

8-Position Cat6 Shielded Slim-Line Modular Plug

1. Introduction

This specification covers the requirements for application of Category 6 shielded slim-line modular plug connectors. These requirements are applicable to hand or automatic machine terminating tools. Round, twisted-pair, shielded or unshielded cables with 23-24 AWG solid or 24-26 AWG stranded conductors are approved for use with these connectors. The insulated conductor outside diameter must be between 0,89 and 1,09 [.035 and .043], and a cable jacket outside diameter between 4,7 and 7,0 [.185 and .276].

When corresponding with **CommScope®** personnel, use the terminology provided in this document to facilitate your inquiries for information. Components of the slim-line modular plug connectors are provided in Figure 1.

Note: All numerical values are in metric units [with U.S. customary units in brackets]. Dimensions are in millimeters [and inches]. Figures and illustrations are for identification only and are not to scale.

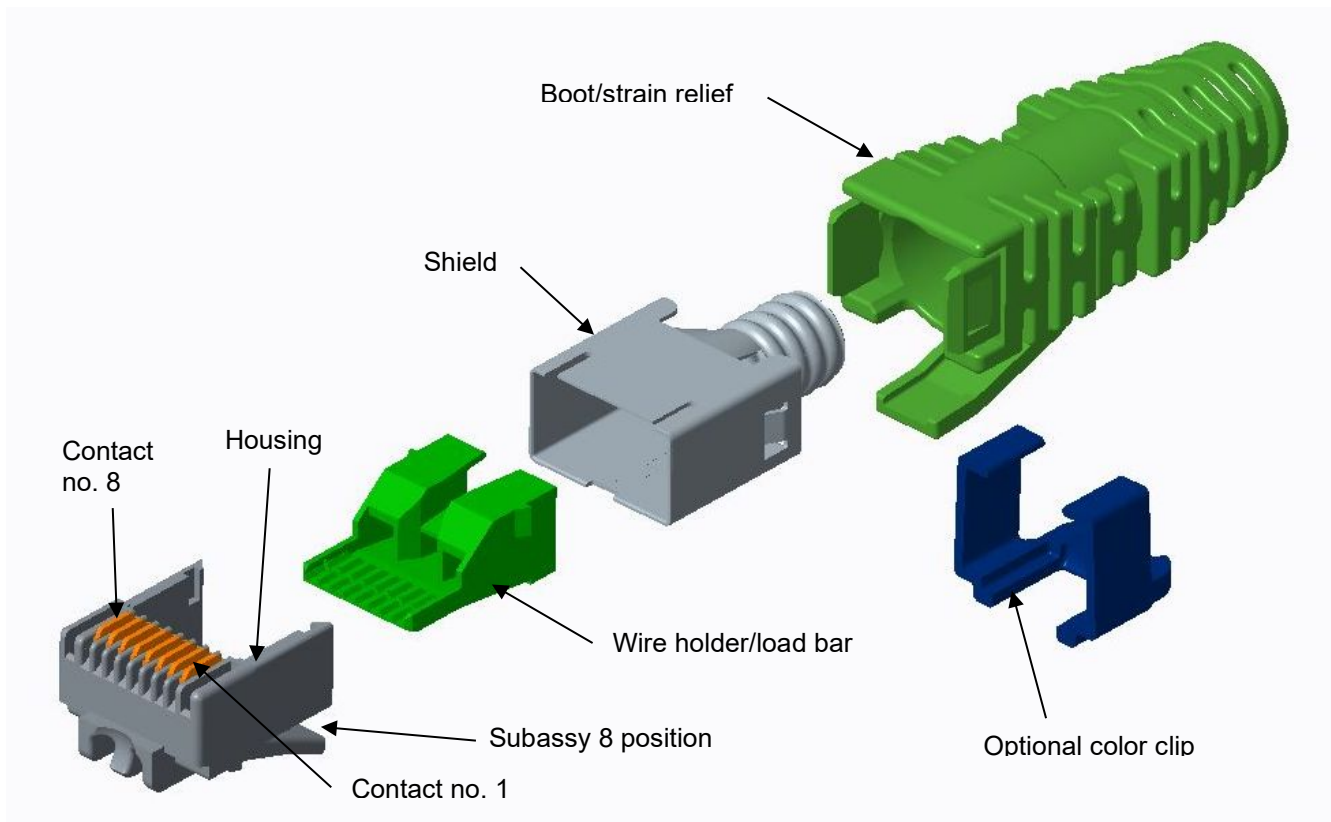


Figure 1. Slim-Line Modular Plug Components

2. How to Contact Us

- To find out more about **CommScope**® products, visit us on the web at www.commscope.com/
- For technical assistance:
 - Within the United States, contact your local account representative or technical support at 1-800-344-0223. Outside the United States, contact your local account representative or **PartnerPRO**™ Network Partner.
 - Within the United States, report any missing/damaged parts or any other issues to **CommScope** Customer Claims at 1-866-539-2795 or email to claims@commscope.com. Outside the United States, contact your local account representative or **PartnerPRO** Network Partner.

