

Submitted for recognition as an American National Standard

**FOUR- AND EIGHT-CONDUCTOR RECTANGULAR  
ELECTRICAL CONNECTORS FOR AUTOMOTIVE TYPE TRAILERS**

**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 10 000 lb (4540 kg). These trailers are grouped in SAE classes 1 through 4 as delineated in SAE J684e (August, 1974), with running light circuit loads not to exceed 7.5 amps per circuit. This recommended practice 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 J560b.(September, 1974) and ISO (1724-1975(E)).

**2. Receptacle**—The receptacle shall be of the configuration and design dimensions shown in Fig. 1 for four circuits and as shown in Fig. 2 for eight circuits.

**2.1** The four-circuit receptacle (Fig. 1) shall be color coded and attached to the towing vehicle as follow:

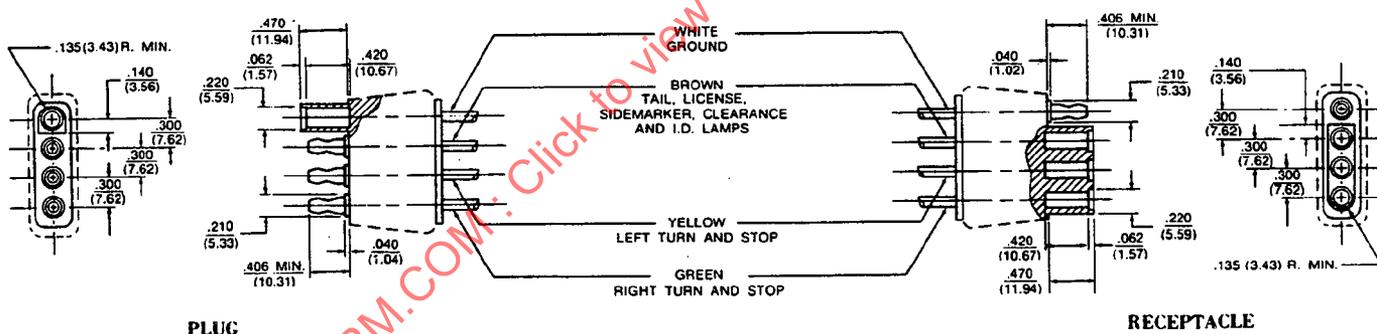


FIG. 1

**2.1.1 WHITE**—Ground to frame (SAE wire size 16 or metric size 1.2 minimum).

**2.1.2 BROWN**—Spliced to tail and license lamp circuit.

**2.1.3 YELLOW**—Spliced to left turn and stop circuit.

**2.1.4 GREEN**—Spliced to right turn and stop circuit.

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2.2 The eight-circuit receptacle (Fig. 2) shall be color coded and shall be attached to the towing vehicle as follows:

