RJF

Ethernet Connection System for Harsh Environment – Industrial Ethernet

RJF allows you to use an Ethernet Class D / Cat. 5e connection for 10 BaseT,100 BaseTX or 1000 BaseT networks in harsh environments.
With the patented RJStop®system you can use a standard RJ45 cordset in a **metallic** plug which will protect it from shocks, dust and fluids.
No hazardous on-field cabling and grounding!

Applications
■ Robotics
■ Industrial Process Control
■ CNC Machines
■ Special Machines
■ Oil & Gas
■ Motion Control
■ Data Acquisition and Transmission in Harsh Environment
■ Tele-maintenance

Data Transmission
10 BaseT, 100 BaseTX and 1000 BaseT networks
Cat 5e per TIA/EIA 568B and ClassD per ISO/IEC 11801

Main characteristics
■ Compliant with IEC 60603-7 variante 11
■ **Bayonet coupling** ("Audible & Visual" coupling signal)
■ **Robust metallic shells based on MIL-DTL-26482 H**
■ RJ45 cordset retention in the plug: 100 N in the axis
■ Mating cycles: 500 min
■ Sealed against fluids and dust (IP68)
■ Shock, Vibration and Traction resistant
■ No cabling operation in field and no tools required
■ Mechanical Coding / Polarization (4 positions)
■ Compatible with cable diameter from 6 mm [0.236 in] to 13 mm [0.512 in]
  For smaller diameters, please consult us.

Environmental Protection

|	
■ Sealing:	IP68
■ Salt Spray:	48 h with Nickel plating > 96 h with Black coating < 500 h with Olive drab cadmium
■ Fire Retardant/Low Smoke:	UL94 V0 and NF F 16 101 & 16 102
■ Vibrations:	10 - 500 Hz, 10 g, 3 axes: no discontinuity > 10 nano s
■ Shocks:	IK06: weight of 250 g drop from 40 cm [15.75 in] onto connectors (mated pair)
■ Humidity:	21 days, 43°C, 98% humidity
■ Thermal Shock:	5 cycles at -40°C / +100°C
■ Temperature Range:	-40°C / +85°C

Amphenol

Part Number Code

Series RJField	RJF	2	2	B	03 100BTX
Shell Type					
6: Plug, Plastic Gland					
6M: Plug, Metal Gland					
2: Square Flange Receptacle					
2PE: Square Flange Receptacle, IP68 backshell, Plastic gland					
2PEM: Square Flange Receptacle, IP68 backshell, Metal gland					
7: Jam Nut Receptacle					
7PE: Jam Nut Receptacle, IP68 backshell, Plastic gland					
7PEM: Jam Nut Receptacle, IP68 backshell, Metal gland					
2SA, 7SA: Transversally sealed receptacle (unmated) see page 34					
Back Terminations *(For Receptacles only)*					
1: Female RJ45					
1RA: Right Angle Female RJ45					
2: RJ45 Cordset					
Shell Finishes					
B: Black Coating - ROHS compliant					
N: Nickel *(Note: with this version, the inserts are metallized)* - ROHS compliant					
G: Olive Drab Cadmium *(Note: with this version, the inserts are metallized)*					
Cordset Length *(For Receptacles with "2" Back Termination only)*					
03 100 BTX: 0.3m *[11.81 inches]*					
05 100 BTX: 0.5m *[19.68 inches]*					
10 100 BTX: 1m *[39.37 inches]*					
15 100 BTX: 1.5m *[59.05 inches]*					
00: 8 tinned holes at the rear of the PCB to solder the cable					

Remark: Cabling configuration: 100 BTX = 568B (Ethernet specification)

