



SCM 010-130 ISO is a range of robust axial piston motors especially suitable for mobile hydraulics.

SCM 010-130 ISO is of the bent-axis type with spherical pistons. The design results in a compact motor with few moving parts, high starting torque and high reliability. It covers the entire displacement range 10-130 cm³/rev. at a maximum pressure of 400 bar. The motors well dimensioned, double tapered roller bearings which permit high shaft loads and lead to excellent speed characteristics. The high level of reliability is based on the choice of materials, hardening methods, surface structures and the quality assured manufacturing process.

Other advantages:

- High maximum speed
- Smooth operation over the entire speed range
- Available in many different configurations of shafts and connections
- High efficiency
- Speed sensor available as option
- Suitable for applications with high angular accelerations due to its high rotary stiffness

Versions, main data

Example

SC	M	-	012	W	-	P	-	I41	-	W25	-	K3	G	-	1	00
Line	1		2	3		4		5		6		7	8		9	10

Line

SC	Sunfab Compact, bent-axis design
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1. Type

M	Motor
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2. Displacement

010	012	017	025	034	040	047	056	064	084	090	108	130
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3. Direction of rotation

W	Independent
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4. Shaft seal

P	FPM, high pressure, high temperature
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For low temperature applications, below -25 °C please contact Sunfab.

5. Mounting flange

ISO 3019-2	010	012	017	025	034	040	047	056	064	084	090	108	130
I41 ISO 4-h ø80	X	X	X	-	-	-	-	-	-	-	-	-	-
I42 ISO 4-h ø100	O	O	O	X	X	-	-	-	-	-	-	-	-
I43 ISO 4-h ø125	-	-	-	-	-	X	X	X	X	-	-	-	-
I44 ISO 4-h ø140	-	-	-	-	-	-	-	-	-	X	X	O	O
I45 ISO 4-h ø160	-	-	-	-	-	-	-	-	-	O	O	X	X

- = Not available

X = Standard, preferred

O = Contact Sunfab

6. Shaft

	010	012	017	025	034	040	047	056	064	084	090	108	130
Spline DIN 5480													
W20 W20x1.25x14x9g	X	X	X	-	-	-	-	-	-	-	-	-	-
W25 W25x1.25x18x9g	X	X	X	X (X)	-	-	-	-	-	-	-	-	-
W30 W30x2x14x9g	-	-	-	X	X	X	X	X (X)	-	-	-	-	-
W32 W32x2x14x9g	-	-	-	-	-	X	X	X (X)	-	-	-	-	-
W35 W35x2x16x9g	-	-	-	-	-	X	X	X	X	X	-	-	-
W40 W40x2x18x9g	-	-	-	-	-	-	-	-	-	X	X	X	X
W45 W45x2x21x9g	-	-	-	-	-	-	-	-	-	O	O	X	X
Key DIN 6885													
K20 ø 20 k6	X	X	X	-	-	-	-	-	-	-	-	-	-
K25 ø 25 k6	X	X	X	X (X)	-	-	-	-	-	-	-	-	-
K28 ø 28 k6	X	X	X	-	-	-	-	-	-	-	-	-	-
K30 ø 30 k6	O	O	O	X	X	X	X	X (X)	-	-	-	-	-
K35 ø 35 k6	-	-	-	-	-	X	X	X	X	-	-	-	-
K40 ø 40 k6	-	-	-	-	-	-	-	-	-	X	X	O	O
K45 ø 45 k6	-	-	-	-	-	-	-	-	-	O	O	X	X
Custom													
X30* ø 30 k6	X	X	X	-	-	-	-	-	-	-	-	-	-

- = Not available

X = Standard, preferred

O = Contact Sunfab

(X) = Limited maximum pressure, contact Sunfab

*Cylindrical shaft without key

7. Connection cover

		010	012	017	025	034	040	047	056	064	084	090	108	130
S1	40° Mount flange vertical*	-	-	-	-	-	-	-	-	-	X	X	X	X
S2	40° Mount flange horizontal*	-	-	-	X	X	X	X	X	X	-	-	-	-
S3	40° Threaded connection	X	X	X	X	X	-	-	-	-	-	-	-	-
V1	90° Mount flange vertical*	-	-	-	-	-	-	-	-	-	X	X	X	X
V2	90° Mount flange horizontal*	-	-	-	X	X	X	X	X	X	X	X	X	X
R1	Side connections, flanged*	-	-	-	X	X	X	X	X	X	X	X	X	X
K3	Combicover 90° side conn. thread	X	X	X	X	X	-	-	-	-	-	-	-	-

*According to SAE J518 code 62

8. Connections

		010	012	017	025	034	040	047	056	064	084	090	108	130
G	ISO G*	X	X	X	X	X	-	-	-	-	-	-	-	-
M	Metric **	-	-	-	X	X	X	X	X	X	X	X	X	X
U	UN***	X	X	X	X	X	X	X	X	X	X	X	X	X

*Only threaded connections

**Only flanged connections

***Not available for K3

9. Additional

1	External drainage
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10. Speed Sensor

		010	012	017	025	034	040	047	056	064	084	090	108	130
00	No Speed Sensor	X	X	X	X	X	X	X	X	X	X	X	X	X
P1	Prepared for Speed Sensor	X	X	X	X	X	X	X	X	X	X	X	X	X
S1	Fitted Speed Sensor type PNP*	X	X	X	X	X	X	X	X	X	X	X	X	X
S2	Fitted Speed Sensor type NPN*	X	X	X	X	X	X	X	X	X	X	X	X	X

*See separate brochure "Speed Sensor hall" for more information.

SCM 010-130 ISO		010	012	017	025	034	040	047	056	064	084	090	108	130
Displacement														
cm ³ /rev		9.6	12.6	17.0	25.4	34.2	41.2	47.1	56.7	63.5	83.6	90.7	108.0	130.0
Working pressure														
bar	<i>max intermittent</i>	400	400	400	400	400	400	400	400	400	400	400	400	350
	<i>max continuous</i>	350	350	350	350	350	350	350	350	350	350	350	350	300
Revolutions														
rpm	<i>max intermittent</i>	8800	8800	8800	7000	7000	6300	6300	6300	6300	5200	5200	5200	5200
	<i>max continuous</i>	8000	8000	8000	6300	6300	5700	5700	5700	5700	4700	4700	4700	4700
	<i>min continuous</i>	300	300	300	300	300	300	300	300	300	300	300	300	300
Max power														
kW	<i>max intermittent</i>	41	54	74	86	115	125	145	175	195	215	230	275	285
	<i>max continuous</i>	15	20	25	40	55	60	65	80	90	100	110	130	135
Starting torque theoretical value														
Nm/bar		0.15	0.20	0.27	0.40	0.54	0.66	0.75	0.89	1.00	1.33	1.44	1.71	2.06
Moment of inertia (x 10⁻³)														
kg m ²		0.9	0.9	0.9	1.1	1.1	2.6	2.6	2.6	2.6	7.4	7.4	7.4	7.4
Weight														
kg		8.5	8.5	8.5	9.5	9.5	16.5	16.5	16.5	16.5	28.0	28.0	30.5	30.5

Data concerning RPM are based on maximum permitted peripheral velocity of the tapered roller bearing.

Max intermittent power data may vary dependent on application. For further information please contact Sunfab.

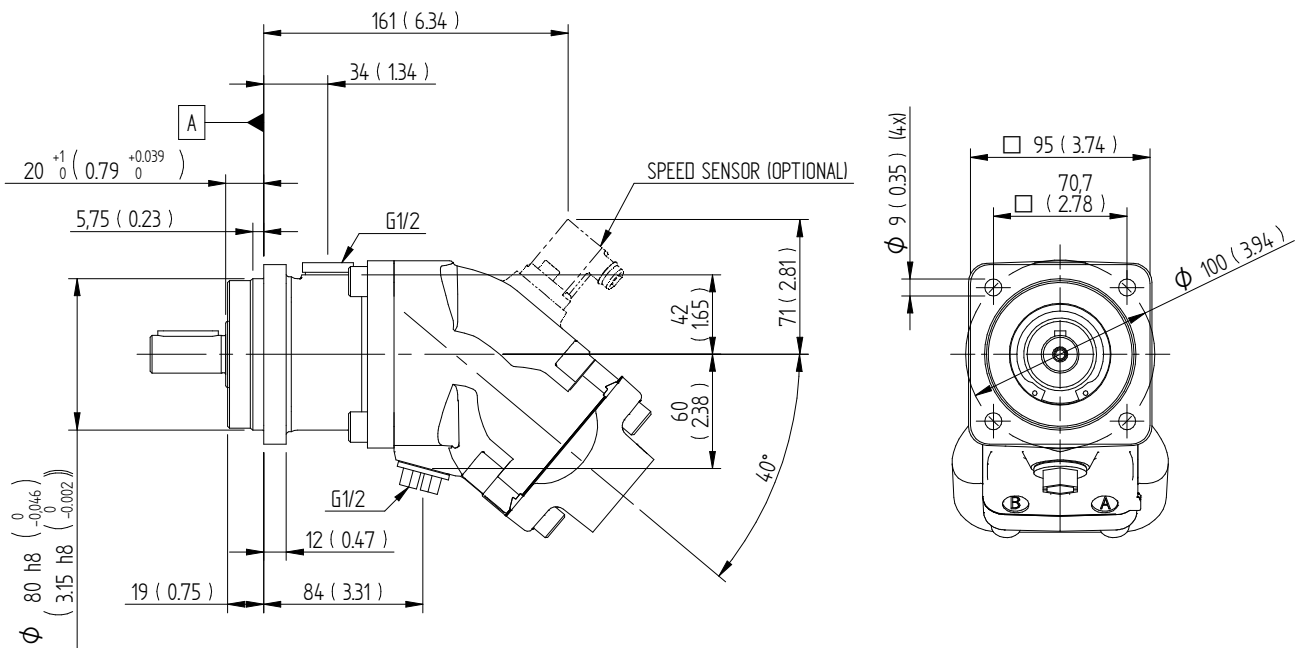
Continuous power data are based on maximum output power without external cooling of the motor housing.

Intermittent duty is defined as follows: max 6 seconds per minute, e.g. peak RPM when unloading or accelerating.

Dimensions SCM 010-017

Millimeter (inch)

