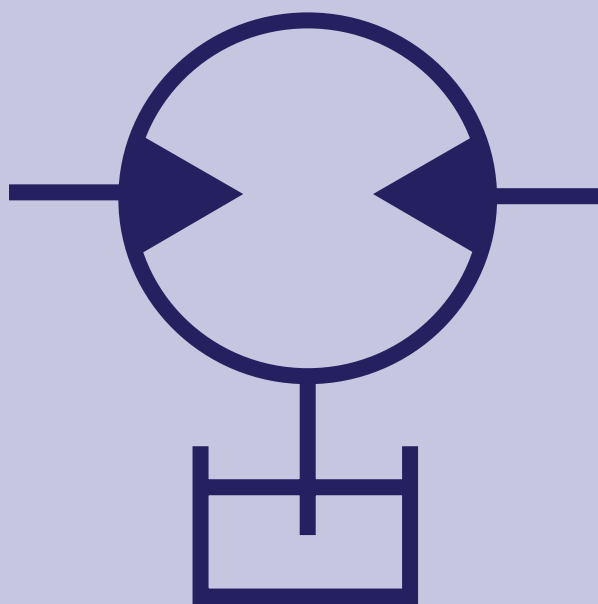
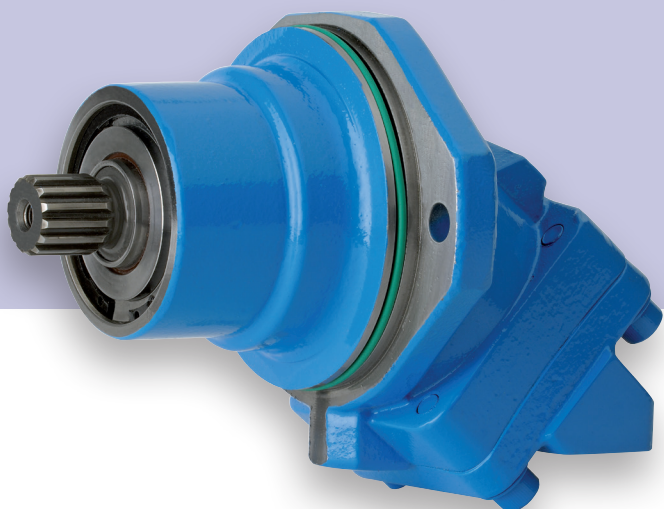
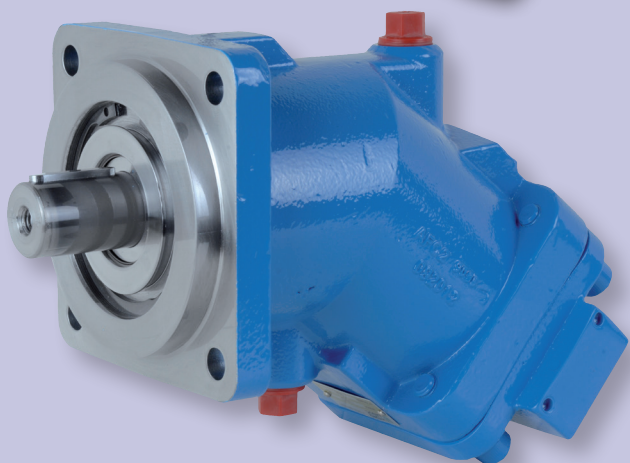
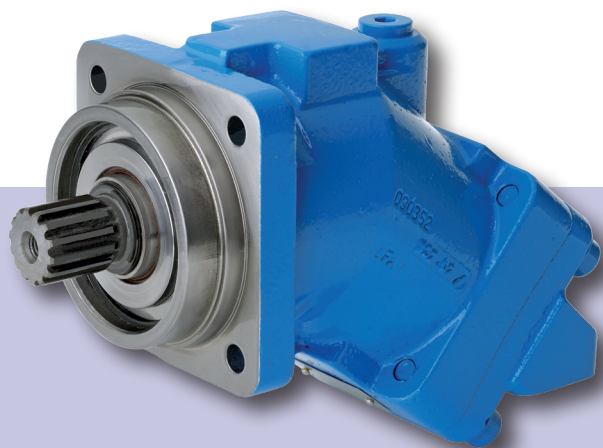


BENT AXIS HYDRAULIC MOTORS

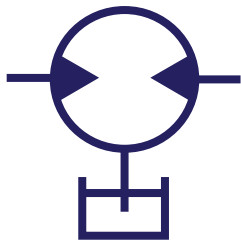
FIXED DISPLACEMENT



make it simple

 **HYDRO
LEDUC**

BENT AXIS
HYDRAULIC MOTORS



| | |
|---|---|
| Applications and efficiency | 4 |
| Definition and advantages | 5 |
| Operating conditions | 6 |
| Determination / calculating the right motor | 9 |

M series

| | |
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| Range and characteristics of M series motors | 11 |
| Order code system of M series motors | 13 |
| Dimensions M 5 to M 180 | 14 |

MA series

| | |
|---|----|
| Range and characteristics of MA series motors | 28 |
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MSI series

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| Order code system of MSI series motors | 47 |
| Dimensions MSI 28 to 180 | 48 |

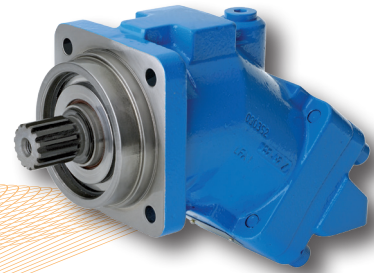
Options | Accessories

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| Speed sensor | 60 |
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M

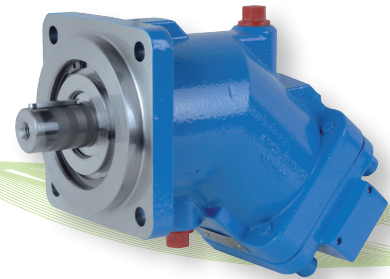
- Displacement 5 cc/rev - CETOP
- Displacements from 12 to 180 cc/rev - ISO
- For fixed and mobile applications



M series

MA

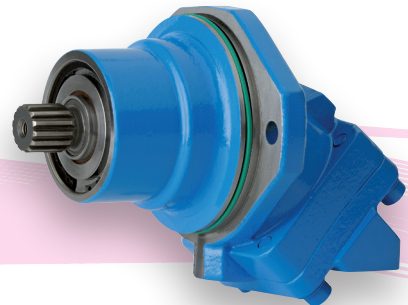
- SAE
- Displacements from 10 to 250 cc/rev
- For fixed and mobile applications



MA series

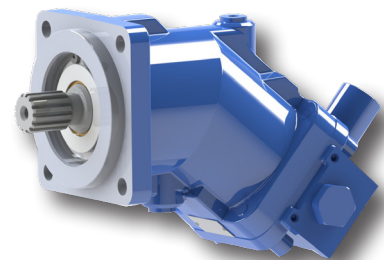
MSI

- ISO - semi-integrated
- Displacements from 28 to 180 cc/rev
- For applications mounted on a planetary gearbox



MSI series

Options



Options
Accessories

► Main applications

Typical applications are those requiring high torque within a small size.

The hydraulic motor is essential for rotations where:

- Mechanical solutions are complex or even impossible.
- Electrical or pneumatic power sources are not available.
- Environments are dangerous (i.e. risk of explosion or extreme temperatures).

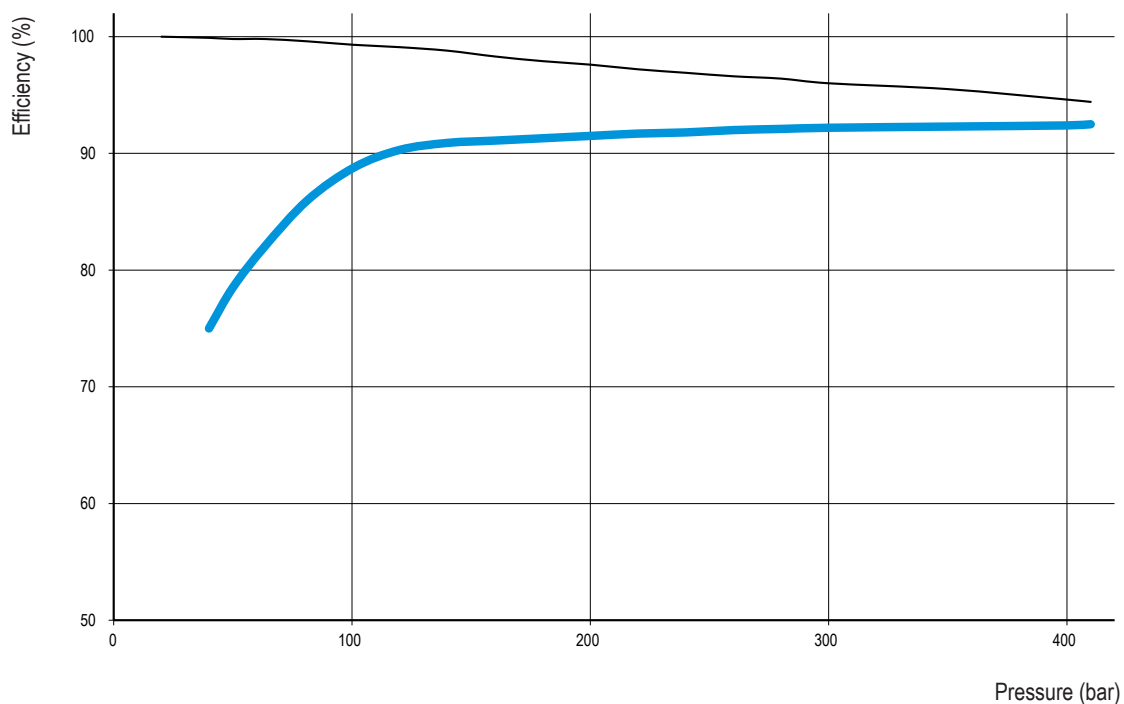
► Examples of use

- Mowers: drive of grass cutting blade, where mechanical solution would be too complicated or impossible.
- Blowers: compressor drive.
- Wheel drive of undercarriages for construction equipment (motor installed on planetary gearbox).
- Industrial of marine winch drive.
- Fan drives...

EFFICIENCY OF M / MA / MSI SERIES MOTORS

N motor = 1000 rpm

ISO46 fluid at 77° F (25°C)



— Global efficiency
 — Volumetric efficiency

This graph is given as an indication only.
 For further information, please contact our Technical Service.

► Definition of function

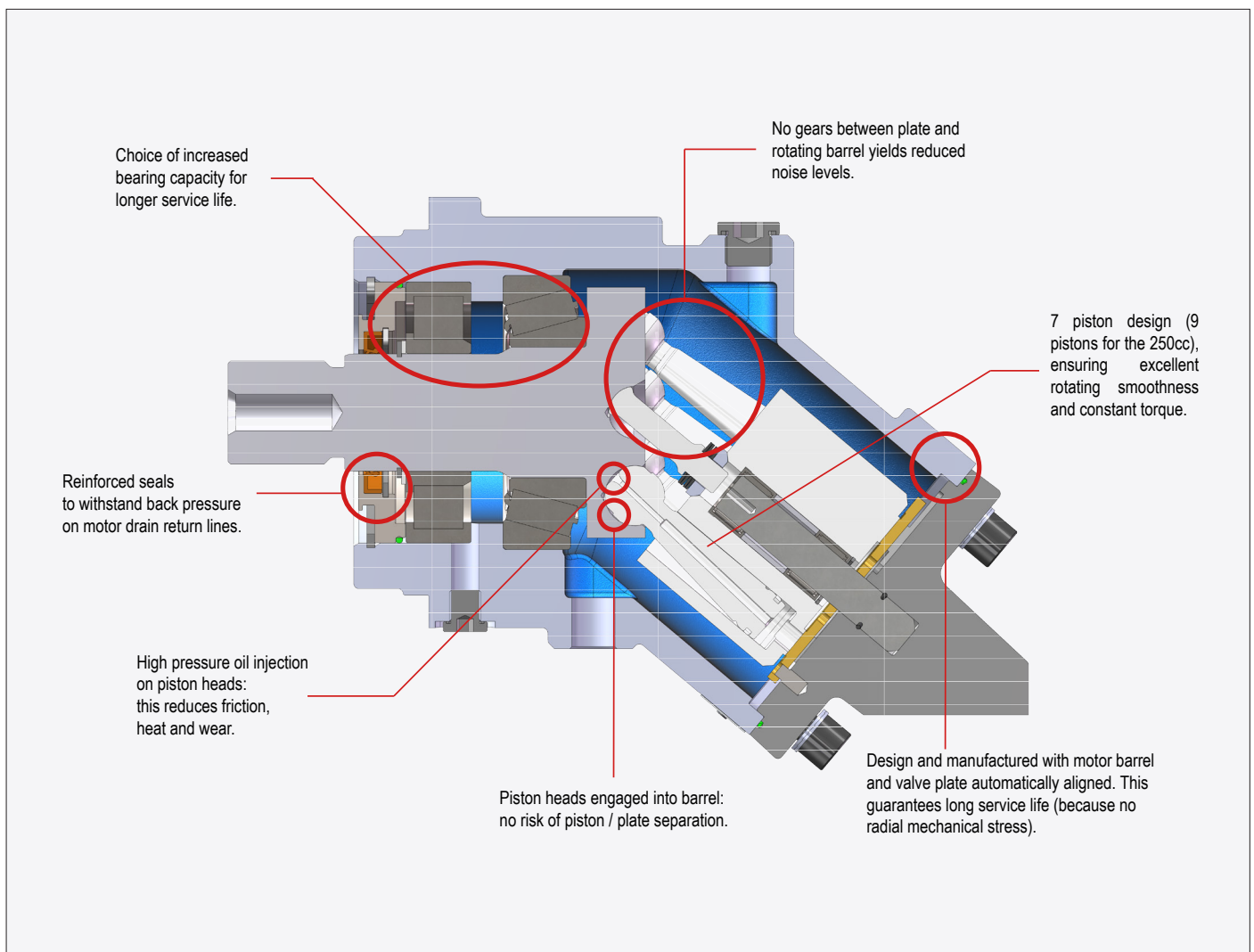
Hydraulic motors transform hydraulic flow into rotating speed and hydraulic pressure into mechanical torque.

Motor rotating speed is proportional to the flow which is supplied to it. Torque produced is proportional to the hydraulic pressure the motor receives.



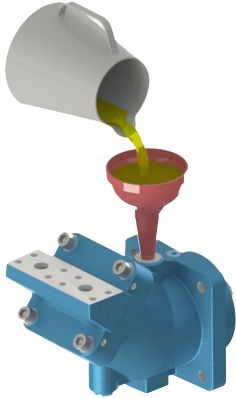
► Advantages of LEDUC motors

High quality materials and workmanship. The design choices highlighted below ensure the remarkable reliability and long service life of LEDUC motors.



► Preparation of the motor

Before starting up, the hydraulic motors must be thoroughly lubricated with oil.



► The fluid

LEDUC motors are designed for use with mineral based hydraulic fluid such as HLVP. Using other fluids is possible but may require a modified motor.

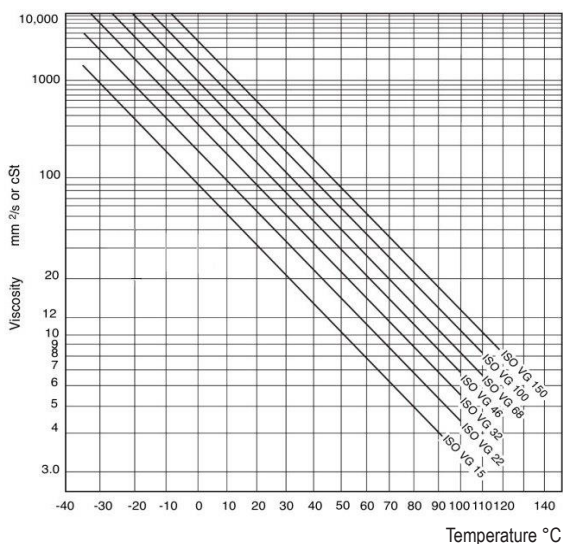
Please contact us with details of fluid.

The fluid temperature within the motor must not exceed 90°C.

Recommended viscosity:

- Ideally: between 15 and 400 cSt;
- Maximum range: between 5 and 1600 cSt.

Fluid viscosities as a function of temperature



► Filtration of the hydraulic fluid

The service life of the motors depends greatly on the quality and the cleanliness of the hydraulic fluid.

We recommend minimum cleanliness as follows:

- NAS 1638 class 9,
- SAE class 6,
- ISO/DIS 4406 class 20/18/15.

For fluids at very high temperatures 194 to 239 °F (90 to 115 °C), we recommend a minimum cleanliness class of 19/17/14 according to ISO 4406.

► Rotating speeds

Minimum rotating speed to obtain continuous rotation is 200 rpm (however, in certain conditions, the motor can run at speeds as low as 50 rpm). Maximum rotating speed is given for each model of motor.

► Installation positions

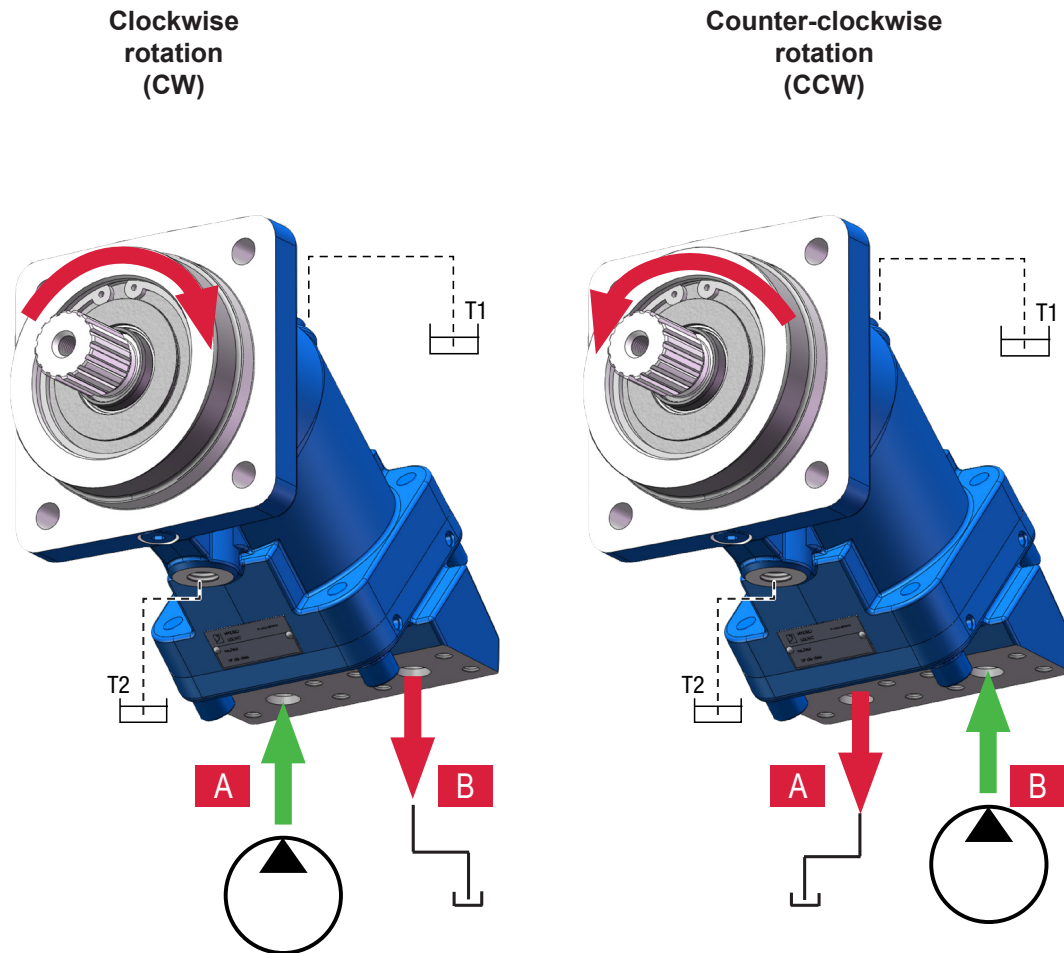
LEDUC motors are made to operate in all positions (see details on page 7).

► Operating temperatures

- As standard, LEDUC motors are fitted with FKM seals (Viton®). Operating temperatures: from -13 to 239 °F (-25 to 115 °C).
- As an option, HYDRO LEDUC proposes NBR seals, for operating temperatures from -40 to 176°F (-40 to 80°C).

► Direction of rotation

The motors rotate clockwise or counter-clockwise depending on the direction of hydraulic flow entering the motor.

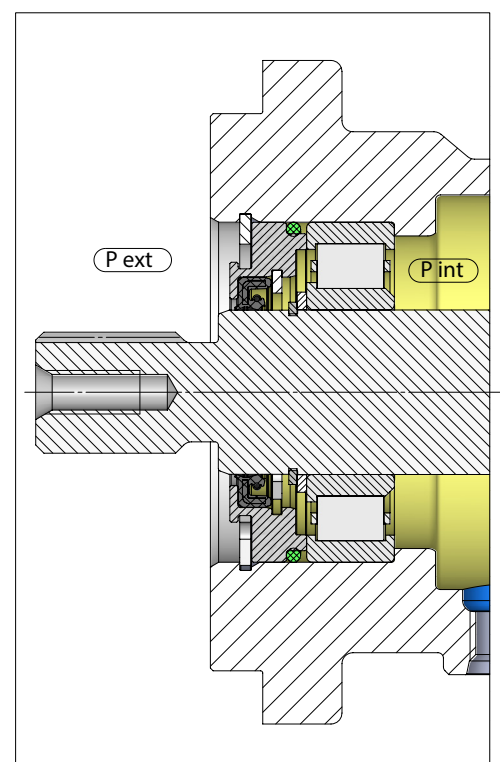


► Drain pressure

It is essential to drain the motor, T1 or T2, to avoid excessive pressures on the shaft seal. Maximum acceptable internal pressure depends on motor rotating speed.

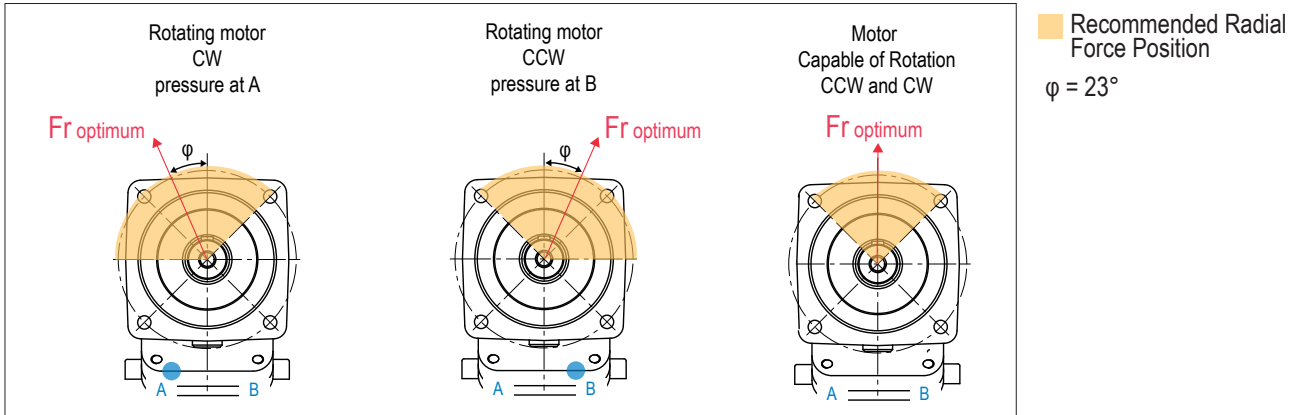
However, following these guidelines will avoid problems during operation:

- Maximum internal pressure (int P) regardless of rotating speed (continuous): 4 bar;
- Maximum internal pressure (int P) regardless of rotating speed (peak): 5.5 bar;
- Minimum pressure in the motor housing: must be greater than ambient (external) pressure (ext P).



► Optimizing Motor Lifespan

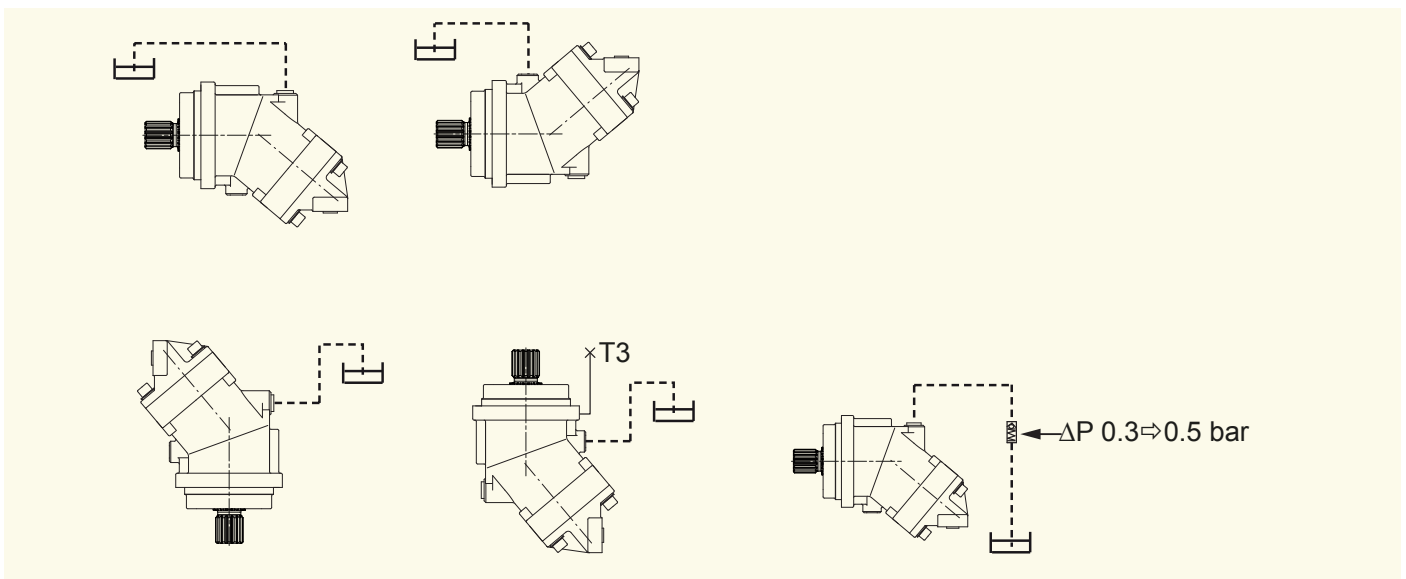
In the case of radial force on the motor shaft, maintaining its orientation (as shown in the diagrams below) improves the motor's lifespan.



► Motor Mounting Positions

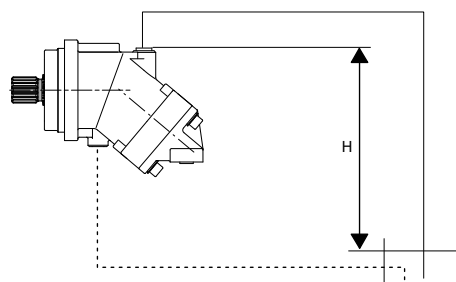
LEDUC motors can be used in any mounting position. When in the 'shaft up' position, ensure that the motor housing is completely filled with fluid (for M series motors, purge the air through connection T3).

T3 port is only available in the M series (except for M25 to M41).



In all cases where the installation level (H) of the motor is positioned higher than the return reservoir of the drain, ensure that the drain is always submerged in the fluid.

Otherwise, add a check valve to the drain as shown in the diagram:



► How to determine the correct motor for your application

Calculations using usual mechanical units:

- N = rotating speed (rpm)
- C = Torque (N.m)
- ΔP = Pressure difference between A and B (bar)
- Cy = Displacement cc/rev
- Q = Flow (l/min)
- η = Efficiency (%)

1. Torque supplied by the hydraulic motor

$$\text{Theoretical torque} = \frac{C_y \times \Delta P}{20 \pi} = C_{th}$$

$$\text{Torque } C = C_{th} \times \eta_{motor}$$

For example: a 50 cc/rev motor with a ΔP of 250 bar will supply a theoretical torque of 200 N.m.
Average global efficiency of the motor is 90%, actual torque is thus: 180 N.m).

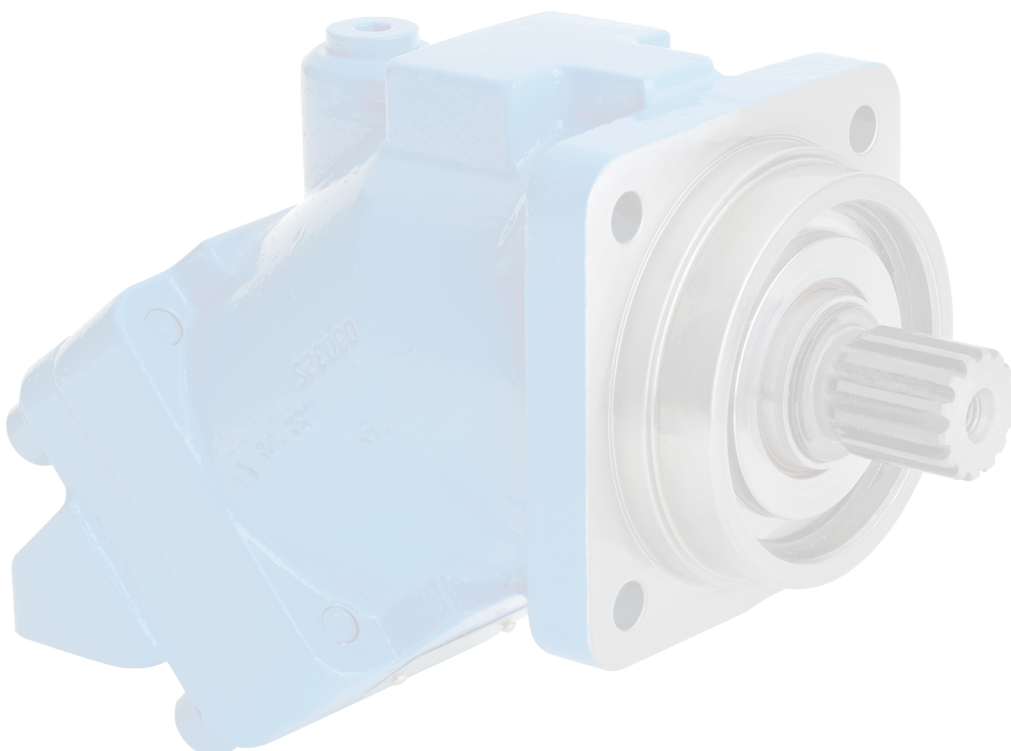
2. Rotating speed of the motor

The rotating speed of the hydraulic motor depends on the flow Q which goes through it, and on the displacement of the motor.

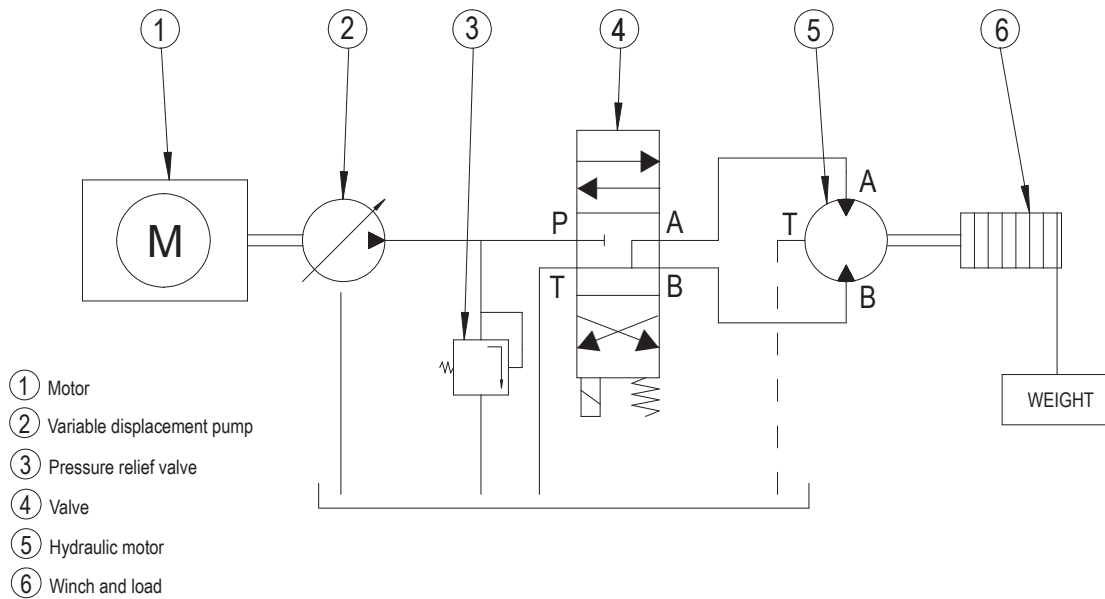
$$N = \frac{Q}{\text{Displ.}} \times 1000$$

► Technical assistance

Our Customer Service would be pleased to assist in determining the right motor for your application.



► Example



The receiving organ (winch) ⑥ needs to rotate at $N = 400$ rpm and supply an actual torque of 200 N.m.
 The hydraulic pump ② is capable of operating at pressure P up to 350 bar.

1. Calculating the displacement of the hydraulic motor:

$$C_{th} = \frac{\text{Disp.} \times \Delta P}{20 \pi} \text{ thus Disp.} = 35.9 \text{ cc/rev}$$

In the LEDUC range, choose a motor with a displacement of 32 cc/rev or 41 cc/rev.

2. Calculating the flow Q which the pump needs to supply:

$$Q = \frac{N \times \text{Disp.}}{1000}$$

Corresponding flow:

- For 32 cc/rev motor, $Q = 12.8$ l/min
- For 41 cc/rev motor, $Q = 16.4$ l/min

CHARACTERISTICS OF THE M SERIES MOTORS

| Motor model | Displacement (cc/rev) | Continuous max. speed (1) (rpm) | Intermittent max. speed (1) (rpm) | Max. flow absorbed (l/mn) | Torque (N.m/bar) | Torque at 350 bar (N.m) | Theoretical maximal power at 400 bar (kW) | Max. allowable pressure continuous / peak (bar) | Weight (kg) |
|-------------|-----------------------|---------------------------------|-----------------------------------|---------------------------|------------------|-------------------------|---|---|-------------|
| M 5 | 5 | 8000 | 8800 | 40 | 0.08 | 28 | 26.6 | 400 / 450 | 4.4 |
| M 12 | 12 | 8000 | 8800 | 96 | 0.19 | 67 | 64 | 400 / 450 | 5.5 |
| M 18 | 18.0 | 8000 | 8800 | 144 | 0.29 | 100 | 96 | 400 / 450 | 5.5 |
| M 25 | 24.9 | 6300 | 6900 | 157 | 0.40 | 139 | 104.5 | 400 / 450 | 11.5 |
| M 28 | 27.7 | 6300 | 6900 | 175 | 0.44 | 154 | 116.3 | 400 / 450 | 11.5 |
| M 32 | 32.1 | 6300 | 6900 | 202 | 0.51 | 179 | 134.8 | 400 / 450 | 11.5 |
| M 35 | 34.8 | 6300 | 6900 | 219 | 0.55 | 192.5 | 146 | 400 / 450 | 11,5 |
| M 41 | 41.1 | 5600 | 6200 | 230 | 0.65 | 229 | 153.4 | 400 / 450 | 11.5 |
| M 41 R (2) | 41,1 | 5000 | 5500 | 206 | 0,65 | 229 | 137 | 400 / 450 | 18 |
| M 45 | 45.4 | 5000 | 5500 | 227 | 0.72 | 253 | 151.3 | 400 / 450 | 18 |
| M 50 | 50.3 | 5000 | 5500 | 252 | 0.80 | 280 | 167.6 | 400 / 450 | 18 |
| M 63 | 63 | 5000 | 5500 | 315 | 1.00 | 351 | 210 | 400 / 450 | 18 |
| M 80 | 80.4 | 4500 | 5000 | 362 | 1.28 | 448 | 241.2 | 400 / 450 | 23 |
| M 90 | 90 | 4500 | 5000 | 405 | 1.43 | 501 | 270 | 400 / 450 | 23 |
| M 108 | 108.3 | 4000 | 4400 | 433 | 1.72 | 603 | 288.8 | 400 / 450 | 23 |
| M 108 R (3) | 108.3 | 3400 | 4500 | 368 | 1.72 | 603 | 245.4 | 400 / 450 | 35 |
| M 125 | 125.4 | 3400 | 4500 | 426 | 2.00 | 699 | 284.2 | 400 / 450 | 35 |
| M 160 | 160 | 3600 | 4000 | 576 | 2.55 | 891 | 384 | 400 / 450 | 48.5 |
| M 180 | 180.6 | 3600 | 4000 | 650 | 2.87 | 1006 | 433.4 | 400 / 450 | 48.5 |

(1) For higher speeds, please contact us.

(2) The M 41 R motor is in the frame size of the M 45.

► Acceptable forces applied to motor shaft

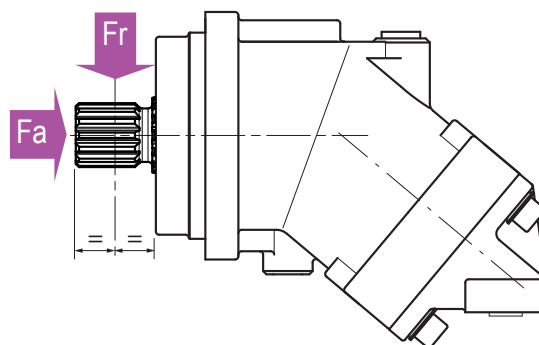
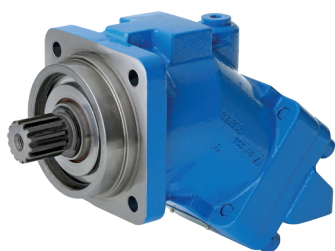
| Motor model | | 5 | 12 | 18 | 25 | 28 | 32 | 35 | 41 | 41 R | 45 | 50 | 63 | 80 | 90 | 108 | 108 R | 125 | 160 | 180 |
|-------------|---------|-----|------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
| Fr | N | 710 | 2800 | 4000 | 6000 | 6200 | 6500 | 6500 | 7000 | 7000 | 6500 | 7500 | 9000 | 10500 | 11000 | 11500 | 12500 | 14500 | 18000 | 20000 |
| Fa | N/bar * | 10 | 15 | 20 | 27 | 28 | 30 | 34 | 40 | 40 | 40 | 40 | 50 | 60 | 67 | 80 | 80 | 86 | 85 | 95 |

Fr: radial force measured at mid point of length of shaft.

