HellermannTyton

# Product Catalogue

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**Handy material overview included with this catalogue!**

Is your material overview page missing? No problem: Download a new one from the Internet:

**www.HellermannTyton.co.uk/materialoverview**

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# Inspired by you

# MADE FOR

## Our product catalogue 2019/2020

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HellermannTyton



# REAL

We listen. We understand. We invent. We deliver. It's concrete action and not big words that help you effectively manage your cables.

Standard part or custom development: HellermannTyton products help industry professionals reliably fix, insulate, protect, install, identify, apply and connect electrical cables and network connectivity solutions.

Your challenges motivate us to deliver inventive products that make a difference to your business – wherever you are in the world.

Quality and service you can rely on – MADE FOR REAL.

Date of issue: January 2019



MADE FOR REAL®

# Inspired by torsion

Date of issue: January 2019

HellermannTyton

# HellermannTyton develops industry-specific product ranges that raise the bar across the world



**Innovation for wind turbines: the Loop Spacer**

Minimises the abrasion on the cable sheaths caused by torsion within the rotating nacelle. The Loop Spacer can also be easily retrofitted to existing installations and enhances the cable's cooling properties.

## Comprehensive industry expertise

From torsion to weight reduction – every single industry has its own unique demands in terms of cable management. With a high degree of specialist knowledge, HellermannTyton develops tailor-made technologies for different markets and industries. These include:


Agricultural technology


Automotive


Construction


Aviation and aerospace


Medical technology


Food and beverage industry


Commercial vehicles


Rail vehicle construction


Shipbuilding


Solar industry


Telecommunications


Wind power

For more information about our markets and industries please refer to:
**www.HellermannTyton.co.uk/markets2019cat**

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MADE FOR REAL®

# Inspired by extremes

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HellermannTyton

# HellermannTyton develops products that you can count on, even under extreme conditions

### Protection in tough environments: Helagaine HEGMAN

NOMEX® HEGMAN-02 braided sleeving offers exceptional mechanical protection in applications with high temperatures and fire protection requirements.



The outstanding flexibility of the braiding enables straightforward assembly even when working with long sections and around installed connectors. The non-flammable braiding also offers excellent protection against fluids and radiation and is both water- and oil-repellent.

### Highly specialised

In order to keep on defying inhospitable conditions, HellermannTyton continuously explores the use of new materials. Our products and manufacturing methods are the only ones of their kind in many areas.



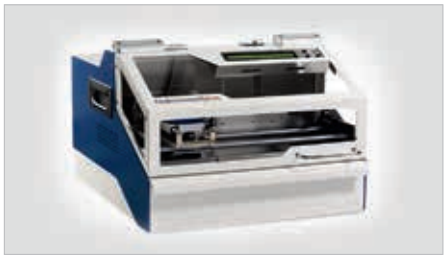
**PEEK cable ties**

The world's most powerful thermoplastic substance can permanently withstand temperatures of -55 °C to +240 °C.
See page 64.



**MST cable ties**

SS304 stainless steel offers chemical resistance and enhanced vibration stability at temperatures of -80 °C to +538 °C.
See page 89.



**M-BOSS Compact**

This stainless steel marking system ensures outstanding legibility under harsh conditions.
See page 519.



**Heavy duty mounts**

Can be attached to threaded bolts and screws with a high level of tightening torque.
See page 155.

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HellermannTyton

# HellermannTyton is an experienced partner for new challenges and individual solutions

## Customer specific product development

HellermannTyton is on the spot whenever new solutions are required. Thanks to our extensive development expertise, we are always able to develop perfectly tailored products, anywhere in the world. A one-stop shop – from planning to production.



The Fixing Clip AC Pipe, for example, solves a problem connected with insulated aluminium refrigerant lines in automotive construction. Rigid connections had caused damage to the pipes due to the vibrations in the engine compartment. Now, the Fixing Clip AC Pipes, which are made of both hard and soft components, ensure that the movement tolerances specified by customers are always adhered to.



## By professionals, for professionals

HellermannTyton does not see the world rigidly through the prism of cable management. We build complex machines ourselves, sometimes encountering problems that are yet to be solved. In the case of the M-BOSS Compact stainless steel marking system, an attachment solution was required for a cylinder. This is now available as a new addition to our range under the product name FlexTack, a self-adhesive mount available for both convex and concave forms. See page 131.

## Ready for your challenges

Thanks to our 5,000 employees around the world, we are able to provide you with on-site support and development expertise. Our developers will be at your disposal for the entire term of larger scale projects. We can't wait to support you.

You can contact us on **0161 945 2249** or **bespokesolutions@HellermannTyton.co.uk**

Issue January 2019



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# Inspired by time

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# HellermannTyton enables significant gains in time during installation, planning and the entire order process

### 25 per cent faster: the Q-tie cable tie

Just insert and tighten! The pioneering design of the Q-tie cuts out two whole steps in comparison with conventional cable ties: the threading of the end through the tie head and the subsequent change of hands to tighten it.



The open head form makes the looping process so straightforward that it can even be done quickly whilst wearing work gloves. It doesn't take long to get a firm grip on the large space at the end of the tie and feel the gap in the tie head. Even blind installations in cramped spaces can be performed within a matter of seconds. See page 55.



### Quick ordering process

Orders and delivery schedules are, of course, produced fully automatically in line with EDI standards.

### Direct contact

With HellermannTyton, you don't spend ages waiting to get through to someone at a call centre. You can get in touch with your contact person directly and discuss everything in your language. Our advisers also have the necessary decision-making expertise.

### Quick availability

An extensive global distributor network guarantees rapid delivery of small consignments and large orders.

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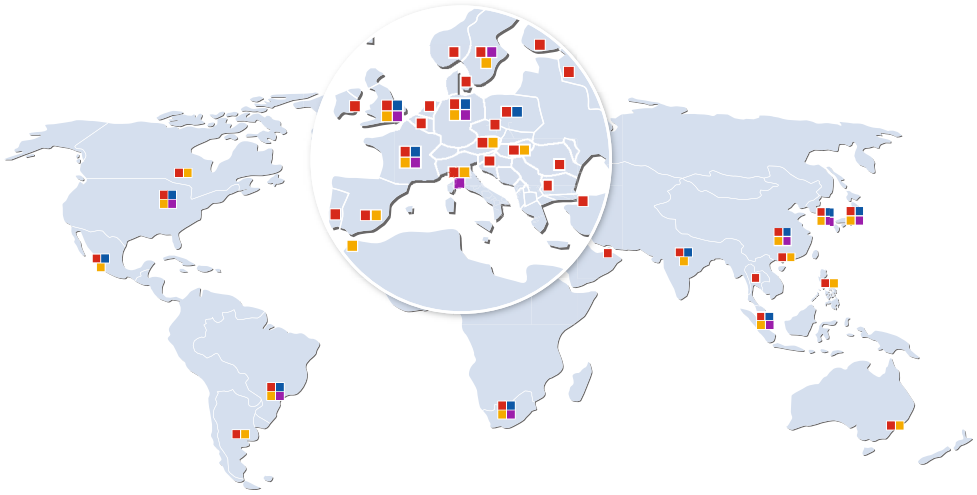
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# Inspired by teamwork

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HellermannTyton

# HellermannTyton is an international team with a passion for the best solutions around cables




Regardless of which HellermannTyton sites you visit in person, you can be assured of a friendly atmosphere and maximum reliability. As part of a survey, 10,000 customers all over Europe confirmed that we are on the right track, with 97 per cent of them saying they would be happy to recommend us.

We want things to stay that way and even improve wherever possible. We will do this with high-quality products and – first and foremost – motivated staff. People who listen carefully, get things done and seek to satisfy all needs.

**HellermannTyton INSIDE**

Be inspired by teamwork at HellermannTyton. Our INSIDE HellermannTyton programme gives new insights into how our teams work.

See for yourself how we generate new ideas and develop innovative products:

*www.HellermannTyton.co.uk/INSIDE2019cat*

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# Inspired by needs

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HellermannTyton

# HellermannTyton is your partner for close, intensive on-site co-operation

We meet growing global challenges by being close to our clients. HellermannTyton speaks your language when it comes to devising new solutions and optimising processes. We want you to be able to provide your customers with even better results.



## Your local contact person


### Head office

Tel: 0808 164 2204
distribution@HellermannTyton.co.uk

### Sales

Tel: 0808 164 2204
info@HellermannTyton.co.uk

### Automotive Sales

Tel: 0808 164 2204
info@HellermannTyton.co.uk




### Let's find inspirational solutions together

Our sales advisers do so much more than just take your order – in fact, they find out what you really need. An appropriate solution will only be selected from the portfolio, or developed on your behalf, once the product requirements have been discussed in detail.


This product catalogue is valid from January 2019. It replaces all previous product catalogues. All product information is supplied without guarantee. Errors and technical modifications reserved. No liability is accepted for printing errors. As of August 2018.



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# Inspired by improvement

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HellermannTyton develops its own products on an ongoing basis. Currently, there are about 75,000 items. We add new ideas every day



### 1. Cable Ties and Fixings

Our tip: lean cable management with the X-Series. The ultra-streamlined head design of the X-Series is ideal for use in tight installation areas (page 57).



### 2. Insulation

Our tip: optimum visibility with the SA47 heat-shrinkable tube. The combination of transparent heat-shrinkable tube and black adhesive enables the user to precisely judge the quality of the bond (page 248).



### 3. Cable Protection Systems

Our tip: our wiring ducts offer protection and order when space is at a premium. They come with blunted edges that protect the cable insulation and make them safer to work with during installation and maintenance (page 348).



### 4. Electrical Installation

Our tip: space-saving cable installation with HelaCon Plus Mini. The innovative design is 40 per cent smaller compared with the HelaCon Plus range. The installation openings enclose the entire cable for reliable processing (page 403).



### 5. Identification Systems

Our tip: seamless product identification with RFID solutions. Cable ties and other accessories with RFID transponders make it easier to satisfy increasing demands in terms of traceability and location tracking (page 509).



### 6. Application Tooling

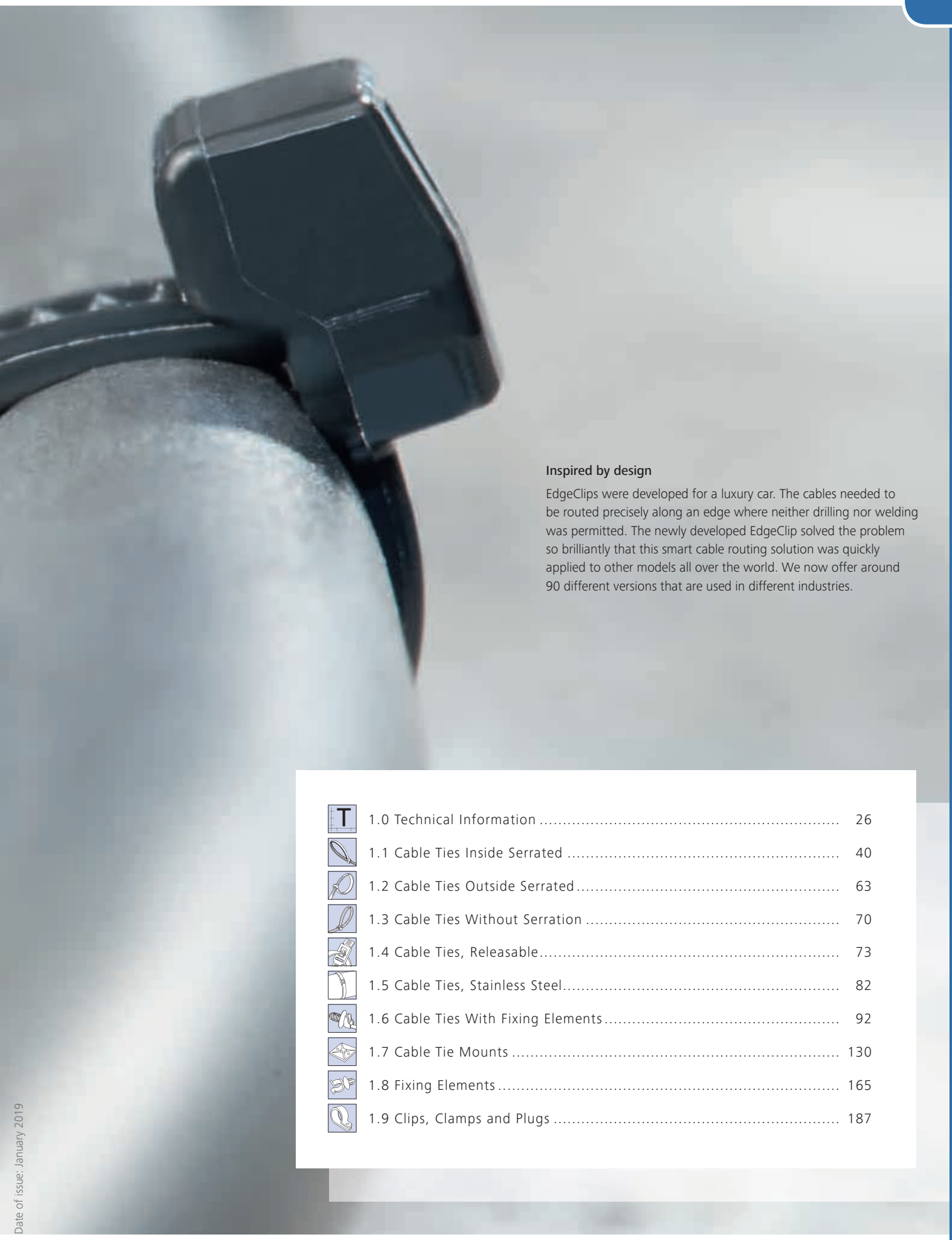
Our tip: recoil-free application of cable ties with the EVO9 processing tool. Even when strong forces are involved, the EVO9 significantly reduces the recoil generated when installing cable ties with conventional pliers (page 549).

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**Inspired by design**

EdgeClips were developed for a luxury car. The cables needed to be routed precisely along an edge where neither drilling nor welding was permitted. The newly developed EdgeClip solved the problem so brilliantly that this smart cable routing solution was quickly applied to other models all over the world. We now offer around 90 different versions that are used in different industries.


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## 1.1 Cable Ties Inside Serrated


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| temperatures up to +105 °C | PA66HS, heat stabilised | 46 |
| for higher impact resistance, scan black | PA66HIR(S), high impact modified | 48 |
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| detectable, corrision resistant | MCTS-Series, PPMP+ | 62 |


## 1.2 Cable Ties Outside Serrated

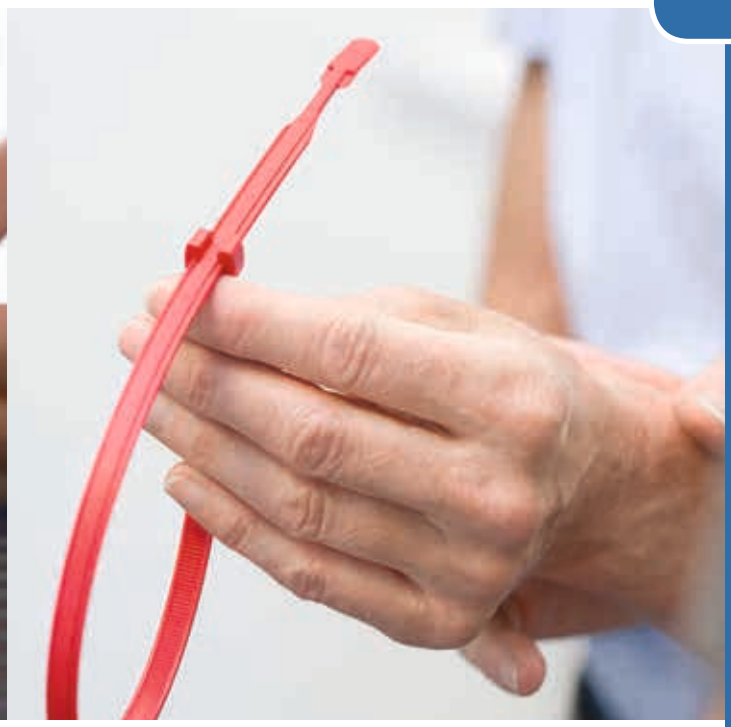

| | | |
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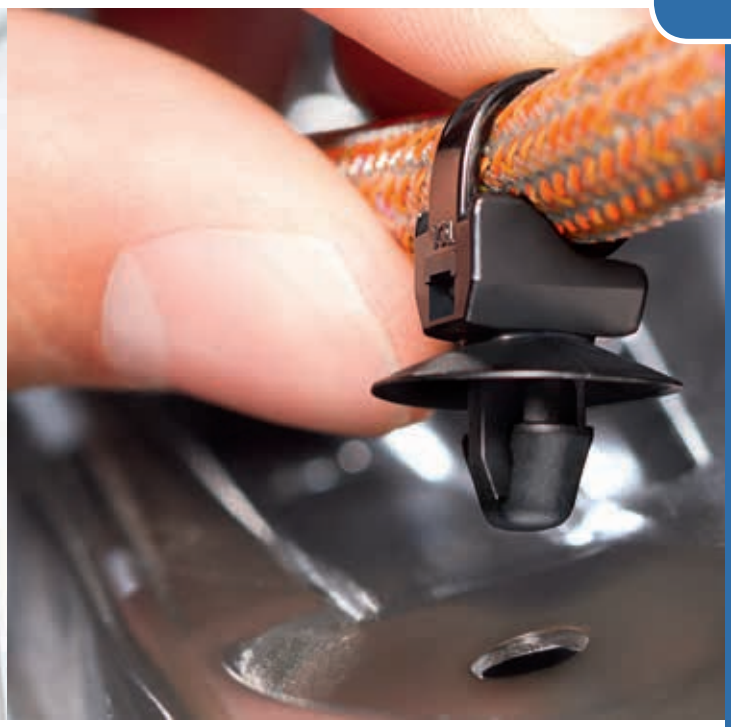

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## Material Specification Overview

| MATERIAL | Material Shortcut | Operating Temperature | Colour** | Flammability | Material Properties* | Material Specifications |
|---|---|---|---|---|---|---|
| **Aluminium alloy** | AL | -40 °C to +180 °C | Natural (NA) | | • Corrosion resistant<br>• Antimagnetic | RoHS |
| **Chloroprene rubber** | CR | -20 °C to +80 °C | Black (BK) | | • Weather resistant<br>• High yield strength | RoHS |
| **Ethylene Tetrafluoroethylene (Tefzel®)** | E/TFE | -80 °C to +170 °C | Blue (BU) | UL 94 V0 | • Resistance to radioactivity<br>• UV resistant, not moisture sensitive<br>• Good chemical resistance to acids, bases, oxidizing agents | RoHS |
| **Polyacetal** | POM | -40 °C to +90 °C, (+110 °C, 500 h) | Natural (NA) | UL 94 HB | • Limited brittleness sensitivity<br>• Flexible at low temperature<br>• Not moisture sensitive<br>• Robust on impact | RoHS |
| **Polyamide 11** | PA11 | -40 °C to +85 °C, (+105 °C, 500 h) | Black (BK) | UL 94 HB | • Bio-plastic, derived from vegetable oil<br>• Strong impact resistance at low temperature<br>• Very low moisture absorption<br>• Weather resistant<br>• Good chemical resistance | HF<br>RoHS |
| **Polyamide 12** | PA12 | -40 °C to +85 °C, (+105 °C, 500 h) | Black (BK) | UL 94 HB | • Good chemical resistance to acids, bases, oxidizing agents<br>• UV resistant | HF<br>RoHS |
| **Polyamide 4.6** | PA46 | -40 °C to +130 °C, (+150 °C, 5000 h; +195 °C, 500 h) | Natural (NA), Grey (GY) | UL 94 V2 | • Resistance to high temperatures<br>• Very moisture sensitive<br>• Low smoke sensitivity | HF<br>LFH<br>RoHS |
| **Polyamide 6** | PA6 | -40 °C to +80 °C | Black (BK) | UL 94 V2 | • High yield strength | RoHS |
| **Polyamide 6** high impact modified | PA6HIR | -40 °C to +80 °C | Black (BK) | UL 94 HB | • Limited brittleness sensitivity<br>• Higher flexibility at low temperature | RoHS |
| **Polyamide 6.6** | PA66 | -40 °C to +85 °C, (+105 °C, 500 h) | Black (BK), Natural (NA) | UL 94 V2 | • High yield strength | HF<br>RoHS |
| **Polyamide 6.6** glass-fibre reinforced | PA66GF13, PA66GF15 | -40 °C to +105 °C | Black (BK) | UL 94 HB | • Good resistance to lubricants, fuels, salt water and solvents | HF<br>RoHS |
| **Polyamide 6.6** heat and UV stabilised | PA66HSW | -40 °C to +105 °C | Black (BK) | UL 94 V2 | • High yield strength<br>• Modified elevated maximum temperature<br>• UV resistant | HF<br>RoHS |
| **Polyamide 6.6** heat stabilised | PA66HS | -40 °C to +105 °C | Black (BK), Natural (NA) | UL 94 V2 | • High yield strength<br>• Modified elevated maximum temperature | HF<br>RoHS |
| **Polyamide 6.6** high impact modified | PA66HIR | -40 °C to +80 °C, (+105 °C, 500 h) | Black (BK) | UL 94 HB | • Limited brittleness sensitivity<br>• Higher flexibility at low temperature | RoHS |
| **Polyamide 6.6** high impact modified, heat and UV stabilised | PA66HIRHSW | -40 °C to +110 °C | Black (BK) | UL 94 HB | • Limited brittleness sensitivity<br>• Higher flexibility at low temperature<br>• Modified elevated maximum temperature<br>• High yield strength, UV resistant | RoHS |
| **Polyamide 6.6** high impact modified, heat stabilised | PA66HIRHS | -40 °C to +105 °C | Black (BK) | UL 94 HB | • Limited brittleness sensitivity<br>• Higher flexibility at low temperature<br>• Modified elevated maximum temperature | RoHS |
| **Polyamide 6.6** high impact modified, scan black | PA66HIR(S) | -40 °C to +80 °C, (+105 °C, 500 h) | Black (BK) | UL 94 HB | • Limited brittleness sensitivity<br>• Higher flexibility at low temperature | RoHS |
| **Polyamide 6.6** UV resistant | PA66W | -40 °C to +85 °C, (+105 °C, 500 h) | Black (BK) | UL 94 V2 | • High yield strength<br>• UV resistant | HF<br>RoHS |

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| MATERIAL | Material Shortcut | Operating Temperature | Colour** | Flammability | Material Properties* | Material Specifications |
|---|---|---|---|---|---|---|
| **Polyamide 6.6** with metal particles | PA66MP | -40 °C to +85 °C, (+105 °C, 500 h) | Blue (BU) | UL 94 HB | • High yield strength<br>• Metal and X-Ray detectable | HF<br>RoHS |
| **Polyamide 6.6** with metal particles | PA66MP+ | -40 °C to +85 °C | Blue (BU) | not flame retardant | • High yield strength<br>• Metal and X-Ray detectable | HF<br>RoHS |
| **Polyamide 6.6 V0** | PA66V0 | -40 °C to +85 °C | White (WH) | UL 94 V0 | • High yield strength<br>• Low smoke emission | HF<br>LFH<br>RoHS |
| **Polyester** | SP | -50 °C to +150 °C | Black (BK) | | • UV resistant<br>• Good chemical resistance to most acids, bases and oils | HF<br>LFH<br>RoHS |
| **Polyetheretherketone** | PEEK | -55 °C to +240 °C | Beige (BGE) | UL 94 V0 | • Resistance to radioactivity<br>• Not moisture sensitive<br>• Good chemical resistance to acids, bases, oxidising agents | HF<br>LFH<br>RoHS |
| **Polyethylene** | PE | -40 °C to +50 °C | Black (BK), Grey (GY) | UL 94 HB | • Low moisture absorption<br>• Good chemical resistance to most acids, bases, alcohol, oils | HF<br>RoHS |
| **Polyolefin** | PO | -40 °C to +90 °C | Black (BK) | UL 94 V0 | • Low smoke emissions | HF<br>LFH<br>RoHS |
| **Polypropylene** | PP | -40 °C to +115 °C | Black (BK), Natural (NA) | UL 94 HB | • Floats in water<br>• Moderate yield strength<br>• Good chemical resistance to acids, bases and solvents | HF<br>RoHS |
| **Polypropylene, Ethylene Propylene Diene Terpolymer rubber** free of Nitrosamine | PP, EPDM | -20 °C to +95 °C | Black (BK) | UL 94 HB | • Good resistance to high temperature<br>• Good chemical and abrasion resistance | HF<br>RoHS |
| **Polypropylene** with metal particles | PPMP | -40 °C to +115 °C | Blue (BU) | UL 94 HB | • Metal and X-Ray detectable<br>• Heat resistant<br>• Moderate yield strength<br>• Good chemical resistance | RoHS |
| **Polypropylene** with metal particles | PPMP+ | -40 °C to +85 °C | Blue (BU) | not flame retardant | • High yield strength<br>• Metal and X-Ray detectable | HF<br>RoHS |
| **Polyvinylchloride** | PVC | -10 °C to +70 °C | Black (BK), Natural (NA) | UL 94 V0 | • Low moisture absorption<br>• Good chemical resistance to acids, bases, salts, alcohol, oils | RoHS |
| **Stainless Steel, Stainless Steel** | SS304, SS316 | -80 °C to +538 °C | Natural (NA) | Non burning | • Corrosion resistant<br>• Antimagnetic<br>• Weather resistant<br>• Chemical resistance<br>• SS316 also resistant against seawater, salt spray and anorganic acids | HF<br>LFH<br>RoHS |
| **Thermoplastic Polyurethane** | TPU | -40 °C to +85 °C | Black (BK) | UL 94 HB | • High elasticity<br>• Good chemical resistance to acids, bases and oxidising agents | HF<br>RoHS |

Tefzel® is a registered trademark of DuPont. General linguistic usage for cable ties made from raw material E/TFE is Tefzel®-Tie. In additon to Tefzel® from DuPont HellermannTyton also uses equivalent E/TFE raw material from other suppliers.

**Further colours available on request.

*These details are only guide values. They should not be regarded as a exhaustive material specification and are no substitute for suitability tests. Please see our datasheets for further details.

N = **Minimum Loop Tensile Strength for Cable Ties (Newton)**

**HF = Halogenfree**
**LFH = Limited Fire Hazard**
**RoHS = Restriction of Hazardous Substances**

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## Product Selection Guide

This Product Selection Guide will help you find the right cable tie for your application. Begin by choosing between indoor or outdoor applications and whether you need very good chemical resistance or not. Next, identify your required temperature range. Finally, select the cable tie range that best meets your requirements.

## Indoor applications

**Standard temperature up to +85 °C**

| Cable tie series and length | Page |
|---|---|
| **SOFTFIX-Family TPU,** BK<br>Length: 180–880 mm | 77 |
| **SRT-Series Industrial quantities TPU,** BK<br>Length: 180–880 mm | 77 |

**Heat stabilised up to +105 °C**

| Cable tie series and length | Page |
|---|---|
| **T-Series PP,** NA, BK<br>Length: 100–390 mm | 52 |

**High temperature up to +240 °C**

| Cable tie series and length | Page |
|---|---|
| **PEEK-Series,** BGE<br>Length: 145–250 mm | 64 |

yes

very good chemical resistance

no

**Standard temperature up to +85 °C**

| Cable tie series and length | Page | Cable tie series and length | Page | Cable tie series and length | Page |
|---|---|---|---|---|---|
| **CTT-Series PA66,**<br>NA, BK<br>Length: 101.6–205 mm | 58 | **MCTRELK-Series PA66MP,**<br>BU<br>Length: 250 mm | 60 | **RT250-Series PA66,**<br>BK, NA<br>Length: 563.3–1,030 mm | 74 |
| **DH-Series PA66,**<br>NA, BK<br>Length: 210–395 mm | 59 | **MCTS-Series PA66MP+,**<br>MGN, MST, RUS, BU,<br>Length: 100–301 mm | 61 | **SpeedyTie PA66,**<br>RD, YE<br>Length: 752 mm | 79 |
| **KR-Series PA66,**<br>NA<br>Length: 210–360 mm | 70 | **OS-Series PA66V0**<br>BK, NA, WH, GY<br>Length: 100–385 mm | 63 | **SpeedyTie PA66HIR(S),**<br>BK<br>Length: 752 mm | 79 |
| **LK-Series PA66,**<br>BK, NA<br>Length: 270–535 mm | 54 | **PE-Series PA66,**<br>BU, YE, GN, RD<br>Length: 400 mm | 66 | **TEXTIE-Series PA66 and PP,**<br>BK, RD, YE, GN, BU, WH<br>Length: 150–25,000 mm | 80 |
| **LK-Series PA66HIR(S),**<br>BK<br>Length 270–535 mm | 54 | **Q-Series PA66,**<br>GN, RD, BK, NA, BU, YE<br>Length: 105–520 mm | 55 | **T-Series PA66,**<br>GY, GN, RD, BK, NA, OG, SR, YE, BU, BN<br>Length: 83–1,325 mm | 42 |
| **LPH-Series PA66,**<br>BK<br>Length: 175 mm | 67 | **REL-Series PA66,**<br>BK, NA<br>Length: 180–250 mm | 75 | **T-Series PA66HIR(S),**<br>BK<br>Length: 200–760 mm | 48 |
| **LPH-Series PA66HIR(S),**<br>BK<br>Length: 265–355 mm | 67 | **RELK-Series to 200N PA66,**<br>NA, BK<br>Length: 200–350 mm | 73 | **T-Series PA66V0,**<br>WH<br>Length: 100–387 mm | 49 |
| **LR55-Series PA66,**<br>GN, RD, BK, NA, BU, YE<br>Length 195 mm | 76 | **REZ-Series PA66,**<br>BK, FLPK, GN, OG<br>Length: 200–305 mm | 78 | **X-Series PA66HIR(S)**<br>BK<br>Length: 100-715 mm | 57 |
| **MCT-Series PA66MP,**<br>BU<br>Length: 100–387 mm | 60 | **RLT-Series to 670N PA66,**<br>NA, BK<br>Length: 340–770 mm | 73 | | |

**Heat stabilised up to +105 °C**

| Cable tie series and length | Page | Cable tie series and length | Page |
|---|---|---|---|
| **CTT-Series PA66HS,** BK<br>Length: 101.6–205 mm | 58 | **OS-Series PA66HS,** NA, BK<br>Length: 100–385 mm | 63 |
| **DH-Series PA66HS,** BK<br>Length: 210–395 mm | 59 | **Q-Series PA66HS,** NA, BK<br>Length: 105–520 mm | 56 |
| **KR-Series PA66HS,** NA, BK<br>Length: 210–426 mm | 70 | **RLT-Series bis 670 N PA66HS,** NA<br>Length: 770 mm | 73 |
| **LK-Series PA66HS,** BK, NA<br>Length: 270–535 mm | 54 | **T-Series PA66HS,** NA, BK<br>Length: 100–1,095 mm | 46 |
| **LR55-Series PA66HS,** BK<br>Length: 195 mm | 76 | **V-Series PA66HS,** NA<br>Length: 102.5–150 mm | 65 |

**High temperature up to +195 °C (short-term)**

| Cable tie series and length | Page |
|---|---|
| **DH-Series PA46,** GY<br>Length: 210 mm | 59 |
| **T-Series PA46,** NA, GY<br>Length: 100–390 mm | 50 |
| **V-Series PA46,** GY<br>Length: 102.5–150 mm | 65 |

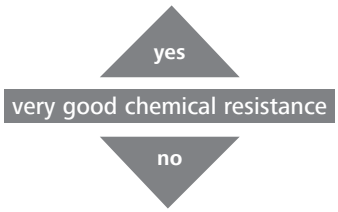
**Colours guide:** Beige (BGE), Black (BK), Blue (BU), Brown (BN), Fluorescent Pink (FLPK), Green (GN), Grey (GY), Mint Green (MGN), Metal (ML), Mustard (MST), Natural (NA), Orange (OG), Red (RD), Russet (RUS), Silver (SR), White (WH), Yellow (YE)

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## Outdoor applications

| Standard temperature up to +85 °C | |
|---|---|
| Cable tie series and length | Page |
| **EL-TY-Series POM,** BK<br>Length: 15.8–53.3 mm | 72 |
| **Robusto-Series PA11,** BK<br>Length: 123–355 mm | 68 |
| **RT250 PA66W,** BK<br>Length: 565.3 mm | 74 |
| **T-Series PA11,** BK<br>Length: 100–200 mm | 53 |

| High temperature +150 °C and higher | |
|---|---|
| Cable tie series and length | Page |
| **MBT-FC-Series SS316,** BK<br>Length: 362–1,245 mm | 86 |
| **MBT-Series SS304,** ML<br>Length: 127–838 mm | 82 |
| **MBT-Series SS316,** ML<br>Length: 127–838 mm | 83 |
| **MBTXHD-/MBTUHD-Series SS316,** ML<br>Length: 681–1,524 mm | 85 |
| **MBTXHDFC-/MBTUHDFC-Series SS316,** ML<br>Length: 681–1,524 mm | 88 |
| **MLT-Series, MLTC-Series SS316,** ML, BK<br>Length: 230–630 mm | 90 |
| **MST-Series SS304,** ML<br>Length: 207–700 mm | 89 |
| **T-Series E/TFE,** BU<br>Length: 100–387 mm | 51 |




| Standard temperature up to +85 °C | |
|---|---|
| Cable tie series and length | Page |
| **DH-Series PA66W,** BK<br>Length: 210–305 mm | 59 |
| **KR-Series PA66W,** BK<br>Length: 210–360 mm | 70 |
| **LK-Series PA66W,** BK<br>Length: 270–535 mm | 54 |
| **Q-Series PA66W,** BK<br>Length: 105–520 mm | 55 |
| **REL-Series PA66W,** BK<br>Length: 250 mm | 75 |
| **RLT-Series to 670 N PA66W,** BK<br>Length: 770 mm | 73 |
| **T-Series PA66W,** BK<br>Length: 100–1,325 mm | 44 |
| **X-Series PA66W,** BK<br>Length: 100–715 mm | 57 |

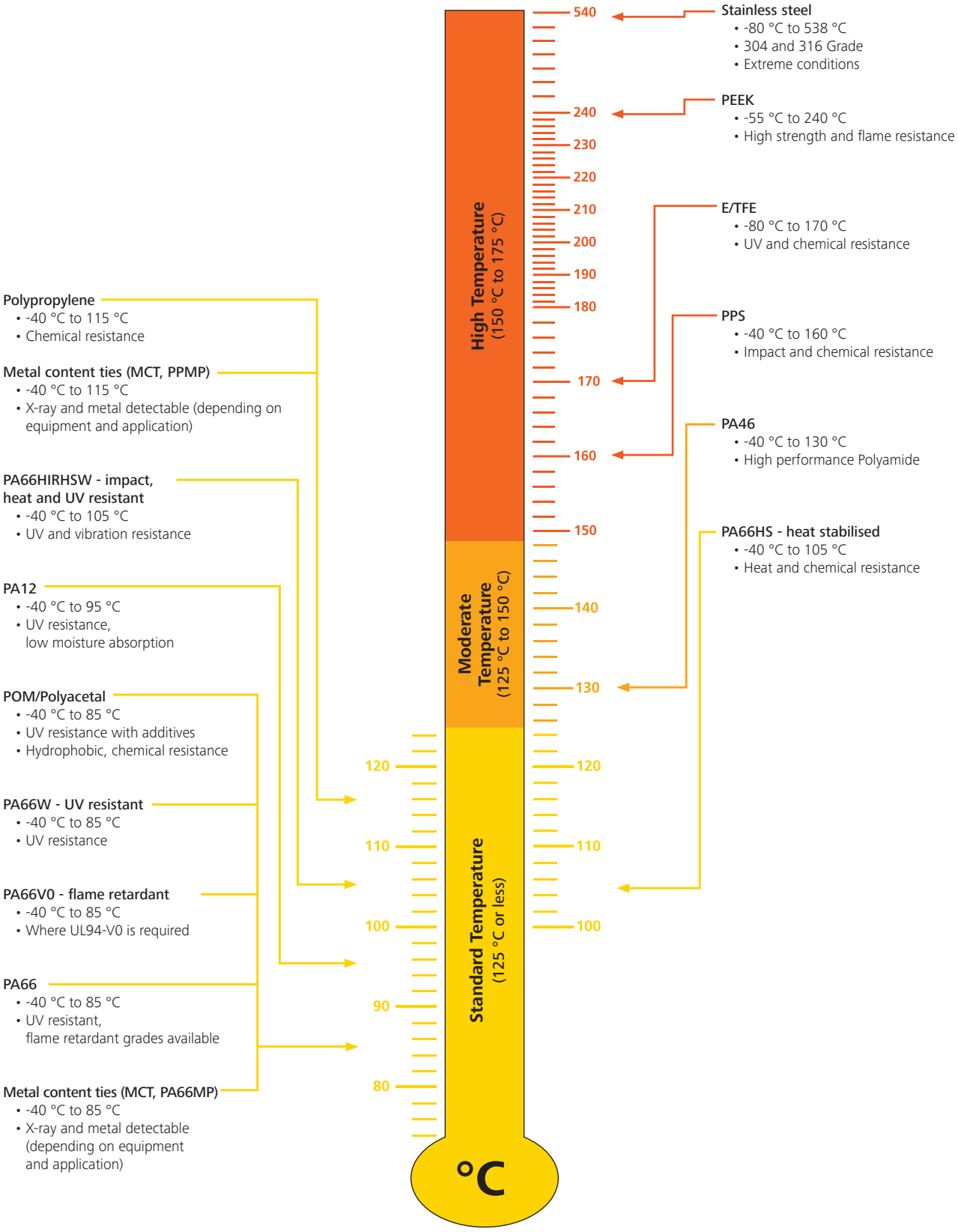
| Heat stabilised up to +105 °C | |
|---|---|
| Cable tie series and length | Page |
| **RPE-Series PA66HSW,** BK<br>Length: 275–350 mm | 66 |

**Colours Guide:** Beige (BGE), Black (BK), Blue (BU), Brown (BN), Fluorescent Pink (FLPK), Green (GN), Grey (GY), Mint Green (MGN), Metal (ML), Mustard (MST), Natural (NA), Orange (OG), Red (RD), Russet (RUS), Silver (SR), White (WH), Yellow (YE)

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## Operating temperature ranges of cable tie materials

This Material Selection Guide illustrates the minimum and maximum operating temperatures for cable ties according to the material from which we manufacture them. It gives an overview of materials HellermannTyton uses to manufacture cable ties. Please contact our sales team to check availability of products in your preferred material.




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## Properties of Polyamide PA66

Polyamides are among the most important thermoplastic synthetic materials. Thermoplastics can be reshaped by heating as often as required without undergoing chemical decomposition or other negative changes. This makes polyamide ideal for processing via injection moulding into high quality products. About 90 % of cable ties and fixings from HellermannTyton are made from this material. Polyamide is also known under the brand name of Nylon®, which was introduced by the Dupont company.

The inner structure of polyamide displays a partial order of polymer chains, i.e. polyamides are partially crystalline. Due to the tighter packing of the individual molecular chains polyamide only has limited transparency to light. The plastic is therefore described as translucent.

Each base unit contains 6 carbon atoms (C). Hence the name PA66.

The polyamide PA66 has many properties which are highly advantageous for HellermannTyton cable ties and fixings, such as:

- High strength, rigidity and hardness
- High dimensional stability, even under the effect of heat
- High abrasion resistance

Having a wide range of polyamides and additives allows for an optimum adaptation of the properties of the finished product to suit the respective requirements.

The following PA66 variants are used for HellermannTyton products:

- Polyamide 6.6 standard (PA66) for temperature conditions of up to +85 °C
- Polyamide 6.6 Heat Stabilised (PA66HS) for temperature conditions of up to +105 °C
- Polyamide 6.6 UV Stabilised (PA66W) for exterior use
- Polyamide 6.6 Heat Stabilised and UV Stabilised (PA66HSW) for exterior use up to +105 °C
- Polyamide 6.6 Impact Resistant (PA66HIR) for high elasticity requirements
- Polyamide 6.6 Impact Resistant and Heat Stabilised (PA66HIRHS) for high elasticity requirements and temperatures up to +105 °C
- Polyamide 6.6 V0 for high standards of fire protection

**Water content in polyamide**

Polyamide is a hygroscopic material - this means that it absorbs and releases water. The mechanical properties are significantly affected by the water content – especially flexibility and minimum tensile strength.

In a standard atmosphere of 23 °C and 50 % relative humidity, the degree of water saturation of polyamide is around 2.5 %. For optimal processing of cable ties it is therefore important that the polyamide has a water content of approximately 2.5 % in a state of equilibrium.

**The quality and functionality of the products are thus affected by the water content, therefore the correct storage of our products is crucial. Please read our separate instructions on storage.**

**Since humidity is so critical to the quality of the tie, the question arises: What happens if the tie is installed and the water content in the tie alters?**

The water content determines the flexibility and strength of a tie. At a water content of approximately 2.5 % the tie has the ideal flexibility for installation. When the strap is being threaded through the head of the tie, the pawl must be flexible enough to “see-saw” over the serration of the strap without breaking. On the other hand, there must also be adequate material rigidity for the serrations of the pawl to engage with the serrations of the strap during the tying process so that a 'positive locking' action is achieved. After achieving the positive locking action the tie is in a static condition. Changes in the mechanical properties of the tie as a function of water content are insignificant during this status.

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## Properties of UV-stabilised Polyamide PA66W

The question constantly arises as to whether a black cable tie is suitable for use outside. This is dependant on the application of the tie, but in general the following statements can be made:

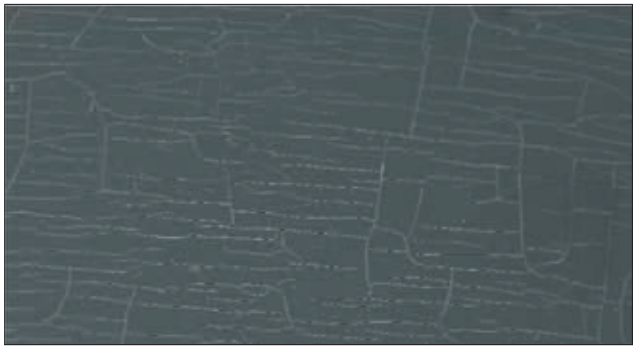
A black cable tie made of polyamide 6.6 standard (PA66) is only coloured black with a low proportion of carbon black. This is not sufficient to protect the material from damage caused by UV-radiation in the long term.

Products made from UV-stabilised polyamide PA66W are produced in accordance with ASTM standard D6779 with a higher carbon black percentage of approx. 2 %. So they resist UV-radiation in the European area for a considerably longer period than standard PA66.

This is clearly illustrated by the comparison of the two images:

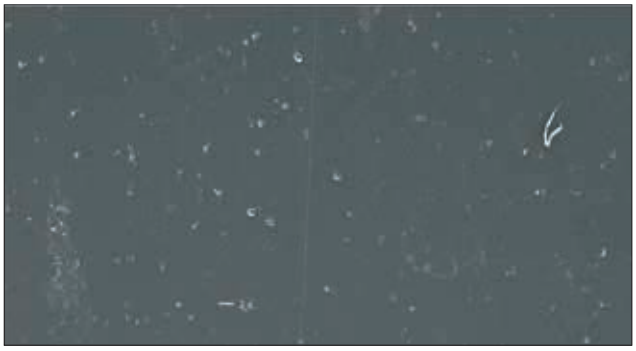
**After 500 hours of UV-radiation exposure**

Polyamide 6.6 standard (PA66) dyed black:



*The joint has been damaged throughout by UV-radiation.*

Polyamide 6.6 UV-stabilised (PA66W) with approx. 2 % carbon black:



*The joint has only been altered at isolated points by the UV-radiation.*

**For outdoor use we recommend our range of products made from UV-stabilised polyamide (PA66W).**

### A simple practical test: "the hammer test"

You can quickly determine whether or not a cable tie is UV stabilised. Strike with a hammer the tail of the strap on the tie. Hold up this flattened end to the light. Cable ties with a carbon black content of about 2 % allow no light through and look black throughout. Standard black ties, however, are transparent on the flattened end.

## Properties of Polyamide PA11/PA12

Apart from PA66, there are polyamides which are less hygroscopic. These include PA11/PA12.

**PA11/PA12 have the following advantages over PA66:**

- Less hygroscopic - saturation at 23 °C and 50 % relative humidity is approximately 1 %
- Better impact performance
- Good weather resistance, even without a special additive

These three properties make PA11/PA12 ideal for use outdoors, in particularly when requirements may include impact resistance.

The water absorption of PA11/PA12 is not only less than that of PA66 but also slower. This is the requirement where the mechanical properties need to remain relatively unaffected by changing environmental conditions.

## Properties of Polyamide PA46

Polyamide PA66, despite the use of additives, is not suitable for long-term use in temperatures of +105 °C. Due to considerably better heat resistance, polyamide PA46 is more suitable for temperatures of up to +195 °C (depending on the length of time of operation).

**Advantages of PA46 over PA66:**

- Greater rigidity, even at higher temperatures
- Higher operating temperature ranges of up to +150 °C (5,000 hours) and +195 °C (500 hours)
- Greater form stability at higher temperatures
- Excellent chemical resistance
- Operating temperature (long-term) up to +130 °C

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## Properties of Polyetheretherketone PEEK

PEEK, a linear aromatic polymer, is semi-crystalline and is widely regarded as the highest performance thermoplastic material currently available. A summary of key physical properties is as follows:

**High temperature performance**
- Melting temperature of +343 °C
- Continuous use temperature of +240 °C (UL 746B)

**Wear resistance**
- Outstanding wear resistance over wide ranges of pressure, velocity, temperature and counter facial roughness

**Chemical resistance**
- Excellent resistance to a wide range of chemical environments, even at elevated temperatures
- The only common environment that dissolves it is concentrated sulfuric acid

**Fire, smoke and toxicity**
- Highly stable and requires no flame-retardant additives to achieve a UL94 V0 rating at 1.45 mm thickness
- The composition and inherent purity of the material results in extremely low smoke and toxic gas emission in fire situations

**Hydrolysis resistance**
- PEEK is not attacked by water or pressurized steam
- Components that are constructed from these materials retain a high level of mechanical properties when continuously conditioned in water at elevated temperatures and pressures

**Radiation resistance**
- Excellent radiation resistance due to the energetically stable chemical structure of PEEK

**Purity**
- PEEK materials are inherently pure with exceptionally low levels of ionic extractables
- Excellent out gassing characteristics

This makes PEEK the right choice for any high performance application in any industry with a clearly outstanding continuous use temperature of +240 °C.

## Properties of Ethylene Tetrafluoroethylene (E/TFE) - Tefzel®

E/TFE can be best described as a rugged thermoplastic with an outstanding balance of properties.

Mechanically, it is tough, has medium stiffness, impact and abrasion resistance.

E/TFE can perform successfully in applications where other materials are lacking in mechanical toughness, broad thermal capability and the ability to meet severe environmental conditions.

Tefzel® is a registered trademark of DuPont.

**Summary of key properties:**
- No load continuous use temperature of +170 °C
- Weather resistant
- Inert to most solvents and chemicals
- Hydrolytically stable
- Substantially better resistance to radiation than other plastic materials

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## Chemical resistance of various plastics

▲ = resistant
△ = partly resistant
○ = not resistant

These values are only rough guides. They should not be regarded as a material specification and are no substitute for a suitability test. Please see our technical datasheets for further details.

| | Conc. (%) | Temp. (°C) | PA66 | PA46 | PA12 | PA11 | POM | PP | E/TFE (Tefzel®) | TPU | PEEK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Acetaldehyde, liquid** | 100 | 23 °C | ▲ | ○ | | ▲ | ▲ | △ | ▲ | ○ | ▲ |
| **Acetowne** | 100 | 23 °C | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ○ | ▲ |
| **Allyl chloride** | 100 | 23 °C | | | | ▲ | | ▲ | | ○ | |
| **Aniline** | 100 | 23 °C | ▲ | △ | △ | ▲ | △ | ▲ | ▲ | ○ | ▲ |
| **Aromatic compounds** | | | | | | | ▲ | ○ | ▲ | △ | ▲ |
| **Benzaldehyde** | | 23 °C | ▲ | △ | | ▲ | ▲ | ▲ | ▲ | ○ | ▲ |
| **Benzine/Benzol mix** | | 23 °C | ▲ | ▲ | ▲ | ▲ | ▲ | △ | ▲ | △ | ▲ |
| **Benzol** | 100 | 23 °C | ▲ | | ▲ | ▲ | △ | △ | ▲ | △ | ▲ |
| **Bromine** | | 23 °C | | ○ | ○ | ○ | | ○ | | ○ | |
| **Carbon bisulphide** | 100 | 23 °C | ▲ | ○ | ▲ | ○ | ▲ | ○ | ▲ | ○ | ▲ |
| **Carbon tetrachloride** | 100 | 23 °C | ▲ | ▲ | △ | ○ | ▲ | △ | ▲ | ○ | ▲ |
| **CFC** | | | | | | | | △ | | | |
| **Chlorine, gaesous** | 100 | 23 °C | ○ | | | ○ | | ○ | ▲ | △ | |
| **Chlorine, liquefied** | 100 | 23 °C | ○ | ○ | | ○ | | ○ | | | |
| **Chlorobenzene** | 100 | 23 °C | | | ○ | △ | △ | ▲ | | | |
| **Chloroform** | 100 | 23 °C | | ○ | ○ | ▲ | ○ | △ | | ○ | |
| **Chromic acid 10 %** | 10 | 23 °C | ○ | ○ | | ○ | ○ | ▲ | ▲ | ○ | ▲ |
| **Chromic acid 20 %** | 20 | 20 °C | ○ | ○ | | ○ | ○ | ▲ | ▲ | ○ | ▲ |
| **Chromic acid 50 %** | 50 | 20 °C | ○ | ○ | | ○ | ○ | ▲ | ▲ | ○ | ▲ |
| **Cyclohexane** | 100 | 23 °C | ▲ | | | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ |
| **Cyclohexanone** | 100 | 23 °C | ▲ | | | ▲ | ▲ | ▲ | ▲ | | ▲ |
| **Decahydronaphthlene** | 100 | 23 °C | ▲ | | | ▲ | ▲ | △ | ▲ | ▲ | ▲ |
| **Diethyl ether** | 100 | 23 °C | ▲ | | | ▲ | ▲ | △ | ▲ | | ▲ |
| **Di-isopropyl ether** | 100 | 23 °C | | | | | | △ | | | |
| **Dimethyl formamide** | 100 | 23 °C | ▲ | ▲ | | ▲ | ▲ | ▲ | ▲ | | ▲ |
| **Dioctyl phthalate** | | 23 °C | ▲ | ▲ | | ▲ | ▲ | ▲ | ▲ | ○ | ▲ |
| **Engine oil** | 100 | 23 °C | | | ▲ | ▲ | ▲ | ▲ | | ▲ | ▲ |
| **Ethanonic acid 10 %** | 10 | 20 °C | ○ | △ | △ | ▲ | ▲ | ▲ | ▲ | | |
| **Ethanonic acid 100 %** | 100 | 23 °C | ○ | ○ | | ▲ | △ | ▲ | ▲ | | |
| **Ethanonic acid 25 %** | 25 | 20 °C | ○ | | | ▲ | △ | ▲ | ▲ | | |
| **Ethanonic acid 50 %** | 50 | 20 °C | ○ | | | ▲ | △ | ▲ | ▲ | | |
| **Ethyl acetate** | 100 | 23 °C | | ▲ | ▲ | ▲ | △ | △ | | △ | ▲ |
| **Formic acid** | 98 | 23 °C | ○ | | ○ | ▲ | ○ | ▲ | ▲ | ○ | △ |
| **Freon** | | 23 °C | | | | | | ▲ | | | ▲ |
| **Heptane** | 100 | 23 °C | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ |
| **Hydrogen peroxide 10 %** | 10 | 20 °C | △ | | | ▲ | ▲ | ▲ | ▲ | △ | |
| **Hydrogen peroxide 30 %** | 30 | 23 °C | ○ | ○ | | ▲ | ▲ | ▲ | ▲ | △ | |
| **Ketone** | | | ▲ | ▲ | | | ▲ | ▲ | ▲ | | ▲ |
| **Methyisobutylketone** | 100 | 23 °C | ▲ | | | ▲ | ▲ | ▲ | ▲ | | ▲ |
| **Methylethylketone** | 100 | 23 °C | ▲ | ▲ | | ▲ | △ | ▲ | ▲ | ○ | ▲ |
| **Nitric acid 10 %** | 10 | 20 °C | ○ | | ○ | ○ | ○ | ▲ | ▲ | ○ | ▲ |
| **Nitric acid 50 %** | 50 | 23 °C | ○ | | ○ | ○ | ○ | ○ | ▲ | ○ | ○ |
| **Nitrobenzene** | 100 | 23 °C | ▲ | △ | | ▲ | ▲ | ▲ | ▲ | ○ | ▲ |
| **Ordinary petrol** | | 23 °C | | ▲ | | ▲ | ▲ | ▲ | | | ▲ |
| **Paraffin oil** | | 23 °C | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ |
| **Perchloroethylene** | | 23 °C | ▲ | | ▲ | △ | ▲ | △ | ▲ | ○ | ▲ |
| **Petroleum** | | 23 °C | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ |
| **Phenol** | 65 | 23 °C | ○ | ○ | ○ | ○ | ○ | ▲ | ▲ | ○ | |
| **Potass. Permanganate** | 6 | 23 °C | ○ | ○ | ○ | ○ | ▲ | ▲ | ▲ | △ | ▲ |
| **Salad oil** | | 23 °C | | △ | | ▲ | | ▲ | | | ▲ |
| **Silicon oil** | | 23 °C | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ |
| **Sulphuric acid 10 %** | 10 | 20 °C | ○ | | △ | ▲ | ○ | ▲ | ▲ | ○ | △ |
| **Sulphuric acid 50 %** | 50 | 20 °C | ○ | | | | ○ | ▲ | ▲ | ○ | ○ |
| **Sulphuric acid 96 %** | 96 | 23 °C | ○ | ○ | | | ○ | ○ | ▲ | ○ | ○ |
| **Toluol** | 100 | 23 °C | ▲ | | ▲ | ▲ | ▲ | △ | ▲ | ○ | ▲ |
| **Trichlorethylene** | 100 | 23 °C | ▲ | △ | △ | △ | △ | △ | ▲ | ○ | ▲ |
| **Water, cold** | | | ▲ | | ▲ | ▲ | ▲ | | | ▲ | ▲ |
| **Water, hot** | | | | | | ▲ | | ▲ | | △ | ▲ |
| **Xylene** | 100 | 23 °C | ▲ | ▲ | ▲ | ▲ | ▲ | △ | ▲ | ○ | ▲ |

Tefzel® is a registered trademark of DuPont.
General linguistic usage for cable ties made from raw material E/TFE is Tefzel®-Tie. In additon to Tefzel® from DuPont HellermannTyton is also using equivalent E/TFE raw material from other suppliers.

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## What does flammability UL94 mean?

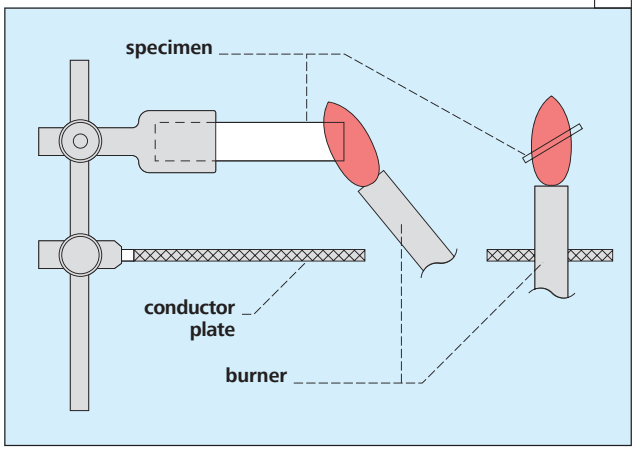
UL is the shortcut for Underwriters Laboratories. This is an independent organisation in the United States to control and certificate product safety.

Beside a lot of product standards UL also specified the flammability test UL94 for plastic materials. UL94 is a material burning test done on defined specimen of the raw material but not a test on final products. UL94 differs between a horizontal burning test UL94 HB (picture 1) and a vertical burning test UL94 V (picture 2). For the vertical test UL94 V there are three flame ratings defined: UL94 V0, UL94 V1 and UL94 V2.

In all these burning tests an open flame is applied for a certain time to the specimen. As the burning behaviour also depends on the thickness of the material it is important to classify the material not only according to HB, V0, V1 or V2 but also to mention the thickness of specimen.

**UL94 HB:**
Horizontal burning test

1

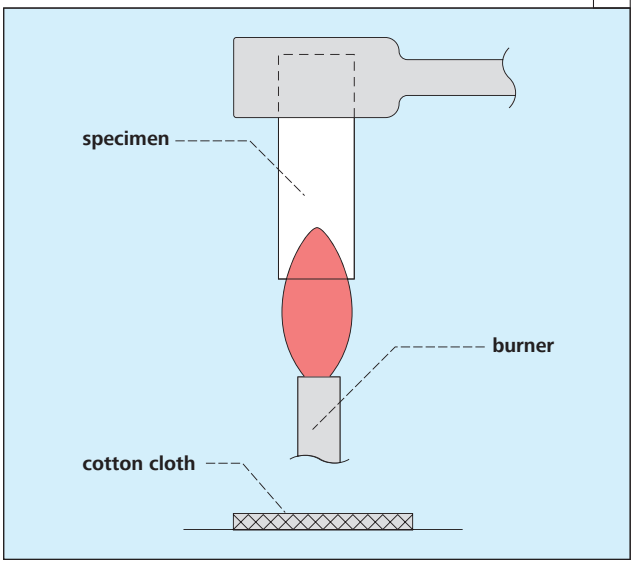



**Test criteria:**
- burning rate of specimen in mm/min.

**Classification:**
- according to HB

**UL94 V:**
Vertical burning test

2




**Test criteria:**
- afterflame time of specimen
- drip of flaming particles

**Classification:**
- according to V0, V1 or V2

## Following table is a summary of test procedures and requirements of the UL94 classification.

| | Horizontal Test UL94 | | Vertical Test UL94 | | |
|---|---|---|---|---|---|
| **Classification** | **HB** | | **V0** | **V1** | **V2** |
| **Number of specimen** | 3 | 3 | 5 | 5 | 5 |
| **Thickness of specimen** | < 3 mm | 3 to 13 mm | up to max. 13 mm | | |
| **1st flame application** | 30 sec. | 30 sec. | 10 sec. | 10 sec. | 10 sec. |
| **2nd flame application** | - | - | 10 sec. | 10 sec. | 10 sec. |
| **Burning rate** | max. 75 mm/min | max. 40 mm/min | - | - | - |
| **Afterflame time after 1st flame application for each individual specimen** | - | - | max. 10 sec. | max. 30 sec. | max. 30 sec. |
| **Afterflame time after 2nd flame application for each individual specimen** | - | - | max. 30 sec. | max. 60 sec. | max. 60 sec. |
| **Total afterflame time for all 5 specimen after 1st and 2nd flame application** | - | - | max. 50 sec. | max. 250 sec. | max. 250 sec. |
| **Afterflame or afterglow of any specimen up to its end allowed** | yes | yes | no | no | no |
| **Cotton indicator ignited by flaming particles or drops allowed** | - | - | no | no | yes |

Flammability behaviour on the following product pages are always related to the raw material burning rate according to UL94. Most commonly used raw materials for cable ties and fixing elements are Polyamide 6.6 standard, Polyamide 6.6 weather resistant and Polyamide 6.6 heat stabilised. These materials normally fulfill UL94 V2 requirement.

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## HellermannTyton cable ties conform to IEC 62275 standard

As a leading global manufacturer of quality, high performance cable management products for over 80 years, HellermannTyton's extensive fastening and fixings portfolio reflects our long-standing industry expertise.

Cable ties from the inside serrated (T-Series, Q-Series), the outside serrated (OS-Series) as well as our metal cable ties (MBT-Series and MST-Series) have been tested in accordance with the international cable tie standard IEC 62275 (Cable management systems - Cable ties for electrical installations).

Cable ties manufactured from the standard material polyamide 6.6 (PA66), heat-stabilised polyamide 6.6 (PA66HS), UV-stabilised polyamide 6.6 (PA66W) and stainless steel grades SS304 and SS316 have been successfully tested and approved.

**The IEC 62275 standard includes the following tests:**

- Installation test on minimum and maximum specified bundle diameters
- Installation test at minimum specified installation temperature
- Impact test at minimum specified operating temperature
- Minimum tensile strength (in the standard this is described as the loop test)
- Loop tensile test after heat ageing at the specified operating temperature
- Loop tensile test after heat cycling at the minimum and maximum operating temperatures
- Loop tensile test after humidity and heat cycling at the minimum and maximum operating temperatures
- Contribution to the spread of fire on both the actual product and test substrate (tissue paper)
- Loop tensile and visual tests after exposure to ultraviolet light radiation for PA66W ties
- Resistance to corrosion (dependent on material)
- Loop tensile test after vibration test for metal cable ties

**The following cable ties have been tested and certified:**

- T-Series inside serrated in PA66-NA, PA66-BK, PA66HS-NA, PA66HS-BK, PA66W
- OS-Series outside serrated in PA66-NA, PA66-BK, PA66HS-NA, PA66HS-BK, PA66W
- Q-Series inside serrated in PA66-NA, PA66-BK, coloured PA66, PA66HS-NA, PA66HS-BK
- MBT-Series, uncoated in SS316 material grade
- MST-Series, uncoated in SS304 material grade

**Material specification please see page 26.**

**In addition to the IEC 62275, we are proud to offer our customers products that have been certified by well-known and independent laboratories such as:**

**Profit from our knowledge and experience and the high-quality of HellermannTyton cable management solutions for your particular industry and market.**

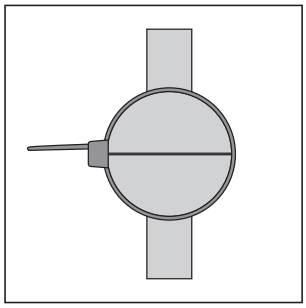
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## Determination of minimum tensile strength

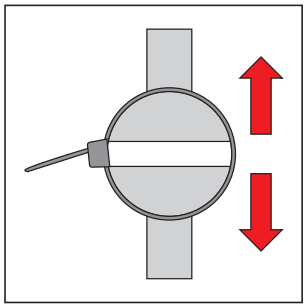
The minimum tensile strength is a critical selection criteria for cable ties. It expresses how much loading a cable tie can bear.

**The test procedure to determine minimum tensile strength:**

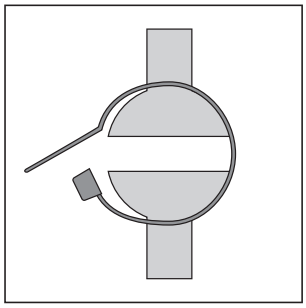
- Stabilisation to achieve equilibrium moisture content
- Set-up of the tensile test fixture
- Application of the tie on a split mandrel fixture
- Test speed



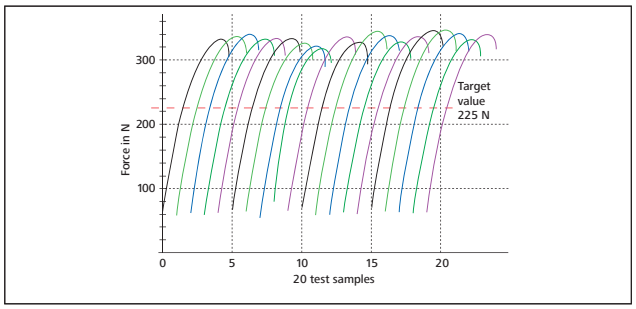
The cable tie is fixed onto a split mandrel fixture with the suitable cable tie application tool.



The mandrel is opened at a defined speed.



The loading at which the cable tie fails is determined. This value is stated in Newtons (N) and is recorded through a computer programme reading the tests. This programme produces graphs as outlined below.




*Typical measurement protocol of a T50R made of PA66 with a minimum tensile strength of 225 N.*

## Explanation of minimum tensile strengths

**What does a minimum tensile strength of 225 N (50 lbs) mean?**
To explain what this value means, the mass with which the tie can be loaded is calculated. The unit of measurement of the mass is stated in kg. To do so, the unit Newton (N) is shown in the following way:

**[N] = [kg * m/s²]**

The formula for calculating the mass is:

**Mass = minimum tensile strength/acceleration due to gravity**

The acceleration due to gravity is 9.81 m/s²

**Mass = minimum tensile strength/[kg * m/s²]/9.81 [m/s²]**

At a minimum tensile strength of 225 N (50 lbs) the mass is:

**Mass = 225 [kg * m/s²]/9.81 [m/s²]**

The units m/s² cancel each other out, leaving the unit [kg] for the mass. Thus:

**Mass = 225/9.81 kg = 22.9 kg**

Therefore, a T50R cable tie with a minimum tensile strength of 225 N (50 lbs) can be loaded with 22.9 kg.

Conversely, with the required loading capacity the minimum tensile strength can be calculated by a mass:

**Min. tensile strength = mass * 9.81[m/s²]**

If the tie is to be loaded with, for example, 53 kg this produces:

**Minimum tensile strength = [53 kg] * 9.81 [m/s²] = 520 N**

In order to withstand a load of 53 kg, the tie must therefore have a minimum tensile strength of 520 N. In this case, select our T120R with a minimum tensile strength of 535 N (120 lbs).

**225 N/9.81 = 22.9 kg**

**53 kg * 9.81 = 520 N**

**= Minimum Loop Tensile Strength for Cable Ties (Newton)**

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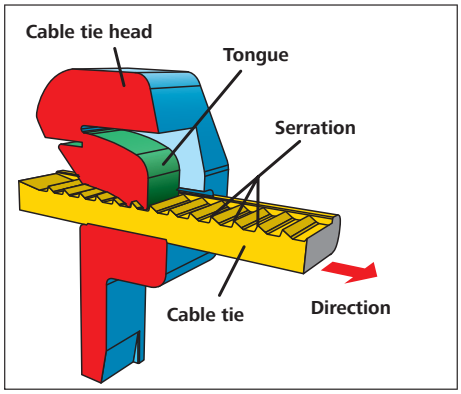
## Introduction to the main locking technologies used for cable ties

HellermannTyton offers a wide range of cable ties for use in different applications. By constantly refining our products and satisfying the ever-changing demands of the market, various locking technologies have been developed. Below you will find a brief overview of three most common locking technologies and their characteristics.

### Cable ties with plastic pawls

This technology is used in 90 % of all polyamide (PA) cable ties applied by HellermannTyton. In order to cover a variety of applications, there are different variants of this system, for example: releasable versions, in-line versions, open head versions.

These are one-piece cable ties, the pawl is moulded as an integral part of the cable tie, thereby building in inherent strengths.



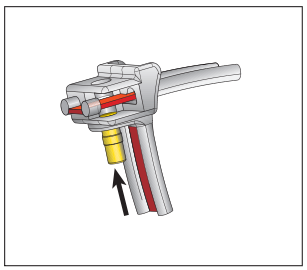
*Locking technology of an outside serrated tie.*

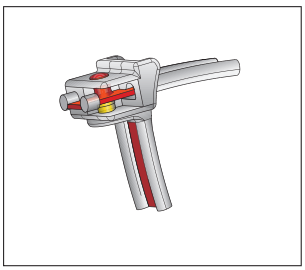
### Locking technology

Positive locking is achieved by engaging the pawl with the strap serrations. This allows the cable tie to perform to the published minimum tensile strength, that is the loading that the cable tie can hold under application.

### KR series cable ties

This cable tie is distinguished by its smooth strap and unique locking mechanism. With the KR series the chamfered head achieves an especially firm fit around the bundled material.


*The unlocked head of a KR-tie.*

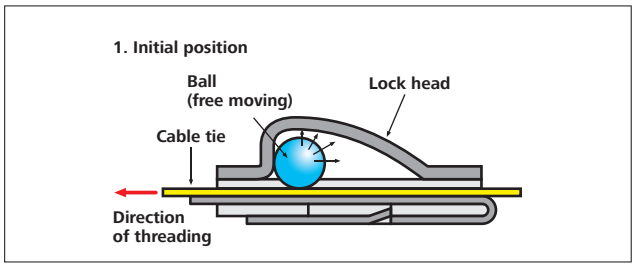

*The cable tie (red) is locked into place with the pin.*

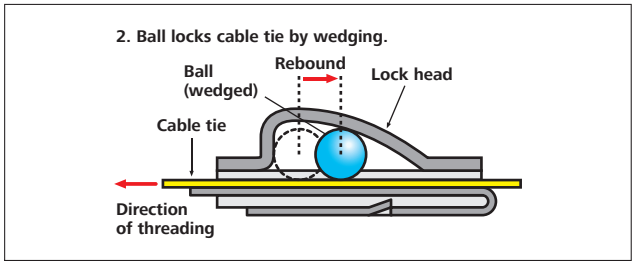
### Locking technology

This patented lock technology takes advantage of the excellent deformation properties of polyamide (PA). Here, the glass fibre-reinforced (GRP) locking pin (yellow) is forced into the strap by the use of an application tool - either the KR6/8 or KR8PNSE. The strap is deformed into the head of the tie by the application of the pin, thereby locking the cable tie in position and allowing for the bundling of heavy loads.

### MBT series cable ties

Made of stainless steel grade 304 or 316, the MBT range of cable ties have no serrations on the strap and are threaded parallel through the head, gliding under a metal ball-bearing locking mechanism. By using an appropriate application tool like our MK9SST the cable tie is tensioned and the strap cut to a flush finish.




### Locking technology

The strap is locked into the head by means of the small ball-bearing. The ball locks into the small end of the wedged shaped housing, forming a positive locking with the strap.

This cable tie is not suitable for rigid objects. Retraction of the ball-bearing (see drawing) is required into the small end of the wedged shaped housing to allow for a positive locking of the strap and also having a flush cut off at the end of the strap. This retraction cannot be ensured when bundling around inflexible materials such as metal pipes. The force by cutting the cable tie might end up in a rebound that could allow the ball moving back slightly. For rigid objects we therefore recommend a protective channel (LFPC) to be laid between strap and bundled object in order to compensate the rebound. The MBT locking technology allows for minimum tensile strengths of up to 7,000 Newton.

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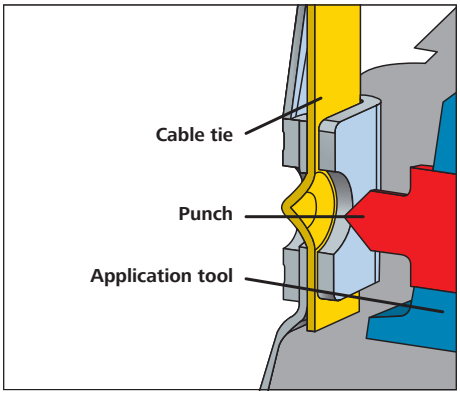
## Introduction to the main locking technologies used for cable ties

### MST series cable ties

MST cable ties are made of stainless steel 304. They offer similar features to MBT products but with a different head design and closure. Where space is tight the flat head allows for space savings. MST cable ties are not only weather-resistant but also highly resistant to heat, fire, and radiation. It can be used in challenging environments including indoor, outdoor and underground installations.

### Locking technology

The punch-locking mechanism keeps the lock tight even in challenging areas with very high vibration such as on trains. Our MST application tools (MST6/MST9) have been specifically developed for tightening and cutting MST cable ties. This tool is mandatory to apply and lock these stainless steel cable ties properly.



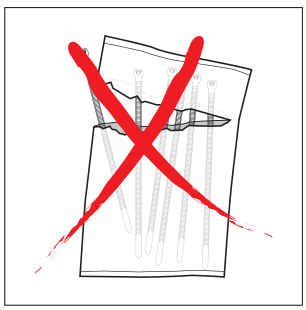

*Punch-locking mechanism of the MST-Series.*

## Optimum storage conditions for cable ties made of Polyamide (PA)

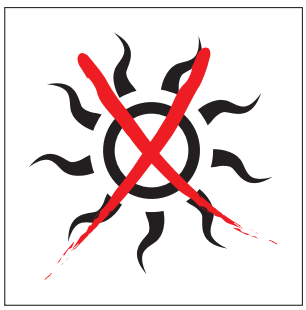
HellermannTyton cable ties, fastenings and fixings are manufactured from high-quality polyamide (PA). This industrial synthetic material is mainly processed using injection moulding, but can also be extruded.

Polyamide is a hygroscopic material. This means that the material absorbs and loses moisture. For optimum handling of cable ties it is important that the material is in a condition of equilibrium with a water content of approximately 2.5 %.

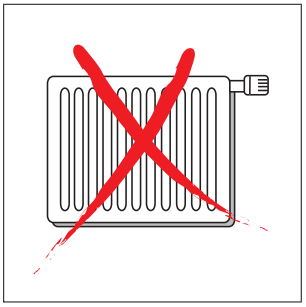
The packaging used by HellermannTyton ensures that the water content in the material remains constant. Therefore, it is important to store the products in their original packaging to preserve the quality of the ties.



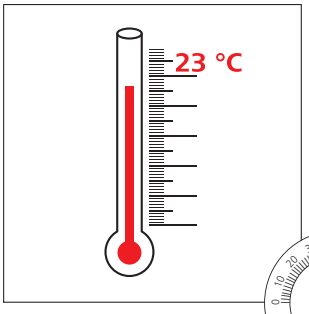
1. Once opened you should use the ties as quickly as possible.
2. Always store ties in the sealed plastic bag.



3. Do not expose the product to direct sunlight.
4. Do not store the product in sunlight; for example, on the windowsill.



5. Store the product away from direct sources of heat.
6. Avoid contact with heat: for example, do not place on the radiators.




7. The ideal storage conditions are those of the central European standard climate:
   23 °C
   50% relative humidity

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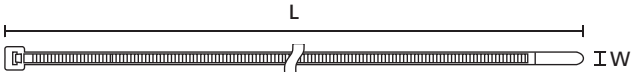
## Cable Ties Polyamide 6.6 standard

**T-Series in PA66 natural and black**

These cable ties are used for routing, bundling and securing of cables, pipes and hoses.

### Features and benefits

- Available in a wide range of materials and sizes
- High tensile strength with very low insertion force
- Only high quality plastic is used meeting recycling targets
- Inside serrated cable ties for a strong hold onto bundles
- Ergonomic bent tail offers quick and simple installation
- Easy application either manually or with an application tool




*T-Series*



*Standard T-Series cable ties – for almost any type of application (PA66).*

| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **T18S** | 2.3 | 83.0 | 16.0 | 80 | PA66 | Natural (NA) | 1,000 pcs. | 2;4-6 | 111-02809 |
| **T18R** | 2.5 | 100.0 | 22.0 | 80 | PA66 | Natural (NA) | 100 pcs. | 2;4-6 | 111-01919 |
| | 2.5 | 100.0 | 22.0 | 80 | PA66 | Black (BK) | 100 pcs. | 2;4-6 | 111-01910 |
| **T18I** | 2.5 | 145.0 | 35.0 | 80 | PA66 | Black (BK) | 100 pcs. | 2;4-6 | 111-02370 |
| | 2.5 | 145.0 | 35.0 | 80 | PA66 | Natural (NA) | 100 pcs. | 2;4-6 | 111-02319 |
| **T18L** | 2.5 | 205.0 | 55.0 | 80 | PA66 | Natural (NA) | 100 pcs. | 2;4-6 | 111-02119 |
| | 2.5 | 205.0 | 55.0 | 80 | PA66 | Black (BK) | 100 pcs. | 2;4-6 | 111-02110 |
| **T25L** | 2.8 | 240.0 | 65.0 | 110 | PA66 | Black (BK) | 100 pcs. | 2;4-6 | 111-02500 |
| | 2.8 | 240.0 | 65.0 | 110 | PA66 | Natural (NA) | 100 pcs. | 2;4-6 | 111-02519 |
| **T25LL** | 2.8 | 330.0 | 95.0 | 110 | PA66 | Natural (NA) | 100 pcs. | 2;4-6 | 111-02619 |
| **T30R** | 3.5 | 150.0 | 35.0 | 135 | PA66 | Black (BK) | 100 pcs. | 2;4-6 | 111-03210 |
| | 3.5 | 150.0 | 35.0 | 135 | PA66 | Natural (NA) | 100 pcs. | 2;4-6 | 111-03009 |
| **T30L** | 3.5 | 198.0 | 50.0 | 135 | PA66 | Natural (NA) | 100 pcs. | 2;4-6 | 111-03419 |
| | 3.5 | 198.0 | 50.0 | 135 | PA66 | Black (BK) | 100 pcs. | 2;4-6 | 111-03410 |
| **T30LL** | 3.5 | 290.0 | 80.0 | 135 | PA66 | Black (BK) | 100 pcs. | 2;4-6 | 111-03500 |
| | 3.5 | 290.0 | 80.0 | 135 | PA66 | Natural (NA) | 100 pcs. | 2;4-6 | 111-03529 |
| **T40R** | 4.0 | 175.0 | 40.0 | 180 | PA66 | Natural (NA) | 100 pcs. | 2;4-8 | 111-01626 |
| **T50S** | 4.6 | 150.0 | 35.0 | 225 | PA66 | Black (BK) | 100 pcs. | 2-10 | 111-05810 |
| | 4.6 | 150.0 | 35.0 | 225 | PA66 | Natural (NA) | 100 pcs. | 2-10 | 111-05819 |
| **T50R** | 4.6 | 200.0 | 50.0 | 225 | PA66 | Black (BK) | 100 pcs. | 2-10 | 111-05000 |
| | 4.6 | 200.0 | 50.0 | 225 | PA66 | Natural (NA) | 100 pcs. | 2-10 | 111-05013 |
| **T50M** | 4.6 | 245.0 | 65.0 | 225 | PA66 | Natural (NA) | 100 pcs. | 2-10 | 111-06201 |
| | 4.6 | 245.0 | 65.0 | 225 | PA66 | Black (BK) | 100 pcs. | 2-10 | 111-06200 |
| **T50I** | 4.6 | 300.0 | 85.0 | 225 | PA66 | Black (BK) | 100 pcs. | 2-10 | 111-05210 |
| | 4.6 | 300.0 | 85.0 | 225 | PA66 | Natural (NA) | 100 pcs. | 2-10 | 111-05219 |
| **T50L** | 4.6 | 390.0 | 110.0 | 225 | PA66 | Black (BK) | 100 pcs. | 2-10 | 111-05400 |
| | 4.6 | 390.0 | 110.0 | 225 | PA66 | Natural (NA) | 100 pcs. | 2-10 | 111-05409 |
| **T50LL** | 4.6 | 445.0 | 130.0 | 225 | PA66 | Black (BK) | 500 pcs. | 2-10 | 111-06002 |
| **T80R** | 4.7 | 210.0 | 55.0 | 355 | PA66 | Natural (NA) | 100 pcs. | 2-12 | 111-05019 |
| | 4.7 | 210.0 | 55.0 | 355 | PA66 | Black (BK) | 100 pcs. | 2-12 | 111-08010 |

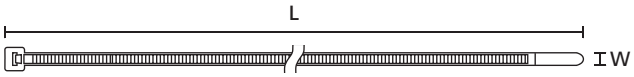
All dimensions in mm. Subject to technical changes. Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Cable Ties Polyamide 6.6 standard

**T-Series in PA66 natural and black**




*T-Series*

**Material specification please see page 26.**

| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **T80I** | 4.7 | 300.0 | 85.0 | 355 | PA66 | Natural (NA) | 100 pcs. | 2-12 | 111-08229 |
| | 4.7 | 300.0 | 85.0 | 355 | PA66 | Black (BK) | 100 pcs. | 2-12 | 111-08210 |
| **T80L** | 4.7 | 390.0 | 110.0 | 355 | PA66 | Black (BK) | 100 pcs. | 2-12 | 111-05410 |
| | 4.7 | 390.0 | 110.0 | 355 | PA66 | Natural (NA) | 100 pcs. | 2-12 | 111-05419 |
| **T120S** | 7.6 | 225.0 | 55.0 | 535 | PA66 | Natural (NA) | 50 pcs. | 3;9-12 | 111-12829 |
| **T120I** | 7.6 | 300.0 | 80.0 | 535 | PA66 | Black (BK) | 100 pcs. | 3;9-12 | 111-12210 |
| | 7.6 | 300.0 | 80.0 | 535 | PA66 | Natural (NA) | 100 pcs. | 3;9-12 | 111-12219 |
| **T150R** | 7.6 | 365.0 | 100.0 | 670 | PA66 | Black (BK) | 100 pcs. | 3;9-12 | 111-14810 |
| | 7.6 | 365.0 | 100.0 | 670 | PA66 | Natural (NA) | 100 pcs. | 3;9-12 | 111-14819 |
| **T120R(E)** | 7.6 | 387.0 | 100.0 | 535 | PA66 | Black (BK) | 100 pcs. | 3;9-12 | 111-12010 |
| | 7.6 | 387.0 | 100.0 | 535 | PA66 | Natural (NA) | 100 pcs. | 3;9-12 | 111-12019 |
| **T120M** | 7.6 | 460.0 | 125.0 | 535 | PA66 | Black (BK) | 100 pcs. | 3;9-12 | 111-12610 |
| | 7.6 | 460.0 | 125.0 | 535 | PA66 | Natural (NA) | 100 pcs. | 3;9-12 | 111-12619 |
| **T120XM** | 7.6 | 600.0 | 175.0 | 535 | PA66 | Black (BK) | 50 pcs. | 3;9-12 | 111-12701 |
| | 7.6 | 600.0 | 175.0 | 535 | PA66 | Natural (NA) | 50 pcs. | 3;9-12 | 111-12704 |
| **T120L** | 7.6 | 760.0 | 225.0 | 535 | PA66 | Black (BK) | 50 pcs. | 3;9-12 | 111-12403 |
| | 7.6 | 760.0 | 225.0 | 535 | PA66 | Natural (NA) | 50 pcs. | 3;9-12 | 111-12429 |
| **T150M** | 8.9 | 530.0 | 150.0 | 780 | PA66 | Black (BK) | 25 pcs. | 9-12 | 111-00124 |
| | 8.9 | 530.0 | 150.0 | 780 | PA66 | Natural (NA) | 25 pcs. | 9-12 | 111-15619 |
| **T150L** | 8.9 | 820.0 | 243.8 | 780 | PA66 | Black (BK) | 25 pcs. | 9-12 | 111-15405 |
| | 8.9 | 820.0 | 243.8 | 780 | PA66 | Natural (NA) | 25 pcs. | 9-12 | 111-15419 |
| **T150XL** | 8.9 | 1,095.0 | 330.2 | 780 | PA66 | Black (BK) | 25 pcs. | 9-12 | 111-15500 |
| | 8.9 | 1,095.0 | 330.2 | 780 | PA66 | Natural (NA) | 25 pcs. | 9-12 | 111-15519 |
| **T150XLL** | 8.9 | 1,325.0 | 406.4 | 780 | PA66 | Black (BK) | 25 pcs. | 9-12 | 111-15300 |
| | 8.9 | 1,325.0 | 406.4 | 780 | PA66 | Natural (NA) | 25 pcs. | 9-12 | 111-15304 |
| **T250R** | 12.4 | 515.0 | 124.5 | 1,115 | PA66 | Natural (NA) | 25 pcs. | 11-12 | 111-24803 |
| **T250M** | 12.4 | 565.3 | 150.0 | 1,115 | PA66 | Black (BK) | 25 pcs. | 11-12 | 111-25001 |
| | 12.4 | 565.3 | 150.0 | 1,115 | PA66 | Natural (NA) | 25 pcs. | 11-12 | 111-25002 |
| **T250I** | 12.4 | 730.0 | 203.0 | 1,115 | PA66 | Natural (NA) | 25 pcs. | 11-12 | 111-25219 |
| **T250L** | 12.4 | 880.0 | 254.0 | 1,115 | PA66 | Black (BK) | 25 pcs. | 11-12 | 111-24601 |
| **T250XL** | 12.4 | 1,030.0 | 305.0 | 1,115 | PA66 | Black (BK) | 25 pcs. | 11-12 | 111-25200 |
| | 12.4 | 1,030.0 | 305.0 | 1,115 | PA66 | Natural (NA) | 25 pcs. | 11-12 | 111-00466 |
| **T250S** | 12.5 | 225.0 | 55.0 | 1,115 | PA66 | Natural (NA) | 100 pcs. | 11-12 | 111-24705 |
| **T250X** | 12.5 | 370.0 | 100.0 | 1,115 | PA66 | Black (BK) | 100 pcs. | 11-12 | 111-25102 |

All dimensions in mm. Subject to technical changes. Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

| Recommended Tools | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| | MK20 | MK21 | MK3SP | MK3PNSP2 | EVO7 | MK7HT | MK7P | MK6 | EVO9 | EVO9HT | MK9P |
| | 545 | 545 | 546 | 546 | 548 | 549 | 550 | 551 | 549 | 549 | 552 |

For more information on toolings please refer to the Application Tooling chapter.

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Cable Ties Polyamide 6.6 standard

**T-Series in PA66 coloured**

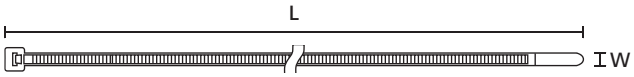
Coloured T-Series cable ties are ideally suited for marking purposes. They can be used to secure and/or identify different kinds of bundles at the same time.

### Features and benefits

- Available in a wide range of colours and sizes
- Strong cable tie to permanently mark or identify bundles
- Easy application either manually or with a processing tool
- Coloured T-Series cable ties provide an inside serration



*T-Series cable ties – ideally suited for colour coding.*




*T-Series*

| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| T18R | 2.5 | 100.0 | 22.0 | 80 | PA66 | Blue (BU) | 100 pcs. | 2;4-6 | 116-01816 |
| | 2.5 | 100.0 | 22.0 | 80 | PA66 | Green (GN) | 100 pcs. | 2;4-6 | 116-01815 |
| | 2.5 | 100.0 | 22.0 | 80 | PA66 | Red (RD) | 100 pcs. | 2;4-6 | 116-01812 |
| | 2.5 | 100.0 | 22.0 | 80 | PA66 | Yellow (YE) | 100 pcs. | 2;4-6 | 116-01814 |
| T30R | 3.5 | 150.0 | 35.0 | 135 | PA66 | Blue (BU) | 100 pcs. | 2;4-6 | 111-03008 |
| | 3.5 | 150.0 | 35.0 | 135 | PA66 | Green (GN) | 100 pcs. | 2;4-6 | 111-03014 |
| | 3.5 | 150.0 | 35.0 | 135 | PA66 | Red (RD) | 100 pcs. | 2;4-6 | 111-03004 |
| | 3.5 | 150.0 | 35.0 | 135 | PA66 | Yellow (YE) | 100 pcs. | 2;4-6 | 111-03006 |
| T50R | 4.6 | 200.0 | 50.0 | 225 | PA66 | Blue (BU) | 100 pcs. | 2-10 | 111-04800 |
| | 4.6 | 200.0 | 50.0 | 225 | PA66 | Green (GN) | 100 pcs. | 2-10 | 111-04801 |
| | 4.6 | 200.0 | 50.0 | 225 | PA66 | Red (RD) | 100 pcs. | 2-10 | 111-04804 |
| | 4.6 | 200.0 | 50.0 | 225 | PA66 | Yellow (YE) | 100 pcs. | 2-10 | 111-04805 |
| T50L | 4.6 | 390.0 | 110.0 | 225 | PA66 | Blue (BU) | 100 pcs. | 2-10 | 111-05404 |
| | 4.6 | 390.0 | 110.0 | 225 | PA66 | Green (GN) | 100 pcs. | 2-10 | 111-05402 |
| | 4.6 | 390.0 | 110.0 | 225 | PA66 | Red (RD) | 100 pcs. | 2-10 | 111-05406 |
| | 4.6 | 390.0 | 110.0 | 225 | PA66 | Yellow (YE) | 100 pcs. | 2-10 | 111-05428 |

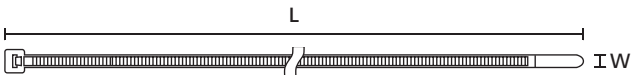
All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Cable Ties Polyamide 6.6 standard

**T-Series in PA66 coloured**




*T-Series*

**Material specification please see page 26.**

| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| T80R | 4.7 | 210.0 | 55.0 | 355 | PA66 | Blue (BU) | 100 pcs. | 2-12 | 116-08016 |
| | 4.7 | 210.0 | 55.0 | 355 | PA66 | Green (GN) | 100 pcs. | 2-12 | 116-08015 |
| | 4.7 | 210.0 | 55.0 | 355 | PA66 | Red (RD) | 100 pcs. | 2-12 | 116-08012 |
| | 4.7 | 210.0 | 55.0 | 355 | PA66 | Yellow (YE) | 100 pcs. | 2-12 | 116-08014 |
| T80L | 4.7 | 390.0 | 110.0 | 355 | PA66 | Blue (BU) | 100 pcs. | 2-12 | 116-05416 |
| | 4.7 | 390.0 | 110.0 | 355 | PA66 | Green (GN) | 100 pcs. | 2-12 | 116-05415 |
| | 4.7 | 390.0 | 110.0 | 355 | PA66 | Red (RD) | 100 pcs. | 2-12 | 116-05412 |
| | 4.7 | 390.0 | 110.0 | 355 | PA66 | Yellow (YE) | 100 pcs. | 2-12 | 116-05414 |
| T150R(H) | 7.6 | 365.0 | 100.0 | 670 | PA66 | Blue (BU) | 100 pcs. | 3;9-12 | 116-15016 |
| | 7.6 | 365.0 | 100.0 | 670 | PA66 | Red (RD) | 100 pcs. | 3;9-12 | 116-15012 |
| | 7.6 | 365.0 | 100.0 | 670 | PA66 | Yellow (YE) | 100 pcs. | 3;9-12 | 116-15014 |
| T120R(E) | 7.6 | 387.0 | 100.0 | 535 | PA66 | Green (GN) | 100 pcs. | 3;9-12 | 111-12001 |
| | 7.6 | 387.0 | 100.0 | 535 | PA66 | Red (RD) | 100 pcs. | 3;9-12 | 111-12002 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

| Recommended Tools | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2<br>MK20 | 3<br>MK21 | 4<br>MK3SP | 5<br>MK3PNSP2 | 6<br>EVO7 | 7<br>MK7HT | 8<br>MK7P | 9<br>MK6 | 10<br>EVO9 | 11<br>EVO9HT | 12<br>MK9P |
| | 545 | 545 | 546 | 546 | 548 | 549 | 550 | 551 | 549 | 549 | 552 |

For more information on toolings please refer to the Application Tooling chapter.

For product specific approvals and specifications please refer to the Appendix.

## Cable Ties for outdoor use (UV-resistant)

**T-Series in PA66W black**

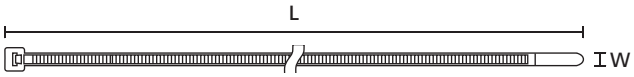
These inside serrated cable ties are made of UV resistant Polyamide 6.6 (PA66W) and thus suitable for outdoor applications. UV stabilised cable ties resist UV radiation for a considerably longer period compared to standard PA66 cable ties. They can easily be used for bundling and securing cables, pipes and hoses especially in outdoor areas.

**Features and benefits**

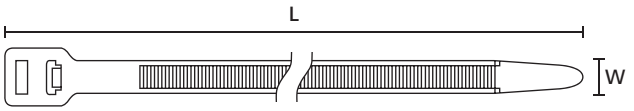
- UV resistant black cable tie available in a wide range of sizes
- Made from 100 % high quality plastic, allows for good recycling
- Inside serration for a strong hold onto bundles
- Easy application either manually or with a processing tool
- Simple to insert due to bent tail



*UV-resistant T-Series cable ties (PA66W).*




*T-Series*




*T250-series*

**Specific part numbers according to EN45545 available on request.**

**Material specification please see page 26.**

| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **T18R** | 2.5 | 100.0 | 22.0 | 80 | PA66W | Black (BK) | 100 pcs. | 2;4-6 | 111-01960 |
| **T18I** | 2.5 | 145.0 | 35.0 | 80 | PA66W | Black (BK) | 100 pcs. | 2;4-6 | 111-02360 |
| **T18L** | 2.5 | 205.0 | 55.0 | 80 | PA66W | Black (BK) | 100 pcs. | 2;4-6 | 111-02160 |
| **T25LL** | 2.8 | 330.0 | 95.0 | 110 | PA66W | Black (BK) | 100 pcs. | 2;4-6 | 111-02660 |
| **T30R** | 3.5 | 150.0 | 35.0 | 135 | PA66W | Black (BK) | 100 pcs. | 2;4-6 | 111-03260 |
| **T30L** | 3.5 | 198.0 | 50.0 | 135 | PA66W | Black (BK) | 100 pcs. | 2;4-6 | 111-03460 |
| **T30LL** | 3.5 | 290.0 | 80.0 | 135 | PA66W | Black (BK) | 100 pcs. | 2;4-6 | 111-03570 |
| **T40R** | 4.0 | 175.0 | 40.0 | 180 | PA66W | Black (BK) | 100 pcs. | 2;4-8 | 111-01625 |
| **T50S** | 4.6 | 150.0 | 35.0 | 225 | PA66W | Black (BK) | 100 pcs. | 2-10 | 111-05860 |
| **T50R** | 4.6 | 200.0 | 50.0 | 225 | PA66W | Black (BK) | 100 pcs. | 2-10 | 111-04889 |
| **T50M** | 4.6 | 245.0 | 65.0 | 225 | PA66W | Black (BK) | 100 pcs. | 2-10 | 111-06206 |
| **T50I** | 4.6 | 300.0 | 85.0 | 225 | PA66W | Black (BK) | 100 pcs. | 2-10 | 111-05260 |
| **T50L** | 4.6 | 390.0 | 110.0 | 225 | PA66W | Black (BK) | 100 pcs. | 2-10 | 111-05440 |
| **T50LL** | 4.6 | 445.0 | 130.0 | 225 | PA66W | Black (BK) | 100 pcs. | 2-10 | 111-06000 |
| **T80R** | 4.7 | 210.0 | 55.0 | 355 | PA66W | Black (BK) | 100 pcs. | 2-12 | 111-05060 |
| **T80I** | 4.7 | 300.0 | 85.0 | 355 | PA66W | Black (BK) | 100 pcs. | 2-12 | 111-08290 |
| **T80L** | 4.7 | 390.0 | 110.0 | 355 | PA66W | Black (BK) | 100 pcs. | 2-12 | 111-05460 |
| **T120S** | 7.6 | 225.0 | 55.0 | 535 | PA66W | Black (BK) | 50 pcs. | 3;9-12 | 111-12830 |
| **T120I** | 7.6 | 300.0 | 80.0 | 535 | PA66W | Black (BK) | 100 pcs. | 3;9-12 | 111-12230 |
| **T150R(H)** | 7.6 | 365.0 | 100.0 | 670 | PA66W | Black (BK) | 100 pcs. | 3;9-12 | 111-14860 |

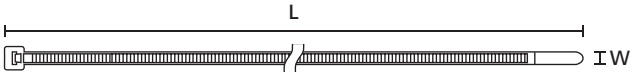
All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

For product specific approvals and specifications please refer to the Appendix.

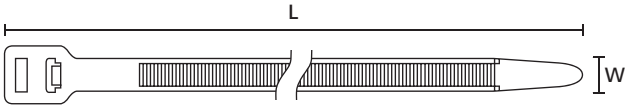
Date of issue: January 2019

## Cable Ties for outdoor use (UV-resistant)

### T-Series in PA66W black




*T-Series*




*T250-series*

| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **T120R(E)** | 7.6 | 387.0 | 100.0 | 535 | PA66W | Black (BK) | 100 pcs. | 3;9-12 | 111-12060 |
| **T120M** | 7.6 | 460.0 | 125.0 | 535 | PA66W | Black (BK) | 100 pcs. | 3;9-12 | 111-12660 |
| **T120L** | 7.6 | 760.0 | 225.0 | 535 | PA66W | Black (BK) | 50 pcs. | 3;9-12 | 111-12430 |
| **T150M** | 8.9 | 530.0 | 150.0 | 780 | PA66UV | Black (BK) | 25 pcs. | 9-12 | 111-15660 |
| **T150L** | 8.9 | 820.0 | 243.8 | 780 | PA66UV | Black (BK) | 25 pcs. | 9-12 | 111-15460 |
| **T150XL** | 8.9 | 1,095.0 | 330.2 | 780 | PA66UV | Black (BK) | 25 pcs. | 9-12 | 111-15502 |
| **T150XLL** | 8.9 | 1,325.0 | 406.4 | 780 | PA66UV | Black (BK) | 25 pcs. | 9-12 | 111-15305 |
| **T250R** | 12.4 | 515.0 | 124.5 | 1,115 | PA66HIRHSUV | Black (BK) | 25 pcs. | 11-12 | 111-24805 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

| Recommended Tools | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2<br>MK20 | 3<br>MK21 | 4<br>MK3SP | 5<br>MK3PNSP2 | 6<br>EVO7 | 7<br>MK7HT | 8<br>MK7P | 9<br>MK6 | 10<br>EVO9 | 11<br>EVO9HT | 12<br>MK9P |
| | 545 | 545 | 546 | 546 | 548 | 549 | 550 | 551 | 549 | 549 | 552 |

For more information on toolings please refer to the Application Tooling chapter.

For product specific approvals and specifications please refer to the Appendix.

## Cable Ties for temperatures up to +105 °C (heat stabilised)

**T-Series in PA66HS natural and black**

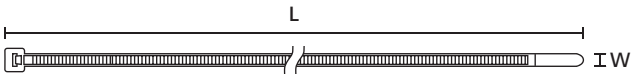
These inside serrated cable ties are made from heat stabilised Polyamide 6.6 (PA66HS). They can be applied in environments with continuous temperatures up to +105 °C. T-Series cable ties can be easily installed by hand or using an application tool to ensure consistency of installation.



*Heat stabilised T-Series cable ties up to +105 °C.*

### Features and benefits

- Heat stabilised cable ties (PA66HS) for temperatures up to +105 °C
- Available in a wide range of sizes to cover almost every application
- Inside serration provides a strong hold onto bundles
- Manual and/or pneumatic tools available for greater process reliability
- Commonly offered in natural and black, other colours available on request




*T-Series*

| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| T18R | 2.5 | 100.0 | 22.0 | 80 | PA66HS | Black (BK) | 100 pcs. | 2;4-6 | 111-01950 |
| | 2.5 | 100.0 | 22.0 | 80 | PA66HS | Natural (NA) | 100 pcs. | 2;4-6 | 111-01959 |
| T18I | 2.5 | 145.0 | 35.0 | 80 | PA66HS | Black (BK) | 100 pcs. | 2;4-6 | 111-02358 |
| | 2.5 | 145.0 | 35.0 | 80 | PA66HS | Natural (NA) | 1,000 pcs. | 2;4-6 | 111-02359 |
| T18L | 2.5 | 205.0 | 55.0 | 80 | PA66HS | Black (BK) | 100 pcs. | 2;4-6 | 111-02049 |
| | 2.5 | 205.0 | 55.0 | 80 | PA66HS | Natural (NA) | 100 pcs. | 2;4-6 | 111-02159 |
| T30R | 3.5 | 150.0 | 35.0 | 135 | PA66HS | Natural (NA) | 100 pcs. | 2;4-6 | 111-03259 |
| | 3.5 | 150.0 | 35.0 | 135 | PA66HS | Black (BK) | 100 pcs. | 2;4-6 | 111-03050 |
| T30L | 3.5 | 198.0 | 50.0 | 135 | PA66HS | Black (BK) | 100 pcs. | 2;4-6 | 111-03450 |
| | 3.5 | 198.0 | 50.0 | 135 | PA66HS | Natural (NA) | 100 pcs. | 2;4-6 | 111-03459 |
| T30LL | 3.5 | 290.0 | 80.0 | 135 | PA66HS | Black (BK) | 1,000 pcs. | 2;4-6 | 111-03660 |
| | 3.5 | 290.0 | 80.0 | 135 | PA66HS | Natural (NA) | 100 pcs. | 2;4-6 | 111-03569 |
| T40R | 4.0 | 175.0 | 40.0 | 180 | PA66HS | Black (BK) | 100 pcs. | 2;4-8 | 111-01623 |
| | 4.0 | 175.0 | 40.0 | 180 | PA66HS | Natural (NA) | 100 pcs. | 2;4-8 | 111-01627 |
| T50S | 4.6 | 150.0 | 35.0 | 225 | PA66HS | Natural (NA) | 100 pcs. | 2-10 | 111-05859 |
| | 4.6 | 150.0 | 35.0 | 225 | PA66HS | Black (BK) | 100 pcs. | 2-10 | 111-05850 |
| T50R | 4.6 | 200.0 | 50.0 | 225 | PA66HS | Black (BK) | 100 pcs. | 2-10 | 111-04950 |
| T50I | 4.6 | 300.0 | 85.0 | 225 | PA66HS | Black (BK) | 100 pcs. | 2-10 | 111-05250 |
| | 4.6 | 300.0 | 85.0 | 225 | PA66HS | Natural (NA) | 100 pcs. | 2-10 | 111-05259 |
| T50L | 4.6 | 390.0 | 110.0 | 225 | PA66HS | Natural (NA) | 100 pcs. | 2-10 | 111-05436 |
| | 4.6 | 390.0 | 110.0 | 225 | PA66HS | Black (BK) | 100 pcs. | 2-10 | 111-05450 |
| T80R | 4.7 | 210.0 | 55.0 | 355 | PA66HS | Black (BK) | 1,000 pcs. | 2-12 | 117-08070 |
| | 4.7 | 210.0 | 55.0 | 355 | PA66HS | Natural (NA) | 100 pcs. | 2-12 | 111-05059 |
| T80I | 4.7 | 300.0 | 85.0 | 355 | PA66HS | Black (BK) | 100 pcs. | 2-12 | 111-08250 |
| | 4.7 | 300.0 | 85.0 | 355 | PA66HS | Natural (NA) | 100 pcs. | 2-12 | 111-08259 |

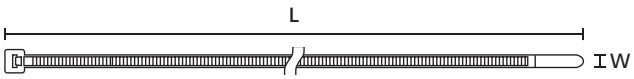
All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Cable Ties for temperatures up to +105 °C (heat stabilised)

**T-Series in PA66HS natural and black**




*T-Series*

**Material specification please see page 26.**

| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **T80L** | 4.7 | 390.0 | 110.0 | 355 | PA66HS | Black (BK) | 100 pcs. | 2-12 | 111-00388 |
| | 4.7 | 390.0 | 110.0 | 355 | PA66HS | Natural (NA) | 100 pcs. | 2-12 | 111-05459 |
| **T120S** | 7.6 | 225.0 | 55.0 | 535 | PA66HS | Black (BK) | 50 pcs. | 3;9-12 | 111-12850 |
| | 7.6 | 225.0 | 55.0 | 535 | PA66HS | Natural (NA) | 50 pcs. | 3;9-12 | 111-12824 |
| **T150R(H)** | 7.6 | 365.0 | 100.0 | 670 | PA66HS | Black (BK) | 100 pcs. | 3;9-12 | 111-15050 |
| | 7.6 | 365.0 | 100.0 | 670 | PA66HS | Natural (NA) | 100 pcs. | 3;9-12 | 111-15069 |
| **T120R(E)** | 7.6 | 387.0 | 100.0 | 535 | PA66HS | Black (BK) | 100 pcs. | 3;9-12 | 111-12050 |
| | 7.6 | 387.0 | 100.0 | 535 | PA66HS | Natural (NA) | 100 pcs. | 3;9-12 | 111-12059 |
| **T120M** | 7.6 | 460.0 | 125.0 | 535 | PA66HS | Black (BK) | 100 pcs. | 3;9-12 | 111-00153 |
| **T120XM** | 7.6 | 600.0 | 175.0 | 535 | PA66HS | Black (BK) | 50 pcs. | 3;9-12 | 111-12700 |
| | 7.6 | 600.0 | 175.0 | 535 | PA66HS | Natural (NA) | 50 pcs. | 3;9-12 | 111-12719 |
| **T120L** | 7.6 | 760.0 | 225.0 | 535 | PA66HS | Natural (NA) | 50 pcs. | 3;9-12 | 111-12449 |
| | 7.6 | 760.0 | 225.0 | 535 | PA66HS | Black (BK) | 50 pcs. | 3;9-12 | 111-12440 |
| **T150M** | 8.9 | 530.0 | 150.0 | 780 | PA66HS | Black (BK) | 25 pcs. | 9-12 | 111-15609 |
| **T150L** | 8.9 | 820.0 | 243.8 | 780 | PA66HS | Black (BK) | 25 pcs. | 9-12 | 111-15410 |
| **T150XL** | 8.9 | 1,095.0 | 330.2 | 780 | PA66HS | Black (BK) | 25 pcs. | 9-12 | 111-15510 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

| Recommended Tools | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2<br>MK20 | 3<br>MK21 | 4<br>MK3SP | 5<br>MK3PNSP2 | 6<br>EVO7 | 7<br>MK7HT | 8<br>MK7P | 9<br>MK6 | 10<br>EVO9 | 11<br>EVO9HT | 12<br>MK9P |
| | 545 | 545 | 546 | 546 | 548 | 549 | 550 | 551 | 549 | 549 | 552 |

For more information on toolings please refer to the Application Tooling chapter.

For product specific approvals and specifications please refer to the Appendix.

## Cable Ties for higher impact resistant Polyamide 6.6 ScanBlack

**T-Series in PA66HIR(S) black**

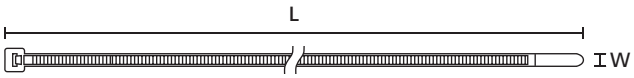
Impact resistance T-Series cable ties are manufactured from PA66HIR(S) – an impact modified material formulation. This high performance material offers limited brittleness sensitivity and a higher flexibility even at low temperatures. PA66HIR(S) cable ties meet increasing requirements like in the chemical, medical and/or automotive industry.

### Features and benefits

- Impact resistant cable tie in black colour
- For bundling and securing cables, pipes and hoses
- Available in different sizes
- Higher flexibility especially in cold environments
- Limited brittleness sensitivity



*Impact resistant T-Series cable tie (PA66HIR(S)).*




*T-Series*

**Material specification please see page 26.**

| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **T50R** | 4.6 | 200.0 | 50.0 | 225 | PA66HIR(S) | Black (BK) | 100 pcs. | 2-10 | 111-04890 |
| **T50I** | 4.6 | 300.0 | 85.0 | 225 | PA66HIR(S) | Black (BK) | 100 pcs. | 2-10 | 111-00222 |
| **T50L** | 4.6 | 390.0 | 110.0 | 225 | PA66HIR(S) | Black (BK) | 100 pcs. | 2-10 | 111-05441 |
| **T120I** | 7.6 | 300.0 | 80.0 | 535 | PA66HIR(S) | Black (BK) | 100 pcs. | 3;9-12 | 111-12203 |
| **T120R(E)** | 7.6 | 387.0 | 100.0 | 535 | PA66HIR(S) | Black (BK) | 100 pcs. | 3;9-12 | 111-12032 |
| **T120L** | 7.6 | 760.0 | 225.0 | 535 | PA66HIR(S) | Black (BK) | 50 pcs. | 3;9-12 | 111-12402 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

| Recommended Tools | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| | MK20 | MK21 | MK3SP | MK3PNSP2 | EVO7 | MK7HT | MK7P | MK6 | EVO9 | EVO9HT | MK9P |
| | 545 | 545 | 546 | 546 | 548 | 549 | 550 | 551 | 549 | 549 | 552 |

For more information on toolings please refer to the Application Tooling chapter.

For product specific approvals and specifications please refer to the Appendix.

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## Cable Ties for higher fire-protection

**T-Series in PA66V0 white**

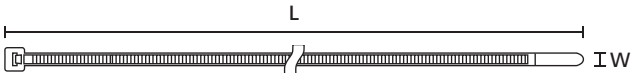
T-Series cable ties for bundling and securing cables, pipes and hoses. These cable ties can be used for almost any type of application especially where safety regulations are high and the reduction of smoke and dangerous gases is required. PA66V0 products are most critically used within public sector areas – particularly in the rail, construction and defence industry.



*White T-Series cable ties for higher fire protection (PA66V0).*

### Features and benefits

- White cable tie for higher fire-protection
- Conform to low smoke generation requirements (UL94 V0)
- Low evolution of toxic gases and corrosive acids in event of a fire
- PA66V0 cable ties are available in different sizes
- High safety rating due to low fire hazard




*T-Series*

| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **T18R** | 2.5 | 100.0 | 22.0 | 80 | PA66V0 | White (WH) | 100 pcs. | 2;4-6 | 111-91819 |
| **T18L** | 2.5 | 205.0 | 55.0 | 80 | PA66V0 | White (WH) | 1,000 pcs. | 2;4-6 | 111-02043 |
| **T30R** | 3.5 | 150.0 | 35.0 | 135 | PA66V0 | White (WH) | 100 pcs. | 2;4-6 | 111-93019 |
| **T50R** | 4.6 | 200.0 | 50.0 | 225 | PA66V0 | White (WH) | 100 pcs. | 2-10 | 111-95019 |
| **T50I** | 4.6 | 300.0 | 85.0 | 225 | PA66V0 | White (WH) | 100 pcs. | 2-10 | 111-00317 |
| **T50L** | 4.7 | 390.0 | 110.0 | 225 | PA66V0 | White (WH) | 100 pcs. | 2-10 | 111-05438 |
| **T120R(E)** | 7.6 | 387.0 | 100.0 | 535 | PA66V0 | White (WH) | 100 pcs. | 3;9-12 | 111-91210 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

| Recommended Tools | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2 MK20 | 3 MK21 | 4 MK3SP | 5 MK3PNSP2 | 6 EVO7 | 7 MK7HT | 8 MK7P | 9 MK6 | 10 EVO9 | 11 EVO9HT | 12 MK9P |
| | 545 | 545 | 546 | 546 | 548 | 549 | 550 | 551 | 549 | 549 | 552 |

For more information on toolings please refer to the Application Tooling chapter.

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For product specific approvals and specifications please refer to the Appendix.

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## Cable Ties for temperatures up to + 195 °C (500 h) in Polyamide 4.6

**T-Series in PA46 natural and grey**

These inside serrated cable ties are made from Polyamide 4.6 (PA46). They can be applied in environments with continuous temperatures up to +195 °C (for 500 hours) which makes them suitable for applications where a broader temperature range is required. Polyamide 4.6 is a well known material in the automotive, railway or white goods area. An application tool is recommended to ensure greater process reliability while installing cable ties.

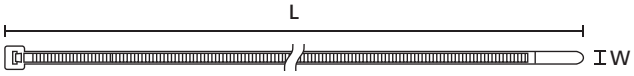


*T-Series cable ties – higher temperature resistance up to +195 °C for 500 hours (PA46).*

**Features and benefits**

- Cable tie for high temperature applications up to +150 °C (5000 h) and +195 °C (500 h)
- Available in different sizes to cover various bundle diameters
- Low smoke generation in the event of a fire
- PA46 is a moisture sensitive material
- Inside serrated cable tie offers strong hold around bundles
- Easy application either manually or with an application tool
- Operating temperature (long-term) up to +130 °C

**Material specification please see page 26.**




*T-Series*

| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **T18R** | 2.5 | 100.0 | 22.0 | 80 | PA46 | Natural (NA) | 1,000 pcs. | 2;4-6 | 114-01879 |
| **T30R** | 3.5 | 150.0 | 35.0 | 135 | PA46 | Grey (GY) | 100 pcs. | 2;4-6 | 111-00264 |
| | 3.5 | 150.0 | 35.0 | 135 | PA46 | Natural (NA) | 100 pcs. | 2;4-6 | 114-03079 |
| **T50R** | 4.6 | 200.0 | 50.0 | 225 | PA46 | Grey (GY) | 100 pcs. | 2-10 | 111-00824 |
| | 4.6 | 200.0 | 50.0 | 225 | PA46 | Natural (NA) | 100 pcs. | 2-10 | 111-00525 |
| **T50I** | 4.6 | 300.0 | 85.0 | 225 | PA46 | Natural (NA) | 100 pcs. | 2-10 | 111-05220 |
| **T50L** | 4.6 | 390.0 | 110.0 | 225 | PA46 | Natural (NA) | 100 pcs. | 2-10 | 111-00526 |
| **T120R(E)** | 7.6 | 387.0 | 100.0 | 535 | PA46 | Grey (GY) | 100 pcs. | 3;9-12 | 111-00819 |
| | 7.6 | 387.0 | 100.0 | 535 | PA46 | Natural (NA) | 100 pcs. | 3;9-12 | 114-12179 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

| Recommended Tools | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2 MK20 | 3 MK21 | 4 MK3SP | 5 MK3PNSP2 | 6 EVO7 | 7 MK7HT | 8 MK7P | 9 MK6 | 10 EVO9 | 11 EVO9HT | 12 MK9P |
| | 545 | 545 | 546 | 546 | 548 | 549 | 550 | 551 | 549 | 549 | 552 |

For more information on toolings please refer to the Application Tooling chapter.

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

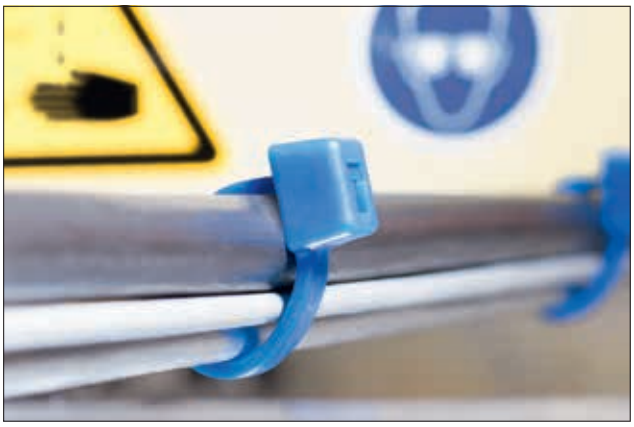
## Cable Ties for higher chemical resistance and temperatures up to +170 °C

**T-Series in E/TFE (Tefzel®) blue**

E/TFE or Tefzel® cable ties are used when higher chemical resistance and/or temperatures up to +170 °C are required. These ties are most likely chosen for challenging applications in industries like food and beverage, aerospace, automotive or railway.

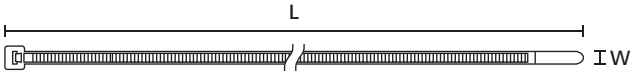
**Features and benefits**

- Blue cable tie offering high chemical resistance
- Suitable for applications with temperatures up to 170 °C
- Resistant to radioactivity and UV light
- E/TFE is a non hydroscopic material, no moisture absorption
- Complying with UL94 V0 requirements



*T-Series E/TFE cable ties – for higher chemical resistance up to +170 °C.*

**For more information on E/TFE mounts please refer to KR-Series on page 144.**




*T-Series*

| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **T18R** | 2.5 | 100.0 | 22.0 | 80 | E/TFE | Blue (BU) | 100 pcs. | 2;6 | 111-00659 |
| **T30R** | 3.5 | 150.0 | 36.0 | 133 | E/TFE | Blue (BU) | 100 pcs. | 2;4-6 | 111-00698 |
| **T50R** | 4.7 | 201.0 | 50.0 | 222 | E/TFE | Blue (BU) | 100 pcs. | 2-10 | 111-00732 |
| **T50L** | 4.7 | 382.0 | 105.0 | 222 | E/TFE | Blue (BU) | 100 pcs. | 2-10 | 111-00718 |
| **T120R** | 7.4 | 387.0 | 105.0 | 535 | E/TFE | Blue (BU) | 50 pcs. | 3;9-12 | 111-01125 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available. General linguistic usage for cable ties made from raw material E/TFE is Tefzel®-Tie. In additon to Tefzel® from DuPont HellermannTyton is also using equivalent E/TFE raw material from other suppliers.

| Recommended Tools | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2<br>MK20 | 3<br>MK21 | 4<br>MK3SP | 5<br>MK3PNSP2 | 6<br>EVO7 | 7<br>MK7HT | 8<br>MK7P | 9<br>MK6 | 10<br>EVO9 | 11<br>EVO9HT | 12<br>MK9P |
| | 545 | 545 | 546 | 546 | 548 | 549 | 550 | 551 | 549 | 549 | 552 |

For more information on toolings please refer to the Application Tooling chapter.

For product specific approvals and specifications please refer to the Appendix.

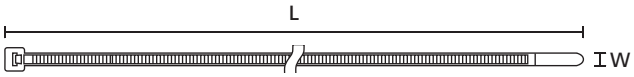
## Polypropylene Cable Ties for higher chemical resistance and temperatures up to +115 °C

**T-Series in PP natural and black**

T-Series cable ties made from Polypropylene (PP) are less hydroscopic and offer a higher chemical resistance and temperature range compared to a standard Polyamide 6.6 (PA66) material. Cable ties from Polypropylene can withstand continuous operating temperatures up to +115 °C. These cable ties are used to bundle and secure cables, pipes and/or hoses.

### Features and benefits

- Polypropylene cable ties for higher chemical reistance
- Can withstand continuous operating temperatures up to 115 °C
- Different sizes available in black and natural colour
- Due to its low density PP cable ties can float on water
- Less hydroscopic material, almost no water absorbtion




*T-Series*



*T-Series cable ties for higher chemical resistance and temperatures up to +115 °C (PP).*

**Material specification please see page 26.**

| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| T18R | 2.5 | 100.0 | 22.0 | 36 | PP | Black (BK) | 100 pcs. | 2;4-6 | 111-01917 |
| | 2.5 | 100.0 | 22.0 | 36 | PP | Natural (NA) | 1,000 pcs. | 2;4-6 | 111-01922 |
| T30R | 3.6 | 150.0 | 35.0 | 89 | PP | Natural (NA) | 100 pcs. | 2;4-6 | 111-03017 |
| T50R | 4.6 | 202.0 | 44.5 | 111 | PP | Black (BK) | 100 pcs. | 2-10 | 111-04928 |
| | 4.6 | 202.0 | 44.5 | 111 | PP | Natural (NA) | 100 pcs. | 2-10 | 111-04931 |
| T120S | 7.6 | 225.0 | 55.9 | 267 | PP | Black (BK) | 500 pcs. | 3;9-12 | 111-12827 |
| T120R | 7.6 | 387.0 | 104.1 | 267 | PP | Black (BK) | 500 pcs. | 3;9-12 | 111-12066 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

| Recommended Tools | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2 MK20 | 3 MK21 | 4 MK3SP | 5 MK3PNSP2 | 6 EVO7 | 7 MK7HT | 8 MK7P | 9 MK6 | 10 EVO9 | 11 EVO9HT | 12 MK9P |
| | 545 | 545 | 546 | 546 | 548 | 549 | 550 | 551 | 549 | 549 | 552 |

For more information on toolings please refer to the Application Tooling chapter.

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## Cable Ties made from sustainable bioplastic

### T-Series in PA11 black

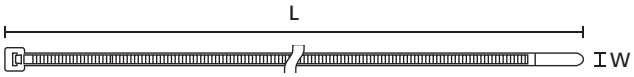
T-Series cable ties manufactured from PA11 have many technical features making them suitable for use in a variety of applications to fix and support cables, pipes and other elements. They offer an excellent resistance to chemicals in most challenging environments like offshore or on oil rigs and construction vehicles. In addition the very good UV resistance makes it a perfect choice for solar panel cable installations.

**Features and benefits**

- Made of Polyamide 11 – a sustainable bioplastic from vegetable oil
- Very good UV resistance and durability in outdoor applications
- Stable technical performance even at very low temperatures
- High resistance to chemicals including chlorides
- Low water absorption rate offers consistent technical performance



*A sustainable T-Series cable tie with high resistance to chemicals and UV light.*




*T-Series*

| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **T18R** | 2.5 | 100.0 | 22.0 | 80 | PA11 | Black (BK) | 100 pcs. | 2;4-6 | 111-01718 |
| **T30R** | 3.5 | 150.0 | 35.0 | 130 | PA11 | Black (BK) | 100 pcs. | 2;4-6 | 111-01719 |
| **T50S** | 4.6 | 150.0 | 35.0 | 170 | PA11 | Black (BK) | 100 pcs. | 2-10 | 111-01720 |
| **T50R** | 4.6 | 200.0 | 50.0 | 170 | PA11 | Black (BK) | 100 pcs. | 2-10 | 111-01721 |
| **T50M** | 4.6 | 245.0 | 65.0 | 225 | PA11 | Black (BK) | 100 pcs. | 2-10 | 111-02218 |
| **T50I** | 4.6 | 300.0 | 85.0 | 225 | PA11 | Black (BK) | 100 pcs. | 2-10 | 111-02217 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

**Recommended Tools**

| | 2 MK20 | 3 MK21 | 4 MK3SP | 5 MK3PNSP2 | 6 EVO7 | 7 MK7HT | 8 MK7P | 9 MK6 | 10 EVO9 |
|---|---|---|---|---|---|---|---|---|---|
| | 545 | 545 | 546 | 546 | 548 | 549 | 550 | 551 | 549 |

For more information on toolings please refer to the Application Tooling chapter.

For product specific approvals and specifications please refer to the Appendix.

## Cable Ties in-between size to T-Series

**LK-Series natural and black**

For bundling and securing cables, pipes, hoses and other elements. These cable ties can be used for a countless number of applications. The LK-Series is similar to T-Series but offers in-between sizes to fit individual customer needs.

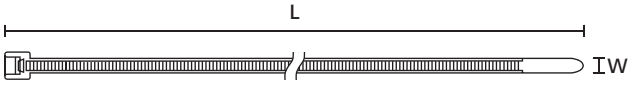
**Features and benefits**

- Inside serrated cable ties for a strong hold around bundles
- Various materials and sizes are available
- High tensile strength with very low insertion force
- Easy application either manually or with an application tool



*LK-Series – in-between size to T-Series.*

**Material specification please see page 26.**




*LK-Series*

| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| LK2A | 4.6 | 270.0 | 73.0 | 225 | PA66 | Black (BK) | 100 pcs. | 2-10 | 111-60110 |
| | 4.6 | 270.0 | 73.0 | 225 | PA66 | Blue (BU) | 100 pcs. | 2-10 | 111-60104 |
| | 4.6 | 270.0 | 73.0 | 225 | PA66 | Natural (NA) | 100 pcs. | 2-10 | 111-60119 |
| | 4.6 | 270.0 | 73.0 | 225 | PA66 | Red (RD) | 100 pcs. | 2-10 | 111-60106 |
| | 4.6 | 270.0 | 73.0 | 225 | PA66 | Yellow (YE) | 100 pcs. | 2-10 | 111-60108 |
| | 4.6 | 270.0 | 73.0 | 225 | PA66HIR | Black (BK) | 500 pcs. | 2-10 | 111-00118 |
| | 4.6 | 270.0 | 73.0 | 225 | PA66HIR(S) | Black (BK) | 100 pcs. | 2-10 | 111-00127 |
| | 4.6 | 270.0 | 73.0 | 225 | PA66HS | Black (BK) | 100 pcs. | 2-10 | 111-60150 |
| | 4.6 | 270.0 | 73.0 | 225 | PA66HS | Brown (BN) | 100 pcs. | 2-10 | 111-60136 |
| | 4.6 | 270.0 | 73.0 | 225 | PA66W | Black (BK) | 100 pcs. | 2-10 | 111-60160 |
| LK2 | 4.8 | 120.0 | 28.0 | 135 | PA66 | Natural (NA) | 200 pcs. | 2;4-8 | 111-60219 |
| LK5 | 13.2 | 535.0 | 150.0 | 1,115 | PA66 | Black (BK) | 50 pcs. | 11-12 | 111-60510 |
| | 13.2 | 535.0 | 150.0 | 1,115 | PA66 | Natural (NA) | 50 pcs. | 11-12 | 111-60519 |
| | 13.2 | 535.0 | 150.0 | 1,115 | PA66HIR(S) | Black (BK) | 50 pcs. | 11-12 | 111-60501 |
| | 13.2 | 535.0 | 150.0 | 1,115 | PA66HS | Natural (NA) | 50 pcs. | 11-12 | 111-60559 |
| | 13.2 | 535.0 | 150.0 | 1,115 | PA66W | Black (BK) | 50 pcs. | 11-12 | 111-60560 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

| Recommended Tools | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2 MK20 | 3 MK21 | 4 MK3SP | 5 MK3PNSP2 | 6 EVO7 | 7 MK7HT | 8 MK7P | 9 MK6 | 10 EVO9 | 11 EVO9HT | 12 MK9P |
| | 545 | 545 | 546 | 546 | 548 | 549 | 550 | 551 | 549 | 549 | 552 |

For more information on toolings please refer to the Application Tooling chapter.

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

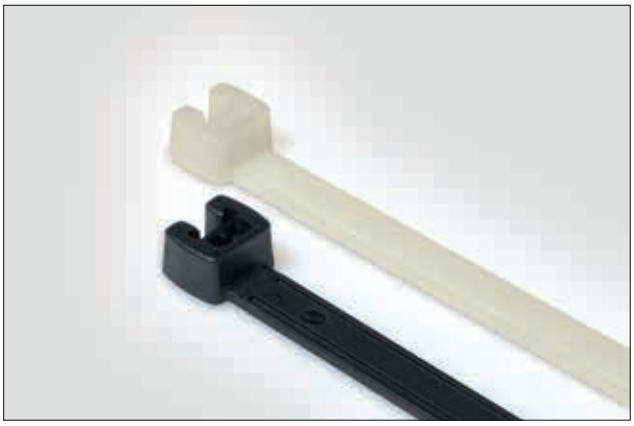
## Cable Ties with open head

### Q-Series

Q-Series cable ties for bundling and securing cables, pipes and hoses. The innovative and effective cable ties enable a simple and quick installation.

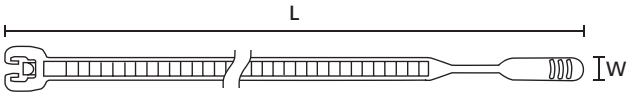
**Features and benefits**

- Open lock head for quick and easy insertion
- Integrated pre-locking function
- More than 25 % faster in application
- Inside serration for a strong hold around bundles
- Easy application either manually or with a processing tool



*Q-tie cable ties: choose from a wide product range in different sizes.*

**Please find more Q-Series products for your system solution on page 133, 143 and 486.**




*Q-Series*

*Application video: Q-Series*

| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| Q18R | 2.6 | 105.0 | 24.0 | 80 | PA66 | Black (BK) | 100 pcs. | 2;4-6 | 109-00030 |
| | 2.6 | 105.0 | 24.0 | 80 | PA66 | Natural (NA) | 100 pcs. | 2;4-6 | 109-00001 |
| Q18I | 2.6 | 155.0 | 40.0 | 80 | PA66 | Black (BK) | 100 pcs. | 2;4-6 | 109-00033 |
| | 2.6 | 155.0 | 40.0 | 80 | PA66 | Natural (NA) | 100 pcs. | 2;4-6 | 109-00004 |
| Q18L | 2.6 | 195.0 | 50.0 | 80 | PA66 | Black (BK) | 100 pcs. | 2;4-6 | 109-00036 |
| | 2.6 | 195.0 | 50.0 | 80 | PA66 | Natural (NA) | 100 pcs. | 2;4-6 | 109-00007 |
| Q30R | 3.6 | 160.0 | 38.0 | 130 | PA66 | Black (BK) | 100 pcs. | 2;4-6;8 | 109-00039 |
| | 3.6 | 160.0 | 38.0 | 130 | PA66 | Natural (NA) | 100 pcs. | 2;4-6;8 | 109-00010 |
| Q30L | 3.6 | 200.0 | 50.0 | 130 | PA66 | Black (BK) | 100 pcs. | 2;4-6;8 | 109-00041 |
| | 3.6 | 200.0 | 50.0 | 130 | PA66 | Natural (NA) | 100 pcs. | 2;4-6;8 | 109-00012 |
| Q30LR | 3.6 | 250.0 | 65.0 | 130 | PA66 | Black (BK) | 100 pcs. | 2;4-6;8 | 109-00043 |
| | 3.6 | 250.0 | 65.0 | 130 | PA66 | Natural (NA) | 100 pcs. | 2;4-6;8 | 109-00014 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

For product specific approvals and specifications please refer to the Appendix.

## Cable Ties with open head

### Q-Series

| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| Q50R | 4.7 | 210.0 | 50.0 | 220 | PA66 | Black (BK) | 100 pcs. | 2-10;12;15 | 109-00047 |
| | 4.7 | 210.0 | 50.0 | 220 | PA66 | Blue (BU) | 100 pcs. | 2-10;12;15 | 109-00182 |
| | 4.7 | 210.0 | 50.0 | 220 | PA66 | Green (GN) | 100 pcs. | 2-10;12;15 | 109-00183 |
| | 4.7 | 210.0 | 50.0 | 220 | PA66 | Natural (NA) | 100 pcs. | 2-10;12;15 | 109-00018 |
| | 4.7 | 210.0 | 50.0 | 220 | PA66 | Yellow (YE) | 100 pcs. | 2-10;12;15 | 109-00185 |
| | 4.7 | 210.0 | 50.0 | 220 | PA66HS | Black (BK) | 100 pcs. | 2-10;12;15 | 109-00105 |
| | 4.7 | 210.0 | 50.0 | 220 | PA66HS | Natural (NA) | 100 pcs. | 2-10;12;15 | 109-00134 |
| | 4.7 | 210.0 | 50.0 | 220 | PA66W | Black (BK) | 100 pcs. | 2-10;12;15 | 109-00076 |
| Q50I | 4.7 | 290.0 | 75.0 | 220 | PA66 | Black (BK) | 100 pcs. | 2-10;12;15 | 109-00049 |
| | 4.7 | 290.0 | 75.0 | 220 | PA66 | Blue (BU) | 100 pcs. | 2-10;12;15 | 109-00187 |
| | 4.7 | 290.0 | 75.0 | 220 | PA66 | Green (GN) | 100 pcs. | 2-10;12;15 | 109-00188 |
| | 4.7 | 290.0 | 75.0 | 220 | PA66 | Natural (NA) | 100 pcs. | 2-10;12;15 | 109-00020 |
| | 4.7 | 290.0 | 75.0 | 220 | PA66 | Yellow (YE) | 100 pcs. | 2-10;12;15 | 109-00190 |
| | 4.7 | 290.0 | 75.0 | 220 | PA66HS | Black (BK) | 100 pcs. | 2-10;12;15 | 109-00107 |
| | 4.7 | 290.0 | 75.0 | 220 | PA66HS | Natural (NA) | 100 pcs. | 2-10;12;15 | 109-00136 |
| | 4.7 | 290.0 | 75.0 | 220 | PA66W | Black (BK) | 100 pcs. | 2-10;12;15 | 109-00078 |
| Q50L | 4.7 | 410.0 | 110.0 | 220 | PA66 | Black (BK) | 100 pcs. | 2-10;12;15 | 109-00051 |
| | 4.7 | 410.0 | 110.0 | 220 | PA66 | Natural (NA) | 100 pcs. | 2-10;12;15 | 109-00022 |
| Q120I | 7.7 | 300.0 | 70.0 | 530 | PA66 | Black (BK) | 100 pcs. | 3;9-12;15 | 109-00053 |
| | 7.7 | 300.0 | 70.0 | 530 | PA66 | Natural (NA) | 100 pcs. | 3;9-12;15 | 109-00024 |
| Q120R | 7.7 | 420.0 | 110.0 | 530 | PA66 | Black (BK) | 100 pcs. | 3;9-12;15 | 109-00055 |
| | 7.7 | 420.0 | 110.0 | 530 | PA66 | Natural (NA) | 100 pcs. | 3;9-12;15 | 109-00026 |
| Q120M | 7.7 | 520.0 | 130.0 | 530 | PA66 | Black (BK) | 100 pcs. | 3;9-12;15 | 109-00057 |
| | 7.7 | 520.0 | 130.0 | 530 | PA66 | Natural (NA) | 100 pcs. | 3;9-12;15 | 109-00028 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

| Recommended Tools | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 15 |
| | MK20 | MK21 | MK3SP | MK3PNSP2 | EVO7 | MK7HT | MK7P | MK6 | EVO9 | EVO9HT | MK9P | MK9SST |
| | 545 | 545 | 546 | 546 | 548 | 549 | 550 | 551 | 549 | 549 | 552 | 554 |

For more information on toolings please refer to the Application Tooling chapter.

c UL us For product specific approvals and specifications please refer to the Appendix.

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## Cable Ties with smart design

### X-Series

The X-series range of cable ties provides a new and improved design compared with standard cable ties, delivering a range of benefits and enhanced performance. With a new streamlined design and smaller head, the X-Series cable ties provide a superior fixing solution for tight applications, whilst also benefiting from a better grip around the bundle. This professional cable tie range is available in weather resistant and high impact / heat stabilised materials, ensuring these fixings consistently perform well at both high temperatures and in cold environments.

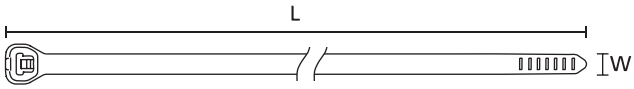


*X-Series provides a superior fixing solution for tight applications.*

**Features and benefits**

- Inside serrated cable tie
- High tensile strength around cable bundles
- Smooth, rounded head design
- Space saving solution
- Improved ergonomic design
- Provides a secure fastening with no lateral movement

**Material specification please see page 26.**




*X-series*

| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| X20R | 2.5 | 100.0 | 20.0 | 90 | PA66HIRHS | Black (BK) | 100 pcs. | 2;4-6 | 108-00066 |
| | 2.5 | 100.0 | 20.0 | 90 | PA66W | Black (BK) | 100 pcs. | 2;4-6 | 108-00072 |
| X80S | 4.7 | 150.0 | 35.0 | 355 | PA66HIRHS | Black (BK) | 100 pcs. | 2-12 | 108-00001 |
| | 4.7 | 150.0 | 35.0 | 355 | PA66W | Black (BK) | 100 pcs. | 2-12 | 108-00003 |
| X80R | 4.7 | 200.0 | 50.0 | 355 | PA66HIRHS | Black (BK) | 100 pcs. | 2-12 | 108-00004 |
| | 4.7 | 200.0 | 50.0 | 355 | PA66W | Black (BK) | 100 pcs. | 2-12 | 108-00010 |
| X80I | 4.7 | 300.0 | 84.0 | 355 | PA66HIRHS | Black (BK) | 100 pcs. | 2-12 | 108-00018 |
| | 4.7 | 300.0 | 84.0 | 355 | PA66W | Black (BK) | 100 pcs. | 2-12 | 108-00024 |
| X80L | 4.7 | 385.0 | 110.0 | 355 | PA66HIRHS | Black (BK) | 100 pcs. | 2-12 | 108-00028 |
| | 4.7 | 385.0 | 110.0 | 355 | PA66W | Black (BK) | 100 pcs. | 2-12 | 108-00034 |
| X120R | 7.7 | 369.0 | 100.0 | 535 | PA66HIRHS | Black (BK) | 100 pcs. | 3;9-12 | 108-00040 |
| | 7.7 | 369.0 | 100.0 | 535 | PA66W | Black (BK) | 100 pcs. | 3;9-12 | 108-00042 |
| X250R | 13.0 | 535.0 | 150.0 | 1,115 | PA66HIRHS | Black (BK) | 50 pcs. | 11-12 | 108-00050 |
| | 13.0 | 535.0 | 150.0 | 1,115 | PA66W | Black (BK) | 50 pcs. | 11-12 | 108-00052 |
| X250I | 13.0 | 715.0 | 205.0 | 1,115 | PA66HIRHS | Black (BK) | 50 pcs. | 11-12 | 108-00045 |
| | 13.0 | 715.0 | 205.0 | 1,115 | PA66W | Black (BK) | 50 pcs. | 11-12 | 108-00047 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

| Recommended Tools | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2 MK20 | 3 MK21 | 4 MK3SP | 5 MK3PNSP2 | 6 EVO7 | 7 MK7HT | 8 MK7P | 9 MK6 | 10 EVO9 | 11 EVO9HT | 12 MK9P |
| | 545 | 545 | 546 | 546 | 548 | 549 | 550 | 551 | 549 | 549 | 552 |

For more information on toolings please refer to the Application Tooling chapter.

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## Cable Ties for hose and gaiter

**CTT-Series natural and black**

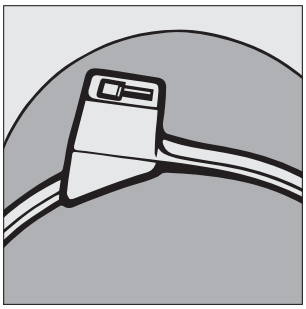
CTT is designed to secure pipes, hoses and gaiters where low pressures are being secured. These ties can be used in many different industries including automotive, white goods manufacturing, medical industry and construction.

**Features and benefits**

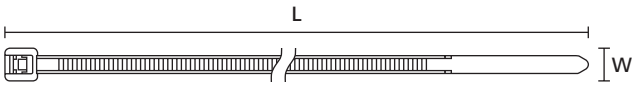
- Curved head design offers a good fit to the bundle
- Inside serration for a strong hold onto bundles
- Easy application either manually or with a processing tool



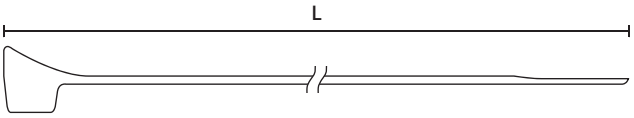
*CTT ties installed on flexible gaiters.*



*For secure fixing of round and solid shapes.*




*CTT series*




*CTT Hose Ties*

| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| CTT20R | 2.5 | 101.6 | 13.0 | 90 | PA66 | Natural (NA) | 100 pcs. | 2;4-6 | 112-51919 |
| | 2.5 | 101.6 | 13.0 | 90 | PA66HS | Black (BK) | 1,000 pcs. | 2;4-6 | 112-51960 |
| CTT60R | 4.7 | 205.0 | 45.0 | 265 | PA66 | Black (BK) | 100 pcs. | 2-12 | 112-56019 |
| | 4.7 | 205.0 | 45.0 | 265 | PA66HS | Black (BK) | 100 pcs. | 2-12 | 112-52112 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

| Recommended Tools | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2 MK20 | 3 MK21 | 4 MK3SP | 5 MK3PNSP2 | 6 EVO7 | 7 MK7HT | 8 MK7P | 9 MK6 | 10 EVO9 | 11 EVO9HT | 12 MK9P |
| | 545 | 545 | 546 | 546 | 548 | 549 | 550 | 551 | 549 | 549 | 552 |

For more information on toolings please refer to the Application Tooling chapter.

c UL us For product specific approvals and specifications please refer to the Appendix.

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## Cable Ties for parallel routing

**DH-Series**

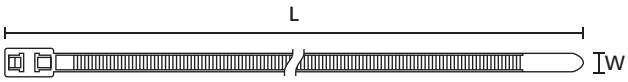
Double loop head ties are ideal for separation of two cable runs without the need for additional cable ties. Additionally these ties are widely used within the packaging industry. The first loop closes and secures the bag whilst the second loop can be made into a carrying handle (subject to weight).

### Features and benefits

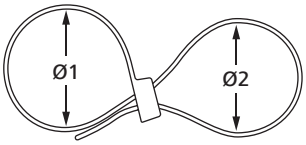
- Possibility to separate bundles with only one cable tie
- Cable tie with two heads creating an inside and outside serrated loop
- Available in a wide range of materials
- Bundles can be of different diameter
- Maximum bundle diameter is a maximum combined bundle
- Easy application either manually or with a processing tool



*DH-Series cable ties for parallel routing.*




*DH-Series*




*DH-Series maximum combined bundle diameter*

| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Min. Tensile Strength 2nd loop | Material | Colour | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| T50RDH | 4.7 | 210.0 | 38.0 | 225 | 180 N | PA46 | Grey (GY) | 100 pcs. | 2;4-6;8 | 117-05168 |
| | 4.7 | 210.0 | 38.0 | 225 | 180 N | PA66 | Black (BK) | 100 pcs. | 2;4-6;8 | 117-05000 |
| | 4.7 | 210.0 | 38.0 | 225 | 180 N | PA66 | Natural (NA) | 100 pcs. | 2;4-6;8 | 117-05002 |
| | 4.7 | 210.0 | 38.0 | 225 | 180 N | PA66HS | Black (BK) | 100 pcs. | 2;4-6;8 | 117-05050 |
| | 4.7 | 210.0 | 38.0 | 225 | 180 N | PA66W | Black (BK) | 500 pcs. | 2;4-6;8 | 117-05060 |
| T50IDH | 4.7 | 305.0 | 76.0 | 225 | 180 N | PA66 | Natural (NA) | 1,000 pcs. | 2;4-6;8 | 117-05303 |
| | 4.7 | 305.0 | 76.0 | 225 | 180 N | PA66HS | Black (BK) | 1,000 pcs. | 2;4-6;8 | 117-05350 |
| | 4.7 | 305.0 | 76.0 | 225 | 180 N | PA66UV | Black (BK) | 100 pcs. | 2;4-6;8 | 117-05360 |
| T50LDH | 4.7 | 395.0 | 100.0 | 225 | 180 N | PA66 | Natural (NA) | 1,000 pcs. | 2;4-6;8 | 117-05461 |
| | 4.7 | 395.0 | 100.0 | 225 | 180 N | PA66HS | Black (BK) | 100 pcs. | 2;4-6;8 | 117-00008 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

| Recommended Tools | | | | | |
|---|---|---|---|---|---|
| | 2<br>MK20 | 4<br>MK3SP | 5<br>MK3PNSP2 | 6<br>EVO7 | 8<br>MK7P |
| | 545 | 546 | 546 | 548 | 550 |

For more information on toolings please refer to the Application Tooling chapter.

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Cable ties for food industry, detectable

The Metal Content Tie is a cable tie specifically designed for use in the food and pharmaceutical processing industries. A unique manufacturing process, involving the inclusion of a metallic pigment, enables even small 'cut-off' sections of the tie to be detected by standard metal-detecting equipment. Ideally suited for the installation of cabling in and around the manufacturing process.

**Features and benefits**

- Total metal dispersion throughout the tie
- Can support quality assurance in the production of food stuffs, for example HACCP
- Blue colour for easy visual detection
- Greatly reduces risk of contamination
- Magnetic and X-Ray detectable (detection level depending on specific application and equipment)

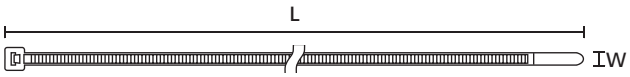
**Material specification please see page 26.**



*Our detectable MCT(S) cable ties are used in the food and pharmaceutical industry.*

*One Step to the Web!*

**MCT-Series, PA66MP**




*MCT-Series*

**Can support quality assurance in the production of food stuffs, for example HACCP.**

| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **MCT18R** | 2.5 | 100.0 | 22.0 | 80 | PA66MP | Blue (BU) | 100 pcs. | 2;4-6 | 111-01225 |
| **MCT30R** | 3.5 | 150.0 | 35.0 | 135 | PA66MP | Blue (BU) | 100 pcs. | 2;4-6 | 111-00829 |
| **MCT50R** | 4.6 | 202.0 | 50.0 | 225 | PA66MP | Blue (BU) | 100 pcs. | 2-10 | 111-00830 |
| **MCT50L** | 4.7 | 380.0 | 110.0 | 225 | PA66MP | Blue (BU) | 100 pcs. | 2-10;12 | 111-00831 |
| | 4.7 | 380.0 | 110.0 | 225 | PA66MP | Yellow (YE) | 100 pcs. | 2-10;12 | 111-01168 |
| **MCT120R** | 7.6 | 387.0 | 100.0 | 535 | PA66MP | Blue (BU) | 100 pcs. | 3;9-12 | 111-01136 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

| Recommended Tools | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2 MK20 | 3 MK21 | 4 MK3SP | 5 MK3PNSP2 | 6 EVO7 | 7 MK7HT | 8 MK7P | 9 MK6 | 10 EVO9 | 11 EVO9HT | 12 MK9P |
| | 545 | 545 | 546 | 546 | 548 | 549 | 550 | 551 | 549 | 549 | 552 |

For more information on toolings please refer to the Application Tooling chapter.

**MCT-Series releasable, PA66MP**

| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **MCTRELK2M** | 4.6 | 250.0 | 65.0 | 225 | PA66MP | Blue (BU) | 100 pcs. | 111-00937 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

Date of issue: January 2019

## Cable ties for food industry, detectable, corrosion resistant

**MCTS-Series, PA66MP+**

Our MCTS cable ties have been specifically developed to be used in the food and beverage as well as in the pharmaceutical industry. A unique manufacturing process in combination with a unique material formulation offers outstanding perfomance in line with high corrosion resistance. This makes the MCTS an ideal product even for very humid environments. In addition the MCTS ties manufactured from a polypropylene base material offer very good chemical resistance.

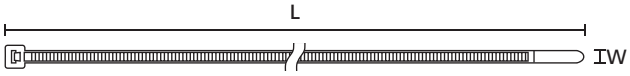
**Features and benefits**

- Total metal dispersion throughout the tie
- Can support quality assurance in the production of food stuffs, for example HACCP
- Blue colour for easy visual detection
- Greatly reduces risk of contamination
- Magnetic and X-Ray detectable (detection level depending on specific application and equipment)
- MCTS ties have very good corrosion resistance



*Our detectable MCT(S) cable ties are used in the food and pharmaceutical industry.*

**Can support quality assurance in the production of food stuffs, for example HACCP.**




*MCT-Series*

| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| MCTS100 | 2.5 | 100.0 | 22.0 | 60 | PA66MP+ | Blue (BU) | 100 pcs. | 2;4-6 | 111-01341 |
| | 2.5 | 100.0 | 22.0 | 60 | PA66MP+ | Mint Green (MGN) | 100 pcs. | 2;4-6 | 111-01377 |
| | 2.5 | 100.0 | 22.0 | 60 | PA66MP+ | Mustard (MST) | 100 pcs. | 2;4-6 | 111-01380 |
| | 2.5 | 100.0 | 22.0 | 60 | PA66MP+ | Russet (RUS) | 100 pcs. | 2;4-6 | 111-01383 |
| MCTS150 | 3.5 | 153.0 | 36.0 | 110 | PA66MP+ | Blue (BU) | 100 pcs. | 2;4-6 | 111-01342 |
| | 3.5 | 153.0 | 36.0 | 110 | PA66MP+ | Mint Green (MGN) | 100 pcs. | 2;4-6 | 111-01378 |
| | 3.5 | 153.0 | 36.0 | 110 | PA66MP+ | Mustard (MST) | 100 pcs. | 2;4-6 | 111-01381 |
| | 3.5 | 153.0 | 36.0 | 110 | PA66MP+ | Russet (RUS) | 100 pcs. | 2;4-6 | 111-01384 |
| MCTS200 | 4.7 | 202.0 | 50.0 | 150 | PA66MP+ | Blue (BU) | 100 pcs. | 2-10 | 111-01343 |
| | 4.7 | 202.0 | 50.0 | 150 | PA66MP+ | Mint Green (MGN) | 100 pcs. | 2-10 | 111-01379 |
| | 4.7 | 202.0 | 50.0 | 150 | PA66MP+ | Mustard (MST) | 100 pcs. | 2-10 | 111-01382 |
| | 4.7 | 202.0 | 50.0 | 150 | PA66MP+ | Russet (RUS) | 100 pcs. | 2-10 | 111-01385 |
| MCTS300 | 4.8 | 301.0 | 80.0 | 150 | PA66MP+ | Blue (BU) | 100 pcs. | 2-10 | 111-01399 |
| | 4.8 | 301.0 | 80.0 | 150 | PA66MP+ | Mint Green (MGN) | 100 pcs. | 2-10 | 111-01400 |
| | 4.8 | 301.0 | 80.0 | 150 | PA66MP+ | Mustard (MST) | 100 pcs. | 2-10 | 111-01401 |
| | 4.8 | 301.0 | 80.0 | 150 | PA66MP+ | Russet (RUS) | 100 pcs. | 2-10 | 111-01402 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

| Recommended Tools | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2<br>MK20 | 3<br>MK21 | 4<br>MK3SP | 5<br>MK3PNSP2 | 6<br>EVO7 | 7<br>MK7HT | 8<br>MK7P | 9<br>MK6 | 10<br>EVO9 |
| | 545 | 545 | 546 | 546 | 548 | 549 | 550 | 551 | 549 |

For more information on toolings please refer to the Application Tooling chapter.

## Cable ties for food industry, detectable

The Metal Content Tie is a cable tie specifically designed for use in the food and pharmaceutical processing industries. A unique manufacturing process, involving the inclusion of a metallic pigment, enables even small 'cut-off' sections of the tie to be detected by standard metal-detecting equipment. Ideally suited for the installation of cabling in and around the manufacturing process.

### Features and benefits

- Manufactured from metal content Polypropylene
- High chemical and temperature resistance
- Blue colour for easy visual detection
- Greatly reduces risk of contamination
- Magnetic and X-Ray detectable (detection level depending on specific application and equipment)
- MCTS ties have very good corrosion resistance
- Can support quality assurance in the production of food stuffs, for example HACCP

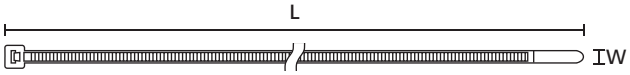


*MCTPP ties have a high chemical and temperature resistance.*

**The MCT ties made of PA66MP are the ideal complement for MCMB mounts on page 142.**

**Can support quality assurance in the production of food stuffs, for example HACCP.**

### MCT-Series / MCTS-Series PPMP




*MCT-Series*

| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **MCTPP18R** | 2.5 | 100.0 | 22.0 | 85 | PPMP | Blue (BU) | 100 pcs. | 2;4-6 | 111-01664 |
| **MCTPP30R** | 3.5 | 150.0 | 35.0 | 130 | PPMP | Blue (BU) | 100 pcs. | 2;4-6 | 111-01665 |
| **MCTPP50R** | 4.6 | 200.0 | 50.0 | 150 | PPMP | Blue (BU) | 100 pcs. | 2-10 | 111-01666 |
| **MCTPP50L** | 4.6 | 390.0 | 110.0 | 150 | PPMP | Blue (BU) | 100 pcs. | 2-10;12 | 111-01667 |
| **MCTPP120R** | 7.6 | 387.0 | 100.0 | 380 | PPMP | Blue (BU) | 100 pcs. | 3;9-12 | 111-01668 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

### MCTS-Series, PPMP+

| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **MCTS200** | 4.7 | 201.0 | 50.0 | 140 | PPMP+ | Blue (BU) | 100 pcs. | 2-10 | 111-01386 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

**Recommended Tools**

| | 2 MK20 | 3 MK21 | 4 MK3SP | 5 MK3PNSP2 | 6 EVO7 | 7 MK7HT | 8 MK7P | 9 MK6 | 10 EVO9 | 11 EVO9HT | 12 MK9P |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 545 | 545 | 546 | 546 | 548 | 549 | 550 | 551 | 549 | 549 | 552 |

For more information on toolings please refer to the Application Tooling chapter.

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## Cable Ties for thin-walled bundles

**OS-Series**

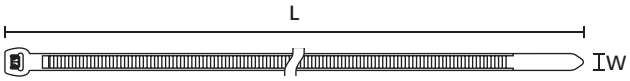
OS-Series cable ties are used in many areas where thin-walled or soft insulation wires and cable are being installed, for instance automotive and aircraft industry. OS ties manufactured from PA66V0 material are suitable for applications where safety regulations require reduction of smoke and dangerous gases.

### Features and benefits

- Outside serrated cable tie with smooth surface to the bundle
- Tie follows the contours of the cable bundle perfectly
- Takes up less space due to curved head design
- Easy insertion combined with high tensile strength
- PA46 material for higher temperatures up to +195 °C (500 h)
- PA66V0 cable ties fulfill Limited Fire Hazard requirements
- Easy application either manually or with a processing tool



*Outside serrated OS-Series cable tie with smooth surface to the bundle.*




*OS-Series*



*The curved head design of the OS-Series*

**Material specification please see page 26.**

| TYPE | Width (W) | Length (L) | Bundle Ø min. | Bundle Ø max. | N | Material | Colour | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| T18ROS | 2.5 | 100.0 | 1.6 | 20.0 | 80 | PA66HS | Natural (NA) | 1,000 pcs. | 2;4-6 | 118-00035 |
| | 2.5 | 100.0 | 1.6 | 20.0 | 80 | PA66W | Black (BK) | 100 pcs. | 2;4-6 | 118-00125 |
| | 2.5 | 100.0 | 1.6 | 20.0 | 80 | PA66HS | Black (BK) | 500 pcs. | 2;4-6 | 118-04701 |
| | 2.5 | 100.0 | 1.6 | 20.0 | 80 | PA66V0 | White (WH) | 100 pcs. | 2;4-6 | 118-00079 |
| T30ROS | 3.4 | 145.0 | 1.6 | 35.0 | 135 | PA66HS | Natural (NA) | 100 pcs. | 2;4-6 | 118-00064 |
| | 3.4 | 145.0 | 1.6 | 35.0 | 135 | PA66HS | Black (BK) | 100 pcs. | 2;4-6 | 118-04800 |
| T30LOS | 3.4 | 200.0 | 1.6 | 50.0 | 135 | PA66HS | Natural (NA) | 100 pcs. | 2;4-6 | 118-00044 |
| | 3.4 | 200.0 | 1.6 | 50.0 | 135 | PA66V0 | White (WH) | 100 pcs. | 2;4-6 | 118-00080 |
| | 3.4 | 200.0 | 1.6 | 50.0 | 135 | PA66W | Black (BK) | 100 pcs. | 2;4-6 | 118-00126 |
| | 3.4 | 200.0 | 1.6 | 50.0 | 135 | PA66HS | Black (BK) | 100 pcs. | 2;4-6 | 118-04900 |
| T50SOS | 4.6 | 150.0 | 1.6 | 35.0 | 225 | PA66HS | Black (BK) | 100 pcs. | 2;4-8 | 118-05850 |
| T50ROS | 4.6 | 200.0 | 1.6 | 50.0 | 225 | PA66HS | Natural (NA) | 100 pcs. | 2;4-8 | 118-05059 |
| | 4.6 | 200.0 | 1.6 | 50.0 | 225 | PA66V0 | White (WH) | 100 pcs. | 2;4-8 | 118-00065 |
| | 4.6 | 200.0 | 1.6 | 50.0 | 225 | PA66W | Black (BK) | 100 pcs. | 2;4-8 | 118-00127 |
| | 4.6 | 200.0 | 1.6 | 50.0 | 225 | PA46 | Grey (GY) | 500 pcs. | 2;4-8 | 118-05078 |
| | 4.6 | 200.0 | 1.6 | 50.0 | 225 | PA66HS | Black (BK) | 500 pcs. | 2;4-8 | 118-05040 |
| T50MOS | 4.6 | 245.0 | 1.6 | 66.0 | 225 | PA66HS | Natural (NA) | 100 pcs. | 2;4-8 | 118-00055 |
| | 4.6 | 245.0 | 1.6 | 66.0 | 225 | PA66V0 | White (WH) | 100 pcs. | 2;4-8 | 118-00081 |
| | 4.6 | 245.0 | 1.6 | 66.0 | 225 | PA66W | Black (BK) | 100 pcs. | 2;4-8 | 118-00128 |
| | 4.6 | 245.0 | 1.6 | 66.0 | 225 | PA66HS | Black (BK) | 100 pcs. | 2;4-8 | 118-00018 |
| T50LOS | 4.6 | 384.0 | 1.6 | 110.0 | 225 | PA66HS | Black (BK) | 100 pcs. | 2;4-8 | 118-05900 |
| T120ROS | 7.6 | 385.0 | 5.0 | 105.0 | 535 | PA66HS | Natural (NA) | 100 pcs. | 3;9-12 | 118-00067 |
| | 7.6 | 385.0 | 5.0 | 105.0 | 535 | PA66V0 | White (WH) | 100 pcs. | 3;9-12 | 118-00082 |
| | 7.6 | 385.0 | 5.0 | 105.0 | 535 | PA66W | Black (BK) | 100 pcs. | 3;9-12 | 118-00130 |
| | 7.6 | 385.0 | 5.0 | 105.0 | 535 | PA66HS | Black (BK) | 100 pcs. | 3;9-12 | 118-00066 |

All dimensions in mm. Subject to technical changes. Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

EN 45545-2

For product specific approvals and specifications please refer to the Appendix.

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## Cable Ties for high temperature applications up to +240 °C

PEEK Ties have been designed for use in hazardous environments. Their suitablility for high temperature applications makes them ideal for use in the drilling industry, railway, offshore or automotive industry. The excellent chemical and radium ray resistance is predestined for applications in medical engineering, chemical industry and power stations. Within the aerospace industry, PEEK ties are suitable due to their good ratio weight to tensile strength. Because of this combination of different properties, PEEK ties can replace metal solutions.

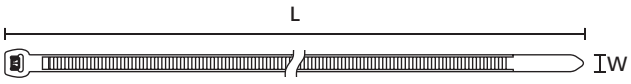
### Features and benefits

- For high temperature applications from -55 °C up to +240 °C
- Outside serrated cable tie with smooth surface to the bundle
- Close fit to the cable bundle due to the deepening head shape
- Easy insertion combined with high tensile strength
- Takes up less space due to curved head design
- Combines the performance of a metal tie with the ease of use of a polyamide cable tie
- Manual and/or pneumatic tools available for greater process reliability



*The contoured head takes up less space, gives a low insertion force and offers high strength.*

**Please find more PEEK products for your system solutions: Foot Part P1SFT65, see page 104. Screw Mount CTAM, see page 145.**




*PEEK-Series*

*Application video: PEEK*

### PEEK Ties, outside serrated

| TYPE | Width (W) | Length (L) | Bundle Ø min. | Bundle Ø max. | N | Colour | Material | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **PT2A** | 3.4 | 145.0 | 4.0 | 35.0 | 230 | Beige (BGE) | PEEK | 100 pcs. | 6-8 | 118-00032 |
| **PT3B** | 4.7 | 250.0 | 4.0 | 65.0 | 300 | Beige (BGE) | PEEK | 100 pcs. | 6-8 | 118-00116 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

### PEEK Ties, inside serrated

| TYPE | Width (W) | Length (L) | Bundle Ø min. | Bundle Ø max. | N | Material | Colour | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **PT220** | 4.7 | 220.0 | 8.0 | 56.0 | 380 | PEEK | Beige (BGE) | 100 pcs. | 8;12;15 | 111-01235 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

| Recommended Tools | | | | | |
|---|---|---|---|---|---|
| | 6<br>EVO7 | 7<br>MK7HT | 8<br>MK7P | 12<br>MK9P | 15<br>MK9SST |
| | 548 | 549 | 550 | 552 | 554 |

For more information on toolings please refer to the Application Tooling chapter.

DNV·GL DVE For product specific approvals and specifications please refer to the Appendix.

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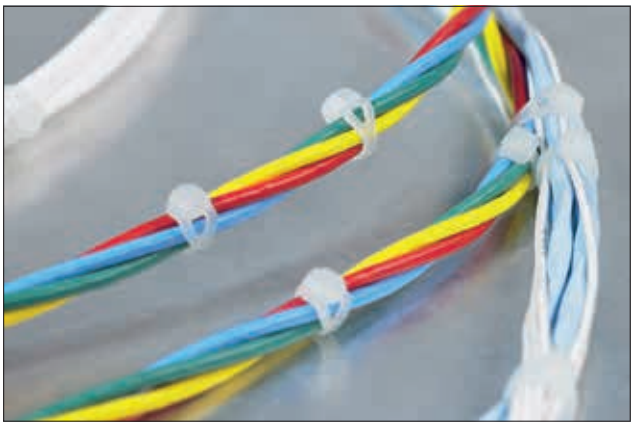
## Cable Ties with 90° angled head

### V-Series

Due to its low profile head, V-Series outside serrated cable ties are perfectly suited for applications with restricted space, such as camera, alarm and automation systems (Remote I/O Systems). Where bundles are fed through a grommet or ductwork, V-Series provides a practical solution due to its unique rounded design.

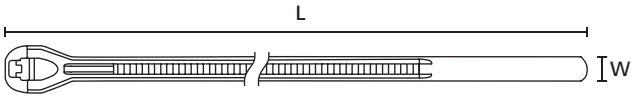
**Features and benefits**

- Outside serrated cable tie with smooth surface to the bundle
- The 90° angled head perfectly fits onto the bundle
- Rounded head design minimises the risk of damage to insulation, especially of parallel routed bundles
- Low profile head takes up less space above the bundle
- Easy insertion and high tensile strength
- Easy application either manually or with a processing tool

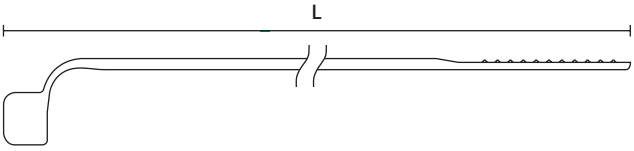


*V-Series is perfect for parallel bundles.*

**Material specification please see page 26.**




*V-Series*




| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| V100R | 2.5 | 102.5 | 20.0 | 100 | PA46 | Grey (GY) | 1,000 pcs. | 2;4-6 | 118-00109 |
| | 2.5 | 102.5 | 20.0 | 100 | PA66HS | Natural (NA) | 1,000 pcs. | 2;4-6 | 118-00074 |
| V150R | 3.3 | 150.0 | 35.0 | 150 | PA46 | Grey (GY) | 100 pcs. | 2;4-6;8 | 118-00107 |
| | 3.3 | 150.0 | 35.0 | 150 | PA66HS | Natural (NA) | 100 pcs. | 2;4-6;8 | 118-00089 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

| Recommended Tools | | | | | |
|---|---|---|---|---|---|
| | 2<br>MK20 | 4<br>MK3SP | 5<br>MK3PNSP2 | 6<br>EVO7 | 8<br>MK7P |
| | 545 | 546 | 546 | 548 | 550 |

For more information on toolings please refer to the Application Tooling chapter.

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## Cable ties with low profile head

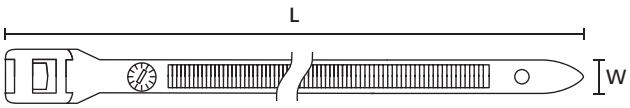
Designed primarily for use within the electrical supply industry these ties are particularly useful in areas with limited space. In addition the low profile head ensures there are no sharp edges. Coloured low profile cable ties are ideal for securing foam padding to playgroud equipment or for any identification purpose.

**Features and benefits**

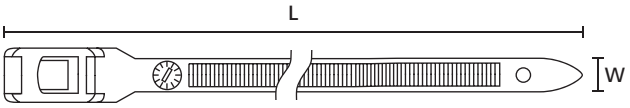
- Outside serrated cable tie with a smooth surface to bundle
- Coloured cable ties can be used for identification
- Broad contact area with cable, minimising risk of damage
- Low profile head for use in restricted area
- Parallel entry for enhanced fit around circular bundles



*Coloured PE400-Series are ideal to secure foam in playground area.*




*PE-Series*




*RPE-Series*

**PE-Series coloured**

| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| PE180 | 9.0 | 180.0 | 42.0 | 445 | PA66HS | Black (BK) | 100 pcs. | 1;3;9-12 | 112-18061 |
| | 9.0 | 180.0 | 42.0 | 445 | PA66HSW | Black (BK) | 100 pcs. | 1;3;9-12 | 112-18060 |
| PE400 | 9.0 | 400.0 | 116.0 | 445 | PA66 | Blue (BU) | 100 pcs. | 1;3;9-12 | 112-18101 |
| | 9.0 | 400.0 | 116.0 | 445 | PA66 | Green (GN) | 100 pcs. | 1;3;9-12 | 112-18100 |
| | 9.0 | 400.0 | 116.0 | 445 | PA66 | Red (RD) | 100 pcs. | 1;3;9-12 | 112-18102 |
| | 9.0 | 400.0 | 116.0 | 445 | PA66 | Yellow (YE) | 100 pcs. | 1;3;9-12 | 112-18103 |
| PE530 | 9.0 | 535.0 | 146.0 | 445 | PA66HSW | Black (BK) | 100 pcs. | 1;3;9-12 | 112-53060 |

All dimensions in mm. Subject to technical changes. Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

**RPE-Series releasable**

| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|
| RPE275 | 9.0 | 275.0 | 69.0 | 445 | PA66HS | Black (BK) | 100 pcs. | 112-00005 |
| | 9.0 | 275.0 | 69.0 | 445 | PA66HSW | Black (BK) | 100 pcs. | 112-27560 |
| RPE350 | 9.0 | 350.0 | 92.0 | 445 | PA66HSW | Black (BK) | 100 pcs. | 112-00006 |
| | 9.0 | 350.0 | 92.0 | 445 | PA66HSW | Black (BK) | 100 pcs. | 112-35060 |

All dimensions in mm. Subject to technical changes. Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

| Recommended Tools | | | | | | |
|---|---|---|---|---|---|---|
| | 1 MK10-SB | 3 MK21 | 9 MK6 | 10 EVO9 | 11 EVO9HT | 12 MK9P |
| | 545 | 545 | 551 | 549 | 549 | 552 |

For more information on toolings please refer to the Application Tooling chapter.

For product specific approvals and specifications please refer to the Appendix.

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## Cable ties with low profile head

**LPH-Series**

LPH cable ties are made of Polyamide 6.6 materials. The design with its serration on the outside provides a smooth surface to the cable bundle. Any damage to the insulation can be avoided. The flat head design offers additional benefit in areas with restricted space. They are mainly used within the electrical supply industry but perfectly suited for construction, heavy duty applications or the automotive industry.

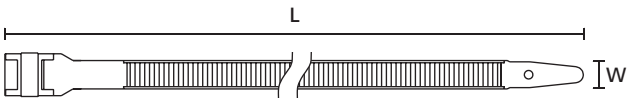
### Features and benefits

- For more flexibility high impact modifed cable ties are available
- Good tensile strength with a single or a double bridged head
- Outside serration allows for a smooth surface to bundle
- Design protects against damage to cable insulation
- Low profile head for optimized use especially in restricted areas
- Strap is threaded parallel through the low profile head

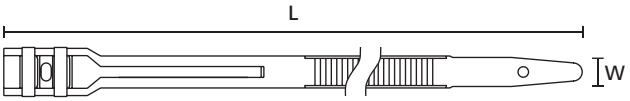


*LPH-Series with a smooth surface to the bundle.*

**Material specification please see page 26.**




*LPH175*




*LPH275, LPH350*

| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **LPH175** | 9.0 | 175.0 | 40.0 | 310 | PA66 | Black (BK) | 100 pcs. | 1;3;9-12 | 112-00203 |
| **LPH275** | 9.0 | 265.0 | 62.0 | 480 | PA66HIR(S) | Black (BK) | 100 pcs. | 1;3;9-12 | 112-00303 |
| **LPH350** | 9.0 | 355.0 | 92.0 | 480 | PA66HIR(S) | Black (BK) | 100 pcs. | 1;3;9-12 | 112-00403 |
| **LPH500** | 9.0 | 505.0 | 140.0 | 540 | PA66HIR(S) | Black (BK) | 100 pcs. | 1;3;9-12 | 112-00033 |
| **LPH750** | 9.0 | 752.0 | 220.0 | 540 | PA66HIR(S) | Black (BK) | 100 pcs. | 1;3;9-12 | 112-00034 |

All dimensions in mm. Subject to technical changes. Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

| Recommended Tools | | | | | | |
|---|---|---|---|---|---|---|
| | 1 MK10-SB | 3 MK21 | 9 MK6 | 10 EVO9 | 11 EVO9HT | 12 MK9P |
| | 545 | 545 | 551 | 549 | 549 | 552 |

For more information on toolings please refer to the Application Tooling chapter.

For product specific approvals and specifications please refer to the Appendix.

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## Cable ties with low profile head

**Robusto-Series**

Robusto cable ties manufactured from PA11 have many technical features making them suitable for use in a variety of applications to fix and support cables, pipes and other elements. They offer an excellent resistance to chemicals in most challenging environments like offshore or on oil rigs and construction vehicles. In addition the very good UV resistance makes it a perfect choice for solar panel cable installations.

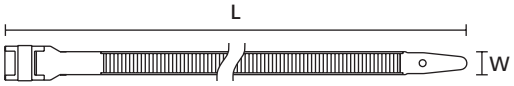
### Features and benefits

- Made of Polyamide 11 – a sustainable bioplastic from vegetable oil
- Outside serrated cable tie with an innovative rounded head design
- Low insertion force for tool-free application
- High tensile strength with a single or a double bridged head
- Soft material for easy handling without damaging cables
- Very good UV resistance and durability in outdoor applications
- Stable technical performance even at very low temperatures
- Offers limited resitance to acids, bases and oxidising agents
- Low water absorption rate for consistent technical performance and high durability
- Prelocking function by simply pushing the strap through the eyelet provided

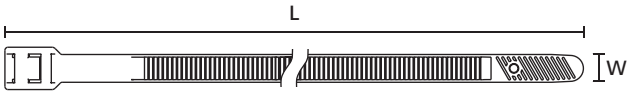


*Flat head cable tie from sustainable bioplastic, Robusto-Series.*

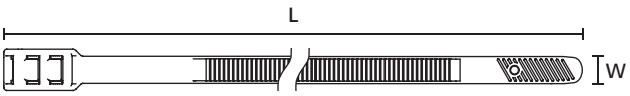
*Application video: Robusto*




*Robusto (LPH922)*




*Robusto (LPH942)*




*Robusto (LPH962, LPH992)*

| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **Robusto (LPH922)** | 9.0 | 123.0 | 22.0 | 310 | PA11 | Black (BK) | 100 pcs. | 1;3;9-12 | 112-00025 |
| **Robusto (LPH942)** | 9.0 | 180.0 | 42.0 | 360 | PA11 | Black (BK) | 100 pcs. | 1;3;9-12 | 112-00011 |
| **Robusto (LPH962)** | 9.0 | 260.0 | 62.0 | 530 | PA11 | Black (BK) | 100 pcs. | 1;3;9-12 | 112-00012 |
| **Robusto (LPH992)** | 9.0 | 355.0 | 92.0 | 530 | PA11 | Black (BK) | 100 pcs. | 1;3;9-12 | 112-00013 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

| Recommended Tools | | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 3 | 9 | 10 | 11 | 12 |
| | MK10-SB | MK21 | MK6 | EVO9 | EVO9HT | MK9P |
| | 545 | 545 | 551 | 549 | 549 | 552 |

For more information on toolings please refer to the Application Tooling chapter.

Date of issue: January 2019

HellermannTyton

# What you do today can improve all your tomorrows.

The standards you set yourself are the best motivation. HellermannTyton is the world's leading cable management pioneer. Every year we file dozens of patents – and we are also dedicated to ecological solutions. Take Robusto, for example, the first cable tie made from sustainable castor oil. Thinking of tomorrow – today.

**www.HellermannTyton.co.uk/robusto2019cat**

## MADE FOR REAL®



Date of issue: January 2019

## Cable Tie locked by glass fibre pin

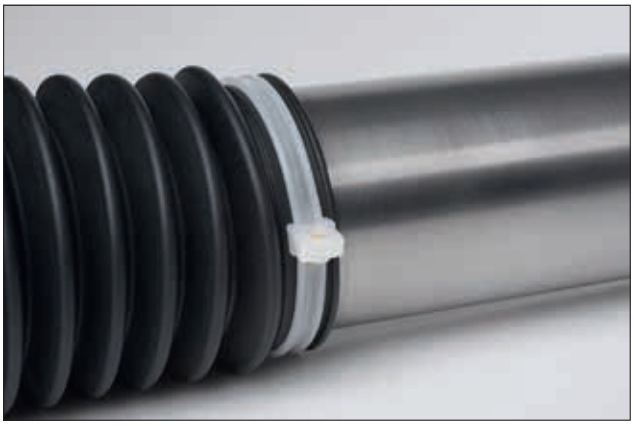
This cable tie is distinguished by its smooth strap and unique locking mechanism. The chamfered head of the KR-Series allows for a firm fit around the bundled element. Due to its special design KR-Series cable ties can be used as a safety method to bundle any cable and to also secure bellows on steering racks, water hoses or vacuum lines. The endless strap version is fairly flexible and can be cut to any length required. Separate heads are available to fix the strap.

**Features and benefits**

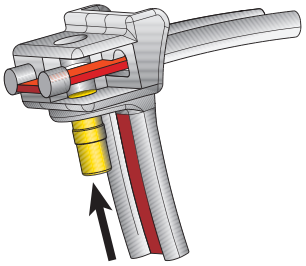
- Cable tie without serration to avoid any damage to cables
- Strap is locked into place with a glass-fibre reinforced pin
- Very secure and vibration resistant fixing
- Available in various materials, colours and almost every length
- Cable ties from PA12 are highly resistant to chemicals, impact and UV light
- KR-ties up to 426 mm are made as one piece
- For assembly a special KR-tool is needed

**Specific part numbers according to EN45545 available on request.**

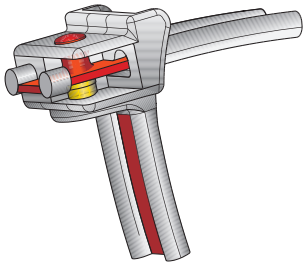
**Material specification please see page 26.**



*The KR-Series has been repeatedly proven in high vibration applications.*

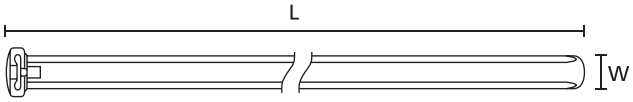


*The unlocked head of a KR-tie.*



*The cable tie (red) is locked into place with the pin.*

**KR-Series, 1-Piece**




*Cable tie KR-Series*

| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| KR6/35 | 6.1 | 360.0 | 93.0 | 490 | PA66 | Natural (NA) | 50 pcs. | 13 | 121-63519 |
| | 6.1 | 360.0 | 93.0 | 490 | PA66HS | Natural (NA) | 50 pcs. | 13 | 121-63555 |
| | 6.1 | 360.0 | 93.0 | 490 | PA66UV | Black (BK) | 50 pcs. | 13 | 121-63560 |
| KR8/21 | 8.0 | 210.0 | 47.0 | 785 | PA66HS | Natural (NA) | 50 pcs. | 13-14 | 121-82155 |
| | 8.0 | 210.0 | 47.0 | 785 | PA66 | Natural (NA) | 50 pcs. | 13-14 | 121-82119 |
| | 8.0 | 210.0 | 47.0 | 785 | PA66UV | Black (BK) | 50 pcs. | 13-14 | 121-82160 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

| Recommended Tools | | |
|---|---|---|
| | 13<br>KR6/8 | 14<br>KR8PNSE |
| | 553 | 553 |

For more information on toolings please refer to the Application Tooling chapter.

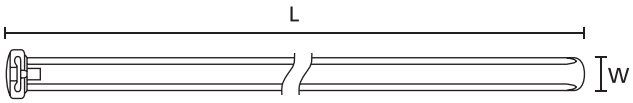
EN 45545-2 DNV·GL

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Cable Tie locked by glass fibre pin

### KR-Series, 1-Piece



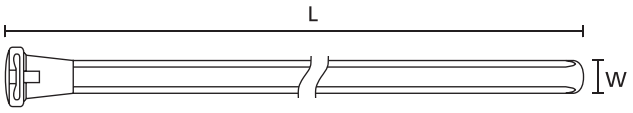

*Cable tie KR-Series*

| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| KR8/33 | 8.0 | 337.0 | 86.0 | 390 | PA12 | Black (BK) | 50 pcs. | 13-14 | 121-83380 |
| | 8.0 | 337.0 | 86.0 | 785 | PA66 | Natural (NA) | 50 pcs. | 13-14 | 121-83319 |
| | 8.0 | 337.0 | 86.0 | 785 | PA46 | Grey (GY) | 50 pcs. | 13-14 | 121-83378 |
| | 8.0 | 337.0 | 86.0 | 785 | PA66HS | Natural (NA) | 50 pcs. | 13-14 | 121-83355 |
| | 8.0 | 337.0 | 86.0 | 785 | PA66UV | Black (BK) | 50 pcs. | 13-14 | 121-83360 |
| KR8/43 | 8.0 | 426.0 | 105.0 | 785 | PA66HS | Black (BK) | 50 pcs. | 13-14 | 121-74360 |
| | 8.0 | 426.0 | 105.0 | 785 | PA66HS | Natural (NA) | 50 pcs. | 13-14 | 121-74359 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

EN 45545-2 DNV·GL For product specific approvals and specifications please refer to the Appendix.

### KR-Series, ultrasonic welded



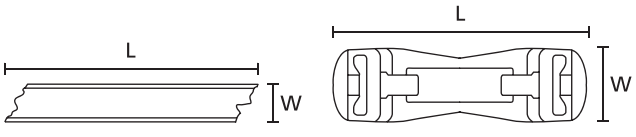

*KR-Series, ultrasonic welded*

**Other dimensions are available on request.**

| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| KR8/50 | 8.0 | 500.0 | 152.0 | 785 | PA66 | Natural (NA) | 50 pcs. | 13-14 | 121-05019 |
| KR8/60 | 8.0 | 600.0 | 184.0 | 785 | PA66W | Black (BK) | 50 pcs. | 13-14 | 121-06060 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

### KR-Series, endless




*Cable tie KR8S1* *Double-head KR8C5*

| TYPE | Width (W) | Length (L) | N | Material | Colour | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|
| KR8/S1 | 8.0 | 50.0 m | 785 | PA66HS | Natural (NA) | 50.0 m | 13-14 | 121-98151 |
| | 8.0 | 50.0 m | 785 | PA66W | Black (BK) | 50.0 m | 13-14 | 121-98160 |
| KR8/C5 | 11.7 | 38.0 | - | PA66HS | Natural (NA) | 200 pcs. | 13-14 | 121-58551 |
| | 11.7 | 38.0 | - | PA66W | Black (BK) | 200 pcs. | 13-14 | 121-58560 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

Date of issue: January 2019

## Endless cable ties with separate head and spacer

**EL-TY-Series**

These robust cable ties are particularly suitable for use with larger diameter cables, pipes and hoses. Designed originally for securing overhead catenary cables (when used with the spacers) they are now used in many industries from the building sector, through to the chemical industry, to the installation of signs for traffic management.

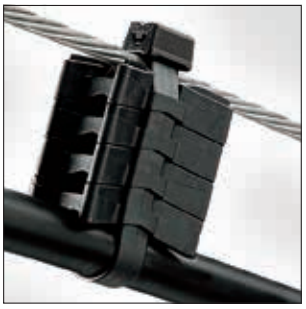
**Features and benefits**

- Made of very strong Polyacetal (POM)
- System consists of endless strap, spacers and heads
- Head includes stainless steel pawls for a proper fixation
- Very secure fixing and good resistance to ageing and UV light
- Suits any bundle diameter and reduces inventory

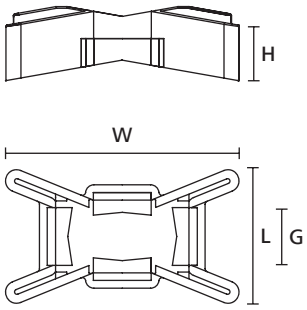


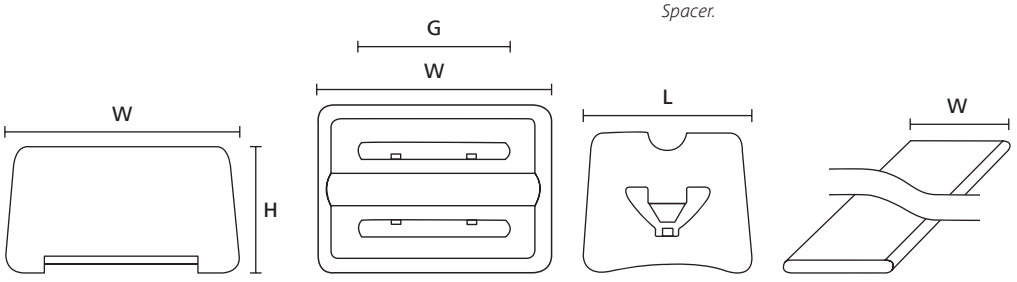
*EL-TY straps can be cut to suit any bundle with application tool EVO9.*

**Material specification please see page 26.**



*Spacer.*




*Head (Front View)* *Head (Plain View)* *Head (Side View)* *Strap*

| TYPE | Width (W) | Length (L) | Height (H) | N | Strap Width max. (G) | Material | Colour | Content | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **EL-TY (TELS1)** | 12.7 | 15.2 m | - | 1,112 | - | POM | Black (BK) | 15m Strap, 30 Heads | 11 | 111-30000 |
| **EL-TY (TELSH)** | 20.3 | 15.8 | 12.4 | - | 12.7 | POM | Black (BK) | 25 Heads | - | 111-31000 |
| **EL-TY (TELS-SPK2)** | 53.3 | 30.5 | 17.0 | - | 12.7 | PP | Black (BK) | 50 Spacer | - | 111-32000 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

| Recommended Tools | |
|---|---|
| | 11<br>EVO9HT |
| | 549 |

For more information on toolings please refer to the Application Tooling chapter.

Date of issue: January 2019

## Cable Ties inside serrated

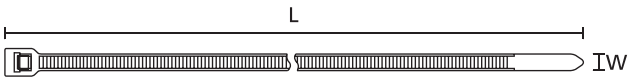
Used in a wide range of industries these releasable and reusable ties are ideal where changes are anticipated. This includes temporary installation and the addition or removal of elements. These releasable cable ties are commonly used to fix stage equipment, for cable management at outdoor events or prototype harnessing work. The extended pawl is simply pushed down with a finger to release the strap.



*RELK releasable cable ties for temporary bundling.*

### Features and benefits

- Releasable and reusable cable tie
- Multiple grades of PA66 for indoors, outdoors or at high temperatures
- Available in black and natural colour
- Extended trigger for simple and quick release of ties
- Inside serrated cable tie
- Different lengths available




*RELK-, RLT-Series*

*Application video: RELK*

### RELK-Series up to 200 N loop tensile strength

| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|
| RELK2R | 4.6 | 200.0 | 50.0 | 200 | PA66 | Natural (NA) | 100 pcs. | 115-02202 |
| RELK2M | 4.6 | 250.0 | 65.0 | 200 | PA66 | Black (BK) | 100 pcs. | 115-02000 |
| | 4.6 | 250.0 | 65.0 | 200 | PA66 | Natural (NA) | 100 pcs. | 115-06729 |
| RELK2I | 4.6 | 300.0 | 81.0 | 200 | PA66 | Black (BK) | 100 pcs. | 115-06760 |
| | 4.6 | 300.0 | 81.0 | 200 | PA66 | Natural (NA) | 100 pcs. | 115-02101 |
| RELK2L | 4.6 | 350.0 | 95.0 | 200 | PA66 | Black (BK) | 100 pcs. | 115-02300 |
| | 4.6 | 350.0 | 95.0 | 200 | PA66 | Natural (NA) | 100 pcs. | 115-06919 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

### RLT-Series up to 670 N loop tensile strength

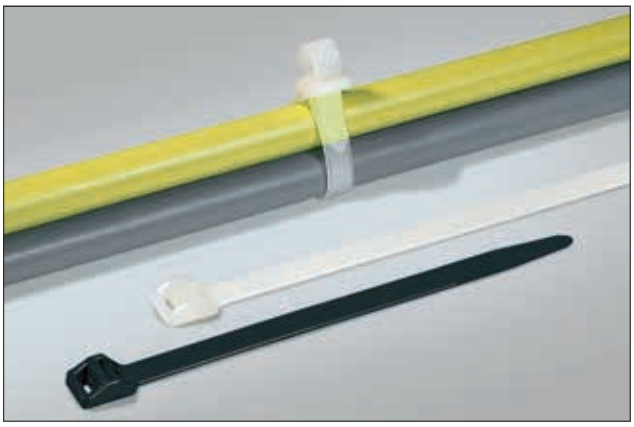
| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|
| RLT120 | 7.6 | 340.0 | 90.0 | 535 | PA66 | Black (BK) | 100 pcs. | 111-70361 |
| | 7.6 | 340.0 | 90.0 | 535 | PA66 | Natural (NA) | 100 pcs. | 111-70319 |
| RLT150 | 8.9 | 770.0 | 225.0 | 670 | PA66 | Black (BK) | 50 pcs. | 111-70110 |
| | 8.9 | 770.0 | 225.0 | 670 | PA66 | Natural (NA) | 50 pcs. | 111-70119 |
| | 8.9 | 770.0 | 225.0 | 670 | PA66HS | Natural (NA) | 50 pcs. | 111-70159 |
| | 8.9 | 770.0 | 225.0 | 670 | PA66W | Black (BK) | 50 pcs. | 111-70160 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

For product specific approvals and specifications please refer to the Appendix.

## Cable Ties inside serrated with tuckaway

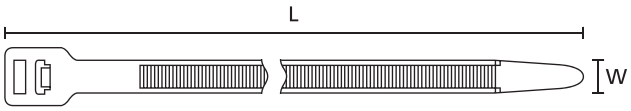
The RT250 is a releasable cable tie. Due to its minimum loop tensile strength of 1,115 N the cable tie is perfectly suited to fix larger and/or heavier bundles. RT250 can be opened and re-used. UV resistant cable ties manufactured from PA66W are recommended for outdoor applications. For shorter lengths REL250-Series can be offered.



*Ideal for larger or heavier bundles these ties can be opened and reused.*

### Features and benefits

- Releasable and reusable cable tie
- Suitable for larger and/or heavier bundles
- Eyelet allows excess tail to be tucked neatly away
- Available in black and natural colour
- Extended trigger for simple and quick release of ties
- Protected trigger to avoid accidental release
- RT250 cable ties are inside serrated

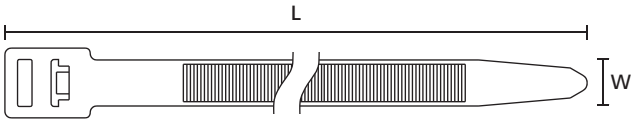



*RT250-Series*

### RT250-Series

| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|
| RT250M | 12.5 | 565.3 | 150.0 | 1,115 | PA66 | Black (BK) | 25 pcs. | 131-75610 |
| | 12.5 | 565.3 | 150.0 | 1,115 | PA66 | Natural (NA) | 25 pcs. | 131-75619 |
| | 12.5 | 565.3 | 150.0 | 1,115 | PA66UV | Black (BK) | 25 pcs. | 131-75620 |
| RT250XL | 12.5 | 1,030.0 | 305.0 | 1,115 | PA66 | Black (BK) | 25 pcs. | 131-75510 |
| | 12.5 | 1,030.0 | 305.0 | 1,115 | PA66 | Natural (NA) | 25 pcs. | 131-75519 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.




*REL250-Series*

### REL250-Series

| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|
| REL250S | 12.2 | 230.0 | 50.0 | 1,115 | PA66HIR(S) | Black (BK) | 50 pcs. | 111-00074 |
| REL250X | 12.2 | 385.0 | 100.0 | 1,115 | PA66HIR(S) | Black (BK) | 50 pcs. | 111-00075 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Cable Ties inside serrated with kickdown lever

**REL-Series**

The REL-Series is ideally used in applications where changes are anticipated and a tie needs to be opened and closed repeatedly. The release mechanism of an REL cable tie allows simple and quick opening with only one hand. UV resistant cable ties manufactured from PA66W are recommended for outdoor applications.

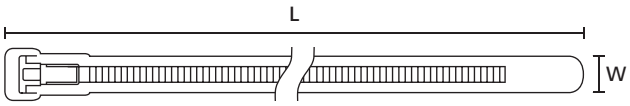
**Features and benefits**

- Releasable and reusable cable tie for medium-weight loads
- Extremely easy-to-operate release mechanism
- Opens simply and quickly with only one hand
- Also available in PA66W for outdoor applications
- REL cable ties have their serration on the inside



*Releasable and reusable cable tie, REL-Series.*

**Material specification please see page 26.**




*REL-Series*

| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **REL180** | 6.5 | 180.0 | 46.0 | 150 | PA66 | Black (BK) | 100 pcs. | 115-00027 |
| **REL100** | 6.7 | 100.0 | 21.0 | 180 | PA66 | Black (BK) | 100 pcs. | 131-21010 |
| | 6.7 | 100.0 | 21.0 | 180 | PA66 | Natural (NA) | 100 pcs. | 131-21019 |
| **REL140** | 7.6 | 150.0 | 35.0 | 200 | PA66 | Black (BK) | 100 pcs. | 131-21410 |
| | 7.6 | 150.0 | 35.0 | 200 | PA66 | Natural (NA) | 100 pcs. | 131-21419 |
| **REL250** | 7.6 | 250.0 | 68.0 | 200 | PA66 | Black (BK) | 100 pcs. | 131-22510 |
| | 7.6 | 250.0 | 68.0 | 200 | PA66 | Natural (NA) | 100 pcs. | 131-22519 |
| | 7.6 | 250.0 | 68.0 | 200 | PA66W | Black (BK) | 100 pcs. | 131-22560 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

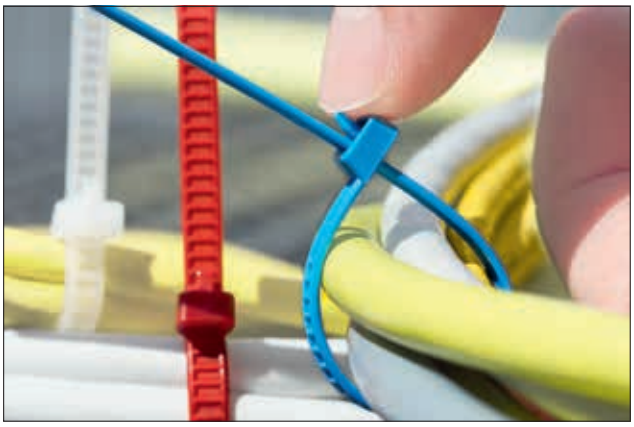
c UL us

For product specific approvals and specifications please refer to the Appendix.

## Cable Ties outside serrated for marking

**LR55-Series**

Releasable cable ties of our LR55-Series offer some extra benefits. Their serration is on the outside of the cable tie. This will minimise the risk of damage to cables or other elements. Additionally LR55 cable ties are available in different colours – optimally suited for temporary identification within logistic, packaging, cable harness production or for testing purposes. The strap is released when pushing the extended pawl upwards. The risk of opening the cable tie accidentally is minimised.



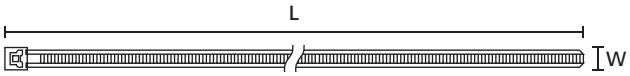
*Releasable and outside serrated LR55 cable ties are ideal suited for colour coding.*

### Features and benefits

- Releasable and reusable cable tie
- Various colours for applications needing colour coding
- Extended trigger for simple and quick release of ties
- Risk of accidental release is minimised
- Outside serration prevents damage to cable insulation

*Application video: LR55*

**Material specification please see page 26.**




*LR55 Series*

| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|
| LR55R | 4.7 | 195.0 | 50.0 | 245 | PA66 | Blue (BU) | 25 pcs. | 115-00006 |
| | 4.7 | 195.0 | 50.0 | 245 | PA66 | Green (GN) | 25 pcs. | 115-00005 |
| | 4.7 | 195.0 | 50.0 | 245 | PA66 | Natural (NA) | 25 pcs. | 115-00008 |
| | 4.7 | 195.0 | 50.0 | 245 | PA66 | Red (RD) | 25 pcs. | 115-00003 |
| | 4.7 | 195.0 | 50.0 | 245 | PA66 | Yellow (YE) | 25 pcs. | 115-00004 |
| | 4.7 | 195.0 | 50.0 | 245 | PA66HS | Black (BK) | 25 pcs. | 115-00002 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

Date of issue: January 2019

## Cable Ties without serration in flexible TPU

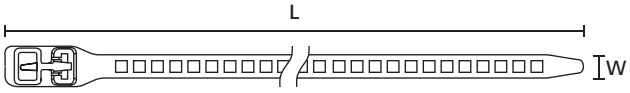
The SRT range offers solutions to numerous bundling applications. The soft, flexible material makes these ties particularly suitable for use on data and fibre-optic cables. The elasticity of the material makes them ideal for securing young trees to support poles, and other applications within the gardening and landscaping industry.

**Features and benefits**

- Elastic and flexible cable ties with rounded and smooth edges
- Releasable and reusable
- Double slotted head with fixation pawl
- Flexibility ensures steady and evenly distributed pressure
- Tight fixation even in vertical position: prevent sliding down or loosening bundle
- Suitable for moving elements and vibrating applications like windmills, machines, robotics, pulsating tubing and conduits
- Ideal use for temporarily fixation for presentations, concerts, theatres, exhibitions
- Long lifetime when used indoor
- Remains flexible even at cold temperatures (-20°C)

**With 2nd loop to run bundles in parallel!**

*Application video: SOFTFIX*




*SRT- and SOFTFIX-Series*



*The elasticity of the SOFTIX ties makes them suitable for use in many applications.*



*SOFTFIX ties available in small packaging units.*

### SRT-Series for industry quantities

| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **SRT1807** | 7.0 | 180.0 | 45.0 | 57 | TPU | Black (BK) | 50 pcs. | 115-07189 |
| **SRT2607** | 7.0 | 260.0 | 70.0 | 57 | TPU | Black (BK) | 50 pcs. | 115-07269 |
| **SRT26011** | 11.0 | 260.0 | 65.0 | 123 | TPU | Black (BK) | 50 pcs. | 115-11269 |
| **SRT34011** | 11.0 | 340.0 | 90.0 | 123 | TPU | Black (BK) | 50 pcs. | 115-11349 |
| **SRT58028** | 28.0 | 580.0 | 150.0 | 360 | TPU | Black (BK) | 10 pcs. | 115-28589 |
| **SRT88028** | 28.0 | 880.0 | 240.0 | 360 | TPU | Black (BK) | 180 pcs. | 115-28889 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

### SOFTFIX-Family

| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **SOFTFIX XS** | 7.0 | 180.0 | 45.0 | 57 | TPU | Black (BK) | 16 pcs. | 115-07190 |
| **SOFTFIX S** | 7.0 | 260.0 | 70.0 | 57 | TPU | Black (BK) | 12 pcs. | 115-07270 |
| **SOFTFIX M** | 11.0 | 260.0 | 65.0 | 123 | TPU | Black (BK) | 8 pcs. | 115-11270 |
| **SOFTFIX L** | 11.0 | 340.0 | 90.0 | 123 | TPU | Black (BK) | 6 pcs. | 115-11350 |
| **SOFTFIX XL** | 28.0 | 580.0 | 150.0 | 360 | TPU | Black (BK) | 3 pcs. | 115-28590 |
| **SOFTFIX XXL** | 28.0 | 880.0 | 240.0 | 360 | TPU | Black (BK) | 3 pcs. | 115-28898 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

Date of issue: January 2019

## Cable Ties inside serrated with one-hand release mechanism

**REZ-Series**

Perfect for use in the packaging industry as a bag closure where access to part of the bag content may be needed but the bag need to be re-sealed later. Something that often occurs for instance in the catering or service industry. In addition the cable tie can be opened easily with only two fingers by simply pushing the wings of the unique head.

**Features and benefits**

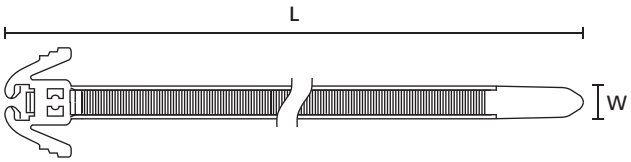
- REZ-Series can be released and reused
- Unique head design for simple and rapid use
- Quick-release mechanism for one-hand operation
- Cable tie can be opened even when under tension
- Can still be released when working with gloves



*The inside serrated REZ ties have a one-hand, simple release mechanism.*

**Material specification please see page 26.**

*Application video: REZ*




*REZ-Series*

| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|
| REZ200 | 4.7 | 200.0 | 50.0 | 135 | PA66 | Black (BK) | 100 pcs. | 115-40200 |
| | 4.7 | 200.0 | 50.0 | 135 | PA66 | Fluorescent Pink (FLPK) | 100 pcs. | 115-00147 |
| | 4.7 | 200.0 | 50.0 | 135 | PA66 | Green (GN) | 100 pcs. | 115-00106 |
| | 4.7 | 200.0 | 50.0 | 135 | PA66 | Orange (OG) | 100 pcs. | 115-00132 |
| REZ300 | 4.7 | 305.0 | 80.0 | 135 | PA66 | Black (BK) | 100 pcs. | 115-40300 |
| | 4.7 | 305.0 | 80.0 | 135 | PA66 | Fluorescent Pink (FLPK) | 100 pcs. | 115-00138 |
| | 4.7 | 305.0 | 80.0 | 135 | PA66 | Red (RD) | 100 pcs. | 115-00043 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

Date of issue: January 2019

## Cable Tie with quick release mechanism

**SpeedyTie**

The versatility of the SpeedyTie means that it is suitable for a multitude of applications like electro installations, heating and ventilation, construction, exhibitions and trade fairs. Whether it is used for permanent or temporarily solutions the SpeedyTie is a very strong helping hand in every situation.

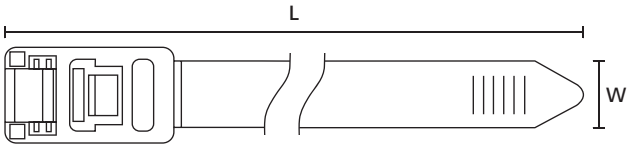
**Features and benefits**

- Releasable and reusable cable tie
- Bears loads of up to 888 N (approx. 90 kg)
- 750 mm long for use in a wide variety of applications
- Can be used for parallel bundling
- Easy to handle when wearing work gloves
- Available in signal yellow and in black



*Excess Tails can be neatly tucked away.*

**Patented**




*SpeedyTie®*

*Application video: SpeedyTie®*

| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|
| SpeedyTie (RTT750HR) | 13.0 | 752.0 | 210.0 | 888 | PA66 | Yellow (YE), Red (RD) | 5 pcs. | 115-00001 |
| | 13.0 | 752.0 | 210.0 | 888 | PA66 | Yellow (YE), Red (RD) | 25 pcs. | 115-00000 |
| | 13.0 | 752.0 | 210.0 | 888 | PA66HIR(S) | Black (BK) | 5 pcs. | 115-00030 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

## Hook and Loop Ties

**TEXTIE-Series**

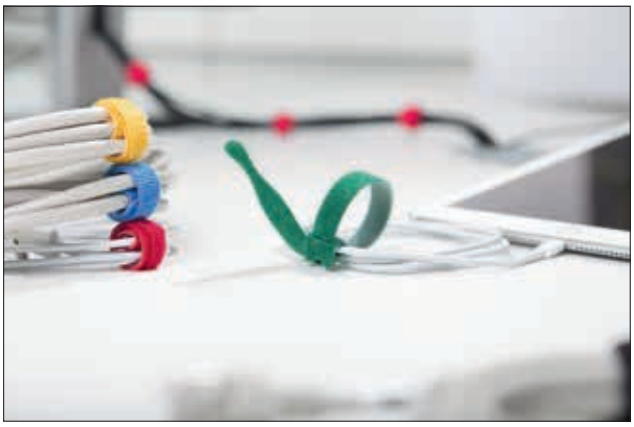
The TEXTIE-Series offers a soft bundling method and is ideal for use on telephone cables, optical fibre and network cables. These cable ties can be reopened and reused up to 400 times. A perfect solution for temporary installations and cable management for stage equipment, at outdoor events or for prototype harnessing. Also suitable for use in private or office applications. TEXTIE cable ties are available in various colours and can be used to colour-code cables and/or wires.

**Features and benefits**

- Quick and simple to use without tools
- Re-usable up to 400 times
- Various colours for easy identification
- For indoor and outdoor use
- Can be attached to the bundle permanently
- Resistant to ageing, no corrosion

*Application video: TEXTIE*

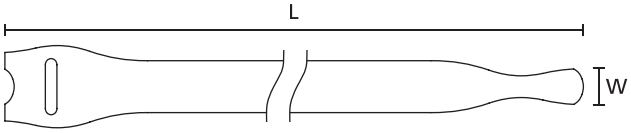
**Material specification please see page 26.**



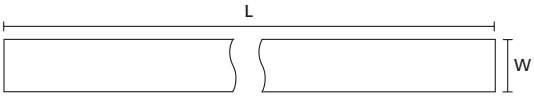
*Due to the functional cable tie design the TEXTIE is fixed on the cable and can't get lost.*



*The TEXTIE-Series is available in different colours and lengths.*




*TEXTIE-Series*




*TEXTIE-Series 5 and 25 m*

| TYPE | Width (W) | Length (L) | Bundle Ø max. | Material Loop | Material Hook | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **TEXTIE S** | 12.5 | 150.0 | 45.0 | Polyamide 6.6 (PA66) | Polypropylene (PP) | Black (BK) | 10 pcs. | 130-00012 |
| **TEXTIE M** | 12.5 | 200.0 | 60.0 | Polyamide 6.6 (PA66) | Polypropylene (PP) | Black (BK) | 10 pcs. | 130-00013 |
| | 12.5 | 200.0 | 60.0 | Polyamide 6.6 (PA66) | Polypropylene (PP) | Blue (BU) | 10 pcs. | 130-00018 |
| | 12.5 | 200.0 | 60.0 | Polyamide 6.6 (PA66) | Polypropylene (PP) | Green (GN) | 10 pcs. | 130-00017 |
| | 12.5 | 200.0 | 60.0 | Polyamide 6.6 (PA66) | Polypropylene (PP) | Red (RD) | 10 pcs. | 130-00014 |
| | 12.5 | 200.0 | 60.0 | Polyamide 6.6 (PA66) | Polypropylene (PP) | White (WH) | 10 pcs. | 130-00021 |
| | 12.5 | 200.0 | 60.0 | Polyamide 6.6 (PA66) | Polypropylene (PP) | Yellow (YE) | 10 pcs. | 130-00016 |
| **TEXTIE L** | 12.5 | 330.0 | 100.0 | Polyamide 6.6 (PA66) | Polypropylene (PP) | Black (BK) | 10 pcs. | 130-00019 |
| **TEXTIE 5M** | 12.5 | 5,000.0 | - | Polyamide 6.6 (PA66) | Polypropylene (PP) | Black (BK) | 1 pc. | 130-00020 |
| **TEXTIE 25M** | 13.0 | 25,000.0 | - | Polyamide 6.6 (PA66) | Polypropylene (PP) | Black (BK) | 1 pc. | 130-00022 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

Date of issue: January 2019

HellermannTyton

# Global certification – we train everyday.

Seeing far ahead increases safety: HellermannTyton is an IRIS-certified specialist in railway cable management solutions that take the material requirements of tomorrow into account today. That's why our products don't just meet standards, but usually exceed them. First class all the way.

**www.HellermannTyton.co.uk/rail2019cat**

## MADE FOR REAL®



Date of issue: Janu 2019

## Cable ties with ball-lock

**MBT-Series, stainless steel 304**

Metal ties are ideal for all applications that require high strength, reliability and fire resistance. The MBT range of stainless steel cable ties can be used in chemical industries and on oil platforms as well as in mass transit, shipbuilding and mining industries. MBT ties are also suitable for machine building, construction and in the outside area of radio technology. Additionally MBT ties are ideal for securing lighting in theatres and exhibition halls.

**Features and benefits**

- Cable ties MBT, made from stainless steel 304
- Non-releasable locking feature
- Corrosion resistant
- Weather resistant
- Outstanding chemical resistance
- High temperature resistant
- Non-burning



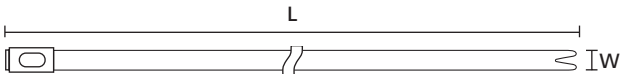
*Stainless steel cable ties, uncoated, MBT_SS, MBT_HS.*



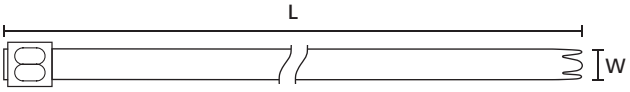
*Stainless Steel Cable Ties, uncoated, MBT_XHS.*

**Can support quality assurance in the production of food stuffs, for example HACCP.**

**The MBT-Series (up to 7.9 mm) can be used in combination with the stainless steel P-Mount. The mount is simple to install with a screw or bolt and ensures a durable fixing solution. Please see page 156.**




*MBT-Series 4.6 mm and 7.9 mm width*




*MBT-Series 12.3 mm width*

| TYPE | Width (W) | Length (L) | Bundle Ø min. | Bundle Ø max. | N | Material | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **MBT8SS** | 4.6 | 201.0 | 17.0 | 50.0 | 900 | SS304 | 100 pcs. | 15-18 | 111-93088 |
| **MBT5SS** | 4.6 | 127.0 | 12.0 | 25.0 | 900 | SS304 | 100 pcs. | 15-18 | 111-93058 |
| **MBT14HS** | 7.9 | 362.0 | 17.0 | 102.0 | 2,000 | SS304 | 50 pcs. | 15-18 | 111-94148 |
| **MBT20SS** | 4.6 | 521.0 | 17.0 | 152.0 | 900 | SS304 | 100 pcs. | 15-18 | 111-93208 |
| **MBT27SS** | 4.6 | 685.0 | 17.0 | 203.0 | 900 | SS304 | 100 pcs. | 15-18 | 111-93278 |
| **MBT33SS** | 4.6 | 838.0 | 17.0 | 254.0 | 900 | SS304 | 100 pcs. | 15-18 | 111-93338 |
| **MBT8HS** | 7.9 | 201.0 | 17.0 | 50.0 | 2,000 | SS304 | 50 pcs. | 15-18 | 111-94088 |
| **MBT20HS** | 7.9 | 521.0 | 17.0 | 152.0 | 2,000 | SS304 | 50 pcs. | 15-18 | 111-94208 |
| **MBT27HS** | 7.9 | 685.0 | 17.0 | 203.0 | 2,000 | SS304 | 50 pcs. | 15-18 | 111-94278 |
| **MBT33HS** | 7.9 | 838.0 | 17.0 | 254.0 | 2,000 | SS304 | 50 pcs. | 15-18 | 111-94338 |
| **MBT14SS** | 4.6 | 362.0 | 17.0 | 102.0 | 900 | SS304 | 100 pcs. | 15-18 | 111-93148 |
| **MBT14XHS** | 12.3 | 362.0 | 17.0 | 102.0 | 2,700 | SS304 | 50 pcs. | 15-18 | 111-95148 |
| **MBT20XHS** | 12.3 | 521.0 | 17.0 | 152.0 | 2,700 | SS304 | 50 pcs. | 15-18 | 111-95208 |
| **MBT27XHS** | 12.3 | 681.0 | 17.0 | 203.0 | 2,700 | SS304 | 50 pcs. | 15-18 | 111-95278 |
| **MBT33XHS** | 12.3 | 838.0 | 17.0 | 254.0 | 2,700 | SS304 | 50 pcs. | 15-18 | 111-95338 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

| Recommended Tools | | | | |
|---|---|---|---|---|
| | 15 | 16 | 17 | 18 |
| | MK9SST | MK9PSST | HDT16 | KST-STG200 |
| | 554 | 554 | 555 | 555 |

For more information on toolings please refer to the Application Tooling chapter.

Date of issue: January 2019

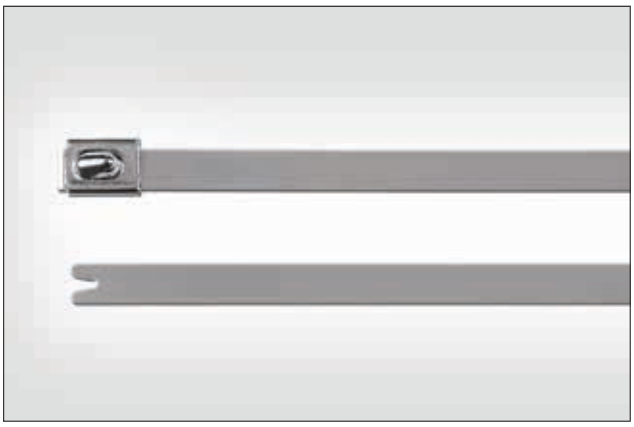
## Cable ties with ball-lock

**MBT-Series, stainless steel 316**

Metal ties are predestined for all areas with requirements for high holding force, reliability and fire resistance. The MBT range of stainless steel cable ties can be used in chemical industry and on oil platform as well as in mass transit, shipbuilding and mining industry. MBT ties are also suitable for machine building, apparatus construction and in the outside area of radio technology. Additionally MBT ties are a good solution to fix lighting in theatres and exhibition halls.

**Features and benefits**

- MBT cable ties made from stainless steel 316
- Non-releasable locking feature
- Corrosion resistant
- Weather resistant
- Outstanding chemical resistance
- High temperature resistant
- Non-burning

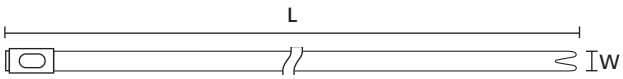


*Stainless steel cable ties, uncoated, MBT_S, MBT_H.*

**Can support quality assurance in the production of food stuffs, for example HACCP.**

**Material specification please see page 26.**

**The MBT-Series (up to 7.9 mm) can be used in combination with the stainless steel P-Mount. The mount is simple to install with a screw or bolt and ensures a durable fixing solution. Please see page 156.**




*MBT-Series 4.6 mm and 7.9 mm width*

| TYPE | Width (W) | Length (L) | Bundle Ø min. | Bundle Ø max. | N | Material | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **MBT20XH** | 12.3 | 521.0 | 12.0 | 152.0 | 2,700 | SS316 | 50 pcs. | 15-18 | 111-95209 |
| **MBT27XH** | 12.3 | 681.0 | 12.0 | 203.0 | 2,700 | SS316 | 50 pcs. | 15-18 | 111-95279 |
| **MBT33XH** | 12.3 | 838.0 | 12.0 | 254.0 | 2,700 | SS316 | 50 pcs. | 15-18 | 111-95339 |
| **MBT14UH** | 16.0 | 362.0 | 12.0 | 102.0 | 4,100 | SS316 | 50 pcs. | 15;17 | 111-01301 |
| **MBT14XH** | 12.3 | 362.0 | 12.0 | 102.0 | 2,700 | SS316 | 50 pcs. | 15-18 | 111-95149 |
| **MBT20UH** | 16.0 | 521.0 | 12.0 | 152.0 | 4,100 | SS316 | 50 pcs. | 15;17 | 111-01302 |
| **MBT8H** | 7.9 | 201.0 | 12.0 | 50.0 | 2,000 | SS316 | 50 pcs. | 15-18 | 111-94089 |
| **MBT14H** | 7.9 | 362.0 | 12.0 | 102.0 | 2,000 | SS316 | 50 pcs. | 15-18 | 111-94149 |
| **MBT20H** | 7.9 | 521.0 | 12.0 | 152.0 | 2,000 | SS316 | 50 pcs. | 15-18 | 111-94209 |
| **MBT27H** | 7.9 | 685.0 | 12.0 | 203.0 | 2,000 | SS316 | 50 pcs. | 15-18 | 111-94279 |
| **MBT33H** | 7.9 | 838.0 | 12.0 | 254.0 | 2,000 | SS316 | 50 pcs. | 15-18 | 111-94339 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

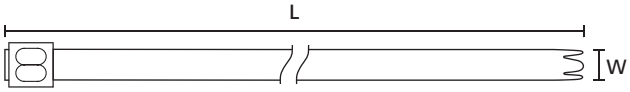
| Recommended Tools | | | | |
|---|---|---|---|---|
| | 15 MK9SST | 16 MK9PSST | 17 HDT16 | 18 KST-STG200 |
| | 554 | 554 | 555 | 555 |

For more information on toolings please refer to the Application Tooling chapter.

