Instructions for Preparing

OPTICAL GROUND WIRE

IN AN ISOLATOR

NOTE:

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1.0 List of Materials Needed for AFL Isolator

ITEM	DESCRIPTION	QTY
1	Isolator Assembly (consisting of Body, Mounting Bracket, Connector Asy. 45 degree Flash Over Probe and 90 degree Flash Over Probe)	
	Isolator Assembly **NOTE:** Parts listed below are factory assembled on Isolator.	
	Silicon Body	1
	Mounting Bracket	1
	45 degree Flash Over Probe	1
	90 degree Flash Over Probe	1
2	Upper Connector Assembly (consisting of the following parts for 1 connector)	
	NOTE: Parts listed below can be used for the lower Connector when NOT using Liquid Tight Conduit.	
	Connector Body	1
	Wire Retainer	1
	Entry Bushing	1
	Set Screws	4
	O-Ring	1
	Retaining Cap	1
3	Lower Connector Assembly (consisting of the following parts for 1 connector)	
	NOTE: Parts listed below are for Liquid Tight Conduit Fitting	
	Connector Body	1
	Wire Retainer	1
	Entry Bushing	1
	Set Screws	4
	O-Ring	1
	Retaining Cap	1
	Liquid Tight Conduit Fitting	1

2.0 Purpose of Installation

The purpose is to isolate the Optical Fibers from electrically charged conductors at the fiber splice or termination locations in order to allow splicing technician safe access to the fibers without presence of harmful electrical charge.

3.0 Scope

This document describes and illustrates the installation of Optical Ground Wire into the AFL Isolator.

4.0 Precautions

4.1 Health

Optical fibers are very thin, fragile and sharp. Therefore, careful handling is required to avoid either damage to the delicate glass fibers, or more importantly, injury to the technician or bystander. Small fiber scraps should be deposited on strips of adhesive tape, placed in a bottle or vinyl bag and properly disposed. Do not eat, or drink when working with optical fibers as small pieces of glass may inadvertently be ingested. Never look directly at the end of a fiber unless certain that no Laser Light is being transmitted through the fiber.

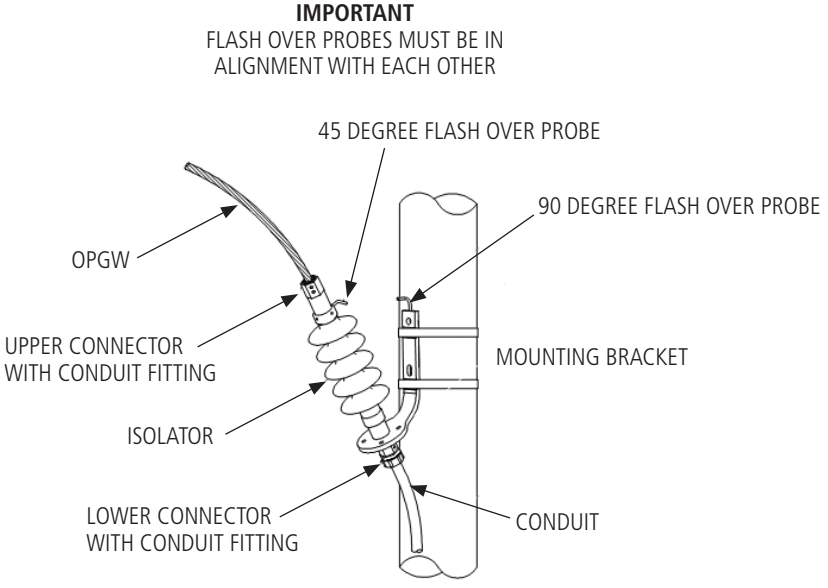
4.2 Work Environment

Handle optical fiber and fiber cable carefully, taking care to impose no damage by physical shock or sharp bends. During the actual splicing, care must be taken to keep hands and work area clean in order that the fibers may be kept clean. Dirty fibers mean poor splices! Keep all tools and equipment in their proper cases or storage pouches when not in use. Consideration should be given to the work area in which the Isolator will be organized. A clean, snag free horizontal surface is necessary.

5.0 Isolator Preparation at Splicing Towers

IMPORTANT: FLASH OVER PROBES MUST BE IN ALIGNMENT WITH EACH OTHER (see Fig. 1). Remove the red cap plugs and take a swab and clean the inside of the isolator with (no less than 99% alcohol) isopropyl equivalent. It is important not to have any contamination inside the Isolator. Mount the isolator at the appropriate position.