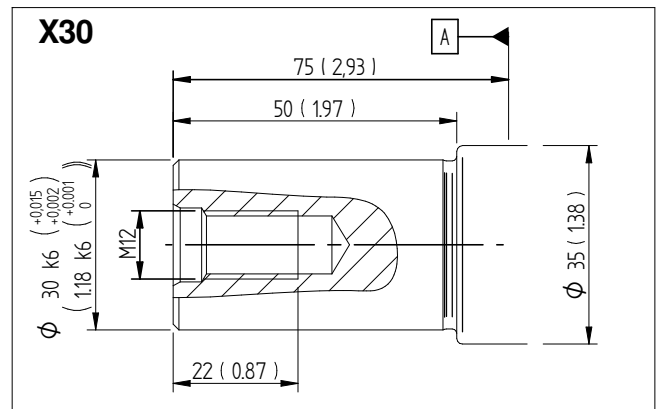
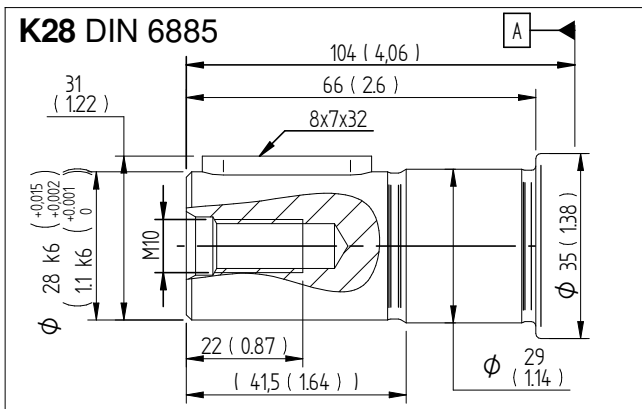
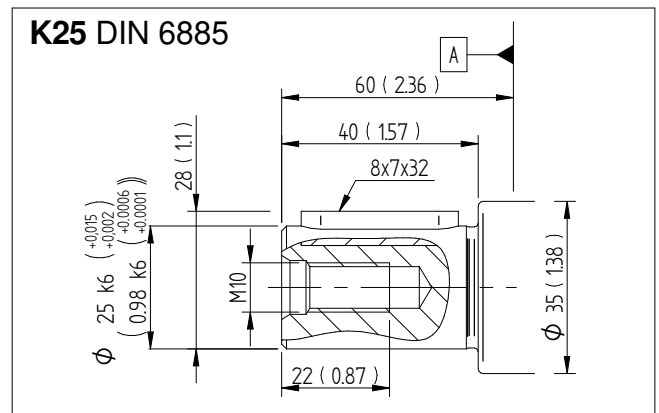
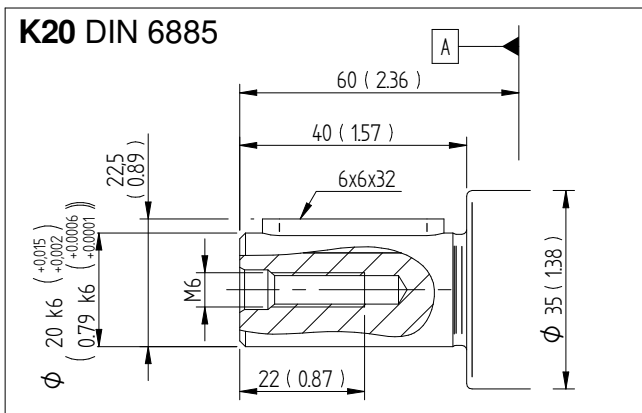
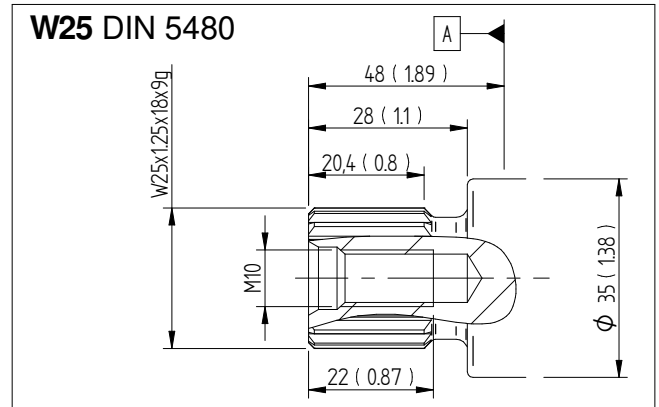
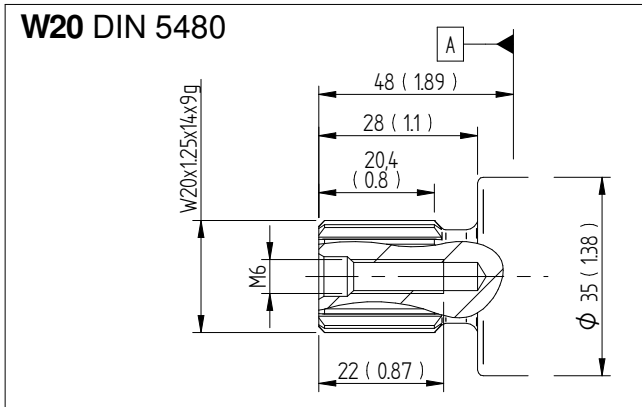
I41 ISO 3019-2



Dimensions SCM 010-017

Shafts

Millimeter (inch)



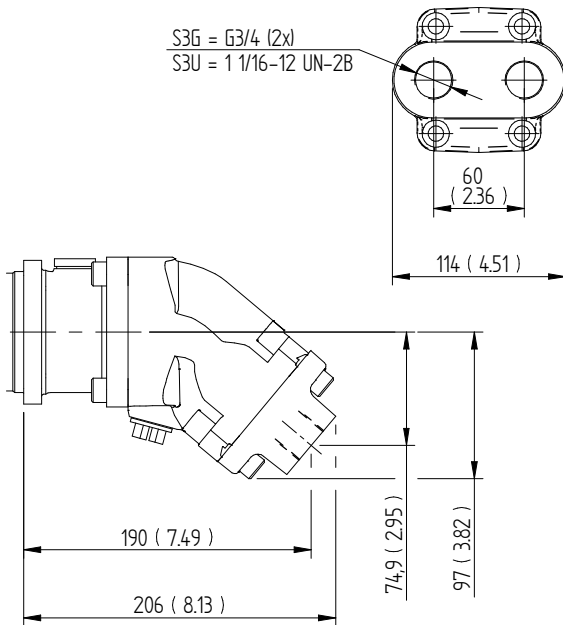
Dimensions SCM 010-017

Connection cover

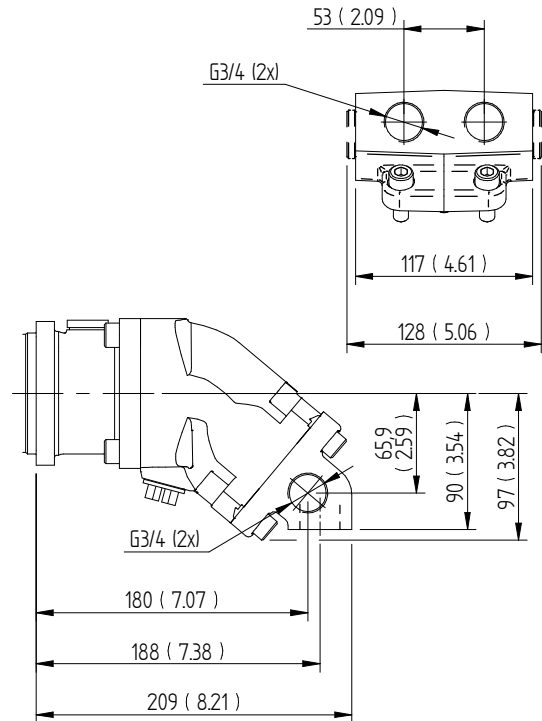
Millimeter (inch)

S3G/S3U

S3G = G3/4 (2x)
S3U = 1 1/16-12 UN-2B



K3G

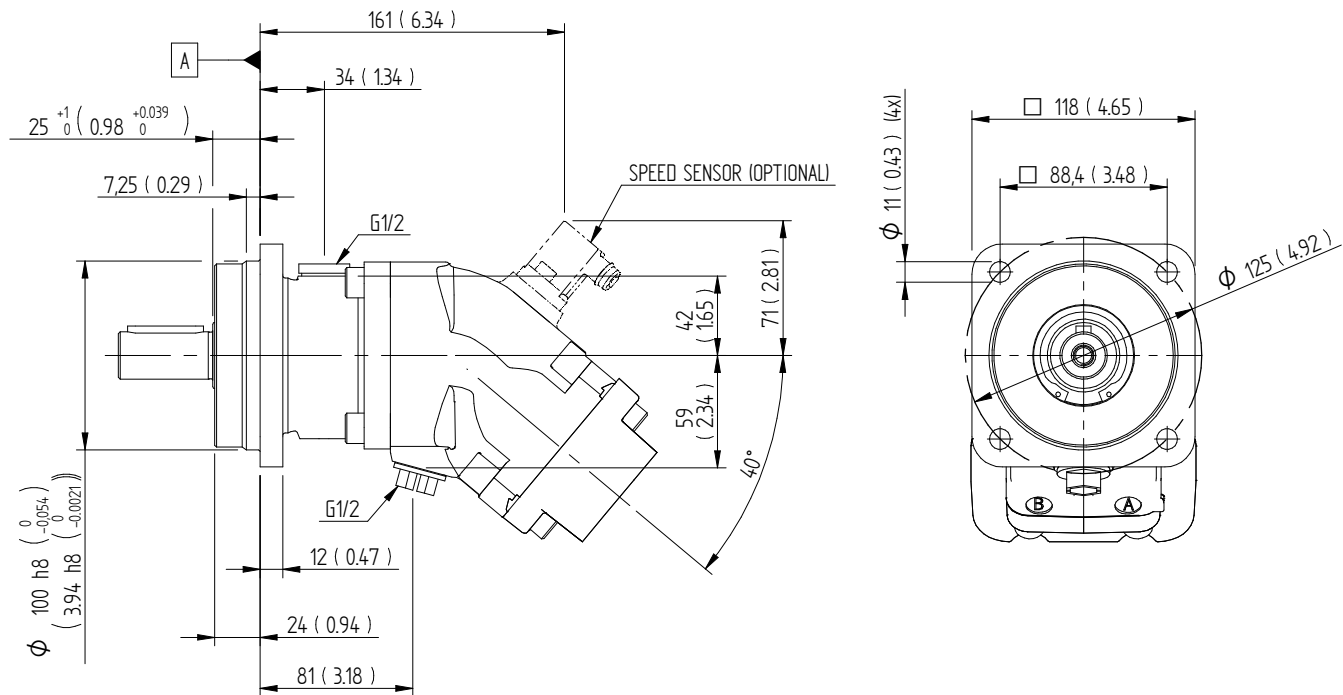


Dimensions SCM 025-034

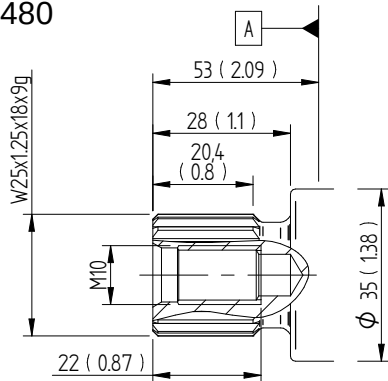
Flange & shafts

Millimeter (inch)

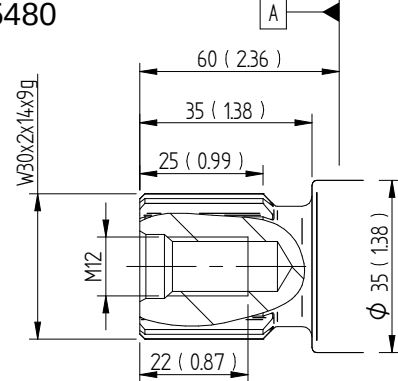
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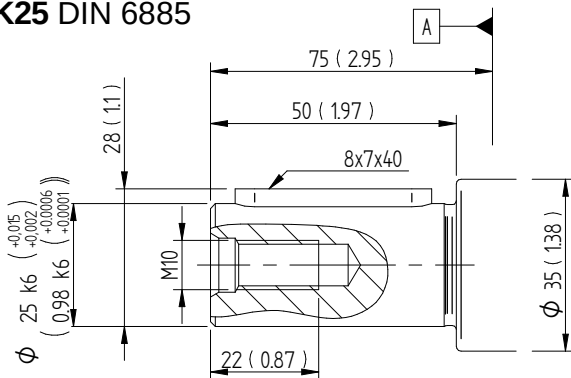
W25 DIN 5480



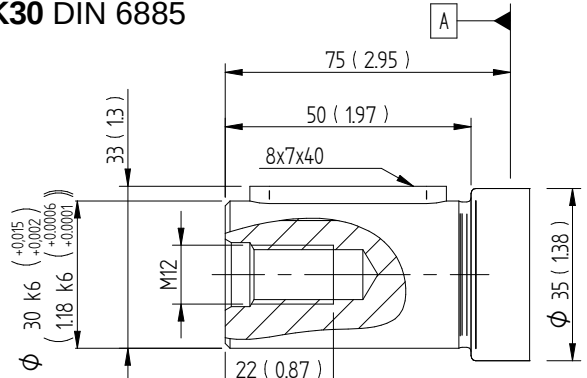
W30 DIN 5480



K25 DIN 6885



K30 DIN 6885



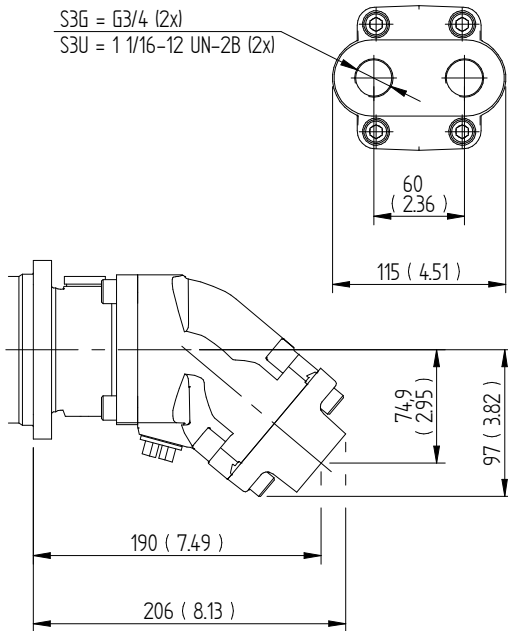
Dimensions SCM 025-034

Connection cover

Millimeter (inch)