Examples:
  - Nickel plug: RJF 6 N
  - Black square flange receptacle, female RJ45 back termination: RJF 2 1 B
  - Olive drab cadmium jam nut receptacle, 1.5m [59.05"] 100 BTX cordset termination: RJF 7 2 G 15 100BTX
  - Black in line square flange receptacle, 30cm [11.81"] 100BTX cordset termination: RJF 2PE 2 B 03 100BTX
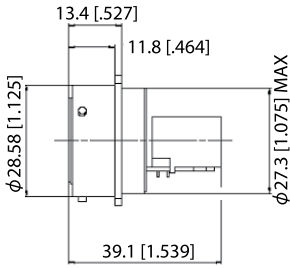 - Nickel jam nut receptacle, solder termination: RJF 72 N 00

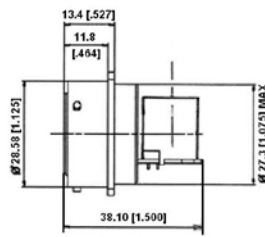## Plug

■ Shell type 6 with Plastic or Metal Gland

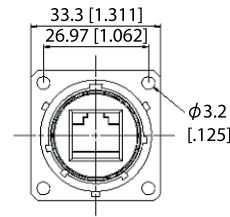57.8 [2.275] Fully Assembled

φ14.8 [.583]

φ34.9 [1.374]
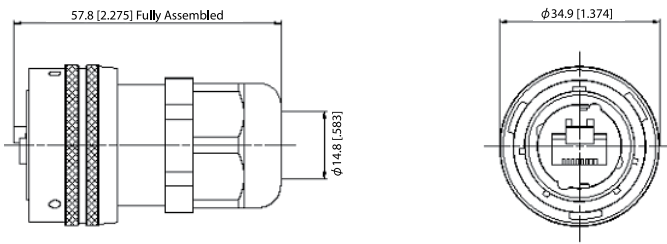
Receptacles

■ Square flange receptacle • 4 mounting holes: Shell type 2

13.4 [.527]
11.8 [.464]
φ28.58 [1.125]
φ27.3 [1.075] MAX
39.1 [1.539]

RJF 21 X (Straight Female RJ45)

13.4 [.527]
11.8 [.464]
φ28.58 [1.125]
φ27.3 [1.075] MAX
38.10 [1.500]

RJF 21 RA X (Right Angle Female RJ45)

33.3 [1.311]
26.97 [1.062]
φ3.2 [.125]

26.97 [1.062]
φ3.5 [.138]
φ31.3 [1.232]
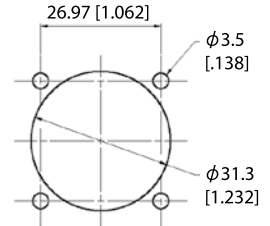
Panel Drilling

■ Jam nut receptacle • Hexagonal Nut mounting: Shell type 7

21.7 [.854]
3.2 [.126]
φ28.58 [1.125]
1.6 [.062] MIN/
3.2 [.126] MAX
39.1 [1.539]

RJF 71 X (Straight Female RJ45)

3.2 [.126]
φ28.58 [1.125]
1.6 [.062] MIN /
3.2 [.126] MAX
38.10 [1.500]

RJF 71 RA X (Right Angle Female RJ45)

41.3[1.626]
φ30.7 $_{-0.3}^{0}$ [1.197-1.209]
φ32$_{0}^{+0.3}$ [1.260-1.272]
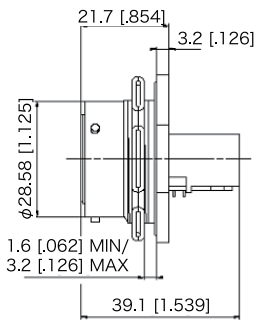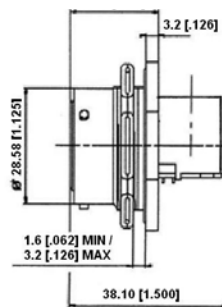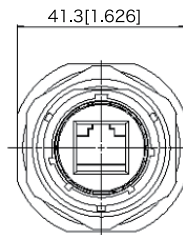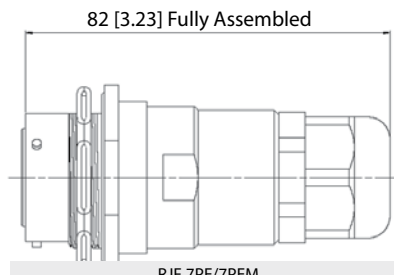
Panel Drilling
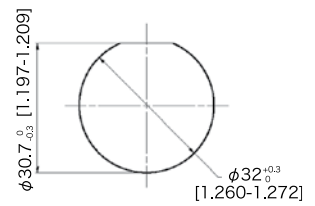
■ Receptacles with IP68 backshell : Shell type 2PE and 7PE with Plastic or Metal Gland

