

	SURFACE VEHICLE RECOMMENDED PRACTICE		SAE J1926-4 AUG2010
	Issued	2009-07	
	Revised	2010-08	
		Superseding	J1926-4 JUL2009
Connector for Fluid Power and General Use—Ports and Stud End with ASME B1.1 Threads and O-Ring Seal—Part 4: External Hex and Internal Hex Inch Port Plugs— Dimensions, Design, Test Methods and Requirements			

RATIONALE

Standard has been revised to correct the Tolerances for Internal Hex Size S_2 in Table 2 which was previously defined in 4.2 as per ISO 4759-1. The ISO specification was for metric sizes only and did not satisfy the concerns of the C1 committee regarding the smaller size torque limitations.

1. SCOPE

This part defines performance requirements, dimensions, and designs for –2 through –32 internal and external hex port plugs for use in SAE J1926-1 ports. Testing and usage through many years confirm the performance requirements of port plugs made from carbon steel. The port plugs were specified in SAE J514 without any performance requirements. They have been developed and tested to gain a 4:1 working pressure rating for industrial applications.

In fluid power systems, power is transmitted and controlled through a fluid (liquid or gas) under pressure within an enclosed circuit. In general applications, a fluid may be conveyed under pressure. Components are connected through their threaded ports by stud ends on fluid conductor fittings to tubes and pipes or to hose fittings and hoses.

For threaded ports and stud ends specified in new designs in hydraulic fluid power applications, only ISO 6149 shall be used. Threaded ports and stud ends in accordance with ISO 1179, ISO 9974, and ISO 11926 are not to be used in new designs in hydraulic fluid power applications.

Conformance to the dimensional information in this part of SAE J1926 does not guarantee rated performance. Each manufacturer should perform testing according to the specification contained in this part of SAE J1926 to assure that components comply with the performance ratings.

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.

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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 J515 Specification for Hydraulic O-Ring Materials, Properties, and Sizes for Metric and Inch Stud Ends, Face Seal Fitting and Four-Screw Flange Tube Connections

SAE J1926-3 Connections for General Use and Fluid Power—Ports and Stud Ends with ASME B1.1 Threads and O-Ring Sealing—Part 3: Light-Duty (L Series) Stud Ends

2.1.2 ASME Publications

Available from the ASME, 22 Law Drive, PO Box 2900, Fairfield, NJ 07007-2900, Tel: 973-882-1170, www.asme.org.

ASME B1.1 Unified Inch Screw Threads (UN and UNR Thread Form)

2.1.3 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 B 117 Method of Salt Spray (Fog) Test

2.1.4 ISO Publications

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

ISO 48 Rubber, vulcanized or thermoplastic—Determination of hardness (hardness between 10 IRHD and 100 IRHD)

ISO 68-2 ISO General Purpose Screw Threads—Basic profile—Part 2: inch screw threads

ISO 263 ISO inch screw threads—General plan and selection for screws, bolts, and nuts—Diameter range 0.06 to 6 in

ISO 922 Corrosion tests in artificial atmosphere—Salt spray tests

ISO 1302 Technical drawings—Method of indicating surface texture on drawings

ISO 3601-3 Fluid power systems O-rings Part 3: Quality acceptance criteria—Second edition

ISO 4759-1 Tolerances for fasteners—Part 1: Bolts screws and nuts with thread diameters between 1.6 (inclusive) and 150 mm (inclusive) and product grades A, B and C

ISO 5598 Fluid power systems and components—Vocabulary

ISO 5864 ISO inch screw threads—Allowances and tolerances

ISO 9927 Corrosion tests in artificial atmospheres—Salt Spray

ISO 19879 Metallic tube connections for fluid power and general use—Test methods for hydraulic fluid power

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 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 J1926-1 Connections for General Use and Fluid Power—Ports and Stud Ends with ASME B1.1 Threads and O-Ring Sealing—Part 1: Threaded Port with O-Ring Seal in Truncated Housing

SAE J1926-2 Connections for General Use and Fluid Power—Ports and Stud Ends with ASME B1.1 Threads and O-Ring Sealing—Part 2: Heavy-Duty (S Series) Stud Ends

