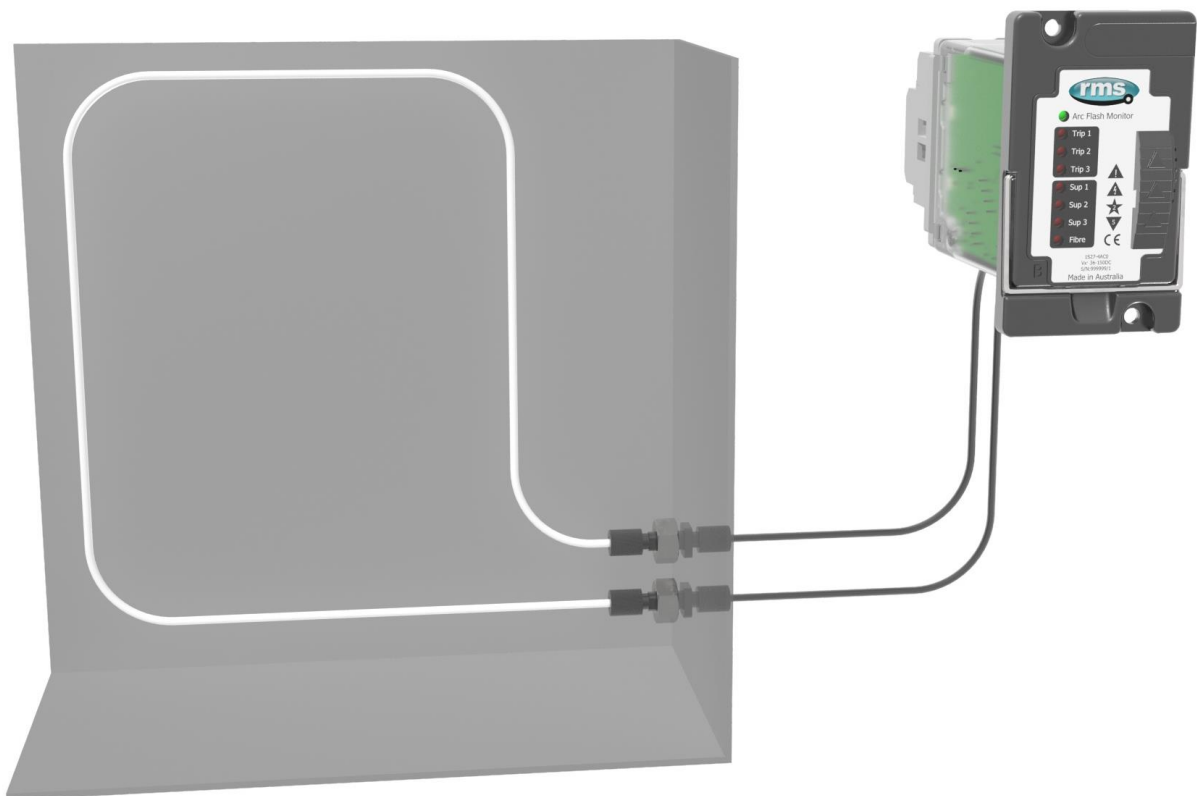


1S40 User Manual

RMS MORS SMITT



1 ASSEMBLY WARNING

Please read the following warnings prior to the assembly of 1S40. Failure to do so may result in irreversible damage to the fibre optic cable.

WARNING

1. Maximum bend radius is 30mm

do not bend fibre optic cable less to than 30mm radius, this may result in micro fractures which will reduce sensitivity or render the fibre optic cable useless.

2. Maximum tensile force short term is 50N

The short term maximum tensile force on the fibre optic cable is 50N over a time span of 24 hours or less. Exceeding this may result in micro fractures which will reduce sensitivity or render the fibre optic cable useless.

3. Maximum tensile force long term is 1N

The long term maximum tensile force on the fibre optic cable is 1N over a time span of 24 hours or more. Exceeding this may result in micro fractures which will reduce sensitivity or render the fibre optic cable useless.

4. Maximum one cut per hole with Fibre Optic Cutter

The provided fibre optic cable cutter can only be used once per cutting hole. This is to ensure a clean cut to prevent any signal loss. Reuse of the fibre optic cable cutter holes may result in reduced sensitivity or render the fibre optic cable useless.

