

# RJF TV

Ethernet Connection System for Harsh Environment



## Applications

- Data Acquisition and Transmission in harsh environment
- Railways
- Radars
- Shelters
- Battlefield Communication
- Systems
- Navy

## Data Transmission

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

RJFTV 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

- Sealed against fluids and dusts (IP68)
- Shock, Vibration and Traction resistant
- No cabling operation in field and no tools required
- Mechanical Coding / Polarization (4 positions)
- Improved EMI protection
- **Tri Start Thread coupling mechanism (MIL-DTL-38999 series III type) with anti-decoupling device**
- **Robust metallic shells**
- RJ45 cordset retention in the plug: 100 N in the axis
- Mating cycles: 500 min
- Compatible with cable diameter from 5,5 mm [0.216 in] to 13 mm [0.512 in]

## Environmental Protection

- Sealing: IP68
- Salt Spray: 48 h with Aluminium shell - Nickel plating  
> 500 h with Aluminium shell - Olive Drab Cadmium plating  
1000h with Marine bronze shell
- 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.
- Compounded versions tested per NAS 1599 (5-3000 Hz, 20g, 12h)
- 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

## Part Number Code

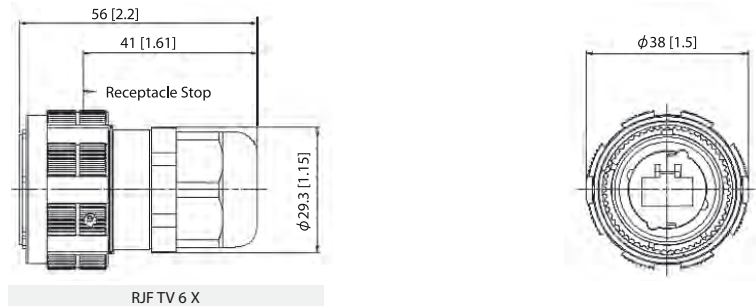
Series	RJF TV	2	2	G	03 100 BTX
RJ Field TV					
Shell Type					
6:	Plug with Plastic gland				
6M:	Plug with Metal gland				
2:	Square Flange Receptacle				
2PE:	Square Flange Receptacle, IP68 backshell, Plastic gland				
2PEM:	Square Flange Receptacle, IP68 backshell, Metal gland				
7:	Jam Nut Receptacle				
7PE:	Jam Nut Receptacle, IP68 backshell, Plastic gland				
7PEM:	Jam Nut Receptacle, IP68 backshell, Metal gland				
2SA, 7SA:		Transversally sealed receptacle (unmated) see page 22			
Back Terminations (Receptacles only)					
1:	Female RJ45				
1RA:	Right Angle Female RJ45				
2:	RJ45 Cordset				
Shells material & Finish					
N:	Aluminium shell - nickel plating (receptacle inserts are metallized) - ROHS compliant				
G:	Aluminium shell - olive drab cadmium plating (receptacle inserts are metallized)				
BZ:	Marine bronze shell (receptacle inserts are metallized) - ROHS compliant				
Cordset Length (type 2 back termination only)					
03 100 BTX:					
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:
- Olive Drab Cadmium plug with plastic gland: RJF TV 6G
  - Olive Drab Cadmium Jam Nut Receptacle, female RJ45 back termination: RJF TV 71G
  - Nickel Jam Nut Receptacle, 1,5 m 100 BTX cordset back termination: RJF TV 72N 15 100BTX
  - Olive Drab Cadmium in line Square Flange Recept., 0,3 m 100 BTX cordset back termination: RJF TV 2PE 2 G 03 100BTX
  - Nickel Jam Nut Receptacle Solder termination 8 tinned holes: RJF TV 22 N 00

## Plug:

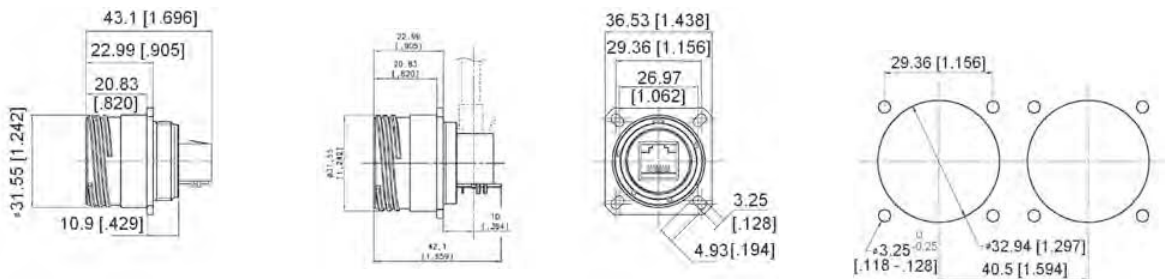
- Shell type 6 with Plastic or Metal Gland