Fa: axial force which tends to push the shaft inwards.

* Differential pressure between A and B.

For other forces, please contact us.



| M | ... | A | ... | ... | ... | ... | ... | ... | ... | ... | SP |
|----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|----|
| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | |

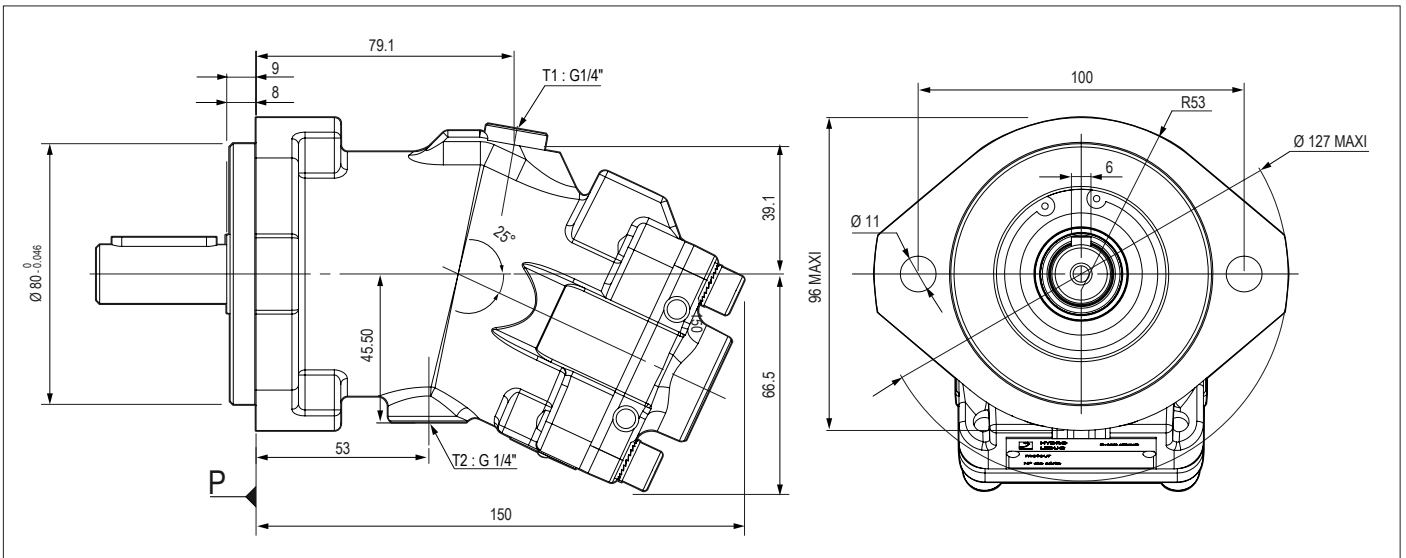
To obtain the code for your motor, complete the different parameters 02, 04, 05, 06, 07, 08, 09 and 10 in the table on the left according to the options you require (see table below).

| Motor | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--------------------------|------------------|--------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|----|------|----|
| 01 | Motor | | | | | | | | | | | | | | | | | | | M | | | | |
| Displacement | | | | | | | | | | | | | | | | | | | | | | | | |
| 02 | | 5 | 12 | 18 | 25 | 28 | 32 | 35 | 41 | 41R | 45 | 50 | 63 | 80 | 90 | 108 | 108R | 125 | 160 | 180 | | | | |
| Mounting flange | | | | | | | | | | | | | | | | | | | | | | | | |
| 03 | | CETOP 2 bolts | 4 bolts ISO 3019-2 | | | | | | | | | | | | | | | | | A | | | | |
| Shaft | | | | | | | | | | | | | | | | | | | | | | | | |
| 04 | DIN 5480 splined | - | W25 | W25 | W25 | W30 | W30 | W30 | W30 | W30 | W30 | W30 | W30 | W30 | W40 | W40 | W40 | W45 | W45 | W50 | W50 | W1 | | |
| | | - | - | - | W30 | W25 | W25 | W25 | - | - | W35 | W35 | W35 | W35 | - | - | W40 | W40 | - | - | - | - | W2 | |
| | DIN 6885 keyed | Ø 18 | Ø 25 | Ø 25 | Ø 25 | Ø 30 | Ø 30 | Ø 30 | Ø 30 | - | Ø 30 | Ø 30 | Ø 30 | Ø 40 | Ø 40 | Ø 40 | Ø 45 | Ø 45 | Ø 50 | Ø 50 | - | - | D1 | |
| | | - | Ø 20 | - | Ø 30 | Ø 25 | Ø 25 | Ø 25 | - | Ø 35 | Ø 35 | Ø 35 | Ø 35 | - | - | - | Ø 40 | - | - | - | - | - | - | D2 |
| Inlet ports A and B | | | | | | | | | | | | | | | | | | | | | | | | |
| 05 | SAE flange ports | Bottom | 0 | - | - | - | - | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | L0 | |
| | | Rear | 0 | - | - | - | • | • | • | - | • | • | • | • | • | • | • | • | • | • | • | • | • | M0 |
| | | Side | 0 | - | - | - | • | • | • | - | • | • | • | • | • | • | • | • | • | • | • | • | • | N0 |
| | Threaded | Side | 1 | - | - | - | • | • | • | - | • | • | • | • | • | • | • | • | • | • | • | • | • | N1 |
| | | | 0 | - | • | • | • | • | • | - | • | • | • | • | • | • | • | • | - | - | - | - | - | Q0 |
| | | Rear | 1 | - | - | - | • | • | • | - | • | • | • | • | • | • | • | • | - | - | - | - | - | Q1 |
| 0 | • | • | • | • | • | • | • | - | • | • | • | • | • | • | • | • | - | - | - | - | - | - | P0 | |
| <div style="border: 1px solid red; padding: 5px; display: inline-block;"> 0 = Without suitability for valves 1 = Compatible with flushing valve </div> | | | | | | | | | | | | | | | | | | | | | | | | |
| Drain ports T1 and T2 | | | | | | | | | | | | | | | | | | | | | | | | |
| 06 | | - | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | M2 | |
| | | • | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | G2 | |
| Suitable for use of speed sensor | | | | | | | | | | | | | | | | | | | | | | | | |
| 07 | Yes | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | 1 | |
| | No | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | 0 | |
| Speed sensor | | | | | | | | | | | | | | | | | | | | | | | | |
| 08 | 1 frequency signal | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | 1 | |
| | 1 signal with connector | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | 1P | |
| | 2 signals with connector | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | 2P | |
| | Without | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | 0 | |
| Flushing valve | | | | | | | | | | | | | | | | | | | | | | | | |
| 09 | Without | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | SV | |
| | Flow rate | 4,25 l/min* | - | - | - | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | VB04 | |
| | | 10 l/min* | - | - | - | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | VB10 | |
| | | 14 l/min* | - | - | - | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | VB14 | |
| Low temperature option | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | Yes (NBR) | - | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | N | |
| | No (FKM) | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | F | |

Legend:
 • Existing model
 ○ On request
 - Not available

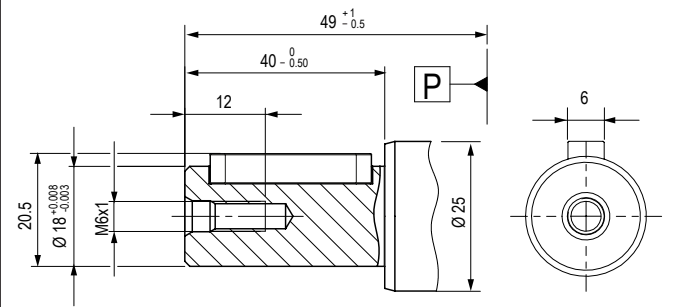
*(Δp = 25 bar)

CETOP flange, 2 bolts



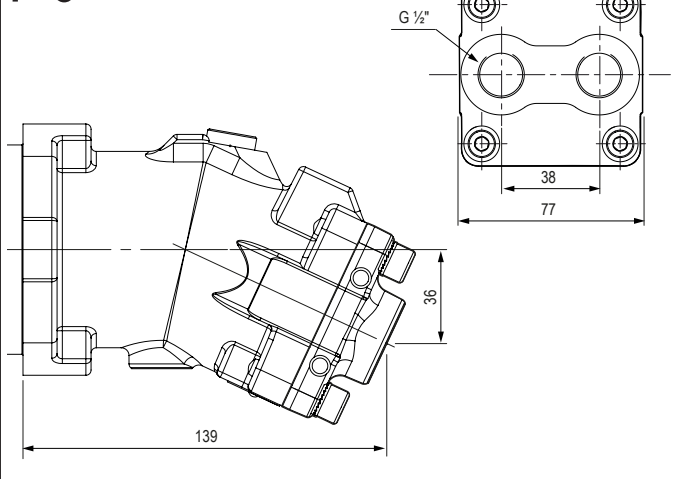
► Shaft end

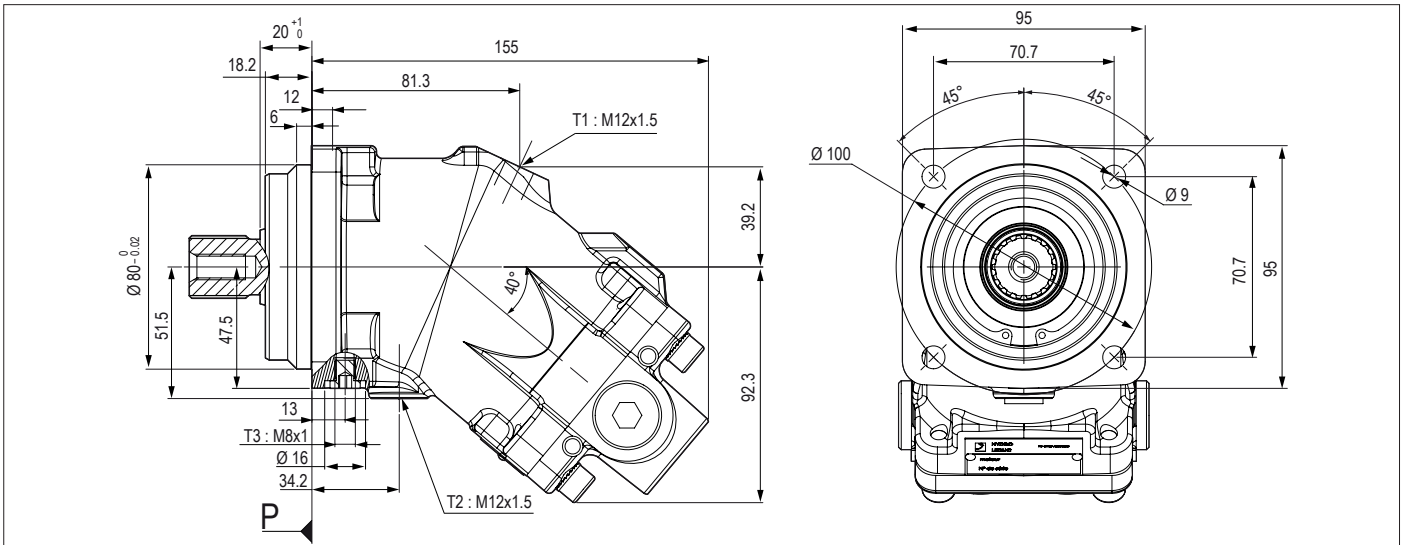
D1 Cylindrical keyed shaft $\varnothing 18$
AS 6 x 6 x 32



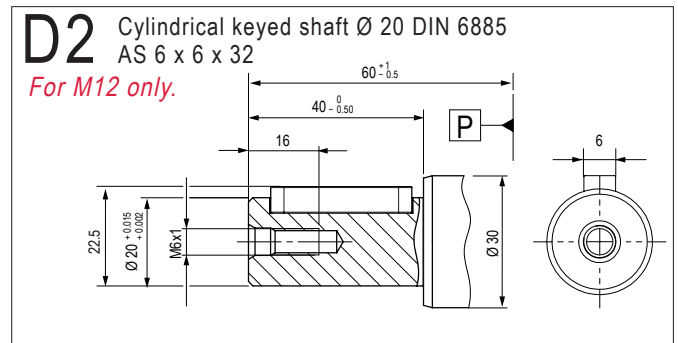
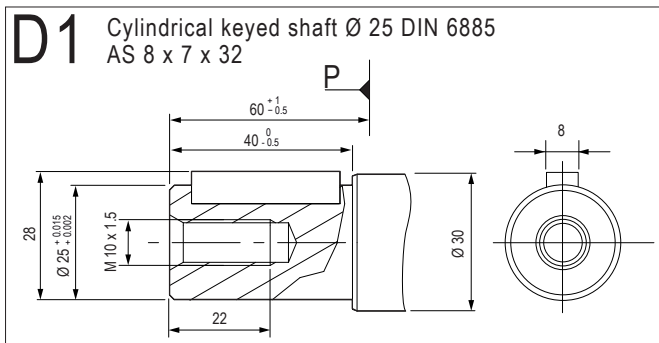
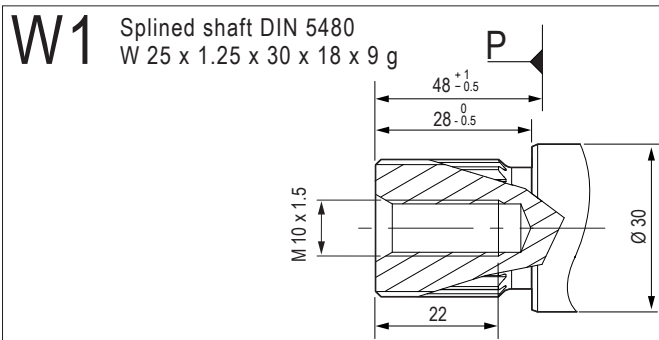
► Inlet ports

P0 Rear threaded ports A and B

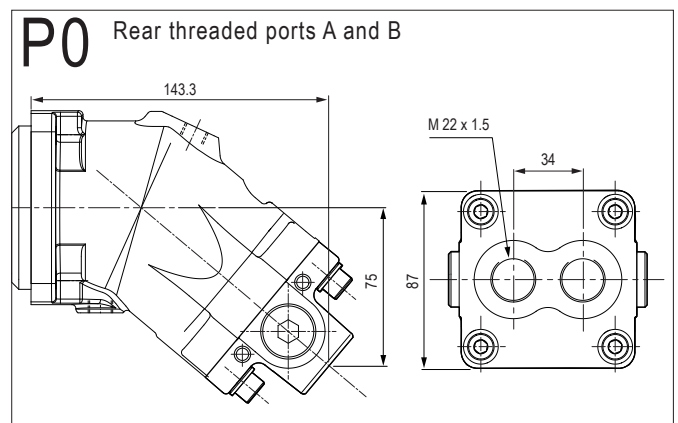
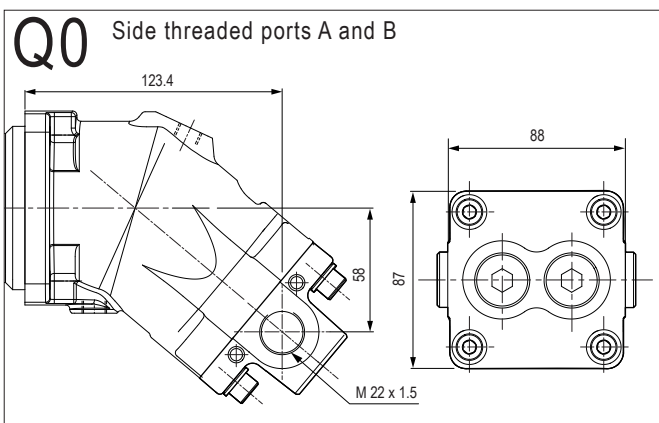




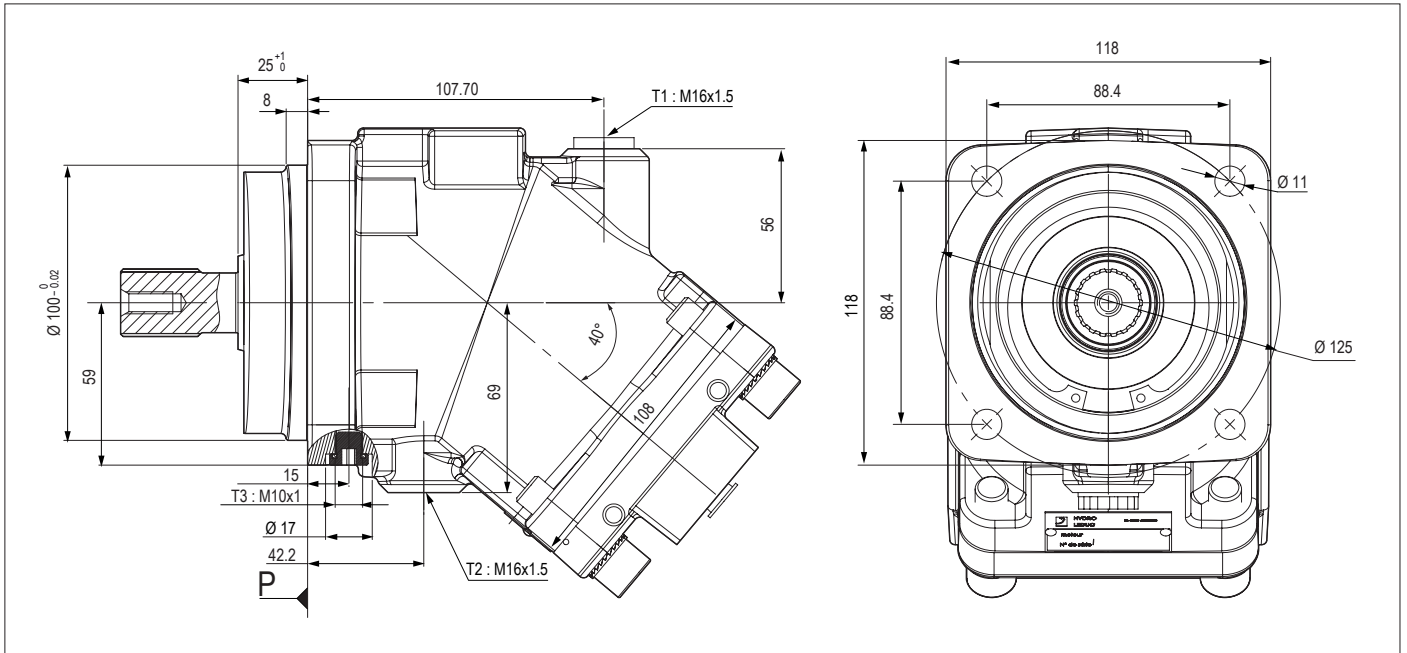
► Shaft



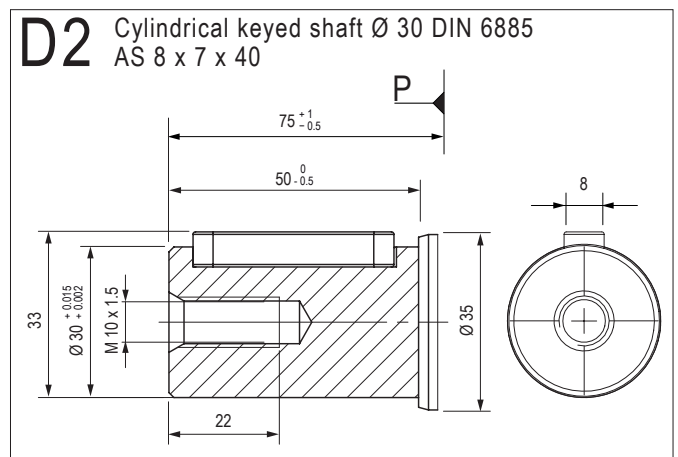
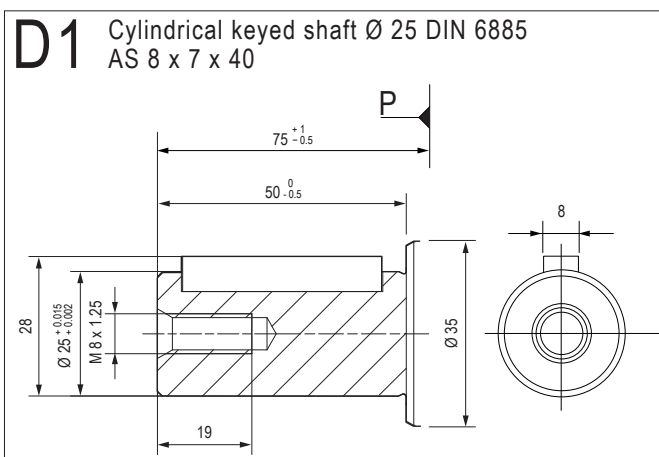
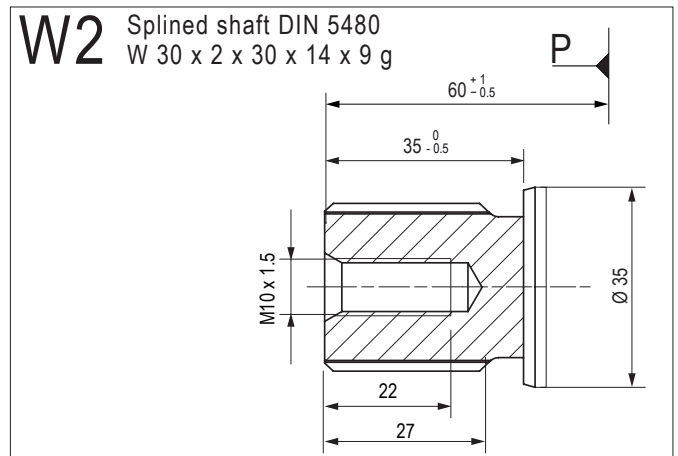
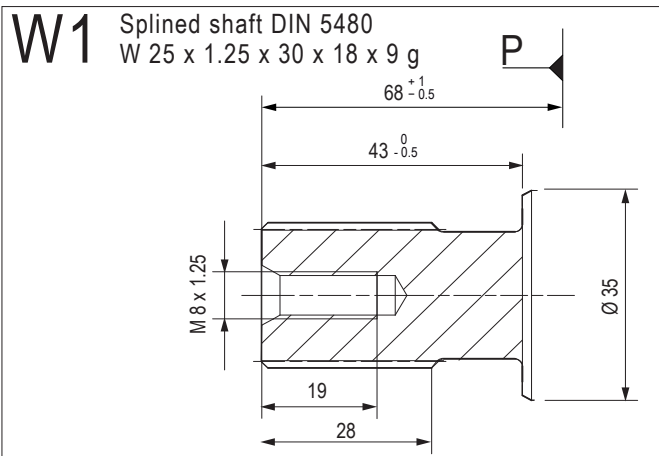
► Inlet ports



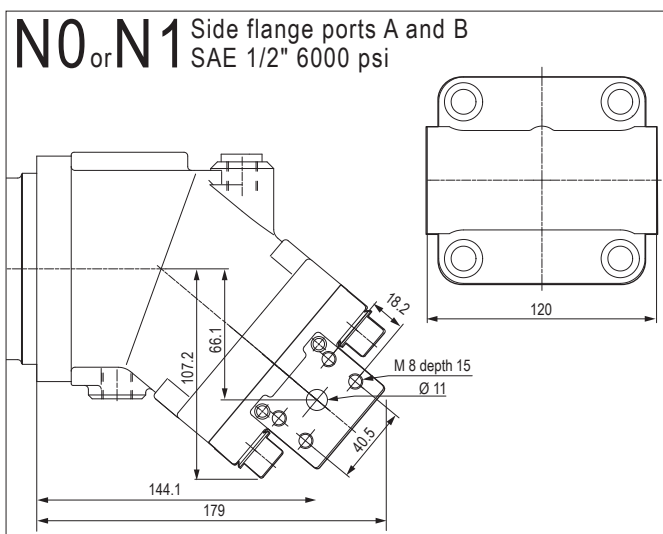
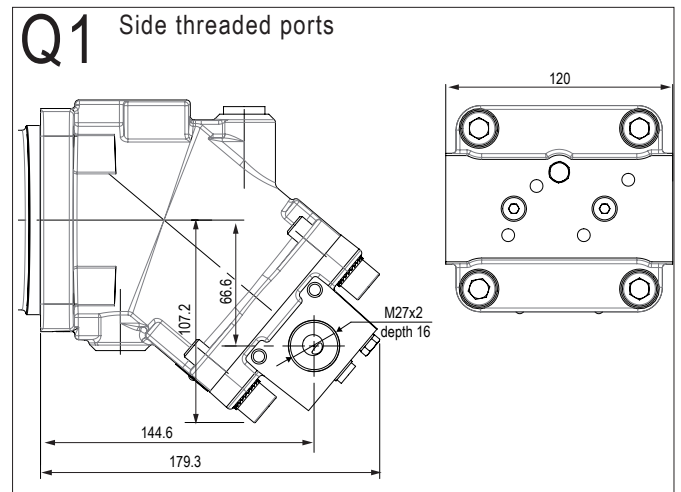
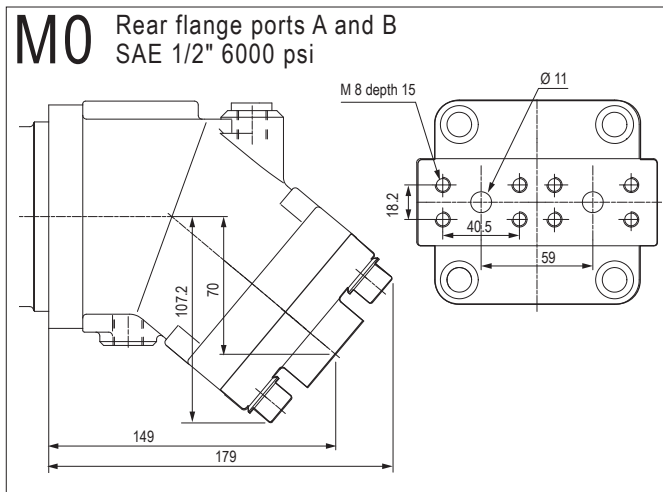
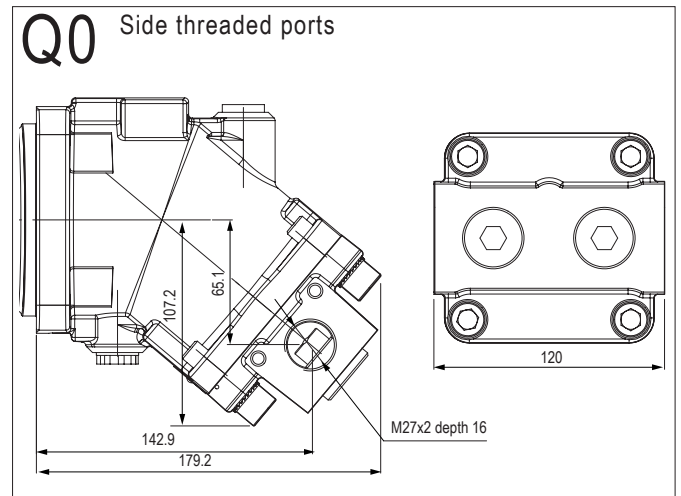
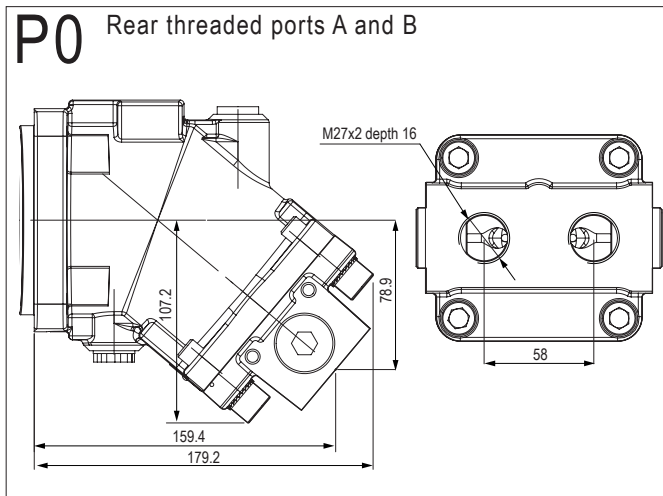
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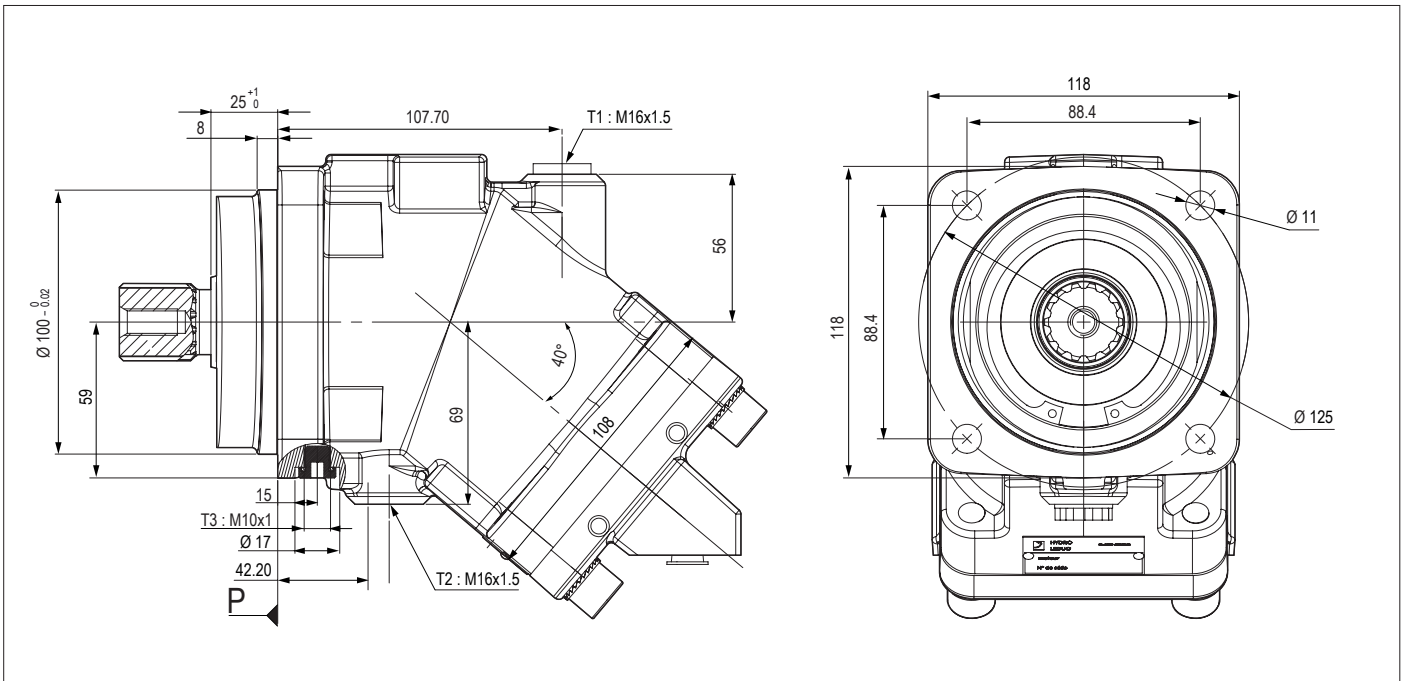


► Shaft end

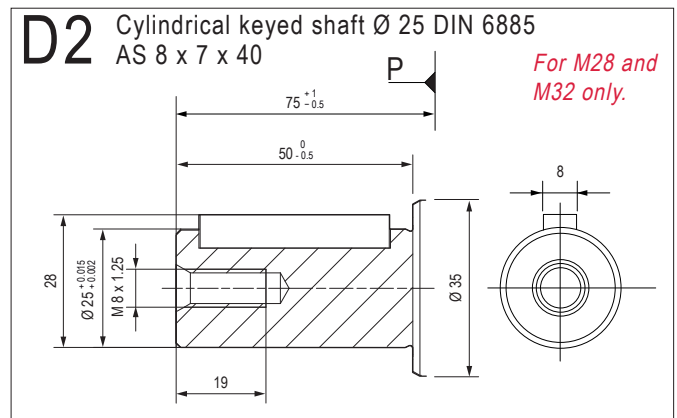
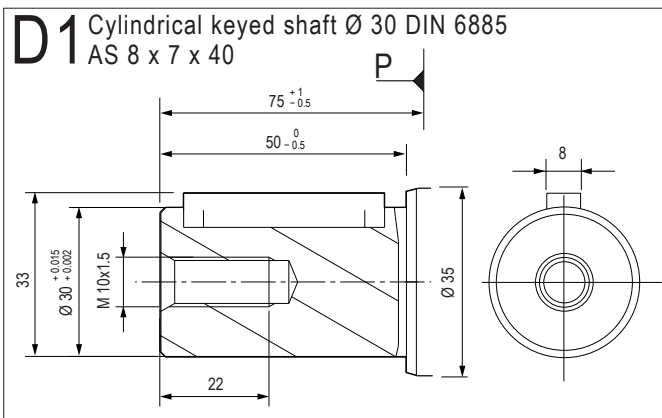
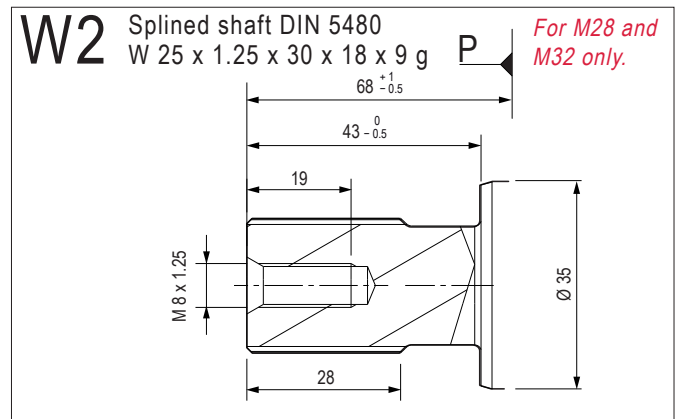
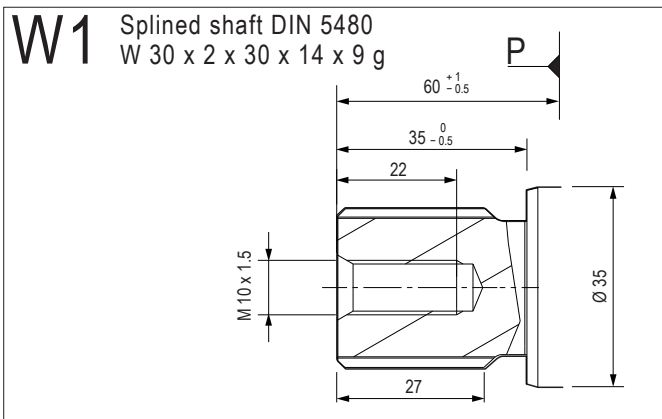