5. Understand the assembly restrictions of 1S40

There are a number of assembly restrictions of the 1S40. These limitations are outlined later in this booklet and the 1S40 Technical Bulletin. Please incorporate these restrictions into your 1S40 installation plan prior to cutting fibre optic cable. Failure to meet these restrictions will result in calibration failure and render the fibre optic cable useless.

6. Plan the Installation prior to cutting fibre optic cable

Plan the installation of the 1S40 and chosen monitor. Choose the position of the 1S40 couplers, Arc Fault Monitors, and the route of the fibre optic cable. Ensure there is enough fibre optic cable required for the installation. Leave slack in the fibre optic cable.

7. Read the 1S40 technical bulletin

Please read the 1S40 technical bulletin for more details on the 1S40 linear fibre sensor.

2 PARTS

The 1S40 is comprised of the following parts.



Link Fibre Optic Cable (QTY 1)



Sensor Fibre Optic Cable (QTY 1)



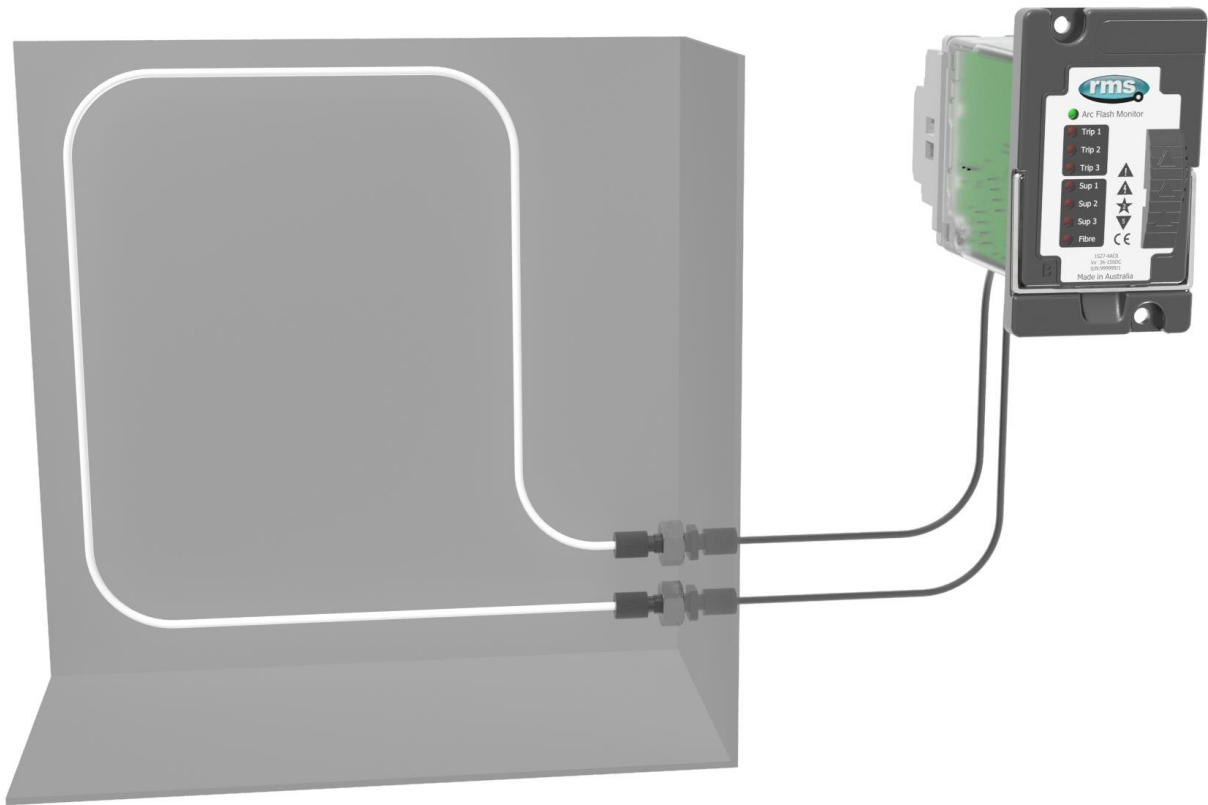
Optical Fibre Cable Cutter (QTY 1)



Optical Fibre Cable Coupler (QTY 2)

3 FINAL ASSEMBLY

The final assembly shall consist of an Arc Fault Monitor, Black Link Fibre Optic Cable, two Optical Fibre Couplers, and the Sensor Fibre Optic Cable. Below is an example of the 1S40 hooked up to an Arc Fault Monitor.



