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!

Main characteristics
- Compliant with IEC 60603-7 variante 11
- **Bayonet coupling** ("Audible & Visual" coupling signal)
- **Robust metallic shells based on MIL-DTL-26482 H - Shell size 18**
- 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: 10-500Hz, 10g, 3 axes: no discontinuity >10 nano s
- Shocks: IK06 ▶ weight of 250 g drop from 40cm [15.75 in] onto connectors (mated pair)
- Humidity: 21 days, 43°C, 98% humidity
- Thermal shock: 5 cycles at -40°C / +100°C
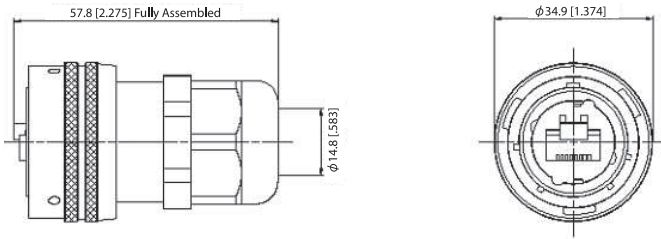- Temperature range: -40°C / +85°C
- Storage temperature:

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

Amphenol

Part number code

	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
Nota: also available a transversally sealed receptacle (unmated) ▶ _see page 22_

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)_
BZC: aluminium shell - black zinc cobalt plating
ZC: aluminium shell - green zinc cobalt plating - _ROHS compliant_

Cordset length (_for receptacles with "2" back termination only) - Other lengths are available on demand_
03 100 BTX: 0.3m _[11.81 inches]_   **00:** 8 tinned holes at the rear of the PCB to solder the cable
05 100 BTX: 0.5m _[19.68 inches]_   **OPEN:** open cable - with no plug at the end
10 100 BTX: 1m _[39.37 inches]_
15 100 BTX: 1.5m _[59.05 inches]_

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
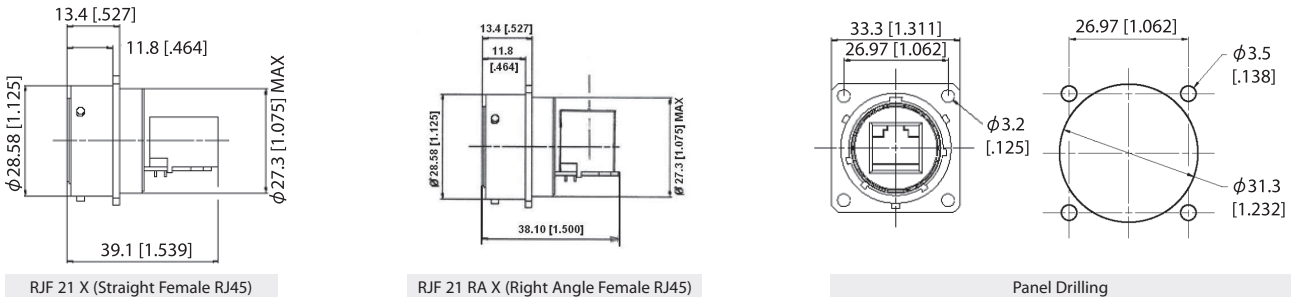- Nickel jam nut receptacle, solder termination: RJF 72 N 00

