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

RATIONALE

The technical report covers technology, products, or processes which are mature and not likely to change in the foreseeable future.

STABILIZED NOTICE

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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.

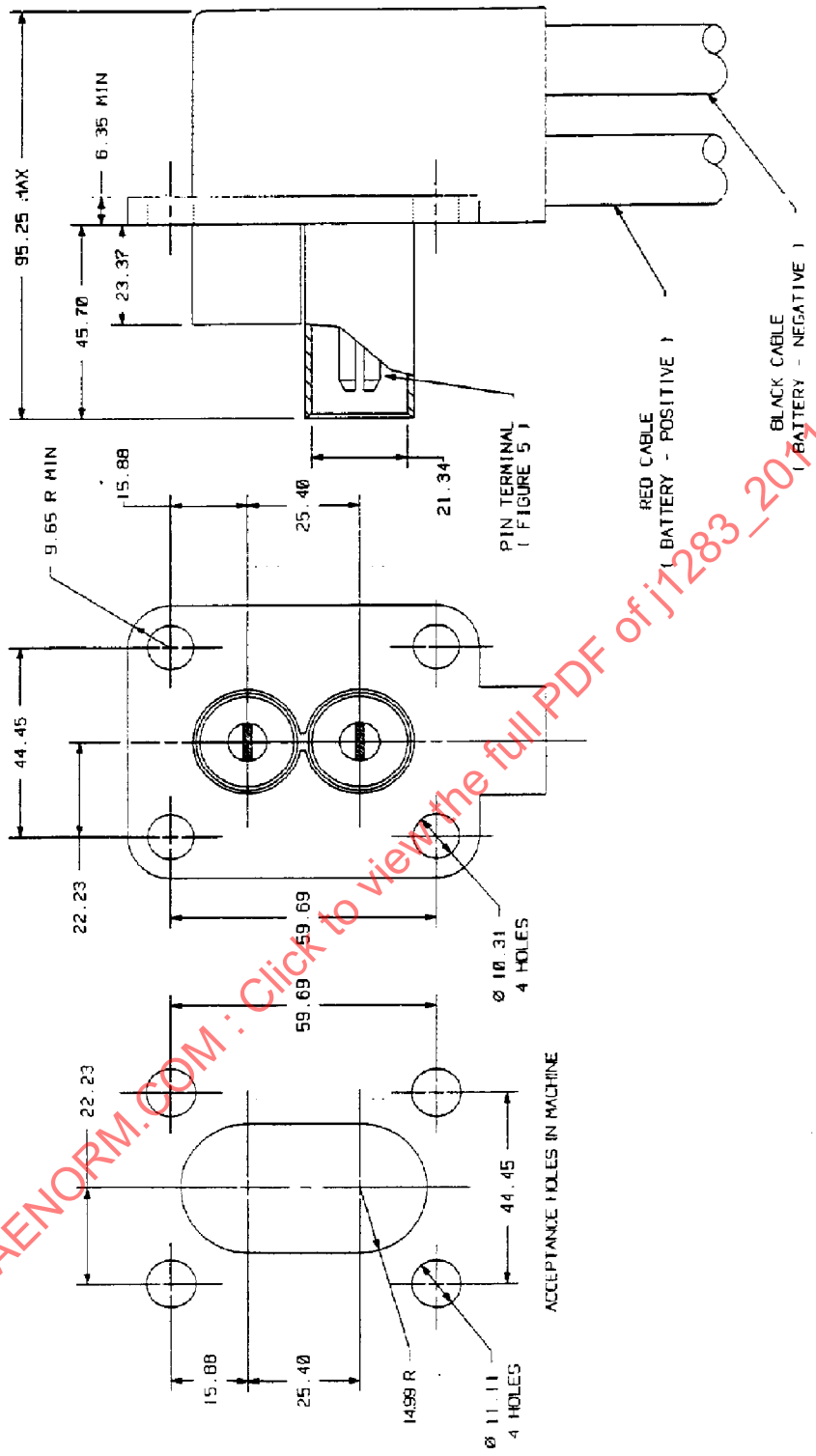

FIGURE 1—RECEPTACLE ASSEMBLY—90 DEGREES

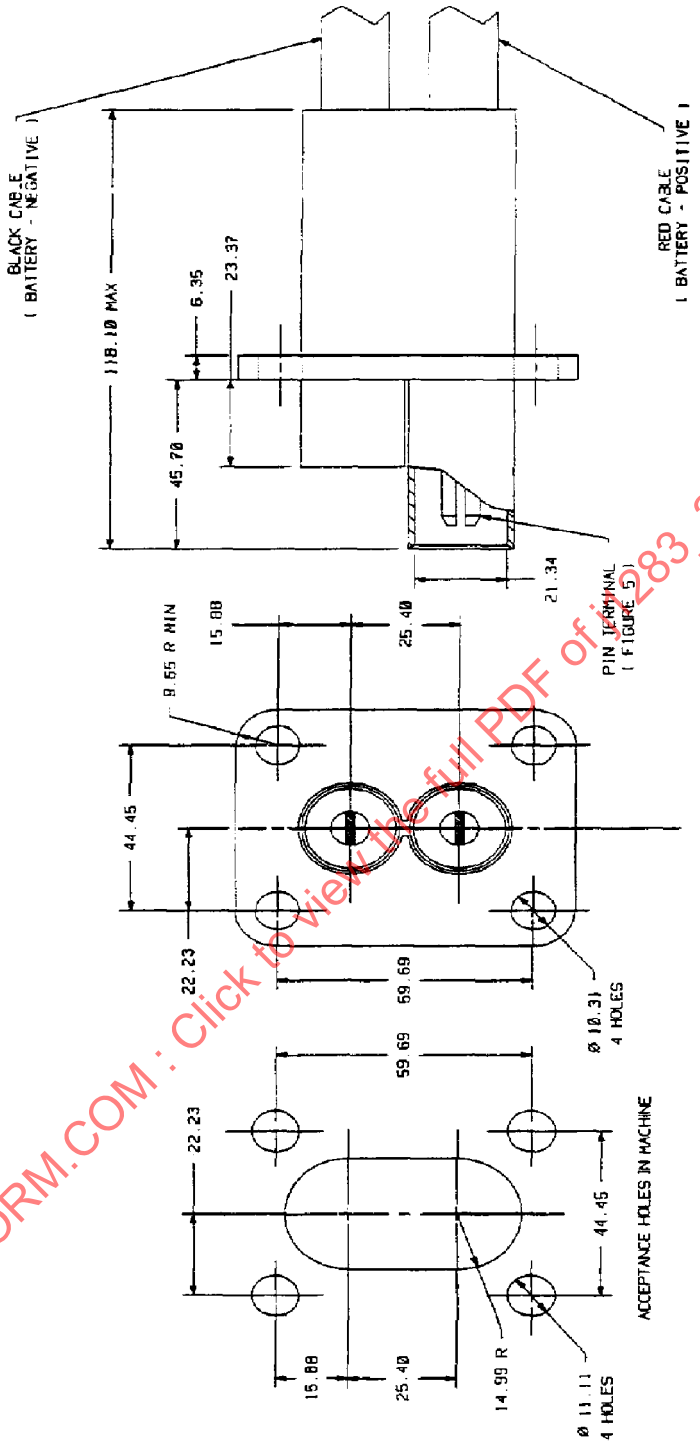

FIGURE 2—RECEPTACLE ASSEMBLY—STRAIGHT

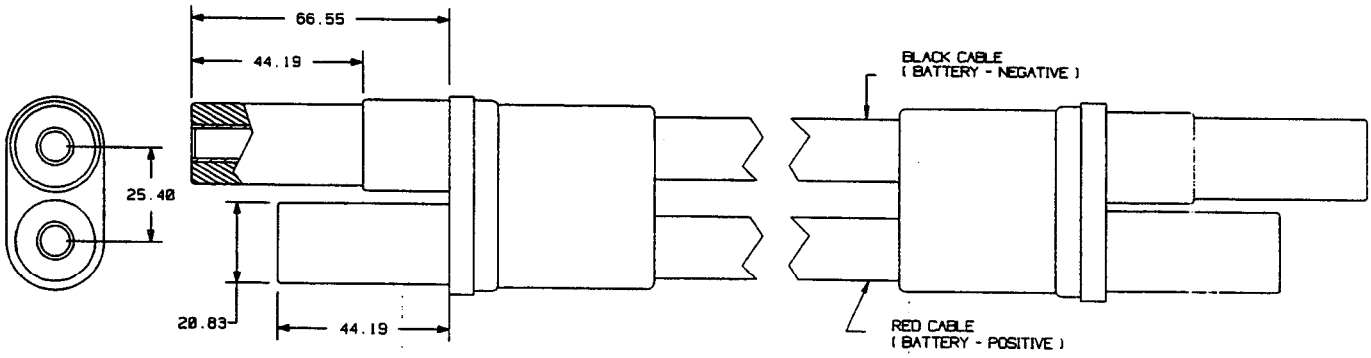

FIGURE 3—PLUG ASSEMBLY (MACHINE TO MACHINE)