► Inlet ports

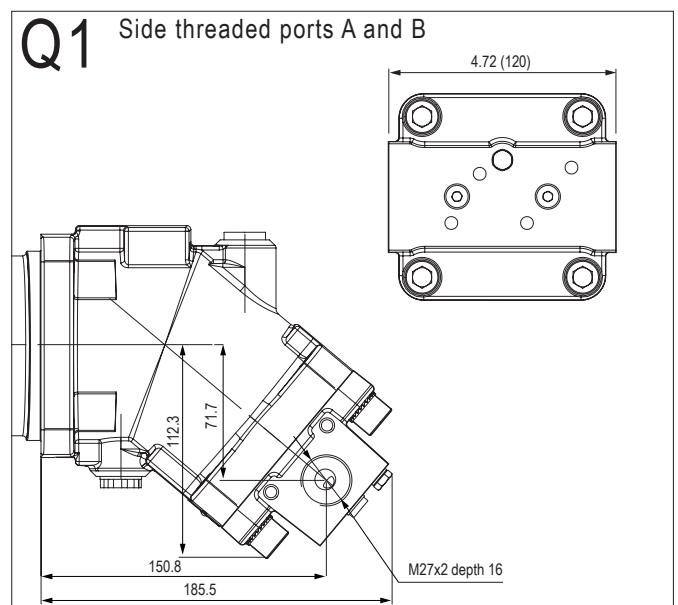
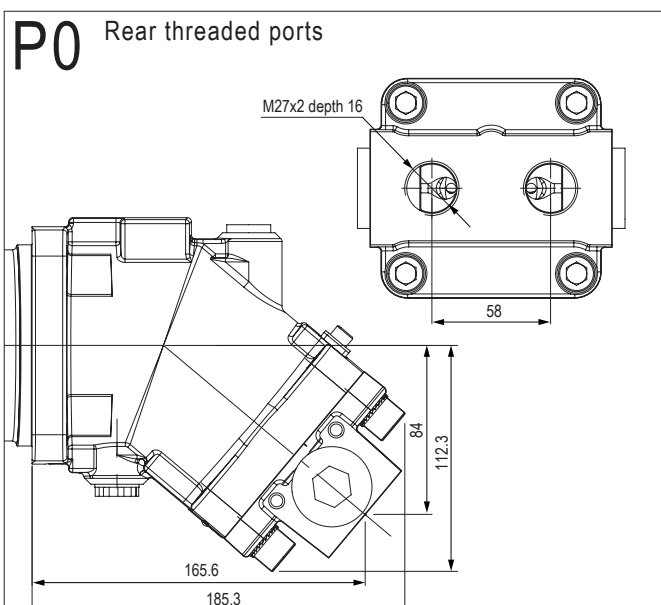
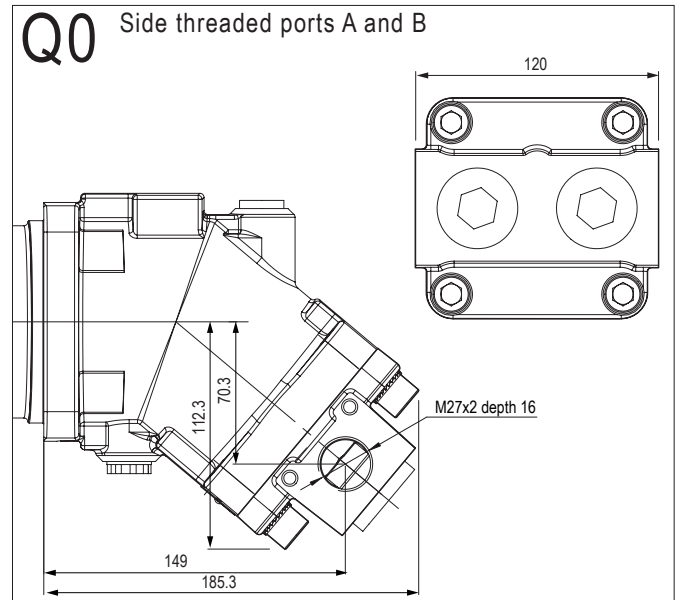
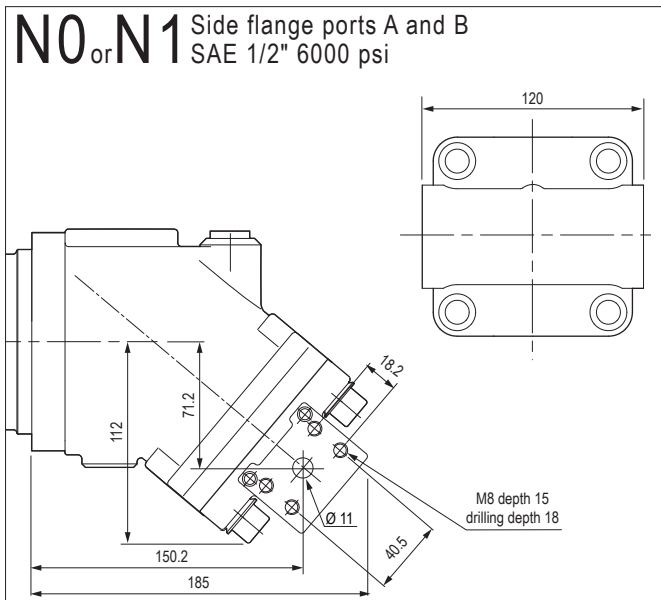
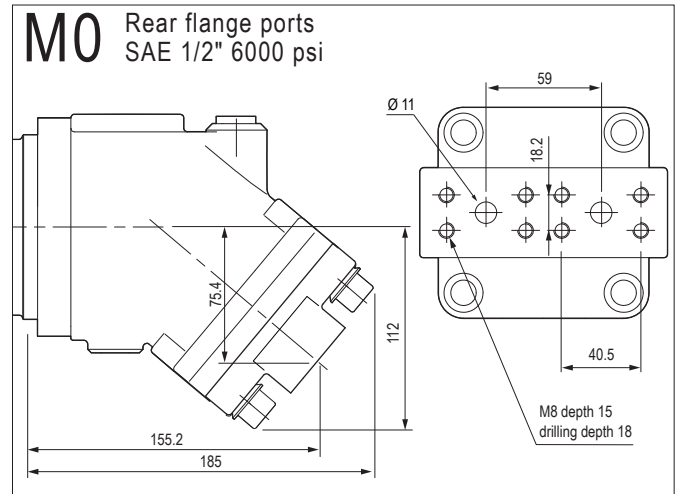
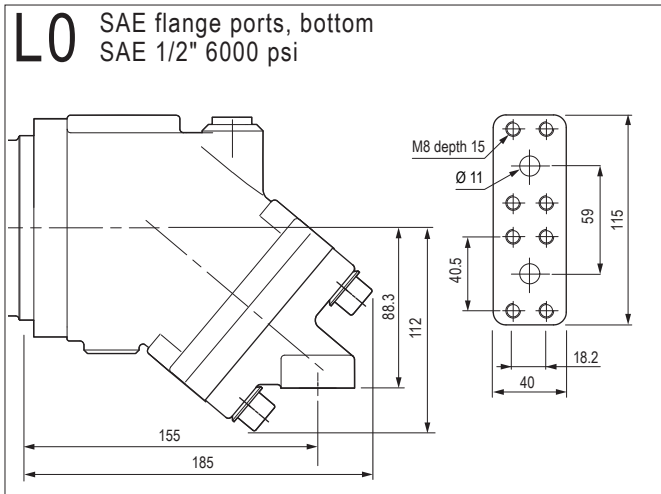




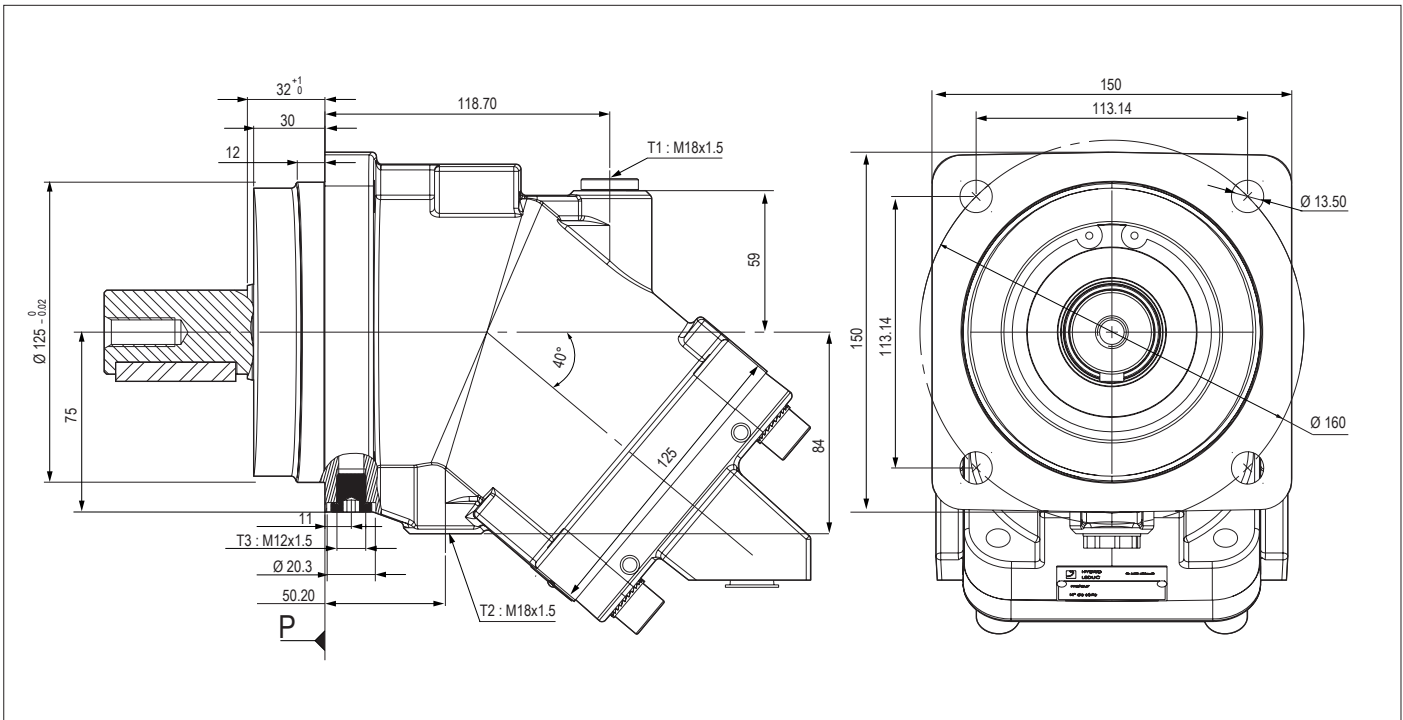
► Shaft end



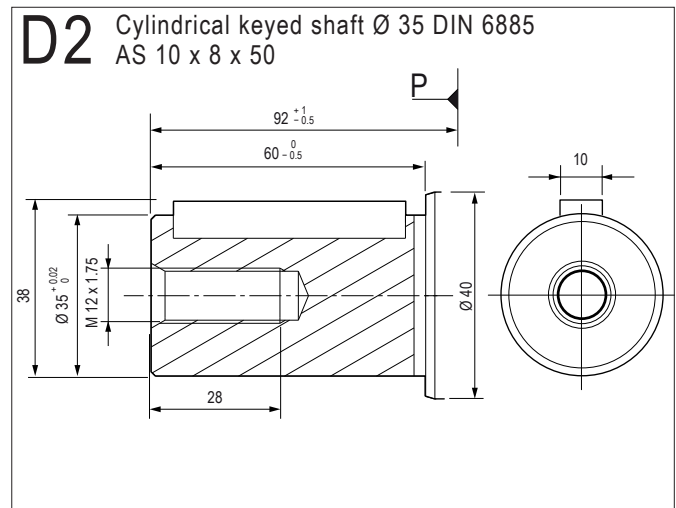
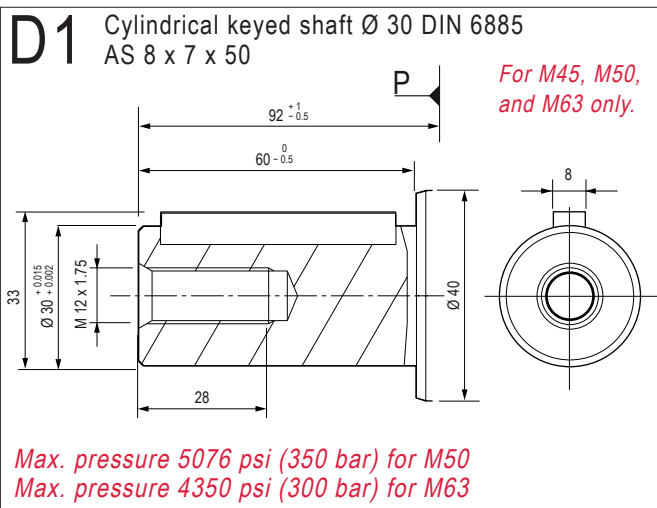
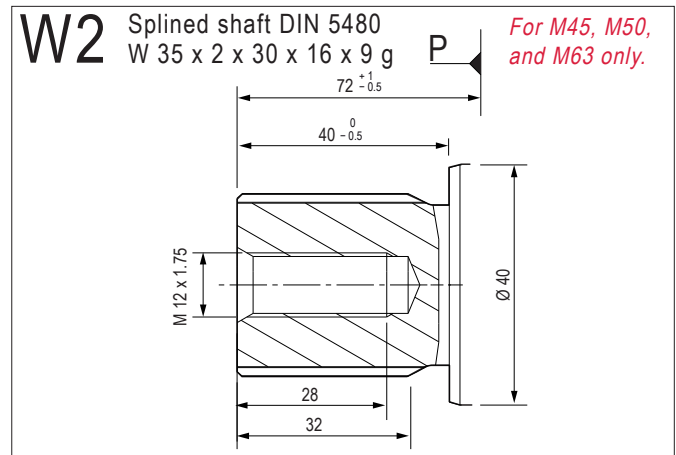
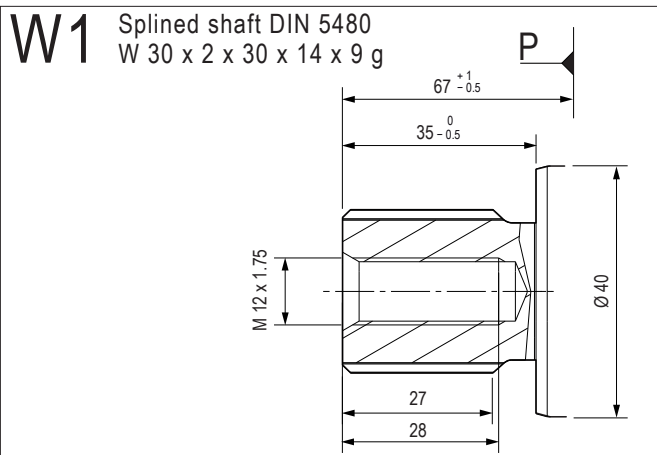
► Inlet ports



Dimensions in mm are given only as an indication.

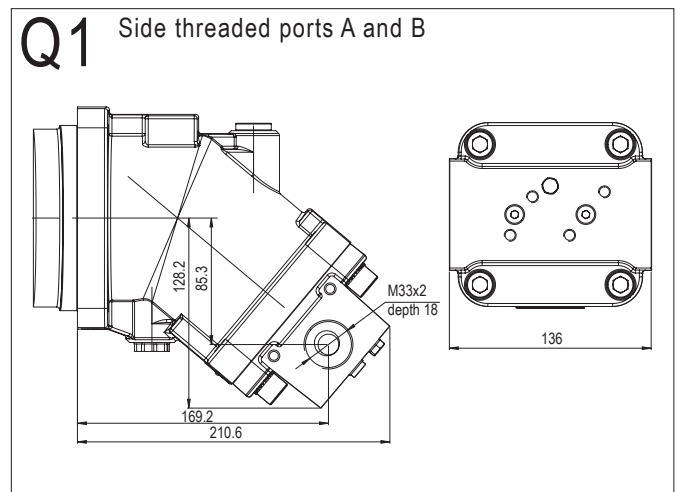
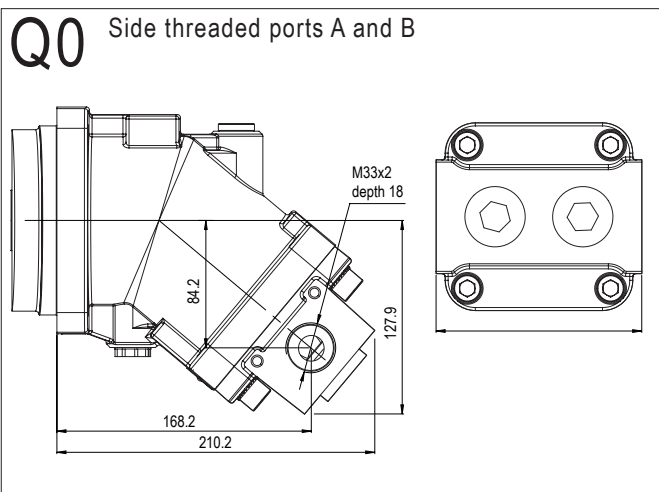
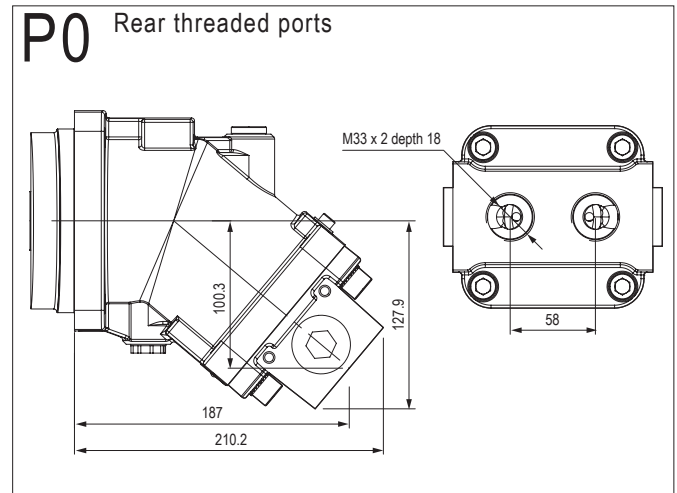
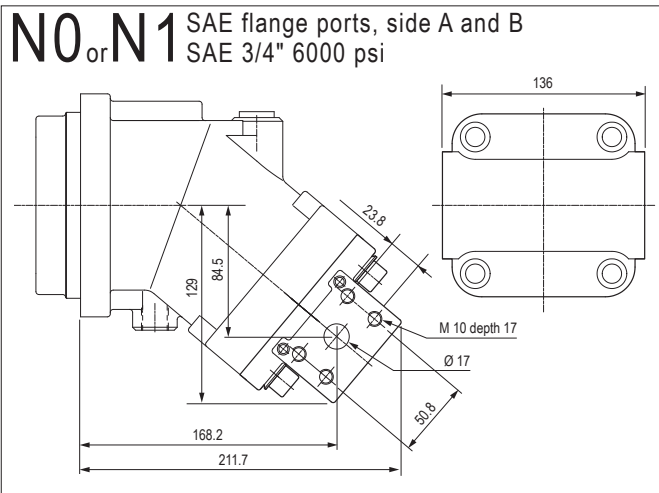
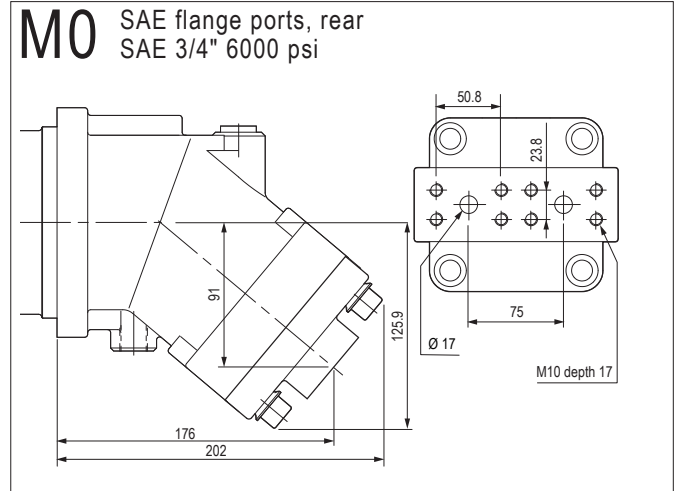
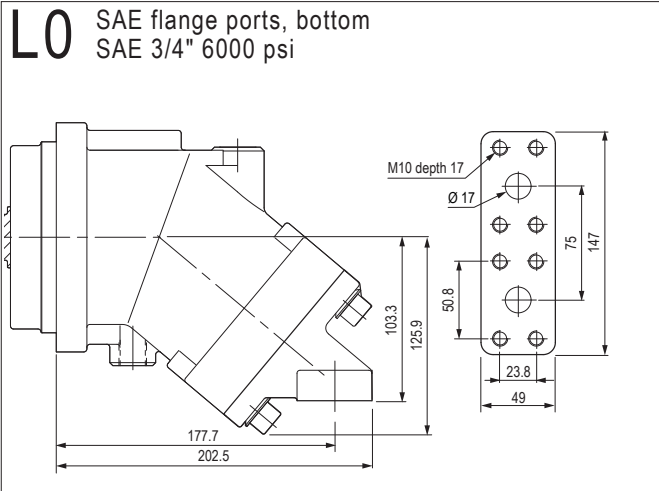


► Shaft end

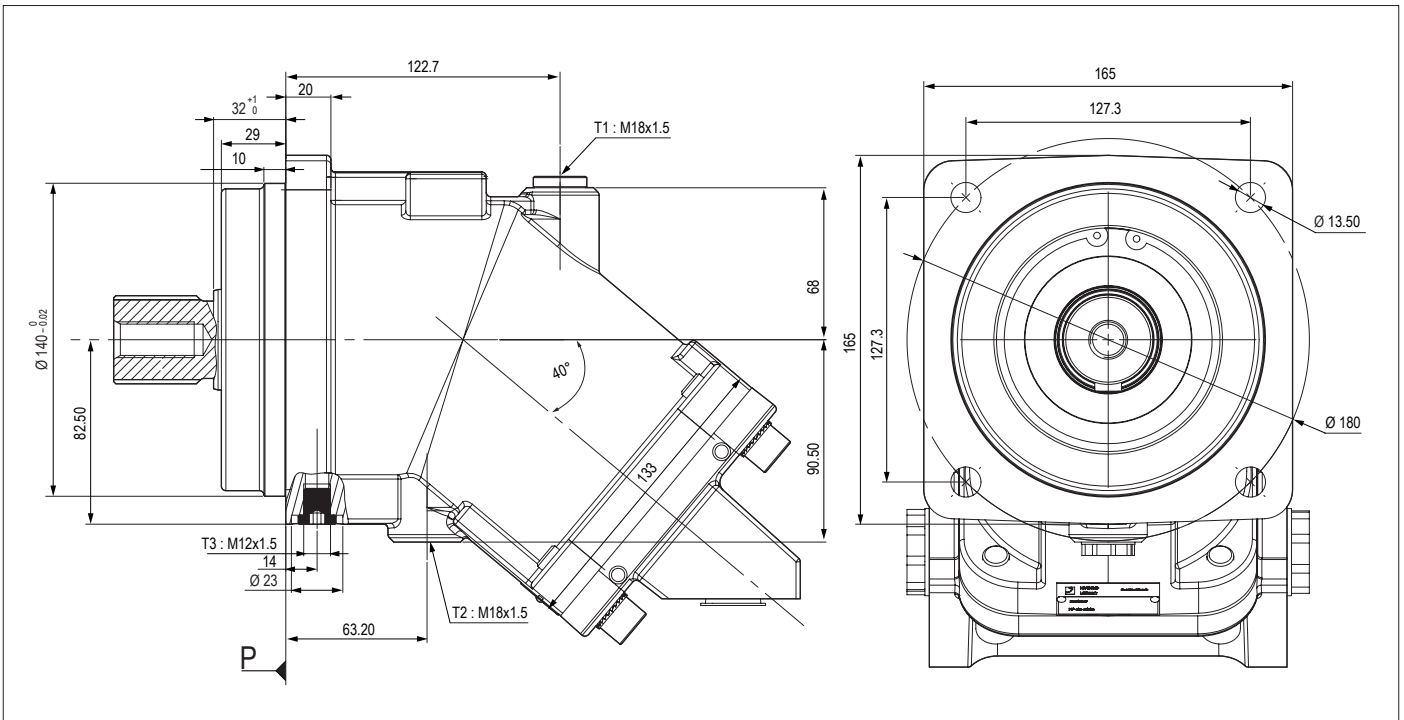


Dimensions in mm are given only as an indication.

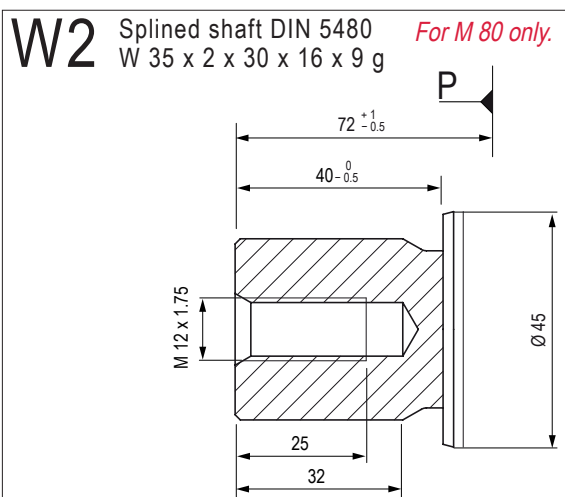
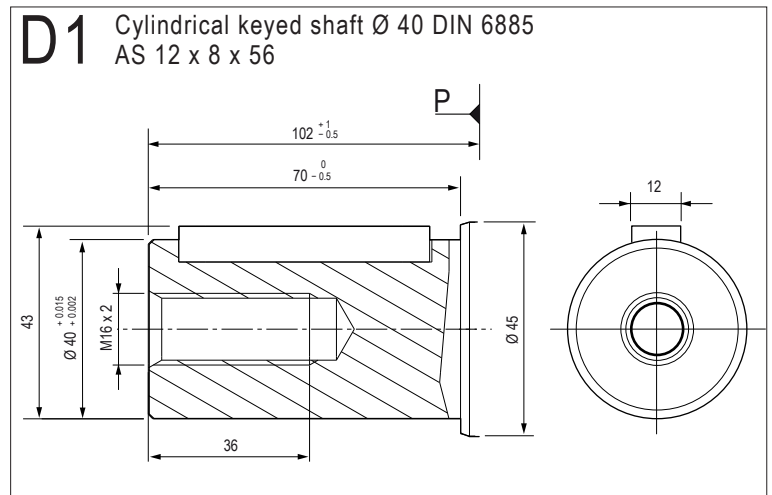
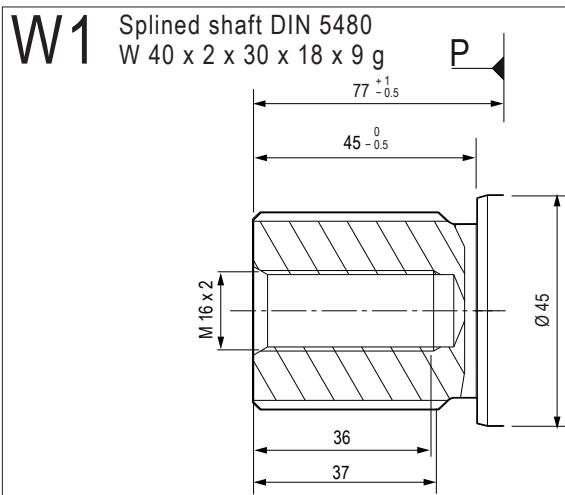
► Inlet ports



M series

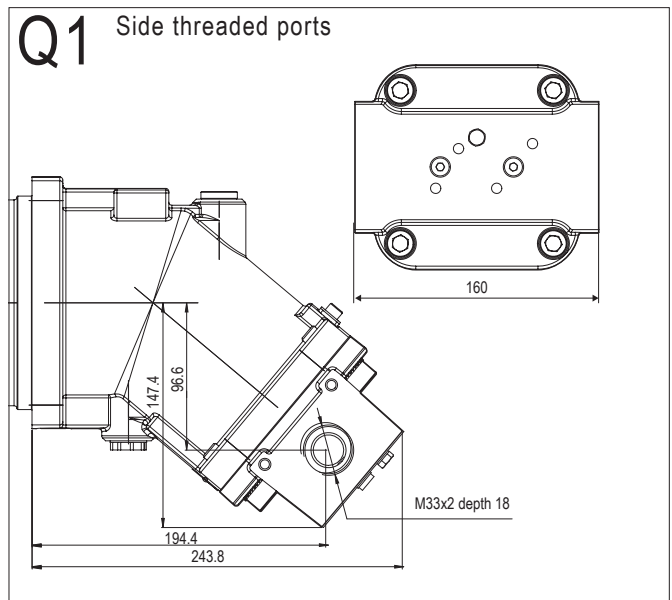
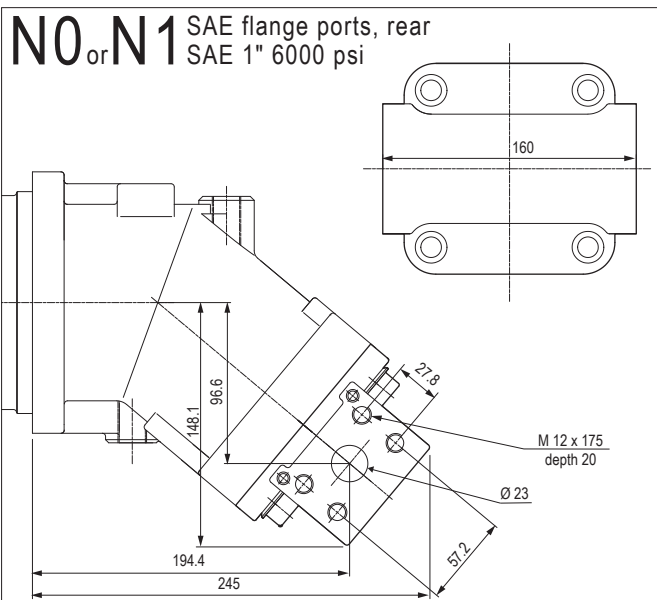
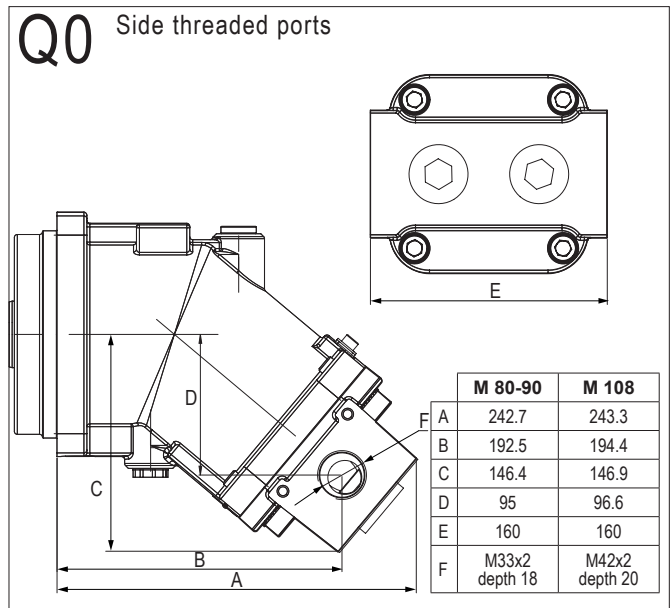
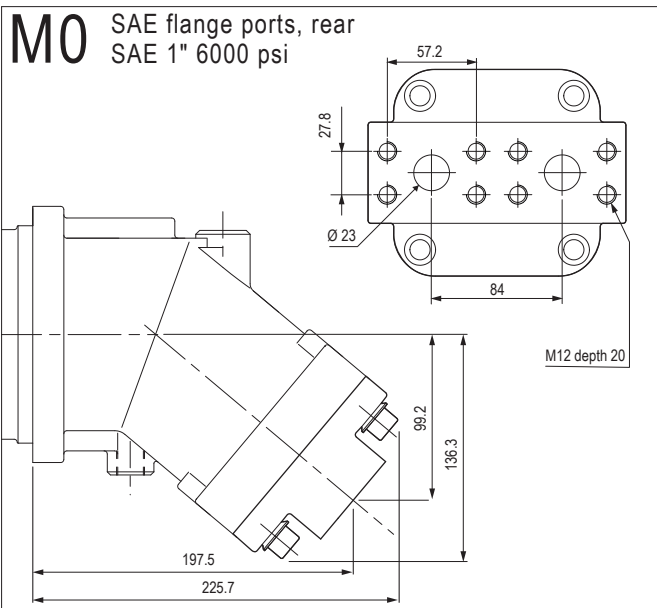
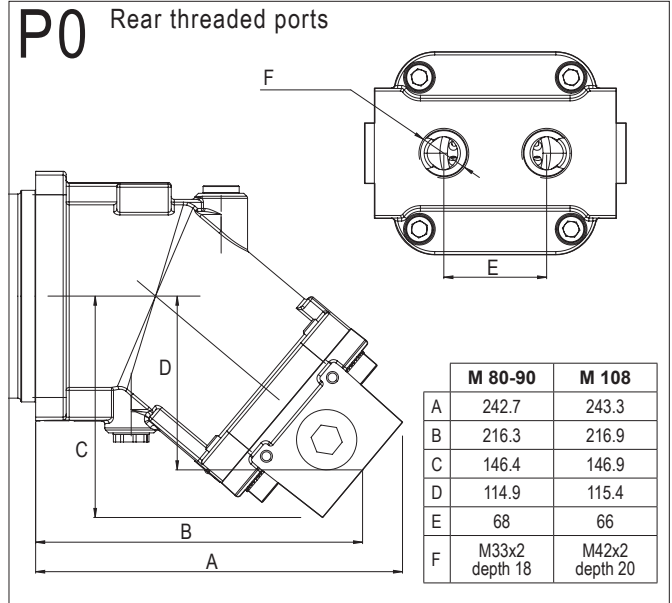
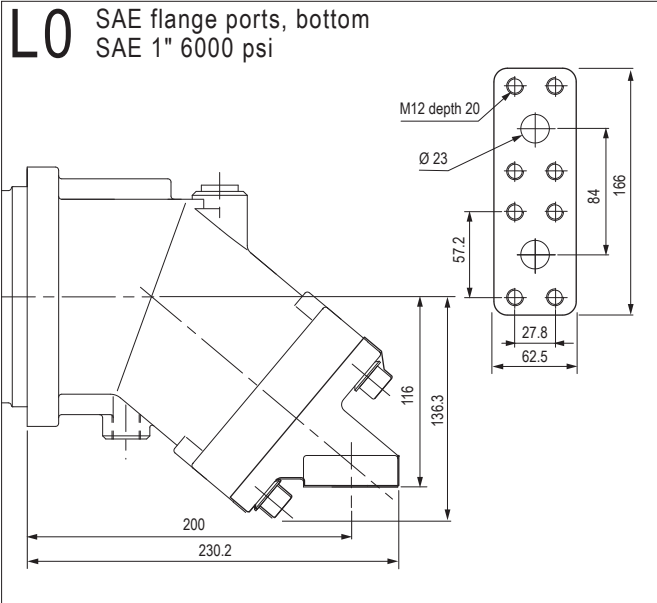


► Shaft end

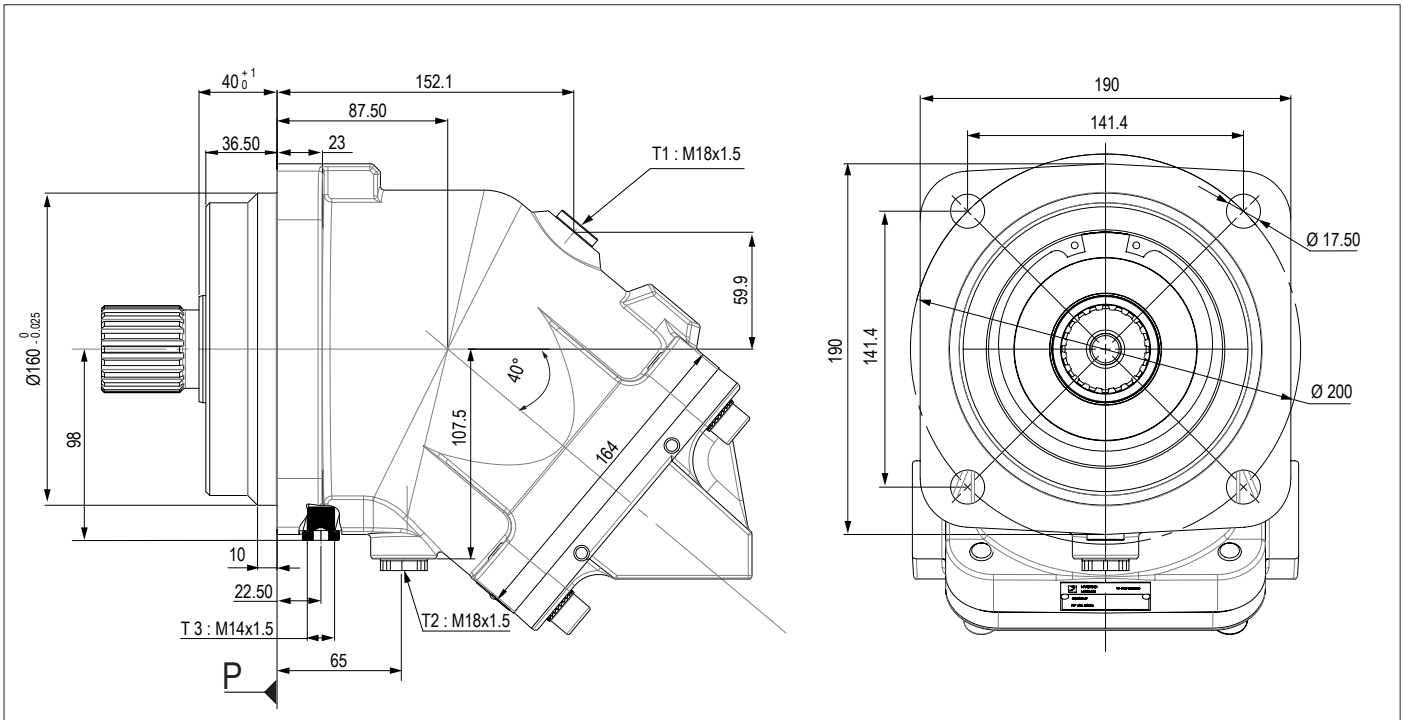


Dimensions in mm are given only as an indication.

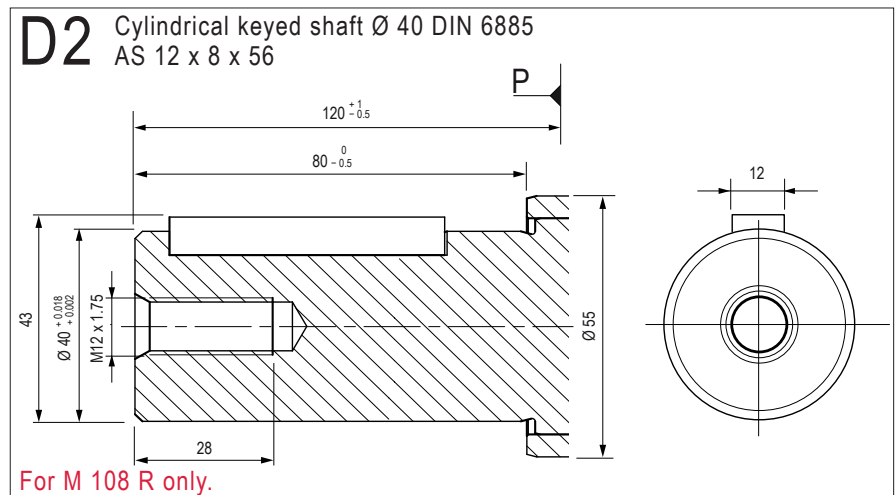
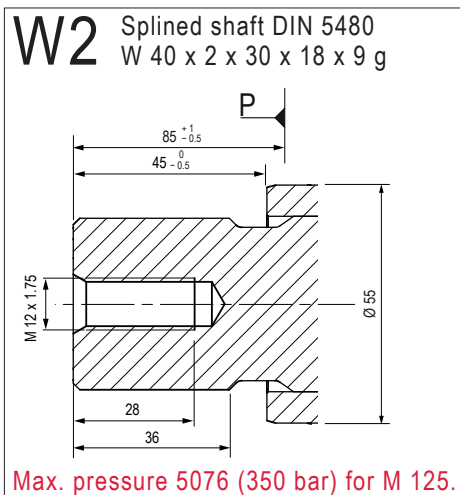
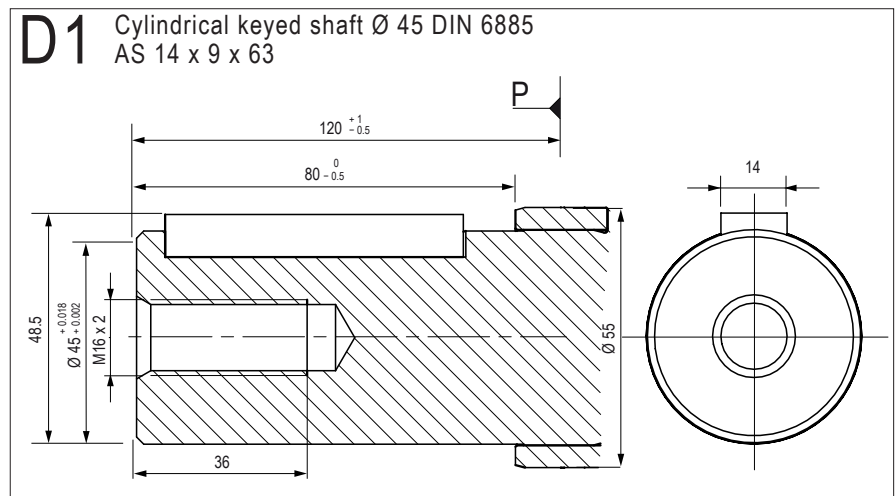
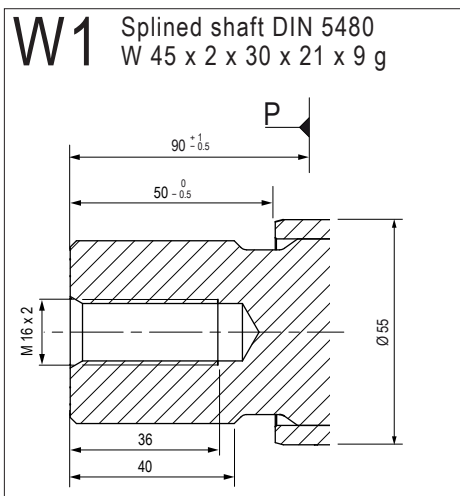
► Inlet ports



Dimensions in mm are given only as an indication.



