

# MIL-STD-2042-5B (SH) UPDATE

## Method 5A1 Insert

### Equipment and materials (to be added to table 5A1-I)

Pliers

#### **3.2.2.2 Cable and fiber preparation for Fiber Systems International backshells.**

- Step 1: Ensure the cable is the correct type as specified on the applicable cable diagram.
- Step 2: Measure the cable to the required length. Then add sufficient slack to allow for at least two reterminations [190 mm (7.5 in) of slack should be sufficient for one retermination].
- Step 3: Clean the outer cable jacket that will be in contact with the connector and backshell with a wipe dampened with alcohol and blow it dry with air.

NOTE: Keep the cable and connector parts free from oil, dirt and grease throughout the installation procedure. If cleaning is necessary, use a wipe dampened with alcohol and blow the parts dry with air.

- Step 4: Slide the labels (as required), heat shrink, and rear cap onto the cable.
- Step 5: Mark the cable jacket approximately 190 mm (7.5 in) from the end and strip back the outer cable jacket to the mark using the cable stripper. Fold back the kevlar strength members and temporarily tape them to the cable outer jacket.

NOTE: The cable core should not be bent beyond the minimum bend diameter when removing the cable jacket. If the cable core is bent beyond the minimum bending diameter during cable jacket removal, optical fiber damage may occur.

CAUTION: Do not cut or nick the OFCC jackets.

Cut off the exposed central member and any fillers using the kevlar shears.

- Step 6: Remove any water blocking material, clean the OFCCs using a wipe dampened with alcohol and blow them dry with air.
- Step 7: Trim the OFCCs to the length (A + B + C) shown in table 5A1-IIA using the Kevlar shears (see figure 5A1-2a).
- Step 8: Feed each OFCC into a crimp sleeve and slide the sleeve back from the end of the OFCC. (NOTE: Only use crimp sleeves intended for termini. Do not use crimp sleeves intended for other types of connectors. The standard crimp sleeve for the terminus may be oriented in either direction.)

TABLE 5A1-IIA. Cable stripping dimensions. Fiber Systems International

Connector Shell size	Backshell configuration	Dimensions mm (in.)		
		A	B	C
13	Straight	100.5 (3.96)	11 (0.43)	15 (0.59)
	45 °	102.75 (4.045)	11 (0.43)	15 (0.59)
	90 °	102.75 (4.045)	11 (0.43)	15 (0.59)
15	Straight	100.5 (3.96)	11 (0.43)	15 (0.59)
	45 °	108.75 (4.28)	11 (0.43)	15 (0.59)
	90 °	108.75 (4.28)	11 (0.43)	15 (0.59)
23	Straight	112.5 (4.43)	11 (0.43)	15 (0.59)
	45 °	135.5 (5.335)	11 (0.43)	15 (0.59)
	90 °	135.5 (5.335)	11 (0.43)	15 (0.59)

Note: The tolerance on dimensions A and B is +/- 1mm (+/- 0.04 in).

Note: Shorter values for dimension C may be used.

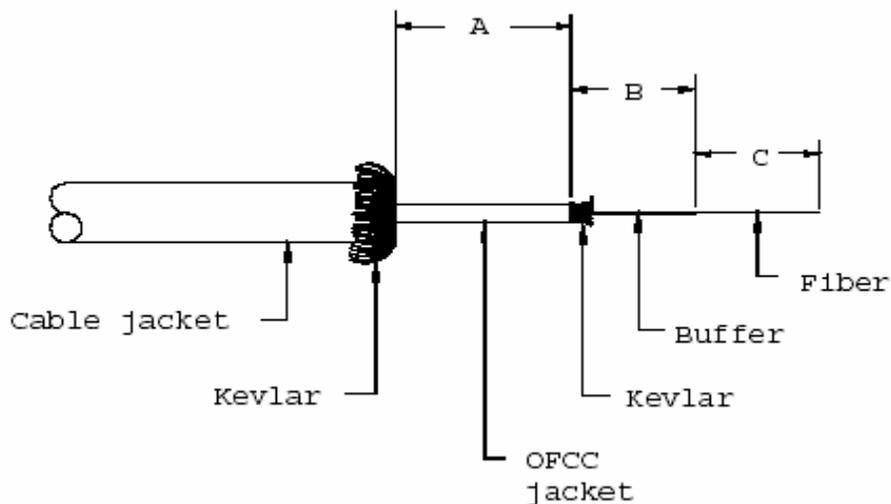


FIGURE 5A1-2a. Cable stripping dimensions

Note: The definition of dimensions A and B has been changed from the definition used in MIL-STD-2042A.

