



SURFACE VEHICLE STANDARD

J1604**DEC2015**Issued 1976-06
Revised 2015-12

Superseding J1604 JAN1995

Rubber Boots for Drum-Type Hydraulic Brake Wheel Cylinders

RATIONALE

SAE J1604 JAN1995 was revised to refer to SAE J1703 for the reference brake fluid.

1. SCOPE

This SAE Standard covers molded rubber boots used as end closures on drum-type wheel brake actuating cylinders to prevent the entrance of dirt and moisture, which could cause corrosion and otherwise impair wheel brake operation.

The document includes performance tests of brake cylinder boots of both plain and insert types under specified conditions and does not include requirements relating to chemical composition, tensile strength, or elongation of the rubber compound. Further, it does not cover the strength of the adhesion of rubber to the insert material where an insert is used.

The rubber material used in these boots is classified as suitable for operation in a temperature range of -40 to $+120$ °C $\pm$ 2 °C (-40 to $+248$ °F $\pm$ 3.6 °F).

2. REFERENCES

2.1 Applicable Documents

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 Publication

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 J1601 Rubber Cups for Hydraulic Actuating Cylinders

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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

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

ASTM D 1149 Standard Test Method for Rubber Deterioration - Surface Ozone Cracking in a Chamber

ASTM D 1415 Standard Test Method for Rubber Property - International Hardness

ASTM D 2240 Standard Test Method for Rubber Property - Durometer Hardness

3. GENERAL REQUIREMENTS

3.1 Workmanship and Finish

Boots shall be free from blisters, pinholes, cracks, protuberances, embedded foreign material, or other physical defects, which can be detected by thorough inspection, and shall conform to the dimensions specified on the drawings.

3.2 Marking

The identification mark of the manufacturer as recorded by the Rubber Manufacturers Association, and other details, as specified on drawings, shall be molded into each boot.

3.3 Packaging

Boots shall be packaged to meet requirements specified by the purchaser.

3.4 Sampling

The minimum lot on which complete specification tests shall be conducted for quality control testing, or the frequency of any specific type test used to control production, shall be agreed on by the manufacturer and the purchaser.

4. TEST REQUIREMENTS

4.1 Resistance to Fluids at Elevated Temperature

After being subjected to the test for resistance to fluids at elevated temperatures, as prescribed in 5.4, a boot shall conform to the following requirements:

- a. Change in Volume: -10 to +15%
- b. Change in Hardness: -10 to +10 points

4.2 Heat Stroking Test

After stroking, as detailed in 5.5, a boot shall be free of flex cracks which extend through the wall thickness, and shall fit tightly around the cylinder and push rod.

4.3 Low Temperature Stroking Test

During stroking, as detailed in 5.6, a boot shall not crack or separate from its assembled position on the cylinder or become loose on the push rod.