

WABCO

Technical Bulletin

Inspection and Repair of the Trailer Chassis Ground

Hazard Alert Messages

Read and observe all Warning and Caution hazard alert messages in this publication. They provide information that can help prevent serious personal injury, damage to components, or both.

WARNING

To prevent serious eye injury, always wear safe eye protection when you perform vehicle maintenance or service.

Park the vehicle on a level surface. Block the wheels to prevent the vehicle from moving. Support the vehicle with safety stands. Do not work under a vehicle supported only by jacks. Jacks can slip and fall over. Serious personal injury and damage to components can result.

CAUTION

Unintended voltages induced into the ECU can damage the electronic control unit (ECU). Disconnect all connectors from the ECU before you perform any welding, electrostatic painting, or any other activity that applies high voltage to the vehicle frame. Refer to the equipment manufacturer's recommended instructions for correct procedures.

How to Obtain Additional Maintenance, Service and Product Information

Refer to WABCO Maintenance Manual MM-0180 Enhanced Easy-Stop™ Trailer ABS with PLC. If you have any questions about the material covered in this publication, or for more information about the WABCO product line, please contact WABCO North America Customer Care at 855-228-3203 or visit our website: wnacustomercare@wabco-auto.com.

Detailed Trailer Grounding Information

For specific information related to trailer grounding, refer to Trailer Grounding and Protection from Electrostatic Discharge (ESD) Service Notes including Vehicle Electrical Grounding Guidelines in Maintenance Manual MM-0180. For best practices in trailer grounding and protection from ESD, refer to SAE standard J1908 recommended practices.

Purpose of this Publication

This technical bulletin provides procedures for checking the trailer chassis ground resistance and, if necessary, fabricating and installing a ground wire to ensure the trailer ground meets SAE J1908 requirements.

When the chassis of the trailer is not correctly grounded at all times, static electricity generated by the tires rolling on the pavement and air flowing over the exterior of the trailer becomes stored in the metal parts of the trailer. Electronic Control Unit (ECU) failures have been attributed to electrostatic discharge (ESD) when the high-voltage static electricity is discharged through the ECU.

To prevent ESD damage to electronic components such as ECUs, WABCO recommends verifying the chassis grounding at a regular service intervals as a best practice. With the increased usage of materials that can generate static electricity, the inspection, and if necessary, the ground wire installation are proactive measures to prevent trailer downtime.

Most trailers are already grounded as recommended in SAE J1908. If the chassis ground integrity meets the specification provided in the inspection procedure in this technical bulletin, it is not necessary to install an additional ground.

Check for Common Chassis Ground

To verify the trailer chassis ground integrity, proceed as follows:

1. Park the vehicle on a level surface. Block the wheels to prevent the vehicle and trailer from moving.

⚠ WARNING

Disconnect the battery ground cable before working on any vehicle electrical system or component to prevent short circuits. A shorted electrical circuit creates heat and or sparks acting as an ignition source for flammable materials. Serious personal injury and damage to components can result.

2. Disconnect the battery and all sources of electricity from the trailer. Locate the J560 7-way electrical receptacle on the front of the trailer. Remove the 7-way wire connector from the receptacle.

3. Using a digital volt ohmmeter (DVOM), measure the resistance from the J560 7-way ground pin (the large pin at the top of the receptacle) to a metal component on the trailer chassis. Figure 1.

- **If resistance measured is less than 10 ohms (<10 Ω):**
The trailer is grounded as recommended in SAE J1908. No further action is required.
- **If the resistance measured is greater than 10 ohms (>10 Ω):** The trailer is not correctly grounded and a ground wire must be added. Follow the procedures in this technical bulletin to fabricate and install the ground wire.

