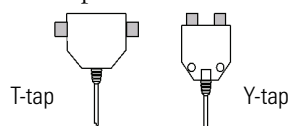
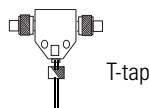


Taps are available with the following connector configurations.

- T or Y placement of BNC connectors (IP20)



- T placement of TNC connector (IP67)



- Straight or right-angle connector on the drop cable

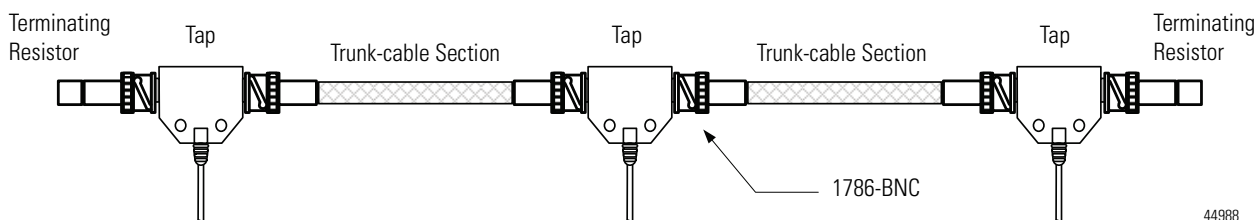


Trunk Cable and Connectors

The trunk cable (catalog number 1786-RG6) is a low-loss, RG-6 quad-shield coaxial cable. It's the bus or central part of the coax media system. The trunk cable is composed of multiple sections of cable.

You can use several types of special-use cables, such as flexible (1786-RG6F), direct burial, or plenum rated, that are available from third-party vendors. Choose the cable type based on the application and or environment where your system is being installed.

A cable connector (catalog number 1786-BNC) attaches coax trunk-cable sections to a tap's BNC connector. Standard BNC connectors twist and lock onto the cable. However, these connectors are not designed for rugged conditions, such as vibration, water, and so forth. Use IP67 media connectors (catalog number 1786-TNC) that have screw threads for harsh environmental conditions.



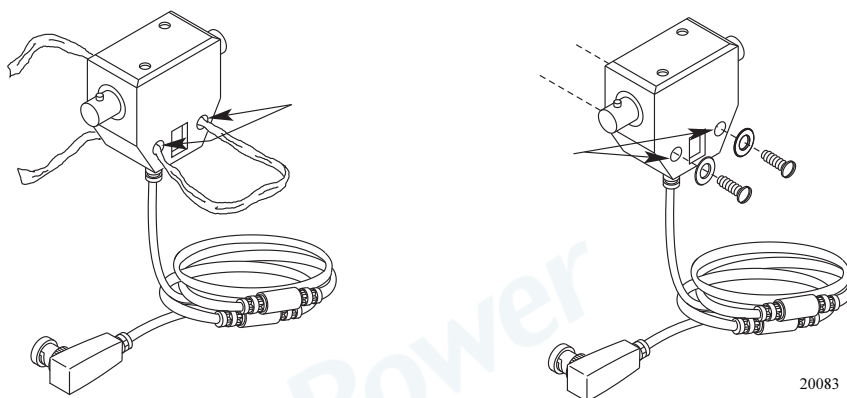
44988

Install a Tap Through the Body Holes

Mount the tap to a suitable fixture by threading the screws through the body holes, as shown in the illustration on the right.

When using screws and flat washers, any suitable hardware can be used, provided the diameter is less than 4 mm (0.15 in.).

The illustration on the left shows a tie wrap threaded through the body holes.



ATTENTION



Do not over-tighten the screws. Over-tightening the screws can damage the tap. The applied torque should be 0.2...0.4 N•m (1...2 lb•ft).

Install a Repeater

To install a repeater adapter, see the ControlNet Modular Repeater Adapter Installation Instructions, publication [1786-IN013](#).