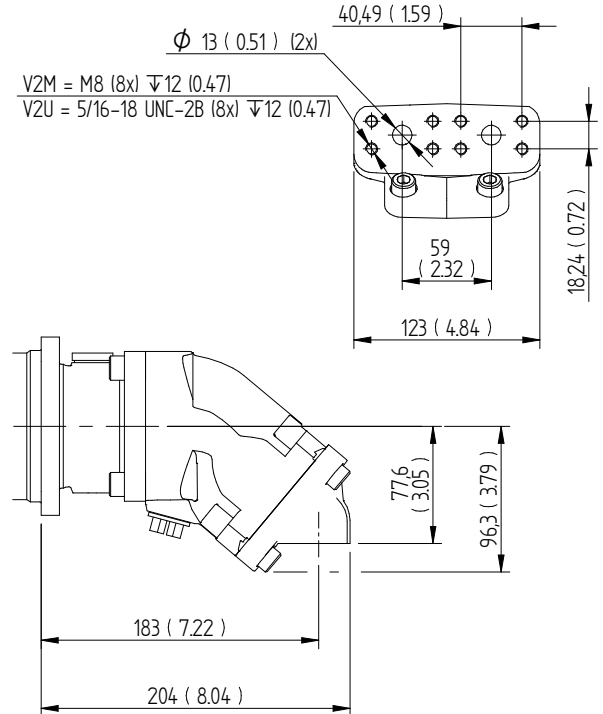
S3G/S3U

S3G = G3/4 (2x)
S3U = 1 1/16-12 UN-2B (2x)



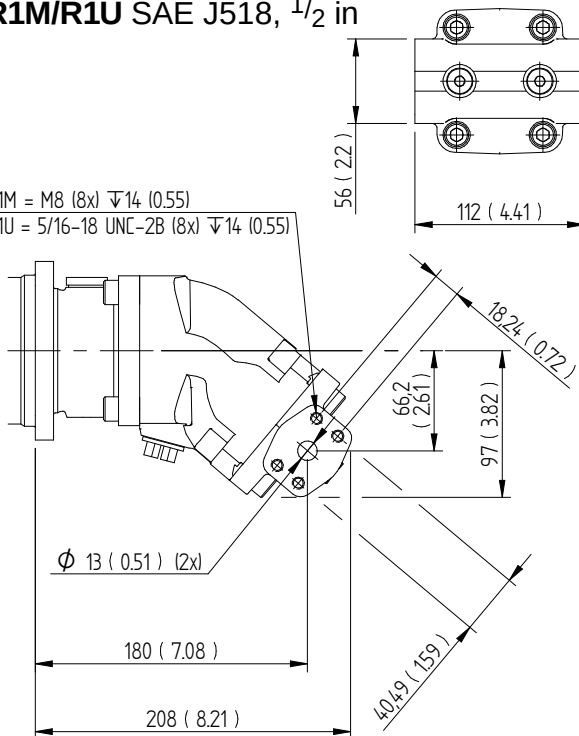
V2M/V2U SAE J518, 1/2 in

V2M = M8 (8x) ∇ 12 (0.47)
V2U = 5/16-18 UNC-2B (8x) ∇ 12 (0.47)

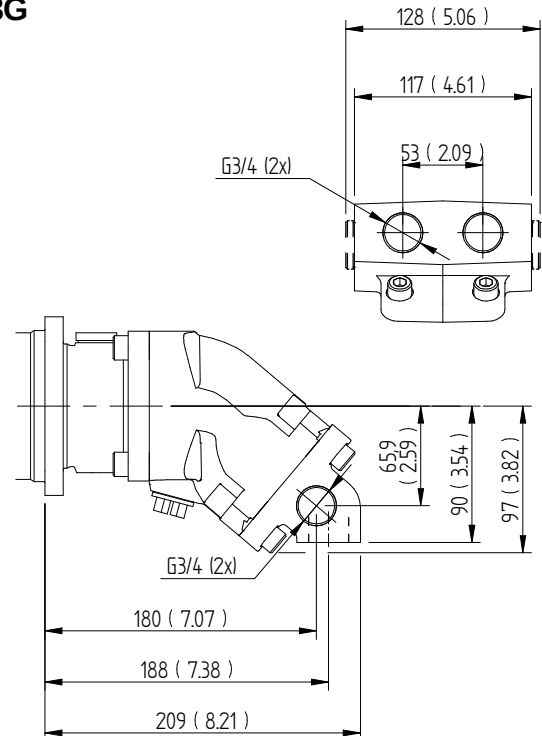


R1M/R1U SAE J518, 1/2 in

R1M = M8 (8x) ∇ 14 (0.55)
R1U = 5/16-18 UNC-2B (8x) ∇ 14 (0.55)



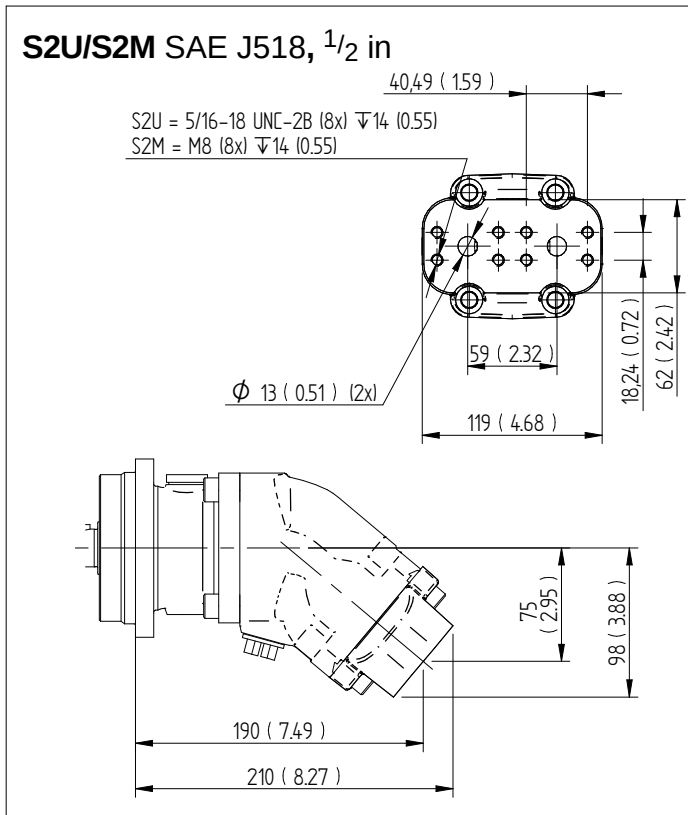
K3G



Dimensions SCM 025-034

Connection cover

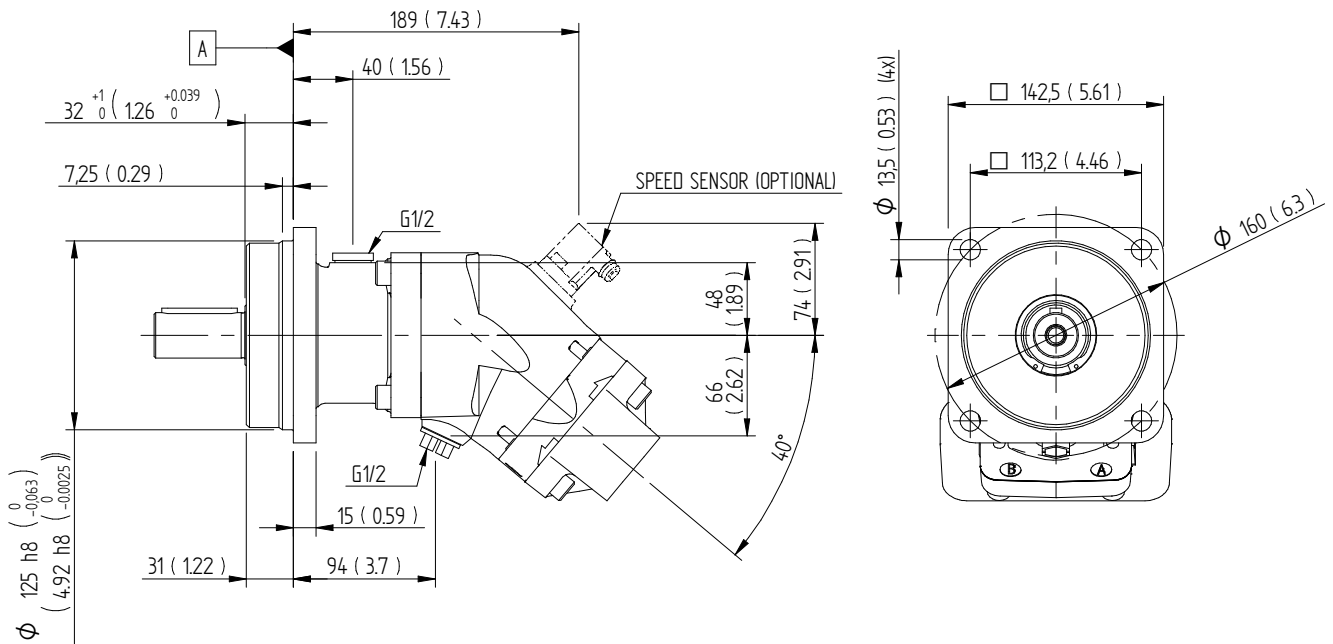
Millimeter (inch)



Dimensions SCM 040-064

Millimeter (inch)

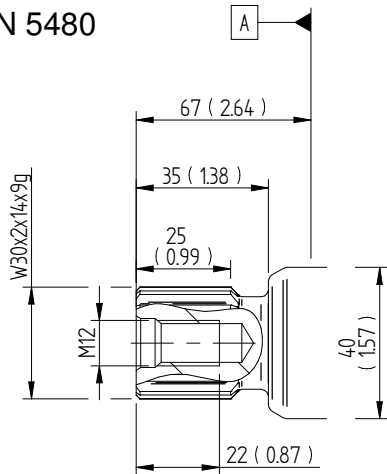
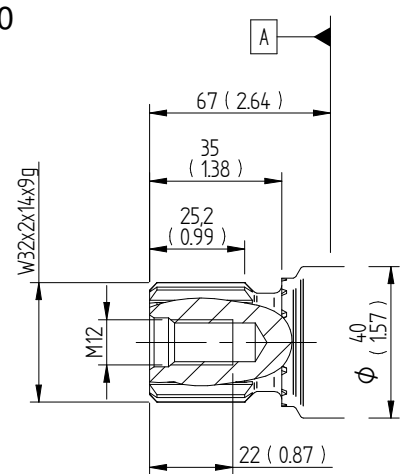
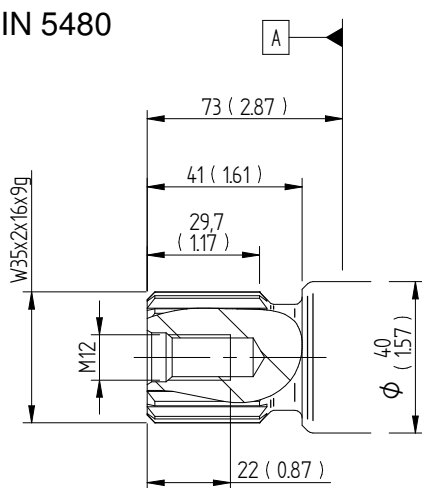
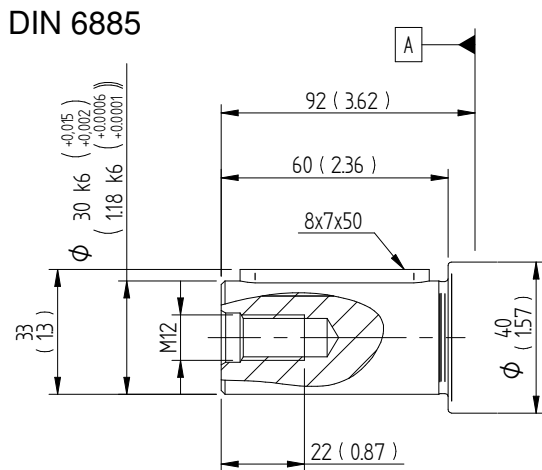
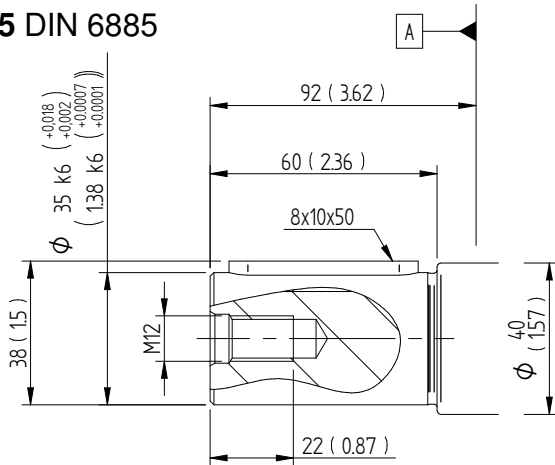
I43 ISO 3019-2



