

# AMPHENOL® μ-COM CONNECTOR SYSTEM

The following procedures are based on Gore's best practices for terminating GORE® Aerospace Ethernet Cables with the Amphenol® μ-Com Connector System for both plug and socket versions. These procedures should be used as a guide in conjunction with current connector manufacturing instructions.

## Preparing the Cable and Parts

1. Gather the tools and materials required for assembly and termination (Figures 1–9).
2. Verify that you have the correct parts for your assembly by checking the part numbers for the connectors and the GORE® Aerospace Ethernet Cables listed on drawing DDA0238.
3. Cut the cable to the desired assembly length minus 4.5 centimeters (cm) to allow for length of the connectors (i.e., 2.0 cm for the socket connector and 2.5 cm for the plug connector).
4. Print any labels required by the end-user, and slide the center label onto the cable.
5. To identify the end for the socket connector, place a piece of tape on the end in which the pairs rotate clockwise in order of green → orange → blue → brown (Figure 10).



Figure 10: Pairs configuration at socket end



Figure 1: Needle nose pliers, scalpel, tweezer scissors, and hand strippers

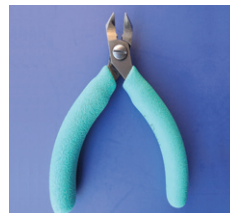


Figure 2: Cutters



Figure 3: Crimpers (M22520/2-01)



Figure 4: Positioner (31095)



Figure 5: Clamp tool (Tie-Dex® II)

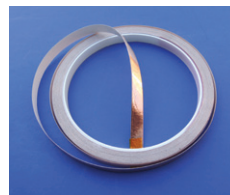


Figure 6: Copper foil tape<sup>1</sup> (3M-3313)



Figure 7: Braid brush

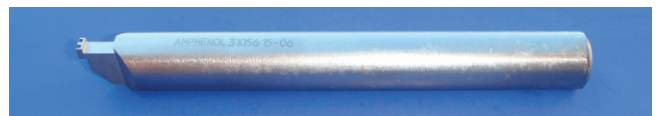


Figure 8: Insertion/extraction tool (DHK 696)



Figure 9: Probe/pick

<sup>1</sup> Gore recommends using copper foil tape instead of polyimide tape during termination procedures because copper tape is easier to use and improves signal integrity.

## Terminating the Plug Connector (Termination A)

1. Slide one piece of the TAT onto the cable.
2. Slide the backshell onto the cable with the smallest end facing the cable (Figure 10).



Figure 11: Sliding components onto the cable

3. Measure and mark the cable 0.5 inch from the plug end of the cable (Figure 11).



Figure 12: Marking the cable

4. Using a scalpel or scissors, slit the cable's jacket from its edge to the mark (Figure 12).

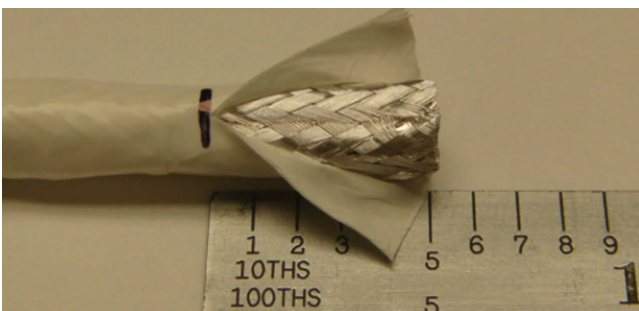


Figure 13: Slitting the cable jacket

5. Using needle-nose pliers, gently pull the outer jacket down the cable until you have exposed approximately 3.5 inches of braid (Figure 13).

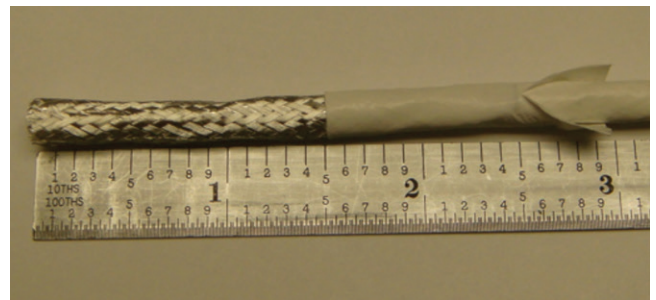


Figure 14: Exposing the braid

6. With your fingers, push the braid back over the cable to expose approximately 3.5 inches of the foil (Figure 14).



Figure 15: Exposing the foil

7. Remove the white filler as far down as possible.
8. Cut a piece of 0.25-inch polyimide tape, and tape the foil at the end of each pair (Figure 15).

