

2PEM

Hydraulic Piston Motor - SAE



2PEM Motors have the following advantages ;

- Compact Design,
- Economical Conception,
- High Power Density,
- High Efficiency,
- High Rotating Speeds,
- From 5cc to 130cc,
- High Pressure,
- Good Starting Characteristics,
- Optimized Weight and Size,
- For Use Mobile and Stationary Applications,

Other Advantages of 2PEM

Interchangeable and Compatible with other SAE Bent Axis Motors,
Special Designed Pistons,
One-Piece Piston with Piston Rings,
Compact motor design and extra durable parts,
High Operational Reliability and High Starting Torque
Extra Warranty with Wide Service

40° bent axis design giving high power, small overall dimensions, optimum efficiency and economic design. Flange and shaft designed for direct mounting on the equipments. The fixed displacement bent axis motors generates a hydraulic fluid flow. It is designed for use in trucks, commercial vehicles, construction type equipments and all stationary hydraulic applications. The 2PEM is a motor with rotary group in bent-axis design. Flow is proportional to drive speed and displacement.

For axial piston units with bent-axis design, the Pistons are arranged diagonally with respect to the drive shaft. The motor covers the whole displacement range 5 to 130 cm³/rev. The motor has been developed with modern styling and design to satisfy market demand as to designed new generation plate, extra parts and pistons with give high flow performance, high pressures with high efficiency and very small dimensions.

The motor is available both to DIN and SAE world standards and can be mounted either directly at the gear box or via a drive shaft. Other brand bent axis motors compatible and interchangeable with 2PEM bent axis motors. Refer to the data sheet and order confirmation for the technical data, operating conditions and operating limits of the Hydraulic Piston Motors.

Ordering Code of 2PEM Motors

[illegible]

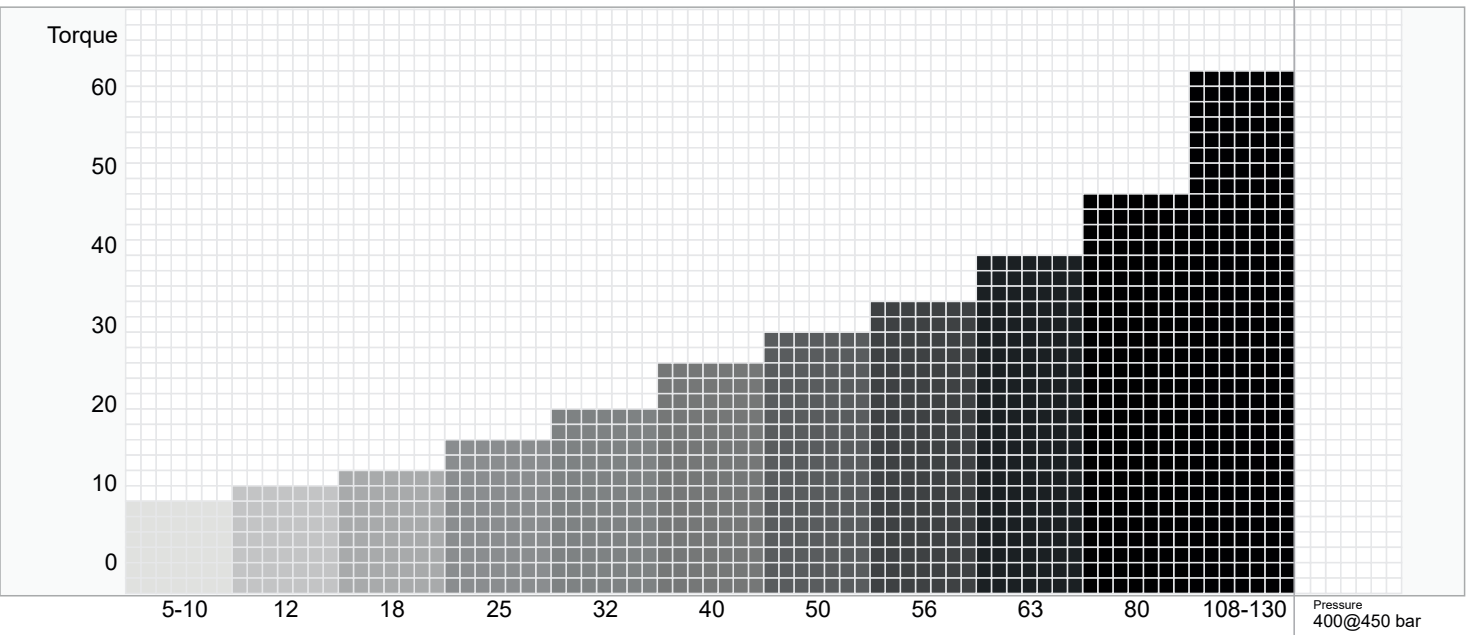
2PEM Hydraulic Piston Motor - SAE, Fixed Displacement.

Technical Data

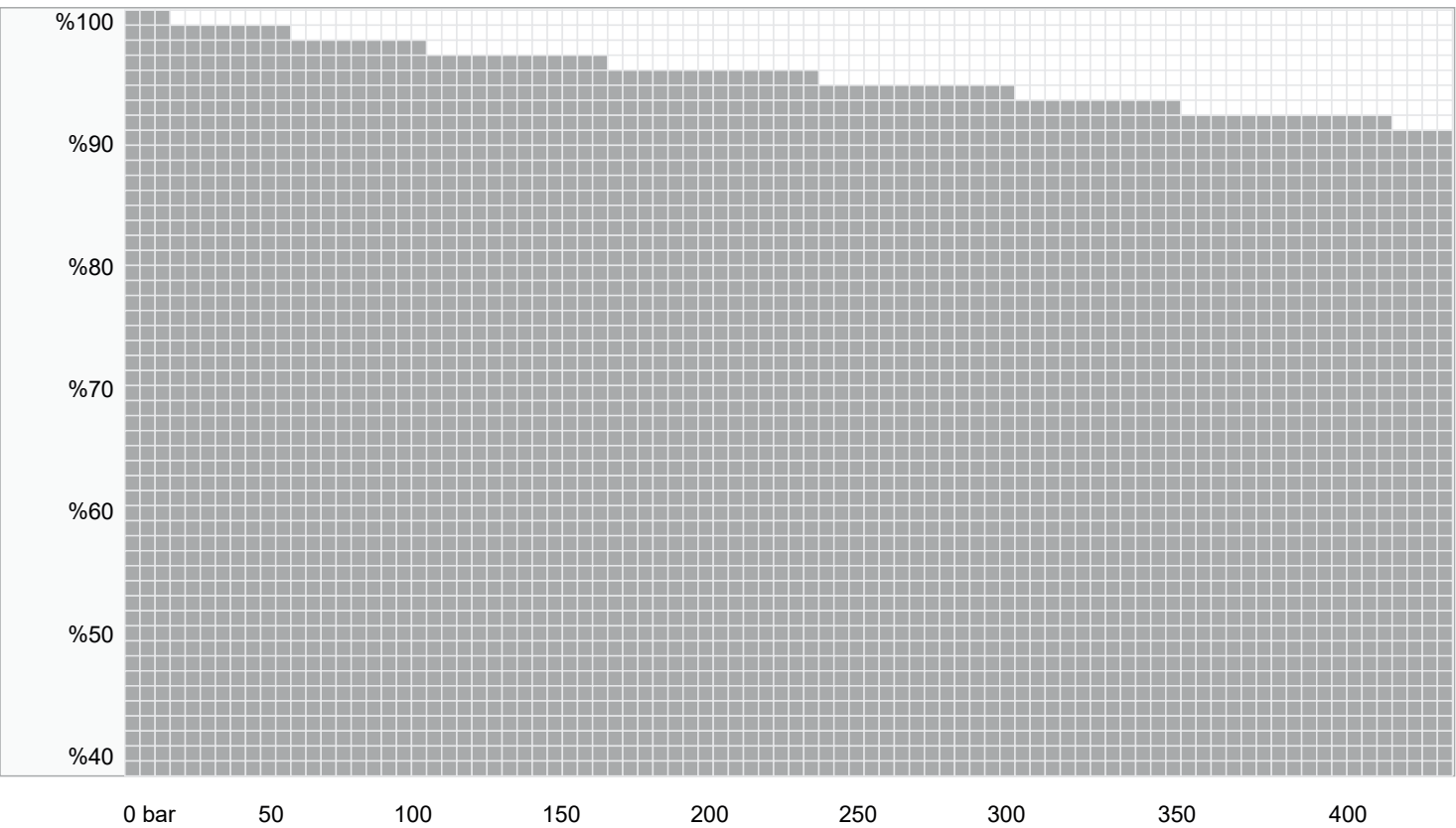
[illegible]

Performance

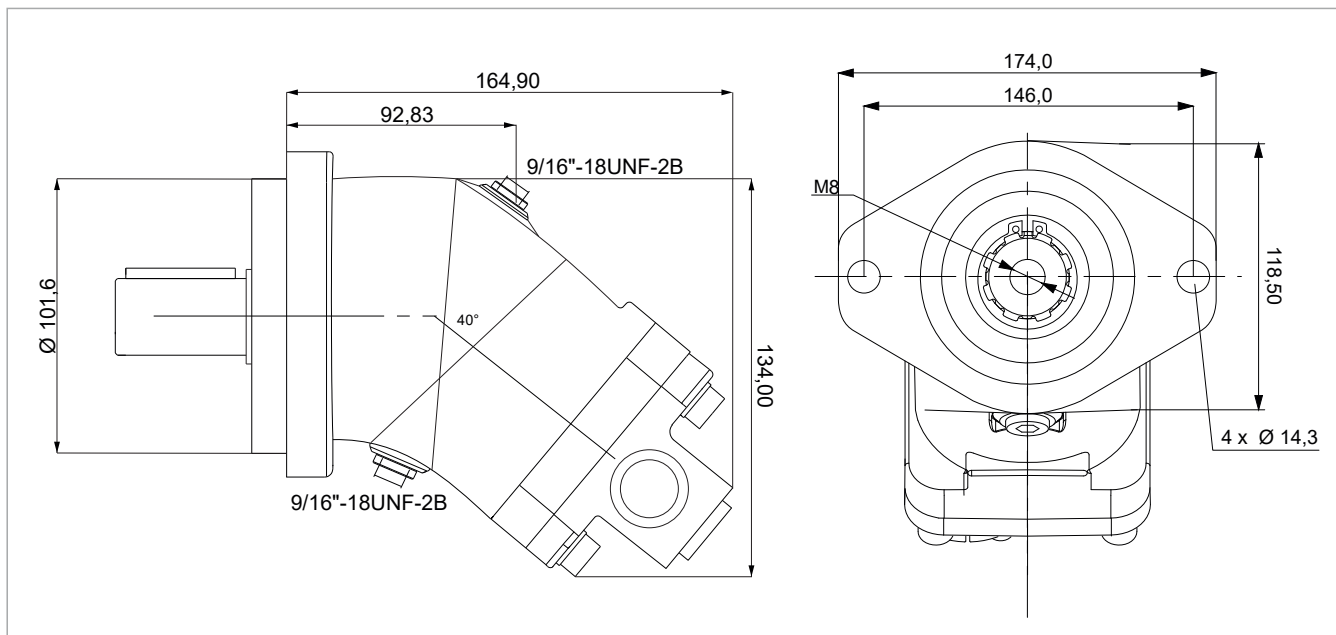
Compare Table of Torque



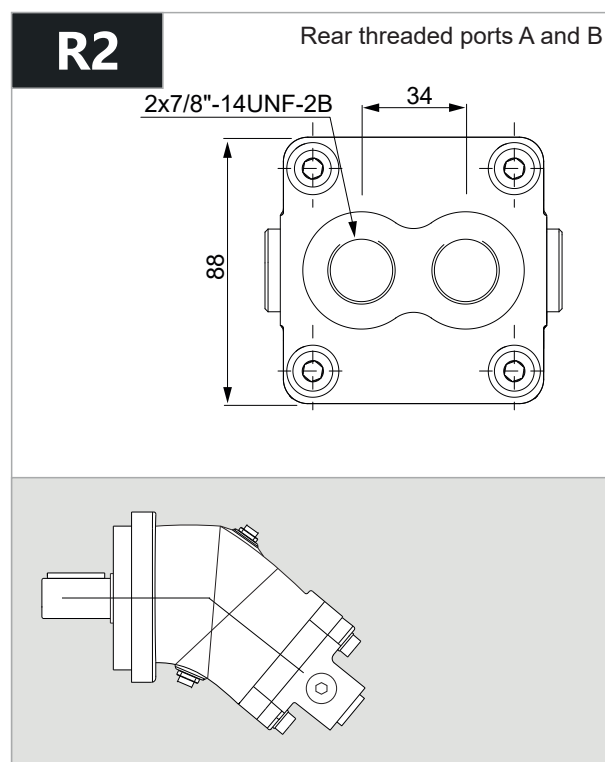
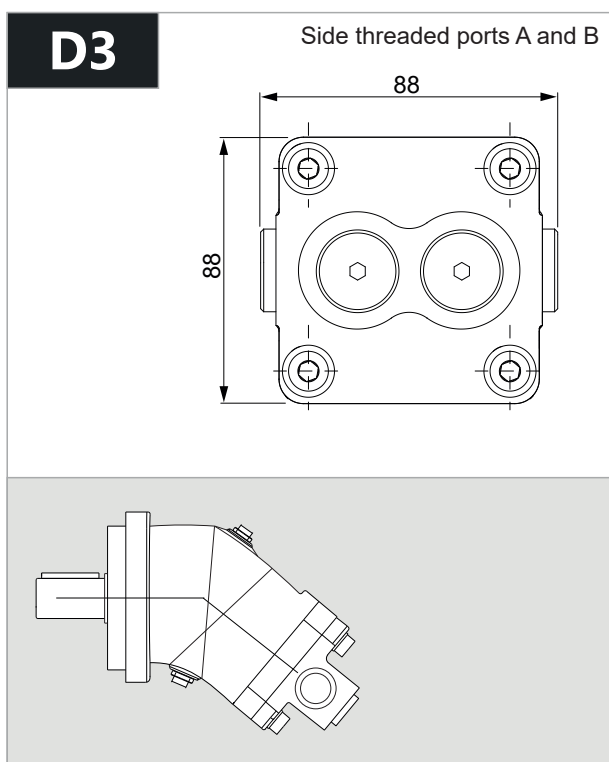
Efficiency of 2PEM Motors



2PEM 12 - SAE B - 2 BOLT

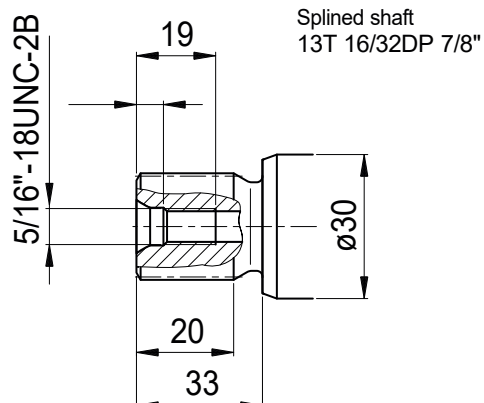


x 1000 rpm	x 1500 rpm	Max. Contin. Pump Speed	Max. Intermitt. Pump Speed	Max. Contin. Pressure	Max. Peak Pressure	Torque bar	Torque at 350 bar	Max. Flow	Weight without accessor.	Weight with accessor.	Max. Motor Temp.	Min. Motor Temp.
12,00 cc	18,00 cc	8000 rpm	8800 rpm	400 bar	450 bar	0,18 m.N/bar	66 m.N	96	6,50 kg	7,00 kg	-25°	110°