3. Reference Material

3.1 Revision Summary

This paragraph is reserved for a revision summary of changes and additions made to this specification. The following changes were made for this revision:

- Updated section numbering. Removed references to Dual Terminators in sections 3.5, 5.3 and 7.0

3.2 Customer Assistance

Part numbers 2111977, 2111978, 2111979, 2111980, 2111983 and 2111989 are representative numbers of 8-position Category 6 shielded slim-line modular plug connectors. Use of these numbers will identify the product line and expedite your inquires through a service network established to help you obtain product and tooling information. Such information can be obtained through a local **CommScope** Representative (Field Sales Engineer, Field Applications Engineer, etc.).

3.3 Drawings

Customer drawings for specific products are available from the service network. The information contained in the customer drawings takes priority if there is a conflict with this specification or with any other technical documentation supplied by **CommScope**.

3.4 Specifications

Product Specification 108-131013 provides test results and product performance requirements.

3.5 Instructional Material

The following list includes available instruction sheets (408-series) and customer manuals (409-series) that provide operation, maintenance, and repair of tooling. In addition, follow the instructions and procedures outlined in Paragraph 3.2 of this specification for product assembly procedures.

Document Number	Document Title
408-4389	Crimp Height Gage 904170-1
408-8738	PRO-CRIMPER III Hand Crimping Tool Assembly 790163-[]
408-9930	PRO-CRIMPER III Hand Crimping Tool Frame Assembly 354940-[]

4. Requirements

4.1 Storage

A. Ultraviolet Light

Prolonged exposure to ultraviolet light may deteriorate the chemical composition used in the connector components.

B. Shelf Life

All components products should remain in the shipping containers until ready for use to prevent damage. These products should be used on a first in, first out basis to avoid storage contamination.

C. Chemical Exposure

Do not store connector components near any chemicals listed below, as they may cause stress corrosion cracking in the product.

- Alkalies
- Ammonia
- Citrates
- Phosphates
- Citrates
- Sulfur Compounds
- Amines
- Carbonates
- Nitrites
- Sulfur Nitrites
- Tartrates

Note: Where the above environmental conditions exist, phosphor-bronze contacts are recommended if available.

4.2 Cable Specifications

Cable Type:	Round jacketed, shielded or unshielded, 4, 2 or 1 twisted pairs. (Pairs individually shielded or not)
Conductor Type:	Solid Conductor: 23-24 AWG Stranded Conductor: 24-26 AWG, 7-strands
Conductor Insulation Outside Diameter:	0,89-1,09 [.035-.043] for any one conductor
Cable Jacket Insulation Diameter:	4,7 – 7,0 [.185 - .276]
Shield Type:	Foil and/or braid, with or without drain wire
Cable Pair Arrangement:	The arrangement of color-coded pairs within the cable jacket applicable to TIA/EIA T568B wiring and the termination procedures described in this specification is shown in Figure 2. Cable end A applies to one end of the cable and cable end B to the opposite end. For TIA/EIA T568A wiring or termination of cables with pair arrangements other than shown in Figure 2, contact the responsible CommScope Engineering Department.

