



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. It's well dimensioned, double tapered roller bearings permit high shaft loads and lead to excellent speed characteristics. The motor's 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

Motor 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														
max intermittent	bar	400	400	400	400	400	400	400	400	400	400	400	400	350
max continuous		350	350	350	350	350	350	350	350	350	350	350	350	300
Revolutions														
max intermittent	rpm	8800	8800	8800	7000	7000	6300	6300	6300	6300	5200	5200	5200	5200
max continuous		8000	8000	8000	6300	6300	5700	5700	5700	5700	4700	4700	4700	4700
min continuous		300	300	300	300	300	300	300	300	300	300	300	300	300
Power														
max intermittent	kW	41	54	74	86	115	125	145	175	195	215	230	275	285
max continuous		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	1.0	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.

Versions, main data

Example

SC	M	-	010	W	-	N	-	I41	-	W25	-	K3	G	-	1	00
Line	1		2	3		4		5		6		7	8		9	10

Line	
SC	Sunfab Compact, bent-axis design

1. Type	
M	Motor

2. Displacement	
010 012 017 025 034 040 047 056 064 084 090 108 130	

3. Direction of rotation	
W	Independent

4. Sealing	
N	Nitrile
H	High pressure, nitrile
V	Viton

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

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

X = Standard, preferred
O = Contact Sunfab

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 - - - -
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 X
R1	Side connections, flanged *	- - - X 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 X
U	UN***	- X X X X X X X X X X X X X

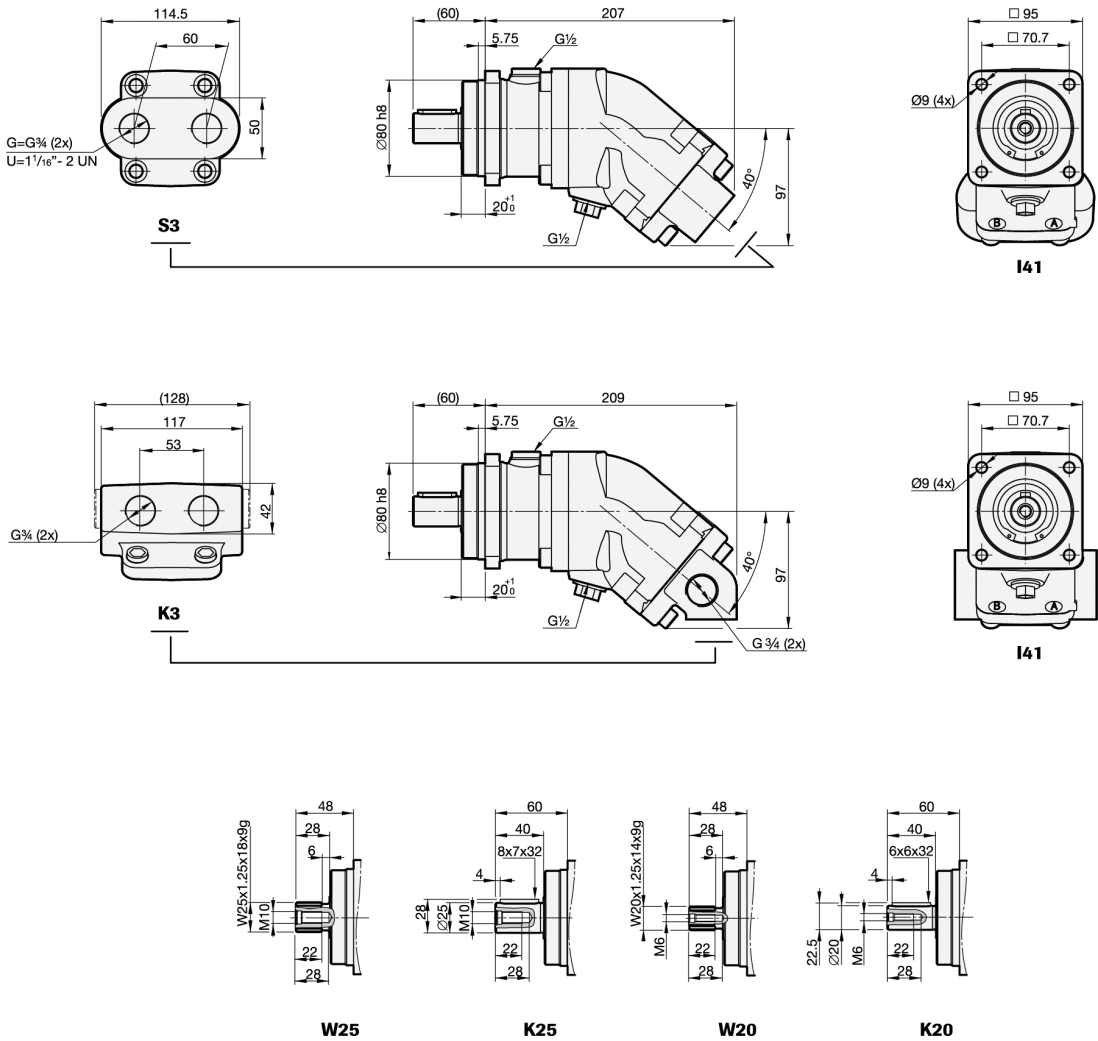
* Only threaded connections
** Only flanged connections
*** Only available for S covers