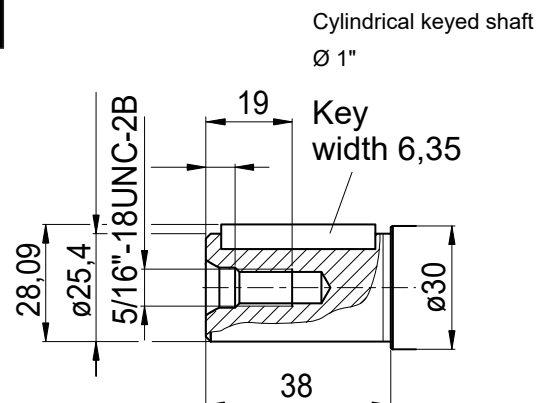


2PEM 12 - SAE B - 2 BOLT

J1



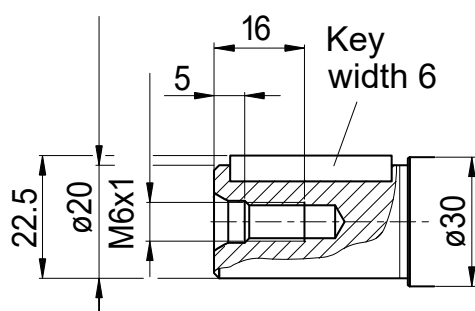
J2



K2

!! Special

Parallel keyed shaft
DIN 6885, AS6x6x32

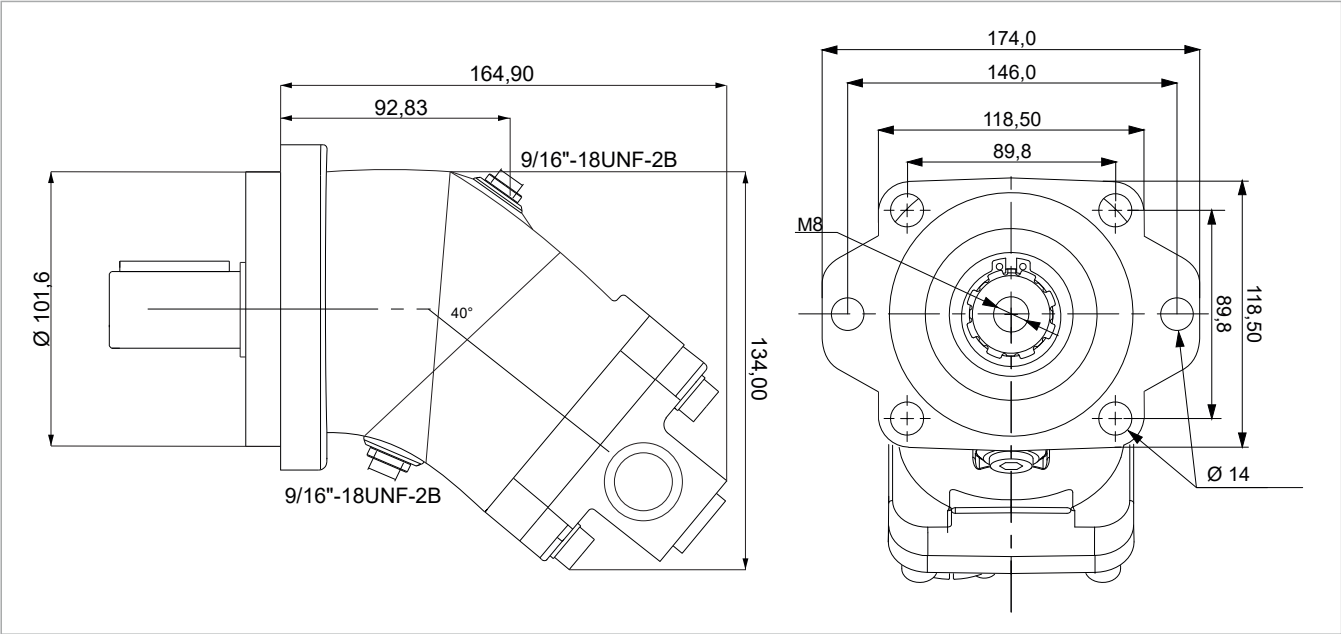


ALL SPLINED AND KEYED
SPECIAL DIMENSION
SHAFTS AVAILABLE

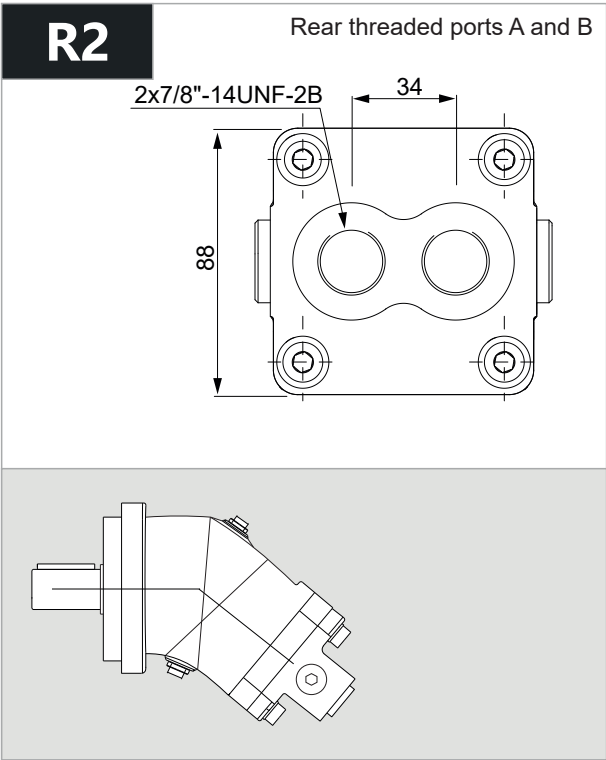
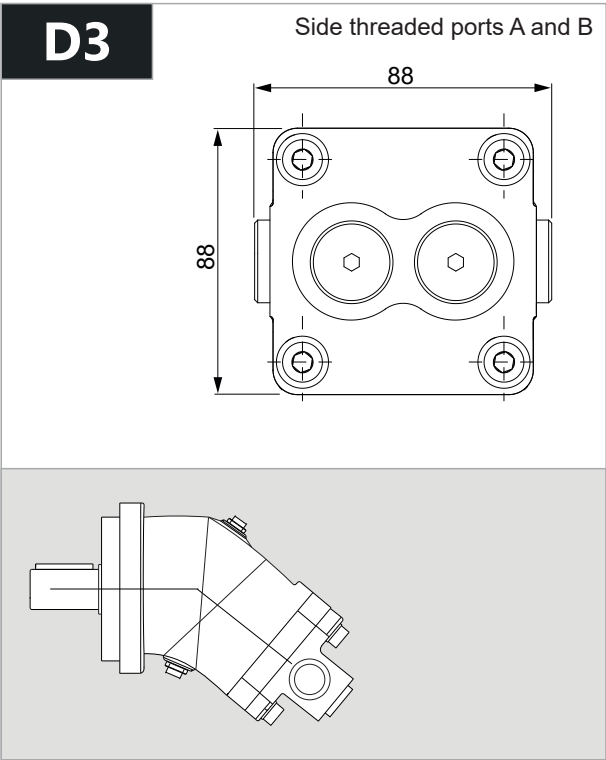
(THE DIMENSIONS CHANGE
DEPENDS ON THE COUNTRIES)

Dimensions Size;

2PEM 12 - SAE B - 6 BOLT



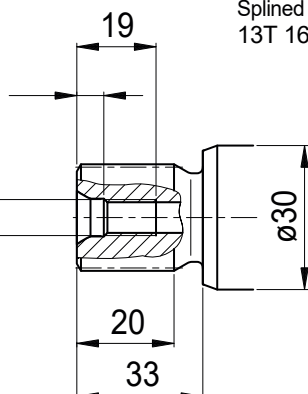
x 1000 rpm	x 1500 rpm	Max. Contin. Pump Speed	Max. Intermit. Pump Speed	Max. Contin. Pressure	Max. Peak Pressure	Torque bar	Torque at 350 bar	Max. Flow	Weight without accessor.	Weight with accessor.	Max. Motor Temp.	Min. Motor Temp.
12,00 cc	18,00 cc	8000 rpm	8800 rpm	400 bar	450 bar	0.18 m.N/bar	66 m.N	96	6,50 kg	7,00 kg	-25°	110°



2PEM 12 - SAE B - 6 BOLT

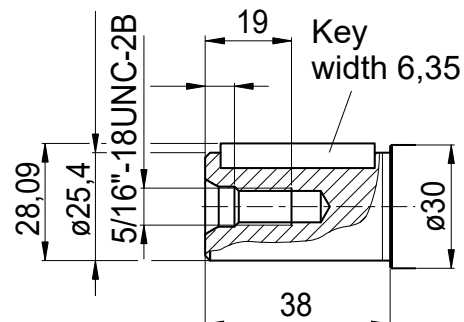
J1

5/16"-18UNC-2B



Splined shaft
13T 16/32DP 7/8"

J2

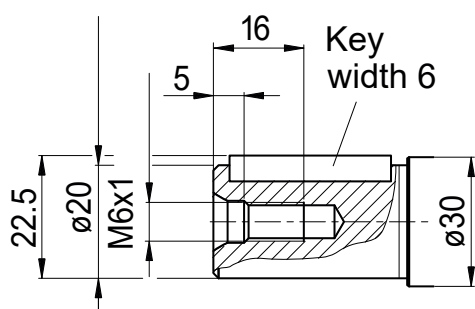


Cylindrical keyed shaft
Ø 1"

K2

!! Special

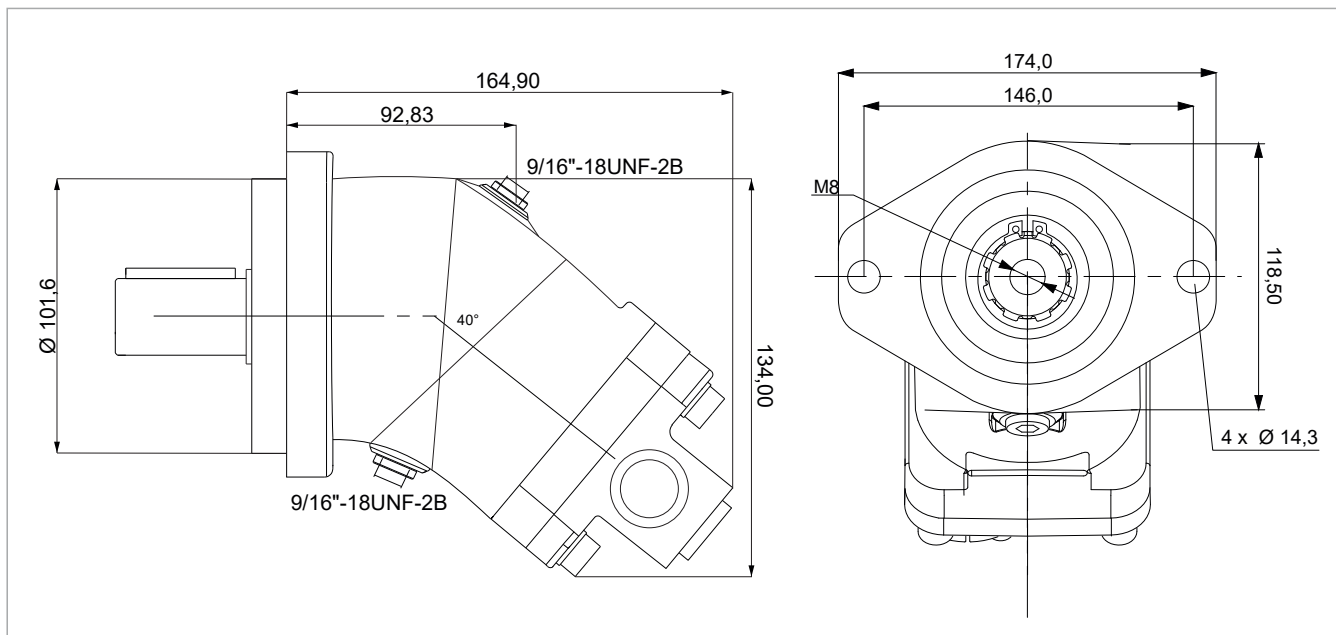
Parallel keyed shaft
DIN 6885, AS6x6x32



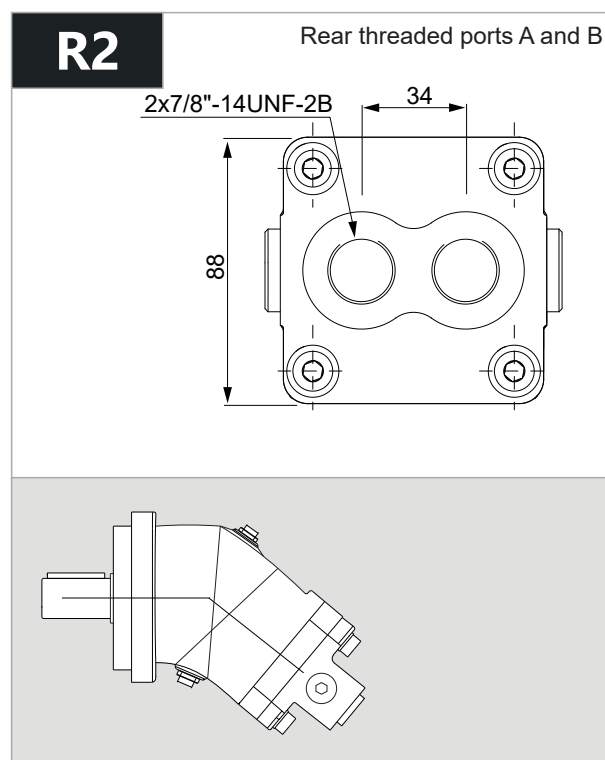
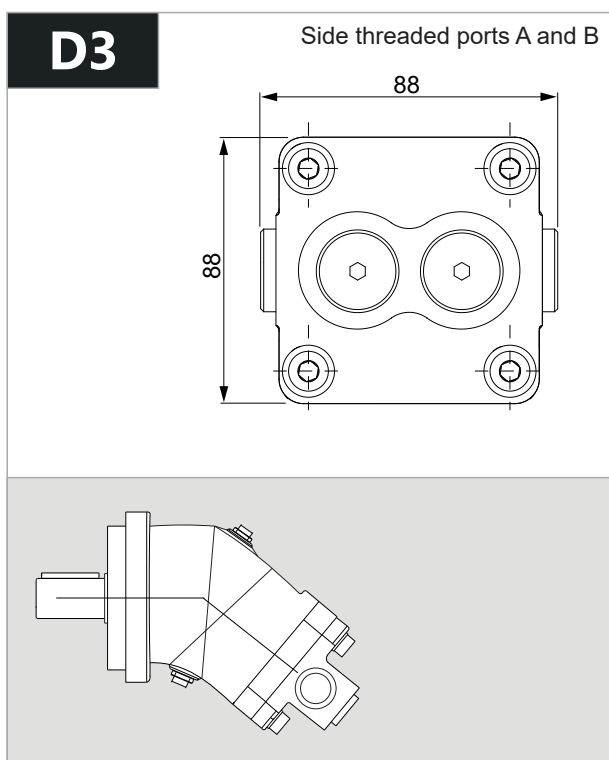
ALL SPLINED AND KEYED
SPECIAL DIMENSION
SHAFTS AVAILABLE

(THE DIMENSIONS CHANGE
DEPENDS ON THE COUNTRIES)

2PEM 18 - SAE B - 2 BOLT

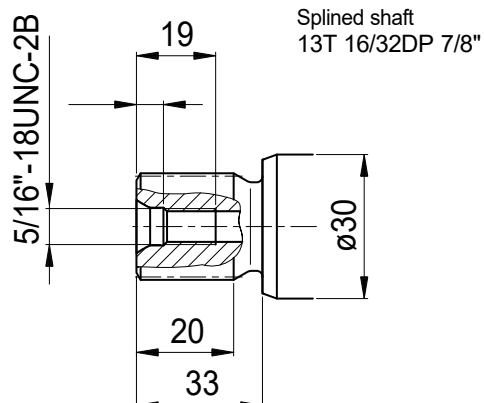


x 1000 rpm	x 1500 rpm	Max. Contin. Pump Speed	Max. Intermit. Pump Speed	Max. Contin. Pressure	Max. Peak Pressure	Torque bar	Torque at 350 bar	Max. Flow	Weight without accessor.	Weight with accessor.	Max. Motor Temp.	Min. Motor Temp.
18,00 cc	27,00 cc	8000 rpm	8800 rpm	400 bar	450 bar	0,28 m.N/bar	98 m.N	144	6,50 kg	7,0 kg	-25°	110°

