

# EMI/EMP Filter Protection Connectors

For protection of sensitive circuits

**Amphenol**  
Aerospace

Amphenol® EMI/EMP Protection Connectors offer the versatility of standard connectors with EMI/EMP protection for sensitive circuits. Internal housing of the EMI/EMP devices eliminates costly and bulky exterior discrete protection devices.

**Virtually all major MIL-Spec circulars can be incorporated with filter devices:**

- MIL-DTL-38999
- MIL-DTL-5015
- MIL-DTL-26482
- MIL-DTL-27599
- MIL-DTL-83723
- MIL-DTL-26500

**Amphenol offers filter connectors that include:**

- EMP protection using diodes
- EMP protection utilizing metal oxide varistors (MOV's)
- Filtered plug connectors
- Filtered hermetic connectors
- Filter connectors with ESD protection
- EMI & EMP Protected Connectors
- Combinations of filtering devices within one connector package

This catalog focuses on the cylindrical connector offerings from Amphenol with EMI/EMP filter transient protection. There are also many rectangular filter connectors that are offered by Amphenol which include:

- MIL-DTL-24308 D-Sub
- MIL-DTL-83513 Micro D
- ARINC 404/600
- DOD-83527 Rack and Panel
- MIL-DTL-83733 Rack and Panel

Rectangular filter interconnects are manufactured and supplied by Amphenol Canada.

**Advantages of Filter Connectors:**

- Reduction in overall weight and space with the elimination of external filter circuits
- Reduction of solder junctions
- Increase in reliability due to fewer connections
- Fragile filter elements protected from handling and environmental damage
- Pre-testing from factory and ready for installation

Series III TV

Series II JT

Series I LJT

SJT

Printed  
Circuit Board

EMI Filter/  
Transient

Accessories  
App Tools

HD38999  
High Density

Options



#### FTV

Subminiature Tri-Start, MIL-DTL-38999 Series III, Metal or Composite shells with Filter Protection.



#### FLJT

Subminiature LJT, MIL-DTL-38999 Series I with Filter Protection.



#### Filter AN Connector

MIL-DTL-5015 Type Connectors with Filter Protection. See Catalog 12-120



#### FJT

Subminiature JT, MIL-DTL-38999 Series II with Filter Protection.



#### FCTV with Stand-off Flange

Filtered Tri-Start connectors with composite shells for attachment to printed circuit boards.



#### FPT

Miniature MIL-DTL-26482 Series I with Filter Protection. See Catalog 12-120

#### Filter Contacts Combined with High Speed Contacts

Filter Connectors can incorporate high frequency coax, twinax, triax, quadax and differential twinax contacts.



#### MOV Connectors

MOV's act as a variable resistor to efficiently dissipate energy.

MOV can be packaged singularly or in combinations with other EMI



#### Header Assemblies

Allow for easy separation and easy termination of connectors when

attaching to flex or printed circuit boards. Allow for electrical testing that would adversely affect sensitive diodes, MOV's or filter capacitors.

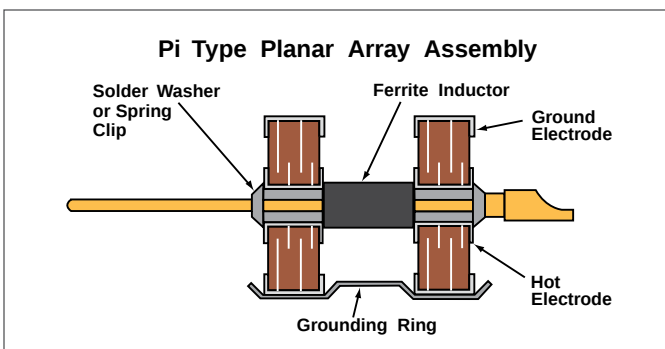
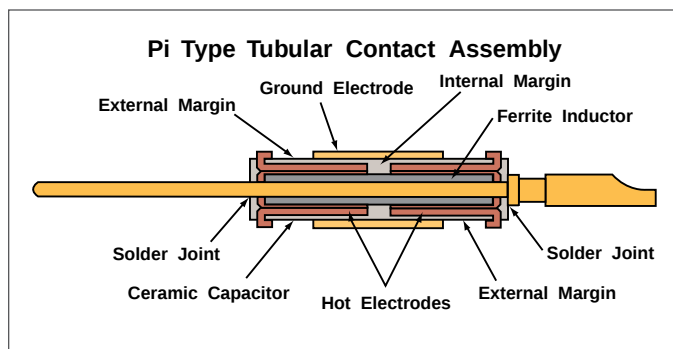
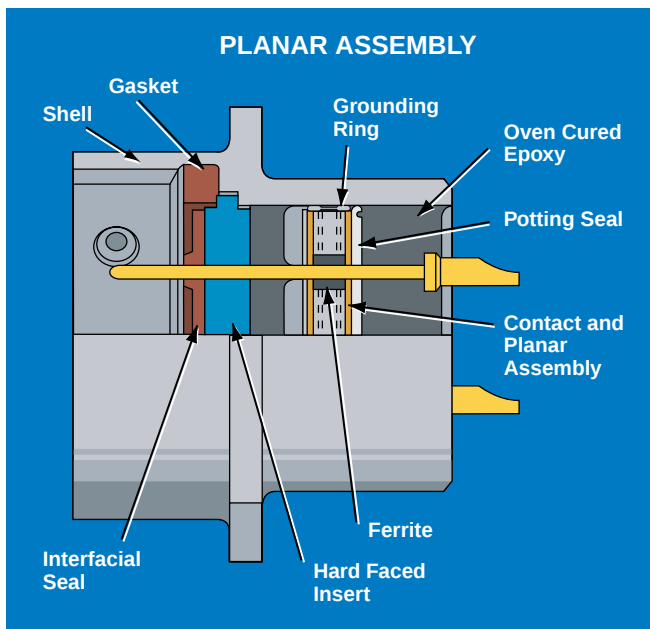
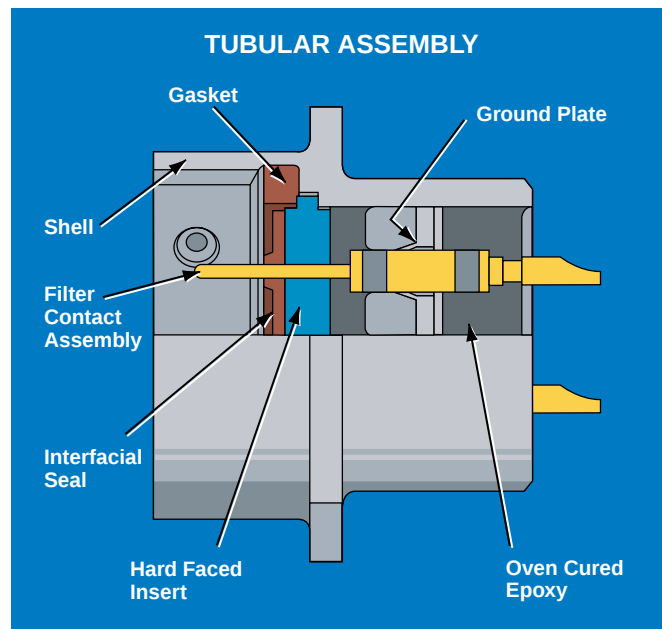


The Amphenol® EMI filter connector utilizes two manufacturing technologies to provide the user with the most cost effective performance across the frequency range. (For EMP performance data, see pages 172-175).

The tubular design offers over 40 years of proven field reliability. All filter contacts within the connector share a common ground plane, which is connected to the connector shell. The pin to pin isolation is 85 dB minimum at 100 MHz. The planar design joins pins to a multi-layered ceramic forming an array sub-assembly, with a peripheral ground which is connected to the connector shell via a ground spring. Pin to pin capacitance is less than 50 pF with a pin to pin isolation of 85 dB minimum at 100 MHz. Filter contacts for both designs contain either a pi passive element network comprised of a ferrite inductor and ceramic capacitor, or a single capacitor.

For planar designs other filter networks are available, ie. T Type, L-C Type, C-L Type and C Type. An encapsulant of oven-cured epoxy in the rear provides:

- Mechanical and thermal insulation of the ceramic elements – mechanical loading can be accomplished without capacitor damage. Pins can be bent 90° and straightened with no damage to the filter.
- Hermeticity ( $4.6 \times 10^{-3}$  cc/sec) – prevents water from entering through the rear of the connector in high humidity environments. Amphenol recommends using metal protection caps during cleaning operations.



Amphenol provides a wide range of filtering solutions. You can select your options for your particular interference threats - VHF, UHF, HF or other filter ranges, then couple with a connector package of your choice. Or give Amphenol your custom shell design requirements for assistance in designing your unique filter solution.

EMI Filter connectors are intended for use in temperatures from  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$ . Attenuation will change with feed-through current and temperature.\*

To assure reliability, connectors may be subjected to an attenuation performance test verifying proper assembly and grounding of the filters. Attenuation data on filter performance is stated in reference to a 50 ohm impedance system in order to allow filter performance to be more easily translated into real world impedances. Those interested in determining the expected filter performance in an impedance system other than 50 ohms may refer to page 131 of this catalog or may contact Amphenol Aerospace for further assistance.

**It is suggested that the user analyze his system requirements for EMI protection in the following areas:**

- Working voltage (DC or AC and Frequency)
- Peak voltage
- Desired attenuation at a given frequency level
- Any special capacitance limitations

#### Definition of Filter Contacts:

|              |                                                                  |
|--------------|------------------------------------------------------------------|
| <b>MF-1</b>  | Medium Frequency<br>50 dB performance between 300 - 2999 KHz     |
| <b>HF-1</b>  | High Frequency<br>50 dB performance between 3 - 29 MHz           |
| <b>VHF-1</b> | Very High Frequency<br>50 dB performance between 30 - 2999 MHz   |
| <b>UHF-1</b> | Ultra High Frequency<br>50 dB performance between 300 - 2999 MHz |

Filter contacts can be provided in most frequencies in contact sizes 22 or larger. Consult Amphenol Aerospace for availability.

Tubular connector designs will meet 3 amps RF current from  $-55^{\circ}\text{C}$  through  $+125^{\circ}\text{C}$ . Planar connector designs will meet 5 amps.

\* More in-depth information on attenuation is available in: L-1146, General Design Guideline for EMI Filters and/or TVS (Transient Voltage Suppression) Connectors.

Also for further information ask for:

L-1145, How to Specify Filter Connectors.

#### Planars, MOV's, Tubular and Diode Contacts



**Planar Array Assembly**

**Capacitor and MOV Planars**

**Tubular Filters and Diode Contacts**

#### Contact Options

- Coaxial, concentric twinax, triax and quadax contacts can be included in arrangements of filtered contacts for signal or power circuits (See Amphenol catalog 12-130, High Frequency Contacts for Multi-Pin Connectors).
- Filter contacts with differing cut-off frequencies can be mixed in any given insert arrangement. (ratio 100:1 typical)
- Ground, insulated or filter contacts can be combined within the same connector to meet unique or changing frequency protection requirements.
- Thermocouple contacts
- Diodes for EMP

#### Methods of Wire Termination

- Solder cup - wire termination
- PCB termination (Pre-tinning is available)
- Solderless wrap
- Amphenol® UTS (Universal Termination System) allows crimp termination. It uses crimp insertable socket contacts on conductor wires. Sockets mate with filter pins within the connector body. (Socket type M39029/57). (For further contact information, see section, MIL-DTL-38999 Series I & II).
- Weld terminal for thermocouple contacts

### Adapters

Filter adapters eliminate replacement of either existing mated pair. The adapter provides the circuit protection at the MF, VHF and UHF levels, and is an effective and economical method of introducing EMI/EMP protection to an installed system. Adapters are to be placed between mating faces. (See pages 171).

### Printed Circuit Board Mount

Receptacle shell modifications that allow mounting directly to a PC board or flex header. Stand-off shells are available in different configurations. These offer improved reliability by eliminating external spacers and washers. (See pages 140, 141, 146, 147, 160 and 163).

### Hermetic

The hermetic filter connector, while only approximately 1/2 inch longer than standard series connectors, provides all the benefits of a hermetic connector, plus EMI protection for sensitive circuits. The filter assembly is protected by a fused glass insert within a unique steel housing. This design provides the capability to tolerate high level static pressure while maintaining a low level leakage rate. Consult Amphenol Aerospace for more information.

### Composite

Composite shell filter connectors meet the MIL-DTL-38999, Series III dimensional length, and offer a light-weight, corrosion resistant, durable connector with the same high performance features as its metal counterpart. The composite filter connector utilizes planar technology to accommodate VHF-1 or better electrical performance characteristics. (See pages 138-141).

### ESD Protection

Filter connectors with ESD (Electrostatic Discharge) protection are available. These MIL-DTL-38999 Series I and III connectors have an added feature of a Faraday Cage to shunt electrostatic discharge events to the conductive enclosure on which the connector is mounted. (See page 203).

### Filtered Plugs

Filtered Plugs are designed for applications where EMI protection is essential, but access to the receptacle is denied. Designed with the same components as a standard filter receptacle, the filtered plug offers the option of being mounted on the cable harness. It is a cost effective method of achieving EMI protection when length restrictions prohibit inclusion of an adapter to the system. Consult Amphenol Aerospace for availability.

### Diode Connectors

Diode Connectors offer versatility with transient protection for sensitive circuits, such as TTL lines. Diodes can stand alone or be combined with other filters. (Pages 174-175).

### Shunting Assembly

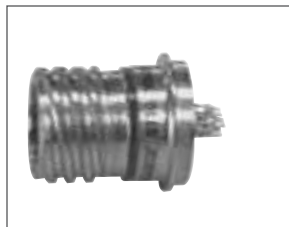
Amphenol's Energy Shunting Assembly is a simple, compact unit which provides lightning and electromagnetic pulse protection of systems in which many signal lines enter sensitive electronic equipment. (Page 176).



Cylindrical Filter Protection Connectors are offered in a wide range of styles, with custom designs for special applications.



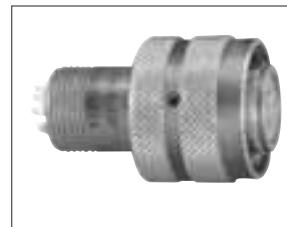
Filter Adapters can be attached to connectors to provide EMI/EMP protection.



Hermetic filter connector



Composite shell stand-off  
Filter 38999 connector



Filtered plug



Diode Connectors

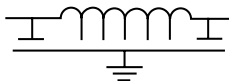


ESA - Energy Shunting  
Assembly

Amphenol® EMI Connectors are produced with several types of filters. They are all low band pass filters with the following configurations:

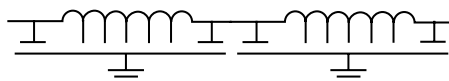
## Pi -

Typical of the VHF, UHF and MF filter



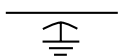
## Cascaded Pi -

Typical of the HF filter. It consists of two VHF Pi filters on a common pin and is available in tubular designs only.



## Capacitor \*-

Consists of a feed-through capacitor without any ferrite. It can be 50pf to 1µf and carry the MF, HF and VHF designation depending on its typical 50dB performance.



## L-C \*-

Typical of HF, VHF and UHF filter. Low source / high load impedance.



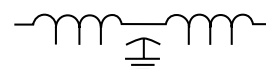
## C-L \*-

Typical of HF, VHF and UHF filter. High load impedance / low source.



## T \*-

Typical of HF, VHF and UHF filter. Low source / low load impedance.



\* Consult factory for attenuation performance values.

| Parameters                                                                                           |                  | Medium Frequency Filter♦      | High Frequency Filter♦ | Very High Frequency Filter |                | Ultra High Frequency Filter |                |
|------------------------------------------------------------------------------------------------------|------------------|-------------------------------|------------------------|----------------------------|----------------|-----------------------------|----------------|
|                                                                                                      |                  | MF-1 (Pi)                     | HF-1 (Cascaded Pi)     | VHF-1 (Pi)                 | VHF-2† (Pi)    | UHF-1† (Pi)                 | UHF-2† (Pi)    |
| Minimum Attenuation (Test Points)*                                                                   | 150kHz           | 20dB                          | —                      | —                          | —              | —                           | —              |
|                                                                                                      | 15MHz            | —                             | 50dB                   | —                          | —              | —                           | —              |
|                                                                                                      | 50MHz            | —                             | 80dB                   | —                          | —              | —                           | —              |
|                                                                                                      | 100MHz           | 80dB                          | —                      | 62dB                       | 46dB           | 18dB                        | 28dB           |
| Maximum Working Voltage (User must specify DC or AC)††††                                             | DC†††            | 50VDC                         | 200VDC                 | 200VDC                     | 200VDC         | 200VDC                      | 200VDC         |
| Dielectric Withstanding Voltage Capability (for 5 sec. with 10 milliamperes max. charging current)♦♦ |                  | 100 volts DC                  | 500 volts DC           | 500 volts DC               | 500 volts DC   | 500 volts DC                | 500 volts DC   |
| Maximum Feed-thru Current (DC and/or Audio Frequency R.M.S.)                                         | Size 16 contacts | 13.0 amps                     | 13.0 amps              | 13.0 amps                  | 13.0 amps      | 13.0 amps                   | 13.0 amps      |
|                                                                                                      | Size 20 contacts | 7.5 amps                      | 7.5 amps               | 7.5 amps                   | 7.5 amps       | 7.5 amps                    | 7.5 amps       |
|                                                                                                      | Size 22 contacts | not available                 | not available          | 5.0 amps                   | 5.0 amps       | 5.0 amps                    | 5.0 amps       |
| Maximum RF Current                                                                                   |                  | 3.0 amps                      | 3.0 amps               | 3.0 amps                   | 3.0 amps       | 3.0 amps                    | 3.0 amps       |
| Minimum Insulation Resistance                                                                        |                  | 250 megohms                   | 10 gigaohms            | 10 gigaohms                | 10 gigaohms    | 10 gigaohms                 | 10 gigaohms    |
| Typical Capacitance**                                                                                |                  | 1.0 microfarad                | 16 nanofarads          | 7 nanofarads               | 2.5 nanofarads | 375 picofarads              | 710 picofarads |
| Air Leakage††                                                                                        |                  | 4.6 x 10 <sup>-3</sup> cc/sec |                        |                            |                |                             |                |
| Operating Temperature Range                                                                          |                  | -55°C to +125°C               |                        |                            |                |                             |                |

\* When tested at 25°C per MIL-STD-220.

\*\* When measured at a frequency of 1 ± .1kHz and a voltage not exceeding 1.0 V.A.C.R.M.S. at +25°C.

† Consult Amphenol, Sidney, NY or your Amphenol representative for part number.

†† Lower leakage rates are available upon request.

††† Summation of the DC and low level AC super-imposed peak voltage.

†††† Consult Amphenol, Sidney, NY whenever AC voltage is present.

♦ Consult Amphenol, Sidney, NY or your Amphenol representative for availability.

♦♦ Higher DWV ratings are available upon request. Consult Amphenol, Sidney, NY.

Series III TV

Series II JT

Series I LJT

SJT

Printed  
Circuit Board

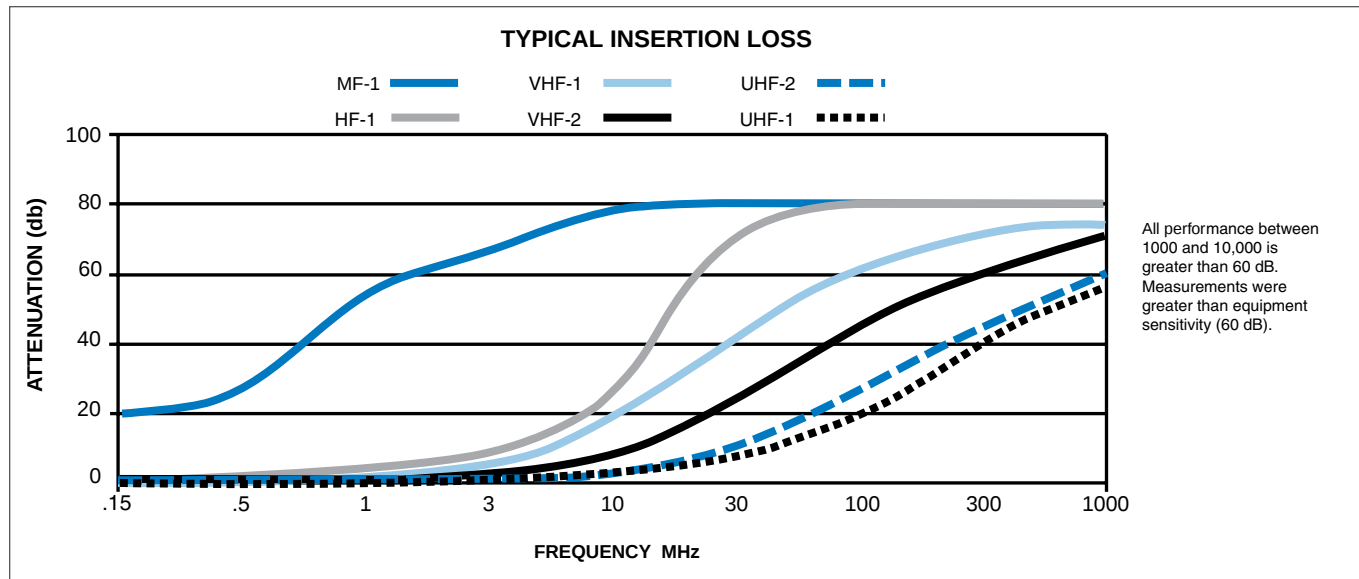
EMI Filter/  
Transient

Accessories  
App Tools

HD38999  
High Density

Options

*\*Note: Below are typical capacitance values. Other capacitance values are available from 5pf to 400 NF in one capacitor element. Please consult factory for part numbers.*



**TYPICAL INSERTION LOSS (dB)  
PER MIL-STD-220, 5 ADC, 25°C**

| Capacitance              | 1MHz | 3MHz | 10MHz | 30MHz | 100MHz | 300MHz | 1000MHz |
|--------------------------|------|------|-------|-------|--------|--------|---------|
| 375 pf UHF <sub>1</sub>  | 0    | 0    | 1     | 8     | 16     | —      | —       |
| 750 pf UHF <sub>2</sub>  | 0    | 0    | 3     | 10    | 19     | —      | —       |
| 2500 pf VHF <sub>2</sub> | 0    | 2    | 8     | 20    | 28     | —      | —       |
| 7000 pf VHF <sub>1</sub> | 5    | 9    | 17    | 23    | 40     | —      | —       |
| 16000 pf HF <sub>1</sub> | 6    | 14   | 20    | 24    | 80     | —      | —       |

Most filter attenuation curves and capacitance values are expressed at 25° C. However, temperature can affect the capacitance of a titanate filter element, affecting the insertion loss that the element will cause.

In order to assist the user in anticipating the effect of various temperatures, the following charts applicable to Amphenol® filter connectors utilizing MF-1, HF-1, VHF-1, VHF-2, UHF-1 and UHF-2 filters are provided. Please note that all insertion loss (attenuation) values given were measured with no load applied. The band designations refer to MIL-STD-2120.

## MF-1\*

Typical Capacitance = 1,000,000 pf Min. 800,000 pf Max. 1,600,000 pf  
Type Pi

| Temp.  | F <sub>co</sub> | 1MHz | 3MHz | 10MHz | 30MHz | 100MHz | 300MHz | 1000MHz |
|--------|-----------------|------|------|-------|-------|--------|--------|---------|
| -55°C  | —               | 18   | —    | 64    | 80    | 80     | 80     | 80      |
| Room   | 7.94K           | 55   | —    | 80    | 80    | 80     | 80     | 80      |
| +125°C | —               | 22   | —    | 70    | 80    | 80     | 80     | 80      |

## VHF-2

Typical Capacitance = 2,500 pf Min. 1,900 pf Max. 4,000 pf  
Band E, Type Pi

| Temp.  | F <sub>co</sub> | 1MHz | 3MHz | 10MHz | 30MHz | 100MHz | 300MHz | 1000MHz |
|--------|-----------------|------|------|-------|-------|--------|--------|---------|
| -55°C  | —               | 0    | 2    | 7     | 17    | 40     | 58     | 71      |
| Room   | 3.3M            | 0    | 2    | 8     | 24    | 46     | 61     | 71      |
| +125°C | —               | 0    | 3    | 10    | 26    | 46     | 63     | 69      |

## HF-1\*

Typical Capacitance = 16,000 pf Min. 9,800 pf Max. 24,000 pf  
Type Cascaded Pi

| Temp.  | F <sub>co</sub> | 1MHz | 3MHz | 15MHz | 50MHz | 100MHz | 300MHz | 1000MHz |
|--------|-----------------|------|------|-------|-------|--------|--------|---------|
| -55°C  | —               | 2    | 6    | 24    | 62    | 80     | 80     | 80      |
| Room   | 648K            | 3    | 9    | 50    | 80    | 80     | 80     | 80      |
| +125°C | —               | 0    | 6    | 30    | 62    | 80     | 80     | 80      |

## UHF-2

Typical Capacitance = 750 pf Min. 500 pf Max. 1,100 pf  
Band C, Type Pi

| Temp.  | F <sub>co</sub> | 1MHz | 3MHz | 10MHz | 30MHz | 100MHz | 300MHz | 1000MHz |
|--------|-----------------|------|------|-------|-------|--------|--------|---------|
| -55°C  | —               | 0    | 0    | 3     | 9     | 25     | 46     | 61      |
| Room   | 12.7M           | 0    | 0    | 3     | 10    | 28     | 46     | 61      |
| +125°C | —               | 0    | 0    | 3     | 10    | 24     | 42     | 60      |

## VHF-1

Typical Capacitance = 7,000 pf Min. 4,900 pf Max. 12,000 pf  
Band G, Type Pi

| Temp.  | F <sub>co</sub> | 1MHz | 3MHz | 10MHz | 30MHz | 100MHz | 300MHz | 1000MHz |
|--------|-----------------|------|------|-------|-------|--------|--------|---------|
| -55°C  | —               | 1    | 2    | 8     | 21    | 44     | 61     | 65      |
| Room   | 1.27M           | 1    | 6    | 18    | 42    | 62     | 72     | 75      |
| +125°C | —               | 0    | 2    | 9     | 24    | 45     | 62     | 64      |

## UHF-1

Typical Capacitance = 375 pf Min. 290 pf Max. 450 pf  
Band B, Type Pi

| Temp.  | F <sub>co</sub> | 1MHz | 3MHz | 10MHz | 30MHz | 100MHz | 300MHz | 1000MHz |
|--------|-----------------|------|------|-------|-------|--------|--------|---------|
| -55°C  | —               | 0    | 0    | 1     | 6     | 21     | 43     | 58      |
| Room   | 21.9M           | 0    | 0    | 1     | 8     | 18     | 42     | 56      |
| +125°C | —               | 0    | 0    | 1     | 8     | 17     | 38     | 50      |

Note: F<sub>co</sub> = Cut-off Frequency

\* Consult Amphenol, Sidney, NY for availability.

# Impedance Matching Formula

(your system to a 50 ohm system)

The following formula and example are offered in order to determine the expected filter performance in an impedance system other than 50 ohms.

With the attenuation expressed in 50 ohms and the transfer impedance curve shown in Figure 1 below, a designer can relate the expressed attenuation to the input and output impedance of his circuit.

Example:

- (1) Noise is 40dB above specification level at 100 MHz
- (2) Input and output impedance are 10 and 100 ohms respectively
- (3) Amphenol® VHF 7000 pf filter has a 65 dB minimum attenuation at 100 MHz and +25°C

Formula (Taken from Figure 1):

$1.4 \times 10^{-2}$  = transfer impedance  
for 65 dB in a 50 ohm system

$$\text{Atten (dB)} = 20 \log_{10} \left[ 1 + \frac{Z_s Z_L}{Z_{12}(Z_s + Z_L)} \right]$$

$Z_s$  = source impedance

$Z_L$  = load impedance

$Z_{12}$  = transfer impedance

Atten = filter performance in a system other than 50 ohms

$$\text{Atten (dB)} = 20 \log_{10} \left[ 1 + \frac{10(100)}{1.4 \times 10^{-2} (10 + 100)} \right]$$

Attenuation = 56.3dB

In this case, the 7000 pf VHF filter will give 56.3 dB which is 16.3dB below the desired reduction in noise (40dB) as stated in the above problem.

