

Motor SCM 012-130

SAE



Sunfab SCM is a range of robust axial piston motors especially suitable for mobile hydraulics.

Sunfab SCM 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.

The SCM covers the entire displacement range 0.77–7.93 cu in/rev. at a maximum working pressure of 5800 psi.

SUNFAB SCM combines a tapered roller bearing and a radial bearing for high radial load tolerance and long life time.

Sunfab SCM's high level of reliability is based on the choice of materials, hardening methods, surface structures and the quality assured manufacturing process.

- One year warranty
- Complete inventory and service in the USA

Type		012 SAE B	017 SAE B	025 SAE B	034 SAE B	047 SAE C	064 SAE C	084 SAE C SAE D	108 SAE C SAE D	130 SAE D	
Displacement	cu in/rev.	0.77	1.04	1.55	2.09	2.87	3.88	5.10 5.10	6.59 6.59	7.93	
Working pressure	psi	5800	5800	5800	5800	5800	5800	5800 5800	5800 5800	5100	
	psi	5100	5100	5100	5100	5100	5100	5100 5100	5100 5100	4350	
Revolutions	RPM	8250	8250	6500	6500	5900	5900	4800 4600	4800 4600	4600	
	RPM	7500	7500	5900	5900	5300	5300	4400 4200	4400 4200	4200	
	RPM	300	300	300	300	300	300	300 300	300 300	300	
Power	hp	67	94	107	147	181	241	268 255	342 328	342	
	hp	27	34	54	74	87	121	134 134	174 174	181	
Start torque	theoretical value	lb-ft/1000 psi	10	14	20	27	38	51	68 68	87 87	104
Mass moment of inertia	(x 10 ⁻³)	lb-ft-sec ²	0.7	0.7	0.8	0.8	1.9	1.9	5.5 5.5	5.5 5.5	5.5
Weight		lb	20	20	20	20	33	33	40 77	40 77	77

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

Intermittent power data are based on maximum continuous speed and maximum working pressure.

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

M-084 W/N-C4 S / F

Type:

M Motor with fixed displacement

Size:

012
017
025
034
047
064
084
108
130

Direction of rotation:

W Independent

Shaft seal:

N Nitrile
H Nitrile, high pressure
V Viton, high temperature

Connections:

U UN thread
G BSP thread
F Flange (SAE J518 code 62)

Type of shaft:

S Spline shaft (SAE J498b)
13T 16/32 30° CLASS 5
14T 12/24 30° CLASS 5
13T 8/16 30° CLASS 5

K Key shaft (SAE J744)

Ø1.00
Ø1.25
Ø1.75

Mounting flange:

B4 SAE B (SAE J744)
C4 SAE C (SAE J744)
D4 SAE D (SAE J744)

SCM 012-034
SCM 012-034
SCM 047-108

SCM 012-034 SAE B
SCM 047-108 SAE C
SCM 084-130 SAE D

SCM 012-034 SAE B
SCM 047-108 SAE C
SCM 084-130 SAE D

SCM 012-034 SAE B
SCM 047-108 SAE C
SCM 084-130 SAE D

Choice of shaft seal

Motor SCM	Code	Temp.	Max. housing pressure psi at RPM					
		°F	1000	1500	2000	3000	4000	5000
012-034 B	N	167	93	61	46	30	23	17
	H	167	416	277	207	139	104	75
	V	194	93	61	46	30	23	17
047-108 C	N	167	80	52	39	26	20	16
	H	167	357	238	178	119	88	74
	V	194	80	52	39	26	20	16
084-130 D	N	167	51	33	25	17		
	H	167	226	151	113	75		
	V	194	51	33	25	17		

Subject to design modifications without notice

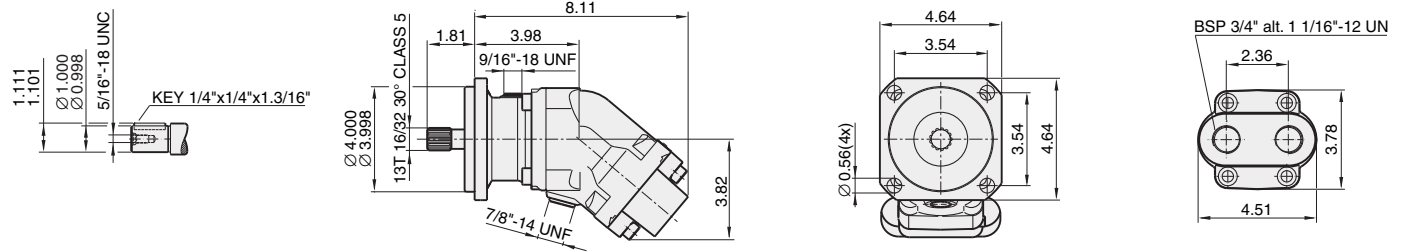
Factors affecting the choice of shaft seal include the hydraulic motor housing pressure and the drainage oil temperature.