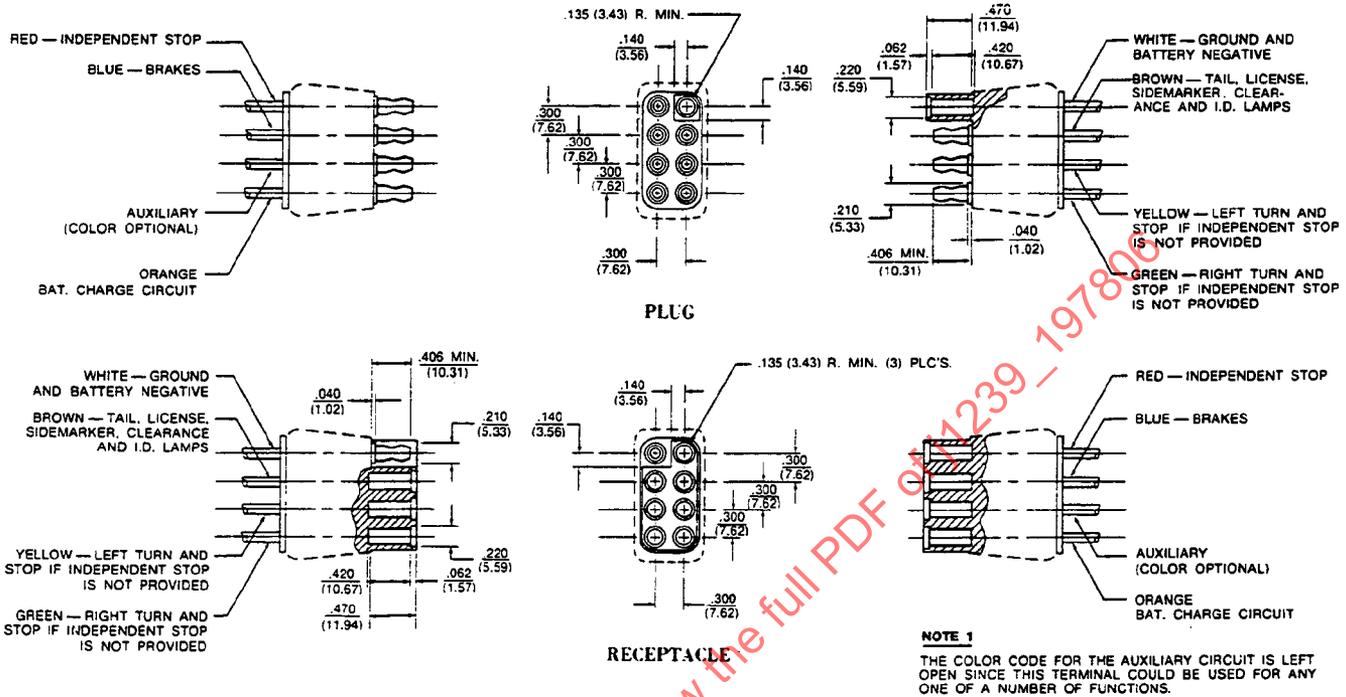


FIG. 2

**Left Bank of Receptacles:**

- 2.2.1 RED—Independent stop.
- 2.2.2 BLUE—Brake circuit spliced to controller of brake.
- 2.2.3 OPTIONAL—Auxiliary (see Fig. 2, Note 1).
- 2.2.4 ORANGE—Battery charge circuit—connect to battery positive terminal through separate fuse or circuit breaker.

**Right Bank of Receptacles:**

- 2.2.5 WHITE—Direct to battery negative (SAE wire size 12 or metric size 3.0 minimum).
- 2.2.6 BROWN—Spliced to tail and license lamp circuit.
- 2.2.7 YELLOW—Spliced to left turn and stop lamp circuit.
- 2.2.8 GREEN—Spliced to right turn and stop lamp circuit.

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- 2.3 The receptacle leads shall be attached to the vehicle wiring harness, brake controller, or battery in a workmanlike manner, mechanically and electrically secure.
- 2.4 The receptacle leads must be properly routed and protected against damage from cutting and pinching where they leave the vehicle body. No receptacle leads designated for lighting shall be smaller than SAE wire size 16 or metric size 1.2 if a single conductor, or smaller than SAE wire size 18 or metric size 0.8 if a multi-conductor cable.
- 2.5 No receptacle leads for brake circuits shall be smaller than SAE wire size 14 or metric size 2.0 and no circuits shall be smaller than SAE wire size 12 or metric size 3.0 for trailer battery charge circuit or battery return circuit. The gauge of conductors for the auxiliary circuit shall be sized to provide at least the minimum ampacity for the load it will service with a voltage drop not exceeding 3%. The receptacle shall be placed in a location where it will not be exposed to road hazards when disconnected from trailer.
3. **Plug**—The plug shall be of the configuration and design dimensions shown in Fig. 1 for four circuits and as shown in Fig. 2 for eight circuits.

3.1 The four circuit plug (Fig. 1) shall be color coded and attached to the trailer harness as follows:

- 3.1.1 WHITE—Ground to frame (SAE wire size 16 or metric wire size 1.0 minimum).
- 3.1.2 BROWN—Spliced to tail and license lamp circuit.
- 3.1.3 YELLOW—Spliced to left turn and stop circuit.
- 3.1.4 GREEN—Spliced to right turn and stop lamp circuit.

3.2 The eight-circuit plug (Fig. 2) shall be color coded and attached to the trailer harness as follows:

**Right Bank of Receptacles:**

- 3.2.1 RED—Independent stop.
- 3.2.2 BLUE—Brake circuit spliced to controller of brake circuit.
- 3.2.3 OPTIONAL—Auxiliary (see Fig. 2, Note 1).
- 3.2.4 ORANGE—Battery charge circuit—connect to trailer battery positive terminal through separate fuse or circuit breaker.

**Left Bank of Receptacles:**

- 3.2.5 WHITE—Ground to frame and trailer battery negative terminal.
- 3.2.6 BROWN—Spliced to tail and license lamp circuit.
- 3.2.7 YELLOW—Spliced to left turn and stop lamp circuit.
- 3.2.8 GREEN—Spliced to right turn and stop lamp circuit.