Dimensions SCM 040-064

Shafts

Millimeter (inch)

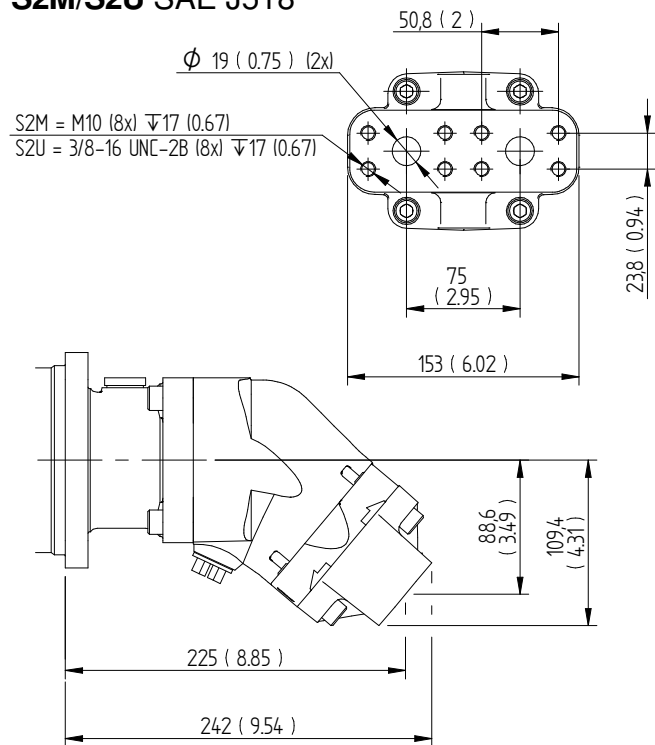
W30 DIN 5480**W32 DIN 5480****W35 DIN 5480****K30 DIN 6885****K35 DIN 6885**

Dimensions SCM 040-064

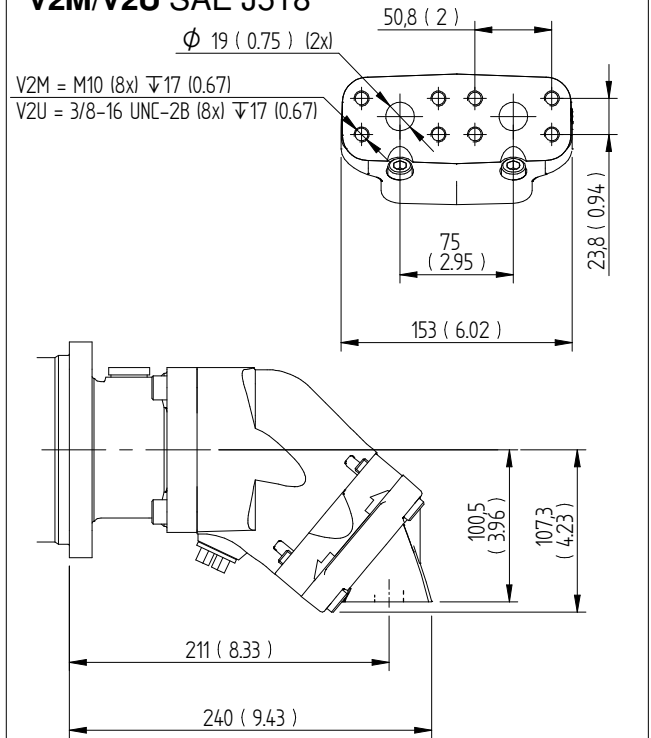
Connection cover

Millimeter (inch)

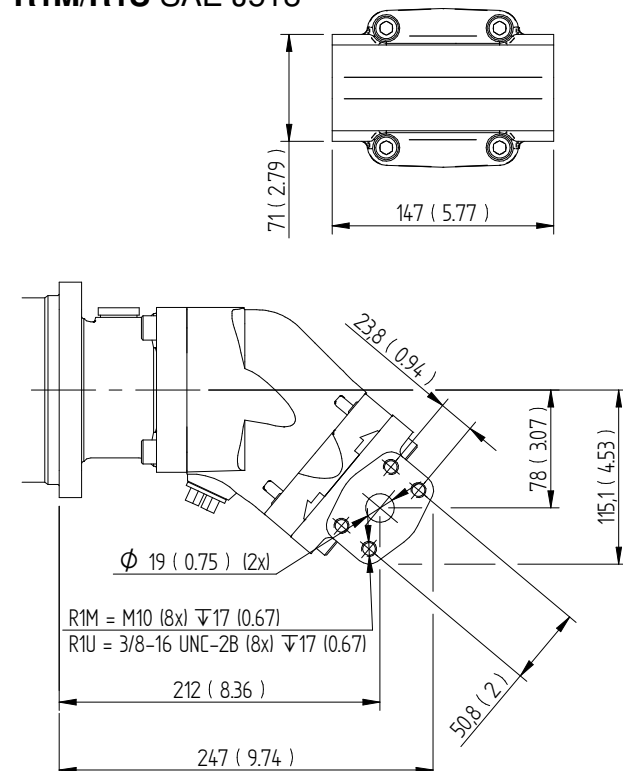
S2M/S2U SAE J518



V2M/V2U SAE J518



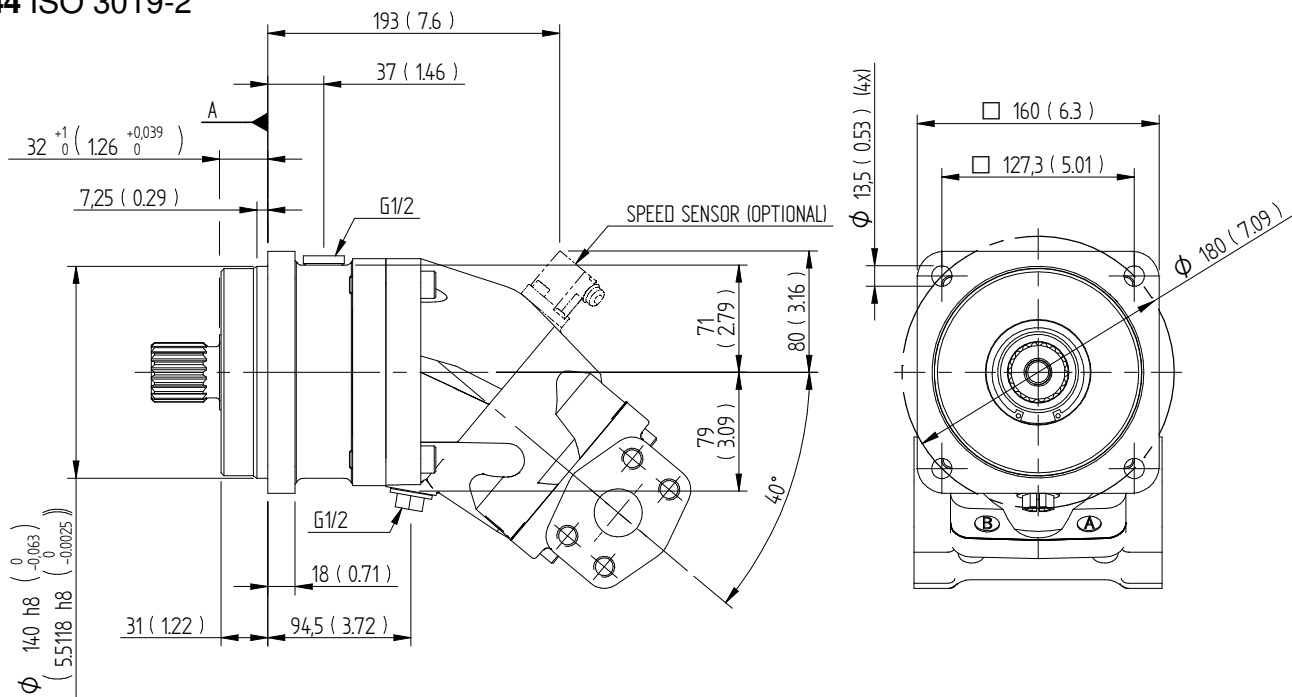
R1M/R1U SAE J518



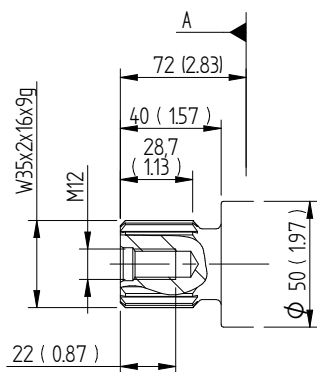
Dimensions SCM 084-090

Millimeter (inch)

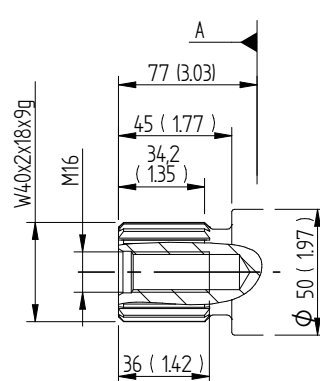
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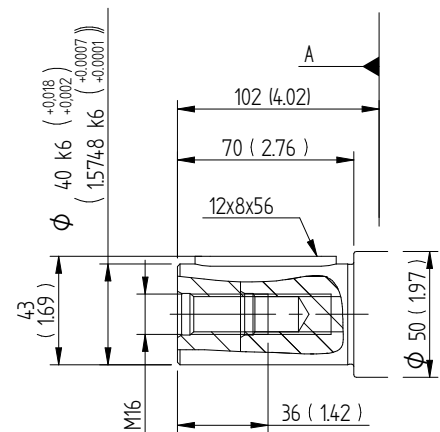
W35 DIN 5480



W40 DIN 5480



K40 DIN 6885

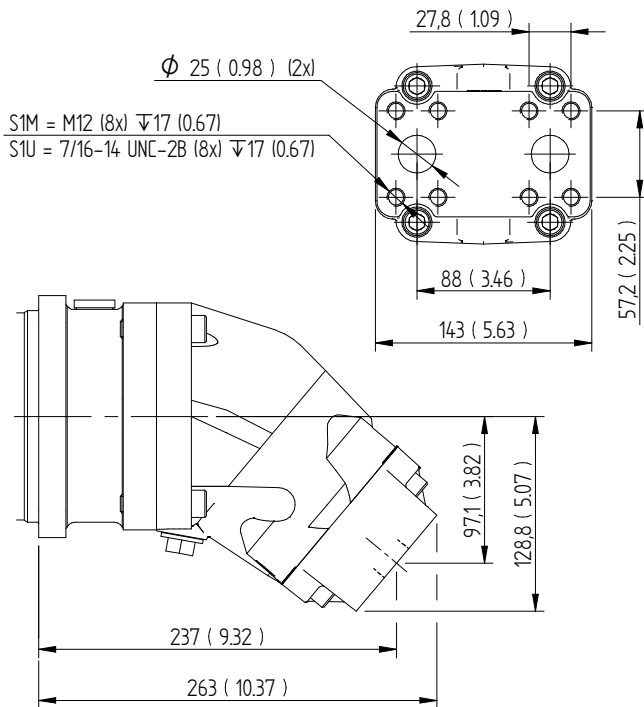


Dimensions SCM 084-090

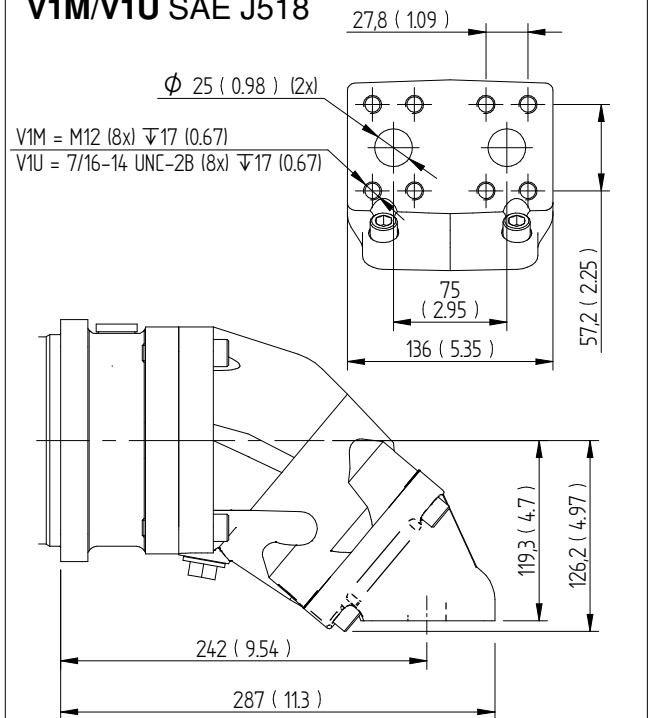
Connection cover

Millimeter (inch)

