In addition, the volume change of specimens taken from the tube and cover material shall not exceed 0 to +100%.

11. Identification Marking—Hose shall be identified with the SAE number, type, size of inside diameter in fractions, date code in days of the year and last digit of the year (for example, 1707 represents the 170th day of 1967), and hose manufacturer's and or coupling manufacturer's code marking. This marking shall appear on the outer cover of the hose at intervals of not greater than 10 in. Additional identification may be added as agreed upon by user and supplier.

12. 100% Proof Pressure Test—Each hose assembly shall be proof pressure tested using air, oil, or water as the pressure medium. Hose shall be tested at the maximum working pressure when air is used or at the proof pressure shown in Table 1, when tested with oil or water. Care should be taken when testing with air due to its explosive nature at high pressure.

POWER STEERING PRESSURE HOSE—WIRE BRAID—SAE J190

SAE Standard

Report of Nonmetallic Materials Committee approved August 1970.

The specifications in this SAE Standard originated in the SAE-ASTM Technical Committee on Automotive Rubber (other than tires). They represent the correlation of the best information available from research investigation and production experience on the minimum constructional and performance characteristics essential for new power steering assemblies used as original or replacement equipment. This standard applies to passenger cars. It may prove useful to truck manufacturers, but it is not to be presented as present practices.

They also represent the minimum quality recognized by original equipment manufacturers and hose suppliers as essential for satisfactory and safe operation by the hose itself and other coacting parts of the power steering system. The original equipment manufacturer may, at his option, add or alter tests through OEM specifications.

Scope This specification covers hose fabricated from wire braid and synthetic rubber, assembled with end fittings for use in automotive applications up to 1500 psi maximum pressure, as flexible connections within the temperature range of −40 to +121 C (−40 to +250 F) average, 149 C (300 F) maximum peaks.

Hose Construction The construction of this hose embodies a smooth bore inner tube of suitable synthetic rubber material, reinforced with one ply of wire braid and covered with a synthetic rubber outer cover.

Dimensions Hose must be within the tolerances shown in Table 1. In addition, the concentricity, based upon full indicator reading, between the inside bore and the outer surface of the hose shall not exceed 0.030 in.

Test Procedures Procedures described in ASTM D 380, Methods of Testing Rubber Hose, shall be followed wherever applicable.

Qualification Tests To qualify hose under this specification, all of the requirements shown under Test Requirements must be met.

Inspection Tests Production shipments or lots of qualified hose shall be tested in accordance with Table 2 and shall conform to the applicable test requirements, but the user may test hose or hose assemblies from any or all such production shipments or lots to all the test requirements. Fourteen sample hose assemblies, selected at random, as listed in Table 2 are required to conduct a complete test. In the event of a failure, the test or tests which have failed shall be retested using twice the number of samples indicated in Table 2. Failure of any of the retested samples shall be cause for rejection of the entire lot.

Frequency of Testing for Inspection All inspection tests except Impulse shall be performed on either a bulk hose lot or a coupled hose lot basis or tests may be split between a bulk hose lot and a coupled hose lot.

A coupled hose lot shall not exceed 10,000 hose assemblies and a bulk hose lot shall not exceed 20,000 ft of bulk hose. The lot size for Impulse testing shall not exceed 100,000 ft of bulk hose.

TABLE 2—INSPECTION TESTS

Test	Samples Required
1. Length Change (paragraph 7) followed by Bursting Strength (paragraph 5)	3
2. Tensile (paragraph 2)	3
3. Adhesion (paragraph 4)	1
4. Low Temperature Flexibility (paragraph 3)	1
5. Impulse (paragraph 1)	6

Test Requirements

1. Impulse Test

Test Conditions

Oil Temperature: 135 ±2 C (275 ±5 F).

Ambient Temperature: 104 ±11 C (220 ±20 F).

Cycle Rate: 30–40 per minute.

Cycle data: Pressure rise time, 0.20 ±0.10 sec. High pressure hold time, 0.65 +0.20 sec. Pressure drop time, 0.20 ±0.10 sec.

Pressure Variation: 0–100 psi to maximum working pressure listed in Table 1.

Hydraulic Fluid and Test Fixture—As specified by the original equipment manufacturer.

Cycle Life—Samples submitted to this test shall exceed 100,000 cycles for inspection acceptance and 225,000 cycles for qualification testing, without failure.

2. Tensile Test—When tested in accordance with ASTM D 571, Testing Automotive Hydraulic Brake Hose, hose assemblies shall withstand a minimum tensile load as specified in Table 1 without the fittings pulling off or rupture of the hose.

3. Low Temperature Flexibility—Hose and/or hose assemblies shall be subjected to −40 ±1 C (−40 ±2 F) for 24 hr. After this time and while still at −40 ±1 C (−40 ±2 F), the samples shall be flexed over a mandrel having a diameter equal to twice the minimum bend radius specified in Table 1 in 4 sec or less. Hose shall be bent through 180 deg over the mandrel. After flexing, the sample shall be allowed to warm to room temperature and be visually examined for cover cracks and subjected to the proof test. There shall be no cover cracks or leakage.

4. Adhesion Test—When tested in accordance with ASTM D 413, Tests for Adhesion of Vulcanized Rubber (Friction Test), a pull of not less than 10 lb shall be required to separate a 1 in. wide ring section of the bond between the cover and the reinforcement.

5. Bursting Strength—Samples shall meet the minimum bursting strength requirements shown in Table 1.

TABLE 1

Nominal ID, in.	Nominal OD, in.	ID Tolerance, in.	OD Tolerance, in.	Wire OD, in.	Working Pressure, max, psi	Proof Pressure, psi	Burst Strength, min, psi	Tensile Strength, min, lb	Bend Radius, min, in.
3/8	25/32	0.398/0.367	0.812/0.750	0.617/0.571	1500	2000	9000	1000	5
1/2	29/32	0.531/0.485	0.938/0.875	0.750/0.688	1500	2000	8000	1200	7