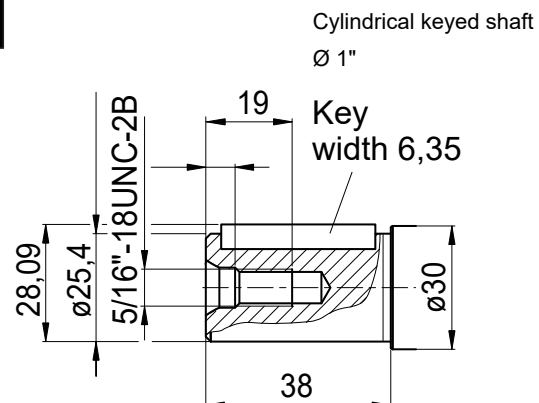


2PEM 18 - SAE B - 2 BOLT

J1



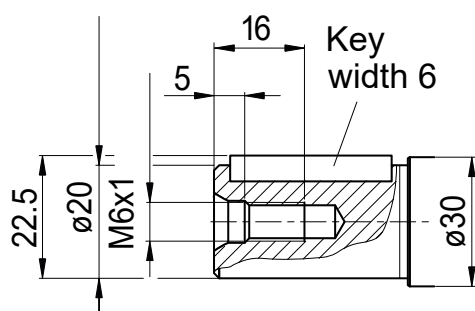
J2



K2

!! Special

Parallel keyed shaft
DIN 6885, AS6x6x32

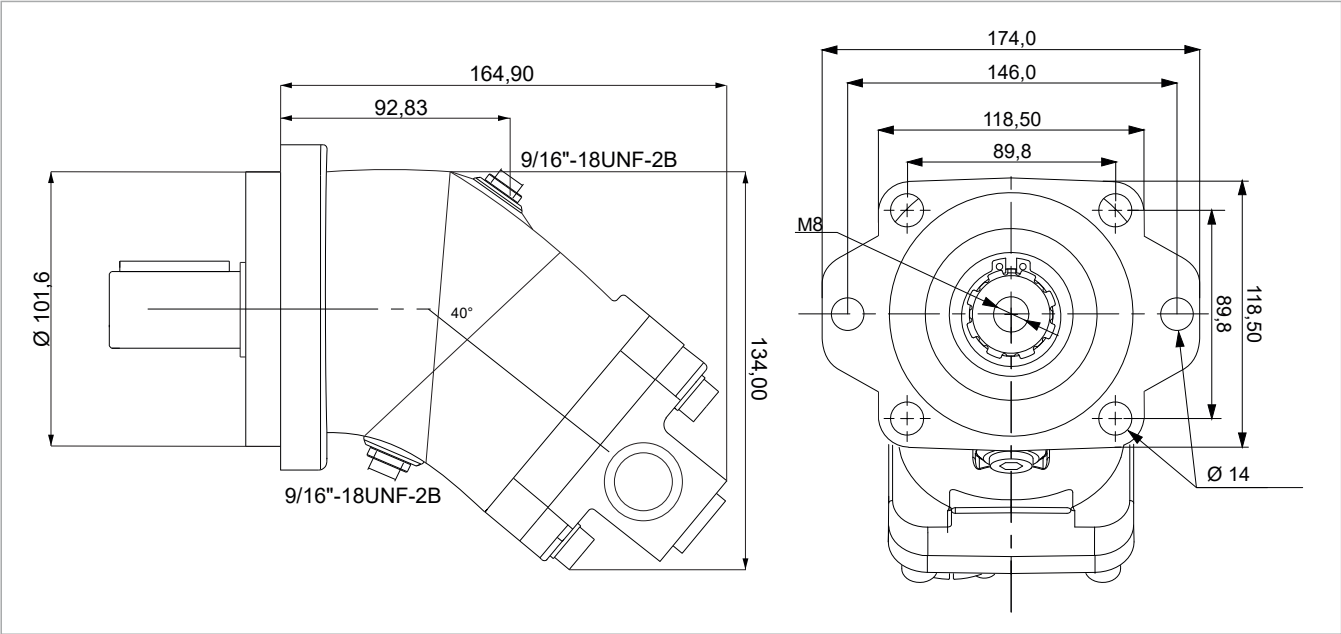


ALL SPLINED AND KEYED
SPECIAL DIMENSION
SHAFTS AVAILABLE

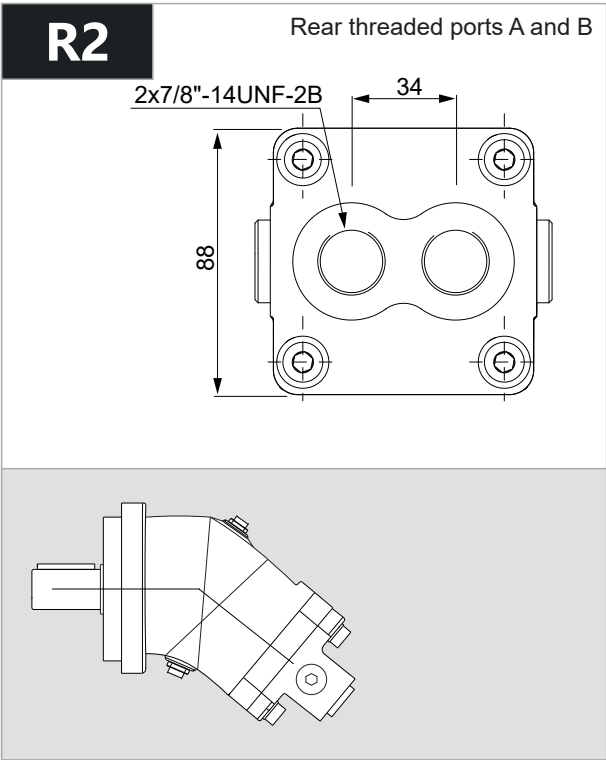
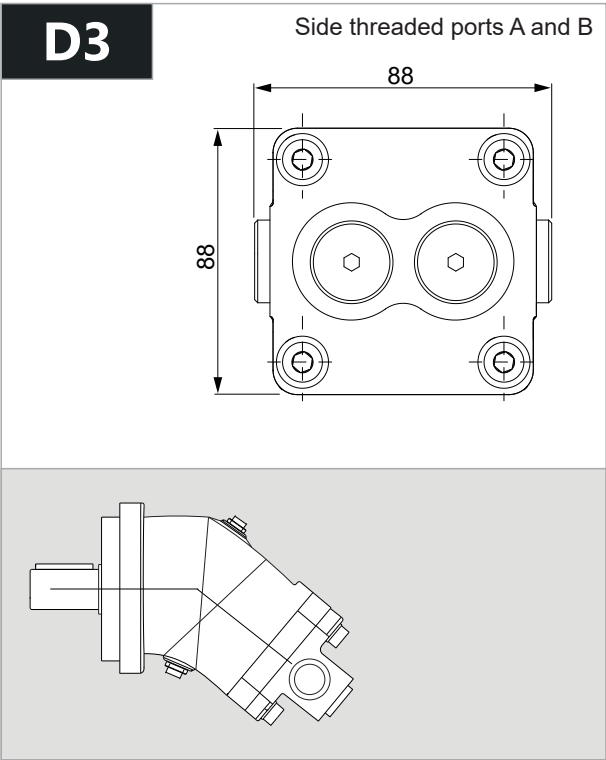
(THE DIMENSIONS CHANGE
DEPENDS ON THE COUNTRIES)

Dimensions Size;

2PEM 18 - SAE B - 6 BOLT

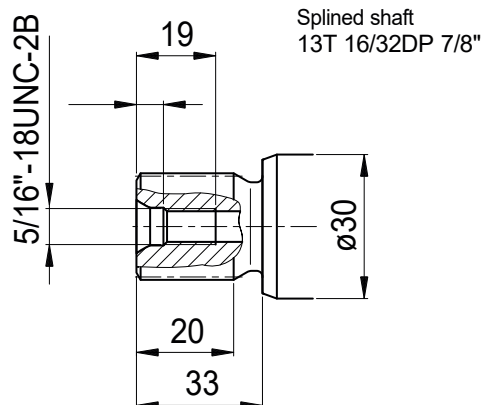


x 1000 rpm	x 1500 rpm	Max. Contin. Pump Speed	Max. Intermit. Pump Speed	Max. Contin. Pressure	Max. Peak Pressure	Torque bar	Torque at 350 bar	Max. Flow	Weight without accessor.	Weight with accessor.	Max. Motor Temp.	Min. Motor Temp.
18,00 cc	27,00 cc	8000 rpm	8800 rpm	400 bar	450 bar	0.28 m.N/bar	98 m.N	144	6,50 kg	7,0 kg	-25°	110°

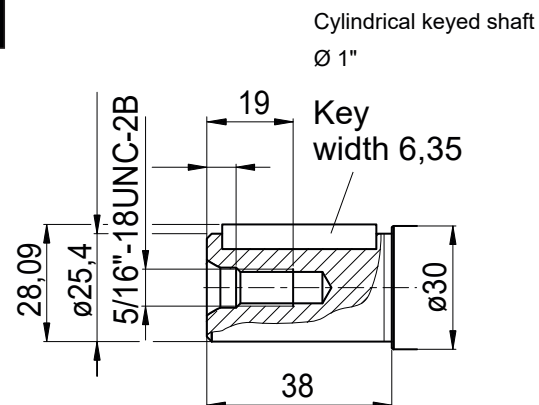


2PEM 18 - SAE B - 6 BOLT

J1



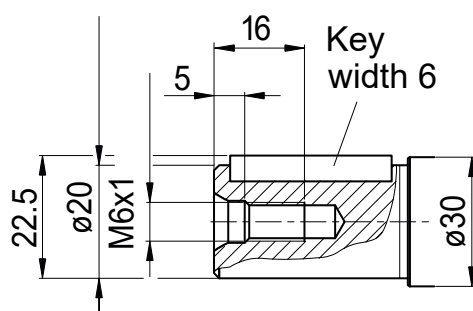
J2



K2

!! Special

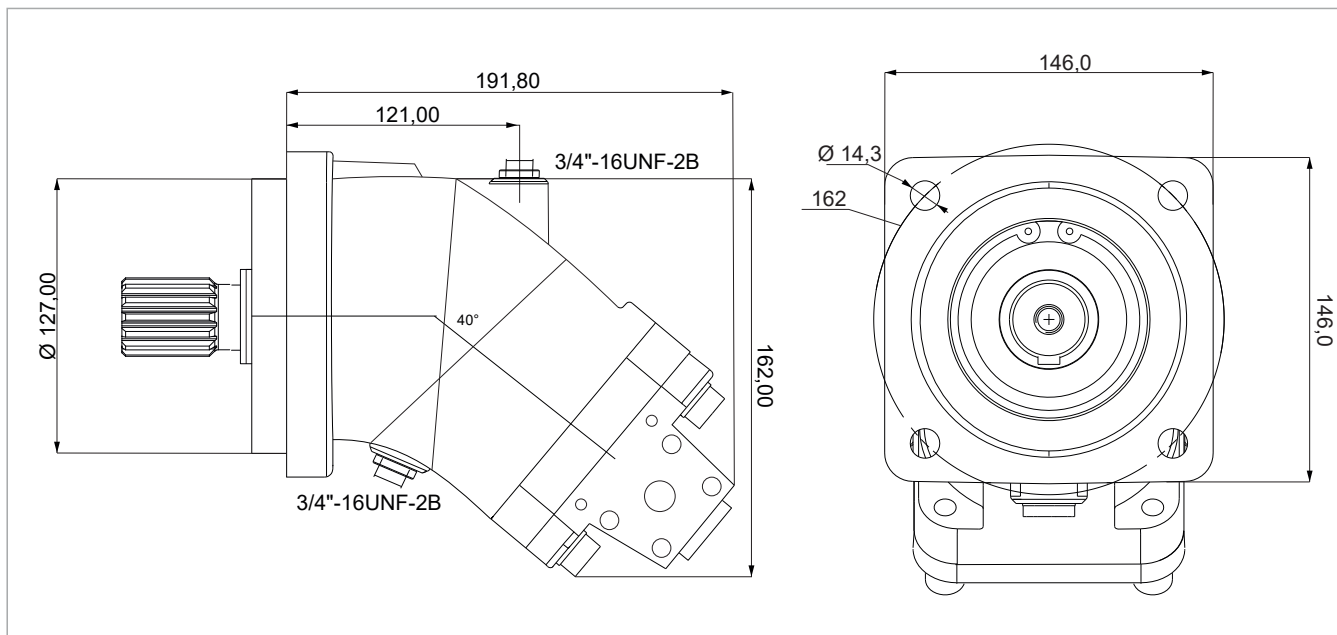
Parallel keyed shaft
DIN 6885, AS6x6x32



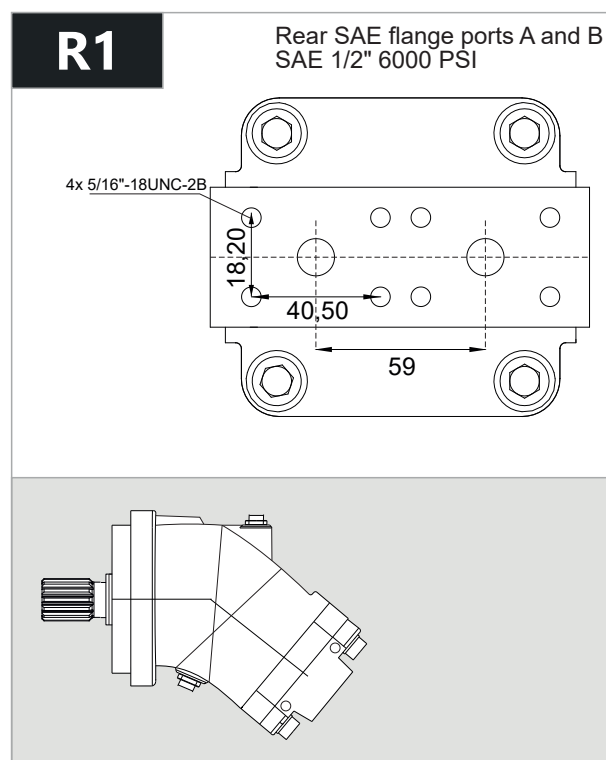
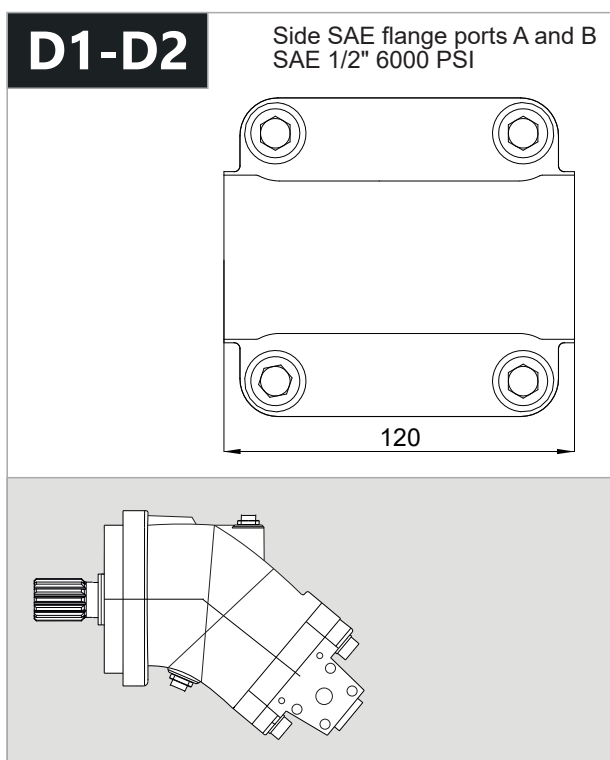
ALL SPLINED AND KEYED
SPECIAL DIMENSION
SHAFTS AVAILABLE

(THE DIMENSIONS CHANGE
DEPENDS ON THE COUNTRIES)

2PEM 25 - SAE C - 4 BOLT



x 1000 rpm	x 1500 rpm	Max. Contin. Pump Speed	Max. Intermit. Pump Speed	Max. Contin. Pressure	Max. Peak Pressure	Torque bar	Torque at 350 bar	Max. Flow	Weight without accessor.	Weight with accessor.	Max. Motor Temp.	Min. Motor Temp.
25,00 cc	37,50 cc	6250 rpm	6800 rpm	400 bar	450 bar	0.40 m.N/bar	140 m.N	156	11,50 kg	11,80 kg	-25°	110°

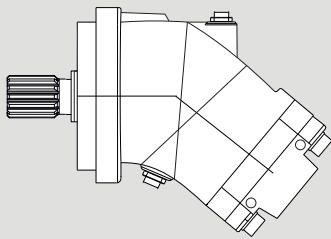
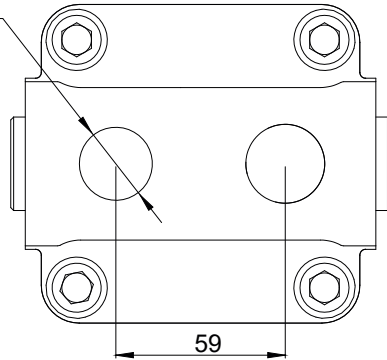


2PEM 25 - SAE C - 4 BOLT

R2

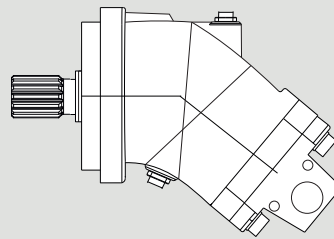
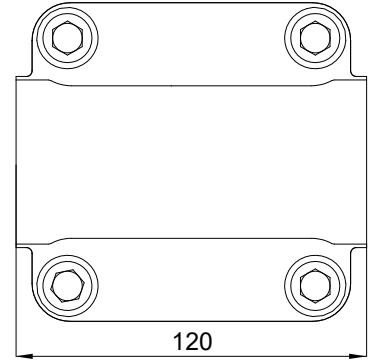
Rear threaded ports A and B

2x1 5/16"-
12UN-2B



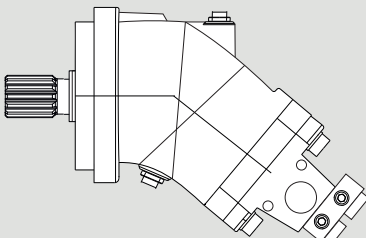
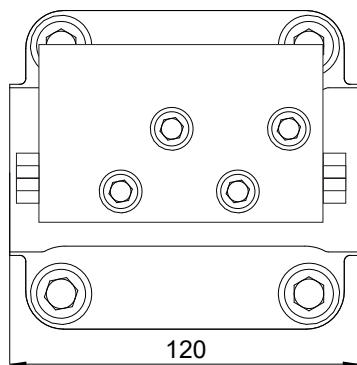
D3

Side threaded ports

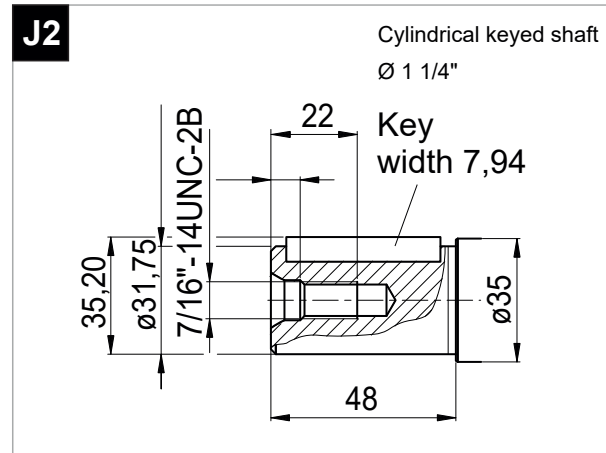
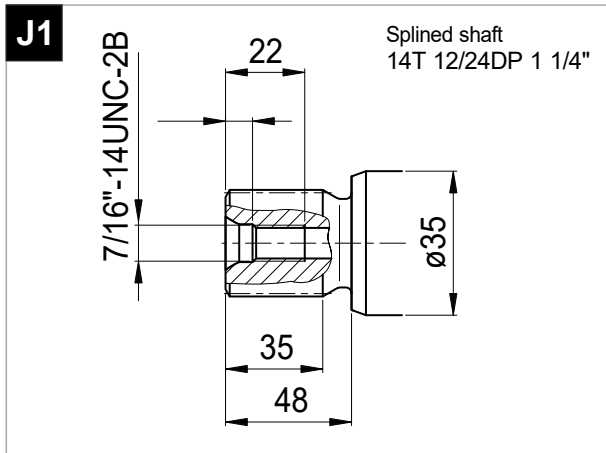


