



SOCKET WELD SAE FLANGES

Literature





Figure 1 S/W SAE Flanges

Introduction:

Socket weld SAE flange is a SAE flange that is made according to SAE J518 / ISO 6162 standards. SAE flanges are supplied for oil hydraulic systems in sectors such as oil & gas, mobile hydraulics, and industrial hydraulics.

Material:

SAE Flanges are available in two types of materials, which is steel ST52.3 or stainless steel AISI SS316L. The SAE flange body is made from normalized forgings so that it can be used for high pressure applications. There are two kinds of surface for SAE flange which is rough surface and smooth surface. The rough surface is on the pipe end connection side, while the smooth surface is at flange to flange side.

Size Range:

For Code 61 series, SAE flanges are available in nominal size ranging from 3/8"NB (DN10) to 5"NB (DN125). While for Code 62 series, SAE flanges size are available from 3/8"NB (DN10) to 3"NB (DN80).



Figure 2 Oring Side SAE Flange

Pressure Rating:

There are two series of SAE flanges which define the pressure rating that it can withstand, respectively Code 61 Series and Code 62 Series. The working pressure for Code 61 series ranges from 34 Bar to 345 Bar, depending on the sizes. Whichever bigger the sizes, it will lower the working pressure that SAE flange can withstand. For Code 62 series, the maximum working pressure is 414 Bar.

However, the pressure rating of SAE flanges and connected equipment combinations might vary from each other. For example: if a pipe connected to the flange has a lower maximum working pressure, it will result in an overall lower working pressure of the system. Therefore in a system, the item with the lowest pressure will be the maximum working pressure of the system.

Connections Type & Configurations:



Figure 3 Flat Side SAE Flange

For the connections of SAE flanges, it is available in socket weld connection where the pipe is inserted into the recessed area of SAE flange.

SAE flanges are available in two types: O-ring Side and Flat Side. The O-ring side SAE flange contains a groove seat to place a rubber o-ring on the smooth surface. Flanges with o-ring have an advantage of preventing leakage as all metal-to-metal flanges are more prone to leakage. While Flat sides of SAE flange are SAE flanges that come with bolt thread either in metric bolt thread or unc bolt thread.

The configurations of SAE flanges are available in o-ring side, flat side or complete set. A complete set of SAE flange is a combination of o-ring side with flat side where it forms a seal between the flat surface and o-ring held in a recessed circular groove in the other half. By tightening the allen cap screws in diagonal sequence, it draws flat side and o-ring side together and compresses the o-ring.

SAE flange complete set is tightened by using socket head cap screws and spring washers according to the recommended torque value. According to SAE J518 standard, the lengths of cap screws are usually shorter than the overall length of the SAE flange complete set.

Steps to assemble SAE Flanges:

STEP 1



- Ensure the sealed surface is free from scratches and contamination.
- Lubricate with system fluid or any compatible lubricant on the surface of the O-ring portion.

STEP 2



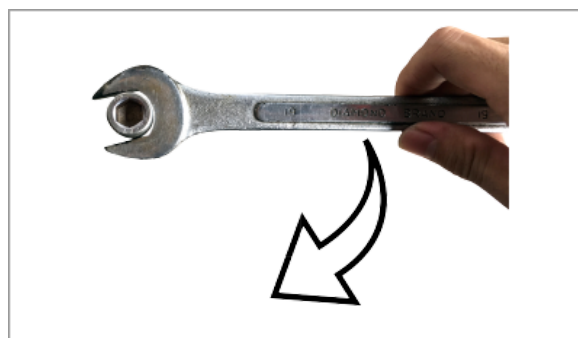
- Position the flange.
- Place the washer on cap screws and bolt through the bolt holes.

STEP 3



- Tighten the cap screws by hand.
- Torque the cap screws gradually in diagonal sequence till the appropriate torque level based on the below torque table.

STEP 4



- Tighten the cap screws according to the below torque table.

3000 PSI Series (Code 61) Flange Recommended Screw Torque Table:

Metric Size	Flange Size	Screw Thread	Screw Torque (NM)
13	1/2"	M8	32
19	3/4"	M10	70
25	1"	M10	70
32	1 1/4"	M10	70
38	1 1/2"	M12	130
51	2"	M12	130
64	2 1/2"	M12	130
76	3"	M16	295
89	3 1/2"	M16	295
102	4"	M16	295
127	5"	M16	295

6000 PSI Series (Code 62) Flange Recommended Screw Torque Table:

Metric Size	Flange Size	Screw Thread	Screw Torque (NM)
13	1/2"	M8	32
19	3/4"	M10	60
25	1"	M12	60
32	1 1/4"	M12	92
38	1 1/2"	M16	150
51	2"	M20	150
64	2 1/2"	M24	150
75	3"	M30	295

Chuan Kok Hardware & Machinery Pte Ltd

Address : 1783 Geylang Bahru, #01-02, Singapore 339708
Telephone Number : +65 6294 2566
Email Address : info@chuankok.com
Website : www.chuankok.com
Business Registration Number : 198201577Z
Country of Registration : Singapore

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