SAE International

SURFACE VEHICLE STANDARD

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Coiled Electrical Cable - Truck and Bus

RATIONALE

The rewrite of this document corrected procedural performance testing criteria in sections 4.3, 4.4 and 4.5. The section 4.3 (Force to extend) rewrite involved interchanging the relaxed and working length of the coiled electrical cable in the test sequence. The section 4.4 and 4.5 rewrites (Sag and endurance), involved providing the correct flex cycle section (4.7) in the test procedure. Section 4.4 also added section 3.6 to define sag.

FOREWORD

A Draft Technical Report under this number was published in November of 1993. The purpose of that document was to give the technical community the opportunity to review, comment on and use the document and to complete the development of the related SAE J2394 – Seven Conductor Cable for ABS Power Standard, which has since been published.

This new document is a Standard that includes reference to the appropriate cable Standards and takes into consideration the information and experience gathered from the use of the Draft Report. Among the key objectives in the development of this new document was to improve the cable's resistance to sag as this has been a major contributor to field failures. Enhancements to the SAE J560 Standard such as the establishment of an angular pull force requirement and an increase in the allowable latched connector detachment force, have aided this objective by relieving the force to extend requirement in this document. Other industry guidelines and recommended practices also contributed to the development of this document.

1. SCOPE

This SAE Standard establishes the minimum performance and endurance requirements for coiled electrical cables used for hookup between trucks, trailers and dollies. The component standards SAE J2394 (replaced SAE J1067) for cable and SAE J560 for connectors must be consulted to determine the complete performance and endurance requirements of the system. Related TMC Recommended Practices may be consulted for information associated with selection, installation and inspection of these coiled electrical cables. This document is intended to set out requirements for the majority of conditions rather than for specialized applications or environments.

TO PLACE A DOCUMENT ORDER: **Tel: 877-606-7323 (inside USA and Canada)**
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http://www.sae.org/technical/standards/J2222_201210

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of the specification to the extent specified herein. Unless otherwise indicated the latest revision of SAE publications shall apply.

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

SAE J560 Primary and Auxiliary Seven Conductor Electrical Connector for Truck-Trailer Jumper Cable

SAE J2394 Seven Conductor Cable for ABS Power – Truck and Bus

2.2 Related Publications

The following publications are provided for information purposes only and are not a required part of this SAE Technical Report.

2.2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

SAE J702 Brake and Electrical Connection Locations - Truck-Tractor and Truck-Trailer

SAE J1067 Seven Conductor Cable – Truck and Bus

2.2.2 TMC (Technology and Maintenance Council) Publications

Available from Technology and Maintenance Council, American Trucking Associations, 950 N Glebe Rd., Suite 210, Arlington, VA 22203-4181, Phone: (703) 838-1763, Fax: (703) 838-1701, www.truckline.com.

RP 107C Seven Conductor Truck-Trailer Converter Dolly Jumper Cable and Connector System

RP137C Antilock Electrical Supply from Tractors through the SAE J560 Seven Pin Connector

RP141 Trailer ABS Power Supply Requirements

RP 159 Installation and Inspection Guidelines for Seven Conductor Truck-Trailer/Converter Dolly Jumper Cable and Connector

RP 703B Electrical and Gladhand Connector Placement

3. DEFINITIONS

3.1 COILED ELECTRICAL CABLE

The coiled electrical cable consists of seven conductor cable described by SAE J2394 (Type F–Flexing) that has been formed into a cylindrical helix. The electrical connector, (plug), specified in SAE J560 may terminate one or both ends of the cable to form an assembly.

3.2 COILED SECTION

The coiled section of the cable is that section which is formed into a helix. It excludes the lead lengths.

3.3 LEAD LENGTH

Lead length refers to the straight, non-coiled section, including connector plug at either end of a coiled electrical cable assembly.

3.4 WORKING LENGTH

Working length is the term referring to the manufacturer's published rating of the distance over which the coiled cable can be extended in the tractor-trailer application (Refer to Figure 1). It is defined here as the extended length of the coiled electrical cable from the beginning of the first coil loop at the tractor end of the cable where the cable will be clamped, to the end of the lead length at the SAE J560 trailer interface connector (Refer to Figure 2).

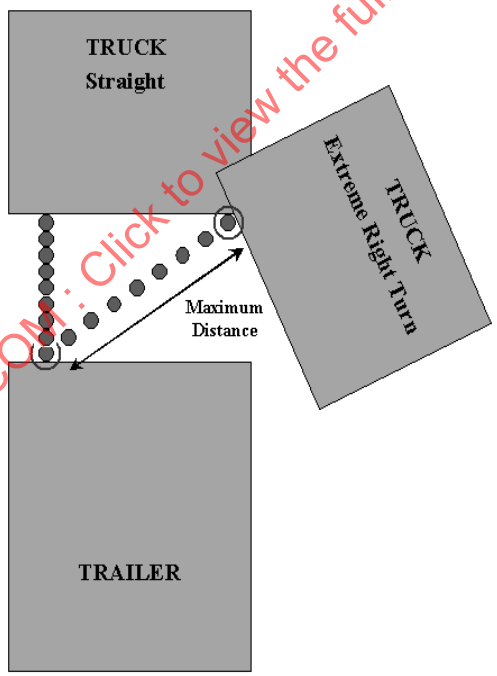

FIGURE 1 - CABLE WORKING LENGTH

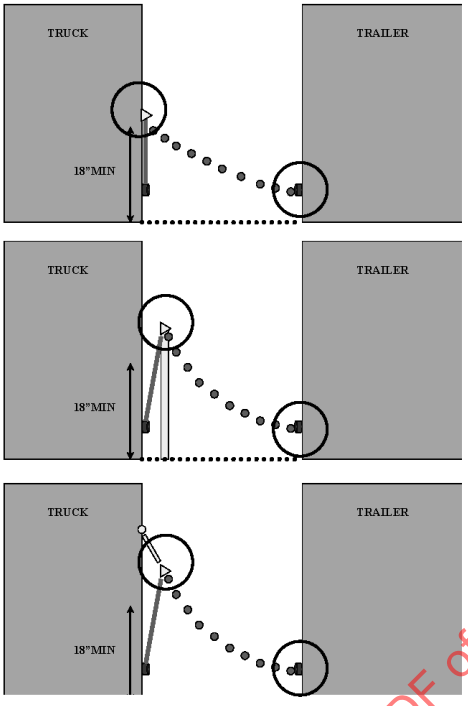

FIGURE 2 - ALTERNATE CABLE SUSPENSION METHODS
AND WORKING LENGTH MEASURING POINTS

3.5 RELAXED LENGTH

Relaxed length refers to the length of the coiled electrical cable when a tractor and trailer are in a straight position with the tractor lead clamped and the trailer connector engaged. For purposes of testing, this length is assumed to be equal to one third of the working length (Refer to Figure 2 above).

3.6 SAG

Sag refers to the vertical drop measured from the horizontal centerline to the lowest point on the coiled section of the assembly.

3.7 COIL FLEX CYCLE

A coil flex cycle is defined as stretching the coiled cable section to 75% of its working length and then returning it to its relaxed length within 15 s ± 2 s.

4. TESTING AND PERFORMANCE SPECIFICATIONS

4.1 Test Sequence

All tests shall be executed in the order specified herein with the same physical cable assembly sample used in each successive test