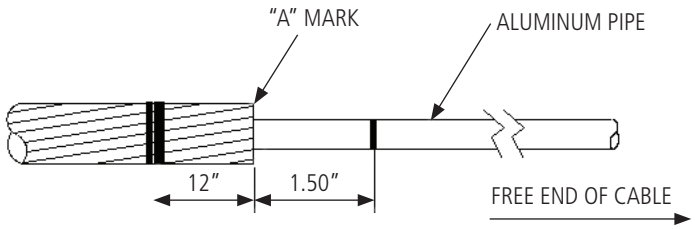
Fig. 1



6.0 Cable Preparation When Using Conduit

When using Liquid Tight Conduit. Mark the Optical cable at the point of entry to the Isolator toward the free end of the cable. This mark will be referred as mark "A". Apply a hose clamp or electrical tap 12 inches behind mark "A". This is to keep the optical strands from separating. Mark "A" is where the outer strands are to be cut. Unlay the outer strands from the free end of the cable back to mark "A". Cut the outer strand back at mark "A" using a Knipex wire cutter or equivalent. Cut the wire back from the pipe. Mark the aluminum pipe 1.5" from the outer strands (see Fig. 2)

Fig. 2

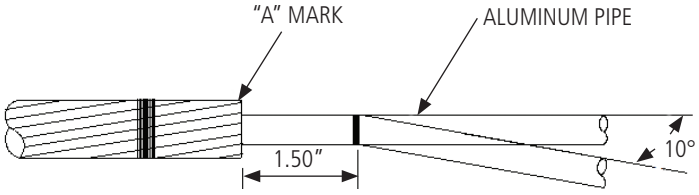


6.1 When cutting off the strands a burr may occur. If this happens, remove the hose clamp or electrical tape further up the cable. Unlay the strand that has the burr, cut the burr and reposition the strand.

6.2 Then score the aluminum pipe with a small pipe cutter. Try 2 or 3 rotational passes around the pipe first. Then try to bend the pipe back and forth. If the pipe does not move easily try a few more passes. Do not score too deep or completely through the pipe. If unsure, cut a small piece of pipe 2 ft. from the free end of cable and practice cutting the pipe. The number of rotational passes can vary depending on the pipe size and design of the cable.

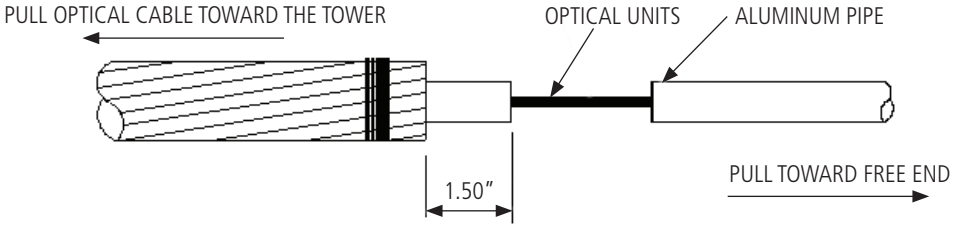
6.3 The pipe may now be broken by bending it back and forth gently not more than 10 degrees (see Fig. 3)

Fig. 3



6.4 Slide the outer strands with the pipe intact about 2 ft. toward the free end of the cable. While holding the cable, pull the optical units completely out of the pipe by pulling toward the tower. Be careful not to kink the optical units (see Fig. 4). Immediately tape the ends of the optical units when the end clears the aluminum pipe. This will hold the core wrap tape intact for ease in performing for the next step.

