

## Bonding an AKMH Servo Motor Cable's Shield to the AKD's Ground (PE) Plate

This application note describes how to remove the outer cable jacket from the AKMH motor cable and solidly clamp it to the servo drive's grounding bracket.

### Safety Recommendations!



Follow all safety recommendations, outlined in the AKD Installation Manual. Only qualified individuals should perform this work after locking out all energy sources feeding the equipment being modified.



For general installation information and safety concerns, follow all instructions in the AKD [Installation Manual](#).



Review this entire document prior to commencement of work to familiarize yourself with all aspects of the work scope. Obtain all supplies, tooling and items listed in Required Parts and Tools section of this document prior to commencement of any work.

### Preparation

Obtain all items listed in Required Parts and Tools. Items consist of common hand tools, a multi-meter, a cable jacket stripper, and copper foil shielding tape. Additional grounding brackets and clamps are available from Kollmorgen.

**NOTE**

Foil tape and cable jacket strippers are available from Newark: [www.newark.com](http://www.newark.com)

**NOTICE**

The insulation of the conductors must not be harmed or damaged in any way! When configuring the blade depth of the jacket-cutting tool, it is critical that the blade depth is set to a conservative distance. If the incision is too deep, damage may occur to the insulation of the conductors within the cable. A replacement cable may be required.

**NOTICE**

To complete incisions into the outer cable jacket, you will need to bend the cable slightly. It is critical that the bend radius of the cable does not exceed 6" (six inches) or the internal vent tube can be pinched closed. If this happens, the motor will not have a means to "breathe".

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## Required Parts and Tools

The following table describes the required parts and tools necessary to remove the cable jacket and properly clamp to the grounding bracket.

**NOTE**

Obtain all items listed below before commencement of work.

Qty.	Description	Check
1	153-254001-00 PE wire shield brackets (for "07" HV drives, 3 to 12A)	
1	153-255000-02 PE wire shield brackets (for "07" HV drives, 24A ONLY)	
1	153-230000-01 PE wire shield brackets (for all "06" MV drives)	
1	960865 cable shield clamps	
1	Phillips screwdriver # 2	
1	Set of small standard screwdrivers	
1	Set of small Phillips screwdrivers	
1	Digital multi-meter	
1	Scissors	
1	Exact-O knife	
1	Black permanent marker	
1	6" pocket ruler	
1	Needle nose pliers	
1	Regular pliers	
6	958903 foil wrap (3M P/N 1245. 1" × 18M) Newark P/N 44F3256	
1	Cable jacket stripper Paladin PA1822 Newark 34C6136	

## Modifications

Follow the procedures below to bond the cable's shield to the grounding bracket.

1. Remove the 24VDC to the drive and all AC power.
2. Lock out all power sources and with a multi-meter confirm DC and AC circuits are de-energized.
3. Remove feedback cable from drive connector X10 and remove motor power connector from drive connector X2.

**NOTE**

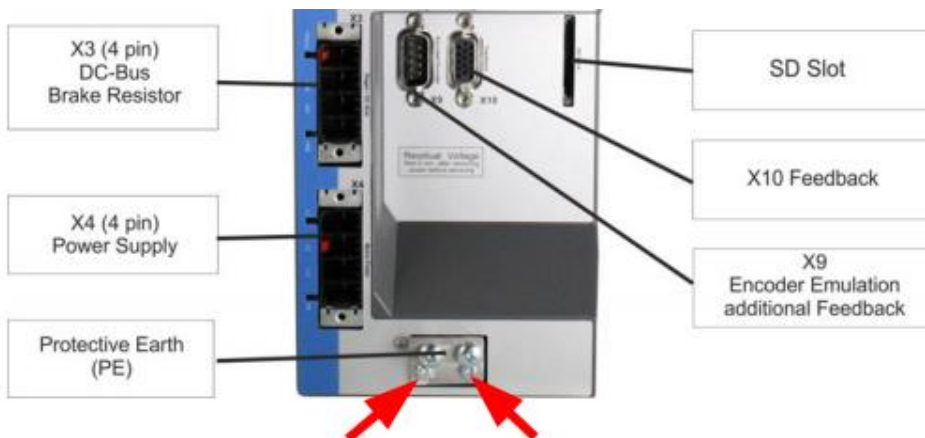
Small standard screwdriver required to loosen retaining screws within connectors.

4. Remove and keep the two bottom screws located on the right side of the drive. These are used to attach the PE wire shield bracket to the drive.

The screws are shown below:



Or



# Application Note

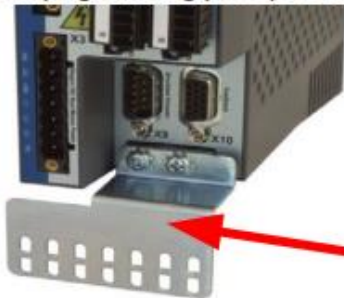
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5. Install the appropriate PE wire shield brackets onto the drive using the two screws from step 4. See section Required Parts and Tools for the proper brackets.

Examples are shown below:

**AKD-x0306 to x1206 types:  
L-shape grounding plate (EU only)**



**AKD-x02406 & zzz07 types:  
flat grounding plate**

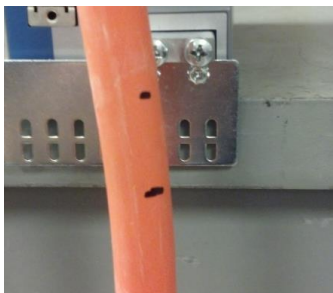


6. Re-connect the power connector (X2) and the feedback connector (X10), placing the cable where it should be routed when your work is completed.