Code according to Versions, main data.

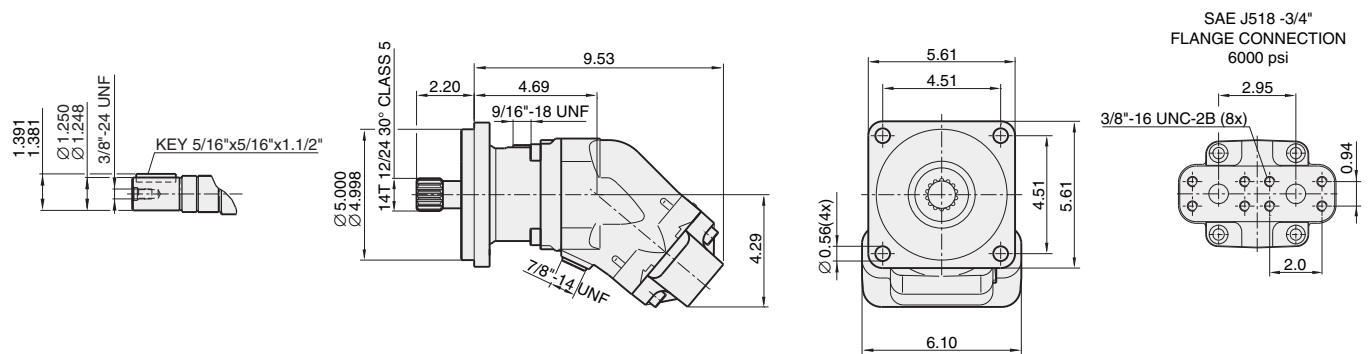
The drainage oil should have a maximum temperature of 167 °F with a Nitrile shaft seal and 194 °F with a Viton shaft seal. These temperatures must not be exceeded.

Dimensions

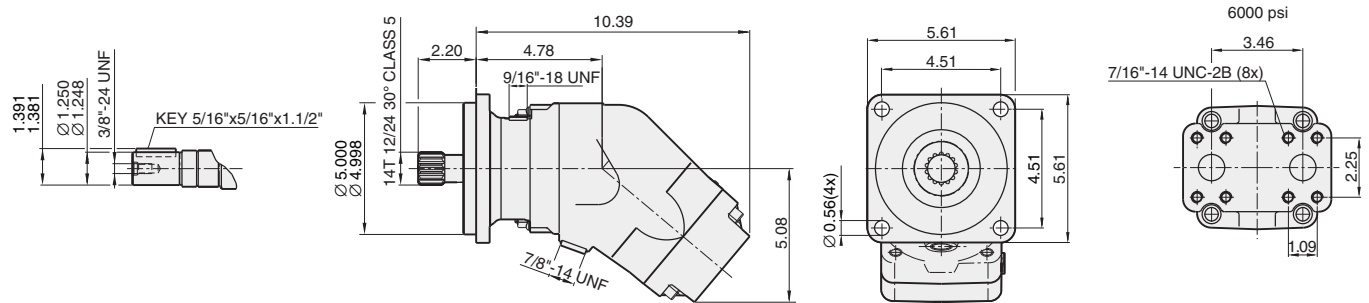
SCM 012-034 SAE B



SCM 047-064 SAE C



SCM 084-108 SAE C



SCM 084-130 SAE D



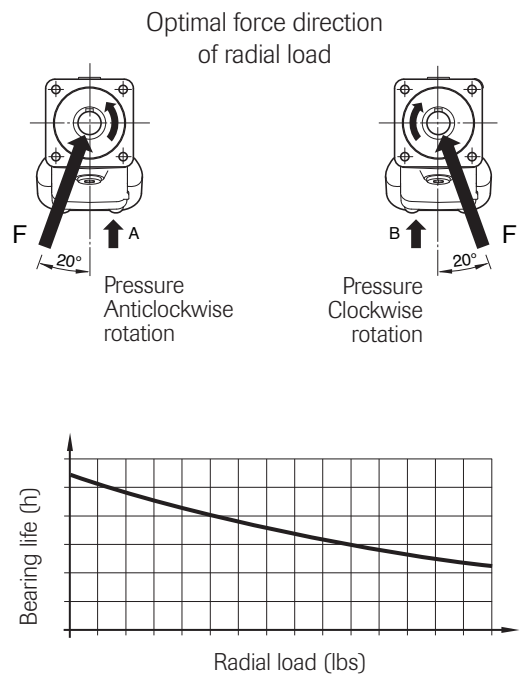
General instructions

Shaft loads

The life of the motor is highly dependent on the bearing life.

