NOTE
All numerical values are in metric units [with U.S. customary units in brackets]. Dimensions are in millimeters. Unless otherwise specified, dimensions have a tolerance of ±0.13 and angles have a tolerance of ±2°. Figures and illustrations are for identification only and are not drawn to scale.

1. INTRODUCTION

This specification covers the requirements for the TE Connectivity (TE) High-Density derivative of the VMEbus International Trade Association (VITA) 66.4 Fiber-Optic Connector Kits for use with Multi-Mode MT Ferrules. This connector system has been designed for use as independent or stand-alone connectors in ANSI/VITA 48.1 (air-cooling applications) and ANSI/VITA 48.2 (conduction-cooling applications) applied to printed wiring boards (PWBs)/plug-in units defined in ANSI/VITA 46.0 VPX systems. Typical applications are in the aerospace and defense industry and include use in adverse environments for Embedded Computing, Processing, Avionics and Vetronics, Radar, Secure Communications and Imaging/Targeting.

The connector system provides an especially high-density, blind-mate optical interconnect in a backplane/card configuration. The fiber-optic (ribbon) cable interconnect is fed through the backplane to removable systems modules using Multi-Mode MT ferrules for up to 24 fibers. The plug and receptacle connector kits contain housings accepting two MT ferrules, accommodating up to 48 fiber paths in total.

When corresponding with TE Connectivity Personnel, use the terminology provided in this specification to facilitate inquiries for information. Basic terms and features of this product are provided in Figure 1.

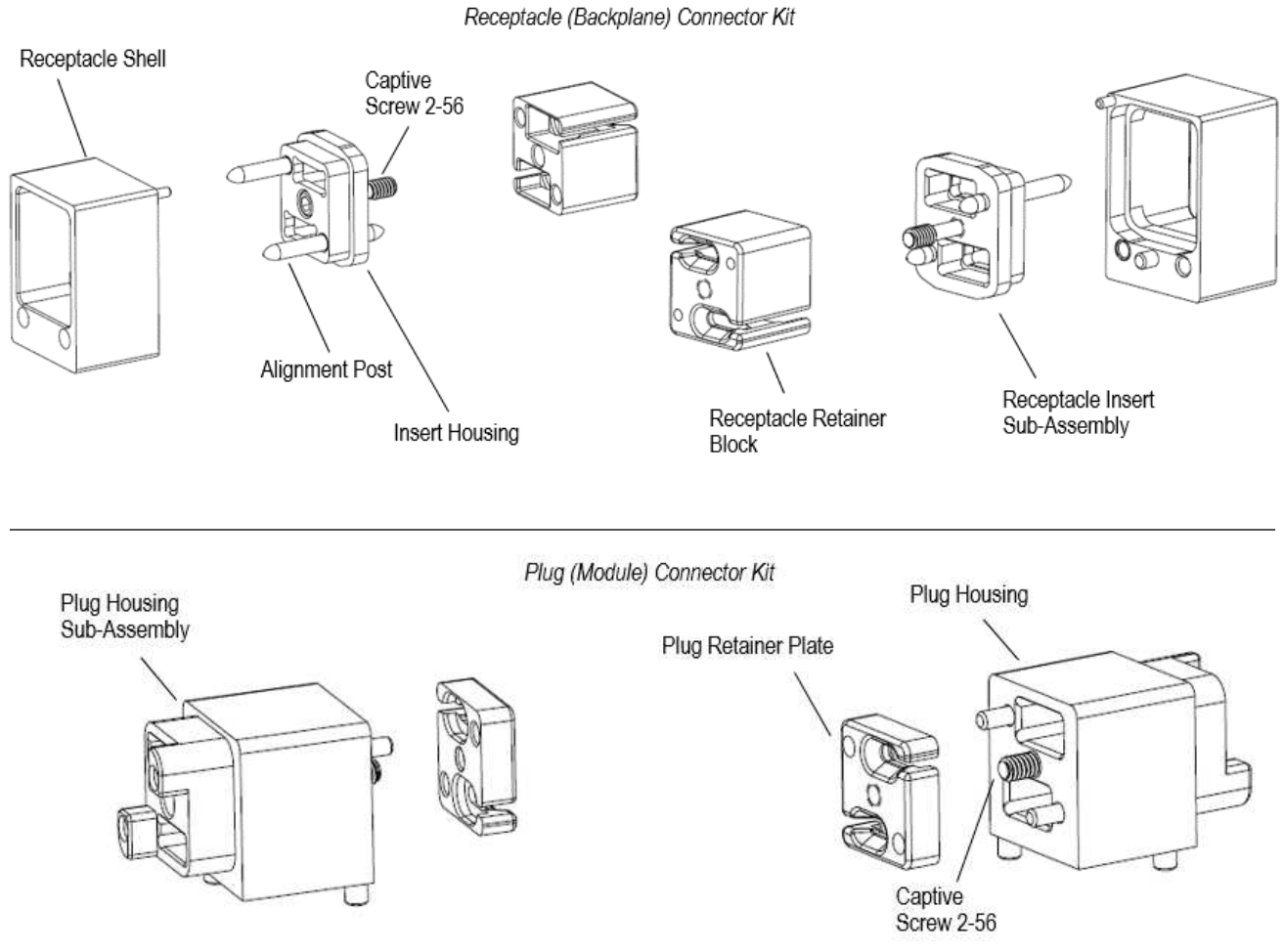


Figure 1

2. REFERENCE MATERIAL

2.1. Revision Summary

Initial release of application specification

2.2. Customer Assistance

Reference Product Base Part Numbers 2828383 and 2828384, and Product Code J547 are representative of the TE High-Density VITA 66.4 Derivative (Half-Size) Fiber Optic Connectors. Use of these numbers will identify the product line and help you to obtain product and tooling information when visiting www.te.com or calling the number at the bottom of page 1.

2.3. Customer Drawings

Customer drawings for product part numbers are available from www.te.com. If there is a conflict between the information contained in the Customer Drawings and this specification or with any other technical documentation supplied, the information contained in the Customer Drawings takes priority.

2.4. Specifications

Product Specification 108-163007 provides product performance requirements and test information for the TE High-Density VITA 66.4 Derivative (Half-Size) Fiber-Optic Connectors installed with low-loss-grade, Multi-Mode, 12-position MT ferrules. Qualification Test Report 501-163003 confirms successful qualification per the information in 108-163007.

2.5. Instructional Material

Instruction sheets (408-series) provide product assembly instructions or tool setup and operation procedures. Instruction sheets available that pertain to this product are:

Document Number	Document Title
408-8922	Cleaning and Inspection for Physical Contact Fiber-Optic Connectors

2.6. Standards and Publications

ANSI/VITA 46.0, “VPX Baseline Standard”, developed by the VMEbus International Trade Association (VITA) describes the VITA 46 VPX family of standards for VMEbus systems for the provision of high-speed interconnects in harsh-environment applications.

ANSI/VITA 47, “American National Standard for Environments, Design and Construction, Safety and Quality for Plug-In Units Standard”, developed by VITA, defines environmental, safety, and quality requirements for commercial-off-the-shelf (COTS) plug-in units (cards, modules, etc.) intended for mobile applications.

ANSI/VITA 48.1, “Mechanical Specification for Microcomputers Using REDI Air Cooling”, developed by VITA, defines the mechanical requirements that are needed to ensure the mechanical interchangeability of air-cooled 3U and 6U plug-in units and define the features required to achieve two level maintenance compatibility.

ANSI/VITA 48.2, “Mechanical Specification for Microcomputers Using REDI Conduction Cooling Applied to VITA VPX”, developed by VITA, defines the mechanical requirements that are needed to ensure the mechanical interchangeability of air-cooled 3U and 6U plug-in units and define the features required to achieve two level maintenance compatibility.

ANSI/VITA 65.0, “OpenVPX System Standard” developed by VITA, uses module mechanical, connectors, thermal, communications protocols, utility, and power definitions provided by specific VPX standards and then describes a series of standard profiles that define slots, backplanes, modules, and Standard Development Chasses.

ANSI/VITA 66.0, “Optical Interconnect on VPX - Base Standard”, developed by VITA, defines a family of blind-mate fiber-optic interconnects for use with VPX backplanes and plug-in modules.

ANSI/VITA 66.4, “Optical Interconnect on VPX – Half Width MT Variant”, developed by VITA, defines the half-size fiber-optic interconnect variant for the MT style contact.

IEC 61755-3-31, “Fiber-Optic Connector Optical Interfaces - Part 3-31”, which defines the MT ferrule end face geometry requirements.

IEC 61754-5, “Fiber-Optic Connector Interfaces - Part 5: Type MT Connector Family”, which defines the standard interface dimensions for the type MT family of connectors.

3. REQUIREMENTS

3.1. Safety Precautions

DANGER
Glass fiber can easily penetrate the skin and eyes. Always use extreme care and wear eye protection when stripping, cutting, and preparing the cable for use. Never look into the end of the fiber when the optical power is applied as infrared light cannot be seen, but it can severely damage the eyes. Also, never eat, drink, or smoke when working with the fibers. This could lead to ingestion of glass particles.

DANGER
To avoid personal injury, connectors must be handled with care; the component corners and edges may be sharp.

Do not stack product shipping containers so high that the containers buckle or deform.

3.2. Limitations

This connector system is designed to operate in a temperature range of -40° to 85°C [-40° to 185°F].

3.3. Material

The receptacle (backplane) connector shell, insert housing and retainer block, and the plug (module) connector housing and retainer plate are made of aluminum and are clear chromate conversion coated. The alignment posts and screws are made of passivated stainless steel.

3.4. Storage

A. Ultraviolet Light

Prolonged exposure to ultraviolet light could cause deterioration of the connector or the materials of the installed MT ferrules or cable assemblies.

