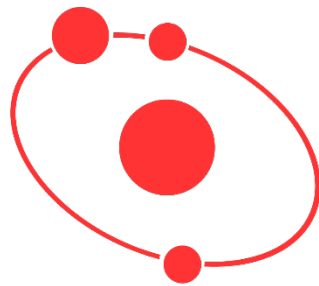


AMPERE  **EV**



ATOM
DRIVE SYSTEM

High Voltage Wiring Guide

Revision 1.3



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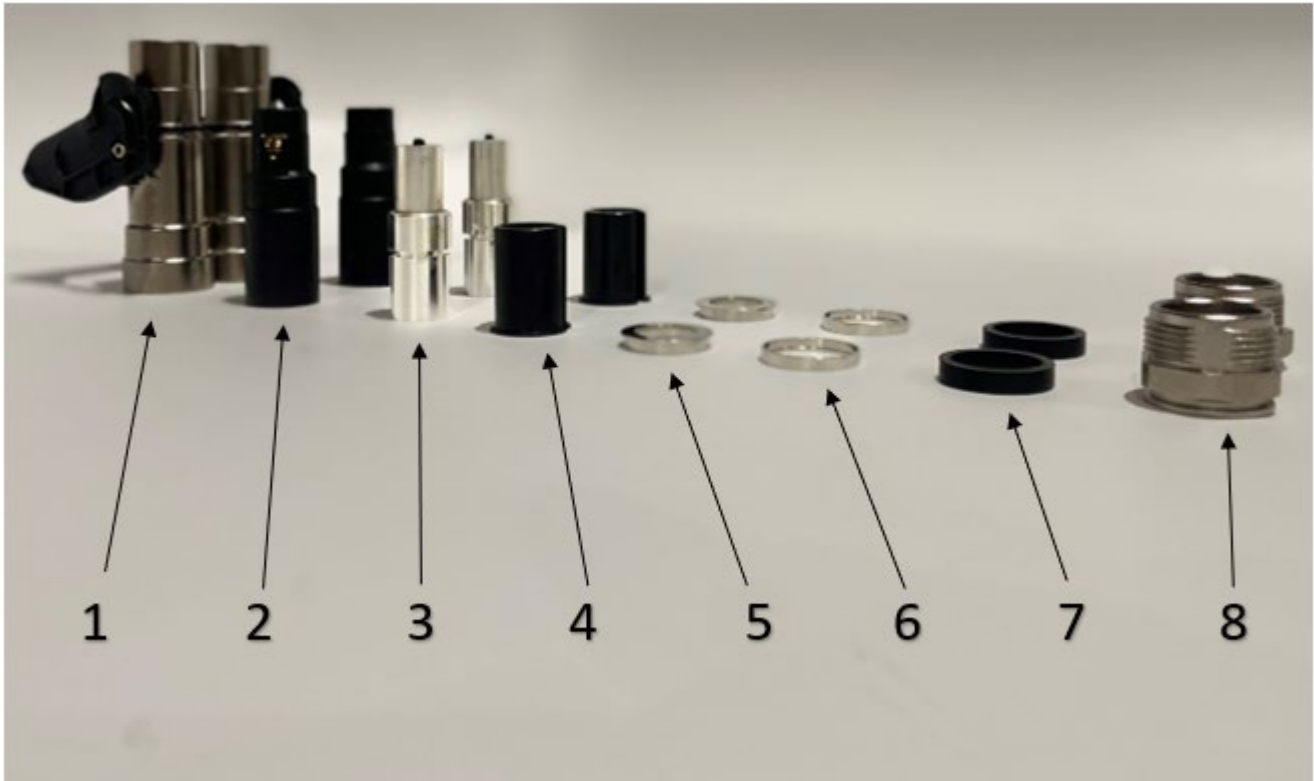
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Amphenol Dual Position Connectors

NOTE: Before any assembly, measure and cut cable to desired length

Step 1: Disassemble the Connector



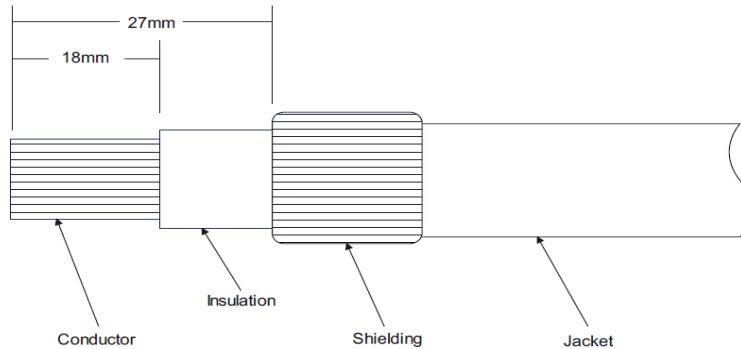
1	Alloy Shell x 1
2	Insulation Housing x 2
3	R4 Holder x 2
4	Insulation x 2
5	Copper Ring x 2
6	Copper Shield Ring x 2
7	Rubber Ring x 2
8	End Cap x 2

NOTE: Each Step will need to be performed twice as there are two cables for each high voltage connection



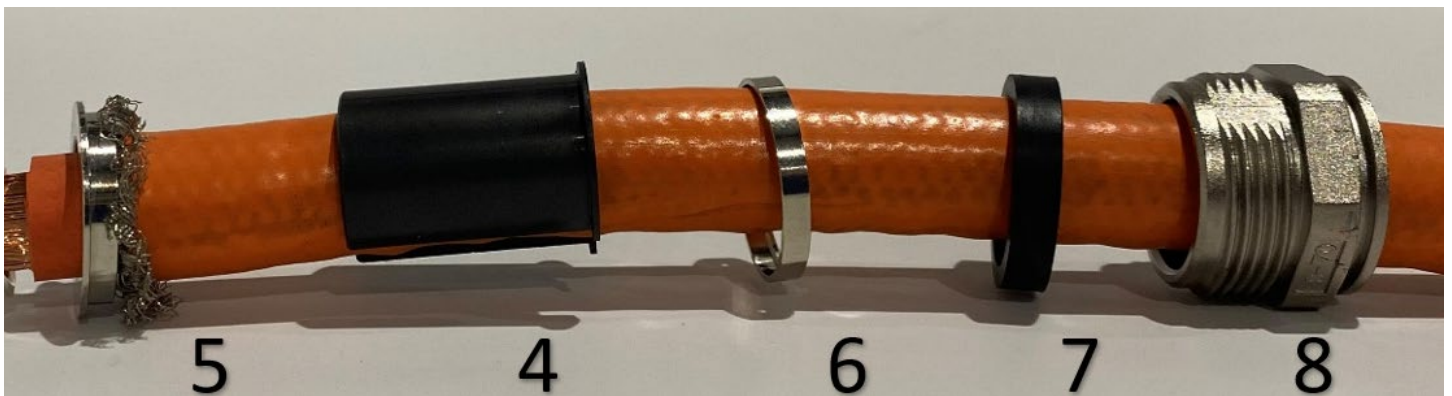
Step 2: Cable Stripping

Strip high voltage cable and cable shielding. Conductor cable must be stripped to 18mm, and shielding must be stripped back to 27mm.



Step 3: Cable Side Assembly

Take 1pcs of (8)end cap, (7)rubber ring, (6)copper shield ring, (5)copper ring, and (4)insulation sleeve and assemble them through the cable in the order shown below.

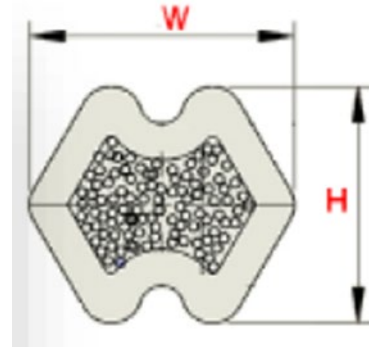


NOTE: Ampere EV ships shielded high voltage cables to be used in junction box installation. Shielding must be stripped back and secured by (5) copper ring.



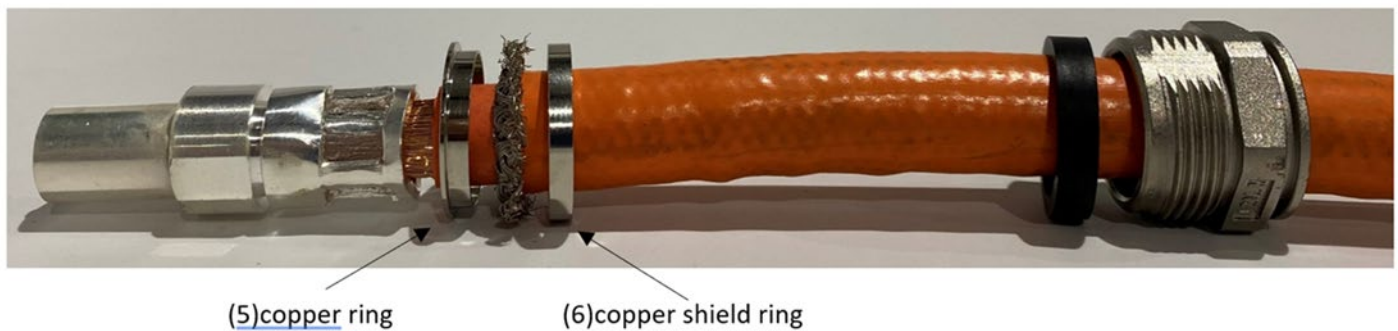
Step 4: Crimping

Take 1 pcs of (3) R\$ holder and crimp it with the cable conductor wire, as shown in the picture below.



Step 5: Securing Cable Side Assembly

Take 1pcs (6) copper shield ring and secure cable shield with (5) copper ring. Secure the braided shield between (5) copper ring and (6) copper shield ring. Trim off any excess braid as shown below.



NOTE: (6) copper shield ring should hold excess braid in place and fit firmly inside (5) copper ring.



Step 6: Insulation Sleeve

Take 1pcs of (4) insulation sleeve and fit into the neck groove of (3) R4 holder, as shown below.



NOTE: (4) Insulation sleeve should fit comfortably between the neck groove of (3) R4 holder and top of (5) copper ring.

Step 7: Securing the End Cap

Once all pieces are aligned, push (8) end cap into secure position as shown in the image below.

