



Standard Methods of Testing RUBBER HOSE FOR AUTOMOTIVE HYDRAULIC BRAKE SYSTEMS¹

This Standard is issued under the fixed designation D 571; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval.

These methods were prepared jointly by the Society of Automotive Engineers and the American Society for Testing and Materials.

1. Scope

1.1 These methods are for use in testing assemblies of 3.2, 4.8, and 6.4-mm ($\frac{1}{8}$, $\frac{3}{16}$, and $\frac{1}{4}$ -in.) hydraulic brake hose² with end fittings as used in the automotive industry. They include procedures for measurements of hose, volumetric expansion under pressure, bursting strength, whip life, tension, cold, water absorption, ozone, and salt tests.

1.2 The methods appear in the following order:

	Section
Measurement of Hose	5
Expansion Test	6 to 9
Bursting Strength Test	10 to 12
Whip Test	13 to 15
Tension Test	16 to 18
Cold Test	19
Ozone Test	20
Water Absorption Test	21
Salt Spray Test	22
Brake Fluid Compatibility Test	23

2. Applicable Documents

2.1 ASTM Standards:

B 117 Salt Spray (Fog) Testing³

E 4 Verification of Testing Machines⁴

3. Test Specimens

3.1 The test specimens shall consist of coupled sections of 3.2, 4.8, and 6.4-mm ($\frac{1}{8}$, $\frac{3}{16}$, and $\frac{1}{4}$ -in.) hydraulic brake hose having a measured free length of hose exposed between the end fittings. The free lengths of specimens to be used in the whip test shall be not less than 200 mm (8 in.) nor more than 600 mm (24 in.) for 3.2-mm ($\frac{1}{8}$ -in.) hose and not less than 250 (10 in.) nor more than 400 mm (15½ in.) for 4.8 and 6.4-mm ($\frac{3}{16}$ and $\frac{1}{4}$ -in.)

hose. When lengths outside this range are prescribed, determine the whip life on specimens made to this size from the same lot of hose. Prior to installation of the hose assembly on a whip tester or low-temperature compatibility test, all external appendages such as mounting brackets, spring guards, and metal collars shall be removed or long tubes shortened, or both.

4. Test Condition

4.1 The temperature of the testing room shall be maintained between 21 and 32 C (70 and 90 F) for all tests except for the cold, ozone, and salt spray. The specimens shall be stabilized for at least 4 h at the testing room temperature prior to testing. The specimens shall be new and unused and at least 24 h old.

MEASUREMENT OF HOSE

5. Procedure

5.1 Determine if the hose is constricted by checking with the gage plugs shown in Fig. 1. The *A* diameter shall be as prescribed in the

¹ These methods are under the jurisdiction of ASTM Committee D-11 on Rubber and Rubber-Like Materials, and are the direct responsibility of Subcommittee D11.31 on Rubber Hose.

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² For specifications for this type of hose, reference should be made to the Specifications for Automotive Brake Hoses (SAE J 1401) of the Society of Automotive Engineers, 1968 *SAE Handbook*. These specifications were prepared by the SAE - ASTM Technical Committee on Automotive Rubber.

³ *Annual Book of ASTM Standards*, Part 9.

⁴ *Annual Book of ASTM Standards*, Part 41.