

# G2EM

Bent Axis Piston Motor - SAE



**G2EM Motors have the following advantages ;**

- Compact Design,
- Economical Conception,
- High Power Density,
- High Efficiency,
- High Rotating Speeds,
- From 10cc to 108cc,
- High Pressure,
- Good Starting Characteristics,
- Optimized Weight and Size,
- For Use Mobile and Stationary Applications,

### **Other Advantages of G2EM**

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 G2EM 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 10 to 108 cm<sup>3</sup>/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 G2EM bent axis motors. Refer to the data sheet and order confirmation for the technical data, operating conditions and operating limits of the bent axis piston motors.

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| Dimensions Size;                   |          |
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| G2EM 12 cc .....                   | 9-10     |
| G2EM 18 cc .....                   | 11-12    |
| G2EM 25 cc .....                   | 13-14-15 |
| G2EM 32 cc .....                   | 16-17-18 |
| G2EM 40 cc .....                   | 19-20-21 |
| G2EM 50 cc .....                   | 22-23    |
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Motor Code

G2EM

Displacement ( cm³ )

108

Drive Shafts

J2

Inlet Ports A - B

R1

Mounting Flange

A

Sealing

N Nitrile

V Viton

A

10

12

18

25

32

40

50

56

63

80

108

SAE B

SAE B

SAE B

SAE C

SAE C

SAE C

SAE C

SAE C

SAE C

SAE C

SAE D

SAE Flange Ports

B1

R1

D1

D2

Bottom

Rear

Side

Side

10

12

18

25

32

40

50

56

63

80

108

Threaded

R2

D3

D4

Rear

Side

Side

10

12

18

25

32

40

50

56

63

80

108

SAE J498b  
SPLINED

J1

SAE J744  
KEYED

J2

10

12

18

25

32

40

50

56

63

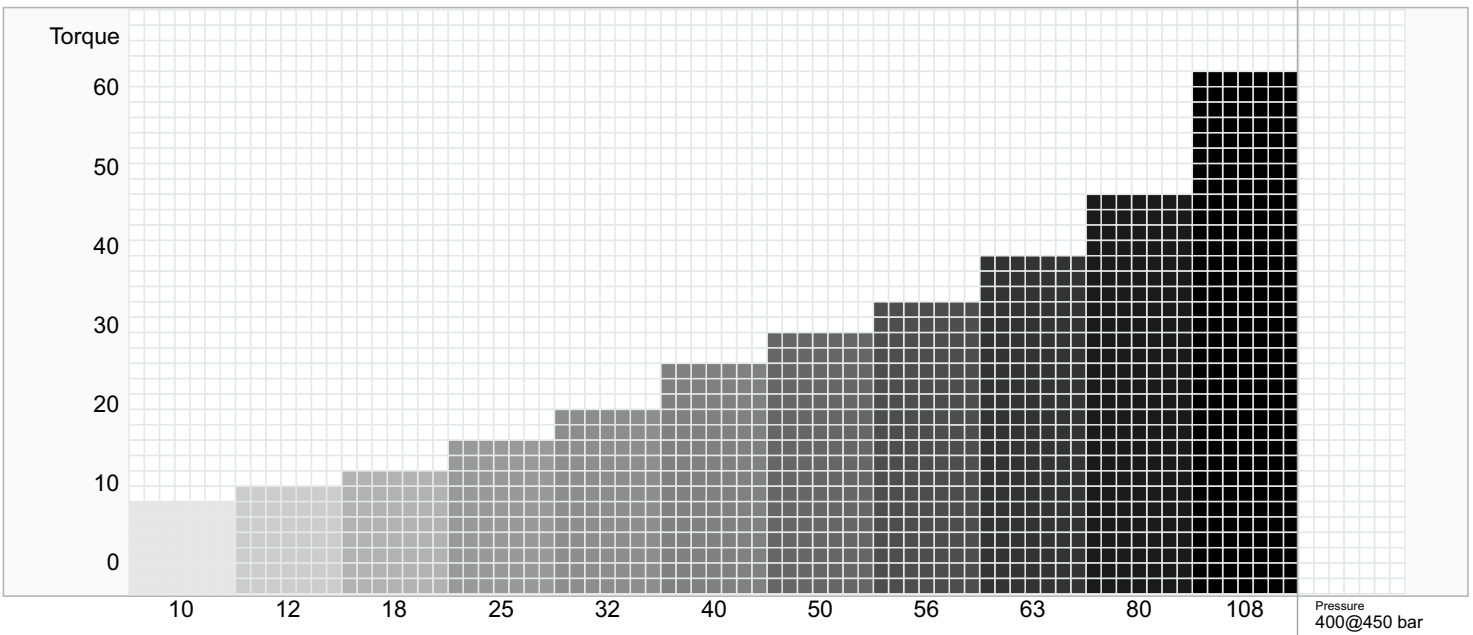
80

108

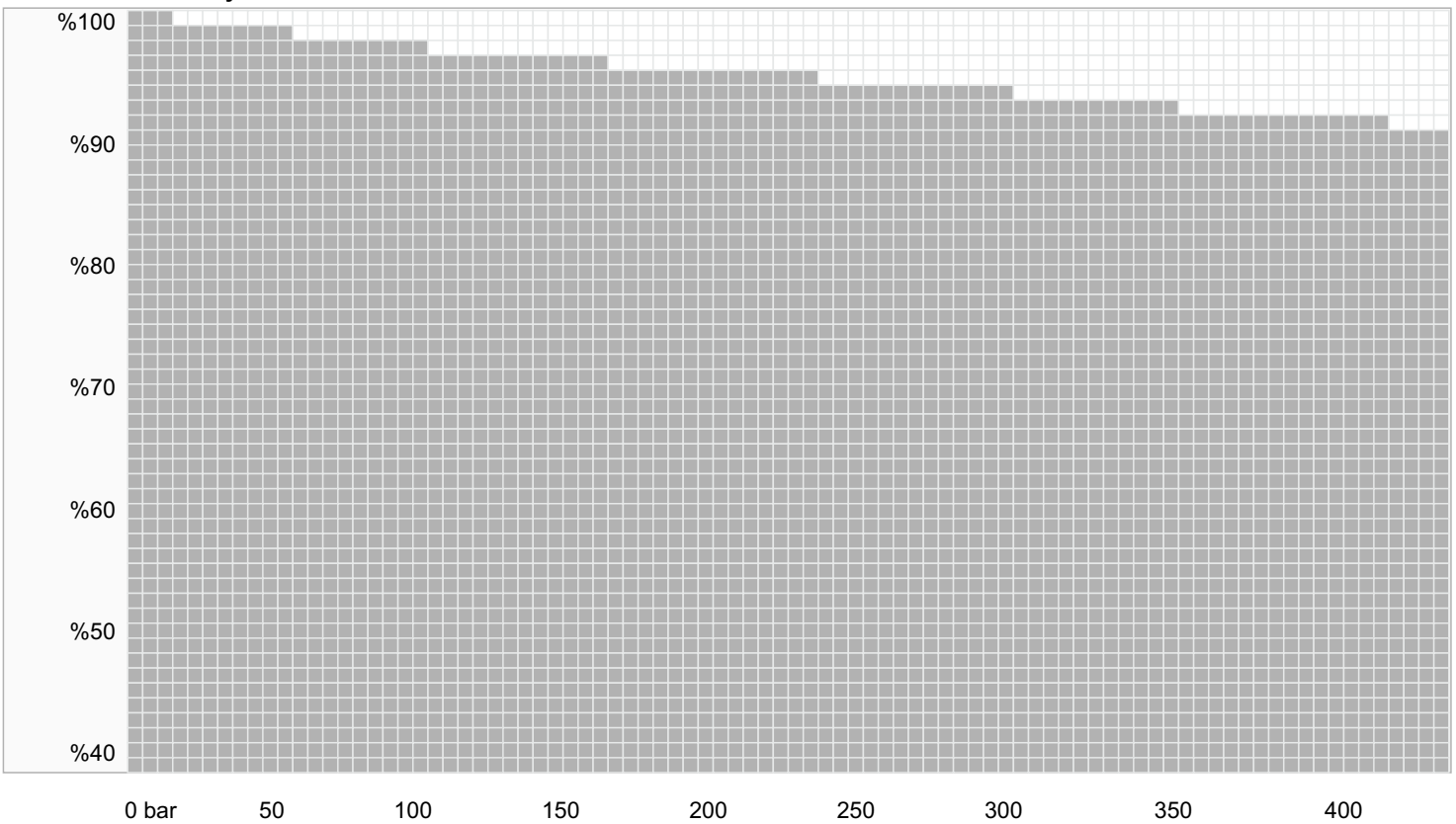
G2EM Bent Axis Piston Motor - SAE, Fixed Displacement.

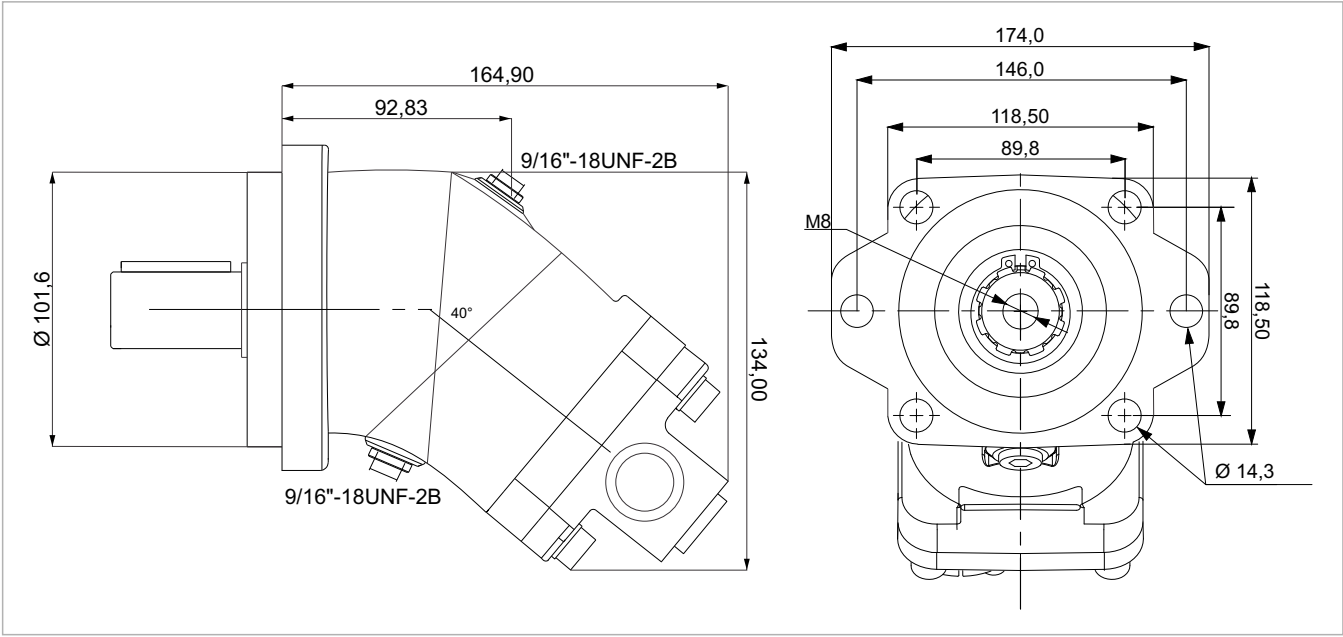
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Compare Table of Torque

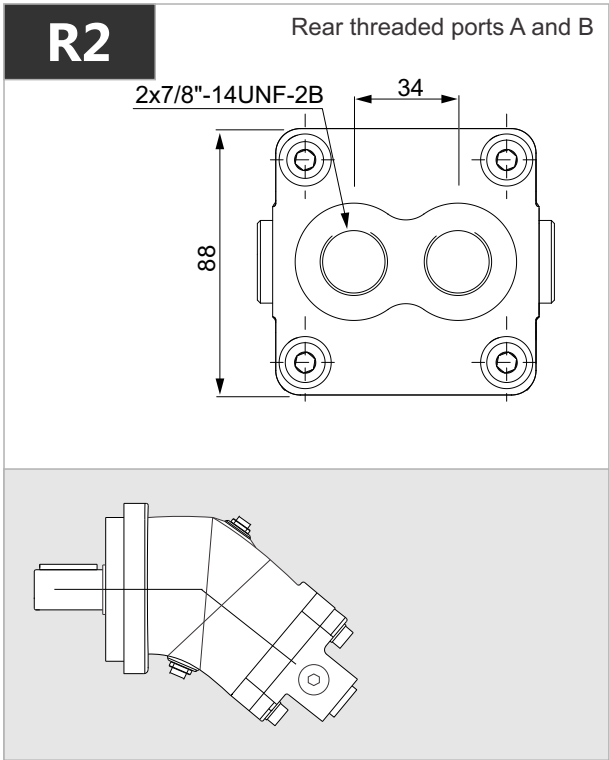
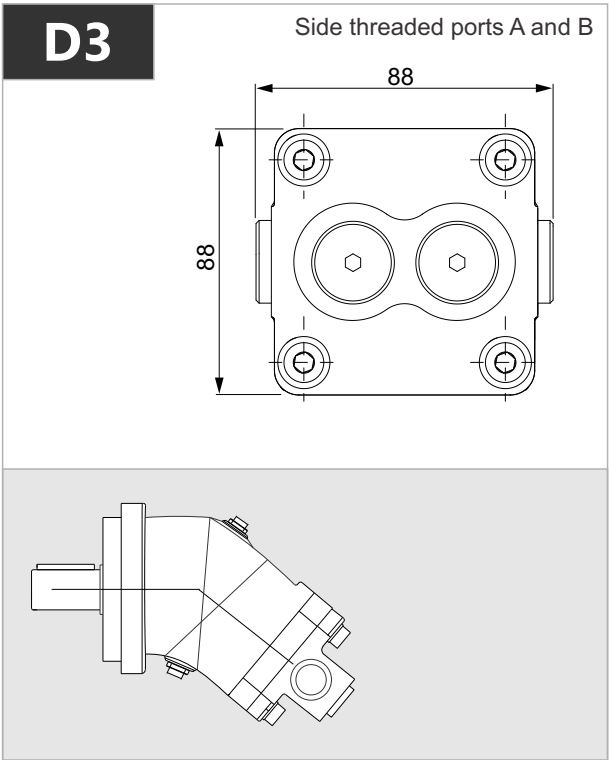


Efficiency of G2EM Motors



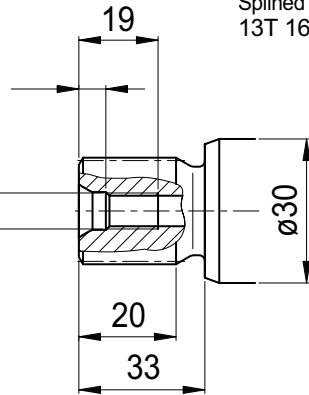


| x 1000 rpm | x 1500 rpm | Max. Contin. Pump Speed | Max. Intermit. Pump Speed | Max. Contin. Pressure | Max. Peak Pressure | Torque bar   | Torque at 350 bar | Max. Flow | Weight without accessor. | Weight with accessor. | Max. Motor Temp. | Min. Motor Temp. |
|------------|------------|-------------------------|---------------------------|-----------------------|--------------------|--------------|-------------------|-----------|--------------------------|-----------------------|------------------|------------------|
| 10,00 cc   | 15,00 cc   | 8000 rpm                | 8800 rpm                  | 400 bar               | 450 bar            | 0.17 m.N/bar | 64 m.N            | 80        | 6,50 kg                  | 7,00 kg               | -25°             | 110°             |