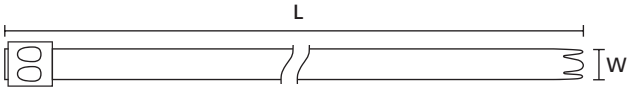
For product specific approvals and specifications please refer to the Appendix.

## Cable ties with ball-lock

**MBT-Series, stainless steel 316**




*MBT-Series 12.3 mm width*




*MBT-Series 16.0 mm width*

| TYPE | Width (W) | Length (L) | Bundle Ø min. | Bundle Ø max. | N | Material | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **MBT27UH** | 16.0 | 681.0 | 12.0 | 203.0 | 4,100 | SS316 | 50 pcs. | 15;17 | 111-01303 |
| **MBT33UH** | 16.0 | 838.0 | 12.0 | 254.0 | 4,100 | SS316 | 50 pcs. | 15;17 | 111-01304 |
| **MBT43UH** | 16.0 | 1,092.0 | 12.0 | 330.0 | 4,100 | SS316 | 25 pcs. | 15;17 | 111-01305 |
| **MBT49UH** | 16.0 | 1,245.0 | 12.0 | 380.0 | 4,100 | SS316 | 25 pcs. | 15;17 | 111-01306 |
| **MBT5S** | 4.6 | 127.0 | 12.0 | 25.0 | 900 | SS316 | 100 pcs. | 15-18 | 111-93059 |
| **MBT8S** | 4.6 | 201.0 | 12.0 | 50.0 | 900 | SS316 | 100 pcs. | 15-18 | 111-93089 |
| **MBT14S** | 4.6 | 362.0 | 12.0 | 102.0 | 900 | SS316 | 100 pcs. | 15-18 | 111-93149 |
| **MBT20S** | 4.6 | 521.0 | 12.0 | 152.0 | 900 | SS316 | 100 pcs. | 15-18 | 111-93209 |
| **MBT27S** | 4.6 | 685.0 | 12.0 | 203.0 | 900 | SS316 | 100 pcs. | 15-18 | 111-93279 |
| **MBT33S** | 4.6 | 838.0 | 12.0 | 254.0 | 900 | SS316 | 100 pcs. | 15-18 | 111-93339 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

| Recommended Tools | | | | |
|---|---|---|---|---|
| | 15<br>MK9SST | 16<br>MK9PSST | 17<br>HDT16 | 18<br>KST-STG200 |
| | 554 | 554 | 555 | 555 |

For more information on toolings please refer to the Application Tooling chapter.

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Double wrap cable ties with ball-lock

**MBTXHD- / MBTUHD-Series, stainless steel 316**

The double wrap ties of the MBT-series are used in applications where a fixing requires an extraordinary high tensile strength.

**Features and benefits**

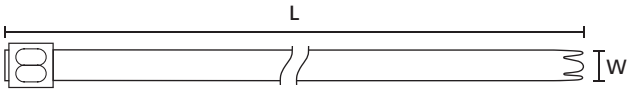
- Stainless steel MBT ties with double wrap operation
- Wraps around the bundle and passes through the head twice
- Very high tensile strength to carry enormous applied loads
- Head with two locking balls
- Resistant to arduous conditions and environments

**Can support quality assurance in the production of food stuffs, for example HACCP.**

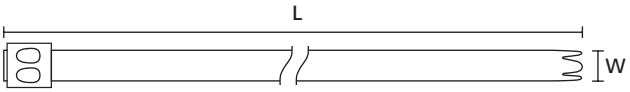
**Material specification please see page 26.**



*Double wrap stainless steel cable ties, uncoated, MBT_UHD.*




*MBT-Series 12.3 mm width*




*MBT-Series 16.0 mm width*

| TYPE | Width (W) | Length (L) | Bundle Ø min. | Bundle Ø max. | N | Material | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **MBT27XHD** | 12.3 | 681.0 | 17.0 | 100.0 | 5,000 | SS316 | 50 pcs. | 15-18 | 111-01307 |
| **MBT33XHD** | 12.3 | 838.0 | 17.0 | 120.0 | 5,000 | SS316 | 50 pcs. | 15-18 | 111-01308 |
| **MBT43XHD** | 12.3 | 1,092.0 | 17.0 | 160.0 | 5,000 | SS316 | 25 pcs. | 15-18 | 111-01309 |
| **MBT49XHD** | 12.3 | 1,245.0 | 17.0 | 180.0 | 5,000 | SS316 | 25 pcs. | 15-18 | 111-01310 |
| **MBT60XHD** | 12.3 | 1,524.0 | 17.0 | 230.0 | 5,000 | SS316 | 25 pcs. | 15-18 | 111-01311 |
| **MBT27UHD** | 16.0 | 681.0 | 25.0 | 100.0 | 7,000 | SS316 | 50 pcs. | 15;17 | 111-01312 |
| **MBT33UHD** | 16.0 | 838.0 | 25.0 | 120.0 | 7,000 | SS316 | 50 pcs. | 15;17 | 111-01313 |
| **MBT43UHD** | 16.0 | 1,092.0 | 25.0 | 160.0 | 7,000 | SS316 | 25 pcs. | 15;17 | 111-01314 |
| **MBT49UHD** | 16.0 | 1,245.0 | 25.0 | 180.0 | 7,000 | SS316 | 25 pcs. | 15;17 | 111-01315 |
| **MBT60UHD** | 16.0 | 1,524.0 | 25.0 | 230.0 | 7,000 | SS316 | 25 pcs. | 15;17 | 111-01316 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

| Recommended Tools | | | | |
|---|---|---|---|---|
| | 15<br>MK9SST | 16<br>MK9PSST | 17<br>HDT16 | 18<br>KST-STG200 |
| | 554 | 554 | 555 | 555 |

For more information on toolings please refer to the Application Tooling chapter.

Date of issue: January 2019

## Cable ties with ball-lock and coating

**MBT-FC-Series, stainless steel 316**

The MBT range of stainless steel cable ties can be used in the most arduous of conditions or where the additional security, strength and fire resistance of a metal fixing is required. Used in all industries from mass transit, ship building, oil rigs, mining and chemical industry, theatres and exhibition halls. In the event of a fire, cables will remain securely held in place and will not fall to block emergency exits. Fully coated ties can also be used to avoid any reflection. An important consideration for instance in the defence industry.

**Features and benefits**

- Fully coated MBT, made from type 316 stainless steel with polyester coating
- Non-releasable locking feature
- Coated cable tie with smooth edges
- Comfortable handling and installation
- Eliminates contact corrosion between dissimilar materials during application

**The MBT-Series (up to 7.9 mm) can be used in combination with the stainless steel P-Mount. The mount is simple to install with a screw or bolt and ensures a durable fixing solution. Please see page 156.**

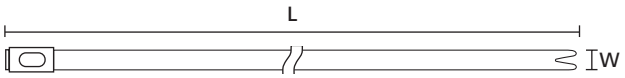
**Material specification please see page 26.**



*Stainless steel cable ties, coated, MBT_SFC, MBT_HFC.*



*Stainless steel cable ties, coated, MBT_XHFC.*




*MBT-Series 4.6 mm and 7.9 mm width*

| TYPE | Width (W) | Length (L) | Bundle Ø min. | Bundle Ø max. | N | Material | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **MBT5SFC** | 4.6 | 127.0 | 15.0 | 25.0 | 540 | SS316, SP | 100 pcs. | 15-18 | 111-00288 |
| **MBT8SFC** | 4.6 | 201.0 | 17.0 | 50.0 | 540 | SS316, SP | 100 pcs. | 15-18 | 111-00289 |
| **MBT14SFC** | 4.6 | 362.0 | 17.0 | 102.0 | 540 | SS316, SP | 100 pcs. | 15-18 | 111-00290 |
| **MBT20SFC** | 4.6 | 521.0 | 17.0 | 152.0 | 540 | SS316, SP | 100 pcs. | 15-18 | 111-00291 |
| **MBT27SFC** | 4.6 | 681.0 | 17.0 | 203.0 | 540 | SS316, SP | 100 pcs. | 15-18 | 111-00292 |
| **MBT33SFC** | 4.6 | 838.0 | 17.0 | 254.0 | 540 | SS316, SP | 100 pcs. | 15-18 | 111-00293 |
| **MBT8HFC** | 7.9 | 201.0 | 17.0 | 50.0 | 1,020 | SS316, SP | 50 pcs. | 15-18 | 111-00294 |
| **MBT14HFC** | 7.9 | 362.0 | 17.0 | 102.0 | 1,020 | SS316, SP | 50 pcs. | 15-18 | 111-00295 |
| **MBT20HFC** | 7.9 | 521.0 | 17.0 | 152.0 | 1,020 | SS316, SP | 50 pcs. | 15-18 | 111-00296 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

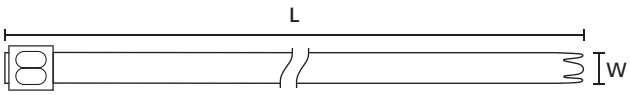
| Recommended Tools | | | | |
|---|---|---|---|---|
| | 15 | 16 | 17 | 18 |
| | MK9SST | MK9PSST | HDT16 | KST-STG200 |
| | 554 | 554 | 555 | 555 |

For more information on toolings please refer to the Application Tooling chapter.

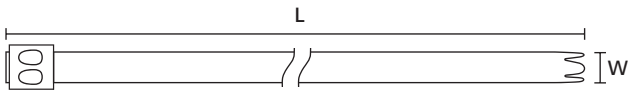
Date of issue: January 2019

## Cable ties with ball-lock and coating

**MBT-FC-Series, stainless steel 316**




*MBT-Series 12.3 mm width*




*MBT-Series 16.0 mm width*

| TYPE | Width (W) | Length (L) | Bundle Ø min. | Bundle Ø max. | N | Material | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **MBT27HFC** | 7.9 | 681.0 | 17.0 | 203.0 | 1,020 | SS316, SP | 50 pcs. | 15-18 | 111-00297 |
| **MBT33HFC** | 7.9 | 838.0 | 17.0 | 254.0 | 1,020 | SS316, SP | 50 pcs. | 15-18 | 111-00298 |
| **MBT14XHFC** | 12.3 | 362.0 | 17.0 | 102.0 | 1,620 | SS316, SP | 50 pcs. | 15-18 | 111-00299 |
| **MBT17XHFC** | 12.3 | 434.0 | 17.0 | 125.0 | 1,620 | SS316, SP | 50 pcs. | 15-18 | 111-01500 |
| **MBT20XHFC** | 12.3 | 521.0 | 17.0 | 152.0 | 1,620 | SS316, SP | 50 pcs. | 15-18 | 111-00300 |
| **MBT23XHFC** | 12.3 | 575.0 | 17.0 | 168.0 | 1,620 | SS316, SP | 50 pcs. | 15-18 | 111-01501 |
| **MBT27XHFC** | 12.3 | 681.0 | 17.0 | 203.0 | 1,620 | SS316, SP | 50 pcs. | 15-18 | 111-00301 |
| **MBT30XHFC** | 12.3 | 754.0 | 17.0 | 225.0 | 1,620 | SS316, SP | 50 pcs. | 15-18 | 111-01502 |
| **MBT33XHFC** | 12.3 | 838.0 | 17.0 | 254.0 | 1,620 | SS316, SP | 50 pcs. | 15-18 | 111-00302 |
| **MBT43XHFC** | 12.3 | 1,092.0 | 17.0 | 330.0 | 1,620 | SS316, SP | 25 pcs. | 15-18 | 111-01503 |
| **MBT49XHFC** | 12.3 | 1,245.0 | 17.0 | 380.0 | 1,620 | SS316, SP | 25 pcs. | 15-18 | 111-01504 |
| **MBT14UHFC** | 16.0 | 362.0 | 25.0 | 102.0 | 2,500 | SS316, SP | 50 pcs. | 15;17 | 111-01512 |
| **MBT17UHFC** | 16.0 | 434.0 | 25.0 | 125.0 | 2,500 | SS316, SP | 50 pcs. | 15;17 | 111-01513 |
| **MBT20UHFC** | 16.0 | 521.0 | 25.0 | 152.0 | 2,500 | SS316, SP | 50 pcs. | 15;17 | 111-01514 |
| **MBT23UHFC** | 16.0 | 575.0 | 25.0 | 168.0 | 2,500 | SS316, SP | 50 pcs. | 15;17 | 111-01515 |
| **MBT27UHFC** | 16.0 | 681.0 | 25.0 | 203.0 | 2,500 | SS316, SP | 50 pcs. | 15;17 | 111-01516 |
| **MBT30UHFC** | 16.0 | 754.0 | 25.0 | 225.0 | 2,500 | SS316, SP | 50 pcs. | 15;17 | 111-01517 |
| **MBT33UHFC** | 16.0 | 838.0 | 25.0 | 254.0 | 2,500 | SS316, SP | 50 pcs. | 15;17 | 111-01518 |
| **MBT43UHFC** | 16.0 | 1,092.0 | 25.0 | 330.0 | 2,500 | SS316, SP | 25 pcs. | 15;17 | 111-01519 |
| **MBT49UHFC** | 16.0 | 1,245.0 | 25.0 | 380.0 | 2,500 | SS316, SP | 25 pcs. | 15;17 | 111-01520 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

| Recommended Tools | | | | |
|---|---|---|---|---|
| | 15 | 16 | 17 | 18 |
| | MK9SST | MK9PSST | HDT16 | KST-STG200 |
| | 554 | 554 | 555 | 555 |

For more information on toolings please refer to the Application Tooling chapter.

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## Double wrap cable ties with ball-lock and coating

**MBTXHDFC- / MBTUHDFC-Series, stainless steel 316**

The MBT range of stainless steel cable ties can be used in the most arduous of conditions or where the additional security, strength and fire resistance of a metal fixing is required. Used in all industries from mass transit, ship building, oil rigs, mining and chemical industry, theatres and exhibition halls. In the event of a fire, cables will remain securely held in place and will not fall to block emergency exits. Fully coated ties can also be used to avoid any reflection. An important consideration for instance in the defence industry.

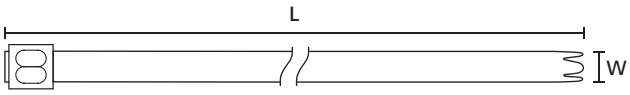


*Stainless steel cable ties, coated, MBT_UHDFC.*

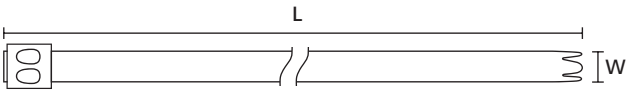
### Features and benefits

- MBT cable ties, made from stainless steel SS316 with a polyester coating
- Non-releasable locking feature
- Double wrap operation
- Corrosion resistant
- Weather resistant
- Outstanding chemical resistance
- High temperature resistant
- Non-burning

**Material specification please see page 26.**




*MBT-Series 12.3 mm width*




*MBT-Series 16.0 mm width*

| TYPE | Width (W) | Length (L) | Bundle Ø min. | Bundle Ø max. | N | Material | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **MBT27XHDFC** | 12.3 | 681.0 | 17.0 | 100.0 | 2,500 | SS316, SP | 50 pcs. | 15-18 | 111-01505 |
| **MBT33XHDFC** | 12.3 | 838.0 | 17.0 | 120.0 | 2,500 | SS316, SP | 50 pcs. | 15-18 | 111-01506 |
| **MBT43XHDFC** | 12.3 | 1,092.0 | 17.0 | 160.0 | 2,500 | SS316, SP | 25 pcs. | 15-18 | 111-01507 |
| **MBT49XHDFC** | 12.3 | 1,245.0 | 17.0 | 180.0 | 2,500 | SS316, SP | 25 pcs. | 15-18 | 111-01508 |
| **MBT60XHDFC** | 12.3 | 1,524.0 | 17.0 | 230.0 | 2,500 | SS316, SP | 25 pcs. | 15-18 | 111-01509 |
| **MBT27UHDFC** | 16.0 | 681.0 | 25.0 | 100.0 | 5,000 | SS316, SP | 50 pcs. | 15;17 | 111-01521 |
| **MBT33UHDFC** | 16.0 | 838.0 | 25.0 | 120.0 | 5,000 | SS316, SP | 50 pcs. | 15;17 | 111-01522 |
| **MBT43UHDFC** | 16.0 | 1,092.0 | 25.0 | 160.0 | 5,000 | SS316, SP | 25 pcs. | 15;17 | 111-01523 |
| **MBT49UHDFC** | 16.0 | 1,245.0 | 25.0 | 180.0 | 5,000 | SS316, SP | 25 pcs. | 15;17 | 111-01524 |
| **MBT60UHDFC** | 16.0 | 1,524.0 | 25.0 | 230.0 | 5,000 | SS316, SP | 25 pcs. | 15;17 | 111-01525 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

| Recommended Tools | | | | |
|---|---|---|---|---|
| | 15 | 16 | 17 | 18 |
| | MK9SST | MK9PSST | HDT16 | KST-STG200 |
| | 554 | 554 | 555 | 555 |

For more information on toolings please refer to the Application Tooling chapter.

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## Cable Ties with punch-locking mechanism

**MST-Series, stainless steel 304**

Stainless steel cable ties are designed for fixing loads and cables securely in hazardous industrial environments such as railway carriages, jet engines, inside power plants or on offshore drilling platforms, where exposure to extremes of weather, saltwater and temperature are common. The MST-Series tie with its new punch-locking mechanism is an excellent choice especially for environments which require high resistance to vibrations.



*Stainless Steel Cable Ties MST-Series.*

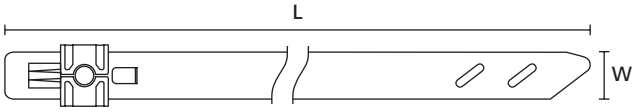
### Features and benefits

- MST-Series cable ties are made from stainless steel 304
- No loosening after bundling
- Corrosion and weather resistant
- Significantly improved vibration resistance
- Outstanding chemical resistance
- Space saving solution
- Safe cut-off (no sharp edges)
- High temperature resistant
- Non-burning

**The MST-Series (up to 8.9 mm) can be used in combination with the stainless steel P-Mount. The mount is simple to install with a screw or bolt and ensures a durable fixing solution. Please see page 156.**

*Application video: MST-Series*

**Can support quality assurance in the production of food stuffs, for example HACCP.**




*MST tie*

| TYPE | Width (W) | Length (L) | Bundle Ø min. | Bundle Ø max. | N | Material | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **MST200S** | 5.9 | 207.0 | 5.0 | 50.0 | 900 | SS304 | 100 pcs. | 19 | 111-01549 |
| **MST360S** | 5.9 | 360.0 | 5.0 | 100.0 | 900 | SS304 | 100 pcs. | 19 | 111-01550 |
| **MST500S** | 5.9 | 500.0 | 5.0 | 145.0 | 900 | SS304 | 100 pcs. | 19 | 111-01551 |
| **MST700S** | 5.9 | 700.0 | 5.0 | 205.0 | 900 | SS304 | 100 pcs. | 19 | 111-01552 |
| **MST360M** | 8.9 | 369.0 | 8.0 | 100.0 | 1,500 | SS304 | 50 pcs. | 20 | 111-01631 |
| **MST500M** | 8.9 | 509.0 | 8.0 | 145.0 | 1,500 | SS304 | 50 pcs. | 20 | 111-01632 |
| **MST700M** | 8.9 | 700.0 | 8.0 | 205.0 | 1,500 | SS304 | 50 pcs. | 20 | 111-01633 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

| Recommended Tools | | |
|---|---|---|
| | 19<br>MST6 | 20<br>MST9 |
| | 556 | 556 |

For more information on toolings please refer to the Application Tooling chapter.

DNV·GL

For product specific approvals and specifications please refer to the Appendix.

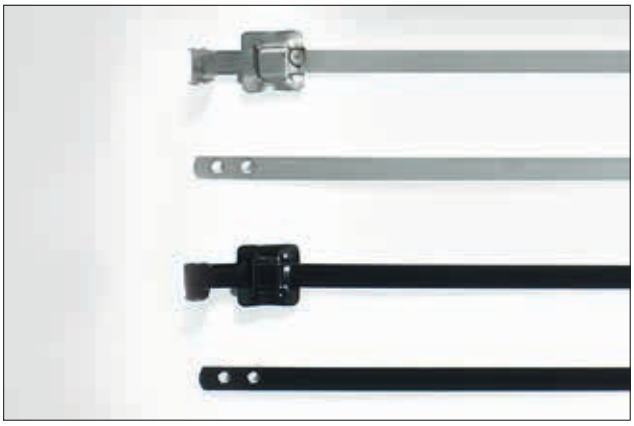
Date of issue: January 2019

## Cable Ties with fold locking

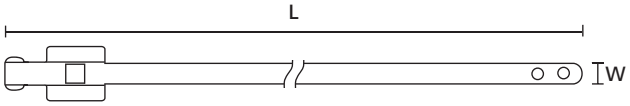
The MLT range of stainless steel cable ties can be used in the most arduous of conditions or where the additional security, strength and fire resistance of a metal fixing is required. Used in all industries from mass transit, ship building, oil rigs, mining and chemical industry, theatres and exhibition halls. In the event of a fire, cables will remain securely held in place and will not fall to block emergency exits.

### Features and benefits

- Releasable stainless steel buckle tie
- Heavy duty type in stainless steel 316
- Can be re-opened and re-used
- Available also with polyester coating which prevents corrosion between dissimilar materials



*MLT-Series. Releasable stainless steel buckle tie with and without coating.*




*MLT-Series*

**The MLT-Series (up to 10 mm) can be used in combination with the stainless steel P-Mount. The mount is simple to install with a screw or bolt and ensures a durable fixing solution. Please see page 156.**

### MLT-Series, stainless steel 316

| TYPE | Width (W) | Length (L) | Bundle Ø min. | Bundle Ø max. | N | Material | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **MLT8SS5** | 5.0 | 230.0 | 20.0 | 60.0 | 420 | SS316 | 100 pcs. | 17;21 | 111-94080 |
| **MLT12SS5** | 5.0 | 330.0 | 20.0 | 90.0 | 420 | SS316 | 100 pcs. | 17;21 | 111-94120 |
| **MLT16SS5** | 5.0 | 430.0 | 20.0 | 120.0 | 420 | SS316 | 100 pcs. | 17;21 | 111-94161 |
| **MLT24SS5** | 5.0 | 630.0 | 20.0 | 180.0 | 420 | SS316 | 100 pcs. | 17;21 | 111-91400 |
| **MLT8SS10** | 10.0 | 230.0 | 25.0 | 60.0 | 850 | SS316 | 100 pcs. | 17;21 | 111-95080 |
| **MLT12SS10** | 10.0 | 330.0 | 25.0 | 90.0 | 850 | SS316 | 100 pcs. | 17;21 | 111-95120 |
| **MLT16SS10** | 10.0 | 430.0 | 25.0 | 120.0 | 850 | SS316 | 100 pcs. | 17;21 | 111-91300 |
| **MLT24SS10** | 10.0 | 630.0 | 25.0 | 180.0 | 850 | SS316 | 100 pcs. | 17;21 | 111-95241 |

All dimensions in mm. Subject to technical changes. Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

### MLT-C-Series coated, stainless steel 316

| TYPE | Width (W) | Length (L) | Bundle Ø min. | Bundle Ø max. | N | Material | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **MLT8SSC5** | 5.3 | 230.0 | 20.0 | 60.0 | 420 | SS316, SP | 100 pcs. | 17;21 | 111-91000 |
| **MLT12SSC5** | 5.3 | 330.0 | 20.0 | 90.0 | 420 | SS316, SP | 100 pcs. | 17;21 | 111-91121 |
| **MLT16SSC5** | 5.3 | 430.0 | 20.0 | 120.0 | 420 | SS316, SP | 100 pcs. | 17;21 | 111-91161 |
| **MLT24SSC5** | 5.3 | 630.0 | 20.0 | 180.0 | 420 | SS316, SP | 100 pcs. | 17;21 | 111-91180 |
| **MLT8SSC10** | 10.3 | 230.0 | 25.0 | 60.0 | 850 | SS316, SP | 100 pcs. | 17;21 | 111-91001 |
| **MLT12SSC10** | 10.3 | 330.0 | 25.0 | 90.0 | 850 | SS316, SP | 100 pcs. | 17;21 | 111-91123 |
| **MLT16SSC10** | 10.3 | 430.0 | 25.0 | 120.0 | 850 | SS316, SP | 100 pcs. | 17;21 | 111-91163 |
| **MLT24SSC10** | 10.3 | 630.0 | 25.0 | 180.0 | 850 | SS316, SP | 100 pcs. | 17;21 | 111-91181 |

All dimensions in mm. Subject to technical changes. Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

| Recommended Tools | | |
|---|---|---|
| | 17<br>HDT16 | 21<br>MTT4 |
| | 555 | 557 |

For more information on toolings please refer to the Application Tooling chapter.

For product specific approvals and specifications please refer to the Appendix.

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## Protective channel for stainless steel ties

**LFPC-Series**

When used in conjunction with the MBT, MST, MLT and AMT range of stainless steel cable ties this channel gives the cable protection against chafing, vibration and shock. Ideal for use in arduous conditions such as those found on board ships, oil rigs or in nuclear power stations.

**Features and benefits**

- LFPC channel, manufactured from Polyolefin
- Works with MBT-, MST-, MLT- and AMT-Series
- Smooth surface protects bundle against chafing caused by vibrations and shocks
- Can be cut from roll to any length
- Halogenfree
- Flame retardant



*Cable tie MBTXH with LFPC Protective Channel.*

**Material specification please see page 26.**

**The fire protection properties of the material relate to the test performed on defined test samples. This is a test under laboratory conditions and not directly transferable to the product made from this material.**




*LFPC*

| TYPE | Width (W) | For Ties | Material | Pack Cont. | Article-No. |
|---|---|---|---|---|---|
| **LFPC70** | 7.0 | MBTS | PO | 25 m | 111-93000 |
| **LFPC83** | 8.3 | MBTH | PO | 25 m | 111-00257 |
| **LFPC103** | 10.3 | MBTH | PO | 25 m | 111-94000 |
| **LFPC129** | 12.9 | MBTXH | PO | 50 m | 111-00253 |
| **LFPC132** | 13.2 | MBTXH | PO | 25 m | 111-00254 |
| **LFPC150** | 15.0 | MBTXH | PO | 25 m | 111-95000 |
| **LFPC163** | 16.3 | AMT, MBTUH | PO | 50 m | 111-00255 |

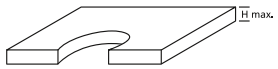
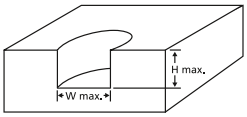
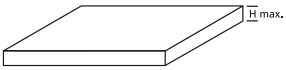
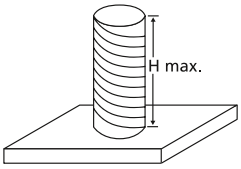
All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

DEF STAN

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Selection guide for fixing ties

| Application | Arrowhead | Fir Tree Mount | Rivet Wall Plug | Screw Mount | EdgeClip | Weld Stud Mount |
|---|---|---|---|---|---|---|
|  | ● | ● | | ● | | |
|  | | ● | ● | ● | | |
|  | | | | | ● | |
|  | | | | | | ● |



### Arrowhead

This fixing tie is based on an arrowhead offering high extraction forces. The arrowhead is securely in place when a click can be heard and felt by the user.



### Arrowhead with disc

The disc minimises the ingress of dust, dirt and water. Furthermore a safe fixation inside the drill hole is assured that withstands pressure from various directions.



### Arrowhead with supporting wings

Arrowhead fixings with supporting wings offer good and stable fixation in drilled holes. The supporting wings generate additional pressure to assure a firm and secure fixing while taking up any variation in panel thickness. These ties are also suitable in high vibration applications.



### Arrowhead without supporting wings

The arrowhead design ensures good fixation and takes up minimal space.



### Fir Tree Mount

Fir Tree Mounts can be pushed into pre-punched holes easily in panels or threaded, blind holes based on the low insertion forces. The design is ideally suited for a wide range of sheet thicknesses. The disc on top of the fir tree covers the hole and minimises the ingress of dust, dirt and water.

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### Weld Stud Mount

Many of the HellermannTyton weld stud mounts can easily be attached by hand ("soft push"). The design offers very low insertion forces that require no tools. The mounts can be removed by twisting to the left.



### Weld Stud Fixings with lateral adjustment

The special oval shape of these mounts provides a 5 - 6 mm lateral adjustment to cater for any misalignment of the stud or incorrect positioning of ties on the cables. The bundle can therefore be moved when mounted.



### EdgeClip

The EdgeClips are specifically designed to bundle and guide cable and wires on edges. Cost intensive drill holes for fixing are no longer required. EdgeClips are easily mounted by hand, the integrated metal clamp, securely keeping the clips on the edge.



### EdgeClip twistable

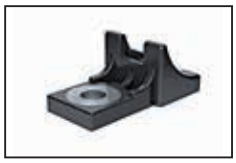
Ideally suited for fixations where bundles need to be flexibly guided. Theses EdgeClips are available with facilities for 90° or 360° rotation.

---



### Cable and Hose Attachment

Excellent solution for subsequent attachment of pipes and wires to installed tubes.



### Heavy Duty Application

These sturdy fixing ties can withstand vibrations. They are easy to apply and give a secure alignment to the bundle. There will be high tighteining torque through metal bushing.



### Two Piece Fixing Ties with Clip Coupler

The Coupler is an article to connect two cable ties for parallel bundling of tubes, harnesses or cables. Its design enables the cable ties to rotate up to 90° and allows flexible installations.

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## 1-Piece Fixing Ties with Arrowhead, with Disc

With a diverse range of fixing possibilities these ties are ideal for use in many different industries, including automotive, aerospace, white goods manufacture and panel building.

**Features and benefits**

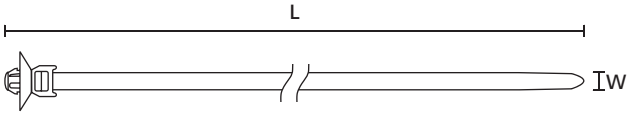
- Easy to install without the need for a tool
- Arrowhead simply locks into place
- Disc adjusts tie for pressures from various directions and minimises ingress of dust, dirt and water
- Cable tie head always situated in a defined position
- KSFT-types with specially rounded arrowhead minimise the assembly height



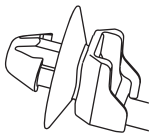
*The disc at the head of the T50SOSSFT6.5E protects the bore against dirt and splashes.*

**Material specification please see page 26.**

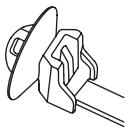
### 1-Piece Fixing Ties with Arrowhead, with Disc, for round holes




*T50SOSKSFT5.4E*



*T50SOSSFT6.5E*



*T50SOSKSFT6.5E*

| TYPE | Hole Ø (FH) | Panel Thickness | Width (W) | Length (L) | Bundle Ø max. | N | Disc Ø | Material | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **T50SOSKSFT5SE** | 4.8 - 5.2 | 0.7 - 1.3 | 4.6 | 156.0 | 35.0 | 180 | 16.0 | PA66HS | Black (BK) | 2-10 | 126-00099 |
| | 4.8 - 5.2 | 0.7 - 1.3 | 4.6 | 156.0 | 35.0 | 180 | 16.0 | PA66HS | Natural (NA) | 2-10 | 126-00111 |
| **T50SOSKSFT5.4E** | 5.2 - 5.6 | 0.7 - 1.3 | 4.6 | 156.0 | 35.0 | 225 | 16.0 | PA66HS | Black (BK) | 2-10 | 126-00075 |
| **T50SST5** | 6.1 - 6.5 | 0.7 - 1.5 | 4.6 | 170.0 | 31.0 | 225 | 16.2 | PA66HS | Black (BK) | 2-10 | 126-00017 |
| | 6.1 - 6.5 | 0.7 - 1.5 | 4.6 | 170.0 | 31.0 | 225 | 16.2 | PA66 | Natural (NA) | 2-10 | 126-02300 |
| **T50SOSKSFT6.5E** | 6.3 - 6.7 | 0.7 - 1.3 | 4.6 | 156.0 | 35.0 | 180 | 16.0 | PA66HS | Black (BK) | 2-10 | 126-00081 |
| **PT2ASFT6.5PT0.7-1.5-E** | 6.3 - 6.7 | 0.7 - 1.5 | 3.4 | 112.7 | 20.0 | 230 | 16.0 | PEEK | Beige (BGE) | 2;4-6 | 126-00183 |
| **T50SOSKSFT6.5S2-E** | 6.3 - 6.7 | 1.7 - 2.3 | 4.6 | 157.5 | 35.0 | 225 | 16.0 | PA66HS | Black (BK) | 2-10 | 126-00086 |
| **T50SOSSFT6.5E** | 6.3 - 6.7 | 1.9 - 2.5 | 4.6 | 158.8 | 30.0 | 225 | 16.0 | PA66HS | Black (BK) | 2-10 | 126-03102 |
| **T50SD6** | 6.3 - 7.5 | 0.6 - 1.8 | 5.0 | 160.0 | 31.0 | 200 | 18.0 | PA66HS | Black (BK) | 2-10 | 111-85350 |
| **T30SOS-AS-SFT6.5-E** | 6.5 - 7.0 | 0.8 - 1.5 | 3.5 | 126.4 | 25.0 | 200 | 16.0 | PA66HS | Black (BK) | 2;4-6 | 126-00255 |
| **T50MD7** | 6.8 - 7.2 | 0.8 - 2.0 | 5.0 | 225.0 | 59.0 | 225 | 16.0 | PA66HS | Black (BK) | 2-10 | 111-85850 |
| **T50SL8** | 8.0 | 0.8 - 1.5 | 4.6 | 165.0 | 35.0 | 225 | 20.0 | PA66 | Black (BK) | 2;4-6;8 | 126-01900 |

All dimensions in mm. Subject to technical changes.

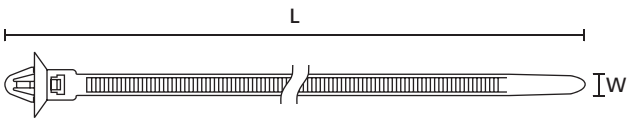
| Recommended Tools | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2<br>MK20 | 3<br>MK21 | 4<br>MK3SP | 5<br>MK3PNSP2 | 6<br>EVO7 | 7<br>MK7HT | 8<br>MK7P | 9<br>MK6 | 10<br>EVO9 |
| | 545 | 545 | 546 | 546 | 548 | 549 | 550 | 551 | 549 |

For more information on toolings please refer to the Application Tooling chapter.

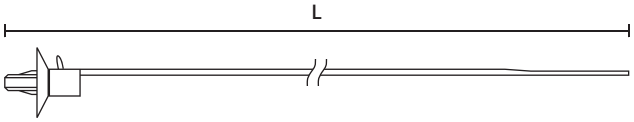
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## 1-Piece Fixing Tie with Arrowhead, with Disc

**1-Piece Fixing Tie with Arrowhead, with Disc, releasable, for round holes**




*RT50SD6*




*RT50SD6*

| TYPE | Hole Ø (FH) | Panel Thickness | Width (W) | Length (L) | Bundle Ø max. | N | Disc Ø | Material | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **RT50SD6** | 6.3 - 7.5 | 0.6 - 1.8 | 5.0 | 160.0 | 31.0 | 225 | 18.0 | PA66HS | Black (BK) | 2-10 | 111-85480 |

All dimensions in mm. Subject to technical changes.

| Recommended Tools | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2<br>MK20 | 3<br>MK21 | 4<br>MK3SP | 5<br>MK3PNSP2 | 6<br>EVO7 | 7<br>MK7HT | 8<br>MK7P | 9<br>MK6 | 10<br>EVO9 |
| | 545 | 545 | 546 | 546 | 548 | 549 | 550 | 551 | 549 |

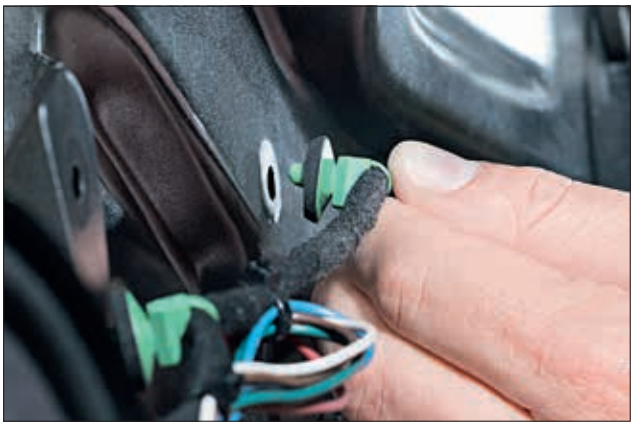
For more information on toolings please refer to the Application Tooling chapter.

## 1-Piece Fixing Ties with Arrowhead, with disc, sealed

The parts are mainly used in the automotive industry, e.g. for door harnesses.

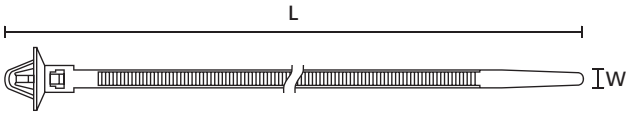
**Features and benefits**

- One-piece fixing ties with cellular rubber disc
- Especially suitable for door and tailgate harnesses used for car body applications
- Made from PA66 heat-stabilised material
- Cellular rubber disc minimises ingress of dust, dirt and water

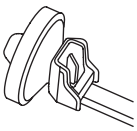


*The additional seal protects against the ingress of moisture.*

### Fixing Ties, sealed, for Round Holes




*One piece fixing tie with arrowhead and disc, standard design*

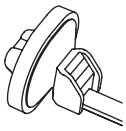


*T50SOSSFT6.5E-MDL*

| TYPE | Hole Ø (FH) | Panel Thickness | Width (W) | Length (L) | Bundle Ø max. | N | Disc Ø | Material | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **T50XROSSFT6.5-E-MDL** | 6.25 - 6.75 | 1.2 - 2.1 | 4.6 | 200.0 | 45.0 | 200 | 16.0 | PA66HS | Black (BK) | 2-10 | 156-00379 |
| **T50SOSSFT6.5E-MS-MD** | 6.25 - 6.75, 6.1 - 6.6 (hexagonal) | 0.7 - 1.6 | 4.6 | 163.0 | 35.0 | 180 | 16.0 | PA66HS | Natural (NA) | 2-10 | 126-00065 |
| **T50SOSSFT6.5E-MDL** | 6.3 - 6.7 | 0.6 - 1.8 | 4.6 | 158.8 | 30.0 | 225 | 16.0 | PA66HS | Green (GN) | 2-10 | 126-03100 |
| | 6.3 - 6.7 | 0.6 - 1.8 | 4.6 | 158.8 | 30.0 | 225 | 16.0 | PA66HS | Black (BK) | 2-10 | 156-00264 |
| | 6.3 - 6.7 | 0.6 - 1.8 | 4.6 | 158.8 | 30.0 | 225 | 16.0 | PA66HS | Natural (NA) | 2-10 | 156-00271 |

All dimensions in mm. Subject to technical changes.

### Fixing Ties, sealed, for Oval Holes



*T60SOSSFT6.5x130E-MD*

**Material specification please see page 26.**

| TYPE | Hole Ø (FH) | Panel Thickness | Width (W) | Length (L) | Bundle Ø max. | N | Disc Ø | Material | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **T60SOSSFT62x122-E-MD** | 6.2 x 12.2 | 0.6 - 2.0 | 5.5 | 157.5 | 30.0 | 300 | 16.0 x 22.0 | PA66HS | Black (BK) | 2-12 | 126-00080 |
| **T60XSOSSFT62X122EMD** | 6.2 x 12.2 | 0.7 - 2.0 | 5.5 | 133.6 | 25.0 | 300 | 16.0 x 22.0 | PA66HS | Black (BK) | 2-12 | 126-00256 |
| **T60SOSSFT65x130-E-MD** | 6.5 x 13.0 | 0.6 - 2.0 | 5.5 | 157.6 | 30.0 | 300 | 16.0 x 22.0 | PA66HS | Natural (NA) | 2-12 | 126-00076 |
| **T60SOSSFT70x120-E-MD** | 7.0 x 12.0 | 0.7 - 2.0 | 5.5 | 157.5 | 30.0 | 300 | 16.0 x 22.0 | PA66HS | Black (BK) | 2-12 | 126-00079 |

All dimensions in mm. Subject to technical changes.

| Recommended Tools | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2<br>MK20 | 3<br>MK21 | 4<br>MK3SP | 5<br>MK3PNSP2 | 6<br>EVO7 | 7<br>MK7HT | 8<br>MK7P | 9<br>MK6 | 10<br>EVO9 | 11<br>EVO9HT | 12<br>MK9P |
| | 545 | 545 | 546 | 546 | 548 | 549 | 550 | 551 | 549 | 549 | 552 |

For more information on toolings please refer to the Application Tooling chapter.

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## 1-Piece Fixing Ties with Arrowhead, with Wings

For bundling and fixing of cable harnesses, pipes and hoses in many different industries, including automotive, aerospace, white goods manufacturing and panel building.

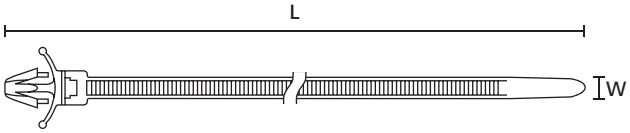
**Features and benefits**

- Easy to assemble without the need for a tool
- Cable tie head always situated in defined position
- Arrowhead simply locks into place
- Supporting legs provide a secure and firm fixing in areas where space is limited

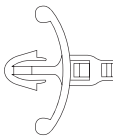
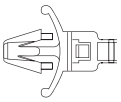
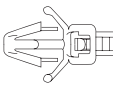
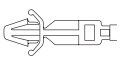


*A wide range of arrowhead fixing ties which are suitable for different panel thicknesses and hole diameters.*

**1-Piece Fixing Ties with Arrowhead, with Wings, for Round Holes**




*T50SSL5*

| TYPE | Drawing | Hole Ø (FH) | Panel Thickness | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **T18RSF** |  | 4.6 - 4.8 | 0.8 - 3.0 | 2.5 | 100.0 | 16.0 | 80 | PA66HS | Natural (NA) | 2;4-6 | 111-85519 |
| | | 4.6 - 4.8 | 0.8 - 3.0 | 2.5 | 100.0 | 16.0 | 80 | PA66UV | Black (BK) | 2;4-6 | 111-85560 |
| | | 4.6 - 4.8 | 1.0 - 3.0 | 2.5 | 100.0 | 16.0 | 80 | PA46 | Grey (GY) | 2;4-6 | 126-00275 |
| **T50SSL5** |  | 6.1 - 6.5 | 0.5 - 2.7 | 4.6 | 135.0 | 27.0 | 200 | PA66HS | Black (BK) | 2-10 | 126-02204 |
| | | 6.1 - 6.5 | 0.5 - 2.7 | 4.6 | 135.0 | 27.0 | 225 | PA46 | Grey (GY) | 2-10 | 111-85395 |
| | | 6.1 - 6.5 | 0.5 - 2.7 | 4.6 | 135.0 | 27.0 | 225 | PA66 | Natural (NA) | 2-10 | 111-85339 |
| **T50SL5-MOD** | | 6.1 | 0.5 - 2.7 | 4.6 | 165.0 | 34.0 | 225 | PA66HIRHS | Black (BK) | 2-10 | 126-00293 |
| **T50SL6** | | 6.3 - 7.5 | 0.5 - 2.5 | 4.6 | 165.0 | 34.0 | 225 | PA66HS | Black (BK) | 2-10 | 111-85360 |
| **T50SL7** | | 6.9 - 7.1 | 0.8 - 2.5 | 4.6 | 165.0 | 34.0 | 225 | PA66 | Natural (NA) | 2-10 | 111-85479 |
| **T50SSFM** |  | 6.0 - 6.6 | 0.7 - 3.0 | 4.6 | 160.0 | 35.0 | 222 | PA66 | Natural (NA) | 2-10 | 111-85739 |
| | | 6.0 - 6.6 | 0.7 - 3.0 | 4.6 | 160.0 | 35.0 | 222 | PA66HS | Black (BK) | 2-10 | 126-00032 |
| | | 6.0 - 6.6 | 0.7 - 3.0 | 4.6 | 160.0 | 35.0 | 222 | PA66HS | Natural (NA) | 2-10 | 126-01104 |
| **T50RSFM** | | 6.0 - 6.6 | 0.7 - 3.0 | 4.6 | 205.0 | 45.0 | 225 | PA66 | Natural (NA) | 2-10 | 111-85729 |
| **OS130** | | 6.8 - 7.2 | 0.6 - 2.6 | 5.0 | 130.0 | 20.0 | 147 | PA66W | Black (BK) | 2-10 | 126-00060 |
| **T50SAH** |  | 6.0 - 6.6 | 0.7 - 3.0 | 4.6 | 160.0 | 25.0 | 225 | PA66HS | Black (BK) | 2-10 | 126-00163 |
| | | 6.0 - 6.6 | 0.7 - 3.0 | 4.6 | 160.0 | 25.0 | 225 | PA66HS | Natural (NA) | 2-10 | 155-41102 |

All dimensions in mm. Subject to technical changes.

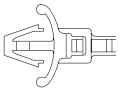
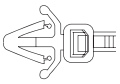
| Recommended Tools | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2<br>MK20 | 3<br>MK21 | 4<br>MK3SP | 5<br>MK3PNSP2 | 6<br>EVO7 | 7<br>MK7HT | 8<br>MK7P | 9<br>MK6 | 10<br>EVO9 |
| | 545 | 545 | 546 | 546 | 548 | 549 | 550 | 551 | 549 |

For more information on toolings please refer to the Application Tooling chapter.

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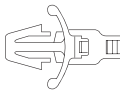
## 1-Piece Fixing Ties with Arrowhead, with Wings

### 1-Piece Fixing Ties with Arrowhead, with wings, releasable, for round holes

| TYPE | Drawing | Hole Ø (FH) | Panel Thickness | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| YQR10016 |  | 6.9 - 7.1 | 1.6 - 4.0 | 4.6 | 165.0 | 34.0 | 225 | PA66 | Grey (GY) | 2-10 | 126-03000 |
| RT50RSF | | 7.8 - 8.2 | 0.8 - 2.5 | 4.6 | 215.0 | 50.0 | 225 | PA66 | Black (BK) | 2-10 | 115-07010 |
| RT50SFK |  | 6.4 - 7.0 | 0.8 - 3.0 | 5.0 | 225.0 | 50.0 | 225 | PA66 | Black (BK) | 2-10 | 115-06960 |

All dimensions in mm. Subject to technical changes.

### 1-Piece Fixing Ties with Arrowhead, with wings, for oval holes

| TYPE | Drawing | Hole Ø (FH) | Panel Thickness | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| T80RFT6X12 |  | 6.3 x 12.3 | 0.6 - 3.0 | 4.6 | 228.0 | 45.0 | 222 | PA46 | Grey (GY) | 2-12 | 150-48397 |
| | | 6.3 x 12.3 | 0.6 - 3.0 | 4.6 | 228.0 | 45.0 | 222 | PA66 | Black (BK) | 2-12 | 150-48396 |

All dimensions in mm. Subject to technical changes.

| Recommended Tools | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2<br>MK20 | 3<br>MK21 | 4<br>MK3SP | 5<br>MK3PNSP2 | 6<br>EVO7 | 7<br>MK7HT | 8<br>MK7P | 9<br>MK6 | 10<br>EVO9 | 11<br>EVO9HT | 12<br>MK9P |
| | 545 | 545 | 546 | 546 | 548 | 549 | 550 | 551 | 549 | 549 | 552 |

For more information on toolings please refer to the Application Tooling chapter.

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## 1-Piece Fixing Ties with Arrowhead

**1-Piece Fixing Ties with Arrowhead, without Wings and Disc, for round holes**

The arrowhead design allows these ties to be used in areas with limited space.

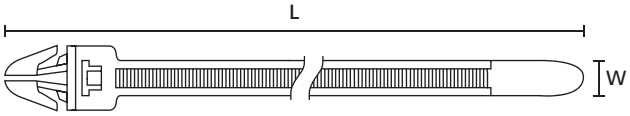
**Features and benefits**

- Easy to assemble without the need for a tool
- Fixing tie with arrowhead without wings
- Arrowhead simply locks into place
- Cable tie head always situated in defined position

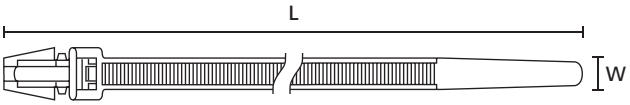
**Material specification please see page 26.**



*The arrowhead design allows these fixing ties to be used in areas with limited space.*




*T30RSF(U)*




*T50RSF(E)*

| TYPE | Hole Ø (FH) | Panel Thickness | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| T30RSF | 4.7 - 5.5 | 0.9 - 2.4 | 3.6 | 158.0 | 32.0 | 135 | PA66HS | Black (BK) | 2;4-6 | 126-00329 |
| | 4.7 - 5.6 | 0.9 - 2.4 | 3.6 | 158.0 | 32.0 | 135 | PA66 | Natural (NA) | 2;4-6 | 126-00330 |
| T50RSF(E) | 6.2 - 6.4 | 2.9 - 3.0 | 4.6 | 210.0 | 44.0 | 225 | PA66 | Natural (NA) | 2-10 | 111-85799 |
| | 6.2 - 6.4 | 2.9 - 3.0 | 4.6 | 210.0 | 44.0 | 225 | PA66 | Black (BK) | 2-10 | 126-01001 |

All dimensions in mm. Subject to technical changes.

| Recommended Tools | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2 MK20 | 3 MK21 | 4 MK3SP | 5 MK3PNSP2 | 6 EVO7 | 7 MK7HT | 8 MK7P | 9 MK6 | 10 EVO9 |
| | 545 | 545 | 546 | 546 | 548 | 549 | 550 | 551 | 549 |

For more information on toolings please refer to the Application Tooling chapter.

For product specific approvals and specifications please refer to the Appendix.

## 1-Piece Fixing Ties with Arrowhead, with Disc

**For temperatures up to +240 °C, for round holes**

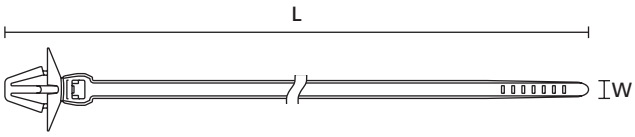
With a diverse range of fixing possibilities these ties are ideal for use in many different industries, including automotive, aerospace, white goods manufacture and panel building.

**Features and benefits**

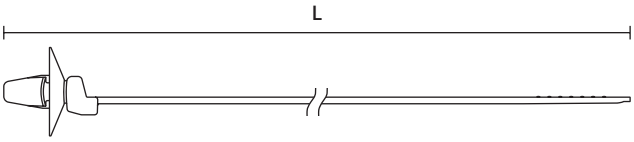
- Easy to install without the need for a tool
- Arrowhead simply locks into place
- Disc adjusts tie for pressures from various directions and minimises access of dust, dirt and water
- Cable tie head always situated in a defined position
- Features Material PEEK
- -55 °C to +240 °C operating temperature
- Excellent resistance against chemicals and gamma radiation



*One piece fixing tie with arrowhead, outside serrated.*




*PT2ASFT6.5PT0.7-1.5-E*




*PT2ASFT6.5PT0.7-1.5-E*

| TYPE | Hole Ø (FH) | Panel Thickness | Width (W) | Length (L) | Bundle Ø max. | N | Disc Ø | Material | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **PT2ASFT6.5PT0.7-1.5-E** | 6.3 - 6.7 | 0.7 - 1.5 | 3.4 | 112.7 | 20.0 | 230 | 16.0 | PEEK | Beige (BGE) | 2;4-6 | 126-00183 |

All dimensions in mm. Subject to technical changes.

| Recommended Tools | | | | |
|---|---|---|---|---|
| | 2<br>MK20 | 4<br>MK3SP | 5<br>MK3PNSP2 | 6<br>EVO7 |
| | 545 | 546 | 546 | 548 |

For more information on toolings please refer to the Application Tooling chapter.

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## 2-Piece Fixing Ties with Arrowhead, with Disc

Primarily designed for fixing cable harnesses in the automotive industry, their simplicity and ease of use has resulted in these parts being used in other industries, for example aviation, switch gear manufacturer, white goods manufacturer.

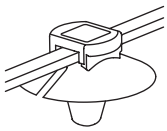
**Features and benefits**

- Pre-assembled 2-piece fixing tie with arrowhead foot part
- Cable tie head can be moved after bundling
- Easy to assemble without the need for a tool
- Arrowhead simply locks into place
- Disc adjusts tie for pressure from various directions

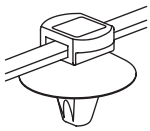


*Being a two piece assembly allows the tie head to be located in the most convenient position.*

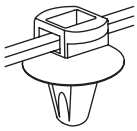
**2-Piece Fixing Ties with Arrowhead, with Disc, for round holes**



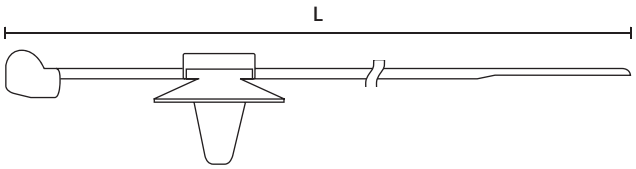
*T50SSFT6.5*



*T50RSFT6.5D18*

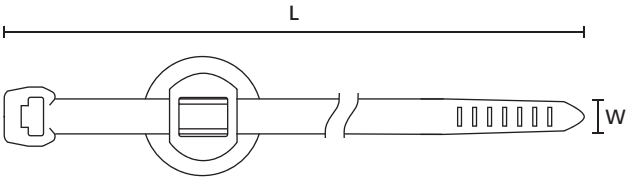


*T50ROSSFT6.5 16-3*




*T50ROSSFT6.5 16-3*

**Material specification please see page 26.**




*T50ROSSFT6.5 16-3*

| TYPE | Hole Ø (FH) | Panel Thickness | Width (W) | Length (L) | Bundle Ø max. | N | Disc Ø | Material Cable Tie | Material Foot Part | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **T50RSFT6.5** | 6.3 - 6.7 | 0.7 - 2.0 | 4.6 | 200.0 | 45.0 | 225 | 22.4 | PA66HS | PA66HS | Black (BK) | 2-10 | 156-01697 |
| **T50SOSSFT65162OD** | 6.3 - 6.7 | 1.5 - 2.2 | 4.6 | 150.0 | 35.0 | 225 | 16.0 | PA66HS | PA66HIRHS | Black (BK) | 2-10 | 150-93130 |
| **T50ROSSFT6.5 16-3** | 6.3 - 6.7 | 2.5 - 3.5 | 4.6 | 200.0 | 45.0 | 225 | 16.0 | PA66HS | PA66HIRHS | Black (BK) | 2-10 | 150-37791 |
| **T50RSFT6.5 16-3** | 6.3 - 6.7 | 2.5 - 3.5 | 4.6 | 200.0 | 49.0 | 222 | 16.0 | PA66HS | PA66HIRHS | Black (BK) | 2-10 | 150-37792 |
| **T50RSFT6.5D18** | 6.5 - 6.8 | 0.4 - 1.6 | 4.6 | 200.0 | 45.0 | 200 | 18.0 | PA66HS | PA66HIRHS | Black (BK) | 2-10 | 150-37691 |
| **T50RDHSFT6.5D18** | 6.5 - 6.8 | 0.4 - 1.6 | 4.7 | 210.0 | 45.0 | 225 | 18.0 | PA66 | PA46 | Natural (NA), Grey (GY) | 2-11;15 | 156-01720 |

All dimensions in mm. Subject to technical changes.

**Recommended Tools**

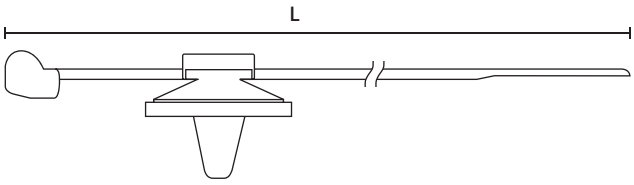
| | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MK20 | MK21 | MK3SP | MK3PNSP2 | EVO7 | MK7HT | MK7P | MK6 | EVO9 | EVO9HT | MK9SST |
| | 545 | 545 | 546 | 546 | 548 | 549 | 550 | 551 | 549 | 549 | 554 |

For more information on toolings please refer to the Application Tooling chapter.

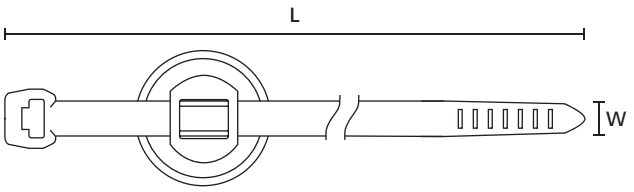
For product specific approvals and specifications please refer to the Appendix.

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## 2-Piece Fixing Ties with Arrowhead, with Disc




*T50ROSSFT6.5-16-2MOD-MD*




*T50ROSSFT6.5-16-2MOD-MD*



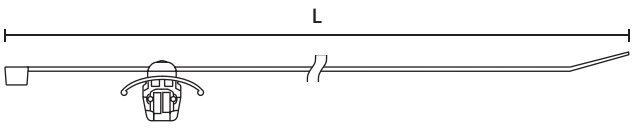
*The additional seal protects against the ingress of moisture.*

### 2-Piece Fixing Ties with Arrowhead, with Disc, for round holes, sealed

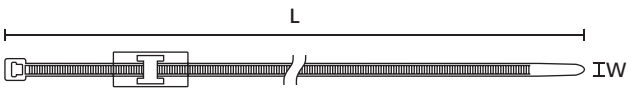
| TYPE | Hole Ø (FH) | Panel Thickness | Width (W) | Length (L) | Bundle Ø max. | N | Disc Ø | Material Cable Tie | Material Foot Part | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T50ROSSFT6.5 16-3MD | 6.1 - 7.0 | 2.5 - 3.0 | 4.6 | 200.0 | 45.0 | 225 | 16.0 | PA66HS | PA66HIRHS | Black (BK) | 2-10 | 150-37799 |
| T50ROSSFT6.5-16-2-MD | 6.3 - 6.7 | 0.7 - 1.2 | 4.6 | 200.0 | 45.0 | 225 | 16.0 | PA66HS | PA66HIRHS | Black (BK) | 2-10 | 155-42002 |
| T50ROSSFT6.5-D16-2 MD | 6.4 - 6.6 | 0.7 - 2.0 | 4.6 | 200.0 | 45.0 | 222 | 22.4 | PA66HS | PA66HIRHS | Black (BK) | 2-10 | 150-93100 |
| T50RAHD6-MS-MD | 6.5 - 7.0 | 0.7 - 1.2 | 4.6 | 202.0 | 50.0 | 225 | 18.0 | PA66HS | PA66HS | Natural (NA) | 2-10 | 156-01193 |

All dimensions in mm. Subject to technical changes.

### 2-Piece Fixing Ties with Arrowhead, with disc for oval holes




*T50RFT62x122*




*T50RFT62x122*



*T50RFT6OVAL for oval holes 6,3 x 12,2 mm.*

| TYPE | Hole Ø (FH) | Panel Thickness | Width (W) | Length (L) | Bundle Ø max. | N | Material Cable Tie | Material Foot Part | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| T50RFT62x122HR | 6.3 x 12.2 | 0.6 - 3.0 | 4.6 | 202.0 | 45.0 | 225 | PA46 | PA46 | Grey (GY) | 2-10 | 156-00446 |
| T50RFT6OVAL | 6.3 x 12.2 | 0.6 - 3.0 | 4.6 | 202.0 | 45.0 | 355 | PA66HS | PA66HIRHS | Black (BK) | 2-10 | 150-37591 |

All dimensions in mm. Subject to technical changes.

Date of issue: January 2019

## 2-Piece Fixing Ties with Arrowhead, with Disc

**2-Piece Fixing Ties with Arrowhead, for parallel routing, for round holes**

**Features and benefits**

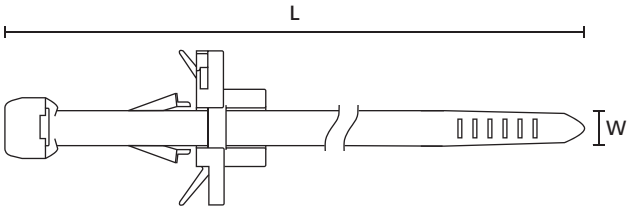
- Pre-assembled 2-piece fixing tie with arrowhead foot part
- Cable tie head can be moved after bundling
- Easy to assemble without the need for a tool
- Arrowhead simply locks into place
- DSFT-version for parallel rounting of two bundles

**Other dimensions are available on request.**

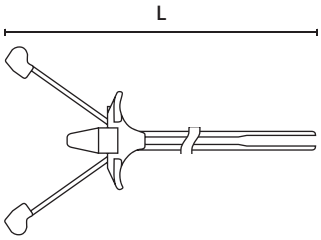
**Material specification please see page 26.**



*T50SOSDSFT6.5 for parallel routing.*




*T50SOSDSFT6.5*




*T50SOSDSFT6.5*

| TYPE | Hole Ø (FH) | Panel Thickness | Width (W) | Length (L) | Bundle Ø max. | N | Material Cable Tie | Material Foot Part | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **T50SOSDSFT6.5** | 6.3 - 6.7 | 0.7 - 1.5 | 4.6 | 150.0 | 15.0 | 225 | PA66HS | PA66HIRHS | Black (BK) | 2-10 | 156-00133 |

All dimensions in mm. Subject to technical changes.

| Recommended Tools | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2<br>MK20 | 3<br>MK21 | 4<br>MK3SP | 5<br>MK3PNSP2 | 6<br>EVO7 | 7<br>MK7HT | 8<br>MK7P | 9<br>MK6 | 10<br>EVO9 |
| | 545 | 545 | 546 | 546 | 548 | 549 | 550 | 551 | 549 |

For more information on toolings please refer to the Application Tooling chapter.

Date of issue: January 2019

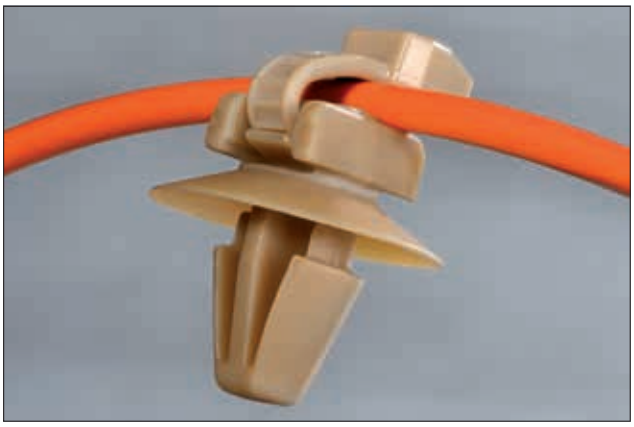
## 2-Piece Fixing Ties with Arrowhead, with Disc

**For temperatures up to +240 °C, PEEK**

Primarily designed for fixing cable harnesses in the automotive industry, their simplicity and ease of use has resulted in these parts being used in other industries, for example aviation, switch gear and white goods manufacturing.

**Features and benefits**

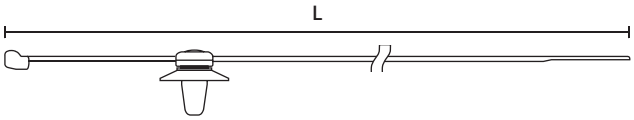
- Pre-assembled 2-piece fixing tie with arrowhead foot part
- Cable tie head can be moved after bundling
- Easy to assemble without the need for a tool
- Arrowhead simply locks into place
- Disc adjusts tie for pressure from various directions and minimises ingress of dust, dirt and water
- Features Material PEEK: -55 °C to +240 °C operating temperature
- Excellent resistance against chemicals and gamma radiation



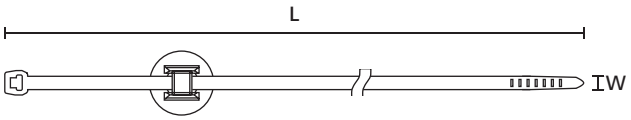
*PEEK fixing ties can be used for small diameters from 1.0 mm.*

**Please find more PEEK products for your system solutions: PEEK Ties, see page 64. Screw Mount CTAM, see page 145.**

*Application video: PEEK*




*PT2AP1SFT6.5*




*PT2AP1SFT6.5*

| TYPE | Hole Ø (FH) | Panel Thickness | Width (W) | Length (L) | Bundle Ø max. | N | Disc Ø | Material | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **T50ROSP1SFT6.5** | 6.3 - 6.7 | 0.7 - 1.3 | 4.6 | 200.0 | 45.0 | 225 | 16.0 | PA46, PEEK | Grey (GY), Beige (BGE) | 2;4-8 | 156-00455 |
| **T50ROSP2SFT6.5** | 6.3 - 6.7 | 1.7 - 2.3 | 4.6 | 200.0 | 45.0 | 225 | 16.0 | PA46, PEEK | Grey (GY), Beige (BGE) | 2;4-8 | 156-00456 |
| **PT2AP1SFT6.5** | 6.3 - 6.7 | 0.7 - 1.3 | 3.4 | 145.0 | 35.0 | 230 | 16.0 | PEEK | Beige (BGE) | 2;4-6 | 156-01090 |
| **PT2AP2SFT6.5** | 6.3 - 6.7 | 1.7 - 2.3 | 3.4 | 145.0 | 35.0 | 230 | 16.0 | PEEK | Beige (BGE) | 2;4-6 | 156-01091 |
| **PT2AP3SFT6.5** | 6.3 - 6.7 | 1.2 - 1.8 | 3.4 | 145.0 | 32.0 | 230 | 16.0 | PEEK | Beige (BGE) | 2;4-6 | 156-01146 |

All dimensions in mm. Subject to technical changes.

| Recommended Tools | | | | | | |
|---|---|---|---|---|---|---|
| | 2 MK20 | 4 MK3SP | 5 MK3PNSP2 | 6 EVO7 | 7 MK7HT | 8 MK7P |
| | 545 | 546 | 546 | 548 | 549 | 550 |

For more information on toolings please refer to the Application Tooling chapter.

Date of issue: January 2019

## 1-Piece Fixing Ties with Fir Tree, with Disc

### 1-Piece Fixing Ties with Fir Tree, with Disc, for Round Holes

Primarily designed for fixing cable harnesses in the automotive industry, their simplicity and ease of use has resulted in these parts being used in other industries, for example aviation, switch gear and white goods manufacturing.

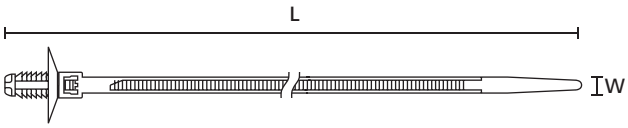
**Features and benefits**

- Cable tie head always situated in defined position
- Easy to assemble without the need for a tool
- Disc adjusts tie for pressure from various directions and minimises ingress of dust, dirt and water
- Fir tree foot part can be used for a variety of panel thicknesses
- Suitable for use within threaded holes

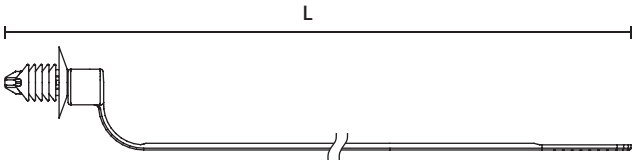


*Fir tree foot parts can be used for a variety of panel thicknesses.*

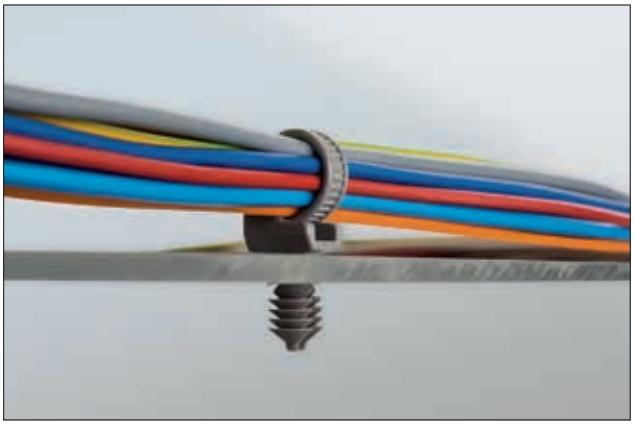
**Material specification please see page 26.**



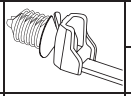
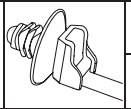
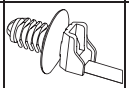
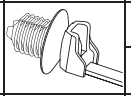
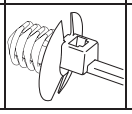

*One piece fixing tie with fir tree mount, standard design*




*Special design without a gap between head and bundle; FT220DP7*



*T50SOSFT6D10E - One piece fixing tie with fir tree foot part.*

| TYPE | Drawing | Hole Ø (FH) | Panel Thickness | Width (W) | Bundle Ø max. | N | Disc Ø | Material | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **T50SOSFT6D10E** |  | 5.8 - 6.2 | 0.8 - 5.5 | 4.6 | 32.0 | 225 | 9.8 | PA46 | Grey (GY) | 2-10 | 157-00028 |
| | | 5.8 - 6.2 | 0.8 - 5.5 | 4.6 | 32.0 | 225 | 9.8 | PA66HS | Black (BK) | 2-10 | 157-00045 |
| **T50SOSFT6-E2** |  | 6.3 - 7.0 | 0.6 - 4.2 | 4.6 | 35.0 | 180 | 16.0 | PA66HS | Black (BK) | 2-10 | 157-00085 |
| | | 6.3 - 7.0 | 0.6 - 4.2 | 4.6 | 35.0 | 180 | 16.0 | PA66HS | Grey (GY) | 2-10 | 157-00198 |
| **T50SOSFT6LGE** |  | 6.3 - 7.0 | 0.7 - 7.0 | 4.6 | 35.0 | 180 | 16.0 | PA66HS | Black (BK) | 2-10 | 157-00228 |
| **T50SOSFT8E** |  | 8.0 - 8.5 | 0.6 - 6.0 | 4.6 | 35.0 | 225 | 16.0 | PA46 | Grey (GY) | 2-10 | 157-00115 |
| | | 8.0 - 8.5 | 0.6 - 6.0 | 4.6 | 35.0 | 225 | 16.0 | PA66HS | Black (BK) | 2-10 | 157-00072 |
| **T18RDP5** |  | 4.9 - 5.1 | 3.0 - 4.0 | 2.5 | 20.0 | 80 | 13.0 | PA66 | Black (BK) | 2;4-6 | 150-55610 |

All dimensions in mm. Subject to technical changes.

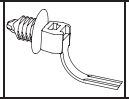
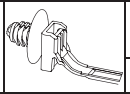
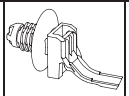
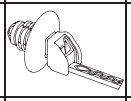
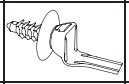
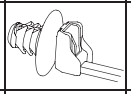
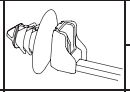
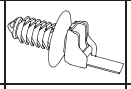
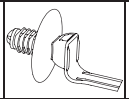
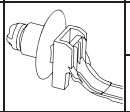
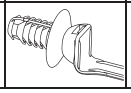
| Recommended Tools | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2<br>MK20 | 3<br>MK21 | 4<br>MK3SP | 5<br>MK3PNSP2 | 6<br>EVO7 | 7<br>MK7HT | 8<br>MK7P | 9<br>MK6 | 10<br>EVO9 | 11<br>EVO9HT | 12<br>MK9P |
| | 545 | 545 | 546 | 546 | 548 | 549 | 550 | 551 | 549 | 549 | 552 |

For more information on toolings please refer to the Application Tooling chapter.

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## 1-Piece Fixing Ties with Fir Tree, with Disc

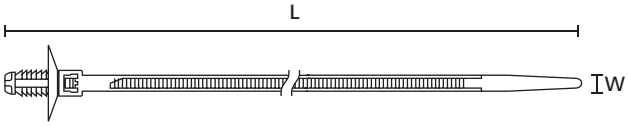
### 1-Piece Fixing Ties with Fir Tree, with Disc, for Round Holes

| TYPE | Drawing | Hole Ø (FH) | Panel Thickness | Width (W) | Bundle Ø max. | N | Disc Ø | Material | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| FT220DP7 |  | 6.8 - 7.2 | 0.8 - 5.0 | 4.7 | 40.0 | 225 | 16.0 | PA66 | Black (BK) | 2-12 | 150-01700 |
| OS160FT6HEX |  | 6.35 (hexagonal) | 0.7 - 5.0 | 5.3 | 30.0 | 200 | 16.0 | PA66 | Black (BK) | 3;9-12 | 157-00080 |
| | | 6.5 | 0.7 - 5.0 | 5.3 | 30.0 | 200 | 16.0 | PA66HS | Black (BK) | 3;9-12 | 157-00081 |
| OS170-FT7-LH |  | 6.8 - 7.2 | 0.6 - 4.5 | 5.3 | 30.0 | 147 | 16.0 | PA66 | Black (BK) | 3;9-12 | 157-00019 |
| T30SOS-AS-FT6-E |  | 6.3 - 6.7 | 0.6 - 4.0 | 3.5 | 25.0 | 200 | 16 | PA66HS | Black (BK) | 2;4-6 | 157-00243 |
| T50ROSFTQM6 |  | 6.1 | 0.6 - 7.0 | 5.1 | 50.0 | 225 | 7.9 | PA66HIRHSUV | Black (BK) | 2-10 | 157-00112 |
| T50SOSFT6-E3 |  | 6.1 - 6.9 | 0.7 - 3.5 | 4.7 | 35.0 | 150 | 16 | PA66HIRHS | Black (BK) | 2-10 | 157-00241 |
| T50SOSFT6E1 |  | 6.3 - 7.0 | 0.7 - 3.0 | 4.7 | 35.0 | 150 | 16.0 | PA66HIRHS | Black (BK) | 2-10 | 157-00033 |
| | | 6.3 - 7.0 | 0.7 - 3.0 | 4.7 | 35.0 | 225 | 16.0 | PA46 | Grey (GY) | 2-10 | 157-00059 |
| T50SOSFT6LG-E2 |  | 6.1 - 6.9, 6.1 - 6.6 (hexagonal) | 0.6 - 8.3 | 4.6 | 35.0 | 180 | 16.0 | PA66HIRHS | Black (BK) | 2-10 | 157-00242 |
| T50SOSFT6LG-E4 |  | 6.3 - 7.0 | 0.8 - 7.0 | 4.9 | 31.0 | 200 | 22.0 | PA66HS | Black (BK) | 2-10 | 157-00237 |
| OS180FT7LH |  | 6.5 - 7.0, 6.35 | 0.6 - 4.5 | 5.3 | 30.0 | 200 | 16.0 | PA66 | Black (BK) | 3;9-12 | 157-00070 |
| | | 6.5 - 7.0, 6.35 | 0.6 - 4.5 | 5.3 | 30.0 | 200 | 16.0 | PA66 | Grey (GY) | 3;9-12 | 157-00068 |
| T50ROSFT6LGU |  | 6.5 - 7.2 | 0.6 - 8.5 | 5.1 | 50.0 | 225 | 15.9 | PA66HS | Black (BK) | 2-10 | 157-00052 |

All dimensions in mm. Subject to technical changes.

## 1-Piece Fixing Ties with Fir Tree, with Disc

### 1-Piece Fixing Ties with Fir Tree, with Disc, releasable, for round holes




*One piece fixing tie with fir tree mount, standard design*

**Material specification please see page 26.**

| TYPE | Hole Ø (FH) | Panel Thickness | Width (W) | Length (L) | Bundle Ø max. | N | Disc Ø | Material | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| REL30SDP6 | 6.3 - 7.1 | 3.0 - 7.0 | 5.0 | 170.0 | 31.0 | 135 | 22.0 | PA66 | Black (BK) | 2;4-6 | 150-55500 |

All dimensions in mm. Subject to technical changes.

| Recommended Tools | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2 MK20 | 3 MK21 | 4 MK3SP | 5 MK3PNSP2 | 6 EVO7 | 7 MK7HT | 8 MK7P | 9 MK6 | 10 EVO9 | 11 EVO9HT | 12 MK9P |
| | 545 | 545 | 546 | 546 | 548 | 549 | 550 | 551 | 549 | 549 | 552 |

For more information on toolings please refer to the Application Tooling chapter.

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## 1-Piece Fixing Ties with Fir Tree and Disc, with Stand-off, for Round Holes

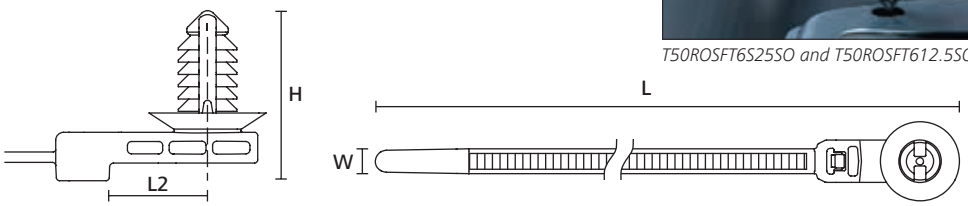
**With Offset 12.5 and 25.0 mm**

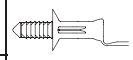
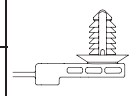
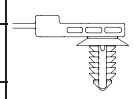
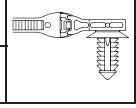


*T50ROSFT6S25SO and T50ROSFT612.5SO.*

**Features and benefits**

- Bundling and fixing solution
- Ideal combination of materials and design
- Different positions of the fixing anchor are available to fit installation space
- 1-piece fixing tie with defined offset 12.5 and 25.0 mm




| TYPE | Drawing | Hole Ø (FH) | Panel Thickness | Width (W) | Length (L) | Length (L2) | Bundle Ø max. | N | Material | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T50ROS FT612.5SO |  | 6.1 - 6.9 | 0.5 - 6.7 | 5.1 | 234.2 | 12.5 | 50.0 | 222 | PA66HIRHS | Black (BK) | 2-10 | 157-00216 |
| T50ROS FT6S25SO | | 6.1 - 6.9 | 0.6 - 3.8 | 5.1 | 242.2 | 25.0 | 50.0 | 220 | PA66HIRHS | Black (BK) | 2-10 | 157-00197 |
| T50ROS FT825SO | | 7.6 - 8.4 | 0.6 - 6.5 | 5.1 | 245.1 | 25.0 | 50.0 | 220 | PA66HIRHS | Black (BK) | 2-10 | 157-00196 |
| T50ROS FT6SO25A |  | 6.1 - 6.6, 6.1 - 7.1 | 0.5 - 6.7 | 5.1 | 230.0 | 25.0 | 50.0 | 222 | PA66HIRHS | Grey (GY) | 2-10 | 157-00119 |
| T50ROS FT6SO12.5A | | 6.1 - 6.6, 6.1 - 7.1 | 0.6 - 6.7 | 5.1 | 215.5 | 12.5 | 50.0 | 222 | PA66HIRHS | Grey (GY) | 2-10 | 157-00130 |
| | | 6.1 - 6.6, 6.1 - 7.1 | 0.6 - 6.7 | 5.1 | 215.5 | 12.5 | 50.0 | 222 | PA66HIRHS | Black (BK) | 2-10 | 157-00145 |
| T50ROS FT6SO25A | | 6.1 - 6.6, 6.1 - 7.1 | 0.6 - 6.7 | 5.1 | 230.0 | 25.0 | 50.0 | 222 | PA46 | Brown (BN) | 2-10 | 157-00158 |
| T50ROS FT8SO25A | | 7.6 - 8.4 | 0.6 - 6.7 | 5.1 | 230.0 | 25.0 | 50.0 | 222 | PA66HIRHS | Grey (GY) | 2-10 | 157-00120 |
| T50ROS FTM6SO12.5A | | M6 Threaded | 0.6 - 5.5 | 5.1 | 215.5 | 12.5 | 50.0 | 222 | PA66HIRHS | Grey (GY) | 2-10 | 157-00118 |
| T50ROS FT6SO12.5B |  | 6.1 - 7.0 | 0.5 - 6.7 | 5.1 | 215.5 | 12.5 | 50.0 | 222 | PA66HIRHS | Black (BK) | 2-10 | 157-00171 |
| T50ROS FT6SO25B | | 6.1 - 7.0 | 0.5 - 6.7 | 5.1 | 230.0 | 25.0 | 50.0 | 222 | PA66HIRHS | Black (BK) | 2-10 | 157-00169 |
| T50ROS FT8SO25B | | 7.6 - 8.4 | 0.5 - 6.7 | 19.0 | 230.0 | 25.0 | 50.0 | 225 | PA66HIRHS | Black (BK) | 2-10 | 157-00170 |
| T50ROS FTM6SO12.5B | | M6 | 0.5 - 6.7 | 15.0 | 215.5 | 12.5 | 5.5 | 225 | PA66HIRHS | Black (BK) | 2-10 | 157-00131 |
| T50ROS FTM6SO25B | | M6 Threaded | 0.5 - 6.7 | 19.0 | 230.0 | 25.0 | 6.5 | 220 | PA66HIRHS | Black (BK) | 2-10 | 157-00172 |
| T50ROS FT6SO12.5R |  | 6.1 - 7.0 | 0.6 - 8.3 | 5.1 | 223.1 | 12.5 | 50.0 | 222 | PA66HIRHS | Black (BK) | 2-10 | 157-00165 |
| T50ROS FT6SO25R | | 6.1 - 7.0 | 0.6 - 8.3 | 5.1 | 237.7 | 25.0 | 50.0 | 222 | PA66HIRHS | Black (BK) | 2-10 | 157-00164 |

All dimensions in mm. Subject to technical changes.

| Recommended Tools | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2 MK20 | 3 MK21 | 4 MK3SP | 5 MK3PNSP2 | 6 EVO7 | 7 MK7HT | 8 MK7P | 9 MK6 | 10 EVO9 |
| | 545 | 545 | 546 | 546 | 548 | 549 | 550 | 551 | 549 |

For more information on toolings please refer to the Application Tooling chapter.

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## 2-Piece Fixing Ties with Fir Tree, with Disc, for Round Holes

Primarily designed for fixing cable harnesses in the automotive industry, their simplicity and ease of use has resulted in these parts being used in other industries, for example aviation, switch gear manufacturer, white goods manufacturer.

**Features and benefits**

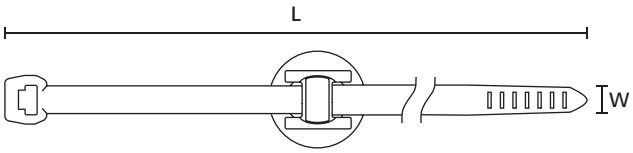
- Pre-assembled 2-piece fixing tie with fir tree foot part
- Cable tie head can be moved after bundling
- Easy to assemble without the need for a tool
- Disc adjusts tie for pressure from various directions and minimises ingress of dust, dirt and water
- Fir tree foot part can be used for a variety of panel thicknesses
- Suitable for use within threaded holes



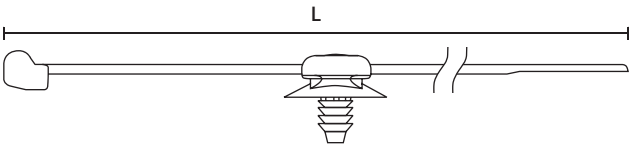
*These fir tree fixings can also be used in threaded, blind holes.*

**Material specification please see page 26.**

**Other dimensions are available on request.**




*T50SOSFT5SD*



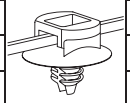
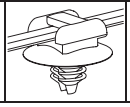

*T50SOSFT5SD*

### Fir Tree Parts FT3

| TYPE | Hole Ø (FH) | Panel Thickness | Width (W) | Bundle Ø max. | N | Disc Ø | Material Cable Tie | Material Foot Part | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **T18RFT3** | M3 | 1.5 - 3.0 | 2.5 | 20.0 | 80 | 13 | PA66HSUV | PA66HSW | Black (BK) | 2;4-6 | 156-00338 |

All dimensions in mm. Subject to technical changes.

### Fir Tree Parts FT5

| TYPE | Drawing | Hole Ø (FH) | Panel Thickness | Width (W) | Length (L) | Bundle Ø max. | N | Disc Ø | Material Cable Tie | Material Foot Part | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **T30RFT5** |  | 4.5 - 5.0 | 0.7 - 3.0 | 3.5 | 150.0 | 34.0 | 135 | 16.0 | PA46 | PA46 | Grey (GY) | 2;4-6 | 156-01316 |
| **T50SOSFT5** | | 4.5 - 5.0 | 0.7 - 3.0 | 4.6 | 150.0 | 31.0 | 225 | 16.0 | PA66HS | PA66HIRHS | Black (BK) | 2-10 | 156-06200 |
| **T30RFT5** | | 4.5 - 5.0 | 0.7 - 3.0 | 3.5 | 150.0 | 34.0 | 135 | 16.0 | PA66HS | PA66HIRHS | Black (BK) | 2;4-6 | 150-55850 |
| **T50RFT5** | | 4.5 - 5.0 | 0.7 - 3.0 | 4.6 | 200.0 | 45.0 | 225 | 16.0 | PA66HS | PA66HIRHS | Black (BK) | 2-10 | 156-00025 |
| **T18RFT5** | | 4.5 - 5.0 | 0.7 - 3.0 | 2.5 | 100.0 | 22.0 | 80 | 16.0 | PA66HS | PA66HIRHS | Black (BK) | 2;4-6 | 156-01225 |
| **T50SOS FT5SD** |  | 4.5 - 5.0 | 0.7 - 3.0 | 4.6 | 150.0 | 35.0 | 225 | 16.0 | PA66HS | PA66HIRHS | Black (BK) | 2-10 | 156-00432 |

All dimensions in mm. Subject to technical changes.

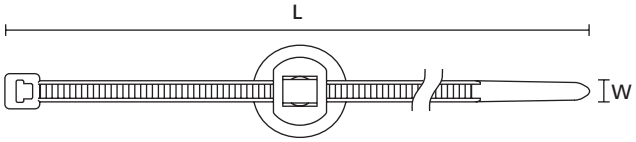
| Recommended Tools | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2 MK20 | 3 MK21 | 4 MK3SP | 5 MK3PNSP2 | 6 EVO7 | 7 MK7HT | 8 MK7P | 9 MK6 | 10 EVO9 |
| | 545 | 545 | 546 | 546 | 548 | 549 | 550 | 551 | 549 |

For more information on toolings please refer to the Application Tooling chapter.

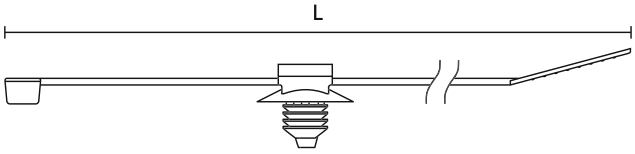
Date of issue: January 2019

## 2-Piece Fixing Ties with Fir Tree, with Disc, for Round Holes

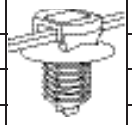
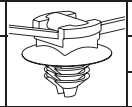
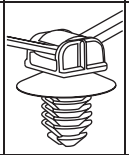
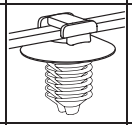
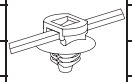
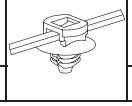
**Fir Tree Parts FT6**




*T30RFT6*




*T30RFT6*

| TYPE | Drawing | Hole Ø (FH) | Panel Thickness | Width (W) | Length (L) | Bundle Ø max. | N | Disc Ø | Material Cable Tie | Material Foot Part | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PT2AFT6LG** |  | 6.4 - 7.1 | 0.8 - 6.0 | 3.4 | 145.0 | 35.0 | 230 | 16.0 | PEEK | PA46 | Beige (BGE), Grey (GY) | 2;4-6 | 156-01336 |
| **T30RFT6LG** | | 6.4 - 7.1 | 0.8 - 6.0 | 3.5 | 150.0 | 30.0 | 135 | 16.0 | PA66HS | PA66HIRHS | Black (BK) | 2;4-6 | 150-31090 |
| **T50ROSFT6LG** | | 6.4 - 7.1 | 0.8 - 6.0 | 4.6 | 200.0 | 45.0 | 225 | 16.0 | PA66HS | PA66HIRHS | Black (BK) | 2;4-8 | 150-31099 |
| **T50RFT6LG** | | 6.4 - 7.1 | 0.8 - 6.0 | 4.6 | 202.0 | 45.0 | 225 | 16.0 | PA66HS | PA66HIRHS | Black (BK) | 2-10 | 150-31091 |
| **T80IFT6LG** | | 6.4 - 7.1 | 0.8 - 6.0 | 4.6 | 300.0 | 81.0 | 356 | 16.0 | PA66HS | PA66HIRHS | Black (BK) | 2-12 | 150-31096 |
| **T30RFT6SD** |  | 6.4 - 7.1 | 0.8 - 3.0 | 3.6 | 148.0 | 35.0 | 135 | 16.0 | PA66HS | PA66HIRHS | Black (BK) | 2;4-6 | 150-52690 |
| **T50ROS FT6SD** | | 6.4 - 7.1 | 0.8 - 3.0 | 4.6 | 200.0 | 45.0 | 225 | 16.0 | PA46 | PA46 | Grey (GY) | 2-10 | 156-00085 |
| | | 6.4 - 7.1 | 0.8 - 3.0 | 4.6 | 200.0 | 46.0 | 225 | 16.0 | PA66HS | PA66HIR | Black (BK) | 2-10 | 156-05902 |
| **T50RFT6 LGSD-HEX** |  | 6.25 - 6.75, 6.1 - 6.6 (hexagonal) | 0.7 - 5.0 | 4.6 | 202.0 | 45.0 | 225 | 16.0 | PA66HS | PA66HIRHS | Black (BK) | 2-10 | 156-01705 |
| **T50SFT6 LG1SD** |  | 6.5 - 7.0 | 0.6 - 6.0 | 4.6 | 160.0 | 30.0 | 225 | 16.0 | PA66HS | PA66HIRHS | Black (BK) | 2-10 | 156-00154 |
| **T30RFT6** |  | 6.4 - 7.1 | 0.8 - 3.0 | 3.5 | 150.0 | 30.0 | 135 | 16.0 | PA66HS | PA66HIRHS | Black (BK) | 2;4-6 | 150-77950 |
| **T50ROSFT6** | | 6.4 - 7.1 | 0.8 - 3.0 | 4.6 | 200.0 | 45.0 | 225 | 16.0 | PA66HS | PA66HIRHS | Black (BK) | 2-10 | 156-00076 |
| **T50RFT6** | | 6.4 - 7.1 | 0.8 - 3.0 | 4.6 | 202.0 | 45.0 | 225 | 16.0 | PA66HS | PA66 | Black (BK) | 2-10 | 150-77941 |
| **T50RDHFT6** | | 6.4 - 7.1 | 0.8 - 3.0 | 4.7 | 210.0 | 19.0 | 180 | 16.0 | PA66HS | PA66HIRHS | Black (BK) | 2-10 | 150-77936 |
| **PT2AFT6** |  | 6.4 - 7.1 | 0.8 - 3.0 | 3.4 | 145.0 | 35.0 | 230 | 16.0 | PEEK | PA46 | Beige (BGE), Grey (GY) | 2;4-6 | 156-00890 |
| **T50RFT6** | | 6.4 - 7.1 | 0.8 - 3.0 | 4.6 | 202.0 | 45.0 | 225 | 16.0 | PA46 | PA46 | Grey (GY) | 2-10 | 156-01693 |

All dimensions in mm. Subject to technical changes.

| Recommended Tools | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2 MK20 | 3 MK21 | 4 MK3SP | 5 MK3PNSP2 | 6 EVO7 | 7 MK7HT | 8 MK7P | 9 MK6 | 10 EVO9 | 11 EVO9HT | 12 MK9P |
| | 545 | 545 | 546 | 546 | 548 | 549 | 550 | 551 | 549 | 549 | 552 |

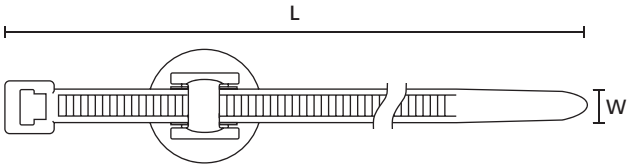
For more information on toolings please refer to the Application Tooling chapter.

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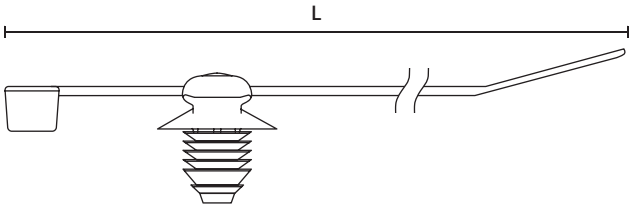
## 2-Piece Fixing Ties with Fir Tree, with Disc, for Round Holes

**Fir Tree Parts FT7 - FT10**

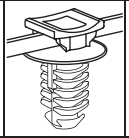
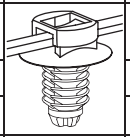
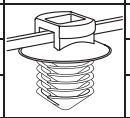
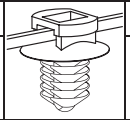
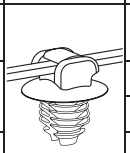
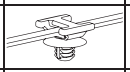
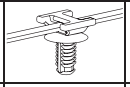
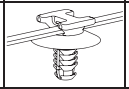
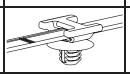
**Material specification please see page 26.**




*T50RFT8GSD*




*T50RFT8GSD*

| TYPE | Drawing | Hole Ø (FH) | Panel Thickness | Width (W) | Length (L) | Bundle Ø max. | N | Disc Ø | Material Cable Tie | Material Foot Part | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **T120IFT9** |  | 9.0 - 10.6 | 5.0 - 11.0 | 7.6 | 300.0 | 80.0 | 535 | 20.0 | PA66HIR(S) | PA66HIR(S) | Black (BK) | 3;9-12 | 156-00200 |
| **T30RFT7** |  | 6.5 - 7.0 | 0.8 - 7.0 | 3.5 | 150.0 | 35.0 | 135 | 16.0 | PA66HS | PA66HS | Black (BK) | 2;4-6;8 | 156-00057 |
| **T50RFT7** | | 6.5 - 7.0 | 0.8 - 7.0 | 4.6 | 200.0 | 45.0 | 225 | 16.0 | PA66HS | PA66HS | Black (BK) | 2-10 | 111-85871 |
| **T50IFT7** | | 6.5 - 7.0 | 0.8 - 7.0 | 4.6 | 300.0 | 81.0 | 225 | 16.0 | PA66HS | PA66HS | Black (BK) | 2-10 | 150-00700 |
| **V150RFT10** |  | 9.7 - 10.0 | 0.8 - 5.0 | 3.3 | 150.0 | 35.0 | 150 | 18.0 | PA66 | PA66HS | Black (BK) | 2;4-6 | 156-01233 |
| **T50ROSFT10** | | 9.7 - 10.0 | 0.8 - 5.0 | 4.6 | 200.0 | 45.0 | 225 | 18.0 | PA66HS | PA66HS | Black (BK) | 2-10 | 156-00120 |
| **T50RFT10** | | 9.7 - 10.0 | 0.8 - 5.0 | 4.6 | 200.0 | 45.0 | 225 | 18.0 | PA66HS | PA66HS | Black (BK) | 2-10 | 111-85810 |
| **T50RFT8** |  | 7.7 - 8.0 | 0.8 - 6.0 | 4.6 | 202.0 | 45.0 | 225 | 16.0 | PA66HS | PA66HS | Black (BK) | 2-10 | 111-85880 |
| **T50RDHFT8** | | 7.7 - 8.0 | 0.8 - 6.0 | 4.7 | 210.0 | 19.0 | 180 | 16.0 | PA66 | PA66 | Black (BK) | 2-10 | 156-01612 |
| **T40RFT8 GSD** |  | 8.0 - 8.5 | 1.5 - 4.0 | 4.0 | 180.0 | 40.0 | 180 | 16.0 | PA66HS | PA66HIRHS | Black (BK) | 2;4-8 | 156-00104 |
| **T50RFT8 GSD** | | 8.0 - 8.5 | 1.5 - 4.0 | 4.6 | 202.0 | 45.0 | 225 | 16.0 | PA66HS | PA66HIRHS | Black (BK) | 2-10 | 133-00034 |
| | | 8.0 - 8.5 | 1.5 - 4.0 | 4.6 | 202.0 | 45.0 | 225 | 16.0 | PA46 | PA46 | Grey (GY) | 2-10 | 156-00235 |
| **T50ROS FT8GSD** | | M10 | 1.1 - 1.5 | 4.6 | 200.0 | 45.0 | 225 | 16.0 | PA66 | PA66 | Black (BK) | 2-10 | 156-01484 |
| **T120RFT9A** |  | 8.7 - 9.2 | 1.0 - 6.5 | 7.6 | 380.0 | 100.0 | 535 | 21.6 | PA66HS | PA66 HIRHSUV | Black (BK) | 3;9-11;15 | 156-00067 |
| **T120RFT9B** |  | 8.7 - 9.2 | 1.0 - 15.8 | 7.6 | 380.0 | 100.0 | 535 | 21.6 | PA66HS | PA66 HIRHSUV | Black (BK) | 3;9-11;15 | 156-00071 |
| **T50RFT7HD** |  | 6.2 - 7.2 | 0.8 - 7.0 | 4.6 | 200.0 | 45.0 | 225 | 21.6 | PA46 | PA46 | Brown (BN) | 2-10 | 156-00457 |
| **WSSFT9A** |  | 8.7 - 9.2 | 1.0 - 6.5 | 12.7 | 228.0 | 57.0 | 535 | 21.6 | PA66 HIRHSUV | PA66 HIRHSUV | Black (BK) | 3;9-12 | 156-00068 |

All dimensions in mm. Subject to technical changes.

| Recommended Tools | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 15 |
| | MK20 | MK21 | MK3SP | MK3PNSP2 | EVO7 | MK7HT | MK7P | MK6 | EVO9 | EVO9HT | MK9P | MK9SST |
| | 545 | 545 | 546 | 546 | 548 | 549 | 550 | 551 | 549 | 549 | 552 | 554 |

For more information on toolings please refer to the Application Tooling chapter.

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## 2-Pieces Fixing Ties with Deep Hole Anchor, with Disc, for Round Holes

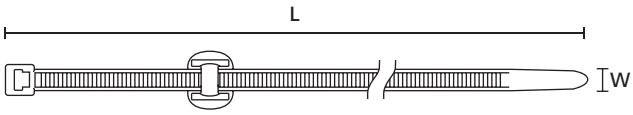
**Deep Hole Anchor DHA5.5 - DHA8.4**

### Features and benefits

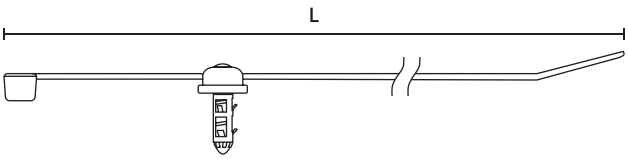
- Pre-assembled 2-piece fixing tie with deep hole anchor
- The high 'pull off' forces are due to the integrated metal clamp
- Cable tie head can be moved after bundling
- Easy to assemble without the need for a tool
- Disc adjusts tie for pressure from various directions and minimises ingress of dust, dirt and water
- Suitable for use within blind holes with or without thread



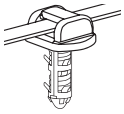
*DHA5.5x15 and DHA8.4x20 for blind hole applications.*




*Fixing tie with deep hole anchor*




*Fixing tie with deep hole anchor*

| TYPE | Drawing | Hole Ø (FH) | Panel Thickness | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **T50RDHA5.5x15** |  | 5.4 - 5.6 | 15.0 | 4.6 | 202.0 | 45.0 | 225 | PA46 | Grey (GY) | 2-10 | 156-01203 |
| **T50RDHA8.4x20** | | 8.3 - 8.5 | 20.0 | 4.6 | 202.0 | 45.0 | 225 | PA46 | Grey (GY) | 2-10 | 156-01155 |

All dimensions in mm. Subject to technical changes.

| Recommended Tools | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2<br>MK20 | 3<br>MK21 | 4<br>MK3SP | 5<br>MK3PNSP2 | 6<br>EVO7 | 7<br>MK7HT | 8<br>MK7P | 9<br>MK6 | 10<br>EVO9 |
| | 545 | 545 | 546 | 546 | 548 | 549 | 550 | 551 | 549 |

For more information on toolings please refer to the Application Tooling chapter.

## 1-Piece Fixing Ties for Weld Studs

**For cable routing above the stud**

Primarily designed for use in the automotive industry, these parts can be used in a wide variety of applications where 5 mm/8 mm weld studs or 5 mm/8 mm ISO bolts are used and cables need to be bundled and secured. (WS series,T120RSM, DCT9 and DCT 11 are for 1/4" bolts)

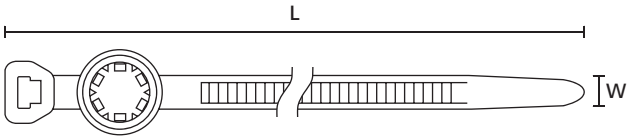
**Features and benefits**

- Cable tie head always situated in defined position
- Easy to assemble without the need for a tool
- Bundle runs directly above weld stud with defined stand-off from the panel

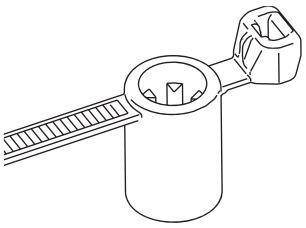


*The T50SSBS5OT-E / T50SSBS6OT-E allows very precise routing of cable bundles.*

**Material specification please see page 26.**




*T50SSBS6OT-E*



*T50SSBS50TE*

| TYPE | Stud Ø | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **T50SSBS5OT-E** | 5.0 | 4.6 | 160.0 | 35.0 | 200 | PA66HS | Black (BK) | 2-10 | 155-30602 |
| **T50SSBS6OT-E** | 6.0 | 4.6 | 160.0 | 35.0 | 200 | PA66HS | Black (BK) | 2-10 | 157-00083 |

All dimensions in mm. Subject to technical changes.

| Recommended Tools | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2<br>MK20 | 3<br>MK21 | 4<br>MK3SP | 5<br>MK3PNSP2 | 6<br>EVO7 | 7<br>MK7HT | 8<br>MK7P | 9<br>MK6 | 10<br>EVO9 |
| | 545 | 545 | 546 | 546 | 548 | 549 | 550 | 551 | 549 |

For more information on toolings please refer to the Application Tooling chapter.

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## 1-Piece Fixing Ties for Weld Studs

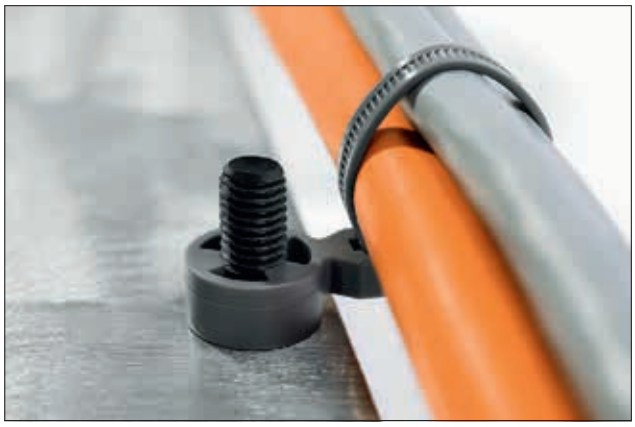
**For cable routing alongside the stud**

**Features and benefits**

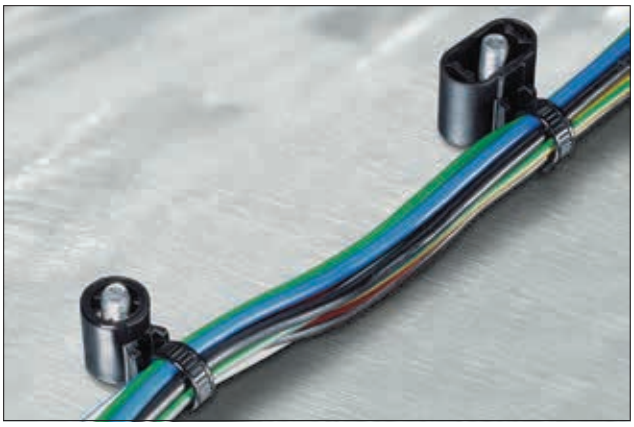
- Cable tie head always situated in defined position
- Easy to install without the need for a tool
- Bundles are routed very close to stud



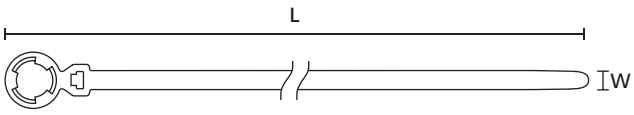
*T50SOSSBD-M8/10.*



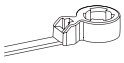
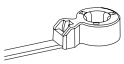
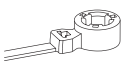
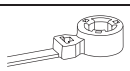
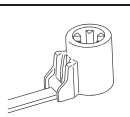
*T50SOSSBU-M8/10 for bundles which run below the stud.*



*This outside serrated cable tie with weld stud mounting keeps the cables close to the fixing stud.*




*T50SOSSBD-M8/M10*

| TYPE | Drawing | Stud Ø | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **T50SOSSBU-M6** |  | M6 | 5.7 | 175.0 | 30.0 | 150 | PA66HSW | Grey (GY) | 2-10 | 157-00065 |
| **T50SOSSBD-M10** | | M10 | 5.7 | 175.0 | 30.0 | 150 | PA66HSW | Black (BK) | 2-10 | 157-00040 |
| **T50SOSSBD-M8** |  | M8 | 5.7 | 175.0 | 30.0 | 150 | PA66HSW | Black (BK) | 2-10 | 157-00039 |
| **T50SOSSBU-M10** |  | 10.0 | 5.7 | 175.0 | 30.0 | 150 | PA66HSW | Grey (GY) | 2-10 | 157-00067 |
| **T50SOSSBU-M8** |  | M8 | 5.7 | 175.0 | 30.0 | 150 | PA66HSW | Grey (GY) | 2-10 | 157-00066 |
| **T50SOSSBS5E-2** |  | 5.0 | 4.7 | 161.0 | 35.0 | 225 | PA66HS | Black (BK) | 2-10 | 157-00252 |

All dimensions in mm. Subject to technical changes.

Date of issue: January 2019

## 1-Piece Fixing Ties for Weld Studs, moveable

**T50SOSWSP5E-2 for 5 mm studs, retainer height 3.5 mm**

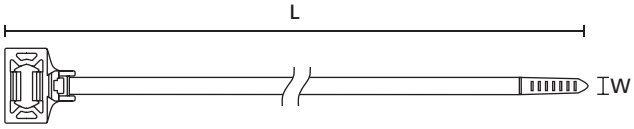
Primarily designed for use in the automotive industry, these parts can be used in a wide variety of applications, e. g. where weld studs or ISO bolts are used and cables need to be bundled and secured. (WS series, DCT9 & DCT 11 are for 1/4" bolts)

**Features and benefits**

- Cable tie head always situated in defined position
- Easy to install without the need for a tool
- Provides 5 – 6 mm lateral adjustment
- Very low profile, stackable design
- For parallel routing of several bundles



*T50SOSWSP5E, parallel installation using two fixing ties.*




*T50SOSWSP5E-2*

| TYPE | Stud Ø | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **T50SOSWSP5E-2** | 5.0, 6.0 | 4.6 | 162.6 | 35.0 | 225 | PA66HS | Black (BK) | 2-10 | 133-01553 |

All dimensions in mm. Subject to technical changes.

## 1-Piece Fixing Ties for Weld Studs, for Heavy Duty Applications

**WS-Series for threaded studs**

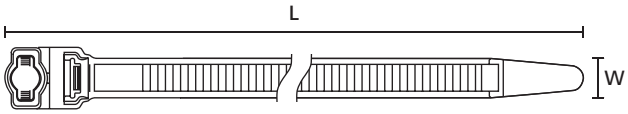
Wide strap stud-mounted cable ties are primarily designed for use in the automotive or truck industry.

**Features and benefits**

- Very flexible strap provides minimum pinching of soft hoses and convoluted tubing
- Low profile head for compact bundling
- Clamping rails to increase grip on round bundles
- Flexible hinge



*The wide strap stud mount cable tie minimizes pinching on soft bundles.*




*Wide Strap Heavy Duty Stud Mount Cable Ties*

| TYPE | Stud Ø | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **WSS8MM** | M8 | 12.7 | 246.4 | 57.1 | 534 | PA66HIRHSUV | Black (BK) | 11-12 | 157-00034 |
| **WSI8MM** | M8 | 12.7 | 322.6 | 82.5 | 534 | PA66HIRHSUV | Black (BK) | 11-12 | 157-00035 |
| **WSR8MM** | M8 | 12.7 | 398.8 | 104.1 | 534 | PA66HIRHSUV | Black (BK) | 11-12 | 157-00036 |

All dimensions in mm. Subject to technical changes.

| Recommended Tools | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2 MK20 | 3 MK21 | 4 MK3SP | 5 MK3PNSP2 | 6 EVO7 | 7 MK7HT | 8 MK7P | 9 MK6 | 10 EVO9 | 11 EVO9HT | 12 MK9P |
| | 545 | 545 | 546 | 546 | 548 | 549 | 550 | 551 | 549 | 549 | 552 |

For more information on toolings please refer to the Application Tooling chapter.

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## Fixing Ties for Weld Studs, for parallel routing

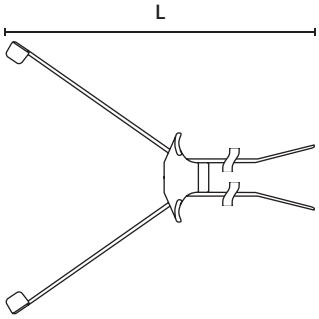
Many applications require cables to be run parallel to each other but separated to avoid abrasion, the double mounting base, when used with two cable ties allow this to be achieved simply and quickly. Widely used for securing cables, pipes and hoses in the automotive and truck building industries, the mounting base is simply pushed onto a 5mm diameter weld stud or bolt.

**Features and benefits**

- Pre-assembled 2-piece fixing tie with stud retainer
- For parallel routing of cables, hoses or harnesses
- Cable tie head can be moved after bundling
- Easy to install without the need for a tool
- For 5 mm studs or 5 mm ISO threaded studs



*Parallel fixation of two cables.*




*DSBS5*

**Other dimensions are available on request.**

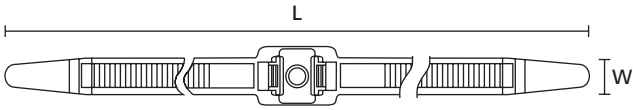
**Material specification please see page 26.**

### 2-Piece Fixing Ties for Weld Studs

| TYPE | Stud Ø | Width (W) | Length (L) | Bundle Ø max. | N | Material Cable Tie | Material Foot Part | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **T50SDSBS5** | 5.0 | 4.6 | 150.0 | 35.0 | 225 | PA66HS | PA66HIRHS | Black (BK) | 2-10 | 150-56193 |
| **T50ROSDSBS5** | 5.0 | 4.6 | 200.0 | 45.0 | 222 | PA66HS | PA66HIRHS | Black (BK) | 2-10 | 150-56199 |

All dimensions in mm. Subject to technical changes.

### 1-Piece Fixing Ties for Weld Studs for Heavy Duty Applications




*Dual Clamp Ties*

| TYPE | Stud Ø | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **DCT11** | M6 | 12.7 | 487.7 | 58.0 | 667 | PA66HIRHSUV | Black (BK) | 3;9-12 | 115-31100 |
| **DCT9** | M6 | 12.8 | 330.2 | 33.0 | 667 | PA66HIRHSUV | Black (BK) | 2-11 | 115-00034 |

All dimensions in mm. Subject to technical changes.

| Recommended Tools | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2 MK20 | 3 MK21 | 4 MK3SP | 5 MK3PNSP2 | 6 EVO7 | 7 MK7HT | 8 MK7P | 9 MK6 | 10 EVO9 | 11 EVO9HT | 12 MK9P |
| | 545 | 545 | 546 | 546 | 548 | 549 | 550 | 551 | 549 | 549 | 552 |

For more information on toolings please refer to the Application Tooling chapter.

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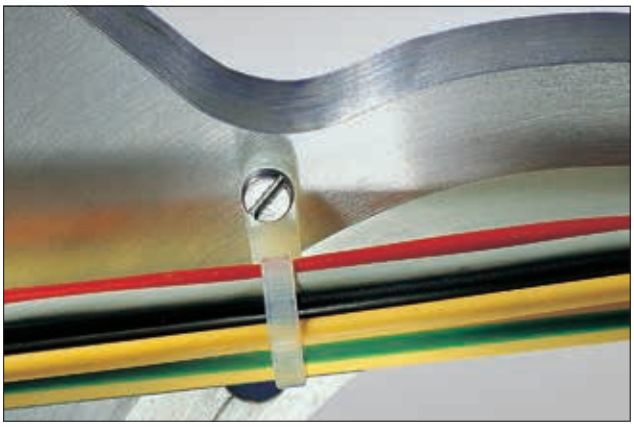
## 1-Piece Fixing Ties with Mounting Head for Screws

This range of one piece cable ties have a built in mounting hole and once fastened around the cables the bundle can be simply secured to the panel with a screw or bolt.

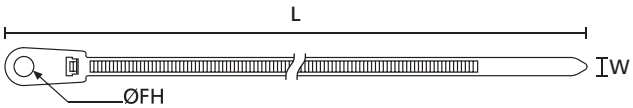
The tie is fitted to the panel first and then the cables can be added.

**Features and benefits**

- One-piece bundling and fixing tie
- Quick and easy installation



*The mounting head ties can be easily screwed onto a panel.*




*T( )MR Series with Mounting Head for Screw fixing*

**Material specification please see page 26.**

| TYPE | Hole Ø (FH) | N | Width (W) | Length (L) | Bundle Ø max. | Material | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **T18MR** | 3.1 | 80 | 2.5 | 110.0 | 20.0 | PA66 | Black (BK) | 2;4-6 | 113-01810 |
| | 3.1 | 80 | 2.5 | 110.0 | 20.0 | PA66 | Natural (NA) | 2;4-6 | 113-01819 |
| **T30MR** | 4.3 | 135 | 3.5 | 160.0 | 32.0 | PA66 | Natural (NA) | 2;4-6 | 113-03019 |
| | 4.3 | 135 | 3.5 | 160.0 | 32.0 | PA66 | Black (BK) | 2;4-6 | 113-03010 |
| **T50MS** | 5.3 | 225 | 4.6 | 165.0 | 32.0 | PA66 | Natural (NA) | 2-10 | 113-05819 |
| | 5.3 | 225 | 4.6 | 165.0 | 32.0 | PA66 | Black (BK) | 2-10 | 113-05820 |
| **T50MR** | 5.4 | 225 | 4.7 | 215.0 | 45.0 | PA66 | Black (BK) | 2-10 | 113-05010 |
| | 5.4 | 225 | 4.7 | 215.0 | 45.0 | PA66 | Natural (NA) | 2-10 | 113-05019 |
| | 5.4 | 225 | 4.7 | 215.0 | 45.0 | PA66W | Black (BK) | 2-10 | 113-05060 |
| **T50ML** | 5.5 | 225 | 4.7 | 390.0 | 100.0 | PA66 | Natural (NA) | 2-10 | 113-05419 |
| **T120MR** | 6.5 | 535 | 7.6 | 395.0 | 102.0 | PA66 | Black (BK) | 3;9-12 | 113-12020 |
| | 6.5 | 535 | 7.6 | 395.0 | 102.0 | PA66 | Natural (NA) | 3;9-12 | 113-12029 |
| | 6.5 | 535 | 7.6 | 395.0 | 102.0 | PA66HIRHSUV | Black (BK) | 3;9-12 | 113-12060 |

All dimensions in mm. Subject to technical changes.

| Recommended Tools | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2 MK20 | 3 MK21 | 4 MK3SP | 5 MK3PNSP2 | 6 EVO7 | 7 MK7HT | 8 MK7P | 9 MK6 | 10 EVO9 | 11 EVO9HT | 12 MK9P |
| | 545 | 545 | 546 | 546 | 548 | 549 | 550 | 551 | 549 | 549 | 552 |

For more information on toolings please refer to the Application Tooling chapter.

For product specific approvals and specifications please refer to the Appendix.

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HellermannTyton

# Just change the focus and you'll create something new.

Everyone has their own point of view. That's why you find different kinds of personalities at HellermannTyton. We create a vibrant working environment for the details that we then step up a level. Take our EdgeClips: cable routing on the cutting edge – no need for drilling or adhesives. Lateral thinking at its best.

**www.HellermannTyton.co.uk/edgeclip2019cat**

MADE FOR REAL®



Date of issue: January 2019

## 1-Piece Fixing Ties for Edges

**EdgeClip-Family**

These cable ties and EdgeClip assemblies are ideal for use where holes are not acceptable or where due to temperature problems adhesives will fail. Once the cable tie is fastened around the cables the EdgeClip is presented ready for attaching to the panel. Widely used within the automotive and panel building industries these cable ties and EdgeClips save time and money.

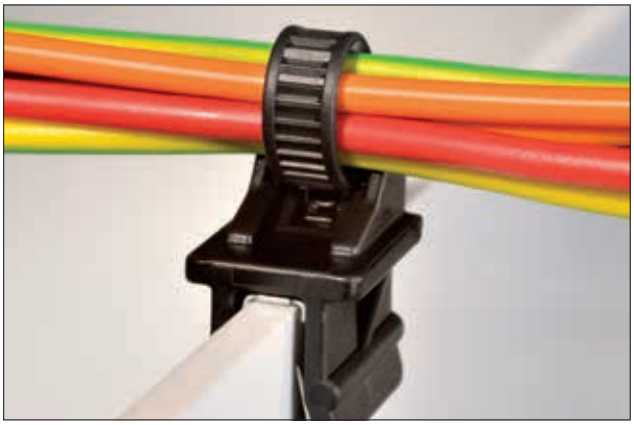
**Features and benefits**

- Easy assembly, just clip on per hand
- For edges of 0.5 - 2.5 mm, 1 – 3 mm or 3 – 6 mm
- Integrated metal clamp holds clip firmly in place
- Clamp consists of double tempered steel spring
- Ideal for applications where holes or adhesives are not suitable

*One Step to the Web!*



*T50ROSEC10 fitted onto a plastic panel to hold a Ø 6 mm harness.*



*1-Piece Fixing Tie T50SOSEC12 can be pushed easily on edges.*

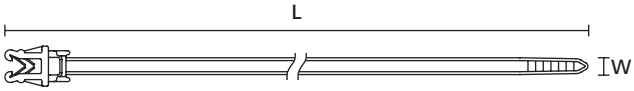
The silver-grey clamp, the heart of our EdgeClips, consists of double-tempered spring steel in accordance with DIN EN 10132-4 C75S. The spring steel gives the clamp both the necessary rigidity to provide high pull-off forces and also sufficient flexibility for various possible applications.

The double coating is applied initially with a zinc plate system followed by inorganic surface sealing. Naturally, no chromium (VI) is used in this process. The clamp therefore complies with the current EU Directive 200/53/EC on end of life vehicles and the prohibition on heavy metals. The refined spring-steel clamp also fulfils the requirements for resistance to salt spray stipulated in DIN EN ISO 9227 NSS (min. 840 h without corrosion of base metal) and DIN EN ISO 6270-Z-CH (min. 720 h without corrosion of base material). This solution has therefore been approved by many OEMs for exposed installation locations, e.g. in engine compartments and the running-gear area.

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## 1-Piece Fixing Ties for Edges

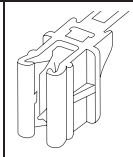
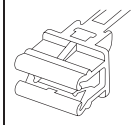
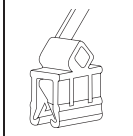
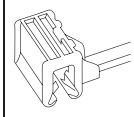
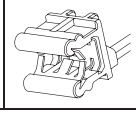
**EdgeClip-Family**




*T50SOSEC12E*

**Material specification please see page 26.**

**EdgeClips are also available on request for panel thickness from 4 - 7 mm.**

| TYPE | Drawing | Panel Thickness | Width (W) | Length (L) | Bundle Ø max. | N | Material | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **T50SOSEC12E** |  | 1.0 - 3.0 | 4.6 | 160.0 | 35.0 | 150 | PA46 | Grey (GY) | 2-10 | 126-00253 |
| | | 1.0 - 3.0 | 4.6 | 160.0 | 35.0 | 180 | PA66HS | Black (BK) | 2-10 | 148-00200 |
| **T50SOSEC13E** |  | 1.0 - 3.0 | 4.6 | 160.0 | 35.0 | 180 | PA66HS | Black (BK) | 2-10 | 126-00000 |
| **T40XEC5SP-E** |  | 1.0 - 3.0 | 4.0 | 85.0 | 15.0 | 178 | PA66HS | Black (BK) | 2;4-8 | 133-00059 |
| **T50SOSEC34E** |  | 1.0 - 3.0 | 4.6 | 155.0 | 35.0 | 180 | PA66HS | Black (BK) | 2-10 | 126-00036 |
| **T50SOSEC20-E** |  | 3.0 - 6.0 | 4.6 | 161.0 | 35.0 | 180 | PA66HS | Black (BK) | 2-10 | 126-00235 |

All dimensions in mm. Subject to technical changes.

| Recommended Tools | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2<br>MK20 | 3<br>MK21 | 4<br>MK3SP | 5<br>MK3PNSP2 | 6<br>EVO7 | 7<br>MK7HT | 8<br>MK7P | 9<br>MK6 | 10<br>EVO9 |
| | 545 | 545 | 546 | 546 | 548 | 549 | 550 | 551 | 549 |

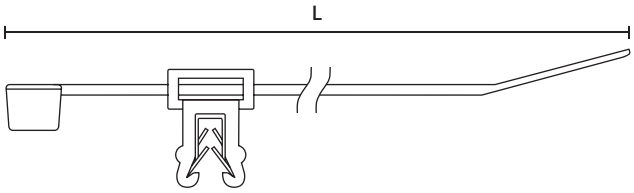
For more information on toolings please refer to the Application Tooling chapter.

## 2-Piece Fixing Ties for Edges, 1.0 - 3.0 mm, Top Fixing

**EdgeClip-Family**

**Features and benefits**

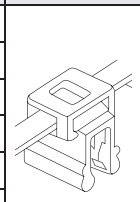
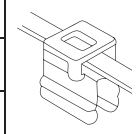
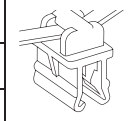
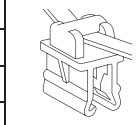
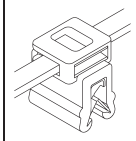
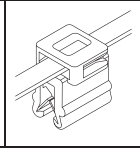
- Pre-assembled 2-piece fixing tie with EdgeClip
- Cable tie head can be moved after bundling
- EC9, EC10, EC21 and EC22 are for minimum bundle diameters of 1 mm
- For edges of 1 – 3 mm




*Fixing Tie with EC4*



*T50ROSEC10 fitted onto a plastic panel to hold a Ø 6 mm harness.*

| TYPE | Drawing | Width (W) | Length (L) | Bundle Ø max. | N | Material Cable Tie | Material Foot Part | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **T30REC4A** |  | 3.6 | 148.0 | 33.0 | 135 | PA66HS | PA66HIRHS | Black (BK) | 2;4-6 | 150-76090 |
| **T50SOSEC4A** | | 4.6 | 150.0 | 35.0 | 225 | PA66HS | PA66HIRHS | Black (BK) | 2-10 | 150-76093 |
| **T50ROSEC4A** | | 4.6 | 200.0 | 45.0 | 225 | PA66HS | PA66HIRHS | Black (BK) | 2-10 | 150-76099 |
| **T50ROSEC4A-W** | | 4.6 | 200.0 | 45.0 | 225 | PA66W | PA66W | Black (BK) | 2-10 | 156-00570 |
| **T50REC4A** | | 4.6 | 202.0 | 45.0 | 225 | PA66HS | PA66HIRHSUV | Black (BK) | 2-10 | 150-76091 |
| **T50RDHEC4A** | | 4.7 | 210.0 | 19.0 | 225 | PA66 | PA66HIRHS | Natural (NA), Black (BK) | 2-10 | 156-01721 |
| **T30REC4B** |  | 3.6 | 148.0 | 35.0 | 135 | PA66HS | PA66HIRHS | Black (BK) | 2;4-6;8 | 150-76080 |
| **T50SOSEC4B** | | 4.6 | 150.0 | 35.0 | 225 | PA66HS | PA66HIRHS | Black (BK) | 2-10 | 156-00109 |
| **T50ROSEC4B** | | 4.6 | 200.0 | 45.0 | 225 | PA66HS | PA66HIRHS | Black (BK) | 2-10 | 150-76079 |
| **T18REC10SD** |  | 2.5 | 100.0 | 22.0 | 80 | PA66HS | PA66HIRHS | Black (BK) | 2;4-6;8 | 155-38304 |
| **T50SOSEC10** | | 4.6 | 150.0 | 31.0 | 225 | PA66HS | PA66HIRHS | Black (BK) | 2-10 | 156-00015 |
| **T50ROSEC10** | | 4.6 | 200.0 | 45.0 | 225 | PA66HS | PA66HIRHS | Black (BK) | 2-10 | 156-05904 |
| **T18REC9SD** |  | 2.5 | 100.0 | 22.0 | 80 | PA66HS | PA66HIRHS | Black (BK) | 2;4-6;8 | 155-37104 |
| **T50SOSEC9SD** | | 4.6 | 150.0 | 31.0 | 225 | PA66HS | PA66HIRHS | Black (BK) | 2-10 | 156-00019 |
| **T50ROSEC9** | | 4.6 | 200.0 | 45.0 | 225 | PA66HS | PA66HIRHS | Black (BK) | 2-10 | 156-05903 |
| **T50REC9SD** | | 4.6 | 200.0 | 45.0 | 225 | PA66HS | PA66HIRHSUV | Black (BK) | 2-10 | 156-01280 |
| **Q50REC4A** |  | 4.7 | 210.0 | 45.0 | 220 | PA66W | PA66W | Black (BK) | 2-10 | 156-01085 |
| **Q50REC4B** |  | 4.7 | 210.0 | 45.0 | 220 | PA66W | PA66W | Black (BK) | 2-10 | 156-01086 |

All dimensions in mm. Subject to technical changes.

Date of issue: January 2019

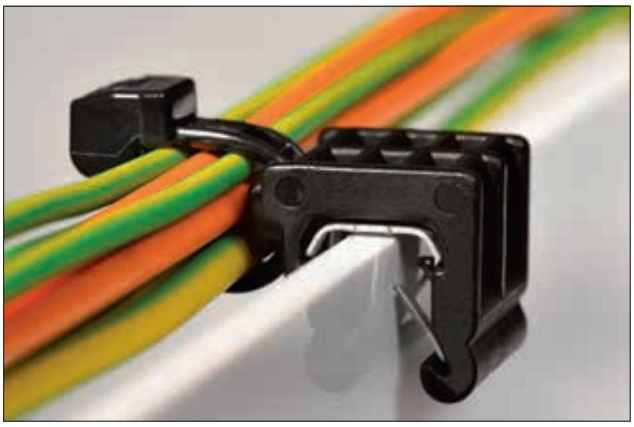
## 2-Piece Fixing Ties for Edges, 1.0 - 3.0 mm, Side Fixing

**EdgeClip-Family**

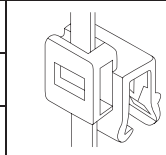
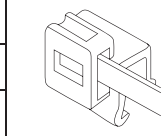
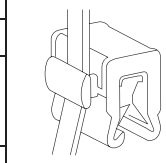
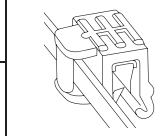
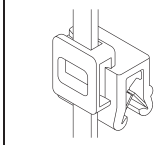
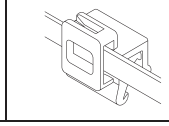
**Features and benefits**

- Pre-assembled 2-piece fixing tie with EdgeClip
- Cable tie head can be moved after bundling
- EC9, EC10, EC21 and EC22 are for minimum bundle diameters of 1 mm
- For edges of 1 – 3 mm

**Material specification please see page 26.**



*T50ROSEC23 - the cable bundle runs parallel with the edge.*

| TYPE | Drawing | Width (W) | Length (L) | Bundle Ø max. | N | Material Cable Tie | Material Foot Part | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **T30REC5A** |  | 3.6 | 148.0 | 33.0 | 135 | PA66HS | PA66HIRHS | Black (BK) | 2;4-6 | 156-00003 |
| **T50SOSEC5A** | | 4.6 | 150.0 | 31.0 | 225 | PA66HS | PA66HIRHS | Black (BK) | 2-10 | 150-40593 |
| **T50ROSEC5A** | | 4.6 | 200.0 | 45.0 | 225 | PA66HS | PA66HIRHS | Black (BK) | 2-10 | 150-40591 |
| **T50SOSEC5B** |  | 4.6 | 150.0 | 31.0 | 225 | PA66HS | PA66HIRHS | Black (BK) | 2-10 | 150-40583 |
| **T50REC5B** | | 4.6 | 200.0 | 45.0 | 225 | PA66HS | PA66HIRHSUV | Black (BK) | 2-10 | 150-40582 |
| **T50ROSEC5B** | | 4.6 | 200.0 | 45.0 | 225 | PA66HS | PA66HIRHS | Black (BK) | 2-10 | 150-40581 |
| **T18REC21** |  | 2.5 | 100.0 | 18.0 | 80 | PA66W | PA66HIRHS | Black (BK) | 2;4-6 | 156-01231 |
| **T50ROSEC21** | | 4.6 | 200.0 | 45.0 | 225 | PA66HS | PA66HIRHS | Black (BK) | 2-10 | 156-00010 |
| **T80REC21** | | 4.7 | 205.0 | 55.0 | 355 | PA66HS | PA66HIRHS | Natural (NA), Black (BK) | 2-10 | 156-01728 |
| **T50SOSEC21** | | 4.6 | 150.0 | 35.0 | 225 | PA66HS | PA66HIRHS | Black (BK) | 2-10 | 156-00017 |
| **T50ROSEC22** |  | 4.6 | 200.0 | 45.0 | 225 | PA66HS | PA66HIRHS | Black (BK) | 2-10 | 156-00011 |
| **T50REC22** | | 4.6 | 200.0 | 45.0 | 225 | PA66W | PA66HIRHS | Black (BK) | 2-10 | 156-00576 |
| **Q50REC5A** |  | 4.7 | 210.0 | 45.0 | 220 | PA66W | PA66W | Black (BK) | 2-10 | 156-01087 |
| **Q50REC5B** |  | 4.7 | 210.0 | 45.0 | 220 | PA66W | PA66W | Black (BK) | 2-10 | 156-01088 |

All dimensions in mm. Subject to technical changes.

| Recommended Tools | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2<br>MK20 | 3<br>MK21 | 4<br>MK3SP | 5<br>MK3PNSP2 | 6<br>EVO7 | 7<br>MK7HT | 8<br>MK7P | 9<br>MK6 | 10<br>EVO9 |
| | 545 | 545 | 546 | 546 | 548 | 549 | 550 | 551 | 549 |

For more information on toolings please refer to the Application Tooling chapter.

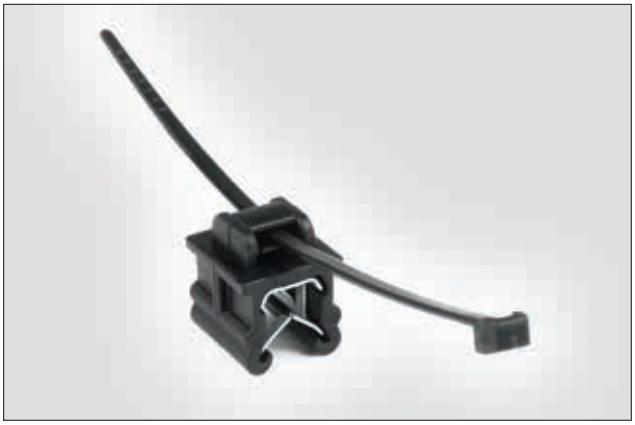
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## 2-Piece Fixing Ties for Edges, 3.0 - 6.0 mm, Top Fixing

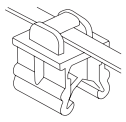
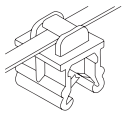
**EdgeClip-Family**

**Features and benefits**

- Pre-assembled 2-piece fixing tie with EdgeClip
- Cable tie head can be moved after bundling
- For minimum bundle diameters of 1 mm
- For edges of 3 – 6 mm



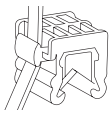
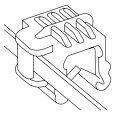
*Pre-assembled 2-piece fixing tie with EdgeClip.*

| TYPE | Drawing | Width (W) | Length (L) | Bundle Ø max. | N | Material Cable Tie | Material Foot Part | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **T18ROSEC19** |  | 2.5 | 100.0 | 20.0 | 80 | PA66HS | PA66HIRHS | Black (BK) | 2;4-6 | 156-04600 |
| **T50SOSEC19** | | 4.6 | 150.0 | 35.0 | 225 | PA66HS | PA66HIRHS | Black (BK) | 2-10 | 156-04601 |
| **T50ROSEC19** | | 4.6 | 200.0 | 45.0 | 225 | PA66HS | PA66HIRHS | Black (BK) | 2-10 | 156-04602 |
| **T50SOSEC20** |  | 4.6 | 150.0 | 35.0 | 225 | PA66HS | PA66HIRHS | Black (BK) | 2-10 | 156-00016 |
| **T50ROSEC20** | | 4.6 | 200.0 | 45.0 | 225 | PA66HS | PA66HIRHS | Black (BK) | 2-10 | 156-00020 |

All dimensions in mm. Subject to technical changes.

**Other combinations between cable tie and foot part available on request.**

## 2-Piece Fixing Ties for Edges, 3.0 - 6.0 mm, Side Fixing

| TYPE | Drawing | Width (W) | Length (L) | Bundle Ø max. | N | Material Cable Tie | Material Foot Part | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **T50ROSEC23** |  | 4.6 | 200.0 | 45.0 | 225 | PA66HS | PA66HIRHS | Black (BK) | 2-10 | 156-00006 |
| **T80REC23** | | 4.7 | 205.0 | 55.0 | 355 | PA66HS | PA66HIRHS | Natural (NA), Black (BK) | 2-10 | 156-01729 |
| **T50ROSEC24** |  | 4.6 | 200.0 | 45.0 | 225 | PA66HS | PA66HIRHS | Black (BK) | 2-10 | 156-00007 |

All dimensions in mm. Subject to technical changes.

| Recommended Tools | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2<br>MK20 | 3<br>MK21 | 4<br>MK3SP | 5<br>MK3PNSP2 | 6<br>EVO7 | 7<br>MK7HT | 8<br>MK7P | 9<br>MK6 | 10<br>EVO9 |
| | 545 | 545 | 546 | 546 | 548 | 549 | 550 | 551 | 549 |

For more information on toolings please refer to the Application Tooling chapter.

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## 2-Piece Fixing Ties for Edges, 0.5 - 2.5 mm, Top Fixing

**Mini-EdgeClip-Family for flat and thin edges**

These cable ties and EdgeClip assemblies are ideal for use where holes are not acceptable or where due to temperature problems adhesives will fail. These assemblies are widely used for fixing and bundling cables, pipes and hoses within the automotive industry, harness making, panel buidling and electrical industry. These EdgeClips are specially designed for applications where space is limited such as in mirrors and headlights.

**Features and benefits**

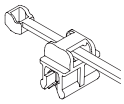
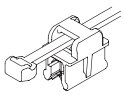
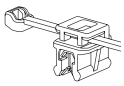
- For flat edges
- For thin edges 0.5 - 2.5 mm
- Small housing for limited space
- Pre-assembled 2-piece fixing tie with EdgeClip
- Cable tie head can be moved after bundling



*T30ROSEC0,5-2,5SPV for application on thin edges.*

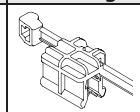
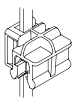


*The Mini-EdgeClip family is our solution for limited spaces.*

| TYPE | Drawing | Width (W) | Length (L) | Bundle Ø max. | N | Material Cable Tie | Material Foot Part | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **T30ROSEC0.5-2.5TP-SD** |  | 3.4 | 145.0 | 35.0 | 135 | PA66HS | PA66HIRHS | Black (BK) | 2;4-6 | 156-01543 |
| **T30ROSEC0.5-2.5TV-SD** |  | 3.4 | 145.0 | 35.0 | 135 | PA66HS | PA66HIRHS | Black (BK) | 2;4-6 | 156-01545 |
| **T30ROSEC0.5-2.5TPVA** |  | 3.4 | 145.0 | 35.0 | 135 | PA66HS | PA66HIRHS | Black (BK) | 2;4-6 | 156-01542 |

All dimensions in mm. Subject to technical changes.

## 2-Piece Fixing Ties for Edges, 0.5 - 2.5 mm, Side Fixing

| TYPE | Drawing | Panel Thickness in. (mm) | Width (W) | Length (L) | Bundle Ø max. | N | Material Cable Tie | Material Foot Part | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **T30ROSEC0.5-2.5SP-SVB** |  | 0.5 – 2.5 | 3.4 | 145.0 | 35.0 | 135 | PA66HS | PA66HIRHS | Black (BK) | 2;4-6 | 156-01546 |
| **T30ROSEC0.5-2.5SPVA** |  | - | 3.4 | 145.0 | 35.0 | 135 | PA66HS | PA66HIRHS | Black (BK) | 2;4-6 | 156-01544 |
| **T30ROSEC0.5-2.5SP-SVA** | | 0.5 – 2.5 | 3.4 | 145.0 | 35.0 | 133 | PA66HS | PA66HIRHS | Black (BK) | 2;4-6 | 156-01797 |

All dimensions in mm. Subject to technical changes.

| Recommended Tools | | | | |
|---|---|---|---|---|
| | 2<br>MK20 | 4<br>MK3SP | 5<br>MK3PNSP2 | 6<br>EVO7 |
| | 545 | 546 | 546 | 548 |

For more information on toolings please refer to the Application Tooling chapter.

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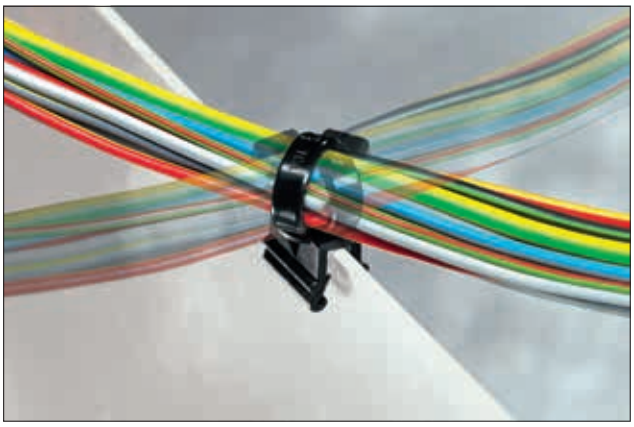
## 2-Piece Fixing Ties for Edges, twistable

**EdgeClip-Family**

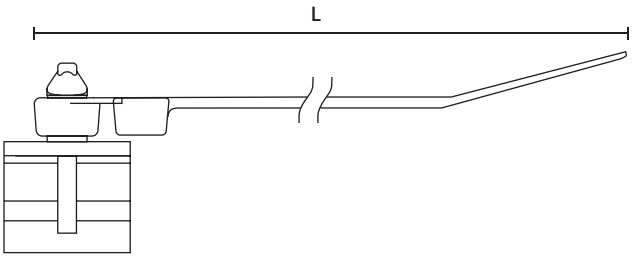
These cable ties and Edge Clip assemblies are ideal for use where holes are not acceptable or where due to temperature problems adhesives will fail. These assemblies are widely used for fixing and bundling cables, pipes and hoses within the automotive industry, harness making, panel buidling and electrical industry.

**Features and benefits**

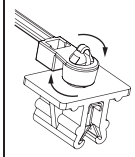
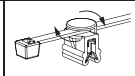
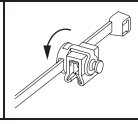
- Pre-assembled 2-piece fixing tie with EdgeClip
- Easy to assemble by hand
- Cable tie head can be moved after bundling
- For edges of 1 – 2.5 mm or 1 – 3 mm
- Can be rotated to the desired position



*EdgeClip CBTO50R, rotatable 90°.*




*CBT30MR*

| TYPE | Drawing | Panel Thickness | Width (W) | Length (L) | Bundle Ø max. | N | Material Cable Tie | Material Foot Part | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **CBT30MR** |  | 2.5 | 3.5 | 160.0 | 32.0 | 135 | PA66HS | POM | Black (BK) | 2;5-6 | 156-00049 |
| **CBTO50R** |  | 3.0 | 4.6 | 202.0 | 47.0 | 225 | PA66HS | PA66HIRHSUV | Black (BK) | 2-10 | 156-01601 |
| **CBTOS50R STUD5** |  | 3.0 | 4.6 | 200.0 | 47.0 | 225 | PA66HS | PA66HIRHS | Black (BK) | 2-10 | 156-00380 |

All dimensions in mm. Subject to technical changes.

| Recommended Tools | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2<br>MK20 | 3<br>MK21 | 4<br>MK3SP | 5<br>MK3PNSP2 | 6<br>EVO7 | 7<br>MK7HT | 8<br>MK7P | 9<br>MK6 | 10<br>EVO9 |
| | 545 | 545 | 546 | 546 | 548 | 549 | 550 | 551 | 549 |

For more information on toolings please refer to the Application Tooling chapter.

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## Heavy Duty Harness Clips

### Beam clamps

Primarily designed for use in the automotive/truck industry, these parts can be used in a wide variety of industries and applications where bundles need mounting.

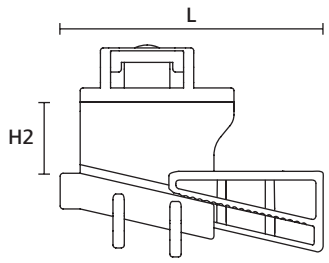
These heavy duty harness clips help to fix and secure cables, lines and hydraulic lines in truck, agriculture and railway vehicle construction, as well as in the ship building industry and industrial buildings.

**Features and benefits**

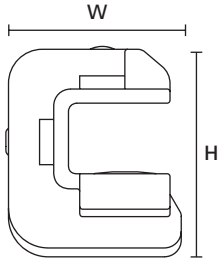
- Easy to install
- No damage to surfaces
- Easy maintenance of bundle by simply changing cable tie
- Cable tie head can be moved after bundling
- Applicable to a wide range of panel thicknesses



*The Beam Clamp can be fixed onto a beam with a wedge. Up to two bundles can be routed on the top or rear side of the clamp.*

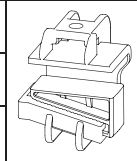
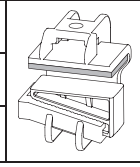



*Beam Clamp, Front view*




*Beam Clamp, Side view*

**Material specification please see page 26.**

| TYPE | Drawing | Panel Thickness | Width (W) | Length (L) | Height (H) | Height (H2) | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **Beam Clamp D** |  | 5.5 - 7.0 | 28.6 | 46.2 | 36.7 | 12.5 | PA6GF30 | Black (BK) | 151-00886 |
| **Beam Clamp B** | | 7.0 - 8.5 | 28.6 | 46.2 | 36.7 | 12.5 | PA6GF30 | Black (BK) | 151-00822 |
| **Beam Clamp C** | | 8.5 - 10.5 | 28.6 | 46.2 | 36.7 | 12.5 | PA6GF30 | Black (BK) | 151-00823 |
| **Beam Clamp D with foam** |  | 5.5 - 7.0 | 28.6 | 46.2 | 36.7 | 12.5 | PA6GF30 | Black (BK) | 151-01188 |
| **Beam Clamp B with foam** | | 7.0 - 8.5 | 28.6 | 46.2 | 36.7 | 12.5 | PA6GF30 | Black (BK) | 151-01186 |
| **Beam Clamp C with foam** | | 8.5 - 10.5 | 28.6 | 46.2 | 36.7 | 12.5 | PA6GF30 | Black (BK) | 151-01187 |

All dimensions in mm. Subject to technical changes.

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## 2-Piece Fixing Ties with Pipe Clip

These fasteners interconnect two different bundles of goods, of various size and type. The mobility of the fixing tie provides a secure grip and protects the cables or bundles, even in difficult conditions.

**Features and benefits**
- Easy to assemble
- For routing of two different bundles
- For post-installation of additional cables for pre-assembled cable looms
- Ideally used in the automotive industry, but also in all industries where bundles and cables have to be routed and connected

### 2-Piece Fixing Ties with Pipe Clip, twistable 360°

**Features and benefits**
- Simply clip on a wire or hose
- Fixing clip offers full 360° rotation
- Routed cable can move in any direction in relation to the fixing point
- Inside serrated cable tie
- Ideally used in the Automotive Industry



### 2-Piece Fixing Ties with Pipe Clip

**Features and benefits**
- For post-installation of additional cables for pre-assembled cable looms
- Variety of twist angles and even different loop directions provide flexibility for cable routing
- For OC1 and 2A additional cable tie dimensions are available
- CBTO-series for cable ties up to 5 mm

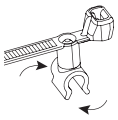
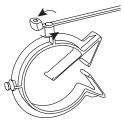
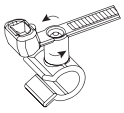
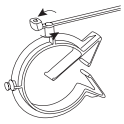


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**Other product variants are available in our Automotive catalogue.**

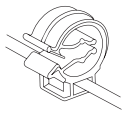



### 2-Piece Fixing Ties with Pipe Clip, twistable 360°

| TYPE | Drawing | Attach to Ø | Width (W) | Length (L) | Bundle Ø max. | Material | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **T50SVC4S** |  | 3.8 - 4.2 | 4.7 | 155.0 | 35.0 | PA66HS, PP | Black (BK), Natural (NA) | 2-10 | 156-01374 |
| **T50SVCOC10-14** |  | 10.0 - 14.0 | 4.7 | 155.0 | 35.0 | PA46 | Grey (GY) | 2-10 | 156-01385 |
| **T50SVC6.5** |  | 6.5 - 8.0 | 4.7 | 155.0 | 35.0 | PA66HS, PA66HIRHS | Black (BK) | 2-10 | 156-00155 |
| **T50SVCOC19-245** |  | 19.0 - 24.5 | 4.7 | 155.0 | 35.0 | PA66HS, PA66HIRHS | Black (BK) | 2-10 | 156-00136 |

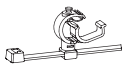
All dimensions in mm. Subject to technical changes.

### 2-Piece Fixing Ties with Pipe Clip

| TYPE | Drawing | Attach to Ø | Width (W) | Length (L) | Material | Bundle Ø max. | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **T50ROC1B** |  | 4.0 - 10.0 | 4.6 | 202.0 | PA66HS, PA66HIRHS | 45.0 | Black (BK) | 2-10 | 156-00306 |

All dimensions in mm. Subject to technical changes.

### 2-Piece Fixing Ties with Pipe, twistable 90°

| TYPE | Drawing | Attach to Ø | Width (W) | Length (L) | Bundle Ø max. | N | Material Cable Tie | Material Foot Part | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **T50RIAHC1TICR** |  | 3.0 - 13.0 | 4.6 | 200.0 | 50.0 | 225 | PA66HIR(S) | PA66HIRHS | Black (BK) | 2-10 | 156-05331 |
| **T50RIAHC2TICR** | | 11.0 - 20.0 | 4.6 | 200.0 | 50.0 | 225 | PA66HIR(S) | PA66HIRHS | Black (BK) | 2-10 | 156-05330 |

All dimensions in mm. Subject to technical changes.

| Recommended Tools | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| | MK20 | MK21 | MK3SP | MK3PNSP2 | EVO7 | MK7HT | MK7P | MK6 | EVO9 |
| | 545 | 545 | 546 | 546 | 548 | 549 | 550 | 551 | 549 |

For more information on toolings please refer to the Application Tooling chapter.

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## 2-Piece Fixing Ties for parallel separation

**Features and benefits**

- Pre-assembled 2-piece fixing tie with coupler
- Cable tie head can be moved after bundling
- Easy addition of cables after assembly
- For parallel routing of bundles that can be twisted 90° even after installation

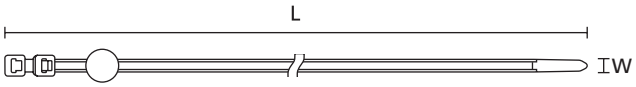


*T120RCoupler can be used for parallel routing of two cable ties.*

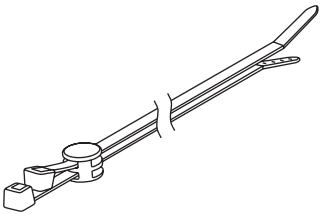


*The second tie can be used for post-installations.*

**Material specification please see page 26.**




*Two Cable Ties with Coupler*



*T120RCoupler*



*Fixing Element - Coupler*

| TYPE | Width (W) | Length (L) | Bundle Ø max. | N | Material Cable Tie | Material Foot Part | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **T50RCOUPLER** | 4.6 | 202.0 | 47.0 | 225 | PA46 | PA46 | Grey (GY) | 2-10 | 156-00382 |
| | 4.6 | 202.0 | 47.0 | 225 | PA66HIR(S) | PA66HIRHS | Black (BK) | 2-10 | 156-00276 |
| **T50RSINGLECOUPLER** | 4.6 | 202.0 | 47.0 | 225 | PA66HIRHS | PA66HIRHS | Black (BK) | 2-10 | 156-01134 |
| **T120RCOUPLER** | 7.6 | 390.0 | 105.0 | 535 | PA46 | PA46 | Grey (GY) | 3;9-12 | 156-02416 |
| | 7.6 | 390.0 | 105.0 | 535 | PA66HIR(S) | PA66HIRHS | Black (BK) | 3;9-12 | 156-00275 |

All dimensions in mm. Subject to technical changes.

| Recommended Tools | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2 MK20 | 3 MK21 | 4 MK3SP | 5 MK3PNSP2 | 6 EVO7 | 7 MK7HT | 8 MK7P | 9 MK6 | 10 EVO9 | 11 EVO9HT | 12 MK9P | 15 MK9SST |
| | 545 | 545 | 546 | 546 | 548 | 549 | 550 | 551 | 549 | 549 | 552 | 554 |

For more information on toolings please refer to the Application Tooling chapter.

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## 2-Piece Fixing Ties for Heavy Duty Applications, for Screws

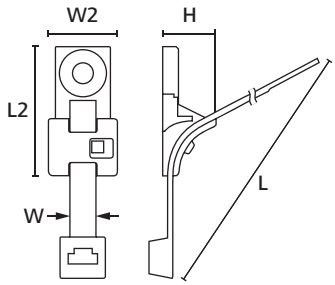
Used in the automotive and truck industry for harness fixing in the engine body, these parts offer solutions in many other industrial applications with difficult environment.

**Features and benefits**

- Pre-assembled 2-piece fixing tie
- Cable tie head can be moved after bundling
- Secure alignment to the bundle due to H-design
- A suitable alternative for metal clamps
- Withstands vibrations and displacement forces
- High tightening torque through metal bushing



*These HDM are suitable for assembling on screws.*




*HDM with cable tie (L = length of the tie"flat")*



*DHDM for parallel routing of bundles.*

### HDM-Series

| TYPE | Width (W2) | Length (L2) | Height (H) | Mounting Screw Type | Width (W) | Length (L) | Material | Bundle Ø max. | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **T120SHDM8** | 20.0 | 38 | 15.6 | M8 | 7.6 | 225.0 | PA46 | 55.0 | Grey (GY) | 9-10;12;15 | 156-00429 |
| **T50RHDM6** | 20.0 | 37.5 | 16.0 | M6 | 4.6 | 200.0 | PA66HIRHS | 50.0 | Black (BK) | 2-10 | 156-00410 |
| **T120RHDM6** | 20.0 | 37.5 | 16.0 | M6 | 7.6 | 390.0 | PA46 | 105.0 | Grey (GY) | 3;9-12 | 156-00407 |
| | 20.0 | 37.5 | 16.0 | M6 | 7.6 | 390.0 | PA66HIRHS | 105.0 | Black (BK) | 3;9-12 | 156-00406 |
| **T50RHDM8** | 20.0 | 37.5 | 16.0 | M8 | 4.6 | 200.0 | PA66HIRHS | 50.0 | Black (BK) | 2-10 | 156-00412 |
| **T120RHDM8** | 20.0 | 37.5 | 16.0 | M8 | 7.6 | 390.0 | PA46 | 105.0 | Grey (GY) | 3;9-12 | 156-00409 |
| | 20.0 | 37.5 | 16.0 | M8 | 7.6 | 390.0 | PA66HIRHS | 105.0 | Black (BK) | 3;9-12 | 156-00408 |
| **X80RHDM6O** | 26.0 | 34.7 | 15.5 | M6 | 4.6 | 200.0 | PA66HS, PA66HIRHS | 23.0 | Black (BK) | 2-12 | 156-01425 |
| **X120RHDM 65x160** | 32.0 | 40.2 | 15.5 | M6 | 7.7 | 369.0 | PA66HIRHS | 100.0 | Black (BK) | 3;9-12 | 156-01466 |

All dimensions in mm. Subject to technical changes.

### DHDM-Series

| TYPE | Width (W2) | Length (L2) | Height (H) | Mounting Screw Type | Width (W) | Length (L) | Material | Bundle Ø max. | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **T120ROSDHDM6** | 25.4 | 59.4 | 15.5 | M6 | 7.6 | 385.0 | PA66HS, PA66W | 105.0 | Black (BK) | 3;9-12 | 156-01485 |
| **X120RDHDM6** | 25.4 | 59.4 | 15.5 | M6 | 7.7 | 369.0 | PA66HIRHS | 100.0 | Black (BK) | 3;9-12 | 156-01096 |
| **X120RDHDM8** | 25.4 | 59.4 | 15.5 | M8 | 7.7 | 369.0 | PA66HIRHS | 100.0 | Black (BK) | 3;9-12 | 156-01097 |

All dimensions in mm. Subject to technical changes.

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## Information and installation instructions for self-adhesive mounting bases

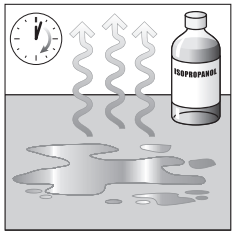
HellermannTyton uses different types of adhesives for self-adhesive bases: acrylate and synthetic rubber. These differ in the operating temperature range and the 'pull off' force of the adhesive. Synthetic rubber has an excellent initial grip, allowing for almost immediate use. Acrylate adhesive has less initial grip, so there is a need to wait for a few hours before use, but has a higher 'pull off' force than synthetic rubber. This enables a permanent fixing lasting months or even years.

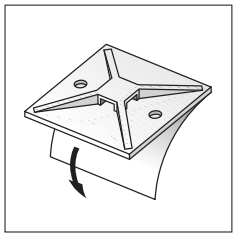
| ADHESIVE | | Adhesive Operating Temperature |
|---|---|---|
| **Synthetic rubber with base of polyethylene foam** | Synthetic rubber T50 | -20 °C to +50 °C |
| | Synthetic rubber T60 | -40 °C to +60 °C |
| **Acrylate with base of polyurethane foam** | Acrylate | to +105 °C |
| **Acrylate with base of polyethylene foam** | | |
| **Acrylate with base of acrylic foam** | mod. Acrylate T90 | -40 °C to +90 °C |

## Instructions for use

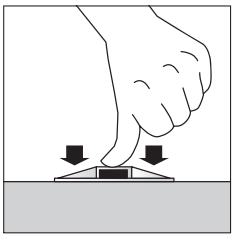



1. The surface must be dry, free from dust, oil, oxides, parting agents and other impurities. The surface to be glued should be cleaned using a clean cloth and isopropanol/water (50/50). When using other appropriate cleaning agents, ensure that they do not attack the surface nor leave any residues. After cleaning allow the surface to air-dry completely.

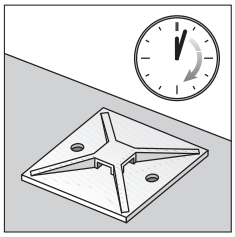


2. Peel off protective backing and ensure the adhesive area is not touched.



3. Press down firmly on the base with the thumbs for several seconds.



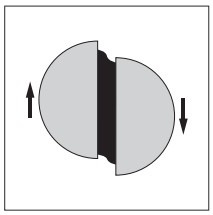
4. Depending on the type of adhesive, wait for several minutes (synthetic rubber) or hours (acrylate) so that the adhesive can bond completely with the surface.

**We will be happy to send you on request an up-to-date technical datasheet for whichever adhesive you are using.**

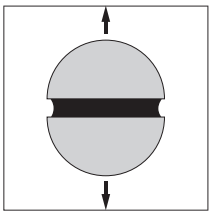
## Advantages of our self-adhesive mounts with mod. Acrylate (SolidTack / FlexTack)

- Acrylic Foam Tape is made from a homogeneous system of high performance acrylic adhesive
- Very good initial bond
- High temperature resistance
- Adhesive offers design freedom, no need for bolts or screws
- Reduces the risk of corrosion, no need for boreholes
- Weight reduction compared to mechanical mounting
- Possibility to optimize production processes and to reduce production cost (bonding vs. screwing)
- Can compensate unevenness up to a certain degree
- Specially developed for low energy surfaces

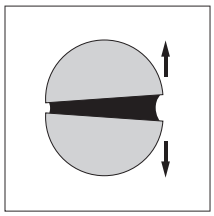
## Load types on adhesive bonds



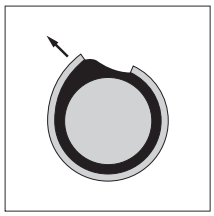
**Shear resistance.**
Shear force pulls the adhesive surfaces in opposite directions along a parallel line.



**Tensile strength.**
Tension force pulls surfaces apart perpendicular to the adhesive bond.



**Cleavage resistance.**
Cleavage can occur where forces acting on bonded surfaces are not evenly spread but concentrated along a single line.



**Peel adhesion.**
Peeling force acts on a small amount of adhesive at the edge of the tape and weakens the adhesive bond. At least one adherend is flexible.

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## Cable Tie Mounts with high performance adhesive

**FlexTack-Series FMB for round and angled surfaces**

FlexTack cable tie mounts can be successfully applied to a variety of high- and low-energy surfaces such as glass, metals (including painted, varnished or powder-coated surfaces) as well as plastics. FlexTack provides a reliable fixing solution where it is impractical to use screws or bolts. The unique design in combination with the special acrylate adhesive makes professional cable management easy.

**Features and benefits**

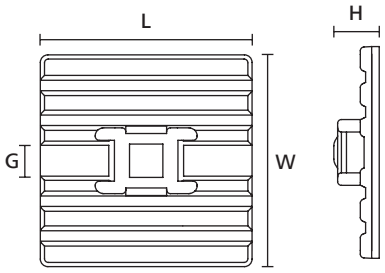
- Flexible Mount for round and angled surfaces
- FMB mounts with homogeneous system of acrylic adhesive
- Allows greater design freedom and offers uniform stress distribution along with weight reduction
- Adhesive with high cohesive strength combined with good weathering resistance
- Innovative fixing solution for high and low energy surfaces
- Protection foil with finger lift for easy peel off
- Temperature resistance up to +105 °C
- 4-way entry for cable tie for quicker and more flexible installation
- FMB4APT-I is also suitable for high energy surfaces like metal or glass

**Material specification please see page 26.**



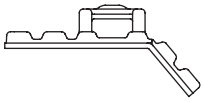
*Flexible cable tie mount, FlexTack in use on a concaved surface.*

*Application video: FlexTack*

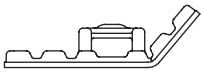



*Flexible Adhesive Mount FMB4APT-I (plan view)*

*Flexible Adhesive Mount FMB4APT-I (side view)*



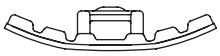
*Flexible Adhesive Mount FMB4APT-I (down angled, side view)*



*Flexible Adhesive Mount FMB4APT-I (up angled, side view)*



*Flexible Adhesive Mount FMB4APT-I (convex, side view)*



*Flexible Adhesive Mount FMB4APT-I (concave, side view)*

| TYPE | Width (W) | Length (L) | Height (H) | Strap Width max. (G) | Material | Colour | Adhesive | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| FMB4APT-I | 28.0 | 28.0 | 6.3 | 5.4 | PA66HS | Black (BK) | mod. Acrylate T90 | 100 pcs. | 151-01527 |
| | 28.0 | 28.0 | 6.3 | 5.4 | PA66HS | White (WH) | mod. Acrylate T90 | 100 pcs. | 151-01528 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

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## Cable Tie Mounts with high perfomance adhesive

**SolidTack-Series QM**

Q-mounts are ideally suited for holding our innovative Q-ties in place. They would perfectly fit to all applications where a reliable and durable fixation is required. With its SolidTack adhesive Q-mounts offer an innovative fixing solution especially for low energy surfaces or if drilling a hole is not possible. Suitable for a wide range of applications on varnished or plastic or metal surfaces in many areas like electrical cabinet, railway, aerospace, automotive and agriculture machinery.

**Features and benefits**

- Q-mounts with homogeneous system of acrylic adhesive
- Perfect for combination with Q-ties
- Very good initial adhesion, increases with time
- Adhesive with high cohesive strength combined with good weathering resistance
- Innovative fixing solution for high and low energy surfaces
- Q-Mount base locks Q-tie in vertical position, means the hands are free to apply cables

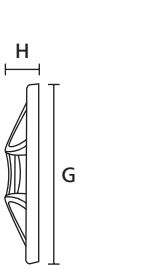


*SolidTack-Series QM - Cable Tie Mounts with high performance adhesive; screwable or self adhesive versions. Perfect for combination with T-series cable ties.*

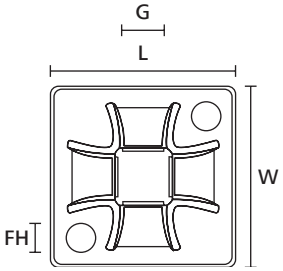
**Please find more Q-Series products for your system solution on page 55, 133, 143 and 486.**

**For more information on the types of adhesive please see page 130.**

**Material specification please see page 26.**




*Q-Mount (side view)*




*Q-Mount (plan view)*

| TYPE | Width (W) | Length (L) | Height (H) | Hole Ø (FH) | Strap Width max. (G) | Material | Colour | Adhesive | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| QM20APT-I | 20.0 | 20.0 | 3.7 | 3.1 | 4.0 | PA66 | Black (BK) | mod. Acrylate T90 | 100 pcs. | 151-01592 |
| | 20.0 | 20.0 | 3.7 | 3.1 | 4.0 | PA66 | Natural (NA) | mod. Acrylate T90 | 100 pcs. | 151-01591 |
| QM30APT-I | 30.0 | 30.0 | 4.5 | 4.1 | 5.1 | PA66 | Black (BK) | mod. Acrylate T90 | 100 pcs. | 151-01594 |
| | 30.0 | 30.0 | 4.5 | 4.1 | 5.1 | PA66 | Natural (NA) | mod. Acrylate T90 | 100 pcs. | 151-01593 |
| QM40APT-I | 40.0 | 40.0 | 5.5 | 4.1 | 8.4 | PA66 | Black (BK) | mod. Acrylate T90 | 50 pcs. | 151-01596 |
| | 40.0 | 40.0 | 5.5 | 4.1 | 8.4 | PA66 | Natural (NA) | mod. Acrylate T90 | 50 pcs. | 151-01595 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

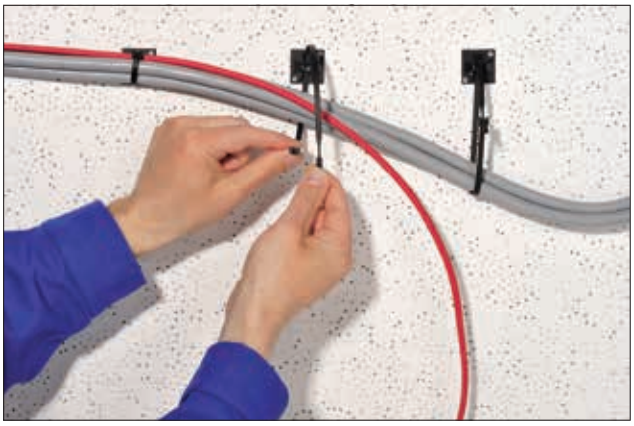
Date of issue: January 2019

## Cable Tie Mounts Q-Series

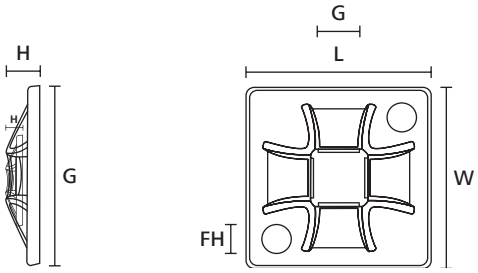
Q-mounts are ideally suited for holding our innovative Q-ties in place. They would perfectly fit to all applications where a reliable and durable fixation is required. Self adhesive versions of our Q-Mounts are suitable for applications where using screws, nuts, bolts or drilling holes to fix cables is problematic, or not the first choice.

### Features and benefits

- Screwable or self adhesive versions
- Perfect for combination with Q-ties
- 4-way entry for cable ties
- Adhesive with high pull-off force
- Locks cable tie in vertical position, means the hands are free to apply cables



*Q-ties can be used for both temporary and final cable installation.*




*Q-Mount (side view)* *Q-Mount (plan view)*

*Application video: Q-Series*

### Q-Mount Series QMA, self adhesive, screwable

| TYPE | Width (W) | Length (L) | Height (H) | Hole Ø (FH) | Strap Width max. (G) | Material | Colour | Adhesive | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| QM20A | 20.0 | 20.0 | 3.7 | 3.1 | 4.0 | PA66 | Black (BK) | Synthetic rubber T60 | 100 pcs. | 151-10914 |
| | 20.0 | 20.0 | 3.7 | 3.1 | 4.0 | PA66 | Natural (NA) | Synthetic rubber T60 | 100 pcs. | 151-10904 |
| QM30A | 30.0 | 30.0 | 4.5 | 4.1 | 5.1 | PA66 | Black (BK) | Synthetic rubber T60 | 100 pcs. | 151-10915 |
| | 30.0 | 30.0 | 4.5 | 4.1 | 5.1 | PA66 | Natural (NA) | Synthetic rubber T60 | 100 pcs. | 151-10905 |
| QM40A | 40.0 | 40.0 | 5.5 | 4.1 | 8.4 | PA66 | Black (BK) | Synthetic rubber T60 | 50 pcs. | 151-10916 |
| | 40.0 | 40.0 | 5.5 | 4.1 | 8.4 | PA66 | Natural (NA) | Synthetic rubber T60 | 50 pcs. | 151-10906 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

### Q-Mount Series QM, screwable

| TYPE | Width (W) | Length (L) | Height (H) | Hole Ø (FH) | Strap Width max. (G) | Material | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| QM20 | 20.0 | 20.0 | 3.7 | 3.1 | 4.0 | PA66 | Natural (NA) | 100 pcs. | 151-10901 |
| | 20.0 | 20.0 | 3.7 | 3.1 | 4.0 | PA66 | Black (BK) | 100 pcs. | 151-10911 |
| QM30 | 30.0 | 30.0 | 4.5 | 4.1 | 5.1 | PA66 | Natural (NA) | 100 pcs. | 151-10902 |
| | 30.0 | 30.0 | 4.5 | 4.1 | 5.1 | PA66 | Black (BK) | 100 pcs. | 151-10912 |
| QM40 | 40.0 | 40.0 | 5.5 | 4.1 | 8.4 | PA66 | Natural (NA) | 50 pcs. | 151-10903 |
| | 40.0 | 40.0 | 5.5 | 4.1 | 8.4 | PA66 | Black (BK) | 50 pcs. | 151-10913 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

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For product specific approvals and specifications please refer to the Appendix.

## Cable Tie Mounts with high perfomance adhesive

**SolidTack-Series MB**

SolidTack MB Series mounts have a square design and are fairly common in areas like electrical cabinet, railway, aerospace, automotive and agriculture machinery. The premium self-adhesive bonds well on high and low-energy surfaces like plastics, metal, varnish or paint and is suitable for a wide range of applications.

**Features and benefits**

- MB mounts with homogeneous system of acrylic adhesive
- Very good initial adhesion, increases with time
- Adhesive with high cohesive strength combined with good weathering resistance
- Innovative fixing solution for high and low energy surfaces
- Protection foil with finger lift for easy peel off

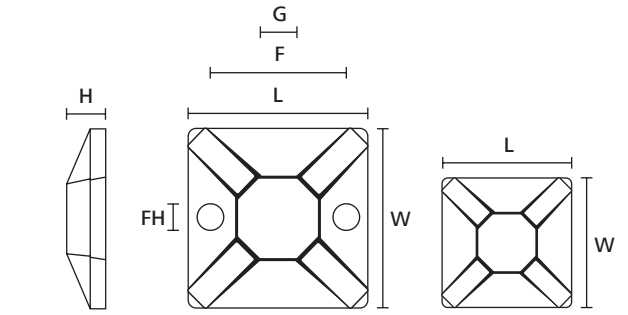


*SolidTack MB Series mounts with square design - screwable, self-adhesive - suitable for a wide range of applications like fastening of cables in the automotive machinery.*

**For more information on the types of adhesive please see page 130.**

**Material specification please see page 26.**

*One Step to the Web!*




*MB3-MB5 (side view)* *MB3-MB5 (plan view)* *Cable Tie Mounts MB2A*

| TYPE | Width (W) | Length (L) | Height (H) | Hole Ø (FH) | Fixing Hole Centres (F) | Strap Width max. (G) | Material | Colour | Adhesive | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **MB2APT-I** | 13.0 | 13.0 | 4.1 | - | - | 2.7 | PA66 | Black (BK) | mod. Acrylate T90 | 100 pcs. | 151-01556 |
| **MB3APT-I** | 19.0 | 19.0 | 3.8 | 3.1 | 13.2 | 4.4 | PA66 | Black (BK) | mod. Acrylate T90 | 100 pcs. | 151-01557 |
| | 19.0 | 19.0 | 3.8 | 3.1 | 13.2 | 4.4 | PA66 | White (WH) | mod. Acrylate T90 | 100 pcs. | 151-01558 |
| **MB4APT-I** | 28.0 | 28.0 | 4.7 | 4.0 | 20.2 | 5.6 | PA66 | Black (BK) | mod. Acrylate T90 | 100 pcs. | 151-01559 |
| | 28.0 | 28.0 | 4.7 | 4.0 | 20.2 | 5.6 | PA66 | White (WH) | mod. Acrylate T90 | 100 pcs. | 151-01560 |
| **MB5APT-I** | 38.0 | 38.0 | 6.3 | 4.7 | 25.3 | 10.0 | PA66 | Black (BK) | mod. Acrylate T90 | 100 pcs. | 151-01561 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

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## Self Adhesive, Screw Fixing Cable Tie Mounts

Where speed, simplicity and a firm fixing base are required these self adhesive clips are ideal. Particularly suitable for use in control cabinets, telecoms equipment or domestic appliances where the use of holes, screws, or nuts and bolts is impractical or undesirable.

### Features and benefits

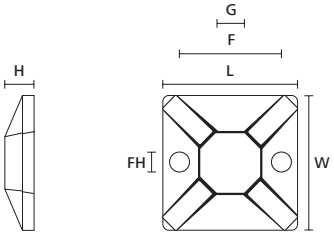
- Screwable or self-adhesive versions
- Simple to install with a screw or bolt
- Excellent security, particularly in areas of high vibration
- Maximum surface area with adhesive to achieve high pull-off force
- 4-way entry for cable tie for quicker and more flexible installation



*MB-Series Mounts with square design / screwable, self adhesive.*

**For more information on the types of adhesive please see page 130.**

### MB-Series square design, screwable



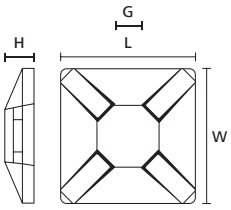

*MB3-MB5 (side view)*

*MB3-MB5 (plan view)*

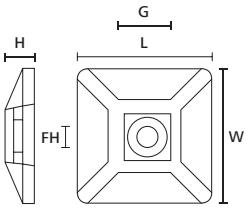
| TYPE | Width (W) | Length (L) | Height (H) | Fixing Hole Centres (F) | Hole Ø (FH) | Strap Width max. (G) | Material | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **MB3** | 19.0 | 19.0 | 3.8 | 13.2 | 3.1 | 4.1 | PA66 | White (WH) | 100 pcs. | 151-28359 |
| **MB4** | 28.0 | 28.0 | 4.7 | 20.0 | 4.0 | 5.4 | PA66 | White (WH) | 100 pcs. | 151-28479 |
| **MB5** | 37.7 | 37.7 | 6.2 | 25.3 | 4.8 | 8.9 | PA66 | White (WH) | 100 pcs. | 151-00324 |

All dimensions in mm. Subject to technical changes. Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

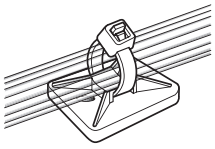
### MB-Series square design, self adhesive, screwable




*Cable Tie Mount MB2A (side and plan view)*




*Cable Tie Mount MB4CA (side and plan view)*



*Cable Tie Mount MB3A in application*

| TYPE | Width (W) | Length (L) | Height (H) | Hole Ø (FH) | Strap Width max. (G) | Material | Colour | Adhesive | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **MB2A** | 13.0 | 13.0 | 4.1 | - | 2.7 | PA66 | Black (BK) | Synthetic rubber T60 | 50 pcs. | 151-01800 |
| | 13.0 | 13.0 | 4.1 | - | 2.7 | PA66 | White (WH) | Synthetic rubber T60 | 100 pcs. | 151-01802 |
| **MB3A** | 19.0 | 19.0 | 3.8 | 3.1 | 4.1 | PA66 | Black (BK) | Synthetic rubber T60 | 100 pcs. | 151-28320 |
| | 19.0 | 19.0 | 3.8 | 3.1 | 4.1 | PA66 | White (WH) | Synthetic rubber T60 | 100 pcs. | 151-28349 |
| **MB4A3** | 28.0 | 28.0 | 4.7 | 4.0 | 5.4 | PA66 | Black (BK) | Acrylate | 100 pcs. | 151-28430 |
| **MB4A** | 28.0 | 28.0 | 4.7 | 4.0 | 5.4 | PA66 | Black (BK) | Synthetic rubber T60 | 100 pcs. | 151-28412 |
| | 28.0 | 28.0 | 4.7 | 4.0 | 5.4 | PA66 | White (WH) | Synthetic rubber T60 | 100 pcs. | 151-28469 |
| **MB4CA*** | 29.0 | 29.0 | 5.7 | 4.2 | 5.4 | PA66 | Natural (NA) | Synthetic rubber T60 | 100 pcs. | 151-28459 |
| **MB4CAS** | 29.0 | 29.0 | 5.7 | 4.2 | 5.4 | PA66 | Natural (NA) | Synthetic rubber T60 | 100 pcs. | 151-28449 |
| **MB5A** | 37.7 | 37.7 | 7.1 | 4.8 | 8.9 | PA66 | Black (BK) | Synthetic rubber T50 | 100 pcs. | 151-28602 |
| | 37.7 | 37.7 | 7.1 | 4.8 | 8.9 | PA66 | White (WH) | Synthetic rubber T50 | 100 pcs. | 151-28529 |
| **MB5A3** | 38.0 | 38.0 | 6.4 | 4.7 | 10.0 | PA66 | Black (BK) | Acrylate | 100 pcs. | 151-28530 |

All dimensions in mm. Subject to technical changes. Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available. *** Plastic box**

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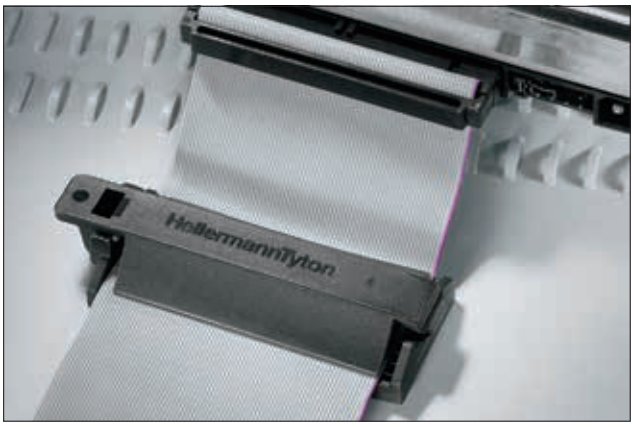
For product specific approvals and specifications please refer to the Appendix.

## Flat ribbon cable mounts

These clips are ideal for use in applications which are difficult to access, or for areas where a self adhesive solution is the only possible fixing method (for example 'holes' would be unacceptable). The FKH clips are designed to retain flat ribbon cables - ideal for use in computer equipment, gaming machines and domestic appliances. Available as a self-adhesive mount or screw mount.

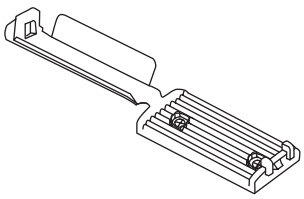
### Features and benefits

- One-piece fixing mount for flat ribbon cables
- Increased mounting area ensures proper bonding
- Quick and easy installation
- Can be released and re-used easily
- Flat cable is gently fastened due to soft wings

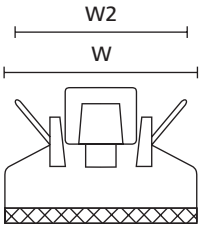



*Based on extremely soft wings any flat cable is gently fastened.*

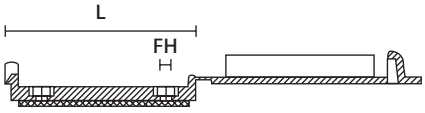
**Material specification please see page 26.**



*Fixing can be realised with M3 screws or acrylic adhesive backing*




*Flat Ribbon Cable Mount (front view)*




*Flat Ribbon Cable Mount (side view)*

**SolidTack-Series FKH, high performance adhesive**

| TYPE | Width (W) | Width (W2) | Length (L) | Hole Ø (FH) | For Cable Width max. | Material | Colour | Adhesive | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **FKH25APT-I** | 25.0 | 22.0 | 31.0 | 3.1 | 25.0 | PA66HIR | Black (BK) | mod. Acrylate T90 | 100 pcs. | 151-02363 |
| **FKH50APT-I** | 25.0 | 22.0 | 56.5 | 3.1 | 50.0 | PA66HIR | Black (BK) | mod. Acrylate T90 | 100 pcs. | 151-01562 |
| **FKH80APT-I** | 25.0 | 22.0 | 86.0 | 3.1 | 80.0 | PA66HIR | Black (BK) | mod. Acrylate T90 | 100 pcs. | 151-01563 |

All dimensions in mm. Subject to technical changes. Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

**FKH-Series, self adhesive, screw fixing**

| TYPE | Width (W) | Length (L) | Width (W2) | Hole Ø (FH) | Material | Colour | Adhesive | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **FKH25A** | 25.0 | 31.0 | 22.0 | 3.1 | PA66HIR | Black (BK) | Acrylate | 151-15250 |
| **FKH30A** | 25.0 | 35.0 | 22.0 | 3.1 | PA66HIR | Black (BK) | Acrylate | 151-15300 |
| **FKH50A** | 25.0 | 56.5 | 22.0 | 3.1 | PA66HIR | Black (BK) | Acrylate | 151-15500 |
| **FKH80A** | 25.0 | 86.0 | 22.0 | 3.1 | PA66HIR | Black (BK) | Acrylate | 151-15800 |

All dimensions in mm. Subject to technical changes.

**FKH-Series, screw fixing**

| TYPE | Width (W) | Length (L) | Width (W2) | Hole Ø (FH) | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|---|
| **FKH25** | 25.0 | 31.0 | 22.0 | 3.1 | PA66HIR | Black (BK) | 151-16250 |
| **FKH30** | 25.0 | 35.0 | 22.0 | 3.1 | PA66HIR | Black (BK) | 151-16300 |
| **FKH50** | 25.0 | 56.5 | 22.0 | 3.1 | PA66HIR | Black (BK) | 151-16500 |
| **FKH80** | 25.0 | 86.0 | 22.0 | 3.1 | PA66HIR | Black (BK) | 151-16800 |

All dimensions in mm. Subject to technical changes.

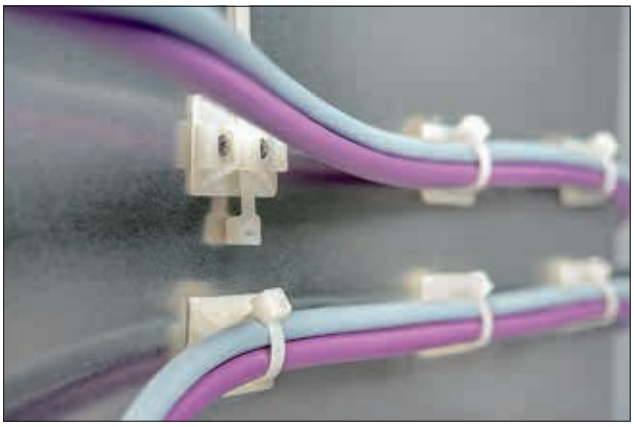
Date of issue: January 2019

## Screw Fixing Cable Tie Mounts

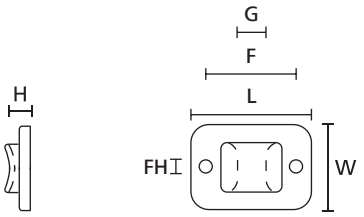
These products are designed for simple yet robust installation in a wide variety of applications. TY-Series mounts with a rectangular design are commonly used in telecoms equipment, switchgear and control cabinets. With its small and compact design TY3G1 offers an easy and rapid assembly for many different applications.

**Features and benefits**

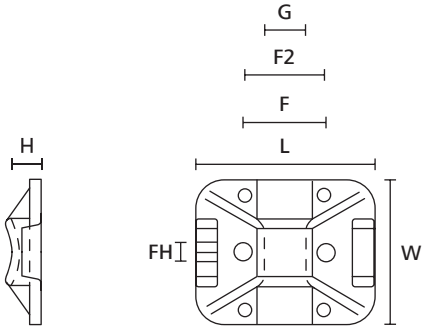
- Screwable or self-adhesive versions
- Concave design to support larger diameter cables and bundles
- 2-way mounting base for safe guiding of cables and conduits
- Suitable for applications with minimal space
- Mounted before cable installation
- Usable with standard cable ties



*TY-Series mounts with rectangle design / screwable, self adhesive.*




*TY3G1, TY3G1S (side view)* *TY3G1, TY3G1S (plan view)*




*TY8G1, TY8G1S (side view)* *TY8G1, TY8G1S (plan view)*

**For more information on the types of adhesive please see page 130.**

### TY-Series Rectangle Design, screwable

| TYPE | Width (W) | Length (L) | Height (H) | Hole Ø (FH) | Fixing Hole Centres (F) | Fixing Hole Centres (F2) | Strap Width max. (G) | Material | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **TY3G1** | 14.0 | 20.0 | 3.7 | 2.2 | 15.0 | - | 4.0 | PA66 | Natural (NA) | 100 pcs. | 151-21319 |
| **TY8G1** | 25.0 | 32.0 | 5.5 | 3.2 | 15.0 | 14.0 | 8.0 | PA66 | Natural (NA) | 100 pcs. | 151-21819 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

### TY-Series Rectangle Design, self adhesive, screwable

| TYPE | Width (W) | Length (L) | Height (H) | Hole Ø (FH) | Fixing Hole Centres (F) | Fixing Hole Centres (F2) | Strap Width max. (G) | Material | Colour | Adhesive | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TY3G1S** | 14.0 | 20.0 | 3.7 | 2.2 | 15.0 | - | 4.0 | PA66 | Natural (NA) | Acrylate | 100 pcs. | 151-11319 |
| | 14.0 | 20.0 | 3.7 | 2.2 | 15.0 | - | 4.0 | PA66W | Black (BK) | Acrylate | 100 pcs. | 151-11310 |
| **TY8G1S** | 25.0 | 32.0 | 5.5 | 3.2 | 15.0 | 14.0 | 8.0 | PA66 | Natural (NA) | Acrylate | 100 pcs. | 151-11819 |
| | 25.0 | 32.0 | 5.5 | 3.2 | 15.0 | 14.0 | 8.0 | PA66W | Black (BK) | Acrylate | 100 pcs. | 151-11810 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

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## Mounts with round design, self adhesive

**RA-Series**

These mounts are ideal for use in applications which are difficult to access or for areas where self adhesive is the only possible fixing method and fixing holes would be unacceptable. The round self adhesive mounts can be used without cable ties. Offering process optimization in industries like automotive, bus and truck, construction vehicles or industrial building.

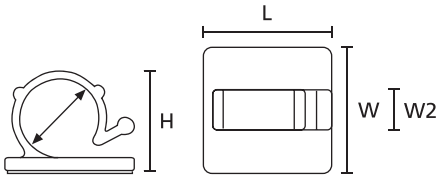
### Features and benefits

- One-piece self adhesive mount for quick and easy installation
- Can be used without cable ties offering process optimization
- Designed to hold wires, cables or hoses
- Different sizes for various bundle diameters available
- Two types of adhesive can be offered



*Self adhesive one piece fixing mounts RA6 (l) and RB5 (r).*

**For more information on the types of adhesive please see page 130.**




*RA3-18 Series (side view)*

*RA3-18 Series (plan view)*

| TYPE | Width (W) | Width (W2) | Length (L) | Height (H) | Bundle Ø max. | Material | Colour | Adhesive | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **RA3** | 13.0 | 5.0 | 13.0 | 5.0 | 3.0 | PA66 | Natural (NA) | Synthetic rubber T60 | 151-13018 |
| **RA6APT-I** | 19.0 | 5.0 | 19.0 | 9.0 | 6.0 | PA66 | Natural (NA) | mod. Acrylate T90 | 151-01635 |
| **RA6** | 19.0 | 5.0 | 19.0 | 9.0 | 6.0 | PA66 | Natural (NA) | Synthetic rubber T60 | 151-13019 |
| **RA9** | 19.0 | 7.5 | 19.0 | 12.5 | 9.0 | PA66 | Natural (NA) | Synthetic rubber T60 | 151-13020 |
| **RA13APT-I** | 25.0 | 10.0 | 25.0 | 16.5 | 13.0 | PA66 | Natural (NA) | mod. Acrylate T90 | 151-01636 |
| **RA13** | 25.0 | 10.0 | 25.0 | 16.5 | 13.0 | PA66 | Natural (NA) | Synthetic rubber T60 | 151-13021 |
| **RA18** | 28.5 | 10.0 | 28.5 | 23.0 | 18.0 | PA66 | Natural (NA) | Synthetic rubber T60 | 151-13119 |

All dimensions in mm. Subject to technical changes.

Date of issue: January 2019

## Mounts with flat and round design, self adhesive

**RB-Series**

RB-Series self adhesive mounts offer greater routing freedom and also reduce the risk of corrosion compared to screw fixing mounts. They are ideally suited for tool-free installation and can be re-opened and reused easily when cables need to be replaced. These mounts can be used without the need for additional cable ties. Offering process optimization in a variety of applications.

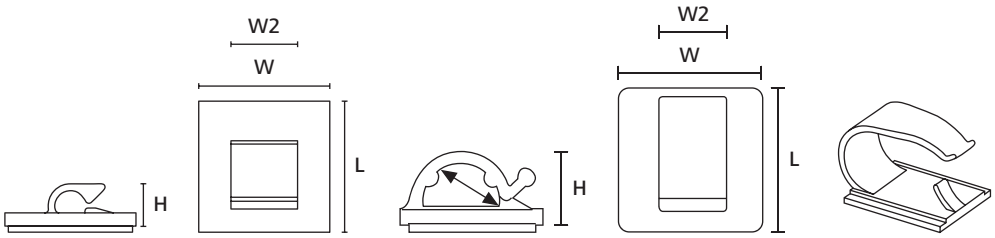


*Self adhesive one piece fixing mounts RB20 (l) and RB14 (r).*

### Features and benefits

- Flat design to use in applications with limited space
- One-piece self adhesive mount for quick and easy installation
- Can be used without cable ties offering process optimization
- Different sizes for various bundle diameters available
- Cost effective with easy application on smooth, clean surfaces

**Material specification please see page 26.**




*RB5-Series (side view)* *RB5-Series (plan view)* *RB8-14 Series (side view)* *RB8-14 Series (plan view)* *RB20*

| TYPE | Width (W) | Width (W2) | Length (L) | Height (H) | Bundle Ø max. | Material | Colour | Adhesive | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **RB5** | 19.0 | 9.7 | 19.0 | 6.0 | 5.0 | PA66 | Black (BK) | Synthetic rubber T60 | 151-14000 |
| | 19.0 | 9.7 | 19.0 | 6.0 | 5.0 | PA66 | Natural (NA) | Synthetic rubber T60 | 151-14059 |
| **RB8** | 25.0 | 12.7 | 25.0 | 11.5 | 8.0 | PA66 | Black (BK) | Synthetic rubber T60 | 151-13601 |
| | 25.0 | 12.7 | 25.0 | 11.5 | 8.0 | PA66 | Natural (NA) | Synthetic rubber T60 | 151-13606 |
| **RB20** | 27.0 | 18.0 | 33.0 | 25.0 | 20.0 | PA66HIRHS | Black (BK) | Synthetic rubber T60 | 151-00831 |
| **RB14** | 27.4 | 23.0 | 33.2 | 16.0 | 14.0 | PA66 | Black (BK) | Synthetic rubber T60 | 151-00502 |
| | 27.4 | 23.0 | 33.2 | 16.0 | 14.0 | PA66 | Natural (NA) | Synthetic rubber T60 | 151-00505 |

All dimensions in mm. Subject to technical changes.

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## Paste Adhesive Mount

**PMB5 mount for uneven surfaces**

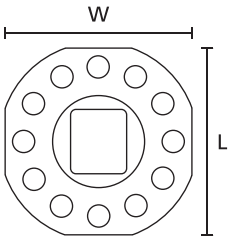
PMB5 paste mount offers a fixing solution wherever screw fixing is not allowed. Due to a larger diameter the mount can even be installed onto uneven surfaces. PMB5 paste mount is used in the railway industry as well as in the renewable energy industry. Further applications are in the ship building industry, in the electrical industry and the production of switching cabinets.

### Features and benefits

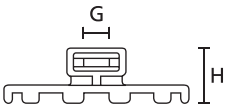
- PMB5 paste adhesive mount for fixings with paste / liquid adhesive
- Mount geometry offers a good form closure with cured adhesive
- Can even be installed onto uneven surfaces due to large diameter
- Can also be applied in combination with hot-melt adhesive, as mount is made of heat resistant PA66



*PMB5 mount with paste adhesive.*




*PMB5 Mount (plan view)*




*PMB5 Mount (front view)*

**Material specification please see page 26.**

| TYPE | Width (W) | Length (L) | Height (H) | Strap Width max. (G) | Material | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **PMB5** | 36.0 | 36.0 | 10.7 | 4.8 | PA66HS | Black (BK) | 100 pcs. | 151-02255 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

Date of issue: January 2019

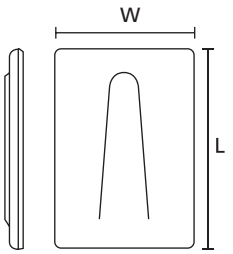
## Mounts with flexible flat design

### SAC-Series

These clips are ideal for use in applications which are difficult to access, or for areas where a self adhesive solution is the only possible fixing method and holes would be unacceptable. Typical applications include domestic appliances and trailers.

**Features and benefits**

- Bendable metal tongue for any shape or configuration of wires or cables
- Cost effective with easy application on smooth, clean surfaces




*SAC-Series Self Adhesive Clip*



*SAC-Series in application*



*Malleable tongue allows for a variety of sizes per clip.*

**For more information on the types of adhesive please see page 130.**

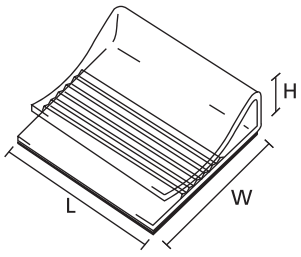
| TYPE | Width (W) | Length (L) | Bundle Ø max. | Material | Colour | Adhesive | Article-No. |
|---|---|---|---|---|---|---|---|
| **SAC0** | 15.0 | 20.0 | 3.0 | ST | White (WH) | Acrylate | 151-00033 |
| **SAC1** | 20.0 | 30.0 | 4.0 | ST | White (WH) | Acrylate | 151-00100 |
| **SAC2** | 25.0 | 35.0 | 8.0 | ST | White (WH) | Acrylate | 151-00200 |
| **SAC3** | 31.0 | 43.0 | 12.0 | ST | White (WH) | Acrylate | 151-00300 |
| **SAC4** | 38.0 | 51.0 | 16.0 | ST | White (WH) | Acrylate | 151-00400 |

All dimensions in mm. Subject to technical changes.

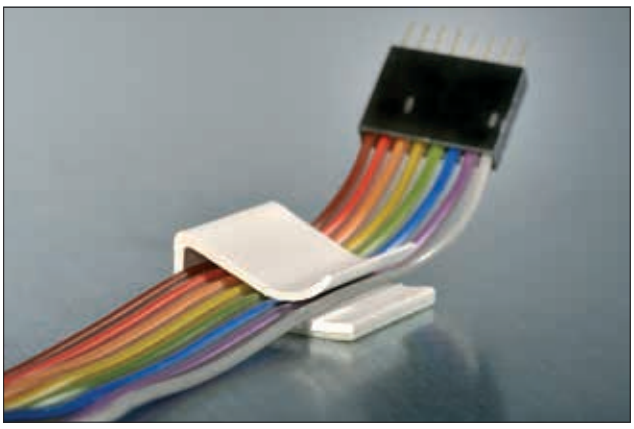
### Type 130100

**Features and benefits**

- Self adhesive mount with integrated clamp for holding flat cables
- Manufactured from PVC




*130100 self adhesive mount*



*130100 self adhesive mount for flat cables.*

| TYPE | Width (W) | Length (L) | Height (H) | Material | Colour | Adhesive | Article-No. |
|---|---|---|---|---|---|---|---|
| **130100** | 25.0 | 25.0 | 9.1 | PVC | White (WH) | Acrylate | 154-01119 |

All dimensions in mm. Subject to technical changes.

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## Cable Tie Mounts for food industry, detectable

**MCMB-Series, screwable**

MCMB mounts are ideally suited for holding MCT-Series cable ties in position, even in areas of high vibration such as food manufacturing equipment and automated packaging machines.

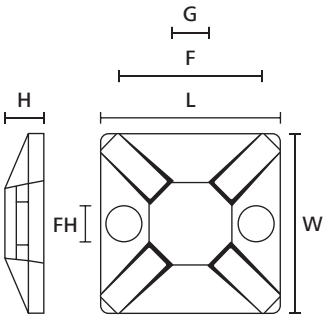
**Features and benefits**

- Distinctive blue colour for easy visual detection
- Simple to install with a screw or bolt
- Provides a secure fixing solution for routing cables, tubes and hoses
- 4-way entry for the cable tie leads to a quicker and more flexible installation
- Magnetic and X-Ray detectable – perfect for use with food and pharmaceutical grade detection equipment
- Total metal dispersion provides consistent detectability, even for small cut-off pieces
- Greatly reduces risk of contamination within food products
- Can support quality assurance in the production of food stuffs, for example HACCP



*Detectable fixing solution containing of MCMB mount and MCT cable tie.*

*One Step to the Web!*




*MCMB Mount (side and plan view)*

**Can support quality assurance in the production of food stuffs, for example HACCP.**

**The MCMB mount can ideally be combined with MCT cable ties on page 60.**

| TYPE | Width (W) | Length (L) | Height (H) | Fixing Hole Centres (F) | Hole Ø (FH) | Strap Width max. (G) | Material | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **MCMB3** | 19.0 | 19.0 | 3.8 | 13.2 | 3.1 | 3.5 | PA66MP | Blue (BU) | 100 pcs. | 151-01169 |
| **MCMB4** | 28.0 | 28.0 | 4.7 | 20.0 | 4.0 | 4.7 | PA66MP | Blue (BU) | 100 pcs. | 151-01170 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

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## Screw Fixing Cable Tie Mounts CTQM for limited space

**Q-Mount Series CTQM**

CTQM mounts are ideally suited for holding our innovative Q-ties in place. They would perfectly fit to all applications where a reliable and durable fixation is required and where space is limited.

### Features and benefits

- 2-way mounting base for safe guiding of cables and conduits
- For cable ties up to 5 mm width
- Uses screw with countersunk head (max. ø of head: 8.0 mm)
- Perfect for combination with Q-ties
- Pre-assembly feature in combination with cable tie
- Holds the cable tie in vertical mounting position

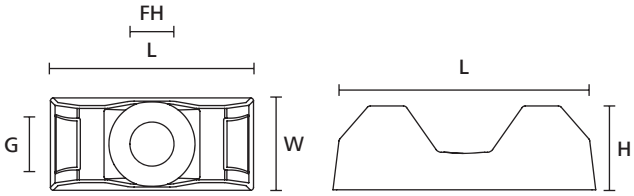


*Q-Mount, CTQM 2-way entry, screwable.*

*Application video: Q-Series*

**Material specification please see page 26.**

**Please find more Q-Series products for your system solution on page 55, 133 and 486.**




*CTQM-Series (plan view)* *CTQM-Series (side view)*

| TYPE | Width (W) | Length (L) | Height (H) | Hole Ø (FH) | Strap Width max. (G) | Material | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| CTQM5 | 9.5 | 21.0 | 6.7 | 4.5 | 5.0 | PA66 | Natural (NA) | 100 pcs. | 151-10920 |
| | 9.5 | 21.0 | 6.7 | 4.5 | 5.0 | PA66 | Black (BK) | 100 pcs. | 151-10930 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

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For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Screw Fixing Mounts

### Cable Tie Mounts with curved design

Designed specifically for holding heavier cable bundles these mounting bases can be used in many industries from agriculture to truck manufacturing. They offer a very secure fixing and can be used with a wide variety of heavy duty cable ties up to 8.3 mm width.

**Features and benefits**

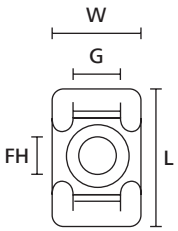
- Curved design for additional cable support
- Simple to install with a screw or bolt
- Excellent security, particularly in areas of high vibration
- Mounts are available in various sizes and materials



*Cable Tie Mounts KR6G5, KR8G5 and CTM.*




*KR6G5, KR8G5 and CTM (side view)*




*KR6G5, KR8G5 and CTM (plan view)*

**The KR-E/TFE mounts can ideally be combined with the E/TFE-cable ties on page 51.**

**Can support quality assurance in the production of food stuffs, for example HACCP.**

| TYPE | Width (W) | Length (L) | Height (H) | Hole Ø (FH) | Strap Width max. (G) | Material | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **CTM0** | 9.4 | 14.7 | 6.9 | 3.8 | 5.0 | PA66 | Black (BK) | 100 pcs. | 151-30300 |
| | 9.4 | 14.7 | 6.9 | 3.8 | 5.0 | PA66 | White (WH) | 100 pcs. | 151-30303 |
| **CTM1** | 9.4 | 14.7 | 6.9 | 4.8 | 5.0 | PA66 | Black (BK) | 100 pcs. | 151-30400 |
| | 9.4 | 14.7 | 6.9 | 4.8 | 5.0 | PA66 | White (WH) | 100 pcs. | 151-30404 |
| **KR6G5** | 11.8 | 17.8 | 8.8 | 4.5 | 6.4 | E/TFE | Blue (BU) | 100 pcs. | 151-00653 |
| **MCKR6G5** | 11.8 | 17.8 | 8.8 | 4.5 | 6.4 | PA66MP+ | Blue (BU) | 100 pcs. | 151-00950 |
| **KR6G5** | 12.0 | 18.0 | 9.0 | 4.5 | 6.0 | PA66 | Natural (NA) | 100 pcs. | 151-24619 |
| | 12.0 | 18.0 | 9.0 | 4.5 | 6.0 | PA66W | Black (BK) | 100 pcs. | 151-24660 |
| **MCKR8G5-5** | 14.3 | 24.8 | 12.0 | 5.2 | 8.3 | PA66MP+ | Blue (BU) | 100 pcs. | 151-01020 |
| **KR8G5** | 14.3 | 24.8 | 12.1 | 6.5 | 8.3 | E/TFE | Blue (BU) | 100 pcs. | 151-00654 |
| | 14.5 | 25.0 | 12.0 | 6.5 | 8.0 | PA66 | Natural (NA) | 100 pcs. | 151-24819 |
| | 14.5 | 25.0 | 12.0 | 6.5 | 8.0 | PA66HS | Black (BK) | 100 pcs. | 151-24850 |
| **CTM2** | 15.5 | 21.8 | 9.4 | 4.6 | 7.9 | PA66 | Black (BK) | 100 pcs. | 151-30500 |
| | 15.5 | 21.8 | 9.4 | 4.6 | 7.9 | PA66 | White (WH) | 100 pcs. | 151-30504 |
| **CTM3** | 15.5 | 21.8 | 9.4 | 5.1 | 7.9 | PA66 | Black (BK) | 100 pcs. | 151-30600 |
| | 15.5 | 21.8 | 9.4 | 5.1 | 7.9 | PA66 | White (WH) | 100 pcs. | 151-30605 |
| **CTM4** | 15.8 | 21.8 | 9.4 | 6.4 | 7.9 | PA66 | Black (BK) | 100 pcs. | 151-30700 |
| | 15.8 | 21.8 | 9.4 | 6.4 | 7.9 | PA66 | White (WH) | 100 pcs. | 151-30703 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

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For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

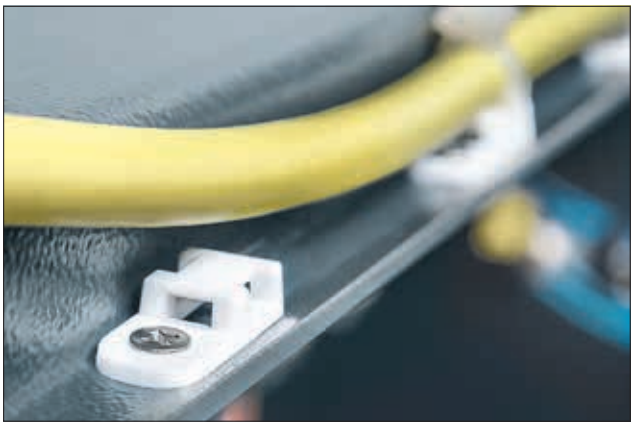
## Screw Fixing Mounts

**CTAM-Series for applications where space is limited**

Each of these products offers particular benefits, but all are designed for simple yet robust installation in a wide variety of applications. Particularly used in telecoms equipment, switchgear and control cabinets these cable tie mounts are also used within the aerospace and railway industry.

**Features and benefits**

- Suitable for applications with minimal space
- Mounted before cable installation and in line with cable
- CTAM has 4-way entry design for use in line or at 90° angle to cable run
- CTAM mounts are available in different sizes and materials

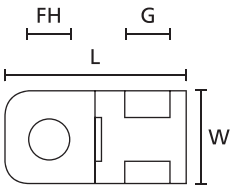


*CTAM mounts for applications with limited space.*

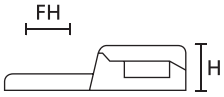
**The CTAM mounts made of PEEK are the ideal complement for the PEEK tie on page 64.**

**The CTAM mounts made of PA66MP+ are the ideal complement for MCTS ties on page 61.**

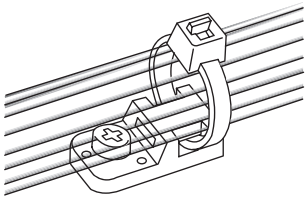
**Can support quality assurance in the production of food stuffs, for example HACCP.**




*CTAM-Series (plan view)*




*CTAM-Series (side view)*



*CTAM-Series in application*

*Application video: PEEK*

| TYPE | Width (W) | Length (L) | Height (H) | Hole Ø (FH) | Strap Width max. (G) | Material | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **CTAM1** | 10.2 | 20.4 | 5.1 | 4.3 | 5.0 | PA66 | White (WH) | 100 pcs. | 151-31103 |
| **CTAM2** | 10.2 | 20.4 | 5.1 | 5.2 | 5.0 | PA66 | White (WH) | 100 pcs. | 151-31203 |
| **CTAM1** | 10.2 | 20.5 | 5.5 | 4.3 | 5.0 | PEEK | Beige (BGE) | 100 pcs. | 151-00757 |
| **CTAM2** | 10.2 | 20.5 | 5.5 | 5.2 | 5.0 | PEEK | Beige (BGE) | 100 pcs. | 151-00758 |
| **MCCTAM1** | 10.3 | 20.7 | 5.1 | 4.3 | 5.0 | PA66MP+ | Blue (BU) | 100 pcs. | 151-00997 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

For product specific approvals and specifications please refer to the Appendix.

## Screw Fixing Mounts

**LKC- and NY-Series with overlapping curved design**

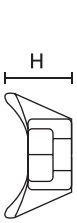
Designed specifically for holding heavier cable bundles these mounting bases can be used in many industries from agriculture to truck manufacture. They offer a very secure fixing and can be used with a wide variety of heavy duty cable ties up to 13 mm wide.

**Features and benefits**

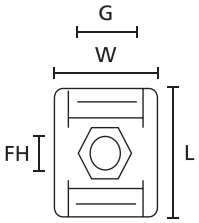
- Curved design for additional cable support
- Simple to install with a screw or bolt
- Excellent security, particularly in areas of high vibration



*Cable tie mount LKC-Series.*

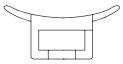
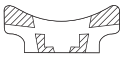
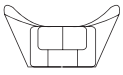



*NY3256 (side view)*




*NY3256 (plan view)*

**Material specification please see page 26.**

| TYPE | Drawing | Width (W) | Length (L) | Height (H) | Hole Ø (FH) | Strap Width max. (G) | Material | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| LKC |  | 17.0 | 25.0 | 13.5 | 5.5 | 8.0 | PA66 | Black (BK) | 100 pcs. | 151-27010 |
| | | 17.0 | 25.0 | 13.5 | 5.5 | 8.0 | PA66 | Natural (NA) | 100 pcs. | 151-27019 |
| LKCSF1 |  | 19.0 | 40.0 | 16.0 | 6.0 | 13.0 | PA66W | Black (BK) | 100 pcs. | 151-01683 |
| | | 19.0 | 40.0 | 16.8 | 6.0 | 13.0 | PA66 | Natural (NA) | 100 pcs. | 151-27219 |
| | | 19.0 | 40.0 | 16.8 | 6.0 | 13.0 | PA66 | Black (BK) | 100 pcs. | 151-27202 |
| NY3256 |  | 12.0 | 13.5 | 7.8 | 3.1 | 8.0 | PA66 | Natural (NA) | 1,000 pcs. | 151-25219 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

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For product specific approvals and specifications please refer to the Appendix.

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## Screw Fixing Mounts

These cable tie mounts are very small in their overall size. They are designed for simple yet robust installation particulary in areas with high vibrations and/or limited space. They are a common fixing method for telecoms equipment, switchgear and control cabinets.

