STANDARD
SAE J518b

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HYDRAULIC FLANGED TUBE, PIPE, AND HOSE CONNECTIONS, 4 BOLT SPLIT FLANGE TYPE

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SOCIETY OF AUTOMOTIVE ENGINEERS, INC.

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FOREWORD

During 1950 and 1951, the SAE Construction and Industrial Machinery Technical Committee formulated a proposed standard covering hydraulic flanged port connections of the 4-bolt split flanged type to satisfy their requirements where it was desirable to eliminate use of threaded type connections. This proposal was, in turn, referred to the SAE Tube, Pipe, Hose and Lubrication Fittings Committee and, subsequent to minor revisions, was approved by this group in February 1952 and published in the 1953 edition of the SAE Handbook.

From 1953 through 1956, the standard underwent only minor and editorial changes. The 1957 SAE Handbook, however, documented the extension of the size range to include 3 in. and the addition of port dimensions as a design guide in accordance with recommendations of the SAE Hydraulic Hose and Hose Fittings Subcommittee which had in the interim been assigned jurisdiction over the standard.

In the 1962 edition of the SAE Handbook, further extension of the size range to 5 in. and the inclusion of recommended maximum working pressures for the various sizes, developed by the subcommittee, were documented. This was followed in the ensuing years' publication by addition of separate general specifications.

In 1965, recognizing the necessity for a series of flanged connections capable of higher pressures, the subcommittee proceeded to introduce proposals which were duly approved and published in the 1966 edition of the SAE Handbook.

The SAE Hydraulic Hose and Hose Fittings Subcommittee has continued to maintain constant vigilance over the standard and has made refinements and revisions as required to keep pace with the requirements of industry.

In 1966, in recognition of the wide acceptance and use of the SAE Standard, Hydraulic Flanged Tube, Pipe, and Hose Connections, 4-Bolt Split Flange Type - SAE J518 throughout industry in the United States, it was submitted to the USA Standards Institute (then the American Standards Association) for adoption and designation as a USA Standard under the existing standards procedures. This was granted on December 9, 1968.

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HYDRAULIC FLANGED TUBE, PIPE, AND HOSE CONNECTIONS, 4 BOLT SPLIT FLANGE TYPE—SAE J518b

SAE Standard

Report of Construction and Industrial Machinery Technical Committee and Tube, Pipe, Hose, and Lubrication Fittings Committee approved February 1952. Revised by Tube, Pipe, Hose, and Lubrication Fittings Committee and Construction and Industrial Machinery Technical Committee June 1962 and last revised by Tube, Pipe, Hose, and Lubrication Fittings Committee July 1965.

GENERAL SPECIFICATIONS

Scope—This standard covers complete general and dimensional specifications for the flanged heads and split flange clamp halves applicable to 4-bolt split flange type tube, pipe, and hose connections with appropriate references to the "O" ring seals and attaching components used in their assembly. Also included are recommended port dimensions and port design considerations.

The flanged heads specified are incorporated into fittings having suitable means for attachment to 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.

Flanged heads shall be as specified in Fig. 3 and Table 1. Split flange clamp halves shall be as specified in Fig. 4 and Table 1. Port dimensions and spacing shall be as specified in Fig. 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 OC Class, Class 1 service, 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 conform with the finished hexagon bolts specified in SAE J477, Table on Dimensions of Finished Hexagon Bolts. They shall be of SAE Grade 5 material, or better, and phosphate coated as specified below.

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.

TABLE 1—DIMENSIONS OF HYDRAULIC FLANGED CONNECTIONS

Nominal Flange Size	A Max	B	C ±0.010	D ±0.010	E	F	G	H Max	J ±0.010	K	L ID Ref
3000 psi max Recommended Working Pressure (except as noted)											
1/2	0.50	1.005–1.000	1.188	1.219	0.270–0.260	0.250–0.240	0.56	0.94	0.969	0.50	0.734
3/4	0.75	1.255–1.250	1.500	1.531	0.270–0.260	0.250–0.240	0.81	1.25	1.281	0.56	0.984
1	1.00	1.565–1.560	1.750	1.781	0.320–0.310	0.300–0.290	1.06	1.50	1.531	0.56	1.296
1-1/4	1.25	1.755–1.750	2.000	2.031	0.320–0.310	0.300–0.290	1.31	1.70	1.734	0.56	1.484
1-1/2	1.50	2.125–2.115	2.375	2.406	0.320–0.310	0.300–0.290	1.56	1.98	2.016	0.62	1.859
2	2.00	2.500–2.490	2.812	2.844	0.380–0.370	0.360–0.350	2.06	2.45	2.484	0.62	2.234
2-1/2[a]	2.50	3.005–2.995	3.312	3.344	0.380–0.370	0.360–0.350	2.56	2.92	2.953	0.69	2.734
3[b]	3.00	3.625–3.615	4.000	4.031	0.380–0.370	0.360–0.350	3.06	3.55	3.578	0.75	3.359
500 psi max Recommended Working Pressure											
3	3.00	3.625–3.615	4.000	4.031	0.380–0.370	0.360–0.350	3.06	3.55	3.578	0.75	3.359
3-1/2	3.50	4.115–4.095	4.500	4.531	0.447–0.437	0.427–0.417	3.56	4.00	4.031	0.88	3.859
4	4.00	4.615–4.595	5.000	5.031	0.447–0.437	0.427–0.417	4.06	4.50	4.531	1.00	4.359
5	5.00	5.615–5.595	6.000	6.031	0.447–0.437	0.427–0.417	5.06	5.50	5.531	1.12	5.359
6000 psi max Recommended Working Pressure											
1/2	0.50	1.005–1.000	1.250	1.281	0.310–0.300	0.290–0.280	0.56	0.94	0.969	0.56	0.734
3/4	0.75	1.255–1.250	1.625	1.656	0.350–0.340	0.330–0.320	0.81	1.25	1.281	0.69	0.984
1	1.00	1.565–1.560	1.875	1.906	0.380–0.370	0.360–0.350	1.06	1.50	1.531	0.81	1.296
1-1/4	1.25	1.755–1.750	2.125	2.156	0.410–0.400	0.390–0.380	1.31	1.72	1.750	1.00	1.484
1-1/2	1.50	2.125–2.115	2.500	2.531	0.500–0.490	0.480–0.470	1.56	2.00	2.031	1.19	1.859
2	2.00	2.500–2.490	3.125	3.156	0.500–0.490	0.480–0.470	2.06	2.62	2.656	1.50	2.234