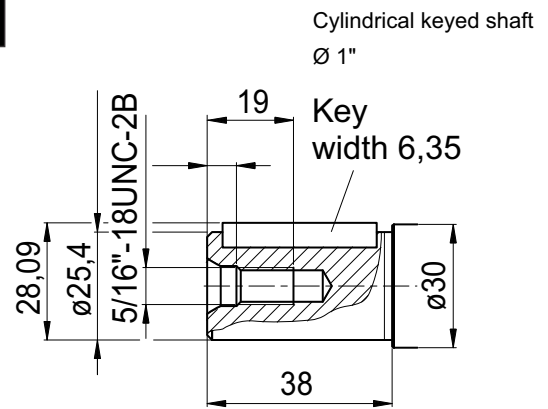
**J1**

5/16"-18UNC-2B



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

**J2**

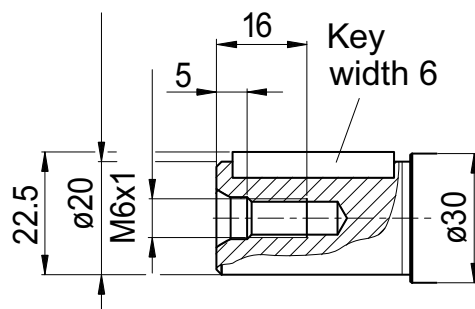


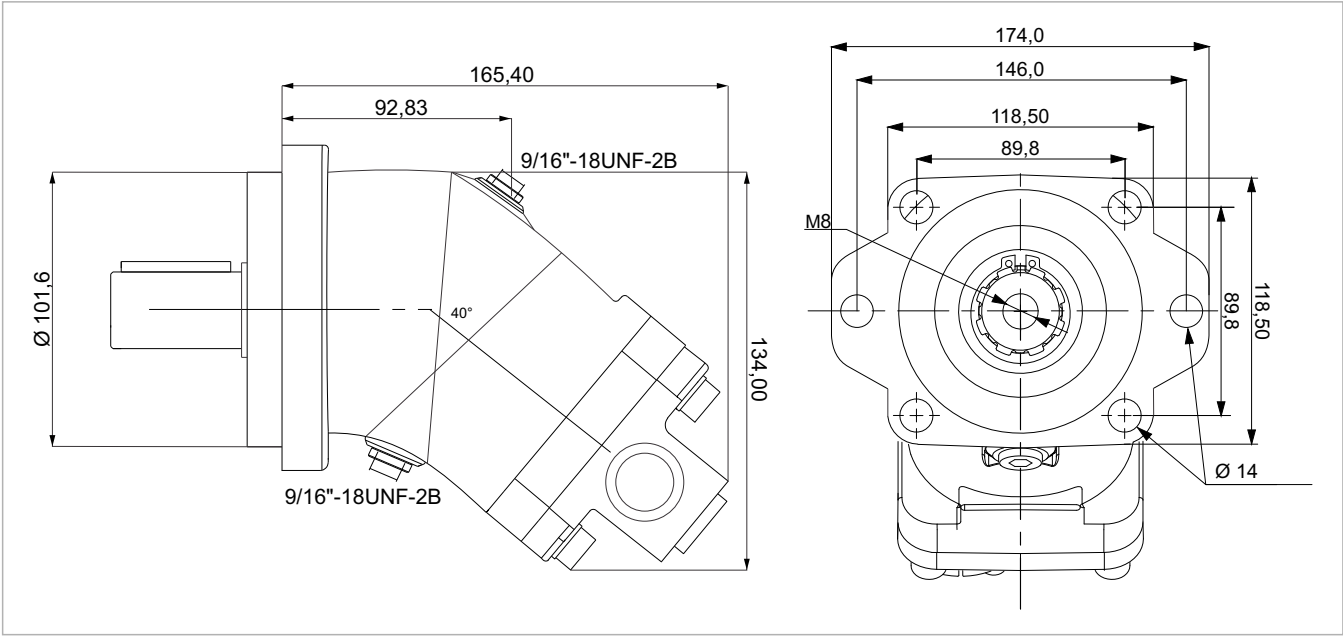
Cylindrical keyed shaft  
Ø 1"

**K2**

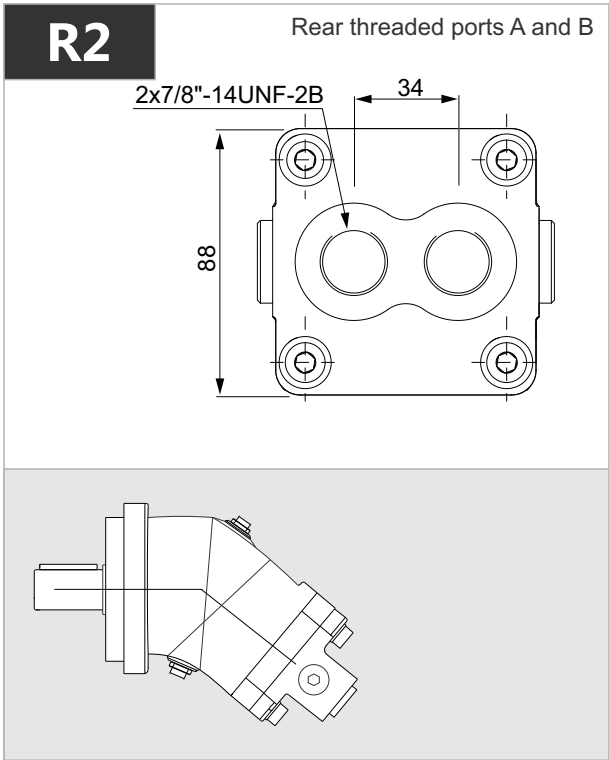
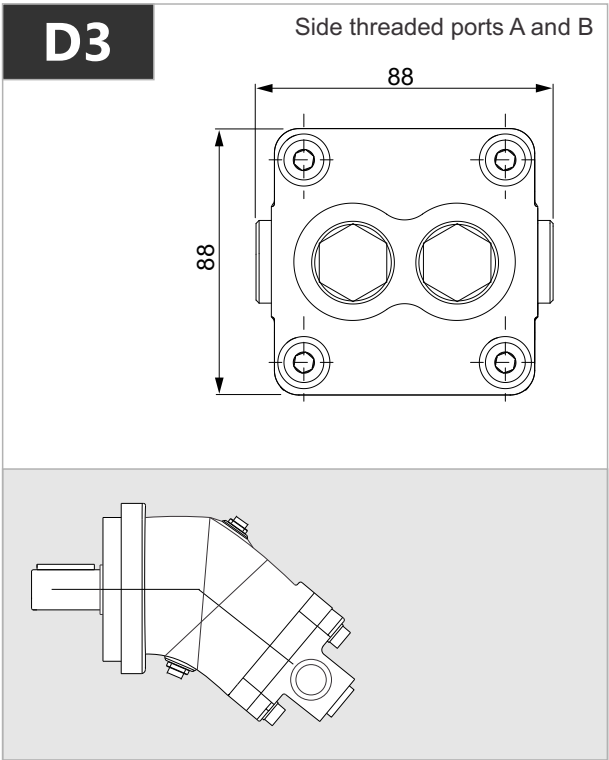
!! Special

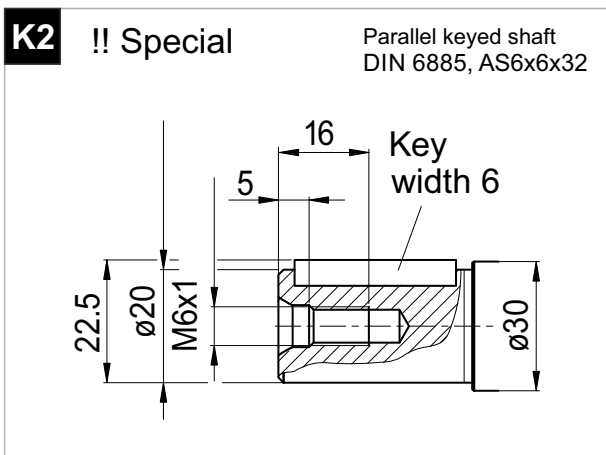
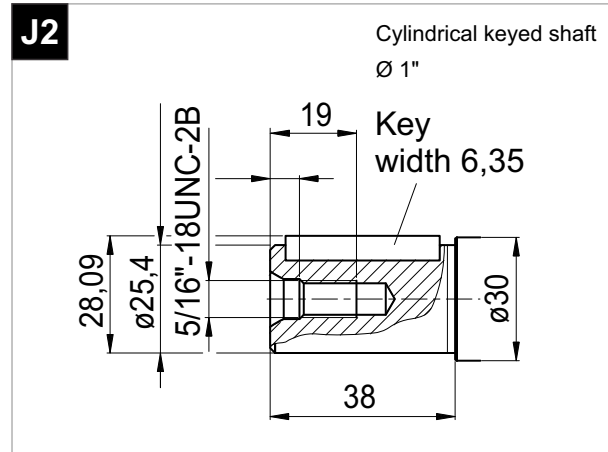
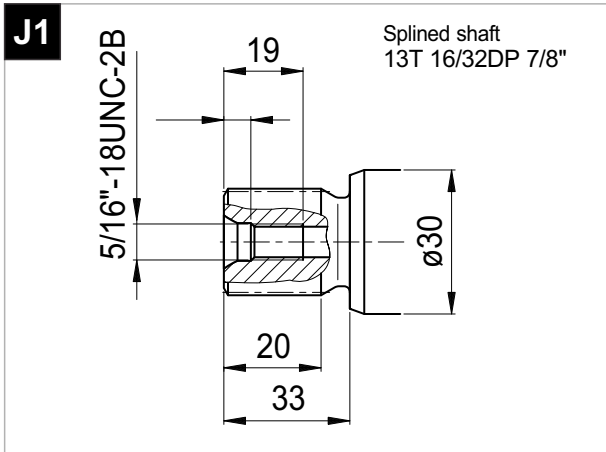
Parallel keyed shaft  
DIN 6885, AS6x6x32

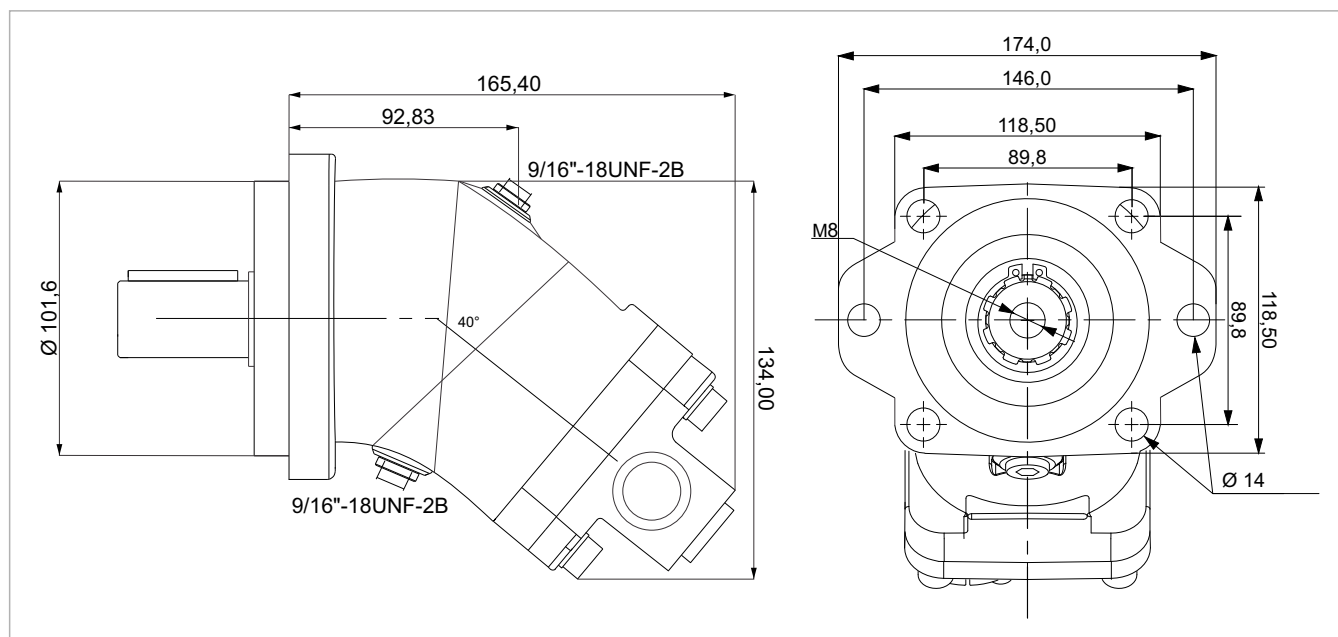




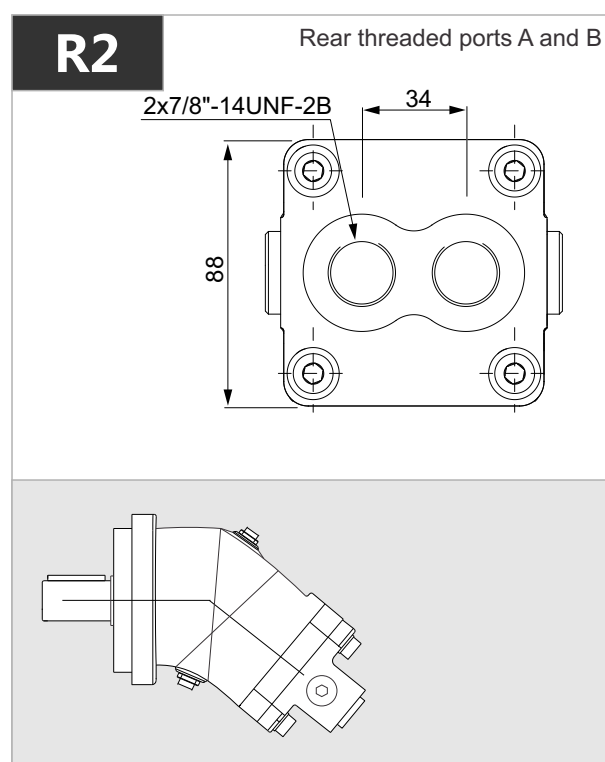
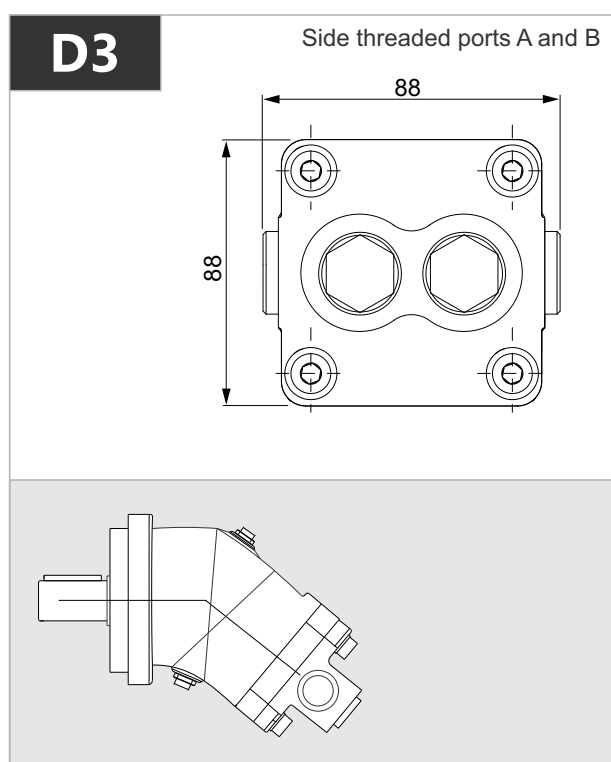
| x 1000 rpm | x 1500 rpm | Max. Contin. Pump Speed | Max. Intermit. Pump Speed | Max. Contin. Pressure | Max. Peak Pressure | Torque bar   | Torque at 350 bar | Max. Flow | Weight without accessor. | Weight with accessor. | Max. Motor Temp. | Min. Motor Temp. |
|------------|------------|-------------------------|---------------------------|-----------------------|--------------------|--------------|-------------------|-----------|--------------------------|-----------------------|------------------|------------------|
| 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°             |

