MILNEC
INTERCONNECT SYSTEMS

CONNECTING YOUR
ENGINEERING PASSION

MILITARY & DEFENSE EDITION

TX Series
MIL-DTL-38999 Series III
Military Style Connectors & Backshells

- IP67 Rated Waterproof Connectors
- EMI-RFI Environmental Backshells
- Covers, Contacts, Gaskets, Tools

TX Series | MIL-DTL-38999 Series III Military Style Connectors

Introduction to the TX Series

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TX Series Cylindrical Connectors

About Us

MILNEC INTERCONNECT SYSTEMS is a leader in the design, manufacture, and supply of high-performance cylindrical interconnect systems. From research stations in the Antarctic to spacecraft on the plains of Mars, our high-reliability connector systems conquer the most demanding environments. Milnec is a supplier to leading companies in 24 countries in the following industries:

- Military & Defense
- Aerospace & Space
- Railway & Mass Transit
- Industrial & Heavy Equipment
- Alternative Energy, Nuclear, Oil & Gas

Logistics Solutions for Global Applications

Global logistics and support means we deliver products on time every time to any destination. To support your immediate requirements, we have extensive inventories, making most systems readily available for today's compressed design and production schedules. On average, custom connector solutions made to your exact configuration ship within seven days from the time of order placement.

- Worldwide shipping (restricted to NATO countries only)
- Web access to inventory, prices, & delivery information
- A large stock of popular parts for greater availability
- Competitive pricing & short lead times
- Impeccable customer service & technical support

High Reliability—Simplified

Just because your interconnect problem is complicated does not mean acquiring the solution has to be. Milnec connector systems and our "all-in-one" kits provide engineers the most complete and professional connector solutions with ease and technical clarity.

- Complete, high-reliability solutions
- Simple to understand technical data & configurations
- Online part builder tools, drawings, & documentation
- Field installable & serviceable

Performance With Environmental Responsibility

RoHS compliant products are available to support environmental responsibility and legislative conformity. Through simple modification codes, Milnec provides a wide variety of material options to easily provide customers with fully compliant and eco-friendly connector components.

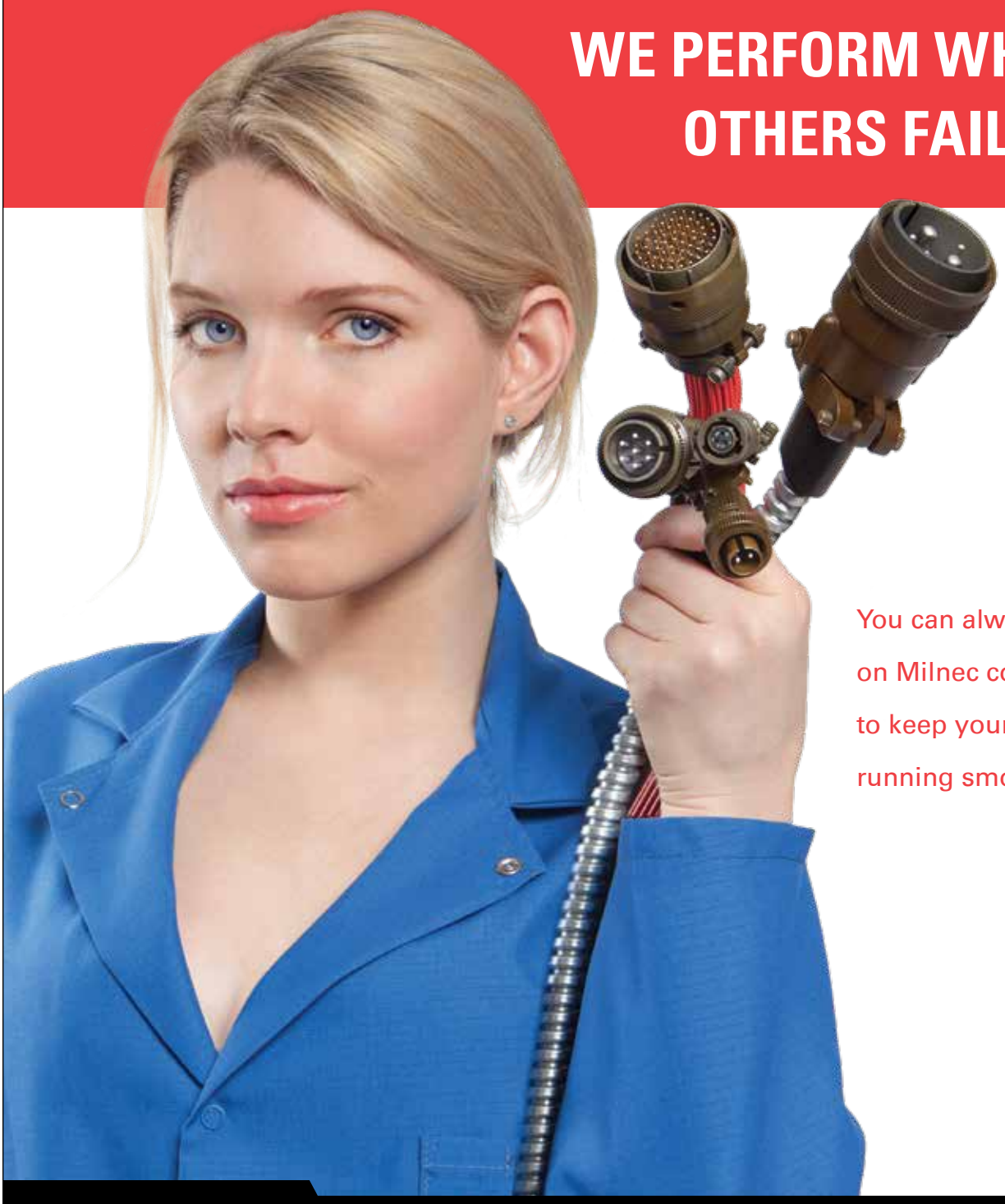
- RoHS compliant materials & finishes
- Simple material modification codes
- Lead-free contacts

Highest Manufacturing Quality

We invest in the finest equipment and modern production processes to ensure that our connectors will exceed your quality and performance expectations. Our production processes include advanced computer numerical control machining, cosmetic and metal finishing, heat treatment, and stainless steel passivation.

- Traceability on 100% of the parts
- Quick production lead times
- Quantity support from R&D to production
- "Just-in-time" delivery, kitting, & special packaging
- Rapid tooling & prototyping for custom designs

WE PERFORM WHERE OTHERS FAIL



You can always rely on Milnec connectors to keep your systems running smoothly.

High Reliability—That's A Beautiful Thing

Our ruggedized connectors combine sealing ability and physical strength with design simplicity, making them the most dependable in the world. And their IP67 rating means they will make a reliable connection in the ugliest of industrial and military environments. High-reliability—that's a beautiful thing.

MILNEC® INTERCONNECT SYSTEMS

Introduction to TX Cylindrical Connectors

At its most basic level, a connector is a simple mechanical device that allows an electrical connection between two systems to be connected and disconnected with ease. A versatile connector is capable of providing a mix of signal, power, and data (in the form of fiber optic, multiple wires, and various cable types) in a single connector package. It is a lot easier to seal and protect a single multi-function cable than a multitude of single function cables and wires, which add engineering complexity to a design.

Connectors are not just components in a design but are the electrical lifelines that provide power and signals to a machine. In order to understand connectors better, you have to know and understand the functions of the individual components. While most cylindrical connectors look very similar, there are differences in construction and design that differentiate them and make them all quite unique. The exploded view below shows the basic components of a typical TX Series cylindrical connector and should provide a basic overview. ■

Receptacle Assembly

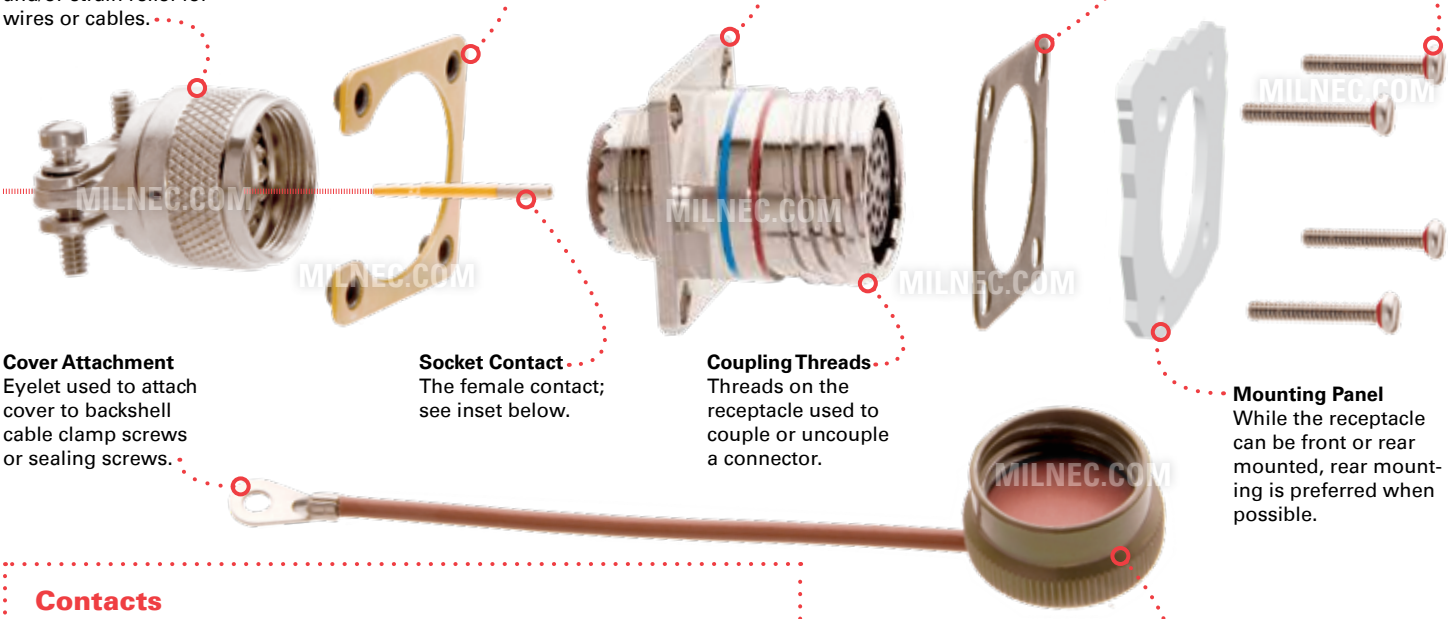
Backshell
Any accessory that attaches to the rear of a connector. Most backshells provide environmental sealing and/or strain relief for wires or cables.

Mounting Bracket
A metal bracket with four captive lock nuts used to securely mount flanged receptacles to a panel.

Receptacle
Counterpart connector that mates to the plug. Flanged receptacles mount to a panel or enclosure.

Mounting Gasket
A neoprene seal that fills the space between the connector flange and the equipment panel.

Sealing Screws
Screws with an O-ring beneath the head that effectively seal the mounting holes on the enclosure.



Cover Attachment
Eyelet used to attach cover to backshell cable clamp screws or sealing screws.

Socket Contact
The female contact; see inset below.

Coupling Threads
Threads on the receptacle used to couple or uncouple a connector.

Mounting Panel
While the receptacle can be front or rear mounted, rear mounting is preferred when possible.

Protective Cover
A cover is used to seal against dirt and moisture. A neoprene seal presses against the face of the connector to create an airtight seal. Protective covers are secured to the connector by a captive steel rope.

Contacts

The conductive element in a connector that makes the connection between the wire and the mating connector's counterpart contact for the purpose of transferring electrical energy. Socket contacts are female; pin contacts are male.

Socket Contact
Socket contacts are recessed in the insert and are placed on the powered or "hot" side of the circuit.

Pin Contact
Pin contacts are always exposed and must be placed on the "load" side of the circuit.

Benefits of Milnec's TX Series Cylindrical Connectors

Cylindrical connectors are distinguished by their sturdy, circular shape, which provides strength and reliability in harsh environmental conditions like oil rigs or mining operations. They must be dependable under temperature extremes and harsh vibration, such as inside a fighter jet's engine bay. A combination of sealing ability, physical strength, and design simplicity make Milnec ruggedized cylindrical connectors the most reliable connectors in the world.

Inside the heart of a connector are precision machined contacts housed and positioned by a dielectric insert. Our inserts are made from glass-filled liquid crystal polymer, providing electrical arc protection and vibration resistance.

The sealing capabilities of cylindrical connectors ensure that the electrical contacts and the contact terminations remain isolated and protected from environmental factors such as water, chemicals, dirt, etc. To accomplish this, a variety of sealing mechanisms are used to provide complete protection, including glands, grommets, O-rings, and bushings.

In today's military environment, only high-quality metal connector components are tough enough to take the daily abuse and provide complete system reliability. And, to ensure long component life in marine environments, shells and components are available in corrosion inhibiting materials that provide a dynamic salt spray rating of up to 2,000 hrs. ■

Plug Assembly

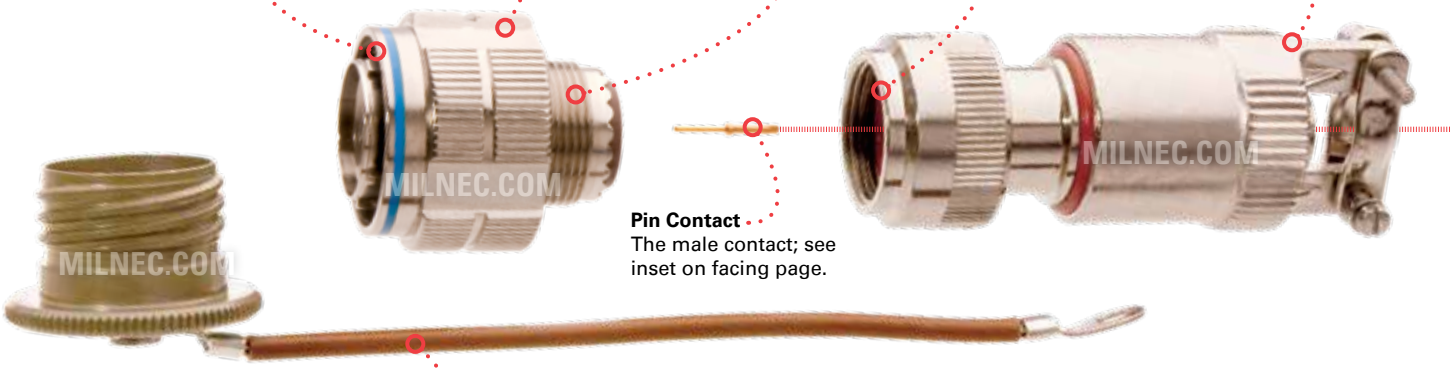
Plug
Connector that mates into a receptacle. Plugs mount at the end of loose cables.

Coupling Ring
The knurled or fluted ring on a plug that couples and locks onto the receptacle shell.

Accessory Threads
Coupling threads on the rear of shells used to accept accessories such as backshells or shrink boot adapters.

O-Ring
A rubber ring placed around the periphery of a backshell coupling shell to form an environmental seal when mated.

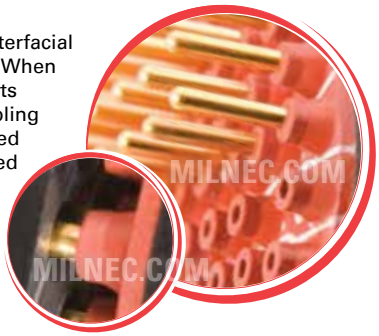
EMI/RFI Environmental Backshell
A backshell is a protective accessory that attaches to the rear of a connector. This particular backshell provides environmental sealing, EMI/RFI protection, and strain relief.



Pin Contact
The male contact; see inset on facing page.

Wire Rope Attachment
Stainless steel wire rope attachment with temperature, chemical, and UV resistant PTFE jacket for durability.

Interfacial Seal
Pin inserts feature a resilient interfacial seal that protects each contact. When mated, the pin and socket inserts are forced together by the coupling mechanism, pressing each raised barrier tightly into the chamfered socket hole to provide superior environmental sealing.



What Is An IP67 Rating?

The International Protection Rating (IP Code) classifies the degrees of protection provided against the intrusion of objects like dust, dirt, debris, and moisture—as well as protection from accidental operator contact.

Milnec connectors are rated to IP67 and are completely protected from dirt and debris. They can be submerged in water up to 3.3 ft (1m) deep for a minimum of 30 minutes without damage.

Rev. 2235

Introduction to TX Series Shell Styles

A connector's shell is the outer casing in which the vital components of the connector, such as the contacts and insert, are housed and protected. A mated pair consists of two shells: one plug and one receptacle. Plugs feature the coupling ring. Receptacle shells bear the coupling threads and come in four basic styles (wall mount, box mount, jam nut, cable mount) to provide various mounting options for your application requirements. Thru-bulkhead receptacles are also available for applications requiring a feed-through on bulkheads or panels. ■

Plug

A plug terminates at the end of a loose cable and mates with a corresponding receptacle. Its coupling ring, the plug's most defining attribute, facilitates positive mating onto the receptacle. Plugs feature anti-vibration, ratchet locking for secure coupling and 360° grounding fingers for superior shell-to-shell conductivity. The keyway design prevents contacts from engaging with the receptacle until all keys have been perfectly aligned to prevent contact damage, even in blind-mate applications. Accessory threads permit the attachment of backshells to a connector shell.

Plug

Receptacles

Wall Mount

Standard receptacle with a four-hole flange for front or rear mounting through a panel or bulkhead. This popular receptacle style includes accessory threads to accept a backshell.

Jam Nut

Preferred for their superior environmental seal due to an integrated O-ring and a single-hole mount design. A single hex nut ("jam nut") locks it in place rather than bolts. Designed for rear panel mounting only.

Cable Mount

Used almost exclusively for extension cords, cable mount receptacles terminate directly at the end of a cable. They are also used when equipment boxes are not easily accessible, making cord mount receptacles the only option.

Stowage

Stowage or "dummy" receptacles prevent connector damage by providing a safe place to stow unused cables, preventing operator injury while protecting and sealing plugs when not in use.

Thru-Bulkhead

For feed-through of circuits on bulkheads or panels. These specialized receptacles have a receptacle on both ends of the shell. One end has pins and the other sockets.

Connector Saver

A saver has both a plug and a receptacle and is designed to protect connectors from damage and wear due to repeated mating during testing or manufacturing.

Introduction to TX Series Hermetic Receptacles

While environmentally sealed connectors are designed to protect against most hazards (moisture, mud, sand, debris, etc.), some applications require more extensive protection or a complete airtight seal. Hermetic connectors can fully seal an enclosure subjected to more unique types of abuse, such as extreme pressures, temperature changes, and gas or moisture ingress. Typical hermetic applications include vacuum chambers, medical and laboratory experiments, pressurized cabins, valves, sensors, and probes.

Hermetic receptacles are primarily used to make connections through environments with a pressure differential, but they are also relied upon for the ultimate environmental seal. Hermetic connectors are often used for special applications where even a small amount of moisture or condensation inside an enclosure can produce malfunctions or false sensor readings in sensitive electronic systems.

These connectors are used to provide a structurally sound, environmentally sealed electronic feed-through to a pressurized bulkhead or chamber. Because the receptacle is the passageway into the sealed environment, only receptacle shells are hermetic. Standard dielectric glass-fused inserts, rated up to 14,000 psi (984 kg/cm^2), are used to maintain the strongest and tightest bond between the insert, contacts, and shell. Special order hermetic receptacles are available for high-temperature applications of 1,000°F (537°C) and high-pressure applications of 50,000 psi (3,515 kg/cm^2).

Hermetic connectors rely on high-strength 316L type stainless steel shells to maintain their structural qualities through extreme temperatures and pressures. Hermetic receptacles are rigorously leak tested and checked to ensure high-reliability at the individual part level. ■

Jam Nut (Hermetic)

(Pictured Right) Designed exclusively for rear mounting through a single D-shaped hole, which keeps the connector from spinning once it is mounted. A hex nut locks it in place rather than fasteners. Jam nut receptacles provide a superior environmental seal due to their integrated O-ring and single-hole mounting design, which decreases the number of openings in a sealed enclosure.

Contacts With Solder Cups
Hermetic receptacles come with solder terminations because the contacts are permanently embedded in the vitreous insert material.

Jam Nut Thru-Bulkhead (Hermetic)

For feed-through of circuits on pressurized bulkheads or vacuum chambers. These specialized connectors have a receptacle on either end of the shell to allow plug coupling from both sides. Thru-bulkhead receptacles can only be ordered with pins on one end and socket contacts on the other.

O-Ring Seal
The jam nut receptacle features an integrated O-ring to maintain a hermetic seal.

Box Mount (Hermetic)

Standard receptacle with a four-hole mounting flange. It requires a gasket to ensure an airtight seal between the mounting panel and the receptacle shell.

Solder Mount (Hermetic)

The reduced flange is specially designed for soldering. Due to their small footprint, these receptacles are ideal for mounting in limited spaces or in high densities.

Introduction to TX Series Metal Backshells

A backshell is an accessory that mounts to the rear threads of a connector to enhance its operational characteristics. The primary function of a backshell is to provide strain relief, which minimizes stress from the cable, on the junction where the wires terminate to the contacts.

In addition to strain relief, a backshell may provide environmental protection by sealing the termination point between the connector and the cable from environmental factors (e.g., moisture and dust) that can compromise the reliability of the electrical connection. A backshell can also be made to provide EMI/RFI protection when used in conjunction with shielded cable or wire braid to prevent the reception and/or emission of electromagnetic and radio frequency interference.

Backshells come in a variety of finishes, materials, and angle configurations. For material compatibility and aesthetics, backshells and connectors should have a matching material and finish. Backshells may be ordered in 45° and 90° angles to provide simple cable management. ■

Vibration Resistant Design
Strain relief backshells have a self-locking option to ensure secure coupling, even in high-vibration applications.

Strain Relief

A strain relief backshell (i.e., cable clamp) is a supportive device that grips the cable to protect the wire–contact junction from stresses placed on the cable. Strain relief backshells do not provide any environmental or EMI/RFI protection and should only be used in clean and dry environments. Strain relief backshells angled at 90° can be used to easily redirect cables inside cramped enclosures. Strain reliefs that feature self-locking mechanisms should always be used in high-vibration environments.

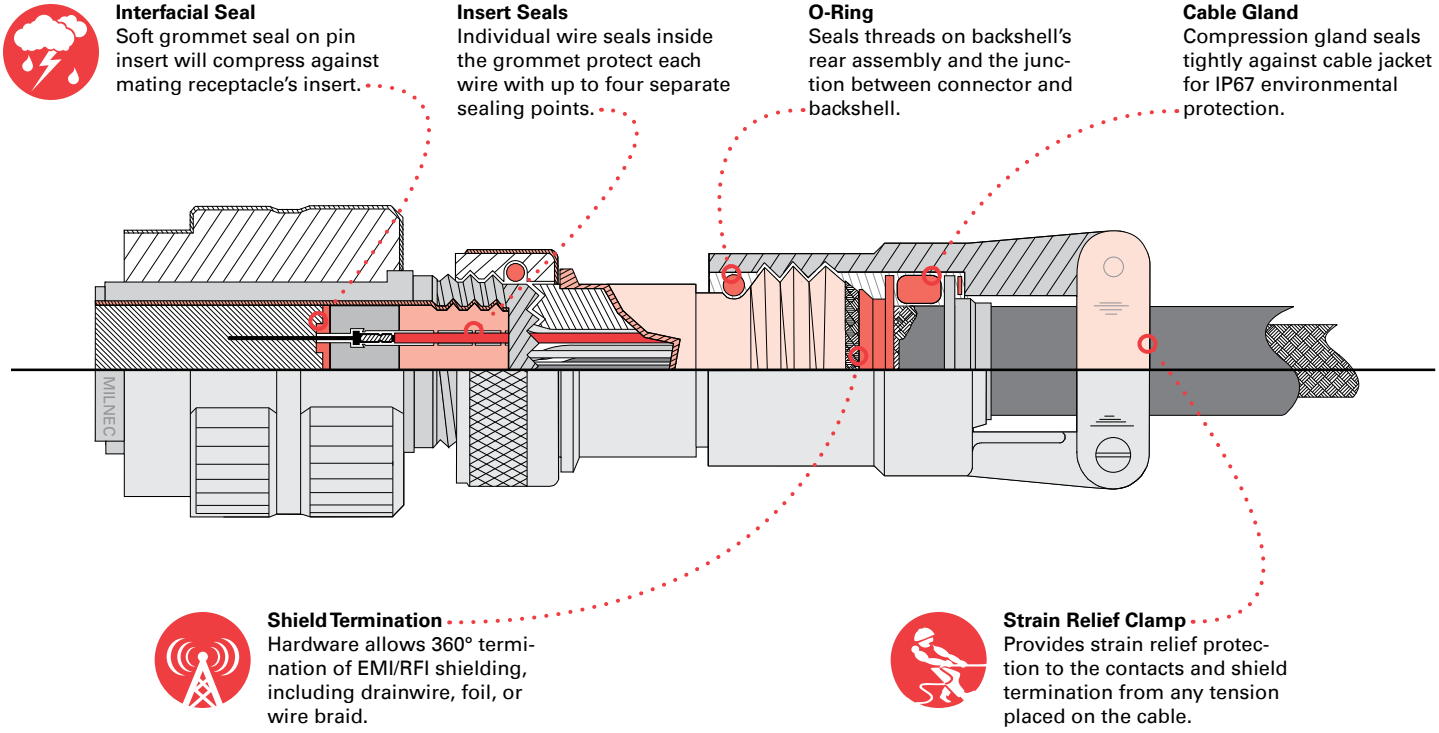
EMI/RFI Environmental

The EMI/RFI environmental backshell offers the ultimate in protection. When used in conjunction with a shielded cable or wire braid, the EMI/RFI environmental backshell protects against electromagnetic and radio frequency interference and gives complete IP67 environmental protection. They are the ideal choice for mission-critical military and aerospace applications, or whenever sensitive electronics are being used. EMI/RFI environmental backshells are available in straight, 45°, and 90° angled configurations.

Protection From EMI/RFI Interference
Backshells include 360° shielding hardware for use with foil or braided wire. However, when not required, the shielding hardware may simply be bypassed for use as an environmental backshell.

Anatomy of the TX Series EMI/RFI Environmental Backshell

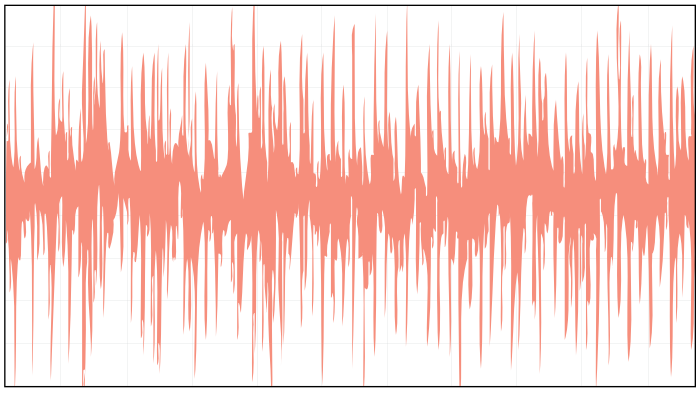
Below is an example of a Milnec EMI/RFI environmental backshell. As you can see, the protection offered by this backshell comes in a variety of forms to provide the ultimate in connector reliability. Soft grommets on the face of each mating connector press against each other to seal and protect contacts. An O-ring seals the junction between the connector and the backshell and between the backshell's cable clamp assembly. An internal ring inside the backshell allows complete termination of shielding, while a cable gland seals the backshell against the cable jacket from the elements. The strain relief clamp at the rear of the backshell protects the contacts and shield termination from cable strain. ■



Dangers of Inteference

Electromagnetic interference (EMI) and radio frequency interference (RFI) are any undesirable electromagnetic emissions or electrical energy, man-made or natural, which may cause an undesirable response, malfunction, or degradation in the performance of electrical equipment. EMI and RFI disturbances can be generated by just about any electronic device.

Always protect your sensitive electronics from the dangers of interference with an EMI/RFI environmental backshell and a shielded cable to ensure complete system reliability and to prevent dangerous malfunctions. ■



Introduction to TX Series Shrink Boots

Shrink boots are an alternative to metal backshells that provide strain relief and environmental sealing for applications that require low-profile backshells. When used in conjunction with specially designed boot adapters, shrink boots environmentally seal a jacketed cable to a connector. Shrink boots can also be used with a banding boot adapter to provide complete environmental and EMI/RFI protection.

Shrink boots are made from polyolefin, a semi-flexible material that is low-smoke and flame retardant. When heat is applied, the boot shrinks or "recovers" over the boot adapter and a heat-activated adhesive lining bonds to the adapter and cable, forming a tight environmental seal. Shrink boots must always be used with an appropriate boot adapter to ensure strain relief and environmental protection. ■

Before: Shrink boot slides over terminated cable onto shrink boot adapter.

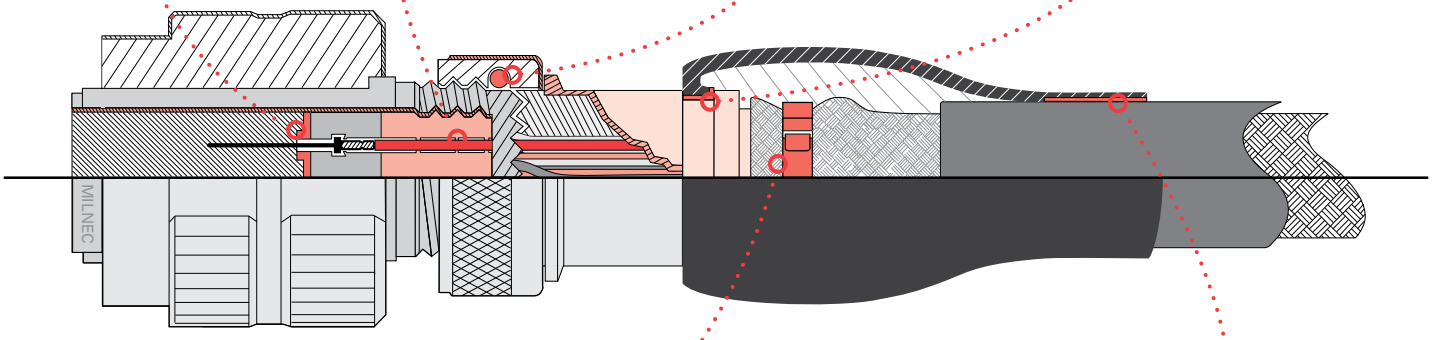
After: Shrink boot conforms to size after recovery, and adhesive adds superior environmental sealing and strain relief properties.

Interfacial Seal
Soft grommet seal on pin insert will compress against mating receptacle's insert.

Insert Seals
Individual wire seals inside the grommet protect each wire with up to four separate sealing points.

O-Ring
Seals threads on backshell's rear assembly and the junction between connector and backshell.

Precoated Adhesive
Heat-activated adhesive forms a watertight seal at the boot adapter junction and on the cable jacket.



Shield Termination
Stainless steel band provides 360° termination of shields, including drainwire, foil, or wire braid. A banding tool is required for installation.

Strain Relief
Heat-activated adhesive, as well as the shrink properties of the boot, provide a strong grip on the cable to provide strain relief from any tension placed on the contacts and shield termination.

Shrink Boot Materials & Configurations

Shrink boots come in straight and 90° configurations and feature operating temperatures of -67° to +392°F (-55° to +200°C). Activation temperature is approximately 248°F (120°C). A high-quality heat gun with adjustable temperature is recommended for professional installation of shrink boots.

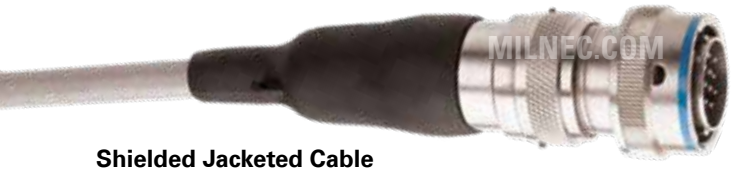
Shrink boots are available in various thermoplastic materials:

- Elastomer pre-coated with latent-curing hot-melt epoxy
- Elastomer pre-coateded with polymide adhesive
- Low-smoke, zero-halogen elastomer pre-coated with adhesive

Shown above are unrecovered 90° (left) and straight (right) shrink boot configurations.

EMI/RFI Banding Boot Adapter

A shrink boot provides EMI/RFI and environmental protection when used in conjunction with an EMI/RFI banding boot adapter. The EMI/RFI boot adapter attaches to the connector with a spin coupling, while the cable shield is quickly and easily terminated to the adapter with a metal band. A simple hand tool is all that is required for the banding process.



Shielded Jacketed Cable

An EMI/RFI banding boot adapter allows for quick and easy shield termination of a jacketed cable with a simple band. A shrink boot installed over the adapter offers a sleek, low-profile design with ruggedized environmental protection.

Wire Braid Over a Wire Bundle

The banding boot adapter also allows simple wire braid termination over a wire bundle for applications that do not require additional environmental protection.

Boot Adapter

A shrink boot adapter attaches to a connector's accessory threads via a spin coupling, permitting the adapter to be attached and removed without twisting or binding the cable. The lip of the shrink boot fits onto a specially designed gripping platform on the adapter, providing effective IP67 environmental protection.

Banding Tool

The one-step banding tool is the only tool needed to place, tighten, and trim bands for shield termination on EMI/RFI banding boot adapters. One size band fits all adapter sizes, making shield termination reliable and easy. See p. B-56 for more product information.

Rev. 2235

Introduction to TX Series Materials

Milnec cylindrical connector shells and components are engineered exclusively from high-grade materials that are able to withstand the harshest environments and the roughest handling. Metal connectors provide the benefit of impact resistance and reliability.

For specialty applications with specific material requirements, connectors can be manufactured from bronze, titanium, brass, and advanced lightweight composites. Each material has unique benefits and should be selected according to application-specific concerns. ■

Aluminum

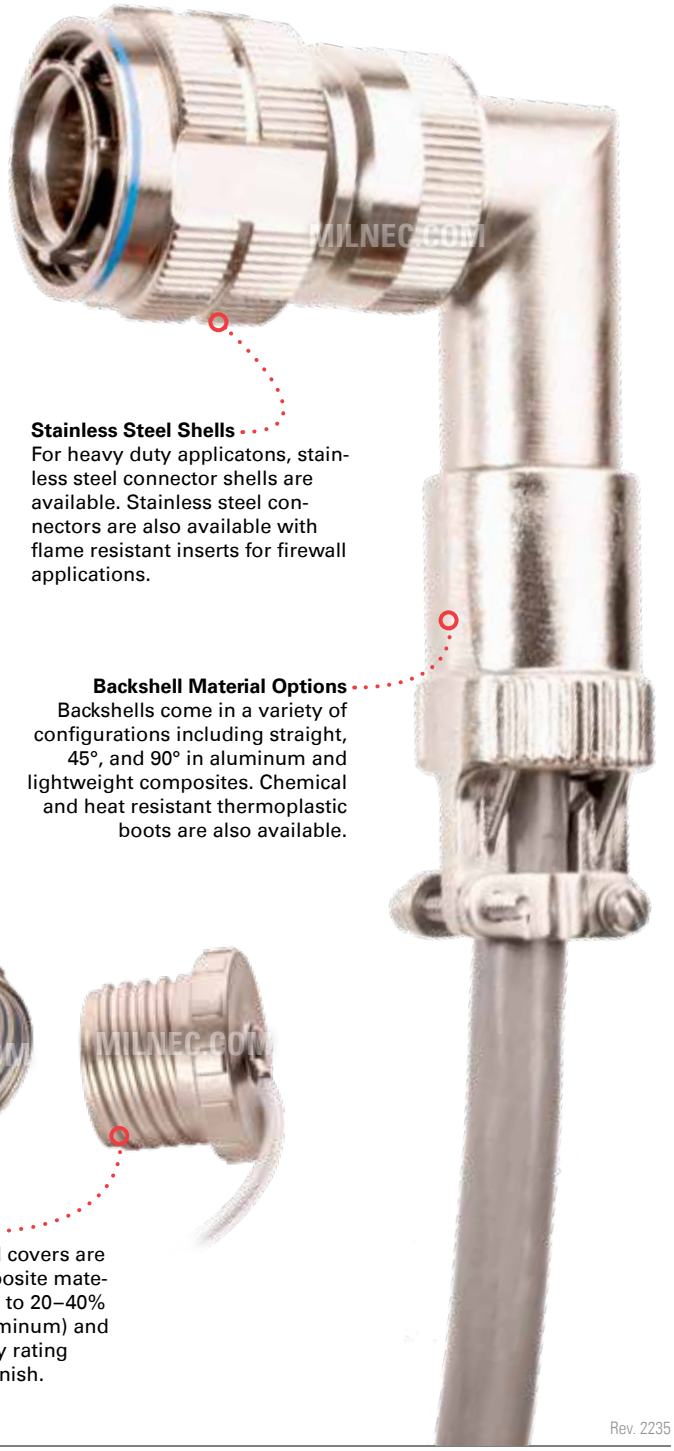
Aerospace-grade aluminum is a popular material choice for connectors. Aluminum provides strength and reliability while remaining lightweight, durable, and economical. It is a standard option for TX Series connectors and is perfect for anything from general duty to military applications.

Stainless Steel

Stainless steel shells are used on all TX hermetic receptacles, and it is a standard option on all other connectors in the series. Stainless steel is extremely tough and maintains its integrity under the harshest conditions and temperature extremes. Stainless steel is also used in our firewall rated connectors, which offer improved temperature capabilities for use in engine compartments or for any other application where the need to prevent emergency fire ingress is necessary.

Composite

Our composite connectors offer a wide range of benefits to the interconnect engineer, including corrosion resistance, vibration dampening, weight reduction, and the minimization of magnetic signatures, which is critical in stealth applications. Composite connector accessories are ideally suited for use in applications where lightweight and high corrosion resistance are important.



Stainless Steel Shells
For heavy duty applicatons, stainless steel connector shells are available. Stainless steel connectors are also available with flame resistant inserts for firewall applications.

