

Submitted for recognition as an American National Standard

**Electrical Connector for Auxiliary Starting of Construction,
Agricultural, and Off-Road Machinery**

1. **Scope**—This SAE Standard defines the requirements for a plug and receptacle used in an auxiliary starting system. The connector facilitates the application of supplemental electrical power for starting or charging a machine from another machine or suitable external source.

This system provides: proper polarity during connector mating, secure electrical connections, and standard circuit color coding.

- 1.1 **Purpose**—This document establishes the connector interface dimensions and performance requirements for the electrical plug and receptacle system and its component parts.

2. **References**

- 2.1 **Applicable Publication**—The following publication forms 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 PUBLICATION—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J561—Electrical Terminals—Eyelet and Spade Type

- 2.2 **Related Publication**—The following publication is provided for information purposes only and is not a required part of this document.

2.2.1 SAE PUBLICATION—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J1127—Battery Cable

3. **General Requirements**

3.1 The receptacle assembly shall contain two pin contacts as shown in Figures 1 and 2.

3.2 The plug assembly shall contain two socket contacts as shown in Figures 3 and 4.

3.3 Two typical plug assembly configurations are shown in Figures 3 and 4.

SAE Technical Standards Board Rules provide that: "This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."

SAE reviews each technical report at least every five years at which time it may be reaffirmed, revised, or cancelled. SAE invites your written comments and suggestions.

TO PLACE A DOCUMENT ORDER; (724) 776-4970 FAX: (724) 776-0790
SAE WEB ADDRESS <http://www.sae.org>

