ITT CANNON OCTOGIG™ CONNECTOR SYSTEM

The following procedures are based on Gore's best practices for terminating GORE® Aerospace Ethernet Cables with the ITT Cannon OctoGig™ Connector System for both socket and pin versions. Following these procedures will enable you to maximize the performance of your assembly; however, results may vary depending on the specific application.

Preparing the Cable and Parts

1. Gather the tools and materials required for assembly and termination (Figures 1 – 6). Pease refer to the manufacturer for recommended tools
2. Verify that you have the correct parts for your assembly by checking the part numbers for the connectors and GORE® Aerospace Ethernet Cables listed on drawing DDA0238. Alternatively, other Gore part numbers may also be used such as RCN8966-24, RCN8966-26, and RCN9034-24. Part numbers KJB6T15F1G1SN and KJB7T15F1G1PN were used for the internal contact only.
3. Using the round cutters, cut the cable to 392.20 inches. To get the cut length for an assembly with a male and female end, subtract 1.85 inches from the total finished assembly length. For example, a 3-foot assembly would be cut at 34.15 inches in length.

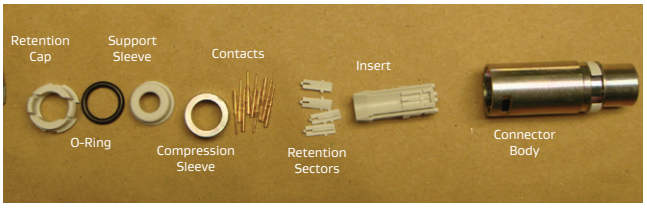

Figure 1: Male connector pin (980-2002-551)

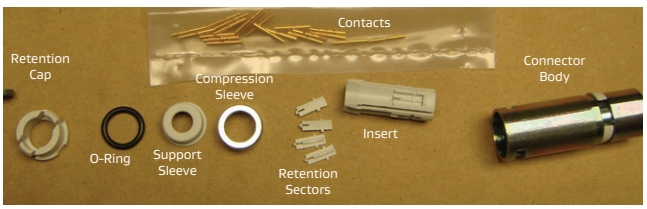

Figure 2: Female connector socket (980-2002-552)


Figure 3: Soft-jawed pliers, flush cutters, hand strippers, and round cable cutters


Figure 4: ITT Cannon Crimp Die, DCM Crimper (M22520/2-01), Sharpie, plastic pick, tweezers, small scissors, and braid brush


Figure 5: Ruler

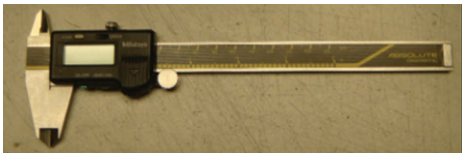
Figure 6: Digital Calipers with .001-inch precision or better

Terminating the Socket Connector (A End)

1. Slide the retention cap onto the cable with the flat edge facing the cable and both clips facing the end of the cable (Figures 7 and 8).

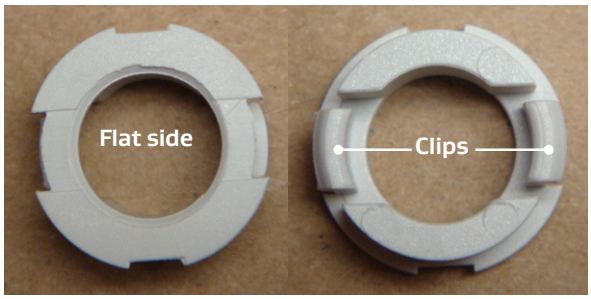

Figure 7: Retention cap

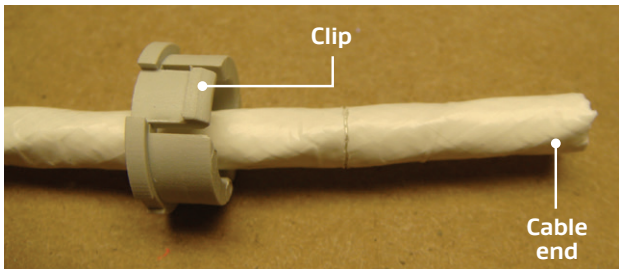

Figure 8: Sliding the retention cap

2. Slide the O-ring onto the cable (Figure 9).

Figure 9: Sliding the O-ring

3. The exit of the connector is larger than the cable diameter. Therefore, it may be necessary to install build-up shrink tubing between the O-ring and the support sleeve or use a shrink boot for proper strain relief.
4. Slide the support sleeve onto the cable with the larger opening facing the cable and the smaller opening facing the end of the cable (Figures 10 and 11).

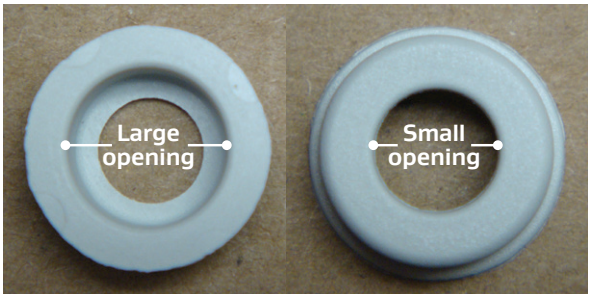

Figure 10: Support sleeve

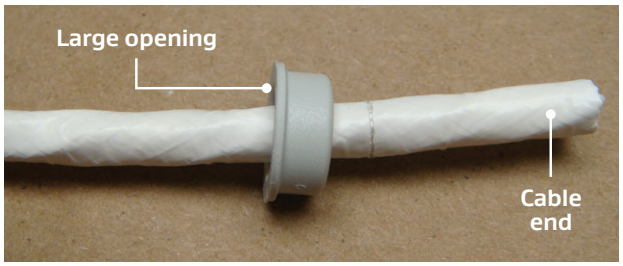

Figure 11: Sliding the support sleeve

5. Follow steps 5a — 5c to manually strip the cable. Strip the left end of the cable to 0.86 inches (Figure 12). Alternatively a laser stripper can be used. The laser stripper may require some setup.