Step 9: Remove the OFCC jackets back to the dimensions (B + C) shown in table 5A1-IIA using the OFCC stripper and trim the OFCC kevlar using the Kevlar shears so that approximately 3 mm (0.12 in) extends past the OFCC jacket (see figure 5A1-2a).

NOTE: The optimum way to remove the OFCC jackets is to ring cut the jacket with the OFCC stripper and pull the jacket off by hand. Pushing off the OFCC jacket with a tightly held OFCC stripper can lead to fiber breakage.

Step 10: WARNING: Wear safety glasses when removing the fiber buffer and coating to avoid possible eye injury.

Remove the fiber buffers and coatings back to the dimension (C) shown in table 5A1-IIA using the buffer stripper (see figure 5A1-2a). Remove the buffer and coating in small sections approximately 6 mm (0.25 in) at a time.

NOTE: Normally, the buffer and coating are tightly adhered to one another and come off of the fiber at the same time.

Step 11: CAUTION: The uncoated fiber is in its most vulnerable state. Take extreme care not to damage the fiber. Breakage of any one fiber from this point until the connector is completely assembled will require repetition of this and the following steps in order to maintain approximately equal length of all the fibers in the cable.

Remove any residual coating material from the bare fibers with a wipe dampened with alcohol. Wipe only once from the end of the buffer towards the end of the fiber.

NOTE: Do not repeatedly wipe the bare fiber, as this will weaken the fiber.

### **3.2.6.2 Assembly of the kevlar retainer mechanism and installation of the terminus into the connector insert for Fiber Systems International backshells.**

Step 1: Feed the termini and cable kevlar through the conical guide (see figure 5A1-19a). Make sure the O-ring is already placed on the conical guide.

Step 2: Hold the kevlar in one hand and slide the conical guide toward the cable jacket with the other hand. Pull the kevlar and conical guide in opposite directions to ensure the cable seats firmly in the conical guide.

NOTE: The cable should not pass all the way through the conical guide.

Step 3: Fold back the kevlar over the conical guide and tape it to the cable jacket to maintain the tension on it. This helps to prevent the conical guide from sliding back from the cable jacket.

NOTE: Refer to table 5A1-I for proper conical guide and spring tools depending on shell size. See figure 5A1-19a for a visual of the kevlar retaining mechanism.

Step 4: Slide the conical spring over the termini, OFCCs, and position it over the kevlar and conical guide. Place the cable and conical guide in the conical guide holding fixture. Tighten the spring down using the conical spring tool and turn the spring clockwise until it is flush with the top of the conical guide.

NOTE: If FSI conical guide tools are not available, use a pair of pliers. Position the jaws around the spring (above the lower tang), take hold of the upper tang, and turn the spring clockwise until it is flush with the top of the conical guide.

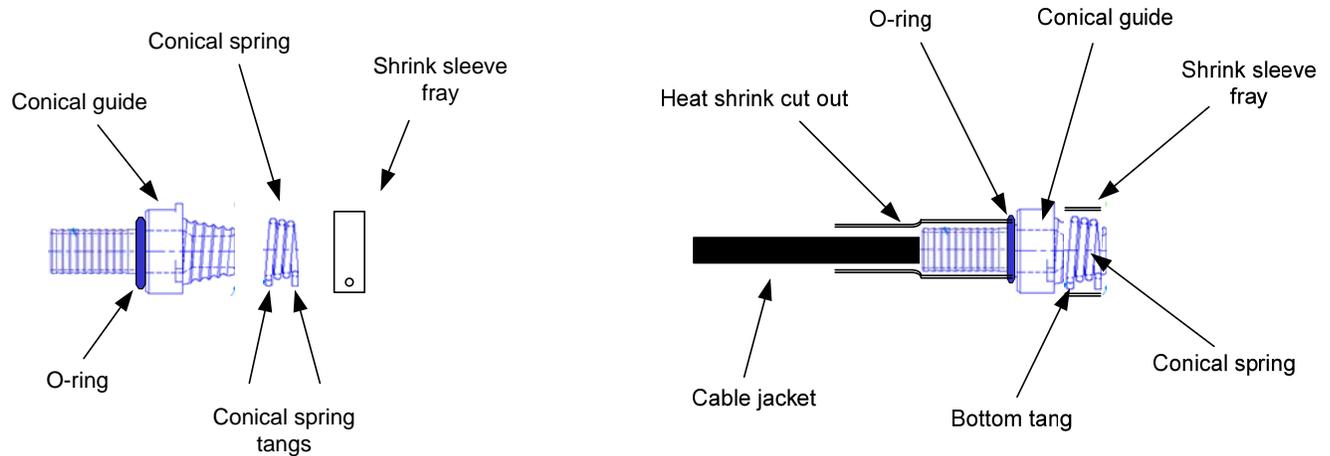


Figure 5A1-19a.