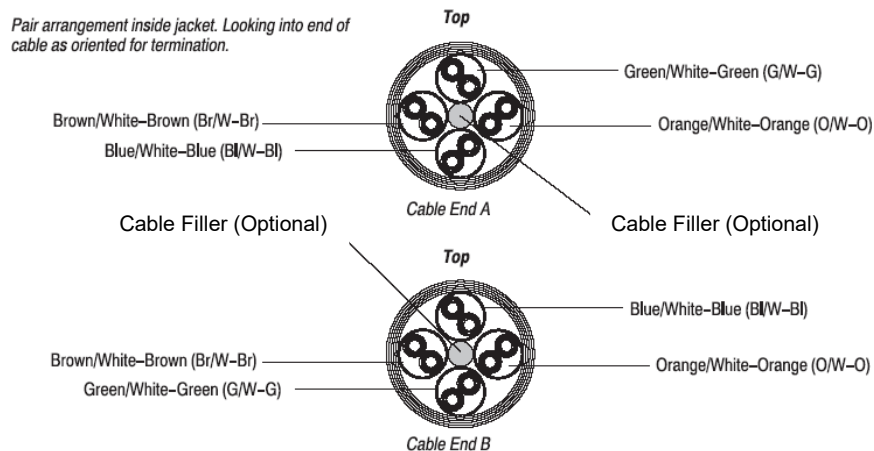


Figure 2. Arrangement of Color-Coded Pairs

5. Assembly

5.1 Cable Preparation

1. Slide each boot over the relevant end of the cable before the cable stripping operation (Figure 3).
2. Strip the cable jacket 30-40 [1.18–1.58] as shown.

CAUTION: Do not nick the insulation of the conductors or the shield of the cable.

3. Fold the outside shield and drain wire (if present) back over the jacket. In case of braid and foil together, foil must be trimmed up to 2.0 [.079] max from the jacket end. Individual pair shields must be trimmed up to 2.0 [.079] max. from the jacket end.
4. If present, cut and remove any cable filler, ripcord or plastic wrap.
5. Slide the plug shield over the cable jacket and cable shield (if present).

CAUTION: Do not tear the cable shield. Do not slide the plug shield past the folded-back end of the cable shield.

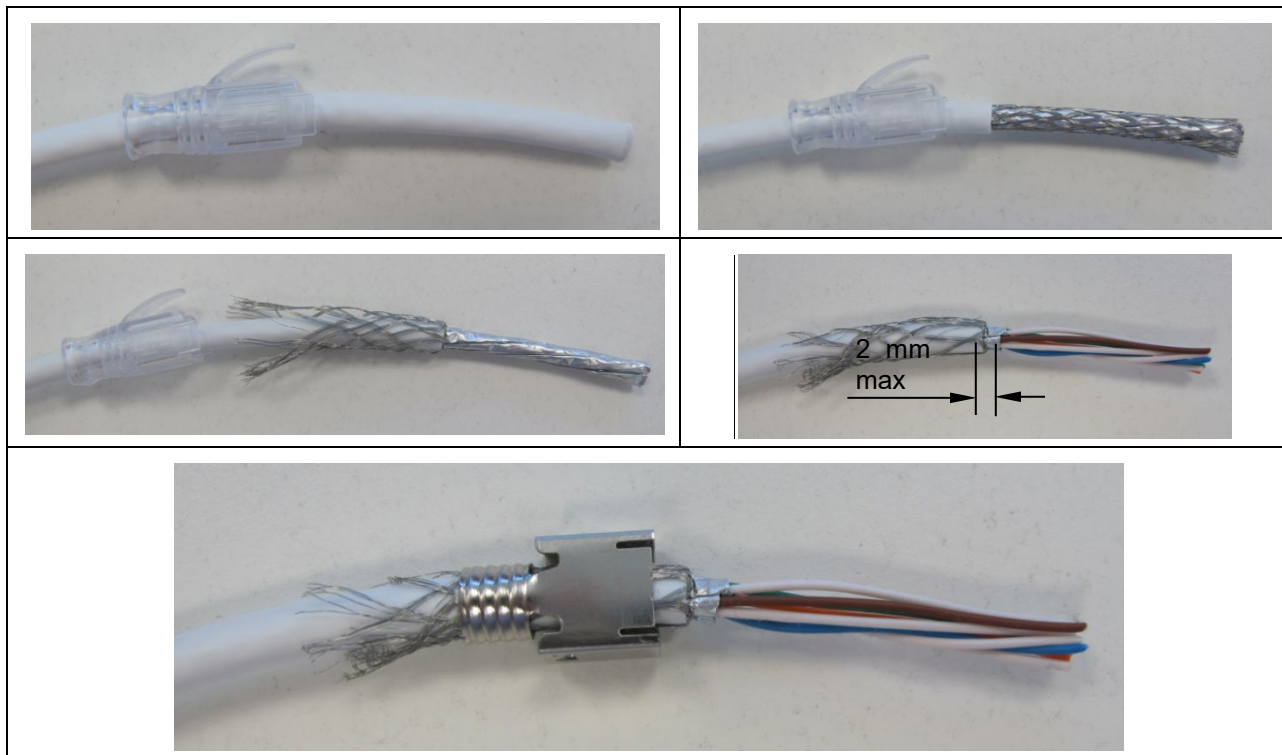


Figure 3: Cable Preparation

5.2 Cable Positioning

1. While firmly holding the cable jacket next to the stripped end, position the pairs as shown in Figure 4.

CAUTION: Minimize the disturbance of the pair arrangement within or exiting the cable jacket.

