SEVEN-CONDUCTOR CABLE FOR ABS POWER —SAE J2394 JUN98

SAE Standard

Report of the SAE Truck and Bus Wiring and Connectors Subcommittee of the SAE Truck and Bus Electrical and Electronic Committee approved June 1998.

Foreword—The current SAE J1067 standard refers only to the 1/8-1/10-5/12 gauge configuration used in traditional vehicles. The SAE J2394 standard was developed for a 1/8-2/10-4/12 construction where the blue circuit has been upgraded to 10-gauge enabling power for ABS. The traditional seven-conductor cable standard was often associated with the tractor-trailer interface cable while lighter-duty low-tension primary cable standards became a common reference in truck, trailer, and harness manufacturer specifications.

Studies prompted by increased safety awareness suggest that voltage losses in wiring and connectors have become of serious concern and both the SAE J1067 and SAE J2394 standards have 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.

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 and trailers. Where appropriate, the document refers to two types of cables, (Type F and S, described later in the document), due to the variation in the performance demands of cables used in flexing and stationary applications.

2. References

2.1 Applicable Publications—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, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J1128—Low-Tension Primary Cable

2.1.2 ASTM PUBLICATIONS—Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

ASTM B 3-95—Specification for Soft or Annealed Copper Wire

ASTM B 33-94—Specification for Tinned Soft or Annealed Copper Wire for Electrical Purposes

ASTM B 172-95—Specification for Rope Lay Stranded Copper Conductors Having Bunch-Stranded Members for Electrical Conductors

ASTM B 174-95—Specification for Bunch-Stranded Copper Conductors for Electrical Conductors

ASTM B 189-95—Specification for Lead Coated and Lead-Alloy-Coated Soft Copper Wire for Electrical Purposes

ASTM B 263-94—Standard Test Method for Determination of Cross-Sectional Area of Standard Conductors

ASTM B 117—Method of Salt Spray (Fog) Testing

ASTM D 4060-95—Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser

ASTM D 412-97—Standard Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers - Tension

ASTM D 573-88—Standard Test Method for Rubber-Deterioration in an Air Oven

ASTM E 145-94—Standard Specification for Gravity-Convection and Forced-Ventilation Ovens

2.1.3 UL (UNDERWRITERS LABORATORY) PUBLICATIONS—Available from Underwriters Laboratories, 333 Pfingsten Road, Northbrook, IL 60062-2096.

UL 1581—Reference Standard for Electrical Wires, Cables, and Flexible Cords—Sections 250,280,560,580, and 1200.

2.2 Related Publications—The following publications are provided for information purposes only and are not a required part of this document.

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

SAE J560—Seven-Conductor Electrical Connector for Truck-Trailer Jumper Cable

SAE J2222—Coiled Electrical Cable

SAE J2174—Heavy-Duty Wiring for Trailers

SAE J2202—Heavy-Duty Wiring for Trucks

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 in) and/or where there is a reasonable likelihood that the cable will be subjected to bending, longitudinal extension, or significant movement. An example of a flexing application is the cable used in a coiled or straight assembly at the tractor-trailer interface.

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 in) or less, and where there is little likelihood of flexing as described previously. 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 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 once 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 Section 3.

4.2 Type S—Stationary—Pertains to cables that are stationary as defined in Section 3.

5. Identification Code Designation—Cable conforming to this document shall be identified with the manufacturer's identification, and shall be identified with SAE J2394 and the revision (month and year) of this document along with the cable type as described in this document.

EXAMPLE—XYZ Corp. SAE J2394(mo/yr) - Type S (or F)

6. Technical Requirements

6.1 Conductors

6.1.1 MATERIAL—All conductors shall be of stranded, soft-annealed copper, complying with ASTM B 3-95, and ASTM B 174-95-Class K or ASTM B-172-95-Class K. Strands may be uncoated or may be coated in a tin complying with ASTM B 33-94 or a tin/lead coating complying with ASTM B 189-95.

6.1.2 CROSS-SECTIONAL AREA—The cross-sectional area of stranded conductors shall not be less that the values specified in Table 1. The cross-sectional area may be verified by measuring actual strand sizes or by using the weight method in ASTM B 263-94 with a calculated factor to allow for the twist loss.