Figure 12: Laser sripping the cable

a. Using a Sharpie or tape, mark the outer jacket at 0.86 inches from the end (Figure 13).

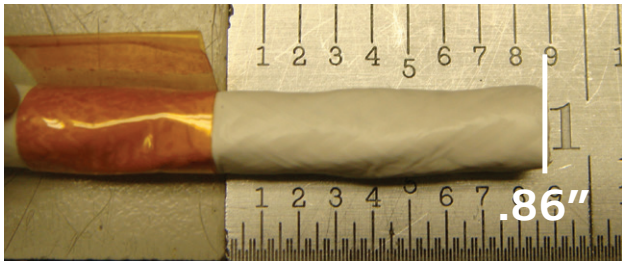

Figure 13: Marking the cable

b. Using small scissors, carefully cut the outer jacket in two places down to the edge of the tape (Figures 14 and 15).

Figure 14: Cutting the outer jacket

Figure 15: Edge of tape

c. Using flush cutters, carefully cut the two flaps at the edge of the tape (Figure 16).

Figure 16: Cutting the two flaps

6. Brush out the outer braid using a braid brush.
7. Slide the support sleeve up to the edge of the outer jacket and fold the braid wire back over it (Figure 17). Then, secure the braid wire ends with tape (Figure 18).

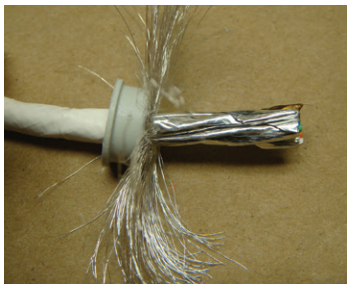

Figure 17: Sliding the support sleeve

Figure 18: Securing the braid wire ends

8. Mark the foil tape of each twisted pair at 0.157 inches ± 0.025 inches from the edge of the braid wire (Figure 19).

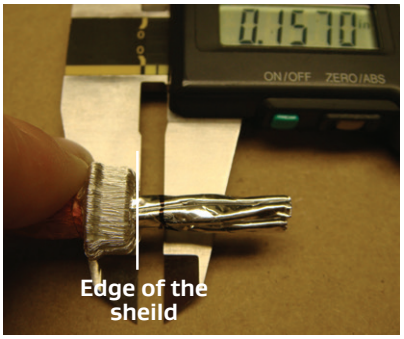

Figure 19: Marking the foil tape

9. Cut and remove the foil tape at 0.157 inches (Figure 20).

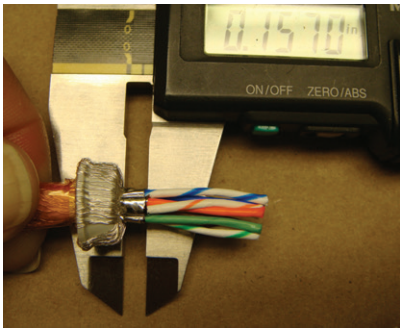

Figure 20: Cutting the foil tape

10. Slide the compression sleeve over the wires with the larger opening facing the cable and the smaller opening facing the end of the wires (Figure 21).

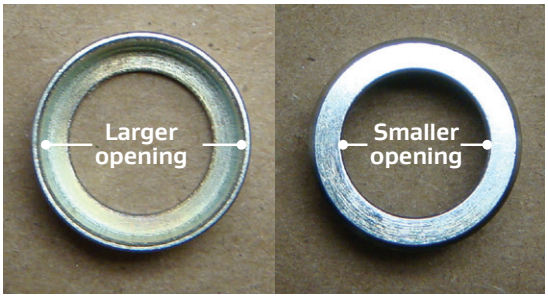

Figure 21: Compression sleeve openings

11. Fit the compression sleeve over the shield wires and support sleeve (Figure 22). Then, tape the compression sleeve in place (Figure 23).