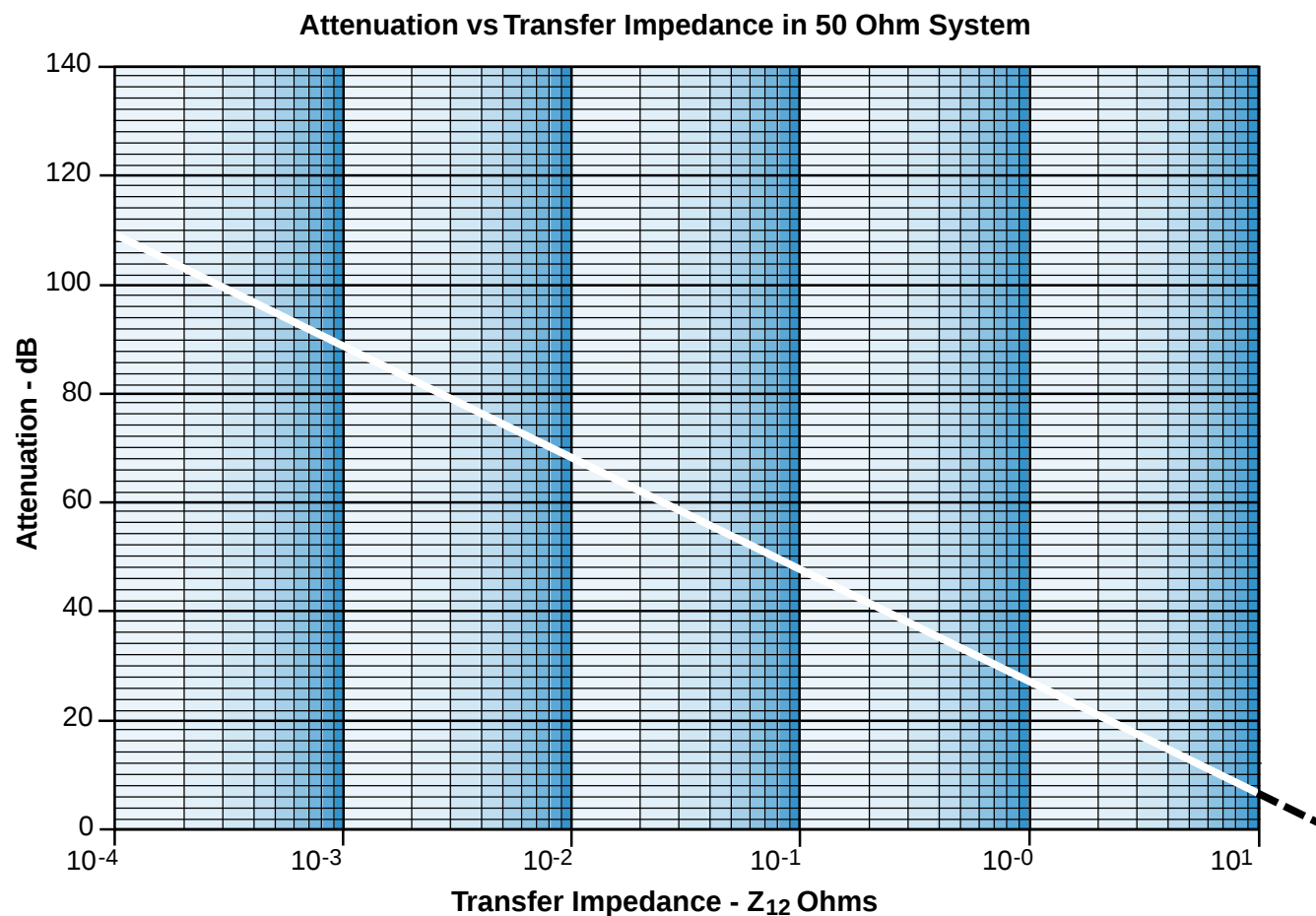


Figure 1

### Acceptance Testing

All filter connectors undergo extensive acceptance testing to assure product quality. An outline of standard acceptance testing performed is as follows:

### Mechanical Inspection

- Dimensional inspection of shells, keys, keyways and mounting surfaces by either in-process inspection of components or inspection of final assemblies.
- Visual inspection of contacts, inserts and seals, gaskets and surface finish of shells and hardware.

### Electrical Tests

- Insulation resistance of filter contacts is checked 100% **at the working voltage and to the test limit** listed for each filter in the filter selection data table.
- Dielectric withstanding voltage is tested on 100% of filter contacts at the voltage listed in the filter selection data table.
- Capacitance is tested 100% at 1KHz.

### Special Tests/Processes

In addition to the standard acceptance testing and processes, the following additional production testing and processing can be provided upon request:

- Attenuation testing (through 100 MHz)
- Leakage inspection
- Thermal cycling/shock
- Burn-in
- De-gassing

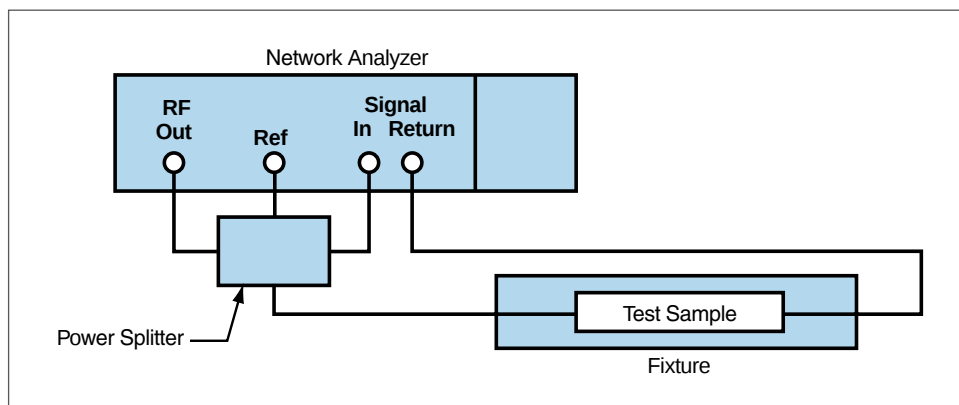
Consult Amphenol Aerospace for further information.

### Qualifications

Amphenol® filter connectors have been qualified and are on periodic requalification to specification BSF-1 (available from your Amphenol representative). This is patterned after MIL-DTL-38999, modified to include mechanical and environmental testing and electrical parameters important to filter connector performance.

These acceptance tests, along with exhaustive in-process inspection and testing, give Amphenol® filter connectors their reputation for reliability.

### ATTENUATION TEST CIRCUIT



There are multiple test stations located on the Amphenol production floor that support all in-process, final electric and qualification testing as necessary.

## Step 1.

### Fill out the EMI Filter Connector Check list on page 134.

This check list page can be copied, filled out and sent to an Amphenol technical support person. Fax it to 607-563-5157 and a filter connector specialist will help you.

## Step 2.

### Choose the Contact and Attenuation Characteristics requirements on page 130 and 131

## Step 3.

### Choose the Shell Style that fits your application

Refer to each of the style sections in this catalog.

| Filter Connector Type | Filter Connector Brief Description                   | Pages   |
|-----------------------|------------------------------------------------------|---------|
| FCTV                  | MIL-DTL-38999 Series III with Composite shell        | 137-141 |
| FTV                   | MIL-DTL-38999 Series III with Metal shell (Aluminum) | 142-147 |
| FJT                   | MIL-DTL-38999, Series II                             | 148-154 |
| FLJT                  | MIL-DTL-38999 Series I                               | 155-164 |
| FSJT                  | Commercial 38999 type                                | 165-168 |
| FBL                   | MIL-DTL-38999, Series IV                             | 169-170 |



## Step 4.

### See How to Order on page 135

**How to Order Filter**

Amphenol Aerospace

Easy Steps to build a part number... Filter

1. Filter Connector Designator 2. Connector and Filter Type 3. Shell Finish 4. Shell Style 5. Shell Size 6. Type of Contact and Mounting Features

**Step 1. Connector Type**

Designator

21 Standard average-power Audio Tilt Lock Connector

30 High Temperature Connector

47 Plug with Grounding Flanges

**Step 2. Connector/Filter Type**

Designator

04 FJT with VHF-1 filter (short shell)

05 FJT with all wideband/VHF-1 filter combination

06 FLJT with VHF-1 filter (short shell)

07 FJT with HF filter (short shell)

08 FJT with HF filter (long shell)

09 FJT with VHF-1 filter (long shell)

10 FJT with HF filter (long shell)

11 FJT with VHF-1 filter (long shell)

12 FJT with HF filter (long shell)

13 FJT with VHF-1 filter (long shell)

14 FJT with HF filter (long shell)

15 FJT with VHF-1 filter (long shell)

16 FJT with HF filter (long shell)

17 FJT with VHF-1 filter (long shell)

18 FJT with HF filter (long shell)

19 FJT with VHF-1 filter (long shell)

20 FJT with HF filter (long shell)

21 FJT with VHF-1 filter (long shell)

22 FJT with HF filter (long shell)

23 FJT with VHF-1 filter (long shell)

24 FJT with HF filter (long shell)

25 FJT with VHF-1 filter (long shell)

26 FJT with HF filter (long shell)

27 FJT with VHF-1 filter (long shell)

28 FJT with HF filter (long shell)

29 FJT with VHF-1 filter (long shell)

30 FJT with HF filter (long shell)

31 FJT with VHF-1 filter (long shell)

32 FJT with HF filter (long shell)

33 FJT with VHF-1 filter (long shell)

34 FJT with HF filter (long shell)

35 FJT with VHF-1 filter (long shell)

36 FJT with HF filter (long shell)

37 FJT with VHF-1 filter (long shell)

38 FJT with HF filter (long shell)

39 FJT with VHF-1 filter (long shell)

40 FJT with HF filter (long shell)

41 FJT with VHF-1 filter (long shell)

42 FJT with HF filter (long shell)

43 FJT with VHF-1 filter (long shell)

44 FJT with HF filter (long shell)

45 FJT with VHF-1 filter (long shell)

46 FJT with HF filter (long shell)

47 FJT with VHF-1 filter (long shell)

48 FJT with HF filter (long shell)

49 FJT with VHF-1 filter (long shell)

50 FJT with HF filter (long shell)

51 FJT with VHF-1 filter (long shell)

52 FJT with HF filter (long shell)

53 FJT with VHF-1 filter (long shell)

54 FJT with HF filter (long shell)

55 FJT with VHF-1 filter (long shell)

56 FJT with HF filter (long shell)

57 FJT with VHF-1 filter (long shell)

58 FJT with HF filter (long shell)

59 FJT with VHF-1 filter (long shell)

60 FJT with HF filter (long shell)

61 FJT with VHF-1 filter (long shell)

62 FJT with HF filter (long shell)

63 FJT with VHF-1 filter (long shell)

64 FJT with HF filter (long shell)

65 FJT with VHF-1 filter (long shell)

66 FJT with HF filter (long shell)

67 FJT with VHF-1 filter (long shell)

68 FJT with HF filter (long shell)

69 FJT with VHF-1 filter (long shell)

70 FJT with HF filter (long shell)

71 FJT with VHF-1 filter (long shell)

72 FJT with HF filter (long shell)

73 FJT with VHF-1 filter (long shell)

74 FJT with HF filter (long shell)

75 FJT with VHF-1 filter (long shell)

76 FJT with HF filter (long shell)

77 FJT with VHF-1 filter (long shell)

78 FJT with HF filter (long shell)

79 FJT with VHF-1 filter (long shell)

80 FJT with HF filter (long shell)

81 FJT with VHF-1 filter (long shell)

82 FJT with HF filter (long shell)

83 FJT with VHF-1 filter (long shell)

84 FJT with HF filter (long shell)

85 FJT with VHF-1 filter (long shell)

86 FJT with HF filter (long shell)

87 FJT with VHF-1 filter (long shell)

88 FJT with HF filter (long shell)

89 FJT with VHF-1 filter (long shell)

90 FJT with HF filter (long shell)

91 FJT with VHF-1 filter (long shell)

92 FJT with HF filter (long shell)

93 FJT with VHF-1 filter (long shell)

94 FJT with HF filter (long shell)

95 FJT with VHF-1 filter (long shell)

96 FJT with HF filter (long shell)

97 FJT with VHF-1 filter (long shell)

98 FJT with HF filter (long shell)

99 FJT with VHF-1 filter (long shell)

**Step 2. Connector/Filter Type Continue**

Designator

01 FTV PCB mount with standard flange and standard nut

02 FTV with all wideband/VHF-1 filter combination

03 FLJT with all wideband/VHF-1 filter combination

04 FTV (UTS) with all wideband/VHF-1 filter combination

05 FTV (UTS) with all wideband/VHF-1 filter combination

06 FLJT (UTS) with all wideband/VHF-1 filter combination

**Step 3. Select a Shell Finish**

Designator

0 Chromate

1 Bright cadmium

2 Stainless steel (electrolytic nickel plated)

3 Electroless nickel, MS (P)

4 Gold plate over nickel

5 Cadmium plate over nickel, MS (N)

6 Bright nickel

7 Cadmium plate, nickel base, OD (MSD), (300 hr salt spray test)

8 Chromium (P) (nickel plated)

**Step 4. Select a Shell Style**

Designator

0 Wall mount receptacle

1 Box mount receptacle

2 Jam nut receptacle with rear thread (DT only)

3 Maximum penetration jam nut receptacle

4 Jam nut receptacle

Series III TV

Series II JT

Series I LJT

SJT

Printed  
Circuit Board

EMI Filter/  
Transient

Accessories  
App Tools

HD38999  
High Density

Options

### 1. Fill out the EMI Filter Connector Check list

Date \_\_\_\_\_

Ref. Filter P/N \_\_\_\_\_ Ref. Mil-Spec \_\_\_\_\_

#### Filter Requirements:

Filter Type (Pi, C, LC, T, LL, other) \_\_\_\_\_

Capacitance (locations) \_\_\_\_\_

Capacitance (locations) \_\_\_\_\_

Capacitance (locations) \_\_\_\_\_

Ground Contacts (locations) \_\_\_\_\_

Insulated feed-thru (locations) \_\_\_\_\_

| Frequency (MHz) | Insertion Loss (dB) |
|-----------------|---------------------|
| 1               |                     |
| 3               |                     |
| 10              |                     |
| 30              |                     |
| 100             |                     |

#### Electrical Requirements:

Working Voltage (VDC or VAC and frequency) \_\_\_\_\_

Dielectric Withstand Voltage (VDC) \_\_\_\_\_

**Modified Shell:** (Flange moved, clinch nuts, heilicoils, stand offs, etc.) \_\_\_\_\_

**Special Requirements:** (AC voltage, spike voltage, attenuation testing, thermal cycling, burn-in, capacitor lot traceability, water immersion, etc.) \_\_\_\_\_

#### Contact Termination:

UTS (Crimp) \_\_\_\_\_

Solder Cup \_\_\_\_\_

Wire Wrap Flat dim. \_\_\_\_\_

Stickout dim. \_\_\_\_\_

PCB tail:

Diameter dim. \_\_\_\_\_

Stickout dim. \_\_\_\_\_

Pre-tin? \_\_\_\_\_

What is terminated to connector (ie. flex, rigid flex, PCB, etc.)? \_\_\_\_\_

Special Cleaning \_\_\_\_\_

(if so, recommend a protective cap with an environmental gasket)

**Special Stamping:** \_\_\_\_\_

**Customer:** \_\_\_\_\_

**Program:** \_\_\_\_\_

**Forecast:** \_\_\_\_\_

**Requested by:** \_\_\_\_\_

**Comments:** \_\_\_\_\_

## Easy Steps to build a part number... Filter

1. 2. 3. 4. 5. 6.

| Filter Connector Designator | Connector and Filter Type | Shell Finish | Shell Styles | Shell Size – Insert Arrg. | Type of Contact and Keyway Position |
|-----------------------------|---------------------------|--------------|--------------|---------------------------|-------------------------------------|
| 21                          | 24                        | 9            | 2            | 16-26                     | P                                   |

## Step 1. Select a Connector Type

|    | Designates                                     |
|----|------------------------------------------------|
| 21 | Standard scoop-proof Junior Tri-Lock Connector |
| 36 | High Temperature Connector                     |
| 47 | Plug with Grounding Fingers                    |

## Step 2. Select a Connector/Filter Type

|    | Designates                                                        |
|----|-------------------------------------------------------------------|
| 20 | FPT with VHF-1 filter (short shell)*                              |
| 22 | FPTE with VHF-1 filter (short shell)*                             |
| 24 | FJT with VHF-1 filter (short shell)                               |
| 25 | FJT with ±8 volt diode/VHF-1 filter combination                   |
| 26 | FAN with VHF-1 filter**                                           |
| 29 | FLJT with VHF-1 filter (short shell)                              |
| 31 | FPT with MF-1 filter (short shell)*                               |
| 32 | FJT with MF-1 filter (short shell)                                |
| 33 | FPT with HF-1 filter (long shell)*                                |
| 34 | FJTP with VHF-1 filter (short shell)                              |
| 36 | FLJT with HF-1 filter (long shell)                                |
| 37 | FJT with HF-1 filter (long shell-min. penetration also available) |
| 38 | FJTP with HF-1 filter (long shell)                                |
| 39 | FJTP with MF-1 filter (short shell)                               |
| 40 | FLJT with MF-1 filter (short shell)                               |
| 41 | FJT (UTS) with VHF-1 filter (short shell)                         |
| 46 | FPT (UTS) with VHF-1 filter *                                     |
| 47 | FLJTPQ with VHF-1 filter (short shell)                            |
| 48 | FLJTPQ (UTS) with VHF-1 filter (short shell)                      |
| 50 | FTV (UTS) with VHF-1 filter (short shell)                         |
| 51 | FTV (UTS) with HF-1 filter (long shell)                           |
| 52 | FTV with VHF-1 filter (short shell)                               |
| 53 | FTV with HF-1 filter (long shell)                                 |
| 56 | FJTP (UTS) with VHF-1 filter                                      |
| 57 | FLJT with VHF-1 filter (printed circuit mount)                    |
| 58 | FJTPQ (UTS) with VHF-1 filter (short shell)                       |
| 60 | FTV with VHF-1 filter (printed circuit board mount, mod. flange)  |
| 61 | FBL with VHF-1 filter (short shell)                               |
| 63 | FSJT with VHF-1 filter (short shell)                              |
| 64 | FBL (UTS) with VHF-1 filter                                       |
| 65 | FSJT (UTS) with VHF-1 filter                                      |
| 67 | FTV with VHF-1 filter (printed circuit board mount, Std. flange)  |
| 68 | FTV (UTS) with ±8 volt diode/VHF-1 filter combination             |

## -2XX

Any combination of filters, non-filters, grounds, and non-standard contact terminations will require -2XX suffix. Please consult Amphenol Aerospace for assistance in setting up these part numbers.

- Standard voltage for diode is ±8 volts. Any deviation requires a -2XX suffix.
- Standard voltage for a MOV is 47 volts. Any deviation requires a -2XX suffix.
- Standard diode/filter combination is ±8 volt/VHF-1 filter. Any deviation requires a -2XX suffix.
- Standard MOV/filter combination is 47 volt/VHF-1 filter. Any deviation requires a -2XX suffix.

## Step 2. Select Connector/Filter Type Continues

|    | Designates                                                        |
|----|-------------------------------------------------------------------|
| 73 | M83723 bayonet coupling with VHF-1 filter*                        |
| 76 | FCTV with VHF-1 filter with composite shell                       |
| 77 | FTV with VHF-1 filter and standard series III shells              |
| 78 | FCTV PCB mount with standard flange and VHF-1 filter              |
| 79 | Same as 77 with no filter - Epoxy sealed                          |
| 80 | FTV PCB mount with standard flange, standard nut and VHF-1 filter |
| 82 | FTV with ±8 volt diode/VHF-1 filter combination                   |
| 83 | FSJT with ±8 volt diode/VHF-1 filter combination                  |
| 84 | FTV (UTS) with ±8 volt diode only                                 |
| 87 | FLJT (UTS) with ±8 volt diode/VHF-1 filter combination            |

## Step 3. Select a Shell Finish

|   | Designates                                                       |
|---|------------------------------------------------------------------|
| 0 | Chromate                                                         |
| 1 | Bright cadmium                                                   |
| 2 | Stainless steel (electrolytic nickel plated)                     |
| 4 | Electroless nickel, MS (F)                                       |
| 5 | Gold plate over nickel                                           |
| 7 | Cadmium plate over nickel, MS (A)                                |
| 8 | Bright nickel                                                    |
| 9 | Cadmium plate, nickel base, OD, MS(B), (500 hr. salt spray test) |
| D | Durmalon™ Nickel-PTFE (cadmium alternative)                      |

## Step 4. Select a Shell Styles

|   | Designates                                    |
|---|-----------------------------------------------|
| 0 | Wall mount receptacle                         |
| 2 | Box mount receptacle                          |
| 3 | Jam nut receptacle with rear thread (PT only) |
| 4 | Minimum penetration jam nut receptacle        |
| 7 | Jam nut receptacle                            |

\*See catalog 12-120 for more information

### Step 5. Select a Shell Size & Insert Arrangement

| Shell Size | Designates                                                   |
|------------|--------------------------------------------------------------|
| 8–24       | Shell sizes available for FJT, Series I                      |
| 9–25       | Shell sizes available for FLJT, Series II and TV, Series III |

For Shell Sizes & Insert Arrangements  
see charts on pages 4-7.  
To view Insert Arrangement Illustrations see  
pages 8-14.

Shell Size & Insert Arrangements are together in one chart. First number represents Shell Size, second number is the Insert Arrangement.

### Step 6. Select the type of Contact and Normal or Alternate Keying Positions

| Shell Size | Designates                  |
|------------|-----------------------------|
| <b>P</b>   | Pins in a normal rotation   |
| <b>S</b>   | Socket in a normal rotation |

For alternate rotations go to the table below for suffix letter.

### ALTERNATE ROTATION SUFFIX LETTERS

| FJT, FLJT or FSJT  |               |         | FTV or FCTV        |               |         |
|--------------------|---------------|---------|--------------------|---------------|---------|
| Alternate Position | Suffix Letter |         | Alternate Position | Suffix Letter |         |
|                    | Pins          | Sockets |                    | Pins          | Sockets |
| Normal             | P             | S       | Normal             | P             | S       |
| A                  | E             | F       | A                  | G             | H       |
| B                  | R             | T       | B                  | I             | J       |
| C                  | W             | X       | C                  | K             | L       |
| D                  | Y             | Z       | D                  | M             | N       |
|                    |               |         | E                  | R             | T       |

See page 171 for ordering adapters; page 195 for ordering universal headers.

Record your part numbers here...

[illegible]

# FTV & FCTV Composite 38999, Series III

## Subminiature Circular Filters



The Amphenol® FTV Series III, demonstrates unsurpassed technical leadership. With added filter features, the high performance general duty threaded connector is designed to withstand the pressures of severe environment applications. The FCTV Series is the Composite Series III with filtering for EMI/EMP protection. It offers the same high performance as its metal counterpart, the FTV, but with a lightweight, corrosion resistance shell.

### Intermateable with MIL-DTL-38999 Series III Connectors (See section Series III TV, MIL-DTL-38999) FTV & FCTV Composite

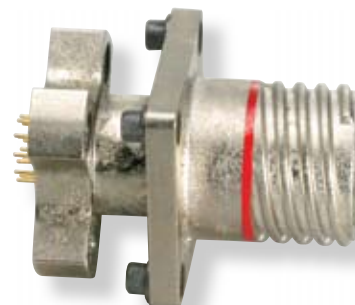
- Quick Mating - completely mates in a 360° turn of the coupling nut
- Lockwiring Eliminated - incorporates anti-decoupling device
- Contact Protection - 100% "scoop-proof"
- Improved Moisture Resistance - prevents electrolytic erosion of contacts
- Lightweight Composite Shell - 17% – 70% weight savings over metal
- Corrosion Resistant - available in standard MIL-DTL-38999 olive drab cadmium (175°C) and electroless nickel plating (200°C), both withstanding 2000 hours of salt spray exposure. The base material is able to withstand an indefinite exposure to salt spray.
- Durability - 1500 couplings minimum (in reference to connector couplings, not contacts)

FTV & FCTV Key/Keyway Positions

| Shell Size | Key & Keyway arrangement identification letter | AR° or AP° BSC | BR° or BP° BSC | CR° or CP° BSC | DR° or DP° BSC |
|------------|------------------------------------------------|----------------|----------------|----------------|----------------|
| 9          | N                                              | 105            | 140            | 215            | 265            |
|            | A                                              | 102            | 132            | 248            | 320            |
|            | B                                              | 80             | 118            | 230            | 312            |
|            | C                                              | 35             | 140            | 205            | 275            |
|            | D                                              | 64             | 155            | 234            | 304            |
|            | E                                              | 91             | 131            | 197            | 240            |
| 11, 13, 15 | N                                              | 95             | 141            | 208            | 236            |
|            | A                                              | 113            | 156            | 182            | 292            |
|            | B                                              | 90             | 145            | 195            | 252            |
|            | C                                              | 53             | 156            | 220            | 255            |
|            | D                                              | 119            | 146            | 176            | 298            |
|            | E                                              | 51             | 141            | 184            | 242            |
| 17 and 19  | N                                              | 80             | 142            | 196            | 293            |
|            | A                                              | 135            | 170            | 200            | 310            |
|            | B                                              | 49             | 169            | 200            | 244            |
|            | C                                              | 66             | 140            | 200            | 257            |
|            | D                                              | 62             | 145            | 180            | 280            |
|            | E                                              | 79             | 153            | 197            | 272            |
| 21, 23, 25 | N                                              | 80             | 142            | 196            | 293            |
|            | A                                              | 135            | 170            | 200            | 310            |
|            | B                                              | 49             | 169            | 200            | 244            |
|            | C                                              | 66             | 140            | 200            | 257            |
|            | D                                              | 62             | 145            | 180            | 280            |
|            | E                                              | 79             | 153            | 197            | 272            |

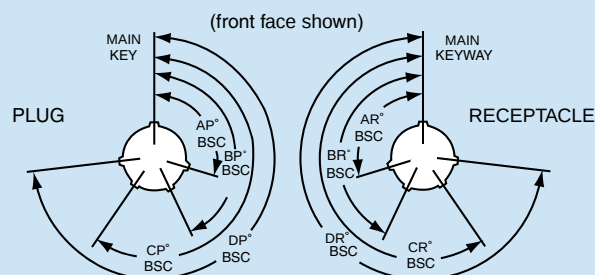
All angles are BSC

The insert arrangement does not rotate with main key/keyway.

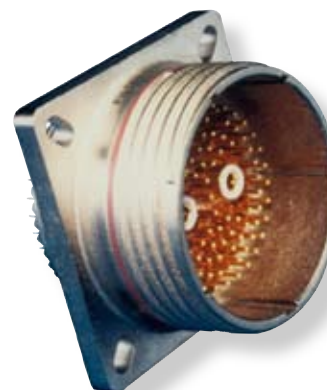


FTV

Composite FCTV Connector for PCB board mounting. Amphenol is currently the only supplier of one-piece composite PCB stand-off shells.



FCTV



Series III TV

Series II JT

Series I LJT

SJT

Printed Circuit Board

EMI Filter/Transient

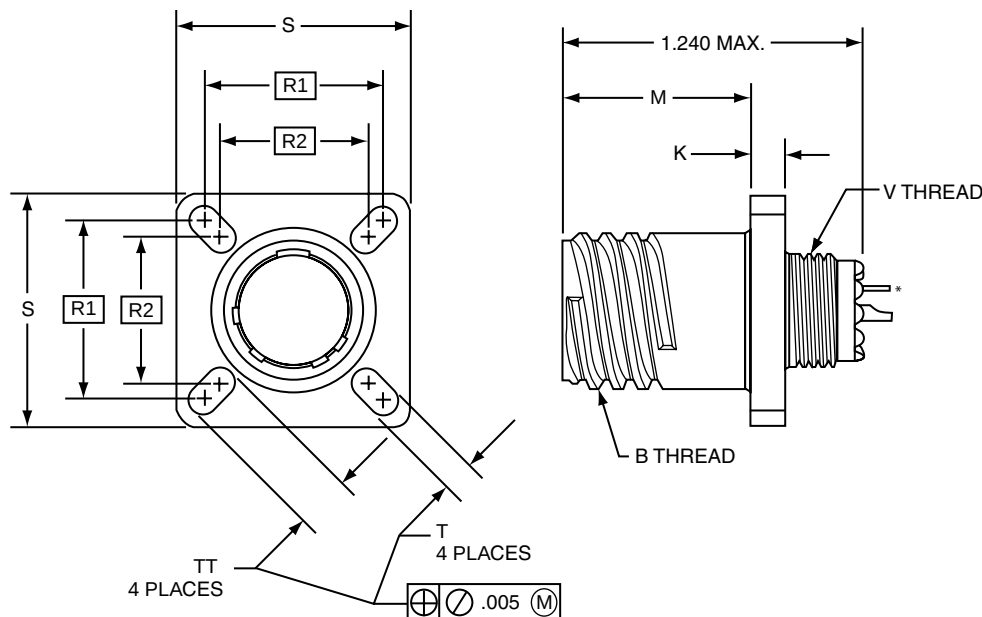
Accessories App Tools

HD38999 High Density

Options

**PART #** To complete, see how to order page 135.

| Filter<br>Connector<br>Designator | Connect/<br>Filter<br>Type | Shell<br>Finish | Shell<br>Style | Shell Size<br>& Insert Arrg | Type of Contact/<br>Keyway Position |
|-----------------------------------|----------------------------|-----------------|----------------|-----------------------------|-------------------------------------|
| 21                                | 76                         | X               | 0              | XX-XX                       | X                                   |



21-76XO

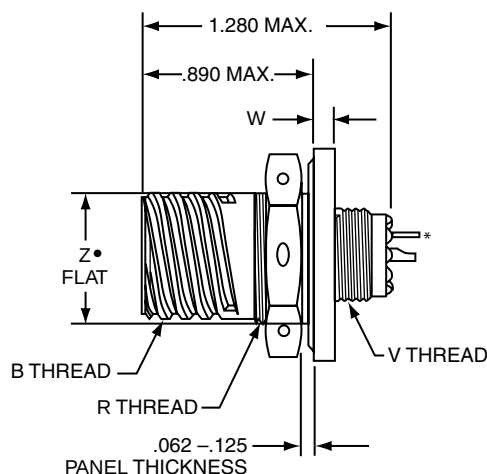
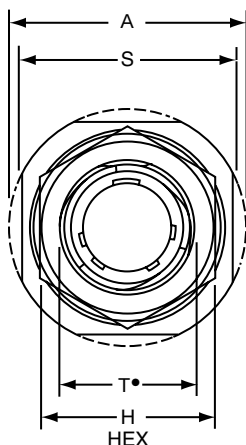
\* Printed Circuit Tail available. Consult Amphenol Aerospace factory for Part Number.

| Shell<br>Size | BThread<br>Class 2A<br>0.1P-0.3L-TS<br>(Plated) | M<br>+.000<br>-.005 | K<br>±.0025 | R <sup>1</sup><br>TP | R <sup>2</sup><br>TP | S<br>+.011<br>-.010 | T<br>+.008<br>-.006 | TT<br>+.008<br>-.006 | V<br>Thread<br>Metric<br>(Plated) |
|---------------|-------------------------------------------------|---------------------|-------------|----------------------|----------------------|---------------------|---------------------|----------------------|-----------------------------------|
| 9             | .6250                                           | .773                | .1378       | .719                 | .594                 | .938                | .128                | .216                 | M12X1-6g0.100R                    |
| 11            | .7500                                           | .773                | .1378       | .812                 | .719                 | 1.031               | .128                | .194                 | M15X1-6g0.100R                    |
| 13            | .8750                                           | .773                | .1378       | .906                 | .812                 | 1.125               | .128                | .194                 | M18X1-6g0.100R                    |
| 15            | 1.0000                                          | .773                | .1378       | .969                 | .906                 | 1.219               | .128                | .173                 | M22X1-6g0.100R                    |
| 17            | 1.1875                                          | .773                | .1378       | 1.062                | .969                 | 1.312               | .128                | .194                 | M25X1-6g0.100R                    |
| 19            | 1.2500                                          | .773                | .1378       | 1.156                | 1.062                | 1.438               | .128                | .194                 | M28X1-6g0.100R                    |
| 21            | 1.3750                                          | .741                | .1654       | 1.250                | 1.156                | 1.562               | .128                | .194                 | M31X1-6g0.100R                    |
| 23            | 1.5000                                          | .741                | .1654       | 1.375                | 1.250                | 1.688               | .154                | .242                 | M34X1-6g0.100R                    |
| 25            | 1.6250                                          | .741                | .1654       | 1.500                | 1.375                | 1.812               | .154                | .242                 | M37X1-6g0.100R                    |

All dimensions for reference only.