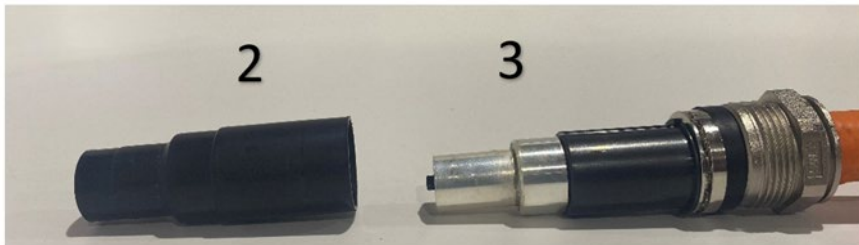


NOTE: The (8) end cap is not secured by anything at this moment; however, all parts so far, when pushed together, should align with no gaps between them. If parts are not resting together with no gaps, double check Step 5 was completed correctly before continuing.

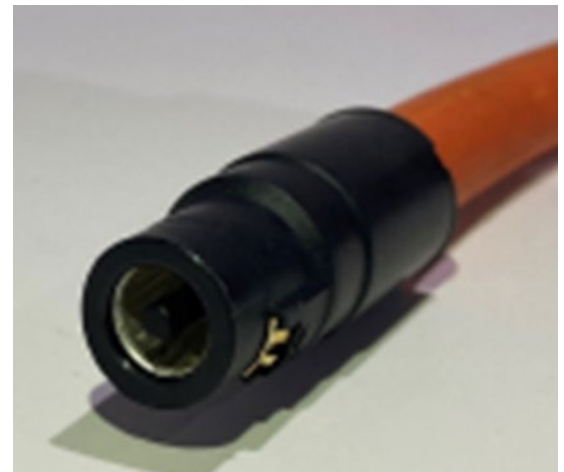


Step 8: Seating the Insulation Housing

Bring (2) insulation housing through (3) R4 holder and rotate until it arrives in stop position. (2) Insulation housing should rotate freely until seated. If properly seated, (2) insulation will not move freely.



NOTE: Make sure (3) R4 end is visible through the front opening of (2) insulation housing.



Step 9: Alloy Shell Installation

Put (2) Insulation housing into (1) alloy shell, rotate cable until (2) insulation housing arrives at stop position. Screw (8) end cap into (1) alloy shell, to a torque of 10-12 N.m to finish the assembly.

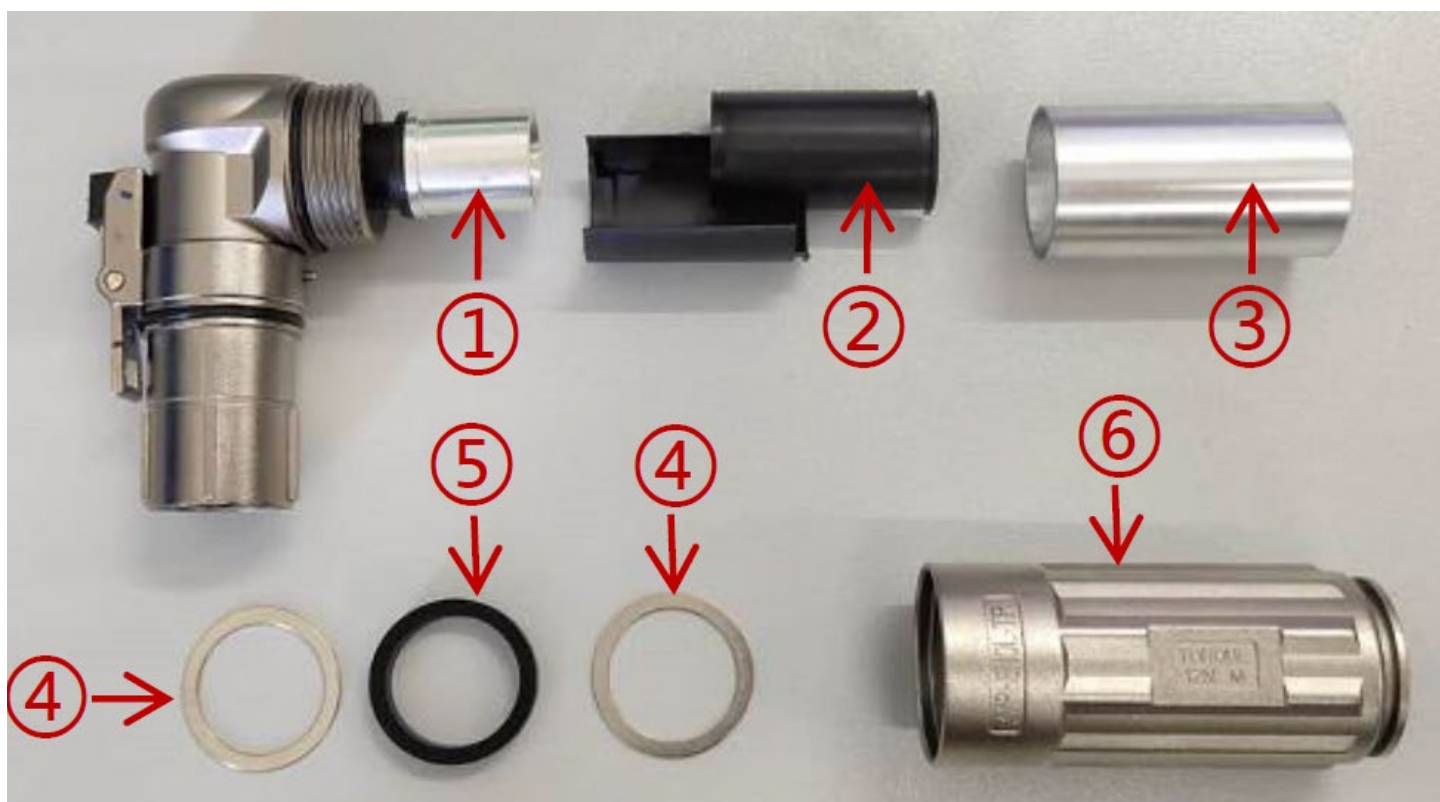




Amphenol Single Position Connectors

NOTE: Before any assembly, measure and cut cable to desired length

Step 1: Disassemble the Connector

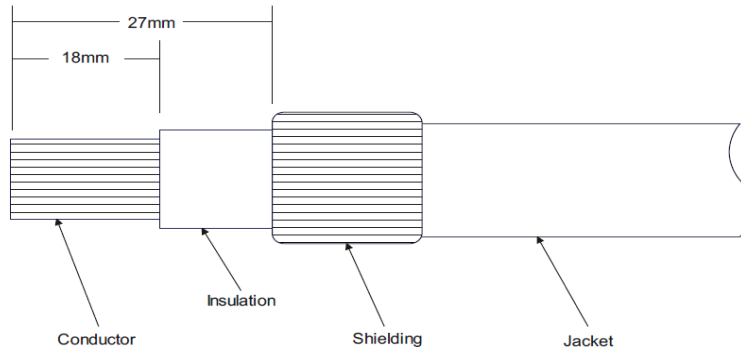


1	Terminal x 1
2	Insulation Sleeve x 2
3	Metal Sleeve x 1
4	Metal Gaskets x 2
5	Rubber Seal x 2
6	Back Shell x 1



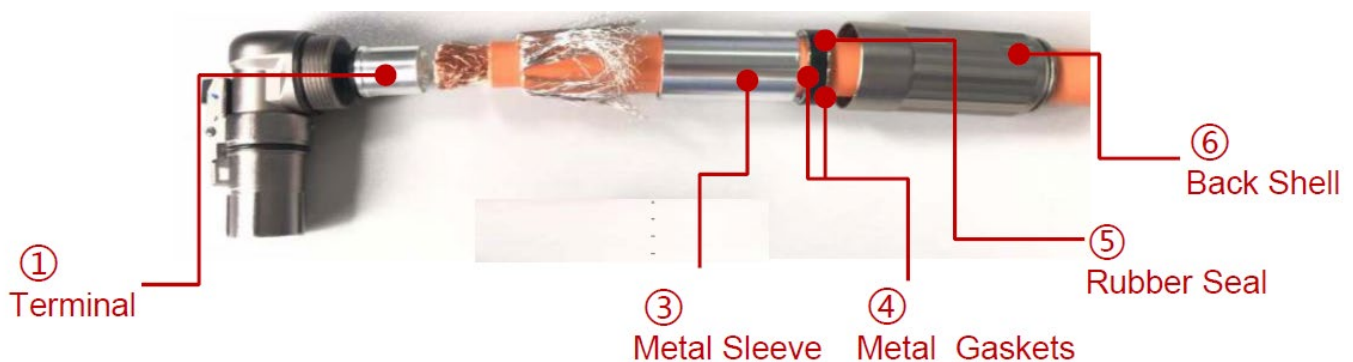
Step 2: Cable Stripping

Strip high voltage cable and cable shielding. Conductor cable must be stripped to 18mm, and shielding must be stripped back to 27mm.