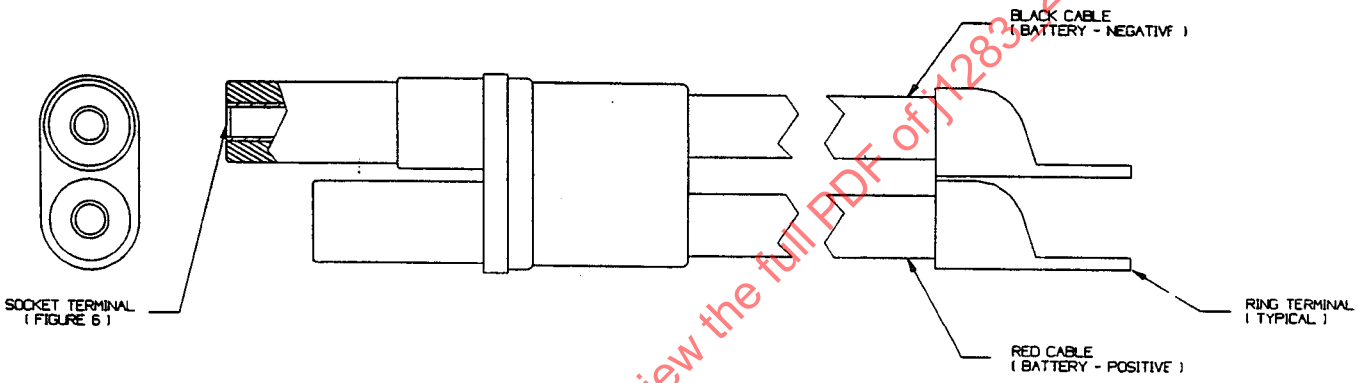

FIGURE 4—PLUG ASSEMBLY (MACHINE TO BATTERY CART)

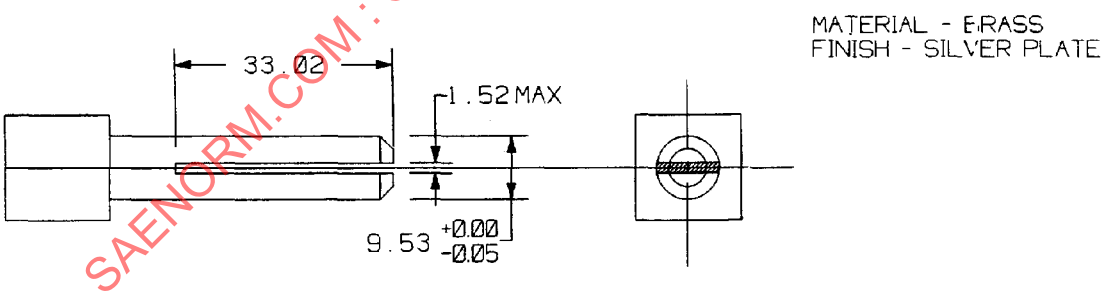

FIGURE 5—PIN TERMINAL

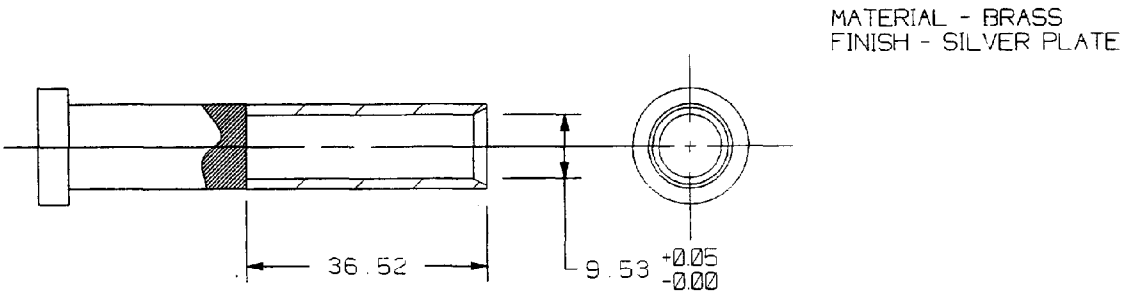

FIGURE 6—SOCKET TERMINAL

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 mm^2 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.