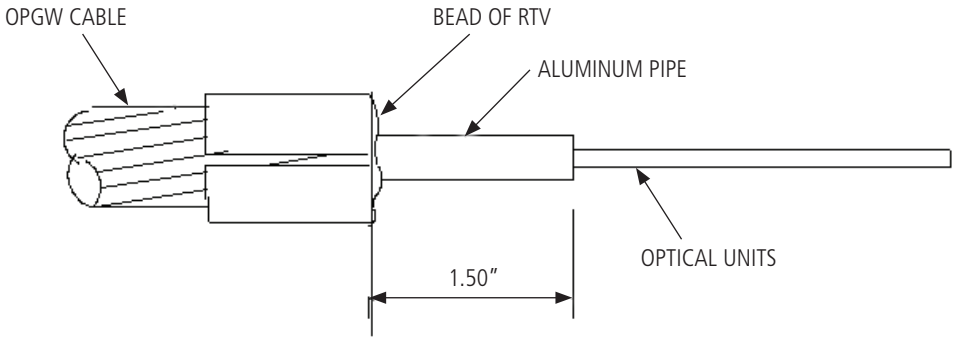
Fig. 4



7.0 Cable to Isolator With Liquid Tight Conduit

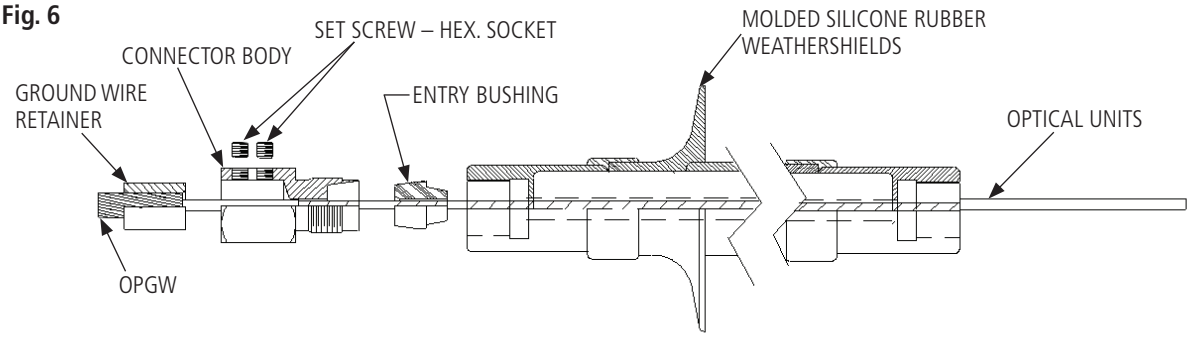
After the individual OPGW end has been prepared slide the cable retainer over the optical units and over all the outer-strands of wire. Then place a bead of RTV silicone on the wire tips and around the pipe (see Fig. 5).

Fig. 5



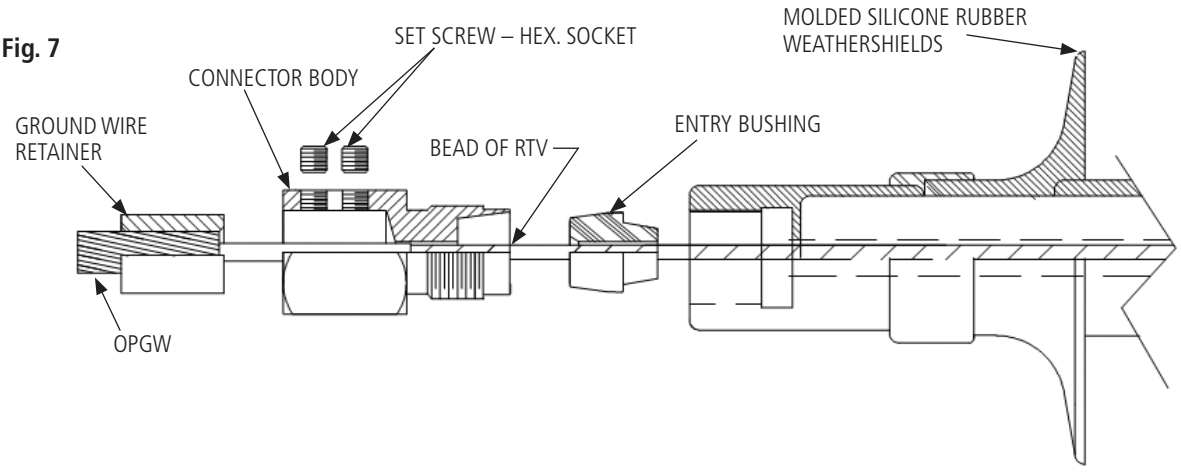
7.1 Slide the optical units tubes through the connector body and entry bushing (**NOTE THE ORIENTATION OF THE BUSHING**). Then slide the optical units through the isolator (see Fig. 6).

Fig. 6



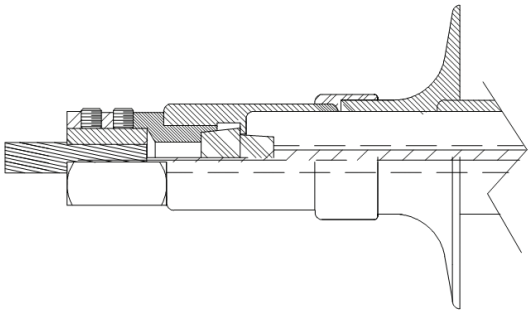
7.2 Place a bead of RTV just inside the top of the connector body (see Fig. 7). Then slide the entry bushing into the connector body. Now screw the connector body into the isolator.