4 ASSEMBLY RESTRICTIONS

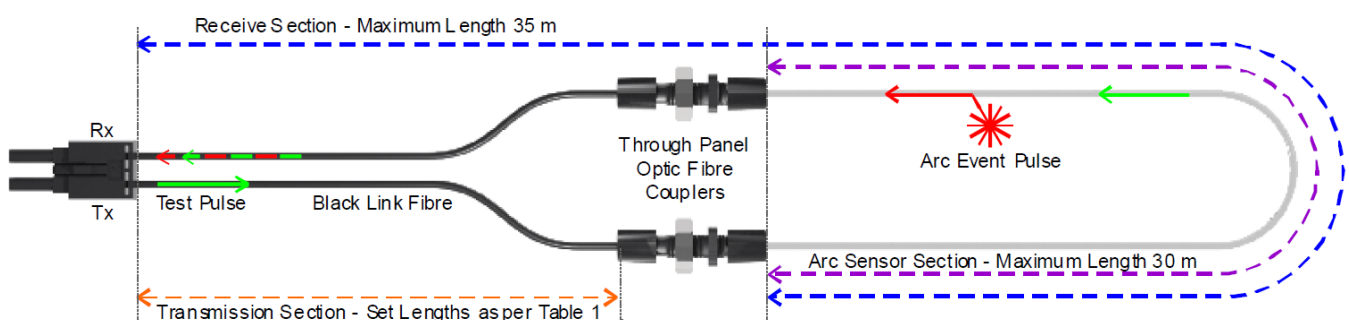
The 1S40 has a number of assembly restrictions which need to be met to ensure proper functionality of the sensor. Below is a list of restrictions.

1. Arc sensor section **MAXIMUM** length is 30 meters.
2. Arc sensor section + return section **MAXIMUM** length is 35 meters.
3. **ONLY** two couplers must be used in the assembly.
4. Transmission section length must be cut to one of the lengths specified in the following table.
5. The transmission section and return section don't have to be the same length.

Note: the return section is the black fibre cable in the receive section noted below.

Transmission Length (T_L)	1S24 Setting	1S27 Setting
$T_L < 0.05m$	00	A
$0.05m < T_L < 1m$	01	B
$1m < T_L < 5m$	05	C
$5m < T_L < 10m$	10	D
$10m < T_L < 20m$	20	E
$20m < T_L < 30m$	30	F
$30m < T_L < 40m$	40	-

Table 1 - Transmission Length



5 PLANNING CHECK LIST

It is essential to plan the installation of the 1S40 prior to making any cuts to the fibre optic cable. Use the below check list to ensure the success of installing the 1S40.

- Arc Fault Monitor is installed.
- Coupler positions have been selected.
- Planned transmission length of cable is 0, 1, 5, 10, 20, 30, or 40 meters.
- Planned sensor section is less than 30 meters.
- Planned sensor section is less than or equal to purchased amount of transparent fibre optic cable.
- Planned return section + sensor length is less than 35 meters.
- Planned transmission length + return length is less than the purchased amount of black fibre optic cable.

