

Amphenol

Energy Technologies

MVC Termination and Soldering



MVC – Medium Voltage Connector



Cylindrical, Metal, Medium Voltage, RADSOK® Power Coupler

Amphenol Industrial Global Operations (AIGO) offers many products and solutions for the mining market. A hazardous industry by its very nature, mine sites must rely heavily on electrical equipment. The safe and reliable transfer of electricity throughout a site is a significant concern. When looking for the best interconnect for the job, AIGO's MVC 600V, 8KV, or 15KV cable couplers with "Rapid-Couple" technology will not leave you guessing. The MVC incorporates patented RADSOK® contact technology for higher amperages (20% to 25% greater than a standard contact), lower T-rises, less resistance and reduced mating forces.

Engineered to Amphenol's high standards for ruggedness and reliability there is no field condition in the world that can impede the MVC. Our Rapid-Couple interlock method makes for a coupler with a quick and easy mating/unmating system. This provides for positive mating and secure fitting covers that repel water and soil while keeping the contacts uncontaminated. The MVC coupler has been remarkably designed with a wide range of features and benefits that makes this the coupler of choice for the mining industry.

Other Applicable Markets: Shore Power, Tunneling, and Utility
Features & Benefits

- Up to 15KV / 600 amps
- Aluminum Housing
- Incorporates patented RADSOK® contact technology leading to 20% - 25% more current in the same size contact, while reducing mating forces
- Rapid-Couple mating technology
- Fire retardant insulators
- Coupler mating is a one person operation without the need for expensive tools or closing mechanisms
- All parts are replaceable and can be serviced easily in the field, equating less downtime for repairs

600V Data Sheet (PDF)

8KV Data Sheet (PDF)

15KV Data Sheet (PDF)

The instructions are not a replacement for standard practices for termination of high and medium voltage cables, but act as a guideline to give a graphical and instructive representation of the process.

Tools and materials used were available at the time of installation, and substitutes can be made if they are an approved alternate.

Cable suggested is SHD-GC mining cable.

Termination Video

<https://www.amphenol-energy.com/mvc-connectors>

Contact us for help?

Contact with us through our representative or submit a business inquiry online.

[CONTACT US >](#)





MVC – Cable Preparation

- 1) Clean at least cable jacket 36" (914mm) from the end
- 2) Slide components of the coupler over the cable jacket.



- 3) Strip 16 1/2" (419 mm) of cable jacket.



- 4) Remove all wraps and fillers.



- 5) Cut the phase conductors to a length of 11 3/4" (298 mm).

Note: If phase conductor crossing is required then the phase conductor cut back length can be increased to 13 1/2" (343mm) for the two phases being crossed.

- 6) Cut pilot conductor back to a length of 16" (406mm).

- 7) Strip back pilot conductor insulation 3/4" (19mm). Check depth of stem



- 8) Remove ground check conductor insulation 5/8" (16 mm) as shown below, so that the ground check stem (connector) can be installed on the conductor.





MVC – Grounding and Shielding

9) Terminate ground wires and body bonding wire into ground stem(s).



10) Remove 7.25" (184.15mm) of the metallic shield (braid) from each of the three phase conductors to the dimension.

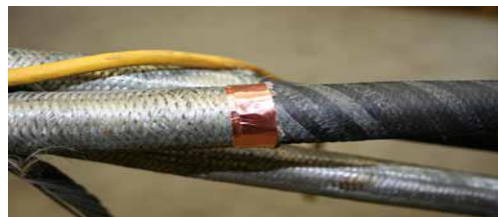


11) Remove the semi-conducting insulation shield – either tape or extrusion to the same dimension as the metallic shield above. The edge of the semi-conducting shield should be cut square with the cable axis. Be careful not to cut the cable insulation. If insulation is cut, termination must be restarted.