Step 3: Cable Component Assembly

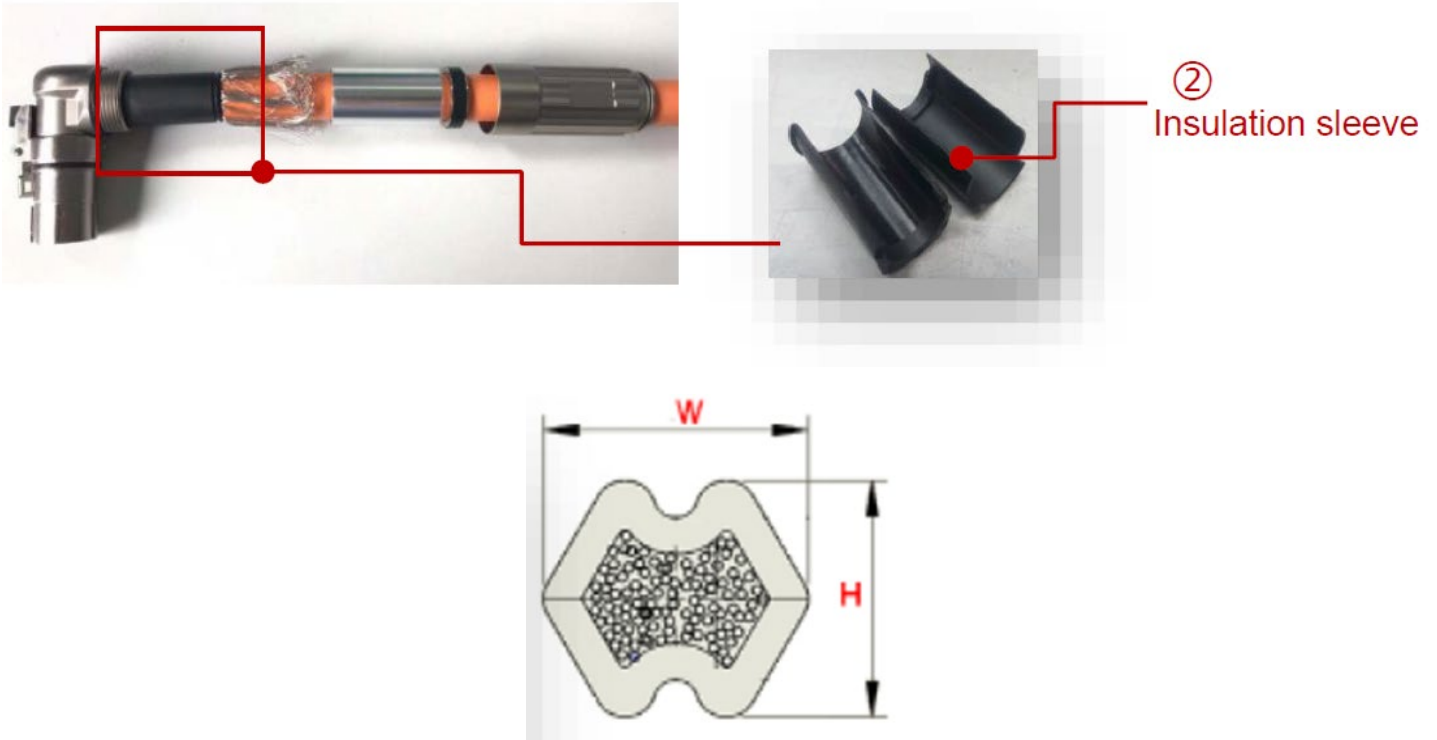
Load the components onto the cable as shown in the photo below. First slide the back shell over the stripped cable followed by a metal gasket, the rubber seal, and another metal gasket. Lastly slide the metal sleeve onto the cable assembly.





Step 4: Crimping

Crimp the terminal onto the cable, then buckle the twin insulation sleeves together around the crimped terminal as shown below.



NOTE: Cross section shape is only for reference. There are other possibilities depending on the crimp tool used. This includes the common hexagonal crimp style.



Step 5: Shielding Braid Preparation

5-1: Slide the metal sleeve over the insulation sleeve and braided shielding.



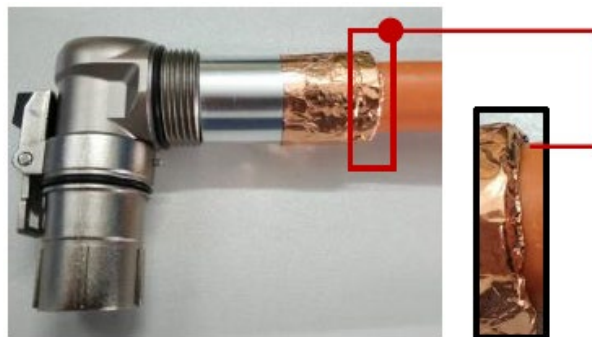
5-1

5-2 Flip the braided shielding over the metal sleeve and trim to 20mm as shown in the reference below.



5-2

5-3 Optional step 3: wrap the braided shield in a layer of copper tape/foil from the edge of the metal sleeve up towards the terminal body 25mm.

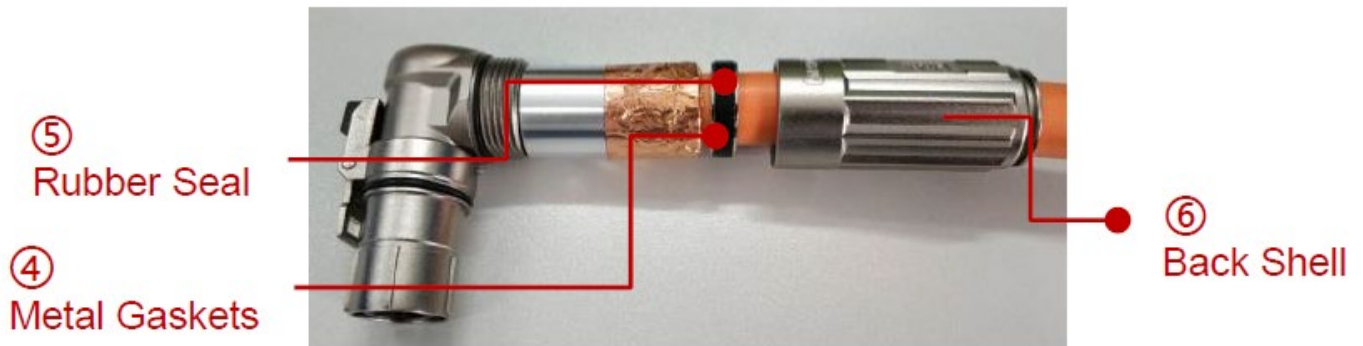


5-3



Step 6: Assemble the Back Shell

6-1 Slide the metal gaskets and rubber seal flush with the metal sleeve.



6-2 Slide the back shell over the metal gaskets, rubber seal, and metal sleeve.

6-3 Screw the back shell onto the terminal body and torque to 10 – 12 Nm.



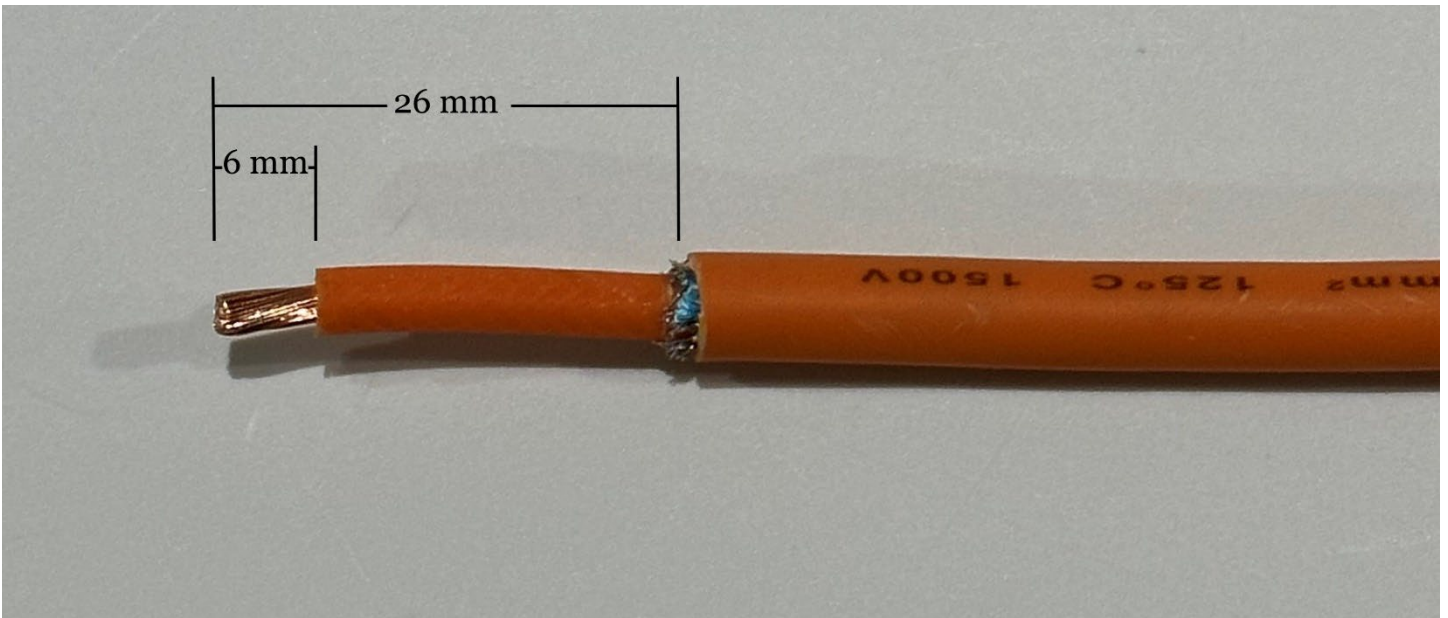


Amphenol AC Compressor Connector

NOTE: Before any assembly, measure and cut cable to desired length

Step 1: Cable Stripping

Strip high voltage cable outer jacket, foil, and cable shielding. Conductor cable must be stripped to 6mm, and shielding must be stripped back to 26mm.



Strip away outer jacket 26mm.





Remove metal foil from stripped cable.



Cut shielding back completely from the stripped portion of the cable.





Strip the inner insulation from the end of the cable 6mm.



Step 3: Crimping

Crimp the conductor pins onto the stripped portion of the cable.



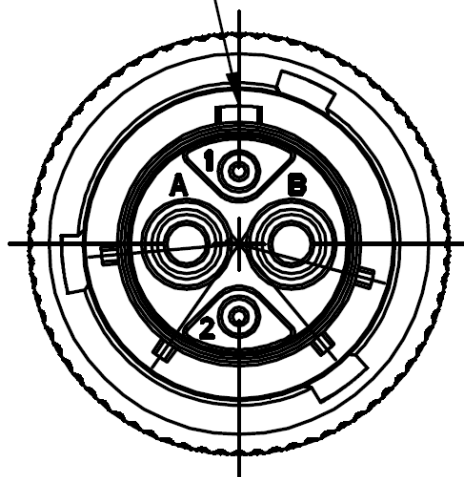


Step 4: Assembly

Slide the conductor and cable through the orange rubber seal on the back of the connector and press firmly until the pin seats inside of the connector housing.