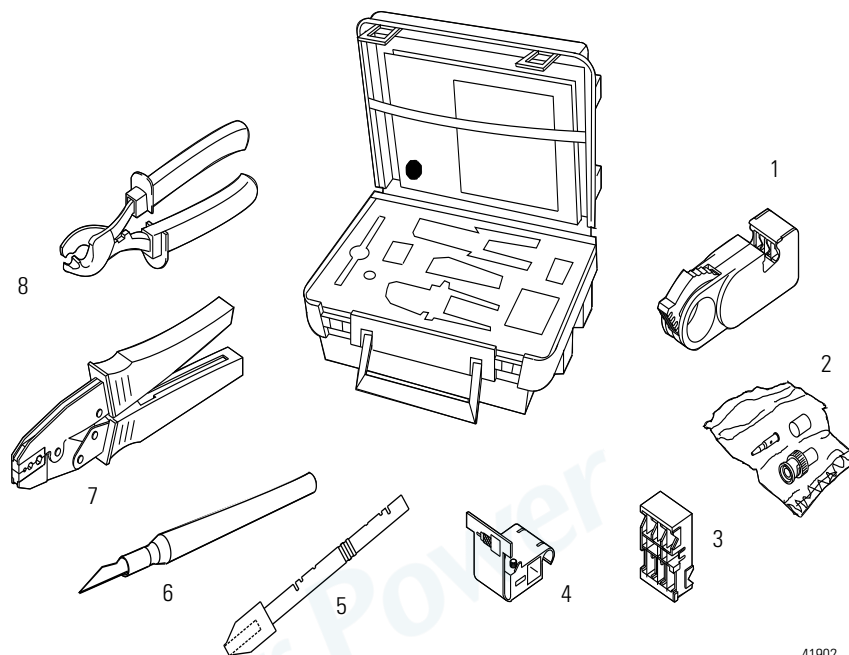
Install Cable Connectors

See the following instructions to attach cable connectors to the ends of your trunk-cable sections:

- [Obtain the Toolkit](#)
- [Calibrate the Cutting Blades](#)
- [Strip the Cable](#)
- [Attach the Connectors to the Cable](#)
- [Test for Electrical Shorts and Continuity](#)

Obtain the Toolkit

To install the cable connectors, we recommend that you use the tools in the ControlNet coax toolkit, catalog number 1786-CTK. The tools include those in the illustration.



Item	Description	Item	Description
1	Cable strip tool with two blade cassettes - one for PVC and one for FEP	5	Calibration/flare holder
2	Terminating resistors and extra connectors	6	Knife
3	Memory blade cartridges that contain two sets of memory blades	7	Crimp tool
4	Memory blade holder	8	Wire cutters

If you are installing IP67 connectors, you need a local-purchase heat gun as it is not supplied in the kit.

Calibrate the Cutting Blades

Follow these procedure to calibrate your cable strip tool to cut FEP or PVC cable.

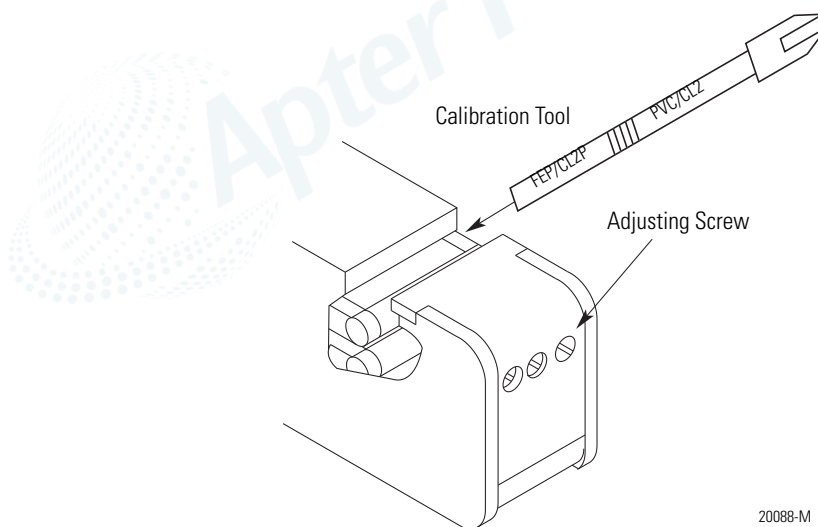
ATTENTION



Be sure to perform the calibration procedure the first time you use the tool and every time you change the blade for both memory cartridges. Due to slight differences between coax cables, calibration should be performed when changing:

- part numbers.
- one cable manufacturer to another manufacturer.