(Note: Use heat gun to assist removing the semi-con)



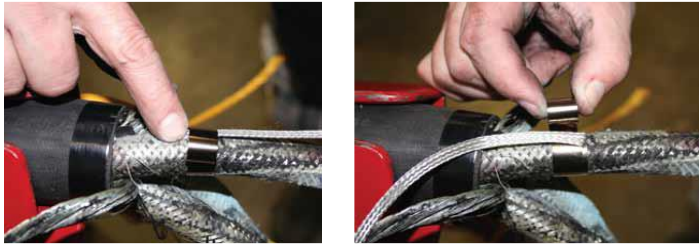
12) If kit includes copper tape, wrap it around the end of the braided shield as shown to the right



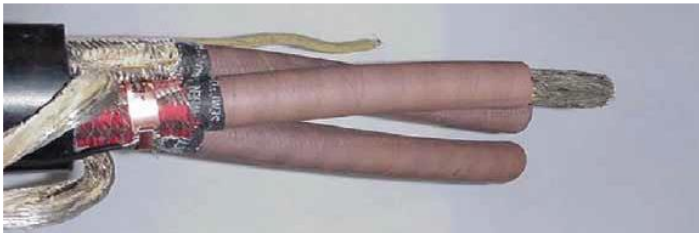


MVC – Grounding and Shielding

13) Secure the shield with the bonding strap supplied. Make sure that there are no loose braid strands. Fold braid strands back over the bonding strap.



14) Remove 1 1/2" (38 mm) of insulation from the end of the 3 phase conductors.



15) Repeat steps 8) through 11) for the other two phases.

16) Clean the surface of the cable insulation. This should be done with non-conductive abrasive cloth and cleaning solvent. Some heat applied cautiously to the cable insulation may help smooth out any dimples and make cleaning easier. Sand the insulation with the sand paper provided until insulation is smooth. Use the cleaning solvent and wipe the insulation. Ensure to wipe toward the semi-con to not contaminate the termination.



MVC – Medium Voltage Termination

17) Use semi-conducting tape to the area around the cable semi-conducting shield. Start ¼" (6 mm) beyond the bonding strap, work to ½" (13 mm) onto the conductor insulation, stretching the tape to half of its original width. Return to the starting point.



18) Apply ½" (13 mm) sealing mastic over the shielding braid. Be sure to use no more than ½" (13 mm) width to avoid isolating the black stress control tube from the shielding braid.

19) Use 1" (25 mm) sealing mastic over the conductor insulation.

20) Slide the heat shrink insulation tube over the complete termination, slightly further than the shielding braid boundary. Before finally installing, trim to length over the insulation. Shrink into place using a hot air gun or low heat torch.

22) Solder phase stems in place. Details How to solder Jump to Solder Section.

23) After installing stems onto conductors, if necessary, fill any void between the stem and the conductor insulation with semi-conducting tape.



24) Apply 1" (25mm) sealing mastic over the semi-conducting tape.

25) Slide heat shrink tube over phase stem and shrink into place.