9. Additional	
1	External drainage

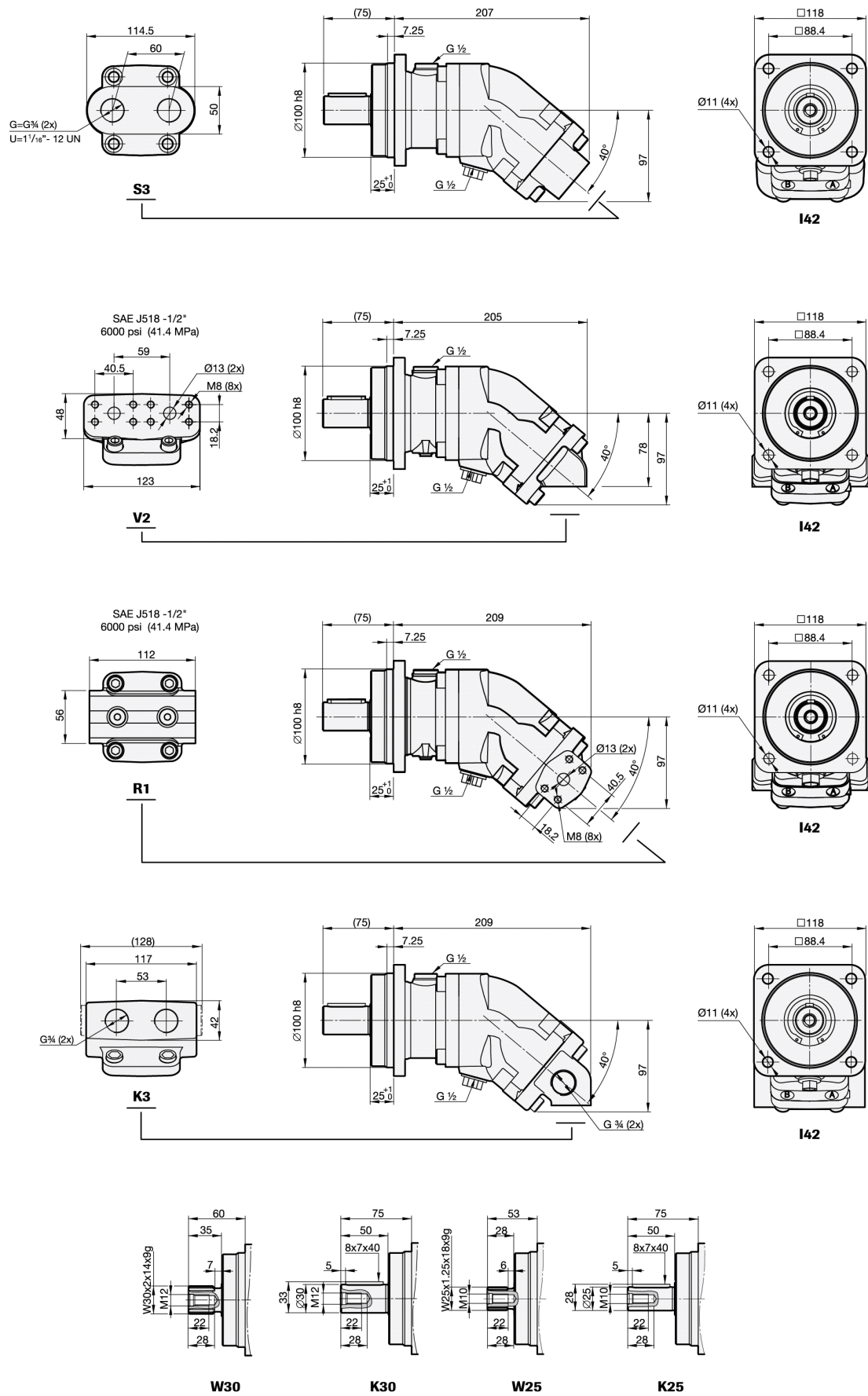
10. Speed sensor		010 012 017 025 034 040 047 056 064 084 090 108 130
00	No speed sensor	X X X X X X X X X X X X X
P1	Prepared for speed sensor	X X X X X X X X X X X X X
S1	Fitted speed sensor type PNP*	X X X X X X X X X X X X X
S2	Fitted speed sensor type NPN*	X X X X X X X X X X X X X