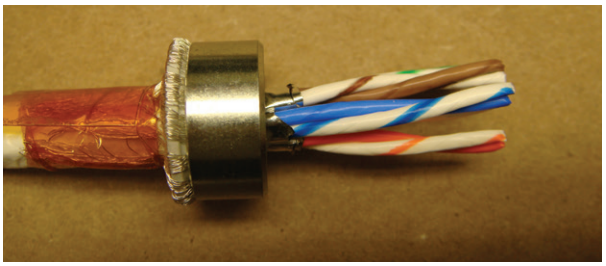

Figure 22: Fitting the compression sleeve

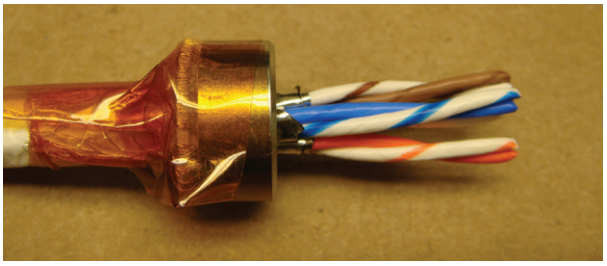

Figure 23: Taping the compression sleeve

12. Spread out the wires around the cable and cut off the white filler as short as possible (Figure 24).

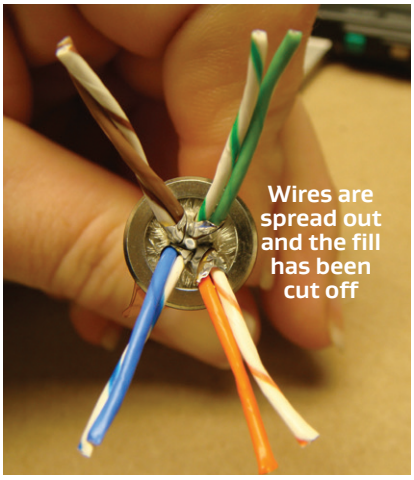

Figure 24: Spreading the wires

13. Mark each wire at 0.177 inches + 0.008 inches / -0.000 inches from the end of each primary wire (Figure 25).

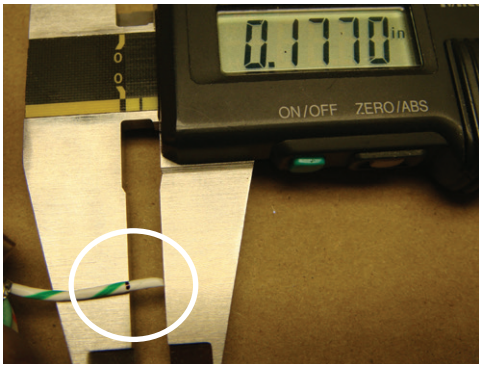

Figure 25: Marking each wire

14. Strip each primary wire at the 0.177-inch mark on the 26 AWG position of the T-strippers (Figure 26). Make sure the wire is straight and the T-strippers are perpendicular to the wire. To ensure no wire damage and a clean strip, close the T-strippers around the primary wire and open slightly. Then, rotate your hand holding the T-trippers at a ¼ turn and close again.
NOTE: Do not user the T-strippers to pull off the jacket slug. Using your fingers or a soft-edged tool, carefully remove the jacket slug from one primary wire at a time.

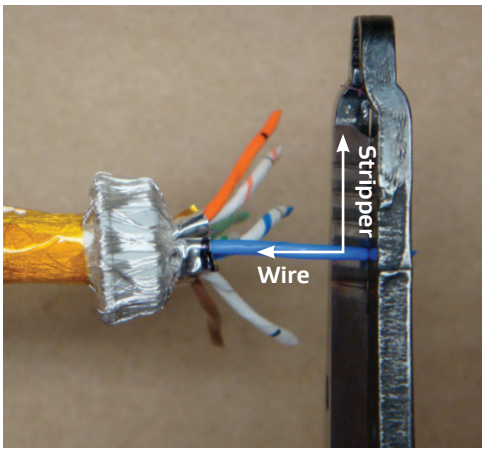

Figure 26: Stripping a primary wire

15. Slide the socket contact from the 980-2002-552 connector kit onto the stripped end of the primary wire (Figure 27).

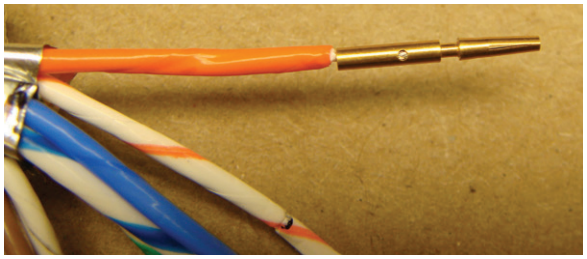

Figure 27: Sliding the socket contact

16. Crimp the contact onto the primary wire using the M22520/2-01 crimper. Set the K1999 Die and selector to 4 (Figure 28). The primary wire should be visible in the inspection window and the wire jacket should be no more than 2 wire diameters from the rear of the contact.

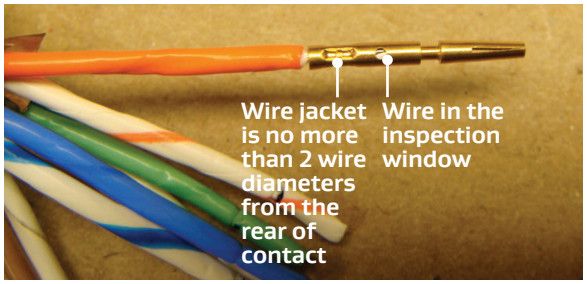

Figure 28: Crimping the contact

17. Repeat Steps 15 and 16 to crimp the remaining primary wires, one at a time.

18. Spread out the pairs around the cable to ensure the insert will sit inside the group of wires (Figure 29).

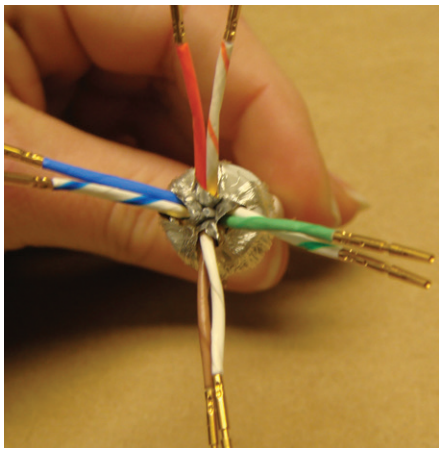

Figure 29: Spreading out the wires

19. Carefully insert each pair into the appropriate section of the connector insert according to the following table. Positions 1 and 2 are located on the section with the rounded corner at the center, which keys with the connector body (Figure 30). The grooves in the contacts should fit in between both tabs in each wire slot of the insert (Figure 31). NOTE: Wire color and location may depend on the individual requirements.

Position	Wire
1	Green
2	Green/White
3	Orange
4	Orange/White
5	Blue
6	Blue/White
7	Brown
8	Brown/White

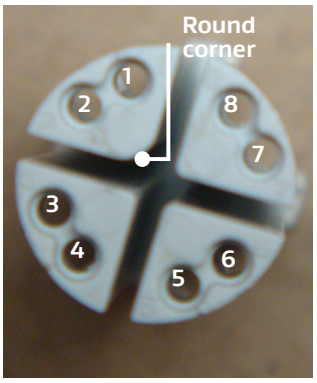

Figure 30: Connector insert positions

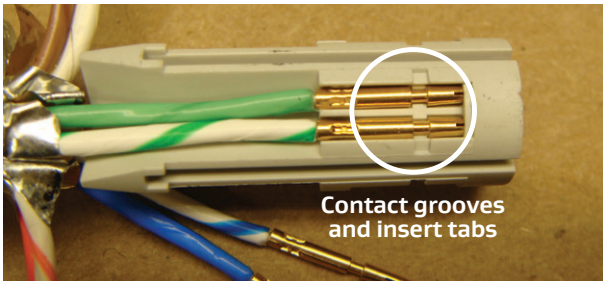

Figure 31: Contact grooves and insert tabs

20. Install the retention sectors over the contacts (Figure 32). Both tabs should fit into the slots near the mating face, and the hole will line up with the tab near the rear of the contacts (Figure 33). The side with the ridge will face toward the insert (Figure 34).