MASTER KEYWAY



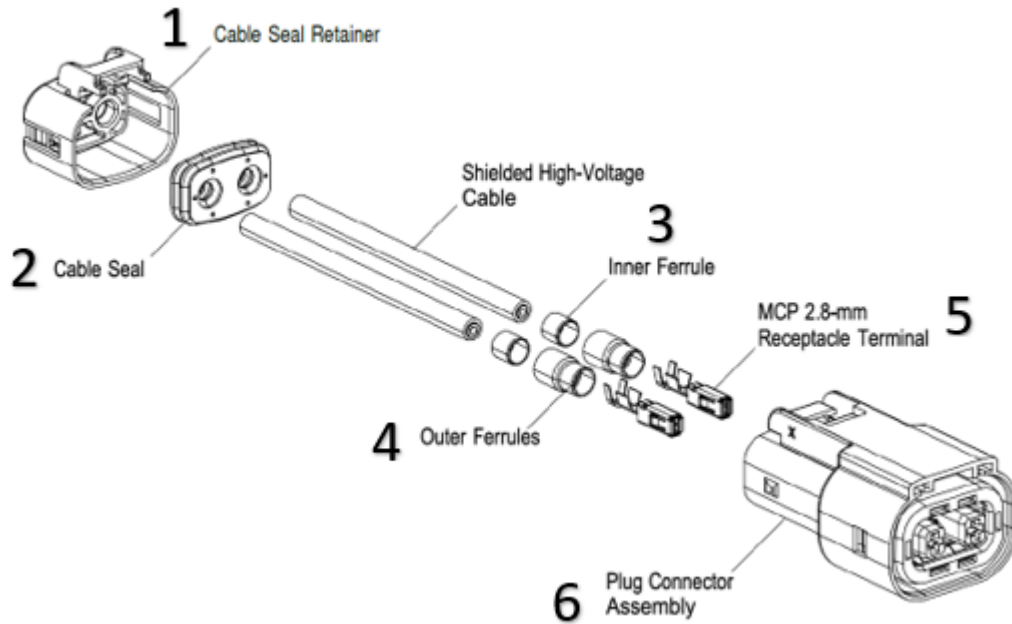
PIN NO.	NAME
A	DC+
B	DC-



HVA-280 High Voltage Plug Connector

NOTE: Each plug connector has the same installation process, but connectors using 4mm cable will have slight variations in the shielding ferrule installation.

Connector Preparation

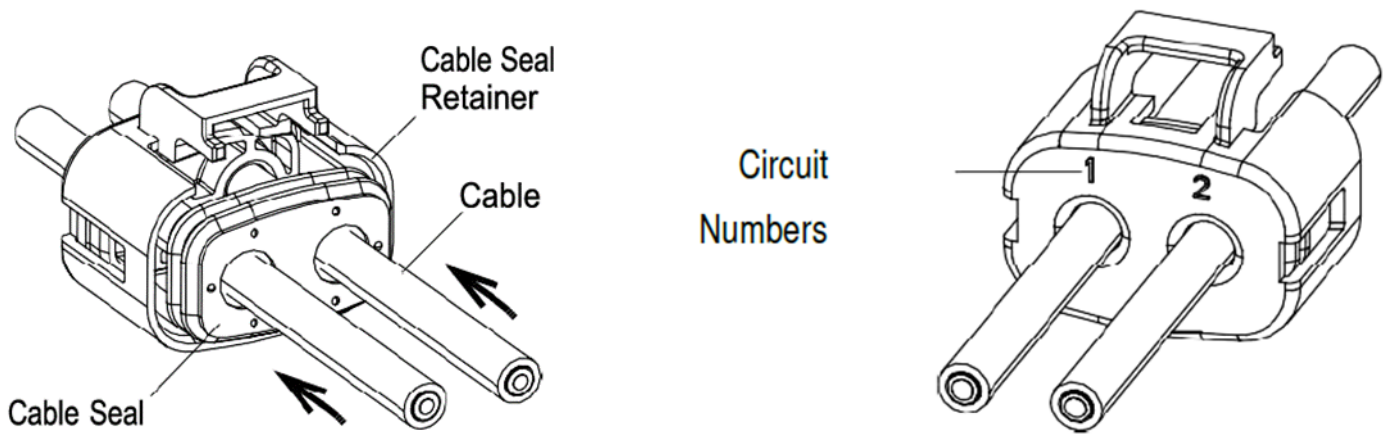


1	Cable Seal Retainer
2	Cable Seal
3	Inner Ferrule
4	Outer Ferrule
5	MCP 2.8mm Receptacle Terminal
6	Plug Connector Assembly



Step 1:

Assemble (1) cable seal retainer and (2) cable seal in the order and direction shown in the image below.

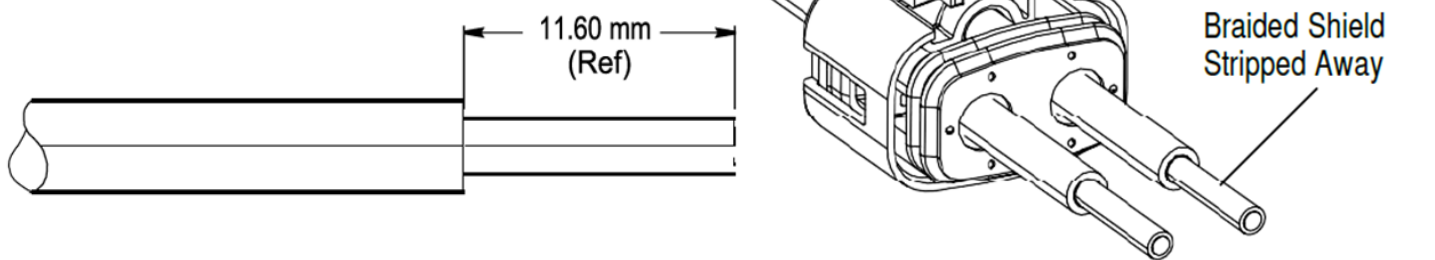


NOTE: The supplied 4mm cable has an outer diameter slightly too large for the holes in the cable seal retainer. To remedy this, you will need to enlarge the holes with a 9/32 drill bit.

Step 2:

With the (1) cable seal retainer and (2) cable seal safely out of the way, strip the outer jacket and braided cable shield off each cable.

Note: Not to Scale

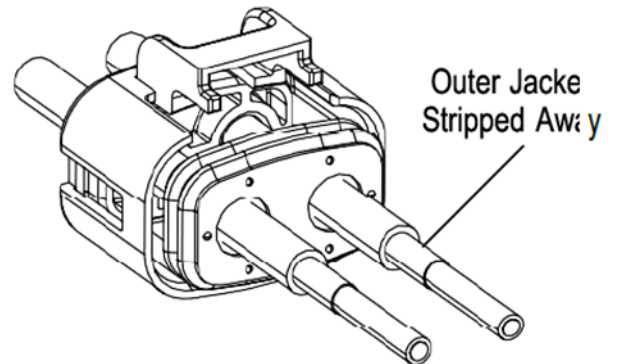
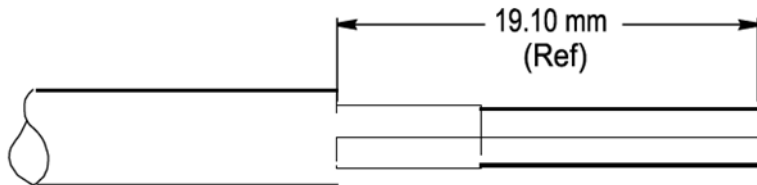




Step 3:

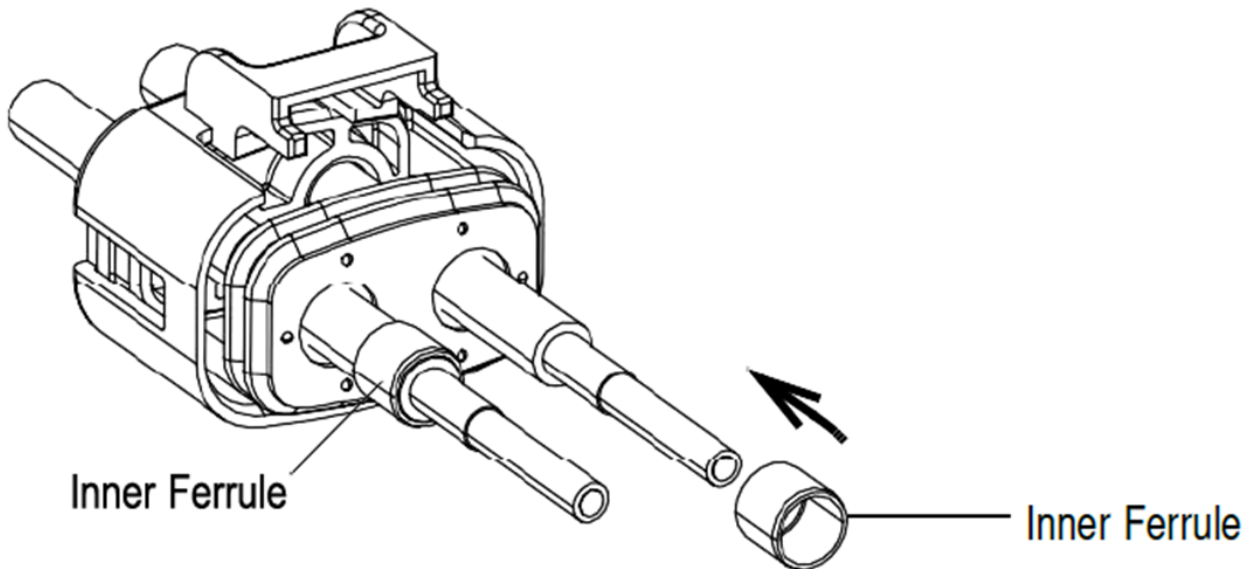
Strip the outer jacket further so that the combined exposed strip length of braided cable shield and conductor insulation matches below.

Note: Note to Scale



Step 4:

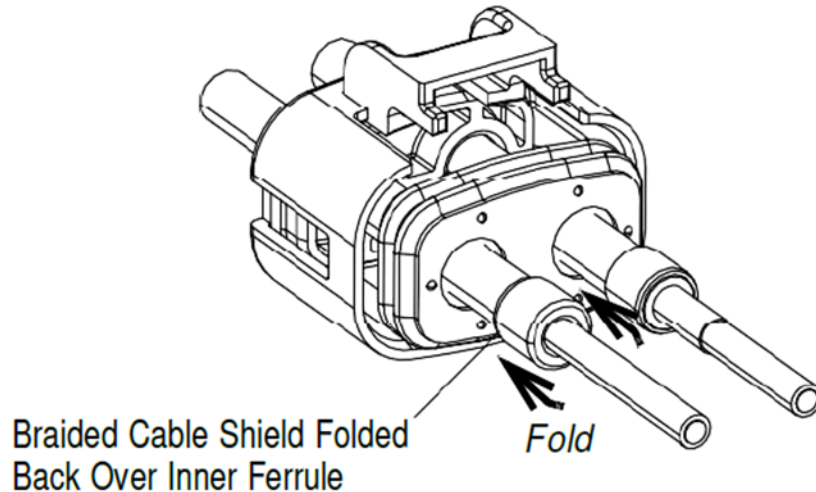
Insert (3) inner ferrule onto each cable and over the outer jacket as shown in the image below.