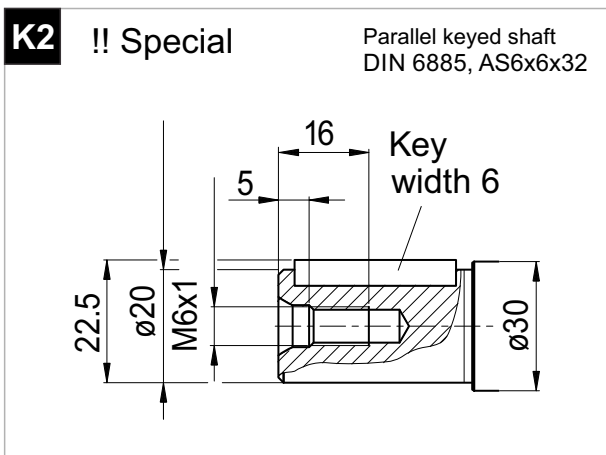
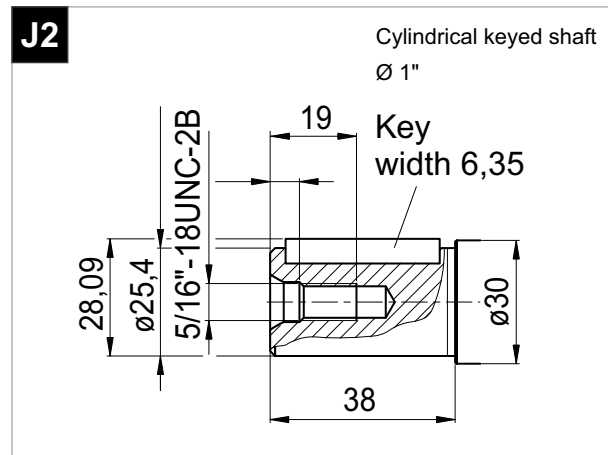
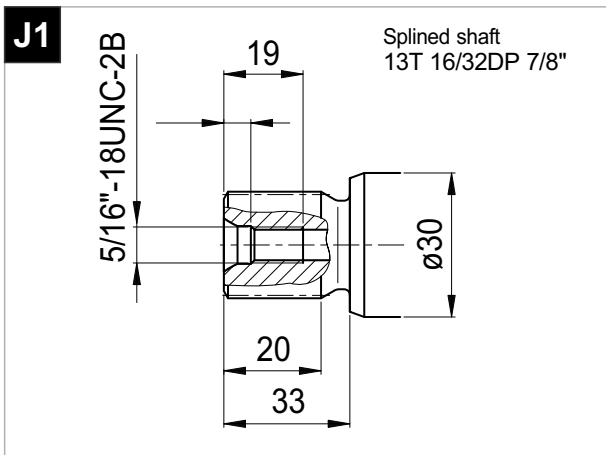


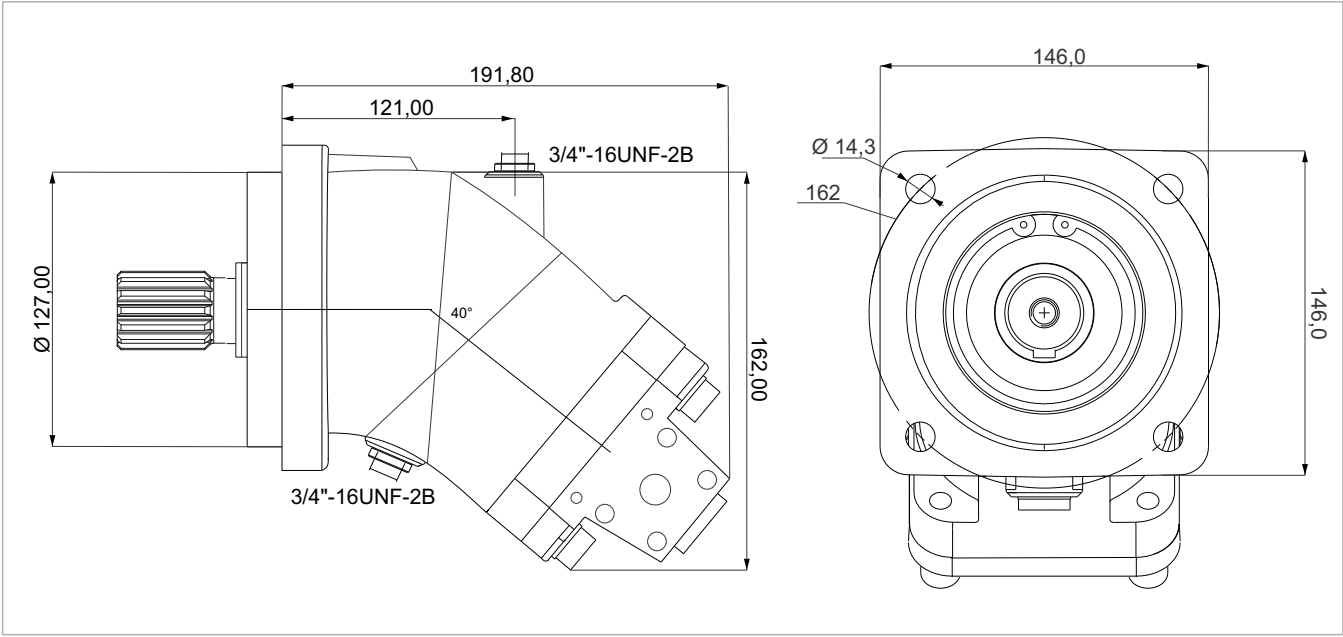




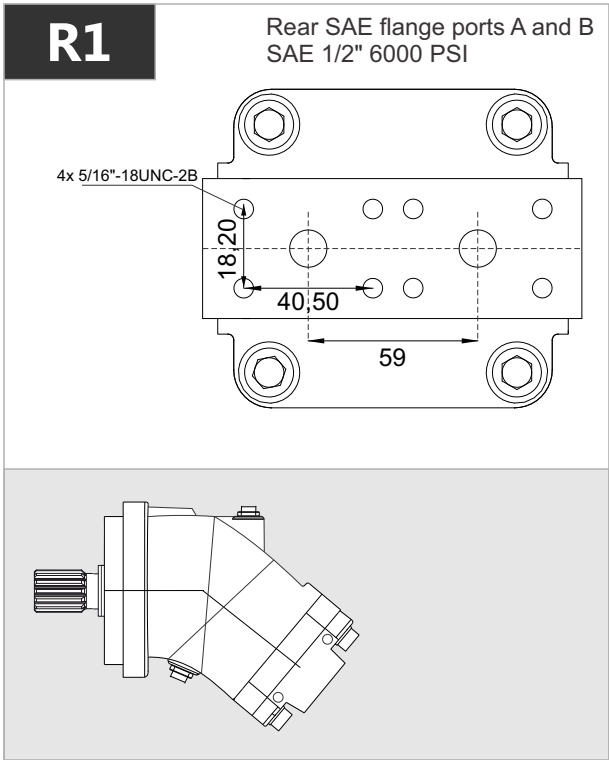
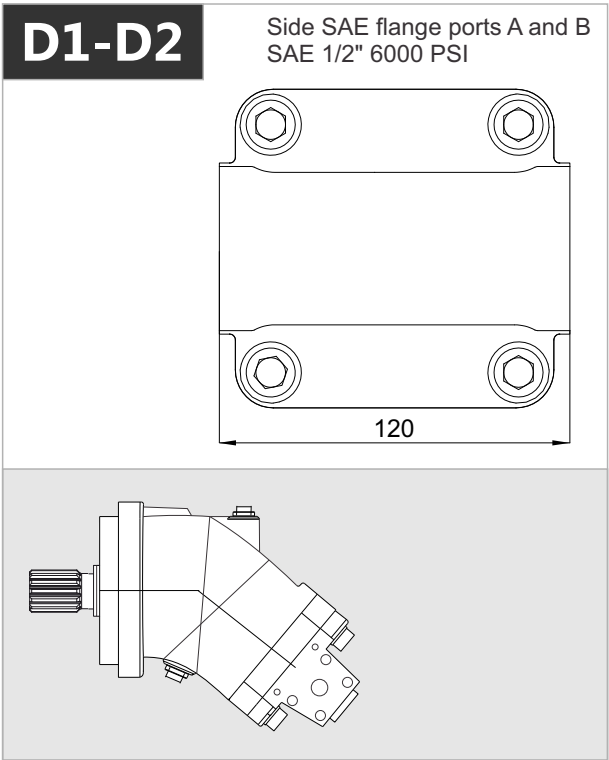
| x 1000<br>rpm | x 1500<br>rpm | Max.<br>Contin.<br>Pump<br>Speed | Max.<br>Intermit.<br>Pump<br>Speed | Max.<br>Contin.<br>Pressure | Max.<br>Peak<br>Pressure | Torque<br>bar   | Torque<br>at<br>350 bar | Max.<br>Flow | Weight<br>without<br>accessor. | Weight<br>with<br>accessor. | Max.<br>Motor<br>Temp.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







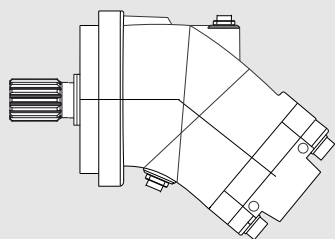
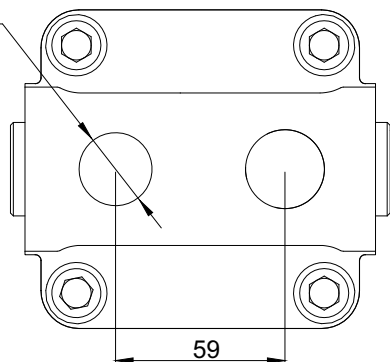
| x 1000 rpm | x 1500 rpm | Max. Contin. Pump Speed | Max. Intermit. Pump Speed | Max. Contin. Pressure | Max. Peak Pressure | Torque bar   | Torque at 350 bar | Max. Flow | Weight without accessor. | Weight with accessor. | Max. Motor Temp. | Min. Motor Temp. |
|------------|------------|-------------------------|---------------------------|-----------------------|--------------------|--------------|-------------------|-----------|--------------------------|-----------------------|------------------|------------------|
| 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°             |



**R2**

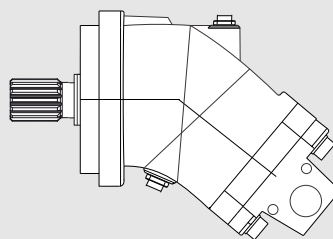
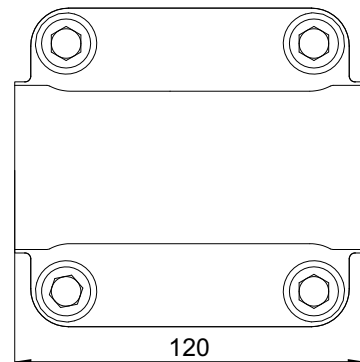
Rear threaded ports A and B

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



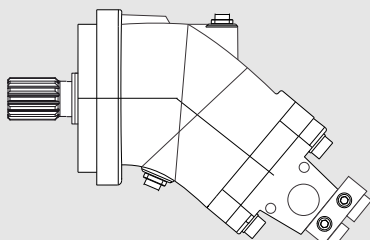
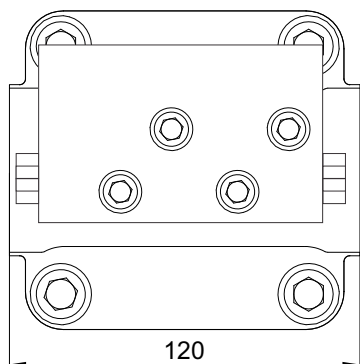
**D3**

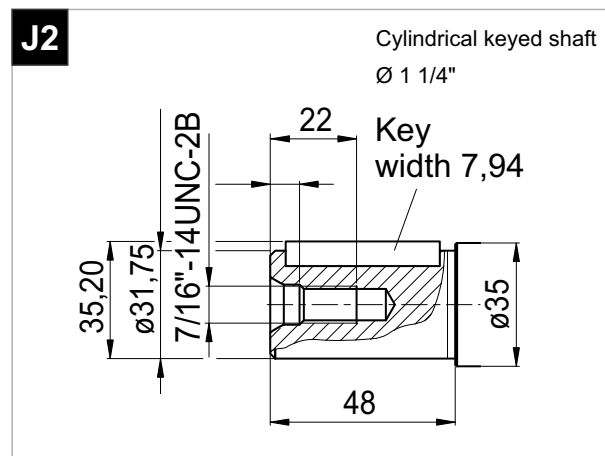
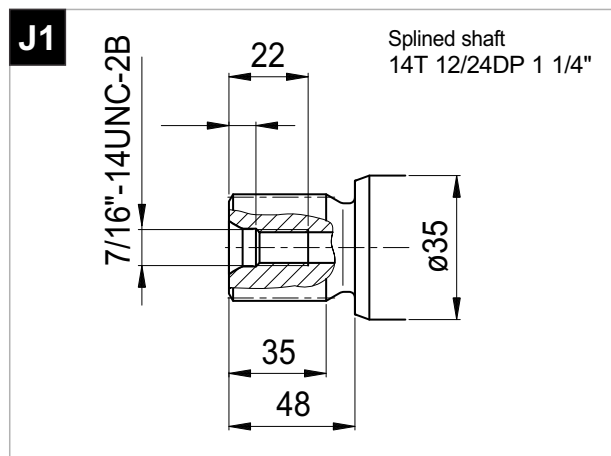
Side threaded ports