**PART #** To complete, see how to order page 135.

| Filter Connector Designator | Connect/ Filter Type | Shell Finish | Shell Style | Shell Size & Insert Arrg | Type of Contact/ Keyway Position |
|-----------------------------|----------------------|--------------|-------------|--------------------------|----------------------------------|
| 21                          | 76                   | X            | 7           | XX-XX                    | X                                |



**21-76X7**

\*\* Printed Circuit Tail available. Consult Amphenol Aerospace factory for Part Number.

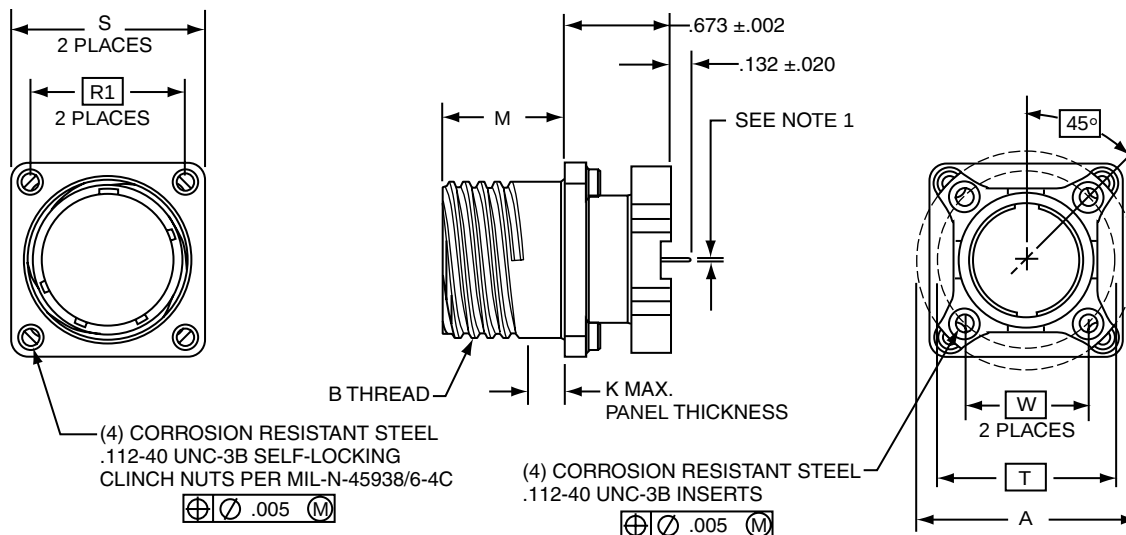
• D shaped mounting hole dimensions

| Shell Size | A Dia. ±.010 | B Thread Class 2A 0.1P-0.3L-TS (Plated) | H Hex +.017 - .016 | R Thread Metric (Plated) | S ±.015 | T* +.010 - .000 | V Thread Metric (Plated) | W +.035 - .004 | Z* Flat +.000 - .010 |
|------------|--------------|-----------------------------------------|--------------------|--------------------------|---------|-----------------|--------------------------|----------------|----------------------|
| 9          | 1.188        | .6250                                   | .875               | M17X1-6g0.100R           | 1.062   | .697            | M12X1-6g0.100R           | .086           | .669                 |
| 11         | 1.375        | .7500                                   | 1.000              | M20X1-6g0.100R           | 1.250   | .822            | M15X1-6g0.100R           | .086           | .769                 |
| 13         | 1.500        | .8750                                   | 1.188              | M25X1-6g0.100R           | 1.375   | 1.007           | M18X1-6g0.100R           | .086           | .955                 |
| 15         | 1.625        | 1.0000                                  | 1.312              | M28X1-6g0.100R           | 1.500   | 1.134           | M22X1-6g0.100R           | .086           | 1.084                |
| 17         | 1.750        | 1.1875                                  | 1.438              | M32X1-6g0.100R           | 1.625   | 1.259           | M25X1-6g0.100R           | .086           | 1.208                |
| 19         | 1.937        | 1.2500                                  | 1.562              | M35X1-6g0.100R           | 1.812   | 1.384           | M28X1-6g0.100R           | .118           | 1.333                |
| 21         | 2.062        | 1.3750                                  | 1.688              | M38X1-6g0.100R           | 1.938   | 1.507           | M31X1-6g0.100R           | .118           | 1.459                |
| 23         | 2.188        | 1.5000                                  | 1.812              | M41X1-6g0.100R           | 2.062   | 1.634           | M34X1-6g0.100R           | .118           | 1.575                |
| 25         | 2.312        | 1.6250                                  | 2.000              | M44X1-6g0.100R           | 2.188   | 1.759           | M37X1-6g0.100R           | .118           | 1.709                |

All dimensions for reference only.

**PART #** To complete, see how to order page 135.

| Filter<br>Connector<br>Designator | Connect/<br>Filter<br>Type | Shell<br>Finish | Shell<br>Style | Shell Size<br>& Insert Arrg | Type of Contact/<br>Keyway Position |
|-----------------------------------|----------------------------|-----------------|----------------|-----------------------------|-------------------------------------|
| 21                                | 78                         | X               | 2              | XX-XX                       | X                                   |



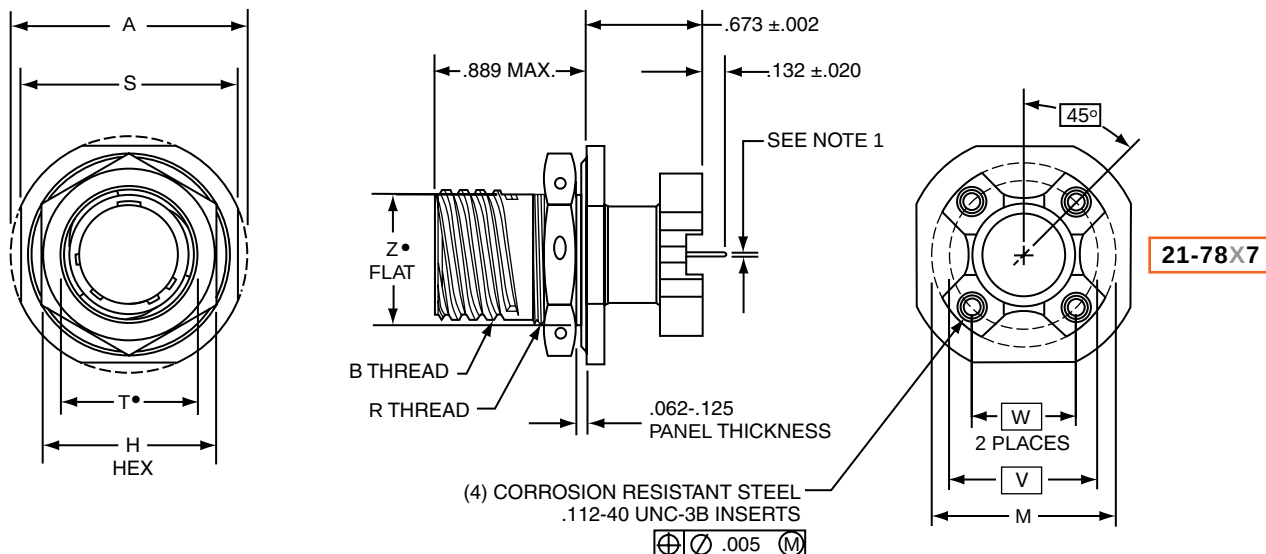
**21-78X2**

1. Standard tail for size 22 is .020 ±.001 dia.  
Standard tail for size 20 is .030 ±.001 dia.

| Shell<br>Size | A<br>Dia.<br>±.005 | B Thread<br>Class 2A<br>0.1P-0.3L-TS<br>(Plated) | M<br>+.003<br>-.003 | K Max.<br>Panel<br>Thickness | R <sup>1</sup><br>TP | S<br>+.011<br>-.010 | PCB Mounting<br>Dimensions |         |
|---------------|--------------------|--------------------------------------------------|---------------------|------------------------------|----------------------|---------------------|----------------------------|---------|
|               |                    |                                                  |                     |                              |                      |                     | T Dia.<br>TP               | W<br>TP |
| 9             | 1.016              | .6250                                            | .770                | .234                         | .719                 | .938                | .752                       | .532    |
| 11            | 1.148              | .7500                                            | .770                | .234                         | .812                 | 1.031               | .850                       | .601    |
| 13            | 1.250              | .8750                                            | .770                | .234                         | .906                 | 1.125               | .994                       | .703    |
| 15            | 1.375              | 1.0000                                           | .770                | .234                         | .969                 | 1.219               | 1.119                      | .791    |
| 17            | 1.500              | 1.1875                                           | .770                | .234                         | 1.062                | 1.312               | 1.237                      | .875    |
| 19            | 1.625              | 1.2500                                           | .770                | .234                         | 1.156                | 1.438               | 1.379                      | .975    |
| 21            | 1.750              | 1.3750                                           | .738                | .204                         | 1.250                | 1.562               | 1.489                      | 1.053   |
| 23            | 1.875              | 1.5000                                           | .738                | .204                         | 1.375                | 1.688               | 1.619                      | 1.145   |
| 25            | 2.000              | 1.6250                                           | .738                | .204                         | 1.500                | 1.812               | 1.744                      | 1.233   |

**PART #** To complete, see how to order page 135.

| Filter<br>Connector<br>Designator | Connect/<br>Filter<br>Type | Shell<br>Finish | Shell<br>Style | Shell Size<br>& Insert Arrg | Type of Contact/<br>Keyway Position |
|-----------------------------------|----------------------------|-----------------|----------------|-----------------------------|-------------------------------------|
| 21                                | 78                         | X               | 7              | XX-XX                       | X                                   |



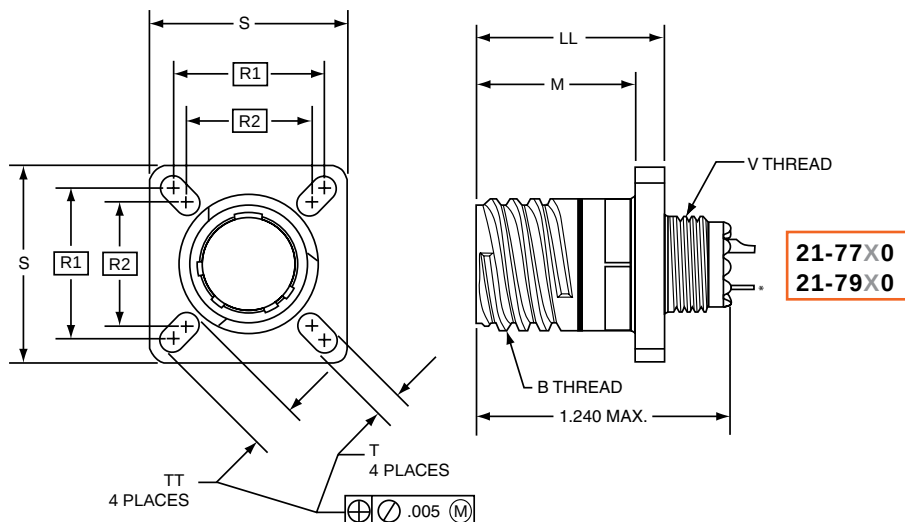
1. Standard tail for size 22 is .020±.001  
Standard tail for size 20 is .030±.001

- "D" shaped mounting hole dimensions

| Shell<br>Size | A<br>Dia.<br>±.005 | B Thread<br>Class 2A<br>0.1P-0.3L-TS<br>(Plated) | H<br>Hex<br>+.017<br>-.016 | M<br>Dia.<br>±.005 | R<br>Thread<br>Metric<br>(Plated) | S<br>+.011<br>-.010 | T•<br>Dia.<br>+.010<br>-.000 | PCB Mounting<br>Dimensions |              | Z•<br>Flat<br>+.000<br>-.010 |
|---------------|--------------------|--------------------------------------------------|----------------------------|--------------------|-----------------------------------|---------------------|------------------------------|----------------------------|--------------|------------------------------|
|               |                    |                                                  |                            |                    |                                   |                     |                              | W<br>TP                    | V Dia.<br>TP |                              |
| 9             | 1.188              | .6250                                            | .875                       | 1.016              | M17X1-6g0.100R                    | 1.062               | .697                         | .532                       | .752         | .669                         |
| 11            | 1.375              | .7500                                            | 1.000                      | 1.148              | M20X1-6g0.100R                    | 1.250               | .822                         | .601                       | .850         | .769                         |
| 13            | 1.500              | .8750                                            | 1.188                      | 1.250              | M25X1-6g0.100R                    | 1.375               | 1.007                        | .703                       | .994         | .955                         |
| 15            | 1.625              | 1.0000                                           | 1.312                      | 1.375              | M28X1-6g0.100R                    | 1.500               | 1.134                        | .791                       | 1.119        | 1.084                        |
| 17            | 1.750              | 1.1875                                           | 1.438                      | 1.500              | M32X1-6g0.100R                    | 1.625               | 1.259                        | .875                       | 1.237        | 1.208                        |
| 19            | 1.937              | 1.2500                                           | 1.562                      | 1.625              | M35X1-6g0.100R                    | 1.812               | 1.384                        | .975                       | 1.379        | 1.333                        |
| 21            | 2.062              | 1.3750                                           | 1.688                      | 1.750              | M38X1-6g0.100R                    | 1.937               | 1.507                        | 1.053                      | 1.489        | 1.459                        |
| 23            | 2.188              | 1.5000                                           | 1.812                      | 1.875              | M41X1-6g0.100R                    | 2.062               | 1.634                        | 1.145                      | 1.619        | 1.575                        |
| 25            | 2.312              | 1.6250                                           | 2.000                      | 2.000              | M44X1-6g0.100R                    | 2.188               | 1.759                        | 1.233                      | 1.744        | 1.709                        |

All dimensions for reference only.

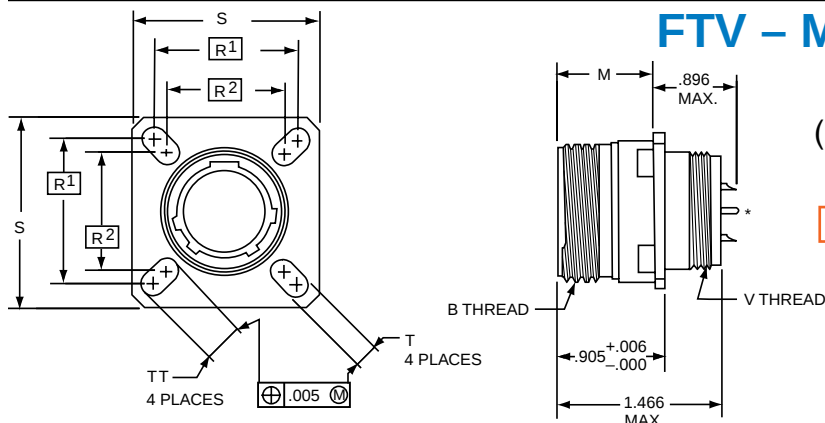
|                                                |                                 |       |       |
|------------------------------------------------|---------------------------------|-------|-------|
| <b>PART #</b>                                  | Filter Connector Designator     | 21    | 21    |
| <b>To complete, see how to order page 135.</b> | Connect/Filter Type             | 77    | 79    |
|                                                | Shell Finish                    | X     | X     |
|                                                | Shell Style                     | 0     | 0     |
| <b>(Solder Cup)</b>                            | Shell Size & Insert Arrg        | XX-XX | XX-XX |
| <b>* Mil Spec length</b>                       | Type of Contact/Keyway Position | X     | X     |



\* Printed Circuit Tail available. Consult Amphenol Aerospace, Sidney, NY for Part Number.

| Shell Size | BThread Class 2A 0.1P-0.3L-TS (Plated) | M +.000 - .005 | LL +.006 - .000 | R <sup>1</sup> TP | R <sup>2</sup> TP | S Max | T +.008 - .006 | V Thread Metric (Plated) | TT +.008 - .006 |
|------------|----------------------------------------|----------------|-----------------|-------------------|-------------------|-------|----------------|--------------------------|-----------------|
| 9          | .6250                                  | .820           | .905            | .719              | .594              | .948  | .128           | M12X1-6g0.100R           | .216            |
| 11         | .7500                                  | .820           | .905            | .812              | .719              | 1.043 | .128           | M15X1-6g0.100R           | .194            |
| 13         | .8750                                  | .820           | .905            | .906              | .812              | 1.137 | .128           | M18X1-6g0.100R           | .194            |
| 15         | 1.0000                                 | .820           | .905            | .969              | .906              | 1.232 | .128           | M22X1-6g0.100R           | .173            |
| 17         | 1.1875                                 | .820           | .905            | 1.062             | .969              | 1.323 | .128           | M25X1-6g0.100R           | .194            |
| 19         | 1.2500                                 | .820           | .905            | 1.156             | 1.062             | 1.449 | .128           | M28X1-6g0.100R           | .194            |
| 21         | 1.3750                                 | .790           | .905            | 1.250             | 1.156             | 1.575 | .128           | M31X1-6g0.100R           | .194            |
| 23         | 1.5000                                 | .790           | .905            | 1.375             | 1.250             | 1.701 | .154           | M34X1-6g0.100R           | .242            |
| 25         | 1.6250                                 | .790           | .905            | 1.500             | 1.375             | 1.823 | .154           | M37X1-6g0.100R           | .242            |

All dimensions for reference only.



## FTV – MIL-DTL-38999, Series III Wall Mounting Receptacle (Extended length shell\*\*) Aluminum

21-52X0

|                                                |                                 |       |
|------------------------------------------------|---------------------------------|-------|
| <b>PART #</b>                                  | Filter Connector Designator     | 21    |
| <b>To complete, see how to order page 135.</b> | Connect/Filter Type             | 52    |
|                                                | Shell Finish                    | X     |
|                                                | Shell Style                     | 0     |
|                                                | Shell Size & Insert Arrg        | XX-XX |
|                                                | Type of Contact/Keyway Position | X     |

\* Printed Circuit Tail available. Consult Amphenol Aerospace, Sidney, NY for Part Number.

| Shell Size | BThread Class 2A 0.1P-0.3L-TS (Plated) | M +.000 - .005 | R <sup>1</sup> TP | R <sup>2</sup> TP | S ±.010 | T +.008 - .006 | V Thread Metric (Plated) | TT +.008 - .006 |
|------------|----------------------------------------|----------------|-------------------|-------------------|---------|----------------|--------------------------|-----------------|
| 9          | .6250                                  | .820           | .719              | .594              | .938    | .128           | M12X1-6g0.100R           | .216            |
| 11         | .7500                                  | .820           | .812              | .719              | 1.031   | .128           | M15X1-6g0.100R           | .194            |
| 13         | .8750                                  | .820           | .906              | .812              | 1.125   | .128           | M18X1-6g0.100R           | .194            |
| 15         | 1.0000                                 | .820           | .969              | .906              | 1.219   | .128           | M22X1-6g0.100R           | .173            |
| 17         | 1.1875                                 | .820           | 1.062             | .969              | 1.312   | .128           | M25X1-6g0.100R           | .194            |
| 19         | 1.2500                                 | .820           | 1.156             | 1.062             | 1.438   | .128           | M28X1-6g0.100R           | .194            |
| 21         | 1.3750                                 | .790           | 1.250             | 1.156             | 1.562   | .128           | M31X1-6g0.100R           | .194            |
| 23         | 1.5000                                 | .790           | 1.375             | 1.250             | 1.688   | .154           | M34X1-6g0.100R           | .242            |
| 25         | 1.6250                                 | .790           | 1.500             | 1.375             | 1.812   | .154           | M37X1-6g0.100R           | .242            |

\*\*To accommodate higher voltage and/or higher capacitance applications

Plug movement required to clear FTV receptacles: .625 min.

# FTV – MIL-DTL-38999, Series III

## Wall Mounting Receptacle - Aluminum

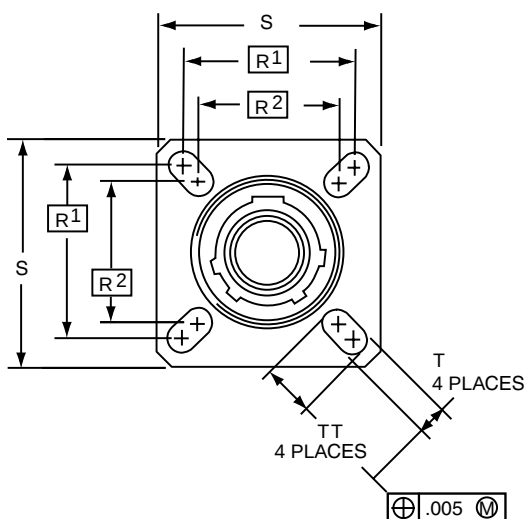
### (UTS crimp)



**PART #** To complete, see how to order page 135.

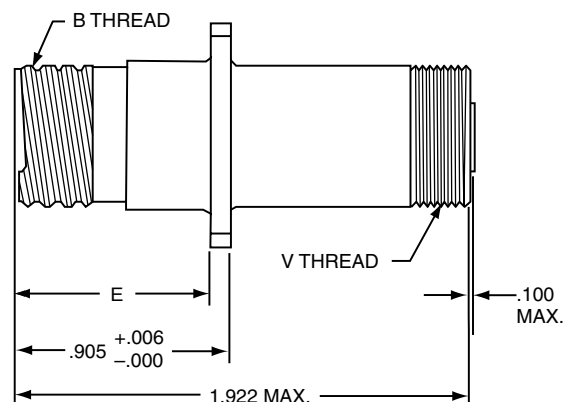
| Filter Connector Designator | Connect/ Filter Type | Shell Finish | Shell Style | Shell Size & Insert Arrg | Type of Contact/ Keyway Position |
|-----------------------------|----------------------|--------------|-------------|--------------------------|----------------------------------|
| 21                          | 50                   | X            | 0           | XX-XX                    | X                                |

**UTS (Crimp) Contact SAE AS39029/57**



**21-50X0**

**UTS (Crimp) Contact**  
**SAE AS39029/57**



| Shell Size | BThread Class 2A 0.1P-0.3L-TS (Plated) | E +.000 - .005 | R <sup>1</sup> TP | R <sup>2</sup> TP | S ±.010 | T +.008 - .006 | V Thread Metric (Plated) | TT +.008 - .006 |
|------------|----------------------------------------|----------------|-------------------|-------------------|---------|----------------|--------------------------|-----------------|
| 9          | .6250                                  | .820           | .719              | .594              | .938    | .128           | M15X1-6g0.100R           | .216            |
| 11         | .7500                                  | .820           | .812              | .719              | 1.031   | .128           | M18X1-6g0.100R           | .194            |
| 13         | .8750                                  | .820           | .906              | .812              | 1.125   | .128           | M22X1-6g0.100R           | .194            |
| 15         | 1.0000                                 | .820           | .969              | .906              | 1.219   | .128           | M25X1-6g0.100R           | .173            |
| 17         | 1.1875                                 | .820           | 1.062             | .969              | 1.312   | .128           | M28X1-6g0.100R           | .194            |
| 19         | 1.2500                                 | .820           | 1.156             | 1.062             | 1.438   | .128           | M31X1-6g0.100R           | .194            |
| 21         | 1.3750                                 | .790           | 1.250             | 1.156             | 1.562   | .128           | M34X1-6g0.100R           | .194            |
| 23         | 1.5000                                 | .790           | 1.375             | 1.250             | 1.688   | .154           | M37X1-6g0.100R           | .242            |
| 25         | 1.6250                                 | .790           | 1.500             | 1.375             | 1.812   | .154           | M41X1-6g0.100R           | .242            |

All dimensions for reference only.

Series III TV

Series II JT

Series I LJT

SJT

Printed  
Circuit Board

EMI Filter/  
Transient

Accessories  
App Tools

HD38999  
High Density

Options

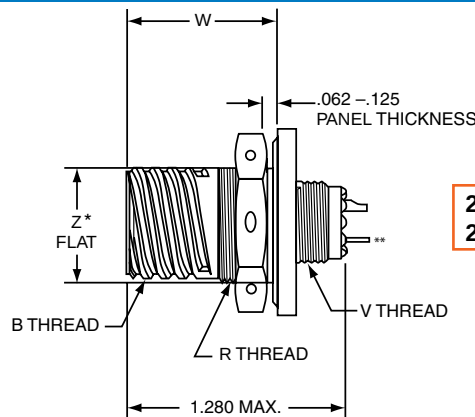
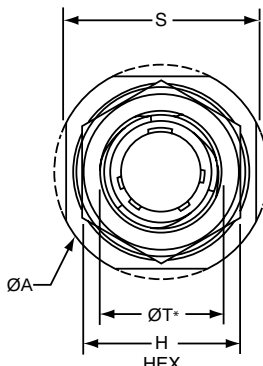
### PART #

To complete,  
see how  
to order  
page 135.

(Solder Cup)

|                                 |       |       |
|---------------------------------|-------|-------|
| Filter Connector Designator     | 21    | 21    |
| Connect/Filter Type             | 77    | 79    |
| Shell Finish                    | X     | X     |
| Shell Style                     | 7     | 7     |
| Shell Size & Insert Arrg        | XX-XX | XX-XX |
| Type of Contact/Keyway Position | X     | X     |

\* Mil Spec length



21-77X7  
21-79X7

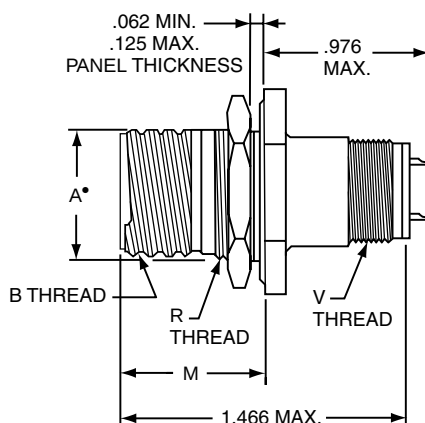
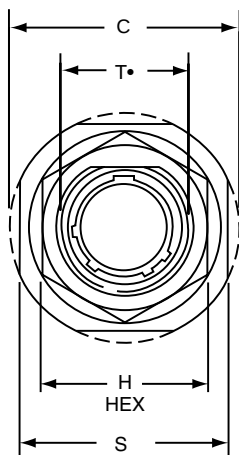
\*\* Printed Circuit Tail available. Consult Amphenol Aerospace factory for P/N. \* "D" shaped mounting hole dimensions

| Shell Size | ØA* Max | BThread Class 2A 0.1P-0.3L-TS (Plated) | H Hex +.017 –.016 | R Thread Metric (Plated) | S ±.010 | ØT* +.010 –.000 | V Thread Metric (Plated) | W +.011 –.010 | Z* Flat +.000 –.010 |
|------------|---------|----------------------------------------|-------------------|--------------------------|---------|-----------------|--------------------------|---------------|---------------------|
| 9          | 1.199   | .6250                                  | .875              | M17X1-6g0.100R           | 1.062   | .697            | M12X1-6g0.100R           | .871          | .669                |
| 11         | 1.386   | .7500                                  | 1.000             | M20X1-6g0.100R           | 1.250   | .822            | M15X1-6g0.100R           | .871          | .769                |
| 13         | 1.511   | .8750                                  | 1.188             | M25X1-6g0.100R           | 1.375   | 1.007           | M18X1-6g0.100R           | .878          | .955                |
| 15         | 1.636   | 1.0000                                 | 1.312             | M28X1-6g0.100R           | 1.500   | 1.134           | M22X1-6g0.100R           | .878          | 1.084               |
| 17         | 1.761   | 1.1875                                 | 1.438             | M32X1-6g0.100R           | 1.625   | 1.259           | M25X1-6g0.100R           | .878          | 1.208               |
| 19         | 1.949   | 1.2500                                 | 1.562             | M35X1-6g0.100R           | 1.812   | 1.384           | M28X1-6g0.100R           | .878          | 1.333               |
| 21         | 2.073   | 1.3750                                 | 1.688             | M38X1-6g0.100R           | 1.938   | 1.507           | M31X1-6g0.100R           | .878          | 1.459               |
| 23         | 2.199   | 1.5000                                 | 1.812             | M41X1-6g0.100R           | 2.062   | 1.634           | M34X1-6g0.100R           | .878          | 1.575               |
| 25         | 2.323   | 1.6250                                 | 2.000             | M44X1-6g0.100R           | 2.188   | 1.759           | M37X1-6g0.100R           | .878          | 1.709               |

## FTV – MIL-DTL-38999, Series III

(Extended length shell\*\*)

Jam Nut Receptacle



21-52X7

### PART #

To complete,  
see how  
to order  
page 135.

|                                 |       |
|---------------------------------|-------|
| Filter Connector Designator     | 21    |
| Connect/Filter Type             | 52    |
| Shell Finish                    | X     |
| Shell Style                     | 7     |
| Shell Size & Insert Arrg        | XX-XX |
| Type of Contact/Keyway Position | X     |

\* "D" shaped mounting hole dimensions Plug movement required to clear FTV receptacles: .625 min.