Plug

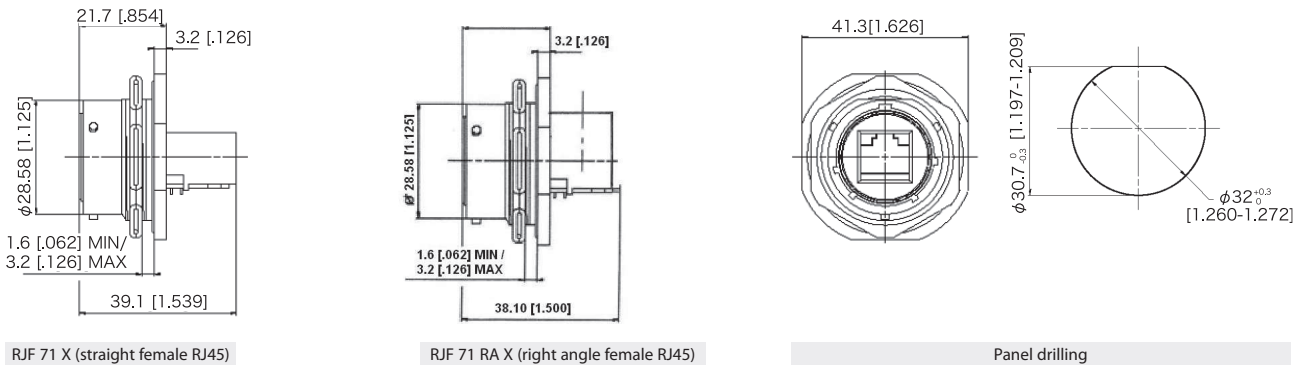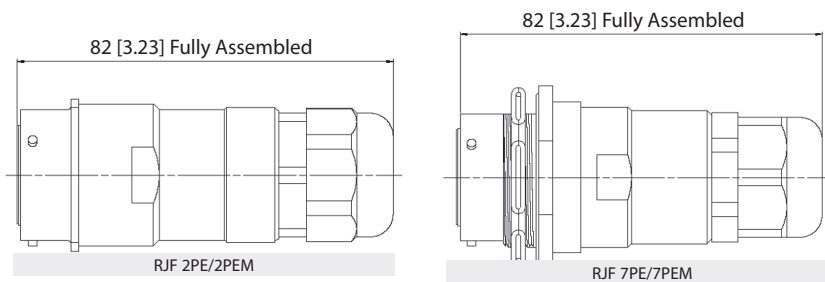■ Shell type 6 with plastic or metal gland

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]

Ø 28.58 [1.125]

Ø 27.3 [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]

Ø 28.58 [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]

$\phi 30.7_{-0.3}^{0}$ [1.197-1.209]

$\phi 32_{0}^{+0.3}$ [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**	Type **1RA**	Type **2**	Type **OPEN**	Type **2 - 00**
Female RJ45	*Right angle female RJ45*	*RJ45 cordset*	*No plug at the end*	*Solder - 8 tinned holes*