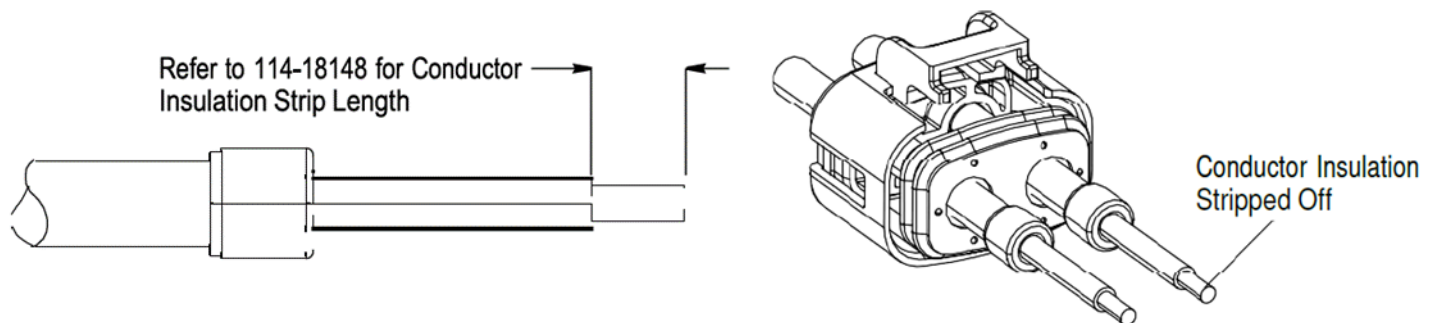
NOTE: The supplied 4mm cable has an outer diameter slightly too large for the inner ferrule to slide over. For these cables simply omit the inner ferrule entirely.

**Step 5:**

Fold the braided cable shield back over the (3) inner ferrule, taking care to try to keep (3) inner ferrule positioned such that its edge is flush with the stripped edge of the outer jacket as shown in the image below.

**Step 6:**

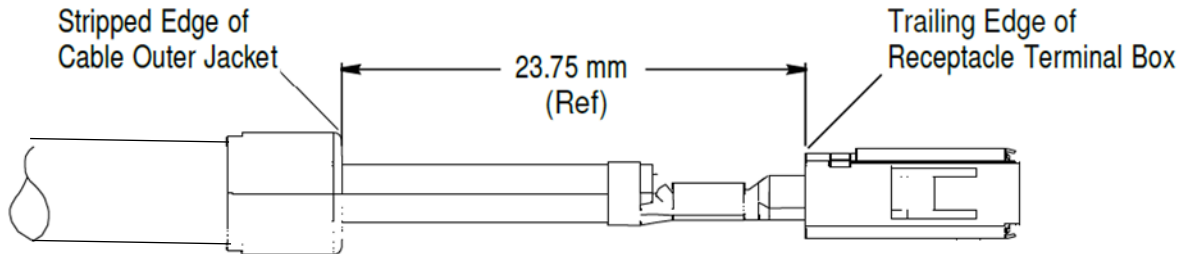
Strip the conductor insulation off each cable to the dimension defined by the specific plug connector.





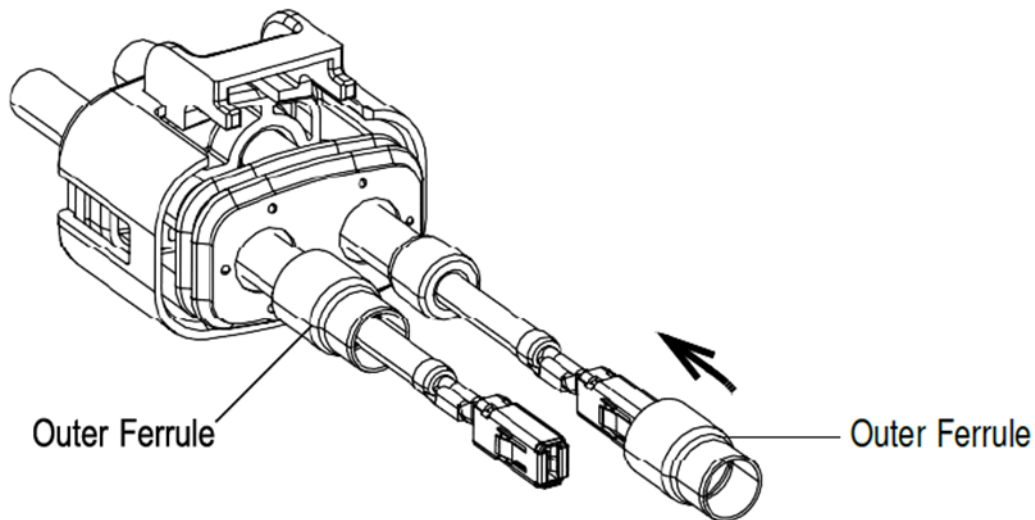
Step 7:

Apply a (2) receptacle terminal to each cable using the tooling, method, and dimensions necessary for each specific plug connection. The trailing edge of the (2) receptacle terminal box should be located from the stripped edge of the outer jacket to the dimension given (approximately) in the image below.



Step 8:

Insert (4) outer ferrule onto each cable in the orientation shown below and over (3) inner ferrule and folded back braided cable shield.



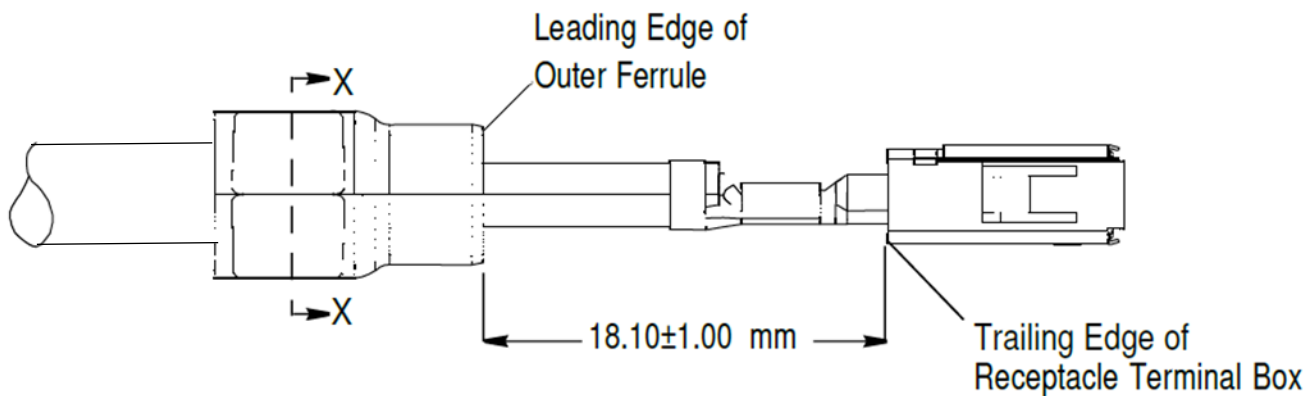
NOTE: For 4mm cables, fold the shielding back over the outer jacket and slide the outer ferrule over the folded back shielding.

**Step 9:**

Crimp each (4) outer ferrule using the necessary tool.

Recommended Tool: SDE-SA Hand crimping frame assembly: this frame assembly accepts a die assembly designed to crimp the specific outer ferrule. (type 1: 6.80mm HEX) and (type 2: 7.40mm HEX) **NOT INCLUDED**

The distance between the leading edge of the outer ferrule and the trailing edge of the receptacle terminal box must be maintained at the dimension given below.

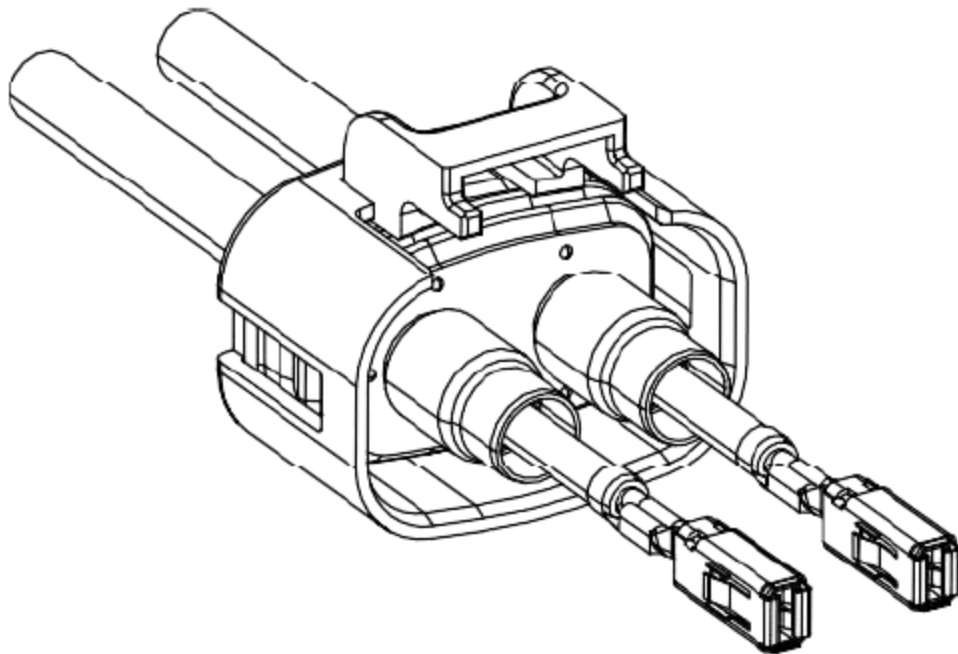


NOTE: Be sure not to overdo the crimp on 4mm cables. You only want to crimp enough to snug the outer ferrule down onto the shielding.



Cable Inspection

- | | |
|---|--|
| 1 | Samples match examples shown in the images in this document |
| 2 | Cables are inserted in correct cavity openings in seal retainer |
| 3 | Seal is not rolled or damaged |
| 4 | Outer jacket or conductor is not damaged |
| 5 | No loose or protruding strands from braided cable shield and ferrule crimp |
| 6 | Terminal crimp meets specified requirements |
| 7 | Outer ferrule hex crimp is correct and outer ferrule is not damaged |



Completed cable assembly conforms to inspection summary.