Fig. 7



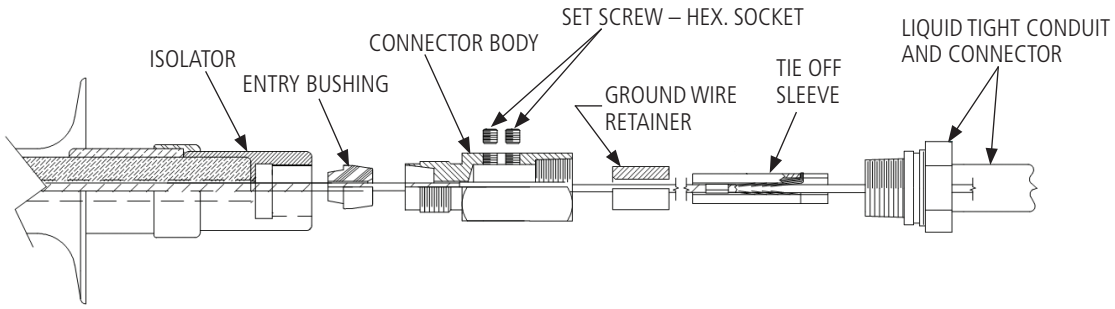
7.3 Screw the connector body into the isolator. Slide the wire retainer into the connector body. The flat surface of the wire retainer should be perpendicular to the set screws before tightening the wire retainer. Tighten the set screws (see Fig. 8).

Fig. 8



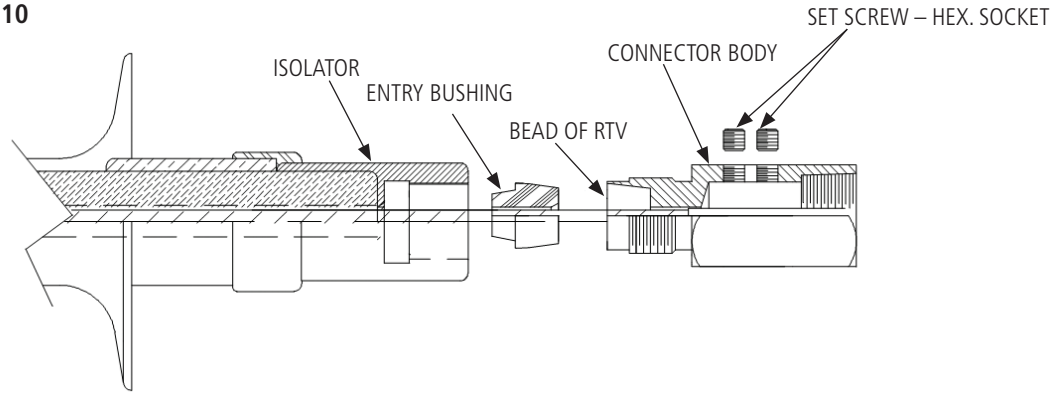
7.4 For the bottom end, slide the optical units through the entry bushing (**NOTE THE ORIENTATION OF THE BUSHING**), connector body, wire retainer, tie off sleeve, and liquid tight conduit fitting (see Fig 9).

Fig. 9



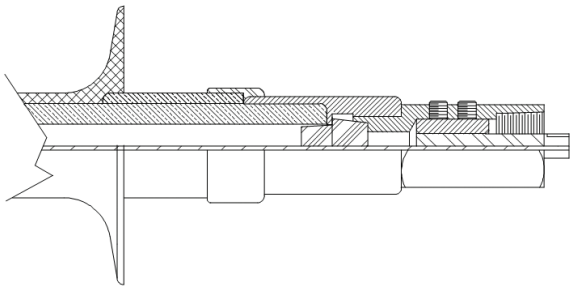
7.5 Place a bead of RTV just inside the top of the connector body (see Fig. 10). Then slide the entry bushing into the connector body. Then screw the connector body into the isolator.

Fig. 10



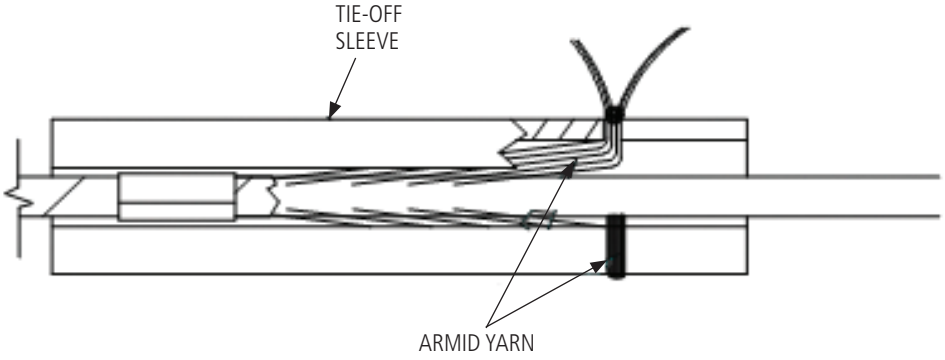
7.6 Slide the wire retainer into the connector body and insert the tie off sleeve into the wire retainer. The flat surface of the wire retainer should be perpendicular to the set screws before tightening the wire retainer. Tighten the set screws (see Fig. 11).