Amphenol
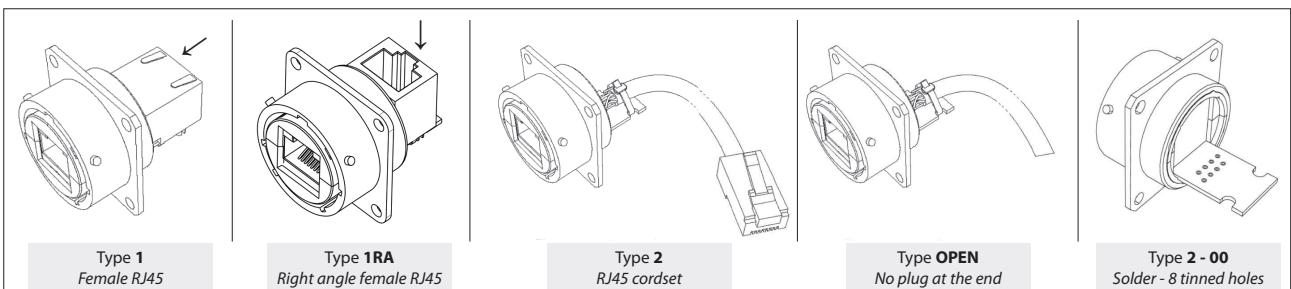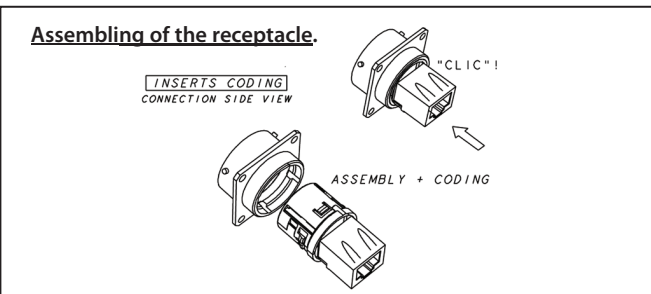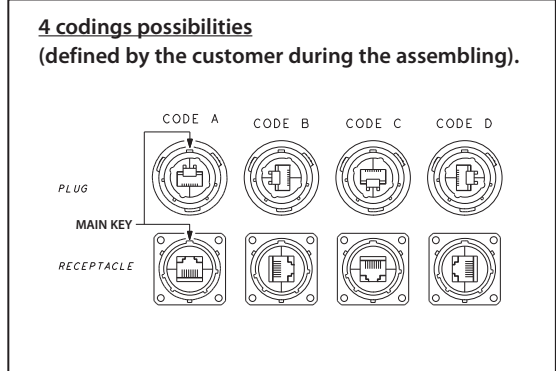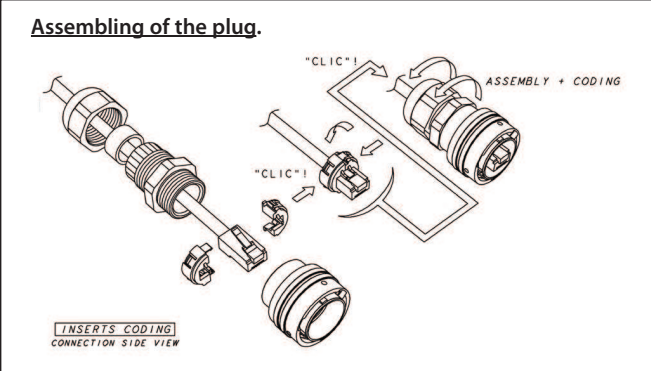
Universal: can be used with all standard RJ45 Cat.5e cordset brands.

Assembly instructions of the RJ Stop
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

1

2

RJ45 PLUG

1
2

HALF INSULATOR

RJ STOP®
Patent

STOPPER

1

HALF INSULATOR

STOPPER
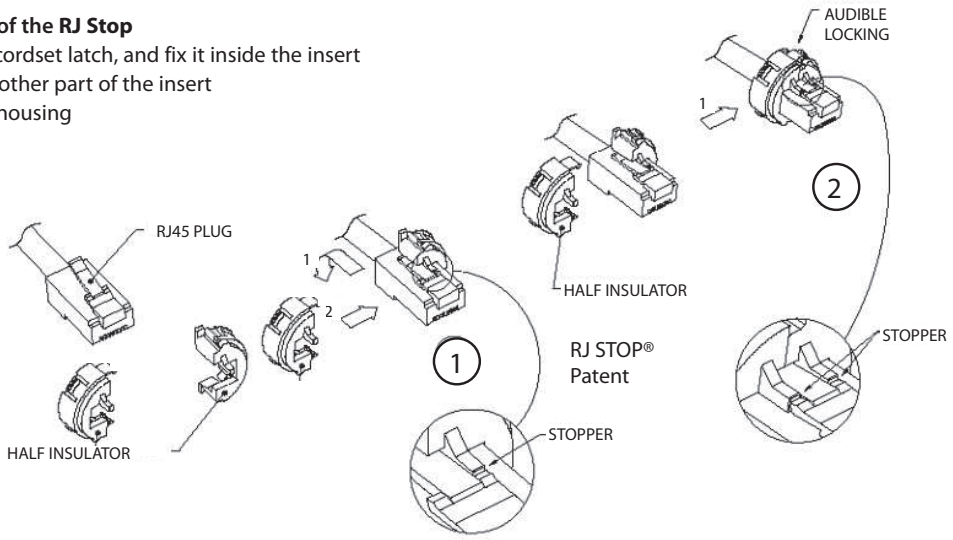
Easy and safe - No field cabling tools required for cabling

Assembling of the plug.

"CLIC"!

ASSEMBLY + CODING

"CLIC"!