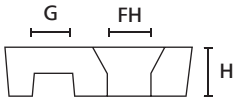
**Features and benefits**

- Small overall size for areas with limited mounting space
- Simple to install with a screw, bolt or rivet
- Excellent security, particularly in areas of high vibration
- Single hole fixing with two-way entry for cable tie

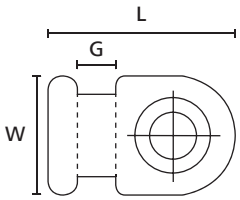


*TY- (l) and MB-Series (r) with curved design, screwable.*

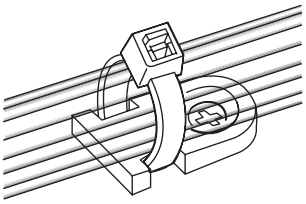
### MB-Series Curved Design, screwable




*MB1, MB2 Mounts (side view)*




*MB1, MB2 Mounts (plan view)*

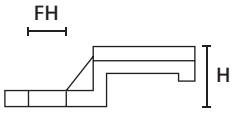


*MB1, MB2 Mounts in application*

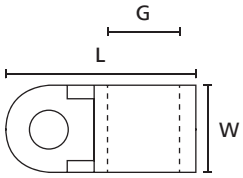
| TYPE | Width (W) | Length (L) | Height (H) | Hole Ø (FH) | Strap Width max. (G) | Material | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **MB1** | 8.0 | 12.5 | 3.5 | 2.9 | 2.6 | PA66 | Natural (NA) | 100 pcs. | 151-28119 |
| **MB2** | 12.5 | 20.5 | 3.3 | 5.0 | 5.0 | PA66 | Black (BK) | 100 pcs. | 151-28210 |
| | 12.5 | 20.5 | 3.3 | 5.0 | 5.0 | PA66 | White (WH) | 100 pcs. | 151-28219 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

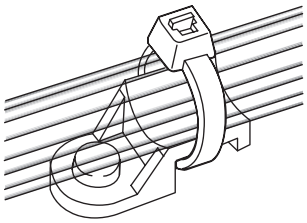
### TY-Series Curved Design, screwable




*TY3, TY8 Mounts (side view)*




*TY3, TY8 Mounts (plan view)*



*TY3, TY8 Mounts in application*

| TYPE | Width (W) | Length (L) | Height (H) | Hole Ø (FH) | Strap Width max. (G) | Material | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **TY3F1** | 8.0 | 19.0 | 5.7 | 3.5 | 5.0 | PA66 | Natural (NA) | 1,000 pcs. | 151-02156 |
| **TY8F1** | 10.0 | 22.5 | 7.2 | 4.5 | 8.0 | PA66 | Natural (NA) | 1,000 pcs. | 151-02157 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

Date of issue: January 2019

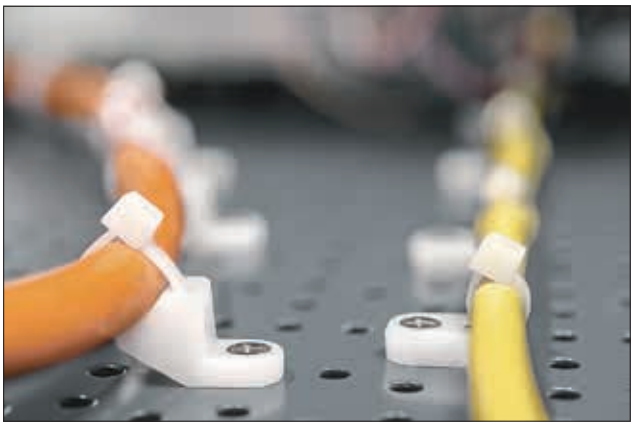
## Screw Fixing Mounts

**LKM / CL / FH with curved design for sideways fixing**

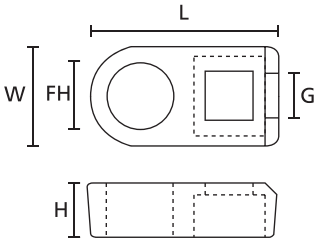
In areas with limited space these mounting bases allow the cable to be offset from the fixing hole, and can be installed in the equipment prior to the cable installation. A major cost saving can be made using these products as they will allow the use of many different sizes of standard cable ties without the need to stock a wide range of specific fixing ties.

### Features and benefits

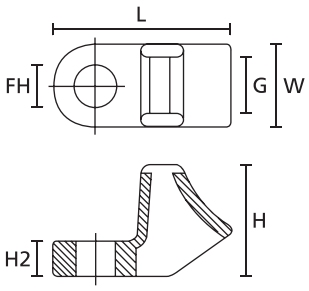
- Small overall size for areas with limited mounting space
- Screwable mounts for fixing cable sideways
- Ideal for securing large, heavier bundles
- Suitable for cable ties up to 8 mm width



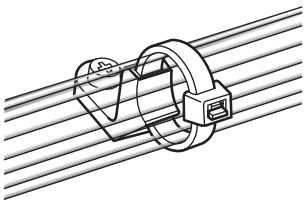
*LKM, CL8 and FH cable tie mounts for applications with limited space.*




*FH cable tie mounts (plan and side view)*




*LKM, CL8 cable tie mounts (plan and side view)*



*CL8 cable tie mount in application*

| TYPE | Width (W) | Length (L) | Height (H) | Height (H2) | Hole Ø (FH) | Strap Width max. (G) | Material | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **FH18** | 7.1 | 13.3 | 4.0 | - | 3.7 | 2.5 | PA66 | Natural (NA) | 500 pcs. | 151-61119 |
| **FH30** | 9.5 | 17.9 | 4.7 | - | 5.5 | 3.5 | PA66 | Natural (NA) | 500 pcs. | 151-61319 |
| **FH50** | 11.3 | 22.2 | 6.2 | - | 7.1 | 4.6 | PA66 | Natural (NA) | 500 pcs. | 151-61519 |
| **LKM** | 12.0 | 27.0 | 16.0 | 5.0 | 6.0 | 7.6 | PA66 | Black (BK) | 100 pcs. | 151-26301 |
| | 12.0 | 27.0 | 16.0 | 5.0 | 6.0 | 7.6 | PA66 | Natural (NA) | 100 pcs. | 151-26304 |
| **CL8** | 12.5 | 27.3 | 16.0 | 5.0 | 6.5 | 8.0 | PA66 | Natural (NA) | 100 pcs. | 151-02258 |
| | 12.5 | 27.3 | 16.0 | 5.0 | 6.5 | 8.0 | PA66W | Black (BK) | 100 pcs. | 151-02259 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

Date of issue: January 2019

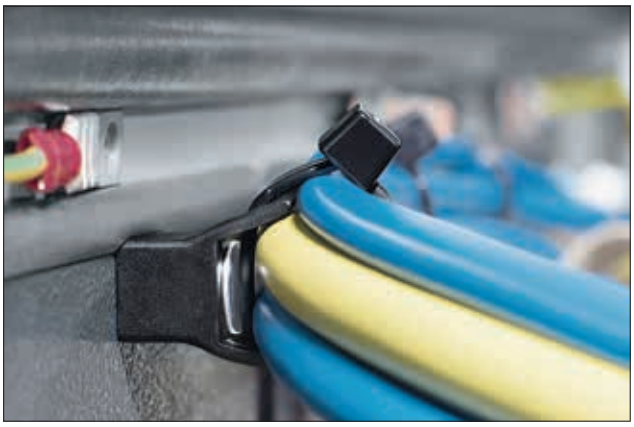
## Fixing Base

**LOK02**

Designed specifically for holding heavier cable bundles these mounting bases can be used in many industries from agriculture to truck manufacturing. LOK cable tie mounts offer a very secure fixing and can be used in combination with cable ties up to 9 mm width.

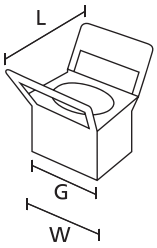
**Features and benefits**

- Special design of fixing base gives additional support to cables
- Simple to install with a screw or bolt
- Excellent security, particularly in areas of high vibration

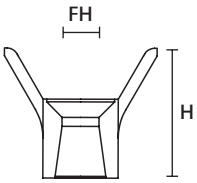


*LOK02 fixing base application.*

**Material specification please see page 26.**




*LOK02 Fixing Base*




*LOK02 Fixing Base (front view)*

**The LOK fixing bases can ideally be combined with the PE-, RPE-, and LPH-cable ties, see pages 66, 67.**

| TYPE | Width (W) | Length (L) | Height (H) | Hole Ø (FH) | Strap Width max. (G) | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **LOK02** | 14.0 | 21.0 | 18.0 | 5.1 | 9.0 | PA6HIR | Black (BK) | 151-80210 |

All dimensions in mm. Subject to technical changes.

Date of issue: January 2019

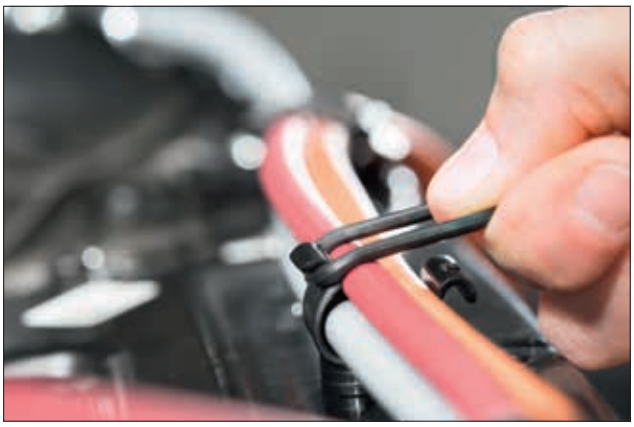
## Clamps with elastical loop

### Cradle clamp

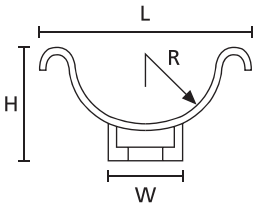
Simple and versatile method of bundling cables. These clamps consist of two parts. The clamping base for mounting onto a panel and the elastical loop.

**Features and benefits**

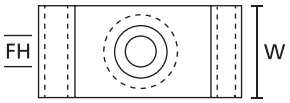
- 2-piece fixing part consists of clamp and retaining ring
- Suitable for pre-assembly and prototyping
- Useful for applications requiring addition or removal of cables
- Simply stretch loop over clip for simple and quick cable containment



*Cradle clamp - 2-piece fixing part consisting of clamp and retaining ring. The simple and versatile method of bundling cables.*



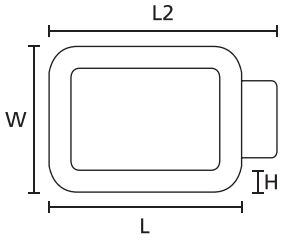

*Cradle clamp (front view)*




*Cradle clamp (plan view)*

| TYPE | Width (W) | Length (L) | Height (H) | Radius (R) | Hole Ø (FH) | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **C1** | 12.7 | 22.0 | 14.0 | 6.3 | 4.8 | PA6HIR | Black (BK) | 201-10010 |
| **C2** | 12.7 | 35.0 | 18.0 | 11.0 | 4.8 | PA6HIR | Black (BK) | 201-10020 |
| **C3** | 12.7 | 48.0 | 25.0 | 17.5 | 4.8 | PA6HIR | Black (BK) | 201-10030 |

All dimensions in mm. Subject to technical changes.




*Retaining Ring R1 - 3*

| TYPE | Width (W) | Length (L) | Length (L2) | Height (H) | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|---|
| **R1** | 23.8 | 16.0 | 22.0 | 3.2 | PVC | Black (BK) | 201-20010 |
| **R2** | 23.8 | 22.0 | 29.0 | 3.2 | PVC | Black (BK) | 201-20020 |
| **R3** | 23.8 | 33.0 | 39.0 | 3.2 | PVC | Black (BK) | 201-20030 |

All dimensions in mm. Subject to technical changes.

Date of issue: January 2019

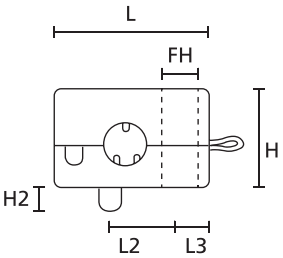
## Strain Relief Clips

### Klam-Klip (KK)

Strain relief clips for gripping cables up to 8.5 mm bundle diameter. Strain relief clip is simply attached to mounting surface with an M4 fixing screw.

**Features and benefits**

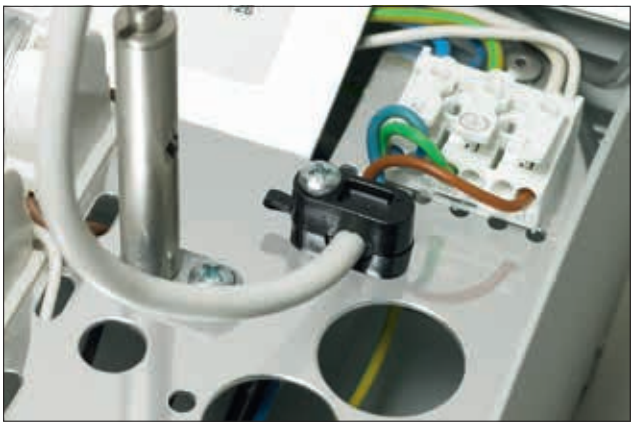
- Simple 1-screw fixing to guide and secure leads
- Two halves of the clip are linked to ensure no loss of parts during re-wiring
- Anti-rotation pin prevents leads from twisting




*Klam-Klip (side view)*




*Klam-Klip Cable Restraints (plan view)*



*Strain relief Klam-Klip in application.*

**Material specification please see page 26.**

| TYPE | Width (W) | Length (L) | Height (H) | Height (H2) | Hole Ø (FH) | Bundle Ø min. | Bundle Ø max. | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **KK1** | 8.8 | 22.0 | 14.0 | 3.5 | 5.0 | 4.5 | 5.7 | PA6HIR | Black (BK) | 234-10100 |
| **KK2** | 8.8 | 22.0 | 14.0 | 3.5 | 5.0 | 5.5 | 6.7 | PA6HIR | Black (BK) | 234-10200 |
| **KK3** | 8.8 | 22.0 | 14.0 | 3.5 | 5.0 | 6.5 | 7.7 | PA6HIR | Black (BK) | 234-10300 |
| **KK4** | 8.8 | 22.0 | 14.0 | 3.5 | 5.0 | 7.5 | 8.5 | PA6HIR | Black (BK) | 234-10400 |

All dimensions in mm. Subject to technical changes.

Date of issue: January 2019

## Harness Clip for Heavy Duty Applications, for Screws or threaded Bolts

These heavy duty mounts (HDM) have been primarily designed for use in the automotive and truck industry. Nowadays they can be found in a variety of applications requiring heavy duty mounting in areas like the railway, defence and/or agriculture industry.

**Features and benefits**

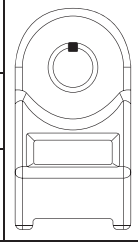
- Design offers secure alignment to the bundle
- Possible replacement of cushion clamps and/or metal clamps
- Eliminates the needs for multiple sized fix diameter clamps
- For heavy duty cable ties up to 12.7 mm width
- High tightening torque
- Easy maintenance of bundle by simply changing the cable tie



*Heavy Duty Mounts HDM-Series, patent number US5820083.*

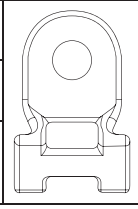
**Material specification please see page 26.**

### Standard Torque Mounts

| TYPE | Drawing | Width (W) | Length (L) | Height (H) | Hole Ø (FH) | Strap Width max. (G) | Material | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| HDM19 |  | 19.3 | 36.3 | 16.7 | 4.7 | 12.7 | PA66HIRHSUV | Black (BK) | 100 pcs. | 151-00134 |
| HDM25 | | 19.3 | 36.3 | 16.7 | 6.2 | 12.7 | PA66HIRHSUV | Black (BK) | 100 pcs. | 151-00437 |
| HDM312 | | 19.3 | 36.3 | 16.7 | 7.8 | 12.7 | PA66HIRHSUV | Black (BK) | 100 pcs. | 151-00439 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

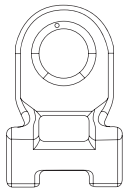
### Medium Torque Mounts

| TYPE | Drawing | Width (W) | Length (L) | Height (H) | Hole Ø (FH) | Strap Width max. (G) | Material | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| HDM321 |  | 24.0 | 46.0 | 20.7 | 8.31 | 12.7 | PA66HIRHSUV | Black (BK) | 500 pcs. | 151-07100 |
| HDM401 | | 24.0 | 46.0 | 20.7 | 10.29 | 12.7 | PA66HIRHSUV | Black (BK) | 500 | 151-07300 |
| HDM501 | | 24.0 | 46.0 | 20.7 | 12.7 | 12.7 | PA66HIRHSUV | Black (BK) | 500 pcs. | 151-07500 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

Date of issue: January 2019

### High Torque Mounts

| TYPE | Drawing | Width (W) | Length (L) | Height (H) | Hole Ø (FH) | Strap Width max. (G) | Material | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **HDM320** |  | 25.0 | 47.0 | 20.7 | 8.31 | 12.7 | PA66HIRHSUV | Black (BK) | 500 | 151-02094 |
| **HDM400** | | 25.0 | 47.0 | 20.7 | 10.29 | 12.7 | PA66HIRHSUV | Black (BK) | 500 pcs. | 151-01224 |
| **HDM500** | | 25.0 | 47.0 | 20.7 | 12.7 | 12.7 | PA66HIRHSUV | Black (BK) | 500 | 151-02096 |
| **HDM375BDM4W** |  | 35.6 | 89.0 | 25.2 | 10.29 | 12.7 | PA66HIRHSUV | Black (BK) | 100 | 151-02104 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

## Two Way Saddle Mount for heavy duty applications, for parallel separation

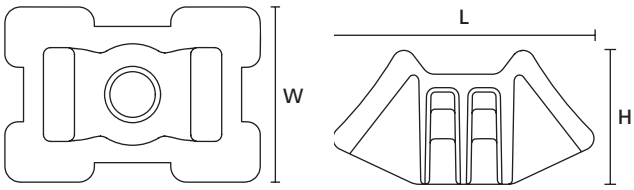
Heavy duty saddle mounts can be installed between two bundles to separate them and prevent chafing and wear. Fastened to a frame rail or mounting bracket, the special profile on the saddle mount provides a tight circumferential loop on large and small bundles. The saddle mount is an ideal assistant in many applications within the railway, truck and agricultural vehicle construction as well as in the ship building industry.



*This saddle mount is installed between two bundles to separate them and prevent chafing and wear.*

**Features and benefits**

- For parallel routing of different bundles to avoid wear and chafing
- Offers secure alignment to the bundle
- Can be used in combination with heavy duty cable ties
- Easy maintenance of bundle by simply changing the cable tie
- Made from impact modified, heat stabilized material




*S2CM25*

| TYPE | Width (W) | Length (L) | Height (H) | Hole Ø (FH) | Strap Width max. (G) | Bundle Ø max. | Material | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **S2CM25** | 30.0 | 45.0 | 23.0 | 6.0 | 12.7 | 89.0 | PA66HIRHS | Grey (GY) | 500 pcs. | 151-29400 |
| **S2HM25** | 30.0 | 45.0 | 23.0 | 6.0 | 12.7 | 89.0 | PA66HIRHSUV | Black (BK) | 500 pcs. | 151-29403 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

Date of issue: January 2019

## Harness Clip for Heavy Duty Applications, for Screws or threaded Bolts for Edges

This axial oval mount stands off bundles from frame rails and cross members to prevent them from rubbing and chafing. They can be perfectly used in combination with heavy duty cable ties up to 12.7 mm width – ideal to securely fix cables and wires in the railway and shipbuilding industry as well as in truck and agricultural vehicle construction.

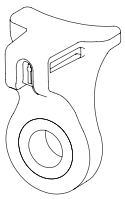
**Features and benefits**

- Guides bundles securely above sharp edges
- For threaded bolts or screws
- Can be used in combination with heavy duty cable ties
- For cable ties up to 12.7 mm width



*Axial oval mounts stand off bundles from frame rails and cross members to prevent them from rubbing and chafing.*

**Material specification please see page 26.**

| TYPE | Drawing | Width (W) | Length (L) | Height (H) | Hole Ø (FH) | Strap Width max. (G) | Bundle Ø max. | Material | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **SAM83** |  | 26.0 | 34.0 | 35.0 | 8.0 | 12.7 | - | PA66HIRHSUV | Grey (GY) | 500 pcs. | 151-29600 |
| **SAOM82** | | 26.0 | 34.0 | 35.0 | 8.0 | 12.7 | - | PA66HIRHSUV | Black (BK) | 500 pcs. | 151-29701 |
| **SAM320B** |  | 25.0 | 29.9 | 44.9 | 8.31 | - | 50.8 | PA66HIRHSUV | Black (BK) | 500 | 151-02099 |
| **SAM400B** | | 25.0 | 29.9 | 44.9 | 10.29 | - | 50.8 | PA66HIRHSUV | Black (BK) | 500 | 151-02102 |
| **SAM500B** | | 25.0 | 29.9 | 44.9 | 12.95 | - | 50.8 | PA66HIRHSUV | Black (BK) | 500 | 151-02103 |

All dimensions in mm. Subject to technical changes. Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

Date of issue: January 2019

## Heavy duty mounts for 3-way routing

Primarily designed for use in the automotive/truck industry, these parts can be used in a wide variety of industries and applications where bundles need mounting.

These heavy duty harness clips helps to fix and secure cable, lines and hydraulic lines in truck, agriculture and railway vehicle construction, as well as in ship building.

### Features and benefits

- For parallel routing of bundles
- Secure alignment to the bundle due to H-design
- Easy maintenance of bundle by simply changing cable tie
- Cable tie head can be moved after bundling

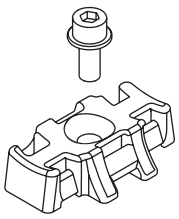


*S3CBM8 in combination with our X-Series.*

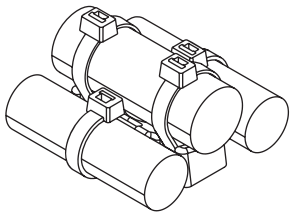


*S3SB15CBM8 and S3CBM8.*

### S3CBM8



*Suitable for external cylindrical hexagonal bolts M8*

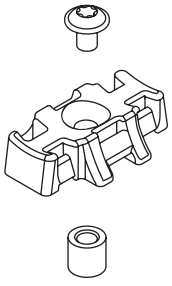


*Example of a possible 3-way transfer*

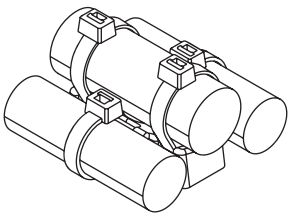
| TYPE | Width (W) | Length (L) | Height (H) | Bundle Ø max. | Strap Width max. (G) | Material | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **S3CBM8** | 46.0 | 70.0 | 18.6 | 100.0 | 9.0 | PA6GF30 | Black (BK) | 500 pcs. | 151-01040 |

All dimensions in mm. Subject to technical changes. Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

### S3SB15CBM8



*Suitable for welding studs (M8 internal bore & outer diameter 15 mm)*



*Example of a possible 3-way transfer*

| TYPE | Width (W) | Length (L) | Height (H) | Bundle Ø max. | Strap Width max. (G) | Material | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **S3SB15CBM8** | 46.0 | 70.0 | 18.6 | 100.0 | 9.0 | PA6GF30 | Black (BK) | 500 pcs. | 151-01010 |

All dimensions in mm. Subject to technical changes. Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

Date of issue: January 2019

## Screw Fixing Mounts

**Stainless Steel 316 mounts**

Suitable for the secure fixing of cables, tubing, conduits and pipes within the most arduous of environments. Providing a complete fastening and fixing solution when used in conjunction with stainless steel ties up to 10.0 mm width. SSPC metal cable tie mounts are ideal for use within shipbuilding, oil and gas (offshore), industrial machinery and vehicles, food and beverage, power, renewable energy or process industries.

**Features and benefits**

- 2-way fixing for metal cable ties
- High performance stainless steel 316 material
- Heavy duty design
- Robust and durable solution
- Resistant to a range of chemicals in challenging environments
- Quick and easy to install
- Safe and secure solution for cables, tubing, conduits and pipes

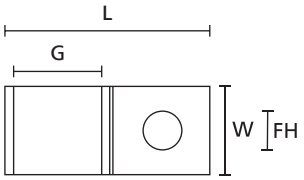


*Stainless Steel P-Mount SSPC for use in arduous environments.*

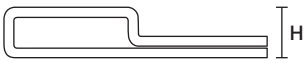
**The SSPC-Mounts can ideally be combined with the MBT cable ties on page 82–88 and with the MST and MLT cable ties on page 89, 90.**

**Can support quality assurance in the production of food stuffs, for example HACCP.**

**Material specification please see page 26.**




*SSPC Series (plan view)*




*SSPC-Series (side view)*

| TYPE | Width (W) | Length (L) | Height (H) | Hole Ø (FH) | Strap Width max. (G) | Material | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **SSPC4** | 10.2 | 23.0 | 4.5 | 4.2 | 10.0 | SS316 | Metal (ML) | 100 pcs. | 151-00837 |
| **SSPC5** | 10.2 | 23.0 | 4.5 | 5.3 | 10.0 | SS316 | Metal (ML) | 100 pcs. | 151-00838 |
| **SSPC6** | 10.2 | 23.0 | 4.5 | 6.3 | 10.0 | SS316 | Metal (ML) | 100 pcs. | 151-00839 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

Date of issue: January 2019

HellermannTyton

# Flexibility is the key to stability.

If it doesn't fit, we'll make it fit. Our FlexTack cable tie mount demonstrates just how progressive this maxim can be. It adheres to virtually any surface, even with concave or convex forms. And whilst we were busy developing it, we also made it ultra lightweight and temperature-resistant up to +105 °C. An excellent fit all round.

**www.HellermannTyton.co.uk/flextack2019cat**

MADE FOR REAL®




Date of issue: January 2019

## Ratchet P-Clamp

The Ratchet P-Clamp family offers versatility when managing wires, cables and hoses. The robust design and durable materials make it ideal for heavy duty applications, both in- and outdoors. The one-piece adjustable clamp can be closed by hand to the desired diameter. The release feature provides easy and nondestructive removal of cables simply by using a flat-head screwdriver. This nondestructive release allows the clamp to be reused without removing or replacing any bolts or screws. The Ratchet P-Clamp is offered in four sizes and multiple mounting configurations.

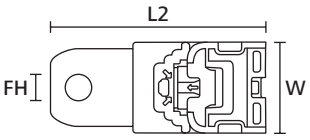
### Features and benefits

- One-piece ratchet closure design allows for easy installation during pre- or final assembly
- Multiple configurations handle a wide range of diameters and applications, reducing part inventory
- Clamp interior is designed to guide and center bundle to reduce pinching
- Easy release feature allows for quick adjustments and maintenance
- Impact modified, heat and UV stabilized PA66 provides long-term durability, in- and outdoors
- Steel mounting plate tolerates high torque mounting and is treated to resist chemicals and salt spray

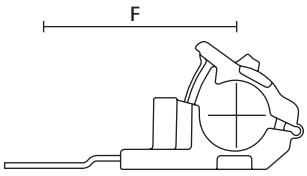


*Ratchet P-Clamp - A more versatile way to mount and clamp cables.*

**All Ratchet P-Clamps are also available with stainless steel mounting plate.**




*Ratchet P-Clamp (plan view)*




*Ratchet P-Clamp (side view)*

*Application video: Ratchet P-Clamp*

**For bundle diameters from 6.2 mm to 13.7 mm**

| TYPE | Width (W) | Length (L2) | Bundle Ø min. | Bundle Ø max. | Hole Ø (FH) | Fixing Hole Centres (F) | Variant | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **RCA90SM6** | 34.9 | 68.8 | 6.2 | 13.7 | 6.5 | 24.9 | Short | PA66HIRHSUV, ST, ZN | Black (BK) | 151-01643 |
| **RCA180SM6** | 34.9 | 83.1 | 6.2 | 13.7 | 6.5 | 50.5 | Short | PA66HIRHSUV, ST, ZN | Black (BK) | 151-01637 |
| **RCA180SM8** | 34.9 | 83.1 | 6.2 | 13.7 | 8.31 | 50.5 | Short | PA66HIRHSUV, ST, ZN | Black (BK) | 151-01416 |
| **RCA180SM10** | 34.9 | 83.1 | 6.2 | 13.7 | 10.29 | 50.5 | Short | PA66HIRHSUV, ST, ZN | Black (BK) | 151-01417 |
| **RCA180SM12** | 34.9 | 83.1 | 6.2 | 13.7 | 12.95 | 50.5 | Short | PA66HIRHSUV, ST, ZN | Black (BK) | 151-01418 |
| **RCA90LM6** | 34.9 | 96.8 | 6.2 | 13.7 | 6.5 | 24.9 | Long | PA66HIRHSUV, ST, ZN | Black (BK) | 151-01644 |
| **RCA90LM8** | 34.9 | 96.8 | 6.2 | 13.7 | 8.31 | 24.9 | Long | PA66HIRHSUV, ST, ZN | Black (BK) | 151-01437 |
| **RCA180MM6** | 34.9 | 105.1 | 6.2 | 13.7 | 6.5 | 72.5 | Medium | PA66HIRHSUV, ST, ZN | Black (BK) | 151-01638 |
| **RCA180MM8** | 34.9 | 105.1 | 6.2 | 13.7 | 8.31 | 72.5 | Medium | PA66HIRHSUV, ST, ZN | Black (BK) | 151-01419 |
| **RCA180LM6** | 34.9 | 134.1 | 6.2 | 13.7 | 6. 5 | 101.5 | Long | PA66HIRHSUV, ST, ZN | Black (BK) | 151-01639 |

All dimensions in mm. Subject to technical changes.

Date of issue: January 2019

## Ratchet P-Clamp

### For bundle diameters from 12.7 mm to 19.5 mm

| TYPE | Width (W) | Length (L2) | Bundle Ø min. | Bundle Ø max. | Hole Ø (FH) | Fixing Hole Centres (F) | Variant | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **RCB90SM6** | 34.9 | 68.8 | 12.7 | 19.5 | 6.5 | 26.7 | Short | PA66HIRHSUV, ST, ZN | Black (BK) | 151-01651 |
| **RCB90SM8** | 34.9 | 68.8 | 12.7 | 19.5 | 8.31 | 26.7 | Short | PA66HIRHSUV, ST, ZN | Black (BK) | 151-01457 |
| **RCB180SM6** | 34.9 | 83.1 | 12.7 | 19.5 | 6.5 | 52.8 | Short | PA66HIRHSUV, ST, ZN | Black (BK) | 151-01645 |
| **RCB180SM8** | 34.9 | 83.1 | 12.7 | 19.5 | 8.31 | 52.8 | Short | PA66HIRHSUV, ST, ZN | Black (BK) | 151-01440 |
| **RCB180SM10** | 34.9 | 83.1 | 12.7 | 19.5 | 10.29 | 52.8 | Short | PA66HIRHSUV, ST, ZN | Black (BK) | 151-01390 |
| **RCB180SM12** | 34.9 | 83.1 | 12.7 | 19.5 | 12.95 | 52.8 | Short | PA66HIRHSUV, ST, ZN | Black (BK) | 151-01441 |
| **RCB90LM6** | 34.9 | 96.8 | 12.7 | 19.5 | 6.5 | 26.7 | Long | PA66HIRHSUV, ST, ZN | Black (BK) | 151-01652 |
| **RCB90LM8** | 34.9 | 96.8 | 12.7 | 19.5 | 8.31 | 26.7 | Long | PA66HIRHSUV, ST, ZN | Black (BK) | 151-01460 |
| **RCB180MM6** | 34.9 | 105.1 | 12.7 | 19.5 | 6.5 | 74.8 | Medium | PA66HIRHSUV, ST, ZN | Black (BK) | 151-01646 |
| **RCB180LM6** | 34.9 | 134.1 | 12.7 | 19.5 | 6.5 | 103.8 | Long | PA66HIRHSUV, ST, ZN | Black (BK) | 151-01647 |

All dimensions in mm. Subject to technical changes.

### For bundle diameters from 19.4 mm to 36.0 mm

| TYPE | Width (W) | Length (L2) | Bundle Ø min. | Bundle Ø max. | Hole Ø (FH) | Fixing Hole Centres (F) | Variant | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **RCC90SM6** | 34.9 | 101.2 | 19.4 | 36.0 | 6.5 | 39.9 | Short | PA66HIRHSUV, ST, ZN | Black (BK) | 151-01659 |
| **RCC90SM8** | 34.9 | 101.2 | 19.4 | 36.0 | 8.31 | 39.9 | Short | PA66HIRHSUV, ST, ZN | Black (BK) | 151-01492 |
| **RCC180SM6** | 34.9 | 103.0 | 19.4 | 36.0 | 6.5 | 62.3 | Short | PA66HIRHSUV, ST, ZN | Black (BK) | 151-01653 |
| **RCC180SM8** | 34.9 | 103.0 | 19.4 | 36.0 | 8.31 | 62.3 | Short | PA66HIRHSUV, ST, ZN | Black (BK) | 151-01474 |
| **RCC180SM10** | 34.9 | 103.0 | 19.4 | 36.0 | 10.29 | 62.3 | Short | PA66HIRHSUV, ST, ZN | Black (BK) | 151-01475 |
| **RCC180SM12** | 34.9 | 103.0 | 19.4 | 36.0 | 12.95 | 62.3 | Short | PA66HIRHSUV, ST, ZN | Black (BK) | 151-01476 |
| **RCC180MM6** | 34.9 | 125.0 | 19.4 | 36.0 | 6.5 | 84.3 | Medium | PA66HIRHSUV, ST, ZN | Black (BK) | 151-01654 |
| **RCC90LM6** | 34.9 | 129.2 | 19.4 | 36.0 | 6.5 | 39.9 | Long | PA66HIRHSUV, ST, ZN | Black (BK) | 151-01660 |
| **RCC90LM8** | 34.9 | 129.2 | 19.4 | 36.0 | 8.31 | 39.9 | Long | PA66HIRHSUV, ST, ZN | Black (BK) | 151-01495 |
| **RCC180LM6** | 34.9 | 154.0 | 19.4 | 36.0 | 6.5 | 113.3 | Long | PA66HIRHSUV, ST, ZN | Black (BK) | 151-01655 |

All dimensions in mm. Subject to technical changes.

### For bundle diameters from 36.0 mm to 51.0 mm

| TYPE | Width (W) | Length (L2) | Bundle Ø min. | Bundle Ø max. | Hole Ø (FH) | Fixing Hole Centres (F) | Variant | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **RCD180SM8** | 34.9 | 115.5 | 36.0 | 51.0 | 8,31 | 70.0 | Short | PA66HIRHSUV, ST, ZN | Black (BK) | 151-01499 |
| **RCD180SM10** | 34.9 | 115.5 | 36.0 | 51.0 | 10,29 | 70.0 | Short | PA66HIRHSUV, ST, ZN | Black (BK) | 151-01501 |
| **RCD180SM12** | 34.9 | 115.5 | 36.0 | 51.0 | 12,95 | 70.0 | Short | PA66HIRHSUV, ST, ZN | Black (BK) | 151-01502 |
| **RCD90LM8** | 34.9 | 116.7 | 36.0 | 51.0 | 8,31 | 42.4 | Long | PA66HIRHSUV, ST, ZN | Black (BK) | 151-01521 |

All dimensions in mm. Subject to technical changes.

### Accessories

| TYPE | Variant | Material | Colour | Article-No. |
|---|---|---|---|---|
| **RCTT** | No Serration | PA66HIRHSUV | Black (BK) | 151-01529 |
| **RCINSERTA** | Rubber profile | TPE | Black (BK) | 151-01530 |
| **RCINSERTB** | Rubber profile | TPE | Black (BK) | 151-01531 |
| **RCINSERTC** | Rubber profile | TPE | Black (BK) | 151-01532 |
| **RCINSERTD** | Rubber profile | TPE | Black (BK) | 151-01533 |

All dimensions in mm. Subject to technical changes.

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## Aluminium P-Clamps

**Alu-P-Clamp with / without chloroprene insert**

Manufactured from a high quality aluminium, these metal P-Clamps provide flexibility whilst providing a permanent fixing in the most arduous of environments. The addition of a chloroprene insert provides the cable or pipe bundle with a high degree of protection against vibration, reducing noise and also providing electrical isolation. They are commonly used in caravan construction, the defence and railway industry as well as in the renewable energy sector.

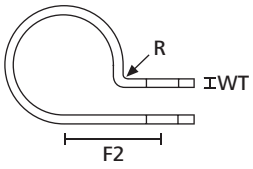
**Features and benefits**

- Simple and secure pipe or cable fixation
- Can be combined with chloroprene rubber for vibration resistance
- Ideal for use in high temperature applications
- Suitable for applications needing strength of metal components

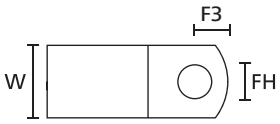


*P-Clamps manufactured in polyamide, aluminium or aluminium with a chloroprene insert.*

**Material specification please see page 26.**




*ALU P-Clamp (side view)*




*ALU P-Clamp (plan view)*

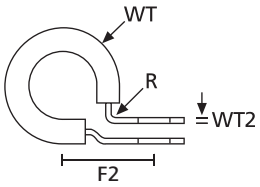
| TYPE | Width (W) | Width (W2) | Wall (WT) | Wall (WT2) | Hole Ø (FH) | Fixing Hole Centres (F2) | Fixing Hole Centres (F3) | Bundle Ø max. | Radius (R) | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **ALU4** | 12.7 | - | 0.80 | - | 5.2 | 11.6 | 5.5 | 6.4 | 1.6 | AL | Natural (NA) | 211-10040 |
| **ALU5** | 12.7 | - | 0.80 | - | 5.2 | 12.6 | 5.5 | 8.0 | 1.6 | AL | Natural (NA) | 211-10050 |
| **ALU6** | 12.7 | - | 0.80 | - | 5.2 | 13.4 | 5.5 | 9.5 | 1.6 | AL | Natural (NA) | 211-10060 |
| **ALU7** | 12.7 | - | 0.80 | - | 5.2 | 14.2 | 5.5 | 11.1 | 1.6 | AL | Natural (NA) | 211-10070 |
| **ALU8** | 12.7 | - | 0.80 | - | 5.2 | 15.0 | 5.5 | 12.7 | 1.6 | AL | Natural (NA) | 211-10080 |
| **ALU10** | 12.7 | - | 0.80 | - | 5.2 | 16.6 | 5.5 | 15.9 | 1.6 | AL | Natural (NA) | 211-10100 |
| **ALU11** | 12.7 | - | 1.30 | - | 5.2 | 19.1 | 5.5 | 17.5 | 2.8 | AL | Natural (NA) | 211-10110 |
| **ALU12** | 12.7 | - | 1.30 | - | 5.2 | 19.9 | 5.5 | 19.1 | 2.8 | AL | Natural (NA) | 211-10120 |
| **ALU13** | 12.7 | - | 1.30 | - | 5.2 | 20.7 | 5.5 | 20.6 | 2.8 | AL | Natural (NA) | 211-10130 |

All dimensions in mm. Subject to technical changes.

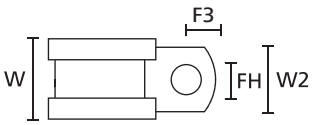
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## Aluminium P-Clamps

### Alu-P-Clamp with / without chloroprene insert




*ALU_C P-Clamp with chloroprene insert (side view)*




*ALU_C P-Clamp with chloroprene insert (plan view)*

| TYPE | Width (W) | Width (W2) | Wall (WT) | Wall (WT2) | Hole Ø (FH) | Fixing Hole Centres (F2) | Fixing Hole Centres (F3) | Bundle Ø max. | Radius (R) | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **ALU4C** | 16.3 | 12.7 | 3.70 | 0.8 | 5.2 | 11.6 | 5.5 | 3.2 | 1.6 | AL, CR | Black (BK) | 211-15040 |
| **ALU5C** | 16.3 | 12.7 | 3.70 | 0.8 | 5.2 | 12.6 | 5.5 | 4.8 | 1.6 | AL, CR | Black (BK) | 211-15050 |
| **ALU6C** | 16.3 | 12.7 | 3.70 | 0.8 | 5.2 | 13.4 | 5.5 | 6.4 | 1.6 | AL, CR | Black (BK) | 211-15060 |
| **ALU7C** | 16.3 | 12.7 | 3.70 | 0.8 | 5.2 | 14.2 | 5.5 | 8.0 | 1.6 | AL, CR | Black (BK) | 211-15070 |
| **ALU8C** | 16.3 | 12.7 | 3.70 | 0.8 | 5.2 | 15.0 | 5.5 | 9.5 | 1.6 | AL, CR | Black (BK) | 211-15080 |
| **ALU9C** | 16.3 | 12.7 | 3.70 | 0.8 | 5.2 | 15.8 | 5.5 | 11.1 | 1.6 | AL, CR | Black (BK) | 211-15090 |
| **ALU10C** | 16.3 | 12.7 | 3.70 | 0.8 | 5.2 | 16.6 | 5.5 | 12.7 | 1.6 | AL, CR | Black (BK) | 211-15100 |
| **ALU11C** | 16.3 | 12.7 | 4.50 | 1.3 | 5.2 | 19.1 | 5.5 | 14.3 | 2.8 | AL, CR | Black (BK) | 211-15110 |
| **ALU12C** | 16.3 | 12.7 | 4.50 | 1.3 | 5.2 | 19.9 | 5.5 | 15.9 | 2.8 | AL, CR | Black (BK) | 211-15120 |
| **ALU13C** | 16.3 | 12.7 | 4.50 | 1.3 | 5.2 | 20.7 | 5.5 | 17.5 | 2.8 | AL, CR | Black (BK) | 211-15130 |
| **ALU14C** | 16.3 | 12.7 | 4.50 | 1.3 | 5.2 | 21.5 | 5.5 | 19.1 | 2.8 | AL, CR | Black (BK) | 211-15140 |
| **ALU15C** | 16.3 | 12.7 | 4.50 | 1.3 | 5.2 | 22.3 | 5.5 | 20.6 | 2.8 | AL, CR | Black (BK) | 211-15150 |
| **ALU16C** | 16.3 | 12.7 | 4.50 | 1.3 | 5.2 | 23.1 | 5.5 | 22.2 | 2.8 | AL, CR | Black (BK) | 211-15160 |
| **ALU17C** | 16.3 | 12.7 | 4.50 | 1.3 | 5.2 | 23.9 | 5.5 | 23.8 | 2.8 | AL, CR | Black (BK) | 211-15170 |
| **ALU18C** | 16.3 | 12.7 | 4.50 | 1.3 | 5.2 | 24.6 | 5.5 | 25.4 | 2.8 | AL, CR | Black (BK) | 211-15180 |
| **ALU19C** | 16.3 | 12.7 | 4.50 | 1.3 | 5.2 | 25.5 | 5.5 | 27.0 | 2.8 | AL, CR | Black (BK) | 211-15190 |
| **ALU20C** | 16.3 | 12.7 | 4.50 | 1.6 | 5.2 | 27.0 | 5.5 | 28.6 | 3.2 | AL, CR | Black (BK) | 211-15200 |
| **ALU22C** | 16.3 | 12.7 | 4.50 | 1.6 | 5.2 | 28.6 | 5.5 | 31.8 | 3.2 | AL, CR | Black (BK) | 211-15220 |
| **ALU23C** | 16.3 | 12.7 | 4.50 | 1.6 | 5.2 | 29.4 | 5.5 | 33.3 | 3.2 | AL, CR | Black (BK) | 211-15230 |
| **ALU24C** | 16.3 | 12.7 | 4.50 | 1.6 | 5.2 | 30.2 | 5.5 | 34.9 | 3.2 | AL, CR | Black (BK) | 211-15240 |
| **ALU25C** | 16.3 | 12.7 | 4.50 | 1.6 | 5.2 | 30.8 | 5.5 | 36.5 | 3.2 | AL, CR | Black (BK) | 211-15250 |
| **ALU26C** | 16.3 | 12.7 | 4.50 | 1.6 | 5.2 | 31.7 | 5.5 | 38.1 | 3.2 | AL, CR | Black (BK) | 211-15260 |
| **ALU28C** | 16.3 | 12.7 | 4.50 | 1.6 | 5.2 | 33.3 | 5.5 | 41.3 | 3.2 | AL, CR | Black (BK) | 211-15280 |
| **ALU29C** | 16.3 | 12.7 | 4.50 | 1.6 | 5.2 | 34.1 | 5.5 | 42.9 | 3.2 | AL, CR | Black (BK) | 211-15290 |
| **ALU30C** | 16.3 | 12.7 | 4.50 | 1.6 | 5.2 | 34.9 | 5.5 | 44.5 | 3.2 | AL, CR | Black (BK) | 211-15300 |
| **ALU34C** | 16.3 | 12.7 | 4.50 | 1.6 | 5.2 | 38.1 | 5.5 | 50.8 | 3.2 | AL, CR | Black (BK) | 211-15340 |

All dimensions in mm. Subject to technical changes.

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## Plastic P-Clamps

**HP-Series**

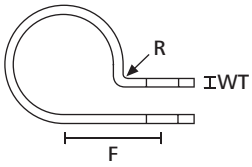
For permanent or semi-permanent cable fixings this range of plastic P-Clamps can be used in many industries. Their light weight makes them particularly suitable for use in areas such as aircraft and aerospace where minimising weight, but retaining a strong fixing, is vitally important.

**Features and benefits**

- Manufactured from polyamide
- Good temperature resistance and high strength
- Wide range of sizes for every application
- Can be used without cable ties



*P-Clamps H1P - H18P in different dimensions.*




*P-Clamp H1P - H18P (side view)*




*P-Clamp H1P - H18P (plan view)*

**Material specification please see page 26.**

| TYPE | Width (W) | Wall (WT) | Hole Ø (FH) | Bundle Ø max. | Fixing Hole Centres (F) | Radius (R) | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **H1P** | 10.0 | 0.80 | 4.2 | 3.2 | 8.5 | 0.5 | PA66 | Natural (NA) | 211-60019 |
| | 10.0 | 0.80 | 4.2 | 3.2 | 8.5 | 0.5 | PA66HS | Black (BK) | 211-60000 |
| **H2P** | 10.0 | 1.00 | 4.2 | 5.0 | 9.5 | 1.0 | PA66 | Natural (NA) | 211-60029 |
| | 10.0 | 1.00 | 4.2 | 5.0 | 9.5 | 1.0 | PA66HS | Black (BK) | 211-60001 |
| **H3P** | 10.0 | 1.00 | 4.2 | 6.5 | 10.0 | 1.0 | PA66 | Natural (NA) | 211-60039 |
| | 10.0 | 1.00 | 4.2 | 6.5 | 10.0 | 1.0 | PA66HS | Black (BK) | 211-60002 |
| **H4P** | 10.0 | 1.20 | 4.2 | 8.0 | 10.0 | 1.0 | PA66 | Natural (NA) | 211-60049 |
| | 10.0 | 1.20 | 4.2 | 8.0 | 10.0 | 1.0 | PA66HS | Black (BK) | 211-60003 |
| **H5P** | 10.0 | 1.20 | 4.2 | 9.5 | 11.0 | 1.0 | PA66 | Natural (NA) | 211-60059 |
| | 10.0 | 1.20 | 4.2 | 9.5 | 11.0 | 1.0 | PA66HS | Black (BK) | 211-60004 |
| **H6P** | 10.0 | 1.20 | 4.2 | 11.0 | 13.0 | 1.0 | PA66 | Natural (NA) | 211-60069 |
| | 10.0 | 1.20 | 4.2 | 11.0 | 13.0 | 1.0 | PA66HS | Black (BK) | 211-60005 |
| **H7P** | 10.0 | 1.20 | 4.2 | 12.5 | 14.0 | 1.5 | PA66 | Natural (NA) | 211-60079 |
| | 10.0 | 1.20 | 4.2 | 12.5 | 14.0 | 1.5 | PA66HS | Black (BK) | 211-60006 |
| **H8P** | 10.0 | 1.50 | 4.2 | 14.0 | 15.0 | 1.5 | PA66 | Natural (NA) | 211-60089 |
| | 10.0 | 1.50 | 4.2 | 14.0 | 15.0 | 1.5 | PA66HS | Black (BK) | 211-60007 |
| **H9P** | 10.0 | 1.50 | 4.2 | 16.0 | 16.0 | 1.5 | PA66 | Natural (NA) | 211-60099 |
| | 10.0 | 1.50 | 4.2 | 16.0 | 16.0 | 1.5 | PA66HS | Black (BK) | 211-60008 |
| **H10P** | 10.0 | 1.50 | 4.2 | 17.5 | 17.0 | 1.5 | PA66 | Natural (NA) | 211-60109 |
| | 10.0 | 1.50 | 4.2 | 17.5 | 17.0 | 1.5 | PA66HS | Black (BK) | 211-60009 |
| **H11P** | 10.0 | 1.50 | 4.2 | 19.0 | 18.0 | 2.0 | PA66 | Natural (NA) | 211-60119 |
| **H12P** | 10.0 | 1.50 | 4.2 | 20.5 | 19.0 | 2.0 | PA66 | Natural (NA) | 211-60129 |
| **H13P** | 12.0 | 1.50 | 5.2 | 22.0 | 20.5 | 2.0 | PA66 | Natural (NA) | 211-60139 |
| **H14P** | 12.0 | 1.50 | 5.2 | 24.0 | 21.5 | 2.0 | PA66 | Natural (NA) | 211-60149 |
| **H15P** | 12.0 | 1.50 | 5.2 | 25.5 | 23.0 | 2.5 | PA66 | Natural (NA) | 211-60159 |
| **H16P** | 12.0 | 1.50 | 5.2 | 28.5 | 24.0 | 2.5 | PA66 | Natural (NA) | 211-60169 |
| **H17P** | 12.0 | 1.50 | 5.2 | 31.5 | 26.0 | 2.5 | PA66 | Natural (NA) | 211-60179 |
| **H18P** | 12.0 | 1.50 | 5.2 | 35.0 | 27.5 | 2.5 | PA66 | Natural (NA) | 211-60189 |

All dimensions in mm. Subject to technical changes.

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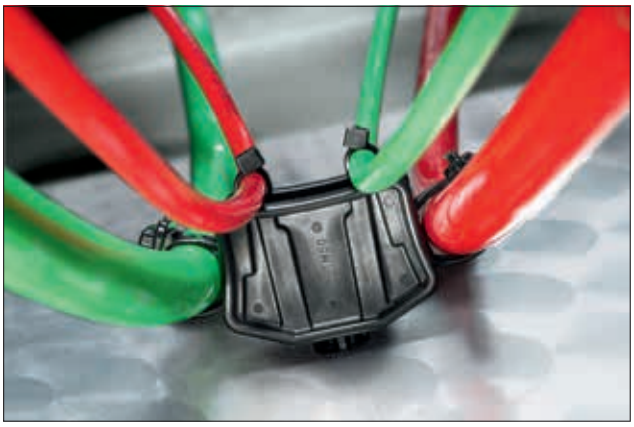
## Fixing Elements with Fir Tree, for Distance Routing

### Saddle Mount

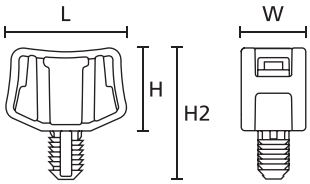
These heavy duty fixing offers excellent performance for ship building and the truck and construction vehicle industries.

**Features and benefits**

- For parallel routing of four bundles
- Secure alignment to the bundle due to H-design
- For cable ties up to 12.7 mm wide
- Pre-fixing of tie with integrated nose



*The mount can secure up to 4 separate bundles, providing parallel spacing between the frame rail and adjacent bundles.*




*Fir Tree Saddle Mounts*

| TYPE | Bundle Ø max. | Hole Ø (FH) | Panel Thickness | Width (W) | Length (L) | Height (H) | Height (H2) | N | Material | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **S3STM50** | 127.0 | 12.7 - 13.7 | 1.9 - 13.0 | 22.0 | 50.0 | 35.0 | 55.0 | 0 | PA66HIRHSUV | Black (BK) | 100 pcs. | 151-29500 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

## Fixing Elements for BHT-Ties for Distance Routing

### MSBT120

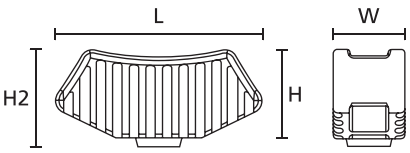
These heavy duty fixing offers excellent performance for ship building and the truck and construction vehicle industries.

**Features and benefits**

- For parallel routing of three bundles
- Retainer is fixed in the hole with BHT-tie
- Socket centres retainer in the hole and can protect tie from sharp edges



*Saddle Mount MSBT120.*




*MSBT120*

| TYPE | Hole Ø (FH) | Panel Thickness | Width (W) | Length (L) | Height (H) | Height (H2) | Bundle Ø max. | Material | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **MSBT120** | 11.2 - 20.8 | 4.1 - 19.1 | 16.5 | 48.3 | 20.6 | 22.2 | 152.4 | PA66HIRHSUV | Black (BK) | 500 pcs. | 151-29301 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

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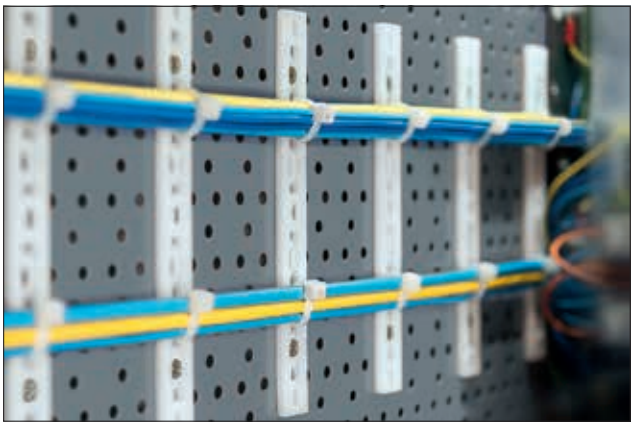
## Mounting Plates for Screw Fixing

**MP-Series for parallel bundling**

Many applications require each cable run to be firmly held in place but to be held separately from adjacent cable runs (example - control cabinets, machinery and military systems). The MP series of mounts can achieve this.

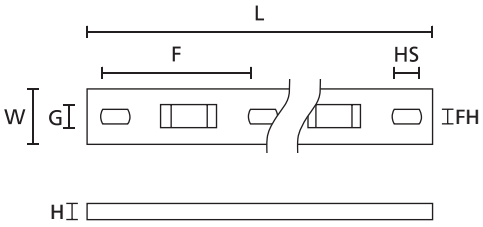
**Features and benefits**

- Allow multiple cables to run in parallel
- Simple to fix with two screws
- Cables are fixed by using a cable tie through any combination of the available slots

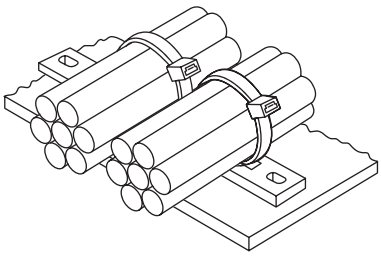


*Screwable mounting plate MSMP.*

**Material specification please see page 26.**




*Mounting plates MP and MSMP (plan and side view)*



*Mounting plates in application*

| TYPE | Width (W) | Length (L) | Height (H) | Hole Ø (FH) | Strap Width max. (G) | No. of bundles | Material | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **MP2M3** | 12.7 | 76.2 | 3.2 | 3.7 | 5.2 | 2 | PA66 | Natural (NA) | 100 pcs. | 151-24219 |
| **MP3M3** | 12.7 | 108.0 | 3.2 | 3.7 | 5.2 | 3 | PA66 | Natural (NA) | 100 pcs. | 151-24319 |
| **MP4M3** | 12.7 | 139.8 | 3.2 | 3.7 | 5.2 | 4 | PA66 | Natural (NA) | 100 pcs. | 151-24419 |
| **MP5M3** | 12.7 | 171.6 | 3.2 | 3.7 | 5.2 | 5 | PA66 | Natural (NA) | 100 pcs. | 151-24519 |
| **MSMP5/10** | 15.8 | 204.5 | 5.3 | 5.1 | 7.6 | 5 | PA66 | Natural (NA) | 100 pcs. | 151-25519 |
| **MSMP6/6** | 15.8 | 244.0 | 5.3 | 3.8 | 7.6 | 6 | PA66 | Natural (NA) | 100 pcs. | 151-25619 |
| **MSMP4** | 15.9 | 167.0 | 5.2 | 5.1 | 8.2 | 4 | PA66 | Natural (NA) | 500 pcs. | 150-83499 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

EN 45545-2 c UL us

For product specific approvals and specifications please refer to the Appendix.

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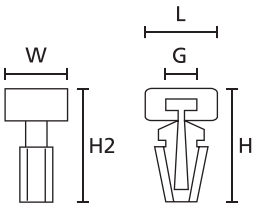
## Cable Fixing Cradle

**TM1SF for cable ties width up to 5.0 mm**

Offering simple and easy methods of securing cables or pipes, these fixing accessories have many applications within a wide range of industries.

**Features and benefits**

- Ideal mount for space-saving applications with restricted access
- Arrowhead for very secure fixing




*TM1SF Fixing Base*



*TM1SF for secure fixing of cables into pre-drilled or pre-punched holes.*

**Material specification please see page 26.**

| TYPE | Hole Ø (FH) | Panel Thickness | Width (W) | Length (L) | Height (H) | Height (H2) | Strap Width max. (G) | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **TM1SF** | 6.35 | 3.3 - 3.4 | 10.2 | 15.8 | 4.6 | 4.6 | 5.0 | PA66 | White (WH) | 151-40119 |

All dimensions in mm. Subject to technical changes.

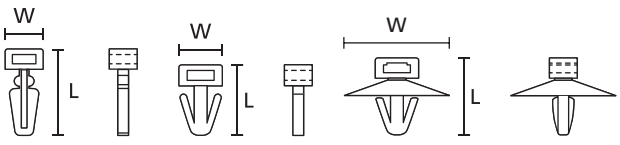
## Arrowhead Cradle

**SFC-Series**

Offering simple and easy methods of securing cables or pipes, these fixing accessories have many applications within a wide range of industries.

**Features and benefits**

- Arrowhead fixing for use in pre-drilled or punched holes
- SFC and SFC2 for ties up to 5.3 mm wide
- SFC3 for ties up to 8.6 mm wide




*SFC* *SFC2* *SFC3*



*The SFC3 series for securely fixing and to route cables and pipes.*

| TYPE | Hole Ø (FH) | Panel Thickness | Width (W) | Length (L) | Strap Width max. (G) | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **SFC2** | 6.0 | 0.8 - 1.0 | 6.0 | 14.5 | 5.3 | PA66 | Natural (NA) | 151-02000 |
| **SFC** | 6.0 | 3.0 - 3.2 | 11.0 | 18.0 | 5.3 | PA66 | Natural (NA) | 151-01600 |
| **SFC3** | 6.3 | 0.8 - 1.8 | 22.0 | 15.5 | 8.6 | PA66 | Black (BK) | 151-01907 |
| | 6.3 | 0.8 - 1.8 | 22.0 | 15.5 | 8.6 | PA66 | Natural (NA) | 151-01909 |

All dimensions in mm. Subject to technical changes.

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# Bundling Clips

Originally designed for the automotive industry, these clips offer simple and easy methods of securing cables, hoses or pipes. They have many applications within a wide range of industries.

## Bundling Clips for Edges

**Features and benefits**

- Easy assembly, just shuffle manually
- Designed for edges of 1 - 3 and 1.5 - 4 mm
- Integrated metal clamp holds clip firmly in place
- Clamp consists of double tempered steel spring
- ATS fixing elements can be tied automatically with tools ATS3080, AT2000 or AT2000CPK



*Cables and leads can be fastened with a cable tie or adhesive tape to the bars of the mounting element.*



*EC17 - Cables and leads can be fastened with adhesive tape to the bar of the mounting element.*

## Bundling Clips for Weld Studs, moveable

**Features and benefits**

- Very flat bundling clip for 5.0 mm weld stud
- Horizontal length tolerance compensation
- Suitable for cables of reduced weight and diameter



*TCSB5CYCC: Tapebar, Stud Retainer and ConnectorClip in just one article.*



*The slim line BC series is particularly compact and flexible.*

## Bundling Clips for round and oval holes

**Features and benefits**

- Easy to install without the need for a tool
- One fir tree foot part can be used for a variety of panel thicknesses
- Suitable for use within threaded holes
- Holding tabs prevent the tie slipping sideways
- Versions for oval holes feature anti-twist protection



*Designed for defined distance of bundles to the hole.*



*COW Clip used as tape-on clip.*

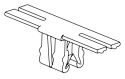
**Material specification please see page 26.**

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**Other product variants are available in our Automotive catalogue.**

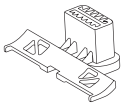



## Bundling Clips for Edges

| TYPE | Drawing | Panel Thickness | Width (W) | Length (L) | Height (H) | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|
| EC14 |  | 1.0 - 3.0 | 10.0 | 40.0 | 12.4 | PA66HIRHS | Black (BK) | 151-03404 |

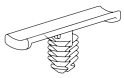
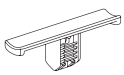
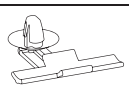
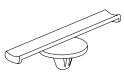
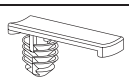
All dimensions in mm. Subject to technical changes.

## Bundling Clips for Weld Studs, moveable

| TYPE | Drawing | Stud Ø | Length (L) | Length (L2) | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|---|
| BC30 |  | 5.0 | 55.0 | 30.0 | PA66HIRHS | Black (BK) | 151-00016 |
| BCUWS5-D5-25 |  | 5.0 | 50.0 | - | PA66HIRHS | Natural (NA) | 151-00851 |

All dimensions in mm. Subject to technical changes.

## Bundling Clips for round and oval holes

| TYPE | Drawing | Hole Ø (FH) | Panel Thickness | Length (L) | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|---|
| TC4FT6LG |  | 6.3 - 7.0 | 0.6 - 5.1 | 37.0 | PA66HIRHS | Black (BK) | 151-00215 |
| WICKELCLIP-VDS |  | 6.3 x 9.0 | 0.6 - 2.5 | 40.0 | PA66HIRHS | Black (BK) | 155-16301 |
| STAND-OFF-CLIP-2 |  | 6.5 - 6.8 | 0.4 - 1.6 | 40.0 | PA66HIRHS | Black (BK) | 155-01600 |
| BCSFT6.5 16-3MD |  | 6.3 - 6.7 | 1.5 - 3.0 | 55.0 | PA66HIRHS | Black (BK) | 155-11601 |
| BCOWFT6M |  | 6.5 - 7.0 | 0.6 - 3.5 | 27.3 | PA66HIRHS | Natural (NA) | 151-02227 |

All dimensions in mm. Subject to technical changes.

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# Connector Clips

The connector clips used here have been designed for electronic cables and cable sets used in the automotive industry.

## Connector Clips for oval holes

**Features and benefits**

- Connector easily installed by simply pushing into place
- Connection can be released non-destructive
- Easy assembly, just shuffle manually
- Oval connectors offer twist protection



*For a secure fixing simply push the connector by hand (ConnectorClip YCCFT62x122).*

## Connector Clips for Edges

**Features and benefits**

- Connectors are mounted simply by pushing them into retainer
- Connector can be removed without damage
- Fastened to an edge, the EdgeClip ensures snug fit almost all types of connector



*EdgeClip EC6mod.*

## Connector Clips for round holes

**Features and benefits**

- Connector easily installed by simply pushing into place
- Connection can be released (non-destructive)
- One fir tree foot part can be used for a variety of panel thicknesses
- Arrowhead simply locks into place
- Disc covers the hole to prevent dirt and water gaining access
- For twist protection: Variants with additional stick or for oval holes



*Connector clip for twist protection.*

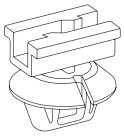
**Material specification please see page 26.**

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**Other product variants are available in our Automotive catalogue.**

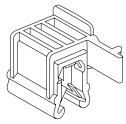
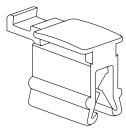



## Connector Clips for oval holes

| TYPE | Drawing | Length (L) | Hole Ø (FH) | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|
| **CCSFT7x12** |  | 16.0 | 7.0 x 12.0 | PA66HIRHS | Grey (GY) | 151-00222 |

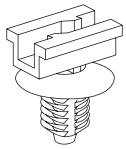
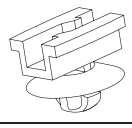
All dimensions in mm. Subject to technical changes.

## Connector Clips for Edges

| TYPE | Drawing | Panel Thickness | Material | Colour | Article-No. |
|---|---|---|---|---|---|
| **EC42** |  | 1.5 - 4.0 | PA66HIRHS | Black (BK) | 151-00429 |
| **EC6mod** |  | 1.0 - 3.0 | PA66HIRHS | Black (BK) | 151-00464 |

All dimensions in mm. Subject to technical changes.

## Connector Clips for round holes

| TYPE | Drawing | Hole Ø (FH) | Panel Thickness | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|
| **FT6LG-AMP** |  | 6.5 - 7.0 | 0.7 - 6.0 | PA66HIRHS | Black (BK) | 155-03800 |
| **CC-PAEKSFT6.5PT1.7-2.3** |  | 6.3 - 6.7 | 1.7 - 2.3 | PA66HIRHS | Black (BK) | 151-00840 |

All dimensions in mm. Subject to technical changes.

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## Automatic bundling

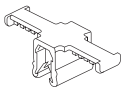
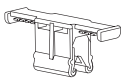
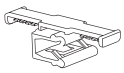
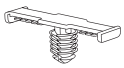
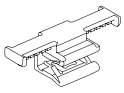
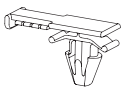
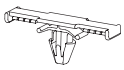
**Bundling Clips for Automatic Cable Tying Systems**

**Features and benefits**

- Optimized for use automatic cable tying systems
- Easy to apply
- The fixing elements can be tied automatically with Autotool 2000 family and Autotool System 3080



*Fixing elements for automatic bundling.*

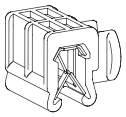
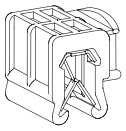
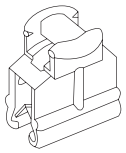
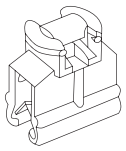
| TYPE | Drawing | Panel Thickness | Hole Ø (FH) | Colour | Material | Article-No. |
|---|---|---|---|---|---|---|
| **ATSBCEC35** |  | 1.5 - 4.0 | - | Black (BK) | PA66HIRHS | 102-68355 |
| **ATSBCSFT6.5** |  | 2.3 - 3.3 | 6.3 - 6.7 | Black (BK) | PA66HIRHS | 102-69066 |
| **ATSBCSFT6.5-MD** |  | 2.0 - 3.0 | 6.3 - 6.7 | Black (BK) | PA66HIRHS | 102-69065 |
| **ATSBCEC36** |  | 1.5 - 4.0 | - | Black (BK) | PA66HIRHS | 102-68365 |
| **ATSBCEC37** |  | 1.5 - 4.0 | - | Black (BK) | PA66HIRHS | 102-68375 |
| **ATSBCFT6LG** |  | 0.6 - 5.1 | 6.3 - 7.0 | Black (BK) | PA66HIRHS | 102-67065 |
| **ATSBCEC38** |  | 1.5 - 4.0 | - | Black (BK) | PA66HSW | 102-68385 |
| **ATSBCKSFT6.5** |  | 0.7 - 1.3 | 6.3 - 6.7 | Black (BK) | PA66HIRHS | 102-69067 |
| **ATSBC2KSFT6.5** | | 1.7 - 2.3 | 6.3 - 6.7 | Black (BK) | PA66HIRHS | 102-69068 |
| **ATSBCOWSFT6.5** |  | 2.3 - 3.3 | 6.3 - 6.7 | Grey (GY) | PA46 | 102-69080 |
| **ATSBCSFT6.5PT2.3-3.3** |  | 2.3 - 3.3 | 6.3 - 6.7 | Grey (GY) | PA46 | 102-69089 |

All dimensions in mm. Subject to technical changes.

Date of issue: January 2019

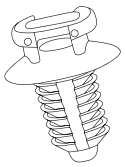
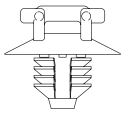
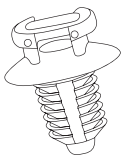
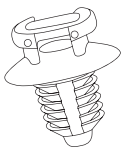
## Automatic bundling

### Edge Clips for Automatic Cable Tying Systems

| TYPE | Drawing | Panel Thickness | Material | Colour | Article-No. |
|---|---|---|---|---|---|
| **ATSEC38** |  | 1.5 - 4.0 | PA66HIRHS | Black (BK) | 102-68380 |
| **ATSEC37** |  | 1.5 - 4.0 | PA66HIRHS | Black (BK) | 102-68370 |
| **ATSEC35** |  | 1.5 - 4.0 | PA66HIRHS | Black (BK) | 102-68350 |
| **ATSEC36** |  | 1.5 - 4.0 | PA66HIRHS | Black (BK) | 102-68360 |

All dimensions in mm. Subject to technical changes.

### Fir Tree Clips for Automatic Cable Tying Systems

| TYPE | Drawing | Hole Ø (FH) | Panel Thickness | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|
| **ATSFT5LG** |  | 4.5 - 5.0 | 0.7 - 8.0 | PA66HIRHS | Black (BK) | 102-67050 |
| **ATSFT6** |  | 6.3 - 7.0 | 0.8 - 3.0 | PA66HIRHS | Black (BK) | 102-67060 |
| **ATSFT6LG** |  | 6.5 - 7.1 | 0.6 - 6.0 | PA66HIRHS | Black (BK) | 102-67062 |
| **ATSFT8GSD** |  | 8.0 - 8.5 | 1.5 - 4.0 | PA66HIRHS | Black (BK) | 102-67081 |

All dimensions in mm. Subject to technical changes.

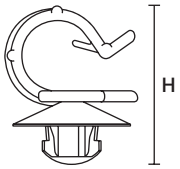
## Fixing Elements for Tubes and Harnesses

**KSFT6.5OC with low Arrowhead**

These fixing elements can be used in a wide range of applications where space saving work is necessary.

**Features and benefits**

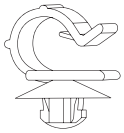
- Fixing part with rounded arrowhead to minimise assembly height
- Ideal for applications where space is limited
- Simply clip on a wire or hose
- Bundle diameter is defined
- Suitable for post-installation of bundles




*KSFT6.5 OC 7-9*



*The very low arrowhead is specially designed for narrow installation spaces.*

| TYPE | Drawing | Hole Ø (FH) | Panel Thickness | Attach to Ø | Height (H) | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **KSFT6.5OC1-3** |  | 6.3 - 6.7 | 2.3 - 2.7 | 1.0 - 3.0 | 14.4 | PA66HIRHS | Black (BK) | 151-01843 |
| **KSFT6.5OC7-9** |  | 6.3 - 6.7 | 2.3 - 2.7 | 7.0 - 9.0 | 21.6 | PA66HIRHS | Black (BK) | 151-01844 |

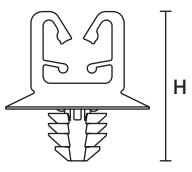
All dimensions in mm. Subject to technical changes.

## Fixing Elements with Fir Tree

**HC48FT6 with Firtree for bundle diameter 4.8 mm**

**Features and benefits**

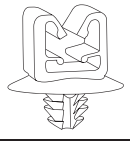
- Easy to install without the need for a tool
- Disc covers the hole to prevent dirt and water gaining access
- Bundle diameter is defined
- Clips to be attached into bore hole
- Suitable for post-installation of bundles




*HC48FT6*



*The HC48FT6 is designed for Bundle diameter 4.3 - 5.2 mm.*

| TYPE | Drawing | Hole Ø (FH) | Panel Thickness | Attach to Ø | Height (H) | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **HC48FT5** |  | 4.5 - 5.0 | 0.7 - 3.0 | 4.5 - 5.2 | 20.8 | PA66HIRHS | Black (BK) | 151-01405 |
| **HC48FT6** | | 6.5 - 7.0 | 0.7 - 2.8 | 4.3 - 5.2 | 20.8 | PA66HIRHS | Black (BK) | 151-00680 |

All dimensions in mm. Subject to technical changes.

Date of issue: January 2019

## Fixing Elements for Tubes and Harnesses with Automatic Locking Feature

**AHC-Series**

Offering a simple and secure method of attaching cables to panels. Originally designed for the automotive industry, these products are used in a wide range of applications with sheet metal panels across various industries.

**Features and benefits**

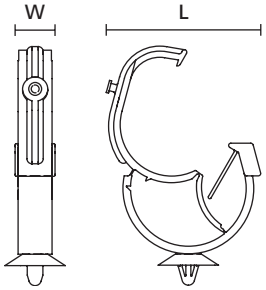
- Push and click closure for fixation of wires
- Clip is clicked into a specific hole
- AHC( )SS und AHC( )SB can be pushed onto a 5.0 mm stud



*Automatic Harness Clip open.*

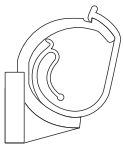
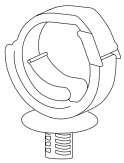
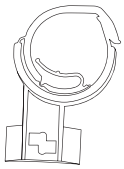


*Automatic Harness Clip closed.*




*AHC( )AH*

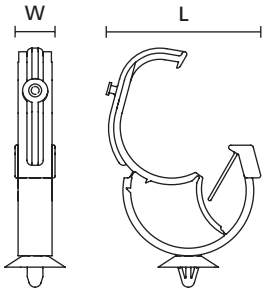
**Material specification please see page 26.**

| TYPE | Drawing | Bundle Ø max. | Hole Ø (FH) | Stud Ø | Panel Thickness | Width (W) | Length (L) | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **AHC2SS** |  | 20.0 | - | 5.0 | - | 10.0 | 29.0 | PA66HIRHS | Black (BK) | 151-00368 |
| **AHC1AH** |  | 13.0 | 6.2 - 6.7 | - | 0.5 - 2.0 | 10.0 | 24.0 | PA66HIRHS | Black (BK) | 151-00366 |
| **AHC2AH** | | 20.0 | 6.2 - 6.7 | - | 0.5 - 3.0 | 10.0 | 29.5 | PA66HIRHS | Black (BK) | 151-00367 |
| **AHC4AH** | | 41.5 | 6.2 - 6.7 | - | 0.8 - 2.7 | 13.5 | 57.6 | PA66HIRHS | Black (BK) | 151-00374 |
| **AHC3SB** |  | 28.0 | - | 5.0 | - | 10.0 | 43.0 | PA66HIRHS | Black (BK) | 151-00372 |
| **AHC3DH** |  | 28.0 | 6.2 x 12.2 | - | 0.5 - 2.0 | 10.0 | 66.0 | PA66HIRHS | Black (BK) | 151-00181 |

All dimensions in mm. Subject to technical changes.

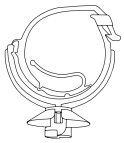
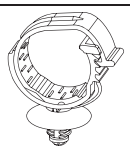
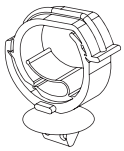
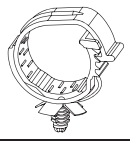
## Fixing Elements for Tubes and Harnesses with Automatic Locking Feature

**AHC-Series**




*AHC( )AH*

**Material specification please see page 26.**

| TYPE | Drawing | Bundle Ø max. | Hole Ø (FH) | Stud Ø | Panel Thickness | Width (W) | Length (L) | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **AHC3EH2** |  | 28.0 | 6.2 x 12.2 | - | 1.8 - 4.8 | 11.0 | 44.2 | PA66HIRHS | Black (BK) | 151-00928 |
| **AHC2BH** |  | 20.0 | 6.2 x 12.2 | - | 0.5 - 3.0 | 10.0 | 31.5 | PA66HIRHS | Black (BK) | 151-00208 |
| **AHC3BHR** | | 28.0 | 6.2 x 12.2 | - | 0.7 - 3.0 | 10.0 | 40.0 | PA66HIRHS | Black (BK) | 151-00370 |
| **AHC45BHG2** | | 36.0 | 6.2 x 12.2 | - | 1.0 - 3.0 | 14.0 | 50.0 | PA46 | Grey (GY) | 151-01197 |
| **AHC25FT6LG** |  | 22.0 | 6.4 - 7.0 | - | 0.7 - 4.0 | 10.0 | 34.0 | PA66HIRHS | Black (BK) | 151-01198 |
| **AHC223FT6LG** | | 23.0 | 6.4 - 7.0 | - | 0.7 - 4.0 | 10.0 | 35.0 | PA66HIRHS | Black (BK) | 151-01078 |
| **AHC3CHR** |  | 28.0 | 6.2 x 12.2 | - | 1.0 - 2.7 | 10.0 | 40.0 | PA6HIR | Black (BK) | 151-00371 |
| **AHC336FT6LG** |  | 36.0 | 6.4 - 7.0 | - | 0.7 - 4.0 | 14.0 | 50.0 | PA66HIRHS | Black (BK) | 151-01376 |

All dimensions in mm. Subject to technical changes.

Date of issue: January 2019

## Fixing Elements for Tubes and Harnesses with Automatic Locking Feature, connectable

**IAHC-Series, Connectable**

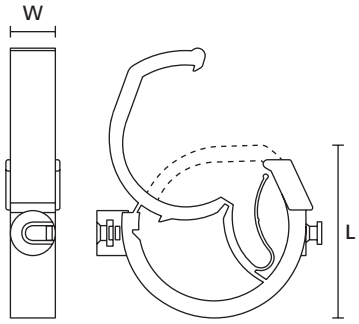
Offering a simple and secure method of attaching cables to panels. Originally designed for the automotive industry, these products are used in a wide range of applications with sheet metal panels across various industries.



*IAHC( )AH in combination with an IAHC( )T.*

### Features and benefits

- Push and click closure
- Coupling elements of the IAHC variants allow parts to connect
- Clip is clicked into a specific hole
- IAHC( )T can only be connected with another IAHC element




*IAHC( )T*

| TYPE | Drawing | Bundle Ø max. | Width (W) | Length (L) | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|---|
| **IAHC1T** |  | 13.0 | 10.0 | 23.0 | PA66HIRHS | Black (BK) | 151-00223 |
| **IAHC2T** | | 20.0 | 10.0 | 30.0 | PA66HIRHS | Black (BK) | 151-00199 |
| **IAHC3T** | | 28.0 | 10.0 | 40.0 | PA66HIRHS | Black (BK) | 151-00213 |
| **IAHC4T** | | 36.0 | 13.5 | 47.0 | PA66HIRHS | Black (BK) | 151-00207 |
| **IAHC5T** | | 45.0 | 13.5 | 57.0 | PA66HIRHS | Black (BK) | 151-00195 |

All dimensions in mm. Subject to technical changes.

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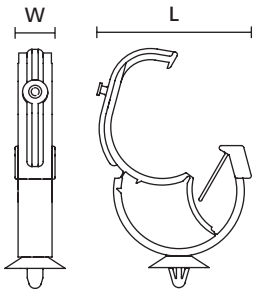
## Fixing Elements for Tubes and Harnesses with Automatic Locking Feature, connectable

**IAHC-Series, Connectable, with Arrowhead**

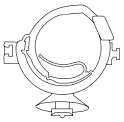
**Material specification please see page 26.**



*IAHC elements can be connected.*




*AHC( )AH*

| TYPE | Drawing | Hole Ø (FH) | Bundle Ø max. | Width (W) | Length (L) | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **IAHC3AH** |  | 6.2 - 6.7 | 28.0 | 13.5 | 40.0 | PA66HIRHS | Black (BK) | 151-00378 |
| **IAHC4AH** | | 6.2 - 6.7 | 36.0 | 13.5 | 53.0 | PA66HIRHS | Black (BK) | 151-00382 |
| **IAHC5BH** |  | 6.2 x 12.2 | 45.0 | 13.5 | 57.0 | PA66HIRHS | Black (BK) | 151-00384 |
| **IAHC3CH** |  | 6.2 x 12.2 | 28.0 | 10.0 | 47.0 | PA66HIRHS | Black (BK) | 151-00381 |
| **IAHC4CH** | | 6.2 x 12.2 | 36.0 | 13.5 | 53.0 | PA6HIRHS | Black (BK) | 151-00383 |
| **IAHC3EH** |  | 6.2 x 12.2 | 28.0 | 13.5 | 44.5 | PA66HIRHS | Black (BK) | 151-00489 |
| **IAHC5FH** |  | 6.2 x 12.2 | 45.0 | 13.5 | 61.5 | PA66HIRHS | Black (BK) | 151-00787 |

All dimensions in mm. Subject to technical changes.

Date of issue: January 2019

## Fixing Elements for Tubes and Harnesses

**DTC - Double Tube Clip, rotatable 360°**

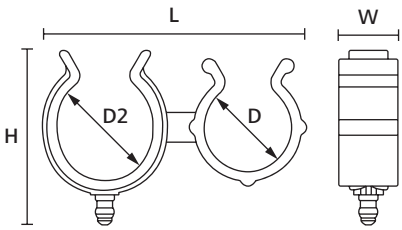
These pipeclips interconnect two different bundles of goods, of various size and type. The mobility of the fixing tie provides even in difficult conditions, such as vibrations, a secure grip and protects the cables or bundles.

**Features and benefits**

- Fixing clip offers full 360° rotation
- For routing of two different bundles
- Simply clip on a wire or hose
- Suitable for post-installation of bundles



*DTCs for easy assembly of rotatable routed tubes and harnesses.*




*DTC Tubeclip* *DTC Tubeclip*

| TYPE | Ø (D) | Ø (D2) | Width (W) | Length (L) | Height (H) | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **DTC18x5-S** | 18.0 | 5.0 | 12.0 | 37.1 | 26.0 | PA66HIRHS | Black (BK) | 156-01311 |
| **DTC18x6.5-S** | 18.0 | 6.5 | 12.0 | 38.1 | 26.0 | PA66HIRHS | Black (BK) | 156-01312 |
| **DTC18x9-11-S** | 18.0 | 11.0 | 12.0 | 43.0 | 26.0 | PA66HIRHS | Black (BK) | 156-01313 |
| **DTC18x18-20-S** | 18.0 | 20.0 | 12.0 | 54.0 | 35.6 | PA66HIRHS | Black (BK) | 156-01314 |
| **DTC18x28-S** | 18.0 | 28.0 | 12.0 | 63.0 | 45.0 | PA66HIRHS | Black (BK) | 156-01315 |

All dimensions in mm. Subject to technical changes.

Date of issue: January 2019

## Wire Push In Clips

**WPC-Series**

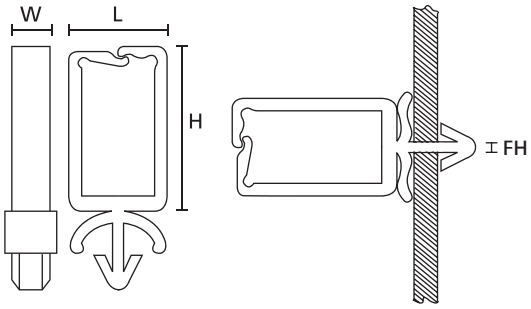
With the increased complexity of electronic and electrical installations the use of the WPC clips enables cables to be installed using the minimum amount of space, a typical application would be in the frames / rails of control cabinets or within the white goods industry.

**Features and benefits**

- Accept single or multiple wires
- Simply push wires into place
- Self-locking to prevent accidental removal
- Arrowhead design for simple and secure installation
- Access to panel only needed from one side



*WPC – Wire Push In Clip.*




*WPC Wire Push In Clip (side view, front view, in application)*

**Material specification please see page 26.**

| TYPE | Hole Ø (FH) | Panel Thickness | Width (W) | Length (L) | Height (H) | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **WPC5** | 4.7 | 0.8 - 4.0 | 5.3 | 15.0 | 12.7 | PA66 | Natural (NA) | 151-75059 |
| **WPC10** | 4.7 | 0.8 - 4.0 | 5.3 | 15.0 | 17.7 | PA66 | Natural (NA) | 151-75109 |
| **WPC15** | 4.7 | 0.8 - 4.0 | 5.3 | 15.0 | 22.7 | PA66 | Natural (NA) | 151-75159 |
| **WPC20** | 4.7 | 0.8 - 4.0 | 5.3 | 15.0 | 27.7 | PA66 | Natural (NA) | 151-75209 |

All dimensions in mm. Subject to technical changes.

Date of issue: January 2019

## Fixing Elements for Tubes and Harnesses, for Edges

**EdgeClip-Family**

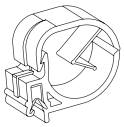
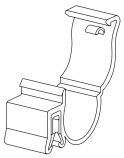
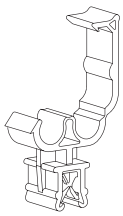
EdgeClips are used in the automotive industries and electrical industries and when it is impossible to drill holes or no other fixing points are available.

**Features and benefits**

- Releasable fixing elements with EdgeClip
- Low-vibration routing of bigger bundle diameters
- Clips to be pushed onto an edge
- To be closed single handed, a snap can be felt
- Bundles can be released at any time
- EC27: fixing element enables usage of smaller bundle diameter
- EC41: for parallel guidance of two bundles



*EdgeClip cable and tube clips are suitable for the low-vibration routing of cables and tubes with larger bundle diameters.*

| TYPE | Drawing | Panel Thickness | Attach to Ø | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|
| **EC27** |  | 1.0 - 3.0 | 15.0 - 22.0 | PA66HIRHS | Black (BK) | 151-00161 |
| **EC39** |  | 1.0 - 3.0 | 15.3 - 15.9 | PA6HIR | Black (BK) | 151-00174 |
| **EC41** |  | 3.0 - 6.0 | 2 x 8.0 | PA6HIR | Black (BK) | 151-00234 |
| **HCEC3.0SP-C** |  | 1.0 - 3.0 | 12.0 - 15.0 | PA66HIRHS | Black (BK) | 151-01863 |
| **HCEC3.0TPS** |  | 1.0 - 3.0 | 4.5 - 5.0 | PA66HIRHS | Black (BK) | 151-00645 |

All dimensions in mm. Subject to technical changes.

Date of issue: January 2019

## Fixing Elements for Corrugated Tubing, with Fir Tree

### CTC-Series

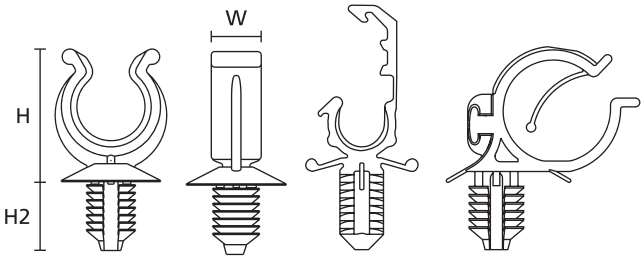
CTC clamps are used for example in the automobile, harness making, electrical industry and wherever corrugated tubing has to be quickly and firmly fixed.

**Features and benefits**

- CTC clamps for a variety of nominal diameters
- Fir tree foot part can be used for a variety of panel thicknesses
- Suitable for use within threaded holes
- Tube is guided accurately by clicking
- Axial slipping is prevented by the inside profile of the clamp



*The tubing clips into the CTC clamp and is held firmly.*




*CTC10FT6LG* *CNCTC8FT6.5LG* *CTCFT6*



*CNCTC8FT6.5LG Clamps*

| TYPE | Width (W) | Height (H) | Height (H2) | Hole Ø (FH) | Panel Thickness | Nominal Ø | Disc Ø | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **CTC4.5FT6LG** | 8.0 | 16.1 | 11.1 | 6.5 - 7.0 | 0.8 - 6.0 | 4.5 | 16.0 | PA66HIRHS | Black (BK) | 151-14314 |
| **CTC7.5FT6LG** | 8.0 | 18.6 | 11.1 | 6.5 - 7.0 | 0.8 - 6.0 | 7.5 | 16.0 | PA66HIRHS | Black (BK) | 151-14313 |
| **CTC7.5FT9** | 8.0 | 19.9 | 12.2 | 8.7 - 9.0 | 3.0 - 5.0 | 7.5 | 23.0 | PA66HIRHS | Black (BK) | 155-31602 |
| **CTC10FT6** | 8.0 | 21.4 | 7.5 | 6.5 - 7.0 | 0.8 - 3.0 | 10.0 | 16.0 | PA66HIRHS | Black (BK) | 151-14311 |
| **CTC10FT6LG** | 8.0 | 21.4 | 11.1 | 6.5 - 7.0 | 0.8 - 6.0 | 10.0 | 16.0 | PA66HIRHS | Black (BK) | 151-00018 |
| **CTC10FT9** | 8.0 | 22.7 | 12.2 | 8.7 - 9.0 | 3.0 - 5.0 | 10.0 | 23.0 | PA66HIRHS | Black (BK) | 155-17801 |
| **CTC13FT6** | 8.0 | 25.2 | 7.5 | 6.5 - 7.0 | 0.8 - 3.0 | 13.0 | 16.0 | PA66HIRHS | Black (BK) | 151-14312 |
| **CTC13FT6LG** | 8.0 | 25.2 | 11.1 | 6.5 - 7.0 | 0.8 - 6.0 | 13.0 | 16.0 | PA66HIRHS | Black (BK) | 151-00019 |
| **CTC22FT9** | 8.0 | 37.7 | 12.2 | 8.7 - 9.0 | 3.0 - 5.0 | 22.0 | 23.0 | PA66HIRHS | Black (BK) | 155-25201 |
| **CTCL4.5FT6LG** | 10.0 | 14.3 | 10.7 | 6.5 - 7.0 | 0.8 - 6.0 | 4.5 | 16.0 | PA66HIRHS | Black (BK) | 151-01115 |

All dimensions in mm. Subject to technical changes.

| TYPE | Width (W) | Height (H) | Height (H2) | Hole Ø (FH) | Panel Thickness | Nominal Ø | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **CTCFT6** | 11.0 | 18.5 | 9.3 | 6.3 - 6.7 | 0.7 - 4.5 | 15.0 | PA66HIRHS | Black (BK) | 151-00783 |

All dimensions in mm. Subject to technical changes.

### CNCTC-Series with cover

| TYPE | Width (W) | Height (H) | Height (H2) | Hole Ø (FH) | Panel Thickness | Nominal Ø | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **CNCTC8FT6.5LG** | 10.0 | 11.0 | 11.4 | 6.5 - 6.7 | 1.0 - 6.0 | 7.0 | PA66HIRHS | Black (BK) | 151-01038 |
| | 10.0 | 11.0 | 11.4 | 6.5 - 6.7 | 1.0 - 6.0 | 7.0 | PA66HIRHS | Blue (BU) | 151-01177 |
| **LC9FTOVAL** | 10.0 | 37.7 | 13.2 | 6.2 x 12.2 | 0.6 - 6.8 | - | PA66HIRHS | Black (BK) | 151-01880 |

All dimensions in mm. Subject to technical changes.

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## Fixing Elements for Corrugated Tubing, for Weld Studs

### CTC-Series for Weld Studs

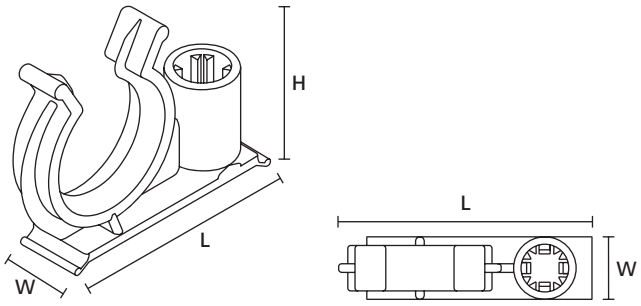
These holders are used in the automotive industry, in the production of cable harnesses and in the electrical industry. Their quick and easy mounting is the reason for their universal success wherever corrugated tubing and pipes have to be fixed quickly and securely.

**Features and benefits**

- Fixing elements for corrugated tubing for nominal diameters from 4.5 - 17.0 mm
- For M6 weld studs
- Soft-Push mechanic for simple assembly, without tool
- Tube is guided accurately by clicking
- Axial slipping is prevented by the inside profile of the clamp
- Clamp can be unscrewed and removed from the weld stud

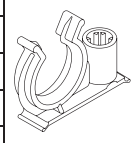


*The tubing clips into the CTC clamp and is held firmly.*




*CTC( )SBS6*

**Material specification please see page 26.**

| TYPE | Drawing | Width (W) | Length (L) | Height (H) | Nominal Ø | Stud Ø | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **CTC4.5SBS6** |  | 11.0 | 28.6 | 18.7 | 4.5 | 6.0 | PA66HIRHS | Black (BK) | 151-00700 |
| **CTC7.5SBS6** | | 11.0 | 31.8 | 19.4 | 7.5 | 6.0 | PA66HIRHS | Black (BK) | 151-00701 |
| **CTC10SBS6** | | 11.0 | 35.3 | 22.2 | 10.0 | 6.0 | PA66HIRHS | Black (BK) | 151-00702 |
| **CTC13SBS6** | | 11.0 | 37.0 | 26.5 | 13.0 | 6.0 | PA66HIRHS | Black (BK) | 151-00703 |
| **CTC17SBS6** | | 11.0 | 44.6 | 33.2 | 17.0 | 6.0 | PA66HIRHS | Black (BK) | 151-00010 |

All dimensions in mm. Subject to technical changes.

Date of issue: January 2019

## Fixing Elements for Corrugated Tubing, with Arrowhead

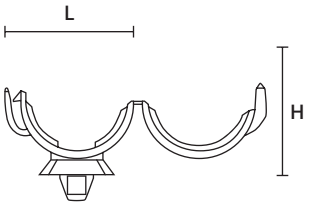
These holders are used in the automotive industry, in the production of cable harnesses and in the electrical industry. Their quick and easy mounting is the reason for their universal success wherever corrugated tubing and pipes have to be fixed quickly and securely.

**Features and benefits**

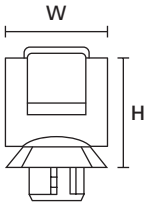
- Clamps for corrugated tubing for a variety of nominal diameters
- Arrowhead simply locks into place
- Tube is guided accurately by clicking
- Axial slipping is prevented by the inside profile of the clamp
- CTCLPROFILE clamp can also fastened to a metal edge



*Simple and secure installation of pipes or hoses to panels.*

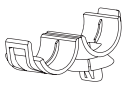



*RCC D21, D24, D28*




*RCC D21, D24, D28*

**Material specification please see page 26.**

| TYPE | Drawing | Hole Ø (FH) | Panel Thickness | Nominal Ø | Width (W) | Length (L) | Height (H) | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **RCC D21** |  | 6.2 x 12.2 | 0.7 - 2.5 | 21.0 | 22.0 | 31.0 | 30.0 | PA66HIRHS | Black (BK) | 150-92300 |
| **RCC D24** | | 6.2 x 12.2 | 0.7 - 2.5 | 24.0 | 22.0 | 33.0 | 33.0 | PA66HIRHS | Black (BK) | 155-04000 |
| **RCC D28** | | 6.75 x 13.25 | 0.7 - 3.0 | 28.0 | 22.0 | 37.0 | 37.0 | PA66HIRHS | Black (BK) | 151-00598 |
| **CTCLPROFILE** |  | 7.8 - 8.2 | 2.3 - 2.7 | 31.2 | 12.0 | 64.5 | 59.5 | PA66HIRHS | Black (BK) | 151-00026 |

All dimensions in mm. Subject to technical changes.

Date of issue: January 2019

## Fixing Elements for Weld Studs

Many industries (but specifically the automotive market) are using weld studs as the standard method of attaching components. Simply hammered onto the stud these parts provide ideal fixing bases for attaching cables, pipes or hose.

The use of weld studs avoids the problems with holes (ingress of moisture, corrosion etc).

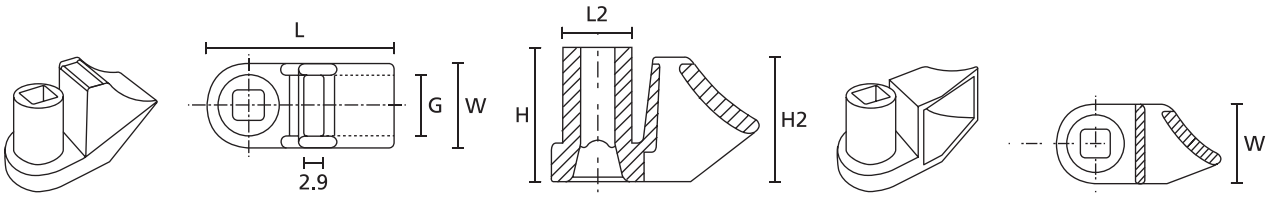
### Features and benefits

- Simple and quick method of fixing
- SBH types simply hammered onto the stud
- SBH1 and SBH3 allow cables to run across the panel
- SBH2 allow cables to run at 90° to the panel



*SBH2 allow cables to run at 90° to the panel.*

### SB-Series

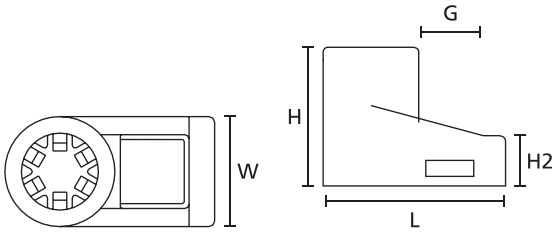



*SBH1, SBH3* *Cable tie base SBH1,3* *SBH1, SBH3* *SBH2* *Cable tie base SBH2*

| TYPE | Width (W) | Length (L) | Length (L2) | Height (H) | Height (H2) | Stud Ø | Strap Width max. (G) | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **SBH1** | 12.5 | 26.8 | 9.0 | 13.9 | 15.9 | 5.0 | 8.5 | PA66 | Black (BK) | 151-26150 |
| **SBH2** | 12.5 | 26.8 | 9.0 | 14.0 | 12.5 | 5.0 | 8.5 | PA66 | Black (BK) | 151-26250 |
| **SBH3** | 12.5 | 26.8 | 9.0 | 18.0 | 15.9 | 5.0 | 8.5 | PA66 | Black (BK) | 150-18900 |

All dimensions in mm. Subject to technical changes.

### CT-Series




*Cable tie base CTMS5* *CTMS5*

| TYPE | Width (W) | Length (L) | Height (H) | Height (H2) | Stud Ø | Strap Width max. (G) | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **CTMS5** | 10.0 | 19.0 | 14.5 | 5.3 | 5.0 | 5.0 | PA66 | Black (BK) | 151-03301 |

All dimensions in mm. Subject to technical changes.

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## Fixing elements for Parallel Routing, twistable

### DSWS-Series

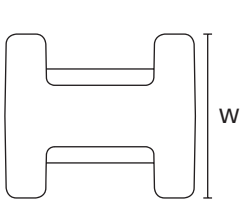
These fixing element for parallel routing can be used where bundles need separation from each other combined with the necessary functionality to support moving harnesses.

**Features and benefits**

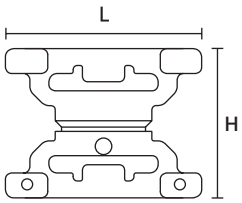
- For parallel routing of bundles that can be twisted 360° even after setting
- Secure alignment to the bundle due to H-design
- Cable tie head can be moved after bundling
- For cable ties up to 12.7 mm wide
- For post-installation of bundles



*The spacers can be easily rotated by hand, allowing the bundles to be crossed and rotated at any angle.*




*DSWS4*




*DSWS4*

| TYPE | Bundle Ø min. | Bundle Ø max. | Width (W) | Length (L) | Height (H) | Material | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| DSWS4 | 6.0 | 76.0 | 20.3 | 23.6 | 18.0 | PA66HS, POM | Black (BK) | 50 pcs. | 151-00644 |
| | 6.0 | 76.0 | 20.3 | 23.6 | 18.0 | PA66HS, POM | Black (BK) | 2,200 pcs. | 151-06500 |
| DSWS5 | 16.0 | 152.0 | 25.4 | 40.6 | 23.6 | PA66HS, POM | Black (BK) | 50 pcs. | 151-06502 |

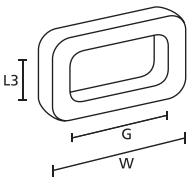
All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

### LOK04-Series, Spacer for parallel Routing

Whenever there is a need of running two or more cables in parallel the LOK04 fixing base would be an ideal and simple solution.

**Features and benefits**

- For running bundles with a distance in parallel
- Can be used with cable ties up to 9 mm cable tie width




*LOK04*



*LOK04 ring for parallel routing.*

| TYPE | Width (W) | Length (L3) | Strap Width max. (G) | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|
| LOK04 | 16.0 | 4.0 | 9.0 | PA66 | Black (BK) | 151-80400 |

All dimensions in mm. Subject to technical changes.

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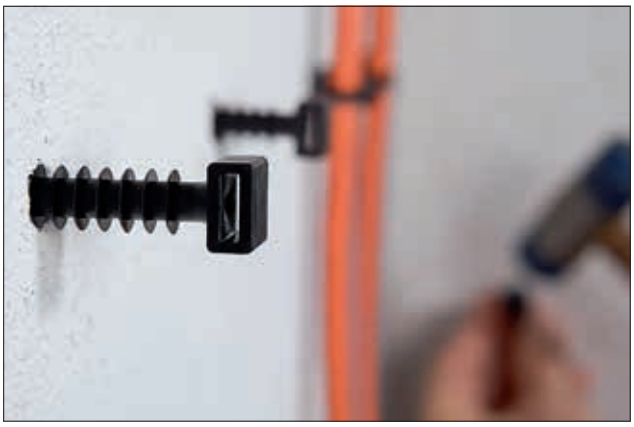
## Fixing Base

**LOK-Series**

The LOK mounts, in conjunction with a cable tie, can be used either indoors or outdoors for a diverse range of applications from holding climbing plants, to securing cables running between buildings.

**Features and benefits**

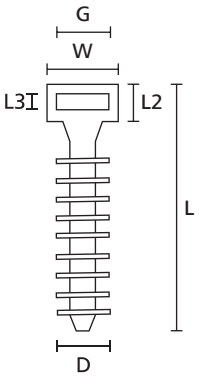
- LOK01 - LOK05 usable with any cable ties up to 9 mm wide
- Suitable for a wide range of materials, including concrete, brick, block and wood
- Installed by knocking into 7 mm or 8 mm diameter hole
- LOK01B is designed for soft brickwork and 6 mm holes
- Elongated head of LOK05 for setting bundles at a distance from brickwork



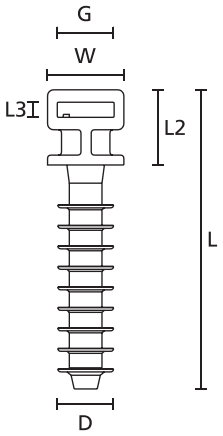
*LOK01 fixing bases for indoor and outdoor use.*

**Material specification please see page 26.**

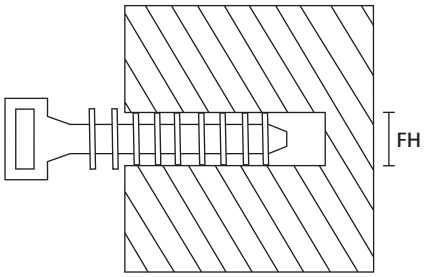
**The whole LOK-Series can ideally be combined with cable ties up to 9 mm cable tie width.**




*LOK01 fixing base (front view)*




*LOK05 fixing base (front view)*




*LOK01 pushed into a wall bore hole.*

| TYPE | Width (W) | Length (L) | Length (L2) | Length (L3) | Ø (D) | Strap Width max. (G) | Hole Ø (FH) | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **LOK01B** | 12.0 | 30.0 | 6.5 | 2.5 | 7.2 | 9.0 | 6.0 | PA6HIR | Black (BK) | 151-80500 |
| **LOK01S** | 12.0 | 34.0 | 6.5 | 2.5 | 9.2 | 9.0 | 7.0 - 8.0 | PA6HIR | Black (BK) | 151-80600 |
| **LOK01** | 12.0 | 44.0 | 6.5 | 2.5 | 9.2 | 9.0 | 7.0 - 8.0 | PA11 | Black (BK) | 151-01277 |
| | 12.0 | 44.0 | 6.5 | 2.5 | 9.2 | 9.0 | 7.0 - 8.0 | PA6HIR | Black (BK) | 151-80110 |
| **LOK05** | 12.0 | 49.0 | 12.5 | 2.5 | 9.2 | 9.0 | 7.0 - 8.0 | PA6HIR | Black (BK) | 151-80700 |

All dimensions in mm. Subject to technical changes.

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## Rivet Mount

**TY5-Series**

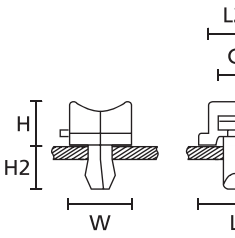
The TY Fixings are ideal for use where a high pull out force is required (eg. in the aircraft industry). The two piece 'wedge' ensures that once installed the mounts will not come away from the panel. Particularly designed for areas with restricted access.

**Features and benefits**

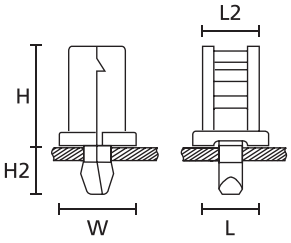
- Quick installation
- Two-piece wedge
- Easy insertion
- Firmly fixes wide variety of cable ties



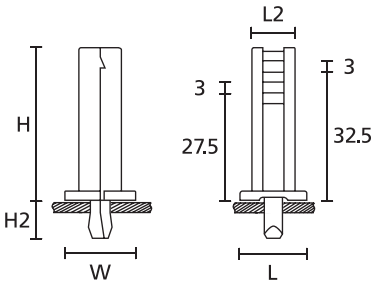
*Rivet Mount TY5 is usable with a wide variety of our cable ties.*



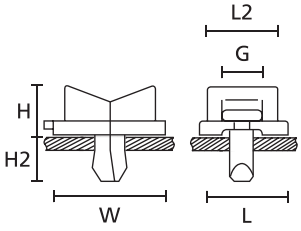

*TY5K2 Rivet Mount*



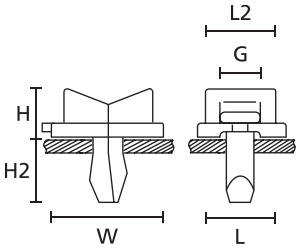

*TY5K1 Rivet Mount*



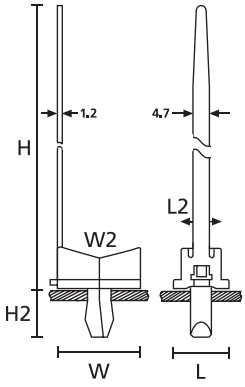

*TY5K5 Rivet Mount*




*TY5K3/5 Rivet Mount*




*TY5K3 Rivet Mount*




*TY5K4 Rivet Mount*

| TYPE | Width (W) | Length (L) | Length (L2) | Height (H) | Height (H2) | Strap Width max. (G) | Hole Ø (FH) | Panel Thickness | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **TY5K2** | 12.0 | 14.0 | 10.0 | 7.8 | 9.5 | 5.5 | 4.9 - 5.3 | 1.0 - 5.0 | PA66HS | Natural (NA) | 152-11209 |
| **TY5K1** | 14.8 | 15.0 | 11.0 | 18.3 | 9.5 | 5.4 | 5.0 - 5.3 | 1.0 - 3.0 | PA66HS | Natural (NA) | 152-51059 |
| **TY5K5** | 17.8 | 18.0 | 11.0 | 38.3 | 9.5 | 5.8 | 5.0 - 5.3 | 1.0 - 3.0 | PA66HS | Natural (NA) | 152-55059 |
| **TY5K4** | 22.0 | 14.0 | 10.0 | 175.0 | 12.5 | - | 5.9 - 6.4 | 2.0 - 8.0 | PA66HS | Natural (NA) | 152-11409 |
| **TY5K3/5** | 22.0 | 18.0 | 14.0 | 10.0 | 9.5 | 9.3 | 4.9 - 5.3 | 1.0 - 5.0 | PA66HS | Natural (NA) | 152-11359 |
| **TY5K3** | 22.0 | 18.0 | 14.0 | 10.0 | 12.5 | 9.3 | 5.9 - 6.4 | 2.0 - 8.0 | PA66HS | Natural (NA) | 152-11309 |

All dimensions in mm. Subject to technical changes.

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## Blind Plugs

Our Blind Plugs were developed especially for the automotive industry. Application in trunks, doors, wheel housing and dash panels. Parts are even used for optical reasons.

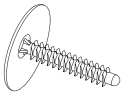
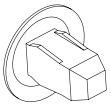
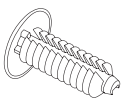
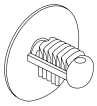
**Features and benefits**

- Easy assembly without the need of a tool
- Disc of the part covers the hole and minimises ingress of dust, dirt and water
- Standard geometry for example fir tree or arrowhead



*Blindplugs are available in different dimensions and materials.*

**Material specification please see page 26.**

| TYPE | Drawing | Hole Ø (FH) | Panel Thickness | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|
| **TRIM PLUG 5** |  | 5.0 | 4.0 - 4.5 | PA66HIR | Natural (NA) | 151-00333 |
| **PLUG11** |  | 11.0 | 4.0 - 6.0 | PA66HIRHS | Natural (NA) | 151-00485 |
| | | 11.0 | 4.0 - 6.0 | POM | Black (BK) | 151-00360 |
| **PLUG5.5** |  | 5.0 - 5.5 | 2.5 - 26.0 | PA6HIR | Black (BK) | 151-00399 |
| | | 5.0 - 5.5 | 2.5 - 26.0 | PA6HIR | Grey (GY) | 151-00401 |
| **PLUG SQ8x8** |  | 7.6 - 8.0 | 1.0 - 3.0 | PA66HIR | Black (BK) | 151-00415 |
| **PLUG5 WITH OPENING** |  | 5.05 - 5.25 | 4.8 - 5.2 | PA66HIRHS | Black (BK) | 151-00419 |
| **PLUG10** |  | 10.2 | 2.0 - 12.0 | PE | Black (BK) | 151-00426 |
| | | 10.2 | 2.0 - 12.0 | PE | Grey (GY) | 151-00488 |
| **BPFT6XXL** |  | 6.3 - 7.0 | 6.0 - 17.0 | PA66HIRHS | Natural (NA) | 151-01160 |
| **PLUGFT6XL** | | 6.5 - 7.0 | 0.7 - 18.0 | PA46 | Brown (BN) | 151-00428 |
| | | 6.5 - 7.0 | 0.7 - 18.0 | PA66HIR | Black (BK) | 241-00002 |
| | | 6.5 - 7.0 | 0.7 - 18.0 | PA66HIR | Grey (GY) | 241-00001 |
| **PLUGFT7** |  | 7.05 - 7.25 | 2.5 - 8.0 | PA6HIR | Black (BK) | 151-00414 |

All dimensions in mm. Subject to technical changes.

Date of issue: January 2019

## Snapper Hose Clips for Tubes and Harnesses

**SNP-Series**

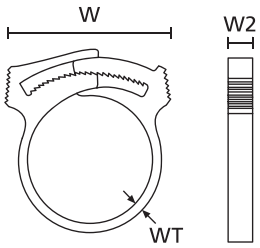
Our SNP range can be used as an alternative to metal hose clamps. Snapper can be used in markets as diverse as automotive, agriculture, white goods, venting systems, pumps and hydraulic systems to medical engineering.

### Features and benefits

- Releasable and reusable plastic hose clamps
- Self-locking
- Releasable by giving a lateral movement to the 'head'
- Installation by hand possible
- Installation with processing tool for a secure tensioning
- For higher operating temperatures: Glass Filled PA66



*SNP - Snapper Hose Clips range.*




*SNP - Snapper Hose Clip (front view)*

*SNP Clip (side view)*

**Material specification please see page 26.**

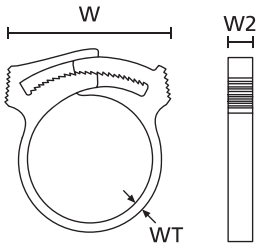
| TYPE | Bundle Ø min. | Bundle Ø max. | Width (W) min. | Width (W) max. | Width (W2) | Wall (WT) | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **SNP1** | 6.0 | 6.5 | 8.33 | 11.73 | 3.8 | 1.00 | POM | White (WH) | 190-00022 |
| | 6.0 | 6.8 | 8.40 | 11.70 | 3.8 | 1.00 | PA66GF13 | Black (BK) | 192-10010 |
| **SNP1.25** | 7.1 | 7.7 | 10.57 | 12.62 | 3.8 | 1.10 | PA66GF13 | Black (BK) | 190-00029 |
| **SNP2(E)** | 8.7 | 10.0 | 17.00 | 21.00 | 6.0 | 1.50 | POM | Natural (NA) | 191-10029 |
| **SNP2** | 9.3 | 10.5 | 12.20 | 17.60 | 5.9 | 1.70 | PA66GF13 | Black (BK) | 192-10020 |
| **SNP3(E)** | 10.0 | 11.4 | 19.00 | 25.00 | 6.0 | 1.80 | POM | Natural (NA) | 191-10039 |
| **SNP4** | 10.4 | 11.7 | 13.30 | 19.20 | 5.9 | 1.70 | PA66GF13 | Black (BK) | 192-10040 |
| **SNP4(E)** | 10.8 | 12.3 | 19.00 | 23.00 | 6.0 | 1.80 | POM | Natural (NA) | 191-10049 |
| **SNP7** | 11.4 | 13.7 | 18.40 | 28.50 | 5.9 | 1.70 | PA66GF13 | Black (BK) | 192-10070 |
| **SNP6** | 11.7 | 13.3 | 14.70 | 21.60 | 5.9 | 1.70 | PA66GF13 | Black (BK) | 192-10060 |
| **SNP6(E)** | 12.0 | 13.7 | 19.00 | 24.00 | 6.0 | 1.80 | POM | Natural (NA) | 191-10069 |
| **SNP8** | 13.1 | 15.0 | 16.70 | 24.90 | 5.7 | 1.70 | PA66GF13 | Black (BK) | 192-10080 |
| **SNP8(E)** | 13.7 | 15.3 | 19.00 | 24.00 | 6.0 | 1.80 | POM | Natural (NA) | 191-10089 |
| **SNP10** | 14.5 | 16.6 | 17.60 | 26.90 | 5.9 | 1.80 | PA66GF13 | Black (BK) | 192-10100 |
| **SNP10(E)** | 15.0 | 16.8 | 19.00 | 24.00 | 6.0 | 1.80 | POM | Natural (NA) | 191-10109 |
| **SNP12A** | 15.6 | 18.3 | 21.00 | 29.90 | 5.9 | 1.80 | PA66GF13 | Black (BK) | 190-00254 |
| **SNP12(E)** | 16.8 | 18.4 | 19.00 | 24.00 | 6.0 | 1.80 | POM | Natural (NA) | 191-10129 |
| **SNP14(E)** | 18.1 | 19.9 | 19.00 | 24.00 | 6.0 | 1.80 | POM | Natural (NA) | 191-10149 |
| **SNP14A** | 18.5 | 21.0 | 20.90 | 30.10 | 5.9 | 1.80 | PA66GF13 | Black (BK) | 190-00300 |
| **SNP16** | 19.1 | 21.7 | 19.90 | 30.80 | 5.8 | 1.50 | PA66GF13 | Black (BK) | 192-10160 |
| | 19.9 | 21.7 | 19.00 | 24.00 | 6.0 | 1.90 | POM | Natural (NA) | 191-10169 |
| **SNP18A** | 19.9 | 23.6 | 24.00 | 35.50 | 5.9 | 1.80 | PA66GF13 | Black (BK) | 190-00258 |
| **SNP18(E)** | 21.4 | 23.0 | 16.00 | 22.00 | 6.0 | 1.90 | POM | Natural (NA) | 191-10189 |
| **SNP19** | 22.3 | 25.3 | 24.40 | 36.10 | 5.9 | 1.70 | PA66GF13 | Black (BK) | 190-00090 |
| **SNP20(E)** | 22.7 | 24.7 | 20.00 | 26.00 | 6.0 | 1.80 | POM | Natural (NA) | 191-10209 |

All dimensions in mm. Subject to technical changes.

Date of issue: January 2019

## Snapper Hose Clips for Tubes and Harnesses

**SNP-Series**




*SNP - Snapper Hose Clip (front view)*

*SNP Clip (side view)*

**SNP Snapper are also available on request in material PA66HS and PA46.**

**Snapper tools please see page 559.**

| TYPE | Bundle Ø min. | Bundle Ø max. | Width (W) min. | Width (W) max. | Width (W2) | Wall (WT) | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **SNP22** | 23.7 | 27.4 | 23.90 | 37.70 | 6.0 | 1.80 | PA66GF13 | Black (BK) | 192-10220 |
| **SNP22(E)** | 25.3 | 27.3 | 20.00 | 26.00 | 6.0 | 1.60 | POM | Natural (NA) | 191-10229 |
| **SNP24** | 25.8 | 29.2 | 26.50 | 39.40 | 7.3 | 1.70 | PA66GF13 | Black (BK) | 192-10240 |
| | 26.5 | 28.6 | 20.00 | 26.00 | 6.0 | 2.00 | POM | Natural (NA) | 191-10249 |
| **SNP28** | 28.8 | 33.2 | 26.00 | 42.10 | 7.3 | 1.70 | PA66GF13 | Black (BK) | 190-00127 |
| **SNP32(E)** | 30.3 | 33.1 | 27.00 | 34.00 | 7.5 | 2.00 | POM | Natural (NA) | 191-10329 |
| **SNP32** | 31.2 | 35.8 | 27.30 | 44.40 | 7.3 | 1.80 | PA66GF13 | Black (BK) | 192-10320 |
| **SNP34(E)** | 32.5 | 35.1 | 27.00 | 34.00 | 7.5 | 2.00 | POM | Natural (NA) | 191-10349 |
| **SNP36(E)** | 34.8 | 37.1 | 27.00 | 34.00 | 7.5 | 2.00 | POM | Natural (NA) | 191-10369 |
| **SNP38(E)** | 36.7 | 38.9 | 27.00 | 34.00 | 7.5 | 2.00 | POM | Natural (NA) | 191-10389 |
| **SNP36** | 37.8 | 44.0 | 32.41 | 53.80 | 7.3 | 1.70 | PA66GF13 | Black (BK) | 192-10360 |
| **SNP42(E)** | 41.0 | 44.2 | 32.00 | 45.00 | 7.5 | 2.00 | POM | Natural (NA) | 191-10429 |
| **SNP38** | 41.0 | 48.1 | 35.60 | 57.50 | 7.3 | 1.80 | PA66GF13 | Black (BK) | 192-10380 |
| **SNP42** | 44.5 | 52.2 | 35.70 | 59.80 | 7.3 | 1.70 | PA66GF13 | Black (BK) | 191-00005 |
| **SNP50(E)** | 48.8 | 52.0 | 32.00 | 45.00 | 7.5 | 2.00 | POM | Natural (NA) | 191-10509 |
| **SNP50** | 52.2 | 58.6 | 36.50 | 60.40 | 7.3 | 1.70 | PA66GF13 | Black (BK) | 192-10500 |
| **SNP58(E)** | 56.7 | 59.2 | 31.00 | 39.00 | 7.5 | 2.00 | POM | Natural (NA) | 191-10589 |

All dimensions in mm. Subject to technical changes.

Date of issue: January 2019

## Plastic Rivets

**TY-Series**

These simple to use plastic rivets are ideal for improving productivity in the working environment, saving time and money over more conventional jointing methods. Ideal for joining panels, or components to panels in a wide range of industries from automotive to panel building.

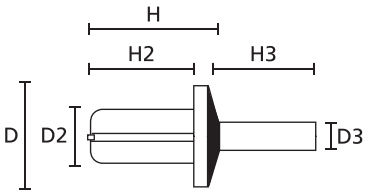
**Features and benefits**

- One Piece
- Simply push pin into body of rivet
- TY3P1 and TY8P1 pins inserted using rivet placement tool
- TY8P2 has 'mushroom' head so pin is simply hammered in
- TY8P2 consists of two unattached parts

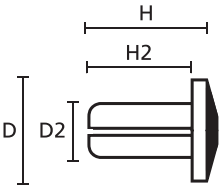


*Plastic Rivet TY8P1 in application.*

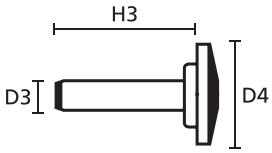
**Material specification please see page 26.**




*Plastic Rivet TY3P1 / 8P1*




*Plastic Rivet TY8P2, 1st piece*




*TY8P2 pin, 2nd piece*

| TYPE | Height (H) | Height (H2) | Height (H3) | Ø (D) | Ø (D2) | Ø (D3) | Ø (D4) | Material | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| TY3P1 | 7.5 | 6.0 | 5.3 | 6.0 | 3.0 | 1.7 | - | PA66 | Black (BK) | 241-11310 |
| | 7.5 | 6.0 | 5.3 | 6.0 | 3.0 | 1.7 | - | PA66 | Natural (NA) | 241-11319 |
| TY8P1 | 10.0 | 8.0 | 7.5 | 8.0 | 4.0 | 2.6 | - | PA66 | Black (BK) | 241-11810 |
| | 10.0 | 8.0 | 7.5 | 8.0 | 4.0 | 2.6 | - | PA66 | Natural (NA) | 241-11819 |
| TY8P2 | 10.0 | 8.0 | 11.5 | 8.0 | 4.0 | 2.6 | 8.0 | PA66 | Black (BK) | 241-11820 |
| | 10.0 | 8.0 | 11.5 | 8.0 | 4.0 | 2.6 | 8.0 | PA66 | Natural (NA) | 241-11829 |

All dimensions in mm. Subject to technical changes.

Date of issue: January 2019

HellermannTyton

# Just change the focus and you'll create something new.

It's all about perspective. The same goes for new thinking at HellermannTyton. We closely examine our customers' workflows in order to make big differences with small enhancements.
Take the 25 per cent reduction in assembly time with Q-Series cable ties. Start with a few seconds. End with valuable minutes.

**www.HellermannTyton.co.uk/q-series2019cat**

MADE FOR REAL®



Date of issue: January 2019




**Inspired by Paul Hellermann**

Heat-shrinkable tubes have always made it easy to repair cables and pipes. Strictly speaking, however, Paul Hellermann used rubber bike valves to bring the insulation of damaged household cables to a mass market from 1935. The idea is the only thing that our modern heat-shrinkable tubes have in common with these simple chloroprene sleeves. Take the SA47 (see page 248), which was specially developed in line with customer specifications and offers outstanding protection against moisture and corrosion, thus enabling vehicles to retain their functionality.

Date of issue: Jan. 2016




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## 2.1 Heat Shrinkable Tubing


| | |
|---|---|
| **Product Selection** | |
| Size Overview | 196 |
| The right Heat Shrink Tube | 197 |
| Heatshrinkable Tubing Overview | 200 |
| **Thin wall** | |
| ShrinKit 321 Basic - black, 3:1, cut pieces in compact kit | 201 |
| ShrinKit 321 Universal Basic, 3:1, coloured pieces in compact kit | 202 |
| ShrinKit 321 Universal, 3:1, coloured pieces in large size reusable kit | 203 |
| HIS-Service Station, bundles | 206 |
| HIS-PACK, 2:1, mini-reel in dispenser pack | 206 |
| HIS-3, 3:1, mini-reel in dispenser pack | 208 |
| HIS-3 BAG, 3:1, pre-cut pieces in blister bag | 211 |
| TREDUX-Display | 213 |
| TREDUX, 1 m lengths | 214 |
| LVR, 2:1, PVC | 217 |
| TL27, 2:1, halogen free | 218 |
| TCN20, 2:1, self extinguishing | 219 |
| TCN20 overexpanded, 3:1, self extinguishing | 220 |
| HFT-A, 2:1, flexible and coloured, self extinguishing | 221 |
| TF21, 2:1, flexible and coloured | 224 |
| TF24, 2:1, flexible and transparent; VG | 227 |
| TF31, 3:1, flexible and coloured | 228 |
| TF34, 3:1, flexible and transparent, VG | 231 |
| TR27, 2:1, halogen free and highly flame retardant | 246 |
| TK20, 2:1, PVDF semi-rigid in 1.2 m lenghts | 252 |
| TFE2, 2:1, PTFE | 254 |
| TFE4, 4:1, PTFE | 255 |
| **Thin wall with adhesive liner** | |
| ShrinKit 321-A, 3:1, cut pieces in large size reusable kit | 204 |
| ShrinKit 321-A Basic, 3:1, adhesive lined cut pieces in compact kit | 205 |
| HIS-A, 3:1, tubing in dispenser pack | 210 |
| TA32, 3:1, 1.2 m lengths | 232 |
| TA42, 4:1, 1.2 m lengths | 233 |
| EPS-300, 3:1, on reel | 234 |
| EPS-400, 4:1, on reel | 234 |
| LVRK, cable repair kit | 239 |
| TA37, 3:1, Halogen free and flame retardant | 247 |
| **Standard wall** | |
| SE28, 2:1, Elastomer | 251 |
| Viton®-E, 2:1, high performance Fluoroelastomer | 253 |
| **Standard wall with adhesive liner** | |
| SA47, 4:1, 1.2 m lengths | 248 |
| SA47-LA, 4:1, 1.2 m lengths | 249 |
| SA47-HT, 4:1, 1.2 m lengths | 250 |
| **Medium wall** | |
| MU47, 4:1, 1 m lengths | 238 |
| **Medium wall with adhesive liner** | |
| TREDUX MA47, 4:1, 1 m lengths | 215 |
| MA40, 4:1, flame retardant | 235 |
| MA47, 4:1, 1 m lengths | 236 |
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| RMS, Cable Repair Sleeves | 240 |
| **Thick wall with adhesive liner** | |
| TREDUX HA47, 3.5:1, 1 m lengths | 216 |
| LVK, straight-through joint | 241 |
| LVK-C, straight-through joint with connectors | 242 |
| HA40, 4:1, flame retardant | 243 |
| HA47, 3.5:1, 1 m lengths | 244 |
| HA67, 6:1, 1.2 m length | 245 |


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## 2.2 Heat Shrinkable Moulded Shapes


| | | |
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| Adhesive Specifications | | 257 |
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| **Low Profile Boots and Transitions** | | |
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| Shim Boots | Helashrink 313E Series, without adapter lip | 261 |
| Straight Boots | Helashrink 313F Series, with adapter lip | 261 |
| Right Angle Boots | Helashrink 333F Series, with adapter lip, 90° angle | 262 |
| Transition Boots | Helashrink 412H Series, side breakout | 263 |
| | Helashrink 492H Series, 1 to 2 cables | 264 |
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| **Bulbous Boots and Transitions** | | |
| Bottle Shapes | Helashrink 150 Series, with rib, VG | 266 |
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| | Helashrink 100 Series, without rib | 267 |
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| Long Outlet Shape | Helashrink 130 Series, with rib, low profile, VG | 268 |
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| | Helashrink 200 Series, VG | 271 |
| | Helashrink 200 Series, in line, low voltage | 280 |
| 3-Way Outlet Shapes | Helashrink 300 Series, VG | 272 |
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| | Helashrink 400 Series, in line, low voltage | 280 |
| 5-Way Outlet Shapes | Helashrink 500 Series, in line, low voltage | 281 |
| Right-Angle Shapes | Helashrink 1100 Series, with rib, VG | 274 |
| | Helashrink 1100 Series, with rib, MIL | 274 |
| | Helashrink 1100 Series, without rib | 275 |
| | Helashrink 1100 Series, with rib, low profile, VG style/MIL style | 276 |
| | Helashrink 1100 Series, with rib, low profile, high ratio, VG | 277 |
| T-Shapes | Helashrink 1200 Series, VG | 278 |
| | Helashrink 1200 Series, Offset, VG | 279 |
| Angled T-Shapes | Helashrink 1300 Series, 30° & 45° angle, VG | 279 |
| **End Caps** | | |
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| **Adhesives for Heat Shrinkable Moulded Shapes** | | |
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## 2.3 Non Shrinkable Tubing


| | | |
|---|---|---|
| **Chloroprene tubing and grommets** | | |
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| Helsyn TH - thin wall | | 287 |
| **Installation aid for tubing and grommets** | | |
| Hellerine | | 288 |


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## Overview of Applications for Heat Shrink Tubing

When selecting the correct heat shrink tubing size, it is important to bear in mind the 80:20 rule. The heat shrink tubing must shrink by at least 20 % and not more than 80 % of its complete shrinkage capacity to achieve the right result. In our overview of applications you will find the best heat shrink tube for every cable diameter. The 80:20 rule has of course been taken into account in the table.

**Heat Shrinkable Tubing with a shrink ratio of 2:1**
HFT-A, TL27, TF21, TF24, VITON®-E, TK20, TK29, TFE-2, TR27, TCN20, SE28

**Heat Shrinkable Tubing with a shrink ratio of 3:1**
With the optimal shrink ratio of 3:1, you can cover a wide range of applications with just a few sizes. This leads to reduced stock expenditure and requires less space. 3:1 heat shrink tubes: TF34, TF31, EPS-300, TCN20 overexpanded, TA32, TA37

| Shrink ratio 2:1 Size mm | | Cable/Wire Diameter |
|---|---|---|
| 1.2/0.6 | | 0.7 mm |
| | | 1.1 mm |
| | 2.4/1.2 | 1.4 mm |
| 3.2/1.6 | | 1.9 mm |
| | | 2.2 mm |
| | 4.8/2.4 | 2.9 mm |
| 6.4/3.2 | | 3.8 mm |
| | | 4.3 mm |
| | 9.5/4.7 | 5.7 mm |
| | | 5.8 mm |
| 12.7/6.4 | | 7.7 mm |
| | | 8.6 mm |
| | 19.1/9.5 | 11.4 mm |
| 25.4/12.7 | | 15.2 mm |
| | | 17.2 mm |
| | 38.1/19.1 | 22.9 mm |
| 50.8/25.4 | | 30.5 mm |
| | | 34.3 mm |
| | 76.2/38.1 | 45.7 mm |
| 101.6/50.8 | | 61.0 mm |
| | | 68.6 mm |
| | | 91.4 mm |

| Shrink ratio 3:1 Size mm | | Cable/Wire Diameter |
|---|---|---|
| 1.5/0.5 | | 0.7 mm |
| | | 1.3 mm |
| | 3/1 | 1.4 mm |
| | | 2.6 mm |
| 6/2 | | 2.8 mm |
| | | 5.2 mm |
| | 12/4 | 5.6 mm |
| 18/6 | | 8.4 mm |
| | | 10.4 mm |
| | 24/8 | 11.2 mm |
| | | 15.6 mm |
| 40/13 | | 18.4 mm |
| | | 20.8 mm |
| | | 34.6 mm |

**Conversion from imperial to metric**

| Inch | 1/32“ | 3/64“ | 1/16“ | 5/64“ | 3/32“ | 1/8“ | 3/16“ | 1/4“ | 3/8“ |
|---|---|---|---|---|---|---|---|---|---|
| mm | 0.8 | 1.2 | 1.6 | 2.0 | 2.4 | 3.2 | 4.8 | 6.4 | 9.5 |
| Inch | 1/2“ | 5/8“ | 3/4“ | 1“ | 1-1/4“ | 1-1/2“ | 2“ | 3“ | 4“ |
| mm | 12.7 | 15.9 | 19.1 | 25.4 | 31.8 | 38.1 | 50.8 | 76.2 | 101.6 |

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Date of issue: January 2019

## The Right Heat Shrink Tube

The 80:20 rule means that a heat shrink tube should shrink by a maximum of 80 % and a minimum of 20 %.

**For example:**
A cable with a diameter of 5mm is to be wrapped in heat shrink tubing. In theory both sizes 6/2 and 12/4 would be suitable, since the required diameter of 5 mm lies within the shrink range of both tube sizes.

### Size 6/2

**Maximum shrink (100 %)**




*Shrinkage of 4 mm*

**Optimum shrinkage max. (80 %)**




*Shrinkage of 3.2 mm*

**Optimum shrinkage min. (20 %)**




*Shrinkage of 0.8 mm*

Size 6/2 has a range of application of between 2.8 mm and 5.2 mm and is therefore suitable for the cable diameter of 5 mm.

### Size 12/4

**Maximum shrink (100 %)**




*Shrinkage of 8 mm*

**Optimum shrinkage max. (80 %)**




*Shrinkage of 6.4 mm*

**Optimum shrinkage min. (20 %)**




*Shrinkage of 1.6 mm*

The smallest application diameter of size 12/4 is 5.6 mm. This size is therefore unsuitable for a cable diameter of 5 mm.

**Calculator tool for Heat Shrink Tubing**

The calculator tool for heat shrink tubing is a selection guide for shrink tubing sizes based on the object to be covered.
Fill in your specification and the calculator presents the right tubing size according to the 80:20 rule.
Find more information under www.HellermannTyton.com/heatshrink-calculator!

The calculator tool also checks if the heat shrink tubing you have chosen is suitable for your application. For example you can find the heat shrink tubing with the Product Search on the www.HellermannTyton.com website.

Date of issue: January 2019

## Heat Shrinkable Tubing Overview

| TYPE | Packaging Type | Variant | Material | Shrink Ratio | Operating Temperature | Dimension (mm) | Halogen-free | Colour | Specifi-cations | Page |
|---|---|---|---|---|---|---|---|---|---|---|
| **ShrinKit 321 Basic** |  | **Thin-Wall** | PO-X | 3:1 | -55 °C to +135 °C | | | Black | 12 | 201 |
| **ShrinKit 321 Universal Basic** |  | | PO-X | 3:1 | -55 °C to +135 °C | | | Black, Blue, Green-Yellow, Red, White | 12 | 202 |
| **ShrinKit 321 Universal** |  | | PO-X | 3:1 | -55 °C to +135 °C | | | Black, Blue, Green-Yellow, Red, Transparent | 12 | 203 |
| **ShrinKit 321-A Basic** |  | **Thin-Wall Hot melt adhesive** | PO-X | 3:1 | -55 °C to +110 °C | | | Black, Transparent | 12 | 204 |
| **ShrinKit 321-A** |  | | PO-X | 3:1 | -55 °C to +110 °C | | | Black, Transparent | 12 | 205 |
| **HIS-PACK** |  | **Thin-Wall** | PO-X | 2:1 | -55 °C to +125 °C | 1.2 - 25.4 | | Black, Blue, Green-Yellow, Red, Transparent | 2, 3, 12 | 206 |
| **HIS-3** |  | | PO-X | 3:1 | -55 °C to +135 °C | 1.5 - 24.0 | | Black, Blue, Green-Yellow, Red, Transparent | 2, 3, 12 | 208 |
| **HIS-A** |  | **Thin-Wall Hot melt adhesive** | PO-X | 3:1 | -55 °C to +125 °C | 3.0 - 24.0 | | Black, Transparent | 2, 3, 12 | 210 |
| **HIS-3 BAG** |  | **Thin-Wall** | PO-X | 3:1 | -55 °C to +135 °C | 1.5 - 12.0 | | Black, Blue, Brown, Green-Yellow, Grey, Red, Transparent | 2, 12 | 211 |
| **TREDUX** |  | | PO-X | 2:1, 3:1 | -55 °C to +135 °C | 1.5 - 101.6 | | Black, Green-Yellow | 2, 3, 11, 12 | 214 |
| **TREDUX MA47** |  | **Medium-Wall Hot melt adhesive** | PO-X | up to 4:1 | -55 °C to +110 °C | 12.0 - 95.0 | HF ✓ | Black | | 215 |
| **TREDUX HA47** |  | **Thick-Wall Hot melt adhesive** | PO-X | up to 4:1 | -55 °C to +110 °C | 19.0 - 85.0 | HF ✓ | Black | | 216 |
| **LVR** |  | **Thin-Wall** | PVC | 2:1 | -30 °C to +105 °C | 2.4 - 25.4 | | Black | 11 | 217 |
| **TL27** |  | | PO-X | 2:1 | -55 °C to +135 °C | 1.2 - 50.8 | HF ✓ | Black | | 218 |
| **TCN20** |  | | PO-X | 2:1 | -55 °C to +125 °C | 1.2 - 50.8 | | Black | 2, 3 | 219 |
| **TCN20 overexpanded** |  | | PO-X | 3:1 | -55 °C to +125 °C | 2.4 - 38.0 | | Black | 2, 3 | 220 |

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## Heat Shrinkable Tubing Overview

| TYPE | Packaging Type | Variant | Material | Shrink Ratio | Operating Temperature | Dimension (mm) | Halogen-free | Colour | Specifi-cations | Page |
|---|---|---|---|---|---|---|---|---|---|---|
| **HFT-A** |  | **Thin-Wall** | PO-X | 2:1 | -55 °C to +135 °C | 1.2 - 101.6 | | Black, Blue, Green-Yellow, Red, White, Yellow | 1, 3, 4, 7, 8, 9, 10, 11, 12, 13,14 | 221 |
| **TF21** |  | | PO-X | 2:1 | -55 °C to +135 °C | 1.2 - 101.6 | | Black, Blue, Green-Yellow, Red, White, Yellow | 2, 3, 6, 9, 12 | 224 |
| **TF24** |  | | PO-X | 2:1 | -55 °C to +135 °C | 1.2 - 101.6 | HF ✓ | Transparent | 4, 12, 13,14 | 227 |
| **TF31** |  | | PO-X | 3:1 | -55 °C to +135 °C | 1.5 - 40.0 | | Black, Blue, Green, Green-Yellow, Red, White, Yellow | 2, 3 | 228 |
| **TF34** |  | | PO-X | 3:1 | -55 °C to +135 °C | 1.5 - 40.0 | HF ✓ | Transparent | | 231 |
| **TA32** |  | **Thin-Wall Hot melt adhesive** | PO-X | 3:1 | -55 °C to +125 °C | 3.2 - 40.0 | | Black | 3, 11, 12 | 232 |
| **TA42** |  | | PO-X | 4:1 | -55 °C to +125 °C | 4.0 - 52.0 | | Black | 11, 12 | 233 |
| **EPS-300** |  | | PO-X | 3:1 | -55 °C to +125 °C | 3.0 - 40.0 | | Black | 12 | 234 |
| **EPS-400** |  | | PO-X | 4:1 | -55 °C to +125 °C | 4.0 - 32.0 | | Black | 12 | 234 |
| **MA40** |  | **Medium-Wall Hot melt adhesive** | PO-X | up to 4:1 | -55 °C to +110 °C | 8.0 - 55.0 | | Black | 5 | 235 |
| **MA47** |  | | PO-X | up to 4:1 | -55 °C to +110 °C | 8.0 - 140.0 | HF ✓ | Black | | 236 |
| **MU47** |  | **Medium-Wall** | PO-X | up to 4:1 | -55 °C to +110 °C | 12.0 - 140.0 | HF ✓ | Black | | 238 |
| **LVRK** |  | **Shrink Cast Hot melt adhesive** | PO-X | 4:1 | -55 °C to +125 °C | 24.0 - 24.0 | | Black | | 239 |
| **RMS** |  | | PO-X | up to 4.5:1 | -40 °C to +120 °C | 43.0 - 185.0 | HF ✓ | Black | | 240 |
| **LVK** |  | | PO-X | up to 4:1 | -55 °C to +110 °C | | HF ✓ | Black | | 241 |
| **LVK-C with connectors** |  | | PO-X | up to 4:1 | -55 °C to +110 °C | | HF ✓ | Black | | 242 |
| **HA40** |  | | PO-X | up to 4:1 | -55 °C to +110 °C | 9.0 - 92.0 | | Black | 5 | 243 |

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## Heat Shrinkable Tubing Overview

| TYPE | Packaging Type | Variant | Material | Shrink Ratio | Operating Temperature | Dimension (mm) | Halogen-free | Colour | Specifi-cations | Page |
|---|---|---|---|---|---|---|---|---|---|---|
| HA47 |  | Thick-Wall Hot melt adhesive | PO-X | up to 4:1 | -55 °C to +110 °C | 9.0 - 180.0 | HF | Black | | 244 |
| HA67 |  | | PO-X | 6:1 | -55 °C to +110 °C | 19.0 - 235.0 | HF | Black | | 245 |
| TR27 |  | Thin-Wall | PO-X | 2:1 | -40 °C to +105 °C | 3.2 - 50.8 | HF | Black | 4, 15 | 246 |
| TA37 |  | Thin-Wall Hot melt adhesive | PO-X | 3:1 | -40 °C to +105 °C | 3.0 - 120.0 | HF | Black | 3, 15 | 247 |
| SA47 |  | Standard-Wall Hot melt adhesive | PO-X | 4:1 | -40 °C to +125 °C | 5.75 - 32.0 | HF | Black, Transparent | | 248 |
| SA47-LA |  | | PO-X | 4:1 | -40 °C to +125 °C | 5.75 - 52.0 | HF | Black, Transparent | | 249 |
| SA47-HT |  | | PO-X | 4:1 | -40 °C to +150 °C | 7.6 - 32.0 | | Black | | 250 |
| SE28 |  | Standard-Wall | POA | 2:1 | -75 °C to +150 °C | 3.2 - 101.2 | | Black | 9, 12, 13,14 | 251 |
| TK20 |  | Thin-Wall | PVDF | 2:1 | -55 °C to +175 °C | 1.2 - 50.8 | | Transparent | 1, 11, 12, 13,14 | 252 |
| Viton®-E |  | Standard-Wall | FPMX | 2:1 | -55 °C to +220 °C | 3.2 - 50.8 | | Black | 7, 14 | 253 |
| TFE2 |  | Thin-Wall | PTFE | 2:1 | -70 °C to +260 °C | 0.86 - 11.94 | | Transparent | | 254 |
| TFE4 |  | | PTFE | 4:1 | -70 °C to +260 °C | 1.98 - 31.75 | | Transparent | 10 | 255 |

## SPECIFICATION

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| ASN | c UL us | SP | DEF STAN | DNV·GL | JAR/FAR | LEA |
| **8** | **9** | **10** | **11** | **12** | **13** | **14** |
| MIL | NF F | NSA | UL | SAE | VDE | VG |
| **15** | | | | | | |
| EN 45545-2 | | | | | | |

Please refer to the Approvals Overview for further information, see page: 585

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## Heat shrinkable tubing 3:1 in a kit

**ShrinKit 321 Basic - black**

The compact and handy kit belongs to the basic equipment for every assembler. Its ideal shrink ratio of 3:1 replaces many differently sized tubing.

**Features and benefits**

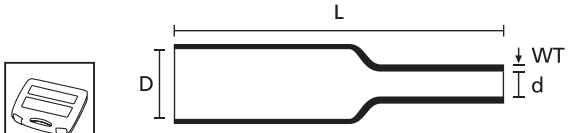
- Compact and handy kit
- Black tubing
- Available in a wide size range of 1.5 mm to 18.0 mm
- 220 precut pieces in five sizes
- Case can be re-used for storing nails, screws, nuts, fish hooks, etc.



*ShrinKit 321 Basic.*

| | |
|---|---|
| **MATERIAL** | Polyolefin, cross-linked (PO-X) |
| **Shrink Ratio** | 3:1 |
| **Operating Temperature** | -55 °C to +135 °C |
| **Min. Shrink Temperature** | +90 °C |
| **Longitudinal Change After Shrinkage** | +5 %/-10 % max. |
| **Dielectric Strength** | 20 kV/mm according to ASTM D 2671 |
| **Flammability** | self-extinguishing |
| **Insulation Class** | B (VDE 0530) |

RoHS




*Heat Shrinkable Tubing 3:1*

| COMP. | Supplied Ø D min. | Recov. Ø d max. | Length (L) | Wall (WT) | Colour | Content | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **1** | 1.5 | 0.5 | 35.0 | 0.45 | Black (BK) | 50 pcs. | 30-32 | 380-03001 |
| **2** | 6.0 | 2.0 | 35.0 | 0.70 | Black (BK) | 30 pcs. | | |
| **3** | 3.0 | 1.0 | 35.0 | 0.55 | Black (BK) | 25 pcs. | | |
| **4** | 6.0 | 2.0 | 35.0 | 0.70 | Black (BK) | 15 pcs. | | |
| **5** | 6.0 | 2.0 | 35.0 | 0.70 | Black (BK) | 15 pcs. | | |
| **6** | 3.0 | 1.0 | 35.0 | 0.55 | Black (BK) | 25 pcs. | | |
| **7** | 1.5 | 0.5 | 35.0 | 0.45 | Black (BK) | 50 pcs. | | |
| **8** | 12.0 | 4.0 | 80.0 | 0.70 | Black (BK) | 5 pcs. | | |
| **8** | 18.0 | 6.0 | 80.0 | 0.80 | Black (BK) | 5 pcs. | | |

All dimensions in mm. Subject to technical changes.

| Recommended Tools | | | |
|---|---|---|---|
| | 30<br>H5002 | 31<br>H5004 | 32<br>E4500 |
| | 561 | 561 | 560 |

For more information on toolings please refer to the Application Tooling chapter.

SAE®

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Heat shrinkable tubing 3:1 in a kit

**ShrinKit 321 Universal Basic**

With ShrinKit 321 HellermannTyton has set a new standard in heat shrink tubing: ShrinKit tubings cover many applications with their ideal shrink ratio of 3:1.

**Features and benefits**

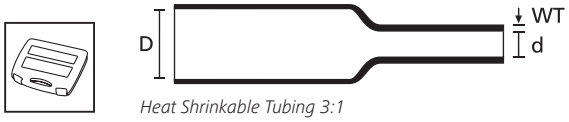
- Compact and handy kit
- Black and coloured tubing
- Available in a wide size range of 3 mm to 18.0 mm
- 177 precut pieces in five sizes
- Case can be re-used for storing nails, screws, nuts, fish hooks, etc.



*ShrinKit 321 Universal Basic.*

| | |
|---|---|
| **MATERIAL** | Polyolefin, cross-linked (PO-X) |
| **Shrink Ratio** | 3:1 |
| **Operating Temperature** | -55 °C to +135 °C |
| **Min. Shrink Temperature** | +90 °C |
| **Longitudinal Change After Shrinkage** | +5 %/-10 % max. |
| **Dielectric Strength** | 20 kV/mm according to ASTM D 2671 |
| **Flammability** | self-extinguishing |
| **Insulation Class** | B (VDE 0530) |

RoHS




*Heat Shrinkable Tubing 3:1*

| COMP. | Supplied Ø D min. | Recov. Ø d max. | Length (L) | Wall (WT) | Colour | Content | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|
| 1 | 12.0 | 4.0 | 35.0 | 0.70 | Black (BK) | 12 pcs. | 30-32 | 380-03005 |
| 2 | 6.0 | 2.0 | 80.0 | 0.70 | Blue (BU) | 5 pcs. | | |
| | 6.0 | 2.0 | 80.0 | 0.70 | Red (RD) | 5 pcs. | | |
| | 6.0 | 2.0 | 80.0 | 0.70 | White (WH) | 5 pcs. | | |
| | 12.0 | 4.0 | 80.0 | 0.70 | Black (BK) | 2 pcs. | | |
| | 12.0 | 4.0 | 80.0 | 0.70 | Blue (BU) | 2 pcs. | | |
| | 12.0 | 4.0 | 80.0 | 0.70 | Red (RD) | 2 pcs. | | |
| 3 | 6.0 | 2.0 | 35.0 | 0.70 | Blue (BU) | 10 pcs. | | |
| | 6.0 | 2.0 | 35.0 | 0.70 | Red (RD) | 10 pcs. | | |
| | 6.0 | 2.0 | 35.0 | 0.70 | White (WH) | 10 pcs. | | |
| 4 | 9.0 | 3.0 | 35.0 | 0.70 | Green-Yellow (GNYE) | 15 pcs. | | |
| 5 | 9.0 | 3.0 | 35.0 | 0.70 | Black (BK) | 20 pcs. | | |
| 6 | 3.0 | 1.0 | 35.0 | 0.55 | Black (BK) | 10 pcs. | | |
| | 3.0 | 1.0 | 35.0 | 0.55 | Blue (BU) | 10 pcs. | | |
| | 3.0 | 1.0 | 35.0 | 0.55 | Red (RD) | 10 pcs. | | |
| | 3.0 | 1.0 | 35.0 | 0.55 | White (WH) | 10 pcs. | | |
| 7 | 6.0 | 2.0 | 35.0 | 0.70 | Black (BK) | 20 pcs. | | |
| | 6.0 | 2.0 | 35.0 | 0.70 | Green-Yellow (GNYE) | 10 pcs. | | |
| 8 | 18.0 | 6.0 | 160.0 | 0.80 | Black (BK) | 3 pcs. | | |
| | 18.0 | 6.0 | 160.0 | 0.80 | Green-Yellow (GNYE) | 3 pcs. | | |
| | 18.0 | 6.0 | 160.0 | 0.80 | White (WH) | 3 pcs. | | |

All dimensions in mm. Subject to technical changes.

| Recommended Tools | | | |
|---|---|---|---|
| | 30<br>H5002 | 31<br>H5004 | 32<br>E4500 |
| | 561 | 561 | 560 |

For more information on toolings please refer to the Application Tooling chapter.

SAE® For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Heat shrinkable tubing 3:1 in a kit

**ShrinKit 321 Universal**

With ShrinKit 321 HellermannTyton has set a new standard in heat shrink tubing: ShrinKit tubings cover many applications wiith their ideal shrink ratio of 3:1.

### Features and benefits

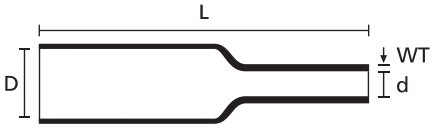
- Wide range of sizes, colours and lengths
- For insulation, bend protection and identification
- Case can be re-used for storing nails, screws, nuts, fish hooks, etc.
- Compartment sizes changeable by simply moving yellow space dividers
- 975 precut pieces



*ShrinKit 321 Universal.*

| | |
|---|---|
| **MATERIAL** | Polyolefin, cross-linked (PO-X) |
| **Shrink Ratio** | 3:1 |
| **Operating Temperature** | -55 °C to +135 °C |
| **Min. Shrink Temperature** | +90 °C |
| **Longitudinal Change After Shrinkage** | +5 %/-10 % max. |
| **Dielectric Strength** | 20 kV/mm according to ASTM D 2671 |
| **Flammability** | self-extinguishing (except for transparent) |
| **Insulation Class** | B (VDE 0530) |






*Heat Shrinkable Tubing 3:1*

RoHS

| COMP. | Supplied Ø D min. | Recov. Ø d max. | Length (L) | Wall (WT) | Colour | Content | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **1** | 6.0 | 2.0 | 60.0 | 0.70 | Black (BK) | 50 pcs. | 30-32 | 380-03002 |
| **2** | 12.0 | 4.0 | 100.0 | 0.70 | Black (BK) | 15 pcs. | | |
| **3** | 24.0 | 8.0 | 200.0 | 1.00 | Black (BK) | 10 pcs. | | |
| **4** | 6.0 | 2.0 | 60.0 | 0.70 | Green-Yellow (GNYE) | 50 pcs. | | |
| **5** | 3.0 | 1.0 | 50.0 | 0.55 | Transparent (CL) | 100 pcs. | | |
| **6** | 3.0 | 1.0 | 50.0 | 0.55 | Black (BK) | 100 pcs. | | |
| **7** | 12.0 | 4.0 | 100.0 | 0.70 | Transparent (CL) | 15 pcs. | | |
| **8** | 12.0 | 4.0 | 100.0 | 0.70 | Red (RD) | 15 pcs. | | |
| **9** | 3.0 | 1.0 | 50.0 | 0.55 | Red (RD) | 100 pcs. | | |
| **10** | 3.0 | 1.0 | 40.0 | 0.55 | Blue (BU) | 100 pcs. | | |
| **11** | 3.0 | 1.0 | 40.0 | 0.55 | Green-Yellow (GNYE) | 100 pcs. | | |
| **12** | 1.5 | 0.5 | 40.0 | 0.45 | Black (BK) | 75 pcs. | | |
| | 1.5 | 0.5 | 40.0 | 0.45 | Green-Yellow (GNYE) | 75 pcs. | | |
| **13** | 6.0 | 2.0 | 60.0 | 0.70 | Blue (BU) | 50 pcs. | | |
| **14** | 6.0 | 2.0 | 60.0 | 0.70 | Red (RD) | 50 pcs. | | |
| **15** | 6.0 | 2.0 | 60.0 | 0.70 | Transparent (CL) | 50 pcs. | | |
| **16** | 12.0 | 4.0 | 170.0 | 0.70 | Green-Yellow (GNYE) | 10 pcs. | | |
| **17** | 12.0 | 4.0 | 170.0 | 0.70 | Blue (BU) | 10 pcs. | | |

All dimensions in mm. Subject to technical changes.

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For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Heat shrinkable tubing 3:1 in a kit

**ShrinKit 321-A Basic - with adhesive liner**

The black tubing is mainly used for environmental sealing of splices and connectors. The transparent tubing is typically used for protection of cable markers.

**Features and benefits**

- Adhesive lined heat shrink tubing
- Inner wall melts when heated and is forced into gaps
- Adhesive forms seal against moisture as tubing cools
- Black tubes mainly for the protection of connectors and splices
- Clear tubing ideal for protection of printed label markers
- 130 precut pieces in three sizes
- Case can be re-used for storing nails, screws, nuts, fish hooks, etc.

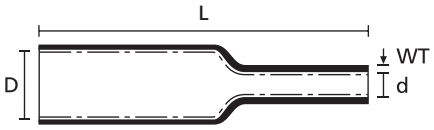


*ShrinKit 321-A Basic.*

| | |
|---|---|
| **MATERIAL** | Polyolefin, cross-linked (PO-X) |
| **Shrink Ratio** | 3:1 |
| **Operating Temperature** | -55 °C to +110 °C |
| **Min. Shrink Temperature** | +110 °C |
| **Longitudinal Change After Shrinkage** | +1 %/-15 % max. |
| **Dielectric Strength** | 15 kV/mm according to ASTM D2671 |
| **Flammability** | self-extinguishing (except for transparent) |
| **Insulation Class** | A (VDE 0530) |

RoHS






*Heat Shrinkable Tubing 3:1 with adhesive*

| COMP. | Supplied Ø D min. | Recov. Ø d max. | Length (L) | Wall (WT) | Colour | Content | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **1** | 3.0 | 1.0 | 35.0 | 1.00 | Black (BK) | 25 pcs. | 30-32 | 380-03004 |
| **2** | 12.0 | 4.0 | 35.0 | 1.70 | Black (BK) | 10 pcs. | | |
| **3** | 3.0 | 1.0 | 35.0 | 1.00 | Transparent (CL) | 25 pcs. | | |
| **4** | 6.0 | 2.0 | 35.0 | 1.10 | Black (BK) | 15 pcs. | | |
| **5** | 6.0 | 2.0 | 35.0 | 1.10 | Transparent (CL) | 15 pcs. | | |
| **6** | 6.0 | 2.0 | 35.0 | 1.10 | Transparent (CL) | 15 pcs. | | |
| **7** | 6.0 | 2.0 | 35.0 | 1.10 | Black (BK) | 15 pcs. | | |
| **8** | 12.0 | 4.0 | 80.0 | 1.70 | Black (BK) | 5 pcs. | | |
| | 12.0 | 4.0 | 80.0 | 1.70 | Transparent (CL) | 5 pcs. | | |

All dimensions in mm. Subject to technical changes.

| Recommended Tools | | | |
|---|---|---|---|
| | 30<br>H5002 | 31<br>H5004 | 32<br>E4500 |
| | 561 | 561 | 560 |

For more information on toolings please refer to the Application Tooling chapter.

SAE®

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Heat shrinkable tubing 3:1 in a kit

**ShrinKit 321-A - with adhesive liner**

The black tubing is mainly used for environmental sealing of splices and connectors. The transparent tubing is typically used for protection of cable markers.

**Features and benefits**

- Adhesive lined heat shrink tubing
- Inner wall melts when heated and is forced into gaps
- Adhesive forms seal against moisture as tubing cools
- Black tubing mainly for the protection of connectors and splices
- Clear tubing ideal for protection of printed label markers
- Case can be re-used for storing nails, screws, nuts, fish hooks, etc.
- Compartment size changeable by simply moving yellow space dividers
- 210 precut pieces



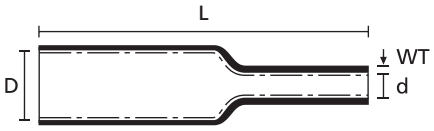

*ShrinKit 321-A.*

| | |
|---|---|
| **MATERIAL** | Polyolefin, cross-linked (PO-X) |
| **Shrink Ratio** | 3:1 |
| **Operating Temperature** | -55 °C to +110 °C |
| **Min. Shrink Temperature** | +110 °C |
| **Longitudinal Change After Shrinkage** | +1 %/-15 % max. |
| **Dielectric Strength** | 15 kV/mm according to IEC 60684 P2 |
| **Flammability** | self-extinguishing (except for transparent) |
| **Insulation Class** | A (VDE 0530) |

*One Step to the Web!*

RoHS






*Heat Shrinkable Tubing 3:1 with adhesive*

| COMP. | Supplied Ø D min. | Recov. Ø d max. | Length (L) | Wall (WT) | Colour | Content | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **1** | 24.0 | 8.0 | 200.0 | 2.50 | Black (BK) | 5 pcs. | 30-32 | 380-03003 |
| **2** | 12.0 | 4.0 | 65.0 | 1.70 | Transparent (CL) | 15 pcs. | | |
| **3** | 6.0 | 2.0 | 50.0 | 1.10 | Black (BK) | 20 pcs. | | |
| | 6.0 | 2.0 | 50.0 | 1.10 | Transparent (CL) | 20 pcs. | | |
| **4** | 12.0 | 4.0 | 65.0 | 1.70 | Black (BK) | 15 pcs. | | |
| **5** | 3.0 | 1.0 | 50.0 | 1.00 | Black (BK) | 50 pcs. | | |
| | 3.0 | 1.0 | 50.0 | 1.00 | Transparent (CL) | 50 pcs. | | |
| **6** | 6.0 | 2.0 | 35.0 | 1.10 | Black (BK) | 30 pcs. | | |
| | 6.0 | 2.0 | 35.0 | 1.10 | Transparent (CL) | 30 pcs. | | |
| **7** | 24.0 | 8.0 | 200.0 | 2.50 | Transparent (CL) | 5 pcs. | | |
| **8** | 12.0 | 4.0 | 100.0 | 1.70 | Black (BK) | 15 pcs. | | |
| **9** | 12.0 | 4.0 | 100.0 | 1.70 | Black (BK) | 15 pcs. | | |
| **10** | 12.0 | 4.0 | 100.0 | 1.70 | Transparent (CL) | 15 pcs. | | |
| **11** | 3.0 | 1.0 | 40.0 | 1.00 | Black (BK) | 50 pcs. | | |
| | 3.0 | 1.0 | 40.0 | 1.00 | Transparent (CL) | 50 pcs. | | |

All dimensions in mm. Subject to technical changes.

SAE® For product specific approvals and specifications please refer to the Appendix.

## Storage rack for HIS-Boxes

**HIS-Service Station**

HIS general purpose heat shrink tubing provides a reliable insulation and protects against corrosion and mechanical influences. The handy dispenser is ideal for small and medium size projects on-site. The sturdy metal HIS-Service Station comes with a cutter and can store all sizes and colours. The Service Station can be mounted to the wall in the work shop or service-van.

**Features and benefits**

- Contains up to 5 dispenser boxes
- Place on bench or mount to wall
- Special cutter included for easily cutting tubing length to size



*HIS-Service Station contains 5 dispensers and a special cutter.*

| TYPE | Description | Tools | Article-No. |
|---|---|---|---|
| **HIS-Service Station** | HIS-Service Station incl. cutter, contents: 5 dispensers HIS-3 (shrink ratio: 3:1), black, sizes are as follows: HIS-3/1, HIS-6/2, HIS-12/4 (2 pcs.), HIS-24/8 | 30-32 | 365-30100 |
| | HIS-Service Station incl. cutter, empty | - | 300-30000 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

## Heat Shrinkable Tubing 2:1 on a Reel

**HIS-PACK**

HIS-PACK is used in general purpose of electrical insulation with a high level of protection against corrosion and mechanical abrasion.

**Features and benefits**

- Cross-linked Polyolefin, thin-wall and flexible
- Handy dispenser box including table showing application size range
- Available in black, red, blue, transparent and yellow/green
- 10 sizes from 1.2 mm to 25.4 mm




*HIS-Pack.*

| MATERIAL | Polyolefin, cross-linked (PO-X) |
|---|---|
| **Shrink Ratio** | 2:1 |
| **Operating Temperature** | -55 °C to +125 °C |
| **Min. Shrink Temperature** | +100 °C |
| **Longitudinal Change After Shrinkage** | +/-5 % |
| **Dielectric Strength** | 20kV/mm according to ASTM D2671 |
| **Flammability** | UL 224 VW-1 (except transparent) |

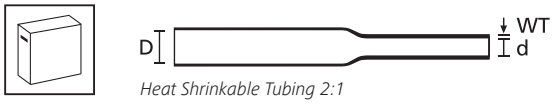
RoHS

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Heat Shrinkable Tubing 2:1 on a Reel

**HIS-PACK**




*Heat Shrinkable Tubing 2:1*

| TYPE | Supplied Ø D min. | Size (imperial) | Recov. Ø d max. | Wall (WT) | Reel Length | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|
| HIS-PACK-1.2/0.6 | 1.2 | 3/64 " | 0.6 | 0.40 | 10 m | Black (BK) | 30-32 | 300-30120 |
| | 1.2 | 3/64 " | 0.6 | 0.40 | 10 m | Blue (BU) | 30-32 | 300-30126 |
| | 1.2 | 3/64 " | 0.6 | 0.40 | 10 m | Red (RD) | 30-32 | 300-30122 |
| | 1.2 | 3/64 " | 0.6 | 0.40 | 10 m | Transparent (CL) | 30-32 | 300-30123 |
| HIS-PACK-1.6/0.8 | 1.6 | 1/16 " | 0.8 | 0.40 | 10 m | Black (BK) | 30-32 | 300-30160 |
| | 1.6 | 1/16 " | 0.8 | 0.40 | 10 m | Blue (BU) | 30-32 | 300-30166 |
| | 1.6 | 1/16 " | 0.8 | 0.40 | 10 m | Red (RD) | 30-32 | 300-30162 |
| | 1.6 | 1/16 " | 0.8 | 0.40 | 10 m | Transparent (CL) | 30-32 | 300-30163 |
| HIS-PACK-2.4/1.2 | 2.4 | 3/32 " | 1.2 | 0.50 | 10 m | Black (BK) | 30-32 | 300-30240 |
| | 2.4 | 3/32 " | 1.2 | 0.50 | 10 m | Blue (BU) | 30-32 | 300-30246 |
| | 2.4 | 3/32 " | 1.2 | 0.50 | 10 m | Red (RD) | 30-32 | 300-30242 |
| | 2.4 | 3/32 " | 1.2 | 0.50 | 10 m | Transparent (CL) | 30-32 | 300-30243 |
| HIS-PACK-3.2/1.6 | 3.2 | 1/8 " | 1.6 | 0.50 | 10 m | Black (BK) | 30-32 | 300-30320 |
| | 3.2 | 1/8 " | 1.6 | 0.50 | 10 m | Blue (BU) | 30-32 | 300-30326 |
| | 3.2 | 1/8 " | 1.6 | 0.50 | 10 m | Green-Yellow (GNYE) | 30-32 | 300-30327 |
| | 3.2 | 1/8 " | 1.6 | 0.50 | 10 m | Red (RD) | 30-32 | 300-30322 |
| | 3.2 | 1/8 " | 1.6 | 0.50 | 10 m | Transparent (CL) | 30-32 | 300-30323 |
| HIS-PACK-4.8/2.4 | 4.8 | 3/16 " | 2.4 | 0.50 | 10 m | Black (BK) | 30-32 | 300-30480 |
| | 4.8 | 3/16 " | 2.4 | 0.50 | 10 m | Blue (BU) | 30-32 | 300-30486 |
| | 4.8 | 3/16 " | 2.4 | 0.50 | 10 m | Green-Yellow (GNYE) | 30-32 | 300-30487 |
| | 4.8 | 3/16 " | 2.4 | 0.50 | 10 m | Red (RD) | 30-32 | 300-30482 |
| | 4.8 | 3/16 " | 2.4 | 0.50 | 10 m | Transparent (CL) | 30-32 | 300-30483 |
| HIS-PACK-6.4/3.2 | 6.4 | 1/4 " | 3.2 | 0.60 | 5 m | Black (BK) | 30-32 | 300-30640 |
| | 6.4 | 1/4 " | 3.2 | 0.60 | 5 m | Blue (BU) | 30-32 | 300-30646 |
| | 6.4 | 1/4 " | 3.2 | 0.60 | 5 m | Green-Yellow (GNYE) | 30-32 | 300-30647 |
| | 6.4 | 1/4 " | 3.2 | 0.60 | 5 m | Red (RD) | 30-32 | 300-30642 |
| | 6.4 | 1/4 " | 3.2 | 0.60 | 5 m | Transparent (CL) | 30-32 | 300-30643 |
| HIS-PACK-9.5/4.7 | 9.5 | 3/8 " | 4.7 | 0.60 | 5 m | Black (BK) | 30-32 | 300-30950 |
| | 9.5 | 3/8 " | 4.7 | 0.60 | 5 m | Blue (BU) | 30-32 | 300-30956 |
| | 9.5 | 3/8 " | 4.7 | 0.60 | 5 m | Green-Yellow (GNYE) | 30-32 | 300-30957 |
| | 9.5 | 3/8 " | 4.7 | 0.60 | 5 m | Red (RD) | 30-32 | 300-30952 |
| | 9.5 | 3/8 " | 4.7 | 0.60 | 5 m | Transparent (CL) | 30-32 | 300-30953 |
| HIS-PACK-12.7/6.4 | 12.7 | 1/2 " | 6.4 | 0.60 | 5 m | Black (BK) | 30-32 | 300-31270 |
| | 12.7 | 1/2 " | 6.4 | 0.60 | 5 m | Blue (BU) | 30-32 | 300-31276 |
| | 12.7 | 1/2 " | 6.4 | 0.60 | 5 m | Green-Yellow (GNYE) | 30-32 | 300-31277 |
| | 12.7 | 1/2 " | 6.4 | 0.60 | 5 m | Red (RD) | 30-32 | 300-31272 |
| | 12.7 | 1/2 " | 6.4 | 0.60 | 5 m | Transparent (CL) | 30-32 | 300-31273 |
| HIS-PACK-19.1/9.5 | 19.1 | 3/4 " | 9.5 | 0.80 | 5 m | Black (BK) | 30-32 | 300-31900 |
| | 19.1 | 3/4 " | 9.5 | 0.80 | 5 m | Blue (BU) | 30-32 | 300-31906 |
| | 19.1 | 3/4 " | 9.5 | 0.80 | 5 m | Green-Yellow (GNYE) | 30-32 | 300-31907 |
| | 19.1 | 3/4 " | 9.5 | 0.80 | 5 m | Red (RD) | 30-32 | 300-31902 |
| | 19.1 | 3/4 " | 9.5 | 0.80 | 5 m | Transparent (CL) | 30-32 | 300-31903 |
| HIS-PACK-25.4/12.7 | 25.4 | 1 " | 12.7 | 0.90 | 5 m | Black (BK) | 30-32 | 300-32540 |
| | 25.4 | 1 " | 12.7 | 0.90 | 5 m | Blue (BU) | 30-32 | 300-32546 |
| | 25.4 | 1 " | 12.7 | 0.90 | 5 m | Green-Yellow (GNYE) | 30-32 | 300-32547 |
| | 25.4 | 1 " | 12.7 | 0.90 | 5 m | Red (RD) | 30-32 | 300-32542 |
| | 25.4 | 1 " | 12.7 | 0.90 | 5 m | Transparent (CL) | 30-32 | 300-32543 |

All dimensions in mm. Subject to technical changes. Minimum Order Quantity (MOQ) may differ from package content.

| Recommended Tools | | | |
|---|---|---|---|
| | 30<br>H5002 | 31<br>H5004 | 32<br>E4500 |
| | 561 | 561 | 560 |

For more information on toolings please refer to the Application Tooling chapter.

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Heat Shrinkable Tubing 3:1 on a Reel

**HIS-3**

HIS-3 is used in general purpose of electrical insulation with a high level of protection against mechanical abrasion.

**Features and benefits**

- Unlined tubing in handly dispenser packs
- High shrink ratio 3:1
- Fits highly variable cable dimensions
- Only 6 sizes for application diameter range of 1 mm up to 20 mm, reduce inventory by half




*HIS-3 can fit highly variable substrate dimensions.*

*One Step to the Web!*

| | |
|---|---|
| **MATERIAL** | Polyolefin, cross-linked (PO-X) |
| **Shrink Ratio** | 3:1 |
| **Operating Temperature** | -55 °C to +135 °C |
| **Min. Shrink Temperature** | +100 °C |
| **Longitudinal Change After Shrinkage** | -5 % max. |
| **Dielectric Strength** | 20 kV/mm according to ASTM D 150 |
| **Flammability** | UL 224 VW-1 (except transparent) |
| **Insulation Class** | B (VDE 0530) |

RoHS




*Heat Shrinkable Tubing 3:1*

| TYPE | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Reel Length | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|
| **HIS-3-1.5/0.5** | 1.5 | 0.5 | 0.45 | 10 m | Black (BK) | 30-32 | 308-30150 |
| | 1.5 | 0.5 | 0.45 | 10 m | Blue (BU) | 30-32 | 308-30156 |
| | 1.5 | 0.5 | 0.45 | 10 m | Red (RD) | 30-32 | 308-30152 |
| | 1.5 | 0.5 | 0.45 | 10 m | Transparent (CL) | 30-32 | 308-30153 |
| **HIS-3-3/1** | 3.0 | 1.0 | 0.55 | 10 m | Black (BK) | 30-32 | 308-30300 |
| | 3.0 | 1.0 | 0.55 | 10 m | Blue (BU) | 30-32 | 308-30306 |
| | 3.0 | 1.0 | 0.55 | 10 m | Green-Yellow (GNYE) | 30-32 | 308-30307 |
| | 3.0 | 1.0 | 0.55 | 10 m | Red (RD) | 30-32 | 308-30302 |
| | 3.0 | 1.0 | 0.55 | 10 m | Transparent (CL) | 30-32 | 308-30303 |
| **HIS-3-6/2** | 6.0 | 2.0 | 0.65 | 5 m | Black (BK) | 30-32 | 308-30600 |
| | 6.0 | 2.0 | 0.65 | 5 m | Blue (BU) | 30-32 | 308-30606 |
| | 6.0 | 2.0 | 0.65 | 5 m | Green-Yellow (GNYE) | 30-32 | 308-30607 |
| | 6.0 | 2.0 | 0.65 | 5 m | Red (RD) | 30-32 | 308-30602 |
| | 6.0 | 2.0 | 0.65 | 5 m | Transparent (CL) | 30-32 | 308-30603 |

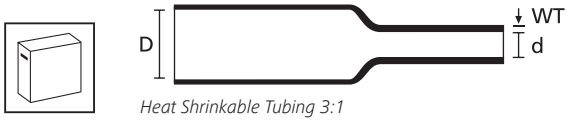
All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Heat Shrinkable Tubing 3:1 on a Reel

**HIS-3**




*Heat Shrinkable Tubing 3:1*

| TYPE | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Reel Length | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|
| HIS-3-9/3 | 9.0 | 3.0 | 0.75 | 5 m | Black (BK) | 30-32 | 308-30900 |
| | 9.0 | 3.0 | 0.75 | 5 m | Blue (BU) | 30-32 | 308-30906 |
| | 9.0 | 3.0 | 0.75 | 5 m | Green-Yellow (GNYE) | 30-32 | 308-30907 |
| | 9.0 | 3.0 | 0.75 | 5 m | Red (RD) | 30-32 | 308-30902 |
| | 9.0 | 3.0 | 0.75 | 5 m | Transparent (CL) | 30-32 | 308-30903 |
| HIS-3-12/4 | 12.0 | 4.0 | 0.80 | 5 m | Black (BK) | 30-32 | 308-31200 |
| | 12.0 | 4.0 | 0.80 | 5 m | Blue (BU) | 30-32 | 308-31206 |
| | 12.0 | 4.0 | 0.80 | 5 m | Green-Yellow (GNYE) | 30-32 | 308-31207 |
| | 12.0 | 4.0 | 0.80 | 5 m | Red (RD) | 30-32 | 308-31202 |
| | 12.0 | 4.0 | 0.80 | 5 m | Transparent (CL) | 30-32 | 308-31203 |
| HIS-3-18/6 | 18.0 | 6.0 | 0.90 | 4 m | Black (BK) | 30-32 | 308-31800 |
| | 18.0 | 6.0 | 0.90 | 4 m | Blue (BU) | 30-32 | 308-31806 |
| | 18.0 | 6.0 | 0.90 | 4 m | Green-Yellow (GNYE) | 30-32 | 308-31807 |
| | 18.0 | 6.0 | 0.90 | 4 m | Red (RD) | 30-32 | 308-31802 |
| | 18.0 | 6.0 | 0.90 | 4 m | Transparent (CL) | 30-32 | 308-31803 |
| HIS-3-24/8 | 24.0 | 8.0 | 1.20 | 3 m | Black (BK) | 30-32 | 308-32400 |
| | 24.0 | 8.0 | 1.20 | 3 m | Blue (BU) | 30-32 | 308-32406 |
| | 24.0 | 8.0 | 1.20 | 3 m | Green-Yellow (GNYE) | 30-32 | 308-32407 |
| | 24.0 | 8.0 | 1.20 | 3 m | Red (RD) | 30-32 | 308-32402 |
| | 24.0 | 8.0 | 1.20 | 3 m | Transparent (CL) | 30-32 | 308-32403 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

| Recommended Tools | | | |
|---|---|---|---|
| | 30<br>H5002 | 31<br>H5004 | 32<br>E4500 |
| | 561 | 561 | 560 |

For more information on toolings please refer to the Application Tooling chapter.

For product specific approvals and specifications please refer to the Appendix.

## Heat shrinkable tubing 3:1 on a reel

**HIS-A - with adhesive liner**

HIS-A forms a seal against moisture and protect against corrosion and mechanical abrasion.

**Features and benefits**

- Adhesive lined heat shrink tubing
- Inner wall melts when heated and is forced into gaps
- Adhesive forms seal against moisture as tubing cools
- Protects components
- Available in black and transparent
- 6 sizes for wide range of applications




*HIS-A - with adhesive liner.*

| | |
|---|---|
| **MATERIAL** | Polyolefin, cross-linked (PO-X) |
| **Shrink Ratio** | 3:1 |
| **Operating Temperature** | -55 °C to +125 °C |
| **Min. Shrink Temperature** | +100 °C |
| **Longitudinal Change After Shrinkage** | -10 % max. |
| **Softening Point Adhesive** | +85 °C |
| **Dielectric Strength** | 15 kV/mm according to IEC 60684 P2 |
| **Flammability** | UL 224 VW-1 (except transparent) |
| **Insulation Class** | A (VDE 0530) |




*Heat Shrinkable Tubing 3:1 with adhesive*

RoHS

| TYPE | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Reel Length | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|
| **HIS-A-3/1** | 3.0 | 1.0 | 1.00 | 10 m | Black (BK) | 30-32 | 308-10300 |
| | 3.0 | 1.0 | 1.00 | 10 m | Transparent (CL) | 30-32 | 308-10303 |
| **HIS-A-6/2** | 6.0 | 2.0 | 1.00 | 5 m | Black (BK) | 30-32 | 308-10600 |
| | 6.0 | 2.0 | 1.00 | 5 m | Transparent (CL) | 30-32 | 308-10603 |
| **HIS-A-9/3** | 9.0 | 3.0 | 1.40 | 5 m | Black (BK) | 30-32 | 308-10900 |
| | 9.0 | 3.0 | 1.40 | 5 m | Transparent (CL) | 30-32 | 308-10903 |
| **HIS-A-12/4** | 12.0 | 4.0 | 1.80 | 5 m | Black (BK) | 30-32 | 308-11200 |
| | 12.0 | 4.0 | 1.80 | 5 m | Transparent (CL) | 30-32 | 308-11203 |
| **HIS-A-18/6** | 18.0 | 6.0 | 2.25 | 4 m | Black (BK) | 30-32 | 308-11800 |
| | 18.0 | 6.0 | 2.25 | 4 m | Transparent (CL) | 30-32 | 308-11803 |
| **HIS-A-24/8** | 24.0 | 8.0 | 2.50 | 3 m | Black (BK) | 30-32 | 308-12400 |
| | 24.0 | 8.0 | 2.50 | 3 m | Transparent (CL) | 30-32 | 308-12403 |

All dimensions in mm. Subject to technical changes. Minimum Order Quantity (MOQ) may differ from package content.

| Recommended Tools | | | |
|---|---|---|---|
| | 30<br>H5002 | 31<br>H5004 | 32<br>E4500 |
| | 561 | 561 | 560 |

For more information on toolings please refer to the Application Tooling chapter.

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Heat Shrinkable Tubing 3:1 in blister bags

**HIS-3 BAG**

HIS-3 BAG tubings are useable for insulation and protection of cables and harnesses.

**Features and benefits**

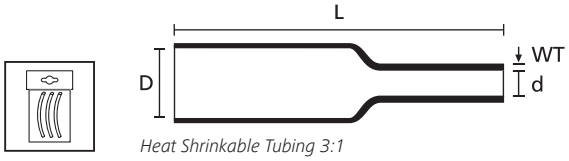
- Thin wall and flexible tubing made of cross-linked Polyolefin
- High shrink ratio 3:1
- Handy, small packaging with 10 pre-cut pieces of 200 mm
- Fits highly variable cable diameters



*HIS-3 BAG available in seven colours and four sizes.*

| MATERIAL | Polyolefin, cross-linked (PO-X) |
|---|---|
| **Shrink Ratio** | 3:1 |
| **Operating Temperature** | -55 °C to +135 °C |
| **Min. Shrink Temperature** | +100 °C |
| **Longitudinal Change After Shrinkage** | -5 % max. |
| **Dielectric Strength** | 20 kV/mm according to ASTM D 150 |
| **Flammability** | UL 224 VW-1 (except transparent) |

RoHS




*Heat Shrinkable Tubing 3:1*

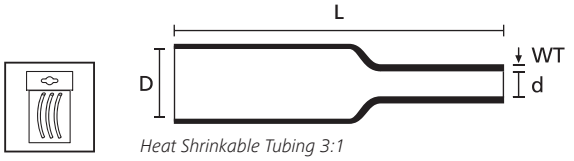
| TYPE | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Length (L) | Pack Cont. | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|
| HIS-3-BAG-1.5/0.5 | 1.5 | 0.5 | 0.45 | 200.0 | 10 pcs. | Black (BK) | 30-32 | 308-30151 |
| | 1.5 | 0.5 | 0.45 | 200.0 | 10 pcs. | Blue (BU) | 30-32 | 308-30161 |
| | 1.5 | 0.5 | 0.45 | 200.0 | 10 pcs. | Brown (BN) | 30-32 | 308-30163 |
| | 1.5 | 0.5 | 0.45 | 200.0 | 10 pcs. | Green-Yellow (GNYE) | 30-32 | 308-30165 |
| | 1.5 | 0.5 | 0.45 | 200.0 | 10 pcs. | Grey (GY) | 30-32 | 308-30162 |
| | 1.5 | 0.5 | 0.45 | 200.0 | 10 pcs. | Red (RD) | 30-32 | 308-30160 |
| | 1.5 | 0.5 | 0.45 | 200.0 | 10 pcs. | Transparent (CL) | 30-32 | 308-30164 |
| HIS-3-BAG-3/1 | 3.0 | 1.0 | 0.55 | 200.0 | 10 pcs. | Black (BK) | 30-32 | 308-30310 |
| | 3.0 | 1.0 | 0.55 | 200.0 | 10 pcs. | Blue (BU) | 30-32 | 308-30312 |
| | 3.0 | 1.0 | 0.55 | 200.0 | 10 pcs. | Brown (BN) | 30-32 | 308-30314 |
| | 3.0 | 1.0 | 0.55 | 200.0 | 10 pcs. | Green-Yellow (GNYE) | 30-32 | 308-30316 |
| | 3.0 | 1.0 | 0.55 | 200.0 | 10 pcs. | Grey (GY) | 30-32 | 308-30313 |
| | 3.0 | 1.0 | 0.55 | 200.0 | 10 pcs. | Red (RD) | 30-32 | 308-30311 |
| | 3.0 | 1.0 | 0.55 | 200.0 | 10 pcs. | Transparent (CL) | 30-32 | 308-30315 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

For product specific approvals and specifications please refer to the Appendix.

## Heat Shrinkable Tubing 3:1 in blister bags

**HIS-3 BAG**




*Heat Shrinkable Tubing 3:1*

| TYPE | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Length (L) | Pack Cont. | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|
| HIS-3-BAG-6/2 | 6.0 | 2.0 | 0.65 | 200.0 | 10 pcs. | Black (BK) | 30-32 | 308-30610 |
| | 6.0 | 2.0 | 0.65 | 200.0 | 10 pcs. | Blue (BU) | 30-32 | 308-30612 |
| | 6.0 | 2.0 | 0.65 | 200.0 | 10 pcs. | Brown (BN) | 30-32 | 308-30614 |
| | 6.0 | 2.0 | 0.65 | 200.0 | 10 pcs. | Grey (GY) | 30-32 | 308-30613 |
| | 6.0 | 2.0 | 0.65 | 200.0 | 10 pcs. | Red (RD) | 30-32 | 308-30611 |
| | 6.0 | 2.0 | 0.65 | 200.0 | 10 pcs. | Transparent (CL) | 30-32 | 308-30615 |
| | 6.0 | 2.0 | 0.65 | 200.0 | 10 pcs. | Green-Yellow (GNYE) | 30-32 | 308-30617 |
| HIS-3-BAG-12/4 | 12.0 | 4.0 | 0.80 | 200.0 | 10 pcs. | Black (BK) | 30-32 | 308-31210 |
| | 12.0 | 4.0 | 0.80 | 200.0 | 10 pcs. | Blue (BU) | 30-32 | 308-31212 |
| | 12.0 | 4.0 | 0.80 | 200.0 | 10 pcs. | Brown (BN) | 30-32 | 308-31214 |
| | 12.0 | 4.0 | 0.80 | 200.0 | 10 pcs. | Grey (GY) | 30-32 | 308-31213 |
| | 12.0 | 4.0 | 0.80 | 200.0 | 10 pcs. | Red (RD) | 30-32 | 308-31211 |
| | 12.0 | 4.0 | 0.80 | 200.0 | 10 pcs. | Transparent (CL) | 30-32 | 308-31215 |
| | 12.0 | 4.0 | 0.80 | 200.0 | 10 pcs. | Green-Yellow (GNYE) | 30-32 | 308-31217 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

| Recommended Tools | | | |
|---|---|---|---|
| | 30<br>H5002 | 31<br>H5004 | 32<br>E4500 |
| | 561 | 561 | 560 |

For more information on toolings please refer to the Application Tooling chapter.

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Point of sale display for TREDUX

**TREDUX-Display**

With TREDUX HellermannTyton has set a new standard in heat shrink tubing. TREDUX offers a complete range of thin, medium and thick wall tubing cut into 1 meter length. All tubing are labled with an EAN barcode securely packed in display boxes. They can be removed individually for occasional use in smaller quantities. With the practical, valuable metal point of sale display is an optimal product presentation guaranteed. The following table is a proposed content for a TREDUX-Display.



*The TREDUX-Display.*

**Features and benefits**

- Complete range of thin, medium- and thick wall heatshrink tubing in one display
- All tubings can be sold in single 1 meter length or entire carton
- Pick of single tube possible allowing job specific purchasing
- Optimised stock based on usage based display content
- Holder for end user brochures available attached to display

*One Step to the Web!*

| TYPE | Content | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Pack Cont. | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **TREDUX-Display** | | | | | | | | |
| **TREDUX-Display** | - | - | - | - | 1 pc. | Blue (BU) | - | 319-30000 |
| **TREDUX thin wall** | | | | | | | | |
| **TREDUX-1.5/0.5** | 1 | 1.5 | 0.5 | 0.50 | 20 pcs. | Black (BK) | 30-32 | 319-00150 |
| **TREDUX-3/1** | 1 | 3.0 | 1.0 | 0.60 | 20 pcs. | Green-Yellow (GNYE) | 30-32 | 319-00307 |
| **TREDUX-6/2** | 1 | 6.0 | 2.0 | 0.70 | 15 pcs. | Green-Yellow (GNYE) | 30-32 | 319-00607 |
| **TREDUX-12/4** | 1 | 12.0 | 4.0 | 0.85 | 10 pcs. | Green-Yellow (GNYE) | 30-32 | 319-01207 |
| **TREDUX-24/8** | 1 | 24.0 | 8.0 | 1.20 | 5 pcs. | Black (BK) | 30-32 | 319-02400 |
| **TREDUX-3/1** | 2 | 3.0 | 1.0 | 0.60 | 20 pcs. | Black (BK) | 30-32 | 319-00300 |
| **TREDUX-6/2** | 2 | 6.0 | 2.0 | 0.70 | 15 pcs. | Black (BK) | 30-32 | 319-00600 |
| **TREDUX-12/4** | 4 | 12.0 | 4.0 | 0.85 | 10 pcs. | Black (BK) | 30-32 | 319-01200 |
| **TREDUX MA47 medium wall - with adhesive liner** | | | | | | | | |
| **TREDUX-MA47-19/6** | 1 | 19.0 | 6.0 | 2.50 | 10 pcs. | Black (BK) | 30-32 | 323-50190 |
| **TREDUX-MA47-40/12** | 1 | 40.0 | 12.0 | 2.50 | 4 pcs. | Black (BK) | - | 323-50400 |
| **TREDUX-MA47-30/8** | 2 | 30.0 | 8.0 | 2.50 | 6 pcs. | Black (BK) | 30-32 | 323-50300 |
| **TREDUX HA47 thick wall - with adhesive liner** | | | | | | | | |
| **TREDUX-HA47-19/6** | 1 | 19.0 | 6.0 | 2.70 | 10 pcs. | Black (BK) | 30-32 | 321-50190 |
| **TREDUX-HA47-33/8** | 1 | 33.0 | 8.0 | 3.20 | 5 pcs. | Black (BK) | 30-32 | 321-50330 |
| **TREDUX-HA47-45/12** | 1 | 45.0 | 12.0 | 4.10 | 4 pcs. | Black (BK) | - | 321-50450 |

All dimensions in mm. Subject to technical changes. Minimum Order Quantity (MOQ) may differ from package content.

| Recommended Tools | | | |
|---|---|---|---|
| | 30 | 31 | 32 |
| | H5002 | H5004 | E4500 |
| | 561 | 561 | 560 |

For more information on toolings please refer to the Application Tooling chapter.

Date of issue: January 2019

## Heat shrinkable tubing up to 3:1 - 1 m lengths

**TREDUX - thin wall**

TREDUX thin wall heat shrink tubing is used for general electrical insulation and mechanical protection of cables and wires.

**Features and benefits**

- Thin wall, flexible, cross-linked polyolefin tubing
- 1m shrink tubing lengths delivered in handy display carton
- 9 sizes from 1.5 mm to 101.6 mm
- All tubings can be sold in single 1 meter length or entire box

**More colours on request. Please contact us.**

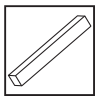


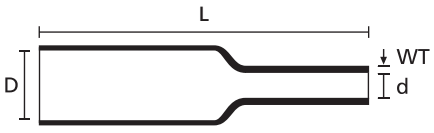
*TREDUX shrinks a maximum of 3:1.*

*One Step to the Web!*

| MATERIAL | Polyolefin, cross-linked (PO-X) | |
|---|---|---|
| Shrink Ratio | 2:1 | 3:1 |
| Operating Temperature | -55 °C to +135 °C | |
| Min. Shrink Temperature | +100 °C | |
| Longitudinal Change After Shrinkage | +/-5 % max. | |
| Dielectric Strength | 20 kV/mm according to ASTM D 150 | |
| Flammability | UL 224 VW-1 | |

RoHS






*Heat Shrinkable Tubing 3:1*




*Heat Shrinkable Tubing 2:1*

| TYPE | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Length (L) | Pack Cont. | Colour | Shrink Ratio | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **TREDUX-1.5/0.5** | 1.5 | 0.5 | 0.50 | 1.0 m | 20 pcs. | Black (BK) | 3:1 | 30-32 | 319-00150 |
| | 1.5 | 0.5 | 0.50 | 1.0 m | 20 pcs. | Green-Yellow (GNYE) | 3:1 | 30-32 | 319-00157 |
| **TREDUX-3/1** | 3.0 | 1.0 | 0.60 | 1.0 m | 20 pcs. | Black (BK) | 3:1 | 30-32 | 319-00300 |
| | 3.0 | 1.0 | 0.60 | 1.0 m | 20 pcs. | Green-Yellow (GNYE) | 3:1 | 30-32 | 319-00307 |
| **TREDUX-6/2** | 6.0 | 2.0 | 0.70 | 1.0 m | 15 pcs. | Black (BK) | 3:1 | 30-32 | 319-00600 |
| | 6.0 | 2.0 | 0.70 | 1.0 m | 15 pcs. | Green-Yellow (GNYE) | 3:1 | 30-32 | 319-00607 |
| **TREDUX-12/4** | 12.0 | 4.0 | 0.85 | 1.0 m | 10 pcs. | Black (BK) | 3:1 | 30-32 | 319-01200 |
| | 12.0 | 4.0 | 0.85 | 1.0 m | 10 pcs. | Green-Yellow (GNYE) | 3:1 | 30-32 | 319-01207 |
| **TREDUX-24/8** | 24.0 | 8.0 | 1.20 | 1.0 m | 5 pcs. | Black (BK) | 3:1 | 30-32 | 319-02400 |
| | 24.0 | 8.0 | 1.20 | 1.0 m | 5 pcs. | Green-Yellow (GNYE) | 3:1 | 30-32 | 319-02407 |
| **TREDUX-38.1/19.1** | 38.1 | 19.1 | 1.02 | 1.0 m | 6 pcs. | Black (BK) | 2:1 | 30-32 | 319-03800 |
| | 38.1 | 19.1 | 1.02 | 1.0 m | 6 pcs. | Green-Yellow (GNYE) | 2:1 | 30-32 | 319-03807 |
| **TREDUX-50.8/25.4** | 50.8 | 25.4 | 1.14 | 1.0 m | 6 pcs. | Black (BK) | 2:1 | 30-32 | 319-05100 |
| **TREDUX-76.2/38.1** | 76.2 | 38.1 | 1.27 | 1.0 m | 3 pcs. | Black (BK) | 2:1 | - | 319-07600 |
| **TREDUX-101.6/50.8** | 101.6 | 50.8 | 1.40 | 1.0 m | 2 pcs. | Black (BK) | 2:1 | - | 319-10200 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Heat Shrinkable Tubing up to 4:1 - 1 m lengths

**TREDUX MA47 medium wall - with adhesive liner**

Suitable for insulation and protection of low voltage cable joints and terminations.

**Features and benefits**

- Medium wall heat shrink tubing
- Thermoplastic adhesive liner for protection from moisture and weathering
- 1 m shrink tubing lenghts delivered in handy display carton
- All tubes can be sold in single 1 meter lenght or entire box

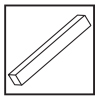


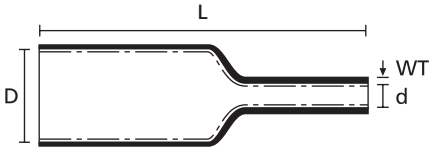

*TREDUX MA47 in handy display carton.*

*One Step to the Web!*

| MATERIAL | Polyolefin, cross-linked (PO-X) |
|---|---|
| **Shrink Ratio** | up to 4:1 |
| **Operating Temperature** | -55 °C to +110 °C |
| **Softening Point Adhesive** | +85 °C |
| **Min. Shrink Temperature** | +120 °C |
| **Longitudinal Change After Shrinkage** | -10 % max. |
| **Dielectric Strength** | 20 kV/mm |
| **Flammability** | not flame retardant |
| **Insulation Class** | A (VDE 0530) |

HF ✓ RoHS ✓






*Heat Shrinkable Tubing 4:1 with adhesive*

| TYPE | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Length (L) | Pack Cont. | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **TREDUX-MA47-12/3** | 12.0 | 3.0 | 2.00 | 1.0 m | 6 pcs. | Black (BK) | 30-32 | 323-50120 |
| **TREDUX-MA47-19/6** | 19.0 | 6.0 | 2.50 | 1.0 m | 10 pcs. | Black (BK) | 30-32 | 323-50190 |
| **TREDUX-MA47-30/8** | 30.0 | 8.0 | 2.50 | 1.0 m | 6 pcs. | Black (BK) | 30-32 | 323-50300 |
| **TREDUX-MA47-40/12** | 40.0 | 12.0 | 2.50 | 1.0 m | 4 pcs. | Black (BK) | - | 323-50400 |
| **TREDUX-MA47-50/16** | 50.0 | 16.0 | 2.70 | 1.0 m | 2 pcs. | Black (BK) | - | 323-50500 |
| **TREDUX-MA47-63/19** | 63.0 | 19.0 | 2.80 | 1.0 m | 2 pcs. | Black (BK) | - | 323-50630 |
| **TREDUX-MA47-75/22** | 75.0 | 22.0 | 3.00 | 1.0 m | 2 pcs. | Black (BK) | - | 323-50750 |
| **TREDUX-MA47-95/30** | 95.0 | 30.0 | 3.00 | 1.0 m | 1 pc. | Black (BK) | - | 323-50950 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

| Recommended Tools | | | |
|---|---|---|---|
| | 30<br>H5002 | 31<br>H5004 | 32<br>E4500 |
| | 561 | 561 | 560 |

For more information on toolings please refer to the Application Tooling chapter.

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## Heat Shrinkable Tubing up to 3,5:1 - 1 m lengths

**TREDUX HA47 thick wall - with adhesive liner**

The toughness and the weatherability of TREDUX thick wall tubing makes it suitable for exposed applications and underground cable joints.

**Features and benefits**

- Thick wall polyolefin adhesive-lined tubing
- 1 m shrink tubing lenghts delivered in handy display carton
- All tubes can be sold in single 1 meter lenght or entire box

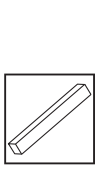


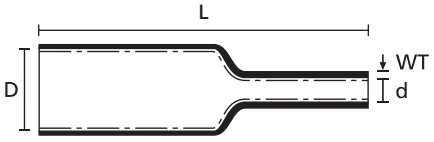
*TREDUX HA47 - application below ground.*

*One Step to the Web!*

| MATERIAL | Polyolefin, cross-linked (PO-X) |
|---|---|
| **Shrink Ratio** | up to 4:1 |
| **Operating Temperature** | -55 °C to +110 °C |
| **Min. Shrink Temperature** | +120 °C |
| **Softening Point Adhesive** | +85 °C |
| **Longitudinal Change After Shrinkage** | -10 % max. |
| **Dielectric Strength** | 20 kV/mm |
| **Flammability** | not flame retardant |

HF ✓ RoHS ✓






*Heat Shrinkable Tubing 3.5:1 with adhesive*

| TYPE | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Length (L) | Pack Cont. | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **TREDUX-HA47-19/6** | 19.0 | 6.0 | 2.70 | 1.0 m | 10 pcs. | Black (BK) | 30-32 | 321-50190 |
| **TREDUX-HA47-33/8** | 33.0 | 8.0 | 3.20 | 1.0 m | 5 pcs. | Black (BK) | 30-32 | 321-50330 |
| **TREDUX-HA47-45/12** | 45.0 | 12.0 | 4.10 | 1.0 m | 4 pcs. | Black (BK) | - | 321-50450 |
| **TREDUX-HA47-51/16** | 51.0 | 16.0 | 4.10 | 1.0 m | 2 pcs. | Black (BK) | - | 321-50510 |
| **TREDUX-HA47-68/22** | 68.0 | 22.0 | 4.10 | 1.0 m | 1 pc. | Black (BK) | - | 321-50680 |
| **TREDUX-HA47-85/25** | 85.0 | 25.4 | 4.30 | 1.0 m | 1 pc. | Black (BK) | - | 321-50850 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

| Recommended Tools | | | |
|---|---|---|---|
| | 30<br>H5002 | 31<br>H5004 | 32<br>E4500 |
| | 561 | 561 | 560 |

For more information on toolings please refer to the Application Tooling chapter.

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## Heat shrinkable tubing 2:1 - PVC

**LVR**

LVR can be used for cable joints, low voltage bus bars and batteries.

**Features and benefits**

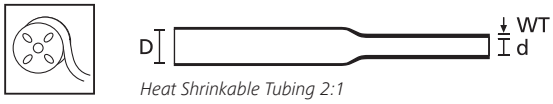
- PVC heat shrinkable tubing
- Self-extinguishing
- Good chemical resistance and mechanical protection



*LVR used for mechanical protection.*

| MATERIAL | Flexible Polyvinyl Chloride, cadmium free (PVC) |
|---|---|
| **Shrink Ratio** | 2:1 |
| **Operating Temperature** | -30 °C to +105 °C |
| **Min. Shrink Temperature** | +135 °C |
| **Longitudinal Change After Shrinkage** | +/-10 % max |
| **Dielectric Strength** | 15 kV/mm according to IEC 243 |
| **Shelf Life** | 12 Months max. |
| **Storage Temperature** | +25 °C max. |
| **Flammability** | ASTM D2671, UL 224 VW-1 |

RoHS




*Heat Shrinkable Tubing 2:1*

| TYPE | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Reel Length | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|
| **LVR-2.4/1.2** | 2.4 | 1.2 | 0.40 | 250 m | Black (BK) | 30-32 | 344-00240 |
| **LVR-3.2/1.6** | 3.2 | 1.6 | 0.40 | 250 m | Black (BK) | 30-32 | 344-00320 |
| **LVR-4.8/2.4** | 4.8 | 2.4 | 0.50 | 250 m | Black (BK) | 30-32 | 344-00480 |
| **LVR-6.4/3.2** | 6.4 | 3.2 | 0.60 | 250 m | Black (BK) | 30-32 | 344-00640 |
| **LVR-9.5/4.8** | 9.5 | 4.8 | 0.60 | 125 m | Black (BK) | 30-32 | 344-00950 |
| **LVR-12.7/6.4** | 12.7 | 6.4 | 0.70 | 75 m | Black (BK) | 30-32 | 344-01270 |
| **LVR-19.1/9.5** | 19.0 | 9.5 | 0.80 | 100 m | Black (BK) | 30-32 | 344-01900 |
| **LVR-25.4/12.7** | 25.4 | 12.7 | 1.00 | 100 m | Black (BK) | 30-32 | 344-02540 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

| Recommended Tools | | | |
|---|---|---|---|
| | 30<br>H5002 | 31<br>H5004 | 32<br>E4500 |
| | 561 | 561 | 560 |

For more information on toolings please refer to the Application Tooling chapter.

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

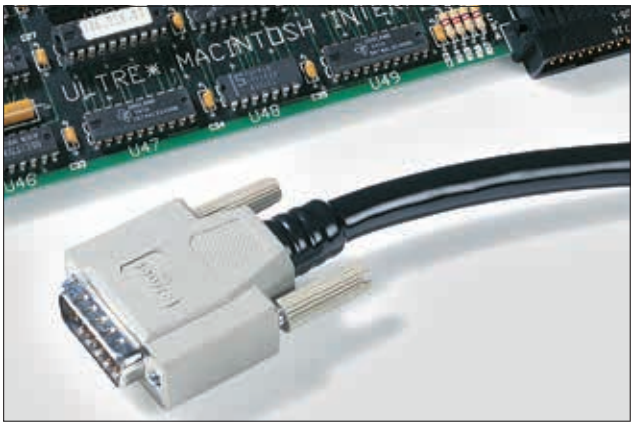
## Low-Heat Shrinkable Tubing 2:1

**TL27 - halogen free**

The product has a low shrink temperature which offers very fast recovery. Application fields include covering of heat sensitive parts, mechanical protection and cosmetic covering.

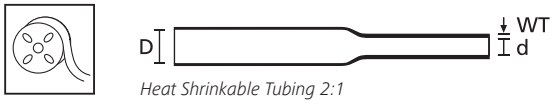
**Features and benefits**

- Very low shrink temperature
- Fast shrinking
- Halogen free




*TL27 – a very flexible tubing for automotive or applications where halogens cannot be accepted.*

| | |
|---|---|
| **MATERIAL** | Polyolefin, cross-linked (PO-X) |
| **Shrink Ratio** | 2:1 |
| **Operating Temperature** | -55 °C to +135 °C |
| **Min. Shrink Temperature** | +90 °C |
| **Longitudinal Change After Shrinkage** | +5 %/-15 % |
| **Dielectric Strength** | >20 kV/mm |
| **Flammability** | FMVSS 302 |




*Heat Shrinkable Tubing 2:1*

HF ✓ RoHS ✓

| TYPE | Supplied Ø D min. | Size (imperial) | Recov. Ø d max. | Wall (WT) | Reel Length | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **TL27-1.2/0.6** | 1.2 | 3/64 " | 0.6 | 0.31 | 500 m | Black (BK) | 30-32 | 302-20120 |
| **TL27-1.6/0.8** | 1.6 | 1/16 " | 0.8 | 0.33 | 500 m | Black (BK) | 30-32 | 302-20160 |
| **TL27-2.4/1.2** | 2.4 | 3/32 " | 1.2 | 0.36 | 500 m | Black (BK) | 30-32 | 302-30240 |
| **TL27-3.2/1.6** | 3.2 | 1/8 " | 1.6 | 0.39 | 300 m | Black (BK) | 30-32 | 302-30320 |
| **TL27-4.8/2.4** | 4.8 | 3/16 " | 2.4 | 0.42 | 150 m | Black (BK) | 30-32 | 302-30480 |
| **TL27-6.4/3.2** | 6.4 | 1/4 " | 3.2 | 0.45 | 100 m | Black (BK) | 30-32 | 302-30640 |
| **TL27-9.5/4.8** | 9.5 | 3/8 " | 4.8 | 0.48 | 100 m | Black (BK) | 30-32 | 302-30950 |
| **TL27-12.7/6.4** | 12.7 | 1/2 " | 6.4 | 0.52 | 100 m | Black (BK) | 30-32 | 302-21270 |
| **TL27-19.1/9.5** | 19.1 | 3/4 " | 9.5 | 0.58 | 100 m | Black (BK) | 30-32 | 302-31900 |
| **TL27-25.4/12.7** | 25.4 | 1 " | 12.7 | 0.67 | 100 m | Black (BK) | 30-32 | 302-32540 |
| **TL27-38.1/19.1** | 38.1 | 1-1/2 " | 19.1 | 0.76 | 100 m | Black (BK) | 30-32 | 302-23810 |
| **TL27-50.8/25.4** | 50.8 | 2 " | 25.4 | 0.85 | 100 m | Black (BK) | 30-32 | 302-25080 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

| Recommended Tools | | | |
|---|---|---|---|
| | 30<br>H5002 | 31<br>H5004 | 32<br>E4500 |
| | 561 | 561 | 560 |

For more information on toolings please refer to the Application Tooling chapter.

Date of issue: January 2019

## Low-Heat Shrinkable Tubing 2:1

**TCN20 - self extinguishing**

TCN20 is suitable for a wide range of applications such as electrical insulation, mechanical protection and cable bundling.

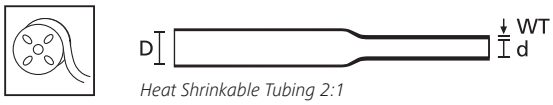
**Features and benefits**

- Thin wall general purpose polyolefin tubing
- Self extinguishing, UL224 VW-1 , CSA
- Fast shrinking
- Low shrink temperature



*Heat Shrink Tubing TCN20.*

| | |
|---|---|
| **MATERIAL** | Polyolefin, cross-linked (PO-X) |
| **Shrink Ratio** | 2:1 |
| **Operating Temperature** | -55 °C to +125 °C |
| **Min. Shrink Temperature** | +100 °C |
| **Longitudinal Change After Shrinkage** | +/-5 % |
| **Dielectric Strength** | 20kV/mm according to ASTM D2671 |
| **Flammability** | self-extinguishing, UL 224 VW-1 |




*Heat Shrinkable Tubing 2:1*

RoHS

| TYPE | Supplied Ø D min. | Size (imperial) | Recov. Ø d max. | Wall (WT) | Reel Length | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **TCN20-1.2/0.6** | 1.2 | 3/64 " | 0.6 | 0.30 | 300 m | Black (BK) | 30-32 | 300-73010 |
| **TCN20-1.6/0.8** | 1.6 | 1/16 " | 0.8 | 0.35 | 300 m | Black (BK) | 30-32 | 300-73020 |
| **TCN20-2.4/1.2** | 2.4 | 3/32 " | 1.2 | 0.45 | 300 m | Black (BK) | 30-32 | 300-73030 |
| **TCN20-3.2/1.6** | 3.2 | 1/8 " | 1.6 | 0.45 | 300 m | Black (BK) | 30-32 | 300-73040 |
| **TCN20-4.8/2.4** | 4.8 | 3/16 " | 2.4 | 0.50 | 300 m | Black (BK) | 30-32 | 300-73050 |
| **TCN20-6.4/3.2** | 6.4 | 1/4 " | 3.2 | 0.55 | 300 m | Black (BK) | 30-32 | 300-73060 |
| **TCN20-9.5/4.8** | 9.5 | 3/8 " | 4.8 | 0.55 | 100 m | Black (BK) | 30-32 | 300-73070 |
| **TCN20-12.7/6.4** | 12.7 | 1/2 " | 6.4 | 0.65 | 100 m | Black (BK) | 30-32 | 300-73080 |
| **TCN20-19.1/9.5** | 19.1 | 3/4 " | 9.5 | 0.80 | 60 m | Black (BK) | 30-32 | 300-73090 |
| **TCN20-25.4/12.7** | 25.4 | 1 " | 12.7 | 0.90 | 60 m | Black (BK) | 30-32 | 300-73100 |
| **TCN20-38.1/19.1** | 38.1 | 1-1/2 " | 19.1 | 1.02 | 30 m | Black (BK) | 30-32 | 300-73110 |
| **TCN20-50.8/25.4** | 50.8 | 2 " | 25.4 | 1.15 | 30 m | Black (BK) | 30-32 | 300-73120 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

| Recommended Tools | | | |
|---|---|---|---|
| | 30<br>H5002 | 31<br>H5004 | 32<br>E4500 |
| | 561 | 561 | 560 |

For more information on toolings please refer to the Application Tooling chapter.

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Heat shrinkable tubing 3:1 - Self extinguishing

**TCN20 overexpanded**

Mechanical and electrical protection applications for parts with high diameter variances. This fast shrinking tubing makes it suitable for high volume production.

**Features and benefits**

- Thin wall overexpanded polyolefin tubing
- Self extinguishing and low shrink temperature
- Highly flame-retardant, UL224 VW-1



*Heat shrink tubing TCN20 overexpanded.*

| | |
|---|---|
| **MATERIAL** | Polyolefin, cross-linked (PO-X) |
| **Shrink Ratio** | 3:1 |
| **Operating Temperature** | -55 °C to +125 °C |
| **Min. Shrink Temperature** | +100 °C |
| **Longitudinal Change After Shrinkage** | +/-5 % |
| **Dielectric Strength** | 20kV/mm according to ASTM D2671 |
| **Flammability** | self-extinguishing |

RoHS






*Heat Shrinkable Tubing 3:1*

| TYPE | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Reel Length | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|
| **TCN20-2.4/0.8** | 2.4 | 0.8 | 0.40 | 300 m | Black (BK) | 30-32 | 300-73130 |
| **TCN20-3.2/1.2** | 3.2 | 1.2 | 0.50 | 300 m | Black (BK) | 30-32 | 300-73140 |
| **TCN20-4.8/1.6** | 4.8 | 1.6 | 0.50 | 300 m | Black (BK) | 30-32 | 300-73150 |
| **TCN20-6.6/2.4** | 6.6 | 2.4 | 0.55 | 300 m | Black (BK) | 30-32 | 300-73160 |
| **TCN20-9.5/3.2** | 9.5 | 3.2 | 0.65 | 100 m | Black (BK) | 30-32 | 300-73170 |
| **TCN20-12.7/4.8** | 12.7 | 4.8 | 0.75 | 100 m | Black (BK) | 30-32 | 300-73180 |
| **TCN20-19.0/6.4** | 19.0 | 6.4 | 0.75 | 60 m | Black (BK) | 30-32 | 300-73190 |
| **TCN20-25.4/9.5** | 25.4 | 9.5 | 0.79 | 60 m | Black (BK) | 30-32 | 300-73200 |
| **TCN20-38.0/12.7** | 38.0 | 12.7 | 0.95 | 30 m | Black (BK) | 30-32 | 300-73210 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

| Recommended Tools | | | |
|---|---|---|---|
| | 30<br>H5002 | 31<br>H5004 | 32<br>E4500 |
| | 561 | 561 | 560 |

For more information on toolings please refer to the Application Tooling chapter.

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

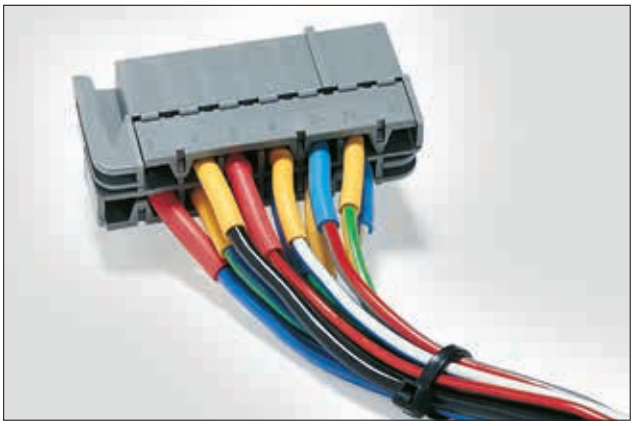
## Heat Shrinkable Tubing 2:1 flexible and coloured

**HFT-A - self extinguishing**

This high performance thin wall tubing is used extensively for electrical and mechanical protection. It is also well proven for sleeve marking to identify wiring circuits.