B. Shelf Life

The product should remain in the shipping containers until ready for use to prevent deformation to components. The product should be used on a first in, first out basis to avoid storage contamination that could adversely affect performance.

C. Chemical Exposure

Do not store product near any chemical listed below as they may cause stress corrosion cracking in the material.

Alkalies	Ammonia	Citrates	Phosphates Citrates	Sulfur Compounds
Amines	Carbonates	Nitrites	Sulfur Nitrites	Tartrates

D. Temperature Exposure

The storage temperature for these fiber-optic connectors is -55 to 85°C [-67° to 185°F].

3.5. Special Characteristics

A. Receptacle (Backplane) Connector Kit (Figure 2)

- The retainer block is shipped unassembled with the receptacle connector shell and insert sub-assembly. The insert sub-assembly contains a captive screw which engages with the retainer block.
- The receptacle connector kit includes two mounting screws containing a pre-applied Nylok patch. The screws are used to secure the shell to the backplane board. The insert sub-assembly is secured between the connector shell and the backplane.
- The insert housing and retainer block contain cavities to accept two MT ferrules.

Nylok is a trademark.

- The shell contains two locating post features that position the connector on the backplane.
- The shell and insert sub-assembly are designed with 0.51 mm minimum clearance to provide at least ±0.25 mm floating alignment in both the x- and y- directions.
- The retainer block is slotted to accept the terminated cable assemblies, and it contains recessed pockets to support the spring component of each installed MT fiber optic cable assembly.

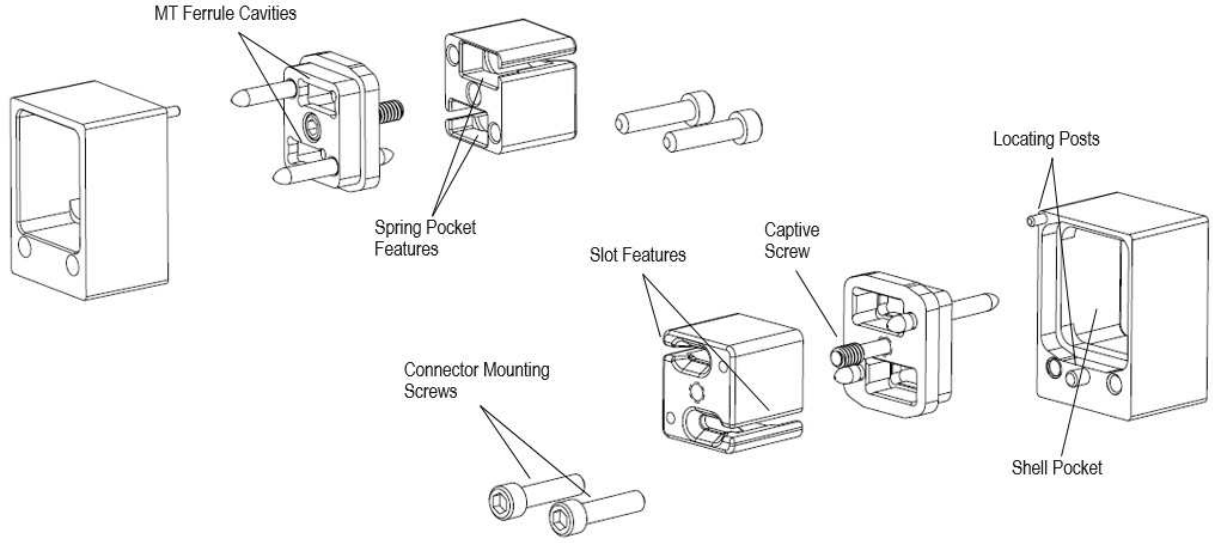


Figure 2

B. Plug (Module) Connector Kit (Figure 3)

- The retainer plate is shipped unassembled with the plug housing sub-assembly. The plug housing contains a captive screw which engages with the retainer plate.
- The housing contains two locating post features that position the connector relative to the edge of the module circuit board.
- The housing and retainer plate contain cavities to accept two MT ferrules.
- The connector kit includes two mounting screws containing a pre-applied Nylok patch. The screws are used to secure the connector housing to the module circuit board.
- The plug housing mating face is recessed to facilitate cleaning the MT ferrule interfaces.
- The retainer plate is slotted to accept the terminated cable assemblies, and it contains recessed pockets supporting the spring component of each fiber-optic cable assembly.

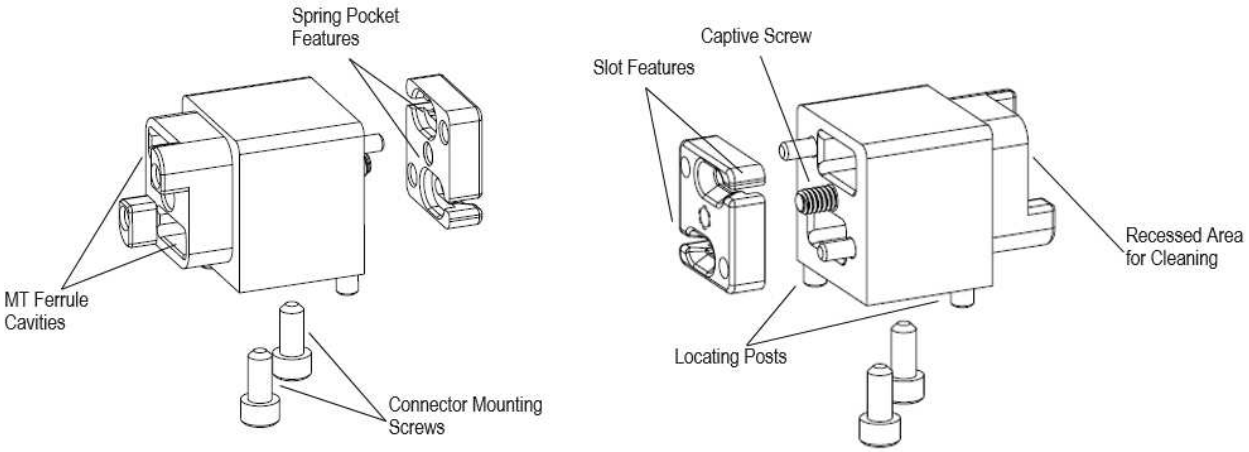


Figure 3

Nylok is a trademark.

3.6. Special Assembly Considerations

A. System Design

The system into which the High-Density VITA 66.4 Derivative (Half-Size) Fiber Optic Connector Kits are installed must support the weight of the drawer when modules are engaged (for example, the drawer must bottom on a built-in stop, not on the connectors).

B. Optical Loss Budget

An optical loss budget analysis is recommended to make certain the system will work over the proposed link. Parameters such as environmental exposure and end face maintenance techniques can add variance to loss budget inputs. For the loss through the module to backplane connection interface, the budget is typically 1.2 dB at 850 nm and 1300 nm. The return loss budget should typically be better than 20 dB. More detail on optical performance is provided in Product Specification 108-163007.

C. Guide Hardware (Figure 4)

The interaction of the guide pin and guide module provide error-free mating and prevents damage to the connectors. Guide hardware is recommended for multi-connector, large and heavy daughter card applications, and conditions where misalignment tolerances given in Section 3.7 cannot be met. Universal and keyed guide hardware are available for proper mating and allow up to ±3 mm offset for blind mating. The guide hardware consists of a guide pin and guide module. The connectors require 2 guide pins (for the receptacle) and 2 guide modules (for the plug), which must be attached to the respective PWB. Refer to Figure 4.

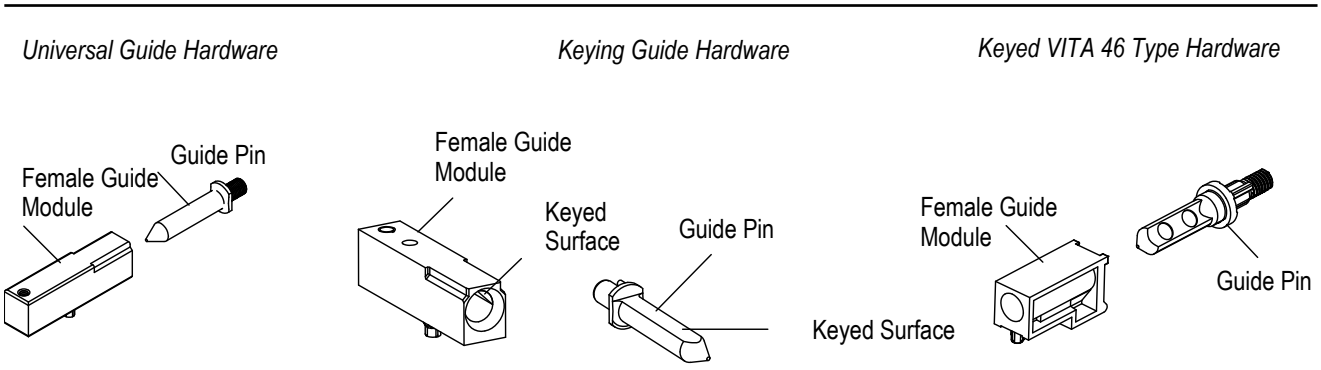


Figure 4

3.7. Printed Wiring Board Requirements

A. Material and Thickness

The recommended material for the both the backplane and module PWBs is glass epoxy (FR-4, G-10, or other TE Engineering-approved substrates). The TE High-Density VITA 66.4 Derivative Connectors require a minimum PWB thickness of 1.50 mm [.060 in]. The receptacle connector accommodates a maximum backplane PWB thickness of 5.8 mm [.228 in]. The plug connector accommodates a maximum daughtercard (module) PWB thickness of 3.5 mm [.138 in].

