

**HOSE, HYDRAULIC BRAKE WITH 304 STAINLESS
STEEL OVERBRAID****WSS-M99P26-A2****HOSE, HYDRAULIC BRAKE WITH 316 STAINLESS
STEEL OVERBRAID****WSS-M99P26-A3****1. SCOPE**

These specifications define the performance for a brake hose with an extruded polytetrafluoroethylene inner tube reinforced with a stainless steel wire braid covering and assembled with stainless steel hose collars.

2. APPLICATION

These specifications were released originally for hydraulic brake hose where flexibility was needed in the engine compartment for assembly, serviceability or small degrees of relative motion. This hose construction is not intended for repeated flexing as experienced in jounce hose applications. The free length of the hose should be less than 203 millimeters (8 inches). This construction offers better heat resistance than a typical reinforced rubber hose.

At the time this specification was released, the common hose sizes were:

<u>Nominal ID</u>	<u>Nominal OD</u>
4.76 mm (3/16 inch)	7.9 mm
6.35 mm (1/4 inch)	9.3 mm
8.0 mm (5/16 inch)	11.0 mm

3. REQUIREMENTS

The requirements listed in this specification are for validation of the hose construction and crimp design. These requirements are usually tested at the design verification (DV) level. Sample sizes required to fulfill each requirement are listed in SAE J1401 unless otherwise noted. In some cases, more samples may be required. Brake hose must conform to all requirements of the Federal Motor Vehicle Safety Standard MVSS 106 and the following requirements.

In process testing for production hose assemblies should be conducted according to the test frequencies and appropriate sample sizes as defined by the engineering specification listed on the print.

3.1 STANDARD REQUIREMENTS FOR PRODUCTION MATERIALS

Material suppliers and part producers must conform to the Company's Standard Requirements For Production Materials (WSS-M99P1111-A).

3.2 HOSE CONSTRUCTION

3.2.1 The hose shall consist of an extruded polytetrafluoroethylene (PTFE) inner tube that meets the requirements of ASTM D4895 Type 1, Grade 4, Class B.

3.2.2 A2: The reinforcing wire braid and hose crimp shall be UNS S30400.
A3: The reinforcing wire braid shall be UNS S31600 and S30400 for the hose crimp.

Date	Action	Revisions	Ver. 1
2008 11 12	Activated		





- 3.3 CONstriction** (SAE J1401 or FMVSS 106) not less than 64% of the inside diameter.

- 3.4 VOLUMETRIC EXPANSION, max** (SAE J1401)

Hoses must have a volumetric expansion below the listed maximum for each pressure.

Maximum Expansion, cc/meter

Hydraulic Brake hose ID	Test Pressure		
	6.9 MPa	10.3 MPa	20 MPa
4.76 mm (3/16")	0.590	0.787	1.575
6.35 mm (1/4")	0.72	1.08	1.85
8.0 mm (5/16")	1.50	1.90	3.0

- 3.5 BURST STRENGTH, min** (SAE J1401) 62 MPa (9000psi)

Test hose assemblies at the minimum and maximum of the compression range for hose crimp diameter.

Test burst strength per SAE J1401, except the hose assemblies must withstand a maintained pressure of 41.4 +/- 0.7 MPa (6000 +/-101 psi) for 2 min. The pressure shall then be increased at the rate of 172.5 +/- 69 MPa /min (25,000 +/-10,000 psi) until burst occurs. No leakage is permitted during the 2 minute hold period.

- 3.6 BRAKE FLUID COMPATIBILITY** (SAE J1401)

Hose assemblies at the minimum and maximum of the compression range for hose crimp diameter must meet the requirements of this specification for Constriction and Burst Strength after exposure to the brake fluid.

- 3.7 WHIP RESISTANCE, min.** (SAE J 1401) 70 hours
No Leakage

Not required when the free length of the production hose is less than 203 mm.
Use hoses with a 300 mm free length if testing is required. Standard length allows comparisons with other hose constructions or crimp designs.

- 3.8 TENSILE STRENGTH, min** (SAE J1401)

Test hose assemblies at the minimum and maximum of the compression range for hose crimp diameter.

Slow Pull, 25.4 mm/min 1761 N (396 lbf)
Fast Pull, 50.8 mm/min 1975 N (444 lbf)