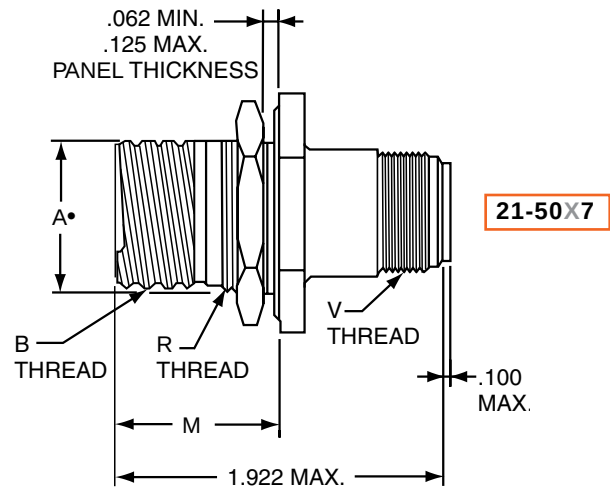
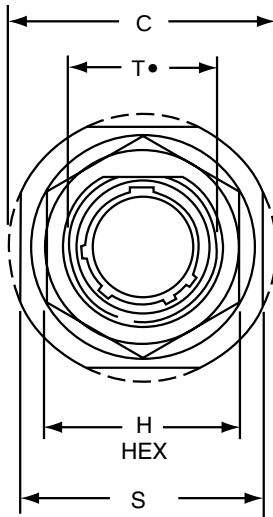
| Shell Size | A* +.000 –.010 | BThread Class 2A 0.1P-0.3L-TS (Plated) | C Max | H Hex +.017 –.016 | M +.011 –.010 | R Thread (Plated) | S +.011 –.010 | T* +.010 –.000 | V Thread Metric (Plated) |
|------------|----------------|----------------------------------------|-------|-------------------|---------------|-------------------|---------------|----------------|--------------------------|
| 9          | .669           | .6250                                  | 1.199 | .875              | .871          | M17X1-6g0.100R    | 1.062         | .697           | M12X1-6g0.100R           |
| 11         | .769           | .7500                                  | 1.386 | 1.000             | .871          | M20X1-6g0.100R    | 1.250         | .822           | M15X1-6g0.100R           |
| 13         | .955           | .8750                                  | 1.511 | 1.188             | .878          | M25X1-6g0.100R    | 1.375         | 1.007          | M18X1-6g0.100R           |
| 15         | 1.084          | 1.0000                                 | 1.636 | 1.312             | .878          | M28X1-6g0.100R    | 1.500         | 1.134          | M22X1-6g0.100R           |
| 17         | 1.208          | 1.1875                                 | 1.761 | 1.438             | .878          | M32X1-6g0.100R    | 1.625         | 1.259          | M25X1-6g0.100R           |
| 19         | 1.333          | 1.2500                                 | 1.949 | 1.562             | .878          | M35X1-6g0.100R    | 1.812         | 1.384          | M28X1-6g0.100R           |
| 21         | 1.459          | 1.3750                                 | 2.073 | 1.688             | .878          | M38X1-6g0.100R    | 1.938         | 1.507          | M31X1-6g0.100R           |
| 23         | 1.575          | 1.5000                                 | 2.199 | 1.812             | .878          | M41X1-6g0.100R    | 2.062         | 1.634          | M34X1-6g0.100R           |
| 25         | 1.709          | 1.6250                                 | 2.323 | 2.000             | .878          | M44X1-6g0.100R    | 2.188         | 1.759          | M37X1-6g0.100R           |

\*\*To accommodate higher voltage and/or higher capacitance applications

**PART #** To complete, see how to order page 135.

| Filter<br>Connector<br>Designator | Connect/<br>Filter<br>Type | Shell<br>Finish | Shell<br>Style | Shell Size<br>& Insert Arrg | Type of Contact/<br>Keyway Position |
|-----------------------------------|----------------------------|-----------------|----------------|-----------------------------|-------------------------------------|
| 21                                | 50                         | X               | 7              | XX-XX                       | X                                   |

**UTS (Crimp ) Contact SAE AS39029/57**



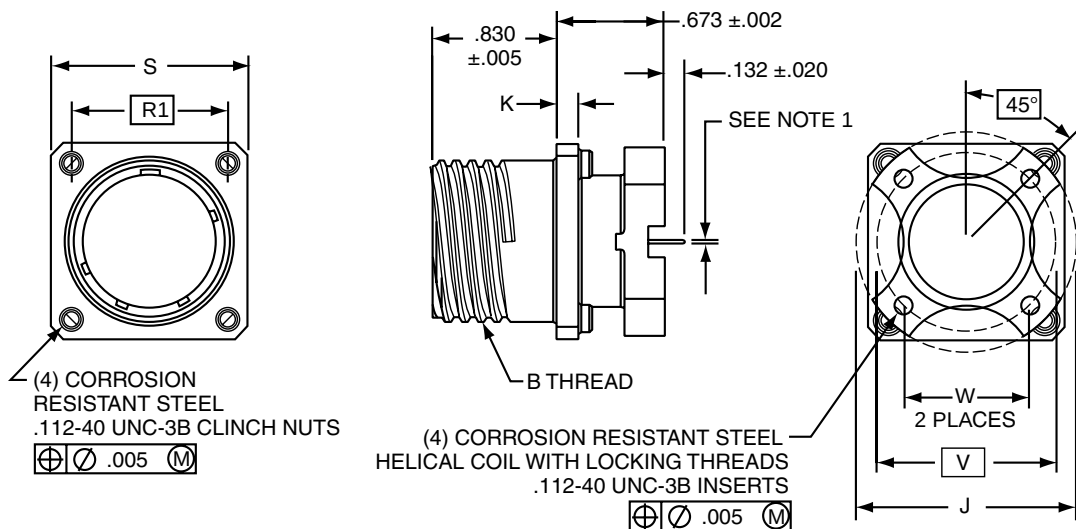
- "D" shaped mounting hole dimensions
- Plug movement required to clear FTV receptacles: .625 min.

| Shell Size | A*<br>+.000<br>-.010 | B Thread<br>Class 2A<br>0.1P-0.3L-TS<br>(Plated) | C<br>Max | H<br>Hex<br>+.017<br>-.016 | M<br>±.005 | R<br>Thread<br>(Plated) | S<br>+.011<br>-.010 | T*<br>+.010<br>-.000 | V<br>Thread<br>Metric<br>(Plated) |
|------------|----------------------|--------------------------------------------------|----------|----------------------------|------------|-------------------------|---------------------|----------------------|-----------------------------------|
| 9          | .669                 | .6250                                            | 1.199    | .875                       | .871       | M17X1-6g0.100R          | 1.062               | .697                 | M15X1-6g0.100R                    |
| 11         | .769                 | .7500                                            | 1.386    | 1.000                      | .871       | M20X1-6g0.100R          | 1.250               | .822                 | M18X1-6g0.100R                    |
| 13         | .955                 | .8750                                            | 1.511    | 1.188                      | .878       | M25X1-6g0.100R          | 1.375               | 1.007                | M22X1-6g0.100R                    |
| 15         | 1.084                | 1.0000                                           | 1.636    | 1.312                      | .878       | M28X1-6g0.100R          | 1.500               | 1.134                | M25X1-6g0.100R                    |
| 17         | 1.208                | 1.1875                                           | 1.761    | 1.438                      | .878       | M32X1-6g0.100R          | 1.625               | 1.259                | M28X1-6g0.100R                    |
| 19         | 1.333                | 1.2500                                           | 1.949    | 1.562                      | .878       | M35X1-6g0.100R          | 1.812               | 1.384                | M31X1-6g0.100R                    |
| 21         | 1.459                | 1.3750                                           | 2.073    | 1.688                      | .878       | M38X1-6g0.100R          | 1.938               | 1.507                | M34X1-6g0.100R                    |
| 23         | 1.575                | 1.5000                                           | 2.199    | 1.812                      | .878       | M41X1-6g0.100R          | 2.062               | 1.634                | M37X1-6g0.100R                    |
| 25         | 1.709                | 1.6250                                           | 2.323    | 2.000                      | .878       | M44X1-6g0.100R          | 2.188               | 1.759                | M41X1-6g0.100R                    |

All dimensions for reference only.

**PART #** To complete, see how to order page 135.

| Filter<br>Connector<br>Designator | Connect/<br>Filter<br>Type | Shell<br>Finish | Shell<br>Style | Shell Size<br>& Insert Arrg | Type of Contact/<br>Keyway Position |
|-----------------------------------|----------------------------|-----------------|----------------|-----------------------------|-------------------------------------|
| 21                                | 80                         | X               | 2              | XX-XX                       | X                                   |



21-80X2

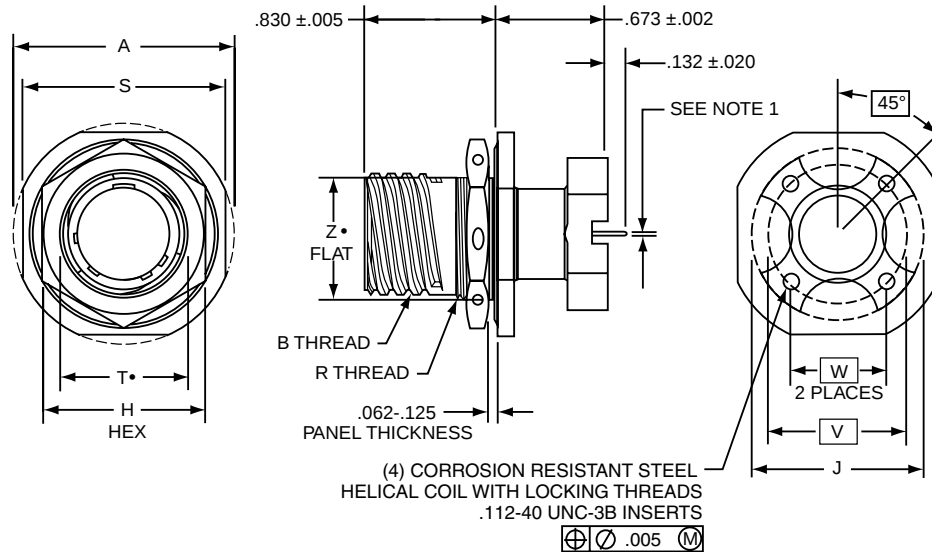
1. Standard tail for size 22 is .020  $\pm .001$ .  
Standard tail for size 20 is .030  $\pm .001$ .

| Shell<br>Size | B Thread<br>Class 2A<br>0.1P-0.3L-TS<br>(Plated) | J<br>Dia.<br>$\pm .005$ | K<br>$\pm .005$ | R <sup>1</sup><br>TP | S<br>$\pm .010$ | PCB Mounting<br>Dimensions |              |
|---------------|--------------------------------------------------|-------------------------|-----------------|----------------------|-----------------|----------------------------|--------------|
|               |                                                  |                         |                 |                      |                 | W<br>TP                    | V Dia.<br>TP |
| 9             | .6250                                            | 1.016                   | .085            | .719                 | .938            | .532                       | .752         |
| 11            | .7500                                            | 1.062                   | .085            | .812                 | 1.031           | .601                       | .850         |
| 13            | .8750                                            | 1.250                   | .085            | .906                 | 1.125           | .703                       | .994         |
| 15            | 1.0000                                           | 1.375                   | .085            | .969                 | 1.219           | .791                       | 1.119        |
| 17            | 1.1875                                           | 1.500                   | .085            | 1.062                | 1.312           | .875                       | 1.237        |
| 19            | 1.2500                                           | 1.625                   | .085            | 1.156                | 1.438           | .975                       | 1.379        |
| 21            | 1.3750                                           | 1.750                   | .115            | 1.250                | 1.562           | 1.053                      | 1.489        |
| 23            | 1.5000                                           | 1.875                   | .115            | 1.375                | 1.688           | 1.145                      | 1.619        |
| 25            | 1.6250                                           | 2.000                   | .115            | 1.500                | 1.812           | 1.233                      | 1.744        |

All dimensions for reference only.

**PART #** To complete, see how to order page 135.

| Filter<br>Connector<br>Designator | Connect/<br>Filter<br>Type | Shell<br>Finish | Shell<br>Style | Shell Size<br>& Insert Arr | Type of Contact/<br>Keyway Position |
|-----------------------------------|----------------------------|-----------------|----------------|----------------------------|-------------------------------------|
| 21                                | 80                         | X               | 7              | XX-XX                      | X                                   |



**21-80X7**

1. Standard tail for size 22 is .020 ±.001.

Standard tail for size 20 is .030 ±.001.

- "D" shaped mounting hole dimensions

| Shell<br>Size | A<br>Dia.<br>±.010 | B Thread<br>Class 2A<br>0.1P-0.3L-TS<br>(Plated) | H<br>Hex<br>+.017<br>-.016 | J<br>Dia.<br>±.005 | R<br>Thread<br>Metric<br>(Plated) | S<br>±.015 | T•<br>Dia.<br>+.010<br>-.000 | PCB Mounting<br>Dimensions |              | Z•<br>Flat<br>+.000<br>-.010 |
|---------------|--------------------|--------------------------------------------------|----------------------------|--------------------|-----------------------------------|------------|------------------------------|----------------------------|--------------|------------------------------|
|               |                    |                                                  |                            |                    |                                   |            |                              | W<br>TP                    | V Dia.<br>TP |                              |
| 9             | 1.188              | .6250                                            | .875                       | 1.016              | M17X1-6g0.100R                    | 1.062      | .697                         | .532                       | .752         | .669                         |
| 11            | 1.375              | .7500                                            | 1.000                      | 1.062              | M20X1-6g0.100R                    | 1.250      | .822                         | .601                       | .850         | .769                         |
| 13            | 1.500              | .8750                                            | 1.188                      | 1.250              | M25X1-6g0.100R                    | 1.375      | 1.007                        | .703                       | .994         | .955                         |
| 15            | 1.625              | 1.0000                                           | 1.312                      | 1.375              | M28X1-6g0.100R                    | 1.500      | 1.134                        | .791                       | 1.119        | 1.084                        |
| 17            | 1.750              | 1.1875                                           | 1.438                      | 1.500              | M32X1-6g0.100R                    | 1.625      | 1.259                        | .875                       | 1.237        | 1.208                        |
| 19            | 1.937              | 1.2500                                           | 1.562                      | 1.625              | M35X1-6g0.100R                    | 1.812      | 1.384                        | .975                       | 1.379        | 1.333                        |
| 21            | 2.062              | 1.3750                                           | 1.688                      | 1.750              | M38X1-6g0.100R                    | 1.937      | 1.507                        | 1.053                      | 1.489        | 1.459                        |
| 23            | 2.188              | 1.5000                                           | 1.812                      | 1.875              | M41X1-6g0.100R                    | 2.062      | 1.634                        | 1.145                      | 1.619        | 1.575                        |
| 25            | 2.312              | 1.6250                                           | 2.000                      | 2.000              | M44X1-6g0.100R                    | 2.188      | 1.759                        | 1.233                      | 1.744        | 1.709                        |

All dimensions for reference only.

The Amphenol® FJT Series space and weight saving design, coupled with a filter, gives high reliability.

- Intermateable with MIL-DTL-38999/27599 Series II connectors (see section Series II JT)
- Quick positive coupling – 3 point bayonet locking
- Error-proof alternate positioning of shell keyways
- Higher reliability and greater durability with permanently encapsulated contacts
- Environmental resistant
- Aluminum shells with several finish options

FJT Master Key/Keyway Rotation

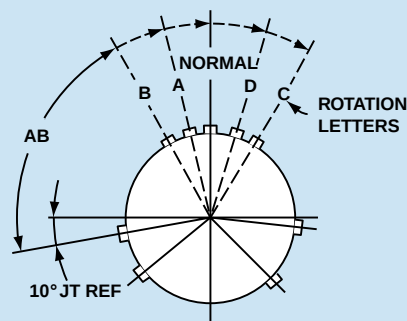
| Shell Size | AB Angle of Rotation (Degrees) |    |    |     |     |
|------------|--------------------------------|----|----|-----|-----|
|            | Normal                         | A  | B  | C   | D   |
| 8          | 100                            | 82 | –  | –   | 118 |
| 10         | 100                            | 86 | 72 | 128 | 114 |
| 12         | 100                            | 80 | 68 | 132 | 120 |
| 14         | 100                            | 79 | 66 | 134 | 121 |
| 16         | 100                            | 82 | 70 | 130 | 118 |
| 18         | 100                            | 82 | 70 | 130 | 118 |
| 20         | 100                            | 82 | 70 | 130 | 118 |
| 22         | 100                            | 85 | 74 | 126 | 115 |
| 24         | 100                            | 85 | 74 | 126 | 115 |

A plug with a given rotation letter will mate with a receptacle with the same rotation letter. The AB angle for a given connector is the same whether it contains pins or sockets. Inserts are not rotated in conjunction with the master key/keyway.

AB angles shown are viewed from the front face of the connector. A receptacle is shown at right. The angles for the plug are exactly the same, except the direction of rotation is opposite of that shown for the receptacle.



FJT



RELATIVE POSSIBLE POSITION OF ROTATED MASTER KEYWAY (front face of receptacle shown)

# FJT – MIL-DTL-38999, Series II

## Wall Mounting Receptacle - Aluminum

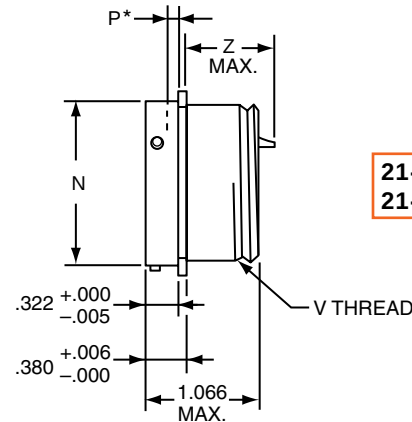
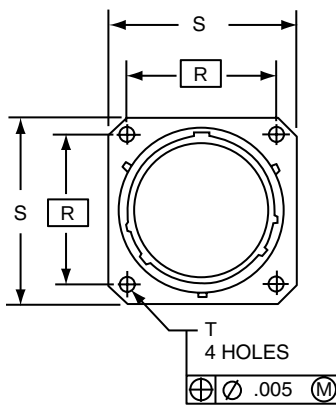


### PART #

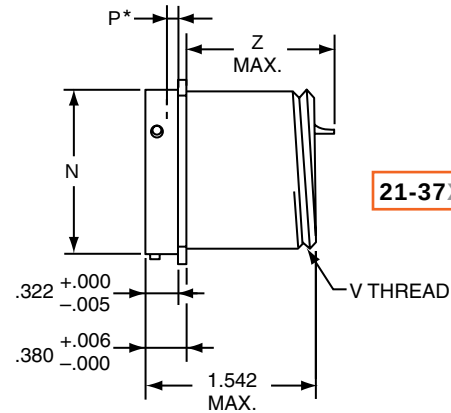
To complete, see how to order page 135.

| Filter Connector Designator | Connect/ Filter Type | Shell Finish | Shell Style | Shell Size & Insert Arrg | Type of Contact/ Keyway Position |
|-----------------------------|----------------------|--------------|-------------|--------------------------|----------------------------------|
| 21                          | 24                   | X            | 0           | XX-XX                    | X                                |
| 21                          | 32                   | X            | 0           | XX-XX                    | X                                |
| 21                          | 37                   | X            | 0           | XX-XX                    | X                                |

(MS27334)



21-24X0 (MS27334)  
21-32X0 (MS27334)



21-37X0 (MS27334)

Plug movement required to clear FJT receptacles: .281 min.

\* Acceptable panel thickness for back panel mounting a standard receptacle.

| Shell Size | N Dia<br>+.001<br>-.005 | P* Max. | R (TP) | S<br>+.011<br>-.010 | T Dia.<br>±.005 | V Thread<br>UNEF-2A<br>(Plated) | SHORT SHELL<br>VHF/UHF/MF Filters |                                             |                              | LONG SHELL<br>HF Filters     |                                             |
|------------|-------------------------|---------|--------|---------------------|-----------------|---------------------------------|-----------------------------------|---------------------------------------------|------------------------------|------------------------------|---------------------------------------------|
|            |                         |         |        |                     |                 |                                 | Size 20<br>Contact<br>Z Max.      | Size 16 or<br>16 & 20<br>Contacts<br>Z Max. | Size 22<br>Contact<br>Z Max. | Size 20<br>Contact<br>Z Max. | Size 16 or<br>16 & 20<br>Contacts<br>Z Max. |
| 8          | .473                    | .022    | .594   | .812                | .120            | .4375-28                        | .937                              | .952                                        | .902                         | 1.300                        | 1.496                                       |
| 10         | .590                    | .027    | .719   | .938                | .120            | .5625-24                        | .937                              | .952                                        | .902                         | 1.300                        | 1.496                                       |
| 12         | .750                    | .027    | .812   | 1.031               | .120            | .6875-24                        | .937                              | .952                                        | .902                         | 1.300                        | 1.496                                       |
| 14         | .875                    | .027    | .906   | 1.125               | .120            | .8125-20                        | .937                              | .952                                        | .902                         | 1.300                        | 1.496                                       |
| 16         | 1.000                   | .027    | .969   | 1.219               | .120            | .9375-20                        | .937                              | .952                                        | .902                         | 1.300                        | 1.496                                       |
| 18         | 1.125                   | .027    | 1.062  | 1.312               | .120            | 1.0625-18                       | .937                              | .952                                        | .902                         | 1.300                        | 1.496                                       |
| 20         | 1.250                   | .054    | 1.156  | 1.438               | .120            | 1.1875-18                       | .937                              | .952                                        | .902                         | 1.300                        | 1.496                                       |
| 22         | 1.375                   | .054    | 1.250  | 1.562               | .120            | 1.3125-18                       | .937                              | .952                                        | .902                         | 1.300                        | 1.496                                       |
| 24         | 1.500                   | .054    | 1.375  | 1.688               | .147            | 1.4375-18                       | .937                              | .952                                        | .902                         | 1.300                        | 1.496                                       |

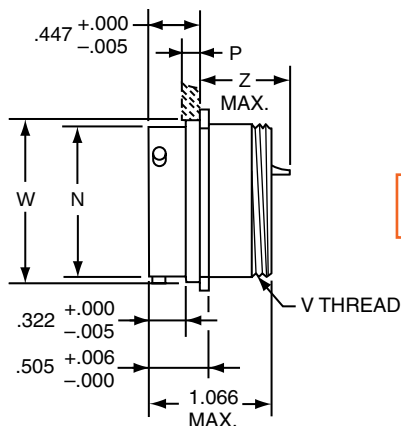
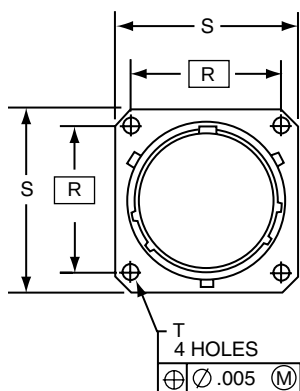
All dimensions for reference only.

#### PART #

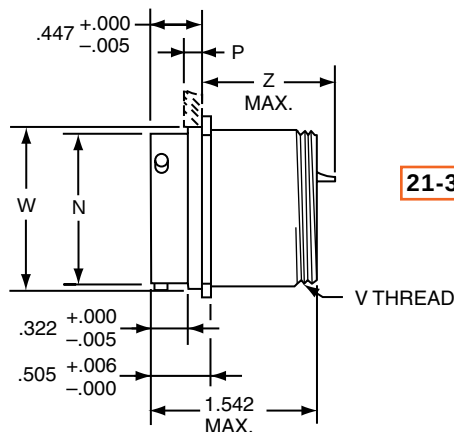
To complete, see how to order page 135.

| Filter Connector Designator | Connect/ Filter Type | Shell Finish | Shell Style | Shell Size & Insert Arrg | Type of Contact/ Keyway Position |
|-----------------------------|----------------------|--------------|-------------|--------------------------|----------------------------------|
| 21                          | 34                   | X            | 0           | XX-XX                    | X                                |
| 21                          | 39                   | X            | 0           | XX-XX                    | X                                |
| 21                          | 38                   | X            | 0           | XX-XX                    | X                                |

(MS27497)



21-34X0 (MS27497)  
21-39X0 (MS27497)



21-38X0 (MS27497)

Plug movement required to clear FJT receptacles: .281 min.

| Shell Size | N Dia<br>+.001<br>-.005 | P Max.<br>Panel Thickness | R (TP) | S<br>+.011<br>-.010 | T Dia.<br>±.005 | V Thread<br>UNEF-2A (Plated) | W Dia.<br>+.001<br>-.005 | SHORT SHELL<br>VHF/UHF/MF Filters  |                              | LONG SHELL<br>HF Filters           |                        |
|------------|-------------------------|---------------------------|--------|---------------------|-----------------|------------------------------|--------------------------|------------------------------------|------------------------------|------------------------------------|------------------------|
|            |                         |                           |        |                     |                 |                              |                          | Size 16 or 16 & 20 Contacts Z Max. | Size 20 or 22 Contact Z Max. | Size 16 or 16 & 20 Contacts Z Max. | Size 20 Contact Z Max. |
| 8          | .473                    | .147                      | .594   | .812                | .120            | .4375-28                     | .516                     | .900                               | .875                         | 1.385                              | 1.285                  |
| 10         | .590                    | .152                      | .719   | .938                | .120            | .5625-24                     | .633                     | .900                               | .875                         | 1.385                              | 1.285                  |
| 12         | .750                    | .152                      | .812   | 1.031               | .120            | .6875-24                     | .802                     | .900                               | .875                         | 1.385                              | 1.285                  |
| 14         | .875                    | .152                      | .906   | 1.125               | .120            | .8125-20                     | .927                     | .900                               | .875                         | 1.385                              | 1.285                  |
| 16         | 1.000                   | .152                      | .969   | 1.219               | .120            | .9375-20                     | 1.052                    | .900                               | .875                         | 1.385                              | 1.285                  |
| 18         | 1.125                   | .152                      | 1.062  | 1.312               | .120            | 1.0625-18                    | 1.177                    | .900                               | .875                         | 1.385                              | 1.285                  |
| 20         | 1.250                   | .179                      | 1.156  | 1.438               | .120            | 1.1875-18                    | 1.302                    | .900                               | .875                         | 1.385                              | 1.285                  |
| 22         | 1.375                   | .179                      | 1.250  | 1.562               | .120            | 1.3125-18                    | 1.427                    | .900                               | .875                         | 1.385                              | 1.285                  |
| 24         | 1.500                   | .179                      | 1.375  | 1.688               | .147            | 1.4375-18                    | 1.552                    | .900                               | .875                         | 1.385                              | 1.285                  |

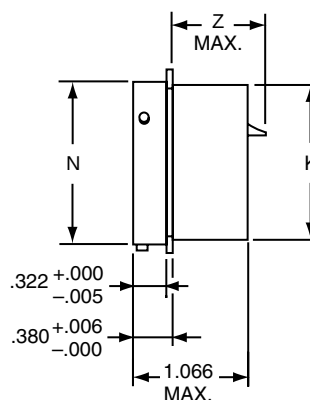
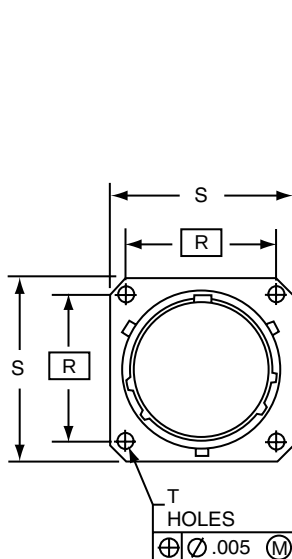
All dimensions for reference only.

