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SUMITOMO RECOMMENDED PROCEDURE

SRP SP-F04-037

FutureFLEX®

INSTALLATION PROCEDURES FOR STRAIN RELIEF KELLEMS GRIPS

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1.0 General

1.1 This procedure describes the standard techniques for installing Strain Relief Kellems® Grips to FutureFLEX Air-Blown Fiber (ABF) tube cables in indoor applications only.

Note: *Liquid-Tight Kellems Grips are the recommended fittings to seal and secure ABF tube cables to Tube Distribution Units (TDUs) subject to hosing, splashing, or flooding conditions and where positive anchoring of the tube cable ends is required. Refer to Sumitomo Recommended Procedure, Installation Procedures for Liquid-Tight Kellems® Grips, SRP SP-F04-024.*

1.2 Strain Relief Kellems Grips provide an effective means of securing tube cable ends to indoor TDU entry points. They are not to be used where the TDU is subject to moisture from hosing, splashing, or flooding. Therefore, their use is restricted to indoor applications only.

1.2.1 The wire mesh of the Grip provides tube cable strain relief and prevents kinking of the cable at its entry point.

1.2.2 The wire mesh of the Strain Relief Kellems Grip also aids in protecting the tube cable if the TDU is located in an area susceptible to damage.

2.0 Safety Precautions

2.1 The use of safety equipment (safety glasses, safety shoes, cut-resistant Kevlar gloves) is recommended during this installation procedure.

3.0 Reference Documents

3.1 Sumitomo Recommended Procedure, *FutureFLEX Tube Cable Installation Procedures,* SRP SP-F04-008.

3.2 Sumitomo Recommended Procedure, *FutureFLEX Tube Cable Stripping Procedures,* SRP SP-F04-030.

4.0 Equipment / Tools Required

The following equipment, tools, and materials, are required to complete this procedure:

4.1 **See TABLE 1** for Strain Relief Kellems Grip Part Numbers. Recommended Knockout Hole Sizes are also provided.

4.2 Tube Cable Cutter (BETL01)

4.3 Utility Knife with Hook Blade

4.4 10-inch (or larger) Adjustable Wrenches

4.5 Hammer

4.6 Hole Punch Set for Knockout Holes

4.7 Felt Tip Pen / Marker

4.8 Tape Measure

5.0 Equipment Layout

5.1 **See Fig. 1** for a typical Strain Relief Kellems Grip layout.

6.0 Preparing TDU Enclosure

6.1 **Refer to TABLE 1** and identify Recommended Knockout Hole size based on the Strain Relief Grip to be used.

6.2 Prepare TDU enclosure by selecting and marking tube cable entry point locations. To best optimize TDU capacity, it is recommended to stagger tube cable entry locations if possible. **See Fig. 2a and Fig. 2b.**

6.3 Use appropriate size hole punch and create opening in TDU.

TABLE 1
Strain Relief Kellems Grips

Indoor Tube Cables	Outdoor Dielectric Tube Cables	Outdoor Metallic & Armored Tube Cables	Strain Relief Kellems Grip SEL P/N	Recommended Knockout Hole Size (inches)
TC02TP2	TC02MSOS	TC02MSOS-2	DEDTSR1	1.719 – 1.766
TC04TP2	TC04MSOS	TC02TOX-2		
TC07TP2	TC07MSOS	TC07TLW		
TC02TRX	TC02TOX			
TC04TRX	TC04TOD			
	TC07TOX			
TC07TRX		TC04MSOS-2	DEDTSR2	1.969 – 2.016
		TC04TOD-2		
		TC07MSOS-3		
		TC07TOX-3		
		TC07TLW-3		
		TC07MSOS-2	DEDTSR3	2.453 – 2.500
		TC07TOX-2		
		TC07TOX-2		
TC19TP2	TC19MSOS	TC19TLW	DEDTSR4	2.953 – 3.000
TC19TRX	TC19TOX			
		TC19MSOS-2	DEDTSR5	2.953 – 3.000
		TC19TOX-2		
		TC19TLW-2		