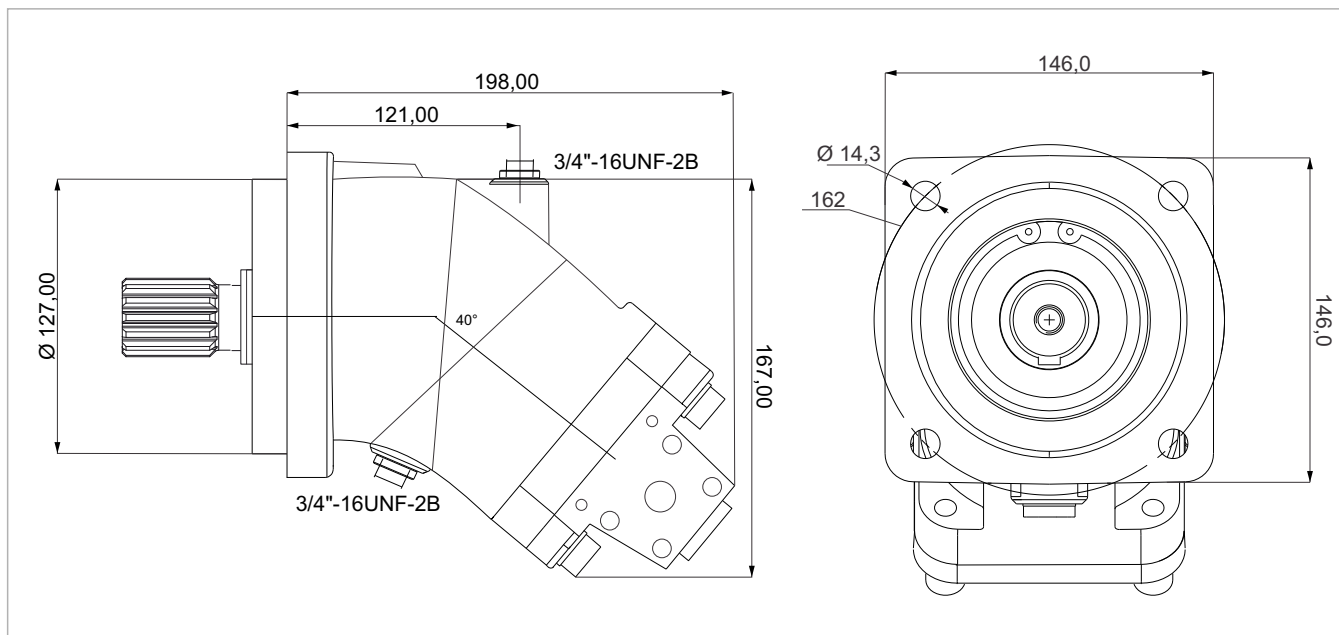


**D4**

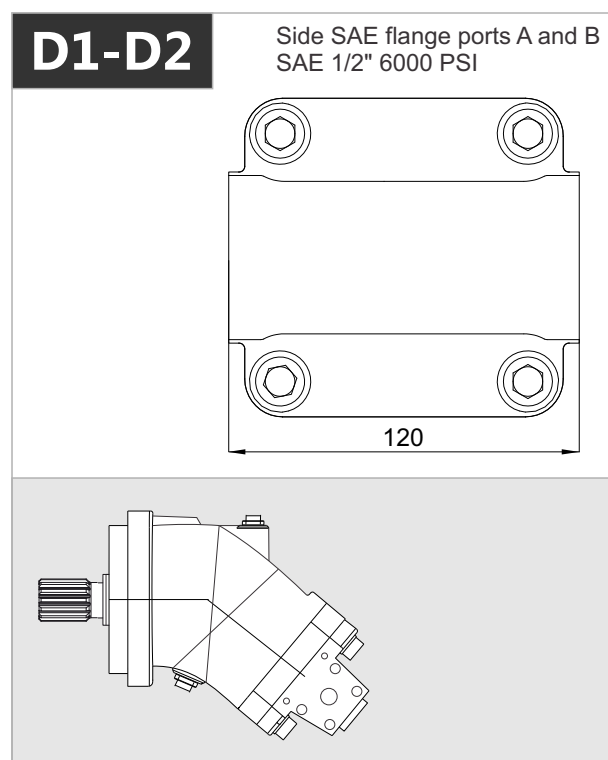
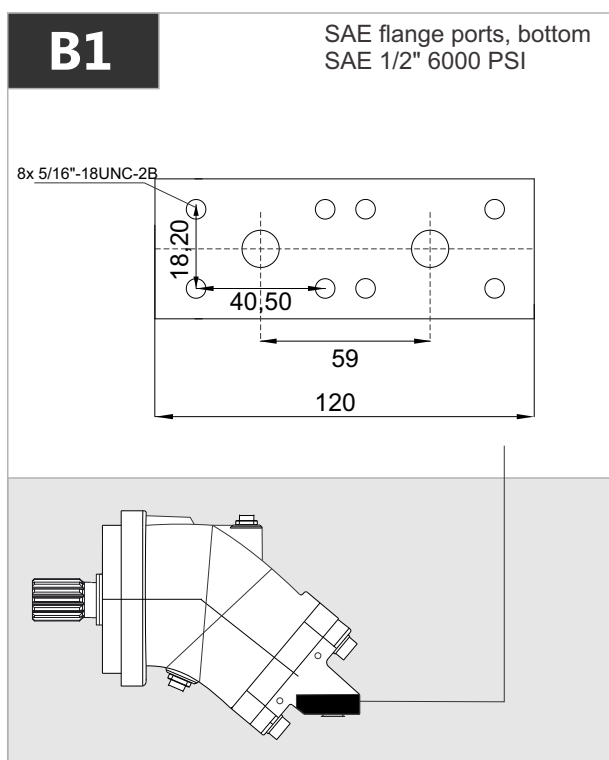
Side threaded ports





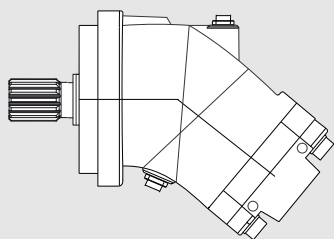
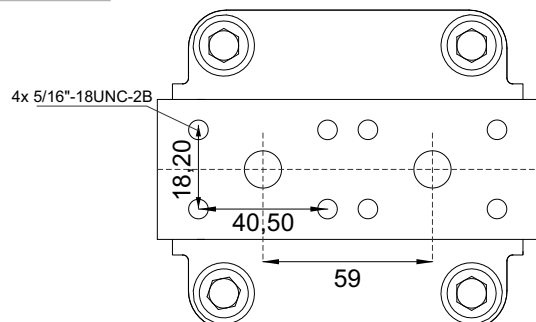


| x 1000 rpm | x 1500 rpm | Max. Contin. Pump Speed | Max. Intermit. Pump Speed | Max. Contin. Pressure | Max. Peak Pressure | Torque bar   | Torque at 350 bar | Max. Flow | Weight without accessor. | Weight with accessor. | Max. Motor Temp. | Min. Motor Temp. |
|------------|------------|-------------------------|---------------------------|-----------------------|--------------------|--------------|-------------------|-----------|--------------------------|-----------------------|------------------|------------------|
| 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°             |



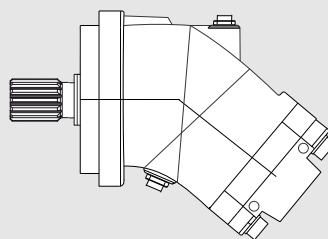
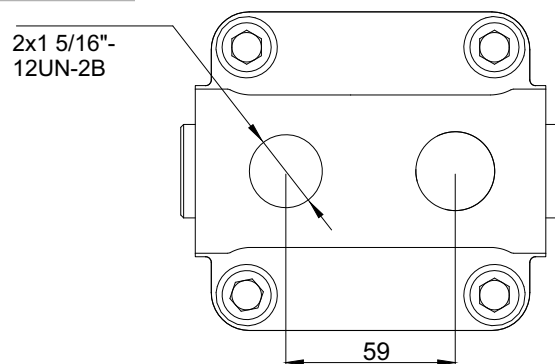
**R1**

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



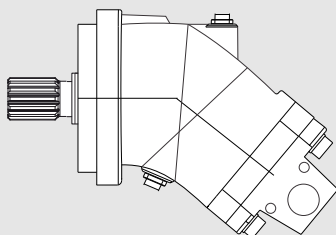
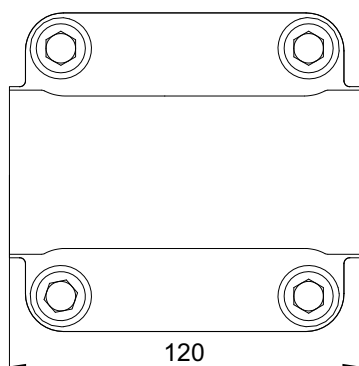
**R2**

Rear threaded ports



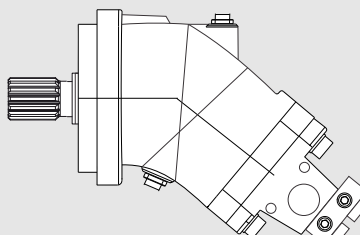
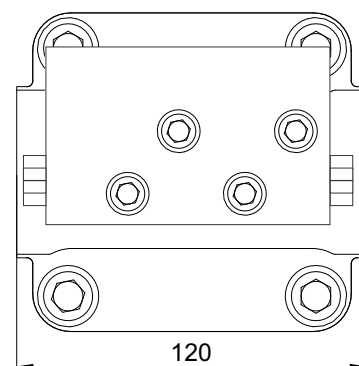
**D3**

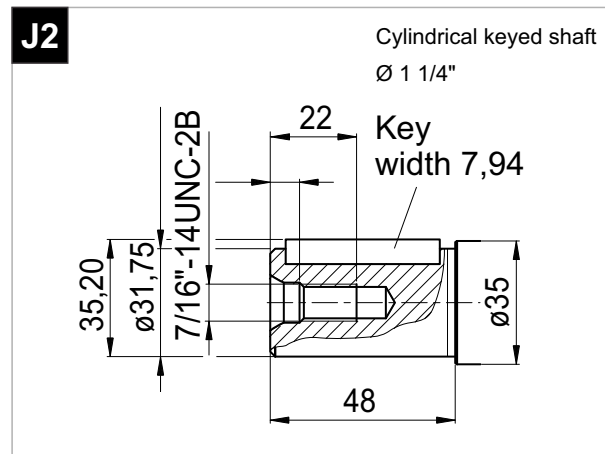
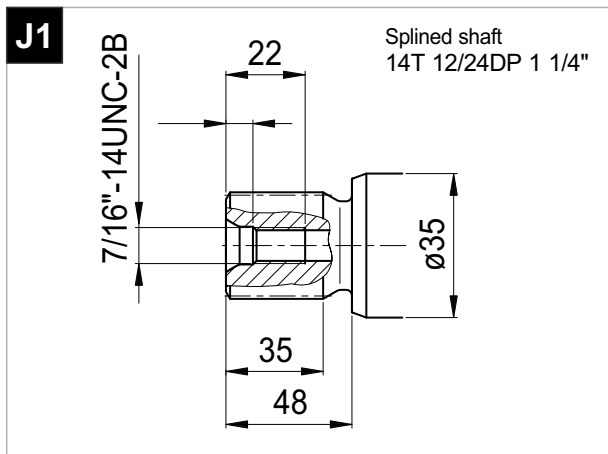
Side threaded ports A and B

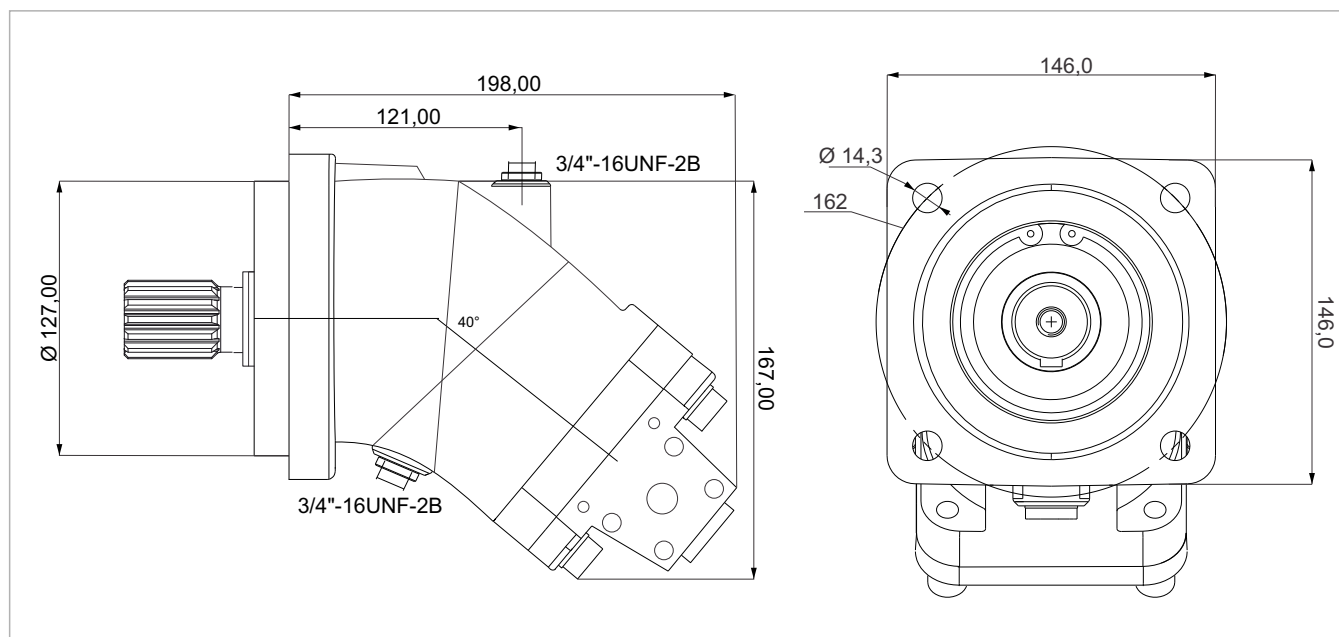


**D4**

Side threaded ports A and B



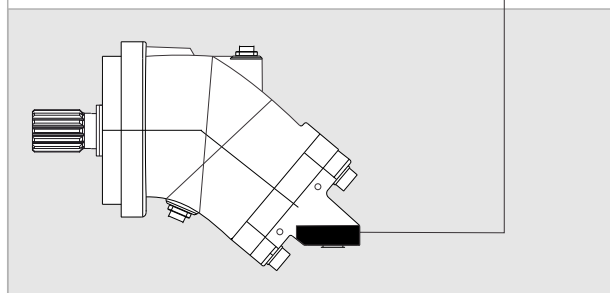
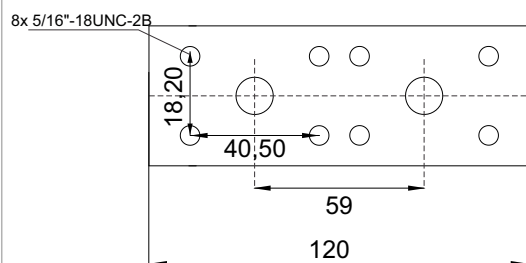




| x 1000<br>rpm | x 1500<br>rpm | Max.<br>Contin.<br>Pump<br>Speed | Max.<br>Intermit.<br>Pump<br>Speed | Max.<br>Contin.<br>Pressure | Max.<br>Peak<br>Pressure | Torque<br>bar   | Torque<br>at<br>350 bar | Max.<br>Flow | Weight<br>without<br>accessor. | Weight<br>with<br>accessor. | Max.<br>Motor<br>Temp. | Min.<br>Motor<br>Temp. |
|---------------|---------------|----------------------------------|------------------------------------|-----------------------------|--------------------------|-----------------|-------------------------|--------------|--------------------------------|-----------------------------|------------------------|------------------------|
| 40,20 cc      | 60,30 cc      | 5600 rpm                         | 6300 rpm                           | 400 bar                     | 450 bar                  | 0.68<br>m.N/bar | 228 m.N                 | 225          | 11,50 kg                       | 11,90 kg                    | -25°                   | 110°                   |

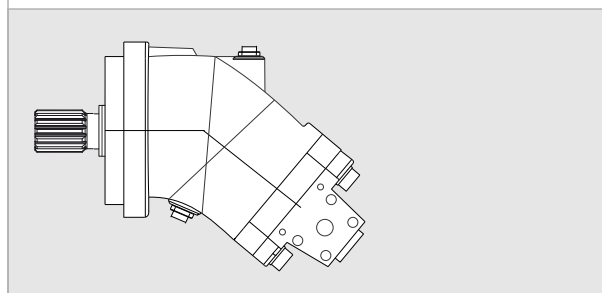
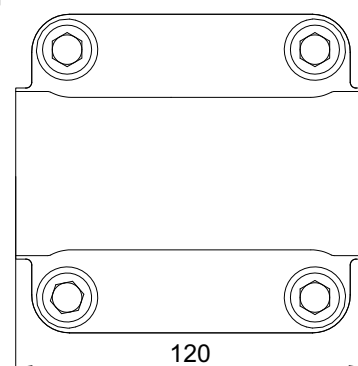
## B1

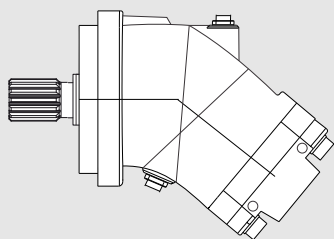
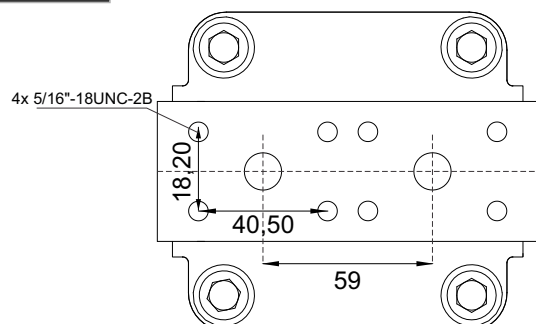
SAE flange ports, bottom  
SAE 1/2" 6000 PSI



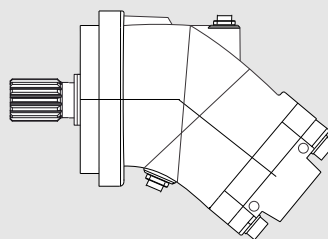
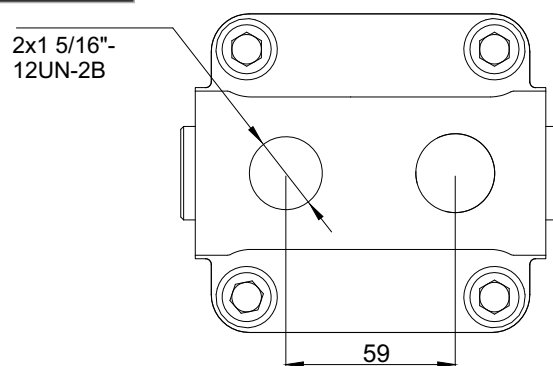
## D1-D2