Backshell Material Options
Backshells come in a variety of configurations including straight, 45°, and 90° in aluminum and lightweight composites. Chemical and heat resistant thermoplastic boots are also available.

Lightweight Composite
Connectors, backshells, and covers are available in advanced composite material for ultra-lightweight (up to 20–40% less when compared to aluminum) and provide a 2,000 hr salt spray rating regardless of the material finish.

Rev. 2235

Introduction to TX Series Finishes

The finish, or plating, is the protective layer that coats the connector's foundation material. This coating is the connector's supplemental defense against corrosion and can be made conductive to provide shell-to-shell electrical continuity for EMI/RFI shielding applications.

In addition to standard finishes, Milnec provides a wide selection of specialty finishes to meet the requirements of nuclear, marine, medical, and space applications. RoHS compliant finishes are also available to provide more environmentally friendly plating options for new designs. ■

Olive Drab Cadmium
Excellent corrosion resistance and conductivity make this finish ideal for most industrial and military applications.

Passivated SST
Stainless steel is one of the most durable materials available for connectors. It has a high corrosion resistance and is often used for high-temperature and marine applications.

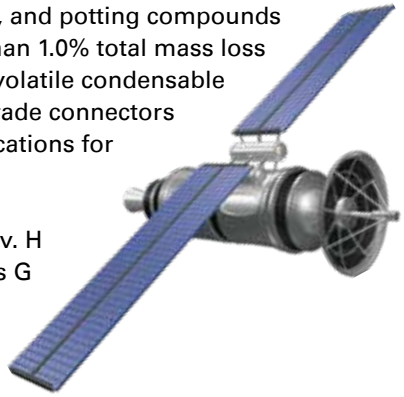
Zinc Cobalt
This RoHS finish is conductive and features excellent resistance to corrosion. It is often used for solider systems, unmanned vehicles, and tactical applications.

Electroless Nickel
Features excellent conductivity and wear resistance and adequate corrosion resistance. Popular choice for aerospace and robotics.

Space-Grade Finishes & Materials

For spaceflight applications, Milnec offers space-grade aluminum connectors with a conductive electroless nickel finish that is fully intermatable with standard European Space Agency ESA/SCC 3401/056 and NATC (NASA Thread Coupling) connectors per the NASA SSQ-21635 specification.

Connector components are rigorously outgassed at high vacuum (5 x 10^{-5} torr) for 48 hours at 350°F (176°C). This guarantees that all nonmetallic materials such as rubber, plastic, ink, adhesives, and potting compounds shall not release greater than 1.0% total mass loss (TML) and 0.1% collected volatile condensable material (CVCM). Space-grade connectors meet the following specifications for spaceflight applications:



- NASA SSP-30423, Rev. H
- MIL-DTL-38999, Class G
- ESA/SCC 3401/056
- ATSM E-595
- EEE-INST-002

RoHS Compliant

The European Union's Restriction of Hazardous Substances (RoHS) 2002/95/EC Directive and its subsequent amendments restricts the incorporation of six hazardous materials in the manufacture of various types of electronic and electrical equipment. It is closely linked with the Waste Electrical and Electronic Equipment Directive (WEEE) 2002/96/EC, which sets collection, recycling, and recovery targets for electrical goods and equipment.

Milnec provides a full offering of RoHS compliant finishes in conductive and non-conductive versions to best suit your application requirements.

Please consult the latest European Union general and regional regulations to ensure materials are appropriate for your application and compliance requirements.

Introduction to TX Series Coupling Features

Milnec cylindrical connectors are equipped with reliable coupling systems designed to remain securely mated, even during severe vibration, yet be easily disconnected by hand without the need for tools. The shells are polarized with keys and matching keyways to properly align shells and contacts with their counterparts prior to mating; this prevents mismatched contacts or shell binding during coupling. Once shells have been properly aligned, a clockwise motion of the coupling ring brings the two connector faces together and securely engages both sets of contacts. ■

Anti-Vibration Ratchet Coupling

The TX Series features an advanced coupling design with a high torque differential. Mating is achieved with a single 360° turn of the ratchet coupling ring for fast connecting and disconnecting, without the need for tools. The self-locking mechanism eliminates the need for lockwire while providing a safe and secure connection every time, even in high-vibration environments.

100% Scoop-Proof Shell Design

TX Series connectors feature a 100% scoop-proof shell design. The shell housing and recessed pins minimize potential contact damage by preventing mating connectors from "scooping" contacts in blind-mate applications, which can bend contacts or cause a short in the system. Shell keys will pre-align shells and contacts during coupling, ensuring contacts are properly aligned prior to mating.

Triple-Start, Impact-Resistant Stub Threads

TX Series connectors are designed with triple-start stub threads for rapid coupling with secure and even contact engagement. Flat threads are impact-resistant and will stand up to the abuse of harsh environments and rough handling. Threads conform to ESA/SCC 3401/056 specification and are fully intermateable with NATC (NASA Thread Coupling) connectors (according to NASA specification SSQ 21635).

360° Grounding Fingers

TX Series plugs come standard with 360° RFI grounding fingers for superior shell-to-shell conductivity and improved EMI/RFI shielding effectiveness for grounding assemblies. Made of tough but flexible beryllium copper or stainless steel alloy, these grounding fingers make constant contact against the receptacle shell when fully mated.

Rev. 2235

Introduction to TX Series Shell Keying

Cylindrical connectors are polarized in direct relation to their corresponding mated half for proper contact alignment. Polarization is achieved via a plug's master key, which matches with a master keyway on the receptacle. Alternate key positions help to prevent cross-mating by differentiating between similar looking connectors with the same insert arrangement or shell size so that only matching pairs are able to couple. Alternate key positions are particularly useful in panels with high densities of similar connectors where there is an increased risk of accidental cross-mating.

Alternate key positions are established during manufacturing and are not user configurable. When a connector has an alternate key position, the five keys and keyways of a mating pair are rotated a set number of degrees, allowing it to only mate with its proper counterpart. If a connector is accidently cross-matted, the mismatched keys will prevent the shells from properly aligning, keeping contacts separated and the connectors from coupling—signifying a mismatched connector set to the operator. Alternate key positions are specified by the letters N (normal), A, B, C, D, and E. ■

Alternate Key Position Examples

Below is a TX00 size 17 receptacle shell with keys highlighted to show their relative positions. Alternate key angles are specific to each shell size, please consult the Master Key/Keyway Position table on p. B-15 for individual specifications.


Normal Keying


A Keying


B Keying


C Keying


D Keying


E Keying

No More Guessing
Keying connectors is a simple way to differentiate connector sets in blind-mate applications or on high-density panels when connectors of the same size or the same insert are used.

Prevent Operator Error & Damage

Alternate key positions can protect equipment and the operator from accidently cross-mating connectors by designating mating pairs with a matching key and keyway. In this way, only correctly matched sets will mate.

In addition to preventing cross-mating, engineers and designers can benefit from being able to safely use the same insert in six different configurations. In low-voltage or low-power applications engineers may also reverse the contacts on a connector to help differentiate cables. This method provides up to 12 different combinations using the same insert arrangement.

- Simple and permanent connector keying
- Prevents operator error when accidently connecting similar cables
- Provides up to 12 unique combinations with the same insert arrangement

Introduction to TX Series Contacts

Contacts are the conductive elements that establish the electrical connection between two halves of a connector in order to transmit signals and/or power. Contacts consist of male pins that mate into female sockets. Pin contacts are exposed and should be used on the "load" side of the circuit. Sockets are recessed into the insert so that no conductive part of the contact is exposed, keeping the operator and electrical system protected from harm or short circuits. Safety dictates that the socket contacts should be on the connector mounted on the live circuit, or power side. ■

Crimp Contacts

Crimping is the act of joining a wire to a contact using a crimp tool that ensures a simple, fast, and precise termination every time. During crimping, the contact barrel is compressed on to the wire to mechanically bond the contact and conductor (solid core or stranded wire) together. Crimp termination offers the highest reliability, and it is the preferred method for high-performance military and aerospace applications because it permits higher contact densities, ease of installation, and increased reliability over solder termination. Because crimp contacts are removable, damaged pins can be individually replaced without sacrificing the connector. This process is known as "re-pinning."

Seal Unused Contacts
Contact sealing plugs maintain environmental protection by sealing the grommet behind contacts without wires.

Variety of Sizes
Sealing plugs come in a variety of sizes to match each contact size.

TX Series Power Contacts

Contacts below shown actual size.

#12 Power Contacts (Gold Plated)

#16 Power Contacts (Gold Plated)

#20 Power Contacts (Gold Plated)

#22D Power Contacts (Gold Plated)

Specialty Contacts

Specialty contacts can be quickly substituted in place of power crimp contacts in all TX Series connectors. These contacts include coax, twinax, quadrax, PC tail, and fiber optic termini. This design flexibility allows engineers to quickly and easily bundle application-specific cables into one multi-function connector package.

RF Contacts

Coaxial contacts are used in a wide range of military and aerospace connectors for analog radio frequency or microwave applications. Twinax and quadrax are high-speed differential impedance contacts used for advanced digital communications.

Fiber Optic

Fiber optics are used in a wide range of high-performance applications where there is a need to carry digitized voice, video, and data with high signal clarity. They are often used in avionics, robotics, and other advanced applications.

PC Tail

PC tail contacts are used exclusively for connectors that are mounted directly to printed circuit boards or flex cable. PC tail contacts enable engineers to design an interconnect solution for sensitive electronics without bulky terminal blocks or pigtails.

Thermocouple

Thermocouple contacts enable engineers to add a temperature sensor to any connector. The contacts are interchangeable with any similarly sized power contacts. A variety of thermocouple materials are available to suit different applications.

Introduction to TX Series Thermocouples

Put simply, a thermocouple is a pair of wires of dissimilar metal that is connected at both ends. When the two wire junctions are exposed to different temperatures, an electrical potential is created between them that is almost directly proportional to the temperature difference. A voltage measuring instrument added to the circuit can then read the temperature. Thermocouples are made from a variety of specific alloys and are best suited for different applications depending on the intended temperature range, sensitivity, resistance to corrosion, magnetism, and cost. Because crimp connectors have removable contacts, the standard contacts can be substituted easily with thermocouples. It is important for engineers to be conscious of where they place the connector within their cable harness, as standard connector insert materials are only designed to withstand a continuous operating temperature of 392°F (200°C). ■

Thermocouple Comparison

Thermocouple Type	Temperature Range (Continuous)*	Temperature Range (Short Term)*	Thermocouple Materials	Contact Size	Termination
K	+32° to +2,012°F (0° to +1,100°C)	-292° to +2,372°F (-180° to +1,300°C)	Chromel & Alumel	#16, #20, #22D	Crimp
E	+32° to +1,472°F (0° to +800°C)	-40° to +1,652°F (-40° to +900°C)	Chromel & Constantan	#16, #20, #22D	Crimp
J	+32° to +1,382°F (0° to +750°C)	-292° to +1,472°F (-180° to +800°C)	Iron & Constantan	#16, #20, #22D	Crimp

* Please note above thermocouple temperature ranges are for reference only. Standard connector insert materials can only withstand 392°F (200°C) of continuous operation.

Thermocouple Types

Certain combinations of alloys have become popular as industry standards for thermocouples. Milnec's standard thermocouple types are listed below with the positive electrode first, followed by the negative electrode.

Type K (chromel/alumel)
The most common general purpose thermocouple with a sensitivity of approximately 41 µV/°C, chromel positive relative to alumel.

Type E (chromel/constantan)
This type has a high output (68 µV/°C), which makes it well suited to cryogenic use. In addition, it is non-magnetic.

Type J (iron/constantan)
This combination has a more restricted range than Type K (0° to +750°C), but has a higher sensitivity (55 µV/°C).

Adding Thermocouples Has Never Been Easier!

By ordering thermocouple contacts separately, engineers can quickly make custom connector solutions to run power, signal, and thermocouples in one cable! Thermocouple contacts have the same form and fit as standard power crimp contacts, allowing for use of the same crimp and installation tooling.

Popular Thermocouple Materials
Thermocouple crimp contacts come in a variety of sizes and materials to suit the most popular thermocouple wires.

Introduction to TX Series Crimp Termination

When working with crimp contacts, specific tools are required for contact installation and removal. First and foremost is the crimp tool that is used to mechanically join the wire and the contact. Hand crimpers are suitable for crimp contacts from size #12 – #22D; pneumatic crimpers are required to crimp contacts from size #0 – #8.

After crimping the contact to the wire, an insertion tool specifically sized to each contact must be used to install the contact into the connector. An extraction tool sized for the contact must be used for contact removal. Sealing plugs should be used behind contacts without wires to seal the rear grommet and ensure environmental integrity. ■

Reliable Crimp Terminations
A crimp termination joins the contact and conductor (solid core or stranded) by deforming the contact to physically join it to the wire. The bend or deformity is called the crimp. Crimp terminations form a lasting and highly reliable termination and are preferred over solder for mission-critical applications.

8-Way Crimping
Detail of 8-way crimp jaws (left) and wire and contact being inserted for crimping.

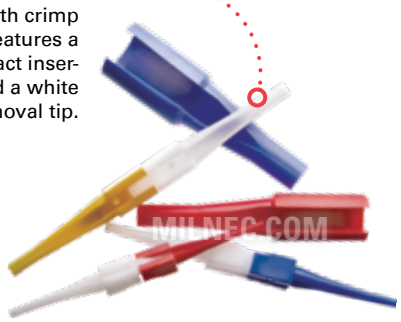
Versatile Tooling
The TK101 hand crimp tool features a turret positioner that accommodates many popular sizes of power contacts.

Find Contact Tooling Easily
Our contacts are grouped with all the associated tooling for quick and easy convenience.

Tooling Included
Crimp connectors come with plastic contact insertion and removal tools intended for limited field use. Metal tools are better for repeated or production use.

Reliable Tools for Production
For production environments where higher tool reliability and durability are desired, we offer stainless steel insertion or removal tweezers.

Insertion & Removal
The disposable tool included with crimp connectors features a colored contact insertion tip and a white removal tip.



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Introduction to TX Series Connector Accessories

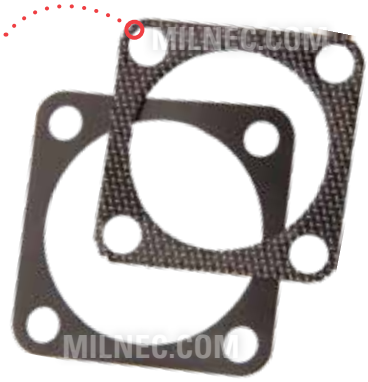
Our full line of connector accessories ensures system reliability by adding extra protection to connectors and mounting enclosures. Gaskets, brackets with O-ring screws, and covers all maintain IP67 environmental protection in the harshest environments. Covers and shielding gaskets protect systems from harmful EMI/RFI interference.

With Milnec, adding the right accessories for your connector is simple and easy. Just select from the part builder the connector kit option that best meets the needs of your application and your connector will come with all the matching accessories right out of the box. Accessories can be ordered individually to upgrade existing connector systems. ■

Environmentally Seal Your Mounting Point

Mounting gaskets will seal the mounting space between receptacles and a panel to maintain the environmental integrity of your enclosure. They may be used in either rear or front mount receptacle installations. For EMI/RFI applications conductive gaskets are available with a special metal weave to ensure conductivity across the grounding assembly.

Shielding Gaskets
Conductive weave ensures electrical continuity across the grounding assemblies.



Cover Your Connector When Not in Use

Protect your interconnects from damage and environmental exposure by sealing them when not in use. A cover keeps coupling mechanisms free of mud and debris, ensuring reliable coupling every time, while the inner gasket provides environmental sealing. A stainless steel wire rope attachment keeps the cover close at hand. Covers also protect systems from EMI/RFI interference by blocking harmful radiation to exposed contacts when connectors are unmated.

Complete Protection
Most connector failures can be prevented by keeping connectors sealed and protected when not in use.

High-Reliability Mounting Hardware

Mounting brackets with captive stainless steel lock nuts provide a safety measure to prevent loose fasteners from falling into susceptible areas, which may cause equipment failure. Optional sealing screws with O-rings will effectively seal the mounting holes on your enclosure from water ingress.

O-Ring Seal
Screws with O-ring seals maintain the environmental integrity of your enclosure.

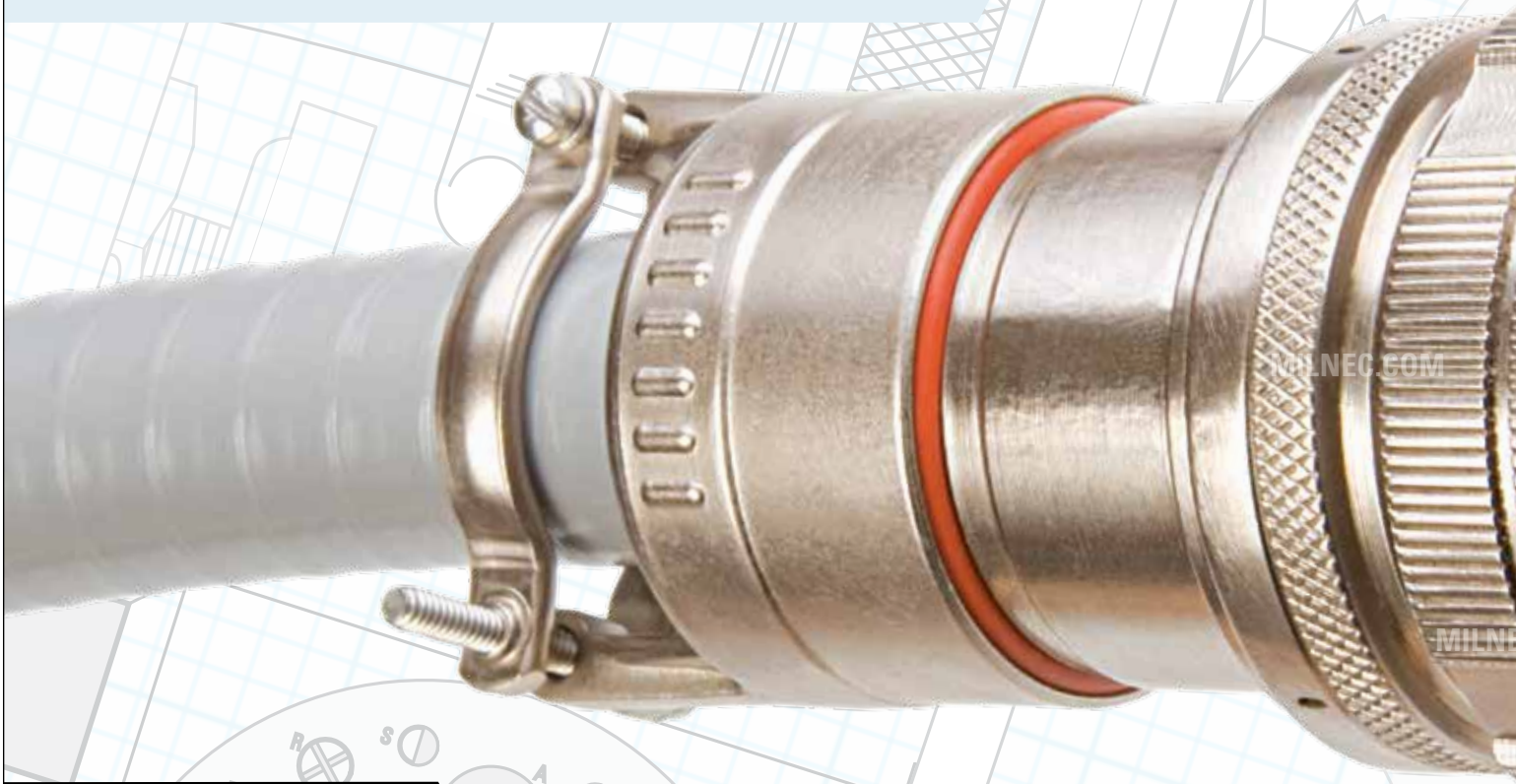
Stow Your Cable & Protect Your Plug

Prevent operator injury or connector damage by providing a safe place to stow and organize your unused cables. Protective covers are recommended to always keep stowage receptacles clean and dry, so they're ready for use when needed. Stowage receptacles protect systems from EMI/RFI interference by blocking harmful radiation to exposed contacts when connectors are unmated.

Designated Stowage
Stowage receptacles provide a designated place to stow unused cables and protect connectors while preventing operator injury.

TX Series

MIL-DTL-38999 Series III Style



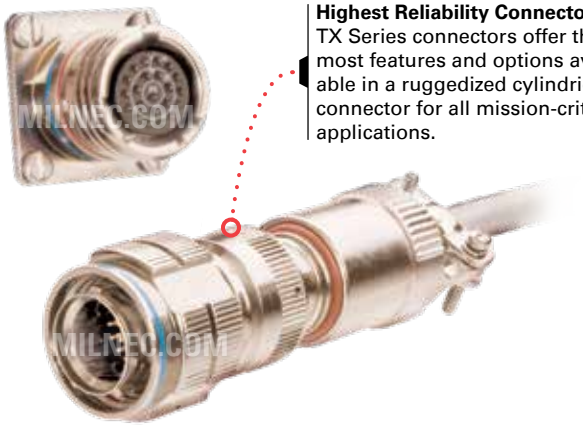
The TX Series of connectors is the top choice for advanced applications. The series is fully compatible with MIL-DTL-38999 and features the widest selection of contacts, shell materials, and finishes to meet the most demanding design requirements. Superior coupling and EMI/RFI protection ensure complete reliability.

- Wide Variety of Contacts
- Self-Locking Coupling
- IP67 Environmental Protection
- 100% Scoop-Proof Shell Design
- Stainless Steel Shells Available
- Space-Grade Materials Available

MIL-DTL-38999 Series III Compatible Connectors

The TX Series of connectors is built to MIL-DTL-38999 Series III standards for performance and durability and is 100% compatible with all commercial and military derivatives. The TX Series is our most technologically advanced series of cylindrical connectors available. Connectors can accommodate the highest density of contacts and feature the most comprehensive selection of contacts, including fiber optic, twinax, coax, quadrax, and PC tail contacts. Coupling is achieved with one 360° turn of the self-locking coupling ring, which is designed with triple-start, impact-resistant stub threads. Standard RFI grounding fingers provide superior shell-to-shell conductivity for shielded applications, while available stainless steel shells protect connectors in harsh environments. For mission-critical applications that demand absolute reliability, TX Series connectors are the only choice.

- MIL-DTL-38999 Series III compatibility
- High-density, up to 128 contacts (#22D)
- Wide variety of specialty contacts (PC tail, RF, fiber optic)
- Self-locking, ratchet coupling
- Triple-start, impact-resistant stub threads
- 100% scoop-proof shell design for contact protection
- Hermetic receptacles available for vacuum applications



Highest Reliability Connector
TX Series connectors offer the most features and options available in a ruggedized cylindrical connector for all mission-critical applications.

Widest Variety of Materials & Finishes

The TX Series offers the widest selection of connector material and finish options to meet the demands of modern design requirements and ensure complete connector protection.

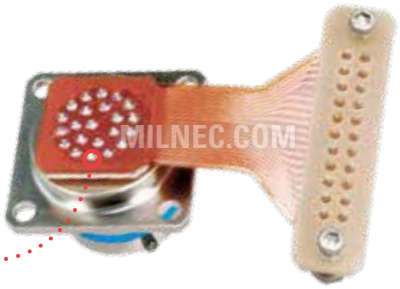
RoHS

- Firewall rated, passivated stainless steel
- Eco-friendly RoHS finishes available
- Aerospace-grade aluminum
- Lightweight composite
- Space-grade aluminum

Ultimate Contact Design Flexibility

The TX Series provides the ultimate flexibility in contact design, density, and shell size. In addition, the series simplifies interconnect systems by enabling multiple wire and cable types, including RF and fiber optic, to be bundled together in the same connector package.

- Crimp power contacts from size #12 to #22D
- High-cycle contacts available (1,500 mating cycles)
- High-speed RF contacts (coax, triax, quadrax)
- Fiber optic contacts
- PC tail contacts
- Thermocouples

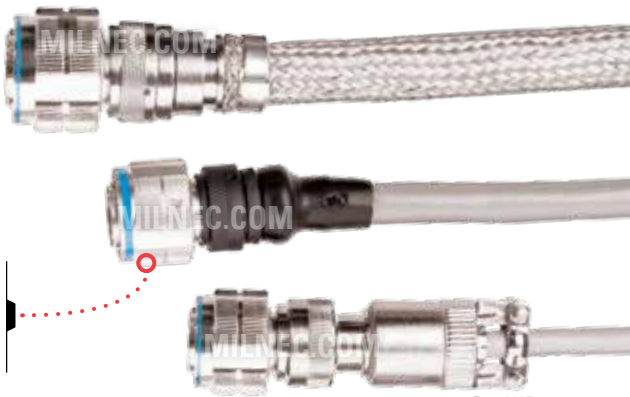


PC Tail Contact Solutions
Simplify designs and improve signal integrity by connecting directly to PC boards.

Waterproof IP67 Environmental Rating

TX connectors are environmentally protected by an integrated interfacial seal that provides moisture resistance when mated, as well as an elastomer wire seal around each contact to prevent moisture penetration from the rear of the connector. A complete selection of environmental backshells or shrink boots provides a variety of cable sealing options to best suit your design requirements.

- Moisture resistance comparable to MIL-PRF-7808, MIL-PRF-23699, MIL-PRF-5606, SAE ASM1424 Type 1
- Hermetic versions available in four receptacle styles
- 2,000 hr salt spray rating with composite shells
- Individual wire seals around each contact
- Interfacial seal and wire sealing grommet



EMI/RFI & Environmental Protection
The TX Series provides a wide range of backshell options for total IP67 rated environmental and EMI/RFI protection to ensure complete system reliability.

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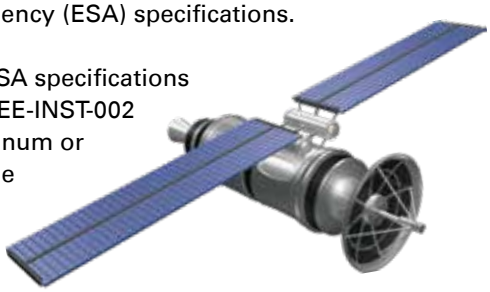
Space-Grade Connectors & Accessories

Whether it be for high-altitude aircraft or for satellites circling the globe, the TX Series offers interconnect solutions for these advanced applications through the use of space-grade aluminum components and thermoplastic composite that meet NASA and European Space Agency (ESA) specifications.

- Outgassed per NASA specifications ATSM E-595 and EEE-INST-002
- Space-grade aluminum or composite available

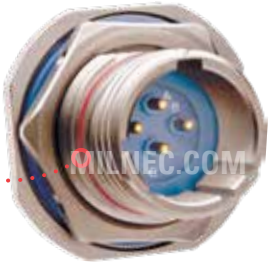


Hermetic Connectors Prevent Gas Ingress

For applications that require an airtight connector solution, the TX Series offers hermetic receptacles. Hermetics are often used for maintaining pressure differentials in pressurized enclosures or vacuum chambers. They are also used to prevent dew point condensation that can affect sensors or other critical electronic systems and components.

- Four hermetic receptacle styles available
- Compression glass inserts
- Stainless steel shells

Superior Hermetic Sealing
TX Series' extensive selection of hermetic receptacles with advanced vitreous inserts provides a wide range of design options.



Wide Selection of Protective Accessories

To give your connectors true IP67 environmental protection, they should be used in conjunction with matching sealing accessories. The TX Series offers a wide selection of protective accessories for mission-critical applications, including EMI/RFI environmental backshells and strain reliefs.

- Mounting brackets and sealing screws
- Protective covers with gaskets
- Stowage receptacles
- Mounting gaskets

Features & Benefits

Plug
- Straight w/ RFI grounding fingers

Receptacles
- Wall mount
- Jam nut
- Cable mount
- Thru-bulkhead

Hermetic Receptacles
- Box mount, jam nut, solder mount
- Jam nut thru-bulkhead

Backshells
- Strain relief, EMI/RFI environmental
- Shrink boots with EMI/RFI banding

Contacts
- Crimp power, coax, twinax, thermocouple
- PC tail & fiber optic

Inserts
- Heat & fluid resistant
- 63 insert combinations
- 6 alternate key positions

Accessories
- Protective cover with wire rope
- Stowage receptacle
- Mounting gasket
- Mounting bracket with sealing screws

Material
- Aluminum
- Stainless steel
- Composite

Finishes
- Olive drab cadmium
- Electroless nickel
- RoHS compliant finishes available

Coupling
- Ratchet coupling
- Self-locking coupling ring
- Triple-start, impact-resistant threads

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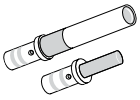
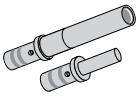
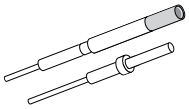
Contacts



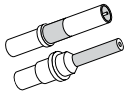
Power
p. B-10



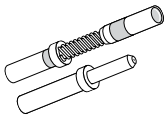
Thermocouple
p. B-10



PC Tail
p. B-13

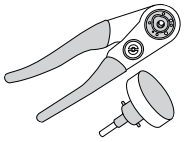


Coax & Twinax
p. B-11

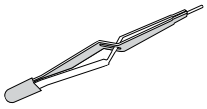


Fiber Optic
p. B-12

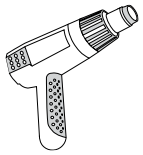
Tools



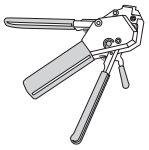
Crimper & Positioner
p. B-10



Insertion/Extraction
p. B-10



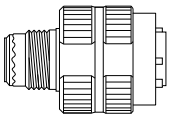
Heat Gun
p. B-57



Banding Tool
p. B-58

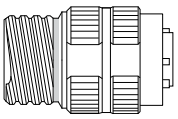
Band
p. B-58

Plugs



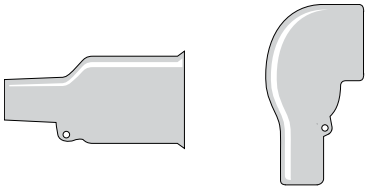
Plug (Self-Locking)
p. B-23

Specialty



Connector Saver
p. B-30

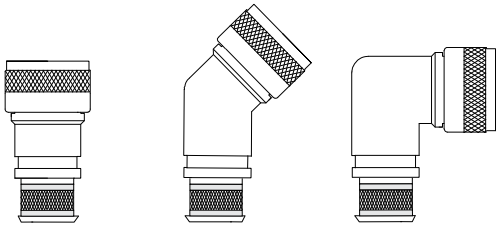
Backshells



Shrink Boots

Straight
p. B-47

90°
p. B-48

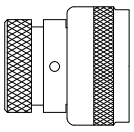


EMI/RFI Banding Boot Adapters

Straight
p. B-50

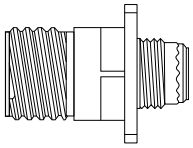
45°
p. B-50

90°
p. B-50

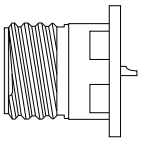


Boot Adapter
p. B-49

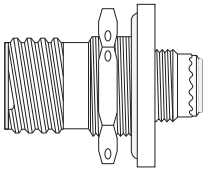
Receptacles



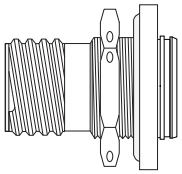
Wall Mount
p. B-24



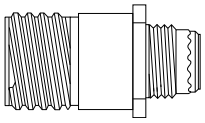
Box Mount (Hermetic)
p. B-27



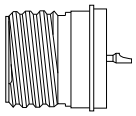
Jam Nut
p. B-25



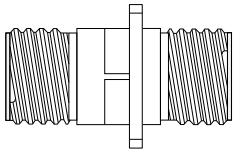
Jam Nut (Hermetic)
p. B-28



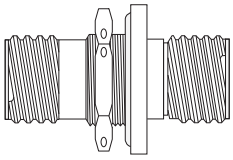
Cable Mount
p. B-26



Solder Mount (Hermetic)
p. B-29

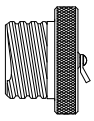


Thru-Bulkhead
p. B-31-B-32

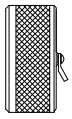


Jam Nut Thru-Bulkhead (Hermetic)
p. B-33

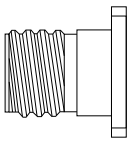
Covers



Plug Cover
p. B-51

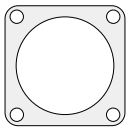


Receptacle Cover
p. B-51

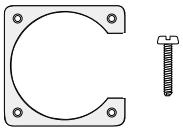


Stowage Receptacle
p. B-52

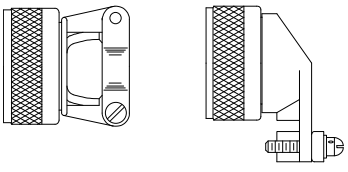
Mounting



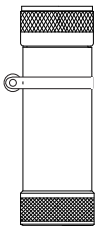
Gasket
p. B-53



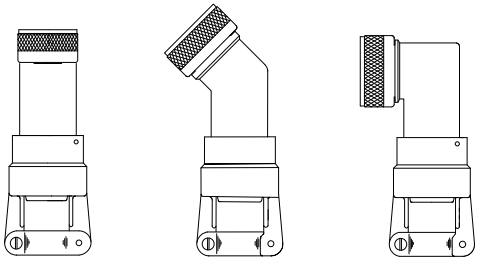
Bracket & Screws
p. B-54



Strain Relief
Straight p. B-35
90° p. B-35



Shorting Cap
p. B-45



EMI/RFI Environmental
Straight p. B-37
45° p. B-41
90° p. B-43

TX

Performance Specifications

Built to meet or exceed MIL-DTL-38999 specifications
Guaranteed fully compatible and interchangeable with respect to physical and performance characteristics with all existing MIL-DTL-38999 Series III commercial, military, NASA, ESA (European Space Agency) derivatives

Environmental Characteristics

Temperature Range

-67° to +392°F (-55° to +200°C)
Service life varies with the maximum internal hot spot temperature resulting from any combination of electrical load or ambient temperature:
77°F (25°C): Continuous
221°F (105°C): 45,000 hours
392°F (200°C): 1,000 hours

Water Pressure

IP67 rating (environmental sealing) when used in conjunction with proper sealing accessories
Fully submersible to 3.3 ft (1m) for minimum of 30 min

Air Leakage Rate

Environmental

Air leakage not to exceed 1 $inch^3$/hr (4.55 $x10^{-3}$ cm^3/sec) at 30 psi (2.11 kg/cm^2) pressure differential with all contact cavities filled

Hermetic

Helium leakage not to exceed 0.01 micron per ft^3/hr (1.0 x 10^{-6} cc^3/sec) at 15 psi (1.1 kg/cm^2)
Hermetic inserts rated up to 14,000 psi (984 kg/cm^2) when precision welded or solder mounted

Thermal Vacuum Outgassing

Outgassed at high vacuum (5 x 10^{-5} torr) for 48 hours at 350°F (176°C); components shall not release greater than 1.0% total mass loss (TML) and 0.1% collected volatile condensable material (CVCM)

Salt Spray Rating

See Materials & Finishes, p. B-16

Humidity

Mated connectors shall maintain an insulation resistance of 100 megohms or greater at 77°F (25°C) with 95% humidity for duration of 20 days

Chemical Resistance to Fluids

20-hour full immersion (unmated) in hydraulic fluid and lubricating oil without damage or material degradation

Lightning Strike Resistance

Per EIA/ECA-364-75, mated connectors with full wire braid shield assembly will show resistance to indirect lightning strike with the following peak currents (amps):
Aluminum & Stainless Steel Shells: 10,000A
Composite Shells: 6,000A (3,000A, shell size 9 only)

Physical Characteristics

Coupling

Coupling is achieved by one 360° clockwise turn of the coupling ring, triple-start metric stub thread design, with integrated self-locking ratchet mechanism

Scoop-Proof

Shell design is 100% scoop-proof to prevent contact raking in blind-mate applications

Coupling Torque

Engagement & Disengagement Force (max / min)
Shell Size 9: .67 ft-lb_f (.904 N-m) / .08 ft-lb_f (.113 N-m)
Shell Size 11: .83 ft-lb_f (1.13 N-m) / .08 ft-lb_f (.113 N-m)
Shell Size 13: 1.17 ft-lb_f (1.58 N-m) / .17 ft-lb_f (.226 N-m)
Shell Size 15: 1.42 ft-lb_f (1.92 N-m) / .33 ft-lb_f (.452 N-m)
Shell Size 17: 1.92 ft-lb_f (2.60 N-m) / .33 ft-lb_f (.452N-m)
Shell Size 19: 2.17 ft-lb_f (2.94 N-m) / .33 ft-lb_f (.452 N-m)
Shell Size 21: 2.58 ft-lb_f (3.50 N-m) / .50 ft-lb_f (.678 N-m)
Shell Size 23: 3.16 ft-lb_f (4.29 N-m) / .58 ft-lb_f (.791N-m)
Shell Size 25: 3.16 ft-lb_f (4.29 N-m) / .58 ft-lb_f (.791 N-m)

Polarization

Single master key and keyway on top position of shell
Four minor keys and keyways on shell

Insert Arrangements

63 standard, custom inserts available

Alternate Keying

Normal polarization (N), plus 5 alternate shell keying polarizations (A, B, C, D, E)

Endurance Characteristics

Coupling Cycles

500 coupling cycles (minimum)

Shock

Half-sine wave with 300g's (±15%) magnitude with duration of 3 milliseconds with less than 1 microsecond maximum discontinuity with no cracking, loosening of parts, or other failures

High-Impact Shock

Per MIL-S-901, a 400 lbs (181 kg) hammer dropped onto assembly from height of 1 ft (30 cm), 3 ft (91 cm), and 5 ft (152 cm) applied to connector assembly in 3 axes, totaling 9 impacts, connector assembly experienced less than 1 microsecond maximum discontinuity with no cracking, loosening of parts, or other failures

Sine Vibration

Random vibration at 10 to 2,000 Hz (15 g's) experienced less than 1 microsecond maximum discontinuity with no cracking, loosening of parts, or other failures

Random Vibration

Per MIL-STD-1344, method 205, V & VI or EIA-364-28

Material Characteristics

Shell

Environmental

Aluminum, solid, one piece, seamless construction
Stainless Steel, solid, one piece, seamless construction
Composite, solid, one piece, seamless construction

Hermetic

Stainless Steel, solid, one piece, seamless construction

Shell Plating (Standard Finishes)

W Finish

Electrically conductive cadmium plate finish with an olive drab chromate after-treat for additional corrosion resistance (500 hr salt spray rating)

N, G Finish

Electrically conductive electroless nickel plating (48 hr salt spray rating)

K Finish

Passivated
(1,000 hr salt spray rating)

RFI Grounding Fingers

Beryllium copper alloy or stainless steel

Shell Conductivity (Standard Finishes)

Per MIL-STD-1344, method 3008, maximum conductivity potential drop shall not exceed the following:

W Finishes

2.5 millivolts across assembly shell-to-shell
5.0 millivolts across assembly shell-to-braid

N, G, K, KS, L Finishes

1.0 millivolts across assembly shell-to-shell
3.5 millivolts across assembly shell-to-braid

J, M Finishes

3.0 millivolts across assembly shell-to-shell
6.0 millivolts across assembly shell-to-braid

HA, HB Finishes

10.0 millivolts across assembly shell-to-shell
15.0 millivolts across assembly shell-to-braid

Magnetic Permeability

Less than 2.0 mu when measured to EIA-364-54

Insert

Glass filled liquid crystal polymer (LCP)
Non-removable and mechanically bonded to shell

Hermetic Insert

Vitreous (glass compression)
Non-removable and mechanically bonded to shell

Protective Cover Chain

Passivated stainless steel, wire rope able to withstand a 25 lb (11.3 kg) tensile force without damage

Adhesives

RTV and epoxies

Grommet, Peripheral Seal, O-Ring, & Interfacial Seal

Blended fluorosilicone (70%) and silicone (30%) elastomer

Contact Characteristics

Contact Design

Environmental

Removable, rear-release crimp contacts

Hermetic

Solder style, permanently bonded to insert

Contact Sizes

#8 (Coax, Twinax), #12, #16, #20, #22D

Contacts Crimp

Beryllium copper alloy, per ASTM B197

Contacts Hermetic

Nickel-iron (Type 52 alloy), per ASTM F30

Contact Plating

Standard Crimp

Gold plate over nickel, 50 µinches (1.27 µm) minimum

High-Cycle Crimp

Gold plate over nickel, 150 µinches (4.00 µm) minimum

Hermetic

Gold plate over nickel, 50 µinches (1.27 µm) minimum

Socket Contact Hood

Stainless steel, passivated

Max Number of Contacts

128 x #22D contacts standard, custom inserts available

Max Contact Resistance

Size #22D: 14.6 milliohm maximum
Size #20: 7.3 milliohm maximum
Size #16: 3.8 milliohm maximum
Size #12: 1.7 milliohm maximum
Size #8: 3.0 milliohm maximum

Max Voltage Drop

Crimp Contacts

<73 millivolt maximum drop (initial)

Hermetic Contacts

<85 millivolt maximum drop (initial)

Contact Retention

Pin and socket contacts are designed to resist severe vibration and repeated connection and disconnection

Electrical Characteristics

Current Rating

23 amps (test current) at 68°F (20°C)

Max Operating Voltage

900 VAC (RMS) at sea level

Insulation Resistance

>5,000 megohms at 77°F (25°C)

Wire Size

12 to 28 (AWG)

Wire Sealing Range

Designed for individual wire sealing
Sealing is only guaranteed if wires meet MIL-W-5086 or within permitted ranges

Wire & Crimp Contact Dimensions

Contact Size	Wire Range		Potential Drop (Millivolts)	Crimp Well Diameter	Min Crimp Well Depth	Wire Jacket Diameter Sealing Range		Contact Retention Min Axial Load Pounds (Newtons)
	AWG	Dia				Min	Max	
#22D	22, 24, 26, 28	.012–.025 (.32–.64)	<73	.035 (.89)	.141 (3.58)	.030 (.76)	.054 (1.37)	10 (44.5)
#20	20, 22, 24	.020–.032 (.51–.81)	<55	.047 (1.19)	.209 (5.31)	.040 (1.02)	.083 (2.11)	15 (66.7)
#16	16, 18, 20	.032–.050 (.81–1.29)	<49	.067 (1.70)	.209 (5.31)	.065 (1.65)	.109 (2.77)	25 (111.2)
#12	12, 14	.064–.080 (1.62–2.05)	<42	.100 (2.54)	.209 (5.31)	.097 (2.46)	.142 (3.61)	30 (133.4)

Dimensions are in inches (mm) unless otherwise noted.

