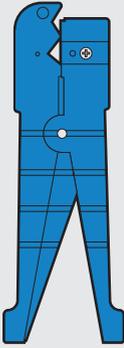
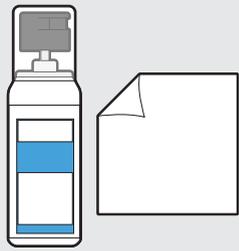
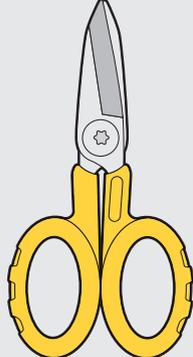
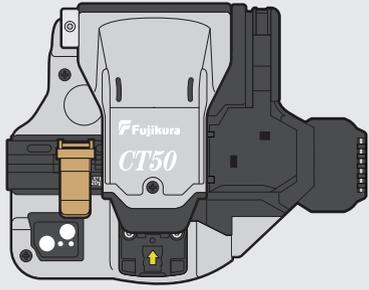


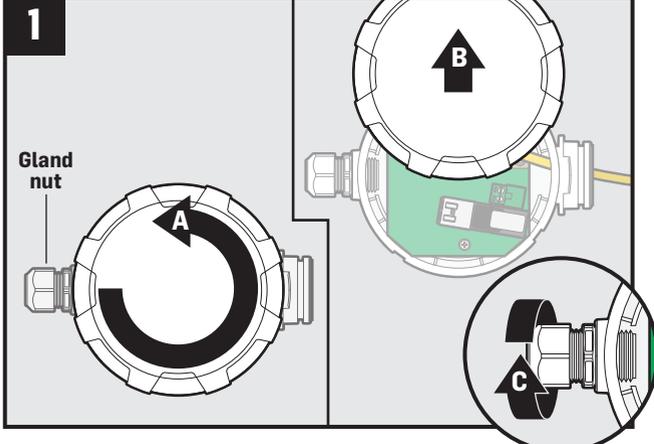
## TOOLS AND ITEMS NEEDED

| Included in SMARTConnect Toolkit   |  |  |   | Not included   |  |
|--|--|--|---|--|--|
|   |   |   |   |   |  |
| Cable Ring Cutter  | Cleaning Fluid Can and Lint Free Wipe  | AFL Optical Power Meter  | Kevlar Scissors   | Electric Wire Stripper   |  |
|  |  |  |  |  |  |
| Fiber Cleaver (Fujikura CT50)  | AFL One-Click Cleaner<br>(AFL P/N: 8500-05-0002MZ)                                 | Fiber Stripper   | Marker Pen  | Flat Head Screwdriver  | Pliers   |

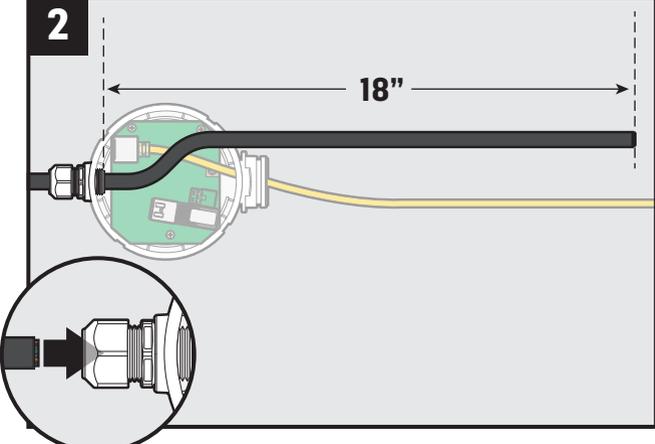
**!** **IMPORTANT:** Read through these directions carefully and completely before proceeding. You should complete all steps up to and including Final Installation Step 8 at the cabinet first and then repeat those steps at the camera.