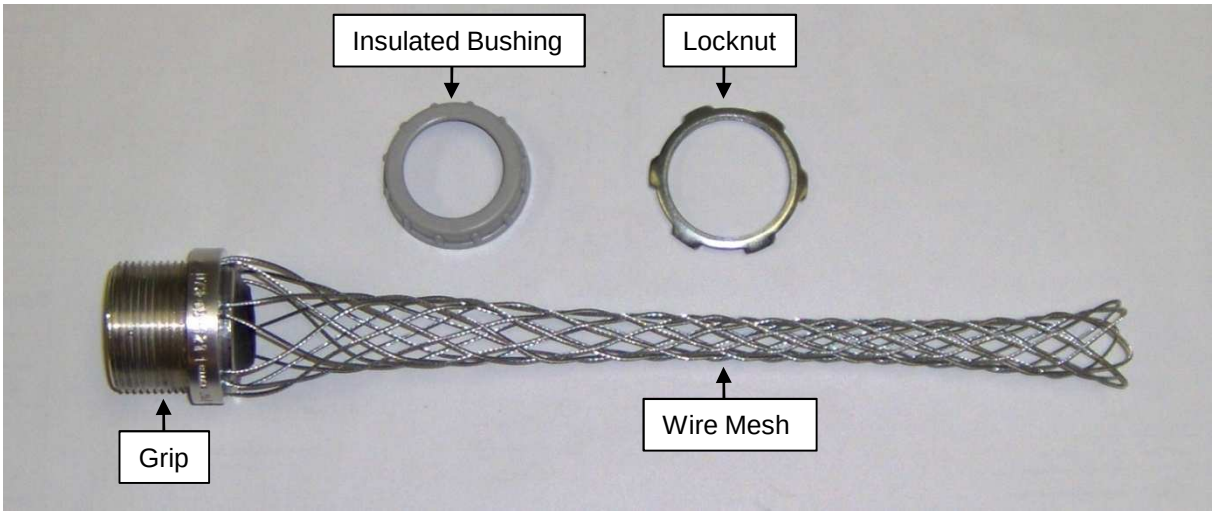

Figure 1
Strain Relief Kellems Grip Layout

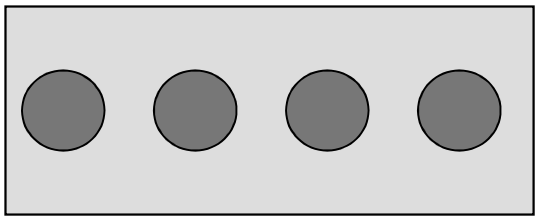

Figure 2a
Inline Tube Cable Entry Locations
Acceptable but Fails to Optimize
TDU Capacity

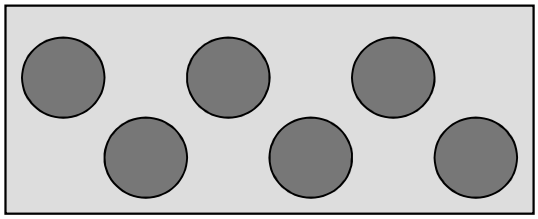

Figure 2b
Staggered Tube Cable Entry Locations
Preferred Method to Optimize
TDU Capacity

7.0 Installing Strain Relief Kellems Grip

7.1 After the appropriate size knockout hole is cut into the TDU enclosure, compress wire mesh and slide Grip onto end of tube cable.

7.2 Insert tube cable and threaded end of Grip into entry hole.

7.3 Slide Locknut over tube cable end and thread onto Grip. Only hand-tighten at this time.

7.4 Compress wire mesh and adjust tube cable length inside TDU as required.

7.5 When tube cable length is adjusted, mark tube cable jacket in preparation for stripping.

7.5.1 Make first mark about 1" beyond threaded end of Grip body. **See Fig. 3.**

Note: *If tube cable is armored, the metallic element or elements must be grounded and bonded. Make first mark about 2"-4" beyond threaded end of Kellems Grip body. See SRP SP-F04-030.*

7.5.2 Second mark must be determined on-site. Measure distance required to route individual tubes from the 1" mark to the farthest tube connection point inside TDU and make second mark.