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

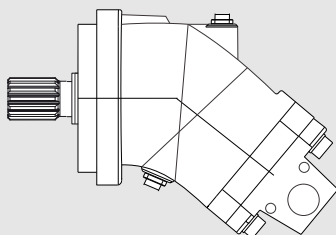
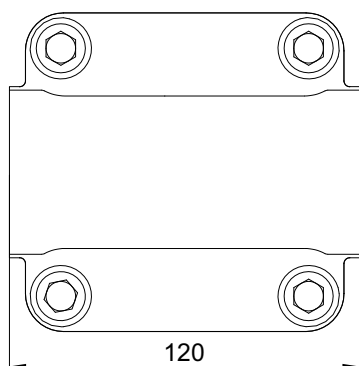


**R1**Rear SAE flange ports A and B  
SAE 1/2" 6000 PSI**R2**

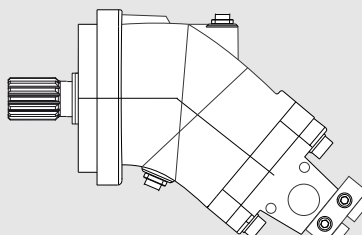
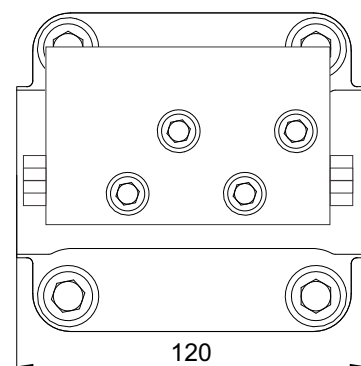
Rear threaded ports

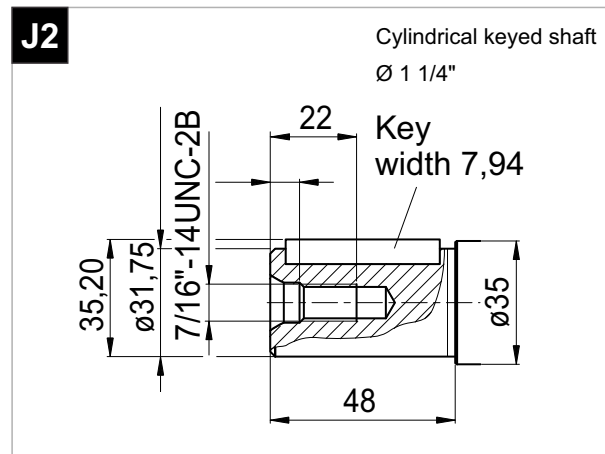
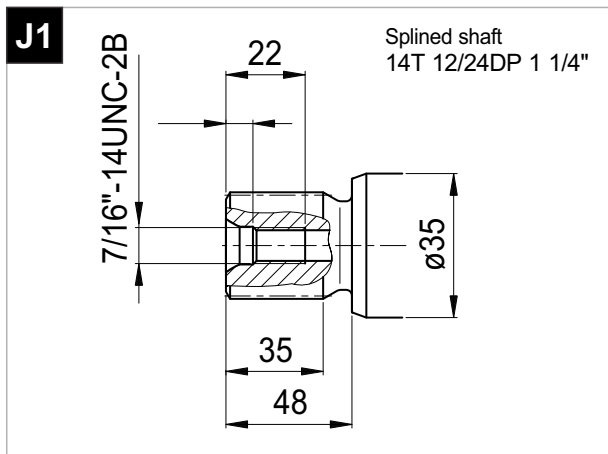
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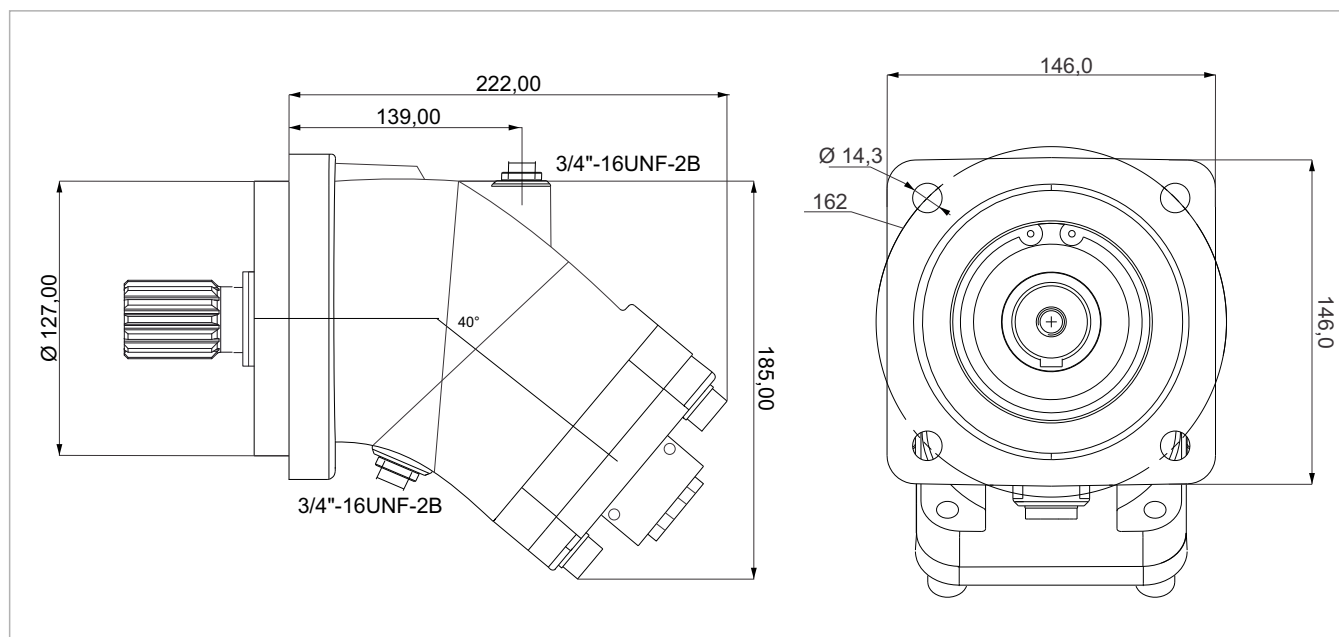
Side threaded ports A and B

**D4**

Side threaded ports A and B



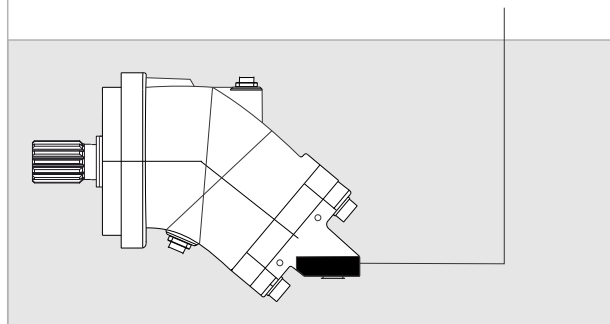
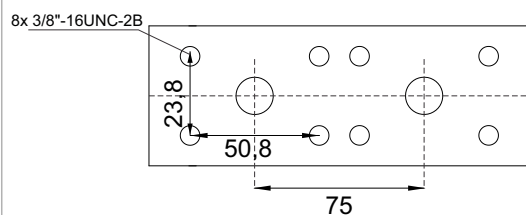




| x 1000<br>rpm | x 1500<br>rpm | Max.<br>Contin.<br>Pump<br>Speed | Max.<br>Intermit.<br>Pump<br>Speed | Max.<br>Contin.<br>Pressure | Max.<br>Peak<br>Pressure | Torque<br>bar   | Torque<br>at<br>350 bar | Max.<br>Flow | Weight<br>without<br>accessor. | Weight<br>with<br>accessor. | Max.<br>Motor<br>Temp.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

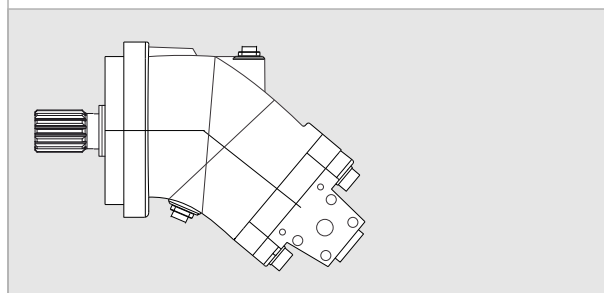
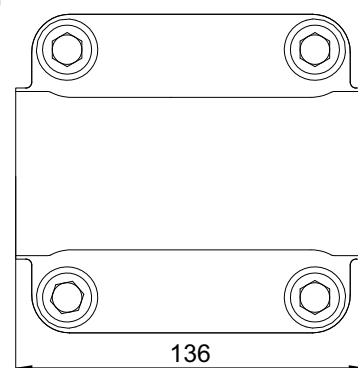
## B1

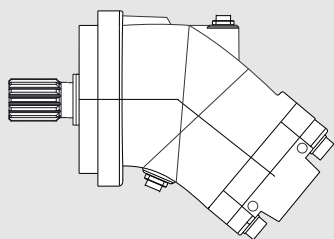
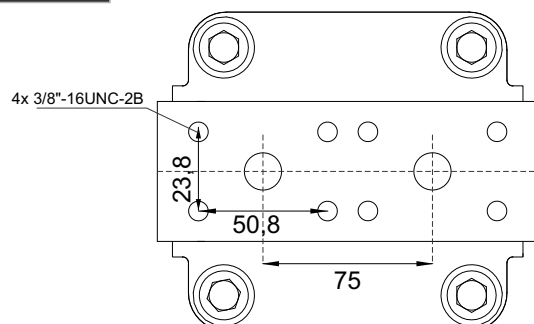
SAE flange ports, bottom  
SAE 3/4" 6000 PSI



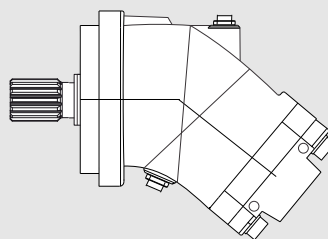
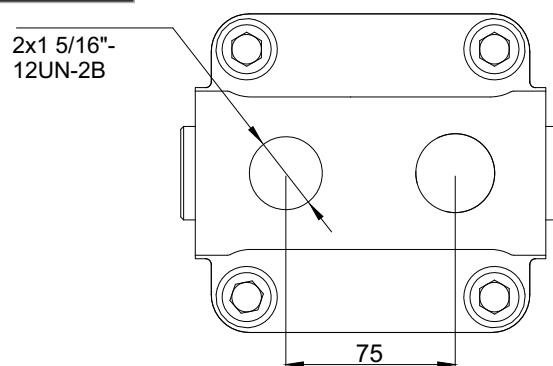
## D1-D2

SAE flange ports side A and B  
SAE 3/4" 6000 PSI

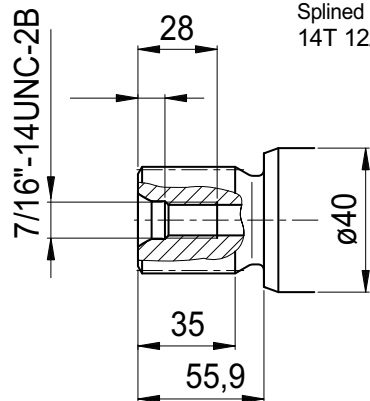
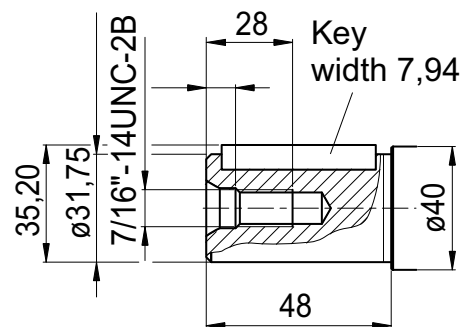


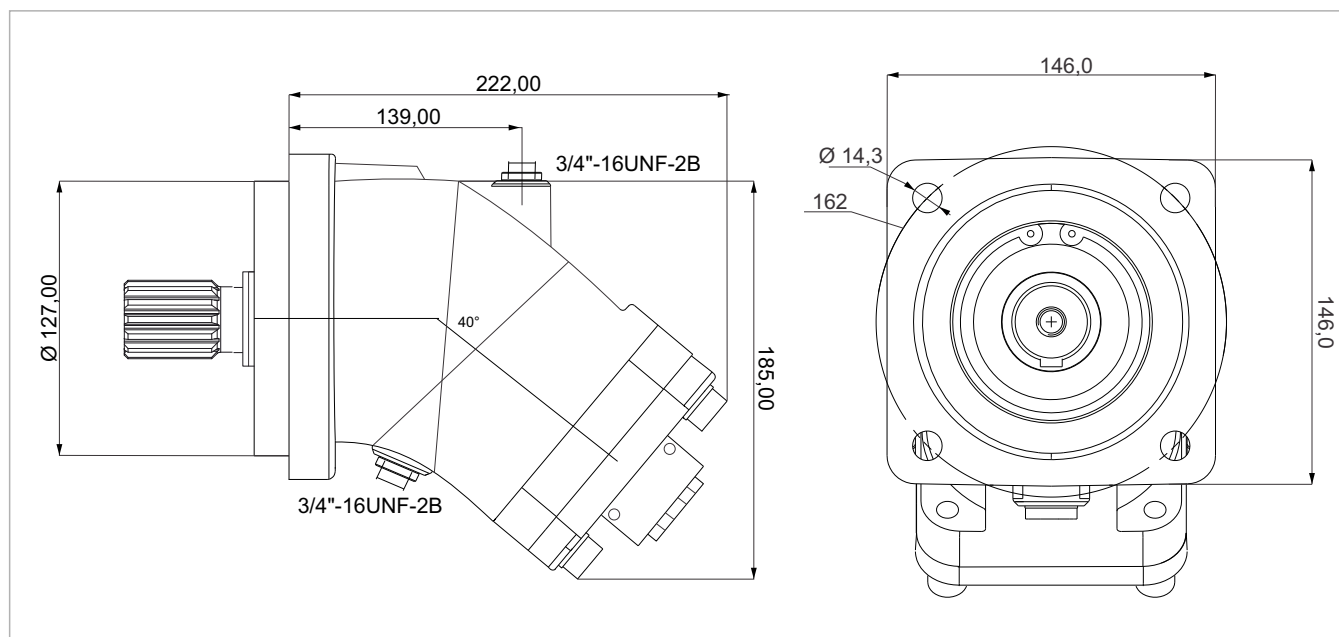
**R1**SAE flange ports rear  
SAE 3/4" 6000 PSI**R2**

