



# SURFACE VEHICLE STANDARD

J2742™

FEB2025

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Superseding J2742 FEB2020

Combination 11 Conductors and Two Pairs ECBS Cable

## RATIONALE

This technical report is stabilized because it covers technology which is mature and not likely to change in the foreseeable future.

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Full document details: SAE J2742\_202502

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Documents

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## 1. SCOPE

This SAE standard establishes the minimum construction and performance requirements for a combination cable consisting of 11 conductors and two twisted pairs for use on trucks, trailers, and dollies for 12 VDC nominal applications in conjunction with SAE J2691 (15 pole connectors.) The cable includes both power and unjacketed SAE J1939-15 paired signal circuits along with dual ground wires to accommodate grounding requirements within the constraints of the SAE J2691 terminal capacity.

## 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.

#### 2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001 0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), [www.sae.org](http://www.sae.org).

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

SAE J1128      Low Voltage Primary Cable

SAE J1939-15      Physical Layer, 250 Kbps, Un-Shielded Twisted Pair (UTP)

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

SAE J2691      15 Pole Connector Between Towing Vehicles and Trailers with 12 Volt Nominal Supply

### 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](http://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 B117  | Method of Salt Spray (Fog) Testing Standard Practice for Operating Salt Spray (Fog) Apparatus                 |
| 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 B263  | Standard Test Method for Determination of Cross-Sectional Area of Standard Conductors                         |
| ASTM D412  | Standard Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers—Tension    |
| ASTM D573  | Standard Test Method for Rubber-Deterioration in an Air Oven                                                  |
| ASTM D4060 | Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser                         |
| ASTM E145  | Standard Specification for Gravity-Convection and Forced-Ventilation Ovens                                    |

### 2.1.3 UL Publications

Available from UL, 333 Pfingsten Road, Northbrook, IL 60062-2096, Tel: 847-272-8800, [www.ul.com](http://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 0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), [www.sae.org](http://www.sae.org).

|           |                                                                                   |
|-----------|-----------------------------------------------------------------------------------|
| SAE J1939 | Serial Control and Communications Heavy Duty Vehicle Network - Top Level Document |
| 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                                           |

### 2.2.2 ISO Publications

Copies of these documents are available online at <http://webstore.ansi.org/>.

|                  |                                                  |
|------------------|--------------------------------------------------|
| ISO 4141-1,2,3,4 | Multi-Core Connecting Cables (Parts 1 through 4) |
|------------------|--------------------------------------------------|

### 3. TERMS AND 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 (18 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 trailer 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.

### 5. IDENTIFICATION CODE DESIGNATION

Cable conforming to this document shall be identified with the manufacturer's identification, and shall be identified with SAE J2742 and the revision (month and year) of this document along with the cable type as described in this document.

EXAMPLE: XYZ Corp. SAE J2742 (mo/yr) - Type S (or F).