RJF TV 6 X

## Receptacles:

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

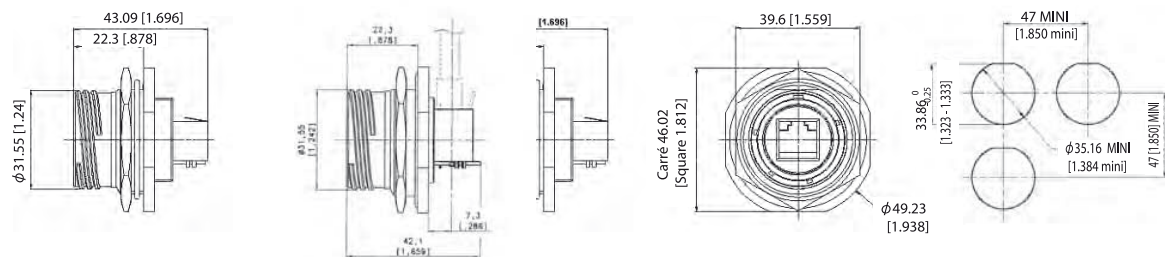


RJFTV 21 X (Straight Female RJ45)

RJFTV 21 RA X (Right Angle Female RJ45)

Panel Drilling

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

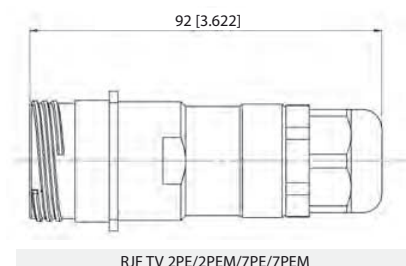


RJFTV 71 X (Straight Female RJ45)

RJFTV 71 RA X (Right Angle Female RJ45)

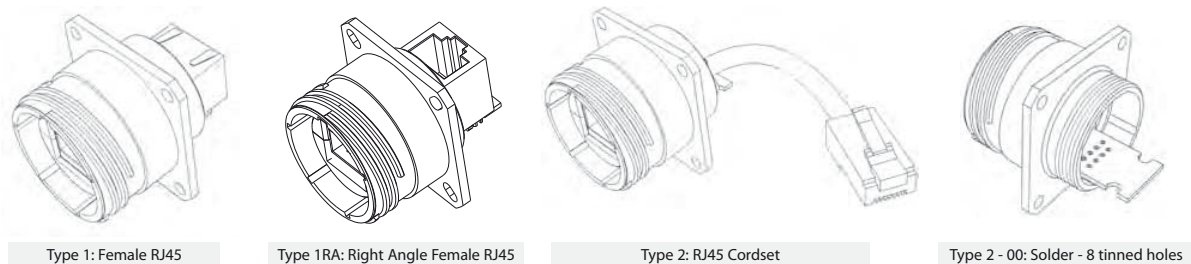
Panel Drilling

- Receptacles with IP68 backshell: • Shell type 2PE and 7PE with Plastic or Metal Gland