6.1.3 STRANDING—The individual strands contained within a conductor shall be of the same nominal diameter. The minimum number of strands per wire size for the two types of cable covered by this document, are as shown in Table 1.

6.1.4 STRAND LAY—The maximum acceptable lay of strands for each wire size, regardless of the number of strands in the conductor, is as shown in Table 1.

6.1.5 CONDUCTOR SPLICING—When agreed between the supplier and purchaser, splices may be used for the individual strands or for the conductor as a whole, provided that they are made in a workmanlike manner as described in ASTM B 172-95/174-95, and that they fulfill the following criteria:

6.1.5.1 The break strength shall not be reduced by more than 20%.

6.1.5.2 The resistance shall not be increased.

6.1.5.3 The diameter of the splice must not exceed the diameter of the uninsulated strand or conductor being spliced by more than 20%.

6.1.5.4 Single-strand splices are not to be closer together than two lay lengths in a bunched or concentric stranded conductor and twenty lay lengths in a rope-lay construction and there shall be no more than three single-strand splices per 3 m of conductor.

6.1.5.5 Whole conductor splices are not to be closer together than twenty conductor lay lengths in the cable core and there shall be no more than three whole-conductor splices per 100 m of cable.

6.2 Insulation

6.2.1 MATERIAL PHYSICAL PROPERTIES—The unaged physical properties of insulation material, tested in accordance with the method identified in ASTM D 412 at room temperature,(23 °C ± 5 °C) shall be a minimum of the following values:

6.2.1.1 Minimum tensile strength of 10 mPa (1500 psi)

6.2.1.2 Minimum elongation of 150%

An accelerated aging test shall be conducted in accordance with ASTM D 412, D 573, E 145 Type II, for 168 h in an air-circulating oven, at a temperature of 100 °C ± 5 °C. After aging, the tensile strength shall not be less than 80% of the original test value and the elongation shall not be less than 50% of the original test value.

6.2.2 APPLICATION—Insulation shall be homogeneous and shall be placed concentrically within commercial tolerances about the conductor. Insulation shall adhere closely to, but strip readily from the conductor leaving it reasonably clean and in suitable condition for termination.

6.2.3 INSULATED CONDUCTOR OUTSIDE DIAMETER—The outside diameter of each insulated conductor shall be measured at five separate cross sections spaced approximately 50 mm (2 in) apart with an optical device accurate to at least 0.1 mm (0.001 in). Other devices may be used; however, in case of dispute, the referee shall be the optical device. A minimum of two readings shall be taken at each cross section. The sample should be rotated approximately 90 degrees between readings. The mean of the diameter readings shall determine the finished insulated conductor diameter and shall be no greater than the maximum values shown in Tables 2A and 2B.

6.2.4 WALL THICKNESS—The minimum wall thickness at any point shall be measured in the method described in Section 250 of UL 1581. All individual wall thickness values must be in accordance with those listed in Tables 2A and 2B.

TABLE 1—CONDUCTORS

SAE Wire Size mm^2	METRIC Min. Cond. Are mm^2	Max. Strand Lay Length mm	Type F (Flexing) Min. Strands	Type S (Stationary) Min. Strands	SAE Wire Size No.	ENGLISH Min. Cond. Area cir mils	Max. Strand Lay Length Inches
3	3.24	70	65	19	12	6334	2.75
5	5.16	64	104	19	10	10069	2.50
8	8.20	76	168	19	8	16104	3.00

NOTE 1—English units are not direct conversions from metric.

NOTE 2—The metric wire size is the approximate nominal area of the conductor.

NOTE 3—The SAE wire size number indicates that the cross-sectional area of the conductor approximates the area of the American Wire Gauge for the equivalent size.

6.2.5 Dielectric Voltage Withstand Test—This test is only practical for use by manufacturers of the wire or cable. Refer to 6.2.6 for an alternate test for use by those wishing to test cable before installation or use in harness assemblies. Unless otherwise specified, all specimens shall be the entire length of wire conductors subjected to continuous spark testing with voltage set at 1500 V, AC.