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

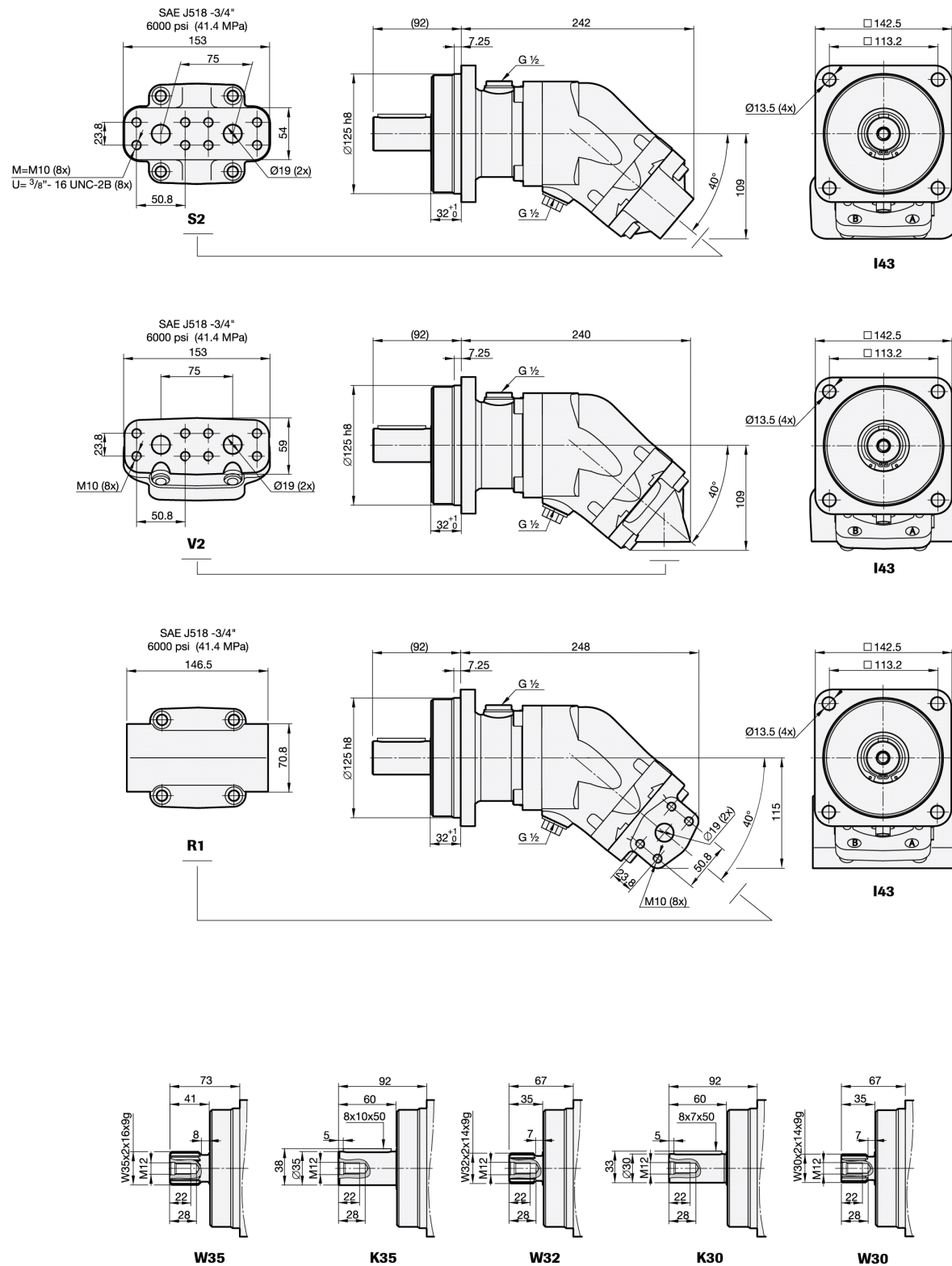
Dimensions SCM 010-017



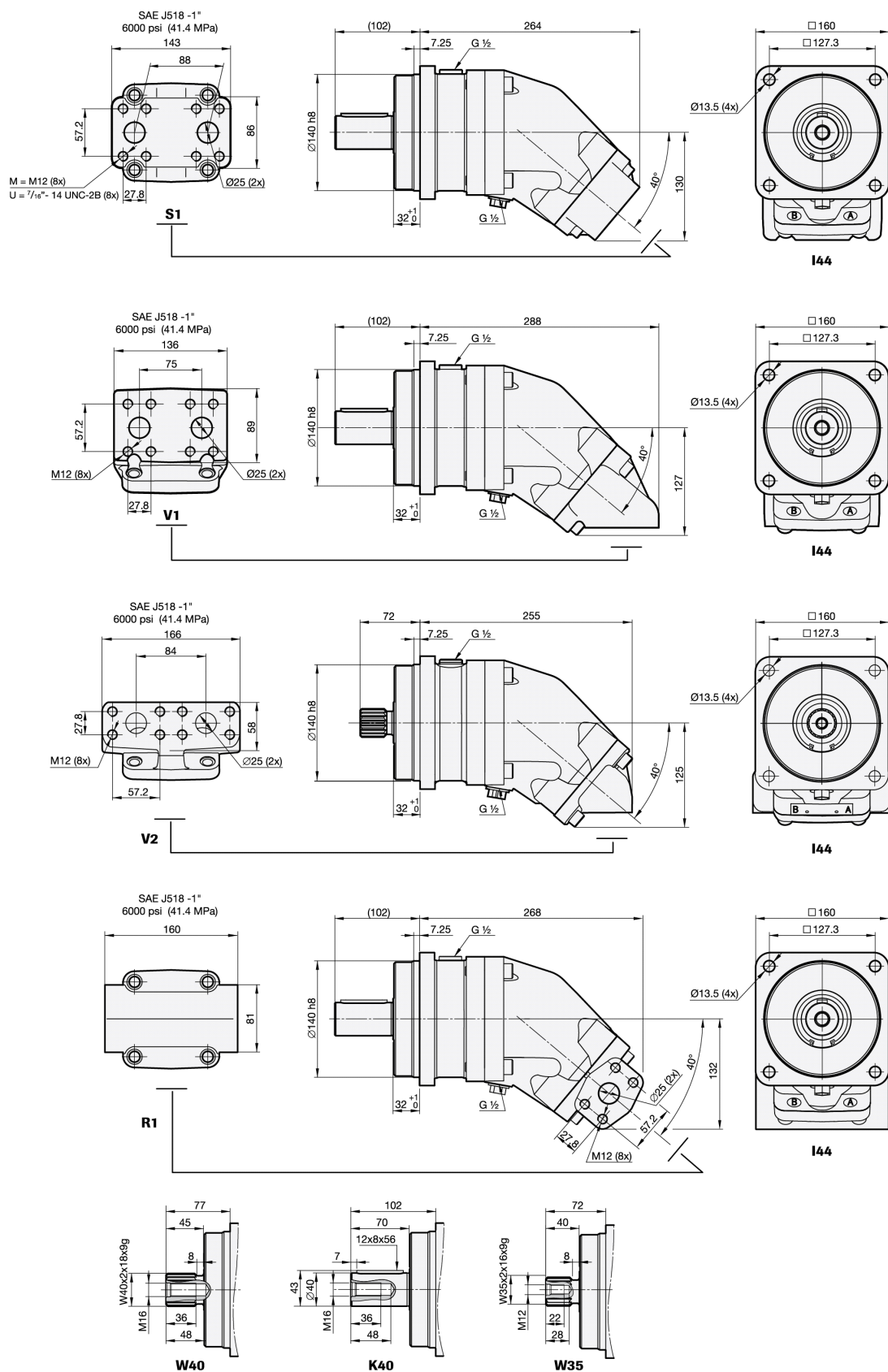
SCM 025-034



SCM 040-064

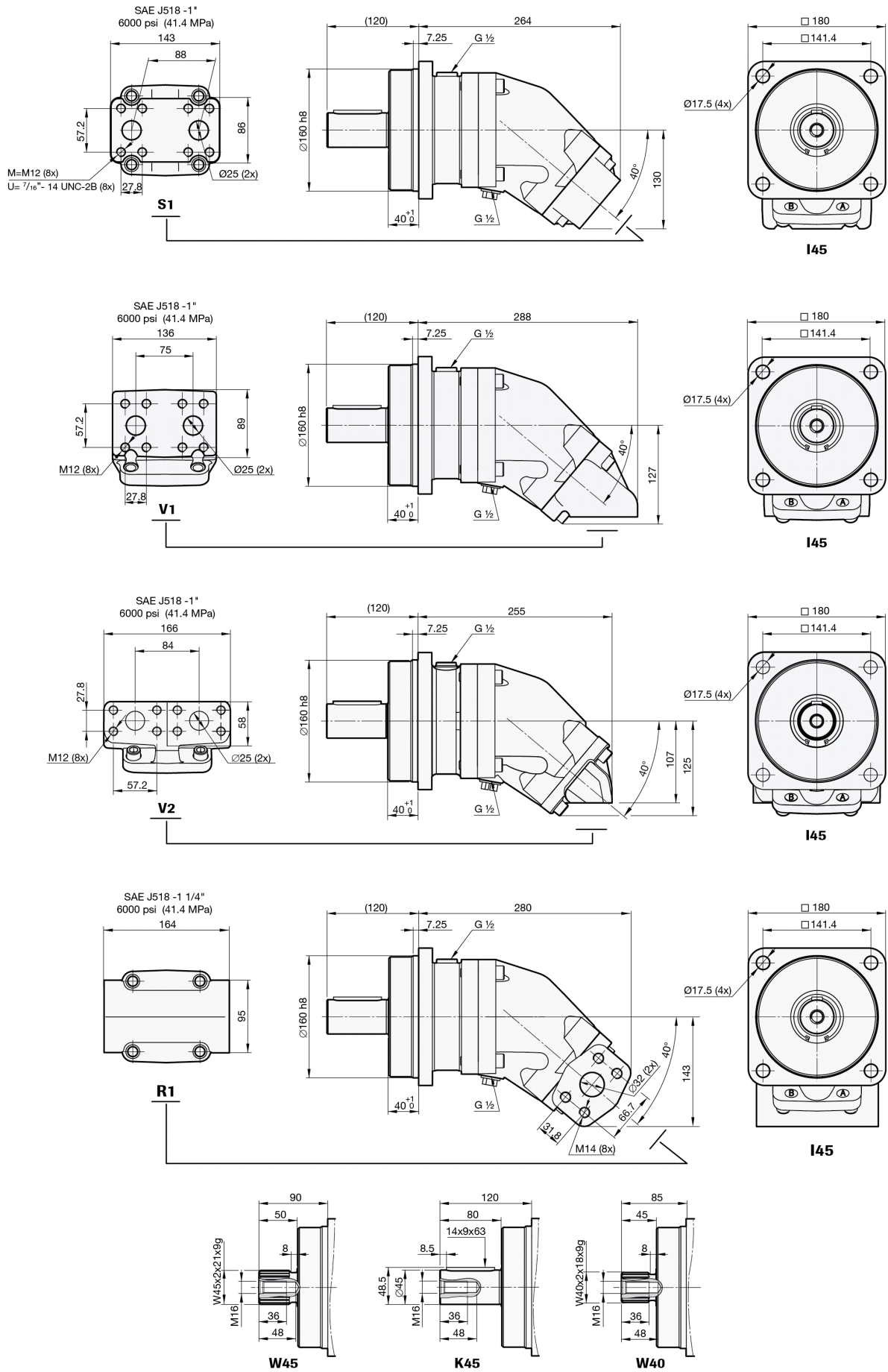


SCM 084-090



Technical drawings of five hydraulic valve models: S1, V1, V2, R1, and I45. Each model is shown with three