The length of the connector mounting screws provided in the connector kits limits the maximum PWB thickness. If an application would require a thicker PWB, longer connector mounting screws would be required. In that event, call PRODUCT INFORMATION at the number at the bottom of page 1 for alternate recommended mounting hardware.

B. Tolerance

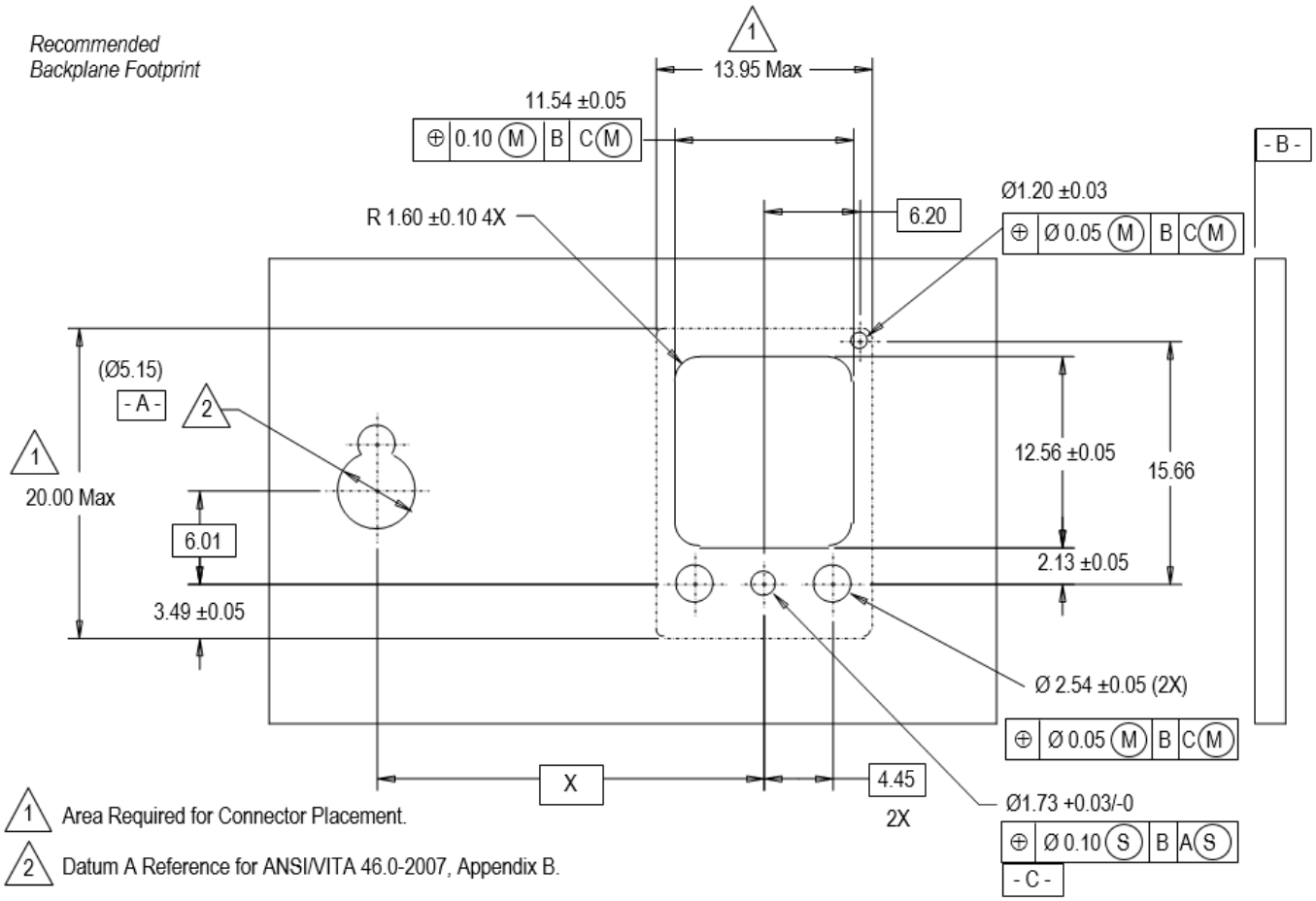
The maximum allowable bow of the PWB shall be 0.03 mm [.001 in.] over the length of the connector.

C. Layout (Figures 5 and 6)

For non-ANSI/VITA-VPX systems, the connectors may be located as required from otherwise-defined system datums.

Backplane PWB Layout:

The mounting and location holes and the rectangular cutout in the backplane PWB must be precisely located to ensure proper placement per ANSI/VITA 46.0 and optimum performance of the connector. The two PWB locating holes accept the connector alignment posts, and the two mounting holes accept the kitted machine screws required to secure the connector to the PWB. These four holes shall be unfinished. The backplane rectangular cutout provides clearance to install and remove the connector retainer block and MT ferrule/cable assemblies.

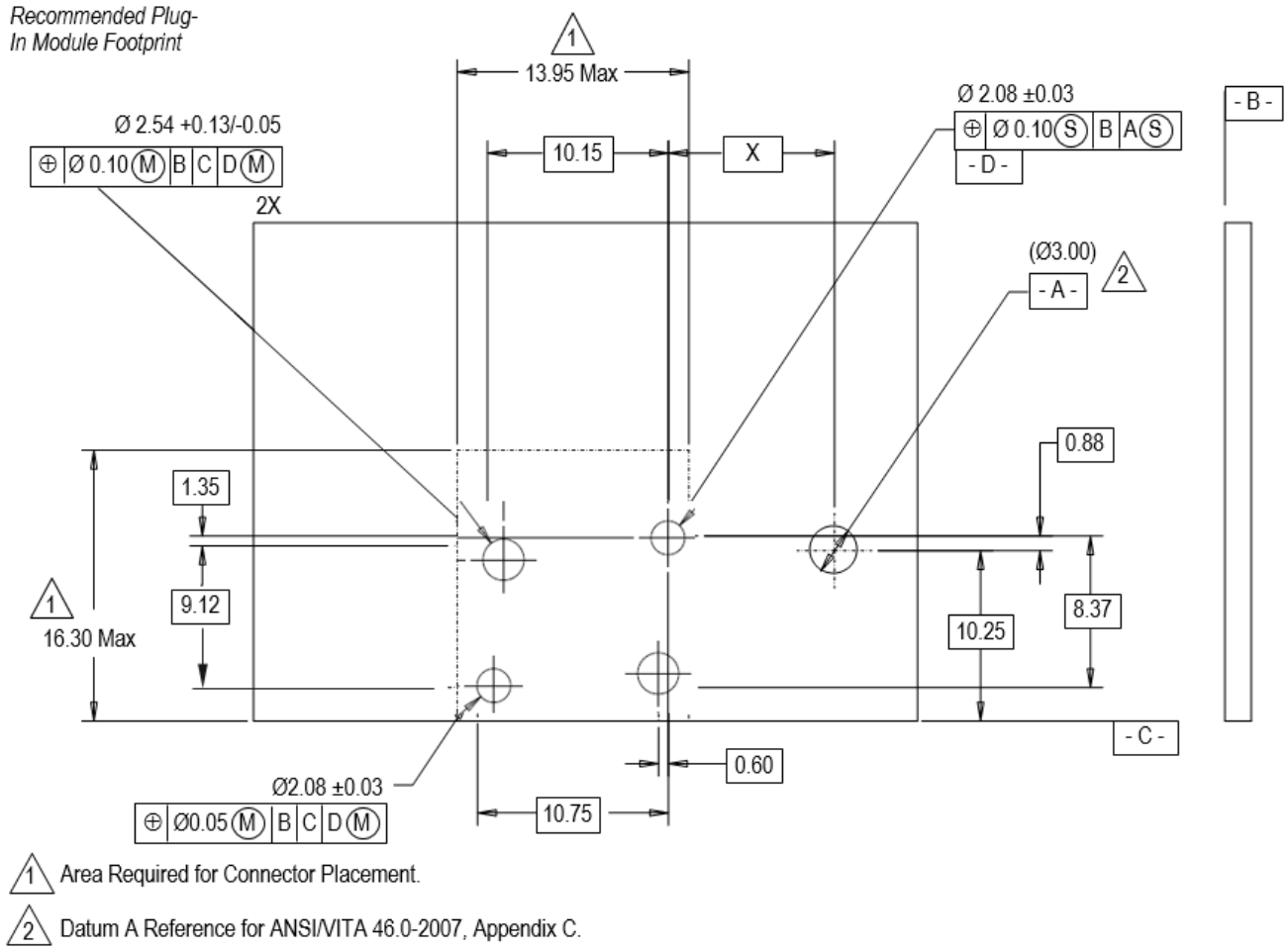


* CONNECTOR LOCATION ON BACKPLANE PC BOARD	
POSITION	**DIMENSION "X"**
J2A	58.73
J2B	72.85
J3A	101.60
J3B	115.72
J4A	130.40
J4B	144.52
J5A	159.20
J5B	173.32
J6A	188.00
J6B	202.12

Figure 5

Module PWB Layout:

The mounting and location holes in the module PWB must be precisely located for proper placement relative to the leading edge of the PWB and the Datum A reference per ANSI/VITA 46.0 and to ensure optimum performance of the connector. The two PWB locating holes accept the connector alignment posts, and the two mounting holes accept the kitted machine screws required to secure the connector to the PWB. These four holes shall be unfinished.



CONNECTOR LOCATION ON MODULE PW BOARD	
POSITION	**DIMENSION "X"**
P2A	52.98
P2B	67.10
P3A	95.85
P3B	109.97
P4A	124.65
P4B	138.77
P5A	153.45
P5B	167.57
P6A	182.25
P6B	196.37

Figure 6

D. Connector Spacing (Figure 7)

To ensure proper mating, the allowable nominal distance between adjacent connectors stacked end-to-end is 14.12 mm [.556 in.] as shown in Figure 7. The allowable nominal distance between adjacent connectors stacked side-by-side is 20.32 mm [.800 in.] as shown likewise.