TABLE 2A—INSULATION METRIC

SAE Wire Size mm^2	Max. OD mm	Minimum Wall Thickness mm	Mandrel Diameter mm	Abrasion Resistance mm
3	3.80	0.46	12.7	for later publication
5	4.70	0.56	12.7	for later publication
8	6.00	0.46	12.7	for later publication

NOTE 1—English units are not direct conversions from metric.
NOTE 2—The metric wire size is the approximate nominal area of the conductor.
NOTE 3—The SAE wire size number indicates that the cross-sectional area of the conductor approximates the area of the American Wire Gauge.

TABLE 2B—INSULATION ENGLISH

SAE Wire Size No.	Max. OD in	Minimum Wall Thickness in	Mandrel Diameter in	Abrasion Resistance in
12	0.150	0.018	0.5	for later publication
10	0.185	0.022	0.5	for later publication
8	0.235	0.018	0.5	for later publication

NOTE 1—English units are not direct conversions from metric.
NOTE 2—The metric wire size is the approximate nominal area of the conductor.
NOTE 3—The SAE wire size number indicates that the cross-sectional area of the conductor approximates the area of the American Wire Gauge.

6.2.5.1 Apparatus

6.2.5.1.1 Spark Tester—A transformer of sufficient capacity to maintain the test voltage specified in the detailed specification under all normal conditions of leakage current shall be used. The core of the transformer and one end of the secondary winding shall be connected to ground. A voltmeter shall be so located in the circuit that it will indicate at all times the actual test voltage applied. The spark tester shall not be simultaneously connected to more than one electrode.

6.2.5.1.2 Electrode—An electrode which makes direct mechanical contact with the surface of the insulation of the wire or cable undergoing test shall be used. A pipe, coiled spring or the like shall not be acceptable. If the link bead-chain type of electrode is used, the bottom of the metal electrode enclosure shall be "V"-shaped. The chains shall have a length appreciably greater that the depth of the enclosure. The width of the trough shall be approximately 38 mm (1.5 in) greater than the diameter of the largest wire or cable to be tested. If a bead-chain type of electrode is used, the beads shall have a diameter of 5 mm (3/16 in). The longitudinal spacing of the chains shall not be more than 13 mm (1/2 in). The transverse spacing of the chains shall not be more than 9.5 mm (3/8 in), except that the spacing may be 13 mm (1/2 in) if the transverse rows of chain are staggered. The electrode shall be provided with a grounded metallic screen or the equivalent as a guard against contact by personnel. The length of the electrode shall be sufficient to meet the requirements in 6.2.5.2.

6.2.5.1.3 Fault-Signaling Device—A fault-signaling device or system shall include a visible signal, a defect recording device, and/or an automatic stop device. The arrangement shall operate in such a way that when the fault signal is given, it will be maintained until manually reset.

6.2.5.2 Procedure—The spark test shall be conducted as near to the end of the manufacturing process as is practicable. The test voltage shall be as specified in the detailed specification. The specimen shall be attached to the electrode and the electrode connected to one lead of the transformer secondary. Both ends of the conductor of the specimen, the other secondary lead and the transformer core shall be grounded. A direct connection shall be made between the ground of the conductor at the take-up end of the transformer secondary ground. The voltmeter located in the circuit shall indicate the test potential at all times during the test. The speed of the specimen through the electrode shall be adjusted so that contact between the electrode and any point on the insulation of the specimen will be maintained for at least 0.15 s. This rate limits the speed of the specimen travel to a maximum of 10 m (33 ft) per minute per 25 mm (1 in) of electrode length. Unless otherwise specified in the detailed specification, the entire delivery of the wire shall be tested.

6.2.6 Alternate Dielectric Test—This test is an alternative to the dielectric voltage withstand test of 6.2.5, for users of cable who wish to perform such a test prior to installation or use in harness assemblies. A 25 mm (1 in) length of insulation shall be removed from each end of a 600 mm (24 in) sample of each size of finished insulated conductor and the two ends twisted together. The loop thus formed shall be immersed in water containing 5% salt by weight at room temperature so that not more than 150 mm (6 in) of each end of the sample protrudes above the solution. After being immersed for 5 h and while still immersed, the sample shall withstand the application of 1000 V rms at 50 to 60 Hz between the conductor and the solution for 1 min without failure of the insulation.