**Features and benefits**

- Flexible heat shrink tubing
- Fast shrinking, easy handling, good mechanical strength
- Wide range of colours
- Internal diameters up to 101.6 mm (4 inches)
- UL-224 ,CSA listed and VG approved

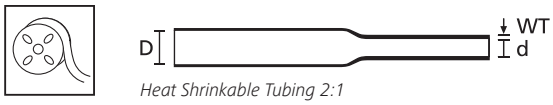


*HFT-A conforms to major standards used in all Defence industries.*

**Standard sizes available in colours black, red, blue, yellow, white and green-yellow.**

| | |
|---|---|
| **MATERIAL** | Polyolefin, cross-linked (PO-X) |
| **Shrink Ratio** | 2:1 |
| **Operating Temperature** | -55 °C to +135 °C |
| **Min. Shrink Temperature** | +100 °C |
| **Longitudinal Change After Shrinkage** | -10 % max. |
| **Dielectric Strength** | 20 kV/mm according to IEC 60684 P2 |
| **Flammability** | self-extinguishing, UL 224 VW-1 |

RoHS




*Heat Shrinkable Tubing 2:1*

| TYPE | Supplied Ø D min. | Size (imperial) | Recov. Ø d max. | Wall (WT) | Reel Length | Colour | Designation as per VG-Norm | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| HFT-A-1.2/0.6 | 1.2 | 3/64 " | 0.6 | 0.40 | 400 m | Black (BK) | VG 95343 T05 A 001 A | 30-32 | 305-01200 |
| | 1.2 | 3/64 " | 0.6 | 0.40 | 400 m | Blue (BU) | VG 95343 T05 A 001 G | 30-32 | 305-01206 |
| | 1.2 | 3/64 " | 0.6 | 0.40 | 400 m | Red (RD) | VG 95343 T05 A 001 C | 30-32 | 305-01202 |
| | 1.2 | 3/64 " | 0.6 | 0.40 | 400 m | White (WH) | VG 95343 T05 A 001 L | 30-32 | 305-01209 |
| | 1.2 | 3/64 " | 0.6 | 0.40 | 400 m | Yellow (YE) | VG 95343 T05 A 001 E | 30-32 | 305-01204 |
| HFT-A-1.6/0.8 | 1.6 | 1/16 " | 0.8 | 0.40 | 400 m | Black (BK) | VG 95343 T05 A 002 A | 30-32 | 305-01600 |
| | 1.6 | 1/16 " | 0.8 | 0.40 | 400 m | Blue (BU) | VG 95343 T05 A 002 G | 30-32 | 305-01606 |
| | 1.6 | 1/16 " | 0.8 | 0.40 | 400 m | Red (RD) | VG 95343 T05 A 002 C | 30-32 | 305-01602 |
| | 1.6 | 1/16 " | 0.8 | 0.40 | 400 m | White (WH) | VG 95343 T05 A 002 L | 30-32 | 305-01609 |
| | 1.6 | 1/16 " | 0.8 | 0.40 | 400 m | Yellow (YE) | VG 95343 T05 A 002 E | 30-32 | 305-01604 |
| HFT-A-2.4/1.2 | 2.4 | 3/32 " | 1.2 | 0.50 | 100 m | Blue (BU) | VG 95343 T05 A 003 G | 30-32 | 305-02406 |
| | 2.4 | 3/32 " | 1.2 | 0.50 | 100 m | Red (RD) | VG 95343 T05 A 003 C | 30-32 | 305-02402 |
| | 2.4 | 3/32 " | 1.2 | 0.50 | 100 m | White (WH) | VG 95343 T05 A 003 L | 30-32 | 305-02409 |
| | 2.4 | 3/32 " | 1.2 | 0.50 | 100 m | Yellow (YE) | VG 95343 T05 A 003 E | 30-32 | 305-02404 |
| | 2.4 | 3/32 " | 1.2 | 0.50 | 400 m | Black (BK) | VG 95343 T05 A 003 A | 30-32 | 305-02400 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

ASN DEF STAN LEA MIL NF F NSA SAE VG

For product specific approvals and specifications please refer to the Appendix.

## Heat Shrinkable Tubing 2:1 flexible and coloured

**HFT-A - self extinguishing**






*Heat Shrinkable Tubing 2:1*

| TYPE | Supplied Ø D min. | Size (imperial) | Recov. Ø d max. | Wall (WT) | Reel Length | Colour | Designation as per VG-Norm | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| HFT-A-3.2/1.6 | 3.2 | 1/8 " | 1.6 | 0.50 | 100 m | Blue (BU) | VG 95343 T05 A 004 G | 30-32 | 305-03206 |
| | 3.2 | 1/8 " | 1.6 | 0.50 | 100 m | Green-Yellow (GNYE) | VG 95343 T05 A 004 N | 30-32 | 305-03245 |
| | 3.2 | 1/8 " | 1.6 | 0.50 | 100 m | Red (RD) | VG 95343 T05 A 004 C | 30-32 | 305-03202 |
| | 3.2 | 1/8 " | 1.6 | 0.50 | 100 m | White (WH) | VG 95343 T05 A 004 L | 30-32 | 305-03209 |
| | 3.2 | 1/8 " | 1.6 | 0.50 | 100 m | Yellow (YE) | VG 95343 T05 A 004 E | 30-32 | 305-03204 |
| | 3.2 | 1/8 " | 1.6 | 0.50 | 400 m | Black (BK) | VG 95343 T05 A 004 A | 30-32 | 305-03200 |
| HFT-A-4.8/2.4 | 4.8 | 3/16 " | 2.4 | 0.50 | 75 m | Blue (BU) | VG 95343 T05 A 005 G | 30-32 | 305-04806 |
| | 4.8 | 3/16 " | 2.4 | 0.50 | 75 m | Green-Yellow (GNYE) | VG 95343 T05 A 005 N | 30-32 | 305-04845 |
| | 4.8 | 3/16 " | 2.4 | 0.50 | 75 m | Red (RD) | VG 95343 T05 A 005 C | 30-32 | 305-04802 |
| | 4.8 | 3/16 " | 2.4 | 0.50 | 75 m | White (WH) | VG 95343 T05 A 005 L | 30-32 | 305-04809 |
| | 4.8 | 3/16 " | 2.4 | 0.50 | 75 m | Yellow (YE) | VG 95343 T05 A 005 E | 30-32 | 305-04804 |
| | 4.8 | 3/16 " | 2.4 | 0.50 | 300 m | Black (BK) | VG 95343 T05 A 005 A | 30-32 | 305-04800 |
| HFT-A-6.4/3.2 | 6.4 | 1/4 " | 3.2 | 0.60 | 75 m | Blue (BU) | VG 95343 T05 A 006 G | 30-32 | 305-06406 |
| | 6.4 | 1/4 " | 3.2 | 0.60 | 75 m | Green-Yellow (GNYE) | VG 95343 T05 A 006 N | 30-32 | 305-06445 |
| | 6.4 | 1/4 " | 3.2 | 0.60 | 75 m | Red (RD) | VG 95343 T05 A 006 C | 30-32 | 305-06402 |
| | 6.4 | 1/4 " | 3.2 | 0.60 | 75 m | White (WH) | VG 95343 T05 A 006 L | 30-32 | 305-06409 |
| | 6.4 | 1/4 " | 3.2 | 0.60 | 75 m | Yellow (YE) | VG 95343 T05 A 006 E | 30-32 | 305-06404 |
| | 6.4 | 1/4 " | 3.2 | 0.60 | 300 m | Black (BK) | VG 95343 T05 A 006 A | 30-32 | 305-06400 |
| HFT-A-9.5/4.8 | 9.5 | 3/8 " | 4.8 | 0.60 | 50 m | Blue (BU) | VG 95343 T05 A 007 G | 30-32 | 305-09506 |
| | 9.5 | 3/8 " | 4.8 | 0.60 | 50 m | Green-Yellow (GNYE) | VG 95343 T05 A 007 N | 30-32 | 305-09545 |
| | 9.5 | 3/8 " | 4.8 | 0.60 | 50 m | Red (RD) | VG 95343 T05 A 007 C | 30-32 | 305-09502 |
| | 9.5 | 3/8 " | 4.8 | 0.60 | 50 m | White (WH) | VG 95343 T05 A 007 L | 30-32 | 305-09509 |
| | 9.5 | 3/8 " | 4.8 | 0.60 | 50 m | Yellow (YE) | VG 95343 T05 A 007 E | 30-32 | 305-09504 |
| | 9.5 | 3/8 " | 4.8 | 0.60 | 150 m | Black (BK) | VG 95343 T05 A 007 A | 30-32 | 305-09500 |
| HFT-A-12.7/6.4 | 12.7 | 1/2 " | 6.4 | 0.60 | 50 m | Blue (BU) | VG 95343 T05 A 008 G | 30-32 | 305-12706 |
| | 12.7 | 1/2 " | 6.4 | 0.60 | 50 m | Green-Yellow (GNYE) | VG 95343 T05 A 008 N | 30-32 | 305-12745 |
| | 12.7 | 1/2 " | 6.4 | 0.60 | 50 m | Red (RD) | VG 95343 T05 A 008 C | 30-32 | 305-12702 |
| | 12.7 | 1/2 " | 6.4 | 0.60 | 50 m | White (WH) | VG 95343 T05 A 008 L | 30-32 | 305-12709 |
| | 12.7 | 1/2 " | 6.4 | 0.60 | 50 m | Yellow (YE) | VG 95343 T05 A 008 E | 30-32 | 305-12704 |
| | 12.7 | 1/2 " | 6.4 | 0.60 | 100 m | Black (BK) | VG 95343 T05 A 008 A | 30-32 | 305-12700 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

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For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Heat Shrinkable Tubing 2:1 flexible and coloured

**HFT-A - self extinguishing**






*Heat Shrinkable Tubing 2:1*

| TYPE | Supplied Ø D min. | Size (imperial) | Recov. Ø d max. | Wall (WT) | Reel Length | Colour | Designation as per VG-Norm | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| HFT-A-19.0/9.5 | 19.0 | 3/4 " | 9.5 | 0.80 | 25 m | Blue (BU) | VG 95343 T05 A 009 G | 30-32 | 305-19006 |
| | 19.0 | 3/4 " | 9.5 | 0.80 | 25 m | Green-Yellow (GNYE) | VG 95343 T05 A 009 N | 30-32 | 305-19045 |
| | 19.0 | 3/4 " | 9.5 | 0.80 | 25 m | Red (RD) | VG 95343 T05 A 009 C | 30-32 | 305-19002 |
| | 19.0 | 3/4 " | 9.5 | 0.80 | 25 m | White (WH) | VG 95343 T05 A 009 L | 30-32 | 305-19009 |
| | 19.0 | 3/4 " | 9.5 | 0.80 | 25 m | Yellow (YE) | VG 95343 T05 A 009 E | 30-32 | 305-19004 |
| | 19.0 | 3/4 " | 9.5 | 0.80 | 50 m | Black (BK) | VG 95343 T05 A 009 A | 30-32 | 305-19000 |
| HFT-A-25.4/12.7 | 25.4 | 1 " | 12.7 | 0.90 | 25 m | Blue (BU) | VG 95343 T05 A 010 G | 30-32 | 305-25406 |
| | 25.4 | 1 " | 12.7 | 0.90 | 25 m | Green-Yellow (GNYE) | VG 95343 T05 A 010 N | 30-32 | 305-25445 |
| | 25.4 | 1 " | 12.7 | 0.90 | 25 m | Red (RD) | VG 95343 T05 A 010 C | 30-32 | 305-25402 |
| | 25.4 | 1 " | 12.7 | 0.90 | 25 m | White (WH) | VG 95343 T05 A 010 L | 30-32 | 305-25409 |
| | 25.4 | 1 " | 12.7 | 0.90 | 25 m | Yellow (YE) | VG 95343 T05 A 010 E | 30-32 | 305-25404 |
| | 25.4 | 1 " | 12.7 | 0.90 | 50 m | Black (BK) | VG 95343 T05 A 010 A | 30-32 | 305-25400 |
| HFT-A-38.0/19.0 | 38.0 | 1-1/2 " | 19.0 | 1.00 | 50 m | Black (BK) | VG 95343 T05 A 011 A | 30-32 | 305-38100 |
| | 38.0 | 1-1/2 " | 19.0 | 1.00 | 50 m | Blue (BU) | VG 95343 T05 A 011 G | 30-32 | 305-38106 |
| | 38.0 | 1-1/2 " | 19.0 | 1.00 | 50 m | Green-Yellow (GNYE) | VG 95343 T05 A 011 N | 30-32 | 305-38145 |
| | 38.0 | 1-1/2 " | 19.0 | 1.00 | 50 m | Red (RD) | VG 95343 T05 A 011 C | 30-32 | 305-38102 |
| | 38.0 | 1-1/2 " | 19.0 | 1.00 | 50 m | White (WH) | VG 95343 T05 A 011 L | 30-32 | 305-38109 |
| | 38.0 | 1-1/2 " | 19.0 | 1.00 | 50 m | Yellow (YE) | VG 95343 T05 A 011 E | 30-32 | 305-38104 |
| HFT-A-50.8/25.4 | 50.8 | 2 " | 25.4 | 1.10 | 35 m | Black (BK) | VG 95343 T05 A 012 A | 30-32 | 305-50800 |
| | 50.8 | 2 " | 25.4 | 1.10 | 35 m | Blue (BU) | VG 95343 T05 A 012 G | 30-32 | 305-50806 |
| | 50.8 | 2 " | 25.4 | 1.10 | 35 m | Red (RD) | VG 95343 T05 A 012 C | 30-32 | 305-50802 |
| | 50.8 | 2 " | 25.4 | 1.10 | 35 m | White (WH) | VG 95343 T05 A 012 L | 30-32 | 305-50809 |
| | 50.8 | 2 " | 25.4 | 1.10 | 35 m | Yellow (YE) | VG 95343 T05 A 012 E | 30-32 | 305-50804 |
| HFT-A-76.0/38.0 | 76.0 | 3 " | 38.0 | 1.30 | 25 m | Black (BK) | VG 95343 T05 A 013 A | - | 305-76200 |
| | 76.0 | 3 " | 38.0 | 1.30 | 25 m | Blue (BU) | VG 95343 T05 A 013 G | - | 305-76206 |
| | 76.0 | 3 " | 38.0 | 1.30 | 25 m | Red (RD) | VG 95343 T05 A 013 C | - | 305-76202 |
| | 76.0 | 3 " | 38.0 | 1.30 | 25 m | White (WH) | VG 95343 T05 A 013 L | - | 305-76209 |
| | 76.0 | 3 " | 38.0 | 1.30 | 25 m | Yellow (YE) | VG 95343 T05 A 013 E | - | 305-76204 |
| HFT-A-101.6/50.8 | 101.6 | 4 " | 50.8 | 1.40 | 25 m | Black (BK) | VG 95343 T05 A 014 A | - | 305-91600 |
| | 101.6 | 4 " | 50.8 | 1.40 | 25 m | Blue (BU) | VG 95343 T05 A 014 G | - | 305-91606 |
| | 101.6 | 4 " | 50.8 | 1.40 | 25 m | Red (RD) | VG 95343 T05 A 014 C | - | 305-91602 |
| | 101.6 | 4 " | 50.8 | 1.40 | 25 m | White (WH) | VG 95343 T05 A 014 L | - | 305-91609 |
| | 101.6 | 4 " | 50.8 | 1.40 | 25 m | Yellow (YE) | VG 95343 T05 A 014 E | - | 305-91604 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

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NF F NSA SAE VG

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Heat shrinkable tubing 2:1 - flexible and coloured

**TF21**

Due to it's versatility TF21 is suitable for a wide range of applications like electrical insulations, mechanical protection and marking.

**Features and benefits**

- Thin wall, flexible polyolefin tubing
- Fast shrinking and low shrink temperature
- Meets and exceeds lots of industrial standards
- Big variety of different colours and sizes
- Flame retarded and UL224 VW1 listed

**Cut lengths available on request. Please contact us!**

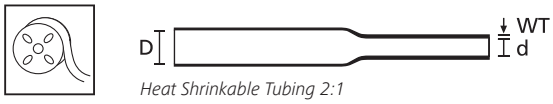
*One Step to the Web!*



*TF21 - available in a wide range of colours and sizes.*

| | |
|---|---|
| **MATERIAL** | Polyolefin, cross-linked (PO-X) |
| **Shrink Ratio** | 2:1 |
| **Operating Temperature** | -55 °C to +135 °C |
| **Min. Shrink Temperature** | +90 °C |
| **Longitudinal Change After Shrinkage** | +/-5 % |
| **Dielectric Strength** | 37 kV/mm |
| **Flammability** | ASTM D876 |

RoHS




*Heat Shrinkable Tubing 2:1*

| TYPE | Supplied Ø D min. | Size (imperial) | Recov. Ø d max. | Wall (WT) | Reel Length | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|
| TF21-1.2/0.6 | 1.2 | 3/64 " | 0.6 | 0.41 | 100 m | Blue (BU) | 30-32 | 309-20126 |
| | 1.2 | 3/64 " | 0.6 | 0.41 | 100 m | Red (RD) | 30-32 | 309-20122 |
| | 1.2 | 3/64 " | 0.6 | 0.41 | 100 m | White (WH) | 30-32 | 309-20129 |
| | 1.2 | 3/64 " | 0.6 | 0.41 | 100 m | Yellow (YE) | 30-32 | 309-20124 |
| | 1.2 | 3/64 " | 0.6 | 0.41 | 300 m | Black (BK) | 30-32 | 309-10120 |
| TF21-1.6/0.8 | 1.6 | 1/16 " | 0.8 | 0.43 | 100 m | Blue (BU) | 30-32 | 309-20166 |
| | 1.6 | 1/16 " | 0.8 | 0.43 | 100 m | Red (RD) | 30-32 | 309-20162 |
| | 1.6 | 1/16 " | 0.8 | 0.43 | 100 m | White (WH) | 30-32 | 309-20169 |
| | 1.6 | 1/16 " | 0.8 | 0.43 | 100 m | Yellow (YE) | 30-32 | 309-20164 |
| | 1.6 | 1/16 " | 0.8 | 0.43 | 300 m | Black (BK) | 30-32 | 309-10160 |
| TF21-2.4/1.2 | 2.4 | 3/32 " | 1.2 | 0.51 | 100 m | Blue (BU) | 30-32 | 309-20246 |
| | 2.4 | 3/32 " | 1.2 | 0.51 | 100 m | Green-Yellow (GNYE) | 30-32 | 309-40247 |
| | 2.4 | 3/32 " | 1.2 | 0.51 | 100 m | Red (RD) | 30-32 | 309-20242 |
| | 2.4 | 3/32 " | 1.2 | 0.51 | 100 m | White (WH) | 30-32 | 309-20249 |
| | 2.4 | 3/32 " | 1.2 | 0.51 | 100 m | Yellow (YE) | 30-32 | 309-20244 |
| | 2.4 | 3/32 " | 1.2 | 0.51 | 300 m | Black (BK) | 30-32 | 309-10240 |

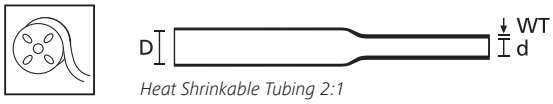
All dimensions in mm. Subject to technical changes. Minimum Order Quantity (MOQ) may differ from package content.

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Heat shrinkable tubing 2:1 - flexible and coloured

**TF21**




*Heat Shrinkable Tubing 2:1*

| TYPE | Supplied Ø D min. | Size (imperial) | Recov. Ø d max. | Wall (WT) | Reel Length | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|
| TF21-3.2/1.6 | 3.2 | 1/8 " | 1.6 | 0.51 | 100 m | Blue (BU) | 30-32 | 309-20326 |
| | 3.2 | 1/8 " | 1.6 | 0.51 | 100 m | Green-Yellow (GNYE) | 30-32 | 309-40327 |
| | 3.2 | 1/8 " | 1.6 | 0.51 | 100 m | Red (RD) | 30-32 | 309-20322 |
| | 3.2 | 1/8 " | 1.6 | 0.51 | 100 m | White (WH) | 30-32 | 309-20329 |
| | 3.2 | 1/8 " | 1.6 | 0.51 | 100 m | Yellow (YE) | 30-32 | 309-20324 |
| | 3.2 | 1/8 " | 1.6 | 0.51 | 300 m | Black (BK) | 30-32 | 309-10320 |
| TF21-4.8/2.4 | 4.8 | 3/16 " | 2.4 | 0.51 | 60 m | Blue (BU) | 30-32 | 309-50486 |
| | 4.8 | 3/16 " | 2.4 | 0.51 | 60 m | Green-Yellow (GNYE) | 30-32 | 309-50487 |
| | 4.8 | 3/16 " | 2.4 | 0.51 | 60 m | Red (RD) | 30-32 | 309-50482 |
| | 4.8 | 3/16 " | 2.4 | 0.51 | 60 m | White (WH) | 30-32 | 309-50489 |
| | 4.8 | 3/16 " | 2.4 | 0.51 | 60 m | Yellow (YE) | 30-32 | 309-50484 |
| | 4.8 | 3/16 " | 2.4 | 0.51 | 300 m | Black (BK) | 30-32 | 309-10480 |
| TF21-6.4/3.2 | 6.4 | 1/4 " | 3.2 | 0.64 | 60 m | Blue (BU) | 30-32 | 309-50646 |
| | 6.4 | 1/4 " | 3.2 | 0.64 | 60 m | Green-Yellow (GNYE) | 30-32 | 309-50647 |
| | 6.4 | 1/4 " | 3.2 | 0.64 | 60 m | Red (RD) | 30-32 | 309-50642 |
| | 6.4 | 1/4 " | 3.2 | 0.64 | 60 m | White (WH) | 30-32 | 309-50649 |
| | 6.4 | 1/4 " | 3.2 | 0.64 | 60 m | Yellow (YE) | 30-32 | 309-50644 |
| | 6.4 | 1/4 " | 3.2 | 0.64 | 300 m | Black (BK) | 30-32 | 309-10640 |
| TF21-9.5/4.8 | 9.5 | 3/8 " | 4.8 | 0.64 | 50 m | Blue (BU) | 30-32 | 309-20956 |
| | 9.5 | 3/8 " | 4.8 | 0.64 | 50 m | Green-Yellow (GNYE) | 30-32 | 309-50957 |
| | 9.5 | 3/8 " | 4.8 | 0.64 | 50 m | Red (RD) | 30-32 | 309-20952 |
| | 9.5 | 3/8 " | 4.8 | 0.64 | 50 m | White (WH) | 30-32 | 309-20959 |
| | 9.5 | 3/8 " | 4.8 | 0.64 | 50 m | Yellow (YE) | 30-32 | 309-20954 |
| | 9.5 | 3/8 " | 4.8 | 0.64 | 150 m | Black (BK) | 30-32 | 309-10950 |
| TF21-12.7/6.4 | 12.7 | 1/2 " | 6.4 | 0.64 | 50 m | Blue (BU) | 30-32 | 309-21276 |
| | 12.7 | 1/2 " | 6.4 | 0.64 | 50 m | Green-Yellow (GNYE) | 30-32 | 309-41277 |
| | 12.7 | 1/2 " | 6.4 | 0.64 | 50 m | Red (RD) | 30-32 | 309-21272 |
| | 12.7 | 1/2 " | 6.4 | 0.64 | 50 m | White (WH) | 30-32 | 309-21279 |
| | 12.7 | 1/2 " | 6.4 | 0.64 | 50 m | Yellow (YE) | 30-32 | 309-21274 |
| | 12.7 | 1/2 " | 6.4 | 0.64 | 100 m | Black (BK) | 30-32 | 309-11270 |

All dimensions in mm. Subject to technical changes. Minimum Order Quantity (MOQ) may differ from package content.

| Recommended Tools | | | |
|---|---|---|---|
| | 30<br>H5002 | 31<br>H5004 | 32<br>E4500 |
| | 561 | 561 | 560 |

For more information on toolings please refer to the Application Tooling chapter.

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Heat shrinkable tubing 2:1 - flexible and coloured

**TF21**






*Heat Shrinkable Tubing 2:1*

| TYPE | Supplied Ø D min. | Size (imperial) | Recov. Ø d max. | Wall (WT) | Reel Length | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|
| TF21-19.1/9.5 | 19.1 | 3/4 " | 9.5 | 0.76 | 50 m | Black (BK) | 30-32 | 309-11900 |
| | 19.1 | 3/4 " | 9.5 | 0.76 | 50 m | Blue (BU) | 30-32 | 309-11906 |
| | 19.1 | 3/4 " | 9.5 | 0.76 | 50 m | Green-Yellow (GNYE) | 30-32 | 309-11907 |
| | 19.1 | 3/4 " | 9.5 | 0.76 | 50 m | Red (RD) | 30-32 | 309-11902 |
| | 19.1 | 3/4 " | 9.5 | 0.76 | 50 m | White (WH) | 30-32 | 309-11909 |
| | 19.1 | 3/4 " | 9.5 | 0.76 | 50 m | Yellow (YE) | 30-32 | 309-11904 |
| TF21-25.4/12.7 | 25.4 | 1 " | 12.7 | 0.89 | 50 m | Black (BK) | 30-32 | 309-12540 |
| | 25.4 | 1 " | 12.7 | 0.89 | 50 m | Blue (BU) | 30-32 | 309-12546 |
| | 25.4 | 1 " | 12.7 | 0.89 | 50 m | Green-Yellow (GNYE) | 30-32 | 309-12547 |
| | 25.4 | 1 " | 12.7 | 0.89 | 50 m | Red (RD) | 30-32 | 309-12542 |
| | 25.4 | 1 " | 12.7 | 0.89 | 50 m | White (WH) | 30-32 | 309-12549 |
| | 25.4 | 1 " | 12.7 | 0.89 | 50 m | Yellow (YE) | 30-32 | 309-12544 |
| TF21-38.0/19.0 | 38.1 | 1-1/2 " | 19.1 | 1.02 | 60 m | Black (BK) | 30-32 | 309-13810 |
| | 38.1 | 1-1/2 " | 19.1 | 1.02 | 60 m | Blue (BU) | 30-32 | 309-13816 |
| | 38.1 | 1-1/2 " | 19.1 | 1.02 | 60 m | Green-Yellow (GNYE) | 30-32 | 309-13817 |
| | 38.1 | 1-1/2 " | 19.1 | 1.02 | 60 m | Red (RD) | 30-32 | 309-13812 |
| | 38.1 | 1-1/2 " | 19.1 | 1.02 | 60 m | White (WH) | 30-32 | 309-13819 |
| | 38.1 | 1-1/2 " | 19.1 | 1.02 | 60 m | Yellow (YE) | 30-32 | 309-13814 |
| TF21-50.8/25.4 | 50.8 | 2 " | 25.4 | 1.14 | 60 m | Black (BK) | 30-32 | 309-15080 |
| | 50.8 | 2 " | 25.4 | 1.14 | 60 m | Blue (BU) | 30-32 | 309-15086 |
| | 50.8 | 2 " | 25.4 | 1.14 | 60 m | Green-Yellow (GNYE) | 30-32 | 309-15087 |
| | 50.8 | 2 " | 25.4 | 1.14 | 60 m | Red (RD) | 30-32 | 309-15082 |
| | 50.8 | 2 " | 25.4 | 1.14 | 60 m | White (WH) | 30-32 | 309-15089 |
| | 50.8 | 2 " | 25.4 | 1.14 | 60 m | Yellow (YE) | 30-32 | 309-15084 |
| TF21-76.0/38.0 | 76.2 | 3 " | 38.1 | 1.27 | 30 m | Black (BK) | - | 309-17600 |
| | 76.2 | 3 " | 38.1 | 1.27 | 30 m | Blue (BU) | - | 309-17606 |
| | 76.2 | 3 " | 38.1 | 1.27 | 30 m | Red (RD) | - | 309-17602 |
| | 76.2 | 3 " | 38.1 | 1.27 | 30 m | White (WH) | - | 309-17609 |
| | 76.2 | 3 " | 38.1 | 1.27 | 30 m | Yellow (YE) | - | 309-17604 |
| TF21-101.6/50.8 | 101.6 | 4 " | 50.8 | 1.40 | 15 m | Black (BK) | - | 309-11020 |
| | 101.6 | 4 " | 50.8 | 1.40 | 15 m | Blue (BU) | - | 309-11026 |
| | 101.6 | 4 " | 50.8 | 1.40 | 15 m | Red (RD) | - | 309-11022 |
| | 101.6 | 4 " | 50.8 | 1.40 | 15 m | White (WH) | - | 309-11029 |
| | 101.6 | 4 " | 50.8 | 1.40 | 15 m | Yellow (YE) | - | 309-11024 |

All dimensions in mm. Subject to technical changes. Minimum Order Quantity (MOQ) may differ from package content.

| Recommended Tools | | | |
|---|---|---|---|
| | 30<br>H5002 | 31<br>H5004 | 32<br>E4500 |
| | 561 | 561 | 560 |

For more information on toolings please refer to the Application Tooling chapter.

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

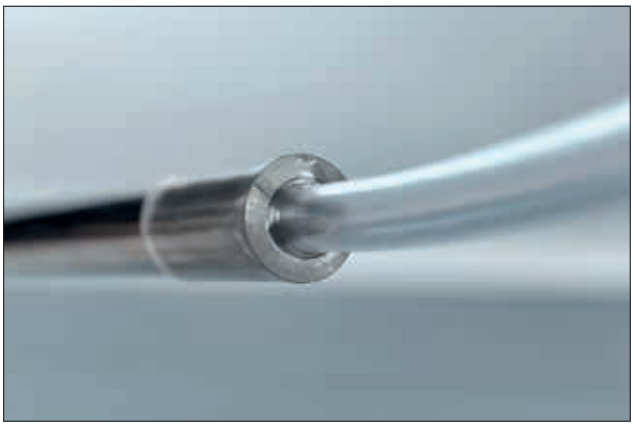
## Heat Shrinkable Tubing 2:1 flexible and transparent

**TF24**

Protects wire and cable markers subject to abuse, while permitting inspectability of each item covered. Protects electronic components while permitting their identification and inspection.

**Features and benefits**

- Transparent, flexible polyolefin tubing
- Protects identification marking perfect
- Halogen free
- Good mechanical and chemical resistance
- VG-approval and additional industrial approvals



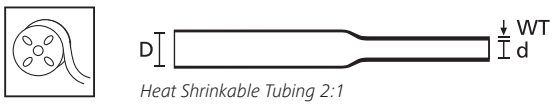
*TF24 transparent tubing with 2:1 shrink ratio.*

**Cut lengths available on request. Please contact us!**

*One Step to the Web!*

| | |
|---|---|
| **MATERIAL** | Polyolefin, cross-linked (PO-X) |
| **Shrink Ratio** | 2:1 |
| **Operating Temperature** | -55 °C to +135 °C |
| **Min. Shrink Temperature** | +110 °C |
| **Longitudinal Change After Shrinkage** | +/-5 % max. |
| **Dielectric Strength** | ≥ 30 kV/mm min. according to ASTM D2171 |
| **Flammability** | not flame retardant |

HF ✓ RoHS ✓




*Heat Shrinkable Tubing 2:1*

| TYPE | Supplied Ø D min. | Size (imperial) | Recov. Ø d max. | Wall (WT) | Reel Length | Colour | Designation as per VG-Norm | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **TF24-1.2/0.6** | 1.2 | 3/64 " | 0.6 | 0.41 | 100 m | Transparent (CL) | VG 95343 T05 B 001 M | 30-32 | 309-40123 |
| **TF24-1.6/0.8** | 1.6 | 1/16 " | 0.8 | 0.43 | 100 m | Transparent (CL) | VG 95343 T05 B 002 M | 30-32 | 309-40163 |
| **TF24-2.4/1.2** | 2.4 | 3/32 " | 1.2 | 0.51 | 100 m | Transparent (CL) | VG 95343 T05 B 003 M | 30-32 | 309-40243 |
| **TF24-3.2/1.6** | 3.2 | 1/8 " | 1.6 | 0.51 | 100 m | Transparent (CL) | VG 95343 T05 B 004 M | 30-32 | 309-40323 |
| **TF24-4.8/2.4** | 4.8 | 3/16 " | 2.4 | 0.51 | 60 m | Transparent (CL) | VG 95343 T05 B 005 M | 30-32 | 309-50483 |
| **TF24-6.4/3.2** | 6.4 | 1/4 " | 3.2 | 0.64 | 60 m | Transparent (CL) | VG 95343 T05 B 006 M | 30-32 | 309-50643 |
| **TF24-9.5/4.8** | 9.5 | 3/8 " | 4.8 | 0.64 | 50 m | Transparent (CL) | VG 95343 T05 B 007 M | 30-32 | 309-40953 |
| **TF24-12.7/6.4** | 12.7 | 1/2 " | 6.4 | 0.64 | 50 m | Transparent (CL) | VG 95343 T05 B 008 M | 30-32 | 309-41273 |
| **TF24-19.1/9.5** | 19.1 | 3/4 " | 9.5 | 0.76 | 50 m | Transparent (CL) | VG 95343 T05 B 009 M | 30-32 | 309-31903 |
| **TF24-25.4/12.7** | 25.4 | 1 " | 12.7 | 0.89 | 50 m | Transparent (CL) | VG 95343 T05 B 010 M | 30-32 | 309-32543 |
| **TF24-38.1/19.1** | 38.1 | 1-1/2 " | 19.1 | 1.02 | 60 m | Transparent (CL) | VG 95343 T05 B 011 M | 30-32 | 309-33813 |
| **TF24-50.8/25.4** | 50.8 | 2 " | 25.4 | 1.14 | 60 m | Transparent (CL) | VG 95343 T05 B 012 M | 30-32 | 309-35083 |
| **TF24-76.2/38.1** | 76.2 | 3 " | 38.1 | 1.27 | 30 m | Transparent (CL) | VG 95343 T05 B 013 M | - | 309-37603 |
| **TF24-101.6/50.8** | 101.6 | 4 " | 50.8 | 1.40 | 15 m | Transparent (CL) | VG 95343 T05 B 014 M | - | 309-31023 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

DEF STAN SAE VDE VG

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Heat shrinkable tubing 3:1 - flexible and coloured

**TF31**

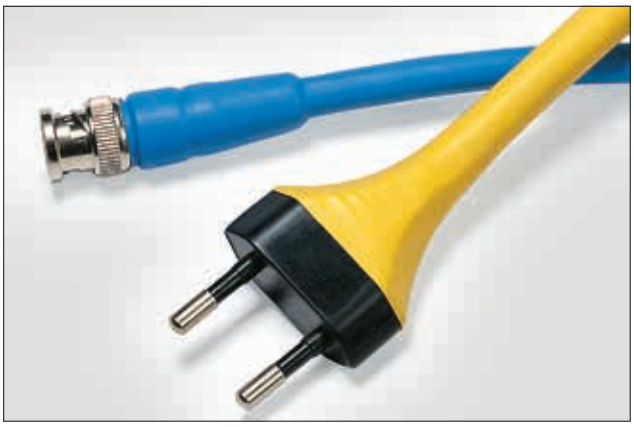
If higher fire protection is a requirement heat shrinkable tubing TF31 is a good choice. It is used for protection, insulation and identification wires, cables and light duty harnesses.

**Features and benefits**

- Thin wall, very flexible polyolefin tubing
- Few sizes cover a wide range of diameters allowing reduced inventory
- Fast shrinking and low shrink temperature
- Flame-retardant, UL224 VW1 listed

**Cut lengths available on request. Please contact us!**

*One Step to the Web!*



*TF31 with 3:1 shrink ratio allowing for a wider range of application.*

| MATERIAL | Polyolefin, cross-linked (PO-X) |
|---|---|
| **Shrink Ratio** | 3:1 |
| **Operating Temperature** | -55 °C to +135 °C |
| **Min. Shrink Temperature** | +90 °C |
| **Longitudinal Change After Shrinkage** | +5 %/-15 % |
| **Dielectric Strength** | 37 kV/mm |
| **Flammability** | ASTM D876, UL 224 VW-1 |

RoHS




*Heat Shrinkable Tubing 3:1*

| TYPE | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Reel Length | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|
| TF31-1.5/0.5 | 1.5 | 0.5 | 0.50 | 30 m | Black (BK) | 30-32 | 333-30150 |
| | 1.5 | 0.5 | 0.50 | 30 m | Blue (BU) | 30-32 | 333-30156 |
| | 1.5 | 0.5 | 0.50 | 30 m | Green (GN) | 30-32 | 333-30155 |
| | 1.5 | 0.5 | 0.50 | 30 m | Green-Yellow (GNYE) | 30-32 | 333-30157 |
| | 1.5 | 0.5 | 0.50 | 30 m | Red (RD) | 30-32 | 333-30152 |
| | 1.5 | 0.5 | 0.50 | 30 m | White (WH) | 30-32 | 333-30159 |
| | 1.5 | 0.5 | 0.50 | 30 m | Yellow (YE) | 30-32 | 333-30154 |
| | 1.5 | 0.5 | 0.50 | 300 m | Black (BK) | 30-32 | 333-20150 |
| TF31-3/1 | 3.0 | 1.0 | 0.60 | 30 m | Black (BK) | 30-32 | 333-30300 |
| | 3.0 | 1.0 | 0.60 | 30 m | Blue (BU) | 30-32 | 333-30306 |
| | 3.0 | 1.0 | 0.60 | 30 m | Green (GN) | 30-32 | 333-30305 |
| | 3.0 | 1.0 | 0.60 | 30 m | Green-Yellow (GNYE) | 30-32 | 333-30307 |
| | 3.0 | 1.0 | 0.60 | 30 m | Red (RD) | 30-32 | 333-30302 |
| | 3.0 | 1.0 | 0.60 | 30 m | White (WH) | 30-32 | 333-30309 |
| | 3.0 | 1.0 | 0.60 | 30 m | Yellow (YE) | 30-32 | 333-30304 |
| | 3.0 | 1.0 | 0.60 | 150 m | Black (BK) | 30-32 | 333-40300 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Heat shrinkable tubing 3:1 - flexible and coloured

**TF31**




*Heat Shrinkable Tubing 3:1*

| TYPE | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Reel Length | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|
| TF31-6/2 | 6.0 | 2.0 | 0.70 | 30 m | Black (BK) | 30-32 | 333-30600 |
| | 6.0 | 2.0 | 0.70 | 30 m | Blue (BU) | 30-32 | 333-30606 |
| | 6.0 | 2.0 | 0.70 | 30 m | Green (GN) | 30-32 | 333-30605 |
| | 6.0 | 2.0 | 0.70 | 30 m | Green-Yellow (GNYE) | 30-32 | 333-30607 |
| | 6.0 | 2.0 | 0.70 | 30 m | Red (RD) | 30-32 | 333-30602 |
| | 6.0 | 2.0 | 0.70 | 30 m | White (WH) | 30-32 | 333-30609 |
| | 6.0 | 2.0 | 0.70 | 30 m | Yellow (YE) | 30-32 | 333-30604 |
| | 6.0 | 2.0 | 0.70 | 150 m | Black (BK) | 30-32 | 333-40600 |
| TF31-9/3 | 9.0 | 3.0 | 0.80 | 30 m | Black (BK) | 30-32 | 333-30900 |
| | 9.0 | 3.0 | 0.80 | 30 m | Blue (BU) | 30-32 | 333-30906 |
| | 9.0 | 3.0 | 0.80 | 30 m | Green (GN) | 30-32 | 333-30905 |
| | 9.0 | 3.0 | 0.80 | 30 m | Green-Yellow (GNYE) | 30-32 | 333-30907 |
| | 9.0 | 3.0 | 0.80 | 30 m | Red (RD) | 30-32 | 333-30902 |
| | 9.0 | 3.0 | 0.80 | 30 m | White (WH) | 30-32 | 333-30909 |
| | 9.0 | 3.0 | 0.80 | 30 m | Yellow (YE) | 30-32 | 333-30904 |
| | 9.0 | 3.0 | 0.80 | 150 m | Black (BK) | 30-32 | 333-20900 |
| TF31-12/4 | 12.0 | 4.0 | 0.85 | 30 m | Black (BK) | 30-32 | 333-31200 |
| | 12.0 | 4.0 | 0.85 | 30 m | Blue (BU) | 30-32 | 333-31206 |
| | 12.0 | 4.0 | 0.85 | 30 m | Green (GN) | 30-32 | 333-31205 |
| | 12.0 | 4.0 | 0.85 | 30 m | Green-Yellow (GNYE) | 30-32 | 333-31207 |
| | 12.0 | 4.0 | 0.85 | 30 m | Red (RD) | 30-32 | 333-31202 |
| | 12.0 | 4.0 | 0.85 | 30 m | White (WH) | 30-32 | 333-31209 |
| | 12.0 | 4.0 | 0.85 | 30 m | Yellow (YE) | 30-32 | 333-31204 |
| | 12.0 | 4.0 | 0.85 | 100 m | Black (BK) | 30-32 | 333-21200 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

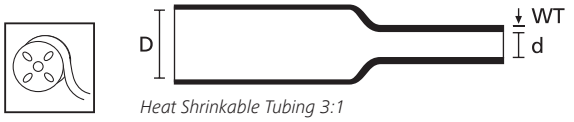
| Recommended Tools | | | |
|---|---|---|---|
| | 30<br>H5002 | 31<br>H5004 | 32<br>E4500 |
| | 561 | 561 | 560 |

For more information on toolings please refer to the Application Tooling chapter.

For product specific approvals and specifications please refer to the Appendix.

## Heat shrinkable tubing 3:1 - flexible and coloured

**TF31**




*Heat Shrinkable Tubing 3:1*

| TYPE | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Reel Length | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|
| TF31-18/6 | 18.0 | 6.0 | 1.00 | 30 m | Black (BK) | 30-32 | 333-31800 |
| | 18.0 | 6.0 | 1.00 | 30 m | Blue (BU) | 30-32 | 333-31806 |
| | 18.0 | 6.0 | 1.00 | 30 m | Green (GN) | 30-32 | 333-31805 |
| | 18.0 | 6.0 | 1.00 | 30 m | Green-Yellow (GNYE) | 30-32 | 333-31807 |
| | 18.0 | 6.0 | 1.00 | 30 m | Red (RD) | 30-32 | 333-31802 |
| | 18.0 | 6.0 | 1.00 | 30 m | White (WH) | 30-32 | 333-31809 |
| | 18.0 | 6.0 | 1.00 | 30 m | Yellow (YE) | 30-32 | 333-31804 |
| | 18.0 | 6.0 | 1.00 | 60 m | Black (BK) | 30-32 | 333-41800 |
| TF31-24/8 | 24.0 | 8.0 | 1.20 | 30 m | Black (BK) | 30-32 | 333-32400 |
| | 24.0 | 8.0 | 1.20 | 30 m | Blue (BU) | 30-32 | 333-32406 |
| | 24.0 | 8.0 | 1.20 | 30 m | Green (GN) | 30-32 | 333-32405 |
| | 24.0 | 8.0 | 1.20 | 30 m | Green-Yellow (GNYE) | 30-32 | 333-32407 |
| | 24.0 | 8.0 | 1.20 | 30 m | Red (RD) | 30-32 | 333-32402 |
| | 24.0 | 8.0 | 1.20 | 30 m | White (WH) | 30-32 | 333-32409 |
| | 24.0 | 8.0 | 1.20 | 30 m | Yellow (YE) | 30-32 | 333-32404 |
| | 24.0 | 8.0 | 1.20 | 60 m | Black (BK) | 30-32 | 333-42400 |
| TF31-40/13 | 40.0 | 13.0 | 1.25 | 30 m | Black (BK) | 30-32 | 333-34000 |
| | 40.0 | 13.0 | 1.25 | 30 m | Blue (BU) | 30-32 | 333-34006 |
| | 40.0 | 13.0 | 1.25 | 30 m | Green (GN) | 30-32 | 333-34005 |
| | 40.0 | 13.0 | 1.25 | 30 m | Green-Yellow (GNYE) | 30-32 | 333-34007 |
| | 40.0 | 13.0 | 1.25 | 30 m | Red (RD) | 30-32 | 333-34002 |
| | 40.0 | 13.0 | 1.25 | 30 m | White (WH) | 30-32 | 333-34009 |
| | 40.0 | 13.0 | 1.25 | 30 m | Yellow (YE) | 30-32 | 333-34004 |
| | 40.0 | 13.0 | 1.25 | 60 m | Black (BK) | 30-32 | 333-24000 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

| Recommended Tools | | | |
|---|---|---|---|
| | 30<br>H5002 | 31<br>H5004 | 32<br>E4500 |
| | 561 | 561 | 560 |

For more information on toolings please refer to the Application Tooling chapter.

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Heat shrinkable tubing 3:1 - flexible and transparent

**TF34**

Protects wire and cable markers subject to abuse, while permitting inspectability of each item covered. Protects electronic components while permitting their identification and inspection.

**Features and benefits**

- Transparent, flexible polyolefin tubing
- Protects identification marking perfect
- Few sizes cover a wide range of diameters allowing reduced inventory
- Halogen free

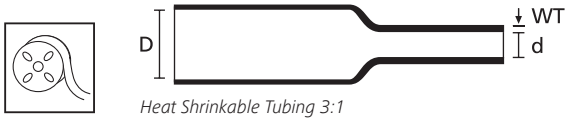
**Cut lengths available on request. Please contact us!**




*TF34 transparent tubing with 3:1 shrink ratio allowing for a wider range of application.*

*One Step to the Web!*

| MATERIAL | Polyolefin, cross-linked (PO-X) |
|---|---|
| Shrink Ratio | 3:1 |
| Operating Temperature | -55 °C to +135 °C |
| Min. Shrink Temperature | +110 °C |
| Longitudinal Change After Shrinkage | -5 % max. |
| Dielectric Strength | 46 kV/mm |
| Flammability | not flame retardant |




*Heat Shrinkable Tubing 3:1*

HF RoHS

| TYPE | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Reel Length | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|
| **TF34-1.5/0.5** | 1.5 | 0.5 | 0.50 | 30 m | Transparent (CL) | 30-32 | 333-30153 |
| **TF34-3/1** | 3.0 | 1.0 | 0.50 | 30 m | Transparent (CL) | 30-32 | 333-30303 |
| **TF34-6/2** | 6.0 | 2.0 | 0.70 | 30 m | Transparent (CL) | 30-32 | 333-30603 |
| **TF34-9/3** | 9.0 | 3.0 | 0.80 | 30 m | Transparent (CL) | 30-32 | 333-30903 |
| **TF34-12/4** | 12.0 | 4.0 | 0.85 | 30 m | Transparent (CL) | 30-32 | 333-31203 |
| **TF34-18/6** | 18.0 | 6.0 | 1.00 | 30 m | Transparent (CL) | 30-32 | 333-31803 |
| **TF34-24/8** | 24.0 | 8.0 | 1.20 | 30 m | Transparent (CL) | 30-32 | 333-32403 |
| **TF34-40/13** | 40.0 | 13.0 | 1.25 | 30 m | Transparent (CL) | 30-32 | 333-34003 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

| Recommended Tools | | | |
|---|---|---|---|
| | 30<br>H5002 | 31<br>H5004 | 32<br>E4500 |
| | 561 | 561 | 560 |

For more information on toolings please refer to the Application Tooling chapter.

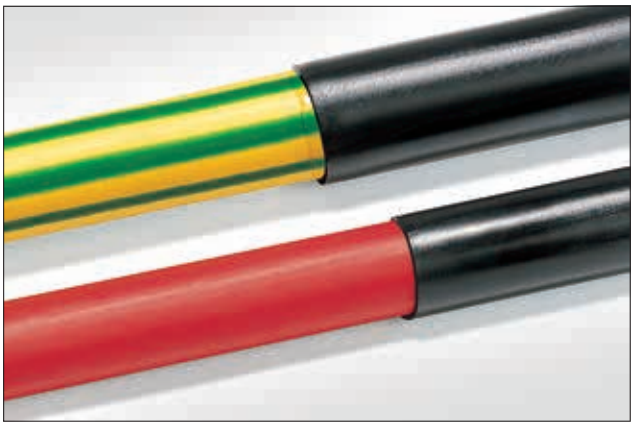
Date of issue: January 2019

## Heat shrinkable tubing adhesive lined - 1.2 m lengths

TA32/TA42 is designed for environmental sealing and electrical insulation of wire splices, terminations and components.

**Features and benefits**

- Thin wall adhesive-lined heat shrink tubing
- Highly flame retardant
- Outer wall conforms to UL224
- High shrink ratio



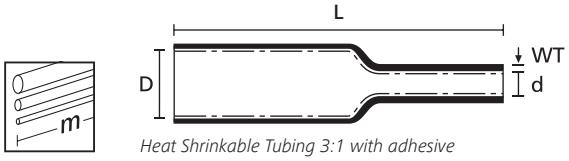
*TA32 and TA42 are UL224 listed adhesive lined tubing. Available in 3:1 and 4:1 shrink ratio.*

**Cut lengths available on request. Please contact us!**

| MATERIAL | Polyolefin, cross-linked (PO-X) |
|---|---|
| **Operating Temperature** | -55 °C to +125 °C |
| **Min. Shrink Temperature** | +110 °C |
| **Softening Point Adhesive** | +110 °C |
| **Longitudinal Change After Shrinkage** | -15 % max. |
| **Dielectric Strength** | 15 kV/mm according to IEC 60684 P2 |
| **Flammability** | UL 224 VW-1 |

RoHS

**TA32 - thin wall, 3:1 shrink ratio**




*Heat Shrinkable Tubing 3:1 with adhesive*

| TYPE | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Length (L) | Colour | Shrink Ratio | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **TA32-3/1** | 3.2 | 0.6 | 0.95 | 1.2 m | Black (BK) | 3:1 | 30-32 | 318-30300 |
| **TA32-4.5/1.5** | 4.5 | 1.5 | 1.10 | 1.2 m | Black (BK) | 3:1 | 30-32 | 318-30450 |
| **TA32-6/2** | 6.0 | 2.0 | 1.20 | 1.2 m | Black (BK) | 3:1 | 30-32 | 318-30600 |
| **TA32-9/3** | 9.0 | 3.0 | 1.30 | 1.2 m | Black (BK) | 3:1 | 30-32 | 318-30900 |
| **TA32-12/4** | 12.0 | 4.0 | 1.40 | 1.2 m | Black (BK) | 3:1 | 30-32 | 318-31200 |
| **TA32-19/6** | 19.0 | 6.0 | 1.80 | 1.2 m | Black (BK) | 3:1 | 30-32 | 318-31900 |
| **TA32-24/8** | 24.0 | 8.0 | 2.50 | 1.2 m | Black (BK) | 3:1 | 30-32 | 318-32400 |
| **TA32-40/13** | 40.0 | 13.0 | 2.50 | 1.2 m | Black (BK) | 3:1 | 30-32 | 318-34000 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

| Recommended Tools | | | |
|---|---|---|---|
| | 30<br>H5002 | 31<br>H5004 | 32<br>E4500 |
| | 561 | 561 | 560 |

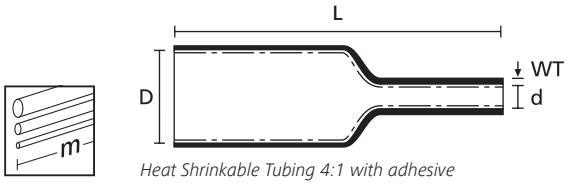
For more information on toolings please refer to the Application Tooling chapter.

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Heat shrinkable tubing adhesive lined - 1.2 m lengths

**TA42 - thin wall, 4:1 shrink ratio**




*Heat Shrinkable Tubing 4:1 with adhesive*

| TYPE | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Length (L) | Colour | Shrink Ratio | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **TA42-4/1** | 4.0 | 1.0 | 1.00 | 1.2 m | Black (BK) | 4:1 | 30-32 | 318-40400 |
| **TA42-8/2** | 8.0 | 2.0 | 1.20 | 1.2 m | Black (BK) | 4:1 | 30-32 | 318-40800 |
| **TA42-12/3** | 12.0 | 3.0 | 1.40 | 1.2 m | Black (BK) | 4:1 | 30-32 | 318-41200 |
| **TA42-16/4** | 16.0 | 4.0 | 1.80 | 1.2 m | Black (BK) | 4:1 | 30-32 | 318-41600 |
| **TA42-24/6** | 24.0 | 6.0 | 2.25 | 1.2 m | Black (BK) | 4:1 | 30-32 | 318-42400 |
| **TA42-32/8** | 32.0 | 8.0 | 2.55 | 1.2 m | Black (BK) | 4:1 | 30-32 | 318-43200 |
| **TA42-52/13** | 52.0 | 13.0 | 2.55 | 1.2 m | Black (BK) | 4:1 | - | 318-45200 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

| Recommended Tools | | | |
|---|---|---|---|
| | 30<br>H5002 | 31<br>H5004 | 32<br>E4500 |
| | 561 | 561 | 560 |

For more information on toolings please refer to the Application Tooling chapter.

For product specific approvals and specifications please refer to the Appendix.

## Heat shrinkable tubing adhesive lined

Heat shrinkable tubing EPS seals and protects a wide variety of electrical applications like back end connector sealing, connector-to-cable transitions and splices.

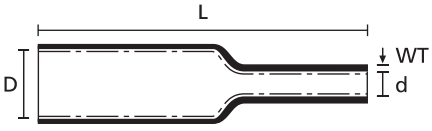
### Features and benefits

- Flexible, thin wall polyolefin heat shrink tubing
- With coextruded hot melt adhesive inner wall
- Protects against moisture
- Provides an environmental sealing of complex parts

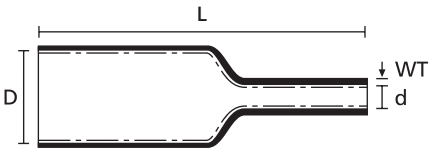
**Cut lengths available on request. Please contact us!**



*PTA300 and PTA400 offer high shrink ratios and protection against humidity.*




*Heat Shrinkable Tubing 3:1 with adhesive*




*Heat Shrinkable Tubing 4:1 with adhesive*

| MATERIAL | Polyolefin, cross-linked (PO-X) |
|---|---|
| Operating Temperature | -55 °C to +125 °C |
| Min. Shrink Temperature | +120 °C |
| Longitudinal Change After Shrinkage | -10 % max. |
| Softening Point Adhesive | +90 °C |
| Dielectric Strength | 15 kV/mm according to IEC 60684 P2 |
| Flammability | ASTM D2671 (outer layer only) |

RoHS

### EPS-300 - 3:1 shrink ratio

| TYPE | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Reel Length | Colour | Shrink Ratio | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **EPS-300-3/1** | 3.0 | 1.0 | 1.00 | 400 m | Black (BK) | 3:1 | 30-32 | 340-03010 |
| **EPS-300-6/2** | 6.0 | 2.0 | 1.00 | 300 m | Black (BK) | 3:1 | 30-32 | 340-06020 |
| **EPS-300-9/3** | 9.0 | 3.0 | 1.40 | 150 m | Black (BK) | 3:1 | 30-32 | 340-09030 |
| **EPS-300-12/4** | 12.0 | 4.0 | 1.80 | 100 m | Black (BK) | 3:1 | 30-32 | 340-12040 |
| **EPS-300-19/6** | 19.0 | 6.0 | 2.20 | 50 m | Black (BK) | 3:1 | 30-32 | 340-19060 |
| **EPS-300-24/8** | 24.0 | 8.0 | 2.50 | 25 m | Black (BK) | 3:1 | 30-32 | 340-24080 |
| **EPS-300-40/13** | 40.0 | 13.0 | 2.50 | 25 m | Black (BK) | 3:1 | 30-32 | 340-40130 |

All dimensions in mm. Subject to technical changes. Minimum Order Quantity (MOQ) may differ from package content.

### EPS-400 - 4:1 shrink ratio

| TYPE | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Reel Length | Colour | Shrink Ratio | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **EPS-400-4/1** | 4.0 | 1.0 | 1.00 | 300 m | Black (BK) | 4:1 | 30-32 | 341-04010 |
| **EPS-400-8/2** | 8.0 | 2.0 | 1.00 | 150 m | Black (BK) | 4:1 | 30-32 | 341-08020 |
| **EPS-400-12/3** | 12.0 | 3.0 | 1.40 | 100 m | Black (BK) | 4:1 | 30-32 | 341-12030 |
| **EPS-400-16/4** | 16.0 | 4.0 | 1.80 | 100 m | Black (BK) | 4:1 | 30-32 | 341-16040 |
| **EPS-400-24/6** | 24.0 | 6.0 | 2.20 | 50 m | Black (BK) | 4:1 | 30-32 | 341-24060 |
| **EPS-400-32/8** | 32.0 | 8.0 | 2.50 | 25 m | Black (BK) | 4:1 | 30-32 | 341-32080 |

All dimensions in mm. Subject to technical changes. Minimum Order Quantity (MOQ) may differ from package content.

SAE® For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Heat shrinkable tubing 4:1 - Flame retardant

**MA40 - medium wall adhesive lined**

Designed for low voltage cable joints and terminations in shipbuilding. Insulates and protects against moisture.

### Features and benefits

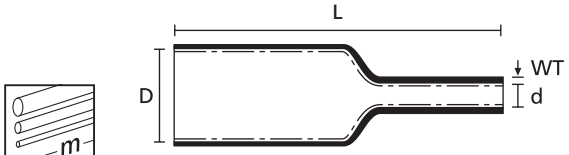
- Medium wall adhesive lined shrink tubing for low voltage power cables
- Designed for shipbuilding, Germanische Lloyd approved
- Flame retarded
- UV and weather resistant
- Excellent mechanical performance




*MA40 medium wall, adhesive lined and flame retarded tubing for shipbuilding applications.*

| | |
|---|---|
| **MATERIAL** | Polyolefin, cross-linked (PO-X) |
| **Shrink Ratio** | up to 4:1 |
| **Operating Temperature** | -55 °C to +110 °C |
| **Min. Shrink Temperature** | +120 °C |
| **Softening Point Adhesive** | +85 °C |
| **Longitudinal Change After Shrinkage** | -10 % max. |
| **Dielectric Strength** | >18 kV/mm |
| **Flammability** | self-extinguishing |

LFH ✓ RoHS ✓




*Heat Shrinkable Tubing 4:1 with adhesive*

| TYPE | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Length (L) | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|
| **MA40-8/2** | 8.0 | 2.0 | 1.70 | 1.0 m | Black (BK) | 30-32 | 323-00100 |
| **MA40-12/3** | 12.0 | 3.0 | 2.00 | 1.0 m | Black (BK) | 30-32 | 323-00101 |
| **MA40-16/5** | 16.0 | 5.0 | 2.00 | 1.0 m | Black (BK) | 30-32 | 323-00103 |
| **MA40-22/6** | 22.0 | 6.0 | 2.40 | 1.0 m | Black (BK) | 30-32 | 323-00104 |
| **MA40-33/8** | 33.0 | 8.0 | 2.50 | 1.0 m | Black (BK) | 30-32 | 323-00105 |
| **MA40-40/12** | 40.0 | 12.0 | 2.50 | 1.0 m | Black (BK) | - | 323-00106 |
| **MA40-55/16** | 55.0 | 16.0 | 2.70 | 1.0 m | Black (BK) | - | 323-00107 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

| Recommended Tools | | | |
|---|---|---|---|
| | 30<br>H5002 | 31<br>H5004 | 32<br>E4500 |
| | 561 | 561 | 560 |

For more information on toolings please refer to the Application Tooling chapter.

ASTM DNV·GL For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Heat Shrinkable Tubing up to 4:1 - 1 m lengths

**MA47 - medium wall adhesive lined**

Insulation and Protection of low voltage cable jonts and terminations above and below ground.

**Features and benefits**

- Medium wall tubing with robust insulation characteristics
- Shrink tubing for above and underground cable applications
- Protects cable joints and terminations in low voltage applications
- Coated inside with thermoplastic adhesive
- Protects against humidity and other environmental impacts after shrinking

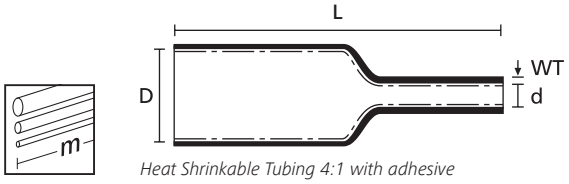


*MA47 for above and below ground.*

**Cut lengths available on request. Please contact us!**

| MATERIAL | Polyolefin, cross-linked (PO-X) |
|---|---|
| Shrink Ratio | up to 4:1 |
| Operating Temperature | -55 °C to +110 °C |
| Min. Shrink Temperature | +120 °C |
| Softening Point Adhesive | +85 °C |
| Longitudinal Change After Shrinkage | -10 % max. |
| Dielectric Strength | 20 kV/mm |
| Flammability | not flame retardant |
| Insulation Class | A (VDE 0530) |

HF ✓ RoHS ✓



*Heat Shrinkable Tubing 4:1 with adhesive*

| TYPE | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Length (L) | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|
| **MA47-8/2** | 8.0 | 2.0 | 1.70 | 1.0 m | Black (BK) | 30-32 | 323-20080 |
| **MA47-12/3** | 12.0 | 3.0 | 2.00 | 1.0 m | Black (BK) | 30-32 | 323-20120 |
| **MA47-19/6** | 19.0 | 6.0 | 2.50 | 1.0 m | Black (BK) | 30-32 | 323-20190 |
| **MA47-30/8** | 30.0 | 8.0 | 2.50 | 1.0 m | Black (BK) | 30-32 | 323-20300 |
| **MA47-40/12** | 40.0 | 12.0 | 2.50 | 1.0 m | Black (BK) | - | 323-20400 |
| **MA47-50/16** | 50.0 | 16.0 | 2.70 | 1.0 m | Black (BK) | - | 323-20500 |
| **MA47-63/19** | 63.0 | 19.0 | 2.80 | 1.0 m | Black (BK) | - | 323-20630 |
| **MA47-75/22** | 75.0 | 22.0 | 3.00 | 1.0 m | Black (BK) | - | 323-20750 |
| **MA47-95/30** | 95.0 | 30.0 | 3.00 | 1.0 m | Black (BK) | - | 323-20950 |
| **MA47-115/34** | 115.0 | 34.0 | 3.00 | 1.0 m | Black (BK) | - | 323-21150 |
| **MA47-140/42** | 140.0 | 42.0 | 3.00 | 1.0 m | Black (BK) | - | 323-21400 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

| Recommended Tools | | | |
|---|---|---|---|
| | 30<br>H5002 | 31<br>H5004 | 32<br>E4500 |
| | 561 | 561 | 560 |

For more information on toolings please refer to the Application Tooling chapter.

Date of issue: January 2019

## Heat shrinkable tubing up to 4:1 - 1 m lengths in a Kit

**MA47 - medium wall adhesive lined**

MA47 heat shrinkable tubing in 4 sizes packed in a handy transportation tube. Insulation and protection of low voltage cable joints and terminations above and below ground.

**Features and benefits**

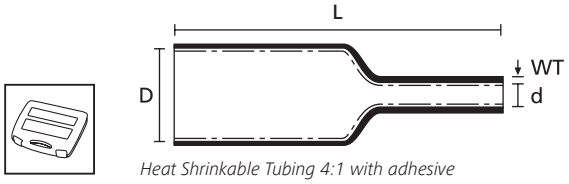
- Re-usable transportation tube in adjustable length
- 4 sizes of MA47 for different applications in 1 kit
- Medium wall tubing with robust insulation characteristics
- Shrink tubing for above and underground cable applications
- Protects against humidity and other environmental impacts after shrinking



*Heatshrink tubing MA47 in a handy, re-usable kit.*

**Detailed Information about Heatguns please refer to page 560.**

**Detailed information about MA47 please refer to page 215.**




*Heat Shrinkable Tubing 4:1 with adhesive*

| TYPE | Content | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Length (L) | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **MA47 Kit** | - | - | - | - | - | Transparent (CL) | 30-32 | 905-50026 |
| **MA47-12/3** | 2 | 12.0 | 3.0 | 2.00 | 1.0 m | Black (BK) | 30-32 | |
| **MA47-19/6** | 2 | 19.0 | 6.0 | 2.50 | 1.0 m | Black (BK) | 30-32 | |
| **MA47-30/8** | 2 | 30.0 | 8.0 | 2.50 | 1.0 m | Black (BK) | 30-32 | |
| **MA47-40/12** | 2 | 40.0 | 12.0 | 2.50 | 1.0 m | Black (BK) | - | |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

| Recommended Tools | | | |
|---|---|---|---|
| | 30<br>H5002 | 31<br>H5004 | 32<br>E4500 |
| | 561 | 561 | 560 |

For more information on toolings please refer to the Application Tooling chapter.

Date of issue: January 2019

## Heat Shrinkable Tubing up to 4:1 - 1 m lengths

**MU47 - medium wall unlined**

Insulation and production of low voltage cable joints and terminations.

**Features and benefits**

- Medium wall heat shrink tubing
- Not adhesive lined
- Provides good mechanical strength
- Resistant to solvents, acids and alkaline solutions

**Detailed Information about Heatguns please refer to page 560.**

**Cut lengths available on request. Please contact us!**

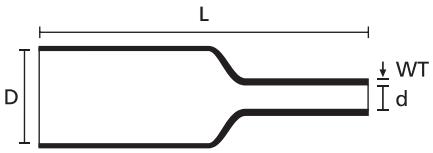


*MA47 and MU47 medium wall tubing - lined and unlined.*

| | |
|---|---|
| **MATERIAL** | Polyolefin, cross-linked (PO-X) |
| **Shrink Ratio** | up to 4:1 |
| **Operating Temperature** | -55 °C to +110 °C |
| **Min. Shrink Temperature** | +120 °C |
| **Longitudinal Change After Shrinkage** | -10 % max. |
| **Dielectric Strength** | 20 kV/mm |
| **Flammability** | not flame retardant |

HF RoHS




*Heat Shrinkable Tubing 4:1*

| TYPE | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Length (L) | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|
| **MU47-12/3** | 12.0 | 3.0 | 2.00 | 1.0 m | Black (BK) | 30-32 | 323-10120 |
| **MU47-19/6** | 19.0 | 6.0 | 2.20 | 1.0 m | Black (BK) | 30-32 | 323-10190 |
| **MU47-30/8** | 30.0 | 8.0 | 2.50 | 1.0 m | Black (BK) | 30-32 | 323-10300 |
| **MU47-40/12** | 40.0 | 12.0 | 2.50 | 1.0 m | Black (BK) | - | 323-10400 |
| **MU47-50/16** | 50.0 | 16.0 | 2.70 | 1.0 m | Black (BK) | - | 323-10500 |
| **MU47-63/19** | 63.0 | 19.0 | 2.80 | 1.0 m | Black (BK) | - | 323-10630 |
| **MU47-75/22** | 75.0 | 22.0 | 3.00 | 1.0 m | Black (BK) | - | 323-10750 |
| **MU47-95/30** | 95.0 | 30.0 | 3.00 | 1.0 m | Black (BK) | - | 323-10950 |
| **MU47-115/34** | 115.0 | 34.0 | 3.00 | 1.0 m | Black (BK) | - | 323-11150 |
| **MU47-140/42** | 140.0 | 42.0 | 3.00 | 1.0 m | Black (BK) | - | 323-11400 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

| Recommended Tools | | | |
|---|---|---|---|
| | 30<br>H5002 | 31<br>H5004 | 32<br>E4500 |
| | 561 | 561 | 560 |

For more information on toolings please refer to the Application Tooling chapter.

Date of issue: January 2019

## Cable repair kit

**LVRK**

The Cable Repair Kit LVRK is a solution for the fast and safe repair of damaged cable and wires in electrical installations. Damaged cable jackets and wires can be repaired safely and durably, saving time and labour.

**Features and benefits**

- Fast, safe and labour-saving repair of cable and wires
- No need for concealed sockets or wire insertion, with subsequent cost savings
- Available as a kit for simple and easy handling
- 1x heat shrinkable tubing, length 200 mm, shrink ratio 4:1, excellent insulation and can be cut for installation
- 5x crimp connectors with heat shrinkable insulation and adhesive liner
- 4x Q-tie heat stabilised cable ties with innovative and time-saving open-head design



*Cable Repair Kit LVRK.*

| MATERIAL | Polyolefin, cross-linked (PO-X) |
|---|---|
| **Colour** | Black (BK) |
| **Shrink Ratio** | 4:1 |
| **Operating Temperature** | -55 °C to +125 °C |
| **Min. Shrink Temperature** | +110 °C |
| **Softening Point Adhesive** | +110 °C |
| **Longitudinal Change After Shrinkage** | -15 % max. |
| **Dielectric Strength** | 15 kV/mm |

RoHS

*Application video: LVRK*

| TYPE | Pack Cont. | Tools | Article-No. |
|---|---|---|---|
| **LVRK-24/6-200** | 1 pc. | 30-32 | 380-04004 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

| Recommended Tools | | | |
|---|---|---|---|
| | 30<br>H5002 | 31<br>H5004 | 32<br>E4500 |
| | 561 | 561 | 560 |

For more information on toolings please refer to the Application Tooling chapter.

## Heat shrinkable cable repair sleeves

**RMS**

RMS wrap-around sleeves are easy to install.

**Features and benefits**

- Fast, moisture proof and permanent repair of cable jackets
- Only 6 sizes for a wide range of cable diameters: from 10 mm up to 160 mm
- Available in 4 standard lengths, custom lengths available on request
- Each RMS kit is ready for use and comes with instruction sheet, abrasive strip and cleaning sachet
- Weather resistant and halogen free
- TCP (thermo-chromatic paint) spots indicate the sleeve has been sufficiently heated

*Application video: RMS*



*RMS wrap-around sleeves for rapid and secure cable repair.*

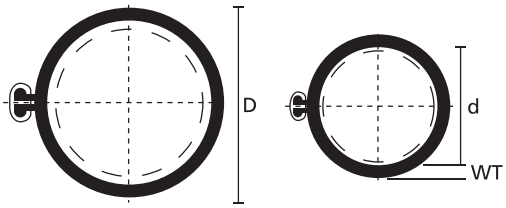


*RMS: Repair sleeve, steel closure, abrasive strip, cleaning sachet, instruction sheet.*

| | |
|---|---|
| **MATERIAL** | Polyolefin, Chemically cross-linked (PO-X) |
| **Shrink Ratio** | up to 4.5:1 |
| **Operating Temperature** | -40 °C to +120 °C |
| **Min. Shrink Temperature** | +110 °C |
| **Softening Point Adhesive** | +105 °C |
| **Longitudinal Change After Shrinkage** | -10 % max. |
| **Dielectric Strength** | 30 kV/mm |
| **Flammability** | not flame retardant |

HF ✓ RoHS ✓




*Cable Repair Sleeve RMS with adhesive*

| TYPE | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Suitable for Cable Ø from/to | Length (L) | Colour | Article-No. |
|---|---|---|---|---|---|---|---|
| **RMS 43-10** | 43.0 | 10.0 | 2.30 | 15 - 35 | 250.0 | Black (BK) | 450-20000 |
| | 43.0 | 10.0 | 2.30 | 15 - 35 | 500.0 | Black (BK) | 450-20001 |
| | 43.0 | 10.0 | 2.30 | 15 - 35 | 750.0 | Black (BK) | 450-20004 |
| | 43.0 | 10.0 | 2.30 | 15 - 35 | 1,000.0 | Black (BK) | 450-20002 |
| **RMS 52-15** | 52.0 | 15.0 | 2.30 | 20 - 45 | 250.0 | Black (BK) | 450-20010 |
| | 52.0 | 15.0 | 2.30 | 20 - 45 | 500.0 | Black (BK) | 450-20011 |
| | 52.0 | 15.0 | 2.30 | 20 - 45 | 750.0 | Black (BK) | 450-20014 |
| | 52.0 | 15.0 | 2.30 | 20 - 45 | 1,000.0 | Black (BK) | 450-20012 |
| **RMS 76-22** | 76.0 | 22.0 | 2.50 | 28 - 65 | 500.0 | Black (BK) | 450-20021 |
| | 76.0 | 22.0 | 2.50 | 28 - 65 | 750.0 | Black (BK) | 450-20024 |
| | 76.0 | 22.0 | 2.50 | 28 - 65 | 1,000.0 | Black (BK) | 450-20022 |
| **RMS 100-30** | 100.0 | 30.0 | 2.54 | 35 - 85 | 500.0 | Black (BK) | 450-20030 |
| | 100.0 | 30.0 | 2.54 | 35 - 85 | 1,000.0 | Black (BK) | 450-20031 |
| **RMS 139-38** | 139.0 | 38.0 | 2.77 | 45 - 120 | 1,000.0 | Black (BK) | 450-20041 |
| **RMS 185-55** | 185.0 | 55.0 | 2.74 | 65 - 160 | 1,000.0 | Black (BK) | 450-20050 |

All dimensions in mm. Subject to technical changes. Minimum Order Quantity (MOQ) may differ from package content.

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## Heat shrinkable straight-through joint

**LVK**

LVK is a heat shrinkable straight-through joint for universal connecting of unarmoured polymeric cables or conductors insulated with

PVC, PE and XLPE. Suitable for compression and mechanical connectors on aluminium or copper cables. Voltage level 0.6/1.0 (1.2) kV.

### Features and benefits

- Universally suitable to connect cables and conductors
- Immediately ready for use
- Using a high-quality thermoplastic inner adhesive
- Good corrosion protection properties with excellent abrasion resistance and weather resistance
- TCP (thermo chromatic paint) spots indicate the sleeve has been sufficiently heated
- Resistant to chemical agents and alkaline earths
- Excellent shrink behavior
- High UV resistance
- Halogen free

### Content of Set / Kit

Outer sleeve, inner sleeves, cleaning cloth, emery cloth, installation instructions



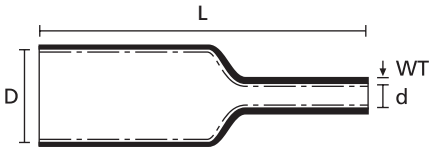
*LVK - Heat shrinkable straight-through joint.*

| | |
|---|---|
| **MATERIAL** | Polyolefin, cross-linked (PO-X) |
| **Colour** | Black (BK) |
| **Shrink Ratio** | up to 4:1 |
| **Operating Temperature** | -55 °C to +110 °C |
| **Min. Shrink Temperature** | +120 °C |
| **Softening Point Adhesive** | +105 °C |
| **Longitudinal Change After Shrinkage** | -10 % max. |
| **Dielectric Strength** | 20 kV/mm according to ASTM D 2671 |

**Without connector!**

HF ✓ RoHS ✓




*Heat Shrinkable Tubing 4:1 with adhesive*

| TYPE | No. of Inner sleeves | Conductor Size Range mm² | Inner Tubing Supplied Ø D min. | Inner Tubing Recov. Ø d max. | Inner Tubing Length (L) | Outer Tubing Supplied Ø D min. | Outer Tubing Recov. Ø d max. | Outer Tubing Length (L) | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **LVK-4x16-50** | 4 | 16-50 | 22.0 | 6.0 | 170.0 | 55.0 | 16.0 | 550.0 | 380-04008 |
| **LVK-4x25-150** | 4 | 25-150 | 33.0 | 8.0 | 250.0 | 105.0 | 25.0 | 800.0 | 380-04010 |
| **LVK-4x25-95** | 4 | 25-95 | 33.0 | 8.0 | 250.0 | 75.0 | 20.0 | 800.0 | 380-04009 |
| **LVK-4x95-300** | 4 | 95-300 | 40.0 | 12.0 | 280.0 | 130.0 | 35.0 | 900.0 | 380-04011 |
| **LVK-5x1.5-16** | 5 | 1.5-16 | 19.0 | 3.2 | 125.0 | 48.0 | 12.0 | 450.0 | 380-04006 |
| **LVK-5x1.5-6** | 5 | 1.5-6 | 12.0 | 3.0 | 70.0 | 48.0 | 12.0 | 250.0 | 380-04005 |
| **LVK-5x6-25** | 5 | 6-25 | 22.0 | 6.0 | 125.0 | 55.0 | 16.0 | 500.0 | 380-04007 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

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## Heat shrinkable straight-through joint with mechanical connectors

**LVK-C - adhesive lined**

LVK-C is a heat shrinkable straight-through joint for universal connecting of unarmoured polymeric cables or conductors insulated with PVC, PE and XLPE. With mechanical connectors for aluminium or copper cables. Voltage level 0.6/1.0 (1.2) kV.

### Features and benefits

- Universally suitable to connect cables and conductors
- Immediately ready for use
- Using a high-quality thermoplastic inner adhesive
- Good corrosion protection properties with excellent abrasion resistance and weather resistance
- TCP (thermo chromatic paint) spots indicate the sleeve has been sufficiently heated
- Resistant to chemical agents and alkaline earths
- Excellent shrink behavior
- High UV resistance
- With mechanical connectors
- Halogen free

### Content of Set / Kit

Outer sleeve, inner sleeves, mechanical connectors, cleaning cloth, emery cloth, installation instructions



*LVK-C - Heat shrinkable straight-through joint with connectors.*



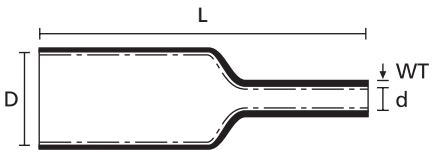
*LVK-C: Outer sleeve, inner sleeves, mechanical connectors, cleaning cloth, emery cloth, installation instructions.*

**With connector!**

| | |
|---|---|
| **MATERIAL** | Polyolefin, cross-linked (PO-X) |
| **Colour** | Black (BK) |
| **Shrink Ratio** | up to 4:1 |
| **Operating Temperature** | -55 °C to +110 °C |
| **Min. Shrink Temperature** | +120 °C |
| **Softening Point Adhesive** | +105 °C |
| **Longitudinal Change After Shrinkage** | -10 % max. |
| **Dielectric Strength** | 20 kV/mm according to ASTM D 2671 |

HF ✓ RoHS ✓




*Heat Shrinkable Tubing 4:1 with adhesive*

| TYPE | No. of Inner sleeves | Conductor Size Range mm² | Inner Tubing Supplied Ø D min. | Inner Tubing Recov. Ø d max. | Inner Tubing Length (L) | Outer Tubing Supplied Ø D min. | Outer Tubing Recov. Ø d max. | Outer Tubing Length (L) | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **LVK-C-4x16-50** | 4 | 16-50 | 22.0 | 6.0 | 170.0 | 55.0 | 16.0 | 550.0 | 380-04016 |
| **LVK-C-4x25-150** | 4 | 25-150 | 33.0 | 8.0 | 250.0 | 105.0 | 25.0 | 800.0 | 380-04018 |
| **LVK-C-4x25-95** | 4 | 25-95 | 33.0 | 8.0 | 250.0 | 75.0 | 20.0 | 800.0 | 380-04017 |
| **LVK-C-5x1.5-16** | 5 | 1.5-16 | 19.0 | 3.2 | 125.0 | 48.0 | 12.0 | 450.0 | 380-04014 |
| **LVK-C-5x1.5-6** | 5 | 1.5-6 | 12.0 | 3.0 | 70.0 | 48.0 | 12.0 | 250.0 | 380-04013 |
| **LVK-C-5x6-25** | 5 | 6-25 | 22.0 | 6.0 | 125.0 | 55.0 | 16.0 | 500.0 | 380-04015 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

Date of issue: January 2019

## Heat shrinkable tubing 4:1 - Flame retardant

**HA40 - thick wall adhesive lined**

Designed for low voltage cable joints and terminations in shipbuilding. Insulates and protects against moisture.

### Features and benefits

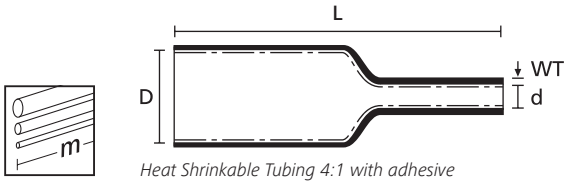
- Thick wall adhesive lined shrink tubing for low voltage power cables
- Designed for shipbuilding, Germanische Lloyd approved
- Flame retarded
- UV and weather resistant
- Excellent mechanical performance



*HA40 thick wall, adhesive lined and flame retarded tubing for shipbuilding applications.*

| | |
|---|---|
| **MATERIAL** | Polyolefin, cross-linked (PO-X) |
| **Shrink Ratio** | up to 4:1 |
| **Operating Temperature** | -55 °C to +110 °C |
| **Min. Shrink Temperature** | +120 °C |
| **Softening Point Adhesive** | +85 °C |
| **Longitudinal Change After Shrinkage** | -10 % max. |
| **Dielectric Strength** | >18 kV/mm |
| **Flammability** | self-extinguishing |

LFH RoHS




*Heat Shrinkable Tubing 4:1 with adhesive*

| TYPE | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Length (L) | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|
| **HA40-9/3** | 9.0 | 3.0 | 1.80 | 1.0 m | Black (BK) | 30-32 | 321-00100 |
| **HA40-13/4** | 13.0 | 4.0 | 2.20 | 1.0 m | Black (BK) | 30-32 | 321-00101 |
| **HA40-22/6** | 22.0 | 6.0 | 2.70 | 1.0 m | Black (BK) | 30-32 | 321-00102 |
| **HA40-33/8** | 33.0 | 8.0 | 2.70 | 1.0 m | Black (BK) | 30-32 | 321-00103 |
| **HA40-40/12** | 40.0 | 12.0 | 4.00 | 1.0 m | Black (BK) | - | 321-00104 |
| **HA40-55/16** | 55.0 | 16.0 | 4.00 | 1.0 m | Black (BK) | - | 321-00105 |
| **HA40-75/22** | 75.0 | 22.0 | 4.10 | 1.0 m | Black (BK) | - | 321-00106 |
| **HA40-92/25** | 92.0 | 25.0 | 4.20 | 1.0 m | Black (BK) | - | 321-00107 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

| Recommended Tools | | | |
|---|---|---|---|
| | 30<br>H5002 | 31<br>H5004 | 32<br>E4500 |
| | 561 | 561 | 560 |

For more information on toolings please refer to the Application Tooling chapter.

ASTM DNV·GL

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

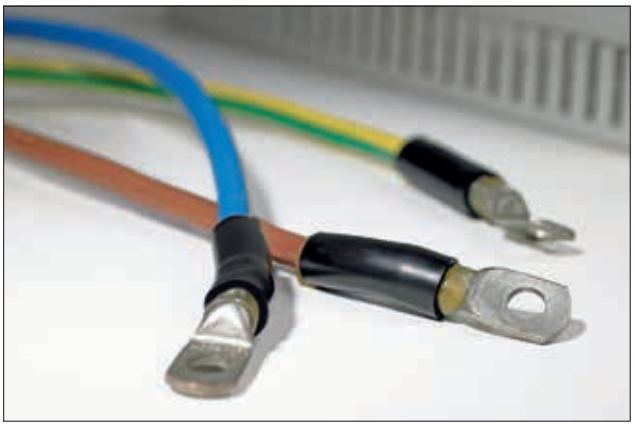
## Heat Shrinkable Tubing up to 3,5:1 - 1 m lengths

**HA47 - thick wall adhesive lined**

The toughness and wheatherability makes it well suited for exposed applications and underground cable joints and cable terminations.

**Features and benefits**

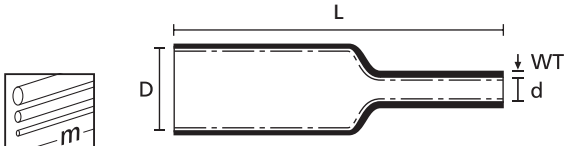
- Thick wall polyolefin adhesive-lined sleeving
- Thermoplastic adhesive protects against moisture and weathering
- Used for low voltage power applications



*HA47 – Heavy wall adhesive lined tubing.*

| | |
|---|---|
| **MATERIAL** | Polyolefin, cross-linked (PO-X) |
| **Shrink Ratio** | up to 4:1 |
| **Operating Temperature** | -55 °C to +110 °C |
| **Min. Shrink Temperature** | +120 °C |
| **Softening Point Adhesive** | +85 °C |
| **Longitudinal Change After Shrinkage** | -10 % max. |
| **Dielectric Strength** | 20 kV/mm |
| **Flammability** | not flame retardant |
| **Insulation Class** | A (VDE 0530) |

HF ✓ RoHS ✓




*Heat Shrinkable Tubing 3.5:1 with adhesive*

| TYPE | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Length (L) | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|
| **HA47-9/3** | 9.0 | 3.0 | 1.80 | 1.0 m | Black (BK) | 30-32 | 321-20090 |
| **HA47-13/4** | 13.0 | 4.0 | 2.40 | 1.0 m | Black (BK) | 30-32 | 321-20130 |
| **HA47-19/6** | 19.0 | 6.0 | 2.70 | 1.0 m | Black (BK) | 30-32 | 321-20180 |
| **HA47-33/8** | 33.0 | 8.0 | 3.20 | 1.0 m | Black (BK) | 30-32 | 321-20280 |
| **HA47-45/12** | 45.0 | 12.0 | 4.10 | 1.0 m | Black (BK) | - | 321-20450 |
| **HA47-51/16** | 51.0 | 16.0 | 4.10 | 1.0 m | Black (BK) | - | 321-20510 |
| **HA47-68/22** | 68.0 | 22.0 | 4.10 | 1.0 m | Black (BK) | - | 321-20680 |
| **HA47-85/25** | 85.0 | 25.0 | 4.30 | 1.0 m | Black (BK) | - | 321-20850 |
| **HA47-105/30** | 105.0 | 30.0 | 4.30 | 1.0 m | Black (BK) | - | 321-20900 |
| **HA47-130/36** | 130.0 | 36.0 | 4.30 | 1.0 m | Black (BK) | - | 321-21300 |
| **HA47-160/50** | 160.0 | 50.0 | 4.30 | 1.0 m | Black (BK) | - | 321-21600 |
| **HA47-180/50** | 180.0 | 50.0 | 4.30 | 1.0 m | Black (BK) | - | 321-21850 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

| Recommended Tools | | | |
|---|---|---|---|
| | 30<br>H5002 | 31<br>H5004 | 32<br>E4500 |
| | 561 | 561 | 560 |

For more information on toolings please refer to the Application Tooling chapter.

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## Heat Shrinkable Tubing 6:1, adhesive lined in 1.2 m cuts

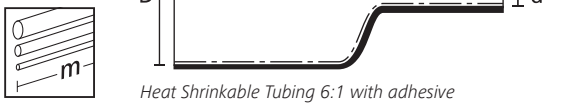
**HA67**

Insulates, seals and protects large size differences between connectors and cables.

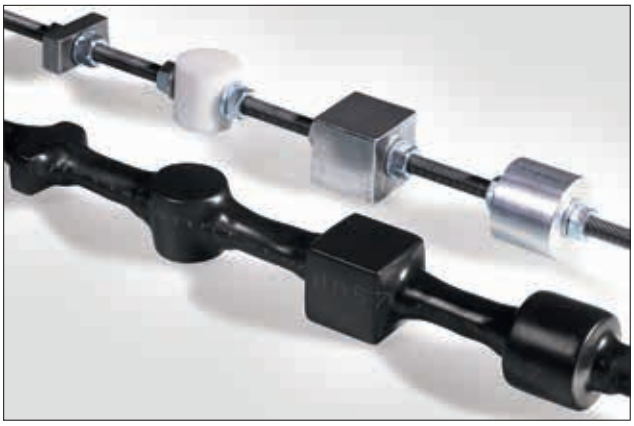
### Features and benefits

- High shrink ratio, heavy-duty heat shrinkable tubing
- Thermoplastic adhesive-lined tubing
- Conforms well to highly variable substrate dimensions
- Simplifies cable repair
- Passes over large connectors and shrinks onto much smaller cable jackets
- Environmental sealing and excellent insulation
- Resistant to impact and abrasion

*One Step to the Web!*




*Heat Shrinkable Tubing 6:1 with adhesive*



*Due to the high shrink ratio HA67 is suitable for complex shapes and dimensions.*

| | |
|---|---|
| **MATERIAL** | Polyolefin, cross-linked (PO-X) |
| **Shrink Ratio** | 6:1 |
| **Operating Temperature** | -55 °C to +110 °C |
| **Min. Shrink Temperature** | +120 °C |
| **Softening Point Adhesive** | +85 °C |
| **Longitudinal Change After Shrinkage** | -10 % max. |
| **Dielectric Strength** | 20kV/mm according to ASTM D2671 |
| **Flammability** | not flame retardant |

HF ✓ RoHS ✓

| TYPE | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Length (L) | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|
| **HA67-19.0/3.2** | 19.0 | 3.2 | 3.20 | 1,220.0 | Black (BK) | 30-32 | 321-30000 |
| **HA67-33.0/5.5** | 33.0 | 5.5 | 3.40 | 1,220.0 | Black (BK) | 30-32 | 321-30100 |
| **HA67-44.4/7.4** | 44.4 | 7.4 | 3.60 | 1,220.0 | Black (BK) | - | 321-30200 |
| **HA67-50.8/8.3** | 50.8 | 8.3 | 4.80 | 1,220.0 | Black (BK) | - | 321-30300 |
| **HA67-69.8/11.7** | 69.8 | 11.7 | 4.80 | 1,220.0 | Black (BK) | - | 321-30400 |
| **HA67-88.9/17.1** | 88.9 | 17.1 | 4.80 | 1,220.0 | Black (BK) | - | 321-30500 |
| **HA67-119.4/22.9** | 119.4 | 22.9 | 4.80 | 1,220.0 | Black (BK) | - | 321-30600 |
| **HA67-235.0/40.0** | 235.0 | 40.0 | 4.80 | 1,000.0 | Black (BK) | - | 321-30701 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

| Recommended Tools | | | |
|---|---|---|---|
| | 30<br>H5002 | 31<br>H5004 | 32<br>E4500 |
| | 561 | 561 | 560 |

For more information on toolings please refer to the Application Tooling chapter.

## Heat shrinkable tubing 2:1 - Flame retardant

**TR27**

TR27 is used in applications where toxic emissions evolved in a fire must be minimised, e.g. for heavily populated buildings or safety sensitive areas like tunnels, hospitals, schools, theatres, mass transit vehicles and computer centres.

**Features and benefits**

- Thin wall, flexible polyolefin tubing
- Optional available with adhesive or as thick wall version (SR27)
- Halogen free and excellent flame-retardant properties
- Meets various industrial standards



*TR27 is ideal for safety sensitive areas.*

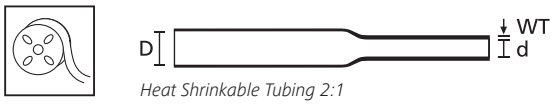
| | |
|---|---|
| **MATERIAL** | Polyolefin, cross-linked (PO-X) |
| **Shrink Ratio** | 2:1 |
| **Operating Temperature** | -40 °C to +105 °C |
| **Min. Shrink Temperature** | +115 °C |
| **Longitudinal Change After Shrinkage** | +5 %/-10 % max. |
| **Dielectric Strength** | 15 kV/mm according to IEC 60684 P2 |
| **EN 45545-2 Classification** | R22 HL3, R23 HL3 |
| **Flammability** | Limited Fire Hazard, Halogen free, Low generation of toxic gases and corrosive acid, Low smoke generation |



*TR27 is mainly used in the railway industry.*

HF ✓ LFH ✓

RoHS ✓




*Heat Shrinkable Tubing 2:1*

| TYPE | Supplied Ø D min. | Size (imperial) | Recov. Ø d max. | Wall (WT) | Reel Length | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **TR27-3.2/1.6** | 3.2 | 1/8 " | 1.6 | 0.51 | 150 m | Black (BK) | 30-32 | 315-50320 |
| **TR27-4.8/2.4** | 4.8 | 3/16 " | 2.4 | 0.51 | 60 m | Black (BK) | 30-32 | 315-50480 |
| **TR27-6.4/3.2** | 6.4 | 1/4 " | 3.2 | 0.64 | 60 m | Black (BK) | 30-32 | 315-50640 |
| **TR27-9.5/4.8** | 9.5 | 3/8 " | 4.8 | 0.64 | 60 m | Black (BK) | 30-32 | 315-50950 |
| **TR27-12.7/6.4** | 12.7 | 1/2 " | 6.4 | 0.64 | 60 m | Black (BK) | 30-32 | 315-51270 |
| **TR27-19.1/9.5** | 19.1 | 3/4 " | 9.5 | 0.76 | 60 m | Black (BK) | 30-32 | 315-51900 |
| **TR27-25.4/12.7** | 25.4 | 1 " | 12.7 | 0.51 | 60 m | Black (BK) | 30-32 | 315-52540 |
| **TR27-38.1/19.1** | 38.1 | 1-1/2 " | 19.1 | 1.02 | 60 m | Black (BK) | 30-32 | 315-53810 |
| **TR27-50.8/25.4** | 50.8 | 2 " | 25.4 | 1.14 | 60 m | Black (BK) | 30-32 | 315-55100 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

| Recommended Tools | | | |
|---|---|---|---|
| | 30<br>H5002 | 31<br>H5004 | 32<br>E4500 |
| | 561 | 561 | 560 |

For more information on toolings please refer to the Application Tooling chapter.

EN 45545-2 DEF STAN

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Heat shrinkable tubing 3:1 - Flame retardant

**TA37 – thin wall adhesive lined**

TA37 shrink tubing has a low smoke index and excellent flame retardant properties to meet strict fire security standards in electrical insulation.

**Features and benefits**

- Thin wall adhesive lined heat shrink tubing
- Halogen free
- Flame retardant
- Combination of these three (halogen free, adhesive lined and flame retardant) product properties is unique

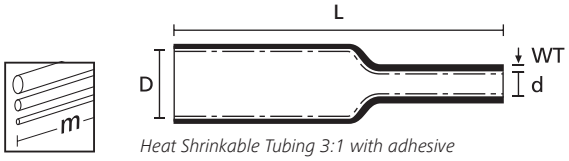


*TA37 - adhesive lined tubing for safety sensitive areas.*

| MATERIAL | Polyolefin, cross-linked (PO-X) |
|---|---|
| **Shrink Ratio** | 3:1 |
| **Operating Temperature** | -40 °C to +105 °C |
| **Min. Shrink Temperature** | +150 °C |
| **Softening Point Adhesive** | +85 °C |
| **Longitudinal Change After Shrinkage** | -15 % max. |
| **EN 45545-2 Classification** | R22 HL3, R23 HL3 |
| **Flammability** | self-extinguishing |

HF ✓ LFH ✓

RoHS ✓




*Heat Shrinkable Tubing 3:1 with adhesive*



*Mainly used in railway applications.*

*One Step to the Web!*

| TYPE | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Length (L) | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|
| **TA37 3-1** | 3.0 | 1.0 | 0.95 | 1.2 m | Black (BK) | 30-32 | 315-13000 |
| **TA37 4.5-1.5** | 4.5 | 1.5 | 1.10 | 1.2 m | Black (BK) | 30-32 | 315-13001 |
| **TA37 6-2** | 6.0 | 2.0 | 1.20 | 1.2 m | Black (BK) | 30-32 | 315-13002 |
| **TA37 9-3** | 9.0 | 3.0 | 1.30 | 1.2 m | Black (BK) | 30-32 | 315-13003 |
| **TA37 12-4** | 12.0 | 4.0 | 1.40 | 1.2 m | Black (BK) | 30-32 | 315-13004 |
| **TA37 19-6** | 19.0 | 6.0 | 1.80 | 1.2 m | Black (BK) | 30-32 | 315-13005 |
| **TA37 24-8** | 24.0 | 8.0 | 2.50 | 1.2 m | Black (BK) | 30-32 | 315-13006 |
| **TA37 40-13** | 40.0 | 13.0 | 2.50 | 1.2 m | Black (BK) | 30-32 | 315-13007 |
| **TA37 50-19** | 50.0 | 19.0 | 4.00 | 1.2 m | Black (BK) | 30-32 | 315-13008 |
| **TA37 75-25** | 75.0 | 25.0 | 3.00 | 1.2 m | Black (BK) | - | 315-13009 |
| **TA37 120-45** | 120.0 | 45.0 | 4.00 | 1.2 m | Black (BK) | - | 315-13011 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

EN 45545-2

For product specific approvals and specifications please refer to the Appendix.

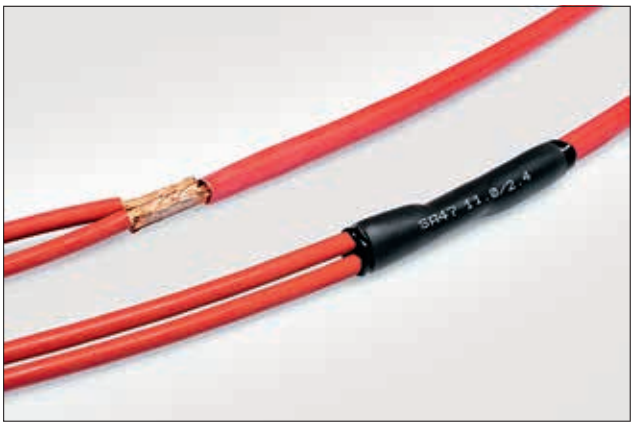
## Heat shrinkable tubing 4:1 - 1.2 m lengths

**SA47 - standard wall adhesive lined**

SA47 is a semi-rigid halogen free polyolefin tubing with a thick inner liner of hot melt adhesive. It has excellent tensile strength and strain relief. The adhesive liner provides excellent moisture protection. Ideal for electrical connections and splices in automobiles. Tubing is transparent and hot melt adhesive is black.

**Features and benefits**

- Flexible, standard wall polyolefin heat shrink tubing
- Excellent tensile strength and strain relief
- Provides excellent moisture protection
- Tubing is clear and hot melt adhesive black
- Provides an environmental sealing of complex parts
- Halogen free

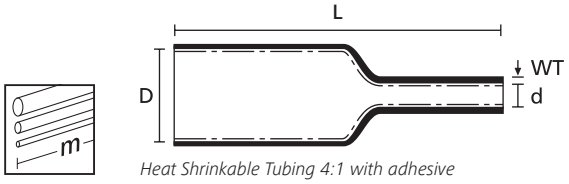


*Heat shrink tubing SA47 for splice application.*

| | |
|---|---|
| **MATERIAL** | Polyolefin, cross-linked (PO-X) |
| **Shrink Ratio** | 4:1 |
| **Operating Temperature** | -40 °C to +125 °C |
| **Min. Shrink Temperature** | +110 °C |
| **Melting Point** | starting from +110 °C |
| **Longitudinal Change After Shrinkage** | -10 % max. |
| **Dielectric Strength** | >20 kV/mm |

HF ✓ RoHS ✓

*One Step to the Web!*




*Heat Shrinkable Tubing 4:1 with adhesive*

**SA47 has been developed with our Automotive partners to eliminate the risk of corrosion around cable splices and terminations.**

**Cut lengths available on request. Please contact us!**

| TYPE | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Length (L) | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|
| **SA47 5.75/1.25** | 5.75 | 1.25 | 1.15 | 1.2 m | Transparent (CL), Black (BK) | 30-32 | 301-10000 |
| **SA47 7.5/1.65** | 7.5 | 1.65 | 1.40 | 1.2 m | Transparent (CL), Black (BK) | 30-32 | 301-10001 |
| **SA47 11.0/2.4** | 11.0 | 2.4 | 1.80 | 1.2 m | Transparent (CL), Black (BK) | 30-32 | 301-10002 |
| **SA47 18.3/4.35** | 18.3 | 4.35 | 2.20 | 1.2 m | Transparent (CL), Black (BK) | 30-32 | 301-10003 |
| **SA47 24/6** | 24.0 | 6.0 | 2.54 | 1.2 m | Transparent (CL), Black (BK) | 30-32 | 301-10005 |
| **SA47 32/8** | 32.0 | 8.0 | 2.54 | 1.2 m | Transparent (CL), Black (BK) | 30-32 | 301-10004 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

| Recommended Tools | | | |
|---|---|---|---|
| | 30<br>H5002 | 31<br>H5004 | 32<br>E4500 |
| | 561 | 561 | 560 |

For more information on toolings please refer to the Application Tooling chapter.

Date of issue: January 2019

## Heat shrinkable tubing 4:1 - 1.2 m lengths

**SA47-LA - standard wall adhesive lined**

SA47-LA is a semi-rigid halogen free polyolefin tubing with an inner liner of hot melt adhesive. It has excellent tensile strength and strain relief. The adhesive liner provides excellent moisture protection. Ideal for electrical connections and splices in automobiles. Tubing is transparent and hot melt adhesive is black.

SA47-LA is specially designed with less adhesive for cable connections.

**Features and benefits**

- Flexible, standard wall polyolefin heat shrink tubing
- Excellent tensile strength and strain relief
- Provides excellent moisture protection
- Tubing is clear and hot melt adhesive black
- Provides an environmental sealing of complex parts
- Halogen free

**SA47 has been developed with our Automotive partners to eliminate the risk of corrosion around cable splices and terminations.**

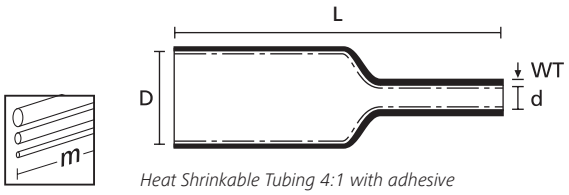
**Cut lengths available on request. Please contact us!**



*Heat shrink tubing SA47-LA for cable connection.*

| | |
|---|---|
| **MATERIAL** | Polyolefin, cross-linked (PO-X) |
| **Shrink Ratio** | 4:1 |
| **Operating Temperature** | -40 °C to +125 °C |
| **Min. Shrink Temperature** | +110 °C |
| **Melting Point** | starting from +110 °C |
| **Longitudinal Change After Shrinkage** | -10 % max. |
| **Dielectric Strength** | >20 kV/mm |

HF ✓ RoHS ✓




*Heat Shrinkable Tubing 4:1 with adhesive*

| TYPE | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Length (L) | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|
| **SA47-LA 5.75/1.25** | 5.75 | 1.25 | 1.15 | 1.2 m | Transparent (CL), Black (BK) | 30-32 | 301-10020 |
| **SA47-LA 7.5/1.65** | 7.5 | 1.65 | 1.40 | 1.2 m | Transparent (CL), Black (BK) | 30-32 | 301-10021 |
| **SA47-LA 11.0/2.4** | 11.0 | 2.4 | 1.80 | 1.2 m | Transparent (CL), Black (BK) | 30-32 | 301-10022 |
| **SA47-LA 18.3/4.35** | 18.3 | 4.35 | 2.20 | 1.2 m | Transparent (CL), Black (BK) | 30-32 | 301-10023 |
| **SA47-LA 24/6** | 24.0 | 6.0 | 2.54 | 1.2 m | Transparent (CL), Black (BK) | 30-32 | 301-10024 |
| **SA47-LA 32/8** | 32.0 | 8.0 | 2.54 | 1.2 m | Transparent (CL), Black (BK) | 30-32 | 301-10025 |
| **SA47-LA 52/13** | 52.0 | 13.0 | 3.00 | 1.2 m | Transparent (CL), Black (BK) | 30-32 | 301-10026 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

| Recommended Tools | | | |
|---|---|---|---|
| | 30<br>H5002 | 31<br>H5004 | 32<br>E4500 |
| | 561 | 561 | 560 |

For more information on toolings please refer to the Application Tooling chapter.

Date of issue: January 2019

## Heat shrinkable tubing 4:1 - 1.2 m lengths

**SA47-HT - standard wall adhesive lined**

SA47-HT is a semi-rigid flame retardant polyolefin tubing with a thick inner liner of hot melt adhesive. The tubing has excellent tensile strength and strain relief. The adhesive liner provides excellent moisture protection. Ideal for electrical connections and splices in automobiles. Suitable for high temperature applications up to 150 °C. Tubing is black and hot melt adhesive is black.

**Features and benefits**

- Flexible, standard wall polyolefin heat shrink tubing
- Excellent tensile strength and strain relief
- Provides excellent moisture protection
- Tubing and hot melt adhesive is black
- Provides an environmental sealing of complex parts
- For high temperature applications up to 150 °C
- Flame retardant



*Heat shrink tubing SA47-HT for 150 °C application.*

*One Step to the Web!*

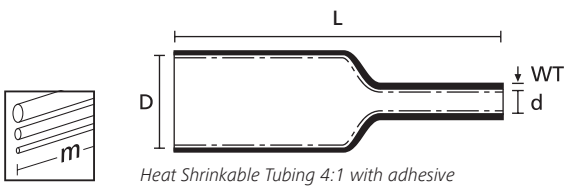
**SA47 has been developed with our Automotive partners to eliminate the risk of corrosion around cable splices and terminations.**

**Cut lengths available on request. Please contact us!**


*SA47-HT provides optimum protection against moisture in high temperature applications.*

| | |
|---|---|
| **MATERIAL** | Polyolefin, cross-linked (PO-X) |
| **Shrink Ratio** | 4:1 |
| **Operating Temperature** | -40 °C to +150 °C |
| **Min. Shrink Temperature** | +130 °C |
| **Melting Point** | starting from +120 °C |
| **Longitudinal Change After Shrinkage** | -10 % max. |
| **Dielectric Strength** | >20 kV/mm |
| **Flammability** | self-extinguishing |

RoHS



*Heat Shrinkable Tubing 4:1 with adhesive*

| TYPE | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Length (L) | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|
| **SA47-HT 7.6/1.7** | 7.6 | 1.7 | 1.52 | 1.2 m | Black (BK) | 30-32 | 301-10010 |
| **SA47-HT 9.0/2.3** | 9.0 | 2.3 | 1.52 | 1.2 m | Black (BK) | 30-32 | 301-10011 |
| **SA47-HT 11.6/2.5** | 11.6 | 2.5 | 2.29 | 1.2 m | Black (BK) | 30-32 | 301-10012 |
| **SA47-HT 17.8/4.4** | 17.8 | 4.4 | 2.54 | 1.2 m | Black (BK) | 30-32 | 301-10013 |
| **SA47-HT 24/6** | 24.0 | 6.0 | 2.54 | 1.2 m | Black (BK) | 30-32 | 301-10015 |
| **SA47-HT 32/8** | 32.0 | 8.0 | 2.54 | 1.2 m | Black (BK) | 30-32 | 301-10014 |

All dimensions in mm. Subject to technical changes. Minimum Order Quantity (MOQ) may differ from package content.

Date of issue: January 2019

## Heat shrinkable tubing 2:1 - Elastomer

**SE28**

SE28 is used for long-term protection of cables and wire harnesses in military equipment, motor sports, and aviation.

**Features and benefits**

- Flexible, high performance elastomeric heat shrink tubing
- Used in aerospace, defence, railway and automotive applications
- Resistant to diesel fuel, aviation and hydrolic fluids
- Provides a reliable protection against abrasion and mechanical damage
- Very suitable for protecting cables and wire harnesses
- For high temperature applications up to 150°C



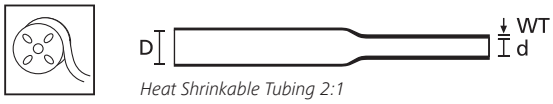
*SE28 tubing.*

| MATERIAL | Elastomer, cross-linked (POA) |
|---|---|
| **Shrink Ratio** | 2:1 |
| **Operating Temperature** | -75 °C to +150 °C |
| **Min. Shrink Temperature** | +170 °C |
| **Longitudinal Change After Shrinkage** | -10 % max. |
| **Dielectric Strength** | 20 kV/mm |
| **Flammability** | self-extinguishing |

RoHS



*SE28 is mainly used in high performance applications.*




*Heat Shrinkable Tubing 2:1*

| TYPE | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Reel Length | Colour | Designation as per VG-Norm | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **SE28 3.2/1.6** | 3.2 | 1.6 | 0.80 | 150 m | Black (BK) | VG 95343 T05 D 001 A | 30-32 | 342-20000 |
| **SE28 4.8/2.4** | 4.8 | 2.4 | 0.90 | 60 m | Black (BK) | VG 95343 T05 D 002 A | 30-32 | 342-20010 |
| **SE28 6.4/3.2** | 6.4 | 3.2 | 1.00 | 60 m | Black (BK) | VG 95343 T05 D 003 A | 30-32 | 342-20020 |
| **SE28 9.5/4.8** | 9.5 | 4.8 | 1.10 | 60 m | Black (BK) | VG 95343 T05 D 004 A | 30-32 | 342-20030 |
| **SE28 12.7/6.4** | 12.7 | 6.4 | 1.30 | 60 m | Black (BK) | VG 95343 T05 D 005 A | 30-32 | 342-20040 |
| **SE28 19.0/9.5** | 19.0 | 9.5 | 1.50 | 30 m | Black (BK) | VG 95343 T05 D 006 A | 30-32 | 342-20050 |
| **SE28 25.4/12.7** | 25.4 | 12.7 | 1.90 | 30 m | Black (BK) | VG 95343 T05 D 007 A | 30-32 | 342-20060 |
| **SE28 38.0/19.0** | 38.0 | 19.0 | 2.50 | 30 m | Black (BK) | VG 95343 T05 D 008 A | 30-32 | 342-20070 |
| **SE28 51.0/25.4** | 51.0 | 25.4 | 3.10 | 30 m | Black (BK) | VG 95343 T05 D 009 A | 30-32 | 342-20080 |
| **SE28 76.0/38.0** | 76.0 | 38.0 | 3.30 | 15 m | Black (BK) | VG 95343 T05 D 010 A | - | 342-20090 |
| **SE28 101.2/51.0** | 101.2 | 51.0 | 3.50 | 10 m | Black (BK) | VG 95343 T05 D 011 A | - | 342-20100 |

All dimensions in mm. Subject to technical changes. Minimum Order Quantity (MOQ) may differ from package content.

| Recommended Tools | | | |
|---|---|---|---|
| | 30<br>H5002 | 31<br>H5004 | 32<br>E4500 |
| | 561 | 561 | 560 |

For more information on toolings please refer to the Application Tooling chapter.

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For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Heat shrinkable tubing 2:1 - PVDF

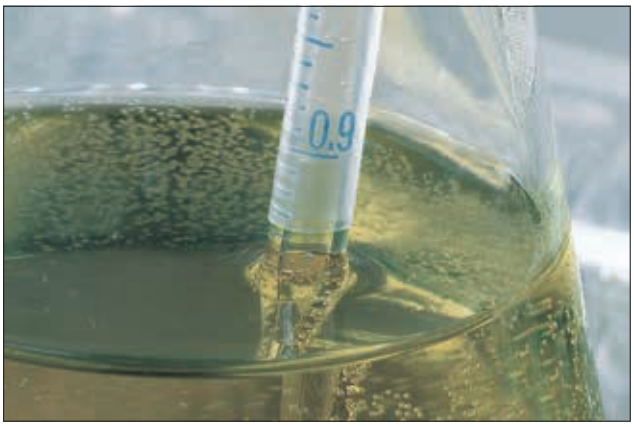
**TK20**

Typical applications of this translucent tubing are where high-temperature performance is required. Also very suitable for applications that ask for visual inspection of covered components, or if a low friction surface is needed. TK20 is also used as oil stop for energy cables.

This thin walled, translucent heat shrink tubing is often used for chemical applications.

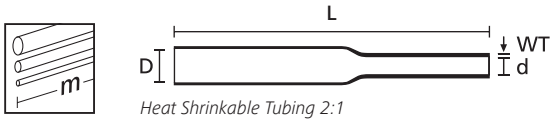
**Features and benefits**

- Semi-rigid heat shrinkable tubing made of PVDF
- Thin wall and tough
- For higher temperature applications
- Very good mechanical strength, abrasion resistance and chemical resistance
- Meets various industrial standards
- Self extinguishing, UL 224 VW1 listed




*This thin walled, translucent heat shrink tubing is often used for chemical applications.*

| MATERIAL | Polyvinylidene Fluoride (PVDF) |
|---|---|
| **Shrink Ratio** | 2:1 |
| **Operating Temperature** | -55 °C to +175 °C |
| **Min. Shrink Temperature** | +175 °C |
| **Longitudinal Change After Shrinkage** | +/-10 % max |
| **Dielectric Strength** | ≥ 30 kV/mm min. according to ASTM D2171 |
| **Flammability** | UL 224 VW-1 |




*Heat Shrinkable Tubing 2:1*

RoHS

| TYPE | Supplied Ø D min. | Size (imperial) | Recov. Ø d max. | Wall (WT) | Length (L) | Colour | Designation as per VG-Norm | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **TK20-1.2/0.6** | 1.2 | 3/64 " | 0.6 | 0.25 | 1.2 m | Transparent (CL) | VG 95343 T05 F 001 M | 30-32 | 331-00129 |
| **TK20-1.6/0.8** | 1.6 | 1/16 " | 0.8 | 0.25 | 1.2 m | Transparent (CL) | VG 95343 T05 F 002 M | 30-32 | 311-00169 |
| **TK20-2.4/1.2** | 2.4 | 3/32 " | 1.2 | 0.25 | 1.2 m | Transparent (CL) | VG 95343 T05 F 003 M | 30-32 | 311-00249 |
| **TK20-3.2/1.6** | 3.2 | 1/8 " | 1.6 | 0.25 | 1.2 m | Transparent (CL) | VG 95343 T05 F 004 M | 30-32 | 311-00329 |
| **TK20-4.8/2.4** | 4.8 | 3/16 " | 2.4 | 0.25 | 1.2 m | Transparent (CL) | VG 95343 T05 F 005 M | 30-32 | 311-00489 |
| **TK20-6.4/3.2** | 6.4 | 1/4 " | 3.2 | 0.30 | 1.2 m | Transparent (CL) | VG 95343 T05 F 006 M | 30-32 | 311-00649 |
| **TK20-9.5/4.8** | 9.5 | 3/8 " | 4.8 | 0.30 | 1.2 m | Transparent (CL) | VG 95343 T05 F 007 M | 30-32 | 311-00959 |
| **TK20-12.7/6.4** | 12.7 | 1/2 " | 6.4 | 0.30 | 1.2 m | Transparent (CL) | VG 95343 T05 F 008 M | 30-32 | 311-01279 |
| **TK20-19.1/9.5** | 19.1 | 3/4 " | 9.5 | 0.43 | 1.2 m | Transparent (CL) | VG 95343 T05 F 009 M | 30-32 | 311-01909 |
| **TK20-25.4/12.7** | 25.4 | 1 " | 12.7 | 0.48 | 1.2 m | Transparent (CL) | VG 95343 T05 F 010 M | 30-32 | 311-02549 |
| **TK20-38.1/19.1** | 38.1 | 1-1/2 " | 19.1 | 0.51 | 1.2 m | Transparent (CL) | - | 30-32 | 311-03819 |
| **TK20-50.8/25.4** | 50.8 | 2 " | 25.4 | 0.51 | 1.2 m | Transparent (CL) | - | 30-32 | 311-05089 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

ASN UL SAE DVE VG

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Heat Shrinkable Tubing 2:1 - Fluoroelastomer

**Viton®-E**

Viton®-E is used for reliable protection against aggressive chemicals in high temperature environments like engine compartments and turbines. It is also used when protective tubings are required to remain flexible at low temperatures.

**Features and benefits**

- High temperature resistant fluoroelastomeric heat shrink tubing
- Very good electrical, chemical and mechanical features
- Resistant to many fuels, oils and lubricants
- Flexible even at very low temperatures




*Viton®-E for flexibility and protection against aggressive chemicals.*

| | |
|---|---|
| **MATERIAL** | Fluoropolymer cross-linked (FPMX) |
| **Shrink Ratio** | 2:1 |
| **Operating Temperature** | -55 °C to +220 °C |
| **Min. Shrink Temperature** | +175 °C |
| **Longitudinal Change After Shrinkage** | -10 % max. |
| **Dielectric Strength** | 15 kV/mm |
| **Flammability** | VG 95343 |
| **Insulation Class** | C (VDE 0530) |






*Heat Shrinkable Tubing 2:1*

RoHS

| TYPE | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Reel Length | Colour | Designation as per VG-Norm | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **VITON®-E-3.2/1.6** | 3.2 | 1.6 | 0.70 | 50 m | Black (BK) | VG 95343 T05 E 001 A | 30-32 | 330-00320 |
| **VITON®-E-4.8/2.4** | 4.8 | 2.4 | 0.80 | 50 m | Black (BK) | VG 95343 T05 E 002 A | 30-32 | 330-00480 |
| **VITON®-E-6.4/3.2** | 6.4 | 3.2 | 0.90 | 50 m | Black (BK) | VG 95343 T05 E 003 A | 30-32 | 330-00640 |
| **VITON®-E-9.5/4.8** | 9.5 | 4.8 | 1.00 | 25 m | Black (BK) | VG 95343 T05 E 004 A | 30-32 | 330-00950 |
| **VITON®-E-12.7/6.4** | 12.7 | 6.4 | 1.20 | 25 m | Black (BK) | VG 95343 T05 E 005 A | 30-32 | 330-01270 |
| **VITON®-E-19.0/9.5** | 19.0 | 9.5 | 1.40 | 25 m | Black (BK) | VG 95343 T05 E 006 A | 30-32 | 330-01900 |
| **VITON®-E-25.4/12.7** | 25.4 | 12.7 | 1.80 | 25 m | Black (BK) | VG 95343 T05 E 007 A | 30-32 | 330-02540 |
| **VITON®-E-38.0/19.0** | 38.0 | 19.0 | 2.40 | 15 m | Black (BK) | VG 95343 T05 E 008 A | 30-32 | 330-03810 |
| **VITON®-E-50.8/25.4** | 50.8 | 25.4 | 2.80 | 15 m | Black (BK) | VG 95343 T05 E 009 A | 30-32 | 330-05080 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

| Recommended Tools | | | |
|---|---|---|---|
| | 30<br>H5002 | 31<br>H5004 | 32<br>E4500 |
| | 561 | 561 | 560 |

For more information on toolings please refer to the Application Tooling chapter.

LEA VG

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Heat Shrinkable Tubing - PTFE

TFE is ideal for high temperature applications, when resistance to aggressive fluids is required or a very thin walled tubing is needed, for example in pH-measuring instruments. TFE tubing is also used to reduce movement due to friction, covering cylinders for example.

**Features and benefits**

- PTFE heat shrink tubing
- Very high temperature resistance
- Extra thin wall translucent tubing
- High abrasion resistance and good resistance against aggressive chemicals
- Available in either 2:1 (TFE2) or 4:1 (TFE4) shrink ratios



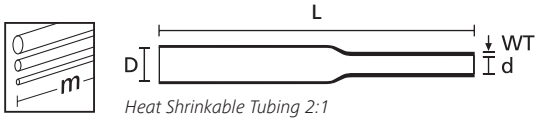
*TFE is available in either 2:1 or 4:1 shrink ratios.*

**Cut lengths available on request. Please contact us!**

| MATERIAL | Polytetrafluoroethylene (PTFE) |
|---|---|
| **Operating Temperature** | -70 °C to +260 °C |
| **Min. Shrink Temperature** | +350 °C |
| **Longitudinal Change After Shrinkage** | -20 % max. |
| **Dielectric Strength** | 40 kV/mm according to DIN 53481 |
| **Flammability** | Non burning |

RoHS

**TFE2 2:1**




*Heat Shrinkable Tubing 2:1*

| TYPE | Supplied Ø D min. | Recov. Ø d max. | Wire Size (AWG) | Wall (WT) | Length (L) | Colour | Shrink Ratio | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **TFE2-30** | 0.86 | 0.38 | 30 | 0.23 | 1.2 m | Transparent (CL) | 2:1 | 30-32 | 336-00079 |
| **TFE2-28** | 0.96 | 0.46 | 28 | 0.23 | 1.2 m | Transparent (CL) | 2:1 | 30-32 | 336-00099 |
| **TFE2-26** | 1.17 | 0.56 | 26 | 0.23 | 1.2 m | Transparent (CL) | 2:1 | 30-32 | 336-00109 |
| **TFE2-24** | 1.27 | 0.69 | 24 | 0.25 | 1.2 m | Transparent (CL) | 2:1 | 30-32 | 336-00139 |
| **TFE2-22** | 1.39 | 0.82 | 22 | 0.25 | 1.2 m | Transparent (CL) | 2:1 | 30-32 | 336-00149 |
| **TFE2-20** | 1.52 | 0.99 | 20 | 0.30 | 1.2 m | Transparent (CL) | 2:1 | 30-32 | 336-00159 |
| **TFE2-18** | 1.93 | 1.25 | 18 | 0.30 | 1.2 m | Transparent (CL) | 2:1 | 30-32 | 336-00199 |
| **TFE2-16** | 2.36 | 1.55 | 16 | 0.30 | 1.2 m | Transparent (CL) | 2:1 | 30-32 | 336-00249 |
| **TFE2-14** | 3.05 | 1.83 | 14 | 0.30 | 1.2 m | Transparent (CL) | 2:1 | 30-32 | 336-00319 |
| **TFE2-12** | 3.81 | 2.26 | 12 | 0.30 | 1.2 m | Transparent (CL) | 2:1 | 30-32 | 336-00399 |
| **TFE2-10** | 4.85 | 2.85 | 10 | 0.30 | 1.2 m | Transparent (CL) | 2:1 | 30-32 | 336-00489 |
| **TFE2-8** | 6.10 | 3.58 | 8 | 0.38 | 1.2 m | Transparent (CL) | 2:1 | 30-32 | 336-00619 |
| **TFE2-6** | 7.67 | 4.52 | 6 | 0.38 | 1.2 m | Transparent (CL) | 2:1 | 30-32 | 336-00779 |
| **TFE2-4** | 9.40 | 5.69 | 4 | 0.38 | 1.2 m | Transparent (CL) | 2:1 | 30-32 | 336-00949 |
| **TFE2-2** | 10.92 | 7.06 | 2 | 0.38 | 1.2 m | Transparent (CL) | 2:1 | 30-32 | 336-01109 |
| **TFE2-0** | 11.94 | 8.81 | 0 | 0.38 | 1.2 m | Transparent (CL) | 2:1 | 30-32 | 336-01209 |

All dimensions in mm. Subject to technical changes. AWG: American Wire Gauge Minimum Order Quantity (MOQ) may differ from package content.

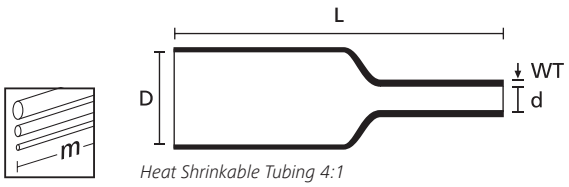
| Recommended Tools | | | |
|---|---|---|---|
| | 30<br>H5002 | 31<br>H5004 | 32<br>E4500 |
| | 561 | 561 | 560 |

For more information on toolings please refer to the Application Tooling chapter.

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## Heat Shrinkable Tubing - PTFE

**TFE4 4:1**




*Heat Shrinkable Tubing 4:1*

| TYPE | Supplied Ø D min. | Recov. Ø d max. | Size (imperial) | Wall (WT) | Length (L) | Colour | Shrink Ratio | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **TFE4-5/64** | 1.98 | 0.64 | 5/64 " | 0.22 | 1.2 m | Transparent (CL) | 4:1 | 30-32 | 339-00209 |
| **TFE4-1/8** | 3.17 | 0.94 | 1/8 " | 0.25 | 1.2 m | Transparent (CL) | 4:1 | 30-32 | 339-00329 |
| **TFE4-3/16** | 4.75 | 1.27 | 3/16 " | 0.30 | 1.2 m | Transparent (CL) | 4:1 | 30-32 | 339-00340 |
| **TFE4-1/4** | 6.35 | 1.60 | 1/4 " | 0.30 | 1.2 m | Transparent (CL) | 4:1 | 30-32 | 339-00649 |
| **TFE4-3/8** | 9.52 | 2.44 | 3/8 " | 0.30 | 1.2 m | Transparent (CL) | 4:1 | 30-32 | 339-00959 |
| **TFE4-1/2** | 12.7 | 3.66 | 1/2 " | 0.38 | 1.2 m | Transparent (CL) | 4:1 | 30-32 | 339-01279 |
| **TFE4-5/8** | 15.87 | 4.52 | 5/8 " | 0.38 | 1.2 m | Transparent (CL) | 4:1 | 30-32 | 339-01599 |
| **TFE4-3/4** | 19.05 | 5.69 | 3/4 " | 0.38 | 1.2 m | Transparent (CL) | 4:1 | 30-32 | 339-01909 |
| **TFE4-1** | 25.4 | 7.06 | 1 " | 0.38 | 1.2 m | Transparent (CL) | 4:1 | 30-32 | 339-02549 |
| **TFE4-1 1/4** | 31.75 | 8.82 | 1-1/4 " | 0.38 | 1.2 m | Transparent (CL) | 4:1 | 30-32 | 339-03189 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

| Recommended Tools | | | |
|---|---|---|---|
| | 30<br>H5002 | 31<br>H5004 | 32<br>E4500 |
| | 561 | 561 | 560 |

For more information on toolings please refer to the Application Tooling chapter.

NSA For product specific approvals and specifications please refer to the Appendix.

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## Materials for Heat Shrinkable Moulded Shapes

### Material Specifications

| | -9 | H | G | B7 | B8 | L |
|---|---|---|---|---|---|---|
| **Material** | Modified elastomer blend | Flexible limited fire hazard material | Fluid resistant elastomer | Semi-rigid flame retarded polyolefin | Semi-rigid flame retarded polyolefin | Flexible flame retarded fluoroelastomer |
| **Operating Temperature** | -55 °C to 120 °C | -55 °C to +105 °C | -75 °C to +150 °C | -55 °C to +135 °C | -55 °C to +100 °C | -55 °C to +200 °C |
| **Min. Shrink Temperature** | +135 °C | +135 °C | +135 °C | +135 °C | +135 °C | +175 °C |
| **Specifications** | SCX15112 | DEF STAN 59-97, BSG198 Part 5, VG 95343 NAVSEA 5617649 | DEF STAN 59-97, BSG198 Part 5, VG 95343 Part 6, 18 | MIL-I-81765/1 Type 1, DEF STAN 59-97, BSG198 Part 5 | EA-TS 09-11 | DEF STAN 59-97, BSG198 Part 5, MIL-81765/4 |
| **Tensile Strength** | 12 MPa | 10 MPa | 15 MPa | 13 MPa | 15 MPa | 12 MPa |
| **Elongation at break** | 500 % | 450 % | 580 % | 500 % | 500 % | 300 % |
| **Dielectric Strength** | 20 kV/mm | 15 kV/mm | 14 kV/mm | 14 kV/mm | 15 kV/mm | 8 kV/mm |
| **Flammability for Material** | excellent | excellent | excellent | excellent | good | excellent |
| **Features and benefits** | Good physical and reasonable chemical resistance | Low smoke Halogen free | Excellent resistance to fuels | Good physical and chemical resistance | Good physical and reasonable chemical resistance | High temperature excellent chemical resistance |
| **Typical Application** | Military and general high performance harnessing | Ships, submarines & railways | Military and general high performance harnessing | Military and general high performance harnessing | Power/utility shapes | Military and high performance harnessing |

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## Adhesive for Heat Shrinkable Moulded Shapes

| Adhesive Specifications | W / W2 | W8 | W21 | W24 | WM250 | V9500 | HMT200A |
|---|---|---|---|---|---|---|---|
| **Adhesive** | Hot melt adhesive | Hot melt adhesive | Hot melt adhesive | Hot melt adhesive | Hot melt adhesive | Two part, black, epoxy adhesive | Hot melt adhesive tape |
| **Operating Temperature** | -55 °C to +80 °C | -55 °C to +105 °C | -55 °C to 120 °C | -75 °C to +200 °C | -55 °C to +80 °C | -75 °C to +150 °C | -55 °C to +105 °C |
| **Softening Point Adhesive** | +95 °C | +110 °C | +120 °C | | +95 °C | | +110 °C |
| **Supplied Form** | pre-applied | pre-applied | pre-applied | pre-applied | pre-applied | cardridge | tape |
| **Shelf Life** | 5 years | 5 years | 5 years | 5 years | 5 years | 18 months | 5 years |
| **Solvent Resistance** | Fair under splash conditions | Fair under splash conditions | Saline: Very good<br>De-icing fluid: Good<br>Diesel: Excellent<br>Lubricating Oil: Good<br>Hydraulic Oil: Excellent<br>Aviation Fuel: Good<br>Automotive Fuel: Good | De-icing fluid: Excellent<br>Petrol: Excellent<br>Lubricating Oil: Excellent<br>Hydraulic Oil: Excellent | Fair under splash conditions | De-icing fluid: Excellent, Petrol: Excellent, Lubricating Oil: Excellent, Hydraulic Oil: Excellent | Fair under splash conditions |




**A wider range of material / adhesive combinations are available in the Moulded Shapes Catalogue.**

## Order Example

Type:

XXX(X)-X(X)-XXXX(XX)

- Adhesive
- Material
- Size
- Series

**Example:**

2 0 6 - 3 - G W 2 4

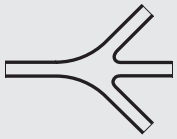
- Adhesive W24
- G Material
- Short version
- Series 200



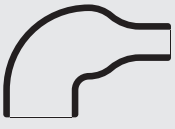

**Other product styles are available. Please refer to Moulded Shapes catalogue.**

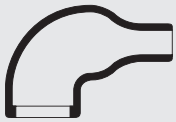
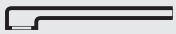
*One Step to the Web!*


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| **Low Voltage** Helashrink 1600 Series |  | 283 |

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## Low Profile Convolute Boots

**Helashrink 313C Series, with adapter lip**

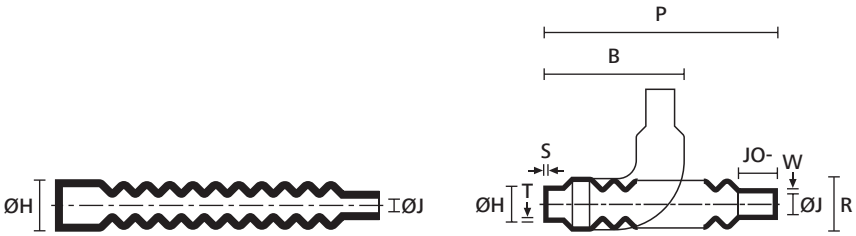
**Features and benefits**

- For circular grooved adapters to provide strain relief
- Excellent environmental sealing with adhesive
- Convoluted design grants flexibility for different cable outlet angles

**For Material / Adhesive information please refer to page 256, 257.**



*313C722-774 Series supplied / fully recovered.*




*a: Expanded form (supplied)*

*b: Fully recovered form (after heating)*

| TYPE | ØH min. a | ØH max. b | ØJ min. a | ØJ max. b | P ± 10 % | R max. | JO ± 10 % | W min | B nom | T ± 0.5 | S ± 0.5 | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **313C722-9** | 14.2 | 6.9 | 11.1 | 4.8 | 120.6 | 21.1 | 17.3 | 1.5 | 62.4 | 1.3 | 1.5 | 422-00001 |
| **313C732-9** | 22.4 | 11.7 | 17.7 | 8.1 | 133.3 | 26.5 | 19.8 | 1.5 | 67.8 | 1.3 | 1.5 | 422-00101 |
| **313C743-9** | 34.0 | 17.5 | 26.9 | 12.7 | 146.0 | 32.7 | 22.3 | 1.5 | 73.4 | 1.3 | 1.8 | 422-00201 |
| **313C753-9** | 44.2 | 22.3 | 36.5 | 17.5 | 158.7 | 37.8 | 25.4 | 1.5 | 78.2 | 1.3 | 1.8 | 422-00302 |
| **313C764-9** | 53.8 | 40.6 | 45.7 | 22.3 | 171.4 | 42.9 | 28.4 | 1.5 | 82.8 | 2.0 | 1.8 | 422-00400 |
| **313C774-9** | 77.2 | 40.6 | 54.6 | 22.8 | 236.2 | 62.2 | 25.4 | 1.5 | 138.4 | 2.0 | 2.0 | 422-00501 |

All dimensions in mm. Subject to technical changes.
For these moulded shapes a wide range of material / adhesive combinations are available. Please refer to the Moulded Shapes Catalogue.

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## Low Profile Shim Boots

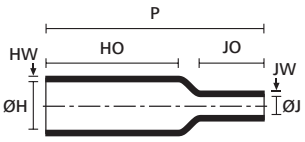
**Helashrink 313E Series, without adapter lip**

### Features and benefits

- Used to build up or shim a cable diameter
- Facilitates better fit for components in cable harness




*a: Expanded form (supplied)*




*b: Fully recovered form (after heating)*



*313E445-457 Series supplied / fully recovered.*

| TYPE | ØH min. a | ØH max. b | ØJ min. a | ØJ max. b | P ± 10 % | HO ± 10 % | HW ± 25 % | JW ± 25 % | JO ± 10 % | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **313E445-9** | 12.7 | 12.7 | 11.1 | 3.3 | 63.5 | 41.1 | 1.5 | 1.5 | 15.7 | 422-10000 |
| **313E447-9** | 20.8 | 14.7 | 20.6 | 9.9 | 63.5 | 41.1 | 1.5 | 1.5 | 16.5 | 422-10100 |
| **313E455-9** | 22.1 | 22.1 | 11.2 | 3.3 | 53.3 | 27.9 | 2.3 | 1.5 | 15.7 | 422-10200 |
| **313E457-9** | 22.1 | 22.1 | 20.6 | 9.9 | 53.3 | 27.9 | 2.3 | 1.5 | 14.0 | 422-10300 |

All dimensions in mm. Subject to technical changes.
For these moulded shapes a wide range of material / adhesive combinations are available. Please refer to the Moulded Shapes Catalogue.

## Low Profile Straight Boots

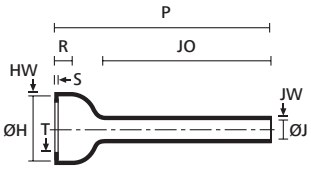
**Helashrink 313F Series, with adapter lip**

### Features and benefits

- Connector strain relief for small cable diameters requiring high shrink ratio




*a: Expanded form (supplied)*




*b: Fully recovered form (after heating)*



*313F322-396 Series supplied / fully recovered.*

| TYPE | ØH min. a | ØH max. b | ØJ min. a | ØJ max. b | P ± 10 % | R ± 15 % | T ± 0.8 | JO ± 10 % | HW ± 1.5 | JW ± 0.8 | S ± 1.5 | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **313F322-9** | 23.8 | 9.9 | 17.2 | 6.6 | 105.9 | 11.6 | 1.3 | 86.3 | 1.5 | 1.5 | 1.5 | 422-20000 |
| **313F332-9** | 27.1 | 13.2 | 20.8 | 7.6 | 121.1 | 12.1 | 1.3 | 98.5 | 1.5 | 1.5 | 1.5 | 422-20100 |
| **313F343-9** | 30.9 | 18.5 | 24.3 | 8.9 | 138.6 | 12.1 | 1.3 | 112.7 | 1.7 | 1.5 | 1.7 | 422-20200 |
| **313F353-9** | 35.6 | 22.1 | 28.7 | 10.1 | 159.5 | 12.1 | 1.3 | 130.8 | 1.7 | 1.5 | 1.7 | 422-20300 |
| **313F364-9** | 38.8 | 28.2 | 31.4 | 10.9 | 177.8 | 13.9 | 1.8 | 142.2 | 1.7 | 1.5 | 1.7 | 422-20400 |
| **313F374-9** | 42.2 | 32.2 | 38.3 | 12.7 | 203.2 | 15.2 | 1.8 | 163.0 | 1.7 | 1.5 | 1.7 | 422-20500 |
| **313F385-9** | 51.5 | 45.4 | 45.4 | 14.9 | 203.2 | 15.2 | 1.8 | 157.7 | 1.7 | 1.7 | 1.7 | 422-20600 |
| **313F396-9** | 62.7 | 45.4 | 53.3 | 16.7 | 228.6 | 16.0 | 1.8 | 153.1 | 1.7 | 1.7 | 1.7 | 422-20700 |

All dimensions in mm. Subject to technical changes.
For these moulded shapes a wide range of material / adhesive combinations are available. Please refer to the Moulded Shapes Catalogue.

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## Low Profile Right Angle Boots

**Helashrink 333F-Series, with adapter lip, 90° angle**

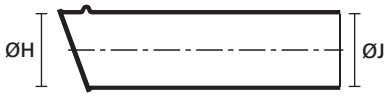
**Features and benefits**

- Connector strain relief for small cable diameters requiring high shrink ratio
- Right angle connector housing with long cable entry and inner lip

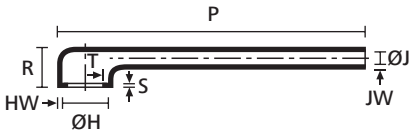
**For Material / Adhesive information please refer to page 256, 257.**



*333F322-385 series as supplied / recovered.*




*a: Expanded form (supplied)*




*b: Fully recovered form (after heating)*

| TYPE | ØH min. a | ØH max. b | ØJ min. a | ØJ max. b | P ± 10 % | R ± 15 % | T ± 0.8 | HW ± 1.5 | JW ± 0.8 | S ± 1.5 | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **333F322-9** | 23.8 | 9.9 | 17.2 | 6.6 | 105.1 | 18.5 | 1.3 | 1.5 | 1.5 | 1.5 | 422-30000 |
| **333F332-9** | 27.1 | 13.2 | 20.8 | 7.6 | 115.8 | 19.8 | 1.3 | 1.5 | 1.5 | 1.5 | 422-30004 |
| **333F343-9** | 30.9 | 18.5 | 24.3 | 8.9 | 146.3 | 20.8 | 1.3 | 1.7 | 1.5 | 1.7 | 422-30100 |
| **333F353-9** | 35.3 | 21.6 | 28.7 | 10.1 | 172.2 | 21.8 | 1.3 | 1.7 | 1.5 | 1.7 | 422-30200 |
| **333F364-9** | 38.8 | 27.9 | 31.4 | 10.9 | 185.1 | 24.1 | 1.8 | 1.7 | 1.5 | 1.7 | 422-30301 |
| **333F374-9** | 45.2 | 34.0 | 38.3 | 12.1 | 213.6 | 27.4 | 1.8 | 1.7 | 1.5 | 1.7 | 422-30400 |
| **333F385-9** | 51.5 | 41.1 | 44.4 | 15.0 | 224.5 | 29.4 | 1.7 | 1.7 | 1.7 | 1.7 | 422-30500 |

All dimensions in mm. Subject to technical changes.
For these moulded shapes a wide range of material / adhesive combinations are available. Please refer to the Moulded Shapes Catalogue.

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## Low Profile Transition Boots

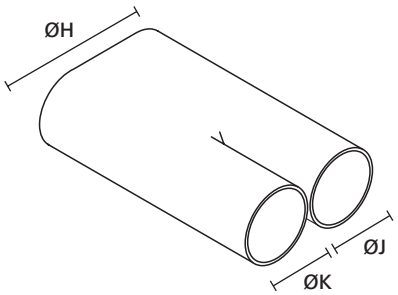
**Helashrink 412H Series, side breakout**

### Features and benefits

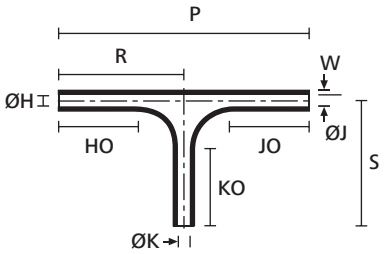
- Connector cable strain relief
- Used with circular adaptors



*412H622-625 Series supplied / fully recovered.*




*a: Expanded form (supplied)*




*b: Fully recovered form (after heating)*

| TYPE | ØH min. a | ØH max. b | ØJ/K min. a | ØJ/K max. b | HO/JO/KO ± 10% | P ± 10 % | W min | R/S nom | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **412H622-9** | 19.8 | 6.6 | 13.2 | 6.6 | 25.4 | 80.7 | 1.0 | 40.3 | 422-40000 |
| **412H623-9** | 34.2 | 11.4 | 22.8 | 11.4 | 41.1 | 120.3 | 1.3 | 60.1 | 422-40100 |
| **412H624-9** | 60.1 | 20.0 | 40.1 | 20.0 | 63.5 | 175.7 | 1.5 | 87.8 | 422-40200 |
| **412H625-9** | 83.3 | 33.2 | 54.8 | 33.2 | 88.9 | 242.3 | 1.7 | 121.1 | 422-40300 |

All dimensions in mm. Subject to technical changes.
For these moulded shapes a wide range of material / adhesive combinations are available. Please refer to the Moulded Shapes Catalogue.

Date of issue: January 2019

## Low Profile Transition Boots

**Helashrink 492H Series, 1 to 2 cables**

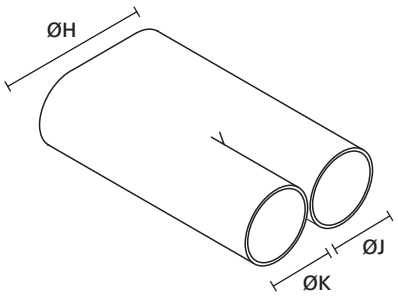
**Features and benefits**

- For cable harness breakouts or transitions
- Strain relief, sealing and mechanical protection

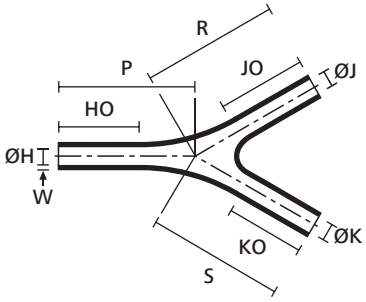
**For Material / Adhesive information please refer to page 256, 257.**



*492H412-415 Series supplied / fully recovered.*




*a: Expanded form (supplied)*




*b: Fully recovered form (after heating)*

| TYPE | ØH min. a | ØH max. b | ØJ/K min. a | ØJ/K max. b | HO/JO/KO ± 15% | W min | P/R/S nom | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **492H412-9** | 19.8 | 6.6 | 13.2 | 6.6 | 25.4 | 1.0 | 40.6 | 422-50000 |
| **492H413-9** | 34.2 | 11.4 | 22.8 | 11.4 | 41.1 | 1.3 | 62.9 | 422-50101 |
| **492H414-9** | 60.1 | 20.0 | 40.1 | 20.0 | 63.5 | 1.5 | 94.7 | 422-50202 |
| **492H415-9** | 83.3 | 33.2 | 54.8 | 33.2 | 49.7 | 1.7 | 133.8 | 422-50302 |

All dimensions in mm. Subject to technical changes.
For these moulded shapes a wide range of material / adhesive combinations are available. Please refer to the Moulded Shapes Catalogue.

Date of issue: January 2019

## Low Profile Transition Boots

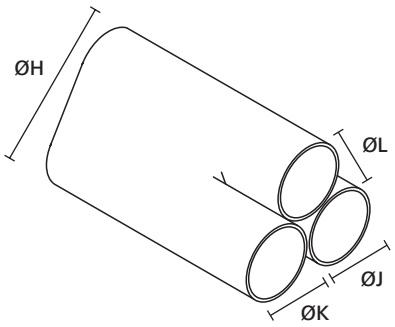
**Helashrink 573H Series, 1 to 3 cables**

### Features and benefits

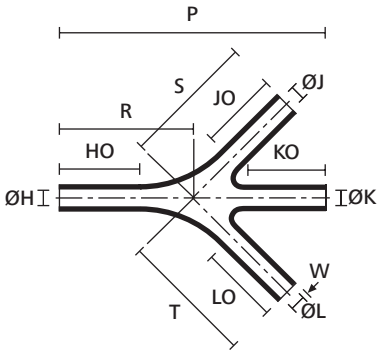
- For cable harness breakouts or transitions
- Strain relief, sealing and mechanical protection



*573H532-535 Series supplied / fully recovered.*




*a: Expanded form (supplied)*




*b: Fully recovered form (after heating)*

| TYPE | ØH min. a | ØH max. b | ØJ/K/L min. a | ØJ/K/L max. b | P nom | R/S/T nom | W min | HO/JO/ KO/LO ± 15% | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **573H532-9** | 19.8 | 6.6 | 13.2 | 6.6 | 85.8 | 42.9 | 1.0 | 25.4 | 422-60000 |
| **573H533-9** | 34.2 | 11.4 | 20.5 | 11.4 | 135.6 | 67.8 | 1.3 | 41.1 | 422-60100 |
| **573H534-9** | 60.1 | 20.0 | 36.0 | 20.0 | 207.2 | 103.6 | 1.5 | 63.5 | 422-60202 |
| **573H535-9** | 99.8 | 33.2 | 54.8 | 33.2 | 294.6 | 147.3 | 1.7 | 88.9 | 422-60302 |

All dimensions in mm. Subject to technical changes.
For these moulded shapes a wide range of material / adhesive combinations are available. Please refer to the Moulded Shapes Catalogue.

Date of issue: January 2019

## Bottle Shapes, VG style

**Helashrink 150 Series, with rib**

**Features and benefits**

- Use in conjunction with circular grooved adaptors
- Strengthened strain relief by usage of an additional inner lip
- Excellent protection against environment impacts

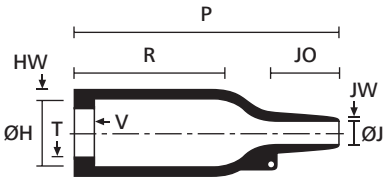
**For Material / Adhesive information please refer to page 256, 257.**



*150 Series boot recovered onto a connectors.*




*a: Expanded form (supplied)*




*b: Fully recovered form (after heating)*



*150 Series supplied.*

| TYPE | ØH min. a | ØH max. b | ØJ min. a | ØJ max. b | P ± 10 % | R ± 10 % | JO ± 10 % | HW ± 20 % | JW ± 20 % | V max | T ± 20 % | Designation as per VG-Norm | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **152-41-G** | 24.0 | 10.5 | 24.0 | 6.0 | 26.0 | 9.0 | 10.0 | 1.6 | 0.5 | 3.3 | 1.0 | VG 95343 T06 A 001 A | 401-52780 |
| **152-42-G** | 24.0 | 10.5 | 24.0 | 6.0 | 38.0 | 21.0 | 10.0 | 1.6 | 0.5 | 3.3 | 1.0 | VG 95343 T06 B 001 A | 401-52880 |
| **153-41-G** | 25.0 | 14.0 | 9.0 | 3.5 | 40.0 | 13.0 | 16.0 | 1.8 | 0.5 | 3.3 | 1.0 | VG 95343 T06 A 002 A | 401-53780 |
| **153-42-G** | 25.0 | 14.0 | 9.0 | 3.5 | 55.0 | 28.0 | 16.0 | 1.8 | 0.5 | 3.3 | 1.0 | VG 95343 T06 B 002 A | 401-53880 |
| **154-41-G** | 30.0 | 14.0 | 30.0 | 6.0 | 43.0 | 20.0 | 13.0 | 1.8 | 1.0 | 3.3 | 1.0 | VG 95343 T06 A 003 A | 401-54780 |
| **154-42-G** | 30.0 | 14.0 | 30.0 | 6.0 | 55.0 | 32.0 | 13.0 | 1.8 | 1.0 | 3.3 | 1.0 | VG 95343 T06 B 003 A | 401-54880 |
| **155-42-G** | 31.0 | 18.0 | 31.0 | 7.0 | 67.0 | 35.0 | 18.0 | 1.8 | 1.0 | 3.3 | 1.0 | VG 95343 T06 B 004 A | 401-55880 |
| **156-41-G** | 36.0 | 22.5 | 36.0 | 8.5 | 60.0 | 22.0 | 20.0 | 2.0 | 1.0 | 3.3 | 1.0 | VG 95343 T06 A 005 A | 401-56780 |
| **156-42-G** | 36.0 | 22.5 | 36.0 | 8.5 | 80.0 | 42.0 | 20.0 | 2.0 | 1.0 | 3.3 | 1.0 | VG 95343 T06 B 005 A | 401-56880 |
| **157-41-G** | 43.0 | 28.0 | 43.0 | 10.0 | 60.0 | 21.0 | 20.0 | 2.2 | 1.0 | 3.3 | 1.7 | VG 95343 T06 A 006 A | 401-57780 |
| **157-42-G** | 43.0 | 28.0 | 43.0 | 10.0 | 79.0 | 41.0 | 20.0 | 2.2 | 1.0 | 3.3 | 1.7 | VG 95343 T06 B 006 A | 401-57880 |
| **157-43-G** | 43.0 | 28.0 | 43.0 | 10.0 | 99.0 | 61.0 | 20.0 | 2.2 | 1.0 | 3.3 | 1.7 | VG 95343 T06 C 001 A | 401-57980 |
| **158-41-G** | 60.0 | 35.0 | 60.0 | 16.0 | 90.0 | 32.0 | 38.0 | 3.2 | 1.5 | 3.3 | 1.7 | VG 95343 T06 A 007 A | 401-58780 |
| **158-42-G** | 60.0 | 35.0 | 60.0 | 16.0 | 110.0 | 52.0 | 38.0 | 3.2 | 1.5 | 3.3 | 1.7 | VG 95343 T06 B 007 A | 401-58880 |
| **158-43-G** | 60.0 | 35.0 | 60.0 | 16.0 | 130.0 | 72.0 | 38.0 | 3.2 | 1.5 | 3.3 | 1.7 | VG 95343 T06 C 002 A | 401-58980 |
| **159-41-G** | 66.0 | 45.0 | 66.0 | 17.0 | 130.0 | 50.0 | 50.0 | 3.8 | 2.0 | 3.3 | 2.0 | VG 95343 T06 A 008 A | 401-59780 |
| **159-42-G** | 66.0 | 45.0 | 66.0 | 17.0 | 150.0 | 70.0 | 50.0 | 3.8 | 2.0 | 3.3 | 2.0 | VG 95343 T06 B 008 A | 401-59880 |
| **159-43-G** | 66.0 | 45.0 | 66.0 | 17.0 | 171.0 | 90.0 | 50.0 | 3.8 | 2.0 | 3.3 | 2.0 | VG 95343 T18 C 003 A | 401-59980 |
| **160-41-G** | 82.0 | 58.0 | 82.0 | 27.0 | 137.0 | 37.0 | 62.0 | 3.8 | 3.8 | 3.3 | 2.0 | VG 95343 T06 A 009 A | 401-60780 |
| **160-42-G** | 82.0 | 58.0 | 82.0 | 27.0 | 158.0 | 58.0 | 62.0 | 3.8 | 3.8 | 3.3 | 2.0 | VG 95343 T06 B 009 A | 401-60880 |
| **160-43-G** | 82.0 | 58.0 | 82.0 | 27.0 | 213.0 | 113.0 | 62.0 | 3.8 | 3.8 | 3.3 | 2.0 | VG 95343 T06 C 004 A | 401-60980 |

All dimensions in mm. Subject to technical changes.

DEF STAN LEA VG

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Bottle Shapes, MIL-Style

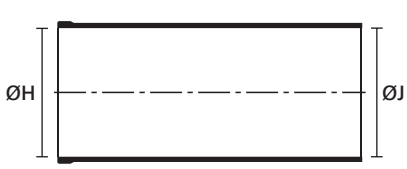
**Helashrink 100 Series, with rib**



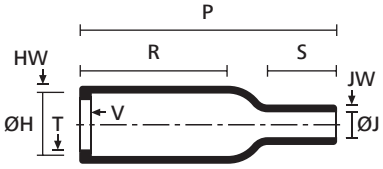
*100 series supplied / fully recovered.*

**Features and benefits**

- With circular grooved adaptor for strain relief
- Combine with complementary adhesives for environmental sealing
- Suitable for small cable diameters




*a: Expanded form (supplied)*




*b: Fully recovered form (after heating)*

| TYPE | ØH min. a | ØH max. b | ØJ min. a | ØJ max. b | P ± 10 % | R ± 10 % | HW ± 20 % | JW ± 20 % | V ± 10 % | T ± 20 % | S nom | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **113-4-G** | 10.7 | 7.9 | 4.6 | 2.0 | 25.4 | 14.5 | 1.3 | 1.0 | 3.0 | 1.0 | 4.6 | 401-13480 |

All dimensions in mm. Subject to technical changes.

## Bottle Shapes

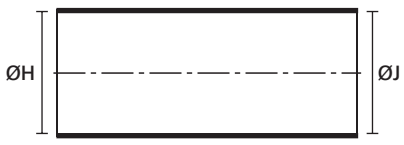
**Helashrink 100 Series, without rib**



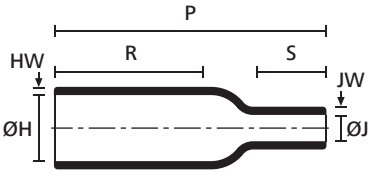
*100 series supplied / fully recovered.*

**Features and benefits**

- Strain relief for connector cable
- Easy re-entry for repair when combined with hot melt adhesive
- For mechanical protection and protection against environment impacts




*a: Expanded form (supplied)*




*b: Fully recovered form (after heating)*

| TYPE | ØH min. a | ØH max. b | ØJ min. a | ØJ max. b | P ± 10 % | R max. | HW ± 20 % | JW ± 30 % | S nom | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **113-1-G** | 10.7 | 7.9 | 4.6 | 2.0 | 25.4 | 14.5 | 1.3 | 1.0 | 4.6 | 401-13180 |

All dimensions in mm. Subject to technical changes.

Date of issue: January 2019

## Long Outlet Shape, VG style

**Helashrink 130 Series, with rib, low profile**

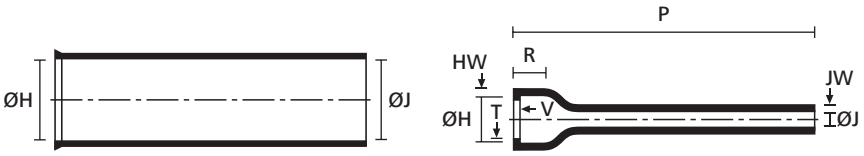
**Features and benefits**

- Low profile and lightweight
- Typically used on airborne harnesses
- Rib locates on circular backshell

**For Material / Adhesive information please refer to page 256, 257.**



*135-1-G as supplied / fully recovered.*




*a: Expanded form (supplied)*

*b: Fully recovered form (after heating)*

| TYPE | ØH min. a | ØH max. b | ØJ min. a | ØJ max. b | P ± 10 % | R ± 10 % | HW ± 20 % | JW ± 20 % | V max | T ± 10 % | Designation as per VG-Norm | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **129-1-G** | 22.0 | 12.0 | 22.0 | 6.5 | 76.0 | 12.0 | 1.5 | 1.1 | 3.3 | 1.0 | VG 95343 T06 D 001 A | 401-29180 |
| **130-1-G** | 25.5 | 15.0 | 25.5 | 7.5 | 83.0 | 12.0 | 1.5 | 1.1 | 3.3 | 1.0 | VG 95343 T06 D 002 A | 401-30180 |
| **131-1-G** | 29.0 | 19.0 | 29.0 | 8.5 | 89.0 | 12.0 | 1.8 | 1.1 | 3.3 | 1.0 | VG 95343 T06 D 003 A | 401-31180 |
| **132-1-G** | 34.0 | 23.0 | 34.0 | 10.0 | 102.0 | 12.0 | 1.8 | 1.1 | 3.3 | 1.0 | VG 95343 T06 D 004 A | 401-32180 |
| **133-1-G** | 37.0 | 30.0 | 37.0 | 11.0 | 108.0 | 14.0 | 2.0 | 1.1 | 3.3 | 1.7 | VG 95343 T06 D 005 A | 401-33180 |
| **134-1-G** | 43.5 | 34.0 | 43.5 | 12.0 | 114.0 | 15.0 | 2.0 | 1.1 | 3.3 | 1.7 | VG 95343 T06 D 006 A | 401-34180 |
| **135-1-G** | 50.0 | 41.0 | 50.0 | 14.5 | 118.0 | 15.0 | 2.3 | 1.4 | 3.3 | 1.7 | VG 95343 T06 D 007 A | 401-35180 |
| **136-1-G** | 62.5 | 47.0 | 62.5 | 18.0 | 121.0 | 16.0 | 2.5 | 1.4 | 3.3 | 2.0 | VG 95343 T06 D 008 A | 401-36180 |
| **138-1-G** | 69.0 | 60.0 | 69.0 | 20.0 | 127.0 | 16.0 | 2.5 | 1.4 | 3.3 | 2.0 | VG 95343 T06 D 009 A | 401-38180 |

All dimensions in mm. Subject to technical changes.

DEF STAN DVE VG

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Bottle Shapes, VG style

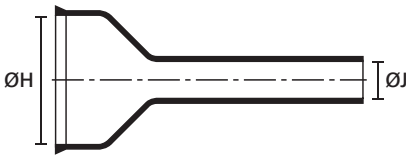
**Helashrink 170 Series, with rib**

### Features and benefits

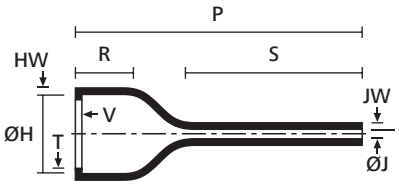
- Cable strain relief for partially loaded connectors
- Small cable diameters
- Use with our W24 adhesive for excellent chemical resistance



*177-1-G as supplied / fully recovered.*




*a: Expanded form (supplied)*




*b: Fully recovered form (after heating)*

| TYPE | ØH min. a | ØH max. b | ØJ min. a | ØJ max. b | P ± 10 % | R ± 10 % | T ± 20 % | HW ± 20 % | JW nom. | V max | S nom | Designation as per VG-Norm | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **176-1-G** | 19.3 | 13.0 | 6.3 | 2.1 | 60.0 | 11.7 | 1.0 | 1.5 | 1.1 | 3.3 | 38.0 | VG 95343 T06 D 011 A | 401-76180 |
| **177-1-G** | 26.1 | 19.1 | 7.6 | 2.6 | 74.0 | 12.2 | 1.0 | 1.8 | 1.1 | 3.3 | 45.0 | VG 95343 T06 D 012 A | 401-77180 |
| **178-1-G** | 34.2 | 26.0 | 9.6 | 3.1 | 84.0 | 12.2 | 1.0 | 1.8 | 1.1 | 3.3 | 51.0 | VG 95343 T06 D 013 A | 401-78180 |
| **179-1-G** | 43.6 | 34.1 | 11.4 | 3.6 | 100.0 | 12.2 | 1.7 | 1.8 | 1.1 | 3.3 | 58.0 | VG 95343 T06 D 014 A | 401-79180 |

All dimensions in mm. Subject to technical changes.

DEF STAN VG

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Bottle Shapes, VG style

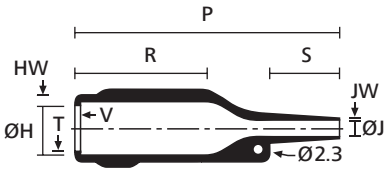
**Helashrink 190 Series, with external ribs**

### Features and benefits

- Specifically for small audio connectors
- Multiple external ribs to improve grip in harsh conditions




*a: Expanded form (supplied)*




*b: Fully recovered form (after heating)*



*199-4-G supplied / fully recovered.*

| TYPE | ØH min. a | ØH max. b | ØJ min. a | ØJ max. b | P ± 10 % | R ± 10 % | HW ± 20 % | JW ± 20 % | V ± 10 % | T ± 20 % | S nom | Designation as per VG-Norm | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **199-4-G** | 17.5 | 14.0 | 7.0 | 4.3 | 70.0 | 35.0 | 1.8 | 0.5 | 1.5 | 1.0 | 20.0 | VG 95343 T06 A 010 A | 401-99480 |

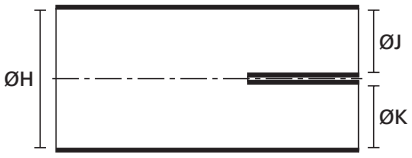
All dimensions in mm. Subject to technical changes.

## 2-Way Outlet Shapes

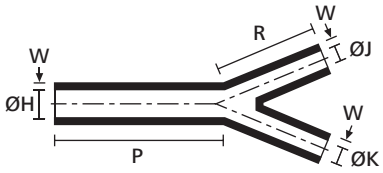
**Helashrink 200 Series, low profile**

### Features and benefits

- For harnesses which route multi-core cables in different directions
- High ratio expansion for quick and easy installation
- Mechanical tension relief




*a: Expanded form (supplied)*




*b: Fully recovered form (after heating)*



*200 series supplied / fully recovered.*

| TYPE | ØH min. a | ØH max. b | ØJ min. a | ØJ max. b | ØK min. a | ØK max. b | P ± 10 % | R ± 10 % | W ± 20 % | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **201-1-G** | 19.0 | 9.4 | 14.0 | 6.4 | 14.0 | 6.4 | 50.8 | 30.5 | 1.5 | 402-01180 |
| **201-2-G** | 31.8 | 9.4 | 15.7 | 6.4 | 15.7 | 6.4 | 50.8 | 30.5 | 1.5 | 402-01220 |

All dimensions in mm. Subject to technical changes.

DEF STAN VG

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## 2-Way Outlet Shapes, VG style

**Helashrink 200 Series**

**Features and benefits**

- Mechanical tension relief in cable harnesses

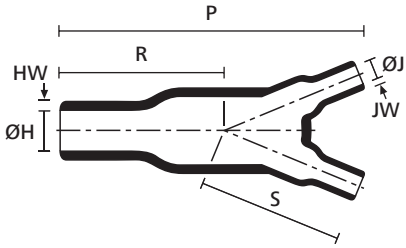
**For Material / Adhesive information please refer to page 256, 257.**



*Two-way outlet shape 223-2 supplied / fully recovered.*




*a: Expanded form (supplied)*




*b: Fully recovered form (after heating)*

| TYPE | ØH min. a | ØH max. b | ØJ min. a | ØJ max. b | P ± 10 % | R ± 10 % | HW ± 20 % | JW nom. | S nom | Designation as per VG-Norm | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **206-1-G** | 13.0 | 6.0 | 7.0 | 3.0 | 41.0 | 19.0 | 1.5 | 1.0 | 19.0 | VG 95343 T08 C 001 A | 402-06180 |
| **212-1-G** | 14.5 | 8.0 | 8.5 | 5.5 | 136.0 | 83.0 | 2.3 | 2.0 | 63.0 | VG 95343 T08 C 005 A | 402-12180 |
| **213-1-G** | 17.3 | 7.9 | 11.1 | 7.9 | 140.0 | 83.1 | 2.3 | 1.0 | 64.0 | - | 402-13180 |
| **203-1-G** | 27.0 | 12.0 | 13.0 | 6.0 | 80.0 | 38.0 | 2.5 | 1.5 | 43.0 | VG 95343 T08 C 002 A | 402-03180 |
| **204-1-G** | 39.0 | 18.0 | 27.0 | 12.0 | 66.0 | 81.0 | 3.1 | 2.5 | 81.0 | VG 95343 T08 C 003 A | 402-04180 |

All dimensions in mm. Subject to technical changes.

DEF STAN JN VG

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## 3-Way Outlet Shapes, VG style

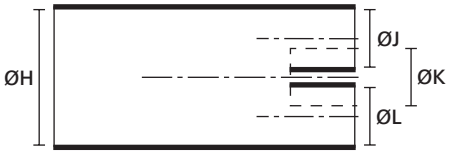
**Helashrink 300 Series**

### Features and benefits

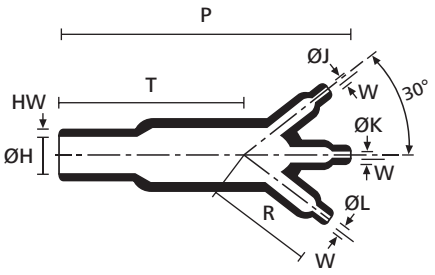
- Cable strain relief and mechanical protection at harness transition points
- All outlets clearly marked to aid orientation during installation



*304-1-G supplied / fully recovered.*




*a: Expanded form (supplied)*




*b: Fully recovered form (after heating)*

| TYPE | ØH min. a | ØH max. b | ØJ/K/L min. a | ØJ/K/L max. b | P ± 10 % | R ± 10 % | HW ± 30 % | W ± 20 % | T ± 10 % | Designation as per VG-Norm | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **306-1-G** | 13.0 | 6.5 | 6.5 | 3.5 | 46.0 | 25.4 | 1.3 | 1.0 | 20.3 | VG 95343 T08 D 001 A | 403-06180 |
| **304-1-G** | 27.0 | 13.5 | 13.0 | 7.0 | 93.0 | 50.3 | 2.5 | 1.5 | 42.9 | VG 95343 T08 D 002 A | 403-04180 |
| **310-1-G** | 38.5 | 19.0 | 19.0 | 10.0 | 135.0 | 73.7 | 3.0 | 1.8 | 61.0 | VG 95343 T08 D 003 A | 403-10180 |
| **311-1-G** | 55.5 | 25.5 | 27.0 | 12.5 | 192.0 | 103.1 | 4.6 | 3.1 | 88.9 | VG 95343 T08 D 004 A | 403-11180 |

All dimensions in mm. Subject to technical changes.

DEF STAN VG

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## 4-Way Outlet Shapes, VG style

**Helashrink 400 Series**

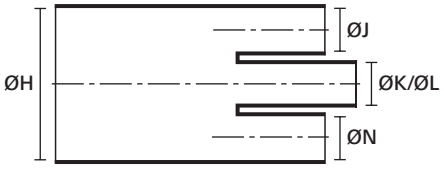
**Features and benefits**

- All outlets clearly marked to aid orientation during installation
- Cable strain relief and mechanical protection at harness transition points

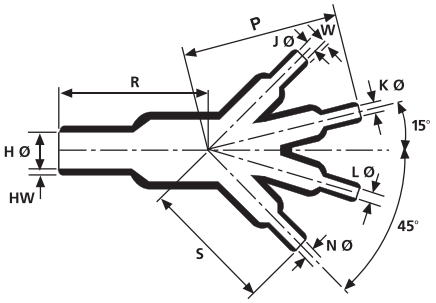
**For Material / Adhesive information please refer to page 256, 257.**



*442-1 supplied / fully recovered.*




*a: Expanded form (supplied)*




*b: Fully recovered form (after heating)*

| TYPE | ØH min. a | ØH max. b | ØJ/K/L/N min. a | ØJ/K/L/N max. b | P ± 10 % | R ± 10 % | HW ± 20 % | W ± 10 % | S nom | Designation as per VG-Norm | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **411-1-G** | 19.0 | 10.0 | 9.5 | 5.5 | 36.1 | 35.6 | 1.8 | 1.0 | 32.0 | VG 95343 T08 E 002 A | 404-11180 |
| **403-1-G** | 27.0 | 13.0 | 13.0 | 7.0 | 51.8 | 49.0 | 2.5 | 1.0 | 45.0 | VG 95343 T08 E 004 A | 404-03180 |
| **413-1-G** | 38.6 | 19.0 | 19.0 | 10.0 | 74.9 | 75.0 | 1.8 | 1.0 | 65.0 | VG 95343 T08 E 005 A | 404-13180 |

All dimensions in mm. Subject to technical changes.

DEF STAN VG

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Right-Angle Shapes, VG-Style

**Helashrink 1100 Series, with rib**

**Features and benefits**

- Used in conjunction with a circular grooved adaptor
- Provides strain relief and an environmental seal

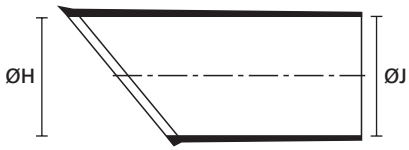


*1152-4-G recovered on to a connector.*

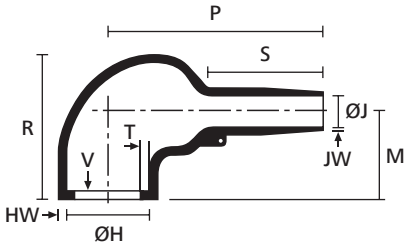
**For Material / Adhesive information please refer to page 256, 257.**



*1155-4 supplied.*




*a: Expanded form (supplied)*




*b: Fully recovered form (after heating)*

| TYPE | ØH min. a | ØH max. b | ØJ min. a | ØJ max. b | P ± 10 % | R ± 10 % | HW ± 20 % | JW ± 20 % | V max | T ± 20 % | M nom | S nom | Designation as per VG-Norm | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1152-4-G** | 24.0 | 10.5 | 24.0 | 6.0 | 32.0 | 25.0 | 1.3 | 0.5 | 3.3 | 1.0 | 19.0 | 10.0 | VG 95343 T06 E 001 A | 411-52480 |
| **1154-4-G** | 30.0 | 14.5 | 30.0 | 6.0 | 41.0 | 27.0 | 1.5 | 0.8 | 3.3 | 1.0 | 19.0 | 12.0 | VG 95343 T06 E 002 A | 411-54480 |
| **1155-4-G** | 31.0 | 18.0 | 31.0 | 7.0 | 51.0 | 31.0 | 1.8 | 1.0 | 3.3 | 1.0 | 21.0 | 15.0 | VG 95343 T06 E 003 A | 411-55480 |
| **1156-4-G** | 36.0 | 22.5 | 36.0 | 8.5 | 59.0 | 38.0 | 1.8 | 1.0 | 3.3 | 1.0 | 26.0 | 15.0 | VG 95343 T06 E 004 A | 411-56480 |
| **1157-4-G** | 43.0 | 28.5 | 43.0 | 10.0 | 71.0 | 45.0 | 2.0 | 1.0 | 3.3 | 1.7 | 30.0 | 16.0 | VG 95343 T06 E 005 A | 411-57480 |
| **1158-4-G** | 60.0 | 35.0 | 60.0 | 16.0 | 80.0 | 54.0 | 3.3 | 1.5 | 3.3 | 1.7 | 35.0 | 30.0 | VG 95343 T06 E 006 A | 411-58480 |
| **1159-4-G** | 66.0 | 45.0 | 66.0 | 17.0 | 108.0 | 68.0 | 3.8 | 2.0 | 3.3 | 2.0 | 42.0 | 51.0 | VG 95343 T06 E 007 A | 411-59480 |
| **1160-4-G** | 82.0 | 61.0 | 82.0 | 25.0 | 118.0 | 84.0 | 4.0 | 4.0 | 3.3 | 2.0 | 52.0 | 39.0 | VG 95343 T06 E 008 A | 411-60480 |

All dimensions in mm. Subject to technical changes.

DAN DEF STAN VG

For product specific approvals and specifications please refer to the Appendix.

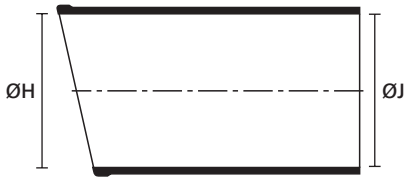
Date of issue: January 2019

## Right-Angle Shapes, MIL style

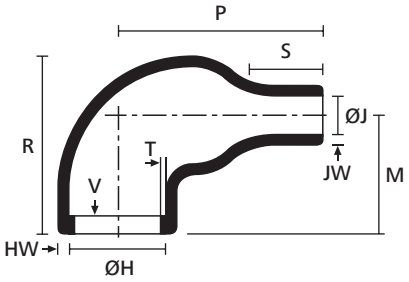
**Helashrink 1100 Series, with rib**

### Features and benefits

- Used in conjunction with a circular grooved adaptor for strain relief




*a: Expanded form (supplied)*




*b: Fully recovered form (after heating)*



*1108-4 supplied / fully recovered.*

| TYPE | ØH min. a | ØH max. b | ØJ min. a | ØJ max. b | P ± 10 % | R ± 10 % | HW ± 20 % | JW ± 30 % | V max | T ± 20 % | M nom | S nom | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1108-4-G** | 16.5 | 7.9 | 16.5 | 3.8 | 17.3 | 20.1 | 1.0 | 1.6 | 3.3 | 1.0 | 15.2 | 5.1 | 411-08480 |

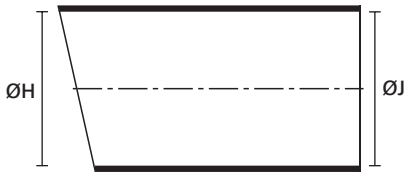
All dimensions in mm. Subject to technical changes.

## Right-Angle Shapes

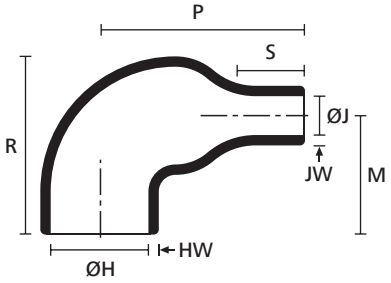
**Helashrink 1100 Series, without rib**

### Features and benefits

- Strain relief for connector cable
- Easy re-entry for repair when combined with hot melt adhesive




*a: Expanded form (supplied)*




*b: Fully recovered form (after heating)*



*1108-1 supplied / fully recovered.*

| TYPE | ØH min. a | ØH max. b | ØJ min. a | ØJ max. b | P ± 10 % | R ± 10 % | HW ± 20 % | JW ± 30 % | M nom | S nom | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1108-1-G** | 16.5 | 7.9 | 16.5 | 2.5 | 18.3 | 20.1 | 1.0 | 1.6 | 15.2 | 5.1 | 411-08180 |

All dimensions in mm. Subject to technical changes.

## Right-Angle Shapes, VG style/MIL style

**Helashrink 1100 Series, with rib, low profile**

**Features and benefits**

- Lightweight, low profile, compact strain relief and mechanical protection
- Typically used on airborne harnesses

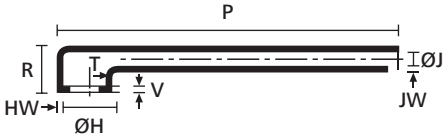
**For Material / Adhesive information please refer to page 256, 257.**



*1123-1-G Supplied and recovered.*




*a: Expanded form (supplied)*




*b: Fully recovered form (after heating)*

| TYPE | ØH min. a | ØH max. b | ØJ min. a | ØJ max. b | P ± 10 % | R ± 10 % | HW ± 20 % | JW ± 30 % | T ± 10 % | V ± 10 % | Designation as per VG-Norm | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1121-1-G** | 22.0 | 12.0 | 22.0 | 6.5 | 70.0 | 19.0 | 1.5 | 1.1 | 1.0 | 3.0 | VG 95343 T06 F 001 A | 411-21180 |
| **1122-1-G** | 25.5 | 15.0 | 25.5 | 7.5 | 79.0 | 20.0 | 1.5 | 1.1 | 1.0 | 3.0 | VG 95343 T06 F 002 A | 411-22180 |
| **1123-1-G** | 29.0 | 19.0 | 29.0 | 8.5 | 89.0 | 21.0 | 1.8 | 1.1 | 1.0 | 3.0 | VG 95343 T06 F 003 A | 411-23180 |
| **1124-1-G** | 34.0 | 23.0 | 34.0 | 10.0 | 102.0 | 22.0 | 1.8 | 1.1 | 1.0 | 3.0 | VG 95343 T06 F 004 A | 411-24180 |
| **1125-1-G** | 37.0 | 30.0 | 37.0 | 11.0 | 108.0 | 24.0 | 2.0 | 1.1 | 1.7 | 3.0 | VG 95343 T06 F 005 A | 411-25180 |
| **1126-1-G** | 43.5 | 34.0 | 43.5 | 12.0 | 121.0 | 27.0 | 2.0 | 1.1 | 1.7 | 3.0 | VG 95343 T06 F 006 A | 411-26180 |
| **1127-1-G** | 50.0 | 41.5 | 50.0 | 14.5 | 132.0 | 30.0 | 2.3 | 1.4 | 1.7 | 3.0 | VG 95343 T06 F 007 A | 411-27180 |
| **1128-1-G** | 62.5 | 47.0 | 62.5 | 1.0 | 133.0 | 33.0 | 2.5 | 1.4 | 2.0 | 3.0 | VG 95343 T06 F 008 A | 411-28180 |
| **1129-1-G** | 69.0 | 60.0 | 69.0 | 20.0 | 137.0 | 35.0 | 2.5 | 1.4 | 2.0 | 3.0 | VG 95343 T06 F 009 A | 411-29180 |

All dimensions in mm. Subject to technical changes.

DEF STAN DVE VG

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Right-Angle Shapes, VG style

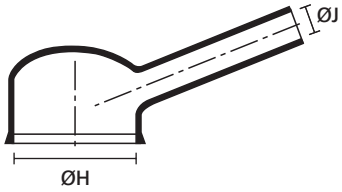
**Helashrink 1100 Series, with rib, low profile, high ratio**

### Features and benefits

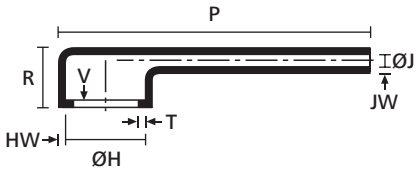
- Use in applications of partially loaded connectors with small cable diameters
- Tail design for easy orientation prior to cooling
- Strain relief for connector cable



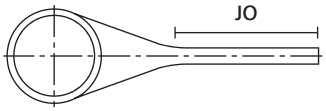
*1135-1-G Supplied and recovered.*




*a: Expanded form (supplied)*




*b: Fully recovered form (after heating)*




*Fully recovered form (after heating)*

| TYPE | ØH min. a | ØH max. b | ØJ min. a | ØJ max. b | P ± 10 % | R ± 10 % | HW ± 20 % | JW ± 20 % | JO ± 10 % | V max | T ± 20 % | Designation as per VG-Norm | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1133-1-G** | 19.0 | 13.0 | 6.0 | 2.0 | 45.0 | 16.0 | 1.5 | 1.1 | 21.8 | 3.3 | 1.0 | VG 95343 T06 F 011 A | 411-33180 |
| **1134-1-G** | 26.0 | 19.0 | 7.5 | 2.5 | 67.0 | 1.0 | 1.8 | 1.1 | 29.2 | 3.3 | 1.0 | VG 95343 T06 F 012 A | 411-34180 |
| **1135-1-G** | 34.0 | 26.0 | 9.5 | 3.0 | 81.0 | 19.0 | 1.8 | 1.1 | 35.3 | 3.3 | 1.0 | VG 95343 T06 F 013 A | 411-35180 |
| **1136-1-G** | 43.5 | 34.0 | 11.5 | 3.5 | 116.0 | 21.0 | 1.8 | 1.1 | 47.0 | 3.3 | 1.7 | VG 95343 T06 F 014 A | 411-36180 |

All dimensions in mm. Subject to technical changes.

DEF STAN VG

For product specific approvals and specifications please refer to the Appendix.

## T-Shapes, VG style/MIL style

**Helashrink 1200 Series**

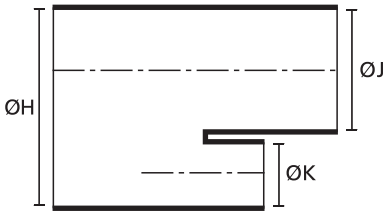
**Features and benefits**

- Strain relief, sealing and mechanical protection on cable harnesses

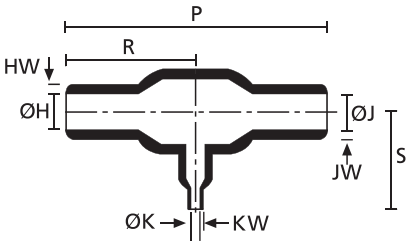
**For Material / Adhesive information please refer to page 256, 257.**



*1202-1-G recovered onto a cable harness.*




*a: Expanded form (supplied)*




*b: Fully recovered form (after heating)*

| TYPE | ØH/J min. a | ØH/J max. b | ØK min. a | ØK max. b | P ± 10 % | R ± 10 % | HW ± 20 % | JW ± 30 % | KW ± 20 % | S ± 10 % | Designation as per VG-Norm | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1206-1-G** | 6.6 | 3.0 | 6.6 | 3.0 | 29.7 | 14.7 | 1.0 | 1.0 | 1.0 | 14.7 | VG 95343 T08 A 009 A | 412-06180 |
| **1203-1-G** | 13.0 | 6.0 | 6.5 | 3.0 | 52.0 | 26.0 | 1.5 | 1.5 | 1.0 | 19.3 | VG 95343 T08 A 001 A | 412-03180 |
| **1202-1-G** | 13.2 | 6.1 | 13.2 | 6.1 | 58.7 | 29.2 | 1.5 | 1.5 | 1.5 | 29.2 | VG 95343 T08 A 010 A | 412-02180 |
| **1205-1-G** | 17.7 | 8.9 | 7.6 | 3.8 | 50.8 | 25.4 | 1.5 | 1.5 | 1.0 | 25.4 | - | 412-05180 |
| **1201-1-G** | 17.7 | 8.9 | 10.1 | 5.0 | 47.5 | 23.6 | 1.5 | 1.5 | 1.0 | 23.6 | VG 95343 T08 A 007 A | 412-01180 |
| **1207-1-G** | 26.9 | 12.4 | 26.9 | 12.4 | 120.1 | 55.9 | 2.5 | 2.5 | 2.5 | 59.9 | VG 95343 T08 A 011 A | 412-07180 |
| **1209-1-G** | 27.0 | 12.4 | 13.2 | 6.0 | 108.0 | 54.0 | 2.5 | 2.5 | 1.5 | 38.6 | VG 95343 T08 A 002 A | 412-09180 |

All dimensions in mm. Subject to technical changes.

DEF STAN VG

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## T-Shapes, VG-Style

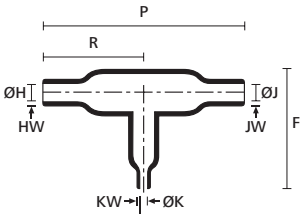
**Helashrink 1200 Series, off-set**

### Features and benefits

- For strain relief, sealing and mechanical protection
- Use adhesive for cable transition on harness, if environmental sealing is required




*a: Expanded form (supplied)*




*b: Fully recovered form (after heating)*



*1204-1 supplied / fully recovered.*

| TYPE | ØH min. a | ØH max. b | ØJ min. a | ØJ max. b | ØK min. a | ØK max. b | P ± 10 % | R ± 10 % | HW ± 20 % | JW ± 20 % | KW ± 20 % | F ± 15% | Designation as per VG-Norm | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1204-1-G** | 13.0 | 7.5 | 6.5 | 4.0 | 6.5 | 4.0 | 56.0 | 33.0 | 1.5 | 1.0 | 1.0 | 27.0 | VG 95343 T08 A 016 A | 412-04180 |
| **1216-1-G** | 33.0 | 13.0 | 16.5 | 6.5 | 16.5 | 6.5 | 97.0 | 54.0 | 2.5 | 1.5 | 1.5 | - | VG 95343 T08 A 017 A | 412-16180 |

All dimensions in mm. Subject to technical changes.

DEF STAN DVE VG

For product specific approvals and specifications please refer to the Appendix.

## Angled T-Shapes, VG style

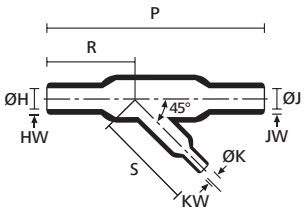
**Helashrink 1300 Series, 30° & 45° angle**

### Features and benefits

- Strain relief, sealing and mechanical protection on cable harnesses
- Branching part 30° & 45° Y-joint
- Mechanical strain relief for cable harnesses




*a: Expanded form (supplied)*




*b: Fully recovered form (after heating)*



*1303-1-G supplied / fully recovered.*

| TYPE | ØH min. a | ØH max. b | ØJ min. a | ØJ max. b | ØK min. a | ØK max. b | P ± 10 % | R ± 10 % | HW ± 30 % | JW ± 30 % | KW ± 20 % | S ± 10 % | Angle | Designation as per VG-Norm | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1306-1-G** | 13.0 | 6.0 | 6.5 | 3.0 | 6.5 | 3.0 | 45.0 | 23.0 | 1.5 | 1.0 | 1.5 | 21.5 | 45 ° | VG 95343 T06 B 010 A | 413-06180 |
| **1301-1-G** | 13.0 | 7.0 | 13.0 | 7.0 | 7.0 | 3.5 | 50.0 | 23.0 | 1.5 | 1.5 | 1.0 | 23.0 | 45 ° | VG 95343 T08 B 001 A | 413-01180 |
| **1302-1-G** | 27.0 | 13.0 | 27.0 | 13.0 | 7.0 | 3.5 | 93.0 | 41.0 | 2.5 | 2.5 | 1.0 | 36.0 | 45 ° | VG 95343 T08 B 004 A | 413-02180 |
| **1303-1-G** | 27.0 | 14.0 | 27.0 | 14.0 | 13.0 | 7.5 | 145.0 | 70.0 | 1.5 | 1.5 | 1.5 | 54.0 | 45 ° | VG 95343 T08 B 002 A | 413-03180 |
| **1311-1-G** | 30.4 | 15.0 | 30.4 | 15.0 | 20.3 | 10.0 | 82.6 | 32.0 | 2.5 | 2.5 | 1.8 | 51.0 | 30 ° | VG 95343 T08 B 003 A | 413-11180 |

All dimensions in mm. Subject to technical changes.

JN DVE VG

For product specific approvals and specifications please refer to the Appendix.

## 2-Way Outlet Shapes, Breakout Boots

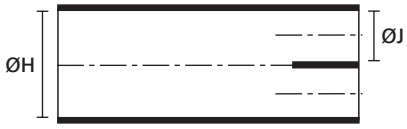
**Helashrink 200 Series, in line, low voltage**



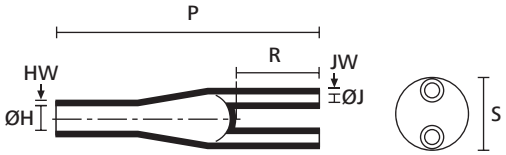
*223-2 supplied / fully recovered.*

**Features and benefits**

- Easy, time-saving insulation of cable branch point where it splits into single wires
- Adhesive is applied to relieve mechanical tension in cable harnesses




*a: Expanded form (supplied)*




*b: Fully recovered form (after heating)*

| TYPE | ØH min. a | ØH max. b | ØJ min. a | ØJ max. b | P ± 10 % | R ± 10 % | HW ± 20 % | JW ± 20 % | S nom | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **216-3-B8W** | 21.0 | 9.4 | 9.0 | 2.8 | 76.5 | 20.0 | 1.6 | 1.6 | 14.0 | 402-16039 |
| **223-2-B8W** | 33.0 | 9.4 | 17.5 | 4.1 | 94.0 | 30.0 | 1.5 | 1.2 | 20.0 | 402-23058 |
| **218-2-B8W** | 49.0 | 22.9 | 20.0 | 7.6 | 119.0 | 34.0 | 3.2 | 3.2 | 30.0 | 402-18051 |

All dimensions in mm. Subject to technical changes.

## 4-Way Outlet Shapes, Breakout Boots

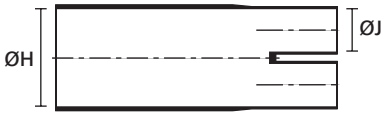
**Helashrink 400 Series, in line, low voltage**



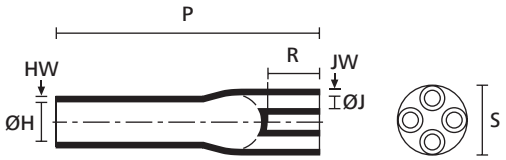
*400 series supplied / fully recovered.*

**Features and benefits**

- Easy, time-saving insulation of cable branch point where it splits into single wires
- Made of tough, cross-linked, Polyolefin
- Adhesive is applied to relieve mechanical tension in cable harnesses




*a: Expanded form (supplied)*




*b: Fully recovered form (after heating)*

| TYPE | ØH min. a | ØH max. b | ØJ min. a | ØJ max. b | P ± 10 % | R ± 10 % | HW ± 20 % | JW ± 20 % | S nom | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **442-1-B8WM250** | 28.0 | 9.0 | 9.0 | 1.8 | 78.0 | 17.0 | 2.7 | 2.0 | 20.0 | 404-42009 |
| **408-2-B8W2** | 35.0 | 12.0 | 15.0 | 3.0 | 95.0 | 24.0 | 2.5 | 2.0 | 22.0 | 404-08022 |
| **418-4-B8W2** | 60.0 | 22.9 | 30.0 | 6.4 | 202.0 | 38.1 | 4.1 | 3.3 | 38.1 | 404-18020 |

All dimensions in mm. Subject to technical changes.

Date of issue: January 2019

## 5-Way Outlet Shapes, Breakout Boots

**Helashrink 500 Series, in line, low voltage**

**Features and benefits**

- Cable breakout boots for insulating and sealing cable crotch or conduit system
- Excellent resistance to abrasion and weathering

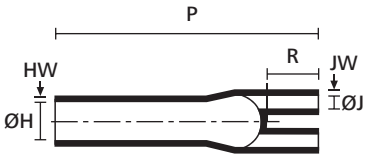
**For Material / Adhesive information please refer to page 256, 257.**



*500 Series supplied / fully recovered.*




*a: Expanded form (supplied)*




*b: Fully recovered form (after heating)*




*Fully recovered form (after heating)*

| TYPE | ØH min. a | ØH max. b | ØJ min. a | ØJ max. b | P ± 10 % | R ± 10 % | HW ± 20 % | JW ± 20 % | S nom | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **508-5-B8W** | 41.9 | 24.5 | 16.9 | 7.5 | 180.0 | 30.0 | 3.5 | 3.0 | 48.0 | 405-08049 |

All dimensions in mm. Subject to technical changes.

Date of issue: January 2019

## Pinched End Caps

**Helashrink PEC Series, low voltage**

Pinched End Caps can be used for mechanical and environmental protection of stub splices in electrical harnesses. Due to the fast and easy installation, these caps can be used for non-electrical applications as well.

**Features and benefits**

- Small size End Caps
- Fast and easy application
- With Inner adhesive layer for moisture sealing
- 3:1 shrink ratio
- Different diameters for wide application range
- Other lengths available on request

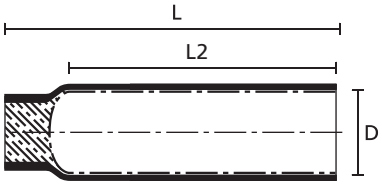


*The appropriate end cap for every cable diameter, and cable types.*

*One Step to the Web!*

| | |
|---|---|
| **MATERIAL** | Polyolefin, cross-linked (PO-X) |
| **Colour** | Black (BK) |
| **Shrink Ratio** | 3:1 |
| **Min. Shrink Temperature** | +120 °C |
| **Operating Temperature** | -45 °C to +125 °C |
| **Dielectric Strength** | 15 kV/mm according to IEC 60684 P2 |
| **Flammability** | self-extinguishing in 30 seconds according to SAE-AMS-DTL-23053/4 |

RoHS




*PEC-Series expanded*




*PEC-Series recovered*

| TYPE | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Length (L) | Length (L2) | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|
| **PEC-3/1** | 3.0 | 1.0 | 1.00 | 25.0 | 20.0 | 50 pcs. | 416-00000 |
| **PEC-4.8/1.5** | 4.8 | 1.5 | 1.00 | 30.0 | 25.0 | 50 pcs. | 416-00003 |
| **PEC-6/2** | 6.0 | 2.0 | 1.00 | 30.0 | 25.0 | 50 pcs. | 416-00001 |
| **PEC-9/3** | 9.0 | 3.0 | 1.40 | 35.0 | 27.0 | 50 pcs. | 416-00002 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

Date of issue: January 2019

## End Caps

**Helashrink 1600 Series, low voltage**

End caps are suitable for use on both polymeric and paper insulated, lead jacketed cables which may include aluminium or steel armouring.

**Features and benefits**

- Seal cables during storage or transportation
- Insulating cap for live LV cables (0.6/1kV)
- Adhesive lining for excellent environmental seal
- High shrink ratio to minimise number of sizes needed
- Can be fitted with air valves for pressurised cable applications
- High shrink ratio to minimise number of sizes needed

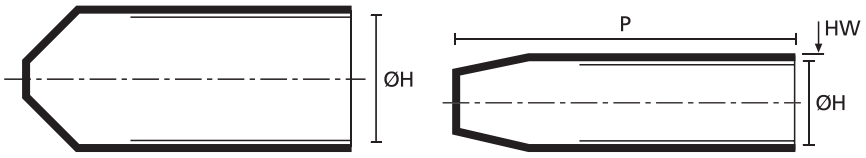


*The appropriate end cap for every cable diameter, and cable types.*

**For Material / Adhesive information please refer to page 256, 257.**

| | |
|---|---|
| **MATERIAL** | Polyolefin, cross-linked (PO-X) |
| **Colour** | Black (BK) |
| **Shrink Ratio** | up to 3:1 |
| **Min. Shrink Temperature** | +135 °C |
| **Operating Temperature** | -55 °C to +80 °C |
| **Dielectric Strength** | 15 kV/mm |
| **Flammability** | ASTM D635 |

RoHS




*a: Expanded form (supplied)*

*b: Fully recovered form (after heating)*

| TYPE | Bundle Ø min. | Bundle Ø max. | ØH min. a | ØH max. b | P ± 10 % | HW ± 20 % | Article-No. |
|---|---|---|---|---|---|---|---|
| **1612-1-B5W2** | 4.0 | 8.0 | 12.0 | 4.0 | 40.0 | 2.6 | 416-12046 |
| **1613-1-B5W2** | 6.5 | 16.0 | 20.0 | 6.0 | 55.0 | 2.8 | 416-13060 |
| **1602-1-B5W2** | 10.0 | 20.0 | 25.0 | 8.5 | 65.0 | 2.8 | 416-02008 |
| **1614-1-B5W2** | 16.0 | 32.0 | 40.0 | 15.0 | 75.0 | 3.3 | 416-14047 |
| **1615-1-B5W2** | 26.0 | 51.0 | 62.0 | 23.0 | 132.0 | 3.8 | 416-15035 |
| **1617-1-B5W2** | 32.0 | 61.0 | 75.0 | 32.0 | 140.0 | 4.0 | 416-17033 |
| **1616-1-B5W2** | 48.0 | 80.0 | 105.0 | 45.0 | 135.0 | 4.0 | 416-16053 |
| **1609-1-B5W2** | 65.0 | 110.0 | 120.0 | 60.0 | 150.0 | 4.2 | 416-09000 |
| **1610-1-B5W2** | 90.0 | 135.0 | 160.0 | 82.0 | 135.0 | 4.5 | 416-10000 |

All dimensions in mm. Subject to technical changes.

Date of issue: January 2019

## Hot Melt Tape for Heat Shrinkable Tubing and Shapes

**HMT200A**

Designed for use with heat shrink sleeving and mouldings.

**Features and benefits**

- Hot melt tape flows when heated to seal against moisture
- For heat shrink tubing and mouldings



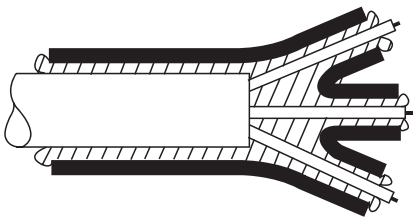
*HMT200A-Tape.*



*Adhesive tape HMT200A for sealing against humidity.*

| | |
|---|---|
| **MATERIAL** | Ethylenevinylacetate (EVA) |
| **Operating Temperature** | -55 °C to +105 °C |

HF ✓ RoHS ✓



*HMT200A*

| TYPE | Thickness (T) | Width (W) | Colour | Reel Length | Article-No. |
|---|---|---|---|---|---|
| HMT200A | 0.25 | 25.0 | Translucent (TT) | 10 m | 354-02260 |
| | 0.25 | 25.0 | Translucent (TT) | 50 m | 354-02259 |

All dimensions in mm. Subject to technical changes.

Date of issue: January 2019

## Two-Component Adhesive for Heat Shrinkable Tubing and Shapes

**V9500**

**Features and benefits**

- High performance, two-part epoxy adhesive
- Very resistant to most solvents and fuels, even at elevated temperatures
- Two different packages available
- V9500 available in 10 g bags for manual mixing
- Processing set: emery paper, small mixing bowl and wooden spatula
- High performance bonding
- Meets military requirements for heat shrinkable components for harnesses
- VG-approved



*Two-component epoxy adhesive V9500.*

**For Material / Adhesive information please refer to page 256, 257.**



*The V9500 applicator gun guarantees the clean and precise coating of special fittings.*

| | |
|---|---|
| **MATERIAL** | Epoxy resins (EP) |
| **Colour** | Black (BK) |
| **Curing Temperature** | +135 °C |
| **Curing Time** | 24 hours at +25 °C, 2 hours at +85 °C |
| **Operating Temperature** | -75 °C to +150 °C |

RoHS

| TYPE | Description | Designation as per VG-Norm | Article-No. |
|---|---|---|---|
| **V9500 Epoxy Kit** | 5 x 10g sachets (50 g), 5 x mixing pots, 5 x mixing sticks, 5 x emery papers | VG 95343 T15 A 001 A | 627-95000 |
| | 1 x dual cartridge (50 g), 5 x mixing pots, 5 x mixing sticks, 5 x emery papers | VG 95343 T15 A 002 B | 627-95001 |
| **V9500 Epoxy Cartridge** | Two-component adhesive cartridge | VG 95343 T15 A | 627-95002 |
| **V9500 Applicator Gun** | Applicator gun | VG 95343 T15 DA | 627-95003 |
| **V9500 Applicator Nozzle** | Mixing nozzle | VG 95343 T15 MA | 627-95004 |

All dimensions in mm. Subject to technical changes.

VG For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Rubber Tubing, Chloroprene

The chloroprene tubings are ideally suited to rigorous environments such as automotive, aerospace, mass transit and defence markets.

As the material is highly elastic, it's original size can be expanded 500 % on application and 200 % in continuous use.

To save time and effort when fitting the tubing, try the HellermannTyton NA three prong tools and the Hellerine lubricant, which are specially designed for use with HellermannTyton chloroprene tubing.

**Features and benefits**

- Highly elastic, easy to fit chloroprene tubing
- Withstands up to 120 °C intermittent temperature
- Covers many cable diameters with one size
- Available in cut lengths



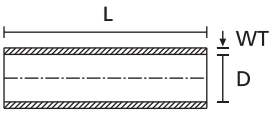
*H rubber tubing is highly flexible and easy to apply.*

| | |
|---|---|
| **MATERIAL** | Chloroprene rubber (CR) |
| **Operating Temperature** | -65 °C to +95 °C, intermittent 120 °C |
| **Flammability** | UL 94 HB |
| **Elongation at break** | min. 500% |

RoHS

### Helsyn H






*Chloroprene tubing*

| TYPE | Supplied Ø D min. | Wall (WT) | Bundle Ø max. | Reel Length | Pack Cont. | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **H12BKX100M** | 1.2 | 0.80 | 2.0 | 100 m | 100 m | Black (BK) | 35 | 608-01200 |
| **H15BKX100M** | 1.5 | 0.80 | 3.0 | 100 m | 100 m | Black (BK) | 35 | 608-01201 |
| **H25BKX100M** | 2.5 | 0.80 | 4.0 | 100 m | 100 m | Black (BK) | 36;39 | 608-01203 |
| **H30BKX100M** | 3.0 | 0.80 | 6.0 | 100 m | 100 m | Black (BK) | 36;39 | 608-01204 |
| **H40BKX100M** | 4.0 | 1.00 | 8.0 | 100 m | 100 m | Black (BK) | 36;39 | 608-01205 |
| **H50BKX100M** | 5.0 | 1.05 | 9.0 | 100 m | 100 m | Black (BK) | 36;39 | 608-01206 |
| **H75BKX25M** | 7.5 | 1.25 | 13.0 | 25 m | 25 m | Black (BK) | 37;39-40 | 608-01207 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.



| TYPE | Supplied Ø D min. | Wall (WT) | Bundle Ø max. | Length (L) | Pack Cont. | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **H12X20BK** | 1.2 | 0.80 | 2.0 | 20.0 | 1,000 pcs. | Black (BK) | 35 | 600-02498 |
| **H15X20BK** | 1.5 | 0.80 | 3.0 | 20.0 | 1,000 pcs. | Black (BK) | 35 | 600-02929 |
| **H25X25BK** | 2.5 | 0.80 | 4.0 | 25.0 | 1,000 pcs. | Black (BK) | 36;39 | 600-02934 |
| **H30X25BK** | 3.0 | 0.80 | 6.0 | 25.0 | 1,000 pcs. | Black (BK) | 36;39 | 600-02938 |
| **H40X30BK** | 4.0 | 1.00 | 8.0 | 30.0 | 500 pcs. | Black (BK) | 36;39 | 600-02947 |
| **H50X25BK** | 5.0 | 1.05 | 9.0 | 25.0 | 500 pcs. | Black (BK) | 36;39 | 600-02949 |
| **H75X30BK** | 7.5 | 1.25 | 13.0 | 30.0 | 250 pcs. | Black (BK) | 37;39-40 | 600-02198 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

DEF STAN

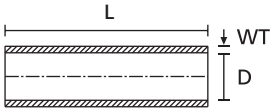
For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Rubber Tubing, Chloroprene

**Helsyn TH - thin wall**






*Chloroprene tubing*

| TYPE | Supplied Ø D min. | Wall (WT) | Bundle Ø max. | Reel Length | Pack Cont. | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **TH100BKX25M** | 10.0 | 1.00 | 20.0 | 25 m | 25 m | Black (BK) | 37;39-40 | 608-01208 |
| **TH120BKX25M** | 12.0 | 1.00 | 23.0 | 25 m | 25 m | Black (BK) | 38-39;41 | 608-01209 |
| **TH140BKX20M** | 14.0 | 1.10 | 25.0 | 20 m | 20 m | Black (BK) | 38-39;41 | 608-01210 |
| **TH170BKX20M** | 17.0 | 1.20 | 28.0 | 20 m | 20 m | Black (BK) | 38-39;41 | 608-01202 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.



| TYPE | Supplied Ø D min. | Wall (WT) | Bundle Ø max. | Length (L) | Pack Cont. | Colour | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **TH100X35BK** | 10.0 | 1.00 | 20.0 | 35.0 | 100 pcs. | Black (BK) | 37;39-40 | 600-02493 |
| **TH120X50BK** | 12.0 | 1.00 | 23.0 | 50.0 | 100 pcs. | Black (BK) | 38-39;41 | 600-02495 |
| **TH140X50BK** | 14.0 | 1.10 | 25.0 | 50.0 | 100 pcs. | Black (BK) | 38-39;41 | 600-02496 |
| **TH170X50BK** | 17.0 | 1.20 | 28.0 | 50.0 | 100 pcs. | Black (BK) | 38-39;41 | 600-02497 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

| Recommended Tools | | | | | | |
|---|---|---|---|---|---|---|
| | 35<br>NA0/1 | 36<br>NA1K/3 | 37<br>NA4/5 | 39<br>VA2.5/5 | 40<br>VA2.5/5+8 | 41<br>VA2.5/5+18 |
| | 562 | 562 | 562 | 563 | 563 | 563 |

For more information on toolings please refer to the Application Tooling chapter.

DEF STAN

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Installation aid for tubing and grommets

### Hellerine

Hellerine lubricant for tubing and grommets installations.

**Features and benefits**

- Effective aid for affixing elastomer sleeves
- Universally employable
- Evaporates after installation
- Consists of 99 % vegetable oils
- Discoloration-free
- Offered in 250 ml bottle or in cans of 5 lt or 20 lt




*Hellerine lubricant in 284ml plastic bottle.*

| TYPE | Description | Article-No. |
|---|---|---|
| **HELLERINE 0.25 LITER** | Hellerine assembly aid, 0.25 litre | 625-00250 |
| **HELLERINE 5 LITER** | Hellerine assembly aid, 5 litre | 625-05000 |
| **HELLERINE 20 LITER** | Hellerine assembly aid, 20 litre | 625-06000 |

All dimensions in mm. Subject to technical changes.

Date of issue: January 2019

HellermannTyton

# The best way to connect cables? With ease.

Taming the elements. RELICON Reliseal provides robust protection for cable connections in the ground. The tough polypropylene shell is flame-retardant and the patented screw system relieves strain on the cable connection. Together with the insulating RELICON gel inside, it is waterproof up to depths of 10 metres. For all eternity.

**www.HellermannTyton.co.uk/reliseal2019cat**

**MADE FOR REAL®**



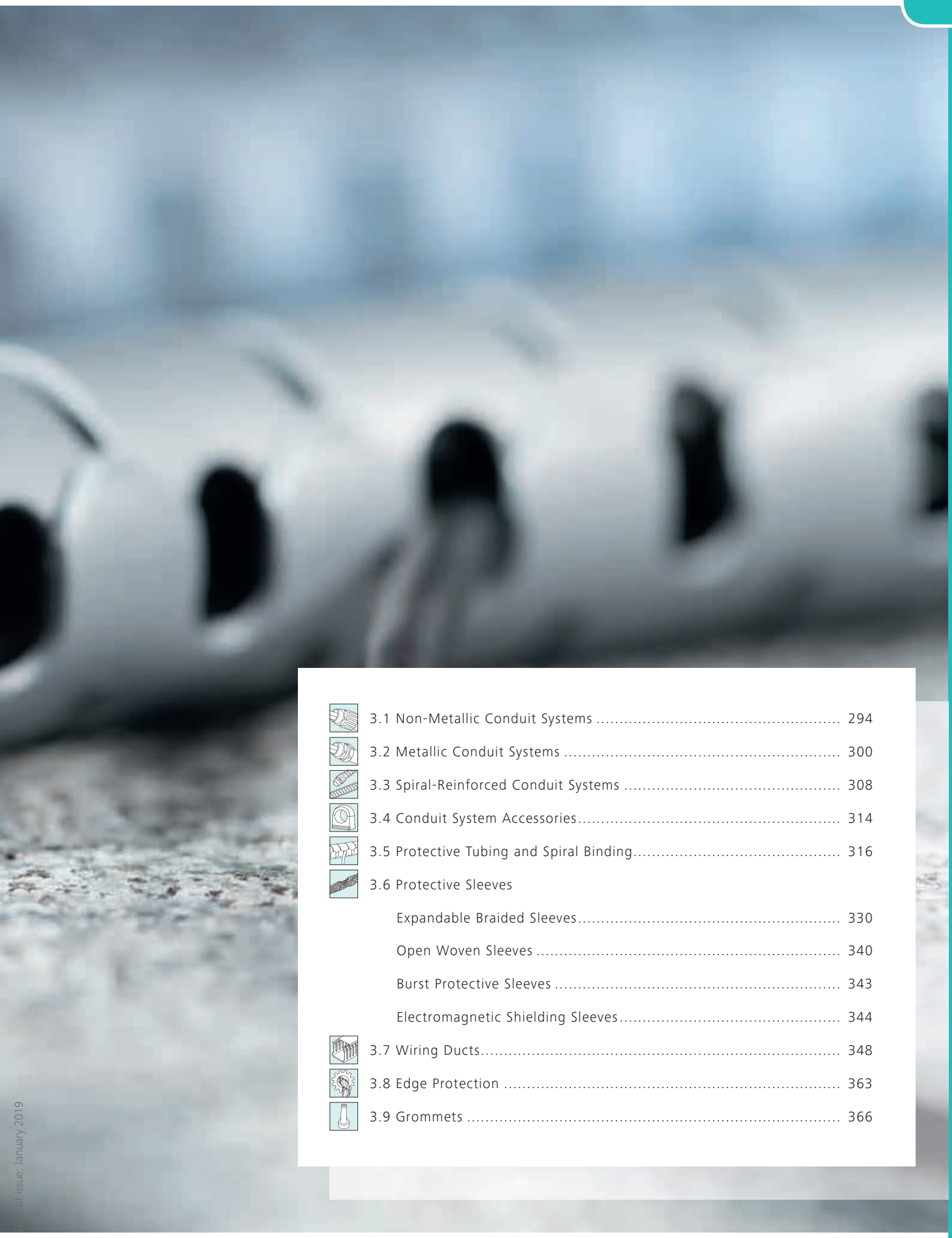
Date of issue January 2019



### Inspired by efficiency

Applying protective covers to cables and wiring can be time consuming – removing them for maintenance or modifications even more so. Reduction in the time needed to remove and reapply cable covers inspired us to develop Helawrap. This flexible cable-bundling solution is quick and easy to apply with a simple zipper-like action. Specially designed gaps in the overlapping cover mean installers can safely branch off cables at any point. Whether used in the office, factory, wind or solar installations, we ensure that all our cable protection solutions score highly on their usability and quality – and maximum efficiency.

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## 3.1 Non-Metallic Conduit Systems


| | | |
|---|---|---|
| **Non-Metallic Conduits** | | |
| HG-SW PA6 Standard | | 294 |
| HG-LW PA6 Light | | 295 |
| HG-FR PA6 Flame Retardant | | 296 |
| HG-DC PA6 Double Slit | | 297 |
| **Fittings for Non-Metallic Conduits** | | |
| Fixed external thread | HG-S, Straight, IP66 | 298 |
| | HG-90, 90° Elbow, IP66 | 299 |


## 3.2 Metallic Conduit Systems


| | | |
|---|---|---|
| **Metallic Conduits** | | |
| SC galvanised steel conduit | | 300 |
| SSC stainless steel conduit | | 301 |
| **Fittings for Metallic Conduits** | | |
| SC-FM fixed external thread | | 302 |
| **Metallic Conduits with Plastic Coating** | | |
| PCS, galvanised steel, PVC coating | | 303 |
| **Fittings for Metallic Conduits with Plastic Coating** | | |
| PCS-FM IP54 fixed external thread | | 304 |
| PCS-FMC IP65 compression fitting, fixed thread | | 305 |
| **Metallic Conduits with Liquid-Tight Cover** | | |
| LTS, galvanised steel, PVC cover | | 306 |
| **Fittings for Metallic Conduits with Liquid-Tight Cover** | | |
| LTS-FMC IP68 compression fitting, fixed thread | | 307 |


## 3.3 Spiral-Reinforced Conduit Systems


| | | |
|---|---|---|
| **Spiral-Reinforced PVC Conduits** | | |
| PSR smooth bore | | 308 |
| **Fittings for Spiral-Reinforced PVC Conduits** | | |
| PSR-S fixed external thread | | 309 |
| PSR-90 fixed external thread, 90° elbow | | 310 |
| **FlexiGuard Conduits and Fittings** | | |
| FG PVC conduit, steel wire spiral-reinforced | | 311 |
| FG IP54 fitting, swivel thread | | 312 |
| FG IP54 fitting with mounting bracket | | 313 |


## 3.4 Conduit System Accessories

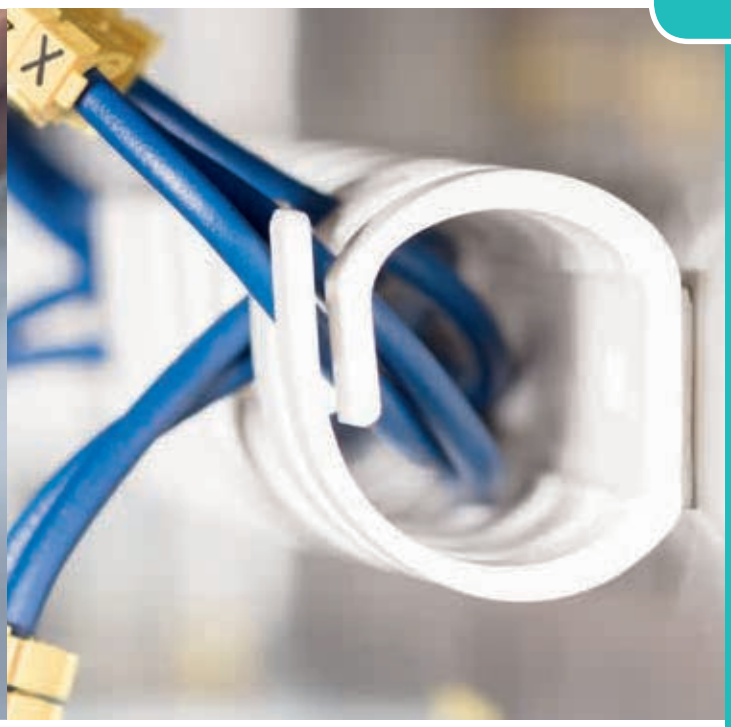

| | | |
|---|---|---|
| **HelaGuard Accessories** | | |
| Conduit Clips | PACC for corrugated conduits | 314 |
| | AFCS plated steel and PVC liner | 315 |


## 3.5 Protective Tubing and Spiral Binding


| | |
|---|---|
| **Helawrap Cable Cover and Accessories** | |
| HWPP in polypropylene | 316 |
| Helawrap in polyamide 6, UL94 V0 | 318 |
| Helawrap HWPPMC with metal-content | 319 |
| HWClips | 320 |
| HWBase | 320 |
| HAT application tool | 321 |
| **Spiral Binding** | |
| SBPE standard polyethylene | 322 |
| SBPEFR polyethylene, flame-retardant | 323 |
| SBPA standard polyamide 6 | 324 |
| SBPAV0 polyamide 6, flame-retardant | 325 |
| SBPTFE, PTFE | 326 |
| SBPEMC metal-content spiral binding | 327 |
| SPS narrow pitch | 328 |
| SPF wide pitch | 329 |


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## 3.6 Protective Sleeves


| | | |
|---|---|---|
| **Expandable Braided Sleeves** | | |
| HEGP standard polyester | | 330 |
| HEGPX high-expansion polyester | | 331 |
| HEGPV0 polyester, flame-retardant | | 332 |
| HEGPV0X high-expansion polyester flame-retardant | | 333 |
| HEGPA66 polyamide 6.6, abrasion-resistant | | 334 |
| HEGPL polyester, light weight | | 335 |
| HLB polyester, in dispenser boxes | | 336 |
| HEGSAS polyester, noise-protection | | 337 |
| HEGMAN non-flammable meta-aramid | | 338 |
| HEGMANWO non-flammable meta-aramid, water and oil-resistant | | 339 |
| **Open Woven Sleeves** | | |
| Twist-In self-closing polyester sleeving | | 340 |
| Twist-In-FR self-closing polyester sleeving, flame-retardant | | 341 |
| HELAHOOK re-closable polyester sleeving with hook-and-loop seal | | 342 |
| **Burst Protective Sleeves** | | |
| HEGWS | | 343 |
| **Electromagnetic Shielding Sleeves** | | |
| HEGEMIP electromagnetic protection | | 344 |
| HEGEMIPV0 electromagnetic protection, flame-retardant | | 345 |
| HEGEMIP-HY electromagnetic protection for hybrid automobiles | | 346 |
| HEGEMIP-VG electromagnetic protection for defence applications | | 347 |


## 3.7 Wiring Ducts


| | | |
|---|---|---|
| **Rigid PVC Wiring Ducts** | | |
| HelaDuct HTWD-PN for small-diameter wires | | 348 |
| HelaDuct HTWD-PW for large-diameter wires | | 350 |
| HelaDuct HTWD-PD DIN-sizes | | 352 |
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| **Flexible Cable Support** | | |
| HelaDuct Flex | screwable | 356 |
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| | adhesive | 357 |
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| For mounting prior to wiring | HelaDuct HTWD-BWR Wire Retainers | 358 |
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| For installing wiring ducts into fixing holes | HelaDuct HTWD-R4 and HTWD-R6 Rivets | 361 |
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## 3.8 Edge Protection


| | |
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| EdgeGuard PS1, SM1, RA1 | 365 |


## 3.9 Grommets


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| Hot Grommet Kit | 374 |


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## Non-Metallic Conduits

### HG-SW PA6 Standard Weight

Machine building, plant construction, control panels, public buildings.