## Cable Preparation

**1**



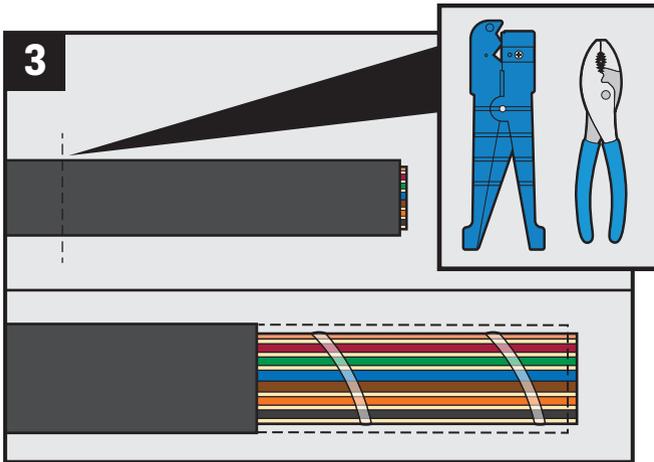
**2**



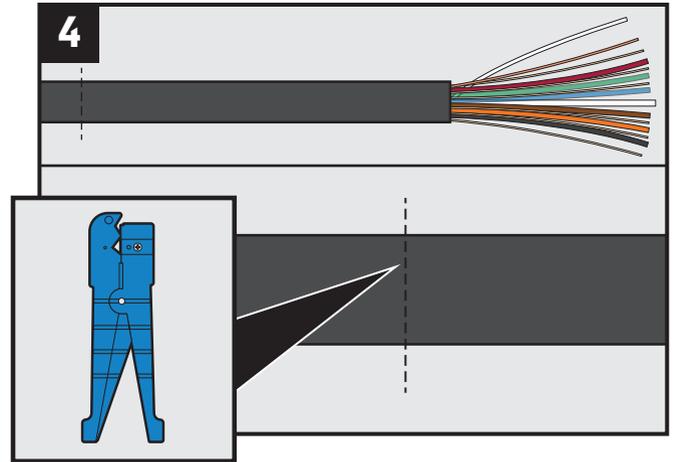
Remove Media Converter lid by turning counterclockwise. Make sure gland nut is loosened.

Insert cable through gland nut and pull 18" through. DO NOT insert cable through other end of Media Converter.

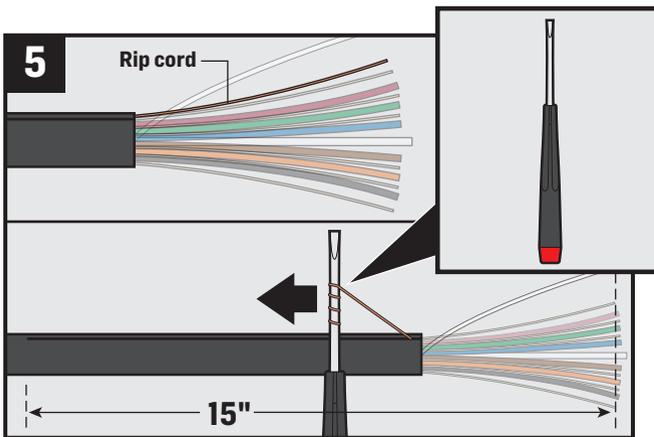
## Cable Preparation (continued)



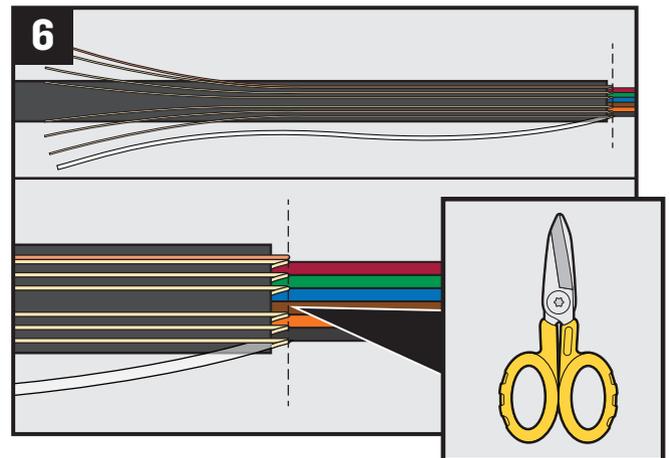
Using the **cable ring cutter**, cut away 3 inches of cable jacket to gain access to the internal rip cord. Use **pliers** to help remove outer jacket.



Using the **cable ring cutter**, cut a ring approximately 15 inches back from the end of the cable.



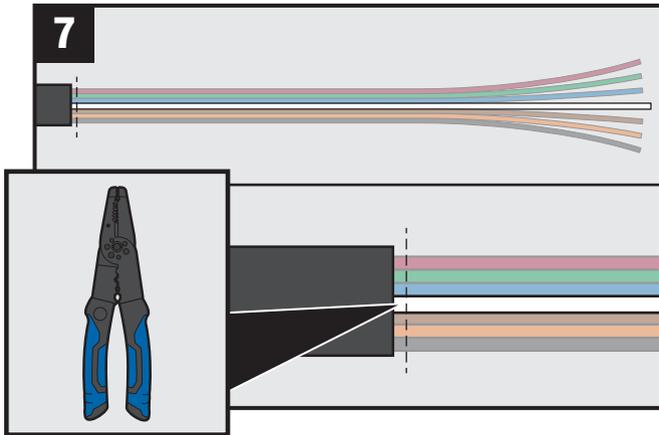
Wrap rip cord around the **flat head screwdriver** shaft. Pull rip cord firmly, splitting jacket, a minimum of 15 inches. Peel off outer jacket.