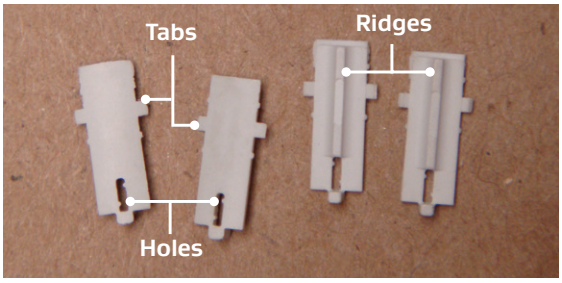

Figure 32: Retention sectors

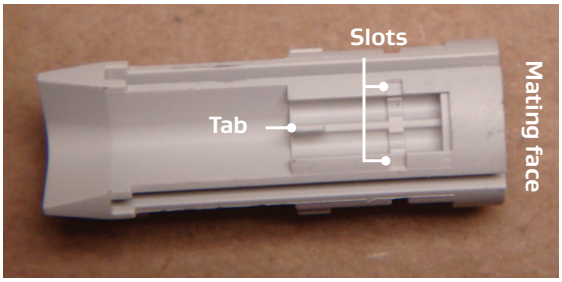

Figure 33: Tabs and slots on connector insert

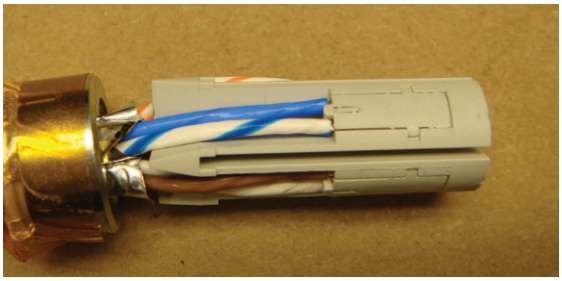
Figure 34: Ridge facing toward insert

21. Remove the tape around the compression sleeve and slide the sleeve up off the braid wires.

22. Using flush cutters, trim the braid wire to just above the lip of the support sleeve (Figures 35 and 36).

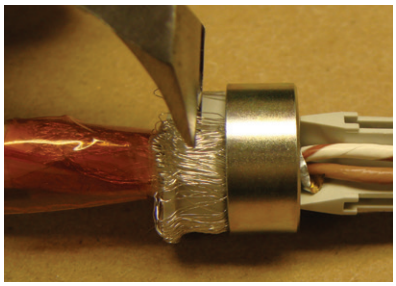

Figure 35: Trimming the braid

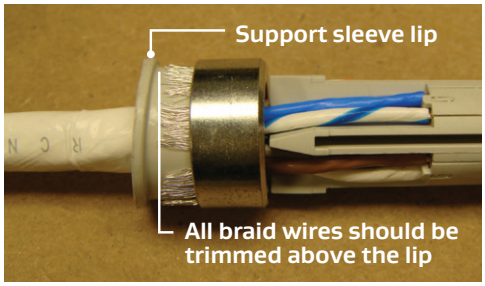

Figure 36: Support sleeve lip

23. Remove the tape holding the braid wire ends. The cut-off portion of the braid wire should come off with the tape.

24. Slide the compression sleeve back down over the braid wire and support sleeve. You should not see any braid wires after the compression sleeve is installed (Figure 37).

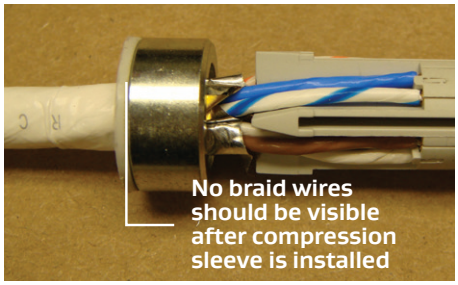

Figure 37: Sliding the compression sleeve

25. To install the connector insert into the connector body, line up the section of the connector insert with the round corner in the center to the section divider of the connector body with the round point. The master keyway should be to the right of the section with the round point (Figures 38 and 39). You will need to look at the mating face of the connector body as the insertion face of the body has no round point.

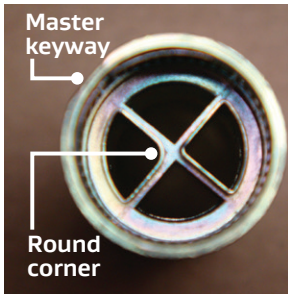

Figure 38: Mating face of conector body

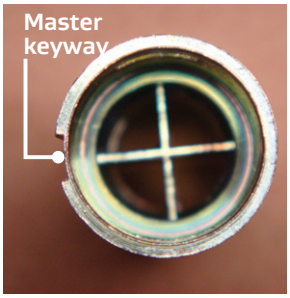

Figure 39: Insertion face of connector body

26. Insert the support sleeve into the connector body. The support sleeve may not sit fully onto the connector body. In this case, use the back of a plastic pick to push the support sleeve inside the connector body until fully seated (Figure 40). The rear edge of the support sleeve should be below both cut outs in the connector body (Figure 41).

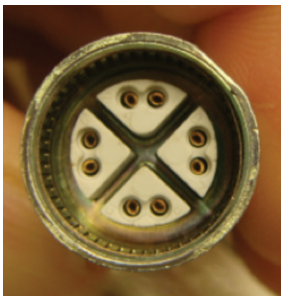

Figure 40: Insert fully seated

Figure 41: Support sleeve in connector body

27. If build-up tubing was installed to account for different cable diameters, slide it up to the rear of the support sleeve and shrink it. Be careful not to melt the support sleeve when using a heat gun at temperatures below 260° C (500° F) and allow the tubing to cool before moving to the next step.