D4

Side threaded ports

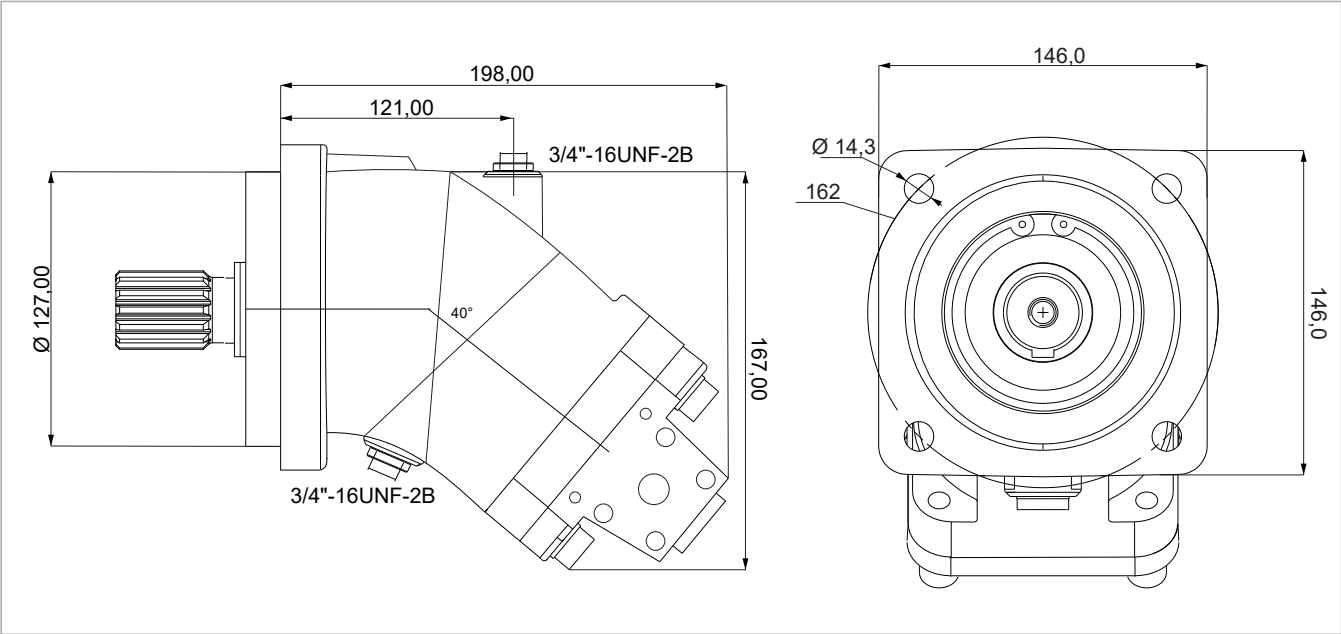


2PEM 25 - SAE C - 4 BOLT

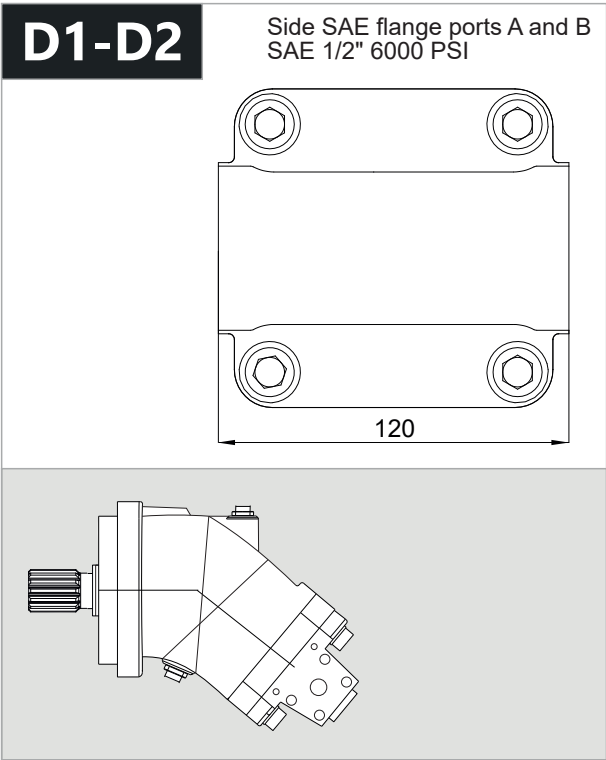
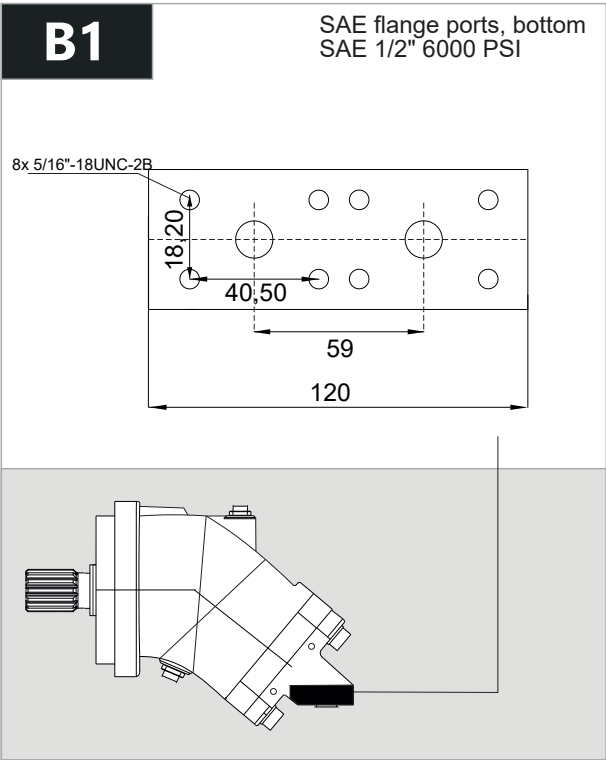


Dimensions Size;

2PEM 32 - SAE C - 4 BOLT



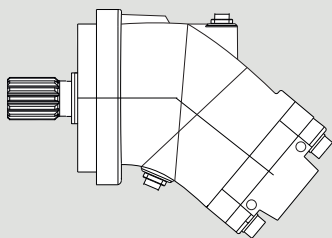
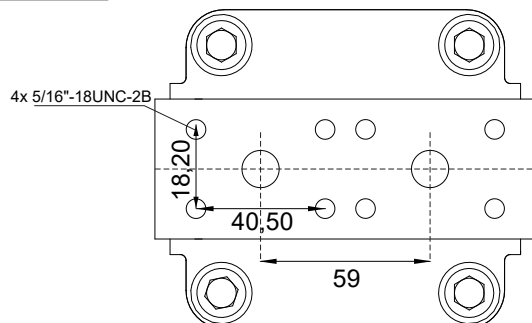
x 1000 rpm	x 1500 rpm	Max. Contin. Pump Speed	Max. Intermit. Pump Speed	Max. Contin. Pressure	Max. Peak Pressure	Torque bar	Torque at 350 bar	Max. Flow	Weight without accessor.	Weight with accessor.	Max. Motor Temp.	Min. Motor Temp.
32,00 cc	48,00 cc	6250 rpm	6800 rpm	400 bar	450 bar	0.51 m.N/bar	174 m.N	200	11,50 kg	11,90 kg	-25°	110°



2PEM 32 - SAE C - 4 BOLT

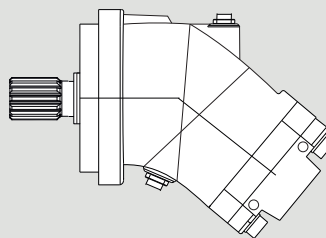
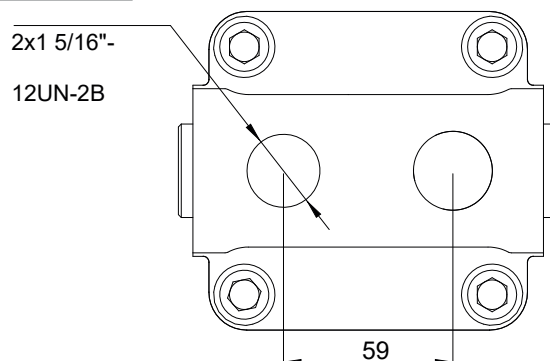
R1

Rear SAE flange ports A and B
SAE 1/2" 6000 PSI



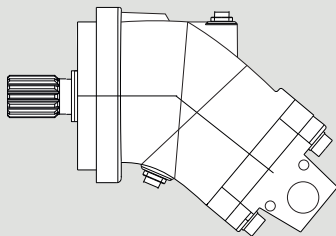
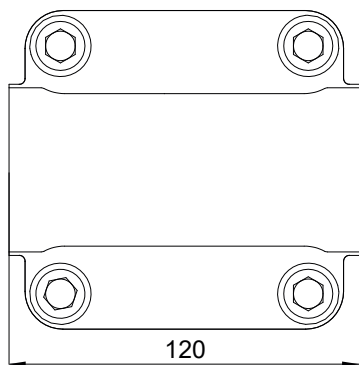
R2

Rear threaded ports



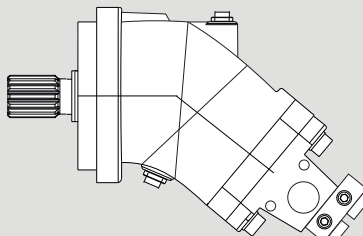
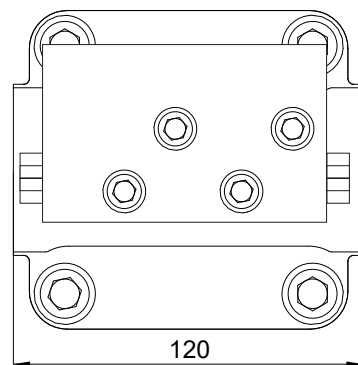
D3

Side threaded ports A and B



D4

Side threaded ports A and B



2PEM 32 - SAE C - 4 BOLT

J1

7/16"-14UNC-2B

22

Splined shaft
14T 12/24DP 1 1/4"

ø35

35

48

J2

Cylindrical keyed shaft
Ø 1 1/4"

7/16"-14UNC-2B

22

Key
width 7,94

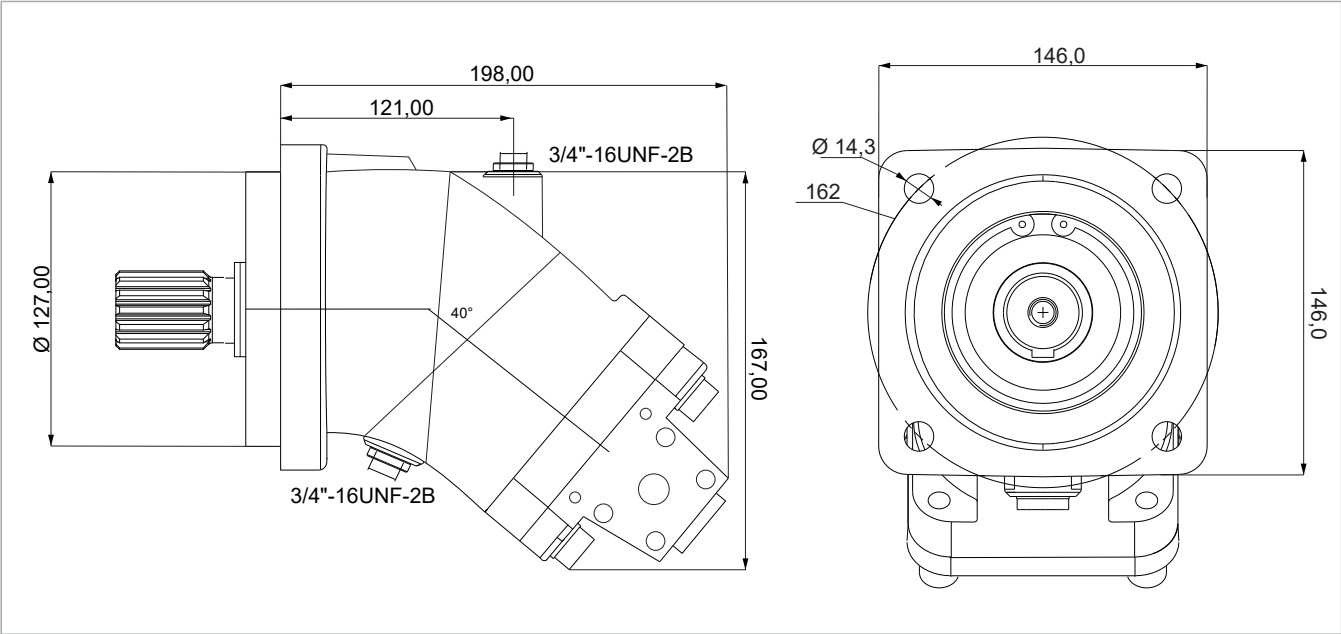
35,20

ø31,75

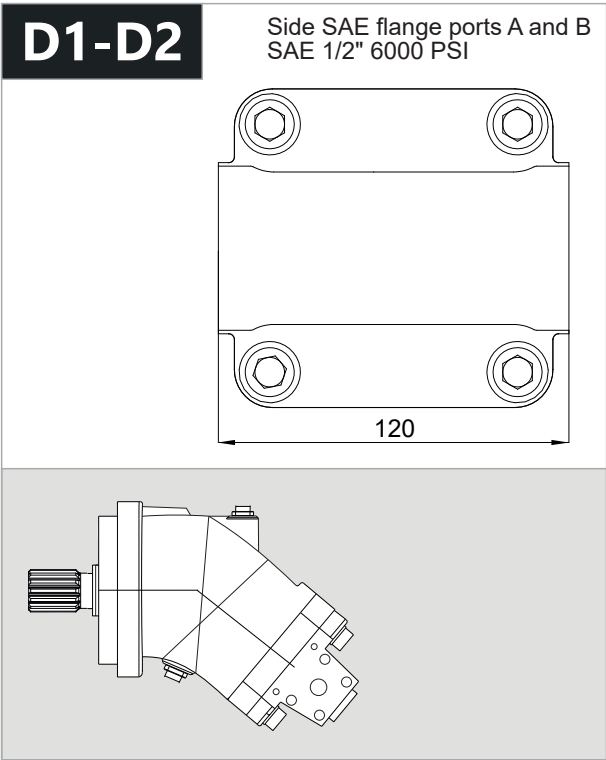
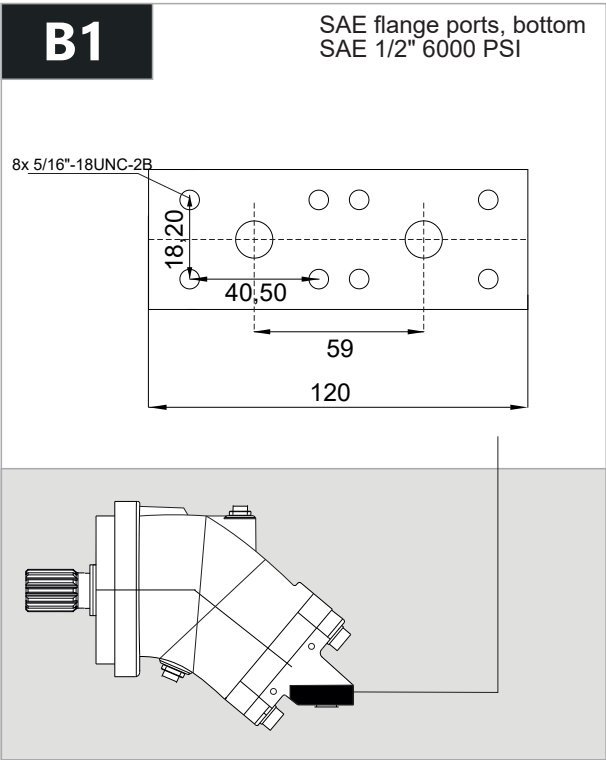
48

ø35

2PEM 40 - SAE C - 4 BOLT



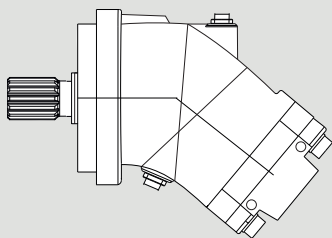
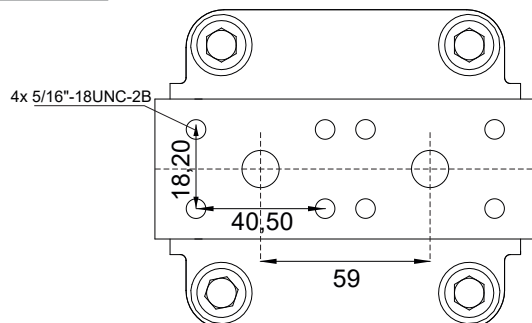
<i>x 1000 rpm</i>	<i>x 1500 rpm</i>	<i>Max. Contin. Pump Speed</i>	<i>Max. Intermit. Pump Speed</i>	<i>Max. Contin. Pressure</i>	<i>Max. Peak Pressure</i>	<i>Torque bar</i>	<i>Torque at 350 bar</i>	<i>Max. Flow</i>	<i>Weight without accessor.</i>	<i>Weight with accessor.</i>	<i>Max. Motor Temp.</i>	<i>Min. Motor Temp.</i>
40,20 cc	60,30 cc	5600 rpm	6300 rpm	400 bar	450 bar	0,68 m.N/bar	228 m.N	225	11,50 kg	11,90 kg	-25°	110°



2PEM 40 - SAE C - 4 BOLT

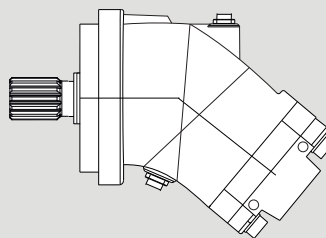
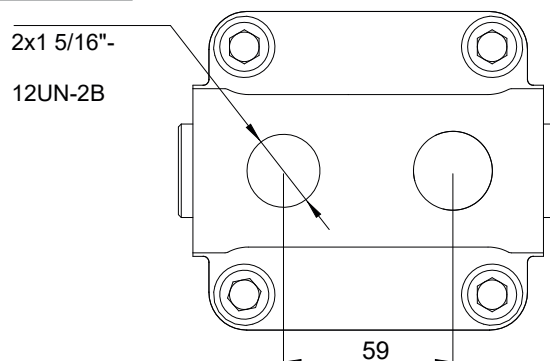
R1