1. Turn the three screws outward to back the blades out to prevent the calibration tool from bottoming out.
2. Place the calibration tool into the cable strip tool, with the narrow end installed and facing forward for FEP cable, and use the wider end for PVC cable.
3. Turn the adjusting screw:
 - clockwise to increase the cut depth.
 - counterclockwise to decrease the cut depth.



20088-M

4. Tighten the chamber gauge ring so that the calibration tool is locked in place, closing all the way to the chamber gauge stop.

IMPORTANT

When aligned properly, the grooves of the calibration tool should align with the blades.

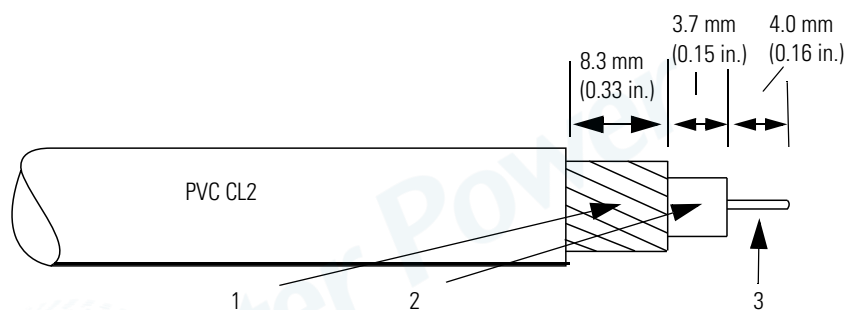
5. Adjust the screws of the memory clip so that the blades just touch the calibration tool.

ATTENTION



Do not over-tighten the screws of the cable strip tool. The blades should not bend, shift, or penetrate the calibration tool.

6. Retract the handle of the cable strip tool.
7. Remove the calibration tool from the cable strip tool.
8. When you are finished, the blade should make a cut of the following dimensions in your cable.



30030-m

Item	Description ⁽¹⁾
1	First Cut: - All four shield layers-braid/tape/braid/tape. The first cut should cut the outer sheath without cutting the outer wire braid. If the braid is frayed, scored, or cut by the blade, adjust the blade outward slightly to eliminate the fraying.
2	Second Cut - White insulation or first tape. The second cut should cut the sheath, three outer shields, and possibly the inner tape shield. The insulation can be scored slightly, but should not have a deep cut.
3	Third Cut - Center conductor. The third cut should cut all layers of the cable down to the center conductor. This cut should not score the center conductor. If the blade leaves a mark on the conductor, adjust the blade slightly so to eliminate marking the conductor.

⁽¹⁾ If any adjustments are made during the cable-stripping procedure to meet items 1, 2, or 3, cut the end of the cable off and start over.

IMPORTANT

The first and second cut adjustments need to be precise. Adjustments as small as 1/12 to 1/8 of a turn can make the difference between a perfect and an imperfect cut.

Strip the Cable

Follow these steps to strip the cable.

ATTENTION



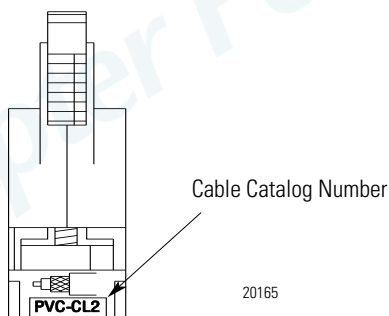
Check the outer braid of cable for cut or scored braid wire after stripping the cable. If the braid is damaged, strip the cable again. If needed, adjust the appropriate stripper blade by backing the set screw out 1/8 of a turn. Do not crimp the BNC to a damaged braid. This type of mistake accounts for most of the connectivity problems that occur. Precise, clean connections will reduce network errors.