28. Slide the O-Ring into the connector body and push it down until it rests on top of the support sleeve (Figure 42). You may need to use the flat end of the plastic pick to get the O-ring to seat fully.

Figure 42: O-ring fully seated

29. Slide the retention cap to the back of the connector body and line up the clips with the cut outs onto the connector body (Figure 43). Then, push on both sides with even pressure and press the retention cap into the connector body until both clips snap into the cut outs (Figure 44).

Figure 43: Lining up the clips with cutouts

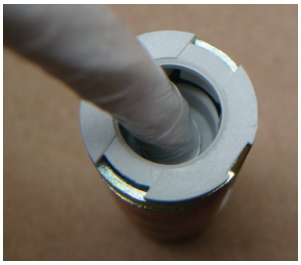

Figure 44: Rention cap on connector body

NOTE: You may need to hold the connector securely. Follow step 29a to use a locally manufactured fixture to receive the diameter of the connector body.

a. Gore recommends using soft-jawed pliers wrapped with PTFE tape. Carefully press the retention cap into the connector body with even pressure to get the clips to fully engage (Figure 45).

Figure 45: Pressing retention cap

Terminating the Pin Connector (B End)

1. Slide the retention cap onto the cable with the flat edge facing the cable and both clips facing the end of the cable (Figures 46 and 47).

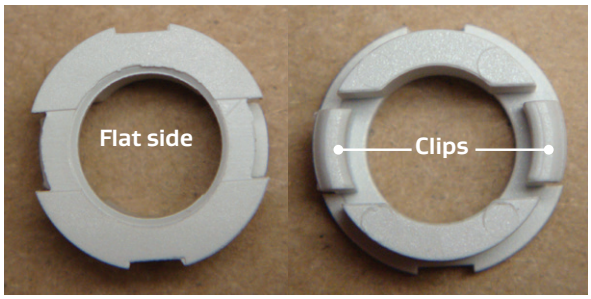

Figure 46: Retention cap

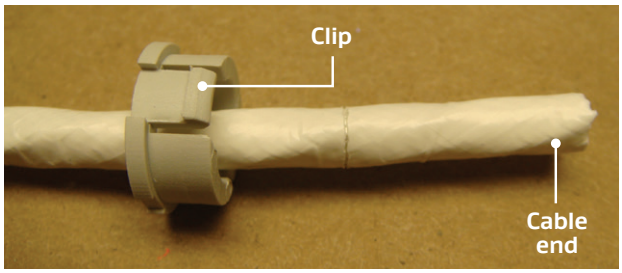

Figure 47: Sliding the retention cap

2. Slide the O-ring onto the cable (Figure 48).

Figure 48: Sliding the O-ring

3. The exit of the connector is larger than the cable diameter. Therefore, it may be necessary to install build-up shrink tubing between the O-ring and the support sleeve or use a shrink boot for proper strain relief.

4. Slide the support sleeve onto the cable with the larger opening facing the cable and the smaller opening facing the end of the cable (Figures 49 and 50).

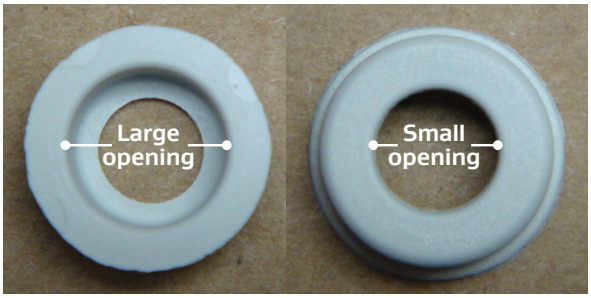

Figure 49: Support sleeve

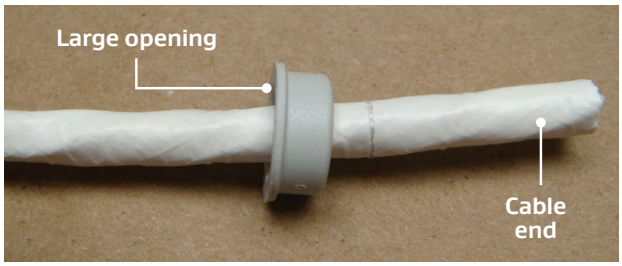

Figure 50: Sliding the support sleeve

5. Strip the left end of the cable to 0.86 inches using a laser stripper (Figure 51). The laser stripper may require some setup. To manually strip the cable, follow steps 5a – 5c.

Figure 51: Laser sripping the cable

a. Using a Sharpie or tape, mark the outer jacket at 0.86 inches from the end (Figure 52).

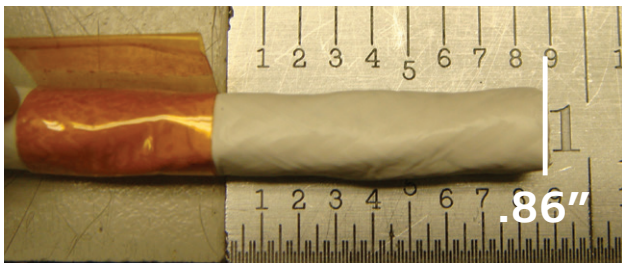

Figure 52: Marking the cable

b. Using small scissors, carefully cut the outer jacket in two places down to the edge of the tape (Figures 53 and 54).

Figure 53: Cutting the outer jacket

Figure 54: Edge of tape

c. Using flush cutters, carefully cut the two flaps at the edge of the tape (Figure 55).

Figure 55: Cutting the two flaps

6. Brush out the outer braid using a braid brush.
7. Slide the support sleeve up to the edge of the outer jacket and fold the braid wire back over it (Figure 56). Then, secure the braid wire ends with tape (Figure 57).