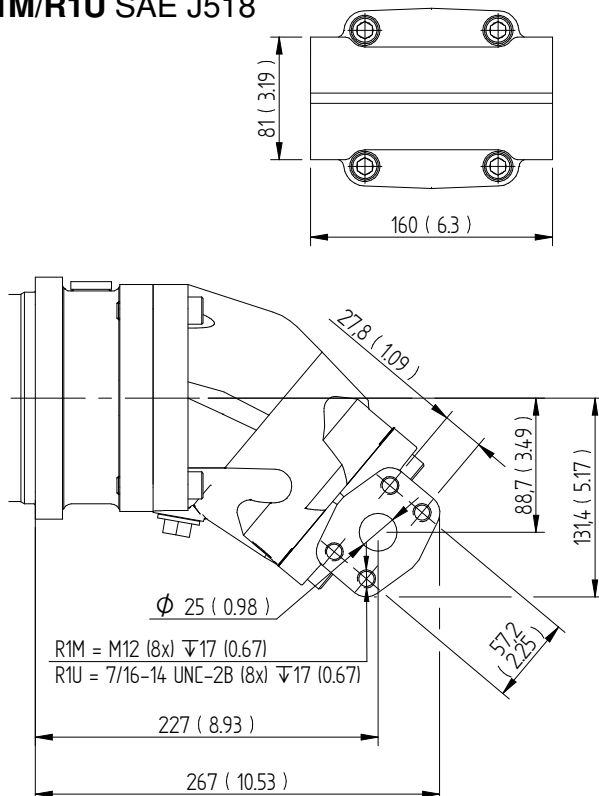
S1M/S1U SAE J518



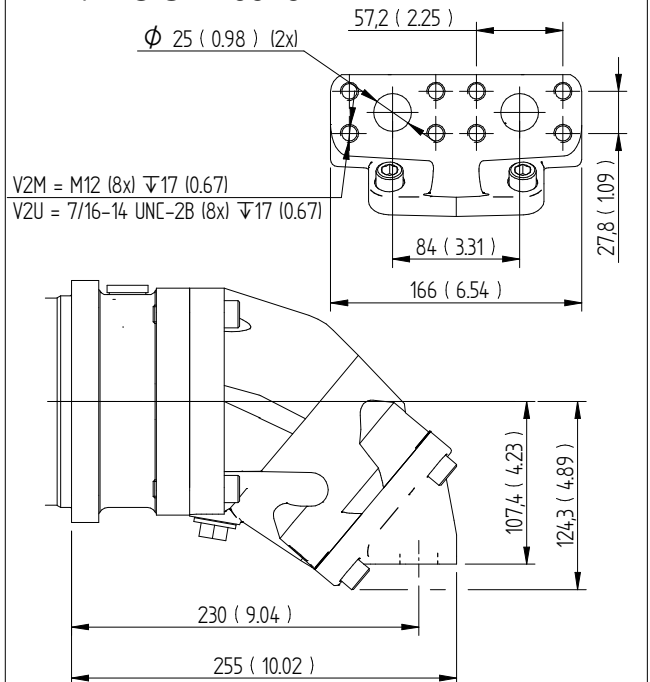
V1M/V1U SAE J518



R1M/R1U SAE J518



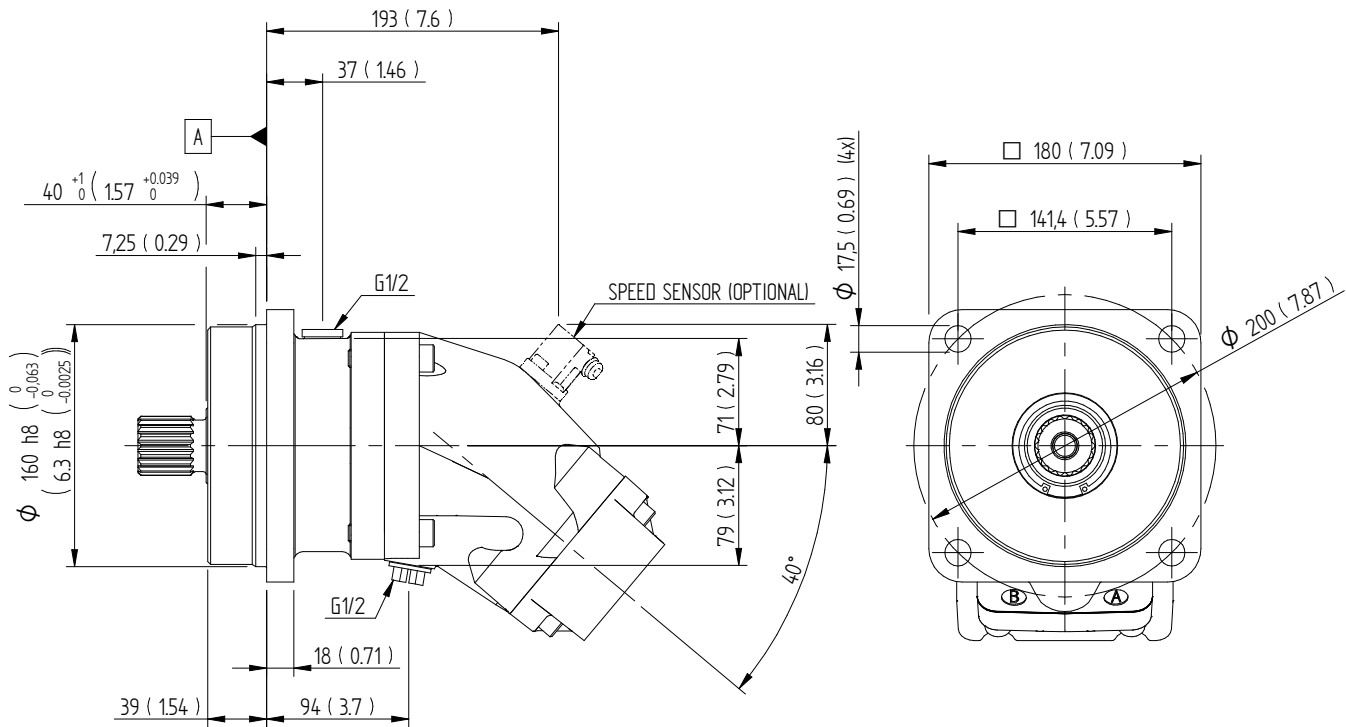
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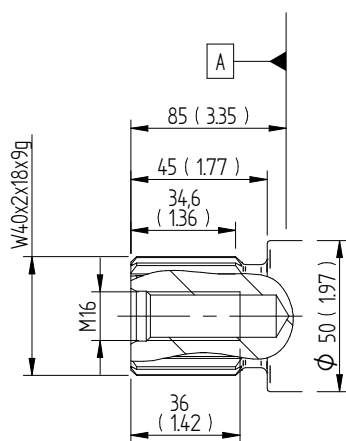
Dimensions SCM 108-130

Millimeter (inch)

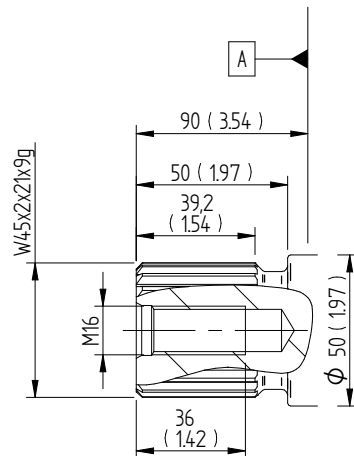
I45 ISO 3019-2



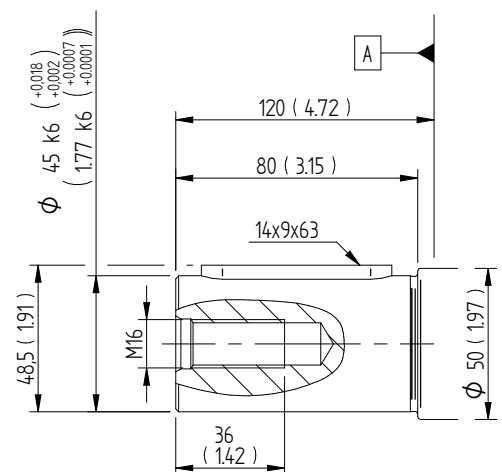
W40 DIN 5480



W45 DIN 5480



K45 DIN 6885

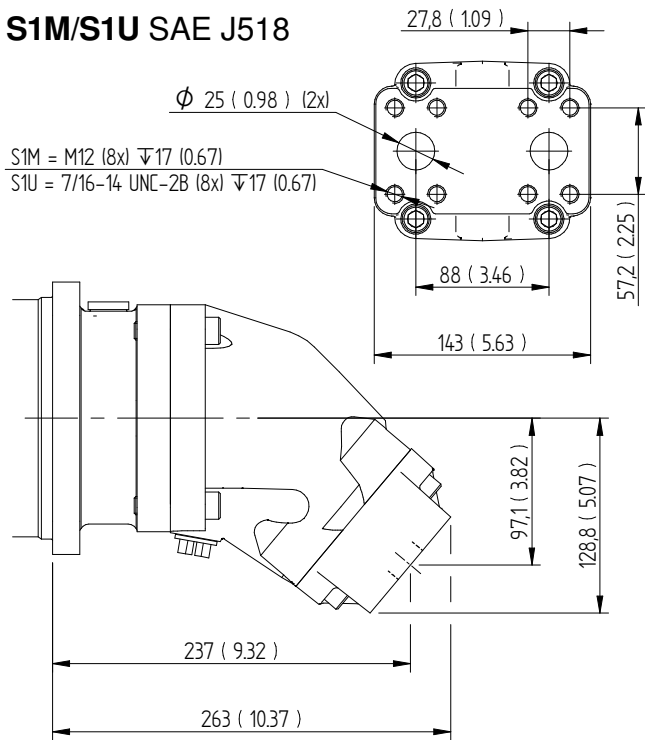


Dimensions SCM 108-130

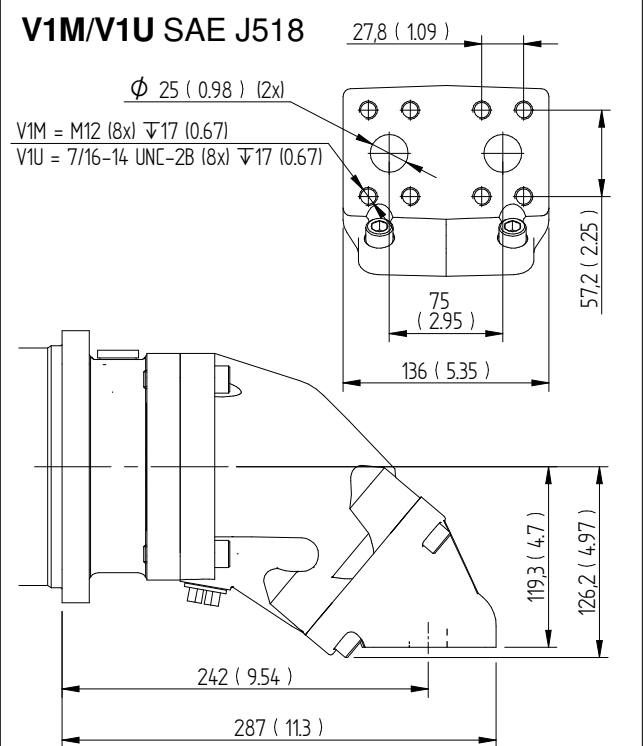
Connection cover

Millimeter (inch)