When using the TE High-Density VITA 66.4 Derivative Connectors with other connectors or components, call PRODUCT INFORMATION at the number at the bottom of page 1 for recommended spacing.

CAUTION
Care must be taken to avoid interference between adjacent connectors and/or other components.

NOTE
The information provided is for manual placement of the TE High-Density VITA 66.4 Derivative Connectors and adjacent connectors. If robotic equipment is used, other space allowances will be required for the grippers.

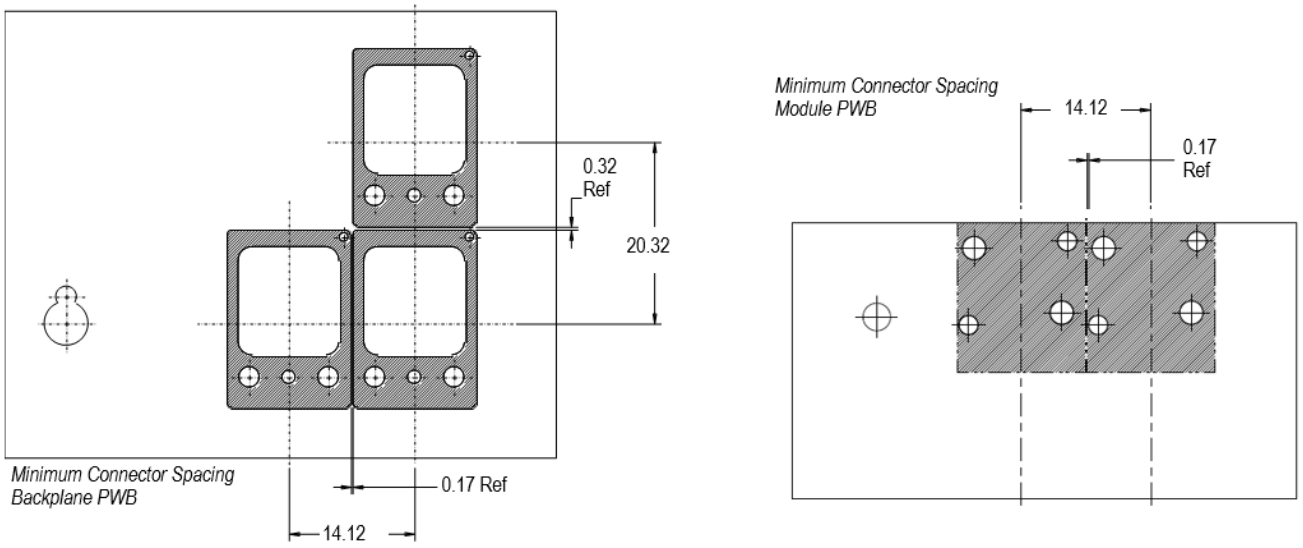
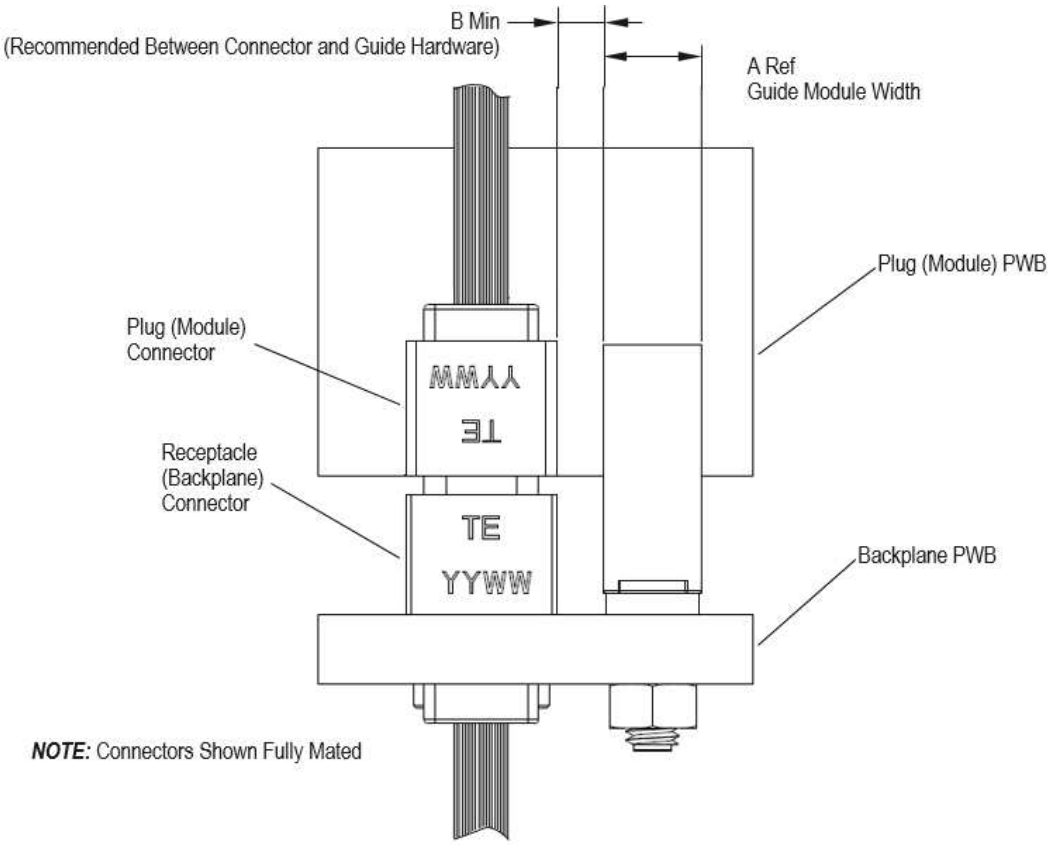


Figure 7

E. Connectors and Guide Hardware (Figure 8)

The recommended minimum distance between the module and guide hardware is given in Figure 8.



GUIDE HARDWARE	DIMENSION	
	A	B
Universal and Keyed	7.9	0.5
Keyed VITA 46 Type	9.0	0.2

Figure 8 (end)

F. Receptacle (Backplane) Connector (Figure 9)

NOTE
Orient the insert sub-assembly and shell to the backplane PWB as shown in Figure 9. When placing them on the PWB, make sure the receptacle shell locating posts are started into the corresponding holes before securing the receptacle shell to the board.

Once the shell is seated on the backplane PWB, from the opposite side of the board, thread the size 2 machine screws with pre-applied Nylok patch through the respective PWB holes into the shell. The screws shall be installed with 0.23 - 0.34 N·m [2 - 3 in·lb] torque. Check that the insert sub-assembly floats freely between the receptacle shell and the PWB, and does not bind within the PWB cutout opening.

Nylok is a trademark.

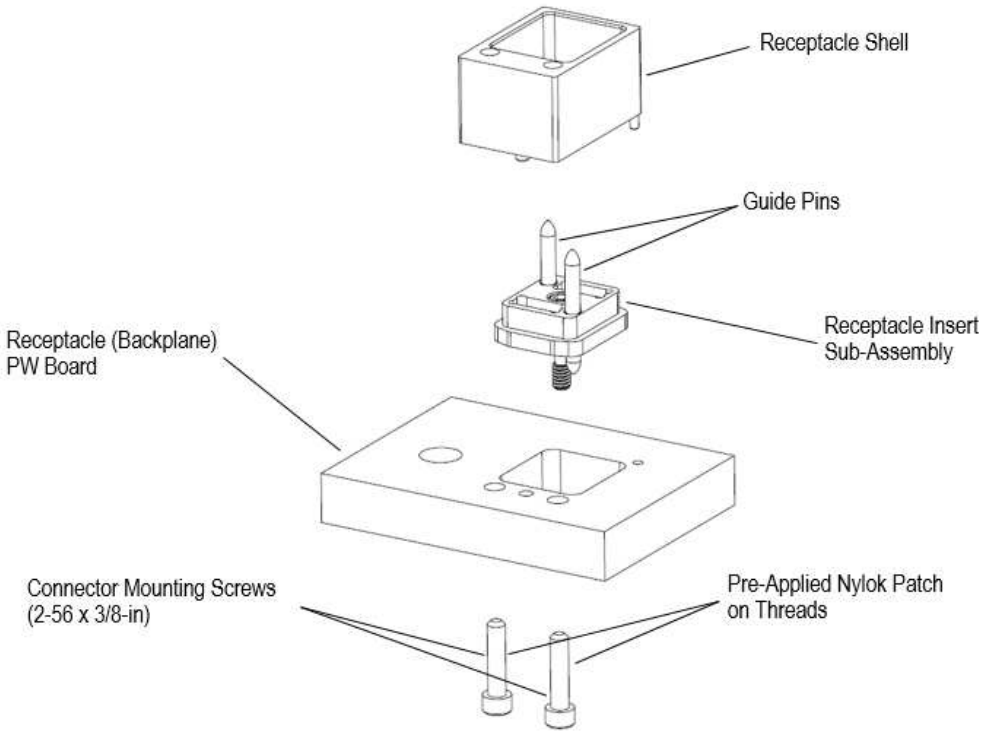


Figure 9

G. Plug (Module) Connector (Figure 10)

NOTE
When placing the plug connector on the module PWB, make sure the locating posts are aligned into the corresponding holes before securing the connector on the board.

Once the connector is seated on the module PWB, from the opposite side of the board, thread the size 2 machine screws with pre-applied Nylok patch through the respective PWB holes into the connector housing. The screws shall be installed with 0.23 - 0.34 N·m [2 - 3 in·lb] torque.