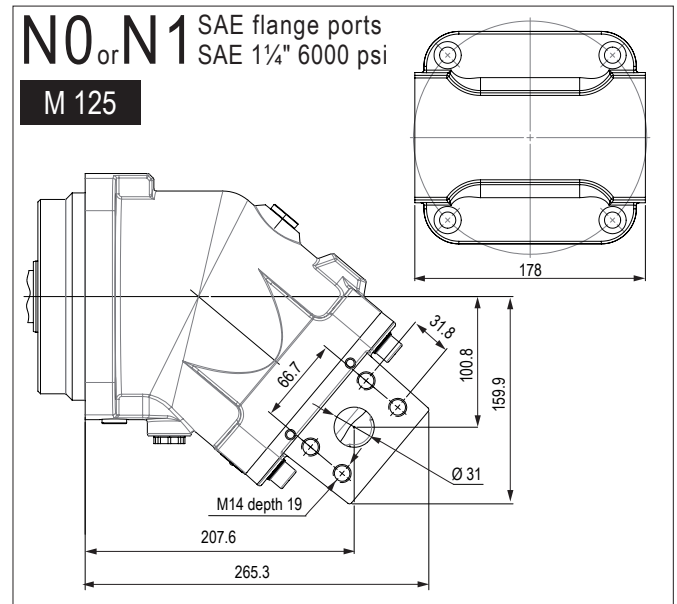
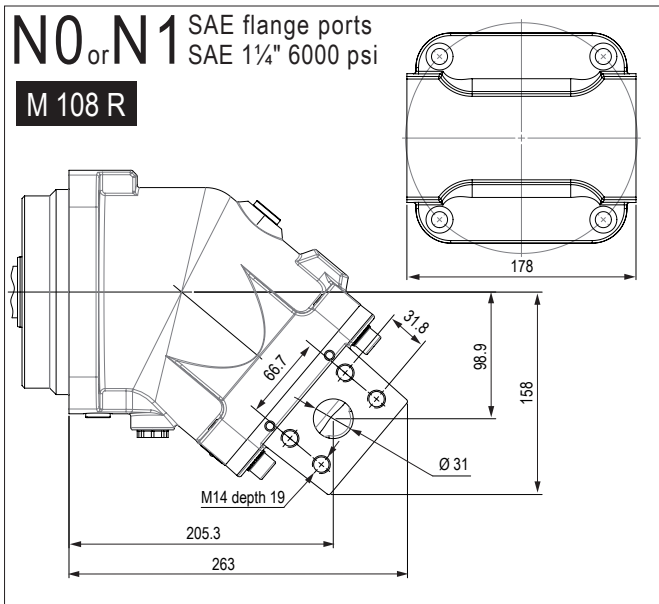
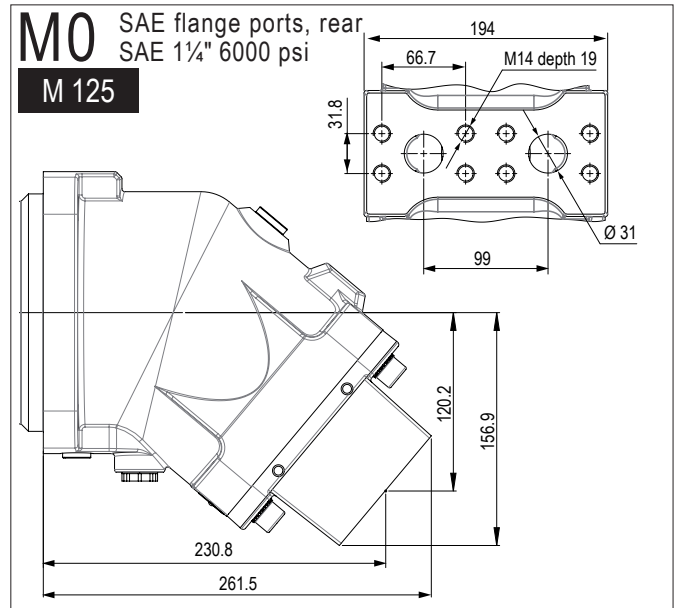
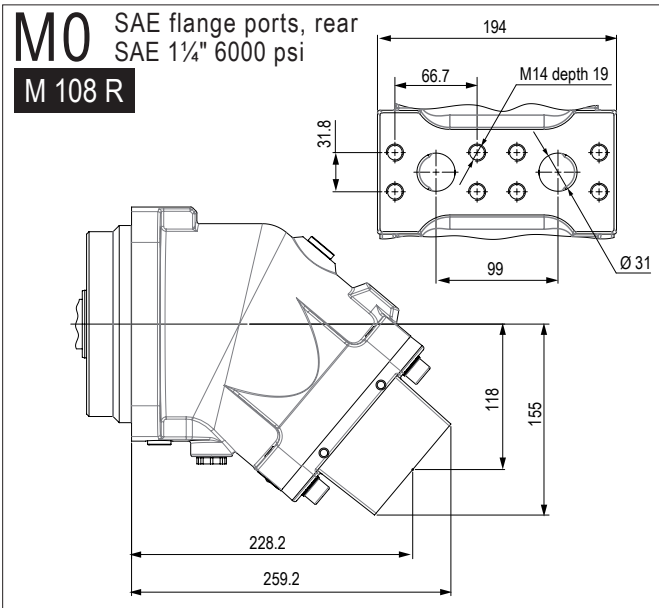
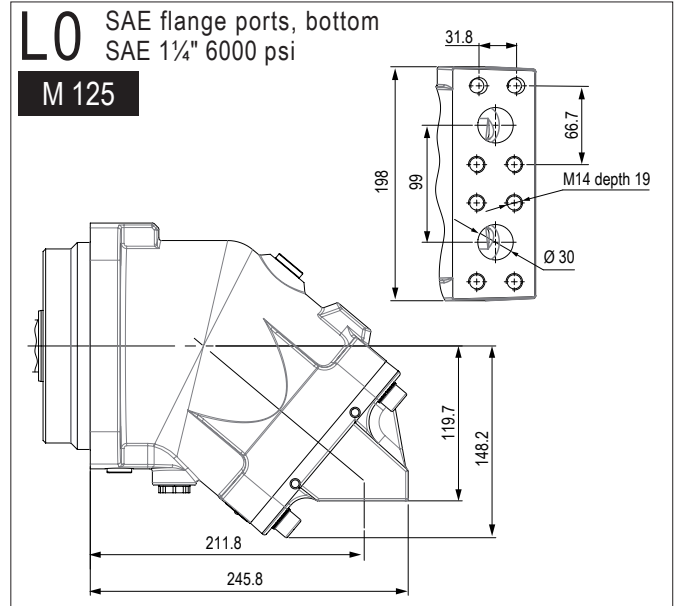
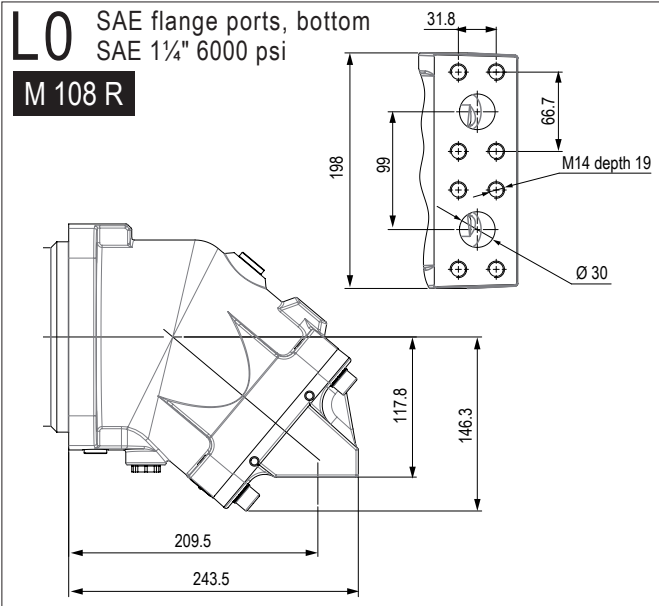
► Shaft end



Max. pressure 5076 (350 bar) for M 125.

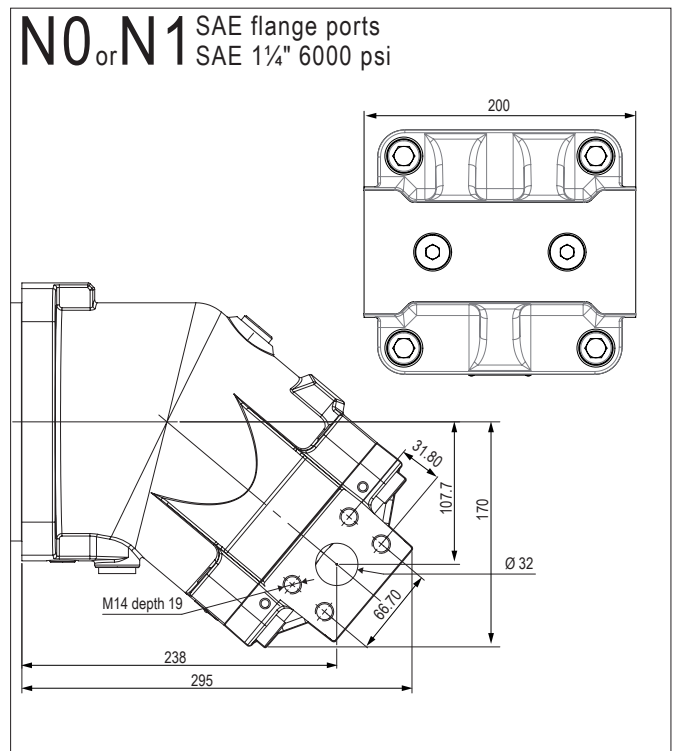
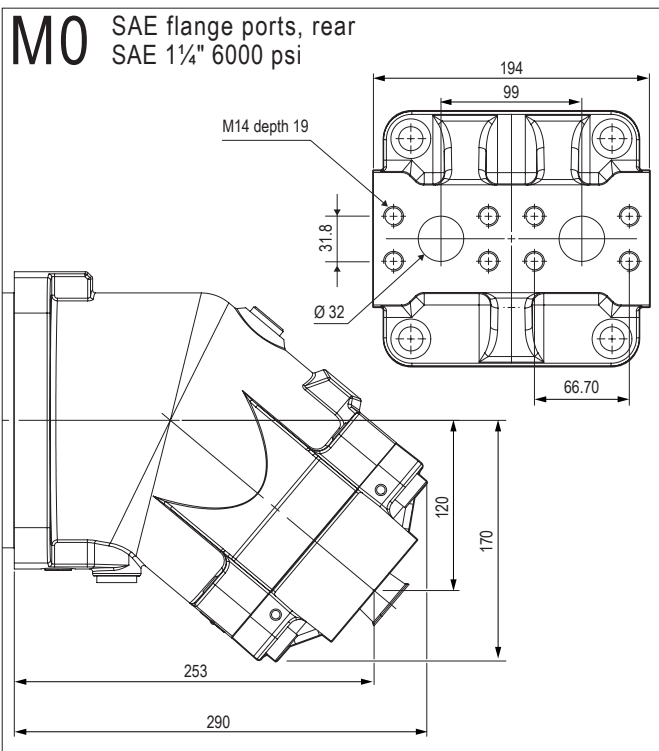
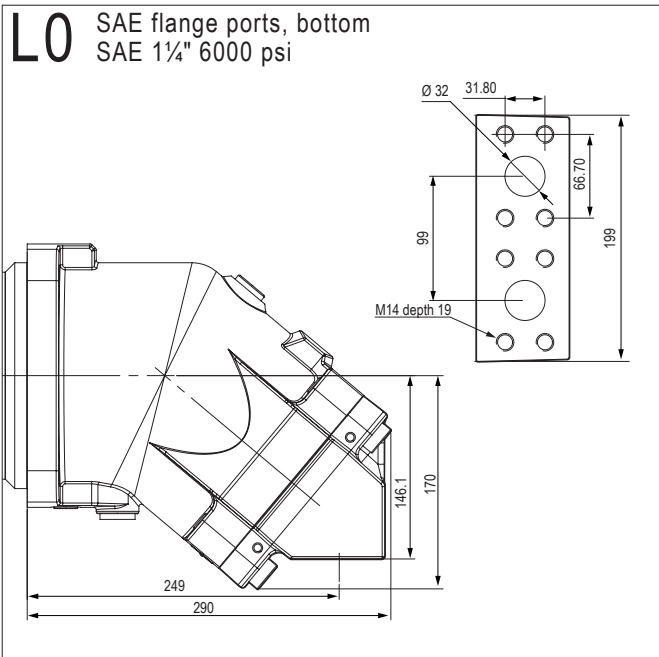
For M 108 R only.

► Inlet ports



Dimensions in mm are given only as an indication.

► Inlet ports



Dimensions in mm are given only as an indication.

CHARACTERISTICS OF THE MA SERIES MOTORS (SAE)

| Motor model | Displacement | | Continuous max. speed (1) | Intermittent max. speed (1) | Max. flow absorbed | | Torque | | Torque at 350 bar (5100 psi) | | Theoretical maximal power at 5800 psi 400 bar | | Max. allowable pressure continuous / peak | | Weight (kg) | |
|-------------|--------------|--------|---------------------------|-----------------------------|--------------------|-----|--------|------|------------------------------|---------|---|-------|---|-----------|-------------|------|
| | cu.in/rev | cc/rev | | | rpm | rpm | gpm | l/mn | lbf.ft/psi | N.m/bar | lbf ft | N.m | HP | kW | psi | bar |
| MA 10 | 0,62 | 10,2 | 8000 | 8800 | 21,6 | 82 | 0,0082 | 0,16 | 42 | 57 | 72,9 | 54,4 | 5800 / 6525 | 400 / 450 | 14,3 | 6,5 |
| MA 12 | 0,73 | 12,0 | 8000 | 8800 | 25,4 | 96 | 0,0097 | 0,19 | 49 | 67 | 85,7 | 64 | 5800 / 6525 | 400 / 450 | 14,3 | 6,5 |
| MA 16 | 0,99 | 16,2 | 8000 | 8800 | 34,2 | 130 | 0,0131 | 0,26 | 67 | 90 | 115,9 | 86,4 | 5800 / 6525 | 400 / 450 | 14,3 | 6,5 |
| MA 18 | 1,10 | 18,0 | 8000 | 8800 | 38,0 | 144 | 0,0145 | 0,29 | 74 | 100 | 128,7 | 96 | 5800 / 6525 | 400 / 450 | 14,3 | 6,5 |
| MA 25 | 1,52 | 24,9 | 6300 | 6900 | 41,4 | 157 | 0,0201 | 0,40 | 102 | 139 | 140,1 | 104,5 | 5800 / 6525 | 400 / 450 | 25 | 11,5 |
| MA 32 | 1,96 | 32,1 | 6300 | 6900 | 53,4 | 202 | 0,0259 | 0,51 | 132 | 179 | 180,7 | 134,8 | 5800 / 6525 | 400 / 450 | 25 | 11,5 |
| MA 41 | 2,51 | 41,1 | 5600 | 6200 | 60,8 | 230 | 0,0331 | 0,65 | 169 | 229 | 205,6 | 153,4 | 5800 / 6525 | 400 / 450 | 25 | 11,5 |
| MA 45 | 2,77 | 45,4 | 5000 | 5500 | 60,0 | 227 | 0,0366 | 0,72 | 187 | 253 | 202,8 | 151,3 | 5800 / 6525 | 400 / 450 | 40 | 18 |
| MA 50 | 3,07 | 50,3 | 5000 | 5500 | 66,4 | 252 | 0,0405 | 0,80 | 207 | 280 | 224,7 | 167,6 | 5800 / 6525 | 400 / 450 | 40 | 18 |
| MA 63 | 3,84 | 63,0 | 5000 | 5500 | 83,2 | 315 | 0,0508 | 1,00 | 259 | 351 | 281,5 | 210 | 5800 / 6525 | 400 / 450 | 40 | 18 |
| MA 80 | 4,91 | 80,4 | 4500 | 5000 | 95,6 | 362 | 0,0648 | 1,28 | 330 | 448 | 323,3 | 241,2 | 5800 / 6525 | 400 / 450 | 51 | 23 |
| MA 90 | 5,49 | 90,0 | 4500 | 5000 | 107,0 | 405 | 0,0725 | 1,43 | 370 | 501 | 361,9 | 270 | 5800 / 6525 | 400 / 450 | 51 | 23 |
| MA 108 | 6,61 | 108,3 | 4000 | 4400 | 114,4 | 433 | 0,0877 | 1,72 | 445 | 603 | 387,3 | 288,8 | 5800 / 6525 | 400 / 450 | 51 | 23 |
| MA 108R (2) | 6,61 | 108,3 | 3400 | 4500 | 97,3 | 368 | 0,0877 | 1,72 | 445 | 603 | 329,2 | 245,5 | 5800 / 6525 | 400 / 450 | 77 | 35 |
| MA 125 | 7,65 | 125,4 | 3400 | 4500 | 112,6 | 426 | 0,1010 | 2,00 | 515 | 699 | 381 | 284,2 | 5800 / 6525 | 400 / 450 | 77 | 35 |
| MA 160 | 9,76 | 160,0 | 3600 | 4000 | 152,2 | 576 | 0,1289 | 2,55 | 657 | 891 | 514,7 | 384 | 5800 / 6525 | 400 / 450 | 107 | 48,5 |
| MA 180 | 11,02 | 180,6 | 3600 | 4000 | 171,8 | 650 | 0,1455 | 2,87 | 742 | 1006 | 581 | 433,4 | 5800 / 6525 | 400 / 450 | 107 | 48,5 |
| MA 250 | 15,27 | 250,2 | 2700 | 3000 | 178,5 | 676 | 0,2025 | 3,98 | 1028 | 1394 | 603,9 | 450,4 | 5800 / 6525 | 400 / 450 | 149,5 | 67,8 |

(1) For higher speeds, please contact us.

(2) The MA 108 R motor is in the frame size of the MA 125.

► Acceptable forces applied to motor shaft

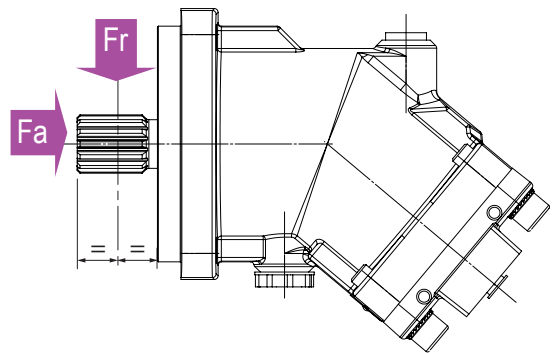
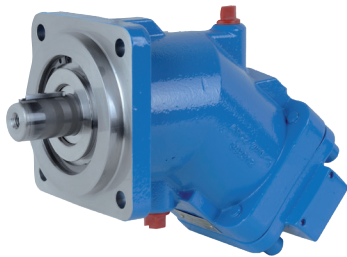
| Motor model | | 10 | 12 | 16 | 18 | 25 | 32 | 41 | 45 | 50 | 63 | 80 | 90 | 108 | 108 R | 125 | 160 | 180 | 250 |
|-------------|----------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| Fr | lbf | 528 | 629 | 742 | 899 | 1349 | 1461 | 1574 | 1461 | 1686 | 2023 | 2360 | 2473 | 2585 | 2810 | 3260 | 4047 | 4496 | 4946 |
| | N | 2350 | 2800 | 3300 | 4000 | 6000 | 6500 | 7000 | 6500 | 7500 | 9000 | 10500 | 11000 | 11500 | 12500 | 14500 | 18000 | 20000 | 22000 |
| Fa | lbf/psi | 0.19 | 0.23 | 0.31 | 0.31 | 0.42 | 0.47 | 0.62 | 0.62 | 0.62 | 0.78 | 0.93 | 1.04 | 1.24 | 1.24 | 1.33 | 1.32 | 1.47 | 2.33 |
| | N/psi | 0.83 | 1.03 | 1.38 | 1.38 | 1.86 | 2.07 | 2.76 | 2.76 | 2.76 | 3.45 | 4.14 | 4.62 | 5.52 | 5.52 | 5.93 | 5.86 | 6.55 | 10.35 |
| | (N/bar)* | (12) | (15) | (20) | (20) | (27) | (30) | (40) | (40) | (40) | (50) | (60) | (67) | (80) | (80) | (86) | (85) | (95) | (150) |

Fr: radial force measured at mid point of length of shaft.

Fa: axial force which tends to push the shaft inwards.

* Differential pressure between A and B.

For other forces, please contact us.



Order code system of MA series motors

| MA | ... | ... | ... | ... | U2 | ... | ... | ... | ... | SP |
|----|-----|-----|-----|-----|----|-----|-----|-----|-----|----|
| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 |

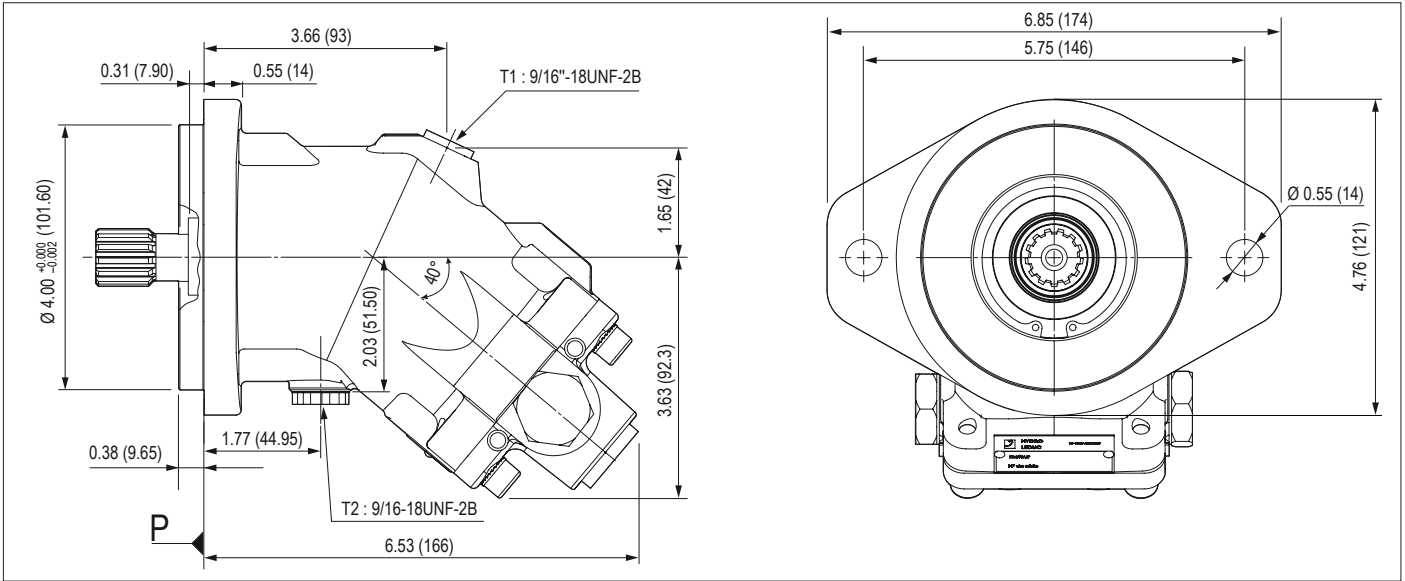
To obtain the code for your motor, complete the different parameters 02, 03, 04, 05, 07, 08, 09 and 10 in the table on the left according to the options you require (see table below).

| Motor | | | | | | | | | | | | | | | | | | | | | | |
|---|--------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|--------------|--------------|---------------|--------------|--------------|--------------|-------------|-----------|
| 01 | Motor | | | | | | | | | | | | | | | | | | | MA | | |
| Displacement | | | | | | | | | | | | | | | | | | | | | | |
| 02 | | 10 | 12 | 16 | 18 | 25 | 32 | 41 | 45 | 50 | 63 | 80 | 90 | 108 | 108R | 125 | 160 | 180 | 250 | | | |
| Mounting flange | | | | | | | | | | | | | | | | | | | | | | |
| 03 | SAE B 2 bolts | | | | SAE C 4 bolts | | | | | | | | SAE D 4 bolts | | | | - | C | | | | |
| | - | | | | - | | | | | | | | - | | | | SAE E 4 bolts | C1 | | | | |
| | - | | | | - | | | | | | | | - | | | | SAE D 4 bolts | C2 | | | | |
| Shaft | | | | | | | | | | | | | | | | | | | | | | |
| 04 | Splined SAE J498b | 13 T 16/32 DP | 13 T 16/32 DP | 13 T 16/32 DP | 13 T 16/32 DP | 14 T 12/24 DP | 14 T 12/24 DP | 14 T 12/24 DP | 14 T 12/24 DP | 14 T 12/24 DP | 14 T 12/24 DP | 14 T 12/24 DP | 14 T 12/24 DP | 14 T 12/24 DP | 13 T 8/16 DP | 13 T 8/16 DP | 13 T 8/16 DP | 13 T 8/16 DP | 15 T 8/16 DP | S1 | | |
| | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 13 T 8/16 DP | S2 | |
| | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | S3 | |
| | DIN 6885 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | Ø50 mm | Ø50 mm | - | D1 | |
| Keyed SAE J744 | Ø1" | Ø1" | Ø1" | Ø1" | Ø1 1/4" | Ø1 1/4" | Ø1 1/4" | Ø1 1/4" | Ø1 1/4" | Ø1 1/4" | Ø1 1/4" | Ø1 1/2" | Ø1 1/2" | - | Ø1 3/4" | Ø1 3/4" | - | - | Ø2" | K1 | | |
| | - | - | - | - | - | - | - | - | - | - | - | - | - | Ø1 1/4" | - | - | - | - | - | K2 | | |
| Inlet ports A and B | | | | | | | | | | | | | | | | | | | | | | |
| 05 | SAE flange ports | Bottom | 0 | - | - | - | - | • | • | • | • | • | • | • | • | • | • | • | • | • | L0 | |
| | | Rear | 0 | - | - | - | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | M0 |
| | | Side | 0 | - | - | - | • | • | • | • | • | • | • | • | - | • | • | • | • | • | • | N0 |
| | 1 | | - | - | - | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | N1 |
| | Threaded | Side | 0 | • | • | • | • | • | • | - | - | - | - | - | - | - | - | - | - | - | - | Q0 |
| | | | 1 | - | - | - | • | • | • | - | - | - | - | - | - | - | - | - | - | - | - | Q1 |
| Rear | | 0 | • | • | • | • | • | • | • | - | - | - | - | - | - | - | - | - | - | - | P0 | |
| <div style="border: 1px solid red; padding: 5px; display: inline-block;"> 0 = Without suitability for valves 1 = Compatible with flushing valve </div> | | | | | | | | | | | | | | | | | | | | | | |
| Drain ports T1 and T2 | | | | | | | | | | | | | | | | | | | | | | |
| 06 | | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | U2 | | |
| Suitable for use of speed sensor | | | | | | | | | | | | | | | | | | | | | | |
| 07 | Yes | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | 1 | |
| | No | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | 0 | |
| Speed sensor | | | | | | | | | | | | | | | | | | | | | | |
| 08 | 1 frequency signal | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | 1 | |
| | 1 signal with connector | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | 1P | |
| | 2 signals with connector | ○ | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | 2P | |
| | No | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | 0 |
| Flushing valve | | | | | | | | | | | | | | | | | | | | | | |
| 09 | Without | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | SV | |
| | Flow rate | 4,25 l/min* | - | - | - | - | • | • | • | • | • | • | • | • | • | • | • | • | • | • | VB04 | |
| | | 10 l/min* | - | - | - | - | • | • | • | • | • | • | • | • | • | • | • | • | • | • | VB10 | |
| | | 14 l/min* | - | - | - | - | • | • | • | • | • | • | • | • | • | • | • | • | • | • | VB14 | |
| Low temperature option | | | | | | | | | | | | | | | | | | | | | | |
| 10 | Yes (NBR) | - | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | N | |
| | No (FKM) | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | F | |

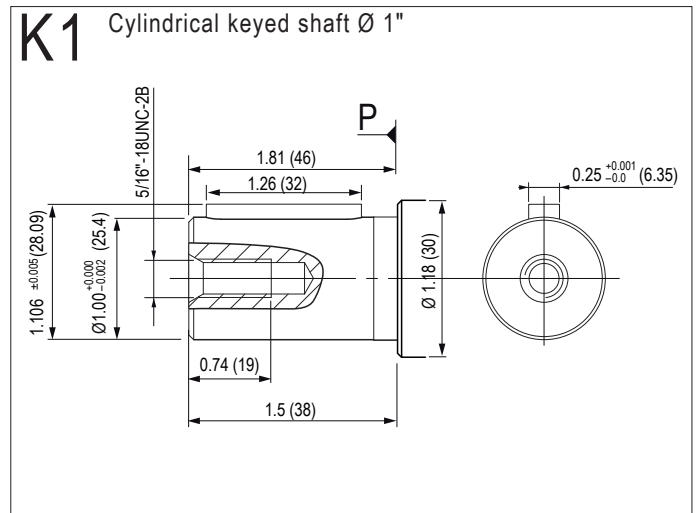
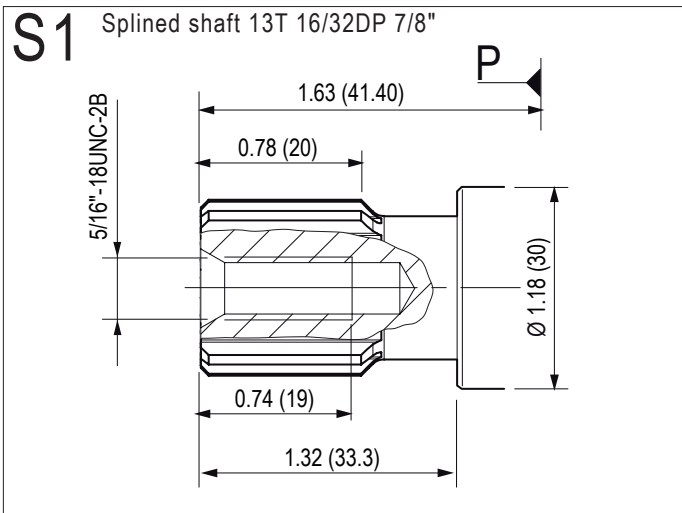
Legend:

- Existing model
- On request
- Not available

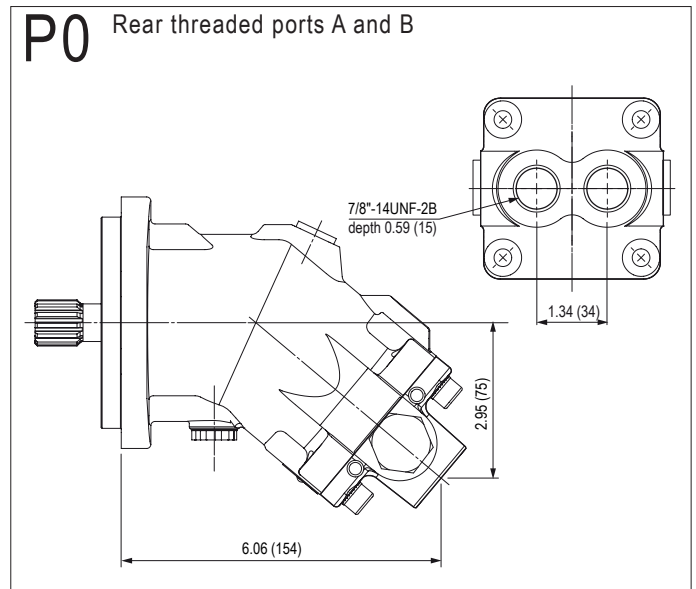
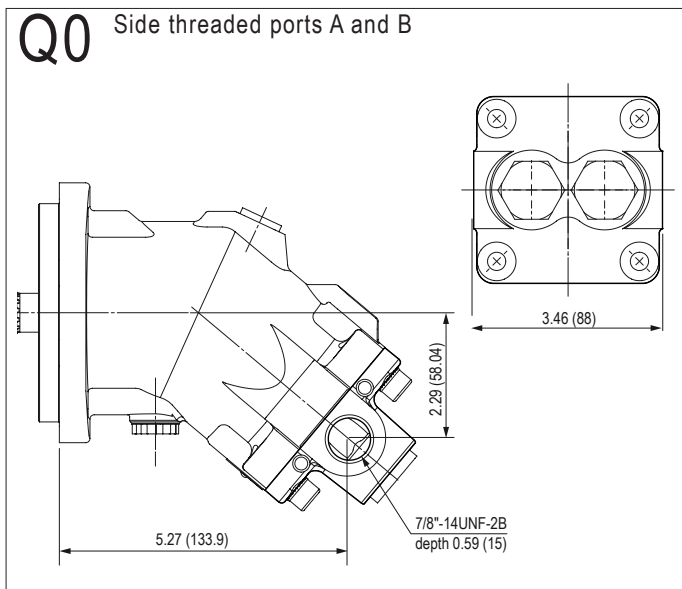
*($\Delta p = 25$ bar)



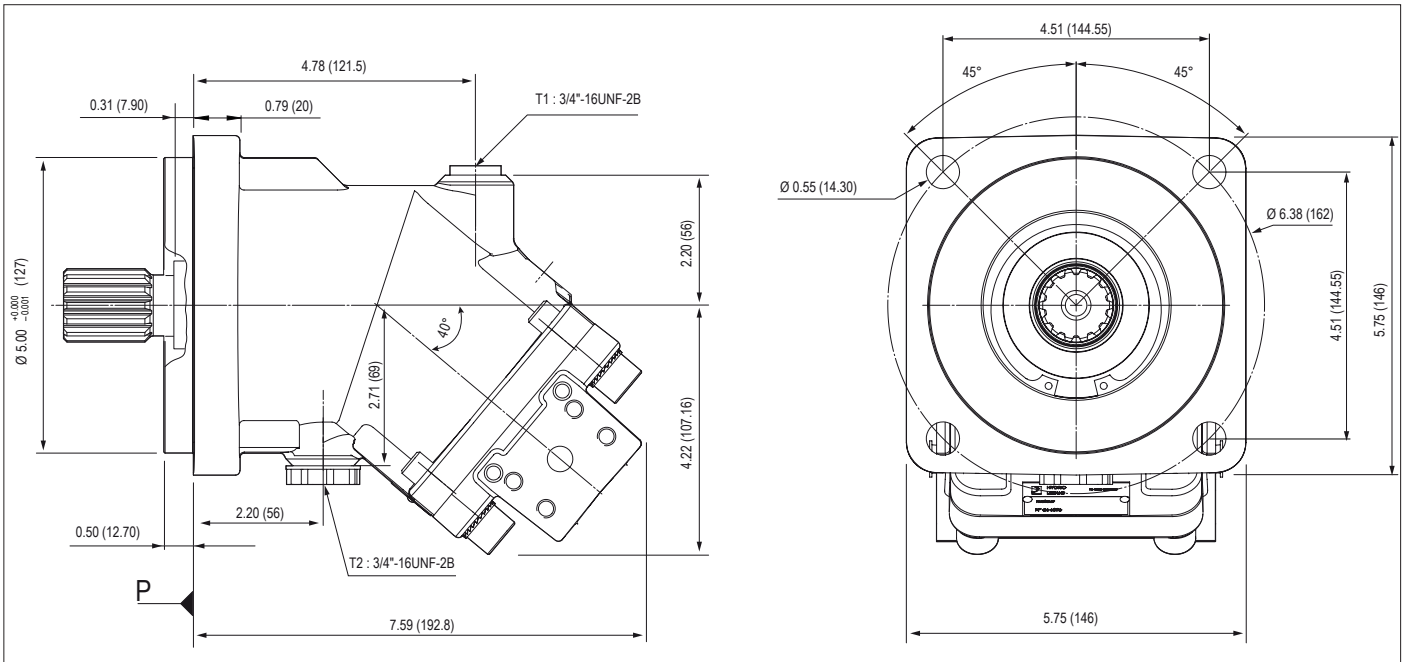
► Shaft end



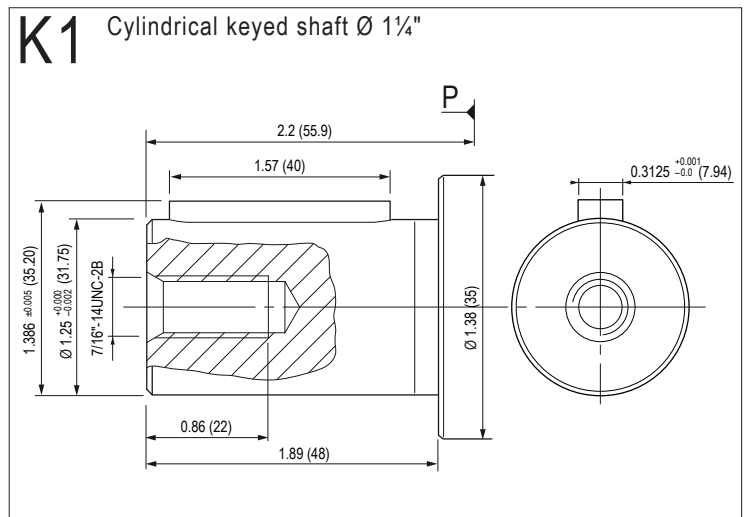
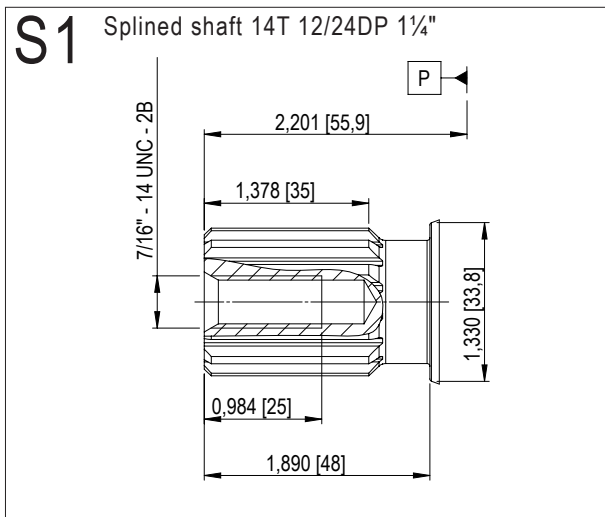
► Inlet ports