The bearings are affected by operation conditions such as speed, pressure, oil viscosity and filtration. External load on the shaft, as well as its size, direction and location also affect the bearing life.

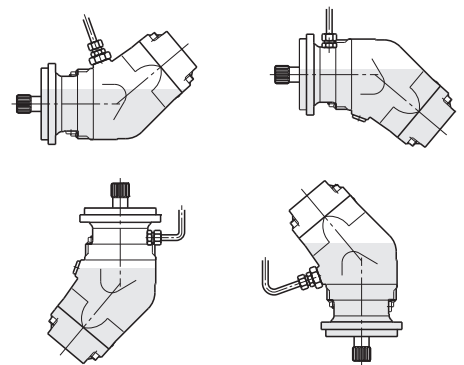
For calculation of bearing life in special applications, please contact Sunfab Hydraulics.



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. 23 ft/s.

Filtering

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

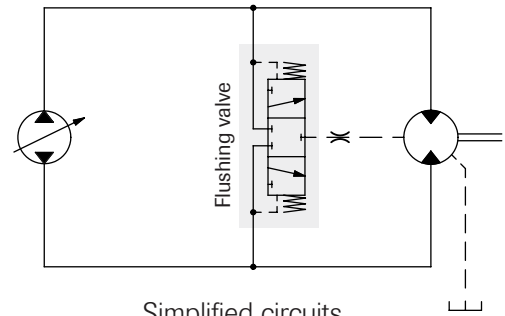
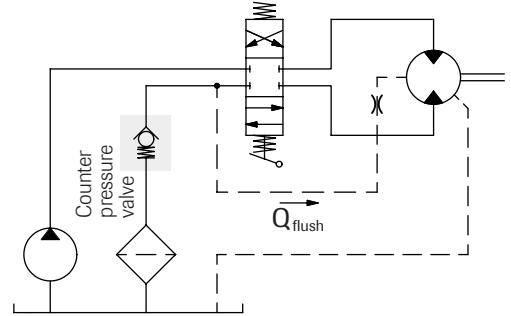
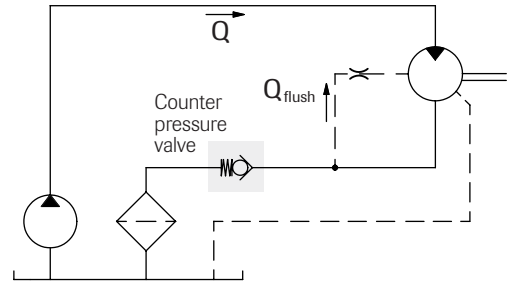
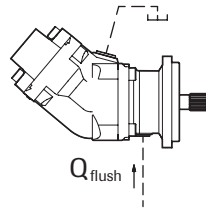
Temperatures/Housing cooling

Excessive system temperature reduces the life of the shaft seal and can lower the oil viscosity below the recommended level. A system temperature of 140°F and a drain flow temperature of 194°F 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 GPM	Cont. RPM
012-034	0.5-2.1	≥ 2800
047-064	1.1-2.7	≥ 2500
084-130	1.6-3.2	≥ 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

Hydraulic fluids

High performance oils meeting ISO specifications – such as HM, DIN 51524-2HLP, 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.

Useful formulaes

Required flow rate $Q = \frac{D \times n}{231 \times \eta_v}$ GPM

Speed $n = \frac{Q \times 231 \times \eta_v}{D}$ RPM

Torque $M = \frac{D \times \Delta p \times \eta_{hm}}{75.6}$ lb-ft

Power $P = \frac{Q \times \Delta p \times \eta_t}{1714}$ hp

D = displacement, cu in/revolution

n = speed, RPM

P = power, hp

Q = flow rate, GPM

η_v = volumetric efficiency

η_{hm} = hydraulic-mechanical efficiency

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

M = torque, lb-ft

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



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