Fig. 11



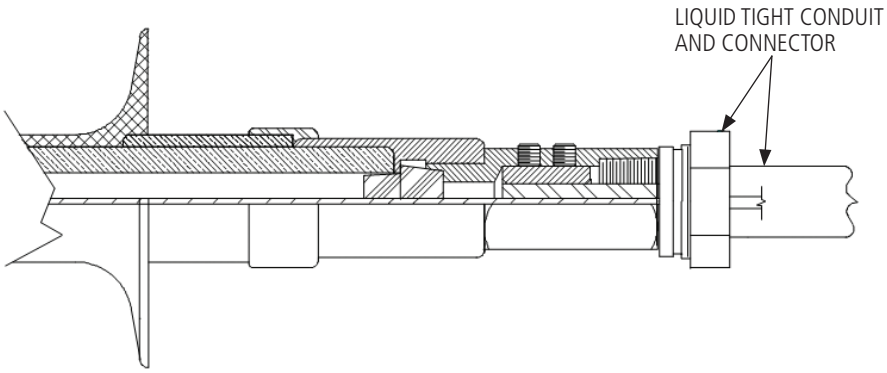
7.7 Remove just enough polyimide tape from the optical units (approx. 12 inches of polyimide tape) to expose the Armid Yarn. Use electrical tape to keep the protective wrap from unravelling. Cut the yarn at the electrical tape. Slide the yarn in the slots of the sleeve and weave in and out, tie the yarn in a knot (see Fig. 12). Note:

Fig. 12



7.8 Screw the Liquid Tight Conduit fitting into the connector body (see Fig. 13). Install the conduit into the conduit fitting and proceed to the splice box. Follow the standard procedure for installing the optical unit into the splice box.

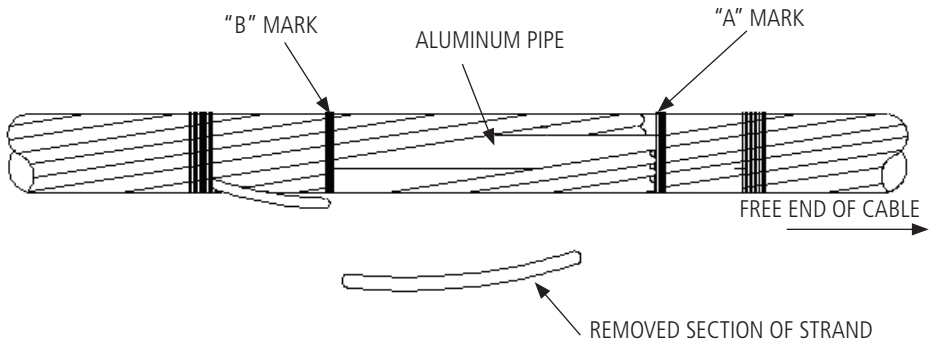
Fig. 13



8.0 Cable Preparation NOT Using Liquid Tight Conduit

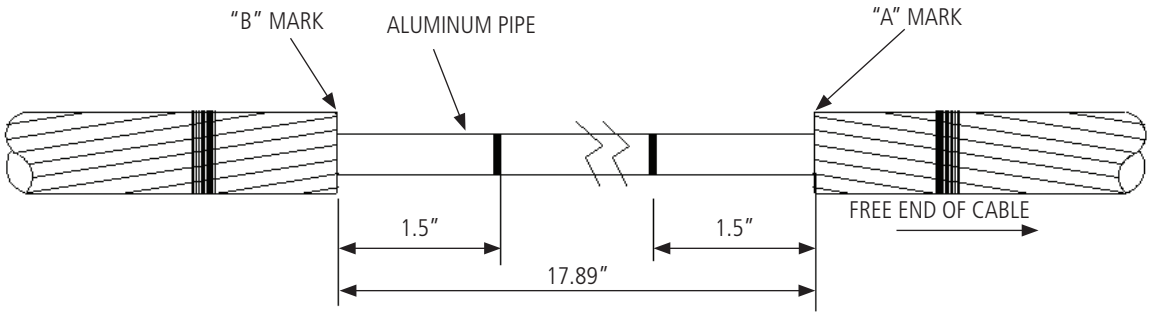
Mark the Optical cable at the point of entry to the Isolator toward the free end of the cable. This mark will be referred as mark "A". Mark 17.89 inches from mark "A" this will be mark "B". Apply a hose clamp or electrical tape .375 inches behind mark "A" and "B". This is to keep the optical strands from separating. Mark "A" and "B" is where the outer strands are to be cut. At mark "A" cut the outer strands using Knipex wire cutters or equivalent. Cut the strands back to mark "B" (see Fig. 14).