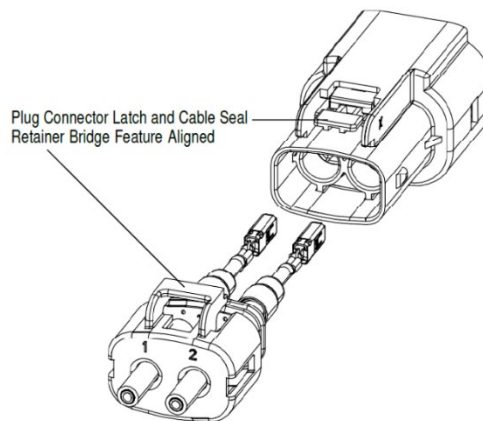


Receptacle Terminal Installation

This section contains steps for installing the receptacle terminal into the plug connector.

Step 1:

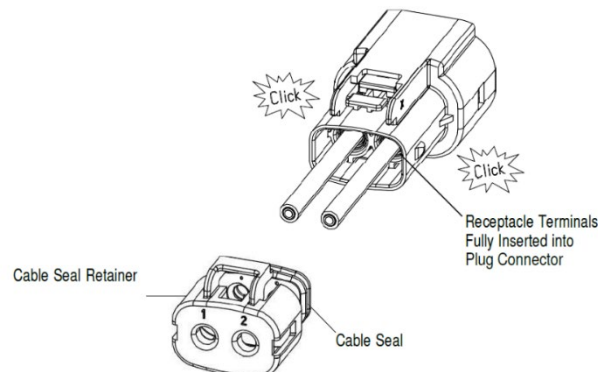
Orient the cable assembly so that the bridge feature on the cable seal retainer is aligned with the plug connector.



Step 2:

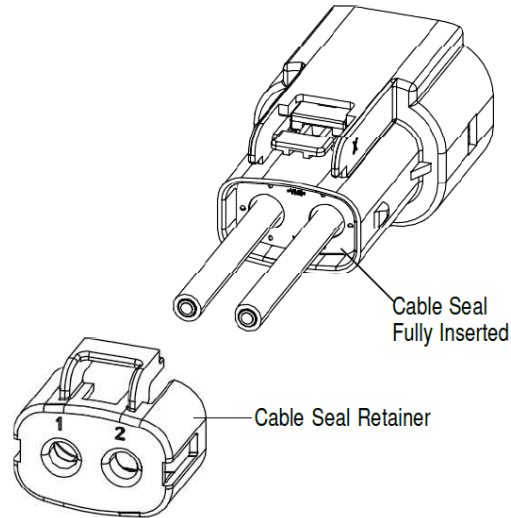
Inset the receptacle terminals into their respective plug connector circuit cavities until they are fully locked, and an audible and tactile 'click' is detected.

NOTE: The installation of the ferrule into the contact springs of the connector shield will cause some resistance, so it is important to verify that the receptacle terminals are fully inserted by pulling back lightly on the cables.

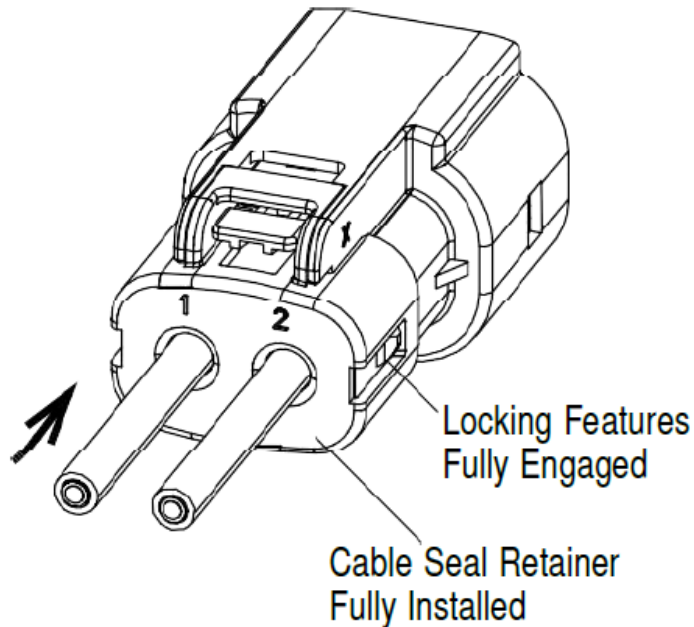


**Step 3:**

Fully insert the cable seal until it stops inside the back of the plug connector.

**Step 4:**

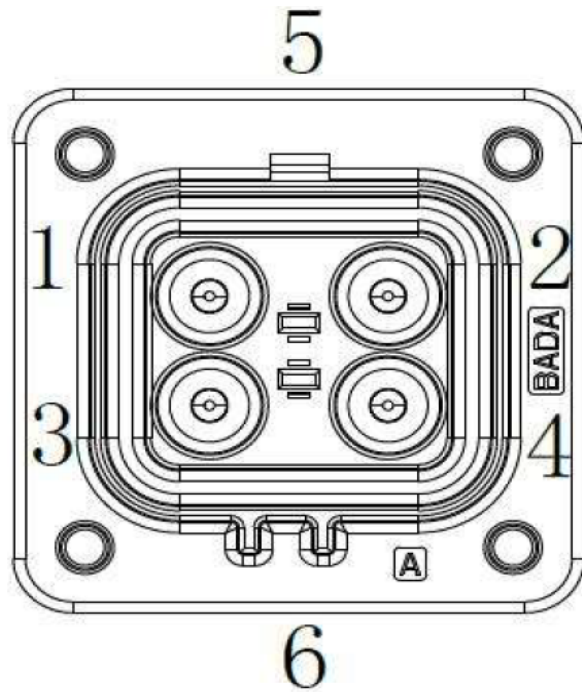
Full install the cable seal retainer over the back of the plug connector, making sure that the bridge feature is correctly aligned with the plug connector latch feature. Verify that both locking features are fully engaged.





Ovartech OBC High Voltage Connector

PIN NO.	NAME
1	OBC OUT +
2	OBC OUT -
3	DC-DC IN+
4	DC-DC IN-
5	INTERLOCK
6	INTERLOCK



Step 1: Back Shell Preparation

The supplied 4mm high voltage cable has a slightly larger outer diameter than the connector back shell can accommodate. To resolve this issue, you must use a 9/32 drill bit to enlarge the openings of the back shell positions 1 and 2. Positions 3 and 4 accept the 2.5mm cable for the DC/DC converter without issue.



Step 2: Wire Stripping

Strip away the outer jacket.

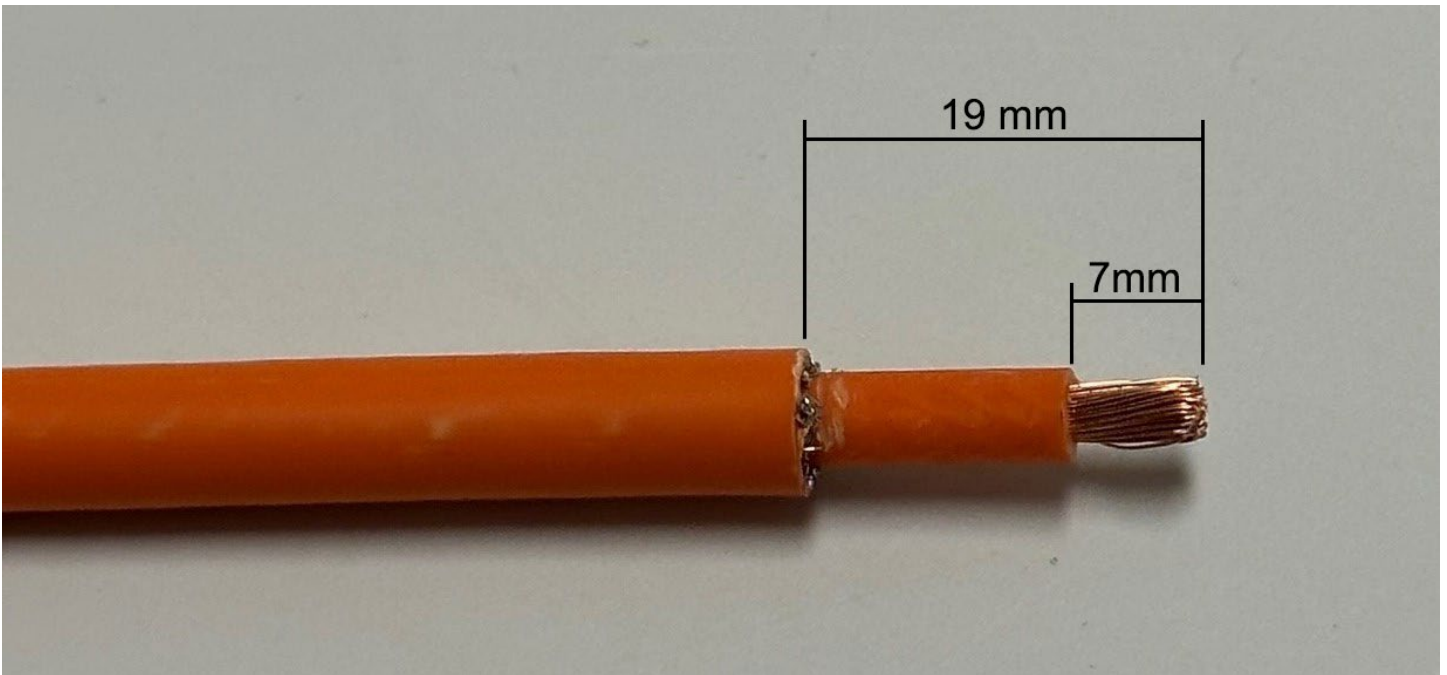


Remove the foil shielding.





Cut away the braided copper shielding and trim the wire to match the reference below. Once trimmed to 19mm, strip away 7mm of the inner jacket to expose the copper conductor.



Repeat this process for all 4 charger high voltage cables.



Step 3: Connector Assembly

Push all 4 wires through the correct hole in the back shell before sliding on the white weather seal.



Crimp on the supplied pins

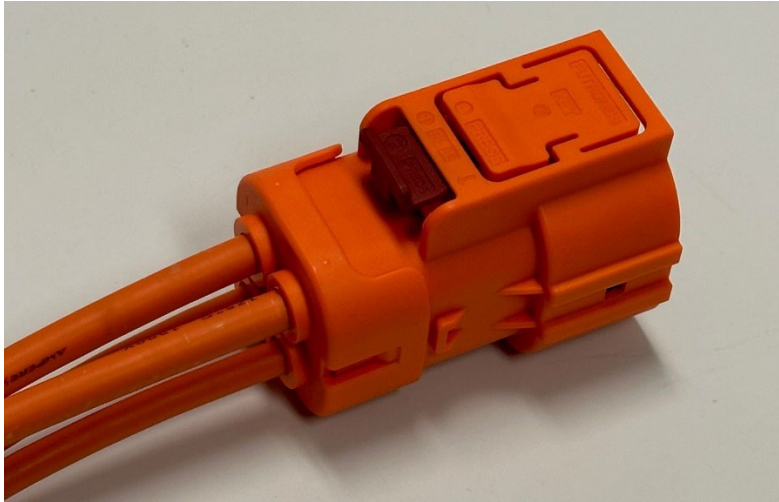
Push the terminated cables into the connector housing until they snap into place.