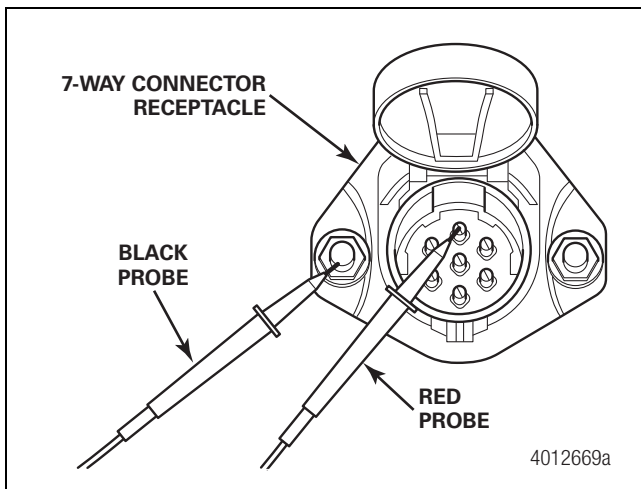


Figure 1

Fabricate the Ground Wire

If the trailer was found to be incorrectly grounded, use the following procedure to fabricate the ground wire to be used for the repair.

NOTE: The ground wire can be fabricated with materials found in most truck and trailer repair facilities.

1. Obtain the following materials:
 - 30" (762 mm) of 10-gauge stranded wire (trim to length)
 - One, 10-gauge 5/16" ring terminal

- One, 10-gauge male bullet connector
- One, 12-gauge female bullet connector
- Two, 5/16" star washers
- 6" (152 mm) shrink tubing cut into 2" (51 mm) lengths
- Nylon tie straps as needed

NOTE: A 10-gauge female and male bullet connector may also be needed later to install the jumper wire depending on the trailer you are servicing.

2. Cut 8" (203 mm) of 10-gauge wire from the 30" (762 mm) piece. Figure 2.

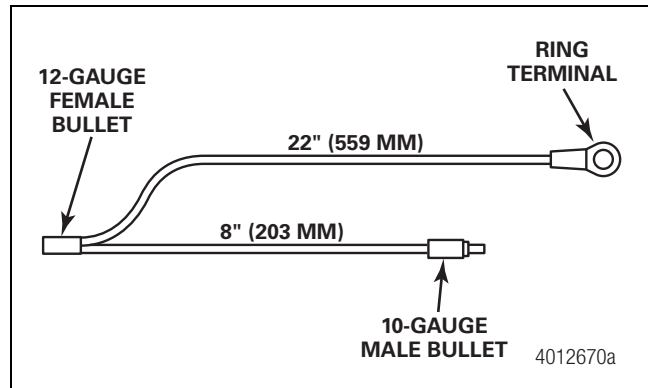


Figure 2

3. Strip the insulation from all four wire ends (about an 1/2" [12.7 mm]).
4. Crimp the ring terminal securely onto one end of the remaining 22" (559 mm) of 10-gauge wire.
5. Install shrink tubing over the ring terminal/wire connection.
6. Insert both wires through a piece of shrink tubing.
7. Insert and crimp both wires into the 12-gauge female bullet connector.
8. Install shrink tubing over the female bullet connector.
9. Slide the remaining piece of shrink tubing onto the 8" (203 mm) wire.
10. Crimp the 10-gauge male bullet connector securely onto the remaining wire end.
11. Install shrink tubing over the male bullet connector.

Install the Ground Wire

This procedure presents a typical installation as an example; steps may vary based on the trailer manufacturer.