Nominal Flange Size	M OD Ref	N Dia Ref	"O" Ring Size	O ±0.03	P ±0.03	Q ±0.010	R ±0.010	S Rad	T Dia	U	V	Finished Hexagon Bolt SAE Grade 5	W	X
3000 psi max Recommended Working Pressure (except as noted)														
1/2	1.012	0.139	210	2.12	0.86	1.500	0.297	0.31	0.34	0.50	0.75	5/16–18 x 1-1/4 lg	0.75	0.34
3/4	1.262	0.139	214	2.56	0.98	1.875	0.391	0.34	0.41	0.56	0.88	3/8–16 x 1-1/4 lg	0.94	0.44
1	1.574	0.139	219	2.75	1.11	2.062	0.469	0.34	0.41	0.56	0.88	3/8–16 x 1-1/4 lg	1.03	0.52
1-1/4	1.762	0.139	222	3.12	1.39	2.312	0.547	0.41	0.47	0.56	0.88	7/16–14 x 1-1/2 lg	1.16	0.59
1-1/2	2.137	0.139	225	3.69	1.58	2.750	0.656	0.47	0.53	0.62	1.00	1/2–13 x 1-1/2 lg	1.38	0.70
2	2.512	0.139	228	4.00	1.86	3.062	0.797	0.47	0.53	0.62	1.03	1/2–13 x 1-1/2 lg	1.53	0.84
2-1/2[a]	3.012	0.139	232	4.50	2.09	3.500	0.953	0.50	0.53	0.75	1.50	1/2–13 x 1-3/4 lg	1.75	1.00
3[b]	3.637	0.139	237	5.31	2.53	4.188	1.172	0.56	0.66	0.88	1.62	5/8–11 x 1-3/4 lg	2.09	1.22
500 psi max Recommended Working Pressure														
3	3.637	0.139	237	5.31	2.52	4.188	1.172	0.56	0.66	0.75	1.06	5/8–11 x 1-3/4 lg	2.09	1.22
3-1/2	4.137	0.139	241	6.00	2.70	4.750	1.328	0.62	0.66	0.88	1.12	5/8–11 x 2 lg	2.38	1.38
4	4.637	0.139	245	6.38	2.95	5.125	1.484	0.62	0.66	1.00	1.38	5/8–11 x 2 lg	2.56	1.53
5	5.637	0.139	253	7.25	3.52	6.000	1.766	0.62	0.66	1.12	1.62	5/8–11 x 2-1/4 lg	3.00	1.81
6000 psi max Recommended Working Pressure														
1/2	1.012	0.139	210	2.22	0.89	1.594	0.312	0.31	0.34	0.62	0.88	5/16–18 x 1-1/4 lg	0.80	0.36
3/4	1.262	0.139	214	2.81	1.14	2.000	0.422	0.41	0.41	0.75	1.12	3/8–16 x 1-1/2 lg	1.00	0.47
1	1.574	0.139	219	3.19	1.33	2.250	0.500	0.47	0.47	0.88	1.44	7/16–14 x 1-3/4 lg	1.12	0.55
1-1/4	1.762	0.139	222	3.75	1.48	2.625	0.578	0.56	0.53	0.94	1.56	1/2–13 x 1-3/4 lg	1.31	0.62
1-1/2	2.137	0.139	225	4.44	1.83	3.125	0.672	0.66	0.66	1.06	1.81	5/8–11 x 2-1/4 lg	1.56	0.72
2	2.512	0.139	228	5.25	2.20	3.812	0.828	0.72	0.78	1.44	2.19	3/4–10 x 2-3/4 lg	1.91	0.88

[a] 2500 psi max recommended working pressure.

[b] 2000 psi recommended working pressure.