When cutting cable sections, make them long enough to route from one tap to the next with sufficient length so that the bend radius is not less than:

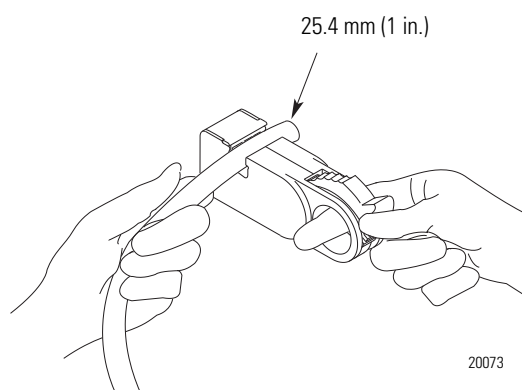
- 76.2 mm (3 in.) for wiring external to enclosures.
- 38.1 mm (1.5 in.) for wiring inside enclosures.

1. Verify that you have the proper memory blade holder installed for the type of cable you are using (catalog number PVC-CL2 or FEP-CL2P).

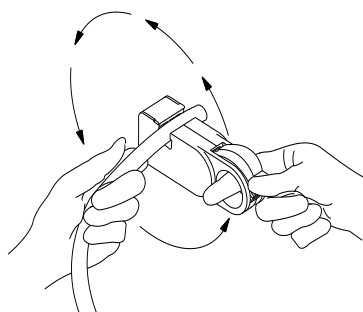
If you need to change the memory blade holder, see [Appendix B](#).



2. Straighten out the end of the cable.
3. Insert the cable into the cable strip tool's cutting chamber so that approximately 25.4 mm (1 in.) of extra cable extends beyond the edge of the tool.



4. Lock the cable into place by moving the chamber-gauge ring forward until it meets the cable with slight resistance, noting that the gauge:
 - moves two rollers toward the cable and regulates the depth of the cut.
 - clicks as it moves from one gauge to the next.
5. Holding the cable in one hand, place the index finger of your other hand inside the chamber-gauge ring and turn the strip tool 360 degrees around the cable.



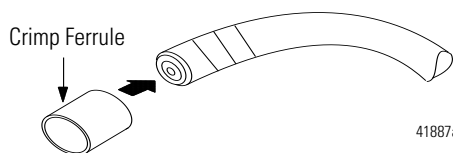
20074

6. Turn four or five full rotations until the strip tool glides easily around the cable.

IMPORTANT

On your last repetition of steps 5 and 6, apply sufficient pressure on the chamber gauge ring to make sure the ring has reached the last stage. The chamber gauge should read **stop** for the last repetition.

7. Repeat steps 5 and 6, moving the chamber gauge ring forward one notch for each time you repeat the steps until you reach the last notch, noting that each time you move the chamber gauge ring forward a notch, the strip tool makes a deeper cut into the cable.
8. After you move the chamber gauge ring to the last position and turn the strip tool the final time, complete these steps.
 - a. Move the chamber gauge ring backward to release the strip tool and remove it from the cable.
 - b. If you are installing IP67 connectors, slide the heat shrink tubing over the cable.
 - c. Slip the crimp ferrule onto the cable, pushing it back to the sheath area of the cable to keep it out of the way for the moment.

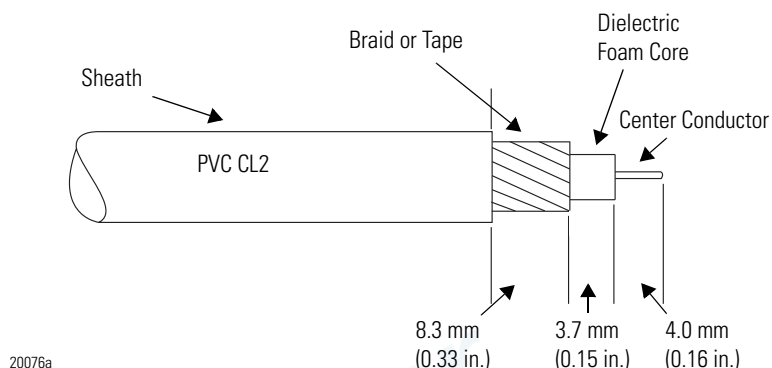


41887a

- d. Strip away the appropriate portion of the cable without using the strip tool.
- e. Clean the remaining cable parts from the strip chamber after each use.