7.6 Remove Locknut, Grip, and tube cable from TDU. Compress wire mesh and remove Grip from tube cable.

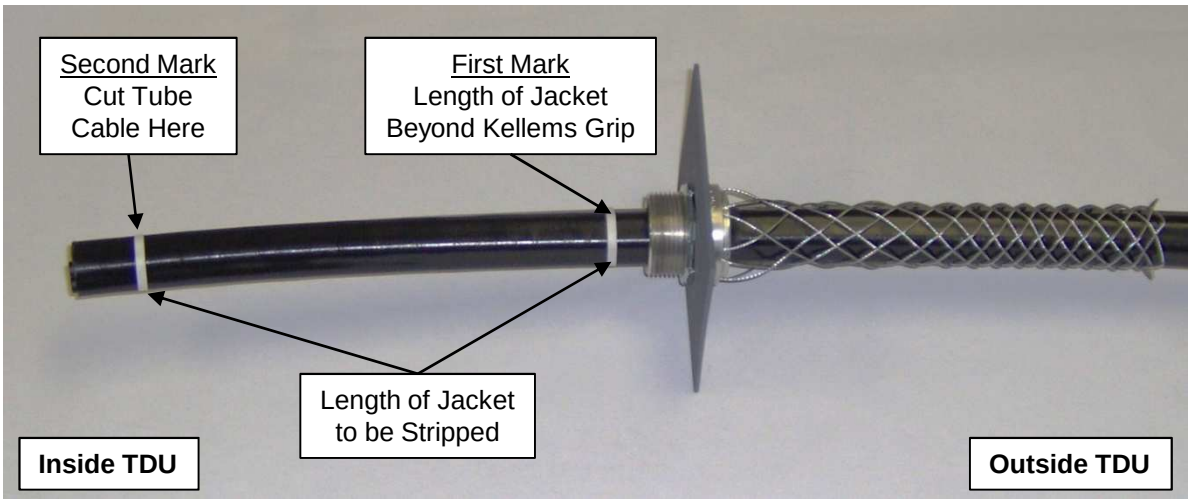

Figure 3
Measuring and Marking Tube Cable

7.7 Use Tube Cable Cutter (BETL01) to cut tube cable at second mark.

7.8 Use Hook Blade Knife to lightly score tube cable jacket at 1" mark. Pull ripcord and strip jacket away to expose individual tubes.

7.9 Compress wire mesh and slide Grip over ends of tubes / tube cable. Adjust tube cable position until there is about 1" of tube cable jacket exposed beyond threaded end of Grip.

7.10 Insert tubes / tube cable and threaded end of Grip into entry hole. Make final adjustments to tube cable length inside TDU as required.

7.11 Slide Locknut over end of tubes / tube cable and thread onto Grip. Wrench-tighten Locknut at this time.

7.12 Slide plastic Insulated Bushing over end of tubes / tube cable, thread onto Grip, and firmly hand-tighten only. **See Fig. 4.**

7.13 Remove any slack from installed wire mesh by smoothing it tight to tube cable to complete the Strain Relief Kellems Grip installation.

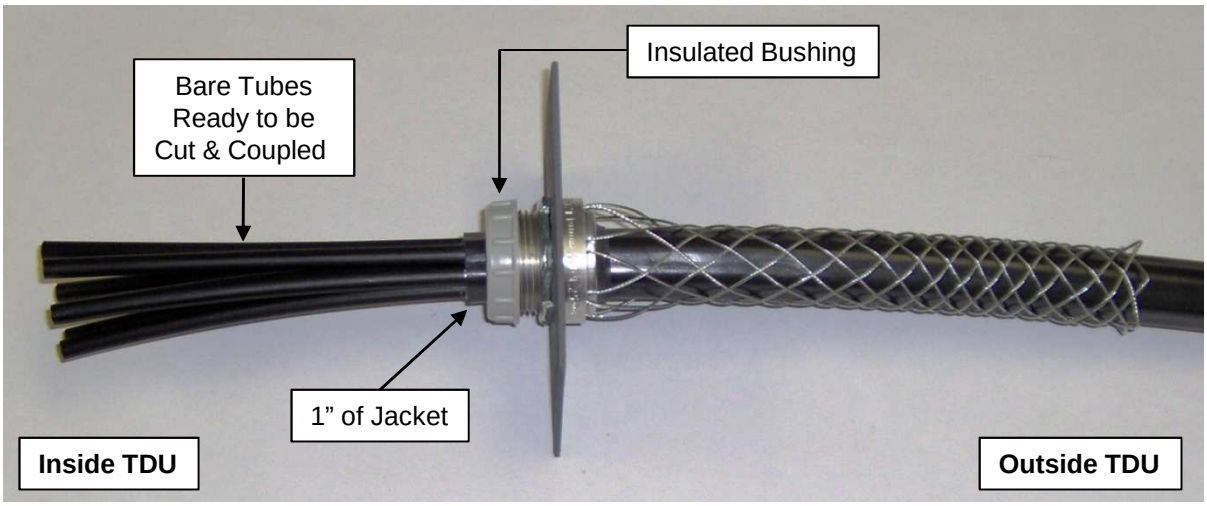

Figure 4
Strain Relief Kellems Grip Installed and Tube Cable Ready for Coupling