82 [3.23] Fully Assembled

RJF 2PE/2PEM

82 [3.23] Fully Assembled
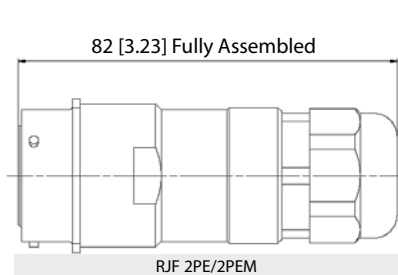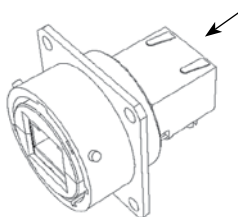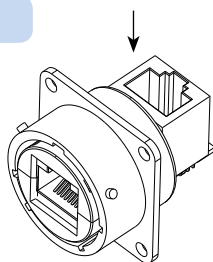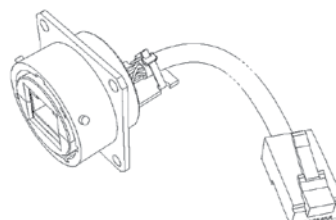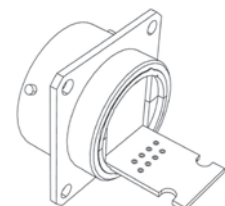
RJF 7PE/7PEM