Rear SAE flange ports A and B
SAE 1/2" 6000 PSI



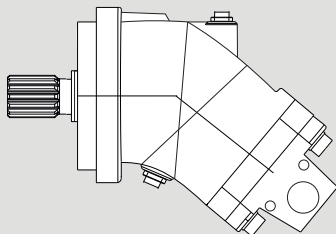
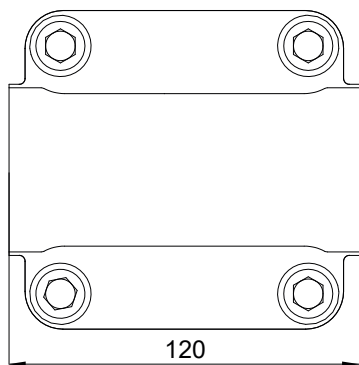
R2

Rear threaded ports



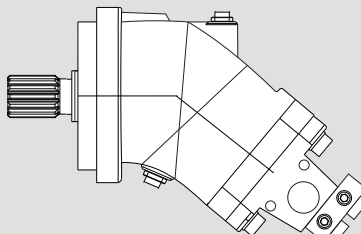
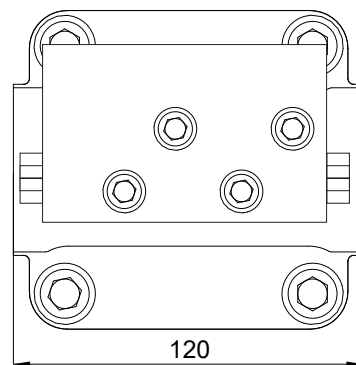
D3

Side threaded ports A and B



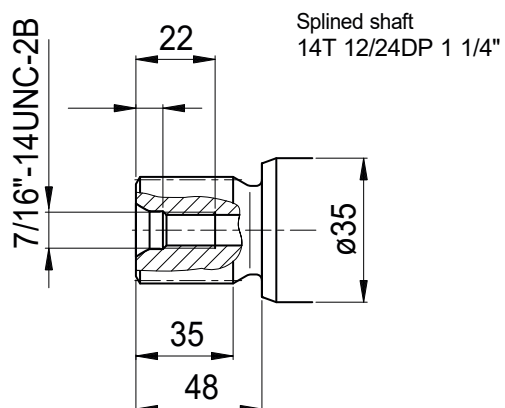
D4

Side threaded ports A and B

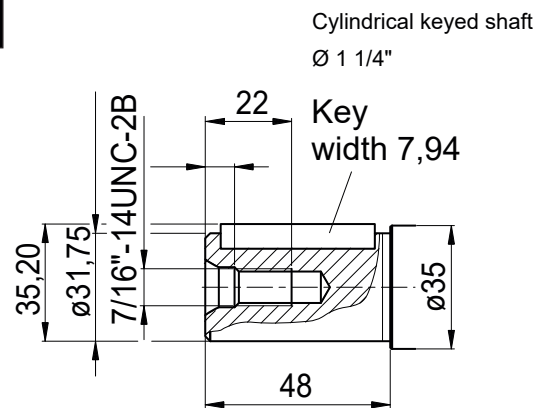


2PEM 40 - SAE C - 4 BOLT

J1

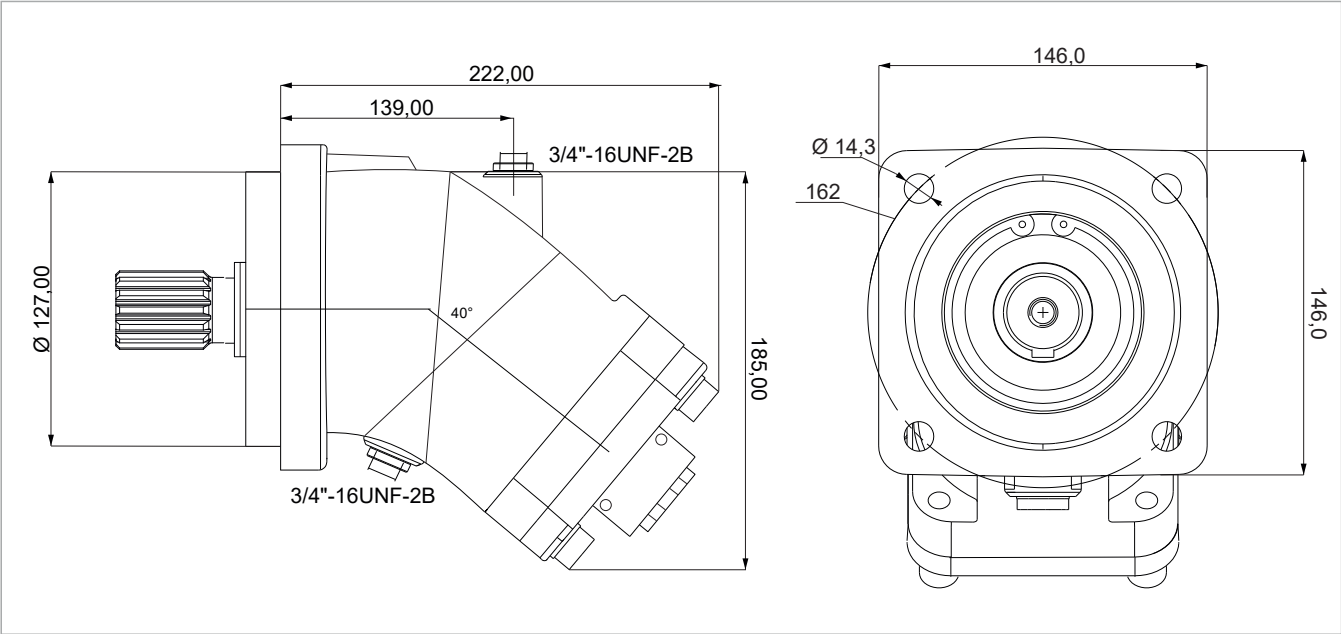


J2

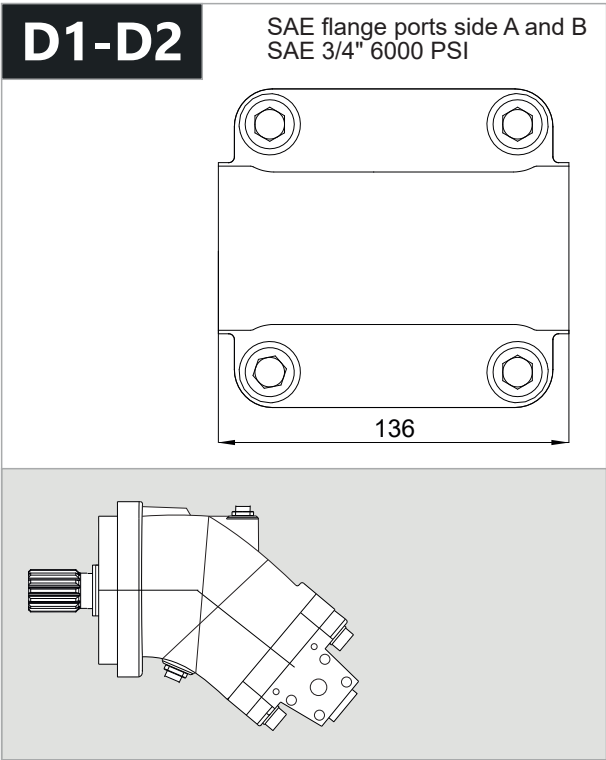
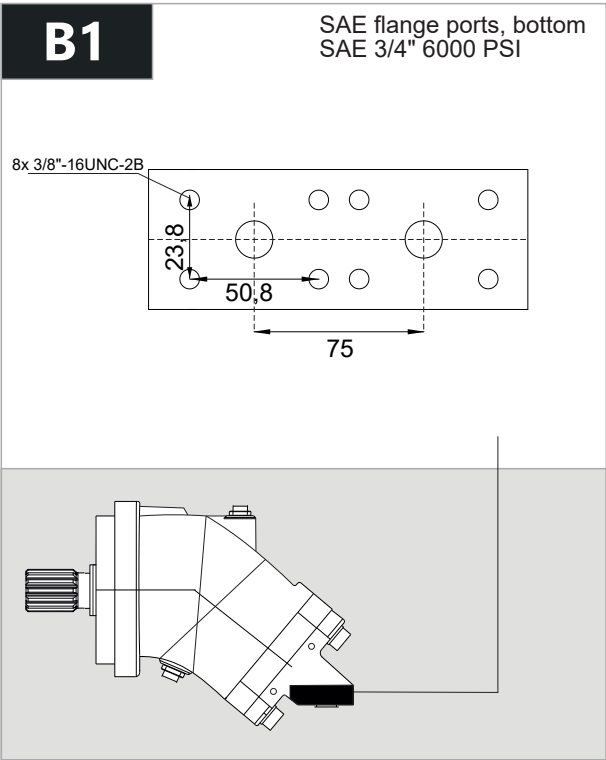


Dimensions Size;

2PEM 50 - SAE C - 4 BOLT



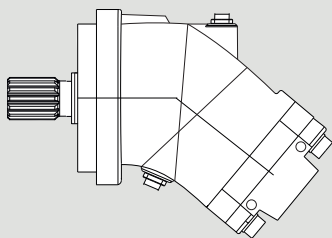
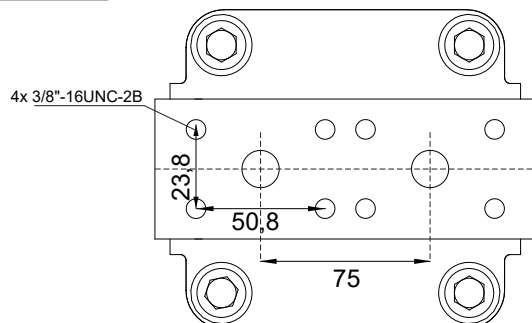
x 1000 rpm	x 1500 rpm	Max. Contin. Pump Speed	Max. Intermit. Pump Speed	Max. Contin. Pressure	Max. Peak Pressure	Torque bar	Torque at 350 bar	Max. Flow	Weight without accessor.	Weight with accessor.	Max. Motor Temp.	Min. Motor Temp.
50,00 cc	75,00 cc	5000 rpm	5500 rpm	400 bar	450 bar	0.80 m.N/bar	280 m.N	250	17,50 kg	18,00 kg	-25°	110°



2PEM 50 - SAE C - 4 BOLT

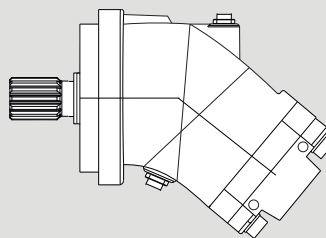
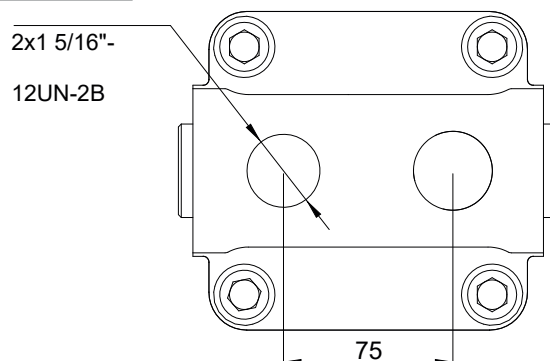
R1

SAE flange ports rear
SAE 3/4" 6000 PSI



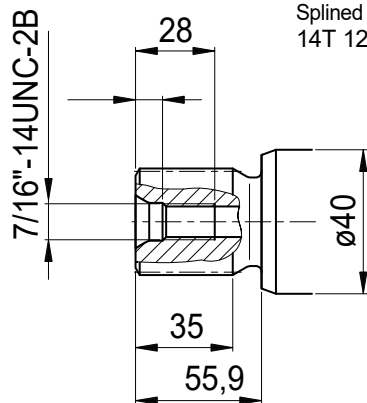
R2

Rear threaded ports



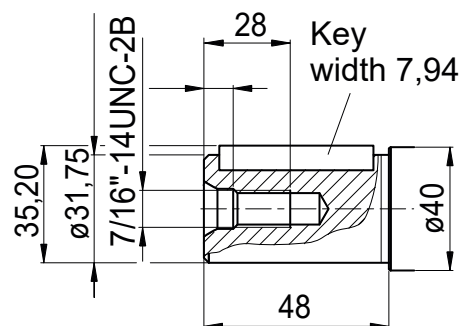
J1

Splined shaft
14T 12/24DP 1 1/4"



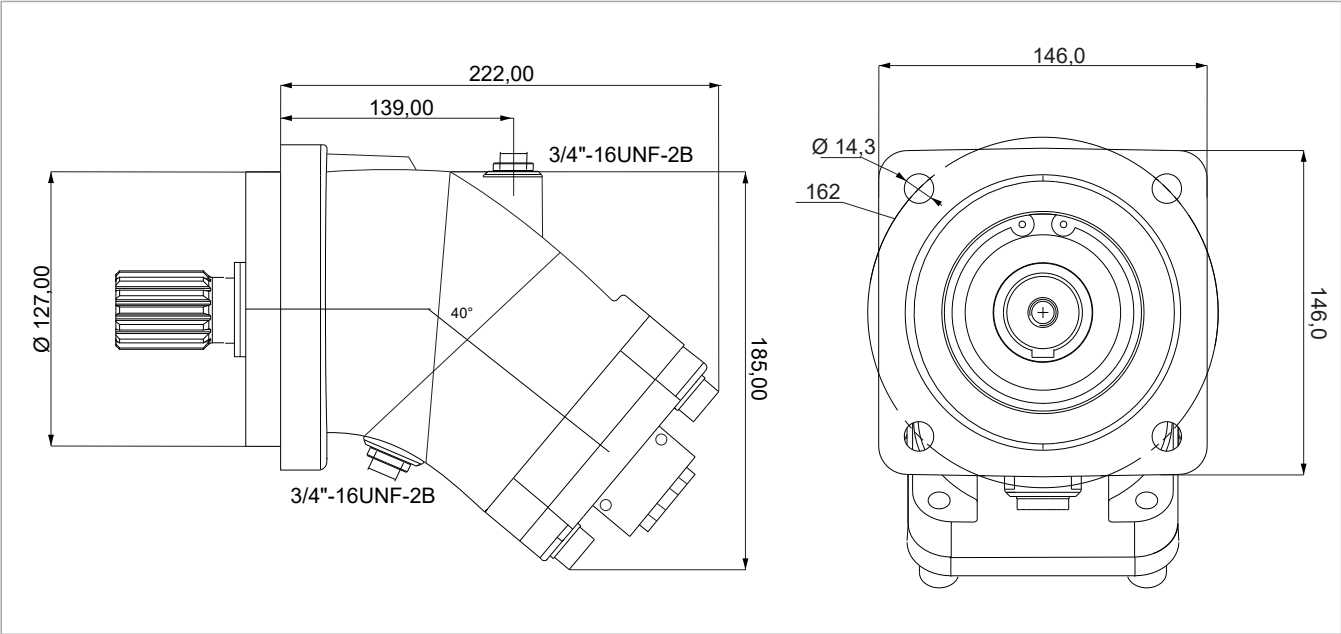
J2

Cylindrical keyed shaft
Ø 1 1/4"

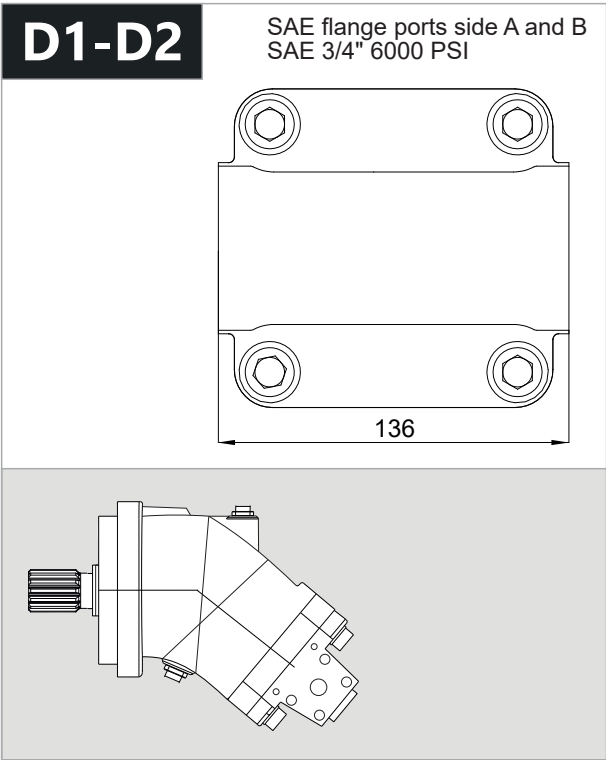
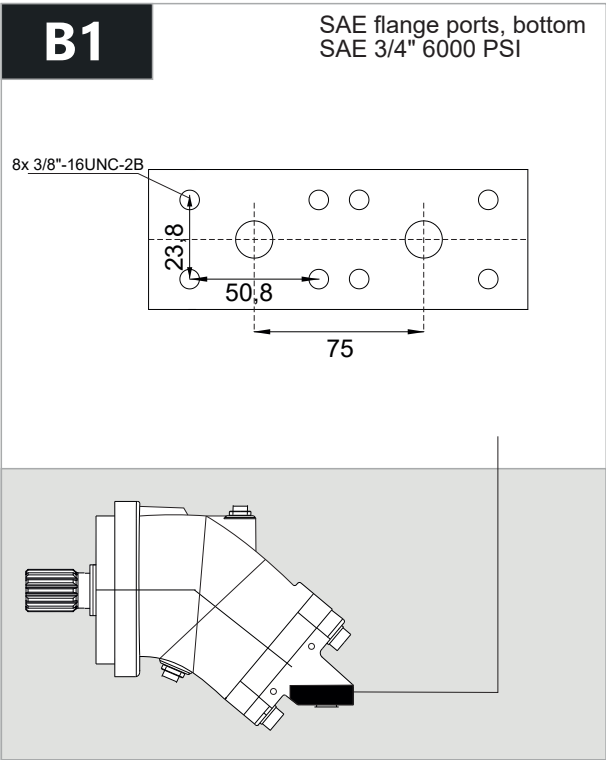