Wire & Solder Contact Dimensions (Hermetic)

Contact Size	Wire Range		Potential Drop (Millivolts)	Solder Well Diameter	Min Solder Well Depth
	AWG	Dia			
#22D	22, 24, 26, 28	.012–.025 (.32–.64)	<85	.036 (.91)	.094 (2.39)
#20	20, 22, 24	.020–.032 (.51–.81)	<60	.044 (1.12)	.125 (3.18)
#16	16, 18, 20, 22	.025–.050 (.64–1.29)	<85	.078 (1.98)	.141 (3.58)
#12	12, 14	.064–.080 (1.62–2.05)	<82	.116 (2.95)	.141 (3.58)

Dimensions are in inches (mm) unless otherwise noted.

Current Rating By Contact Size & Wire Size

Wire Size (AWG)	Contact Size			
	#22D	#20	#16	#12
28	1.5A	-	-	-
26	2A	-	-	-
24	3A	3A	-	-
22	5A	5A	-	-
20	-	7.5A	7.5A	-
18	-	-	10A	-
16	-	-	13A	-
14	-	-	-	17A
12	-	-	-	23A

Test ratings only. A connector cannot withstand maximum current through all contacts continuously. Please note that the establishment of electrical safety factors is left entirely in the designer's hands, since he or she is in the best position to know what peak voltage, switching surges, transients, etc. can be expected in a particular circuit.

Contact Derating Specifications

Service Rating	Max Operating Voltage (Sea Level)		Test Voltage			
	AC (RMS)	DC	Sea Level AC (RMS)	50,000 ft AC (RMS)	70,000 ft AC (RMS)	110,000 ft AC (RMS)
M	400	500	1,300	550	350	200
N	300	450	1,000	400	260	200
I	600	850	1,800	600	400	200
II	900	1,250	2,300	800	500	200

Test ratings only. A connector cannot withstand maximum current through all contacts continuously. Please note that the establishment of electrical safety factors is left entirely in the designer's hands, since he or she is in the best position to know what peak voltage, switching surges, transients, etc. can be expected in a particular circuit.

Shielding Effectiveness

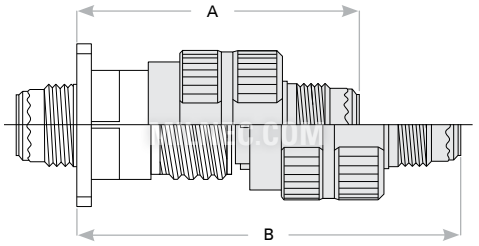
Freq Range (Mhz)	Attenuation Minimum (dB)
100	90
200	88
300	88
400	87
800	85
1,000	85
1,500	76
2,000	70
3,000	69
4,000	68
6,000	66
10,000	65

Effective over a range of 100 MHz to 10 GHz with a minimum 50 dB effectiveness at 10 GHz, in accordance with test method EIA-364-10.

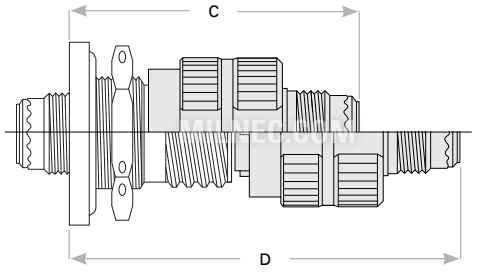
Mated Connector Dimensions

Shell Size	A Max	B Max	C Max	D Max
9	1.457 (37.0)	2.059 (52.3)	1.508 (38.3)	2.110 (53.6)
11	1.457 (37.0)	2.059 (52.3)	1.508 (38.3)	2.110 (53.6)
13	1.457 (37.0)	2.059 (52.3)	1.516 (38.5)	2.118 (53.8)
15	1.457 (37.0)	2.059 (52.3)	1.516 (38.5)	2.118 (53.8)
17	1.457 (37.0)	2.059 (52.3)	1.516 (38.5)	2.118 (53.8)
19	1.457 (37.0)	2.059 (52.3)	1.516 (38.5)	2.118 (53.8)
21	1.417 (36.0)	2.020 (51.3)	1.516 (38.5)	2.118 (53.8)
23	1.417 (36.0)	2.020 (51.3)	1.516 (38.5)	2.118 (53.8)
25	1.417 (36.0)	2.020 (51.3)	1.516 (38.5)	2.118 (53.8)

Dimensions are in inches (mm).



TX00 Wall Mount Receptacle & TX06 Plug



TX07 Jam Nut Receptacle & TX06 Plug

Contacts, Sealing Plugs, & Tooling

Contact Size	Contact Style	Part Number	Wire Size (AWG)	Wire Range (Dia)	Jacket Strip Length	Crimping Tool	Positioner	Insertion Tool	Extraction Tool
#22D	Standard Pin	TXPP22	22, 24, 26, 28	.012–.025 (.32–.64)	.157 (4.00)	TK201	TP209 (pins only)	TN801	TX802
	High-Cycle Pin	TXHP22							
	Standard Socket	TXSS22					TP207 (socket only)		
	High-Cycle Socket	TXHS22							
	Sealing Plug	TXSP22				No Tooling Required			
#20	Standard Pin	TXPP20	20, 22, 24	.020–.032 (.51–.81)	.197 (5.00)	TK101A	TP104 (Turret)	TN805	TX806
	High-Cycle Pin	TXHP20							
	Standard Socket	TXSS20							
	High-Cycle Socket	TXHS20							
	Sealing Plug	TXSP20				No Tooling Required			
#16	Standard Pin	TXPP16	16, 18, 20	.032–.050 (.81–1.29)	.236 (6.00)	TK101A	TP104 (Turret)	TN807	TX808
	High-Cycle Pin	TXHP16							
	Standard Socket	TXSS16							
	High-Cycle Socket	TXHS16							
	Sealing Plug	TXSP16				No Tooling Required			
#12	Standard Pin	TXPP12	12, 14	.064–.080 (1.62–2.05)	.236 (6.00)	TK101A	TP104 (Turret)	TN809	TX810
	High-Cycle Pin	TXHP12							
	Standard Socket	TXSS12							
	High-Cycle Socket	TXHS12							
	Sealing Plug	TXSP12				No Tooling Required			

Dimensions are in inches (mm) unless otherwise noted.

Thermocouple Contacts

Contact Size	Contact Style	Part Number	Wire Size (AWG)	Wire Range (Dia)	Jacket Strip Length	Crimping Tool	Positioner	Insertion Tool	Extraction Tool
#22D Alumel	Pin	TXPA22	22, 24, 26, 28	.012–.025 (.32–.64)	.157 (4.00)	TK201	TP209	TN801	TX802
	Socket	TXSA22					TP207		
#22D Chromel	Pin	TXPR22					TP209		
	Socket	TXSR22					TP207		
#22D Constantan	Pin	TXPK22					TP209		
	Socket	TXSK22					TP207		
#22D Iron	Pin	TXPE22					TP209		
	Socket	TXSE22					TP207		
#20 Alumel	Pin	TXPA20	20, 22, 24	.020–.032 (.51–.81)	.197 (5.00)	TK101A	TP104 (Turret)	TN805	TX806
	Socket	TXSA20							
#20 Chromel	Pin	TXPR20							
	Socket	TXSR20							
#20 Constantan	Pin	TXPK20							
	Socket	TXSK20							
#20 Iron	Pin	TXPE20							
	Socket	TXSE20							
#16 Alumel	Pin	TXPA16	16, 18, 20	.032–.050 (.81–1.29)	.236 (6.00)	TK101A		TN807	TX808
	Socket	TXSA16							
#16 Chromel	Pin	TXPR16							
	Socket	TXSR16							
#16 Constantan	Pin	TXPK16							
	Socket	TXSK16							
#16 Iron	Pin	TXPE16							
	Socket	TXSE16							

Dimensions are in inches (mm) unless otherwise noted. For other thermocouple materials, including copper, contact your authorized distributor.

Rev. 1231.1

Coax Contacts

Cable	Contact Size	Part Number		Crimping Tools		Positioners		Installation Tools	
		Pin	Socket	Inner	Outer	Inner	Outer	Insertion	Extraction
RG-178B/U RG-196A/U M17/093-RG178 M17/169-00001	#16	TXPX16-002	TXSX16-003		TK401	TP235	TP402	TN807	TX808
RG-161/U RG-174A/U RG-179B/U RG-187A/U RG-188A/U RG-316/U Haveg 8100207 Times (HS-179) AA3248 Teledyne 11299 Thermax 75-738-BCCWXE Tensolite 3088/L707YX-1 M17/119-RG174 M17/094-RG179 M17/113-RG316	#12	TXPX12-006	TXSX12-007	TK201	TK3101	TP234	TP3102	TN809	TX810
RG-180B/U RG-195A/U Raychem 9528A1318 Raychem 9527D1514-2L Microdot 293-3922 M17/095-RG180		TXPX12-008	TXSX12-009						
M17/113-RG316 M17/094-RG179		TXPX12-010*	TXSX12-011*	TK992		TP1360	TP503		
RG-180B/U RG-195A/U Raychem 9527D1514-2L M17/095-RG180	#8	TXPX08-012	TXSX08-013	TK201	TK501	TP231	TP505	—	TX814
RG-400		TXPX08-102	TXSX08-101			TP210	TP545		
RG-161/U, RG-174A/U, RG-179B/U, RG-187A/U, RG-188A/U, RG-316/U, Haveg 8100207, Times (HS-179)AA3248, Teledyne 11299, T-Flex 405		TXPX08-103	TXSX08-104	TK201 or solder		TP231‡ or solder	TP503	—	TX917

* Matched impedance when used with RG316 cable. ‡ When inner contact is installed by crimping, TE134 expander tool must be used to assemble rear insulator over contact.

Twinax Contacts

Cable	Contact Size	Part Number		Crimping Tools		Positioners		Installation Tools	
		Pin	Socket	Inner	Outer	Inner	Outer	Insertion	Extraction
M17/176-00002	#8	TXPW08-002	TXSW08-003	TK201	TK501	TP231	TP505	—	TX2648

PC Tail Coax & Twinax Contacts

For added engineering flexibility in today's advanced electronic designs, Milnec can provide coax or twinax contacts with PC tails. Custom tail lengths and tail diameters enable engineers to bring high-speed transmission directly to PC board applications with improved signal integrity. Please consult an authorized distributor for lead time information and minimum quantity requirements for special order high-speed PC tail contacts.

Rev. 2235

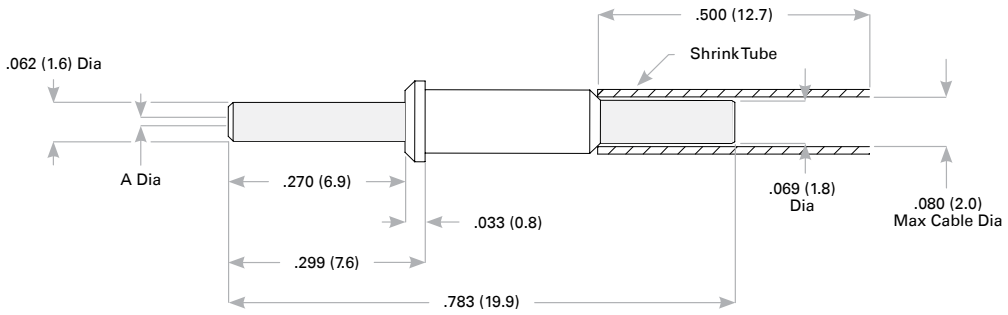
Size #16 Fiber Optic Contacts

Pin Part Number	Socket Part Number	Fiber Size Core/Cladding	Mode	A Dia (Microns)	Tooling
TXPF-125S*	TXSF-125S*	9/125	Single	125.5	
TXPF-126S*	TXSF-126S*	9/125	Single	126	
TXPF-126M	TXSF-126M*	50/125 & 62.5/125	Multi	126	
TXPF-127M	TXSF-127M	50/125 & 62.5/125	Multi	127	
TXPF-142M	TXSF-142M	100/140	Multi	142	
TXPF-144M	TXSF-144M	100/140	Multi	144	Insertion Tool TN807
TXPF-145M*	TXSF-145M*	100/140	Multi	145	
TXPF-156M*	TXSF-156M*	62.5/125/155 (Polyimide)	Multi	156	
TXPF-157M*	TXSF-157M*	62.5/125/155 (Polyimide)	Multi	157	Removal Tool TX808
TXPF-173M	TXSF-173M	100/140/172 (Polyimide)	Multi	173	
TXPF-175M*	TXSF-175M*	100/140/172 (Polyimide)	Multi	175	
TXPF-231M*	TXSF-231M*	200/230	Multi	231	
TXPF-236M*	TXSF-236M*	200/233	Multi	236	
TXPF-286M*	TXSF-286M*	200/280	Multi	286	
TXPF-448M*	TXSF-448M*	400/440	Multi	448	
TXPF-533M*	TXSF-533M*	486/500	Multi	533	

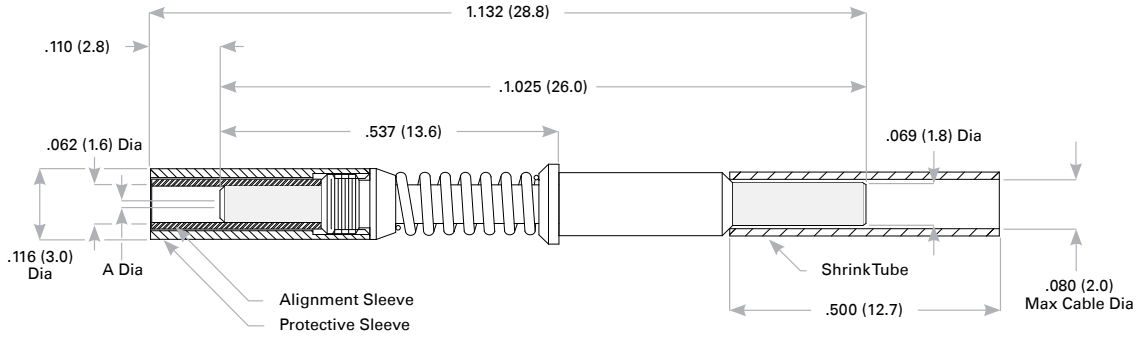
* Special order item. Please consult an authorized distributor for lead time and minimum quantity requirements.

High-Performance Fiber Optic Contacts

Fiber optic termini are used in avionics, robotics, weapons systems, sensors, and other high-performance applications in which low data loss and reliable, repeatable performance is a necessity. These fiber optic termini can be used in any TX Series insert that accommodates standard #16 contacts.



Size 16 Fiber Optic Pin Termini



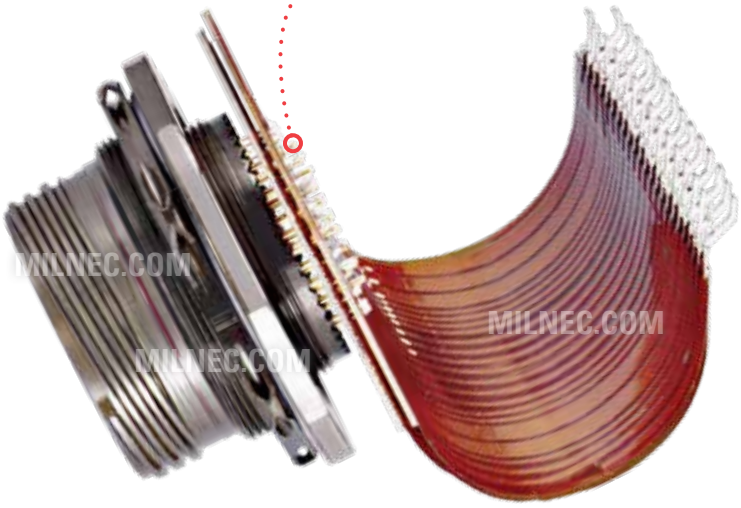
Size 16 Fiber Optic Socket Termini

Introduction to PC Tail Contacts

PC tail contacts are used exclusively for connectors that are mounted directly to printed circuit boards or flex cable by a specialized contact with a long termination "tail" that protrudes behind the connector body. PC tail contacts offer a number of design advantages by permitting the use of ruggedized connectors mounted to sophisticated electronics without the use of pigtails or bulky terminal blocks. Direct termination of contacts to PC boards also increases signal integrity and improves overall system reliability.

PC tail contacts differ from one another by the tail diameter and length. The tail length is the portion that extends beyond the main body of the contact and protrudes from the rear of the connector shell. In cases where the tail length extends beyond a design's required minimum length, excess tail material can simply be trimmed with wire cutters after soldering and testing. Milnec also offers custom coax, twinax, or quadrax PC tail contacts to accommodate high-frequency contact requirements. ■

Get PC Tail Contacts Easily
Ordering connectors pre-loaded with PC tail contacts ready for termination to PC boards or flex cable has never been easier!



Jam Nuts for PC Tail Contact Applications

While PC tail contacts can be used in any shell style, we recommend the use of jam nut receptacles when using PC tail contacts for PC board applications. Jam nut receptacles are designed for rear mounting and enable simpler installation on the enclosure. Their single-hole mounting design also reduces the number of environmentally susceptible openings that must be made, while the integrated O-ring maintains the environmental integrity of the enclosure. Protective covers are highly recommended to provide environmental and EMI/RFI protection when connectors are unmated. Socket contacts (which are recessed in the insert) are recommended for use as PC tail contacts in order to avoid accidental electrostatic discharge to contacts attached to sensitive electronics.

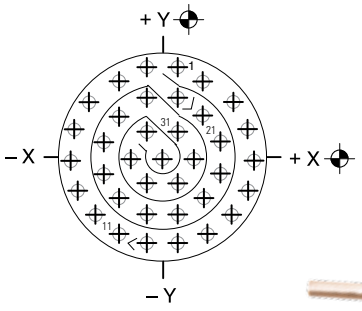
Custom PC Tail Lengths & Dimensions

We realize that every engineering application is different, that's why we're able to provide custom PC tail contacts to fit any design. Options include custom tail lengths, shoulder extensions, or 90° angled configurations.

For applications requiring high-speed data transmission, we can also provide coax, twinax, and quadrax contacts with PC tails for termination directly to your PC board to provide the highest signal integrity. Please contact an authorized distributor for ordering assistance.

PC Tail Contact Placement Diagrams

Insert arrangement diagrams are available for the most popular inserts for PC tail contact applications. These diagrams provide precise hole locations for printed circuit board manufacturing via exact coordinates. Please contact your distributor for more information.



Custom PC Tail Contacts Available
PC tail contacts may be ordered with custom shoulder extensions, tail lengths, diameters, and angle configurations.

TX07 N 13-35 Y N - 02

1 2 3 4 5 6

1 BASIC PART NUMBER
- **TX00** Wall mount receptacle
- **TX07** Jam nut receptacle

2 MATERIAL & FINISH
- **N** Aluminum, electroless nickel
- **W** Aluminum, olive drab cadmium
- **K** Stainless steel, passivated (firewall)

3 SHELL SIZE & INSERT ARRANGEMENT
- See Insert Arrangement Selection table, p. B-19

4 CONTACT STYLE
- **X** PC tail pins
- **Y** PC tail sockets

5 ALTERNATE KEYING
- **N** NORMAL or A, B, C, D, E

6 OPTIONAL ACCESSORY KIT (OMIT FOR NONE)
- **02** Protective cover + mounting gasket
- **03** 02 kit + mounting bracket + sealing screws

Note: See part builder (p. B-17) for additional finish options.

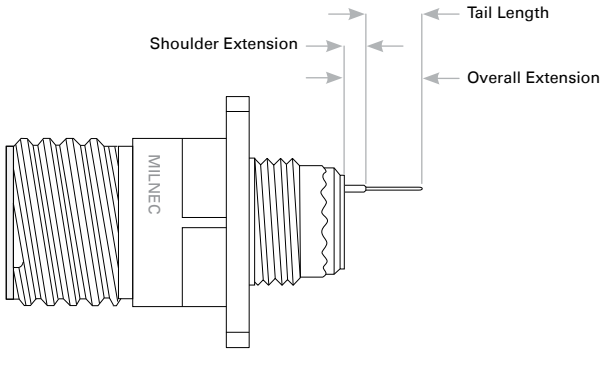
Order receptacles with PC tail contacts

PC tail contacts are used to mount ruggedized connectors directly to printed circuit boards or flex cable. To include PC tail contacts with your connector, simply select the X or Y option for contact style. Custom PC Tail contact angles and sizes are available by special order. Insert arrangement diagrams are available with precise hole locations for PCB manufacturing.

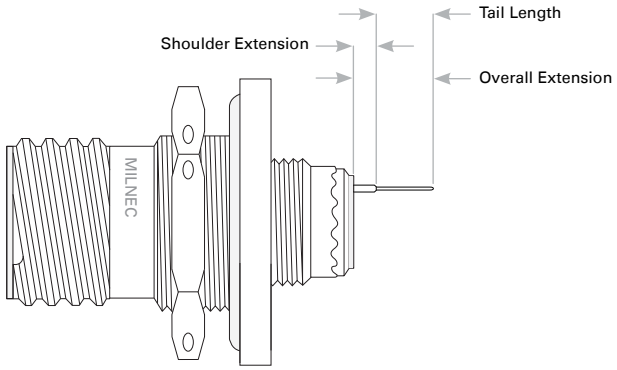
PC Tail Contacts

Contact Type	Part Number	Size	Tail Dia	Tail Length	TX00 Shoulder Extension		TX07 Shoulder Extension		TX00 Overall Extension‡		TX07 Overall Extension‡	
					Metal	Composite	Metal	Composite	Metal	Composite	Metal	Composite
Pin	TXPT22-001	#22D	.019 (.48)	.236 (5.99)	.084 (2.13)	.083 (2.11)	.083 (2.11)	.050 (1.27)	.320 (8.13)	.319 (8.10)	.319 (8.10)	.286 (7.26)
	TXPT20-002	#20	.025 (.63)									
	TXPT16-003	#16	.062 (1.57)									
	TXPT12-004	#12	.081 (2.06)									
Socket	TXST22-005	#22D	.019 (.48)	.236 (5.99)	.094 (2.39)	.097 (2.46)	.092 (2.34)	.050 (1.27)	.330 (8.38)	.333 (8.46)	.328 (8.33)	.286 (7.26)
	TXST20-006	#20	.025 (.63)									
	TXST16-007	#16	.062 (1.57)									
	TXST12-008	#12	.094 (2.39)									

Please contact your distributor for more contact sizes. For insertion and extraction tools, please see the Contacts, Sealing Plugs, & Tooling table, p. B-10.
Dimensions are in inches (mm). ‡ Overall extension ± 0.010 (0.3).



TX00 Wall Mount Receptacle
PC Tail Contact Extension



TX07 Jam Nut Receptacle
PC Tail Contact Extension

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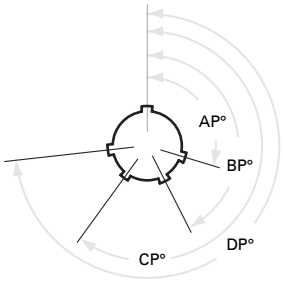
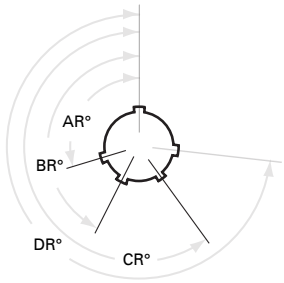
TX Series Shell Keying

Alternate key positions should be used to avoid cross-mating of connectors with the same (or similar) insert pattern that are in close proximity to one another, such as on a high-density control panel. A plug with a given key position letter will only mate with a receptacle with the same letter. Inserts maintain a fixed position regardless of keying. For example, receptacle "N" will only mate with plug "N," and a second receptacle with an "A" keying will only mate with the "A" cable plug. In this manner, cross-mating of similar connectors by accident becomes impossible. ■



Plug
(front face shown)



Receptacle
(front face shown)

Master Key/Keyway Position

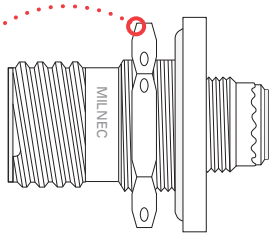
Shell Size	Keyway Arrangement	AR° or AP°	BR° or BP°	CR° or CP°	DR° or DP°
9	N	105°	140°	215°	265°
	A	102°	132°	248°	320°
	B	80°	118°	230°	312°
	C	35°	140°	205°	275°
	D	64°	155°	234°	304°
	E	91°	131°	197°	240°
11 13 15	N	95°	141°	208°	236°
	A	113°	156°	182°	292°
	B	90°	145°	195°	252°
	C	53°	156°	220°	255°
	D	119°	146°	176°	298°
	E	51°	141°	184°	242°
17 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°

Accessory & Jam Nut Torque

Shell Size	Connector Accessory Metric Thread Dimension	Aluminum & Stainless Steel				Composite			
		Accessory Thread Torque		Jam Nut Torque		Accessory Thread Torque		Jam Nut Torque	
		Min	Max	Min	Max	Min	Max	Min	Max
9	M12 X 1-6g	70 (7.9)	75 (8.5)	30 (3.4)	36 (4.1)	30 (3.4)	36 (4.1)	30 (3.4)	36 (4.1)
11	M15 X 1-6g	80 (9.0)	85 (9.6)	40 (4.5)	46 (5.2)	40 (4.5)	46 (5.2)	40 (4.5)	46 (5.2)
13	M18 X 1-6g	100 (11.3)	110 (12.4)	55 (6.2)	60 (6.8)	55 (6.2)	60 (6.8)	55 (6.2)	60 (6.8)
15	M22 X 1-6g	140 (15.8)	150 (17.0)	70 (7.9)	75 (8.5)	70 (7.9)	75 (8.5)	70 (7.9)	75 (8.5)
17	M25 X 1-6g	160 (18.1)	170 (19.2)	80 (9.0)	85 (9.6)	80 (9.0)	85 (9.6)	80 (9.0)	85 (9.6)
19	M28 X 1-6g	210 (23.7)	230 (26.0)	90 (10.2)	95 (10.7)	90 (10.2)	95 (10.7)	90 (10.2)	95 (10.7)
21	M31 X 1-6g	260 (29.4)	280 (31.6)	100 (11.3)	110 (12.4)	100 (11.3)	110 (12.4)	100 (11.3)	110 (12.4)
23	M34 X 1-6g	280 (31.6)	300 (33.9)	110 (12.4)	120 (13.6)	110 (12.4)	120 (13.6)	110 (12.4)	120 (13.6)
25	M37 X 1-6g	300 (33.9)	325 (36.7)	120 (13.6)	130 (14.7)	120 (13.6)	130 (14.7)	120 (13.6)	130 (14.7)

Units are in inch pounds (Newton meters).

Jam Nut Hex Wrenches
When working with composite jam nut connectors, special hex wrenches are recommended to avoid damaging the jam nut. Contact an authorized distributor for suggested tooling and assembly instructions.



Cable Clamp Screw Torque

Screw Size	Min	Max
#2-56	1.5 (.2)	2.5 (.3)
#4-40	3.5 (.4)	4.5 (.5)
#6-32	5 (.6)	7 (.8)
#8-32	7 (.8)	9 (1.0)
#10-32	9 (1.0)	11 (1.2)
#.250-20	11 (1.2)	13 (1.5)

Units are in inch pounds (Newton meters).

Rev. 2235

TX Series Materials & Finishes

The material of a connector is the foundation of its protective ability, providing strength and durability. The finish (or plating) offers the foundation material added corrosion resistance along with an aesthetic look. Each material and finish combination offers unique properties and should be selected according to your application requirements.

The TX Series features stainless steel, composite, and aluminum as standard materials, with electroless nickel and olive drab cadmium as finish options. In addition to the standard options, a wide variety of special materials and finishes is available, including space-grade approved materials and RoHS compliant finishes for eco-friendly designs. ■

Standard TX Series Materials & Finishes

Finish Code	Finish	Hermetic Only	Electrically Conductive	RoHS Compliant	Appearance	Shell Material	Salt Spray Rating	Recommended Operating Temperature Range
W	Olive Drab Cadmium		✓		Drab Olive Green	Aluminum	500 hrs	-85° to +347°F (-65° to +175°C)
N	Electroless Nickel		✓+	✓	Bright Metal	Aluminum	48 hrs	-85° to +392°F (-65° to +200°C)
G	Electroless Nickel (Space-Grade)‡		✓+	✓	Bright Metal	Aluminum	48 hrs	-85° to +392°F (-65° to +200°C)
GM	Electroless Nickel (Space-Grade) ‡		✓+	✓	Matte Metal	Composite	2,000 hrs	-85° to +347°F (-65° to +175°C)
K	Passivated (Firewall)†		✓	✓	Matte Metal	SST Steel	1,000 hrs	-85° to +392°F (-65° to +200°C)
KS	Electrodeposited Nickel (Firewall)†		✓+	✓	Bright Metal	SST Steel	500 hrs	-85° to +392°F (-65° to +200°C)
L	Electrodeposited Nickel		✓+	✓	Bright Metal	SST Steel	500 hrs	-85° to +392°F (-65° to +200°C)
J	Olive Drab Cadmium		✓		Drab Olive Green	Composite	2,000 hrs	-85° to +347°F (-65° to +175°C)
M	Electroless Nickel		✓+	✓	Matte Metal	Composite	2,000 hrs	-85° to +347°F (-65° to +175°C)
HA	Passivated	✓	✓	✓	Matte Metal	SST Steel	1,000 hrs	-85° to +392°F (-65° to +200°C)
HB	Electrodeposited Nickel	✓	✓+	✓	Bright Metal	SST Steel	48 hrs	-85° to +392°F (-65° to +200°C)

‡ Outgassed per NASA specifications ASTM E-595 and EEE-INST-002. ✓+ Indicates improved conductivity for shielding effectiveness.
† Connectors will be supplied with flame resistant inserts designed to protect bulkheads from the passage of a 2,000°F (1,093°C) flame for a minimum of 20 minutes.

Special TX Series Materials & Finishes*

Finish Code	Finish	Hermetic Only	Electrically Conductive	RoHS Compliant	Appearance	Shell Material	Salt Spray Rating	Recommended Operating Temperature Range
B	Hardcoat Anodize			✓	Grey to Black	Aluminum	336 hrs	-85° to +347°F (-65° to +175°C)
Z	Zinc Nickel		✓	✓	Black	Aluminum	500 hrs	-85° to +347°F (-65° to +175°C)
CB	Cadmium		✓	✓	Black	Aluminum	1,000 hrs	-85° to +347°F (-65° to +175°C)
T	Hard Anodic			✓	Grey Metal	Aluminum	500 hrs	-85° to +347°F (-65° to +175°C)
NP	Nickel Flurocarbon Polymer		✓	✓	Grey Metal	Aluminum	1,000 hrs	-85° to +347°F (-65° to +175°C)
XA	Unplated Composite			✓	Light Brown	Composite	2,000 hrs	-85° to +347°F (-65° to +175°C)
XB	Unplated Composite			✓	Black	Composite	2,000 hrs	-85° to +347°F (-65° to +175°C)
MB	Marine Bronze		✓	✓	Yellow Metal	Bronze	1,000 hrs	-85° to +392°F (-65° to +200°C)
TY	Titanium		✓	✓	Gray Metal	Titanium	1,000 hrs	-67° to +392°F (-55° to +200°C)

* Please consult an authorized distributor for lead time information and minimum quantity requirements for special order finishes.
‡ Outgassed per NASA specifications ASTM E-595 and EEE-INST-002. ✓+ Indicates improved conductivity for shielding effectiveness.

About RoHS Finishes

The European Union's Restriction of Hazardous Substances (RoHS) 2002/95/EC Directive and its subsequent amendments restricts the incorporation of six hazardous materials in the manufacture of various types of electronic and electrical equipment. It is closely linked with the Waste Electrical and Electronic Equipment Directive (WEEE) 2002/96/EC, which sets collection, recycling, and recovery targets for electrical goods and equipment.

RoHS ☑ Milnec provides a full offering of RoHS compliant finishes in conductive and non-conductive versions to best suit your application requirements.

Please consult the latest European Union general and regional regulations to ensure materials are appropriate for your application and compliance requirements.

Rev. 2235

How to Build Your TX Connector Part Number

A part number is comprised of a string of characters that represent the different elements of a connector. High-performance connectors are built to order from component form using a unique part number as a blueprint to specify particular characteristics. Each modifier of the part number represents a particular configuration.

Below is an example part number for a TX Series connector that designates, 1) TX Series wall mount receptacle, 2) electroless nickel finish over aluminum, 3) 15-35 insert arrangement, 4) pin contacts, 5) normal keying, 6) EMI/RFI environmental backshell (dash number indicates size, length, and cable range), and 7) integrated accessory kit. ■

TX00	N	15-35	P	N	R2(025)	-	03
1	2	3	4	5	6		7

1 Series Shell Style

Standard Environmental Shells

TX06 Plug (self-locking), p. B-23

TX00 Wall mount receptacle, p. B-24
TX07 Jam nut receptacle, p. B-25
TX01 Cable mount receptacle, p. B-26

For non-standard shell styles including hermetic and thru-bulkhead receptacles, please see specific datasheet for part numbering and kit options.

2 Material & Finish

Aluminum
N Electroless nickel
G Electroless nickel (space-grade)
W Olive drab cadmium

Stainless Steel
K Passivated, firewall rated
L Electrodeposited nickel

Composite
M Electroless nickel
J Olive drab cadmium

For complete material and finish options, including RoHS finishes, see p. B-16.