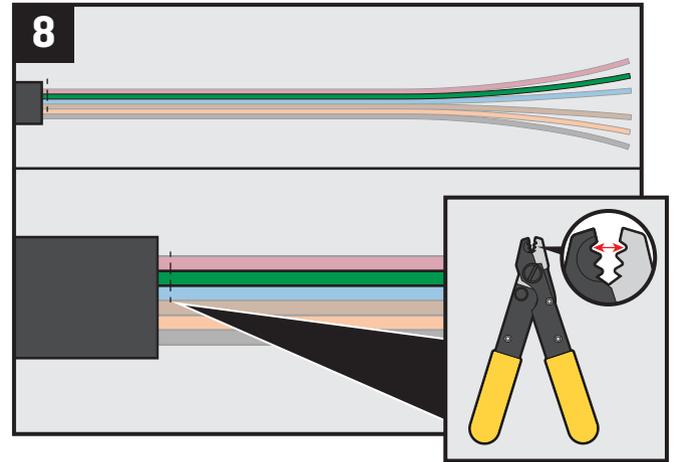
Pull back all internal string material including rip cord. Using **scissors**, trim string material as close to cable jacket as possible, leaving only fiber cables, copper cable, and white fiberglass center.

**!** **IMPORTANT:** Pulling rip cord through jacket is difficult and will require force.

## Cable Preparation (continued)

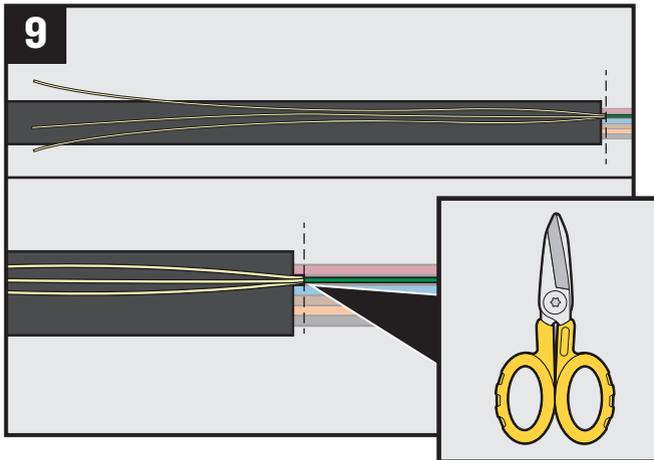


Using the **electric wire stripper**, cut only the white fiberglass center core as close to jacket as possible.

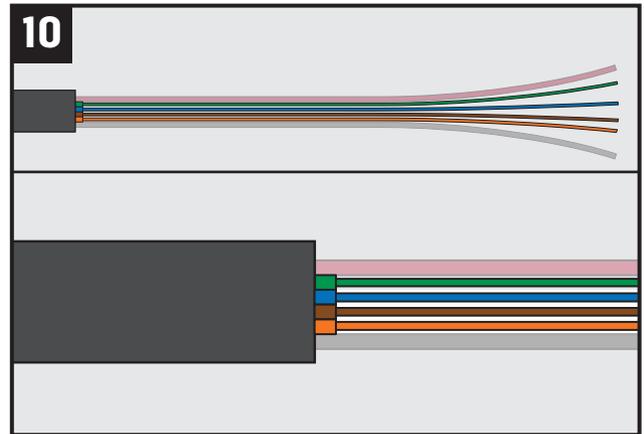


Using largest notch of **fiber stripper**, remove the green, blue, brown, and orange sub-jackets as close to cable jackets as possible.

**!** **IMPORTANT:** Continue this process to remove sub-jackets from all four fiber lines.

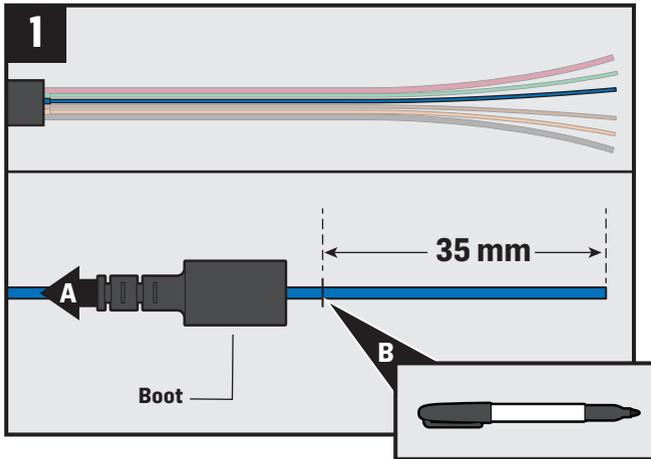


Pull back remaining internal string material. Using **scissors**, trim string material as close to cable jacket as possible, removing everything but the fiber cable.

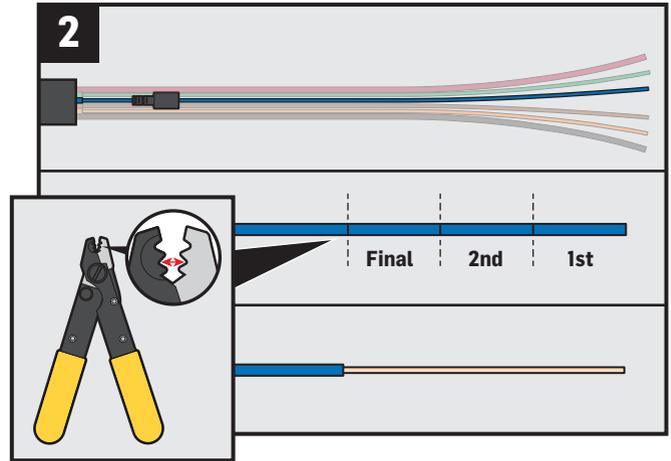


Above: example of finished cable prep.