### PART #

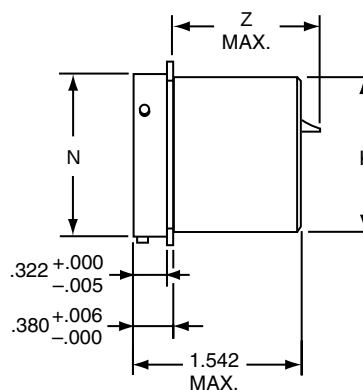
To complete,  
see how to order  
page 135.

| Filter<br>Connector<br>Designator | Connect/<br>Filter<br>Type | Shell<br>Finish | Shell<br>Style | Shell Size<br>& Insert Arr | Type of Contact/<br>Keyway Position |
|-----------------------------------|----------------------------|-----------------|----------------|----------------------------|-------------------------------------|
| 21                                | 24                         | X               | 2              | XX-XX                      | X                                   |
| 21                                | 32                         | X               | 2              | XX-XX                      | X                                   |
| 21                                | 37                         | X               | 2              | XX-XX                      | X                                   |

(MS27335)



21-24X2 (MS27335)  
21-32X2 (MS27335)



21-37X2 (MS27335)

Plug movement required to clear FJT receptacles: .281 min.

| Shell<br>Size | K<br>Dia.<br>+.000<br>-.007 | N<br>Dia.<br>+.001<br>-.005 | R<br>(TP) | S<br>+.011<br>-.010 | T<br>Dia.<br>±.005 | SHORT SHELL<br>VHF/UHF/MF Filters |                                             |                              | LONG SHELL<br>HF Filters     |                                             |
|---------------|-----------------------------|-----------------------------|-----------|---------------------|--------------------|-----------------------------------|---------------------------------------------|------------------------------|------------------------------|---------------------------------------------|
|               |                             |                             |           |                     |                    | Size 20<br>Contact<br>Z Max.      | Size 16 or<br>16 & 20<br>Contacts<br>Z Max. | Size 22<br>Contact<br>Z Max. | Size 20<br>Contact<br>Z Max. | Size 16 or<br>16 & 20<br>Contacts<br>Z Max. |
| 8             | .438                        | .473                        | .594      | .812                | .120               | .937                              | .952                                        | .902                         | 1.300                        | 1.496                                       |
| 10            | .562                        | .590                        | .719      | .938                | .120               | .937                              | .952                                        | .902                         | 1.300                        | 1.496                                       |
| 12            | .688                        | .750                        | .812      | 1.031               | .120               | .937                              | .952                                        | .902                         | 1.300                        | 1.496                                       |
| 14            | .812                        | .875                        | .906      | 1.125               | .120               | .937                              | .952                                        | .902                         | 1.300                        | 1.496                                       |
| 16            | .938                        | 1.000                       | .969      | 1.219               | .120               | .937                              | .952                                        | .902                         | 1.300                        | 1.496                                       |
| 18            | 1.062                       | 1.125                       | 1.062     | 1.312               | .120               | .937                              | .952                                        | .902                         | 1.300                        | 1.496                                       |
| 20            | 1.188                       | 1.250                       | 1.156     | 1.438               | .120               | .937                              | .952                                        | .902                         | 1.300                        | 1.496                                       |
| 22            | 1.312                       | 1.375                       | 1.250     | 1.562               | .120               | .937                              | .952                                        | .902                         | 1.300                        | 1.496                                       |
| 24            | 1.438                       | 1.500                       | 1.375     | 1.688               | .147               | .937                              | .952                                        | .902                         | 1.300                        | 1.496                                       |

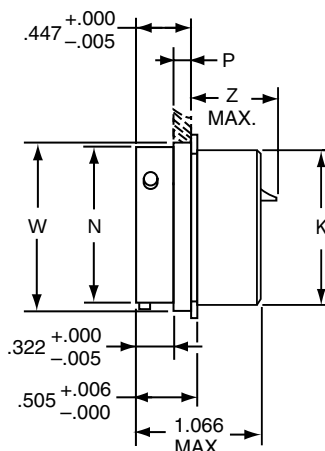
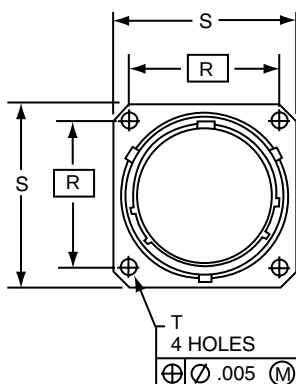
All dimensions for reference only.

#### PART #

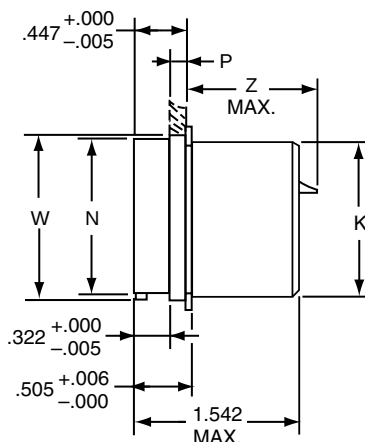
To complete,  
see how to order  
page 135.

| Filter<br>Connector<br>Designator | Connect/<br>Filter<br>Type | Shell<br>Finish | Shell<br>Style | Shell Size<br>& Insert Arrg | Type of Contact/<br>Keyway Position |
|-----------------------------------|----------------------------|-----------------|----------------|-----------------------------|-------------------------------------|
| 21                                | 34                         | X               | 2              | XX-XX                       | X                                   |
| 21                                | 39                         | X               | 2              | XX-XX                       | X                                   |
| 21                                | 38                         | X               | 2              | XX-XX                       | X                                   |

(MS27508)



21-34X2 (MS27508)  
21-39X2 (MS27508)



21-38X2 (MS27508)

Plug movement required to clear FJT receptacles: .281 min.

| Shell<br>Size | K<br>Dia.<br>+.000<br>-.007 | N<br>Dia<br>+.001<br>-.005 | P<br>Max.<br>Panel<br>Thickness | R<br>(TP) | S<br>+.011<br>-.010 | T<br>Dia.<br>±.005 | W<br>Dia.<br>+.001<br>-.005 | SHORT SHELL<br>VHF/UHF/MF Filters           |                                       | LONG SHELL<br>HF Filters                    |                              |
|---------------|-----------------------------|----------------------------|---------------------------------|-----------|---------------------|--------------------|-----------------------------|---------------------------------------------|---------------------------------------|---------------------------------------------|------------------------------|
|               |                             |                            |                                 |           |                     |                    |                             | Size 16 or<br>16 & 20<br>Contacts<br>Z Max. | Size 20<br>or 22<br>Contact<br>Z Max. | Size 16 or<br>16 & 20<br>Contacts<br>Z Max. | Size 20<br>Contact<br>Z Max. |
| 8             | .438                        | .473                       | .147                            | .594      | .812                | .120               | .516                        | .900                                        | .875                                  | 1.385                                       | 1.285                        |
| 10            | .562                        | .590                       | .152                            | .719      | .938                | .120               | .633                        | .900                                        | .875                                  | 1.385                                       | 1.285                        |
| 12            | .688                        | .750                       | .152                            | .812      | 1.031               | .120               | .802                        | .900                                        | .875                                  | 1.385                                       | 1.285                        |
| 14            | .812                        | .875                       | .152                            | .906      | 1.125               | .120               | .927                        | .900                                        | .875                                  | 1.385                                       | 1.285                        |
| 16            | .938                        | 1.000                      | .152                            | .969      | 1.219               | .120               | 1.052                       | .900                                        | .875                                  | 1.385                                       | 1.285                        |
| 18            | 1.062                       | 1.125                      | .152                            | 1.062     | 1.312               | .120               | 1.177                       | .900                                        | .875                                  | 1.385                                       | 1.285                        |
| 20            | 1.188                       | 1.250                      | .179                            | 1.156     | 1.438               | .120               | 1.302                       | .900                                        | .875                                  | 1.385                                       | 1.285                        |
| 22            | 1.312                       | 1.375                      | .179                            | 1.250     | 1.562               | .120               | 1.427                       | .900                                        | .875                                  | 1.385                                       | 1.285                        |
| 24            | 1.438                       | 1.500                      | .179                            | 1.375     | 1.688               | .147               | 1.552                       | .900                                        | .875                                  | 1.385                                       | 1.285                        |

All dimensions for reference only.

# FJT – MIL-DTL-38999, Series II

## Jam Nut Receptacle - Aluminum

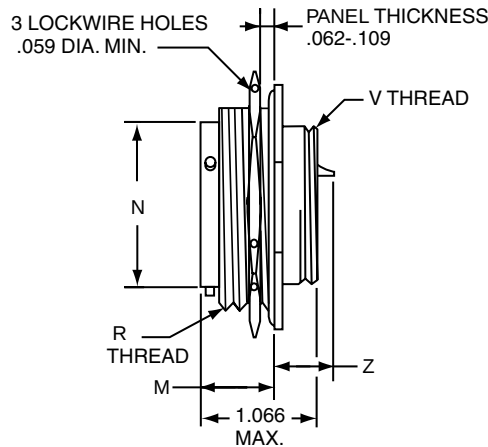
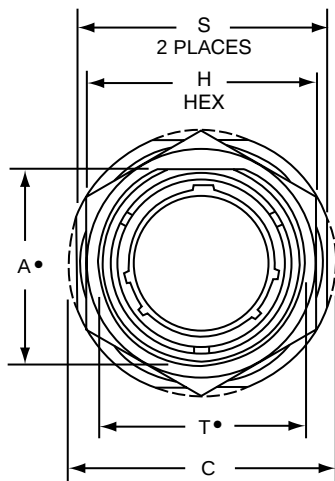


### PART #

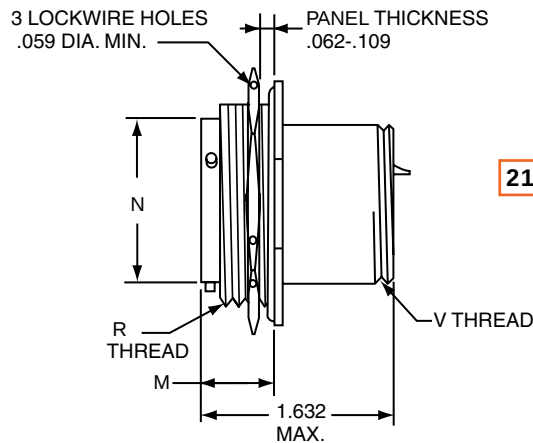
To complete,  
see how to order  
page 135.

| Filter<br>Connector<br>Designator | Connect/<br>Filter<br>Type | Shell<br>Finish | Shell<br>Style | Shell Size<br>& Insert Arrg | Type of Contact/<br>Keyway Position |
|-----------------------------------|----------------------------|-----------------|----------------|-----------------------------|-------------------------------------|
| 21                                | 24                         | X               | 7              | XX-XX                       | X                                   |
| 21                                | 32                         | X               | 7              | XX-XX                       | X                                   |
| 21                                | 37                         | X               | 7              | XX-XX                       | X                                   |

(MS27337)



21-24X7 (MS27337)  
21-32X7 (MS27337)



21-37X7 (MS27337)

• "D" shaped mounting hole dimensions  
Plug movement required to clear FJT receptacles: .281 min.

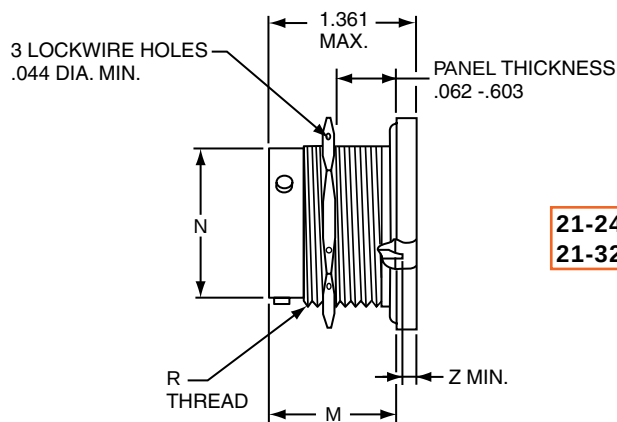
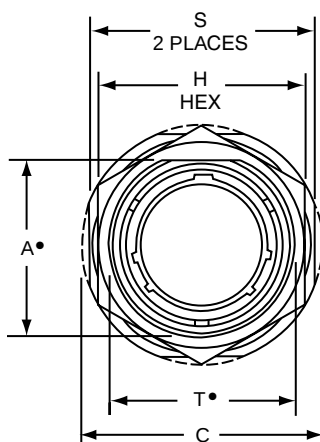
| Shell<br>Size | A*<br>Flat<br>+.000<br>-.010 | C<br>Dia.<br>+.011<br>-.010 | H<br>Hex<br>+.017<br>-.016 | M<br>±.005 | N<br>Dia<br>+.001<br>-.005 | R<br>Thread<br>(Plated)<br>Class -2A | S<br>±.010 | T*<br>Dia.<br>+.010<br>-.000 | V<br>Thread<br>UNEF-2A<br>(Plated) | SHORT SHELL<br>VHF/UHF/MF Filters           |                              |                              | LONG SHELL<br>HF Filters                    |                              |
|---------------|------------------------------|-----------------------------|----------------------------|------------|----------------------------|--------------------------------------|------------|------------------------------|------------------------------------|---------------------------------------------|------------------------------|------------------------------|---------------------------------------------|------------------------------|
|               |                              |                             |                            |            |                            |                                      |            |                              |                                    | Size 16 or<br>16 & 20<br>Contacts<br>Z Max. | Size 20<br>Contact<br>Z Max. | Size 22<br>Contact<br>Z Max. | Size 16 or<br>16 & 20<br>Contacts<br>Z Max. | Size 20<br>Contact<br>Z Max. |
| 8             | .830                         | 1.375                       | 1.062                      | .438       | .473                       | .8750-20UNEF                         | 1.250      | .884                         | .4375-28                           | .900                                        | .884                         | .849                         | 1.443                                       | 1.276                        |
| 10            | .955                         | 1.500                       | 1.188                      | .438       | .590                       | 1.0000-20UNEF                        | 1.375      | 1.007                        | .5625-24                           | .900                                        | .884                         | .849                         | 1.443                                       | 1.276                        |
| 12            | 1.084                        | 1.625                       | 1.312                      | .438       | .750                       | 1.1250-18UNEF                        | 1.500      | 1.134                        | .6875-24                           | .900                                        | .884                         | .849                         | 1.443                                       | 1.276                        |
| 14            | 1.208                        | 1.750                       | 1.438                      | .438       | .875                       | 1.2500-18UNEF                        | 1.625      | 1.259                        | .8125-20                           | .900                                        | .884                         | .849                         | 1.443                                       | 1.276                        |
| 16            | 1.333                        | 1.938                       | 1.562                      | .438       | 1.000                      | 1.3750-18UNEF                        | 1.781      | 1.384                        | .9375-20                           | .900                                        | .884                         | .849                         | 1.443                                       | 1.276                        |
| 18            | 1.459                        | 2.016                       | 1.688                      | .438       | 1.125                      | 1.5000-18UNEF                        | 1.890      | 1.507                        | 1.0625-18                          | .900                                        | .884                         | .849                         | 1.443                                       | 1.276                        |
| 20            | 1.576                        | 2.141                       | 1.812                      | .464       | 1.250                      | 1.6250-18UNEF                        | 2.016      | 1.634                        | 1.1875-18                          | .874                                        | .858                         | .823                         | 1.443                                       | 1.276                        |
| 22            | 1.701                        | 2.265                       | 2.000                      | .464       | 1.375                      | 1.7500-18UNS                         | 2.140      | 1.759                        | 1.3125-18                          | .874                                        | .858                         | .823                         | 1.417                                       | 1.250                        |
| 24            | 1.826                        | 2.390                       | 2.125                      | .464       | 1.500                      | 1.8750-16UN                          | 2.265      | 1.884                        | 1.4375-18                          | .874                                        | .858                         | .823                         | 1.417                                       | 1.250                        |

All dimensions for reference only.

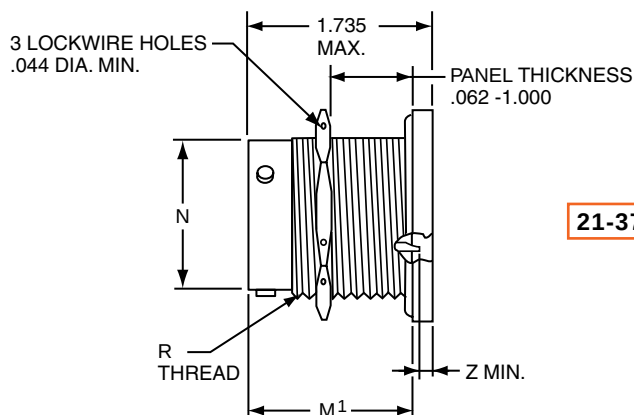
#### PART #

To complete, see how to order page 135.

| Filter Connector Designator | Connect/ Filter Type | Shell Finish | Shell Style | Shell Size & Insert Arrg | Type of Contact/ Keyway Position |
|-----------------------------|----------------------|--------------|-------------|--------------------------|----------------------------------|
| 21                          | 24                   | X            | 4           | XX-XX                    | X                                |
| 21                          | 32                   | X            | 4           | XX-XX                    | X                                |
| 21                          | 37                   | X            | 4           | XX-XX                    | X                                |



21-24 X 4  
21-32 X 4



21-37 X 4

• "D" shaped mounting hole dimensions

Plug movement required to clear FJT receptacles: .281 min.

| Shell Size | A* Flat<br>+.000<br>-.010 | C Dia.<br>+.011<br>-.010 | H Hex<br>+.017<br>-.016 | M     | M1    | N Dia<br>+.001<br>-.005 | R Thread<br>UNEF-2A<br>(Plated) | S<br>+.011<br>-.010 | T* Dia.<br>+.010<br>-.000 | SHORT SHELL<br>VHF/UHF/MF Filters           |                              |                              | LONG SHELL<br>HF Filters                    |                              |
|------------|---------------------------|--------------------------|-------------------------|-------|-------|-------------------------|---------------------------------|---------------------|---------------------------|---------------------------------------------|------------------------------|------------------------------|---------------------------------------------|------------------------------|
|            |                           |                          |                         |       |       |                         |                                 |                     |                           | Size 16 or<br>16 & 20<br>Contacts<br>Z Max. | Size 20<br>Contact<br>Z Max. | Size 22<br>Contact<br>Z Max. | Size 16 or<br>16 & 20<br>Contacts<br>Z Max. | Size 20<br>Contact<br>Z Max. |
| 8          | .542                      | 1.062                    | .750                    | 1.220 | 1.594 | .473                    | .5625-24                        | .938                | .572                      | .000                                        | .022                         | .057                         | .000                                        | .000                         |
| 10         | .669                      | 1.188                    | .875                    | 1.220 | 1.594 | .590                    | .6875-24                        | 1.062               | .697                      | .000                                        | .022                         | .057                         | .000                                        | .000                         |
| 12         | .830                      | 1.375                    | 1.062                   | 1.220 | 1.594 | .750                    | .8750-20                        | 1.250               | .844                      | .000                                        | .022                         | .057                         | .000                                        | .000                         |
| 14         | .955                      | 1.500                    | 1.188                   | 1.220 | 1.594 | .875                    | 1.0000-20                       | 1.375               | 1.007                     | .000                                        | .022                         | .057                         | .000                                        | .000                         |
| 16         | 1.084                     | 1.625                    | 1.312                   | 1.220 | 1.594 | 1.000                   | 1.1250-18                       | 1.500               | 1.134                     | .000                                        | .022                         | .057                         | .000                                        | .000                         |
| 18         | 1.208                     | 1.750                    | 1.438                   | 1.220 | 1.594 | 1.125                   | 1.2500-18                       | 1.625               | 1.259                     | .000                                        | .022                         | .057                         | .000                                        | .000                         |
| 20         | 1.333                     | 1.938                    | 1.562                   | 1.188 | 1.563 | 1.250                   | 1.3750-18                       | 1.812               | 1.384                     | .000                                        | .022                         | .057                         | .000                                        | .000                         |
| 22         | 1.459                     | 2.062                    | 1.688                   | 1.188 | 1.563 | 1.375                   | 1.5000-18                       | 1.938               | 1.507                     | .000                                        | .022                         | .057                         | .000                                        | .000                         |
| 24         | 1.575                     | 2.188                    | 1.812                   | 1.188 | 1.563 | 1.500                   | 1.6250-18                       | 2.062               | 1.634                     | .000                                        | .022                         | .057                         | .000                                        | .000                         |

All dimensions for reference only.

The Amphenol® FLJT Series offers all the design features of the FJT plus a 100% “scoop-proof” contact protection design.

- Intermountable with MIL-DTL-38999/27599 Series I connectors (see section Series I LJT)
- Contact Protection - shell design prevents contact damage
- Quick Positive Coupling – 3 point bayonet locking
- Higher reliability and greater durability with permanently encapsulated contacts
- Environmental Resistant
- Aluminum shells with several finish options
- Error-proof alternate positioning of shell keyways
- Corrosion Resistant - 500 hour salt spray olive drab cadmium over nickel plating, class T (aluminum), electroless nickel plating, class F (aluminum) or stainless steel shells

**FLJT Master Key/Keyway Rotation**

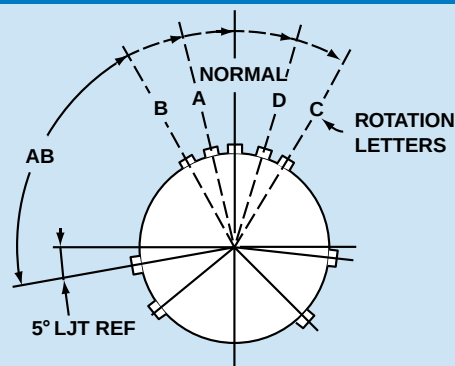
| Shell Size | AB Angle of Rotation (Degrees) |    |    |     |     |
|------------|--------------------------------|----|----|-----|-----|
|            | Normal                         | A  | B  | C   | D   |
| 9          | 95                             | 77 | –  | –   | 113 |
| 11         | 95                             | 81 | 67 | 123 | 109 |
| 13         | 95                             | 75 | 63 | 127 | 115 |
| 15         | 95                             | 74 | 61 | 129 | 116 |
| 17         | 95                             | 77 | 65 | 125 | 113 |
| 19         | 95                             | 77 | 65 | 125 | 113 |
| 21         | 95                             | 77 | 65 | 125 | 113 |
| 23         | 95                             | 80 | 69 | 121 | 110 |
| 25         | 95                             | 80 | 69 | 121 | 110 |

A plug with a given rotation letter will mate with a receptacle with the same rotation letter. The AB angle for a given connector is the same whether it contains pins or sockets. Inserts are not rotated in conjunction with the master key/keyway.

AB angles shown are viewed from the front face of the connector. A receptacle is shown at right. The angles for the plug are exactly the same, except the direction of rotation is opposite of that shown for the receptacle.



**FLJT**



**RELATIVE POSSIBLE POSITION OF ROTATED MASTER KEYWAY (front face of receptacle shown)**

Series III TV

Series II JT

Series I LJT

SJT

Printed  
Circuit Board

EMI Filter/  
Transient

Accessories  
App Tools

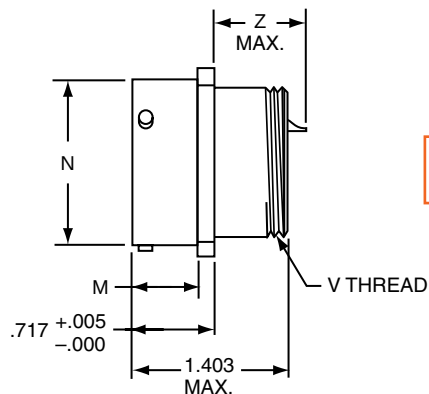
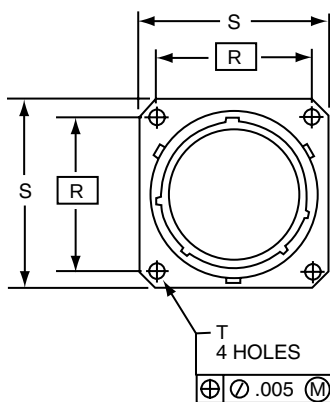
HD38999  
High Density

Options

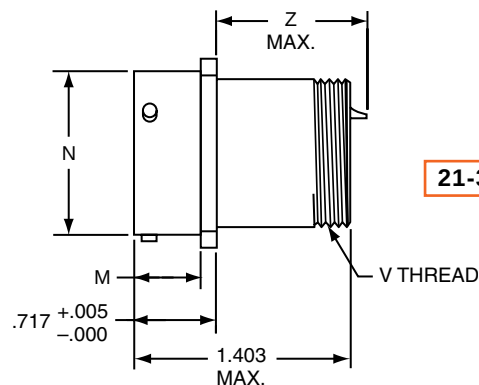
### PART #

To complete,  
see how to order  
page 135.

| Filter<br>Connector<br>Designator | Connect/<br>Filter<br>Type | Shell<br>Finish | Shell<br>Style | Shell Size<br>& Insert Arrg | Type of Contact/<br>Keyway Position |
|-----------------------------------|----------------------------|-----------------|----------------|-----------------------------|-------------------------------------|
| 21                                | 29                         | X               | 0              | XX-XX                       | X                                   |
| 21                                | 40                         | X               | 0              | XX-XX                       | X                                   |
| 21                                | 36                         | X               | 0              | XX-XX                       | X                                   |



21-29X0  
21-40X0



21-36X0

Plug movement required to clear FLJT receptacles: .625 min.

| Shell<br>Size | M<br>+.000<br>-.006 | N<br>Dia.<br>+.001<br>-.005 | R<br>(TP) | S<br>+.011<br>-.010 | T<br>Dia.<br>±.005 | V<br>Thread<br>UNEF-2A<br>(Plated) | SHORT SHELL<br>VHF/UHF/MF Filters |                                             |                              | LONG SHELL<br>HF Filters     |                                             |
|---------------|---------------------|-----------------------------|-----------|---------------------|--------------------|------------------------------------|-----------------------------------|---------------------------------------------|------------------------------|------------------------------|---------------------------------------------|
|               |                     |                             |           |                     |                    |                                    | Size 20<br>Contact<br>Z Max.      | Size 16 or<br>16 & 20<br>Contacts<br>Z Max. | Size 22<br>Contact<br>Z Max. | Size 20<br>Contact<br>Z Max. | Size 16 or<br>16 & 20<br>Contacts<br>Z Max. |
| 9             | .632                | .572                        | .719      | .938                | .128               | .4375-28                           | .865                              | .950                                        | .820                         | 1.324                        | 1.394                                       |
| 11            | .632                | .700                        | .812      | 1.031               | .128               | .5625-24                           | .865                              | .950                                        | .820                         | 1.324                        | 1.394                                       |
| 13            | .632                | .850                        | .906      | 1.125               | .128               | .6875-24                           | .865                              | .950                                        | .820                         | 1.324                        | 1.394                                       |
| 15            | .632                | .975                        | .969      | 1.219               | .128               | .8125-20                           | .865                              | .950                                        | .820                         | 1.324                        | 1.394                                       |
| 17            | .632                | 1.100                       | 1.062     | 1.312               | .128               | .9375-20                           | .865                              | .950                                        | .820                         | 1.324                        | 1.394                                       |
| 19            | .632                | 1.207                       | 1.156     | 1.438               | .128               | 1.0625-18                          | .865                              | .950                                        | .820                         | 1.324                        | 1.394                                       |
| 21            | .602                | 1.332                       | 1.250     | 1.562               | .128               | 1.1875-18                          | .865                              | .950                                        | .820                         | 1.324                        | 1.394                                       |
| 23            | .602                | 1.457                       | 1.375     | 1.688               | .147               | 1.3125-18                          | .865                              | .950                                        | .820                         | 1.324                        | 1.394                                       |
| 25            | .602                | 1.582                       | 1.500     | 1.812               | .147               | 1.4375-18                          | .865                              | .950                                        | .820                         | 1.324                        | 1.394                                       |

All dimensions for reference only.

# FLJTPQ – MIL-DTL-38999, Series I

## Wall Mounting Receptacle - Aluminum

(back panel mounting, UTS crimp)

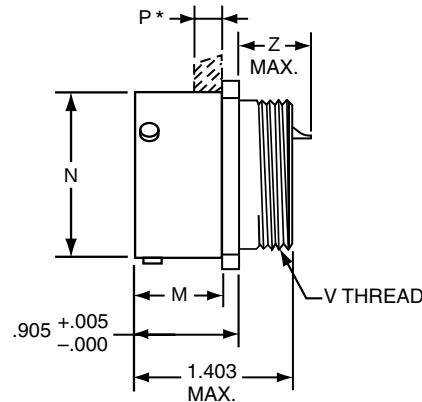
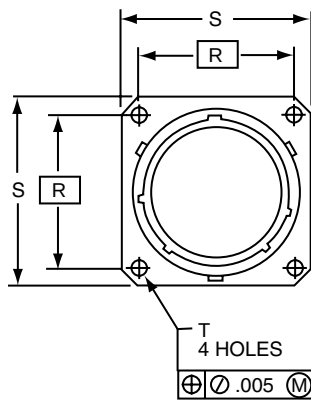


### PART #

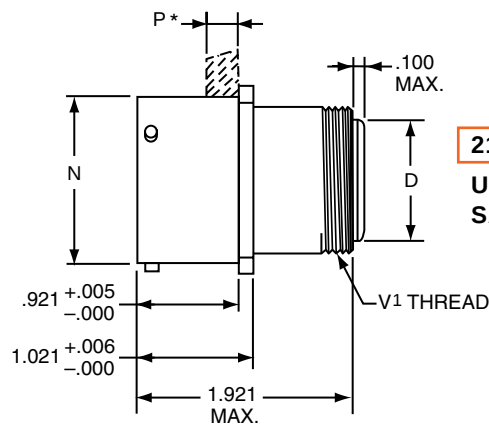
To complete,  
see how to order  
page 135.

| Filter<br>Connector<br>Designator | Connect/<br>Filter<br>Type | Shell<br>Finish | Shell<br>Style | Shell Size<br>& Insert Arrg | Type of Contact/<br>Keyway Position |
|-----------------------------------|----------------------------|-----------------|----------------|-----------------------------|-------------------------------------|
| 21                                | 47                         | X               | 0              | XX-XX                       | X                                   |
| 21                                | 48                         | X               | 0              | XX-XX                       | X                                   |

UTS (Crimp) Contact SAE AS39029/57



21-47X0



21-48X0

UTS (Crimp) Contact  
SAE AS39029/57

Plug movement required to clear FLJT receptacles: .625 min.