1. Use a 1/2" socket or wrench to remove the two retaining nuts from the 7-way connector receptacle. Figure 3.

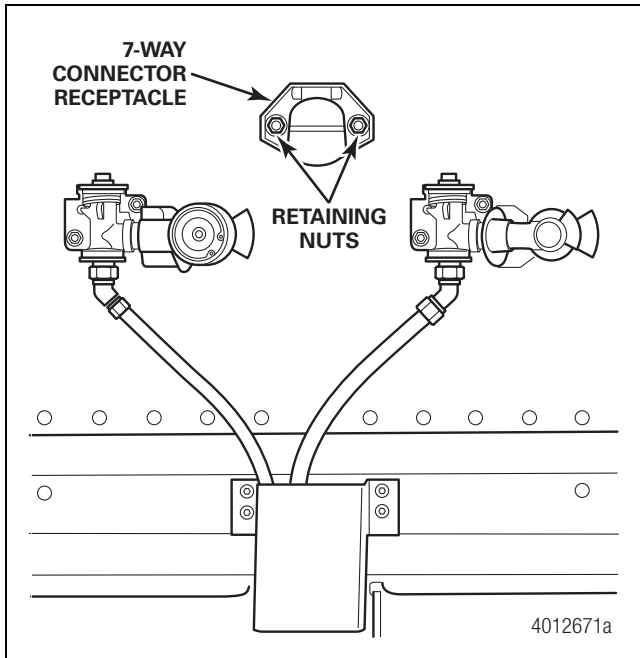


Figure 3

2. Pull the receptacle socket out from the trailer wall exposing the auxiliary wire connections. Figure 4.

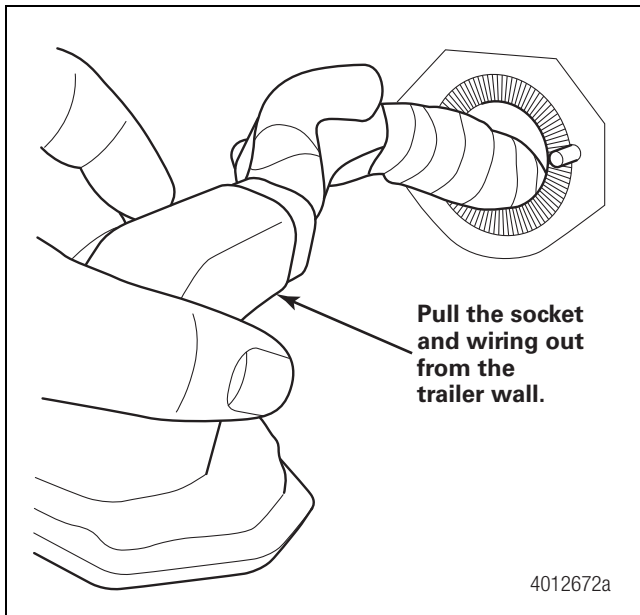


Figure 4

The auxiliary connections are the blue and white wires not being used. You will be working with the white wire from this pair to use as a ground connection. Figure 5.

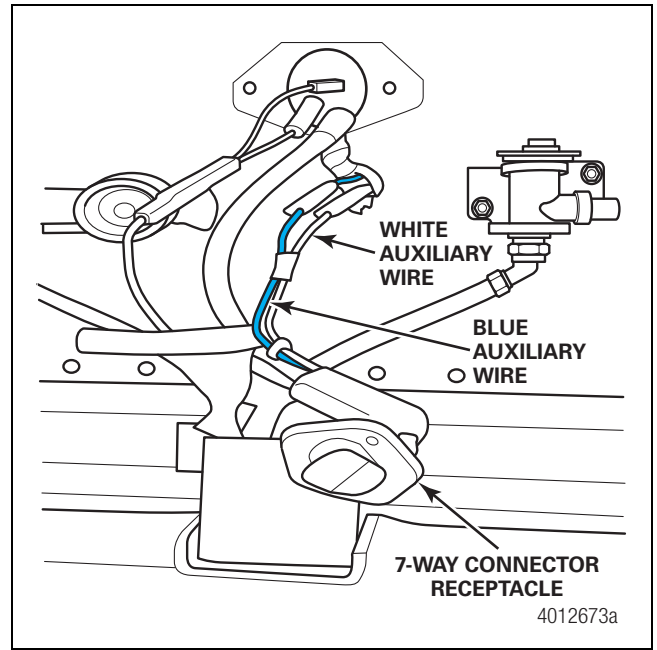


Figure 5

3. Separate the bullet connection on the white auxiliary wire.

NOTE: If the white auxiliary wire does not have a connector installed, cut the wire and install the 10-gauge female bullet connector on the wire end near the receptacle and the 10-gauge male bullet connector on the wire end near the trailer.
4. Install the new ground wire jumper harness into the open bullet connections on the white wire. Figure 6.