Rear threaded ports

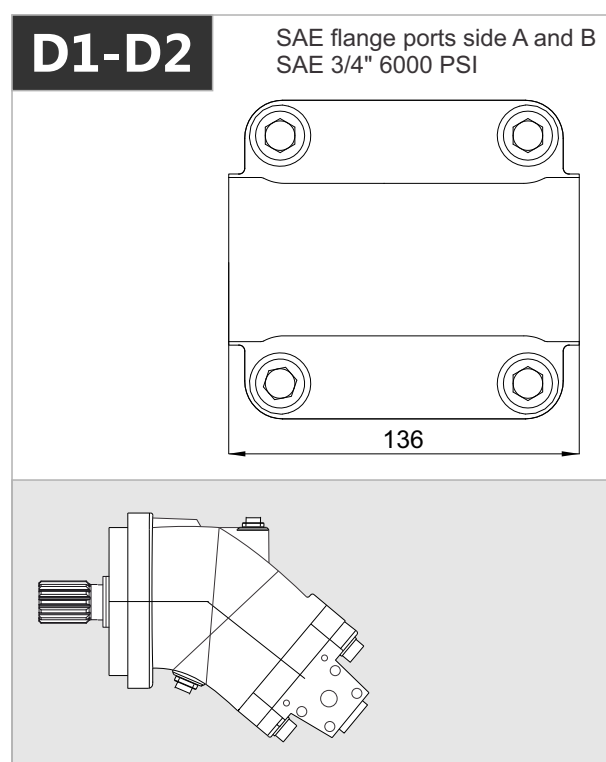
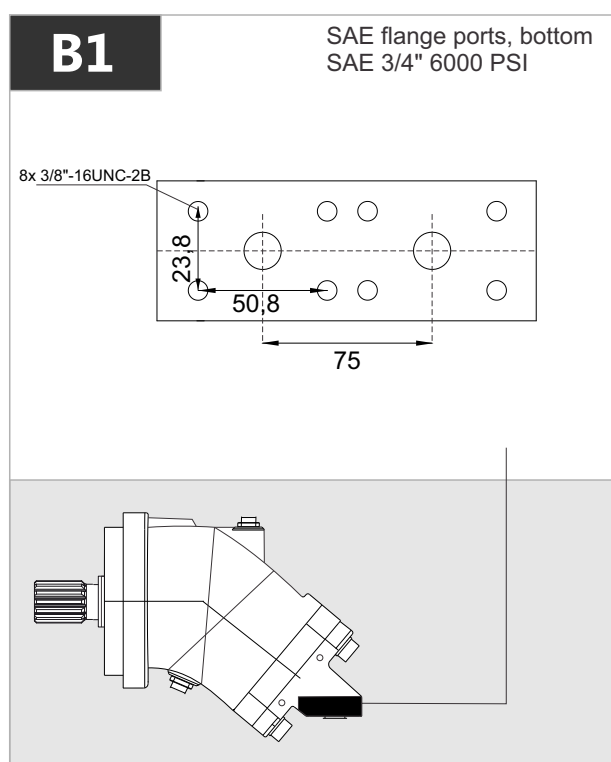
**J1**

7/16"-14UNC-2B

Splined shaft  
14T 12/24DP 1 1/4"**J2**Cylindrical keyed shaft  
Ø 1 1/4"

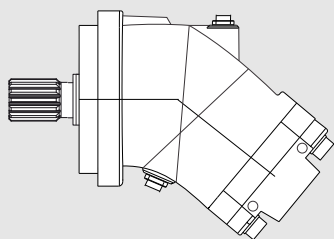
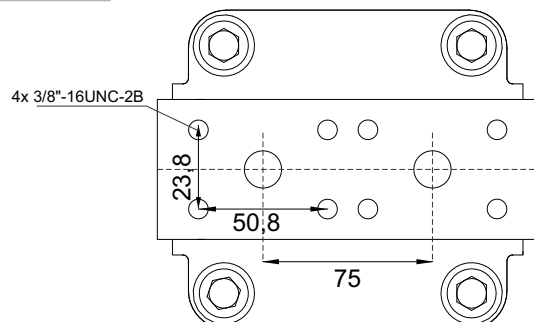


| x 1000 rpm | x 1500 rpm | Max. Contin. Pump Speed | Max. Intermit. Pump Speed | Max. Contin. Pressure | Max. Peak Pressure | Torque bar   | Torque at 350 bar | Max. Flow | Weight without accessor. | Weight with accessor. | Max. Motor Temp. | Min. Motor Temp. |
|------------|------------|-------------------------|---------------------------|-----------------------|--------------------|--------------|-------------------|-----------|--------------------------|-----------------------|------------------|------------------|
| 56,40 cc   | 84,60 cc   | 5000 rpm                | 5500 rpm                  | 400 bar               | 450 bar            | 0.92 m.N/bar | 320 m.N           | 282       | 18,00 kg                 | 18,50 kg              | -25°             | 110°             |



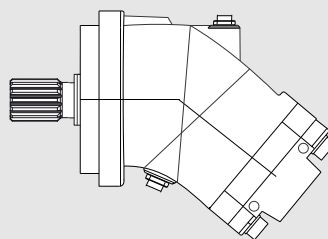
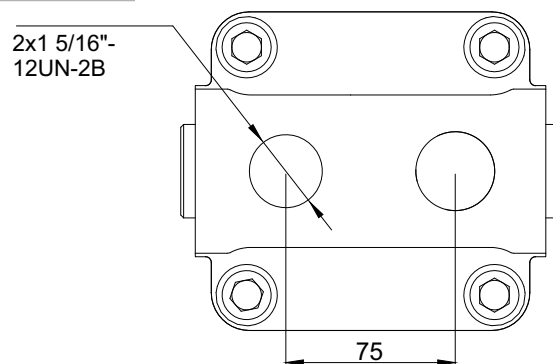
**R1**

SAE flange ports rear  
SAE 3/4" 6000 PSI



**R2**

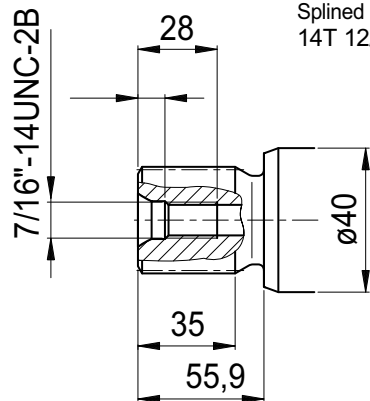
Rear threaded ports



**J1**

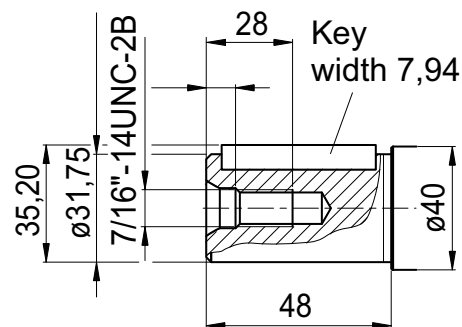
7/16"-14UNC-2B

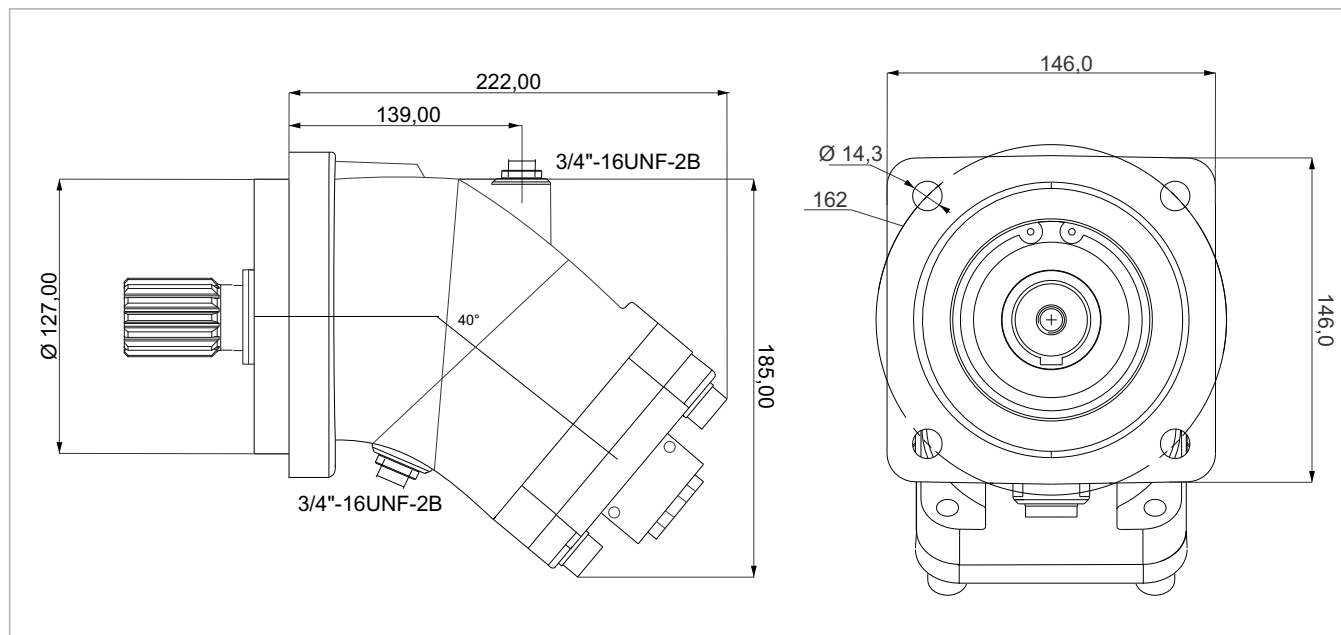
Splined shaft  
14T 12/24DP 1 1/4"



**J2**

Cylindrical keyed shaft  
Ø 1 1/4"

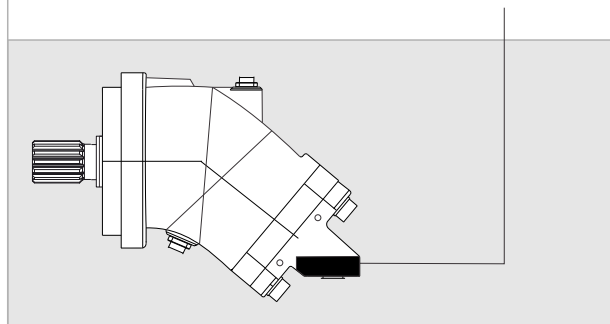
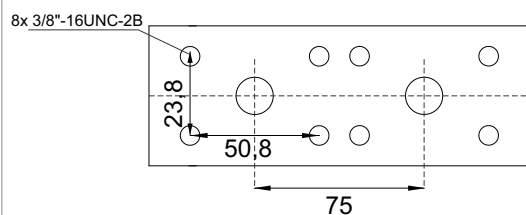




| x 1000<br>rpm | x 1500<br>rpm | Max.<br>Contin.<br>Pump<br>Speed | Max.<br>Intermit.<br>Pump<br>Speed | Max.<br>Contin.<br>Pressure | Max.<br>Peak<br>Pressure | Torque<br>bar   | Torque<br>at<br>350 bar | Max.<br>Flow | Weight<br>without<br>accessor. | Weight<br>with<br>accessor. | Max.<br>Motor<br>Temp. | Min.<br>Motor<br>Temp. |
|---------------|---------------|----------------------------------|------------------------------------|-----------------------------|--------------------------|-----------------|-------------------------|--------------|--------------------------------|-----------------------------|------------------------|------------------------|
| 63,00 cc      | 94,50 cc      | 5000 rpm                         | 5500 rpm                           | 400 bar                     | 450 bar                  | 1.00<br>m.N/bar | 350 m.N                 | 315          | 18,00 kg                       | 18,50 kg                    | -25°                   | 110°                   |

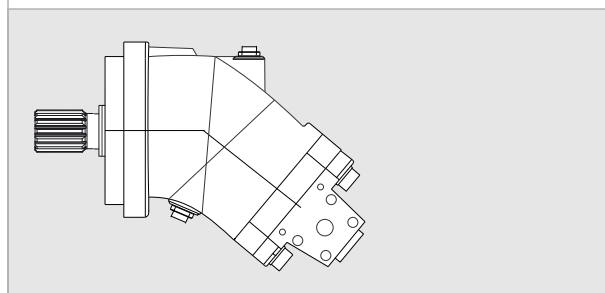
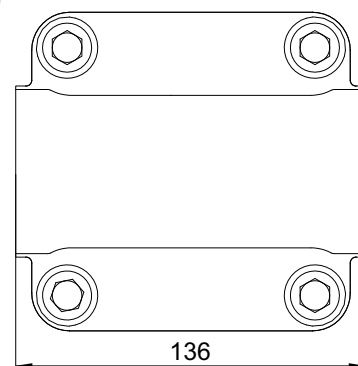
## B1

SAE flange ports, bottom  
SAE 3/4" 6000 PSI



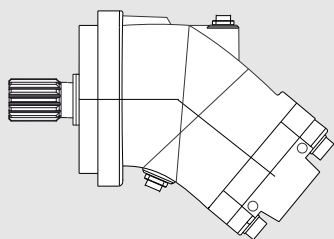
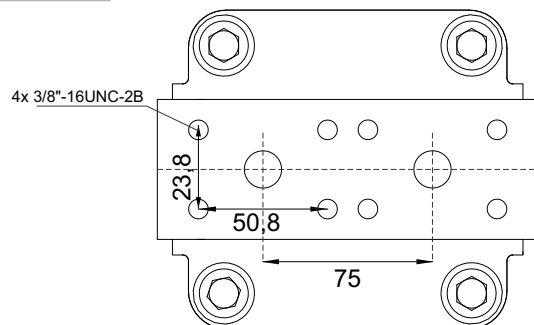
## D1-D2

SAE flange ports side A and B  
SAE 3/4" 6000 PSI



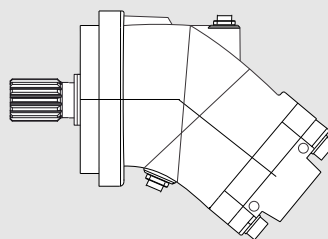
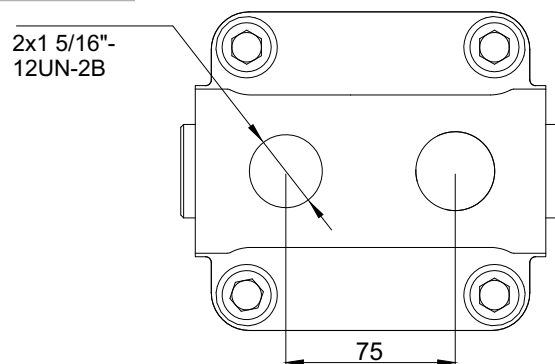
**R1**

SAE flange ports rear  
SAE 3/4" 6000 PSI



**R2**

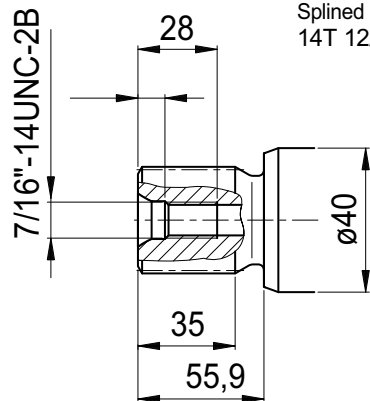
Rear threaded ports



**J1**

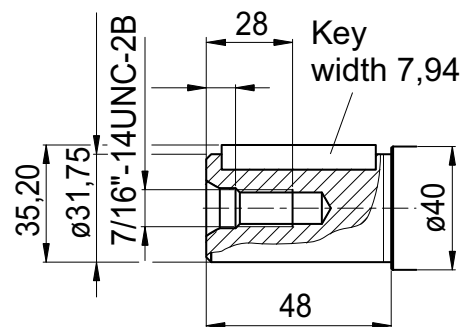
7/16"-14UNC-2B

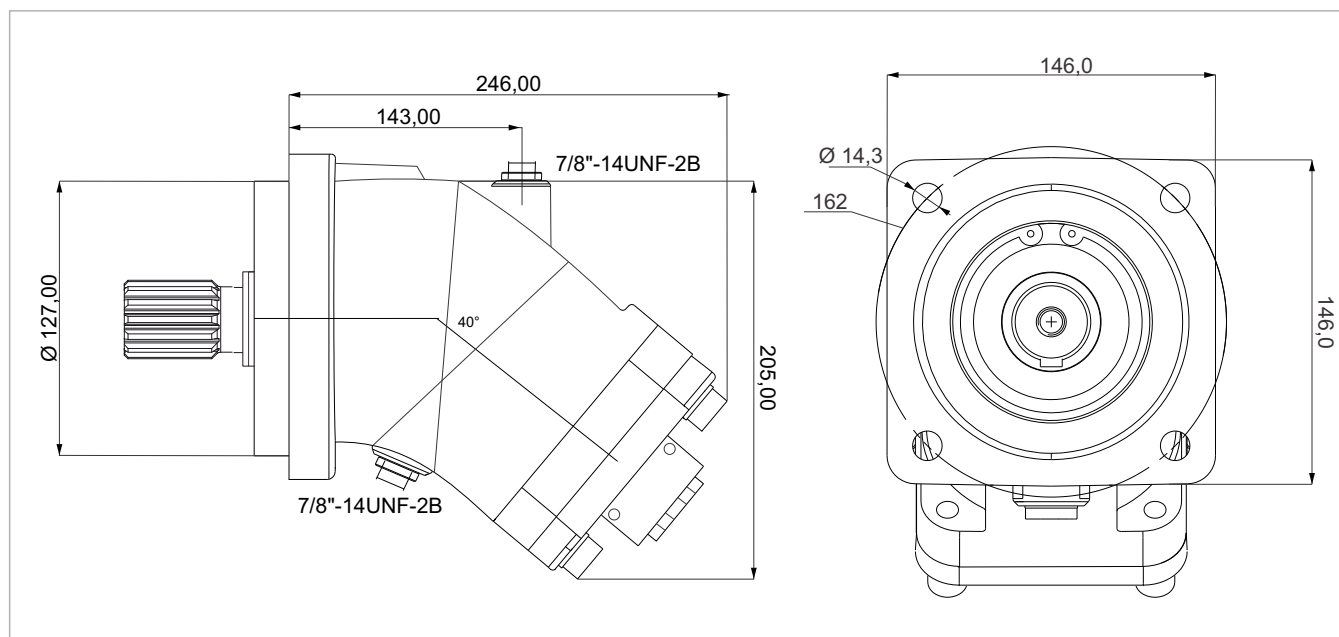
Splined shaft  
14T 12/24DP 1 1/4"