This procedure should appropriately strip the cable, exposing these layers of the cable as shown in the illustration.

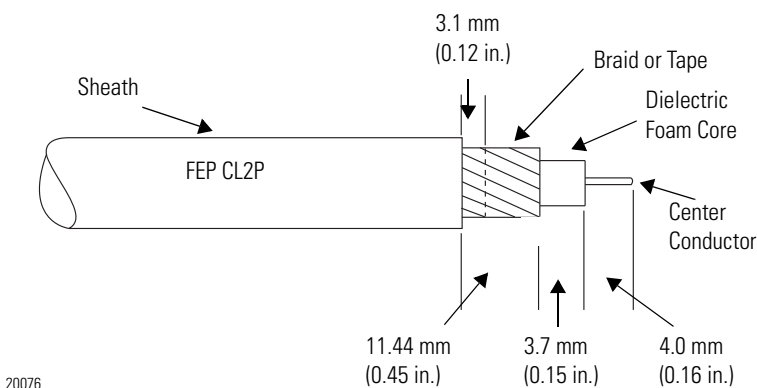
- All four shield layers: braid or tape, braid or tape
- White foam dielectric core or first tape, if tape bonded
- Center conductor


TIP

If you do not see the three distinct layers of cable or if the outer braid was scored or cut, snip off the exposed end with the wire cutters and repeat the entire cable-stripping process. It is very important that the outer braid be intact before crimping the connector.

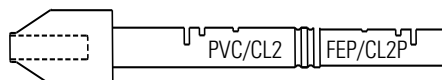
If stripping problems persist, the strip tool may need adjustment. Refer to [Appendix B](#) for instructions on how to adjust the strip tool.

9. If you are terminating plenum FEP cable, cut off an additional 3.1 mm (approximately 1/8 in.) of the outer sheath with the knife from the toolkit.



10. Concerning the center conductor, note the following guidelines.

- Be sure the center conductor is 4.0 mm (0.16 in.) by using the imprint guide on the back of the ControlNet tap or the calibration tool for verification.
- You should use the FEP/CL2P end of the calibration/flare tool to verify proper measurement for FEP cable.



- If the center conductor is too long, cut off the excess with the wire cutter from the cable kit. If the center conductor is too short, repeat the entire cable-stripping process.

ATTENTION

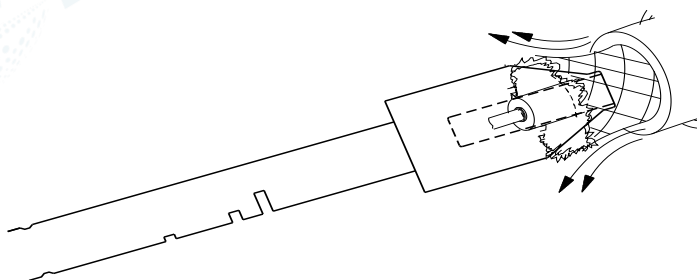


Check for any braid stranding not cut to the proper length. If one strand comes in contact with the center conductor, it could short out the cable. If you find any such strands, cut them to the correct length.

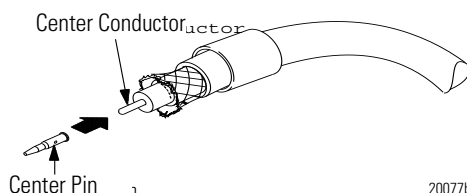
Attach the Connectors to the Cable

Do these steps to install standard BNC or IP67-rated TNC connectors.

1. Push the calibration/flare tool onto the cable and with a slight twisting motion (with sufficient inward pressure) to expand the braid.