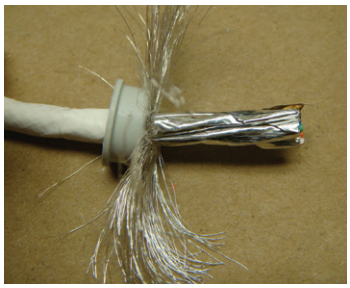

Figure 56: Sliding the support sleeve

Figure 57: Securing the braid wire ends

8. Mark the foil tape of each twisted pair at 0.157 inches ± 0.025 inches from the edge of the braid wire (Figure 58).

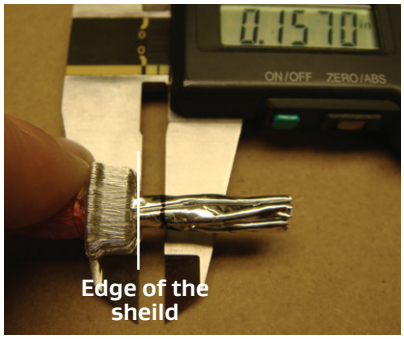

Figure 58: Marking the foil tape

9. Cut and remove the foil tape at 0.157 inches (Figure 59).

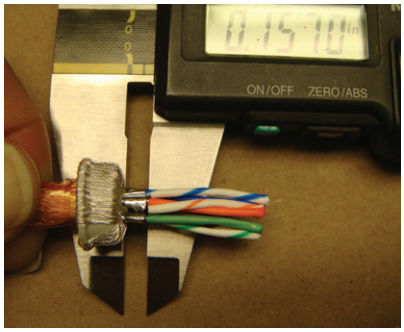

Figure 59: Cutting the foil tape

10. Slide the compression sleeve over the wires with the larger opening facing the cable and the smaller opening facing the end of the wires (Figure 60).

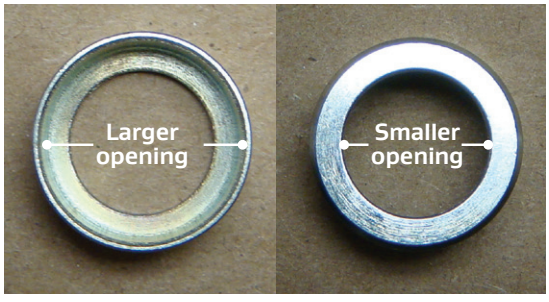

Figure 60: Compression sleeve openings

11. Fit the compression sleeve over the shield wires and support sleeve (Figure 61). Then, tape the compression sleeve in place (Figure 62).

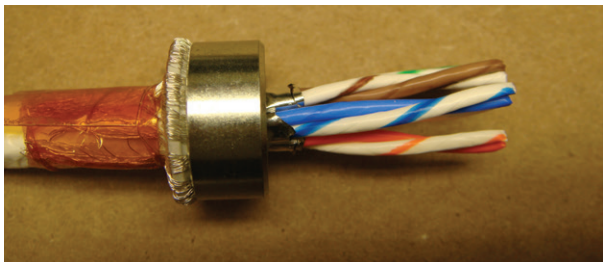

Figure 61: Fitting the compression sleeve

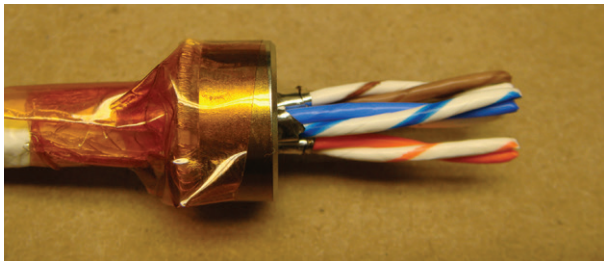

Figure 62: Taping the compression sleeve

12. Spread out the wires around the cable and cut off the white filler as short as possible (Figure 63).

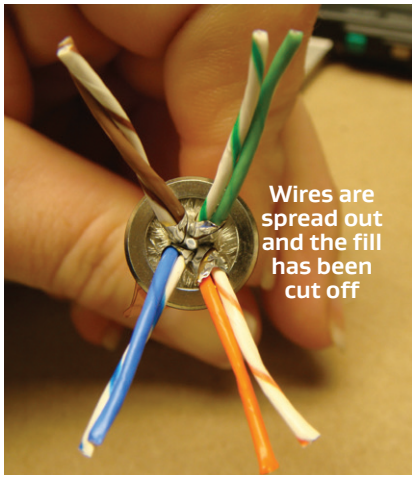

Figure 63: Spreading the wires

13. Mark each wire at 0.177 inches + 0.008 inches / -0.000 inches from the end of each primary wire (Figure 64).

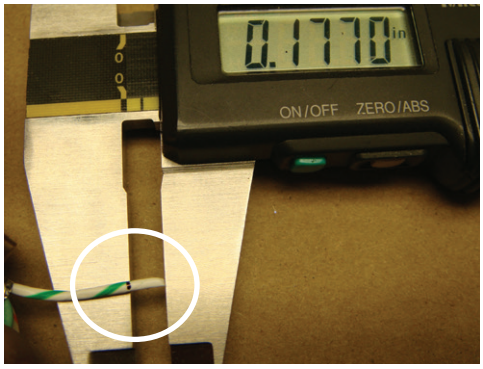

Figure 64: Marking each wire

14. Strip each primary wire at the 0.177-inch mark on the 26 AWG position of the T-strippers (Figure 65). Make sure the wire is straight and the T-strippers are perpendicular to the wire. To ensure no wire damage and a clean strip, close the T-strippers around the primary wire and open slightly. Then, rotate your hand holding the T-trippers at a ¼ turn and close again.
NOTE: Do not user the T-strippers to pull off the jacket slug. Using your fingers or a soft-edged tool, carefully remove the jacket slug from one primary wire at a time.