Back terminations

Type 1: Female RJ45

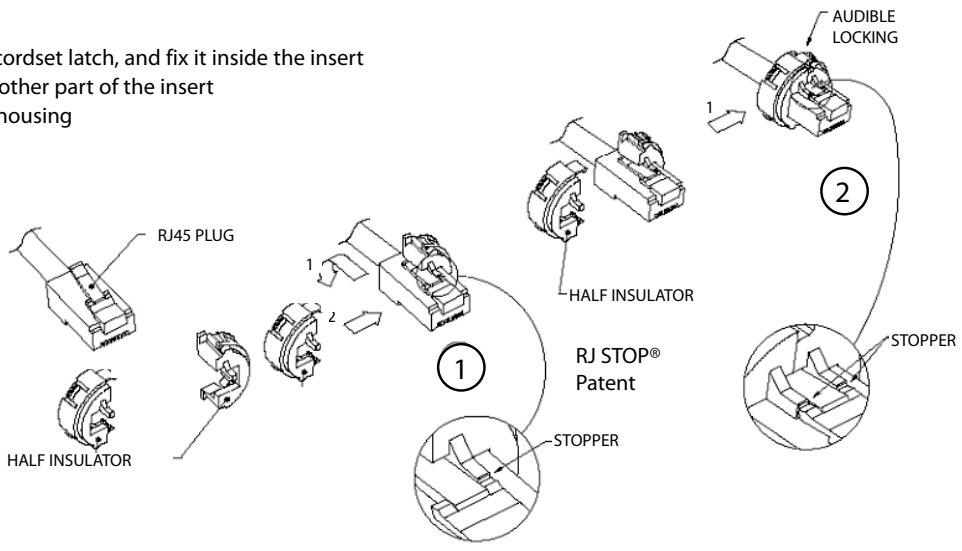Type 1RA: Right Angle Female RJ45

Type 2: RJ45 Cordset

Type 2 - 00: Solder - 8 tinned holes

Notes: Type 2 without RJ45 plug at the end of the cable is also available: consult factory
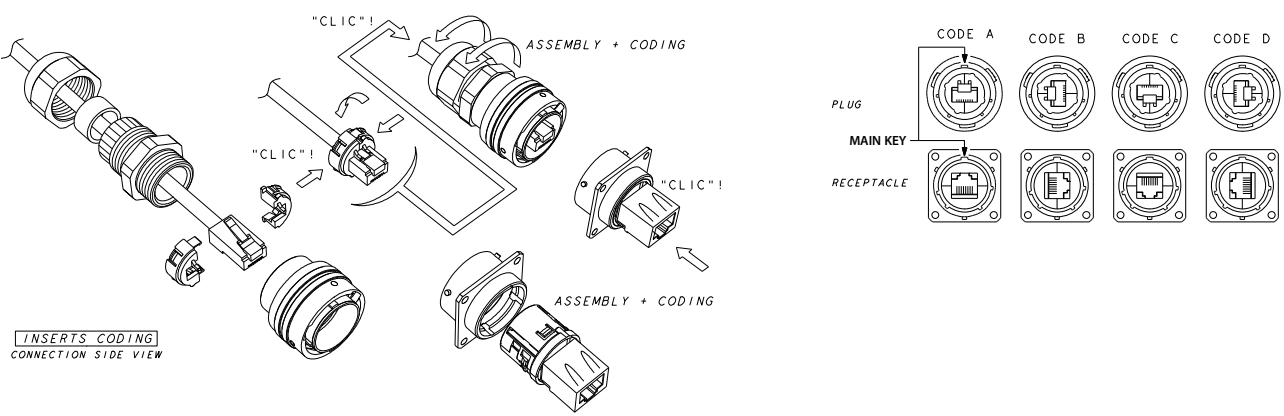
Universal: Can be used with all standard RJ45 Cat.5e cordset brands

Assembly instructions
1. Push down the RJ45 cordset latch, and fix it inside the insert
2. Press in and click the other part of the insert
3. Insert in the metallic housing

AUDIBLE
LOCKING

RJ45 PLUG

HALF INSULATOR

HALF INSULATOR

STOPPER

RJ STOP®
Patent

STOPPER

Easy and Safe: No field cabling tools required

"CLIC"!

ASSEMBLY + CODING

"CLIC"!

"CLIC"!

ASSEMBLY + CODING

INSERTS CODING
CONNECTION SIDE VIEW

CODE A CODE B CODE C CODE D

PLUG

MAIN KEY

RECEPTACLE

Accessories

■ **Metallic cap**

	RJFC	2	B
Connector Type **6:** Plug **2:** Square Flange Receptacle **7:** Jam Nut Receptacle			
Shell Finishes **B:** Black Coating - ROHS compliant **N:** Nickel - ROHS compliant **G:** Olive Drab Cadmium			

Plug cap

Receptacle cap

$\varnothing 4.45 \pm 0.25$

Square Flange
type « 2 »

Plug Cap end
type « 6 »

Jam nut receptacle
type « 7 »
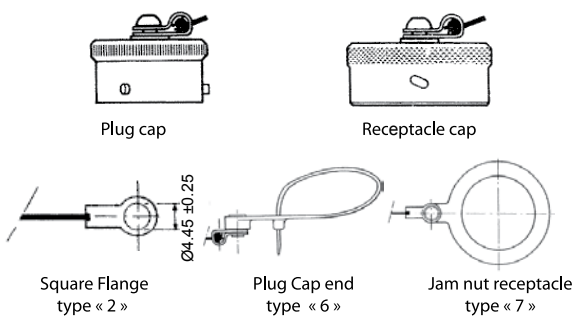
■ **Panel gasket for square flange 2 »thickness:**