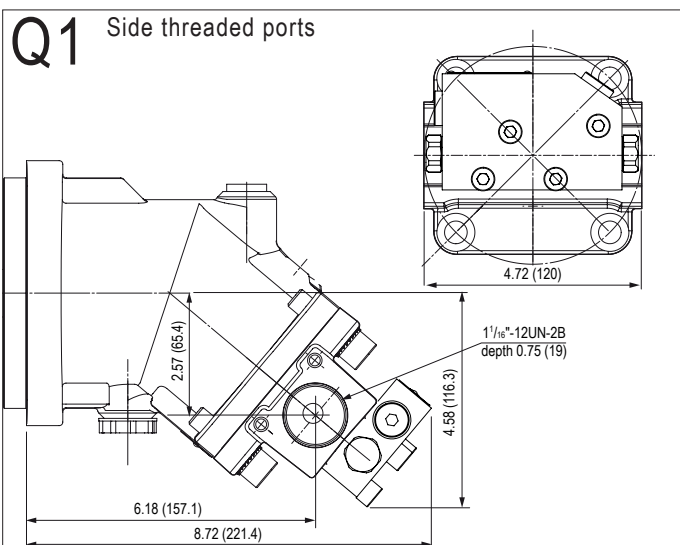
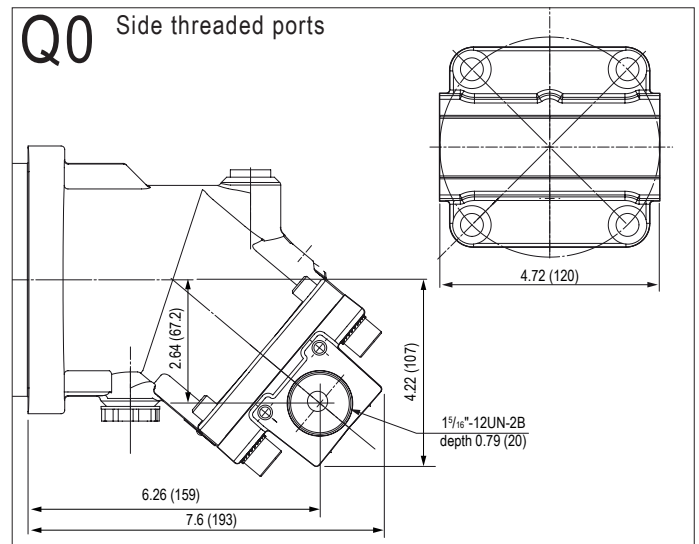
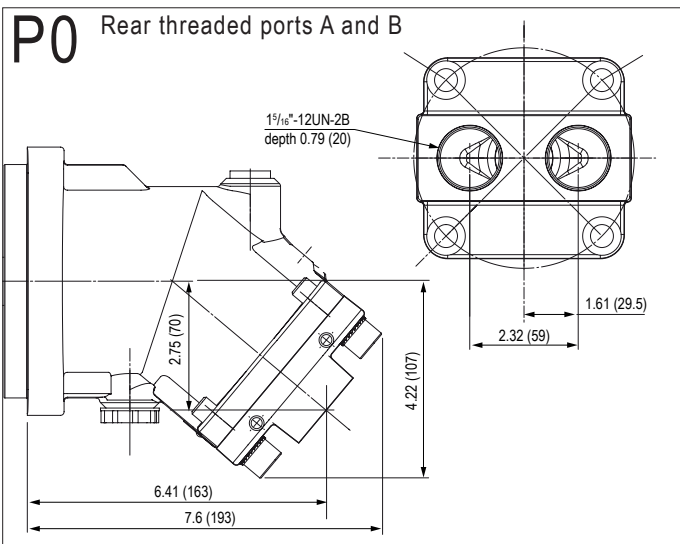
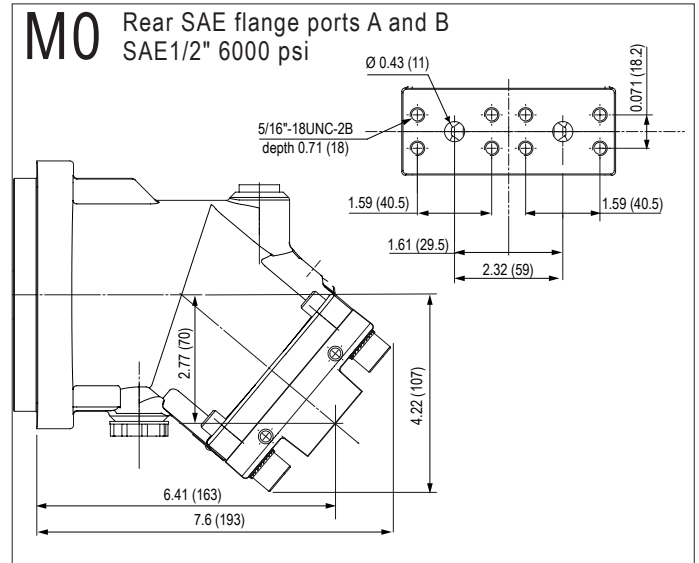
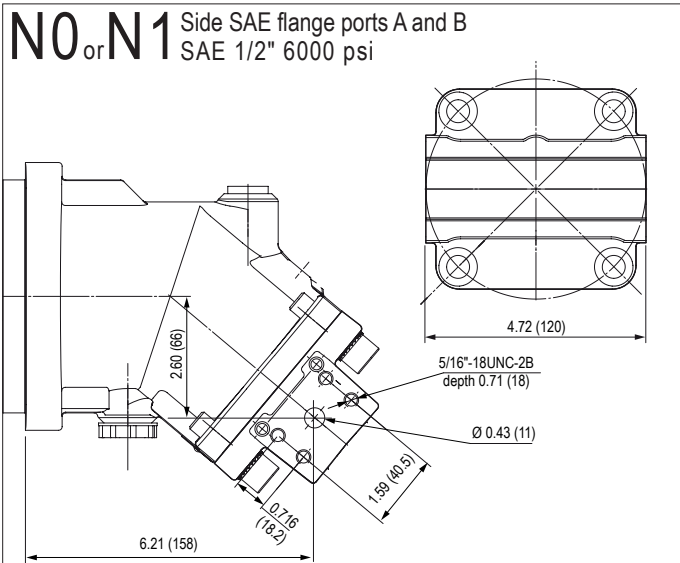
Dimensions in inches (mm) are given only as an indication.



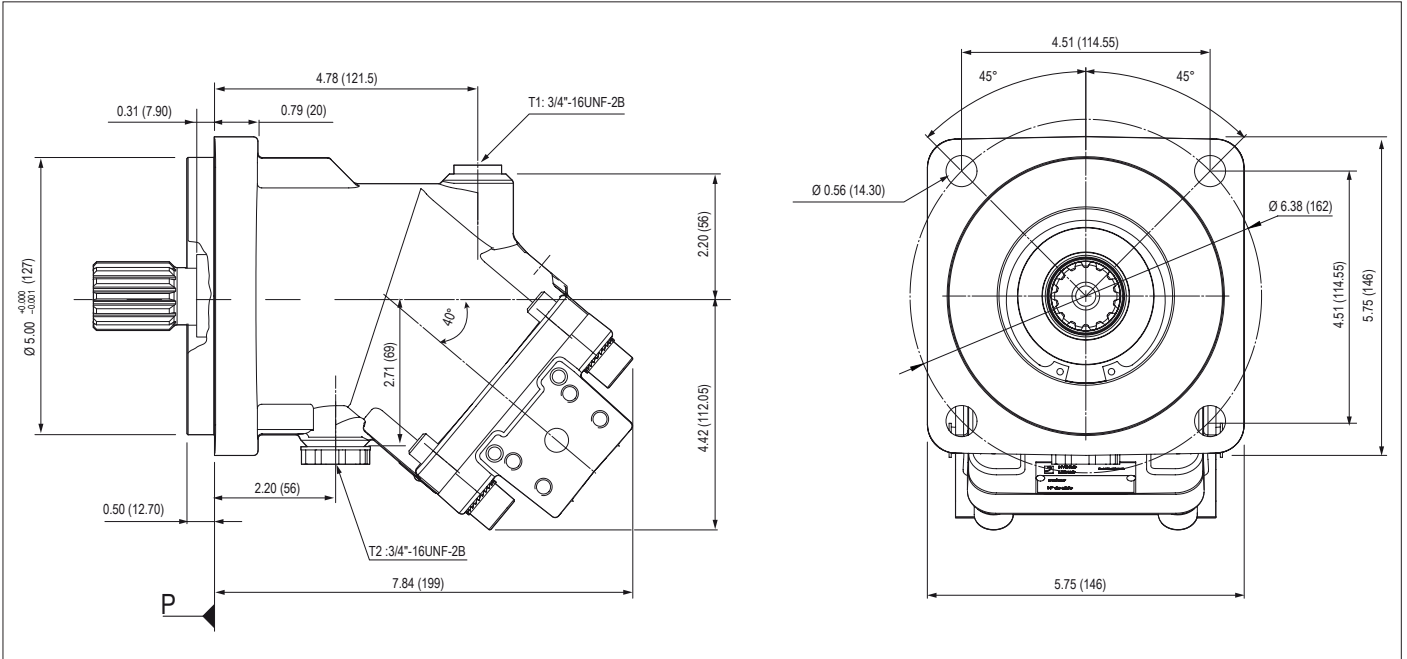
► Shaft end



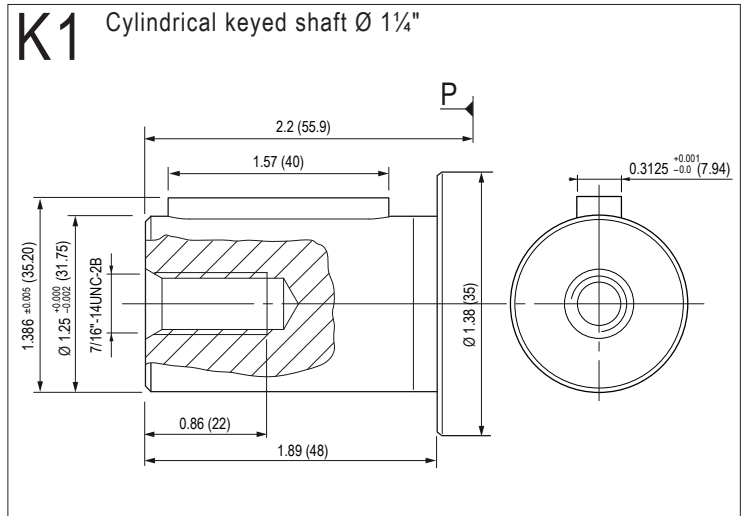
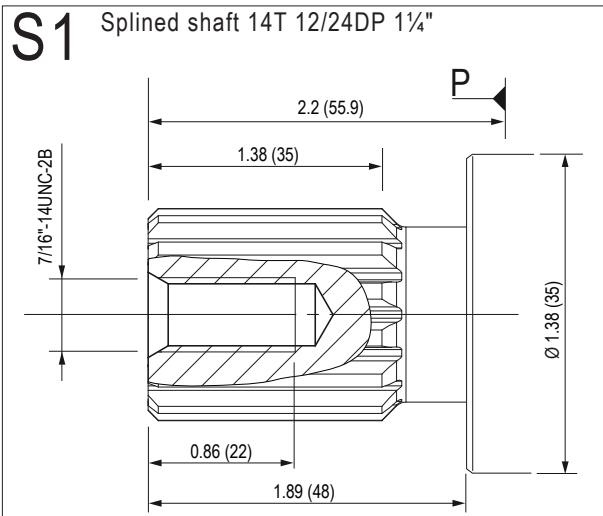
► Shaft end



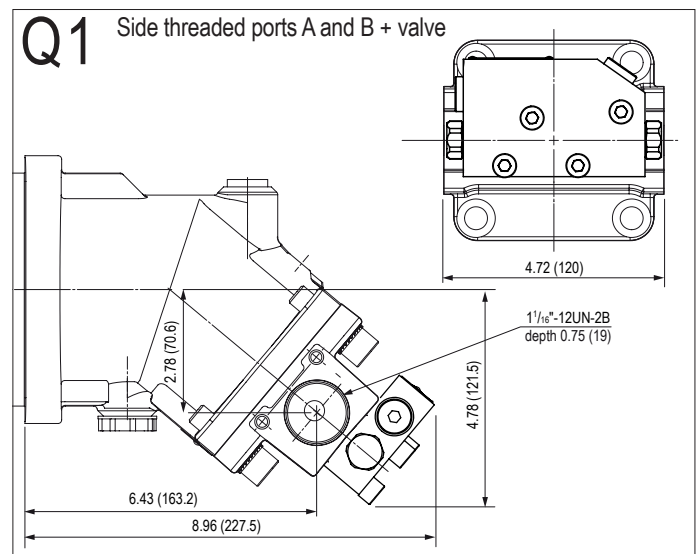
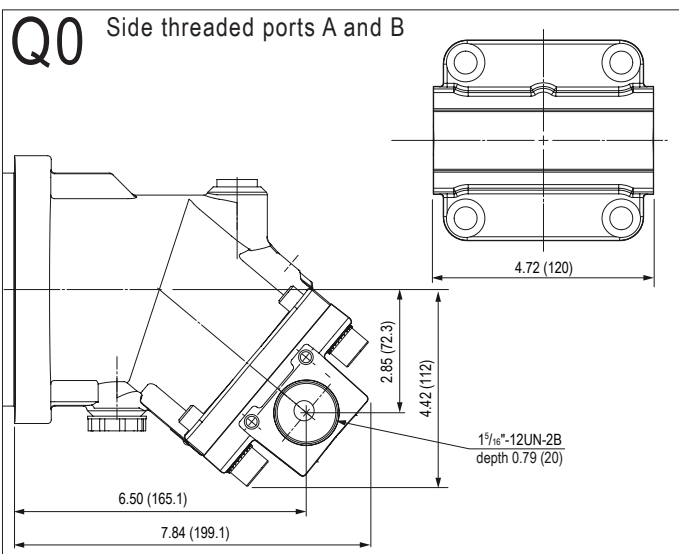
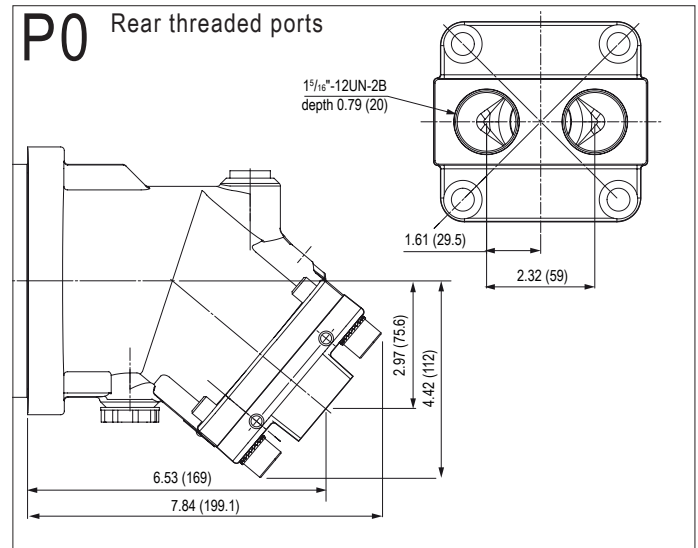
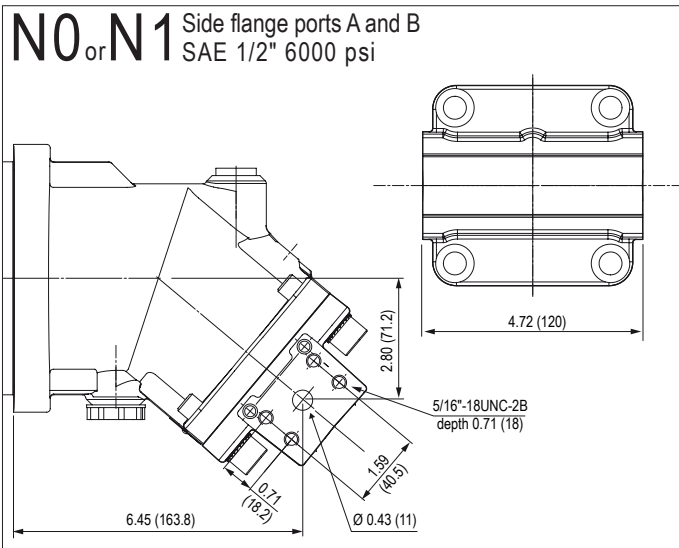
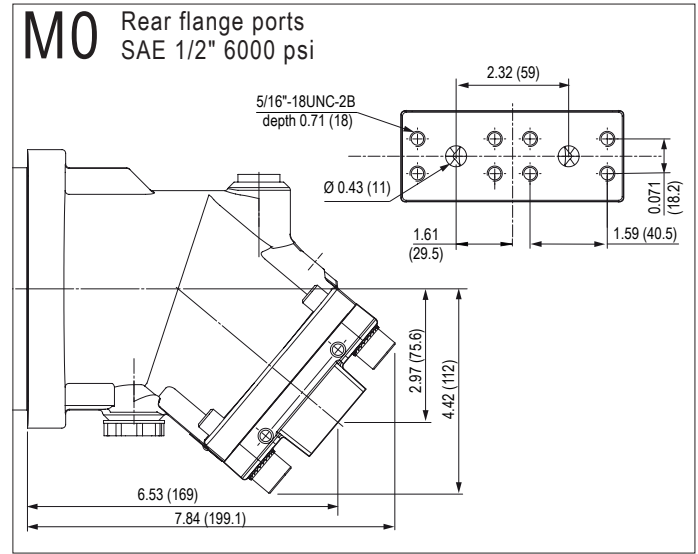
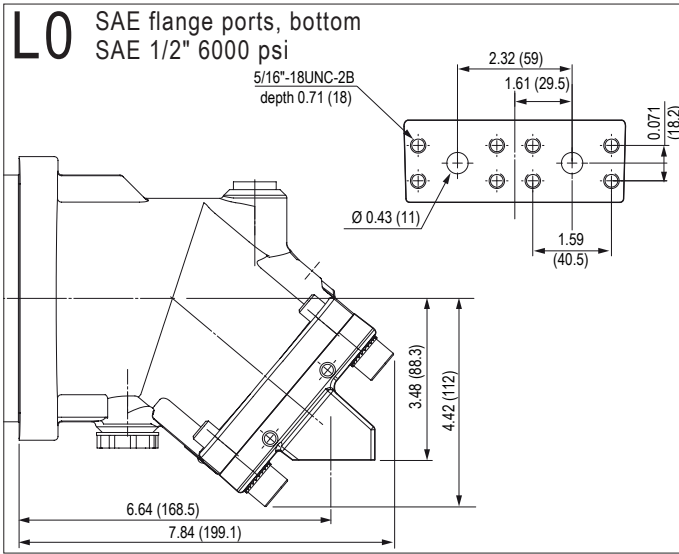
Dimensions in inches (mm) are given only as an indication.



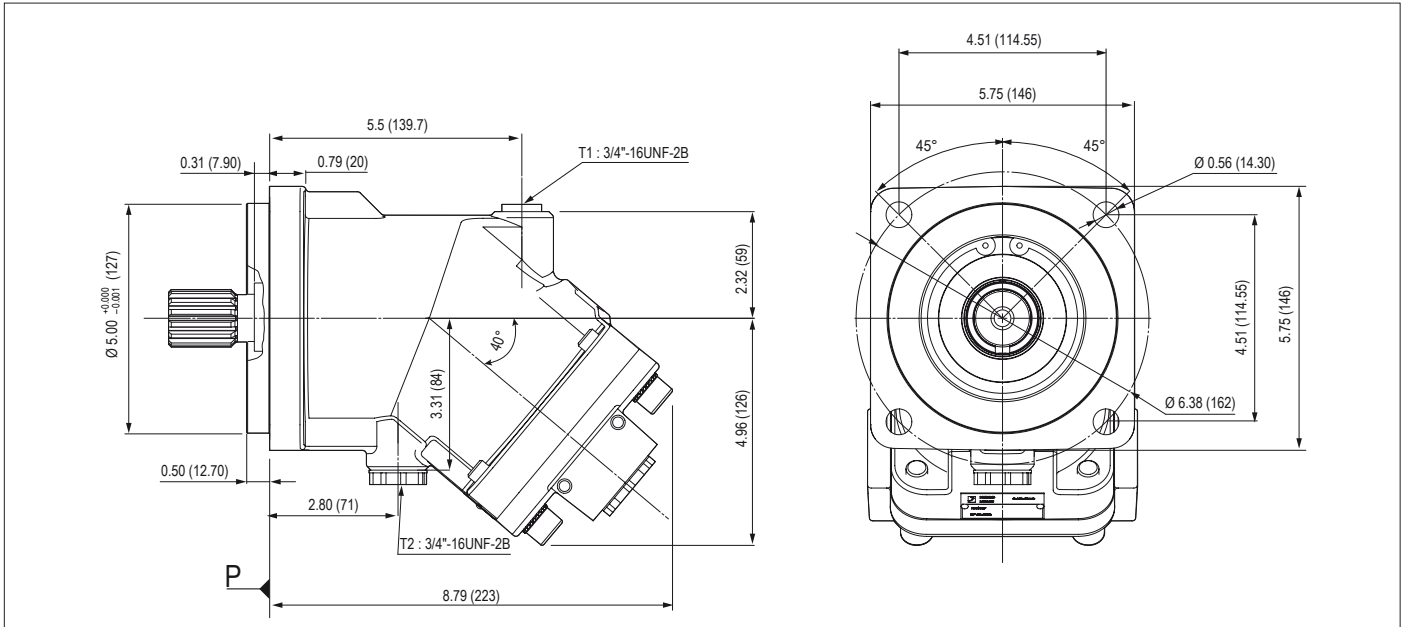
► Shaft end



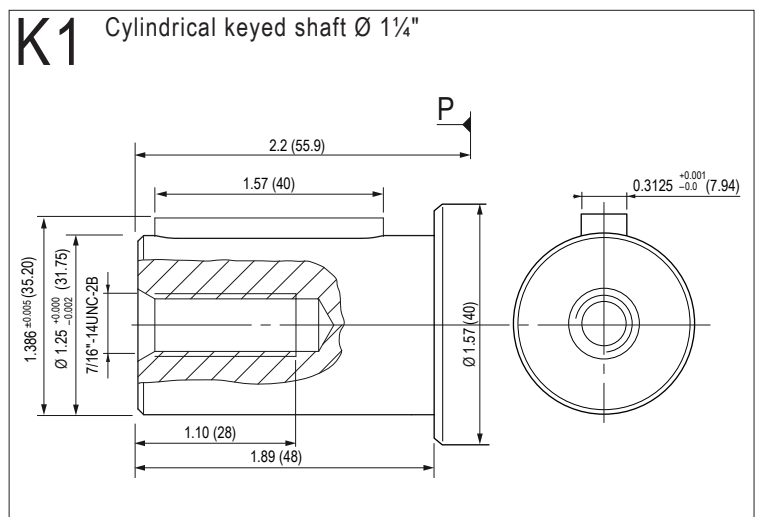
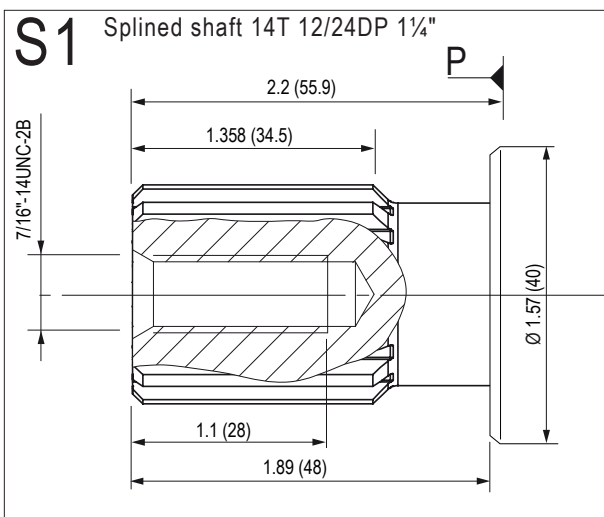
► Inlet ports



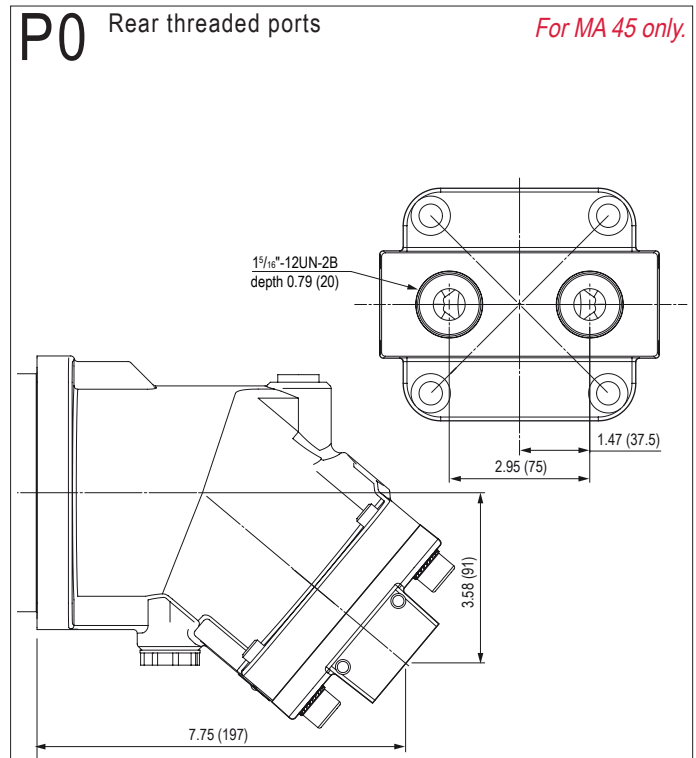
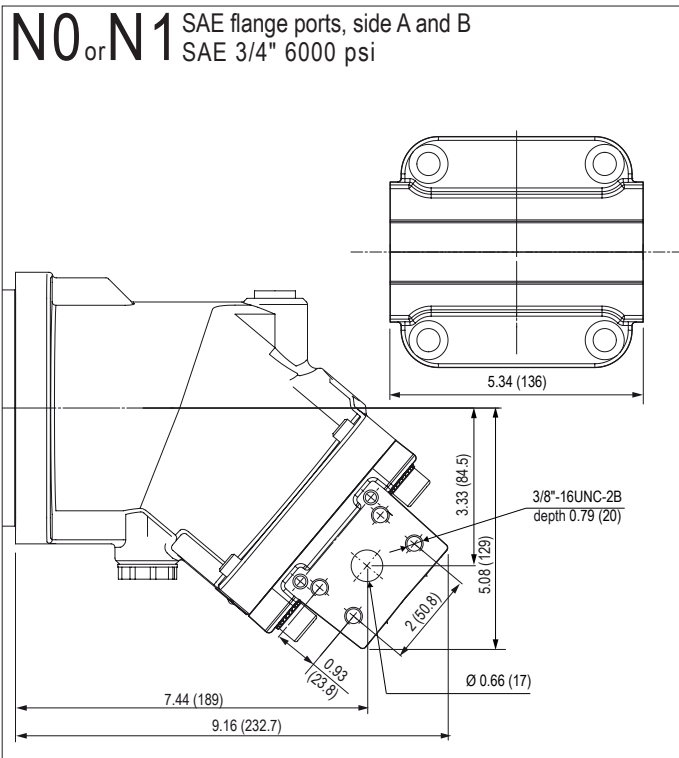
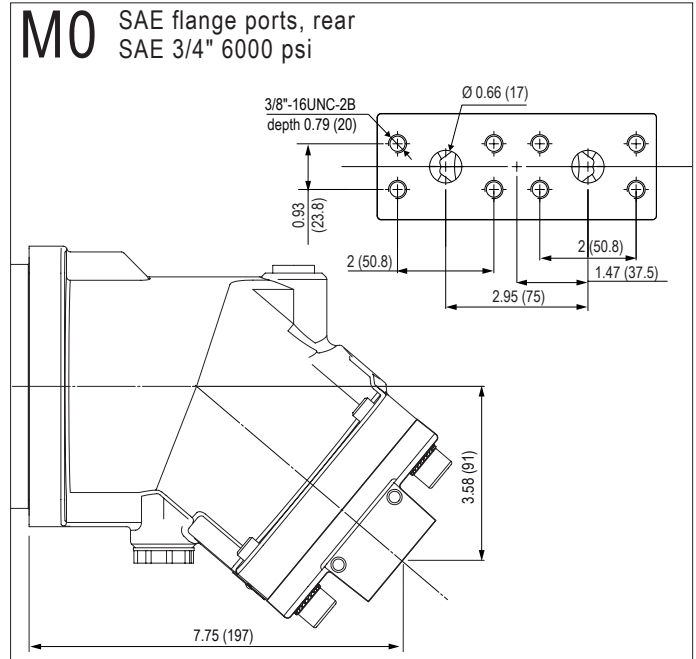
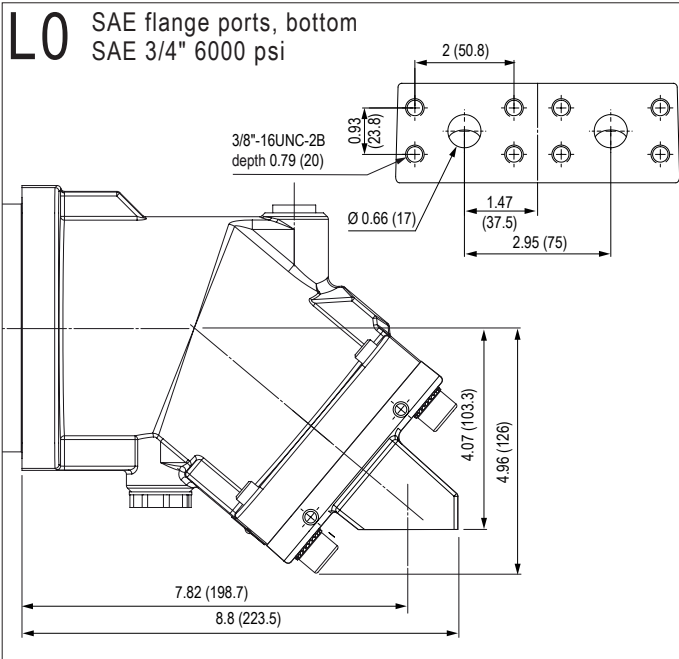
Dimensions in inches (mm) are given only as an indication.



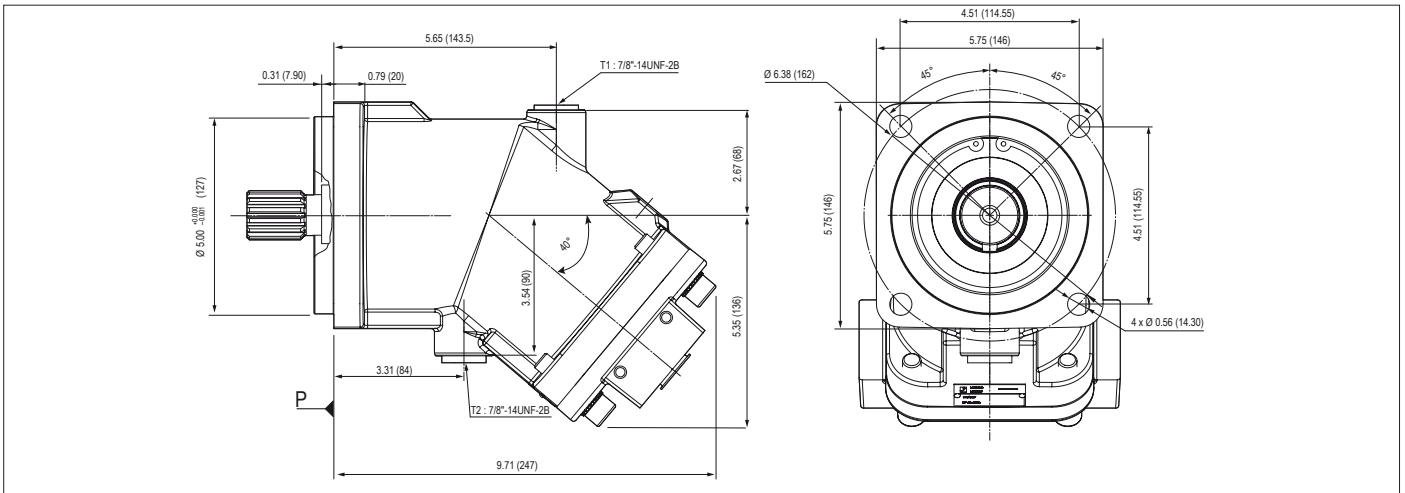
► Shaft end



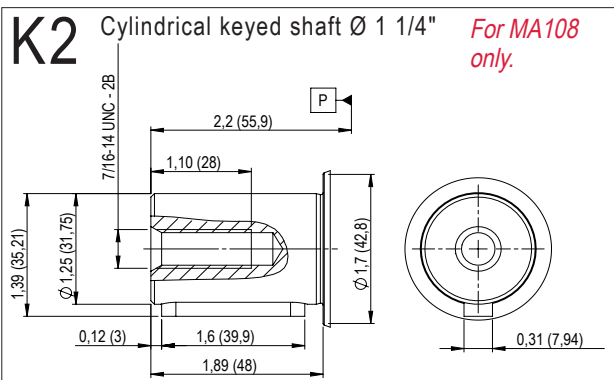
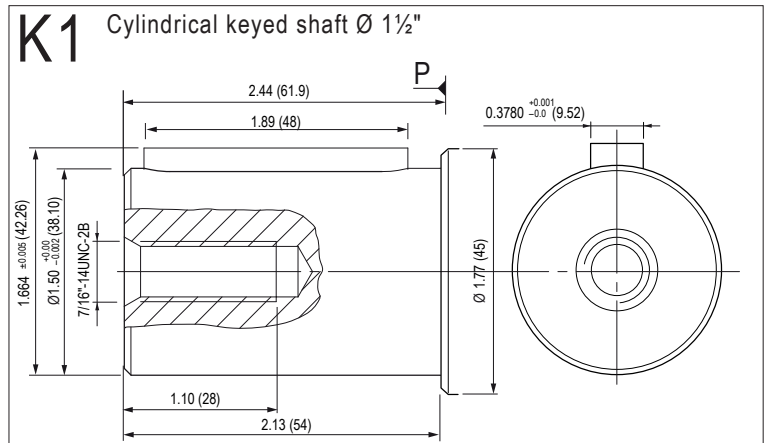
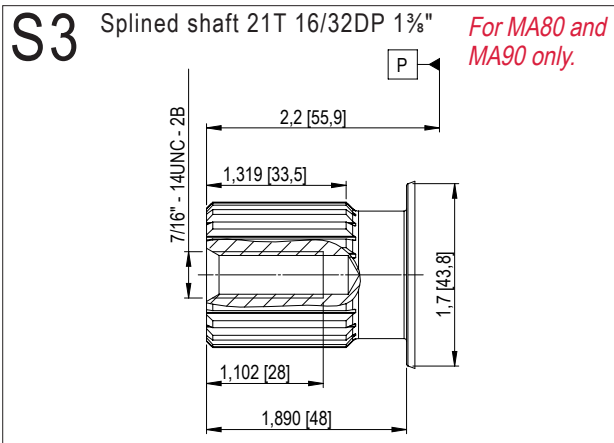
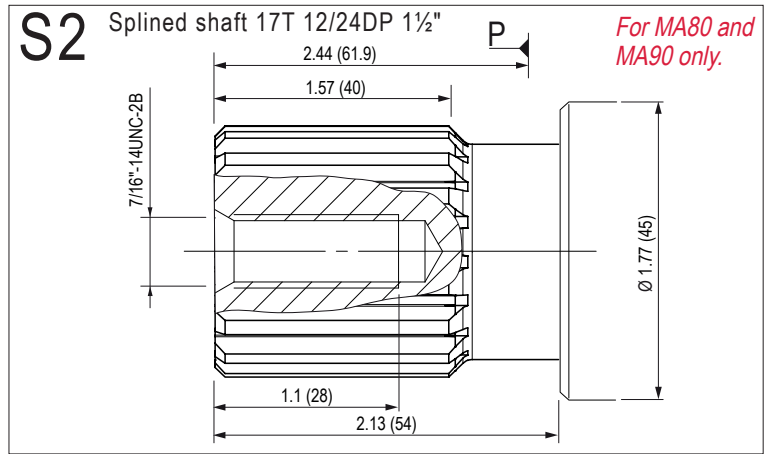
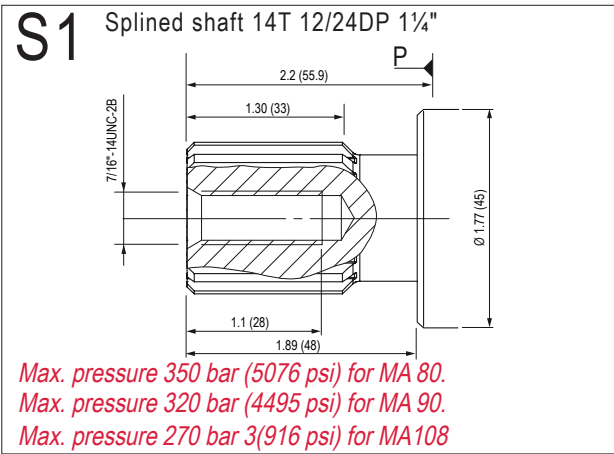
► Inlet ports



Dimensions in inches (mm) are given only as an indication.