6.2.7 Cold Bend Test—Using a specimen of each of the insulated conductor sizes employed in the cable and a mandrel size as identified in Tables 2A and 2B, condition and test the specimen at –40 °C according to the method outlined in paragraph 580.1 of UL 1581. A visual inspection shall reveal no cracks or splits. The sample is to be returned to room temperature and then subjected to the dielectric test specified in 6.2.5 or 6.2.6.

6.2.8 Deformation Test—Test a specimen from each of the insulated conductor sizes employed in the cable according to the method outlined in paragraph 560.1 of UL 1581 using a 4.90 N load. The insulation specimen shall decrease by no more than 50% in thickness. The sample is to be returned to room temperature and then subjected to the dielectric test specified in 6.2.5 or 6.2.6.

6.2.9 Abrasion Resistance—(Performance values are yet to be determined and will be provided in a subsequent publication). Test at least two specimens of each of the insulation materials used in the cable according to ASTM D 4060-95 modified as follows:

6.2.9.1 Apparatus—Use a model 5230 or 5150 Taber abraser, model 5000 sample cutter, model 200 wheel refacer, H18 abrasive wheels and S-36 mounting cards—available from Taber Industries, P.O. Box 164, 455 Bryant Street, North Tonawanda, NY 14120.

6.2.9.2 Sample Preparation—Prepare samples of each material to be tested. Samples must be in sheet form with a similar surface texture to the actual insulated conductors, with a thickness of 1.78 mm ± 0.13 mm (0.070 in ± 0.005 in). Each sample must be a minimum of 114 mm x 114 mm (4.5 in x 4.5 in) square. Ideally, the processing parameters used to produce the samples should be the same as those used in the manufacture of the insulated conductors.

6.2.9.3 Test Procedure—Adhere each sample to an S-36 mounting card. Place the sample attached to the mounting card in the model 5000 sample cutter and cut into a 107 mm (4.2 in) circle. Weigh the sample on a balance to the nearest 0.1 mg and record the weight on the back of the S-36 mounting card. Reface one pair of H18 wheels on the model 200 wheel refacer prior to conducting the test. Place 500 gram weights on the Taber abraser. Set the vacuum nozzle height to 6 mm (0.25 in) and the vacuum power level to 100%. Reset the counter to 5000 cycles. Place the prepared sample on the Taber abraser and clean it with compressed air. After 5000 cycles, weigh the sample on a balance to the nearest 0.1 mg and record the weight on the back of the mounting card. Remove the pair of H18 wheels and reface them on the model 200 wheel refacer. Return the sample and H18 wheels to the Taber abraser and reset the counter to 5000 cycles. After a further 5000 cycles, (10 000 cycles total in the test), weigh the sample on a balance to the nearest 0.1 mg and record the weight on the back of the mounting card.

6.2.9.4 Performance Criteria—The weight loss for each of the samples tested must not exceed (value for later publication, to be determined by SAE J2394 task force after further testing).

6.2.10 Fluid Resistance—A 600-mm (24-in) sample of each of the insulated conductor sizes shall be prepared for each fluid to be tested. The area of the sample to be subjected to a bend test shall be immersed in the fluid shown in Table 3 for a period of 20 h. After removal from the fluid, remove excess fluid from the sample and then condition the sample for 4 h at room temperature. The conditioned sample shall be tested at room temperature in accordance with paragraph 580.1 of UL 1581 using a mandrel diameter as shown in Tables 2A and 2B. A visual inspection shall reveal no cracks of splits.

6.2.11 Color-Coding—The conductor color-coding by wire size for this construction is as follows:

a. 3 mm^2 (12 AWG)—Black, Yellow, Green, Brown (4 conductors)
b. 5 mm^2 (10 AWG)—Red, Blue (2 conductors)
c. 8 mm^2 (8 AWG)—White (1 conductor)

The color of the insulated conductors shall match as closely as possible the central colors specified in Appendix A of SAE J1128 JAN95.

6.3 Cable Core

6.3.1 Insulated Conductor Lay—The maximum lay of the individual insulated conductors in the cable core shall be 14 times the cable core diameter. Fillers may be used to improve the roundness of the cable core.