INSERTS CODING
CONNECTION SIDE VIEW

4 codings possibilities
(defined by the customer during the assembling).

| CODE A | CODE B | CODE C | CODE D |

PLUG

MAIN KEY

RECEPTACLE

Assembling of the receptacle.

INSERTS CODING
CONNECTION SIDE VIEW

"CLIC"!

ASSEMBLY + CODING

IMPORTANT NOTE: to remove the insert, use the
■ **Insert removal tool for receptacle and plug**
P/N: **RJF ODE**

Accessories

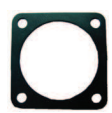■ **Metallic cap**

	RJFC	2	G
Connector type			
6: plug			
2: square Flange Receptacle			
7: jam Nut Receptacle			
Shell material & finish			
B: black coating - *ROHS compliant*			
N: aluminium shell - nickel plating - *ROHS compliant*			
G: aluminium shell - olive drab cadmium plating			

Plug cap

Receptacle cap

Ø 4.45 ±0.25

Square Flange
type « 2 »

Plug Cap end
type « 6 »

Jam nut receptacle
type « 7 »
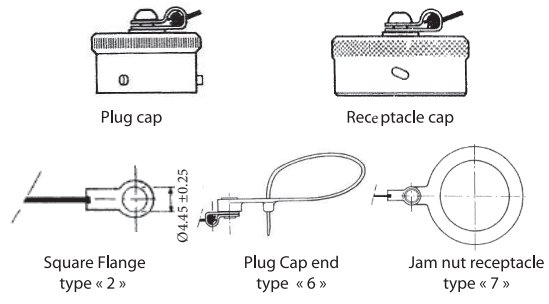
■ **Panel gasket for square flange 2 »thickness - 0,6 mm**
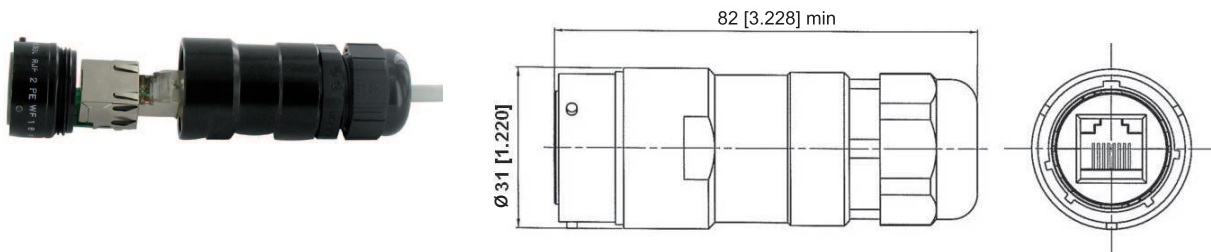P/N: **JE 18**

RJF
Special receptacles: cable mount inline & PC tails
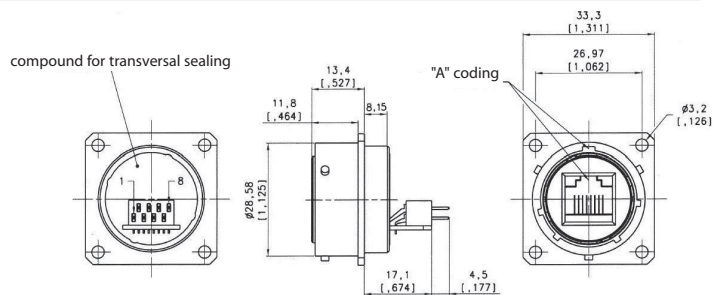
Amphenol

Inline cable mount receptacles

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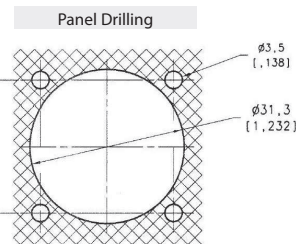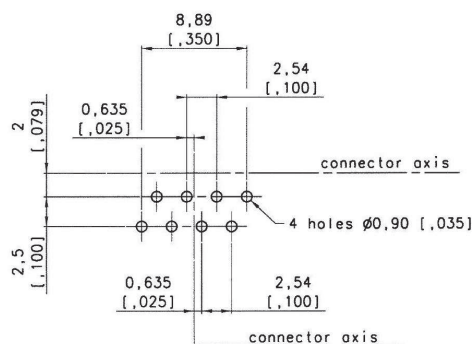
82 [3.228] min