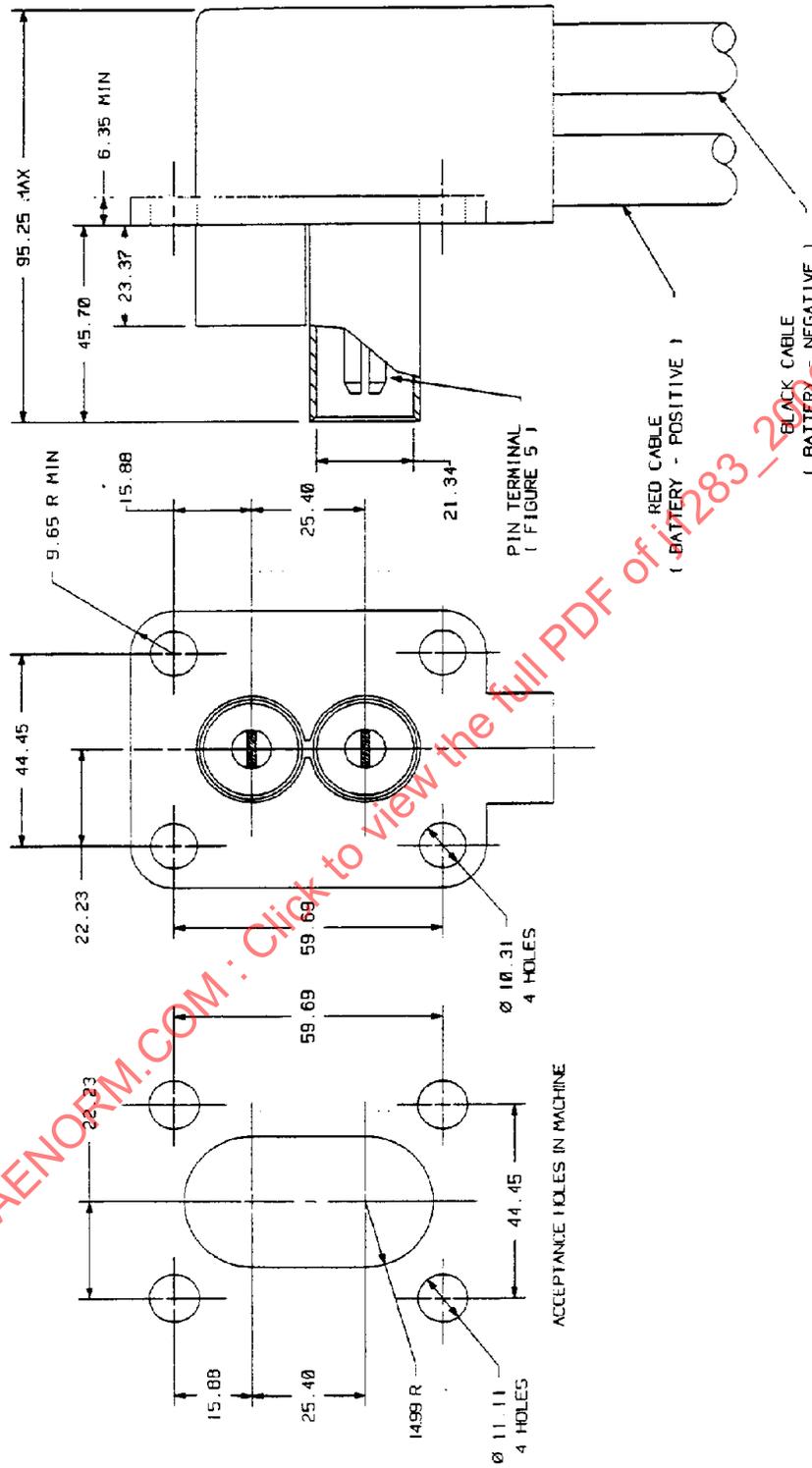


FIGURE 1—RECEPTACLE ASSEMBLY—90 DEGREES

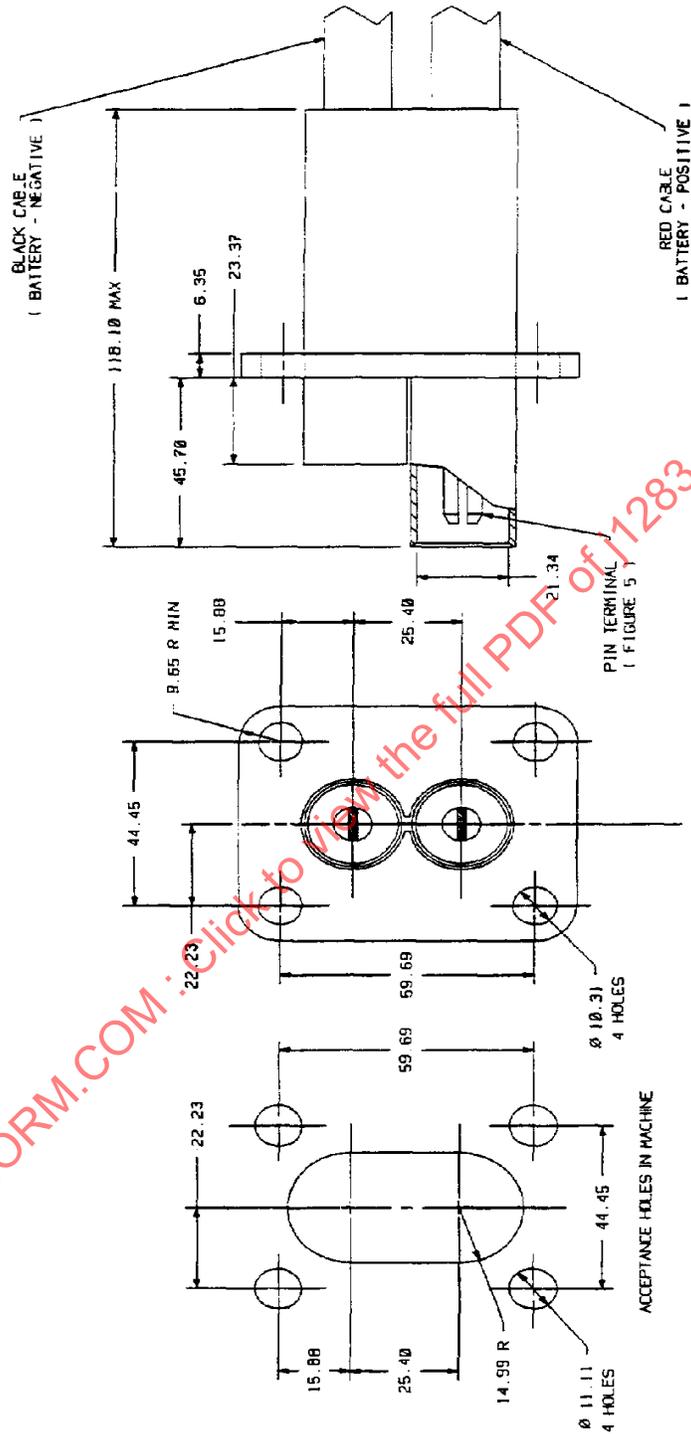


FIGURE 2—RECEPTACLE ASSEMBLY—STRAIGHT