views: front, side, and top. S1, V1, and V2 are 1/2 inch SAE J518 valves with 6000 psi rating. R1 is a 1/2 inch SAE J518 valve with 6000 psi rating. I45 is a 1/2 inch SAE J518 valve with 6000 psi rating. Dimensions are given in inches and millimeters. Key features include ports, mounting flanges, and internal components.

SCM 130



General instructions

Choice of shaft seal

Motor SCM	Code	Temp.	Max. housing pressure bar at rpm								
		°C	1000	2000	3000	4000	5000	6000	7000	8000	9000
010-034	N	75	5.5	2.7	1.8	1.4	1.1	0.9	0.8	0.7	0.6
	H	75	24.6	12.3	8.2	6.1	4.9	4.1	3.5	3.1	2.7
	V	90	5.5	2.7	1.8	1.4	1.1	0.9	0.8	0.7	0.6
040-064	N	75	5.5	2.7	1.8	1.4	1.1	0.9	0.8		
	H	75	24.6	12.3	8.2	6.1	4.9	4.1	3.5		
	V	90	5.5	2.7	1.8	1.4	1.1	0.9	0.8		
084-130	N	75	3.8	1.9	1.3	1.0	0.8	0.6			
	H	75	17.2	8.6	5.7	4.3	3.4	2.9			
	V	90	3.8	1.9	1.3	1.0	0.8	0.6			

Code according to page 2, Versions, main data

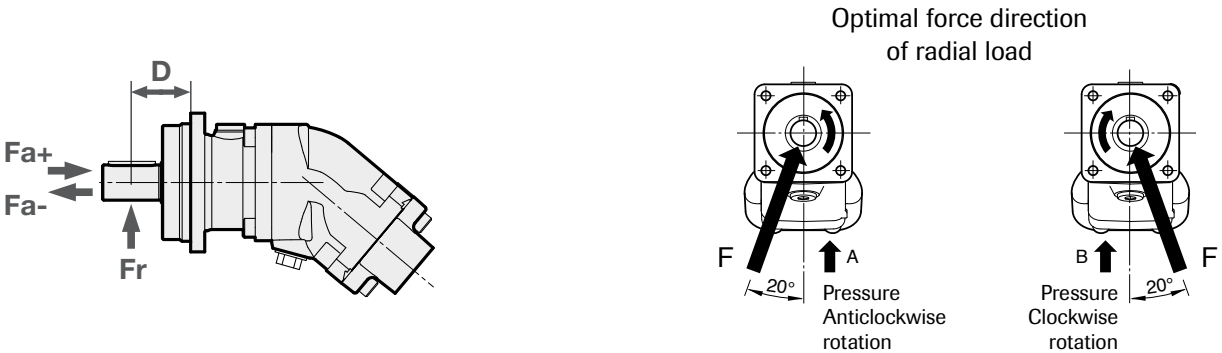
Factors affecting the choice of shaft seal include the hydraulic motor housing pressure and the drainage oil temperature.