0,6 mm – P/N: JE 18

■ **Insert removal tool for receptacle and plug**

P/N = RJF ODE

RJF
Special Receptacles: Cable mount inline & PC tails

Inline Cable Mount Receptacles

Inline receptacles allow you to make cable extensions in the field by using them with rugged RJ Field series plugs.
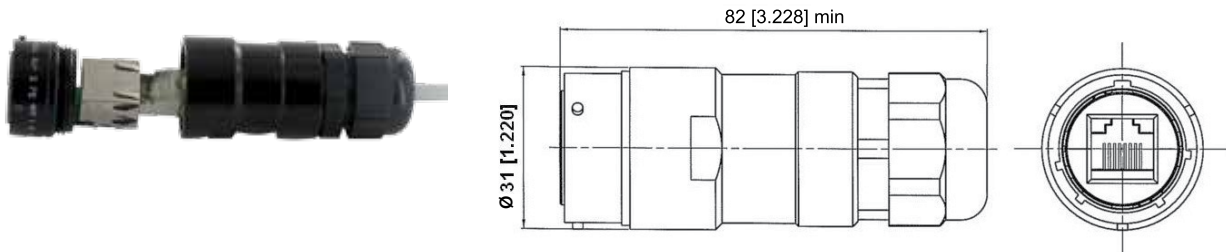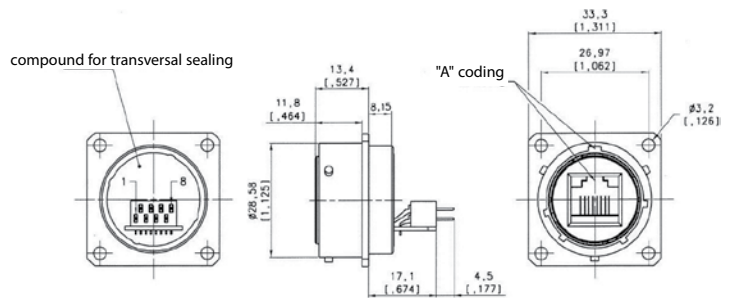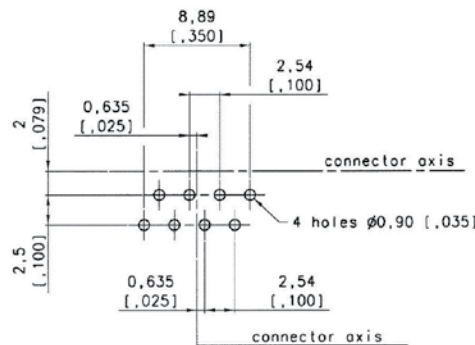
82 [3.228] min

Ø 31 [1.220]

Part number	Plating	Plastic Gland	Metallic Gland
	Black coating	RJF2PEWF1B	RJF2PEMWF1B
	Nickel	RJF2PEWF1N	RJF2PEMWF1N
	Olive Drab Cadmium	RJF2PEWF1G	RJF2PEMWF1G

PC Tails Receptacles

These receptacles can be soldered directly on your PCB. A compound insures a transversal sealing and good performance in high vibration environments. They can be connected with rugged RJField series plugs.

compound for transversal sealing

13,4 [.527]

11,8 [.464]   8,15

Ø28,58 [1.125]

"A" coding

33,3 [1.311]

26,97 [1.062]

Ø3,2 [.126]

17,1 [.674]   4,5 [.177]

PCB LAYOUT – SOLDER FACE VIEW

8,89 [.350]

2,54 [.100]

0,635 [.025]

2 [.079]

connector axis

4 holes Ø0,90 [.035]

2,5 [.100]

0,635 [.025]   2,54 [.100]

connector axis

Panel Drilling

Ø3,5 [.138]

Ø31,3 [1.232]