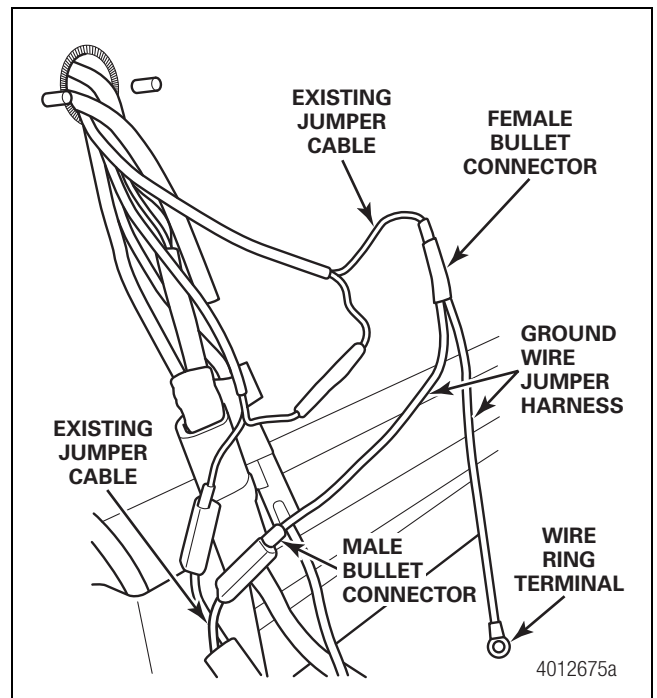


Figure 6

5. Install nylon tie straps as needed to secure the ground wire jumper harness to the trailer wire harness.
6. Using a plastic or wooden scraper, clean any excess sealer or caulking off the face of the trailer and receptacle to ensure the receptacle will seat flush against the trailer wall. Figure 7.

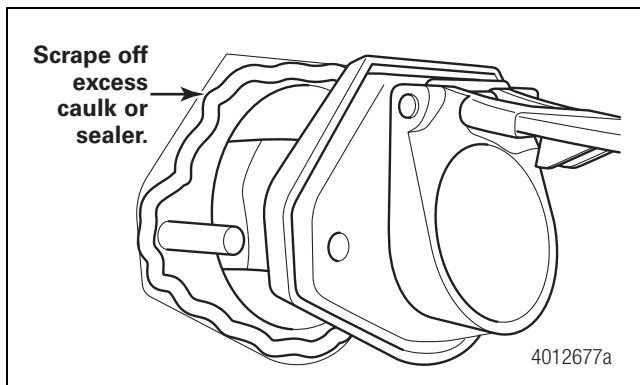


Figure 7

7. Add a 5/16" star washer to each side of the ring terminal wire and place the star washers and ring terminal wire over the left stud. Figure 8.

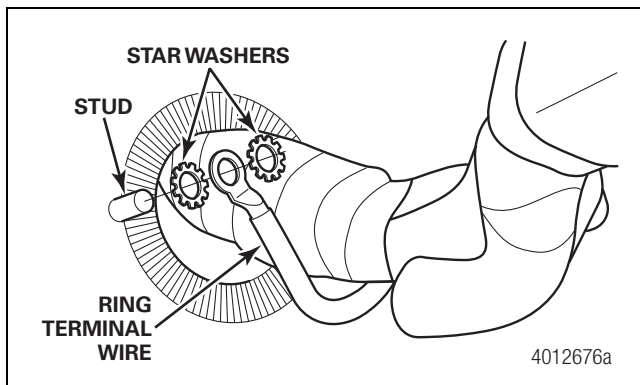


Figure 8

8. Push the wire assembly back through the receptacle hole in the wall.
9. Reinstall the 7-way connector receptacle over the studs. On the left stud, you may need to bend the ring terminal slightly so it does not interfere with the reinstallation of the receptacle.

10. Install the two retaining nuts. Figure 3.
11. Check the resistance from the top pin of the J560 7-way connector to both mounting studs to verify it is less than 10 ohms (<math><10 \Omega</math>). Figure 1.
 - **If resistance is less than 10 ohms:** The chassis is correctly grounded.
 - **If resistance is greater than 10 ohms:** The chassis is NOT correctly grounded. Make adjustments as necessary to obtain the correct resistance.

Warranty

This ground wire installation procedure is warrantable only if an incorrect ground condition exists and the repair procedure is performed along with a warrantable ECU replacement within the applicable base warranty period. If the ECU has not failed or an applicable stored or active fault is not found, this procedure is considered preventive and warranty does not apply.

To submit a warranty claim, contact WABCO North America Customer Care at 855-228-3203.

WABCO

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