Ø 31 [1.220]

Part number	Plating	Plastic gland	Metallic gland
	Black coating - *ROHS compliant*	RJF2PEWF1B	RJF2PEMWF1B
	Nickel - *ROHS compliant*	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]

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

"A" coding

33,3 [1,311]

26,97 [1,062]

Ø3,2 [,126]

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	Part number
	Black coating - *ROHS compliant*	RJF 2S **X** 5B
	Nickel - *ROHS compliant*	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
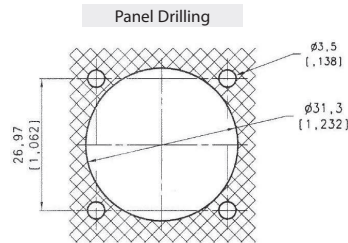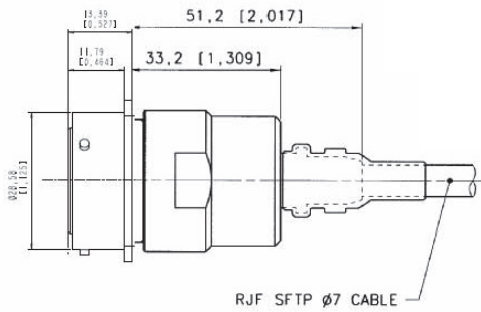
PLUG

MAIN KEY
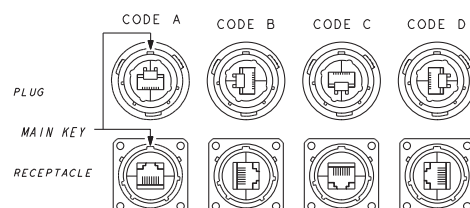
RECEPTACLE

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, Cat6, or Cat6A cable ▶ *see pages 41-42-43*.

Square flange receptacle - *Straight backshell*

Panel Drilling

Part number	Plating	Part number
	Nickel - *ROHS compliant*	**Kit30439NI**
	Olive drab cadmium	**Kit30439**

Kit30439 & Kit30439NI include:

Inserts

WIRE POSITION TO BE DEFINED BY CUSTOMER ACCORDING TO NETWORK
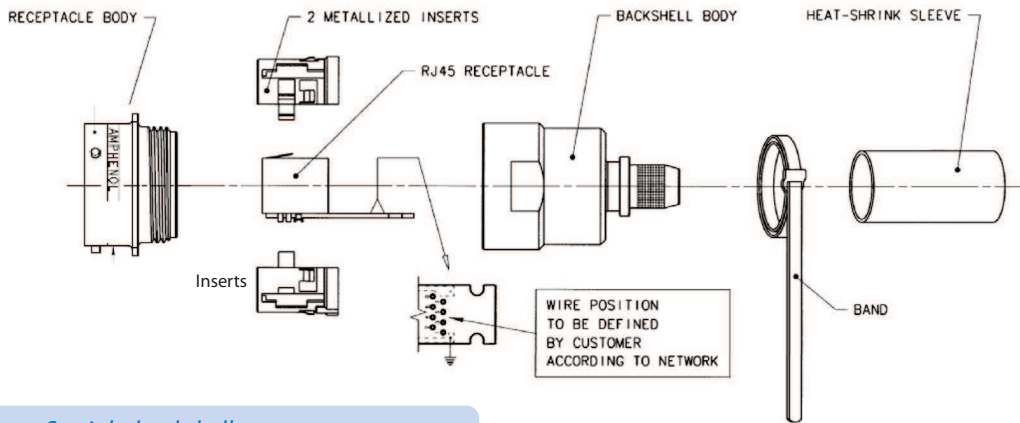
Plug - *Straight backshell*
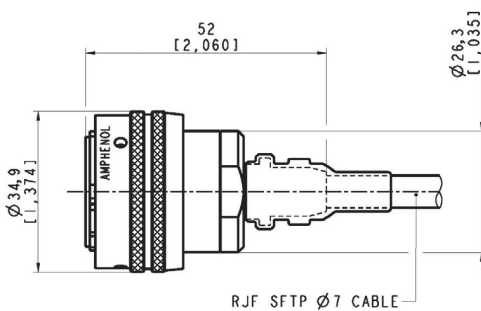
Part number	Plating	Part number
	Nickel - *ROHS compliant*	**Kit30394NI**
	Olive drab cadmium	**Kit30394**