26,97 [1.062]
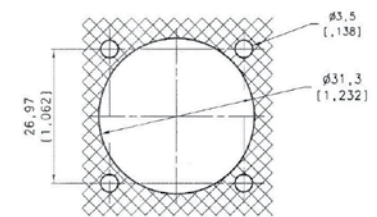
Part number	Plating available	Part number
	Black coating	RJF 2S X 5B
	Nickel	RJF 2S X 5N
	Olive drab cadmium	RJF 2S X 5G

X to be replaced by the letter of the coding position you need (A, B, C, or D) ▷

CODE A   CODE B   CODE C   CODE D

PLUG

MAIN KEY
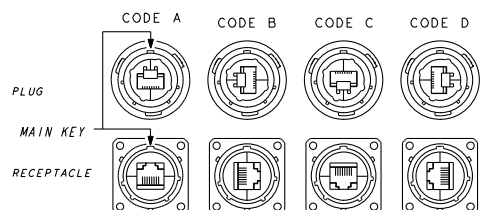
RECEPTACLE

RJF
Receptacles - Plugs with 360° EMI backshell

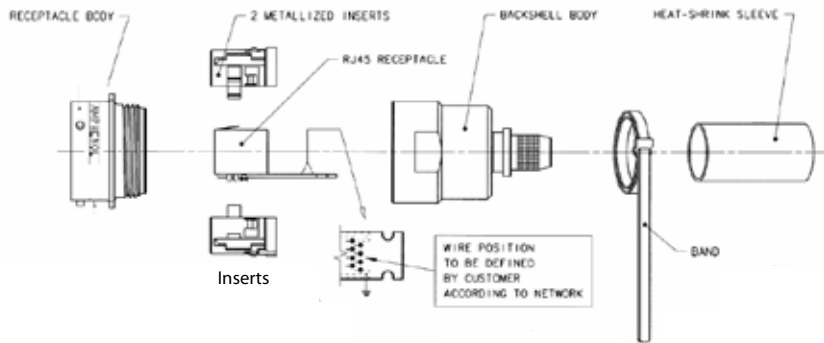RJF series receptacles and plugs with EMI backshells provide a solution with 360° shielding: same protection than the one proposed by standard MIL-DTL-26482H connectors. With those solutions we recommend using our reinforced and double shielded cat5E cable, see page 39.

Square Flange Receptacle *Straight Backshell*

51.2 [2.017]
33.2 [1.309]

RJF SFTP Ø7 CABLE

Panel Drilling

Ø3.5 [.138]
Ø31.3 [1.232]
26.97 [1.062]
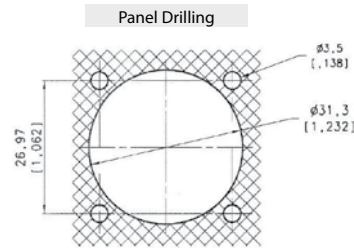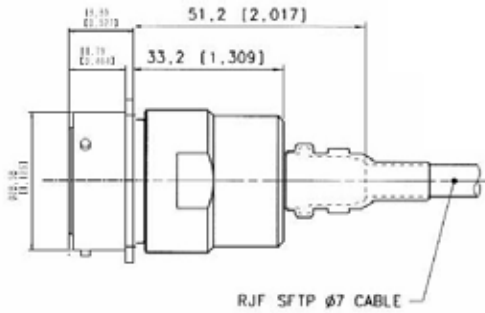
Part Number	Plating	Part number
	Nickel	Kit30439NI
	Olive Drab Cadmium	Kit30439

Kit30439 & Kit30439NI include:

RECEPTACLE BODY — 2 METALLIZED INSERTS — RJ45 RECEPTACLE — BACKSHELL BODY — HEAT-SHRINK SLEEVE

Inserts

WIRE POSITION TO BE DEFINED BY CUSTOMER ACCORDING TO NETWORK

BAND

Plug *Straight Backshell*

52 [2.060]
Ø26.3 [1.035]
Ø34.9 [1.374]

