

SURFACE VEHICLE RECOMMENDED PRACTICE

SAE J1239

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(R) FOUR-, FIVE-, AND EIGHT-CONDUCTOR RECTANGULAR ELECTRICAL CONNECTORS FOR AUTOMOTIVE TYPE TRAILERS

Foreword—This Document has also changed to comply with the new SAE Technical Standards Board format.

1. Scope—This SAE Recommended Practice covers the wiring and rectangularly shaped connector standards for all types of trailers whose gross weight does not exceed 4540 kg (10 000 lb). These trailers are grouped in SAE J684, with running light circuit loads not to exceed 7.5 A per circuit. This document provides circuits for lighting, electric brakes, trailer battery charging, and an auxiliary circuit color coding and protection for the wiring from hazards or short circuits. Color coding is compatible with SAE J560 and ISO 1724-1980(E).

2. References

2.1 Applicable Publications—The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

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

SAE J560 JUN93—Seven Conductor Electrical Connector for Truck-Trailer Jumper Cable
SAE J684 MAR94—Trailer Couplings, Hitches and Safety Chains—Automotive Type
SAE J928 JUL89—Electrical Terminals—Pin and Receptacle Type
SAE J1128 JAN95—Low-Tension Primary Cable
SAE J2223/1 FEB94—Connection for On-Board Road Vehicle Electrical Wiring Harnesses—Part 1: Single-Pole Connectors—Flat Blade Terminals—Dimensional Characteristics and Specific Requirements
SAE J2223/2 FEB94—Connections for On-Board Road Vehicle Electrical Wiring Harnesses—Part 2: Tests and General Performances Requirements
SAE J2223/3 FEB94—Connections for On-Board Road Vehicle Electrical Wiring Harnesses—Part 3: Multipole Connectors—Flat Blade Terminals—Dimensional Characteristics and Specific Requirements

2.1.2 ASTM PUBLICATION—Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

ASTM G 90-94—Standard Practice for Performing Accelerated Outdoor Weathering of Nonmetallic Materials Using Concentrated Natural Sunlight

2.1.3 ISO PUBLICATION—Available from ANSI, 11 West 42nd Street, New York, NY 10036-8002.

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ISO 1724-1980(E)—Road vehicles—Electrical connections between towing vehicles and towed vehicles with 6-or 12-V electrical equipment—Type 12 N (normal)

3. Receptacles

3.1 Four-Way Receptacle—The receptacle shall be of the configuration and design dimensions shown in Figure 1 for four circuits and as shown in Figure 3 for eight circuits.

3.1.1 The four-circuit receptacle (Figure 1) shall be color coded and attached to the towing vehicle as follows:

- a. White—Ground to frame SAE wire size 1 mm² (SAE wire size no. 16 gauge) minimum
- b. Brown—Spliced to tail and license lamp circuit
- c. Yellow—Spliced to left turn and stop circuit
- d. Green—Spliced to right turn and stop circuit

3.1.2 FIVE-WAY RECEPTACLE—Figure 2 shall be color coded and shall be attached to the towing vehicle as follows:

- a. White—Ground to frame
- b. Brown—Spliced to tail and license light circuit
- c. Yellow—Spliced to left turn and stop circuit
- d. Green—Spliced to right turn and stop circuit
- e. Blue—Auxiliary

3.1.3 EIGHT-WAY RECEPTACLE—Figure 3 shall be color coded and shall be attached to the towing vehicle as follows:

3.1.3.1 *Left Bank of Receptacles*

- a. Red—Independent stop
- b. Blue—Brake circuit spliced to controller of brake
- c. Optional—Auxiliary (See Figure 3, Note 1)
- d. Orange—Battery charge circuit—connect to battery positive terminal through separate fuse or circuit breaker

3.1.3.2 *Right Bank of Receptacles*

- a. White—Direct to battery negative SAE wire size 3 mm² (SAE wire size no. 12 gauge) minimum
- b. Brown—Spliced to tail and license lamp circuit
- c. Yellow—Spliced to left turn and stop lamp circuit
- d. Green—Spliced to right turn and stop lamp circuit

3.1.4 The receptacle leads shall be attached to the vehicle wiring harness in a workmanlike manner, mechanically and electrically secure. Further, a well-insulated strain relief shall be provided between the receptacle and the towing vehicle wiring harness connections so that there will be no strain on the vehicle harness in the event of an abnormal pull on the receptacle. The receptacle shall be placed in a location where it will not be exposed to road hazards either when connected or loose. The receptacle leads must be properly routed and protected against damage from cutting and pinching where they leave the vehicle body. Extra insulation should be provided between the strain relief at the trailer hitch and the wiring assembly so that an abnormal pull on the plug will not damage the wiring.

3.1.5 No receptacle leads designated for lighting shall be smaller than SAE wire size 1 mm² (SAE wire size no. 16 gauge) minimum if a single conductor, or smaller than SAE wire size 0.8 mm² (SAE wire size no. 12 gauge) if a multiconductor cable.

Full document details: SAE J1239_199510