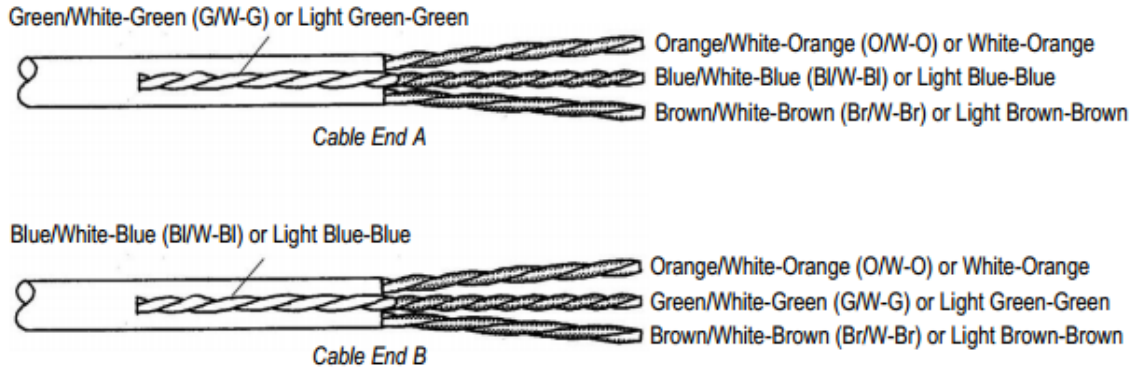


Figure 4. Position Cable Pairs

2. Insert the three side-by-side pairs through the wire holder as shown in Figure 5. Slide the wire holder back against the end of the cable jacket. The end of the cable jacket should extend into the end of the wire holder and the folded-back pair should rest in the slot on top of the wire holder.

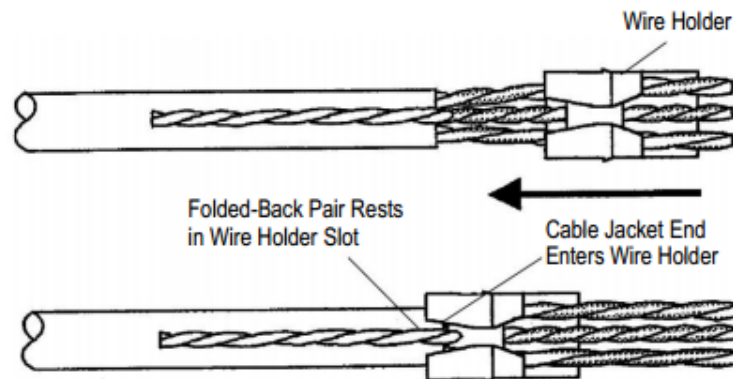
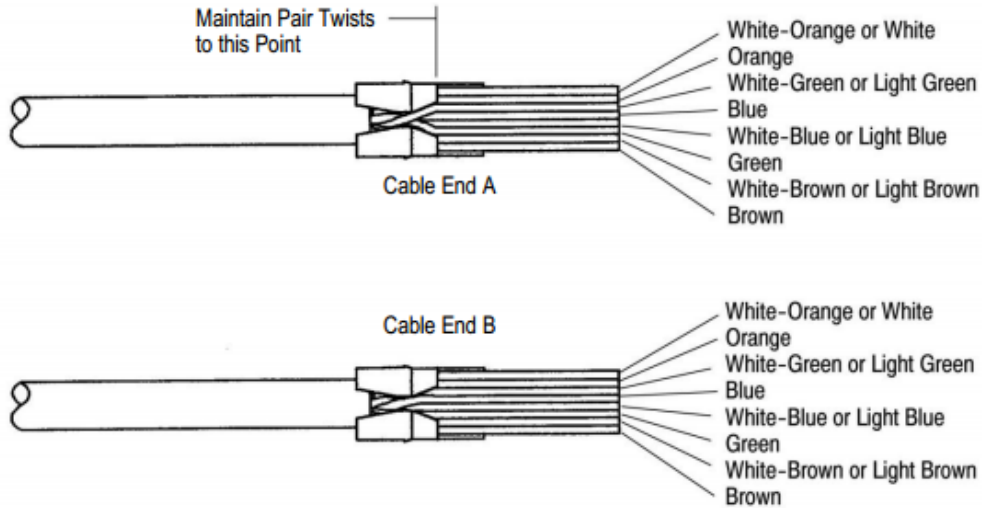