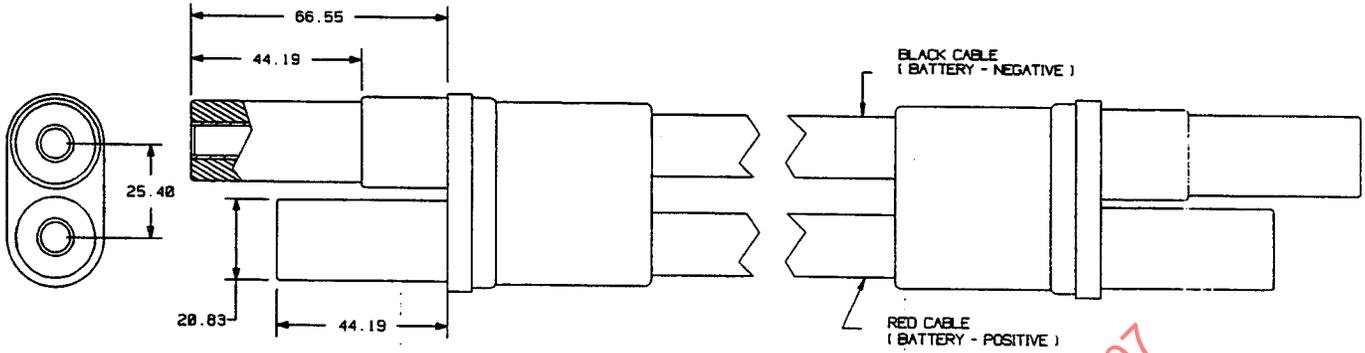


FIGURE 3—PLUG ASSEMBLY (MACHINE TO MACHINE)

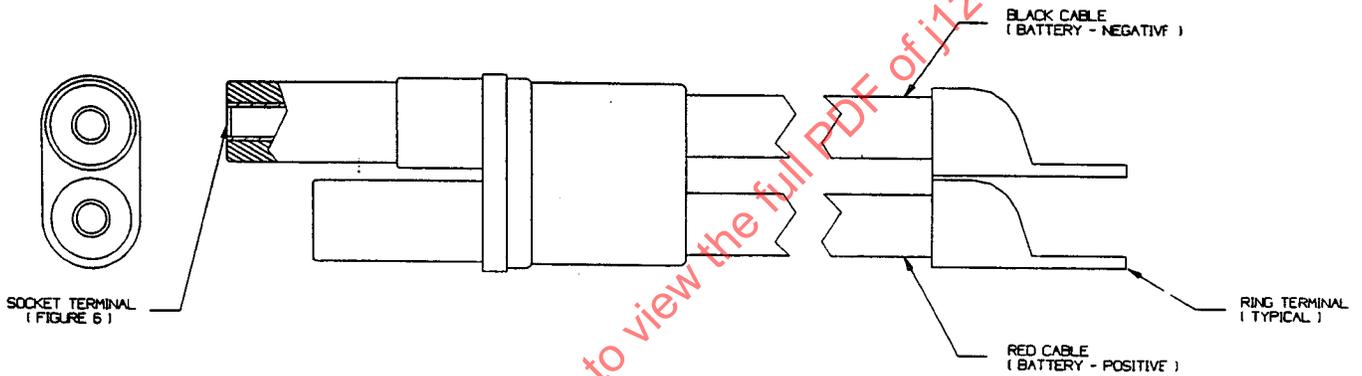


FIGURE 4—PLUG ASSEMBLY (MACHINE TO BATTERY CART)