Dimensions Size;

2PEM 63 - SAE C - 4 BOLT



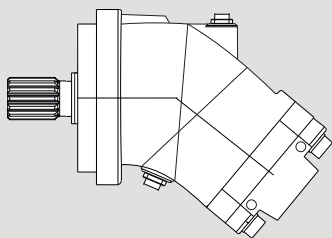
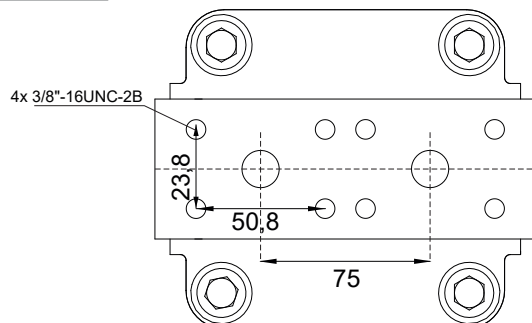
x 1000 rpm	x 1500 rpm	Max. Contin. Pump Speed	Max. Intermit. Pump Speed	Max. Contin. Pressure	Max. Peak Pressure	Torque bar	Torque at 350 bar	Max. Flow	Weight without accessor.	Weight with accessor.	Max. Motor Temp.	Min. Motor Temp.
63,00 cc	94,50 cc	5000 rpm	5500 rpm	400 bar	450 bar	1,00 m.N/bar	350 m.N	315	18,00 kg	18,50 kg	-25°	110°



2PEM 63 - SAE C - 4 BOLT

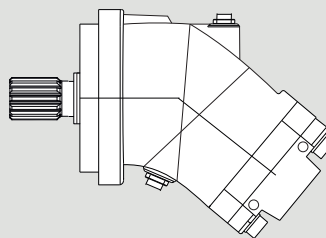
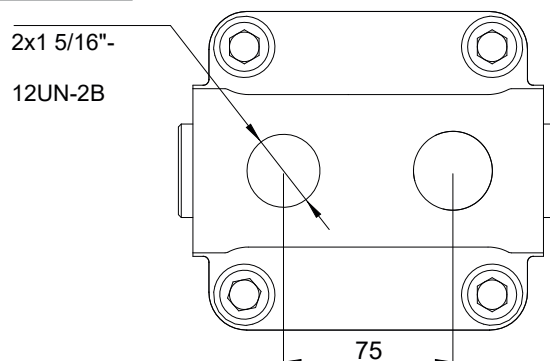
R1

SAE flange ports rear
SAE 3/4" 6000 PSI



R2

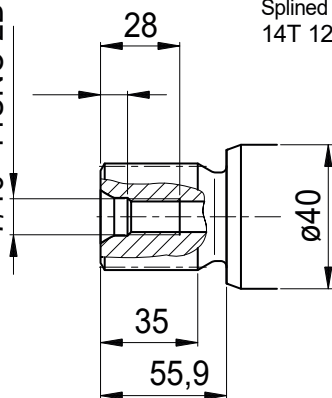
Rear threaded ports



J1

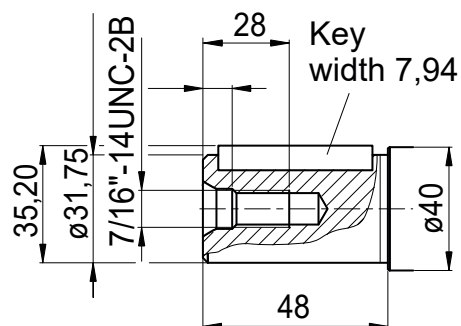
7/16"-14UNC-2B

Splined shaft
14T 12/24DP 1 1/4"



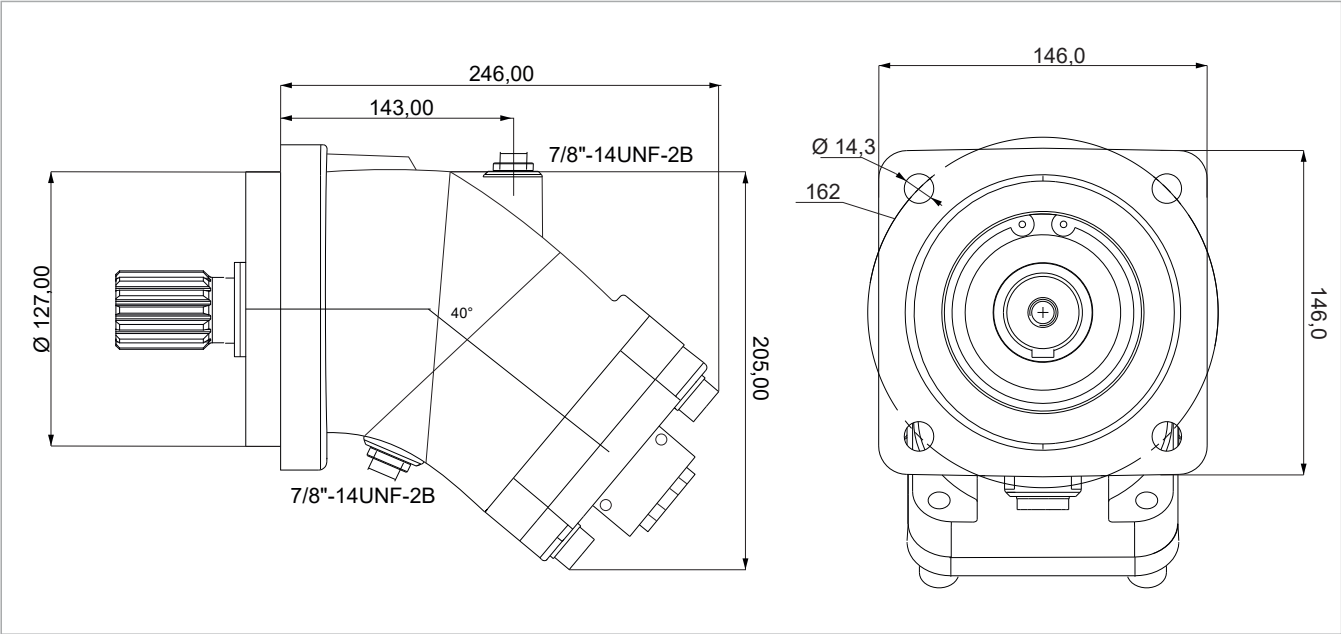
J2

Cylindrical keyed shaft
Ø 1 1/4"

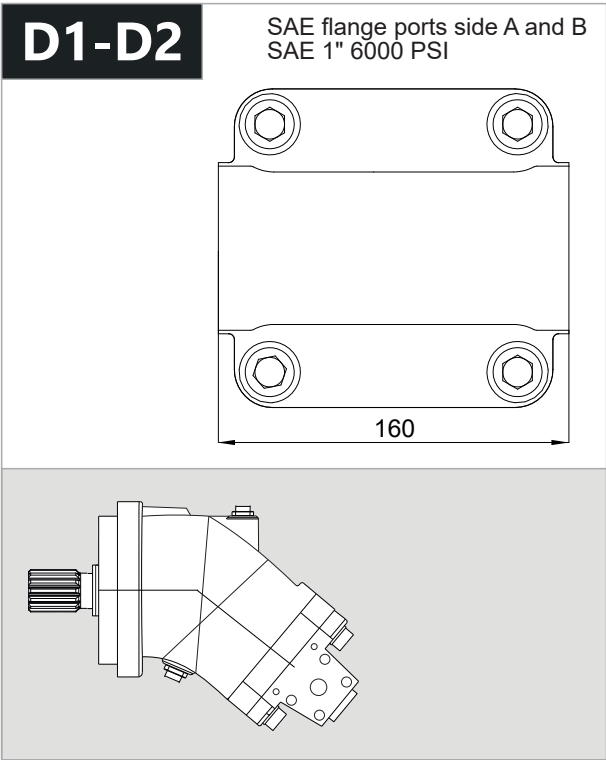
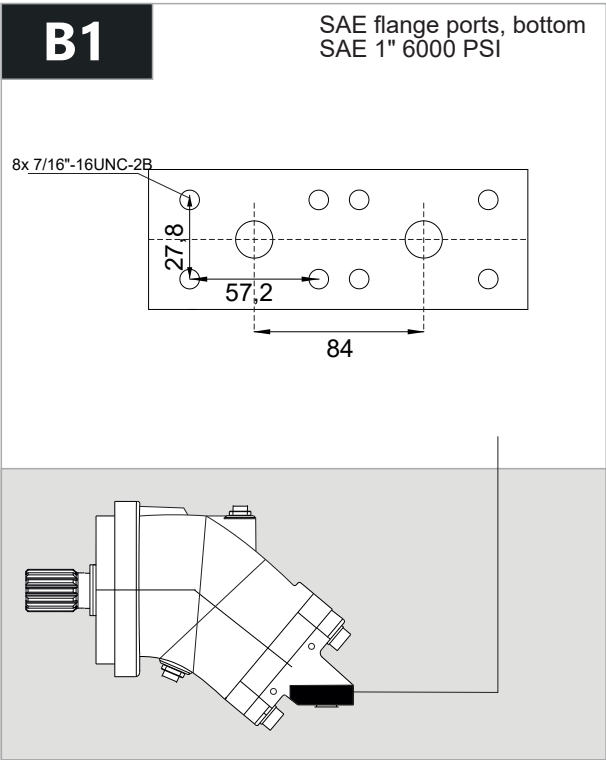


Dimensions Size;

2PEM 80 - SAE C - 4 BOLT



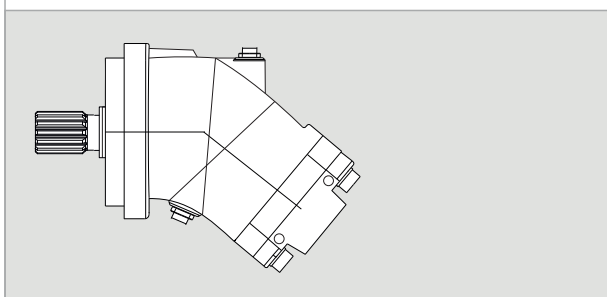
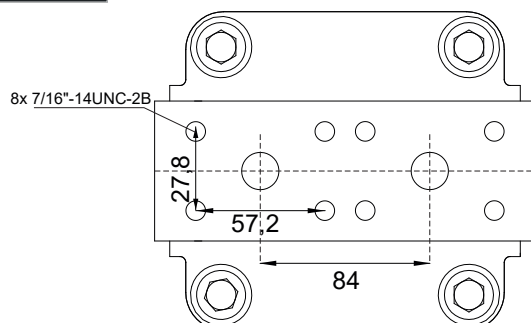
x 1000 rpm	x 1500 rpm	Max. Contin. Pump Speed	Max. Intermit. Pump Speed	Max. Contin. Pressure	Max. Peak Pressure	Torque bar	Torque at 350 bar	Max. Flow	Weight without accessor.	Weight with accessor.	Max. Motor Temp.	Min. Motor Temp.
80,00 cc	120,00 cc	4400 rpm	4900 rpm	400 bar	450 bar	1.28 m.N/bar	440 m.N	352	22,00 kg	22,50 kg	-25°	110°



2PEM 80 - SAE C - 4 BOLT

R1

SAE flange ports rear
SAE 1" 6000 PSI

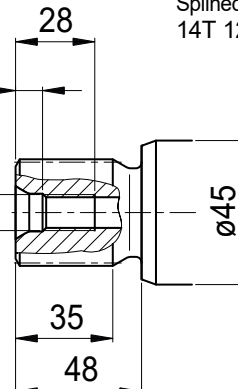


J1

7/16" -14UNC-2B

28

Splined shaft
14T 12/24DP 1 1/4"



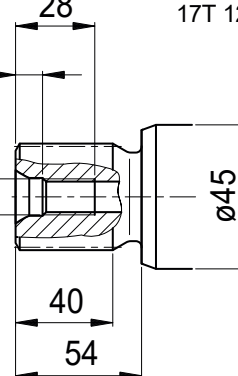
!! Special

J1

7/16" -14UNC-2B

28

Splined shaft
17T 12/24DP 1 1/2"



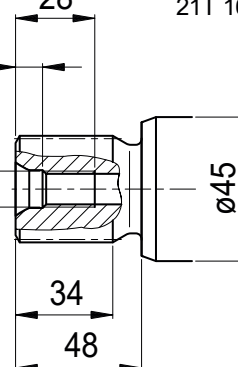
!! Special

J1

7/16" -14UNC-2B

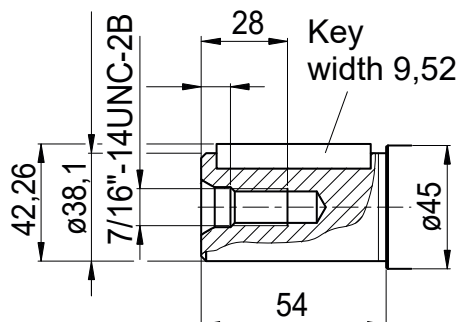
28

Splined shaft
21T 16/32DP 1 3/8"



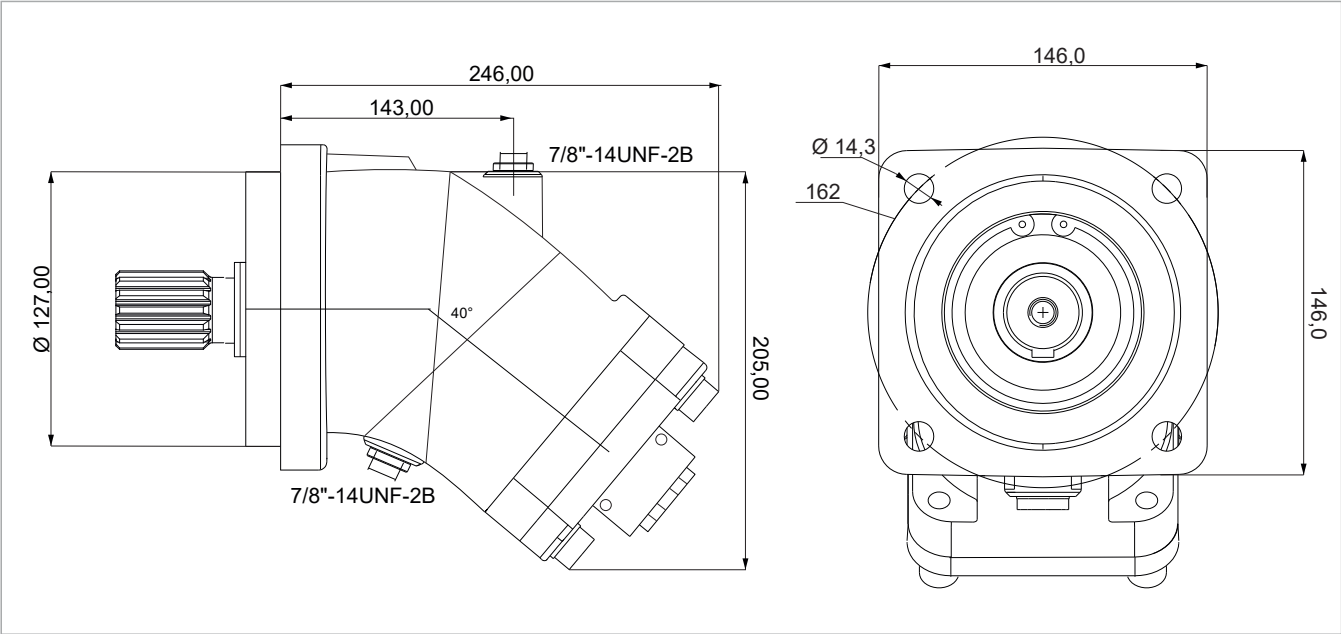
J2

Cylindrical keyed shaft
Ø 1 1/2"

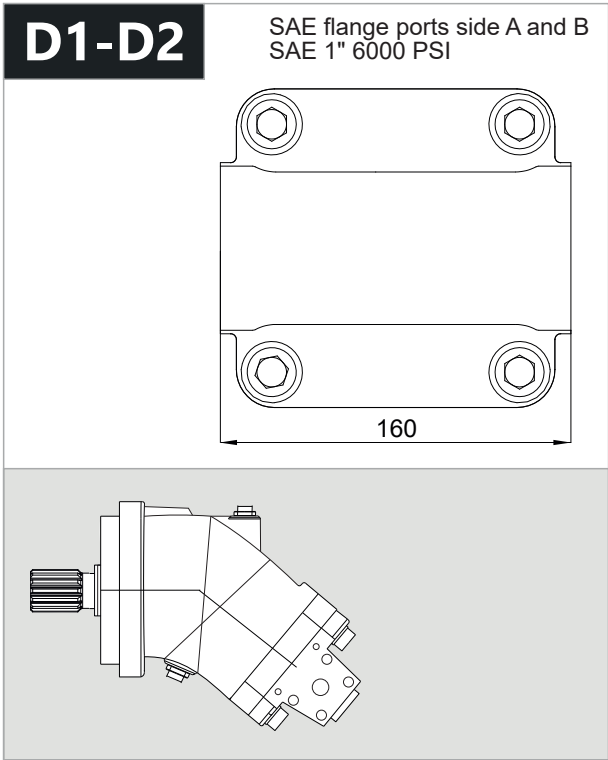
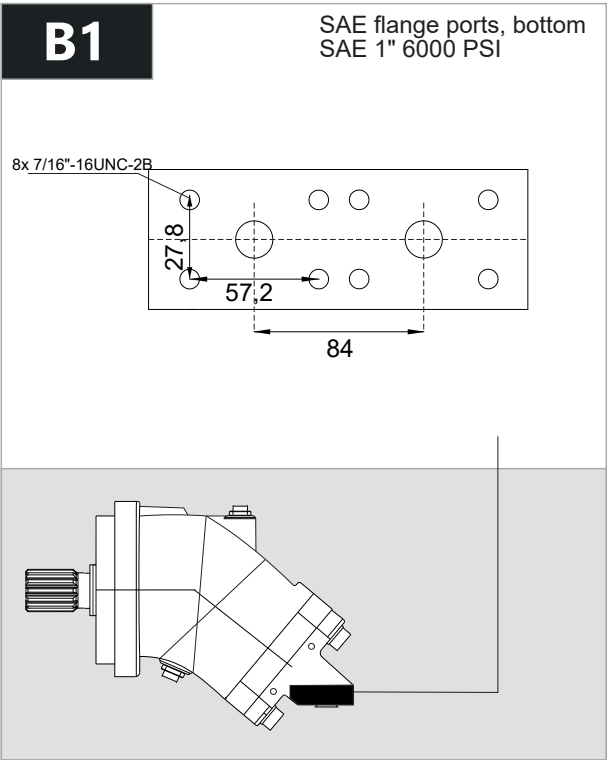