- Step 5: Pull the kevlar up toward the termini. Feed the kevlar through the shrink sleeve fray control. Slide the shrink sleeve over the conical spring with the punched hole over the bottom tang at the spring's larger end. Heat the shrink sleeve down with a heat gun.
- Step 6: Trim the kevlar as close to the top of the conical guide as possible.
- Step 7: Slide the heat shrink, which has already been placed onto the cable earlier, over the conical guide and shrink it down with heat gun.
- Step 8: Feed the termini through the backshell from the rear.

NOTE: For 45° and 90° backshells, group the termini together and bundle them up with a piece of masking tape. Attach the bundle of termini to one end of a piece of twisted masking tape (9-10 inches long), then feed the other end through the backshell. Gently pull the twisted masking tape out of the backshell until the termini exit the backshell.

CAUTION: Be sure to place the dust cover over the termini prior to bundling them up.

- Step 9: Slide the kevlar retainer (conical guide) into the backshell barrel as far as possible. Some rotation of the conical guide is necessary to get it enters the backshell. Remove the masking tape and set the termini free.
- Step 10: Place the end of the terminus insertion tool at the rear of the crimp sleeve with the OFCC laid in the channel on the tool.
- Step 11: Position the terminus into the proper cavity in the rear of the connector insert. Apply pressure to the insertion tool until the terminus snaps into place (see figure 5A1-18). Remove the tool by pulling it straight back. Repeat steps 10 to 11 for all termini.

NOTE: Inspect the connector insert for dirt or other debris before installing terminus into the insert. Clean dirty inserts prior to installing terminus.

NOTE: A properly inserted terminus will have some axial "play" within the insert cavity.

NOTE: A socket terminus, unlike a pin terminus, will require installation of the alignment sleeve after the terminus has been installed into the insert. Proceed to step 12 below.

Step 12: Place the end of the socket terminus alignment sleeve installation and removal tool into the solid end of the alignment sleeve, depress the plunger to grasp the alignment sleeve and place the sleeve onto the socket terminus. Release the plunger and press the tool until the sleeve snaps into place (see figure 5A1-19). Remove the tool by pulling it straight back.

CAUTION: Do not press the sleeve into place with the plunger depressed. This may cause damage to the sleeve.

### **3.2.8.2 Assembly of the Fiber Systems International backshell.**

Step 1: Install the insert body into the plug or receptacle. Match the key on the outside of the insert with the slot in the plug or receptacle.

Step 2: Slide the whole cable assembly toward the back of the backshell and pull the conical guide out of the backshell. The plug body should be seated on the top of the backshell attachment nut. Press the plug or receptacle into the groove.

NOTE: For 45° and 90° backshell, large key on face should be in line with angle on backshell. Rotate plug or receptacle until the largest key is aligned with angle.

Step 3: Screw the backshell attachment nut tightly onto the plug/receptacle.

Step 4: Tighten the attachment nut using a torque wrench (60 in-lbs) on the attachment nut flats and hand grip on the backshell.

NOTE: Be careful not to nick or scratch the backshell plating during assembly.

Step 5: Push the conical guide up against the rear of the backshell and rotate it until the tabs seat properly onto the armrest sections (See Figure 5A1-20b).

Step 6: Slide the rear cap onto the back of the backshell and tighten it with a strap wrench.

NOTE: Ensure that the tabs of the conical guide do not slide out of the armrest sections during tightening of the rear cap.

NOTE: Be careful not to nick or scratch the backshell plating during assembly.

Step 7: Place the dust cap over the front of plug/receptacle.