Figure 5. Insert Wire Holder over Twisted Pairs

3. Reposition the folded-back pair over the slot in the top of the wire holder. While holding the wire holder and cable jacket firmly together, untwist the pair of conductors to the point where they exit the main body or slot of the wire holder as shown in Figure 6.
4. Straighten and arrange the conductors side-by-side and parallel according to color code as shown in Figure 6. Note that the G/W-G pair must be split to either side of the Bl/W-Bl pair. Press the conductors flat against the front section of the wire holder.

Note: Untwist of conductor pair may be performed before inserting through the wire holder.

CAUTION: Maintain the last twist (conductor crossing) of each pair as closely as possible to the point indicated. Up to, but not exceeding, one half untwist may be added to achieve the proper color code arrangement or the split of G/W-G pair.



NOTE: Conductor Arrangement According to T568B

Figure 6. Untwist Conductor Pairs

5. While holding all conductors down against the wire holder in a flat layer, trim all conductors evenly and square with appropriate tooling, just beyond the front edge of the wire holder (approximately 0.010" past the edge of the wire holder) as shown in Figure 7.

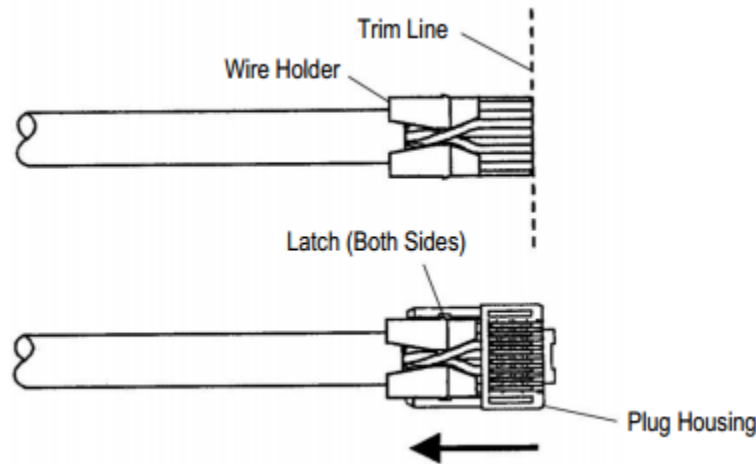


Figure 7. Trim Conductor Pairs

6. Continue holding all conductors down against the wire holder. Insert the front of the wire holder and the ends of the conductors into the cavity of the plug housing. Push the wire holder into the housing until it latches into both sides of the plug housing.
7. Visually verify that all conductors are fully inserted into the housing with the ends of the conductors seated against the end of the housing cavity. If not, push the cable further into the wire holder and check if the wire holder has latched into both sides of the plug housing. See Figure 8.

CAUTION: Do not rotate the cable relative to the plug and do not allow the wire holder to cock at an angle relative to the plug.

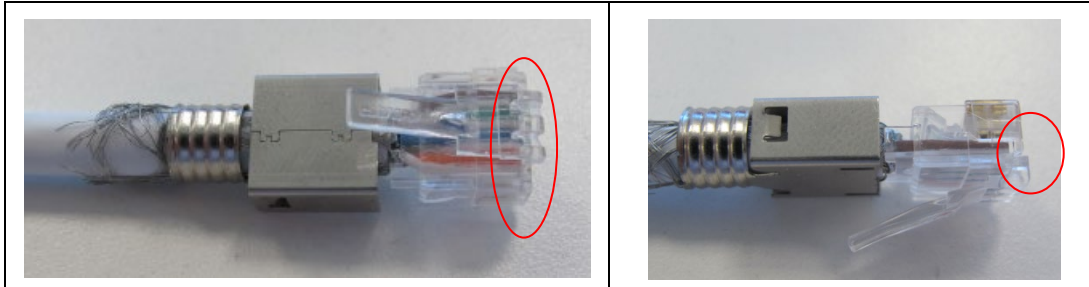


Figure 8. Verify Conductors are Fully Inserted

5.3 Connector Termination

Refer to Tooling section for appropriate crimp tooling that are compatible with this connector and proceed as follows:

1. Shield orientation: Place the shield so the slots are in the same side as the contacts. See Figure 9.

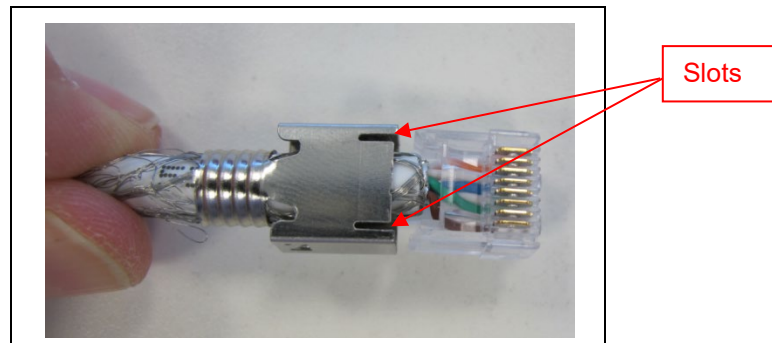


Figure 9. Orient Shield

2. Slide the plug shield over the plug subassembly until it seats against the front edge of recessed area around the outside of the plug housing. See Figure 10.

CAUTION: At the same time, carefully hold the braiding to prevent the shield from catching and dragging it as it slides.

3. Insert the plug and shield assembly into the appropriate tooling and crimp the connector according to the instruction sheet packaged with the tooling. The shield must be free of bulges, tears and must be uniform after the crimping operation.

CAUTION: Continue pushing the cable toward the plug during crimping to ensure that the conductors remain seated against the front of the housing cavity.

4. The shield end must be against the raised edge of the housing. The strain relief end must be held firmly in place on the cable. See Figure 10.

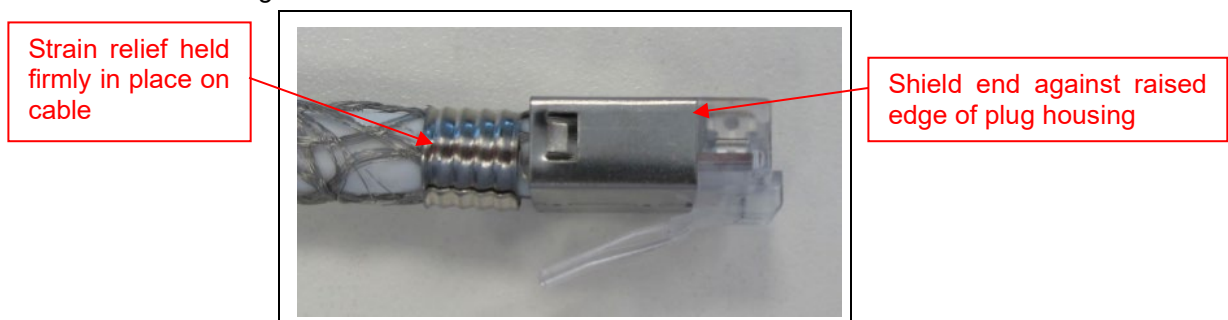


Figure 10. Shield Against Raised End of Housing

5. Trim away any braid/foil and drain wire left extending beyond the end of the plug shield. See Figure 11.

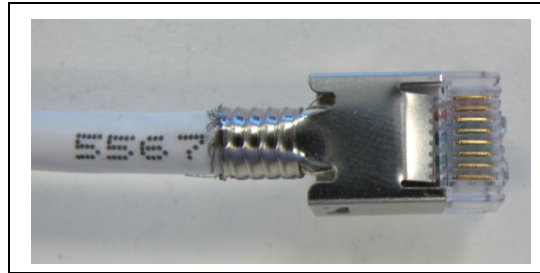


Figure 11. Trim any Braid or Foil

6. Slide the boot over the crimped plug and shield up to the end. A double click shall be heard when both latches are in their place See Figure 12.

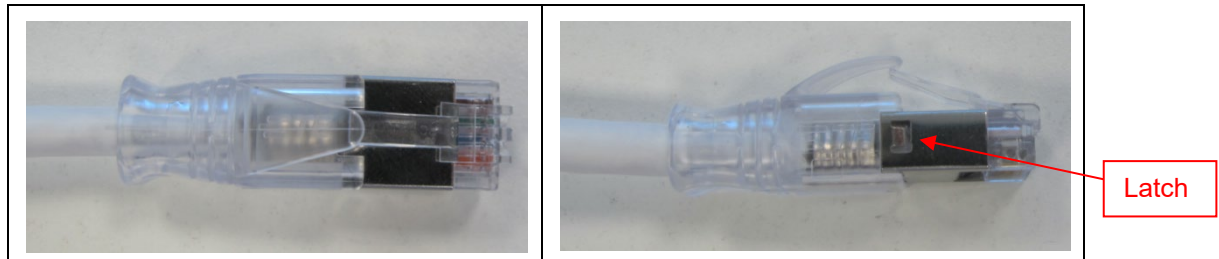


Figure 12. Slide Boot over Crimped Plug

5.4 Terminated Connector Requirements

Figure 13 shows a cutaway of a typical terminated plug and the required location of the conductors. A visual check through the plastic housing of the plug should reveal whether the conductors are within the acceptable range.