#### 4. Wiring

- 4.1 Exposed trailer wiring shall be run in conduits or secured at intervals not greater than 18 in (457 mm) to stop lateral movement and prevent rubbing or chafing.
- 4.2 So far as practicable wiring should be located to afford protection from road splash, stones, or abrasion. Wiring exposed to such conditions shall be further protected by the use of—or combination of—additional tape covering, plastic sleeving, non-metallic, or other suitable shielding or covering.

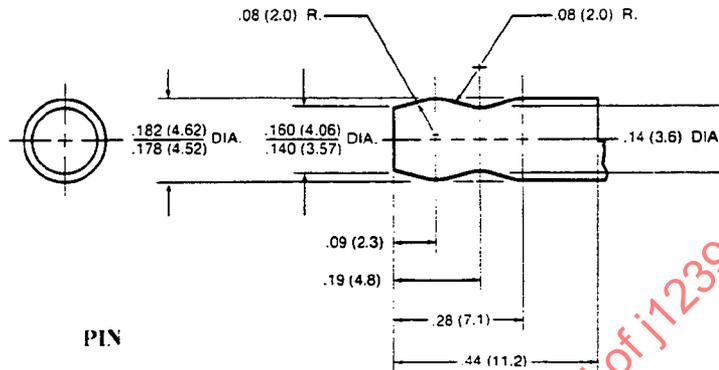
#### 5. Appendix

##### 5.1 Material Requirements

- 5.1.1 If the receptacles and plugs are fabricated of either compression molded or extruded plastic, the plastic material shall be stabilized for protection against exposure to ultra-violet light.
- 5.1.1.2 The hardness of a molded or extruded plastic receptacle or plug shall fall within the limits of Shore A 50 as minimum and Shore A 70 as a maximum.
- 5.1.2 The metal pins and sockets shall be of the size and type shown in Figs. 3 and 4.
- 5.1.2.1 Pins and receptacles shall be fabricated from brass or bronze and suitably coated to protect against corrosion. Finished surfaces of plugs and interior walls of sockets shall be smooth so as not to bind when the parts are engaged.
- 5.1.2.2 Pins and receptacles shall conform to TYPE 1—PIN TERMINALS, nominal diameter 0.180(5) specified as SAE J928a (April, 1970). Detailed pin and receptacle dimensions are illustrated Figs. 3 and 4.
- 5.2 All wire and insulation shall conform to the requirements of SAE J1128 (November, 1975), Low Tension Primary Cable.
6. **Assembly Requirements**—The plug and receptacle of a 4-way connector assembly shall disengage with a minimum force of 5 lb (22.2 N) per assembly and a maximum force of 20 lb (89.0 N) per assembly. The plug and receptacle of an 8-way connector assembly shall disengage with a minimum of 8 lb (35.6 N) per assembly and a maximum force of 30 lb (133.6 N) per assembly.

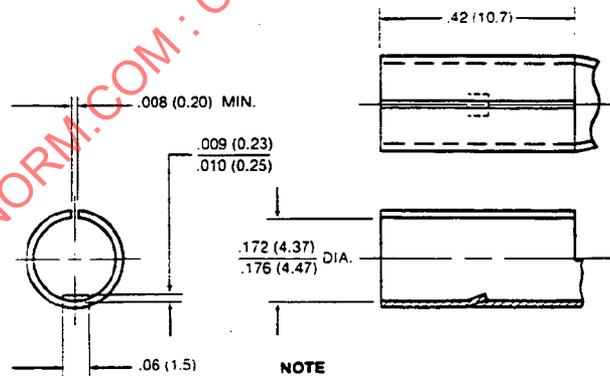
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**NOTE**  
METAL STOCK SHOULD BE OF 3/4 HARD TEMPER  
BRASS OR BRONZE MATERIAL.



PIN

FIG. 3



SOCKET

**NOTE**  
THIS SOCKET TO BE USED ONLY ON THE GROUND  
CIRCUIT OF THE MOLDED PLUG. SOCKETS SIMILAR  
TO THIS, EXCEPT WITH THE DETENT OMITTED, ARE  
TO BE USED IN THE MOLDED RECEPTACLE.  
METAL STOCK SHOULD BE OF 3/4 HARD TEMPER  
BRASS OR BRONZE MATERIAL.

FIG. 4