



TECHNICAL TIPS LINE MOUNT BODIES



- All dimensions are metric, unless otherwise specified.

SUN Hydraulics offers more than 300 different line mount bodies for its screw-in cartridges, all available in a choice of either aluminium or SG iron. These passive mounting configurations greatly simplify the installation of SUN cartridges in both new and existing circuits. Because oil flow is confined within the body, leakage points are minimized. The result is a reliable hydraulic circuit with a high degree of stiffness.

SUN line mount bodies feature from one to five SUN cavities with various porting options for oil distribution. SUN offers ports in the following configurations:

- NPTF – National Pipe Straight Thread for Fuels (.25 to 1.25 inch)
- BSPP – British Standard Pipe Parallel (.25 to 1.25 inch)
- SAE – Modified (see table below) Straight Thread with O-ring Boss (4 thru 20)
- SAE Code 61 and Code 62 Four-Bolt Split Flange (.50 thru 2.00 inch)

MATERIAL PROPERTIES

Grade 6061-T6 Aluminium– Material Pressure Rating 210 bar

For its aluminium bodies, SUN uses a 6000 series aluminium alloy that offers high strength characteristics and good corrosion resistance in the finished product. The mechanical properties of grade 6061-T6 aluminium are:

Ultimate Strength (Tension)	3060 bar
Yield Strength (Tension)	2720 bar
Elongation	12%
Brinell Hardness	95
Ultimate Shear Strength	2040 bar
Fatigue Endurance Limit	950 bar
Elasticity	0,7 x 10 ⁶ bar

Grade 65-45-12 SG Iron– Material Pressure Rating 350 bar

SUN uses a SG iron that offers high tensile strength and good ductility for its iron bodies. All SG iron SUN bodies use iron produced by the continuous cast method which provides a body that possesses a dense, homogeneous structure with minimal inclusions for high pressure integrity. After machining, all SG iron SUN bodies go through a surface impregnation process in which the material is chemically blackened. The mechanical properties of grade 65-4SG iron 5-12 are:

Ultimate Strength (Tension)	4420 bar
Yield Strength (Tension)	3060 bar
Elongation	12%
Brinell Hardness	170 – 207
Ultimate Shear Strength	3950 bar
Fatigue Endurance Limit	2070 bar
Elasticity	1,66 X 10 ⁶ bar

SUN's Modified SAE Straight Thread with O-ring Boss

To conserve material, SUN modifies the SAE standard counterbore diameter on its SAE straight threads. The modification uses a smaller spotface than the standard SAE diameter which may result in certain fittings not seating correctly. The table below compares SUN's SAE counterbore diameters with the standard SAE specification. Swivel and ORS fittings do not present interference problems with the SUN modified counterbore diameter. However, the across corner dimension of certain hex fittings will interfere with the spotface and therefore may not seat correctly. A column of comparative specifications is shown in the table and hex fittings that present interference problems are identified with an asterisk.

SAE COUNTERBORE DIAMETERS

SAE Size	SUN Counterbore	SAE Recommended Counterbore	Fittings Hex Size		
-4	17,1	21	12,7	14,3	17,5(*)
-6	20,6	24,6	17,5	19,1(*)	23,8(*)
-8	26,2	30,2	20,6	22,2	25,4(*)
-10	30,2	34,1	25,4	28,6(*)	
-12	37,3	41,3	28,6	31,8	34,9(*)
-16	44,5	48,5	34,9	38,1	41,3(*)
-20	55,6	57,7	42,9	47,6	

(*) Hex fittings that present interference problems.