## Fiber Preparation/Termination



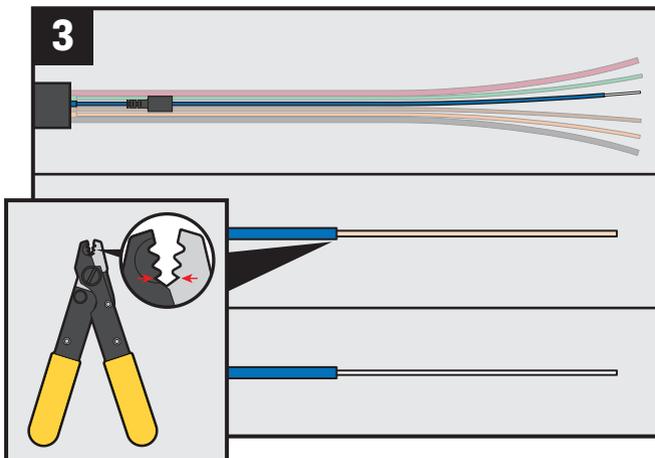
Place 900  $\mu\text{m}$  boot on blue fiber and slide down. Mark 35 mm from the end of fiber.



Using the middle notch of **fiber stripper**, remove 35 mm of 900  $\mu\text{m}$  coating in 3 small segments.

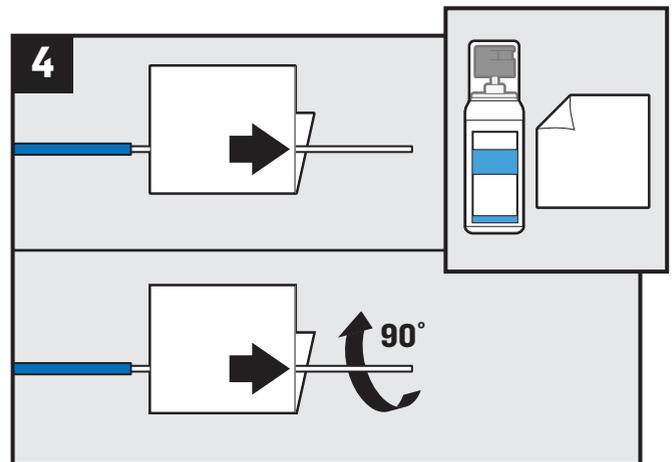
**!** **IMPORTANT:** Always wear protective eyewear when trimming fiber.

**!** **IMPORTANT:** If temperatures are under 40 degrees you should decrease the amount of buffer material you remove with the wire strippers to a few millimeters at a time.



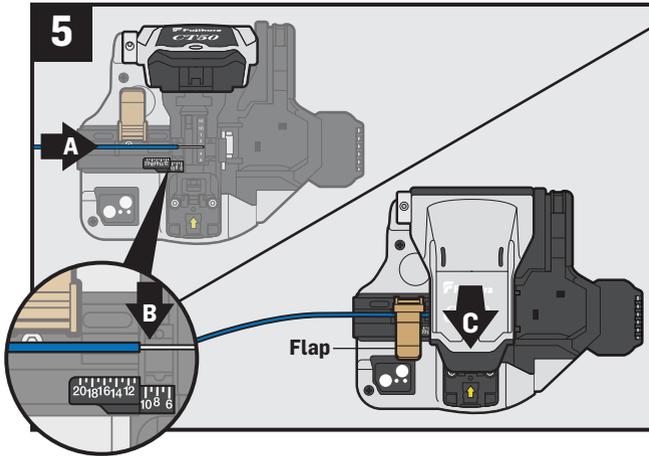
**!** **IMPORTANT:** Before starting step 3, make sure you are prepared to proceed with remaining steps without delay.

Using the smallest notch of **fiber stripper**, strip off all 35 mm of 250  $\mu\text{m}$  coating. Move immediately to the next step.



Using the **cleaning fluid** and a **lint-free wipe**, apply fluid to wipe, then fold the wet area around the fiber, squeeze tightly, and clean with one full swipe followed by a second swipe. Rotate fiber 90°, then clean with one full swipe again, followed by a second swipe.