**Features and benefits**

- Very flexible and high fatigue life
- Very abrasion resistant
- High impact strength, recovers if crushed
- Highly resistant to solvents and oils
- Free of halogen, sulphur and phosphorus
- Low smoke and low toxicity
- Self-extinguishing according to UL94 V2
- Colour: black (UV resistant); grey on request

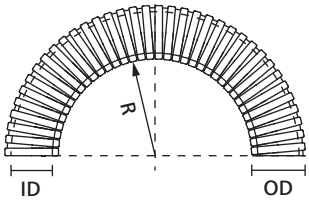


*HelaGuard PA6 Standard for industrial applications.*

| | |
|---|---|
| **MATERIAL** | Polyamide 6 (PA6) |
| **Operating Temperature** | -40 °C to +120 °C |
| **Operating Temperature Moving** | -20 °C to +100 °C |
| **Flammability** | UL 94 V2 |

HF ✓ RoHS ✓

*One Step to the Web!*




*HelaGuard non-metallic conduit*

CAD

*CAD download*

| TYPE | Nominal Ø | NW Ø | Outside Ø (OD) | Inside Ø (ID) | Min. Bending Radius (R) | Weight | Reel Length | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **HG-SW10** | 10 | 7.5 | 10.0 | 6.3 | 15 | 19 g/m | 50 m | Black (BK) | 166-11100 |
| **HG-SW11** | 11 | 8.5 | 11.5 | 8.2 | 20 | 22 g/m | 50 m | Black (BK) | 166-11101 |
| **HG-SW13** | 13 | 10 | 13.0 | 9.8 | 25 | 28 g/m | 50 m | Black (BK) | 166-11102 |
| **HG-SW16** | 16 | 12 | 15.8 | 11.8 | 35 | 38 g/m | 25 m | Black (BK) | 166-11110 |
| | 16 | 12 | 15.8 | 11.8 | 35 | 38 g/m | 50 m | Black (BK) | 166-11103 |
| **HG-SW21** | 21 | 17 | 21.2 | 16.7 | 45 | 60 g/m | 25 m | Black (BK) | 166-11111 |
| | 21 | 17 | 21.2 | 16.7 | 45 | 60 g/m | 50 m | Black (BK) | 166-11104 |
| **HG-SW28** | 28 | 23 | 28.5 | 22.8 | 50 | 100 g/m | 25 m | Black (BK) | 166-11105 |
| | 28 | 23 | 28.5 | 22.8 | 50 | 100 g/m | 50 m | Black (BK) | 166-11112 |
| **HG-SW34** | 34 | 29 | 34.5 | 28.1 | 60 | 135 g/m | 25 m | Black (BK) | 166-11106 |
| | 34 | 29 | 34.5 | 28.1 | 60 | 135 g/m | 50 m | Black (BK) | 166-11118 |
| **HG-SW42** | 42 | 36 | 42.5 | 35.5 | 70 | 165 g/m | 25 m | Black (BK) | 166-11113 |
| **HG-SW54** | 54 | 48 | 54.5 | 47.2 | 80 | 235 g/m | 25 m | Black (BK) | 166-11114 |
| **HG-SW67** | 67 | 56 | 67.2 | 56.3 | 130 | 365 g/m | 10 m | Black (BK) | 166-11109 |

All dimensions in mm. Subject to technical changes.
Colour grey available on request. Other reel lengths available on request. Minimum Order Quantity (MOQ) may differ from package content.

c UL us

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Non-Metallic Conduits

### HG-LW PA6 Light Weight

Machine building, plant construction, control panels and public buildings, wherever lower mechanical protection is required.

**Features and benefits**

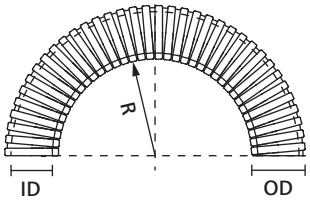
- Light weight
- Very flexible and high fatigue life
- Small bending radius
- High impact strength and recovers if crushed
- Highly resistant to solvents and oils
- Free of halogen, sulphur and phosphorus
- Colour: black; grey (RAL 7031) on request



*HelaGuard PA6 Light is very flexible and can be used in moving applications.*

| | |
|---|---|
| **MATERIAL** | Polyamide 6 (PA6) |
| **Operating Temperature** | -40 °C to +120 °C |
| **Operating Temperature Moving** | -20 °C to +100 °C |
| **Flammability** | self-extinguishing according to EN IEC 61386 |

HF ✓ RoHS ✓




*HelaGuard non-metallic conduit*

| TYPE | Nominal Ø | NW Ø | Outside Ø (OD) | Inside Ø (ID) | Min. Bending Radius (R) | Weight | Reel Length | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **HG-LW10** | 10 | 7.5 | 10.0 | 6.5 | 15 | 18 g/m | 50 m | Black (BK) | 166-11200 |
| **HG-LW11** | 11 | 8.5 | 11.5 | 8.3 | 20 | 22 g/m | 50 m | Black (BK) | 166-11201 |
| **HG-LW13** | 13 | 10 | 13.0 | 10.0 | 25 | 24 g/m | 50 m | Black (BK) | 166-11202 |
| **HG-LW16** | 16 | 12 | 15.8 | 12.0 | 35 | 36 g/m | 50 m | Black (BK) | 166-11203 |
| **HG-LW21** | 21 | 17 | 21.2 | 16.9 | 40 | 56 g/m | 50 m | Black (BK) | 166-11204 |
| **HG-LW28** | 28 | 23 | 28.5 | 23.0 | 45 | 90 g/m | 50 m | Black (BK) | 166-11205 |
| **HG-LW34** | 34 | 29 | 34.5 | 28.3 | 55 | 110 g/m | 50 m | Black (BK) | 166-11206 |
| **HG-LW42** | 42 | 36 | 42.5 | 35.7 | 65 | 150 g/m | 25 m | Black (BK) | 166-11207 |
| **HG-LW54** | 54 | 48 | 54.5 | 47.4 | 80 | 200 g/m | 25 m | Black (BK) | 166-11208 |
| **HG-LW67** | 67 | 56 | 67.2 | 56.5 | 110 | 310 g/m | 10 m | Black (BK) | 166-11209 |

All dimensions in mm. Subject to technical changes.
Colour grey available on request. Other reel lengths available on request. Minimum Order Quantity (MOQ) may differ from package content.

c UL us

For product specific approvals and specifications please refer to the Appendix.

## Non-Metallic Conduits

### HG-FR PA6 Flame Retardant

Railway vehicles, railway tunnels, underground stations and public buildings, where high fire protection is required.

**Features and benefits**

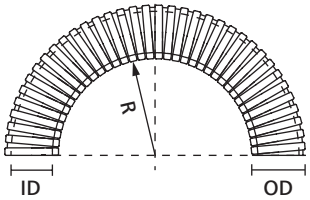
- Highly flame retardant (UL94 V0)
- Low smoke, low toxicity
- Very flexible and high fatigue life
- High impact strength, recovers if crushed
- Abrasion resistant
- Highly resistant to solvents and oils
- Free of halogen, sulphur and phosphorus
- Colour: black (UV resistant)



*Public buildings often require HelaGuard PA6 Flame Retardant due to its high fire protection properties.*

| | |
|---|---|
| **MATERIAL** | Polyamide 6, flame retardant (PA6-FR) |
| **Operating Temperature** | -40 °C to +120 °C |
| **Operating Temperature Moving** | -20 °C to +100 °C |
| **Flammability** | UL 94 V0 |

HF ✓ RoHS ✓




*HelaGuard non-metallic conduit*

| TYPE | Nominal Ø | NW Ø | Outside Ø (OD) | Inside Ø (ID) | Min. Bending Radius (R) | Weight | Reel Length | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **HG-FR10** | 10 | 7.5 | 10.0 | 6.3 | 15 | 19 g/m | 50 m | Black (BK) | 166-11400 |
| **HG-FR13** | 13 | 10 | 13.0 | 9.8 | 25 | 28 g/m | 50 m | Black (BK) | 166-11401 |
| **HG-FR16** | 16 | 12 | 15.8 | 11.8 | 35 | 38 g/m | 50 m | Black (BK) | 166-11402 |
| **HG-FR21** | 21 | 17 | 21.2 | 16.7 | 45 | 60 g/m | 50 m | Black (BK) | 166-11403 |
| **HG-FR28** | 28 | 23 | 28.5 | 21.7 | 50 | 100 g/m | 50 m | Black (BK) | 166-11404 |
| **HG-FR34** | 34 | 29 | 34.5 | 28.1 | 60 | 135 g/m | 50 m | Black (BK) | 166-11405 |
| **HG-FR42** | 42 | 36 | 42.5 | 35.5 | 70 | 165 g/m | 25 m | Black (BK) | 166-11406 |
| **HG-FR54** | 54 | 48 | 54.5 | 47.2 | 80 | 235 g/m | 25 m | Black (BK) | 166-11407 |

All dimensions in mm. Subject to technical changes.
Other reel lengths available on request. Minimum Order Quantity (MOQ) may differ from package content.

EN 45545-2 c UL us

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Non-Metallic Conduits

### HG-DC Double Slit

Control panels, machine building, plant construction and wherever retrofitting is a requirement.

**Features and benefits**

- Can be opened and closed repeatedly
- Cables can be inserted laterally
- Abrasion resistant
- Free of halogen, sulphur and phosphorus
- Self-extinguishing to IEC 61386
- Colour: black

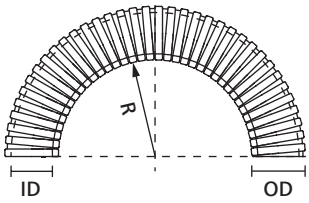


*HelaGuard HG-DC double slit conduit is ideal for retrofitting.*

**To order additional HAT application tools, see page 321.**

| | |
|---|---|
| **MATERIAL** | Polyamide 6 (PA6) |
| **Operating Temperature** | -40 °C to +140 °C, intermittent +160 °C |
| **Flammability** | UL 94 HB |

HF ✓ RoHS ✓




*HelaGuard non-metallic conduit*

| TYPE | Nominal Ø | NW Ø | Outside Ø (OD) | Inside Ø (ID) | Min. Bending Radius (R) | Weight | Reel Length | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **HG-DC11** | 11 | 8.5 | 11.5 | 6.2 | 45 | 37 g/m | 50 m | Black (BK) | 166-11800 |
| **HG-DC13** | 13 | 10 | 12.9 | 7.9 | 55 | 46 g/m | 50 m | Black (BK) | 166-11801 |
| **HG-DC16** | 16 | 12 | 16.2 | 10.3 | 60 | 72 g/m | 50 m | Black (BK) | 166-11802 |
| **HG-DC21** | 21 | 17 | 21.0 | 13.7 | 90 | 110 g/m | 50 m | Black (BK) | 166-11803 |
| **HG-DC28** | 28 | 23 | 28.4 | 19.8 | 105 | 166 g/m | 50 m | Black (BK) | 166-11804 |
| **HG-DC34** | 34 | 29 | 34.2 | 26.6 | 150 | 180 g/m | 25 m | Black (BK) | 166-11805 |
| **HG-DC42** | 42 | 36 | 43.5 | 32.3 | 170 | 293 g/m | 25 m | Black (BK) | 166-11806 |
| **HG-DC54** | 54 | 48 | 53.3 | 44.0 | 170 | 378 g/m | 25 m | Black (BK) | 166-11807 |

All dimensions in mm. Subject to technical changes.
Other reel lengths available on request. Minimum Order Quantity (MOQ) may differ from package content.

**For more information on our complete HelaGuard range of conduits and fittings, please see our new HelaGuard catalogue.**




Date of issue: January 2019

## Fittings with fixed external thread

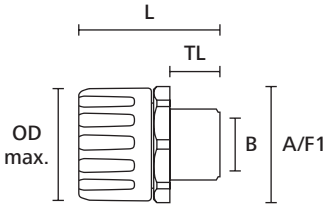
### HG-S Straight, IP66

Straight external thread.

**Features and benefits**

- One piece, fast fit
- High pull-off strength
- Highly resistant to solvents and oils
- Free of halogen, sulphur and phosphorus
- Metric threads supplied with locknuts

**Fittings with PG and swivel threads are also available. For our complete range of conduits and fittings, please see our HelaGuard catalogue.**




*HelaGuard fitting, straight with fixed external thread*



*HelaGuard HG-S Straight, IP66.*

| | |
|---|---|
| **MATERIAL** | Polyamide 6.6 (PA66) |
| **Operating Temperature** | -50 °C to +135 °C |
| **Flammability** | UL 94 V2 |

HF ✓ RoHS ✓

| TYPE | Nominal Ø | Thread Size | Min. Bore Size (B) | Outside Ø max (OD max.) | Length (L) | A/F Body (A/F1) | Thread Length (TL) | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **HG10-S-M12** | 10 | M12 | 7.5 | 19 | 33 | 19 | 9 | 10 pcs. | Black (BK) | 166-21000 |
| **HG10-S-M16** | 10 | M16 | 9.5 | 19 | 35 | 19 | 11 | 10 pcs. | Black (BK) | 166-21020 |
| **HG11-S-M12** | 11 | M12 | 7.5 | 19 | 33 | 19 | 9 | 10 pcs. | Black (BK) | 166-21021 |
| **HG13-S-M12** | 13 | M12 | 7.5 | 24 | 35 | 23 | 9 | 10 pcs. | Black (BK) | 166-21022 |
| **HG13-S-M16** | 13 | M16 | 11.0 | 24 | 37 | 23 | 11 | 10 pcs. | Black (BK) | 166-21001 |
| **HG13-S-M20** | 13 | M20 | 12.5 | 24 | 40 | 23 | 14 | 10 pcs. | Black (BK) | 166-21023 |
| **HG16-S-M16** | 16 | M16 | 11.0 | 29 | 41 | 28 | 11 | 10 pcs. | Black (BK) | 166-21002 |
| **HG16-S-M20** | 16 | M20 | 14.5 | 29 | 34 | 28 | 14 | 10 pcs. | Black (BK) | 166-21003 |
| **HG20-S-M20** | 20 | M20 | 14.5 | 32 | 44 | 30 | 14 | 10 pcs. | Black (BK) | 166-21025 |
| **HG21-S-M20** | 21 | M20 | 14.5 | 32 | 44 | 30 | 14 | 10 pcs. | Black (BK) | 166-21004 |
| **HG25-S-M25** | 25 | M25 | 19.5 | 39 | 49 | 37 | 15 | 10 pcs. | Black (BK) | 166-21026 |
| **HG28-S-M25** | 28 | M25 | 19.5 | 44 | 49 | 42 | 15 | 10 pcs. | Black (BK) | 166-21005 |
| **HG28-S-M32** | 28 | M32 | 26.5 | 44 | 50 | 42 | 16 | 10 pcs. | Black (BK) | 166-21027 |
| **HG34-S-M32** | 34 | M32 | 26.5 | 51 | 53 | 49 | 16 | 10 pcs. | Black (BK) | 166-21006 |
| **HG34-S-M40** | 34 | M40 | 32.5 | 51 | 53 | 49 | 16 | 10 pcs. | Black (BK) | 166-21028 |
| **HG42-S-M40** | 42 | M40 | 32.5 | 63 | 60 | 60 | 16 | 2 pcs. | Black (BK) | 166-21007 |
| **HG42-S-M50** | 42 | M50 | 40.5 | 63 | 60 | 60 | 16 | 2 pcs. | Black (BK) | 166-21029 |
| **HG54-S-M50** | 54 | M50 | 42.0 | 76 | 65 | 73 | 16 | 2 pcs. | Black (BK) | 166-21008 |
| **HG54-S-M63** | 54 | M63 | 53.0 | 76 | 65 | 73 | 16 | 2 pcs. | Black (BK) | 166-21030 |
| **HG67-S-M63** | 67 | M63 | 56.0 | 90 | 70 | 87 | 16 | 1 pc. | Black (BK) | 166-21009 |

All dimensions in mm. Subject to technical changes.
Colour grey available on request. Minimum Order Quantity (MOQ) may differ from package content.

c UL us

For product specific approvals and specifications please refer to the Appendix.

CAD

*CAD download*

Date of issue: January 2019

## Fittings with fixed external thread

**HG-90 90° Elbow, IP66**

90° elbow external thread.

**Features and benefits**

- One piece, fast fit
- High pull-off strength
- Highly resistant to solvents and oils
- Free of halogen, sulphur and phosphorus
- Metric threads supplied with locknuts

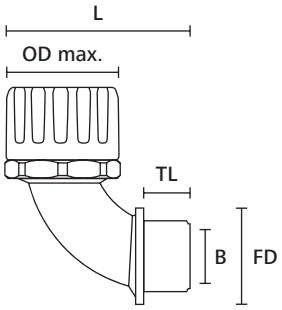
**Fittings with PG and swivel threads are also available. For our complete range of conduits and fittings, please see our HelaGuard catalogue.**



*HelaGuard HG-90 90° Elbow, IP66.*

| | |
|---|---|
| **MATERIAL** | Polyamide 6.6 (PA66) |
| **Operating Temperature** | -50 °C to +135 °C |
| **Flammability** | UL 94 V2 |

HF ✓ RoHS ✓




*HelaGuard fitting, 90° with fixed external thread*

| TYPE | Nominal Ø | Thread Size | Min. Bore Size (B) | Outside Ø max (OD max.) | Length (L) | Face Diameter (FD) | Thread Length (TL) | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **HG10-90-M12** | 10 | M12 | 6.5 | 19 | 32 | 17 | 8 | 10 pcs. | Black (BK) | 166-22200 |
| **HG11-90-M12** | 11 | M12 | 6.5 | 19 | 32 | 17 | 8 | 10 pcs. | Black (BK) | 166-22220 |
| **HG13-90-M16** | 13 | M16 | 10.5 | 24 | 46 | 22 | 11 | 10 pcs. | Black (BK) | 166-22201 |
| **HG16-90-M16** | 16 | M16 | 10.5 | 29 | 49 | 22 | 11 | 10 pcs. | Black (BK) | 166-22202 |
| **HG16-90-M20** | 16 | M20 | 14.0 | 29 | 51 | 27 | 13 | 10 pcs. | Black (BK) | 166-22203 |
| **HG21-90-M20** | 21 | M20 | 14.0 | 32 | 53 | 27 | 13 | 10 pcs. | Black (BK) | 166-22204 |
| **HG25-90-M25** | 25 | M25 | 19.0 | 39 | 63 | 32 | 15 | 10 pcs. | Black (BK) | 166-22222 |
| **HG28-90-M25** | 28 | M25 | 19.0 | 44 | 66 | 32 | 15 | 10 pcs. | Black (BK) | 166-22205 |
| **HG34-90-M32** | 34 | M32 | 24.5 | 51 | 75 | 40 | 16 | 10 pcs. | Black (BK) | 166-22206 |
| **HG42-90-M40** | 42 | M40 | 32.5 | 63 | 98 | 50 | 16 | 2 pcs. | Black (BK) | 166-22207 |
| **HG42-90-M50** | 42 | M50 | 39.0 | 63 | 99 | 60 | 16 | 2 pcs. | Black (BK) | 166-22223 |
| **HG54-90-M50** | 54 | M50 | 39.0 | 76 | 104 | 60 | 16 | 2 pcs. | Black (BK) | 166-22208 |
| **HG54-90-M63** | 54 | M63 | 49.5 | 76 | 104 | 72 | 16 | 2 pcs. | Black (BK) | 166-22224 |
| **HG67-90-M63** | 67 | M63 | 49.5 | 90 | 120 | 72 | 16 | 1 pc. | Black (BK) | 166-22209 |

All dimensions in mm. Subject to technical changes.
Colour grey available on request. Minimum Order Quantity (MOQ) may differ from package content.

c UL us

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Metallic conduits

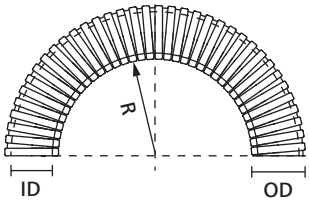
### SC Galvanised Steel Conduit

General purpose flexible steel conduit offers high mechanical protection and is typically used in machines, plants, underfloor wiring, data cabling and protection of hydraulic or pneumatic hoses.

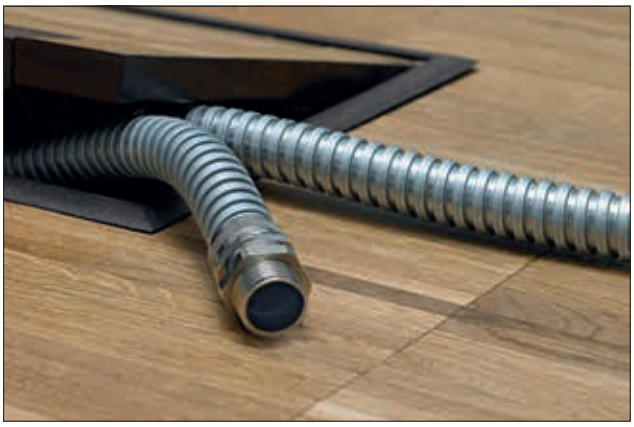
**Features and benefits**

- High compression, tensile and impact strength
- Very flexible

*One Step to the Web!*




*HelaGuard metallic conduit*



*HelaGuard SC Galvanised Steel Conduit.*

| | |
|---|---|
| **MATERIAL** | Galvanised Steel (GS) |
| **Operating Temperature** | -100 °C to +300 °C |

HF ✓ RoHS ✓

| TYPE | Nominal Ø | Outside Ø (OD) | Inside Ø (ID) | Min. Bending Radius (R) | Weight | Reel Length | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|
| SC10 | 10 | 9.1 | 6.8 | 25 | 110 g/m | 10 m | Metal (ML) | 166-30110 |
| | 10 | 9.1 | 6.8 | 25 | 110 g/m | 50 m | Metal (ML) | 166-30100 |
| SC12 | 12 | 13.2 | 10.0 | 30 | 113 g/m | 10 m | Metal (ML) | 166-30111 |
| | 12 | 13.2 | 10.0 | 30 | 113 g/m | 50 m | Metal (ML) | 166-30101 |
| SC16 | 16 | 16.4 | 12.9 | 40 | 152 g/m | 10 m | Metal (ML) | 166-30112 |
| | 16 | 16.4 | 12.9 | 40 | 152 g/m | 25 m | Metal (ML) | 166-30102 |
| SC20 | 20 | 20.6 | 16.9 | 45 | 295 g/m | 10 m | Metal (ML) | 166-30113 |
| | 20 | 20.6 | 16.9 | 45 | 295 g/m | 25 m | Metal (ML) | 166-30103 |
| SC25 | 25 | 24.6 | 21.1 | 55 | 321 g/m | 10 m | Metal (ML) | 166-30114 |
| | 25 | 24.6 | 21.1 | 55 | 321 g/m | 25 m | Metal (ML) | 166-30104 |
| SC32 | 32 | 32.0 | 28.1 | 70 | 450 g/m | 10 m | Metal (ML) | 166-30115 |
| | 32 | 32.0 | 28.1 | 70 | 450 g/m | 25 m | Metal (ML) | 166-30105 |
| SC40 | 40 | 42.5 | 37.6 | 80 | 519 g/m | 10 m | Metal (ML) | 166-30116 |
| | 40 | 42.5 | 37.6 | 80 | 519 g/m | 25 m | Metal (ML) | 166-30106 |
| SC50 | 50 | 53.2 | 48.4 | 90 | 802 g/m | 10 m | Metal (ML) | 166-30117 |
| | 50 | 53.2 | 48.4 | 90 | 802 g/m | 25 m | Metal (ML) | 166-30107 |
| SC63 | 63 | 62.5 | 57.5 | 115 | 836 g/m | 10 m | Metal (ML) | 166-30108 |
| SC75 | 75 | 77.0 | 70.0 | 150 | 1,137 g/m | 10 m | Metal (ML) | 166-30109 |

All dimensions in mm. Subject to technical changes.
Other reel lengths available on request. Minimum Order Quantity (MOQ) may differ from package content.

CAD

*CAD download*

Date of issue: January 2019

## Metallic conduits

### SSC Stainless Steel Conduit

Stainless steel, corrosion-resistant flexible conduit used for protection of sensor cables, instrumentation tubing, as well as hydraulic and pneumatic hoses, particularly in corrosive environments. Commonly used in hospitals and clinics.

**Features and benefits**

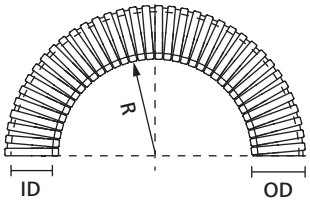
- Highly resistant to rust and corrosion
- High compression, tensile and impact strength
- Very flexible



*The HelaGuard SSC stainless steel conduit offers superior mechanical protection in corrosive environments.*

| | |
|---|---|
| **MATERIAL** | Stainless Steel (SS316) |
| **Operating Temperature** | -100 °C to +600 °C |

HF ✓ RoHS ✓




*HelaGuard metallic conduit*

| TYPE | Nominal Ø | Outside Ø (OD) | Inside Ø (ID) | Min. Bending Radius (R) | Weight | Reel Length | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **SSC10** | 10 | 9.1 | 6.8 | 25 | 110 g/m | 25 m | Metal (ML) | 166-30200 |
| **SSC12** | 12 | 12.3 | 10.0 | 40 | 126 g/m | 25 m | Metal (ML) | 166-30201 |
| **SSC16** | 16 | 16.4 | 13.0 | 40 | 162 g/m | 25 m | Metal (ML) | 166-30202 |
| **SSC20** | 20 | 20.4 | 16.9 | 45 | 202 g/m | 25 m | Metal (ML) | 166-30203 |
| **SSC25** | 25 | 24.3 | 21.1 | 55 | 300 g/m | 25 m | Metal (ML) | 166-30204 |
| **SSC32** | 32 | 31.7 | 28.1 | 70 | 340 g/m | 25 m | Metal (ML) | 166-30205 |
| **SSC40** | 40 | 42.1 | 37.6 | 80 | 410 g/m | 10 m | Metal (ML) | 166-30206 |
| **SSC50** | 50 | 52.8 | 48.4 | 90 | 516 g/m | 10 m | Metal (ML) | 166-30207 |

All dimensions in mm. Subject to technical changes.
Other reel lengths available on request. Minimum Order Quantity (MOQ) may differ from package content.

**For more information on our complete HelaGuard range of conduits and fittings, please see our new HelaGuard catalogue.**



## Fittings for metallic conduits

### SC-FM Fixed External Thread

Fixed external thread, nickel plated brass.

**Features and benefits**

- Two-part fitting of shell and body with external thread
- Provides tight, reliable hold of conduit
- Can be secured with locknut

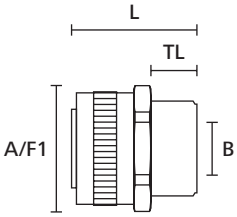
**Fittings with PG and swivel threads are also available. For our complete range of conduits and fittings, please see our HelaGuard catalogue.**



*HelaGuard SC-FM Fixed External Thread.*

| | |
|---|---|
| **MATERIAL** | Nickel Plated Brass (NPB) |
| **Operating Temperature** | -100 °C to +300 °C |

HF ✓ RoHS ✓




*HelaGuard fitting, straight with fixed external thread*

| TYPE | Nominal Ø | Thread Size | Min. Bore Size (B) | Length (L) | A/F Body (A/F1) | Thread Length (TL) | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **SC10-FM-M12** | 10 | M12 | 5.6 | 21.0 | 13 | 7.0 | 10 pcs. | Metal (ML) | 166-30300 |
| **SC12-FM-M16** | 12 | M16 | 8.5 | 23.0 | 17 | 10.0 | 10 pcs. | Metal (ML) | 166-30301 |
| **SC16-FM-M16** | 16 | M16 | 11.5 | 25.0 | 20 | 10.0 | 10 pcs. | Metal (ML) | 166-30302 |
| **SC16-FM-M20** | 16 | M20 | 11.5 | 25.0 | 22 | 10.0 | 10 pcs. | Metal (ML) | 166-30303 |
| **SC20-FM-M20** | 20 | M20 | 15.3 | 26.3 | 24 | 10.0 | 10 pcs. | Metal (ML) | 166-30304 |
| **SC25-FM-M25** | 25 | M25 | 19.1 | 29.5 | 29 | 10.0 | 10 pcs. | Metal (ML) | 166-30305 |
| **SC32-FM-M32** | 32 | M32 | 26.2 | 36.8 | 36 | 13.0 | 2 pcs. | Metal (ML) | 166-30306 |
| **SC40-FM-M40** | 40 | M40 | 34.6 | 39.0 | 48 | 14.0 | 2 pcs. | Metal (ML) | 166-30307 |
| **SC50-FM-M50** | 50 | M50 | 44.7 | 42.0 | 58 | 15.0 | 1 pc. | Metal (ML) | 166-30308 |
| **SC63-FM-M63** | 63 | M63 | 54.1 | 50.0 | 70 | 18.0 | 1 pc. | Metal (ML) | 166-30309 |
| **SC75-FM-M75** | 75 | M75 | 66.4 | 60.0 | 84 | 20.0 | 1 pc. | Metal (ML) | 166-30310 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

CAD

*CAD download*

Date of issue: January 2019

## Metallic conduits with plastic coating

### PCS Galvanised Steel Conduit, PVC Coating

Flexible galvanised steel conduit with PVC coating, typically used in machine and plant construction and electrical installations.

**Features and benefits**

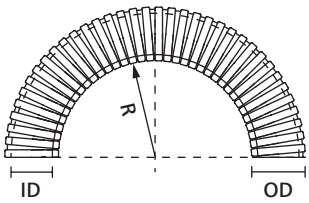
- High compression, tensile and impact strength
- Very flexible
- Good resistance to alkalis and acids
- Good resistance to chemicals
- Colour: black, grey



*HelaGuard PCS Galvanised Steel Conduit with PVC Coating.*

| | |
|---|---|
| **MATERIAL** | Galvanised Steel (GS), Polyvinylchloride (PVC) |
| **Operating Temperature** | -15 °C to +70 °C |

RoHS




*HelaGuard metallic conduit, plastic coating*

| TYPE | Nominal Ø | Outside Ø (OD) | Inside Ø (ID) | Min. Bending Radius (R) | Weight | Reel Length | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|
| PCS10 | 10 | 10.1 | 6.8 | 25 | 140 g/m | 10 m | Grey (GY) | 166-30722 |
| | 10 | 10.1 | 6.8 | 25 | 140 g/m | 50 m | Black (BK) | 166-30700 |
| PCS12 | 12 | 14.2 | 10.2 | 30 | 143 g/m | 10 m | Grey (GY) | 166-30723 |
| | 12 | 14.2 | 10.2 | 30 | 143 g/m | 50 m | Black (BK) | 166-30701 |
| PCS16 | 16 | 17.0 | 13.0 | 40 | 196 g/m | 10 m | Grey (GY) | 166-30724 |
| | 16 | 17.1 | 13.0 | 40 | 196 g/m | 25 m | Black (BK) | 166-30702 |
| PCS20 | 20 | 21.6 | 16.9 | 45 | 345 g/m | 10 m | Grey (GY) | 166-30725 |
| | 20 | 21.6 | 16.9 | 45 | 345 g/m | 25 m | Black (BK) | 166-30703 |
| PCS25 | 25 | 26.0 | 21.1 | 55 | 411 g/m | 10 m | Grey (GY) | 166-30726 |
| | 25 | 26.0 | 21.1 | 55 | 411 g/m | 25 m | Black (BK) | 166-30704 |
| PCS32 | 32 | 34.0 | 28.1 | 60 | 560 g/m | 10 m | Grey (GY) | 166-30727 |
| | 32 | 34.0 | 28.1 | 60 | 560 g/m | 25 m | Black (BK) | 166-30705 |
| PCS40 | 40 | 44.2 | 37.6 | 80 | 719 g/m | 10 m | Grey (GY) | 166-30728 |
| | 40 | 44.2 | 37.6 | 80 | 719 g/m | 25 m | Black (BK) | 166-30706 |
| PCS50 | 50 | 55.0 | 48.4 | 90 | 1,052 g/m | 10 m | Grey (GY) | 166-30729 |
| | 50 | 55.0 | 48.4 | 90 | 1,052 g/m | 25 m | Black (BK) | 166-30707 |
| PCS63 | 63 | 64.5 | 57.5 | 115 | 1,091 g/m | 10 m | Black (BK) | 166-30708 |
| | 63 | 64.5 | 57.5 | 115 | 1,091 g/m | 10 m | Grey (GY) | 166-30730 |
| PCS75 | 75 | 79.2 | 70.0 | 150 | 1,459 g/m | 10 m | Black (BK) | 166-30709 |
| | 75 | 79.2 | 70.0 | 150 | 1,459 g/m | 10 m | Grey (GY) | 166-30731 |

All dimensions in mm. Subject to technical changes.
Other reel lengths available on request. Minimum Order Quantity (MOQ) may differ from package content.

Date of issue: January 2019

## Fittings for metallic conduits with plastic coating

**PCS-FM Fixed External Thread, IP54**

Fixed external thread, nickel plated brass.

**Features and benefits**

- Two-part fitting of shell and body with external thread
- Provides tight, reliable hold of conduit
- Can be secured with locknut

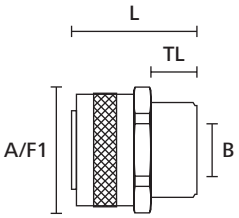
**Fittings with PG and swivel threads are also available. For our complete range of conduits and fittings, please see our HelaGuard catalogue.**



*HelaGuard PCS-FM Fixed External Thread.*

| | |
|---|---|
| **MATERIAL** | Nickel Plated Brass (NPB) |
| **Operating Temperature** | -100 °C to +300 °C |

HF RoHS




*HelaGuard fitting, straight with fixed external thread*

| TYPE | Nominal Ø | Thread Size | Min. Bore Size (B) | Length (L) | A/F Body (A/F1) | Thread Length (TL) | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **PCS10-FM-M12** | 10 | M12 | 5.6 | 21.0 | 13 | 8.0 | 10 pcs. | Metal (ML) | 166-31000 |
| **PCS12-FM-M16** | 12 | M16 | 8.5 | 23.0 | 17 | 8.0 | 10 pcs. | Metal (ML) | 166-31001 |
| **PCS16-FM-M16** | 16 | M16 | 11.5 | 25.0 | 20 | 10.0 | 10 pcs. | Metal (ML) | 166-31002 |
| **PCS16-FM-M20** | 16 | M20 | 11.5 | 25.0 | 22 | 10.0 | 10 pcs. | Metal (ML) | 166-31003 |
| **PCS20-FM-M20** | 20 | M20 | 15.3 | 26.3 | 24 | 10.0 | 10 pcs. | Metal (ML) | 166-31004 |
| **PCS25-FM-M25** | 25 | M25 | 19.1 | 32.5 | 29 | 10.0 | 10 pcs. | Metal (ML) | 166-31005 |
| **PCS32-FM-M32** | 32 | M32 | 26.2 | 36.8 | 36 | 13.0 | 2 pcs. | Metal (ML) | 166-31006 |
| **PCS40-FM-M40** | 40 | M40 | 34.6 | 39.0 | 48 | 14.0 | 2 pcs. | Metal (ML) | 166-31007 |
| **PCS50-FM-M50** | 50 | M50 | 44.7 | 42.0 | 58 | 15.0 | 1 pc. | Metal (ML) | 166-31008 |
| **PCS63-FM-M63** | 63 | M63 | 54.5 | 50.0 | 70 | 18.0 | 1 pc. | Metal (ML) | 166-31009 |
| **PCS75-FM-M75** | 75 | M75 | 66.5 | 60.0 | 84 | 20.0 | 1 pc. | Metal (ML) | 166-31019 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

CAD

*CAD download*

Date of issue: January 2019

## Fittings for metallic conduits with plastic coating

**PCS-FMC Fixed Thread Compression Fitting, IP65**

External thread, nickel plated brass.

Fulfils IP65.

**Features and benefits**

- Multipart compression fitting including elastomeric seal
- Provides excellent tensile strength
- Can be used for knockouts or threaded entries as fitting rotates until tightened

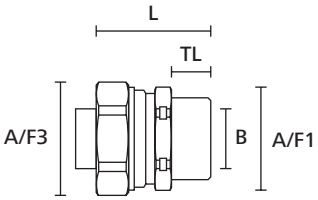
**Fittings with PG and swivel threads are also available. For our complete range of conduits and fittings, please see our HelaGuard catalogue.**



*HelaGuard PCS-FMC Compression Fitting.*

| | | |
|---|---|---|
| **MATERIAL** | Nickel Plated Brass (NPB), Thermoplastic Elastomer (TPE) | Nickel Plated Brass (NPB), Polyamide 6 (PA6) |
| **Operating Temperature** | -50 °C to +135 °C | |

HF RoHS




*HelaGuard compression fitting, straight with fixed external thread*

| TYPE | Nominal Ø | Thread Size | Min. Bore Size (B) | Length (L) | A/F Body (A/F1) | A/F Nut (A/F3) | Thread Length (TL) | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **PCS10-FMC-M12** | 10 | M12 | 5.6 | 29.8 | 20 | 20 | 10.0 | 10 pcs. | Metal (ML) | 166-31400 |
| **PCS12-FMC-M16** | 12 | M16 | 8.6 | 29.8 | 20 | 22 | 10.0 | 10 pcs. | Metal (ML) | 166-31401 |
| **PCS16-FMC-M16** | 16 | M16 | 11.5 | 33.0 | 24 | 26 | 12.0 | 10 pcs. | Metal (ML) | 166-31402 |
| **PCS16-FMC-M20** | 16 | M20 | 11.5 | 33.0 | 24 | 26 | 12.0 | 10 pcs. | Metal (ML) | 166-31403 |
| **PCS20-FMC-M20** | 20 | M20 | 15.3 | 33.5 | 26 | 29 | 12.0 | 10 pcs. | Metal (ML) | 166-31404 |
| **PCS25-FMC-M25** | 25 | M25 | 19.1 | 40.5 | 33 | 35 | 14.0 | 10 pcs. | Metal (ML) | 166-31405 |
| **PCS32-FMC-M32** | 32 | M32 | 26.0 | 45.8 | 40 | 42 | 15.0 | 2 pcs. | Metal (ML) | 166-31406 |
| **PCS40-FMC-M40** | 40 | M40 | 34.6 | 47.5 | 56 | 58 | 16.0 | 2 pcs. | Metal (ML) | 166-31407 |
| **PCS50-FMC-M50** | 50 | M50 | 44.7 | 51.0 | 70 | 70 | 16.0 | 1 pc. | Metal (ML) | 166-31408 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

CAD

*CAD download*

## Metallic conduits with liquid-tight cover

**LTS Galvanised Steel Conduit, PVC Cover**

Machine tools or outdoor installations, wherever liquid-tight (IP68) is a requirement.

**Features and benefits**

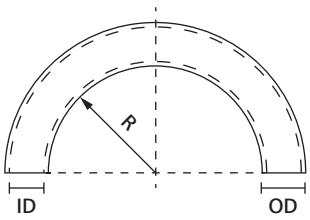
- Liquid-tight (IP68 and IP69k with LTS fittings)
- High compression, tensile and impact strength
- Good flexibility
- Smooth outer cover does not wrinkle when bent
- Good resistance to acids, petrol, oils and greases
- UV-resistant, suitable for outdoor use
- Colour: black



*HelaGuard LTS.*



*HelaGuard LTS galvanised steel conduit with a smooth, liquid-tight PVC cover is ideal for outdoor installations.*




*HelaGuard liquid-tight metallic conduit, plastic coating*

| | |
|---|---|
| **MATERIAL** | Galvanised Steel (GS), Polyvinylchloride (PVC) |
| **Operating Temperature** | -20 °C to +105 °C |

RoHS

| TYPE | Nominal Ø | US Trade Size | Outside Ø (OD) | Inside Ø (ID) | Min. Bending Radius (R) | Weight | Reel Length | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **LTS10** | 10 | 1/4 " | 11.8 | 7.0 | 35 | 185 g/m | 50 m | Black (BK) | 166-31900 |
| **LTS12** | 12 | 5/16 " | 14.2 | 10.0 | 40 | 203 g/m | 25 m | Black (BK) | 166-31901 |
| **LTS16** | 16 | 3/8 " | 17.8 | 12.6 | 45 | 311 g/m | 25 m | Black (BK) | 166-31902 |
| **LTS20** | 20 | 1/2 " | 21.1 | 16.0 | 65 | 407 g/m | 25 m | Black (BK) | 166-31903 |
| **LTS25** | 25 | 3/4 " | 26.4 | 21.1 | 100 | 503 g/m | 25 m | Black (BK) | 166-31904 |
| **LTS32** | 32 | 1 " | 33.1 | 26.5 | 135 | 732 g/m | 25 m | Black (BK) | 166-31905 |
| **LTS40** | 40 | 1 1/4 " | 41.8 | 35.4 | 175 | 885 g/m | 25 m | Black (BK) | 166-31906 |
| **LTS50** | 50 | 1 1/2 " | 47.9 | 40.4 | 230 | 1,240 g/m | 25 m | Black (BK) | 166-31907 |
| **LTS63** | 63 | 2 " | 59.7 | 51.6 | 280 | 1,470 g/m | 10 m | Black (BK) | 166-31908 |

All dimensions in mm. Subject to technical changes.
Other reel lengths available on request. Minimum Order Quantity (MOQ) may differ from package content.

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Fittings for metallic conduits with liquid-tight cover

**LTS-FMC Fixed Thread Compression Fitting, IP68**

External thread, nickel plated brass.

Fulfils IP66, IP67, IP68 and IP69k.

**Features and benefits**

- Multipart compression fitting including elastomeric seal
- Provides excellent tensile strength
- Can be used for knockouts or threaded entries as fitting rotates until tightened

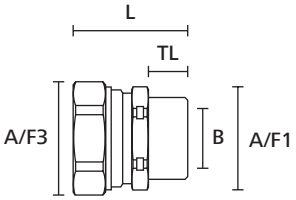
**Fittings with PG and swivel threads are also available. For our complete range of conduits and fittings, please see our HelaGuard catalogue.**



*HelaGuard LTS-FMC Compression Fitting.*

| | |
|---|---|
| **MATERIAL** | Nickel Plated Brass (NPB), Polyamide 6 (PA6) |
| **Operating Temperature** | -50 °C to +135 °C |

HF ✓ RoHS ✓




*HelaGuard compression fitting, straight with fixed external thread*

| TYPE | Nominal Ø | Thread Size | Min. Bore Size (B) | Length (L) | A/F Body (A/F1) | A/F Nut (A/F3) | Thread Length (TL) | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **LTS10-FMC-M12** | 10 | M12 | 5.6 | 29.8 | 20 | 20 | 10.0 | 10 pcs. | Metal (ML) | 166-32200 |
| **LTS10-FMC-M16** | 10 | M16 | 5.6 | 29.8 | 20 | 20 | 10.0 | 10 pcs. | Metal (ML) | 166-32201 |
| **LTS12-FMC-M16** | 12 | M16 | 8.6 | 29.8 | 20 | 22 | 10.0 | 10 pcs. | Metal (ML) | 166-32203 |
| **LTS16-FMC-M16** | 16 | M16 | 10.7 | 33.0 | 24 | 26 | 12.0 | 10 pcs. | Metal (ML) | 166-32204 |
| **LTS16-FMC-M20** | 16 | M20 | 10.7 | 33.0 | 24 | 26 | 12.0 | 10 pcs. | Metal (ML) | 166-32205 |
| **LTS20-FMC-M20** | 20 | M20 | 14.5 | 33.5 | 26 | 29 | 12.0 | 10 pcs. | Metal (ML) | 166-32206 |
| **LTS25-FMC-M25** | 25 | M25 | 18.0 | 40.5 | 33 | 35 | 14.0 | 10 pcs. | Metal (ML) | 166-32207 |
| **LTS32-FMC-M32** | 32 | M32 | 24.6 | 45.8 | 40 | 42 | 15.0 | 2 pcs. | Metal (ML) | 166-32208 |
| **LTS40-FMC-M40** | 40 | M40 | 32.7 | 47.5 | 50 | 52 | 16.0 | 1 pc. | Metal (ML) | 166-32209 |
| **LTS50-FMC-M50** | 50 | M50 | 37.7 | 53.0 | 58 | 58 | 18.0 | 1 pc. | Metal (ML) | 166-32210 |
| **LTS63-FMC-M63** | 63 | M63 | 49.0 | 58.8 | 70 | 70 | 20.0 | 1 pc. | Metal (ML) | 166-32211 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

CAD

*CAD download*

## Spiral-reinforced PVC Conduits

**PSR Conduit**

Machine building, plant construction, shipbuilding, automation, electrical installations

**Features and benefits**

- Extremely flexible
- Withstands torsional movement
- Self-extinguishing
- Easy to feed cables into conduit
- Can be used with PSR fittings
- Colour: grey; black, green (oil resistant) or blue (high temperature resistant) upon request

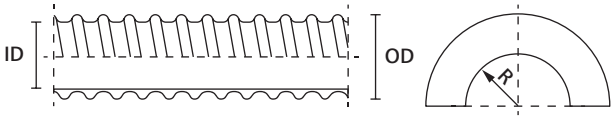


*PSR is extremely flexible and allows for easy insertion of cables.*

| | |
|---|---|
| **MATERIAL** | Polyvinylchloride (PVC) |
| **Operating Temperature** | -20 °C to +70 °C |
| **Flammability** | self-extinguishing according to EN IEC 61386 |

RoHS

*One Step to the Web!*




*HelaGuard spiral reinforced conduit*

**PSR conduit with higher resistance to oil (color: green) and temperature (colour: blue) available on request.**

| TYPE | Nominal Ø | Outside Ø (OD) | Inside Ø (ID) | Min. Bending Radius (R) | Weight | Reel Length | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **PSR12** | 12 | 14.5 | 10 | 25 | 71 g/m | 30 m | Grey (GY) | 166-40001 |
| **PSR16** | 16 | 16.5 | 12 | 25 | 76 g/m | 30 m | Grey (GY) | 166-40002 |
| **PSR20** | 20 | 21.0 | 16 | 35 | 112 g/m | 30 m | Grey (GY) | 166-40003 |
| **PSR25** | 25 | 27.5 | 22 | 45 | 153 g/m | 30 m | Grey (GY) | 166-40004 |
| **PSR32** | 32 | 33.5 | 28 | 60 | 327 g/m | 30 m | Grey (GY) | 166-40005 |
| **PSR40** | 40 | 41.0 | 35 | 80 | 448 g/m | 30 m | Grey (GY) | 166-40006 |
| **PSR50** | 50 | 46.4 | 40 | 105 | 725 g/m | 30 m | Grey (GY) | 166-40007 |
| **PSR63** | 63 | 57.0 | 50 | 120 | 948 g/m | 30 m | Grey (GY) | 166-40008 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

c UL us For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Fittings for spiral-reinforced PVC Conduits

### PSR-S Straight fitting

Straight PA66 fitting, fixed external thread.

Fulfils IP65 with PSR conduits.

Fulfils IP66 and IP67 with PSRSC conduits.

**Features and benefits**

- High pull-off strength
- Highly resistant to solvents and oils
- Free of halogen, sulphur and phosphorus
- Metric threads supplied with locknuts
- Fits both PSR and PSRSC conduits

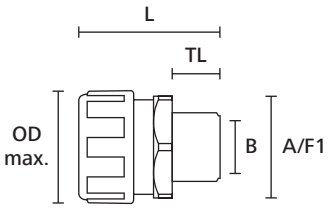


*PSR-S Straight.*

**Fittings with PG-Thread and in 90° and 45° are also available. For our complete range of conduits and fittings, please see our HelaGuard catalogue.**

| | |
|---|---|
| **MATERIAL** | Polyamide 6.6 (PA66) |
| **Operating Temperature** | -50 °C to +135 °C |
| **Flammability** | UL 94 V2 |

HF ✓ RoHS ✓




*HelaGuard fitting, straight with fixed external thread*

| TYPE | Nominal Ø | Thread Size | Min. Bore Size (B) | Outside Ø max (OD max.) | Length (L) | A/F Body (A/F1) | Thread Length (TL) | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **PSR12-S-M16** | 12 | M16 | 9.0 | 24 | 38 | 23 | 11 | 10 pcs. | Grey (GY) | 166-40701 |
| **PSR16-S-M16** | 16 | M16 | 10.5 | 28 | 40 | 25 | 11 | 10 pcs. | Grey (GY) | 166-40702 |
| **PSR16-S-M20** | 16 | M20 | 10.5 | 28 | 41 | 25 | 14 | 10 pcs. | Grey (GY) | 166-40703 |
| **PSR20-S-M20** | 20 | M20 | 14.5 | 33 | 43 | 30 | 14 | 10 pcs. | Grey (GY) | 166-40704 |
| **PSR25-S-M25** | 25 | M25 | 19.0 | 42 | 45 | 37 | 15 | 10 pcs. | Grey (GY) | 166-40705 |
| **PSR32-S-M32** | 32 | M32 | 24.5 | 48 | 48 | 45 | 16 | 10 pcs. | Grey (GY) | 166-40706 |
| **PSR40-S-M40** | 40 | M40 | 33.0 | 60 | 59 | 60 | 16 | 2 pcs. | Grey (GY) | 166-40707 |
| **PSR50-S-M50** | 50 | M50 | 39.0 | 64 | 55 | 60 | 16 | 2 pcs. | Grey (GY) | 166-40708 |
| **PSR63-S-M63** | 63 | M63 | 48.0 | 76 | 56 | 73 | 16 | 1 pc. | Grey (GY) | 166-40709 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

c UL us For product specific approvals and specifications please refer to the Appendix.

## Fittings for spiral-reinforced PVC Conduits

### PSR-90 90° elbow fitting

90° PA66 fitting, fixed external thread.

Fulfils IP65 with PSR conduits.

Fulfils IP66 and IP67 with PSRSC conduits.

**Features and benefits**

- High pull-off strength
- Highly resistant to solvents and oils
- Free of halogen, sulphur and phosphorus
- Metric threads supplied with locknuts
- Fits both PSR and PSRSC conduits

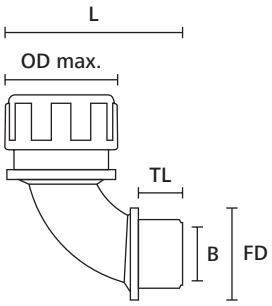
**Fittings with PG-Thread and in 90° and 45° are also available. For our complete range of conduits and fittings, please see our HelaGuard catalogue.**



*PSR-90 90° Elbow.*

| | |
|---|---|
| **MATERIAL** | Polyamide 6.6 (PA66) |
| **Operating Temperature** | -50 °C to +135 °C |
| **Flammability** | UL 94 V2 |

HF ✓ RoHS ✓




*HelaGuard fitting, 90° with fixed external thread*

| TYPE | Nominal Ø | Thread Size | Min. Bore Size (B) | Outside Ø max (OD max.) | Length (L) | Face Diameter (FD) | Thread Length (TL) | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **PSR16-90-M16** | 16 | M16 | 10.5 | 28 | 49 | 22 | 11 | 10 pcs. | 166-40801 |
| **PSR16-90-M20** | 16 | M20 | 10.5 | 28 | 51 | 27 | 13 | 10 pcs. | 166-40802 |
| **PSR20-90-M20** | 20 | M20 | 14.5 | 33 | 52 | 27 | 13 | 10 pcs. | 166-40803 |
| **PSR25-90-M25** | 25 | M25 | 19.0 | 42 | 63 | 33 | 15 | 10 pcs. | 166-40804 |
| **PSR32-90-M32** | 32 | M32 | 24.5 | 48 | 74 | 40 | 16 | 2 pcs. | 166-40805 |
| **PSR40-90-M40** | 40 | M40 | 33.0 | 60 | 113 | 50 | 16 | 2 pcs. | 166-40806 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

CAD

*CAD download*

c UL us For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## FlexiGuard Conduits & Fittings

### FlexiGuard PVC Protective Conduits

FlexiGuard protective hoses are used to protect cables in machines and plant construction, and robotics as well as leads to switch cabinets.

**Features and benefits**

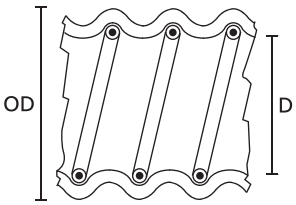
- Extremely flexible
- Excellent mechanical protection
- Good resistance to oils, acids and alkalis
- Good resistance to chemicals
- Good resistance to UV and ozone



*FlexiGuard FG with FG-UH fitting.*

| | |
|---|---|
| **MATERIAL** | Flexible Polyvinyl Chloride, cadmium free (PVC), Steel (ST) |
| **Operating Temperature** | -20 °C to +70 °C, (+80 °C, 200 h) |
| **Flammability** | UL 94 HB |

RoHS




*FlexiGuard*

| TYPE | Nominal Ø | Inside Ø (ID) | Outside Ø (OD) | Min. Bending Radius (R) | Reel Length | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **FG14** | 14 | 10 | 14 | 14 | 10 m | Grey (GY) | 10 m | 167-00209 |
| **FG17** | 17 | 13 | 17 | 17 | 10 m | Grey (GY) | 10 m | 167-00211 |
| **FG19** | 19 | 15 | 19 | 19 | 10 m | Grey (GY) | 10 m | 167-00213 |
| **FG21** | 21 | 16 | 21 | 21 | 10 m | Grey (GY) | 10 m | 167-00216 |
| **FG27** | 27 | 21 | 27 | 27 | 10 m | Grey (GY) | 10 m | 167-00221 |
| **FG36** | 36 | 30 | 36 | 36 | 10 m | Grey (GY) | 10 m | 167-00229 |
| **FG45** | 45 | 38 | 45 | 45 | 10 m | Grey (GY) | 10 m | 167-00236 |
| **FG56** | 56 | 48 | 56 | 56 | 10 m | Grey (GY) | 10 m | 167-00248 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

**For more information on our complete HelaGuard range of conduits and fittings, please see our new HelaGuard catalogue.**



## FlexiGuard Conduits & Fittings

### FG-M Fittings

The TV fittings and TH fasteners are used to protect against dust and moisture, for instance outdoors or wherever dust and moisture are a particular hazard.

**Features and benefits**

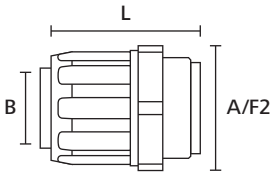
- One piece, easy fit
- Swivel thread
- Vibration and tension resistant
- Large bore size
- Inner ferrule protects cables
- Good resistance to chemicals
- Good resistance to UV and ozone



*FG conduit fitting.*

| | |
|---|---|
| **MATERIAL** | Polypropylene (PP) |
| **Operating Temperature** | -35 °C to +80 °C |
| **Flammability** | UL 94 V2 |

HF ✓ RoHS ✓




*FlexiGuard fitting, straight with swivel thread*

| TYPE | Nominal Ø | Thread Size | Min. Bore Size (B) | Length (L) | A/F Thread (A/F2) | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **FG14-M16** | 14 | M16 | 8.8 | 42.0 | 20 | Grey (GY) | 10 pcs. | 167-00530 |
| **FG14-PG9** | 14 | PG9 | 8.8 | 42.0 | 20 | Grey (GY) | 10 pcs. | 167-00510 |
| **FG17-M20** | 17 | M20 | 11.1 | 45.5 | 24 | Grey (GY) | 10 pcs. | 167-00531 |
| **FG17-PG11** | 17 | PG11 | 11.1 | 45.5 | 24 | Grey (GY) | 10 pcs. | 167-00511 |
| **FG19-PG13** | 19 | PG13.5 | 13.0 | 47.5 | 27 | Grey (GY) | 10 pcs. | 167-00512 |
| **FG21-M25** | 21 | M25 | 14.8 | 49.8 | 30 | Grey (GY) | 10 pcs. | 167-00533 |
| **FG21-PG16** | 21 | PG16 | 14.8 | 49.8 | 30 | Grey (GY) | 10 pcs. | 167-00513 |
| **FG27-M32** | 27 | M32 | 19.4 | 52.0 | 36 | Grey (GY) | 10 pcs. | 167-00534 |
| **FG27-PG21** | 27 | PG21 | 19.4 | 52.0 | 36 | Grey (GY) | 10 pcs. | 167-00514 |
| **FG36-M40** | 36 | M40 | 27.9 | 55.0 | 46 | Grey (GY) | 10 pcs. | 167-00535 |
| **FG36-PG29** | 36 | PG29 | 27.9 | 55.0 | 46 | Grey (GY) | 10 pcs. | 167-00515 |
| **FG45-M50** | 45 | M50 | 35.6 | 58.0 | 55 | Grey (GY) | 10 pcs. | 167-00536 |
| **FG45-PG36** | 45 | PG36 | 35.6 | 58.0 | 55 | Grey (GY) | 10 pcs. | 167-00516 |
| **FG56-M63** | 56 | M63 | 45.9 | 60.5 | 65 | Grey (GY) | 10 pcs. | 167-00537 |
| **FG56-PG48** | 56 | PG48 | 45.9 | 60.5 | 65 | Grey (GY) | 10 pcs. | 167-00517 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

Date of issue: January 2019

## FlexiGuard Conduits & Fittings

### FG-UH Fittings with Bracket

Straight swivel bracket.

Fulfils IP54 with FlexiGuard FG conduits.

**Features and benefits**

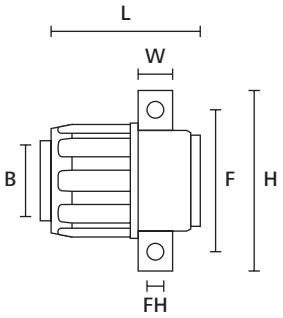
- One piece, easy fit
- Swivel bracket
- Vibration and tension resistant
- Large bore size
- Inner ferrule protects cables
- Good resistance to chemicals
- Good resistance to UV and ozone



*FG-UH fitting with bracket.*

| | |
|---|---|
| **MATERIAL** | Polypropylene (PP) |
| **Operating Temperature** | -35 °C to +80 °C |
| **Flammability** | UL 94 V2 |

HF ✓ RoHS ✓




*FlexiGuard fitting, straight with bracket*

| TYPE | Nominal Ø | Min. Bore Size (B) | Length (L) | Width (W) | Height (H) | Hole Ø (FH) | Fixing Hole Centres (F) | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **FG14-UH** | 14 | 8.8 | 42.0 | 10.0 | 40.0 | 5,7 | 29.0 | Grey (GY) | 10 pcs. | 167-00520 |
| **FG17-UH** | 17 | 11.1 | 45.5 | 12.0 | 50.0 | 5,7 | 37.0 | Grey (GY) | 10 pcs. | 167-00521 |
| **FG19-UH** | 19 | 13.0 | 47.5 | 12.0 | 50.0 | 5,7 | 37.0 | Grey (GY) | 10 pcs. | 167-00522 |
| **FG21-UH** | 21 | 14.8 | 49.8 | 12.0 | 50.0 | 5,7 | 37.0 | Grey (GY) | 10 pcs. | 167-00523 |
| **FG27-UH** | 27 | 19.4 | 52.0 | 12.5 | 57.0 | 5,7 | 43.0 | Grey (GY) | 10 pcs. | 167-00524 |
| **FG36-UH** | 36 | 27.9 | 55.0 | 13.0 | 67.0 | 6,7 | 53.0 | Grey (GY) | 10 pcs. | 167-00525 |
| **FG45-UH** | 45 | 35.6 | 58.0 | 14.0 | 80.0 | 6,7 | 65.0 | Grey (GY) | 10 pcs. | 167-00526 |
| **FG56-UH** | 56 | 45.9 | 60.5 | 16.5 | 93.0 | 6,7 | 76.0 | Grey (GY) | 10 pcs. | 167-00527 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

Date of issue: January 2019

## HelaGuard Accessories

### PACC Clip for Corrugated Conduits

**Features and benefits**

- Easy and quick assembly with non-metallic conduits
- Lid is integrated
- Hole for fastening with screw
- Inner rib prevents conduit from slipping
- Can be used in C-shaped DIN rails

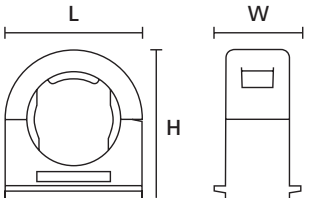


*HelaGuard PACC Conduit Clip.*

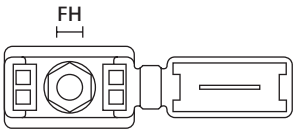
*One Step to the Web!*

| | |
|---|---|
| **MATERIAL** | Polyamide 6.6 (PA66) |
| **Operating Temperature** | -50 °C to +135 °C |
| **Flammability** | UL 94 V2 |

HF ✓ RoHS ✓




*HelaGuard conduit clip, side views*




*HelaGuard conduit clip, top view*

| TYPE | Nominal Ø | Height (H) | Width (W) | Length (L) | Hole Ø (FH) | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **PACC10** | 10 | 26 | 12 | 23 | M5 | 10 pcs. | Black (BK) | 166-25707 |
| **PACC13** | 13 | 26 | 12 | 23 | M5 | 10 pcs. | Black (BK) | 166-25700 |
| **PACC16** | 16 | 30 | 12 | 26 | M5 | 10 pcs. | Black (BK) | 166-25701 |
| **PACC21** | 21 | 36 | 15 | 32 | M6 | 10 pcs. | Black (BK) | 166-25702 |
| **PACC28** | 28 | 45 | 15 | 41 | M6 | 10 pcs. | Black (BK) | 166-25703 |
| **PACC34** | 34 | 51 | 15 | 48 | M6 | 10 pcs. | Black (BK) | 166-25704 |
| **PACC42** | 42 | 60 | 15 | 57 | M6 | 5 pcs. | Black (BK) | 166-25705 |
| **PACC54** | 54 | 72 | 15 | 70 | M6 | 5 pcs. | Black (BK) | 166-25706 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

**For more information on our complete HelaGuard range of conduits and fittings, please see our new HelaGuard catalogue.**




Date of issue: January 2019

## HelaGuard Accessories

### AFCS Fixing Clip, Plated Steel and PVC Liner

**Features and benefits**

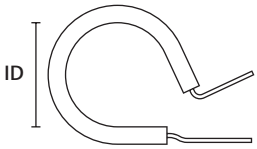
- Simple, secure fixing of metallic conduits
- Liner prevents damage due to abrasion



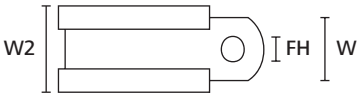
*HelaGuard AFCS Fixing Clip, Stainless Steel and PVC Liner.*

| | |
|---|---|
| **MATERIAL** | Galvanised Steel (GS), Polyvinylchloride (PVC) |
| **Operating Temperature** | -20 °C to +105 °C |

RoHS




*HelaGuard fixing clip, side view*




*HelaGuard fixing clip, top view*

| TYPE | Nominal Ø | Inside Ø (ID) | Width (W) | Width (W2) | Hole Ø (FH) | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **AFCS10** | 10 | 11.0 | 12.7 | 17.4 | 5.1 | 10 pcs. | Metal (ML), Black (BK) | 166-50600 |
| **AFCS12** | 12 | 14.0 | 12.7 | 17.4 | 5.1 | 10 pcs. | Metal (ML), Black (BK) | 166-50601 |
| **AFCS16** | 16 | 17.0 | 12.7 | 17.4 | 5.1 | 10 pcs. | Metal (ML), Black (BK) | 166-50602 |
| **AFCS20** | 20 | 21.0 | 12.7 | 17.4 | 5.1 | 10 pcs. | Metal (ML), Black (BK) | 166-50603 |
| **AFCS25** | 25 | 25.0 | 12.7 | 17.4 | 5.1 | 10 pcs. | Metal (ML), Black (BK) | 166-50604 |
| **AFCS32** | 32 | 34.0 | 12.7 | 17.4 | 5.1 | 10 pcs. | Metal (ML), Black (BK) | 166-50605 |
| **AFCS40** | 40 | 44.0 | 25.4 | 30.5 | 14.2 x 17.5 | 5 pcs. | Metal (ML), Black (BK) | 166-50606 |
| **AFCS50** | 50 | 54.0 | 25.4 | 30.5 | 14.2 x 17.5 | 5 pcs. | Metal (ML), Black (BK) | 166-50607 |
| **AFCS63** | 63 | 70.0 | 25.4 | 30.5 | 14.2 x 17.5 | 1 pc. | Metal (ML), Black (BK) | 166-50608 |
| **AFCS75** | 75 | 76.2 | 25.4 | 30.5 | 14.2 x 17.5 | 1 pc. | Metal (ML), Black (BK) | 166-50609 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

CAD

*CAD download*

## Helawrap Cable Cover

**HWPP for industrial applications**

Helawrap is used to bundle and protect cables and wires in the electrical industry, panel building, machine building and many other industrial applications. Helawrap is the time-saving solution for industrial applications.

**Features and benefits**

- Ideal solution for bundling, protecting and fixing cables
- Quick and effortless to apply
- Good abrasion protection
- Special profile enables branching off cable at any point
- Can be removed and reapplied often
- Available in several colours and sizes
- Handy applicator tool included



*HWPP is commonly used wherever high flexibility is required, such as in the door area of wiring panels.*

*Application video: Helawrap*

| | |
|---|---|
| **MATERIAL** | Polypropylene (PP) |
| **Operating Temperature** | -60 °C to +110 °C, intermittent +140 °C |
| **Flammability** | UL 94 HB |

HF ✓ RoHS ✓

| TYPE | Bundle Ø max. | Colour | Reel Length | Application Tool | Article-No. |
|---|---|---|---|---|---|
| **HWPP8** | 9 | Black (BK) | 25 m | HAT8 | 161-64101 |
| | 9 | Grey (GY) | 25 m | HAT8 | 161-64102 |
| | 9 | Silver (SR) | 25 m | HAT8 | 161-64103 |
| | 9 | White (WH) | 25 m | HAT8 | 161-64104 |
| **HWPP16** | 16 | Black (BK) | 25 m | HAT16 | 161-64201 |
| | 16 | Grey (GY) | 25 m | HAT16 | 161-64202 |
| | 16 | Silver (SR) | 25 m | HAT16 | 161-64203 |
| | 16 | White (WH) | 25 m | HAT16 | 161-64207 |
| **HWPP20** | 21 | Black (BK) | 25 m | HAT20 | 161-64301 |
| | 21 | Grey (GY) | 25 m | HAT20 | 161-64302 |
| | 21 | Silver (SR) | 25 m | HAT20 | 161-64303 |
| | 21 | White (WH) | 25 m | HAT20 | 161-64304 |
| **HWPP25** | 27 | Black (BK) | 25 m | HAT25 | 161-64401 |
| | 27 | Grey (GY) | 25 m | HAT25 | 161-64402 |
| | 27 | Silver (SR) | 25 m | HAT25 | 161-64403 |
| | 27 | White (WH) | 25 m | HAT25 | 161-64407 |
| **HWPP30** | 32 | Black (BK) | 25 m | HAT30 | 161-64501 |
| | 32 | Grey (GY) | 25 m | HAT30 | 161-64502 |
| | 32 | Silver (SR) | 25 m | HAT30 | 161-64503 |
| | 32 | White (WH) | 25 m | HAT30 | 161-64504 |
| **HWPP40** | 42 | Black (BK) | 15 m | HAT40 | 161-64601 |

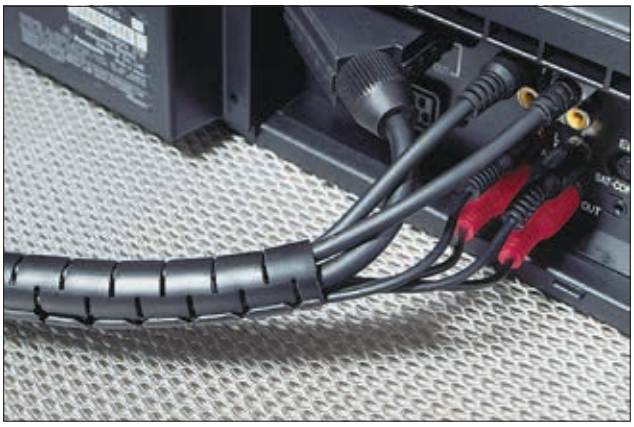
All dimensions in mm. Subject to technical changes. Minimum Order Quantity (MOQ) may differ from package content.

Date of issue: January 2019

## Helawrap Cable Cover

**HWPP for home and office use**

Helawrap HWPP in practical 2 metre lengths is designed for home and office use. It puts an end to the cable chaos of PCs, TVs and Hi-Fi systems.



*Complete cable management for home and office.*

**To order additional HAT application tools, see page 321.**



*Helawrap HWPP, in practical 2m lengths, is available in 2 sizes and 4 colours.*



*Insert one or more cables into the insertion slot of the applicator tool.*



*Place the HAT applicator tool in one end of the Helawrap cable cover.*



*Simply slide the HAT applicator tool through the Helawrap cover.*

| TYPE | Bundle Ø max. | Colour | Length (L) | Application Tool | Article-No. |
|---|---|---|---|---|---|
| HWPP16L2 | 16 | Black (BK) | 2 m | HAT16 | 161-64204 |
| | 16 | Grey (GY) | 2 m | HAT16 | 161-64205 |
| | 16 | Silver (SR) | 2 m | HAT16 | 161-64206 |
| | 16 | White (WH) | 2 m | HAT16 | 161-64215 |
| HWPP25L2 | 27 | Black (BK) | 2 m | HAT25 | 161-64404 |
| | 27 | Grey (GY) | 2 m | HAT25 | 161-64405 |
| | 27 | Silver (SR) | 2 m | HAT25 | 161-64406 |
| | 27 | White (WH) | 2 m | HAT25 | 161-64415 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

Date of issue: January 2019

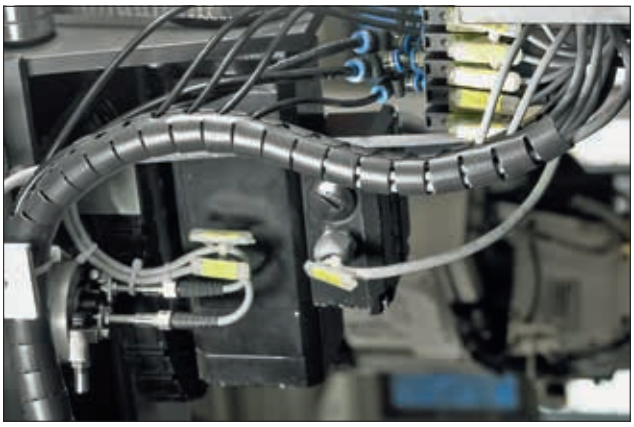
## Cable Cover, Material: PA6, UL94V0

**Helawrap HWPA-V0**

Helawrap HWPAV0 is used to bundle and protect cable and wires, especially there is vibration and abrasion. HWPAV0 has excellent flame-retardant properties and is halogen-free.

**Features and benefits**

- Ideal solution for bundling, protecting and fixing cables
- Quick and effortless to apply
- Self-extinguishing according to UL94 V0
- Very good abrasion protection
- Special profile enables branching off cable at any point
- Can be removed and reapplied often
- Available in several colours and sizes
- Handy applicator tool included



*Cables can be branched off at any point for better, more flexible protection.*

| | |
|---|---|
| **MATERIAL** | Polyamide 6 V0 (PA6V0) |
| **Operating Temperature** | -40 °C to +90 °C, intermittent +120 °C |
| **Flammability** | UL 94 V0 |
| **EN 45545-2 Classification** | R22 HL2, R23 HL2 |

HF RoHS

**To order additional HAT application tools, see page 321.**

| TYPE | Bundle Ø max. | Colour | Reel Length | Application Tool | Article-No. |
|---|---|---|---|---|---|
| **HWPAV08** | 9 | Black (BK) | 25 m | HAT8 | 161-63101 |
| **HWPAV016** | 16 | Black (BK) | 25 m | HAT16 | 161-63201 |
| **HWPAV020** | 21 | Black (BK) | 25 m | HAT20 | 161-63301 |
| **HWPAV025** | 27 | Black (BK) | 25 m | HAT25 | 161-63401 |
| **HWPAV030** | 32 | Black (BK) | 25 m | HAT30 | 161-63501 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

EN 45545-2

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

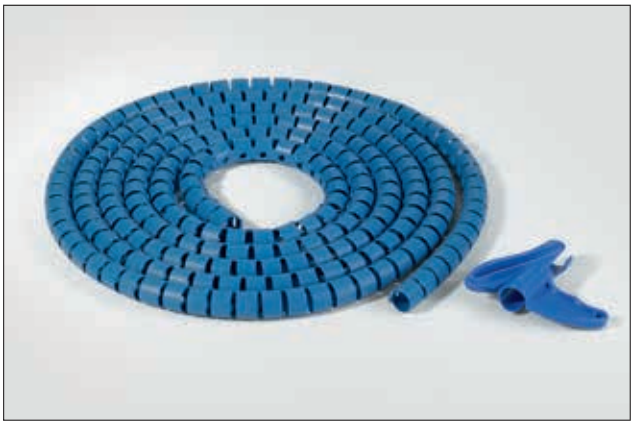
## Metal-Content Cable Cover

**Helawrap HWPPMC**

HWPPMC is particularly suitable for installation and maintenance for food-processing machines and in food-processing plants.

**Features and benefits**

- High metal-content for reliable detection with standard detection equipment
- Quick and effortless to apply
- Stainless steel preserves resistance to corrosion
- Blue colour for enhanced visibility
- Ideal solution for bundling and protecting cables and hoses
- Highly flexible
- Very good abrasion protection
- Special profile enables branching off cable at any point
- Can be removed and reused
- Handy applicator tool included



*HWPPMC metal-content cable cover.*

| | |
|---|---|
| **MATERIAL** | Polypropylene (PP), Stainless Steel (SS) |
| **Operating Temperature** | -60 °C to +100 °C, intermittent +140 °C |
| **Flammability** | UL 94 HB |

HF ✓ RoHS ✓

**Can support quality assurance in the production of food stuffs, for example HACCP.**

**To order additional HAT application tools, see page 321.**

| TYPE | Bundle Ø max. | Colour | Reel Length | Application Tool | Article-No. |
|---|---|---|---|---|---|
| **HWPPMC8** | 9 | Blue (BU) | 25 m | HAT8 | 161-66000 |
| **HWPPMC16** | 16 | Blue (BU) | 25 m | HAT16 | 161-66100 |
| **HWPPMC20** | 21 | Blue (BU) | 25 m | HAT20 | 161-66200 |
| **HWPPMC25** | 27 | Blue (BU) | 25 m | HAT25 | 161-66300 |
| **HWPPMC30** | 32 | Blue (BU) | 25 m | HAT30 | 161-66400 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

Date of issue: January 2019

## Acessories for retaining Helawrap Open Cable Cover

### HWClips

Helawrap clips and mounting plates can be linked to mount and route Helawrap cable covers in wiring cabinets and machines as well as in the iin the office or home.

**Features and benefits**

- Mounts and routes Helawrap cable cover flexibly and efficiently
- Fit snugly around the cable cover and holds it tight
- Each clip can be joined to mounting plate or other clips of any size
- Each clip rotates freely
- Easily released and re-used
- Mounting plates fixed with screws, cable ties or adhesive



*The Helawrap accessory set for bundling, fixing and protecting multiple cable runs.*

| | | |
|---|---|---|
| **MATERIAL** | Polyamide 6.6, high impact modified, heat stabilised (PA66HIRHS) | Flexible Polyvinyl Chloride, cadmium free (PVC) |
| **Operating Temperature** | -40 °C to +105 °C | -35 °C to +50 °C |
| **Flammability** | UL 94 HB | UL 94 V2 |

HF ✓ RoHS ✓

RoHS ✓



*Multiple clips can be joined. Clips swivel freely.*



*For secure hold, R1 loop can be used (for HWClip25 and HWClip30 only).*

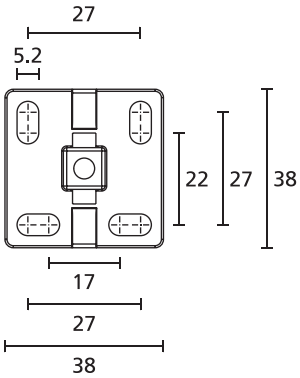
| TYPE | for Helawrap size | Material | Colour | Article-No. |
|---|---|---|---|---|
| **HWCLIP08** | 8 | PA66HIRHS | Black (BK) | 161-64002 |
| **HWCLIP16** | 16 | PA66HIRHS | Black (BK) | 161-64004 |
| **HWCLIP20** | 20 | PA66HIRHS | Black (BK) | 161-64006 |
| **HWCLIP25** | 25 | PA66HIRHS | Black (BK) | 161-64008 |
| **HWCLIP30** | 30 | PA66HIRHS | Black (BK) | 161-64010 |
| **R1** | 25, 30 | PVC | Black (BK) | 201-20010 |

Subject to technical changes.

### HWBase

**Features and benefits**

- Mounting plates can be fixed with screws, cable ties or adhesive
- Can be used to mount any size HWClip




*Helawrap HWBase/HWBaseA*

| TYPE | Adhesive | Colour | Article-No. |
|---|---|---|---|
| **HWBASE** | - | Black (BK) | 161-64014 |
| **HWBASEA** | Acrylate with base of polyurethane foam | Black (BK) | 161-64012 |

All dimensions in mm. Subject to technical changes.

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## Application Tools for Helawrap Cable Cover

### HAT Tools

The HAT application tools are used with Helawrap HWPP, HWPAV0 and HWPPMC cable covers to bundle and protect cables rapidly and efficiently. There is a specially designed HAT application tool for each size Helawarp cable cover.

**Features and benefits**

- Bundle cable rapidly and effortlessly
- Glides smoothly and securely through cover
- Easy insertion of cable



*Applicator tools HAT are available for every Helawrap cover size.*

| TYPE | Colour | Pack Cont. | Article-No. |
|---|---|---|---|
| **HAT8** | Blue (BU) | 10 pcs. | 161-60001 |
| **HAT16** | Blue (BU) | 10 pcs. | 161-60002 |
| **HAT20** | Blue (BU) | 10 pcs. | 161-60003 |
| **HAT25** | Blue (BU) | 10 pcs. | 161-60004 |
| **HAT30** | Blue (BU) | 10 pcs. | 161-60005 |
| **HAT40** | Blue (BU) | 5 pcs. | 161-60006 |

Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

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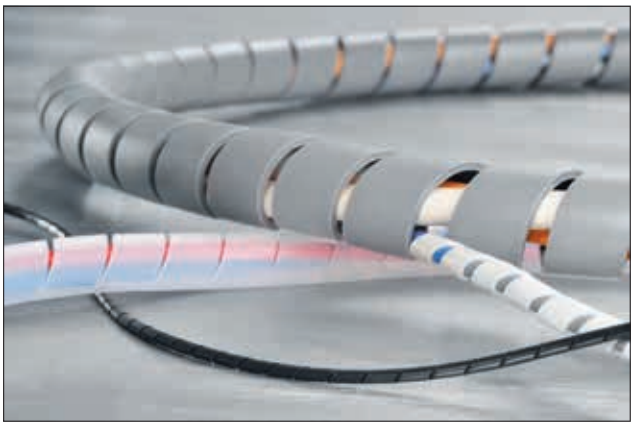
## Standard Polyethylene Spiral Binding for general applications

**SBPE**

SBPE spiral binding is suitable for standard electrical applications and panel building and plant engineering. Sizes 4 and 9 are also available in practical 5 metre lengths.

### Features and benefits

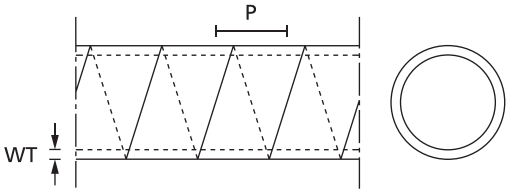
- Organises and protects cables and hoses
- Suitable for retro-fitting
- Cables branch out at any point
- Wide range of diameters and colours



*Spiral binding SBPE.*

| | |
|---|---|
| **MATERIAL** | Polyethylene (PE) |
| **Operating Temperature** | -60 °C to +80 °C, intermittent +120 °C |
| **Flammability** | UL 94 HB |

HF ✓ RoHS ✓




*Spiral binding*

| TYPE | Nominal Ø | Wall (WT) | Pitch (P) | Bundle Ø min. | Bundle Ø max. | Colour | Reel Length | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **SBPE1.5** | 1.5 | 0.8 | 6.0 | 1.6 | 8 | Black (BK) | 30 m | 161-41001 |
| | 1.5 | 0.8 | 6.0 | 1.6 | 8 | Grey (GY) | 30 m | 161-41002 |
| | 1.5 | 0.8 | 6.0 | 1.6 | 8 | Natural (NA) | 30 m | 161-41000 |
| **SBPE4** | 4 | 1.0 | 7.8 | 5 | 20 | Black (BK) | 30 m | 161-41101 |
| | 4 | 1.0 | 7.8 | 5 | 20 | Grey (GY) | 30 m | 161-41102 |
| | 4 | 1.0 | 7.8 | 5 | 20 | Natural (NA) | 30 m | 161-41100 |
| **SBPE9** | 9 | 1.4 | 12.5 | 10 | 100 | Black (BK) | 30 m | 161-41201 |
| | 9 | 1.4 | 12.5 | 10 | 100 | Grey (GY) | 30 m | 161-41202 |
| | 9 | 1.4 | 12.5 | 10 | 100 | Natural (NA) | 30 m | 161-41200 |
| **SBPE16** | 16 | 1.6 | 16.0 | 20 | 150 | Black (BK) | 30 m | 161-41301 |
| | 16 | 1.6 | 16.0 | 20 | 150 | Grey (GY) | 30 m | 161-41302 |
| | 16 | 1.6 | 16.0 | 20 | 150 | Natural (NA) | 30 m | 161-41300 |

All dimensions in mm. Subject to technical changes. Minimum Order Quantity (MOQ) may differ from package content.

| TYPE | Nominal Ø | Wall (WT) | Pitch (P) | Bundle Ø min. | Bundle Ø max. | Colour | Reel Length | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **SBPE4D** | 4 | 1.0 | 7.8 | 5 | 20 | Black (BK) | 5 m | 161-41104 |
| | 4 | 1.0 | 7.8 | 5 | 20 | Grey (GY) | 5 m | 161-41105 |
| | 4 | 1.0 | 7.8 | 5 | 20 | Natural (NA) | 5 m | 161-41103 |
| **SBPE9D** | 9 | 1.4 | 12.5 | 10 | 100 | Black (BK) | 5 m | 161-41204 |
| | 9 | 1.4 | 12.5 | 10 | 100 | Grey (GY) | 5 m | 161-41205 |
| | 9 | 1.4 | 12.5 | 10 | 100 | Natural (NA) | 5 m | 161-41203 |

All dimensions in mm. Subject to technical changes. Minimum Order Quantity (MOQ) may differ from package content.

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## Polyethylene Spiral Binding for enhanced flame protection

**SBPEFR**

The flame-retardant properties of SBPEFR make it suitable for applications in the automobile and electrical industries, where enhanced fire protection is needed.

### Features and benefits

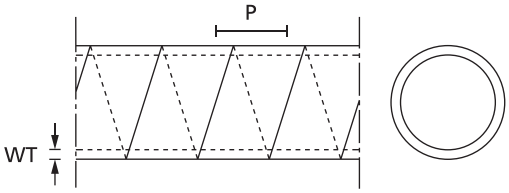
- Organises and protects cables and hoses
- Self-extinguishing according to UL94 V2
- Suitable for retro-fitting
- Cables branch out at any point
- Wide range of diameters and colours



*Spiral binding SBPEFR is available in a wide range of diameters and in colours black and white.*

| | |
|---|---|
| **MATERIAL** | Polyethylene (PEFR), Flame retardant |
| **Operating Temperature** | -60 °C to +80 °C, intermittent +120 °C |
| **Flammability** | UL 94 V2, FMVSS 302, Type B |

RoHS




*Spiral binding*

| TYPE | Nominal Ø | Wall (WT) | Pitch (P) | Bundle Ø min. | Bundle Ø max. | Colour | Reel Length | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **SBPEFR1.5** | 1.5 | 0.8 | 6.0 | 1.6 | 8 | Black (BK) | 30 m | 161-43001 |
| | 1.5 | 0.8 | 6.0 | 1.6 | 8 | White (WH) | 30 m | 161-43000 |
| **SBPEFR4** | 4 | 1.0 | 7.8 | 5 | 20 | Black (BK) | 30 m | 161-43101 |
| | 4 | 1.0 | 7.8 | 5 | 20 | White (WH) | 30 m | 161-43100 |
| **SBPEFR9** | 9 | 1.4 | 12.5 | 10 | 100 | Black (BK) | 30 m | 161-43201 |
| | 9 | 1.4 | 12.5 | 10 | 100 | White (WH) | 30 m | 161-43200 |
| **SBPEFR16** | 16 | 1.6 | 16.0 | 20 | 150 | Black (BK) | 30 m | 161-43301 |
| | 16 | 1.6 | 16.0 | 20 | 150 | White (WH) | 30 m | 161-43300 |

All dimensions in mm. Subject to technical changes. Minimum Order Quantity (MOQ) may differ from package content.

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## Polyamide Spiral Binding for added strength and protection against abrasion

**SBPA**

SBPA spiral binding is used for cable harnesses in the automobile industry and for many demanding industrial applications.

**Features and benefits**

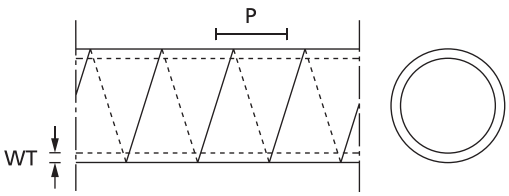
- Organises and protects cables and hoses
- Very good protection against abrasion
- Suitable for retro-fitting
- Cables branch out at any point
- Wide range of diameters and colours



*SBPA spiral binding made of polyamide offers excellent protection against abrasion.*

| | |
|---|---|
| **MATERIAL** | Polyamide 6 (PA6) |
| **Operating Temperature** | -60 °C to +95 °C |
| **Flammability** | UL 94 HB |

HF ✓ RoHS ✓




*Spiral binding*

| TYPE | Nominal Ø | Wall (WT) | Pitch (P) | Bundle Ø min. | Bundle Ø max. | Colour | Reel Length | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **SBPA1.5** | 1.5 | 0.4 | 6.0 | 1.6 | 8 | Natural (NA) | 30 m | 161-42000 |
| **SBPA4** | 4 | 0.6 | 7.8 | 5 | 20 | Natural (NA) | 30 m | 161-42100 |
| **SBPA9** | 9 | 1.0 | 12.5 | 10 | 100 | Natural (NA) | 30 m | 161-42200 |
| **SBPA16** | 16 | 1.2 | 16.0 | 20 | 150 | Natural (NA) | 30 m | 161-42300 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

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## Polyethylene Spiral Binding with UL94V0 classification

**SBPAV0**

Due to its excellent flame protection properties, SBPAV0 spiral binding is particularly suitable for the rail and aviation industries as well as public buildings.

### Features and benefits

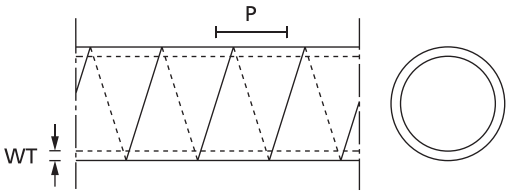
- Organises and protects cables and hoses
- Self-extinguishing according to UL94 V0
- Very good protection against abrasion
- Suitable for retro-fitting
- Cables branch out at any point
- Wide range of diameters



*Spiral binding SBPAV0.*

| | |
|---|---|
| **MATERIAL** | Polyamide 6 V0 (PA6V0) |
| **Operating Temperature** | -60 °C to +95 °C, intermittent +130 °C |
| **Flammability** | UL 94 V0 |
| **EN 45545-2 Classification** | R22 HL2, R23 HL2 |

HF ✓ RoHS ✓




*Spiral binding*

| TYPE | Nominal Ø | Wall (WT) | Pitch (P) | Bundle Ø min. | Bundle Ø max. | Colour | Reel Length | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **SBPAV01.5** | 1.5 | 0.4 | 6.0 | 1.6 | 8 | Black (BK) | 30 m | 161-44000 |
| **SBPAV04** | 4 | 0.6 | 7.8 | 5 | 20 | Black (BK) | 30 m | 161-44100 |
| **SBPAV09** | 9 | 1.0 | 12.5 | 10 | 100 | Black (BK) | 30 m | 161-44200 |
| **SBPAV016** | 16 | 1.2 | 16.0 | 20 | 150 | Black (BK) | 30 m | 161-44300 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

EN 45545-2

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## PTFE Spiral Binding for superior protection

**SBPTFE**

Wherever superior protection against chemical and extreme temperatures are important, the use of SBPTFE is recommended.

**Features and benefits**

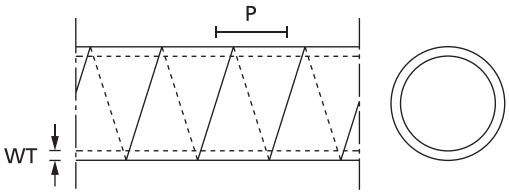
- Organises and protects cables and hoses
- Excellent fire protection
- Self-extinguishing according to UL94 V0
- Suitable for retro-fitting
- Cables branch out at any point
- Wide range of diameters and colours



*Spiral binding SBTFE - ideal for extreme conditions.*

| | |
|---|---|
| **MATERIAL** | Polytetrafluoroethylene (PTFE) |
| **Operating Temperature** | -60 °C to +260 °C, intermittent +350 °C |
| **Flammability** | UL 94 V0 |

RoHS




*Spiral binding*

| TYPE | Nominal Ø | Wall (WT) | Pitch (P) | Bundle Ø min. | Bundle Ø max. | Colour | Reel Length | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **SBPTFE1.5** | 1.5 | 0.5 | 6.0 | 1.6 | 8 | Natural (NA) | 5 m | 161-45000 |
| **SBPTFE4** | 4 | 0.7 | 7.8 | 5 | 20 | Natural (NA) | 5 m | 161-45100 |
| **SBPTFE9** | 9 | 1.0 | 12.5 | 10 | 100 | Natural (NA) | 5 m | 161-45200 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

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## Metal-Content Spiral Binding

**SBPEMC**

SBPEMC is designed for applications in food-processing plants and machines.

**Features and benefits**

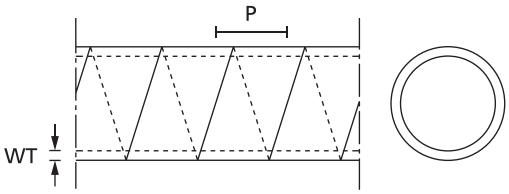
- High metal-content for reliable detection with standard detection equipment
- Stainless steel preserves resistance to corrosion
- Blue colour for enhanced visibility
- Ideal solution for bundling and protecting cables and hoses
- Highly flexible
- Suitable for retro-fitting
- Branching off cable at any point



*Detectable, metal-content spiral binding protects cables on food-processing machines.*

| | |
|---|---|
| **MATERIAL** | Polyethylene (PE), Stainless Steel (SS) |
| **Operating Temperature** | -60 °C to +80 °C, intermittent +120 °C |
| **Flammability** | UL 94 HB |

HF ✓ RoHS ✓




*Spiral binding*

**Can support quality assurance in the production of food stuffs, for example HACCP.**

| TYPE | Nominal Ø | Wall (WT) | Pitch (P) | Bundle Ø min. | Bundle Ø max. | Colour | Reel Length | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **SBPEMC1.5** | 1.5 | 0.8 | 6.0 | 1.6 | 8 | Blue (BU) | 30 m | 161-46000 |
| **SBPEMC4** | 4 | 1.0 | 7.8 | 5 | 20 | Blue (BU) | 30 m | 161-46100 |
| **SBPEMC9** | 9 | 1.4 | 12.5 | 10 | 100 | Blue (BU) | 30 m | 161-46200 |
| **SBPEMC16** | 16 | 1.6 | 16.0 | 20 | 150 | Blue (BU) | 30 m | 161-46300 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

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## Polypropylene spiral binding for high resistance against oil, narrow pitch

**SPS**

SPS spiral binding is especially suitable for the use in areas where high abrasion resistance and much larger cable diameters are needed, for example the automobile and petrochemical industry as well as in heavy plant construction.

**Features and benefits**

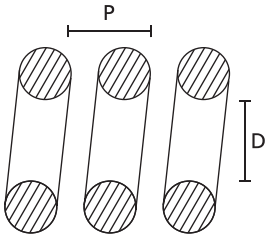
- Heavy-walled and very robust
- Excellent protection from mechanical stress
- Very high abrasion resistance
- Very good resistance to oils
- Available in diameters up to 50 mm
- Ideal for larger cable bundles



*Spiral binding SPS is very robust and provides good protection against oil.*

| | |
|---|---|
| **MATERIAL** | Polypropylene (PP) |
| **Operating Temperature** | -30 °C to +100 °C |
| **Flammability** | UL 94 HB |

HF ✓ RoHS ✓




*SPS spiral binding (narrow pitch)*

| TYPE | Ø (D) | Pitch (P) | Bundle Ø max. | Length (L) | Colour | Article-No. |
|---|---|---|---|---|---|---|
| **SPS10** | 10.0 | 5.0 | 14 | 1.0 m | Black (BK) | 162-10100 |
| **SPS15** | 15.0 | 5.0 | 20 | 1.0 m | Black (BK) | 162-10150 |
| **SPS20** | 20.0 | 5.5 | 25 | 1.0 m | Black (BK) | 162-10200 |
| **SPS25** | 25.0 | 6.0 | 30 | 1.0 m | Black (BK) | 162-10250 |
| **SPS30** | 30.0 | 6.5 | 37 | 1.0 m | Black (BK) | 162-10300 |
| **SPS35** | 35.0 | 6.5 | 42 | 1.0 m | Black (BK) | 162-10350 |
| **SPS40** | 40.0 | 7.0 | 48 | 1.0 m | Black (BK) | 162-10400 |
| **SPS50** | 50.0 | 8.0 | 59 | 1.0 m | Black (BK) | 162-10500 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

Date of issue: January 2019

## Polypropylene spiral binding for high resistance against oil, wide pitch

**SPF**

Wherever high abrasion resistance and stable cable inserting are important, the use of SPF spiral binding is recommended. SPF is suitable for wind industry, plant construction and the petrochemical industry.

### Features and benefits

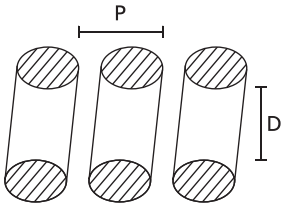
- Heavy-walled and very robust
- Excellent protection from mechanical stress
- Very high abrasion resistance
- Very good resistance to oils
- Available in diameters up to 50 mm
- Ideal for larger cable bundles



*Spiral binding - extremely robust and abrasion resistant.*

| | |
|---|---|
| **MATERIAL** | Polypropylene (PP) |
| **Operating Temperature** | -30 °C to +100 °C |
| **Flammability** | UL 94 HB |

HF ✓ RoHS ✓




*SPF spiral binding (wide pitch)*

| TYPE | Ø (D) | Pitch (P) | Bundle Ø max. | Length (L) | Colour | Article-No. |
|---|---|---|---|---|---|---|
| **SPF10** | 10.0 | 10 | 13 | 1.0 m | Black (BK) | 162-20100 |
| **SPF15** | 15.0 | 13 | 18 | 1.0 m | Black (BK) | 162-20150 |
| **SPF20** | 20.0 | 18 | 23 | 1.0 m | Black (BK) | 162-20200 |
| **SPF25** | 25.0 | 19 | 29 | 1.0 m | Black (BK) | 162-20250 |
| **SPF30** | 30.0 | 20 | 34 | 1.0 m | Black (BK) | 162-20300 |
| **SPF35** | 35.0 | 20 | 39 | 1.0 m | Black (BK) | 162-20350 |
| **SPF40** | 40.0 | 20 | 45 | 1.0 m | Black (BK) | 162-20400 |
| **SPF50** | 50.0 | 22 | 56 | 1.0 m | Black (BK) | 162-20500 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

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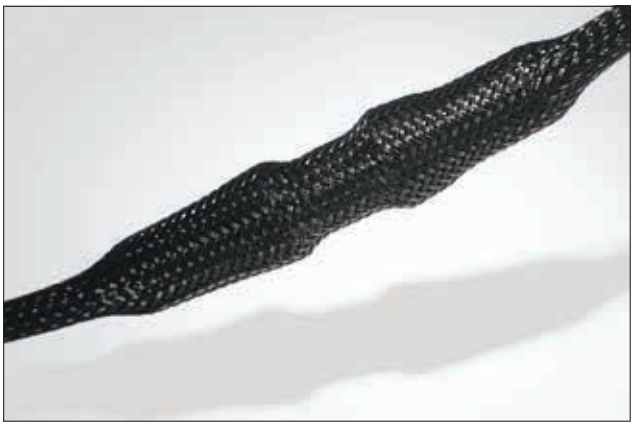
## Standard polyester braided sleeving

**Helagaine HEGP**

Helagaine HEGP braided sleeving is used in the automotive industry and in machine construction. It is also used for smaller electrical appliances to avoid pockets of high temperature. HEGP fulfils the strict requirement of DIN5510-2 and is therefore also optimal for railway applications.

**Features and benefits**

- Made of sturdy polyester
- Highly flexible
- High abrasion resistance
- Very high surface coverage
- 13 sizes for diameters from 1 - 66 mm for an optimal fit



*Helagaine HEGP braided sleeving.*

| | |
|---|---|
| **MATERIAL** | Polyester (PET) |
| **Operating Temperature** | -50 °C to +150 °C, intermittent +220 °C |
| **Melting Point** | +250 °C |
| **Flammability** | UL 94 V2, FMVSS 302 |
| **EN 45545-2 Classification** | R22 HL3, R23 HL3 |

HF ✓ RoHS ✓

| TYPE | Bundle Ø min. | Bundle Ø max. | Colour | Reel Length | Tools | Article-No. |
|---|---|---|---|---|---|---|
| **HEGP03** | 1 | 5 | Black (BK) | 200 m | 45 | 170-10300 |
| **HEGP04** | 2 | 7 | Black (BK) | 200 m | 45 | 170-10400 |
| **HEGP05** | 3 | 9 | Black (BK) | 200 m | 45 | 170-10500 |
| **HEGP06** | 4 | 11 | Black (BK) | 100 m | 45 | 170-10600 |
| **HEGP08** | 5 | 12 | Black (BK) | 100 m | 45 | 170-10800 |
| **HEGP10** | 7 | 15 | Black (BK) | 100 m | 45 | 170-11000 |
| **HEGP12** | 8 | 17 | Black (BK) | 100 m | 45 | 170-11200 |
| **HEGP15** | 10 | 20 | Black (BK) | 100 m | 45 | 170-11500 |
| **HEGP20** | 14 | 26 | Black (BK) | 50 m | 45 | 170-12000 |
| **HEGP25** | 18 | 34 | Black (BK) | 50 m | 45 | 170-12500 |
| **HEGP30** | 20 | 40 | Black (BK) | 50 m | 45 | 170-13000 |
| **HEGP40** | 30 | 50 | Black (BK) | 50 m | 45 | 170-14000 |
| **HEGP50** | 40 | 66 | Black (BK) | 50 m | 45 | 170-15000 |

All dimensions in mm. Subject to technical changes.
Colour grey available on request. Cuts in any lengths. Minimum Order Quantity (MOQ) may differ from package content.

| Recommended Tools | |
|---|---|
| | 45<br>HSG0 |
| | 565 |

For more information on toolings please refer to the Application Tooling chapter.

EN 45545-2

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Standard polyester braided sleeving, expansion rate: 3:1

**Helagaine HEGPX**

Helagaine HEGPX is used whenever a higher expansion rate is required. HEGPX is particularly suitable for use in the automotive industry and in electrical appliances.

### Features and benefits

- Made of sturdy polyester
- Highly flexible
- Expands to 3x nominal diameter
- Easy to apply over irregular shapes
- Good abrasion resistance



*Helagaine HEGPX braided sleeving.*

| | |
|---|---|
| **MATERIAL** | Polyester (PET) |
| **Operating Temperature** | -50 °C to +150 °C, intermittent +220 °C |
| **Melting Point** | +250 °C |
| **Flammability** | UL 94 V2, FMVSS 302 |
| **EN 45545-2 Classification** | R22 HL2, R23 HL2 |

HF ✓ RoHS ✓

| TYPE | Bundle Ø min. | Bundle Ø max. | Colour | Reel Length | Tools | Article-No. |
|---|---|---|---|---|---|---|
| **HEGPX06** | 3 | 10 | Black (BK) | 200 m | 45 | 170-00060 |
| **HEGPX09** | 5 | 16 | Black (BK) | 100 m | 45 | 170-00090 |
| **HEGPX12** | 6 | 19 | Black (BK) | 100 m | 45 | 170-00120 |
| **HEGPX20** | 13 | 32 | Black (BK) | 100 m | 45 | 170-00200 |
| **HEGPX30** | 19 | 45 | Black (BK) | 50 m | 45 | 170-00300 |
| **HEGPX40** | 32 | 70 | Black (BK) | 50 m | 45 | 170-00400 |

All dimensions in mm. Subject to technical changes.
Colour grey available on request. Cuts in any lengths. Minimum Order Quantity (MOQ) may differ from package content.

| Recommended Tools | |
|---|---|
| | 45<br>HSG0 |
| | 565 |

For more information on toolings please refer to the Application Tooling chapter.

EN 45545-2

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Polyester braided sleeving, UL94V0 classification

**Helagaine HEGPV0**

HEGPV0 braided sleevings are used wherever fire protection is important such as control cabinets, robotics and automatic equipment. Also HEGPV0 is suitable for railway vehicle manufacturing as it conforms to the strict requirements of DIN5510-2 and NFF-16 101.

**Features and benefits**

- Made of sturdy polyester
- Self-extinguishing according to UL94 V0 for enhanced fire protection
- Highly flexible
- High abrasion resistance
- High surface coverage



*Helagaine HEGPV0 braided sleeving.*

| | |
|---|---|
| **MATERIAL** | Polyester (PBT) |
| **Operating Temperature** | -50 °C to +150 °C, intermittent +200 °C |
| **Melting Point** | +225 °C |
| **Flammability** | UL 94 V0, FMVSS 302 |

RoHS

| TYPE | Bundle Ø min. | Bundle Ø max. | Colour | Reel Length | Tools | Article-No. |
|---|---|---|---|---|---|---|
| **HEGPV004** | 3 | 7 | Black with White Identification Yarn (BKIDWH) | 100 m | 45 | 170-30400 |
| **HEGPV006** | 5 | 11 | Black with White Identification Yarn (BKIDWH) | 100 m | 45 | 170-30600 |
| **HEGPV008** | 7 | 13 | Black with White Identification Yarn (BKIDWH) | 100 m | 45 | 170-30800 |
| **HEGPV012** | 11 | 17 | Black with White Identification Yarn (BKIDWH) | 50 m | 45 | 170-31200 |
| **HEGPV015** | 13 | 20 | Black with White Identification Yarn (BKIDWH) | 50 m | 45 | 170-31500 |
| **HEGPV020** | 18 | 25 | Black with White Identification Yarn (BKIDWH) | 50 m | 45 | 170-32000 |
| **HEGPV030** | 27 | 40 | Black with White Identification Yarn (BKIDWH) | 50 m | 45 | 170-33000 |
| **HEGPV040** | 35 | 50 | Black with White Identification Yarn (BKIDWH) | 50 m | 45 | 170-34000 |
| **HEGPV050** | 40 | 60 | Black with White Identification Yarn (BKIDWH) | 50 m | 45 | 170-35000 |

All dimensions in mm. Subject to technical changes.
Colour grey available on request. Cuts in any lengths. Minimum Order Quantity (MOQ) may differ from package content.

| Recommended Tools | |
|---|---|
| | 45<br>HSG0 |
| | 565 |

For more information on toolings please refer to the Application Tooling chapter.

NF F For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

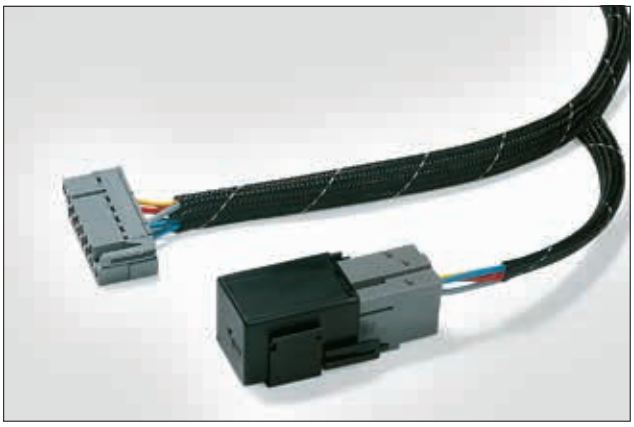
## Polyester braided sleeving, expansion rate: 3:1, UL94V0 classification

**Helagaine HEGPV0X**

Helagaine HEGPV0X is especially suitable for areas wherever fire protection is important as well as a higher expansion ratio of the braided sleeve. Helagaine HEGPV0X offers superior cable protection for machine tools, robotics and automatic equipment. Helagaine HEGPV0X had been successfully tested to DIN5510-2 and NF F 16-101 and can thus be used in many railway applications.

### Features and benefits

- Made of sturdy polyester
- Self-extinguishing according to UL94 V0 for enhanced fire protection
- Highly flexible
- Expansion ratio of 3:1
- Easy to apply over irregular shapes
- Good abrasion resistance



*Helagaine HEGPV0X braided sleeving.*

| | |
|---|---|
| **MATERIAL** | Polyester (PBT) |
| **Operating Temperature** | -50 °C to +150 °C, intermittent +200 °C |
| **Melting Point** | +225 °C |
| **Flammability** | UL 94 V0, FMVSS 302 |

RoHS

| TYPE | Bundle Ø min. | Bundle Ø max. | Colour | Reel Length | Tools | Article-No. |
|---|---|---|---|---|---|---|
| **HEGPV0X03** | 2 | 6 | Black with White Identification Yarn (BKIDWH) | 200 m | 45 | 170-50030 |
| **HEGPV0X06** | 3 | 10 | Black with White Identification Yarn (BKIDWH) | 200 m | 45 | 170-50060 |
| **HEGPV0X09** | 5 | 16 | Black with White Identification Yarn (BKIDWH) | 100 m | 45 | 170-50090 |
| **HEGPV0X12** | 6 | 19 | Black with White Identification Yarn (BKIDWH) | 100 m | 45 | 170-50120 |
| **HEGPV0X20** | 12 | 32 | Black with White Identification Yarn (BKIDWH) | 100 m | 45 | 170-50200 |
| **HEGPV0X30** | 19 | 45 | Black with White Identification Yarn (BKIDWH) | 50 m | 45 | 170-50300 |
| **HEGPV0X40** | 32 | 70 | Black with White Identification Yarn (BKIDWH) | 50 m | 45 | 170-50400 |
| **HEGPV0X50** | 38 | 76 | Black with White Identification Yarn (BKIDWH) | 50 m | 45 | 170-50500 |

All dimensions in mm. Subject to technical changes.
Colour grey available on request. Cuts in any lengths. Minimum Order Quantity (MOQ) may differ from package content.

| Recommended Tools | |
|---|---|
| | 45<br>HSG0 |
| | 565 |

For more information on toolings please refer to the Application Tooling chapter.

NF F

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Polyamide braided sleeving for excellent abrasion resistance

**Helagaine HEGPA66**

Helagaine HEGPA66 is particularly suitable for vehicle manufacturing as well as plant construction.

### Features and benefits

- Made from heavy-duty polyamide yarn
- Excellent abrasion resistance
- Highly flexible
- Easy to apply over irregular shapes
- Eases application by expanding when compressed
- Very high surface covering



*Various types of Helagaine braided sleeving.*

| | |
|---|---|
| **MATERIAL** | Polyamide 6.6 (PA66) |
| **Operating Temperature** | -60 °C to +150 °C, intermittent +200 °C |
| **Melting Point** | +255 °C |
| **Flammability** | UL 94 V2, FMVSS 302 |
| **EN 45545-2 Classification** | R22 HL3, R23 HL3 |

HF ✓ RoHS ✓

| TYPE | Bundle Ø min. | Bundle Ø max. | Colour | Reel Length | Tools | Article-No. |
|---|---|---|---|---|---|---|
| **HEGPA6604** | 3 | 6 | Black (BK) | 200 m | 45 | 170-40400 |
| **HEGPA6606** | 4 | 8 | Black (BK) | 100 m | 45 | 170-40600 |
| **HEGPA6608** | 5 | 10 | Black (BK) | 100 m | 45 | 170-40800 |
| **HEGPA6610** | 7 | 12 | Black (BK) | 100 m | 45 | 170-41000 |
| **HEGPA6612** | 8 | 14 | Black (BK) | 100 m | 45 | 170-41200 |
| **HEGPA6616** | 12 | 18 | Black (BK) | 50 m | 45 | 170-41600 |
| **HEGPA6620** | 15 | 23 | Black (BK) | 50 m | 45 | 170-42000 |
| **HEGPA6625** | 18 | 28 | Black (BK) | 50 m | 45 | 170-42500 |
| **HEGPA6630** | 25 | 32 | Black (BK) | 50 m | 45 | 170-43000 |
| **HEGPA6640** | 30 | 44 | Black (BK) | 50 m | 45 | 170-44000 |
| **HEGPA6650** | 40 | 55 | Black (BK) | 50 m | 45 | 170-45000 |
| **HEGPA6660** | 50 | 65 | Black (BK) | 50 m | 45 | 170-46000 |

All dimensions in mm. Subject to technical changes.
Colour grey available on request. Cuts in any lengths. Minimum Order Quantity (MOQ) may differ from package content.

| Recommended Tools | |
|---|---|
| | 45<br>HSG0 |
| | 565 |

For more information on toolings please refer to the Application Tooling chapter.

EN 45545-2

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Light weight standard polyester braided sleeving

**Helagaine HEGPL**

Helagaine HEGPL is used primarily in automobile interiors, motor compartments, car bodies and underfloors.

**Features and benefits**

- Made of sturdy polyester
- Expansion rate of 3:1
- Easier application over irregular shapes
- Highly flexible
- Good abrasion resistance



*Helagaine HEGPL braided sleeving.*

| | |
|---|---|
| **MATERIAL** | Polyester (PET) |
| **Operating Temperature** | -50 °C to +150 °C, intermittent +220 °C |
| **Melting Point** | +250 °C |
| **Flammability** | UL 94 V2, FMVSS 302, Type B |

HF ✓ RoHS ✓

| TYPE | Bundle Ø min. | Bundle Ø max. | Colour | Reel Length | Tools | Article-No. |
|---|---|---|---|---|---|---|
| **HEGPL03** | 3 | 8 | Black (BK) | 1,000 m | 45 | 170-80503 |
| **HEGPL06** | 5 | 12 | Black (BK) | 400 m | 45 | 170-80506 |
| **HEGPL12** | 8 | 21 | Black (BK) | 300 m | 45 | 170-80512 |
| **HEGPL20** | 12 | 30 | Black (BK) | 300 m | 45 | 170-80520 |
| **HEGPL30** | 18 | 55 | Black (BK) | 200 m | 45 | 170-80530 |
| **HEGPL40** | 24 | 66 | Black (BK) | 150 m | 45 | 170-80540 |
| **HEGPL50** | 30 | 82 | Black (BK) | 150 m | 45 | 170-80550 |

All dimensions in mm. Subject to technical changes.
Colour grey available on request. Cuts in any lengths. Minimum Order Quantity (MOQ) may differ from package content.

| Recommended Tools | |
|---|---|
| | 45<br>HSG0 |
| | 565 |

For more information on toolings please refer to the Application Tooling chapter.

## Standard braided sleeving in dispenser boxes

**Helagaine HLB**

Helagaine HLB is supplied in practical dispenser boxes and covers a wide range of applications with only a few sizes. It is ideal for both the professional and the home user. Helagaine HLB bundles and effectively protects cables and wires, for instance in HiFi systems and in industrial plants. Helagaine HLB also provides good resistance to abrasion.

### Features and benefits

- In practical, space-saving 10 m dispenser boxes
- Expands to 3x nominal diameter
- Bundling diameters from 5 mm to 54 mm
- Three sizes for very wide range of applications
- Extraction of sleeves




*Helagaine HLB: The expansion rate makes it possible. Only three sizes in a handy dispenser box for almost all standard diameters.*

*One Step to the Web!*

| MATERIAL | Polyester (PET) |
|---|---|
| Operating Temperature | -50 °C to +150 °C, intermittent +220 °C |
| Melting Point | +250 °C |
| Flammability | UL 94 V2 |

HF ✓ RoHS ✓

| TYPE | Ø (D) | Bundle Ø min. | Bundle Ø max. | Colour | Reel Length | Tools | Article-No. |
|---|---|---|---|---|---|---|---|
| **HLB15** | 15 | 5 | 21 | Black (BK) | 10 m | 45 | 170-80150 |
| **HLB25** | 25 | 10 | 30 | Black (BK) | 10 m | 45 | 170-80250 |
| **HLB35** | 35 | 18 | 54 | Black (BK) | 10 m | 45 | 170-80350 |

All dimensions in mm. Subject to technical changes.

| Recommended Tools | |
|---|---|
| | 45<br>HSG0 |
| | 565 |

For more information on toolings please refer to the Application Tooling chapter.

Date of issue: January 2019

## Polyester braided sleeving for reducation of vibration noise

**Helagaine HEGSAS**

Helagaine HEGSAS is used primarily in the automotive sector and wherever vibration noise must be reduced. Helagaine HEGSAS can be supplied in pre-cut lengths on request.

### Features and benefits

- Superior noise reduction
- Made of sturdy polyester
- Highly flexible
- Expansion rate of 3:1
- Easy to apply over irregular shapes due
- High surface coverage
- Excellent abrasion resistance



*Helagaine HEGSAS braided sleeving.*

| | |
|---|---|
| **MATERIAL** | Polyester (PET) |
| **Operating Temperature** | -50 °C to +150 °C, intermittent +220 °C |
| **Melting Point** | +250 °C |
| **Flammability** | FMVSS 302 |

HF ✓ RoHS ✓

| TYPE | Bundle Ø min. | Bundle Ø max. | Colour | Reel Length | Tools | Article-No. |
|---|---|---|---|---|---|---|
| **HEGSAS04** | 2 | 8 | Black (BK) | 200 m | 45 | 170-60401 |
| **HEGSAS06** | 4 | 11 | Black (BK) | 200 m | 45 | 170-60600 |
| **HEGSAS09** | 6 | 16 | Black (BK) | 100 m | 45 | 170-60900 |
| **HEGSAS12** | 8 | 20 | Black (BK) | 100 m | 45 | 170-61200 |
| **HEGSAS15** | 10 | 24 | Black (BK) | 50 m | 45 | 170-61500 |
| **HEGSAS20** | 13 | 30 | Black (BK) | 50 m | 45 | 170-62000 |
| **HEGSAS30** | 20 | 40 | Black (BK) | 25 m | 45 | 170-63000 |
| **HEGSAS40** | 30 | 50 | Black (BK) | 25 m | 45 | 170-64000 |

All dimensions in mm. Subject to technical changes.
Colour grey available on request. Cuts in any lengths. Minimum Order Quantity (MOQ) may differ from package content.

| Recommended Tools | |
|---|---|
| | 45<br>HSG0 |
| | 565 |

For more information on toolings please refer to the Application Tooling chapter.

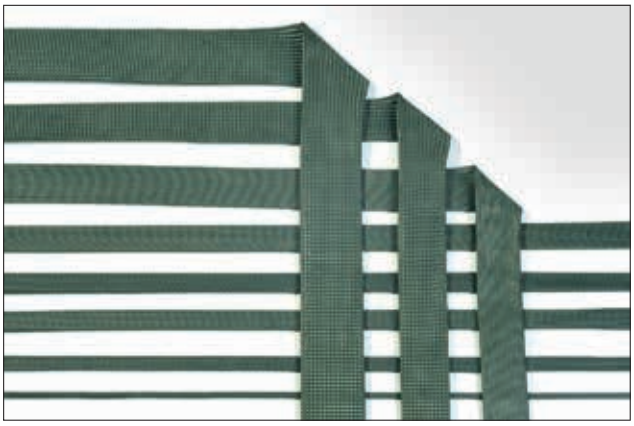
## Meta-aramid braided sleeving

**Helagaine HEGMAN**

Helagaine HEGMAN provides excellent mechanical protection for applications involving high temperatures and fire-protection, particularly in the aerospace, military, railway and ship-building industries.

**Features and benefits**

- Made of non-flammable meta-aramid
- Extremely flexible
- High expansion for easy installation over long lengths
- Optimal mechanical protection for harnesses
- Able to withstand the most severe environments
- Superior protection against abrasion, flames and high temperatures
- Highly resistant to radiation and fluids



*Helagaine HEGMAN and HEGMANWO are available in various sizes.*

| | |
|---|---|
| **MATERIAL** | Polyaramid Polymetaphenylene Isophthalamide (NOMEX) |
| **Operating Temperature** | +240 °C |
| **Melting Point** | Does not melt / Carbonisation above +370 °C |
| **Flammability** | UL 94 V0 (Raw material), UL 224 VW-1 |

*One Step to the Web!*

RoHS

| TYPE | Bundle Ø min. | Bundle Ø max. | Colour | Reel Length | Article-No. |
|---|---|---|---|---|---|
| **HEGMAN-02** | 1 | 2 | Green (GN) | 100 m | 170-02100 |
| **HEGMAN-04** | 2 | 4 | Green (GN) | 100 m | 170-02101 |
| **HEGMAN-06** | 4 | 8 | Green (GN) | 100 m | 170-02102 |
| **HEGMAN-08** | 6 | 12 | Green (GN) | 50 m | 170-02103 |
| **HEGMAN-10** | 8 | 16 | Green (GN) | 50 m | 170-02104 |
| **HEGMAN-15** | 10 | 20 | Green (GN) | 50 m | 170-02105 |
| **HEGMAN-20** | 12 | 24 | Green (GN) | 50 m | 170-02106 |
| **HEGMAN-25** | 15 | 30 | Green (GN) | 50 m | 170-02107 |
| **HEGMAN-30** | 20 | 40 | Green (GN) | 50 m | 170-02108 |

All dimensions in mm. Subject to technical changes.
Cuts in any lengths. NOMEX® is a registered trademark of DuPont. Minimum Order Quantity (MOQ) may differ from package content.

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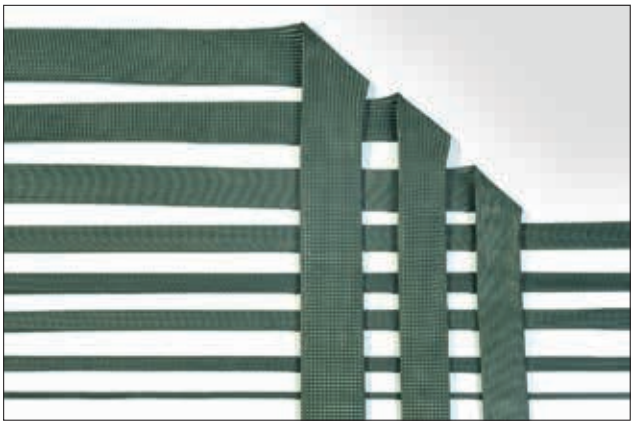
## Water and oil repellent meta-aramid braided sleeving

**Helagaine HEGMANWO**

Helagaine HEGMANWO is especially resistant to water and oil and is designed for applications requiring mechanical protection at high temperatures, particularly in the aerospace, military, railway and ship-building industries.

**Features and benefits**

- Made of non-flammable meta-aramid
- Water and oil-repellent
- Extremely flexible
- High expansion for easy installation over long lengths
- Optimal mechanical protection for harnesses
- Able to withstand the most severe environments
- Superior protection against abrasion, flames and high temperatures
- Highly resistant to radiation and fluids



*Helagaine HEGMAN and HEGMANWO are available in various sizes.*

| | |
|---|---|
| **MATERIAL** | Polyaramid Polymetaphenylene Isophthalamide (NOMEX) |
| **Operating Temperature** | -60 °C to +240 °C |
| **Melting Point** | Does not melt / Carbonisation above +370 °C |
| **Flammability** | UL 94 V0 (Raw material), UL 224 VW-1 |

RoHS

| TYPE | Bundle Ø min. | Bundle Ø max. | Colour | Reel Length | Article-No. |
|---|---|---|---|---|---|
| **HEGMANWO-02** | 1 | 2 | Green (GN) | 100 m | 170-02000 |
| **HEGMANWO-04** | 2 | 4 | Green (GN) | 100 m | 170-02001 |
| **HEGMANWO-06** | 4 | 8 | Green (GN) | 100 m | 170-02002 |
| **HEGMANWO-08** | 6 | 12 | Green (GN) | 50 m | 170-02003 |
| **HEGMANWO-10** | 8 | 16 | Green (GN) | 50 m | 170-02004 |
| **HEGMANWO-15** | 10 | 20 | Green (GN) | 50 m | 170-02005 |
| **HEGMANWO-20** | 12 | 24 | Green (GN) | 50 m | 170-02006 |
| **HEGMANWO-25** | 15 | 30 | Green (GN) | 50 m | 170-02007 |
| **HEGMANWO-30** | 20 | 40 | Green (GN) | 50 m | 170-02008 |

All dimensions in mm. Subject to technical changes.
Cuts in any lengths. NOMEX® is a registered trademark of DuPont. Minimum Order Quantity (MOQ) may differ from package content.

## Polyester self-closing sleeving

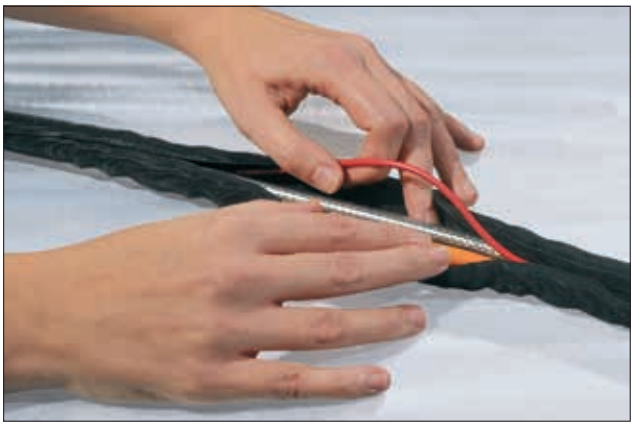
### Helagaine Twist-In

Helagaine Twist-In is used to bundle and protect pre-terminated cables in machine-building and automation, electrical installations and automobile and truck manufacturing.

Helagaine Twist-In is also available in practical 2 m and 5 m lengths for use in the home or office.

**Features and benefits**

- Self-closing sleeve made of polyester
- Very good protection against abrasion
- Ideal for retro-fitting
- Quick and easy installation and removal
- Allows to bundle for inspection, maintenance and assembly
- Small range of sizes covers a wide range of applications



*Helagaine Twist-In gives easy access to cables and wires for inspection, maintenance and assembly.*

| | |
|---|---|
| **MATERIAL** | Polyester (PET) |
| **Operating Temperature** | -50 °C to +125 °C |
| **Melting Point** | +255 °C |
| **Flammability** | self-extinguishing, FMVSS 302 |

HF ✓ RoHS ✓

| TYPE | Bundle Ø min. | Bundle Ø max. | Colour | Reel Length | Tools | Article-No. |
|---|---|---|---|---|---|---|
| **Twist-In 05** | 4 | 5 | Black (BK) | 150 m | 45 | 170-01000 |
| **Twist-In 08** | 5 | 8 | Black (BK) | 100 m | 45 | 170-01001 |
| **Twist-In 13** | 10 | 13 | Black (BK) | 50 m | 45 | 170-01002 |
| **Twist-In 19** | 16 | 19 | Black (BK) | 25 m | 45 | 170-01004 |
| **Twist-In 25** | 19 | 25 | Black (BK) | 25 m | 45 | 170-01005 |
| **Twist-In 29** | 25 | 29 | Black (BK) | 15 m | 45 | 170-01006 |
| **Twist-In 32** | 29 | 32 | Black (BK) | 15 m | 45 | 170-01007 |
| **Twist-In 38** | 32 | 38 | Black (BK) | 15 m | 45 | 170-01008 |
| **Twist-In 50** | 38 | 50 | Black (BK) | 15 m | 45 | 170-01010 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

| TYPE | Bundle Ø min. | Bundle Ø max. | Colour | Reel Length | Tools | Article-No. |
|---|---|---|---|---|---|---|
| **Twist-In 05** | 4 | 5 | Black (BK) | 5 m | 45 | 170-01011 |
| **Twist-In 08** | 5 | 8 | Black (BK) | 5 m | 45 | 170-01012 |
| **Twist-In 13** | 10 | 13 | Black (BK) | 5 m | 45 | 170-01013 |
| **Twist-In 19** | 16 | 19 | Black (BK) | 2 m | 45 | 170-01014 |
| **Twist-In 25** | 19 | 25 | Black (BK) | 2 m | 45 | 170-01015 |
| **Twist-In 29** | 25 | 29 | Black (BK) | 2 m | 45 | 170-01016 |
| **Twist-In 32** | 29 | 32 | Black (BK) | 2 m | 45 | 170-01017 |
| **Twist-In 38** | 32 | 38 | Black (BK) | 2 m | 45 | 170-01018 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

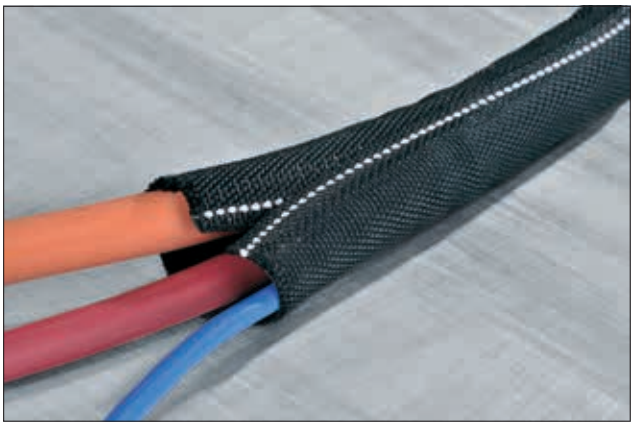
## Polyester self-closing sleeving, flame-retardent

### Helagaine Twist-In-FR

Helagaine Twist-In-FR can be used in areas where fire protection is important, such as railway, aerospace and shipbuilding.

**Features and benefits**

- Self-closing sleeve made from polyester
- Optimal fire protection
- Ideal for retro-fitting
- Very easy, quick installation and removal
- Quick and easy access to bundle for inspection, maintenance and assembly
- Small range of sizes covers a wide range of applications



*Helagaine Twist-In-FR with the white identification yarn.*

| | |
|---|---|
| **MATERIAL** | Polyester (PET) |
| **Operating Temperature** | -50 °C to +125 °C |
| **Melting Point** | +240 °C |
| **Flammability** | FMVSS 302, self-extinguishing |

HF ✓ RoHS ✓

| TYPE | Bundle Ø min. | Bundle Ø max. | Colour | Reel Length | Tools | Article-No. |
|---|---|---|---|---|---|---|
| **Twist-In-FR 05** | 4 | 5 | Black with White Identification Yarn (BKIDWH) | 150 m | 45 | 170-01100 |
| **Twist-In-FR 08** | 5 | 8 | Black with White Identification Yarn (BKIDWH) | 100 m | 45 | 170-01101 |
| **Twist-In-FR 13** | 10 | 13 | Black with White Identification Yarn (BKIDWH) | 50 m | 45 | 170-01102 |
| **Twist-In-FR 19** | 16 | 19 | Black with White Identification Yarn (BKIDWH) | 25 m | 45 | 170-01104 |
| **Twist-In-FR 25** | 19 | 25 | Black with White Identification Yarn (BKIDWH) | 25 m | 45 | 170-01105 |
| **Twist-In-FR 29** | 25 | 29 | Black with White Identification Yarn (BKIDWH) | 15 m | 45 | 170-01106 |
| **Twist-In-FR 32** | 29 | 32 | Black with White Identification Yarn (BKIDWH) | 15 m | 45 | 170-01107 |
| **Twist-In-FR 38** | 32 | 38 | Black with White Identification Yarn (BKIDWH) | 15 m | 45 | 170-01108 |
| **Twist-In-FR 50** | 38 | 50 | Black with White Identification Yarn (BKIDWH) | 15 m | 45 | 170-01109 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

| Recommended Tools | |
|---|---|
| | 45<br>HSG0 |
| | 565 |

For more information on toolings please refer to the Application Tooling chapter.

EN 45545-2 NF F

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

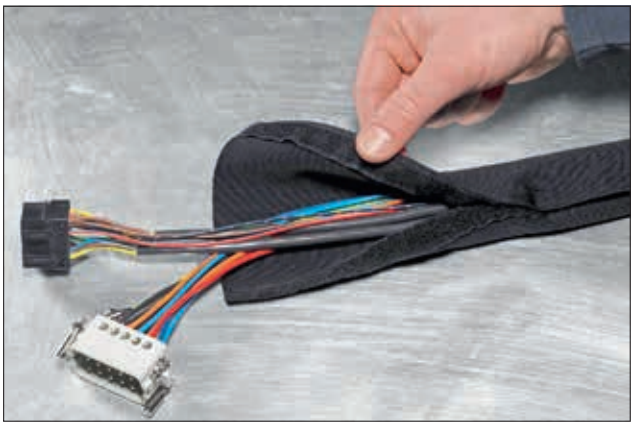
## Re-sealable protective sleeving for post-termination cable organisation

**HELAHOOK**

HELAHOOK is used in industrial machines, electrical appliances, shipbuilding, railway vehicles and in the aerospace industry. HELAHOOK is also employed in automobiles or commercial vehicles. It is the ideal solution for post-termination cable organisation and wherever repeated use is a necessity.

**Features and benefits**

- Re-sealable cable protection made of polyester
- Very elastic, fits snugly around the cables
- Hook and loop sealing system can be used for retro-fitting
- High abrasion-resistance



*HELAHOOK protective sleeving allows for retrospective fitting and repeated use.*

| | |
|---|---|
| **MATERIAL** | Polyester (PET) |
| **Operating Temperature** | -50 °C to +150 °C, intermittent +220 °C |
| **Flammability** | UL 94 V2, FMVSS 302 |

HF ✓ RoHS ✓

| TYPE | Bundle Ø min. | Bundle Ø max. | Colour | Reel Length | Article-No. |
|---|---|---|---|---|---|
| **HELAHOOK10** | 3 | 15 | Black (BK) | 25 m | 170-05100 |
| **HELAHOOK15** | 10 | 20 | Black (BK) | 25 m | 170-05150 |
| **HELAHOOK20** | 15 | 30 | Black (BK) | 25 m | 170-05200 |
| **HELAHOOK25** | 20 | 40 | Black (BK) | 25 m | 170-05250 |
| **HELAHOOK30** | 25 | 50 | Black (BK) | 25 m | 170-05300 |

All dimensions in mm. Subject to technical changes.
Cuts in any lengths. Minimum Order Quantity (MOQ) may differ from package content.

Date of issue: January 2019

## Burst Protection Sleeving for Hydraulic Hoses

**Helagaine HEGWS**

Helagaine HEGWS is burst protection sleeve highly resistant to abrasion and tears. HEGWS is used to protect hydraulic hoses and prevent injuries due to leaks emitting high-pressure liquid jets. HEGWS is typically used with earth moving machinery and where the is high mechanical vibration.

**Features and benefits**

- Exceptional tear-resistance
- Very good protection against abrasion
- Optimal protection of hydraulic hoses
- Reduces risk of liquid-jet injuries
- Fullfils the standards of Earth Moving Machinery EN ISO 3457 and Mechanical Vibration and Shock EN 1299



*Helagaine HEGWS: The ideal protective sleeve for hydraulic hoses.*

| | |
|---|---|
| **MATERIAL** | Polyamide 6 (PA6) |
| **Operating Temperature** | -60 °C to +125 °C |
| **Melting Point** | +220 +/- 10 °C |
| **Flammability** | UL 94 V2, FMVSS 302, Type B |

HF ✓ RoHS ✓

| TYPE | Inside Ø (ID) | Wall (WT) | Colour | Reel Length | Tools | Article-No. |
|---|---|---|---|---|---|---|
| **HEGWS20** | 12 | 1.1 | Black (BK) | 50 m | 45 | 170-01300 |
| **HEGWS25** | 15 | 1.1 | Black (BK) | 50 m | 45 | 170-01301 |
| **HEGWS30** | 19 | 1.1 | Black (BK) | 50 m | 45 | 170-01302 |
| **HEGWS35** | 22 | 1.1 | Black (BK) | 50 m | 45 | 170-01303 |
| **HEGWS40** | 25 | 1.1 | Black (BK) | 50 m | 45 | 170-01304 |
| **HEGWS45** | 28 | 1.1 | Black (BK) | 50 m | 45 | 170-01305 |
| **HEGWS50** | 31 | 1.1 | Black (BK) | 50 m | 45 | 170-01306 |
| **HEGWS60** | 38 | 1.1 | Black (BK) | 50 m | 45 | 170-01307 |
| **HEGWS70** | 44 | 1.1 | Black (BK) | 50 m | 45 | 170-01308 |
| **HEGWS80** | 50 | 1.1 | Black (BK) | 50 m | 45 | 170-01309 |
| **HEGWS90** | 57 | 1.1 | Black (BK) | 50 m | 45 | 170-01310 |
| **HEGWS100** | 60 | 1.1 | Black (BK) | 50 m | 45 | 170-01311 |
| **HEGWS115** | 70 | 1.1 | Black (BK) | 50 m | 45 | 170-01312 |
| **HEGWS145** | 90 | 1.1 | Black (BK) | 50 m | 45 | 170-01313 |
| **HEGWS176** | 110 | 1.1 | Black (BK) | 50 m | 45 | 170-01314 |
| **HEGWS200** | 125 | 1.1 | Black (BK) | 50 m | 45 | 170-01315 |

All dimensions in mm. Subject to technical changes. Minimum Order Quantity (MOQ) may differ from package content.

| Recommended Tools | |
|---|---|
| | 45<br>HSG0 |
| | 565 |

For more information on toolings please refer to the Application Tooling chapter.

Date of issue: January 2019

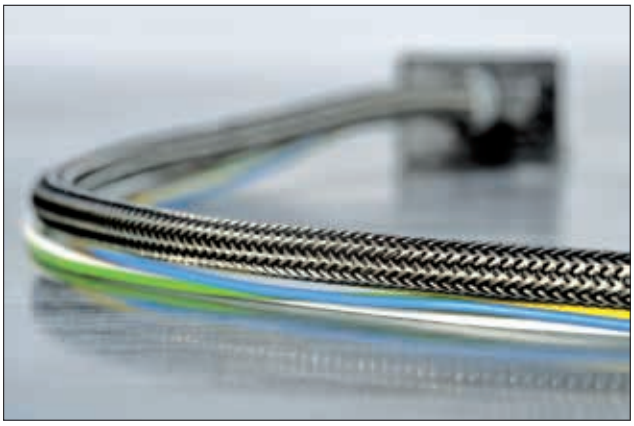
## Electromagnetic protection braided sleeving

**Helagaine HEGEMIP**

Helagaine HEGEMIP braided sleeving is used for highly sensitive electronics, such as electrical appliances and machines, radio equipment, military and automotive engineering.

**Features and benefits**

- Excellent electromagnetic protection
- Extremely flexible, expandable and easy to apply
- Superior abrasion protection
- No kinks or tears, even when bending the sleeve 90°
- Particularly suitable for applications with restricted space or requiring movement
- Inner disposable tube protects sleeve from deformation and allows for easy insertion of cables
- Fulfils the requirements of IEC CISPR25 for radio disturbances in vehicles, boats and engines



*HEGEMIP braided sleeving: reliable protection from electromagnetic radiation.*

| | |
|---|---|
| **MATERIAL** | Polyester, halogen free (PET), Tin Plated copper (SNCU) |
| **Operating Temperature** | -40 °C to +150 °C |
| **EMI requirements** | 10 KHz to 1 GHz according to CISPR25 (DIN VDE 0879-2) |
| **Flammability** | UL 94 V2, FMVSS 302 |

HF ✓ RoHS ✓

| TYPE | Ø (D) | Bundle Ø min. | Bundle Ø max. | Colour | Weight | Reel Length | Article-No. |
|---|---|---|---|---|---|---|---|
| **HEGEMIP04** | 4 | 4 | 6 | Tin coloured and Black | 22 g/m | 100 m | 173-00400 |
| **HEGEMIP06** | 6 | 5 | 10 | Tin coloured and Black | 29 g/m | 100 m | 173-00600 |
| **HEGEMIP08** | 8 | 8 | 11 | Tin coloured and Black | 27 g/m | 100 m | 173-00800 |
| **HEGEMIP10** | 10 | 8 | 13 | Tin coloured and Black | 44 g/m | 50 m | 173-01000 |
| **HEGEMIP12** | 12 | 10 | 15 | Tin coloured and Black | 48 g/m | 50 m | 173-01200 |
| **HEGEMIP14** | 14 | 12 | 18 | Tin coloured and Black | 58 g/m | 100 m | 173-01400 |
| **HEGEMIP16** | 16 | 14 | 20 | Tin coloured and Black | 73 g/m | 100 m | 173-01600 |
| **HEGEMIP18** | 18 | 16 | 22 | Tin coloured and Black | 79 g/m | 50 m | 173-01800 |
| **HEGEMIP20** | 20 | 18 | 25 | Tin coloured and Black | 100 g/m | 50 m | 173-02000 |

All dimensions in mm. Subject to technical changes.
Cuts in any lengths. Minimum Order Quantity (MOQ) may differ from package content.

Date of issue: January 2019

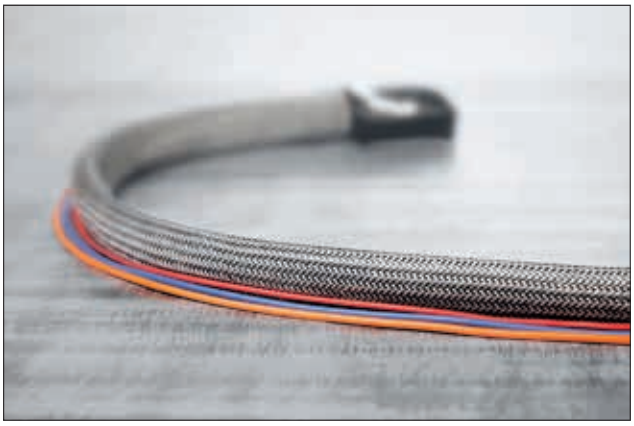
## Electromagnetic protection, flame-retardant protection braided sleeving

**Helagaine HEGEMIPV0**

Helagaine HEGEMIPV0 braided sleeving is used for protection of highly sensitive electronics in industries, wherever fire protection is important, such as mass transit, aerospace and military industries.

### Features and benefits

- Excellent electromagnetic protection
- Extremely flexible, expandable and easy to apply
- Self-extinguishing according to UL94 V0
- Superior abrasion protection
- No kinks or tears, even when bending the sleeve 90°
- Particularly suitable for applications with restricted space or requiring movement
- Inner disposable tube protects sleeve from deformation and allows for easy insertion of cables
- Fulfils the requirements of IEC CISPR25 for radio disturbances in vehicles, boats and engines



*HEGEMIPV0 braided sleeve: EMI protection with enhanced flame retardance.*

| | |
|---|---|
| **MATERIAL** | Polyester (PBT), Tin Plated copper (SNCU) |
| **Operating Temperature** | -40 °C to +150 °C |
| **EMI requirements** | 10 KHz to 1 GHz according to CISPR25 (DIN VDE 0879-2) |
| **Flammability** | UL 94 V0, FMVSS 302 |

RoHS

| TYPE | Ø (D) | Bundle Ø min. | Bundle Ø max. | Colour | Weight | Reel Length | Article-No. |
|---|---|---|---|---|---|---|---|
| **HEGEMIPV004** | 4 | 4 | 6 | Tin coloured and Black | 22 g/m | 100 m | 173-60400 |
| **HEGEMIPV006** | 6 | 5 | 10 | Tin coloured and Black | 29 g/m | 100 m | 173-60600 |
| **HEGEMIPV008** | 8 | 8 | 11 | Tin coloured and Black | 27 g/m | 100 m | 173-60800 |
| **HEGEMIPV010** | 10 | 8 | 13 | Tin coloured and Black | 44 g/m | 50 m | 173-61000 |
| **HEGEMIPV012** | 12 | 10 | 15 | Tin coloured and Black | 48 g/m | 50 m | 173-61200 |
| **HEGEMIPV014** | 14 | 12 | 18 | Tin coloured and Black | 58 g/m | 100 m | 173-61400 |
| **HEGEMIPV016** | 16 | 14 | 20 | Tin coloured and Black | 73 g/m | 100 m | 173-61600 |
| **HEGEMIPV018** | 18 | 16 | 22 | Tin coloured and Black | 79 g/m | 50 m | 173-61800 |
| **HEGEMIPV020** | 20 | 18 | 25 | Tin coloured and Black | 100 g/m | 50 m | 173-62000 |

All dimensions in mm. Subject to technical changes.
Cuts in any lengths. Minimum Order Quantity (MOQ) may differ from package content.

Date of issue: January 2019

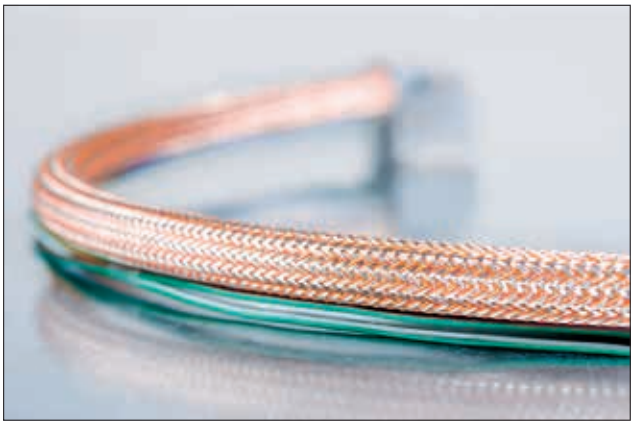
## Electromagnetic protection braided sleeving for hybrid automobiles

**Helagaine HEGEMIP-HY**

Helagaine HEGEMIP-HY provides electromagnetic protection in hybrid automobiles.

### Features and benefits

- Excellent electromagnetic protection
- Extremely flexible, expandable and easy to apply
- No kinks or ruptures even when bent at sharp angles
- Superior abrasion protection
- Special copper alloy for enhanced protection against salt spray
- Particularly suitable for applications with restricted space or requiring movement
- Inner disposable tube protects sleeve from deformation and allows for easy insertion of cables
- Fulfils the requirements of IEC CISPR25 for radio disturbances in vehicles, boats and engines



*HEGEMIP-HY braided sleeving: EMI protection for hybrid automobiles.*

| | |
|---|---|
| **MATERIAL** | Polyester (PET), Tin Plated copper (SNCU) |
| **Operating Temperature** | -40 °C to +150 °C |
| **EMI requirements** | 10 kHz to 1 GHz according to CISPR25 (DIN VDE 0879-2) |
| **Flammability** | UL 94 V2, FMVSS 302 |

HF ✓ RoHS ✓

| TYPE | Ø (D) | Bundle Ø min. | Bundle Ø max. | Colour | Weight | Reel Length | Article-No. |
|---|---|---|---|---|---|---|---|
| **HEGEMIP-HY20** | 20 | 19 | 27 | Silver (SR), Orange (OG) | 72 g/m | 50 m | 173-02001 |
| **HEGEMIP-HY30** | 30 | 25 | 35 | Silver (SR), Orange (OG) | 101 g/m | 50 m | 173-03000 |
| **HEGEMIP-HY35** | 35 | 30 | 40 | Silver (SR), Orange (OG) | 120 g/m | 50 m | 173-03501 |
| **HEGEMIP-HY40** | 40 | 30 | 50 | Silver (SR), Orange (OG) | 180 g/m | 50 m | 173-04000 |
| **HEGEMIP-HY50** | 50 | 40 | 60 | Silver (SR), Orange (OG) | 193 g/m | 50 m | 173-05000 |

All dimensions in mm. Subject to technical changes.
Cuts in any lengths. Minimum Order Quantity (MOQ) may differ from package content.

Date of issue: January 2019

## Electromagnetic protection braided sleeving for defence applications

**Helagaine HEGEMIP-VG**

Helagaine HEGEMIP-VG provides electromagnetic protection for the defence industry.

### Features and benefits

- Excellent electromagnetic protection
- Very flexible, expandable and easy to apply
- Especially suitable for applications in tight areas or requiring movement
- Inner disposable tube protects sleeve from deformation and allows for easy insertion of cables
- Very good abrasion resistance
- Approved to military norm VG 96936-10 / Type A



*HEGEMIP-VG braided sleeving with VG approval for defence applications.*

| | |
|---|---|
| **MATERIAL** | Tin Plated copper (SNCU) |
| **Operating Temperature** | -65 °C to +150 °C |
| **Flammability** | UL 94 V2, FMVSS 302 |

RoHS

*One Step to the Web!*

| TYPE | Ø (D) | Bundle Ø min. | Bundle Ø max. | Colour | Weight | Reel Length | Article-No. |
|---|---|---|---|---|---|---|---|
| **HEGEMIP-VG03** | 3 | 3.5 | 5.0 | Metal (ML) | 19 g/m | 500 m | 173-00200 |
| **HEGEMIP-VG04** | 4 | 4.5 | 7.0 | Metal (ML) | 30 g/m | 500 m | 173-00201 |
| **HEGEMIP-VG06** | 6 | 5.5 | 8.5 | Metal (ML) | 37 g/m | 500 m | 173-00202 |
| **HEGEMIP-VG07.5** | 7.5 | 7.5 | 13.5 | Metal (ML) | 71 g/m | 500 m | 173-00203 |
| **HEGEMIP-VG10** | 10 | 13.0 | 17.5 | Metal (ML) | 96 g/m | 250 m | 173-00204 |
| **HEGEMIP-VG12.5** | 12.5 | 15.0 | 19.5 | Metal (ML) | 100 g/m | 200 m | 173-00205 |
| **HEGEMIP-VG20** | 20 | 19.0 | 30.0 | Metal (ML) | 265 g/m | 100 m | 173-00206 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

VG

For product specific approvals and specifications please refer to the Appendix.

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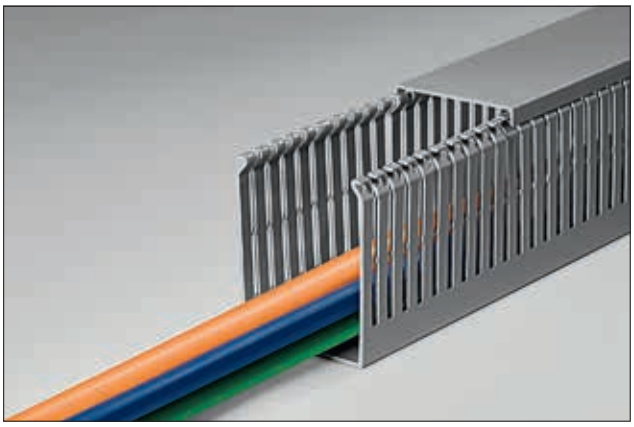
## Rigid PVC wiring ducts

### HelaDuct HTWD-PN for small-diameter wires

T1E wiring ducts are used in control panels, switching systems, and especially electronic control systems.

**Features and benefits**

- Narrow slots suitable for small-diameter wires
- Smooth, burr-free edges protect installers from injury and wires from damage
- Fingers can be removed with no sharp edges at pre-notched snap-off points
- Further pre-notched snap-off point at base of sidewall allow cutting out and removing sections of sidewall with no sharp edges
- Raised mounting points for easily and securely fastening wire retainers and other accessores prior to cabling
- Wire retainers and accessories leave no protruding parts below surface of duct
- Duct covers are easy to mount and remove, yet hold securely even in a vertical position and under vibration
- Cover is flush with side of duct, allowing for tight, contiguous placement of ducts
- Additional retainer nub on fingers on ducts height 80 and above to prevent cables from slipping
- Base perforation according to DIN EN 50085

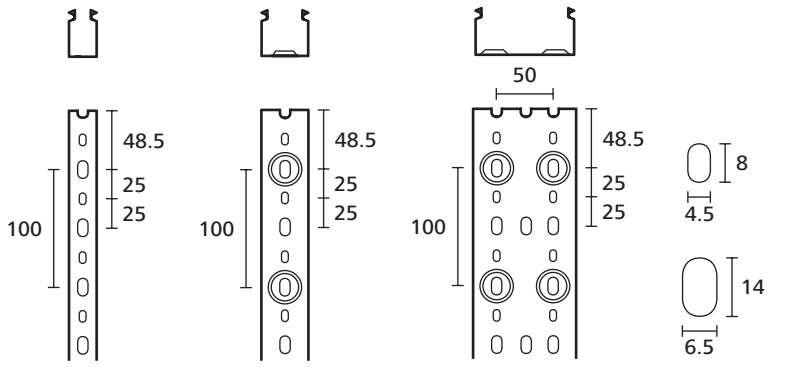


*HTWD-PN wiring ducts with narrow fingers and slots for small-diameter wires.*

| | |
|---|---|
| **MATERIAL** | Polyvinylchloride (PVC) |
| **Colour** | Grey (GY) |
| **Length (L)** | 2 m |
| **Operating Temperature** | -5 °C to +65 °C |
| **Flammability** | UL 94 V0 |

RoHS

**HTWD-PN wiring ducts base perforation according to DIN EN 50085**




*Width 25* *Width 40-60* *Width 80-120* *Hole dimensions*

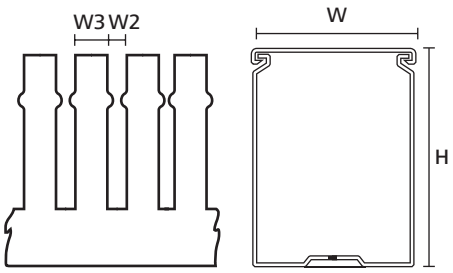
c UL us

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Rigid PVC wiring ducts

### HelaDuct HTWD-PN for small-diameter wires




*Wiring duct HTWD-PN*

| TYPE | Width (W) | Height (H) | Width (W2) | Width (W3) | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|
| **HTWD-PN-25X40** | 25 | 40 | 4 | 6 | 72 m | 184-10068 |
| **HTWD-PN-25X60** | 25 | 60 | 4 | 6 | 48 m | 184-10138 |
| **HTWD-PN-25X80** | 25 | 80 | 4 | 6 | 48 m | 184-10198 |
| **HTWD-PN-40X40** | 40 | 40 | 4 | 6 | 40 m | 184-10078 |
| **HTWD-PN-40X60** | 40 | 60 | 4 | 6 | 36 m | 184-10148 |
| **HTWD-PN-40X80** | 40 | 80 | 4 | 6 | 32 m | 184-10208 |
| **HTWD-PN-40X100** | 40 | 100 | 4 | 6 | 16 m | 184-10258 |
| **HTWD-PN-60X40** | 60 | 40 | 4 | 6 | 24 m | 184-10088 |
| **HTWD-PN-60X60** | 60 | 60 | 4 | 6 | 24 m | 184-10158 |
| **HTWD-PN-60X80** | 60 | 80 | 4 | 6 | 24 m | 184-10218 |
| **HTWD-PN-60X100** | 60 | 100 | 4 | 6 | 8 m | 184-10268 |
| **HTWD-PN-80X40** | 80 | 40 | 4 | 6 | 24 m | 184-10098 |
| **HTWD-PN-80X60** | 80 | 60 | 4 | 6 | 24 m | 184-10168 |
| **HTWD-PN-80X80** | 80 | 80 | 4 | 6 | 24 m | 184-10228 |
| **HTWD-PN-80X100** | 80 | 100 | 4 | 6 | 8 m | 184-10329 |
| **HTWD-PN-100X40** | 100 | 40 | 4 | 6 | 16 m | 184-10108 |
| **HTWD-PN-100X60** | 100 | 60 | 4 | 6 | 16 m | 184-10178 |
| **HTWD-PN-100X80** | 100 | 80 | 4 | 6 | 16 m | 184-10238 |
| **HTWD-PN-100X100** | 100 | 100 | 4 | 6 | 8 m | 184-10278 |
| **HTWD-PN-120X60** | 120 | 60 | 4 | 6 | 16 m | 184-10188 |
| **HTWD-PN-120X80** | 120 | 80 | 4 | 6 | 16 m | 184-10248 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

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For product specific approvals and specifications please refer to the Appendix.

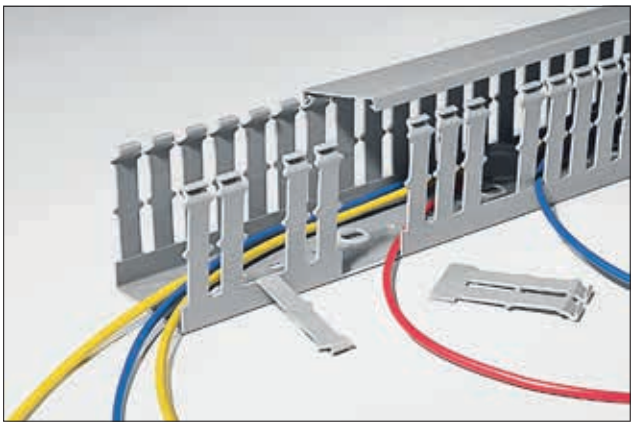
## Rigid PVC wiring ducts

### HelaDuct HTWD-PW for large-diameter wires

T1 wiring ducts are used in control panels and switching systems, particularly for wires with large diameters.

**Features and benefits**

- Wide slots suitable for large-diameter wires
- Wide fingers provide additional wire support
- Smooth, burr-free edges protect installers from injury and wires from damage
- Fingers can be removed with no sharp edges at pre-notched snap-off points
- Further pre-notched snap-off point at base of sidewall allow cutting out and removing sections of sidewall with no sharp edges
- Raised mounting points for easily, quickly and securely fastening wire retainers and other accessories prior to cabling
- Wire retainers and accessories leave no protruding parts below surface of duct
- Duct covers are easy to mount and remove, yet hold securely even in a vertical position and under vibration
- Cover is flush with side of duct, allowing for tight, contiguous placement of ducts
- Additional retainer nub on fingers on ducts height 80 and above to prevent cables from slipping
- Base perforation according to DIN EN 50085

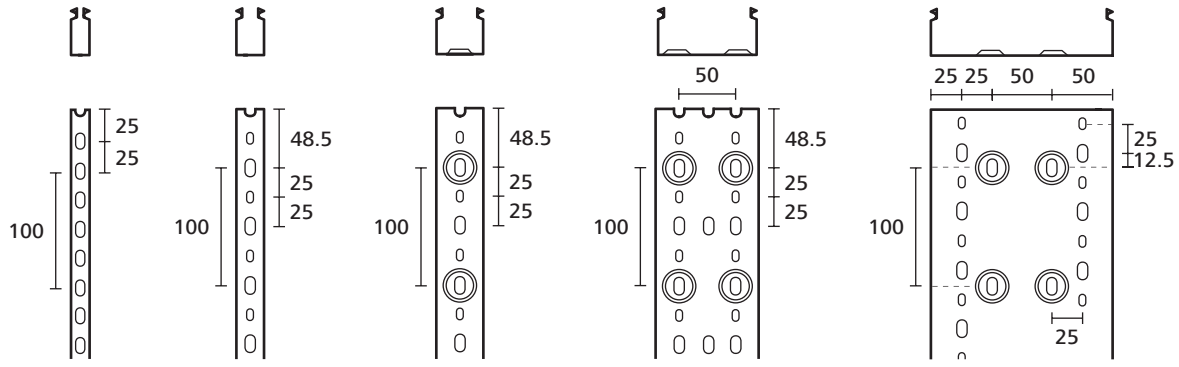


*HTWD-PW wiring ducts with wide fingers and slots for large-diameter wires.*

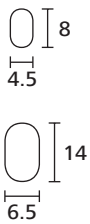
| | |
|---|---|
| **MATERIAL** | Polyvinylchloride (PVC) |
| **Colour** | Grey (GY) |
| **Length (L)** | 2 m |
| **Operating Temperature** | -5 °C to +65 °C |
| **Flammability** | UL 94 V0 |

RoHS

**HTWD-PW wiring ducts base perforation according to DIN EN 50085**




*Width 15* *Width 25* *Width 40-60* *Width 80-120* *Width 150*



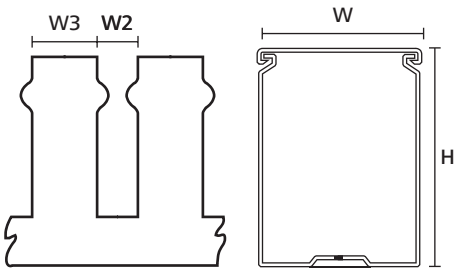

*Hole dimensions*

c UL us For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Rigid PVC wiring ducts

### HelaDuct HTWD-PW for large-diameter wires




*Wiring duct HTWD-PW*

| TYPE | Width (W) | Height (H) | Width (W2) | Width (W3) | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|
| **HTWD-PW-15X18** | 15 | 18 | 5 | 7.5 | 72 m | 181-10018 |
| **HTWD-PW-15X30** | 15 | 30 | 5 | 7.5 | 64 m | 181-10038 |
| **HTWD-PW-15X40** | 15 | 40 | 5 | 7.5 | 48 m | 181-10058 |
| **HTWD-PW-15X60** | 15 | 60 | 5 | 7.5 | 32 m | 181-10118 |
| **HTWD-PW-25X30** | 25 | 30 | 5 | 7.5 | 72 m | 181-10028 |
| **HTWD-PW-25X40** | 25 | 40 | 8 | 12 | 72 m | 181-10068 |
| **HTWD-PW-25X60** | 25 | 60 | 8 | 12 | 48 m | 181-10138 |
| **HTWD-PW-25X80** | 25 | 80 | 8 | 12 | 48 m | 181-10198 |
| **HTWD-PW-25X100** | 25 | 100 | 8 | 12 | 16 m | 181-10328 |
| **HTWD-PW-40X40** | 40 | 40 | 8 | 12 | 40 m | 181-10078 |
| **HTWD-PW-40X60** | 40 | 60 | 8 | 12 | 36 m | 181-10148 |
| **HTWD-PW-40X80** | 40 | 80 | 8 | 12 | 32 m | 181-10208 |
| **HTWD-PW-40X100** | 40 | 100 | 8 | 12 | 16 m | 181-10258 |
| **HTWD-PW-60X40** | 60 | 40 | 8 | 12 | 24 m | 181-10088 |
| **HTWD-PW-60X60** | 60 | 60 | 8 | 12 | 24 m | 181-10158 |
| **HTWD-PW-60X80** | 60 | 80 | 8 | 12 | 24 m | 181-10218 |
| **HTWD-PW-60X100** | 60 | 100 | 8 | 12 | 8 m | 181-10268 |
| **HTWD-PW-80X40** | 80 | 40 | 8 | 12 | 24 m | 181-10098 |
| **HTWD-PW-80X60** | 80 | 60 | 8 | 12 | 24 m | 181-10168 |
| **HTWD-PW-80X80** | 80 | 80 | 8 | 12 | 24 m | 181-10228 |
| **HTWD-PW-80X100** | 80 | 100 | 8 | 12 | 8 m | 181-10329 |
| **HTWD-PW-100X40** | 100 | 40 | 8 | 12 | 16 m | 181-10108 |
| **HTWD-PW-100X60** | 100 | 60 | 8 | 12 | 16 m | 181-10178 |
| **HTWD-PW-100X80** | 100 | 80 | 8 | 12 | 16 m | 181-10238 |
| **HTWD-PW-100X100** | 100 | 100 | 8 | 12 | 8 m | 181-10278 |
| **HTWD-PW-120X60** | 120 | 60 | 8 | 12 | 16 m | 181-10188 |
| **HTWD-PW-120X80** | 120 | 80 | 8 | 12 | 16 m | 181-10248 |
| **HTWD-PW-150X100** | 150 | 100 | 8 | 12 | 8 m | 181-10288 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

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For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

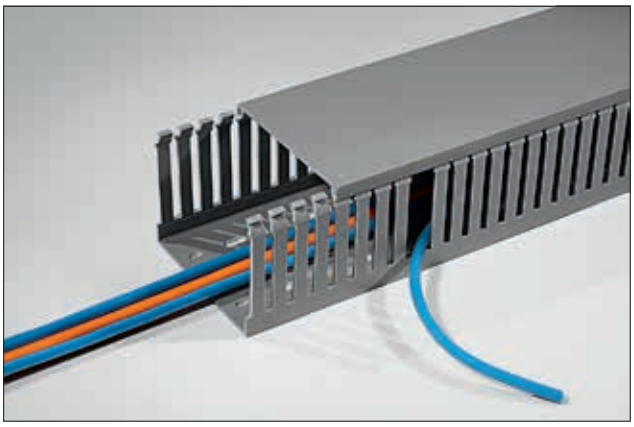
## Rigid PVC wiring ducts

### HelaDuct HTWD-PD DIN-sizes

HelaDuct HTWD-PD wiring ducts are used to route and protect wires in control panels and switching systems.

**Features and benefits**

- Narrow slots suitable for small-diameter wires
- Smooth, burr-free edges protect installers from injury and wires from damage
- Fingers can be removed with no sharp edges at pre-notched snap-off points
- Further pre-notched snap-off point at base of sidewall allow cutting out and removing sections of sidewall with no sharp edges
- Duct covers are easy to mount and remove, yet hold securely even in a vertical position and under vibration
- Cover is flush with side of duct, allowing for tight, contiguous placement of ducts
- Base perforation according to DIN EN 50085

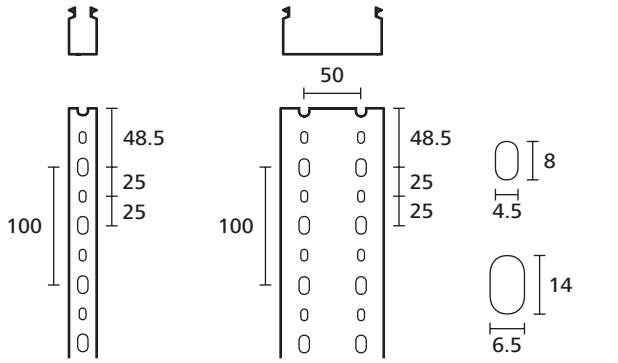


*HTWD-PD wiring ducts in DIN sizes.*

| | |
|---|---|
| **MATERIAL** | Polyvinylchloride (PVC) |
| **Colour** | Grey (GY) |
| **Length (L)** | 2 m |
| **Flammability** | UL 94 V0 |
| **Operating Temperature** | -5 °C to +60 °C |

RoHS

**HTWD-PD wiring ducts base perforation according to DIN EN 50085**



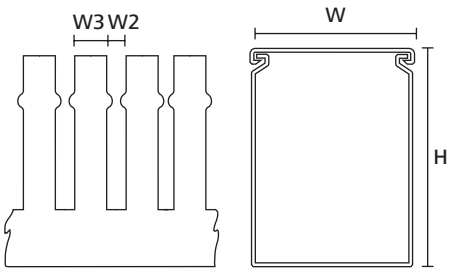

*Width 20-50* *Width 75-100* *Hole dimensions*

c UL us For product specific approvals and specifications please refer to the Appendix.

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## Rigid PVC wiring ducts

### HelaDuct HTWD-PD DIN-sizes




*Wiring duct HTWD-PD*

| TYPE | Width (W) | Height (H) | Width (W2) | Width (W3) | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|
| **HTWD-PD-20X20** | 20 | 20 | 4 | 6 | 64 m | 185-42020 |
| **HTWD-PD-20X37.5** | 20 | 37.5 | 4 | 6 | 32 m | 185-42037 |
| **HTWD-PD-20X50** | 20 | 50 | 4 | 6 | 20 m | 185-42050 |
| **HTWD-PD-25X25** | 25 | 25 | 5 | 7.5 | 48 m | 185-42525 |
| **HTWD-PD-25X50** | 25 | 50 | 5 | 7.5 | 18 m | 185-42550 |
| **HTWD-PD-25X75** | 25 | 75 | 5 | 7.5 | 32 m | 185-42575 |
| **HTWD-PD-37.5X25** | 37.5 | 25 | 5 | 7.5 | 64 m | 185-43725 |
| **HTWD-PD-37.5X37.5** | 37.5 | 37.5 | 5 | 7.5 | 32 m | 185-43737 |
| **HTWD-PD-37.5X50** | 37.5 | 50 | 5 | 7.5 | 40 m | 185-43750 |
| **HTWD-PD-37.5X75** | 37.5 | 75 | 5 | 7.5 | 40 m | 185-43775 |
| **HTWD-PD-50X50** | 50 | 50 | 5 | 7.5 | 48 m | 185-45050 |
| **HTWD-PD-50X75** | 50 | 75 | 5 | 7.5 | 20 m | 185-45075 |
| **HTWD-PD-50X100** | 50 | 100 | 5 | 7.5 | 24 m | 185-45010 |
| **HTWD-PD-75X50** | 75 | 50 | 5 | 7.5 | 20 m | 185-47550 |
| **HTWD-PD-75X75** | 75 | 75 | 5 | 7.5 | 16 m | 185-47575 |
| **HTWD-PD-75X100** | 75 | 100 | 5 | 7.5 | 16 m | 185-47510 |
| **HTWD-PD-100X50** | 100 | 50 | 5 | 7.5 | 24 m | 185-41050 |
| **HTWD-PD-100X75** | 100 | 75 | 5 | 7.5 | 16 m | 185-41075 |
| **HTWD-PD-100X100** | 100 | 100 | 5 | 7.5 | 8 m | 185-41010 |
| **HTWD-PD-125X50** | 125 | 50 | 5 | 7.5 | 18 m | 185-41250 |
| **HTWD-PD-125X75** | 125 | 75 | 5 | 7.5 | 12 m | 185-41275 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

c UL us

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

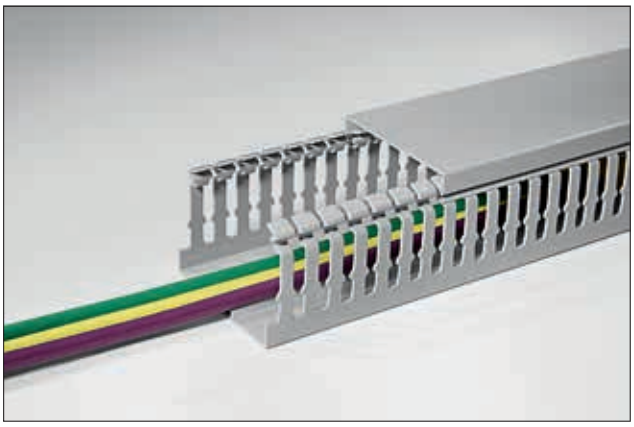
## Halogen-free wiring ducts

### HelaDuct HTWD-HF

HelaDuct HTWD-HF wiring ducts are used to route and protect wires in control panels and switching systems where there are high demands on personal or material safety in case of fire, such as in public transport, tunnels, data-processing centers or public buildings.

**Features and benefits**

- Excellent fire-safety characteristics
- Narrow slots suitable for small-diameter wires
- Smooth, burr-free edges protect installers from injury and wires from damage
- Fingers can be removed with no sharp edges at pre-notched snap-off points
- Further pre-notched snap-off point at base of sidewall allow cutting out and removing sections of sidewall with no sharp edges
- Duct covers hold securely even in a vertical position and under vibration
- Cover is flush with side of duct, allowing for tight, contiguous placement of duct
- Base perforation according to DIN EN 50085

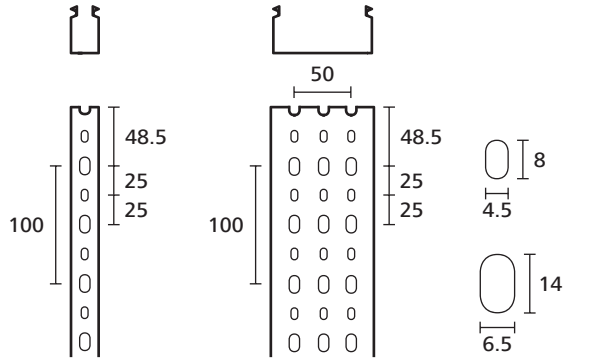


*The HelaDuct HTWD-HF halogen-free wiring ducts meet the highest requirements of fire safety.*

| MATERIAL | Acrylonitrile Butadiene Styrene alloyed with Polycarbonate (PC/ABS) |
|---|---|
| **Colour** | Grey (GY) |
| **Length (L)** | 2 m |
| **Operating Temperature** | -25 °C to +90 °C, intermittent +100 °C |
| **Flammability** | UL 94 V0 |
| **EN 45545-2 Classification** | R22 HL2, R23 HL2 |

HF ✓ RoHS ✓

**HTWD-HF wiring ducts base perforation according to DIN EN 50085**




*Width 25-60* *Width 80-120* *Hole dimesions*

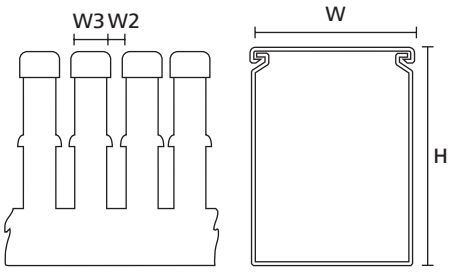
EN 45545-2 c UL us

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Halogen-free wiring ducts

### HelaDuct HTWD-HF




*HelaDuct Wiring ducts HTWD-HF*

| TYPE | Width (W) | Height (H) | Width (W2) | Width (W3) | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|
| **HTWD-HF-25X25** | 25 | 25 | 6 | 6.5 | 50 m | 183-22525 |
| **HTWD-HF-25X40** | 25 | 40 | 6 | 6.5 | 48 m | 183-22540 |
| **HTWD-HF-25X60** | 25 | 60 | 6 | 6.5 | 60 m | 183-25060 |
| **HTWD-HF-25X80** | 25 | 80 | 6 | 6.5 | 20 m | 183-22580 |
| **HTWD-HF-40X25** | 40 | 25 | 6 | 6.5 | 48 m | 183-24025 |
| **HTWD-HF-40X40** | 40 | 40 | 6 | 6.5 | 50 m | 183-24040 |
| **HTWD-HF-40X60** | 40 | 60 | 6 | 6.5 | 40 m | 183-24060 |
| **HTWD-HF-40X80** | 40 | 80 | 6 | 6.5 | 20 m | 183-24080 |
| **HTWD-HF-60X40** | 60 | 40 | 6 | 6.5 | 40 m | 183-26040 |
| **HTWD-HF-60X60** | 60 | 60 | 6 | 6.5 | 24 m | 183-26060 |
| **HTWD-HF-60X80** | 60 | 80 | 6 | 6.5 | 20 m | 183-26080 |
| **HTWD-HF-60X100** | 60 | 100 | 6 | 6.5 | 12 m | 183-26010 |
| **HTWD-HF-80X40** | 80 | 40 | 6 | 6.5 | 20 m | 183-28040 |
| **HTWD-HF-80X60** | 80 | 60 | 6 | 6.5 | 20 m | 183-28060 |
| **HTWD-HF-80X80** | 80 | 80 | 6 | 6.5 | 12 m | 183-28080 |
| **HTWD-HF-80X100** | 80 | 100 | 6 | 6.5 | 10 m | 183-28010 |
| **HTWD-HF-100X40** | 100 | 40 | 6 | 6.5 | 20 m | 183-22040 |
| **HTWD-HF-100X60** | 100 | 60 | 6 | 6.5 | 16 m | 183-21060 |
| **HTWD-HF-100X80** | 100 | 80 | 6 | 6.5 | 12 m | 183-21080 |
| **HTWD-HF-100X100** | 100 | 100 | 6 | 6.5 | 8 m | 183-21010 |
| **HTWD-HF-120X60** | 120 | 60 | 6 | 6.5 | 12 m | 183-21260 |
| **HTWD-HF-120X80** | 120 | 80 | 6 | 6.5 | 16 m | 183-21280 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

EN 45545-2 c UL us

For product specific approvals and specifications please refer to the Appendix.

## Flexible Cable Support

Heladuct flexible cable supports are commonly used in switching cabinets. They are also used in the furniture industry, where cables need to be routed rapidly and attractively.

### Features and benefits

- Space-saving wiring system
- Highly flexible, can be installed at angles of 90° and higher
- Cable clearly open to view
- Rapid mounting with screws or adhesive strip with high-quality foam bonding layer



*Heladuct Flex- clearly and space-saving arrangement of wiring, even at angles above 90°.*

| | |
|---|---|
| **MATERIAL** | Polypropylene (PP) |
| **Operating Temperature** | -20 °C to +70 °C, (+80 °C, 200 h) |
| **Adhesive** | Synthetic rubber with base of polyethylene foam |
| **Flammability** | UL 94 V0 (excluding adhesive) |

HF ✓ RoHS ✓

### HelaDuct Flex Screw Mounting

| TYPE | Nominal Ø | Fixation Method | No. of Wires | | Colour | Length (L) | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **HelaDuct Flex10** | 10 | Screw Mounting | 6 x 1.50 mm² | 4 x 2.50 mm² | White (WH) | 500 | 100 pcs. | 164-11008 |
| **HelaDuct Flex20** | 20 | Screw Mounting | 22 x 1.50 mm² | 14 x 2.50 mm² | White (WH) | 500 | 70 pcs. | 164-21008 |
| **HelaDuct Flex30** | 30 | Screw Mounting | 50 x 1.50 mm² | 34 x 2.50 mm² | White (WH) | 500 | 40 pcs. | 164-31008 |
| **HelaDuct Flex40** | 40 | Screw Mounting | 81 x 2.50 mm² | 60 x 2.50 mm² | White (WH) | 500 | 24 pcs. | 164-41008 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

### HelaDuct Flex Screw Mounting with Adhesive

| TYPE | Nominal Ø | Fixation Method | No. of Wires | | Colour | Length (L) | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **HelaDuct Flex10SK** | 10 | Screw Mounting and Adhesive | 6 x 1.50 mm² | 4 x 2.50 mm² | White (WH) | 500 | 100 pcs. | 164-11108 |
| **HelaDuct Flex20SK** | 20 | Screw Mounting and Adhesive | 22 x 1.50 mm² | 14 x 2.50 mm² | White (WH) | 500 | 70 pcs. | 164-21108 |
| **HelaDuct Flex30SK** | 30 | Screw Mounting and Adhesive | 50 x 1.50 mm² | 34 x 2.50 mm² | White (WH) | 500 | 40 pcs. | 164-31108 |
| **HelaDuct Flex40SK** | 40 | Screw Mounting and Adhesive | 81 x 2.50 mm² | 60 x 2.50 mm² | White (WH) | 500 | 24 pcs. | 164-41108 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

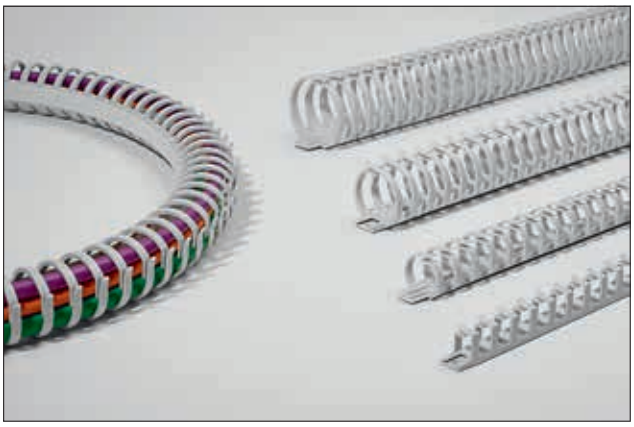
Date of issue: January 2019

## Flexible cable support

HelaDuct Flex are used to route cables where bending and twisting are common and cables need to be monitored, particularly in the door area.

**Features and benefits**

- Very flexible, can be bent and twisted
- Cables easily and safely inserted
- Keeps cables open to view
- Rapidly mounted with adhesive strip or screws with high-quality foam bonding layer
- Can be clicked together end-to-end to create longer lengths



*HelaDuct HTWD-Flex is strong, flexible and easy to mount.*

| | |
|---|---|
| **MATERIAL** | Polyamide 6 (PA6) |
| **Operating Temperature** | -25 °C to +90 °C, intermittent +100 °C |
| **Flammability** | UL 94 V0 |

HF ✓ RoHS ✓

### HelaDuct Flex Screw Mounting

| TYPE | Nominal Ø | Fixation Method | No. of Wires | | Colour | Length (L) | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **HTWD-FLEX-10** | 10 | Screw Mounting | 8 x 1.50 mm² | 5 x 2.50 mm² | White (WH) | 250 | 40 pcs. | 164-40010 |
| **HTWD-FLEX-20** | 20 | Screw Mounting | 18 x 1.50 mm² | 13 x 2.50 mm² | White (WH) | 500 | 40 pcs. | 164-40020 |
| **HTWD-FLEX-30** | 30 | Screw Mounting | 46 x 1.50 mm² | 30 x 2.50 mm² | White (WH) | 500 | 40 pcs. | 164-40030 |
| **HTWD-FLEX-40** | 40 | Screw Mounting | 81 x 1.50 mm² | 53 x 2.50 mm² | White (WH) | 500 | 40 pcs. | 164-40040 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

### HelaDuct Flex Screw Mounting and Adhesive

| | |
|---|---|
| **MATERIAL** | Polyamide 6 (PA6) |
| **Operating Temperature** | -25 °C to +90 °C, intermittent +100 °C |
| **Adhesive** | Acrylate with base of polyethylene foam |
| **Flammability** | UL 94 V0 (excluding adhesive) |

HF ✓ RoHS ✓

| TYPE | Nominal Ø | Fixation Method | No. of Wires | | Colour | Length (L) | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **HTWD-FLEX-A-10** | 10 | Screw Mounting and Adhesive | 8 x 1.50 mm² | 5 x 2.50 mm² | White (WH) | 250 | 40 pcs. | 164-40015 |
| **HTWD-FLEX-A-20** | 20 | Screw Mounting and Adhesive | 18 x 1.50 mm² | 13 x 2.50 mm² | White (WH) | 500 | 40 pcs. | 164-40025 |
| **HTWD-FLEX-A-30** | 30 | Screw Mounting and Adhesive | 46 x 1.50 mm² | 30 x 2.50 mm² | White (WH) | 500 | 40 pcs. | 164-40035 |
| **HTWD-FLEX-A-40** | 40 | Screw Mounting and Adhesive | 81 x 1.50 mm² | 53 x 2.50 mm² | White (WH) | 500 | 40 pcs. | 164-40045 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

c UL us For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

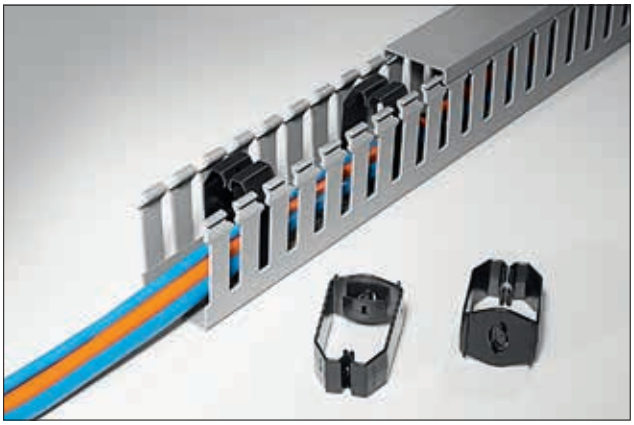
## For mounting prior to wiring

**HelaDuct HTWD-BWR wire retainers**

HelaDuct HTWD-BWR are anchored securely on the raised mounting points of HTWD-PN and HTWD-PW ducts to allow insertion of wires. Wires are held in place during wiring, for instance in a vertical position or during ceiling installation.

**Features and benefits**

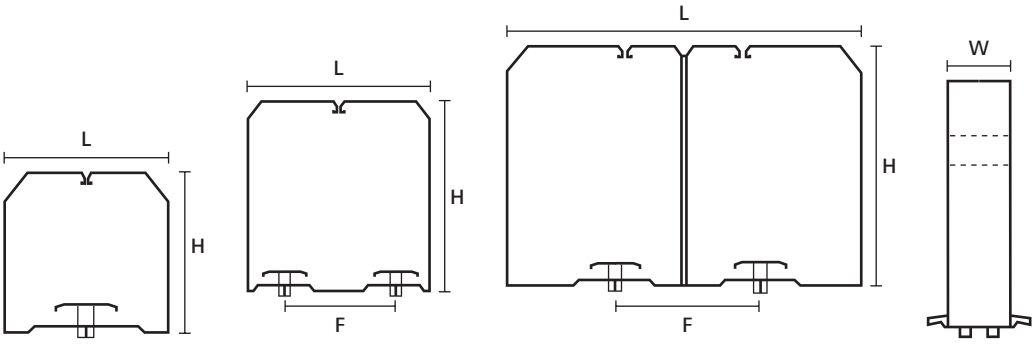
- Quickly and easily fastend on raised mounting points with a 1/4 turn of a screwdriver
- Wires easily inserted and firmly held in place
- Anchor of retainer remains inside raised mounting point and does not protrude below surface of duct base
- Reduces strain on duct fingers especially at corners and eliminates bulging against sidewall
- Available for all duct sizes of width and height larger than 40
- Fits snuggly in duct for minimal loss of installation space



*HTWD-BWR wire retainers are easy to mount and hold wires firmly during wiring.*

| | |
|---|---|
| **MATERIAL** | Acrylonitrile Butadiene Styrene alloyed with Polycarbonate (PC/ABS) |
| **Operating Temperature** | -5 °C to +85 °C |
| **Flammability** | UL 94 HB |

HF ✓ RoHS ✓




*Width 40-60* *Width 80-120* *Width 150* *HTWD-BWR*

| TYPE | Length (L) | Height (H) | Width (W) | Fixing Hole Centres (F) | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|
| **HTWD-BWR-40X80** | 34 | 75 | 20 | - | Black (BK) | 20 pcs. | 181-50480 |
| **HTWD-BWR-40X40** | 35 | 36 | 20 | - | Black (BK) | 40 pcs. | 181-50440 |
| **HTWD-BWR-40X60** | 35 | 56 | 20 | - | Black (BK) | 40 pcs. | 181-50460 |
| **HTWD-BWR-60X60** | 54 | 55 | 20 | - | Black (BK) | 20 pcs. | 181-50660 |
| **HTWD-BWR-60X80** | 54 | 75 | 20 | - | Black (BK) | 20 pcs. | 181-50680 |
| **HTWD-BWR-60X100** | 54 | 95 | 20 | - | Black (BK) | 20 pcs. | 181-50690 |
| **HTWD-BWR-60X40** | 55 | 35 | 20 | - | Black (BK) | 40 pcs. | 181-50640 |
| **HTWD-BWR-80X60** | 74 | 55 | 20 | 50 | Black (BK) | 10 pcs. | 181-50860 |
| **HTWD-BWR-80X80** | 74 | 74 | 20 | 50 | Black (BK) | 10 pcs. | 181-50880 |
| **HTWD-BWR-80X100** | 74 | 94 | 20 | 50 | Black (BK) | 30 pcs. | 181-50890 |
| **HTWD-BWR-100X100** | 93 | 94 | 20 | 50 | Black (BK) | 5 pcs. | 181-51090 |
| **HTWD-BWR-100X60** | 94 | 55 | 20 | 50 | Black (BK) | 10 pcs. | 181-51060 |
| **HTWD-BWR-100X80** | 94 | 75 | 20 | 50 | Black (BK) | 10 pcs. | 181-51080 |
| **HTWD-BWR-120X80** | 113 | 74 | 20 | 50 | Black (BK) | 10 pcs. | 181-51280 |
| **HTWD-BWR-120X60** | 114 | 54 | 20 | 50 | Black (BK) | 10 pcs. | 181-51260 |
| **HTWD-BWR-150X100** | 143 | 94 | 20 | 50 | Black (BK) | 5 pcs. | 181-51590 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

Date of issue: January 2019

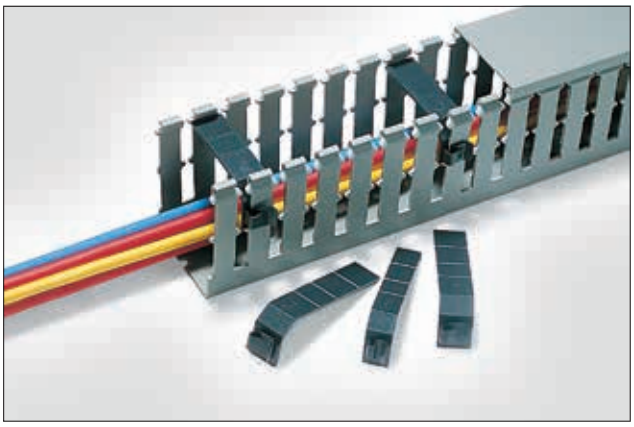
## For mounting to duct fingers

**HelaDuct HTWD-NFWR and HTWD-WFWR Wire Retainers**

HTWD-NFWR for the HTWD-PN ducts and HTWD-WFWR for HTWD-PW ducts are easily inserted onto fingers and hold wires securely into place when cover is removed.

### Features and benefits

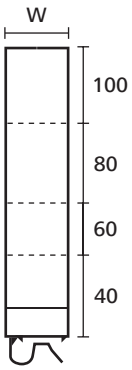
- Prevents wires from falling out even when vertical routed
- Easily inserted onto single fingers of duct
- Height can be freely adjusted
- Does not block insertion of wirings into slots
- One retainer for all duct widths: length of retainer can be shortened at break-off points to duct width
- HTWD-NFWR for HTWD-PN ducts, HTWD-WFWR for HTWD-PW ducts



*HTWD-NFWR and HTWD-WFWR hold wires in place even when cover is removed.*

| | |
|---|---|
| **MATERIAL** | Acrylonitrile Butadiene Styrene (ABS) |
| **Operating Temperature** | -40 °C to +80 °C |
| **Flammability** | UL 94 V0 |

HF ✓ RoHS ✓




*HTWD-NFWR, -WFWR*

| TYPE | For Wiring Ducts | Width (W) | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|
| **HTWD-NFWR** | HTWD-PN | 14 | Black (BK) | 100 pcs. | 181-10020 |
| **HTWD-WFWR** | HTWD-PW | 18 | Black (BK) | 100 pcs. | 181-10010 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

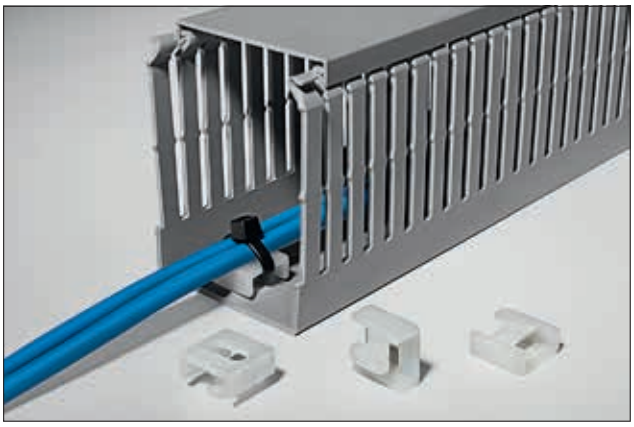
## For fixing cable ties to base of ducts

**HelaDuct HTWD-CTH cable tie holder**

HelaDuct HTWD-CTH is used to anchor a cable tie securely to the base of a duct.

**Features and benefits**

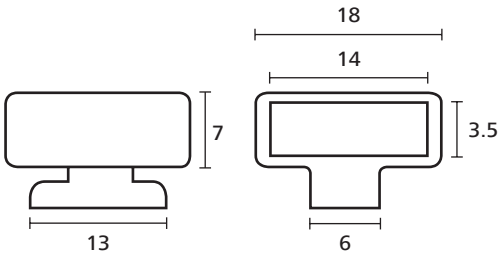
- Holds all components firmly in place
- Cable tie easily laced through HTWD-CTH
- Anchor of mount remains inside raised mounting point and does not protrude below surface of duct base



*HTWD-CTH for fixing cable ties to base of ducts.*

| | |
|---|---|
| **MATERIAL** | Polyamide 6 (PA6) |
| **Operating Temperature** | -40 °C to +80 °C |
| **Flammability** | UL 94 V2 |

HF ✓ RoHS ✓




*HTWD-CTH Mount* *HTWD-CTH Mount*

| TYPE | For Wiring Ducts | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|
| **HTWD-CTH** | HTWD-PN, HTWD-PW | White (WH) | 50 pcs. | 181-45029 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

Date of issue: January 2019

## For installing wiring ducts into fixing holes

**HelaDuct HTWD-R4 and HTWD-R6 rivets**

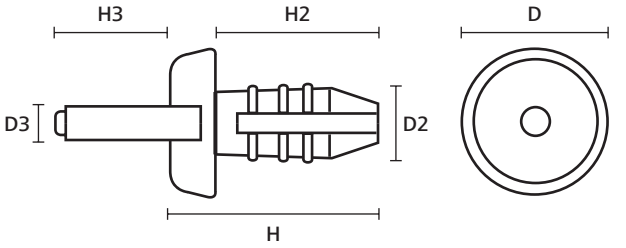
HTWD-R4 and HTWD-R6 are used to rapidly mount and secure wiring ducts into fixing holes without the use of screws.

**Features and benefits**

- Very good mechanical properties
- Good resistance to vibration
- Easily and rapidly applied with HTWD-RT4 and HTWD-RT6 rivet tools
- Colour-coded for easy identification for use with rivet tools



*HTWD-R4 and HTWD-R6 Rivet.*




*HTWD-R4, -R6*

| | |
|---|---|
| **MATERIAL** | Polyamide 6 (PA6) |
| **Operating Temperature** | -40 °C to +80 °C |
| **Flammability** | UL 94 V2 |

HF ✓ RoHS ✓

| TYPE | Height (H) | Height (H2) | Height (H3) | Ø (D) | Ø (D2) | Ø (D3) | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **HTWD-R4** | 14.0 | 12.0 | 11.5 | 9.0 | 5.0 | 4.0 | Blue (BU) | 1,000 pcs. | 181-42400 |
| **HTWD-R6** | 16.0 | 12.7 | 13.0 | 11 | 6.0 | 3.0 | Black (BK) | 250 pcs. | 181-42600 |
| | 16.0 | 14.0 | 13.5 | 11 | 7.5 | 6.0 | Orange (OG) | 500 pcs. | 181-42500 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

## For inserting R4 and R6 rivets

**HelaDuct HTWD-RT4 and HTWD-RT6 Rivet Tools**

HelaDuct HTWD-RT4 and HTWD-RT6 tools are used to insert HTWD-R4 and HTWD-R6 rivets into fixing holes and thus mounting ducts without the use of screws.

**Features and benefits**

- Durable and reliable
- Long aluminum body enables insertion even into very high ducts
- Soft plastic ergonomic handle
- Colour-coded for easy identification for use with correct rivets



*Rivet Tools HTWD-RT4, -RT6.*

| | |
|---|---|
| **MATERIAL** | Metal (MET), Plastic (PL) |

RoHS ✓

| TYPE | For Wiring Duct Rivets | Weight | Colour | Article-No. |
|---|---|---|---|---|
| **HTWD-RT4** | R4 | 0.15 kg | Blue (BU) | 181-41542 |
| **HTWD-RT6** | R6 | 0.15 kg | Orange (OG) | 181-41564 |

All dimensions in mm. Subject to technical changes.

Date of issue: January 2019

## For mounting ducts to DIN rails

**HelaDuct HTWD-RB Rail Mounting Blocks**

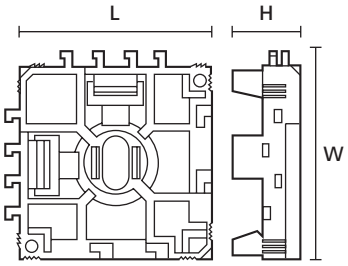
HelaDuct HTWD-RB is used to fix wiring ducts firmly to DIN rail.

**Features and benefits**

- Easily snapped onto DIN rail
- Rapidly fixed to wiring duct with a HTWD-TL mount
- Assembly direction of wiring duct can be either parallel or perpendicular to DIN rail



*HTWD-RB rail mounting blocks und HTWD-TL for mounting ducts to DIN rails.*




*HTWD-RB Rail Mounting Block*

| | |
|---|---|
| **MATERIAL** | Polyamide 6.6 (PA66) |
| **Operating Temperature** | -40 °C to +80 °C |
| **Flammability** | UL 94 V2 |

HF ✓ RoHS ✓

| TYPE | Width (W) | Length (L) | Height (H) | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|
| **HTWD-RB** | 50 | 50 | 14 | Black (BK) | 25 pcs. | 181-45130 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

## For fastening mounting blocks to base of ducts

**HelaDuct HTWD-TL mounting block fastener**

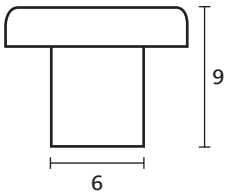
The HTWD-TL is used to fix a HTWD-RB rail mounting block to duct or to fix smaller ducts inside larger ones.

**Features and benefits**

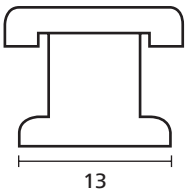
- Holds all components firmly in place
- Anchor of mount remains inside raised mounting point and does not protrude below surface of duct base

| | |
|---|---|
| **MATERIAL** | Polyamide 6 (PA6) |
| **Operating Temperature** | -40 °C to +80 °C |
| **Flammability** | UL 94 V2 |

HF ✓ RoHS ✓




*HTWD-TL Mount*




*HTWD-TL Mount*

| TYPE | For Wiring Ducts | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|
| **HTWD-TL** | HTWD-PN, HTWD-PW | White (WH) | 100 pcs. | 181-45019 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

Date of issue: January 2019

## Edge protection for cut-out sections

Flexiform edge protection is used to protect cables and wires routed through sharp-edged cut-out sections.

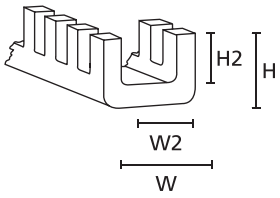
**Features and benefits**

- Very flexible
- Easily and securely applied without adhesives
- Provides effective, orderly-looking protection
- Flexiform G51P made of polyethylene offers general purpose edge protection
- Flexiform G51N made of PA6 offers very good abrasion resistance
- Flexiform G51T made of PTFE offers excellent resistance to high temperatures and most chemicals



*Optimal protection of cables and wires at panel edges.*

**Flexiform G51P polyethylene grommet strip**




*Flexiform edge protection*

| | |
|---|---|
| **MATERIAL** | Polyethylene (PE) |
| **Operating Temperature** | -30 °C to +80 °C |
| **Flammability** | UL 94 HB |

HF ✓ RoHS ✓

| TYPE | Panel Thickness | Width (W) | Width (W2) | Height (H) | Height (H2) | Material | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **G51PAA** | 0.4 - 0.9 | 2.3 | 0.9 | 2.7 | 1.8 | PE | Natural (NA) | 25 m | 251-10009 |
| **G51PA** | 0.4 - 1.3 | 3.9 | 1.5 | 4.3 | 2.7 | PE | Natural (NA) | 25 m | 251-10109 |
| **G51PB** | 1.3 - 2.1 | 4.6 | 2.4 | 4.3 | 2.7 | PE | Natural (NA) | 25 m | 251-10209 |
| **G51PC** | 2.1 - 3.3 | 5.7 | 3.5 | 4.3 | 2.7 | PE | Natural (NA) | 25 m | 251-10309 |
| **G51PD** | 3.3 - 4.8 | 8.4 | 5.1 | 6.2 | 4.3 | PE | Natural (NA) | 25 m | 251-10409 |
| **G51PE** | 4.8 - 6.5 | 9.9 | 6.7 | 6.4 | 4.5 | PE | Natural (NA) | 25 m | 251-10509 |
| **G51PF** | 6.5 - 8.1 | 11.4 | 8.3 | 6.8 | 4.8 | PE | Natural (NA) | 25 m | 251-10609 |
| **G51PG** | 8.1 - 9.7 | 13.2 | 10.1 | 6.8 | 4.8 | PE | Natural (NA) | 25 m | 251-10709 |
| **G51PH** | 9.7 - 12.9 | 16.4 | 13.2 | 6.8 | 4.8 | PE | Natural (NA) | 25 m | 251-10809 |

All dimensions in mm. Subject to technical changes. Minimum Order Quantity (MOQ) may differ from package content.
Flexiform grommet strips are not self-adhesive and therefore not suitable for outer edges.

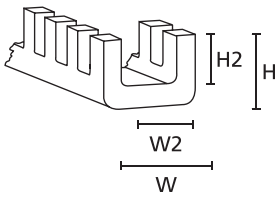
Date of issue: January 2019

## Edge protection for cut-out sections

### Flexiform G51N polyamide 6 grommet strip

| | |
|---|---|
| **MATERIAL** | Polyamide 6 (PA6) |
| **Operating Temperature** | -60 °C to +95 °C |
| **Flammability** | UL 94 HB |

HF RoHS




*Flexiform edge protection*

| TYPE | Panel Thickness | Width (W) | Width (W2) | Height (H) | Height (H2) | Material | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **G51NA** | 0.4 - 1.3 | 3.9 | 1.5 | 4.3 | 2.7 | PA6 | Natural (NA) | 25 m | 251-21109 |
| **G51NB** | 1.3 - 2.1 | 4.6 | 2.4 | 4.3 | 2.7 | PA6 | Natural (NA) | 25 m | 251-21209 |
| **G51NC** | 2.1 - 3.3 | 5.7 | 3.5 | 4.3 | 2.7 | PA6 | Natural (NA) | 25 m | 251-21309 |
| **G51ND** | 3.3 - 4.8 | 8.4 | 5.1 | 6.2 | 4.3 | PA6 | Natural (NA) | 25 m | 251-21409 |
| **G51NE** | 4.8 - 6.5 | 9.9 | 6.7 | 6.4 | 4.5 | PA6 | Natural (NA) | 25 m | 251-21509 |
| **G51NF** | 6.5 - 8.1 | 11.4 | 8.3 | 6.8 | 4.8 | PA6 | Natural (NA) | 25 m | 251-21609 |
| **G51NG** | 8.1 - 9.7 | 13.2 | 10.1 | 6.8 | 4.8 | PA6 | Natural (NA) | 25 m | 251-21709 |
| **G51NH** | 9.7 - 12.9 | 16.4 | 13.2 | 6.8 | 4.8 | PA6 | Natural (NA) | 25 m | 251-21809 |

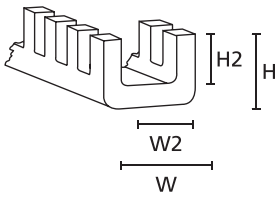
All dimensions in mm. Subject to technical changes. Minimum Order Quantity (MOQ) may differ from package content.
Flexiform grommet strips are not self-adhesive and therefore not suitable for outer edges.

NASM For product specific approvals and specifications please refer to the Appendix.

### Flexiform G51T PTFE grommet strip

| | |
|---|---|
| **MATERIAL** | Polytetrafluoroethylene (PTFE) |
| **Operating Temperature** | -60 °C to +260 °C, intermittent +350 °C |
| **Flammability** | UL 94 V0 |

RoHS




*Flexiform edge protection*

| TYPE | Panel Thickness | Width (W) | Width (W2) | Height (H) | Height (H2) | Material | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **G51TA** | 0.4 - 1.3 | 3.9 | 1.5 | 4.3 | 2.7 | PTFE | Natural (NA) | 3 m | 251-30109 |
| **G51TB** | 1.3 - 2.1 | 4.6 | 2.4 | 4.3 | 2.7 | PTFE | Natural (NA) | 3 m | 251-30209 |
| **G51TC** | 2.1 - 3.3 | 5.7 | 3.5 | 4.3 | 2.7 | PTFE | Natural (NA) | 3 m | 251-30309 |
| **G51TD** | 3.3 - 4.8 | 8.4 | 5.1 | 6.2 | 4.3 | PTFE | Natural (NA) | 3 m | 251-30409 |
| **G51TE** | 4.8 - 6.5 | 9.9 | 6.7 | 6.4 | 4.5 | PTFE | Natural (NA) | 3 m | 251-30509 |
| **G51TF** | 6.5 - 8.1 | 11.4 | 8.3 | 6.8 | 4.8 | PTFE | Natural (NA) | 3 m | 251-30609 |
| **G51TG** | 8.1 - 9.7 | 13.2 | 10.1 | 6.8 | 4.8 | PTFE | Natural (NA) | 3 m | 251-30709 |
| **G51TH** | 9.7 - 12.9 | 16.4 | 13.2 | 6.8 | 4.8 | PTFE | Natural (NA) | 3 m | 251-30809 |

All dimensions in mm. Subject to technical changes. Minimum Order Quantity (MOQ) may differ from package content.
Flexiform grommet strips are not self-adhesive and therefore not suitable for outer edges.

Date of issue: January 2019

## Beading Edge Protection

### EdgeGuard

PVC Beading strip is used to protect cables routed through sharp-edged cutout sections. It can also be used to provide an attractive finish to panel edges.

**Features and benefits**

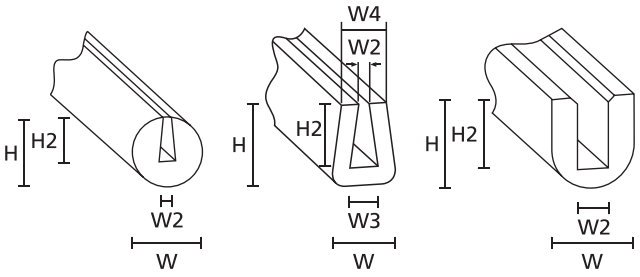
- Very flexible
- Easy to apply
- Protects cables from chafing on bulkheads



*EdgeGuard protects against shart panel edges.*

| | |
|---|---|
| **MATERIAL** | Polyvinylchloride (PVC) |
| **Operating Temperature** | -65 °C to +105 °C, intermittent +135 °C |
| **Flammability** | UL 94 HB |

RoHS




*PS1* *SM1* *RA1*

| TYPE | Width (W) | Width (W2) | Width (W3) | Width (W4) | Height (H) | Height (H2) | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **PS1** | 1.2 | 0.6 | - | - | 5.0 | 3.2 | Black (BK) | 75 m | 800-00200 |
| **SM1** | 5.0 | 1.0 | 1.8 | 4.2 | 6.3 | 4.9 | Black (BK) | 75 m | 800-00004 |
| **RA1** | 6.4 | 2.4 | - | - | 7.1 | 5.6 | Black (BK) | 75 m | 800-00001 |

All dimensions in mm. Subject to technical changes. Minimum Order Quantity (MOQ) may differ from package content.

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## Push-on Caps

### Push-on caps

The protective push-on caps and elbow grommets are specially constructed to insulate and protect flat pin bushings. The caps and grommets are used in all areas of automotive electronics and in electrical connection systems.

**Features and benefits**

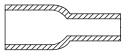
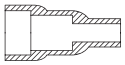
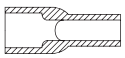
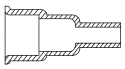
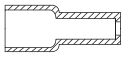
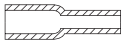
- Protects effectively against spraying water
- Flexible and easy to apply
- High resistance to chemicals and environmental influences



*Push-on caps and elbow grommets in various dimensions.*

| MATERIAL | Polyvinylchloride (PVC) | Polyvinylchloride, flame retardant (PVC-FR) | Polyethylene (PE) |
|---|---|---|---|
| Operating Temperature | -30 °C to +60 °C | | -10 °C to +70 °C |
| Shore Hardness A | 70±5 | 55±5 | Nom. 45 |
| Flammability | UL 94 HB | UL 94 V0 | UL 94 HB |

RoHS RoHS HF RoHS

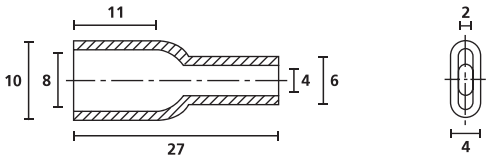
| TYPE | Drawing | Material | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|
| HV4819 |  | PVC-FR | Black (BK) | 2,000 pcs. | 631-08190 |
| | | PVC-FR | Natural (NA) | 2,000 pcs. | 631-08199 |
| HV4820 |  | PVC | Black (BK) | 2,000 pcs. | 631-08200 |
| | | PVC | Natural (NA) | 2,000 pcs. | 631-08209 |
| HV4823 |  | PVC | Black (BK) | 2,000 pcs. | 631-08230 |
| | | PVC | Natural (NA) | 2,000 pcs. | 631-08239 |
| HV4825 |  | PVC | Natural (NA) | 2,000 pcs. | 631-08259 |
| OP4827 |  | PE | Natural (NA) | 2,000 pcs. | 631-58279 |
| OP4828 |  | PE | Natural (NA) | 2,000 pcs. | 631-58289 |

All dimensions in mm. Subject to technical changes.

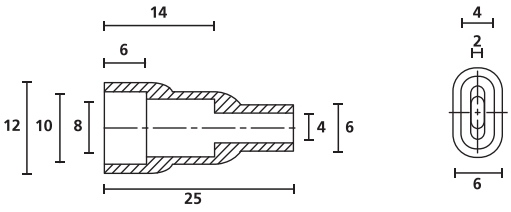
Date of issue: January 2019

## Push-on Caps

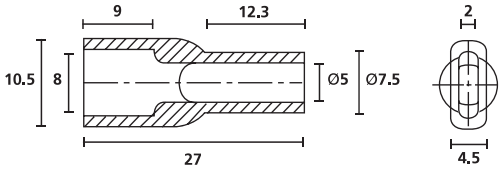
### Push-on caps



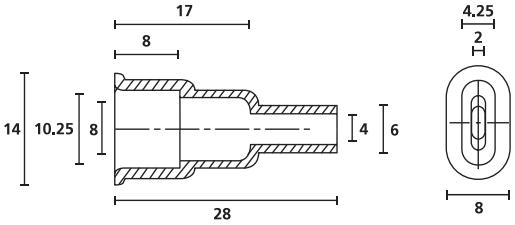

*HV4819*



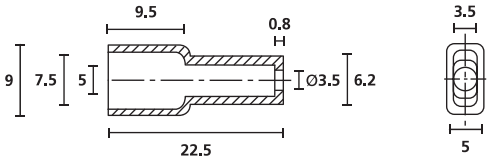

*HV4820*



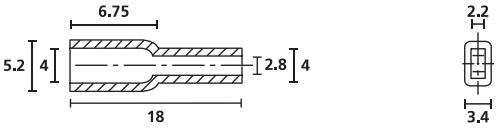

*HV4823*



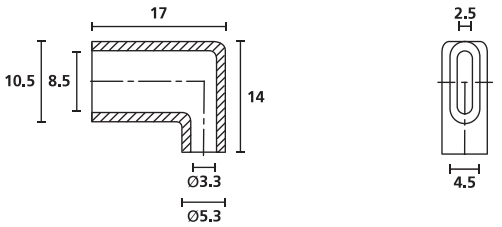

*HV4825*



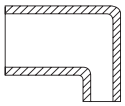

*OP4827*




*OP4828*




*HV4821*

| TYPE | Drawing | Material | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|
| **HV4821** |  | PVC-FR | Black (BK) | 2,000 pcs. | 631-08210 |
| | | PVC-FR | Natural (NA) | 2,000 pcs. | 631-08219 |

All dimensions in mm. Subject to technical changes.

Date of issue: January 2019

## For strain relief

### Bend protection grommets

Bend protection grommets are typically used for protection of cables at apertures in casings.

