



TECHNICAL TIPS LINE MOUNT BODIES



- All dimensions in this catalog are in inches, 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 aluminum or ductile 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 Aluminum— Material Pressure Rating 3000 psi

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

Ultimate Strength (Tension)	45,000 psi
Yield Strength (Tension)	40,000 psi
Elongation	12%
Brinell Hardness	95
Ultimate Shear Strength	30,000 psi
Fatigue Endurance Limit	14,000 psi
Elasticity	10 X 10 ⁶ psi

Grade 65-45-12 Ductile Iron— Material Pressure Rating 5000 psi

SUN uses a ductile iron that offers high tensile strength and good ductility for its iron bodies. All SUN ductile iron 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 SUN ductile iron bodies go through a surface impregnation process in which the material is chemically blackened. The mechanical properties of grade 65-45-12 ductile iron are:

Ultimate Strength (Tension)	65,000 psi
Yield Strength (Tension)	45,000 psi
Elongation	12%
Brinell Hardness	170 – 207
Ultimate Shear Strength	58,000 psi
Fatigue Endurance Limit	30,500 psi
Elasticity	24.4 X 10 ⁶ psi

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	.672	.828	.500	.5625	.6875(*)
-6	.812	.969	.6875	.750(*)	.9375(*)
-8	1.031	1.188	.8125	.875	1.000(*)
-10	1.188	1.344	1.000	1.125(*)	
-12	1.469	1.625	1.125	1.250	1.375(*)
-16	1.750	1.910	1.375	1.500	1.625(*)
-20	2.188	2.270	1.6875	1.875	

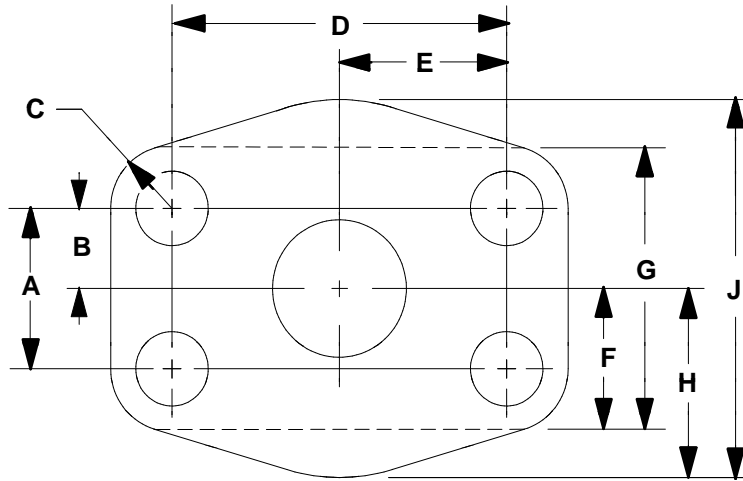


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- SAE Flange Pattern Specifications

SAE CODE 61	
Nominal SAE Flange	SAE Maximum Recommended Working Pressure
3/4"	5000 psi
1"	5000 psi
1 1/4"	4000 psi
1 1/2"	3000 psi
2"	3000 psi



SAE CODE 62	
Nominal SAE Flange	SAE Maximum Recommended Working Pressure
.50	6000 psi
.75	6000 psi
1.00	6000 psi
1.25	6000 psi
1.50	6000 psi
2.00	6000 psi

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	.875	.438	.344	1.875	.938	.812	1.625	1.031	2.062	.50	.719	.359	.312	1.594	.797	.750	1.500	.938	1.875
1.00	1.031	.516	.344	2.062	1.031	.938	1.875	1.156	2.312	.75	.938	.469	.406	2.000	1.000	.938	1.875	1.188	2.375
1.25	1.188	.594	.406	2.312	1.156	1.062	2.125	1.438	2.875	1.00	1.094	.547	.469	2.250	1.125	1.062	2.125	1.375	2.750
1.50	1.406	.703	.469	2.750	1.375	1.250	2.500	1.625	3.250	1.25	1.250	.625	.562	2.625	1.312	1.188	2.375	1.531	3.062
2.00	1.688	.844	.469	3.062	1.531	1.500	3.000	1.906	3.812	1.50	1.438	.719	.656	3.125	1.562	1.375	2.750	1.875	3.750
										2.00	1.750	.875	.719	3.812	1.906	1.688	3.375	2.250	4.500
Inch Mounting Dimensions										Inch Mounting Dimensions									
SAE Flange	Hole Diameter	Hole Thread	Hole Thread Depth	Hole Cbore Diameter	SAE Flange	Hole Diameter	Hole Thread	Hole Thread Depth	Hole Cbore Diameter										
.75	.41	.375-16 UNC	.875	.594	.50	.34	.312-18 UNC	.812	.500										
1.00	.41	.375-16 UNC	.875	.594	.75	.41	.375-16 UNC	.938	.590										
1.25	.47	.438-14 UNC	1.125	.688	1.00	.47	.438-14 UNC	1.062	.688										
1.50	.53	.500-13 UNC	1.062	.781	1.25	.53	.500-13 UNC	1.000	.781										
2.00	.53	.500-13 UNC	1.062	.781	1.50	.66	.625-11 UNC	1.375	.969										
					2.00	.78	.750-10 UNC	1.500	1.156										
Reference: J518 4-Bolt Flange										Reference: J518 4-Bolt Flange									
Metric Mounting Dimensions										Metric Mounting Dimensions									
SAE Flange	Hole Diameter	Hole Thread	Hole Thread Depth	Hole Cbore Diameter	SAE Flange	Hole Diameter	Hole Thread	Hole Thread Depth	Hole Cbore Diameter										
.75	.42	M10X1.5-6H	.875	.69	.50	.34	M8X1.25-6H	.812	.562										
1.00	.42	M10X1.5-6H	.875	.69	.75	.42	M10X1.50-6H	.938	.688										
1.25	.42	M10X1.5-6H	1.125	.69	1.00	.50	M12X1.75-6H	1.062	.750										
1.50	.50	M12X1.75-6H	1.062	.75	1.25	.59	M14X2.0-6H	1.000	.875										
2.00	.50	M12X1.75-6H	1.062	.75	1.50	.66	M16x2.0-6H	1.375	1.000										
					2.00	.81	M20x2.5-6H	1.500	1.250										
Reference: DIN 20066 4-Bolt Flange										Reference: DIN 20066 4-Bolt Flange									