\* Acceptable panel thickness for back panel mounting a standard receptacle.

| Shell<br>Size | D<br>Dia.<br>±.005 | M<br>+.000<br>-.006 | N<br>Dia.<br>+.001<br>-.005 | P<br>Max.<br>Panel<br>Thickness | R<br>(TP) | S<br>+.011<br>-.010 | T<br>Dia.<br>±.005 | V<br>Thread<br>UNEF-2A<br>(Plated) | V1<br>Thread<br>UNEF-2A<br>(Plated) | SHORT SHELL<br>VHF/UHF Filters |                                             |                              |
|---------------|--------------------|---------------------|-----------------------------|---------------------------------|-----------|---------------------|--------------------|------------------------------------|-------------------------------------|--------------------------------|---------------------------------------------|------------------------------|
|               |                    |                     |                             |                                 |           |                     |                    |                                    |                                     | Size 20<br>Contact<br>Z Max.   | Size 16 or<br>16 & 20<br>Contacts<br>Z Max. | Size 22<br>Contact<br>Z Max. |
| 9             | .299               | .820                | .572                        | .234                            | .719      | .938                | .128               | .4375-28                           | .5625-24                            | .672                           | .763                                        | .632                         |
| 11            | .427               | .820                | .700                        | .234                            | .812      | 1.031               | .128               | .5625-24                           | .6875-24                            | .672                           | .763                                        | .632                         |
| 13            | .541               | .820                | .850                        | .234                            | .906      | 1.125               | .128               | .6875-24                           | .8125-20                            | .672                           | .763                                        | .632                         |
| 15            | .666               | .820                | .975                        | .234                            | .969      | 1.219               | .128               | .8125-20                           | .9375-20                            | .672                           | .763                                        | .632                         |
| 17            | .791               | .820                | 1.100                       | .234                            | 1.062     | 1.312               | .128               | .9375-20                           | 1.0625-18                           | .672                           | .763                                        | .632                         |
| 19            | .897               | .820                | 1.207                       | .234                            | 1.156     | 1.438               | .128               | 1.0625-18                          | 1.1875-18                           | .672                           | .763                                        | .632                         |
| 21            | 1.022              | .790                | 1.332                       | .204                            | 1.250     | 1.562               | .128               | 1.1875-18                          | 1.3125-18                           | .672                           | .763                                        | .632                         |
| 23            | 1.147              | .790                | 1.457                       | .204                            | 1.375     | 1.688               | .147               | 1.3125-18                          | 1.4375-18                           | .672                           | .763                                        | .632                         |
| 25            | 1.272              | .790                | 1.582                       | .193                            | 1.500     | 1.812               | .147               | 1.4375-18                          | 1.5625-18                           | .672                           | .763                                        | .632                         |

All dimensions for reference only.

Series III TV

Series II JT

Series I LJT

SJT

Printed  
Circuit Board

EMI Filter/  
Transient

Accessories  
App Tools

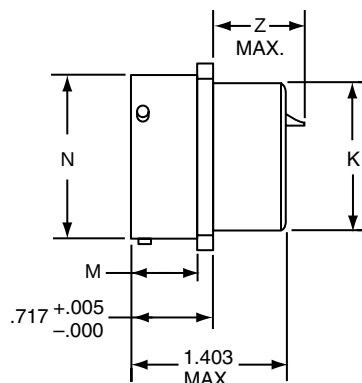
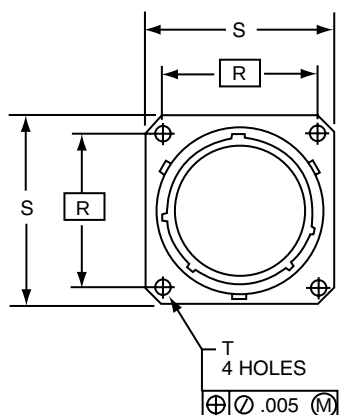
HD38999  
High Density

Options

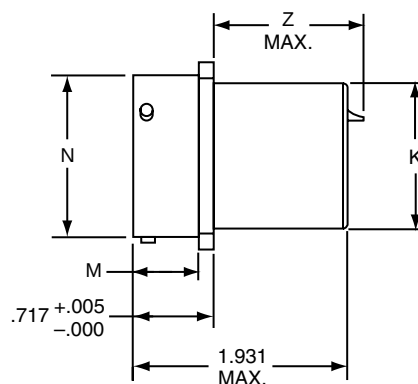
### PART #

To complete,  
see how to order  
page 135.

| Filter<br>Connector<br>Designator | Connect/<br>Filter<br>Type | Shell<br>Finish | Shell<br>Style | Shell Size<br>& Insert Arrg | Type of Contact/<br>Keyway Position |
|-----------------------------------|----------------------------|-----------------|----------------|-----------------------------|-------------------------------------|
| 21                                | 29                         | X               | 2              | XX-XX                       | X                                   |
| 21                                | 40                         | X               | 2              | XX-XX                       | X                                   |
| 21                                | 36                         | X               | 2              | XX-XX                       | X                                   |



21-29X2  
21-40X2



21-36X2

Plug movement required to clear FLJT receptacles: .625 min.

| Shell<br>Size | K<br>Dia.<br>+.001<br>-.006 | M<br>+.000<br>-.006 | N<br>Dia.<br>+.001<br>-.005 | R<br>(TP) | S<br>+.011<br>-.010 | T<br>Dia.<br>±.005 | SHORT SHELL<br>VHF/UHF/MF Filters |                                             |                              | LONG SHELL<br>HF Filters     |                                             |
|---------------|-----------------------------|---------------------|-----------------------------|-----------|---------------------|--------------------|-----------------------------------|---------------------------------------------|------------------------------|------------------------------|---------------------------------------------|
|               |                             |                     |                             |           |                     |                    | Size 20<br>Contact<br>Z Max.      | Size 16 or<br>16 & 20<br>Contacts<br>Z Max. | Size 22<br>Contact<br>Z Max. | Size 20<br>Contact<br>Z Max. | Size 16 or<br>16 & 20<br>Contacts Z<br>Max. |
| 9             | .436                        | .632                | .572                        | .719      | .938                | .128               | .865                              | .950                                        | .820                         | 1.324                        | 1.394                                       |
| 11            | .560                        | .632                | .700                        | .812      | 1.031               | .128               | .865                              | .950                                        | .820                         | 1.324                        | 1.394                                       |
| 13            | .686                        | .632                | .850                        | .906      | 1.125               | .128               | .865                              | .950                                        | .820                         | 1.324                        | 1.394                                       |
| 15            | .810                        | .632                | .975                        | .969      | 1.219               | .128               | .865                              | .950                                        | .820                         | 1.324                        | 1.394                                       |
| 17            | .936                        | .632                | 1.100                       | 1.062     | 1.312               | .128               | .865                              | .950                                        | .820                         | 1.324                        | 1.394                                       |
| 19            | 1.060                       | .632                | 1.207                       | 1.156     | 1.438               | .128               | .865                              | .950                                        | .820                         | 1.324                        | 1.394                                       |
| 21            | 1.186                       | .602                | 1.332                       | 1.250     | 1.562               | .128               | .865                              | .950                                        | .820                         | 1.324                        | 1.394                                       |
| 23            | 1.310                       | .602                | 1.457                       | 1.375     | 1.688               | .147               | .865                              | .950                                        | .820                         | 1.324                        | 1.394                                       |
| 25            | 1.436                       | .602                | 1.582                       | 1.500     | 1.812               | .147               | .865                              | .950                                        | .820                         | 1.324                        | 1.394                                       |

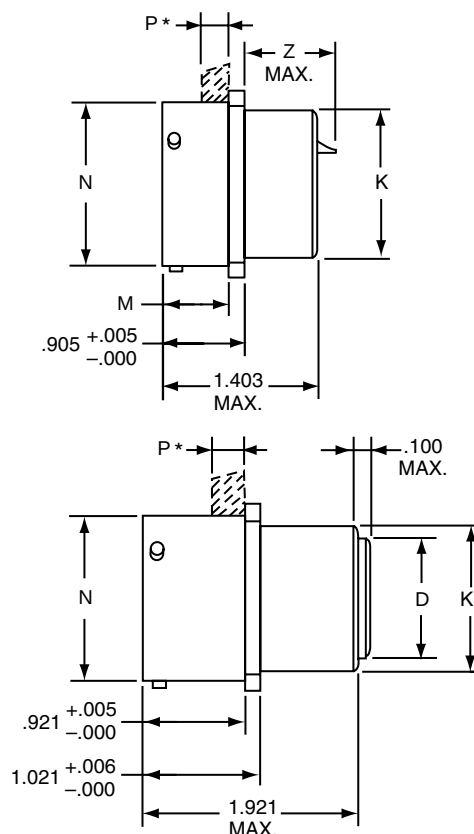
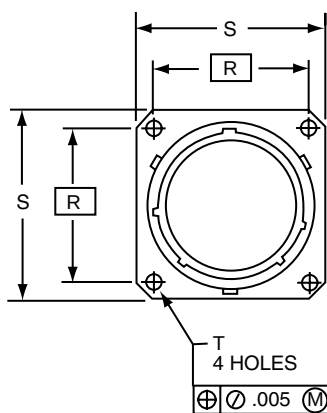
All dimensions for reference only.

#### PART #

To complete,  
see how to order  
page 135.

| Filter<br>Connector<br>Designator | Connect/<br>Filter<br>Type | Shell<br>Finish | Shell<br>Style | Shell Size<br>& Insert Arrg | Type of Contact/<br>Keyway Position |
|-----------------------------------|----------------------------|-----------------|----------------|-----------------------------|-------------------------------------|
| 21                                | 47                         | X               | 2              | XX-XX                       | X                                   |
| 21                                | 48                         | X               | 2              | XX-XX                       | X                                   |

UTS (Crimp) Contact SAE AS39029



21-47X2

21-48X2

UTS (Crimp)  
Contact  
SAE AS39029

Plug movement required to clear FLJT receptacles: .625 min.

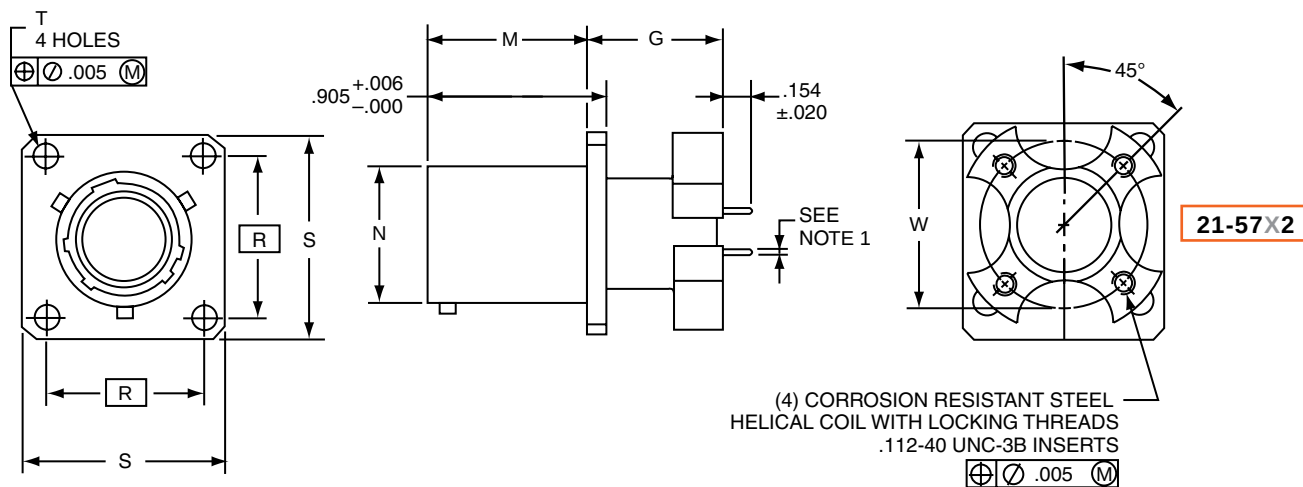
\* Acceptable panel thickness for back panel mounting a standard receptacle.

| Shell<br>Size | D<br>Dia.<br>±.005 | K<br>Dia.<br>+.000<br>-.006 | K <sup>1</sup><br>Dia.<br>+.000<br>-.007 | M<br>+.000<br>-.006 | N<br>Dia.<br>+.001<br>-.005 | P<br>Max.<br>Panel<br>Thickness | R<br>(TP) | S<br>+.011<br>-.010 | T<br>Dia.<br>±.005 | SHORT SHELL<br>VHF/UHF Filters |                                             |                              |
|---------------|--------------------|-----------------------------|------------------------------------------|---------------------|-----------------------------|---------------------------------|-----------|---------------------|--------------------|--------------------------------|---------------------------------------------|------------------------------|
|               |                    |                             |                                          |                     |                             |                                 |           |                     |                    | Size 20<br>Contact<br>Z Max.   | Size 16 or<br>16 & 20<br>Contacts<br>Z Max. | Size 22<br>Contact<br>Z Max. |
| 9             | .299               | .437                        | .561                                     | .820                | .572                        | .234                            | .719      | .938                | .128               | .672                           | .763                                        | .632                         |
| 11            | .427               | .562                        | .687                                     | .820                | .700                        | .234                            | .812      | 1.031               | .128               | .672                           | .763                                        | .632                         |
| 13            | .541               | .688                        | .811                                     | .820                | .850                        | .234                            | .906      | 1.125               | .128               | .672                           | .763                                        | .632                         |
| 15            | .666               | .812                        | .937                                     | .820                | .975                        | .234                            | .969      | 1.219               | .128               | .672                           | .763                                        | .632                         |
| 17            | .791               | .938                        | 1.061                                    | .820                | 1.100                       | .234                            | 1.062     | 1.312               | .128               | .672                           | .763                                        | .632                         |
| 19            | .897               | 1.062                       | 1.187                                    | .820                | 1.207                       | .234                            | 1.156     | 1.438               | .128               | .672                           | .763                                        | .632                         |
| 21            | 1.022              | 1.188                       | 1.312                                    | .790                | 1.332                       | .204                            | 1.250     | 1.562               | .128               | .672                           | .763                                        | .632                         |
| 23            | 1.147              | 1.312                       | 1.437                                    | .790                | 1.457                       | .204                            | 1.375     | 1.688               | .147               | .672                           | .763                                        | .632                         |
| 25            | 1.272              | 1.438                       | 1.562                                    | .790                | 1.582                       | .193                            | 1.500     | 1.812               | .147               | .672                           | .763                                        | .632                         |

All dimensions for reference only.

**PART #** To complete, see how to order page 135.

| Filter<br>Connector<br>Designator | Connect/<br>Filter<br>Type | Shell<br>Finish | Shell<br>Style | Shell Size<br>& Insert Arrg | Type of Contact/<br>Keyway Position |
|-----------------------------------|----------------------------|-----------------|----------------|-----------------------------|-------------------------------------|
| 21                                | 57                         | X               | 2              | XX-XX                       | X                                   |



1. Standard tail for size 22 is .020 ±.001 dia.  
Standard tail for size 20 is .030 ±.001 dia.  
Plug movement required to clear FLJT receptacles: .625 min.

| Shell<br>Size | G<br>+.006<br>-.005 | M<br>+.000<br>-.005 | N<br>Dia.<br>+.001<br>-.005 | R<br>(TP) | S<br>+.011<br>-.010 | T<br>Dia.<br>+.004<br>-.003 | W     |
|---------------|---------------------|---------------------|-----------------------------|-----------|---------------------|-----------------------------|-------|
| 11            | .689                | .820                | .700                        | .812      | 1.031               | .128                        | .850  |
| 13            | .689                | .820                | .850                        | .906      | 1.125               | .128                        | .994  |
| 15            | .689                | .820                | .975                        | .969      | 1.219               | .128                        | 1.119 |
| 17            | .689                | .820                | 1.100                       | 1.062     | 1.312               | .128                        | 1.237 |
| 19            | .689                | .820                | 1.207                       | 1.156     | 1.438               | .128                        | 1.379 |
| 21            | .689                | .790                | 1.332                       | 1.250     | 1.562               | .128                        | 1.489 |
| 23            | .719                | .790                | 1.457                       | 1.375     | 1.688               | .147                        | 1.619 |
| 25            | .719                | .790                | 1.582                       | 1.500     | 1.812               | .147                        | 1.744 |

All dimensions for reference only.

# FLJT – MIL-DTL-38999, Series I

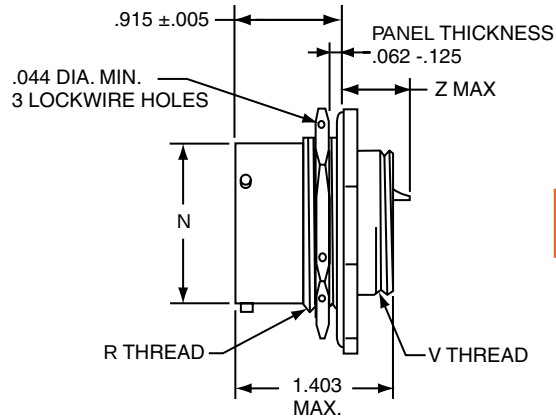
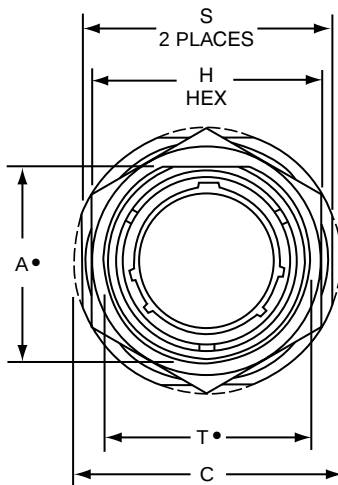
## Jam Nut Receptacle - Aluminum



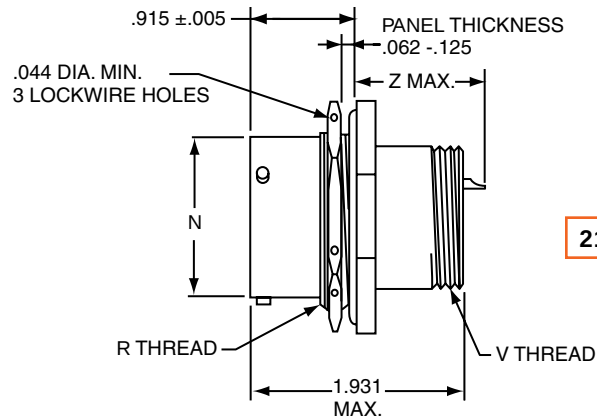
### PART #

To complete,  
see how to order  
page 135.

| Filter<br>Connector<br>Designator | Connect/<br>Filter<br>Type | Shell<br>Finish | Shell<br>Style | Shell Size<br>& Insert Arrg | Type of Contact/<br>Keyway Position |
|-----------------------------------|----------------------------|-----------------|----------------|-----------------------------|-------------------------------------|
| 21                                | 29                         | X               | 7              | XX-XX                       | X                                   |
| 21                                | 40                         | X               | 7              | XX-XX                       | X                                   |
| 21                                | 36                         | X               | 7              | XX-XX                       | X                                   |



21-29X7  
21-40X7



21-36X7

- "D" shaped mounting hole dimensions
- Plug movement required to clear FLJT receptacles: .625 min.

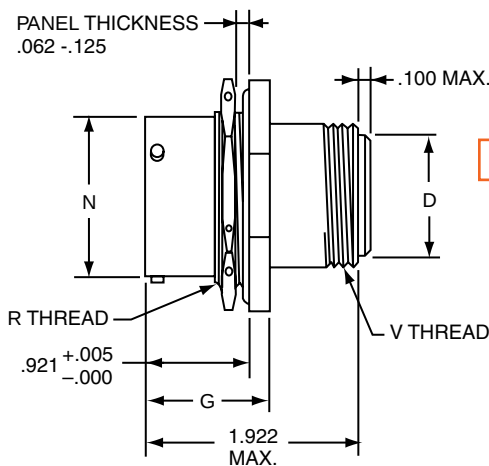
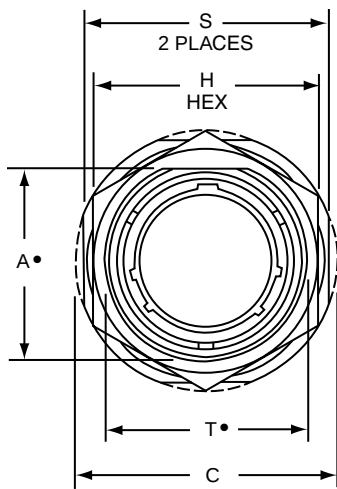
| Shell<br>Size | A*<br>Flat<br>+.000<br>-.010 | C<br>Dia.<br>+.011<br>-.010 | H<br>Hex<br>+.017<br>-.016 | N<br>Dia<br>+.001<br>-.005 | R<br>Thread<br>(Plated)<br>Class -2A | S<br>+.016<br>-.015 | T*<br>Dia.<br>+.010<br>-.000 | V<br>Thread<br>UNEF-2A<br>(Plated) | SHORT SHELL<br>VHF/UHF/MF Filters |                                             |                              | LONG SHELL<br>HF Filters     |                                             |
|---------------|------------------------------|-----------------------------|----------------------------|----------------------------|--------------------------------------|---------------------|------------------------------|------------------------------------|-----------------------------------|---------------------------------------------|------------------------------|------------------------------|---------------------------------------------|
|               |                              |                             |                            |                            |                                      |                     |                              |                                    | Size 20<br>Contact<br>Z Max.      | Size 16 or<br>16 & 20<br>Contacts<br>Z Max. | Size 22<br>Contact<br>Z Max. | Size 20<br>Contact<br>Z Max. | Size 16 or<br>16 & 20<br>Contacts<br>Z Max. |
| 9             | .669                         | 1.188                       | .875                       | .572                       | .6875-24UNEF                         | 1.062               | .697                         | .4375-28                           | .667                              | .756                                        | .616                         | 1.228                        | 1.201                                       |
| 11            | .769                         | 1.375                       | 1.000                      | .700                       | .8125-20UNEF                         | 1.250               | .822                         | .5625-24                           | .667                              | .756                                        | .616                         | 1.228                        | 1.201                                       |
| 13            | .955                         | 1.500                       | 1.188                      | .850                       | 1.0000-20UNEF                        | 1.375               | 1.007                        | .6875-24                           | .667                              | .756                                        | .616                         | 1.228                        | 1.201                                       |
| 15            | 1.084                        | 1.625                       | 1.312                      | .975                       | 1.1250-18UNEF                        | 1.500               | 1.134                        | .8125-20                           | .667                              | .756                                        | .616                         | 1.228                        | 1.201                                       |
| 17            | 1.208                        | 1.750                       | 1.438                      | 1.100                      | 1.2500-18UNEF                        | 1.625               | 1.259                        | .9375-20                           | .667                              | .756                                        | .616                         | 1.228                        | 1.201                                       |
| 19            | 1.333                        | 1.938                       | 1.562                      | 1.207                      | 1.3750-18UNEF                        | 1.812               | 1.384                        | 1.0625-18                          | .667                              | .756                                        | .616                         | 1.228                        | 1.201                                       |
| 21            | 1.459                        | 2.062                       | 1.688                      | 1.332                      | 1.5000-18UNEF                        | 1.938               | 1.507                        | 1.1875-18                          | .667                              | .756                                        | .616                         | 1.228                        | 1.201                                       |
| 23            | 1.580                        | 2.188                       | 1.812                      | 1.457                      | 1.6250-18UNEF                        | 2.062               | 1.634                        | 1.3125-18                          | .667                              | .756                                        | .616                         | 1.228                        | 1.201                                       |
| 25            | 1.709                        | 2.312                       | 2.000                      | 1.582                      | 1.7500-18UNS                         | 2.188               | 1.759                        | 1.4375-18                          | .667                              | .756                                        | .616                         | 1.228                        | 1.201                                       |

All dimensions for reference only.

**PART #** To complete, see how to order page 135.

| Filter Connector Designator | Connect/ Filter Type | Shell Finish | Shell Style | Shell Size & Insert Arrg | Type of Contact/ Keyway Position |
|-----------------------------|----------------------|--------------|-------------|--------------------------|----------------------------------|
| 21                          | 48                   | X            | 7           | XX-XX                    | X                                |

**UTS (Crimp) Contact SAE AS39029/57**



**21-48X7**

**UTS (Crimp) Contact  
SAE AS39029/57**

- "D" shaped mounting hole dimensions
- Plug movement required to clear FLJT receptacles: .625 min.

| Shell Size | A* Flat<br>+.000<br>-.010 | C Dia.<br>+.011<br>-.010 | D Dia.<br>±.005 | G<br>+.006<br>-.005 | H Hex<br>+.017<br>-.016 | N Dia<br>+.001<br>-.005 | R Thread<br>(Plated)<br>Class -2A | S<br>+.016<br>-.015 | T* Dia.<br>+.010<br>-.000 | V Thread<br>UNEF-2A<br>(Plated) |
|------------|---------------------------|--------------------------|-----------------|---------------------|-------------------------|-------------------------|-----------------------------------|---------------------|---------------------------|---------------------------------|
| 9          | .669                      | 1.188                    | .299            | 1.030               | .875                    | .572                    | .6875-24UNEF                      | 1.062               | .697                      | .5625-24                        |
| 11         | .769                      | 1.375                    | .427            | 1.030               | 1.000                   | .700                    | .8125-20UNEF                      | 1.250               | .822                      | .6875-24                        |
| 13         | .955                      | 1.500                    | .541            | 1.030               | 1.188                   | .850                    | 1.0000-20UNEF                     | 1.375               | 1.007                     | .8125-20                        |
| 15         | 1.084                     | 1.625                    | .666            | 1.030               | 1.312                   | .975                    | 1.1250-18UNEF                     | 1.500               | 1.134                     | .9375-20                        |
| 17         | 1.208                     | 1.750                    | .791            | 1.030               | 1.438                   | 1.100                   | 1.2500-18UNEF                     | 1.625               | 1.259                     | 1.0625-18                       |
| 19         | 1.333                     | 1.938                    | .897            | 1.061               | 1.562                   | 1.207                   | 1.3750-18UNEF                     | 1.812               | 1.384                     | 1.1875-18                       |
| 21         | 1.459                     | 2.062                    | 1.022           | 1.061               | 1.688                   | 1.332                   | 1.5000-18UNEF                     | 1.938               | 1.507                     | 1.3125-18                       |
| 23         | 1.580                     | 2.188                    | 1.147           | 1.061               | 1.812                   | 1.457                   | 1.6250-18UNEF                     | 2.062               | 1.634                     | 1.4375-18                       |
| 25         | 1.709                     | 2.312                    | 1.272           | 1.061               | 2.000                   | 1.582                   | 1.7500-18UNS                      | 2.188               | 1.759                     | 1.5625-18                       |

All dimensions for reference only.

# FLJT – MIL-DTL-38999, Series I

## Jam Mounting Receptacle - Aluminum

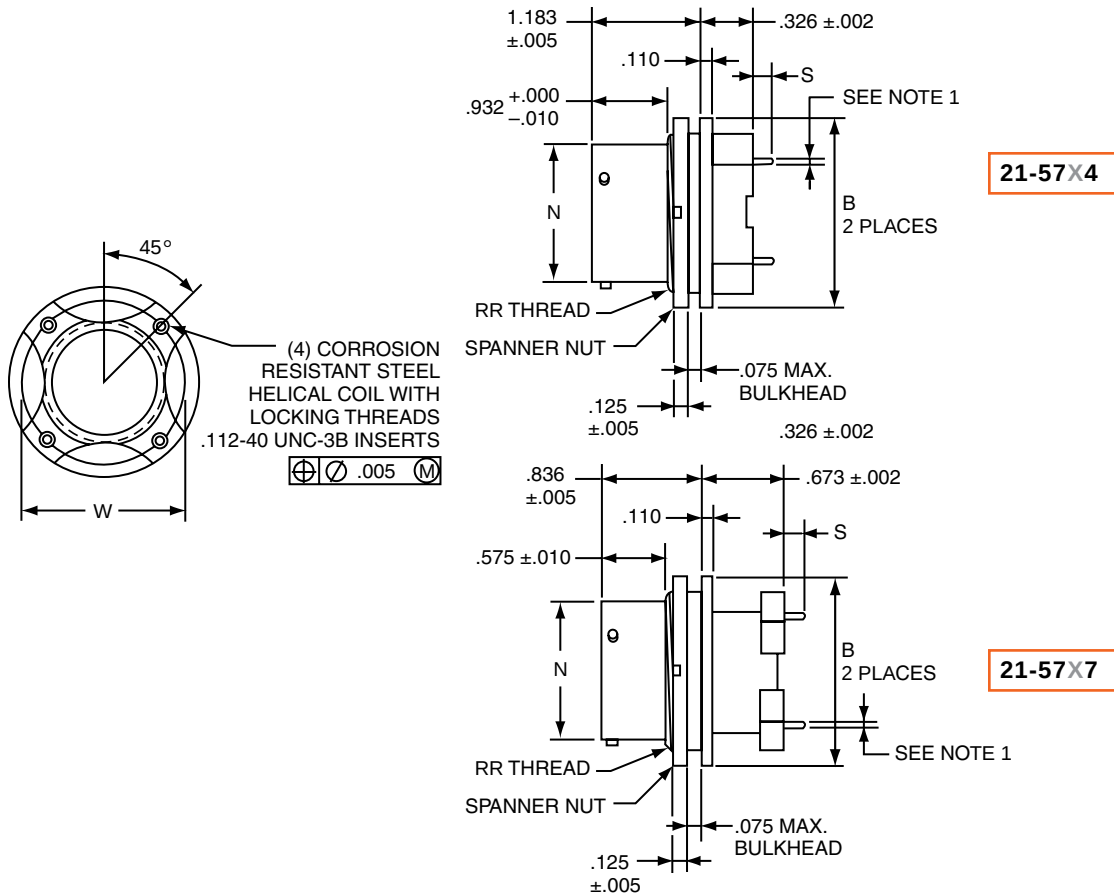
(printed circuit board mount)



### PART #

To complete,  
see how to order  
page 135.

| Filter<br>Connector<br>Designator | Connect/<br>Filter<br>Type | Shell<br>Finish | Shell<br>Style | Shell Size<br>& Insert Arrg | Type of Contact/<br>Keyway Position |
|-----------------------------------|----------------------------|-----------------|----------------|-----------------------------|-------------------------------------|
| 21                                | 57                         | X               | 4              | XX-XX                       | X                                   |
| 21                                | 57                         | X               | 7              | XX-XX                       | X                                   |



1. Standard tail for size 22 is .020 ±.001 dia.  
Standard tail for size 20 is .030 ±.001 dia.  
Plug movement required to clear FLJT receptacles: .625 min.

| Shell<br>Size | B<br>Dia.<br>±.005 | N<br>Dia.<br>+.001<br>-.005 | S<br>±.020 | W     | RR<br>Thread<br>UNEF-2A |
|---------------|--------------------|-----------------------------|------------|-------|-------------------------|
| 11            | 1.062              | .700                        | .132       | .850  | .8125-20                |
| 13            | 1.250              | .850                        | .132       | .994  | 1.0000-20               |
| 15            | 1.375              | .975                        | .132       | 1.119 | 1.1250-20               |
| 17            | 1.500              | 1.100                       | .132       | 1.237 | 1.2500-18               |
| 19            | 1.625              | 1.207                       | .132       | 1.379 | 1.3750-18               |
| 21            | 1.750              | 1.332                       | .132       | 1.489 | 1.5000-18               |
| 23            | 1.875              | 1.457                       | .132       | 1.619 | 1.6250-18               |
| 25            | 2.000              | 1.582                       | .132       | 1.744 | 1.7500-18               |

All dimensions for reference only.