For optimum transmission performance, it is preferred that all conductors be fully inserted into the plug housing with the ends of the conductors bottomed against the end of the housing cavity. For reliable electrical termination, the conductors must at least be inserted past the contact and into the 0.80 [.032] reference zone.

Proper crimp height can be inspected using an indicator with needle-point probes or equivalent. The crimp height shall be measured at the front of the contact as shown in Figure 13.

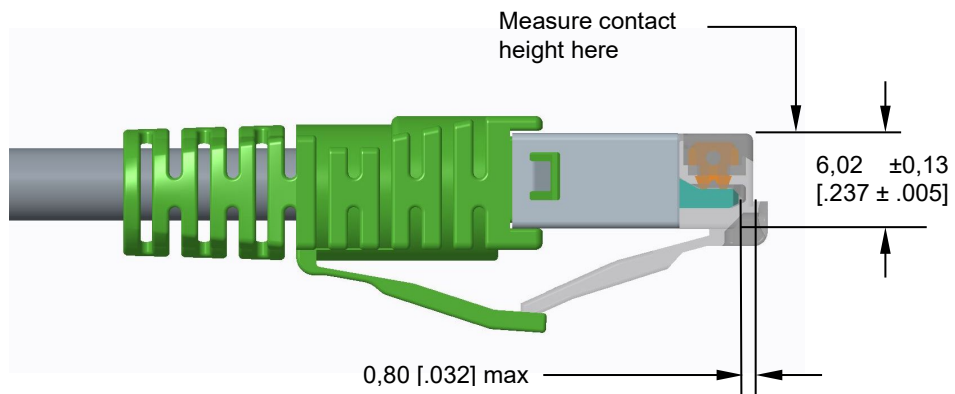


Figure 13. Plug Tolerances

In addition, make sure that maximum gap between shield and housing is less than indicated in Figure 14.

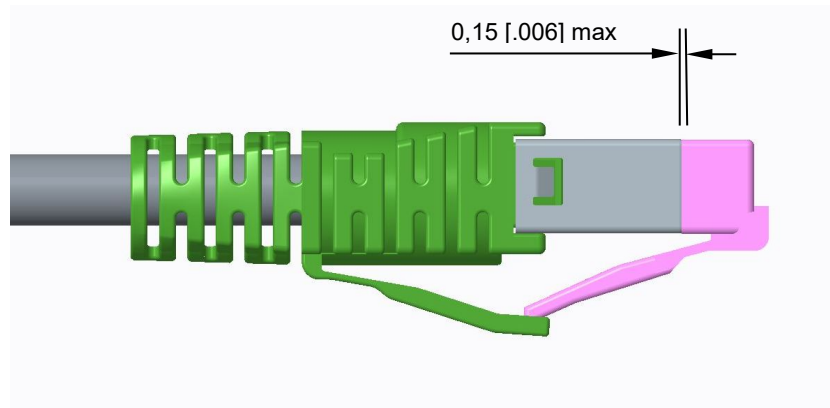


Figure 14. Gap Between Shield and Housing

5.5. Repair/Replacement

Damaged components must not be used. If a damaged component is evident, it must be replaced with a new one.