6 1S40 ASSEMBLY

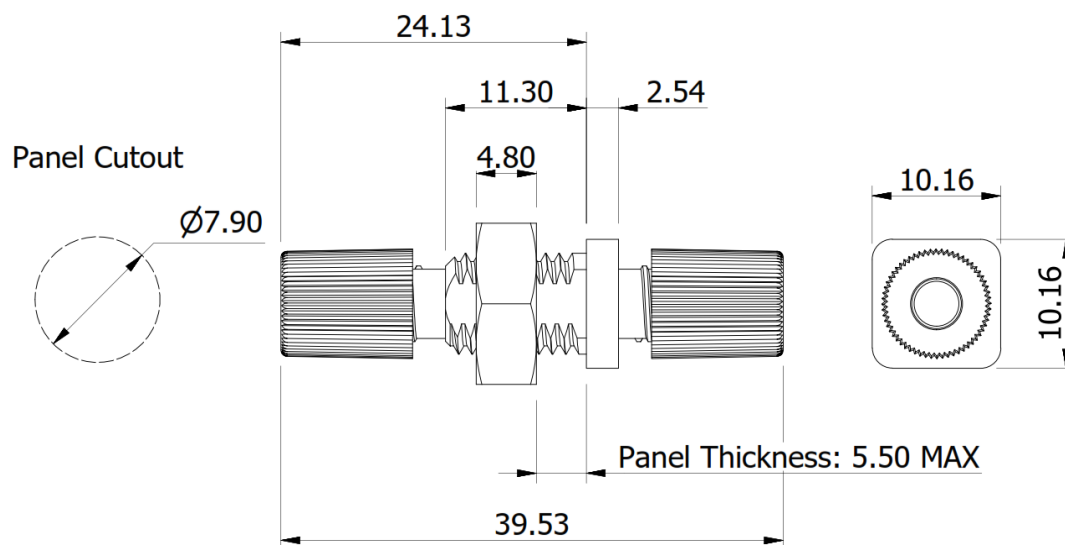
6.1 ASSEMBLY OVERVIEW

The assembly of the 1S40 will include the following steps:

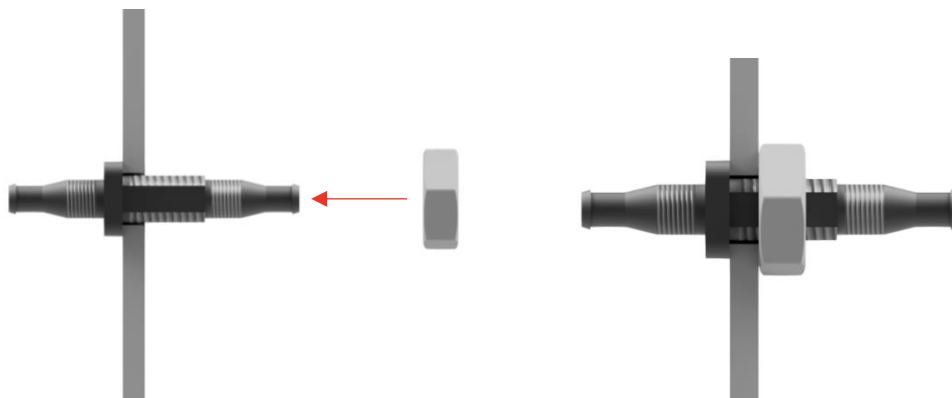
- Installation of 1S40 couplers into panel.
- Cutting black fibre wire to desired length.
- Cutting transparent fibre to desired length.
- Installation of fibre to coupler.
- Installation of fibre to Arc Fault Monitor.

6.2 INSTALL 1S40 COUPLERS INTO PANEL

1. Cut a 7.9mm diameter hole into the panel at the chosen coupler locations.
2. Insert coupler into panel ensuring that the nut is placed on the outside of the panel. The below image illustrates the coupler dimensions and recommended panel cut-out size.



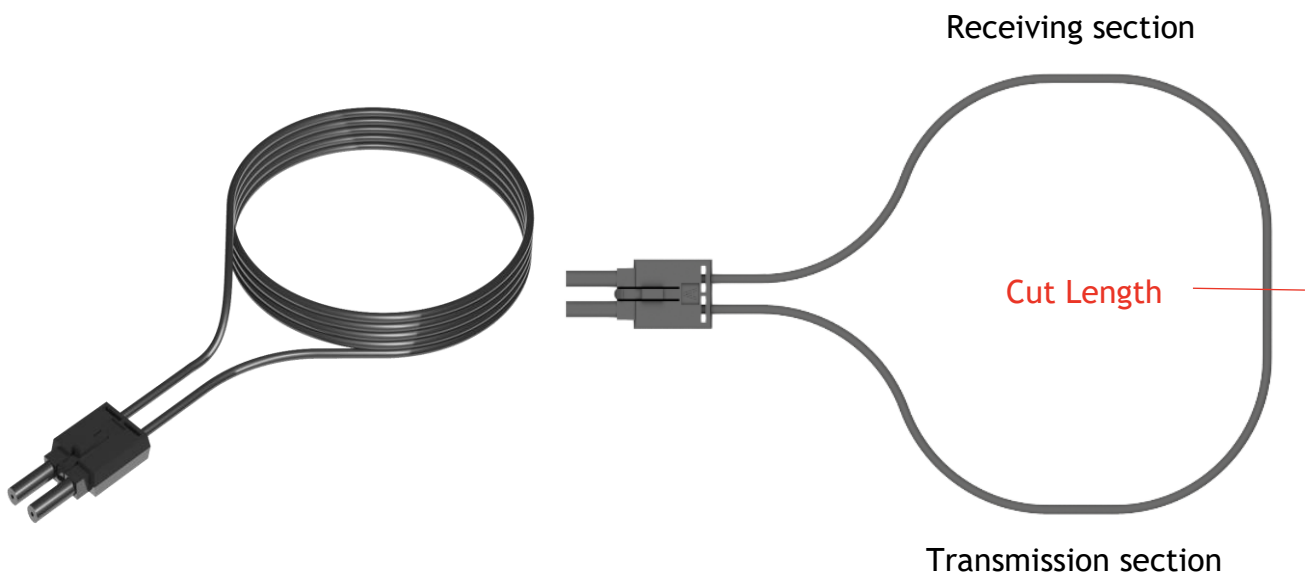
3. Place locking nut to secure coupler (end caps will need to be removed).



