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SURFACE VEHICLE RECOMMENDED PRACTICE

SAE J2247

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Truck Tractor Power Output for Trailer ABS

1. Scope—This SAE Recommended Practice identifies the minimum truck tractor electrical power output of the stop lamp and ABS (antilock brake system) circuits measured at the tractor trailer interface connector(s).

2. References

2.1 Related Publications—The following publications are provided for information purposes only and are not a required part of this document.

2.1.1 SAE PUBLICATIONS—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J560—Seven Conductor Electrical Connector for Truck Trailer Jumper Cable
SAE J2394—Seven-Conductor Cable for ABS Power

3. Technical Requirements—The minimum DC voltage measured on the stop lamp and ABS circuits when tested in accordance with Section 4 of this document shall be 12.5 V for new vehicles. Note that compliance with the minimum voltage requirements may not be adequate for some multiple trailer ABS applications.

4. Test Procedure

4.1 Check battery condition. Tractor batteries are to be fully charged. (13.5 V minimum battery terminal voltage required during test.)

4.2 Run engine at 1000 rpm ± 100 rpm.

4.3 Connect 10 A load devices to the stop lamp circuit and the ABS power circuit. The loads are attached to the SAE J560 tractor/trailer interface connector(s), the trailer interface end, and grounded through the ground circuit of the SAE J560 connector(s).

a. Stop Lamp Circuit—Terminal 4—SAE J560
10 GA/5 mm^2 Red—SAE J2394
b. Continuous ABS Power—Terminal 7—SAE J560
10 GA/5 mm^2 Blue—SAE J2394
c. Ground Return to Towing Vehicle—Terminal 1—SAE J560
8 GA/8 mm^2 White—SAE J2394

4.4 Turn on “normal” electrical loads—such as heaters, AC, lights, radios, etc.

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4.5 Check load device output after 5 min and adjust if necessary to ensure 10 A per circuit draw and confirm that the battery terminal voltage is 13.5 VDC minimum.

CAUTION—The electrical load devices may be HOT and cause injury if touched or ignite flammable material.

4.6 Measure and record the voltage on the stop lamp and ABS circuits on the trailer load side as near as practical to the connector terminals. The minimum voltage should be 12.5 VDC at 20 °C ± 10 °C between each circuit to the ground terminal. If not, proceed to 4.7.

NOTE—The circuits are loaded simultaneously at the time of measurement.

4.7 To meet the 12.5 VDC minimum voltage requirement may require an upgrade in the alternator output capacity, circuit design revisions to reduce the voltage drop, a decrease in the tractor continuous electrical load (see note), or a combination of these options. To comply with the recommended tractor/trailer interface power requirements, modify the electrical system as required and repeat the test procedure to verify performance.

NOTE—For the given test conditions, the alternator should be capable of producing a minimum of 75% rated output capacity. The combination of continuous and test electrical loads must be compatible with the alternator capacity.

5. Additional Recommendations

5.1 If the vehicle is not equipped with a trailer cable and connector, install a vehicle manufacturer approved assembly of at least 4267 mm for the test. Cables and connectors in compliance with the SAE J2394, SAE J560, and other applicable standards are recommended.

5.2 This measurement test procedure may be used for new and in-service vehicles.

5.3 Use instruments of known accuracy for all measurements.

PREPARED BY THE SAE TRUCK AND BUS ELECTRICAL AND ELECTRONICS COMMITTEE