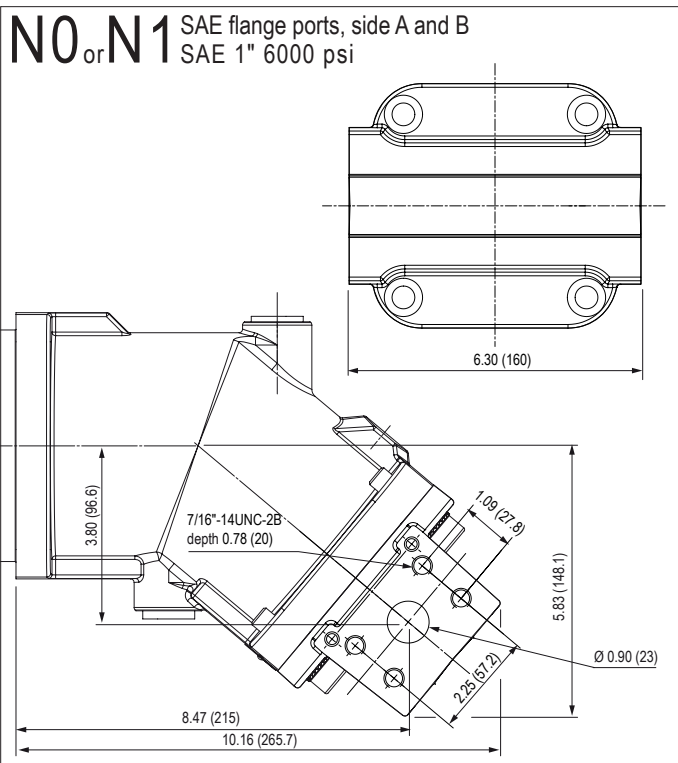
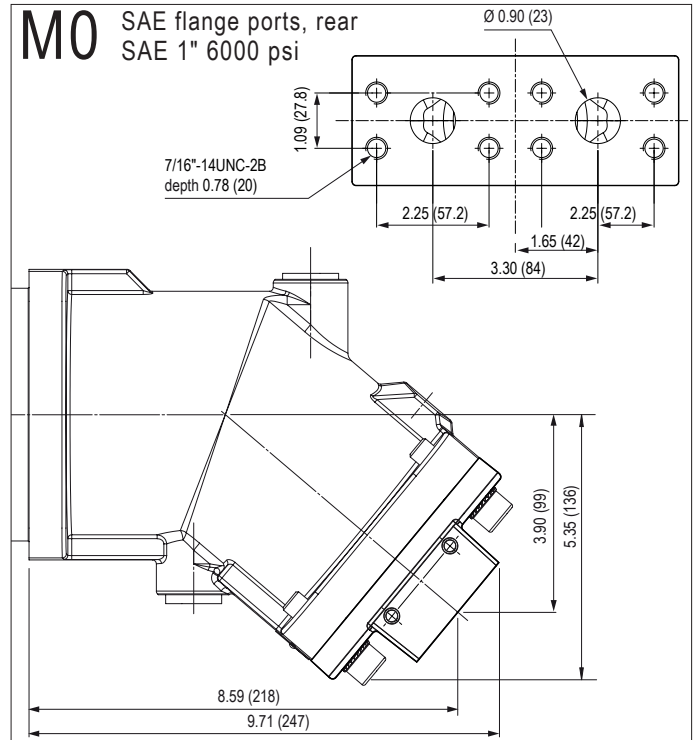
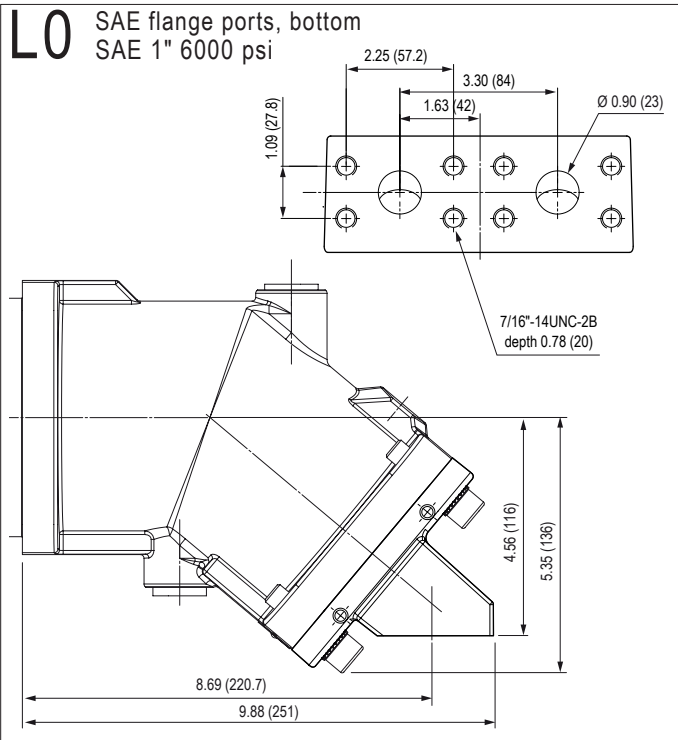


► Shaft end



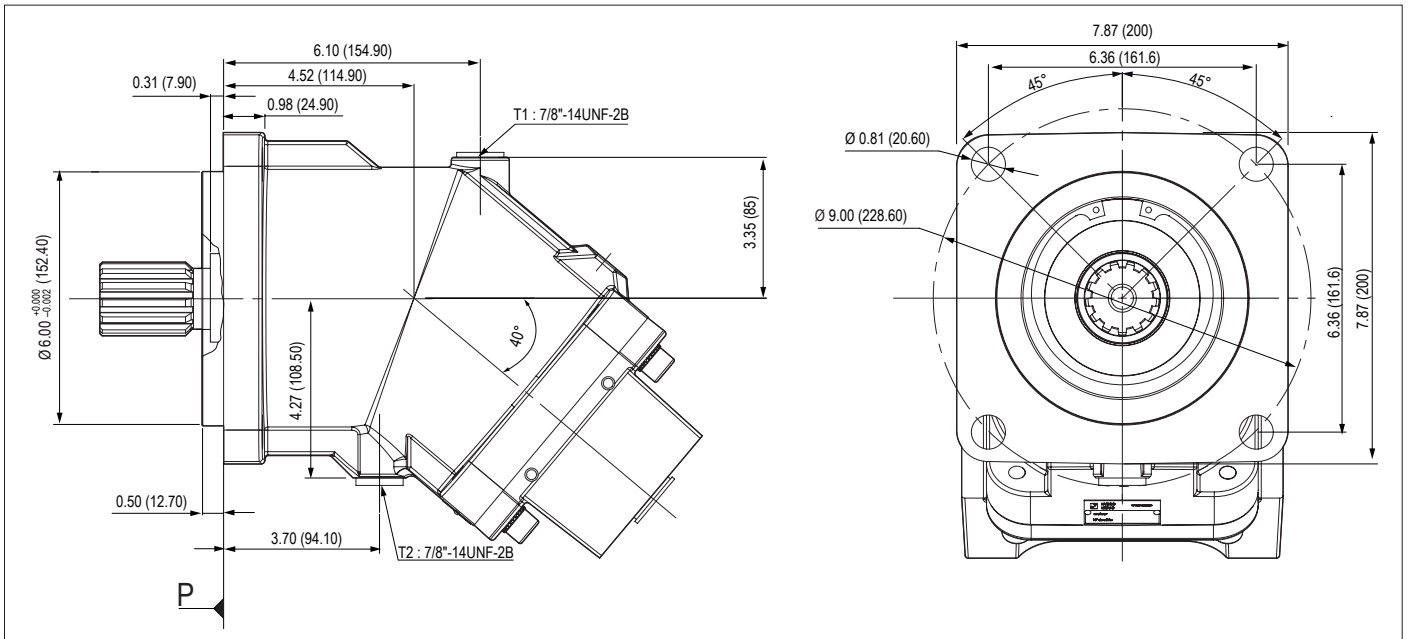
Dimensions in inches (mm) are given only as an indication.

► Inlet ports

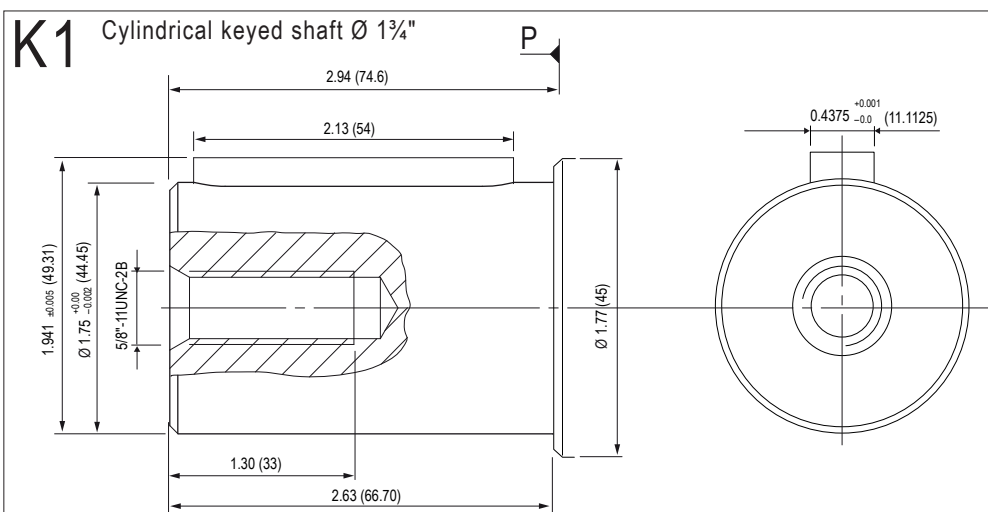
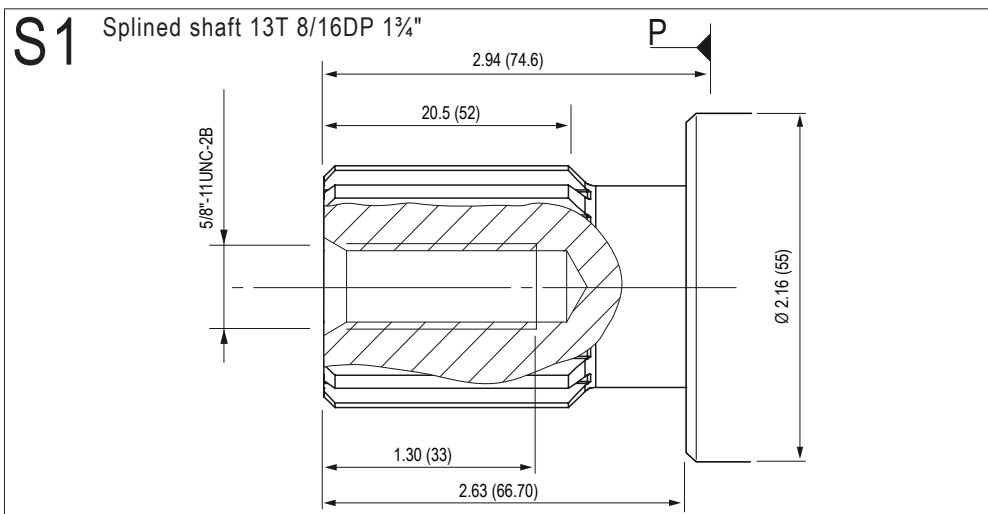


MA series

Dimensions in inches (mm) are given only as an indication.



► Shaft end

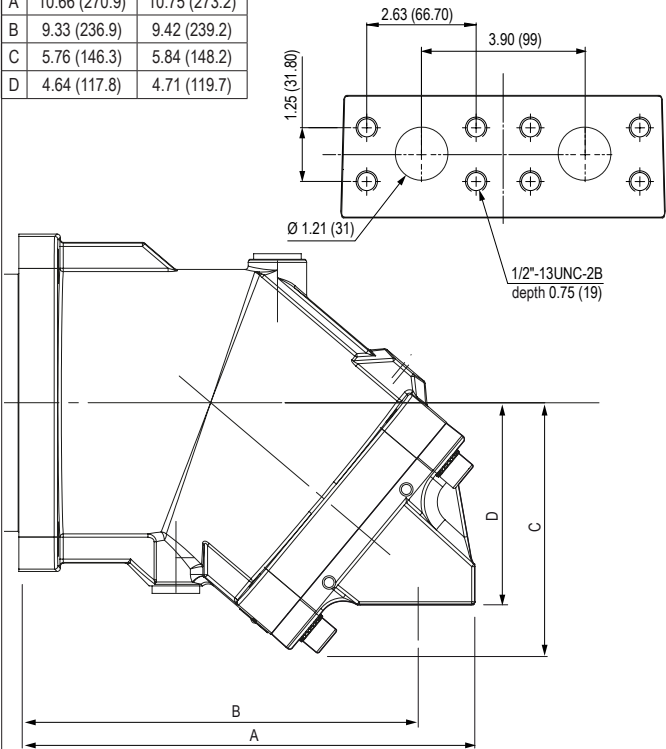


Dimensions in inches (mm) are given only as an indication.

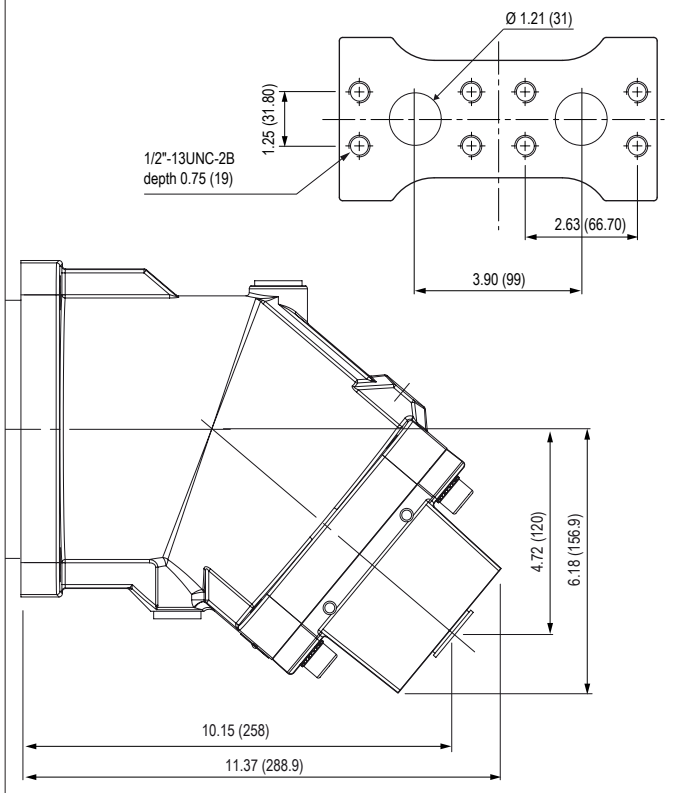
► Inlet ports

L0 SAE flange ports, bottom
SAE 1 1/4" 6000 psi

| | MA 108R | MA 125 |
|---|---------------|---------------|
| A | 10.66 (270.9) | 10.75 (273.2) |
| B | 9.33 (236.9) | 9.42 (239.2) |
| C | 5.76 (146.3) | 5.84 (148.2) |
| D | 4.64 (117.8) | 4.71 (119.7) |

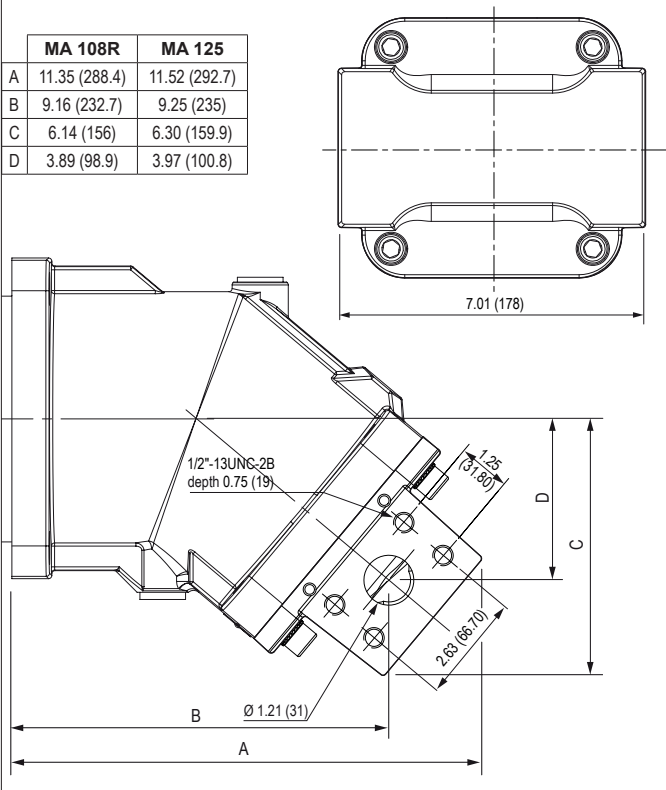


M0 SAE flange ports, rear
SAE 1 1/4" 6000 psi

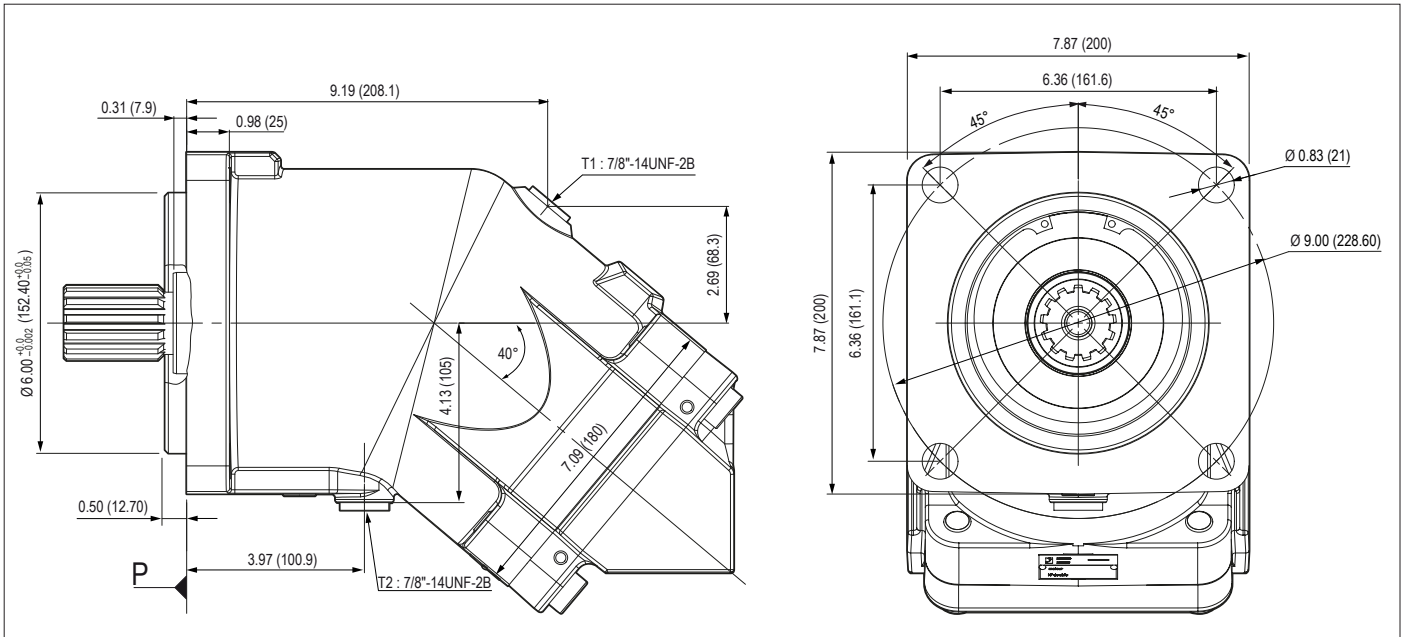


N0 or N1 SAE flange ports, side A and B
SAE 1 1/4" 6000 psi

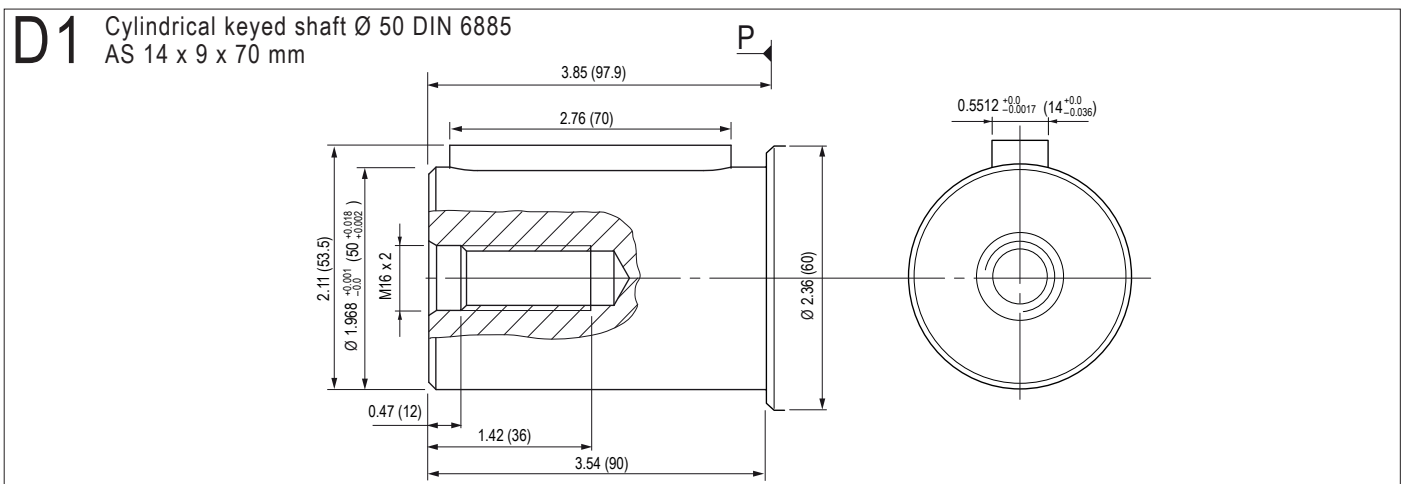
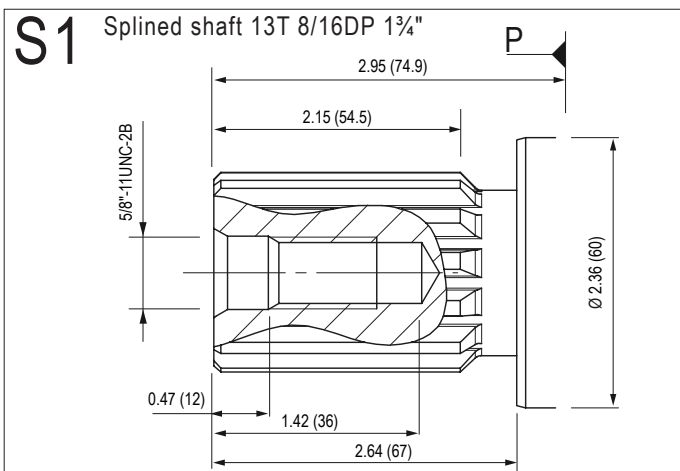
| | MA 108R | MA 125 |
|---|---------------|---------------|
| A | 11.35 (288.4) | 11.52 (292.7) |
| B | 9.16 (232.7) | 9.25 (235) |
| C | 6.14 (156) | 6.30 (159.9) |
| D | 3.89 (98.9) | 3.97 (100.8) |



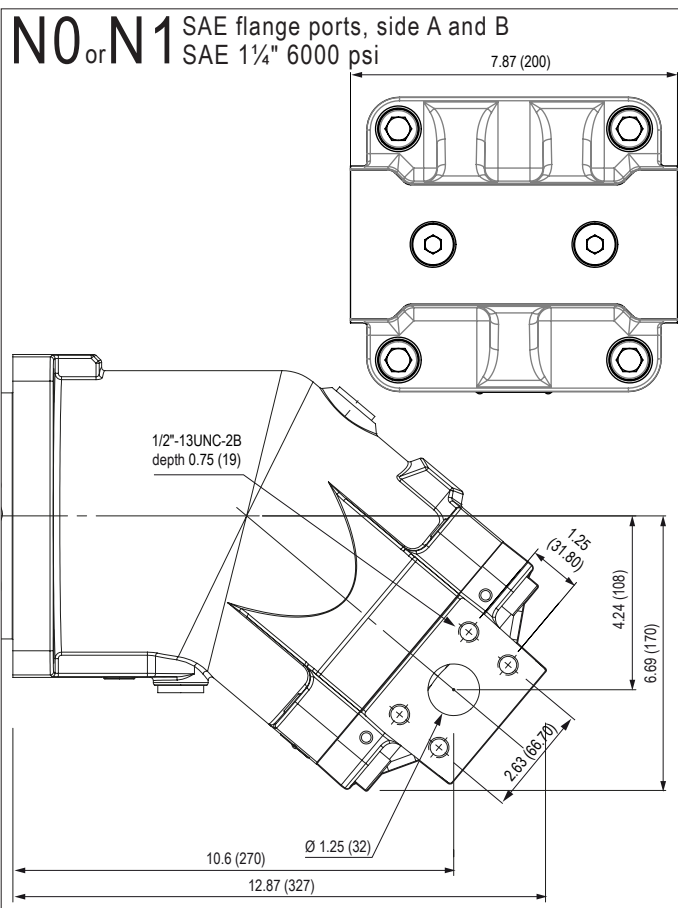
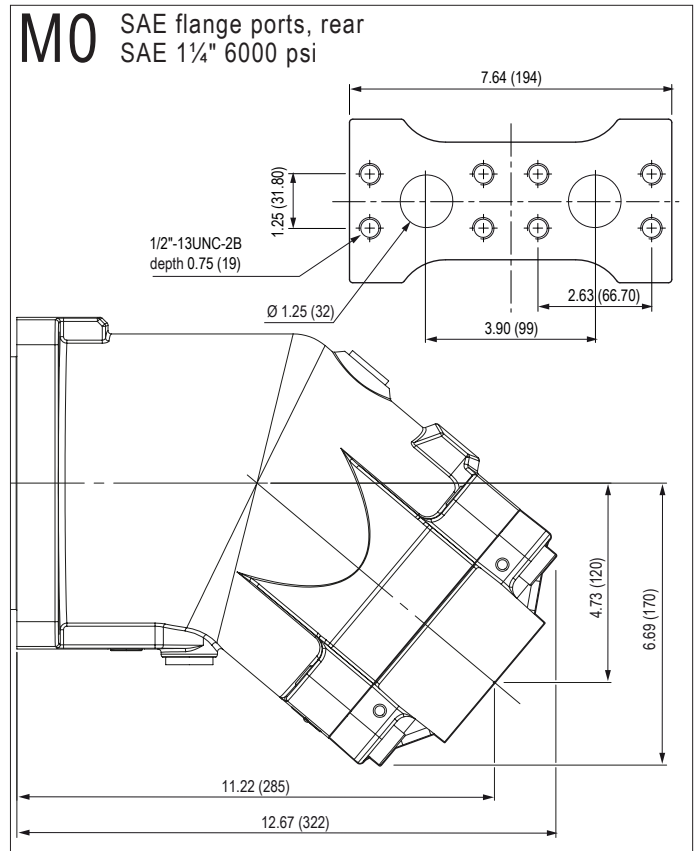
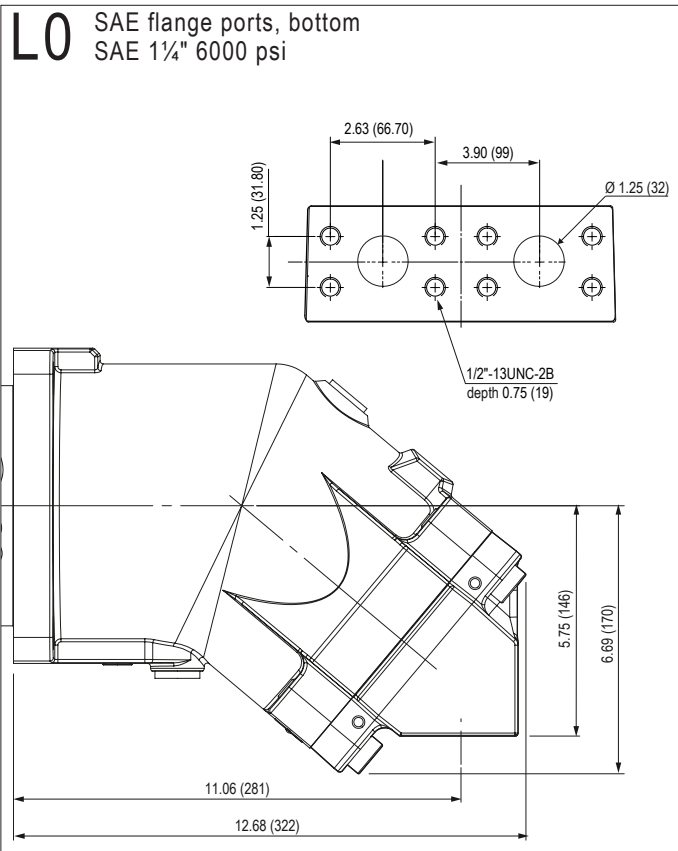
Dimensions in inches (mm) are given only as an indication.



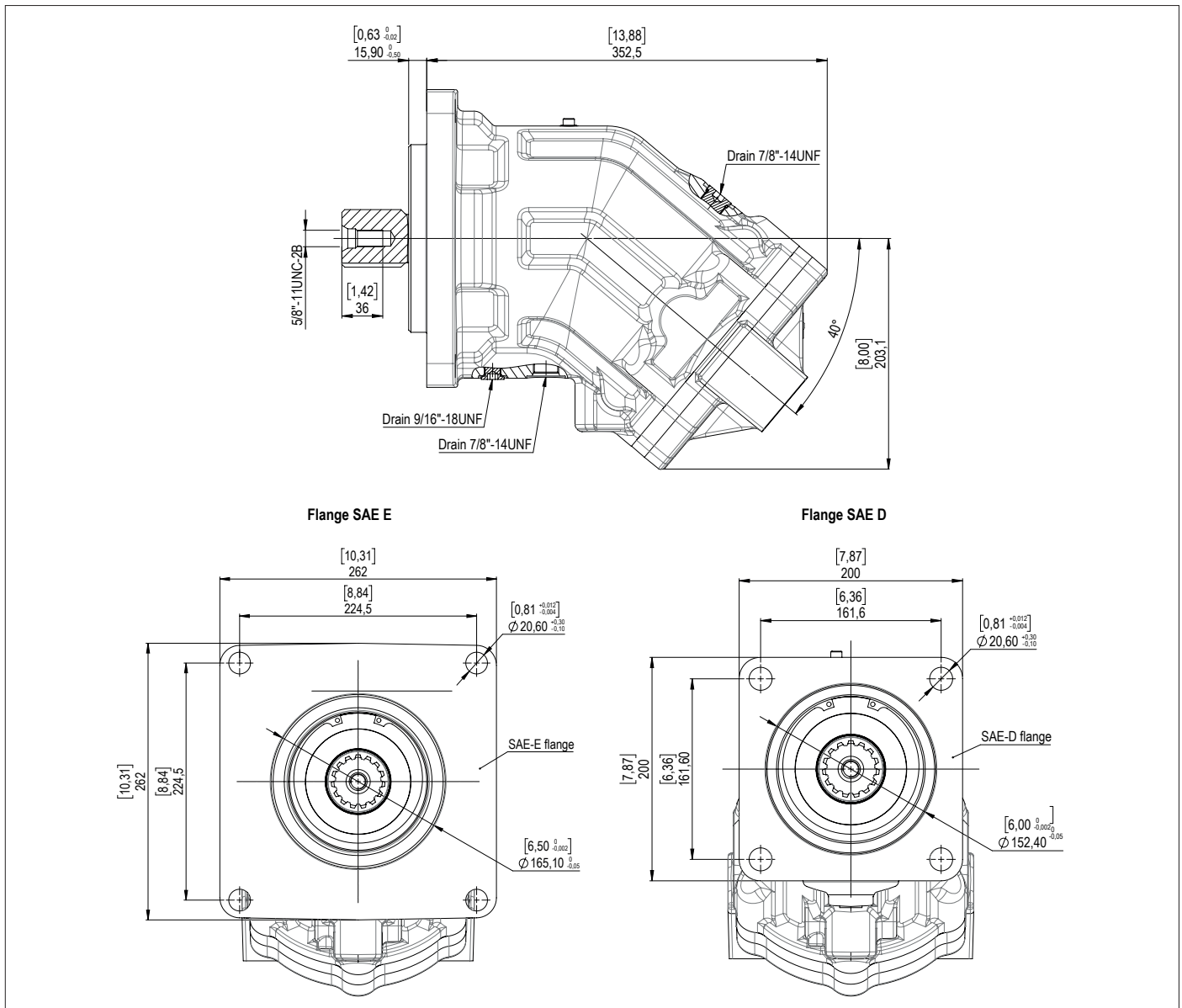
► Shaft end



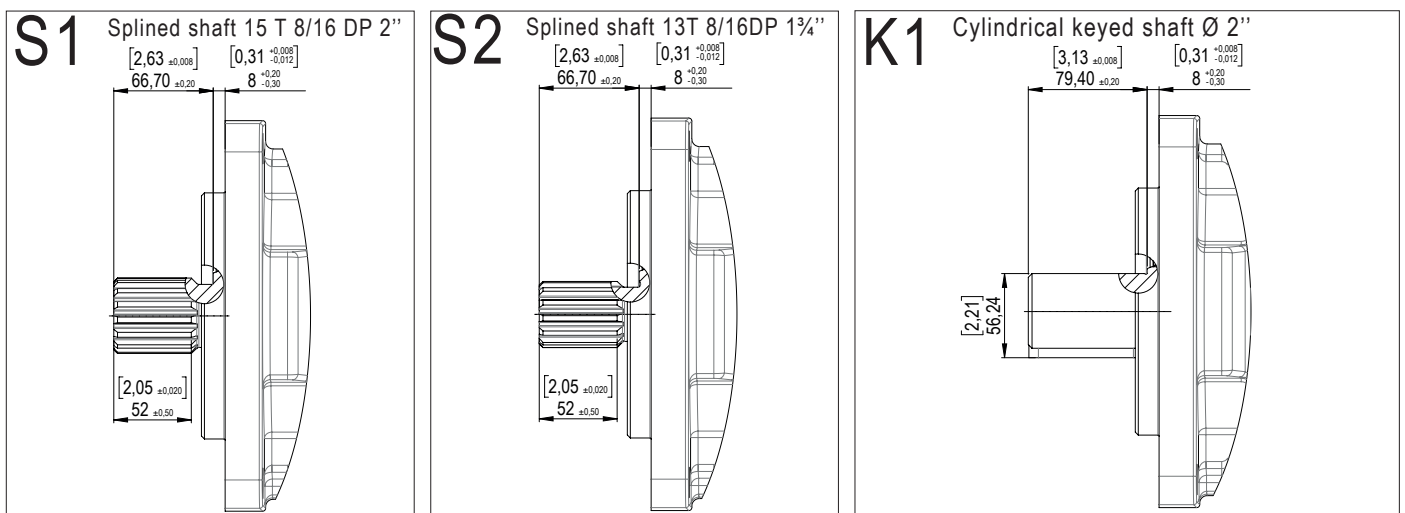
► Inlet ports



Dimensions in inches (mm) are given only as an indication.