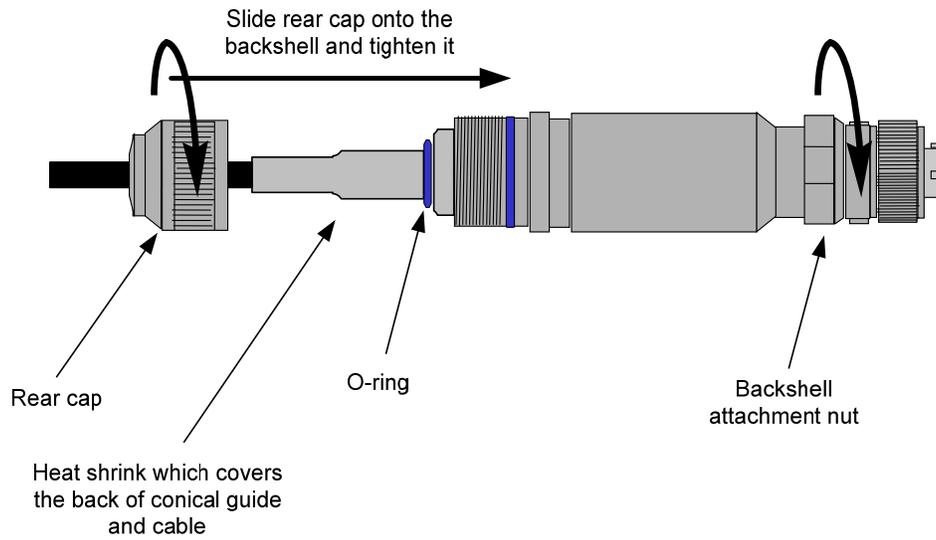


Figure 5A1-20a.

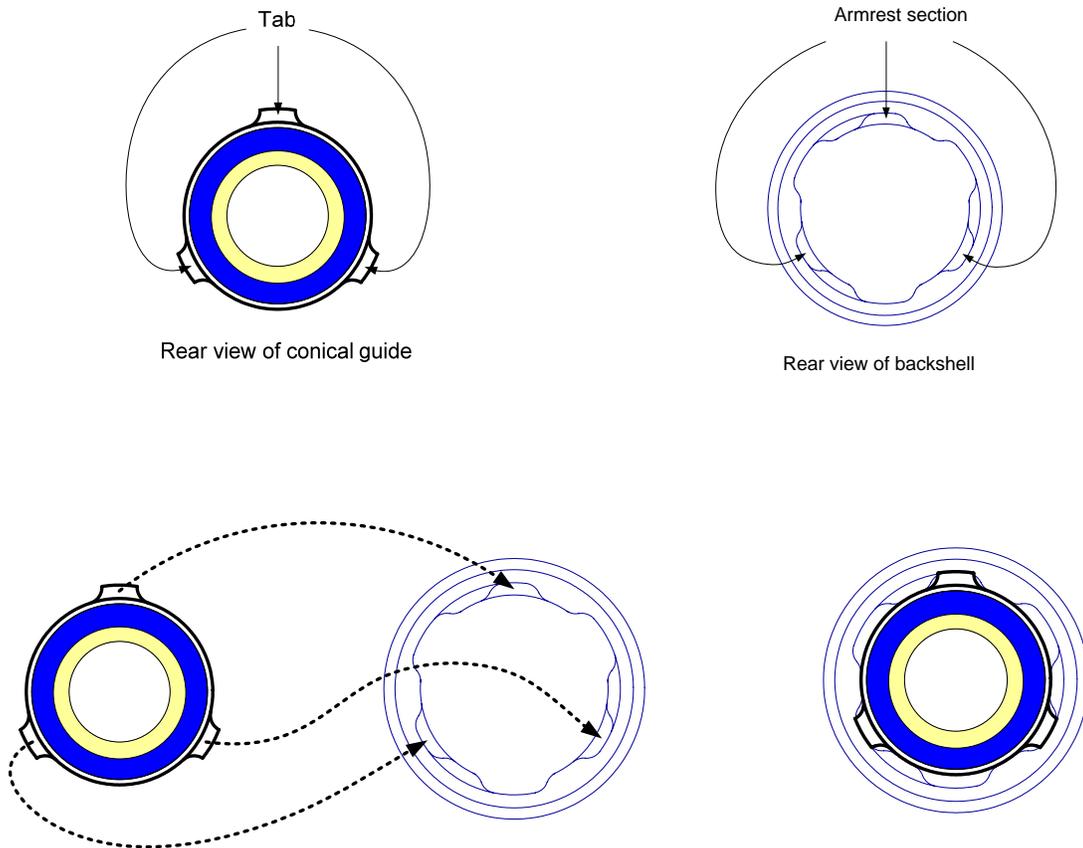


Figure 5A1-20b.