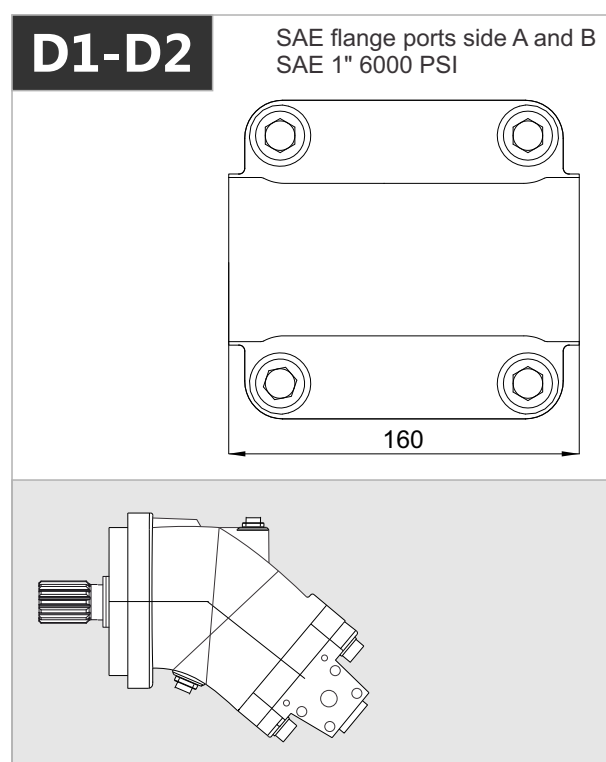
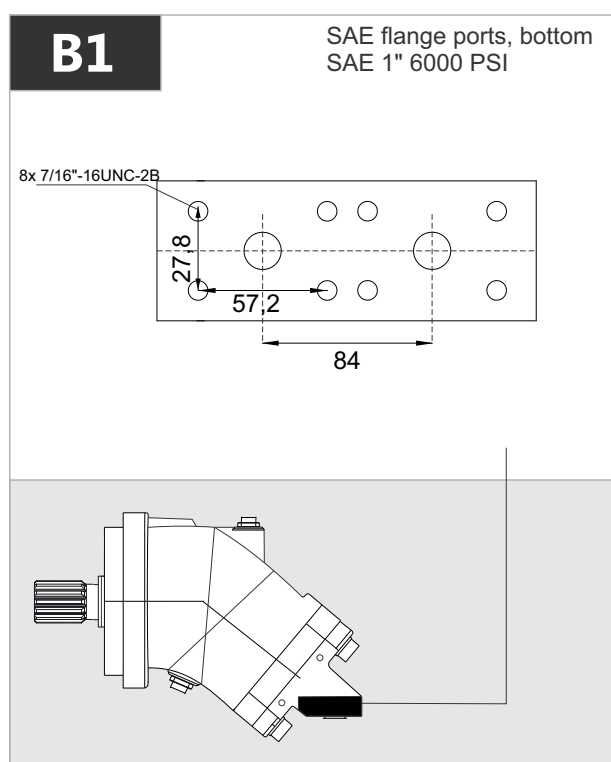
**J2**

Cylindrical keyed shaft  
Ø 1 1/4"





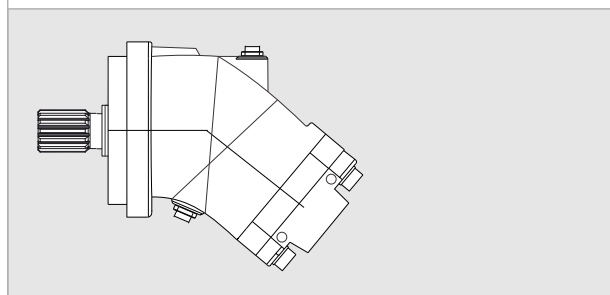
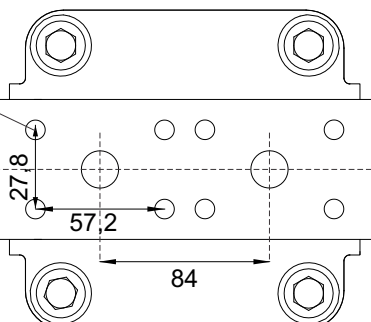
| x 1000<br>rpm | x 1500<br>rpm | Max.<br>Contin.<br>Pump<br>Speed | Max.<br>Intermit.<br>Pump<br>Speed | Max.<br>Contin.<br>Pressure | Max.<br>Peak<br>Pressure | Torque<br>bar   | Torque<br>at<br>350 bar | Max.<br>Flow | Weight<br>without<br>accessor. | Weight<br>with<br>accessor. | Max.<br>Motor<br>Temp.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



**R1**

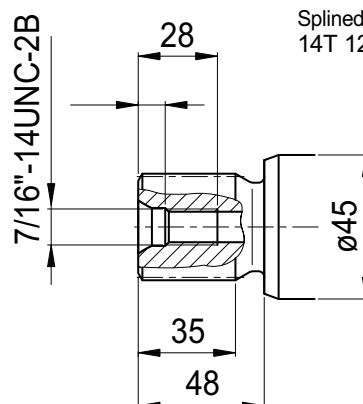
SAE flange ports rear  
SAE 1" 6000 PSI

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



**J1**

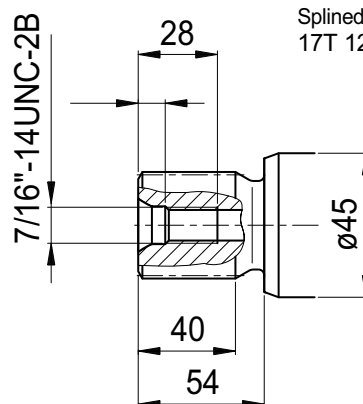
Splined shaft  
14T 12/24DP 1 1/4"



!! Special

**J1**

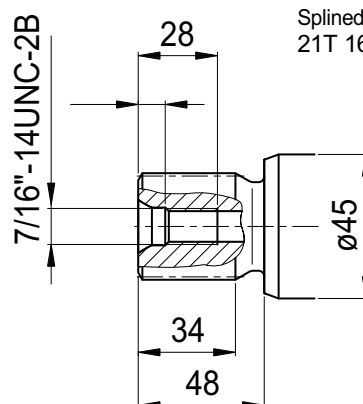
Splined shaft  
17T 12/24DP 1 1/2"



!! Special

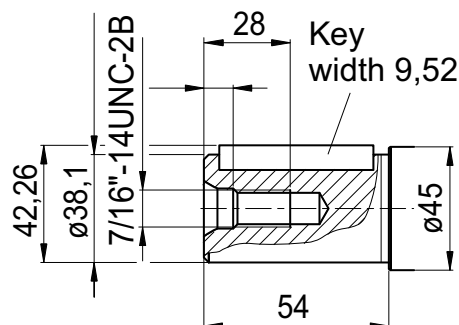
**J1**

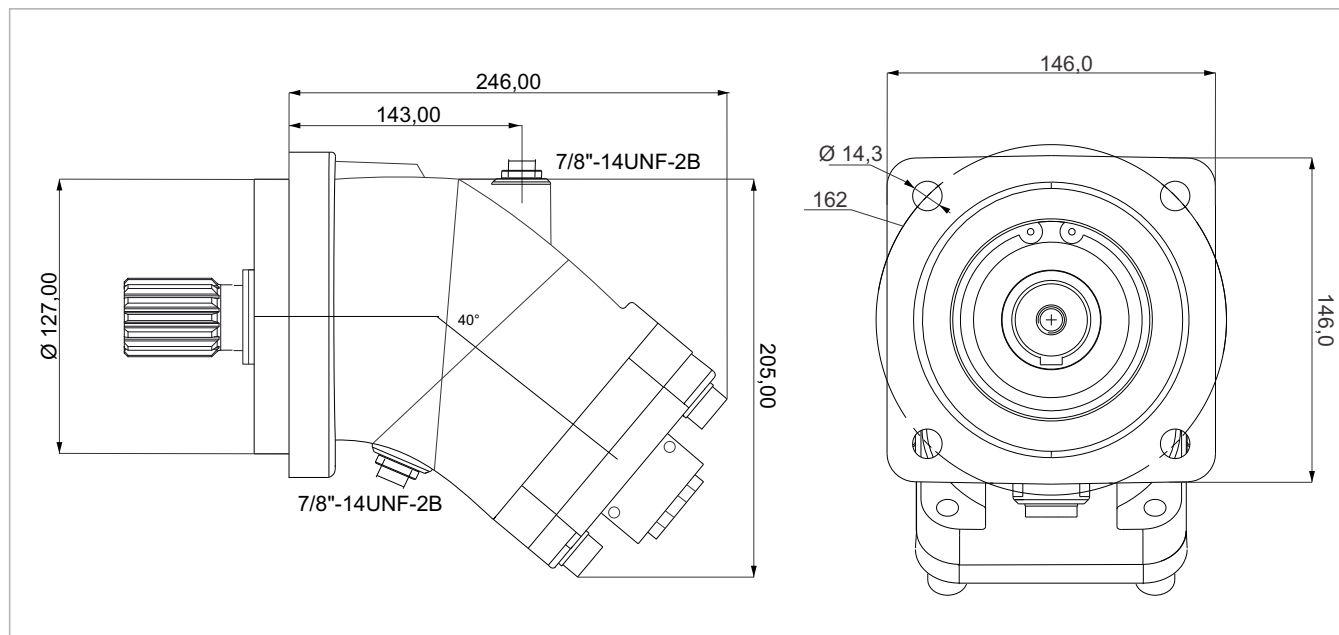
Splined shaft  
21T 16/32DP 1 3/8"



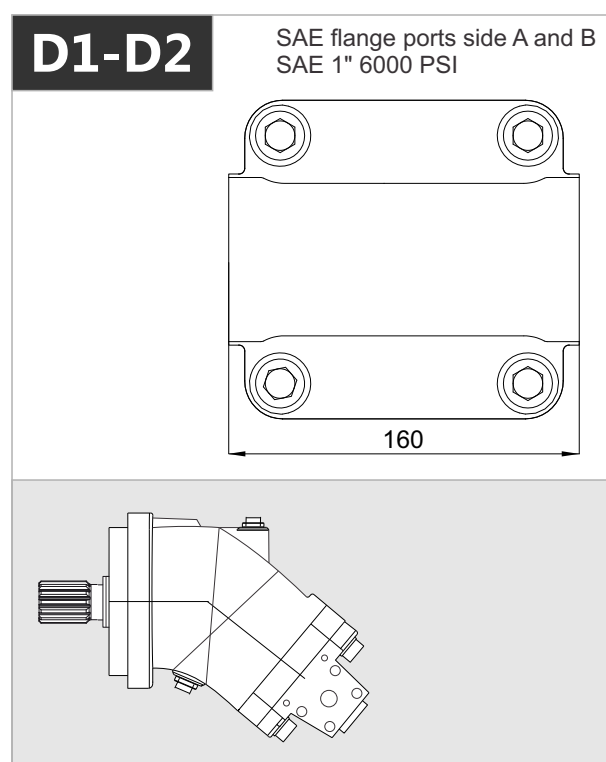
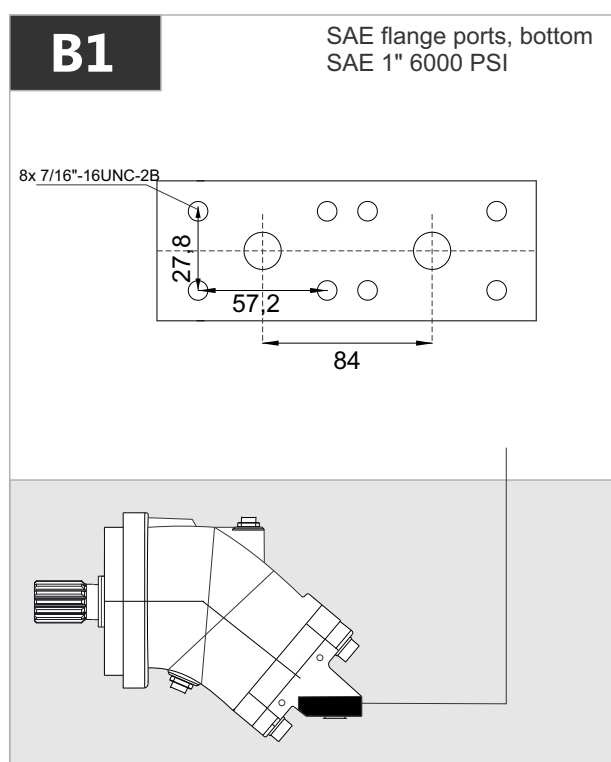
**J2**

Cylindrical keyed shaft  
Ø 1 1/2"





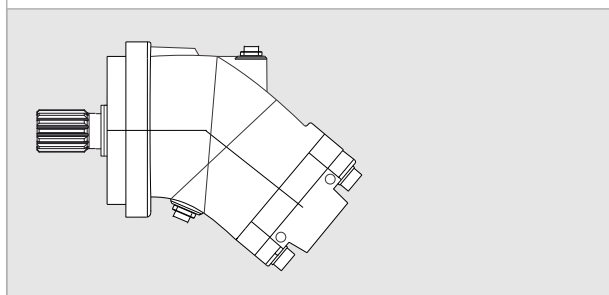
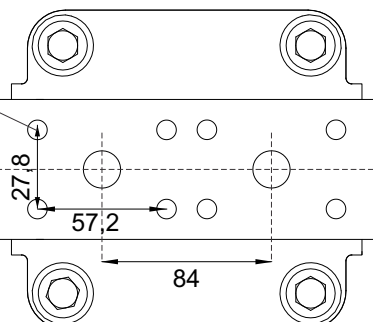
| x 1000 rpm | x 1500 rpm | Max. Contin. Pump Speed | Max. Intermit. Pump Speed | Max. Contin. Pressure | Max. Peak Pressure | Torque bar   | Torque at 350 bar | Max. Flow | Weight without accessor. | Weight with accessor. | Max. Motor Temp. | Min. Motor Temp. |
|------------|------------|-------------------------|---------------------------|-----------------------|--------------------|--------------|-------------------|-----------|--------------------------|-----------------------|------------------|------------------|
| 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°             |