RJF TV 2PE/2PEM/7PE/7PEM

## Back Terminations

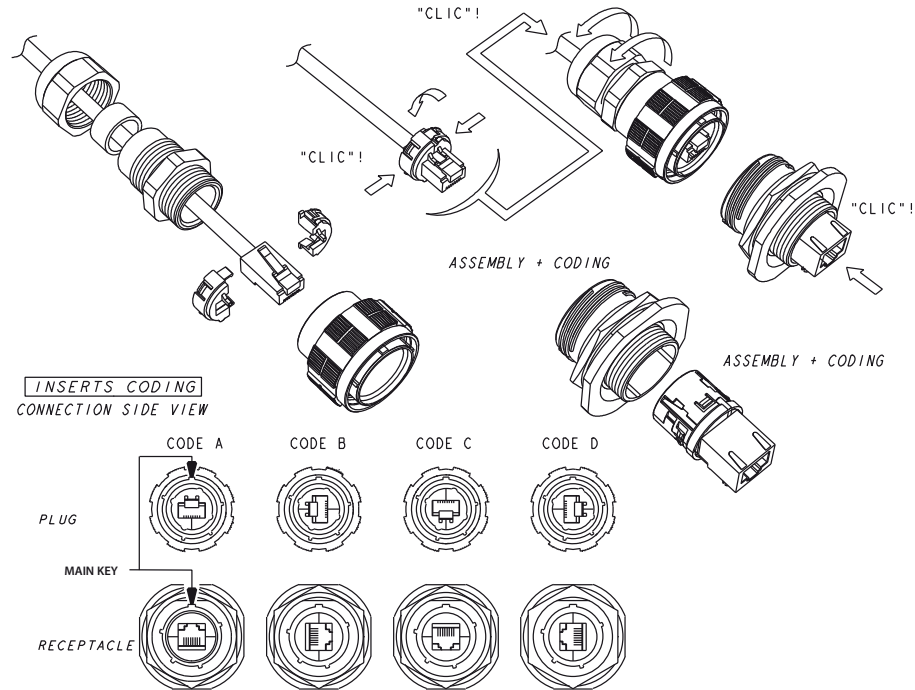


**Notes** Type 2 without RJ45 plug at the end of the cable is also available: consult factory

## Assembly instructions

### Insert Codings

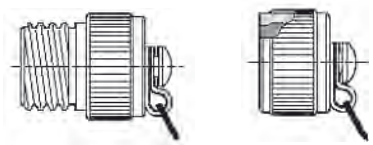
CONNECTION SIDE VIEW



### Accessories

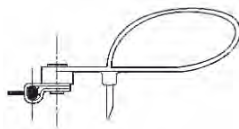
#### ■ Metallic Caps

	RJFTVC	2	G
<b>Connector Type</b>			
6: Plug			
2: Square Flange Receptacle			
7: Jam Nut Receptacle			
<b>Shell Material &amp; finish</b>			
N: Aluminium shell - nickel plating - ROHS compliant			
G: Aluminium shell - olive drab cadmium plating			
BZ: Marine bronze shell - ROHS compliant			

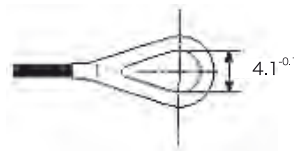


Plug Cap

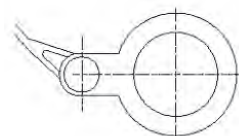
Receptacle Cap



Plug Cap end



Square flange receptacle cap end



Jam Nut receptacle cap end

- Panel Gasket for square flange receptacle  
(Thickness: 0,8 mm [.031]): JE19



- Insert removal tool: RJF ODE



# RJF TV

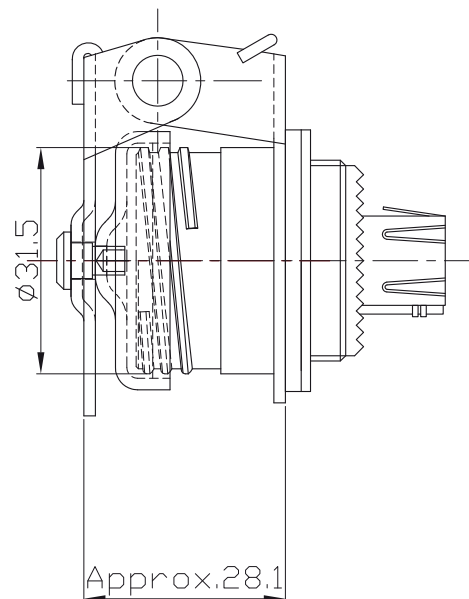
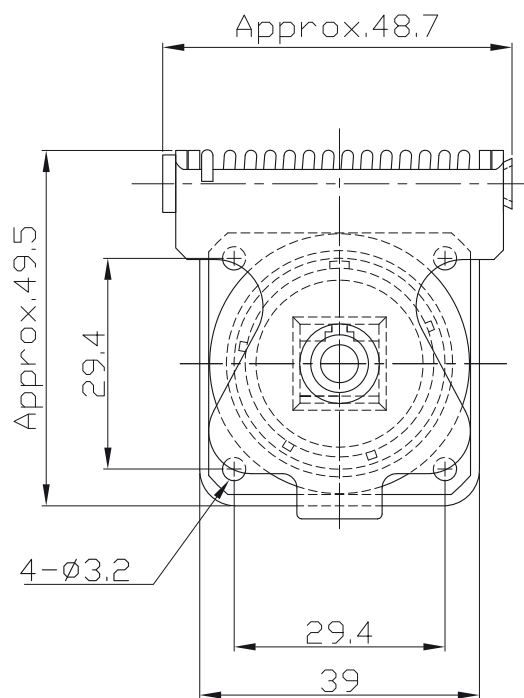
Self Closing Cap (SCC Series)



This Self Closing cap automatically protects the RJF TV square flange receptacle (MIL-DTL-38999 type), protecting your system from dust and water projection. A spring automatically closes the upper part of the cap when the RJF TV plug is removed from the receptacle.