**Features and benefits**

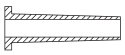
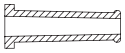
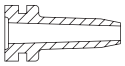
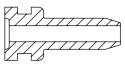
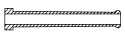
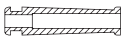
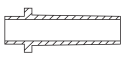
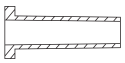
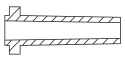
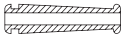
- Routes cables free of kinks and breakage
- Provides strain relief
- Flexible and easy to apply
- High resistance to chemicals und environmental influences



*Protection of cables and routing free of kinks and breakage.*

| | |
|---|---|
| **MATERIAL** | Polyvinylchloride, flame retardant (PVC-FR) |
| **Operating Temperature** | -30 °C to +60 °C |
| **Shore Hardness A** | 55±5 |
| **Flammability** | UL 94 V0 |

RoHS

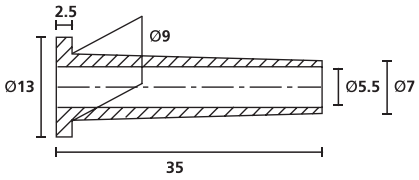
| TYPE | Drawing | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|
| **HV2101** |  | Black (BK) | 1,000 pcs. | 632-01010 |
| | | Grey (GY) | 1,000 pcs. | 632-01017 |
| | | White (WH) | 1,000 pcs. | 632-01019 |
| **HV2101A** |  | Black (BK) | 1,000 pcs. | 632-01020 |
| **HV2103** |  | Black (BK) | 1,000 pcs. | 632-01030 |
| **HV2104** |  | Black (BK) | 1,000 pcs. | 632-01040 |
| **HV2107** |  | Black (BK) | 200 pcs. | 632-01070 |
| **HV2206** |  | Black (BK) | 500 pcs. | 632-02060 |
| **HV2209** |  | Black (BK) | 1,000 pcs. | 632-02090 |
| **HV2210** |  | Black (BK) | 1,000 pcs. | 632-02100 |
| **HV2213** |  | Black (BK) | 2,000 pcs. | 632-02130 |
| **HV2228** |  | Black (BK) | 500 pcs. | 632-02280 |

All dimensions in mm. Subject to technical changes.

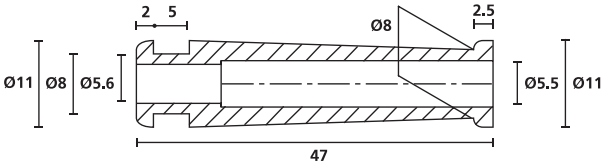
Date of issue: January 2019

## For strain relief

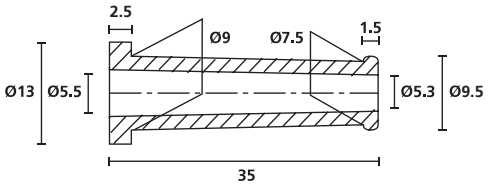
### Bend protection grommets



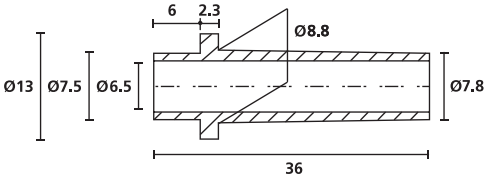

*HV2101*



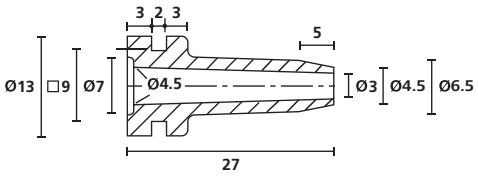

*HV2206*



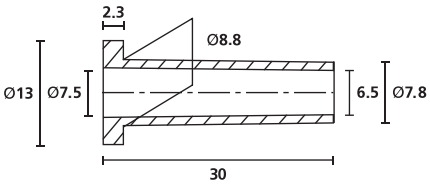

*HV2101A*



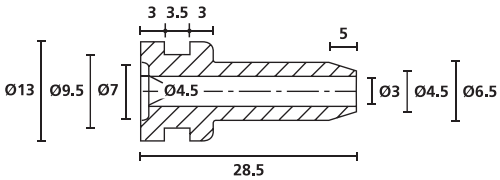

*HV2209*



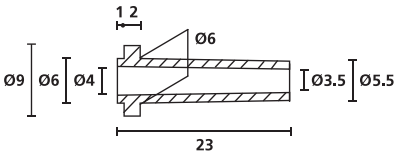

*HV2103*



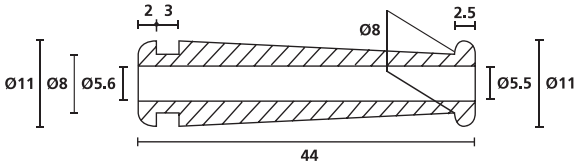

*HV2210*



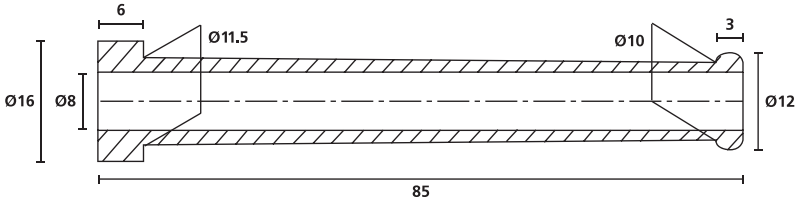

*HV2104*




*HV2213*




*HV2228*




*HV2107*

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## For strain relief

### Strain relief grommets

Straining protection grommets are used as protection for cables and wires from pulling. They are also used for bend protection in casing apertures. They are especially useful in electrical equipment, for instance in electrical drills.

The use of Hellerine is recommended when working with grommets.

**Features and benefits**

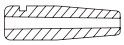
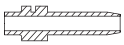
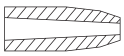
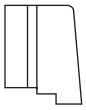
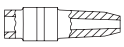
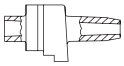
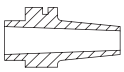
- Provides excellent strain relieve
- Flexible and easy to apply
- High resistance to chemicals and environmental influences



*Bend and strain protection on casings.*

| MATERIAL | Polyvinylchloride, flame retardant (PVC-FR) | Flexible Polyvinyl Chloride, cadmium free (PVC) |
|---|---|---|
| **Operating Temperature** | -30 °C to +60 °C | |
| **Shore Hardness A** | 55±5 | 63±5 |
| **Flammability** | UL 94 V0 | UL 94 HB |

RoHS

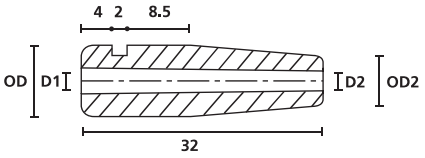
| TYPE | Drawing | Outside Ø (OD) | Outside Ø (OD2) | Outside Ø (OD3) | Ø (D) | Ø (D2) | Material | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **H125** |  | 9.0 | 6.0 | - | 4.0 | 3.5 | PVC | Black (BK) | 1,000 pcs. | 634-31250 |
| **H126** | | 9.0 | 6.0 | - | 5.0 | 4.5 | PVC | Black (BK) | 1,000 pcs. | 634-31260 |
| | | 9.0 | 6.0 | - | 5.0 | 4.5 | PVC | Grey (GY) | 1,000 pcs. | 634-31268 |
| **H321** |  | 8.5 | 7.0 | 8.5 | 6.0 | 5.5 | PVC-FR | Black (BK) | 200 pcs. | 634-03210 |
| **H3A** |  | 9.0 | 5.0 | 8.0 | 4.5 | 3.0 | PVC-FR | Black (BK) | 2,000 pcs. | 634-00310 |
| **H4202** |  | - | - | - | - | - | PVC-FR | Black (BK) | 1,000 pcs. | 634-04200 |
| **H119** |  | 7.0 | 4.5 | 6.5 | 4.5 | 3.0 | PVC-FR | Black (BK) | 2,000 pcs. | 634-01190 |
| **H120** |  | 8.0 | 6.0 | 8.0 | 4.5 | 3.0 | PVC-FR | Black (BK) | 500 pcs. | 634-01200 |
| **H121** |  | 11.0 | 8.5 | - | 8.0 | 7.0 | PVC-FR | Black (BK) | 500 pcs. | 634-01210 |

All dimensions in mm. Subject to technical changes.

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## For strain relief

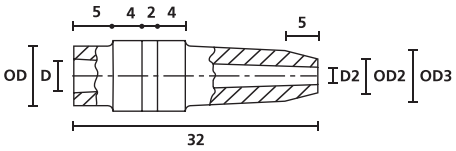
### Strain relief grommets

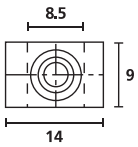




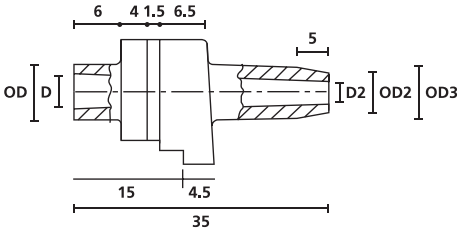


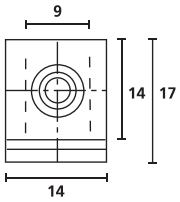
*H125/H126*



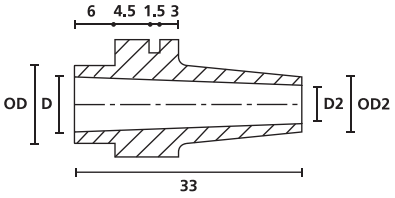



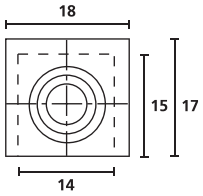

*H119*



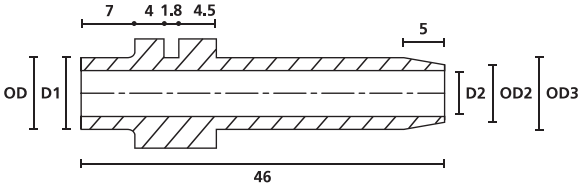



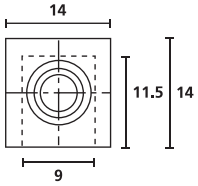

*H120*



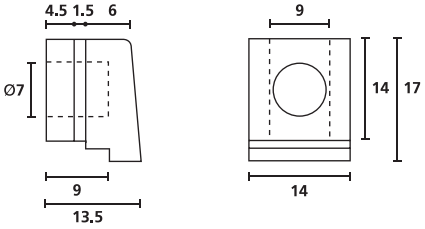




*H121*

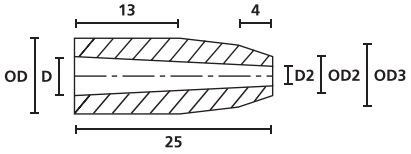



*H321*




*H4202*




*H3A*

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## Egde protection grommets

### Edge protection grommets

Edge protection grommets are used wherever cable and wires are routed through outlets and apertures. HellermannTyton grommets offer excellent mechanical protection.

**Features and benefits**

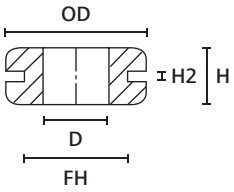
- Protects cables from sharp edges
- Provides additional strain relief
- Flexible and easy to apply
- High resistance to chemicals and environmental influences



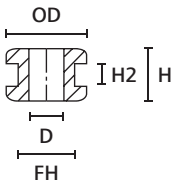
*Edge protection grommets.*

| MATERIAL | Polyvinylchloride (PVC) | Polyvinylchloride, flame retardant (PVC-FR) |
|---|---|---|
| **Operating Temperature** | -30 °C to +60 °C | |
| **Shore Hardness A** | 70±5 | 55±5 |
| **Flammability** | UL 94 HB | UL 94 V0 |

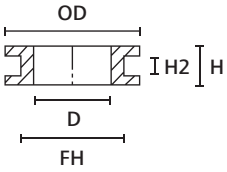
RoHS



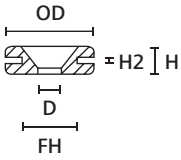

*HV1101*



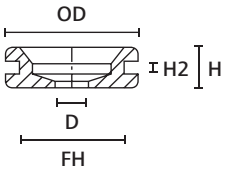

*HV1201 to HV1218*



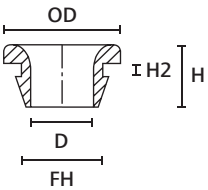

*HV1301 to HV1305*



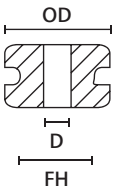

*HV1401*



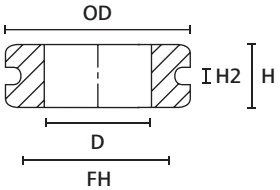

*HV1402*



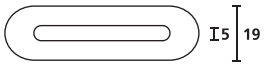

*HV1502 to OP1503*




*HV1606 to HV1608*




*HV1606 to HV1608*

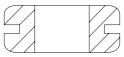
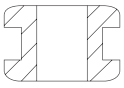
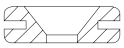
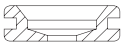
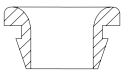
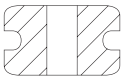
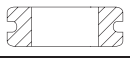
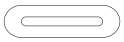



*HV1606 to HV1608*

Date of issue: January 2019

## Egde protection grommets

### Edge protection grommets

| TYPE | Drawing | Outside Ø (OD) | Hole Ø (FH) | Ø (D) | Height (H) | Height (H2) | Material | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **HV1101** |  | 25.5 | 19.0 | 12.0 | 10.0 | 1.6 | PVC-FR | Black (BK) | 500 pcs. | 633-01010 |
| **HV1212** |  | 9.0 | 6.0 | 4.0 | 7.0 | 1.0 | PVC-FR | Black (BK) | 2,000 pcs. | 633-02120 |
| **HV1201** | | 9.5 | 6.4 | 4.0 | 5.6 | 1.6 | PVC-FR | Black (BK) | 2,000 pcs. | 633-02010 |
| **HV1201B** | | 9.5 | 6.4 | 4.0 | 6.5 | 2.5 | PVC-FR | Black (BK) | 2,000 pcs. | 633-02020 |
| **HV1215** | | 10.0 | 8.0 | 6.0 | 5.0 | 1.0 | PVC-FR | Black (BK) | 2,000 pcs. | 633-02150 |
| **HV1209** | | 11.0 | 9.0 | 4.0 | 5.5 | 1.5 | PVC-FR | Black (BK) | 1,000 pcs. | 633-02090 |
| **HV1208** | | 14.0 | 9.5 | 8.0 | 8.0 | 1.5 | PVC-FR | Black (BK) | 1,000 pcs. | 633-02080 |
| **HV1207** | | 14.0 | 10.0 | 6.0 | 6.4 | 1.5 | PVC-FR | Black (BK) | 1,000 pcs. | 633-02070 |
| **HV1218** | | 14.5 | 8.0 | 5.0 | 6.5 | 1.5 | PVC-FR | Black (BK) | 1,000 pcs. | 633-02180 |
| **HV1216** | | 14.5 | 8.0 | 5.0 | 6.5 | 1.5 | PVC-FR | Black (BK) | 2,000 pcs. | 633-02160 |
| **HV1210** | | 15.0 | 9.0 | 6.0 | 10.5 | 2.0 | PVC-FR | Black (BK) | 1,000 pcs. | 633-02100 |
| **HV1203** | | 17.5 | 12.0 | 10.0 | 6.8 | 2.0 | PVC-FR | Black (BK) | 1,000 pcs. | 633-02030 |
| **HV1204** | | 17.5 | 12.0 | 10.0 | 8.8 | 4.0 | PVC-FR | Black (BK) | 1,000 pcs. | 633-02040 |
| **HV1206** | | 17.5 | 12.0 | 10.0 | 10.8 | 6.0 | PVC-FR | Black (BK) | 1,000 pcs. | 633-02060 |
| **HV1205** | | 17.5 | 13.5 | 10.0 | 8.7 | 4.0 | PVC-FR | Black (BK) | 1,000 pcs. | 633-02050 |
| **HV1303** |  | 15.9 | 11.0 | 8.0 | 6.4 | 1.6 | PVC-FR | Black (BK) | 1,000 pcs. | 633-03030 |
| **HV1301** | | 15.9 | 11.0 | 8.0 | 7.0 | 1.0 | PVC-FR | Black (BK) | 1,000 pcs. | 633-03010 |
| **HV1302** | | 15.9 | 11.0 | 8.0 | 9.0 | 3.0 | PVC-FR | Black (BK) | 1,000 pcs. | 633-03020 |
| **HV1304** | | 15.9 | 11.0 | 8.0 | 10.8 | 6.0 | PVC-FR | Black (BK) | 1,000 pcs. | 633-03040 |
| **HV1305** | | 24.0 | 18.0 | 14.0 | 7.0 | 3.0 | PVC-FR | Black (BK) | 500 pcs. | 633-03050 |
| | | 24.0 | 18.0 | 14.0 | 7.0 | 3.0 | PVC-FR | White (WH) | 500 pcs. | 633-03059 |
| **HV1401** |  | 15.9 | 9.5 | 5.0 | 4.8 | 0.8 | PVC-FR | Black (BK) | 1,000 pcs. | 633-04010 |
| **HV1402** |  | 23.0 | 18.5 | 6.0 | 7.0 | 2.0 | PVC-FR | Black (BK) | 1,000 pcs. | 633-04020 |
| **HV1502** |  | 11.5 | 8.0 | 6.5 | 8.0 | 1.5 | PVC | Black (BK) | 2,000 pcs. | 633-05020 |
| **HV1606** |  | 31.0 | 25.0 | 17.0 | 11.0 | 3.0 | PVC-FR | Grey (GY) | 500 pcs. | 633-06068 |
| **HV1607** |  | 43.0 | 37.0 | 29.0 | 11.0 | 3.0 | PVC-FR | Grey (GY) | 250 pcs. | 633-06078 |
| **HV1608** |  | 58.0 | 52.0 | 44.0 | 11.0 | 3.0 | PVC-FR | Grey (GY) | 250 pcs. | 633-06088 |

All dimensions in mm. Subject to technical changes.

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## Set for Bend and Edge Protection

**HOT Kit**

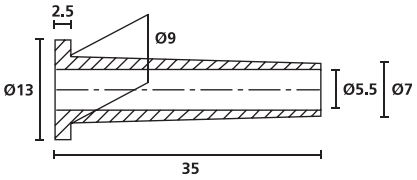
The practical mix of grommets for construction, repairs and home improvement.

**Features and benefits**

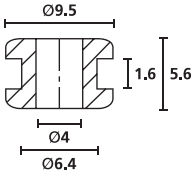
- Flexible and easy to apply
- High resistance to chemicals and environmental influences



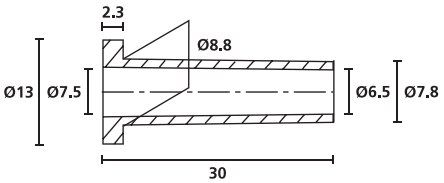
*Small, but practical - the HOT Grommet Kit.*



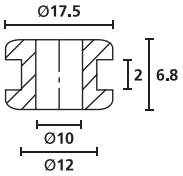

*HV2101*



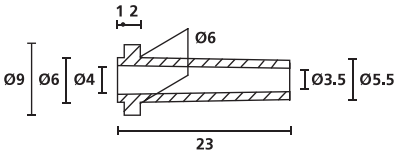

*HV1201*



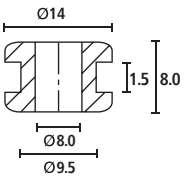

*HV2210*




*HV1203*




*HV2213*




*HV1208*

| Description | Type | Content | Article-No. | Page |
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| **Set for Bend and Edge Protection** | **HOT Kit** | **-** | **639-60000** | **-** |
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Minimum Order Quantity (MOQ) may differ from package content.

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HellermannTyton

# We provide space for space saving.

Everything in its place. HelaDuct wiring ducts and flexible cable supports make the construction of electrical panels easier. These cable routing systems are designed to help optimise space, save time and boost quality. Peak performance.

**www.HellermannTyton.co.uk/heladuct2019cat**

MADE FOR REAL®



Data Sheet, January 2019



# Even big things have small beginnings.

You have to work with what you've got – and that was exactly what our company founder Paul Hellermann did back in 1935. Inspired by the small rubber tube in bicycle valves, he developed a process for binding electric cables with rubber: the Hellermann grommet and three-pronged pliers. The first two of the hundreds of patents filed since then.

**www.HellermannTyton.co.uk/mfr2019cat**

**MADE FOR REAL®**

Date of issue: January 2019

HellermannTyton



Date of issue: January 2019



Inspired by reliability

One of the best ways to keep your customers happy is to provide them with products that make their job easier. At construction sites everywhere, we kept seeing skilled electrical engineers losing time and having a tough job connecting cables. Simply because there wasn't a product on the market that allowed them to do their job safely, reliably and faster. That's where the story of RELICON cable joints begins. What they do is link maximum protection and reliability in just a fraction of the time. Our high-quality, efficient and safe RELICON cable joints and other installation products can be used in industrial buildings, outdoors, underground or submerged.

**Join the ranks of satisfied electrical engineers and find the right connection for your needs in our separate RELICON catalogue at www.HellermannTyton.com/RELICON2019cat**

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HellermannTyton





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## 4.1 Electrical and Technical Tapes


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## HelaTape

**HellermannTyton offers a comprehensive range of vinyl, rubber and cloth tapes for bundling, insulating, fixing, sealing and marking applications around all kinds of electrical applications. Vinyl electrical tapes are designed for low voltage applications and available in different dimensions and colours. Rubber tapes are suitable for sealing and insulating cables and splices in low, medium and high voltage applications. HelaTape cloth tapes are extremely strong and ideal for identification, fixing, bundling and repair purposes. HelaTape Protect is used to build professional cable and wiring harnesses.**

### Vinyl Electrical Tapes – Commercial Grade Vinyl Electrical Tape

**HelaTape Flex 15**

**Features and benefits**

- Vinyl electrical tape in many different colours
- Used for insulation, protection, fixing, maintenance, colour coding and more
- Good resistance to abrasion, sunlight, moisture, chemicals and varying weather conditions
- Highly flexible with outstanding adhesion performance
- Harnessing of wires and cables
- Suitable for mechanical and electrical applications up to 1 kV
- VDE approved according to IEC 60454-3-1-6/F-PVCP/90
- Flame retardant according to IEC 60454-2



*HelaTape Flex 15 is a commercial grade, weather resistant vinyl tape.*

*One Step to the Web!*

| | |
|---|---|
| **MATERIAL** | Polyvinylchloride (PVC) |
| **Dielectric Strength** | 45 kV/mm |
| **Adhesion to Steel** | 2.2 N/10 mm |
| **Adhesion to Backing** | 2.0 N/10 mm |
| **Elongation at break** | 200 % |
| **Breaking Strength** | 28 N/10 mm |
| **Operating Temperature** | -10 °C to +90 °C |

RoHS

| TYPE | Thickness (T) | Width (W) | Length (L) | Colour | Article-No. |
|---|---|---|---|---|---|
| HTAPE-FLEX15-15x10 | 0.15 | 15.0 | 10.0 m | Black (BK) | 710-00104 |
| | 0.15 | 15.0 | 10.0 m | Blue (BU) | 710-00100 |
| | 0.15 | 15.0 | 10.0 m | Brown (BN) | 710-00107 |
| | 0.15 | 15.0 | 10.0 m | Green (GN) | 710-00103 |
| | 0.15 | 15.0 | 10.0 m | Green-Yellow (GNYE) | 710-00106 |
| | 0.15 | 15.0 | 10.0 m | Grey (GY) | 710-00108 |
| | 0.15 | 15.0 | 10.0 m | Orange (OG) | 710-00110 |
| | 0.15 | 15.0 | 10.0 m | Red (RD) | 710-00101 |
| | 0.15 | 15.0 | 10.0 m | Red (RD), Grey (GY), Yellow (YE), Green (GN), Blue (BU), Orange (OG), White (WH), Brown (BN), Black (BK), Green-Yellow (GNYE) | 710-00146 |
| | 0.15 | 15.0 | 10.0 m | Transparent (CL) | 710-00147 |
| | 0.15 | 15.0 | 10.0 m | Violet (VT) | 710-00109 |
| | 0.15 | 15.0 | 10.0 m | White (WH) | 710-00105 |
| | 0.15 | 15.0 | 10.0 m | Yellow (YE) | 710-00102 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Vinyl Electrical Tapes – Commercial Grade Vinyl Electrical Tape

**HelaTape Flex 15**

| TYPE | Thickness (T) | Width (W) | Length (L) | Colour | Article-No. |
|---|---|---|---|---|---|
| **HTAPE-FLEX15-15x25** | 0.15 | 15.0 | 25.0 m | Black (BK) | 710-00115 |
| **HTAPE-FLEX15-19x20** | 0.15 | 19.0 | 20.0 m | Black (BK) | 710-00155 |
| | 0.15 | 19.0 | 20.0 m | Blue (BU) | 710-00151 |
| | 0.15 | 19.0 | 20.0 m | Brown (BN) | 710-00158 |
| | 0.15 | 19.0 | 20.0 m | Green (GN) | 710-00154 |
| | 0.15 | 19.0 | 20.0 m | Green-Yellow (GNYE) | 710-00157 |
| | 0.15 | 19.0 | 20.0 m | Grey (GY) | 710-00159 |
| | 0.15 | 19.0 | 20.0 m | Red (RD) | 710-00152 |
| | 0.15 | 19.0 | 20.0 m | Violet (VT) | 710-00160 |
| | 0.15 | 19.0 | 20.0 m | White (WH) | 710-00156 |
| | 0.15 | 19.0 | 20.0 m | Yellow (YE) | 710-00153 |
| **HTAPE-FLEX15-19x25** | 0.15 | 19.0 | 25.0 m | Black (BK) | 710-00126 |
| **HTAPE-FLEX15-25x25** | 0.15 | 25.0 | 25.0 m | Black (BK) | 710-00137 |
| | 0.15 | 25.0 | 25.0 m | Blue (BU) | 710-00133 |
| | 0.15 | 25.0 | 25.0 m | Brown (BN) | 710-00140 |
| | 0.15 | 25.0 | 25.0 m | Green (GN) | 710-00136 |
| | 0.15 | 25.0 | 25.0 m | Green-Yellow (GNYE) | 710-00139 |
| | 0.15 | 25.0 | 25.0 m | Grey (GY) | 710-00141 |
| | 0.15 | 25.0 | 25.0 m | Red (RD) | 710-00134 |
| | 0.15 | 25.0 | 25.0 m | White (WH) | 710-00138 |
| | 0.15 | 25.0 | 25.0 m | Yellow (YE) | 710-00135 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

For product specific approvals and specifications please refer to the Appendix.

## Vinyl Electrical Tapes – Insulating Tape for Higher Mechanical Requirements

### HelaTape Flex 20



*HelaTape Flex 20 - Additional thickness allows for quicker layering.*

**Features and benefits**

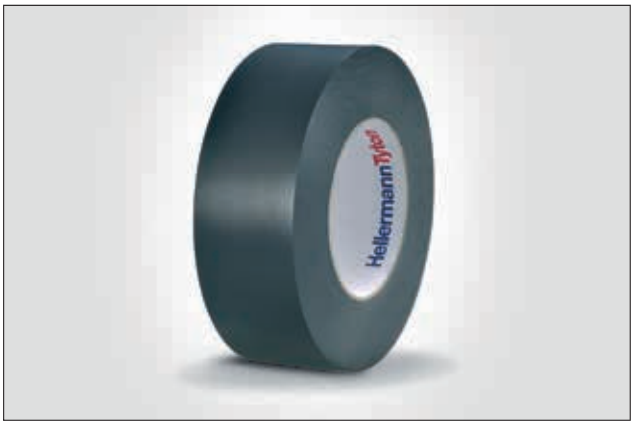
- Vinyl electrical tape with strong rubber adhesive
- Suitable for mechanical and electrical applications up to 1 kV
- Additional thickness for quicker layering and higher abrasion resistance
- Weather resistant
- Flame retardant according to UL 510 Standard

| MATERIAL | Polyvinylchloride (PVC) |
|---|---|
| Dielectric Strength | 45 kV/mm |
| Adhesion to Steel | 2.5 N/10 mm |
| Adhesion to Backing | 2.5 N/10 mm |
| Elongation at break | 260 % |
| Breaking Strength | 40 N/10 mm |
| Operating Temperature | -10 °C to +105 °C |

RoHS

## Vinyl Electrical Tapes – Insulating Tape for Higher Mechanical Requirements

### HelaTape Flex 25



*HelaTape Flex 25 for higher abrasion resistance.*

**Features and benefits**

- Vinyl film coated with high quality rubber adhesive
- Extra high material thickness
- Highly resistant to sun, water, oil, acids, alkalies, corrosive chemicals
- Used for insulation, protection, fixing, maintenance and more
- Superior vinyl tape with excellent all-weather performance
- Flame retardant according to UL 510 Standard

| MATERIAL | Polyvinylchloride (PVC) |
|---|---|
| Dielectric Strength | 45 kV/mm |
| Adhesion to Steel | 2.6 N/10 mm |
| Adhesion to Backing | 2.6 N/10 mm |
| Elongation at break | 240 % |
| Breaking Strength | 46 N/10 mm |
| Operating Temperature | -10 °C to +80 °C |

RoHS

### HelaTape Flex 20

| TYPE | Thickness (T) | Width (W) | Length (L) | Colour | Article-No. |
|---|---|---|---|---|---|
| HTAPE-FLEX20-19x20 | 0.20 | 19.0 | 20.0 m | Black (BK) | 710-10300 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

### HelaTape Flex 25

| TYPE | Thickness (T) | Width (W) | Length (L) | Colour | Article-No. |
|---|---|---|---|---|---|
| HTAPE-FLEX25-19x33 | 0.25 | 19.0 | 33.0 m | Black (BK) | 710-00450 |
| HTAPE-FLEX25-38x33 | 0.25 | 38.0 | 33.0 m | Black (BK) | 710-00451 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

Date of issue: January 2019

## Vinyl Electrical Tapes – Premium Vinyl Electrical Tape

**HelaTape Flex 1000+**

### Features and benefits

- All-weather, highly flexible, professional grade, self-adhesive vinyl electrical tape
- Excellent performance and durability over wide temperature range from -18 °C to +105 °C according to CSA C22.2
- VDE approved according to IEC 60454-3-1-7/F-PVCP/90
- Used for insulation, protection, fixing, maintenance, colour coding and more
- Pressure sensitive high quality rubber based adhesive
- Performs continuously at low temperature environment
- Excellent resistance to abrasion, moisture, chemicals, corrosion and UV exposure
- Primary electrical insulation for all wire and cable splices up to 1 kV
- Protective jacketing for low, medium and high voltage splices and repairs
- Flame retardant according to UL 510 Standard
- For indoor and outdoor applications
- Size 19 mm x 20 m is single packed in a plastic can, only 710-10601 comes in a pack of 10 pcs.



*HelaTape Flex 1000+ provides excellent low temperature performance.*

| | |
|---|---|
| **MATERIAL** | Polyvinylchloride (PVC) |
| **Dielectric Strength** | 45 kV/mm |
| **Adhesion to Steel** | 3.0 N/10 mm |
| **Adhesion to Backing** | 2.5 N/10 mm |
| **Elongation at break** | 300 % |
| **Breaking Strength** | 35 N/10 mm |
| **Operating Temperature** | -18 °C to +105 °C |

RoHS

| TYPE | Thickness (T) | Width (W) | Length (L) | Colour | Article-No. |
|---|---|---|---|---|---|
| **HTAPE-FLEX1000+ 19x6** | 0.18 | 19.0 | 6.0 m | Black (BK) | 710-10600 |
| **HTAPE-FLEX1000+ 19x20** | 0.18 | 19.0 | 20.0 m | Black (BK) | 710-10602 |
| **HTAPE-FLEX1000+ 19x20 PACK** | 0.18 | 19.0 | 20.0 m | Black (BK) | 710-10601 |
| **HTAPE-FLEX1000+ C 19x20** | 0.18 | 19.0 | 20.0 m | Blue (BU) | 710-10603 |
| | 0.18 | 19.0 | 20.0 m | Brown (BN) | 710-10608 |
| | 0.18 | 19.0 | 20.0 m | Green (GN) | 710-10606 |
| | 0.18 | 19.0 | 20.0 m | Green-Yellow (GNYE) | 710-10612 |
| | 0.18 | 19.0 | 20.0 m | Grey (GY) | 710-10609 |
| | 0.18 | 19.0 | 20.0 m | Red (RD) | 710-10604 |
| | 0.18 | 19.0 | 20.0 m | White (WH) | 710-10607 |
| | 0.18 | 19.0 | 20.0 m | Yellow (YE) | 710-10605 |
| **HTAPE-FLEX1000+ 19x33** | 0.18 | 19.0 | 33.0 m | Black (BK) | 710-10610 |
| **HTAPE-FLEX1000+ 50x33** | 0.18 | 50.0 | 33.0 m | Black (BK) | 710-10611 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

For product specific approvals and specifications please refer to the Appendix.

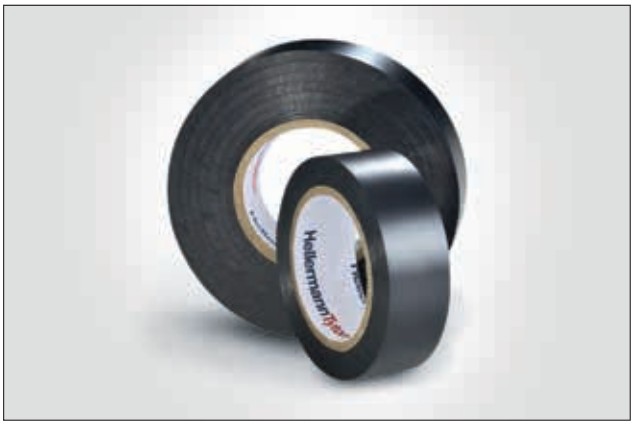
Date of issue: January 2019

## Vinyl Electrical Tapes – Premium Heavy Duty Vinyl Electrical Tape

**HelaTape Flex 2000+**

### Features and benefits

- All-weather, highly flexible, professional grade, self-adhesive vinyl electrical tape with higher thickness for more mechanical and electrical protection
- Excellent performance and durability over wide temperature range from -18 °C to +105 °C according to CSA C22.2
- Pressure sensitive and aggressive high quality rubber based adhesive
- Performs continuously at low temperature environment
- Flame retardant according to UL 510 Standard
- Excellent resistance to abrasion, moisture, chemicals, corrosion and UV exposure
- Primary electrical insulation for all wire and cable splices up to 1 kV



*HelaTape Flex 2000+ is the best choice for professional installation.*

| | |
|---|---|
| **MATERIAL** | Polyvinylchloride (PVC) |
| **Dielectric Strength** | 48 kV/mm |
| **Adhesion to Steel** | 3.1 N/10 mm |
| **Adhesion to Backing** | 2.5 N/10 mm |
| **Elongation at break** | 300 % |
| **Breaking Strength** | 40 N/10 mm |
| **Operating Temperature** | -18 °C to +105 °C |

RoHS

| TYPE | Thickness (T) | Width (W) | Length (L) | Colour | Article-No. |
|---|---|---|---|---|---|
| **HTAPE-FLEX2000+19x20** | 0.21 | 19.0 | 20.0 m | Black (BK) | 710-10701 |
| **HTAPE-FLEX2000+38x20** | 0.21 | 38.0 | 20.0 m | Black (BK) | 710-10705 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

Date of issue: January 2019

## Vinyl Electrical Tapes – Vinyl Tape for Corrosion Protection

**HelaTape Wrap 25**

### Features and benefits

- Special adhesive with excellent protection against corrosion
- Complete environmental, mechanical and electrical protection
- Highly resistant to UV, water, oil, most chemicals, bacteria and fungus
- Used for pipes, tubes, and conduits in outside and underground applications



*HelaTape Wrap 25 protects against all types of corrosion.*

| | |
|---|---|
| **MATERIAL** | Polyvinylchloride (PVC) |
| **Dielectric Strength** | 40 kV/mm |
| **Adhesion to Steel** | 2.4 N/10 mm |
| **Adhesion to Backing** | 2.0 N/10 mm |
| **Elongation at break** | 200 % |
| **Breaking Strength** | 44 N/10 mm |
| **Operating Temperature** | -10 °C to +90 °C |

RoHS

| TYPE | Thickness (T) | Width (W) | Length (L) | Colour | Article-No. |
|---|---|---|---|---|---|
| **HTAPE-WRAP25-25x30** | 0.25 | 25.0 | 30.0 m | Black (BK) | 710-10800 |
| **HTAPE-WRAP25-50x30** | 0.25 | 50.0 | 30.0 m | Black (BK) | 710-10802 |
| **HTAPE-WRAP25-100x30** | 0.25 | 100.0 | 30.0 m | Black (BK) | 710-10803 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

## Conductive Tapes – Electrical Semi-Conducting Tape

### HelaTape Shield 310



*HelaTape Shield 310 self-amalgamating conducting tape for shielding high-voltage splices and terminations.*

**Features and benefits**

- Self-amalgamating conducting tape made from ethylene propylene rubber
- Provides good conducting properties
- Prevents partial discharges
- Moisture and UV-resistant and easy to apply
- Replacement for semiconducting layer underneath the metallic shield in case of repairs and connections of medium to high voltage cables

| | |
|---|---|
| **MATERIAL** | Ethylene Propylene Rubber (EPR) |
| **Operating Temperature** | -40 °C to +90 °C |
| **Intermittent Operating Temperature** | +130 °C |
| **Water Absorption** | 0.02 % |
| **Elongation at break** | 500 % |
| **Volume Resistance** | 870 Ω cm |

RoHS

## Conductive Tapes – Electrical Shielding Tape

### HelaTape Shield 320



*HelaTape Shield 320 provides good electromagnetic shielding.*

**Features and benefits**

- Copper shielding braid, tin-plated
- Quick and easy to use due to copper knit-mesh design
- Excellent conformability
- Good electromagnetic properties
- Used for splices and terminations of shielded cables

| | |
|---|---|
| **MATERIAL** | Tin Plated copper (SNCU) |
| **Operating Temperature** | -40 °C to +125 °C |
| **Elongation at break** | 5 % |

RoHS

### HelaTape Shield 310

| TYPE | Thickness (T) | Width (W) | Length (L) | Colour | Article-No. |
|---|---|---|---|---|---|
| **HTAPE-SHIELD310** | 0.76 | 19.0 | 4.6 m | Black (BK) | 711-10000 |
| | 0.76 | 38.0 | 9.1 m | Black (BK) | 711-10001 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

### HelaTape Shield 320

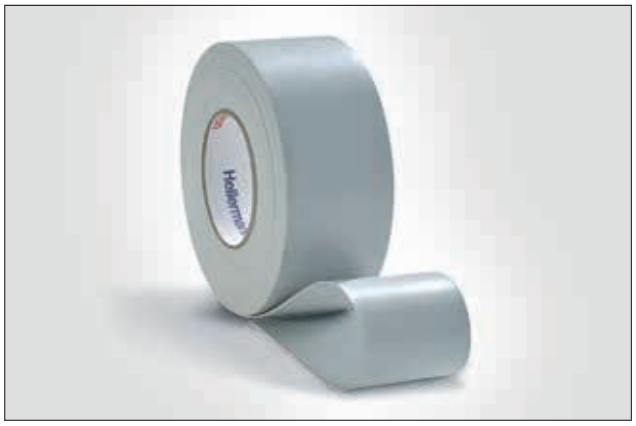
| TYPE | Thickness (T) | Width (W) | Length (L) | Colour | Article-No. |
|---|---|---|---|---|---|
| **HTAPE-SHIELD320** | 0.45 | 25.0 | 4.6 m | Natural (NA) | 711-10002 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

Date of issue: January 2019

## High Temperature Tapes – Arc and Fireproofing Tape

### HelaTape Power 410



*HelaTape Power 410 is an unsupported, liner less, elastomeric tape possessing superior arc and flame resistance.*

**Features and benefits**

- Unsupported, linerless, elastomeric tape
- Superior arc and flame proofing for high voltage and communication cables
- For cable protection in cable trays, switch boxes, cable conduits and substations
- Excellent flexibility and conformability for easy application
- Creates insulating residue when exposed to severe flame conditions
- Passes flammability test according to Con-Ed EO 5343-14
- Withstands Bunsen burner flame for many minutes
- Water, chemical and UV resistant

| MATERIAL | Elastomer (PM) |
|---|---|
| **Elongation at break** | 300 % |

RoHS

## Self-amalgamating Tapes – Low Voltage Rubber Tape

### HelaTape Power 600



*HelaTape Power 600 is a self-amalgamating low-voltage rubber tape.*

**Features and benefits**

- Self-amalgamating low voltage rubber tape
- Primary insulation at not more than 1 kV
- Easily suitable to irregular shapes and surfaces
- Compatible with all extruded dielectric cable insulations
- Weather resistant and flame retardant according to UL 510
- Recommended use in conjunction with HelaTape Flex for mechanical protection

| MATERIAL | Natural Rubber (NR) |
|---|---|
| **Operating Temperature** | +80 °C |
| **Intermittent Operating Temperature** | +95 °C |
| **Tensile Strength** | 2 N/mm² |
| **Elongation at break** | 300 % |
| **Dielectric Strength** | 14 kV/mm |

HF RoHS

### HelaTape Power 410

| TYPE | Thickness (T) | Width (W) | Length (L) | Colour | Article-No. |
|---|---|---|---|---|---|
| **HTAPE-POWER410** | 0.76 | 38.0 | 6.0 m | Grey (GY) | 711-10100 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

### HelaTape Power 600

| TYPE | Thickness (T) | Width (W) | Length (L) | Colour | Article-No. |
|---|---|---|---|---|---|
| **HTAPE-POWER600-19x6.7** | 0.76 | 19.0 | 6.7 m | Black (BK) | 711-10200 |
| **HTAPE-POWER600-38x6.7** | 0.76 | 38.0 | 6.7 m | Black (BK) | 711-10201 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

Date of issue: January 2019

## Self-amalgamating Tapes – Electrical Insulation Mastic

### HelaTape Power 650

**Features and benefits**

- Self-amalgamating insulation compound for sealing and padding cable jackets up to 1 kV
- Easily moulded by hand to conform to irregular shapes even during low temperatures
- Permanently elastic and resistant to aging
- Perfect adhesion to metal and all types of cable insulations and jackets
- Provides excellent moisture sealing
- Resistant to salt water, ozone, oil and corrosive chemicals
- Recommended use with HelaTape Flex vinyl electrical tape for mechanical protection



*HelaTape Power 650 self-amalgamating mastic is highly flexible.*

| | |
|---|---|
| **MATERIAL** | Isobutene-Isoprene-Rubber (butyl rubber) (IIR) |
| **Operating Temperature** | -10 °C to +105 °C |
| **Intermittent Operating Temperature** | +130 °C |
| **Water Absorption** | 0.1 % |
| **Volume Resistance** | $10^{15}$ Ω cm |
| **Dielectric Strength** | 19.7 kV/mm |

HF ✓ RoHS ✓

| TYPE | Thickness (T) | Width (W) | Length (L) | Colour | Article-No. |
|---|---|---|---|---|---|
| **HTAPE-POWER650** | 3.20 | 38.0 | 1.5 m | Black (BK) | 711-10300 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

Date of issue: January 2019

## Self-amalgamating Tapes – Rubber Mastic Tape

**HelaTape Power 660 RM**

### Features and benefits

- Self-amalgamating rubber mastic tape
- EPR backing coated with a tacky, temperature-stable mastic adhesive
- Designed for electrical insulating and moisture sealing applications
- Can be used as cable jacket replacement
- Perfect adhesion and sealing for copper and aluminium wires
- Easily suitable to irregular shapes and surfaces
- Compatible with all extruded cable insulations
- UV, moisture, corrosion and chemical resistant
- Primary electrical insulation for bus bar connections rated up to 35 kV
- Recommended use with HelaTape Flex vinyl electrical tape for mechanical protection



*HelaTape Power 660 is a very flexibel rubber mastic sealing and padding tape.*

| | |
|---|---|
| **MATERIAL** | Ethylene Propylene Rubber (EPR), Isobutene-Isoprene-Rubber (butyl rubber) (IIR) |
| **Operating Temperature** | -30 °C to +90 °C |
| **Intermittent Operating Temperature** | +130 °C |
| **Water Absorption** | 0.1 % |
| **Tensile Strength** | 1.5 N/mm² |
| **Dielectric Strength** | 19.7 kV/mm |

HF ✓ RoHS ✓

| TYPE | Thickness (T) | Width (W) | Length (L) | Colour | Article-No. |
|---|---|---|---|---|---|
| **HTAPE-POWER660-RM** | 1.65 | 50.8 | 3.0 m | Black (BK) | 711-00307 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

## Self-amalgamating Tapes – Vinyl Mastic Tape

**HelaTape Power 670 VM**

### Features and benefits

- Easy to apply vinyl mastic tape
- Self-adhesive application - without stretching
- Mastic layer is very sticky and provides excellent moisture sealing
- Vinyl top layer provides additional protection
- Performs continuously at low temperature environment
- Primary insulation up to 1 kV
- Compatible with all extruded cable insulations
- UV and weather resistant



*HelaTape Power 670 provides additional vinyl film protection to the mastic compound.*

| | |
|---|---|
| **MATERIAL** | Polyvinylchloride (PVC), Isobutene-Isoprene-Rubber (butyl rubber) (IIR) |
| **Operating Temperature** | -30 °C to +80 °C |
| **Intermittent Operating Temperature** | +95 °C |
| **Water Absorption** | 0.9 % |
| **Tensile Strength** | 16 N/mm² |
| **Elongation at break** | 200 % |
| **Volume Resistance** | $10^{12}$ Ω cm |
| **Dielectric Strength** | 19.7 kV/mm |

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| TYPE | Thickness (T) | Width (W) | Length (L) | Colour | Article-No. |
|---|---|---|---|---|---|
| **HTAPE-POWER670-VM** | 1.20 | 100.0 | 3.0 m | Black (BK) | 711-00304 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

Date of issue: January 2019

## Self-amalgamating Tapes – Medium Voltage Rubber Tape

**HelaTape Power 700**

### Features and benefits

- Polyisobutylene-based self-amalgamating medium voltage tape
- Insulating and jacketing power cables up to 46 kV
- Provides electrical stability and permanent moisture sealing
- Perfect stretching properties allows fast and uniform application
- Excellent UV, moisture, corrosion and chemical resistance
- Temperature range from -40 °C to +90 °C
- Compatible with all extruded cable insulation materials



*HelaTape Power 700 is a self-amalgamating medium voltage rubber tape.*

| MATERIAL | Polyisobutylene Rubber (PIBR) |
|---|---|
| **Operating Temperature** | -40 °C to +90 °C |
| **Intermittent Operating Temperature** | +90 °C |
| **Water Absorption** | 0.02 % |
| **Tensile Strength** | 2.4 N/mm² |
| **Elongation at break** | 700 % |
| **Volume Resistance** | $10^{13}$ Ω cm |
| **Dielectric Strength** | 35 kV/mm |

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| TYPE | Thickness (T) | Width (W) | Length (L) | Colour | Article-No. |
|---|---|---|---|---|---|
| **HTAPE-POWER700-PIB** | 0.50 | 19.0 | 10.0 m | Black (BK) | 711-00308 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

Date of issue: January 2019

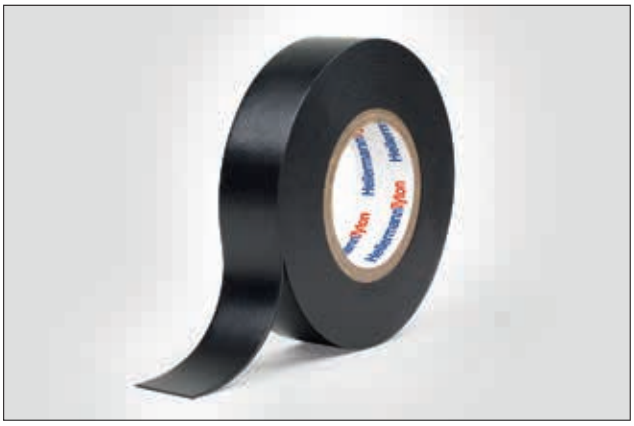
## Self-amalgamating Tapes – Medium Voltage Rubber Tape (Linerless)

### HelaTape Power 715

The rubber-based self-amalgamating linerless tape is used for electrical insulation, protection, sealing, splicing and termination of cables up to 35 kV. The special material comes without a separating liner and reduces therefore the time required to apply the tape. It features with excellent UV, moisture, corrosion, ozone and chemical resistance. HelaTape Power 715 is compatible with all extruded dielectric cable insulations.

**Features and benefits**

- Rubber-based self-amalgamating linerless tape
- Used for waterproof sealing and corrosion protection of cables
- Excellent electrical insulation and weather protection
- Time saving application without liner
- Easy to apply and very flexible



*HelaTape Power 715 allows quicker layering due to the linerless composition.*

| MATERIAL | Ethylene Propylene Rubber (EPR) |
|---|---|
| **Operating Temperature** | +90 °C |
| **Intermittent Operating Temperature** | +130 °C |
| **Water Absorption** | 0.06 % |
| **Tensile Strength** | 2.1 N/mm² |
| **Elongation at break** | 700 % |
| **Volume Resistance** | $10^{16}$ Ω cm |
| **Dielectric Strength** | 30 kV/mm |

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| TYPE | Thickness (T) | Width (W) | Length (L) | Colour | Article-No. |
|---|---|---|---|---|---|
| **HTAPE-POWER715-19x5** | 0.50 | 19.0 | 5.0 m | Black (BK) | 711-00310 |
| **HTAPE-POWER715-19x10** | 0.50 | 19.0 | 10.0 m | Black (BK) | 711-00311 |
| **HTAPE-POWER715-25x10** | 0.50 | 25.0 | 10.0 m | Black (BK) | 711-00312 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

Date of issue: January 2019

## Self-amalgamating Tapes – Silicone Rubber Tape

### HelaTape Power 800

**Features and benefits**

- Self-amalgamating and self-cleaning, chemically cross-linked silicone rubber tape
- Triangular cross-section with centre line for precise half-overlapping
- Resistant to creepage and surface erosion
- Fuses into solid mass after application
- Weather, UV and oil resistant
- Recommended use for high temperature silicone insulated cables and outdoor machinery and transformers



*HelaTape Power 800 is a silicone rubber tape with triangular cross-section.*

| | |
|---|---|
| **MATERIAL** | Silicone (SI) |
| **Operating Temperature** | -54 °C to +93 °C |
| **Intermittent Operating Temperature** | +260 °C |
| **Tensile Strength** | 7 N/mm² |
| **Elongation at break** | 400 % |
| **Volume Resistance** | $10^{14}$ Ω cm |
| **Dielectric Strength** | 23.5 kV/mm |

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| TYPE | Thickness (T) | Width (W) | Length (L) | Colour | Article-No. |
|---|---|---|---|---|---|
| **HTAPE-POWER800** | 0.51 | 25.0 | 9.1 m | Grey (GY) | 711-10400 |

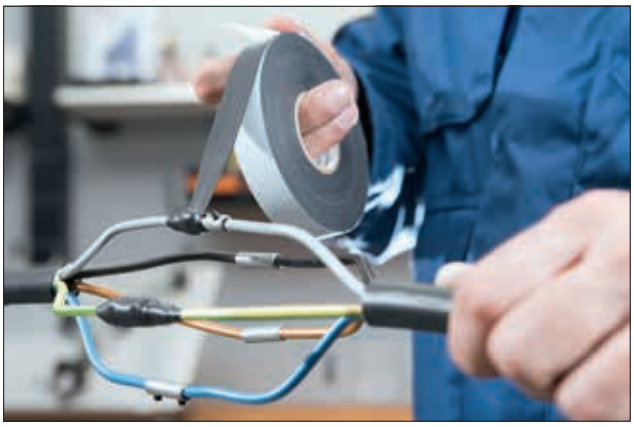
All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

## Self-amalgamating Tapes – High Voltage Rubber Tape

**HelaTape Power 810**

### Features and benefits

- Self-amalgamating tape for insulating and jacketing splices up to 69 kV
- Halogen-free with outstanding corona, ozone and UV-resistance
- Ideal for sealing of terminations, electrical connections and cable jacket repair
- Void-free, electrically stable layering
- Protects bus bar components
- Excellent moisture, corrosion and chemical resistance
- Compatible with all extruded cable insulations



*HelaTape Power 810 for primary insulation up to 69 kV.*

| MATERIAL | Ethylene Propylene Rubber (EPR) |
|---|---|
| **Operating Temperature** | +90 °C |
| **Intermittent Operating Temperature** | +130 °C |
| **Water Absorption** | 0.06 % |
| **Tensile Strength** | 2.4 N/mm² |
| **Elongation at break** | 750 % |
| **Volume Resistance** | $10^{16}$ Ω cm |
| **Dielectric Strength** | 30 kV/mm |

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| TYPE | Thickness (T) | Width (W) | Length (L) | Colour | Article-No. |
|---|---|---|---|---|---|
| **HTAPE-POWER810** | 0.76 | 19.0 | 9.1 m | Black (BK) | 711-10401 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

Date of issue: January 2019

## Self-amalgamating Tapes – High Voltage Rubber Tape (Linerless)

**HelaTape Power 820**

### Features and benefits

- Self-amalgamating, linerless tape for insulating and jacketing splices up to 69 kV
- Excellent electrical, chemical and physical properties
- Building stress cones and jacketing of terminations, bus bars and joints
- Quicker application due to linerless design
- Uniform and void-free layering
- Very flexible to conform to the most complex shapes
- Compatible with all extruded cable insulations



*The high-voltage tape HelaTape Power 820 yields a uniform and void-free build-up.*

| | |
|---|---|
| **MATERIAL** | Ethylene Propylene Rubber (EPR) |
| **Operating Temperature** | -30 °C to +90 °C |
| **Intermittent Operating Temperature** | +130 °C |
| **Water Absorption** | 0.06 % |
| **Tensile Strength** | 2.8 N/mm² |
| **Elongation at break** | 750 % |
| **Volume Resistance** | $10^{16}$ Ω cm |
| **Dielectric Strength** | 31.5 kV/mm |

RoHS

| TYPE | Thickness (T) | Width (W) | Length (L) | Colour | Article-No. |
|---|---|---|---|---|---|
| **HTAPE-POWER820** | 0.76 | 19.0 | 9.1 m | Black (BK) | 711-10402 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

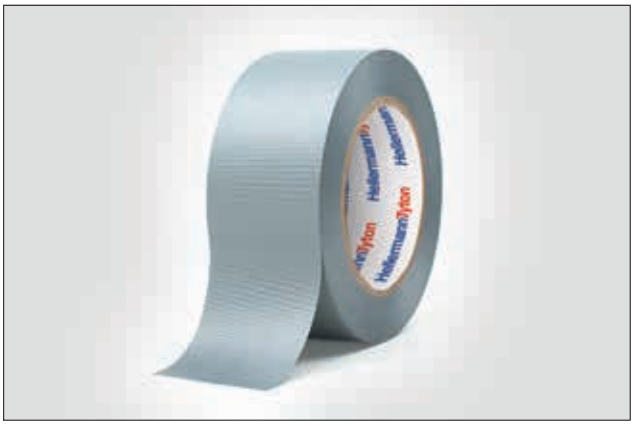
## Technical Tapes – Vinyl Bundling Tape

### HelaTape Allround 1500

Allround 1500 – Electricians Duct Tape is designed for bundling, holding, fixing and maintenance applications. It can be also used as temporary surface protection of steel and aluminium parts.

**Features and benefits**

- Vinyl film coated with high quality rubber adhesive
- Excellent performance and durability
- Easy to tear
- No cloth – does not absorb water
- Used for bundling, holding, fixing and maintenance
- This product has no electrical insulating properties



*HelaTape Allround 1500 – universal and very strong vinyl bundling tape.*

| | |
|---|---|
| **MATERIAL** | Polyvinylchloride (PVC) |
| **Adhesion to Steel** | 1.5 N/10 mm |
| **Adhesion to Backing** | 1.5 N/10 mm |
| **Elongation at break** | 150 % |
| **Breaking Strength** | 18 N/10 mm |
| **Operating Temperature** | -10 °C to +90 °C |

RoHS

| TYPE | Thickness (T) | Width (W) | Length (L) | Colour | Article-No. |
|---|---|---|---|---|---|
| **HTAPE-ALLROUND1500** | 0.15 | 51.0 | 46.0 m | Grey (GY) | 710-01000 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

Date of issue: January 2019

HellermannTyton

# The ideal insulating tape for 1001 very cold nights.

So cool. On icy construction sites that really put the endurance of people and materials to the test – that's where HelaTape Flex 1000+ premium insulating tape really shows its strengths. Developed and produced by us, it adheres despite condensation and stays pliable down to -18 °C. A low temperature record.

**www.HellermannTyton.co.uk/helatape2019cat**

**MADE FOR REAL**



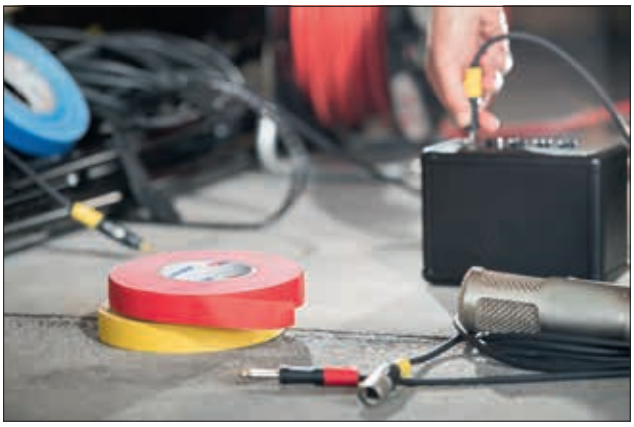
Date of issue: Jan 2019

## Technical Tapes – Cloth Tape

### HelaTape Tex

**Features and benefits**

- High quality PE-coated cloth tape with good weather resistance
- Total thickness of 0.31 mm for high tensile strength
- Highly tear-resistant in longitudinal direction
- Easy to tear-off by hand in transverse direction
- Matt surface finish for use in stage constructions and for exhibitions to avoid light reflections
- Useful for various applications like bundling, fixing, identification, marking and protection
- HelaTape Tex can be removed without residues due to high quality rubber based adhesive



*HelaTape Tex is available in various colours and sizes.*

| | |
|---|---|
| **MATERIAL** | Cotton (CO) |
| **Operating Temperature** | -30 °C to +80 °C |
| **Adhesion to Backing** | 3 N/10 mm |
| **Elongation at break** | 10 % |
| **Breaking Strength** | 64 N/10 mm |

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| TYPE | Thickness (T) | Width (W) | Length (L) | Colour | Article-No. |
|---|---|---|---|---|---|
| HTAPE-TEX-19x10 | 0.31 | 19.0 | 10.0 m | Black (BK) | 712-00204 |
| | 0.31 | 19.0 | 10.0 m | Blue (BU) | 712-00200 |
| | 0.31 | 19.0 | 10.0 m | Green (GN) | 712-00203 |
| | 0.31 | 19.0 | 10.0 m | Grey (GY) | 712-00206 |
| | 0.31 | 19.0 | 10.0 m | Red (RD) | 712-00201 |
| | 0.31 | 19.0 | 10.0 m | White (WH) | 712-00205 |
| | 0.31 | 19.0 | 10.0 m | Yellow (YE) | 712-00202 |
| HTAPE-TEX-19x50 | 0.31 | 19.0 | 50.0 m | Black (BK) | 712-00504 |
| | 0.31 | 19.0 | 50.0 m | Blue (BU) | 712-00500 |
| | 0.31 | 19.0 | 50.0 m | Green (GN) | 712-00503 |
| | 0.31 | 19.0 | 50.0 m | Grey (GY) | 712-00506 |
| | 0.31 | 19.0 | 50.0 m | Red (RD) | 712-00501 |
| | 0.31 | 19.0 | 50.0 m | White (WH) | 712-00505 |
| | 0.31 | 19.0 | 50.0 m | Yellow (YE) | 712-00502 |
| HTAPE-TEX-50x50 | 0.31 | 50.0 | 50.0 m | Black (BK) | 712-00904 |
| | 0.31 | 50.0 | 50.0 m | Blue (BU) | 712-00900 |
| | 0.31 | 50.0 | 50.0 m | Green (GN) | 712-00903 |
| | 0.31 | 50.0 | 50.0 m | Grey (GY) | 712-00906 |
| | 0.31 | 50.0 | 50.0 m | Red (RD) | 712-00901 |
| | 0.31 | 50.0 | 50.0 m | White (WH) | 712-00905 |
| | 0.31 | 50.0 | 50.0 m | Yellow (YE) | 712-00902 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

Date of issue: January 2019

## Wire Harness Tape – Hand-tearable Cloth Tape

### HelaTape Protect 180



*HelaTape Protect 180 is very flexible and used for cable harnessing.*

**Features and benefits**

- High quality polyester fabric harnessing tape
- Rubber-based adhesive offers very good heat and media resistance
- High temperature stability from -40 °C to +125 °C
- Temperature resistance tested according to LV312
- Very good resistance against abrasion
- Material is very flexible and tearable by hand
- Excellent ageing resistance, stable against rotting

| | |
|---|---|
| **MATERIAL** | Polyester (PET) |
| **Operating Temperature** | -40 °C to +125 °C |
| **Adhesion to Steel** | 3 N/10 mm |
| **Adhesion to Backing** | 3 N/10 mm |
| **Elongation at break** | 15 % |
| **Breaking Strength** | 65 N/10 mm |

HF RoHS

## Wire Harness Tape – Strong, High Temperature Cloth Tape

### HelaTape Protect 250



*HelaTape Protect 250 is designed for cable harnessing and offers a very high temperature resistance.*

**Features and benefits**

- High temperature polyester fabric harnessing tape
- Special acrylate-based adhesive offers very good heat and media resistance
- Very high temperature stability from -40 °C to +150 °C
- Temperature and humidity resistance tested according to LV312
- Very good resistance against abrasion
- Material is very flexible and easy to handle
- Excellent ageing resistance, stable against rotting
- Provides long term reliability under varying and extreme environmental conditions

| | |
|---|---|
| **MATERIAL** | Polyester (PET) |
| **Operating Temperature** | -40 °C to +150 °C |
| **Adhesion to Steel** | 2.5 N/10 mm |
| **Adhesion to Backing** | 2 N/10 mm |
| **Elongation at break** | 15 % |
| **Breaking Strength** | 180 N/10 mm |

HF RoHS

### HelaTape Protect 180

| TYPE | Thickness (T) | Width (W) | Length (L) | Colour | Article-No. |
|---|---|---|---|---|---|
| **HTAPE-PROTECT180** | 0.18 | 19.0 | 25.0 m | Black (BK) | 712-10002 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

### HelaTape Protect 250

| TYPE | Thickness (T) | Width (W) | Length (L) | Colour | Article-No. |
|---|---|---|---|---|---|
| **HTAPE-PROTECT250** | 0.25 | 19.0 | 25.0 m | Black (BK) | 712-10003 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

Date of issue: January 2019

## Wire Harness Tape – Soft and Flexible Fleece Tape

**HelaTape Protect 300**



*HelaTape Protect 300 provides high noise reduction and media resistance.*

**Features and benefits**

- Soft polyester fleece harnessing tape
- High noise reduction and very high resistance against abrasion
- Synthetic rubber based adhesive offers good heat and media resistance
- High temperature stability from -40 °C to +105 °C
- Material is very flexible and tearable by hand
- Excellent ageing resistance and stable against rotting

| | |
|---|---|
| **MATERIAL** | Polyester (PET) |
| **Operating Temperature** | -40 °C to +105 °C |
| **Adhesion to Steel** | 2 N/10 mm |
| **Adhesion to Backing** | 2 N/10 mm |
| **Elongation at break** | 10 % |
| **Breaking Strength** | 30 N/10 mm |

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## Wire Harness Tape – High Noise Reduction Tape

**HelaTape Protect 1500**



*HelaTape Protect 1500 is extremely soft and offers very high noise reduction.*

**Features and benefits**

- High quality polyamide velours harnessing tape
- Highest noise reduction and very high resistance against abrasion
- Acrylate based adhesive offers very good heat and media resistance
- High temperature stability from -40 °C to +130 °C
- Material is extremely soft and very flexible
- Excellent ageing resistance, stable against rotting

| | |
|---|---|
| **MATERIAL** | Polyamide (PA) |
| **Operating Temperature** | -40 °C to +130 °C |
| **Adhesion to Steel** | 2.5 N/10 mm |
| **Adhesion to Backing** | 2 N/10 mm |
| **Elongation at break** | 50 % |
| **Breaking Strength** | 100 N/10 mm |

HF ✓ RoHS ✓

**HelaTape Protect 300**

| TYPE | Thickness (T) | Width (W) | Length (L) | Colour | Article-No. |
|---|---|---|---|---|---|
| **HTAPE-PROTECT300** | 0.30 | 19.0 | 25.0 m | Black (BK) | 712-10001 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

**HelaTape Protect 1500**

| TYPE | Thickness (T) | Width (W) | Length (L) | Colour | Article-No. |
|---|---|---|---|---|---|
| **HTAPE-PROTECT1500** | 1.50 | 25.0 | 4.0 m | Black (BK) | 712-10000 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

Date of issue: January 2019

## Connectors - For Solid and Stranded Wires

### HelaCon Plus Mini

HelaCon connectors are used for fast, easy and reliable connection and distribution of cable and conductors in electrical installation applications. The new generation of HelaCon Plus Mini wire connectors can be applied tool-free using the push-in technology. HelaCon Plus Mini uses a double spring which is approved for solid and stranded wires.

**Features and benefits**

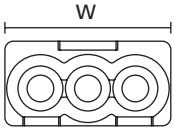
- 40 % smaller – Space saving design
- Low insertion force – Easy to use, saves time on installation
- Easy access to voltage test entry and innovative port shape design
- Correct installation can be visually checked through transparent housing
- Different colour codes for easy identification of size
- Allows different conductor diameters in each entry
- Safe application, installation and maintenance
- Practical Variobox with 350 pcs. of selected HCPM wire connectors available (148-90046)



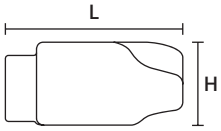
*HelaCon Plus Mini fits perfect in every space limited situation.*

| | |
|---|---|
| **MATERIAL** | Polycarbonate (PC) |
| **Max Current** | 24 A |
| **Max Voltage** | 600 V |
| **Wire Range (VDE) in mm²** | 0.5 to 2.5 mm² solid wires / 1.0 to 2.5 mm² stranded wires |
| **Stripping Length** | 11.0 mm |
| **Flammability** | UL 94 V0 |
| **Operating Temperature** | -30 °C to +85 °C |

HF ✓ RoHS ✓

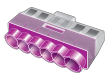
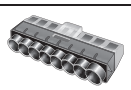



*HelaCon Plus Mini front view*




*HelaCon Plus Mini side view*

*One Step to the Web!*

| TYPE | Drawing | Number of Conductors | Colour | Width (W) | Height (H) | Length (L) | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **HCPM-2** |  | 2 | Transparent (CL), Yellow (YE) | 10.8 | 7.7 | 16.5 | 150 pcs. | 148-90036 |
| **HCPM-3** |  | 3 | Transparent (CL), Orange (OG) | 15.1 | 7.7 | 16.5 | 100 pcs. | 148-90037 |
| **HCPM-4** |  | 4 | Transparent (CL) | 19.4 | 7.7 | 16.5 | 100 pcs. | 148-90038 |
| **HCPM-5** |  | 5 | Transparent (CL), Blue (BU) | 23.7 | 7.7 | 16.5 | 75 pcs. | 148-90039 |
| **HCPM-6** |  | 6 | Transparent (CL), Violet (VT) | 28.0 | 7.7 | 16.5 | 50 pcs. | 148-90040 |
| **HCPM-8** |  | 8 | Transparent (CL), Black (BK) | 36.6 | 7.7 | 16.5 | 50 pcs. | 148-90041 |
| **HCPM Variobox 350** |  | - | Transparent (CL) | - | 7.7 | 16.5 | 350 pcs. | 148-90046 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

For product specific approvals and specifications please refer to the Appendix.

## Connectors - For Solid Wires

### HelaCon Easy

The HelaCon Easy connectors are used for fast, easy and reliable connection, distribution of cable and conductors in the field of electrical installations within junction boxes and control panels.

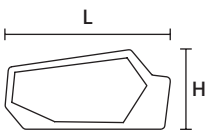
**Features and benefits**

- Fast, easy, reliable push-in wire connectors
- For connection and distribution of conductors in electrical housing
- Use typical range of voltages up to 450 volts
- Variety of input poles for flexible application
- Conductor sizes of: 0.5 up to 1.5 mm² and 1.0 up to 2.5 mm²

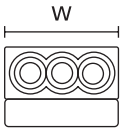


*The compact design of HelaCon Easy fits perfectly in tight spaces.*

*One Step to the Web!*



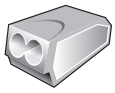
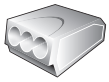
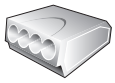
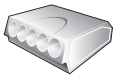
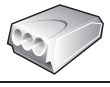
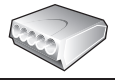
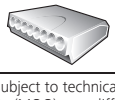

*HelaCon Easy wire connector side view*




*HelaCon Easy wire connector front view*

| MATERIAL | Polyamide 6.6 (PA66) | |
|---|---|---|
| Wire Range (VDE) in mm² | 0.5 - 1.5 mm² solid | 1.0 - 2.5 mm² solid |
| Max Current | 17.5 A | 24 A |
| Max Voltage | 450 V | |
| Stripping Length | 11 mm | |
| Flammability | UL 94 V2 | |
| Operating Temperature | -30 °C to +110 °C (VDE), -30 °C to +105 °C (cULus) | -35 °C to +85 °C |

HF ✓ RoHS ✓

| TYPE | Drawing | Wire Range (VDE) in mm² | Number of Conductors | Colour | Width (W) | Height (H) | Length (L) | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| HECE-2 |  | 1.0 - 2.5 solid | 2 | Grey (GY) | 10.5 | 9.5 | 19.5 | 100 pcs. | 148-90006 |
| HECE-3 |  | 1.0 - 2.5 solid | 3 | Grey (GY) | 13.5 | 9.5 | 19.7 | 100 pcs. | 148-90035 |
| HECE-4 |  | 1.0 - 2.5 solid | 4 | Grey (GY) | 17.2 | 9.5 | 19.7 | 100 pcs. | 148-90008 |
| HECE-5 |  | 1.0 - 2.5 solid | 5 | Grey (GY) | 21.1 | 9.5 | 19.7 | 100 pcs. | 148-90009 |
| HECE-8 |  | 1.0 - 2.5 solid | 8 | Grey (GY) | 17.8 | 14.5 | 17.8 | 50 pcs. | 148-90010 |
| HECE-3x1.5 |  | 0.5 - 1.5 solid | 3 | Grey (GY) | 11.4 | 8.8 | 18.5 | 100 pcs. | 148-90013 |
| HECE-5x1.5 |  | 0.5 - 1.5 solid | 5 | Grey (GY) | 17.2 | 8.8 | 18.5 | 100 pcs. | 148-90015 |
| HECE-8x1.5 |  | 0.5 - 1.5 solid | 8 | Grey (GY) | 26.0 | 8.8 | 18.5 | 75 pcs. | 148-90018 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. * Deviating value for Article-No.148-90010: -30 °C to +85 °C (CULus).

CEBEC c UL us FI KEMA KEUR VDE

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Connectors - For Lighting Installation

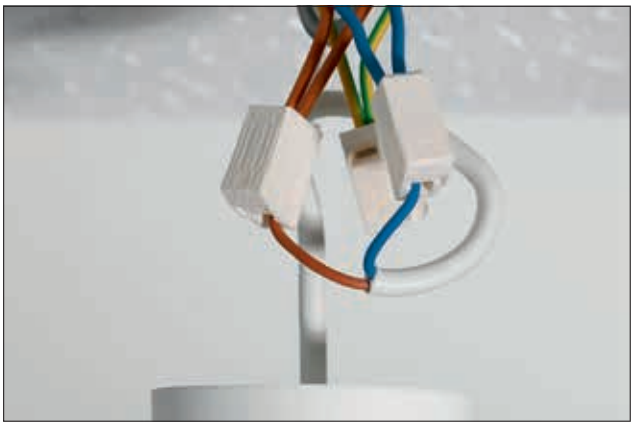
### HelaCon Lux

A typical application is lighting installation, where the solid conductor from concealed cabling has to be connected to a flexible conductor for lighting. The 2/1 variant allows the looping through of the supply lines for additional devices.

The conductor on the output/lighting side can easily be inserted by pressing the locking mechanism and can be released in the same way at any time. The lighting side can carry any kind of conductor and makes HelaCon Lux connectors also useful to connect devices that carry flexible connecting cables like control devices e.g. for blinds, fans and other drives.

**Features and benefits**

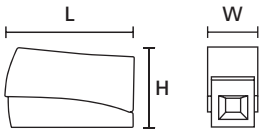
- Best suitable to connect solid with flexible wire
- Combines push-in connector with lock/unlock spring mechanism
- For fine-stranded conductors at lighting input
- Use with typical voltage current of 450 V / 24 A
- Either one or two inputs for solid conductor on installation side
- Very flexible application
- Tool-free application for easy, time-saving, safe connection
- Especially for overhead work and when wires are difficult to access



*Quick installation and release of lighting devices with HelaCon Lux.*

| | |
|---|---|
| **MATERIAL** | Polyamide 6.6 (PA66) |
| **Max Current** | 24 A |
| **Max Voltage** | 450 V |
| **Wire Range (VDE) in mm²** | 0.5 mm² - 2.5 mm² |
| **Flammability** | UL 94 V2 |
| **Operating Temperature** | -5 °C to +100 °C |

HF ✓ RoHS ✓




*HelaCon Lux side view*

*HelaCon Lux front view*

*One Step to the Web!*

| TYPE | Drawing | Number of Conductors | Colour | Width (W) | Height (H) | Length (L) | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **HECL-1/1** |  | 2 | Grey (GY) | 8.1 | 15.8 | 20.8 | 100 pcs. | 148-90022 |
| **HECL-2/1** |  | 3 | White (WH) | 9.5 | 15.8 | 20.8 | 100 pcs. | 148-90023 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

For product specific approvals and specifications please refer to the Appendix.

## Cable Installation System - Cable Scout+

### Cable Scout+ Rod Sets

Cable Scout+ is a professional cable routing tool which enables installers to easily route cables, saving time, even with the most challenging installations. The rods are manufactured from high quality Glass Reinforced Plastic (GRP), which enables a load carrying capacity of up to 200 kg. Cable Scout+ offers a range of features which allows the installer to illuminate, grip, inspect and retrieve by using the range of accessories. Cable Scout+ is supplied in a useful durable bag which contains the rods and accessories all in one place.

**Features and benefits**

- Professional cable installation tool
- Enables time savings to be achieved even with challenging installations
- Rods manufactured from high quality Glass Reinforced Plastic (GRP)
- Load carrying capacity of 200 kg
- Range of accessories enabling the installer to illuminate, grip inspect and retrieve.
- Rods & accessories contained in a useful durable storage bag

*Application video: Cable Scout+*



*All components stored neat and tidy with the Cable Scout+ Deluxe set.*

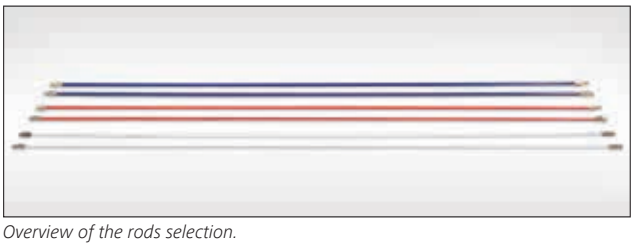

*Basic Set.*


*Handy Set.*

| TYPE | Description | Content Rods | Rod Capacity (m) | Content Accessories | Article-No. |
|---|---|---|---|---|---|
| **CS-SB** | Basic Set: designed to perform basic cable installation | 10 rods x 1 m (white) | 10.0 m | 15 cm white flexi lead, gender changer, tuff hook, mini eye | 897-90000 |
| **CS-SD** | Deluxe Set: the most comprehensive set aimed for carrying out larger installations | 2 rods x 1 m (white)<br>6 rods x 1 m (red)<br>2 rods x 1 m (blue) | 10.0 m | 15 cm white flexi lead, split ring, gender changer, tuff hook, mini eye, domed bullet, flat bullet, beam, single magnet | 897-90001 |
| **CS-SH** | Handy Set: made up for fitting in a tool box | 1 rod x 40 cm (white)<br>2 rods x 40 cm (red)<br>1 rod x 40 cm (blue) | 1.6 m | 40 cm white flexi lead, domed bullet, mini hook, mini eye | 897-90003 |

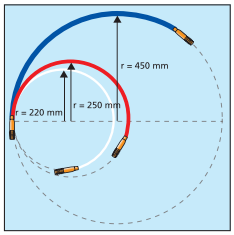
Subject to technical changes.

### Cable Scout+ Rod Pairs


*Overview of the rods selection.*

| TYPE | Content Rods | Flexibility | Ø (D) | Article-No. |
|---|---|---|---|---|
| **CS-P6** | One pair of 1 m blue rods | strong | 6.0 | 897-90007 |
| **CS-PN** | One pair of 1 m nylon rods | fully flexible | 5.0 | 897-90008 |
| **CS-P5** | One pair of 1 m red rods | medium | 5.0 | 897-90006 |
| **CS-P4** | One pair of 1 m white rods | flexible | 4.0 | 897-90005 |

All dimensions in mm. Subject to technical changes.



*Overview on Cable Scout+ marginal bending radii.*

Date of issue: January 2019

## Cable Installation System - Cable Scout+

### Cable Scout+ Accessories

Cable Scout+ is supplied with a range of useful standard accessories. Additional accessories can be purchased separately. Cable Grips are designed to grip objects and provide reliable and time saving method of securing cables & pipes to the rods. Just open the grip by compressing the braid, push the grip over the cable or pipe and release the grip, which will contract and establish a tight grip on the cable or pipe to the rod set.

**Features and benefits**

- Accessory kit includes a lot of useful tools
- User can inspect, illuminate and retrieve
- Cable grips allows a very fast way to pull cables
- Whisk glides smoothly over obstacles
- LED Beam brings light into the dark
- Strong magnet lifts metallic tools up to 2.5 kg weight



*Cable Grips are available in five different sizes to attach a wide range of cable diameters.*



*The Cable Scout+ Beam - a perfect tool for seeing into cavities.*



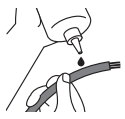
*The whisk allows the rod to glide over obstructions easily.*



*The strong magnet lifts a metallic tool of up to 2.5 kg.*



*Cable Pulling Lubricant reduces friction during the installation of cables.*

| TYPE | Drawing | Description | Article-No. |
|---|---|---|---|
| CS-SA | | Accessory Kit: Includes a 15 cm long flexi lead, gender changer, mini hook, tuff hook, mini eye, split ring, round bullet, flat bullet, single magnet, chain | 897-90004 |
| CS-ACG1630 |  | Cable Grip: Suitable for diameter 1.6 - 3.0 cm | 897-90027 |
| CS-ACG0415 | | Cable Grip: Suitable for diameters 0.4 - 1.5 cm | 897-90026 |
| CS-AWL |  | Large whisk: designed to glide over more uneven surfaces such as roof tiles. | 897-90019 |
| CS-AW | | Whisk: Enables cables to glide over rough and uneven surfaces. | 897-90018 |
| CS-AB |  | Beam: Useful LED torch enables inspection of working area. Uses 1 x AAA Battery. | 897-90016 |
| CS-AMG2 |  | Strong Magnet: Enables positioning or retrieval of items weighing up to 2.5 kg. | 897-90015 |
| CS - CPL |  | Cable pulling lubricant: provides reliable protection against cable jacket damage by reducing the frictional resistance up to 80 %. | 897-90031 |

Subject to technical changes.

## Downlight Covers - For Residential Buildings

**SpotClip-I**

SpotClip-I is a unique product that has been developed for mounting down lights in dry mortarless construction and acoustic construction applications.

The innovative, 4-leg ceiling brace has a number of outstanding features and is suitable for use in both panelling and plasterboard.

SpotClip-I consists of non-flammable, fibreglass reinforced polyamide and offers a number of thermal and mechanical benefits and can even be installed retrospectively.

As a result, it opens up a variety of possibilities for applications in both old and new buildings.

SpotClip-I can be used in ceiling cavities with diameters of 62 to 90 mm.

SpotClip-I ensures that a safe distance is kept between the down light, insulation foil and roof insulation.

It reduces the risk of damage being caused to any insulation material as a result of overheating and heat accumulation and may also have a positive effect on the life time of the lamp.

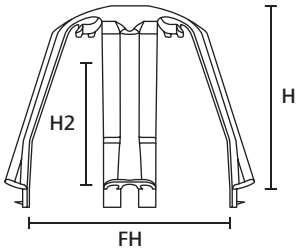


*SpotClip-II ensures reliability and safety of lighting installations.*

*Application video: SpotClip*



*Optimization of 4 fastening feet.*




*SpotClip-I*

| MATERIAL | Polyamide 6.6, glass-fibre reinforced (PA66GF15%) |
|---|---|
| **Operating Temperature** | -20 °C to +120 °C |
| **Flammability** | UL94 V0 at 1.5 mm thickness, Glow Wire Test (GWT) 960 °C |

HF ✓ RoHS ✓

| TYPE | Hole Ø (FH) min. | Hole Ø (FH) max. | Height (H) | Height (H2) | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|
| **SpotClip-I** | 62.0 | 90.0 | 82.0 | 70.0 | Black (BK) | 10 pcs. | 148-00076 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

Date of issue: January 2019

## Downlight Covers - For Residential Buildings

**SpotClip-I**

### Features and benefits

- Mount down lights in dry, mortarless construction and acoustic construction
- Innovative, 4-leg ceiling spacer
- Suitable for both panelling and plasterboard
- Non-flammable, fibreglass reinforced polyamide
- Thermal and mechanical benefits
- Can be installed after construction, useful for both old and new buildings
- Use in ceiling cavities 62-90 mm in diameter
- Keeps safe distance between down light, insulation foil and roof insulation
- Reduces risk of damage to insulation from overheating, heat accumulation
- Improves life span and reliability of lamps
- Tested according to EN 60598-1, EN 60598-2-2, and NF C 15100



*Cable retainers on the heat protection top hold the supply cable in place.*



*Additional retaining spikes prevent movement during mounting.*



*Bearing wings ensure that the spacer locates securely on the plasterboard.*



*1. Use the delivered tool to install SpotClip in the fixing hole as easy as possible.*



*2. Push the spikes into the plasterboard to prevent shifting and disconnect the tool.*



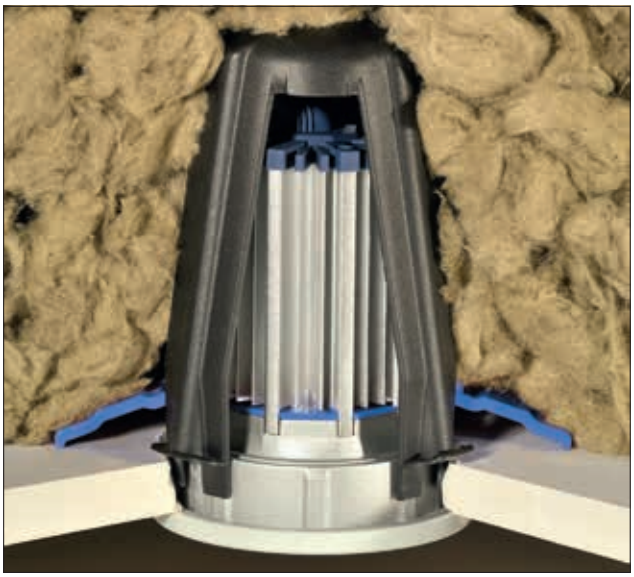
*3. Start the installation of the downlight in a safe way.*

Date of issue: January 2019

## Downlight Covers - For Residential Buildings

**SpotClip-II**

SpotClip-II has been developed for use with large halogen and LED spotlights. Additional, flexible legs allow use with blown-in insulation material. The legs can be easily removed to facilitate cable installation. The downlight cover can be inserted easily into the ceiling cavity and offers valuable savings on installation time. SpotClip creates a reliable gap between the light bulb and the insulation material, reducing the risk of overheating and heat accumulation.



*The additional 4 legs on SpotClip-II allow use with blown-in cavity insulation.*

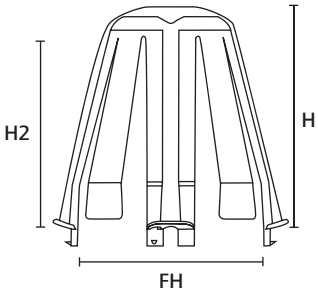
*Application video: SpotClip-II*



*SpotClip-II downlight cover with 4 additional flexible legs.*



*SpotClip-II shown using standard insulation wool.*




*SpotClip-II*

| | |
|---|---|
| **MATERIAL** | Polyamide 6.6, glass-fibre reinforced (PA66GF15%) |
| **Operating Temperature** | -20 °C to +120 °C |
| **Flammability** | UL94 V0 at 1.5 mm thickness, Glow Wire Test (GWT) 960 °C |

HF ✓ RoHS ✓

| TYPE | Hole Ø (FH) min. | Hole Ø (FH) max. | Height (H) | Height (H2) | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|
| **SpotClip-II** | 62.0 | 90.0 | 107.0 | 95.0 | Black (BK) | 10 pcs. | 148-00098 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

Date of issue: January 2019

## Downlight Covers - For Residential Buildings

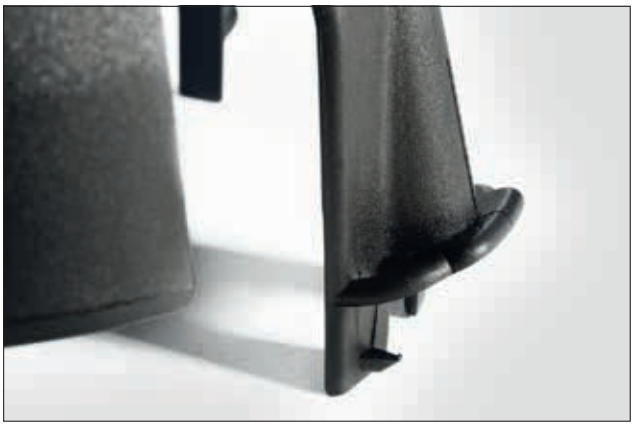
### SpotClip-II

**Features and benefits**

- SpotClip-II has been developed for bulbs up to 95 mm height
- Ensures safety distance between downlight, damp-proof foil and insulation material
- Flexible installation during or after construction
- Additional spikes at the end of the legs prevent SpotClip shifting
- Suitable for fixing into holes from 62 - 90 mm diameter
- Remains rigid even at higher temperatures
- Flame retardant material according to UL94-V0
- Improves life span and reliability of lamps
- Tested according to EN 60598-1, EN 60598-2-2, and NF C 15100



*SpotClip-I and SpotClip-II for maximum downlight heights of 70 mm and 95 mm respectively.*



*Retaining spikes and support wings hold SpotClip-II in the required position.*



*1. Use the delivered tool to install SpotClip-II in the fixing hole as easy as possible.*



*2. Push the spikes into the plasterboard to prevent shifting and disconnect the tool.*



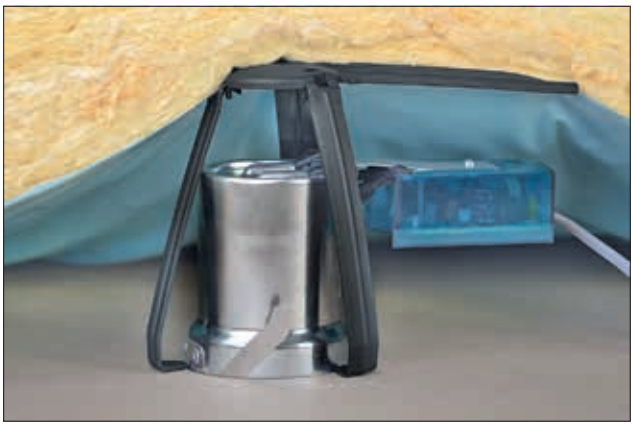
*3. Start the installation of the downlight in a safe way.*

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## Downlight Covers - For Residential Buildings

### SpotClip-III

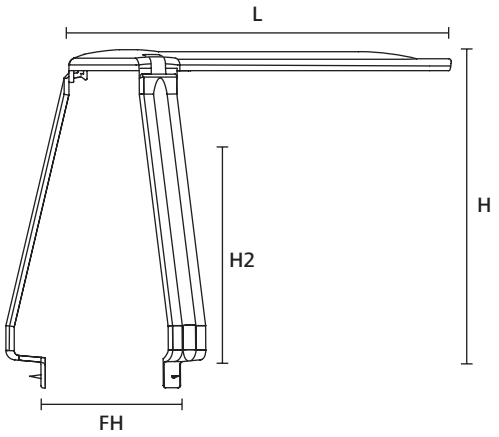
This further development of SpotClip-II allows the use of an existing power supply. In the case of a spot without power supply, this added straight leg can be cut easily and removed manually. It helps to avoid contact between the insulation and the external power supply of the spot. SpotClip-III will fit to all standard applications with solid insulation material. It is delivered flat with flexible legs. They can be locked within seconds. The height of the this mounting device is depending on the fixing hole diameter. SpotClip-III is suitable for LED and Halogen downlights with a fixing hole diameter from 62 mm to 120 mm. The maximum product height is 130 mm depending on the fixing hole diameter.



*SpotClip-III for downlight application with external power supply.*



*SpotClip-III downlight cover- Easy-to-mount legs with one click folding function.*




*SpotClip-III*

| | |
|---|---|
| **MATERIAL** | Polyamide 6.6, heat stabilised (PA66HS) |
| **Operating Temperature** | -40 °C to +105 °C |
| **Flammability** | UL 94 V2, self-extinguishing,<br>Glow Wire Test (GWT) 960 °C |

HF ✓ RoHS ✓

| TYPE | Hole Ø (FH) min. | Hole Ø (FH) max. | Height (H) | Height (H2) | Length (L) | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **SpotClip-III** | 62.0 | 120.0 | 130.0 | 115.0 | 160.0 | Black (BK) | 5 pcs. | 148-00121 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. * For fixing hole diameter 65 mm.

Date of issue: January 2019

## Downlight Covers - For Residential Buildings

**SpotClip-III**

### Features and benefits

- A mounting support for the external power supply unit provides more space for the downlight installation
- Ensures safety distance between the downlight, damp-proof foil and insulation material
- Flexible installation during or after construction
- Additional spikes at the end of the legs prevent SpotClip shifting
- Prevents damage to insulation material caused by overheating
- Flame retardant material according to UL94-V2
- Improves life span and reliability of lamps
- Faster and easier installation and replacement of lamps
- Tested according to EN 60598-1, EN 60598-2-2, and NF C 15100



*One cable retainer to fix the power supply cable at the top.*



*Click and fix mounting mechanism for the 3 flexible legs.*



*New leg design combined with retaining spikes for high stability throughout installation.*



*1. Insert the mounting support through the fixing hole.*



*2. Press the spikes into the plasterboard to ensure stability of SpotClip-III.*



*3. Install the downlight.*



*4. Connect the power supply unit and fix the cable in the cable retainer.*

Date of issue: January 2019

## Downlight Covers - For Residential Buildings

### SpotClip-Box

SpotClip-Box has been designed especially for passive houses. This innovative downlight cover prevents contact between insulation material and the bulb. The insulation remains continuous, thus avoiding any breach in the integrity of insulation in the passive house. SpotClip-Box is suitable for LED and compact fluorescent-lamp downlights with a diameter of up to 75 mm and a maximum height of 130 mm.

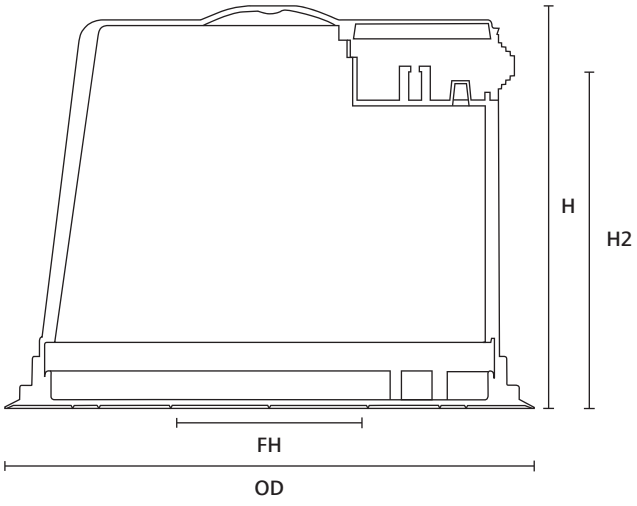
It is available as a complete kit, including HelaCon Lux wire connectors and all necessary mounting components.



*SpotClip-Box - Especially designed for passive house applications.*



*View inside the SpotClip-Box.*




*SpotClip-Box*

| | |
|---|---|
| **MATERIAL** | Polyamide 6.6, heat stabilised (PA66HS) |
| **Operating Temperature** | -40 °C to +105 °C |
| **Flammability** | UL 94 V2, self-extinguishing,<br>Glow Wire Test (GWT) 960 °C |

HF ✓ RoHS ✓

| TYPE | Hole Ø (FH) min. | Hole Ø (FH) max. | Height (H) | Height (H2) | Outside Ø (OD) | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **SpotClip-Box** | 75.0 | 75.0 | 140.0 | 130.0 | 184 | Black (BK) | 1 pc. | 148-00122 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

Date of issue: January 2019

## Downlight Covers - For Residential Buildings

### SpotClip-Box

**Features and benefits**

- Suitable for all types of suspended ceilings and a variety of insulation materials
- Ensures safety distance between the downlight, damp-proof foil and insulation material
- Additional spikes at the bottom of the product prevent shifting during installation
- Connection without the need for screws, with HelaCon Lux connectors included
- Prevents damage to insulation material caused by overheating
- Improves life span and reliability of lamps
- Quick and easy one-click installation with bayonet mechanism
- Can also be used to install downlights and speakers in concrete ceilings constructed on-site
- Tested according to EN 60598-1, EN 60598-2-2, and NF C 15100



*SpotClip-Box is a downlight cover supplied as a complete kit.*



*HelaCon Lux connected to the power supply.*



*Seal the complete SpotClip-box using the end cap and grommet.*



*1. Mount the bottom plate over the drilled fixing hole and install the downlight housing.*



*2. Connect the power supply to the lamp socket with the HelaCon Lux wire connectors included and lock it with the bayonet coupling.*



*3. Connect the bulb to the socket and lock into the correct position.*



*4. Insulation material can now be applied.*

Date of issue: January 2019

## Downlight Covers - For Industrial Buildings

### SpotClip-Kit

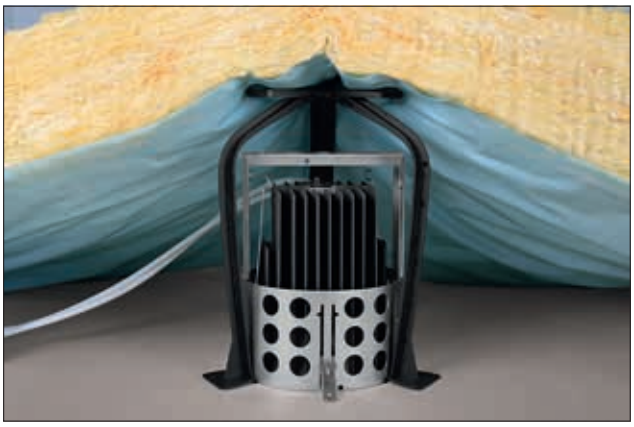
SpotClip-Kit has been designed for use primarily in industrial and office buildings for downlights with larger dimensions. The packaging kit consists of three legs and a mounting plate. The legs are available in two different lengths (150 mm and 240 mm). SpotClip-Kit has six selectable fixing positions in the mounting plate, making it suitable for downlights of differing dimensions. SpotClip-Kit 150 is suitable for downlights with a diameter from 100 mm up to 270 mm and with a maximum height of 140 mm. SpotClip-Kit 240 is suitable for downlights with a diameter from 170 mm up to 310 mm and with a maximum height of 230 mm. SpotClip-Kit can be combined with SpotClip-Plate.



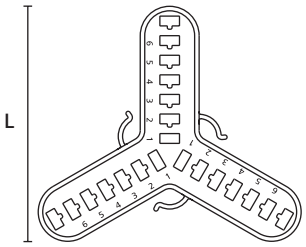
*SpotClip-Kit 150 used in a suspended ceiling.*

| | |
|---|---|
| **MATERIAL** | Polyamide 6.6, heat stabilised (PA66HS) |
| **Operating Temperature** | -40 °C to +105 °C |
| **Flammability** | UL 94 V2, self-extinguishing, Glow Wire Test (GWT) 960 °C |

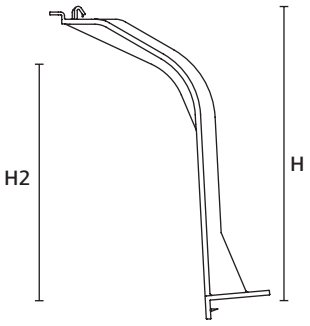
HF ✓ RoHS ✓



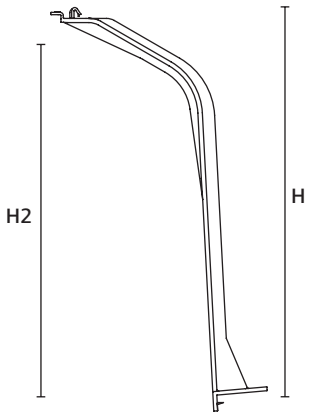
*SpotClip-Kit 240 applied with a fixed sheet of insulating material.*




*SpotClip-Kit mounting plate*




*SpotClip-Kit 150 leg*




*SpotClip-Kit 240 leg*



*SpotClip-Kit downlight cover is available in two sizes.*

| TYPE | Hole Ø (FH) min. | Hole Ø (FH) max. | Height (H) | Height (H2) | Length (L) | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **SpotClip-Kit 150** | 100.0 | 270.0 | 157.0 | 140.0 | 120.0 | Black (BK) | 1 pc. | 148-00119 |
| **SpotClip-Kit 240** | 170.0 | 310.0 | 247.0 | 230.0 | 120.0 | Black (BK) | 1 pc. | 148-00120 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

Date of issue: January 2019

## Downlight Covers - For Industrial Buildings

**SpotClip-Kit**

### Features and benefits

- Installation from the top or bottom in all types of suspended ceilings
- Ensures safety distance between downlight, damp-proof foil and insulation material
- Flexible installation during or after construction, suitable for use in existing and new buildings
- Additional spikes at the end of the legs prevents shifting during installation
- Intelligent cable routing with eyelet at the top
- Prevents damage to insulation material caused by overheating
- Heavy-duty leg design prevents long-term deformation
- Improves life span and reliability of the lamp
- Tested according to EN 60598-1, EN 60598-2-2, and NF C 15100



*SpotClip-Kit 150 is used for fixing hole diameters from 100 mm to 270 mm.*



*SpotClip-Kit 240 is used for fixing hole diameters from 170 mm to 310 mm.*

### SpotClip-Kit 150

| Slot | Fixing hole diameter Ø min. – Ø max. |
|---|---|
| 1 | 100–170 |
| 2 | 120–190 |
| 3 | 140–210 |
| 4 | 160–230 |
| 5 | 180–250 |
| 6 | 200–270 |

All dimensions in mm. Subject to technical changes.

### SpotClip-Kit 240

| Slot | Fixing hole diameter Ø min. – Ø max. |
|---|---|
| 1 | 170–210 |
| 2 | 190–230 |
| 3 | 210–250 |
| 4 | 230–270 |
| 5 | 250–290 |
| 6 | 270–310 |

All dimensions in mm. Subject to technical changes.



*The feet position can be very easily adjusted using the click and release system.*



*A robust design combined with retaining spikes ensures high stability.*



*SpotClip-Kit 150 is delivered as a self-assembly set.*



*SpotClip-Kit 240 is delivered as a self-assembly set.*



*1. Squeeze the legs and insert the SpotClip-Kit through the fixing hole.*



*2. Press the retaining spikes into the plasterboard to secure the legs.*



*3. Install the downlight according to the manufacturer's user manual.*



*4. Connect the downlight to the power supply and fix the cable into the routing eyelet.*

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## Downlight Covers - For Industrial Buildings

### SpotClip-Plate

SpotClip-Plate has been developed especially for installation in suspended grid ceilings in order to avoid damage and cracks in the ceiling plates caused by the weight of heavy downlights. The product dimensions of 592 mm x 592 mm mean that it fits perfectly into standard grid ceilings with a width of 600 mm. The pre-cut design makes it suitable for installation of the most commonly used downlights with a diameter from 75 mm to 314 mm.

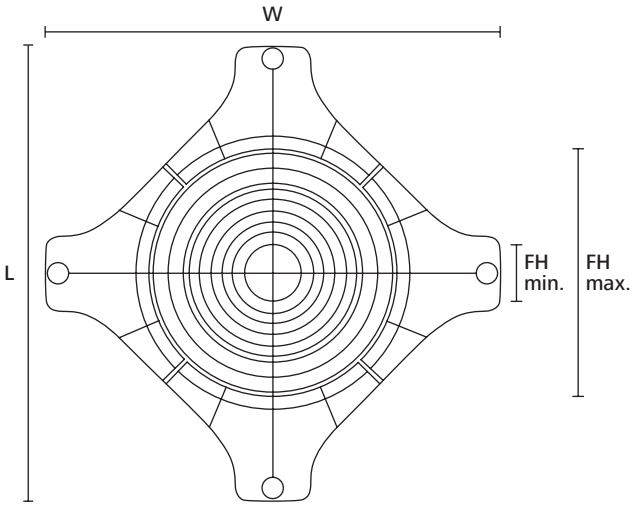
Please check if your grid ceiling size corresponds to the side length of 600 mm. Depending on the manufacturer and country this can vary between 600 mm and 625 mm.



*SpotClip-Plate has been developed for applications with heavy downlights in suspended grid ceilings.*



*SpotClip-Plate fits perfect into standard grid ceilings with a width of 600 mm.*




*SpotClip-Plate*

| | |
|---|---|
| **MATERIAL** | Polyamide 6.6, heat stabilised (PA66HS) |
| **Operating Temperature** | -40 °C to +105 °C |
| **Flammability** | UL 94 V2, self-extinguishing, Glow Wire Test (GWT) 960 °C |

HF ✓ RoHS ✓

| TYPE | Hole Ø (FH) min. | Hole Ø (FH) max. | Length (L) | Width (W) | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|
| **SpotClip-Plate 600** | 75.0 | 314.0 | 592.0 | 592.0 | Black (BK) | 10 pcs. | 148-00117 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

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## Downlight Covers - For Industrial Buildings

### SpotClip-Plate

**Features and benefits**

- SpotClip-Plate distributes the load of the downlight equally across the suspended ceiling construction
- Flexible installation during or after construction, useful for both existing and new buildings
- Remains rigid even at higher temperature
- Flame retardant material according to UL94-V2
- Improves life span and reliability of lamps
- Faster and easier installation and replacement of the lamp
- Tested according to EN 60598-1, EN 60598-2-2, and NF C 15100



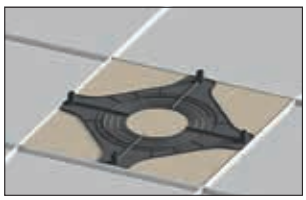
*SpotClip-Plate comes in 16 pre-cut fixing hole diameter sizes.*



*Choose the required diameter and cut with a handsaw.*



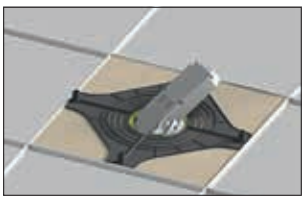
*Use the SpotClip-Plate as a stencil to cut the fixing hole into the ceiling plate.*



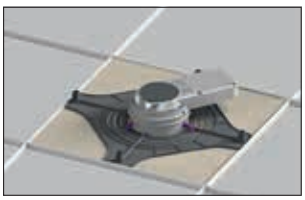
*1. Place the SpotClip-Plate in position.*



*2. Cut the ceiling plate.*



*3. Insert the downlight through the cutted hole.*



*4. Mount the downlight.*

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## SpotClip-Plate - Further Accessories

### SpotClip-Caps

SpotClip-Plate can be used to ensure the safety distance between the downlight and insulation material. We offer three different solutions to prevent damage to insulation material caused by overheating of the bulb.

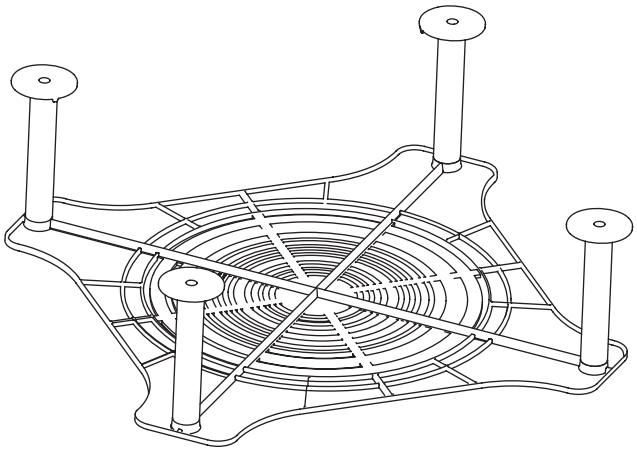
1. Place two plates on top of each other and use IRL standard tubes between these to achieve the required distance
2. Use SpotClip-Caps and IRL standard tubes to achieve the required distance between the plate and insulation material
3. Combine SpotClip-Kit with SpotClip-Plate for a fast solution



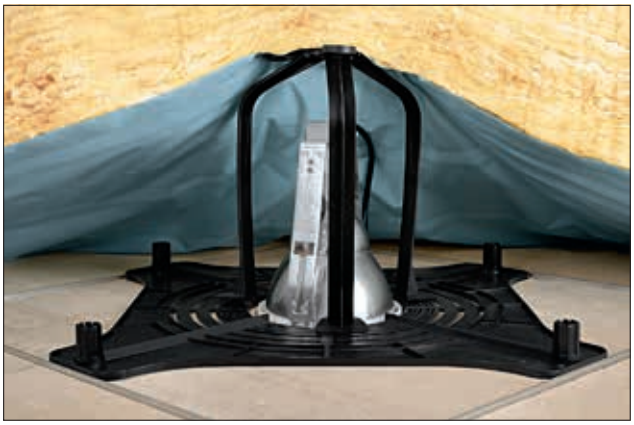
*SpotClip-Plate with insulation material - Plate-to-Plate solution.*



*SpotClip-Plate combined with SpotClip-Caps.*



*SpotClip-Plate in combination with IRL standard tubes and SpotClip-Caps*



*SpotClip-Plate combined with SpotClip-Kit, shown with insulation material.*

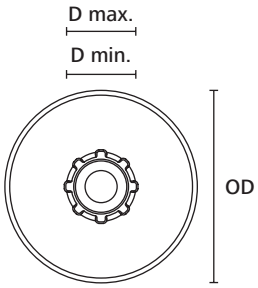
Date of issue: January 2019

## SpotClip-Plate - Further Accessories

### SpotClip-Caps

**Features and benefits**

- Different solutions to ensure safety distance between downlight, damp-proof foil and insulation material
- SpotClip-Plate can be combined with SpotClip-Kit, SpotClip-Caps or placed on top of each other with standard SpotClip-Tubes to ensure the required distance
- Prevents damage to insulation material caused by overheating
- Improves life span and reliability of lamps
- Faster and easier installation and replacement of lamps




*SpotClip-Cap*




*SpotClip-Caps offered in a pack of 40 pieces.*

| | |
|---|---|
| **MATERIAL** | Polyamide 6.6, heat stabilised (PA66HS) |
| **Operating Temperature** | -40 °C to +105 °C |
| **Flammability** | UL 94 V2, self-extinguishing,<br>Glow Wire Test (GWT) 960 °C |

HF ✓ RoHS ✓

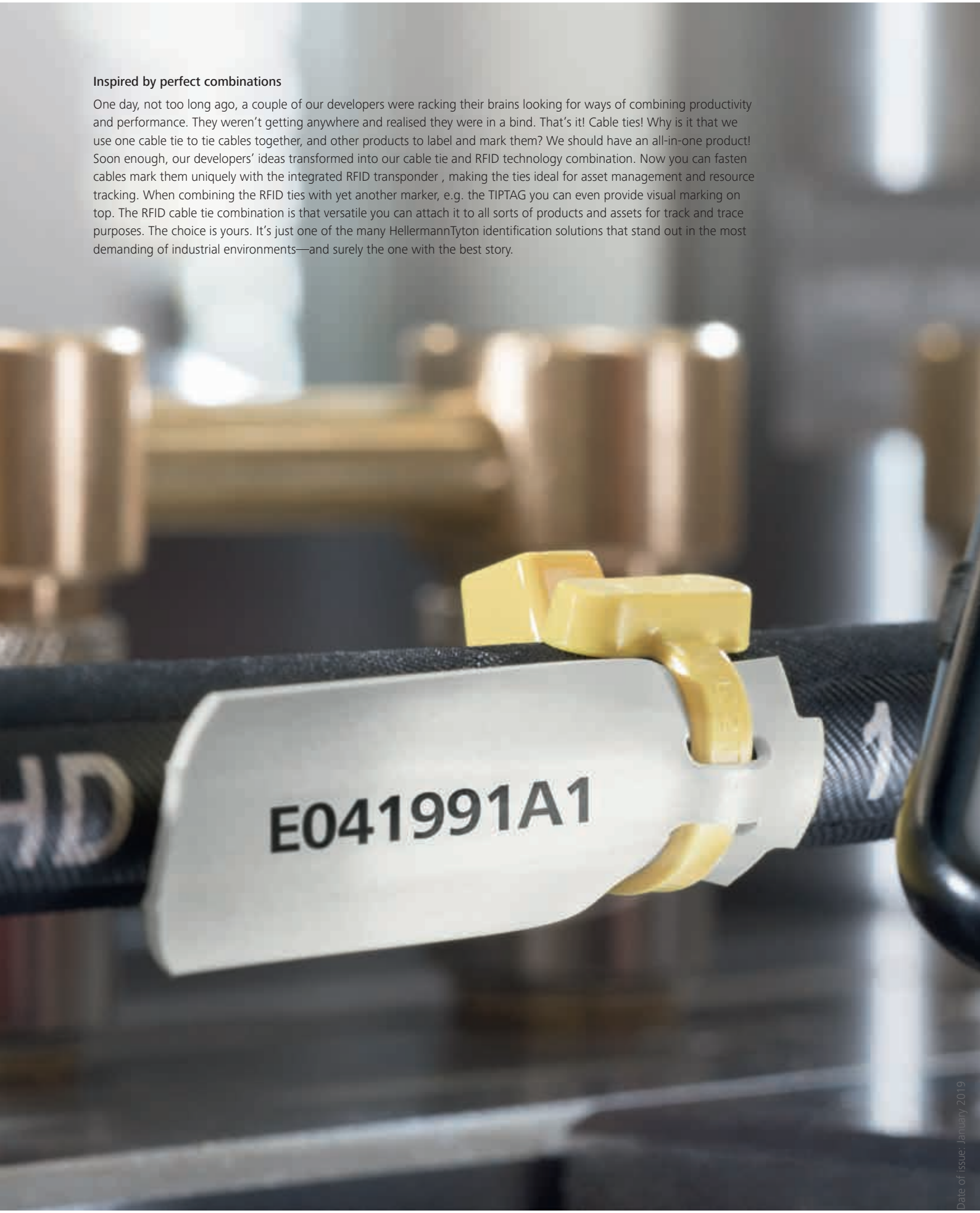
| TYPE | Outside Ø (OD) | Ø D min. | Ø D max. | Colour | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|
| **SpotClip-Caps 16/25** | 60.0 | 16.0 | 22.0 | Black (BK) | 40 pcs. | 148-00102 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

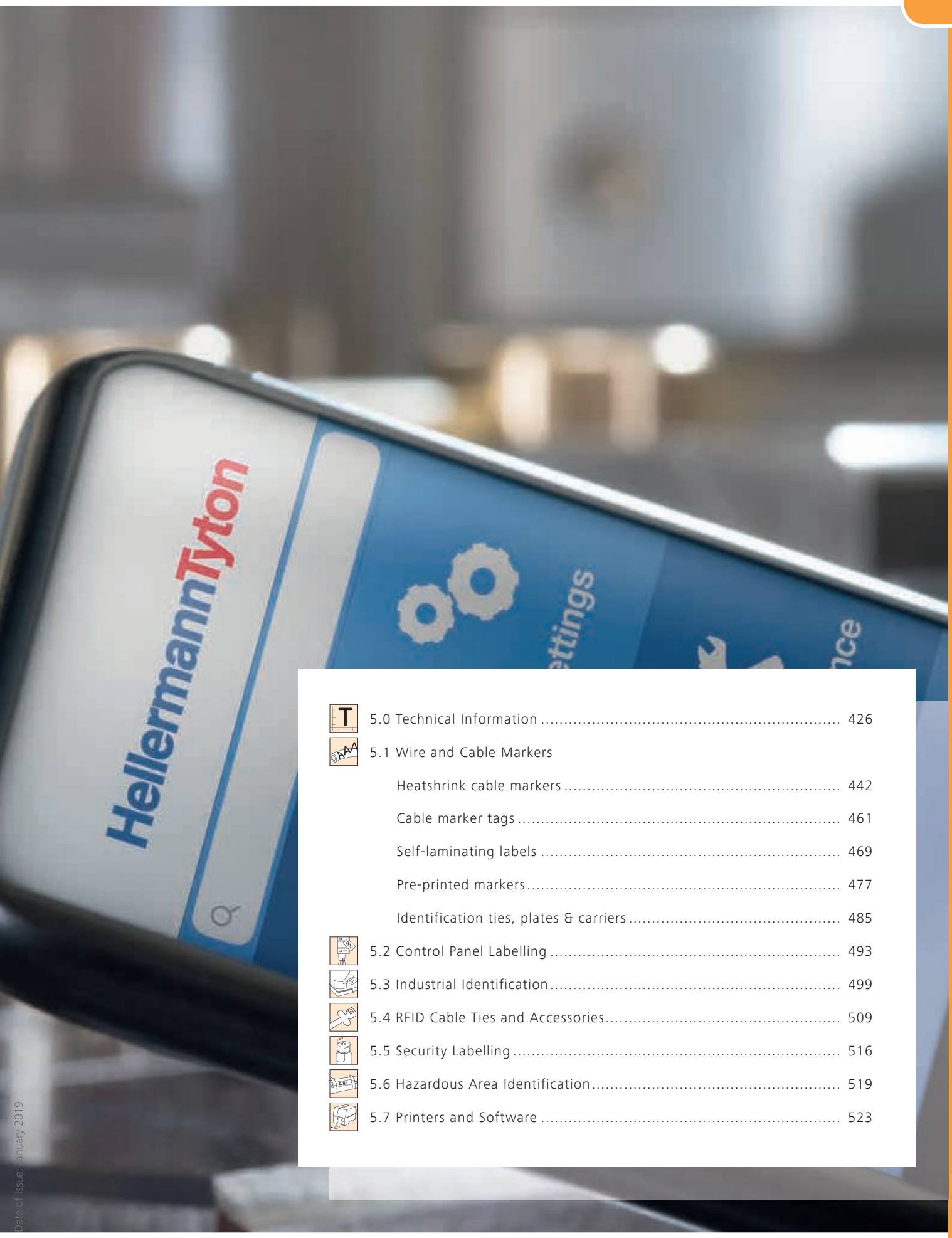
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### Inspired by perfect combinations

One day, not too long ago, a couple of our developers were racking their brains looking for ways of combining productivity and performance. They weren't getting anywhere and realised they were in a bind. That's it! Cable ties! Why is it that we use one cable tie to tie cables together, and other products to label and mark them? We should have an all-in-one product! Soon enough, our developers' ideas transformed into our cable tie and RFID technology combination. Now you can fasten cables mark them uniquely with the integrated RFID transponder , making the ties ideal for asset management and resource tracking. When combining the RFID ties with yet another marker, e.g. the TIPTAG you can even provide visual marking on top. The RFID cable tie combination is that versatile you can attach it to all sorts of products and assets for track and trace purposes. The choice is yours. It's just one of the many HellermannTyton identification solutions that stand out in the most demanding of industrial environments—and surely the one with the best story.




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## 5.0 Technical Information


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## 5.1 Wire and Cable Markers

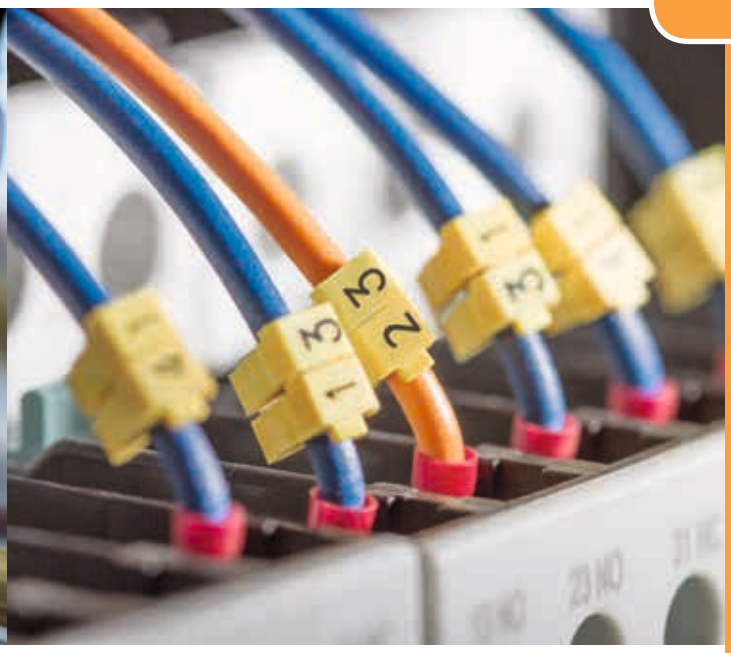

| | |
|---|---|
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| TDRT DS – 2:1 Rail Diesel Resistant | 453 |
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| | |
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| Helatag 1101 (White) | 496 |
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## 5.3 Industrial Identification


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|---|---|
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| **Type label identification, thermal transfer** | |
| Helatag 1204 (Silver-matt) | 501 |
| **Asset identification label, thermal transfer** | |
| Helatag 1206 (White gloss) | 502 |
| **Type label identification, laser printer** | |
| Helatag 1103 (Silver) | 504 |
| Helatag 1102 (Yellow) | 505 |
| Helatag 1101 (White) | 506 |
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| **Thermal printer ribbons for** | |
| Heatshrink and Tiptags | 529 |

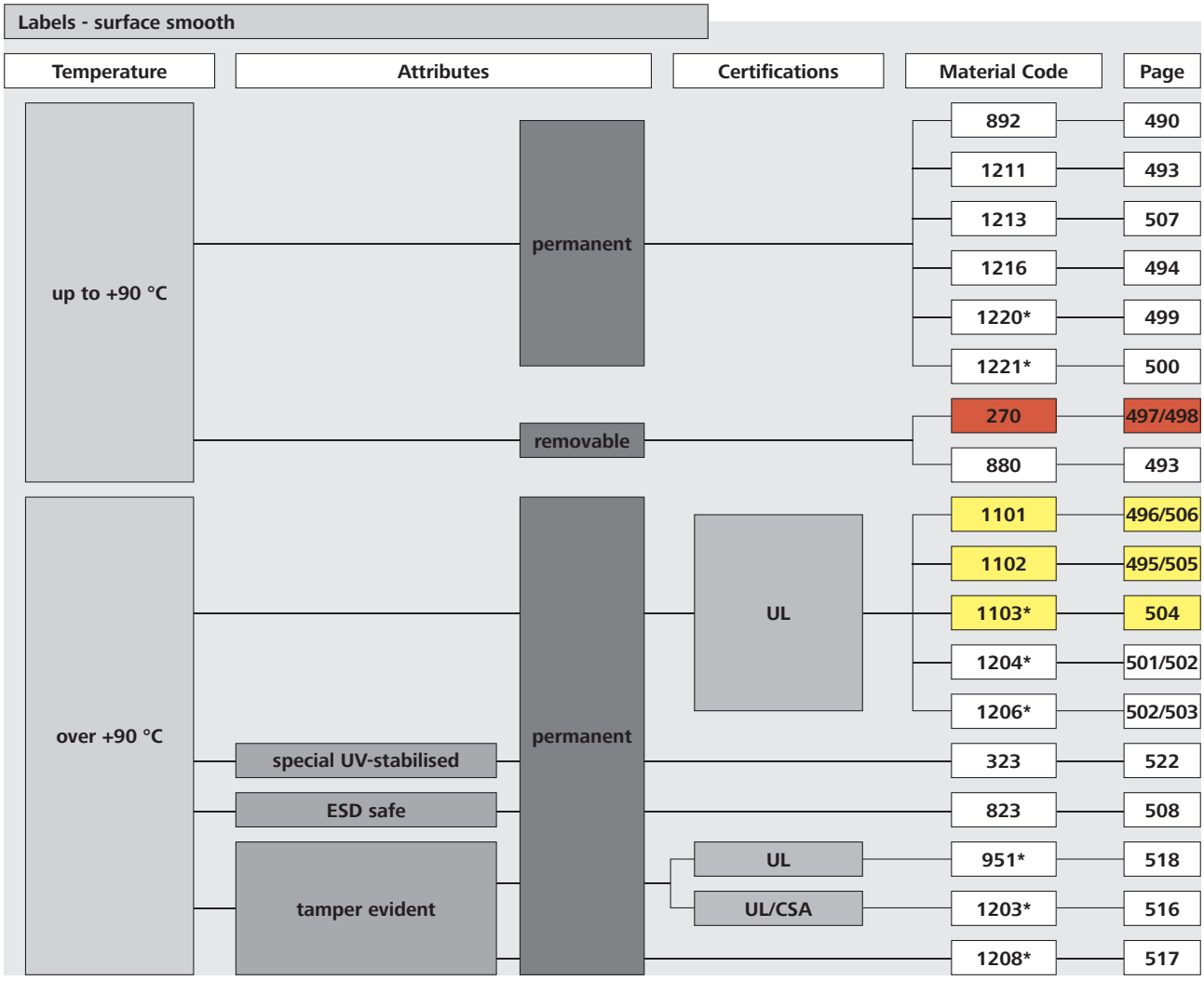

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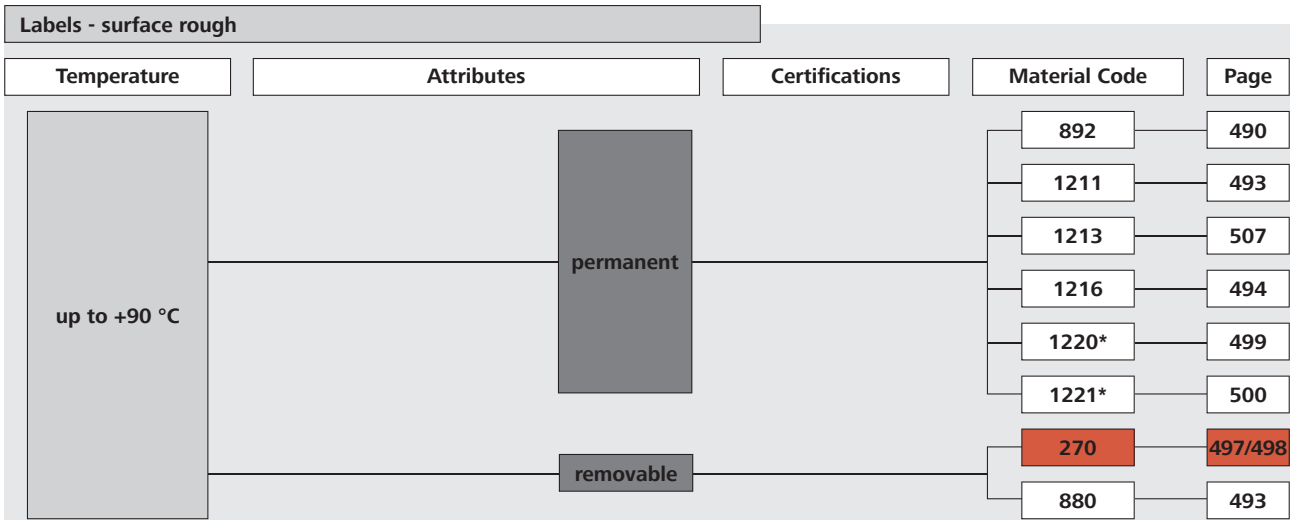
## Label and marker selection guide

**Use our flowchart to find the right label or identification material.**

Select the object to be identified (flat or curved surface) and its surface quality (smooth or rough). Depending on what you require from our identification systems, you will be guided through the flowchart to the end. Please note that we have highlighted the respective printer technology (thermal transfer, matrix or laser printer, etc.) in colour.

When selecting the material, the general rule is that a higher quality material can of course be used for lower requirements (e.g. a material for operating temperatures of over +90 °C can also be used for temperatures below +90 °C). And you can, of course, always ring us on our usual telephone numbers.




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**Labelling material for:**

- TT printer
- Laser printer
- Matrix printer
- Handwritten identification

* For this labelling material you can also use laser beam.

**Approvals:**

1. UL: Underwriter Laboratories
2. CSA: Canadian Standards Association
3. NF F: Norme Française Ferroviaire
4. EN: European Normative

## Labels - cables/tubes smooth

| Temperature | Attributes | Certifications | Material Code | Page |
|---|---|---|---|---|
| up to +90 °C | permanent | | 101 | 474 |
| | | | 1209* | 469/470 |
| | | | 1401 | 475 |
| | | | 1402 | 476 |
| | removable | | 270 | 497/498 |
| over +90 °C | permanent | | 323* | 471 |
| | | | 1104 | 472 |
| | | | 1105 | 473 |

## Heat shrink marker

| Temperature | Attributes/Application | Certifications | Material Code | Page |
|---|---|---|---|---|
| over +90 °C | | | TCGT* | 442/443 |
| | for Electronics | UL/CSA//MIL STD | TULT* | 444/445 |
| | | | TULT DS* | 446/447 |
| | for Rail | EN45545-2 | TLFX* | 448/449 |
| | | | TLFX DS* | 450/451 |
| | | | TLFD DS | 455/456 |
| | | EN50343 | TDRT* | 452 |
| | | | TDRT DS* | 453/454 |
| | for Aerospace high temperature | | THTT* | 457/458 |
| | | | THTT DS* | 459/460 |

## TIPTAG

| Temperature | Attributes/Application | Certifications | Material Code | Page |
|---|---|---|---|---|
| over +90 °C | special UV-stabilised | | TIPTAG PU* | 462 |
| | for Electronics | | TAGUL* | 464 |
| | for Rail | EN45545-2 | TAGLF* | 466 |
| | | NF F 00-608/ EN50343 | TAGDR* | 467 |
| | for Aerospace high temperature | | TAGHT* | 468 |
| up to +90 °C | for Rail | EN45545-2 | TIPTAG HF* | 461 |
| | for Food and Pharma | | TIPTAG MC | 463 |
| | special UV-stabilised | | TAGPU* | 465 |

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## Bonding properties of labels

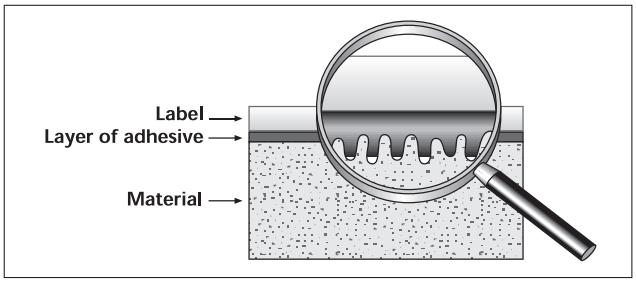
The great variety of places where adhesive labels can be used require a broad range of different materials and adhesives. The information given below will explain all the important aspects of this adhesion.

To enable you to make the right choice for your particular application quickly and efficiently, we have set out the most important selection criteria diagrammatically in our flowchart.

### Initial and final bonding

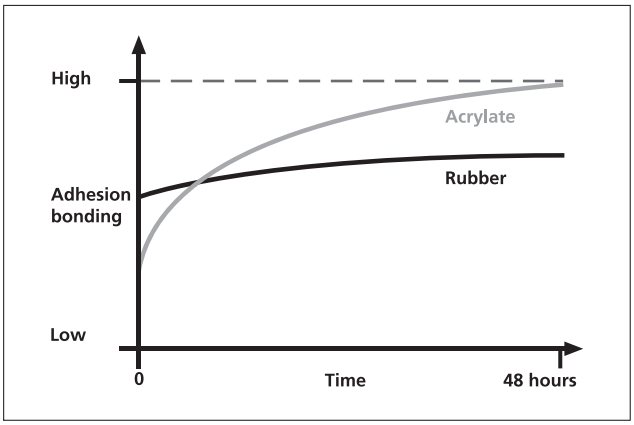
In principle there are two different bonding conditions for labels: The initial bonding which occurs immediately after the label and surface are brought together and the final bonding which represents the permanent bonding status between label and surface following the application, pressing on and curing of the adhesive. The bonding of labels is measured in a defined test process (FINAT FTM) and stated in N/mm.

The initial bonding (or tack) describes the bonding ability of the label after it has been applied to the surface, without being pressed down. The final bonding of labels is ultimately affected by the combined factors of material quality, adhesive basis, curing time, pressure applied and surface tension.




### Adhesion: powers of attraction between two materials

Adhesion can be described, in principle, as the ability of the adhesive to form a bond with the substrate; the substrate is the surface of the material you need the label applied to. The influencing factors for optimum bonding are the quality of the material's surface and the creep ability of the adhesive. The crucial factor is the proportion of the surface which is actually to be 'wetted' by the adhesive. Most surfaces appear – from a microscopic point of view – like a mountain range with peaks and valleys; i.e. the effective surface is much bigger than that seen by the naked eye. No matter how smooth and flat a substrate may appear to be, there is always some roughness. The better the adhesive flows into the valleys, the more bonding points it can form and the better the adhesive will bond to the surface. A thicker layer of adhesive does allow these uneven areas to be filled in better, but a thicker coat of adhesive has negative effects when labels are processed by machine (e.g. leakage of the adhesive or limited storage life).




### Adhesive basis

HellermannTyton currently uses acrylate and synthetic rubber as adhesive bases. Acrylate adhesives belong to the family of thermoplastic resins and at normal temperatures they provide high and lasting adhesion. When considering the final bonding of acrylate adhesives, however, it must be noted that the relatively high final bonding is only attained after a certain curing period. This is especially true of labelling materials which may be used for rating plates. Normally you must wait for at least 48 hours in a dry office environment.

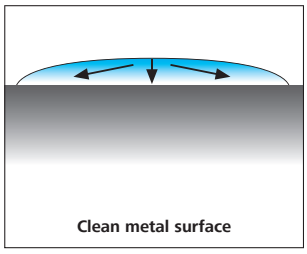
Synthetic rubber-based adhesives, unlike acrylate-based adhesives, are distinguished by their high initial bonding. But this adhesive technology does not achieve a final bonding comparable to acrylate adhesives (see graph). Special mixtures of synthetic rubber are used in labelling technology, for example for removable labels, e.g. HellermannTyton material type 270.

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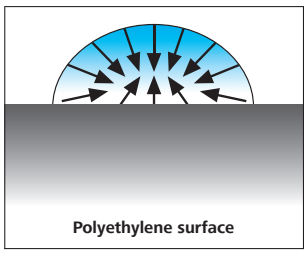
## Effect of surface energy on bonding properties

The surface energy (also known as surface tension) is an important factor in the selection of the right adhesive. Because of their chemical formulation, all surfaces have their own polarity and surface tension. The cause of surface tensions is the tendency of liquids to reduce their surface as far as possible, thus to form drops. When a surface which is to be marked (substrate) is wetted with an adhesive, in addition to the adhesive formulation and the surface quality (material, roughness, dampness etc.) the surface energy is also a decisive factor in the maximum attainable bonding force of the adhesive.

As a basic rule, it can be noted that the surface energy of the adhesive must be less than the surface energy of the material to be bonded (substrate). The adhesive should completely wet the substrate and not form any drops.




**Flat drops**
- High surface energy
- Good wetting
- Good bonding properties




**Rounded drops**
- Low surface energy
- Poor wetting
- Weak bonding properties

### The material combination is the decisive factor

An acrylate-based adhesive is polar and therefore has a relatively high surface energy. Acrylate-based adhesives achieve optimum final bonding on polar substrates (e.g. glass or metals) with a high surface energy. More critical is the application of labels using acrylate-based adhesives on materials with low surface energy (apolar substrates) such as, for example, silicone, polyethylene and polypropylene. The surface tensions of an acrylate-based adhesive can be reduced for particular applications by the addition of specific additives. However, this step brings with it some drawbacks, for example, a free-flowing adhesive and thus a limited life and storage ability of the labels. The lower bonding force of low-energy surfaces must therefore be taken into account of when considering the end use. For optimum marking using acrylate-based adhesive labels, HellermannTyton uses an improved adhesive formulation, which is co-ordinated to the most common materials in industry. In most cases it is possible to guarantee very good application of these labels. In borderline cases, a modified adhesive formulation may be necessary. Talk to us, we'll be delighted to advise you.

**Surface energies of different materials**

| MATERIAL | Surface energy [mN/m]* |
|---|---|
| Polytetrafluorethylene (PTFE) | 18 |
| Silicon (Si) | 24 |
| Polyvinyl fluoride (PVF) | 25 |
| Natural rubber (CR) | 25 |
| Polypropylene (PP) | 29 |
| Polyethylene (PE) | 35 |
| Polymethyl methacrylate, Acryl (PMMA) | 36 |
| Epoxy (EP) | 36 |
| Polyoxymethylene, Acetal (POM) | 36 |
| Polystyrene (PS) | 38 |
| Polyvinyl chloride (PVC) | 39 |
| Vinylidene chloride (VC) | 40 |
| Polyester (PET) | 41 |
| Polyimide (PI) | 41 |
| Polyarylsulfone (PAS) | 41 |
| Phenolic resin | 42 |
| Polyurethane (PUR) | 43 |
| Polyamide 6 (PA 6) | 43 |
| Polycarbonate (PC) | 46 |
| Lead (Pb) | 450 |
| Aluminium (Al) | 840 |
| Copper (Cu) | 1,100 |
| Chromium (Cr) | 2,400 |
| Iron (Fe) | 2,550 |

*The values stated are non-binding reference values and for guidance purposes only.

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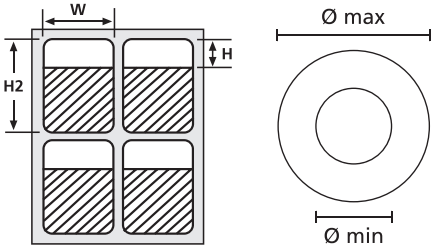
## Instructions for using labels with protective laminate

Labels with protective laminate (also known as cable laminators) have a white or coloured label field which can be written on either manually using a marker pen (see RiteOn and HELASIGN) or using a matrix, laser or thermal transfer printer (see Helatag). Depending on the design for the respective type of printing, the title block has a special surface finish to achieve the optimum print anchorage to the label substrate. This results in long-lasting, clear, sharp writing with text, graphics or barcode. A special feature is that most of the HellermannTyton protective laminate labels come with rounded corners. This achieves greater final adhesion of the protective laminate and counteracts any undesirable removal of the label, especially with cables of small diameter and in heavy-duty applications.

When calculating the minimum and maximum diameters, the following formula has been used:

$$\text{Diameter} = \frac{\text{Length of laminate}}{\pi}$$

Pi (π) is the constant 3.14.




*Helatag self-laminating labels.*

**Minimum diameter:**

To save time, when wrapping the cable with the cable laminator, a limit of max. 2 windings has been set. The protective laminate length is calculated from: Height H2 – height H

By applying the "diameter" formula this produces the approx. minimum diameter:

$$\text{Diameter min} = \frac{H2 - H}{2*\pi}$$

Example: TAG136LA4 (H = 19.05 mm; H2 = 67.7 mm)

$$\text{Diameter min} = \frac{67.7 - 19.05}{2*3.14}$$

**Maximum diameter:**

In this case the minimum requirement is complete coverage of the label field with the protective laminate with a single winding. The length of the protective laminate is again obtained from the formula: H2 – H.

By applying the "diameter" formula this produces the approx. maximum diameter, which also corresponds to double the minimum diameter:

$$\text{Diameter}_{max} = \frac{H2 - H}{\pi \text{ min}} = 2*\text{Diameter}_{min}$$

Example: TAG136LA4 (H = 19.05 mm; H2 = 67.7 mm)

$$\text{Diameter}_{max} = \frac{67.7 - 19.05}{3.14} = 2*\text{Diameter}_{min}$$

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## Interesting facts about thermal transfer films (colour ribbons)

The thermal transfer ribbon is perhaps the most important consumable that is used in this printing system - using the right ribbon for a particular application is extremely important.

Not every transfer ribbon is equally suited to any purpose. Depending on the printing requirements (e.g. smudge or scratchproof) to be met, what type of labels will be used, an appropriate thermal transfer ribbon must be used.

Another important consideration for the thermal transfer ribbon is the electrostatic charging which can arise during the printing process. Some transfer ribbons become statically charged during the printing process, which can damage an ESD-sensitive printer head in the long run.

To clarify: The thermal transfer printer head is in physical contact with the back of the thermal transfer ribbon and consists solely of electronic, voltage-sensitive elements, which are known as dots.

These can become damaged when the thermal transfer ribbon causes discharges, which usually results in dot drop-outs. At points where the print head is damaged, no more colour is transferred. This leaves gaps on the label.

Thermal transfer films usually consist of three layers:

- A polyester strip as supporting material
- A protective, gliding backing layer on one side
- A colour layer on the other side.

The colour remains solid at room temperature, but liquefies under the effect of heat. To manufacture the colour ribbons, the polyester ribbon is coated with a special backing and then the respective coloured ink is applied. Print characteristics and bonding ability on various materials depend mainly on the chemical composition of this colour ink.

The main distinguishing feature of thermal transfer ribbons is the so-called quality of the coating. There are two basic types of thermal transfer ribbons:

### Wax-resin-based films – good synthesis

With this quality of a wax-resin mixture, the good print characteristics of the wax are essentially retained, but the resin content increases mechanical strength. The print image produced has high resistance to heat, solvents, abrasion and scratching and high print quality, e.g. for barcodes. These colour ribbons are suitable for use on synthetic materials. They can be used for most applications at standard print temperatures.

- TT932DOUT
- TT822OUT8

### Resin-based films – for very heavy-duty purposes

The colour layer at this quality level is based entirely on synthetic resins, developed for industrial applications and extreme conditions. Resin-based colour ribbons guarantee maximum readability, even on the most difficult materials (e.g. barcodes). Depending on the backing material, medium to high print temperatures and slow print speeds are necessary when using these thermal transfer films. In return, a print image is obtained which stands out for its high resistance to abrasion and scratching and great solvent and heat resistance.

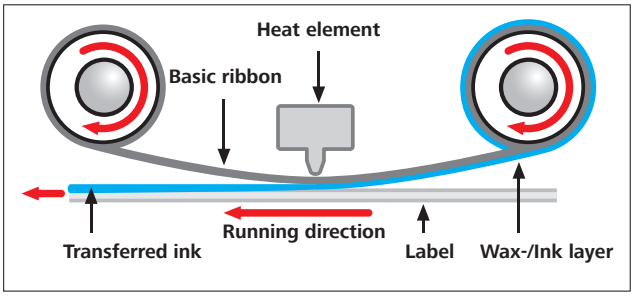
- TT822OUT
- TTRW
- TTDTHOUT
- TTRHT
- TTRR
- TT122OUT
- TTRC+

## Interesting facts about thermal transfer printing

Thermal transfer printing plays a central role, especially in the field of printing variable data, single-proofs and even for small series. This is largely due to the fact that thermal transfer printing is a non-impact printing (NIP) process. Unlike traditional printing processes, such as offset-printing, a NIP printing process does not require a fixed printing block and can therefore print out different data with consistent quality from print to print.

Due to the increasing spread and importance of one and two-dimensional barcodes in goods inventory systems, logistics and in the field of component identification, the market potential of thermal transfer printing is growing all the time. The same is also true of incremental serial numbers, inventory designations, entrance tickets, rating plates, wine labels and many more.

Good print quality, high print speeds and the option of printing almost all backing materials permanently – these are the critical advantages of thermal transfer printing. It's good readability, resistance and abrasion resistance allow thermal transfer printing to be put to use in applications where the print results from laser, inkjet or dot matrix printers are not satisfactory.




Heated dots strike a special colour ribbon, the thermal transfer film, which transfers liquefied colour ink at exactly that point onto the backing material (labels, tubes, rating plates). Our modern printers use what is known as “thin film technology”, in which the very brief liquid phase of the ink produces faster print speeds and better and more precise images than with the “thick film technology” formerly used.

Moreover, the linear orientation of the labels or of the heatshrink tubing makes it possible to print on demand. The printing is then carried out as required. This is especially useful in the production of rating plates in series production.

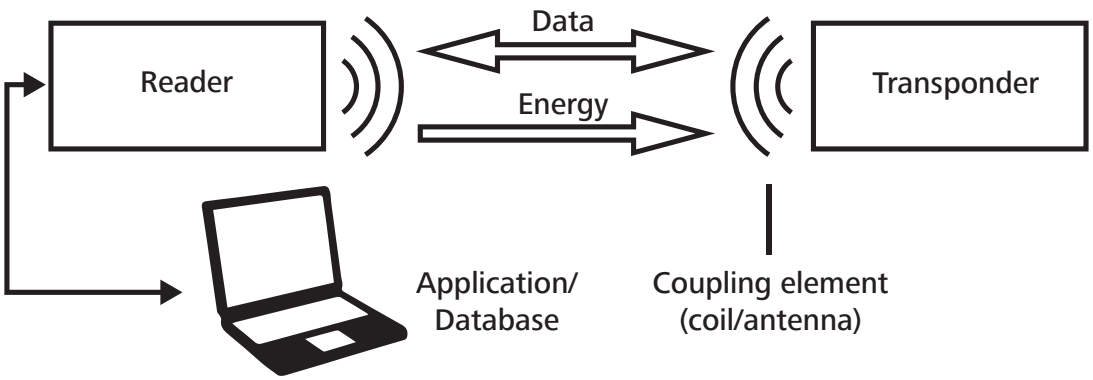
In thermal transfer printing, the print image is defined by the three components: printer, label material and thermal transfer film (colour ribbon).

**The advantages at a glance:**

- High print quality with a resolution of 8-12 dots/mm (12 dots/mm corresponds to approx. 300 dpi)
- Barcode printing in excellent quality, hence good optical readability
- High print speeds of between 30 mm/sec and 150mm/sec
- Individual graphics capability
- Problem free and rapid realisation of self designed drafts
- Quiet and service friendly printers
- Prints are UV fast and permanent with high definition and contrast and good resistance to mechanical and chemical influences.

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## What is RFID?




Radio frequency identification, for short RFID, simply means the identification by radio waves. The data transfer is affected by means of electromagnetic waves. This technology allows a contactless storing and reading of data and makes a communication between devices possible. There are several methods of identification, but the most common is to store a serial number that identifies a person or object, and perhaps other information, on a microchip that is attached to an antenna (the chip and the antenna together are called an RFID transponder or an RFID tag). With an RFID reader the stored information can be evaluated.

HellermannTyton offers a range of RFID cable ties complete with choice of transponders which can be read with HellermannTyton RFID readers to deliver quick and accurate reporting.

RFID (Radio Frequency Identification) is a digital system to manage equipment inspections and reporting for business that are still using paper based systems and wants to improve resource performance.

*Application video: RFID*

**The benefits of RFID cable ties and accessories are:**

- Fast and paperless data collection
- Elimination of typing errors in reports
- Reduction of working hours due to reduction of paper work
- Controlled administration of devices and warehouse
- Comply with legislation
- Easy to share up-to-date information
- Reliable operation in harsh environments, for example wet, dusty, dirty conditions; corrosive environments; vibration and shock
- No need for contact or line-of-sight

HellermannTyton has developed a range of cable ties to host RFID transponders to enable users to easily fix the RFID tag to equipment that needs to carry a serial number for tracking and identification purposes. Applications for RFID include:

- Resource and asset management
- Theft preventing and traceability
- Security tagging
- Essential maintenance
- Attendance verification and time recording
- Leak detection
- Baggage tagging
- Vehicle identification
- Automation processes

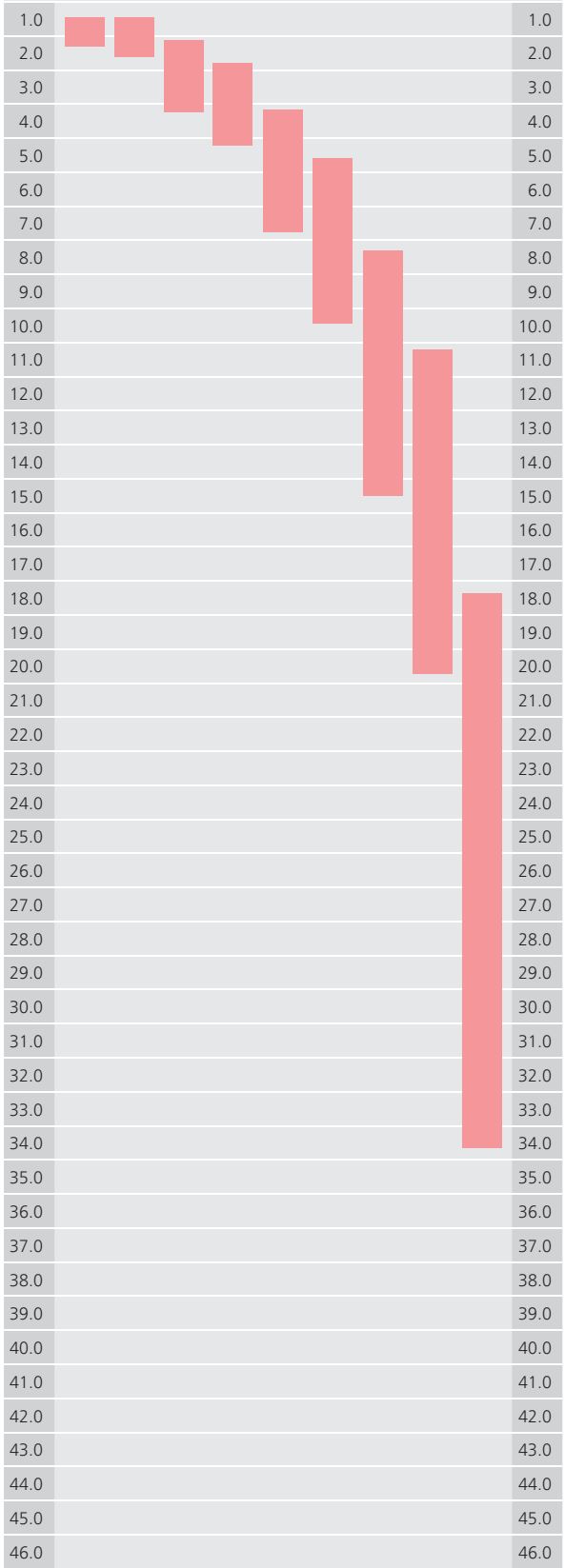
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## Size Selection Guide

### Heat Shrink - Cable Diameters

Ideal Outside Diameter

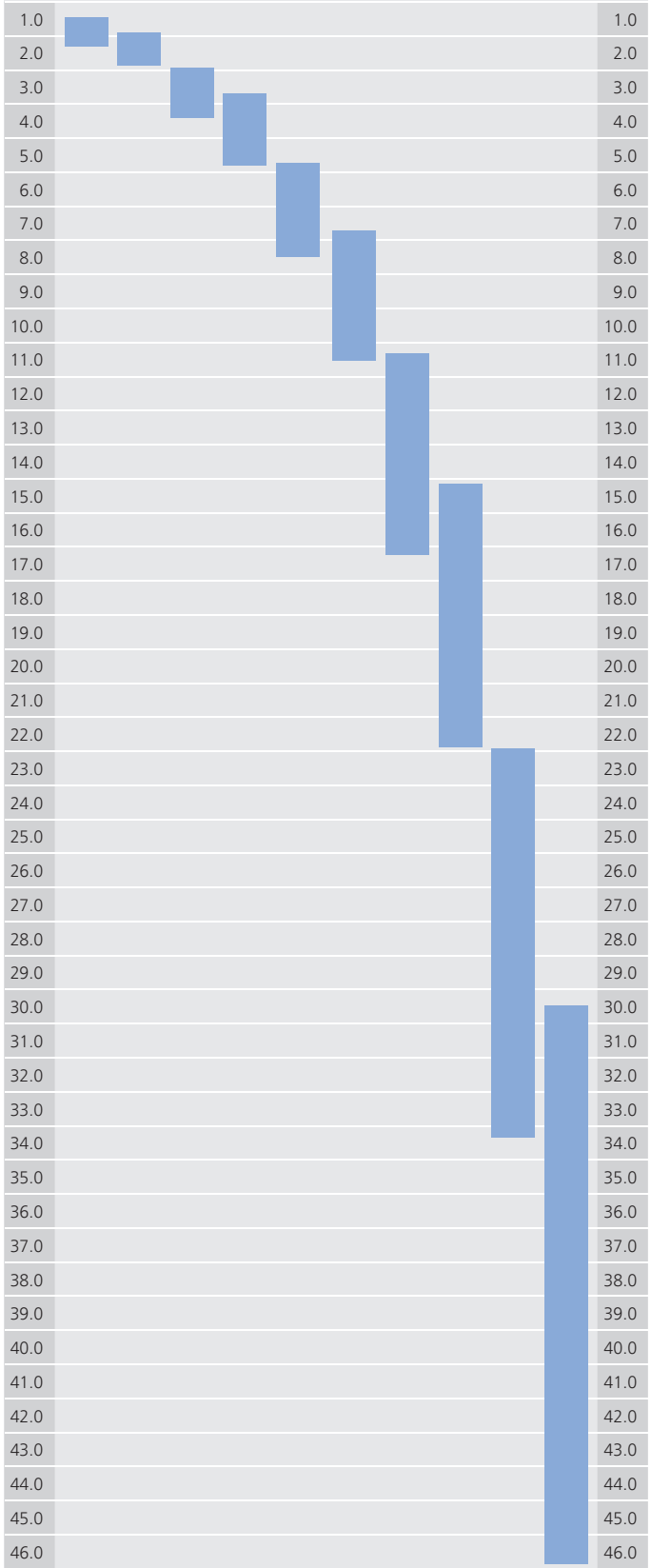
**TULT, TULT DS, TCGT (3:1)**




### Heat Shrink - Cable Diameters

Ideal Outside Diameter

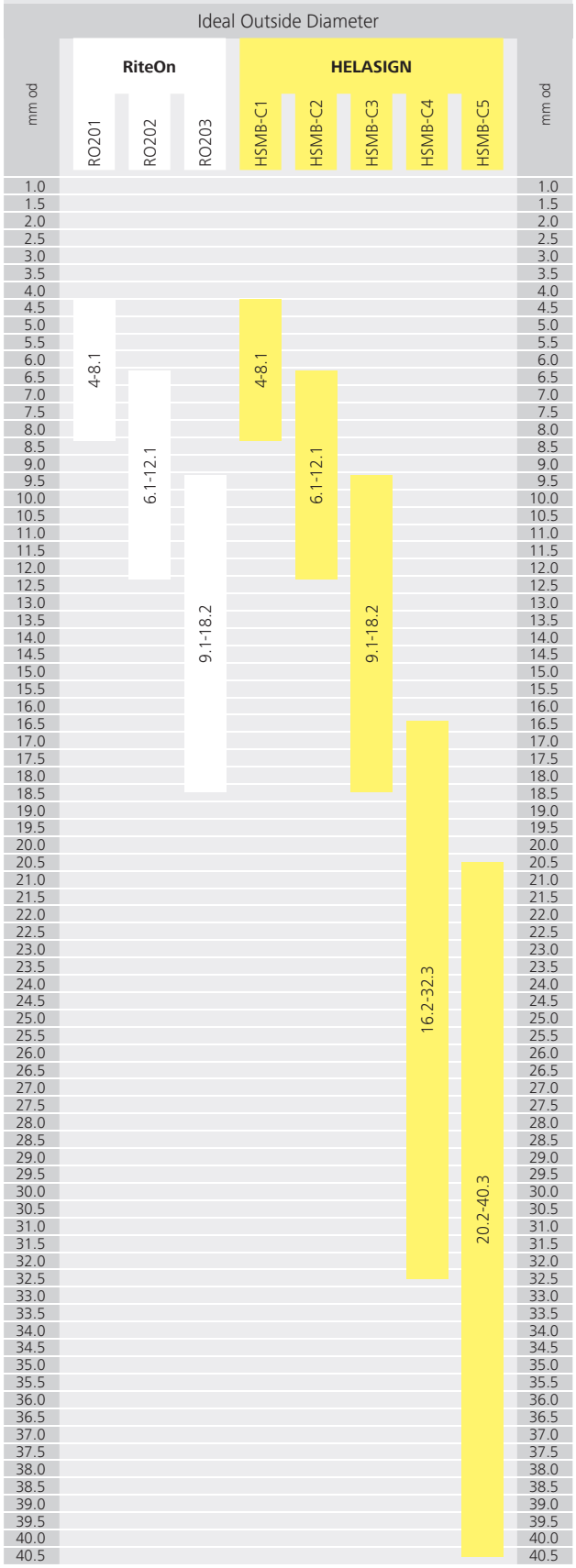
**TLFX, TLFX DS, THTT, THTT DS, TDRT, TDRT DS, TLFD DS (2:1)**



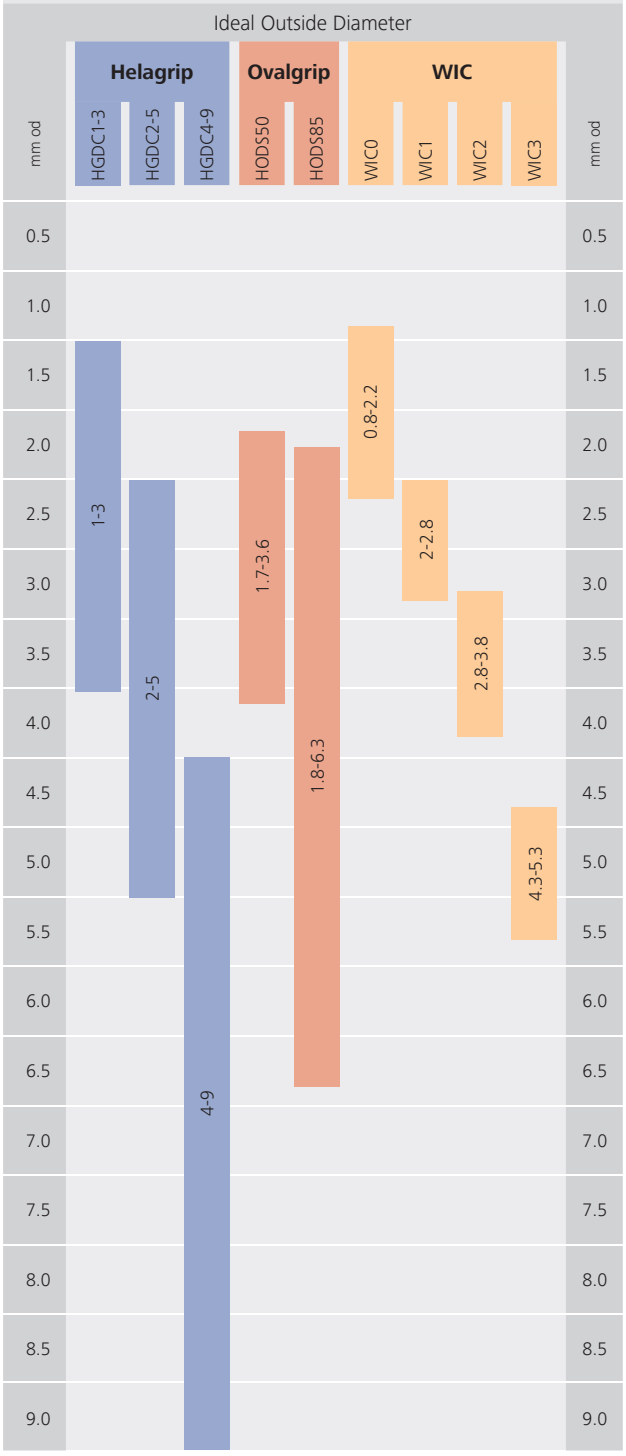

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## Size Selection Guide

### Self-laminating Labels - Cable Diameters

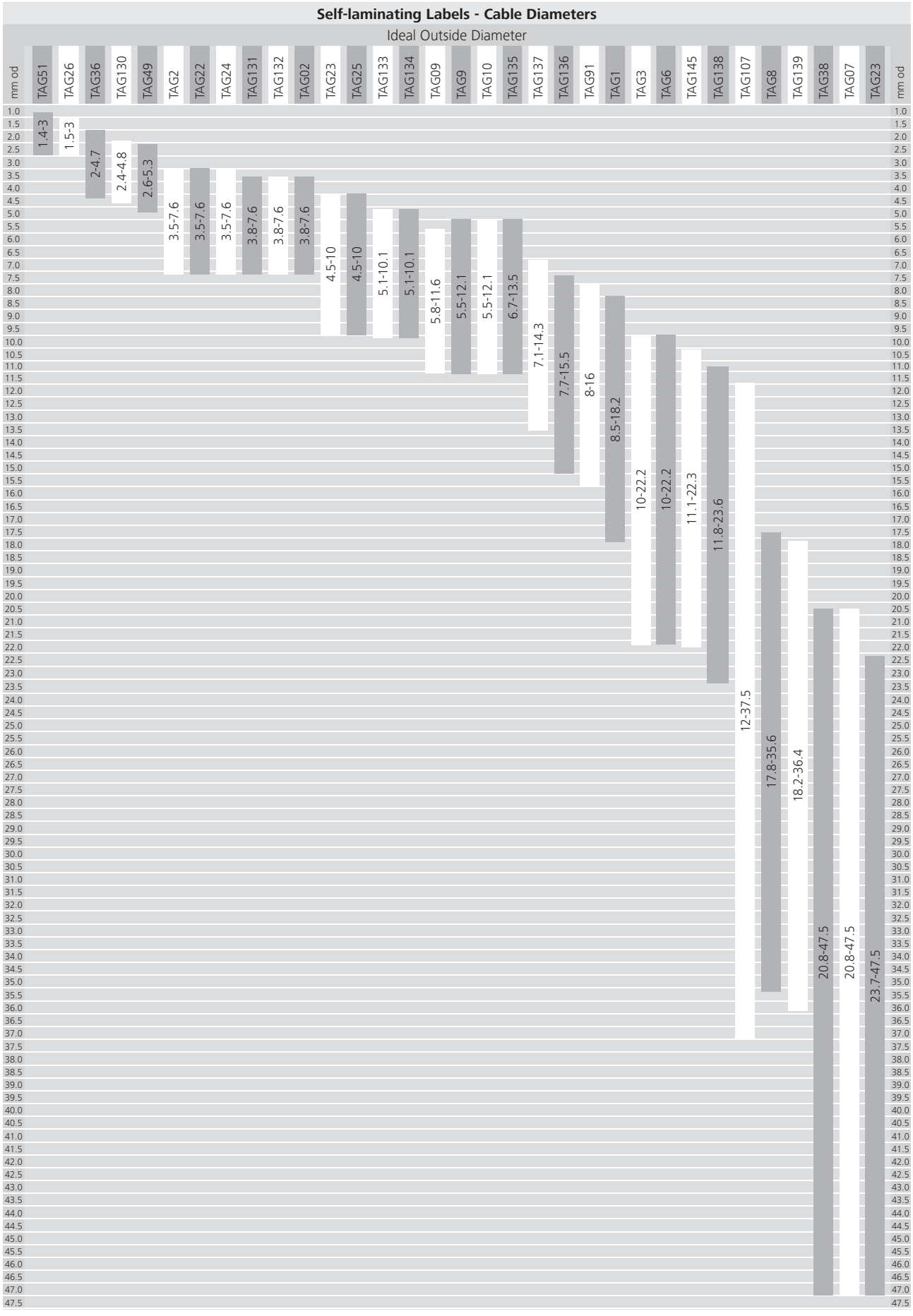



### Pre-printed Markers - Cable Diameters




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## Size Selection Guide



## Printers, ribbons and label types/materials

This table will help you select the correct printer and ribbon for specific material/label types. Please refer to the page indicated in the last column of the table for additional information.





| Material | Label type | Printing method | TrakMark DS (Double sided printing) | TT4030 | TT430 | Ribbon | Page |
|---|---|---|---|---|---|---|---|
| | | | TagPrint Pro 3.0 | | | | |
| TCGT | | | • | • | • | TTRC+ TTDTHOUT TTRW TT822OUT8 | 442/443 |
| TULT | | | • | • | • | TTRC+ TTDTHOUT TTRW TT822OUT8 | 444/445 |
| TULT DS | | | • | • | • | TTDTHOUT | 446/447 |
| TLFX | | | • | • | • | TTDTHOUT | 448/449 |
| TLFX DS | | | • | • | • | TTDTHOUT | 450/451 |
| TDRT | | | • | • | • | TTDTHOUT | 452 |
| TDRT DS | | | • | • | • | TTDTHOUT | 453/454 |
| TLFD DS | | | • | • | • | TTDTHOUT | 455/456 |
| THTT | | | • | • | • | TTRHT | 457/458 |
| THTT DS | | | • | • | • | TTRHT | 459/460 |
| TIPTAG HF | | | – | • | • | TTDTHOUT | 461 |
| TIPTAG PU | | | – | • | • | TTRC+ | 462 |
| TIPTAG MC | | | – | • | • | TTDTHOUT TTRW | 463 |
| TAGUL | | | – | • | • | TTDTHOUT | 464 |
| TAGPU | | | – | • | • | TTRHT | 465 |
| TAGLF | | | – | • | • | TTDTHOUT | 466 |
| TAGDR | | | – | • | • | TTDTHOUT | 467 |
| TAGHT | | | – | • | • | TTRHT | 468 |
| Helatag 1209 | | | – | • | • | TT932DOUT | 469/470 |
| Helatag 323 | | | – | • | • | TT932DOUT | 471 |
| Helatag 323 | | | – | • | • | TT822OUT | 522 |
| Helatag 892 | | | – | • | • | TT822OUT | 490 |

Date of issue: January 2019





| Material | Label type | Printing method | TrakMark DS (Double sided printing) | TT4030 | TT430 | Ribbon | Page |
|---|---|---|---|---|---|---|---|
| | | | TagPrint Pro 3.0 | | | | |
| **Helatag 1211** | | | – | • | • | TT822OUT | 493 |
| **Helatag 880** | | | – | • | • | TT822OUT | 493 |
| **Helatag 1216** | | | – | • | • | TT822OUT | 494 |
| **Helatag 1220** | | | – | • | • | TT822OUT TT122OUT | 499 |
| **Helatag 1221** | | | – | • | • | TT822OUT TT122OUT | 500 |
| **Helatag 1204** | | | – | • | • | TT822OUT | 501/502 |
| **Helatag 1206** | | | – | • | • | TT822OUT | 502/503 |
| **Helatag 1213** | | | – | • | • | TT822OUT TTRW | 507 |
| **Helatag 823** | | | – | • | • | TT822OUT | 508 |
| **Helatag 1203** | | | – | • | • | TT822OUT | 516 |
| **Helatag 1208** | | | – | • | • | TT822OUT | 517 |
| **Helatag 951** | | | – | • | • | TT822OUT | 518 |

| Material | Label type | Printing method | Page |
|---|---|---|---|
| **Helatag 1104** | | | 472 |
| **Helatag 1105** | | | 473 |
| **Helafix HFX** | | | 492 |
| **Helatag 1102** | | | 495/505 |
| **Helatag 1101** | | | 496/506 |

| Material | Label type | Printing method | Page |
|---|---|---|---|
| **Helatag 1103** | | | 504 |
| **Helatag 101** | | | 474 |
| **RiteOn material 1401** | | | 475 |
| **HELASIGN material 1402** | | | 476 |
| **HELASIGN material 270** | | | 497/498 |

Thermal transfer printing
Laser printing
Laser beam
Dot matrix printing
Manual writing/marking

Self-lamination label
Plain label
Continuous roll
Shrinkable marker
Identification tag

## Label Material Specifications

### Laser printing



| Material | 1101 | 1102 | 1103 | 1104 | 1105 |
|---|---|---|---|---|---|
| Material Description | Polyester, white | Polyester, yellow | Polyester, silver (SR) | Polyester self-laminating, super transparent with white write on area. | |
| Material Application | Permanent identification of assets and components, particularly suitable for identification of switch panels. | | Permanent identification of assets and components. Particularly suitable for type- and nameplates. | Self-laminating wire and cable marking, also suitable for flat cables. | |
| Thickness of Foil (TF) | 55 µm | | 53 µm | 25 µm | 50 µm |
| Operating Temperature | -40 °C to +150 °C | | | | |
| Curing Temperature | from 0 °C | | | from +10 °C | from +2 °C |
| Adhesive | Acrylic | | | | |
| Material Durability | 2 years external weathering (central European climate) | | | | |
| Label Type | | | | | |
| Certification / Specification | c UL us | | | UL | |
| Page | 496, 506 | 495, 505 | 504 | 472 | 473 |

### Dot matrix printing



| Material | 101 |
|---|---|
| Material Description | A self-laminating transparent vinyl material with acrylic adhesive. Write on area is white (WHCL). |
| Material Application | Used for wire marking round and flat ribbon cable. |
| Thickness of Foil (TF) | 80 µm |
| Operating Temperature | -40 °C to +80 °C |
| Curing Temperature | from +10 °C |
| Adhesive | Acrylic |
| Material Durability | 2 years external weathering (central European climate). |
| Label Type | |
| Page | 474 |

Plain labels  Self-laminating labels

Date of issue: January 2019

## Label Material Specifications

### Manual marking/writing



| Material | 270 | | 1401 | 1402 |
|---|---|---|---|---|
| Material Description | Type 270, yellow cotton cloth material (YE) | Type 270, yellow cotton cloth material | Self-laminating super transparent vinyl with write on area | |
| Material Application | Temporary/permanent identification of assets and components, particularly suitable for switch panels | | Self-laminating cable and wire marking (also suitable for flat ribbon cables). | |
| Thickness of Foil (TF) | 150 µm | | 80 µm | |
| Operating Temperature | -29 °C to +80 °C | | -40 °C to +80 °C | |
| Curing Temperature | from +10 °C | | | from +8 °C |
| Adhesive | Synthetic rubber | | Acrylic | |
| Material Durability | 1 year external weathering (central European climate) | | 2 years external weathering (central European climate) | 3 years external weathering (central European climate) |
| Label Type |  | |  | |
| Page | 497, 498 | | 475 | 476 |

### Thermal transfer printing



| Material | 323 | | 823 | 880 |
|---|---|---|---|---|
| Material Description | Polyvinylidene Fluoride, transparent with white or yellow write on area (WHCL/YECL), chemical resistant | Transparent polyvinylidene fluoride foil. The foil is excellent resistance against a big variety of chemicals and solvents. The material is flame retardent. | Type 823 is a white label material (WH) suitable for printing with thermal transfer printers. | Vinyl, matt yellow (YE) |
| Material Application | Self-laminating wire and cable identification for extremely dirty environments. | Protective laminate for labels in extreme dirty environments. Especially designed for military and aeronautic applications. | Electrostatic sensitive applications. | General Identification. Suitable for temporary and permanent identification. |
| Mech. Material Properties | permanent adhesive, extremely scratch resistant | use as protective over-laminate or clear printable label | according to ESD requirements of EIA 625 and 541 | Adhesive removable without traces |
| Thickness of Foil (TF) | 25 µm | | 51 µm | 80 µm |
| Operating Temperature | -40 °C to +140 °C, intermittent +160 °C | | -40 °C to +150 °C | -40 °C to +80 °C |
| Curing Temperature | from +10 °C | | | |
| Adhesive | Acrylic | | | |
| Material Durability | 5 years external weathering (central European climate). Excellent indoor use. | | 2 years external weathering (central European climate). Foil becomes slightly yellow when exposed to direct sunlight. | 2 years external weathering (central European climate) |
| Label Type |  |  | | |
| Certification / Specification | | | | |
| Page | 471 | 522 | 508 | 493 |

Date of issue: January 2019

## Label Material Specifications

### Thermal transfer printing



| Material | 892 | 951 | 1203 |
|---|---|---|---|
| Material Description | A smooth, white (WH) vinyl foil. Adhesive suitable for critical surfaces. | Polyester, silver (SR), tamper proof (951A) and Polyester transparent (CL) as overlaminate (951B). Set out of 2 materials. | Polyester, silver (SR), tamper proof, adhesive suitable for critical surfaces |
| Material Application | Use with IT identification ties, Q-tags and AT/IMP plates. | For automotive and electric industries for tamper-proof applications. Particularly suitable as type label according to norms of German Kraftfahrtbundesamt (KBA). | Electrical and electronic identification. Security and warranty identification of components, housings and nameplates. |
| Mech. Material Properties | Permanent adhesive, suitable for critical surfaces like low energy surfaces. | Tamper-proof identification, leaves small checkboard traces. | |
| Thickness of Foil (TF) | 83 µm | 36 µm, 25 µm | 53 µm |
| Operating Temperature | -40 °C to +80 °C | -40 °C to +150 °C | -40 °C to +120 °C |
| Curing Temperature | from 0 °C | from 0 °C (label), from +4 °C (laminate) | from +7 °C |
| Adhesive | Acrylic | | |
| Material Durability | 3 years external weathering (central European climate) | 2 years external weathering (central European climate) | |
| Label Type | | | |
| Certification / Specification | | | |
| Page | 490 | 518 | 516 |



| Material | 1204 | 1206 | 1208 | 1209 |
|---|---|---|---|---|
| Material Description | A silver-matt, highly heat resistant, reverse side aluminised Polyester. Adhesive suitable for critical surfaces. | Polyester, white (WH), temperature resistant with high adhesiveness | Acetate foil, white (WH), tamper proof | Vinyl, transparent with white write on area (WHCL) |
| Material Application | Electro and electronical identification. Permanent identification of components and housings with type labels. | Electro and electronical identification. Permanent identification of components with type labels. | General identification with need of manipulation detection | Self laminating cable and wire identification, also suitable for flat ribbon cables. |
| Mech. Material Properties | permanent adhesive, suitable for critical surfaces | | Tamper-proof, material will easily fragment if removed. | Due to its flexibility particularly suitable for identification of cables |
| Thickness of Foil (TF) | 55 µm | 50 µm | 56 µm | 90 µm |
| Operating Temperature | -40 °C to +150 °C | | | -20 °C to +80 °C |
| Curing Temperature | from 0 °C | | from +4 °C | from 0 °C |
| Adhesive | Acrylic | | | |
| Material Durability | 2 years external weathering (central European climate) | | | |
| Label Type | | | | |
| Certification / Specification | | | | |
| Page | 501, 502 | 502, 503 | 517 | 469, 470 |

Date of issue: January 2019

## Label Material Specifications

### Thermal transfer printing



| Material | 1211 | 1213 |
|---|---|---|
| Material Description | A smooth, gloss yellow (GSYE) painted vinyl foil. Adhesive suitable for critical surfaces. | Type 1213 is a coloured and very smooth vinyl material with excellent outdoor properties. It has nearly endless shelf life when used indoors. |
| Material Application | Identification of control panels. | Warehouse labeling, warning notices. Also General marking purposes. |
| Mech. Material Properties | permanent adhesive, suitable for critical surfaces | permanent adhesive, suitable for rough surfaces |
| Thickness of Foil (TF) | 84 µm | 66 µm |
| Operating Temperature | -20 °C to +80 °C | -40 °C to +90 °C |
| Curing Temperature | from +5 °C | from +8 °C |
| Adhesive | Acrylic | |
| Material Durability | 2 years external weathering (central European climate) | 7 years external weathering (central European climate) |
| Label Type |  | |
| Page | 493 | 507 |



| Material | 1216 | 1220 | 1221 |
|---|---|---|---|
| Material Description | Polyethylene, matt white (WH) | A white (WH), glossy polyester label mounted with a compressible foam carrier | A silver (SR), polyester label mounted with a compressible foam carrier |
| Material Application | Permanent identification of components and preassembled units within electrical industry as well as asset identification. | Suitable for indoor and outdoor applications on smooth and slightly rough surfaces. Especially used for the identification of electrical cabinets and electrical components. | |
| Mech. Material Properties | permanent adhesive, suitable for critical surfaces | Permanent adhesive with an elastic foam carrier | |
| Thickness of Foil (TF) | 110 µm | 625 µm | |
| Operating Temperature | -30 °C to +60 °C | -40 °C to +90 °C | |
| Curing Temperature | from 0 °C | from +4 °C | |
| Adhesive | Acrylic | | |
| Material Durability | 2 years external weathering (central European climate) | | |
| Label Type |  | | |
| Page | 494 | 499 | 500 |

Date of issue: January 2019

## Shrinkable markers, "Continuous Tube", thermal transfer

**TCGT – 3:1 Commercial Grade**

TCGT is a commercial grade 3:1 heat shrink marker material supplied as a continuous tube and printable on both sides. TCGT's polyolefin compound has good mechanical strength and resistance to organic solvents and chemicals. The surface of the tubing has been especially prepared so that print performance is excellent at all times. HellermannTyton's printer range allow users to create a high quality print. In addition it is possible to either perforate the tubing at pre-determined lengths or fully sever the markers.

### Features and benefits

- Shrink ratio 3:1
- Available in Black, Blue, Red, White, and Yellow
- Cable range from 39 mm to 1 mm
- Good mechanical strength and resistance to organic solvents and chemicals
- Highly flexible
- Fulfils CSA requirements
- Delivery in convenient storage boxes
- Easy label design with TagPrint Pro




*TCGT – five colours of printable tube to cover a wide range of diameters.*




*TCGT continuous tube – printable on both sides.*

**For size matrix please refer to page 433.**

| | |
|---|---|
| **MATERIAL** | Polyolefin, cross-linked (PO-X) |
| **Operating Temperature** | -55 °C to +135 °C |
| **Min. Shrink Temperature** | +90 °C |
| **Shrink Ratio** | 3:1 |
| **Recommended Ribbon Type** | TTRC+, TTDTHOUT, TTRW, TT822OUT8 |
| **Thermal Transfer Printer** | TT430, TT4030, TrakMark DS |






RoHS

| TYPE | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|
| **TCGT3-1BK** | 3.0 | 1.0 | 0.60 | 176 m | Black (BK) | 553-30352 |
| **TCGT3-1BU** | 3.0 | 1.0 | 0.60 | 176 m | Blue (BU) | 553-30353 |
| **TCGT3-1RD** | 3.0 | 1.0 | 0.60 | 176 m | Red (RD) | 553-30354 |
| **TCGT3-1WH** | 3.0 | 1.0 | 0.60 | 176 m | White (WH) | 553-30351 |
| **TCGT3-1YE** | 3.0 | 1.0 | 0.60 | 176 m | Yellow (YE) | 553-30350 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.
More colours on request.

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Shrinkable markers, "Continuous Tube", thermal transfer

**TCGT – 3:1 Commercial Grade**






| TYPE | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|
| **TCGT4.8-1.6BK** | 4.8 | 1.6 | 0.65 | 110 m | Black (BK) | 553-30452 |
| **TCGT4.8-1.6BU** | 4.8 | 1.6 | 0.65 | 110 m | Blue (BU) | 553-30453 |
| **TCGT4.8-1.6RD** | 4.8 | 1.6 | 0.65 | 110 m | Red (RD) | 553-30454 |
| **TCGT4.8-1.6WH** | 4.8 | 1.6 | 0.65 | 110 m | White (WH) | 553-30451 |
| **TCGT4.8-1.6YE** | 4.8 | 1.6 | 0.65 | 110 m | Yellow (YE) | 553-30450 |
| **TCGT6-2BK** | 6.0 | 2.0 | 0.70 | 110 m | Black (BK) | 553-30652 |
| **TCGT6-2BU** | 6.0 | 2.0 | 0.70 | 110 m | Blue (BU) | 553-30653 |
| **TCGT6-2RD** | 6.0 | 2.0 | 0.70 | 110 m | Red (RD) | 553-30654 |
| **TCGT6-2WH** | 6.0 | 2.0 | 0.70 | 110 m | White (WH) | 553-30651 |
| **TCGT6-2YE** | 6.0 | 2.0 | 0.70 | 110 m | Yellow (YE) | 553-30650 |
| **TCGT9-3BK** | 9.0 | 3.0 | 0.80 | 72 m | Black (BK) | 553-30952 |
| **TCGT9-3BU** | 9.0 | 3.0 | 0.80 | 72 m | Blue (BU) | 553-30953 |
| **TCGT9-3RD** | 9.0 | 3.0 | 0.80 | 72 m | Red (RD) | 553-30954 |
| **TCGT9-3WH** | 9.0 | 3.0 | 0.80 | 72 m | White (WH) | 553-30951 |
| **TCGT9-3YE** | 9.0 | 3.0 | 0.80 | 72 m | Yellow (YE) | 553-30950 |
| **TCGT12-4BK** | 12.0 | 4.0 | 0.85 | 54 m | Black (BK) | 553-31252 |
| **TCGT12-4BU** | 12.0 | 4.0 | 0.85 | 54 m | Blue (BU) | 553-31253 |
| **TCGT12-4RD** | 12.0 | 4.0 | 0.85 | 54 m | Red (RD) | 553-31254 |
| **TCGT12-4WH** | 12.0 | 4.0 | 0.85 | 54 m | White (WH) | 553-31251 |
| **TCGT12-4YE** | 12.0 | 4.0 | 0.85 | 54 m | Yellow (YE) | 553-31250 |
| **TCGT18-6BK** | 18.0 | 6.0 | 1.00 | 26 m | Black (BK) | 553-31852 |
| **TCGT18-6BU** | 18.0 | 6.0 | 1.00 | 26 m | Blue (BU) | 553-31853 |
| **TCGT18-6RD** | 18.0 | 6.0 | 1.00 | 26 m | Red (RD) | 553-31854 |
| **TCGT18-6WH** | 18.0 | 6.0 | 1.00 | 26 m | White (WH) | 553-31851 |
| **TCGT18-6YE** | 18.0 | 6.0 | 1.00 | 26 m | Yellow (YE) | 553-31850 |
| **TCGT24-8BK** | 24.0 | 8.0 | 1.20 | 26 m | Black (BK) | 553-32452 |
| **TCGT24-8BU** | 24.0 | 8.0 | 1.20 | 26 m | Blue (BU) | 553-32453 |
| **TCGT24-8RD** | 24.0 | 8.0 | 1.20 | 26 m | Red (RD) | 553-32454 |
| **TCGT24-8WH** | 24.0 | 8.0 | 1.20 | 26 m | White (WH) | 553-32451 |
| **TCGT24-8YE** | 24.0 | 8.0 | 1.20 | 26 m | Yellow (YE) | 553-32450 |
| **TCGT39-13BK** | 39.0 | 13.0 | 1.25 | 10 m | Black (BK) | 553-33952 |
| **TCGT39-13BU** | 39.0 | 13.0 | 1.25 | 10 m | Blue (BU) | 553-33953 |
| **TCGT39-13RD** | 39.0 | 13.0 | 1.25 | 10 m | Red (RD) | 553-33954 |
| **TCGT39-13WH** | 39.0 | 13.0 | 1.25 | 10 m | White (WH) | 553-33951 |
| **TCGT39-13YE** | 39.0 | 13.0 | 1.25 | 10 m | Yellow (YE) | 553-33950 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.
More colours on request.

For product specific approvals and specifications please refer to the Appendix.

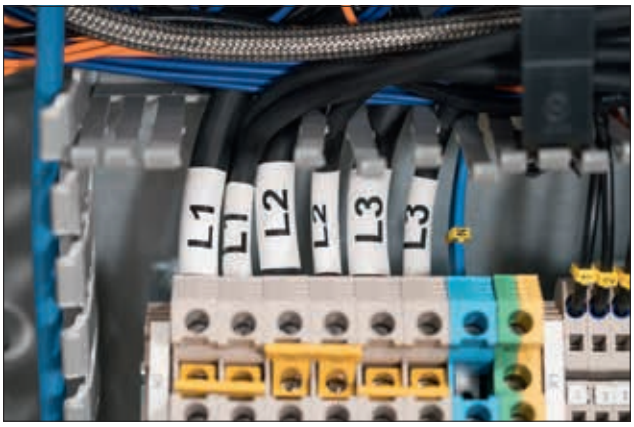
## Shrinkable markers "Continuous Tube", thermal transfer

**TULT – 3:1 Military and Electronics**

TULT is a UL recognized 3:1 heat shrink marker material supplied as a continuous tube and printable on both sides. TULT's polyolefin compound has good mechanical strength and resistance to organic solvents and chemicals. The surface of the tubing has been especially prepared so that print performance is excellent at all times. HellermannTyton's printer range allow users to create a high quality print. In addition it is possible to either perforate the tubing at pre-determined lengths or fully sever the markers.

### Features and benefits

- Shrink ratio 3:1
- Available in black, blue, red, white and yellow
- Cable range from 39 mm to 1 mm
- Good mechanical strength and resistance to organic solvents and chemicals
- Highly flexible
- Delivery in convenient storage boxes




*TULT – good mechanical strength and resistance to organic solvents and chemicals.*




*TULT – five colours of UL recognised printable tube to cover a wide range of diameters.*

**For size matrix please refer to page 433.**

| | |
|---|---|
| **MATERIAL** | Polyolefin, cross-linked (PO-X) |
| **Operating Temperature** | -55 °C to +135 °C |
| **Min. Shrink Temperature** | +90 °C |
| **Shrink Ratio** | 3:1 |
| **Recommended Ribbon Type** | TTRC+, TTDTHOUT, TTRW, TT822OUT8 |
| **Thermal Transfer Printer** | TT430, TT4030, TrakMark DS |

RoHS




| TYPE | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|
| **TULT3-1BK** | 3.0 | 1.0 | 0.60 | 176 m | Black (BK) | 553-40352 |
| **TULT3-1BU** | 3.0 | 1.0 | 0.60 | 176 m | Blue (BU) | 553-40353 |
| **TULT3-1RD** | 3.0 | 1.0 | 0.60 | 176 m | Red (RD) | 553-40354 |
| **TULT3-1WH** | 3.0 | 1.0 | 0.60 | 176 m | White (WH) | 553-40351 |
| **TULT3-1YE** | 3.0 | 1.0 | 0.60 | 176 m | Yellow (YE) | 553-40350 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. More colours on request.

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Shrinkable markers "Continuous Tube", thermal transfer

**TULT – 3:1 Military and Electronics**






| TYPE | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|
| **TULT4.8-1.6BK** | 4.8 | 1.6 | 0.65 | 110 m | Black (BK) | 553-40452 |
| **TULT4.8-1.6BU** | 4.8 | 1.6 | 0.65 | 110 m | Blue (BU) | 553-40453 |
| **TULT4.8-1.6RD** | 4.8 | 1.6 | 0.65 | 110 m | Red (RD) | 553-40454 |
| **TULT4.8-1.6WH** | 4.8 | 1.6 | 0.65 | 110 m | White (WH) | 553-40451 |
| **TULT4.8-1.6YE** | 4.8 | 1.6 | 0.65 | 110 m | Yellow (YE) | 553-40450 |
| **TULT6-2BK** | 6.0 | 2.0 | 0.70 | 110 m | Black (BK) | 553-40652 |
| **TULT6-2BU** | 6.0 | 2.0 | 0.70 | 110 m | Blue (BU) | 553-40653 |
| **TULT6-2RD** | 6.0 | 2.0 | 0.70 | 110 m | Red (RD) | 553-40654 |
| **TULT6-2WH** | 6.0 | 2.0 | 0.70 | 110 m | White (WH) | 553-40651 |
| **TULT6-2YE** | 6.0 | 2.0 | 0.70 | 110 m | Yellow (YE) | 553-40650 |
| **TULT9-3BK** | 9.0 | 3.0 | 0.80 | 72 m | Black (BK) | 553-40952 |
| **TULT9-3BU** | 9.0 | 3.0 | 0.80 | 72 m | Blue (BU) | 553-40953 |
| **TULT9-3RD** | 9.0 | 3.0 | 0.80 | 72 m | Red (RD) | 553-40954 |
| **TULT9-3WH** | 9.0 | 3.0 | 0.80 | 72 m | White (WH) | 553-40951 |
| **TULT9-3YE** | 9.0 | 3.0 | 0.80 | 72 m | Yellow (YE) | 553-40950 |
| **TULT12-4BK** | 12.0 | 4.0 | 0.85 | 54 m | Black (BK) | 553-41252 |
| **TULT12-4BU** | 12.0 | 4.0 | 0.85 | 54 m | Blue (BU) | 553-41253 |
| **TULT12-4RD** | 12.0 | 4.0 | 0.85 | 54 m | Red (RD) | 553-41254 |
| **TULT12-4WH** | 12.0 | 4.0 | 0.85 | 54 m | White (WH) | 553-41251 |
| **TULT12-4YE** | 12.0 | 4.0 | 0.85 | 54 m | Yellow (YE) | 553-41250 |
| **TULT18-6BK** | 18.0 | 6.0 | 1.00 | 26 m | Black (BK) | 553-41852 |
| **TULT18-6BU** | 18.0 | 6.0 | 1.00 | 26 m | Blue (BU) | 553-41853 |
| **TULT18-6RD** | 18.0 | 6.0 | 1.00 | 26 m | Red (RD) | 553-41854 |
| **TULT18-6WH** | 18.0 | 6.0 | 1.00 | 26 m | White (WH) | 553-41851 |
| **TULT18-6YE** | 18.0 | 6.0 | 1.00 | 26 m | Yellow (YE) | 553-41850 |
| **TULT24-8BK** | 24.0 | 8.0 | 1.20 | 26 m | Black (BK) | 553-42452 |
| **TULT24-8BU** | 24.0 | 8.0 | 1.20 | 26 m | Blue (BU) | 553-42453 |
| **TULT24-8RD** | 24.0 | 8.0 | 1.20 | 26 m | Red (RD) | 553-42454 |
| **TULT24-8WH** | 24.0 | 8.0 | 1.20 | 26 m | White (WH) | 553-42451 |
| **TULT24-8YE** | 24.0 | 8.0 | 1.20 | 26 m | Yellow (YE) | 553-42450 |
| **TULT39-13BK** | 39.0 | 13.0 | 1.25 | 10 m | Black (BK) | 553-43952 |
| **TULT39-13BU** | 39.0 | 13.0 | 1.25 | 10 m | Blue (BU) | 553-43953 |
| **TULT39-13RD** | 39.0 | 13.0 | 1.25 | 10 m | Red (RD) | 553-43954 |
| **TULT39-13WH** | 39.0 | 13.0 | 1.25 | 10 m | White (WH) | 553-43951 |
| **TULT39-13YE** | 39.0 | 13.0 | 1.25 | 10 m | Yellow (YE) | 553-43950 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. More colours on request.

For product specific approvals and specifications please refer to the Appendix.

## Shrinkable markers "Ladder Style", thermal transfer

**TULT DS – 3:1 Military and Electronics "Ladder Style"**

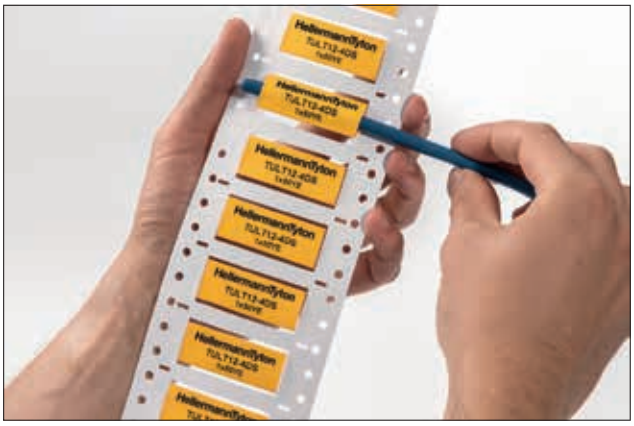
TULT DS is a UL recognised 3:1 heat shrink marker material pre-cut and formatted into a convenient "ladder" system. This pre-cut format not only allows printing on both sides of the marker but the user can also easily choose and pick each required marker. TULT's polyolefin compound has good mechanical strength and resistance to organic solvents and chemicals. The surface of the tubing has been especially prepared so that print performance is excellent at all times using HellermannTyton's printer range.

**Features and benefits**

- Shrink ratio 3:1
- 50 mm, 25 mm and 16 mm pre-cut marker options as standard, other lengths available on request
- Available in white or yellow
- Good mechanical strength and resistance to organic solvents and chemicals
- Highly flexible
- Delivery in convenient storage boxes

**For size matrix please refer to page 433.**

One Step to the Web!



*Shrinkable markers TULT DS for military and electronics industry.*

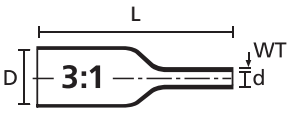



*TULT DS – shrinkable markers with good mechanical strength for a wide range of applications.*

| | |
|---|---|
| **MATERIAL** | Polyolefin, cross-linked (PO-X) |
| **Operating Temperature** | -55 °C to +135 °C |
| **Min. Shrink Temperature** | +90 °C |
| **Shrink Ratio** | 3:1 |
| **Recommended Ribbon Type** | TTDTHOUT |
| **Thermal Transfer Printer** | TT430, TT4030, TrakMark DS |








RoHS

| TYPE | Supplied Ø D min. | Recov. Ø d max. | Length (L) | Wall (WT) | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|
| **TULT2.4-0.8DS-2x25WH** | 2.4 | 0.8 | 25.0 | 0.73 | 2,000 pcs. | White (WH) | 553-71002 |
| **TULT2.4-0.8DS-2x25YE** | 2.4 | 0.8 | 25.0 | 0.73 | 2,000 pcs. | Yellow (YE) | 553-71003 |
| **TULT2.4-0.8DS-1x50WH** | 2.4 | 0.8 | 50.0 | 0.73 | 1,000 pcs. | White (WH) | 553-71000 |
| **TULT2.4-0.8DS-1x50YE** | 2.4 | 0.8 | 50.0 | 0.73 | 1,000 pcs. | Yellow (YE) | 553-71001 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

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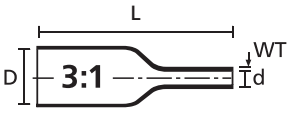
For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Shrinkable markers "Ladder Style", thermal transfer

**TULT DS – 3:1 Military and Electronics "Ladder Style"**






| TYPE | Supplied Ø D min. | Recov. Ø d max. | Length (L) | Wall (WT) | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|
| **TULT3-1DS-2x25WH** | 3.0 | 1.0 | 25.0 | 0.60 | 2,000 pcs. | White (WH) | 553-71008 |
| **TULT3-1DS-2x25YE** | 3.0 | 1.0 | 25.0 | 0.60 | 2,000 pcs. | Yellow (YE) | 553-71009 |
| **TULT3-1DS-1x50WH** | 3.0 | 1.0 | 50.0 | 0.60 | 1,000 pcs. | White (WH) | 553-71006 |
| **TULT3-1DS-1x50YE** | 3.0 | 1.0 | 50.0 | 0.60 | 1,000 pcs. | Yellow (YE) | 553-71007 |
| **TULT4.8-1.6DS-2x25WH** | 4.8 | 1.6 | 25.0 | 0.66 | 2,000 pcs. | White (WH) | 553-71014 |
| **TULT4.8-1.6DS-2x25YE** | 4.8 | 1.6 | 25.0 | 0.66 | 2,000 pcs. | Yellow (YE) | 553-71015 |
| **TULT4.8-1.6DS-1x50WH** | 4.8 | 1.6 | 50.0 | 0.66 | 1,000 pcs. | White (WH) | 553-71012 |
| **TULT4.8-1.6DS-1x50YE** | 4.8 | 1.6 | 50.0 | 0.66 | 1,000 pcs. | Yellow (YE) | 553-71013 |
| **TULT6-2DS-2x25WH** | 6.0 | 2.0 | 25.0 | 0.69 | 2,000 pcs. | White (WH) | 553-71020 |
| **TULT6-2DS-2x25YE** | 6.0 | 2.0 | 25.0 | 0.69 | 2,000 pcs. | Yellow (YE) | 553-71021 |
| **TULT6-2DS-1x50WH** | 6.0 | 2.0 | 50.0 | 0.69 | 1,000 pcs. | White (WH) | 553-71018 |
| **TULT6-2DS-1x50YE** | 6.0 | 2.0 | 50.0 | 0.69 | 1,000 pcs. | Yellow (YE) | 553-71019 |
| **TULT9-3DS-2x25WH** | 9.0 | 3.0 | 25.0 | 0.79 | 1,000 pcs. | White (WH) | 553-71026 |
| **TULT9-3DS-2x25YE** | 9.0 | 3.0 | 25.0 | 0.79 | 1,000 pcs. | Yellow (YE) | 553-71027 |
| **TULT9-3DS-1x50WH** | 9.0 | 3.0 | 50.0 | 0.79 | 500 pcs. | White (WH) | 553-71024 |
| **TULT9-3DS-1x50YE** | 9.0 | 3.0 | 50.0 | 0.79 | 500 pcs. | Yellow (YE) | 553-71025 |
| **TULT12-4DS-2x25WH** | 12.0 | 4.0 | 25.0 | 0.84 | 1,000 pcs. | White (WH) | 553-71032 |
| **TULT12-4DS-2x25YE** | 12.0 | 4.0 | 25.0 | 0.84 | 1,000 pcs. | Yellow (YE) | 553-71033 |
| **TULT12-4DS-1x50WH** | 12.0 | 4.0 | 50.0 | 0.84 | 500 pcs. | White (WH) | 553-71030 |
| **TULT12-4DS-1x50YE** | 12.0 | 4.0 | 50.0 | 0.84 | 500 pcs. | Yellow (YE) | 553-71031 |
| **TULT18-6DS-2x25WH** | 18.0 | 6.0 | 25.0 | 1.00 | 1,000 pcs. | White (WH) | 553-71038 |
| **TULT18-6DS-2x25YE** | 18.0 | 6.0 | 25.0 | 1.00 | 1,000 pcs. | Yellow (YE) | 553-71039 |
| **TULT18-6DS-1x50WH** | 18.0 | 6.0 | 50.0 | 1.00 | 500 pcs. | White (WH) | 553-71036 |
| **TULT18-6DS-1x50YE** | 18.0 | 6.0 | 50.0 | 1.00 | 500 pcs. | Yellow (YE) | 553-71037 |
| **TULT24-8DS-2x25WH** | 24.0 | 8.0 | 25.0 | 1.20 | 500 pcs. | White (WH) | 553-71044 |
| **TULT24-8DS-2x25YE** | 24.0 | 8.0 | 25.0 | 1.20 | 500 pcs. | Yellow (YE) | 553-71045 |
| **TULT24-8DS-1x50WH** | 24.0 | 8.0 | 50.0 | 1.20 | 250 pcs. | White (WH) | 553-71042 |
| **TULT24-8DS-1x50YE** | 24.0 | 8.0 | 50.0 | 1.20 | 250 pcs. | Yellow (YE) | 553-71043 |
| **TULT39-13DS-2x25WH** | 39.0 | 13.0 | 25.0 | 1.25 | 500 pcs. | White (WH) | 553-71050 |
| **TULT39-13DS-2x25YE** | 39.0 | 13.0 | 25.0 | 1.25 | 500 pcs. | Yellow (YE) | 553-71051 |
| **TULT39-13DS-1x50WH** | 39.0 | 13.0 | 50.0 | 1.25 | 250 pcs. | White (WH) | 553-71048 |
| **TULT39-13DS-1x50YE** | 39.0 | 13.0 | 50.0 | 1.25 | 250 pcs. | Yellow (YE) | 553-71049 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

Date of issue: January 2019

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For product specific approvals and specifications please refer to the Appendix.

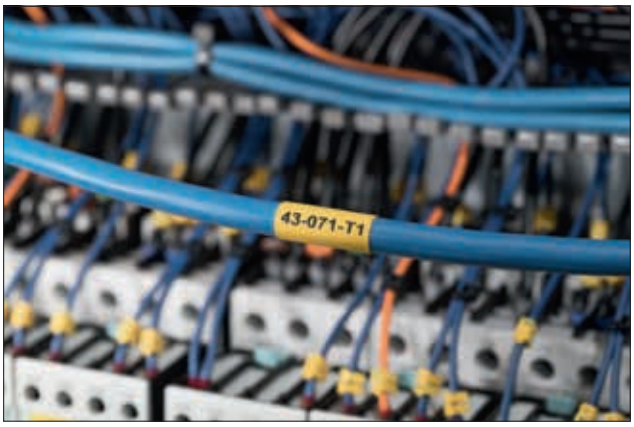
## Shrinkable markers "Continuous Tube", thermal transfer

**TLFX – 2:1 Rail Limited Fire Hazard**

TLFX is a halogen free European rail approved 2:1 heat shrink marker material supplied as a continuous tube and printable on both sides. Special material properties show low smoke propagation, density and toxicity. The tubing has been especially prepared so that print performance is excellent at all times. HellermannTyton's printer range allow users to create a high quality print. In addition it is possible to either perforate the tubing at pre-determined lengths or fully sever the markers.

### Features and benefits

- Shrink ratio 2:1
- Halogen Free
- Low smoke propagation, density and toxicity
- High Oxygen Index value (36.5 %)
- Available in yellow or white
- Cable range 50.8 mm to 1.2 mm
- Delivery in convenient storage boxes



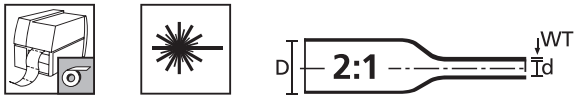

*TLFX- high performance halogen free heat shrink tube.*



*TLFX – European rail approved heat shrink marker material.*

| | |
|---|---|
| **MATERIAL** | Polyolefin, cross-linked (PO-X) |
| **Operating Temperature** | -55 °C to +105 °C |
| **Min. Shrink Temperature** | +100 °C |
| **Shrink Ratio** | 2:1 |
| **Recommended Ribbon Type** | TTDTHOUT |
| **Thermal Transfer Printer** | TT430, TT4030, TrakMark DS |
| **EN 45545-2 Classification** | R22 HL3, R23 HL3 |

HF ✓ LFH ✓
RoHS ✓




| TYPE | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|
| **TLFX24WH** | 2.4 | 1.2 | 0.57 | 144 m | White (WH) | 554-51000 |
| **TLFX24YE** | 2.4 | 1.2 | 0.57 | 144 m | Yellow (YE) | 554-51001 |
| **TLFX32WH** | 3.2 | 1.6 | 0.58 | 126 m | White (WH) | 554-51100 |
| **TLFX32YE** | 3.2 | 1.6 | 0.58 | 126 m | Yellow (YE) | 554-51101 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

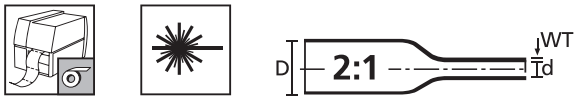
EN 45545-2 NF F

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Shrinkable markers "Continuous Tube", thermal transfer

**TLFX – 2:1 Rail Limited Fire Hazard**




| TYPE | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|
| **TLFX48WH** | 4.8 | 2.4 | 0.61 | 108 m | White (WH) | 554-51200 |
| **TLFX48YE** | 4.8 | 2.4 | 0.61 | 108 m | Yellow (YE) | 554-51201 |
| **TLFX64WH** | 6.4 | 3.2 | 0.61 | 90 m | White (WH) | 554-51300 |
| **TLFX64YE** | 6.4 | 3.2 | 0.61 | 90 m | Yellow (YE) | 554-51301 |
| **TLFX95WH** | 9.5 | 4.8 | 0.66 | 72 m | White (WH) | 554-51400 |
| **TLFX95YE** | 9.5 | 4.8 | 0.66 | 72 m | Yellow (YE) | 554-51401 |
| **TLFX127WH** | 12.7 | 6.4 | 0.68 | 54 m | White (WH) | 554-51500 |
| **TLFX127YE** | 12.7 | 6.4 | 0.68 | 54 m | Yellow (YE) | 554-51501 |
| **TLFX190WH** | 19.0 | 9.5 | 0.69 | 30 m | White (WH) | 554-51600 |
| **TLFX190YE** | 19.0 | 9.5 | 0.69 | 30 m | Yellow (YE) | 554-51601 |
| **TLFX254WH** | 25.4 | 12.7 | 0.69 | 30 m | White (WH) | 554-51700 |
| **TLFX254YE** | 25.4 | 12.7 | 0.69 | 30 m | Yellow (YE) | 554-51701 |
| **TLFX381WH** | 38.1 | 19.0 | 0.70 | 13 m | White (WH) | 554-51800 |
| **TLFX381YE** | 38.1 | 19.0 | 0.70 | 13 m | Yellow (YE) | 554-51801 |
| **TLFX508WH** | 50.8 | 25.4 | 0.73 | 10 m | White (WH) | 554-50900 |
| **TLFX508YE** | 50.8 | 25.4 | 0.73 | 10 m | Yellow (YE) | 554-50901 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

EN 45545-2 NF F

For product specific approvals and specifications please refer to the Appendix.

## Shrinkable markers "Ladder Style", thermal transfer

**TLFX DS – 2:1 Rail Limited Fire Hazard "Ladder Style"**

TLFX DS is a halogen free European rail approved 2:1 heat shrink marker material supplied pre-cut and formatted into a convenient "ladder" system. Special material properties show low smoke propagation, density and toxicity. This pre-cut format not only allows printing on both sides of the marker but the user can also easily choose and pick each required marker. Special material properties show low smoke propagation, density and toxicity. The tubing has been especially prepared so that the print performance is excellent at all times using HellermannTyton's printer range.



*Shrinkable rail approved markers TLFX DS.*

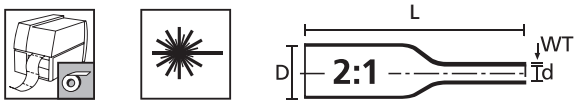
### Features and benefits

- Shrink ratio 2:1
- Halogen Free
- Low smoke propagation, density and toxicity
- High Oxygen Index value (35.4 %)
- 50 mm, 25 mm and 16 mm pre-cut marker options as standard, other lengths available on request
- Available in yellow or white
- Cable range 38.1 mm to 1.2 mm
- Delivery in convenient storage boxes

| | |
|---|---|
| **MATERIAL** | Polyolefin, cross-linked (PO-X) |
| **Operating Temperature** | -55 °C to +105 °C |
| **Min. Shrink Temperature** | +100 °C |
| **Shrink Ratio** | 2:1 |
| **Recommended Ribbon Type** | TTDTHOUT |
| **Thermal Transfer Printer** | TT430, TT4030, TrakMark DS |
| **EN 45545-2 Classification** | R22 HL3, R23 HL3 |

*One Step to the Web!*

HF ✓ LFH ✓
RoHS ✓




**For size matrix please refer to page 433.**

| TYPE | Supplied Ø D min. | Recov. Ø d max. | Length (L) | Wall (WT) | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|
| **TLFX24DS-2x25WH** | 2.4 | 1.2 | 25.0 | 0.52 | 10,000 pcs. | White (WH) | 553-60020 |
| **TLFX24DS-2x25YE** | 2.4 | 1.2 | 25.0 | 0.52 | 10,000 pcs. | Yellow (YE) | 553-60029 |
| **TLFX24DS-1x50WH** | 2.4 | 1.2 | 50.0 | 0.52 | 5,000 pcs. | White (WH) | 553-60000 |
| **TLFX24DS-1x50YE** | 2.4 | 1.2 | 50.0 | 0.52 | 5,000 pcs. | Yellow (YE) | 553-60010 |
| **TLFX32DS-2x25WH** | 3.2 | 1.6 | 25.0 | 0.64 | 10,000 pcs. | White (WH) | 553-60021 |
| **TLFX32DS-2x25YE** | 3.2 | 1.6 | 25.0 | 0.64 | 10,000 pcs. | Yellow (YE) | 553-60030 |
| **TLFX32DS-1x50WH** | 3.2 | 1.6 | 50.0 | 0.64 | 5,000 pcs. | White (WH) | 553-60001 |
| **TLFX32DS-1x50YE** | 3.2 | 1.6 | 50.0 | 0.64 | 5,000 pcs. | Yellow (YE) | 553-60011 |
| **TLFX48DS-2x25WH** | 4.8 | 2.4 | 25.0 | 0.64 | 10,000 pcs. | White (WH) | 553-60022 |
| **TLFX48DS-2x25YE** | 4.8 | 2.4 | 25.0 | 0.64 | 10,000 pcs. | Yellow (YE) | 553-60031 |
| **TLFX48DS-1x50WH** | 4.8 | 2.4 | 50.0 | 0.64 | 5,000 pcs. | White (WH) | 553-60002 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

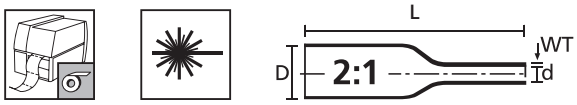
EN 45545-2 ASTM NF F UNI CEI

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Shrinkable markers "Ladder Style", thermal transfer

**TLFX DS – 2:1 Rail Limited Fire Hazard "Ladder Style"**




| TYPE | Supplied Ø D min. | Recov. Ø d max. | Length (L) | Wall (WT) | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|
| **TLFX48DS-1x50YE** | 4.8 | 2.4 | 50.0 | 0.64 | 5,000 pcs. | Yellow (YE) | 553-60012 |
| **TLFX64DS-2x25WH** | 6.4 | 3.2 | 25.0 | 0.73 | 6,000 pcs. | White (WH) | 553-60023 |
| **TLFX64DS-2x25YE** | 6.4 | 3.2 | 25.0 | 0.73 | 6,000 pcs. | Yellow (YE) | 553-60032 |
| **TLFX64DS-1x50WH** | 6.4 | 3.2 | 50.0 | 0.73 | 3,000 pcs. | White (WH) | 553-60003 |
| **TLFX64DS-1x50YE** | 6.4 | 3.2 | 50.0 | 0.73 | 3,000 pcs. | Yellow (YE) | 553-60013 |
| **TLFX95DS-2x25WH** | 9.5 | 4.8 | 25.0 | 0.70 | 5,000 pcs. | White (WH) | 553-60024 |
| **TLFX95DS-2x25YE** | 9.5 | 4.8 | 25.0 | 0.70 | 5,000 pcs. | Yellow (YE) | 553-60033 |
| **TLFX95DS-1x50WH** | 9.5 | 4.8 | 50.0 | 0.70 | 2,500 pcs. | White (WH) | 553-60004 |
| **TLFX95DS-1x50YE** | 9.5 | 4.8 | 50.0 | 0.70 | 2,500 pcs. | Yellow (YE) | 553-60014 |
| **TLFX127DS-2x25WH** | 12.7 | 6.4 | 25.0 | 0.70 | 3,000 pcs. | White (WH) | 553-60025 |
| **TLFX127DS-2x25YE** | 12.7 | 6.4 | 25.0 | 0.70 | 3,000 pcs. | Yellow (YE) | 553-60034 |
| **TLFX127DS-1x50WH** | 12.7 | 6.4 | 50.0 | 0.70 | 1,500 pcs. | White (WH) | 553-60005 |
| **TLFX127DS-1x50YE** | 12.7 | 6.4 | 50.0 | 0.70 | 1,500 pcs. | Yellow (YE) | 553-60015 |
| **TLFX190DS-2x25WH** | 19.0 | 9.5 | 25.0 | 0.78 | 3,000 pcs. | White (WH) | 553-60026 |
| **TLFX190DS-2x25YE** | 19.0 | 9.5 | 25.0 | 0.78 | 3,000 pcs. | Yellow (YE) | 553-60035 |
| **TLFX190DS-1x50WH** | 19.0 | 9.5 | 50.0 | 0.78 | 1,500 pcs. | White (WH) | 553-60006 |
| **TLFX190DS-1x50YE** | 19.0 | 9.5 | 50.0 | 0.78 | 1,500 pcs. | Yellow (YE) | 553-60016 |
| **TLFX254DS-2x25WH** | 25.4 | 12.7 | 25.0 | 0.93 | 2,000 pcs. | White (WH) | 553-60027 |
| **TLFX254DS-2x25YE** | 25.4 | 12.7 | 25.0 | 0.93 | 2,000 pcs. | Yellow (YE) | 553-60036 |
| **TLFX254DS-1x50WH** | 25.4 | 12.7 | 50.0 | 0.93 | 1,000 pcs. | White (WH) | 553-60007 |
| **TLFX254DS-1x50YE** | 25.4 | 12.7 | 50.0 | 0.93 | 1,000 pcs. | Yellow (YE) | 553-60017 |
| **TLFX381DS-2x25WH** | 38.1 | 19.1 | 25.0 | 0.98 | 1,000 pcs. | White (WH) | 553-60028 |
| **TLFX381DS-2x25YE** | 38.1 | 19.1 | 25.0 | 0.98 | 1,000 pcs. | Yellow (YE) | 553-60037 |
| **TLFX381DS-1x50WH** | 38.1 | 19.1 | 50.0 | 0.98 | 500 pcs. | White (WH) | 553-60008 |
| **TLFX381DS-1x50YE** | 38.1 | 19.1 | 50.0 | 0.98 | 500 pcs. | Yellow (YE) | 553-60018 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

EN 45545-2 ASTM NF F UNI CEI

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

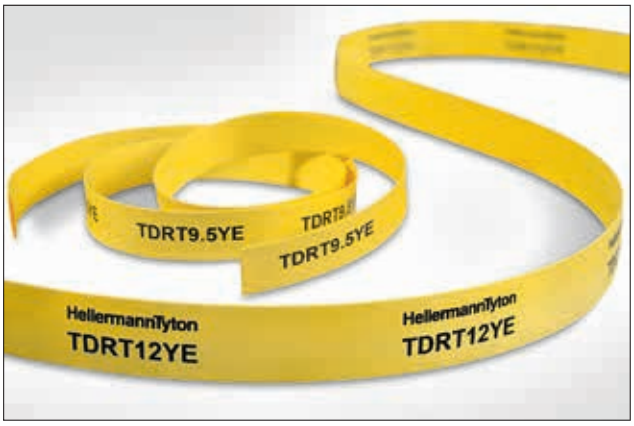
## Shrinkable markers "Continuous Tube", thermal transfer

**TDRT – 2:1 Rail Diesel Resistant**

TDRT is a diesel resistant 2:1 heat shrink material which is rail approved. It is supplied as a continuous tube and printable on both sides.