3 Shell Size & Insert Arrangement

See Insert Arrangement Selection table, p. B-19

4 Contact Style

Standard Power Contacts
P Pin, p. B-10
S Socket, p. B-10
A Pin insert, supplied without contacts
B Socket insert, supplied without contacts

High-Cycle Contacts
F High-cycle pin contacts, p. B-10
G High-cycle socket contacts, p. B-10

PC Tail Contacts
X PC tail pin contacts, p. B-13
Y PC tail socket contacts, p. B-13

Verify selected insert arrangement has PC Tail Kit option available, see p. B-19.
For PC tail contact dimensions, see p. B-13.

5 Alternate Keying

Normal Keying
N Normal

Alternate Keying
A, B, C, D, E Alternate keying

6 Optional Backshell Kit (Omit for None)

Strain Relief Backshell (Self-Locking)
B2 Straight, p. B-35
B4 90°, p. B-35

EMI/RFI Environmental Backshell*
R2 ( ) Straight, p. B-37
R3 ( ) 45°, p. B-41
R4 ( ) 90°, p. B-43

Supply specific Dash No. on referenced datasheet page for appropriate connector shell size.

Shrink Boot & Boot Adapter*
K2 Straight boot, p. B-47, & adapter, p. B-49
K4 90° boot, p. B-48, & adapter, p. B-49

K2 supplied with recommended boot in 100 material, p. B-47.
K4 supplied with recommended boot in 100 material, p. B-48.

Shrink Boot, EMI/RFI Banding Boot Adapter, & Band*
D2 Straight adapter, p. B-50, w/ boot & band
D4 90° adapter, p. B-50, w/ boot & band

Supplied with recommended straight boot in 100 material, p. B-47, and TB250 band, p. B-58.

* Backshell kits will be supplied with matching connector material, except stainless steel.

7 Optional Accessory Kit (Omit for None)

01 **For Plugs:**
Protective cover, p. B-51

02 **For Receptacles:**
Protective cover, p. B-51 +
Mounting gasket, p. B-53

03 **For Receptacles:**
Protective cover, p. B-51 +
Mounting gasket, p. B-53 +
Mounting bracket, p. B-54
with (4x) sealing screws

Kits with 02 & 03 accessory option will use R1 (outer) mounting hole positions.

Kits with EMI/RFI backshells will be supplied with TXGS RFI shielding gaskets.

Rev. 2235

GET THE WHOLE KIT & CABOODLE WITHOUT THE PAIN IN THE BOODLE

Advanced Connectors
Ruggedized and environmentally protected connectors that feature a wide variety of contacts, materials, and finishes for the ultimate in design flexibility.

EMI/RFI Backshells
For mission-critical applications, EMI/RFI environmental backshells offer total protection from environmental hazards and radiated interference.

Protective Covers
Quickly match the correct cover with your custom connector to protect contacts and ensure a reliable environmental seal when it is not in use.

Contacts
Gold plated contacts ensure superior signal and power fidelity and are included with every connector.

Mounting Hardware
Securely mount and seal your connector with a mounting bracket, sealing gasket, and stainless steel sealing screws.

Order Matching Accessories—Every Time!

The search for matching connector accessories is over! Our simple part builders make it easy to build a complete connector kit with everything you need for mission-critical applications. Kits include protective covers, gaskets, mounting hardware, and a variety of backshells. Get complete protection with Milnec connector kits.

MILNEC® INTERCONNECT SYSTEMS

Selecting Your Insert Arrangement

Below is a chart that represents every available shell and insert arrangement within the series. To choose the proper insert arrangement, you must first distinguish your application requirements for contact size and quantity.

Each insert arrangement has a unique number to identify its size and contact arrangement. The first number is the shell size. The second number is the contact arrangement. It does not, however, always equal the total number of contacts. ■

Insert Arrangement Selection

Insert Arrangement	Military Shell Size	Total Contacts	Hermetic Available	Service Rating	Contact Size						
					#22D	#20	#16	#12	#12 Coax[1]	#8 Coax[2]	#8 Twinax[3]
9-35	A	6	✓	M	6						
9-94‡	A	2		M		2					
9-98	A	3	✓	I		3					
11-2	B	2	✓	I			2				
11-5	B	5	✓	I		5					
11-35	B	13	✓	M	13						
11-54	B	4		II	4						
11-98	B	6	✓	I		6					
11-99	B	7	✓	I		7					
13-4	C	4	✓	I			4				
13-8	C	8	✓	I		8					
13-13[4]‡	C	4		I, Fiber			2	2			
13-35	C	22	✓	M	22						
13-98	C	10	✓	I		10					
15-4‡	D	4		I				4			
15-5	D	5	✓	II			5				
15-15	D	15	✓	I		14	1				
15-18	D	18	✓	I		18					
15-19	D	19	✓	I		19					
15-35	D	37	✓	M	37						
15-97	D	12	✓	I		8	4				
17-2	E	39		M	38						1
17-6	E	6	✓	I				6			
17-8	E	8	✓	II			8				
17-22‡	E	4		Coax					2	2	
17-26	E	26	✓	I		26					
17-35	E	55	✓	M	55						
17-99	E	23	✓	I		21	2				
19-11	F	11	✓	II			11				
19-18	F	18		M	14						4
19-28	F	28	✓	I		26	2				
19-31‡	F	15		M	12			1		2	
19-32	F	32	✓	I		32					
19-35	F	66	✓	M	66						
21-11	G	11	✓	I				11			
21-16	G	16	✓	II			16				
21-29	G	27		I		19	4	4			
21-35	G	79	✓	M	79						
21-39	G	39	✓	I		37	2				
21-41	G	41	✓	I		41					
21-75	G	4		M							4

(Continued on next page)

Insert Arrangement Selection (Continued from previous page)

Insert Arrangement	Military Shell Size	Total Contacts	Hermetic Available	Service Rating	Contact Size						
					#22D	#20	#16	#12	#12 Coax[1]	#8 Coax[2]	#8 Twinax[3]
21-79‡	G	19		II	17					2	
23-6‡	H	6		M							6
23-14‡	H	14		I				14			
23-21	H	21	✓	II			21				
23-35	H	100	✓	M	100						
23-53	H	53	✓	I		53					
23-54‡	H	53		M	40		9	4			
23-55	H	55	✓	I		55					
25-4	J	56	✓	I		48	8				
25-7	J	99		Twinax	97						2
25-8	J	8		Twinax							8
25-17‡	J	42		M	36						6
25-19	J	19	✓	I				19			
25-20[5]	J	30		N		10	13		4		3
25-24	J	24	✓	I			12	12			
25-29	J	29	✓	I			29				
25-35	J	128	✓	M	128						
25-41‡	J	41		N, Inst.	22	3	11		2		3
25-43	J	43	✓	I		23	20				
25-46	J	46		I		40	4			2	
25-61	J	61	✓	I		61					
25-90	J	46		I		40	4				2

[1] Includes the following #12 coax contacts: TXPX12-006 (pin) or TXSX12-007 (socket) contacts, see p. B-11 for more information. ‡ Special order contact arrangement.
[2] Includes the following #8 coax contacts: TXPX08-012 (pin) or TXSX08-013 (socket) contacts, see p. B-11 for more information.
[3] Includes the following #8 twinax contacts: TXPW08-002 (pin) or TXSW08-003 (socket) contacts, see p. B-11 for more information.
[4] 13-13 insert is designed to accept 2 of our standard size #16 fiber optic contacts in place of #16 power contacts, see p. B-12 for more information.
[5] 25-20 insert is designed for MIL-STD-1760 applications and includes the following contacts:
2 x #12 coax contacts: TXPX12-006 (pin) or TXSX12-007 (socket) contacts
2 x #12 coax contacts (matched impedance): TXPX12-010 (pin) or TXSX12-011 (socket) contacts
3 x #8 twinax contacts: TXPW08-002 (pin) or TXSW08-003 (socket) contacts

HIGH-FREQUENCY CONTACTS FOR HIGH-SPEED TRANSMISSION

TX00 wall mount with eight concentric twinax contacts for high-speed data transmission in a rugged connector.

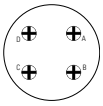
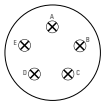
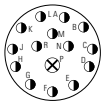
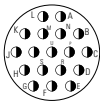
Contacts for Advanced Applications

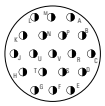
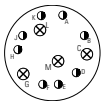
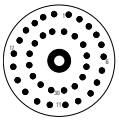
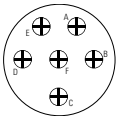
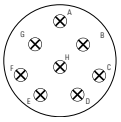
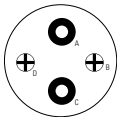
Milnec's high-frequency contacts are the ideal choice for advanced applications that require superior electrical performance along with shielding to protect from outside electrical interference.

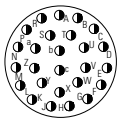
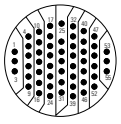
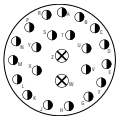
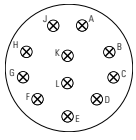
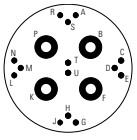
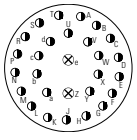
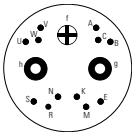
- High-speed RF contacts
- Fiber optic contacts
- PC tail contacts

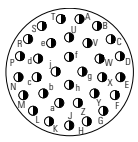
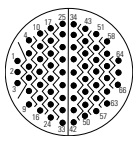
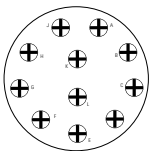
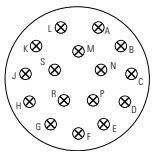
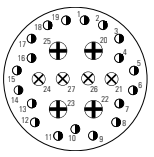
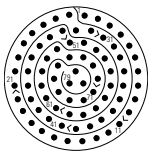
Front face of pin insert shown

										
Arrangement	**9-35**	**9-94**	**9-98**	**11-2**	**11-5**	**11-35**	**11-54**	**11-98**	**11-99**	**13-4**
Service Rating	M	M	I	I	I	M	II	I	I	I
Number of Contacts	6 x #22D	2 x #20	3 x #20	2 x #16	5 x #20	13 x #22D	4 x #22D	6 x #20	7 x #20	4 x #16

								
Arrangement	**13-8**	**13-13**	**13-35**	**13-98**	**15-4**	**15-5**	**15-15**	**15-18**
Service Rating	I	I, Fiber Optic	M	I	I	II	I	I
Number of Contacts	8 x #20	2 x #16 2 x #12	22 x #22D	10 x #20	4 x #12	5 x #16	14 x #20 1 x #16	18 x #20

							
Arrangement	**15-19**	**15-35**	**15-97**	**17-2**	**17-6**	**17-8**	**17-22**
Service Rating	I	M	I	M	I	II	Coax
Number of Contacts	19 x #20	37 x #22D	8 x #20 4 x #16	38 x #22D 1 x #8 Twinax	6 x #12	8 x #16	2 x #12 Coax 2 x #8 Coax

							
Arrangement	**17-26**	**17-35**	**17-99**	**19-11**	**19-18**	**19-28**	**19-31**
Service Rating	I	M	I	II	M	I	M
Number of Contacts	26 x #20	55 x #22D	21 x #20 2 x #16	11 x #16	14 x #22D 4 x #8 Twinax	26 x #20 2 x #16	2 x #8 Coax 1 x #12 12 x #22D

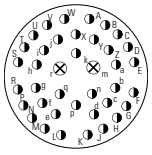
						
Arrangement	**19-32**	**19-35**	**21-11**	**21-16**	**21-29**	**21-35**
Service Rating	I	M	I	II	I	M
Number of Contacts	32 x #20	66 x #22D	11 x #12	16 x #16	19 x #20 4 x #16, 4 x #12	79 x #22D

Contact Legend 

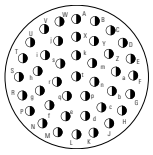
(Continued on next page)

(Continued from previous page)

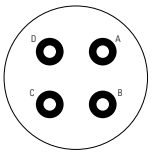
Front face of pin insert shown



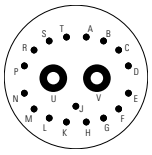
21-39
I
37 x #20
2 x #16



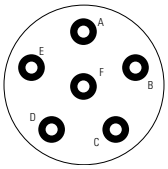
21-41
I
41 x #20



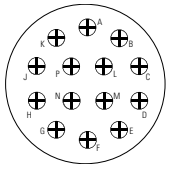
21-75
M
4 x #8 Twinax



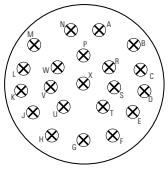
21-79
II
17 x #22D
2 x #8 Coax



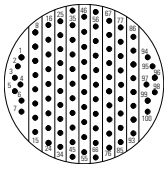
23-6
M
6 x #8 Twinax



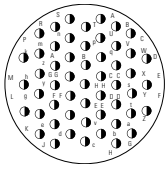
23-14
I
14 x #12



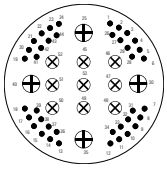
23-21
II
21 x #16



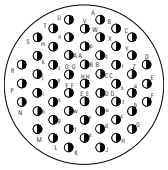
23-35
M
100 x #22D



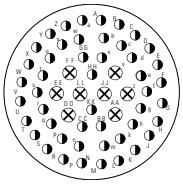
23-53
I
53 x #20



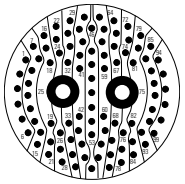
23-54
M
40 x #22D, 9 x #16
4 x #12



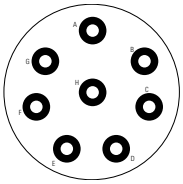
23-55
I
55 x #20



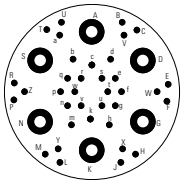
25-4
I
48 x #20
8 x #16



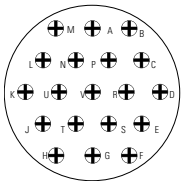
25-7
Twinax
97 x #22D
2 x #8 Twinax



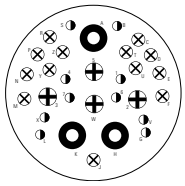
25-8
Twinax
8 x #8 Twinax



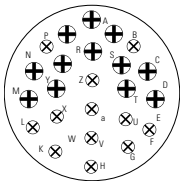
25-17
M
36 x #22D
6 x #8 Twinax



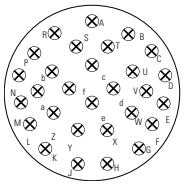
25-19
I
19 x #12



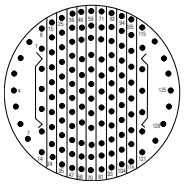
25-20
N
10 x #20, 13 x#16,
3 x #8 Twinax, 4 x #12 Coax



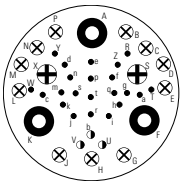
25-24
I
12 x #16
12 x #12



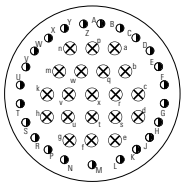
25-29
I
29 x #16



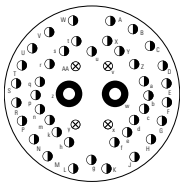
25-35
M
128 x #22D



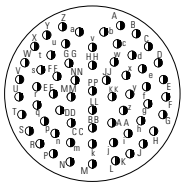
25-41
N/Inst.
22 x #22D, 3 x #20, 11 x #16
2 x #12 Coax, 3 x #8 Twinax



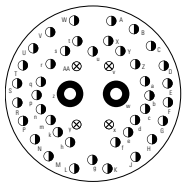
25-43
I
23 x #20
20 x #16



25-46
I
40 x #20; 4 x #16
2 x #8 Coax



25-61
I
61 x #20



25-90
I
40 x #20, 4 x #16
2 x #8 Twinax

Arrangement
Service Rating
Number of Contacts

TX06 N 13-35 P N - R2(015) - 01

1 2 3 4 5 6 7

1 BASIC PART NUMBER
- **TX06** Plug (self-locking)

2 MATERIAL & FINISH
- **N** Aluminum, electroless nickel
- **W** Aluminum, olive drab cadmium
- **K** Stainless steel, passivated (firewall)

3 SHELL SIZE & INSERT ARRANGEMENT
- See Insert Arrangement Selection table, p. B-19

4 CONTACT STYLE
- **P** Pin
- **S** Socket

5 ALTERNATE KEYING
- **N** NORMAL or A, B, C, D, E

6 OPTIONAL BACKSHELL KIT (OMIT FOR NONE)
- **B2** Straight strain relief (self-locking), p. B-35
- **R2( )** Straight EMI/RFI environmental, p. B-37
- (Add dash number for appropriate shell size, see p. B-37)
- **K2** Boot adapter, p. B-49, & straight shrink boot, p. B-47

7 OPTIONAL ACCESSORY KIT (OMIT FOR NONE)
- **01** Protective cover

Note: See part builder (p. B-17) for additional kit options.

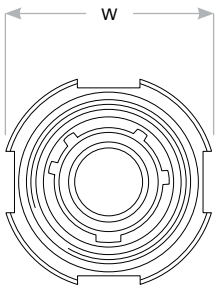
TX06 Cross-Reference & Compatibility

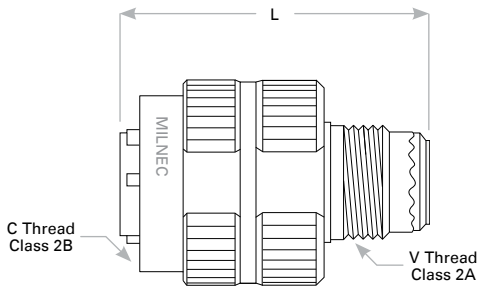
Compatible Brands	Equivalents	Mates
MIL-DTL-38999 Series III	D38999/26	D38999/20, D38999/24
Aero / Conesys	AE326	AE320, AE324
Amphenol	TV06, TVS06	TVP00, TVPS00, TVP07, TVPS07
Deutsch	DTS26	DTS20, DTS24
ITT Cannon	KJA6	KJA0, KJA7
Souriau	8D5, 8DS06G	8D0, 8D1, 8D7, 8DS00, 8DS07

Plug Dimensions

Shell Size	Military Shell Size	W	C Thread Class 2B	L	V Thread Class 2A
9	A	.858 (21.8)	.6250- 0.1P-0.3L-TS-2B	1.234 (31.3)	M12X1-6g
11	B	.984 (25.0)	.7500- 0.1P-0.3L-TS-2B	1.234 (31.3)	M15X1-6g
13	C	1.157 (29.4)	.8750- 0.1P-0.3L-TS-2B	1.234 (31.3)	M18X1-6g
15	D	1.280 (32.5)	1.0000- 0.1P-0.3L-TS-2B	1.234 (31.3)	M22X1-6g
17	E	1.406 (35.7)	1.1875- 0.1P-0.3L-TS-2B	1.234 (31.3)	M25X1-6g
19	F	1.516 (38.5)	1.2500- 0.1P-0.3L-TS-2B	1.234 (31.3)	M28X1-6g
21	G	1.642 (41.7)	1.3750- 0.1P-0.3L-TS-2B	1.234 (31.3)	M31X1-6g
23	H	1.768 (44.9)	1.5000- 0.1P-0.3L-TS-2B	1.234 (31.3)	M34X1-6g
25	J	1.890 (48.0)	1.6250- 0.1P-0.3L-TS-2B	1.234 (31.3)	M37X1-6g

Dimensions are in inches (mm).





TX00 N 13-35 S N - R2(015) - 03

1 2 3 4 5 6 7

1 BASIC PART NUMBER
- **TX00** Wall mount receptacle

2 MATERIAL & FINISH
- **N** Aluminum, electroless nickel
- **W** Aluminum, olive drab cadmium
- **K** Stainless steel, passivated (firewall)

3 SHELL SIZE & INSERT ARRANGEMENT
- See Insert Arrangement Selection table, p. B-19

4 CONTACT STYLE
- **P** Pin
- **S** Socket

5 ALTERNATE KEYING
- **N** NORMAL or A, B, C, D, E

6 OPTIONAL BACKSHELL KIT (OMIT FOR NONE)
- **B2** Straight strain relief (self-locking), p. B-35
- **R2( )** Straight EMI/RFI environmental, p. B-37
- (Add dash number for appropriate shell size, see p. B-37)
- **K2** Boot adapter, p. B-49, & straight shrink boot, p. B-47

7 OPTIONAL ACCESSORY KIT (OMIT FOR NONE)
- **02** Protective cover + mounting gasket
- **03** 02 kit + mounting bracket + sealing screws

Note: See part builder (p. B-17) for additional kit options.

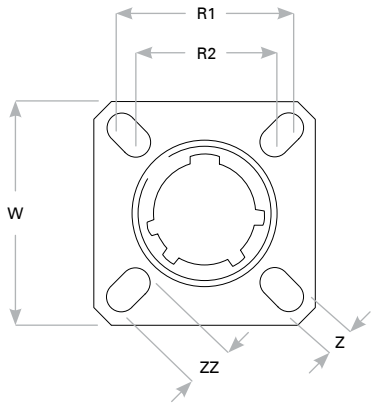
TX00 Cross-Reference & Compatibility

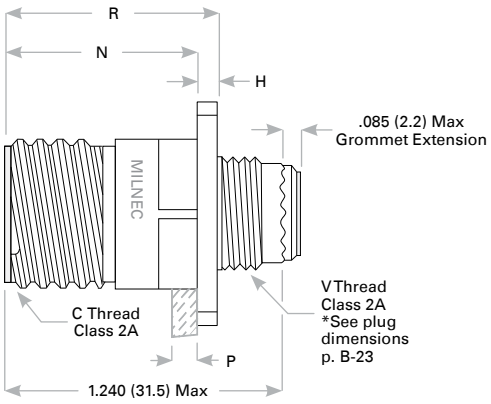
Compatible Brands	Equivalents	Mates
MIL-DTL-38999 Series III	D38999/20	D38999/26
Aero / Conesys	AE320	AE326
Amphenol	TV00, TVPS00	TV06, TVS06, CTV06, CTVS06
Deutsch	DTS20	DTS26
ITT Cannon	KJA0	KJA6
Souriau	8D0	8D5, 8DS06G

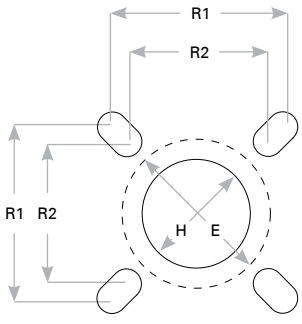
Receptacle Dimensions

Shell Size	Military Shell Size	W ±.012 (0.3)	ZZ ±.008 (0.2)	Z ±.008 (0.2)	R Max	N Max	H Max	C Thread Class 2A	P Max Rear Panel‡	R1	R2	H Front Mount	E Rear Mount
9	A	.948 (24.1)	.220 (5.5)	.130 (3.3)	.918 (23.3)	.820 (20.8)	.098 (2.5)	.6250-0.1P-0.3L-TS	.234 (5.9)	.719 (18.3)	.594 (15.1)	.516 (13.1)	.656 (16.7)
11	B	1.043 (26.5)	.190 (4.9)	.130 (3.3)	.918 (23.3)	.820 (20.8)	.098 (2.5)	.7500-0.1P-0.3L-TS	.234 (5.9)	.812 (20.6)	.719 (18.3)	.625 (15.9)	.796 (20.2)
13	C	1.137 (28.9)	.190 (4.9)	.130 (3.3)	.918 (23.3)	.820 (20.8)	.098 (2.5)	.8750-0.1P-0.3L-TS	.234 (5.9)	.906 (23.0)	.812 (20.6)	.750 (19.1)	.922 (23.4)
15	D	1.232 (31.3)	.190 (4.9)	.130 (3.3)	.918 (23.3)	.820 (20.8)	.098 (2.5)	1.0000-0.1P-0.3L-TS	.234 (5.9)	.969 (24.6)	.906 (23.0)	.906 (23.0)	1.047 (26.6)
17	E	1.323 (33.6)	.190 (4.9)	.130 (3.3)	.918 (23.3)	.820 (20.8)	.098 (2.5)	1.1875-0.1P-0.3L-TS	.234 (5.9)	1.062 (27.0)	.969 (24.6)	1.016 (25.8)	1.219 (31.0)
19	F	1.449 (36.8)	.190 (4.9)	.130 (3.3)	.918 (23.3)	.820 (20.8)	.098 (2.5)	1.2500-0.1P-0.3L-TS	.234 (5.9)	1.156 (29.4)	1.062 (27.0)	1.141 (29.0)	1.297 (32.9)
21	G	1.575 (40.0)	.190 (4.9)	.130 (3.3)	.918 (23.3)	.790 (20.1)	.126 (32.0)	1.3750-0.1P-0.3L-TS	.234 (5.9)	1.250 (31.8)	1.156 (29.4)	1.266 (32.2)	1.422 (36.1)
23	H	1.701 (43.2)	.240 (6.1)	.150 (3.8)	.918 (23.3)	.790 (20.1)	.126 (32.0)	1.5000-0.1P-0.3L-TS	.234 (5.9)	1.375 (34.9)	1.250 (31.8)	1.375 (34.9)	1.547 (39.3)
25	J	1.823 (46.3)	.240 (6.1)	.150 (3.8)	.918 (23.3)	.790 (20.1)	.126 (32.0)	1.6250-0.1P-0.3L-TS	.234 (5.9)	1.500 (38.1)	1.375 (34.9)	1.484 (37.7)	1.672 (42.5)

Dimensions are in inches (mm). ‡ Max panel thickness applies only to rear mount applications to ensure proper coupling clearance.







Panel Cutout

Kits with 03 accessory option will use R1 mounting hole positions.

Rev. 2235

TX07 N 13-35 S N - R2(015) - 02

1 2 3 4 5 6 7

1 BASIC PART NUMBER
- **TX07** Jam nut receptacle

2 MATERIAL & FINISH
- **N** Aluminum, electroless nickel
- **W** Aluminum, olive drab cadmium
- **K** Stainless steel, passivated (firewall)

3 SHELL SIZE & INSERT ARRANGEMENT
- See Insert Arrangement Selection table, p. B-19

4 CONTACT STYLE
- **P** Pin
- **S** Socket

5 ALTERNATE KEYING
- **N** NORMAL or A, B, C, D, E

6 OPTIONAL BACKSHELL KIT (OMIT FOR NONE)
- **B2** Straight strain relief (self-locking), p. B-35
- **R2( )** Straight EMI/RFI environmental, p. B-37
- (Add dash number for appropriate shell size, see p. B-37)
- **K2** Boot adapter, p. B-49, & straight shrink boot, p. B-47

7 OPTIONAL ACCESSORY KIT (OMIT FOR NONE)
- **02** Protective cover

Note: See part builder (p. B-17) for additional kit options.

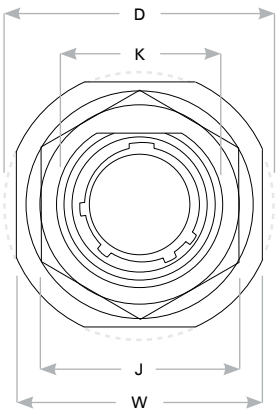
TX07 Cross-Reference & Compatibility

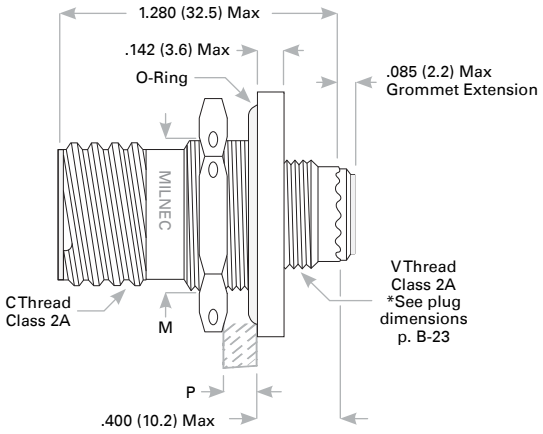
Compatible Brands	Equivalents	Mates
MIL-DTL-38999 Series III	D38999/24	D38999/26
Aero / Conesys	AE324	AE326
Amphenol	TV07, TVPS07	TV06, TVS06, CTV06, CTVS06
Deutsch	DTS24	DTS26
ITT Cannon	KJA7	KJA6
Souriau	8D7	8D5, 8DS06G

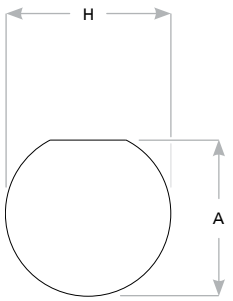
Receptacle Dimensions

Shell Size	Military Shell Size	W ±.016 (0.4)	D	K	J Max	C Thread Class 2A	M	P Max Rear Panel‡	H	A
9	A	1.062 (27.0)	1.199 (30.5)	.697 (17.7)	.945 (24.0)	.6250-0.1P-0.3L-TS	.669 (17.0)	.125 (3.2)	.700 (17.8)	.670 (17.0)
11	B	1.250 (31.8)	1.386 (35.2)	.822 (20.9)	1.063 (27.0)	.7500-0.1P-0.3L-TS	.769 (19.5)	.125 (3.2)	.825 (21.0)	.771 (19.6)
13	C	1.375 (34.9)	1.511 (38.4)	1.007 (25.6)	1.260 (32.0)	.8750-0.1P-0.3L-TS	.955 (24.3)	.125 (3.2)	1.010 (25.7)	.955 (24.3)
15	D	1.500 (38.1)	1.636 (41.6)	1.134 (28.8)	1.417 (36.0)	1.0000-0.1P-0.3L-TS	1.084 (27.5)	.125 (3.2)	1.135 (28.8)	1.085 (27.6)
17	E	1.625 (41.3)	1.761 (44.7)	1.259 (32.0)	1.457 (37.0)	1.1875-0.1P-0.3L-TS	1.208 (30.7)	.125 (3.2)	1.260 (32.0)	1.210 (30.7)
19	F	1.812 (46.0)	1.949 (49.5)	1.384 (35.2)	1.614 (41.0)	1.2500-0.1P-0.3L-TS	1.333 (33.9)	.125 (3.2)	1.385 (35.2)	1.335 (33.9)
21	G	1.938 (49.2)	2.073 (52.7)	1.507 (38.3)	1.811 (46.0)	1.3750-0.1P-0.3L-TS	1.459 (37.1)	.125 (3.2)	1.510 (38.4)	1.460 (37.1)
23	H	2.062 (52.4)	2.199 (55.9)	1.634 (41.5)	1.969 (50.0)	1.5000-0.1P-0.3L-TS	1.575 (40.0)	.125 (3.2)	1.635 (41.5)	1.585 (40.3)
25	J	2.188 (55.6)	2.323 (59.0)	1.759 (44.7)	2.017 (51.2)	1.6250-0.1P-0.3L-TS	1.709 (43.4)	.125 (3.2)	1.760 (44.7)	1.710 (43.4)

Dimensions are in inches (mm). ‡ Max panel thickness will ensure proper coupling clearance.







Panel Cutout

TX01 N 13-35 S N - R2(015) - 02

1 2 3 4 5 6 7

1. **BASIC PART NUMBER**
   - **TX01** Cable mount receptacle
2. **MATERIAL & FINISH**
   - **N** Aluminum, electroless nickel
   - **W** Aluminum, olive drab
   - **K** Stainless steel, passivated (firewall)
3. **SHELL SIZE & INSERT ARRANGEMENT**
   - See Insert Arrangement Selection table, p. B-19
4. **CONTACT STYLE**
   - **P** Pin
   - **S** Socket
5. **ALTERNATE KEYING**
   - **N** NORMAL or A, B, C, D, E
6. **OPTIONAL BACKSHELL KIT** (OMIT FOR NONE)
   - **B2** Straight strain relief (self-locking), p. B-35
   - **R2( )** Straight EMI/RFI environmental, p. B-37
   - (Add dash number for appropriate shell size, see p. B-37)
   - **K2** Boot adapter, p. B-49, & straight shrink boot, p. B-47
7. **OPTIONAL ACCESSORY KIT** (OMIT FOR NONE)
   - **02** Protective cover

Note: See part builder (p. B-17) for additional kit options.

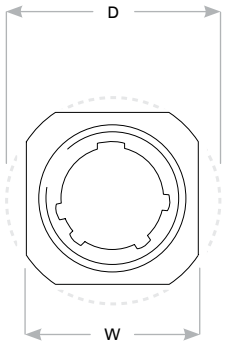
TX01 Compatibility

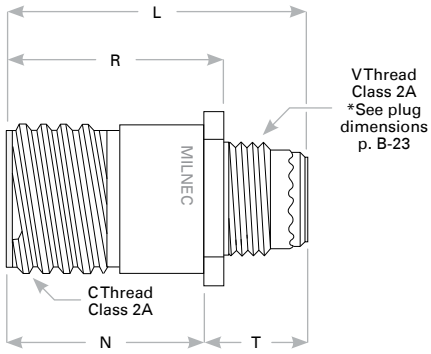
Compatible Brands	Mates
MIL-DTL-38999 Series III	D38999/26
Aero / Conesys	AE326
Amphenol	TV06, TVS06, CTV06, CTVS06
Deutsch	DTS26
ITT Cannon	KJA6
Souriau	8D5, 8DS06G

Receptacle Dimensions

Shell Size	Military Shell Size	W	D	L	R	N	T	C Thread Class 2A
9	A	.675 (17.1)	.812 (20.6)	1.240 (31.5)	.905 (23.0)	.820 (20.8)	.469 (11.9)	.6250-0.1P-0.3L-TS-2A
11	B	.800 (20.3)	.905 (23.0)	1.240 (31.5)	.905 (23.0)	.820 (20.8)	.469 (11.9)	.7500-0.1P-0.3L-TS-2A
13	C	.925 (23.5)	1.093 (27.8)	1.240 (31.5)	.905 (23.0)	.820 (20.8)	.469 (11.9)	.8750-0.1P-0.3L-TS-2A
15	D	1.050 (26.7)	1.219 (31.0)	1.240 (31.5)	.905 (23.0)	.820 (20.8)	.469 (11.9)	1.0000-0.1P-0.3L-TS-2A
17	E	1.238 (31.4)	1.375 (34.9)	1.240 (31.5)	.905 (23.0)	.820 (20.8)	.469 (11.9)	1.1875-0.1P-0.3L-TS-2A
19	F	1.300 (33.0)	1.469 (37.3)	1.240 (31.5)	.905 (23.0)	.820 (20.8)	.469 (11.9)	1.2500-0.1P-0.3L-TS-2A
21	G	1.425 (36.2)	1.625 (41.3)	1.240 (31.5)	.905 (23.0)	.790 (20.1)	.500 (12.7)	1.3750-0.1P-0.3L-TS-2A
23	H	1.550 (39.4)	1.750 (44.5)	1.240 (31.5)	.905 (23.0)	.790 (20.1)	.500 (12.7)	1.5000-0.1P-0.3L-TS-2A
25	J	1.675 (42.5)	1.875 (47.6)	1.240 (31.5)	.905 (23.0)	.790 (20.1)	.500 (12.7)	1.6250-0.1P-0.3L-TS-2A

Dimensions are in inches (mm).





Box Mount Receptacle (Hermetic)

TX Series • MIL-DTL-38999 Series III Style Connectors

TX12 Compatibility

Compatible Brands	Mates
MIL-DTL-38999 Series III	D38999/26
Aero / Conesys	AE326
Amphenol	TV06, TVS06, CTV06, CTVS06
Deutsch	DTS26
ITT Cannon	KJA6
Souriau	8D5, 8DS06G

TX12 HA 9-98 P N - 03

1 2 3 4 5 6

1 BASIC PART NUMBER

TX12 Hermetic box mount receptacle
Helium leakage < 1.0 x10^{-7} cc^3/sec at
15 psi (1.1 kg/cm^2). Insert rated to 14,000 psi
(984 kg/cm^2) when precision welded or soldered.

2 MATERIAL & FINISH

H Carbon steel, tin plating over nickel
HA 316L type stainless steel, passivated
HB 316L type stainless steel, electrodeposited nickel
HG Same as HB, for space-grade applications

3 SHELL SIZE & INSERT ARRANGEMENT

See Insert Arrangement Selection table, p. B-19
(Verify hermetic availability on table)

4 CONTACT STYLE

P Pin only, gold plated, solder cup termination
H* Socket, gold plated, solder cup termination
(PC tail contacts available, contact your authorized distributor)

5 ALTERNATE KEYING

N NORMAL or A, B, C, D, E

6 OPTIONAL ACCESSORY KIT (OMIT FOR NONE)

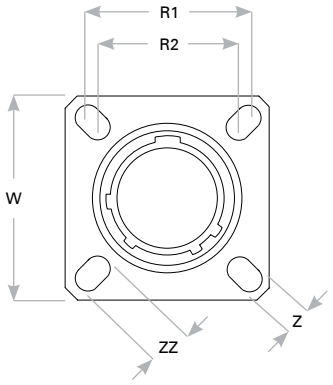
02 Protective cover + mounting gasket
03 02 kit + mounting bracket + sealing screws

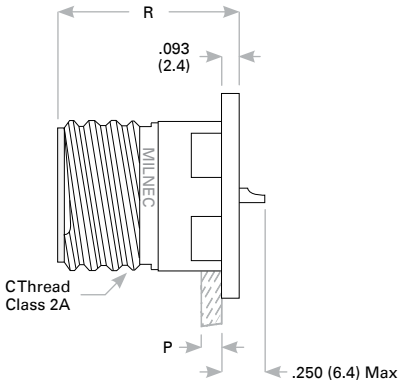
* Please consult an authorized distributor for lead time and minimum quantity requirements.