Kit30394 & Kit30394NI include:

Plug body | Inserts | Backshell body | Band | Heat shrink sleeve

Amphenol

RJF
Environmentaly sealed receptacles, transversally sealed receptacles

In some applications, a transversal sealing for the receptacle is a « must ». This will prevent fluids and dust from going through the receptacle when plug or cap are not mated to the receptacle.

The sealed solution (version "S") has a compound at the rear of the receptacle as shown on the examples below. This feature is available both in RJF and RJF TV shells (please consult the relevant data sheet for product details and accessories).

In addition, the Sealed RJF TV has been successfully tested in very high vibration corresponding to airplane applications.

Applications
- Outdoor equipment
- Airplanes equipment
- Tactical radios
- Shelters
- Rugged computers
- Data acquisition and transmission in harsh environments
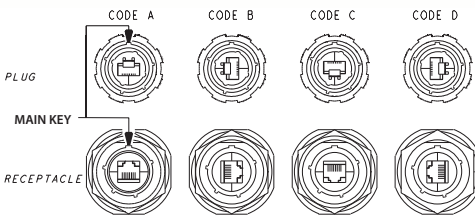
Data transmission
10 BaseT, 100 BaseTX and 1000 BaseT networks
Cat 5e per TIA/EIA 568B and ClassD per ISO/IEC 11801

Main characteristics
- Same as the RJF and RJF TV series.
- A complete IP68 sealing of the receptacle (even with no plug or no protective cap mated) is added.
- Outside dimensions are the same as the standard RJF and RJF TV series.
- Vibrations: the compounded versions of the RJF TV have been tested in vibration following the NAS 1599 Aeronautic specification (Ambient temperature):
  5 - 3000 Hz, 20g, 2,5 mm [.1 inch] double amplitude, 3 axes, 12 hours
  Note: this specification exceeds MIL-C-26500 requirements.

IMPORTANT NOTE
Due to the compound, the coding of the connector must be done in the factory : use the codes A, B, C or D in the part number: **see below**.

CODE A   CODE B   CODE C   CODE D

PLUG

MAIN KEY

RECEPTACLE

Example :
RJFTV 2S **A**2 G 15 100BTX

Part number code

		RJF	7S	A	2	G	03 100BTX
Series **RJF:** MIL-DTL-26482 H bayonet		RJF					
Shell type **2S:** sealed square flange receptacle **7S:** sealed jam nut receptacle			7S				
Coding **A,B,C,D**				A			
Back terminations *(for receptacles only)* **1:** female RJ45 **1RA:** right angle female RJ45 **2:** RJ45 Cordset					2		
Shell material & finish **B:** aluminium shell - black coating - *ROHS compliant* **N:** aluminium shell - nickel plating - *ROHS compliant* **G:** aluminium shell - olive drab cadmium plating *Nota: for nickel and olive drab cadmium plating, receptacle inserts are metallized.*						G	
Cordset length *(For Receptacles with "2" Back Termination only) - Other lengths are available on demand* **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] **OPEN**: open cable - with no plug at the end							03 100BTX
Remark: cabling configuration: 100 BTX = 568B (Ethernet specification)							

Examples:
- bayonet, sealed jam nut receptacle, A coding, with female RJ45 back termination, olive drab cadmium plating: ***RJF 7SA 1 G***
- bayonet, sealed square flange receptacle, A coding, with female RJ45 back termination, black plating: ***RJF 2SA 1 B***
- bayonet, sealed jam nut receptacle, A coding, 1.5m [59.05"] 100 BTX cordset, olive drab cadmium plating: ***RJF 7SA 2 G15 100BTX***

Amphenol

RJF
Hermetic receptacles

In some applications, a transversal hermiticity for the receptacle is a « must ». This will prevent gas from going through the receptacle when plug or cap are not mated to the receptacle.

