SAE International

SURFACE VEHICLE STANDARD

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Superseded By J518/1 JAN2013 and J518/2 JAN2013

Hydraulic Flanged Tube, Pipe, and Hose Connections, Four-Bolt Split Flange Type

RATIONALE

Superseded by SAE J518/1 and SAE J518/2.

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1. ***Scope***—This SAE Standard covers complete general and dimensional specifications for the flanged heads and split flange clamp halves applicable to four-bolt split flange type tube, pipe, and hose connections with appropriate references to the O-ring seals and attaching components used in their assembly. (See Figures 1 and 2.) Also included are recommended port dimensions and port design considerations.

The flanged heads specified are incorporated into fittings having suitable means for attachment of tubes, pipes, or hoses to provide connection ends. These connections are intended for application in hydraulic systems, on industrial and commercial products, where it is desired to avoid the use of threaded connections.

THE RATED WORKING PRESSURE OF A HOSE ASSEMBLY COMPRISING SAE J518 HOSE CONNECTIONS AND SAE J517 HOSE SHALL NOT EXCEED THE LOWER OF THE TWO WORKING PRESSURE RATED VALUES.

Flanged heads shall be as specified in Figure 3 and Table 1. Split flange clamp halves shall be as specified in Figure 4 and Table 1. Port dimensions and spacing shall be as specified in Figure 5 and Table 2.

O-ring seals, having nominal dimensions as indicated in Table 1, are used in conjunction with these connections. They shall conform to the seals specified in SAE J120, Table on Dimensions and Tolerances.

Bolts for use with these connections shall be of the sizes and lengths indicated in Table 1. They shall be of SAE Grade 5 material or better as specified in SAE J429. Socket head cap screws of SAE Grade 5 material or better are acceptable.

Lock washers, if used, shall be in accordance with the light spring lock washers specified in SAE J489, Dimensions of Light, Medium, Heavy, Extra Heavy, and Hi Collar Spring Lock Washers, and of sizes applicable to the corresponding bolts.

The following general specifications supplement the dimensional data contained in Table 1 with respect to all unspecified detail.

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2. *References*

2.1 Applicable Publications—The following publications form a part of this specification to the extent specified herein. The latest issue of SAE publications shall apply.

2.1.1 SAE PUBLICATIONS—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J120—Rubber Rings for Automotive Applications
SAE J429—Mechanical and Material Requirements for Externally Threaded Fasteners
SAE J489—Lock Washers
SAE J517—Hydraulic Hose
SAE J846—Coding Systems for Identification of Fluid Conductors and Connectors

2.1.2 ASTM PUBLICATION—Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

ASTM B 117—Method of Salt Spray (Fog) Testing

3. ***Size Designation***—Four-bolt split flange connection sizes are designated by the nominal flange size which corresponds to the maximum inside diameter of the hole through the flanged head.

4. ***Dimensions and Tolerances***—Tabulated dimensions and tolerances shall apply to the finished parts, plated or otherwise processed, as specified by the purchaser. Tolerances on all dimensions for flanged heads, split flange clamp halves, and ports not otherwise limited shall be ±0.4 mm (0.016 in).

5. ***Material***—Flanged heads shall be made of steel. Split flange clamp halves shall be made from a material with the properties in Table 3.

6. ***Finish***—The external surfaces and threads of all carbon steel parts shall be plated or coated with a suitable material that passes a 72 h salt spray test in accordance with ASTM B 117. Any appearance of red rust during the 72 h salt spray test shall be considered failure, except for the following:

a. All internal fluid passages.
b. Edges such as hex points, serrations, and crests of threads where there may be mechanical deformation of the plating or coating typical of mass-produced parts or shipping effects.
c. Areas where there is mechanical deformation of the plating or coating caused by crimping, flaring, bending, and other post-plate metal forming operations.
d. Areas where the parts are suspended or affixed in the test chamber where condensate can accumulate.

NOTE—Cadmium plating is not preferred due to environmental reasons. Parts manufactured to this Standard after January 1, 1997, shall not be cadmium plated. Internal fluid passages shall be protected from corrosion during storage. Changes in plating may affect assembly torques and require requalification, when applicable.

Bolts shall be finished with a suitable coating that meet the previous requirements after a 16 h salt spray test in accordance with ASTM B 117. Lock washers may have a plain (natural) finish or a suitable coating.

7. ***Workmanship***—Workmanship shall conform to the best commercial practice to produce high-quality connection components. Connection components shall be free from all hanging burrs, loose scale, and slivers which might become dislodged in usage and all other defects which might affect their serviceability. All sealing surfaces must be smooth except that annular tool marks up to 3 μm (100 μin) max, unless specified otherwise, shall be permissible.

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