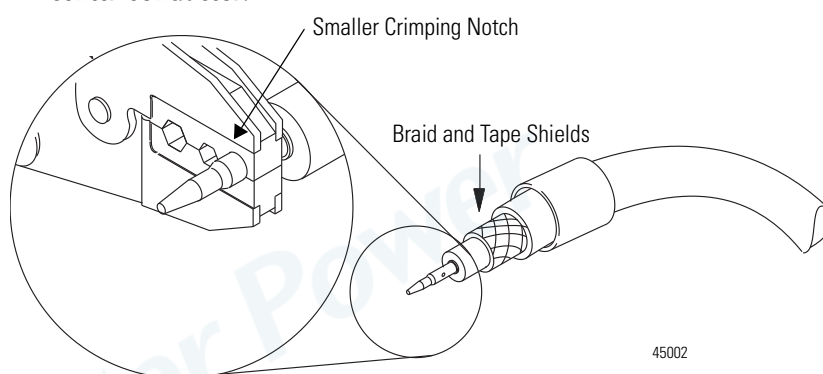
2. Place the center pin over the center conductor. Be sure the center conductor is clean, noting that sometimes strands of insulation remain on the center conductor.



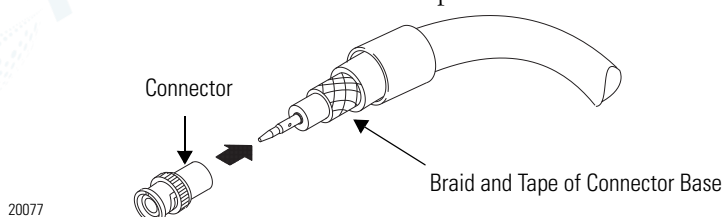
IMPORTANT

Be sure the center pin slips onto the center conductor completely. The back shoulder of the center pin should be up against the white insulation. If it is not, recheck the length of the center conductor.

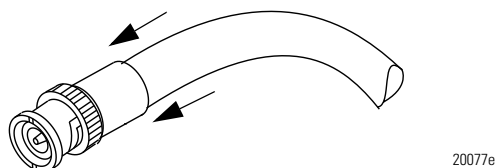
3. With the center pin in place, use the crimp tool to crimp the pin into place, noting the following guidelines.
 - The smaller hexagonal crimping notch is for crimping the center pin onto the center conductor.
 - Check for any braid strands that could cause a short to the center conductor.



4. Slide the ControlNet connector body onto the cable, noting the illustration that shows the braid and tape shields and connector base.

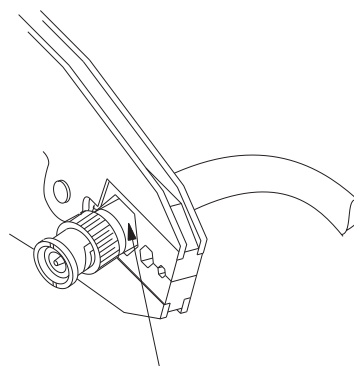


5. Slide the crimp ferrule over the three outer shields and connector base until it meets the shoulder on the connector.



6. Using the crimp tool, crimp the ferrule. The large hexagon opening is used for this crimp.

7. Position the crimp tool on the ferrule as close as possible to the connector base and ferrule meeting line.



45001

Crimp Ferrule in Larger Crimping Notch

8. Press the tool tightly around the ferrule until the crimp tool allows release, noting that the larger hexagonal crimping notch is for crimping the ferrule that holds the connector to the cable.

TIP

Many network problems are due to improperly installed connectors. You should have tight-fitting connectors on the ends of all of your cables. Pull the connector to verify that it is attached. If it is loose or comes off, snip off the connector and install a new one. The connector should withstand a minimum 27 kg (60 lb) pull force if properly installed.

9. If your installation requires IP67-rated cabling and you plan to use the IP67-rated taps, complete the following steps.
 - a. Slide the heat-shrink tubing onto the cable.
 - b. Place the crimp ring on to the cable.
 - c. Strip the cable using the 1786-CTK stripper tool.
 - d. Remove an extra 25 mm (1/8 in.) of the jacket from the cable, being careful not to cut the braid.
 - e. Trim the center conductor to the required length as directed on the connector bag.

IMPORTANT

Use only the ACUM heat-shrink tubing provided in the IP67 Tap and Cable Kit. Do not substitute other types of heat-shrink tubing. Substitutions may cause a loss of the IP67 rating.

