



SURFACE VEHICLE RECOMMENDED PRACTICE

J1402™

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Automotive Air Brake Hose and Hose Assemblies

RATIONALE

During the Five-Year Review, the document was updated as follows: In 2.1.1, removed non-applicable standard SAE J1401; added 2.1.3 ARPM Publication reference for Hose Manufacturers Identification Codes and updated 6.1 with ARPM information; updated document to SAE standard by removing INCH references throughout (Tables 1 and 2, 4.2, and Tables 3, 4, and 6); and in 7.2.1.2, added -54°C low temperature testing protocol and also referenced the temperature change in Section 1 Scope.

1. SCOPE

This SAE Recommended Practice covers minimum requirements for air brake hose assemblies made from reinforced elastomeric hose and suitable fittings for use in automotive air brake systems, including flexible connections from frame to axle, tractor to trailer, trailer to trailer, and other unshielded air lines with air pressures up to 1 MPa, that are exposed to potential pull or impact. This hose is not to be used where temperatures, external or internal, fall outside the range of -40 to +100 °C. Provisions for extreme low temperature performance testing to -54 °C are included in the document.

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, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

SAE J517 Hydraulic Hose

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Documents

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2.1.2 ARPM Publications

Available from Association for Rubber Products Manufacturers, 732 Shadeland Station Way #285, Indianapolis, IN 46256, Tel: (317) 863-4072, www.arpminc.com.

Hose Manufacturer Identification Codes-Colored Yarn Assignments

2.1.3 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 B117 Standard Test Method of Salt Spray (Fog) Testing

ASTM D380 Standard Test Methods for Rubber Hose

ASTM D413 Test Methods for Rubber Property - Adhesion to Flexible Substrate

3. HOSE CONSTRUCTIONS AND DIMENSIONS

There are four distinct hose constructions used for air brake hose assemblies made from reinforced elastomeric hose. All dimensions are in accordance with Tables 1 and 2.

Type A consists of an elastomeric tube, a fiber reinforcement and an elastomeric cover.

Type AI consists of an elastomeric tube, a wire or fiber reinforcement, and a fiber braid cover.

Type AII consists of an elastomeric tube, a wire or fiber reinforcement, and a fiber braid or elastomeric cover. This hose is dimensionally identical to SAE J517 100R5 hose.

Type AIII consists of an elastomeric tube, wire or fiber reinforcement, and a fiber braid or elastomeric cover.

Table 1 - Inside and outside diameters for Type A and AIII hoses

Metric Size	SAE Type A				SAE Type AIII					
	Dash Size (Ref)	Type A ID Min	Type A ID Max	Type A OD Min	Type A OD Max	Dash Size (Ref)	Type AIII ID Min	Type AIII ID Max	Type AIII OD Min	Type AIII OD Max
6.3	-4	5.8	6.9	15.1	16.7	-4	6.2	7.0	12.0	14.0
8	-5	7.3	8.5	16.7	18.3					
10	-6	8.9	10.1	18.3	19.8	-6	9.3	10.1	15.5	17.5
11.5	-7	10.3	11.9	19.8	21.4					
12.5 SP	-8	11.9	13.5	21.4	23.0					
12.5						-8	12.3	13.5	19.0	21.0
16	-10	15.1	16.7	26.2	27.8	-10	15.5	16.7	22.7	24.7

Note: All dimensions are in millimeters, unless otherwise specified.

NOTE: The sizes 6.3, 8, 10, 11.5, and 12.5 SP of Type A hose can be assembled with field attachable fittings if desired. These field attachable fittings are not the same as used with Types AI and AII hoses. AIII hoses are assembled with permanent crimp fittings only.

Table 2 - Inside and outside diameters for Type AI and All hoses

Metric Size	SAE Type AI and All Dash Size (Ref)	Type AI and All ID Min	Type AI and All ID Max	Type AI OD Min	Type AI OD Max	Type All OD Min	Type All OD Max
5	-4	4.8	5.5	12.0	13.0	12.7	13.7
6.3	-5	6.4	7.2	13.6	14.6	14.3	15.3
8	-6	7.9	8.7	15.1	16.2	16.7	17.6
11	-8	10.3	11.1	18.1	19.3	18.9	20.0
12.5	-10	12.7	13.7	20.5	21.7	22.8	24.0
16	-12	15.9	17.0	23.7	24.9	26.8	28.0

Note: All dimensions are in millimeters, unless otherwise specified.

4. FITTINGS

4.1 For Permanently Attached Fittings

When the hose is assembled with permanently attached fittings, the hose portion of the hose assembly shall conform to the dimensional requirements of Type A or All hose in Table 1 and AI or All hose in Table 2.

4.2 For Field Attachable Fittings

When the hose is assembled with field attachable fittings, the hose portion of the hose assembly shall conform to the dimensional requirements for all sizes of Type AI or All hose in Table 2 or shall conform to the dimensional requirements of 6.3, 8, 10, 11.5, and 12.5 SP Type A hose from Table 1.

NOTE: The sizes 6.3, 8, 10, 11.5, and 12.5 SP of Type A hose can be assembled with field attachable fittings if desired. These field attachable fittings are not the same as used with Types AI and All hoses.

5. MINIMUM BEND RADIUS

Table 3 contains the minimum bend radii recommended for vehicle installations.

Table 3 - Recommended minimum bend radius

Metric Size	SAE Type AI and All Dash Size (Ref)	Minimum Bend Radius to Inside of Bend (millimeters)
5	-4	50
6.3	-5	65
8	-6	75
10	--	90
11	-8	90
11.5	--	100
12.5 SP	--	100
12.5	-10	100
16	-12	115