2.2.2 ISO Publications

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

ISO 263 ISO inch screw threads—General plan and selection for screws, bolts, and nuts—Diameter range 0.06 to 6 in

ISO 1179 Pipe connections, threaded to ISO 228/1, for plain end steel and other metal tubes in industrial applications

ISO 3601-1 O-rings: Part 1: Inside diameters, cross-sections, tolerances and size identification code

ISO 6149-1 Connections for fluid power and general use—Ports and stud ends with ISO 261 threads and O-ring sealing—Part 1: Port with O-ring in truncated housing

ISO 6149-2 Connections for fluid power and general use—Ports and stud ends with ISO 261 threads and O-ring sealing—Part 2: Heavy-duty (S series) stud ends—Dimensions, design, test methods and requirements

ISO 6149-3 Connections for fluid power and general use—Ports and stud ends with ISO 261 threads and O-ring sealing—Part 3: Light-duty (L series) stud ends—dimensions, design, test methods and requirements

ISO 9974 Connections for general use and fluid power—Ports and stud ends with ISO 261 threads with elastomeric or metal to metal sealing

ISO 10683 Fasteners—Non-electrolytically applied zinc flake coatings

ISO 11926-1 Connections for fluid power and general use—Ports and stud ends with ISO 263 threads and O-ring sealing—Part 1: Ports with O-ring seal in truncated housing

ISO 11926-2 Connections for fluid power and general use—Ports and stud ends with ISO 263 threads and O-ring sealing—Part 2: Heavy-duty (S series) stud ends—Dimensions, design, test methods and requirements

ISO 11926-3 Connections for fluid power and general use—Ports and stud ends with ISO 263 threads and O-ring sealing—Part 3: Light-duty (L series) stud ends—Dimensions, design, test methods and requirements

3. DEFINITIONS

For the purposes of this standard, the definitions given in ISO 5598 and the following definitions apply.

3.1 Plug

A stud end with no through hole for fluid passage, used to contain hydraulic fluid.

4. DIMENSIONS

4.1 Plug Dimensions

External hex and internal hex plugs shall conform to the dimensions shown in Figures 1 and 2 and given in Tables 1 and 2 respectively.

4.2 Hex Tolerances

Hex tolerances across flats shall be in accordance with ISO 4759-1, product grade B. Minimum across corner dimensions are 1.092 times the nominal width across flats. The minimum side flat is 0,43 times the nominal width across flats. Unless otherwise specified or shown, hex corners shall be chamfered 15° to 30° to a diameter equal the width across flats, with a tolerance of 0/-0.4 mm.

Hexagon tolerance for internal hexagon sockets shall be in accordance with the tolerances presented in Table 2. Minimum across corner hex dimensions are 1.14 times the minimum width across flats.

4.3 Screw Threads

The screw threads on the plug shall be inch screw threads to ASME B1.1 tolerance class 2A or ISO 68-2, ISO 263, and ISO 5864. External class 2A threads which are plated or coated may exceed 2A diameters but shall not exceed maximum 3A diameters.

5. REQUIREMENTS

5.1 Working Pressure and Working Temperatures

External hex and internal hex plugs conforming to this part of SAE J1926 shall be suitable for use at the working pressures given in Table 3 when used at -40 °C and +120 °C. For use at pressures and or temperatures outside this range, the manufacturer shall be consulted.

5.2 Performance

External hex and internal hex plugs conforming to this part of SAE J1926 shall meet the burst and impulse pressures given in Table 3, and shall be capable of withstanding a vacuum of 6.5 kPa (0.065 bar) absolute pressure when tested in accordance with clause 7

6. O-RINGS

Unless otherwise specified, for use at the pressure and temperature requirements of 5.1 and Table 3 and for testing, the O-rings shall

- be made of NBR (nitrile) with a hardness of (90 ± 5) IRHD, measured in accordance with ISO 48.
- conform to the dimensions shown in SAE J515.
- meet or exceed the O-ring quality acceptance criteria for grade N of ISO 3601-3.

Tolerances on O-ring dimensions shall be in accordance with SAE J515.