## IMPORTANT NOTE

Metal Self Closing cap are sold separately (without receptacle)



- Panel Gasket for square flange receptacle (Thickness: 0,8 mm [.031]):

PART NUMBER: JE19



## PART NUMBER:

Self closing cap only: **RJFTVSCC**

**Remark:** Compatible only with RJFTV square flange receptacle type: RJFTV2XXX (see page 14)

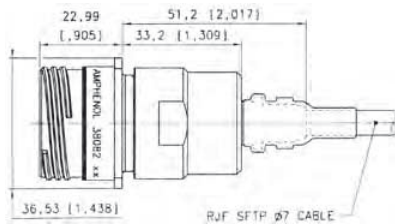
# RJFTV

Receptacles - Plugs with 360° EMI backshells



RJFTV series receptacles and plugs with EMI backshells provide a solution with 360° shielding: same protection than the one proposed by standard MIL-DTL-38999 series III connectors. With those solutions we recommend using our reinforced and double shielded cat5E cable, see page 24.

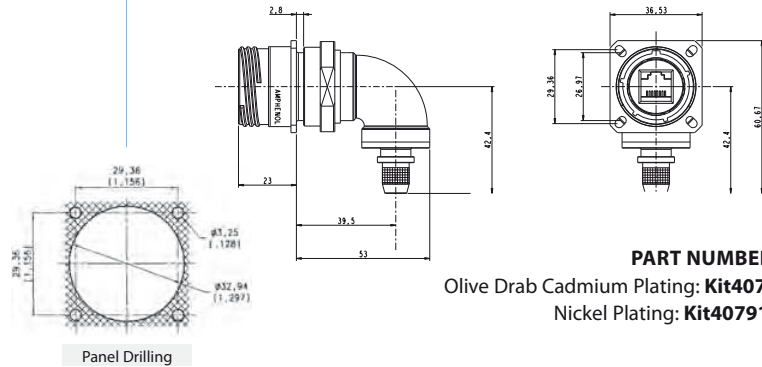
## Square Flange Receptacle *Straight Backshell*



### PART NUMBERS:

Olive Drab Cadmium Plating: **Kit38082**  
Nickel Plating: **Kit38082NI**

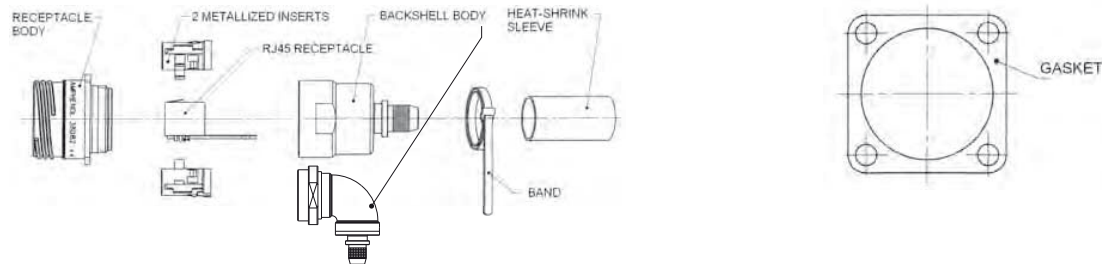
## Square Flange Receptacle *Right Angle Backshell*



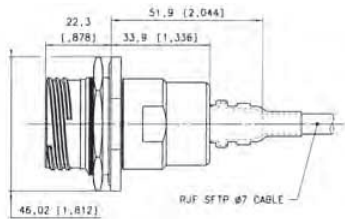
### PART NUMBERS:

Olive Drab Cadmium Plating: **Kit40791**  
Nickel Plating: **Kit40791NI**

Kit38082, Kit38082NI, Kit 40791 & Kit 40791NI include:



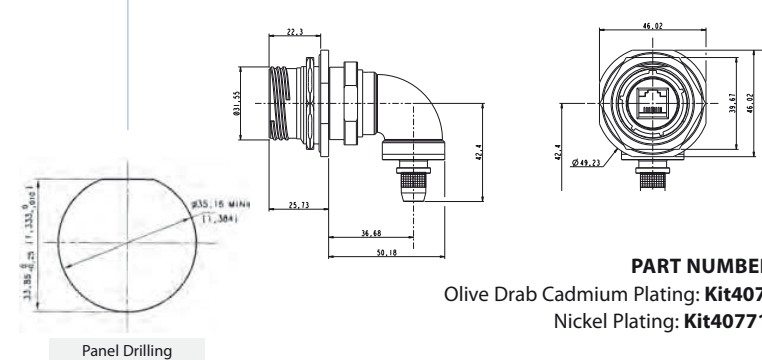
## Jam Nut Receptacle *Straight Backshell*



### PART NUMBERS:

Olive Drab Cadmium Plating: **Kit38204**  
Nickel Plating: **Kit38204NI**

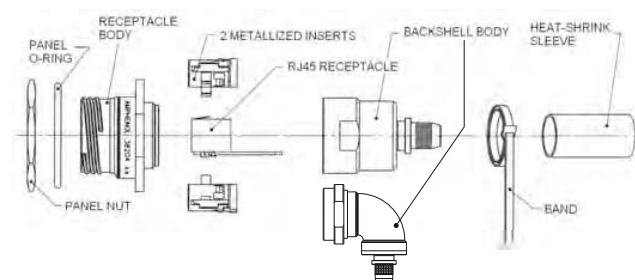
## Jam Nut Receptacle *Right Angle Backshell*