Fig. 14



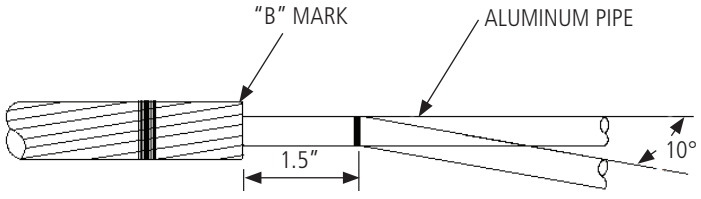
8.1 Remove the cut strands. When cutting off the strands a burr may occur. If this happens, remove the hose clamp or electrical tape and move further up the cable. Unlay the strand that has the burr, cut the burr and reposition the strand. After the strands have been removed mark the aluminum pipe 1.5 in. back from mark "A" and "B" (see Fig. 15). Then score the aluminum pipe with a small pipe cutter. Try 2 or 3 rotational passes around the pipe first. Then try to bend the pipe back and forth. If the pipe does not move easily try a few more passes. Do not score too deeply or completely through the pipe. If unsure cut a small piece 2 ft. from the free end of cable and practice cutting the pipe. The number of rotational passes can vary depending on the pipe size and design of the cable.

Fig. 15



8.2 The pipe may now be broken by bending it back and forth gently no more than 10 degrees (see Fig. 16). Slide the outer strands with the pipe intact about 2 ft. toward the free end of the cable. While holding the cable pull the optical units completely out of the pipe by pulling toward the free end. Keep the aluminum pipe and cable intact. DO NOT unlay the stranding from the pipe. The optical units will be threaded back through the aluminum pipe at a later time. Be careful not to kink the optical units. Immediately tape the ends of the optical units when the end clears the aluminum pipe. This will hold the core wrap tape intact for ease in performing the next step. Now remove the smaller section of pipe.