AMPHENOL

RJF SFTP Ø7 CABLE
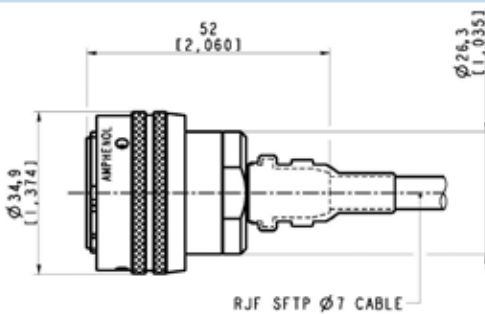
Part number	Plating	Part number
	Nickel	Kit30394NI
	Olive Drab Cadmium	Kit30394

Kit30394 & Kit30394NI include:

Receptacle Body | Inserts | Backshell Body | Band | Heat Shrink Sleeve

Amphenol

RJF

Special plug for big insulation wire up to 1.6 mm [0.062 in]

Rugged plug dedicated to cable with insulation wire from 1,1 to 1,6 mm [from 0.043 in to 0.062 in]

Remark:
- Solution compatible with any RJF receptacle
- For cables which are not compatible with standard RJ45 plug.

Applications
- Robotics
- Industrial Process Control
- CNC Machines
- Special Machines
- Oil & Gas
- Motion Control
- Data Acquisition and Transmission in Harsh Environment
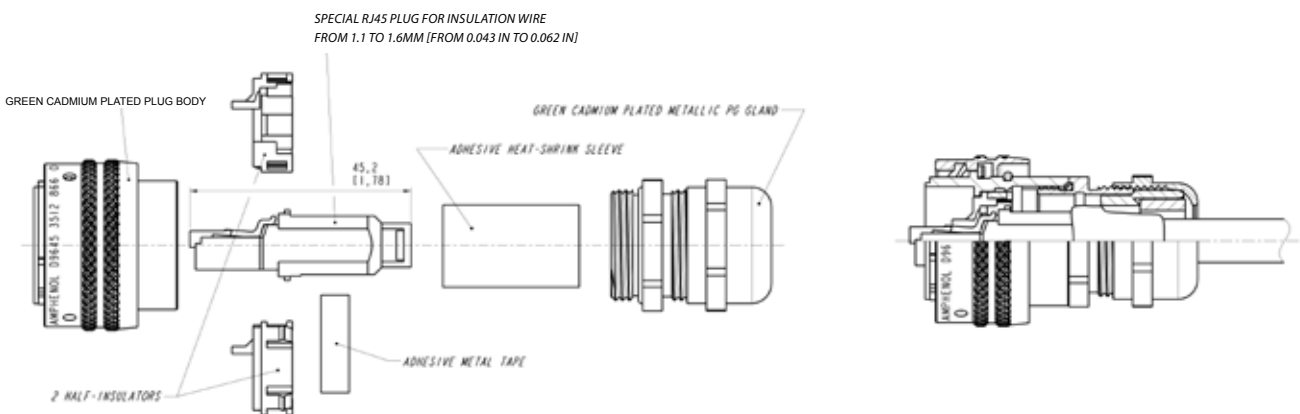- Tele-maintenance

Main characteristics
- **Bayonet coupling** ("Audible & Visual" coupling signal)
- **Robust metallic shells based on MIL-DTL-26482 H**
- RJ45 cordset retention in the plug: 100 N in the axis
- Mating cycles: 500 min
- Sealed against fluids and dust (IP68)
- Shock, Vibration and Traction resistant
- Mechanical Coding / Polarization (4 positions)
- Compatible with cable diameter from 6 mm [0.216 in] to 13 mm [0.512 in], for smaller diameters, please consult us