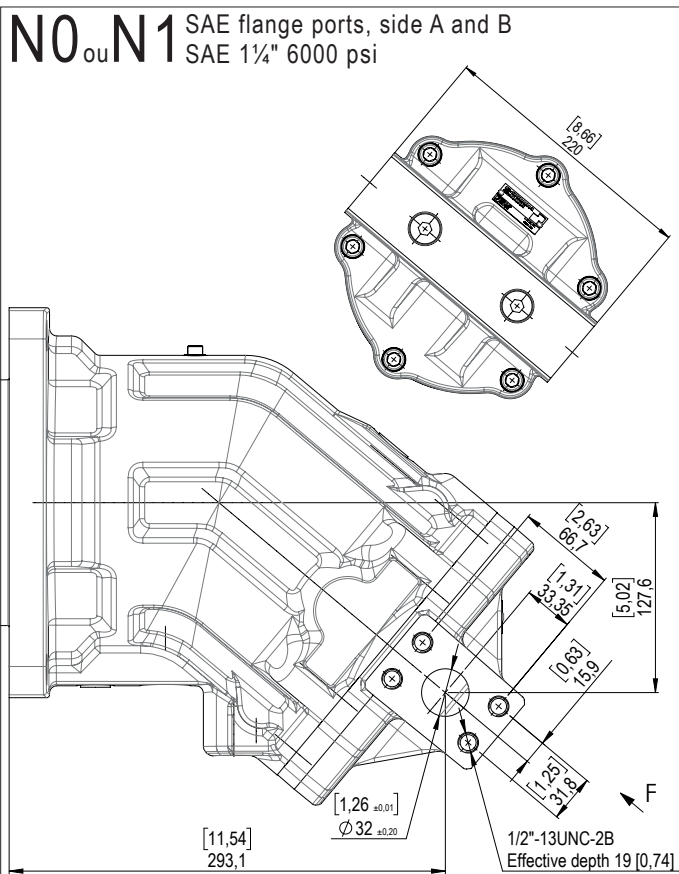
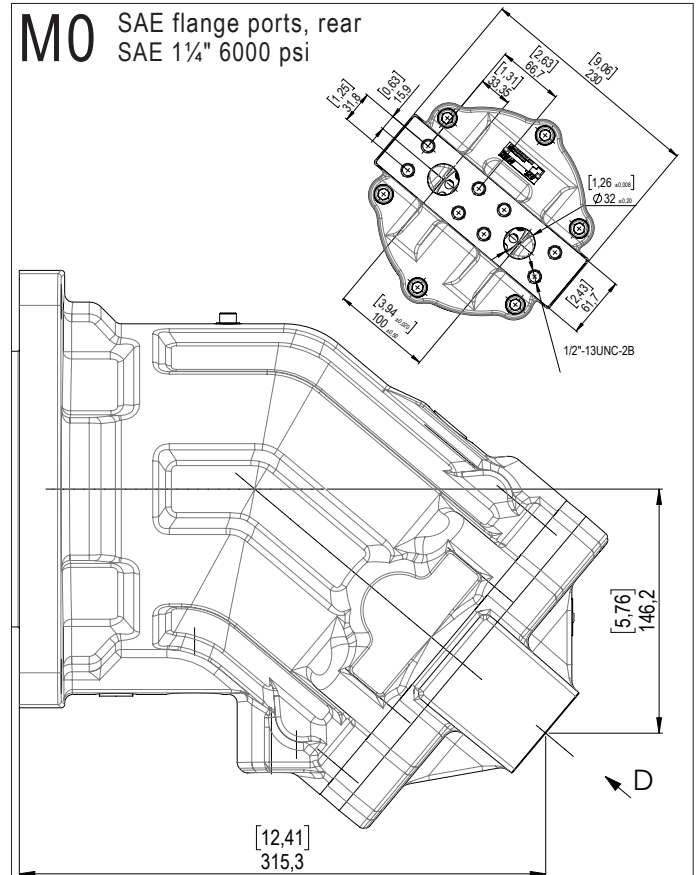
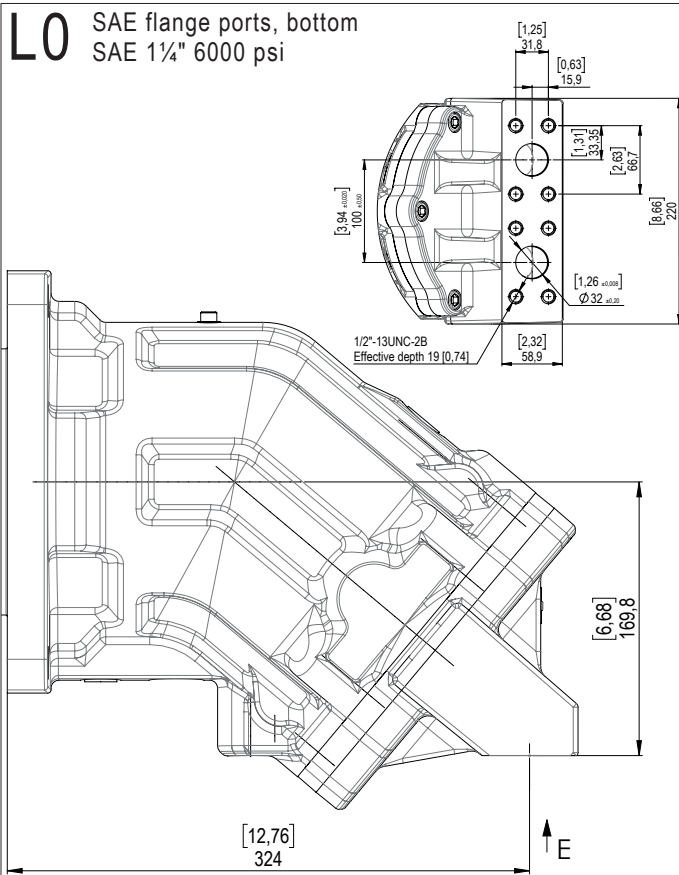


► Shaft end



Dimensions in inches (mm) are given only as an indication.

► Inlet ports



Dimensions in inches (mm) are given only as an indication.

CHARACTERISTICS OF THE MSI SERIES MOTORS

| Motor model | Displacement (cc/rev) | Continuous max. speed (1) (rpm) | Intermittent max. speed (1) (rpm) | Max. flow absorbed (l/min) | Torque (N.m/bar) | Torque at 350 bar (N.m) | Max. allowable pressure continuous / peak (bar) | Weight (kg) |
|---------------|-----------------------|---------------------------------|-----------------------------------|----------------------------|------------------|-------------------------|---|-------------|
| MSI 28 | 27,7 | 6300 | 6900 | 175 | 0,44 | 154 | 400 / 450 | 11,5 |
| MSI 32 | 32,1 | 6300 | 6900 | 202 | 0,51 | 179 | 400 / 450 | 11,5 |
| MSI 41 | 41,1 | 5600 | 6200 | 230 | 0,65 | 229 | 400 / 450 | 11,5 |
| MSI 45 | 45,4 | 5000 | 5500 | 227 | 0,72 | 253 | 400 / 450 | 17 |
| MSI 50 | 50,3 | 5000 | 5500 | 252 | 0,80 | 280 | 400 / 450 | 19 |
| MSI 63 | 63,3 | 5000 | 5500 | 315 | 1,00 | 351 | 400 / 450 | 19 |
| MSI 80 | 80,4 | 4500 | 5000 | 362 | 1,28 | 448 | 400 / 450 | 26 |
| MSI 90 | 90 | 4500 | 5000 | 405 | 1,43 | 501 | 400 / 450 | 26 |
| MSI 108 | 108,3 | 4000 | 4400 | 433 | 1,72 | 603 | 400 / 450 | 26 |
| MSI 108 R (2) | 108,3 | 3400 | 4500 | 368 | 1,72 | 603 | 400 / 450 | 33 |
| MSI 125 | 125,3 | 3400 | 4500 | 426 | 2,00 | 699 | 400 / 450 | 33 |
| MSI 160 | 160,3 | 3600 | 4000 | 576 | 2,55 | 891 | 400 / 450 | 45,3 |
| MSI 180 | 180,3 | 3600 | 4000 | 650 | 2,87 | 1006 | 400 / 450 | 45,3 |

(1) For higher speeds, please contact us.

(2) The MSI 108 R is in the frame size of the MA 125.

► Acceptable forces applied to motor shaft

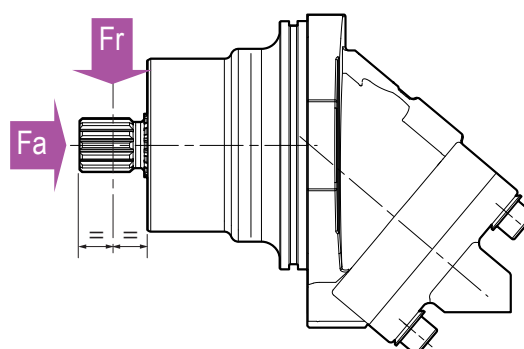
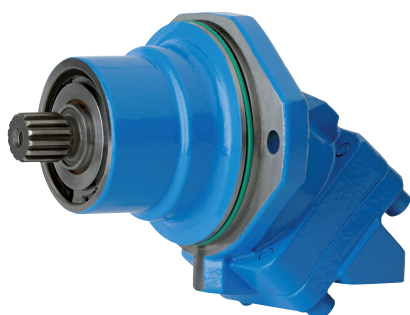
| Motor model | 28 | 32 | 41 | 45 | 50 | 63 | 80 | 90 | 108 | 108 R | 125 | 160 | 180 | |
|-------------|---------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
| Fr | N | 6200 | 6500 | 7000 | 6500 | 7500 | 9000 | 10500 | 11000 | 11500 | 12500 | 14500 | 18000 | 20000 |
| Fa | N/bar * | 28 | 30 | 40 | 40 | 40 | 50 | 60 | 67 | 80 | 80 | 86 | 85 | 95 |

Fr: radial force measured at mid point of length of shaft.

Fa: axial force which tends to push the shaft inwards.

* Differential pressure between A and B.

For other forces, please contact us.



| | | | | | | | | | | |
|-----|-----|----|-----|-----|----|-----|-----|-----|-----|----|
| MSI | ... | B | ... | ... | M1 | ... | ... | ... | ... | SP |
| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 |

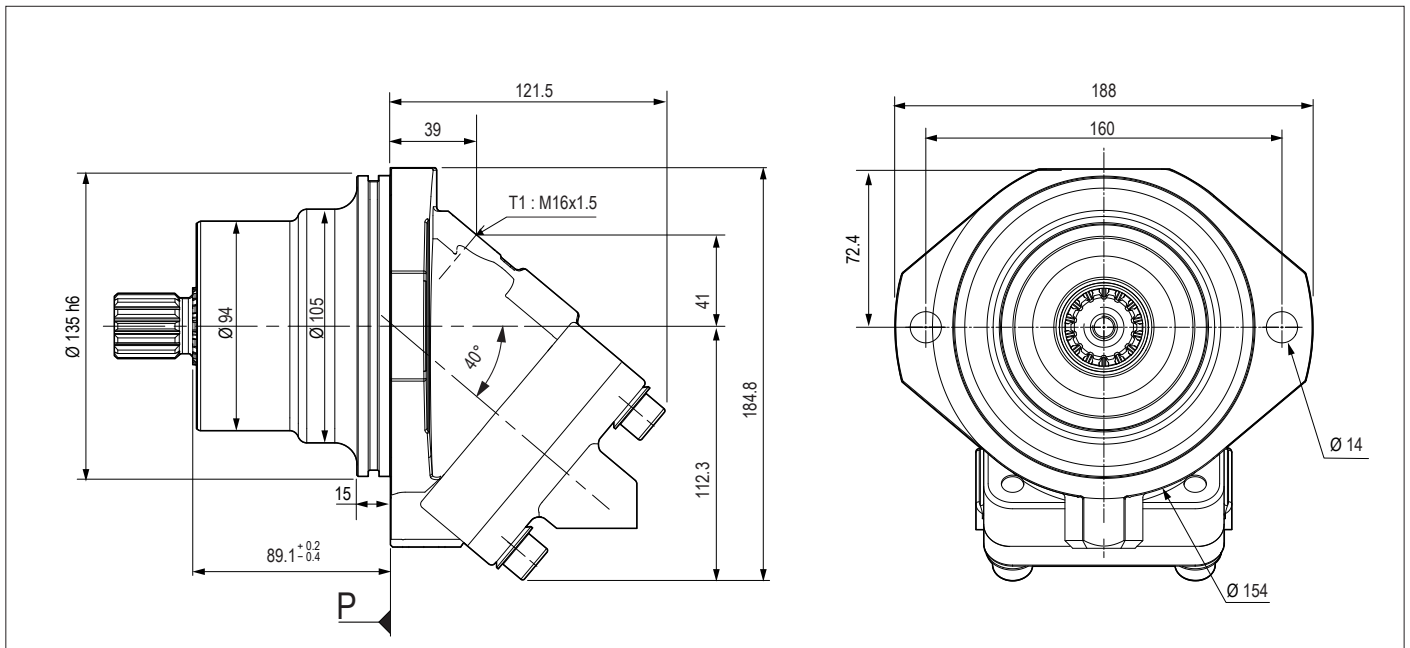
To obtain the code for your motor, complete the different parameters 02, 04, 05, 07, 08, 09 and 10, in the table on the left according to the options you require (see table below).

| Motor | | | | | | | | | | | | | | | | | |
|----------------------------------|--------------------------|-------------|--|-----|-----|-----|-----|-----|-----|-----|-----|-------|-----|-----|-----|-------------|-----------|
| 01 | Semi-integrated motor | | | | | | | | | | | | | | | MSI | |
| Displacement | | | | | | | | | | | | | | | | | |
| 02 | | | 28 | 32 | 41 | 45 | 50 | 63 | 80 | 90 | 108 | 108 R | 125 | 160 | 180 | | |
| Mounting flange | | | | | | | | | | | | | | | | | |
| 03 | 2 bolts ISO 3019-2 | | | | | | | | | | | | | | | B | |
| Shaft | | | | | | | | | | | | | | | | | |
| 04 | DIN 5480 splined | W30 | W30 | W30 | W30 | W30 | W30 | W30 | W40 | W40 | W40 | W45 | W45 | W50 | W50 | W1 | |
| | | W25 | W25 | - | W35 | W35 | W35 | W35 | W35 | W35 | - | W40 | W40 | - | - | W2 | |
| | DIN 6885 keyed | Ø30 | Ø30 | Ø30 | Ø30 | Ø30 | Ø30 | Ø30 | Ø40 | Ø40 | Ø40 | Ø45 | Ø45 | Ø50 | Ø50 | D1 | |
| | | Ø25 | Ø25 | - | Ø35 | Ø35 | Ø35 | - | - | - | Ø40 | - | - | - | - | D2 | |
| Inlet ports A and B | | | | | | | | | | | | | | | | | |
| 05 | SAE flange ports | Bottom | 0 | • | • | • | - | • | • | • | • | • | • | • | • | L0 | |
| | | Rear | 0 | • | • | • | - | • | • | • | • | • | • | • | • | M0 | |
| | | Side | 0 | • | • | • | - | • | • | • | • | • | • | • | • | • | N0 |
| | 1 | | • | • | • | - | • | • | • | • | • | • | • | • | • | N1 | |
| | Threaded | Side | 0 | • | • | • | - | • | • | • | • | • | - | - | - | - | Q0 |
| | | | 1 | • | • | • | - | • | • | • | • | • | - | - | - | - | Q1 |
| Rear | | 0 | • | • | • | - | • | • | • | • | • | - | - | - | - | P0 | |
| | | | 0 = Without suitability for valves 1 = Compatible with flushing valve | | | | | | | | | | | | | | |
| Drain ports T1 and T2 | | | | | | | | | | | | | | | | | |
| 06 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | M1 | |
| Suitable for use of speed sensor | | | | | | | | | | | | | | | | | |
| 07 | Yes | • | • | • | • | • | • | • | • | • | • | • | • | • | • | 1 | |
| | No | • | • | • | • | • | • | • | • | • | • | • | • | • | • | 0 | |
| Speed sensor | | | | | | | | | | | | | | | | | |
| 08 | 1 frequency signal | | • | • | • | • | • | • | • | • | • | • | • | • | • | 1 | |
| | 1 signal with connector | | • | • | • | • | • | • | • | • | • | • | • | • | • | 1P | |
| | 2 signals with connector | | • | • | • | • | • | • | • | • | • | • | • | • | • | 2P | |
| | No | | • | • | • | • | • | • | • | • | • | • | • | • | • | 0 | |
| Flushing valve | | | | | | | | | | | | | | | | | |
| 09 | Without | | • | • | • | • | • | • | • | • | • | • | • | • | • | SV | |
| | Flow rate | 4,25 l/min* | • | • | • | • | • | • | • | • | • | • | • | • | • | VB04 | |
| | | 10 l/min* | • | • | • | • | • | • | • | • | • | • | • | • | • | VB10 | |
| | | 14 l/min* | • | • | • | • | • | • | • | • | • | • | • | • | • | VB14 | |
| Low temperature option | | | | | | | | | | | | | | | | | |
| 10 | Yes (NBR) | | • | • | • | • | • | • | • | • | • | • | • | • | • | N | |
| | No (FKM) | | • | • | • | • | • | • | • | • | • | • | • | • | • | F | |

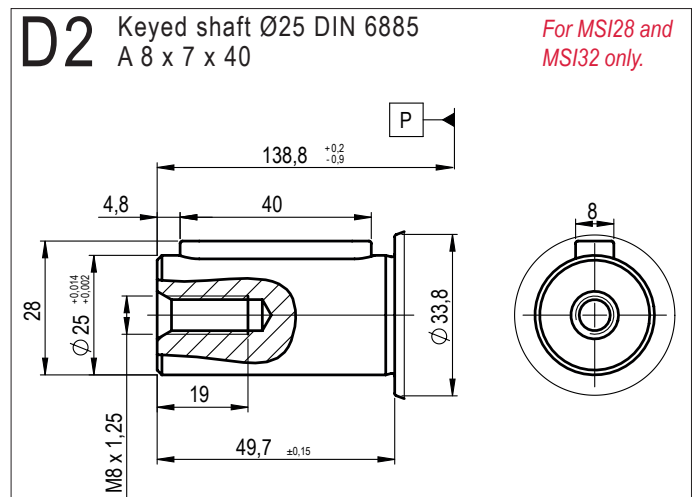
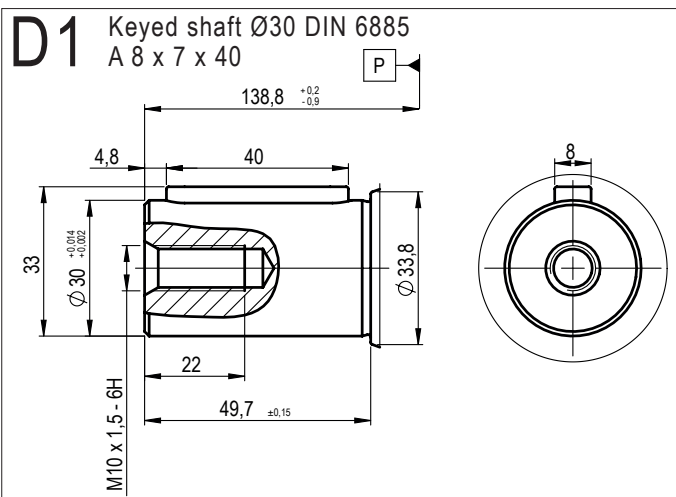
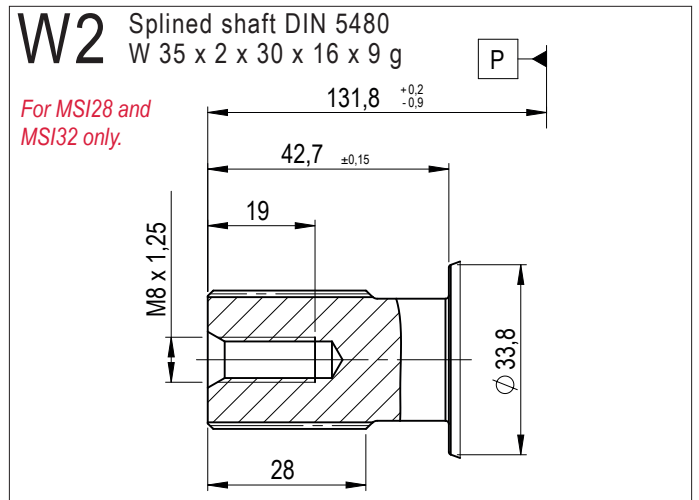
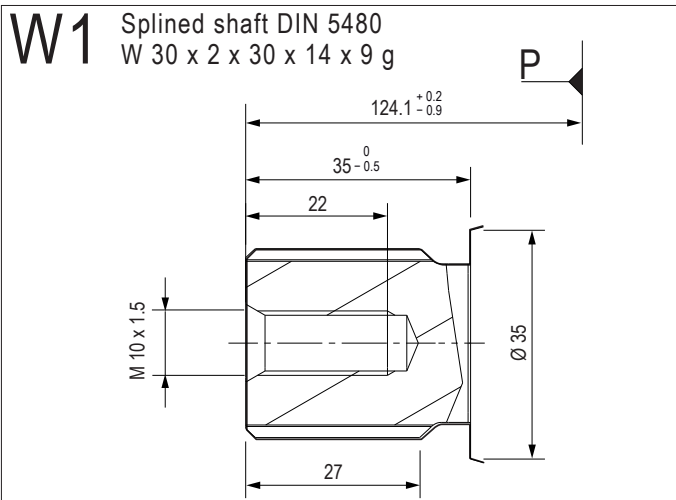
Légende:

- Existing model
- Not yet existing

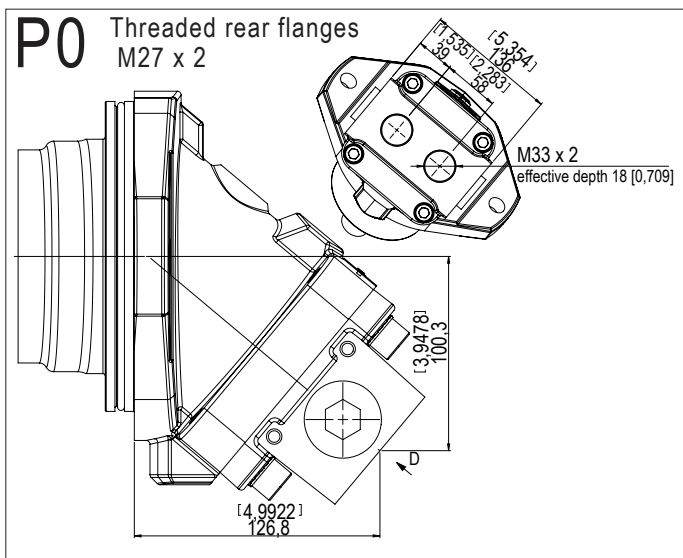
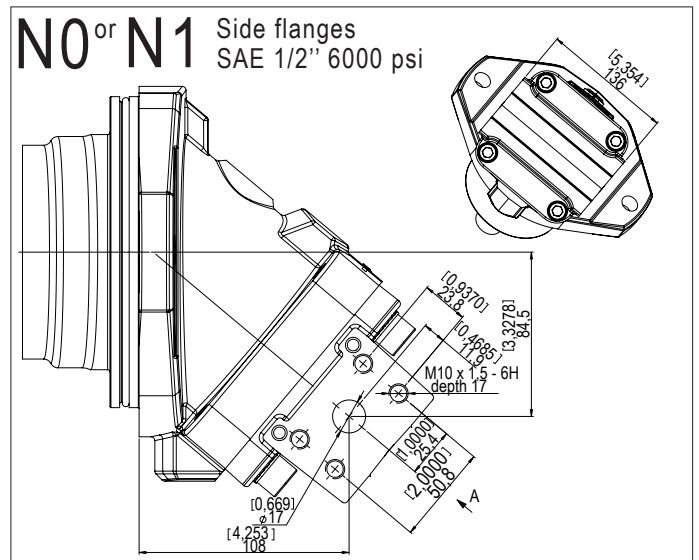
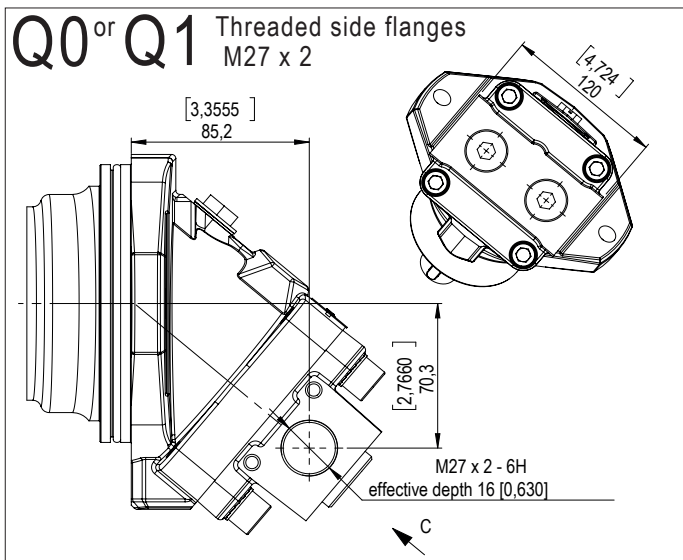
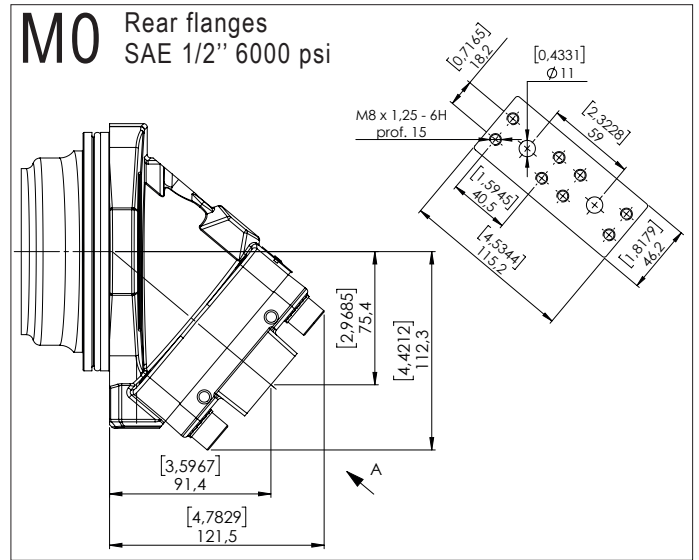
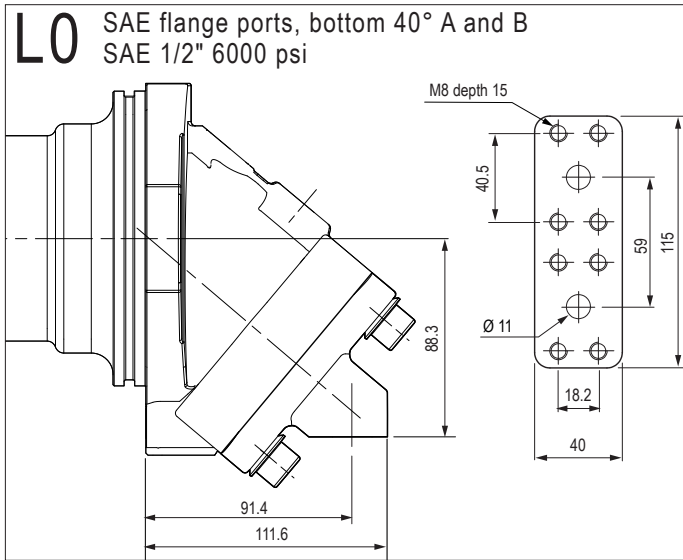
 *($\Delta p = 25$ bar)



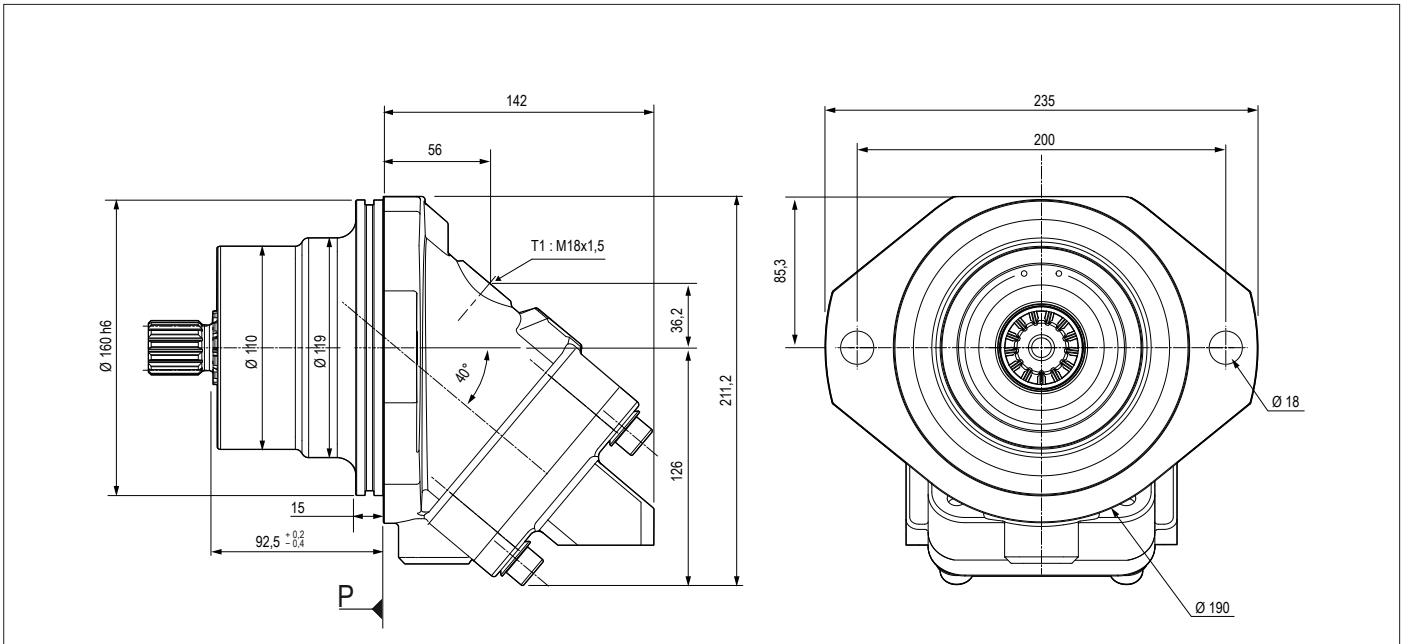
► Shaft end



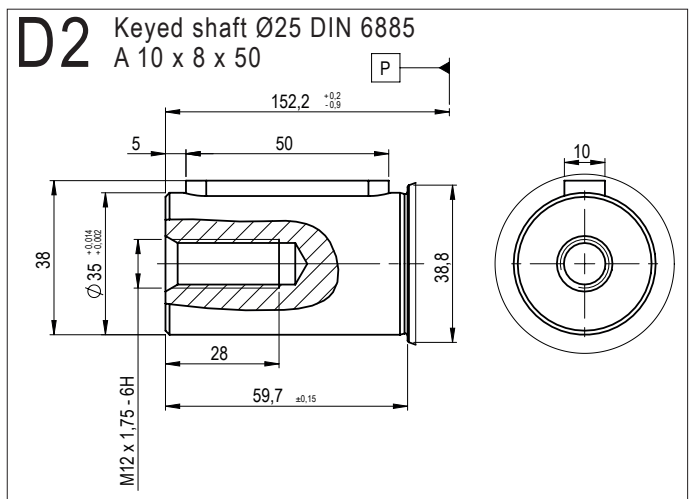
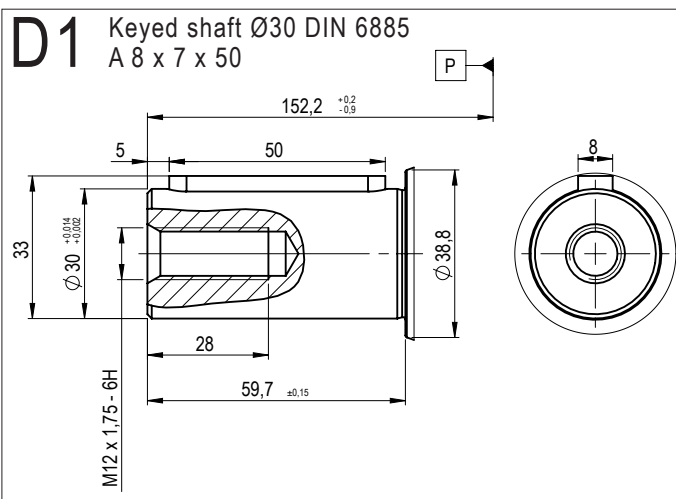
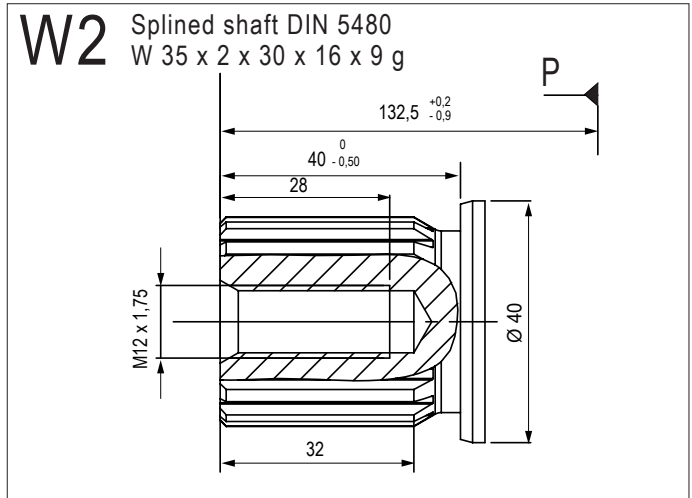
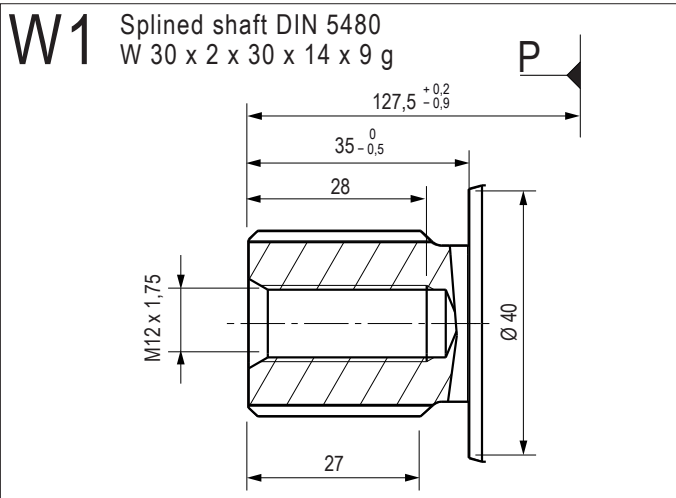
► Inlet ports



Dimensions are given only as an indication. Measurements in mm and [inches].

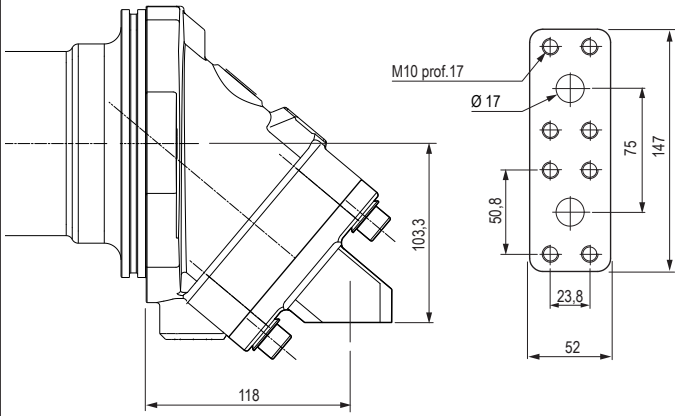


► Shaft end

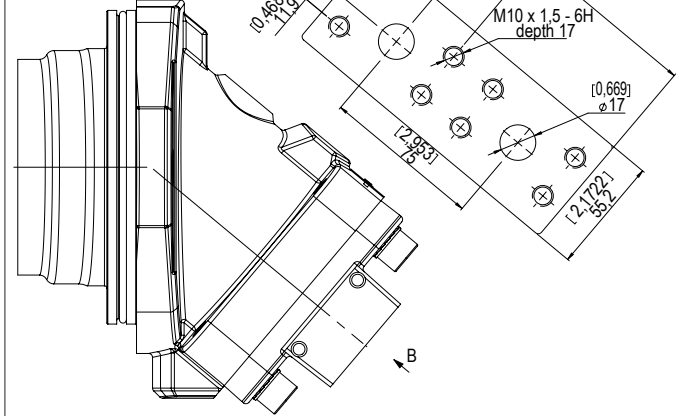


► Inlet ports

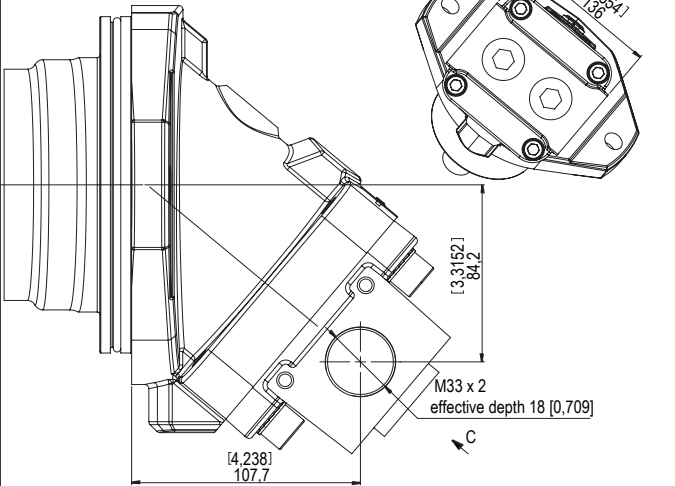
L0 Bottom flanges
SAE 3/4" 6000 psi



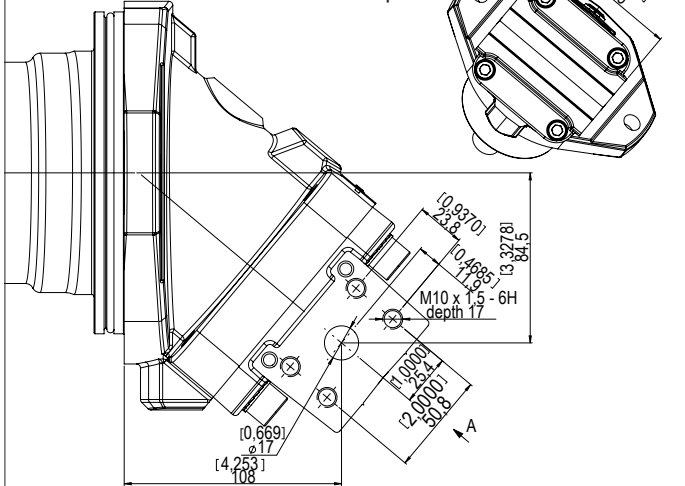
M0 Rear flanges
SAE 3/4" 6000 psi



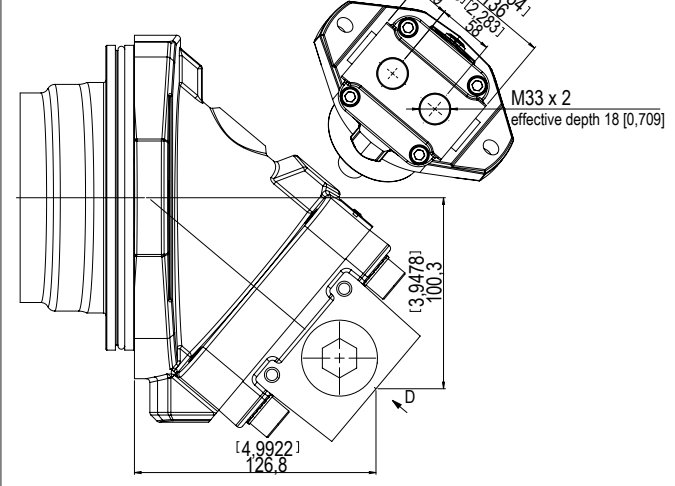
Q0 or Q1 Threaded side flanges
M33 x 2



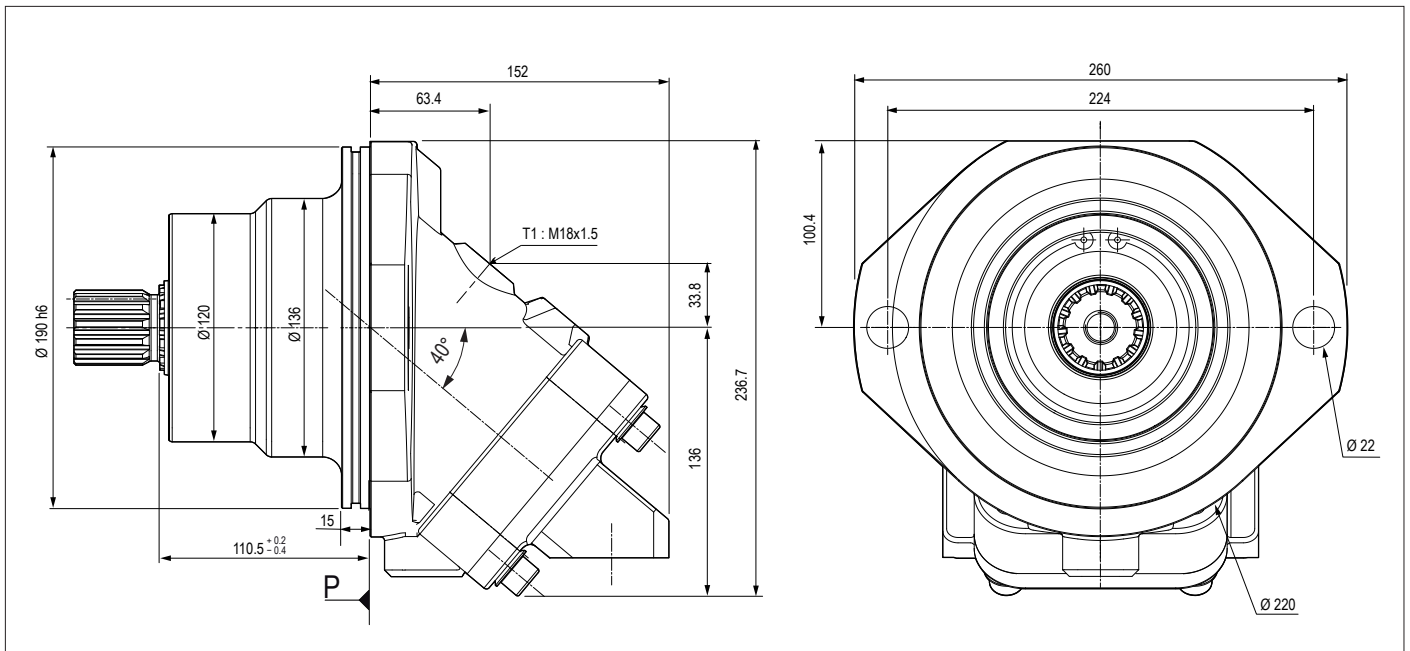
N0 or N1 Side flanges
SAE 3/4" 6000 psi



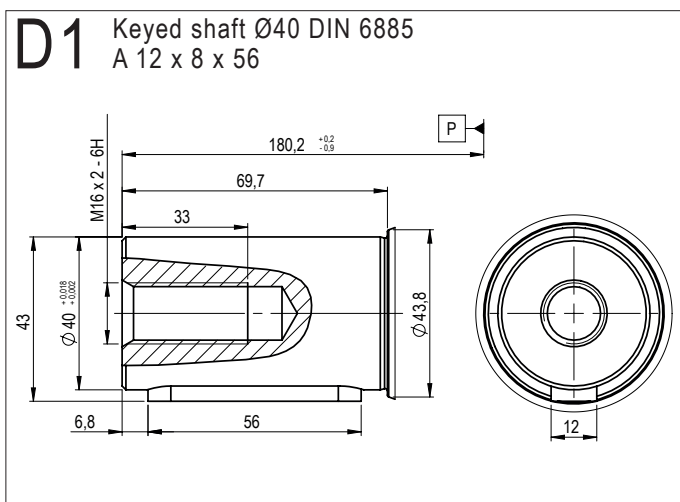
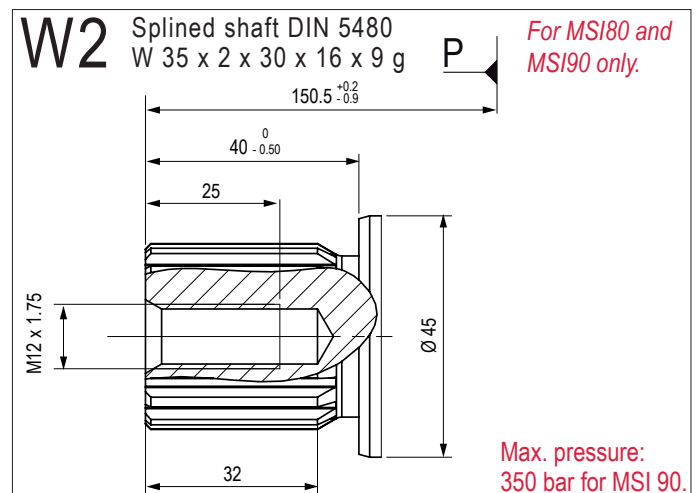
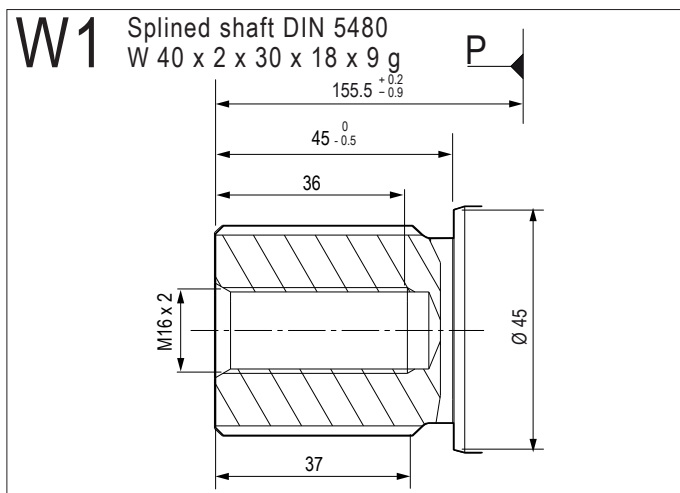
P0 Threaded rear flanges
M33 x 2



Dimensions are given only as an indication. Measurements in mm and [inches].