Series III TV

Series II JT

Series I LJT

SJT

Printed  
Circuit Board

EMI Filter/  
Transient

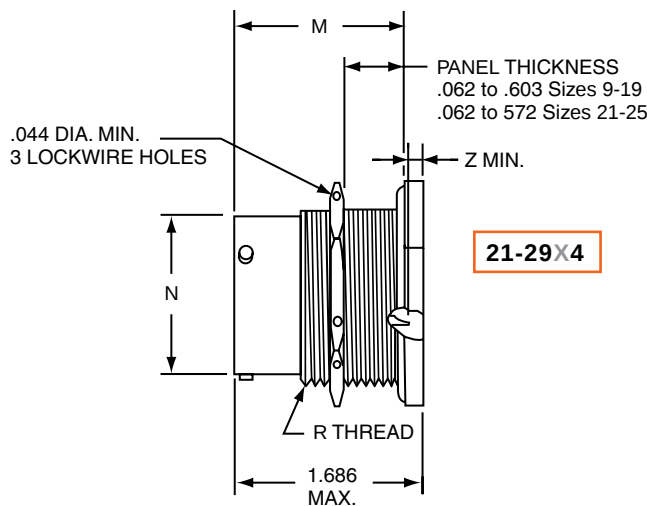
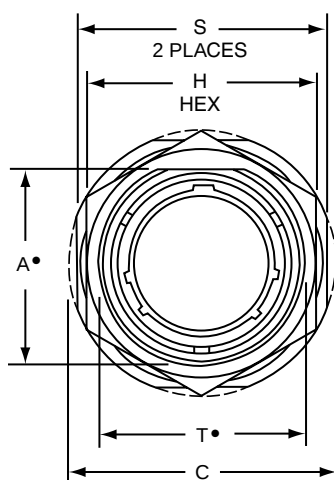
Accessories  
App Tools

HD38999  
High Density

Options

**PART #** To complete, see how to order page 135.

| Filter Connector Designator | Connect/ Filter Type | Shell Finish | Shell Style | Shell Size & Insert Arrg | Type of Contact/ Keyway Position |
|-----------------------------|----------------------|--------------|-------------|--------------------------|----------------------------------|
| 21                          | 29                   | X            | 4           | XX-XX                    | X                                |



- "D" shaped mounting hole dimensions
- Plug movement required to clear FLJT receptacles: .625 min.

| Shell Size | A* Flat<br>+.000<br>-.010 | C Dia.<br>+.011<br>-.010 | H Hex<br>+.017<br>-.016 | M<br>±.005 | N Dia<br>+.001<br>-.005 | R Thread<br>(Plated)<br>Class -2A | S<br>+.016<br>-.015 | T* Dia.<br>+.010<br>-.000 | SHORT SHELL<br>VHF/UHF Filters |                                             |                              |                              |
|------------|---------------------------|--------------------------|-------------------------|------------|-------------------------|-----------------------------------|---------------------|---------------------------|--------------------------------|---------------------------------------------|------------------------------|------------------------------|
|            |                           |                          |                         |            |                         |                                   |                     |                           | Size 16<br>Contact<br>Z Max.   | Size 16 or<br>16 & 20<br>Contacts<br>Z Max. | Size 20<br>Contact<br>Z Max. | Size 22<br>Contact<br>Z Max. |
| 9          | .669                      | 1.188                    | .875                    | 1.557      | .572                    | .6875-24UNEF                      | 1.062               | .697                      | .000                           | .000                                        | .000                         | .000                         |
| 11         | .769                      | 1.375                    | 1.000                   | 1.557      | .700                    | .8125-20UNEF                      | 1.250               | .822                      | .000                           | .000                                        | .000                         | .000                         |
| 13         | .955                      | 1.500                    | 1.188                   | 1.557      | .850                    | 1.0000-20UNEF                     | 1.375               | 1.007                     | .000                           | .000                                        | .000                         | .000                         |
| 15         | 1.084                     | 1.625                    | 1.312                   | 1.557      | .975                    | 1.1250-18UNEF                     | 1.500               | 1.134                     | .000                           | .000                                        | .000                         | .000                         |
| 17         | 1.208                     | 1.750                    | 1.438                   | 1.557      | 1.100                   | 1.2500-18UNEF                     | 1.625               | 1.259                     | .000                           | .000                                        | .000                         | .000                         |
| 19         | 1.333                     | 1.938                    | 1.562                   | 1.557      | 1.207                   | 1.3750-18UNEF                     | 1.812               | 1.384                     | .000                           | .000                                        | .000                         | .000                         |
| 21         | 1.459                     | 2.062                    | 1.688                   | 1.525      | 1.332                   | 1.5000-18UNEF                     | 1.938               | 1.507                     | .000                           | .000                                        | .000                         | .000                         |
| 23         | 1.580                     | 2.188                    | 1.812                   | 1.525      | 1.457                   | 1.6250-18UNEF                     | 2.062               | 1.634                     | .000                           | .000                                        | .000                         | .000                         |
| 25         | 1.709                     | 2.312                    | 2.000                   | 1.525      | 1.582                   | 1.7500-18UNS                      | 2.188               | 1.759                     | .000                           | .000                                        | .000                         | .000                         |

All dimensions for reference only.

The Amphenol® FSJT Series combines the unique design features of the scoop-proof FLJT Series with the standard mounting dimensions of JT types.

- 100% scoop-proof design
- Standard mounting dimensions
- Compliance with European Specifications PAN6433-2, LN29729, VG96912
- Uses proven filter technology with available components from other series
- EMP protection versions available



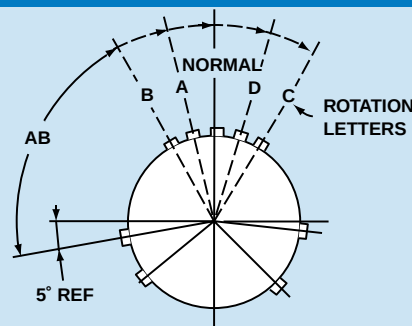
**FSJT**

**FSJT Master Key/Keyway Rotation**

| Shell Size | AB Angle of Rotation (Degrees) |    |    |     |     |
|------------|--------------------------------|----|----|-----|-----|
|            | Normal                         | A  | B  | C   | D   |
| 8          | 95                             | —  | —  | —   | —   |
| 10         | 95                             | 81 | 67 | 123 | 109 |
| 12         | 95                             | 75 | 63 | 127 | 115 |
| 14         | 95                             | 74 | 61 | 129 | 116 |
| 16         | 95                             | 77 | 65 | 125 | 113 |
| 18         | 95                             | 77 | 65 | 125 | 113 |
| 20         | 95                             | 77 | 65 | 125 | 113 |
| 22         | 95                             | 80 | 69 | 121 | 110 |
| 24         | 95                             | 80 | 69 | 121 | 110 |

A plug with a given rotation letter will mate with a receptacle with the same rotation letter. The AB angle for a given connector is the same whether it contains pins or sockets. Inserts are not rotated in conjunction with the master key/keyway.

AB angles shown are viewed from the front face of the connector. A receptacle is shown at right. The angles for the plug are exactly the same, except the direction of rotation is opposite of that shown for the receptacle.



**RELATIVE POSSIBLE POSITION OF ROTATED MASTER KEYWAY**  
(front face of receptacle shown)

Series III TV

Series II JT

Series I LJT

SJT

Printed  
Circuit Board

EMI Filter/  
Transient

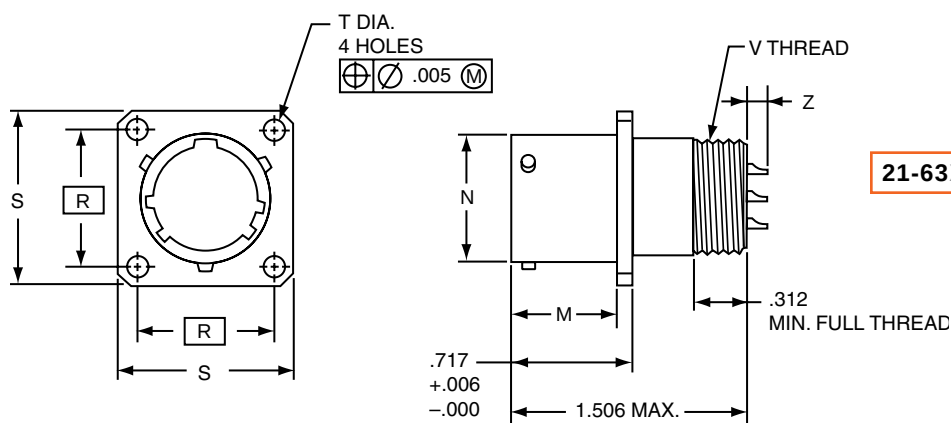
Accessories  
App Tools

HD38999  
High Density

Options

**PART #** To complete, see how to order page 135.

| Filter<br>Connector<br>Designator | Connect/<br>Filter<br>Type | Shell<br>Finish | Shell<br>Style | Shell Size<br>& Insert Arrg | Type of Contact/<br>Keyway Position |
|-----------------------------------|----------------------------|-----------------|----------------|-----------------------------|-------------------------------------|
| 21                                | 63                         | X               | 0              | XX-XX                       | X                                   |



Plug movement required to clear FSJT receptacles: .625 min.

| Shell<br>Size | M<br>+.000<br>-.005 | N<br>Dia.<br>+.001<br>-.005 | R<br>(TP) | S<br>+.021<br>-.020 | T<br>Dia.<br>+.004<br>-.003 | V<br>Thread<br>UNEF-2A | Z Max.             |                                   |                    |
|---------------|---------------------|-----------------------------|-----------|---------------------|-----------------------------|------------------------|--------------------|-----------------------------------|--------------------|
|               |                     |                             |           |                     |                             |                        | Size 20<br>Contact | Size 16 or<br>16 & 20<br>Contacts | Size 22<br>Contact |
| 10            | .632                | .590                        | .719      | .938                | .120                        | .5625-24               | .165               | .265                              | .134               |
| 12            | .632                | .750                        | .812      | 1.031               | .120                        | .6875-24               | .165               | .265                              | .134               |
| 14            | .632                | .875                        | .906      | 1.125               | .120                        | .8125-20               | .165               | .265                              | .134               |
| 16            | .632                | 1.000                       | .969      | 1.219               | .120                        | .9375-20               | .165               | .265                              | .134               |
| 18            | .632                | 1.125                       | 1.062     | 1.312               | .120                        | 1.0625-18              | .165               | .265                              | .134               |
| 20            | .602                | 1.250                       | 1.156     | 1.438               | .120                        | 1.1875-18              | .165               | .265                              | .134               |
| 22            | .602                | 1.375                       | 1.250     | 1.562               | .120                        | 1.3125-18              | .165               | .265                              | .134               |
| 24            | .602                | 1.500                       | 1.375     | 1.688               | .147                        | 1.4375-18              | .165               | .265                              | .134               |

All dimensions for reference only.

# FSJT – MIL-DTL-38999

## Wall Mounting Receptacle (UTS crimp)

### Aluminum

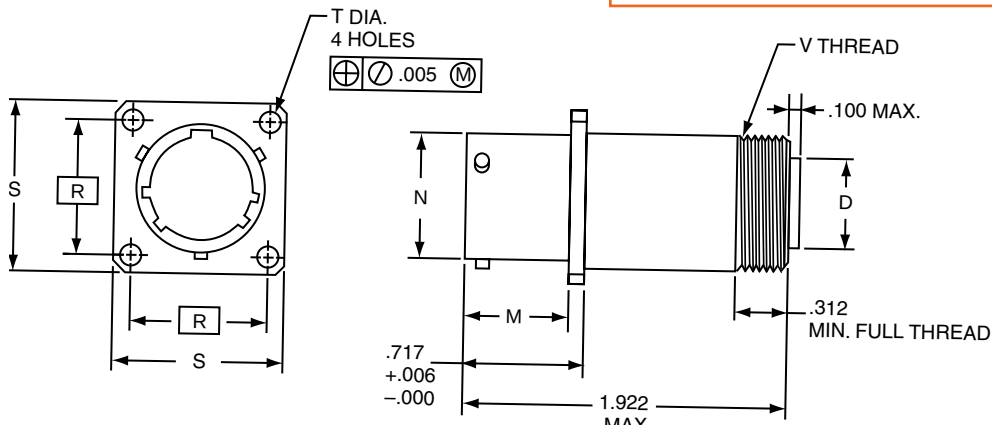


#### PART #

To complete, see how to order page 135.

| Filter Connector Designator | Connect/ Filter Type | Shell Finish | Shell Style | Shell Size & Insert Arrg | Type of Contact/ Keyway Position |
|-----------------------------|----------------------|--------------|-------------|--------------------------|----------------------------------|
| 21                          | 65                   | X            | 0           | XX-XX                    | X                                |
| 21                          | 63                   | X            | 2           | XX-XX                    | X                                |

UTS (Crimp) Contact SAE AS39029/57



21-65X0

UTS (Crimp) Contact  
SAE AS39029/57

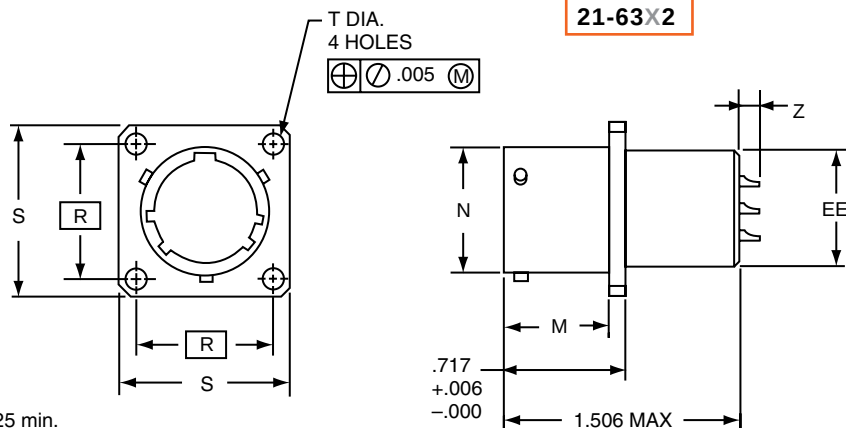
| Shell Size | D Dia. ±.005 | M +.000 - .005 | N Dia. +.001 - .005 | R (TP) | S +.021 - .020 | T Dia. +.004 - .003 | V Thread UNEF-2A |
|------------|--------------|----------------|---------------------|--------|----------------|---------------------|------------------|
| 10         | .427         | .632           | .590                | .719   | .938           | .120                | .6875-24         |
| 12         | .541         | .632           | .750                | .812   | 1.031          | .120                | .8125-20         |
| 14         | .666         | .632           | .875                | .906   | 1.125          | .120                | .9375-20         |
| 16         | .791         | .632           | 1.000               | .969   | 1.219          | .120                | 1.0625-18        |
| 18         | .897         | .632           | 1.125               | 1.062  | 1.312          | .120                | 1.1875-18        |
| 20         | 1.022        | .602           | 1.250               | 1.156  | 1.438          | .120                | 1.3125-18        |
| 22         | 1.147        | .602           | 1.375               | 1.250  | 1.562          | .120                | 1.4375-18        |
| 24         | 1.272        | .602           | 1.500               | 1.375  | 1.688          | .147                | 1.5625-18        |

All dimensions for reference only.

Plug movement required to clear FSJT receptacles: .625 min.

## FSJT MIL-DTL-38999

### Box Mounting Receptacle Aluminum



21-63X2

Plug movement required to clear FSJT receptacles: .625 min.

| Shell Size | M +.000 - .005 | N Dia. +.001 - .005 | R (TP) | S +.021 - .020 | T Dia. +.004 - .003 | EE +.001 - .005 | Z Max.          |                 |                             |                 |
|------------|----------------|---------------------|--------|----------------|---------------------|-----------------|-----------------|-----------------|-----------------------------|-----------------|
|            |                |                     |        |                |                     |                 | Size 16 Contact | Size 20 Contact | Size 16 or 16 & 20 Contacts | Size 22 Contact |
| 10         | .632           | .590                | .719   | .938           | .120                | .562            | .265            | .165            | .265                        | .134            |
| 12         | .632           | .750                | .812   | 1.031          | .120                | .687            | .265            | .165            | .265                        | .134            |
| 14         | .632           | .875                | .906   | 1.125          | .120                | .812            | .265            | .165            | .265                        | .134            |
| 16         | .632           | 1.000               | .969   | 1.219          | .120                | .937            | .265            | .165            | .265                        | .134            |
| 18         | .632           | 1.125               | 1.062  | 1.312          | .120                | 1.062           | .265            | .165            | .265                        | .134            |
| 20         | .602           | 1.250               | 1.156  | 1.438          | .120                | 1.187           | .265            | .165            | .265                        | .134            |
| 22         | .602           | 1.375               | 1.250  | 1.562          | .120                | 1.312           | .265            | .165            | .265                        | .134            |
| 24         | .602           | 1.500               | 1.375  | 1.688          | .147                | 1.437           | .265            | .165            | .265                        | .134            |

All dimensions for reference only.

- Series III TV
- Series II JT
- Series I LJT
- SJT
- Printed Circuit Board
- EMI Filter/Transient
- Accessories App Tools
- HD38999 High Density
- Options

### PART #

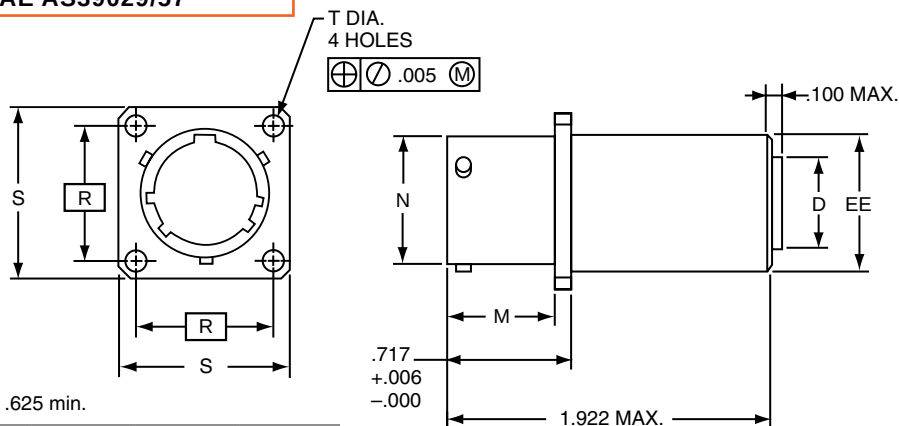
To complete,  
see how to order  
page 135.

| Filter<br>Connector<br>Designator | Connect/<br>Filter<br>Type | Shell<br>Finish | Shell<br>Style | Shell Size<br>& Insert Arrg | Type of Contact/<br>Keyway Position |
|-----------------------------------|----------------------------|-----------------|----------------|-----------------------------|-------------------------------------|
| 21                                | 65                         | X               | 2              | XX-XX                       | X                                   |
| 21                                | 63                         | X               | 7              | XX-XX                       | X                                   |

UTS (Crimp) Contact SAE AS39029/57

21-65X2

UTS (Crimp) Contact  
SAE AS39029/57

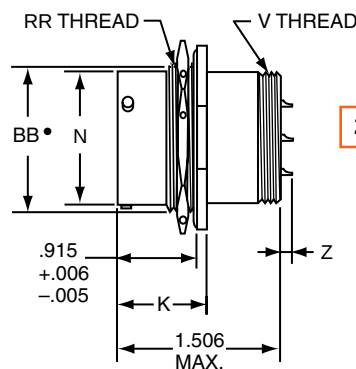
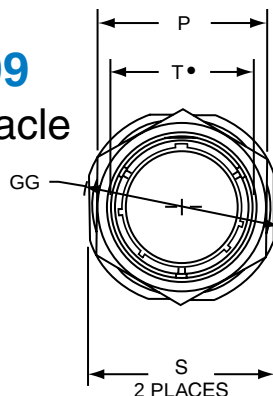


Plug movement required to clear FSJT receptacles: .625 min.

| Shell<br>Size | D<br>Dia.<br>±.005 | M<br>+.000<br>-.005 | N<br>Dia.<br>+.001<br>-.005 | R<br>(TP) | S<br>+.021<br>-.020 | T<br>Dia.<br>+.004<br>-.003 | EE<br>Dia.<br>+.001<br>-.005 |
|---------------|--------------------|---------------------|-----------------------------|-----------|---------------------|-----------------------------|------------------------------|
| 10            | .427               | .632                | .590                        | .719      | .938                | .120                        | .687                         |
| 12            | .541               | .632                | .750                        | .812      | 1.031               | .120                        | .811                         |
| 14            | .666               | .632                | .875                        | .906      | 1.125               | .120                        | .937                         |
| 16            | .791               | .632                | 1.000                       | .969      | 1.219               | .120                        | 1.061                        |
| 18            | .897               | .632                | 1.125                       | 1.062     | 1.312               | .120                        | 1.187                        |
| 20            | 1.022              | .602                | 1.250                       | 1.156     | 1.438               | .120                        | 1.312                        |
| 22            | 1.147              | .602                | 1.375                       | 1.250     | 1.562               | .120                        | 1.437                        |
| 24            | 1.272              | .602                | 1.500                       | 1.375     | 1.688               | .147                        | 1.562                        |

All dimensions for reference only.

## FSJT MIL-DTL-38999 Jam Nut Receptacle Aluminum



21-63X7

• "D" shaped mounting hole dimensions

Plug movement required to clear FSJT receptacles: .625 min.

| Shell<br>Size | K<br>+.006<br>-.005 | N<br>Dia.<br>+.001<br>-.005 | P<br>Hex | S<br>±.016 | T*<br>+.010<br>-.000 | V<br>Thread<br>UNEF<br>Class 2A | Z<br>±.020 | BB*<br>+.000<br>-.010 | GG<br>Max. | RR<br>Thread<br>UNEF<br>Class 2A | SS<br>+.001<br>-.016 |
|---------------|---------------------|-----------------------------|----------|------------|----------------------|---------------------------------|------------|-----------------------|------------|----------------------------------|----------------------|
| 10            | 1.024               | .590                        | .875     | 1.062      | .697                 | .5625-24                        | .150       | .669                  | 1.203      | .6875-24                         | .680                 |
| 12            | 1.024               | .750                        | 1.062    | 1.250      | .884                 | .6875-24                        | .150       | .830                  | 1.391      | .8750-20                         | .859                 |
| 14            | 1.024               | .875                        | 1.188    | 1.375      | 1.007                | .8125-20                        | .150       | .955                  | 1.515      | 1.0000-20                        | .984                 |
| 16            | 1.024               | 1.000                       | 1.312    | 1.500      | 1.134                | .9375-20                        | .150       | 1.084                 | 1.641      | 1.1250-18                        | 1.108                |
| 18            | 1.055               | 1.125                       | 1.438    | 1.625      | 1.259                | 1.0625-18                       | .150       | 1.208                 | 1.766      | 1.2500-18                        | 1.233                |
| 20            | 1.055               | 1.250                       | 1.562    | 1.812      | 1.384                | 1.1875-18                       | .150       | 1.333                 | 1.953      | 1.3750-18                        | 1.358                |
| 22            | 1.055               | 1.375                       | 1.688    | 1.938      | 1.507                | 1.3125-18                       | .150       | 1.459                 | 2.078      | 1.5000-18                        | 1.483                |
| 24            | 1.055               | 1.500                       | 1.812    | 2.062      | 1.634                | 1.4375-18                       | .150       | 1.580                 | 2.203      | 1.6250-18                        | 1.610                |

Components designed to meet the severe mechanical and environmental requirements of MIL-DTL-38999 Series III are now available to Series IV users. Modifications of the connector are available with EMP protection, incorporating MOV's, diodes or a combination of both.

- Intermateable with MIL-DTL-38999 Series IV plugs
- Maintains all the features of standard MIL-DTL-38999 Series IV receptacles
- Scoop-proof pins provide contact protection
- Uses insert patterns from MIL-DTL-38999 Series III



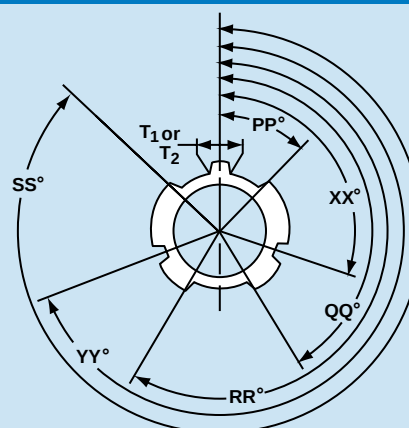
### FBL

#### Polarity Dimensions

| Key and Keyway Arrangement | XX°  | YY°  |
|----------------------------|------|------|
| N                          | 110° | 250° |
| A                          | 100° | 260° |
| B                          | 90°  | 270° |
| C                          | 80°  | 280° |
| D                          | 70°  | 290° |
| K                          | 120° | 255° |

#### FBL Master Key/Keyway Rotation

| Shell Size | Receptacle Key Position |         |         |         | Main Key Receptacle/Basic     |                            |
|------------|-------------------------|---------|---------|---------|-------------------------------|----------------------------|
|            | PP°                     | QQ°     | RR°     | SS°     | Socket Contact T <sub>1</sub> | Pin Contact T <sub>2</sub> |
| 11         | 44°28'                  | 151°6'  | 208°54' | 315°32' | .075                          | .109                       |
| 13         | 44°25'                  | 150°31' | 209°29' | 315°35' | .076                          | .112                       |
| 15         | 44°33'                  | 150°24' | 209°36' | 315°27' | .096                          | .132                       |
| 17         | 44°36'                  | 150°22' | 209°38' | 315°24' | .096                          | .134                       |
| 19         | 44°33'                  | 150°27' | 209°33' | 315°27' | .117                          | .154                       |
| 21         | 44°34'                  | 150°23' | 209°37' | 315°26' | .118                          | .155                       |
| 23         | 44°34'                  | 150°20' | 209°40' | 315°26' | .138                          | .176                       |
| 25         | 44°42'                  | 150°22' | 209°48' | 315°18' | .139                          | .177                       |



RELATIVE POSSIBLE POSITION  
OF KEYWAYS  
(front face of receptacle shown)

Series III TV

Series II JT

Series I LJT

SJT

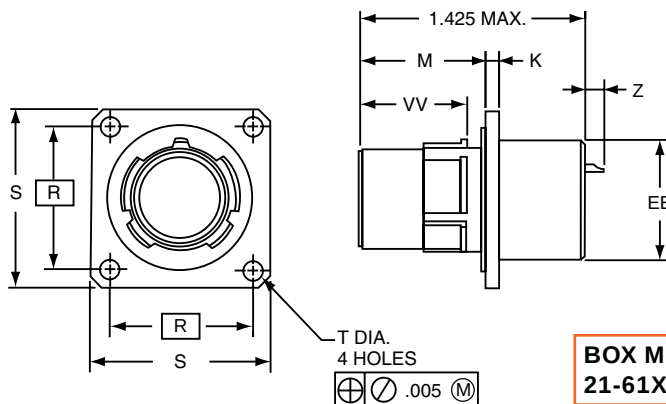
Printed  
Circuit Board

EMI Filter/  
Transient

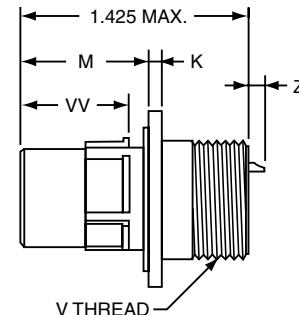
Accessories  
App Tools

HD38999  
High Density

Options



**BOX MOUNT**  
**21-61X2XX-XXX**



**WALL MOUNT**  
**21-61X0XX-XXX**

| Shell Size | K<br>±.010 | M<br>±.020 | R<br>(TP) | S<br>+.021<br>-.020 | T Dia.<br>+.004<br>-.003 | V Thread<br>(Plated)<br>-.006 | EE Dia.<br>+.001<br>-.005 | VV<br>±.003 | Z Max.          |                 |                             |                 |
|------------|------------|------------|-----------|---------------------|--------------------------|-------------------------------|---------------------------|-------------|-----------------|-----------------|-----------------------------|-----------------|
|            |            |            |           |                     |                          |                               |                           |             | Size 16 Contact | Size 20 Contact | Size 16 or 16 & 20 Contacts | Size 22 Contact |
| 11         | .092       | .791       | .812      | 1.029               | .128                     | M15X1-6g0.100R                | .589                      | .672        | .265            | .165            | .265                        | .134            |
| 13         | .092       | .791       | .906      | 1.124               | .128                     | M18X1-6g0.100R                | .707                      | .672        | .265            | .165            | .265                        | .134            |
| 15         | .092       | .791       | .969      | 1.218               | .128                     | M22X1-6g0.100R                | .865                      | .672        | .265            | .165            | .265                        | .134            |
| 17         | .092       | .791       | 1.062     | 1.313               | .128                     | M25X1-6g0.100R                | .983                      | .672        | .265            | .165            | .265                        | .134            |
| 19         | .092       | .791       | 1.156     | 1.439               | .128                     | M28X1-6g0.100R                | 1.101                     | .662        | .265            | .165            | .265                        | .134            |
| 21         | .124       | .791       | 1.250     | 1.561               | .128                     | M31X1-6g0.100R                | 1.219                     | .662        | .265            | .165            | .265                        | .134            |
| 23         | .124       | .791       | 1.375     | 1.687               | .147                     | M34X1-6g0.100R                | 1.337                     | .662        | .265            | .165            | .265                        | .134            |
| 25         | .124       | .791       | 1.500     | 1.813               | .147                     | M37X1-6g0.100R                | 1.455                     | .662        | .265            | .165            | .265                        | .134            |

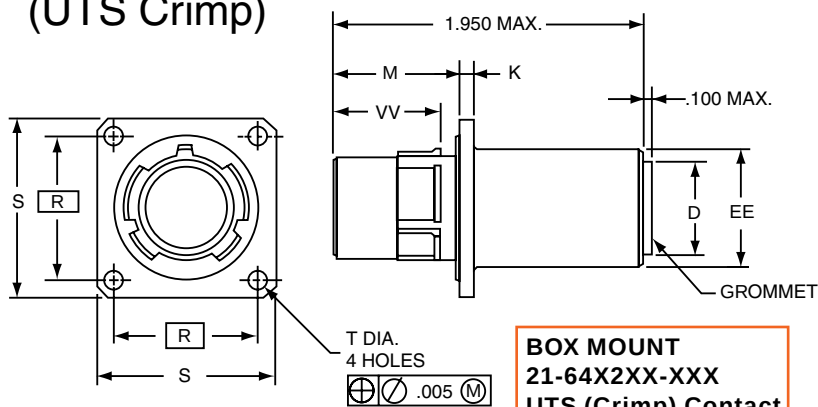
All dimensions for reference only.