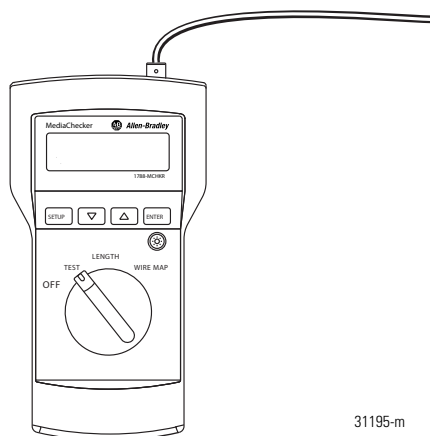
ATTENTION



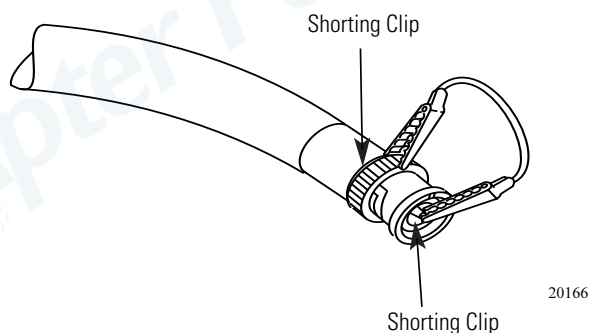
Be careful when using heat guns. High temperatures can lead to burns, risk of fire, or other property damage.

Test for Electrical Shorts and Continuity

1. Using the NetLinx Media Checker (catalog number 1788-MCHKR) as the preferred method for continuity testing, attach the connector end of the cable to the port on top of the Media Checker.



2. As a secondary method, you can also use an ohmmeter or continuity tester to test for a short between the connector body and pin.
3. Use shorting clips to connect a temporary short between the pin and the connector body at one end of the cable.



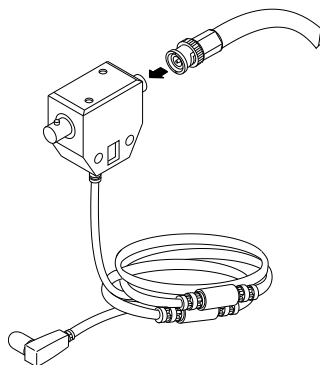
4. At the other end of the cable, use the NetLinx Media Checker, an ohmmeter, or continuity tester to test for electrical continuity.
5. If the resistance reading indicates a short exists, use your wire cutters to cut off the connector, install a new connector, and begin testing again; otherwise, proceed to the next section.

IMPORTANT

Replace the trunk cable section if problems persist with the cable after completing these tests.

Connect Cable Sections

Connect the cable sections to the tap's BNC connectors.



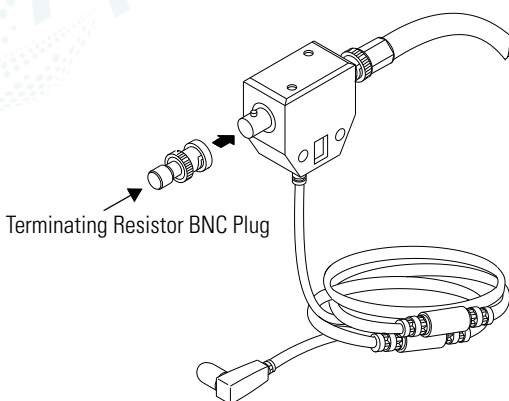
20078

Terminate Segments

The taps on the ends of the segment have only one cable connector attached to them. This leaves an open, or un-terminated, end on the segment. Signals transmitted along the cable reflect off these un-terminated ends and interfere with transmission.

To eliminate signal reflections from the ends of the segment, you must attach a 75 Ω terminating resistor to the first and last taps on the segment. The terms **first** and **last** refer to the physical location of the node along the trunk cable.

1. Connect one end of the trunk-cable section to one of the tap's BNC connectors, as shown in the above illustration.
2. Install a 75 Ω terminating resistor onto the tap's other BNC connector.



20079

3. Repeat steps 1 and 2 at the other end of the segment.

TIP

The bend radius is 1.5 in. for all fixed-tap drop cables.