Dimensions Size;

2PEM 108 - SAE C - 4 BOLT



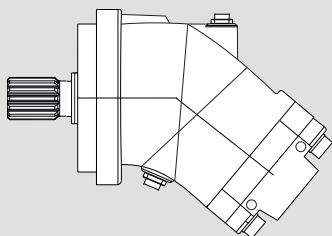
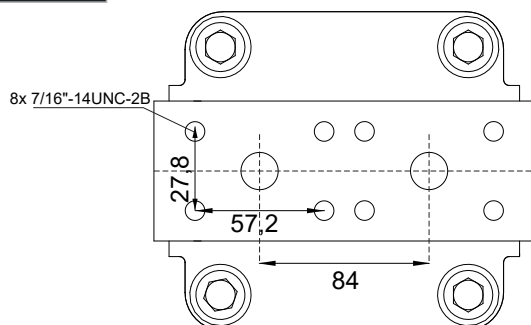
x 1000 rpm	x 1500 rpm	Max. Contin. Pump Speed	Max. Intermit. Pump Speed	Max. Contin. Pressure	Max. Peak Pressure	Torque bar	Torque at 350 bar	Max. Flow	Weight without accessor.	Weight with accessor.	Max. Motor Temp.	Min. Motor Temp.
108,4 cc	162,6 cc	4000 rpm	4400 rpm	400 bar	450 bar	1,69 m.N/bar	600 m.N	433	22,50 kg	23,00 kg	-25°	110°



2PEM 108 - SAE C - 4 BOLT

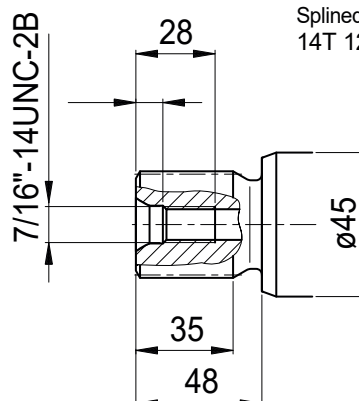
R1

SAE flange ports rear
SAE 1" 6000 PSI



J1

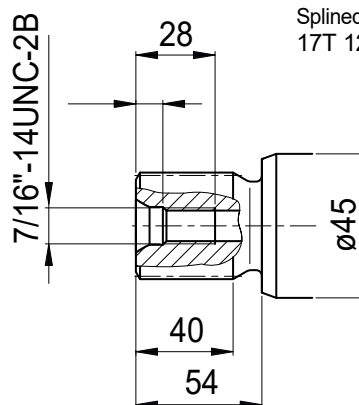
Splined shaft
14T 12/24DP 1 1/4"



!! Special

J1

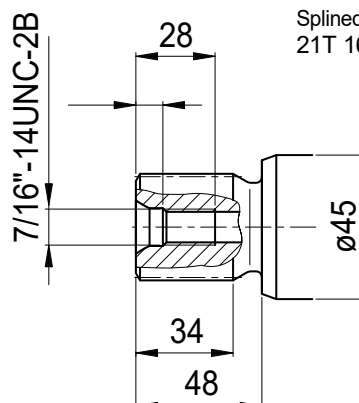
Splined shaft
17T 12/24DP 1 1/2"



!! Special

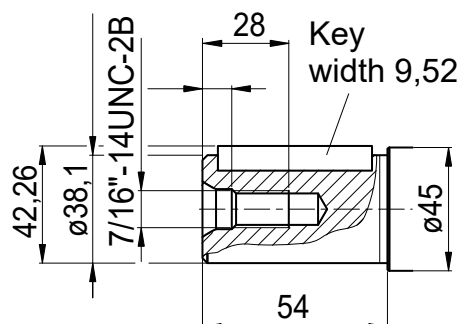
J1

Splined shaft
21T 16/32DP 1 3/8"

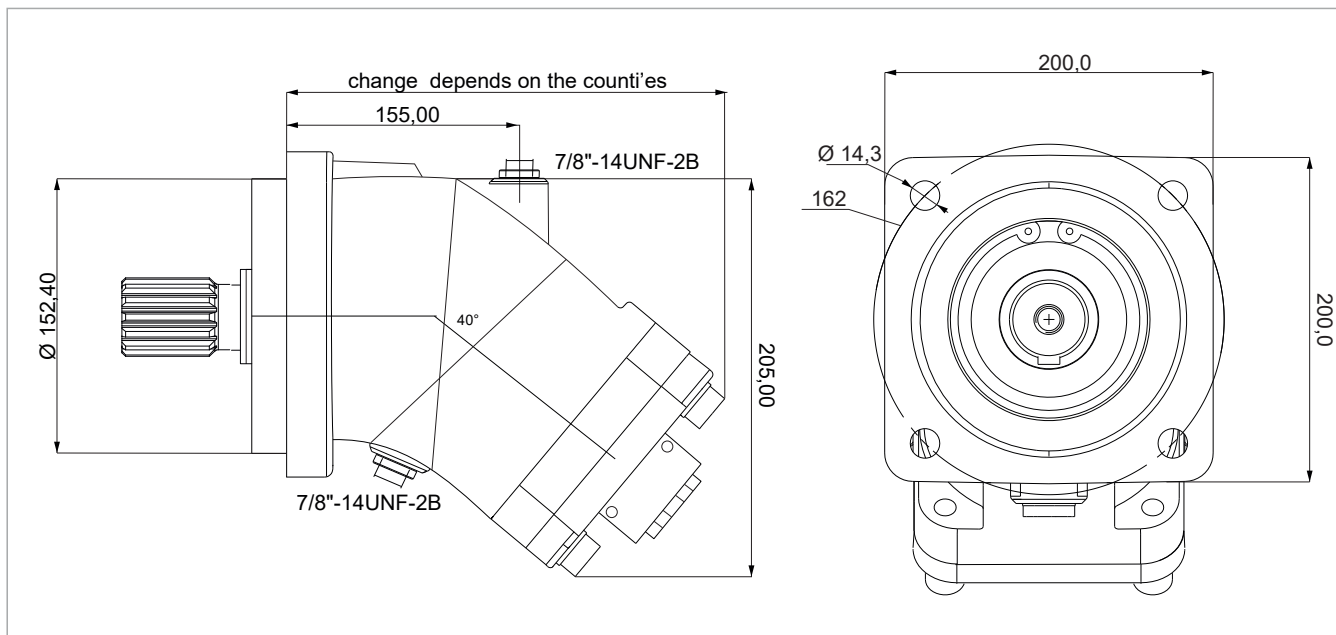


J2

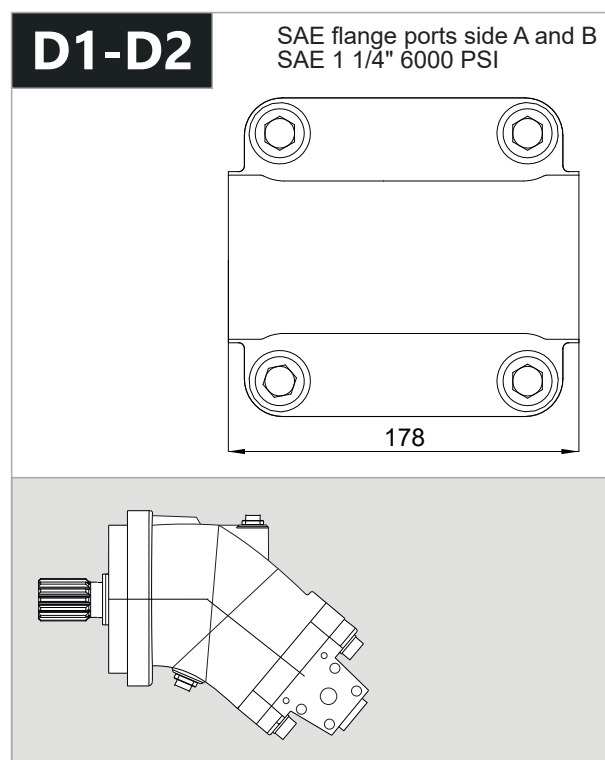
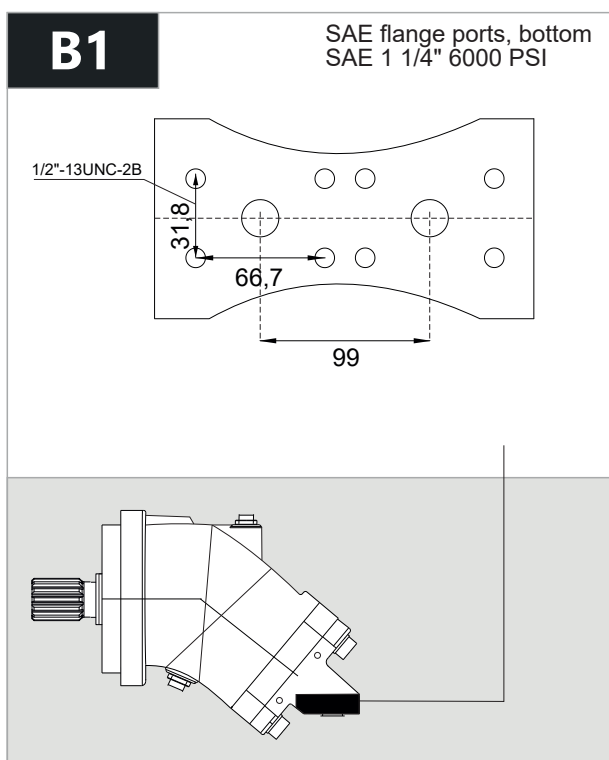
Cylindrical keyed shaft
Ø 1 1/2"



2PEM 108 - SAE D - 4 BOLT



x 1000 rpm	x 1500 rpm	Max. Contin. Pump Speed	Max. Intermit. Pump Speed	Max. Contin. Pressure	Max. Peak Pressure	Torque bar	Torque at 350 bar	Max. Flow	Weight without accessor.	Weight with accessor.	Max. Motor Temp.	Min. Motor Temp.
108,4 cc	162,6 cc	4000 rpm	4400 rpm	400 bar	450 bar	1,69 m.N/bar	600 m.N	433	22,50 kg	23,00 kg	-25°	110°

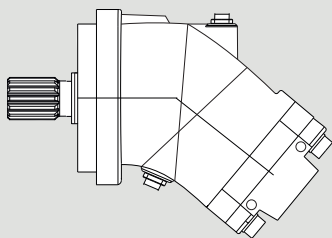
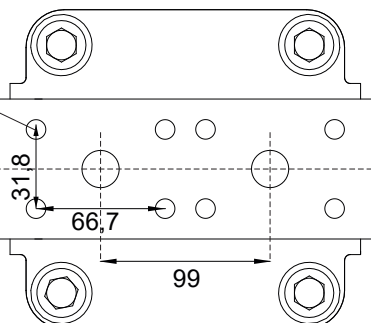


2PEM 108 - SAE D - 4 BOLT

R1

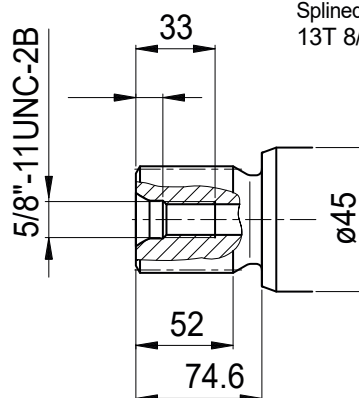
SAE flange ports rear
SAE 1 1/4" 6000 PSI

8x 7/16"-14UNC-2B



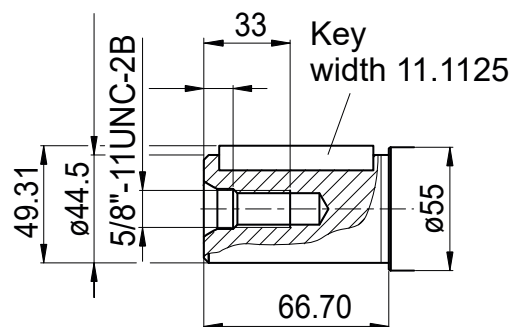
J1

Splined shaft
13T 8/16DP 1 3/4"

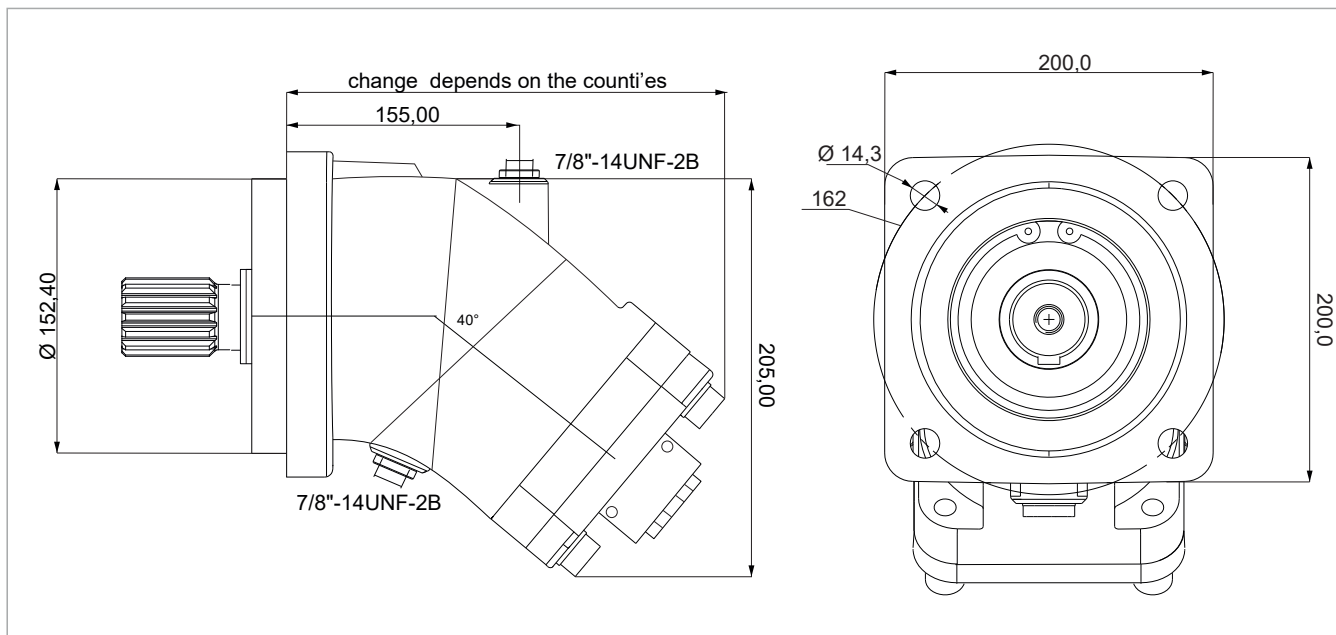


J2

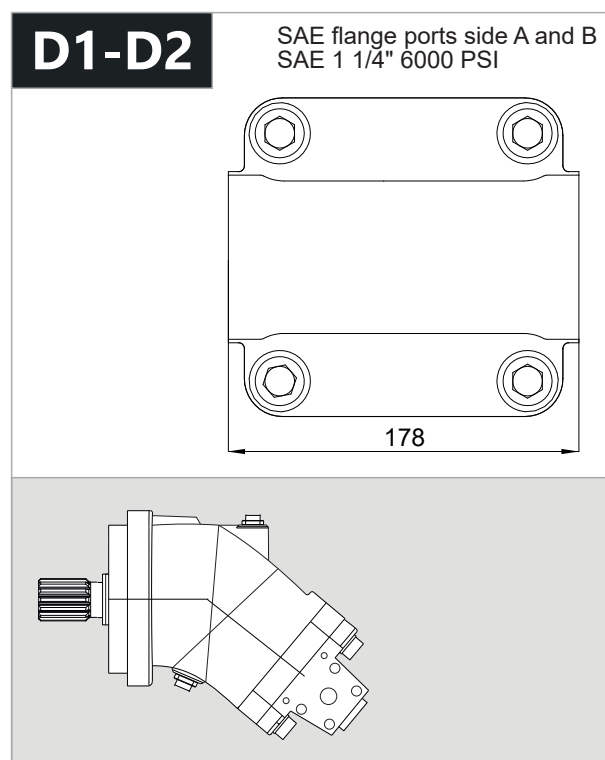
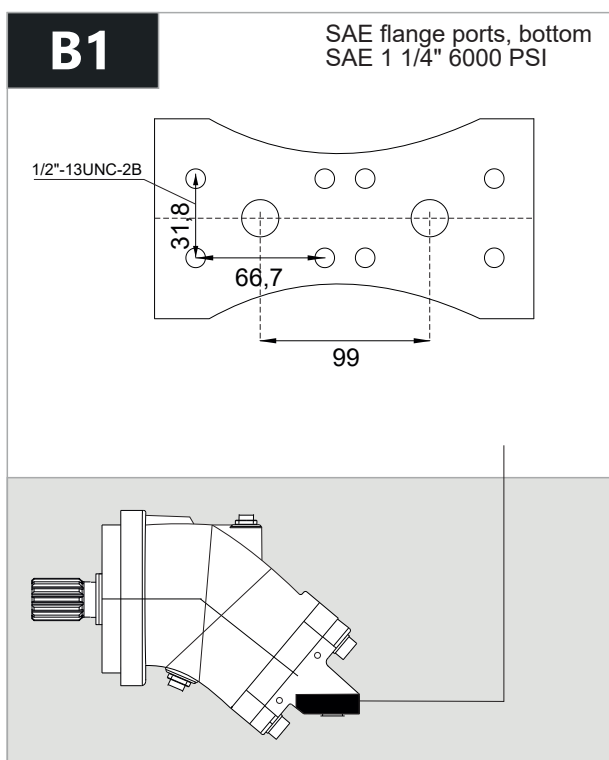
Cylindrical keyed shaft
Ø 1 3/4"