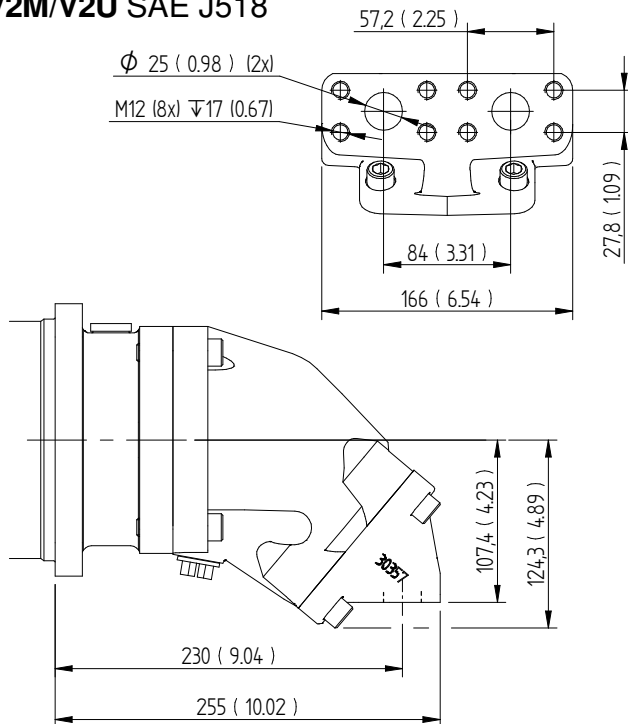
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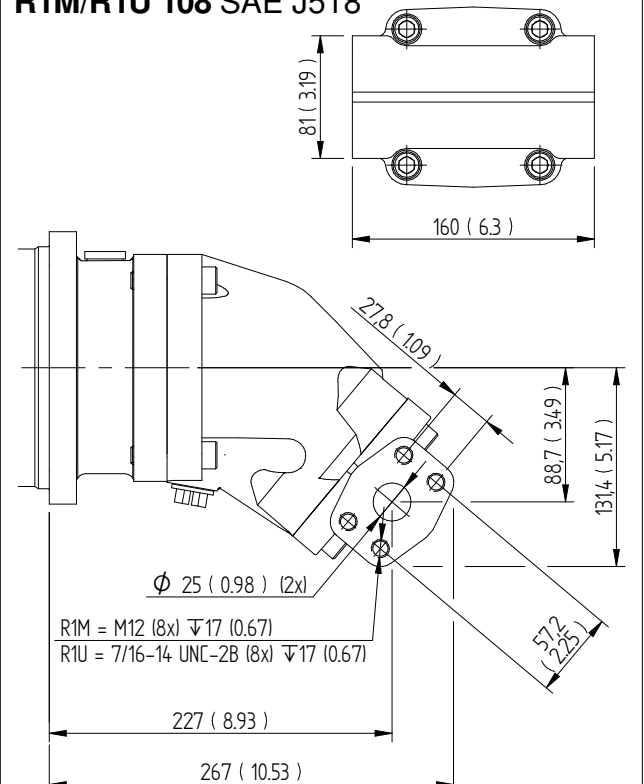
V1M/V1U SAE J518



V2M/V2U SAE J518



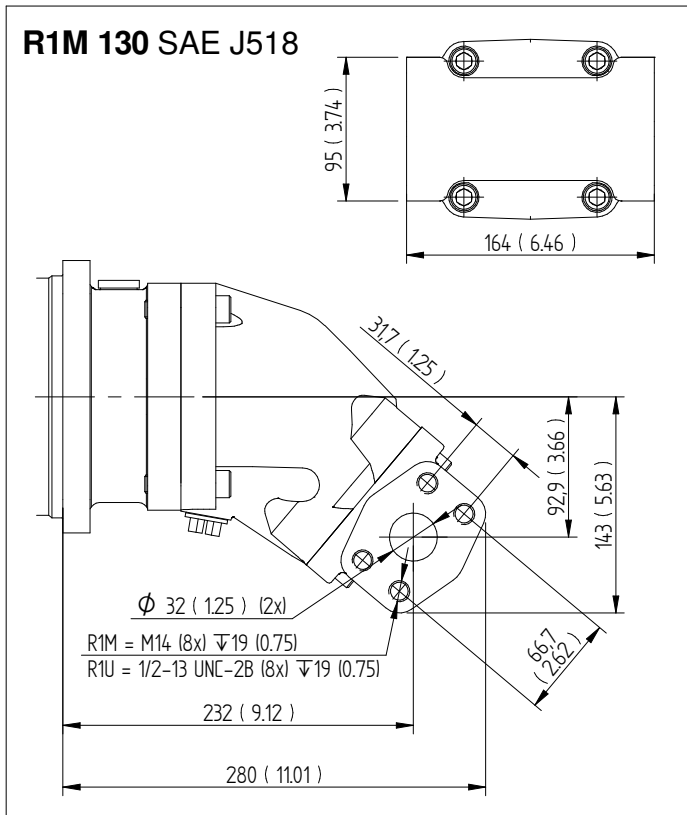
R1M/R1U 108 SAE J518



Dimensions SCM 108-130

Connection cover

Millimeter (inch)



General instructions

Shaft seal

Motor SCM	Code	Max. housing pressure bar at rpm				
		1500	3000	5200	6300	8800
010-034	P	7	7	4	3.5	2.5
040-064	P	7	6	3.5	3	-
084-130	P	7	4	3	-	-

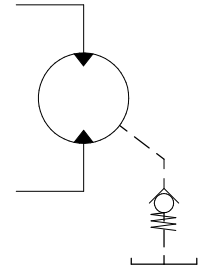
Code according to page 2. Versions main data.

For low temperature applications, below -25 °C please contact Sunfab.

The drainage oil should have a maximum temperature of 115 °C with the P shaft seal. This temperature must not be exceeded.

The housing pressure must be equal to or greater than the external pressure on the shaft seal.

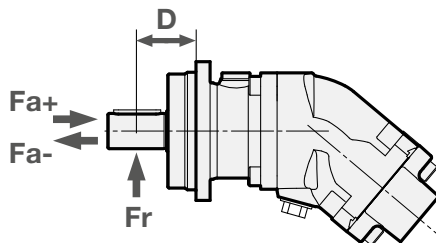
To ensure the function of the shaft seal and lubrication of the motor, we recommend a min. housing pressure of 0,5 bar. If needed, a spring loaded check valve of 0,5 bar can be installed on the housing drain line.



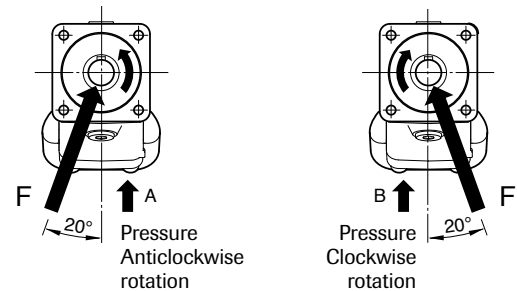
Shaft loads

The life of the motor is highly dependent on the bearing life. The bearings are affected by operating conditions such as speed, pressure, oil viscosity and filtration.

External load on the shaft, as well as its size, direction and location also affects the bearing life.



Optimal force direction of radial load



SCM ISO Max recommended shaft loads		010	012	017	025	034	040	047	056	064	084	090	108	130
Fr (radial) max ¹	kN	7	7	7	8	8	8.5	8.5	9	9	12	12.5	12.5	13
Distance D (to point of force)	mm	45	45	45	50	50	60	60	60	60	65	65	70	70
Fa (axial) + (at standstill/ 0 bar pressure) max	kN	3	3	3	3	3	4	4	4	4	5	5	5	5
Fa (axial) - (at standstill/ 0 bar pressure) max	kN	4	4	5	7	7	7	7	10	11	13	14	16	19
Fa (axial) + (at 400 bar pressure) max ²	kN	4	4	5	7	7	7	7	10	11	13	14	16	19
Fa (axial) - (at 400 bar pressure) max ²	kN	0	0	0	0	0	0	0	0	0	0	0	0	0

¹) Fr (radial) max; Calculation based on running conditions: 300 bar / 2000 rpm
¹) Fr (radial) max; Calculation based on optimal force direction (Fr max will be lower in other force directions)

¹) Fr (radial) max; In running conditions higher than 300 bar and/or 2000 rpm the max limits for Fr (radial) max will be lower

²) Fa (axial) + Will increase bearing life

²) Fa (axial) - Will decrease bearing life

For other forces, please contact Sunfab for advice.

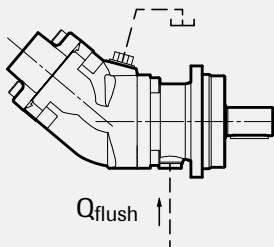
Temperatures/Housing cooling

Excessive system temperature reduces the life of the shaft seal and can lower the oil viscosity below the recommended level. A system temperature of 60 °C and a drain flow temperature of 115 °C must not be exceeded.

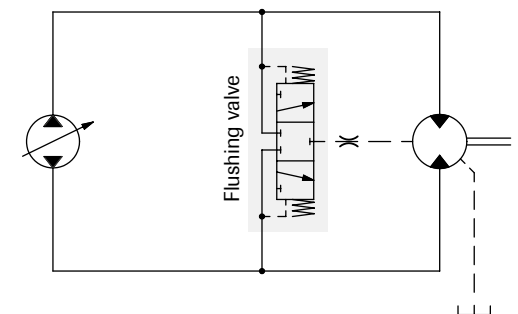
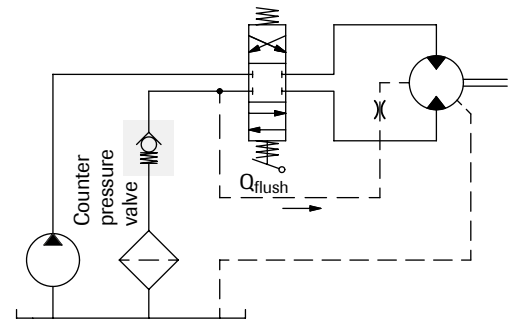
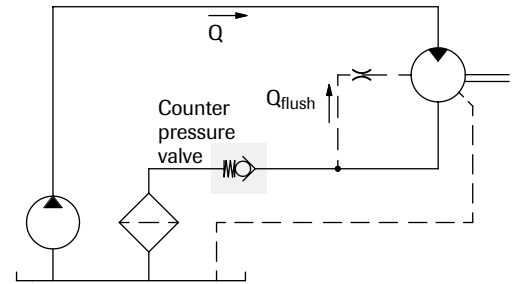
Cooling/flushing of the motor housing can be needed to keep the drain flow temperature at an acceptable level.

Suggested flow:

Motor SCM	Flushing l/min	Cont. RPM
010-034	2-8	≥ 2800
040-064	4-10	≥ 2500
084-130	6-12	≥ 2200



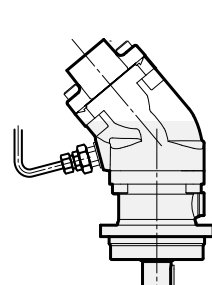
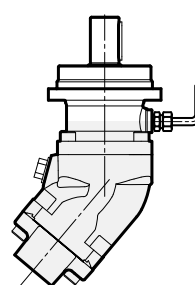
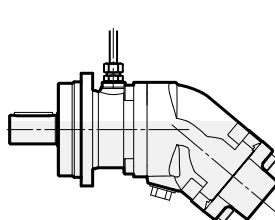
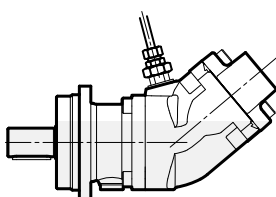
Housing flushing can be built up with the help of a flushing valve or taken directly from the return line. When the return pressure is too low this is compensated for by a counter pressure valve. The tank line is connected to the highest point as in the figure.



Simplified circuits

Installation

- The motor housing should be filled with oil to at least 50% before starting.
- The drainage pipe should be connected to topmost drainage outlet.
- The other end of the pipe should be connected to the oil tank at a point below the oil level.



Piping

Recommended oil velocity in pressure line max. 7 m/sec

Filtering

Cleanliness according to ISO norm 4406, code 16/13.

Hydraulic fluids

High performance oils meeting ISO specifications – such as HM, DIN 51524-2 HLP, or better – must be used.

A min. viscosity of 10 cSt is required to keep the lubrication at a safe level.

The ideal viscosity is 20 – 40 cSt.

Additional technical data

Noise levels and bearing life calculations available on request. Please contact Sunfab!

Useful formulaes

Required flow rate $Q = \frac{D \times n}{1000 \times \eta_v}$ litres/min.