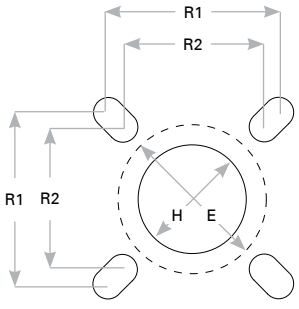
Receptacle Dimensions

Shell Size	Military Shell Size	W	ZZ	Z	R	C Thread Class 2A	P Max Rear Panel‡	R1	R2	H Front Mount	E Rear Mount
9	A	.938 (23.8)	.216 (5.5)	.128 (3.3)	.913 (23.2)	.6250-0.1P-0.3L-TS	.234 (5.9)	.719 (18.3)	.594 (15.1)	.510 (13.0)	.650 (16.5)
11	B	1.031 (26.2)	.194 (4.9)	.128 (3.3)	.913 (23.2)	.7500-0.1P-0.3L-TS	.234 (5.9)	.812 (20.6)	.719 (18.3)	.620 (15.7)	.800 (20.3)
13	C	1.125 (28.6)	.194 (4.9)	.128 (3.3)	.913 (23.2)	.8750-0.1P-0.3L-TS	.234 (5.9)	.906 (23.0)	.812 (20.6)	.740 (18.8)	.910 (23.1)
15	D	1.219 (31.0)	.173 (4.3)	.128 (3.3)	.913 (23.2)	1.0000-0.1P-0.3L-TS	.234 (5.9)	.969 (24.6)	.906 (23.0)	.900 (22.9)	1.040 (26.4)
17	E	1.312 (33.3)	.194 (4.9)	.128 (3.3)	.913 (23.2)	1.1875-0.1P-0.3L-TS	.234 (5.9)	1.062 (27.0)	.969 (24.6)	1.010 (25.7)	1.210 (30.7)
19	F	1.438 (36.5)	.194 (4.9)	.128 (3.3)	.913 (23.2)	1.2500-0.1P-0.3L-TS	.234 (5.9)	1.156 (29.4)	1.062 (27.0)	1.130 (28.7)	1.280 (32.5)
21	G	1.562 (39.7)	.194 (4.9)	.128 (3.3)	.913 (23.2)	1.3750-0.1P-0.3L-TS	.234 (5.9)	1.250 (31.8)	1.156 (29.4)	1.250 (31.8)	1.410 (35.8)
23	H	1.688 (42.9)	.242 (6.1)	.154 (3.9)	.913 (23.2)	1.5000-0.1P-0.3L-TS	.234 (5.9)	1.375 (34.9)	1.250 (31.8)	1.360 (34.5)	1.530 (38.9)
25	J	1.812 (46.0)	.242 (6.1)	.154 (3.9)	.913 (23.2)	1.6250-0.1P-0.3L-TS	.234 (5.9)	1.500 (38.1)	1.375 (34.9)	1.470 (37.3)	1.660 (42.2)

Dimensions are in inches (mm). ‡ Max panel thickness applies only to rear mount applications to ensure proper coupling clearance.







Panel Cutout

Kits with 03 accessory option will use R1 mounting hole positions.

Rev. 2235

TX13 HA 13-4 P N - 02

1 2 3 4 5 6

1 BASIC PART NUMBER

TX13 Hermetic jam nut receptacle
Helium leakage < 1.0 x10^{-7} cc^3/sec at
15 psi (1.1 kg/cm^2). Insert rated to 14,000 psi
(984 kg/cm^2) when precision welded or soldered.

2 MATERIAL & FINISH

H Carbon steel, tin plating over nickel
HA 316L type stainless steel, passivated
HB 316L type stainless steel, electrodeposited nickel
HG Same as HB, for space-grade applications

3 SHELL SIZE & INSERT ARRANGEMENT

See Insert Arrangement Selection table, p. B-19
(Verify hermetic availability on table)

4 CONTACT STYLE

P Pin only, gold plated, solder cup termination
H* Socket, gold plated, solder cup termination
(PC tail contacts available, contact your authorized distributor)

5 ALTERNATE KEYING

N NORMAL or A, B, C, D, E

6 OPTIONAL ACCESSORY KIT (OMIT FOR NONE)

02 Protective cover

* Please consult an authorized distributor for lead time and minimum quantity requirements.

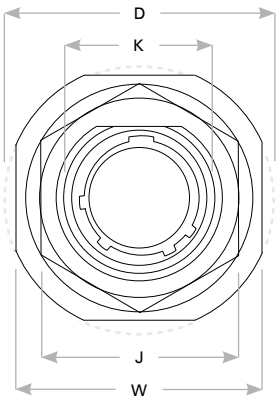
TX13 Compatibility

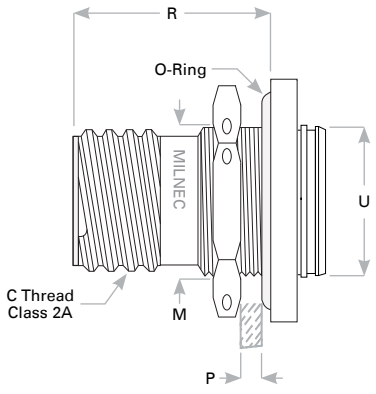
Compatible Brands	Mates
MIL-DTL-38999 Series III	D38999/26
Aero / Conesys	AE326
Amphenol	TV06, TVS06, CTV06, CTVS06
Deutsch	DTS26
ITT Cannon	KJA6
Souriau	8D5, 8DS06G

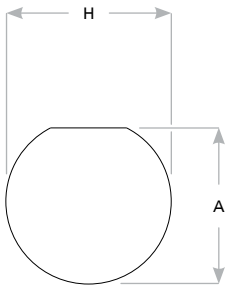
Receptacle Dimensions

Shell Size	Military Shell Size	W	D	K	J Max	R	M	U	C Thread Class 2A	P Max Rear Panel‡	H	A
9	A	1.062 (27.0)	1.199 (30.5)	.697 (17.7)	.945 (24.0)	.871 (22.1)	.669 (17.0)	.642 (16.3)	.6250-0.1P-0.3L-TS	.125 (3.2)	.700 (17.8)	.670 (17.0)
11	B	1.250 (31.8)	1.386 (35.2)	.822 (20.9)	1.063 (27.0)	.871 (22.1)	.769 (19.5)	.766 (19.5)	.7500-0.1P-0.3L-TS	.125 (3.2)	.825 (21.0)	.771 (19.6)
13	C	1.375 (34.9)	1.511 (38.4)	1.007 (25.6)	1.260 (32.0)	.878 (22.3)	.955 (24.3)	.892 (22.7)	.8750-0.1P-0.3L-TS	.125 (3.2)	1.010 (25.7)	.955 (24.3)
15	D	1.500 (38.1)	1.636 (41.6)	1.134 (28.8)	1.417 (36.0)	.878 (22.3)	1.084 (27.5)	1.018 (25.9)	1.0000-0.1P-0.3L-TS	.125 (3.2)	1.135 (28.8)	1.085 (27.6)
17	E	1.625 (41.3)	1.761 (44.7)	1.259 (32.0)	1.457 (37.0)	.878 (22.3)	1.208 (30.7)	1.142 (29.0)	1.1875-0.1P-0.3L-TS	.125 (3.2)	1.260 (32.0)	1.210 (30.7)
19	F	1.182 (30.0)	1.949 (49.5)	1.384 (35.2)	1.614 (41.0)	.878 (22.3)	1.333 (33.9)	1.268 (32.2)	1.2500-0.1P-0.3L-TS	.125 (3.2)	1.385 (35.2)	1.335 (33.9)
21	G	1.938 (49.2)	2.073 (52.7)	1.507 (38.3)	1.811 (46.0)	.878 (22.3)	1.459 (37.1)	1.392 (35.4)	1.3750-0.1P-0.3L-TS	.125 (3.2)	1.510 (38.4)	1.460 (37.1)
23	H	2.062 (52.4)	2.199 (55.9)	1.634 (41.5)	1.969 (50.0)	.878 (22.3)	1.575 (40.0)	1.518 (38.6)	1.5000-0.1P-0.3L-TS	.125 (3.2)	1.635 (41.5)	1.585 (40.3)
25	J	2.188 (55.6)	2.323 (59.0)	1.759 (44.7)	2.017 (51.2)	.878 (22.3)	1.709 (43.4)	1.642 (41.7)	1.6250-0.1P-0.3L-TS	.125 (3.2)	1.760 (44.7)	1.710 (43.4)

Dimensions are in inches (mm). ‡ Max panel thickness will ensure proper coupling clearance.







Panel Cutout

Rev. 2235

TX

Solder Mount Receptacle (Hermetic)

TX Series • MIL-DTL-38999 Series III Style Connectors

TX19 Compatibility

Compatible Brands	Mates
MIL-DTL-38999 Series III	D38999/26
Aero / Conesys	AE326
Amphenol	TV06, TVS06, CTV06, CTVS06
Deutsch	DTS26
ITT Cannon	KJA6
Souriau	8D5, 8DS06G

TX19 HA 11-99 P N - 02

1 2 3 4 5 6

1 BASIC PART NUMBER

TX19 Hermetic solder mount receptacle
Helium leakage < 1.0 x10^{-7} cc^3/sec at
15 psi (1.1 kg/cm^2). Insert rated to 14,000 psi
(984 kg/cm^2) when precision welded or soldered.

2 MATERIAL & FINISH

H Carbon steel, tin plating over nickel
HA 316L type stainless steel, passivated
HB 316L type stainless steel, electrodeposited nickel
HG Same as HB, for space-grade applications

3 SHELL SIZE & INSERT ARRANGEMENT

See Insert Arrangement Selection table, p. B-19
(Verify hermetic availability on table)

4 CONTACT STYLE

P Pin only, gold plated, solder cup termination
H* Socket, gold plated, solder cup termination
(PC tail contacts available, contact your authorized distributor)

5 ALTERNATE KEYING

N NORMAL or A, B, C, D, E

6 OPTIONAL ACCESSORY KIT (OMIT FOR NONE)

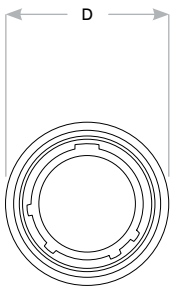
02 Protective cover

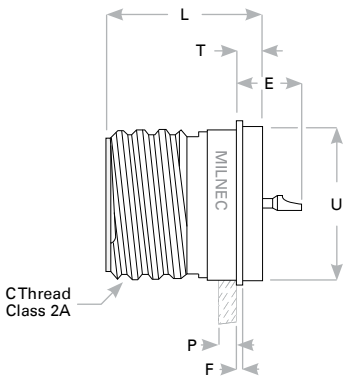
* Please consult an authorized distributor for lead time and minimum quantity requirements.

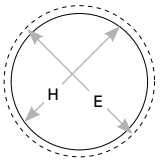
Receptacle Dimensions

Shell Size	Military Shell Size	D	C Thread Class 2A	L	F	T	E	U	P Max Rear Panel‡	H Front Mount	E Rear Mount
9	A	.750 (19.1)	.6250-0.1P-0.3L-TS	.806 (20.5)	.031 (0.8)	.125 (3.2)	.375 (9.5)	.672 (17.1)	.234 (5.9)	.702 (17.8)	.650 (16.5)
11	B	.844 (21.4)	.7500-0.1P-0.3L-TS	.806 (20.5)	.031 (0.8)	.125 (3.2)	.375 (9.5)	.781 (19.8)	.234 (5.9)	.811 (20.6)	.800 (20.3)
13	C	.969 (24.6)	.8750-0.1P-0.3L-TS	.806 (20.5)	.031 (0.8)	.125 (3.2)	.375 (9.5)	.906 (23.0)	.234 (5.9)	.936 (23.8)	.910 (23.1)
15	D	1.094 (27.8)	1.0000-0.1P-0.3L-TS	.806 (20.5)	.031 (0.8)	.125 (3.2)	.375 (9.5)	1.031 (26.2)	.234 (5.9)	1.061 (27.0)	1.040 (26.4)
17	E	1.218 (30.9)	1.1875-0.1P-0.3L-TS	.806 (20.5)	.031 (0.8)	.125 (3.2)	.375 (9.5)	1.156 (29.4)	.234 (5.9)	1.186 (30.1)	1.210 (30.7)
19	F	1.312 (33.3)	1.2500-0.1P-0.3L-TS	.806 (20.5)	.031 (0.8)	.125 (3.2)	.375 (9.5)	1.250 (31.8)	.234 (5.9)	1.280 (32.5)	1.280 (32.5)
21	G	1.438 (36.5)	1.3750-0.1P-0.3L-TS	.806 (20.5)	.031 (0.8)	.125 (3.2)	.375 (9.5)	1.375 (34.9)	.234 (5.9)	1.405 (35.7)	1.410 (35.8)
23	H	1.563 (39.7)	1.5000-0.1P-0.3L-TS	.838 (21.3)	.031 (0.8)	.156 (4.0)	.375 (9.5)	1.500 (38.1)	.234 (5.9)	1.530 (38.9)	1.530 (38.9)
25	J	1.688 (42.9)	1.6250-0.1P-0.3L-TS	.838 (21.3)	.031 (0.8)	.156 (4.0)	.375 (9.5)	1.625 (41.3)	.234 (5.9)	1.655 (42.0)	1.660 (42.2)

Dimensions are in inches (mm). ‡ Max panel thickness applies only to rear mount applications to ensure proper coupling clearance.







Panel Cutout

Rev. 2235

TXAS N 23-35 P N - 02

1 2 3 4 5 6

1. **BASIC PART NUMBER**
   - **TXAS** Connector saver
2. **MATERIAL & FINISH**
   - **N** Aluminum, electroless nickel
   - **W** Aluminum, olive drab
3. **SHELL SIZE & INSERT ARRANGEMNT**
   - See Insert Arrangement Selection table, p. B-19
4. **CONTACT STYLE**
   - **P** Pins on plug side (sockets on recept. side)
   - **S** Sockets on plug side (pins on recept. side)
5. **ALTERNATE KEYING**
   - **N** NORMAL or A, B, C, D, E
6. **OPTIONAL ACCESSORY KIT** (OMIT FOR NONE)
   - **02** Protective covers (2x)

Note: See part builder (p. B-17) for additional kit options.

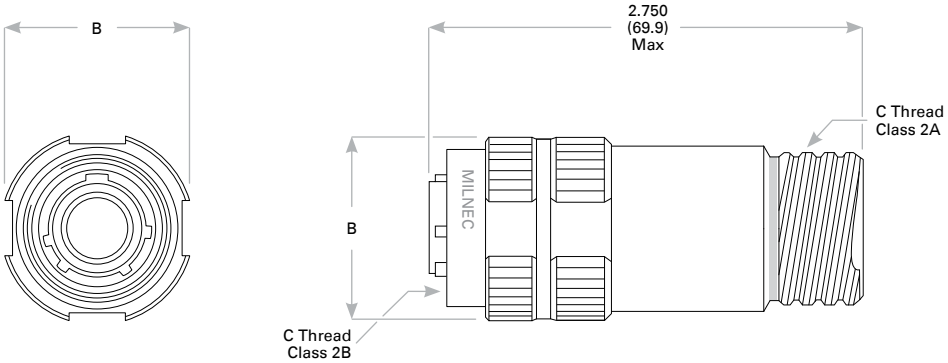
TXAS Compatibility

Compatible Brands	Plug Side Mates	Receptacle Side Mates
MIL-DTL-38999 Series III	D38999/20, D38999/24	D38999/26
Aero / Conesys	AE320, AE324	AE326
Amphenol	TVP00, TVPS00, TVP07, TVPS07	TV06, TVS06, CTV06, CTVS06
Deutsch	DTS20, DTS24	DTS26
ITT Cannon	KJA0, KJA7	KJA6
Souriau	8D0, 8D1, 8D7	8D5, 8DS06G

Connector Saver Dimensions

Shell Size	Military Shell Size	C Thread Class 2A/B	B
9	**A**	.6250-0.1P-0.3L-TS-2	.859 (21.8)
11	**B**	.7500-0.1P-0.3L-TS-2	.969 (24.6)
13	**C**	.8750-0.1P-0.3L-TS-2	1.141 (29.0)
15	**D**	1.0000-0.1P-0.3L-TS-2	1.266 (32.2)
17	**E**	1.1875-0.1P-0.3L-TS-2	1.391 (35.3)
19	**F**	1.2500-0.1P-0.3L-TS-2	1.500 (38.1)
21	**G**	1.3750-0.1P-0.3L-TS-2	1.625 (41.3)
23	**H**	1.5000-0.1P-0.3L-TS-2	1.750 (44.5)
25	**J**	1.6250-0.1P-0.3L-TS-2	1.875 (47.6)

Dimensions are in inches (mm).



Plug End **Receptacle End**

Rev. 2235

Thru-Bulkhead Receptacle

TX Series • MIL-DTL-38999 Series III Style Connectors

TX22 N 15-35 S 1 N - 03

1 2 3 4 5 6 7

1 BASIC PART NUMBER
- **TX22** Thru-bulkhead receptacle

2 MATERIAL & FINISH
- **N** Aluminum, electroless nickel
- **W** Aluminum, olive drab cadmium
- **K** Stainless steel, passivated (firewall)

3 SHELL SIZE & INSERT ARRANGEMENT
See Insert Arrangement Selection table, p. B-19

4 CONTACT STYLE
- **P** Pins on flange side, sockets opposite
- **S** Sockets on flange side, pins opposite

5 PANEL RANGE
- **1** .063 (1.6) Min — .125 (3.2) Max
- **2** .063 (1.6) Min — .250 (6.4) Max
- **3** .063 (1.6) Min — .500 (12.7) Max

6 ALTERNATE KEYING
- **N** NORMAL or A, B, C, D, E

7 OPTIONAL ACCESSORY KIT (OMIT FOR NONE)
- **02** Protective cover (2x) + mounting gasket
- **03** 02 kit + mounting bracket + sealing screws

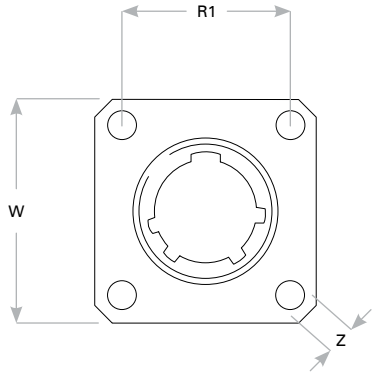
TX22 Compatibility

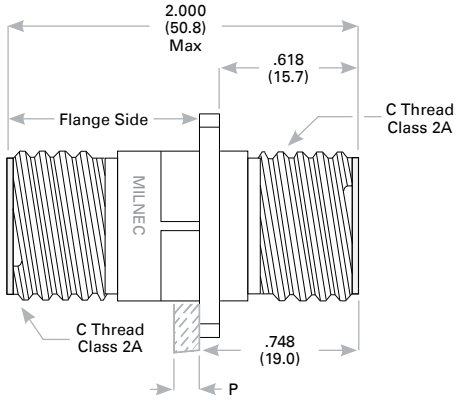
Compatible Brands	Mates
MIL-DTL-38999 Series III	D38999/26
Aero / Conesys	AE326
Amphenol	TV06, TVS06, CTV06, CTVS06
Deutsch	DTS26
ITT Cannon	KJA6
Souriau	8D5, 8DS06G

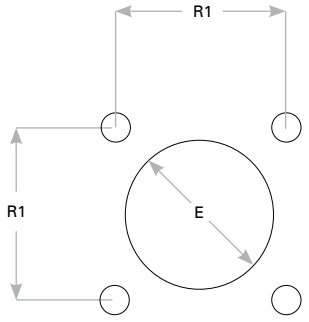
Receptacle Dimensions

Shell Size	Military Shell Size	C Thread Class 2A	W	Z	R1	E Feed-Thru Mount	P Max Rear Panel‡
9	A	.6250-0.1 P-0.3L-2A	.938 (23.8)	.128 (3.3)	.719 (18.3)	.656 (16.7)	See Option 5 for Panel Range
11	B	.7500-0.1 P-0.3L-2A	1.031 (26.2)	.128 (3.3)	.812 (20.6)	.796 (20.2)	
13	C	.8750-0.1 P-0.3L-2A	1.125 (28.6)	.128 (3.3)	.906 (23.0)	.922 (23.4)	
15	D	1.0000-0.1 P-0.3L-2A	1.219 (31.0)	.128 (3.3)	.969 (24.6)	1.047 (26.6)	
17	E	1.1875-0.1 P-0.3L-2A	1.312 (33.3)	.128 (3.3)	1.062 (27.0)	1.219 (31.0)	
19	F	1.2500-0.1 P-0.3L-2A	1.438 (36.5)	.128 (3.3)	1.156 (29.4)	1.297 (32.9)	
21	G	1.3750-0.1 P-0.3L-2A	1.562 (39.7)	.128 (3.3)	1.250 (31.8)	1.422 (36.1)	
23	H	1.5000-0.1 P-0.3L-2A	1.688 (42.9)	.156 (4.0)	1.375 (34.9)	1.547 (39.3)	
25	J	1.6250-0.1 P-0.3L-2A	1.812 (46.0)	.156 (4.0)	1.500 (38.1)	1.672 (42.5)	

Dimensions are in inches (mm). ‡ Max panel thickness will ensure proper coupling clearance.







Panel Cutout

Kits with 03 accessory option will use R1 mounting hole positions.

Rev. 2235

TX24 N 13-98 P 1 N - 02

1 2 3 4 5 6 7

1 BASIC PART NUMBER
- **TX24** Jam nut thru-bulkhead receptacle

2 MATERIAL & FINISH
- **N** Aluminum, electroless nickel
- **W** Aluminum, olive drab cadmium
- **K** Stainless steel, passivated (firewall)

3 SHELL SIZE & INSERT ARRANGEMENT
See Insert Arrangement Selection table, p. B-19

4 CONTACT STYLE
- **P** Pins on jam nut side, sockets opposite
- **S** Sockets on jam nut side, pins opposite

5 PANEL RANGE
- **1** .063 (1.6) Min — .125 (3.2) Max
- **2** .063 (1.6) Min — .250 (6.4) Max
- **3** .063 (1.6) Min — .500 (12.7) Max

6 ALTERNATE KEYING
- **N** NORMAL or A, B, C, D, E

7 OPTIONAL ACCESSORY KIT (OMIT FOR NONE)
- **02** Protective cover (2x)

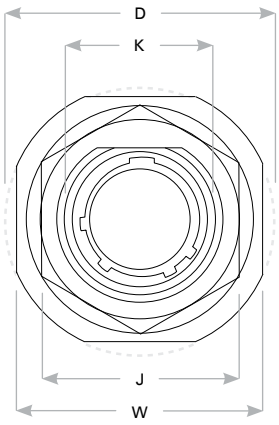
TX24 Compatibility

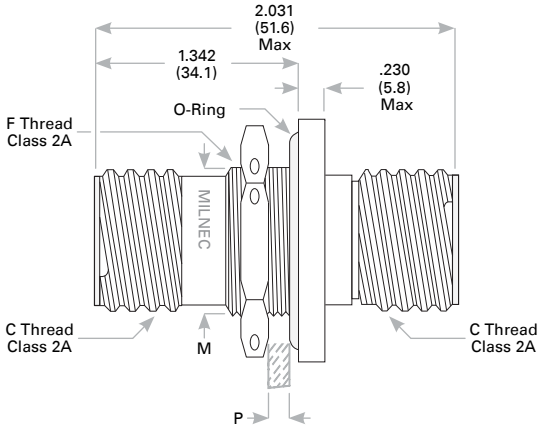
Compatible Brands	Mates
MIL-DTL-38999 Series III	D38999/26
Aero / Conesys	AE326
Amphenol	TV06, TVS06, CTV06, CTVS06
Deutsch	DTS26
ITT Cannon	KJA6
Souriau	8D5, 8DS06G

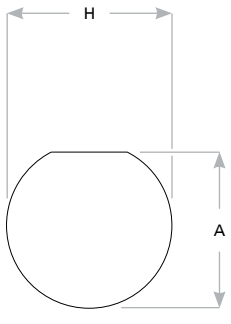
Receptacle Dimensions

Shell Size	Military Shell Size	C Thread Class 2A	J Max	W	D	K	F Thread Class 2A	H	A	P Max Panel‡
9	A	.6250-0.1P-0.3L-TS	.945 (24.0)	1.090 (27.7)	1.199 (30.5)	.697 (17.7)	.6875-24 UNEF	.700 (17.8)	.670 (17.0)	See Option 5 for Panel Range
11	B	.7500-0.1P-0.3L-TS	1.063 (27.0)	1.280 (32.5)	1.386 (35.2)	.822 (20.9)	.8125-20 UNEF	.825 (21.0)	.771 (19.6)	
13	C	.8750-0.1P-0.3L-TS	1.260 (32.0)	1.400 (35.6)	1.511 (38.4)	1.007 (25.6)	1.000-20 UNEF	1.010 (25.7)	.955 (24.3)	
15	D	1.0000-0.1P-0.3L-TS	1.417 (36.0)	1.530 (38.9)	1.636 (41.6)	1.134 (28.8)	1.125-18 UNEF	1.135 (28.8)	1.085 (27.6)	
17	E	1.1875-0.1P-0.3L-TS	1.457 (37.0)	1.660 (42.2)	1.761 (44.7)	1.259 (32.0)	1.250-18 UNEF	1.260 (32.0)	1.210 (30.7)	
19	F	1.2500-0.1P-0.3L-TS	1.614 (41.0)	1.840 (46.7)	1.949 (49.5)	1.384 (35.2)	1.375-18 UNEF	1.385 (35.2)	1.335 (33.9)	
21	G	1.3750-0.1P-0.3L-TS	1.811 (46.0)	1.970 (50.0)	2.073 (52.7)	1.507 (38.3)	1.500-18 UNEF	1.510 (38.4)	1.460 (37.1)	
23	H	1.5000-0.1P-0.3L-TS	1.969 (50.0)	2.090 (53.1)	2.199 (55.9)	1.634 (41.5)	1.625-18 UNEF	1.635 (41.5)	1.585 (40.3)	
25	J	1.6250-0.1P-0.3L-TS	2.017 (51.2)	2.210 (56.1)	2.323 (59.0)	1.759 (44.7)	1.750-18 UNS	1.760 (44.7)	1.710 (43.4)	

Dimensions are in inches (mm). ‡ Max panel thickness will ensure proper coupling clearance.







Panel Cutout

Jam Nut Thru-Bulkhead (Hermetic)

TX Series • MIL-DTL-38999 Series III Style Connectors

TX27 Compatibility

Compatible Brands	Mates
MIL-DTL-38999 Series III	D38999/26
Aero / Conesys	AE326
Amphenol	TV06, TVS06, CTV06, CTVS06
Deutsch	DTS26
ITT Cannon	KJA6
Souriau	8D5, 8DS06G

TX27 HA 13-98 P 1 N - 02

1 2 3 4 5 6 7

1 BASIC PART NUMBER

TX27 Hermetic jam nut thru-bulkhead receptacle Helium leakage < 1.0 x10^{-7} cc^3/sec at 15 psi (1.1 kg/cm^2). Insert rated to 14,000 psi (984 kg/cm^2) when precision welded or soldered.

2 MATERIAL & FINISH

HA 316L type stainless steel, passivated

HB 316L type stainless steel, electrodeposited nickel

3 SHELL SIZE & INSERT ARRANGEMENT

See Insert Arrangement Selection table, p. B-19

4 CONTACT STYLE

P Pins on jam nut side, sockets opposite

S Sockets on jam nut side, pins opposite

5 PANEL RANGE

1 .063 (1.6) Min — .125 (3.2) Max

2 .063 (1.6) Min — .250 (6.4) Max

3 .063 (1.6) Min — .500 (12.7) Max

6 ALTERNATE KEYING

N NORMAL or A, B, C, D, E

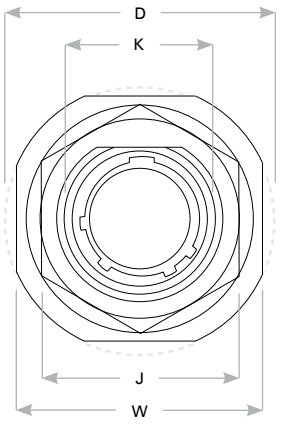
7 OPTIONAL ACCESSORY KIT (OMIT FOR NONE)

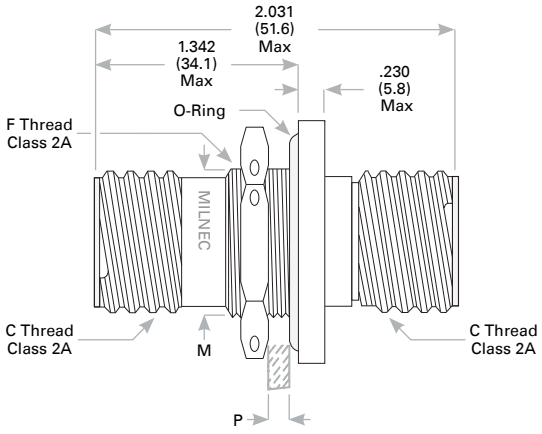
02 Protective cover (2x)

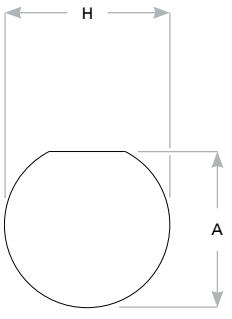
Receptacle Dimensions

Shell Size	Military Shell Size	C Thread Class 2A	J Max	W	D	K	F Thread Class 2A	H	A	P Max Panel‡
9	A	.6250-0.1P-0.3L-TS	.945 (24.0)	1.090 (27.7)	1.199 (30.5)	.697 (17.7)	.6875-24 UNEF	.700 (17.8)	.670 (17.0)	See Option 5 for Panel Range
11	B	.7500-0.1P-0.3L-TS	1.063 (27.0)	1.280 (32.5)	1.386 (35.2)	.822 (20.9)	.8125-20 UNEF	.825 (21.0)	.771 (19.6)	
13	C	.8750-0.1P-0.3L-TS	1.260 (32.0)	1.400 (35.6)	1.511 (38.4)	1.007 (25.6)	1.000-20 UNEF	1.010 (25.7)	.955 (24.3)	
15	D	1.0000-0.1P-0.3L-TS	1.417 (36.0)	1.530 (38.9)	1.636 (41.6)	1.134 (28.8)	1.125-18 UNEF	1.135 (28.8)	1.085 (27.6)	
17	E	1.1875-0.1P-0.3L-TS	1.457 (37.0)	1.660 (42.2)	1.761 (44.7)	1.259 (32.0)	1.250-18 UNEF	1.260 (32.0)	1.210 (30.7)	
19	F	1.2500-0.1P-0.3L-TS	1.614 (41.0)	1.840 (46.7)	1.949 (49.5)	1.384 (35.2)	1.375-18 UNEF	1.385 (35.2)	1.335 (33.9)	
21	G	1.3750-0.1P-0.3L-TS	1.811 (46.0)	1.970 (50.0)	2.073 (52.7)	1.507 (38.3)	1.500-18 UNEF	1.510 (38.4)	1.460 (37.1)	
23	H	1.5000-0.1P-0.3L-TS	1.969 (50.0)	2.090 (53.1)	2.199 (55.9)	1.634 (41.5)	1.625-18 UNEF	1.635 (41.5)	1.585 (40.3)	
25	J	1.6250-0.1P-0.3L-TS	2.017 (51.2)	2.210 (56.1)	2.323 (59.0)	1.759 (44.7)	1.750-18 UNS	1.760 (44.7)	1.710 (43.4)	

Dimensions are in inches (mm). ‡ Max panel thickness will ensure proper coupling clearance.







Panel Cutout

Rev. 2235

CONNECTOR SOLUTIONS FOR THE MODERN BATTLEFIELD

Mil-Spec Reliability with COTS Flexibility

TX Series connectors are built to the MIL-DTL-38999 Series III standard and are compatible with all mil-spec components. They feature self-locking coupling for secure coupling in high-vibration environments, in addition to a wide array of protective accessories and mounting hardware that is unavailable in the mil-spec.

MILNEC® INTERCONNECT SYSTEMS

TXB2 - S - 15 N

1 2 3 4

1 BASIC PART NUMBER

TXB2	Straight strain relief backshell
TXB4	90° strain relief backshell

2 COUPLING STYLE

N	Non-self-locking coupling
S	Self-locking coupling

3 SHELL SIZE

See Strain Relief Dimensions table below

4 MATERIAL & FINISH

N	Aluminum, electroless nickel
W	Aluminum, olive drab cadmium
K	Stainless steel, passivated
G	Aluminum, electroless nickel (space-grade)
M	Composite, electroless nickel (self-locking only)
J	Composite, olive drab cadmium (self-locking only)

Note: See part builder (p. B-17) for additional kit options.

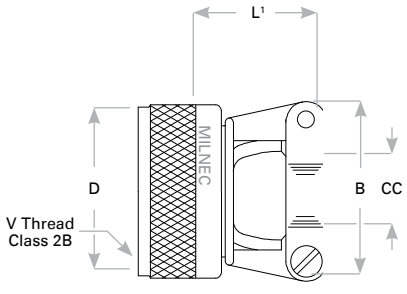
TXB2 Compatibility

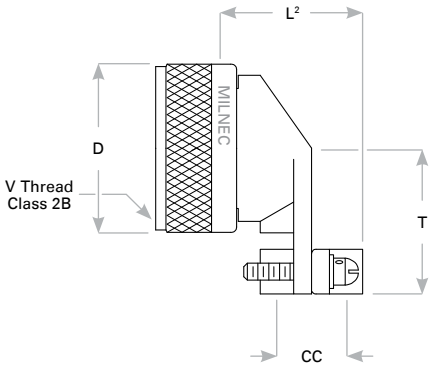
Compatible Brands	Connectors
MIL-DTL-38999 Series III	D38999/20, D38999/24, D38999/26
Aero / Conesys	AE320, AE324, AE326
Amphenol	TVP00, TVPS00, TV06, TVS06, TV07, TVS07
Deutsch	DTS20, DTS24, DTS26
ITT Cannon	KJA0, KJA6, KJA7
Souriau	8D0, 8D1, 8D5, 8D7, 8DS00, 8DS06G, 8DS07

Strain Relief Dimensions

Shell Size	Military Shell Size	D	L¹	L²	T	B	V Thread Class 2B	CC Cable Clearance	
								Min	Max
9	A	.858 (21.8)	.910 (23.1)	1.200 (30.5)	1.000 (25.4)	.850 (21.6)	M12 X 1-6H	.098 (2.5)	.234 (5.9)
11	B	.984 (25.0)	.910 (23.1)	1.200 (30.5)	1.100 (27.9)	.900 (22.9)	M15 X 1-6H	.153 (3.9)	.234 (5.9)
13	C	1.157 (29.4)	1.010 (25.7)	1.400 (35.6)	1.100 (27.9)	1.100 (27.9)	M18 X 1-6H	.190 (4.8)	.328 (8.3)
15	D	1.279 (32.5)	1.060 (26.9)	1.450 (36.8)	1.250 (31.8)	1.150 (29.2)	M22 X 1-6H	.260 (6.6)	.457 (11.6)
17	E	1.406 (35.7)	1.160 (29.5)	1.600 (40.6)	1.300 (33.0)	1.300 (33.0)	M25 X 1-6H	.283 (7.2)	.614 (15.6)
19	F	1.516 (38.5)	1.410 (35.8)	1.700 (43.2)	1.350 (34.3)	1.500 (38.1)	M28 X 1-6H	.325 (8.3)	.634 (16.1)
21	G	1.642 (41.7)	1.510 (38.4)	1.850 (47.0)	1.600 (40.6)	1.600 (40.6)	M31 X 1-6H	.343 (8.7)	.698 (17.7)
23	H	1.768 (44.9)	1.660 (42.2)	1.950 (49.5)	1.750 (44.5)	1.700 (43.2)	M34 X1-6H	.381 (9.7)	.823 (20.9)
25	J	1.889 (48.0)	1.760 (44.7)	2.100 (53.3)	1.850 (47.0)	1.800 (45.7)	M37 X1-6H	.418 (10.6)	.853 (21.7)

Dimensions are in inches (mm).





TXC2 - 15 M

1 2 3

1 BASIC PART NUMBER

TXC2 Straight EMI/RFI env. backshell (self-locking)

TXC4 90° EMI/RFI env. backshell (self-locking)

2 SHELL SIZE

See Backshell Dimensions table below

3 MATERIAL & FINISH

M Composite, electroless nickel

J Composite, olive drab cadmium

Note: See part builder (p. B-17) for additional kit options.