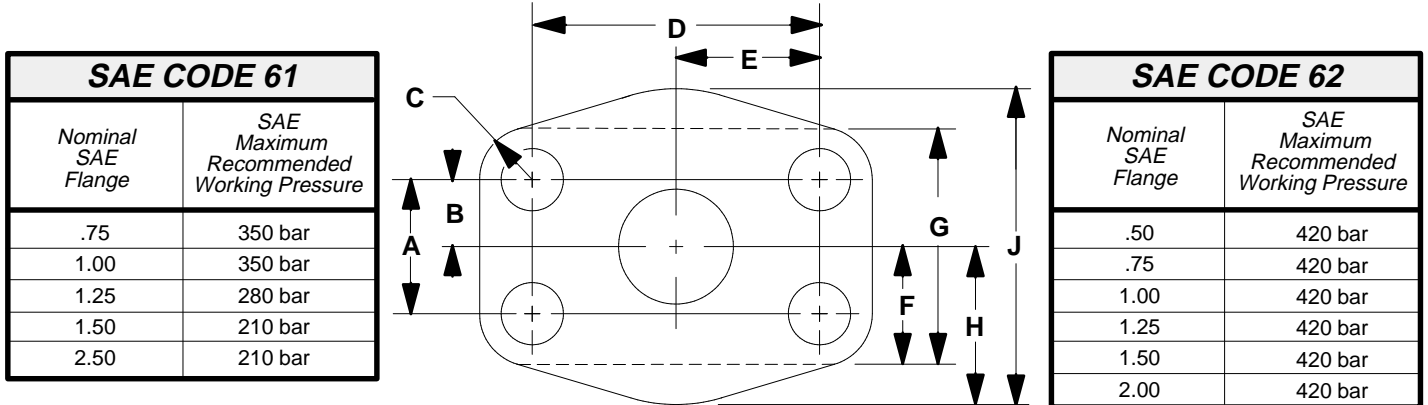
11



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- SAE Flange Pattern Specifications



SAE CODE 61	
Nominal SAE Flange	SAE Maximum Recommended Working Pressure
.75	350 bar
1.00	350 bar
1.25	280 bar
1.50	210 bar
2.50	210 bar

SAE CODE 62	
Nominal SAE Flange	SAE Maximum Recommended Working Pressure
.50	420 bar
.75	420 bar
1.00	420 bar
1.25	420 bar
1.50	420 bar
2.00	420 bar

SAE CODE 61										SAE CODE 62									
Four-Bolt Flange Pattern										Four-Bolt Flange Pattern									
SAE Flange	A	B	C	D	E	F	G	H	J	SAE Flange	A	B	C	D	E	F	G	H	J
.75	22,2	11,1	8,7	47,6	23,8	20,6	41,3	26,2	52,4	.50	18,3	9,1	7,9	40,5	20,2	19,1	38,1	23,8	47,6
1.00	26,2	13,1	8,7	52,4	26,2	23,8	47,6	29,4	58,7	.75	23,8	11,9	10,3	50,8	25,4	23,8	47,6	30,2	60,3
1.25	30,2	15,1	10,3	58,7	29,4	27	54	36,5	73	1.00	27,8	13,9	11,9	57,2	28,6	27	54	34,9	69,9
1.50	35,7	17,9	11,9	69,9	34,9	31,8	63,8	41,3	82,6	1.25	31,8	15,9	14,3	66,7	33,3	30,2	60,3	38,9	77,8
2.00	42,9	21,4	11,9	77,8	38,9	38,1	76,2	48,4	96,8	1.50	36,5	18,3	16,7	79,4	39,7	34,9	69,9	47,6	95,3
										2.00	44,5	22,2	18,3	96,8	48,4	42,9	85,7	57,2	14,3

Inch Mounting Dimensions					Inch Mounting Dimensions				
SAE Flange	Hole Diameter	Hole Thread	Hole Thread Depth	Hole Counterbore Diameter	SAE Flange	Hole Diameter	Hole Thread	Hole Thread Depth	Hole Counterbore Diameter
.75	10,4	.375-16 UNC	22,2	15,1	.50	8,6	.312-18 UNC	20,6	12,7
1.00	10,4	.375-16 UNC	22,2	15,1	.75	10,4	.375-16 UNC	23,8	15
1.25	11,9	.438-14 UNC	28,6	17,5	1.00	11,9	.438-14 UNC	27	17,5
1.50	13,5	.500-13 UNC	27	19,8	1.25	13,5	.500-13 UNC	25,4	19,8
2.00	13,5	.500-13 UNC	27	19,8	1.50	16,8	.625-11 UNC	34,9	24,6
					2.00	19,8	.750-10 UNC	38,1	29,4

Reference: J518 4-Bolt Flange

Metric Mounting Dimensions					Metric Mounting Dimensions				
SAE Flange	Hole Diameter	Hole Thread	Hole Thread Depth	Hole Counterbore Diameter	SAE Flange	Hole Diameter	Hole Thread	Hole Thread Depth	Hole Counterbore Diameter
.75	10,7	M10 x 1.5-6H	22,2	17,5	.50	8,6	M8 x 1.25-6H	20,6	14,3
1.00	10,7	M10 x 1.5-6H	22,2	17,5	.75	10,7	M10 x 1.50-6H	23,8	17,5
1.25	10,7	M10 x 1.5-6H	28,6	17,5	1.00	12,7	M12 x 1.75-6H	27	19,1
1.50	12,7	M12 x 1.75-6H	27	19,1	1.25	15	M14 x 2.0-6H	28,4	22,2
2.00	12,7	M12 x 1.75-6H	27	19,1	1.50	16,8	M16 x 2.0-6H	34,9	25,4
					2.00	20,6	M20 x 2.5-6H	38,1	31,8

Reference: DIN 20066 4-Bolt Flange