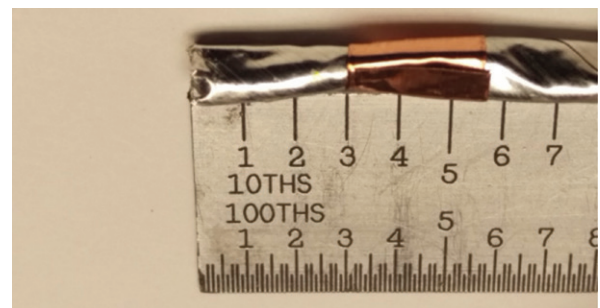


Figure 16: Wrapping the pair

9. With cutters, cut the foil where it meets the tape. Then tear the foil along the tape edge (Figure 17).



Figure 17: Removing the foil edge

10. Mark each pair 0.125 inch from its end (Figure 18).

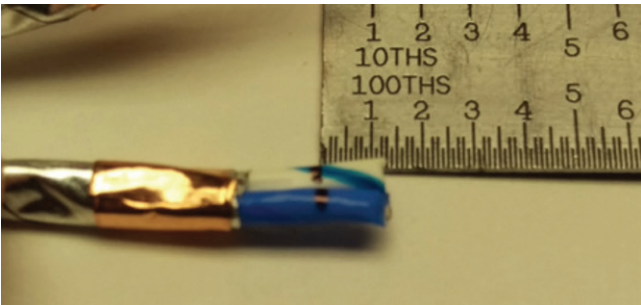


Figure 18: Marking each pair

11. Install the 31095 positioner for the pin contact into the M22520/2-01, and select setting 3. To prevent stray wire strands during crimping, strip and crimp one primary at a time (Figure 19).

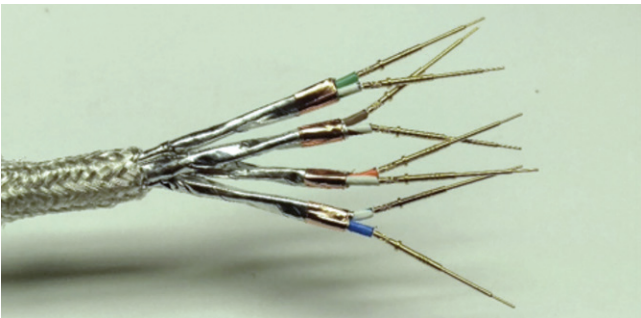


Figure 19: Stripping the primaries

12. Ensure that the screen crossbar is seated inside the connector body (Figure 20).



Figure 20: Checking the crossbar

13. Using a contact insertion tool (31056), insert the two contacts of each pair into the connector body based on the following table (Figures 21–22):

| Keyway Position | Pair         |
|-----------------|--------------|
| 1               | Green        |
| 2               | Green/White  |
| 3               | Brown        |
| 4               | Brown/White  |
| 5               | Blue         |
| 6               | Blue/White   |
| 7               | Orange       |
| 8               | Orange/White |



Figure 21: Positions on connector

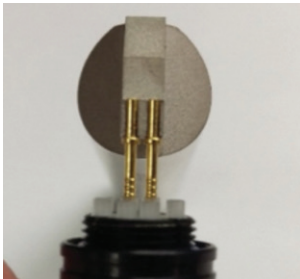


Figure 22: Using contact insertion tool

Contact insertion tool shown without wires for demonstration only.  
Do not insert un-crimped contacts.



## GORE® Aerospace Ethernet Cables

### Termination Instructions

14. From the side, slip a back insulator over each pod of wires, and snap the insulator into place (Figure 23).



Figure 23: Inserting the back insulator

15. Remove the tape holding the backshell and crossbar washer. Slide the crossbar washer toward the connector until it seats over the screen crossbar (Figure 24).