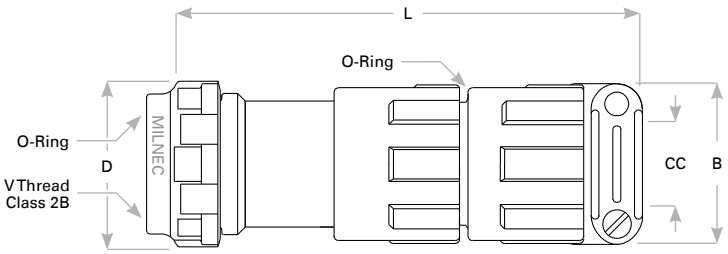
TXC2 Compatibility

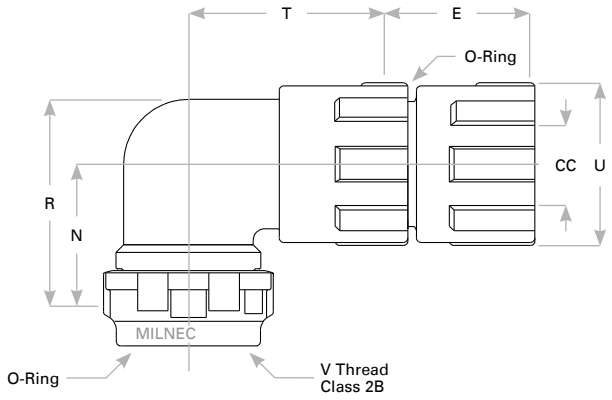
Compatible Brands	Connectors
MIL-DTL-38999 Series III	D38999/20, D38999/24, D38999/26
Aero / Conesys	AE320, AE324, AE326
Amphenol	TVP00, TVPS00, TV06, TVS06, TV07, TVS07
Deutsch	DTS20, DTS24, DTS26
ITT Cannon	KJA0, KJA6, KJA7
Souriau	8D0, 8D1, 8D5, 8D7, 8DS00, 8DS06G, 8DS07

Backshell Dimensions

Shell Size	Military Shell Size	V Thread Class 2B	D	B	R	N	T	E	U	L	CC Cable Clearance Min	CC Cable Clearance Max
9	A	M12 X 1-6H	.858 (21.8)	.940 (23.9)	.880 (22.4)	.690 (17.5)	1.060 (26.9)	.750 (19.1)	.800 (20.3)	2.500 (63.5)	.130 (3.3)	.250 (6.4)
11	B	M15 X 1-6H	.984 (25.0)	1.170 (29.7)	1.000 (25.4)	.750 (19.1)	1.130 (28.7)	.750 (19.1)	.930 (23.6)	2.500 (63.5)	.250 (6.4)	.380 (9.7)
13	C	M18 X 1-6H	1.157 (29.4)	1.280 (32.5)	1.130 (28.7)	.810 (20.6)	1.190 (30.2)	.750 (19.1)	1.060 (26.9)	2.500 (63.5)	.310 (7.9)	.440 (11.2)
15	D	M22 X 1-6H	1.279 (32.5)	1.410 (35.8)	1.310 (33.3)	.880 (22.4)	1.250 (31.8)	.750 (19.1)	1.220 (31.0)	2.500 (63.5)	.500 (12.7)	.630 (15.9)
17	E	M25 X 1-6H	1.406 (35.7)	1.500 (38.1)	1.380 (35.1)	.940 (23.9)	1.310 (33.3)	.750 (19.1)	1.240 (31.5)	2.500 (63.5)	.560 (14.2)	.690 (17.5)
19	F	M28 X 1-6H	1.516 (38.5)	1.560 (39.6)	1.440 (36.6)	.970 (24.6)	1.340 (34.0)	.750 (19.1)	1.370 (34.8)	2.500 (63.5)	.630 (16.0)	.750 (19.1)
21	G	M31 X 1-6H	1.642 (41.7)	1.690 (42.9)	1.630 (41.4)	1.060 (26.9)	1.440 (36.6)	.750 (19.1)	1.490 (37.8)	2.500 (63.5)	.750 (19.1)	.880 (22.2)
23	H	M34 X 1-6H	1.768 (44.9)	1.810 (46.0)	1.750 (44.5)	1.130 (28.7)	1.500 (38.1)	.750 (19.1)	1.620 (41.1)	2.500 (63.5)	.880 (22.4)	1.000 (25.4)
25	J	M37 X 1-6H	1.889 (48.0)	1.910 (48.5)	1.880 (47.8)	1.190 (30.2)	1.560 (39.6)	.750 (19.1)	1.680 (42.7)	2.500 (63.5)	1.000 (25.4)	1.130 (28.6)

Dimensions are in inches (mm).





Rev. 2235

Straight EMI/RFI Env. Backshell

TX Series • MIL-DTL-38999 Series III Style Connectors

TXR2 - 035 N

1 2 3

1 **BASIC PART NUMBER**

TXR2 Straight EMI/RFI environmental backshell

2 **DASH NO.**

See Backshell Dimensions table below

3 **MATERIAL & FINISH**

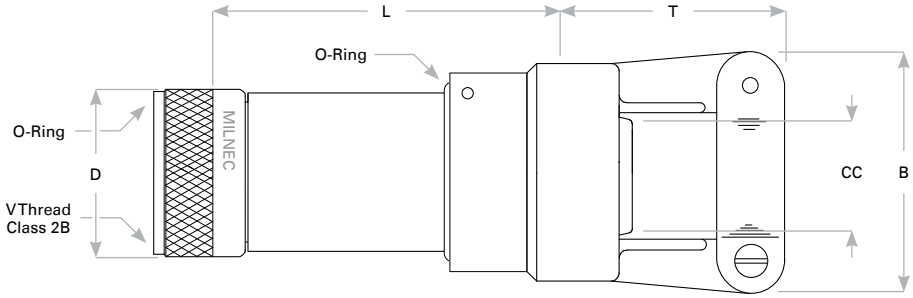
N	Aluminum, electroless nickel
W	Aluminum, olive drab cadmium
G	Aluminum, electroless nickel (space-grade)
K*	Stainless steel, passivated
L*	Stainless steel, electrodeposited nickel

* Please consult an authorized distributor for lead time and minimum quantity requirements.

TXR2 Compatibility

Compatible Brands	Connectors
MIL-DTL-38999 Series III	D38999/20, D38999/24, D38999/26
Aero / Conesys	AE320, AE324, AE326
Amphenol	TVP00, TVPS00, TV06, TVS06, TV07, TVS07
Deutsch	DTS20, DTS24, DTS26
ITT Cannon	KJA0, KJA6, KJA7
Souriau	8D0, 8D1, 8D5, 8D7, 8DS00, 8DS06G, 8DS07

Note: See part builder (p. B-17) for additional kit options.



Backshell Dimensions

Dash No.	Shell Size	Military Shell Size	V Thread Class 2B	D	T	B	L	CC Cable Clearance	
								Min	Max
001	**9**	A	M12 X 1-6H	.750 (19.1)	1.250 (31.8)	.781 (19.8)	1.500 (38.1)	.062 (1.6)	.125 (3.2)
002	**9**	A	M12 X 1-6H	.750 (19.1)	1.250 (31.8)	.781 (19.8)	2.500 (63.5)	.062 (1.6)	.125 (3.2)
003	**9**	A	M12 X 1-6H	.750 (19.1)	1.250 (31.8)	.969 (24.6)	1.500 (38.1)	.125 (3.2)	.250 (6.4)
004	**9**	A	M12 X 1-6H	.750 (19.1)	1.250 (31.8)	.969 (24.6)	2.500 (63.5)	.125 (3.2)	.250 (6.4)
005	**11**	B	M15 X 1-6H	.850 (21.6)	1.250 (31.8)	.781 (19.8)	1.500 (38.1)	.062 (1.6)	.125 (3.2)
006	**11**	B	M15 X 1-6H	.850 (21.6)	1.250 (31.8)	.781 (19.8)	2.500 (63.5)	.062 (1.6)	.125 (3.2)
007	**11**	B	M15 X 1-6H	.850 (21.6)	1.250 (31.8)	.969 (24.6)	1.500 (38.1)	.125 (3.2)	.250 (6.4)
008	**11**	B	M15 X 1-6H	.850 (21.6)	1.250 (31.8)	.969 (24.6)	2.500 (63.5)	.125 (3.2)	.250 (6.4)
009	**11**	B	M15 X 1-6H	.850 (21.6)	1.250 (31.8)	1.062 (27.0)	1.500 (38.1)	.250 (6.4)	.375 (9.5)
010	**11**	B	M15 X 1-6H	.850 (21.6)	1.250 (31.8)	1.062 (27.0)	2.500 (63.5)	.250 (6.4)	.375 (9.5)

Dimensions are in inches (mm).

(Continued on next page)

Rev. 2235

Backshell Dimensions (Continued from previous page)

Dash No.	Shell Size	Military Shell Size	V Thread Class 2B	D	T	B	L	CC Cable Clearance	
								Min	Max
011	13	C	M18 X 1-6H	1.000 (25.4)	1.250 (31.8)	.969 (24.6)	1.500 (38.1)	.125 (3.2)	.250 (6.4)
012	13	C	M18 X 1-6H	1.000 (25.4)	1.250 (31.8)	.969 (24.6)	2.500 (63.5)	.125 (3.2)	.250 (6.4)
013	13	C	M18 X 1-6H	1.000 (25.4)	1.250 (31.8)	1.062 (27.0)	1.500 (38.1)	.250 (6.4)	.375 (9.5)
014	13	C	M18 X 1-6H	1.000 (25.4)	1.250 (31.8)	1.062 (27.0)	2.500 (63.5)	.250 (6.4)	.375 (9.5)
015	13	C	M18 X 1-6H	1.000 (25.4)	1.250 (31.8)	1.156 (29.4)	1.500 (38.1)	.375 (9.5)	.500 (12.7)
016	13	C	M18 X 1-6H	1.000 (25.4)	1.250 (31.8)	1.156 (29.4)	2.500 (63.5)	.375 (9.5)	.500 (12.7)
017	15	D	M22 X 1-6H	1.150 (29.2)	1.250 (31.8)	.969 (24.6)	1.500 (38.1)	.125 (3.2)	.250 (6.4)
018	15	D	M22 X 1-6H	1.150 (29.2)	1.250 (31.8)	.969 (24.6)	2.500 (63.5)	.125 (3.2)	.250 (6.4)
019	15	D	M22 X 1-6H	1.150 (29.2)	1.250 (31.8)	.969 (24.6)	3.500 (88.9)	.125 (3.2)	.250 (6.4)
020	15	D	M22 X 1-6H	1.150 (29.2)	1.250 (31.8)	1.062 (27.0)	1.500 (38.1)	.250 (6.4)	.375 (9.5)
021	15	D	M22 X 1-6H	1.150 (29.2)	1.250 (31.8)	1.062 (27.0)	2.500 (63.5)	.250 (6.4)	.375 (9.5)
022	15	D	M22 X 1-6H	1.150 (29.2)	1.250 (31.8)	1.062 (27.0)	3.500 (88.9)	.250 (6.4)	.375 (9.5)
023	15	D	M22 X 1-6H	1.150 (29.2)	1.250 (31.8)	1.156 (29.4)	1.500 (38.1)	.375 (9.5)	.500 (12.7)
024	15	D	M22 X 1-6H	1.150 (29.2)	1.250 (31.8)	1.156 (29.4)	2.500 (63.5)	.375 (9.5)	.500 (12.7)
025	15	D	M22 X 1-6H	1.150 (29.2)	1.250 (31.8)	1.156 (29.4)	3.500 (88.9)	.375 (9.5)	.500 (12.7)
026	15	D	M22 X 1-6H	1.150 (29.2)	1.312 (33.3)	1.250 (31.8)	1.500 (38.1)	.500 (12.7)	.625 (15.9)
027	15	D	M22 X 1-6H	1.150 (29.2)	1.312 (33.3)	1.250 (31.8)	2.500 (63.5)	.500 (12.7)	.625 (15.9)
028	15	D	M22 X 1-6H	1.150 (29.2)	1.312 (33.3)	1.250 (31.8)	3.500 (88.9)	.500 (12.7)	.625 (15.9)
029	17	E	M25 X 1-6H	1.250 (31.8)	1.250 (31.8)	.969 (24.6)	1.500 (38.1)	.125 (3.2)	.250 (6.4)
030	17	E	M25 X 1-6H	1.250 (31.8)	1.250 (31.8)	.969 (24.6)	2.500 (63.5)	.125 (3.2)	.250 (6.4)
031	17	E	M25 X 1-6H	1.250 (31.8)	1.250 (31.8)	.969 (24.6)	3.500 (88.9)	.125 (3.2)	.250 (6.4)
032	17	E	M25 X 1-6H	1.250 (31.8)	1.250 (31.8)	1.062 (27.0)	1.500 (38.1)	.250 (6.4)	.375 (9.5)
033	17	E	M25 X 1-6H	1.250 (31.8)	1.250 (31.8)	1.062 (27.0)	2.500 (63.5)	.250 (6.4)	.375 (9.5)
034	17	E	M25 X 1-6H	1.250 (31.8)	1.250 (31.8)	1.062 (27.0)	3.500 (88.9)	.250 (6.4)	.375 (9.5)
035	17	E	M25 X 1-6H	1.250 (31.8)	1.250 (31.8)	1.156 (29.4)	1.500 (38.1)	.375 (9.5)	.500 (12.7)
036	17	E	M25 X 1-6H	1.250 (31.8)	1.250 (31.8)	1.156 (29.4)	2.500 (63.5)	.375 (9.5)	.500 (12.7)
037	17	E	M25 X 1-6H	1.250 (31.8)	1.250 (31.8)	1.156 (29.4)	3.500 (88.9)	.375 (9.5)	.500 (12.7)
038	17	E	M25 X 1-6H	1.250 (31.8)	1.312 (33.3)	1.250 (31.8)	1.500 (38.1)	.500 (12.7)	.625 (15.9)
039	17	E	M25 X 1-6H	1.250 (31.8)	1.312 (33.3)	1.250 (31.8)	2.500 (63.5)	.500 (12.7)	.625 (15.9)
040	17	E	M25 X 1-6H	1.250 (31.8)	1.312 (33.3)	1.250 (31.8)	3.500 (88.9)	.500 (12.7)	.625 (15.9)
041	17	E	M25 X 1-6H	1.250 (31.8)	1.375 (34.9)	1.375 (34.9)	1.500 (38.1)	.625 (15.9)	.750 (19.1)
042	17	E	M25 X 1-6H	1.250 (31.8)	1.375 (34.9)	1.375 (34.9)	2.500 (63.5)	.625 (15.9)	.750 (19.1)
043	17	E	M25 X 1-6H	1.250 (31.8)	1.375 (34.9)	1.375 (34.9)	3.500 (88.9)	.625 (15.9)	.750 (19.1)
044	19	F	M28 X 1-6H	1.400 (35.6)	1.250 (31.8)	1.062 (27.0)	1.500 (38.1)	.250 (6.4)	.375 (9.5)
045	19	F	M28 X 1-6H	1.400 (35.6)	1.250 (31.8)	1.062 (27.0)	2.500 (63.5)	.250 (6.4)	.375 (9.5)
046	19	F	M28 X 1-6H	1.400 (35.6)	1.250 (31.8)	1.062 (27.0)	3.500 (88.9)	.250 (6.4)	.375 (9.5)
047	19	F	M28 X 1-6H	1.400 (35.6)	1.250 (31.8)	1.156 (29.4)	1.500 (38.1)	.375 (9.5)	.500 (12.7)
048	19	F	M28 X 1-6H	1.400 (35.6)	1.250 (31.8)	1.156 (29.4)	2.500 (63.5)	.375 (9.5)	.500 (12.7)
049	19	F	M28 X 1-6H	1.400 (35.6)	1.250 (31.8)	1.156 (29.4)	3.500 (88.9)	.375 (9.5)	.500 (12.7)
050	19	F	M28 X 1-6H	1.400 (35.6)	1.312 (33.3)	1.250 (31.8)	1.500 (38.1)	.500 (12.7)	.625 (15.9)
051	19	F	M28 X 1-6H	1.400 (35.6)	1.312 (33.3)	1.250 (31.8)	2.500 (63.5)	.500 (12.7)	.625 (15.9)
052	19	F	M28 X 1-6H	1.400 (35.6)	1.312 (33.3)	1.250 (31.8)	3.500 (88.9)	.500 (12.7)	.625 (15.9)
053	19	F	M28 X 1-6H	1.400 (35.6)	1.375 (34.9)	1.375 (34.9)	1.500 (38.1)	.625 (15.9)	.750 (19.1)
054	19	F	M28 X 1-6H	1.400 (35.6)	1.375 (34.9)	1.375 (34.9)	2.500 (63.5)	.625 (15.9)	.750 (19.1)
055	19	F	M28 X 1-6H	1.400 (35.6)	1.375 (34.9)	1.375 (34.9)	3.500 (88.9)	.625 (15.9)	.750 (19.1)
056	19	F	M28 X 1-6H	1.400 (35.6)	1.500 (38.1)	1.500 (38.1)	1.500 (38.1)	.750 (19.1)	.875 (22.2)
057	19	F	M28 X 1-6H	1.400 (35.6)	1.500 (38.1)	1.500 (38.1)	2.500 (63.5)	.750 (19.1)	.875 (22.2)
058	19	F	M28 X 1-6H	1.400 (35.6)	1.500 (38.1)	1.500 (38.1)	3.500 (88.9)	.750 (19.1)	.875 (22.2)

Dimensions are in inches (mm).

(Continued on next page)

Rev. 2235

Backshell Dimensions (Continued from previous page)

Dash No.	Shell Size	Military Shell Size	V Thread Class 2B	D	T	B	L	CC Cable Clearance	
								Min	Max
059	21	G	M31 X 1-6H	1.550 (39.4)	1.250 (31.8)	1.062 (27.0)	1.500 (38.1)	.250 (6.4)	.375 (9.5)
060	21	G	M31 X 1-6H	1.550 (39.4)	1.250 (31.8)	1.062 (27.0)	2.500 (63.5)	.250 (6.4)	.375 (9.5)
061	21	G	M31 X 1-6H	1.550 (39.4)	1.250 (31.8)	1.062 (27.0)	3.500 (88.9)	.250 (6.4)	.375 (9.5)
062	21	G	M31 X 1-6H	1.550 (39.4)	1.250 (31.8)	1.062 (27.0)	4.500 (114.3)	.250 (6.4)	.375 (9.5)
063	21	G	M31 X 1-6H	1.550 (39.4)	1.250 (31.8)	1.156 (29.4)	1.500 (38.1)	.375 (9.5)	.500 (12.7)
064	21	G	M31 X 1-6H	1.550 (39.4)	1.250 (31.8)	1.156 (29.4)	2.500 (63.5)	.375 (9.5)	.500 (12.7)
065	21	G	M31 X 1-6H	1.550 (39.4)	1.250 (31.8)	1.156 (29.4)	3.500 (88.9)	.375 (9.5)	.500 (12.7)
066	21	G	M31 X 1-6H	1.550 (39.4)	1.250 (31.8)	1.156 (29.4)	4.500 (114.3)	.375 (9.5)	.500 (12.7)
067	21	G	M31 X 1-6H	1.550 (39.4)	1.312 (33.3)	1.250 (31.8)	1.500 (38.1)	.500 (12.7)	.625 (15.9)
068	21	G	M31 X 1-6H	1.550 (39.4)	1.312 (33.3)	1.250 (31.8)	2.500 (63.5)	.500 (12.7)	.625 (15.9)
069	21	G	M31 X 1-6H	1.550 (39.4)	1.312 (33.3)	1.250 (31.8)	3.500 (88.9)	.500 (12.7)	.625 (15.9)
070	21	G	M31 X 1-6H	1.550 (39.4)	1.312 (33.3)	1.250 (31.8)	4.500 (114.3)	.500 (12.7)	.625 (15.9)
071	21	G	M31 X 1-6H	1.550 (39.4)	1.375 (34.9)	1.375 (34.9)	1.500 (38.1)	.625 (15.9)	.750 (19.1)
072	21	G	M31 X 1-6H	1.550 (39.4)	1.375 (34.9)	1.375 (34.9)	2.500 (63.5)	.625 (15.9)	.750 (19.1)
073	21	G	M31 X 1-6H	1.550 (39.4)	1.375 (34.9)	1.375 (34.9)	3.500 (88.9)	.625 (15.9)	.750 (19.1)
074	21	G	M31 X 1-6H	1.550 (39.4)	1.375 (34.9)	1.375 (34.9)	4.500 (114.3)	.625 (15.9)	.750 (19.1)
075	21	G	M31 X 1-6H	1.550 (39.4)	1.500 (38.1)	1.500 (38.1)	1.500 (38.1)	.750 (19.1)	.875 (22.2)
076	21	G	M31 X 1-6H	1.550 (39.4)	1.500 (38.1)	1.500 (38.1)	2.500 (63.5)	.750 (19.1)	.875 (22.2)
077	21	G	M31 X 1-6H	1.550 (39.4)	1.500 (38.1)	1.500 (38.1)	3.500 (88.9)	.750 (19.1)	.875 (22.2)
078	21	G	M31 X 1-6H	1.550 (39.4)	1.500 (38.1)	1.500 (38.1)	4.500 (114.3)	.750 (19.1)	.875 (22.2)
079	21	G	M31 X 1-6H	1.550 (39.4)	1.625 (41.3)	1.625 (41.3)	1.500 (38.1)	.875 (22.2)	1.000 (25.4)
080	21	G	M31 X 1-6H	1.550 (39.4)	1.625 (41.3)	1.625 (41.3)	2.500 (63.5)	.875 (22.2)	1.000 (25.4)
081	21	G	M31 X 1-6H	1.550 (39.4)	1.625 (41.3)	1.625 (41.3)	3.500 (88.9)	.875 (22.2)	1.000 (25.4)
082	21	G	M31 X 1-6H	1.550 (39.4)	1.625 (41.3)	1.625 (41.3)	4.500 (114.3)	.875 (22.2)	1.000 (25.4)
083	23	H	M34 X 1-6H	1.650 (41.9)	1.250 (31.8)	1.062 (27.0)	1.500 (38.1)	.250 (6.4)	.375 (9.5)
084	23	H	M34 X 1-6H	1.650 (41.9)	1.250 (31.8)	1.062 (27.0)	2.500 (63.5)	.250 (6.4)	.375 (9.5)
085	23	H	M34 X 1-6H	1.650 (41.9)	1.250 (31.8)	1.062 (27.0)	3.500 (88.9)	.250 (6.4)	.375 (9.5)
086	23	H	M34 X 1-6H	1.650 (41.9)	1.250 (31.8)	1.062 (27.0)	4.500 (114.3)	.250 (6.4)	.375 (9.5)
087	23	H	M34 X 1-6H	1.650 (41.9)	1.250 (31.8)	1.156 (29.4)	1.500 (38.1)	.375 (9.5)	.500 (12.7)
088	23	H	M34 X 1-6H	1.650 (41.9)	1.250 (31.8)	1.156 (29.4)	2.500 (63.5)	.375 (9.5)	.500 (12.7)
089	23	H	M34 X 1-6H	1.650 (41.9)	1.250 (31.8)	1.156 (29.4)	3.500 (88.9)	.375 (9.5)	.500 (12.7)
090	23	H	M34 X 1-6H	1.650 (41.9)	1.250 (31.8)	1.156 (29.4)	4.500 (114.3)	.375 (9.5)	.500 (12.7)
091	23	H	M34 X 1-6H	1.650 (41.9)	1.312 (33.3)	1.250 (31.8)	1.500 (38.1)	.500 (12.7)	.625 (15.9)
092	23	H	M34 X 1-6H	1.650 (41.9)	1.312 (33.3)	1.250 (31.8)	2.500 (63.5)	.500 (12.7)	.625 (15.9)
093	23	H	M34 X 1-6H	1.650 (41.9)	1.312 (33.3)	1.250 (31.8)	3.500 (88.9)	.500 (12.7)	.625 (15.9)
094	23	H	M34 X 1-6H	1.650 (41.9)	1.312 (33.3)	1.250 (31.8)	4.500 (114.3)	.500 (12.7)	.625 (15.9)
095	23	H	M34 X 1-6H	1.650 (41.9)	1.375 (34.9)	1.375 (34.9)	1.500 (38.1)	.625 (15.9)	.750 (19.1)
096	23	H	M34 X 1-6H	1.650 (41.9)	1.375 (34.9)	1.375 (34.9)	2.500 (63.5)	.625 (15.9)	.750 (19.1)
097	23	H	M34 X 1-6H	1.650 (41.9)	1.375 (34.9)	1.375 (34.9)	3.500 (88.9)	.625 (15.9)	.750 (19.1)
098	23	H	M34 X 1-6H	1.650 (41.9)	1.375 (34.9)	1.375 (34.9)	4.500 (114.3)	.625 (15.9)	.750 (19.1)
099	23	H	M34 X 1-6H	1.650 (41.9)	1.500 (38.1)	1.500 (38.1)	1.500 (38.1)	.750 (19.1)	.875 (22.2)
100	23	H	M34 X 1-6H	1.650 (41.9)	1.500 (38.1)	1.500 (38.1)	2.500 (63.5)	.750 (19.1)	.875 (22.2)
101	23	H	M34 X 1-6H	1.650 (41.9)	1.500 (38.1)	1.500 (38.1)	3.500 (88.9)	.750 (19.1)	.875 (22.2)
102	23	H	M34 X 1-6H	1.650 (41.9)	1.500 (38.1)	1.500 (38.1)	4.500 (114.3)	.750 (19.1)	.875 (22.2)
103	23	H	M34 X 1-6H	1.650 (41.9)	1.625 (41.3)	1.625 (41.3)	1.500 (38.1)	.875 (22.2)	1.000 (25.4)
104	23	H	M34 X 1-6H	1.650 (41.9)	1.625 (41.3)	1.625 (41.3)	2.500 (63.5)	.875 (22.2)	1.000 (25.4)
105	23	H	M34 X 1-6H	1.650 (41.9)	1.625 (41.3)	1.625 (41.3)	3.500 (88.9)	.875 (22.2)	1.000 (25.4)

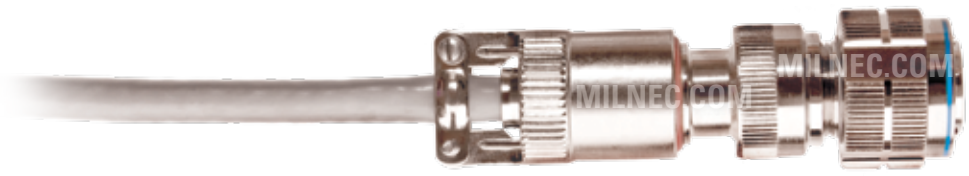
Dimensions are in inches (mm).

(Continued on next page)

Backshell Dimensions (Continued from previous page)

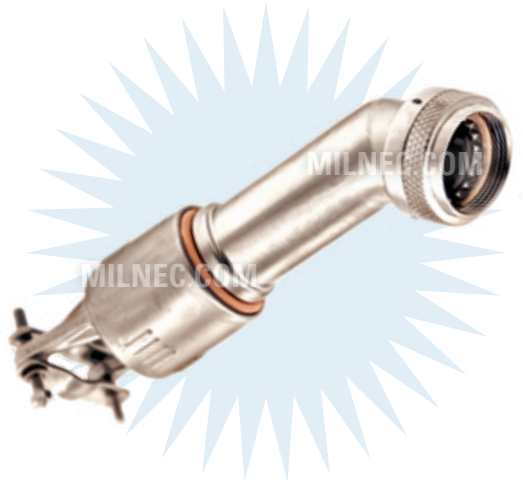
Dash No.	Shell Size	Military Shell Size	V Thread Class 2B	D	T	B	L	CC Cable Clearance	
								Min	Max
106	**23**	H	M34 X 1-6H	1.650 (41.9)	1.625 (41.3)	1.625 (41.3)	4.500 (114.3)	.875 (22.2)	1.000 (25.4)
107	**23**	H	M34 X 1-6H	1.650 (41.9)	1.625 (41.3)	1.750 (44.5)	1.500 (38.1)	1.000 (25.4)	1.125 (28.6)
108	**23**	H	M34 X 1-6H	1.650 (41.9)	1.625 (41.3)	1.750 (44.5)	2.500 (63.5)	1.000 (25.4)	1.125 (28.6)
109	**23**	H	M34 X 1-6H	1.650 (41.9)	1.625 (41.3)	1.750 (44.5)	3.500 (88.9)	1.000 (25.4)	1.125 (28.6)
110	**23**	H	M34 X 1-6H	1.650 (41.9)	1.625 (41.3)	1.750 (44.5)	4.500 (114.3)	1.000 (25.4)	1.125 (28.6)
111	**25**	J	M37 X 1-6H	1.850 (47.0)	1.250 (31.8)	1.156 (29.4)	1.500 (38.1)	.375 (9.5)	.500 (12.7)
112	**25**	J	M37 X 1-6H	1.850 (47.0)	1.250 (31.8)	1.156 (29.4)	2.500 (63.5)	.375 (9.5)	.500 (12.7)
113	**25**	J	M37 X 1-6H	1.850 (47.0)	1.250 (31.8)	1.156 (29.4)	3.500 (88.9)	.375 (9.5)	.500 (12.7)
114	**25**	J	M37 X 1-6H	1.850 (47.0)	1.250 (31.8)	1.156 (29.4)	4.500 (114.3)	.375 (9.5)	.500 (12.7)
115	**25**	J	M37 X 1-6H	1.850 (47.0)	1.312 (33.3)	1.250 (31.8)	1.500 (38.1)	.500 (12.7)	.625 (15.9)
116	**25**	J	M37 X 1-6H	1.850 (47.0)	1.312 (33.3)	1.250 (31.8)	2.500 (63.5)	.500 (12.7)	.625 (15.9)
117	**25**	J	M37 X 1-6H	1.850 (47.0)	1.312 (33.3)	1.250 (31.8)	3.500 (88.9)	.500 (12.7)	.625 (15.9)
118	**25**	J	M37 X 1-6H	1.850 (47.0)	1.312 (33.3)	1.250 (31.8)	4.500 (114.3)	.500 (12.7)	.625 (15.9)
119	**25**	J	M37 X 1-6H	1.850 (47.0)	1.375 (34.9)	1.375 (34.9)	1.500 (38.1)	.625 (15.9)	.750 (19.1)
120	**25**	J	M37 X 1-6H	1.850 (47.0)	1.375 (34.9)	1.375 (34.9)	2.500 (63.5)	.625 (15.9)	.750 (19.1)
121	**25**	J	M37 X 1-6H	1.850 (47.0)	1.375 (34.9)	1.375 (34.9)	3.500 (88.9)	.625 (15.9)	.750 (19.1)
122	**25**	J	M37 X 1-6H	1.850 (47.0)	1.375 (34.9)	1.375 (34.9)	4.500 (114.3)	.625 (15.9)	.750 (19.1)
123	**25**	J	M37 X 1-6H	1.850 (47.0)	1.500 (38.1)	1.500 (38.1)	1.500 (38.1)	.750 (19.1)	.875 (22.2)
124	**25**	J	M37 X 1-6H	1.850 (47.0)	1.500 (38.1)	1.500 (38.1)	2.500 (63.5)	.750 (19.1)	.875 (22.2)
125	**25**	J	M37 X 1-6H	1.850 (47.0)	1.500 (38.1)	1.500 (38.1)	3.500 (88.9)	.750 (19.1)	.875 (22.2)
126	**25**	J	M37 X 1-6H	1.850 (47.0)	1.500 (38.1)	1.500 (38.1)	4.500 (114.3)	.750 (19.1)	.875 (22.2)
127	**25**	J	M37 X 1-6H	1.850 (47.0)	1.625 (41.3)	1.625 (41.3)	1.500 (38.1)	.875 (22.2)	1.000 (25.4)
128	**25**	J	M37 X 1-6H	1.850 (47.0)	1.625 (41.3)	1.625 (41.3)	2.500 (63.5)	.875 (22.2)	1.000 (25.4)
129	**25**	J	M37 X 1-6H	1.850 (47.0)	1.625 (41.3)	1.625 (41.3)	3.500 (88.9)	.875 (22.2)	1.000 (25.4)
130	**25**	J	M37 X 1-6H	1.850 (47.0)	1.625 (41.3)	1.625 (41.3)	4.500 (114.3)	.875 (22.2)	1.000 (25.4)
131	**25**	J	M37 X 1-6H	1.850 (47.0)	1.625 (41.3)	1.750 (44.5)	1.500 (38.1)	1.000 (25.4)	1.125 (28.6)
132	**25**	J	M37 X 1-6H	1.850 (47.0)	1.625 (41.3)	1.750 (44.5)	2.500 (63.5)	1.000 (25.4)	1.125 (28.6)
133	**25**	J	M37 X 1-6H	1.850 (47.0)	1.625 (41.3)	1.750 (44.5)	3.500 (88.9)	1.000 (25.4)	1.125 (28.6)
134	**25**	J	M37 X 1-6H	1.850 (47.0)	1.625 (41.3)	1.750 (44.5)	4.500 (114.3)	1.000 (25.4)	1.125 (28.6)
135	**25**	J	M37 X 1-6H	1.850 (47.0)	1.625 (41.3)	1.875 (47.6)	1.500 (38.1)	1.125 (28.6)	1.250 (31.8)
136	**25**	J	M37 X 1-6H	1.850 (47.0)	1.625 (41.3)	1.875 (47.6)	2.500 (63.5)	1.125 (28.6)	1.250 (31.8)
137	**25**	J	M37 X 1-6H	1.850 (47.0)	1.625 (41.3)	1.875 (47.6)	3.500 (88.9)	1.125 (28.6)	1.250 (31.8)
138	**25**	J	M37 X 1-6H	1.850 (47.0)	1.625 (41.3)	1.875 (47.6)	4.500 (114.3)	1.125 (28.6)	1.250 (31.8)

Dimensions are in inches (mm).



45° EMI/RFI Env. Backshell

TX Series • MIL-DTL-38999 Series III Style Connectors



TXR3 - 015 N

1 2 3

1 **BASIC PART NUMBER**
TXR3 45° EMI/RFI environmental backshell

2 **DASH NO.**
See Backshell Dimensions table below

3 **MATERIAL & FINISH**

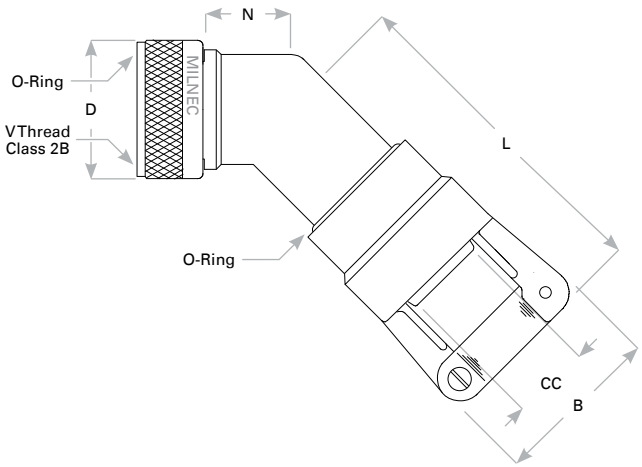
N	Aluminum, electroless nickel
W	Aluminum, olive drab cadmium
G	Aluminum, electroless nickel (space-grade)
K*	Stainless steel, passivated
L*	Stainless steel, electrodeposited nickel

* Please consult an authorized distributor for lead time and minimum quantity requirements.

TXR3 Compatibility

Compatible Brands	Connectors
MIL-DTL-38999 Series III	D38999/20, D38999/24, D38999/26
Aero / Conesys	AE320, AE324, AE326
Amphenol	TVP00, TVPS00, TV06, TVS06, TV07, TVS07
Deutsch	DTS20, DTS24, DTS26
ITT Cannon	KJA0, KJA6, KJA7
Souriau	8D0, 8D1, 8D5, 8D7, 8DS00, 8DS06G, 8DS07

Note: See part builder (p. B-17) for additional kit options.



Backshell Dimensions

Dash No.	Shell Size	Military Shell Size	V Thread Class 2B	N	D	B	L	CC Cable Clearance	
								Min	Max
001	**9**	A	M12 X 1-6H	.398 (10.1)	.750 (19.1)	.800 (20.3)	3.088 (78.4)	.062 (1.6)	.125 (3.2)
002	**9**	A	M12 X 1-6H	.398 (10.1)	.750 (19.1)	1.000 (25.4)	3.088 (78.4)	.125 (3.2)	.250 (6.4)
003	**11**	B	M15 X 1-6H	.458 (11.6)	.850 (21.6)	.800 (20.3)	3.148 (80.0)	.062 (1.6)	.125 (3.2)
004	**11**	B	M15 X 1-6H	.458 (11.6)	.850 (21.6)	1.000 (25.4)	3.148 (80.0)	.125 (3.2)	.250 (6.4)
005	**11**	B	M15 X 1-6H	.458 (11.6)	.850 (21.6)	1.100 (27.9)	3.148 (80.0)	.250 (6.4)	.375 (9.5)
006	**13**	C	M18 X 1-6H	.518 (13.2)	1.000 (25.4)	1.000 (25.4)	3.208 (81.5)	.125 (3.2)	.250 (6.4)
007	**13**	C	M18 X 1-6H	.518 (13.2)	1.000 (25.4)	1.100 (27.9)	3.208 (81.5)	.250 (6.4)	.375 (9.5)
008	**13**	C	M18 X 1-6H	.518 (13.2)	1.000 (25.4)	1.200 (30.5)	3.208 (81.5)	.375 (9.5)	.500 (12.7)
009	**15**	D	M22 X 1-6H	.588 (14.9)	1.150 (29.2)	1.000 (25.4)	3.298 (83.8)	.125 (3.2)	.250 (6.4)
010	**15**	D	M22 X 1-6H	.588 (14.9)	1.150 (29.2)	1.100 (27.9)	3.298 (83.8)	.250 (6.4)	.375 (9.5)

Dimensions are in inches (mm).