## Fiber Preparation/Termination (continued)

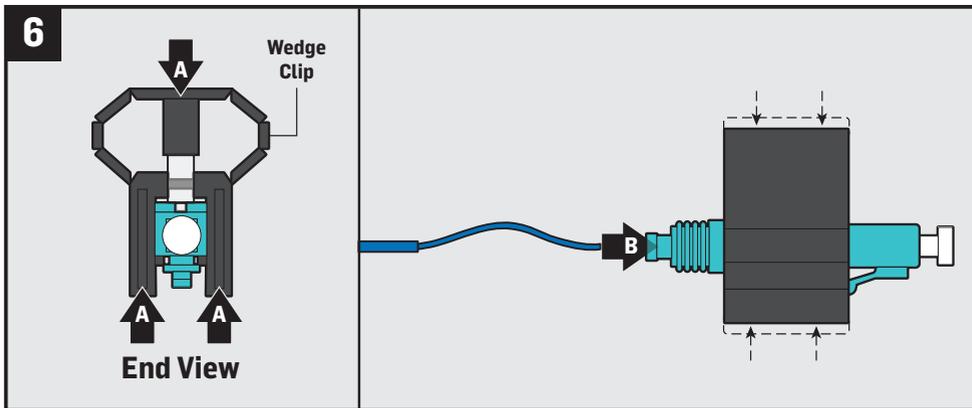
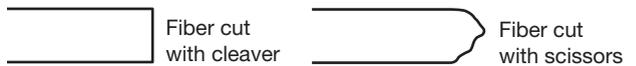


**!** **IMPORTANT:** Once cleaned, do not delay or set the fiber down. Move immediately on to steps 5-7.

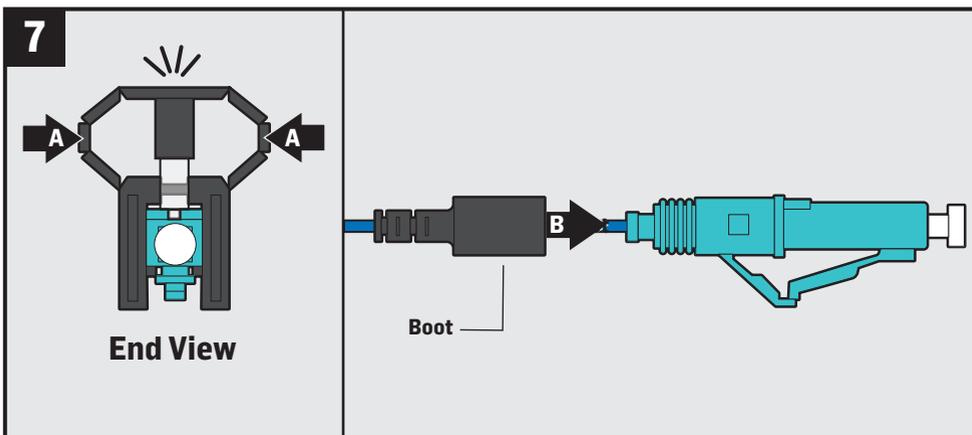
Open cleaver door and cleaver flap fully, then position end of the 900  $\mu$ m coating at 10.5 mm mark on scale. Close the flap over the fiber and depress the cleaver door until it “clicks”.

**!** **IMPORTANT:** A Fujikura CT50 cleaver must be used to cleave length.

Images below show side view enlargements of cut fiber.



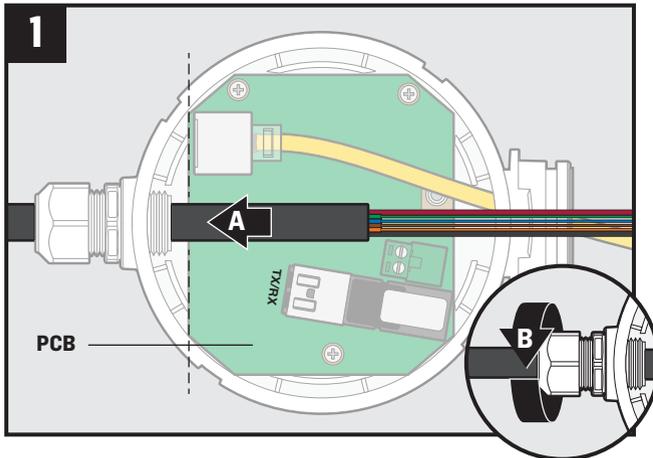
Squeeze top and bottom of connector wedge, ensuring both internal springs “click” open. No “click” indicates springs are already open. Insert fiber into connector, creating a distinct bend in outside connector to maintain connection.



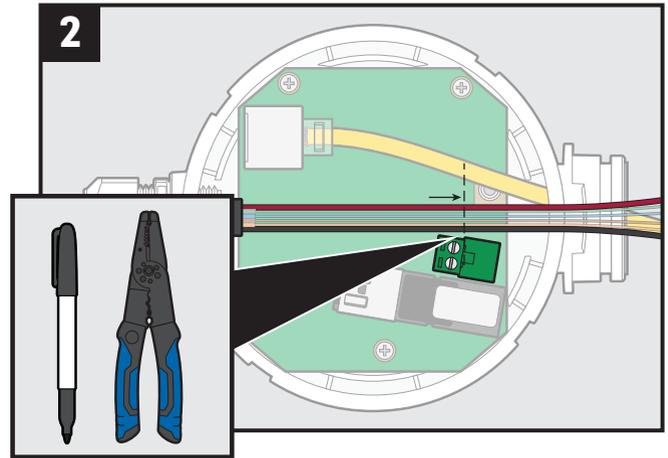
Disengage internal springs in clip by squeezing both sides. Two audible “clicks” can be heard as springs engage. Slide boot onto connector body. Remove wedge clip. Repeat steps 1-7 for orange fiber.