**R1**

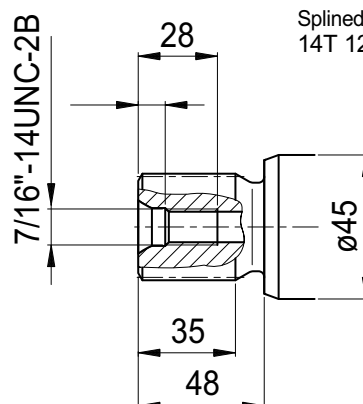
SAE flange ports rear  
SAE 1" 6000 PSI

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



**J1**

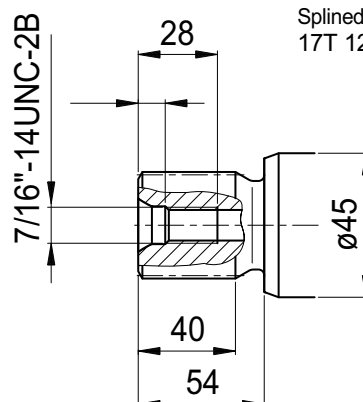
Splined shaft  
14T 12/24DP 1 1/4"



!! Special

**J1**

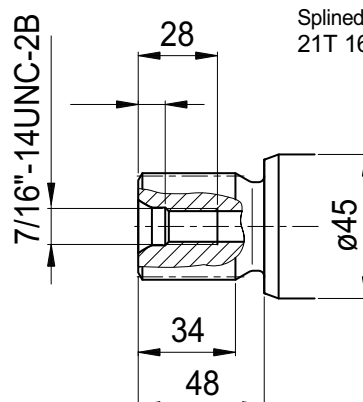
Splined shaft  
17T 12/24DP 1 1/2"



!! Special

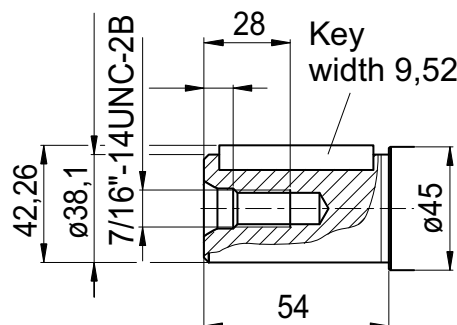
**J1**

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

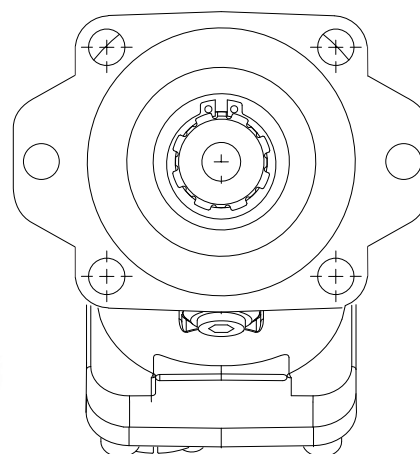


**J2**

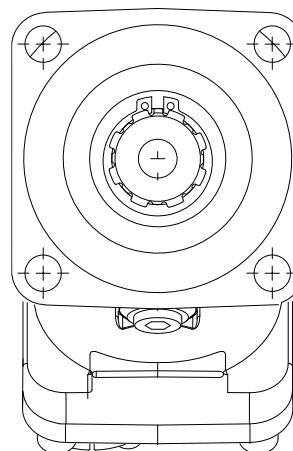
Cylindrical keyed shaft  
Ø 1 1/2"



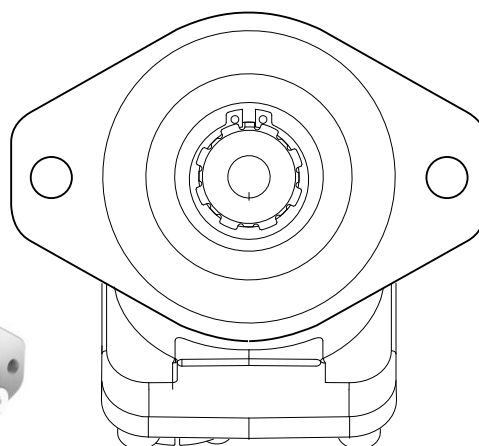
6 BOLT  
Mounting Flange

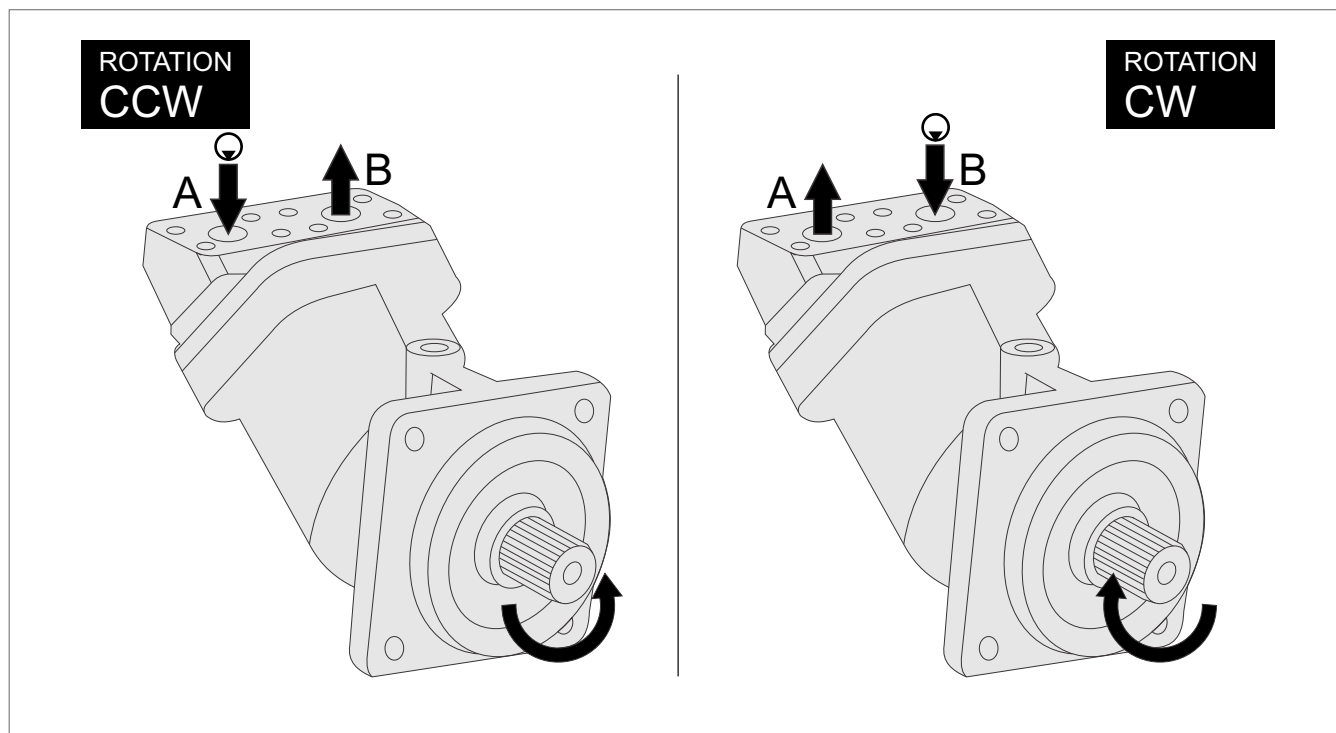


SAE B 4 BOLT



SAE B 2 BOLT





## Quick Calculation

### Flow rate

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

### Torque

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

### Power

$$P = \frac{2\pi \cdot M \cdot n}{60000} = \frac{M \cdot n}{9549} = \frac{Q \cdot \Delta p \cdot \eta_t}{600} \text{ (kw)}$$

### Speed

$$n = \frac{1000 \cdot Q \cdot \eta_v}{V_s} \text{ (rpm)}$$

- $V_s$  = Displacement (ccm/rev.)  
 $\Delta p$  = Diff. pressure (bar)  
 $n$  = Speed (rpm)  
 $Q$  = Flow (lpm)  
 $\eta_v$  = Volumetric efficiency  
 $\eta_{mh}$  = Mechanical-hydraulic efficiency  
 $\eta_t$  = Total efficiency ( $\eta_t = \eta_v \times \eta_{mh}$ )

## HYDROLINA HYDRAULICS, LTD.

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 G2EM Bent Axis Motors.

Fevziçakmak mh. 10505 Sk.  
No: 23/1 Karatay / KONYA

Phone : **+90 (551) 148 26 88**

Fax : +90 (551) 148 26 88

**mail@hydrolina.com**  
**order@hydrolina.com**

## POSITION

G2EM Motors can be operate any position.

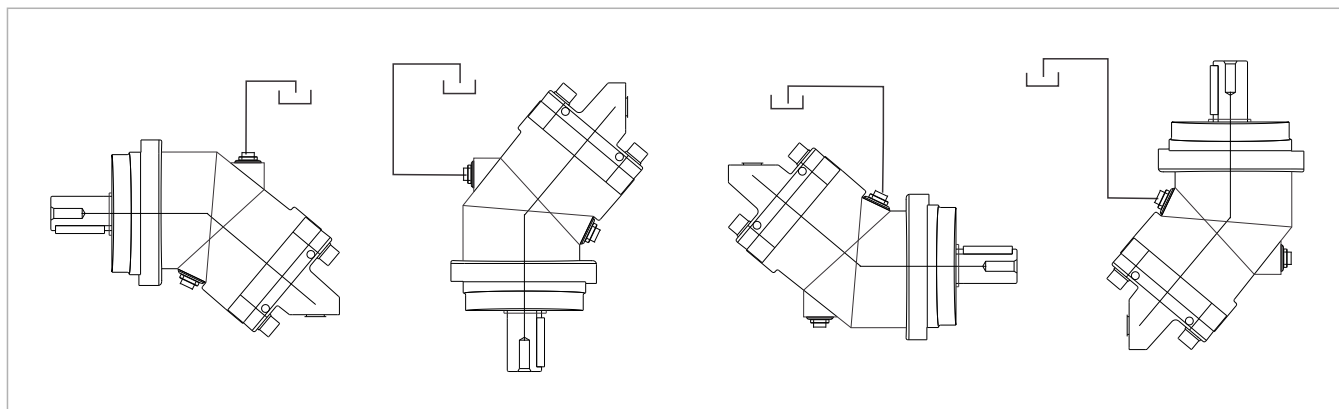
## DIRECTION OF ROTATION

G2EM 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.

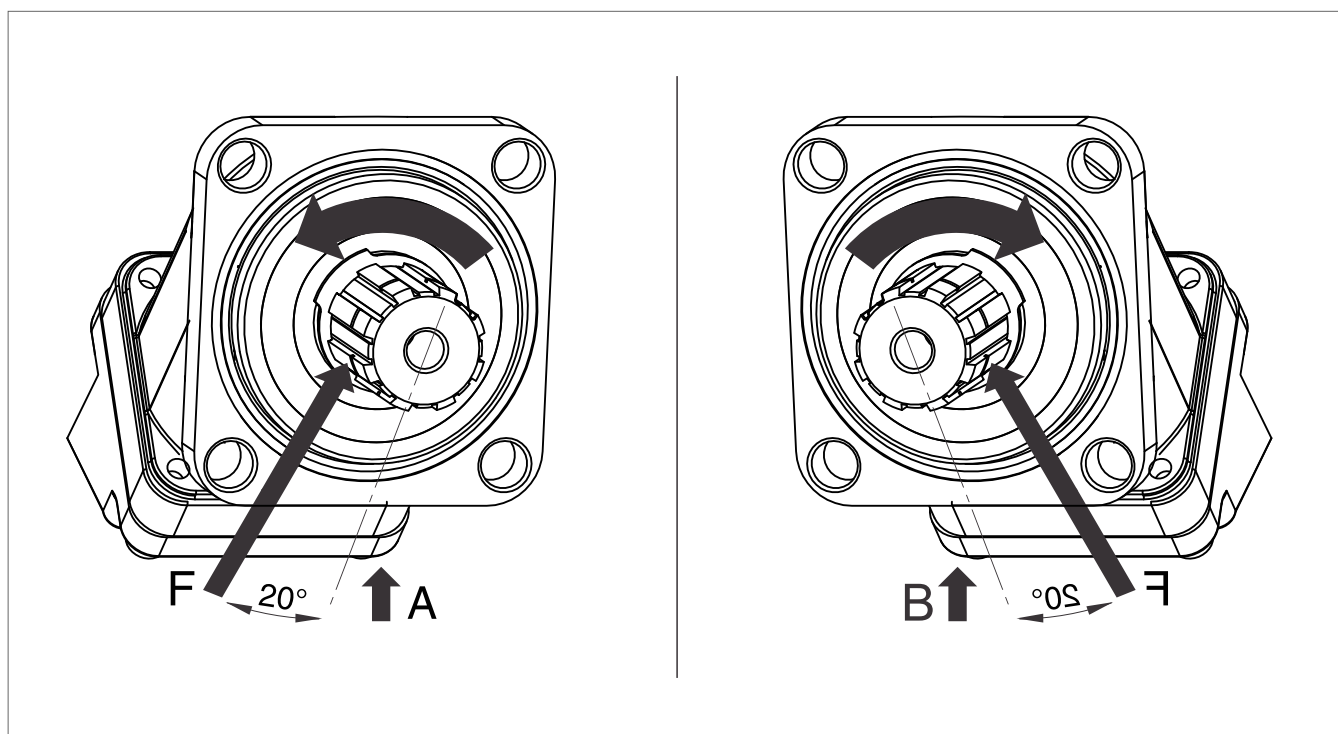


## HYDRAULIC FLUID

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 G2EM Bent Axis Motors, please contact with Technical Department !!!

DIN

DIN 5462 / ISO 14  
8x32x35  
8x32x36  
DIN 6885


**G2PA**

**G1PA**

**G2PM**

## Piston Pumps

## Piston Motors

ISO

ISO 3019-2 (4 BOLTS)  
DIN 5480 -W25,30,35,40,45  
DIN 6885 -Ø20,25,30,35,40,45


**G2P**

**G2M**

SAE

SAE B2 C4 - SAE D  
SAE J498b  
SAE J 744


**G2SE**

**G2EM**

M2

Fixed Plug-in

DIN 5480 / ISO 3019-2  
W30 - W35 - W40  
M21 - M22 - M23


**G2MS**

DIN ISO 14  
8x32x36


**GPA**

P2 Connection M8x125  
Woodruff key 3x6,5 NF E  
27-653 NF R 124-04  
(2 BOLTS)


**GPH**

## HYDROLINA HYDRAULICS, LTD.

Fevziçakmak mh. 10505 Sk.  
No: 23/1 Karatay / KONYA

Phone : **+90 (551) 148 26 88**

Fax : +90 (551) 148 26 88

**mail@hydrolina.com**  
**order@hydrolina.com**

## G2EM

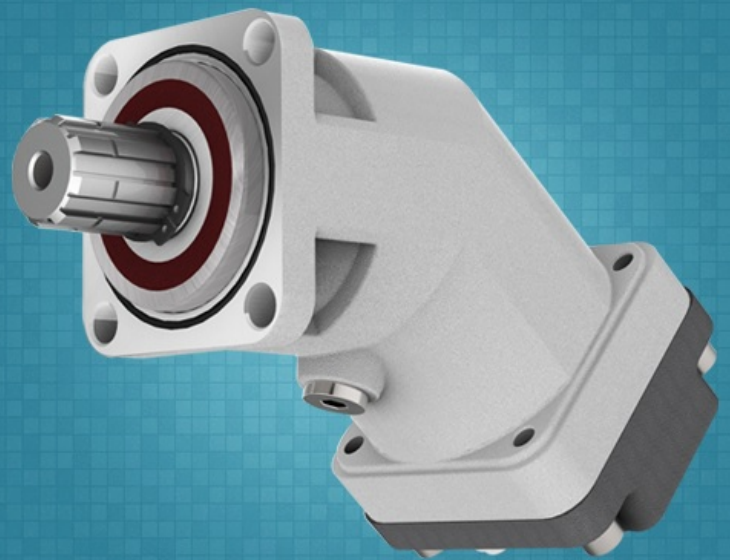


HOME CORPORATE PRODUCT LINE PUMPS MOTORS INDUSTRIAL & MOBILE HYDRAULIC LOCATIONS ENVIRONMENT CATALOGS WorldWide

## G2PA

### Bent Axis Piston Pumps

- Compact Design,
- Economical Conception,
- High Rotating Speeds,
- High Output Pressure.



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