Environmental Protection
- Sealing: IP68
- Salt Spray: 48 h with Nickel plating
                              > 96 h with black coating
                              > 500 h with Oliv Drab Cadmium
- Fire Retardant/Low Smoke: UL94 V0 and NF F 16 101 & 16 102
- Vibrations: 10 – 500 Hz, 10 g, 3 axes: no discontinuity >10 nano s.
- Shocks: IK06: weight of 250 g drop from 40 cm
                              [15.75 in] onto connectors (mated pair)
- Humidity: 21 days, 43°C, 98% humidity
- Thermal Shock: 5 cycles at - 40°C / +100°C
- Temperature Range: - 40°C / +85°C

Data Transmission
10 BaseT, 100 BaseTX and 1000 BaseT networks
Cat 5e per TIA/EIA 568B and ClassD per ISO/IEC 11801

SPECIAL RJ45 PLUG FOR INSULATION WIRE
FROM 1.1 TO 1.6MM [FROM 0.043 IN TO 0.062 IN]

GREEN CADMIUM PLATED PLUG BODY

GREEN CADMIUM PLATED METALLIC PG GLAND

ADHESIVE HEAT-SHRINK SLEEVE

ADHESIVE METAL TAPE

2 HALF-INSULATORS

Part number	Plating	Part number
	Nickel	**Kit39992NI**
	Olive Drab Cadmium	**Kit39992G**

Amphenol

SELF CLOSING CAP

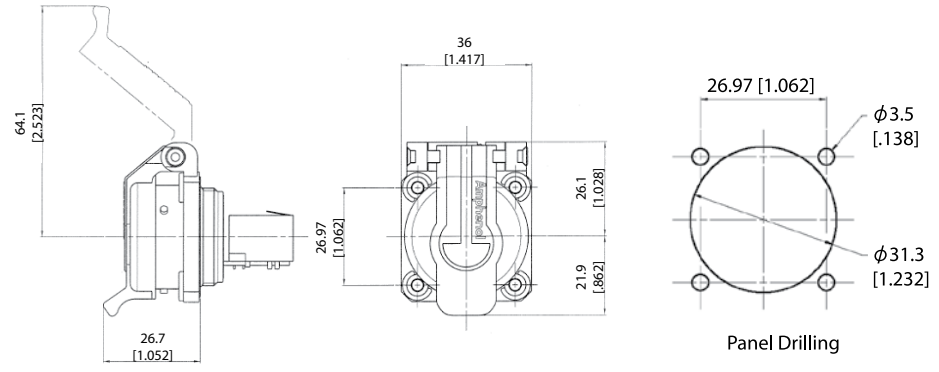**For RJ Field Receptacles**

Sealing level IP54
(Splash and dust Proof)

This kit includes a receptacle and a Self Closing Cap which protects the RJ Field square flange receptacles (MIL-C-26482 type).
This cap offers a protection against dust and water projections.
A spring automatically closes the upper part of the cap when either the RJfield plug, USB or IEEE1394 cordset, or USB key are removed from the receptacle.

RJF 21 X SCC

RJ45 version

64.1 [2.523]

26.7 [1.052]

36 [1.417]

26.97 [1.062]

26.1 [1.028]

21.9 [.862]

26.97 [1.062]

26.97 [1.062]

φ3.5 [.138]

φ31.3 [1.232]

Panel Drilling

Part number	Plating	Metallized insert (EMI)	Part number
	Black coating	No	**RJF 21B SCC**
	Nickel	Yes	**RJF 21N SCC**
	Olive drab cadmium	Yes	**RJF 21G SCC**

Remark: could be used with our RJF series plug: part number RJF6xx *(see page 17)*.

■ **Note**: Panel gasket with any of these receptacles: **JE18**

USBF 21 x SCC, USBBF 21 x SCC, & IEEE1394

USB-A version
(see page 83)

USB-B version
(see page 92)

IEEE1394 version
(see page 117)

Amphenol