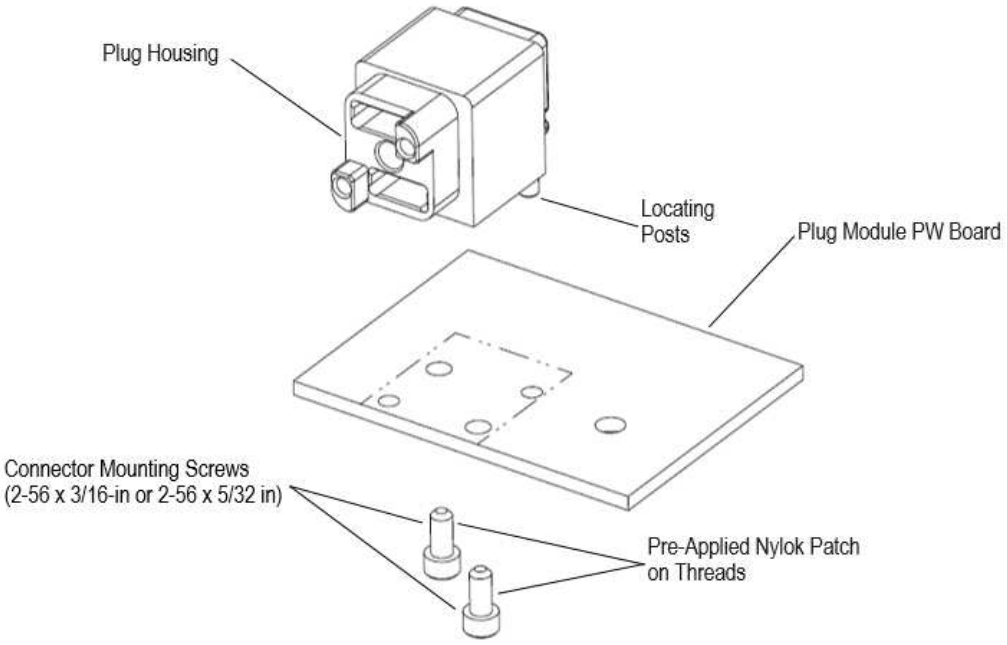


Figure 10

Nylok is a trademark.

CAUTION
The plug connector kit contains two packages of connector mounting screws: one package contains two pieces of 5/32-in length screws, and the other contains two pcs of 3/16-in length screws. The two 5/32-in screws are used for a module PWB thickness of 1.50 mm [.060 in] – 2.50 mm [.098 in]. The two 3/16-in screws are used for a PWB thickness range of 2.50 mm [.098 in] – 3.50 mm [.138 in]. The label on the individual bags containing the screws states the relevant PWB thickness range. The screw lengths are optimized over the defined PWB thickness ranges to properly secure the connector, without the screws protruding into the lower MT ferrule cavity.

3.8. Ribbon Fiber Requirements (Figure 11)

The following commercially-available, multi-mode fiber-optic ribbon cable types are compatible with the MT ferrules and the TE High-Density VITA 66.4 Derivative Connectors.

- 12-Ribbon fiber (50/125/250 µm, OM4) per TIA-492AAAD-XBBX
- Jacketed 12-ribbon fiber cable (50/125/250 µm) per TIA-492AAAB-XBAX7

Other fiber/cable types may likewise be compatible, contact your local TE Representative or contact PRODUCT INFORMATION at the number at the bottom of page 1.

CAUTION
When selecting a ribbon fiber/cable, confirm the temperature rating and bend radius capabilities are compatible with the application requirements.

CAUTION
When using jacketed fiber having a thickness greater than 1 mm [.039 in], the outer jacket layer must be removed at least 30 mm [1.181 in.] from the end of the MT-terminated end as shown in Figure 11. This is necessary to allow sufficient clearance to fit through the retainer plate slot feature and to accommodate a right-angle bend without over-stressing the ribbon fiber.

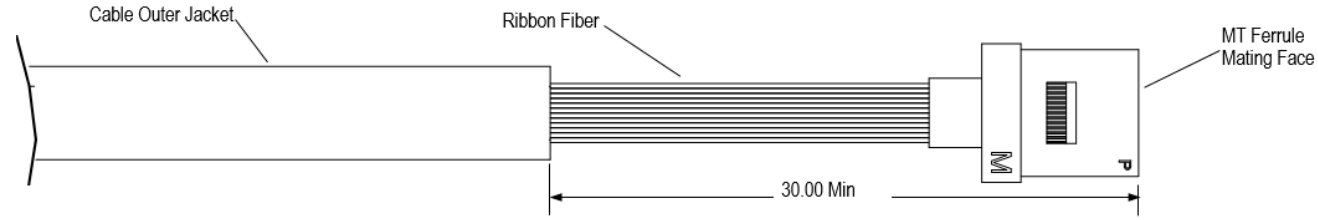


Figure 11

NOTE
For applications requiring a cable jacket thickness greater than 1 mm [.039 in], TE can build cable assemblies containing a light-duty-jacketed transition between the cable outer jacket and the MT ferrule to minimize handling risk associated with exposed ribbon fiber.

3.9. MT Ferrules

A combination of material, geometry and tolerance parameters of the MT ferrule end face control the attenuation of the MT ferrule mating interface. The TE High-Density VITA 66.4 Derivative Connectors have been qualified per Product Specification 108-163007 using both 12-fiber and 24-fiber, multi-mode MT ferrules.

A. Ferrule Requirements

MT ferrules shall be of polyphenylene sulfide (PPS) material having a Young's modulus of less than 20 GPa [2.90E6 psi]. The MT ferrules shall comply with the mechanical characteristics defined in IEC 61754-5 for 6.4 mm [.252 in] x 2.5 mm [.098 in] ferrules.

Multi-mode MT ferrules accepting two thru 24 fibers are allowed. Commercially available ferrules and accessories are identified in Section 3.14. For other ferrule types, contact your local TE Representative or call PRODUCT INFORMATION at the number at the bottom of page 1.

B. MT Ferrule End Face Characteristics

The end face geometry shall comply with the characteristics defined by IEC 61755-3-31, except that parameter GY shall be -0.2° minimum to 0.2° maximum.

3.10. Installation and Removal of MT Ferrule Cable Assemblies

A. Receptacle (Backplane) Connectors (Figure 12)

The receptacle connector insert housing likewise contains cavities to accept two MT ferrules. Manually place the MT ferrules / cable assemblies (each containing a spacer component and spring) into the respective cavities into the respective cavity until the shoulder feature of the MT ferrule bottoms within the connector cavity. Slip the ribbon cable into the respective slot of the receptacle retainer block, fitting the spring in the pocket feature of the retainer block. Then, position the retainer block behind the insert housing. Compress the springs as needed to engage the center captive screw into the retainer block. Using a 1/16-in Allen key, tighten the captive screw, compressing the springs, until the retainer block bottoms against the insert housing. Torque the screw to 0.23 - 0.34 N·m [2-3 in·lb]. Do NOT over torque the screws.

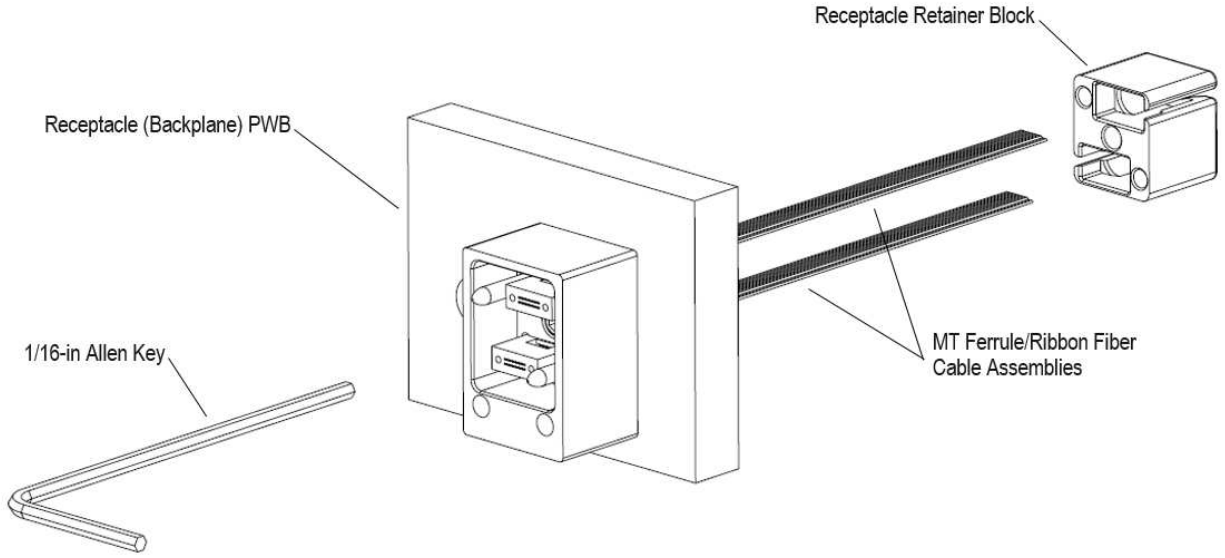


Figure 12

B. Plug (Module) Connectors (Figure 13)

The plug connector housing contains cavities to accept two MT ferrules. Manually place the MT ferrules / cable assemblies (each containing the pins/holder and spring) into the respective cavities until the shoulder feature of the MT ferrule bottoms within the connector cavity. Slip the ribbon cable into the corresponding slot of the plug retainer plate, fitting the spring in the pocket feature of the retainer plate. Then, position the retainer plate behind the insert housing. Compress the springs as needed to engage the center captive screw into the retainer plate. Using a 1/16-in Allen key, tighten the captive screw, compressing the springs, until the retainer plate bottoms against the plug housing. Torque the screw to 0.23 – 0.34 N·m [2-3 in·lb]. Do NOT over-torque the screws.