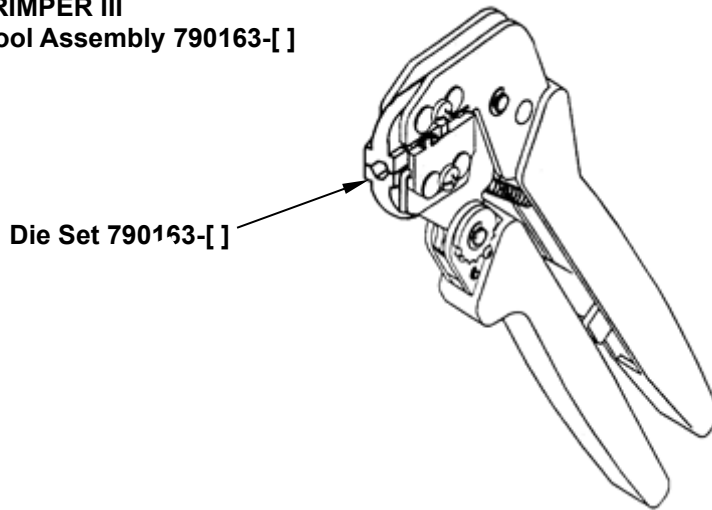
6.0 Qualifications

The modular plug connectors are not required to be listed or recognized by Underwriters Laboratories Inc. (UL), or certified to the Canadian Standards Association (CSA).

7.0 Tooling

This section provides a selection of tools for termination of the modular plugs. Hand tools are designed for field terminations, and low volume production. Refer to Figure 15 for available termination tooling (and instructional material).

**PRO CRIMPER III
Hand Tool Assembly 790163-[]**



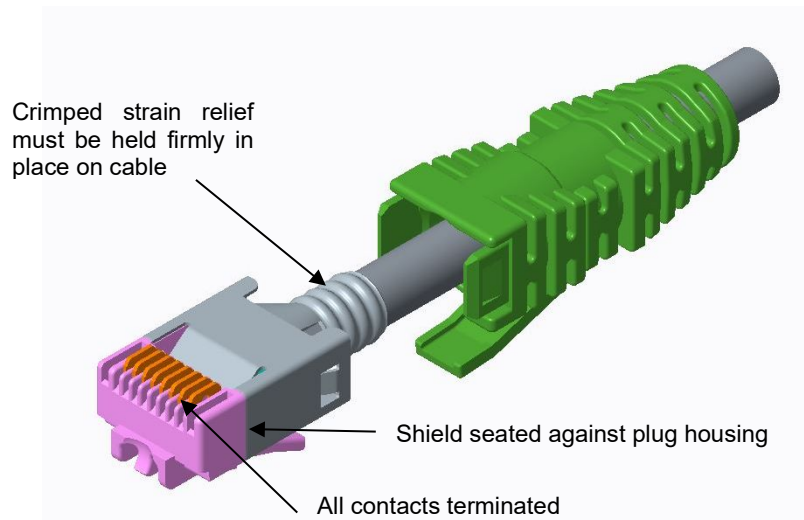
**Frame Assembly
354940-1 (with Screws)
354940-2 (without Screws)
(408-9930)**

CAT5E (EMT) Plug Connector that Accepts Cable O.D.	Hand Tool (Document)	
	Pro-Crimper III Hand Tool Assembly	Die Set Only
4,7 - 5,5 [.185 - .216]	790163-7 (408-8738)	790163-8
5,1 - 6,0 [.201 - .236]	790163-1 (408-8738)	790163-2
5,7 - 7,0 [.224 - .276]	1-790163-1 (408-8738)	1-790163-2

Figure 15: Crimping Tools

8.0 Visual Aid

Figure 16 shows typical applications of modular plug connectors. These illustrations should be used by production personnel to ensure a correctly applied product. Applications which DO NOT appear correct should be inspected using the information in the preceding pages of this specification and in the instructional material shipped with the product or tooling.



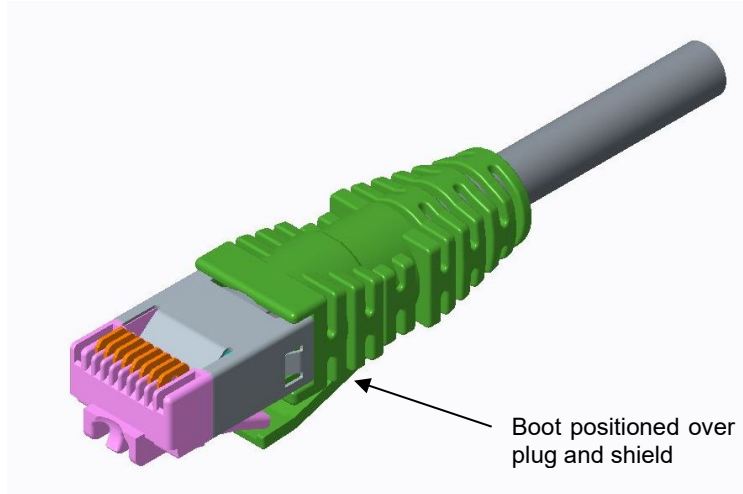


Figure 16: Visual Aid