NOTE: Brown and green fibers are spares.

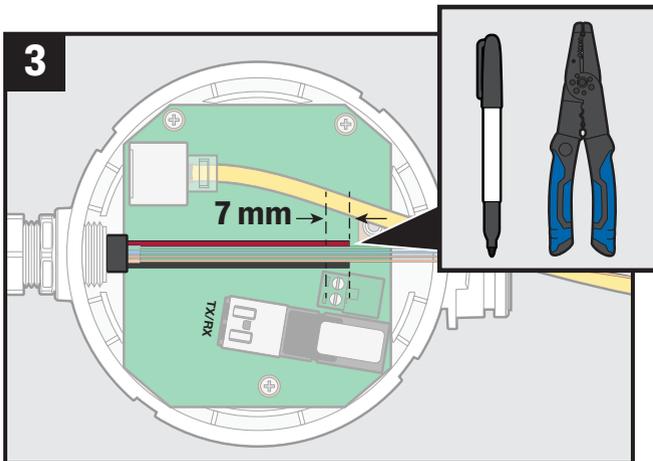
## Final Installation



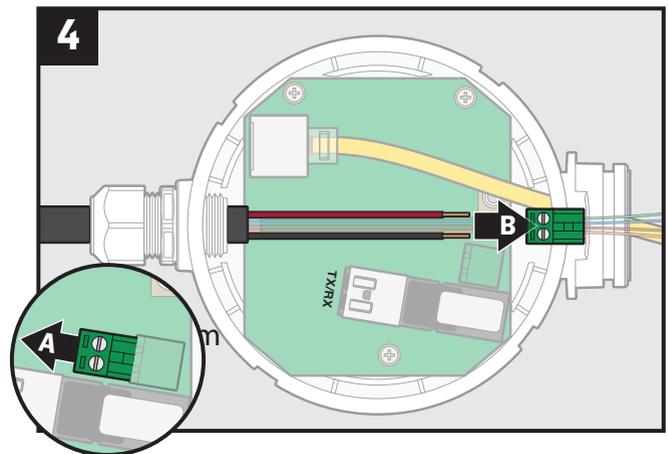
Pull cable back through gland nut and align cable jacket with edges of PCB. Tighten gland nut to 50 in-lbf.



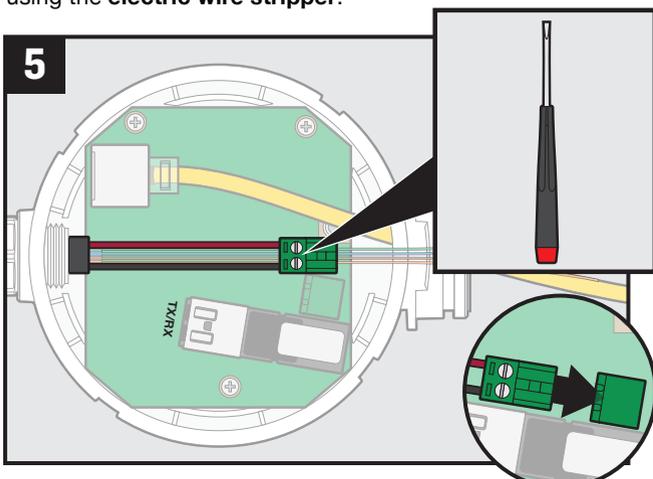
Mark red and black power wires at the back of the power connector plug. Trim power wires with the **electric wire stripper**.



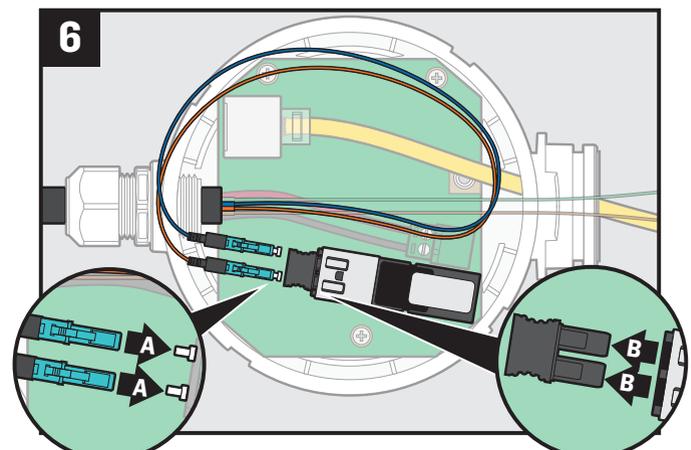
Mark 7 mm from the end of power wires. Strip power wires using the **electric wire stripper**.