(Continued on next page)

Rev. 2235

Backshell Dimensions (Continued from previous page)

Dash No.	Shell Size	Military Shell Size	V Thread Class 2B	N	D	B	L	CC Cable Clearance	
								Min	Max
011	15	D	M22 X 1-6H	.588 (14.9)	1.150 (29.2)	1.200 (30.5)	3.298 (83.8)	.375 (9.5)	.500 (12.7)
012	15	D	M22 X 1-6H	.588 (14.9)	1.150 (29.2)	1.250 (31.8)	3.298 (83.8)	.500 (12.7)	.625 (15.9)
013	17	E	M25 X 1-6H	.678 (17.2)	1.250 (31.8)	1.000 (25.4)	3.408 (86.6)	.125 (3.2)	.250 (6.4)
014	17	E	M25 X 1-6H	.678 (17.2)	1.250 (31.8)	1.100 (27.9)	3.408 (86.6)	.250 (6.4)	.375 (9.5)
015	17	E	M25 X 1-6H	.678 (17.2)	1.250 (31.8)	1.200 (30.5)	3.408 (86.6)	.375 (9.5)	.500 (12.7)
016	17	E	M25 X 1-6H	.678 (17.2)	1.250 (31.8)	1.250 (31.8)	3.408 (86.6)	.500 (12.7)	.625 (15.9)
017	17	E	M25 X 1-6H	.678 (17.2)	1.250 (31.8)	1.400 (35.6)	3.408 (86.6)	.625 (15.9)	.750 (19.1)
018	19	F	M28 X 1-6H	.868 (22.0)	1.400 (35.6)	1.100 (27.9)	3.598 (91.4)	.250 (6.4)	.375 (9.5)
019	19	F	M28 X 1-6H	.868 (22.0)	1.400 (35.6)	1.200 (30.5)	3.598 (91.4)	.375 (9.5)	.500 (12.7)
020	19	F	M28 X 1-6H	.868 (22.0)	1.400 (35.6)	1.250 (31.8)	3.598 (91.4)	.500 (12.7)	.625 (15.9)
021	19	F	M28 X 1-6H	.868 (22.0)	1.400 (35.6)	1.400 (35.6)	3.598 (91.4)	.625 (15.9)	.750 (19.1)
022	19	F	M28 X 1-6H	.868 (22.0)	1.400 (35.6)	1.500 (38.1)	3.598 (91.4)	.750 (19.1)	.875 (22.2)
023	21	G	M31 X 1-6H	.868 (22.0)	1.550 (39.4)	1.100 (27.9)	3.598 (91.4)	.250 (6.4)	.375 (9.5)
024	21	G	M31 X 1-6H	.868 (22.0)	1.550 (39.4)	1.200 (30.5)	3.598 (91.4)	.375 (9.5)	.500 (12.7)
025	21	G	M31 X 1-6H	.868 (22.0)	1.550 (39.4)	1.250 (31.8)	3.598 (91.4)	.500 (12.7)	.625 (15.9)
026	21	G	M31 X 1-6H	.868 (22.0)	1.550 (39.4)	1.400 (35.6)	3.598 (91.4)	.625 (15.9)	.750 (19.1)
027	21	G	M31 X 1-6H	.868 (22.0)	1.550 (39.4)	1.500 (38.1)	3.598 (91.4)	.750 (19.1)	.875 (22.2)
028	21	G	M31 X 1-6H	.868 (22.0)	1.550 (39.4)	1.650 (41.9)	3.598 (91.4)	.875 (22.2)	1.000 (25.4)
029	23	H	M34 X 1-6H	.958 (24.3)	1.650 (41.9)	1.100 (27.9)	3.748 (95.2)	.250 (6.4)	.375 (9.5)
030	23	H	M34 X 1-6H	.958 (24.3)	1.650 (41.9)	1.200 (30.5)	3.748 (95.2)	.375 (9.5)	.500 (12.7)
031	23	H	M34 X 1-6H	.958 (24.3)	1.650 (41.9)	1.250 (31.8)	3.748 (95.2)	.500 (12.7)	.625 (15.9)
032	23	H	M34 X 1-6H	.958 (24.3)	1.650 (41.9)	1.400 (35.6)	3.748 (95.2)	.625 (15.9)	.750 (19.1)
033	23	H	M34 X 1-6H	.958 (24.3)	1.650 (41.9)	1.500 (38.1)	3.748 (95.2)	.750 (19.1)	.875 (22.2)
034	23	H	M34 X 1-6H	.958 (24.3)	1.650 (41.9)	1.650 (41.9)	3.748 (95.2)	.875 (22.2)	1.000 (25.4)
035	23	H	M34 X 1-6H	.958 (24.3)	1.650 (41.9)	1.750 (44.5)	3.748 (95.2)	1.000 (25.4)	1.125 (28.6)
036	25	J	M37 X 1-6H	.958 (24.3)	1.850 (47.0)	1.200 (30.5)	3.748 (95.2)	.375 (9.5)	.500 (12.7)
037	25	J	M37 X 1-6H	.958 (24.3)	1.850 (47.0)	1.250 (31.8)	3.748 (95.2)	.500 (12.7)	.625 (15.9)
038	25	J	M37 X 1-6H	.958 (24.3)	1.850 (47.0)	1.400 (35.6)	3.748 (95.2)	.625 (15.9)	.750 (19.1)
039	25	J	M37 X 1-6H	.958 (24.3)	1.850 (47.0)	1.500 (38.1)	3.748 (95.2)	.750 (19.1)	.875 (22.2)
040	25	J	M37 X 1-6H	.958 (24.3)	1.850 (47.0)	1.650 (41.9)	3.748 (95.2)	.875 (22.2)	1.000 (25.4)
041	25	J	M37 X 1-6H	.958 (24.3)	1.850 (47.0)	1.750 (44.5)	3.748 (95.2)	1.000 (25.4)	1.125 (28.6)
042	25	J	M37 X 1-6H	.958 (24.3)	1.850 (47.0)	1.900 (48.3)	3.748 (95.2)	1.125 (28.6)	1.250 (31.8)

Dimensions are in inches (mm).

Rev. 2235

TXR4 - 015 N

1 2 3

1 BASIC PART NUMBER

TXR4 90° EMI/RFI environmental backshell

2 DASH NO.

See Backshell Dimensions table below

3 MATERIAL & FINISH

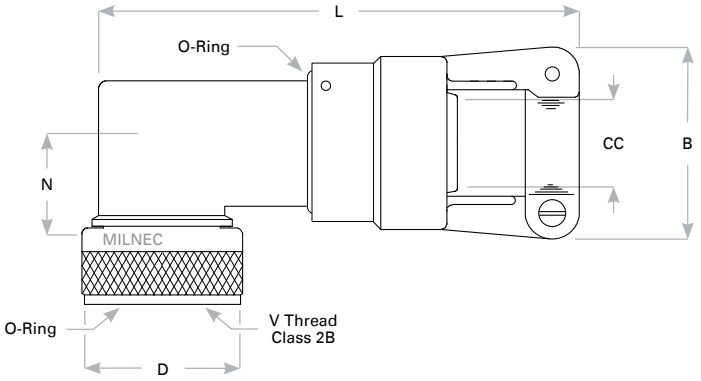
N	Aluminum, electroless nickel
W	Aluminum, olive drab cadmium
G	Aluminum, electroless nickel (space-grade)
K*	Stainless steel, passivated
L*	Stainless steel, electrodeposited nickel

* Please consult an authorized distributor for lead time and minimum quantity requirements.

TXR4 Compatibility

Compatible Brands	Connectors
MIL-DTL-38999 Series III	D38999/20, D38999/24, D38999/26
Aero / Conesys	AE320, AE324, AE326
Amphenol	TVP00, TVPS00, TV06, TVS06, TV07, TVS07
Deutsch	DTS20, DTS24, DTS26
ITT Cannon	KJA0, KJA6, KJA7
Souriau	8D0, 8D1, 8D5, 8D7, 8DS00, 8DS06G, 8DS07

Note: See part builder (p. B-17) for additional kit options.



Backshell Dimensions

Dash No.	Shell Size	Military Shell Size	V Thread Class 2B	N	D	B	L	CC Cable Clearance	
								Min	Max
001	**9**	A	M12 X 1-6H	.438 (11.1)	.750 (19.1)	.800 (20.3)	3.141 (79.8)	.062 (1.6)	.125 (3.2)
002	**9**	A	M12 X 1-6H	.438 (11.1)	.750 (19.1)	1.000 (25.4)	3.141 (79.8)	.125 (3.2)	.250 (6.4)
003	**11**	B	M15 X 1-6H	.533 (13.5)	.850 (21.6)	.800 (20.3)	3.261 (82.8)	.062 (1.6)	.125 (3.2)
004	**11**	B	M15 X 1-6H	.533 (13.5)	.850 (21.6)	1.000 (25.4)	3.261 (82.8)	.125 (3.2)	.250 (6.4)
005	**11**	B	M15 X 1-6H	.533 (13.5)	.850 (21.6)	1.100 (27.9)	3.261 (82.8)	.250 (6.4)	.375 (9.5)
006	**13**	C	M18 X 1-6H	.548 (13.9)	1.000 (25.4)	1.000 (25.4)	3.281 (83.3)	.125 (3.2)	.250 (6.4)
007	**13**	C	M18 X 1-6H	.548 (13.9)	1.000 (25.4)	1.100 (27.9)	3.281 (83.3)	.250 (6.4)	.375 (9.5)
008	**13**	C	M18 X 1-6H	.548 (13.9)	1.000 (25.4)	1.200 (30.5)	3.281 (83.3)	.375 (9.5)	.500 (12.7)
009	**15**	D	M22 X 1-6H	.638 (16.2)	1.150 (29.2)	1.000 (25.4)	3.351 (85.1)	.125 (3.2)	.250 (6.4)
010	**15**	D	M22 X 1-6H	.638 (16.2)	1.150 (29.2)	1.100 (27.9)	3.351 (85.1)	.250 (6.4)	.375 (9.5)

Dimensions are in inches (mm).

(Continued on next page)

Backshell Dimensions (Continued from previous page)

Dash No.	Shell Size	Military Shell Size	V Thread Class 2B	N	D	B	L	CC Cable Clearance	
								Min	Max
011	15	D	M22 X 1-6H	.638 (16.2)	1.150 (29.2)	1.200 (30.5)	3.351 (85.1)	.375 (9.5)	.500 (12.7)
012	15	D	M22 X 1-6H	.638 (16.2)	1.150 (29.2)	1.250 (31.8)	3.351 (85.1)	.500 (12.7)	.625 (15.9)
013	17	E	M25 X 1-6H	.823 (20.9)	1.250 (31.8)	1.000 (25.4)	3.441 (87.4)	.125 (3.2)	.250 (6.4)
014	17	E	M25 X 1-6H	.823 (20.9)	1.250 (31.8)	1.100 (27.9)	3.441 (87.4)	.250 (6.4)	.375 (9.5)
015	17	E	M25 X 1-6H	.823 (20.9)	1.250 (31.8)	1.200 (30.5)	3.441 (87.4)	.375 (9.5)	.500 (12.7)
016	17	E	M25 X 1-6H	.823 (20.9)	1.250 (31.8)	1.250 (31.8)	3.441 (87.4)	.500 (12.7)	.625 (15.9)
017	17	E	M25 X 1-6H	.823 (20.9)	1.250 (31.8)	1.400 (35.6)	3.441 (87.4)	.625 (15.9)	.750 (19.1)
018	19	F	M28 X 1-6H	.913 (23.2)	1.400 (35.6)	1.100 (27.9)	3.611 (91.7)	.250 (6.4)	.375 (9.5)
019	19	F	M28 X 1-6H	.913 (23.2)	1.400 (35.6)	1.200 (30.5)	3.611 (91.7)	.375 (9.5)	.500 (12.7)
020	19	F	M28 X 1-6H	.913 (23.2)	1.400 (35.6)	1.250 (31.8)	3.611 (91.7)	.500 (12.7)	.625 (15.9)
021	19	F	M28 X 1-6H	.913 (23.2)	1.400 (35.6)	1.400 (35.6)	3.611 (91.7)	.625 (15.9)	.750 (19.1)
022	19	F	M28 X 1-6H	.913 (23.2)	1.400 (35.6)	1.500 (38.1)	3.611 (91.7)	.750 (19.1)	.875 (22.2)
023	21	G	M31 X 1-6H	.913 (23.2)	1.550 (39.4)	1.100 (27.9)	3.611 (91.7)	.250 (6.4)	.375 (9.5)
024	21	G	M31 X 1-6H	.913 (23.2)	1.550 (39.4)	1.200 (30.5)	3.611 (91.7)	.375 (9.5)	.500 (12.7)
025	21	G	M31 X 1-6H	.913 (23.2)	1.550 (39.4)	1.250 (31.8)	3.611 (91.7)	.500 (12.7)	.625 (15.9)
026	21	G	M31 X 1-6H	.913 (23.2)	1.550 (39.4)	1.400 (35.6)	3.611 (91.7)	.625 (15.9)	.750 (19.1)
027	21	G	M31 X 1-6H	.913 (23.2)	1.550 (39.4)	1.500 (38.1)	3.611 (91.7)	.750 (19.1)	.875 (22.2)
028	21	G	M31 X 1-6H	.913 (23.2)	1.550 (39.4)	1.650 (41.9)	3.611 (91.7)	.875 (22.2)	1.000 (25.4)
029	23	H	M34 X 1-6H	1.063 (27.0)	1.650 (41.9)	1.100 (27.9)	3.721 (94.5)	.250 (6.4)	.375 (9.5)
030	23	H	M34 X 1-6H	1.063 (27.0)	1.650 (41.9)	1.200 (30.5)	3.721 (94.5)	.375 (9.5)	.500 (12.7)
031	23	H	M34 X 1-6H	1.063 (27.0)	1.650 (41.9)	1.250 (31.8)	3.721 (94.5)	.500 (12.7)	.625 (15.9)
032	23	H	M34 X 1-6H	1.063 (27.0)	1.650 (41.9)	1.400 (35.6)	3.721 (94.5)	.625 (15.9)	.750 (19.1)
033	23	H	M34 X 1-6H	1.063 (27.0)	1.650 (41.9)	1.500 (38.1)	3.721 (94.5)	.750 (19.1)	.875 (22.2)
034	23	H	M34 X 1-6H	1.063 (27.0)	1.650 (41.9)	1.650 (41.9)	3.721 (94.5)	.875 (22.2)	1.000 (25.4)
035	23	H	M34 X 1-6H	1.063 (27.0)	1.650 (41.9)	1.750 (44.5)	3.721 (94.5)	1.000 (25.4)	1.125 (28.6)
036	25	J	M37 X 1-6H	1.063 (27.0)	1.850 (47.0)	1.200 (30.5)	3.721 (94.5)	.375 (9.5)	.500 (12.7)
037	25	J	M37 X 1-6H	1.063 (27.0)	1.850 (47.0)	1.250 (31.8)	3.721 (94.5)	.500 (12.7)	.625 (15.9)
038	25	J	M37 X 1-6H	1.063 (27.0)	1.850 (47.0)	1.400 (35.6)	3.721 (94.5)	.625 (15.9)	.750 (19.1)
039	25	J	M37 X 1-6H	1.063 (27.0)	1.850 (47.0)	1.500 (38.1)	3.721 (94.5)	.750 (19.1)	.875 (22.2)
040	25	J	M37 X 1-6H	1.063 (27.0)	1.850 (47.0)	1.650 (41.9)	3.721 (94.5)	.875 (22.2)	1.000 (25.4)
041	25	J	M37 X 1-6H	1.063 (27.0)	1.850 (47.0)	1.750 (44.5)	3.721 (94.5)	1.000 (25.4)	1.125 (28.6)
042	25	J	M37 X 1-6H	1.063 (27.0)	1.850 (47.0)	1.900 (48.3)	3.721 (94.5)	1.125 (28.6)	1.250 (31.8)

Dimensions are in inches (mm).

Shorting Cap Backshell

TX Series • MIL-DTL-38999 Series III Style Connectors

Optional Body Strap
with Bolt Attachment

TXSC - 13 - 3 N 2

1 2 3 4 5

1. **BASIC PART NUMBER**
   - **TXSC** Shorting cap backshell
2. **SHELL SIZE**
   - See Backshell Dimensions table below
3. **BACKSHELL LENGTH**
   - Length in whole inches (1 inch = 25.4 mm)
4. **MATERIAL & FINISH**
   - **N** Aluminum, electroless nickel
   - **W** Aluminum, olive drab cadmium
   - **G** Aluminum, electroless nickel (space-grade)
5. **OPTIONAL ATTACHMENT KIT**
   - **1** No strap attachment
   - **2** Body strap with bolt attachment (2-56 bolt & nut)

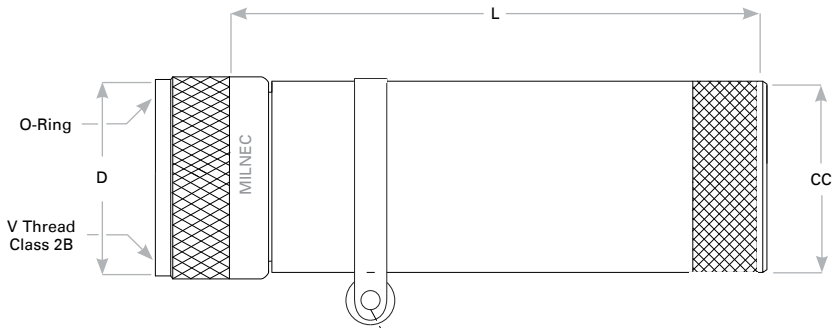
TXSC Compatibility

Compatible Brands	Connectors
MIL-DTL-38999 Series III	D38999/20, D38999/24, D38999/26
Aero / Conesys	AE320, AE324, AE326
Amphenol	TVP00, TVPS00, TV06, TVS06, TV07, TVS07
Deutsch	DTS20, DTS24, DTS26
ITT Cannon	KJA0, KJA6, KJA7
Souriau	8D0, 8D1, 8D5, 8D7, 8DS00, 8DS06G, 8DS07

Backshell Dimensions

Shell Size	Military Shell Size	D	V Thread Class 2B	CC Internal Dia.	L
9	A	.600 (15.2)	M12 X 1-6H	.250 (6.4)	Ordered in whole inch increments Min = 1 inch (25.4 mm) Max = 12 inches (304.8 mm)
11	B	.717 (18.2)	M15 X 1-6H	.375 (9.5)	
13	C	.834 (21.2)	M18 X 1-6H	.500 (12.7)	
15	D	.990 (25.2)	M22 X 1-6H	.625 (15.9)	
17	E	1.107 (28.1)	M25 X 1-6H	.750 (19.1)	
19	F	1.224 (31.1)	M28 X 1-6H	.812 (20.6)	
21	G	1.341 (34.1)	M31 X 1-6H	.938 (23.8)	
23	H	1.453 (36.9)	M34 X 1-6H	1.062 (27.0)	
25	J	1.567 (39.8)	M37 X 1-6H	1.188 (30.2)	

Dimensions are in inches (mm). Body thickness .115 (3.0).



Rev. 2235

CUSTOM TAILORED CONNECTORS

- Complete Mil-Spec Compatibility
- Wide Variety of Materials & Finishes
- More Backshells
- Specialized Contacts
- Additional Inserts
- More Shell Options

Military Strength—COTS Flexibility

Milnec builds connectors that meet and exceed established military specifications, while also providing additional options and features unavailable under the mil-spec. These commercial off the shelf (COTS) upgrades provide the strength and reliability of military specifications with the flexibility demanded by modern designs.

MILNEC® INTERCONNECT SYSTEMS

Straight Shrink Boot

TX Series • MIL-DTL-38999 Series III Style Connectors

TXK2 - 4 - 100

1 2 3

1 **BASIC PART NUMBER**

TXK2 Straight shrink boot

2 **BOOT SIZE**

See Boot Dimensions table below

3 **MATERIAL**

100 Halogen-free semi-flexible elastomer pre-coated with hot-melt adhesive. Material has excellent fire-safety characteristics and is especially suited for where people are confined in enclosed spaces (mass transit, aviation, vehicles, offshore, etc).

- Temp: -22° to +302°F (-30° to +150°C)
- Low-smoke index as defined by NES 711
- Low-toxicity index as defined by NES 713
- High-temp index as defined by NES 715

* Please consult an authorized distributor for other high-temperature materials and adhesive options.

Environmental protection, low-profile design

A shrink boot provides complete IP67 environmental protection and strain relief. Must be used with a boot adapter.

Boot Size Recommendations

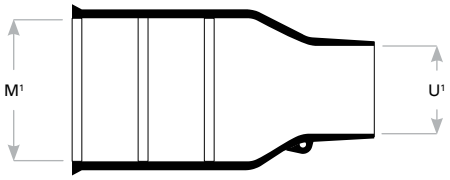
Boot Size	Cable Range		Shell Size																	
	Min	Max	9		11		13		15		17		19		21		23		25	
2	.220 (5.6)	.550 (14.0)	✓	✶	✓	✶	✓	✶												
3	.230 (5.9)	.590 (15.0)							✓	✶	✓	✶								
4	.280 (7.1)	.710 (18.0)												✶		✶				
5	.330 (8.4)	.830 (21.0)											✓		✓			✶		✶
6	.390 (9.9)	.980 (25.0)															✓		✓	
7	.620 (15.7)	1.540 (39.0)																		
8	.660 (16.8)	1.650 (42.0)																		

Dimensions are in inches (mm). ✓ Recommended boot size for (TXAB) Boot Adapter, p. B-49. ✶ Recommended boot size for (TXD2, TXD3, TXD4) EMI/RFI Banding Boot Adapter, p. B-50.

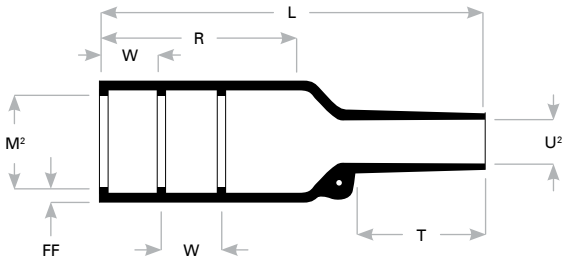
Boot Dimensions

Boot Size	M¹	U¹	M²	U²	L‡	R‡	T*	W‡	FF*
2	.940 (24.0)	.550 (14.0)	.410 (10.4)	.220 (5.6)	1.500 (38.0)	.830 (21.0)	.330 (8.5)	.470 (12.0)	.060 (1.6)
3	1.180 (30.0)	.590 (15.0)	.560 (14.2)	.230 (5.9)	2.170 (55.0)	1.260 (32.0)	.450 (11.5)	.470 (12.0)	.070 (1.8)
4	1.220 (31.0)	.710 (18.0)	.710 (18.0)	.280 (7.1)	2.640 (67.0)	1.380 (35.0)	.670 (17.0)	.790 (20.0)	.070 (1.8)
5	1.420 (36.0)	.830 (21.0)	.880 (22.4)	.330 (8.4)	3.150 (80.0)	1.650 (42.0)	.760 (19.5)	.790 (20.0)	.080 (2.0)
6	1.690 (43.0)	.980 (25.0)	1.110 (28.2)	.390 (9.9)	3.900 (99.0)	2.400 (61.0)	.820 (21.0)	.790 (20.0)	.090 (2.2)
7	2.050 (52.0)	1.540 (39.0)	1.380 (35.1)	.620 (15.7)	5.120 (130.0)	2.830 (72.0)	1.530 (39.0)	.790 (20.0)	.130 (3.2)
8	2.600 (66.0)	1.650 (42.0)	1.750 (44.5)	.660 (16.8)	6.690 (170.0)	3.540 (90.0)	2.020 (51.5)	.790 (20.0)	.150 (3.8)

Dimensions are in inches (mm). ‡ Dimensions ±10% before and after heat activation. ✶ Dimensions ±10% before heat activation, ±20% after heat activation.



Before Heat Activation



After Heat Activation

Rev. 2235

TXK4 - 4 - 100

1 2 3

1 BASIC PART NUMBER

TXK4 90° shrink boot

2 BOOT SIZE

See Boot Dimensions table below

3 STANDARD MATERIAL

100 Halogen-free semi-flexible elastomer pre-coated with hot-melt adhesive. Material has excellent fire-safety characteristics and is especially suited for where people are confined in enclosed spaces (mass transit, aviation, vehicles, offshore, etc).

- Temp: -22° to +302°F (-30° to +150°C)
- Low-smoke index as defined by NES 711
- Low-toxicity index as defined by NES 713
- High-temp index as defined by NES 715

* Please consult an authorized distributor for other high-temperature materials and adhesive options.

Angled boot for simple cable management

A 90° shrink boot offers simple cable management, strain relief, and environmental protection. For proper installation, it must be used with a boot adapter.

Boot Size Recommendations

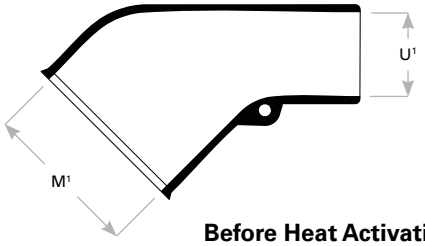
Boot Size	Cable Range		Shell Size																	
	Min	Max	9		11		13		15		17		19		21		23		25	
2	.220 (5.6)	.550 (14.0)	✓	✶	✓	✶	✓	✶												
3	.230 (5.9)	.590 (15.0)							✓	✶	✓	✶								
4	.280 (7.1)	.710 (18.0)												✶		✶				
5	.330 (8.4)	.830 (21.0)											✓		✓			✶		✶
6	.390 (9.9)	.980 (25.0)															✓		✓	
7	.620 (15.7)	1.540 (39.0)																		
8	.660 (16.8)	1.650 (42.0)																		

Dimensions are in inches (mm). ✓ Recommended boot size for (TXAB) Boot Adapter, p. B-49. ✶ Recommended boot size for (TXD2, TXD3, TXD4) EMI/RFI Banding Boot Adapter, p. B-50.

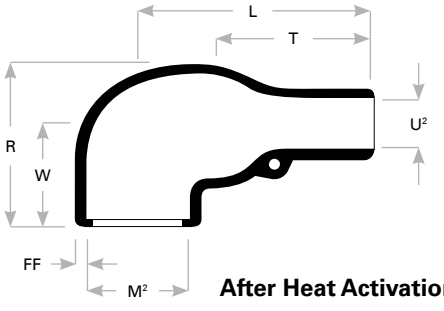
Boot Dimensions

Boot Size	M¹	U¹	M²	U²	L‡	R‡	T*	W‡	FF*
2	.940 (24.0)	.550 (14.0)	.410 (10.4)	.220 (5.6)	.980 (25.0)	.980 (25.0)	.630 (16.0)	.750 (19.0)	.050 (1.3)
3	1.180 (30.0)	.590 (15.0)	.560 (14.2)	.230 (5.9)	1.260 (32.0)	1.060 (27.0)	.790 (20.0)	.790 (20.0)	.060 (1.5)
4	1.220 (31.0)	.710 (18.0)	.710 (18.0)	.280 (7.1)	1.540 (39.0)	1.220 (31.0)	.790 (20.0)	.830 (21.0)	.070 (1.8)
5	1.420 (36.0)	.830 (21.0)	.880 (22.4)	.330 (8.4)	1.810 (46.0)	1.500 (38.0)	.980 (25.0)	1.020 (26.0)	.070 (1.8)
6	1.690 (43.0)	.980 (25.0)	1.110 (28.2)	.390 (9.9)	2.171 (55.0)	1.770 (45.0)	1.180 (30.0)	1.180 (30.0)	.080 (2.0)
7	2.050 (52.0)	1.540 (39.0)	1.380 (35.1)	.620 (15.7)	3.150 (80.0)	2.130 (54.0)	1.770 (45.0)	1.380 (35.0)	.130 (3.3)
8	2.600 (66.0)	1.650 (42.0)	1.750 (44.5)	.660 (16.8)	4.250 (108.0)	2.680 (68.0)	2.760 (70.0)	1.650 (42.0)	.150 (3.8)

Dimensions are in inches (mm). ‡ Dimensions ±10% before and after heat activation. ✶ Dimensions ±10% before heat activation, ±20% after heat activation.



Before Heat Activation



After Heat Activation

Rev. 2235

Boot Adapter

TX Series • MIL-DTL-38999 Series III Style Connectors

TXAB - 15 B - K2

1 2 3 4

1 **BASIC PART NUMBER**
- **TXAB** Boot adapter

2 **SHELL SIZE**
- See Adapter Dimensions table below

3 **MATERIAL & FINISH**
- **B** Aluminum, hardcoat anodize
- **N** Aluminum, electroless nickel
- **W** Aluminum, olive drab cadmium
- **G** Aluminum, electroless nickel (space-grade)

4 **OPTIONAL BOOT KIT** (OMIT FOR NONE)
- **K2** Includes recommended straight shrink boot in standard material 100, p. B-47
- **K4** Includes recommended 90° shrink boot in standard material 100, p. B-48

Note: See part builder (p. B-17) for additional kit options.

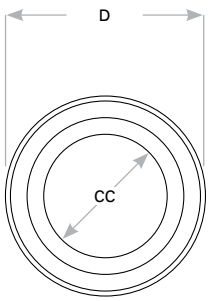
TXAB Compatibility

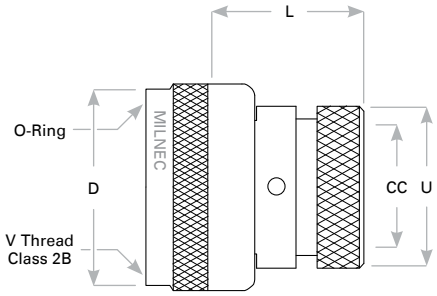
Compatible Brands	Connectors
MIL-DTL-38999 Series III	D38999/20, D38999/24, D38999/26
Aero / Conesys	AE320, AE324, AE326
Amphenol	TVP00, TVPS00, TV06, TVS06, TV07, TVS07
Deutsch	DTS20, DTS24, DTS26
ITT Cannon	KJA0, KJA6, KJA7
Souriau	8D0, 8D1, 8D5, 8D7, 8DS00, 8DS06G, 8DS07

Adapter Dimensions

Shell Size	Military Shell Size	CC Cable Clearance	L	D	U	V Thread Class 2B
9	A	.250 (6.4)	.710 (18.0)	.600 (15.2)	.533 (13.5)	M12 X 1-6H
11	B	.375 (9.5)	.710 (18.0)	.717 (18.2)	.605 (15.4)	M15 X 1-6H
13	C	.500 (12.7)	.710 (18.0)	.834 (21.2)	.774 (19.7)	M18 X 1-6H
15	D	.625 (15.9)	.710 (18.0)	.990 (25.2)	.838 (21.3)	M22 X 1-6H
17	E	.750 (19.1)	.710 (18.0)	1.107 (28.1)	.963 (24.5)	M25 X 1-6H
19	F	.812 (20.6)	.710 (18.0)	1.224 (31.1)	1.042 (26.5)	M28 X 1-6H
21	G	.938 (23.8)	.710 (18.0)	1.341 (34.1)	1.217 (30.9)	M31 X 1-6H
23	H	1.062 (27.0)	.710 (18.0)	1.453 (36.9)	1.355 (34.4)	M34 X 1-6H
25	J	1.188 (30.2)	.710 (18.0)	1.567 (39.8)	1.443 (36.7)	M37 X 1-6H

Dimensions are in inches (mm).





TXD2 - 15 N - K2

1 2 3 4

1 BASIC PART NUMBER

TXD2	Straight EMI/RFI banding boot adapter
TXD3	45° EMI/RFI banding boot adapter
TXD4	90° EMI/RFI banding boot adapter

(Includes shield termination band TB250, p. B-58)

2 SHELL SIZE

See Adapter Dimensions table below

3 MATERIAL & FINISH

N	Aluminum, electroless nickel
W	Aluminum, olive drab cadmium
G	Aluminum, electroless nickel (space-grade)
M	Composite, electroless nickel
J	Composite, olive drab cadmium

4 OPTIONAL BOOT KIT (OMIT FOR NONE)

K2	Includes recommended straight shrink boot in standard material 100, p. B-47

Note: Designed for use with straight shrink boot (TXK2, p. B-47). See part builder (p. B-17) for additional kit options.

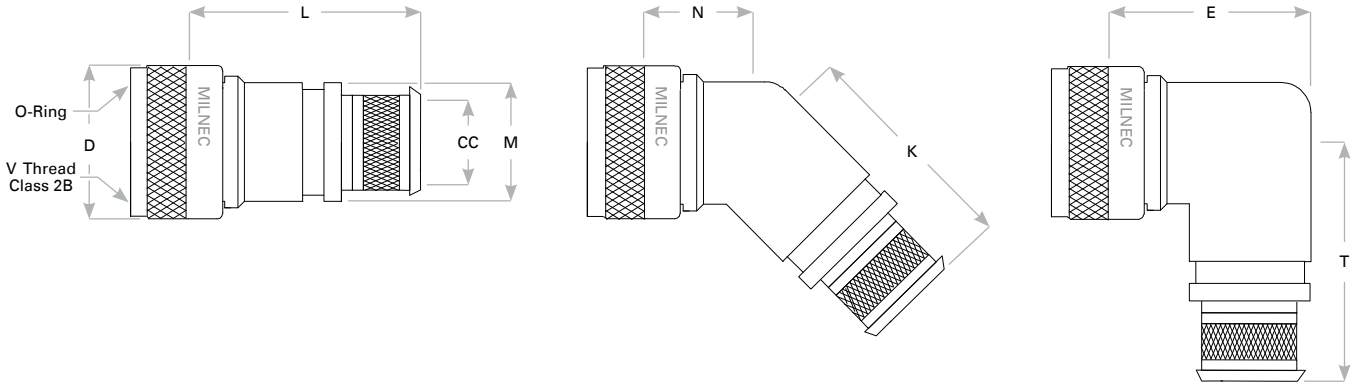
TXD2 Compatibility

Compatible Brands	Connectors
MIL-DTL-38999 Series III	D38999/20, D38999/24, D38999/26
Aero / Conesys	AE320, AE324, AE326
Amphenol	TVP00, TVPS00, TV06, TVS06, TV07, TVS07
Deutsch	DTS20, DTS24, DTS26
ITT Cannon	KJA0, KJA6, KJA7
Souriau	8D0, 8D1, 8D5, 8D7, 8DS00, 8DS06G, 8DS07

Adapter Dimensions

Shell Size	Military Shell Size	CC Cable Clearance	M Max	D Max	L Max	N Max	K Max	E Max	T Max	V Thread Class 2B
9	A	.250 (6.4)	.560 (14.2)	.858 (21.8)	1.350 (34.3)	1.012 (25.7)	1.161 (29.5)	1.375 (34.9)	1.417 (36.0)	M12 X 1-6H
11	B	.312 (7.9)	.630 (16.0)	.998 (25.4)	1.350 (34.3)	1.031 (26.2)	1.189 (30.2)	1.437 (36.5)	1.480 (37.6)	M15 X 1-6H
13	C	.438 (11.1)	.750 (19.1)	1.161 (29.5)	1.350 (34.3)	1.059 (26.9)	1.209 (30.7)	1.562 (39.7)	1.553 (39.4)	M18 X 1-6H
15	D	.562 (14.3)	.890 (22.6)	1.280 (32.5)	1.350 (34.3)	1.079 (27.4)	1.240 (31.5)	1.687 (42.8)	1.614 (41.0)	M22 X 1-6H
17	E	.625 (15.9)	.950 (24.1)	1.409 (35.8)	1.350 (34.3)	1.110 (28.2)	1.260 (32.0)	1.750 (44.5)	1.678 (42.6)	M25 X 1-6H
19	F	.750 (19.1)	1.070 (27.2)	1.520 (38.6)	1.350 (34.3)	1.118 (28.4)	1.272 (32.3)	1.875 (47.6)	1.733 (44.0)	M28 X 1-6H
21	G	.812 (20.6)	1.130 (28.7)	1.642 (41.7)	1.350 (34.3)	1.150 (29.2)	1.299 (33.0)	1.938 (49.2)	1.796 (45.6)	M31 X 1-6H
23	H	.938 (23.8)	1.260 (32.0)	1.772 (45.0)	1.350 (34.3)	1.169 (29.7)	1.331 (33.8)	2.062 (52.4)	1.859 (47.2)	M34 X 1-6H
25	J	1.000 (25.4)	1.320 (33.5)	1.890 (48.0)	1.350 (34.3)	1.201 (30.5)	1.350 (34.3)	2.125 (54.0)	1.919 (48.7)	M37 X 1-6H

Dimensions are in inches (mm).



Rev. 2235

TXCP & TXCR Compatibility

Compatible Brands	Plugs	Recepacles
MIL-DTL-38999 Series III	D38999/26	D38999/20, D38999/24
Aero / Conesys	AE326	AE320, AE324
Amphenol	TV06, TVS06	TVP00, TVPS00, TV07, TVS07
Deutsch	DTS26	DTS20, DTS24
ITT Cannon	KJA6	KJA0, KJA7
Souriau	8D5, 8DS06G	8D0, 8D1, 8D7, 8DS00, 8DS07

TXCP - 15 M E

1 2 3 4

1 BASIC PART NUMBER

TXCP Plug cover w/ wire rope

TXCR Receptacle cover w/ wire rope

2 SHELL SIZE

See Protective Cover Dimensions table below

3 MATERIAL & FINISH

N Aluminum, electroless nickel

W Aluminum, olive drab cadmium

G Aluminum, electroless nickel (space-grade)

M Composite, electroless nickel

J Composite, olive drab cadmium

4 ATTACHMENT TYPE

E Eyelet attachment on wire rope

J Jam nut ring attachment on wire rope (For use with TX07, TX13, TX27 jam nut recepts.)

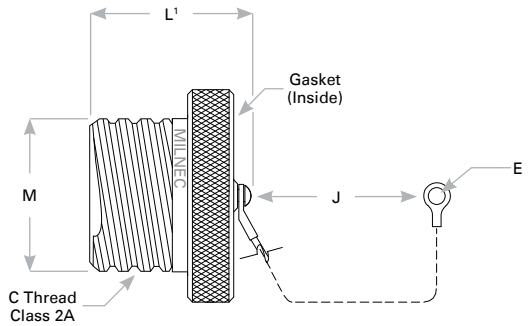
N No attachment

Note: See part builder (p. B-17) for additional kit options.

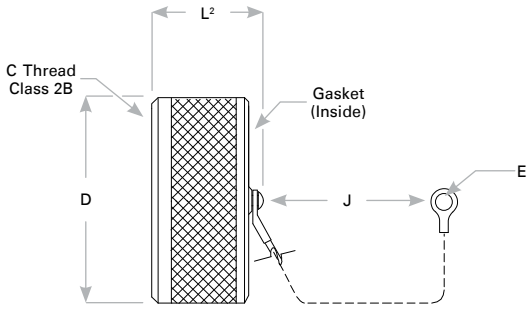
Protective Cover Dimensions

Shell Size	Military Shell Size	C Thread Class 2A/B	L¹	M	L²	D	R	E	J Chain Length
9	A	.6250-0.1P-0.3L-TS	1.180 (30.0)	.906 (23.0)	.906 (23.0)	.906 (23.0)	.694 (17.6)	.167 (4.2)	5.000 (127.0)
11	B	.7500-0.1P-0.3L-TS	1.180 (30.0)	1.024 (26.0)	.906 (23.0)	1.102 (28.0)	.865 (22.0)	.167 (4.2)	5.000 (127.0)
13	C	.8750-0.1P-0.3L-TS	1.180 (30.0)	1.220 (31.0)	.906 (23.0)	1.220 (31.0)	.989 (25.1)	.167 (4.2)	5.000 (127.0)
15	D	1.0000-0.1P-0.3L-TS	1.180 (30.0)	1.300 (33.0)	.906 (23.0)	1.260 (32.0)	1.178 (29.9)	.167 (4.2)	5.000 (127.0)
17	E	1.1875-0.1P-0.3L-TS	1.180 (30.0)	1.457 (37.0)	.906 (23.0)	1.457 (37.0)	1.260 (32.0)	.167 (4.2)	5.000 (127.0)
19	F	1.2500-0.1P-0.3L-TS	1.180 (30.0)	1.575 (40.0)	.906 (23.0)	1.535 (39.0)	1.428 (36.3)	.167 (4.2)	5.000 (127.0)
21	G	1.3750-0.1P-0.3L-TS	1.180 (30.0)	1.732 (44.0)	.906 (23.0)	1.654 (42.0)	1.506 (38.3)	.167 (4.2)	5.000 (127.0)
23	H	1.5000-0.1P-0.3L-TS	1.180 (30.0)	1.811 (46.0)	.906 (23.0)	1.772 (45.0)	1.678 (42.6)	.167 (4.2)	5.000 (127.0)
25	J	1.6250-0.1P-0.3L-TS	1.180 (30.0)	1.969 (50.0)	.906 (23.0)	1.929 (49.0)	1.750 (44.5)	.167 (4.2)	5.000 (127.0)

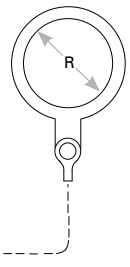
Dimensions are in inches (mm).



