SURFACE VEHICLE STANDARD

J1532™	JUN2021

Issued 1988-10
Reaffirmed 2014-06
Stabilized 2021-06

Superseding J1532 JUN2014

Transmission Oil Cooler Hose

RATIONALE

This document has been stabilized as the technical report covers technology, products, or processes which are mature and not likely to change in the foreseeable future.

STABILIZED NOTICE

This document has been declared “Stabilized” by the SAE Non-Hydraulic Hose Committee and will no longer be subjected to periodic reviews for currency. Users are responsible for verifying references and continued suitability of technical requirements. Newer technology may exist.

TO PLACE A DOCUMENT ORDER: **Tel: 877-606-7323 (inside USA and Canada)**
Tel: +1 724-776-4970 (outside USA)
Fax: 724-776-0790
Email: CustomerService@sae.org
SAE WEB ADDRESS: **http://www.sae.org**

For more information on this standard, visit
https://www.sae.org/standards/content/J1532_202106

1. Scope

This SAE Standard covers hose intended for use with automatic transmission cooling system applications. Type A hoses are intended for original equipment or replacement applications while Type B hoses are intended for aftermarket auxiliary cooler applications only. The reference fluid for tests requiring the use of automatic transmission fluid (ATF) shall be Dexron III / Mercon 5 or equivalent ATF that is agreed to by hose manufacturer and customer.

2. References

2.1 Applicable Publications

The following publications form a part of this specification to the extent specified herein. The latest issue of SAE publications shall apply.

2.1.1 SAE PUBLICATIONS

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

SAE J343—Tests and Procedures for SAE 100R Series Hydraulic Hose and Hose Assemblies

2.1.2 ASTM PUBLICATIONS

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

ASTM D 380—Test Methods for Testing Rubber Hose
ASTM D 413—Test Methods for Rubber Property—Adhesion to Flexible Substrate
ASTM D 1149—Test Method for Rubber Deterioration—Surface Ozone Cracking in a Chamber (Flat Specimens)

3. Definitions

Hoses shall be defined by Type and Class as follows:

3.1 Type

Type refers to the operating and burst pressure rating of the hose.

Type A hoses are defined as having a maximum operating pressure of 1.7 MPa and minimum burst pressure of 6.9 MPa.
Type B hoses are defined as having a maximum operating pressure of 1.0 MPa and minimum burst pressure of 4.1 MPa.

3.2 Class

Class refers to the temperature rating of the hose.

Class 1 hoses have a temperature rating of –40 °C. to 125 °C.
Class 2 hoses have a temperature rating of –40 °C. to 150 °C.
Class 3 hoses have a temperature rating of –40 °C. to 165 °C.

4. Dimensions

The dimensions and tolerances are listed in Table 1. Concentricity based on total indicator reading between the bore and the outer surface shall not exceed 0.8 mm.

TABLE 1—DIMENSIONS AND TOLERANCES

Hose Size[1]		Inside Diameter Tolerance		Outside Diameter Tolerance		Wall Thickness	
mm	in	mm	in	mm	in	mm	in
7 to 11	0.276 to 0.433	+/- 0.50	+/- 0.020	+/- 0.80	+/- 0.031	2.94	0.116
>11 to 14	>0.433 to 0.551	+/- 0.59	+/- 0.023	+/- 0.80	+/- 0.031	3.44	0.135

1. inside hose diameter

5. Qualification Tests

5.1 Original Burst Test

When hydrostatically tested in accordance with ASTM D 380, two hose samples, with a minimum of 460 mm in length, shall not burst or leak below the burst pressure defined in Table 2.

TABLE 2—BURST PRESSURE

Hose Size	Type A MPa	Type A psi	Type B MPa	Type B psi
All Sizes	6.9	1000	4.1	600

5.2 Ozone Test

Test procedure and apparatus shall be in accordance with ASTM D 1149. A hose specimen of sufficient length shall be bent around a mandrel of non-ozone absorbing material with diameter as specified in Table 3. Both ends shall be tied at their crossing with enameled copper or aluminum wire. After mounting, the specimen shall be allowed to rest in an ozone-free atmosphere for 24 h at room temperature of 23 °C ± 2 °C. The mounted specimen shall be placed in a test chamber with an ozone partial pressure of 100 mPa ± 5 mPa at a temperature of 40 °C ± 2 °C. After 70 h to 72 h of exposure, the specimen shall be removed, allowed to cool to a temperature of 23 °C ± 2 °C and then visually inspected under 7X magnification. There shall be no evidence of surface cracking except for the area immediately adjacent to the wire, which shall be ignored.

TABLE 3—TEST FIXTURE DIMENSIONS

Hose Size mm	Hose Size in	Mandrel Diameter, Ozone Test (mm)	Mandrel Diameter, Cold Flex (mm)	Bend Radius, Impulse (mm) Minimum
7.0 to 8.0	0 .276 to 0.315	108–121	135–151	31.8
>8.0 to 9.0	>0.315 to 0.354	114–127	143–159	36.0
>9.0 to 11.0	>0.354 to 0.433	121–134	151–167	40.2
>11.0 to 14.0	>0.433 to 0.551	152–165	190–206	50.8

5.3 Automatic Transmission Fluid Resistance Test

Class 1 hose shall be filled with reference fluid and aged for 168 h at 125 °C ± 2 °C. Class 2 hose shall be filled with reference fluid and aged for 70 h at 150 °C ± 2 °C. Class 3 hose shall be filled with reference fluid and aged for 70 h at 165 °C ± 2 °C. Six specimens of aged hose shall then be subjected to the tests described as follows so that each specimen is subjected to one and only one of the tests.

5.3.1 Vacuum Collapse Test

Measure the O.D. of the hose along its narrowest dimension with calipers. Seal one end air tight, and connect the other to a vacuum source. Then expose to a vacuum of 508 mm of Hg for 30 s, and measure the O.D. of the hose along its narrowest dimension under vacuum. The O.D. of the hose must not collapse more than 25% when compared to the O.D. of the hose before exposure of vacuum.