



SURFACE VEHICLE STANDARD

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Dimensional Specifications for Metallic Body Push-to-Connect Fittings
Used on a Vehicular Air Brake System

RATIONALE

This document provides maximum envelope dimensions and general design guidance only. The document has been determined to contain basic and stable information which is not dynamic in nature.

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This document has been declared "Stabilized" by the SAE Air Brake Tubing and Tube Ftg Committee and will no longer be subjected to periodic reviews for currency. Users are responsible for verifying references and continued suitability of technical requirements. Newer technology may exist.

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1. SCOPE

This SAE Standard covers general and dimensional specifications for brass bodied reusable Push to Connect tube fittings for use in the piping of vehicular air brake systems. This type of fitting is intended for use with nylon tubing per SAE J844. See SAE J2494-3 for the Performance Requirements of Reusable (Push to Connect) Fittings Intended for Use in Automotive Air Brake Systems and U.S. Department of Transportation, National Highway Traffic Safety Administration (NHTSA) Federal Motor Vehicle Safety Standards (FMVSS) 571.

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

SAE J476	Dryseal Pipe Threads
SAE J512	Automotive Tube Fittings
SAE J844	Nonmetallic Air Brake System Tubing
SAE J846	Coding Systems for Identification of Fluid Conductors and Connectors
SAE J2494-3	Performance Requirements for SAE J844 Non-Metallic Air Brake Tubing and Push to Connect Fitting Assemblies Used in Vehicular Air Brake Systems

2.1.2 ANSI Publication

Available from American National Standards Institute, 25 West 43rd Street, New York, NY 10036-8002, Tel: 212-642-4900, www.ansi.org.

ANSI B 1.1 Unified Inch Screw Threads

2.1.3 Federal Publications

Available from the Document Automation and Production Service (DAPS), Building 4/D, 700 Robbins Avenue, Philadelphia, PA 19111-5094, Tel: 215-697-6257, <http://assist.daps.dla.mil/quicksearch/>.

FMVSS 571.106 Standard No. 106; Brake Hoses

2.1.4 ISO Publications

Available from American National Standards Institute, 25 West 43rd Street, New York, NY 10036-8002, Tel: 212-642-4900, www.ansi.org.

ISO 7-1 Pipe threads where pressure-tight joints are made on the threads—Part 1: Dimensions, tolerances and designation

ISO 228-1 Pipe threads where pressure-tight joints are not made on the threads

ISO 261 General purpose metric screw threads general plan

2.2 Related Publications

The following publications are provided for information purposes only and are not a required part of this SAE Technical Report.

2.2.1 ANSI Publications

Available from American National Standards Institute, 25 West 43rd Street, New York, NY 10036-8002, Tel: 212-642-4900, www.ansi.org.

ANSI B 1.20.3 Dryseal Pipe Threads

ANSI B 18.2.2 Square and Hex Nuts Inch Series

2.2.2 ASTM Publication

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 B 249 Specification for Wrought Copper and Copper Alloy Rod Bar and Shape

3. GENERAL SPECIFICATIONS

The following general specifications supplement the dimensional data contained in Tables 1A to 4B with respect to all unspecified details.

3.1 Identification

Any one component of the fitting shall be permanently and legibly marked according to the current U.S. Department of Transportation FMVSS 571.106 Regulation (NHTSA). The location of such markings shall be optional with manufacturer.

3.2 Size Designations

Fitting sizes are designated by the corresponding nominal outside diameter of the tubing for the various sizes of tube ends and by the corresponding standard nominal pipe size for pipe thread ends.

3.3 Dimensions and Tolerances

Except for nominal size and thread specifications, dimensions and tolerances are given in both SI units and U.S. customary as designated. Tabulated dimensions shall apply to the finished parts. The maximum and minimum across flat dimensions shall be within the commercial tolerance of bar or extruded stock from which the fittings are produced.

Angular tolerance on axis of ends of elbows and tees shall be ± 2.50 degrees for sizes up to and including 3/8 in (8 mm), and ± 1.50 degrees for sizes larger than 3/8 in (8 mm).

The minimum across corners dimensions of hexagons shall be 1.092 times the nominal width across flats, but shall not result in a side flat width less than 0.43 times the nominal width across flats.

Wrenching surfaces shall fit standard wrench openings. Where so illustrated, hexagon corners shall be chamfered 30 degrees $\pm$ 5 degrees to a diameter equal to the nominal width across flats, with a tolerance of -0.41 mm (-0.016 in); or, where design permits, corners may be chamfered to the diameter of the abutting surface, provided the length of chamfer does not exceed that produced by the 30 degree chamfer previously described.

Tabulated dimensions apply to measurements taken when the release mechanism is in the "in" position.

3.4 Passages

The minimum flow diameter through any section of the air brake fitting shall not be less than 66% of the nominal inside diameter of the air brake tubing.

Where passages in straight fittings are machined from opposite ends, the offset at the meeting point shall not exceed 0.38 mm (0.015 in). The cross-sectional area at the junction of passages in angle fittings shall not be less than that of the smallest passage. At manufacturer's option, all passages in a particular fitting may conform with the smallest diameter specified for that fitting. Where the passage is specified as tap drill diameter or less, the minimum shall be no less than the minimum diameter of the smallest passage in the fitting.