Plug Cover



Receptacle Cover



Jam Nut Ring Attachment

Rev. 2235

TXCD - 15 W - 03

1 2 3 4

1 BASIC PART NUMBER
- **TXCD** Stowage receptacle

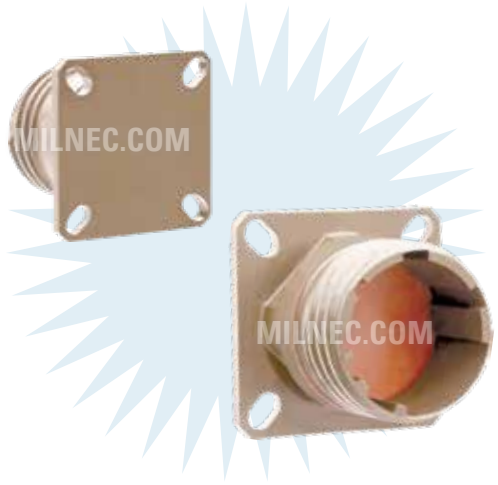
2 SHELL SIZE
- See Stowage Receptacle Dimensions table below

3 MATERIAL & FINISH
- **N** Aluminum, electroless nickel
- **W** Aluminum, olive drab cadmium
- **G** Aluminum, electroless nickel (space-grade)
- **K*** Stainless steel, passivated
- **L*** Stainless steel, electrodeposited nickel

4 OPTIONAL ACCESSORY KIT (OMIT FOR NONE)
- **02** Protective cover + mounting gasket
- **03** 02 kit + mounting bracket + sealing screws

* Please consult an authorized distributor for lead time and minimum quantity requirements.

Note: See part builder (p. B-17) for additional kit options.



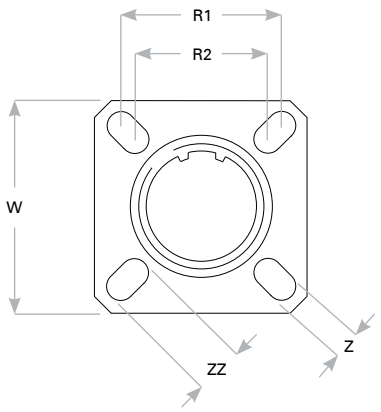
TXCD Compatibility

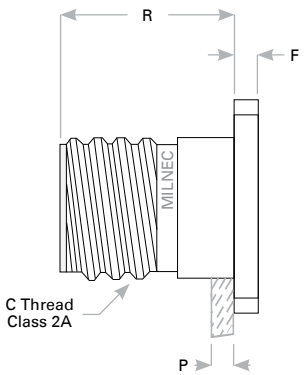
Compatible Brands	Plugs
MIL-DTL-38999 Series III	D38999/26
Aero / Conesys	AE326
Amphenol	TV06, TVS06, CTV06, CTVS06
Deutsch	DTS26
ITT Cannon	KJA6
Souriau	8D5, 8DS06G

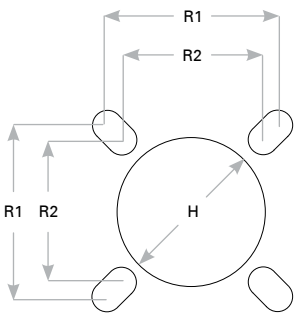
Stowage Receptacle Dimensions

Shell Size	Military Shell Size	W	ZZ	Z	C Thread Class 2A	R	F	P Max Rear Panel‡	R1	R2	H
9	A	.938 (23.8)	.216 (5.5)	.128 (3.3)	.6250-0.1P-0.3L-TS	.822 (20.9)	.098 (2.5)	.234 (5.9)	.719 (18.3)	.594 (15.1)	.656 (16.7)
11	B	1.031 (26.2)	.194 (4.9)	.128 (3.3)	.7500-0.1P-0.3L-TS	.822 (20.9)	.098 (2.5)	.234 (5.9)	.812 (20.6)	.719 (18.3)	.796 (20.2)
13	C	1.125 (28.6)	.194 (4.9)	.128 (3.3)	.8750-0.1P-0.3L-TS	.822 (20.9)	.098 (2.5)	.234 (5.9)	.906 (23.0)	.812 (20.6)	.922 (23.4)
15	D	1.219 (31.0)	.173 (4.4)	.128 (3.3)	1.0000-0.1P-0.3L-TS	.822 (20.9)	.098 (2.5)	.234 (5.9)	.969 (24.6)	.906 (23.0)	1.047 (26.6)
17	E	1.312 (33.3)	.194 (4.9)	.128 (3.3)	1.1875-0.1P-0.3L-TS	.822 (20.9)	.098 (2.5)	.234 (5.9)	1.062 (27.0)	.969 (24.6)	1.219 (31.0)
19	F	1.438 (36.5)	.194 (4.9)	.128 (3.3)	1.2500-0.1P-0.3L-TS	.822 (20.9)	.098 (2.5)	.234 (5.9)	1.156 (29.4)	1.062 (27.0)	1.297 (32.9)
21	G	1.562 (39.7)	.194 (4.9)	.128 (3.3)	1.3750-0.1P-0.3L-TS	.791 (20.1)	.125 (3.2)	.234 (5.9)	1.250 (31.8)	1.156 (29.4)	1.422 (36.1)
23	H	1.688 (42.9)	.242 (6.1)	.154 (3.9)	1.5000-0.1P-0.3L-TS	.791 (20.1)	.125 (3.2)	.234 (5.9)	1.375 (34.9)	1.250 (31.8)	1.547 (39.3)
25	J	1.812 (46.0)	.242 (6.1)	.154 (3.9)	1.6250-0.1P-0.3L-TS	.791 (20.1)	.125 (3.2)	.234 (5.9)	1.500 (38.1)	1.375 (34.9)	1.672 (42.5)

Dimensions are in inches (mm). ‡ Max panel thickness applies only to rear mount applications to ensure proper coupling clearance.







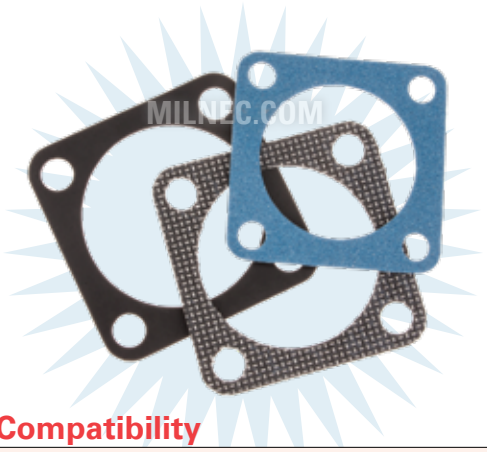
Panel Cutout

Kits with 03 accessory option will use R1 mounting hole positions.

Rev. 2235

Mounting Gasket

TX Series • MIL-DTL-38999 Series III Style Connectors



TXGE Compatibility

Compatible Brands	Receptacles
MIL-DTL-38999 Series III	D38999/20
Aero / Conesys	AE320
Amphenol	TVP00, TVPS00, CTVP00, CTVPS00
Deutsch	DTS20
ITT Cannon	KJA0
Souriau	8D0

TXGE - 15 R1

1 2 3

1 BASIC PART NUMBER

TXGE Neoprene environmental (weather resistant)
Temp. range -40˚F to +230˚F (-40˚C to +110˚C)

TXGS Conductive EMI-RFI neoprene, Ni-Cu alloy mesh
Temp. range -40˚F to +230˚F (-40˚C to +110˚C)

TXGL Fluorosilicone (jet fuel & oil resistant)
Temp. range -70˚F to +392˚F (-56˚C to +200˚C)
Per MIL-DTL-25988, Class 1, Grade 6

TXGD Conductive EMI-RFI fluorosilicone, Al-Ag filled
Temp. range -70˚F to +392˚F (-56˚C to +200˚C)
Shielding effectiveness at 90 dB @ 10 GHz
Per MIL-DTL-83528, Type D

2 SHELL SIZE

See Gasket Dimensions table below

3 MOUNTING HOLE

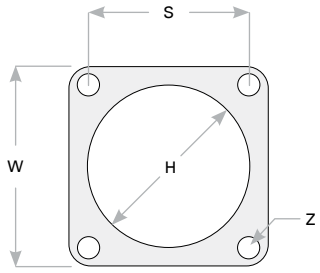
R1 For mounting connector flange behind panel

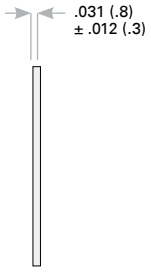
R2 For mounting connector flange on front panel

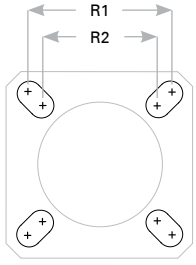
Gasket Dimensions

Shell Size	Military Shell Size	W	S	Z	H	Mounting Hole
9	A	1.000 (25.4)	.719 (18.3)	.172 (4.4)	.625 (15.9)	R1
		.875 (22.2)	.594 (15.1)	.172 (4.4)	.500 (12.7)	R2
11	B	1.094 (27.8)	.813 (20.7)	.172 (4.4)	.750 (19.1)	R1
		1.000 (25.4)	.719 (18.3)	.172 (4.4)	.625 (15.9)	R2
13	C	1.188 (30.2)	.906 (23.0)	.172 (4.4)	.875 (22.2)	R1
		1.094 (27.8)	.813 (20.7)	.172 (4.4)	.750 (19.1)	R2
15	D	1.281 (32.5)	.969 (24.6)	.172 (4.4)	1.000 (25.4)	R1
		1.188 (30.2)	.906 (23.0)	.172 (4.4)	.875 (22.2)	R2
17	E	1.375 (34.9)	1.063 (27.0)	.203 (5.2)	1.125 (28.6)	R1
		1.281 (32.5)	.969 (24.6)	.172 (4.4)	1.000 (25.4)	R2
19	F	1.500 (38.1)	1.156 (29.4)	.203 (5.2)	1.250 (31.8)	R1
		1.375 (34.9)	1.063 (27.0)	.203 (5.2)	1.125 (28.6)	R2
21	G	1.625 (41.3)	1.250 (31.8)	.203 (5.2)	1.375 (34.9)	R1
		1.500 (38.1)	1.156 (29.4)	.203 (5.2)	1.250 (31.8)	R2
23	H	1.750 (44.5)	1.375 (34.9)	.203 (5.2)	1.500 (38.1)	R1
		1.625 (41.3)	1.250 (31.8)	.203 (5.2)	1.375 (34.9)	R2
25	J	1.785 (45.3)	1.500 (38.1)	.152 (3.9)	1.625 (41.3)	R1*
		1.750 (44.5)	1.375 (34.9)	.203 (5.2)	1.500 (38.1)	R2

Dimensions are in inches (mm). *TXGS not available in -25R1 mounting size.







Rev. 2235

TXMB - 15 R1 - A

1 2 3 4

1 BASIC PART NUMBER

TXMB Mounting bracket, aluminum alloy with imperial SST locking nuts

TXME Mounting bracket, aluminum alloy with metric SST locking nuts (available in R2 option only)

2 SHELL SIZE

See Bracket Dimensions table below

3 MOUNTING HOLE

R1 Outer position(rear mount)

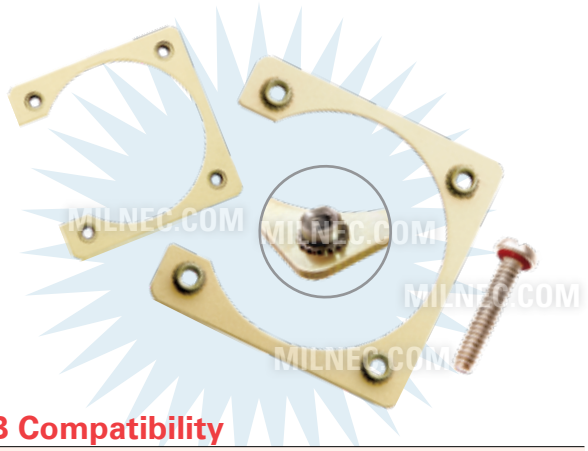
R2 Inner position (front mount)

4 OPTIONAL ACCESSORY KIT (OMIT FOR NONE)

A Self-sealing SST fillister head screws (4x)

B A kit + environmental gasket

D A kit + fluorosilicone EMI/RFI gasket



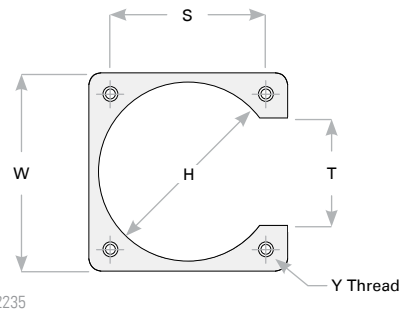
TXMB Compatibility

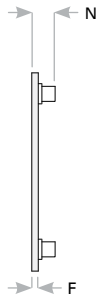
Compatible Brands	Receptacles
MIL-DTL-38999 Series III	D38999/20
Aero / Conesys	AE320
Amphenol	TVP00, TVPS00, CTVP00, CTVPS00
Deutsch	DTS20
ITT Cannon	KJA0
Souriau	8D0

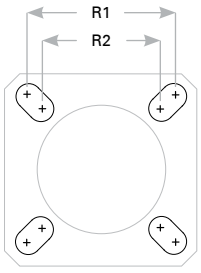
Bracket Dimensions

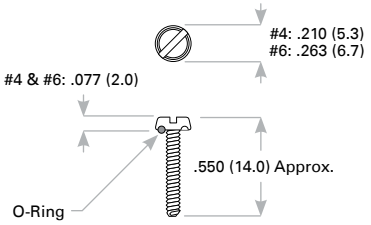
Shell Size	W	S	T	H	N	F	Mounting Hole	Screw Size	Y Thread Imperial	Y Thread Metric
9	1.019 (25.9)	.719 (18.3)	.433 (11.0)	.720 (18.3)	.136 (3.5)	.040 (1.0)	R1	#4	4-40 UNJC-3B	M3 x 0.5 UNJC-3B
	.880 (22.4)	.594 (15.1)	.308 (7.8)	.570 (14.5)	.136 (3.5)	.040 (1.0)	R2	#4	4-40 UNJC-3B	M3 x 0.5 UNJC-3B
11	1.104 (28.0)	.812 (20.6)	.530 (13.5)	.855 (21.7)	.136 (3.5)	.040 (1.0)	R1	#4	4-40 UNJC-3B	M3 x 0.5 UNJC-3B
	1.019 (25.9)	.719 (18.3)	.433 (11.0)	.720 (18.3)	.136 (3.5)	.040 (1.0)	R2	#4	4-40 UNJC-3B	M3 x 0.5 UNJC-3B
13	1.198 (30.4)	.906 (23.0)	.624 (15.8)	.984 (25.0)	.136 (3.5)	.040 (1.0)	R1	#4	4-40 UNJC-3B	M3 x 0.5 UNJC-3B
	1.104 (28.0)	.812 (20.6)	.530 (13.5)	.855 (21.7)	.136 (3.5)	.040 (1.0)	R2	#4	4-40 UNJC-3B	M3 x 0.5 UNJC-3B
15	1.280 (32.5)	.969 (24.6)	.687 (17.4)	1.094 (27.8)	.136 (3.5)	.040 (1.0)	R1	#4	4-40 UNJC-3B	M3 x 0.5 UNJC-3B
	1.198 (30.4)	.906 (23.0)	.624 (15.8)	.984 (25.0)	.136 (3.5)	.040 (1.0)	R2	#4	4-40 UNJC-3B	M3 x 0.5 UNJC-3B
17	1.406 (35.7)	1.062 (27.0)	.780 (19.8)	1.220 (31.0)	.136 (3.5)	.040 (1.0)	R1	#4	4-40 UNJC-3B	M3 x 0.5 UNJC-3B
	1.280 (32.5)	.969 (24.6)	.687 (17.4)	1.094 (27.8)	.136 (3.5)	.040 (1.0)	R2	#4	4-40 UNJC-3B	M3 x 0.5 UNJC-3B
19	1.535 (39.0)	1.156 (29.4)	.874 (22.2)	1.345 (34.2)	.136 (3.5)	.040 (1.0)	R1	#4	4-40 UNJC-3B	M3 x 0.5 UNJC-3B
	1.406 (35.7)	1.062 (27.0)	.780 (19.8)	1.220 (31.0)	.136 (3.5)	.040 (1.0)	R2	#4	4-40 UNJC-3B	M3 x 0.5 UNJC-3B
21	1.665 (42.3)	1.250 (31.8)	.968 (24.6)	1.478 (37.5)	.136 (3.5)	.040 (1.0)	R1	#4	4-40 UNJC-3B	M3 x 0.5 UNJC-3B
	1.535 (39.0)	1.156 (29.4)	.874 (22.2)	1.345 (34.2)	.136 (3.5)	.040 (1.0)	R2	#4	4-40 UNJC-3B	M3 x 0.5 UNJC-3B
23	1.738 (44.1)	1.375 (34.9)	.907 (23.0)	1.483 (37.7)	.153 (3.9)	.040 (1.0)	R1	#6	6-32 UNJC-3B	M3 x 0.5 UNJC-3B
	1.665 (42.3)	1.250 (31.8)	.968 (24.6)	1.478 (37.5)	.136 (3.5)	.040 (1.0)	R2	#4	4-40 UNJC-3B	M3 x 0.5 UNJC-3B
25	1.891 (48.0)	1.500 (38.1)	1.125 (28.6)	1.658 (42.1)	.153 (3.9)	.040 (1.0)	R1	#6	6-32 UNJC-3B	M3 x 0.5 UNJC-3B
	1.738 (44.1)	1.375 (34.9)	.907 (23.0)	1.483 (37.7)	.153 (3.9)	.040 (1.0)	R2	#6	6-32 UNJC-3B	M3 x 0.5 UNJC-3B

Dimensions are in inches (mm). Recommended sealing screw torque (inch/pounds): #4-40 screw (5.00/0.5), #6-32 & M3 screws (10.00/1.0).









Rev. 2235

Precision Hand Crimpers

A crimp tool provides reliable crimp termination of contacts for mission-critical applications. A hand crimper is suitable for contacts from size #12 to #22D. For production environments, pneumatic crimpers are also available.

Our tools feature an 8-impression crimp, which ensures maximum tensile strength between wire and contact. Their cycle controlled ratchets are consistent and accurate and do not permit half crimps, ensuring complete and precise crimping every time.

The tool frames have a built-in 8-step selector knob for easy adjustment of crimp depth to accommodate the size of wire being used. Data plates on positioners provide setting information specific to the size of wires and contacts being used.

There are a variety of crimp tools and positioners available to fit the various sized contacts within each connector series. We have paired our most popular models with their required positioner(s) to ensure complete compatibility.

Hand Crimper & Positioner Kits

Part Number	Kit Includes the Following Items	Contacts Sizes	Milnec Series Compatibility	Mil-Spec Series Compatibility
TK101-KIT	TK101A crimp tool with TP104 turret positioner	#20, #16, #12	DL Series, DS, Series, TX Series	MIL-DTL-38999 Series I, II, III
TK101B-KIT	TK101A crimp tool with TP102 turret positioner	#20, #16, #12	BM Series, EV Series, TM Series, HR Series	MIL-DTL-26482 Series I, II MIL-DTL-83723 Series III MIL-DTL-5015 Crimp*
TK201-KIT	TK201 crimp tool with the following positioners: TP209 (for pins), TP207 (for sockets)	#22, #22M, #22D	DL Series, TX Series	MIL-DTL-38999 Series I MIL-DTL-38999 Series III
TK201B-KIT	TK201 crimp tool with the following positioners: TP209 (for pins), TP206 (for sockets)	#22, #22M, #22D	DS Series	MIL-DTL-38999 Series II

* Contacts size #8 and larger require pneumatic crimper. When this is not an option, wires may be soldered directly into contact wire well. For mission critical applications, crimping is preferred termination method.

Rev. 2235

H900 Soldering Station Kit

Our soldering station kit provides a complete solution for professionally terminating solder contacts to stranded or solid core wire.

Features & Benefits

- Temperature range 392° to 896°F (200° to 480°C)
- Adjustable temperature control dial with lock/set screw
- Idle temperature stability of ±1.8°F (1.0°C)
- Ceramic heating element and sensor ensure rapid heat-up temperature (30 seconds) and fast thermal recovery
- Celsius or Fahrenheit temperature setting
- Slender iron handles are insulated and ergonomically designed for ease and comfort
- ESD-safe design suitable for controlled environments
- 5 interchangeable tips suitable for connector solder contacts ranging from #0 to #22D

Note: The above lists standard options readily available in stock. Please consult an authorized distributor for full range of solder stations, re-work stations, specialty tips, and accessories.

Soldering Station Kit

Part Number	Kit Includes The Following Items
H900	120V / 60W soldering station, iron holder, cleaning sponge, 5 interchangeable tips, rosin-core lead solder, instructions

Replacement Tips

Part Number	For Contact Size	Description	Image
H900-6D	#16, #20, #22D	Chisel (1.6mm Tip)	
H900-B	#16, #20	Conical (0.5mm Tip)	
H900-2C	#16	45° Beveled (2mm Tip)	
H900-4C	#8, #12	45° Beveled (4mm Tip)	
H900-S3	#0, #4	Chisel (5.2mm Tip)	

TH1910E Professional Heat Gun

Our professional heat gun kit provides a complete solution for installing shrink boots. Interchangeable nozzles help to concentrate heat flow or to direct hot air evenly around a target while protecting sensitive equipment nearby.

Features & Benefits

- Temperature range 120° to 1,100°F (49° to 593°C)
- 3 interchangeable nozzle attachments
- Adjustable temperature control dial
- 3 stage switch to control airflow from 3.6 to 17.6 ft³/min
- Ergonomic design for ease and comfort

Note: The above lists standard options readily available in stock. Please consult an authorized distributor for full range of heat guns and specialized nozzle accessories.

Heat Gun Kit

Part Number	Kit Includes The Following Items
TH1910E	120V / 1,500W variable temperature heat gun, ring holder, and 3 interchangeable nozzles

Consult with authorized distributor for 220V, 230V, & 240V models suitable for your region.

Nozzle Attachments

Part Number	Description
TH101	10mm reduction nozzle
TH102	39mm reflector nozzle
TH103	13mm reflector nozzle

Banding Tool

This specially designed banding tool is the only tool needed to professionally install shielding termination bands to all Milnec EMI/RFI banding adapters. The simple hand tool positions, tightens, and trims the shield termination band with just a few easy steps for a foolproof, precise installation.

Features & Benefits

- One tool for all adapter sizes
- Ergonomic & lightweight: 1.18 lbs (0.5 kg)
- Tension range: 100 to 180 lbs (45.3 to 81.6 kg)

Banding Tool

Part Number	Kit Includes The Following Items
TB058	Banding tool for TB250 shield termination bands (.250/6.4 width)
TB048	Banding tool for TB120 shield termination bands (.120/3.1 width)

Note: Please consult an authorized distributor for full range of pneumatic banding tools for high-volume production environments.

Shield Termination Band

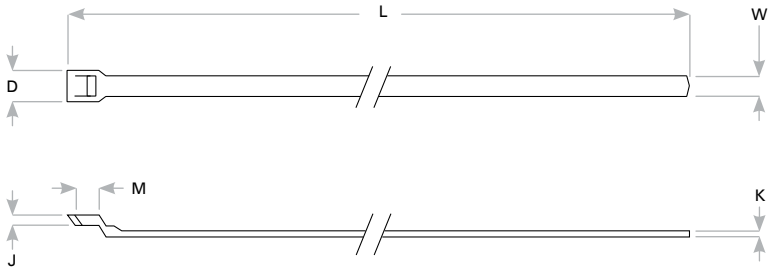
Shield termination bands will professionally attach shielding to Milnec EMI/RFI banding boot adapters of all sizes. The bands can be quickly and reliably installed with the specially designed banding tool. Bands come pre-coiled for faster installation.

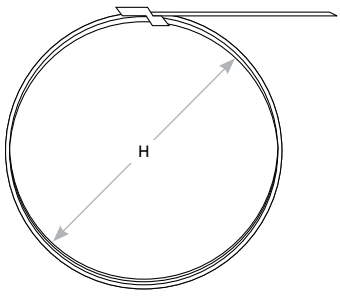
Features & Benefits

- Double-wrapped bands will accommodate diameters up to approximately 0.88 inches (22.4 mm)
- 300 series stainless steel single-piece construction

Band Dimensions

Part Number	L	W	D	K	J	M	H
TB250	14.252 (362.0)	.250 (6.4)	.350 (8.9)	.020 (0.5)	.130 (3.3)	156 (4.0)	1.750 (44.5)
TB120	8.125 (206.4)	.120 (3.1)	.195 (5.0)	.015 (0.4)	.053 (1.4)	.090 (2.3)	0.860 (21.8)





Pre-coiled Band

Dimensions are in inches (mm).

Rev. 2235

Introduction to Contact Crimping

Crimping is a termination method that firmly attaches a contact onto a wire by compressing the body of the contact around the wire using a crimping tool. The crimping process ensures metal-to-metal contact and establishes a reliable mechanical and electrical connection. Crimp termination is the preferred method for high-performance applications because it allows for higher contact densities, ease of installation, and increased reliability over solder termination. A crimp tool and the proper positioner are necessary for an effective and reliable crimp connection. A crimp tool can terminate a wide variety of contact sizes by simply changing the poistioner, making crimp termination a quick and easy task. Crimp contacts can also be removed and replaced if one becomes damaged without having to replace the entire connector.

The steps that follow will guide you through basic contact crimping. Before you begin, read through all of the instructions and gather all the necessary materials, including connectors, wires, contacts, connector accessories, crimper, dies, wire stripper/cutter, and ruler. Don't forget to wear appropriate eye protection while you are working. ■

Basic Contact Crimping Instructions

1 Slide the backshell and accessories over the wire bundle in their proper order. This must be done prior to crimping because the accessories cannot be placed on the cable once contacts are inserted into the connector.

2 Select the proper crimp tool and positioner for the size of contact you are using. Open the crimp tool by squeezing the handles until the ratchet releases and the tool opens completely.

Always adjust the tool in the open position to avoid damage.

3 Adjust the crimper's selector knob to the settings recommended on the positioner's data plate that correspond to the contact size and wire gauge being used.

When using a turret positioner, be sure to press the turret into the positioner body until it locks into place after the appropriate contact size has been selected.

4 Make a clean cut at the end of the wire to be terminated and strip the insulation to the correct length. If stranded wire is being used, lightly twist the strands together.

To find the proper strip length for your contact, see the Contacts, Sealing Plugs, & Tooling table on p. B-10.

5 After stripping the wire insulator, clean the exposed conductor with a swab of alcohol to remove any impurities.

6 Insert the conductor into the crimp well until it rests on the bottom. Check the inspection hole to ensure that the conductor is visible. If wire jacket has been properly stripped, only a small amount of conductor should be visible between the top of the contact well and the wire jacket. When using stranded wire, ensure that all strands are contained.

7 Insert the wired contact into the crimp tool. While holding the wire in place, squeeze the crimp tool handle. Once crimping has begun, the tool will not open until the crimping cycle is complete. When the tool handle has released, remove the wire and contact.

8 Inspect the crimped contact to ensure that all wire strands are contained in the crimp barrel and that the conductor is visible through the contact's inspection hole. If no conductor is visible, re-crimping is recommended.

9 When crimping is complete, slide the wire and contact into the channel of the properly sized contact insertion tool. Ensure that the tool tip lies flat against the contact shoulder. For double-sided plastic field installation tools, the colored tip is the insertion side, the white the removal side.

For production environments, stainless steel tools are recommended.

10 Hold the contact and tool perpendicular to the rear face of the connector's grommet. Push the contact into the insulator with firm and even pressure until the contact clicks into place.

11 Remove the tool and pull back lightly on the wire to ensure that the contact is properly secured. Repeat the process with each remaining contact. For connectors with high contact densities, begin in the center cavity and work outward in a circular pattern.

12 Check the mating face of the connector to ensure that all contacts are fully inserted. If not, completely remove the partially inserted contacts using the proper extraction tool and insert again.

Fill all unused cavities with contacts followed by sealing plugs to environmentally seal the connector. Sealing plugs should be inserted head first and any excess trimmed.

13 To remove a contact, place the wire attached to the contact to be removed in the proper extraction tool (white tip of plastic tool). Slowly slide the extraction tool down the wire and into the contact cavity until the tool tip bottoms against the contact shoulder.

For production environments, stainless steel removal tools are recommended.

14 Hold the wire firmly in the tool and carefully pull back to extract the tool and the contact from the connector simultaneously.

Repeat the process for all contacts to be extracted.

Introduction to Shrink Boots

A shrink boot is a simple but effective alternative to a metal backshell that provides strain relief and environmental sealing for applications requiring a low-profile backshell and easy installation. To use a shrink boot with a connector, the boot must be installed in conjunction with a specially designed boot adapter to environmentally seal the jacketed cable and the connector.

A shrink boot adapter attaches to a connector's accessory threads via a spin coupling, which permits the adapter to be attached and removed without twisting or binding the cable. The adapter provides a specially designed gripping area or platform to accommodate the lip of a shrink boot. The semi-flexible, low-smoke, flame retardant polyolefin boot features an inner adhesive that bonds to the adapter. When heat is applied with a heat gun or other heat source, the boot shrinks and self-adheres to the adaptor and cable, forming the environmental seal. The recovered shrink boot's firm grip on the jacketed cable and on the boot adapter offers excellent strain relief.

Whenever a shrink boot is used with an EMI/RFI adapter, the wire braid that shields the cable must be banded to the adapter in order to ground the connector. A special banding tool creates a quick and reliable clamp that terminates the wire shield to the adapter and ensures EMI/RFI protection. ■

Basic Banding and Shrink Boot Instructions

1 After contact termination is complete, slide the boot adapter and shrink boot up the cable and attach the adapter to the rear end of the wired connector. If using the EMI/RFI boot adapter, be sure to strip the wire jacket back enough to expose sufficient shielding to fit over the termination platform.

Prepare the exposed shield by folding back or inverting the wire braids (fish-mouthing) to provide for correct length and finished look. (If using a basic boot adapter, start at step 6.)

2 Create a double-wrapped loop in the termination band by feeding the end of it through the narrow slot on the buckle twice. Pull on the tail of the band to reduce the loop until the start mark has been pulled through the buckle. Squeeze the release lever of the banding tool and insert the band tail into the tool up to the start mark.

3 Slide the shield over the adapter, then slide the band over the shield and rest it on the banding platform. Repeatedly squeeze the pull-up handle to tighten the band. Always allow the pull-up handle to return to its original position after each stroke. Correct tension on the band has been reached when the handle locks against the tool body.

4 Once the handle has locked against the tool body to signify that the band is at the right tension, squeeze the cut-off handle (top handle) once to lock the band and trim excess material. Afterward, the tension handle will release. Remove the band from the tool.

5 Inspect the terminated shield to be sure that it is properly seated on the adapter. If re-banding is necessary, the installed band can be removed by prying up the tab on the buckle.

Shield Termination Options

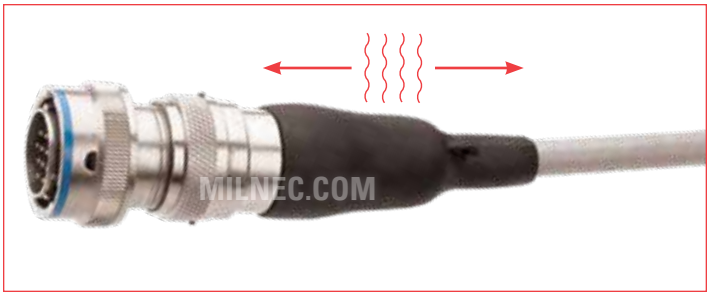
Shielded Jacketed Cable

An EMI/RFI banding boot adapter allows for quick and easy shield termination of a jacketed cable with a simple band. A shrink boot installed over the adapter offers a sleek, low-profile design with ruggedized environmental protection.

Wire Braid Over a Wire Bundle

The banding boot adapter also allows simple wire braid termination over a wire bundle for applications that do not require additional environmental protection.

6 Abrade the surface of the cable jacket to be covered by the shrink boot with #320 grit emery cloth and clean the surface with isopropyl alcohol. When ready, position the boot so that the lip will shrink or "recover" into the groove of the adapter.



7 Apply heat evenly around the boot at the adapter end and ensure that the lip of the boot fits tightly into the groove of the adapter. Then, heat down the body of the boot toward the cable end. Apply heat in brush-like strokes, ensuring the last part to recover is the back end. After the boot is fully recovered, apply additional heat to the adapter end to ensure that the adhesive lining has bonded.

8 After the boot has cooled, inspect it for proper installation. The boot should be free from scorching or blisters and the lip of the boot should be seated firmly into the adapter groove. A thin seam of adhesive should be visible between the boot and the cable jacket at the back end of the boot.

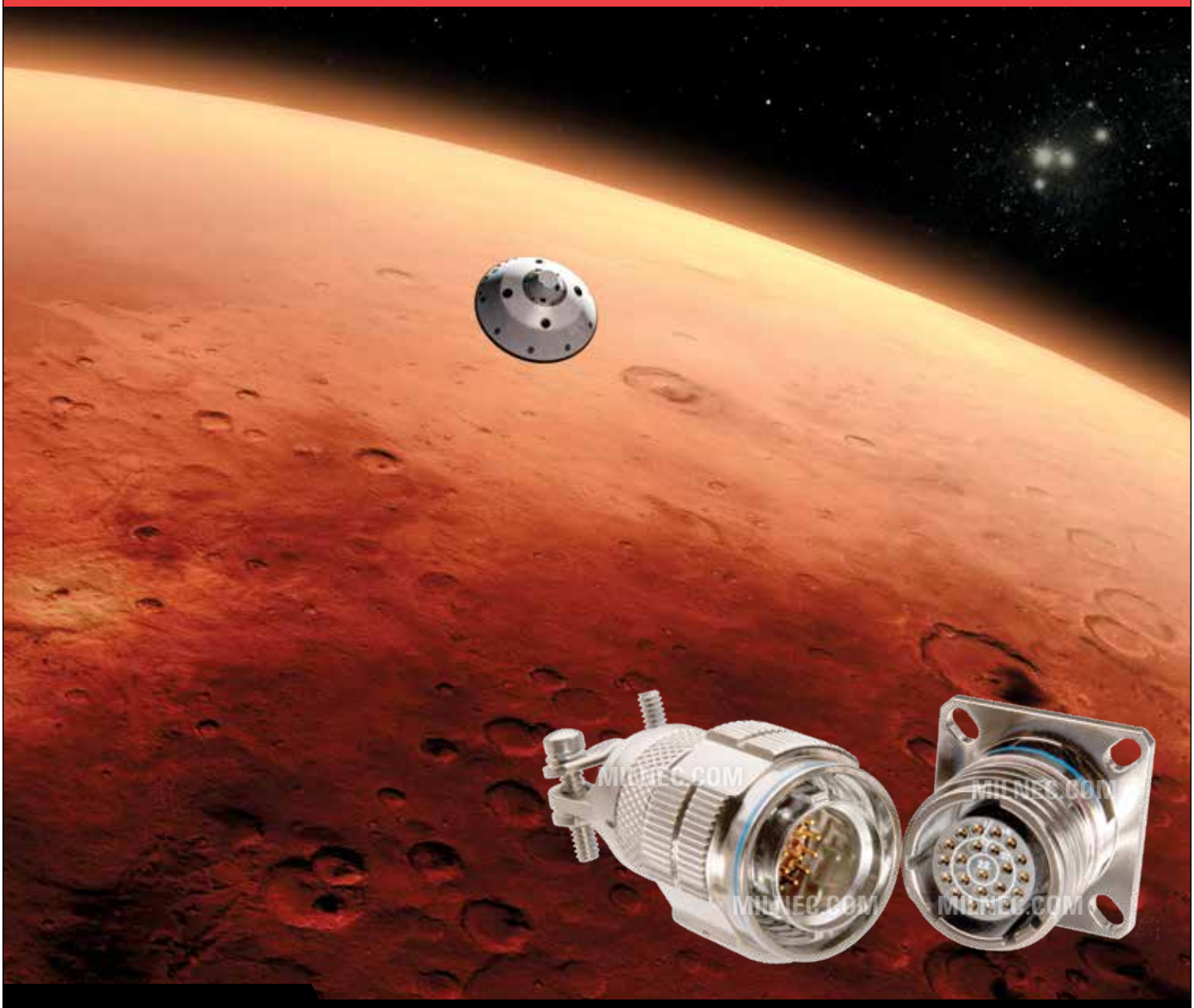
Application Tools

A professional heat gun and the TB058 banding tool are recommended for reliable shrink boot installation and EMI/RFI shield termination. The TB250 termination band is provided with all EMI/RFI Banding Boot Adapters.

TH1910E Heat Gun, p. B-57

TB058 Banding Tool, p. B-58

SPACE-GRADE CONNECTORS FOR THE FINAL FRONTIER



Don't Lose Touch With Mission Control

Rely on TX Series space-grade connectors for all your high-altitude and space applications. Our space-grade connectors meet all NASA specifications for outgassing and feature triple-start and impact resistant stub threads with self-locking ratchet coupling to ensure secure mating, even in high-vibration environments.

MILNEC® INTERCONNECT SYSTEMS