The TDRT material is ideal where resistance to diesel, organic fluids, common fuels, lubricants and solvents properties are required, e.g. in mass transit, aerospace, marine and industrial installations. The tubing has been especially prepared so that the print performance is excellent at all times using HellermannTyton's printer range. In addition it is possible to either perforate the tubing at pre-determined lengths or fully sever the markers.

The material is also especially formulated to be printable with laser beam printers.



*Certified diesel resistant heatshrink markers TDRT.*

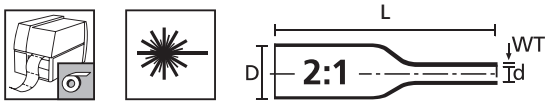
**Features and benefits**

- Shrink ratio 2:1
- Resistant to diesel and common fluids
- Available in yellow as standard and white on request
- Delivery in convenient storage boxes

| | |
|---|---|
| **MATERIAL** | Polyolefin, cross-linked (PO-X) |
| **Operating Temperature** | -55 °C to +135 °C |
| **Min. Shrink Temperature** | +120 °C |
| **Shrink Ratio** | 2:1 |
| **Recommended Ribbon Type** | TTDTHOUT |
| **Thermal Transfer Printer** | TT430, TT4030, TrakMark DS |

LFH ✓ RoHS ✓

**For size matrix please refer to page 433.**




| TYPE | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|
| **TDRT2.4YE** | 2.79 | 1.18 | 0.49 | 110 m | Yellow (YE) | 553-62020 |
| **TDRT3.2YE** | 3.64 | 1.59 | 0.51 | 110 m | Yellow (YE) | 553-62021 |
| **TDRT4.8YE** | 5.26 | 2.36 | 0.54 | 110 m | Yellow (YE) | 553-62022 |
| **TDRT6.4YE** | 6.92 | 3.18 | 0.56 | 110 m | Yellow (YE) | 553-62023 |
| **TDRT9.5YE** | 10.20 | 4.75 | 0.59 | 72 m | Yellow (YE) | 553-62024 |
| **TDRT12YE** | 13.5 | 6.35 | 0.60 | 54 m | Yellow (YE) | 553-62030 |
| **TDRT18YE** | 20.1 | 9.53 | 0.62 | 26 m | Yellow (YE) | 553-62031 |
| **TDRT25YE** | 26.7 | 12.7 | 0.63 | 26 m | Yellow (YE) | 553-62032 |
| **TDRT38YE** | 39.8 | 19.1 | 0.64 | 13 m | Yellow (YE) | 553-62033 |
| **TDRT51YE** | 53.0 | 25.4 | 0.64 | 10 m | Yellow (YE) | 553-62034 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

Date of issue: January 2019

## Shrinkable markers "Ladder Style", thermal transfer

**TDRT DS – 2:1 Rail Diesel Resistant "Ladder Style"**

TDRT DS is a diesel resistant 2:1 heat shrink material which is rail approved. The material is pre-cut and formatted into a convenient "ladder" system that allows printing on both sides of the marker.

The TDRT DS material is ideal where resistance to diesel, organic fluids, common fuels, lubricants and solvents properties are required, e.g. in mass transit, aerospace, marine and industrial installations. This pre-cut format not only allows printing on both sides of the marker but the user can also easily choose and pick each required marker. The tubing has been especially prepared so that the print performance is excellent at all times using HellermannTyton's printer range.

The material is also especially formulated to be printable with laser beam printers.



*Shrinkable rail diesel resistant markers TDRT DS.*

**Features and benefits**

- Shrink ratio 2:1
- Resistant to diesel and common fluids
- 50 mm and 25 mm lengths are standard, other lengths available on request
- Available in yellow as standard and white on request
- Delivery in convenient storage boxes



*Identification markers especially for railway applications.*

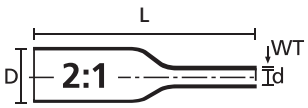
*One Step to the Web!*

| | |
|---|---|
| **MATERIAL** | Polyolefin, cross-linked (PO-X) |
| **Operating Temperature** | -55 °C to +135 °C |
| **Min. Shrink Temperature** | +120 °C |
| **Shrink Ratio** | 2:1 |
| **Recommended Ribbon Type** | TTDTHOUT |
| **Thermal Transfer Printer** | TT430, TT4030, TrakMark DS |

LFH ✓ RoHS ✓








**For size matrix please refer to page 433.**

| TYPE | Supplied Ø D min. | Recov. Ø d max. | Length (L) | Wall (WT) | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|
| **TDRT2.4DS-2X25YE** | 2.79 | 1.18 | 25.0 | 0.49 | 10,000 pcs. | Yellow (YE) | 553-70101 |
| **TDRT2.4DS-1X50YE** | 2.79 | 1.18 | 50.0 | 0.49 | 5,000 pcs. | Yellow (YE) | 553-70100 |
| **TDRT3.2DS-2X25YE** | 3.64 | 1.59 | 25.0 | 0.51 | 10,000 pcs. | Yellow (YE) | 553-70103 |
| **TDRT3.2DS-1X50YE** | 3.64 | 1.59 | 50.0 | 0.51 | 5,000 pcs. | Yellow (YE) | 553-70102 |

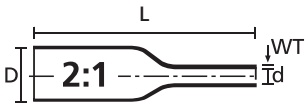
All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

Date of issue: January 2019

## Shrinkable markers "Ladder Style", thermal transfer

**TDRT DS – 2:1 Rail Diesel Resistant "Ladder Style"**






| TYPE | Supplied Ø D min. | Recov. Ø d max. | Length (L) | Wall (WT) | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|
| **TDRT4.8DS-2X25YE** | 5.26 | 2.36 | 25.0 | 0.54 | 10,000 pcs. | Yellow (YE) | 553-70105 |
| **TDRT4.8DS-1X50YE** | 5.26 | 2.36 | 50.0 | 0.54 | 5,000 pcs. | Yellow (YE) | 553-70104 |
| **TDRT6.4DS-2X25YE** | 6.92 | 3.18 | 25.0 | 0.56 | 6,000 pcs. | Yellow (YE) | 553-70107 |
| **TDRT6.4DS-1X50YE** | 6.92 | 3.18 | 50.0 | 0.56 | 3,000 pcs. | Yellow (YE) | 553-70106 |
| **TDRT9.5DS-2X25YE** | 10.20 | 4.75 | 25.0 | 0.59 | 5,000 pcs. | Yellow (YE) | 553-70109 |
| **TDRT9.5DS-1X50YE** | 10.20 | 4.75 | 50.0 | 0.59 | 2,500 pcs. | Yellow (YE) | 553-70108 |
| **TDRT12DS-2X25YE** | 13.50 | 6.35 | 25.0 | 0.60 | 3,000 pcs. | Yellow (YE) | 553-70111 |
| **TDRT12DS-1X50YE** | 13.50 | 6.35 | 50.0 | 0.60 | 1,500 pcs. | Yellow (YE) | 553-70110 |
| **TDRT18DS-2X25YE** | 20.10 | 9.53 | 25.0 | 0.62 | 3,000 pcs. | Yellow (YE) | 553-70113 |
| **TDRT18DS-1X50YE** | 20.10 | 9.53 | 50.0 | 0.62 | 1,500 pcs. | Yellow (YE) | 553-70112 |
| **TDRT25DS-2X25YE** | 26.70 | 12.70 | 25.0 | 0.63 | 2,000 pcs. | Yellow (YE) | 553-70115 |
| **TDRT25DS-1X50YE** | 26.70 | 12.70 | 50.0 | 0.63 | 1,000 pcs. | Yellow (YE) | 553-70114 |
| **TDRT38DS-2X25YE** | 39.80 | 19.10 | 25.0 | 0.64 | 1,000 pcs. | Yellow (YE) | 553-70117 |
| **TDRT38DS-1X50YE** | 39.80 | 19.10 | 50.0 | 0.64 | 500 pcs. | Yellow (YE) | 553-70116 |
| **TDRT51DS-2X25YE** | 53.80 | 25.40 | 25.0 | 0.64 | 1,000 pcs. | Yellow (YE) | 553-70119 |
| **TDRT51DS-1X50YE** | 53.80 | 25.40 | 50.0 | 0.64 | 500 pcs. | Yellow (YE) | 553-70118 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

Date of issue: January 2019

## Shrinkable markers "Ladder Style", thermal transfer

**TLFD DS – 2:1 Rail Limited Fire Hazard, fluid resistant "Ladder Style"**

TLFD DS is an innovative 2:1 heat shrink marker which is halogen free, low fire hazard and fluid resistant. This rail and EN approved material is supplied pre-cut and formatted into a convenient "ladder" system.

The TLFD DS marker's material properties are ideal for applications where fire protection is of great importance. TLFD DS shows low smoke propagation, density and toxicity and is also ideal for applications where resistance to organic fluids, common fuels, lubricants and solvents properties are required.

The pre-cut format not only allows printing on both sides of the marker but the user can also easily choose and pick each required marker. The tubing has been especially prepared so that the print performance is excellent at all times using HellermannTyton's printer range.

**Features and benefits**

- Shrink ratio 2:1
- Halogen free and fluid resistant
- Low smoke propagation and toxicity
- Fluid resistant
- "Ladder Style" format for ease of use
- Available in yellow and white
- 50 mm and 25 mm pre-cut markers as standard



*TLFD DS shrinkable markers – halogen-free and fluid resistant.*

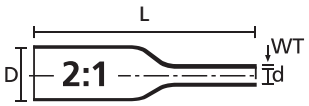


*TLFD DS shrinkable markers for more safety and clarity in the switchboard.*

| | |
|---|---|
| **MATERIAL** | Polyolefin, cross-linked (PO-X) |
| **Operating Temperature** | -55 °C to +125 °C |
| **Min. Shrink Temperature** | +120 °C |
| **Shrink Ratio** | 2:1 |
| **Recommended Ribbon Type** | TTDTHOUT |
| **Thermal Transfer Printer** | TT430, TT4030, TrakMark DS |
| **EN 45545-2 Classification** | R22 HL3, R23 HL3 |

HF ✓ LFH ✓ RoHS ✓






| TYPE | Supplied Ø D min. | Recov. Ø d max. | Length (L) | Wall (WT) | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|
| **TLFD24DS-2X25YE** | 2.59 | 1.2 | 25.0 | 0.49 | 10,000 pcs. | Yellow (YE) | 533-65019 |
| **TLFD64DS-2X25WH** | 6.64 | 3.2 | 25.0 | 0.56 | 6,000 pcs. | White (WH) | 533-65007 |
| **TLFD64DS-1X50YE** | 6.64 | 3.2 | 50.0 | 0.56 | 3,000 pcs. | Yellow (YE) | 533-65024 |
| **TLFD95DS-2X25WH** | 9.88 | 4.8 | 25.0 | 0.59 | 5,000 pcs. | White (WH) | 533-65009 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

EN 45545-2 EN 50343 App. H

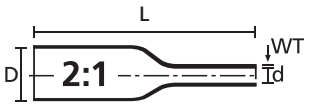
For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Shrinkable markers "Ladder Style", thermal transfer

**TLFD DS – 2:1 Rail Limited Fire Hazard, fluid resistant "Ladder Style"**






| TYPE | Supplied Ø D min. | Recov. Ø d max. | Length (L) | Wall (WT) | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|
| **TLFD95DS-2X25YE** | 9.88 | 4.8 | 25.0 | 0.59 | 5,000 pcs. | Yellow (YE) | 533-65027 |
| **TLFD64DS-2X25YE** | 9.88 | 4.8 | 25.0 | 0.59 | 6,000 pcs. | Yellow (YE) | 533-65025 |
| **TLFD24DS-2X25WH** | 9.88 | 4.8 | 25.0 | 0.59 | 10,000 pcs. | White (WH) | 533-65001 |
| **TLFD32DS-2X25WH** | 9.88 | 4.8 | 25.0 | 0.59 | 10,000 pcs. | White (WH) | 533-65003 |
| **TLFD48DS-2X25WH** | 9.88 | 4.8 | 25.0 | 0.59 | 10,000 pcs. | White (WH) | 533-65005 |
| **TLFD32DS-2X25YE** | 9.88 | 4.8 | 25.0 | 0.59 | 10,000 pcs. | Yellow (YE) | 533-65021 |
| **TLFD48DS-2X25YE** | 9.88 | 4.8 | 25.0 | 0.59 | 10,000 pcs. | Yellow (YE) | 533-65023 |
| **TLFD95DS-1X50WH** | 9.88 | 4.8 | 50.0 | 0.59 | 2,500 pcs. | White (WH) | 533-65008 |
| **TLFD95DS-1X50YE** | 9.88 | 4.8 | 50.0 | 0.59 | 2,500 pcs. | Yellow (YE) | 533-65026 |
| **TLFD64DS-1X50WH** | 9.88 | 4.8 | 50.0 | 0.59 | 3,000 pcs. | White (WH) | 533-65006 |
| **TLFD24DS-1X50WH** | 9.88 | 4.8 | 50.0 | 0.59 | 5,000 pcs. | White (WH) | 533-65000 |
| **TLFD32DS-1X50WH** | 9.88 | 4.8 | 50.0 | 0.59 | 5,000 pcs. | White (WH) | 533-65002 |
| **TLFD48DS-1X50WH** | 9.88 | 4.8 | 50.0 | 0.59 | 5,000 pcs. | White (WH) | 533-65004 |
| **TLFD24DS-1X50YE** | 9.88 | 4.8 | 50.0 | 0.59 | 5,000 pcs. | Yellow (YE) | 533-65018 |
| **TLFD32DS-1X50YE** | 9.88 | 4.8 | 50.0 | 0.59 | 5,000 pcs. | Yellow (YE) | 533-65020 |
| **TLFD48DS-1X50YE** | 9.88 | 4.8 | 50.0 | 0.59 | 5,000 pcs. | Yellow (YE) | 533-65022 |
| **TLFD127DS-2X25WH** | 13.14 | 6.4 | 25.0 | 0.60 | 3,000 pcs. | White (WH) | 533-65011 |
| **TLFD127DS-2X25YE** | 13.14 | 6.4 | 25.0 | 0.60 | 3,000 pcs. | Yellow (YE) | 533-65029 |
| **TLFD127DS-1X50WH** | 13.14 | 6.4 | 50.0 | 0.60 | 1,500 pcs. | White (WH) | 533-65010 |
| **TLFD127DS-1X50YE** | 13.14 | 6.4 | 50.0 | 0.60 | 1,500 pcs. | Yellow (YE) | 533-65028 |
| **TLFD190DS-2X25WH** | 19.70 | 9.6 | 25.0 | 0.62 | 3,000 pcs. | White (WH) | 533-65013 |
| **TLFD190DS-2X25YE** | 19.70 | 9.6 | 25.0 | 0.62 | 3,000 pcs. | Yellow (YE) | 533-65031 |
| **TLFD190DS-1X50WH** | 19.70 | 9.6 | 50.0 | 0.62 | 1,500 pcs. | White (WH) | 533-65012 |
| **TLFD190DS-1X50YE** | 19.70 | 9.6 | 50.0 | 0.62 | 1,500 pcs. | Yellow (YE) | 533-65030 |
| **TLFD254DS-2X25WH** | 26.25 | 12.7 | 25.0 | 0.63 | 2,000 pcs. | White (WH) | 533-65015 |
| **TLFD254DS-2X25YE** | 26.25 | 12.7 | 25.0 | 0.63 | 2,000 pcs. | Yellow (YE) | 533-65033 |
| **TLFD254DS-1X50WH** | 26.25 | 12.7 | 50.0 | 0.63 | 1,000 pcs. | White (WH) | 533-65014 |
| **TLFD254DS-1X50YE** | 26.25 | 12.7 | 50.0 | 0.63 | 1,000 pcs. | Yellow (YE) | 533-65032 |
| **TLFD381DS-2X25WH** | 39.29 | 19.1 | 25.0 | 0.64 | 1,000 pcs. | White (WH) | 533-65017 |
| **TLFD381DS-2X25YE** | 39.29 | 19.1 | 25.0 | 0.64 | 1,000 pcs. | Yellow (YE) | 533-65035 |
| **TLFD381DS-1X50WH** | 39.29 | 19.1 | 50.0 | 0.64 | 500 pcs. | White (WH) | 533-65016 |
| **TLFD381DS-1X50YE** | 39.29 | 19.1 | 50.0 | 0.64 | 500 pcs. | Yellow (YE) | 533-65034 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

EN 45545-2 | EN 50343 App. H

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Shrinkable markers "Continuous Tube", thermal transfer

**THTT – 2:1 Aerospace High Temperature**

THTT is a 2:1 high temperature, flame retardant heat shrink marker supplied in continuous tube and on convenient reels that allows printing on both sides if required. The printed marker is ideal for use in applications where high temperature and exposure to aggressive solutions are found. The tubing has been especially prepared so that the print performance is excellent at all times using HellermannTyton's printer range. A standard heat gun with reflector is used to shrink the sleeves onto the wire or cable to achieve a permanent mark. In addition it is possible to either perforate the tubing at pre-determined lengths or fully sever the markers.

The material is also especially formulated to be printable with laser beam printers.



*THTT - High temperature tube in black and white.*

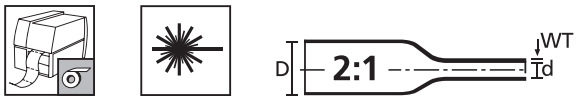
**Features and benefits**

- Shrink ratio 2:1
- PVDFX high temperature tube
- Thermal transfer or laser beam printable
- Available in white and black as standard
- Good mechanical strength and highly flexible
- Delivery in convenient storage boxes


*Aerospace-specific products offer best solutions.*

**For size matrix please refer to page 433.**

| MATERIAL | Polyvinylidene Fluoride cross-linked (PVDFX) |
|---|---|
| **Operating Temperature** | -55 °C to +225 °C |
| **Min. Shrink Temperature** | +120 °C |
| **Shrink Ratio** | 2:1 |
| **Recommended Ribbon Type** | TTRHT |
| **Thermal Transfer Printer** | TT430, TT4030, TrakMark DS |




RoHS

| TYPE | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|
| **THTT24BK** | 2.4 | 1.2 | 0.41 | 110 m | Black (BK) | 551-41109 |
| **THTT24WH** | 2.4 | 1.2 | 0.41 | 110 m | White (WH) | 551-41100 |
| **THTT32BK** | 3.2 | 1.6 | 0.27 | 110 m | Black (BK) | 551-41110 |
| **THTT32WH** | 3.2 | 1.6 | 0.27 | 110 m | White (WH) | 551-41101 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

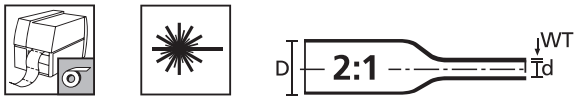
MIL SAE

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Shrinkable markers "Continuous Tube", thermal transfer

**THTT – 2:1 Aerospace High Temperature**




| TYPE | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|
| **THTT48BK** | 4.8 | 2.4 | 0.27 | 110 m | Black (BK) | 551-41111 |
| **THTT48WH** | 4.8 | 2.4 | 0.27 | 110 m | White (WH) | 551-41102 |
| **THTT64BK** | 6.4 | 3.2 | 0.33 | 110 m | Black (BK) | 551-41112 |
| **THTT64WH** | 6.4 | 3.2 | 0.33 | 110 m | White (WH) | 551-41103 |
| **THTT95BK** | 9.5 | 4.8 | 0.33 | 72 m | Black (BK) | 551-41113 |
| **THTT95WH** | 9.5 | 4.8 | 0.33 | 72 m | White (WH) | 551-41104 |
| **THTT127BK** | 12.7 | 6.4 | 0.33 | 54 m | Black (BK) | 551-41114 |
| **THTT127WH** | 12.7 | 6.4 | 0.33 | 54 m | White (WH) | 551-41105 |
| **THTT190BK** | 19.0 | 9.5 | 0.43 | 26 m | Black (BK) | 551-41115 |
| **THTT190WH** | 19.0 | 9.5 | 0.43 | 26 m | White (WH) | 551-41106 |
| **THTT254BK** | 25.4 | 12.7 | 0.48 | 26 m | Black (BK) | 551-41116 |
| **THTT254WH** | 25.4 | 12.7 | 0.48 | 26 m | White (WH) | 551-41107 |
| **THTT381BK** | 38.1 | 19.1 | 0.50 | 10 m | Black (BK) | 551-41117 |
| **THTT381WH** | 38.1 | 19.1 | 0.50 | 10 m | White (WH) | 551-41108 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

MIL SAE® For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Shrinkable markers "Ladder Style", thermal transfer

**THTT DS – 2:1 Aerospace High Temperature "Ladder Style"**

THTT DS is a 2:1 high temperature, flame retardant heat shrink marker. The material is pre-cut and formatted into a convenient "ladder" system that allows printing on both sides of the marker.

The printed marker is ideal for use in applications where high temperature and exposure to aggressive solutions are found. The pre-cut format not only allows printing on both sides of the marker but the user can also easily choose and pick each required marker. The tubing has been especially prepared so that the print performance is excellent at all times using HellermannTyton's printer range.

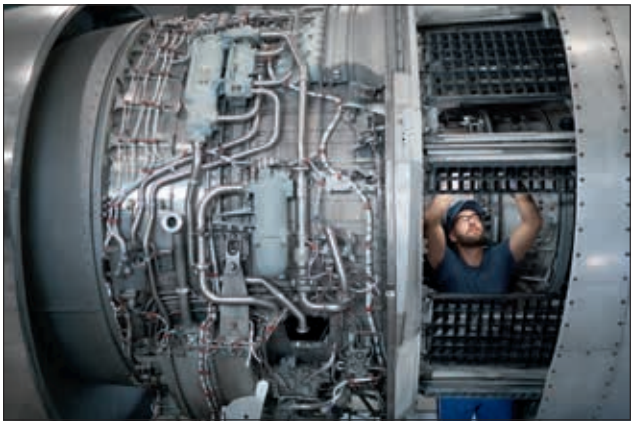
The material is also especially formulated to be printable with laser beam printers.



*THTT DS - High temperature heatshrink printable marker.*

### Features and benefits

- Shrink ratio 2:1
- PVDFX high temperature marker
- Thermal transfer or laser beam printable
- 50 mm and 25 mm pre-cut marker options as standard, other lengths available on request
- Available in black and white as standard
- Good mechanical strength and highly flexible
- Delivery in convenient storage boxes



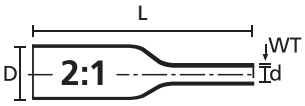
*Ideal solutions for aerospace applications.*

**For size matrix please refer to page 433.**

| | |
|---|---|
| **MATERIAL** | Polyvinylidene Fluoride cross-linked (PVDFX) |
| **Operating Temperature** | -55 °C to +225 °C |
| **Min. Shrink Temperature** | +120 °C |
| **Shrink Ratio** | 2:1 |
| **Recommended Ribbon Type** | TTRHT |
| **Thermal Transfer Printer** | TT430, TT4030, TrakMark DS |








RoHS

| TYPE | Supplied Ø D min. | Recov. Ø d max. | Length (L) | Wall (WT) | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|
| **THTT24DS-2X25BK** | 2.4 | 1.2 | 25.0 | 0.41 | 2,000 pcs. | Black (BK) | 553-72519 |
| **THTT24DS-2X25WH** | 2.4 | 1.2 | 25.0 | 0.41 | 2,000 pcs. | White (WH) | 553-72501 |
| **THTT24DS-1X50BK** | 2.4 | 1.2 | 50.0 | 0.41 | 1,000 pcs. | Black (BK) | 553-72518 |
| **THTT24DS-1X50WH** | 2.4 | 1.2 | 50.0 | 0.41 | 1,000 pcs. | White (WH) | 553-72500 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

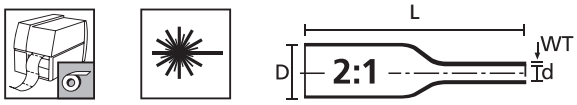
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For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Shrinkable markers "Ladder Style", thermal transfer

**THTT DS – 2:1 Aerospace High Temperature "Ladder Style"**




| TYPE | Supplied Ø D min. | Recov. Ø d max. | Length (L) | Wall (WT) | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|
| **THTT32DS-2X25BK** | 3.2 | 1.6 | 25.0 | 0.27 | 2,000 pcs. | Black (BK) | 553-72521 |
| **THTT32DS-2X25WH** | 3.2 | 1.6 | 25.0 | 0.27 | 2,000 pcs. | White (WH) | 553-72503 |
| **THTT32DS-1X50BK** | 3.2 | 1.6 | 50.0 | 0.27 | 1,000 pcs. | Black (BK) | 553-72520 |
| **THTT32DS-1X50WH** | 3.2 | 1.6 | 50.0 | 0.27 | 1,000 pcs. | White (WH) | 553-72502 |
| **THTT48DS-2X25BK** | 4.8 | 2.4 | 25.0 | 0.27 | 2,000 pcs. | Black (BK) | 553-72523 |
| **THTT48DS-2X25WH** | 4.8 | 2.4 | 25.0 | 0.27 | 2,000 pcs. | White (WH) | 553-72505 |
| **THTT48DS-1X50BK** | 4.8 | 2.4 | 50.0 | 0.27 | 1,000 pcs. | Black (BK) | 553-72522 |
| **THTT48DS-1X50WH** | 4.8 | 2.4 | 50.0 | 0.27 | 1,000 pcs. | White (WH) | 553-72504 |
| **THTT64DS-2X25BK** | 6.4 | 3.2 | 25.0 | 0.33 | 2,000 pcs. | Black (BK) | 553-72525 |
| **THTT64DS-2X25WH** | 6.4 | 3.2 | 25.0 | 0.33 | 2,000 pcs. | White (WH) | 553-72507 |
| **THTT64DS-1X50BK** | 6.4 | 3.2 | 50.0 | 0.33 | 1,000 pcs. | Black (BK) | 553-72524 |
| **THTT64DS-1X50WH** | 6.4 | 3.2 | 50.0 | 0.33 | 1,000 pcs. | White (WH) | 553-72506 |
| **THTT95DS-2X25BK** | 9.5 | 4.8 | 25.0 | 0.33 | 1,000 pcs. | Black (BK) | 553-72527 |
| **THTT95DS-2X25WH** | 9.5 | 4.8 | 25.0 | 0.33 | 1,000 pcs. | White (WH) | 553-72509 |
| **THTT95DS-1X50BK** | 9.5 | 4.8 | 50.0 | 0.33 | 500 pcs. | Black (BK) | 553-72526 |
| **THTT95DS-1X50WH** | 9.5 | 4.8 | 50.0 | 0.33 | 500 pcs. | White (WH) | 553-72508 |
| **THTT127DS-2X25BK** | 12.7 | 6.4 | 25.0 | 0.33 | 1,000 pcs. | Black (BK) | 553-72529 |
| **THTT127DS-2X25WH** | 12.7 | 6.4 | 25.0 | 0.33 | 1,000 pcs. | White (WH) | 553-72511 |
| **THTT127DS-1X50BK** | 12.7 | 6.4 | 50.0 | 0.33 | 500 pcs. | Black (BK) | 553-72528 |
| **THTT127DS-1X50WH** | 12.7 | 6.4 | 50.0 | 0.33 | 500 pcs. | White (WH) | 553-72510 |
| **THTT190DS-2X25BK** | 19.1 | 9.5 | 25.0 | 0.43 | 1,000 pcs. | Black (BK) | 553-72531 |
| **THTT190DS-2X25WH** | 19.1 | 9.5 | 25.0 | 0.43 | 1,000 pcs. | White (WH) | 553-72513 |
| **THTT190DS-1X50BK** | 19.1 | 9.5 | 50.0 | 0.43 | 500 pcs. | Black (BK) | 553-72530 |
| **THTT190DS-1X50WH** | 19.1 | 9.5 | 50.0 | 0.43 | 500 pcs. | White (WH) | 553-72512 |
| **THTT254DS-2X25BK** | 25.4 | 12.7 | 25.0 | 0.48 | 600 pcs. | Black (BK) | 553-72533 |
| **THTT254DS-2X25WH** | 25.4 | 12.7 | 25.0 | 0.48 | 600 pcs. | White (WH) | 553-72515 |
| **THTT254DS-1X50BK** | 25.4 | 12.7 | 50.0 | 0.48 | 300 pcs. | Black (BK) | 553-72532 |
| **THTT254DS-1X50WH** | 25.4 | 12.7 | 50.0 | 0.48 | 300 pcs. | White (WH) | 553-72514 |
| **THTT381DS-2X25BK** | 38.1 | 19.1 | 25.0 | 0.50 | 200 pcs. | Black (BK) | 553-72535 |
| **THTT381DS-2X25WH** | 38.1 | 19.1 | 25.0 | 0.50 | 200 pcs. | White (WH) | 553-72517 |
| **THTT381DS-1X50BK** | 38.1 | 19.1 | 50.0 | 0.50 | 100 pcs. | Black (BK) | 553-72534 |
| **THTT381DS-1X50WH** | 38.1 | 19.1 | 50.0 | 0.50 | 100 pcs. | White (WH) | 553-72516 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

MIL SAE® For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Identification tags for cable bundle, thermal transfer

**TIPTAG HF - Limited Fire Hazard Tiptags, Halogen free**

The Tiptag HF cable markers have been designed to identify larger wires and cable bundles not only in the electronics and general cabling environments but also in the railway industry. Tiptag HF is halogen free and its material properties show low smoke propagation, density and toxicity. Tiptags are presented in a special perforated format which include fastening slots for easy fitting with cable ties. They are also suitable for retrofit purposes.

Print from the reel with HellermannTyton's premium range of thermal transfer printers and ribbons for optimum print quality and longevity.

### Features and benefits

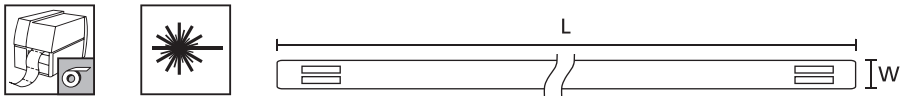
- Ideal for marking larger wire and cable bundles
- Halogen free
- Low smoke propagation and toxicity
- Perforated format that includes fastening slots for cable ties
- Available in various colours




*TIPTAG - high performance cable bundle marking.*

| | |
|---|---|
| **MATERIAL** | Polyolefin (PO) |
| **Operating Temperature** | -40 °C to +90 °C |
| **Flammability** | Limited Fire Hazard, Low generation of toxic gases and corrosive acid, Low smoke generation, Halogen free |
| **Recommended Ribbon Type** | TTDTHOUT |
| **Thermal Transfer Printer** | TT430, TT4030 |
| **EN 45545-2 Classification** | R22 HL3, R23 HL3 |

HF ✓ LFH ✓
RoHS ✓




| TYPE | Length (L) | Width (W) | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|
| **TIPTAG11X65BU** | 65.0 | 11.0 | 190 pcs. | Blue (BU) | 556-20066 |
| **TIPTAG11X65RD** | 65.0 | 11.0 | 190 pcs. | Red (RD) | 556-20062 |
| **TIPTAG11X65WH** | 65.0 | 11.0 | 190 pcs. | White (WH) | 556-20069 |
| **TIPTAG11X65YE** | 65.0 | 11.0 | 190 pcs. | Yellow (YE) | 556-20064 |
| **TIPTAG15X65WH** | 65.0 | 15.0 | 190 pcs. | White (WH) | 556-21069 |
| **TIPTAG15X65YE** | 65.0 | 15.0 | 190 pcs. | Yellow (YE) | 556-21064 |
| **TIPTAG11X100BU** | 100.0 | 11.0 | 120 pcs. | Blue (BU) | 556-20080 |
| **TIPTAG11X100RD** | 100.0 | 11.0 | 120 pcs. | Red (RD) | 556-20091 |
| **TIPTAG11X100WH** | 100.0 | 11.0 | 120 pcs. | White (WH) | 556-20079 |
| **TIPTAG11X100YE** | 100.0 | 11.0 | 120 pcs. | Yellow (YE) | 556-20074 |
| **TIPTAG15X100RD** | 100.0 | 15.0 | 120 pcs. | Red (RD) | 556-21096 |
| **TIPTAG15X100WH** | 100.0 | 15.0 | 120 pcs. | White (WH) | 556-21079 |
| **TIPTAG15X100YE** | 100.0 | 15.0 | 120 pcs. | Yellow (YE) | 556-21074 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available. More colours on request.

EN 45545-2

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Identification tags for cable bundle, thermal transfer

**TIPTAG PU - UV-stabilised Tiptags, Polyurethane**

The Tiptag PU cable markers consist of a robust and flexible polyurethane material. It is especially suited for harsh environments where the material is exposed to chemical, fluids or abrasion. Tiptag PU's are presented in a special perforated format which include fastening slots for easy fitting with cable ties. They are also suitable for retrofit purposes.

Print from the reel with HellermannTyton's premium range of thermal transfer printers.

A special ribbon has been developed for Tiptag PU to create a "tattoo" effect so that the marking cannot be rubbed off and is particularly durable and resistant to harsh abrasion.



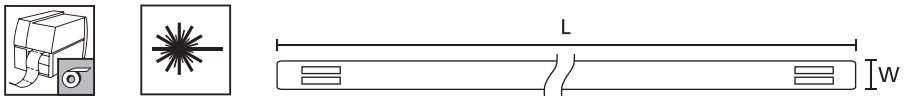
*TIPTAG PU – printed mark has a tattoo-like permanency.*

**Features and benefits**

- Durable and robust polyurethane material
- For large cable bundles and wires
- Flame retardant
- Weather resistant
- Abrasion resistant
- Good resistance to chemicals
- Available in white and yellow as standard
- Perforated format with fastening slots for cable ties

| | |
|---|---|
| **MATERIAL** | Polyurethane (PUR) |
| **Operating Temperature** | -65 °C to +120 °C, intermittent 150 °C |
| **Flammability** | self-extinguishing, UL 94 V0 (3 mm) |
| **Recommended Ribbon Type** | TTRC+ |
| **Thermal Transfer Printer** | TT430, TT4030 |

RoHS




| TYPE | Length (L) | Width (W) | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|
| **TTAGPU11X65WH** | 65.0 | 11.0 | 190 pcs. | White (WH) | 556-25012 |
| **TTAGPU11X65YE** | 65.0 | 11.0 | 190 pcs. | Yellow (YE) | 556-25019 |
| **TTAGPU15X65WH** | 65.0 | 15.0 | 190 pcs. | White (WH) | 556-25007 |
| **TTAGPU15X65YE** | 65.0 | 15.0 | 190 pcs. | Yellow (YE) | 556-25011 |
| **TTAGPU11X100WH** | 100.0 | 11.0 | 125 pcs. | White (WH) | 556-25021 |
| **TTAGPU11X100YE** | 100.0 | 11.0 | 125 pcs. | Yellow (YE) | 556-25020 |
| **TTAGPU15X100WH** | 100.0 | 15.0 | 125 pcs. | White (WH) | 556-25006 |
| **TTAGPU15X100YE** | 100.0 | 15.0 | 125 pcs. | Yellow (YE) | 556-25010 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available. More colours on request.

Date of issue: January 2019

## Identification tags for cable bundles, thermal transfer

**TTAG MC - Metal Content TipTags**

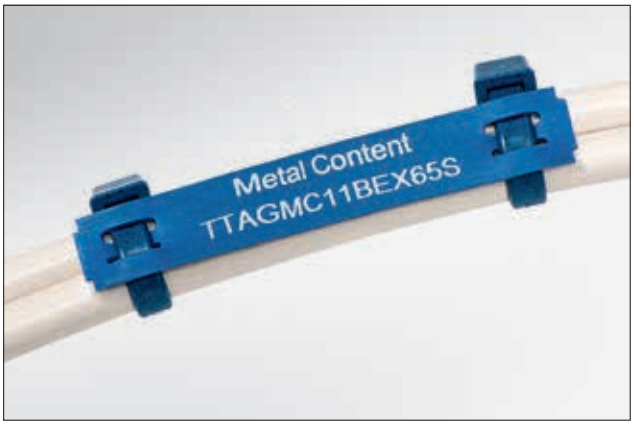
The TIPTAG MC cable markers have been especially designed for applications where materials need to be metal detectable. Small metal particles have been included into the entire length of the marker making it ideal for marking larger cables, wires and bundles in the food and pharmaceutical industries. TIPTAG MCs come in a special perforated format that includes holes for fastening with cables ties (MCT).

Print from the reel with HellermannTyton's premium range of thermal transfer printers.

**Features and benefits**

- Metal dectectable
- For marking larger cables in food and pharma industries
- Outstanding chemical resistance
- High temperature resistant
- Non-burning

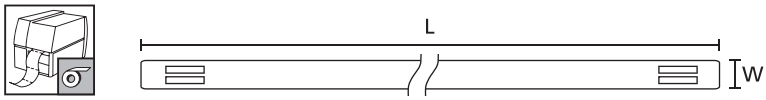
**Can support quality assurance in the production of food stuffs, for example HACCP.**




*Metal content identification tags TIPTAG MC for a safe and clean production process.*

| | |
|---|---|
| **MATERIAL** | Polyolefin (PO), Metal (MET) |
| **Operating Temperature** | -40 °C to +85 °C |
| **Recommended Ribbon Type** | TTDTHOUT, TTRW |
| **Thermal Transfer Printer** | TT430, TT4030 |

RoHS




| TYPE | Length (L) | Width (W) | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|
| **TTAGMC11BEX65S** | 65.0 | 11.0 | 190 pcs. | Blue (BU) | 556-26500 |
| **TTAGMC15BEX65S** | 65.0 | 15.0 | 190 pcs. | Blue (BU) | 556-26502 |
| **TTAGMC11BEX100S** | 100.0 | 11.0 | 120 pcs. | Blue (BU) | 556-26501 |
| **TTAGMC15BEX100S** | 100.0 | 15.0 | 120 pcs. | Blue (BU) | 556-26503 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available. More colours on request.

Date of issue: January 2019

## Identification tags for cable bundle "Ladder Style", thermal transfer

**TAGUL – Standard Tiptags**

The TAGUL cable markers have been designed to identify larger wires and cable bundles in the electronics and general cabling environments and is supplied pre-cut and formatted into a convenient "ladder" system. The labels are applied to cables and harness assemblies with cable ties, and are also suitable for retrofit purposes. The material has been conditioned for printing on both thermal transfer and laser beam printers. Simply print and press out the required Tiptag and apply with cable ties.

Print with HellermannTyton's premium range of thermal printers and ribbons or a laser beam marking device.



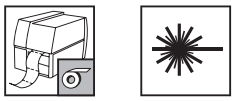
*TAGUL – cable markers for larger cable bundles and wires.*

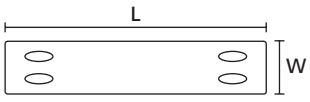
### Features and benefits

- General purpose cable marker
- For larger cables and wires
- Convenient "Ladder Style" format
- Good mechanical strength and highly flexible
- Delivered in convenient storage boxes

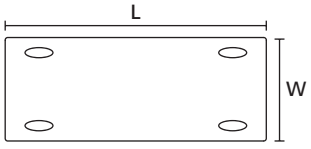
| | |
|---|---|
| **MATERIAL** | Polyolefin, cross-linked (PO-X) |
| **Operating Temperature** | -55 °C to +135 °C |
| **Flammability** | ASTM D2671 B |
| **Recommended Ribbon Type** | TTDTHOUT |
| **Thermal Transfer Printer** | TT430, TT4030 |

RoHS

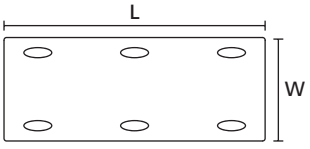




*TAG10x51-4*



*TAG20x51-4*



*TAG20x51-6*

| TYPE | Length (L) | Width (W) | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|
| **TAGUL10X51-4WH** | 51.0 | 10.0 | 400 pcs. | White (WH) | 556-82010 |
| | 51.0 | 10.0 | 2,000 pcs. | White (WH) | 556-82000 |
| **TAGUL10X51-4YE** | 51.0 | 10.0 | 400 pcs. | Yellow (YE) | 556-82011 |
| | 51.0 | 10.0 | 2,000 pcs. | Yellow (YE) | 556-82001 |
| **TAGUL20X51-4WH** | 51.0 | 20.0 | 200 pcs. | White (WH) | 556-82012 |
| | 51.0 | 20.0 | 1,000 pcs. | White (WH) | 556-82005 |
| **TAGUL20X51-4YE** | 51.0 | 20.0 | 200 pcs. | Yellow (YE) | 556-82013 |
| | 51.0 | 20.0 | 1,000 pcs. | Yellow (YE) | 556-82004 |
| **TAGUL20X51-6WH** | 51.0 | 20.0 | 200 pcs. | White (WH) | 556-82014 |
| | 51.0 | 20.0 | 1,000 pcs. | White (WH) | 556-82002 |
| **TAGUL20X51-6YE** | 51.0 | 20.0 | 200 pcs. | Yellow (YE) | 556-82015 |
| | 51.0 | 20.0 | 1,000 pcs. | Yellow (YE) | 556-82003 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. More colours on request.

SAE For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Identification tags for cable bundle, "Ladder Style", thermal transfer

**TAGPU – UV-stabilised Tiptags**

TAGPU is a specially designed cable marker for identifying larger wire and cable bundles, where a permanently legible and UV resistant marking is required. The cable markers consist of a robust and flexible polyurethane material and are especially suited for harsh environments. They are supplied pre-cut and have been formatted into a convenient "ladder" system. The markers are applied to cable and harness assemblies with cable ties, and are also suitable for retrofit purposes. The material has been conditioned for printing on both thermal transfer and laser beam printers. Simply print and press out the required TAGPU and apply with cable ties.

Print with HellermannTyton's premium range of thermal printers and ribbons or a laser beam marking device.



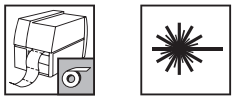
*TAGPU - Tiptags "Ladder Style".*

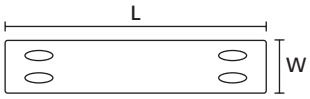
| | |
|---|---|
| **MATERIAL** | Polyurethane (PUR) |
| **Operating Temperature** | -25 °C to +80 °C |
| **Recommended Ribbon Type** | TTRHT |
| **Thermal Transfer Printer** | TT430, TT4030 |

HF RoHS

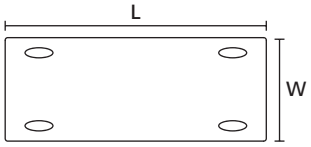
**Features and benefits**

- UV-stabilised
- For larger cables and wires, bundles
- Robust and flexible material
- Thermal transfer or laser beam printable
- Available in white or yellow
- Halogen Free
- Good mechanical strength and highly flexible
- Delivery in convenient storage boxes

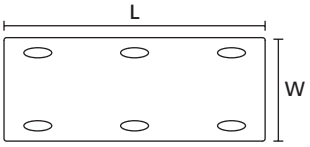




*TAG10x51-4*



*TAG20x51-4*



*TAG20x51-6*

| TYPE | Length (L) | Width (W) | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|
| **TAGPU10X51-4WH** | 51.0 | 10.0 | 400 pcs. | White (WH) | 556-80506 |
| | 51.0 | 10.0 | 2,000 pcs. | White (WH) | 556-80500 |
| **TAGPU10X51-4YE** | 51.0 | 10.0 | 400 pcs. | Yellow (YE) | 556-80507 |
| | 51.0 | 10.0 | 2,000 pcs. | Yellow (YE) | 556-80501 |
| **TAGPU20X51-4WH** | 51.0 | 20.0 | 200 pcs. | White (WH) | 556-80508 |
| | 51.0 | 20.0 | 1,000 pcs. | White (WH) | 556-80504 |
| **TAGPU20X51-4YE** | 51.0 | 20.0 | 200 pcs. | Yellow (YE) | 556-80509 |
| | 51.0 | 20.0 | 1,000 pcs. | Yellow (YE) | 556-80505 |
| **TAGPU20X51-6WH** | 51.0 | 20.0 | 200 pcs. | White (WH) | 556-80510 |
| | 51.0 | 20.0 | 1,000 pcs. | White (WH) | 556-80502 |
| **TAGPU20X51-6YE** | 51.0 | 20.0 | 200 pcs. | Yellow (YE) | 556-80511 |
| | 51.0 | 20.0 | 1,000 pcs. | Yellow (YE) | 556-80503 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available. More colours on request.

MIL SAE® For product specific approvals and specifications please refer to the Appendix.

## Identification tags for cable bundle "Ladder Style", thermal transfer

**TAGLF – Rail - Limited Fire Hazard Tiptags**

TAGLF is a halogen free cable marker for mass transit applications specifically in the railway industry or for all areas where limited fire hazard material is needed. TAGLF's material properties show low smoke propagation, density and toxicity. They are supplied pre-cut and have been formatted into a convenient "ladder" system. Simply print and press out the required TAGLF and apply with cable ties, they are also suitable for retrofit purposes.

Print with HellermannTyton's premium range of thermal printers and ribbons or a laser beam marking device.




*Limited fire hazard identification tags TAGLF.*

### Features and benefits

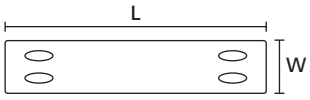
- Limited fire hazard cable marker
- Halogen free
- For larger cables and wires, bundles
- Thermal transfer or laser beam printable
- Good mechanical strength and highly flexible
- Delivered on reel in convenient storage boxes

| | |
|---|---|
| **MATERIAL** | Polyolefin, cross-linked (PO-X) |
| **Operating Temperature** | -40 °C to +105 °C |
| **Flammability** | self-extinguishing |
| **Recommended Ribbon Type** | TTDTHOUT |
| **Thermal Transfer Printer** | TT430, TT4030 |
| **Oxygen Index** | 34.4 % |
| **EN 45545-2 Classification** | R22 HL3, R23 HL3 |

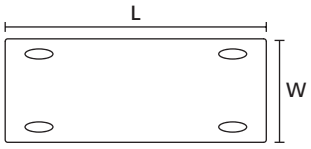
HF ✓ RoHS ✓



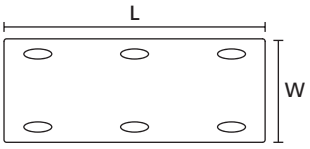





*TAG10x51-4*




*TAG20x51-4*




*TAG20x51-6*

| TYPE | Length (L) | Width (W) | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|
| **TAGLF10X51-4WH** | 51.0 | 10.0 | 400 pcs. | White (WH) | 556-83006 |
| | 51.0 | 10.0 | 2,000 pcs. | White (WH) | 556-83000 |
| **TAGLF10X51-4YE** | 51.0 | 10.0 | 400 pcs. | Yellow (YE) | 556-83007 |
| | 51.0 | 10.0 | 2,000 pcs. | Yellow (YE) | 556-83001 |
| **TAGLF20X51-4WH** | 51.0 | 20.0 | 200 pcs. | White (WH) | 556-83008 |
| | 51.0 | 20.0 | 1,000 pcs. | White (WH) | 556-83002 |
| **TAGLF20X51-4YE** | 51.0 | 20.0 | 200 pcs. | Yellow (YE) | 556-83009 |
| | 51.0 | 20.0 | 1,000 pcs. | Yellow (YE) | 556-83003 |
| **TAGLF20X51-6WH** | 51.0 | 20.0 | 200 pcs. | White (WH) | 556-83010 |
| | 51.0 | 20.0 | 1,000 pcs. | White (WH) | 556-83004 |
| **TAGLF20X51-6YE** | 51.0 | 20.0 | 200 pcs. | Yellow (YE) | 556-83011 |
| | 51.0 | 20.0 | 1,000 pcs. | Yellow (YE) | 556-83005 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

EN 45545-2 MIL SAE

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Identification tags for cable bundle "Ladder Style", thermal transfer

**TAGDR – Rail - Diesel Resistant Tiptags**

TAGDR is a cable marker designed for environments where identification is exposed to organic fluids and oils for long periods at high temperatures. The diesel resistant marker is ideal for rail applications. They are supplied pre-cut and have been formatted into a convenient "ladder" system. Simply print and press out the required TAGDR and apply to cables and harness assemblies with cable ties, they are also suitable for retrofit purposes.

Print with HellermannTyton's premium range of thermal printers and ribbons or a laser beam marking device.

### Features and benefits

- Fluid resistant cable marker
- For larger cables and wires, bundles
- Thermal transfer or laser beam printable
- Good mechanical strength and highly flexible
- Delivered on reel in convenient storage boxes



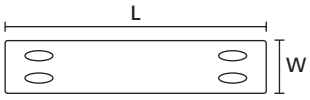

*Diesel resistant identification tags TAGDR.*

| | |
|---|---|
| **MATERIAL** | Polyolefin, cross-linked (PO-X) |
| **Operating Temperature** | -55 °C to +135 °C |
| **Flammability** | ASTM D2671 B |
| **Recommended Ribbon Type** | TTDTHOUT |
| **Thermal Transfer Printer** | TT430, TT4030 |

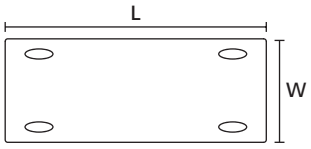
RoHS



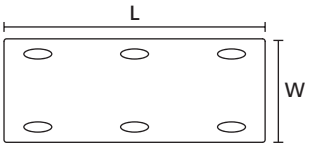





*TAG10x51-4*




*TAG20x51-4*




*TAG20x51-6*

| TYPE | Length (L) | Width (W) | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|
| **TAGDR10X51-4WH** | 51.0 | 10.0 | 2,000 pcs. | White (WH) | 556-83500 |
| **TAGDR10X51-4YE** | 51.0 | 10.0 | 2,000 pcs. | Yellow (YE) | 556-83501 |
| **TAGDR20X51-4WH** | 51.0 | 20.0 | 1,000 pcs. | White (WH) | 556-83504 |
| **TAGDR20X51-4YE** | 51.0 | 20.0 | 1,000 pcs. | Yellow (YE) | 556-83505 |
| **TAGDR20X51-6WH** | 51.0 | 20.0 | 1,000 pcs. | White (WH) | 556-83502 |
| **TAGDR20X51-6YE** | 51.0 | 20.0 | 1,000 pcs. | Yellow (YE) | 556-83503 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

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For product specific approvals and specifications please refer to the Appendix.

## Identification tags for cable bundle "Ladder Style", thermal transfer

**TAGHT – Aerospace - High Temperature Tiptags**

TAGHT is a high temperature, flame retardant cable marker used to identify larger cables and wire harnesses. The marker is ideal for applications where high temperatures and exposure to aggressive solutions are found, e.g. in the aerospace industry. They are supplied pre-cut and have been formatted into a convenient "ladder" system. Simply print and press out the required TAGHT and apply to cables and harness assemblies with cable ties, they are also suitable for retrofit purposes.

Print with HellermannTyton's premium range of thermal printers and ribbons or a laser beam marking device.



*TAGHT – High temperature tag to identify cables and wire harnesses.*


*Aerospace-specific products offer best solutions.*

### Features and benefits

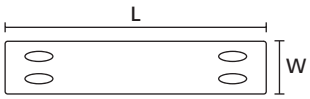
- High temperature cable marker
- For larger cables, bundles and harnesses
- Thermal transfer or laser beam printable
- Good mechanical strength and highly flexible
- Delivery in convenient storage boxes

| | |
|---|---|
| **MATERIAL** | Polyvinylidene Fluoride cross-linked (PVDFX) |
| **Operating Temperature** | -55 °C to +225 °C |
| **Flammability** | UL 224 VW-1 |
| **Recommended Ribbon Type** | TTRHT |
| **Thermal Transfer Printer** | TT430, TT4030 |

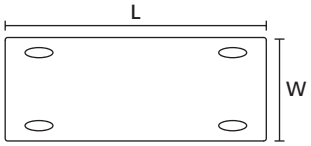
RoHS



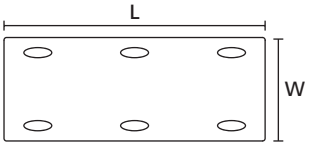




*TAG10x51-4*



*TAG20x51-4*



*TAG20x51-6*

| TYPE | Length (L) | Width (W) | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|
| **TAGHT10X51-4WH** | 51.0 | 10.0 | 2,000 pcs. | White (WH) | 556-80000 |
| **TAGHT20X51-4WH** | 51.0 | 20.0 | 1,000 pcs. | White (WH) | 556-80004 |
| **TAGHT20X51-6WH** | 51.0 | 20.0 | 1,000 pcs. | White (WH) | 556-80002 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

MIL SAE® For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Self-laminating labels, thermal transfer

**Helatag 1209 (White-Transparent)**

These labels are ideal identifying cables and wire. They consist of a printable area plus a lamination function for protection of print text against humidity, dirt, debris and mechanical abrasion. Due to its flexibility these labels are also suitable for flat ribbon cables.

**Features and benefits**

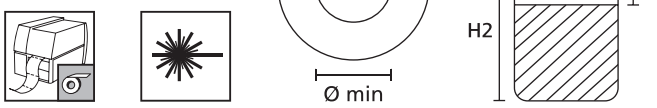
- High-quality self-laminating labels
- Suitable for marking of wires and cables
- Laminating function gives excellent protection against humidity and mechanical abrasion
- Rounded edge design gives additional bonding strength




*Helatag 1209 offers an excellent protection against abrasion and environmental impact.*

| | |
|---|---|
| **MATERIAL** | Type 1209, Vinyl (PVC), white (WH), transparent (CL) |
| **Operating Temperature** | -20 °C to +80 °C |
| **Curing Temperature** | from 0 °C |
| **Adhesive** | Acrylic |
| **Thickness of Foil** | 90 µm |
| **Chem. Material Properties** | Resistant to water, alcohol, most oils, greases, fuel, aliphatic solvents, weak acids, salts and alkalis. |
| **Recommended Ribbon Type** | TT932DOUT |
| **Thermal Transfer Printer** | TT430, TT4030 |

RoHS

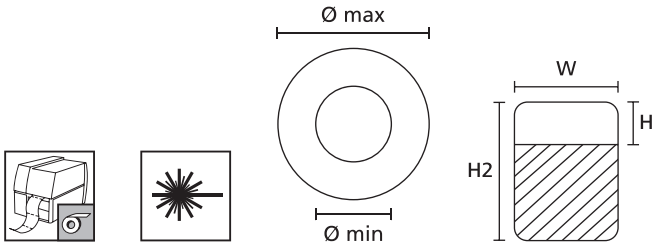



| TYPE | Bundle Ø min. | Bundle Ø max. | Width (W) | Height (H) | Height (H2) | Width of Liner (WL) | Labels per Row | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **TAG51TD3-1209-WHCL** | 1.4 | 3.0 | 25.4 | 8.8 | 19.1 | 85.0 | 3 pcs. | 5,000 pcs. | White (WH), Transparent (CL) | 596-12091 |
| **TAG26TD6-1209-WHCL** | 1.5 | 3.0 | 12.7 | 9.5 | 19.1 | 85.0 | 6 pcs. | 10,000 pcs. | White (WH), Transparent (CL) | 596-12096 |
| **TAG36TD7-1209-WHCL** | 2.0 | 4.7 | 12.7 | 9.0 | 23.8 | 95.0 | 7 pcs. | 10,000 pcs. | White (WH), Transparent (CL) | 596-12097 |
| **TAG2TD6-1209-WHCL** | 3.5 | 7.6 | 12.7 | 12.7 | 36.5 | 82.0 | 6 pcs. | 5,000 pcs. | White (WH), Transparent (CL) | 596-61209 |
| **TAG22TD3-1209-WHCL** | 3.5 | 7.6 | 25.4 | 12.7 | 36.5 | 82.0 | 3 pcs. | 2,500 pcs. | White (WH), Transparent (CL) | 596-32091 |
| **TAG24TD1-1209-WHCL** | 3.5 | 7.6 | 50.8 | 12.7 | 36.5 | 55.0 | 1 pc. | 1,000 pcs. | White (WH), Transparent (CL) | 596-12094 |
| **TAG23TD5-1209-WHCL** | 4.5 | 10.0 | 19.1 | 12.7 | 44.5 | 101.6 | 5 pcs. | 5,000 pcs. | White (WH), Transparent (CL) | 596-12095 |
| **TAG25TD3-1209-WHCL** | 4.5 | 10.0 | 25.4 | 12.7 | 44.5 | 82.0 | 3 pcs. | 2,500 pcs. | White (WH), Transparent (CL) | 596-51209 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available. More colours on request.

## Self-laminating labels, thermal transfer

### Helatag 1209 (White-Transparent)




| TYPE | Bundle Ø min. | Bundle Ø max. | Width (W) | Height (H) | Height (H2) | Width of Liner (WL) | Labels per Row | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **TAG9TD3-1209-WHCL** | 5.5 | 12.1 | 25.4 | 19.1 | 57.1 | 82.0 | 3 pcs. | 2,500 pcs. | White (WH), Transparent (CL) | 596-91209 |
| **TAG10TD2-1209-WHCL** | 5.5 | 12.1 | 49.5 | 19.1 | 57.1 | 101.6 | 2 pcs. | 1,000 pcs. | White (WH), Transparent (CL) | 596-12090 |
| **TAG91TD1-1209-WHCL** | 8.0 | 16.0 | 70.0 | 35.0 | 85.0 | 74.0 | 1 pc. | 500 pcs. | White (WH), Transparent (CL) | 596-41209 |
| **TAG1TD2-1209-WHCL** | 8.5 | 18.2 | 48.2 | 19.1 | 79.2 | 101.6 | 2 pcs. | 1,000 pcs. | White (WH), Transparent (CL) | 596-21209 |
| **TAG3TD3-1209-WHCL** | 10.0 | 22.2 | 25.4 | 25.4 | 95.3 | 82.0 | 3 pcs. | 1,000 pcs. | White (WH), Transparent (CL) | 596-31209 |
| **TAG6TD1-1209-WHCL** | 10.0 | 22.2 | 50.8 | 25.4 | 95.3 | 55.0 | 1 pc. | 500 pcs. | White (WH), Transparent (CL) | 596-11209 |
| **TAG107TD3-1209-WHCL** | 12.0 | 37.5 | 25.4 | 31.8 | 149.9 | 82.0 | 3 pcs. | 1,000 pcs. | White (WH), Transparent (CL) | 596-01209 |
| **TAG38TD3-1209-WHCL** | 20.8 | 47.5 | 25.4 | 38.1 | 187.2 | 82.0 | 3 pcs. | 1,000 pcs. | White (WH), Transparent (CL) | 596-12098 |
| **TAG07TD1-1209-WHCL** | 20.8 | 47.5 | 50.8 | 25.4 | 187.2 | 55.0 | 1 pc. | 250 pcs. | White (WH), Transparent (CL) | 596-71209 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available. More colours on request.

Date of issue: January 2019

## Self-laminating labels, thermal transfer

**Helatag 323 (White-Transparent), high temperature**

This self-laminating label consists of a printable area plus a lamination function for protection of print text against humidity, dirt, debris and mechanical abrasion. It is ideally suited for wire and cable marking in both high temperature and outside environments, particular used in industry as well as military technology.

**Features and benefits**

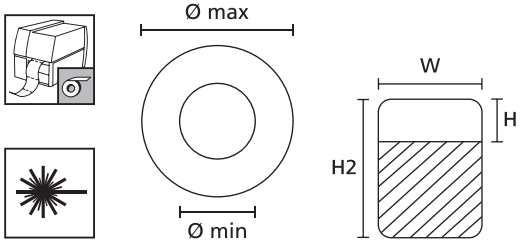
- High temperature self-laminating labels with an inscription field
- Extremely scratch and chemical resistant
- Protective laminating foil ensures optimal protection against humidity, dirt, debris, and mechanical abrasion
- Survives 5 years external weathering in central European climate



*Easy marking of flexible, semi-rigid and rigid cables and wires.*

| | |
|---|---|
| **MATERIAL** | Type 323, Polyvinylidene Fluoride (PVDF) |
| **Operating Temperature** | -40 °C to +140 °C, intermittent +160 °C |
| **Curing Temperature** | from +10 °C |
| **Adhesive** | Acrylic |
| **Thickness of Foil** | 25 µm |
| **Chem. Material Properties** | Excellent resistance against water, UV radiation, weather influence and solvents based on petroleum. |
| **Recommended Ribbon Type** | TT932DOUT |
| **Thermal Transfer Printer** | TT430, TT4030 |

RoHS




| TYPE | Bundle Ø min. | Bundle Ø max. | Width (W) | Height (H) | Height (H2) | Width of Liner (WL) | Labels per Row | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **TAG51TD3-323-WHCL** | 1.4 | 3.0 | 25.4 | 8.8 | 19.1 | 85.0 | 3 pcs. | 5,000 pcs. | White (WH), Transparent (CL) | 596-51320 |
| **TAG26TD6-323-WHCL** | 1.5 | 3.0 | 12.7 | 9.5 | 19.1 | 85.0 | 6 pcs. | 10,000 pcs. | White (WH), Transparent (CL) | 596-26320 |
| **TAG36TD7-323-WHCL** | 2.0 | 4.7 | 12.7 | 9.0 | 23.8 | 95.0 | 7 pcs. | 10,000 pcs. | White (WH), Transparent (CL) | 596-36320 |
| **TAG24TD1-323-WHCL** | 3.5 | 7.6 | 50.8 | 12.7 | 36.5 | 55.0 | 1 pc. | 1,000 pcs. | White (WH), Transparent (CL) | 596-24320 |
| **TAG2TD6-323-WHCL** | 3.5 | 7.6 | 12.7 | 12.7 | 36.5 | 82.0 | 6 pcs. | 5,000 pcs. | White (WH), Transparent (CL) | 596-02320 |
| **TAG22TD3-323-WHCL** | 3.5 | 7.6 | 25.4 | 12.7 | 36.5 | 82.0 | 3 pcs. | 2,500 pcs. | White (WH), Transparent (CL) | 596-22320 |
| **TAG23TD5-323-WHCL** | 4.5 | 10.0 | 19.1 | 12.7 | 44.5 | 101.6 | 5 pcs. | 5,000 pcs. | White (WH), Transparent (CL) | 596-23320 |
| **TAG25TD3-323-WHCL** | 4.5 | 10.0 | 25.4 | 12.7 | 44.5 | 82.0 | 3 pcs. | 2,500 pcs. | White (WH), Transparent (CL) | 596-25320 |
| **TAG9TD3-323-WHCL** | 5.5 | 12.1 | 25.4 | 19.1 | 57.1 | 82.0 | 3 pcs. | 2,500 pcs. | White (WH), Transparent (CL) | 596-09320 |
| **TAG10TD2-323-WHCL** | 5.5 | 12.1 | 49.5 | 19.1 | 57.1 | 101.6 | 2 pcs. | 1,000 pcs. | White (WH), Transparent (CL) | 596-10320 |
| **TAG1TD2-323-WHCL** | 8.5 | 18.2 | 48.2 | 19.1 | 79.2 | 101.6 | 2 pcs. | 1,000 pcs. | White (WH), Transparent (CL) | 596-01320 |
| **TAG3TD3-323-WHCL** | 10.0 | 22.2 | 25.4 | 25.4 | 95.3 | 82.0 | 3 pcs. | 1,000 pcs. | White (WH), Transparent (CL) | 596-03320 |
| **TAG6TD1-323-WHCL** | 10.0 | 22.2 | 50.8 | 25.4 | 95.3 | 55.0 | 1 pc. | 500 pcs. | White (WH), Transparent (CL) | 596-06320 |
| **TAG107TD3-323-WHCL** | 12.0 | 37.5 | 25.4 | 31.8 | 149.9 | 82.0 | 3 pcs. | 1,000 pcs. | White (WH), Transparent (CL) | 596-10732 |
| **TAG38TD3-323-WHCL** | 20.8 | 47.5 | 25.4 | 38.1 | 187.2 | 82.0 | 3 pcs. | 1,000 pcs. | White (WH), Transparent (CL) | 596-38320 |
| **TAG07TD1-323-WHCL** | 20.8 | 47.5 | 50.8 | 25.4 | 187.2 | 55.0 | 1 pc. | 250 pcs. | White (WH), Transparent (CL) | 596-07320 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available. More colours on request.

Date of issue: January 2019

## Self-laminating labels, laser printer

**Helatag 1104 (White-Transparent)**

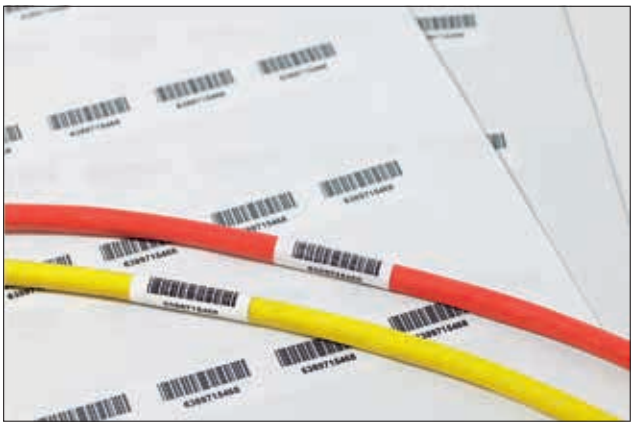
A specially developed material for use in labels required to wrap around cables and wires. The conformable structure of the label ensures that once the label is applied to the wire it remains in place without lifting. The rounded edge construction gives additional bonding features not found in straight edge label designs.

The information is printed onto the white inscription area. The printed information area is placed onto the wire and the transparent tail is wrapped around the wire and covers the text; this gives excellent protection from abrasion, dust and debris.

TagPrint Pro labelling program comes pre-loaded with all our labels. Designing labels is simply done; just choose inbuilt graphics or download your own and add data from ERP system or standard office programs such as Excel. Barcodes are created in a couple of clicks.

**Features and benefits**

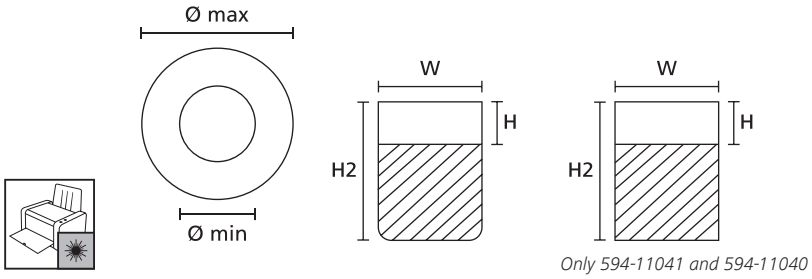
- High-quality self-laminating labels
- Suitable for marking of wires and cables
- Laminating function gives excellent protection against humidity and mechanical abrasion
- Rounded edge design gives additional bonding strength
- Standard material (25 micron) for standard labels
- Simple and efficient label design and printing with TagPrint Pro labelling software
- Templates available from www.HellermannTyton.com for those wishing to use MS Word
- Clear protective box to ensures labels stay as good as new



*Laminating the mark gives long-term print survivability.*

| | |
|---|---|
| **MATERIAL** | Type 1104, Polyester (PET), white-transparent (WH/CL), self-laminating |
| **Operating Temperature** | -40 °C to +150 °C |
| **Curing Temperature** | from +10 °C |
| **Adhesive** | Acrylic |
| **Thickness of Foil** | 25 µm |
| **Chem. Material Properties** | Excellent resistance to alcohol, gasoline, cleaning solvents, butanol, ethyl and Butylcellosolve solvent, battery acid. |

HF ✓ RoHS ✓




*Only 594-11041 and 594-11040*

**Software TagPrint Pro for troublefree printing see page 523. For MS-Windows Word design templates for simple applications please refer to www.HellermannTyton.com (Media Centre).**

| TYPE | Bundle Ø min. | Bundle Ø max. | Width (W) | Height (H) | Height (H2) | Labels per Sheet | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| TAG26LA4-1104-WHCL | 1.5 | 3.0 | 12.7 | 9.5 | 19.1 | 180 pcs. | 5,000 pcs. | White (WH), Transparent (CL) | 594-11041 |
| TAG130LA4-1104-WHCL | 2.4 | 4.8 | 12.7 | 9.0 | 24.0 | 165 pcs. | 5,000 pcs. | White (WH), Transparent (CL) | 594-21104 |
| TAG49LA4-1104-WHCL | 2.6 | 5.3 | 25.4 | 8.8 | 25.4 | 70 pcs. | 2,500 pcs. | White (WH), Transparent (CL) | 594-11042 |
| TAG131LA4-1104-WHCL | 3.8 | 7.6 | 12.7 | 12.7 | 36.5 | 105 pcs. | 2,500 pcs. | White (WH), Transparent (CL) | 594-31104 |
| TAG132LA4-1104-WHCL | 3.8 | 7.6 | 20.3 | 12.7 | 36.5 | 63 pcs. | 2,500 pcs. | White (WH), Transparent (CL) | 594-41104 |
| TAG02LA4-1104-WHCL | 3.8 | 7.6 | 25.4 | 12.7 | 36.5 | 49 pcs. | 2,450 pcs. | White (WH), Transparent (CL) | 594-01104 |
| TAG133LA4-1104-WHCL | 5.1 | 10.1 | 19.1 | 12.7 | 44.5 | 60 pcs. | 2,500 pcs. | White (WH), Transparent (CL) | 594-51104 |
| TAG134LA4-1104-WHCL | 5.1 | 10.1 | 25.4 | 12.7 | 44.5 | 42 pcs. | 1,000 pcs. | White (WH), Transparent (CL) | 594-61104 |
| TAG09LA4-1104-WHCL | 5.8 | 11.6 | 25.4 | 19.1 | 55.5 | 35 pcs. | 1,000 pcs. | White (WH), Transparent (CL) | 594-11104 |
| TAG135LA4-1104-WHCL | 6.7 | 13.5 | 48.5 | 12.7 | 55.0 | 20 pcs. | 500 pcs. | White (WH), Transparent (CL) | 594-71104 |
| TAG137LA4-1104-WHCL | 7.1 | 14.3 | 31.8 | 22.9 | 67.7 | 24 pcs. | 1,000 pcs. | White (WH), Transparent (CL) | 594-91104 |
| TAG136LA4-1104-WHCL | 7.7 | 15.5 | 25.4 | 19.1 | 67.7 | 28 pcs. | 1,000 pcs. | White (WH), Transparent (CL) | 594-81104 |
| TAG145LA4-1104-WHCL | 11.1 | 22.3 | 25.4 | 25.4 | 95.3 | 21 pcs. | 1,000 pcs. | White (WH), Transparent (CL) | 594-11040 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

Date of issue: January 2019

## Self-laminating labels, laser printer

**Helatag 1105 (White-Transparent)**

These labels are ideal for marking cables of a larger diameter. The type 1105 self-laminating labels exceed the length of 100 mm and are made of a thicker material than type 1104.

Because of its greater material rigidity these labels can be easily removed from the sheet and applied by hand to larger cables and hoses.

**Features and benefits**

- High-quality self-laminating labels
- Suitable for marking of wires and cables
- Laminating function gives excellent protection against humidity and mechanical abrasion
- Rounded edge design gives additional bonding strength
- Thicker material (50 micron) for longer labels
- Simple and efficient label design and printing with TagPrint Pro labelling software
- Templates available from www.HellermannTyton.com for those wishing to use MS Word
- Clear protective box to ensures labels stay as good as new

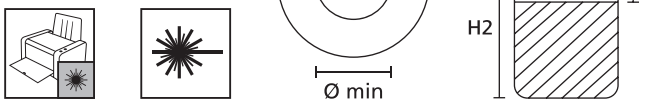
**Software TagPrint Pro for troublefree printing see page 523.**
**For MS-Windows Word design templates for simple applications please refer to www.HellermannTyton.com (Media Centre).**




*Laminating the mark gives long-term print survivability.*

| | |
|---|---|
| **MATERIAL** | Type 1105, Polyester (PET), white-transparent (WH/CL), self-laminating |
| **Operating Temperature** | -40 °C to +150 °C |
| **Curing Temperature** | from +2 °C |
| **Adhesive** | Acrylic |
| **Thickness of Foil** | 50 µm |
| **Chem. Material Properties** | Excellent resistance to alcohol, gasoline, cleaning solvents, butanol, ethyl and Butylcellosolve solvent, battery acid. |

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| TYPE | Bundle Ø min. | Bundle Ø max. | Width (W) | Height (H) | Height (H2) | Labels per Sheet | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **TAG138LA4-1105-WHCL** | 11.8 | 23.6 | 38.1 | 19.1 | 93.1 | 15 pcs. | 500 pcs. | White (WH), Transparent (CL) | 594-13876 |
| **TAG139LA4-1105-WHCL** | 18.2 | 36.4 | 38.1 | 25.4 | 139.7 | 10 pcs. | 500 pcs. | White (WH), Transparent (CL) | 594-13976 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

Date of issue: January 2019

## Self-laminating labels, dot matrix

### Helatag 101 (White-Transparent)

Helatag self-laminating wire markers are used in industries ranging from automotive for wire and pipe identification to electrical panels.

**Features and benefits**

- Print industrial grade labels using standard dot matrix printers
- For low to medium print volumes
- Self-laminating wire markers for automotive and other industries
- Simple and efficient label design and printing with TagPrint Pro software
- Clear protective box to ensures labels stay as good as new

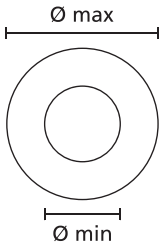


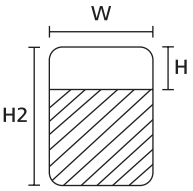

*Helatag 101 – unique packaging ensures outstanding label protection.*

| | |
|---|---|
| **MATERIAL** | Type 101, Vinyl (PVC), white-transparent (WH/CL), self-laminating |
| **Operating Temperature** | -40 °C to +80 °C |
| **Curing Temperature** | from +10 °C |
| **Adhesive** | Acrylic |
| **Thickness of Foil** | 80 µm |
| **Chem. Material Properties** | Good resistance to water, oils and many solvents |

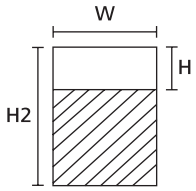
RoHS



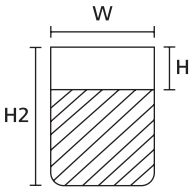



*595-08101, 595-23101*




*595-22101, 595-09101, 595-10101*




*595-03101*

| TYPE | Bundle Ø min. | Bundle Ø max. | Width (W) | Height (H) | Height (H2) | Labels per Sheet | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **TAG22-101-WHCL** | 3.5 | 7.6 | 25.4 | 12.7 | 36.5 | 64 pcs. | 2,500 pcs. | White (WH), Transparent (CL) | 595-22101 |
| **TAG9-101-WHCL** | 5.5 | 12.1 | 25.4 | 19.1 | 57.2 | 32 pcs. | 1,000 pcs. | White (WH), Transparent (CL) | 595-09101 |
| **TAG10-101-WHCL** | 5.5 | 12.1 | 50.8 | 19.1 | 57.2 | 20 pcs. | 1,000 pcs. | White (WH), Transparent (CL) | 595-10101 |
| **TAG3-101-WHCL** | 10.0 | 22.2 | 25.4 | 25.4 | 95.3 | 24 pcs. | 1,000 pcs. | White (WH), Transparent (CL) | 595-03101 |
| **TAG8-101-WHCL** | 17.8 | 35.6 | 25.4 | 38.1 | 149.8 | 14 pcs. | 500 pcs. | White (WH), Transparent (CL) | 595-08101 |
| **TAG23-101-WHCL** | 23.7 | 47.5 | 25.4 | 38.1 | 187.9 | 7 pcs. | 250 pcs. | White (WH), Transparent (CL) | 595-23101 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

Date of issue: January 2019

## Self-laminating labels, manual marking

**RiteOn, Starter Pack, Material 1401 dispenser**

A specially developed material for use in labels required to wrap around cables and wires. The conformable structure of the label ensures that once the label is applied to the wire it remains in place without lifting.

The SPRO200-1401-WH Starter Pack contains all you need to start work identifying your wires,

1 x RiteOn dispenser

1 x RO202 reel of 150 self-laminating labels for cable diameters ranging from 6 mm to 12 mm

1 x T82S-BK black indelible ink marker pen

### Features and benefits

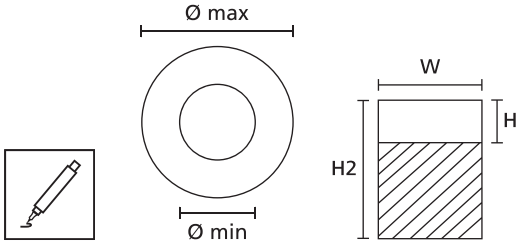
- Palm sized hand held self-laminating label dispenser
- Easy to write on and dispense labels
- Wide range of wire diameters covered as standard
- Ideal for low volume maintenance and repair work
- Write text with specially formulated fast-drying ink T82 pens




*Easy to write and dispense labels with RiteOn label dispenser.*

| | |
|---|---|
| **MATERIAL** | Type 1401, Vinyl (PVC) |
| **Operating Temperature** | -40 °C to +80 °C |
| **Curing Temperature** | from +10 °C |
| **Adhesive** | Acrylic |
| **Thickness of Foil** | 80 µm |
| **Chem. Material Properties** | Resistant to water, oil and many solvents. |

RoHS




*Application video: RiteOn*

| TYPE | Description | Bundle Ø min. | Bundle Ø max. | Width (W) | Height (H) | Height (H2) | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|
| **RO201-1401-WH** | Filled dispenser | 4.0 | 8.1 | 12.7 | 12.7 | 38.1 | 200 pcs. | White (WH), Transparent (CL) | 550-14011 |
| **RO202-1401-WH** | Filled dispenser | 6.1 | 12.1 | 19.1 | 12.7 | 50.8 | 150 pcs. | White (WH), Transparent (CL) | 550-14012 |
| **RO203-1401-WH** | Filled dispenser | 9.1 | 18.2 | 19.1 | 25.4 | 76.2 | 100 pcs. | White (WH), Transparent (CL) | 550-14013 |
| **RO201REF-1401-WH** | Refill packs | 4.0 | 8.1 | 12.7 | 12.7 | 38.1 | 200 pcs. | White (WH), Transparent (CL) | 550-14014 |
| **RO202REF-1401-WH** | Refill packs | 6.1 | 12.1 | 19.1 | 12.7 | 50.8 | 150 pcs. | White (WH), Transparent (CL) | 550-11401 |
| **RO203REF-1401-WH** | Refill packs | 9.1 | 18.2 | 19.1 | 25.4 | 76.2 | 100 pcs. | White (WH), Transparent (CL) | 550-71401 |
| **SPRO200-1401-WH** | Starter pack | 6.1 | 12.1 | 19.1 | 12.7 | 50.8 | 150 pcs. | White (WH), Transparent (CL) | 550-14010 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available. More colours on request.

| TYPE | Description | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|
| **T82S-BK** | Indelible Marker Pen | 2 pcs. | Black (BK) | 500-50820 |
| **T82R-RD** | Indelible Marker Pen | 2 pcs. | Red (RD) | 500-50822 |

Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

## Self-laminating labels, manual marking

**HELASIGN, Material 1402, Booklet**

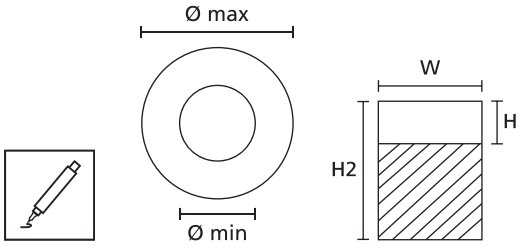
A quick and simple on-site solution, for either permanent or temporary marking of wires, cables and pipes.

### Features and benefits

- Self-laminating labels supplied in handy pocket-sized booklets
- Booklet cover protects labels when stored
- Ideal for low volume maintenance and repair work
- Easy to write on and dispense labels
- Laminating function gives excellent protection against humidity and mechanical abrasion
- Applicator tool for clean application enclosed
- Write text with specially formulated fast-drying ink T82 pens



*Always on hand: Labels in a convenient, pocket sized and lightweight booklet.*




| MATERIAL | Type 1402, Vinyl (PVC) |
|---|---|
| **Operating Temperature** | -40 °C to +80 °C |
| **Curing Temperature** | from +8 °C |
| **Adhesive** | Acrylic |
| **Thickness of Foil** | 80 µm |
| **Chem. Material Properties** | Resistant to water, oil and many solvents. |

RoHS

| TYPE | Bundle Ø min. | Bundle Ø max. | Width (W) | Height (H) | Height (H2) | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **HSMB-C1-1402-BU** | 4.0 | 8.1 | 12.7 | 12.7 | 38.1 | 240 pcs. | Blue (BU), Transparent (CL) | 598-14025 |
| **HSMB-C1-1402-GN** | 4.0 | 8.1 | 12.7 | 12.7 | 38.1 | 240 pcs. | Green (GN), Transparent (CL) | 598-14024 |
| **HSMB-C1-1402-OG** | 4.0 | 8.1 | 12.7 | 12.7 | 38.1 | 240 pcs. | Orange (OG), Transparent (CL) | 598-14022 |
| **HSMB-C1-1402-RD** | 4.0 | 8.1 | 12.7 | 12.7 | 38.1 | 240 pcs. | Red (RD), Transparent (CL) | 598-14021 |
| **HSMB-C1-1402-WH** | 4.0 | 8.1 | 12.7 | 12.7 | 38.1 | 240 pcs. | White (WH), Transparent (CL) | 598-14020 |
| **HSMB-C1-1402-YE** | 4.0 | 8.1 | 12.7 | 12.7 | 38.1 | 240 pcs. | Yellow (YE), Transparent (CL) | 598-14023 |
| **HSMB-C2-1402-BU** | 6.1 | 12.1 | 19.1 | 12.7 | 50.8 | 120 pcs. | Blue (BU), Transparent (CL) | 598-11402 |
| **HSMB-C2-1402-GN** | 6.1 | 12.1 | 19.1 | 12.7 | 50.8 | 120 pcs. | Green (GN), Transparent (CL) | 598-01402 |
| **HSMB-C2-1402-OG** | 6.1 | 12.1 | 19.1 | 12.7 | 50.8 | 120 pcs. | Orange (OG), Transparent (CL) | 598-14028 |
| **HSMB-C2-1402-RD** | 6.1 | 12.1 | 19.1 | 12.7 | 50.8 | 120 pcs. | Red (RD), Transparent (CL) | 598-14027 |
| **HSMB-C2-1402-WH** | 6.1 | 12.1 | 19.1 | 12.7 | 50.8 | 120 pcs. | White (WH), Transparent (CL) | 598-14026 |
| **HSMB-C2-1402-YE** | 6.1 | 12.1 | 19.1 | 12.7 | 50.8 | 120 pcs. | Yellow (YE), Transparent (CL) | 598-14029 |
| **HSMB-C3-1402-BU** | 9.1 | 18.2 | 25.4 | 19.1 | 76.2 | 60 pcs. | Blue (BU), Transparent (CL) | 598-71402 |
| **HSMB-C3-1402-GN** | 9.1 | 18.2 | 25.4 | 19.1 | 76.2 | 60 pcs. | Green (GN), Transparent (CL) | 598-61402 |
| **HSMB-C3-1402-OG** | 9.1 | 18.2 | 25.4 | 19.1 | 76.2 | 60 pcs. | Orange (OG), Transparent (CL) | 598-41402 |
| **HSMB-C3-1402-RD** | 9.1 | 18.2 | 25.4 | 19.1 | 76.2 | 60 pcs. | Red (RD), Transparent (CL) | 598-31402 |
| **HSMB-C3-1402-WH** | 9.1 | 18.2 | 25.4 | 19.1 | 76.2 | 60 pcs. | White (WH), Transparent (CL) | 598-21402 |
| **HSMB-C3-1402-YE** | 9.1 | 18.2 | 25.4 | 19.1 | 76.2 | 60 pcs. | Yellow (YE), Transparent (CL) | 598-51402 |
| **HSMB-C4-1402-WH** | 16.2 | 32.3 | 25.4 | 25.4 | 127.0 | 30 pcs. | White (WH), Transparent (CL) | 598-40402 |
| **HSMB-C5-1402-WH** | 20.2 | 40.3 | 25.4 | 25.4 | 152.4 | 30 pcs. | White (WH), Transparent (CL) | 598-50402 |

All dimensions in mm. Subject to technical changes. Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available. More colours on request.

| TYPE | Description | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|
| **T82S-BK** | Indelible Marker Pen | 2 pcs. | Black (BK) | 500-50820 |
| **T82R-RD** | Indelible Marker Pen | 2 pcs. | Red (RD) | 500-50822 |

Subject to technical changes. Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

Date of issue: January 2019

## Pre-printed Cable Markers

**Helagrip, slide on, chevron cut**

The Helagrip range consists of pre-printed markers that slide easily onto cables and wires. The anti-skew chevron-cut ensures that markers are locked together and stay in place.

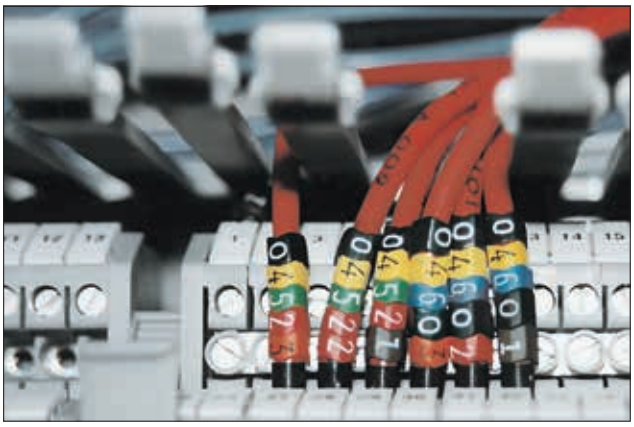
The markers are ideally suited for panel building, mass transit, utilities, telecommunications and electrical contracting.

Markers are available as standard in international resistor colour code and yellow material marked in black. White material marked in black is available to special order.

Characters are 0-9, A-Z and standard electrical symbols.

### Features and benefits

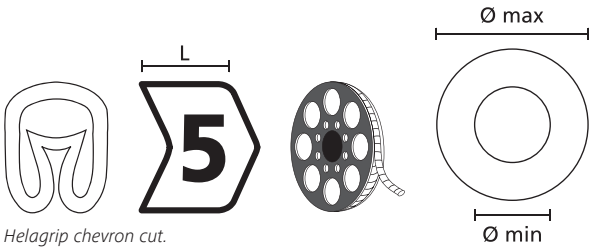
- Easily apply one size marker to wide range of cables
- Markers are applied before termination takes place
- Chevron cut to lock markers together ensuring text remains in place
- Traditional wire marking available in yellow, white and colour code
- Flexible material so product returns securely on the wire
- Applicator tool TJC available



*Clearly a better way to identify in confined spaces.*

| | |
|---|---|
| **MATERIAL** | Flexible Polyvinyl Chloride, cadmium free (PVC) |
| **Operating Temperature** | -65 °C to +105 °C, intermittent +135 °C |
| **Flammability** | UL 94 V0 (3 mm) |

RoHS




*Helagrip chevron cut.*

**The products have been tested in-house according to UL224.**

| TYPE | Bundle Ø min. | Bundle Ø max. | Length (L) | Pack Cont. |
|---|---|---|---|---|
| **HGDC1-3** | 1.0 | 3.0 | 3.5 | 1,000 pcs. |
| **HGDC2-5** | 2.0 | 5.0 | 3.5 | 1,000 pcs. |
| **HGDC4-9** | 4.0 | 9.0 | 5.0 | 250 pcs. |

All dimensions in mm. Subject to technical changes. Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available. More colours on request.

| TYPE | Description | For Size | Article-No. |
|---|---|---|---|
| **TJC1-3** | Applicator tool TJC1-3 | Helagrip 1-3 | 518-00113 |
| **TJC2-5** | Applicator tool TJC2-5 | Helagrip 2-5 | 518-00125 |
| **TJC4-9** | Applicator tool TJC4-9 | Helagrip 4-9 | 518-00149 |

All dimensions in mm. Subject to technical changes. Minimum Order Quantity (MOQ) may differ from package content.

Date of issue: January 2019

## Pre-printed Cable Markers

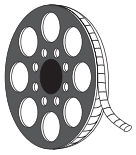
**Helagrip, slide on, chevron cut**

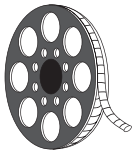
| HGDC1-3 | |
|---|---|
| | Article-No. |
| A | 515-01014 |
| B | 515-01024 |
| C | 515-01034 |
| D | 515-01044 |
| E | 515-01054 |
| F | 515-01064 |
| G | 515-01074 |
| H | 515-01084 |
| I | 515-01094 |
| J | 515-01104 |
| K | 515-01114 |
| L | 515-01124 |
| M | 515-01134 |
| N | 515-01144 |
| O | 515-01154 |
| P | 515-01164 |
| Q | 515-01174 |
| R | 515-01184 |
| S | 515-01194 |
| T | 515-01204 |
| U | 515-01214 |
| V | 515-01224 |
| W | 515-01234 |
| X | 515-01244 |
| Y | 515-01254 |
| Z | 515-01264 |

| HGDC1-3 | |
|---|---|
| | Article-No. |
| 0 | 515-01604 |
| 1 | 515-01614 |
| 2 | 515-01624 |
| 3 | 515-01634 |
| 4 | 515-01644 |
| 5 | 515-01654 |
| 6 | 515-01664 |
| 7 | 515-01674 |
| 8 | 515-01684 |
| 9 | 515-01694 |
| + | 515-01704 |
| – | 515-01714 |
| / | 515-01724 |
| = | 515-01734 |
| • | 515-01804 |
| 0 | 515-01600 |
| 1 | 515-01611 |
| 2 | 515-01622 |
| 3 | 515-01633 |
| 4 | 515-01644 |
| 5 | 515-01655 |
| 6 | 515-01666 |
| 7 | 515-01677 |
| 8 | 515-01688 |
| 9 | 515-01699 |

| HGDC2-5 | |
|---|---|
| | Article-No. |
| A | 515-02014 |
| B | 515-02024 |
| C | 515-02034 |
| D | 515-02044 |
| E | 515-02054 |
| F | 515-02064 |
| G | 515-02074 |
| H | 515-02084 |
| I | 515-02094 |
| J | 515-02104 |
| K | 515-02114 |
| L | 515-02124 |
| M | 515-02134 |
| N | 515-02144 |
| O | 515-02154 |
| P | 515-02164 |
| Q | 515-02174 |
| R | 515-02184 |
| S | 515-02194 |
| T | 515-02204 |
| U | 515-02214 |
| V | 515-02224 |
| W | 515-02234 |
| X | 515-02244 |
| Y | 515-02254 |
| Z | 515-02264 |

| HGDC2-5 | |
|---|---|
| | Article-No. |
| 0 | 515-02604 |
| 1 | 515-02614 |
| 2 | 515-02624 |
| 3 | 515-02634 |
| 4 | 515-02644 |
| 5 | 515-02654 |
| 6 | 515-02664 |
| 7 | 515-02674 |
| 8 | 515-02684 |
| 9 | 515-02694 |
| + | 515-02704 |
| – | 515-02714 |
| • | 515-02715 |
| / | 515-02724 |
| = | 515-02734 |
| 0 | 515-02600 |
| 1 | 515-02611 |
| 2 | 515-02622 |
| 3 | 515-02633 |
| 4 | 515-02644 |
| 5 | 515-02655 |
| 6 | 515-02666 |
| 7 | 515-02677 |
| 8 | 515-02688 |
| 9 | 515-02699 |





Date of issue: January 2019

## Pre-printed Cable Markers

**Helagrip, slide on, chevron cut**

| HGDC4-9 | |
|---|---|
| | Article-No. |
| A | 515-03014 |
| B | 515-03024 |
| C | 515-03034 |
| D | 515-03044 |
| E | 515-03054 |
| F | 515-03064 |
| G | 515-03074 |
| H | 515-03084 |
| I | 515-03094 |
| J | 515-03104 |
| K | 515-03114 |
| L | 515-03124 |
| M | 515-03134 |
| N | 515-03144 |
| O | 515-03154 |
| P | 515-03164 |
| Q | 515-03174 |
| R | 515-03184 |
| S | 515-03194 |
| T | 515-03204 |
| U | 515-03214 |
| V | 515-03224 |
| W | 515-03234 |
| X | 515-03244 |
| Y | 515-03254 |
| Z | 515-03264 |

| HGDC4-9 | |
|---|---|
| | Article-No. |
| 0 | 515-03604 |
| 1 | 515-03614 |
| 2 | 515-03624 |
| 3 | 515-03634 |
| 4 | 515-03644 |
| 5 | 515-03654 |
| 6 | 515-03664 |
| 7 | 515-03674 |
| 8 | 515-03684 |
| 9 | 515-03694 |
| + | 515-03704 |
| – | 515-03714 |
| / | 515-03724 |
| • | 515-01946 |
| = | 515-01947 |
| 0 | 515-03600 |
| 1 | 515-03611 |
| 2 | 515-03622 |
| 3 | 515-03633 |
| 4 | 515-03644 |
| 5 | 515-03655 |
| 6 | 515-03666 |
| 7 | 515-03677 |
| 8 | 515-03688 |
| 9 | 515-03699 |



## Pre-printed Cable Markers

**Ovalgrip, slide on, straight cut**

The Ovalgrip range consists of pre-printed markers that slide easily onto cables and wires. The markers are ideally suited to panel building, mass transit, utilities, telecommunications and electrical contracting.

These markers are supplied as standard on a disk / reel.

They are available as a standard in yellow material marked in black, and international resistor colour code. Characters are 0-9, A-Z and standard electrical symbols.

White material marked in black available on special request.

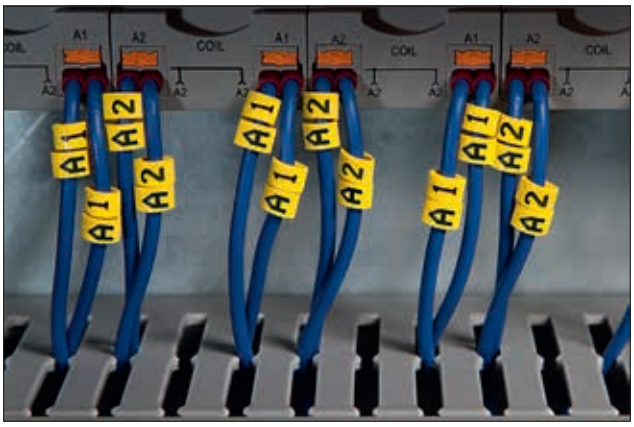
AT1 Arrowtags will fit 7 size 50 markers.

AT2 Arrowtags will fit 8 size 85 markers.

AT3 Arrowtags will fit 14 size 85 markers.

### Features and benefits

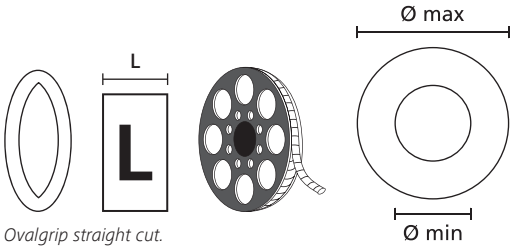
- Oval shaped markers designed to fit AT1, AT2 or AT3 (depends on Ovalgrip size)
- Ideal for use in maintenance and repair and fixed with cable ties
- Direct application to wire and cable before termination is also recommended
- Traditional wire marking available in yellow, white and colour code



*A simple idea for complex marking needs.*

| | |
|---|---|
| **MATERIAL** | Flexible Polyvinyl Chloride, cadmium free (PVC) |
| **Operating Temperature** | -65 °C to +105 °C, intermittent +135 °C |
| **Flammability** | UL 94 V0 (3 mm) |

RoHS



*Ovalgrip straight cut.*

**The products have been tested in-house according to UL224.**

**For details on Arrowtags please see page 485.**

| TYPE | Bundle Ø min. | Bundle Ø max. | Length (L) | Pack Cont. | For Size |
|---|---|---|---|---|---|
| **HODS50** | 1.7 | 3.6 | 4.0 | 1,000 pcs. | AT1 |
| **HODS85** | 1.8 | 6.3 | 4.5 | 1,000 pcs. | AT2/AT3 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available. More colours on request.

Date of issue: January 2019

## Pre-printed Cable Markers

**Ovalgrip, slide on, straight cut**

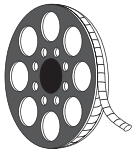
| HODS50 | |
|---|---|
| | Article-No. |
| A | 531-15014 |
| B | 531-15024 |
| C | 531-15034 |
| D | 531-15044 |
| E | 531-15054 |
| F | 531-15064 |
| G | 531-15074 |
| H | 531-15084 |
| I | 531-15094 |
| J | 531-15104 |
| K | 531-15114 |
| L | 531-15124 |
| M | 531-15134 |
| N | 531-15144 |
| O | 531-15154 |
| P | 531-15164 |
| Q | 531-15174 |
| R | 531-15184 |
| S | 531-15194 |
| T | 531-15204 |
| U | 531-15214 |
| V | 531-15224 |
| W | 531-15234 |
| X | 531-15244 |
| Y | 531-15254 |
| Z | 531-15264 |

| HODS50 | |
|---|---|
| | Article-No. |
| 0 | 531-15274 |
| 1 | 531-15284 |
| 2 | 531-15294 |
| 3 | 531-15304 |
| 4 | 531-15314 |
| 5 | 531-15324 |
| 6 | 531-15334 |
| 7 | 531-15344 |
| 8 | 531-15354 |
| 9 | 531-15364 |
| . | 531-00174 |
| / | 531-00175 |
| ⏚ | 531-00176 |
| + | 531-00451 |
| - | 531-00452 |
| 0 | 531-15365 |
| 1 | 531-15366 |
| 2 | 531-15367 |
| 3 | 531-15368 |
| 4 | 531-15314 |
| 5 | 531-15370 |
| 6 | 531-15371 |
| 7 | 531-15372 |
| 8 | 531-15373 |
| 9 | 531-15374 |

| HODS85 | |
|---|---|
| | Article-No. |
| A | 531-07935 |
| B | 531-07936 |
| C | 531-07937 |
| D | 531-07938 |
| E | 531-07939 |
| F | 531-07940 |
| G | 531-07941 |
| H | 531-07942 |
| I | 531-07943 |
| J | 531-07944 |
| K | 531-07945 |
| L | 531-07946 |
| M | 531-07947 |
| N | 531-07948 |
| O | 531-07949 |
| P | 531-07950 |
| Q | 531-07951 |
| R | 531-07952 |
| S | 531-07953 |
| T | 531-07954 |
| U | 531-07955 |
| V | 531-07956 |
| W | 531-07957 |
| X | 531-07958 |
| Y | 531-07959 |
| Z | 531-07960 |

| HODS85 | |
|---|---|
| | Article-No. |
| 0 | 531-07925 |
| 1 | 531-07926 |
| 2 | 531-07927 |
| 3 | 531-07928 |
| 4 | 531-07732 |
| 5 | 531-07930 |
| 6 | 531-07931 |
| 7 | 531-07932 |
| 8 | 531-07933 |
| 9 | 531-07934 |
| . | 531-00384 |
| / | 531-07961 |
| ⏚ | 531-00386 |
| + | 531-07924 |
| - | 531-07923 |
| 0 | 531-07728 |
| 1 | 531-07729 |
| 2 | 531-07730 |
| 3 | 531-07731 |
| 4 | 531-07732 |
| 5 | 531-07733 |
| 6 | 531-07734 |
| 7 | 531-07735 |
| 8 | 531-07736 |
| 9 | 531-07737 |





## Pre-printed Cable Markers

**WIC, snap on**

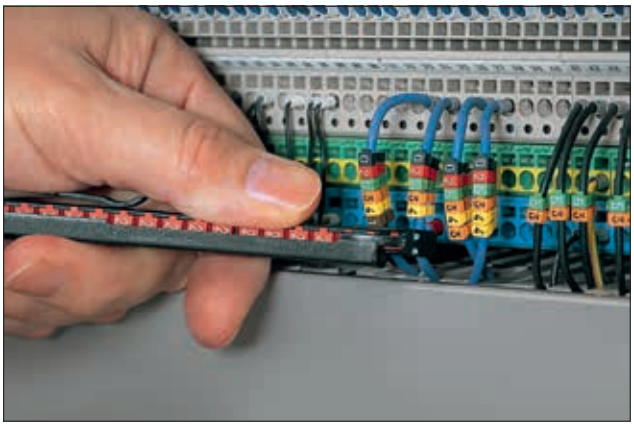
The WIC range of pre-printed cable markers easily snap onto cables and wires. The WIC tool ensures an easy application of the markers – simply insert the markers into the tool, slide down and press the markers onto the wire while twisting. Markers for fibre cables should be applied by hand.

All markers come with a locking mechanism to ensure perfect text alignment.

The two WICA accessories are ideal for marking cables of larger diameters (6 mm² - 95 mm²).

**Features and benefits**

- Fast and easy to use pre-printed nylon snap-on marker
- Ideal where termination is completed or for maintenance and repair
- Markers lock together to give perfect text alignment
- Vibration resistant markers, WIC markers lock onto wire and cable tightly
- WIC tool holds 20 WIC marker in all three sizes
- Gripping system locks markers onto wire and resists rotation
- Available in Yellow, White and international resistor colour code
- Popular 2 digit markings such as L1, L2, L3, PE are available in Yellow or colour code
- Dispenser colour denotes marker size: WIC0 (GN), WIC1 (RD), WIC2 (BU), WIC3 (YE)

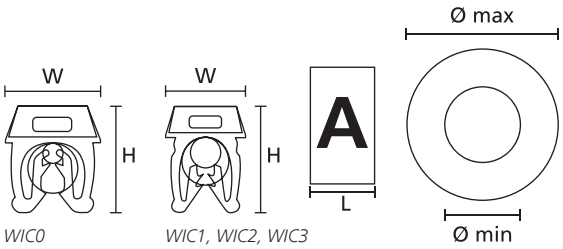


*Use the applicator to simply snap the marker onto your cable.*

| | |
|---|---|
| **MATERIAL** | Polyamide 6.6 (PA66) |
| **Operating Temperature** | -40 °C to +85 °C, (+105 °C, 500 h) |
| **Flammability** | UL 94 V0 |

HF ✓ RoHS ✓

**Customized marking on request**




*WIC0* *WIC1, WIC2, WIC3*

*Application video: WIC*

| TYPE | Bundle Ø min. | Bundle Ø max. | Width (W) | Height (H) | Length (L) | Wire Size Range (mm²) | Pack Cont. | Application Tool |
|---|---|---|---|---|---|---|---|---|
| **WIC0** | 0.80 | 2.20 | 5.0 | 5.5 | 3.0 | 0.15-0.75 | 1,000 pcs. | WIC Tool |
| **WIC1** | 2.00 | 2.80 | 5.0 | 6.4 | 3.0 | 0.50-1.50 | 1,000 pcs. | |
| **WIC2** | 2.80 | 3.80 | 5.6 | 7.1 | 3.0 | 1.50-2.50 | 1,000 pcs. | |
| **WIC3** | 4.30 | 5.30 | 8.0 | 9.6 | 3.0 | 4.00-6.00 | 500 pcs. | |

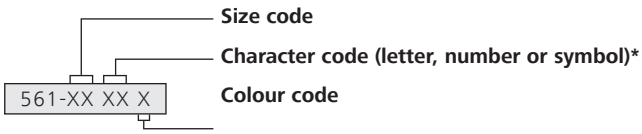
All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available. More colours on request.

Date of issue: January 2019

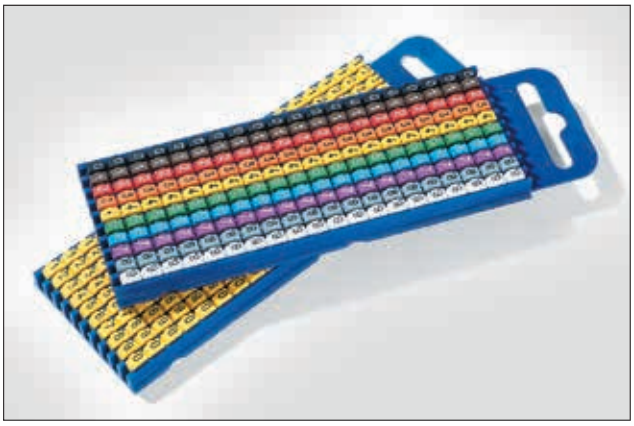
## Pre-printed Cable Markers

**WIC, snap on**

Use our coding system, to easily order the markers suitable for your use.




* For the assortment and the symbols ∿, ⎓ please use the code with three digits.

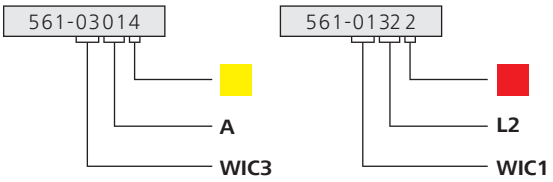


*WIC – pre-printed wire and cable markers.*

### Step 1: Choose your size.

| SIZE | WIC0 | WIC1 | WIC2 | WIC3 |
|---|---|---|---|---|
| |  |  |  |  |
| Code | 00 | 01 | 02 | 03 |

**Example:**




### Step 2: Choose your letter, symbol, number or assortment.

| LETTER | A | B | C | D | E | F | G | H | I | J | K |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Code | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 |
| LETTER | L | M | N | O | P | Q | R | S | T | U | V |
| Code | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |
| LETTER | W | X | Y | Z | | | | | | | |
| Code | 23 | 24 | 25 | 26 | | | | | | | |

| SYMBOL | L1 | L2 | L3 | PE | + | - | / | ⏚ | . |
|---|---|---|---|---|---|---|---|---|---|
| Code | 31 | 32 | 33 | 34 | 70 | 71 | 72 | 73 | 74 |
| SYMBOL | | ↯ | = | ∿ | ⎓ | | | | |
| Code | 75 | 76 | 77 | 000 | 001 | | | | |

| NUMBER | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| Code | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 |

| ASSORTMENT | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| Code | 100 | | | | | | | | | |
| ASSORTMENT | A | E | L | N | R | S | T | + | - | |
| Code | 994 | | | | | | | | | |
| ASSORTMENT | G | H | Y | Z | O | Q | J | K | X | L |
| Code | 003 | | | | | | | | | |
| ASSORTMENT | L1 | L1 | L2 | L2 | L3 | L3 | N | N | ⏚ | ⏚ |
| Code | 300 | | | | | | | | | |
| ASSORTMENT | L1 | L1 | L2 | L2 | L3 | L3 | N | N | ⏚ | ⏚ |
| Code | 302 | | | | | | | | | |

| ASSORTMENT | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| Code | 101 | | | | | | | | | |
| ASSORTMENT | B | C | U | V | W | P | D | F | I | M |
| Code | 002 | | | | | | | | | |
| ASSORTMENT | . | / | ⎓ | ⏚ | + | - | ∿ | = | * | |
| Code | 004 | | | | | | | | | |
| ASSORTMENT | L1 | L1 | L2 | L2 | L3 | L3 | N | N | ⏚ | ⏚ |
| Code | 301 | | | | | | | | | |
| ASSORTMENT | L1 | L1 | L2 | L2 | L3 | L3 | N | N | ⏚ | ⏚ |
| Code | 303 | | | | | | | | | |

### Step 3: Choose your colour.

| COLOUR | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Code | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

**Customized marking on request**

## Pre-printed Cable Markers

### WIC Tool and accessories

The WIC range of pre-printed cable markers easily snap onto cables and wires. The WIC tool ensures an easy application of the markers – simply insert the markers into the tool, slide down and press the markers onto the wire while twisting. Markers for fibre cables should be applied by hand.

All markers come with a locking mechanism to ensure perfect text alignment.

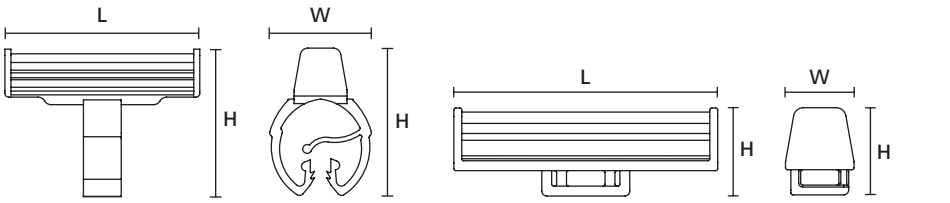
The two WICA accessories are ideal for marking cables of larger diameters (2.5 mm² - 95 mm²).



*WIC cable markers and accessories.*

| | | |
|---|---|---|
| **MATERIAL** | Polyamide 6.6, high impact modified, heat stabilised (PA66HIRHS) | Polyamide 6, glass-fibre reinforced (PA6GF15%) |
| **Operating Temperature** | -40 °C to +85 °C, (+105 °C, 500 h) | -40 °C to +85 °C |
| **Flammability** | UL 94 HB | UL 94 V0 |

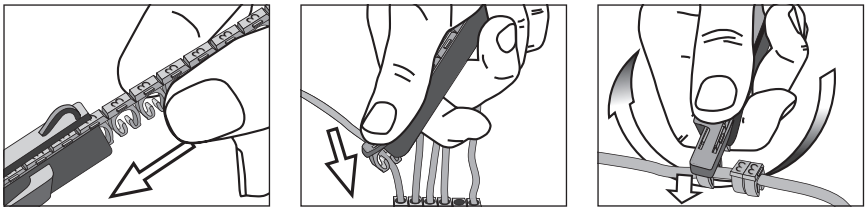
HF ✓ RoHS ✓




*WICA-AC (front view)* *WICA-AC (side view)* *WICA-ACT (front view)* *WICA-ACT (side view)*

| TYPE | Description | Bundle Ø min. | Bundle Ø max. | Width (W) | Height (H) | Length (L) | Material | Marker tiles per carrier | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **WICA-AC10-25** | Snap-on accessory | 5.5 | 9.5 | 13.5 | 19.4 | 25.8 | PA66HIRHS | 8 | 100 pcs. | 561-06001 |
| **WICA-ACT-BK** | WIC adapter set for fixing with cable ties | 3.0 | 38.0 | 7.0 | 8.9 | 26.7 | PA66HIRHS | 8 | 100 pcs. | 561-06000 |
| **WIC Tool** | Applicator | - | - | - | - | - | PA6GF15 | - | 5 pcs. | 561-00001 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available. More colours on request.



*Step 1* *Step 2* *Step 3*

Date of issue: January 2019

## Identification ties and plates for marking cable bundles

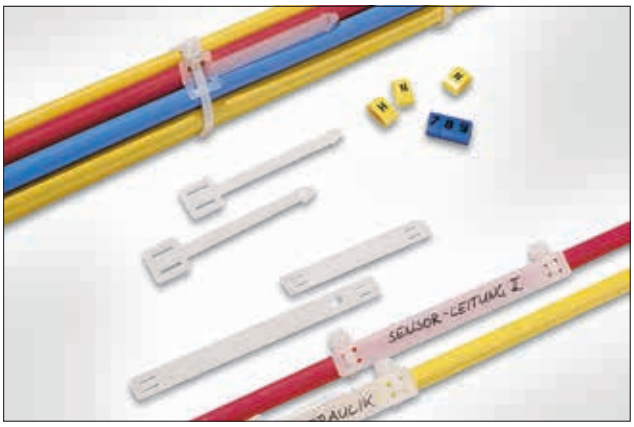
### Arrowtag

The plates are suitable for applying to larger pipes and cables before or after termination has taken place.

They can be marked with Ovalgrip markers or manually using the T82 series of indelible markers pens.

**Features and benefits**

- Blank nylon arrowhead shape plate fixed with a cable tie
- Identify with a T82 pen or Ovalgrip markers
- AT1 for 7 size 50 Ovalgrip markers
- AT2 for 8 size 85 Ovalgrip markers
- AT3 for 14 size 85 Ovalgrip markers
- Custom printed plaques are available on request



*A clearly better way of identifying cables and pipes.*

| | |
|---|---|
| **MATERIAL** | Polyamide 6.6 (PA66) |
| **Operating Temperature** | -40 °C to +85 °C |
| **Flammability** | UL 94 V2 |

HF ✓ RoHS ✓




*AT1*




*AT2*




*AT3*

| TYPE | Length (L) | Width (W) | Strap Width max. (G) | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|
| **AT1** | 62.5 | 4.7 | 7.4 | 100 pcs. | Black (BK) | 151-41110 |
| | 62.5 | 4.7 | 7.4 | 100 pcs. | Natural (NA) | 151-41119 |
| **AT2** | 63.0 | 9.0 | 6.4 | 100 pcs. | Black (BK) | 151-41210 |
| | 63.0 | 9.0 | 6.4 | 100 pcs. | Natural (NA) | 151-41219 |
| **AT3** | 100.0 | 9.0 | 6.4 | 100 pcs. | Black (BK) | 151-41310 |
| | 100.0 | 9.0 | 6.4 | 100 pcs. | Natural (NA) | 151-41319 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

| TYPE | Description | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|
| **T82S-BK** | Indelible Marker Pen | 2 pcs. | Black (BK) | 500-50820 |
| **T82R-RD** | Indelible Marker Pen | 2 pcs. | Red (RD) | 500-50822 |

Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

Date of issue: January 2019

## Identification tags for marking cable bundles

### Q-tags

Q-tags are used to identify a cable or a cable bundle and are secured with a Q-tie. The Q-tag's flag design allows the user to quickly read or scan the printed information.

**Features and benefits**

- Identify cable or cable bundle
- Quickly read or scan printed information
- Mark by hand with T82 series marker pen or use printed adhesive label
- HellermannTyton offers complete printing solution (printers, labels, ribbons)
- Perfect combination with Q-ties to safely secure and mark cables with highly visible text




*The flagged orientation of Q-tags ensures that printed texts are easily visible.*

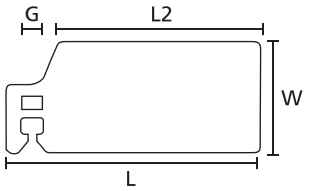
| | |
|---|---|
| **MATERIAL** | Polyamide 6.6 (PA66) |
| **Operating Temperature** | -40 °C to +85 °C |
| **Flammability** | UL 94 V2 |

HF ✓ RoHS ✓

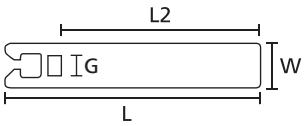
*Application video: Q-Series*

**Please find the corresponding labels on page 490.**

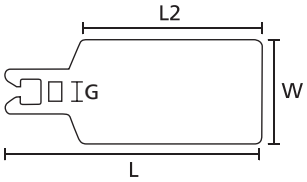
**Please find more Q-Series products for your system solution on page 55, 133 and 143.**




*Q-tag QT7040S*




*Q-tag QT7016R*




*Q-tag QT7040R, QT10065R*

| TYPE | Length (L) | Length (L2) | Width (W) | Strap Width max. (G) | Pack Cont. | Colour | Recommended Labels | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **QT7040S** | 88.0 | 70.0 | 42.0 | 3.6 | 50 pcs. | White (WH) | TAG63TD1 | 151-10952 |
| **QT7016R** | 100.0 | 70.0 | 18.0 | 4.7 | 50 pcs. | White (WH) | TAG68-16TD1 | 151-10950 |
| **QT7040R** | 100.0 | 70.0 | 42.0 | 4.7 | 50 pcs. | White (WH) | TAG63TD1 | 151-10951 |
| **QT10065R** | 135.0 | 100.0 | 67.0 | 4.7 | 25 pcs. | White (WH) | TAG102-64TD1 | 151-10953 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

| TYPE | Description | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|
| **T82S-BK** | Indelible Marker Pen | 2 pcs. | Black (BK) | 500-50820 |
| **T82R-RD** | Indelible Marker Pen | 2 pcs. | Red (RD) | 500-50822 |

Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

Date of issue: January 2019

## Identification ties and plates for marking cable bundles

### IMP Plates

The IMP and IT range of marker plates are suitable for applying to large cable bundles before or after termination has taken place. The marker plates can also be riveted if required.

They are secured with cable ties of any length with a maximum width of 4.8 mm.

They can be written on by hand using either a black or red T82 indelible marker pen.

**Features and benefits**

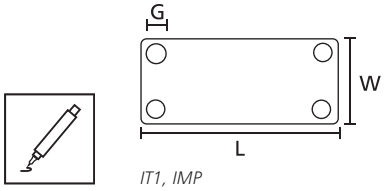
- IT and IMP plates for identifying large cable bundles or flat surfaces
- Mark IT and IMP plates with printable labels or T82 pens
- Fix with cable ties or rivets
- Custom printed plaques are available on request




*Unlimited cable bundle diameters can be securely identified.*

| | |
|---|---|
| **MATERIAL** | Polyamide 6.6 (PA66) |
| **Operating Temperature** | -40 °C to +85 °C, (+105 °C, 500 h) |
| **Flammability** | UL 94 V2 |

HF ✓ RoHS ✓




*IT1, IMP*

**Please find the corresponding labels on page 490.**

| TYPE | Length (L) | Width (W) | Strap Width max. (G) | Pack Cont. | Colour | Recommended Labels | Article-No. |
|---|---|---|---|---|---|---|---|
| **IMP1.5** | 38.1 | 19.1 | 4.8 | 100 pcs. | White (WH) | TAG18-16TD1 | 151-42159 |
| **IT1** | 44.0 | 19.0 | 4.8 | 100 pcs. | Natural (NA) | TAG28-16TD1 | 151-42119 |
| **IMP2** | 50.8 | 19.3 | 4.8 | 100 pcs. | White (WH) | TAG28-16TD1 | 151-42229 |
| **IMP2.5** | 63.5 | 19.3 | 4.8 | 100 pcs. | White (WH) | TAG43-16TD1 | 151-42259 |
| | 63.5 | 44.7 | 4.8 | 100 pcs. | White (WH) | TAG43-41TD1 | 151-42269 |
| **IMP3.5** | 88.9 | 19.3 | 4.8 | 100 pcs. | White (WH) | TAG68-16TD1 | 151-42359 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

| TYPE | Description | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|
| **T82S-BK** | Indelible Marker Pen | 2 pcs. | Black (BK) | 500-50820 |
| **T82R-RD** | Indelible Marker Pen | 2 pcs. | Red (RD) | 500-50822 |

Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

Date of issue: January 2019

## Identification ties and plates for marking cable bundles

**IT-Ties**

One of the major benefits is the ability to both secure and identify cable bundles at different times.

**Features and benefits**

- Identification ties made of Polyamide 6.6
- For simple identification and securing of cable bundles in one step
- Printable labels are available for a professional finish
- Manual or temporary marking is possible with an indelible pen (T82S-BK / T82R-RD)



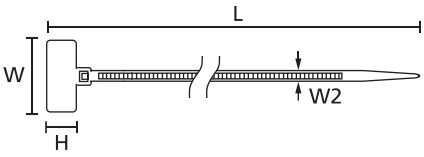
*One operation with two benefits.*

**Please find the corresponding labels on page 490.**

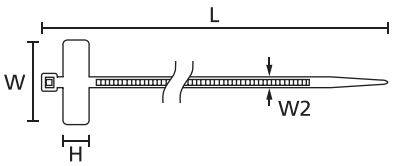
| | |
|---|---|
| **MATERIAL** | Polyamide 6.6 (PA66) |
| **Operating Temperature** | -40 °C to +85 °C |
| **Flammability** | UL 94 V2 |

HF ✓ RoHS ✓






*IT18FL*




*IT18R*

| TYPE | Bundle Ø min. | Bundle Ø max. | Width (W) | Height (H) | Length (L) | Width (W2) | N | Recommended Labels | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **IT18FL** | 1.5 | 19.0 | 20.5 | 9.0 | 110.0 | 2.5 | 80 | TAG18-07TD1 | 100 pcs. | Natural (NA) | 111-81919 |
| **IT18R** | 6.0 | 22.0 | 25.0 | 8.0 | 100.0 | 2.3 | 80 | TAG23-06TD1 | 100 pcs. | Natural (NA) | 111-81821 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.
More colours on request.

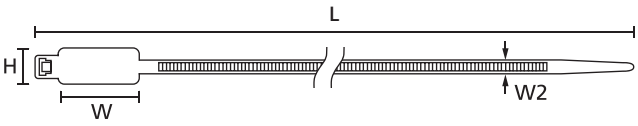
N = **Minimum Loop Tensile Strength for Cable Ties (Newton)**

c UL us For product specific approvals and specifications please refer to the Appendix.

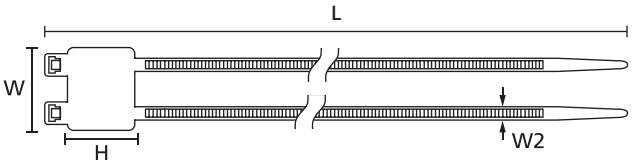
Date of issue: January 2019

## Identification ties and plates for marking cable bundles

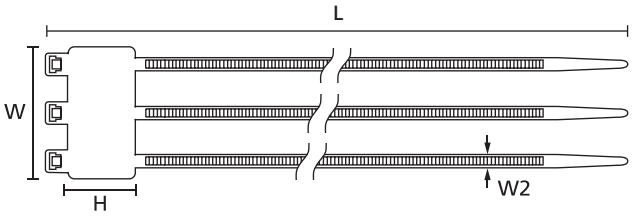
### IT-Ties



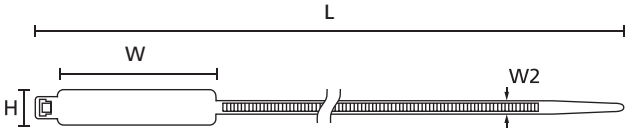

*IT50R*




*IT50RD*




*IT50RT*




*IT50L*



| TYPE | Bundle Ø min. | Bundle Ø max. | Width (W) | Height (H) | Length (L) | Width (W2) | N | Recommended Labels | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **IT50R** | 9.5 | 44.5 | 28.0 | 12.9 | 203.0 | 4.6 | 225 | TAG23-10TD1 | 100 pcs. | Natural (NA) | 111-85019 |
| **IT50RD** | 10.0 | 44.0 | 29.0 | 26.3 | 205.0 | 4.7 | 225 | TAG26-21TD1 | 50 pcs. | Natural (NA) | 111-85219 |
| **IT50RT** | 10.0 | 44.0 | 46.0 | 26.3 | 205.0 | 4.7 | 225 | TAG43-21TD1 | 50 pcs. | Natural (NA) | 111-85119 |
| **IT50L** | 19.0 | 100.0 | 56.0 | 12.8 | 390.0 | 4.7 | 225 | TAG52-10TD1 | 100 pcs. | Natural (NA) | 111-85319 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.
More colours on request.

| TYPE | Description | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|
| **T82S-BK** | Indelible Marker Pen | 2 pcs. | Black (BK) | 500-50820 |
| **T82R-RD** | Indelible Marker Pen | 2 pcs. | Red (RD) | 500-50822 |

Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

For product specific approvals and specifications please refer to the Appendix.

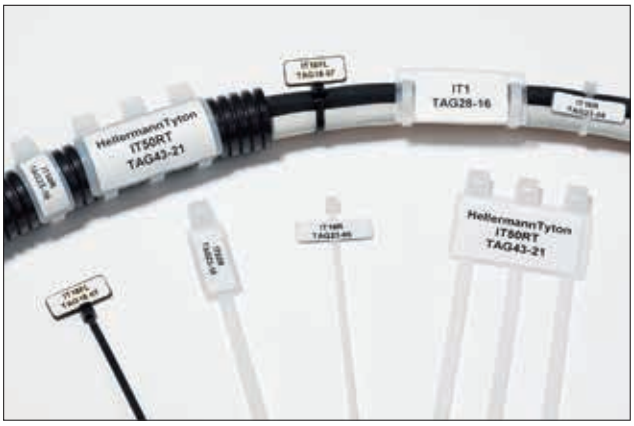
## Labels for IT ties, IMP plates and Q-tags, thermal transfer

**Helatag 892 (White)**

These labels are specially tailored to the sizes used in the IT marking tie and IMP/IT as well as Q-tag range. The flexible material sticks to the marking tie or tag, even on rounded surfaces. Print with HellermannTyton's premium range of thermal transfer printers and ribbons for optimum print results. Using unique numbering, graphics or barcodes the labels give excellent asset identification possibilities. This solution produces professional marking of tubes, pipes, cables and other parts.

### Features and benefits

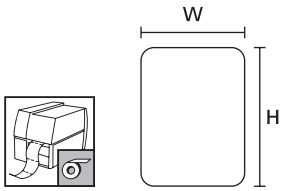
- Suited to the slightly rough surfaces of Q-tags, IT ties and IMP/IT plates
- Adheres to rounded surfaces
- Rounded corners ensure better long term durability of adhesion
- White labels give excellent contrast




*Identification ties and tags.*

| | | |
|---|---|---|
| **MATERIAL** | Type 892, Vinyl (PVC), white (WH) | |
| **Operating Temperature** | -40 °C to +80 °C | |
| **Curing Temperature** | from 0 °C | |
| **Adhesive** | Acrylic | |
| **Thickness of Foil** | 83 µm | |
| **Chem. Material Properties** | Good resistance against water, oils and most solvents. | self extinguishing, resistant to oils, water and solvents |
| **Recommended Ribbon Type** | TT822OUT | |
| **Thermal Transfer Printer** | TT430, TT4030 | |

RoHS




| TYPE | Width (W) | Height (H) | Width of Liner (WL) | Labels per Row | For Size | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **TAG18-07TD1-892-WH** | 18.0 | 7.0 | 24.0 | 1 pc. | IT18FL | 5,000 pcs. | White (WH) | 596-12253 |
| **TAG18-16TD1-892-WH** | 18.0 | 16.0 | 24.0 | 1 pc. | IMP1.5 | 2,500 pcs. | White (WH) | 596-12254 |
| **TAG23-06TD1-892-WH** | 23.0 | 6.0 | 30.0 | 1 pc. | IT18R | 5,000 pcs. | White (WH) | 596-12255 |
| **TAG23-10TD1-892-WH** | 23.0 | 10.0 | 30.0 | 1 pc. | IT50R | 5,000 pcs. | White (WH) | 596-12256 |
| **TAG26-21TD2-892-WH** | 26.0 | 21.0 | 57.0 | 2 pcs. | IT50RD | 2,500 pcs. | White (WH) | 596-12257 |
| **TAG28-16TD1-892-WH** | 28.0 | 16.0 | 34.0 | 1 pc. | IT1, IMP2 | 2,500 pcs. | White (WH) | 596-12258 |
| **TAG43-16TD1-892-WH** | 43.0 | 16.0 | 50.0 | 1 pc. | IMP2.5 | 2,500 pcs. | White (WH) | 596-12259 |
| **TAG43-21TD1-892-WH** | 43.0 | 21.0 | 50.0 | 1 pc. | IT50RT | 2,500 pcs. | White (WH) | 596-12260 |
| **TAG43-41TD1-892-WH** | 43.0 | 41.0 | 50.0 | 1 pc. | IMP2.5W1.75 | 1,000 pcs. | White (WH) | 596-12261 |
| **TAG52-10TD1-892-WH** | 52.0 | 10.0 | 58.0 | 1 pc. | IT50L | 5,000 pcs. | White (WH) | 596-12262 |
| **TAG63TD1-892-WH** | 63.5 | 38.1 | 70.0 | 1 pc. | QT7040R, QT7040S | 1,000 pcs. | White (WH) | 596-12263 |
| **TAG68-16TD1-892-WH** | 68.0 | 16.0 | 74.0 | 1 pc. | IMP3.5, QT7016R | 2,500 pcs. | White (WH) | 596-12264 |
| **TAG102-64TD1-892-WH** | 102.0 | 64.0 | 106.0 | 1 pc. | QT10065R | 250 pcs. | White (WH) | 596-12265 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

Date of issue: January 2019

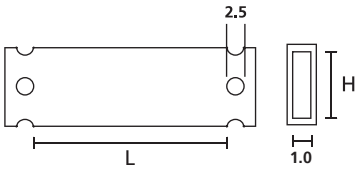
## Carrier marking system, laser printer

### Helafix HC and HCR Carriers

Marking of cable looms, cables, pipes, transport systems, valves, sensors, for inventory marking on machines or other parts.

**Features and benefits**

- Versatile transparent carriers for HFX labels used for temporary or permanent marking
- Fixed in place using T18 series cable ties, screws or rivets (carrier HC06, no rivet hole)
- Protects inserted HFX label against damp, dirt, damage and UV radiation
- Helafix HC supplied as cut lengths in bags, pre-cut and pre-punched rivet hole (carrier HC06 has no punched hole)
- Helafix HCR supplied in continuous tube format and can be cut to size with HCT tool
- Helafix HFX labels designed to fit into HC and HCR carriers







*Multi-purpose identification potential: Helafix HC and HCR.*

| | |
|---|---|
| **MATERIAL** | Polyethylene, UV Resistant (PEUV) |
| **Operating Temperature** | -60 °C to +65 °C |
| **Flammability** | UL 94 HB |
| **Chem. Material Properties** | Resistance to UV light, water and a variety of solvents. |

HF ✓ RoHS ✓

| TYPE | Length (L) | Height (H) | Reel Length | Pack Cont. | Recommended Labels | Tools | Article-No. |
|---|---|---|---|---|---|---|---|
| **HCR06** | - | 7.0 | 25 m | 25 m | - | - | 525-07003 |
| **HCR09** | - | 10.0 | 25 m | 25 m | HFX9 | 50 | 525-10003 |
| **HCR12** | - | 13.0 | 25 m | 25 m | HFX12 | 51 | 525-13003 |
| **HCR18** | - | 19.0 | 25 m | 25 m | - | - | 525-19003 |
| **HCR24** | - | 25.0 | 25 m | 25 m | - | - | 525-25003 |
| **HC06-17** | 17.5 | 7.0 | - | 50 pcs. | - | - | 525-07173 |
| **HC09-17** | 17.5 | 10.0 | - | 50 pcs. | HFX9-17P | - | 525-10173 |
| **HC12-17** | 17.5 | 13.0 | - | 50 pcs. | - | - | 525-13173 |
| **HC06-35** | 35.0 | 7.0 | - | 50 pcs. | - | - | 525-07353 |
| **HC09-35** | 35.0 | 10.0 | - | 50 pcs. | HFX9-35P | - | 525-10353 |
| **HC12-35** | 35.0 | 13.0 | - | 50 pcs. | HFX12-35P | - | 525-13353 |
| **HC18-35** | 35.0 | 19.0 | - | 50 pcs. | - | - | 525-19353 |
| **HC09-52** | 52.0 | 10.0 | - | 50 pcs. | HFX9-52P | - | 525-10523 |
| **HC12-52** | 52.0 | 13.0 | - | 50 pcs. | HFX12-52P | - | 525-13523 |
| **HC18-52** | 52.0 | 19.0 | - | 50 pcs. | - | - | 525-19523 |
| **HC24-52** | 52.0 | 25.0 | - | 50 pcs. | - | - | 525-25523 |
| **HC12-70** | 70.0 | 13.0 | - | 50 pcs. | - | - | 525-13703 |
| **HC18-70** | 70.0 | 19.0 | - | 50 pcs. | - | - | 525-19703 |
| **HC24-70** | 70.0 | 25.0 | - | 50 pcs. | - | - | 525-25703 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

| Recommended Tools | | |
|---|---|---|
| | 50<br>HCT1 | 51<br>HCT2 |
| | 566 | 566 |

For more information on toolings please refer to the Application Tooling chapter.

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## Carrier marking system, laser printer

### Helafix HFX Labels

Use marking pen T82 or print the labels with laser printer. For indoor use in bundle applications in machines, panel building or wherever flexible self marked marking is needed.

**Features and benefits**

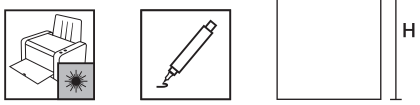
- Laser printable non-adhesive labels for Helafix carrier strip (HC and HCR) range
- Every sheet in two colours (front yellow, back white)
- A4 format
- Simple and efficient label design and printing with TagPrint Pro software
- Mark manually with T82 series indelible markers pens
- Templates available from www.HellermannTyton.com for those wishing to use MS Word



*A precise match for Helafix, for permanent identification coding.*

| MATERIAL | Polyester (SP) |
|---|---|
| Operating Temperature | -70 °C to +125 °C |
| Chem. Material Properties | Resistance to a variety of solvents. Good UV light resistance. |

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| TYPE | Width (W) | Height (H) | Labels per Sheet | Sheets per Pack | Carton Quantity | Colour | Article-No. |
|---|---|---|---|---|---|---|---|
| HFX9-17P | 17.5 | 9.0 | 319 pcs. | 20 pcs. | 6,380 pcs. | Yellow (YE), White (WH) | 526-01014 |
| HFX9-35P | 35.0 | 9.0 | 145 pcs. | 20 pcs. | 2,900 pcs. | Yellow (YE), White (WH) | 526-01514 |
| HFX12-35P | 35.0 | 12.0 | 110 pcs. | 20 pcs. | 2,200 pcs. | Yellow (YE), White (WH) | 526-01714 |
| HFX9-52P | 52.5 | 9.0 | 124 pcs. | 20 pcs. | 2,480 pcs. | Yellow (YE), White (WH) | 526-02014 |
| HFX12-52P | 52.5 | 12.0 | 92 pcs. | 20 pcs. | 1,840 pcs. | Yellow (YE), White (WH) | 526-02214 |
| HFX12-105P | 105.0 | 12.0 | 44 pcs. | 20 pcs. | 880 pcs. | Yellow (YE), White (WH) | 526-02514 |
| HFX24-105P | 105.0 | 24.0 | 22 pcs. | 20 pcs. | 440 pcs. | Yellow (YE), White (WH) | 526-03014 |
| HFX12-210P | 210.0 | 12.0 | 22 pcs. | 20 pcs. | 440 pcs. | Yellow (YE), White (WH) | 526-05014 |
| HFX24-210P | 210.0 | 24.0 | 11 pcs. | 20 pcs. | 220 pcs. | Yellow (YE), White (WH) | 526-05514 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

| TYPE | Description | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|
| T82S-BK | Indelible Marker Pen | 2 pcs. | Black (BK) | 500-50820 |
| T82R-RD | Indelible Marker Pen | 2 pcs. | Red (RD) | 500-50822 |

Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

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## Labels for control panel identification, thermal transfer

**Helatag 880 (Yellow matt), removable**

**Helatag 1211 (Yellow gloss)**

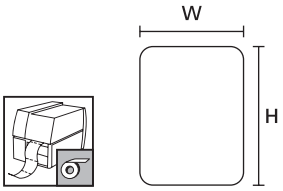
These labels are suitable for the permanent identification of components and preassembled units within electrical industry as well as asset identification. Print with HellermannTyton's premium range of thermal transfer printers and ribbons for optimum print results. They can also be used in the design and setup as well as in the repair and expansion of control cabinets and control units. Due to the structure of the vinyl label they are suitable for rougher surfaces.

**Features and benefits**

- Suited to labelling electrical panels
- Where high label visibility is required
- Partially suitable for critical surfaces
- Rounded corners ensure better long term durability of adhesion



*Switchgear application.*




| MATERIAL | Type 880, Vinyl (PVC), yellow matt (MTYE), removable |
|---|---|
| Operating Temperature | -40 °C to +80 °C |
| Curing Temperature | from +10 °C |
| Adhesive | Acrylic |
| Thickness of Foil | 80 µm |
| Chem. Material Properties | Good resistance to water, oil and most solvents. |
| Recommended Ribbon Type | TT822OUT |
| Thermal Transfer Printer | TT430, TT4030 |

RoHS

| MATERIAL | Type 1211, Vinyl (PVC), yellow gloss (GSYE) |
|---|---|
| Operating Temperature | -20 °C to +80 °C |
| Curing Temperature | from +5 °C |
| Adhesive | Acrylic |
| Thickness of Foil | 84 µm |
| Chem. Material Properties | Resistant to water, alcohol, most oils, greases, fuel, aliphatic solvents, weak acids, salts and alkalis. |
| Recommended Ribbon Type | TT822OUT |
| Thermal Transfer Printer | TT430, TT4030 |

RoHS

| TYPE | Width (W) | Height (H) | Width of Liner (WL) | Labels per Row | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|
| TAG15-09TE-880-YE | 15.0 | 9.0 | 89.0 | 5 pcs. | 10,000 pcs. | Yellow matt (MTYE) | 596-12174 |
| TAG16-06TE-880-YE | 16.5 | 6.0 | 101.6 | 5 pcs. | 20,000 pcs. | Yellow matt (MTYE) | 596-12172 |
| TAG19-11TE-880-YE | 19.0 | 11.0 | 89.0 | 4 pcs. | 10,000 pcs. | Yellow matt (MTYE) | 596-12175 |
| TAG20-08TE-880-YE | 20.0 | 8.0 | 101.6 | 4 pcs. | 10,000 pcs. | Yellow matt (MTYE) | 596-12173 |
| TAG38-11TE-880-YE | 38.0 | 11.0 | 85.1 | 2 pcs. | 5,000 pcs. | Yellow matt (MTYE) | 596-12176 |
| TAG56-22TE-880-YE | 56.0 | 22.0 | 62.0 | 1 pc. | 2,000 pcs. | Yellow matt (MTYE) | 596-12177 |

All dimensions in mm. Subject to technical changes. Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

| TYPE | Width (W) | Height (H) | Width of Liner (WL) | Labels per Row | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|
| TAG15-09TE-1211-YE | 15.0 | 9.0 | 89.0 | 5 pcs. | 10,000 pcs. | Yellow gloss (GSYE) | 596-21211 |
| TAG16-06TE-1211-YE | 16.5 | 6.0 | 101.6 | 5 pcs. | 20,000 pcs. | Yellow gloss (GSYE) | 596-01211 |
| TAG20-08TE-1211-YE | 20.0 | 8.0 | 101.6 | 4 pcs. | 10,000 pcs. | Yellow gloss (GSYE) | 596-11211 |
| TAG38-11TE-1211-YE | 38.0 | 11.0 | 85.1 | 2 pcs. | 5,000 pcs. | Yellow gloss (GSYE) | 596-41211 |
| TAG56-22TE-1211-YE | 56.0 | 22.0 | 62.0 | 1 pc. | 2,000 pcs. | Yellow gloss (GSYE) | 596-51211 |

All dimensions in mm. Subject to technical changes. Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

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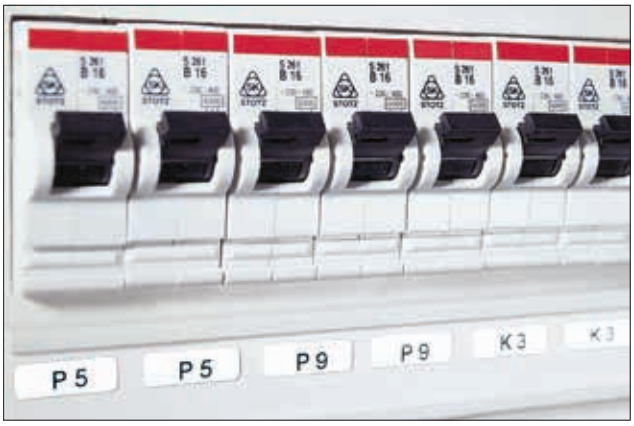
## Labels for control panel identification, thermal transfer

**Helatag 1216 (White) for rough surfaces**

These labels are suitable for the permanent identification of components and preassembled units within electrical industry as well as asset identification. Print with HellermannTyton's premium range of thermal transfer printers and ribbons for optimum print results. They can also be used in the design and setup as well as in the repair and expansion of control cabinets and control units.

### Features and benefits

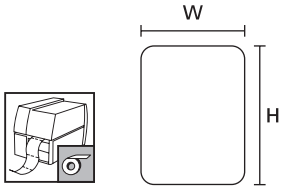
- Suited to labelling electrical panels
- White labels give excellent contrast
- Also suitable for critical surfaces
- Rounded corners ensure better long term durability of adhesion



*Clear and permanent identification.*

| | |
|---|---|
| **MATERIAL** | Type 1216, Polyethylene (PE), white (WH) |
| **Operating Temperature** | -30 °C to +60 °C |
| **Curing Temperature** | from 0 °C |
| **Adhesive** | Acrylic |
| **Thickness of Foil** | 110 µm |
| **Chem. Material Properties** | Resistant to water, alcohol, most oils, greases, fuel, aliphatic solvents, weak acids, salts and alkalis. |
| **Recommended Ribbon Type** | TT822OUT |
| **Thermal Transfer Printer** | TT430, TT4030 |

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| TYPE | Width (W) | Height (H) | Width of Liner (WL) | Labels per Row | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|
| **TAG05-08TC-1216-WH** | 5.0 | 8.0 | 85.0 | 16 pcs. | 25,000 pcs. | White (WH) | 596-12147 |
| **TAG05-15TC-1216-WH** | 5.0 | 15.0 | 85.0 | 16 pcs. | 25,000 pcs. | White (WH) | 596-12151 |
| **TAG06-10TC-1216-WH** | 6.0 | 10.0 | 85.0 | 13 pcs. | 25,000 pcs. | White (WH) | 596-12149 |
| **TAG08-15TC-1216-WH** | 8.0 | 15.0 | 85.0 | 10 pcs. | 25,000 pcs. | White (WH) | 596-12152 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

Date of issue: January 2019

## Labels for control panel identification, laser printer

**Helatag 1102 (Yellow)**

These yellow labels come in various sizes and are ideal for marking flat surfaces inside control panels to ensure easy wire and cable management. The labels can be easily printed with office laser printers. All label templates are already stored in HellermannTyton's Tagprint Pro 3.0 software so label design including barcodes or logos has been made easy even with office printers.

### Features and benefits

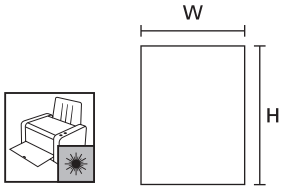
- Yellow rating labels for component marking and control cabinets
- For use on flat and smooth surfaces
- Crisp and clear text, barcodes and graphics
- Simple and efficient label design and printing with TagPrint Pro labelling software
- Templates available from www.HellermannTyton.com for those wishing to use MS Word
- Clear protective box to ensures labels stay as good as new



*Clearly identified labels ensure easy network wire and cable management.*

| MATERIAL | Type 1102, Polyester (PET), yellow (YE) |
|---|---|
| **Operating Temperature** | -40 °C to +150 °C |
| **Curing Temperature** | from 0 °C |
| **Adhesive** | Acrylic |
| **Thickness of Foil** | 55 µm |
| **Chem. Material Properties** | Excellent resistance against water, alcohol, most oils, lubricants, fuels, aliphatic solvents, weak acid, salts, alkalis and UV light. |

HF ✓ RoHS ✓




| TYPE | Width (W) | Height (H) | Labels per Sheet | Sheets per Pack | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|
| **TAG122LA4-1102-YE** | 15.0 | 9.0 | 372 pcs. | 27 pcs. | 10,000 pcs. | Yellow (YE) | 594-21102 |
| **TAG120LA4-1102-YE** | 15.2 | 6.4 | 528 pcs. | 19 pcs. | 10,000 pcs. | Yellow (YE) | 594-01102 |
| **TAG154LA4-1102-YE** | 17.0 | 9.0 | 341 pcs. | 30 pcs. | 10,000 pcs. | Yellow (YE) | 594-51102 |
| **TAG124LA4-1102-YE** | 19.0 | 11.0 | 260 pcs. | 20 pcs. | 5,000 pcs. | Yellow (YE) | 594-41102 |
| **TAG13LA4-1102-YE** | 19.1 | 6.4 | 440 pcs. | 23 pcs. | 10,000 pcs. | Yellow (YE) | 594-31102 |
| **TAG121LA4-1102-YE** | 20.0 | 8.0 | 315 pcs. | 32 pcs. | 10,000 pcs. | Yellow (YE) | 594-11102 |
| **TAG62LA4-1102-YE** | 31.8 | 9.5 | 180 pcs. | 28 pcs. | 5,000 pcs. | Yellow (YE) | 594-81102 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

c UL us For product specific approvals and specifications please refer to the Appendix.

## Labels for control panel identification, laser printer

**Helatag 1101 (White)**

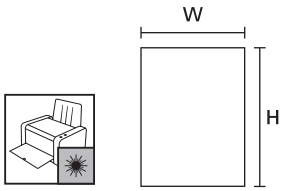
These white labels come in various sizes and are ideal for marking flat surfaces inside control panels to ensure easy wire and cable management. The labels can be easily printed with office laser printers. All label templates are already stored in HellermannTyton's Tagprint Pro 3.0 software so label design including barcodes or logos has been made easy even with office printers.

### Features and benefits

- White rating labels for component marking as well as for control cabinets
- For use on flat and smooth surfaces
- Crisp and clear text, barcodes and graphics
- Simple and efficient label design and printing with TagPrint Pro labelling software
- Templates available from www.HellermannTyton.com for those wishing to use MS Word
- Clear protective box to ensures labels stay as good as new



*Clearly identified labels ensure easy network wire and cable management.*




| MATERIAL | Type 1101, Polyester (PET), white (WH) |
|---|---|
| **Operating Temperature** | -40 °C to +150 °C |
| **Curing Temperature** | from 0 °C |
| **Adhesive** | Acrylic |
| **Thickness of Foil** | 55 µm |
| **Chem. Material Properties** | Excellent resistance against water, alcohol, most oils, lubricants, fuels, aliphatic solvents, weak acid, salts, alkalis and UV light. |

HF ✓ RoHS ✓

| TYPE | Width (W) | Height (H) | Labels per Sheet | Sheets per Pack | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|
| **TAG156LA4-1101-WH** | 10.2 | 10.2 | 532 pcs. | 19 pcs. | 10,000 pcs. | White (WH) | 594-81101 |
| **TAG122LA4-1101-WH** | 15.0 | 9.0 | 372 pcs. | 27 pcs. | 10,000 pcs. | White (WH) | 594-31101 |
| **TAG120LA4-1101-WH** | 15.2 | 6.4 | 528 pcs. | 19 pcs. | 10,000 pcs. | White (WH) | 594-11101 |
| **TAG11LA4-1101-WH** | 16.5 | 5.1 | 605 pcs. | 17 pcs. | 10,000 pcs. | White (WH) | 594-01101 |
| **TAG154LA4-1101-WH** | 17.0 | 9.0 | 341 pcs. | 30 pcs. | 10,000 pcs. | White (WH) | 594-61101 |
| **TAG124LA4-1101-WH** | 19.0 | 11.0 | 260 pcs. | 20 pcs. | 5,000 pcs. | White (WH) | 594-11017 |
| **TAG13LA4-1101-WH** | 19.1 | 6.4 | 440 pcs. | 23 pcs. | 10,000 pcs. | White (WH) | 594-41101 |
| **TAG121LA4-1101-WH** | 20.0 | 8.0 | 315 pcs. | 32 pcs. | 10,000 pcs. | White (WH) | 594-21101 |
| **TAG155LA4-1101-WH** | 25.4 | 8.5 | 231 pcs. | 22 pcs. | 5,000 pcs. | White (WH) | 594-71101 |
| **TAG15LA4-1101-WH** | 25.4 | 12.7 | 154 pcs. | 33 pcs. | 5,000 pcs. | White (WH) | 594-91101 |
| **TAG162LA4-1101-WH** | 38.1 | 12.7 | 110 pcs. | 23 pcs. | 2,500 pcs. | White (WH) | 594-11010 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

c UL us For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Cotton cloth labels, manual marking

**HELASIGN, Material 270 (Yellow), Booklet**

These handwritten labels are made of yellow fabric and have been designed for fast on-site identification of component parts, switching devices and other operating equipment. The synthetic rubber adhesive allows the easy removal or repositioning of the label when needed. For professional handwriting we recommend the marking pen T82, equipped with a fast-drying and UV-resistant ink.

### Features and benefits

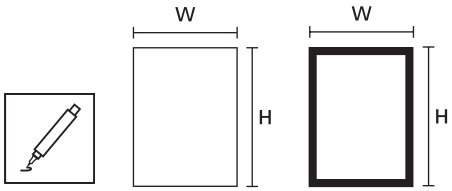
- Yellow fabric adhesive labels
- Supplied in handy pocket-sized booklets
- Booklet cover protects labels when stored
- Easily remove or reposition labels as required
- No sticky residue on removal
- Labels available with or without black border
- Also suitable for difficult surfaces
- Use T82 marker pen for market leading mark endurance



*Always on hand: Labels in a convenient, pocket sized and lightweight booklet.*

| | |
|---|---|
| **MATERIAL** | Type 270, Cotton cloth, yellow (YE) |
| **Operating Temperature** | -29 °C to +80 °C |
| **Curing Temperature** | from +10 °C |
| **Adhesive** | Synthetic rubber |
| **Thickness of Foil** | 150 µm |
| **Chem. Material Properties** | Good resistance to water, oils and most solvents, alcohols and gasoline. |

RoHS




| TYPE | Drawing | Width (W) | Height (H) | Labels per Sheet | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|
| **TAG122B-270-YE** | | 15.0 | 9.0 | 70 pcs. | 700 pcs. | Yellow (YE) | 598-12227 |
| **TAG120B-270-YE** | | 15.0 | 6.0 | 105 pcs. | 1,050 pcs. | Yellow (YE) | 598-12027 |
| **TAG124B-270-YE** | | 19.0 | 11.0 | 44 pcs. | 440 pcs. | Yellow (YE) | 598-12427 |
| **TAG121B-270-YE** | | 20.0 | 8.0 | 60 pcs. | 600 pcs. | Yellow (YE) | 598-12127 |
| **TAG122FB-270-YE** | | 15.0 | 9.0 | 70 pcs. | 700 pcs. | Yellow (YE) | 598-92227 |
| **TAG124FB-270-YE** | | 19.0 | 11.0 | 44 pcs. | 440 pcs. | Yellow (YE) | 598-92427 |
| **TAG121FB-270-YE** | | 20.0 | 8.0 | 60 pcs. | 600 pcs. | Yellow (YE) | 598-92127 |
| **TAG125FB-270-YE** | | 38.0 | 11.0 | 22 pcs. | 220 pcs. | Yellow (YE) | 598-92527 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

| TYPE | Description | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|
| **T82S-BK** | Indelible Marker Pen | 2 pcs. | Black (BK) | 500-50820 |
| **T82R-RD** | Indelible Marker Pen | 2 pcs. | Red (RD) | 500-50822 |

Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

Date of issue: January 2019

## Cotton cloth labels, manual marking

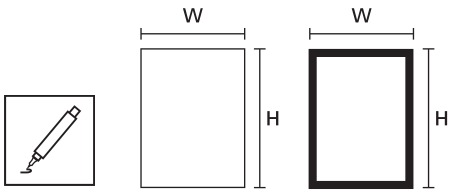
**HELASIGN, Material 270 (Yellow), A4 Sheets**

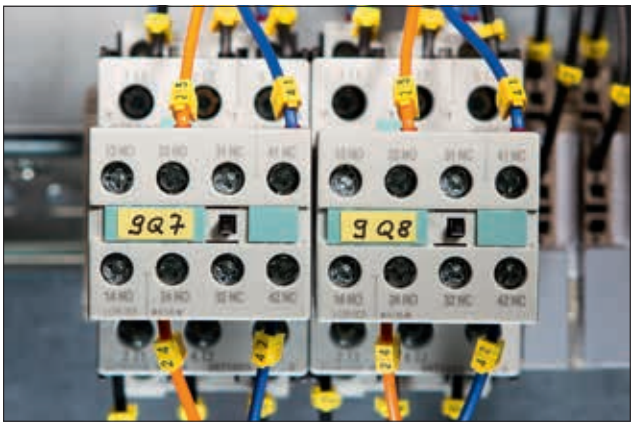
These handwritten labels are made of yellow fabric and have been designed for fast on-site identification of component parts, switching devices and other operating equipment. The synthetic rubber adhesive allows the easy removal or repositioning of the label when needed. For professional handwriting we recommend the marking pen T82, equipped with a fast-drying and UV-resistant ink.

**Features and benefits**

- Yellow fabric adhesive labels
- A4 sheets
- Easily remove or reposition labels as required
- No sticky residue on removal
- Labels available with or without black border
- Also suitable for difficult surfaces
- Use T82 marker pen for market leading mark endurance

**Please note: These labels are not suitable for laser printing.**




*Cotton fabric labels will adhere to most surfaces and are repositionable.*

| | |
|---|---|
| **MATERIAL** | Type 270, Cotton cloth, yellow (YE) |
| **Operating Temperature** | -29 °C to +80 °C |
| **Curing Temperature** | from +10 °C |
| **Adhesive** | Synthetic rubber |
| **Thickness of Foil** | 150 µm |
| **Chem. Material Properties** | Good resistance to water, oils and most solvents, alcohols and gasoline. |

RoHS

| TYPE | Drawing | Width (W) | Height (H) | Labels per Sheet | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|
| **TAG120A4-270-YE** | | 15.0 | 6.0 | 611 pcs. | 15,275 pcs. | Yellow (YE) | 597-12027 |
| **TAG122A4-270-YE** | | 15.0 | 9.0 | 348 pcs. | 9,300 pcs. | Yellow (YE) | 597-12227 |
| **TAG124A4-270-YE** | | 19.0 | 11.0 | 240 pcs. | 6,000 pcs. | Yellow (YE) | 597-12427 |
| **TAG121A4-270-YE** | | 20.0 | 8.0 | 315 pcs. | 7,875 pcs. | Yellow (YE) | 597-12127 |
| **TAG123A4-270-YE** | | 26.0 | 10.0 | 196 pcs. | 4,900 pcs. | Yellow (YE) | 597-12327 |
| **TAG126A4-270-YE** | | 30.0 | 20.0 | 36 pcs. | 2,100 pcs. | Yellow (YE) | 597-12627 |
| **TAG125A4-270-YE** | | 38.0 | 11.0 | 130 pcs. | 3,250 pcs. | Yellow (YE) | 597-12527 |
| **TAG127A4-270-YE** | | 56.0 | 22.0 | 39 pcs. | 975 pcs. | Yellow (YE) | 597-12727 |
| **TAG128A4-270-YE** | | 60.0 | 35.0 | 24 pcs. | 600 pcs. | Yellow (YE) | 597-12827 |
| **TAG122FA4-270-YE** | | 15.0 | 9.0 | 348 pcs. | 9,300 pcs. | Yellow (YE) | 597-92227 |
| **TAG124FA4-270-YE** | | 19.0 | 11.0 | 240 pcs. | 6,000 pcs. | Yellow (YE) | 597-92427 |
| **TAG121FA4-270-YE** | | 20.0 | 8.0 | 315 pcs. | 7,875 pcs. | Yellow (YE) | 597-92127 |
| **TAG125FA4-270-YE** | | 38.0 | 11.0 | 130 pcs. | 3,250 pcs. | Yellow (YE) | 597-92527 |
| **TAG127FA4-270-YE** | | 56.0 | 22.0 | 39 pcs. | 975 pcs. | Yellow (YE) | 597-92727 |
| **TAG128FA4-270-YE** | | 60.0 | 35.0 | 24 pcs. | 600 pcs. | Yellow (YE) | 597-92827 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

| TYPE | Description | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|
| **T82S-BK** | Indelible Marker Pen | 2 pcs. | Black (BK) | 500-50820 |
| **T82R-RD** | Indelible Marker Pen | 2 pcs. | Red (RD) | 500-50822 |

Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

Date of issue: January 2019

## Panel plate labels, thermal transfer

**Helatag 1220 (White)**

Panel labels are durable adhesive labels especially made from a thick material that is designed to replace traditional engraved plastic plates. The white glossy colour is suited to industrial control panels, switchgear, data racks and general equipment labelling.

Create crisp and clear professional looking labels by printing with HellermannTyton thermal transfer printers and ribbons.

Simple label design creation is easily achieved using TagPrint Pro.

### Features and benefits

- Cost-effective replacement for engraved plastic plates, no need for additional label holder
- High performance adhesive and compressible foam backing ensures optimal adhesion to uneven surfaces if required
- Rounded corners ensure better long term durability of adhesion
- Print high contrast text and barcodes
- Print 'On Site' not order 'Off Site'
- Special sizes and colours are possible on request
- For outstanding chemical resistance use TT122OUT

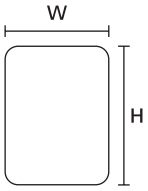



*Panel labels Helatag 1220 – high performance adhesive ensures optimal adhesion to uneven surfaces.*

| | |
|---|---|
| **MATERIAL** | Type 1220, Polyester (PET), white (WH) |
| **Operating Temperature** | -40 °C to +90 °C |
| **Curing Temperature** | from +4 °C |
| **Adhesive** | Acrylic |
| **Thickness of Foil** | 625 µm |
| **Chem. Material Properties** | Excellent resistance to aging, weathering and UV-radiation. Extensive resistance to the influence of chemicals and solvents. |
| **Recommended Ribbon Type** | TT122OUT, TT822OUT |
| **Thermal Transfer Printer** | TT430, TT4030 |








*One Step to the Web!*

RoHS

| TYPE | Width (W) | Height (H) | Width of Liner (WL) | Labels per Row | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|
| **TAG13-07TDK1-1220-WH** | 13.0 | 7.0 | 21.0 | 1 pc. | 1,000 pcs. | White (WH) | 596-00560 |
| **TAG22-22TDK1-1220-WH** | 22.0 | 22.0 | 28.0 | 1 pc. | 1,000 pcs. | White (WH) | 596-00561 |
| **TAG27-08TDK1-1220-WH** | 27.0 | 8.0 | 33.0 | 1 pc. | 1,000 pcs. | White (WH) | 596-00562 |
| **TAG27-12.5TDK1-1220-WH** | 27.0 | 12.5 | 33.0 | 1 pc. | 1,000 pcs. | White (WH) | 596-00558 |
| **TAG27-15TDK1-1220-WH** | 27.0 | 15.0 | 33.0 | 1 pc. | 1,000 pcs. | White (WH) | 596-00563 |
| **TAG27-18TDK1-1220-WH** | 27.0 | 18.0 | 33.0 | 1 pc. | 1,000 pcs. | White (WH) | 596-00564 |
| **TAG27-27TDK1-1220-WH** | 27.0 | 27.0 | 33.0 | 1 pc. | 1,000 pcs. | White (WH) | 596-00565 |
| **TAG35-18TDK1-1220-WH** | 35.0 | 18.0 | 41.0 | 1 pc. | 1,000 pcs. | White (WH) | 596-00566 |
| **TAG45-15TDK1-1220-WH** | 45.0 | 15.0 | 51.0 | 1 pc. | 1,000 pcs. | White (WH) | 596-00567 |
| **TAG45-25TDK1-1220-WH** | 45.0 | 25.0 | 51.0 | 1 pc. | 1,000 pcs. | White (WH) | 596-00568 |
| **TAG60-30TDK1-1220-WH** | 60.0 | 30.0 | 66.0 | 1 pc. | 500 pcs. | White (WH) | 596-00569 |
| **TAG90-45TDK1-1220-WH** | 90.0 | 45.0 | 96.0 | 1 pc. | 500 pcs. | White (WH) | 596-00570 |
| **TAG100-30TDK1-1220-WH** | 100.0 | 30.0 | 106.0 | 1 pc. | 250 pcs. | White (WH) | 596-00571 |
| **TAG100-70TDK1-1220-WH** | 100.0 | 70.0 | 106.0 | 1 pc. | 250 pcs. | White (WH) | 596-00572 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

Date of issue: January 2019

## Panel plate labels, thermal transfer

**Helatag 1221 (Silver)**

Panel labels are durable adhesive labels especially made from a thick material that is designed to replace traditional engraved plastic plates. The silver colour is suited to industrial control panels, switchgear, data racks and general equipment labelling.

Create crisp and clear professional looking labels by printing with HellermannTyton thermal transfer printers and ribbons.

Simple label design creation is easily achieved using TagPrint Pro.

### Features and benefits

- Cost-effective replacement for engraved plastic plates, no need for additional label holder
- High performance adhesive and compressible foam backing ensures optimal adhesion to uneven surfaces if required
- Rounded corners ensure better long term durability of adhesion
- Print high contrast text and barcodes
- Print 'On Site' not order 'Off Site'
- Special sizes and colours are possible on request
- For outstanding chemical resistance use TT122OUT



*Panel labels are an ideal replacement for engraved plates.*

| | |
|---|---|
| **MATERIAL** | Type 1221, Polyester (PET), silver (SR) |
| **Operating Temperature** | -40 °C to +90 °C |
| **Curing Temperature** | from +4 °C |
| **Adhesive** | Acrylic |
| **Thickness of Foil** | 625 µm |
| **Chem. Material Properties** | Excellent resistance to aging, weathering and UV-radiation. Extensive resistance to the influence of chemicals and solvents. |
| **Recommended Ribbon Type** | TT122OUT, TT822OUT |
| **Thermal Transfer Printer** | TT430, TT4030 |




RoHS

| TYPE | Width (W) | Height (H) | Width of Liner (WL) | Labels per Row | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|
| **TAG13-07TDK1-1221-SR** | 13.0 | 7.0 | 21.0 | 1 pc. | 1,000 pcs. | Silver (SR) | 596-00573 |
| **TAG22-22TDK1-1221-SR** | 22.0 | 22.0 | 28.0 | 1 pc. | 1,000 pcs. | Silver (SR) | 596-00574 |
| **TAG27-08TDK1-1221-SR** | 27.0 | 8.0 | 33.0 | 1 pc. | 1,000 pcs. | Silver (SR) | 596-00575 |
| **TAG27-12.5TDK1-1221-SR** | 27.0 | 12.5 | 33.0 | 1 pc. | 1,000 pcs. | Silver (SR) | 596-00576 |
| **TAG27-15TDK1-1221-SR** | 27.0 | 15.0 | 33.0 | 1 pc. | 1,000 pcs. | Silver (SR) | 596-00577 |
| **TAG27-18TDK1-1221-SR** | 27.0 | 18.0 | 33.0 | 1 pc. | 1,000 pcs. | Silver (SR) | 596-00578 |
| **TAG27-27TDK1-1221-SR** | 27.0 | 27.0 | 33.0 | 1 pc. | 1,000 pcs. | Silver (SR) | 596-00579 |
| **TAG35-18TDK1-1221-SR** | 35.0 | 18.0 | 41.0 | 1 pc. | 1,000 pcs. | Silver (SR) | 596-00580 |
| **TAG45-15TDK1-1221-SR** | 45.0 | 15.0 | 51.0 | 1 pc. | 1,000 pcs. | Silver (SR) | 596-00581 |
| **TAG45-25TDK1-1221-SR** | 45.0 | 25.0 | 51.0 | 1 pc. | 1,000 pcs. | Silver (SR) | 596-00582 |
| **TAG60-30TDK1-1221-SR** | 60.0 | 30.0 | 66.0 | 1 pc. | 500 pcs. | Silver (SR) | 596-00583 |
| **TAG90-45TDK1-1221-SR** | 90.0 | 45.0 | 96.0 | 1 pc. | 500 pcs. | Silver (SR) | 596-00584 |
| **TAG100-30TDK1-1221-SR** | 100.0 | 30.0 | 106.0 | 1 pc. | 250 pcs. | Silver (SR) | 596-00585 |
| **TAG100-70TDK1-1221-SR** | 100.0 | 70.0 | 106.0 | 1 pc. | 250 pcs. | Silver (SR) | 596-00586 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

Date of issue: January 2019

## Type label identification, thermal transfer

**Helatag 1204 (Silver-matt)**

This silver-matt label is scratch-resistant and is ideal for usage as identification or name plate in industrial environments. The high temperature range suits a wide range of applications on flat surfaces. The adhesive is also suitable for critical surfaces like plastic and paint.

Designing and printing labels is simple and users can quickly print out professional labels in a matter of moments when using TagPrint Pro labelling software.

### Features and benefits

- Replacement option for aluminium plates
- For applications on flat surfaces
- Allows the identification on critical surfaces, e.g. paints and plastic variants
- Print labels with customer unique references
- Use text, graphics and barcodes as required



*Professional type plate on a heating unit.*

| | |
|---|---|
| **MATERIAL** | Type 1204, Polyester (PET) |
| **Operating Temperature** | -40 °C to +150 °C |
| **Curing Temperature** | from 0 °C |
| **Adhesive** | Acrylic |
| **Thickness of Foil** | 55 µm |
| **Chem. Material Properties** | Excellent resistance to water, alcohol, most oils, greases, fuel, aliphatic solvents, weak acids, salts and alkalis. |
| **Recommended Ribbon Type** | TT822OUT |
| **Thermal Transfer Printer** | TT430, TT4030 |




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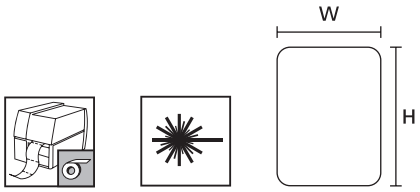
| TYPE | Width (W) | Height (H) | Width of Liner (WL) | Labels per Row | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|
| **TAG71TD6-1204-SR** | 12.7 | 11.1 | 101.6 | 6 pcs. | 15,000 pcs. | Silver matt (SR) | 596-12071 |
| **TAG13TD4-1204-SR** | 19.1 | 6.4 | 101.6 | 4 pcs. | 10,000 pcs. | Silver matt (SR) | 596-12043 |
| **TAG34TD3-1204-SR** | 25.4 | 9.5 | 85.1 | 3 pcs. | 7,500 pcs. | Silver matt (SR) | 596-34120 |
| **TAG15TD3-1204-SR** | 25.4 | 12.7 | 85.1 | 3 pcs. | 7,500 pcs. | Silver matt (SR) | 596-12045 |
| **TAG35TD3-1204-SR** | 31.8 | 9.5 | 101.6 | 3 pcs. | 7,500 pcs. | Silver matt (SR) | 596-12035 |
| **TAG17TD2-1204-SR** | 38.1 | 6.4 | 85.1 | 2 pcs. | 5,000 pcs. | Silver matt (SR) | 596-12047 |
| **TAG27TD2-1204-SR** | 38.1 | 19.1 | 85.1 | 2 pcs. | 5,000 pcs. | Silver matt (SR) | 596-27120 |
| **TAG67TD2-1204-SR** | 38.1 | 31.8 | 85.1 | 2 pcs. | 1,000 pcs. | Silver matt (SR) | 596-12067 |
| **TAG69TD2-1204-SR** | 40.6 | 22.9 | 89.0 | 2 pcs. | 2,500 pcs. | Silver matt (SR) | 596-12069 |
| **TAG77TD1-1204-SR** | 50.8 | 22.9 | 55.0 | 1 pc. | 2,000 pcs. | Silver matt (SR) | 596-12077 |
| **TAG73TD1-1204-SR** | 50.8 | 25.4 | 55.0 | 1 pc. | 2,000 pcs. | Silver matt (SR) | 596-73124 |
| **TAG66TD1-1204-SR** | 50.8 | 36.5 | 56.8 | 1 pc. | 1,000 pcs. | Silver matt (SR) | 596-12066 |
| **TAG63TD1-1204-SR** | 63.5 | 38.1 | 70.0 | 1 pc. | 1,000 pcs. | Silver matt (SR) | 596-12063 |
| **TAG76TD1-1204-SR** | 63.5 | 50.8 | 70.0 | 1 pc. | 500 pcs. | Silver matt (SR) | 596-12076 |
| **TAG72TD1-1204-SR** | 69.9 | 31.8 | 76.0 | 1 pc. | 1,000 pcs. | Silver matt (SR) | 596-12072 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

c UL us For product specific approvals and specifications please refer to the Appendix.

## Type label identification, thermal transfer

**Helatag 1204 (Silver-matt)**




| TYPE | Width (W) | Height (H) | Width of Liner (WL) | Labels per Row | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|
| **TAG65TD1-1204-SR** | 76.2 | 36.5 | 82.0 | 1 pc. | 1,000 pcs. | Silver matt (SR) | 596-12065 |
| **TAG62TD1-1204-SR** | 76.2 | 50.8 | 82.0 | 1 pc. | 500 pcs. | Silver matt (SR) | 596-12062 |
| **TAG64TD1-1204-SR** | 88.9 | 36.5 | 95.0 | 1 pc. | 1,000 pcs. | Silver matt (SR) | 596-12064 |
| **TAG97TD1-1204-SR** | 101.6 | 74.0 | 106.0 | 1 pc. | 500 pcs. | Silver matt (SR) | 596-71204 |
| **TAG02TD1-1204-SR** | 104.0 | 12.0 | 104.0 | 1 pc. | 5,000 pcs. | Silver matt (SR) | 596-21204 |
| **TAGR3TD1-1204-SR** | 104.0 | 75,000.0 | 108.0 | 1 pc. | 75.0 m | Silver matt (SR) | 596-31204 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

c UL us For product specific approvals and specifications please refer to the Appendix.

## Asset identification label, thermal transfer

**Helatag 1206 (White gloss)**

This white label is scratch-resistant and is ideal for usage as identification or name plate in industrial environments. The high temperature range suits a wide range of applications on flat surfaces. The adhesive is also suitable for critical surfaces like plastic and paint.

Designing and printing labels is simple and users can quickly print out professional labels in a matter of moments when using TagPrint Pro labelling software.

**Features and benefits**

- Ideal for machinery operating in high temperature areas (up to +150 °C)
- For applications on flat surfaces
- Chemical resistant polyester foil
- For permanent and ageing-resistant identification
- Barcodes and alphanumeric text remain pin sharp on this high quality material
- White colour guarantees a suitable contrast for all barcode scanners to read printed barcodes




*Helatag label for a permanent asset identification.*

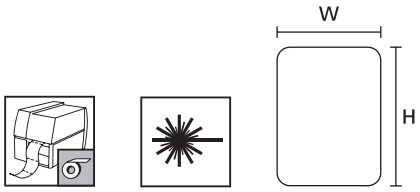
| | |
|---|---|
| **MATERIAL** | Type 1206, Polyester (PET), white gloss (GSWH) |
| **Operating Temperature** | -40 °C to +150 °C |
| **Curing Temperature** | from 0 °C |
| **Adhesive** | Acrylic |
| **Thickness of Foil** | 50 µm |
| **Chem. Material Properties** | Excellent resistance to water, alcohol, most oils, greases, fuel, aliphatic solvents, weak acids, salts and alkalis. |
| **Recommended Ribbon Type** | TT822OUT |
| **Thermal Transfer Printer** | TT430, TT4030 |

HF ✓ RoHS ✓

Date of issue: January 2019

## Asset identification label, thermal transfer

**Helatag 1206 (White gloss)**




| TYPE | Width (W) | Height (H) | Width of Liner (WL) | Labels per Row | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|
| **TAG71TD6-1206-WH** | 12.7 | 11.1 | 101.6 | 6 pcs. | 15,000 pcs. | White gloss (GSWH) | 596-12671 |
| **TAG13TD4-1206-WH** | 19.1 | 6.4 | 101.6 | 4 pcs. | 10,000 pcs. | White gloss (GSWH) | 596-12061 |
| **TAG16TD3-1206-WH** | 22.9 | 6.4 | 80.0 | 3 pcs. | 10,000 pcs. | White gloss (GSWH) | 596-12616 |
| **TAG61TD3-1206-WH** | 25.4 | 4.8 | 89.0 | 3 pcs. | 10,000 pcs. | White gloss (GSWH) | 596-12661 |
| **TAG01TD3-1206-WH** | 25.4 | 6.4 | 89.0 | 3 pcs. | 7,500 pcs. | White gloss (GSWH) | 596-01120 |
| **TAG34TD3-1206-WH** | 25.4 | 9.5 | 85.1 | 3 pcs. | 7,500 pcs. | White gloss (GSWH) | 596-12634 |
| **TAG15TD3-1206-WH** | 25.4 | 12.7 | 85.1 | 3 pcs. | 7,500 pcs. | White gloss (GSWH) | 596-12615 |
| **TAG31TD3-1206-WH** | 25.4 | 19.1 | 85.1 | 3 pcs. | 5,000 pcs. | White gloss (GSWH) | 596-12631 |
| **TAG35TD3-1206-WH** | 31.8 | 9.5 | 101.6 | 3 pcs. | 7,500 pcs. | White gloss (GSWH) | 596-12635 |
| **TAG17TD2-1206-WH** | 38.1 | 6.4 | 85.1 | 2 pcs. | 5,000 pcs. | White gloss (GSWH) | 596-12617 |
| **TAG27TD2-1206-WH** | 38.1 | 19.1 | 85.1 | 2 pcs. | 2,500 pcs. | White gloss (GSWH) | 596-12627 |
| **TAG67TD2-1206-WH** | 38.1 | 31.8 | 85.1 | 2 pcs. | 2,500 pcs. | White gloss (GSWH) | 596-12667 |
| **TAG69TD2-1206-WH** | 40.6 | 22.9 | 89.0 | 2 pcs. | 2,500 pcs. | White gloss (GSWH) | 596-12669 |
| **TAG77TD1-1206-WH** | 50.8 | 22.9 | 55.0 | 1 pc. | 2,000 pcs. | White gloss (GSWH) | 596-71206 |
| **TAG73TD1-1206-WH** | 50.8 | 25.4 | 55.0 | 1 pc. | 2,000 pcs. | White gloss (GSWH) | 596-12673 |
| **TAG68TD1-1206-WH** | 63.5 | 25.4 | 69.0 | 1 pc. | 2,000 pcs. | White gloss (GSWH) | 596-12668 |
| **TAG63TD1-1206-WH** | 63.5 | 38.1 | 70.0 | 1 pc. | 1,000 pcs. | White gloss (GSWH) | 596-12663 |
| **TAG76TD1-1206-WH** | 63.5 | 50.8 | 70.0 | 1 pc. | 500 pcs. | White gloss (GSWH) | 596-61206 |
| **TAG4TD1-1206-WH** | 65.0 | 20.0 | 70.0 | 1 pc. | 2,500 pcs. | White gloss (GSWH) | 596-41206 |
| **TAG72TD1-1206-WH** | 69.9 | 31.8 | 76.0 | 1 pc. | 1,000 pcs. | White gloss (GSWH) | 596-12672 |
| **TAG65TD1-1206-WH** | 76.2 | 36.5 | 82.0 | 1 pc. | 1,000 pcs. | White gloss (GSWH) | 596-12665 |
| **TAG62TD1-1206-WH** | 76.2 | 50.8 | 82.0 | 1 pc. | 500 pcs. | White gloss (GSWH) | 596-12662 |
| **TAG64TD1-1206-WH** | 88.9 | 36.5 | 95.0 | 1 pc. | 1,000 pcs. | White gloss (GSWH) | 596-12664 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

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For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Type label identification, laser printer

**Helatag 1103 (Silver)**

These silver labels come in various sizes and are ideal for the identification of industrial assets.

The labels can be easily printed with office laser printers. All label templates are already stored in HellermannTyton's Tagprint Pro 3.0 software so label design including barcodes or logos has been made easy even with office printers.

**Features and benefits**

- Matt-silver rating labels for component marking
- For use on flat and smooth surfaces
- Simple and efficient label design and printing with TagPrint Pro labelling software
- Templates available from www.HellermannTyton.com for those wishing to use MS Word
- Clear protective box to ensures labels stay as good as new




*Highly visible and clearly printed labels identify quality assets.*

| | |
|---|---|
| **MATERIAL** | Type 1103, Polyester (PET), silver (SR) |
| **Operating Temperature** | -40 °C to +150 °C |
| **Curing Temperature** | from 0 °C |
| **Adhesive** | Acrylic |
| **Thickness of Foil** | 53 µm |
| **Chem. Material Properties** | Excellent resistance against water, alcohol, most oils, lubricants, fuels, aliphatic solvents, weak acid, salts, alkalis and UV light. |




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| TYPE | Width (W) | Height (H) | Labels per Sheet | Sheets per Pack | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|
| **TAG155LA4-1103-SR** | 25.4 | 8.5 | 231 pcs. | 22 pcs. | 5,000 pcs. | Silver (SR) | 594-01103 |
| **TAG15LA4-1103-SR** | 25.4 | 12.7 | 154 pcs. | 33 pcs. | 5,000 pcs. | Silver (SR) | 594-11103 |
| **TAG162LA4-1103-SR** | 38.1 | 12.7 | 110 pcs. | 23 pcs. | 2,500 pcs. | Silver (SR) | 594-21103 |
| **TAG165LA4-1103-SR** | 48.3 | 21.2 | 52 pcs. | 20 pcs. | 1,000 pcs. | Silver (SR) | 594-31103 |
| **TAG169LA4-1103-SR** | 48.3 | 33.9 | 32 pcs. | 32 pcs. | 1,000 pcs. | Silver (SR) | 594-41103 |
| **TAG170LA4-1103-SR** | 63.5 | 33.9 | 24 pcs. | 21 pcs. | 500 pcs. | Silver (SR) | 594-51103 |
| **TAG171LA4-1103-SR** | 210.0 | 297.0 | 1 pc. | 25 pcs. | 25 pcs. | Silver (SR) | 594-61103 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

c UL us For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Type label identification, laser printer

**Helatag 1102 (Yellow)**

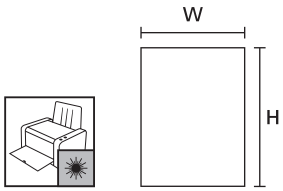
Used where clarity of print is most important and is ideally suited for printing barcodes and high definition graphics.

A range of sizes and materials are available to suit most cable marking and asset identification needs.

For problem-free printing, we recommend our easy to use windows based Tagprint Pro software program, which comes pre-loaded with all our standard label templates so you can start producing labels immediately.

### Features and benefits

- Yellow rating labels for component marking and control cabinets
- For use on flat and smooth surfaces
- Crisp and clear text, barcodes and graphics
- Simple and efficient label design and printing with TagPrint Pro labelling software
- Templates available from www.HellermannTyton.com for those wishing to use MS Word
- Clear protective box to ensures labels stay as good as new







*Optimal print results with a range of office laser printers.*

| MATERIAL | Type 1102, Polyester (PET), yellow (YE) |
|---|---|
| **Operating Temperature** | -40 °C to +150 °C |
| **Curing Temperature** | from 0 °C |
| **Adhesive** | Acrylic |
| **Thickness of Foil** | 55 µm |
| **Chem. Material Properties** | Excellent resistance against water, alcohol, most oils, lubricants, fuels, aliphatic solvents, weak acid, salts, alkalis and UV light. |

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| TYPE | Width (W) | Height (H) | Labels per Sheet | Sheets per Pack | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|
| **TAG156LA4-1102-YE** | 10.2 | 10.2 | 532 pcs. | 19 pcs. | 10,000 pcs. | Yellow (YE) | 594-61102 |
| **TAG122LA4-1102-YE** | 15.0 | 9.0 | 372 pcs. | 27 pcs. | 10,000 pcs. | Yellow (YE) | 594-21102 |
| **TAG120LA4-1102-YE** | 15.2 | 6.4 | 528 pcs. | 19 pcs. | 10,000 pcs. | Yellow (YE) | 594-01102 |
| **TAG154LA4-1102-YE** | 17.0 | 9.0 | 341 pcs. | 30 pcs. | 10,000 pcs. | Yellow (YE) | 594-51102 |
| **TAG124LA4-1102-YE** | 19.0 | 11.0 | 260 pcs. | 20 pcs. | 5,000 pcs. | Yellow (YE) | 594-41102 |
| **TAG13LA4-1102-YE** | 19.1 | 6.4 | 440 pcs. | 23 pcs. | 10,000 pcs. | Yellow (YE) | 594-31102 |
| **TAG121LA4-1102-YE** | 20.0 | 8.0 | 315 pcs. | 32 pcs. | 10,000 pcs. | Yellow (YE) | 594-11102 |
| **TAG62LA4-1102-YE** | 31.8 | 9.5 | 180 pcs. | 28 pcs. | 5,000 pcs. | Yellow (YE) | 594-81102 |
| **TAG171LA4-1102-YE** | 210.0 | 297.0 | 1 pc. | 25 pcs. | 25 pcs. | Yellow (YE) | 594-71102 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

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For product specific approvals and specifications please refer to the Appendix.

## Type label identification, laser printer

**Helatag 1101 (White)**

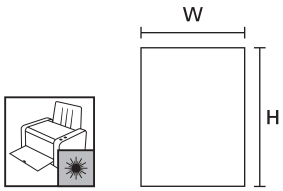
Used where clarity of print is most important and is ideally suited for printing barcodes and high definition graphics.

A range of sizes and materials are available to suit most cable marking and asset identification needs.

For problem-free printing, we recommend our easy to use windows based Tagprint Pro software program, which comes pre-loaded with all our standard label templates so you can start producing labels immediately.

### Features and benefits

- White rating labels for component marking as well as for control cabinets
- For use on flat and smooth surfaces
- Crisp and clear text, barcodes and graphics
- Simple and efficient label design and printing with TagPrint Pro labelling software
- Templates available from www.HellermannTyton.com for those wishing to use MS Word
- Clear protective box to ensures labels stay as good as new







*Helatag label for permanent asset identification.*

| | |
|---|---|
| **MATERIAL** | Type 1101, Polyester (PET), white (WH) |
| **Operating Temperature** | -40 °C to +150 °C |
| **Curing Temperature** | from 0 °C |
| **Adhesive** | Acrylic |
| **Thickness of Foil** | 55 µm |
| **Chem. Material Properties** | Excellent resistance against water, alcohol, most oils, lubricants, fuels, aliphatic solvents, weak acid, salts, alkalis and UV light. |

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| TYPE | Width (W) | Height (H) | Labels per Sheet | Sheets per Pack | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|
| **TAG156LA4-1101-WH** | 10.2 | 10.2 | 532 pcs. | 19 pcs. | 10,000 pcs. | White (WH) | 594-81101 |
| **TAG122LA4-1101-WH** | 15.0 | 9.0 | 372 pcs. | 27 pcs. | 10,000 pcs. | White (WH) | 594-31101 |
| **TAG120LA4-1101-WH** | 15.2 | 6.4 | 528 pcs. | 19 pcs. | 10,000 pcs. | White (WH) | 594-11101 |
| **TAG11LA4-1101-WH** | 16.5 | 5.1 | 605 pcs. | 17 pcs. | 10,000 pcs. | White (WH) | 594-01101 |
| **TAG154LA4-1101-WH** | 17.0 | 9.0 | 341 pcs. | 30 pcs. | 10,000 pcs. | White (WH) | 594-61101 |
| **TAG124LA4-1101-WH** | 19.0 | 11.0 | 260 pcs. | 20 pcs. | 5,000 pcs. | White (WH) | 594-11017 |
| **TAG13LA4-1101-WH** | 19.1 | 6.4 | 440 pcs. | 23 pcs. | 10,000 pcs. | White (WH) | 594-41101 |
| **TAG121LA4-1101-WH** | 20.0 | 8.0 | 315 pcs. | 32 pcs. | 10,000 pcs. | White (WH) | 594-21101 |
| **TAG155LA4-1101-WH** | 25.4 | 8.5 | 231 pcs. | 22 pcs. | 5,000 pcs. | White (WH) | 594-71101 |
| **TAG15LA4-1101-WH** | 25.4 | 12.7 | 154 pcs. | 33 pcs. | 5,000 pcs. | White (WH) | 594-91101 |
| **TAG62LA4-1101-WH** | 31.8 | 9.5 | 180 pcs. | 28 pcs. | 5,000 pcs. | White (WH) | 594-11016 |
| **TAG162LA4-1101-WH** | 38.1 | 12.7 | 110 pcs. | 23 pcs. | 2,500 pcs. | White (WH) | 594-11010 |
| **TAG150LA4-1101-WH** | 48.3 | 8.5 | 132 pcs. | 19 pcs. | 2,500 pcs. | White (WH) | 594-51101 |
| **TAG163LA4-1101-WH** | 48.3 | 12.7 | 88 pcs. | 29 pcs. | 2,500 pcs. | White (WH) | 594-11011 |
| **TAG165LA4-1101-WH** | 48.3 | 21.2 | 52 pcs. | 20 pcs. | 1,000 pcs. | White (WH) | 594-11012 |
| **TAG169LA4-1101-WH** | 48.3 | 33.9 | 32 pcs. | 32 pcs. | 1,000 pcs. | White (WH) | 594-11013 |
| **TAG170LA4-1101-WH** | 63.5 | 33.9 | 24 pcs. | 21 pcs. | 500 pcs. | White (WH) | 594-11014 |
| **TAG171LA4-1101-WH** | 210.0 | 297.0 | 1 pc. | 25 pcs. | 25 pcs. | White (WH) | 594-11015 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

c UL us For product specific approvals and specifications please refer to the Appendix.

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## Warehouse and pipe labelling, thermal transfer

**Helatag 1213 (Various colours)**

These coloured labels are used to identify storage systems with barcode and location information. They are also suitable for general marking of parts and components, samples and blocked goods in quality assurance, storage boxes and barrels.

**Features and benefits**

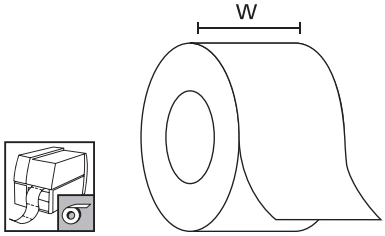
- Pipe, warehouse and shelving label
- Supplied on a continuous roll and cut by hand or automated with printer cutters
- Also for rough surfaces
- Good resistance in outdoor applications




*Large and highly visible pipe marking.*

| | |
|---|---|
| **MATERIAL** | Type 1213, Vinyl (PVC), glossy colours |
| **Operating Temperature** | -40 °C to +90 °C |
| **Curing Temperature** | from +8 °C |
| **Adhesive** | Acrylic |
| **Thickness of Foil** | 66 µm |
| **Chem. Material Properties** | Resistant to water, alcohol, most oils, greases, fuel, aliphatic solvents, weak acids, salts and alkalis. |
| **Recommended Ribbon Type** | TT822OUT, TTRW |
| **Thermal Transfer Printer** | TT430, TT4030 |

RoHS




| TYPE | Width (W) | Width of Liner (WL) | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|
| **TAGR4TD1-1213-YE** | 25.0 | 25.0 | 50 m | Yellow gloss (GSYE) | 596-03103 |
| **TAG108TD1-1213-BU** | 40.0 | 40.0 | 50 m | Blue (BU) | 596-12181 |
| **TAG108TD1-1213-GY** | 40.0 | 40.0 | 50 m | Grey (GY) | 596-12188 |
| **TAG108TD1-1213-PK** | 40.0 | 40.0 | 50 m | Pink (PK) | 596-00971 |
| **TAG108TD1-1213-YE** | 40.0 | 40.0 | 50 m | Yellow gloss (GSYE) | 596-12167 |
| **TAG108TD1-1213-GN** | 40.0 | 40.0 | 50 m | Green (GN) | 596-12166 |
| **TAGR1TD-1213-GN** | 101.6 | 101.6 | 50 m | Green (GN) | 596-12170 |
| **TAGR1TD-1213-RD** | 101.6 | 101.6 | 50 m | Red (RD) | 596-12168 |
| **TAGR1TD-1213-WH** | 101.6 | 101.6 | 50 m | White (WH) | 596-12171 |
| **TAGR1TD-1213-YE** | 101.6 | 101.6 | 50 m | Yellow gloss (GSYE) | 596-12169 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

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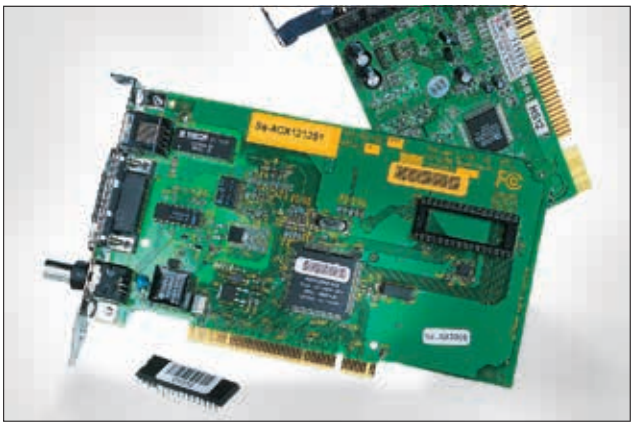
## Printed circuit board labels (ESD), thermal transfer

**Helatag 823 (White), PCB labelling**

Helatag 823 labels have been designed to fit all areas when it comes to marking components on PCBs. The specially formulated adhesive labels give the highest quality print clarity when printed on thermal transfer printers. Designing and printing labels is simple and users can quickly print out professional labels in a matter of moments when using TagPrint Pro labelling software.

**Features and benefits**

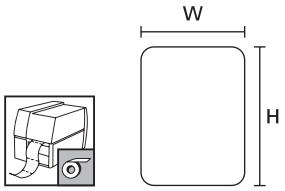
- Labels for printed circuit boards
- Voltage rejecting adhesive properties
- Permanent and durable identification
- For electrostatic sensitive applications



*Secure identification of component parts and circuit boards with Helatag.*

| MATERIAL | Type 823, Polyester (PET), white (WH) |
|---|---|
| **Operating Temperature** | -40 °C to +150 °C |
| **Curing Temperature** | from +10 °C |
| **Adhesive** | Acrylic |
| **Thickness of Foil** | 51 µm |
| **Chem. Material Properties** | Excellent resistance against alcohol, petrol, solvents, butanol, ethyl- and butylcellosolve solvents, battery acid |
| **Recommended Ribbon Type** | TT822OUT |
| **Thermal Transfer Printer** | TT430, TT4030 |

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| TYPE | Width (W) | Height (H) | Width of Liner (WL) | Labels per Row | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|
| **TAG16TD3-823-WH** | 22.9 | 6.4 | 80.0 | 3 pcs. | 10,000 pcs. | White (WH) | 596-16823 |
| **TAG61TD3-823-WH** | 25.4 | 4.8 | 89.0 | 3 pcs. | 10,000 pcs. | White (WH) | 596-61823 |
| **TAG29TD3-823-WH** | 25.4 | 6.4 | 89.0 | 3 pcs. | 7,500 pcs. | White (WH) | 596-29823 |
| **TAG34TD3-823-WH** | 25.4 | 9.5 | 85.1 | 3 pcs. | 7,500 pcs. | White (WH) | 596-34823 |
| **TAG35TD3-823-WH** | 31.8 | 9.5 | 101.6 | 3 pcs. | 7,500 pcs. | White (WH) | 596-35823 |
| **TAG17TD2-823-WH** | 38.1 | 6.4 | 85.1 | 2 pcs. | 5,000 pcs. | White (WH) | 596-17823 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

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## Cable ties with integrated RFID transponder

**T50RFID – Low Frequency (LF) and High Frequency (HF)**

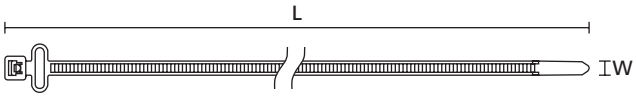
RFID cable ties provide an innovative solution for clear and rapid product identification. The nylon cable ties are equipped with an RFID transponder and therefore combine the numerous advantages of a regular cable tie with RFID technology. The ties are especially suited for securing, serialisation, tracking and identification of products in the areas of resource management, electrical inspection, inventory, distribution and rental services as well as for easy management of maintenance and repair routines.

### Features and benefits

- Flexible, contactless data communication
- Clear identification of objects through unique numbering
- Faster data management compared to paper solution
- More accurate documentation processes – prevention of
- human errors
- Robust and resistant to harsh environments and cleaning processes
- Low frequency (LF – 125 kHz) - Read only
- High frequency (HF – 13.56 MHz) - Rewritable



*T50RFID – cable ties with RFID transponder.*




*T50RFID, MCTRFID*

| MATERIAL | Polyamide 6.6 (PA66) | Polyamide 6.6, UV-resistant (PA66W) |
|---|---|---|
| **Frequency** | 125 kHz (LF) | 13.56 MHz (HF) |
| **Idle Temperature** | -40 °C to +85 °C | |
| **Operating Temperature** | -40 °C to +85 °C | -25 °C to +85 °C |
| **Flammability** | UL 94 V2 | |

HF ✓ RoHS ✓

| TYPE | Frequency | Bundle Ø min. | Bundle Ø max. | Width (W) | Length (L) | N | Colour | Pack Cont. | Material | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **T50RFIDCLA** | 125 kHz (LF) | 1.5 | 50.0 | 4.6 | 200.0 | 225 | Yellow (YE) | 100 pcs. | PA66 | 6;54 | 111-01638 |
| **T50RFIDCHA** | 13.56 MHz (HF) | 1.5 | 50.0 | 4.6 | 200.0 | 225 | Yellow (YE) | 100 pcs. | PA66 | 6;52-53 | 111-01639 |
| | 13.56 MHz (HF) | 1.5 | 50.0 | 4.6 | 200.0 | 225 | Black (BK) | 100 pcs. | PA66 | 6;52-53 | 111-01591 |
| | 13.56 MHz (HF) | 1.5 | 50.0 | 4.6 | 200.0 | 225 | Black (BK) | 100 pcs. | PA66W | 6;52-53 | 111-02406 |
| | 13.56 MHz (HF) | 1.5 | 50.0 | 4.6 | 200.0 | 225 | Light Blue (LTBU) | 100 pcs. | PA66 | 6;52-53 | 111-01673 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

N = **Minimum Loop Tensile Strength for Cable Ties (Newton)**

| Recommended Tools | | | | |
|---|---|---|---|---|
| | 6<br>EVO7 | 52<br>RFID-DT22-HF | 53<br>RFID-HS9BT-HF | 54<br>RFID-HS9BT-LF |
| | 548 | 515 | 514 | 514 |

For more information on toolings please refer to the Application Tooling chapter.

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Detectable cable ties with integrated RFID transponder

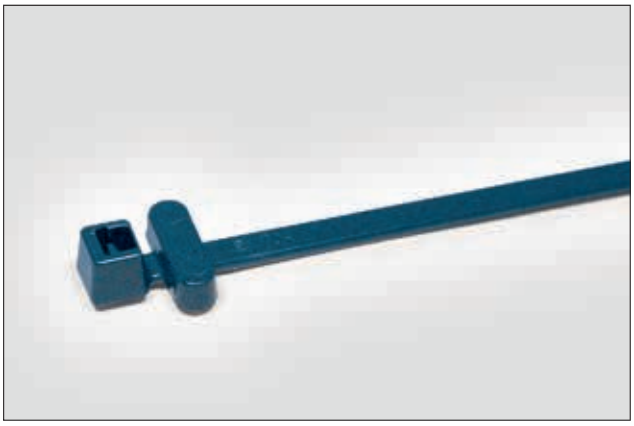
**MCTRFID – Low Frequency (LF) and High Frequency (HF)**

HellermannTyton has developed a range of nylon and metal identification cable ties with RFID tag to enable users to easily fix the RFID tag to equipment that needs to carry a serial number for tracking and identification purposes.

The products are provided to clients in the following areas: utility companies, healthcare, food processing, agriculture, hire shops and companies carrying out servicing and calibration.

### Features and benefits

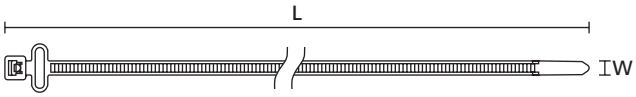
- Magnetic or X-Ray detectable RFID cable ties (detection level depending on specific application)
- Total metal dispersion throughout the tie
- For safe handling of production processes
- Blue colour for easy visual detection
- Flexible, contactless data communication
- Clear identification of objects through unique numbering
- Faster data management compared to paper solution
- More accurate documentation processes – prevention of human errors
- Robust and resistant to harsh environments and cleaning processes
- Low frequency (LF – 125 kHz) - Read only
- High frequency (HF – 13.56 MHz) - Rewritable



*MCTRFID – detectable cable ties (metal content) with RFID transponder.*

| MATERIAL | Polyamide 6.6, with metal particles (PA66MP) | |
|---|---|---|
| **Frequency** | 125 kHz (LF) | 13.56 MHz (HF) |
| **Idle Temperature** | -40 °C to +85 °C | |
| **Operating Temperature** | -40 °C to +85 °C | -25 °C to +85 °C |
| **Flammability** | UL 94 HB | |

HF ✓ RoHS ✓




*T50RFID, MCTRFID*

| TYPE | Frequency | Bundle Ø min. | Bundle Ø max. | Width (W) | Length (L) | N | Colour | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **MCTRFIDCLA** | 125 kHz (LF) | 1.5 | 50.0 | 4.6 | 200.0 | 225 | Blue (BU) | 100 pcs. | 6;54 | 111-01976 |
| **MCTRFIDCHA** | 13.56 MHz (HF) | 1.5 | 50.0 | 4.6 | 200.0 | 225 | Blue (BU) | 100 pcs. | 6;52-53 | 111-01676 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

N = **Minimum Loop Tensile Strength for Cable Ties (Newton)**

| Recommended Tools | | | | |
|---|---|---|---|---|
| | 6<br>EVO7 | 52<br>RFID-DT22-HF | 53<br>RFID-HS9BT-HF | 54<br>RFID-HS9BT-LF |
| | 548 | 515 | 514 | 514 |

For more information on toolings please refer to the Application Tooling chapter.

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Stainless steel ties with RFID transponder

**MBTRFID – High Frequency (HF) and Ultra High Frequency (UHF)**

Stainless steel RFID cable ties are fitted with a slide-on carrier for a high frequency (HF) or an ultra-high frequency (UHF) RFID transponder. These ties are ideal for product identification in all areas of harsh environment where high tensile strength and durability is of importance. The ties are especially suited for securing, serialisation, tracking and identification of products in the areas of resource management, electrical inspection, inventory, distribution and rental services as well as for easy management of maintenance and repair routines.

### Features and benefits

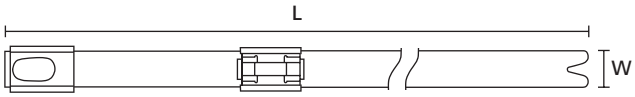
- MBT stainless steel (316) tie complete with RFID transponder
- Especially suited for applications in harsh environments
- Patented non-releasable locking feature
- Flexible, contactless data communication
- Clear identification of objects through unique numbering
- Faster data management compared to paper solution
- More accurate documentation processes – prevention of human errors
- High frequency (HF – 13.56 MHz)
- Ultra high frequency (UHF – 869 MHz)
- Rewritable
- Standard colour red, black coating is also available as a special



*MBTRFID – stainless steel RFID cable ties for product identification in harsh environments.*

| MATERIAL | Stainless Steel (SS316), Polyester (SP) | |
|---|---|---|
| **Frequency** | 13.56 MHz (HF) | 869 MHz (UHF) |
| **Idle Temperature** | -25 °C to +70 °C | -40 °C to +85 °C |
| **Operating Temperature** | -25 °C to +70 °C | -40 °C to +85 °C |
| **Flammability** | non-burning (except coating) | |

HF ✓ RoHS ✓




*MBTRFID*

| TYPE | Frequency | Bundle Ø min. | Bundle Ø max. | Width (W) | Length (L) | N | Colour | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| **MBT8HFCRFID** | 13.56 MHz (HF) | 17.0 | 50.0 | 7.9 | 201.0 | 1,020 | Red (RD) | 50 pcs. | 15-18;52-53 | 156-01167 |
| **MBT14HFCRFID** | 13.56 MHz (HF) | 17.0 | 102.0 | 7.9 | 362.0 | 1,020 | Red (RD) | 50 pcs. | 15-18;52-53 | 111-01586 |
| **MBT20HFCRFID** | 13.56 MHz (HF) | 17.0 | 152.0 | 7.9 | 521.0 | 1,020 | Red (RD) | 50 pcs. | 15-18;52-53 | 111-01587 |
| **MBT27HFCRFID** | 13.56 MHz (HF) | 17.0 | 203.0 | 7.9 | 681.0 | 1,020 | Red (RD) | 50 pcs. | 15-18;52-53 | 111-01588 |
| **MBT33HFCRFID** | 13.56 MHz (HF) | 17.0 | 254.0 | 7.9 | 838.0 | 1,020 | Red (RD) | 50 pcs. | 15-18;52-53 | 111-01589 |
| **MBT8HHFRFID** | 869 MHz (UHF) | 17.0 | 50.0 | 7.9 | 201.0 | 1,020 | Red (RD) | 50 pcs. | 15-18 | 156-01565 |
| **MBT14HHFRFID** | 869 MHz (UHF) | 17.0 | 102.0 | 7.9 | 362.0 | 1,020 | Red (RD) | 50 pcs. | 15-18 | 156-01566 |
| **MBT20HHFRFID** | 869 MHz (UHF) | 17.0 | 152.0 | 7.9 | 521.0 | 1,020 | Red (RD) | 50 pcs. | 15-18 | 156-01567 |
| **MBT27HHFRFID** | 869 MHz (UHF) | 17.0 | 203.0 | 7.9 | 681.0 | 1,020 | Red (RD) | 50 pcs. | 15-18 | 156-01568 |
| **MBT33HHFRFID** | 869 MHz (UHF) | 17.0 | 254.0 | 7.9 | 838.0 | 1,020 | Red (RD) | 50 pcs. | 15-18 | 156-01569 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

N = **Minimum Loop Tensile Strength for Cable Ties (Newton)**

| Recommended Tools | | | | | | |
|---|---|---|---|---|---|---|
| | 15 MK9SST | 16 MK9PSST | 17 HDT16 | 18 KST-STG200 | 52 RFID-DT22-HF | 53 RFID-HS9BT-HF |
| | 554 | 554 | 555 | 555 | 515 | 514 |

For more information on toolings please refer to the Application Tooling chapter.

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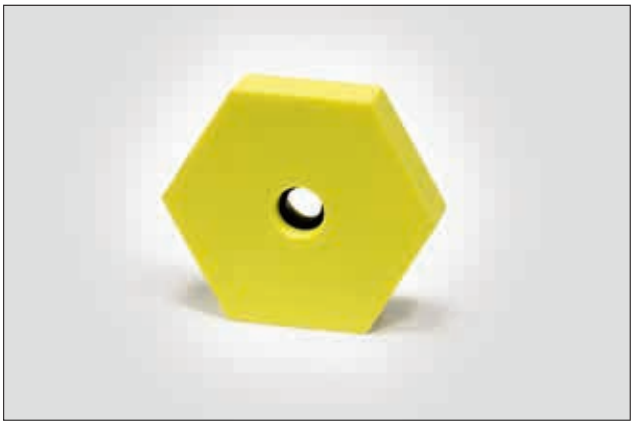
## Accessories with RFID transponder

### HEXTAG – High Frequency (HF)

The HEXTAG made from PA66 is equipped with a transponder of HF frequency. The central hole allows a simple mounting in applications where a RFID cable tie solution is not suitable. All HellermannTyton RFID products can be used for securing, serialisation, tracking and identification of products in the areas of resource management, electrical inspection, inventory, distribution and rental services as well as for easy management of maintenance and repair routines.

**Features and benefits**

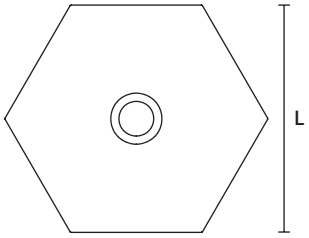
- Can be fitted using a chosen fixing element through the centre hole
- Flexible, contactless data communication
- Clear identification of objects through unique numbering
- Faster data management compared to paper solution
- More accurate documentation processes – prevention of human errors
- Robust and resistant to harsh environments and cleaning processes
- High frequency (HF – 13.56 MHz)
- Rewritable
- Yellow colour for easy visual detection



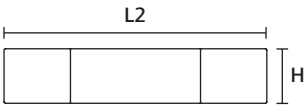
*RFID HEXTAG – for applications where a RFID cable tie solution is not suitable.*

| | |
|---|---|
| **MATERIAL** | Polyamide 6.6 (PA66) |
| **Frequency** | 13.56 MHz (HF) |
| **Idle Temperature** | -40 °C to +85 °C |
| **Operating Temperature** | -40 °C to +85 °C |
| **Flammability** | UL 94 V2 |

HF ✓ RoHS ✓




*HEXTAG (front view)*




*HEXTAG (side view)*

| TYPE | Frequency | Height (H) | Length (L) | Length (L2) | Colour | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **RFID HEXTAG** | 13.56 MHz (HF) | 8.0 | 33.4 | 38.39 | Yellow (YE) | 100 pcs. | 52-53 | 151-01582 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

| Recommended Tools | | |
|---|---|---|
| | 52<br>RFID-DT22-HF | 53<br>RFID-HS9BT-HF |
| | 515 | 514 |

For more information on toolings please refer to the Application Tooling chapter.

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

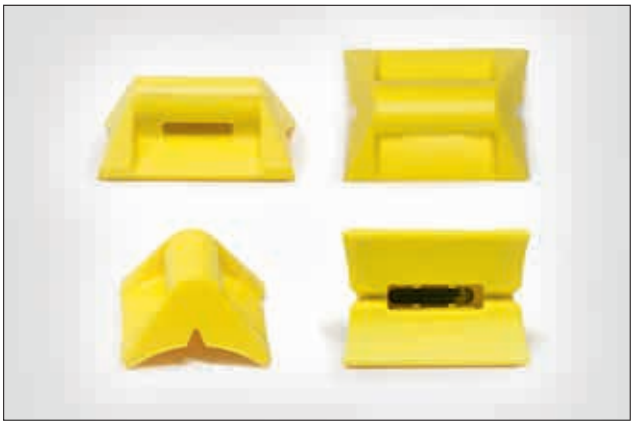
## Accessories with RFID transponder

### CRADLE – High Frequency (HF)

The CRADLE equipped with a HF transponder can be used with standard HellermannTyton cable ties. All RFID products can be used for securing, serialisation, tracking and identification of products in the areas of resource management, electrical inspection, inventory, distribution and rental services as well as for easy management of maintenance and repair routines.

**Features and benefits**

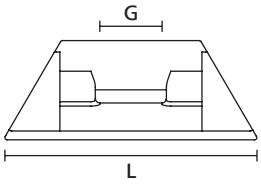
- Cable tie slot to suit HellermannTyton's standard cable ties up to 7.9 mm wide
- Made from durable TPU and is suitable to be used in salt water conditions
- Flexible, contactless data communication
- Clear identification of objects through unique numbering
- Faster data management compared to paper solution
- More accurate documentation processes – prevention of human errors
- Robust and resistant to harsh environments and cleaning processes
- Date on RFID chip can be reprogrammed (HF) – no waste
- Yellow colour for easy visual detection
- Other colours and frequencies are available on request
- High frequency (HF – 13.56 MHz)
- Rewritable



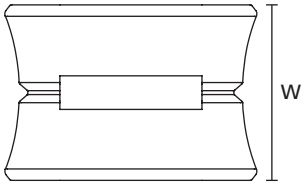
*RFID CRADLE – can be used with a standard HellermannTyton cable tie.*

| MATERIAL | Thermoplastic Polyurethane (TPU) |
|---|---|
| **Frequency** | 13.56 MHz (HF) |
| **Idle Temperature** | -40 °C to +85 °C |
| **Operating Temperature** | -25 °C to +85 °C |
| **Flammability** | UL 94 V2 |

HF ✓ RoHS ✓




*CRADLE (front view)*




*CRADLE (rear view)*




*CRADLE (side view)*

| TYPE | Frequency | Width (W) | Length (L) | Strap Width max. (G) | Colour | Pack Cont. | Tools | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **RFID CRADLE** | 13.56 MHz (HF) | 19.8 | 27.9 | 7.9 | Yellow (YE) | 100 pcs. | 52-53 | 151-01472 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

| Recommended Tools | | |
|---|---|---|
| | 52<br>RFID-DT22-HF | 53<br>RFID-HS9BT-HF |
| | 515 | 514 |

For more information on toolings please refer to the Application Tooling chapter.

CE Ex For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## RFID Readers

### RFID Handheld Reader

The HS9 handheld RFID readers are designed to read LF transponders and read/write to HF transponders fitted to HellermannTyton RFID cable ties and accessories. The readers act as an interface between the RFID transponder and computer systems or databases. Radio waves transmit the data from the RFID transponder to the reader, so that contactless reading and/or writing of information is possible. The HS9 reader is available for low frequency (LF, 125 kHz, read-only) and for high-frequency (HF, 13.56 MHz, read and write) transponders. RFID system solutions can make a significant contribution to improving the process reliability and quality in a variety of industries.



*RFID-HS9 – handheld readers for low frequency (LF) and high frequency (HF) transponders.*

**Features and benefits**

- RFID handheld reader
- Write capability on request
- Low frequency (LF – 125 kHz)
- High frequency (HF – 13.56 MHz)
- USB, HID interface
- Wireless transmission via Bluetooth
- Operator convenience
- Lightweight and handy design
- Compatible with Android- and iOS-devices
- 9V alkaline battery included

| | |
|---|---|
| **Operating Temperature** | 0 °C to +55 °C |
| **Interfaces** | USB, Bluetooth, HID |
| **L x W x H** | 135.0 mm x 70.0 mm x 24.0 mm |

RoHS

| TYPE | Frequency | Weight | Article-No. |
|---|---|---|---|
| **RFID-HS9BT-LF** | 125 kHz (LF) | 0.165 kg | 556-00701 |
| **RFID-HS9BT-HF** | 13.56 MHz (HF) | 0.185 kg | 556-00700 |

Subject to technical changes.

Date of issue: January 2019

## RFID Readers

### RFID Desktop Reader

The RFID-DT22 desktop reader for stationary use has been designed to read and write from/to high frequency (HF 13.56 MHz) transponders fitted to HellermannTyton RFID cable ties and accessories. The reader acts as an interface to computer systems and databases. Radio waves transmit the data from the transponder to the reader, so that contactless reading of information is possible. RFID system solutions can make a significant contribution to improving the process reliability and quality in a variety of industries.

**Features and benefits**

- RFID desktop reader
- High frequency (HF – 13.56 MHz)
- For reading and writing of data
- USB, HID interface
- Operator convenience
- Lightweight and handy design




*RFID-DT22 – desktop reader for high frequency (HF) transponders.*

| | |
|---|---|
| **Operating Temperature** | -25 °C to +60 °C |
| **Interfaces** | USB, HID |
| **L x W x H** | 110.0 mm x 110.0 mm x 30.0 mm |

RoHS

| TYPE | Frequency | Weight | Article-No. |
|---|---|---|---|
| **RFID-DT22-HF** | 13.56 MHz (HF) | 0.2 kg | 556-00702 |

Subject to technical changes.

