

TABLE 1.—COMPARISON OF HYDRAULIC BRAKE HOSE REQUIREMENTS IN FMVSS NO. 106 AND SAE J1401

Requirement/procedure		Existing FMVSS No. 106		SAE J1401
Hydraulic Brake Hoses				
“x” Indicates Requirements/Procedures Proposed To Be Included in FMVSS No. 106				
Pressure Test		5,000 psi burst strength specification, all hoses.	x	7,000 psi specified for 1/8 in. hose, same for 3/16 in. hose.
Constriction	1	Similar dimensional specifications	1	Similar, does not specify 1/4 in. hose size.
Volumetric Expansion	x	Same		Same.
Whip Test	x	Same		Same.
Tensile Strength		Slow pull rate test	x	Includes slow plus fast pull rate tests.
Water Absorption and Pressure Test	x	Similar, note differences in pressure test ...		Similar.
Water Absorption and Tensile Strength		Similar, except fast pull rate test not included.	x	Similar, but includes fast pull rate.
Water Absorption and Whip Resistance	x	Similar		Similar.
Low Temperature Resistance Test	x	Same		Same, but does not cover all hose sizes.
Brake Fluid Compatibility, Constriction, and Burst Strength.		Lower conditioning temperature	x	Higher conditioning temperature, older version of test fluid (use RM-66-05 fluid).
Ozone Resistance		Similar, 50 ppm ozone concentration	x	Similar, 100 ppm ozone concentration.
Dynamic Ozone Test		Not included	x	Flex hose in ozone chamber for 48 hours.
End Fitting Corrosion Resistance	x	Similar, 30 degree mounting angle		Similar, 15–30 degree mounting angle, brass material exempt.
High Temperature Impulse Test		Not included	x	Pressure cycling at elevated temperature followed by burst test; does not cover 1/4 in. brake hose.

Note 1: Use existing FMVSS No. 106 constriction requirement, propose that J1401 plug gauge test method be adopted in Test Procedure 106, add drop time.

B. Air Brake Hoses

NHTSA's performance requirements and test procedures relating to air brake hose are located in paragraph S7, *Requirements—Air brake hose, brake hose assemblies, and brake hose end fittings*, and paragraph S8, *Test procedures—Air brake hose, brake hose assemblies, and brake hose end fittings*, of FMVSS No. 106. The corresponding SAE requirements/procedures are contained in SAE Surface Vehicle Recommended Practice J1402, *Automotive Air Brake Hose and Hose Assemblies, Rev. June 1985* (SAE J1402).

NHTSA proposes to update FMVSS No. 106 to include performance requirements from SAE Recommended Practice J1402 that are not presently contained in the standard. The agency notes that, as was the case for hydraulic and vacuum brake hoses, air brake hose requirements as originally incorporated in Standard 106 in November of 1973 (38 FR 31302) were based on the substantive requirements in SAE J1402.

NHTSA tentatively concludes that virtually all air-braked vehicles are currently equipped with air brake hoses that meet SAE J1402 because many of these vehicles are used in commercial operations, and therefore are subject to the current FMCSA regulations requiring use of air brake hoses that comply with SAE J1402. While some vehicles equipped with air brake systems may not be operated as commercial vehicles, such as heavy-

duty motor homes, the agency tentatively concludes that such vehicle populations are small in comparison to the number of straight trucks, tractors, and air-braked buses. NHTSA tentatively concludes that it is likely that the air brake hose, assemblies, and fittings on these non-commercial vehicles are already compliant with SAE 1402's specifications, however, because SAE 1402-compliant air brake hose products are the most widely available in the United States. Nevertheless, the agency welcomes comments on whether air brake hoses currently in use on commercial and non-commercial vehicles are designed to meet the specifications in SAE J1402.

A detailed discussion of the differences between the air brake hose, assemblies, and end fitting performance requirements and test procedures in SAE J1402 and FMVSS No. 106 follows, along with the agency's proposed resolution of those differences.

1. Dimensional Requirements

FMVSS No. 106 requires that hose constructed of synthetic or natural elastomeric rubber and intended for use with reusable end fittings must conform to the dimensional requirements listed in Table III of paragraph S7.1, *Construction*. Standardized dimensional requirements for hose with reusable end fittings guard against the possibility that replacement hose will not properly fit the end fittings. Table III lists required inside diameter (ID) and outside

diameter (OD) dimensions for Type AI and Type AII air brake hose manufactured in fractional-inch sizes.

SAE J1402 includes the same dimensional requirements for AI and AII hose, but also includes dimensions for Type “A” hose. Type A air brake hose are primarily used with permanently attached end fittings, unlike Types AI and AII air brake hose, which are used with reusable end fittings. Some Type A hose, specifically 3/8 inch, 7/16 inch, and 1/2 inch “Special” hose, may also be fitted with reusable end fittings. SAE J1402's dimensional requirements apply to all Type A hose, regardless of whether they are fitted with permanent or reusable end fittings. With respect to the Type A 3/8-inch and Type A 1/2-inch “Special” hose, the agency notes that there are already corresponding dimensions included in Table III of FMVSS No. 106 with identical dimensions for both Type AI and Type AII hose. Under FMVSS No. 106, a 1/2-Special or 3/8 brake hose can be labeled to include the “A,” “AI,” and/or “AII” designations, or any combination thereof (e.g., “AI-AII”), as the hose manufacturer deems appropriate.

Although the petitioners did not specifically request the incorporation of SAE J1402's dimensional requirements for Type A air brake hose into FMVSS No. 106, the agency notes that it once considered whether to do so. In a June 28, 1974, final rule (39 FR 24012, Docket No. 1–5; Notice 11), the agency