The hermetic solution (version "H") has a compound at the rear of the receptacle as shown on the examples below.

This feature is available both in RJF and RJF TV shells (please consult the relevant data sheet for product details and accessories).

Helium leakage is less than 1.10^{-6} cm^3 per second [0.1 micron cubic ft per hour] at one bar [15 psi] pressure differential.

Applications
- Outdoor equipment
- Airplanes equipment
- Tactical radios
- Shelters
- Rugged computers
- Data acquisition and transmission in harsh environments

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

Main characteristics
- Same as the RJF and RJF TV series.
- A complete IP68 sealing of the receptacle (even with no plug or no protective cap mated) is added.
- Outside dimensions are the same as the standard RJF and RJF TV series.
- Vibrations: the compounded versions of the RJF TV have been tested in vibration following the NAS 1599 Aeronautic specification (Ambient temperature):
  5 - 3000 Hz, 20g, 2,5 mm [.1 inch] double amplitude, 3 axes, 12 hours
  Note: this specification exceeds MIL-C-26500 requirements.

IMPORTANT NOTE
Due to the compound, the coding of the connector must be done in the factory: use the codes A, B, C or D in the part number: **see below**.

PLUG

MAIN KEY

RECEPTACLE

Example :
RJFTV 2H **A**2 N 15 100BTX

Part number code

Series	RJF	7H	A	2	G	03 100BTX
RJF: MIL-DTL-26482 H bayonet						
Shell type **2H:** transversally sealed and hermetic square flange receptacle **7H:** transversally sealed and hermetic jam nut receptacle						
Coding **A,B,C,D**						
Back terminations (for receptacles only) **1:** female RJ45 **1RA:** right angle female RJ45 **2:** RJ45 Cordset						
Shell material & finish **B:** aluminium shell - black coating - *ROHS compliant* **N:** aluminium shell - nickel plating - *ROHS compliant* **G:** aluminium shell - olive drab cadmium plating *Nota: for nickel and olive drab cadmium plating, receptacle inserts are metallized.*						
Cordset length (for receptacles with "2" back termination only) - Other lengths are available on demand **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] **OPEN:** open cable - with no plug at the end						
Remark: cabling configuration: 100 BTX = 568B (Ethernet specification)						

Examples: - bayonet, sealed jam nut receptacle, A coding, with female RJ45 Back termination, olive drab cadmium plating: **RJF 7HA 1 G**
        - bayonet, sealed square flange receptacle, A coding, with female RJ45 back termination, black plating: **RJF 2HA 1 B**
        - bayonet, sealed jam nut receptacle, A coding, 1.5m [59.05"] 100 BTX cordset, olive drab cadmium plating : **RJF 7HA 2 G15 100BTX**