TABLE 3—FLUID RESISTANCE

Name	Test Fluid Referee Fluid	Test Temp (deg. C)
Battery Acid	H2S04, Spec.grav.=1.260±0.005	50 ± 3
Brake Fluid	Disc. type 1	Room Temp.
Diesel Fuel	#2	Room Temp.
Engine Coolant	ASTM D 471, Service Fluid 104	50 ± 3
Engine Oil	ASTM D 471, IRM-902	50 ± 3
Power Steering	ASTM D 471, IRM-903	50 ± 3
Transmission Oil	Citgo #33123	50 ± 3

6.4 Cable Jacket

6.4.1 MATERIAL PHYSICAL PROPERTIES—The unaged physical properties of the jacket material, tested in accordance with the method identified in ASTM D 412 at room temperature, (23 °C ± 5 °C), shall be a minimum of the following values:

6.4.1.1 Minimum tensile strength of 10 mPa (1500 psi)

6.4.1.2 Minimum elongation of 150%

An accelerated aging test shall be conducted in accordance with ASTM D 412, D 573, E 145 Type II, for 168 h in an air-circulating oven, at a temperature of 100 °C ± 5 °C. After aging, the tensile strength shall not be less than 80% of the original test value and the elongation shall not be less than 50% of the original test value.

6.4.2 APPLICATION—The cable jacket shall be homogeneous and shall be placed concentrically within commercial tolerances about the cable core. The jacket shall be readily strippable from the core for purposes of termination.

6.4.3 OVERALL CABLE DIAMETER—Due to the internal diameter restrictions of the SAE J560 connectors, the overall cable diameter must not exceed 18 mm (0.710 in).

6.4.4 WALL THICKNESS—The minimum jacket thickness at any point shall be measured in the method described in Section 280 of UL 1581. The minimum wall thickness at any point of a type F-Flexing cable shall be 1.00 mm (0.040 in). The minimum wall thickness at any point of a type S-Stationary cable shall be 0.70 mm (0.028 in).

6.4.5 COLD BEND TEST—Five 450-mm (18-in) samples of jacketed cable shall be tested at –40 °C in accordance with paragraph 580.1 of UL1581 using a mandrel diameter equal to twice the finished cable diameter. A visual inspection shall reveal no inside or outside surface cracks or splits in any of the samples.

6.4.6 DEFORMATION TEST— Test a specimen from finished jacketed cable, according to the method outlined in paragraph 560.1 of UL 1581 using a 4.90 N load. The specimen shall decrease by no more than 50% in thickness.

6.4.7 ABRASION RESISTANCE—(Performance values are yet to be determined and will be provided in a subsequent publication). Test at least two specimens of each of the jacket materials used in the cable according to ASTM D 4060-95 modified as follows:

6.4.7.1 Apparatus—Use a model 5130 or 5150 Taber abraser, model 5000 sample cutter, model 200 wheel refacer, H18 abrasive wheels and S-36 mounting cards—available from Taber Industries, P.O. Box 164, 455 Bryant Street, North Tonawanda, NY 14120.

6.4.7.2 Sample Preparation—Prepare samples of each material to be tested. Samples must be in sheet form with a similar surface texture to the actual cable jacket, with a thickness of 1.78 mm ± 0.13 mm (0.070 in ± 0.005 in). Each sample must be a minimum of 114 mm x 114 mm (4.5 in x 4.5 in) square. Ideally, the processing parameters used to produce the samples should be the same as those used in the manufacture of the cable.

6.4.7.3 Test Procedure—Adhere each sample to an S-36 mounting card. Place the sample attached to the mounting card in the model 5000 sample cutter and cut into a 107 mm (4.2 in) circle. Weigh the sample on a balance to the nearest 0.1 mg and record the weight on the back of the S-36 mounting card. Reface one pair of H18 wheels on the model 200 wheel refacer prior to conducting the test. Place 500 gram weights on the Taber abraser. Set the vacuum nozzle height to 6 mm (0.25 in) and the vacuum power level to 100%. Reset the counter to 5000 cycles. Place the prepared sample on the Taber abraser and clean it with compressed air. After 5000 cycles, weigh the sample on a balance to the nearest 0.1 mg and record the weight on the back of the mounting card. Remove the pair of H18 wheels and reface them on the model 200 wheel refacer. Return the sample and H18 wheels to the Taber abraser and reset the counter to 5000 cycles. After a further 5000 cycles, (10 000 cycles total in the test), weigh the sample on a balance to the nearest 0.1 mg and record the weight on the back of the mounting card.