***** Double and triple check that you have the correct cable in the correct location. These pins are difficult to remove once inserted into the housing. *****





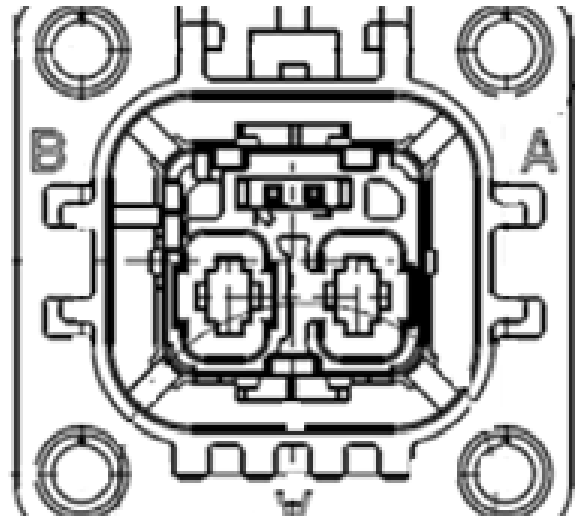
Push the wire seal into the back housing of the connector followed by the back shell until it snaps into place.





Dilong OBC High Voltage Connector

PIN NO.	NAME
A	OBC OUT +
B	OBC OUT -



Step 1: Wire Stripping

Strip away 21mm of the outer jacket.



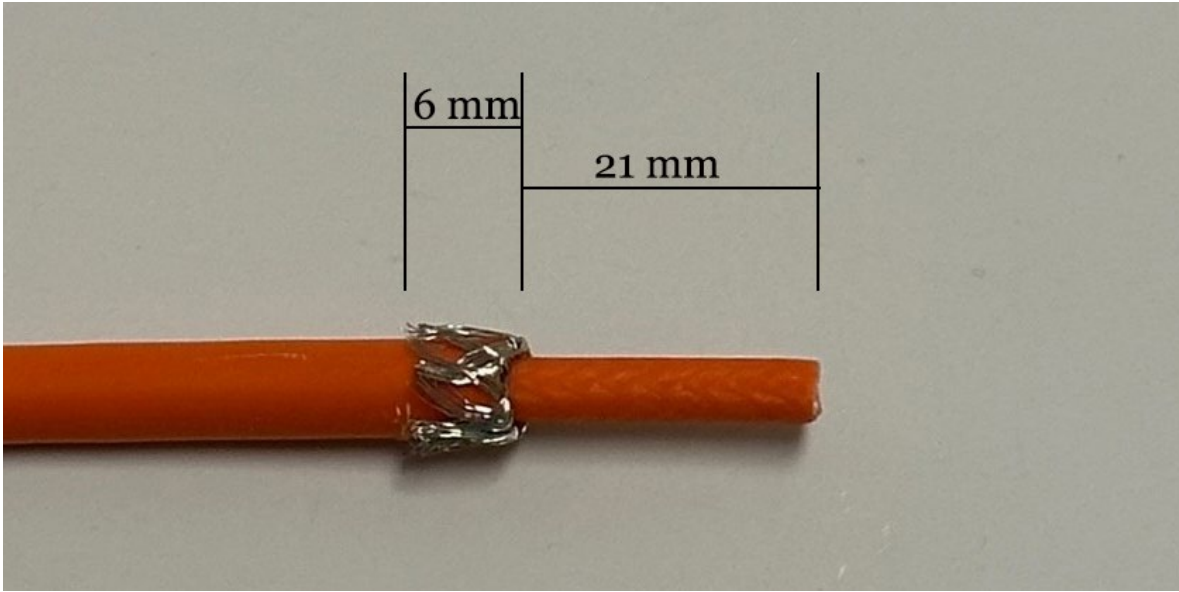


Remove the foil shielding.

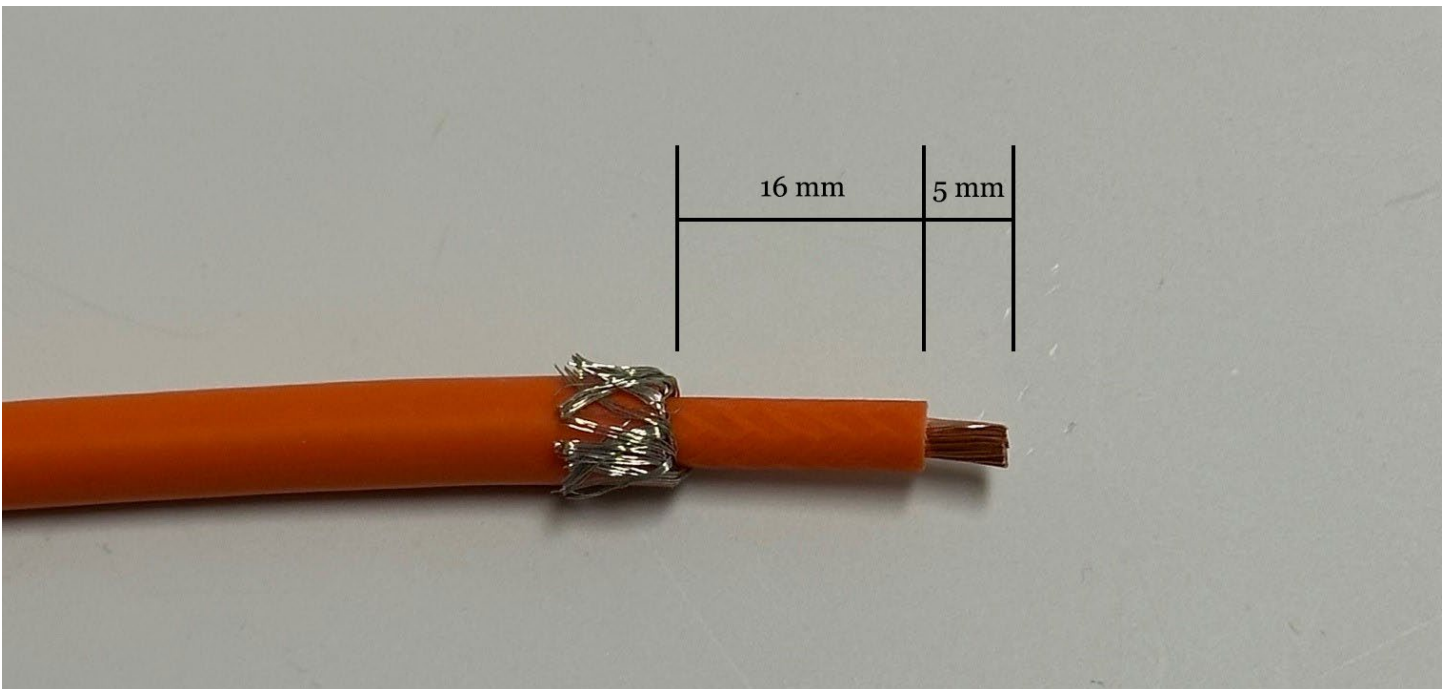




Fold back the braided copper shielding over the cable and trim to 6mm.

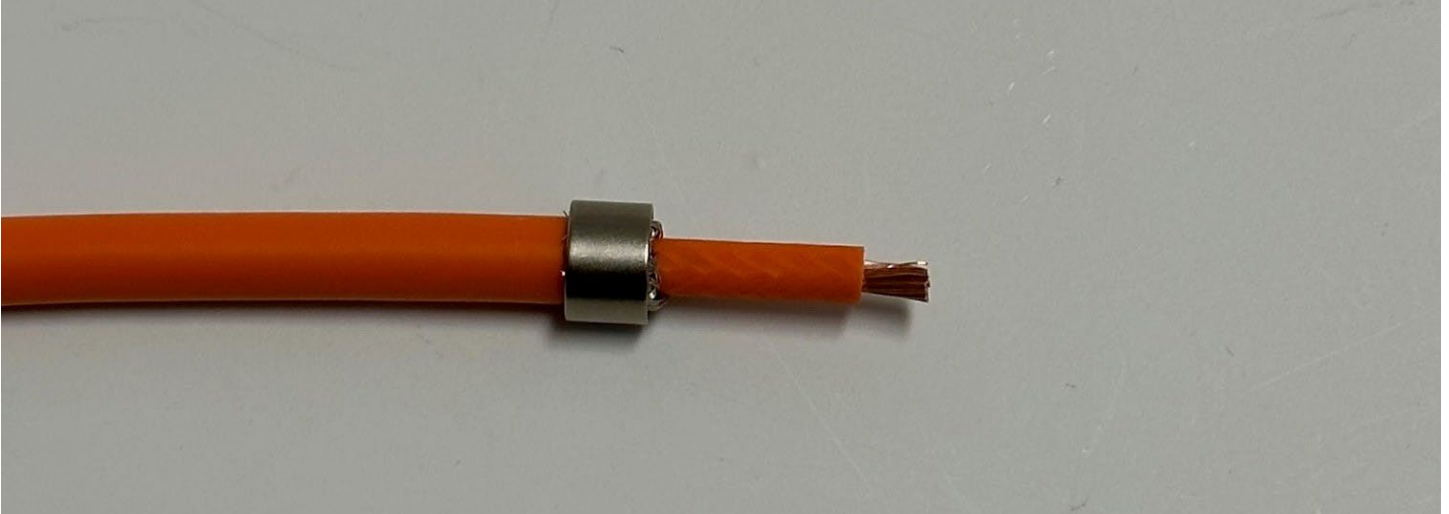


Strip away 5mm of the inner jacket to expose the copper conductor.





Slide the metal ferrule over the braided shielding and crimp lightly with an 8mm hexagonal crimping die.



Crimp the terminal onto the cable.