## FBL – MIL-DTL-38999

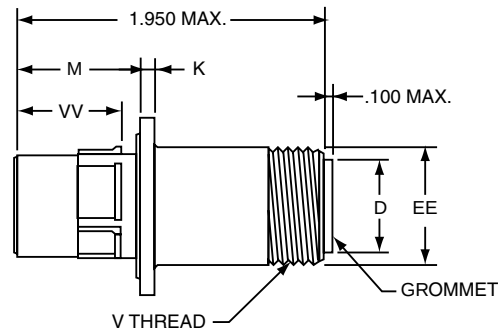
### Box and Wall Mounting Receptacle (UTS Crimp)

**PART #** To complete, see how to order page 135.

| Filter Connector Designator | Connect/ Filter Type | Shell Finish | Shell Style | Shell Size & Insert Arrg | Type of Contact/ Keyway Position |
|-----------------------------|----------------------|--------------|-------------|--------------------------|----------------------------------|
| 21                          | 64                   | X            | 2           | XX-XX                    | X                                |



**BOX MOUNT**  
**21-64X2XX-XXX**  
**UTS (Crimp) Contact**  
**MIL-C-39029/57**



**WALL MOUNT**  
**21-64X0XX-XXX**  
**UTS (Crimp) Contact**  
**MIL-C-39029/57**

| Shell Size | D Dia.<br>±.005 | K<br>±.010 | M<br>±.020 | R<br>(TP) | S<br>+.021<br>-.020 | T Dia.<br>+.004<br>-.003 | V Thread<br>(Plated)<br>-.006 | EE Dia.<br>+.001<br>-.005 | VV<br>±.003 |
|------------|-----------------|------------|------------|-----------|---------------------|--------------------------|-------------------------------|---------------------------|-------------|
| 11         | .427            | .092       | .791       | .812      | 1.029               | .128                     | M18X1-6g0.100R                | .687                      | .672        |
| 13         | .541            | .092       | .791       | .906      | 1.124               | .128                     | M22X1-6g0.100R                | .811                      | .672        |
| 15         | .666            | .092       | .791       | .969      | 1.218               | .128                     | M25X1-6g0.100R                | .937                      | .672        |
| 17         | .791            | .092       | .791       | 1.062     | 1.313               | .128                     | M28X1-6g0.100R                | 1.061                     | .672        |
| 19         | .897            | .092       | .791       | 1.156     | 1.439               | .128                     | M31X1-6g0.100R                | 1.187                     | .662        |
| 21         | 1.022           | .124       | .791       | 1.250     | 1.561               | .128                     | M34X1-6g0.100R                | 1.312                     | .662        |
| 23         | 1.147           | .124       | .791       | 1.375     | 1.687               | .147                     | M37X1-6g0.100R                | 1.437                     | .662        |
| 25         | 1.272           | .124       | .791       | 1.500     | 1.813               | .147                     | M41X1-6g0.100R                | 1.562                     | .662        |

# Amphenol® Filter Adapters

## Circuit Protection for Existing Applications



Filter adapters present an effective and economical method of introducing EMI/EMP protection to an installed system. The adapter series of filter connectors from Amphenol are available to intermate with all the popular MIL-Specs.

### Features of the Amphenol Adapter include:

- Planar technology from the industry's leader in circulars
- Filter products
- MOV or diode capability for transient protection
- Wide range of tooled patterns
- Space qualified components

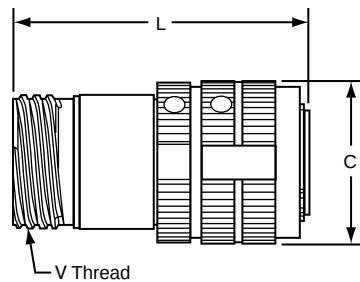
Installation of the adapter is quick and efficient, requiring no tools, fixtures or extended downtime. Simply unmate the existing cable harness from the receptacle; attach the coupling nut to the receptacle on the unit; then mate the cable harness to the receptacle side of the adapter. Several design alternatives are available that will help ensure that the adapter remains permanently attached to either the cable harness or the unit receptacle.



## Adapters

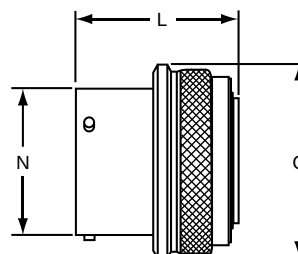
### FTV Adapter

21-900529-XXX



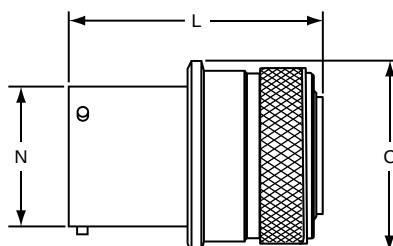
### FJT Adapter

21-900393-XXX



### FLJT Adapter

21-900423-XXX



All dimensions for reference only.  
Consult Amphenol, Sidney, NY for ordering information.

| FTV Shell Size | C Dia. Ref. | VThread 0.1P-0.3L-TS Class 2A | L Max. |
|----------------|-------------|-------------------------------|--------|
| 9              | .845        | .6250                         | 2.257  |
| 11             | .950        | .7500                         | 2.257  |
| 13             | 1.121       | .8750                         | 2.257  |
| 15             | 1.249       | 1.0000                        | 2.257  |
| 17             | 1.386       | 1.1875                        | 2.257  |
| 19             | 1.493       | 1.2500                        | 2.257  |
| 21             | 1.620       | 1.3750                        | 2.257  |
| 23             | 1.737       | 1.5000                        | 2.257  |
| 25             | 1.864       | 1.6250                        | 2.257  |

| FJT Shell Size | C Dia. +.011 -0.010 | N Dia. +.001 -0.005 | L Max. |
|----------------|---------------------|---------------------|--------|
| 8              | .847                | .473                | 1.397  |
| 10             | .969                | .590                | 1.397  |
| 12             | 1.143               | .750                | 1.397  |
| 14             | 1.255               | .875                | 1.397  |
| 16             | 1.388               | 1.000               | 1.397  |
| 18             | 1.510               | 1.125               | 1.397  |
| 20             | 1.633               | 1.250               | 1.397  |
| 22             | 1.756               | 1.375               | 1.397  |
| 24             | 1.878               | 1.500               | 1.397  |

| FLJT Shell Size | C Dia. +.011 -0.010 | N Dia. +.001 -0.005 | L Max. |
|-----------------|---------------------|---------------------|--------|
| 9               | .920                | .572                | 2.038  |
| 11              | 1.045               | .700                | 2.038  |
| 13              | 1.246               | .850                | 2.038  |
| 15              | 1.371               | .975                | 2.038  |
| 17              | 1.496               | 1.100               | 2.038  |
| 19              | 1.616               | 1.207               | 2.038  |
| 21              | 1.743               | 1.332               | 2.038  |
| 23              | 1.866               | 1.457               | 2.038  |
| 25              | 1.991               | 1.582               | 2.038  |

Series III TV

Series II JT

Series I LJT

SJT

Printed  
Circuit Board

EMI Filter/  
Transient

Accessories  
App Tools

HD38999  
High Density

Options

Series III TV

Series II JT

Series I LJT

SJT

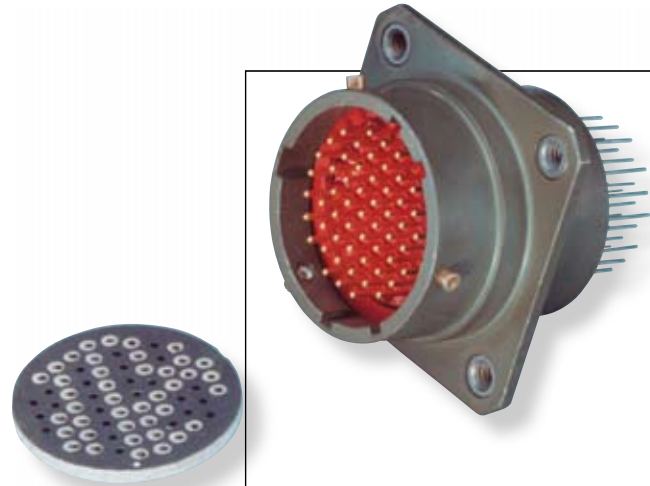
Printed  
Circuit Board

EMI Filter/  
Transient

Accessories  
App Tools

HD38999  
High Density

Options



MOV

- Filter connector size package
- Protection for 14, 31, 38 DC voltage circuits
- Radiation hardened
- No additional circuits required
- Low impedance
- Increased reliability
- Nanosecond response time
- Elimination of costly external suppression assemblies

The Amphenol® MOV Connector offers the versatility of a standard connector, with transient protection for sensitive circuits. Transients in electrical circuits caused by a sudden release of stored energy can originate within or outside of the circuit and may be repeatable or random.

Regardless of frequency or origin, transient caused failures generated by load switching, lightning, electrostatic discharge (ESD) and electromagnetic pulse (EMP) can destroy unprotected IC components.

Compatible with present filter connector assembly procedures, MOVs can be combined with existing filters. Internal housing of the MOV offers weight and space savings over other protection methods available today, and eliminates costly and bulky exterior suppression mechanisms in appropriate situations. MOVs are presently available in contact sizes 22, 20 and 16.

Transient protection can be provided in receptacle, plug or adapter configuration. These connectors are intermateable and intermountable with the following MIL-Specs:

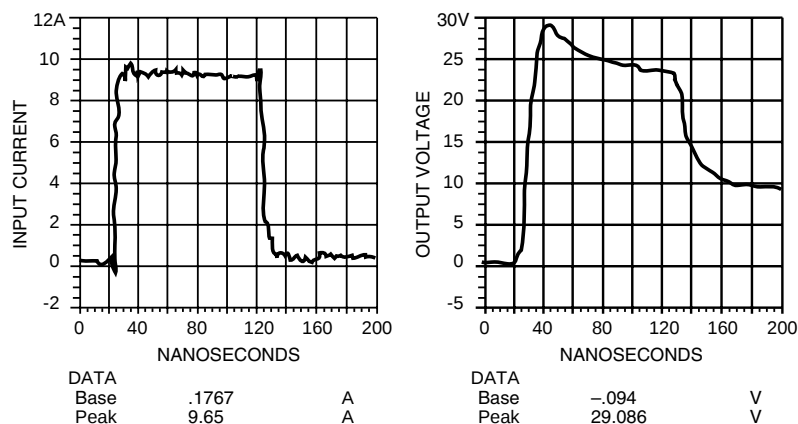
- MIL-DTL-5015
- MIL-DTL-26482
- MIL-DTL-26500
- MIL-DTL-27599
- MIL-DTL-38999
- MIL-DTL-83723

## M.O.V. PERFORMANCE CHARACTERISTICS

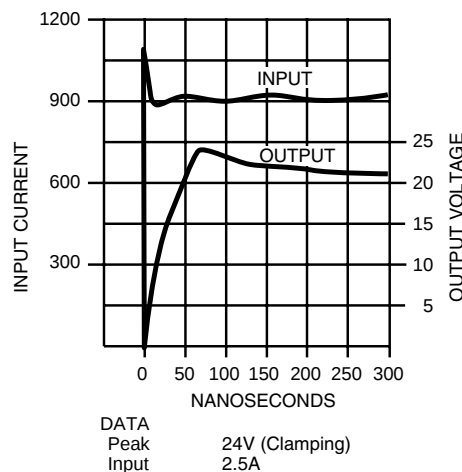
| Designation | Contact Size | Maximum Rating (125°C) |                      |                        |                         | Specifications (25°C)        |                           |            |                                                                                 |                     |                      |      | Maximum Leakage Current at V <sub>I</sub> (dc) |                     |                |
|-------------|--------------|------------------------|----------------------|------------------------|-------------------------|------------------------------|---------------------------|------------|---------------------------------------------------------------------------------|---------------------|----------------------|------|------------------------------------------------|---------------------|----------------|
|             |              | Continuous             |                      | Transient              |                         | Varistor Voltage at 1mA (DC) |                           |            | Maximum Clamping Voltage V <sub>c</sub> at Test Current I <sub>p</sub> (8/20μS) |                     | Capacitance at 1 MHz |      | I <sub>L</sub> Max.                            | I <sub>L</sub> Max. | V <sub>I</sub> |
|             |              | DC Voltage             | RMS Voltage          | Energy (10/1000μS)     | Peak Current (8/20μS)   |                              |                           |            |                                                                                 |                     |                      |      |                                                |                     |                |
|             |              | V <sub>m</sub> Volts   | V <sub>m</sub> Volts | W <sub>tm</sub> Joules | I <sub>tm</sub> Amperes | Min. Volts                   | V <sub>n</sub> (dc) Volts | Max. Volts | V <sub>c</sub> Volts                                                            | I <sub>p</sub> Amps | Picofarads           |      | 25°C                                           | 125°C               | DC Volts       |
| Min.        | Max.         | μA                     | μA                   |                        |                         |                              |                           |            |                                                                                 |                     |                      |      |                                                |                     |                |
| F14         | 22           | 14                     | 10                   | 1.5                    | 250                     | 18.5                         | 22                        | 25.5       | 42                                                                              | 10                  | 800                  | 2000 | 5                                              | 50                  | 14             |
| F31         | 22           | 31                     | 25                   | 1.5                    | 250                     | 35                           | 39                        | 48         | 85                                                                              | 5                   | 400                  | 1400 | 5                                              | 50                  | 28             |
| F38         | 22           | 38                     | 30                   | 1.5                    | 250                     | 42                           | 47                        | 58         | 100                                                                             | 5                   | 200                  | 1000 | 5                                              | 50                  | 36             |
| F45         | 22           | 45                     | 35                   | 1.5                    | 250                     | 53                           | 59                        | 68         | 100                                                                             | 5                   | 200                  | 850  | 5                                              | 50                  | 45             |
|             |              |                        |                      |                        |                         |                              |                           |            |                                                                                 |                     |                      |      |                                                |                     |                |
| F31         | 20           | 31                     | 25                   | 2                      | 300                     | 35                           | 39                        | 48         | 85                                                                              | 10                  | 400                  | 1400 | 5                                              | 50                  | 28             |
| F38         | 20           | 38                     | 30                   | 2                      | 300                     | 42                           | 47                        | 58         | 100                                                                             | 10                  | 200                  | 1000 | 5                                              | 50                  | 36             |
| F45         | 20           | 45                     | 35                   | 2                      | 300                     | 53                           | 59                        | 68         | 100                                                                             | 10                  | 200                  | 850  | 5                                              | 50                  | 45             |
|             |              |                        |                      |                        |                         |                              |                           |            |                                                                                 |                     |                      |      |                                                |                     |                |
| F38         | 16           | 38                     | 30                   | 3                      | 350                     | 42                           | 47                        | 58         | 100                                                                             | 20                  | 200                  | 1000 | 5                                              | 50                  | 36             |
| F45         | 16           | 45                     | 35                   | 3                      | 350                     | 53                           | 59                        | 68         | 100                                                                             | 20                  | 200                  | 850  | 5                                              | 50                  | 45             |

NOTE: Continuous voltage ratings are based on 1000 hour reliability assurance tests at 125°C rated ambient temperature per MIL-STD-202 method 108. Contact Amphenol Sidney for options not listed in chart.

The following charts show the typical MOV response to an input pulse open circuit of 1000V and 10A peak square wave with a 5 nanosecond rise time in a 50 Ohm system.



The following chart shows response time and output voltage of a typical MOV with 1000V, 5 nanosecond, 2.5A input pulse mounted in an LJT 13-35P connector. Test was performed without load.



Series III TV

Series II JT

Series I LJT

SJT

Printed  
Circuit BoardEMI Filter/  
TransientAccessories  
App ToolsHD38999  
High Density

Options

- Clamping voltage as low as 11.9 volts
- Low capacitance – suitable for high frequency applications
- Unipolar or bipolar – using existing proven diode technology
- Protection for 5.8 to 60 VDC circuits
- No additional circuits required
- Low impedance – high frequency response
- Increased reliability
- Nanosecond response time
- Elimination of costly external suppression assemblies
- Screening to applicable requirements of MIL-S-19500TX/TXV available
- Keeps transients outside of the box
- Minimizes fast transient voltage overshoot

The Amphenol® Diode Connector offers the versatility of a standard connector, with transient protection for sensitive circuits, such as TTL Lines.

Transients in electrical circuits caused by a sudden release of stored energy can originate within or outside of the circuit and may be repeatable or random.

Regardless of frequency or origin, transient caused failures generated by load switching, lightning, electrostatic discharge (ESD) and electromagnetic pulse (EMP) can destroy unprotected IC components.

Compatible with present filter connector assembly procedures, diodes can stand alone or can be combined in series with filters. Internal housing of the diode offers weight and space savings over other protection methods available today, and eliminates costly and bulky exterior suppression mechanisms in appropriate situations. Diodes are presently available in contact sizes 22 and 20.

Transient protection can be provided in receptacle, plug or adapter configurations. These connectors are intermateable and intermountable with the following MIL-Specs:

- MIL-DTL-5015
- MIL-DTL-26482
- MIL-DTL-26500
- MIL-DTL-27599
- MIL-DTL-38999
- MIL-DTL-83723



### Diode

Diode Connector and Adapter



Close-up View of Diode Contact

## STANDARD DIODE CONNECTOR CHARACTERISTICS AT 25°C

| Stand-off Voltage † (VDC) | Max. Capacitance* (pf) | Breakdown Voltage at 1 mA (VDC) | Max. Clamping Voltage (8 x 20µ sec. pulse) | Leakage Current at Stand-off Voltage (µA) | Power Capability † 20µs Exp. Impulse (Peak) (Watts) |
|---------------------------|------------------------|---------------------------------|--------------------------------------------|-------------------------------------------|-----------------------------------------------------|
| + 5.8                     | 1600                   | + 6.45 to + 7.1**               | +11.9                                      | <100                                      | 1000                                                |
| ± 5.8                     | 1000                   | ± 6.45 to ± 7.1**               | ±11.9                                      | <150                                      | 1000                                                |
| ± 7.0                     | 750                    | ± 7.3 to ± 9.3                  | ±13.5                                      | <10                                       | 1000                                                |
| ± 8.0                     | 750                    | ± 8.2 to ±10.6                  | ±15.4                                      | <5                                        | 1000                                                |
| + 8.0                     | 1500                   | + 8.5 to +10.6                  | +15.4                                      | <5                                        | 1000                                                |
| ±10.0                     | 500                    | ±11.1 to ±12.3                  | ±17.0                                      | <1                                        | 1000                                                |
| +10.0                     | 1100                   | +11.1 to +12.3                  | +17.0                                      | <1                                        | 1000                                                |
| ±15.0                     | 500                    | ±16.7 to ±18.5                  | ±24.9                                      | <1                                        | 1000                                                |
| +15.0                     | 750                    | +16.2 to +19.2                  | +24.9                                      | <1                                        | 1000                                                |
| -15.0                     | 750                    | -16.2 to -19.2                  | -24.9                                      | <1                                        | 1000                                                |
| ±17.0                     | 500                    | ±18.9 to ±23.0                  | ±32.0                                      | <1                                        | 1000                                                |
| +17.1                     | 600                    | +19.0 to +21.0                  | +27.7                                      | <1                                        | 1000                                                |
| ±22.0                     | 500                    | ±25.7 to ±28.4                  | ±38.0                                      | <1                                        | 1000                                                |
| ±25.0                     | 500                    | ±27.8 to ±30.7                  | ±40.5                                      | <1                                        | 1000                                                |
| +28.0                     | 500                    | +30.5 to +35.7                  | +46.4                                      | <1                                        | 1000                                                |
| ±33.3                     | 500                    | ±37.1 to ±41.0                  | ±53.9                                      | <1                                        | 1000                                                |
| +33.3                     | 500                    | +37.1 to +41.0                  | +53.9                                      | <1                                        | 1000                                                |
| ±40.0                     | 500                    | ±44.4 to ±49.1                  | ±64.5                                      | <1                                        | 1000                                                |
| ±45.0                     | 500                    | ±47.1 to ±58.1                  | ±84.2                                      | <1                                        | 1000                                                |
| +57.8                     | 500                    | +64.6 to +71.4                  | +95.2                                      | <1                                        | 1000                                                |
| ±57.8                     | 500                    | ±64.6 to ±71.4                  | ±95.2                                      | <1                                        | 1000                                                |

Clamping Time -

Unipolar: Less than 1 nanosecond, 0V to breakdown

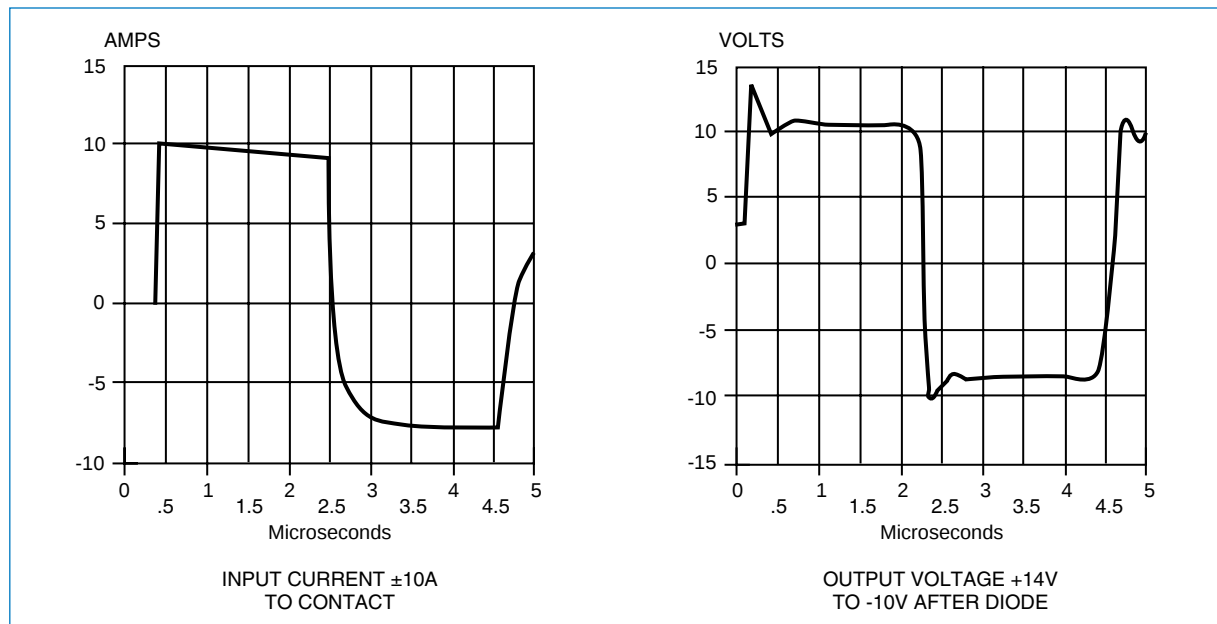
Bipolar: Less than 5 nanoseconds, 0V to breakdown

\* Lower capacitance devices available; consult Amphenol, Sidney, NY.

\*\* This device only measured at 10ma

† Higher power ratings also available

## DIODE CONTACT PULSE TEST, ±5.8 DIODE



Series III TV

Series II JT

Series I LJT

SJT

Printed  
Circuit Board

EMI Filter/  
Transient

Accessories  
App Tools

HD38999  
High Density

Options

The Amphenol® Energy Shunting Assembly (ESA) is a simple, compact unit which provides lightning and electromagnetic pulse (EMP) protection of systems in which many signal lines enter sensitive electronic equipment. The efficient packaging of the ESA circumvents the concept of one protective device per line. It provides a surge arrester which has the advantage of space saving and simplified assembly when compared to current protective devices which range from diodes to large spark gaps.

The current ESA design consists of two 53-pin contact, Mil-Standard, hermetic connectors assembled back to back, and encompassing a ground plate. A sealed chamber is formed within this thru-bulkhead unit, housing 53 in-line spark gaps. Introducing a controlled atmosphere enhances fast rise breakdown.

The ESA can be integrated with an EMI filter connector which can improve its performance. These two assemblies provide a method to help protect against lightning, EMP, EMI and TEMPEST effects.



**ESA**

Energy Shunting Assembly

### Performance Characteristics

|                                                                     |                                   |                                    |
|---------------------------------------------------------------------|-----------------------------------|------------------------------------|
| 1. DC breakdown voltage                                             |                                   | 230 Volts                          |
| 2. Maximum rated surge discharge current (8 x 20 microsecond pulse) |                                   | 5,000 Amperes per pin              |
| 3. Insulation resistance                                            |                                   | 10 <sup>10</sup> ohms minimum      |
| 4. Capacitance between each electrode and the ground plane          |                                   | Less than 2 pf                     |
| 5. Rate-of-rise breakdown voltage                                   | Maximum Breakdown Voltage (Volts) | Rate of Rise (Volts/microsecond)   |
|                                                                     | 600                               | 10                                 |
|                                                                     | 800                               | 1,000                              |
|                                                                     | 1,500                             | 10,000                             |
|                                                                     | 2,000                             | 1000,000                           |
| 6. Surge breakdown unbalance (at 100 Volts/microseconds)            |                                   | 180 Volts                          |
| 7. Surge life (500 Ampere – 10 x 1,000 microsecond)                 |                                   | 400 Surges                         |
| 8. Hold-over voltage                                                |                                   | 100 Volts                          |
| 9. Arcing voltage                                                   |                                   | 40 Volts                           |
| 10. Glow to arc transition point                                    |                                   | 1 Ampere                           |
| 11. Temperature range                                               |                                   | –40°F to 150°F<br>(233°K to 339°K) |

### The Hermetic Filter Connector

While only approximately 1/2 inch longer than standard series connectors, the hermetic filter connector provides all the benefits of a hermetic connector, as well as EMI protection for sensitive circuits. The filter assembly is protected by a fused glass insert within a unique steel housing. This design accounts for the connector's capability of tolerating high level static pressure, while maintaining a low level leakage rate. Applications include pressurized test equipment, environmental and toxic gas chambers, and moisture sealing on industrial equipment and missiles.



Filtered Plug



Hermetic Filter Connector

### Filtered Plug

This connector is designed for applications where EMI protection is essential, but access to the receptacle is denied. The filtered plug presents an alternative for the electrical engineer.

The filter plug is designed with the same components as a standard filter receptacle, but offers the option of being mounted on the cable harness. This device is a cost effective method of achieving EMI protection when length restrictions prohibit inclusion of an adapter to the system.

### Filter Connectors can also incorporate high frequency coax, twinax, triax, quadax and differential twinax contacts.

Amphenol MIL-DTL-38999 Series III connectors are the most commonly used connectors for incorporation of shielded contacts along with traditional crimp contacts. High performance shielded coaxial, twinax and triax contacts are available to fit various RG and special cables. They eliminate discontinuities or impedance variations due to movement of parts under axial load. Size 8 quadax and differential twinax contacts provide high speed data transfers.



Filter Connectors with Coax Shielded Contacts

### Filter Connectors with Flex Termination

Flex circuits are available for MIL-DTL-38999, MIL-DTL-5015 and MIL-DTL-26482 filter connectors. They are offered in flat or sculptured styles and provide flexibility in assembling to printed circuit boards.

Through Amphenol's Advanced Circuit Technology division, these strong and rigid, yet highly flexible circuits eliminate the need to purchase and attach individual pins or connectors. Thus they promote system automation, reduce space requirements and lower installation costs. Sculptured® Flexible Circuits have built-in terminations which eliminate the failure associated with crimped or soldered-on contacts, and geometrically fit the tight space requirements within a unit.



Flex Circuitry for Attachment to  
Printed Circuit Boards



MIL-DTL-38999 with Quadax Contacts

For more information on these specials, consult Amphenol Aerospace and see our website at [www.amphenol-aerospace.com](http://www.amphenol-aerospace.com).

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