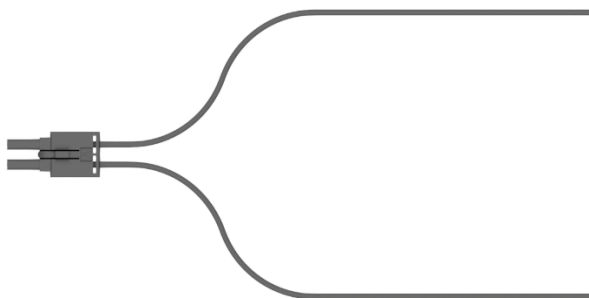
4. Press end caps back onto coupler.
5. Repeat for second coupler.

6.3 CUT BLACK FIBRE OPTIC CABLE TO DESIRED LENGTH

1. Measure the distances from the installed coupler to the arc fault monitor. Double check desired length of black fibre optic cable and ensure the length meets the product restrictions prior to any cutting.
2. Unwind the black fibre optic cable and measure the desired transmission length starting from the connector. *Note: The transmit section does not need to be the same length as the receive section.*
3. Add at least extra 100mm to the measured length from previous step.



4. Cut the black fibre optic cable at measured point using side cutters.
5. Use provided fibre optic cable cutter to trim back both ends of the black fibre optic cable by at least 100mm or more to the desired lengths.



6.4 CUT TRANSPARENT FIBRE OPTIC CABLE TO DESIRED LENGTH.

1. Measure the distances between the installed couplers along the planned sensor fibre optic cable route. Double check desired length of transparent fibre optic cable and ensure the length meets the product restrictions prior to any cutting.
2. Unwind the transparent fibre optic cable and measure the desired sensing length. Ensure there is at least 100mm of spare cable on both ends.
3. Use provided fibre optic cable cutter to trim back both ends of the transparent fibre optic cable to the desired length for the sensing section as planned.