## **NOTE**

Do not tighten the connector screws at this time! With a permanent marker, mark the cable towards the top and bottom of the PE wire shield brackets and confirm the distance is at least 1.25" to 1.50". Note the foil tape used is 1" wide.

Example:



# Application Note

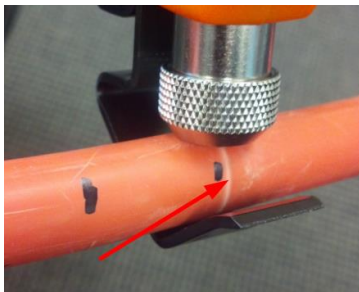
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7. Remove the X2 and X10 connectors from the drive and position the cable splitter over one (1) of the marks. Verify the blade on the cable splitter is not set too high. An example of the correct placement is shown:



8. When the tool is rotated around the cable jacket four to five times, the jacket should be scored  $\frac{1}{2}$  to  $\frac{3}{4}$  of the way through.



**NOTE**

It is critical that the internal conductors not be harmed or damaged in any way!

9. Remove the cable splitter tool and notice the cable is bent slightly near the scoring of the outer jacket.

**NOTE**

A light orange color displays where the jacket is scored and the braided jacket is not visible at this time. This is the desired condition and is acceptable. Repeat Step 7 and 8 on the other marked side.

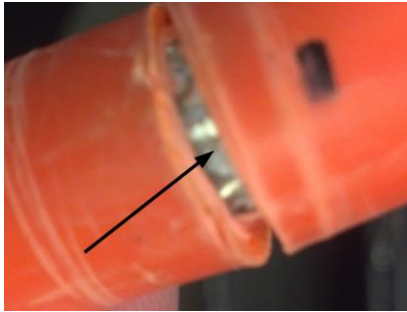


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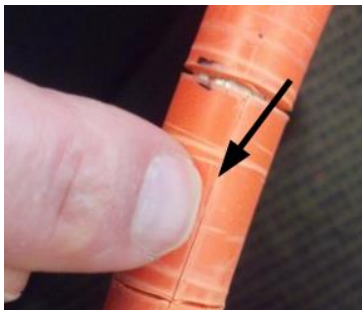
- When slightly bending the cable and exposing the light orange area of the cable jacket (with the Exact-O knife) will allow the blade to pass through it with almost no pressure. Gently, go around both scores of the jacket until the braid underneath is exposed. Perform this on both marked and scored sides.



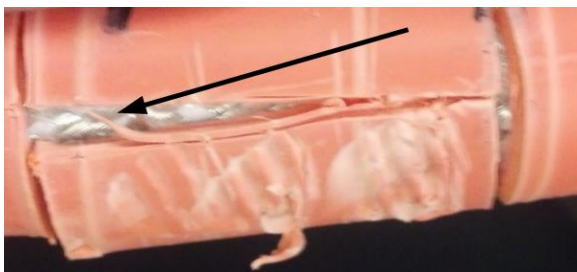
**NOTE**

The Cable Slitting Tool used in this modification has a lever to rotate the blade 90 degrees allowing you to pull the tool from one score to another. **This lever will not work with this cable jacket!**

- Place the cable on a horizontal and steady surface. Safely and slowly make a score in the outer jacket, going from one of the scores (made in 3.8) to the other. Multiple passes may be required, but do not exceed more than  $\frac{1}{2}$  to  $\frac{3}{4}$  of the way through the outer jacket. When completed, the cable appears as shown:



- With a pair of pliers, gently grab at the sides to open the incision splitting the cable jacket.



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13. Remove the outer jacket easily to expose the braid.

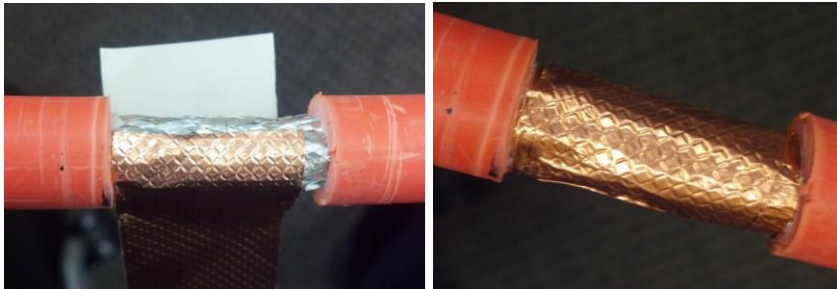


14. Cut six to eight inch strips of the copper foil wrap to apply over the braid.

15. Place the foil wrap onto the braid and begin wrapping the foil around the braid tightly covering all of the exposed braid.

**NOTE**

Make every effort to keep out air pockets and to maintain a smooth surface.



16. Attach the X2 and X10 connectors to the drive and tighten the slotted screws built inside the connectors. Route the cable in the desired position to be secured having the foil area directly placed over the drive's PE wire shield bracket.

17. With a 960865 cable clamp, position the cable and clamp as shown below. Tighten the clamp to secure the cable, but do not tighten this clamp so tight as to potentially crimp the vent tube closed.





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18. Restore 24VDC control power to the drive and restart.

Look for any fault codes (other than Bus Under voltage F502).

19. Following all safety practices, restore the AC power to the drive.

If possible, enable the drive and operate the motor to ensure that everything is fully functional.