### PART NUMBERS:

Olive Drab Cadmium Plating: **Kit40771**  
Nickel Plating: **Kit40771NI**

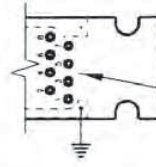
Kit38204, Kit38204NI, Kit 40771 & Kit 40771NI include:





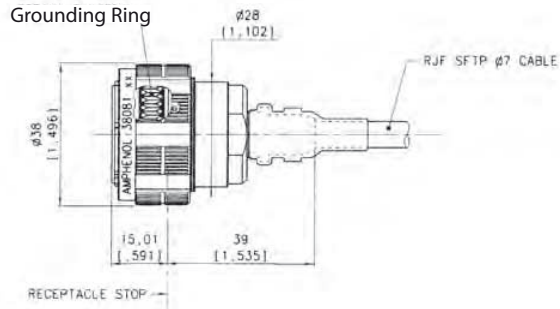
### IMPORTANT NOTE

With these receptacles, customer will have to solder his own cable on the PCB. So the wire positions have to be defined by the customer according to his network.



WIRE POSITION  
TO BE DEFINED  
BY CUSTOMER  
ACCORDING TO NETWORK

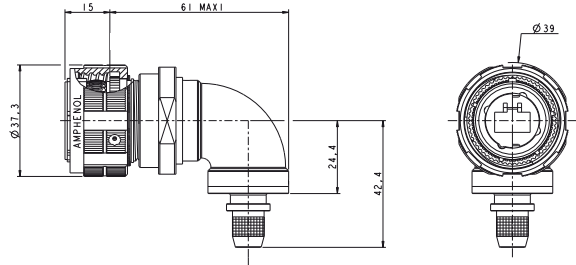
### Plug Straight Backshell



#### PART NUMBERS:

Olive Drab Cadmium Plating: **Kit38081**  
Nickel Plating: **Kit38081NI**

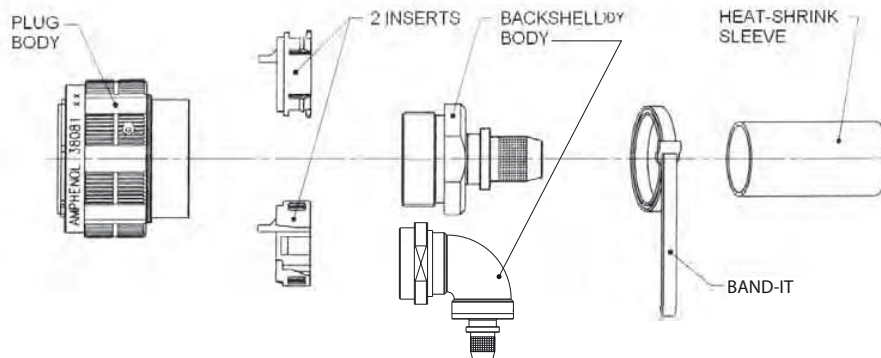
### Plug Right Angle Backshell



#### PART NUMBERS:

Olive Drab Cadmium Plating: **Kit40792**  
Nickel Plating: **Kit40792NI**

Kit38081, Kit38081NI, Kit40792 & Kit40792NI include:

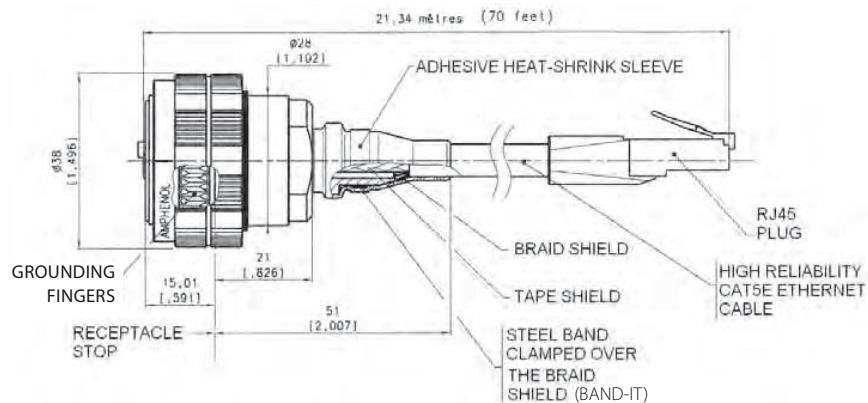


### IMPORTANT NOTE

With these plugs, the standard RJ45 plug is not provided. Customer will have to crimp a standard RJ45 on the cable by himself.