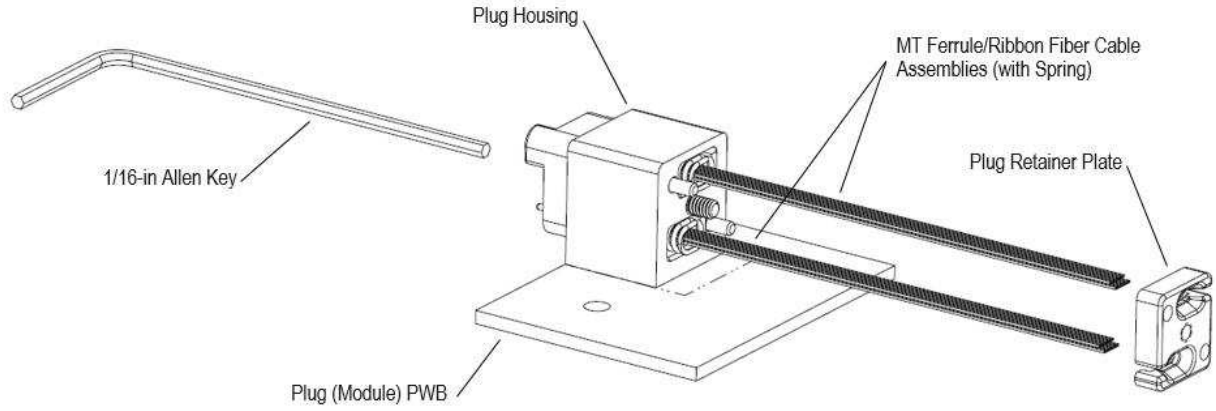


Figure 13

3.11. Cleaning the MT Ferrules

The MT ferrules may be cleaned following the recommended instructions per Instruction Sheet 408-8922, Cleaning and Inspection for Physical Contact Fiber Optic Connectors.

Commercial tooling is available from US Conec (www.usconec.com) to facilitate manual cleaning of the connectors installed in typical ANSI/VITA 46.0 system applications.

- MPX Cleaner Assembly, 7.5-in Length, IBC Brand Cleaner: C12050
- MPO Cleaner Assembly, HBMT Extended Nozzle Tip (14-in Length), IBC Tool: C9959

Senko Advanced Components (www.senko.com/fiber) offers a variety of cleaning, inspection and test equipment for MT ferrules. This equipment requires removing the ferrules from the TE High-Density VITA 66.4 Derivative Connectors.

FiberQA offers a range of automated cleaning, inspection and test equipment for MT ferrule interfaces. Their equipment enables checking the ferrules installed within the TE High-Density VITA 66.4 Derivative Connectors, while situated in the installation. Contact FiberQA (www.fiberqa.com) regarding tooling dedicated to these connectors.

3.12. Connector Mating and Unmating

A. Mating Dimension/Range of Engagement (Figure 14)

To ensure proper optical coupling between the mating MT ferrules, the following distances must be within the limits specified in Figure 14:

- The distance from the center of the tooling hole (Datum A, per ANSI/VITA 46.0-2007, Appendix C) on the module PWB and the front face of the backplane PWB.
- On the module PWB, the distance from the centerline of the locating post hole to that of the tooling hole.

NOTE

The MT ferrule interface is spring-loaded, by design, in the axial direction of connector mating and unmating. As a result, the connectors do not secure themselves in a fully-mated state. The exterior system design shall engage the connectors to the proper mating depth.

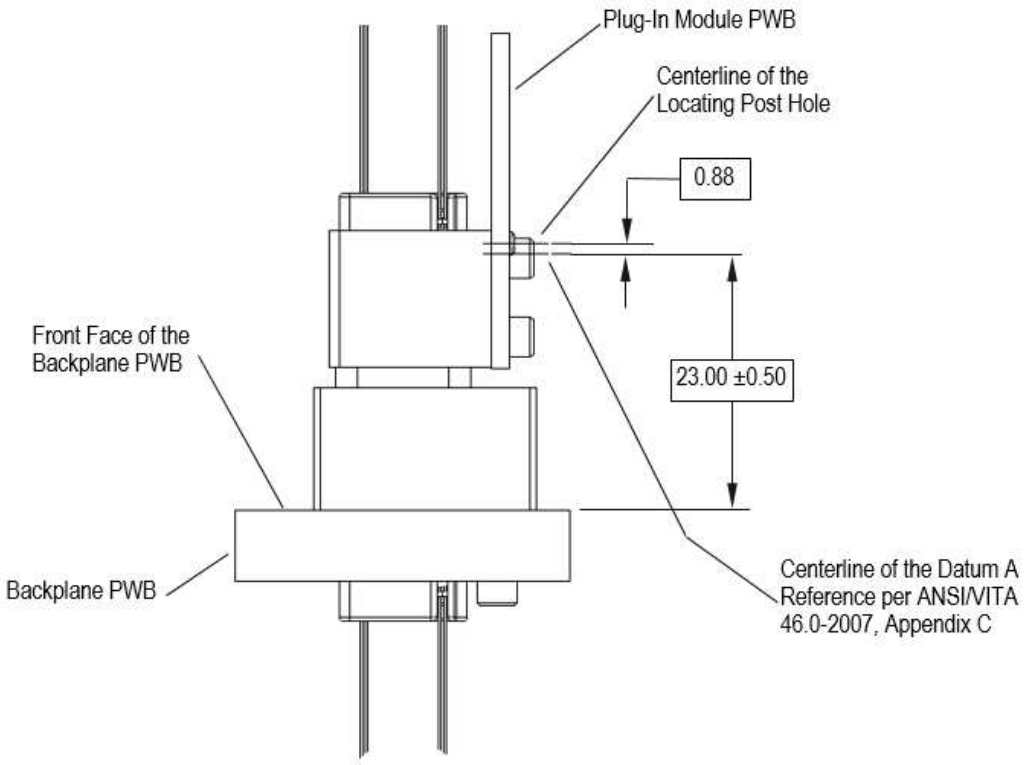


Figure 14

B. Mating Force

A retained mating force between the module and backplane MT ferrules is necessary for reliable optical performance during operational conditions. Springs, installed on the fiber optic cable assemblies secured within both the receptacle (backplane) and plug (module) connectors, generate this mating force. The mating force varies accordingly as the module and backplane connectors mate through the module insertion range. Accordingly, the connector mating forces vary depending on the MT ferrule fiber count and the engagement distance.

To maintain the rated optical performance, a mating pair of 12-fiber MT ferrules requires a 7.8 – 11.8 N [1.75 – 2.65 lb] force across the ferrule-to-ferrule mating interface. With two mating pair of 12-fiber MT ferrules, the connector mating force ranges from 15.6 N – 23.6 N [3.5 – 5.3 lb].

A pair of 24-fiber MT ferrules requires a 16.7 – 23.6 N [3.75 – 5.3 lb] force across the mating interface. With tow mating pair of 24-fiber MT ferrules, the connector mating force ranges from 33.4 – 47.2 N [7.5 – 10.6 lb].

C. Connector Alignment (Figure 15)

Proper alignment is essential to ensure full engagement of the mating connectors and to ensure the MT ferrules are not damaged during mating. Due to the manufacturing tolerances typical of VITA 46 plug-in modules and backplanes, the TE High-Density VITA 66.4 Derivative Connector system incorporates float to enable aligning the mating interfaces of the MT ferrules.

The lateral clearance existing between the shell and insert housing of the backplane connector provides a minimum of ±0.25 mm [.010 in.] float in both the x- and y- directions. The backplane connector guide pins and plug cavities accommodate a maximum misalignment of 1.02 mm [.040 in] in. The exterior system design shall ensure the connectors are located relative to each other within that range. Also, the system shall axially align the connectors within a 2° angle.