Date of issue: January 2019

## Tamper-evident security labelling, thermal transfer

**Helatag 1203 (Silver)**

These labels are ideal for tamper-proof marking of valuable inventory items as well as for type labels, security and guarantee labels for components and housings.

**Features and benefits**

- Tamper-evident labels leave clear reminder that label has been removed
- Mark assets securely and unambiguously
- Print labels with customer unique references
- Use text, graphics and barcodes as required



*Highly visible tamper evidence.*

| MATERIAL | Type 1203, Polyester (PET), silver matt (SR), tamper-proof |
|---|---|
| **Operating Temperature** | -40 °C to +120 °C |
| **Curing Temperature** | from +7 °C |
| **Adhesive** | Acrylic |
| **Thickness of Foil** | 53 µm |
| **Chem. Material Properties** | Excellent resistance to water, alcohol, most oils, greases, fuel, freezing fluid, brake fluid, aliphatic solvents, weak acids, salts and alkalis. |
| **Recommended Ribbon Type** | TT822OUT |
| **Thermal Transfer Printer** | TT430, TT4030 |

HF ✓ RoHS ✓




| TYPE | Width (W) | Height (H) | Width of Liner (WL) | Labels per Row | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|
| **TAG71TD6-1203-SR** | 12.7 | 11.1 | 101.6 | 6 pcs. | 15,000 pcs. | Silver (SR) | 596-71120 |
| **TAG15TD3-1203-SR** | 25.4 | 12.7 | 85.1 | 3 pcs. | 7,500 pcs. | Silver (SR) | 596-51203 |
| **TAG27TD2-1203-SR** | 38.1 | 19.1 | 85.1 | 2 pcs. | 2,500 pcs. | Silver (SR) | 596-71203 |
| **TAG67TD2-1203-SR** | 38.1 | 31.8 | 85.1 | 2 pcs. | 1,000 pcs. | Silver (SR) | 596-67120 |
| **TAG73TD1-1203-SR** | 50.8 | 25.4 | 55.0 | 1 pc. | 2,000 pcs. | Silver (SR) | 596-73120 |
| **TAG66TD1-1203-SR** | 50.8 | 36.5 | 56.8 | 1 pc. | 1,000 pcs. | Silver (SR) | 596-66120 |
| **TAG68TD1-1203-SR** | 63.5 | 25.4 | 69.0 | 1 pc. | 2,000 pcs. | Silver (SR) | 596-68120 |
| **TAG63TD1-1203-SR** | 63.5 | 38.1 | 70.0 | 1 pc. | 1,000 pcs. | Silver (SR) | 596-63120 |
| **TAG76TD1-1203-SR** | 63.5 | 50.8 | 70.0 | 1 pc. | 500 pcs. | Silver (SR) | 596-76120 |
| **TAG62TD1-1203-SR** | 76.2 | 50.8 | 82.0 | 1 pc. | 500 pcs. | Silver (SR) | 596-21203 |
| **TAG64TD1-1203-SR** | 88.9 | 36.5 | 95.0 | 1 pc. | 1,000 pcs. | Silver (SR) | 596-64120 |
| **TAG98TD1-1203-SR** | 101.0 | 160.0 | 105.0 | 1 pc. | 250 pcs. | Silver (SR) | 596-98120 |
| **TAG97TD1-1203-SR** | 101.6 | 74.0 | 106.0 | 1 pc. | 500 pcs. | Silver (SR) | 596-97120 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Tamper-evident security labelling, thermal transfer

**Helatag 1208 (White), fragmenting**

These special labels are optimally suited for tamper-proof identification of valuable inventory items as well as a security and guarantee seal for components and housings.

**Features and benefits**

- Security label
- Fragments on removal
- Designed weak spots makes label removal time consuming



*Helatag 1208 – a secure way of identifying if an asset label has been tampered with.*

| MATERIAL | Type 1208, Acetate foil (CA), white (WH), tamper-proof |
|---|---|
| **Operating Temperature** | -40 °C to +150 °C |
| **Curing Temperature** | from +4 °C |
| **Adhesive** | Acrylic |
| **Thickness of Foil** | 56 µm |
| **Chem. Material Properties** | Resistant to oils, water and solvents |
| **Recommended Ribbon Type** | TT822OUT |
| **Thermal Transfer Printer** | TT430, TT4030 |

RoHS




| TYPE | Width (W) | Height (H) | Width of Liner (WL) | Labels per Row | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|
| **TAG71TD6-1208-WH** | 12.7 | 11.1 | 101.6 | 6 pcs. | 15,000 pcs. | White (WH) | 596-20871 |
| **TAG15TD3-1208-WH** | 25.4 | 12.7 | 85.1 | 3 pcs. | 7,500 pcs. | White (WH) | 596-12080 |
| **TAG27TD2-1208-WH** | 38.1 | 19.1 | 85.1 | 2 pcs. | 2,500 pcs. | White (WH) | 596-12082 |
| **TAG67TD2-1208-WH** | 38.1 | 31.8 | 85.1 | 2 pcs. | 2,500 pcs. | White (WH) | 596-12087 |
| **TAG69TD2-1208-WH** | 40.6 | 22.9 | 89.0 | 2 pcs. | 2,500 pcs. | White (WH) | 596-12089 |
| **TAG73TD1-1208-WH** | 50.8 | 25.4 | 55.0 | 1 pc. | 2,000 pcs. | White (WH) | 596-31208 |
| **TAG66TD1-1208-WH** | 50.8 | 36.5 | 56.8 | 1 pc. | 1,000 pcs. | White (WH) | 596-12086 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

Date of issue: January 2019

## Tamper-evident security labelling, thermal transfer

**Helatag 951 (Silver, Transparent), 2 parts**

These labels are primarily used for tamper-proof type label applications in the automotive and electrical industries.

They are ideally suited for labelling flat surfaces, e.g. on vehicle frames and can be used as a replacement for conventional aluminium plates.

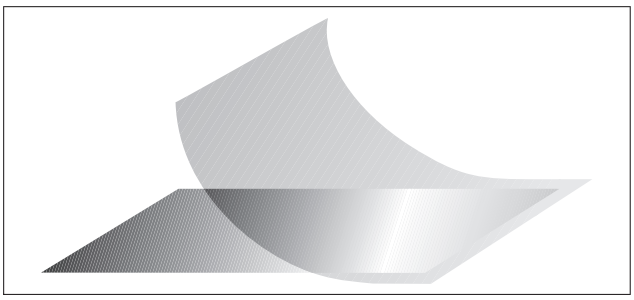
The transparent protective laminate guarantees good resistance to dirt and abrasion and can be easily applied by hand.

### Features and benefits

- 2-part label, delivered on reel together with the protective label
- Designed for highly visible and rugged identification on trucks and trailers
- Tamper-evident, when pulled off a checkered pattern will be visible as evident
- High durability in outside use
- Meets requirements of the KBA (Kraftfahrtbundesamt [German Federal Motor Transport Authority])
- Thickness of 951A label 36 µm and 951B laminate 25 µm
- Particularly suitable as type label for vehicles




*Type plate of an HGV trailer with protective laminate.*

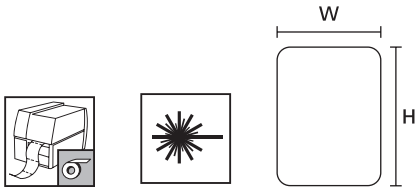


*The printed silver type plate (Mat. 951A) is protected by the transparent laminate (Mat 951B).*

**Tested according to German Federal Motor Transport Authority (KBA) technical bulletin 412-205 (Testing of factory plates made of foil and the affixing thereof with adhesive).**

| | |
|---|---|
| **MATERIAL** | Type 951, Polyester (PET), silver (SR) and Polyester (PET), transparent (CL) |
| **Operating Temperature** | -40 °C to +150 °C |
| **Curing Temperature** | from 0 °C (label), from +4 °C (laminate) |
| **Adhesive** | Acrylic |
| **Thickness of Foil** | 36 µm, 25 µm |
| **Chem. Material Properties** | Excellent resistance to water, alcohol, most oils, greases, fuel, aliphatic solvents, weak acids, salts and alkalis. |
| **Recommended Ribbon Type** | TT822OUT |
| **Thermal Transfer Printer** | TT430, TT4030 |

HF ✓ RoHS ✓




| TYPE | Width (W) | Height (H) | Width of Liner (WL) | Labels per Row | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|
| **TAG25.4-12.7TD1-951 SET** | 25.4 | 12.7 | 31.5 | 1 pc. | 1,000 pcs. | Silver (SR) | 596-44951 |
| **TAG50.8-25.4TD1-951 SET** | 50.8 | 25.4 | 56.8 | 1 pc. | 1,000 pcs. | Silver (SR) | 596-43951 |
| **TAG63.5-50.8TD1-951 SET** | 63.5 | 50.8 | 69.5 | 1 pc. | 500 pcs. | Silver (SR) | 596-42951 |
| **TAG101-74TD1-951 SET** | 101.6 | 74.0 | 107.0 | 1 pc. | 250 pcs. | Silver (SR) | 596-41951 |
| **TAG101-160TD1-951 SET** | 101.6 | 160.0 | 105.8 | 1 pc. | 250 pcs. | Silver (SR) | 596-40951 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Stainless steel embossing system

### M-BOSS Compact

M-BOSS Compact is a quiet easy-to-use metal plate embossing printer with a small production footprint. It is simple to install and operate and only needs a standard electrical supply and a PC. Texts are created with Tagprint Pro 3.0. Simply open the easy to use program to create print lists. Improved cooling system now ensures a continuous operation between 8-10 hours.Marker plates are attached to pipes and cables using 4.6 mm width MBT cable ties and a MK9SST hand tool.

**Features and benefits**

- Small and easy to use metal plate embosser
- Quiet embossing mechanism suited to production and office environments
- Embossed characters have been tested to withstand 1.5 million strikes each
- Improved cooling systems allows 8-10 hours continuous printing
- Use Tagprint Pro 3.0 labelling software with pre-loaded templates to simplify print jobs
- 45 piece character set as standard - can be upgraded to 60 characters
  Letters: A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
  Numbers: 0 1 2 3 4 5 6 7 8 9
  Symbols: & - / . , ' Ä, Ö, Ü
- Other symbols available on request

**For problem-free printing we recommend TagPrint Pro, page 523.**



*A quiet, durable, and easy to use metal plate embossing printer.*

| | |
|---|---|
| **Print Method** | Embossing |
| **Power Supply** | AC 110V-240V, 45/65 Hz, 1.5A-3A |
| **Cycle Time** | 1 second per character |
| **Interfaces** | USB 2.0 |
| **System Requirements** | MS Windows XP SP3, Vista SP1, Win 7, 8, 10 |
| **Dimensions W x H x D** | 480 mm x 360 mm x 570 mm |
| **Weight** | 41.0 kg |

RoHS

| TYPE | Article-No. |
|---|---|
| **M-BOSS Compact** | 544-20000 |

Subject to technical changes.

**1.5 million strikes per character without maintenance**

### M-BOSS Compact inlcuding Organiser

The M-BOSS Compact with included Organiser system gives the added advantage of a self-contained storage system within the print unit.

The organiser is a 10 container carousel storage system that can be programmed to hold either an individual or a pre-defined set of marker plates. This means that users have the flexibility to manage how they work with the printed output. A simple input screen on the top of the machine is used to specify the quantity per container within the carousel. The carousel drawer when opened extends 430 mm from the front of the printer.

**Features and benefits**

- Ability to manage how the printed marker plates are organised
- Carousel system under the printer has 10 removable marker plate containers
- Flexible output means all marker plates or a set amount can be sent to each container
- Carousel system will hold up to 400 markers
- Each container can hold 40 marker plates



*A simple solution to managing your printer output.*

| TYPE | Article-No. |
|---|---|
| **M-BOSS Compact Organiser** | 544-21000 |

Subject to technical changes.

CE For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Stainless Steel Printing System

### M-BOSS Compact Markers

M-BOSS Compact Markers are used in all areas where severe mechanical or chemical conditions occur e.g. offshore industry, marine engineering, petrochemical industry, mining, underground or on radio and cellular masts where mark permanence is critical.

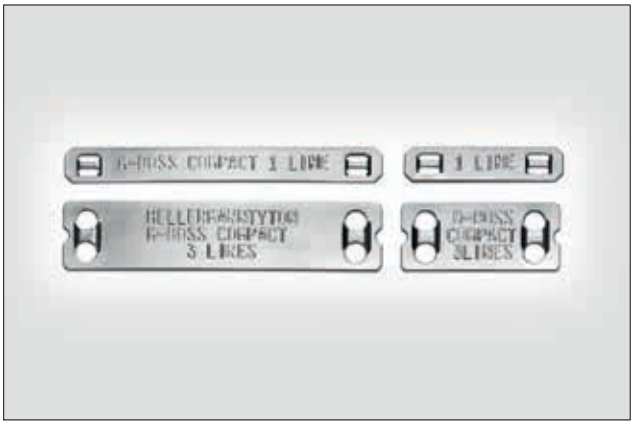
The raised surface of the embossed print ensures that the text remains visible even with dirt, grease, and paint cover the marker. The physical characteristics of the metal and the height of the embossed mark allows users to apply a stiff or metallic brush to the surface and remove excess layers of paint or grease without damaging the integrity of the text.

**Features and benefits**

- Raised marking ensure text visibility even when covered in dust, debris, grease and oil
- Stainless steel grade SS316 is suited for use in harsh environments
- Marker plates are designed for use with stainless steel cable ties with a 4.6 mm strap width
- Apply ties with a MK9SST

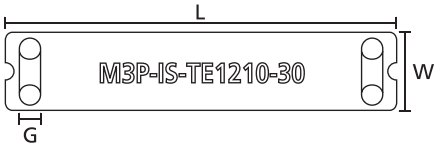


*Identification for hazardous environments: M-BOSS Compact stainless steel markers.*



*A range of metal plate sizes to suit your needs.*

*Application video: M-BOSS Compact*




*MBML*

| MATERIAL | Stainless Steel (SS316) |
|---|---|
| Operating Temperature | -80 °C to +538 °C |

HF ✓ LFH ✓
RoHS ✓

| TYPE | Strap Width max. (G) | Number of lines | Characters per line | Number of characters | Width (W) | Length (L) | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|---|
| **MBML10X45** | 4.6 | 1 | 8 | 8 | 10.0 | 44.5 | 1,000 pcs. | 544-80101 |
| **MBML10X90** | 4.6 | 1 | 23 | 23 | 10.0 | 89.5 | 500 pcs. | 544-80102 |
| **MBML20X45** | 4.6 | 3 | 8 | 24 | 20.0 | 44.5 | 1,000 pcs. | 544-80201 |
| **MBML20X90** | 4.6 | 3 | 23 | 69 | 20.0 | 89.5 | 500 pcs. | 544-80202 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

Date of issue: January 2019

## Stainless steel pre-embossed marking system, manual

**Hellermark SSC**

**Hellermark SSM**

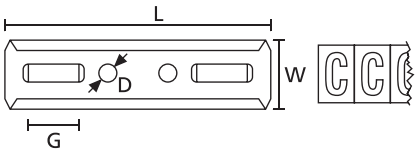
Hellermark is used in the rail, marine, offshore, petrochemical, food and construction industries, for the identification of cables, pipes and other equipment in harsh environments.

### Features and benefits

- Stainless steel pre-embossed marker tiles
- Use in harsh and hazardous conditions
- Made of grade SS316 stainless steel for ideal use in aggressive environments
- Insert marker tiles (SSM) into fitting carrier (SSC) and close ends with pliers
- Fasten carriers using stainless steel cable ties with max. strap width of 8 mm
- Carrier can be riveted or screw-fixed using two 3 mm holes at each end



*Hellermark SSC and SSM.*




| TYPE | Marking Text | Pack Cont. | Article-No. |
|---|---|---|---|
| SSM | + | 200 pcs. | 540-01700 |
| | - | 200 pcs. | 540-01703 |
| | , | 200 pcs. | 540-01702 |
| | . | 200 pcs. | 540-01701 |
| | / | 200 pcs. | 540-01720 |
| | 0 | 200 pcs. | 540-01600 |
| | 1 | 200 pcs. | 540-01610 |
| | 2 | 200 pcs. | 540-01620 |
| | 3 | 200 pcs. | 540-01630 |
| | 4 | 200 pcs. | 540-01640 |
| | 5 | 200 pcs. | 540-01650 |
| | 6 | 200 pcs. | 540-01660 |
| | 7 | 200 pcs. | 540-01670 |
| | 8 | 200 pcs. | 540-01680 |
| | 9 | 200 pcs. | 540-01690 |
| | ⏚ | 200 pcs. | 540-01730 |

| TYPE | Marking Text | Pack Cont. | Article-No. |
|---|---|---|---|
| SSM | A | 200 pcs. | 540-01010 |
| | B | 200 pcs. | 540-01020 |
| | C | 200 pcs. | 540-01030 |
| | D | 200 pcs. | 540-01040 |
| | E | 200 pcs. | 540-01050 |
| | F | 200 pcs. | 540-01060 |
| | G | 200 pcs. | 540-01070 |
| | H | 200 pcs. | 540-01080 |
| | I | 200 pcs. | 540-01090 |
| | J | 200 pcs. | 540-01100 |
| | K | 200 pcs. | 540-01110 |
| | L | 200 pcs. | 540-01120 |
| | M | 200 pcs. | 540-01130 |
| | N | 200 pcs. | 540-01140 |
| | O | 200 pcs. | 540-01150 |
| | P | 200 pcs. | 540-01160 |
| | Q | 200 pcs. | 540-01170 |
| | R | 200 pcs. | 540-01180 |
| | S | 200 pcs. | 540-01190 |
| | T | 200 pcs. | 540-01200 |
| | U | 200 pcs. | 540-01210 |
| | V | 200 pcs. | 540-01220 |
| | W | 200 pcs. | 540-01230 |
| | X | 200 pcs. | 540-01240 |
| | Y | 200 pcs. | 540-01250 |
| | Z | 200 pcs. | 540-01260 |

Subject to technical changes. Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

| TYPE | Width (W) | Length (L) | Strap Width max. (G) | Ø (D) | Marker tiles per carrier | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|
| **SSC46** | 11.0 | 46.0 | 7.9 | 3.0 | 5 | 10 pcs. | 540-01046 |
| **SSC56** | 11.0 | 56.0 | 7.9 | 3.0 | 7 | 10 pcs. | 540-01056 |
| **SSC82** | 11.0 | 82.0 | 7.9 | 3.0 | 11 | 10 pcs. | 540-01082 |
| **SSC106** | 11.0 | 106.0 | 7.9 | 3.0 | 15 | 10 pcs. | 540-01106 |
| **SSC134** | 11.0 | 134.0 | 7.9 | 3.0 | 20 | 10 pcs. | 540-01134 |
| **SSC286** | 11.0 | 286.0 | 7.9 | 3.0 | 45 | 10 pcs. | 540-01286 |
| **SSCPP (Plastic)** | 11.0 | 7.0 | 7.9 | 3.0 | - | 100 pcs. | 540-02011 |

All dimensions in mm. Subject to technical changes. Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

Date of issue: January 2019

## Protective Laminates, thermal transfer

**Helatag 323 (Transparent), high temperature**

Protective laminates are used for the additional protection of printed type labels, for example in the automotive sector and for other outdoor installations. The protective laminates are also used if the contours of a label, for example on glass surfaces or backlit objects, should not be visible (no-label look).

### Features and benefits

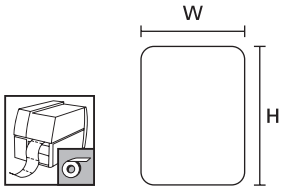
- High temperature transparent material
- Ideal as a protective laminate or as a printed label
- The barrier label needs to overlap the covered label
- Survives 5 years external weathering in central European climate
- Provides additional protection against chemicals for the underlying label




*Helatag protective laminates.*

| | |
|---|---|
| **MATERIAL** | Type 323, Polyvinylidene Fluoride (PVDF), transparent (CL) |
| **Operating Temperature** | -40 °C to +140 °C, intermittent +160 °C |
| **Curing Temperature** | from +10 °C |
| **Adhesive** | Acrylic |
| **Thickness of Foil** | 25 µm |
| **Chem. Material Properties** | Excellent resistance against water, UV radiation, weather influence and solvents based on petroleum. |
| **Recommended Ribbon Type** | TT822OUT |
| **Thermal Transfer Printer** | TT430, TT4030 |

RoHS




| TYPE | Width (W) | Height (H) | Width of Liner (WL) | Labels per Row | Pack Cont. | Colour | Article-No. |
|---|---|---|---|---|---|---|---|
| **TAG0638TL2-323-CL** | 43.2 | 11.4 | 94.9 | 2 pcs. | 5,000 pcs. | Transparent (CL) | 596-38321 |
| **TAG1351TL1-323-CL** | 55.9 | 17.8 | 62.0 | 1 pc. | 2,000 pcs. | Transparent (CL) | 596-51321 |
| **TAG2551TL1-323-CL** | 55.9 | 30.5 | 62.0 | 1 pc. | 1,000 pcs. | Transparent (CL) | 596-52321 |
| **TAG3863TL1-323-CL** | 68.6 | 43.2 | 75.0 | 1 pc. | 1,000 pcs. | Transparent (CL) | 596-63321 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Labelling software

### TagPrint Pro 3.0

TagPrint Pro 3.0 is the easy-to-use label/marker design and printing software in the HellermannTyton printing. Compatible with Windows® 7, Vista and XP as well as future operating systems such as Windows® 8, TagPrint Pro 3.0 delivers an individualised, task-based experience that enables a user to easily develop print templates including bar codes, text and graphics to meet numerous applications. TagPrint Pro 3.0 streamlines labeling production by offering a user full control over the importing or entering of data, advanced security features, the option to group label designs under a single file name or job number, and the ability to batch print to either one or more printers at the same time.

**Features and benefits**

- Easy and intuitive label/marker template design
- WYSIWYG
- Print to multiple printers at one time
- Save jobs in a queue and print all at one time with "Print later" function
- Connect or import directly from other databases including Excel, Access, text files
- Text, graphics and barcode functionalities
- Full text editing functions
- Inverse, flip, and mirror image options for graphic images
- Print log available

| TYPE | Article-No. |
|---|---|
| **TagPrint Pro 3.0 EMEA** | 556-00051 |

Subject to technical changes.




*The easy to use software speeds up production of markers, labels and identification tags.*

| | |
|---|---|
| **System Requirements** | PC running Microsoft Windows XP SP3, Vista SP1 or later, Windows 7 .NET Framework 4, Windows 8<br>512 MB RAM (XP SP3)<br>1.0 GB RAM (Vista/Windows 7/Windows 8)<br>500 MB available hard disk space |

RoHS

Date of issue: January 2019

## Thermal transfer printer

**TT430, Small to medium volume printing**

The TT430 thermal transfer printer is perfect for printing on HellermannTyton materials such as self-adhesive labels, shrinkable tubing and identification tags. Thanks to its low weight and compact construction, the TT430 integrates seamlessly into any workstation. It is easy to use due to its intuitive touch display and clear status messages which can be shown in multiple languages. The optional cutter and perforator make this printer ideal for a wide range of applications. 300 dpi resolution ensures that barcodes, warning symbols, logos and text are as sharp as they can be.

### Features and benefits

- Medium volume single sided printing
- Print on HellermannTyton cable markers and labels
- Uses standard ribbons
- Barcodes: standard and 2D
- Print speed up to 125 mm/s (30mm/s recommended for Ladder Style products and tubing)
- Adjustable label sensor
- Multiple language selection
- Windows drivers: 32/64 bit for Windows XP, Windows Vista, Windows 7, 8, 10




*TT430 thermal transfer printer.*

| | |
|---|---|
| **Print Method** | Thermal transfer |
| **Print Head Type** | 300 dpi, flat type |
| **Print Speed** | up to 125 mm/s |
| **Max. Print Width** | 106 mm |
| **Label Height Max (metric)** | 1,000 mm |
| **Interfaces** | USB 2.0, Ethernet 10/100 Base T |
| **Supported Barcodes, Printer** | Standard and 2D |
| **Printer Memory** | 64 MB RAM |
| **Dimensions W x H x D** | 253 mm x 189 mm x 322 mm |
| **Weight** | 4 kg |

RoHS

*One Step to the Web!*

| TYPE | Article-No. |
|---|---|
| **TT430** | 556-00450 |

Subject to technical changes.

| TYPE | Description | Article-No. |
|---|---|---|
| **S430 Cutter** | Cutter for TT430 | 556-00452 |
| **P430 Perforator** | Perforator for TT430 | 556-00456 |
| **TT External Reel Holder** | External Reel Holder | 556-00451 |
| **TT430 300dpi Printhead** | Printhead for TT430 | 556-00453 |
| **TT430 Print Roller** | Print Roller for TT430 | 556-00454 |

Subject to technical changes.

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Thermal transfer printer

**TT4030, High volume printing**

HellermannTyton's premium printer TT4030 is specifically designed for medium and heavy duty industrial applications. The 300 dpi print head fulfils all standard requirements for printing bar codes, warning signs, logos and written information. Optional premium quality accessories such as a perforator and cutter are designed to work seamlessly with the printer and will suit the most demanding needs.

Printing high definition graphics such as 2d barcodes, standard bar codes, numbers and text on adhesive labels, thermo plastics such as heat shrink and cable markers (Tiptags) is easily done.

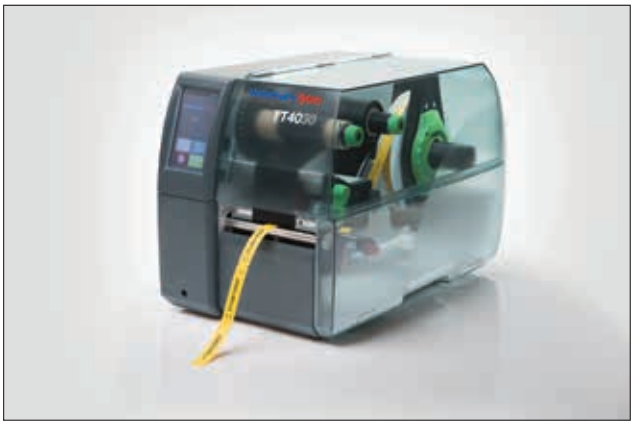
A colour LCD Touchscreen with modern user interface helps intuitive operation.

Creation of professional looking industrial identification is simplified by the use of HellermannTyton´s label creation software TagPrint Pro 3.0.

Whether in stand-alone mode, as a PC application or in a network - the robust TT4030 printers can meet every requirement.

### Features and benefits

- High volume single sided printing
- Print on HellermannTyton heatshrink tubing, cable markers and labels
- Uses standard 300 m ribbons
- Barcodes: standard and 2D
- Print speed up to 300 mm/s (30 mm/s recommended for ladder style products and tubing)
- Multiple language selection
- Windows drivers: 32 / 64 bit for Windows XP, Windows Vista, Windows 7, 8, 10



*TT4030 thermal transfer printer for high volumes.*

| | |
|---|---|
| **Print Method** | Thermal transfer |
| **Print Head Type** | 300 dpi, flat type |
| **Print Speed** | up to 300 mm/s |
| **Max. Print Width** | 101.6 mm |
| **Label Height Max (metric)** | 2,000 mm |
| **Interfaces** | RS232 C, USB 2.0,<br>Ethernet 10/100 Base T |
| **Supported Barcodes, Printer** | Standard, 2D |
| **Printer Memory** | 256 MB RAM |
| **Dimensions W x H x D** | 252 mm x 288 mm x 460 mm |
| **Weight** | 10 kg |

HF ✓ RoHS ✓

*One Step to the Web!*

| TYPE | Article-No. |
|---|---|
| **TT4030** | 556-04037 |

Subject to technical changes.

| TYPE | Description | Article-No. |
|---|---|---|
| **P4030 Perforator** | Perforator for TT4030 | 556-04051 |
| **TT4030 Printhead 4.3/300** | Printhead for TT4030 | 556-04041 |
| **S4030 Cutter** | S4030 Cutter for TT4030 | 556-04050 |
| **TT External Reel Holder** | External Reel Holder | 556-00451 |
| **Printer Roller TT4030/TT4000+** | Printer Roller for TT4030/TT4000+ | 556-04005 |

Subject to technical changes.

CE cULus For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Thermal transfer printer

**TrakMark DS, Double Sided**

The TrakMark DS is a high-performance printer for double-sided printing. This printer is perfect for double-sided printing on HellermannTyton shrinkable tubing. With two print heads mounted one on top of the other, the TrakMark DS prints onto both sides of the material at the same time. High reliability and multiple peripherals enable applications and solutions tailored to specific customer requirements. It is easy to use thanks to its display and clear status messages which can be shown in multiple languages. 300 dpi resolution ensures that barcodes, warning symbols, logos and text are as sharp as they can be.

**Features and benefits**

- High volume double sided printing
- Prints perfectly on HellermannTyton heat shrink ladder style products
- Uses standard 300 m ribbons
- Barcodes: standard and 2D
- Print speed up to 125 mm/s (30 mm/s recommended for ladder style products and tubing)
- Multiple language selection
- Windows drivers: 32/64 bit for Windows XP, Windows Vista, Windows 7, 8, 10

*One Step to the Web!*




*TrakMark DS printer.*

| | |
|---|---|
| **Print Method** | Thermal transfer |
| **Print Head Type** | 300 dpi, flat type |
| **Print Speed** | 30, 40, 50, 75, 100, 125 mm/s |
| **Max. Print Width** | 105.6 mm |
| **Label Height Max (metric)** | 2,000 mm |
| **Interfaces** | RS232 C, USB 2.0, Ethernet 10/100 Base T |
| **Supported Barcodes, Printer** | Standard, 2D |
| **Printer Memory** | 64 MB RAM |
| **Dimensions W x H x D** | 248 mm x 395 mm x 554 mm |
| **Weight** | 21 kg |

RoHS

| TYPE | Article-No. |
|---|---|
| **TrakMark DS** | 556-05000 |

Subject to technical changes.

| TYPE | Description | Pack Cont. | Article-No. |
|---|---|---|---|
| **S4000 Cutter** | S4000 Cutter for TT4000+ and TrakMark DS | 1 pc. | 556-04025 |
| **P4000 Perforator** | Perforator for TT4000+ and TrakMark DS | 1 pc. | 556-04024 |
| **TT External Reel Holder** | External Reel Holder | 1 pc. | 556-00451 |

Subject to technical changes.

For product specific approvals and specifications please refer to the Appendix.

Date of issue: January 2019

## Selection matrix: materials and ribbons

Use this selection matrix to find the right combination of material and ribbon to suit your application.

| Material (Page) | TT ribbon | Resistance to: Smudgeproof | Scratchproof | Partly smudgeproof | Oils / benzenes | Alcoholic solvents | Etching | Approved | Market (suggested): Aerospace | Automotive | Electronics | Machine Building | Military | Process Control | Rail |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **323** (471/522), **1209** (469/470) | TT822OUT | ● | ● | – | ● | – | – | – | – | – | ● | ● | – | ● | – |
| | TT932DOUT | ● | – | – | – | – | – | – | – | – | ● | ● | – | ● | – |
| **823** (508) | TT822OUT | ● | ● | – | ● | – | – | – | – | – | ● | ● | – | ● | – |
| **1206** (502/503) | TT822OUT | ● | ● | – | ● | – | – | ● | – | – | ● | ● | – | ● | – |
| **880** (493) | TT822OUT | ● | ● | – | ● | – | – | – | – | – | – | ● | – | ● | – |
| **892** (490) | TT822OUT | ● | ● | – | ● | – | – | – | – | – | – | ● | – | ● | – |
| **951** (518) | TT822OUT | ● | ● | – | ● | – | – | ● | – | ● | ● | ● | – | – | – |
| **1203** (516) | TT822OUT | ● | ● | – | ● | – | – | ● | – | – | ● | ● | – | ● | – |
| **1204** (501) | TT822OUT | ● | ● | – | ● | – | – | ● | – | ● | ● | ● | – | ● | – |
| **1208** (517) | TT822OUT | ● | ● | – | ● | – | – | – | – | – | ● | – | – | – | – |
| **1211** (493) | TT822OUT | ● | ● | – | ● | – | – | – | – | – | – | ● | – | ● | – |
| **1213** (507) | TT822OUT | ● | ● | – | ● | – | – | – | – | – | – | ● | – | ● | – |
| **1216** (494) | TT822OUT | ● | ● | – | ● | – | – | – | – | – | ● | – | – | – | – |
| **1220** (599) **1221** (500) | TT122OUT | ● | ● | – | ● | ● | – | – | – | – | ● | ● | – | ● | – |
| | TT822OUT | ● | ● | – | ● | – | – | – | – | – | ● | ● | – | ● | – |
| **TCGT** (442), **TULT** (444) | TT822OUT8 | – | – | ● | – | – | – | – | ● | – | ● | ● | ● | ● | – |
| | TTDTHOUT | ● | ● | – | ● | ● | – | – | ● | ● | ● | ● | ● | ● | – |
| | TTRC+ | ● | ● | – | ● | ● | ● | – | ● | – | – | ● | ● | ● | – |
| | TTRW | – | – | ● | – | – | – | – | ● | – | ● | ● | ● | ● | – |
| **TULT DS** (446), **TAGUL** (464) | TTDTHOUT | ● | ● | – | ● | ● | – | – | ● | ● | ● | ● | ● | ● | – |
| **TLFX** (448), **TLFX DS** (450), **TLFD DS** (455), **TAGLF** (466), **TIPTAG HF** (461) | TTDTHOUT | ● | ● | – | ● | ● | – | – | – | – | – | ● | – | – | ● |
| **THTT** (457), **THTT DS** (459), **TAGHT** (468) | TTRHT | ● | ● | – | ● | ● | – | – | ● | – | – | – | ● | – | – |
| **TDRT** (452), **TDRT DS** (453), **TAGDR** (467) | TTDTHOUT | ● | ● | – | ● | ● | – | – | – | – | – | – | – | – | ● |
| **TAGPU** (465) | TTRHT | ● | ● | – | ● | ● | – | – | – | – | ● | ● | – | ● | – |
| **TIPTAG PU** (462) | TTRC+ | ● | ● | – | ● | ● | ● | – | – | – | ● | ● | – | ● | – |

● yes
– no

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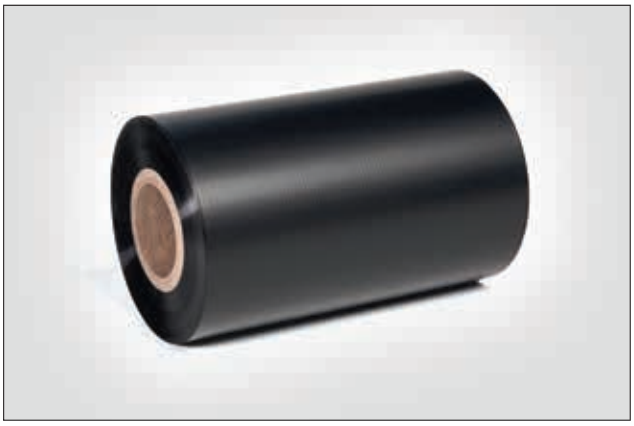
## Thermal transfer ribbons for

### Adhesive Labels

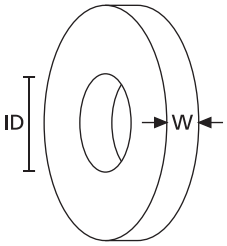
The thermal transfer print technology is based on heating up certain dots in the print head. This transfers the ink very precisely from the ribbon onto the surface of the printed material. All HellermannTyton ribbons consist of a special resin composition to maximise print performance. In combination with HellermannTyton printers the ribbons ensure the highest of print quality on all HellermannTyton thermal printable identification materials.

**Features and benefits**

- Thermal transfer ribbons for highest quality and performance of printed labels
- Ribbons are specifically designed to maximise print performance for the recommended material



*Ribbons for printing on adhesive labels.*




**ID: The standard inside core diameter is 25.4 mm.**

| TYPE | Recommended Material | Colour | Width (W) | Reel Length | Article-No. |
|---|---|---|---|---|---|
| **TT822OUT 60MM** | 323/823/880/892/951/1203/1204/1206/1208/1210/1211/1213/ 1216/1220/1221 | Black (BK) | 60.0 | 300 m | 556-00111 |
| **TT822OUT 110MM** | 323/823/880/892/951/1203/1204/1206/1208/1210/1211/1213/ 1216/1220/1221 | Black (BK) | 110.0 | 300 m | 556-00101 |
| **TT932DOUT 85MM** | 323/1209 | Black (BK) | 85.0 | 300 m | 556-00117 |
| **TT932DOUT 110MM** | 323/1209 | Black (BK) | 110.0 | 300 m | 556-00118 |
| **TT122OUT 60mm** | 1220/1221 | Black (BK) | 60.0 | 300 m | 556-00060 |
| **TT122OUT 110mm** | 1220/1221 | Black (BK) | 110.0 | 300 m | 556-00061 |
| **TTRR 110** | Labels/1220/1221 | Red (RD) | 110.0 | 300 m | 556-00208 |

All dimensions in mm. Subject to technical changes.

RoHS

c UL us

For product specific approvals and specifications please refer to the Appendix.

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## Thermal printer ribbons for

### Heatshrink and Tiptags

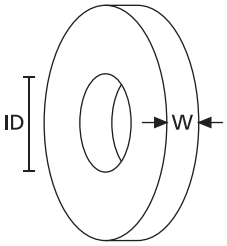
The thermal transfer print technology is based on heating up certain dots in the print head. This transfers the ink very precisely from the ribbon onto the surface of the printed material. All HellermannTyton ribbons consist of a special resin composition to maximise print performance. In combination with HellermannTyton printers the ribbons ensure the highest of print quality on all HellermannTyton thermal printable identification materials.

**Features and benefits**

- Thermal transfer ribbons for high quality print results on heat shrink tubing and Tiptag identification tags
- Ribbons are specifically designed to maximize print performance for the recommended material



*Ribbons for printing on tubes and Tiptags.*




**ID: The standard inside core diameter is 25.4 mm.**

| TYPE | Recommended Material | Colour | Width (W) | Reel Length | Article-No. |
|---|---|---|---|---|---|
| **TT822OUT8 110MM** | TCGT/TULT | Silver (SR) | 110.0 | 300 m | 556-00161 |
| **TTRW 30MM** | TCGT/TULT(DS) | White (WH) | 30.0 | 300 m | 556-00125 |
| **TTRW 60MM** | TCGT/TULT(DS) | White (WH) | 60.0 | 300 m | 556-00137 |
| **TTDTHOUT 40MM** | TCGT/TULT(DS)/TLFX(DS)/TDRT(DS)/TLFD DS/TIPTAG | Black (BK) | 40.0 | 300 m | 556-00139 |
| **TTDTHOUT 60MM** | TCGT/TULT(DS)/TLFX(DS)/TDRT(DS)/TLFD DS/TIPTAG | Black (BK) | 60.0 | 300 m | 556-00140 |
| **TTDTHOUT 100MM** | TCGT/TULT(DS)/TLFX(DS)/TDRT(DS)/TLFD DS/TIPTAG | Black (BK) | 100.0 | 300 m | 556-00141 |
| **TTRHTBK 70MM** | THTT/THTT DS/TAGHT | Black (BK) | 70.0 | 300 m | 556-00204 |
| **TTRHTBK 100mm** | THTT/THTT DS/TAGHT | Black (BK) | 100.0 | 300 m | 556-00210 |
| **TTRHTWH 70mm** | THTT/THTT DS/TAGHT | White (WH) | 70.0 | 300 m | 556-00209 |
| **TTRHTWH 100mm** | THTT/THTT DS/TAGHT | White (WH) | 100.0 | 300 m | 556-00211 |
| **TTRC+ 30MM** | TIPTAG PU/TCGT/TULT | Black (BK) | 30.0 | 300 m | 556-00114 |
| **TTRC+ 60MM** | TIPTAG PU/TCGT/TULT | Black (BK) | 60.0 | 300 m | 556-00115 |
| **TTRC+ 100MM** | TIPTAG PU/TCGT/TULT | Black (BK) | 100.0 | 300 m | 556-00103 |

All dimensions in mm. Subject to technical changes.

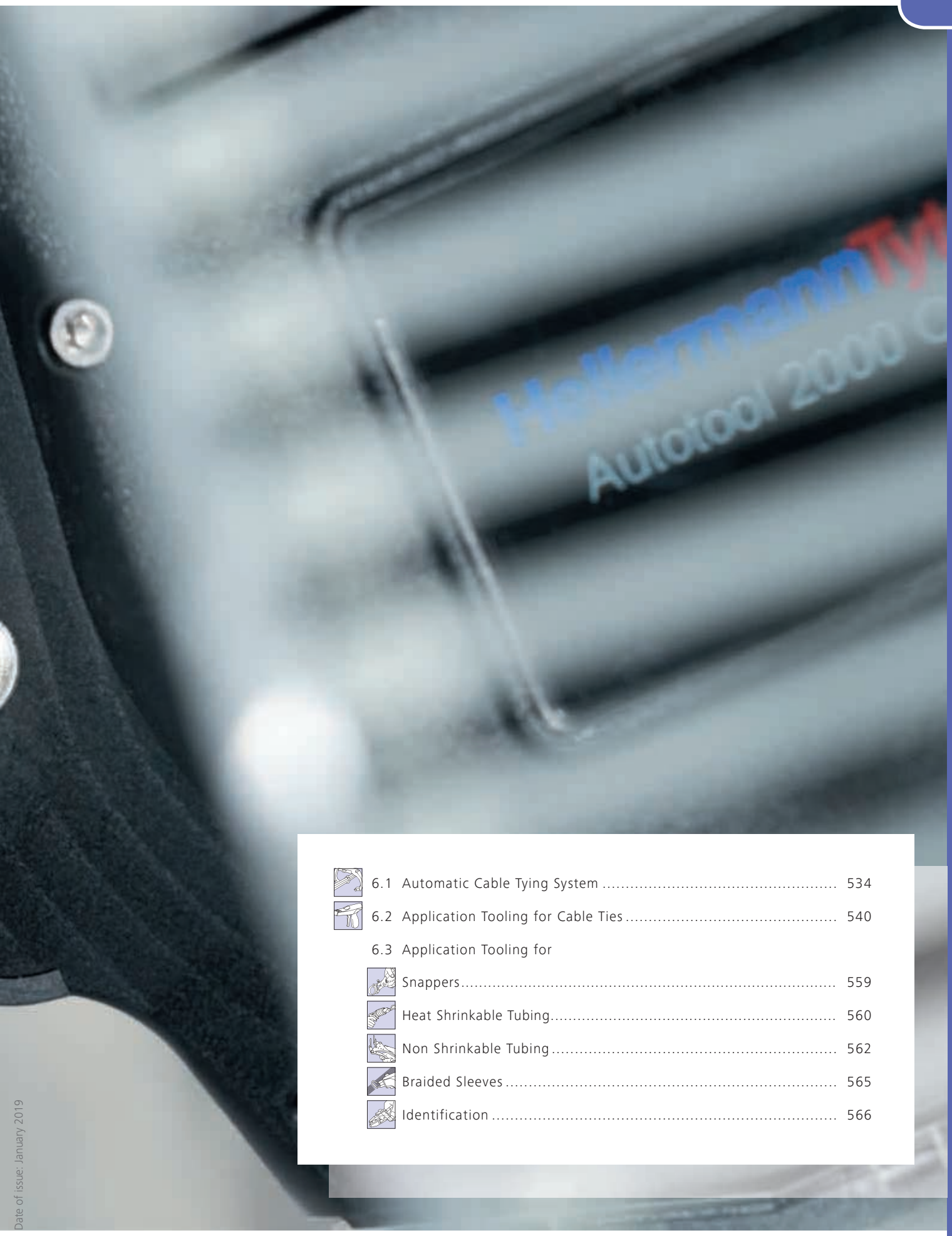
RoHS



### Inspired by automation

Highly automated production requires processes you can count on, which is why our developers have systematically enhanced our automated bundling techniques. The current top model is the Autotool 2000 CPK (see page 534). It offers high reproducibility of binding results, individual control and complete documentation. Bulk quantities – such as in cable confectioning, the automotive industry and the packaging sector – can be processed more quickly and reliably as a result.

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 6.1 Automatic Cable Tying System ..... 534

 6.2 Application Tooling for Cable Ties ..... 540

6.3 Application Tooling for

 Snappers ..... 559

 Heat Shrinkable Tubing ..... 560

 Non Shrinkable Tubing ..... 562

 Braided Sleeves ..... 565

 Identification ..... 566


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## 6.1 Automatic Cable Tying System


| | |
|---|---|
| **Automatic bundling up to Ø 20 mm** | |
| Autotool 2000 CPK | 534 |
| Accessories for Autotool 2000 CPK | 535 |
| Cable ties for Autotool 2000 CPK | 536 |
| **Waste-free bundling up to Ø 80 mm** | |
| Autotool System 3080 | 537 |
| Accessories for Autotool System 3080 | 538 |
| Cable ties for Autotool System 3080 | 539 |


## 6.2 Application Tooling for Cable Ties


| | |
|---|---|
| **Product Selection** | |
| Tool Overview for Cable Ties | 540, 542 |
| Flowchart for optimum tool selection | 541, 542 |
| **Technical Information** | |
| How to use a cable tie tool | 543 |
| **Manual tensioning tool for cable ties with low profile head** | |
| MK10-SB | 545 |
| **Manual tensioning tool, simple version** | |
| MK20, MK21 | 545 |
| **Manual tensioning tool metal housing** | |
| MK3SP | 546 |
| MK6 | 551 |
| **Manual tensioning tool plastic housing** | |
| EVO7, EVO7SP | 548 |
| EVO9, EVO9HT, EVO9SP | 549 |
| MK7HT | 549 |
| **Accessory for EVO family** | |
| CALTOOL | 548 |
| **Pneumatic tensioning tool metal housing** | |
| MK3PNSP2 | 546 |
| **Pneumatic tensioning tool plastic housing** | |
| MK7P | 550 |
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| **Manual tensioning tool for KR-Series** | |
| KR6/8 | 553 |
| **Pneumatic tensioning tool for KR8-Series** | |
| KR8PNSE | 553 |
| **Manual tensioning tool for metal ties MBT-Series** | |
| MK9SST | 554 |
| KST-STG200 | 555 |
| **Manual tensioning tool for metal ties MBT-, MLT- and AMT-Series** | |
| HDT16 | 555 |
| **Manual tensioning tool for metal ties MST-Series** | |
| MST6 | 556 |
| MST9 | 556 |
| **Manual tensioning tool for metal ties MLT-Series** | |
| MTT4 | 557 |


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## 6.3 Product Selection

| | |
|---|---|
| Tool Overview | 558 |

## 6.3 Application Tooling for Snappers

| | |
|---|---|
| **Manual Tool** | |
| ASNP, MSNP snapper tools | 559 |

## 6.3 Application Tooling for Heat Shrinkable Tubing

| | |
|---|---|
| **Gas powered hot air tool** | |
| E4500 | 560 |
| **Electrical hot air tool** | |
| H5002 - handy tool | 561 |
| H5004 - for professional use | 561 |

## 6.3 Application Tooling for Non Shrinkable Tubing

| | |
|---|---|
| **Three-pronged pliers for sleeves and grommets** | |
| NA | 562 |
| VA2.5/5 - reinforced | 563 |
| K, S, SS | 564 |

## 6.3 Application Tooling for Braided Sleeves

| | |
|---|---|
| **Helagaine Braided Sleeving** | |
| HSG0 hot cutting tool | 565 |

## 6.3 Application Tooling for Identification

| | |
|---|---|
| **Manual Tool for Helafix HCR** | |
| Helafix HCT application tool | 566 |


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## Automatic bundling up to Ø 20 mm

**Autotool 2000 CPK**

The Autotool 2000 CPK is an electrically operated and automated cable tying system. It has been developed to speed up bundling processes and to make the production more efficient. Besides the high speed bundling, this cable tying system is characterized by its simple operation and user-friendly ergonomics. The Autotool 2000 CPK offers a display for the settings and user information in 20 languages. One main feature of the Autotool 2000 CPK is the software "HT Data Management CPK".

This feature enables the easy parameterization of the tool for customers applications. The parameterization can easily be carried out via computer. Additionally the "HT Data Management CPK" offers an export function for the saved manufacturing data as well as further service functions. Therefore it ensures a consistent documentation for every binding process through the tool. The Autotool 2000 CPK is ideally suited for handling high volume applications in wire harness facilities, automotive and industrial companies and in the packaging sector. With either the Bench mount kit CPK or the Overhead suspension CPK, the Autotool 2000 CPK is suitable for both stationary and flexible applications. By using the optional Power pack CPK with control box the Autotool 2000 CPK can be integrated into fully automated production lines through a serial interface. Due to the removable handle less assembly space is needed. Bandoleers of 50 cable ties as well as reels of 3,500 cable ties can be used.

### Features and benefits

- Electrically operated cable tying system
- Power supply through Power pack CPK - Input: 100-240 V a.c., 50/60 Hz; Output: 25.2 V d.c., max. 150 W
- Integration into fully automated production lines (Power pack CPK with control box necessary)
- Cycle time 0.8-1.2 sec. depending on quality and force
- Stationary and flexible use with devices possible
- HT Data Management CPK software (included) - for extensive data evaluation and monitoring of the tensioning process
- User-friendly menu in various languages included
- Process-reliable, constant and reproducable bundling and cutting up to Ø 20 mm
- Removable handle for space-saving integration

*One Step to the Web!*



*Autotool 2000 CPK.*




*HT Data Management CPK - software for Autotool 2000 CPK.*




*Power pack CPK for Autotool 2000 CPK.*

| TYPE | Article-No. |
|---|---|
| **Autotool 2000 CPK** | 106-00000 |
| **Power pack CPK** | 106-00100 |
| **Power pack CPK with control box** | 106-00110 |

Subject to technical changes.

| | |
|---|---|
| **Power Supply** | Electronically operated |
| **Cycle Time** | 0.8-1.2 sec. depending on quality and force |
| **Weight** | 1.8 kg |
| **Tension Force** | Adjustable |

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## Automatic bundling up to Ø 20 mm

**Accessories for Autotool 2000 CPK**

### Features and benefits

- Bench mount kit CPK for stationary use
- Overhead suspension CPK for flexible use
- Wire retainer HH20 raises the bundle off the harness board at optimum height and allows the operator to eliminate handling the bundle when applying ties
- Force measurement device CPK to measure the linear tensile force of the Autotool 2000 CPK. Available with grip mount or robot adapter



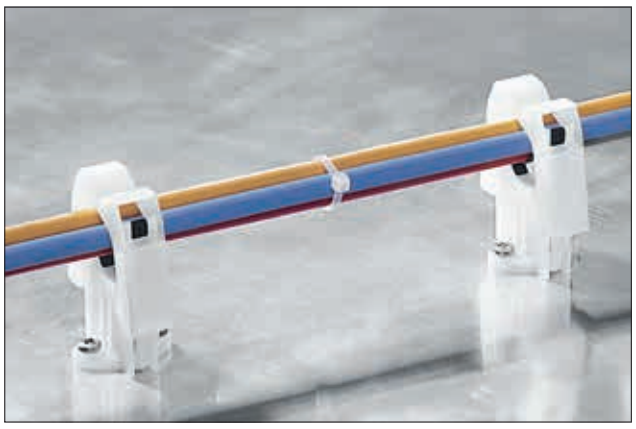
*Bench mount kit CPK with foot pedal (also shown: Autotool 2000 CPK, Power pack CPK and T18RA3500).*

| TYPE | Article-No. |
|---|---|
| **Bench mount kit CPK** | 106-00040 |
| **Force measurement device with grip mount CPK** | 106-29010 |
| **Force measurement device with robot adapter CPK** | 106-29011 |
| **HH20** | 120-00080 |
| **Overhead suspension CPK** | 106-00050 |

Subject to technical changes.



*Overhead suspension CPK (also shown: Autotool 2000 CPK, Power pack CPK and T18RA3500).*



*Harness board accessory HH20.*



*Application with the Bench mount kit CPK.*

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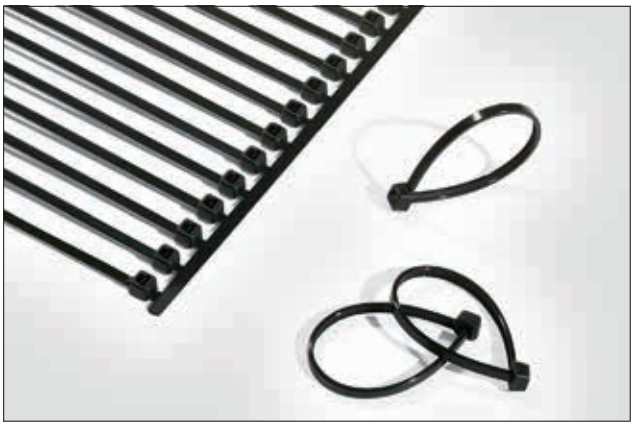
## Automatic bundling up to Ø 20 mm

**Cable ties for Autotool 2000 systems**

The inside-serrated cable ties are designed for use specifically in the automatic cable tying systems. The Autotool 2000 CPK is ideally suited for handling high volumes applications in wire harness facilities, automotive and industrial companies as wells as the packaging sector.

**Features and benefits**

- Heat stabilised cable ties (PA66HS) in all colours for temperatures up to +125 °C
- Available in bandoleers of 50 cable ties or reels of 3,500 cable ties
- Repetitive tension on the bundles
- Easily recyclable

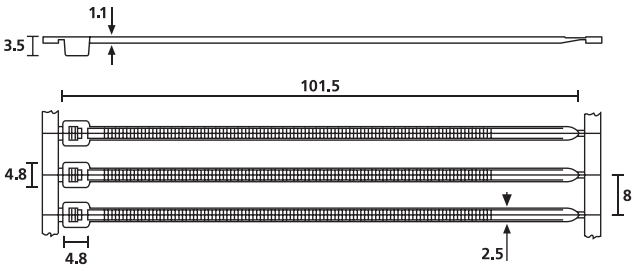


*Cable ties for Autotool 2000 systems.*

| | | | |
|---|---|---|---|
| **MATERIAL** | Polyamide 6.6, heat stabilised (PA66HS) | Polyamide 6.6, heat and UV-resistant (PA66HSW) | Polyamide 4.6 (PA46) |
| **Operating Temperature** | -40 °C to +105 °C, (+145 °C, 500 h) | | -40 °C to +130 °C, (+150 °C, 5000 h; +195 °C, 500 h) |
| **Flammability** | UL 94 V2 | | |

HF ✓ RoHS ✓

HF ✓
LFH ✓
RoHS ✓




*Bandoleer T18RA*

**Please find the corresponding Bundling Clips on page 170.**

| TYPE | Bundle Ø max. | N | Colour | Material | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|
| **T18RA50** | 20.0 | 80 | Black (BK) | PA66HSW | 2,000 pcs. | 120-40020 |
| **T18RA3500** | 20.0 | 80 | Black (BK) | PA66HSW | 3,500 pcs. | 120-50010 |
| | 20.0 | 80 | Natural (NA) | PA46 | 3,500 pcs. | 120-46009 |
| **T18RA50** | 20.0 | 80 | Natural (NA) | PA66HS | 2,000 pcs. | 120-40019 |
| **T18RA3500** | 20.0 | 80 | Natural (NA) | PA66HS | 3,500 pcs. | 120-50009 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.
Halogen-free according to the interdictions of the GADSL list and compulsory registration of the SVHC list.

N = **Minimum Loop Tensile Strength for Cable Ties (Newton)**

c UL us For product specific approvals and specifications please refer to the Appendix.

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## Waste-free bundling up to Ø 80 mm

**Autotool System 3080**

The Autotool System 3080 is an automated and electric cable tying system. It has been developed to speed up bundling processes and operates waste-free. The advantage of three quick-changeable jaw sizes allows the Autotool System 3080 to adapt perfectly to different bundle diameters up to Ø 80 mm. With either the Bench mount kit 3080 or the Overhead suspension 3080, the Autoool System 3080 is suitable for both stationary and flexible applications. The Autotool System 3080 can also be integrated into fully automated production lines.

Custom designed jaws are available to enable bundling of foot parts on production lines.

### Features and benefits

- Electrically operated cable tying system (Power pack 3080 necessary)
- Power pack 3080 - Input: 240/150 V a.c., 50/60 Hz; Output: 48 V d.c., max. 150 W
- High quality, waste-free bundling up to Ø 80 mm with flush cut off
- Jaws with diameters of 30, 50 and 80 mm - included in delivery
- Cycle time 1.1-2.4 seconds depending on bundle diameter
- Integration into Bench mount kit 3080 or Overhead suspension 3080 possible
- Integration into fully automated production lines possible
- Foot part bundling with custom jaw design Ø 50 mm



*Autotool System 3080.*



*Autotool System 3080 with three different jaws - to optimize the cycle time for different bundle diameters.*

*One Step to the Web!*




*Power pack 3080.*

| TYPE | Article-No. |
|---|---|
| **Autotool System 3080** | 102-00000 |
| **Power pack 3080** | 102-00100 |

Subject to technical changes.

| | |
|---|---|
| **Power Supply** | Electrically operated |
| **Cycle Time** | 1.1-2.4 sec. depending on bundle diameter |
| **Weight** | 1.9 kg |
| **Tension Force** | Adjustable |

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## Waste-free bundling up to Ø 80 mm

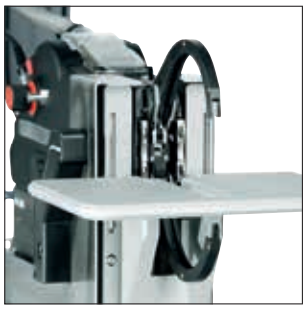
**Accessories for Autotool System 3080**

### Features and benefits

- Bench mount kit automatic 3080 in fully automated production lines
- Bench mount kit horizontal 3080 for horizontal use in fully automated production lines
- Bench mount kit 3080 for stationary use, foot pedal included
- Overhead suspension 3080 for flexible use



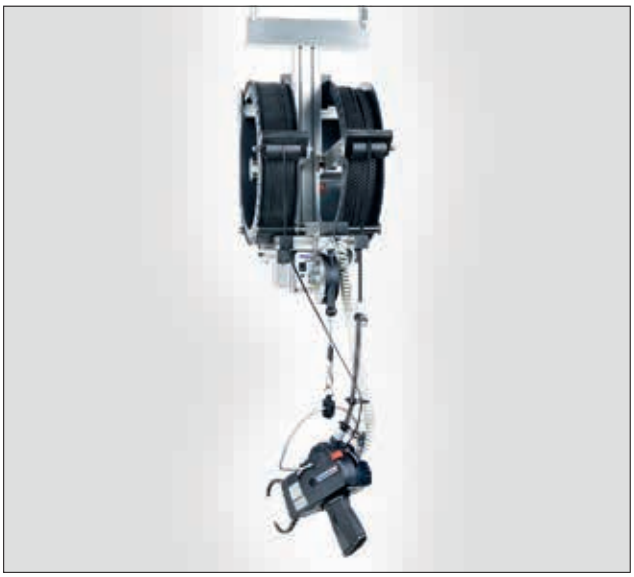
*Bench mount kit 3080 with foot pedal (also shown: Autotool System 3080, Power pack 3080 and consumables).*



*Optional: Bench mount kit 3080 with table board.*



*Packaging application with Bench mount kit horizontal 3080.*



*Overhead suspension 3080 (also shown: Autotool System 3080 and consumables).*

| TYPE | Article-No. |
|---|---|
| **Bench mount kit automatic 3080** | 102-00042 |
| **Bench mount kit horizontal 3080** | 102-00041 |
| **Bench mount kit movable 3080** | 102-00040 |
| **Overhead suspension 3080** | 102-00050 |

Subject to technical changes.

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## Waste-free bundling up to Ø 80 mm

**Cable ties for Autotool System 3080**

The outside serrated strap is perfectly suitable for sensitive surfaces and can be used for bundling and fixing of cables, pipes and hoses, as well as for bag sealing. The materials are particularly appropriate for high volume bundling applications in cable assembly, automotive, industrial and packaging applications.

**Features and benefits**

- Innovative two-piece consumables: closure and strap
- Outside serrated strap protects the bundle
- Available on reels of 500 m strap and 5,000 pcs. closures

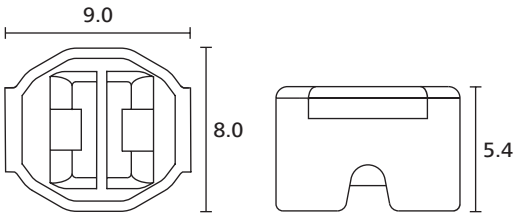


*Closures and strap for ATS3080.*

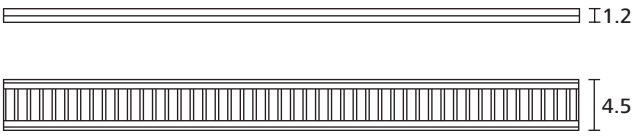
| | | |
|---|---|---|
| **MATERIAL** | Polyamide 6.6, high impact modified, heat and UV stabilised (PA66HIRHSUV) | Polyamide 6.6, heat and UV stabilised (PA66HSUV) |
| **Operating Temperature** | -40 °C to +95 °C, (+105 °C, 5000 h; +145 °C, 500 h) | -40 °C to +105 °C, (+145 °C, 500 h) |
| **Flammability** | UL 94 HB | UL 94 V2 |

RoHS RoHS

**Please find the corresponding Bundling Clips on page 168.**




*Closure ATS3080*




*Strap ATS3080*

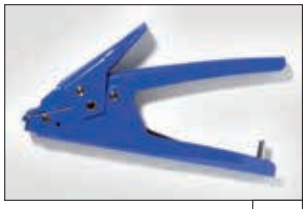
| TYPE | Description | Bundle Ø max. | N | Colour | Material | Pack Cont. | Article-No. |
|---|---|---|---|---|---|---|---|
| **Closures Black ATS3080** | Closures Black ATS3080 | 80.0 | 225 | Black (BK) | PA66HSUV | 5,000 pcs. | 102-66210 |
| **Closures Natural ATS3080** | Closures Natural ATS3080 | 80.0 | 225 | Natural (NA) | PA66HSUV | 5,000 pcs. | 102-66209 |
| **Strap Black ATS3080** | Strap Black ATS3080 | 80.0 | 225 | Black (BK) | PA66HIRHSUV | 500 m | 102-66110 |
| **Strap Natural ATS3080** | Strap Natural ATS3080 | 80.0 | 225 | Natural (NA) | PA66HIRHSUV | 500 m | 102-66109 |

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

N = **Minimum Loop Tensile Strength for Cable Ties (Newton)**

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## Tensioning Tools for Cable Ties



*MK10-SB.*
*See page 545*
1



*MK20, MK21.*
*See page 545*
2, 3



*MK3SP.*
*See page 546*
4



*MK3PNSP2.*
*See page 546*
5



*EVO7/EVO7SP.*
*See page 548*
6



*MK7HT.*
*See page 549*
7



*MK7P.*
*See page 550*
8



*MK6.*
*See page 551*
9



*EVO9/EVO9SP.*
*See page 549*
10



*EVO9HT.*
*See page 549*
11



*MK9P.*
*See page 552*
12

## Tensioning Tools for Cable Ties KR-Series



*KR6/8.*
*See page 553*
13



*KR8PNSE.*
*See page 553*
14

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## Flowchart for optimum tool selection

**Manual and pneumatic tensioning tools for conventional plastic cable ties**

**≤ 4.8 mm**

| Manual tools | Page |
|---|---|
| EVO7 / EVO7SP | 548 |
| MK7HT | 549 |
| MK3SP | 546 |
| MK10-SB | 545 |
| MK20 | 545 |

| Pneumatic tools | Page |
|---|---|
| MK3PNSP2 | 546 |
| MK7P | 550 |

**≥ 4.8 mm**

| Manual tools | Page |
|---|---|
| EVO9 / EVO9SP, EVO9HT | 549 |
| MK6 | 551 |
| MK10-SB | 545 |
| MK21 | 545 |

| Pneumatic tools | Page |
|---|---|
| MK9P | 552 |
| MK7P | 550 |

**Manual and pneumatic tensioning tools for KR-Series cable ties**

**= 6.0 mm**

| Manual tools | Page |
|---|---|
| KR6/8 | 553 |

**= 8.0 mm**

| Manual tools | Page |
|---|---|
| KR6/8 | 553 |

| Pneumatic tools | Page |
|---|---|
| KR8PNSE | 553 |

**Electrically operated and automated tensioning tools for plastic cable ties**

**= 2.5 mm**

| Automatic tools | Page |
|---|---|
| Autotool 2000 CPK | 534 |

**= 4.5 mm**

| Automatic tools | Page |
|---|---|
| Autotool System 3080 | 537 |

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## Tensioning Tools for Metal Ties



*MK9SST.*
*See page 554*
15



*MK9PSST.*
*See page 554*
16



*HDT16.*
*See page 555*
17



*KST-STG200.*
*See page 555*
18



*MST6.*
*See page 556*
19



*MST9.*
*See page 556*
20



*MTT4.*
*See page 557*
21

## Flowchart for optimum tool selection

**Manual and pneumatic tensioning tools for metal cable ties MBT-Series**

**≤ 12.3 mm**

| Manual tools | Page |
|---|---|
| KST-STG200 | 555 |

**≤ 16.0 mm**

| Manual tools | Page |
|---|---|
| MK9SST | 554 |
| HDT16 | 555 |

| Pneumatic tools | Page |
|---|---|
| MK9PSST | 554 |

**Manual tensioning tools for metal cable ties AMT- and MLT-Series**

**≤ 12.0 mm**

| Manual tools | Page |
|---|---|
| MTT4 | 557 |

**≤ 16.0 mm**

| Manual tools | Page |
|---|---|
| HDT16 | 555 |

**Manual tensioning tools for metal cable ties MST-Series**

**= 5.9 mm**

| Manual tools | Page |
|---|---|
| MST6 | 556 |

**= 8.9 mm**

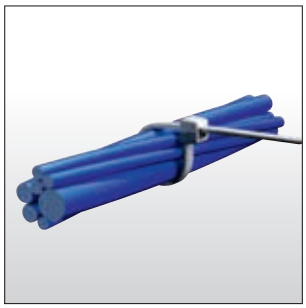
| Manual tools | Page |
|---|---|
| MST9 | 556 |

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## How to use a cable tie tool (using an EVO7 as an example)



*1. Use tension adjustment knob to select your desired tension setting.*



*2. Fasten a nylon HellermannTyton cable tie around the bundle.*




*3. Insert strap of cable tie through side opening of nosepiece.*




*4. Place front of nosepiece flush to the head of the cable tie.*




*5. Pull trigger until cable tie tensions and cuts.*

## Tool testing - Determination of tensions

To date, no generally applicable test method has been established on the market. The companies within the HellermannTyton group work with a usual force meter with minimum 10 kHz frequency of data sampling to determine the tensile forces of the tools and to guarantee the quality of the tools.

It is more difficult to test cable tie tools than would appear at first glance. It is of supreme importance to comply with a standardised test procedure and consistent test conditions, e.g. the size and cross-section of the cable ties and the water content of the tie. A test using different ties and / or different conditioning can easily lead to different values.

In general, the speed of cut-off, the position of the tool with respect to the cable tie, the condition of the wearing parts in the tool and the state of the cable tie play a fundamental role in the determination of tensile forces.

Therefore we must point out that any values we provide must only ever be regarded as guide values for your information. The values cannot be transferred into practice "one for one".

In our user instructions, we specify an adjustment range for each type of cable tie. If tension values must be documented or comply with a specification, we recommend that you adjust them with the aid of the force meter. Also, as a guideline, half the minimum holding strength of the cable tie should be used as tensile force.

The minimum tensile strength (also referred to as minimum unlocking strength) is the least force which the cable tie can withstand before it tears or stretches. This strength is determined using a threaded tie, hence the following formula should be used for guidance as to the correct tensile force of the tool:

$$\frac{\text{Min. tensile strength}}{2} = \text{recommended tensile force}$$

**Example:**

$$\text{T50R} = \frac{225\ \text{N minimum tensile strength}}{2}$$

$$\frac{225\ \text{N}}{2} = 112.5\ \text{N recommended tensile force according to formula}$$

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The tensile force can of course be adjusted up or down, in line with the corresponding application.

Please bear in mind that this statement applies only to HellermannTyton products. Cable ties from other manufacturers may require a higher or lower force setting.

In order to secure the device against manipulation or unintentional maladjustment after it has been adjusted using the force meter, HellermannTyton offers an adjustment safety cap (Art. No.: 110-07200 for MK7HT, MK7P, MK9, MK9HT, MK9SST, MK9P) which you can push onto the device after removing the adjustment unit (loosening a screw is all it takes to remove).

After a period of time, to be defined, you test the device again and if necessary re-adjust it. The problem of determination of forces depends on the individual case and has no direct connection with the quality of our product. An exact value for each setting (e. g. in Newtons), without stating a tolerance, cannot be confirmed.

**Test set-up with a usual force meter and EVO7 cable tie tool.**




The following describes how to check the tension force of a manual tensioning tool.

1. Lay the cable tie (green) into the fixture (A).
2. Bring the nose piece of the tensioning tool (B) flush to the test block (C).
3. Insert the strap of the cable tie into the tensioning tool and pull the strap flush against the fixture (A).
4. Re-set the force meter (D) to zero.
5. Pull the trigger of the tensioning tool continuously until the cable tie is cut.
6. The tension force achieved at the cut off point is determined.

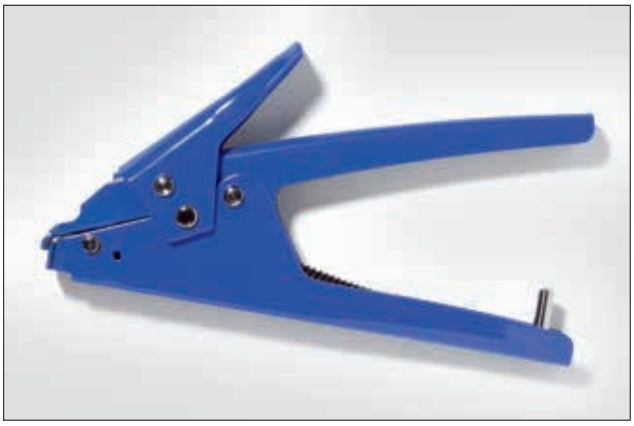
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## Manual tensioning tool for cable ties with low profile head

**MK10-SB up to 9.5 mm strap width**

**Features and benefits**

- Ideal for easy handling of entire HellermannTyton RPE, PE and LPH series
- Tensions and cuts off pre-looped cable ties flush at the head



*MK10-SB.*

| TYPE | Strap Width max. | Strap Thickness max. | Weight | Article-No. |
|---|---|---|---|---|
| **MK10-SB** | 9.5 | 2.5 | 0.372 kg | 110-10001 |

All dimensions in mm. Subject to technical changes.

## Manual tensioning tool for cable ties, simple version

**MK20 up to 4.8 mm strap width**

**MK21 up to 7.6 mm strap width**

**Features and benefits**

- Lightweight, ergonomic tools
- For tensioning and cutting standard cable ties 4.8 - 7.6 mm width
- MK20 and MK21 ideal for on-site assembly
- Mounted and pretensioned ties are cut off by twisting tool
- Simply apply cable tie, tension and twist to cut



*MK20, MK21.*

| TYPE | Strap Width max. | Strap Thickness max. | Weight | Article-No. |
|---|---|---|---|---|
| **MK20** | 4.8 | 1.5 | 0.05 kg | 110-20006 |
| **MK21** | 7.6 | 2.5 | 0.05 kg | 110-21016 |

All dimensions in mm. Subject to technical changes.

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## Manual Tensioning Tool with Metal Housing

**MK3SP up to 4.8 mm strap width**

This tough metal tool MK3SP is used by harness makers for automotive industry and white goods as well as in the aerospace, railway and medical industry.

**Features and benefits**

- Tough metal tool for HellermannTyton plastic cable ties up to 4.8 mm width
- For consistent tensioning and automatically flush cutting
- Infinitely adjustable tension force
- Reliable and low maintenance



*MK3SP.*

| TYPE | Strap Width max. | Strap Thickness max. | Weight | Article-No. |
|---|---|---|---|---|
| **MK3SP** | 4.8 | 1.5 | 0.332 kg | 110-03500 |
| **SP MK3SP replacement blade** | - | - | 0.05 kg | 110-03524 |

All dimensions in mm. Subject to technical changes.

## Pneumatic tensioning tool metal housing

**MK3PNSP2 up to 4.8 mm strap width**

**Features and benefits**

- Pneumatic tensioning tool
- Tough metal housing
- For cable ties up to 4.8 mm width
- For consistent tensioning and automatically flush cutting
- Infinitely adjustable tension force
- High application speed
- Reliable and low maintenance



*MK3PNSP2.*

| | |
|---|---|
| **Air Supply** | Non oiled / oiled |
| **Air Pressure (min.)** | 3 Bar |
| **Air Pressure (max.)** | 6 Bar |
| **Hose Internal Diameter** | 4.0 mm |
| **L x H x W** | approx. 225 x 140 x 40mm |

RoHS

| TYPE | Strap Width max. | Strap Thickness max. | Weight | Article-No. |
|---|---|---|---|---|
| **MK3PNSP2** | 4.8 | 1.5 | 0.555 kg | 110-03400 |
| **SP MK3PNSP2 air hose 3 meters** | - | - | 0.139 kg | 110-30002 |
| **SP MK3PNSP2 cutting blade** | - | - | 0.05 kg | 110-30101 |

All dimensions in mm. Subject to technical changes.

For product specific approvals and specifications please refer to the Appendix.

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## The EVO family delivers maximum performance whilst protecting muscles and joints

**The next generation of application tools impresses with its advanced technology.**

With the EVO family HellermannTyton has developed truly ergonomic cable tie application tools that are unique in the market, perfectly combining convenience with function. **The heart of the EVO family is the innovative TLC-technology (Tension/Lock/Cut).** This is designed to revolutionise the application of cable ties by significantly reducing the cutting effort. The EVO family cuts cable ties with ease, delivering a flush clean finish with no excess strap, whilst enormously reducing physical strain on the user.




**The patent-pending TLC-technology delivers increased productivity:**

- Application force and effort are significantly reduced
- Precise cutting of the cable tie right at the head
- Smooth fastening of the cable tie without recoil
- Protects muscles and joints and herewith the health of the user

## Perfect cutting made easy with the EVO family:

From precise preliminary settings to the perfect cut, the EVO family allows an even lighter, gentler and easier cable tie application than ever before. The TLC-technology makes all the difference!



**1. Tension**
Tension the cable tie as usual. Use the tension adjustment knob to select the desired tension setting.




**2. Lock**
The locking mechanism detects when the desired tension is reached, locking the tie in place prior to cutting. No manual pressure is required to hold the cable tie in place.



**3. Cut**
For the final cut, very little effort is needed. By simply pulling the trigger back a little to cut the tie. Without recoil and vibration.

*Application video: EVO7 family*

*Application video: EVO9 family*

## Manual Tensioning Tool with Plastic Housing

**EVO7 up to 4.8 mm strap width**

HellermannTyton's EVO7 mechanical hand tool was ergonomically designed to reduce the risks of repetitive stress injuries to operators while concurrently increasing productivity. The EVO7 Tension/Lock/Cut Technology delivers performance, safety and comfort for the operators. Available in a standard grip span (EVO7) or short grip span (EVO7SP), for smaller hands. Additional accessories are available.



*The EVO7: Maximum performance with minimum effort.*

**Features and benefits**

- Ergonomic, slip-proof handle for a comfortable and secure grip
- Extremely low-maintenance
- Fast and precise application with minimum effort (TLC mechanism)
- Convenient and simple tension adjustment
- Extended, slim nose for use in narrow spaces
- Housing made of resilient and lightweight glass fibre-reinforced polyester
- Standard grip span (90 mm) and short grip span (80 mm) available

| TYPE | Strap Width max. | Strap Thickness max. | Weight | Article-No. |
|---|---|---|---|---|
| **EVO7** | 4.8 | 1.5 | 0.275 kg | 110-70129 |
| **EVO7SP** | 4.8 | 1.5 | 0.272 kg | 110-70130 |
| **BLADEKIT** | - | - | 0.02 kg | 110-70106 |

All dimensions in mm. Subject to technical changes.

SAE® For product specific approvals and specifications please refer to the Appendix.

**CALTOOL for calibration of EVO family**

The CALTOOL serves for the fine or readjustment of the EVO family.



*CALTOOL for calibration of EVO family.*

**Features and benefits**

- The factory setting (setting 0-8) of the EVO family can be changed

| TYPE | Weight | Article-No. |
|---|---|---|
| **CALTOOL** | 0.032 kg | 110-70089 |

All dimensions in mm. Subject to technical changes.

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## Manual tensioning tool plastic housing

**EVO9 up to 13.5 mm strap width**

The EVO9 is available in a standard grip span 90 mm (EVO9) or short grip span 80 mm (EVO9SP), for smaller hands. Both tools perform between 53N and 307N. The EVO9HT (high tension) was designed to apply HellermannTyton cable ties from 120N until 516N with a maximum width of 13.5 mm.



*The EVO9 with TLC technology.*

**Features and benefits**

- Standard grip span (90 mm) and short grip span (80 mm) available
- Ergonomic, slip-proof handle for a comfortable and secure grip
- Extremely low-maintenance
- Fast and precise application with minimum effort (TLC-technology)
- Convenient and simple tension adjustment
- Integrated 3 position quick adjustment override (EVO9/EVO9SP/EVO9HT)
- Housing made of resilient and lightweight glass fibre-reinforced polyester

| TYPE | Strap Width max. | Strap Thickness max. | Weight | Article-No. |
|---|---|---|---|---|
| **EVO9** | 13.5 | 2.0 | 0.357 kg | 110-80002 |
| **EVO9SP** | 13.5 | 2.0 | 0.361 kg | 110-80003 |
| **EVO9HT** | 13.5 | 2.0 | 0.364 kg | 110-80017 |
| **Replacement Blade** | - | - | 0.01 kg | 110-80037 |

All dimensions in mm. Subject to technical changes.

## Manual Processing Tool with Plastic Housing

**MK7HT up to 4.8 mm strap width**

MK7HT application tool is mainly used to apply cable ties in harness making industries.


*MK7HT.*

**Features and benefits**

- Light glass-fibre-reinforced housing
- Ergonomic design
- For cable ties up to 4.8 mm width
- MK7 HighTension version with higher tension force than MK7
- Consistent tensioning and automatically flush cutting
- Infinitely adjustable tension force combined with three-step quick adjustment

| TYPE | Strap Width max. | Strap Thickness max. | Weight | Article-No. |
|---|---|---|---|---|
| **MK7HT** | 4.8 | 1.5 | 0.29 kg | 110-07000 |
| **SP MK7HT replacement blade** | - | - | 0.01 kg | 110-07511 |
| **SP lock cap tensioning knob** | - | - | 0.011 kg | 110-07200 |

All dimensions in mm. Subject to technical changes.

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## Pneumatic Tensioning Tool with Plastic Housing

**MK7P up to 4.8 mm strap width**

The MK7P pneumatic bundling tool sets a new benchmark for the rational application of ties in the industrial production process. Improved compressed air supply moves the tensioning piston faster than in comparable tools.

**Features and benefits**

- Pneumatic tensioning tool
- Light glass-fibre-reinforced housing
- For cable ties up to 4.8 mm width
- For consistent tensioning and automatically flush cutting
- Infinitely adjustable tension force
- High application speed



*MK7P.*



*The easy to use quick-set-knob.*

| | |
|---|---|
| **Air Supply** | Non oiled / oiled |
| **Air Pressure (min.)** | 3 Bar |
| **Air Pressure (max.)** | 6 Bar |
| **Hose Internal Diameter** | 4.0 mm |
| **L x H x W** | approx. 220 x 170 x 40 mm |

RoHS

| TYPE | Strap Width max. | Strap Thickness max. | Weight | Article-No. |
|---|---|---|---|---|
| **MK7P** | 4.8 | 1.5 | 0.448 kg | 110-07100 |
| **SP MK3PNSP2 air hose 3 meters** | - | - | 0.139 kg | 110-30002 |
| **SP MK7P replacement blade** | - | - | 0.01 kg | 110-07111 |
| **SP lock cap tensioning knob** | - | - | 0.011 kg | 110-07200 |

All dimensions in mm. Subject to technical changes.

For product specific approvals and specifications please refer to the Appendix.

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## Manual tensioning tool metal housing

**MK6 up to 9.0 mm strap width**

**Features and benefits**

- Tough metal tool
- For cable ties up to 9.0 mm width
- For consistent tensioning and automatically flush cutting
- Infinitely adjustable tension force
- Reliable and low maintenance



*MK6.*

| TYPE | Strap Width max. | Strap Thickness max. | Weight | Article-No. |
|---|---|---|---|---|
| **MK6** | 9.0 | 2.0 | 0.519 kg | 110-06000 |
| **SP MK6 replacement blade** | - | - | 0.01 kg | 110-06026 |

All dimensions in mm. Subject to technical changes.

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## Pneumatic tensioning tool plastic housing

**MK9P up to 13.5 mm strap width**

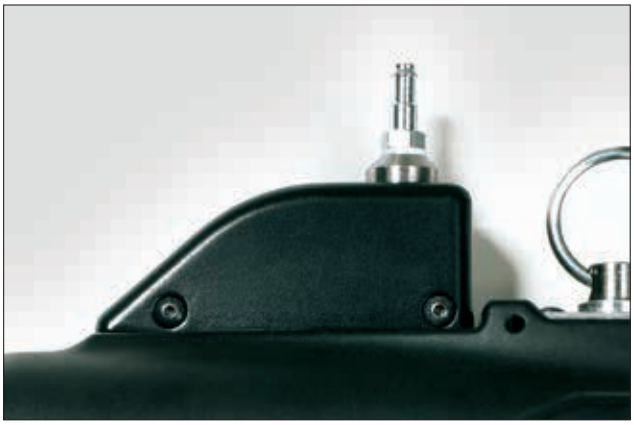
The MK9P is constructed with heavy duty parts to ensure optimum performance. It is ideally designed to apply heavy-duty ties like they are used in vehicle construction like trucks, busses and railways.

**Features and benefits**

- Pneumatic tensioning tool
- Glass-fibre-reinforced housing
- For cable ties up to 13.5 mm width
- For consistent tensioning and automatically flush cutting
- Infinitely adjustable tension force
- High application speed
- Holding ring for a balancer
- Optional with lower or upper air attachment



*MK9P.*



*MK9P is also available with upper air attachment.*

| | |
|---|---|
| **Air Supply** | Non oiled / oiled |
| **Air Pressure (min.)** | 3 Bar |
| **Air Pressure (max.)** | 6 Bar |
| **Hose Internal Diameter** | 4.0 mm |
| **L x H x W** | approx. 280 x 200 x 55mm |

RoHS

| TYPE | Strap Width max. | Strap Thickness max. | Weight | Air att. Position | Article-No. |
|---|---|---|---|---|---|
| **MK9P** | 13.5 | 2.5 | 0.972 kg | Lower air connection | 110-09100 |
| | 13.5 | 2.5 | 1.057 kg | Top air connection | 110-09110 |
| **SP MK3PNSP2 air hose 3 meters** | - | - | 0.139 kg | - | 110-30002 |
| **SP lock cap tensioning knob** | - | - | 0.011 kg | - | 110-07200 |
| **SP MK9P replacement blade** | - | - | 0.01 kg | - | 110-09111 |

All dimensions in mm. Subject to technical changes.

For product specific approvals and specifications please refer to the Appendix.

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## Manual tensioning tool for KR-Series

**KR6/8**

Application tool KR6/8 crimps the glass-fibre-reinforced locking pin of the KR seal and leads to plastic deformation of the tie ends. This produces a very permanent connection.

**Features and benefits**

- Tough metal tool for applying KR cable ties only
- For tensioning, fixing and cutting KR cable ties
- Simply change the front plate to apply 6 mm or 8 mm straps



*KR6/8.*

| TYPE | For Ties | Strap Width max. | Weight | Article-No. |
|---|---|---|---|---|
| **KR6/8** | KR6, KR8 | 8.0 | 0.69 kg | 121-00680 |
| **SP KR6/8 replacement blade** | KR6, KR8 | - | 0.05 kg | 122-68019 |

All dimensions in mm. Subject to technical changes.

## Pneumatic tensioning tool for KR8-Series

**KR8PNSE**

Application tool KR8PNSE crimps the glass-fibre-reinforced locking pin of the KR seal and leads to plastic deformation of the tie ends. This produces a very proof permanent connection.

**Features and benefits**

- Pneumatic tool with tough metal housing
- For applying KR8 cable ties only
- For tensioning, fixing and automatica cutting KR8 cable ties
- Tension force can be adapted depending on air pressure
- Holding ring for a balancer



*KR8PNSE.*

| | |
|---|---|
| **Air Supply** | Non oiled / oiled |
| **Air Pressure (min.)** | 3 Bar |
| **Air Pressure (max.)** | 4 Bar |
| **Hose Internal Diameter** | 6.0 mm |
| **L x H x W** | approx. 320 x 210 x 50 mm |

RoHS

| TYPE | For Ties | Strap Width max. | Weight | Article-No. |
|---|---|---|---|---|
| **KR8PNSE** | KR8 | 8.0 | 1.537 kg | 121-00889 |
| **SP KR8PNSE replacement blade** | KR8 | - | 0.01 kg | 122-80032 |

All dimensions in mm. Subject to technical changes.

For product specific approvals and specifications please refer to the Appendix.

## Manual tensioning tool for metal ties MBT-Series

**MK9SST up to 16.0 mm strap width**

The MK9SST is constructed with heavy duty parts to ensure optimum performance. It is designed to apply our MBT cable ties with a strap width of up to 16 mm. The tool is ideally suited for use in most arduous environments such as found on board ships, oil rigs, constructions or in nuclear power stations.

**Features and benefits**

- Glass-fibre-reinforced housing
- Ergonomic design
- Consistent tensioning and automatic cutting of metal ties MBT-Series
- Infinitely adjustable tension force combined with two-step quick adjustment



*MK9SST.*

| TYPE | Strap Width max. | Strap Thickness max. | Weight | Article-No. |
|---|---|---|---|---|
| **MK9SST** | 16.0 | 0.5 | 0.508 kg | 110-95000 |
| **SP MK9SST replacement blade** | - | - | 0.04 kg | 110-95273 |

All dimensions in mm. Subject to technical changes.

## Pneumatic tensioning tool for metal ties MBT-Series

**MK9PSST up to 16.0 mm strap width**

The MK9PSST pneumatic stainless steel tool is constructed with heavy-duty parts to ensure optimum performance in demanding environments. It is ideally designed to apply stainless steel metal ball tie series (MBT) up to 16.0 mm width.

**Features and benefits**

- Unique levels of repeatability and accuracy
- High application speed and low maintenance
- Improved compressed air supply for faster tensioning piston movement
- Shorter processing time and greater volume of connecting tie application
- Ergonomic design
- Automatic ejection of cut-off cable tie end
- Ideally designed to apply stainless steel MBT-Series up to 16.0 mm width
- Airpressure between 3 and 6 bar



*MK9PSST.*

| | |
|---|---|
| **Air Supply** | Non oiled / oiled |
| **Air Pressure (min.)** | 3 Bar |
| **Air Pressure (max.)** | 6 Bar |
| **Hose Internal Diameter** | 4.0 mm |
| **L x H x W** | approx. 280 x 200 x 55 mm |

RoHS

| TYPE | Strap Width max. | Strap Thickness max. | Weight | Article-No. |
|---|---|---|---|---|
| **MK9PSST** | 16.0 | 0.5 | 0.972 kg | 110-95350 |
| **SP MK9PSST replacement blade** | - | - | 0.04 kg | 110-95307 |
| **SP lock cap tensioning knob** | - | - | 0.011 kg | 110-07200 |

All dimensions in mm. Subject to technical changes.

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## Manual tensioning tool for metal ties MBT-, MLT- and AMT-Series

**HDT16 up to 16.0 mm strap width**

The HDT16 application tool is designed for installing heavy duty stainless steel cable ties within a range of industries such as shipbuilding, oil rigs, mining and mass transit. The tool can easily be adjusted making it suitable for applying both MBT, MLT and AMT cable ties with a strap width of up to 16 mm.

**Features and benefits**

- Two way nose piece for use with MBT-Series and AMT-, MLT-Series stainless steel cable ties
- Easy adjustment of the handles to ensure the most ergonomic position for the operator
- Integrated cutting mechanism delivering a flush cut and professional finish every time
- The ideal tool for achieving a perfect installation of MBT, MLT and AMT cable ties



*HDT16.*

*Application video: HDT16 Tool*

| TYPE | Strap Width max. | Strap Thickness max. | Weight | Article-No. |
|---|---|---|---|---|
| **HDT16** | 16.0 | 0.8 | 0.78 kg | 110-40000 |

All dimensions in mm. Subject to technical changes.

## Manual tensioning tool for metal ties MBT-Series

**KST-STG200 up to 12.3 mm strap width**

The KST-STG200 application tool is designed for installing heavy duty stainless steel cable ties within a range of industries such as shipbuilding, oil rigs, mining and mass transit. The tensioning strength can be adjusted while pulling the trigger. The tool is easy to handle and far more reliable than trying to tension the ties by hand.

**Features and benefits**

- Tough metal tool
- Operator controlled tensioning
- Cut off by pulling the hand lever



*KST-STG200.*

| TYPE | Strap Width max. | Strap Thickness max. | Weight | Article-No. |
|---|---|---|---|---|
| **KST-STG200** | 12.3 | 0.3 | 0.562 kg | 110-09950 |

All dimensions in mm. Subject to technical changes.

## Manual tensioning tool for metal ties MST-Series

**MST6 for 5.9 mm strap width**

The MST6 tool has been specially developed for reliably applying HellermannTyton metal cable ties of the MST-S series. Due to the punch-lock mechanism the tie is mechanically crimped and leads to metal deformation of the tie ends. This punch-lock mechanism ensures a reliable bundling with perfect resistance to vibration. The tension force is freely adjustable by the operator.

**Features and benefits**

- Tough metal tool
- Ergonomic design
- Consistent tensioning and automatically cutting of metal ties
- Designed for use with MST-S Series ties (5.9 mm)
- For tensioning, fixing and cutting MST-S metal ties only



*MST6.*

| TYPE | Strap Width max. | Strap Thickness max. | Weight | Article-No. |
|---|---|---|---|---|
| **MST6** | 5.9 | 0.3 | 0.532 kg | 110-61000 |
| **MST6-P29 Replacement Blade** | - | - | 0.01 kg | 110-61001 |
| **MST6-P30 Replacement Punch** | - | - | 0.01 kg | 110-61002 |

All dimensions in mm. Subject to technical changes.

*Application video: MST-Series*

## Manual tensioning tool for metal ties MST-Series

**MST9 for 8.9 mm strap width**

The MST9 tool has been specially developed for reliably applying HellermannTyton metal cable ties of the MST-M series. Due to the punch-lock mechanism the tie is mechanically crimped and leads to metal deformation of the tie ends. This punch-lock mechanism ensures a reliable bundling with perfect resistance to vibration. The tension force is freely adjustable by the operator.

**Features and benefits**

- Tough metal tool
- Ergonomic design
- Consistent tensioning and automatic cutting of metal ties
- Designed for use with MST-M Series ties (8.9 mm)
- For tensioning, fixing and cutting MST-M metal ties only



*MST9.*

| TYPE | Strap Width max. | Strap Thickness max. | Weight | Article-No. |
|---|---|---|---|---|
| **MST9** | 8.9 | 0.4 | 0.532 kg | 110-13000 |
| **MST9-P29 Replacement Blade** | - | - | 0.01 kg | 110-13001 |
| **MST9-P30 Replacement Punch** | - | - | 0.01 kg | 110-13002 |

All dimensions in mm. Subject to technical changes.

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## Manual tensioning tool for metal ties MLT-Series

**MTT4 up to 12.0 mm strap width**

The MTT4 tensioning tool is a lightweight manual processing tool which is easy to use for application of the MLT (releasable) series. The extended nose piece ensures the fixing length of the MLT cable tie. While using the ratchet system, the operator can easily cut off the tie on the correct length with the long cutter lever.

### Features and benefits

- Tough metal tool
- Simple ratchet operation, easy to use
- Operator controlled tensioning and cutting facility



*MTT4.*

| TYPE | Strap Width max. | Strap Thickness max. | Weight | Article-No. |
|---|---|---|---|---|
| **MTT4** | 12.0 | 0.7 | 0.78 kg | 110-04000 |

All dimensions in mm. Subject to technical changes.

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## Application Tooling for Snappers



*MSNP, ASNP.*
*See page 559*



*ASNP.*
*See page 559*

## Application Tooling for Heat Shrinkable Tubing



*H5002.*
*See page 561*
30



*H5004.*
*See page 561*
31



*E4500.*
*See page 560*
32

## Application Tooling for Non Shrinkable Tubing



*NA.*
*See page 562*
35–38



*VA.*
*See page 561*
39–41



*K, S, SS.*
*See page 564*

## Application Tooling for Braided Sleeves



*HSG0.*
*See page 565*
45

## Application Tooling for Identification



*HCT1, HCT2.*
*See page 566*
50–51

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## Snapper Tools

**MSNP1-70 for Snapper Size 1 to 70**

**ASNP2-22 for Snapper Size 2 to 22**

**ASNP24-70 for Snapper Size 24 to 70**

**Features and benefits**

- For efficient fixing of the snapper hose clips
- MSNP tool: handy for installation on site
- ASNP tool: suitable for series production. Retaining screw limits the draw-in area prevents overstretching of the snapper



*Snapper Application Tools MSNP1-70 and ASNP24-70.*

**Pneumatic Tools for Snapper are available on request. Contact us!**

**Snapper hose clips for tubes and harnesses see page 188.**



*Snapper Application Tool ASNP2-22.*

| TYPE | Application | Weight | Material | Colour | Article-No. |
|---|---|---|---|---|---|
| **MSNP1-70** | SNP-Series 1 up to 70 | 0.18 kg | Metal (MET), Plastic (PL) | Yellow (YE) | 191-01700 |
| **ASNP2-22** | SNP-Series 2 up to 22 | 0.2 kg | Metal (MET), Plastic (PL) | Blue (BU) | 191-02220 |
| **ASNP24-70** | SNP-Series 24 up to 70 | 0.25 kg | Metal (MET), Plastic (PL) | Red (RD) | 191-24700 |

Subject to technical changes.

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## Gas powered hot air tool

**E4500**

The E4500 hot air gun starter kit is ideal for working in cramped spaces or where there is no power supply. The kit includes a E4500 hot air tool with protective spring, gas cartridge P445, reflector nozzle Z2 and flat nozzle Z3. The hot air tool is suitable for shrinking all types of heat shrink products including tubing, shapes and cable repair sleeves. It can also be used for the bending and shaping of PVC pipes, soft soldering of copper pipes, drying, defrosting (of locks), heating and paint stripping.

**Features and benefits**

- Cordless hot air gun works with special gas cartridge
- Does not need any power supply
- Suitable for outdoor use
- Designed specifically for heat shrink tubing, end caps and moulded shapes
- Supplied with protective spring, two nozzles and a gas cartridge
- Allows precise working in any position even in restricted spaces
- Can be operated on its stand for hands free use
- Light weight tool
- Operating time of cartridge: approx. 1.5 hours
- With easy Piezo ignition

*One Step to the Web!*



*E4500 with heat protecting spring.*




*Practical hot air gun kit E4500 with accessories.*




*Gas cartridge P445.*

| TYPE | Description | Article-No. |
|---|---|---|
| **E4500** | Hot air gun with protective spring incl. gas cartridge, reflector nozzle Z2 and flat nozzle Z3 | 391-90002 |
| **P445** | P445 Refill Gas Cartridge (Butane, Propane, Propene) | 391-90101 |

Subject to technical changes.

Date of issue: January 2019

## Electrical hot air tool

### H5002 - handy tool

For applying heat shrinkable products like thin wall shrink tubing and Moulded Shapes.

**Features and benefits**

- Lightweight and compact hot air tool
- Enables comfortable, fatigue-free work
- Temperature electronically controlled from 100-600 °C, cold air step of 50 °C
- Air-flow regulation adjusted in two stages (300 l/min and 500 l/min)




*H5002 - The light, convenient hot-air tool.*

| TYPE | Air Flow l/min | Operating Temperature | Standby Temp. °C | Wattage | Operational Voltage | Weight | Article-No. |
|---|---|---|---|---|---|---|---|
| **H5002** | 300-500 l/min | +100 °C to +600 °C | 50 °C | 2,000 W | 230 V AC ~ / 230-240 V | 0.9 kg | 391-50200 |

Subject to technical changes.

## Electrical hot air tool

### H5004 - for professional use

H5004 electrical hot air tool is designed for shrinking down many heat shrinkable products like thin wall tubing, with and without adhesive, end caps and moulded shapes.

**Features and benefits**

- Professional hot air gun
- Temperature electronically controlled
- Air flow regulation
- Equipped with LED temperature indication enabling precise temperature adjustment




*H5004 - for professional use.*

| TYPE | Air Flow l/min | Operating Temperature | Standby Temp. °C | Wattage | Operational Voltage | Weight | Article-No. |
|---|---|---|---|---|---|---|---|
| **H5004** | 150-500 l/min | +50 °C to +650 °C | 50 °C | 2,300 W | 230-240V, 50Hz | 0.92 kg | 391-50400 |

Subject to technical changes.

Date of issue: January 2019

## Three-pronged pliers for sleeves and grommets

**NA Tool Range**

Three-pronged expansion tools are used to ensure speedy and precise application of expandable markers and sleeves.

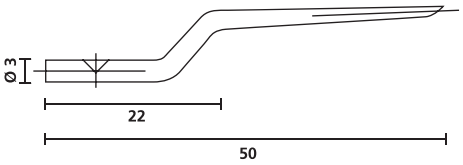
**Features and benefits**

- To easy affix expandable sleeves of every type onto cables/connectors
- Push pliers and pull over cable
- Close pliers, sleeve is placed easily
- Hellerine lubricant recommended for easy operation
- Replacement prongs available

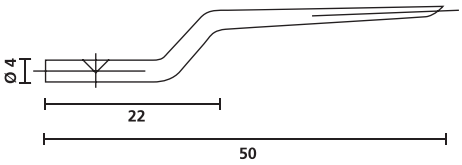


*Fast, secure application with the NA three-pronged pliers.*

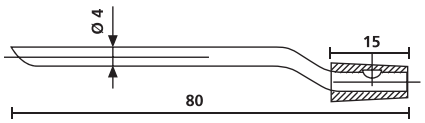
**For Hellerine lubricant see page 288.**



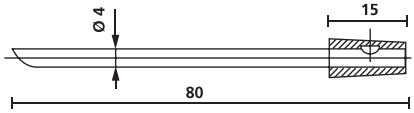

*Replacement prong NA0/1*



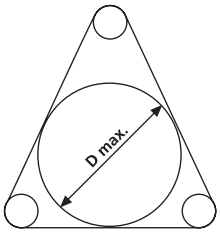

*Replacement prong NA1K/3*




*Replacement prong NA4/5*




*Replacement prong NA8/10*




*Three-prong pliers max. application diameter*

| TYPE | Description | Bundle Ø min. | Bundle Ø max. | Ø D max. | Max. length of marker | Article-No. |
|---|---|---|---|---|---|---|
| **NA0/1** | Expansion tool NA0/1 | 1.3 | 1.8 | 10.5 | 28 | 621-10001 |
| **NA1K/3** | Expansion tool NA1/3 | 2.5 | 5.0 | 11.0 | 28 | 621-10103 |
| **NA4/5** | Expansion tool NA4/5 | 7.5 | 10.0 | 15.5 | 50 | 621-10405 |
| **NA8/10** | Expansion tool NA8/10 | 12.0 | 17.0 | 25.5 | 60 | 621-10810 |
| **NA0/1 PRONG** | Replacement prongs for NA0/1 | 1.3 | 1.8 | - | 28 | 621-60001 |
| **NA1K/3 PRONG** | Replacement prongs for NA1K/3 | 2.5 | 5.0 | - | 28 | 621-60103 |
| **NA4/5 PRONG** | Replacement prongs for NA4/5 | 7.5 | 10.0 | - | 50 | 621-60405 |
| **NA8/10 PRONG** | Replacement prongs for NA8/10 | 12.0 | 17.0 | - | 60 | 621-60810 |

All dimensions in mm. Subject to technical changes.

Date of issue: January 2019

## Three-pronged pliers for sleeves and grommets

**VA2,5/5 - Reinforced**

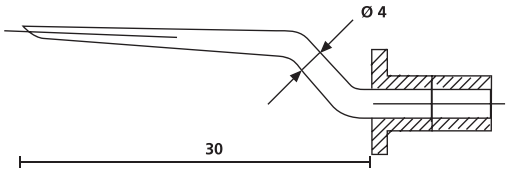
Expansion tools are used to ensure speedy and precise application of expandable markers and sleeves.

**Features and benefits**

- Suitable for expanding tubing cut lengths and rubber parts
- Withstands high loading
- Set of 3 2.5/5 pins
- Replacement pins available in sizes 8 and 18
- Hellerine lubricant recommended for easy operation

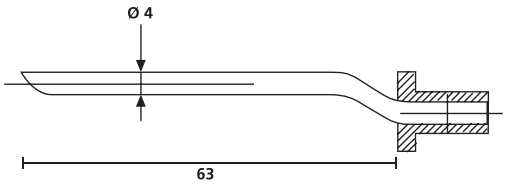


*VA2.5/5.*

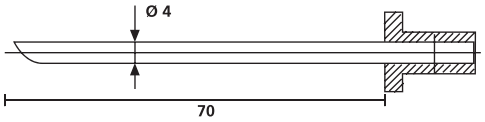



*Replacement prong size 2.5/5*

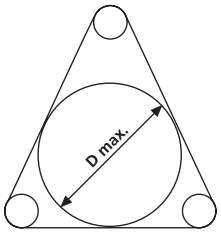
**For Hellerine lubricant see page 288.**




*Replacement prong size 8*




*Replacement prong size 18*




*Three-prong pliers max. application diameter*

| TYPE | Description | Bundle Ø min. | Bundle Ø max. | Ø D max. | Article-No. |
|---|---|---|---|---|---|
| **VA2.5/5** | Expansion tool VA2.5/5 | 2.5 | 5.0 | 26.0 | 621-00200 |
| **VA-2.5/5 PRONG** | Replacement prongs size 2.5/5 | 2.5 | 5.0 | 26.0 | 621-01200 |
| **VA2.5/5 PRONG 8** | Replacement prongs size 8 | 8.0 | 10.0 | 28.0 | 621-02200 |
| **VA2.5/5 PRONG 18** | Replacement prongs size 18 | 18.0 | 20.0 | 30.0 | 621-03200 |

All dimensions in mm. Subject to technical changes.

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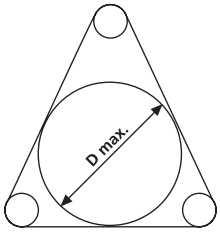
## Three-pronged pliers for sleeves and grommets

**K, S, SS**

Three-pronged expansion tools are used to ensure speedy and precise application of expandable markers and sleeves.

**Features and benefits**

- For speedy application of markers and sleeves
- Hellerine lubricant recommended for easy operation
- Handy D KIT contains a tool body, a range of prongs and small bottle of Hellerine lubricant.




*Three-prong pliers max. application diameter*



*Fast, secure application with the three-pronged expansion tools.*

**For Hellerine lubricant see page 288.**

| TYPE | Description | Bundle Ø min. | Bundle Ø max. | Ø D max. | Max. length of marker | Article-No. |
|---|---|---|---|---|---|---|
| **SS TOOL** | Three-pronged plier | 1.2 | 2.0 | 15.0 | 20 | 621-80008 |
| **S TOOL** | Three-pronged plier | 2.5 | 4.0 | 15.0 | 20 | 621-80009 |
| **K TOOL** | Three-pronged plier | 5.0 | 10.0 | 17.0 | 32 | 621-80007 |
| **D KIT** | Three-pronged plier kit | 1.2 | 11.5 | 17.0 | 32 | 621-80005 |

All dimensions in mm. Subject to technical changes.

Date of issue: January 2019

## Hot cutting tool

**HSG0**

The HSG0 hand tool is used to cut braided sleeving cleanly and without fraying.

**Features and benefits**

- Light and sturdy
- Heats up quickly with the press of button and cuts in seconds
- The yarn melts and fuses together
- No fraying of the sleeving



*The HSG0 hot cutting tool prevents the braided sleeving from fraying.*

| TYPE | Description | Weight | Colour | Article-No. |
|---|---|---|---|---|
| **HSG0** | Hot cutting tool | 1.15 kg | Blue (BU) | 170-99003 |
| **HSG0BLADE** | Replacement blade | 0.027 kg | Metal (ML) | 170-99002 |

Subject to technical changes.
Cannot be used with GSS sleeving.

Date of issue: January 2019

## Helafix Tool

**HCT1 for carrier size HCR09**

**HCT2 for carrier size HCR12**

HCT1 and HCT2 tools are ideal for cleanly cutting the carrier strip as well as punching out the securing holes. For HCR06, HCR18 and HCR24, the front part of the pliers can be used. To fix the character holders HC and HCR simply use the T18 range of cable ties, fixings or rivets.

**Features and benefits**

- Cleanly cut Helafix HCR carrier tubing
- Punch securing holes on edges of HCR09 (HCT1) and HCR12 (HCT2)
- Apply punched HCR09 and HCR12 with T18 range of cable ties
- Suitable for punching rivet holes in HCR06, HCR18 and HCR24 tubing
- Punch hole diameter 2.5 mm
- Fix with T18 range of cable ties or suitable rivets



*Any length can be used…*



*…just cut to suit.*

| TYPE | For Carrier Width | For Size | Ø (D) | Article-No. |
|---|---|---|---|---|
| **HCT1** | 10.0 | HCR09 | 2.5 | 525-00010 |
| **HCT2** | 13.0 | HCR12 | 2.5 | 525-00013 |

All dimensions in mm. Subject to technical changes.

Date of issue: January 2019

HellermannTyton

# To be successful, be ahead of your time – but only a little.

There are many forward thinkers, but we prefer to think things through. We have revolutionised the cable tie on many occasions. With the first endless system in 1965. With the first fully automated bundling system in 1991. With the first open tie head in 2012. With the first recoil-free cable tie tool in 2013. With the flexible mount in 2017. To be continued ...

**www.HellermannTyton.co.uk/cable-ties-and-fixings2019cat**

## MADE FOR REAL®

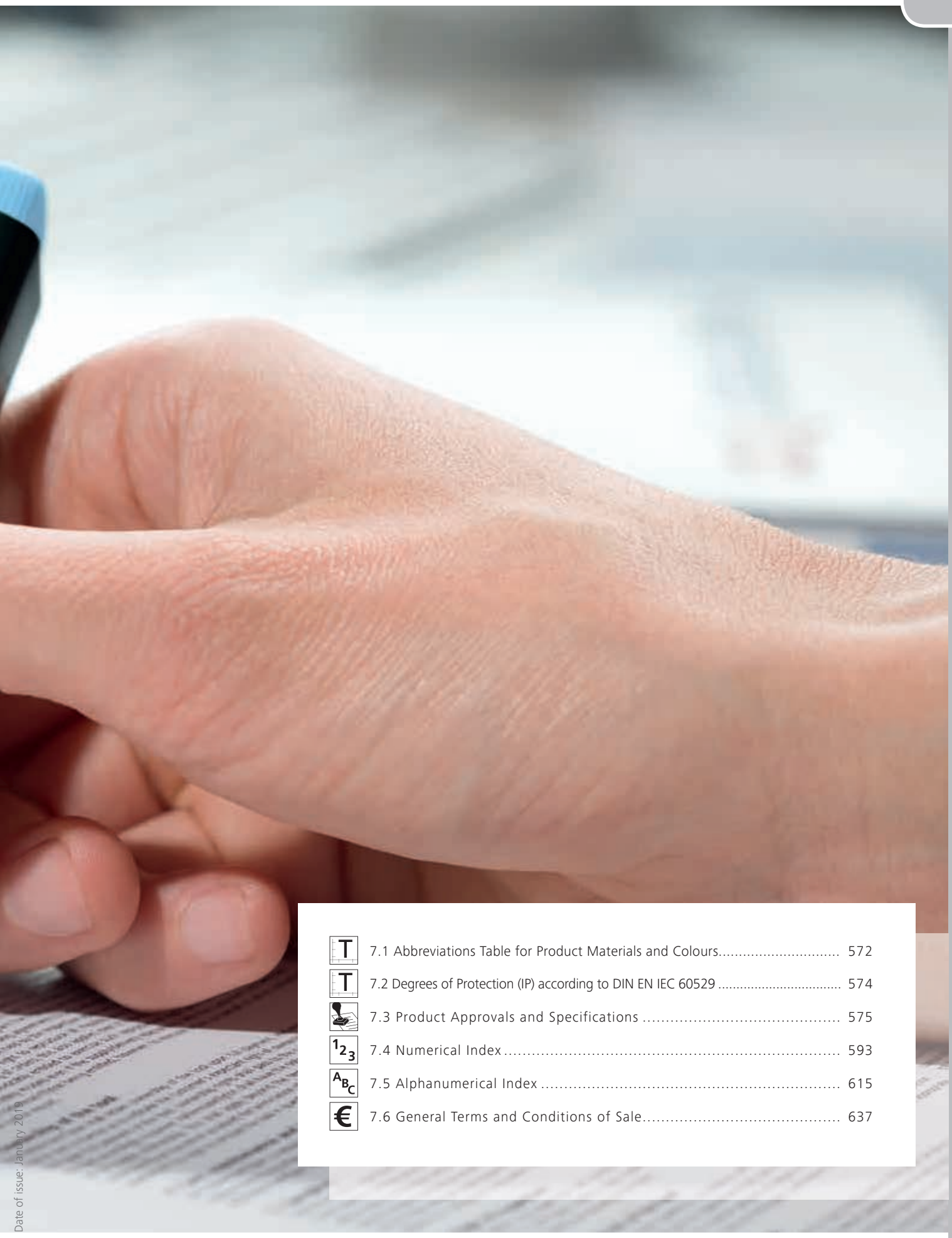


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HellermannTyton




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## 7.1 Abbreviations Table for Product Materials and Colours

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## 7.2 Degrees of Protection (IP) according to DIN EN IEC 60529

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## 7.3 Product Approvals and Specifications

| | |
|---|---|
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**7.4 Numerical Index** 593

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**7.6 General Terms and Conditions of Sale** 637


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## Abbreviations Table for Product Materials and Colours

| Abbreviation* | Material |
|---|---|
| 101 | Type 101, Vinyl (PVC), white-transparent (WH/CL), self-laminating |
| 1101 | Type 1101, Polyester (PET), white (WH) |
| 1102 | Type 1102, Polyester (PET), yellow (YE) |
| 1103 | Type 1103, Polyester (PET), silver (SR) |
| 1104 | Type 1104, Polyester (PET), white-transparent (WH/CL), self-laminating |
| 1105 | Type 1105, Polyester (PET), white-transparent (WH/CL), self-laminating |
| 1203 | Type 1203, Polyester (PET), silver matt (SR), tamper-proof |
| 1204 | Type 1204, Polyester (PET), silver matt (SR) |
| 1206 | Type 1206, Polyester (PET), white gloss (GSWH) |
| 1208 | Type 1208, Acrylate foil (AC), white (WH), tamper-proof |
| 1209 | Type 1209, Vinyl (PVC), white-transparent (WH/CL) |
| 1210 | Type 1210, Vinyl (PVC), white gloss (WH) |
| 1211 | Type 1211, Vinyl (PVC), yellow gloss (GSYE) |
| 1213 | Type 1213, Vinyl (PVC), glossy colours |
| 1216 | Type 1216, Polyethylene (PE), white (WH) |
| 1220 | Type 1220, Polyester (PET), white (WH) |
| 1221 | Type 1221, Polyester (PET), silver (SR) |
| 1401 | Type 1401, Vinyl (PVC) |
| 1402 | Type 1402, Vinyl (PVC) |
| 270 | Type 270, Cotton cloth, yellow (YE) |
| 323 | Type 323, Polyvinylidene Fluoride, white/transp. (WH/CL), yellow/transp. (YE/CL) |
| 822 | Type 822, Polyester, black (BK) |
| 823 | Type 823, Polyester, white (WH) |
| 880 | Type 880, Vinyl, yellow matt (MTYE), removable |
| 951 | Type 951, Polyester, silver (SR) and Polyester, transparent (CL) |
| AL | Aluminium (AL) |
| AL;CR | Aluminium-alloy (AL);Chloroprene (CR) |
| AL;ST | Aluminium (AL);Steel (ST) |
| ABS | Acrylonitrile Butadiene Styrene (ABS) |
| BS | Brass (BS) |
| CO | Cotton (CO) |
| CR | Chloroprene (CR) |
| E/TFE | Ethylene Tetrafluoroethylene (E/TFE) |
| EP | Epoxy resins (EP) |
| EPR | Ethylene Propylene Rubber (EPR) |
| EVA | Ethylenevinylacetate (EVA) |
| FPMX | Fluoropolymer cross-linked (FPMX) |
| GF-F | Glass-fibre Cloth (GF-F) |
| GS | Galvanised Steel (GS) |
| GS;PVC | Galvanised Steel (GS);Polyvinylchloride (PVC) |
| IIR | Isobutene-Isoprene-Rubber (butyl rubber) (IIR) |
| Metal | Metal (MET) |
| NOMEX® | Polyaramid Polymetaphenylene Isophthalamide (NOMEX) |
| NPB | Nickel Plated Brass (NPB) |
| NPB, PA6 | Nickel Plated Brass (NPB), Polyamide 6 (PA6) |
| NPB, TPE | Nickel Plated Brass (NPB), Thermoplastic Elastomer (TPE) |

| Abbreviation* | Material |
|---|---|
| NR | Natural Rubber (NR) |
| PA | Polyamide (PA) |
| PA11 | Polyamide 11 (PA11) |
| PA12 | Polyamide 12 (PA12) |
| PA46 | Polyamide 4.6 (PA46) |
| PA6 | Polyamide 6 (PA6) |
| PA66 | Polyamide (PA) |
| PA66, PA66HS | Polyamide 6.6 (PA66), Polyamide 6.6, heat stabilised (PA66HS) |
| PA66, PP | Polyamide 6.6 (PA66), Polypropylene (PP) |
| PA66GF13 | Polyamide 6.6, glass-fibre reinforced (PA66GF13 %) |
| PA66GF15 | Polyamide 6.6, glass-fibre reinforced (PA66GF15 %) |
| PA66HIR | Polyamide 6.6, high impact modified (PA66HIR) |
| PA66HIR(S) | Polyamide 6.6, high impact modified, scan black (PA66HIR(S)) |
| PA66HIRHS | Polyamide 6.6, high impact modified, heat stabilised (PA66HIRHS) |
| PA66HIRHS, PA66HIR(S) | Polyamide 6.6, high impact modified, heat stabilised (PA66HIRHS), Polyamide 6.6, high impact modified, scan black (PA66HIR(S)) |
| PA66HIRHS, PA6GF15 | Polyamide 6.6, high impact modified, heat stabilised (PA66HIRHS), Polyamide 6, glass-fibre reinforced (PA6GF15 %) |
| PA66HIRHSUV | Polyamide 6.6, high impact modified, heat and UV stabilised (PA66HIRHSUV) |
| PA66HIRHSW | Polyamide 6.6, high impact modified, heat and UV stabilised (PA66HIRHSUV) |
| PA66HS | Polyamide 6.6, heat stabilised (PA66HS) |
| PA66HS, PA66HIRHS | Polyamide 6.6, heat stabilised (PA66HS), Polyamide 6.6, high impact modified, heat stabilised (PA66HIRHS) |
| PA66HS, POM | Polyamide 6.6, heat stabilised (PA66HS), Polyacetal (POM) |
| PA66HS, PP | Polyamide 6.6, heat stabilised (PA66HS), Polypropylene (PP) |
| PA66HSUV | Polyamide 6.6, heat and UV stabilised (PA66HSUV) |
| PA66HSW | Polyamide 6.6, heat and UV stabilised (PA66HSUV) |
| PA66MP | Polyamide 6.6, with metal particles (PA66MP) |
| PA66MP+ | Polyamide 6.6, with metal particles (PA66MP+) |
| PA66UV | Polyamide 6.6, UV-resistant (PA66W) |
| PA66V0 | Polyamide 6.6 V0 (PA66V0) |
| PA66W | Polyamide 6.6, UV-resistant (PA66W) |
| PA66W, PA66HIRHS | Polyamide 6.6, UV-resistant (PA66W), Polyamide 6.6, high impact modified, heat stabilised (PA66HIRHS) |
| PA6-FR | Polyamide 6, flame retardant (PA6-FR) |
| PA6GF30 | Polyamide 6, glass-fibre reinforced (PA6GF30 %) |
| PA6HIR | Polyamide 6, high impact modified (PA6HIR) |
| PA6HIRHS | Polyamide 6, high impact modified, heat stabilised (PA6HIRHS) |

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| Abbreviation* | Material |
|---|---|
| PA6V0 | Polyamide 6 V0 (PA6V0) |
| PBT | Polyester (PBT) |
| PBT, TNCU | Polyester (PBT), Tin-plated copper (TNCU) |
| PC | Polycarbonate (PC) |
| PEUV | Polyethylene, UV-resistant (PEUV) |
| PE, SS | Polyethylene (PE), Stainless Steel (SS) |
| PEEK | Polyetheretherketone (PEEK) |
| PEEK, PA46 | Polyetheretherketone (PEEK), Polyamide 4.6 (PA46) |
| PE-FR | Polyethylene, flame retardant (PE-FR) |
| PET | Polyester Film |
| PET, TNCU | Polyester (PET), Tin-plated copper (TNCU) |
| Plastic, GF | Plastic, glass-fibre reinforced |
| PL | Plastic (PL) |
| PM | Elastomer (PM) |
| PMMA | Acrylic Glass (PMMA) |
| PO | Polyolefin Compound unlinked (PO) |
| POA | Elastomer, cross-linked (POA) |
| POM | Polyacetal (POM) |
| PO-X | Polyolefin, chemically cross linked (PO-X) |
| PP | Polypropylene (PP) |
| PP, SS | Polypropylene (PP), Stainless Steel (SS) |
| PPMP | Polypropylene with metal particles (PPMP) |
| PPMP+ | Polypropylene with metal particles (PPMP+) |
| PTFE | Polytetrafluoroethylene (PTFE) |
| PUR | Polyurethane (PUR) |
| PUR DS | Polyurethane resin DS (PUR DS) |
| PVC | Polyvinylchloride (PVC) |
| PVC, ST | Flexible Polyvinyl Chloride, cadmium free (PVC), Steel (ST) |
| PVC-FR | Polyvinylchloride, flame retardant (PVC-FR) |
| PVDF | Polyvinylidene Fluoride (PVDF) |
| PVDFX | Polyvinylidene Fluoride cross-linked (PVDFX) |
| SI | Silicone (SI) |
| SP | Polyester (SP) |
| SS316 | Stainless Steel (SS316) |
| SS304 | Stainless Steel (SS304) |
| SS316;SP | Stainless Steel (SS316);Polyester (SP) |
| ST | Steel (ST) |
| TNCU | Tin-plated copper (TNCU) |
| TPU | Thermoplastic Polyurethane (TPU) |
| V | Vinyl (V) |

***according to EN ISO 1043 Part 1 and ISO 1629**

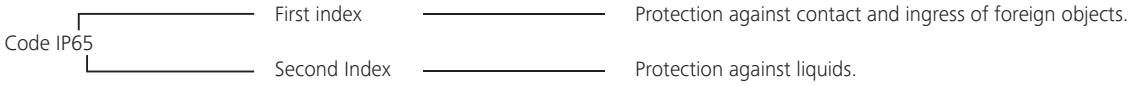
| Abbreviation | Colour |
|---|---|
| BGE | Beige |
| BK* | Black |
| BKIDWH | Black with white identification yarn |
| BN* | Brown |
| BU* | Blue |
| CC | International resistor colour code |
| CL | Transparent |
| DKGY | Dark grey |
| FLPK | Fluorescent Pink |
| GN* | Green |
| GNYE* | Green-Yellow |
| GSWH | White gloss |
| GSYE | Yellow gloss |
| GY* | Grey |
| LTBU | Light blue |
| MGN | Mint green |
| ML | Metal |
| MST | Mustard |
| MTYE | Yellow matt |
| NA | Natural |
| OG* | Orange |
| RD* | Red |
| SR* | Silver |
| TCBK | Tin-coloured and black |
| TT | Translucent |
| VT* | Violet |
| WH* | White |
| YE* | Yellow |

***according to DIN IEC 60757**

## Definition of the degrees of protection according to DIN EN IEC 60529

The levels of protection are indicated by a code made up of two constant letters IP and two characteristic numbers for the degree of protection, e.g. IP54.

**Example:**




### Degree of protection against access and foreign bodies

| Index | Designation | Scope of protection |
|---|---|---|
| 0 | **Non-protected** | No special protection for persons against direct contact with live or moving parts. No protection of the equipment against ingress of solid foreign objects. |
| 1 | **Protection against large foreign bodies** | Protection against accidental contact of large areas with live and internal moving parts, e.g. back of hand, but not protection against deliberate access to the parts. Protection against ingress of solid foreign objects with a diameter greater than 50 mm. |
| 2 | **Protection against medium-sized foreign bodies** | Protection against contact between the finger and live or internal moving parts. Protection against ingress of solid foreign objects with a diameter greater than 12.5 mm. |
| 3 | **Protection against small foreign bodies** | Protection against contact between live or internal moving parts and tools, wires and the like with a thickness greater than 2.5 mm. Protection against ingress of solid foreign objects with a diameter greater than 2.5 mm. |
| 4 | **Protection against granular foreign objects** | Protection against contact between live or internal moving parts and tools, wires and the like with a thickness greater than 1 mm. Protection against ingress of solid foreign objects with a diameter greater than 1 mm. |
| 5 | **Protection against dust deposits** | Complete protection against contact with live or internal moving parts, protection against hazardous dust deposits. The ingress of dust is not completely prevented, but dust may not penetrate in such quantities as to impair the function. |
| 6 | **Protection against dust entry** | Complete protection against contact with live or internal moving parts. Protection against the ingress of dust. |

### Degrees of protection for water

| Index | Designation | Scope of protection |
|---|---|---|
| 0 | **Non-protected** | No special protection. |
| 1 | **Protection against vertically dripping water** | Water dripping vertically must cause no damage. |
| 2 | **Protection against dripping water (tilted)** | Water dripping at an angle of 15° to the vertical from any direction must cause no damage. |
| 3 | **Protection against spraying water** | Water dripping at an angle of 60° to the vertical from any direction must cause no damage. |
| 4 | **Protection against splashing water** | Water that splashes against the equipment from any direction must cause no damage. |
| 5 | **Protection against water jets** | A water jet from a nozzle that is directed against the equipment from any direction must cause no damage. |
| 6 | **Protection against flooding** | Water must not penetrate the equipment in hazardous quantities in cases of temporary flooding, e.g. due to heavy seas. |
| 7 | **Protection during temporary immersion** | Water must not penetrate the equipment in hazardous quantities if the equipment is immersed in water under the specified conditions of pressure and time (1m for 30 min.). |
| 8 | **Protection during continuous immersion** | Water must not penetrate the equipment in hazardous quantities if the equipment is immersed in water (at least 2 bar for 2 h for HelaGuard IP68 non-metallic fittings and 5 bar for 5 h for HelaGuard IP68 metallic fittings.) |
| 9k | **Protection against high pressure/steam jet cleaning** | Highly pressurised water directed at the enclosure from any direction must cause no damage. |

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## Standards/Standards Organisations/Authorities

| | | | |
|---|---|---|---|
| ABS | American Bureau of Shipping | USA | ABS |
| ASN | AeroSpatiale Normalisation | France | ASN |
| ASTM | ASTM International | USA | ASTM |
| BS | British Standard | Great Britain | BS |
| DAN | Deutsche Airbus Norm | Europe | DAN |
| DEF STAN | Defence Standard | Great Britain | DEF STAN |
| FCC | Federal Communications Commission | USA | FC |
| LEA | Liste des Equivalences Approuvés | France | LEA |
| MIL | Military Specification | USA | MIL |
| MS | Military Standard | USA | MS |
| NASM | National Aerospace Standard, Metric | USA | NASM |
| NF F | Norme Française Ferroviaire | France | NF F |
| SAE | Society of Automotive Engineers | USA | SAE |
| STD | Standard for Dassault | France | STD |
| UNI CEI | Ente Nazionale Italiano di Unificazione<br>Comitato Elettrotecnico Italiano | Italy | UNI CEI |
| VG | Verteidigungsgerätenorm der Bundeswehr | Germany | VG |

## References

| | | | |
|---|---|---|---|
| NSA | Norm Sud Aviation | France | NSA |

## Testing Institute/Certifying Company

| | | | |
|---|---|---|---|
| BV | Bureau Veritas | France | |
| CSA | Canadian Standards Association | Canada | |
| DEMKO | Danske Elektriske Materialekontrol | Denmark | |
| DNV | Det Norske Veritas | Norway | |
| DNV GL | Det Norske Veritas + Germanischer Lloyd | Norway | |
| IMQ | Certificazione di prodotti | Italy | |
| FIMKO | Suomalainen testaus ja sertifiointiyritys | Finland | |
| KEMA KEUR | KEMA Quality B.V. | Netherlands | |
| LR | Lloyd´s Register | Great Britain | |
| NEMKO | Norges Elektriske Materiellkontroll | Norway | |
| SEMKO | Sveriges Elektrisa Materielkontroll | Sweden | |
| UL | Underwriters Laboratories | USA | |
| UL | Underwriters Laboratories | USA | |
| UL | Canadian Underwriters Laboratories | Canada | |
| VDE | Verband der Elektrotechnik, Elektronik, Informationstechnik | Germany | |

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## Certification mark

| | | | |
|---|---|---|---|
| CE | Conformité Européenne | Europe | CE |
| CEBEC | Comitée for electrotechnical Belgium European Community | Belgium | CEBEC |
| ENEC | European Norms Electrical Certification | Europe | ENEC |
| GS | Geprüfte Sicherheit | Europe | GS |
| JAR/FAR | Joint Aviation Regulations / Federal Aviation Regulations | Europe, USA | JAR/FAR |
| JN | Particular Specification developed for Eurofighter Program | | JN |
| UL Recognized | Underwriters Laboratories Recognized | USA | UL |
| cULus | Canadian Underwriters Laboratories | Canada, USA | cULus |
| VDE | Verband der Elektrotechnik, Elektronik, Informationstechnik | Germany | VDE |

## Standards for HellermannTyton Cable Ties and Fixings

| Material | Colour (short) | Specifications | UL-File Number |
|---|---|---|---|
| **CTAM1** | | | |
| PA66 | WH | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E64139 |
| **CTAM2** | | | |
| PA66 | WH | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E64139 |
| **CTM0** | | | |
| PA66 | BK<br>WH | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E64139 |
| **CTM1** | | | |
| PA66 | BK<br>WH | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E64139 |
| **CTM2** | | | |
| PA66 | BK<br>WH | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E64139 |
| **CTM3** | | | |
| PA66 | BK<br>WH | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E64139 |
| **CTM4** | | | |
| PA66 | BK<br>WH | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E64139 |
| **CTQM5** | | | |
| PA66 | BK<br>NA | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E65344 |
| **CTT20R** | | | |
| PA66 | NA | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E64139 |
| PA66HS | BK | | |
| **CTT60R** | | | |
| PA66<br>PA66HS | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E64139 |
| **H6P** | | | |
| PA66 | NA | NF EN 45545-2 | |
| **KR6/35** | | | |
| PA66 | NA | IEC 62275:2006, NF EN 45545-2 | |
| **KR6G5** | | | |
| E/TFE | BU | ANSI/UL 1565, ANSI/UL 62275 | E64962 |
| PA66 | NA | NF EN 45545-2 | |
| **KR8/21** | | | |
| PA66 | NA | IEC 62275:2006, NF EN 45545-2 | |
| PA66UV | BK | IEC 62275:2006 | |
| **KR8/33** | | | |
| PA66 | NA | IEC 62275:2006, NF EN 45545-2 | |
| PA66UV | BK | IEC 62275:2006 | |
| **KR8G5** | | | |
| E/TFE | BU | ANSI/UL 1565, ANSI/UL 62275 | E64962 |
| PA66 | NA | NF EN 45545-2 | |
| **LFPC103** | | | |
| PO | BK | DEF STAN 61-12 issue 2 | |

| Material | Colour (short) | Specifications | UL-File Number |
|---|---|---|---|
| **LFPC129** | | | |
| PO | BK | DEF STAN 61-12 issue 2 | |
| **LFPC132** | | | |
| PO | BK | DEF STAN 61-12 issue 2 | |
| **LFPC150** | | | |
| PO | BK | DEF STAN 61-12 issue 2 | |
| **LFPC163** | | | |
| PO | BK | DEF STAN 61-12 issue 2 | |
| **LFPC70** | | | |
| PO | BK | DEF STAN 61-12 issue 2 | |
| **LFPC83** | | | |
| PO | BK | DEF STAN 61-12 issue 2 | |
| **LK2** | | | |
| PA66 | NA | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B, IEC 60092 series, IEC 62275:2006 | E64963 |
| **LK2A** | | | |
| PA66 | BK | IEC 60092 series, IEC 62275 | |
| | BU | IEC 60092 series | |
| | NA | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B, CAN/CSA-C22.2 no. 18.5, CAN/CSA-C22.2 no. 62275, IEC 60092 series | E64963 |
| | RD<br>YE | IEC 60092 series | |
| PA66HIR | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B, CAN/CSA-C22.2 no. 18.5, CAN/CSA-C22.2 no. 62275, IEC 60092 series | E64963 |
| PA66HIR(S) | | | |
| PA66HS | | | |
| | BN | IEC 60092 series | |
| PA66W | BK | | |
| **LK5** | | | |
| PA66 | BK | IEC 60092 series | |
| | NA | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B, IEC 60092 series | E64963 |
| PA66HIR(S) | BK | IEC 60092 series | |
| PA66HS | NA | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B, IEC 60092 series | E64963 |
| PA66W | BK | IEC 62275:2006 | |
| **LPH175** | | | |
| PA66 | BK | IEC 60092 series | |
| **LPH275** | | | |
| PA66HIR(S) | BK | IEC 60092 series | |
| **LPH350** | | | |
| PA66HIR(S) | BK | IEC 60092 series | |

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## Standards for HellermannTyton Cable Ties and Fixings

| Material | Colour (short) | Specifications | UL-File Number |
|---|---|---|---|
| **MB5** | | | |
| PA66 | WH | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E64139 |
| **MBT14H** | | | |
| SS316 | ML | IEC 60092, IEC 62275:2006 | |
| **MBT14XH** | | | |
| SS316 | ML | IEC 60092, IEC 62275:2006 | |
| **MBT20H** | | | |
| SS316 | ML | IEC 60092, IEC 62275:2006 | |
| **MBT20S** | | | |
| SS316 | ML | IEC 60092, IEC 62275:2006 | |
| **MBT20XH** | | | |
| SS316 | ML | IEC 60092 | |
| **MBT27H** | | | |
| SS316 | ML | IEC 60092, IEC 62275:2006 | |
| **MBT27S** | | | |
| SS316 | ML | IEC 60092, IEC 62275:2006 | |
| **MBT27XH** | | | |
| SS316 | ML | IEC 60092 | |
| **MBT33H** | | | |
| SS316 | ML | IEC 60092, IEC 62275:2006 | |
| **MBT33S** | | | |
| SS316 | ML | IEC 60092, IEC 62275:2006 | |
| **MBT33XH** | | | |
| SS316 | ML | IEC 60092 | |
| **MBT5S** | | | |
| SS316 | ML | IEC 60092, IEC 62275:2006 | |
| **MBT8H** | | | |
| SS316 | ML | IEC 62275:2006 | |
| **MBT8S** | | | |
| SS316 | ML | IEC 60092, IEC 62275:2006 | |
| **MLT12SS10** | | | |
| SS316 | ML | IEC 60092 series | |
| **MLT12SS5** | | | |
| SS316 | ML | IEC 60092 series | |
| **MLT16SS10** | | | |
| SS316 | ML | IEC 60092 series | |
| **MLT16SS5** | | | |
| SS316 | ML | IEC 60092 series | |
| **MLT24SS10** | | | |
| SS316 | ML | IEC 60092 series | |
| **MLT24SS5** | | | |
| SS316 | ML | IEC 60092 series | |
| **MLT8SS10** | | | |
| SS316 | ML | IEC 60092 series | |
| **MLT8SS5** | | | |
| SS316 | ML | IEC 60092 series | |
| **MP3M3** | | | |
| PA66 | NA | NF EN 45545-2 | |
| **MP4M3** | | | |
| PA66 | NA | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E64963 |
| **MSMP5/10** | | | |
| PA66 | NA | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E64139 |
| **MSMP6/6** | | | |
| PA66 | NA | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E64139 |
| **MST200S** | | | |
| SS304 | ML | IEC 62275:2006, IEC 62275 | |
| **MST360S** | | | |
| SS304 | ML | IEC 62275:2006, IEC 62275 | |
| **MST500S** | | | |
| SS304 | ML | IEC 62275:2006, IEC 62275 | |
| **MST700S** | | | |
| SS304 | ML | IEC 62275:2006, IEC 62275 | |
| **NY3256** | | | |
| PA66 | NA | DIN EN 45545-2 | |
| **PE180** | | | |
| PA66HS | BK | IEC 60092 series | |
| PA66HSW | | | |
| **PE400** | | | |
| PA66 | BU | IEC 60092 series | |
| | GN | | |
| | RD | | |
| | YE | | |
| **PE530** | | | |
| PA66HSW | BK | IEC 60092 series | |
| **PT220** | | | |
| PEEK | BGE | DIN EN 62275:2016-01, EN 62275:2009 | |
| **PT2A** | | | |
| PEEK | BGE | DIN EN 62275:2010-07, EN 62275:2009 | |
| **Q120I** | | | |
| PA66 | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E65344 |
| | NA | | |
| **Q120M** | | | |
| PA66 | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E65344 |
| | NA | | |
| **Q120R** | | | |
| PA66 | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E65344 |
| | NA | | |

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## Standards for HellermannTyton Cable Ties and Fixings

| Material | Colour (short) | Specifications | UL-File Number |
|---|---|---|---|
| **Q18I** | | | |
| PA66 | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E65344 |
| | NA | | |
| **Q18L** | | | |
| PA66 | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E65344 |
| | NA | | |
| **Q18R** | | | |
| PA66 | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E65344 |
| | NA | | |
| **Q30L** | | | |
| PA66 | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E65344 |
| | NA | | |
| **Q30R** | | | |
| PA66 | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E65344 |
| | NA | | |
| **Q50I** | | | |
| PA66 | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E65344 |
| | NA | | |
| PA66HS | BK | | |
| | NA | | |
| **Q50L** | | | |
| PA66 | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E65344 |
| | NA | | |
| **Q50R** | | | |
| PA66 | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E65344 |
| | NA | | |
| PA66HS | BK | | |
| | NA | | |
| **QM20** | | | |
| PA66 | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E65344 |
| | NA | | |
| **REL100** | | | |
| PA66 | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E64963 |
| | NA | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B, CAN/CSA-C22.2 no. 18.5, CAN/CSA-C22.2 no. 62275 | |
| **REL140** | | | |
| PA66 | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E64963 |
| | NA | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B, CAN/CSA-C22.2 no. 18.5, CAN/CSA-C22.2 no. 62275 | |
| **REL180** | | | |
| PA66 | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B, CAN/CSA-C22.2 no. 18.5, CAN/CSA-C22.2 no. 62275 | E64963 |

| Material | Colour (short) | Specifications | UL-File Number |
|---|---|---|---|
| **REL250** | | | |
| PA66 | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B, CAN/CSA-C22.2 no. 18.5, CAN/CSA-C22.2 no. 62275 | E64963 |
| | NA | | |
| **RELK2I** | | | |
| PA66 | BK | IEC 60092 series | |
| | NA | | |
| **RELK2L** | | | |
| PA66 | BK | IEC 60092 series | |
| | NA | | E64963 |
| **RELK2M** | | | |
| PA66 | BK | IEC 60092 series | |
| | NA | | E64963 |
| **RELK2R** | | | |
| PA66 | NA | IEC 60092 series | E64963 |
| **RLT120** | | | |
| PA66 | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B, CAN/CSA-C22.2 no. 18.5, CAN/CSA-C22.2 no. 62275, IEC 60092 series, IEC 62275:2006 | E64963 |
| | NA | | |
| **RLT150** | | | |
| PA66 | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B, CAN/CSA-C22.2 no. 18.5, CAN/CSA-C22.2 no. 62275, IEC 60092 series | E64963 |
| | NA | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B, IEC 60092 series, IEC 62275:2006 | |
| PA66HS | | IEC 60092 series | |
| PA66W | BK | IEC 62275:2006 | |
| **Robusto (LPH942)** | | | |
| PA11 | BK | IEC 62275 | |
| **Robusto (LPH962)** | | | |
| PA11 | BK | IEC 62275 | |
| **Robusto (LPH992)** | | | |
| PA11 | BK | IEC 62275 | |
| **RT250M** | | | |
| PA66 | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B, IEC 60092 series | E64139 |
| | NA | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | |
| PA66UV | BK | | |
| **RT250XL** | | | |
| PA66 | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E64139 |
| | NA | | |
| **T120I** | | | |
| PA66 | BK | IEC 60092 series | |
| | NA | IEC 60092 series, IEC 62275:2006 | |
| PA66HIR(S) | BK | IEC 60092 series | |
| PA66W | | IEC 62275:2006 | |

## Standards for HellermannTyton Cable Ties and Fixings

| Material | Colour (short) | Specifications | UL-File Number |
|---|---|---|---|
| **T120L** | | | |
| PA66 | BK | IEC 60092 series | |
| | NA | IEC 60092 series, IEC 62275:2006 | |
| PA66HIR(S) | BK | IEC 60092 series | |
| PA66HS | | | |
| | NA | | |
| PA66W | BK | IEC 60092 series, IEC 62275:2006 | |
| **T120M** | | | |
| PA66 | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B, IEC 60092 series | E64963 |
| | NA | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B, IEC 60092 series, IEC 62275:2006 | |
| PA66HS | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B, CAN/CSA-C22.2 no. 18.5, CAN/CSA-C22.2 no. 62275, IEC 60092 series | |
| PA66W | | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | |
| **T120MR** | | | |
| PA66 | BK | ANSI/UL 62275 | E64139 E64963 |
| | NA | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | |
| **T120R** | | | |
| E/TFE | BU | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E193818 |
| **T120R(E)** | | | |
| PA46 | NA | IEC 60092 series | |
| PA66 | BK | IEC 60092 series, IEC 62275:2006 | |
| | GN | IEC 60092 series | |
| | NA | IEC 60092 series, IEC 62275:2006 | |
| | RD | | |
| PA66HIR(S) | BK | IEC 60092 series | |
| PA66HS | | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B, CAN/CSA-C22.2 no. 18.5, CAN/CSA-C22.2 no. 62275, IEC 60092 series | E64963 |
| | NA | | |
| PA66V0 | WH | DIN EN 45545-2 , IEC 60092 series | |
| PA66W | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B, IEC 60092 series, IEC 62275:2006 | E64963 |
| **T120ROS** | | | |
| PA66HS | BK | NF EN 45545-2 | |
| PA66V0 | WH | DIN EN 45545-2 | |
| PA66W | BK | | |

| Material | Colour (short) | Specifications | UL-File Number |
|---|---|---|---|
| **T120S** | | | |
| PA66 | NA | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B, IEC 60092 series | E64963 |
| PA66HS | BK | | |
| | NA | | |
| PA66W | BK | IEC 62275:2006 | |
| **T120XM** | | | |
| PA66 | BK | IEC 60092 series | |
| | NA | | |
| PA66HS | BK | | |
| | NA | | |
| **T150L** | | | |
| PA66 | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E64139 |
| | NA | | |
| PA66HS | BK | | |
| **T150M** | | | |
| PA66 | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E64139 |
| | NA | | |
| PA66HS | BK | | |
| **T150R** | | | |
| PA66 | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E85319 |
| | NA | | |
| **T150R(H)** | | | |
| PA66 | BU | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E85319 |
| | RD | | |
| | YE | | |
| PA66HS | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B, VG U48/04101 | |
| | NA | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B, VG 95387 Part 4 Edition: 2008-12, VG U48/04101 | |
| PA66W | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B, IEC 62275:2006 | |
| **T150XL** | | | |
| PA66 | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E64139 |
| | NA | | |
| PA66HS | BK | | |
| PA66UV | | | |

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## Standards for HellermannTyton Cable Ties and Fixings

| Material | Colour (short) | Specifications | UL-File Number |
|---|---|---|---|
| **T150XLL** | | | |
| PA66 | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E64139 |
| | NA | | |
| PA66UV | BK | | |
| **T18I** | | | |
| PA66 | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E85319 E64963 |
| | NA | | |
| PA66HS | BK | | |
| | NA | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B, IEC 62275:2006 | |
| PA66W | BK | ANSI/UL 1565, ANSI/UL 62275 | |
| **T18L** | | | |
| PA66 | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E85319 E64963 |
| | NA | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B, IEC 62275:2006 | |
| PA66HS | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | |
| | NA | | |
| PA66V0 | WH | IEC 60092 series | |
| **T18MR** | | | |
| PA66 | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B, CAN/CSA-C22.2 no. 18.5, CAN/CSA-C22.2 no. 62275 | E64963 |
| | NA | | |
| **T18R** | | | |
| E/TFE | BU | ANSI/UL 1565, ANSI/UL 62275 | E64962 E64963 |
| PA11 | BK | BV 03856/H0 BV, IEC 62275 | |
| PA46 | NA | ANSI/UL 62275 | E85319 E64963 |
| PA66 | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | |
| | BU | | |
| | GN | | |
| | NA | | |
| | RD | | |
| | YE | | |
| PA66HS | BK | | |
| | NA | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B, STD78750, VG 95387 Part 2 Edition: 2008-12, VG 95387 Part 4 Edition: 2008-12 | |
| PA66V0 | WH | DIN EN 45545-2 , IEC 60092 series | |
| PA66W | BK | ANSI/UL 62275 | E85319 |
| **T18ROS** | | | |
| PA66V0 | WH | DIN EN 45545-2 | |
| PA66W | BK | | |
| **T18S** | | | |
| PA66 | NA | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E85319 E64963 |

| Material | Colour (short) | Specifications | UL-File Number |
|---|---|---|---|
| **T250I** | | | |
| PA66 | NA | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E64139 |
| **T250L** | | | |
| PA66 | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E64139 |
| **T250M** | | | |
| PA66 | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E64139 |
| | NA | | |
| **T250R** | | | |
| PA66 | NA | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E64139 |
| PA66HIRHSUV | BK | | |
| **T250S** | | | |
| PA66 | NA | IEC 60092 series | |
| **T250X** | | | |
| PA66 | BK | IEC 60092 series | |
| **T250XL** | | | |
| PA66 | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E64139 |
| | NA | | |
| **T30L** | | | |
| PA66 | NA | IEC 62275:2006 | |
| PA66HS | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E85319 E64963 |
| | NA | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B, IEC 60092 series | E64963 |
| PA66W | BK | IEC 62275:2006 | |
| **T30LL** | | | |
| PA66 | NA | 2011/65/EU article 4, 2014/35/EU, IEC 60092 series | - |
| PA66HS | BK | IEC 60092 series | |
| | NA | | |
| PA66W | BK | IEC 62275:2006 | |
| **T30LOS** | | | |
| PA66V0 | WH | DIN EN 45545-2 | |
| PA66W | BK | | |
| **T30MR** | | | |
| PA66 | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E64139 E64963 |
| | NA | | |

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Date of issue: January 2019

## Standards for HellermannTyton Cable Ties and Fixings

| Material | Colour (short) | Specifications | UL-File Number |
|---|---|---|---|
| **T30R** | | | |
| E/TFE | BU | ANSI/UL 1565, ANSI/UL 62275 | E64962 |
| PA11 | BK | BV 03856/H0 BV, IEC 62275 | |
| PA66 | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E85319 |
| | BU | IEC 60092 series | |
| | GN | | |
| | NA | BV 03856/H0 BV, IEC 62275:2006 | |
| | RD | IEC 60092 series | |
| | YE | | |
| PA66HS | BK | | |
| | NA | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B, STD78750, VG 95387 Part 2 Edition: 2008-12, VG 95387 Part 4 Edition: 2008-12 | E85319 |
| PA66V0 | WH | DIN EN 45545-2 , IEC 60092 series | |
| **T30REC4A** | | | |
| PA66HS, PA66HIRHS | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B, CAN/CSA-C22.2 no. 62275 | E65344 |
| **T30RSF** | | | |
| PA66 | NA | ANSI/UL 1565, ANSI/UL 62275 | E65344 E64963 |
| PA66HS | BK | | |
| **T40R** | | | |
| PA66 | NA | BV 03856/H0 BV, IEC 62275:2006 | |
| PA66HS | BK | BV 03856/H0 BV | |
| | NA | | |
| PA66W | BK | IEC 62275:2006 | |
| **T50I** | | | |
| PA11 | BK | IEC 62275 | |
| PA46 | NA | IEC 60092 series | |
| PA66 | BK | IEC 60092 series, IEC 62275:2006 | |
| | NA | | |
| PA66HIR(S) | BK | IEC 60092 series | |
| PA66HS | | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B, IEC 60092 series | E85319 |
| | NA | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B, CAN/CSA-C22.2 no. 18.5, CAN/CSA-C22.2 no. 62275, IEC 60092 series, VG 95387 Part 4 Edition: 2008-12 | E64963 |
| PA66V0 | WH | DIN EN 45545-2 , IEC 60092 series | |
| PA66W | BK | IEC 62275:2006 | |
| **T50IDH** | | | |
| PA66 | NA | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E64139 |
| PA66HS | BK | | |
| PA66UV | | | |

| Material | Colour (short) | Specifications | UL-File Number |
|---|---|---|---|
| **T50L** | | | |
| E/TFE | BU | ANSI/UL 1565, ANSI/UL 62275 | E64962 |
| PA46 | NA | CAN/CSA-C22.2 no. 62275 | E85319 |
| PA66 | BK | IEC 60092 series, IEC 62275:2006 | |
| | BU | IEC 60092 series | |
| | GN | | |
| | NA | IEC 60092 series, IEC 62275:2006 | |
| | RD | IEC 60092 series | |
| | YE | | |
| PA66HIR(S) | BK | | |
| PA66HS | | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B, VG 95387 Part 4 Edition: 2008-12 | E85319 |
| | NA | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B, IEC 60092 series, IEC 62275:2006 | E64963 |
| PA66V0 | WH | DIN EN 45545-2 | |
| PA66W | BK | IEC 62275:2006 | |
| **T50LDH** | | | |
| PA66 | NA | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E64139 |
| PA66HS | BK | | |
| **T50LL** | | | |
| PA66 | BK | IEC 60092 series, IEC 62275:2006 | |
| PA66W | | IEC 60092 series | |
| **T50M** | | | |
| PA66 | BK | IEC 60092 series, IEC 62275:2006 | |
| | NA | | |
| PA66W | BK | IEC 62275:2006 | |
| **T50ML** | | | |
| PA66 | NA | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E64139 |
| **T50MOS** | | | |
| PA66V0 | WH | DIN EN 45545-2 | |
| PA66W | BK | | |
| **T50MR** | | | |
| PA66 | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B, CAN/CSA-C22.2 no. 18.5, CAN/CSA-C22.2 no. 62275 | E64963 |
| | NA | | |
| PA66W | BK | VG 95387 Part 2 Edition: 2008-12 | |
| **T50MS** | | | |
| PA66 | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B, CAN/CSA-C22.2 no. 18.5, CAN/CSA-C22.2 no. 62275 | E64963 |
| | NA | | |

## Standards for HellermannTyton Cable Ties and Fixings

| Material | Colour (short) | Specifications | UL-File Number |
|---|---|---|---|
| **T50R** | | | |
| E/TFE | BU | ANSI/UL 1565, ANSI/UL 62275 | E64962 |
| PA11 | BK | IEC 60092 series, IEC 62275 | |
| PA46 | NA | CAN/CSA-C22.2 no. 62275 | E85319 |
| PA66 | NA | 2011/65/EU article 4, 2014/35/EU, IEC 60092 series, IEC 62275:2006 | |
| | RD | IEC 60092 series | |
| | YE | | |
| PA66HIR(S) | BK | | |
| PA66HS | | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B, CAN/CSA-C22.2 no. 18.5, CAN/CSA-C22.2 no. 62275, IEC 60092 series | E64963 |
| PA66V0 | WH | DIN EN 45545-2 , IEC 60092 series | |
| PA66W | BK | IEC 62275:2006 | |
| **T50RDH** | | | |
| PA66 | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B, CAN/CSA-C22.2 no. 18.5, CAN/CSA-C22.2 no. 62275 | E64963 |
| | NA | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | |
| **T50RDHEC4A** | | | |
| PA66, PA66HIRHS | NA, BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B, CAN/CSA-C22.2 no. 62275 | E65344 |
| **T50RDHSFT6.5D18** | | | |
| PA66, PA46 | NA, GY | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E65344 |
| **T50ROS** | | | |
| PA66V0 | WH | DIN EN 45545-2 | |
| PA66W | BK | | |

| Material | Colour (short) | Specifications | UL-File Number |
|---|---|---|---|
| **T50RSF(E)** | | | |
| PA66 | BK | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | E64963 |
| | NA | | |
| **T50S** | | | |
| PA11 | BK | IEC 60092 series, IEC 62275 | |
| PA66 | NA | 2011/65/EU article 4, 2014/35/EU, IEC 60092 series, IEC 62275:2006 | |
| PA66HS | BK | IEC 60092 series | |
| | NA | | |
| PA66W | BK | IEC 62275:2006 | |
| **T80I** | | | |
| PA66W | BK | IEC 62275:2006 | |
| **T80L** | | | |
| PA66HS | BK | VG 95387 Part 4 Edition: 2008-12 | |
| | NA | STD78750, VG 95387 Part 4 Edition: 2008-12 | |
| **T80R** | | | |
| PA66HS | NA | STD78750, VG 95387 Part 2 Edition: 2008-12, VG 95387 Part 4 Edition: 2008-12 | |
| **TM1SF** | | | |
| PA66 | WH | DIN EN 45545-2 | E64139 |
| **TY5K2** | | | |
| PA66HS | NA | DIN EN 45545-2 | |
| **X250R** | | | |
| PA66W | BK | ANSI/UL 62275, CAN/CSA-C22.2 no. 62275 | E64963 |

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Date of issue: January 2019

## Standards for HellermannTyton Cable Ties and Fixings according to VG norm 95387

| Designation as per VG-Norm | Type | Country of Origin |
|---|---|---|
| VG 95387 T04 A 201 L | **T18R** | SG |
| VG 95387 T04 A 202 L | **T80R** | |
| VG 95387 T04 A 203 L | **T50I** | GB |
| VG 95387 T04 A 204 L | **T150R(H)** | SG |
| VG 95387 T04 A 205 L | **T50L** | |
| | **T80L** | |
| VG 95387 T04 A 208 L | **T30R** | |
| VG 95387 T04 B 004 B | **T50MR** | GB |

## Standards for HellermannTyton Heatshrinkable Tubing

| Type | Specifications |
|---|---|
| **EPS-300** | SAE - AMS - DTL-23053/4 |
| **EPS-400** | |
| **HA40** | ASTM 2671/C |
| **HFT-A** | ANSI/UL 224, ASN-E0126, CLASS 903201, CSA-C22.2 No.198.1-99, DEF STAN 59-97/3, LEA, MIL-DTL-23053/5C, NF F 00-608, NSA937211, SAE - AMS - DTL-23053/5C, UL 224, VG 95343-5:2006-06, VG 95343 T05 A 002 A, VG 95343 T05 A 002 C, VG 95343 T05 A 002 E, VG 95343 T05 A 002 G, VG 95343 T05 A 002 L, VG 95343 T05 A 003 A, VG 95343 T05 A 003 C |
| **HIS-3** | ANSI/UL 224, C22.2 no. 198.1-06, SAE - AMS - DTL-23053/5 Class 1 and 3, SAE - AMS - DTL-23053/5 Class 2 (clear) |
| **HIS-3 BAG** | ANSI/UL 224, SAE - AMS - DTL-23053/5 Class 1 and 3, SAE - AMS - DTL-23053/5 Class 2 (clear) |
| **HIS-A** | ANSI/UL 224, C22.2 no. 198.1-06, CSA, CSA-C22.1, CSA-C22.2 No.198.1, SAE - AMS - DTL-23053/4 |
| **HIS-PACK** | ANSI/UL 224, CSA-C22.1, CSA-C22.2 No.198.1, SAE - AMS - DTL-23053/5 Class 1 and 3, SAE - AMS - DTL-23053/5 Class 2 (clear), UL 224 |
| **LVR** | ANSI/UL 224 |
| **MA40** | ASTM 2671/C |
| **ShrinKit 321-A** | SAE - AMS - DTL-23053/4 Class 3 (except clear) |
| **ShrinKit 321-A Basic** | |
| **ShrinKit 321 Basic** | SAE - AMS - DTL-23053/5 Class 1 |
| **ShrinKit 321 Universal** | SAE - AMS - DTL-23053/5 Class 1 (colours), SAE - AMS - DTL-23053/5 Class 2 (clear) |
| **ShrinKit 321 Universal Basic** | SAE - AMS - DTL-23053/5 Class 1 |
| **TA32** | ANSI/UL 224, C22.2 no. 198.1-99, SAE - AMS - DTL-23053/4 Class 3 |
| **TA42** | ANSI/UL 224, SAE - AMS - DTL-23053 |
| **TCN20** | ANSI/UL 224, C22.2 no. 198.1-06, CSA, UL 224 125 °C 600V VW-1 |
| **TCN20 overexpanded** | ANSI/UL 224, CSA |
| **TF21** | ANSI/UL 224, C22.2 no. 198.1-99, JAR/FAR 25.853, NF F 00-608:1995, SAE - AMS - DTL-23053/5 Class 1 |
| **TF24** | DEF STAN 59-97 Type 2B, SAE - AMS - DTL-23053/5 Class 2, VG 95343-5:2006-06 |
| **TF31** | ANSI/UL 224, C22.2 no. 198.1-99, CSA-C22.2 No.198.1-99 |
| **TK20** | ANSI/UL 224, ASNE 0718, SAE-AMS-DTL-23053/8, UL 224 150 °C 600V VW-1, VG 95343, VG 95343-5:2006-06 |
| **TREDUX** | ANSI/UL 224, C22.2 no. 198.1-06, SAE - AMS - DTL-23053/5 Class 1 and 3, SAE - AMS - DTL-23053/5 Class 2 (clear) |
| **Viton®-E** | LEA, VG 95343 |
| **TFE4** | NSA 937210 |

Specifications apply to limited article numbers. Please contact our sales desk for further information.

## Standards for HellermannTyton Heat Shrinkable Moulded Shapes

| Type | Specifications |
|---|---|
| **1100 series 90 degree with Rib - VG** | DAN341, DEF STAN 59-97/3, VG 95343-6:2009-12 |
| **1100 series 90 high ratio** | DEF STAN 59-97/3, VG 95343-6:2009-12 |
| **1100 series 90 low profile with Rib** | |
| **1200 series T offset - VG** | DEF STAN 59-97/3, VG 95343-8:2016-03 |
| **1200 series T - VG** | |
| **1300 series 45 angle (and 30) T - VG** | JN1000T, VG 95343-8:2016-03 |
| **130 series Long Outlet with Rib** | DEF STAN 59-97/3, VG 95343-6:2009-12 |
| **150 series Bottle with Rib - VG** | DEF STAN 59-97/3, LEA, VG 95343-6:2009-12, VG 95343 T06 B 006 A |
| **170 series Bottle with Rib** | DEF STAN 59-97/3, VG 95343-6:2009-12 |
| **190 series Bottle with external Ribs** | |
| **200 series 2-way Outlet - VG** | DEF STAN 59-97/3, JN1000T, VG 95343-8:2016-03 |
| **300 series 3-way Outlet - VG** | DEF STAN 59-97/3, VG 95343-8:2016-03 |
| **400 series 4-way Outlet - VG** | |
| **Epoxy adhesive** | VG 95343 |

Specifications apply to limited article numbers. Please contact our sales desk for further information.

## Standards for HellermannTyton Non Shrinkable Tubing

| Type | Specifications |
|---|---|
| **Helsyn H PLC** | BS-4G-198 Part 1 Type 1, DEF STAN 59-15 D2 |
| **Helsyn H Reel** | |
| **Helsyn TH PLC** | |
| **Helsyn TH Reel** | |

Specifications apply to limited article numbers. Please contact our sales desk for further information.

Date of issue: January 2019

## Standards for HellermannTyton Heat Shrinkable Tubing and Heat Shrinkable Moulded Shapes according to VG Norm 95343

| Designation as per VG-Norm | Type |
|---|---|
| VG 95343 T05 A 001 A | HFT-A-1.2/0.6 |
| VG 95343 T05 A 001 C | |
| VG 95343 T05 A 001 E | |
| VG 95343 T05 A 001 G | |
| VG 95343 T05 A 001 L | |
| VG 95343 T05 A 002 A | HFT-A-1.6/0.8 |
| VG 95343 T05 A 002 C | |
| VG 95343 T05 A 002 E | |
| VG 95343 T05 A 002 G | |
| VG 95343 T05 A 002 L | |
| VG 95343 T05 A 003 A | HFT-A-2.4/1.2 |
| VG 95343 T05 A 003 C | |
| VG 95343 T05 A 003 E | |
| VG 95343 T05 A 003 G | |
| VG 95343 T05 A 003 L | |
| VG 95343 T05 A 004 A | HFT-A-3.2/1.6 |
| VG 95343 T05 A 004 C | |
| VG 95343 T05 A 004 E | |
| VG 95343 T05 A 004 G | |
| VG 95343 T05 A 004 L | |
| VG 95343 T05 A 004 N | |
| VG 95343 T05 A 005 A | HFT-A-4.8/2.4 |
| VG 95343 T05 A 005 C | |
| VG 95343 T05 A 005 E | |
| VG 95343 T05 A 005 G | |
| VG 95343 T05 A 005 L | |
| VG 95343 T05 A 005 N | |
| VG 95343 T05 A 006 A | HFT-A-6.4/3.2 |
| VG 95343 T05 A 006 C | |
| VG 95343 T05 A 006 E | |
| VG 95343 T05 A 006 G | |
| VG 95343 T05 A 006 L | |
| VG 95343 T05 A 006 N | |
| VG 95343 T05 A 007 A | HFT-A-9.5/4.8 |
| VG 95343 T05 A 007 C | |
| VG 95343 T05 A 007 E | |
| VG 95343 T05 A 007 G | |
| VG 95343 T05 A 007 L | |
| VG 95343 T05 A 007 N | |
| VG 95343 T05 A 008 A | HFT-A-12.7/6.4 |
| VG 95343 T05 A 008 C | |
| VG 95343 T05 A 008 E | |
| VG 95343 T05 A 008 G | |
| VG 95343 T05 A 008 L | |
| VG 95343 T05 A 008 N | |

| Designation as per VG-Norm | Type |
|---|---|
| VG 95343 T05 A 009 A | HFT-A-19.0/9.5 |
| VG 95343 T05 A 009 C | |
| VG 95343 T05 A 009 E | |
| VG 95343 T05 A 009 G | |
| VG 95343 T05 A 009 L | |
| VG 95343 T05 A 009 N | |
| VG 95343 T05 A 010 A | HFT-A-25.4/12.7 |
| VG 95343 T05 A 010 C | |
| VG 95343 T05 A 010 E | |
| VG 95343 T05 A 010 G | |
| VG 95343 T05 A 010 L | |
| VG 95343 T05 A 010 N | |
| VG 95343 T05 A 011 A | HFT-A-38.0/19.0 |
| VG 95343 T05 A 011 C | |
| VG 95343 T05 A 011 E | |
| VG 95343 T05 A 011 G | |
| VG 95343 T05 A 011 L | |
| VG 95343 T05 A 011 N | |
| VG 95343 T05 A 012 A | HFT-A-50.8/25.4 |
| VG 95343 T05 A 012 C | |
| VG 95343 T05 A 012 E | |
| VG 95343 T05 A 012 G | |
| VG 95343 T05 A 012 L | |
| VG 95343 T05 A 013 A | HFT-A-76.0/38.0 |
| VG 95343 T05 A 013 C | |
| VG 95343 T05 A 013 E | |
| VG 95343 T05 A 013 G | |
| VG 95343 T05 A 013 L | |
| VG 95343 T05 A 014 A | HFT-A-101.6/50.8 |
| VG 95343 T05 A 014 C | |
| VG 95343 T05 A 014 E | |
| VG 95343 T05 A 014 G | |
| VG 95343 T05 A 014 L | |

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## Standards for HellermannTyton Heat Shrinkable Tubing and Heat Shrinkable Moulded Shapes according to VG Norm 95343

| Designation as per VG-Norm | Type |
|---|---|
| VG 95343 T05 B 001 M | **TF24-1.2/0.6** |
| VG 95343 T05 B 002 M | **TF24-1.6/0.8** |
| VG 95343 T05 B 003 M | **TF24-2.4/1.2** |
| VG 95343 T05 B 004 M | **TF24-3.2/1.6** |
| VG 95343 T05 B 005 M | **TF24-4.8/2.4** |
| VG 95343 T05 B 006 M | **TF24-6.4/3.2** |
| VG 95343 T05 B 007 M | **TF24-9.5/4.8** |
| VG 95343 T05 B 008 M | **TF24-12.7/6.4** |
| VG 95343 T05 B 009 M | **TF24-19.1/9.5** |
| VG 95343 T05 B 010 M | **TF24-25.4/12.7** |
| VG 95343 T05 B 011 M | **TF24-38.1/19.1** |
| VG 95343 T05 B 012 M | **TF24-50.8/25.4** |
| VG 95343 T05 B 013 M | **TF24-76.2/38.1** |
| VG 95343 T05 B 014 M | **TF24-101.6/50.8** |
| VG 95343 T05 D 001 A | **SE28 3.2/1.6** |
| VG 95343 T05 D 002 A | **SE28 4.8/2.4** |
| VG 95343 T05 D 003 A | **SE28 6.4/3.2** |
| VG 95343 T05 D 004 A | **SE28 9.5/4.8** |
| VG 95343 T05 D 005 A | **SE28 12.7/6.4** |
| VG 95343 T05 D 006 A | **SE28 19.0/9.5** |
| VG 95343 T05 D 007 A | **SE28 25.4/12.7** |
| VG 95343 T05 D 008 A | **SE28 38.0/19.0** |
| VG 95343 T05 D 009 A | **SE28 51.0/25.4** |
| VG 95343 T05 D 010 A | **SE28 76.0/38.0** |
| VG 95343 T05 D 011 A | **SE28 101.2/51.0** |
| VG 95343 T05 E 001 A | **VITON®-E-3.2/1.6** |
| VG 95343 T05 E 002 A | **VITON®-E-4.8/2.4** |
| VG 95343 T05 E 003 A | **VITON®-E-6.4/3.2** |
| VG 95343 T05 E 004 A | **VITON®-E-9.5/4.8** |
| VG 95343 T05 E 005 A | **VITON®-E-12.7/6.4** |
| VG 95343 T05 E 006 A | **VITON®-E-19.0/9.5** |
| VG 95343 T05 E 007 A | **VITON®-E-25.4/12.7** |
| VG 95343 T05 E 008 A | **VITON®-E-38.0/19.0** |
| VG 95343 T05 E 009 A | **VITON®-E-50.8/25.4** |
| VG 95343 T05 F 001 M | **TK20-1.2/0.6** |
| VG 95343 T05 F 002 M | **TK20-1.6/0.8** |
| VG 95343 T05 F 003 M | **TK20-2.4/1.2** |
| VG 95343 T05 F 004 M | **TK20-3.2/1.6** |
| VG 95343 T05 F 005 M | **TK20-4.8/2.4** |
| VG 95343 T05 F 006 M | **TK20-6.4/3.2** |
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| VG 95343 T05 F 009 M | **TK20-19.1/9.5** |
| VG 95343 T05 F 010 M | **TK20-25.4/12.7** |
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| VG 95343 T06 D 014 A | **179-1-G** |
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| VG 95343 T06 E 003 A | **1155-4-G** |
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| VG 95343 T06 E 005 A | **1157-4-G** |
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| VG 95343 T06 F 006 A | **1126-1-G** |
| VG 95343 T06 F 007 A | **1127-1-G** |
| VG 95343 T06 F 008 A | **1128-1-G** |
| VG 95343 T06 F 009 A | **1129-1-G** |
| VG 95343 T06 F 011 A | **1133-1-G** |
| VG 95343 T06 F 012 A | **1134-1-G** |
| VG 95343 T06 F 013 A | **1135-1-G** |
| VG 95343 T06 F 014 A | **1136-1-G** |
| VG 95343 T08 A 001 A | **1203-1-G** |
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| VG 95343 T08 A 009 A | **1206-1-G** |
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| VG 95343 T08 A 011 A | **1207-1-G** |
| VG 95343 T08 A 016 A | **1204-1-G** |
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| VG 95343 T08 B 001 A | **1301-1-G** |
| VG 95343 T08 B 002 A | **1303-1-G** |
| VG 95343 T08 B 003 A | **1311-1-G** |
| VG 95343 T08 B 004 A | **1302-1-G** |
| VG 95343 T08 C 001 A | **206-1-G** |
| VG 95343 T08 C 002 A | **203-1-G** |

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| VG 95343 T08 E 004 A | **403-1-G** |
| VG 95343 T08 E 005 A | **413-1-G** |
| VG 95343 T15 A | **V9500 Epoxy Cartridge** |
| VG 95343 T15 A 001 A | **V9500 Epoxy Kit** |
| VG 95343 T15 A 002 B | |
| VG 95343 T15 DA | **V9500 Applicator Gun** |
| VG 95343 T15 MA | **V9500 Applicator Nozzle** |
| VG 95343 T18 C 003 A | **159-43-G** |

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## Standards for HellermannTyton Cable Protection

| Type | Specifications | UL File Number |
|---|---|---|
| **HG-SW Standard Weight PA6** | ANSI/UL 1695, BS EN 61386-23:2004 | E325250 |
| **HG-LW Light Weight PA6** | ANSI/UL 1695 | |
| **HG-FR Flame Retardant PA6** | ANSI/UL 1695, BS EN 45545-2:2013+A1:2015, BS EN 61386-23:2004, EN 45545-2:2013+A1:2015 | |
| **HG-S Straight, IP66** | ANSI/UL 1695 | |
| **HG-90 90° Elbow, IP66** | | |
| **LTS Galv. Steel Conduit, PVC Cover** | BS EN 61386-23:2004 | |
| **PSR-S Straight PA6 Fitting, Ext. Thread** | ANSI/UL 1695 | E325250 |
| **PSR Smooth Bore PVC Spiral Reinforced Conduit** | | |
| **PSR-90 90° Elbow PA6 Fitting, Ext. Thread** | | |
| **Helawrap HWPA6-V0** | UL 1441, UNI EN 45545-2:2015 | E341700 |
| **SBPAV0** | EN 45545-2:2013, UNI EN 45545-2:2015 | |
| **Braided Sleeving Helagaine HEGP** | DIN EN 45545-2 (02/2016), DIN EN 45545-2 (08/2013) | |
| **Braided Sleeving Helagaine HEGPX** | DIN EN 45545-2 (08/2013) , EN 45545-2:2013, UL 1441 | E197993 |
| **Braided Sleeving Helagaine HEGPV0** | NF F 16-101 | |
| **Braided Sleeving Helagaine HEGPV0X** | NF F 16-101, UL 1441 | E197993 |
| **Braided Sleeving Helagaine HEGPA66** | EN 45545-2:2013 | |
| **Braided Sleeving HEGMAN** | DIN EN 6049 | |
| **Braided Sleeving HEGMANWO** | | |
| **Twist-In Standard** | UL 1441 | E197993 |
| **Twist-In Distripack** | | |
| **Self-Closing Sleeving Helagaine Twist-In-FR** | CEN/TS 45545-2:2009-07, DIN EN 45545-2:2009, NF F 16-101, UL 1441 | |
| **Braided Sleeving Helagaine HEGEMIP-VG** | VG 96936-10:2007-10 | |
| **Grommet Strip Flexiform G51N** | NASM21266 | |
| **HelaDuct HTWD-PW Wide Finger PVC Wiring Ducts** | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B | |
| **HelaDuct HTWD-PN Narrow Finger PVC Wiring ducts** | | E357929 |
| **HelaDuct HTWD-PD DIN PVC Wiring Ducts** | ANSI/UL 1565, ANSI/UL 746B, CAN/CSA-C22.2 no. 18.5 | |
| **HelaDuct HTWD-HF Halogen-Free Wiring Ducts** | ANSI/UL 1565, ANSI/UL 746B, CAN/CSA-C22.2 no. 18.5, DIN EN 45545-2 (02/2016) | |

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## Standards for HellermannTyton Wire Connectors and Electrical Tapes

| Product Family | Type | Specifications |
|---|---|---|
| HelaCon Easy | HECE-2 | 60998-1:2004, ANSI/UL 486-A, ANSI/UL 486-B, ANSI/UL 486-C, CEBEC, DIN EN 60998-2-2:2005-03, EN 60998-2-2:2004, ENEC, FIMKO |
| | HECE-3 | |
| | HECE-3x1.5 | DIN EN 60998-2-2:2005-03, ENEC, FIMKO |
| | HECE-4 | 60998-1:2004, ANSI/UL 486-A, ANSI/UL 486-B, ANSI/UL 486-C, CEBEC, DIN EN 60998-2-2:2005-03, EN 60998-2-2:2004, ENEC, FIMKO |
| | HECE-5 | |
| | HECE-5x1.5 | DIN EN 60998-2-2:2005-03, ENEC, FIMKO |
| | HECE-8 | 60998-1:2004, ANSI/UL 486-A, ANSI/UL 486-B, ANSI/UL 486-C, CEBEC, DIN EN 60998-2-2:2005-03, EN 60998-2-2:2004 |
| | HECE-8x1.5 | 60998-1:2004, DIN EN 60998-2-2:2005-03, EN 60998-2-2:2004, ENEC, FIMKO |
| HelaCon Lux | HECL-1/1 | CEBEC, cULus, DIN EN 60998-2-2:2005-03, EN 60998-2-2:1993, ENEC, FIMKO |
| | HECL-2/1 | |
| HelaCon Plus Mini | HCPM-2 | 2006/65/EC, ANSI/UL 486-A, ANSI/UL 486-B, ANSI/UL 486-C, cULus, EN 60998-2-2:2004, EN 60998-2-2:201, ENEC |
| | HCPM-3 | |
| | HCPM-4 | |
| | HCPM-5 | |
| | HCPM-6 | |
| | HCPM-8 | |
| | HCPM Variobox 350 | 2006/65/EC, EN 60998-2-2:2004, ENEC |
| HelaTape Flex 1000+ | HTAPE-FLEX1000+ 19x20 | IEC 60454-3-1-7/F-PVCP/90, UL 510 |
| | HTAPE-FLEX1000+ 19x20 PACK | |
| | HTAPE-FLEX1000+ 19x33 | |
| | HTAPE-FLEX1000+ 19x6 | |
| | HTAPE-FLEX1000+ 50x33 | |
| | HTAPE-FLEX1000+ C 19x20 | |
| HelaTape Flex 15 | HTAPE-FLEX15-15x10 | IEC 60454-3-1-6/F-PVCP/90 |
| | HTAPE-FLEX15-15x25 | IEC 60454-3-1-7/F-PVCP/90 |
| | HTAPE-FLEX15-19x20 | |
| | HTAPE-FLEX15-19x25 | |
| | HTAPE-FLEX15-25x25 | |
| HelaTape Flex 2000+ | HTAPE-FLEX2000+19x20 | UL 510 |
| | HTAPE-FLEX2000+38x20 | |
| HelaTape Flex 25 | HTAPE-FLEX25-19x33 | |
| | HTAPE-FLEX25-38x33 | |
| HelaTape Power 600 | HTAPE-POWER600-19x6.7 | |
| | HTAPE-POWER600-38x6.7 | |

## Standards for HellermannTyton Identification Systems

| Type | Specifications |
|---|---|
| **2:1 THTT, 2:1 THTT DS** | MIL-STD-202G Method 215K, SAE - AS81531 |
| **2:1 TLFD DS** | DIN EN 45545-2 (02/2016), DIN EN 50343:2014 Appendix H |
| **2:1 TLFX** | BS-6853:1999, DIN 53438-3: 1984, DIN 5510-2, EN 45545-2:2013 , EN ISO 11925-2: 2002, NF F 16-101 |
| **2:1 TLFX DS** | ASTM E 662, BS-6853:1999, BS-EN ISO 4589-2, DIN 53438-3: 1984, DIN 54837 (12/2007), DIN 5510-2, EN 45545-2:2013 , EN ISO 11925-2: 2010, NF F 16-101, UNI CEI 11170-3 |
| **3:1 TCGT** | C22.2 no. 198.1-99 |
| **3:1 TULT** | ANSI/UL 224, C22.2 no. 198.1-99, CSA |
| **3:1 TULT DS** | ANSI/UL 224, MIL-STD-202G Method 215K |
| **CRADLE RFID TPU** | Article 41 of Directive 2014/34/EU, EN 50303:2000, EN 60079-0:2012, EN 60079-11:2012 |
| **Helagrip, reel chevron cut** | BS-2782-540B, BS-6746C, IEC 757 |
| **HEXTAG RFID PA66** | Article 41 of Directive 2014/34/EU, EN 60079-0:2012, EN 60079-11:2012 |
| **HGDC1-3, HGDC2-5, HGDC4-9** | BS-2782-540B, BS-6746C, IEC 757 |
| **HODS50, HODS85** | BS-2782-540B, BS-6746C, IEC 304, IEC 757 |
| **IT Ties** | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B, CAGE Code 53421, CAN/CSA-C22.2 no. 62275 |
| **M-BOSS Compact and Organiser** | 2006/42/EG, EN 60204-1:2006, EN ISO 12100:2010 |
| **MCTRFID Ties PA66MP** | Article 41 of Directive 2014/34/EU, EN 50303:2000, EN 60079-0:2012, EN 60079-11:2012 |
| **Ovalgrip, reel straight cut** | BS-2782-540B, BS-6746C, IEC 304, IEC 757 |
| **Plain Labels - 1203** | CSA |
| **Plain Labels - 951** | German Federal Motor Transport Authority/technical bulletin 412-205 |
| **RFID Nylon Ties for RFID_BRO** | Article 41 of Directive 2014/34/EU, EN 50303:2000, EN 60079-0:2012, EN 60079-11:2012 |
| **TAGDR** | MIL-STD-202G Method 215K, NF F 00-608 (12/1995), SAE - AS81531 |
| **TAGHT** | MIL-STD-202G Method 215K, SAE - AS81531 |
| **TAGLF** | EN 45545-2:2013 , MIL-STD-202G Method 215K, SAE - AS81531 |
| **TAGPU** | MIL-STD-202G Method 215K, SAE - AS81531 |
| **TAGUL** | SAE - AMS - DTL-23053/5 Class 1 and 3, SAE - AS81531 , UL 224 125 °C 600V VW-1 |
| **Thermal Transfer Ribbons Adhesive Labels** | ANSI/UL 969 |
| **TIPTAG HF** | EN 45545-2:2013 |
| **TrakMark Assecories** | CEN |
| **TrakMark DS** | 2004/108/EG, 2014/35/EU, ANSI/UL 60950-1, ANSI/UL 60950-21, ANSI/UL 60950-22, ANSI/UL 60950-23, EN 55022:2011-12, EN 55024:2011-09, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, FCC |
| **TT4030 Printer** | 2011/65/EU, 2014/35/EU, CE 2014/35/EU, DIN EN 55032:2012-12, DIN EN 55032:2016-02, DIN EN 55032 Berichtigung 1:2013-04, DIN EN 61000-6-2:2006-03, DIN EN 61000-6-2 Berichtigung 1:2011-06, EN 61000-3-2, EN 61000-6-2, IEC 60950-1 (ed.2), IEC 60950-1 (ed.2);am1, IEC 60950-1 (ed.2);am² |
| **TT430 Accessories** | CEN |
| **TT430 Printer** | ANSI/NFPA 70 article 645, ANSI/NFPA 75, ANSI/UL 60950-1, ANSI/UL 60950-21, ANSI/UL 60950-22, ANSI/UL 60950-23, CE 2014/35/EU, EN 55022:2011-12, EN 55024:2011-09, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, FCC eCFR 47 FCC part 15 - subpart B, limit class A, ICES-033:2004 Issue 4, limit class A |
| **WIC Accessories** | EN 60062, IEC 304 |

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## Standards for HellermannTyton Application Tooling

| Type | Specifications |
|---|---|
| **EVO7** | CAGE Code 53421 |
| **KR8PNSE** | 2006/42/EG, GS |
| **MK3PNSP2** | |
| **MK7P** | GS |
| **MK9P** | 2006/42/EG |
| | CEN, GS |
| **T18RA3500** | ANSI/UL 1565, ANSI/UL 62275, ANSI/UL 746B |
| **T18RA50** | |

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**CONDITIONS OF SALE**

1. Interpretation

1.1 In these Conditions:

"ACKNOWLEDGEMENT OF ORDER" shall mean the document by which the Seller or its authorised representative accepts the Order.

"BUYER" shall mean the purchaser of the Goods from the Seller.

"BUYER'S SPECIFICATION" means any variation, modification or amendment to Seller's specification as requested by Buyer and agreed between the parties in accordance with clause 2.3 and/or as identified in the Acknowledgement of Order.

"CONDITIONS" means the terms and conditions of sale set out herein and includes any special terms and conditions included in the Acknowledgement of Order.

"CONTRACT" shall mean the contract for the sale and purchase of the Goods made pursuant to these Conditions.

"DELIVERY" shall mean delivery of the Goods or any part of them in accordance with clause 6.1 of these Conditions.

"DELIVERY DATE" shall mean the date or period for Delivery set out in an Acknowledgement of Order or which is otherwise agreed by the Seller and the Buyer.

"FORCE MAJEURE" shall mean any circumstances beyond the reasonable control of the Seller.

"GOODS" shall mean the goods which the Seller has agreed to supply to the Buyer pursuant to these Conditions.

"INFORMATION" shall mean any and all IPR, technical or commercial data, know-how, show-how, formulae, processes, designs, photographs, drawings, specifications, details of customers and suppliers, pricing information, samples, prototypes and other sensitive business information and any other information of a confidential nature together with any experimental or test data and results produced by the Seller as a result of it carrying out necessary tests for the purposes of performing the Contract which either directly or indirectly is disclosed by or on behalf of the Seller to the Buyer or to any person on behalf of the Buyer orally, in writing, by physical embodiment, by data transmission or in any other way.

"INTELLECTUAL PROPERTY RIGHTS" ("IPR") shall mean all patents, trade marks, service marks, design rights (whether patentable, registrable or otherwise), applications for any of the foregoing copyright, know-how, trade or business names, rights in databases, topography rights and other similar rights or obligations whether registrable or not in any country (including, but not limited to the United Kingdom).

"LOSS" shall mean all actions, claims, demands, losses (direct, indirect, consequential or otherwise), expenses, costs, actions and proceedings.

"ORDER" shall mean the Buyer's order for Goods.

"SELLER" shall mean HellermannTyton Ltd, a company registered in England and Wales under company number 05652018 and having its registered office at Griffin House, 135 High Street, Crawley, West Sussex, RH10 1DQ.

"SPECIFICATION" shall mean the description of the Goods set out in the Acknowledgement of Order pursuant to clause 3.4 including any variation, modification or amendment to specification as a consequence of Buyer's Specification and "Specification" and "Buyer's Specification" shall be construed accordingly.

1.2 Any reference in these Conditions to any provision of a statute shall be construed as a reference to that provision as amended re-enacted or extended at the relevant time.

1.3 The headings in these Conditions are for convenience only and shall not affect their interpretation.

1.4 In these Conditions "Incoterms" means the international rules for the interpretation of trade terms of the International Chamber of Commerce 2010 as amended or republished from time to time (Incoterms® 2010). Unless the Contract otherwise requires any terms or expression which is defined in or given a particular meaning by the provisions of Incoterms shall have the same meaning in these Conditions, but if there is any conflict between the provisions of Incoterms and these Conditions the latter shall prevail.

2. Basis of Sale

2.1 These Conditions together with the Seller's Acknowledgement of Order apply to all Contracts between the Seller and the Buyer and shall prevail and be effective notwithstanding any variations or additions whether contained or referred to in the Buyer's order, or other document submitted by the Buyer including without limitation any standard conditions of purchase of the Buyer, acceptance of quotation or in correspondence or elsewhere, or implied by trade, custom, practice or course of dealing, and shall supersede all other and any prior promises, representations or undertakings.

2.2 Where the Buyer purchases Goods from the Seller which include electrical and electronic equipment (as defined by the Waste Electrical and Electronic Equipment Regulations 2006 as amended or re-enacted from time to time ("WEEE")), he does so on the understanding that he will, at his own expense, properly collect, treat, recover and dispose of it in an environmentally sound manner, or arrange for the proper collection, treatment, recovery and environmentally sound disposal of such electrical or electronic equipment in accordance with the requirements of WEEE. Further, the Buyer agrees that where the electrical and electronic equipment referred to above is intended to replace electrical or electronic equipment that was supplied to the Buyer prior to the 13 August 2005, it will be responsible for the environmentally sound collection, treatment, recovery and disposal of that electrical and electronic equipment being replaced and shall not ask the Seller to take it back in order to arrange the same.

2.3 No variation to these Conditions shall be binding unless agreed in writing by an authorised representative of the Seller.

2.4 The Seller's employees or agents are not authorised to make any representations or recommendations concerning the Goods unless confirmed by a duly authorised representative of the Seller in writing. In entering into the Contract the Buyer acknowledges that it does not rely on and waives any claim for breach of any such representations which are not so confirmed. For the avoidance of doubt, nothing herein contained shall be deemed to exclude the Seller's liability due to fraud or fraudulent misrepresentation.

2.5 Any typographical clerical or other error or omission in any sales literature quotation price list Acknowledgement of Order invoice or other documentation or information issued by the Seller shall be subject to correction without any liability on the part of the Seller.

3. Orders and Specifications

3.1 Every acceptance by the Buyer of any quotation given by the Seller shall be deemed an offer by the Buyer to purchase Goods from the Seller and will not be deemed to be accepted by the Seller until a duly authorised representative of the Seller has provided an Acknowledgement of Order in relation to such offer by the Buyer.

3.2 No Order submitted by the Buyer shall be deemed to be accepted by the Seller unless and until confirmed by an Acknowledgement of Order.

3.3 The Buyer shall be responsible to the Seller for ensuring the accuracy of the terms of any Order (including any applicable Specification or Buyer's Specification) submitted by the Buyer and for giving the Seller any necessary information relating to the Goods within a sufficient time to enable the Seller to perform the Contract in accordance with its terms.

3.4 The quantity quality and description of and any Specification for the Goods shall be those set out in the Seller's Acknowledgement of Order.

3.5 If the Goods are to be manufactured by the Seller in accordance with the Buyer's Specification:

3.5.1 the Buyer shall indemnify the Seller against all Loss suffered by the Seller in connection with any claim by a third party that the manufacture and/or supply of the Goods to such Buyer Specification or instructions infringes the rights of any third party; and

3.5.2 the Buyer shall be responsible for supplying reliable and accurate information to the Seller (including, without limitation, drawings, plans and designs) to enable the Seller to manufacture the Goods to the Buyer's Specification. The Seller shall be entitled to assume that all information supplied by the Buyer is true, accurate complete and fit for the purpose for which it is supplied and that the Seller can rely on the same. The Seller shall not be liable for any Loss or delay in Delivery of the Goods which directly or indirectly arises from the Buyer's failure to supply accurate information at all or on time.

3.6 The Seller reserves the right to make any changes in the Specification of the Goods which are required to conform with any applicable safety or other statutory requirements and/or where such changes do not materially affect the quality or performance of the Goods. For the avoidance of doubt and subject to clause 10.1, the Seller provides no implied warranties in relation to Goods supplied to the Buyer's Specification.

3.7 No Order which has been accepted by the Seller by an Acknowledgement of Order may be cancelled by the Buyer except with the agreement in writing of the Seller and on terms that the Buyer shall indemnify the Seller in full against all Loss incurred by the Seller as a result of cancellation.

4. Price of the Goods

4.1 The price shall be the price in the Acknowledgement of Order ("Price").

4.2 The Seller reserves the right by giving notice to the Buyer at any time before Delivery to increase the Price to reflect any increase in the cost to the Seller which is due to any factor beyond the control of the Seller (such as without limitation any foreign exchange fluctuation, currency regulation alteration of duties significant increase in the costs of labour materials or other costs of manufacture), any change in Delivery Dates quantities or Specifications for the Goods which is requested by the Buyer or any delay caused by any instructions of the Buyer or failure of the Buyer to give the Seller adequate information or instructions.

4.3 Except as otherwise stated in an Acknowledgement of Order all prices are given by the Seller for Delivery as defined in clause 6.1. Where the Seller agrees to deliver the Goods otherwise than as defined in clause 6.1 the Buyer shall be liable to pay the Seller's charges for transport packaging and insurance where requested.

4.4 The price is exclusive of any applicable value added tax (which will be applied in accordance with the legislation in force at the tax point date) and which the Buyer shall be additionally liable to pay to the Seller.

5. Terms of Payment

5.1 Subject to any special terms agreed in an Acknowledgement of Order the Seller shall be entitled to invoice the Buyer for the Price on Delivery immediately the Goods have been despatched, when they are ready for despatch but are prevented or delayed from being despatched due to Force Majeure or the day the Goods are put out ready for collection (whichever event occurs the earliest).

5.2 The Buyer shall pay the Price without deduction within 30 days of the date of the Seller's invoice notwithstanding that Delivery may not have taken place and the property in the Goods has not passed to the Buyer. The time of payment of the Price shall be of the essence of the Contract. Receipts for payment will be issued only upon request.

5.3 If the Buyer fails to make any payment in accordance with clause 5.2 then without prejudice to any other right or remedy available to the Seller the Seller shall be entitled to:-

5.3.1 cancel the contract or suspend any Deliveries to the Buyer;

5.3.2 appropriate any payment made by the Buyer to such of the Goods (or the goods supplied under any other contract between the Buyer and the Seller) as the Seller may think fit (notwithstanding any purported appropriation by the Buyer);

5.3.3 charge the Buyer interest on the amount unpaid at the rate of 3 percent per annum above HSBC Bank base rate from time to time until payment in full is made (a part of a month being treated as a full month for the purpose of calculating interest); and

5.3.4 demand payment of all outstanding balances from the Buyer whether due or not and/or cancel all outstanding Orders and/or decline to make further Deliveries (under this or any other contract between the Buyer and the Seller) or provision of services.

5.4 Except where insolvency laws provide otherwise the Buyer shall not be entitled to withhold or set off payment for Goods for any reason whatsoever. All Goods for which payment has not been made in accordance with clause 5.2 and which are held by the Seller at its premises are so held at the Buyer's risk.

6. Delivery

6.1 Except as otherwise stated in an Acknowledgement of Order delivery shall take place when the Seller places the Goods at the disposal of the Buyer at the Seller's premises and not loaded on any collecting vehicle.

6.2 Any Delivery Date is approximate only. The Seller shall not be liable for any Loss arising from any failure to deliver the Goods on the Delivery Date howsoever caused. Time for delivery shall not be of the essence unless previously agreed by the Seller in writing. The Goods may be delivered by the Seller in advance of the quoted delivery date upon giving reasonable notice to the Buyer.

6.3 The Buyer shall not be entitled to change the Delivery Date without the prior written consent of a duly authorised representative of the Seller.

6.4 Where delivery of the Goods is to be made by the Seller, the Seller reserves the right to deliver up to 10 per cent more or 10 per cent less than the quantity ordered provided that there is a pro rata adjustment to the Price to reflect the Goods actually delivered and the quantity so delivered shall be deemed to be the quantity ordered. Goods delivered in excess of such tolerance may be rejected by the Buyer provided that it serves notice of rejection within 10 working days of Delivery.

6.5 Where the Goods are to be delivered in installments each delivery shall constitute a separate contract and failure by the Seller to deliver any one or more of the installments in accordance with these Conditions or any claim by the Buyer in respect of any one or more installments shall not entitle the Buyer to treat the Contract as a whole as repudiated.

6.6 Subject to clause 10.6 if the Seller fails to deliver the Goods for any reason other than Force Majeure or due to Buyer's fault and the Seller is accordingly liable to the Buyer, the Seller's only liability shall be limited to the excess (if any) of the cost to the Buyer (having used its best endeavours to replace the Goods by purchasing them in the cheapest available market) of purchasing similar goods to replace those not delivered.

6.7 If the Buyer fails to take Delivery on the Delivery Date then without prejudice to any other right or remedy available to the Seller the Seller may:

6.7.1 store the Goods until actual delivery and charge the Buyer for the costs (including insurance) of storage; or

6.7.2 treat the Contract as repudiated by the Buyer and without prejudice to any other right it may have against the Buyer the Seller shall be entitled to resell the Goods and be indemnified by the Buyer for any Loss which it suffers.

7. Risk and Property

7.1 Risk of damage to or loss of the Goods shall pass to the Buyer on Delivery of the Goods;

7.2 Notwithstanding Delivery and the passing of risk in the Goods or any other provision of these Conditions the property in the Goods shall remain with the Seller until the Seller has received in cash or cleared funds payment in full of the Price and any other monies due to the Seller in respect of the Goods and all other goods agreed to be sold by the Seller to the Buyer for which payment is then due under the Contract or any other contract between the Seller and the Buyer (including without limitation costs of Delivery).

7.3 Until such time as the property in the Goods passes to the Buyer the Buyer shall hold the goods as the Seller's fiduciary agent and bailee and shall keep the Goods separate from those of the Buyer and third parties and properly stored protected and insured and identified as the Seller's property.

7.4 Until such time as the property in the Goods passes to the Buyer the Buyer shall be entitled to resell or use the Goods in the ordinary course of its business but shall account to the Seller for the proceeds of sale or otherwise of the Goods whether tangible or intangible including insurance proceeds and shall keep all such proceeds separate from any monies or property of the Buyer and third parties and in the case of tangible proceeds properly stored protected and insured.

7.5 If the Goods are prior to sale by the Buyer made up or incorporated in or mixed with other goods, then if they remain separately identifiable the Seller shall retain property and title thereof and if they do not remain separately identifiable the Seller shall become a joint owner of the goods in or which the Goods are incorporated or mixed in such proportion as the value of the Goods bears to the value of the Goods in which the Goods are so incorporated or mixed.

7.6 If the Buyer sells the Goods or the goods in which the Goods have been incorporated or mixed the sale shall be on behalf of the Seller as the joint owner thereof as the case may be and the proceeds of any such sale for the Seller's share thereof if the sale is of jointly owned property shall be held on trust for the Seller and in a separate identified account.

7.7 Until such time as the property in the Goods passes to the Buyer (and provided the Goods are still in existence and have not been resold) the Seller shall be entitled at any time to require the Buyer to deliver up the Goods to the Seller and if the Buyer fails to do so forthwith to enter the premises of the Buyer or any third party where the Goods are stored and take possession of any Goods in which property remains in the Seller and remove and dispose of them as the Seller thinks fit. The Seller shall apply the proceeds of disposal (after deduction of all expenses) in discharge of the amount unpaid by the Buyer.

7.8 The Buyer shall not be entitled to pledge or in any way charge by way of security for any indebtedness any of the Goods which remain the property of the Seller without the Seller's consent but if the Buyer does so all moneys owing by the Buyer to the Seller shall (without prejudice to any other right or remedy of the Seller) forthwith become due and payable.

8. Confidentiality and IPR

8.1 The Buyer agrees and undertakes that it will keep confidential and will not disclose or use for any purpose (other than to perform its obligations under the Contract) any Information. Any Information supplied to the Buyer by the Seller shall at all times remain the property of the Seller. The Buyer shall not acquire any rights in the Information, which shall be returned to the Seller immediately upon request.

8.2 Unless otherwise agreed in writing all IPR in relation to the Goods including without limitation their method of manufacture shall vest in the Seller and remain the property of the Seller notwithstanding the purchase of the Goods by the Buyer and the Buyer undertakes to do all acts and/or enter into such agreements or deeds as the Seller shall require to vest any such IPR in the Seller.

8.3 Unless otherwise agreed in writing and notwithstanding that the Buyer may have contributed towards the costs of such items all tooling (and all IPR in relation to such tooling) produced or acquired by the Seller in relation to the manufacture of the Goods shall be and remain the property of the Seller.

9. Lien

9.1 In addition to any other right or lien to which the Seller may by law or pursuant to these Conditions be entitled, the Seller shall be entitled to a general lien on all the goods and the property of the Buyer in the Seller's possession and a right of sale of such goods and property at the Seller's sole discretion for any unpaid money due under the terms of the same or any other Contract between the Seller and the Buyer.

9.2 In addition and without prejudice to its other rights, the Seller shall have the right on fourteen days notice to the Buyer to put any goods or property over which it has a lien into a saleable state by any means whatsoever and (without prior notice to the Buyer) to sell such goods and shall be deemed the Buyer's agent for the purposes of effecting such sale. Out of the proceeds of the sale

the Seller shall be entitled to retain a sum equivalent to all unpaid monies due to it from the Buyer as aforesaid together with the cost of putting the goods into a saleable state and the expenses of sale without prejudice to the Seller's right to recover the balance thereof from the Buyer.

10. Warranties and Liability

10.1 The Seller warrants that at Delivery the Goods will be free from defect in materials, workmanship and design (where designed by the Seller) provided that subject as aforesaid and expressly provided in these Conditions, and except where the Goods are sold to a person dealing as a consumer (within the meaning of the Unfair Contract Terms Act 1977) all warranties conditions or other terms implied by statute and/or common law are excluded to the fullest extent permitted by law.

10.2 Where the Goods are sold under a consumer transaction (as defined by the Consumer Transactions (Restrictions on Statements) Order 1976) the statutory rights of the Buyer are not affected by these Conditions.

10.3 Any specification or sample supplied by the Seller in any brochure, catalogue, estimate or quotation provided by Seller shall be approximate only and for information and guidance only and shall not form part of the Contract.

10.4 Any claim based upon the quality or condition of the Goods or any failure of the Goods to meet the Specification ("Claim") by the Buyer shall (whether or not delivery is refused by the Buyer) be notified to the Seller in writing within 7 days from the date of delivery or (where the defect or failure was not apparent on reasonable inspection) within one month after discovery of the defect or failure. If delivery is not refused and the Buyer does not notify the Seller accordingly, the Buyer shall not be entitled to reject the Goods and the Seller shall have no liability in respect of such a Claim and the Buyer shall be bound to pay the Price as if the Goods had been delivered in accordance with the Contract. The Buyer shall not be entitled to make any Claim after the expiration of six months from the date of Delivery of the Goods.

10.5 Where any valid Claim in respect of any of the Goods is notified to the Seller in accordance with clause 10.4 the Seller shall be entitled to replace the Goods (or the part in question) free of charge or at the Seller's sole discretion refund to the Buyer the Price (or a proportionate part of the Price) but the Seller shall have no further liability to the Buyer and the Buyer shall have no other remedy.

10.6 The Seller shall have no liability to the Buyer in relation to non-delivery or short delivery of the Goods unless such non-delivery or short delivery is notified to the Seller in writing within fourteen days of the Delivery Date.

10.7 Where any valid Claim in respect of the Goods is notified to the Seller in accordance with clause 10.6 the Seller shall be entitled to deliver the Goods or the shortfall of the Goods, but the Buyer shall have no other remedy.

10.8 Except in respect of death or personal injury caused by the Seller's negligence the Seller's total liability to the Buyer under these Conditions shall not exceed the total price of all Goods supplied hereunder.

10.9 The Seller shall have no liability to the Buyer under or arising out of or otherwise in connection with the Contract or the supply of Goods by the Seller to the Buyer and/or their use or resale by the Buyer in contract tort (including negligence or breach of statutory duty) or otherwise for loss of profit, business, contracts, revenues or anticipated savings or for any special indirect or consequential damage or loss of any nature or for the costs of recall of any Goods except as may otherwise be expressly provided for in these Conditions.

10.10 Notwithstanding any provision of these Conditions the Seller shall have failure of the Goods to meet Specification where the defect or failure has arisen as a result of improper use, installation or storage of Goods or as a result of any act or omission of the Buyer (including but not limited to requiring Goods to be supplied to Buyer's Specification).

10.11 For the avoidance of doubt nothing herein contained shall be deemed to exclude or restrict the Seller's liability for death or personal injury arising due to the Seller's negligence.

10.12 Where any Claim is made under this clause 10 the Buyer grants the Seller or its agents the right to enter upon the Buyer's premises to inspect the Goods. Unless and until the Seller has been afforded an opportunity to examine the Goods no Claim will be accepted.

10.13 The Seller shall not be liable to the Buyer or be deemed to be in breach of the Contract by reason of any delay in performing or any failure to perform any of the Seller's obligations in relation to the Goods if the delay or failure was due to Buyer's fault or Force Majeure.

10.14 The Buyer shall indemnify the Seller against all Loss suffered by the Seller which arises as a result of the breach by the Buyer of any provision of the Contract or the negligence of the Buyer or any of its employees, agents or representatives.

11. Insolvency of Buyer

11.1 In the event that:

11.1.1 the Buyer makes any voluntary arrangement with its creditors or becomes subject to an administration order or (being an individual or firm) becomes bankrupt or (being a company) goes into liquidation (otherwise than for the purposes of amalgamation or reconstruction);

11.1.2 an encumbrancer takes possession or a receiver or administrator is appointed of any of the property or assets of the Buyer;

11.1.3 the Buyer ceases or threatens to cease to carry on business;

11.1.4 the Seller reasonably apprehends that any of the events mentioned above is about to occur in relation to the Buyer and notifies the Buyer accordingly; or

11.1.5 if the Buyer's jurisdiction is not in England and Wales any events similar to those described in clauses 11.1.1 to 11.1.4 occur then without prejudice to any other right or remedy available to the Seller the Seller shall be entitled to suspend further performance of the Contract for such time as it shall in its absolute discretion see fit or treat the Contract as wrongfully repudiated by the Buyer and forthwith terminate the Contract (either with or without notice to the Buyer) without any liability to the Buyer and if the Goods have been delivered but not paid for the Price shall become immediately due and payable notwithstanding any previous agreement or arrangement to the contrary.

12. Export Terms

12.1 Where the Goods are supplied for export from the United Kingdom the provision of this clause 12 shall (subject to any special terms in the Acknowledgement of Order or otherwise agreed in writing between the Buyer and the Seller) apply notwithstanding any other provision of these Conditions.

12.2 The Buyer shall be responsible for complying with any legislation or regulations governing the importation of the Goods into the country of destination and for the payment of any duties thereon. In particular, if any licence or consent of any government or other authority shall be required for the acquisition, carriage or use of the Goods by the Buyer the Buyer shall obtain the same at its own expense and if necessary produce evidence of the same to the Seller on demand. Failure to do so shall not entitle the Buyer to withhold or delay payment of the Price. Any additional expenses or charges incurred by the Seller resulting from such failure shall be for the Buyer's account.

12.3 Unless otherwise agreed in writing between the Buyer and the Seller the Goods shall be delivered ex-works (Incoterms® 2010) and the Seller shall be under no obligation to give the Buyer notice under section 32(3) of the Sale of Goods Act 1979.

12.4 Notwithstanding clause 5.2 payment of all amounts due to the Seller shall be made by irrevocable letter of credit opened by the Buyer in favour of the Seller and confirmed by a bank in the United Kingdom acceptable to the Seller or if the Seller has agreed in writing on or before acceptance of the Buyer's order to waive this requirement for any other agreed method of payment

13. General

13.1 The Seller shall be entitled to assign or subcontract all or any of its rights and obligations hereunder. The Buyer shall not be entitled to assign, transfer, subcontract or otherwise delegate any of its rights or obligations hereunder.

13.2 Any notice required or permitted to be given by either party to the other under these Conditions shall be given in writing at its registered office or principal place of business or such other address as may be notified for such purpose to the party giving notice.

13.3 No waiver by the Seller of any breach of Contract or any provision herein by the Buyer shall be considered as a waiver of any subsequent breach of the same or any other provision.

13.4 If any provision of these Conditions is held by any competent authority to be invalid or unenforceable in whole or in part the validity of the other provisions of these Conditions and the remainder of the provision in question shall not be affected thereby.

13.5 The parties hereto intend that no term of the Contract may be enforced by any person, entity or body that is not a party to the Contract.

13.6 The Contract shall be governed by the laws of England and Wales and the Buyer and the Seller hereby submit to the exclusive jurisdiction of the English Courts save with respect to enforcement where their jurisdiction shall be non-exclusive.

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## Europe

**HellermannTyton GmbH – Austria**
Rennbahnweg 65
1220 Vienna
Tel.: +43 12 59 99 55-0
Fax: +43 12 59 99 11
Email: office@HellermannTyton.at
www.HellermannTyton.at

**HellermannTyton – Bulgaria**
Email: officeBG@HellermannTyton.at
www.HellermannTyton.at

**HellermannTyton – Czech Republic**
Email: officeCZ@HellermannTyton.at
www.HellermannTyton.cz

**HellermannTyton – Denmark**
Industrivej 44A, 1.
4000 Roskilde
Tel.: +45 702 371 20
Fax: +45 702 371 21
Email: htdk@HellermannTyton.dk
www.HellermannTyton.dk

**HellermannTyton – Finland**
Äyritie 12 B
01510 Vantaa
Tel.: +358 9 8700 450
Fax: +358 9 8700 4520
Email: myynti@HellermannTyton.fi
www.HellermannTyton.fi

**HellermannTyton S.A.S. – France**
2 rue des Hêtres - CS 80543
78197 Trappes Cedex
Tel.: +33 1 30 13 80 00
Fax: +33 1 30 13 80 60
Email: info@HellermannTyton.fr
www.HellermannTyton.fr

**HellermannTyton GmbH – Germany**
Großer Moorweg 45
25436 Tornesch
Tel.: +49 4122 701-0
Fax: +49 4122 701-400
Email: info@HellermannTyton.de
www.HellermannTyton.de

**HellermannTyton KFT – Hungary**
Kisfaludy u. 13
1044 Budapest
Tel.: +36 1 369 4151
Fax: +36 1 369 4151
Email: officeHU@HellermannTyton.at
www.HellermannTyton.hu

**HellermannTyton Ltd – Ireland**
Unit A5 Cherry Orchard
Business Park
Ballyfermot, Dublin 10
Tel.: +353 1 626 8267
Fax: +353 1 626 8022
Email: sales@HellermannTyton.ie
www.HellermannTyton.co.uk

**HellermannTyton S.r.l. – Italy**
Via Visco, 3/5
35010 Limena (PD)
Tel.: +39 049 767 870
Fax: +39 049 767 985
Email: info@HellermannTyton.it
www.HellermannTyton.it

**HellermannTyton B.V. – Belgium/Netherlands**
Vanadiumweg 11-C
3812 PX Amersfoort
Tel.: +31 33 460 06 90
Fax: +31 33 460 06 99
Email (NL): info@HellermannTyton.nl
Email (BE): info@HellermannTyton.be
www.HellermannTyton.nl
www.HellermannTyton.be

**HellermannTyton AS – Norway**
Nils Hansens vei 13
0667 Oslo
Tel.: +47 23 17 47 00
Fax: +47 22 97 09 70
Email: firmapost@HellermannTyton.no
www.HellermannTyton.no

**HellermannTyton Sp. z o.o. – Poland**
Kotunia 111
62-400 Słupca
Tel.: +48 63 2237 111
Fax: +48 63 2237 110
Email: info@HellermannTyton.pl
www.HellermannTyton.pl

**HellermannTyton – Romania**
Email: officeRO@HellermannTyton.at
www.HellermannTyton.at

**OOO HellermannTyton – Russia**
40/4, Pulkovskoe road
BC Technopolis Pulkovo, office A 8081
196158, St. Petersburg
Tel.: +7 812 386 00 09
Fax: +7 812 386 00 08
Email: info@HellermannTyton.ru
www.Hellermanntyton.ru

**HellermannTyton – Slovenia**
Branch Office Ljubljana
Podružnica Ljubljana, Ukmarjeva 2
1000 Ljubljana
Tel.: +386 1 433 70 56
Fax: +386 1 433 63 21
Email: officeSI@HellermannTyton.at
www.HellermannTyton.si

**HellermannTyton España s.l. – Spain / Portugal**
Avda. de la Industria 37 2° 2
28108 Alcobendas, Madrid
Tel.: +34 91 661 2835
Fax: +34 91 661 2368
Email:
HellermannTyton@HellermannTyton.es
www.HellermannTyton.es

**HellermannTyton AB – Sweden**
Isafjordsgatan 5
16440 Kista
Tel.: +46 8 580 890 00
Fax: +46 8 580 348 02
Email: kundsupport@HellermannTyton.se
www.HellermannTyton.se

**HellermannTyton Engineering GmbH – Turkey**
Saray Mah Dr. Adnan Büyükdeniz Cad. No:4
Akkom Office Park 2. Blok Kat: 10
34768 Ümraniye-İstanbul
Tel.: +90 216 687 03 40
Fax: +90 216 250 32 32
Email: info@HellermannTyton.com.tr
www.HellermannTyton.com.tr

**HellermannTyton Ltd – UK**
William Prance Road
Plymouth International Medical
and Technology Park
Plymouth, Devon PL6 5WR
Tel.: +44 1752 701 261
Fax: +44 1752 790 058
Email: info@HellermannTyton.co.uk
www.HellermannTyton.co.uk

**HellermannTyton Ltd – UK**
Sharston Green Business Park
1 Robeson Way
Altrincham Road, Wythenshawe
Manchester M22 4TY
Tel.: +44 161 947 2200
Fax: +44 161 947 2220
Email: sales@HellermannTyton.co.uk
www.HellermannTyton.co.uk

**HellermannTyton Ltd – UK**
Cley Road, Kingswood Lakeside
Cannock, Staffordshire
WS11 8AA
Tel.: +44 1543 728282
Fax: +44 1543 728284
Email: info@Hellermanntyton.co.uk
www.HellermannTyton.co.uk

**HellermannTyton Data Ltd – UK**
Waterside House, Edgar Mobbs Way
Northampton NN5 5JE
Tel.: +44 1604 707 420
Fax: +44 1604 705 454
Email: sales@htdata.co.uk
www.htdata.co.uk

## Middle East

**HellermannTyton – UAE**
Email: info@HellermannTyton.ae
www.HellermannTyton.ae

## North America

**HellermannTyton – Canada**
Tel.: +1 905 726 1221
Fax: +1 905 726 8538
Email: sales@HellermannTyton.ca
www.HellermannTyton.ca

**HellermannTyton – Mexico**
Tel.: +52 333 133 9880
Fax: +52 333 133 9861
Email: info@HellermannTyton.com.mx
www.HellermannTyton.com

**HellermannTyton – USA**
Tel.: +1 414 355 1130
Fax: +1 414 355 7341
Email: corp@htamericas.com
www.HellermannTyton.com

## South America

**HellermannTyton – Argentina**
Tel.: +54 11 4754 5400
Fax: +54 11 4752 0374
Email: ventas@HellermannTyton.com.ar
www.HellermannTyton.com.ar

**HellermannTyton – Brazil**
Tel.: +55 11 4815 9000
Fax: +55 11 4815 9030
Email: vendas@HellermannTyton.com.br
www.HellermannTyton.com.br

## Asia-Pacific

**HellermannTyton – Australia**
Tel.: +61 2 9525 2133
Fax: +61 2 9526 2495
Email: cservice@HellermannTyton.com.au
www.HellermannTyton.com.au

**HellermannTyton – China**
Tel.: +86 510 8528 2536
Fax: +86 510 8528 2731
Email: cservice@HellermannTyton.com.cn
www.HellermannTyton.com.cn

**HellermannTyton – Hong Kong**
Tel.: +852 2831 9090
Fax: +852 2832 9381
Email: cservice@HellermannTyton.com.hk
www.HellermannTyton.com.sg

**HellermannTyton – India**
Tel.: +91 120 413 3384
Email: cservice@HellermannTyton.co.in
www.HellermannTyton.co.in

**HellermannTyton – Japan**
Tel.: +81 3 5790 3111
Fax: +81 3 5790 3112
Email: mkt@hellermanntyton.co.jp
www.HellermannTyton.co.jp

**HellermannTyton – Republic of Korea**
Tel.: +82 32 833 8012
Fax: +82 32 833 8013
Email: cservice@HellermannTyton.co.kr
www.HellermannTyton.co.kr

**HellermannTyton – Philippines**
Tel.: +63 2 752 6551
Fax: +63 2 752 6553
Email: cservice@HellermannTyton.com.ph
www.HellermannTyton.com.ph

**HellermannTyton – Singapore**
Tel.: +65 6 586 1919
Fax: +65 6 752 2527
Email: cservice@HellermannTyton.sg
www.HellermannTyton.com.sg

**HellermannTyton – Thailand**
Tel.: +662 237 6702 / 266 0624
Fax: +662 266 8664
Email: cservice@HellermannTyton.co.th
www.HellermannTyton.com.sg

## Africa

**HellermannTyton – South Africa**
Tel.: +27 11 879 6600
Fax: +27 11 879 6603
Email: jhb.sales@Hellermann.co.za
www.HellermannTyton.co.za

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HellermannTyton
www.HellermannTyton.co.uk

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## Your local contact person


### Head office

Tel: 0808 164 2204
distribution@HellermannTyton.co.uk

### Sales

Tel: 0808 164 2204
info@HellermannTyton.co.uk

### Automotive Sales

Tel: 0808 164 2204
info@HellermannTyton.co.uk



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HellermannTyton

HellermannTyton Ltd
Cley Road, Kingswood Lakeside
Cannock, Staffordshire
WS11 8AA
Tel.: +44 1543 728282
Freephone line: 0808-1642204
Fax: +44 1543 728284
Email: info@HellermannTyton.co.uk
www.HellermannTyton.co.uk

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