We advise using our double Shielded, reinforced Cat5E cable (see page 24) with these RJFTV series EMI connectors. If customer wants to use his own cable, please check with us regarding compatibility with our backshells: [contact@rjfield.com](mailto:contact@rjfield.com).

We also provide assembled cordsets, (see examples below). For this type of solution please provide the configuration needed: length, description of second end...



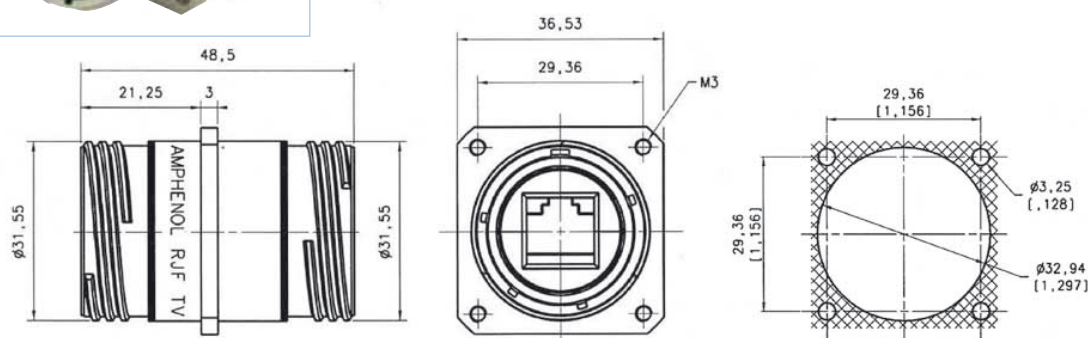
# RJFTV

Through Bulkhead – Stand-off receptacles

## Through Bulkhead Receptacles



Our RJFTV through bulkhead receptacles can be connected on each side with rugged RJFTV plugs. This system allows mechanical protection and a sealing (IP68) inside and outside the equipment, and keeps the flexibility offered by panel mount and plug connectors.



### PART NUMBERS:

Nickel plating – Non metallized inserts: **RJFTVB2N ISO BRUT**  
Nickel plating – Metallized inserts: **RJFTVB2N ISO NI**

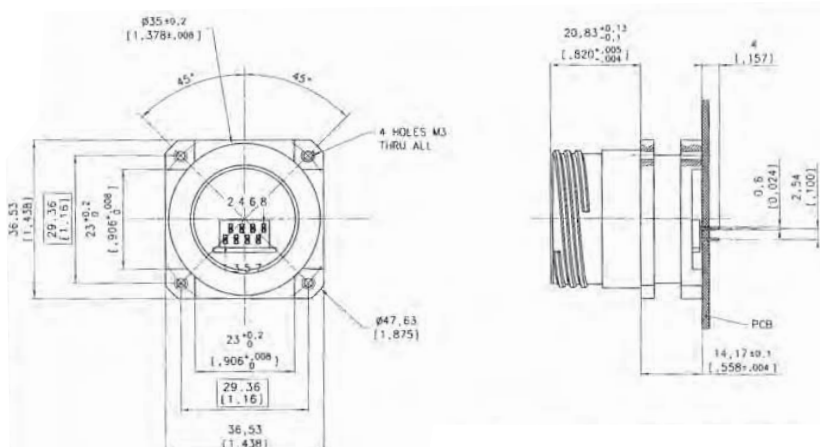
Olive Drab Cadmium plating – Non metallized inserts: **RJFTVB2G ISO BRUT**  
Olive Drab Cadmium plating – Metallized inserts: **RJFTVB2G ISO NI**

## Stand-off receptacles



These receptacles can be soldered directly to your PCB. A compound insures a transversal sealing and good performance in high-vibration environments. The shell of those receptacles are in the « Stand Off » style. They can be connected with RJFTV series plugs.