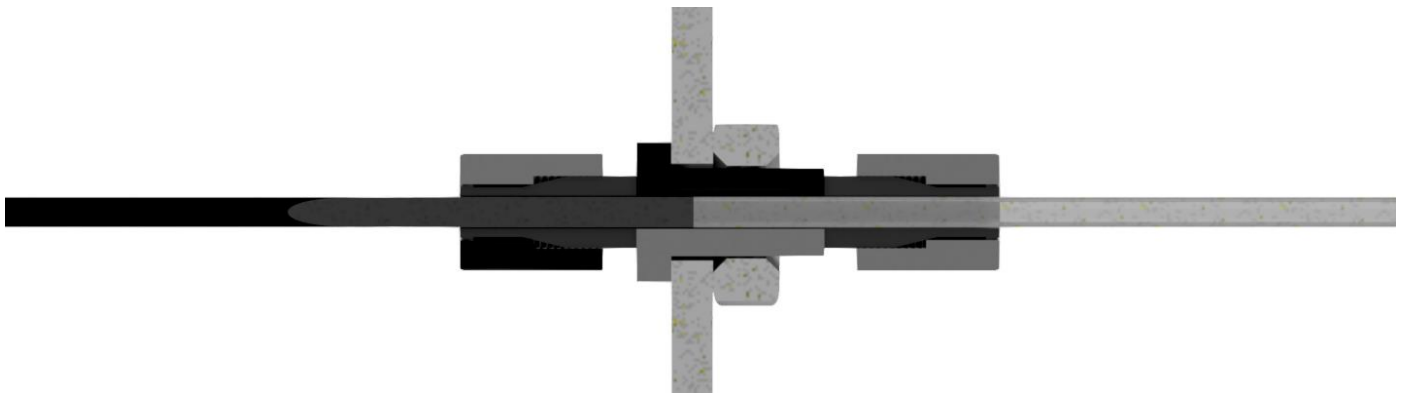
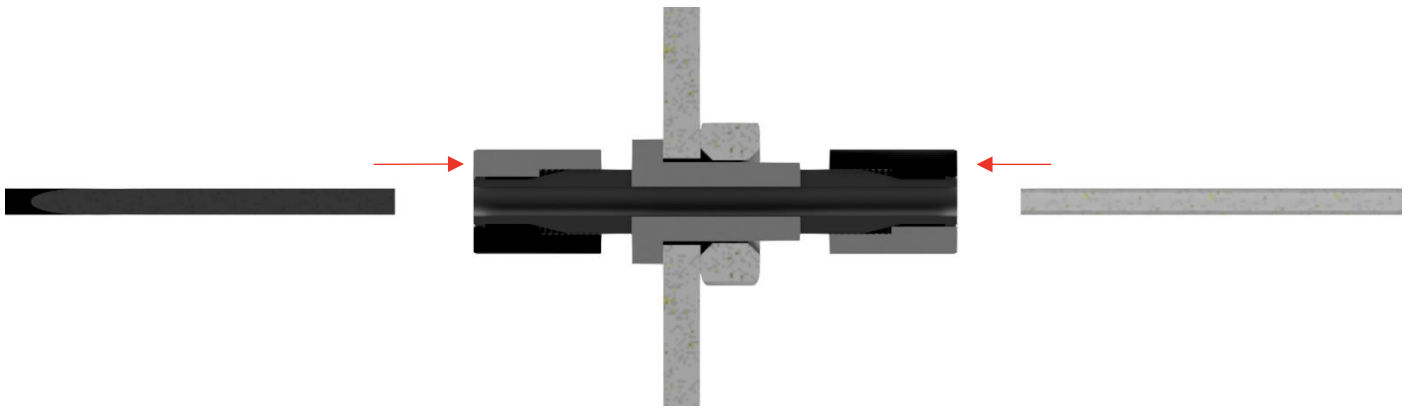
6.5 INSTALL TRANSPARENT FIBRE OPTIC CABLE TO SWITCHGEAR

Route the transparent fibre optic cable through the switchgear ensuring that each end of the fibre optic cable ends at the couplers. It is recommended to use Wing push mounts, Zip ties, and grommets to mount the fibre optic cable.

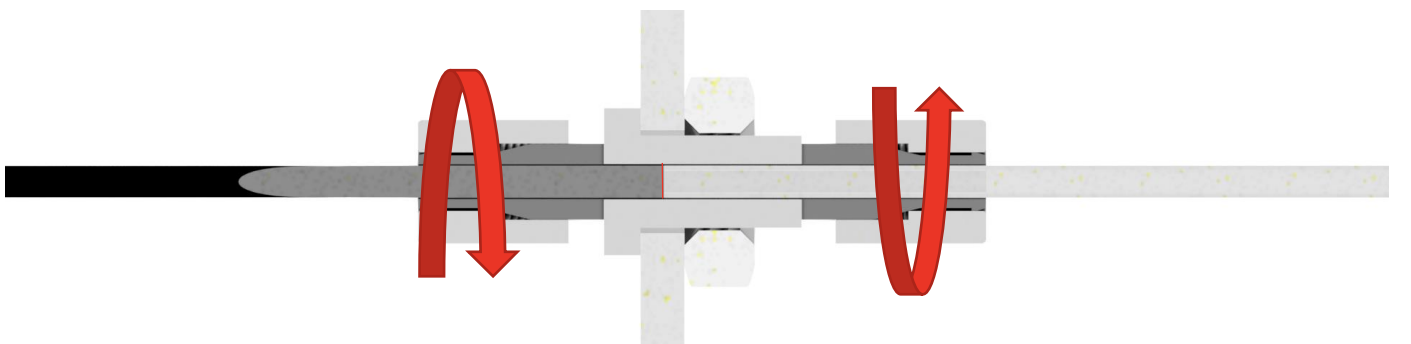


6.6 INSTALL FIBRE OPTIC CABLES TO COUPLERS

1. Loosen both caps on both couplers.
2. Push both the black fibre optic cable and transparent fibre optic cable into each coupler. Ensure they both meet in the middle.



3. Tighten both end caps.



6.7 PLUG 1S40 INTO ARC FAULT MONITOR

1. Plug the 1S40 connector into the arc Fault Monitor.
2. Run calibration on Arc Fault Monitor.