Speed $n = \frac{Q \times 1000 \times \eta_v}{D}$ RPM

Torque $M = \frac{D \times \Delta p \times \eta_{hm}}{6.3}$ Nm

Power $P = \frac{Q \times \Delta p \times \eta_t}{60}$ kW

D = displacement, cm³/revolution

n = speed, revolution/min

P = power, kW

Q = flow rate, litres/min

η_v = volumetric efficiency

η_{hm} = hydraulic-mechanical efficiency

η_t = overall efficiency = $\eta_v \times \eta_{hm}$

M = torque, Nm

Δp = pressure difference between the hydraulic motor inlet and outlet, MPa



WARNING!

When the motor is in use:

1. Do not touch the pressure pipe
2. Watch out for rotating parts
3. The motor and pipes can reach high temperatures

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SAP/SAPT 012-130 SAE is a series of light weight casing piston pumps with a fixed displacement for demanding mobile hydraulics.

SAP/SAPT 012-130 SAE covers the displacement range 12-130 cm³/rev. at a maximum pressure up to 400 bar. It is a modern, compact pump which meets the market's high demands on flow performance, pressure, efficiency and small installation dimensions. The pump is either mounted directly on the power take-off or on a frame bracket via an intermediate shaft. Sunfab also offers a two-bolt flange, SAE B2 012-034.

SAPT 090, 130 is an addition to the SAP series that supports larger flows and pressure up to 300 bar. Ideal for applications that require both a high flow and a high working pressure.

Other advantages:

- Light weight metal casing design
- Smooth operation over the entire speed range
- Long life due to high demands on material selection, such as bearings, seals, etc
- Corrosion free light metal-housing
- Less heat generation due to better ability to dissipate heat through housing

Versions, main data

Example

SA	P	-	064	L	-	N	-	SB4	-	B13	-	S0	S	-	0	00
Line	1		2	3		4		5		6		7	8		9	10

Line	
SA	Sunfab Aluminium

1. Type	
P	Pump

2. Displacement	
012 017 025 034 040 047 056 064 084 090 108 130	

3. Direction of rotation	
R	Right
L	Left

4. Shaft seal	
N	Nitrile
V*	HNBR

*Can withstand higher temperature, e.g. on engine PTO. Not available for 012-034.

5. Mounting flange		012	017	025	034	040	047	056	064	084	090	108	130
SB2	SAE B2	X	X	X	X	-	-	-	-	-	-	-	-
SB4	SAE B4	X	X	X	X	X	X	X	X	-	X	-	-
SC4	SAE C4	-	-	-	-	X	X	X	X	X*	-	X*	X*

*SAP 084, 108 & 130 with adapter flange for SC4.

6. Shaft		012	017	025	034	040	047	056	064	084	090	108	130
B13*	SAE B 13t	X	X	X	X	X	X	X	X	-	X	-	-
C14	SAE C 14t	-	-	-	-	X	X	X	X	X	-	X	X

*Only with SB2/SB4 mounting flange

- = Not available

X = Standard, preferred

7. Connection cover	
S0	40° Sunfab standard

8. Connections	
S	Sunfab standard

9. Additional	
0	-

10. Accessories	
00	No accessories available

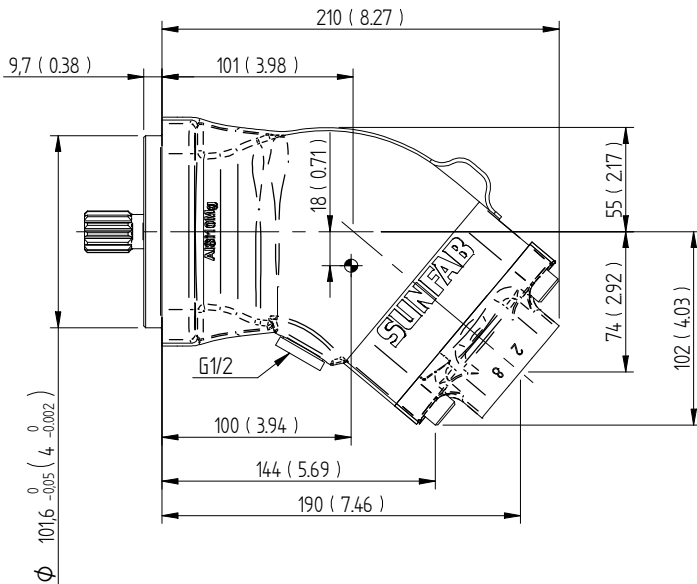
SAP/SAPT 012-130 SAE		012	017	025	034	040	040	047	047	056	056	064	064	084	090*	108	130*
		SAE B	SAE B	SAE B	SAE B	SAE B	SAE C	SAE B	SAE C	SAE B	SAE C	SAE B	SAE C	SAE C	SAE C	SAE C	SAE C
Theoretical oil flow l/min at pump speed																	
rpm	500	6	9	13	17	21	21	24	24	28	28	32	32	42	45	54	65
	1000	13	17	25	34	41	41	47	47	57	57	64	64	84	90	108	130
	1500	19	26	38	51	62	62	71	71	85	85	95	95	125	135	162	195
Displacement																	
cm ³ /rev		12.6	17.0	25.4	34.2	41.2	41.2	47.1	47.1	56.7	56.7	63.6	63.6	83.6	90.0	108.0	130.0
Max pump speed																	
continuous	rpm	2300	2300	2300	2300	1900	1900	1900	1900	1900	1900	1900	1900	1600	1500	1600	1500
intermittent		3000	3000	3000	3000	2500	2500	2500	2500	2500	2500	2500	2500	2100	2000	2100	2000
Max working pressure																	
bar		400	400	400	400	400	400	400	400	400	400	350	400	400	300	400	300
Weight																	
kg		7.3	7.3	7.5	7.4	9.7	10.4	9.7	10.4	9.2	9.9	9.6	10.3	16.2	9.6	15.9	16.2
Tare-weight torque (M)																	
Nm		7.2	7.2	7.4	7.3	10.2	10.9	10.2	10.9	9.7	10.4	10.1	10.8	22.3	10.1	21.9	22.3
Direction of rotation																	
Left (L) or Right (R)																	

*SAPT

Dimensions SAP 012-034 SAE

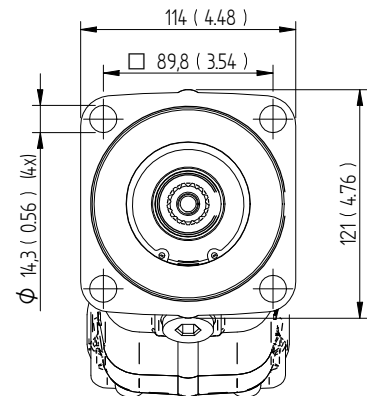
Millimeter (inch)

SB4 / SB2 SAE J744

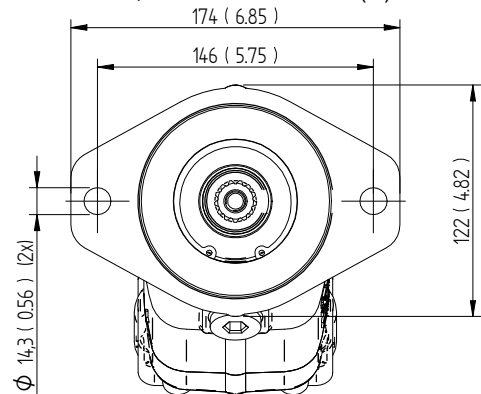


Center of gravity

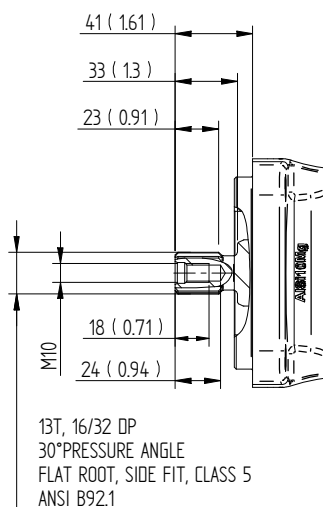
SB4 SAE J744, ID. CODE: 101-4 (B)



SB2 SAE J744, ID. CODE: 101-2 (B)

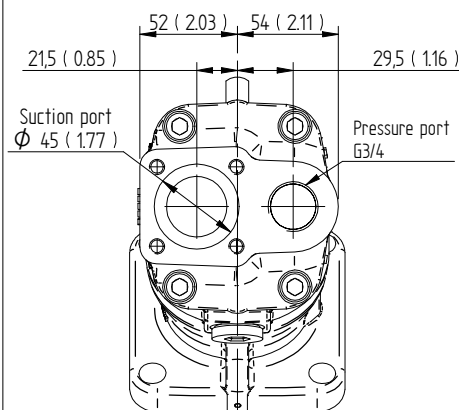


B13 SAE J744, ID. CODE: 22-4 (B)



13T, 16/32 DP
30°PRESSURE ANGLE
FLAT ROOT, SIDE FIT, CLASS 5
ANSI B92.1

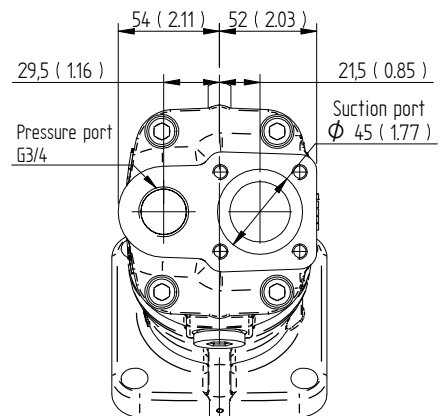
S0S LEFT ROTATION (L)



Suction port
Ø 45 (1.77)

Pressure port
G3/4

S0S RIGHT ROTATION (R)



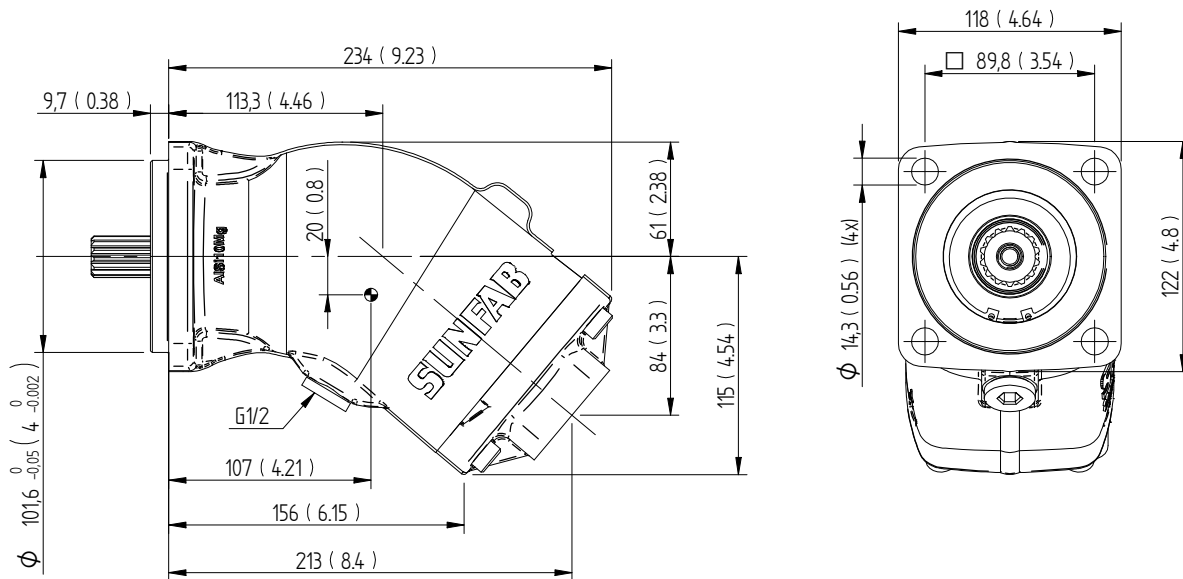
Pressure port
G3/4

Suction port
Ø 45 (1.77)