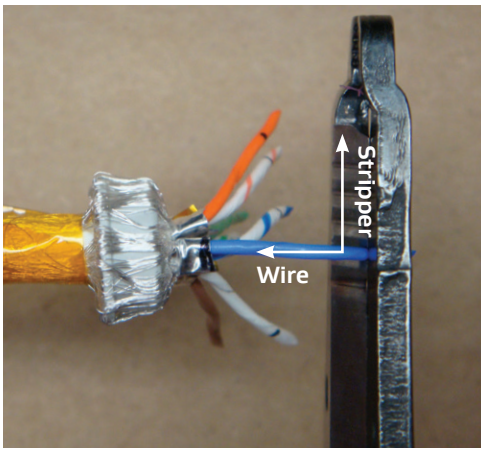

Figure 65: Stripping a primary wire

15. Slide the socket contact from the 980-2002-551 connector kit onto the stripped end of the primary wire (Figure 66).

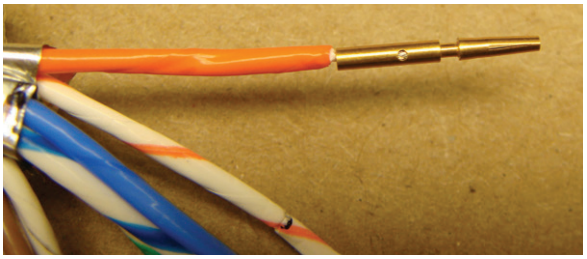

Figure 66: Sliding the socket contact

16. Crimp the contact onto the primary wire using the M22520/2-01 crimper. Set the K1999 Die and selector to 4 (Figure 67). The primary wire should be visible in the inspection window and the wire jacket should be no more than 2 wire diameters from the rear of the contact.

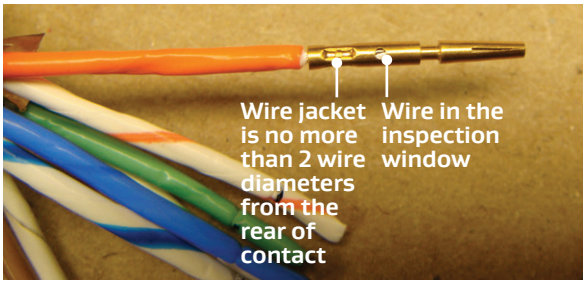

Figure 67: Crimping the contact

17. Repeat Steps 15 and 16 to crimp the remaining primary wires, one at a time.

18. Spread out the pairs around the cable to ensure the insert will sit inside the group of wires (Figure 68).

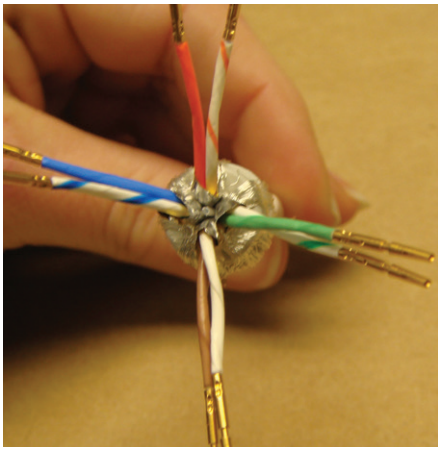

Figure 68: Spreading out the wires

19. Carefully insert each pair into the appropriate section of the connector insert according to the following table. Positions 1 and 2 are located on the section with the rounded corner at the center, which keys with the connector body (Figure 69). The grooves in the contacts should fit in between both tabs in each wire slot of the insert (Figure 70). **NOTE:** Wire color and location may depend on the individual requirements.

Position	Wire
1	Green
2	Green/White
3	Orange
4	Orange/White
5	Blue
6	Blue/White
7	Brown
8	Brown/White

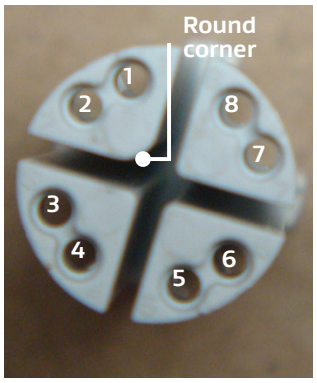

Figure 69: Connector insert positions

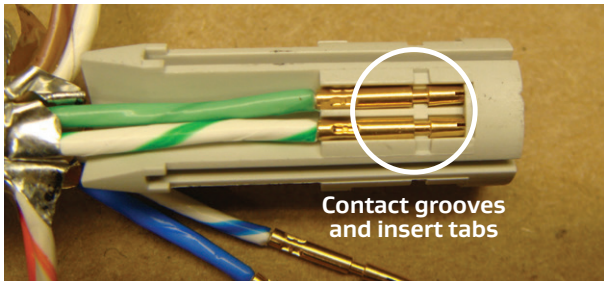

Figure 70: Contact grooves and insert tabs

20. Install the retention sectors over the contacts (Figure 71). Both tabs should fit into the slots near the mating face, and the hole will line up with the tab near the rear of the contacts (Figure 72). The side with the ridge will face toward the insert (Figure 73).