Amphenol

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

NEW

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
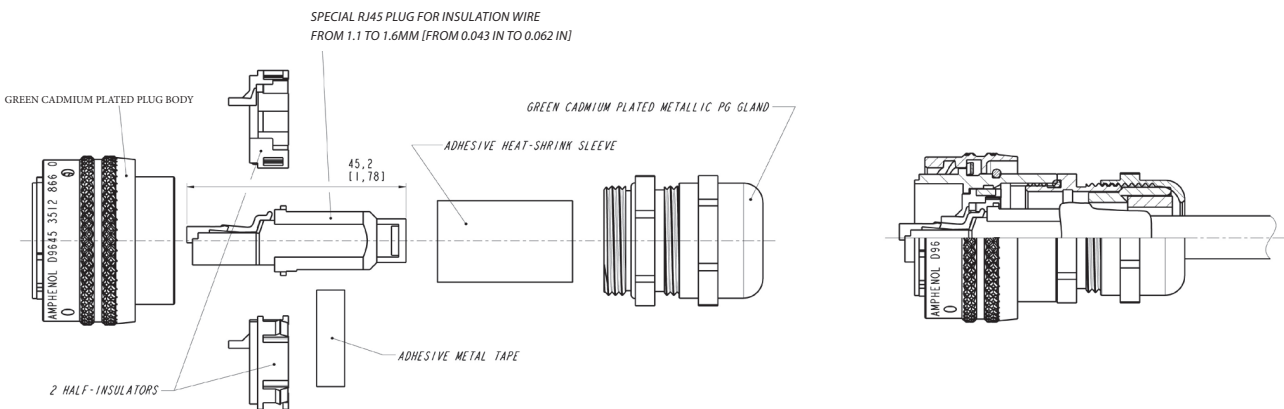- Tele-maintenance

Main characteristics
- **Bayonet coupling** ("Audible & Visual" coupling signal)
- **Robust metallic shells based on MIL-DTL-26482 H - Shell size 18**
- 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

45,2
[1,78]

AMPHENOL D9645 3512 866 0

ADHESIVE METAL TAPE

2 HALF-INSULATORS

AMPHENOL D96

Part number	Plating	Part number
	Nickel - *ROHS compliant*	**Kit39992NI**
	Olive drab cadmium	**Kit39992G**

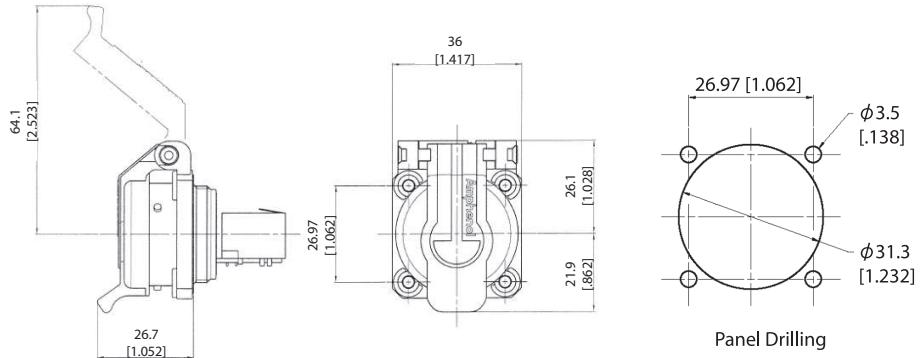Amphenol

RJ Field Receptacle with Self Closing Cap

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.

Sealing level IP54
(Splash and dust Proof)

RJF 21 X SCC

RJ45 version

64.1 [2.523]
26.7 [1.052]
26.97 [1.062]
36 [1.417]
26.1 [1.028]
21.9 [.862]
26.97 [1.062]

26.97 [1.062]
φ 3.5 [.138]
φ 31.3 [1.232]

Panel Drilling

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

* The part number includes the receptacle + the self closing cap

Remarks:
• the back termination is female RJ45
• it 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

USB2.0 & 3.0 - A version	**USB-B version**	**IEEE1394 version**
(see pages 94 & 107)	*(see page 118)*	*(see page 143)*

Amphenol

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Amphenol](#):

RJF21GSCC RJF2PEM2N00 RJF2SA5G RJF7HA1B RJF2PE2N00 RJF71RAN RJF2SB1N RJF2SD5G
RJF2SC5N RJF2PE2B00 RJF72N10100BTX RJF7HC1G RJF7PE2B05100BTX RJF7PE2G05100BTX RJF2SB1G
RJF2SC1G RJF2SD1G RJF7SC1G RJF7SB1G RJF2PE2G15100BTX RJF7SB1RAN RJF7SC1B RJF7SC1N
RJF7SD1G RJF7HA1N RJF7HC1B