SURFACE VEHICLE STANDARD

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Superseding J2394 FEB2020

Seven Conductor Cable for ABS Power - Truck and Bus

RATIONALE

Revision is to confirm that this document is only for 12 VDC nominal applications in light of future discussions and documents where multi-voltage systems are considered.

SAE J2394 has been reaffirmed to comply with the SAE Five-Year Review policy.

FOREWORD

This document, first published in 1998, superseded the traditional SAE J1067 standard that referred to the 1/8-1/10-5/12 gauge configuration used in non-ABS equipped tractors vehicles. The SAE J2394 standard was developed for a 1/8-2/10-4/12 construction where the blue circuit was upgraded to 10 gauge enabling power for ABS. The traditional seven conductor cable standard was often associated with the tractor-trailer interface cable, while the lighter duty low tension primary cable standards became a common reference for the internal primary cables of the seven-conductor cable in truck, trailer, and harness manufacturer specifications.

Studies prompted by increased safety awareness suggest that voltage losses in wiring and connectors had become of serious concern and both the SAE J1067 and SAE J2394 standards had been written to better address the demanding physical and electrical performance needs of seven conductor cable used throughout the entire truck and trailer electrical system. While SAE J1067 still exists as a standard to support those few users who still purchase it for older equipment, a switch to this SAE J2394 standard is strongly encouraged.

1. SCOPE

This SAE Standard establishes the minimum construction and performance requirements for seven conductor 1/8-2/10-4/12 cable for use on trucks, trailers, and converter dollies for 12 VDC nominal applications. Where appropriate, the standard refers to two types of cables (Type F and S, described later in the standard), due to the variation in the performance demands of cables used in flexing and stationary applications. While the document's title refers to ABS Power to differentiate the document from the SAE J1067 standard that it supersedes, the scope applies to both the primary green cable for powering ABS and lighting and the yellow auxiliary cable of the same construction.

2. REFERENCES

2.1 Applicable Documents

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.

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Documents Document Sharing Hub
Full document details: SAE J2394-2026 Seven Conductor Cable for ABS Power - Truck and Bus

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 +1 724-776-4970 (outside USA), www.sae.org.

SAE J844 Nonmetallic Air Brake System Tubing

SAE J1067 Seven Conductor Cable - Truck and Bus

SAE J1128 Low Voltage Primary Cable

2.1.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM B3 Specification for Soft or Annealed Copper Wire

ASTM B33 Specification for Tinned Soft or Annealed Copper Wire for Electrical Purposes

ASTM B172 Specification for Rope Lay Stranded Copper Conductors having Bunch-Stranded Members for Electrical Conductors

ASTM B174 Specification for Bunch-Stranded Copper Conductors for Electrical Conductors

ASTM B189 Specification for Lead Coated and Lead-Alloy-Coated Soft Copper Wire for Electrical Purposes

ASTM B263 Standard Test Method for Determination of Cross-Sectional Area of Standard Conductors

ASTM B117 Method of Salt Spray (Fog) Testing

ASTM D412 Standard Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers—Tension

2.1.3 UL Publications

Available from UL, 333 Pfingsten Road, Northbrook, IL 60062-2096, Tel: 847-272-8800, www.ul.com.

UL 1581 Reference Standard for Electrical Wires, Cables, and Flexible Cords - Section 593

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 +1 724-776-4970 (outside USA), www.sae.org.

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

SAE J1067 Seven Conductor Cable - Truck and Bus

SAE J2174 Heavy-Duty Wiring Systems for Trailers 2032 mm or More in Width

SAE J2202 Heavy-Duty Wiring Systems for On-Highway Trucks

SAE J2222 Coiled Electrical Cable - Truck and Bus

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3. DEFINITIONS

3.1 FLEXING

Describes a condition where the cable is installed in an unsupported way over a distance of greater than 0.5 m (18 inches) and/or where there is a reasonable likelihood that the cable will be subjected to bending, longitudinal extension, or significant movement. As an example, all cables connecting the tractor to trailer or dolly to trailer are to be considered flexing cables.

3.2 STATIONARY

Describes a condition where the cable is installed in a fashion where its weight is supported within a distance of 0.5 m (19.7 inches) or less, and where there is little likelihood of flexing as described above. An example of a stationary application is cable that is connected with clamps to a vehicle chassis.

3.3 CONDUCTOR

The current carrying element(s) in a cable comprised of a series of copper strands twisted together.

3.4 STRAND

The solid component members of a conductor.

3.5 LAY

The measure along a single plane, between an individual strand or series of copper strands or insulated conductor’s starting and ending points in a complete spiral wrap around the grouping of which it is a part.

3.6 INSULATION

The material applied to the conductor to provide electrical insulation and a level of mechanical protection.

3.7 CABLE CORE

The grouping of insulated conductors twisted together.

3.8 JACKET

The outer sheath applied to the cable core to maintain inner conductor positioning and to enhance the mechanical strength and durability of the cable.

4. TYPES

Due to the variation in the performance demands of cables used in different applications within the truck-trailer system, this document addresses two types of cables, determined by their mode of installation.

4.1 Type F - Flexing

Pertains to cables that are subjected to flexing as defined in 3.1.

4.2 Type S - Stationary

Pertains to cables that are stationary as defined in 3.2.

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