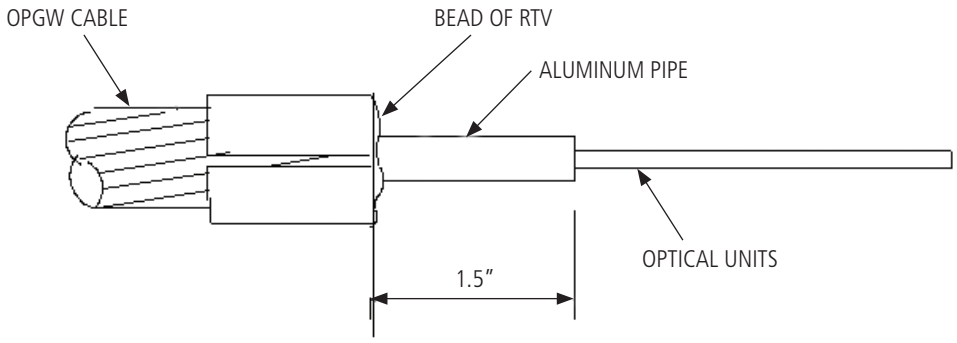
Fig. 16



9.0 Cable to Isolator Without Liquid TIght Conduit

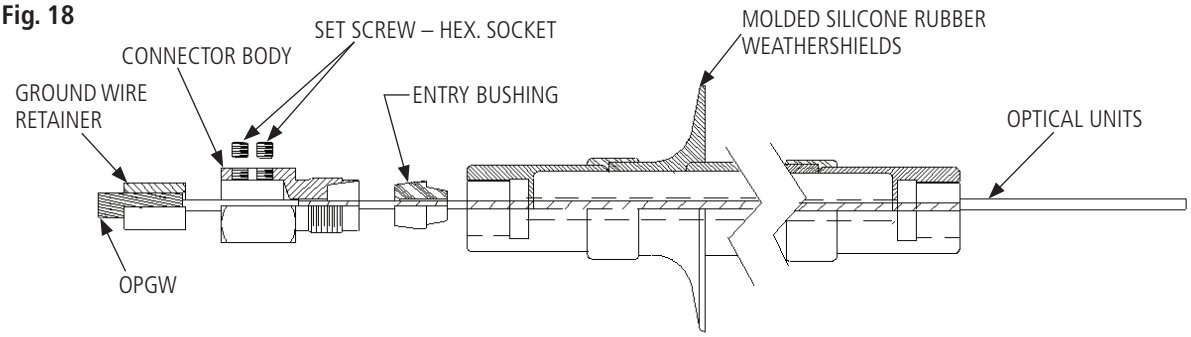
After the individual OPGW end has been prepared slide the cable retainer over the optical units and over all the outer-strands of wire. Then place a bead of RTV silicone on the wire tips and around the pipe (see Fig. 17).

Fig. 17



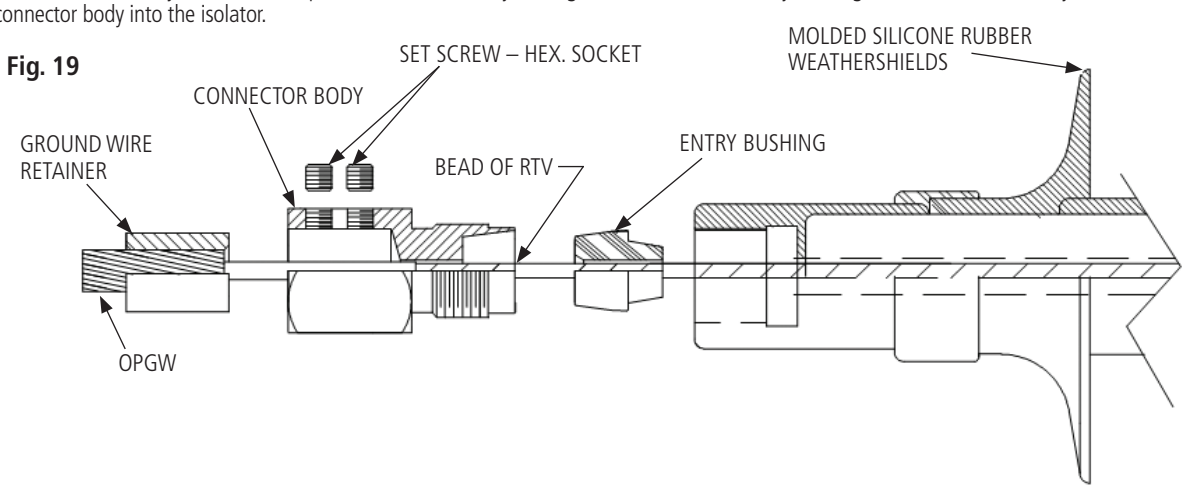
9.1 Slide the optical units tubes through the connector body and entry bushing (**NOTE THE ORIENTATION OF THE BUSHING**). Then slide the optical units through the isolator (see Fig. 18).

Fig. 18



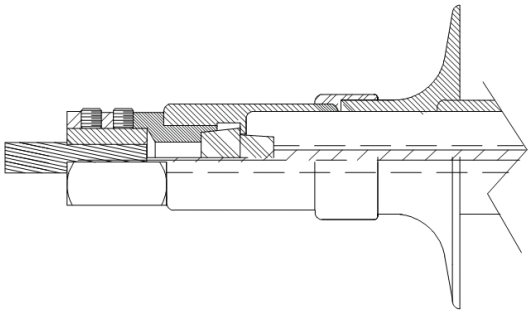
9.2 Place a bead of RTV just inside the top of the connector body (see fig. 19). Then slide the entry bushing into the connector body. Now screw the connector body into the isolator.