Figure 24: Seating the crossbar washer

16. Slide the backshell toward the connector, and manually tighten it until it is secure (Figure 25).



Figure 25: Seating the backshell

17. Gently slide the braid back toward the connector (Figure 26).



Figure 26: Returning the braid

18. Using a brush or pick, brush the braid over the knurled part of the connector. Then, use your fingers or needle-nose pliers to push the outer jacket as close as possible to the connector (Figure 27).



Figure 27: Brushing the braid

### Terminating the Plug Connector (Termination B)

1. Select the tubing from the kit, and slide it on the cable.
2. With the smallest end closest to the cable, slide the backshell onto the socket end of the cable. Slide the crossbar washer onto the socket end of the cable (Figure 28). Push both components up the cable, and tape them out of the way.



Figure 28: Sliding components onto the cable

3. Measure and mark the cable 0.5 inch from the socket end of the cable (Figure 29).



Figure 29: Marking the cable

4. Using a scalpel or scissors, slit the cable's jacket from the edge to the mark (Figure 30).

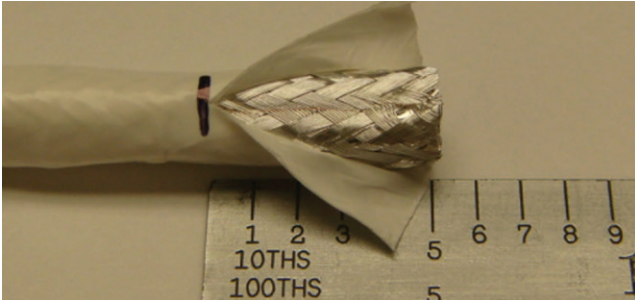


Figure 30: Slitting the cable jacket

5. Using needle-nose pliers, gently pull the outer jacket down the cable until you have exposed approximately 1.5 inches of braid (Figure 31).

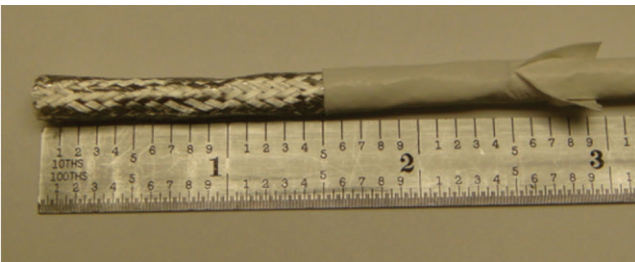


Figure 31: Exposing the braid

6. With your fingers, push the braid back over the cable to expose approximately 1.5 inches of the foil (Figure 32).



Figure 32: Exposing the foil

7. Remove the white filler as far down as possible.

8. Cut a 0.5-inch piece of copper or polyimide tape for each pair of the cable. Wrap a piece around each pair 0.30 inch from the end of the cable (Figure 33).



Figure 33: Wrapping the pair

9. With cutters, cut the foil where it meets the tape. Then tear the foil along the tape edge (Figure 34).



Figure 34: Removing the foil edge

10. Mark each pair 0.125 inch from its end (Figure 35).

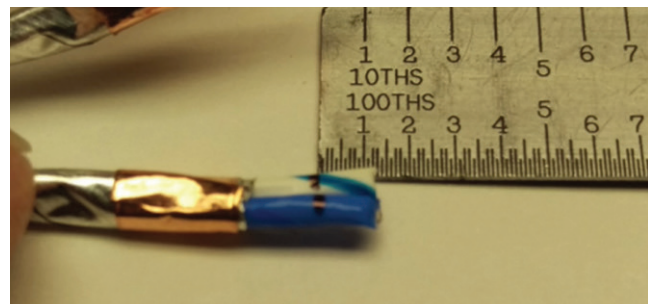


Figure 35: Marking each pair

## GORE® Aerospace Ethernet Cables

### Termination Instructions

11. Install the 31095 positioner for the pin contact into the M22520/2-01, and select setting 3. To prevent stray wire strands during crimping, strip and crimp one primary at a time (Figure 36).