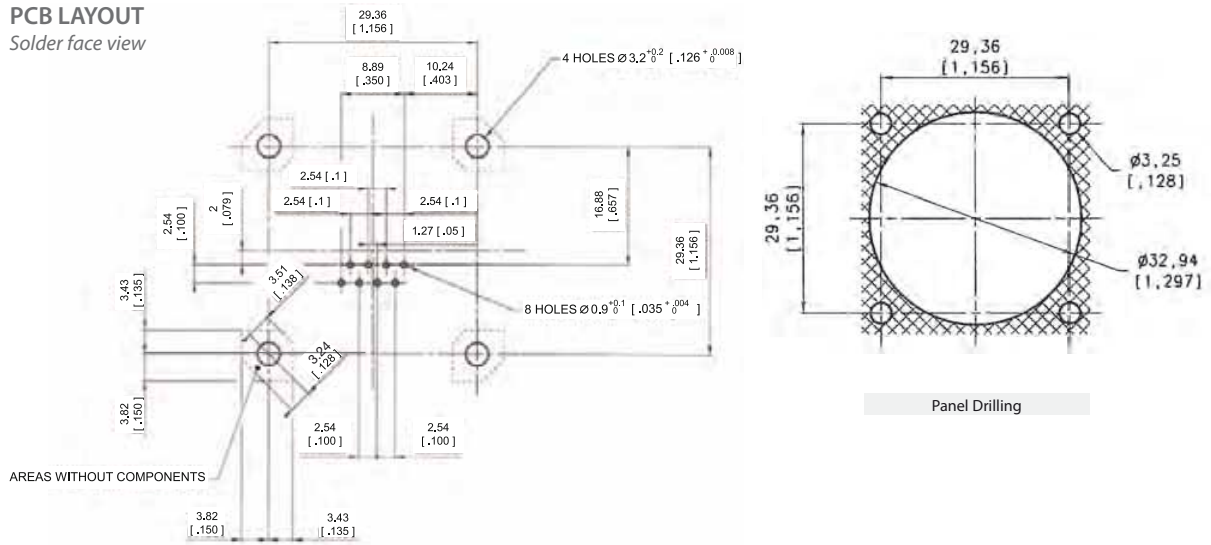
### Square Flange Receptacle



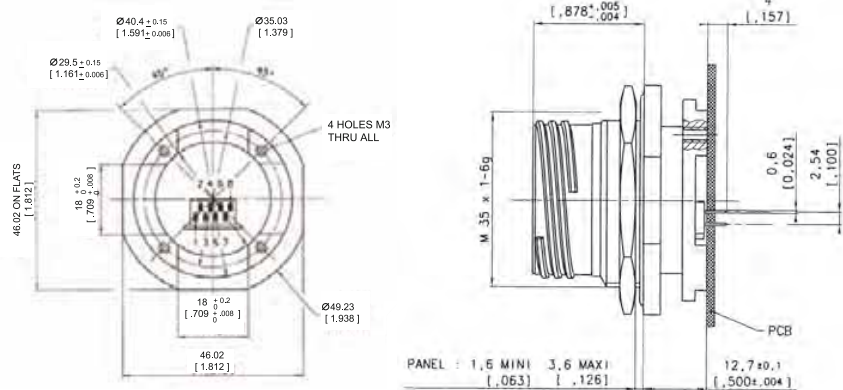
### PART NUMBERS:

Olive Drab Cadmium Plating: **RJFTV25GF459**  
Nickel Plating: **RJFTV25NF459**

PCB LAYOUT  
*Solder face view*



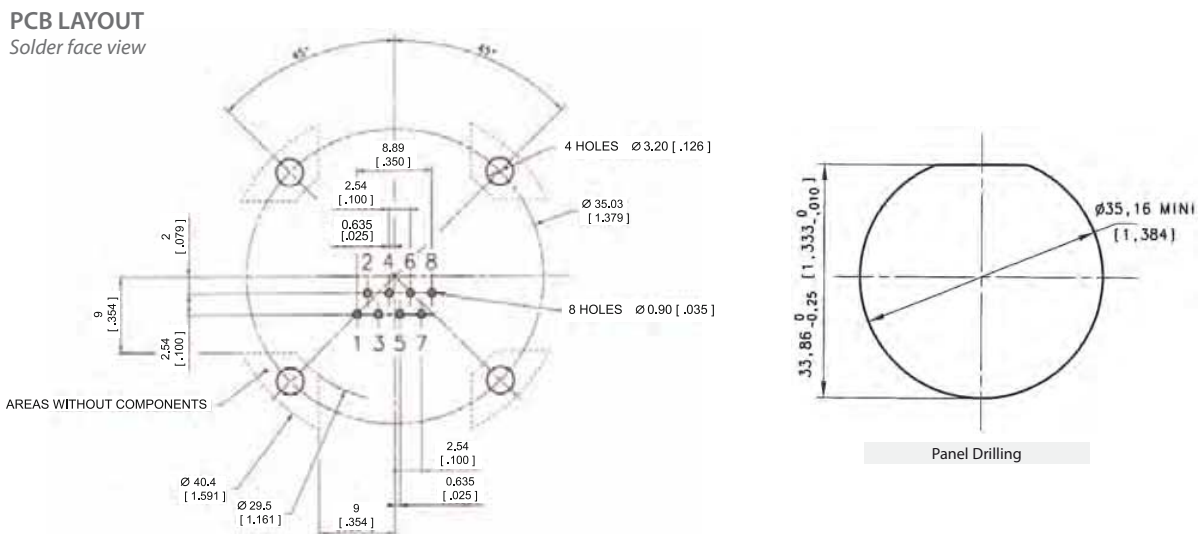
## Jam Nut Receptacle



**PART NUMBERS:**

Olive Drab Cadmium Plating: **RJFTV75GF459** - Nickel Plating: **RJFTV75NF459**

PCB LAYOUT  
*Solder face view*





# RJF/RJF TV

Environmentally Sealed Receptacles, Transversally sealed receptacles



**SEALED RECEPTACLE** 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

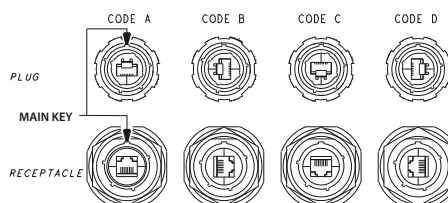
10 BaseT, 100 BaseTX and 1000 BaseT networks  
Cat 5e per TIA/EIA 568B and ClassD per ISO/IEC 11801

## 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.

## 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.



RJFTV 7S A 2G 15 100BTX

## Part Number Code

Series	RJF TV	7S	A	2	G	03 100BTX
<b>RJF:</b>	MIL-DTL-26482 H bayonet					
<b>RJFTV:</b>	MIL-DTL-38999 Series III					
<b>Shell Type</b>						
<b>2S:</b>	Sealed Square Flange Receptacle					
<b>7S:</b>	Sealed Jam Nut Receptacle					
<b>Coding</b>	A,B,C,D					
<b>Back Terminations (For Receptacles only)</b>						
<b>1:</b>	Female RJ45					
<b>1RA:</b>	Right Angle Female RJ45					
<b>2:</b>	RJ45 Cordset					
<b>Shell material &amp; Finish</b>						
<b>B:</b>	Aluminium shell - black coating (Only available for RJF Series) - ROHS compliant					
<b>N:</b>	Aluminium shell - nickel plating - ROHS compliant (note: receptacle inserts are metallized)					
<b>G:</b>	Aluminium shell - olive drab cadmium plating (note: receptacle inserts are metallized)					
<b>BZ:</b>	Marine bronze shell (only available for RJFTV) (receptacle inserts are metallized) - ROHS compliant					
<b>Cordset Length (For Receptacles with "2" Back Termination only)</b>						
<b>03 100 BTX:</b>	0.3m [11.81 inches]					
<b>05 100 BTX:</b>	0.5m [19.68 inches]					
<b>10 100 BTX:</b>	1m [39.37 inches]					
<b>15 100 BTX:</b>	1.5m [59.05 inches]					

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

Examples:

- Bayonet, A coding, Olive Drab Cadmium Jam Nut sealed receptacle with female RJ45 Back termination: RJF 7SA 1 G
- Bayonet, A coding, Black square flange sealed receptacle, Female RJ45 Back termination: RJF 2SA 1 B
- Series III, A coding, Olive Drab Cadmium Jam Nut sealed receptacle, 1.5m [59.05"] 100 BTX cordset: RJF TV 7SA 2 G15 100BTX

# RJF/RJF TV

Hermetic receptacles



**HERMETIC RECEPTACLE** 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  $1.10^{-6} \text{ cm}^3$  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

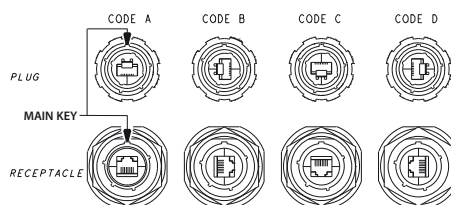
10 BaseT, 100 BaseTX and 1000 BaseT networks  
Cat 5e per TIA/EIA 568B and ClassD per ISO/IEC 11801

## 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.

## 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.



RJF TV 7 H 2G 15 100BTX

## Part Number Code

Series	RJF TV	7H	A	2	G	03 100BTX
RJF:	MIL-DTL-26482 H bayonet					
RJFTV:	MIL-C-38999 series III					
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 (Only available for RJF Series) - ROHS compliant					
N:	Aluminium shell - nickel plating - ROHS compliant (note: receptacle inserts are metallized)					
G:	Aluminium shell - olive drab cadmium plating (note: receptacle inserts are metallized)					
BZ:	Marine bronze shell (only available for RJFTV) (receptacle inserts are metallized) - ROHS compliant					
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]					

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

Examples:

- Bayonet, A coding, Olive Drab Cadmium Jam Nut sealed receptacle with female RJ45 Back termination: RJF 7HA 1 G
- Bayonet, A coding, Black square flange sealed receptacle, Female RJ45 Back termination: RJF 2HA 1 B
- Series III, A coding, Olive Drab Cadmium Jam Nut sealed receptacle, 1.5m [59.05"] 100 BTX cordset: RJF TV 7HA 2 G15 100BTX