Fig. 19



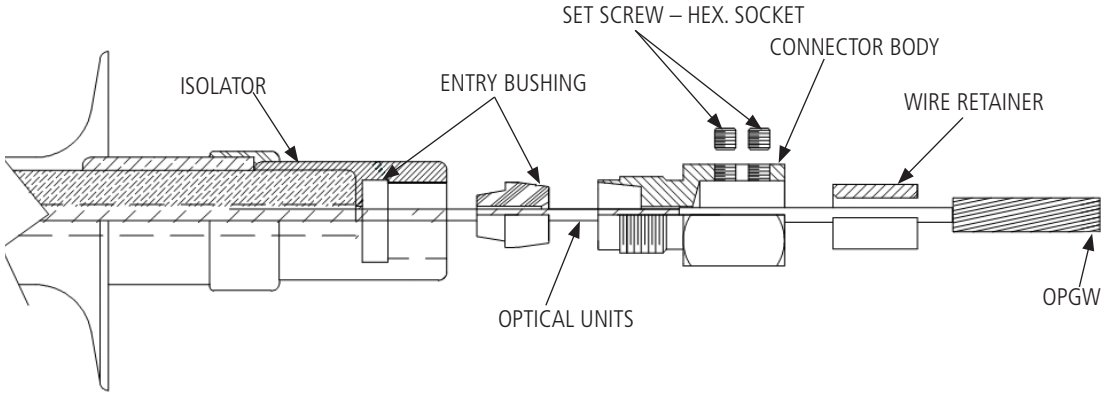
9.3 Screw the connector body into the isolator. Slide the wire retainer into the connector body. The flat surface of the wire retainer with cable should be perpendicular to the set screws before tightening the wire retainer. Tighten the set screws (see Fig. 20).

Fig. 20



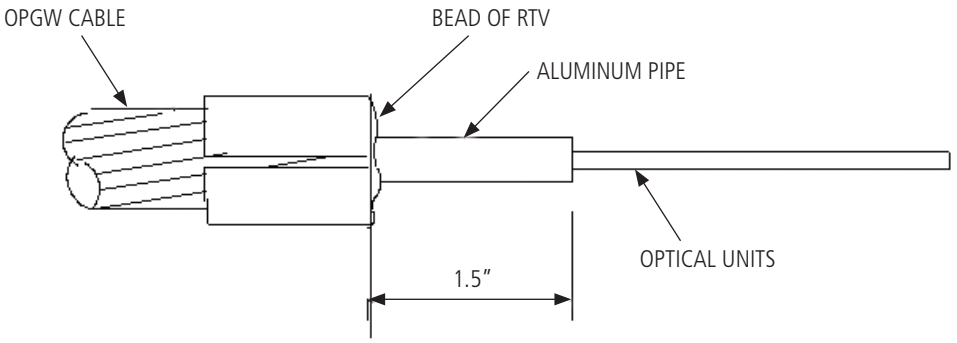
9.4 On the bottom end of the isolator, slide the optical units through the entry bushing, connector body and wire retainer (**NOTE THE ORIENTATION OF THE BUSHING**). Then slide the optical units through the aluminum pipe, being careful not to unravel the polyimide tape (see Fig. 21).

Fig. 21



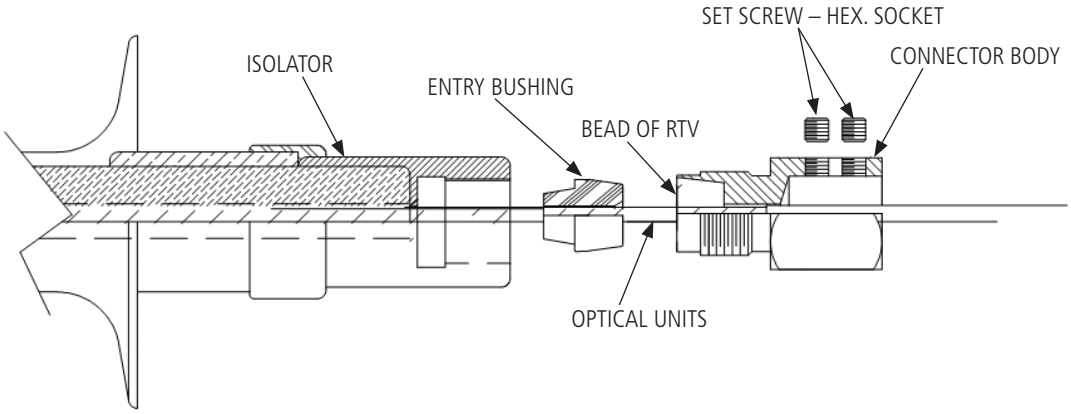
9.5 After the individual OPGW end has been prepared slide the cable retainer over the optical units and over all the outer-strands of wire. Then place a bead of RTV silicone on the wire tips and around the pipe (see Fig. 22).

Fig. 22



9.6 Place a bead of RTV just inside the top of the connector body (see Fig. 23). Then slide the entry bushing into the connector body. Screw the connector body into the isolator.

Fig. 23



9.7 Screw the connector body into the isolator. Slide the wire retainer into the connector body. The flat surface of the wire retainer should be perpendicular to the set screws before tightening the wire retainer. Tighten the set screws (see Fig. 24). Follow the standard procedure for installing the optical unit into the splice box.

Fig. 24