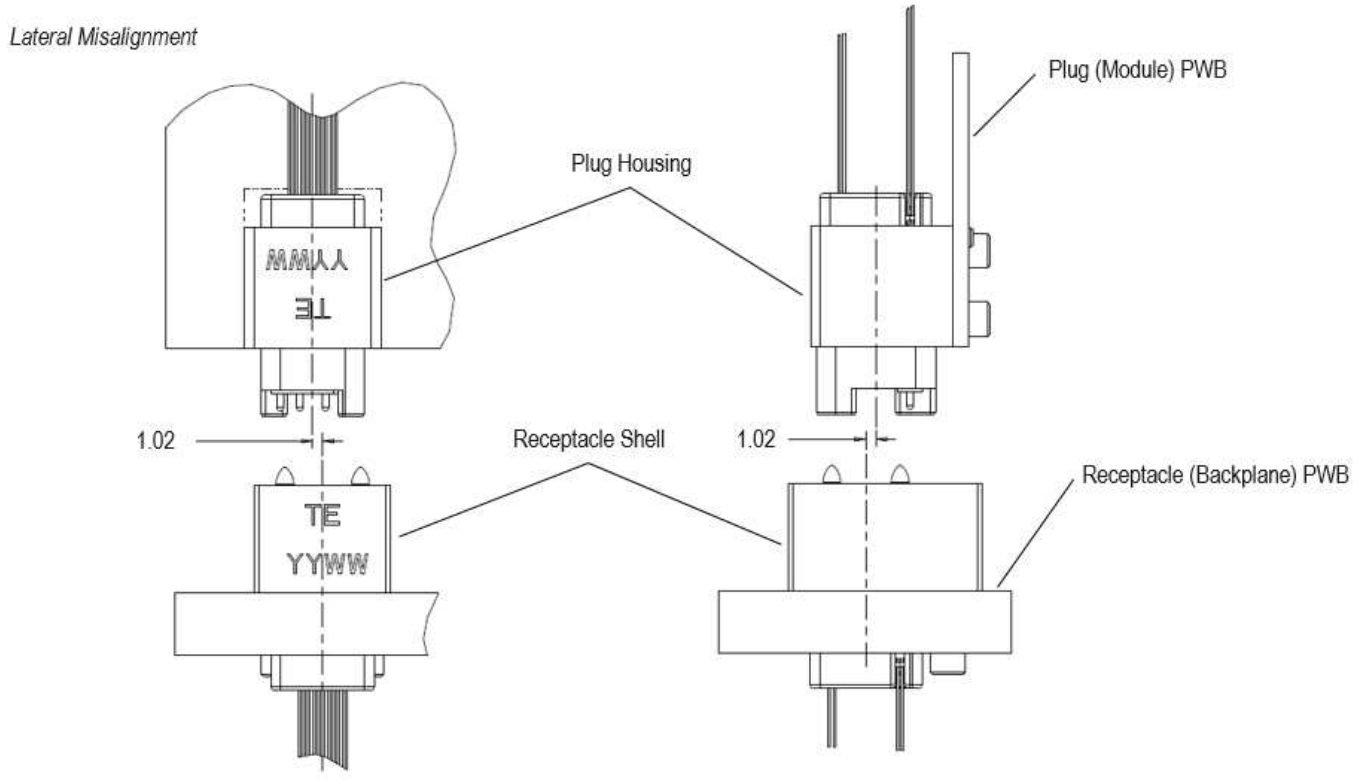


Figure 15

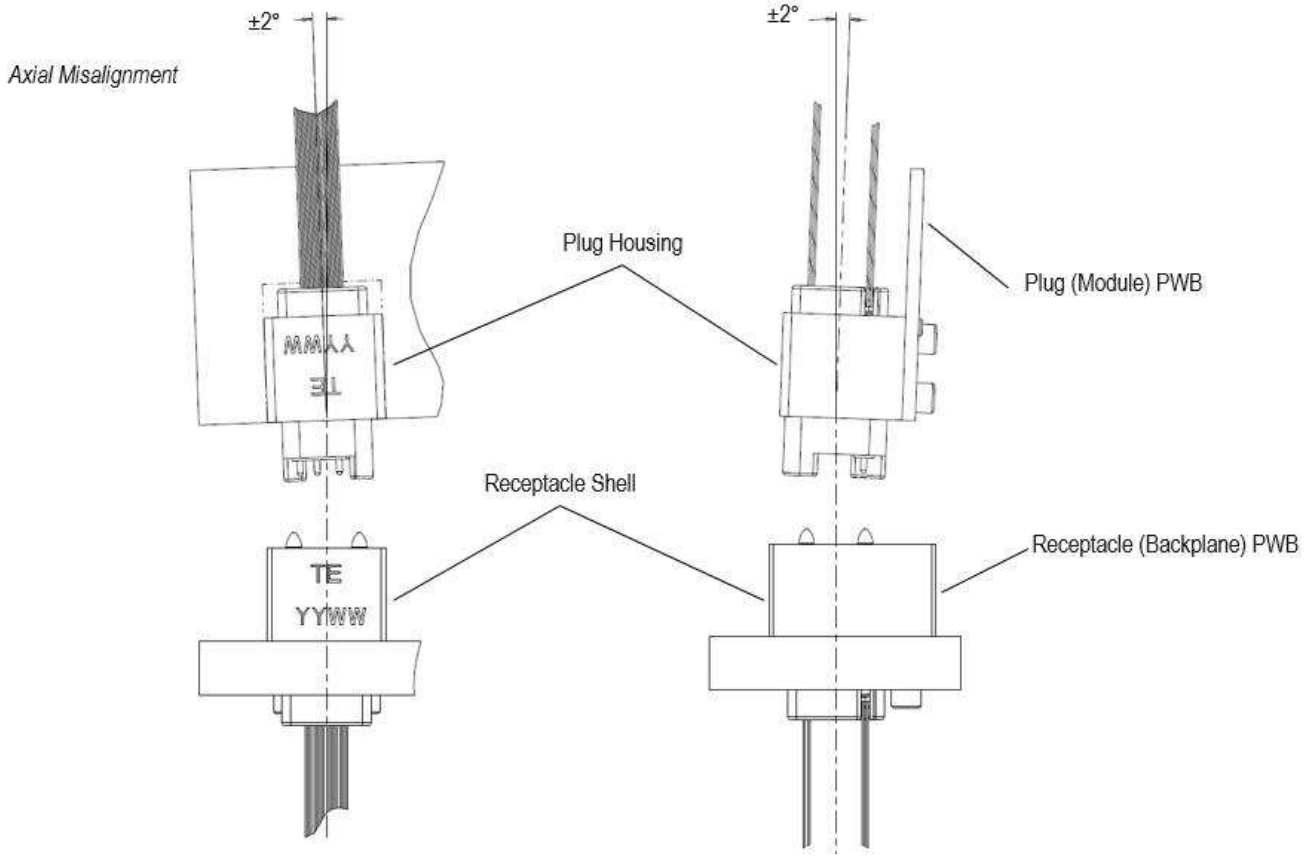


Figure 15, end

The guide hardware described in Paragraph 3.13.C provides lateral alignment to within 1.02 mm [.040 in.] to enable the connector guide pins. These are typical of VITA 46 applications. Varieties are available that accommodate up to 3.5 mm [.137 in.] of lateral misalignment. Contact your local TE Representative or call PRODUCT INFORMATION at the number at the bottom of page 1.

D. Ferrule and Circuit Identification (Figures 16 and 17)

Each MT ferrule (MT#) and fiber path (F#) shall be identified by the notation and convention shown in Figure 16. The fiber path number applies as viewed from the receptacle (backplane) and plug (module) connector mating faces.

The fiber path (F#) locations are based relative to the Fiber #1 identification mark (M) of the MT ferrule. For a 12-fiber MT ferrule, F1 is located adjacent to the identification mark, and F12 is located at the opposite end of the ferrule. For a 24-fiber MT ferrule, F1 is located adjacent to the identification mark, toward the side containing the epoxy window. F12 is on the same side as F1, at the opposite end. F13 is located on the end adjacent to F1, except on the side opposite the epoxy window. Likewise, F24 is on the side opposite the epoxy window, at the opposite end from F13.

ANSI/VITA 65.0 requires the MT ferrules installed in the plug connector to be oriented with the epoxy window facing upward, away from the module PWB. The resulting F# locations for a 24-fiber MT ferrule are as shown in Figure 16. Accordingly, for a 12-fiber MT ferrule, F1 is likewise on the left and F12 is on the right, as viewed from the connector mating face.

For 12-fiber MT ferrules, for F1 of the receptacle to align with F1 of the plug, the MT ferrules in the receptacle are oriented with the epoxy window facing downward, when viewed from the mating face as shown. The epoxy window likewise faces downward for 24-fiber MT ferrules installed in the receptacle. However, F1 of the plug mates with F13 of the receptacle, F12 of the plug mates with F24 of the receptacle, F13 of the plug mates with F12 of the receptacle, and F24 of the plug mates with F1 of the receptacle.

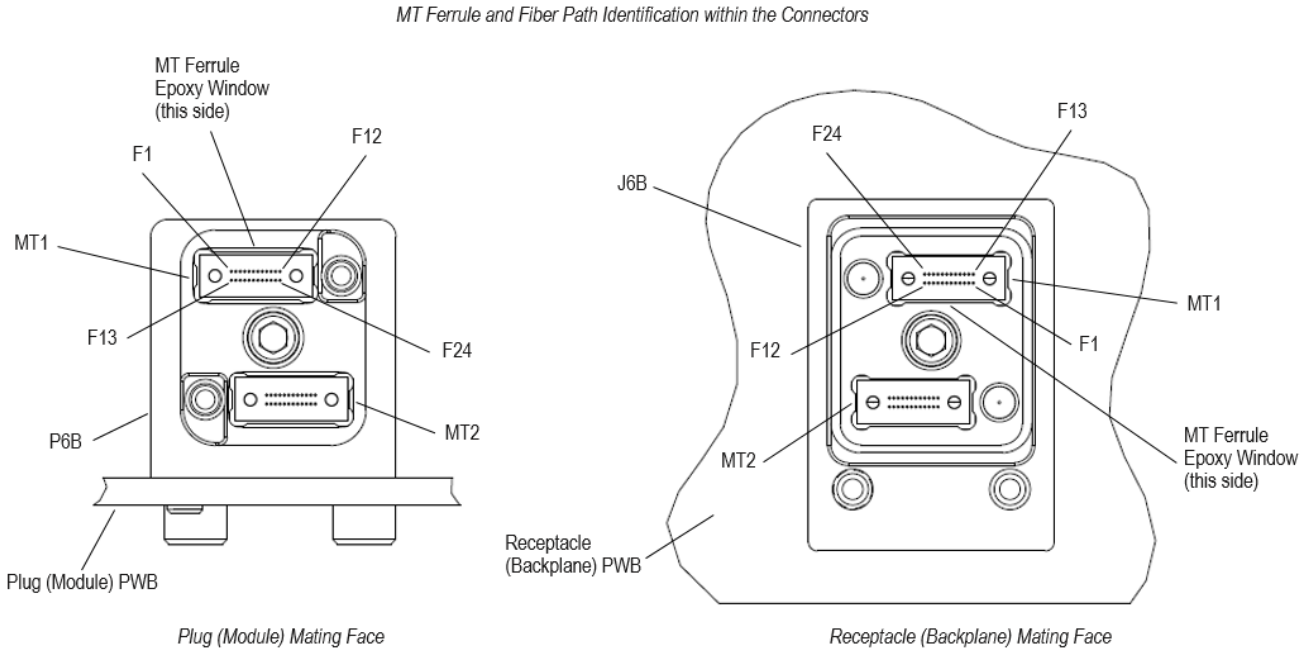


Figure 16

NOTE
The connector locations "P6B" and "J6B" identified in Figure 16 are shown as examples and are variable for the module and backplane position within the card slot in accordance with VITA 66.0.