6.4.7.4 Performance Criteria—The weight loss for each of the samples tested must not exceed (value for later publication, to be determined by SAE J2394 task force after further testing).

6.4.8 SUNLIGHT RESISTANCE—Test five specimens of finished cable according to the method outlined in paragraph 1200 of UL 1581. The cable is not acceptable if either the tensile strength or ultimate elongation ratio is less than 85% after the 300 h of exposure.

6.4.9 OZONE RESISTANCE—Any rubber-based jacketing materials used shall be tested for ozone resistance. A 300 mm (12 in) sample of finished cable shall be wound a minimum of 180 degrees around a 75 mm (3.0 in) mandrel at a uniform rate of one turn per second and secured. The assembly shall then be conditioned to 192 h at 65 °C ± 3 °C in an atmosphere containing 100 pphm ± 5 pphm of ozone. A visual inspection shall reveal no cracks or splits.

6.4.10 FLUID RESISTANCE—A 600-mm (24-in) sample of finished cable shall be prepared for each fluid to be tested. The area of the sample to be subjected to a bend test shall be immersed in the fluid shown in Table 3 for a period of 20 h. After removal from the fluid, remove excess fluid from the sample and then condition the sample for 4 h at room temperature. The conditioned sample shall be tested at room temperature in accordance with paragraph 580.1 of UL 1581 using a mandrel diameter equal to twice the finished cable diameter. A visual inspection shall reveal no cracks of splits.

6.4.11 SALT SPRAY RESISTANCE TEST—Five 600-mm (24-in) samples of finished cable shall be subjected to 96 h of salt spray exposure in accordance with ASTM B 117. Within 168 h of the completion of the salt spray exposure, the samples shall be aged in a straight position in a full draft circulating-air oven at a temperature of 100 °C ± 1 °C for a period of 70 h ± 2 h. Within 168 h of the completion of oven aging each of the samples shall be subjected to a bend test at room temperature in accordance with paragraph 580.1 of UL 1581 using a mandrel diameter equal to twice the finished cable diameter. A visual inspection shall reveal no cracks of splits.

6.4.12 MARKING ABRASION RESISTANCE TEST—Place the marked cable on a firm surface with the cable identification markings facing up. Secure the cable in place. With a force of 31 N applied perpendicular to the markings, wipe a new unused "Pink Pearl" eraser across the cable and markings parallel to the centerline ten times. The characters of the identification markings shall be legible after each test.

7. Guidelines

7.1 Conductor sequencing—The conductors may be sequenced as shown in Figure 1 for ease of assembly to SAE J560 connectors, unless otherwise agreed between the supplier and purchaser.

7.2 Cable Jacket Color—The cable jacket may be colored green, (for "primary" cables where only a single cable is in use), to provide an easier reference to the SAE J2394 cable style. It may be yellow, (for "secondary" cables where a second cable is in use). The color alone shall not signify conformance to this document.

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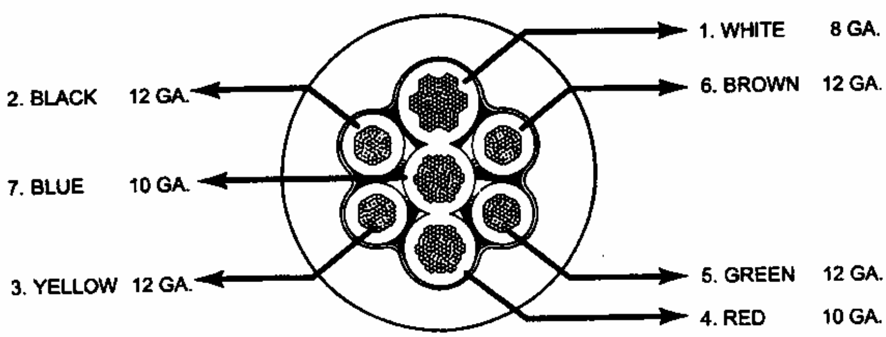

FIGURE 1—CONDUCTOR SEQUENCE