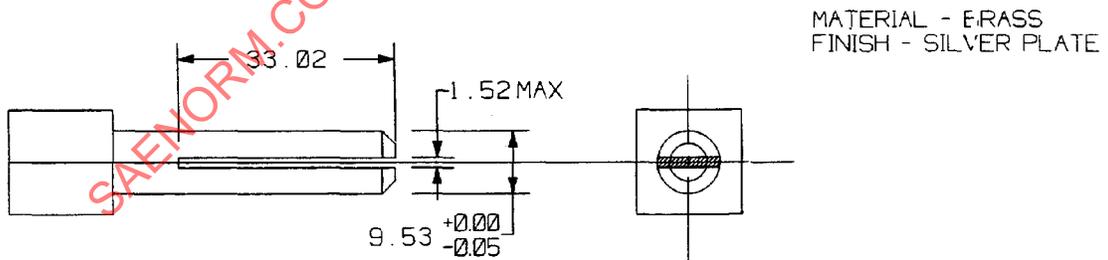


FIGURE 5—PIN TERMINAL

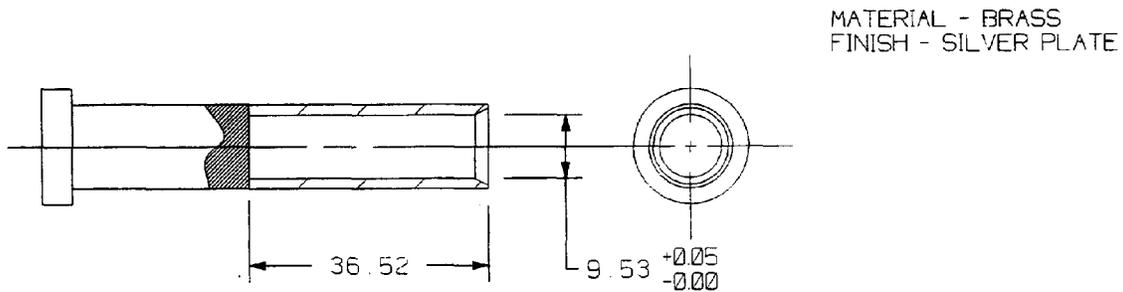


FIGURE 6—SOCKET TERMINAL

- 3.3.1 The configuration shown in Figure 3 is used for auxiliary starting of one machine from another when both are equipped with a receptacle.
- 3.3.2 The configuration shown in Figure 4 is used when starting a machine equipped with a receptacle from an external power source such as a battery cart.
- 3.4 The connector bodies shall be made of glass-filled nylon or other moldable insulating material having equal or superior properties.
- 3.5 The terminals shall be permanently attached to the cable ends by welding or other equally suitable methods, to provide a connection that will be mechanically secure and electrically sound.
- 3.6 Cables for the receptacle and plug assembly shall conform to SAE J1127. Cable flexibility shall be considered to insure adequate performance throughout the operating temperature range of the application.
- 3.7 Color identification of cables and battery polarity shall conform to Figures 1 and 2.

4. Application Requirements

- 4.1 **Location of Receptacle on Machine**—The receptacle shall be attached and located so that the receptacle will be protected from external damage. The location shall also provide easy access for attaching the auxiliary starting cable plug assembly. To minimize voltage drop, the receptacle shall be mounted as close to the starting motor as practical.
- 4.2 **Cover Assembly**—A receptacle cover as described in Figure 7 shall be provided. The cover shall be attached to the machine near the receptacle. The cover is intended to protect internal components from dust and moisture.
- 4.3 **Voltage Marking**—The machine manufacturer shall provide a working system voltage label mounted near the receptacle.

5. Performance Requirements

- 5.1 The plug and receptacle shall be tested with 62 mm² cables. Tests shall be conducted at 25 °C ± 5 °C unless otherwise specified.
- 5.2 **Terminal Insertion and Extraction Force**—The initial insertion and extraction force for the pin and socket terminals shall be a minimum of 30 N.