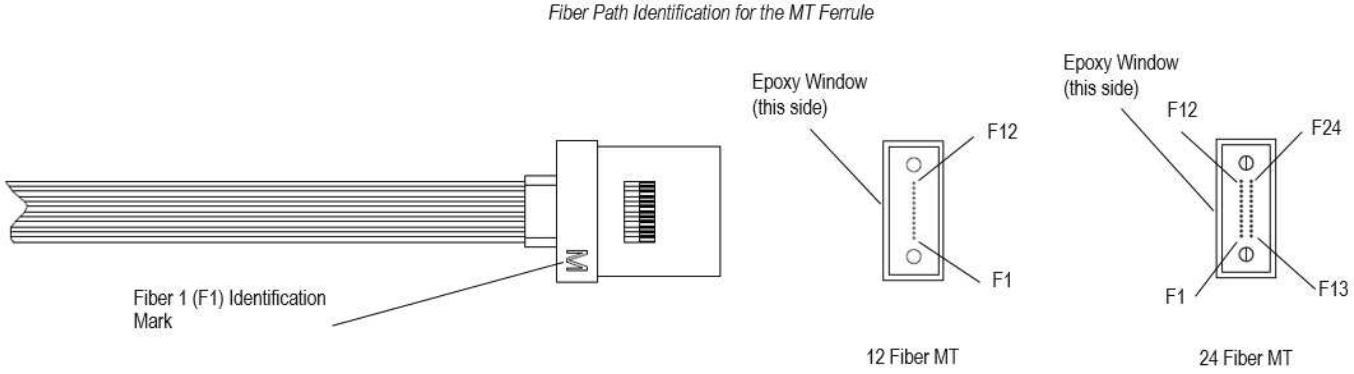


Figure 17

NOTE
The F1 designator "M" shown in Figure 17 applies for the multi-mode version MT ferrule.

E. MT Ferrule Support

The TE High-Density VITA 66.4 Derivative Connectors support up to two MT ferrules. Either two 12-fiber or two 24-fiber, multi-mode MT ferrules may be used. If only one MT ferrule is required, it shall be populated into contact position MT1. Any un-installed MT ferrule positions shall be populated with dummy ferrule / pigtail cable assemblies.

3.13. Ancillary Items

A. Fiber Optic Cable Assemblies

Fiber-optic cable assemblies are available for purchase. Custom assemblies, including fiber-optic flex routing solutions, may be requested through your local TE Representative, or by contacting PRODUCT INFORMATION at the number at the bottom of page 1.

B. MT Ferrule Kits

To terminate custom fiber optic cable assemblies, MT ferrule kits are available for purchase through your local TE Representative or by calling PRODUCT INFORMATION at the number at the bottom of page 1. The MT ferrule kit used with the receptacle (backplane) connector includes an MT ferrule (multi-mode, 12-fiber or 24-fiber), a mini-boot seal, a spacer / spring support, a spring, and a ferrule cover. The MT ferrule kit used with the plug (module) connector includes an MT ferrule (multi-mode, 12-fiber or 24-fiber), a mini-boot seal, a pin holder, a spring, and a ferrule cover.

C. MT Ferrules and Accessories

The following MT ferrule and accessory items are commercially-available from US Conec:

- 12-fiber MT ferrule and mini-boot seal: 17185
- 24-fiber MT ferrule and mini-boot seal: 18007
- Spring, for 12-fiber MT ferrule: Y0367
- Spring, for 24-fiber MT ferrule: 12501
- Pins/holder: 14850
- Spacer: 12918

D. FO Ribbon Cable

Commercially-available fiber-optic ribbon cable types are compatible with the MT ferrules and TE High-Density VITA 66.4 Derivative Connectors as listed in Paragraph 3.9.

E. Strain Relief/Fiber Management

The TE High-Density VITA 66.4 Derivative Connectors do not provide strain relief for the ribbon fiber optic cable assemblies. It is the responsibility of the user to provide proper strain relief and management of the optical fibers/cable. Consult your local TE Representative or contact PRODUCT INFORMATION at the number at the bottom of page 1 for fiber-management products specially designed to the application.

3.14. Repair/Replacement

A. Replacement of MT Ferrules

Damage may occasionally occur to the MT ferrule end faces. A damaged MT ferrule (and the attached cable assembly) may be removed from the plug or receptacle connector accordingly by disengaging the respective connector retainer plate. Turn the Allen key counter-clock-wise to disengage both captive screws securing the retainer plate to the connector. Slide the retainer plate backward along the fiber-optic cable, then remove the cable through the slot feature in the retainer plate. A replacement MT ferrule/cable assembly may then be re-installed per the installation procedure.

B. Damaged Components

CAUTION

Damaged components must not be used. If a damaged component is evident, it must be removed and replaced with a new one. If this requires removing the connector from the PWB, disengage the connector mounting screws.

4. QUALIFICATION

No commercial or agency qualifications for the TE High-Density VITA 66.4 Derivative Connectors have been defined at the time of publication of this document.

5. TOOLING

The connector mounting screws to the connector are installed and removed using a commercially-available 5/64-in Allen key. The captive screw securing the retainer plate is installed and removed using a commercially-available 1/16-in Allen key.

6. VISUAL AID

The illustration below shows a typical application of this product. This illustration should be used by production personnel to ensure a correctly applied product. Applications which do not appear correct should be inspected using the information in the preceding pages of this specification and in the instructional material shipped with the product or tooling.

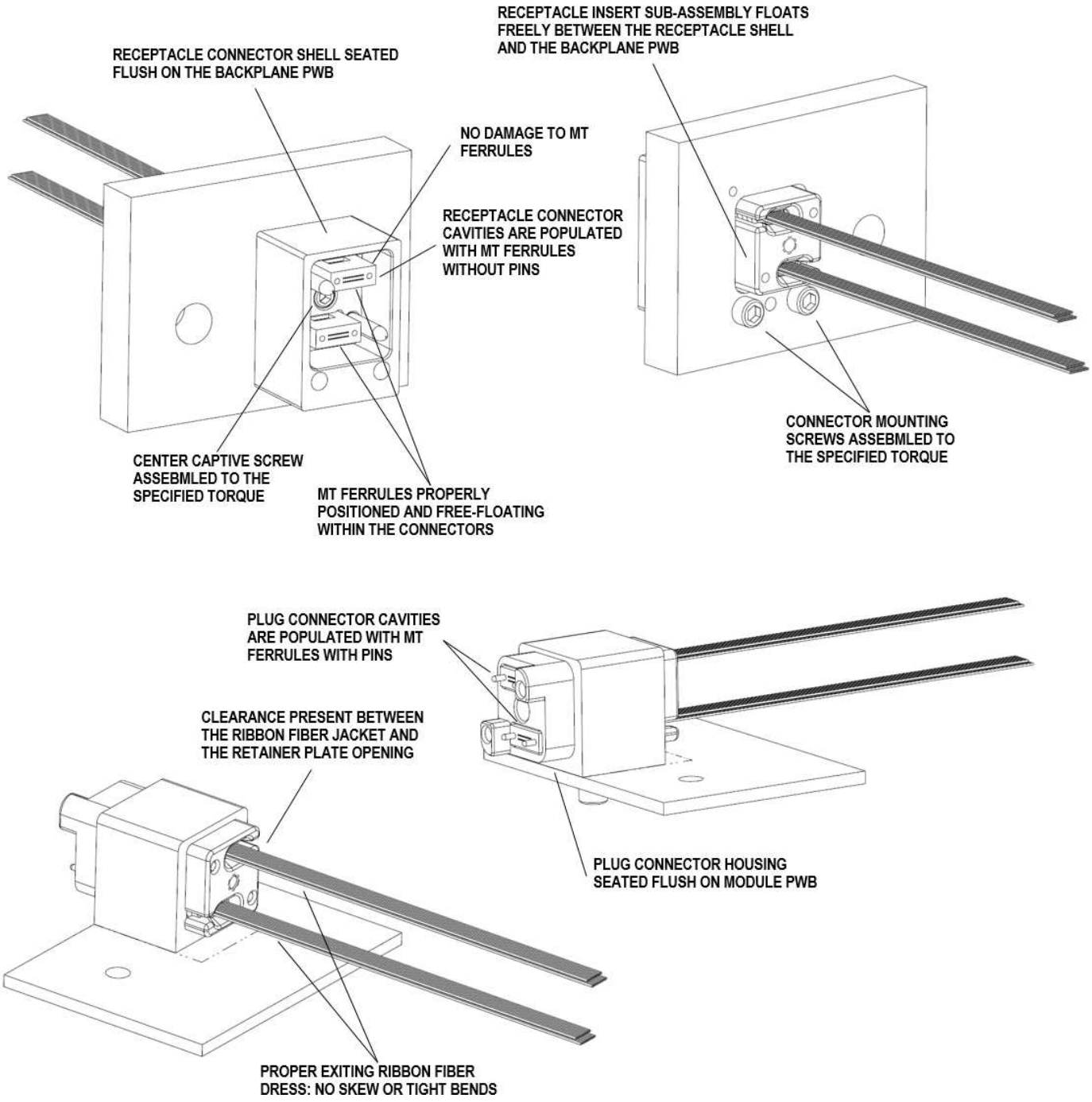


Figure 18. Visual Aid