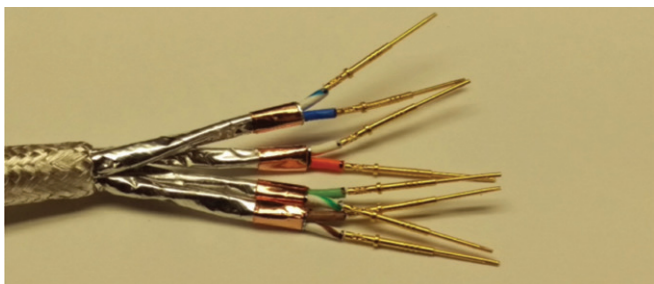


Figure 36: Stripping the primaries

12. Ensure that the screen crossbar is seated inside the connector body (Figure 37).



Figure 37: Replacing the crossbar

13. Using a contact insertion tool (31056), insert the two contacts of each pair into the connector body based on the following table (Figures 38–39):

| Keyway Position | Pair         |
|-----------------|--------------|
| 1               | Green        |
| 2               | Green/White  |
| 3               | Brown        |
| 4               | Brown/White  |
| 5               | Blue         |
| 6               | Blue/White   |
| 7               | Orange       |
| 8               | Orange/White |



Figure 38: Positions on connector



Figure 39: Using contact insertion tool

Contact insertion tool shown without wires for demonstration only.  
Do not insert un-crimped contacts.

14. From the side, slip a back insulator over each pod of wires, and snap the insulator into place (Figure 40).

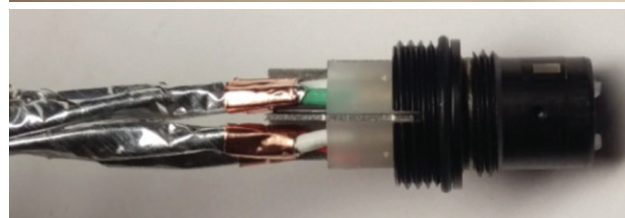
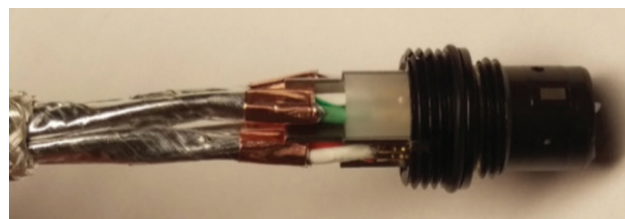


Figure 40: Inserting the back insulator

15. Remove the tape holding the backshell and crossbar washer. Slide the crossbar washer toward the connector until it seats over the screen crossbar (Figure 41).



Figure 41: Seating the crossbar washer



16. Slide the backshell toward the connector, and manually tighten it until it is secure (Figure 42).



Figure 42: Seating the backshell

17. Gently slide the braid back toward the connector (Figure 43).



Figure 43: Returning the braid

18. Using a brush or pick, brush the braid over the knurled part of the connector. Then, use your fingers or needle-nose pliers to push the outer jacket as close as possible to the connector (Figure 44).



Figure 44: Brushing the braid

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## Closing the Connectors

1. Perform all required in-process testing. At a minimum, verify proper wiring and continuity, and check for shorts. Local authorities and end-users may require additional testing.
2. Verify that the assembly length is accurate.
3. Using the appropriate torque wrench and adapter (i.e., size 13 or 14), torque the backshells to 25 inch-pounds. You can also hold it in a fixture such as Amphenol PN 31132 or 31133, depending on whether you are tightening the plug or socket.

4. Using the Tie-Dex® II clamp tool, attach the pre-coiled microband to the end of each connector (Figures 45–46).



Figure 45: Attaching microband to plug



Figure 46: Attaching microband to socket

5. Using cutters, trim off the excess braid (Figures 47–48).



Figure 47: Trimming excess braid on plug



Figure 48: Trimming excess braid on socket

6. Cut two pieces of 0.25-inch polyimide tape, and wrap it around each microband at least twice (Figures 49–50).



Figure 49: Taping microband on plug



Figure 50: Taping microband on socket

7. Position the tubing so that it completely covers the microband and braid. Using a heat-gun, shrink the tubing over the backshell (Figure 51–52).



Figure 51: Shrinking tubing on plug backshell



Figure 52: Shrinking tubing on socket backshell

8. Perform all required testing. At a minimum, verify proper wiring and continuity, and check for shorts. Local authorities and end-users may require additional testing.
9. Using a heat-gun, shrink the center label, if appropriate.

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