Remove power connector plug from the connector. Insert power wires into the connector plug.

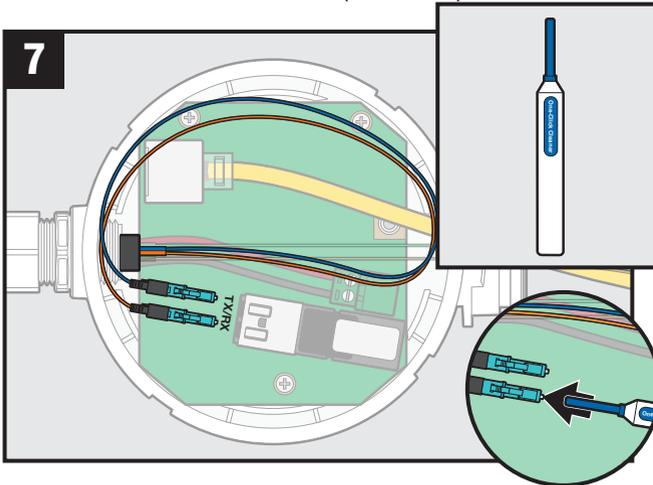


Tighten connector screws with **flat head screwdriver**. Insert connector plug back into connector. Ensure that the plug clicks into place.

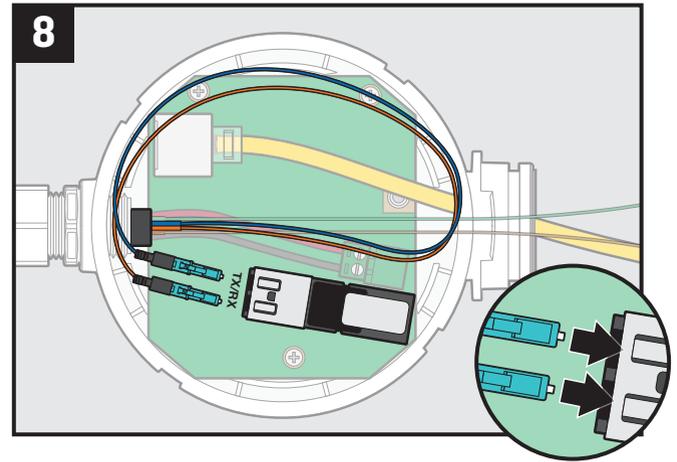


Remove dust caps from the fiber connectors and rubber plug from PCB connector.

## Final Installation (continued)



Both fiber connectors must be cleaned before making final connections. Insert the **One-Click** cleaner into each connector and push until an audible “click” is heard.



Plug Orange fiber into RX port and Blue fiber into TX port. After completing this step at the cabinet, repeat all steps up to and including this step at the camera.

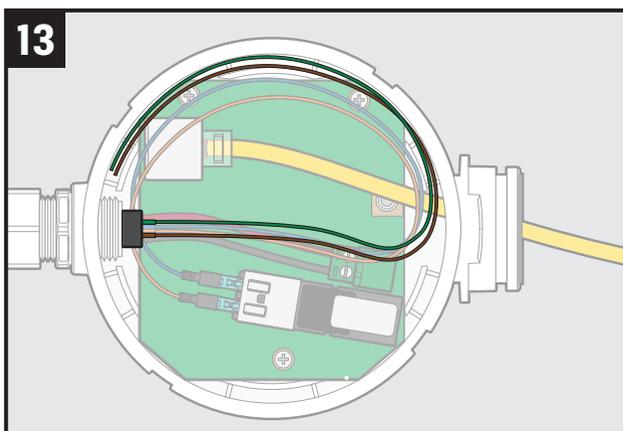
**!** **IMPORTANT:** After all signal verification testing, the final fiber color positions must have reverse mating – the color connected to TX in one Media Converter must be connected to RX in the other. If followed carefully, correct orientation will be ensured with Steps 9-12 below, which require actions at both the cabinet and the camera.

**9** At the cabinet, connect the Cabinet Media Converter to the powered-on Processor.

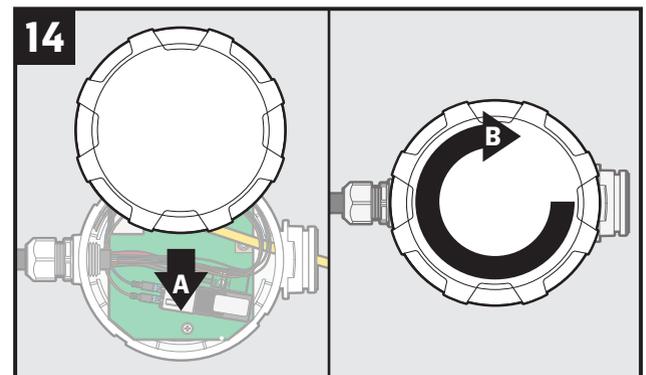
**10** At the camera, unplug the Blue fiber and verify the signal using Fiber Optic Signal Verification 1-4. Once signal has been verified, plug the Blue fiber back into the TX port of the Camera Media Converter.