The drainage oil should have a maximum temperature of 75 °C with a Nitrile shaft seal and 90 °C with a Viton shaft seal. These temperatures must not be exceeded.
The housing pressure must be equal to or greater than the external pressure on the shaft seal.

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.



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.

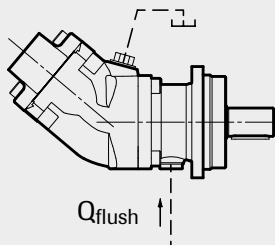
Temperatures/Housing cooling

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 90 °C must not be exceeded.

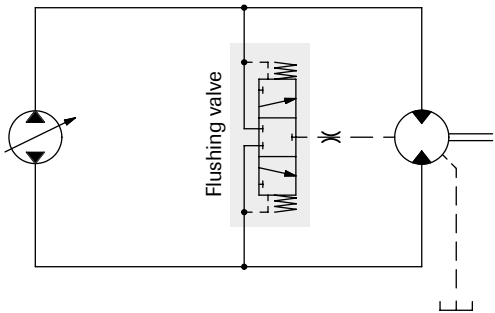
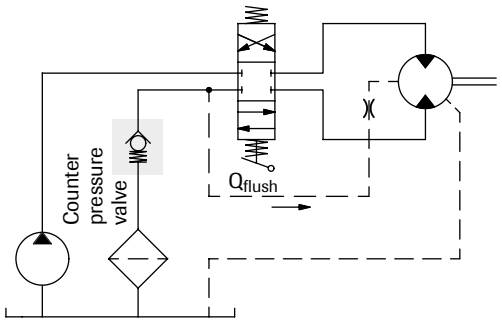
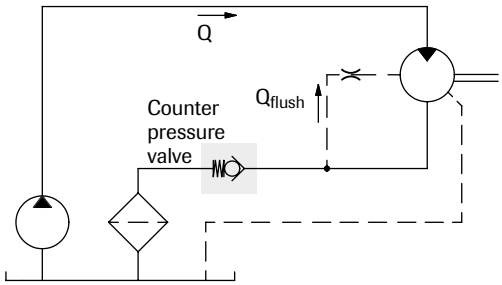
Cooling/flushing of the motor housing can be needed to keep the drain flow temperature at an acceptable level.

Suggested flow:

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



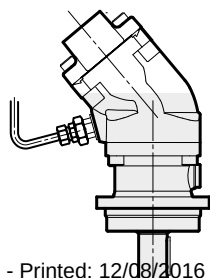
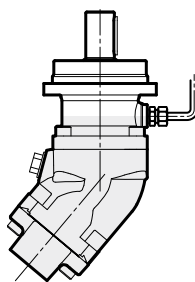
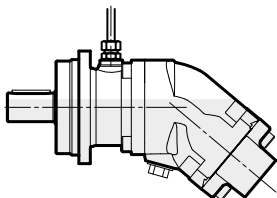
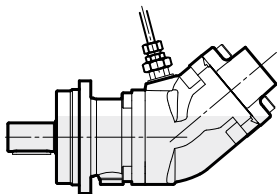
Housing flushing can be built up with the help of a flushing valve or taken directly from the return line. When the return pressure is too low this is compensated for by a counter pressure valve. The tank line is connected to the highest point as in the figure.



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. Beware of rotating parts
3. The motor and pipes can reach high temperatures

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