MVC – Soldering Information

Recommended Solder: 50/50 Solid Core

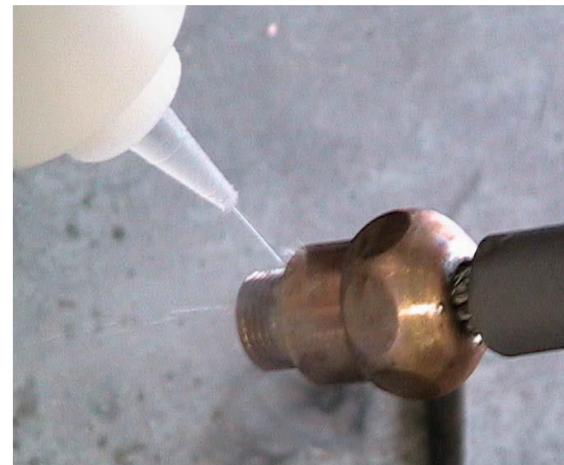
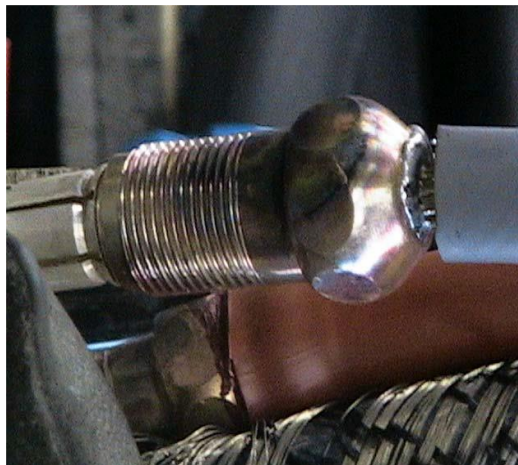
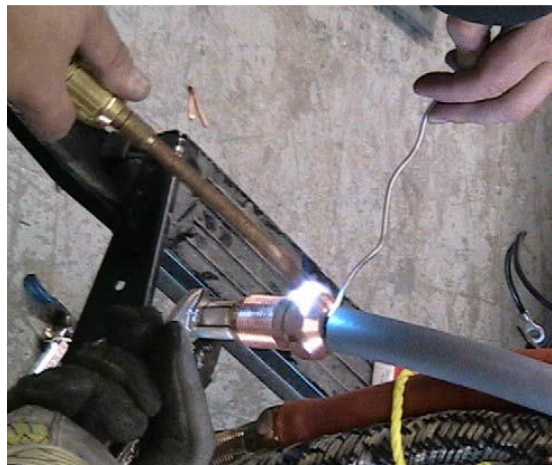
Note: Silver solder will create less resistance than tin /lead solder however it requires higher heat to achieve the necessary melting point. This heat can damage the insulation of the cable (as heat will travel into the cable) and cause conductor strands to become brittle

Recommended Flux: Use noncorrosive (lead free) flux. Brush flux on the phase / ground stem and on the conductor.

Remove any O-rings from the stem (if applicable) before applying heat to the stem

Recommended Heat: Oxy Acetylene is recommended for fast heating. Propane torch can be used if Oxy Acetylene is not available.

Stems may be cooled with water after soldering. Once the stem has cooled, replace any O-Rings that were removed prior to soldering





MVC – Final MVC Coupler Assy

26) Slide the entrance fitting gasket and rear body over the complete termination.



27) Install ground stem and ground check stem into insulator.



28) Make sure that the front body assembly is orientated relative to the phase that is going into each insulation sleeve (phases are marked on the front body).

All phase conductors must be slid down their associated insulator tubes simultaneously.

Ensure all rubber gaskets are in place on the phase stems, slide the phase conductors into the insulation tubes, making sure they are in the appropriate phase tube (you may need a hand for the next part).



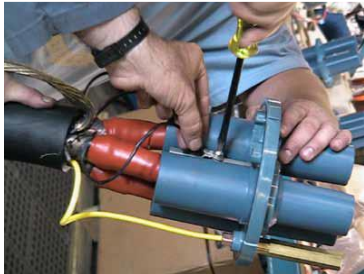


MVC – Final MVC Coupler Assy

29) If using male contacts - install insulator phase seals on male stem contacts as shown below



30) Connect the three shield bonding straps to coupler back body by placing them under the speed nut of the body bonding wire. Secure all (4) connections to back body.



31) Install the bolts front and rear bodies together. Be sure to check proper positioning of insulator relative to roll pin locator. Be sure "o" ring seals on insulator plate are properly seated.

32) Secure the entrance fitting flange to the rear body.



33) Slide up and insert the cable gasket into the entrance fitting flange.



MVC – Final MVC Coupler Assy

29) Mount gland unit (thrust ring) with six bolts and tighten.



NOTE:

- If required, a filling compound can be used to help exclude moisture. The compound must be compatible with both the cable insulation and coupler components.

30) Place the two polyurethane clamp inserts in the two entrance fitting clamps.

31) Place the two entrance fitting clamps around the entrance fitting gland unit. Install two bolts and nuts and tighten to provide mechanical stress relief.

32) With the addition of the protective hood or cover, the coupler is now complete.