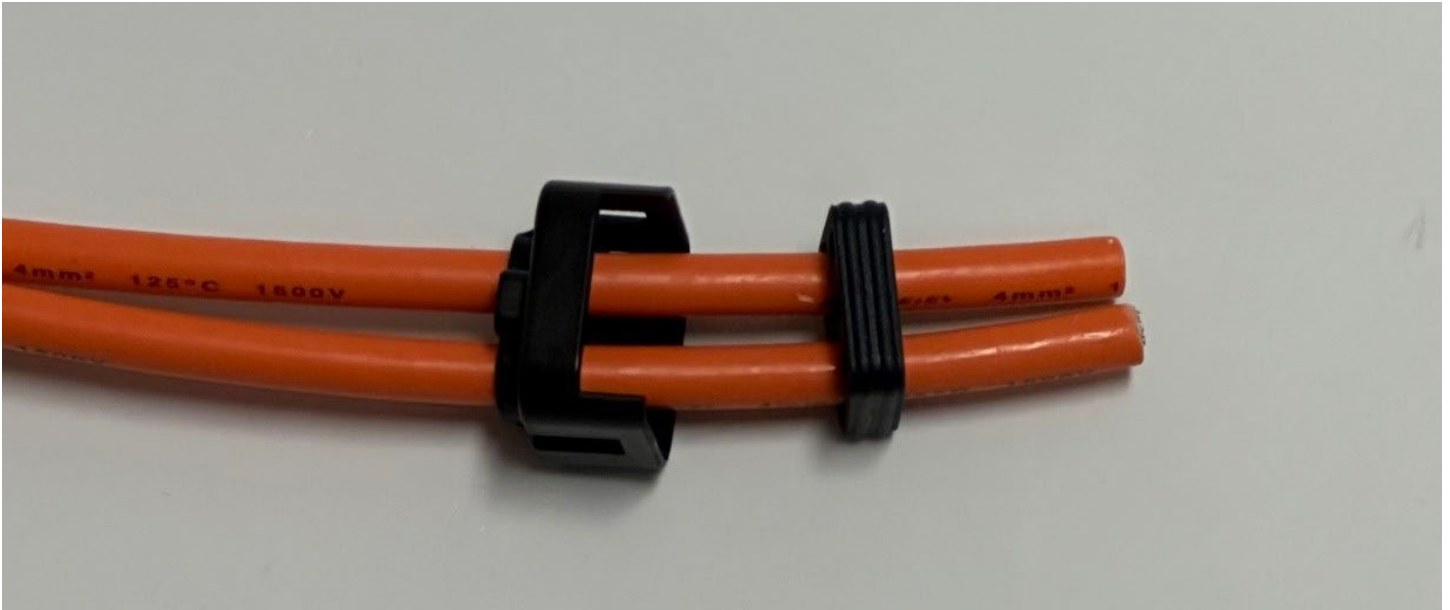


Repeat this process for both charger high voltage cables.



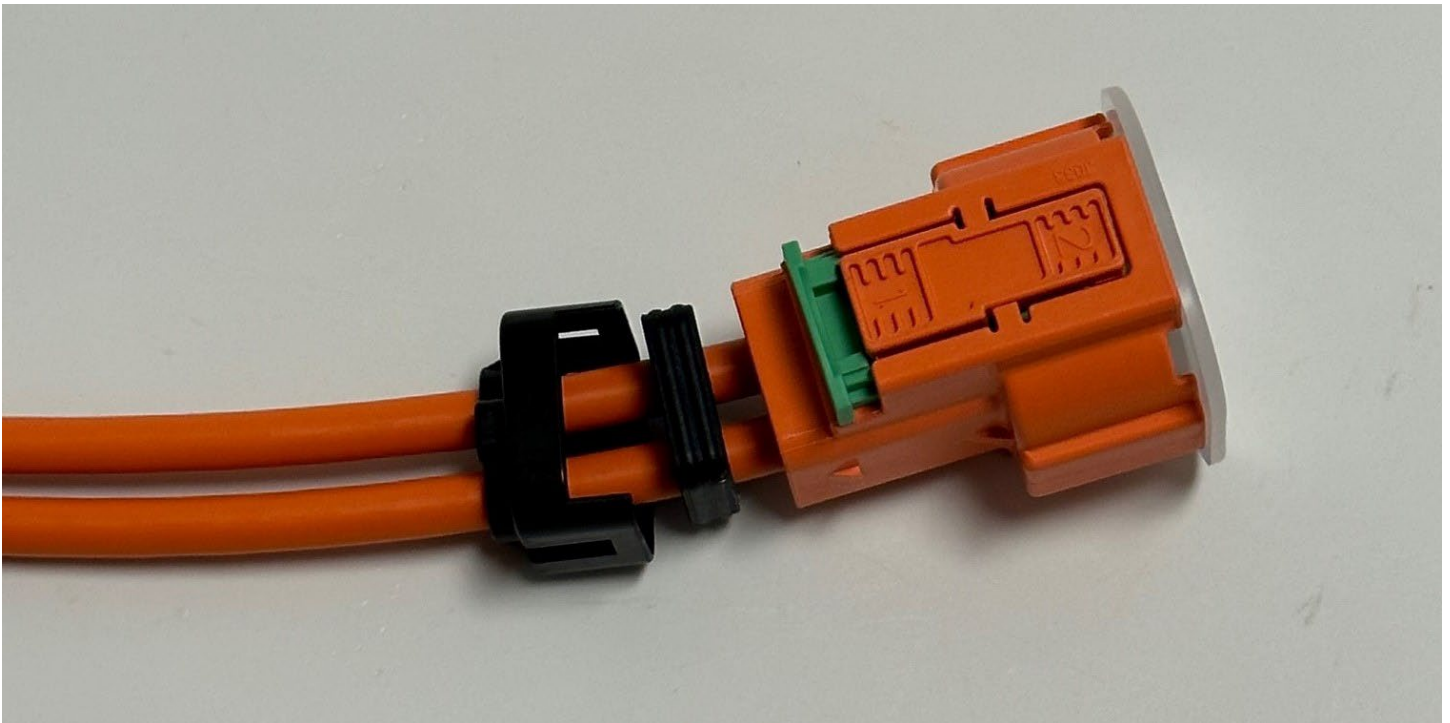
Step 3: Connector Assembly

Push both wires through the correct hole in the back shell before sliding on the black weather seal.



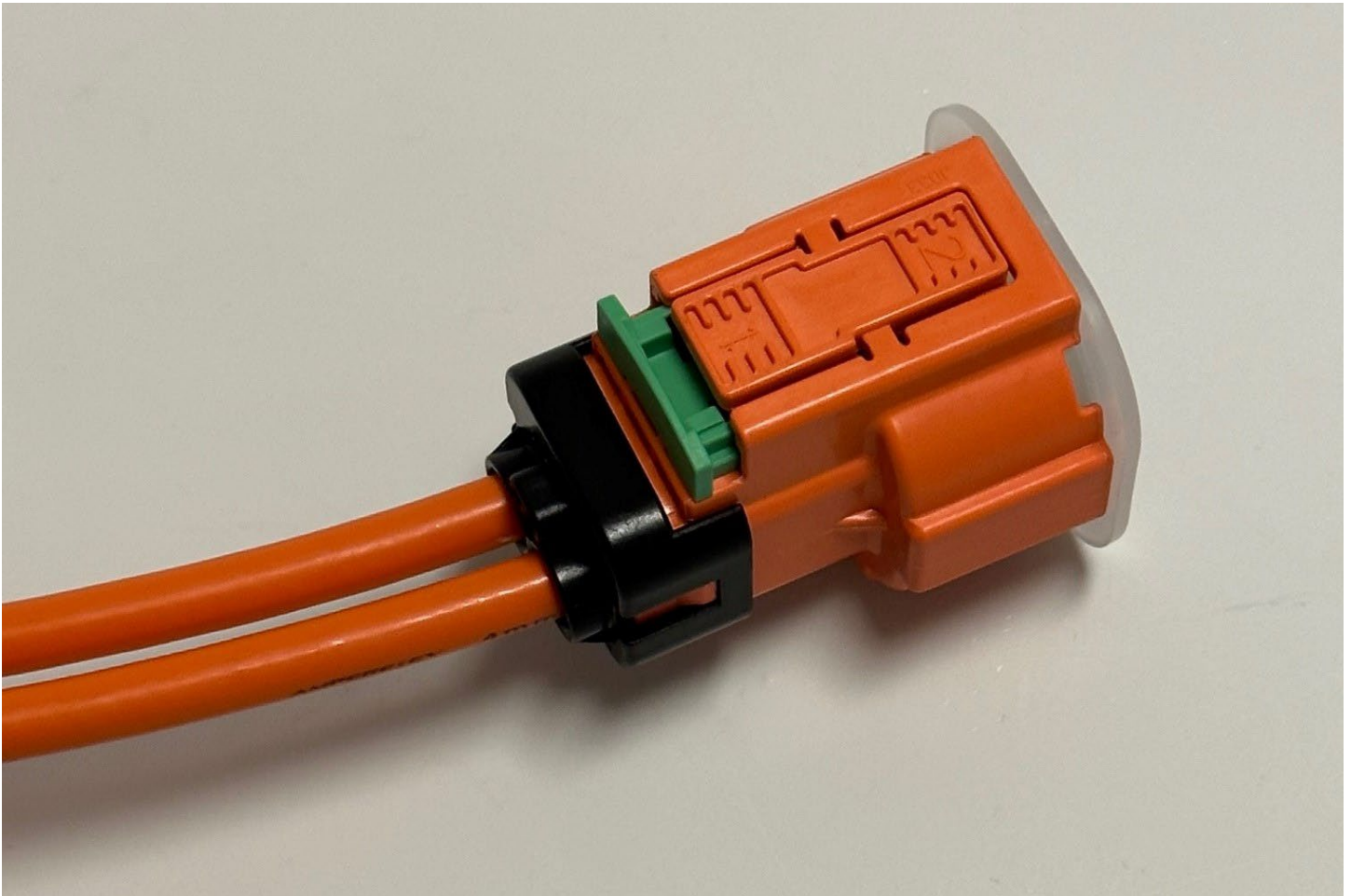
Push the terminated cables into the connector housing until they snap into place.

***** Double and triple check that you have the correct cable in the correct location. These pins are difficult to remove once inserted into the housing. *****





Push the wire seal into the back housing of the connector followed by the back shell until it snaps into place.





Revision History

Version	Description of Version/Changes	Updated by	Date
1.0	First version of the document. Compiling existing HV wiring instructions.	Blakely Fabiani	3/17/23
1.1	Added single position connector assembly instructions as well as updated table of content structure.	Blakely Fabiani	5/1/23
1.2	Added Dilong charger HV connector instructions.	Blakely Fabiani	5/9/23