**11** At the cabinet, swap the Orange and Blue fibers in the Cabinet Media Converter so that the Orange is now connected to the TX port and Blue is connected to the RX port.

**12** At the camera, unplug the Orange fiber and verify the signal using Fiber Optic Signal Verification 1-4. Once signal has been verified, plug the Orange fiber back into the RX port of the Camera Media Converter.

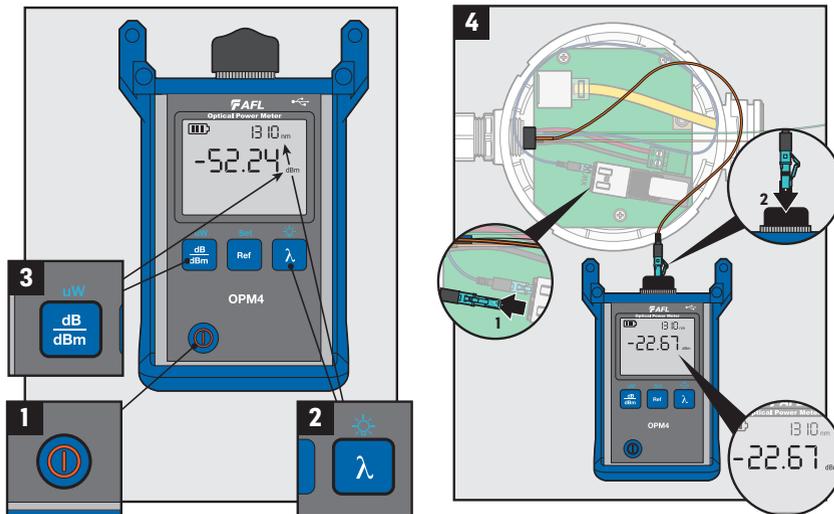


At both cabinet and camera, carefully loop the fiber cables around the internal ribs of the Media Converters to prevent interference with lid installation that could cause damage.



At both cabinet and camera, replace the lid on the Media Converters and turn clockwise until tight.

## Fiber Optic Signal Verification



**IMPORTANT:** Cabinet Media Converter **MUST** be connected to a GS Processor and cabinet before testing begins.

Begin signal verification at the camera Media Converter (the fiber should be fully terminated at both the cabinet and camera).

1. Power the meter on.
2. Verify the meter is set to measure the proper wavelength of **1310 nm**. Use the **λ** button if needed to change the wavelength.
3. Verify the meter is measuring the signal strength in dBm.
4. Reading the Signal
  - At the cabinet, ensure the Blue Fiber is plugged into the TX.
  - At the camera, measure the signal strength of the Blue Fiber in dBm. Reading should be between -20 dBm and -24 dBm.
  - At the cabinet, unplug Blue Fiber from the TX port and plug the Orange Fiber into the TX port.
  - At the camera, measure the signal strength of the Orange Fiber in dBm. Reading should be between -20 dBm and -24 dBm.
  - Once both readings are verified, proceed with Final Installation.

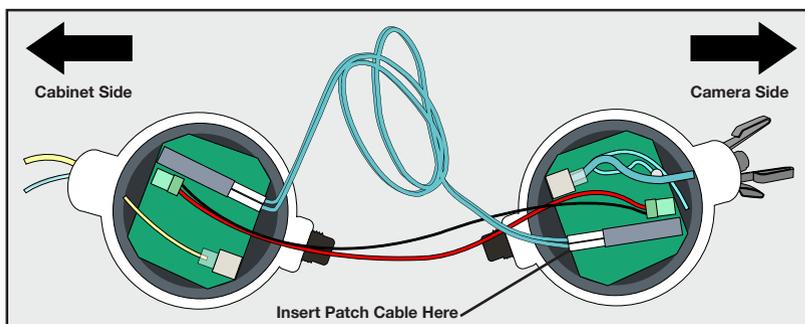
## Fiber Optic Troubleshooting

**IMPORTANT: Troubleshooting**

If the signal strength is not in acceptable range, reconnect the black wedge clip to the connector, remove connector, and verify that the fiber is still intact. If so, repeat Fiber Preparation/Termination Steps 6 & 7 and then repeat the Fiber Optic Signal Verification. If the problem persists, repeat this on the connector at the opposite end. Each connector can be removed and reinstalled 2 times, after which a new connector must be used.

If the reading returns **LO**, there is a break in the fiber. Select another fiber color and perform all Fiber Preparation/Termination steps.

## Component Verification with Fiber Patch Cable



1. Carefully uninstall the GRIDSMART Camera and Media Converter. Attach protective Camera Lens Cap and proceed to the cabinet for testing.
2. Connect the Media Converters directly to the camera and Processor. Then connect the Media Converters using the supplied Fiber Patch Cable and wait for the camera to power up.
3. Verify dBm readings are within the range listed above (see Fiber Optic Signal Verification).
4. Verify Camera image.