Dimensions SAP 040-064 SAE, SAPT 090 SAE

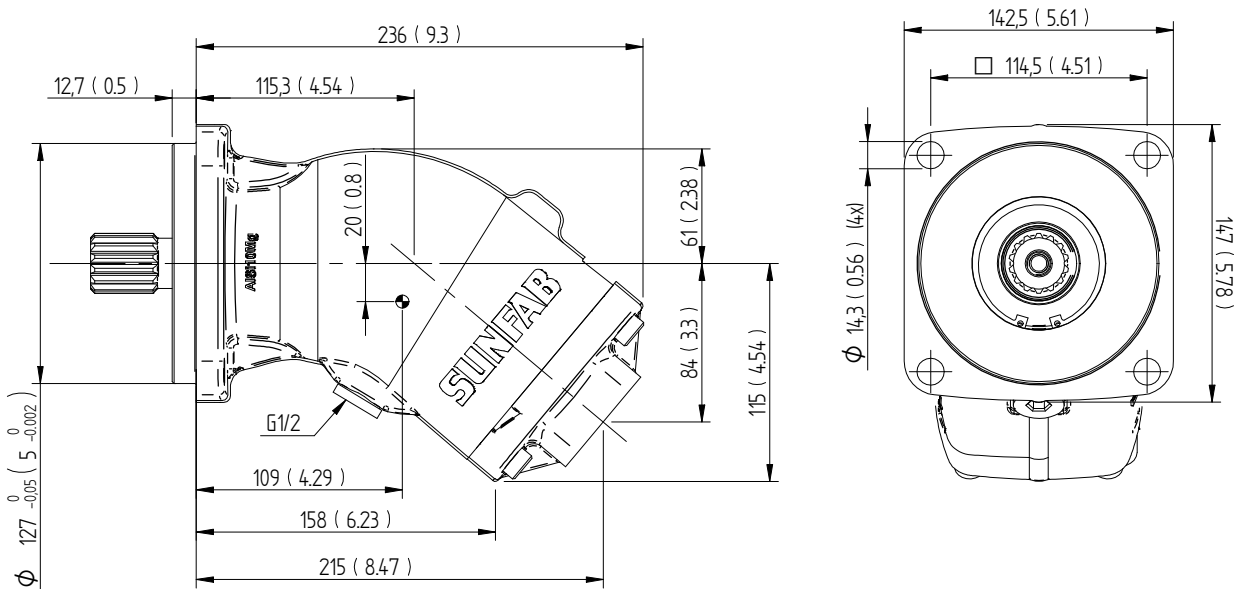
Millimeter (inch)

SB4 SAE J744, ID. CODE: 101-4 (B)



Center of gravity

SC4 SAE J744, ID. CODE: 127-4 (C)



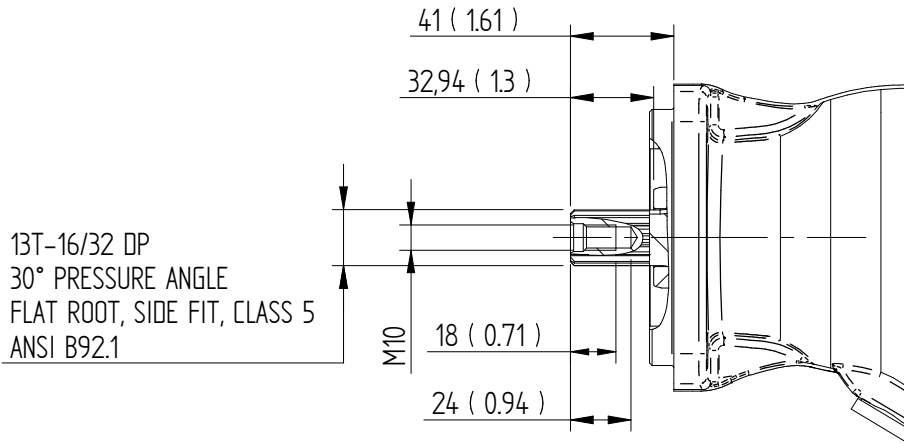
Center of gravity

Dimensions SAP 040-064 SAE, SAPT 090 SAE

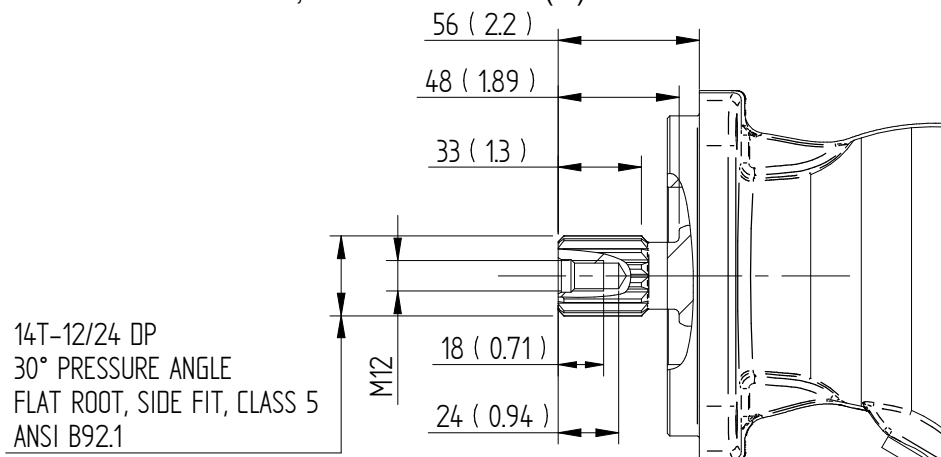
Flange & Connection cover

Millimeter (inch)

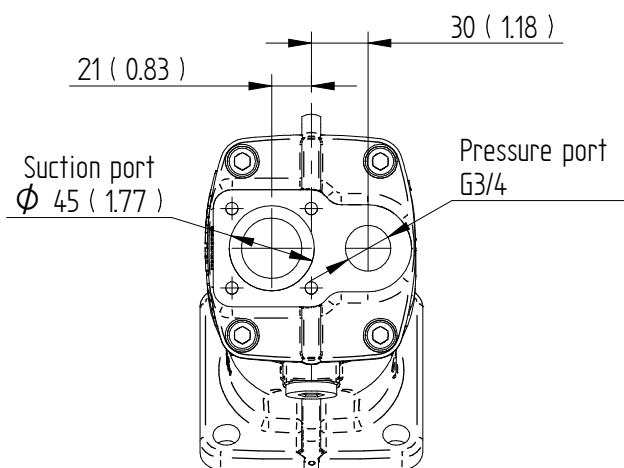
SB4 B13 SAE J744, ID. CODE: 22-4 (B)



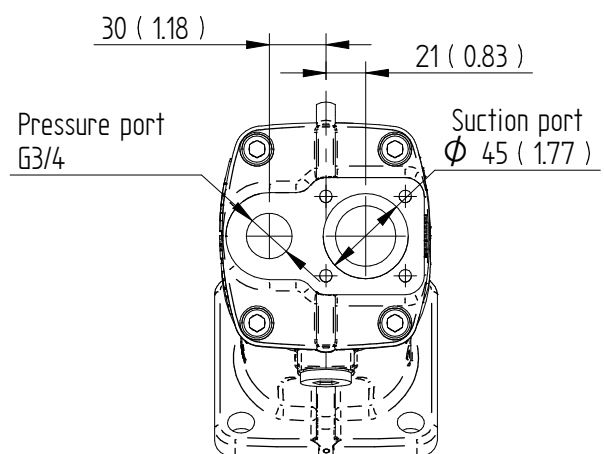
SC4 C14 SAE J744, ID. CODE: 32-4 (C)



S0S LEFT ROTATION (L)



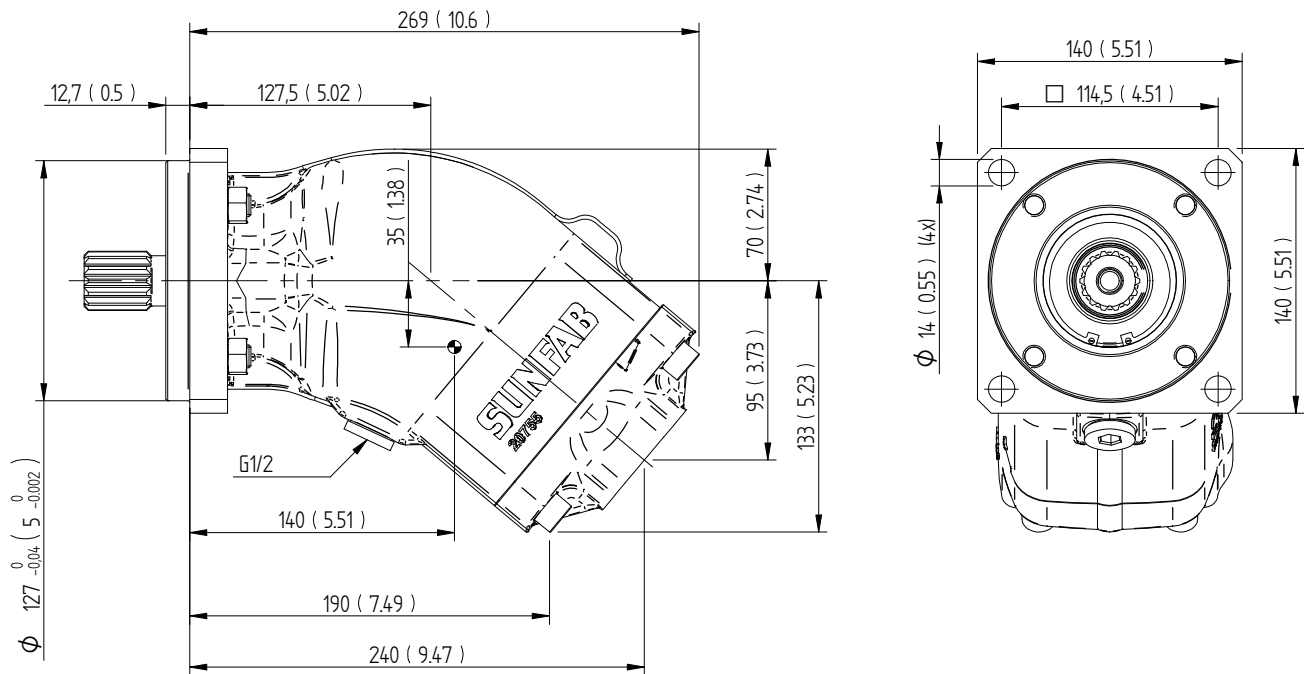
S0S RIGHT ROTATION (R)



Dimensions SAP 084-108 SAE, SAPT 130 SAE

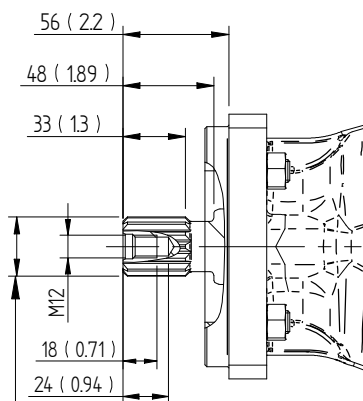
Millimeter (inch)

SC4 SAE J744, ID. CODE: 127-4 (C)



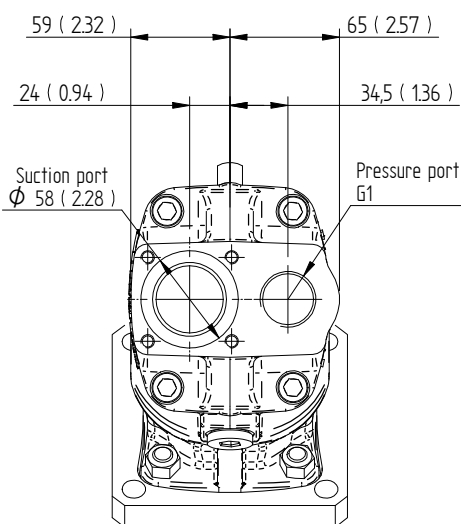
Center of gravity

C14 SAE J744, ID. CODE: 32-4 (C)

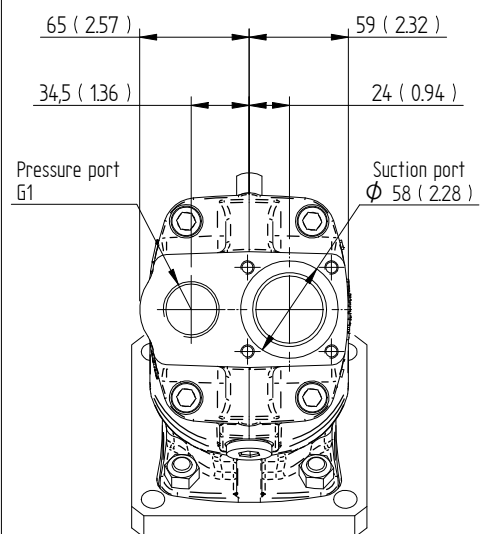


14T-12/24 DP
30° PRESSURE ANGLE
FLAT ROOT, SIDE FIT, CLASS 5
ANSI B92.1

S0S LEFT ROTATION (L)



S0S RIGHT ROTATION (R)





WARNING!

When the pump is running:

1. Do not touch the pressure hose
2. Watch out for rotating parts
3. The pump and hoses may be hot

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