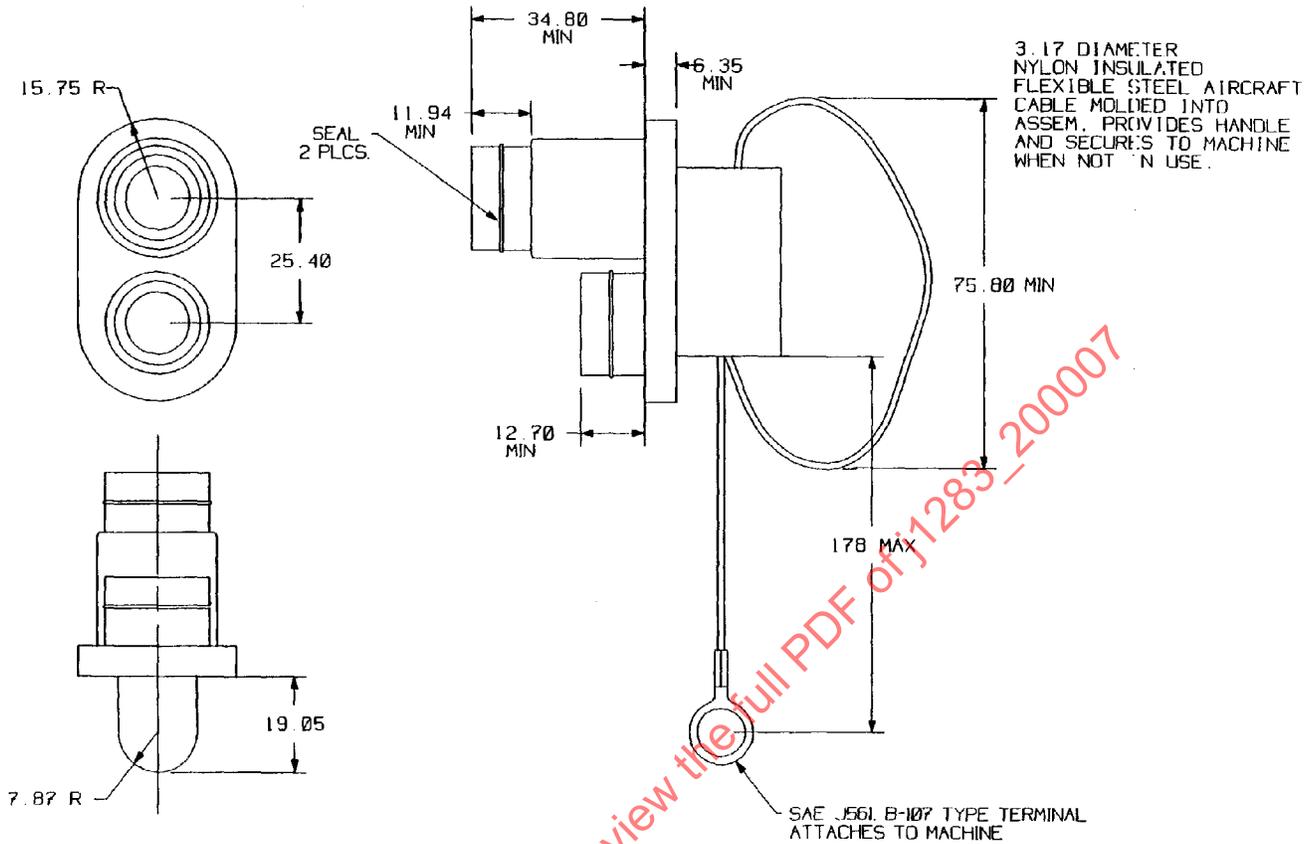


FIGURE 7—COVER ASSEMBLY

5.3 Voltage Drop—Measure the voltage drop across each pair of mated contacts, 1 min after a 500 A load power is applied. The measurement shall be taken as shown in Figure 8. The voltage drop shall not exceed 100 mV.

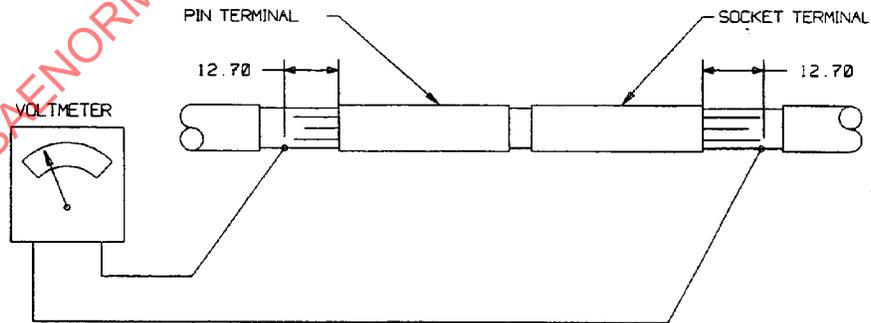


FIGURE 8—VOLTAGE DROP TEST