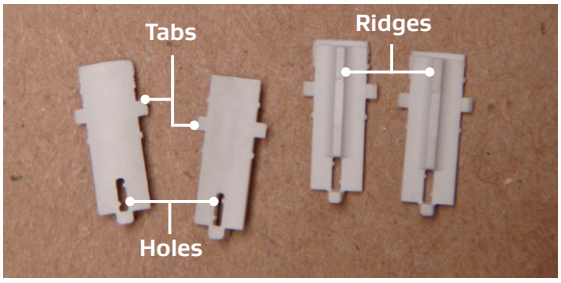

Figure 71: Retention sectors

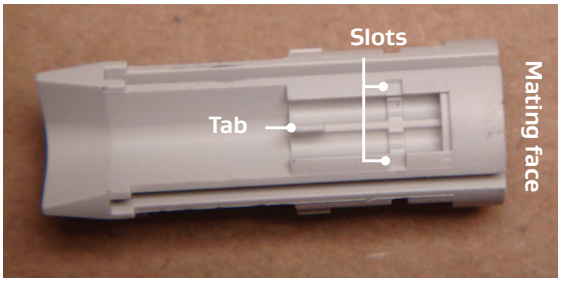

Figure 72: Tabs and slots on connector insert

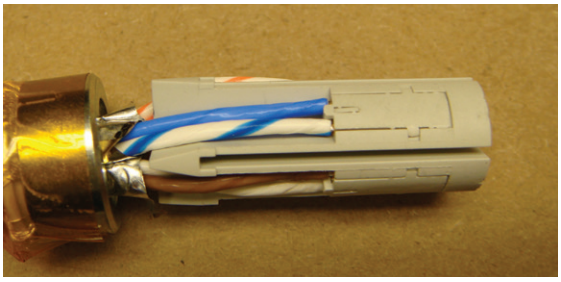
Figure 73: Ridge facing toward insert

21. Remove the tape around the compression sleeve and slide the sleeve up off the braid wires.

22. Using flush cutters, trim the braid wire to just above the lip of the support sleeve (Figures 74 and 75).

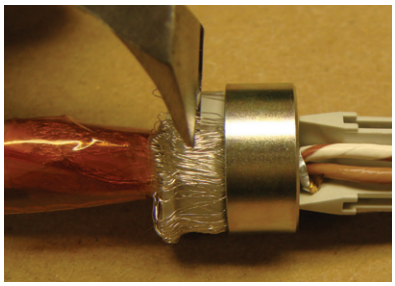

Figure 74: Trimming the braid

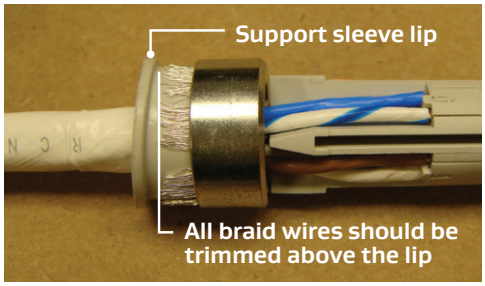

Figure 75: Support sleeve lip

23. Remove the tape holding the braid wire ends. The cut-off portion of the braid wire should come off with the tape.

24. Slide the compression sleeve back down over the braid wire and support sleeve. You should not see any braid wires after the compression sleeve is installed (Figure 76).

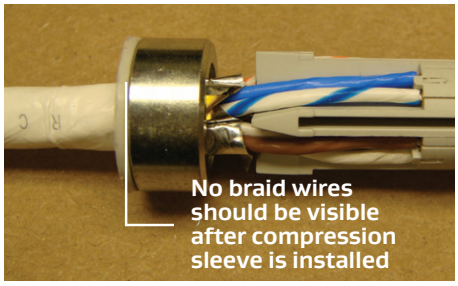

Figure 76: Sliding the compression sleeve

25. To install the connector insert into the connector body, line up the section of the connector insert with the round point in the center to the section divider of the connector body with the round point. The master keyway should be to the right of the section with the round point (Figures 77 and 78). You will need to look at the mating face of the connector body as the insertion face of the body has no round point.

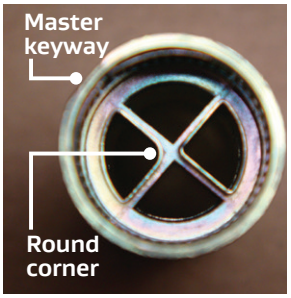

Figure 77: Mating face of conector body

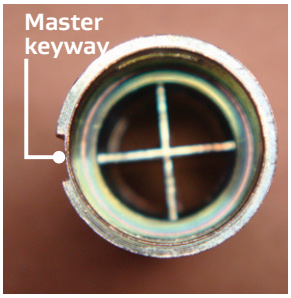

Figure 78: Rear face of connector body

26. Insert the support sleeve into the connector body. The support sleeve may not sit fully onto the connector body. In this case, use the back of a plastic pick to push the support sleeve inside the connector body until fully seated (Figure 79). The rear edge of the support sleeve should be below both cut outs in the connector body (Figure 80)..

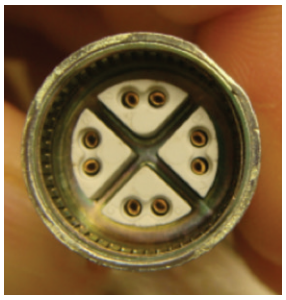

Figure 79: Insert fully seated

Figure 80: Support sleeve in connector body

27. If build-up tubing was installed to account for different cable diameters, slide it up to the rear of the support sleeve and shrink it. Be careful not to melt the support sleeve when using a heat gun at temperatures below 260° C (500° F) and allow the tubing to cool before moving to the next step.

28. Slide the O-Ring into the connector body and push it down until it rests on top of the support sleeve (Figure 81). You may need to use the flat end of the plastic pick to get the O-ring to seat fully.

Figure 81: O-ring fully seated

29. Slide the retention cap to the back of the connector body and line up the clips with the cut outs onto the connector body (Figure 82). Then, push on both sides with even pressure and press the retention cap into the connector body until both clips snap into the cut outs (Figure 83).

Figure 82: Lining up the clips with cutouts

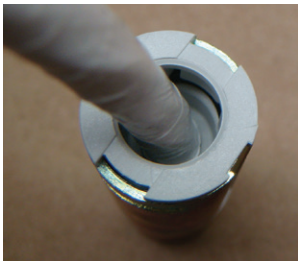

Figure 83: Rention cap on connector body

NOTE: You may need to hold the connector securely. Follow step 29a to use a locally manufactured fixture to receive the diameter of the connector body.

a. Gore recommends using soft-jawed pliers wrapped with PTFE tape. Carefully press the retention cap into the connector body with even pressure to get the clips to fully engage (Figure 84).

Figure 84: Pressing retention cap

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