2PEM 130 - SAE D - 4 BOLT



x 1000 rpm	x 1500 rpm	Max. Contin. Pump Speed	Max. Intermit. Pump Speed	Max. Contin. Pressure	Max. Peak Pressure	Torque bar	Torque at 350 bar	Max. Flow	Weight without accessor.	Weight with accessor.	Max. Motor Temp.	Min. Motor Temp.
130,0 cc	195,0 cc	3400 rpm	4400 rpm	400 bar	450 bar	2.10 m.N/bar	710 m.N	442	30,50 kg	30,90 kg	-25°	110°

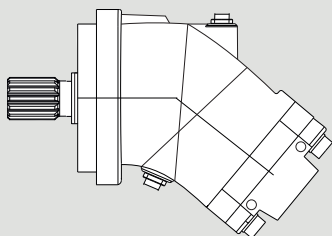
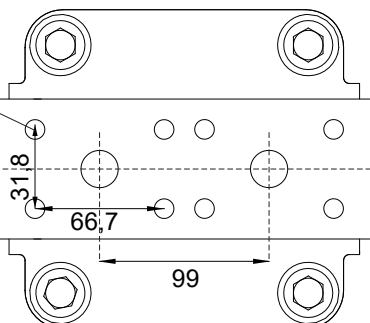


2PEM 130 - SAE D - 4 BOLT

R1

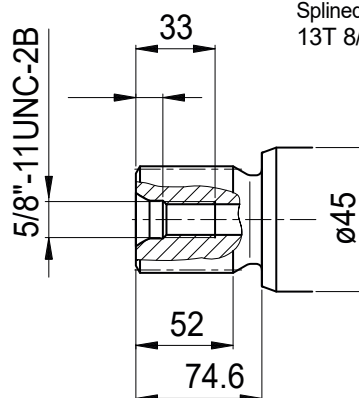
SAE flange ports rear
SAE 1 1/4" 6000 PSI

8x 7/16"-14UNC-2B



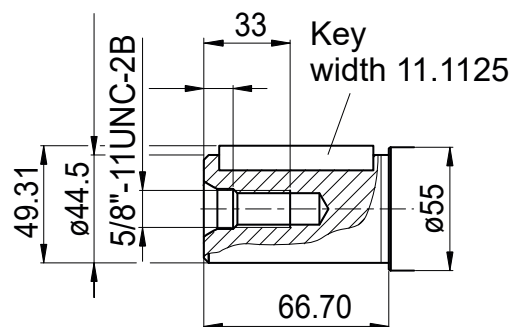
J1

Splined shaft
13T 8/16DP 1 3/4"



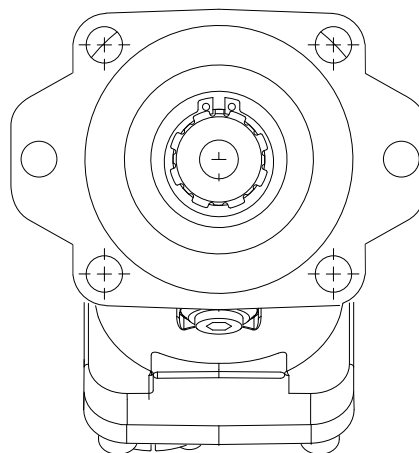
J2

Cylindrical keyed shaft
Ø 1 3/4"

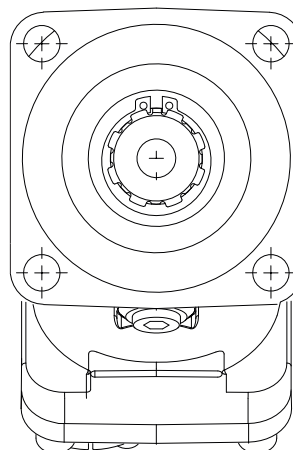


Special Mounting Flanges

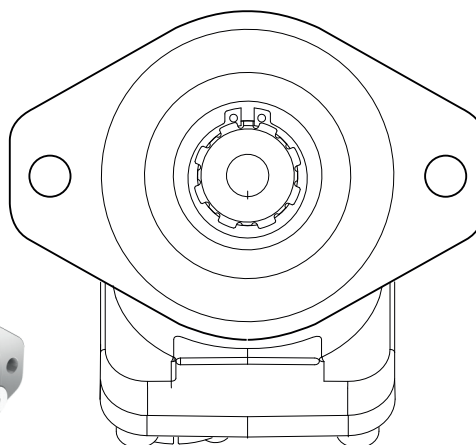
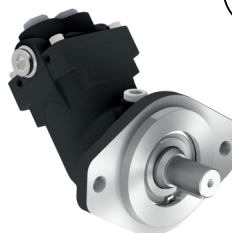
SAE B - 6 BOLT
Mounting Flange



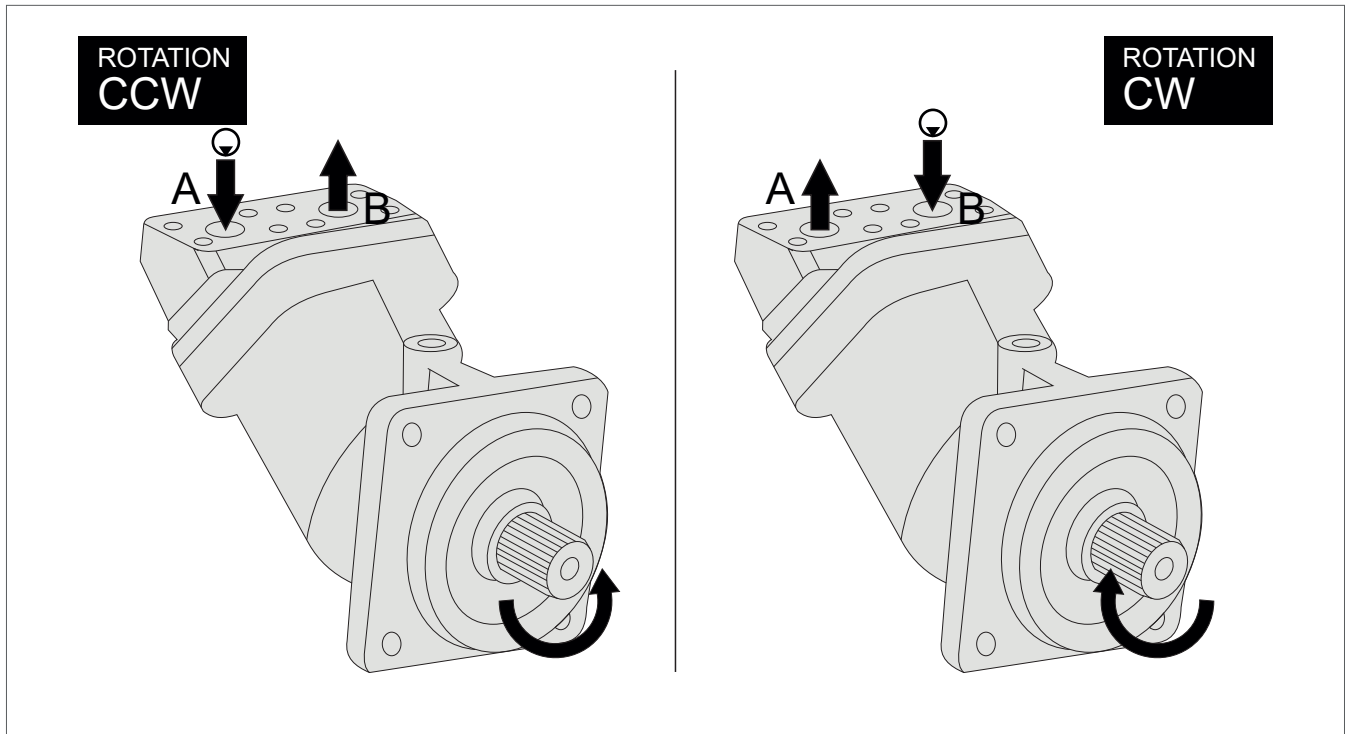
SAE C- 4 BOLT



SAE B - 2 BOLT



Direction of Rotation



Quick Calculation

Flow rate

$$Q = \frac{s \times nV}{1000\eta_v} \text{ (lpm)}$$

TorquePowerSpeed

$$M = \frac{s \Delta p V \eta_{mh}}{63} \text{ (Nm)}$$

$$P = \frac{\frac{\pi}{2} \times nM^2}{60000} = \frac{nM}{9549} = \frac{pQ \times \eta \times \Delta t}{600} \text{ (kw)}$$

$$n = \frac{1000 Q \eta \times \eta_v}{V_s} \text{ (lpm)}$$

V_s = Displacement (ccm/rev.)

Δp = Diff. pressure (bar)

n = Speed (rpm)

Q = Flow (lpm)

η_v = Volumetric efficiency

η_{mh} = Mechanical-hydraulic efficiency

η_t = Total efficiency ($\eta_t = \eta_v \times \eta_{mh}$)

Address all questions regarding spare parts to your responsible Our Service Partner or the technical service department of the manufacture's plant / factory for the 2PEM Bent Axis Motors.

ÇELEBİ HİDROCEL OTOM. SAN. TİC. LTD. ŞTİ.

Fevzicakmak Mh. Aslım Cd. Kobisan San. Sit. H Blok No: 67J 42050 Karatay – Konya / TURKEY

Phone : +90 (332) 345 13 70 - +90 (332) 345 13 71

hidrocel@hidrocel.com.tr

Installation

POSITION

2PEM Motors can be operate any position.

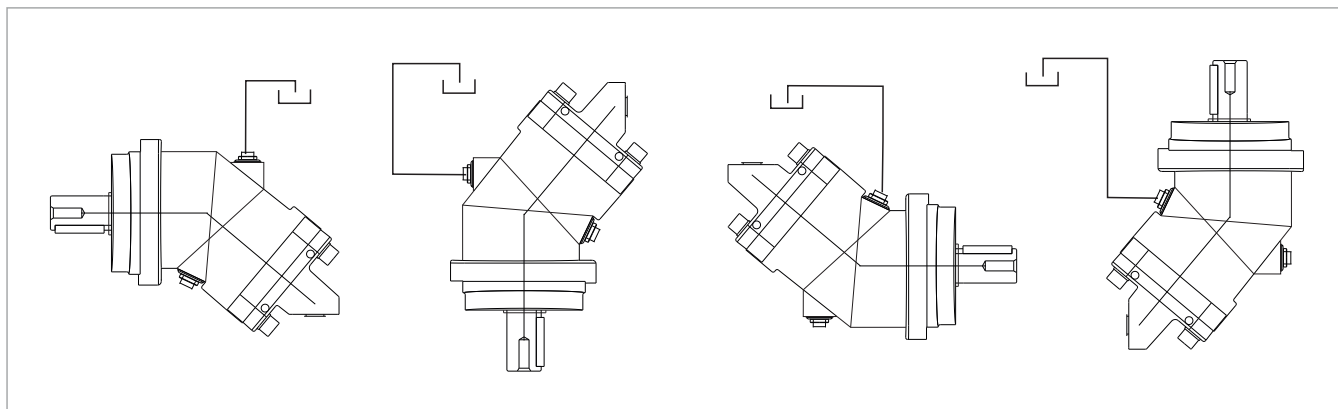
DIRECTION OF ROTATION

2PEM Motors can be operate in both directions of rotation.

Before of Installation operation, the motor must be filled with hydraulic fluid and air bled.

INSTALLATION POSITION

See following examples.

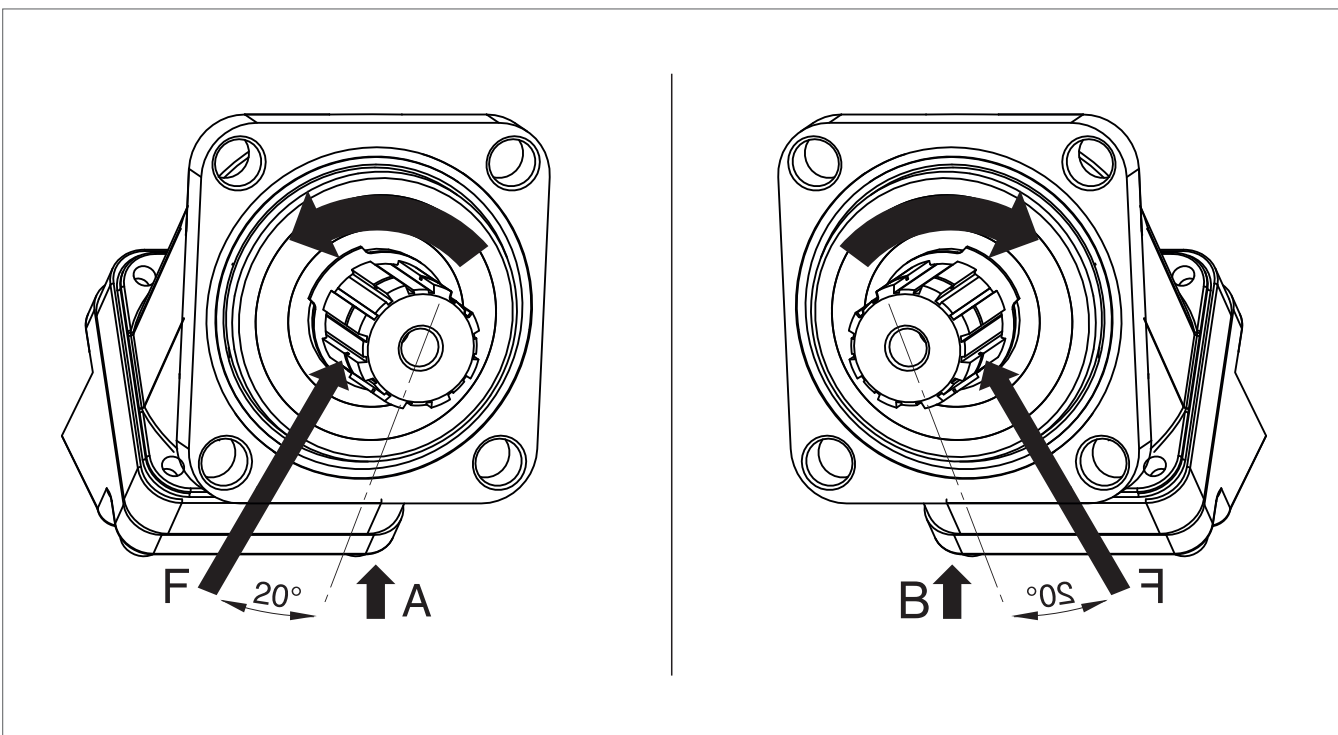


HYDRAULIC FLUID

Recommended ;

Generally : between 15 and 200 cSt.

Maximum : between 5 and 1600 cSt.

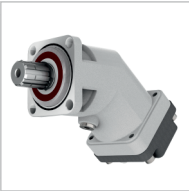
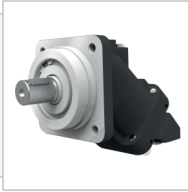


FOR USE;

Available via e-mail on request or each motor is supplied via Starting datasheet.

For detailed information about 2PEM Bent Axis Motors, please contact with Technical Department !!!

Complete Product Range

		Piston Pumps	Piston Motors
DIN	DIN 5462 / ISO 14 8x32x35 8x32x36 DIN 6885	 2PBA	 2PBM
ISO	ISO 3019-2 (4 BOLTS) DIN 5480 -W25,30,35,40,45 DIN 6885 -Ø20,25,30,35,40,45	 2PS	 2PM
SAE	SAE B2 C4 - SAE D SAE J498b SAE J 744	 2PE	 2PEM

Contact

ÇELEBİ HİDROCEL OTOM. SAN. TİC. LTD. ŞTİ.

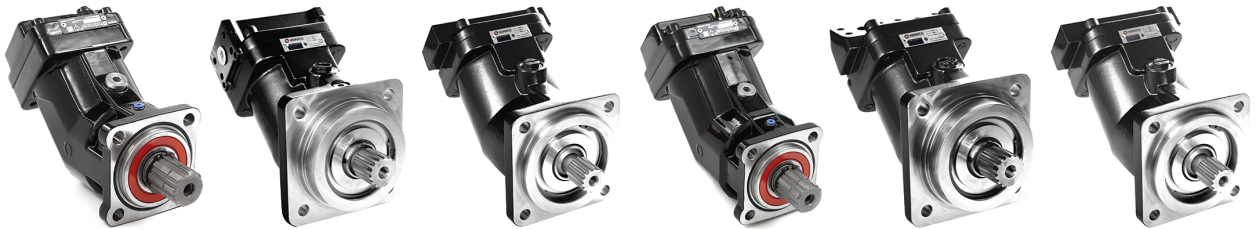
Fevzicakmak Mh. Aslım Cd. Kobisan San. Sit. H Blok No: 67J
42050 Karatay – Konya / TURKEY

Phone : +90 (332) 345 13 70

+90 (332) 345 13 71

Fax : +90 (332) 345 13 72

hidrocel@hidrocel.com.tr



www.hidrocel.com.tr