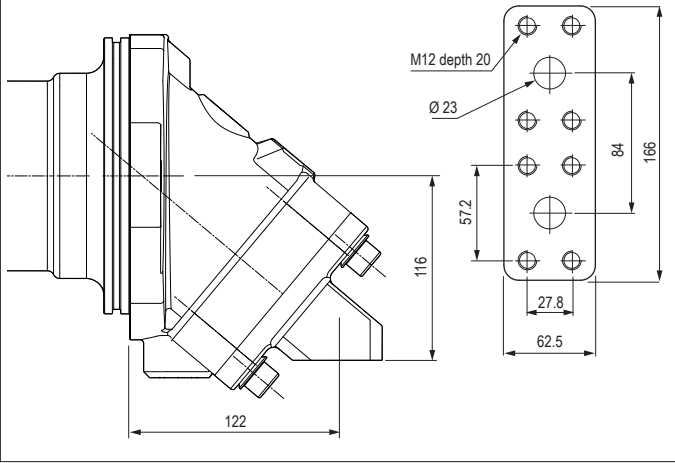


► Shaft end

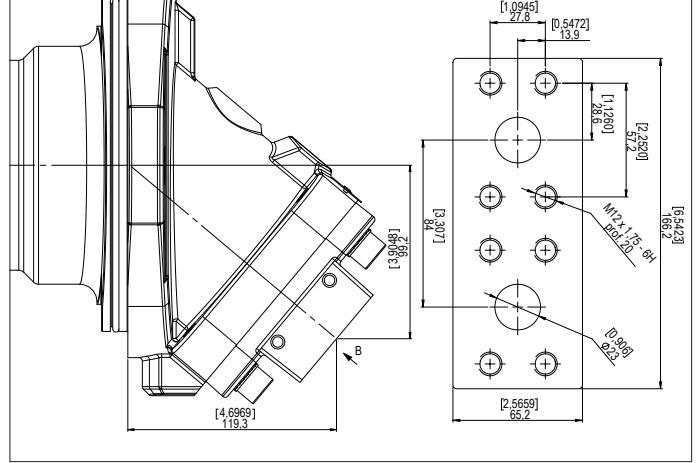


► Inlet ports

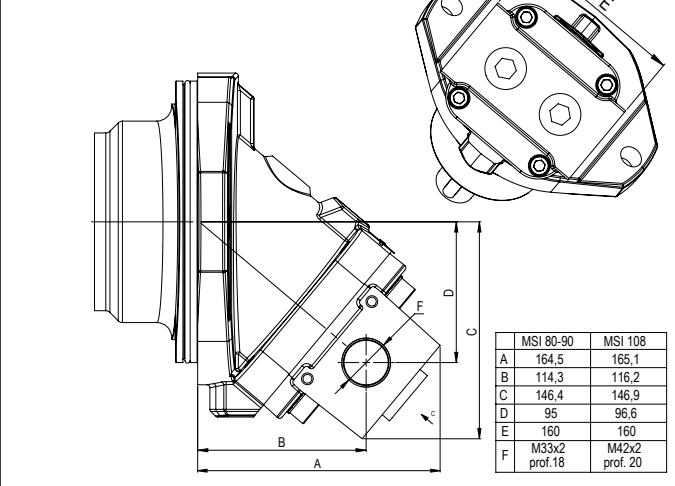
L0 SAE flange ports, bottom 40° A and B
SAE 1" 6000 psi



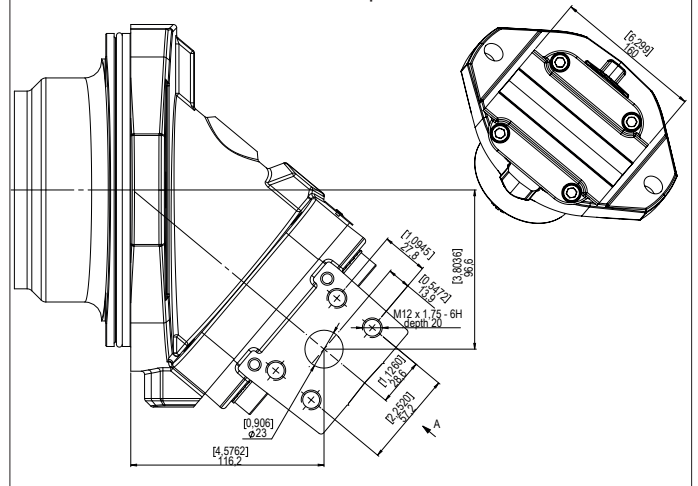
M0 Rear flanges
SAE 1" 6000 psi



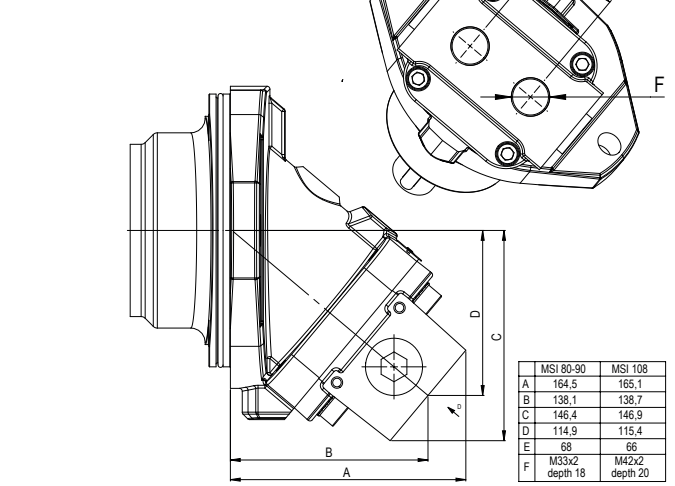
Q0 or Q1 Threaded side flanges



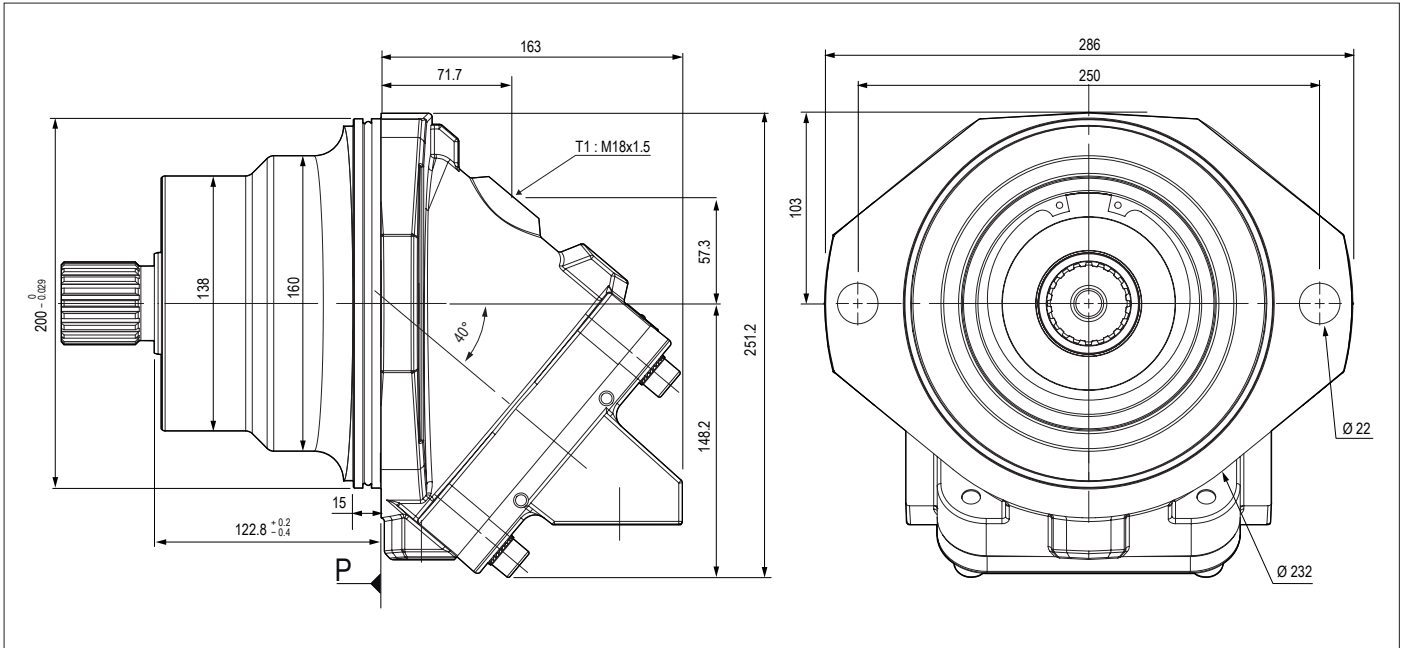
N0 or N1 Side flanges
SAE 1" 6000 psi



P0 Threaded rear flanges

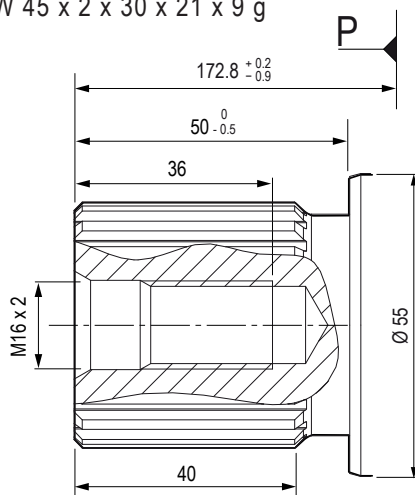


Dimensions are given only as an indication. Measurements in mm and [inches].

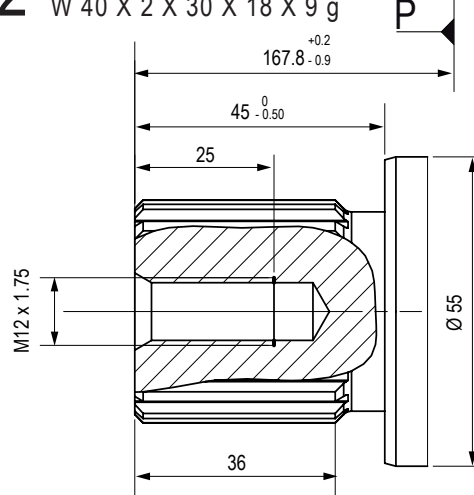


► Shaft end

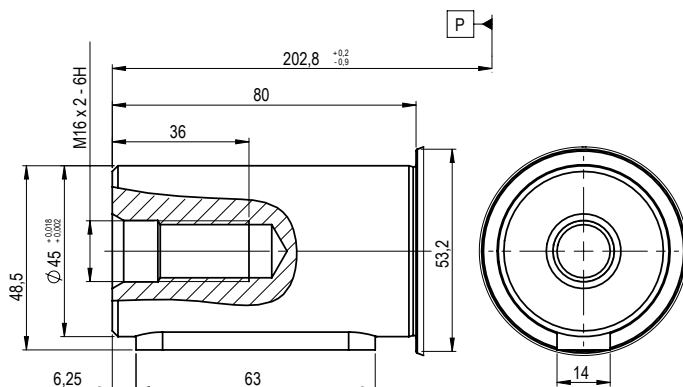
W1 Splined shaft DIN 5480
W 45 x 2 x 30 x 21 x 9 g



W2 Splined shaft DIN 5480
W 40 X 2 X 30 X 18 X 9 g

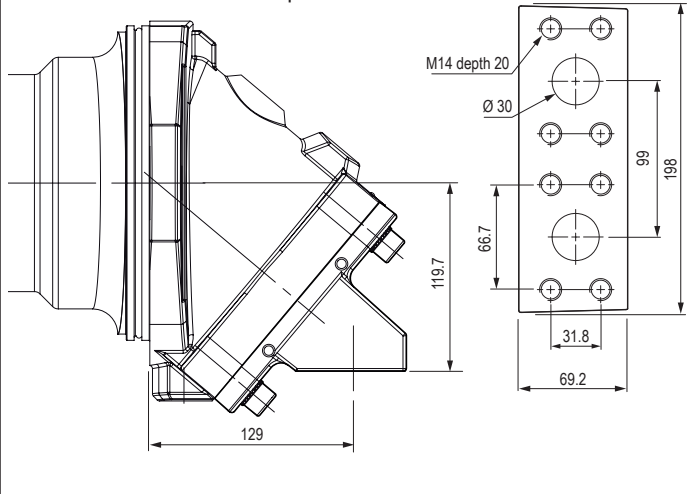


D1 Keyed shaft Ø45 DIN 6885
A 14 x 9 x 63

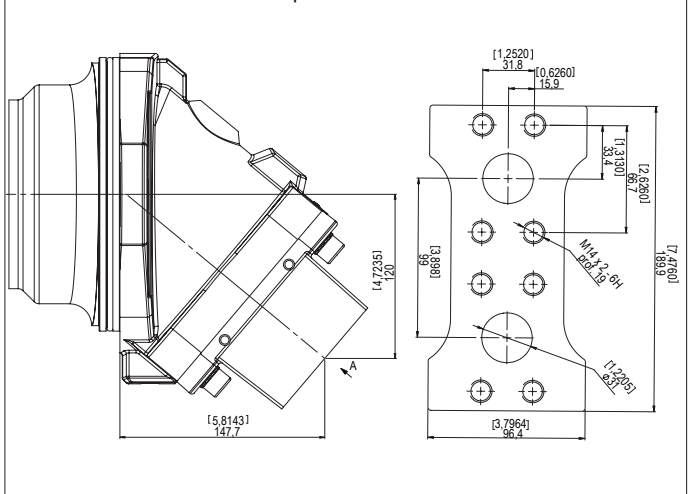


► Inlet ports

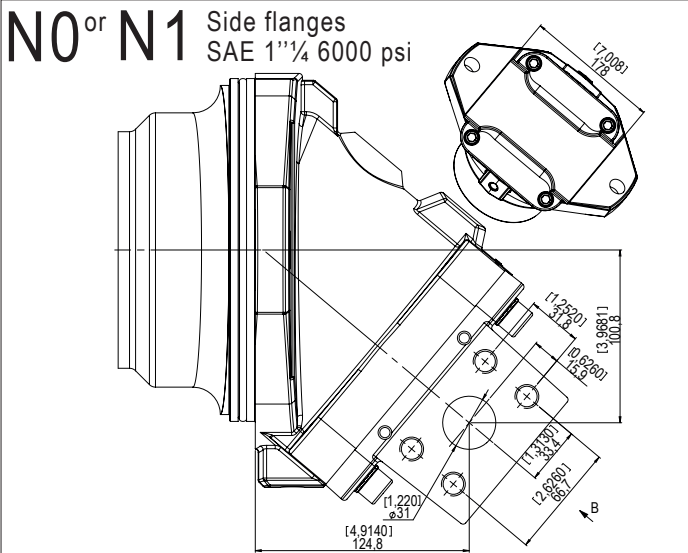
L0 SAE flange ports, bottom 40° A and B
SAE 1 1/4 6000 psi



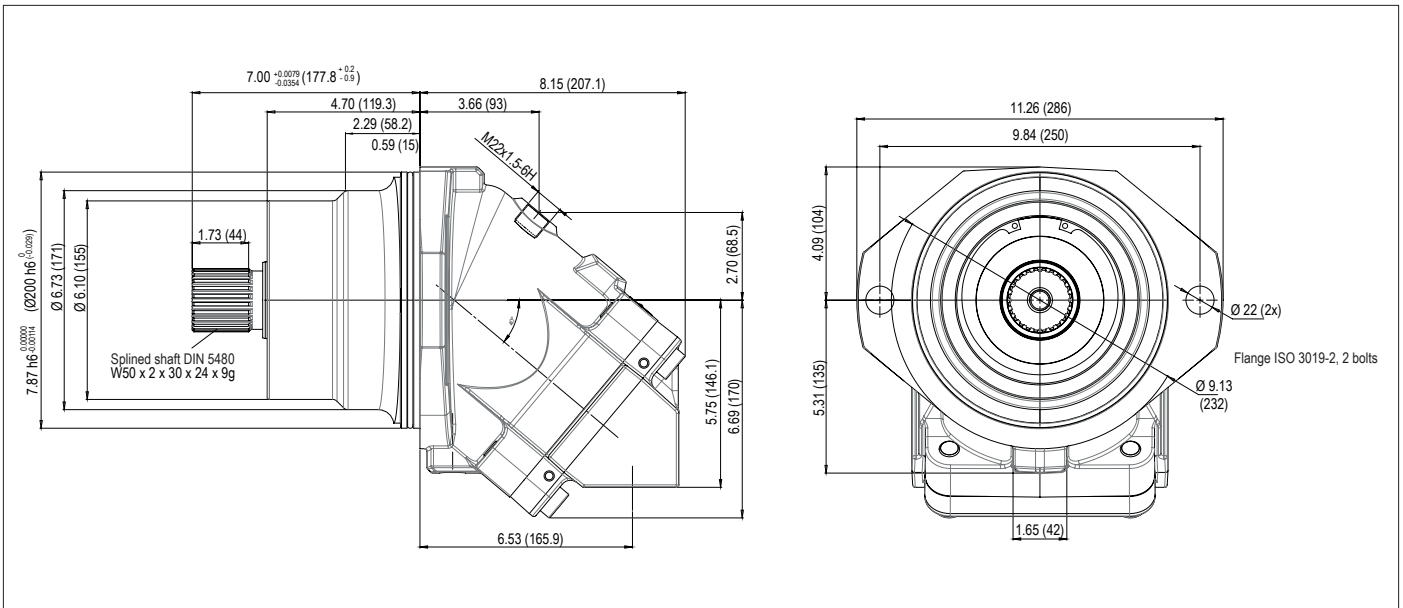
M0 Rear flanges
SAE 1 1/4 6000 psi



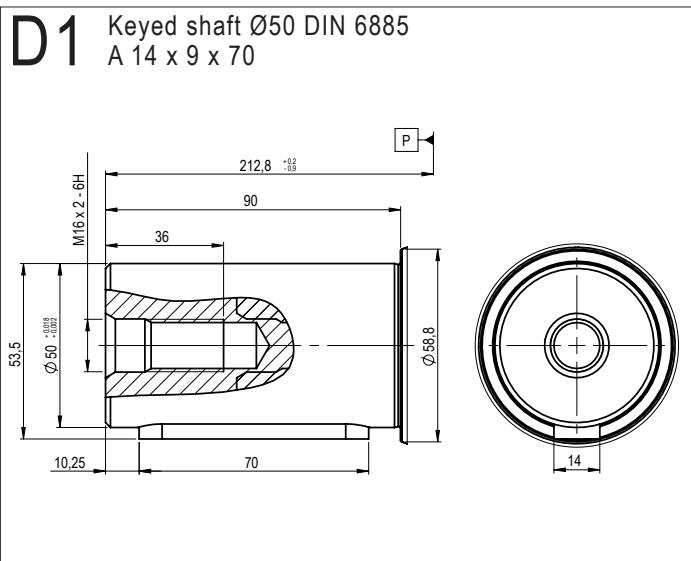
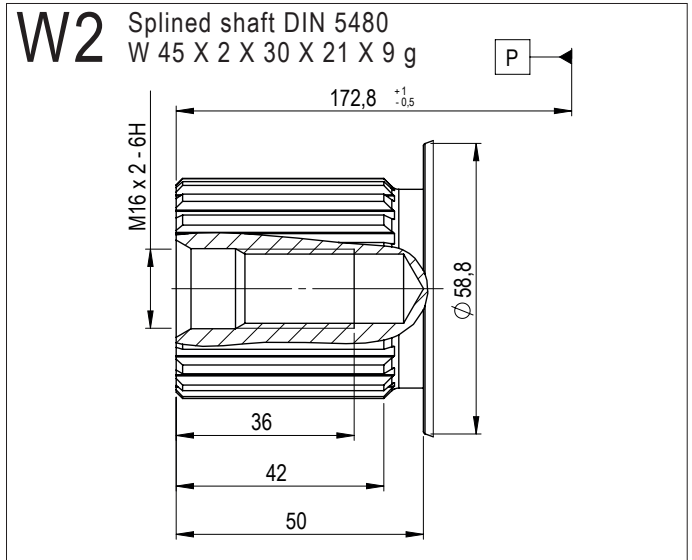
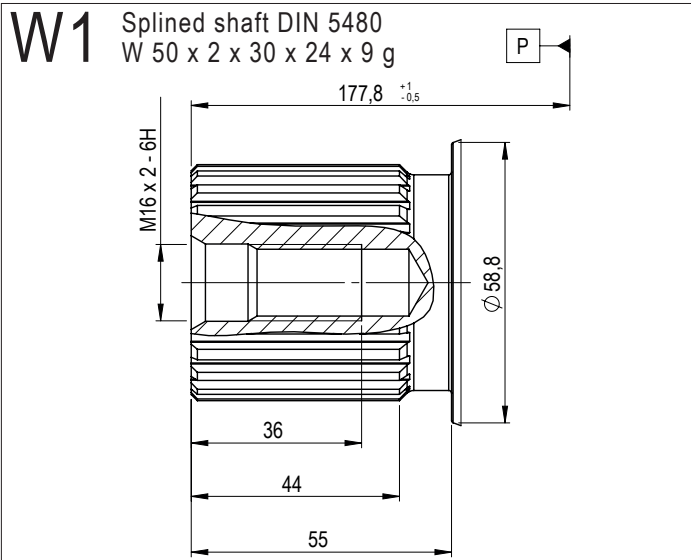
N0 or N1 Side flanges
SAE 1 1/4 6000 psi



Dimensions are given only as an indication. Measurements in mm and [inches].

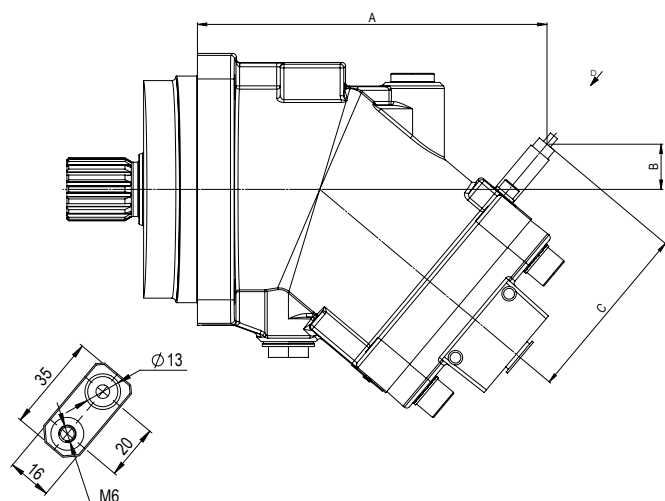


► Shaft end



SPEED SENSOR & INDICATOR OF DIRECTION OF ROTATION

M, MA, MSI series motors can be fitted with an induction type speed sensor, to measure rotating speed and also direction of rotation. This accessory may only be used on motors which are suitably adapted to take it (see the order code system).



► Technical data for the sensor

| | |
|-----------------------|--------------------------------------|
| Supply voltage | 8...32 V DC |
| Current consumption | maximum 15 mA @ 24 Vdc |
| Output frequency | 0 Hz...20 kHz |
| Protection type | IP 6K9K |
| Operating temperature | - 104°F...+ 257°F (- 40°C...+ 125°C) |
| Cable length | 1500 mm |

| Series | Motor models | A (mm) | B (mm) | C (mm) | Number of teeth * |
|--------|----------------------|--------|--------|--------|-------------------|
| M | M 5 | 133 | 61 | 86 | 26 |
| | M 12 - 18 | 152 | 33 | 88 | 30 |
| | M 25 | 169 | 32 | 91 | 33 |
| | M 28 - 32 - 35 - 41 | 174 | 28 | 91 | 33 |
| | M 41R - 45 - 50 - 63 | 192 | 24 | 98 | 39 |
| | M 80 - 90 - 108 | 218 | 18 | 103 | 44 |
| | M 108R - 125 | 225 | 46 | 121 | 64 |
| | M 160 - 180 | 250 | 47 | 126 | 68 |
| MA | MA 10 - 12 - 16 - 18 | 162 | 32 | 87 | 30 |
| | MA 25 | 173 | 41 | 92 | 35 |
| | MA 32 - 41 | 173 | 41 | 92 | 35 |
| | MA 45 - 50 - 63 | 193 | 35 | 96 | 39 |
| | MA 80 - 90 - 108 | 223 | 30 | 101 | 44 |
| | MA 108R - 125 | 251 | 45 | 122 | 64 |
| | MA 160 - 180 | 282 | 47 | 126 | 68 |
| | MA 250 | 125 | 115 | - | 74 |
| MSI | MSI 28 - 32 - 41 | 97 | 43 | 91 | 35 |
| | MSI 45 - 50 - 63 | 117 | 36 | 96 | 39 |
| | MSI 80 - 90 - 108 | 125 | 31 | 101 | 44 |
| | MSI 108 R - MSI 125 | 142 | 45 | 122 | 64 |
| | MSI 160 - MSI 180 | 169 | 50 | 130 | 68 |

* The motors suitable for use with a speed sensor are fitted with a gear wheel on the barrel.

When this barrel rotates, it produces a signal proportional to rotating speed, and which is picked up by the sensor.

FLUSHING VALVE

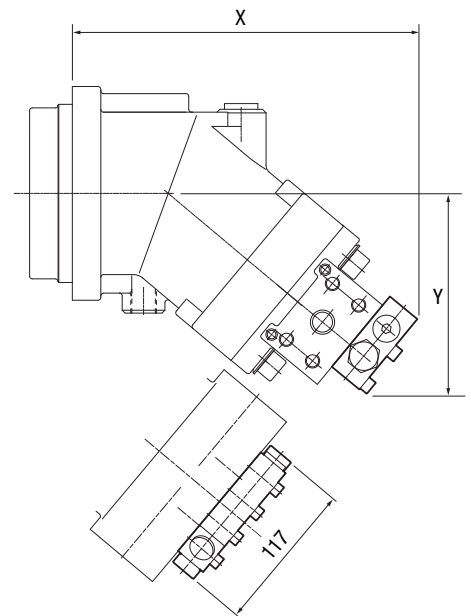
Used to create engine cooling flow, this valve is essential for heavy-duty applications and promotes the longevity of engines in high-stress applications.

The valve draws a portion of the hydraulic fluid from the return port (low pressure) and reintroduces it into the motor casing. This supply is then discharged through the motor's drain.

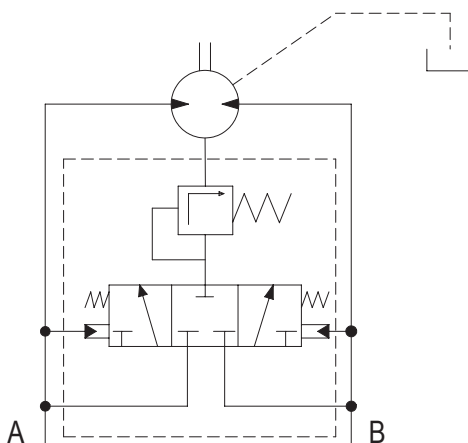
The flushing valve is only available for motors with side ports (N1 or Q1).

► Dimensions

| Series | Type of motor | X (mm) | Y (mm) |
|--------|---------------------|--------|--------|
| M | M 25 | 207 | 116 |
| | M 28 - 32 - 35 - 41 | 213 | 121 |
| | M 45 - 50 - 63 | 235 | 137 |
| | M 80 - 90 - 108 | 265 | 153 |
| | M 108R | 273 | 153 |
| | M 125 | 275 | 155 |
| | M 160 - 180 | 313 | 172 |
| MA | MA 25 | 221 | 116 |
| | MA 32 - 41 | 228 | 122 |
| | MA 45 - 50 - 63 | 256 | 137 |
| | MA 80 - 90 | 286 | 153 |
| | MA 108 R | 305 | 157 |
| | MA 125 | 307 | 159 |
| | MA 160 - 180 | 345 | 170 |
| MSI | MSI 28 - 32 - 41 | 150 | 121 |
| | MSI 45 - 50 - 63 | 175 | 137 |
| | MSI 80 - 90 - 108 | 187 | 153 |
| | MSI 108R - 125 | 197 | 158 |

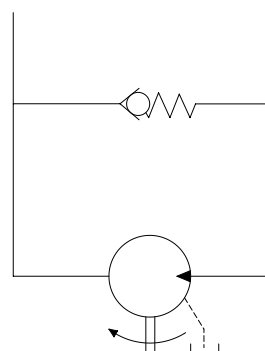


► Schematic Diagram of the Flushing valve

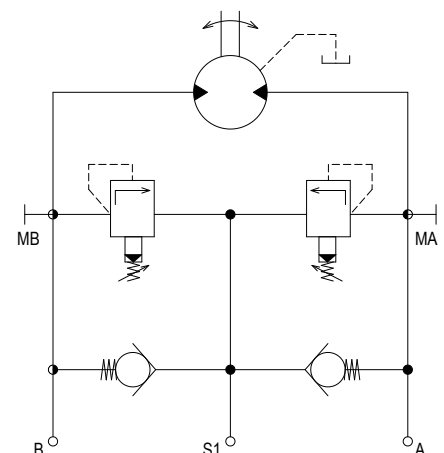


Examples of other valves available upon request (please inquire):

Anti-cavitation valve



Double Limiting Valve



Drainless motor

bent axis hydraulic motor

HYDRO LEDUC is now able to offer drainless motors for either **single direction of rotation** or **bi-directional use**, under certain conditions and on request (giving details of your application).

ADVANTAGES

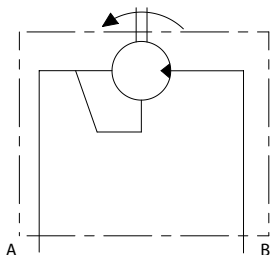
No drainline needed

- ▶ Only two hose lines are required: supply line and output.
 - ▶ The motor is drained through the return line.
- It is fitted with a high pressure lip seal.

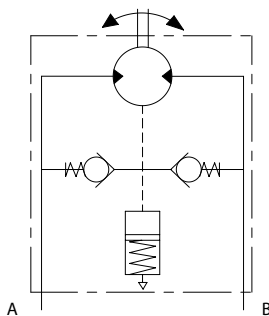
CHARACTERISTICS

- Working speed:
Please consult our Technical Department with details of your applications.
- Max. pressure on the return line: 25 bar.

▶ Schematic drawing for use in single direction of rotation

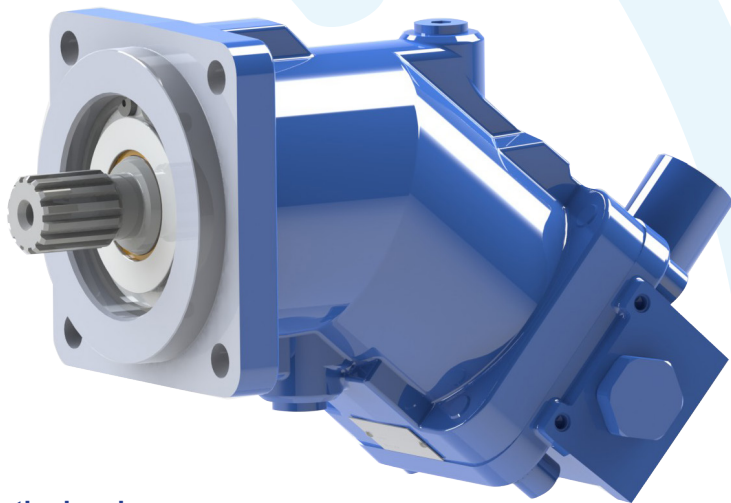
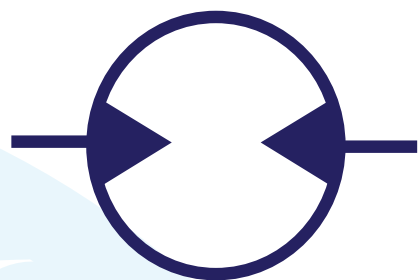


▶ Schematic drawing for bi-directional use

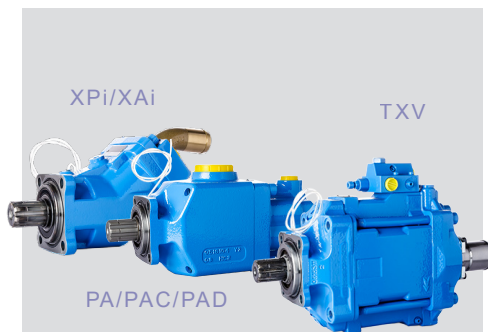


For **bi-directional** applications, the motor is fitted with an accumulator integrated in the back piece, to compensate possible pressure peaks in the housing (for example from rapid change in direction).

Please contact our Customer Service Department with details of your application.



PISTON PUMPS FOR TRUCKS



HYDRO LEDUC offers 3 ranges of piston pumps perfectly suited for truck applications, mountable on power take-off.

- Fixed displacement from 12 to 130 cm³/rev
- Fixed displacement, dual flow, from 2x25 to 2x75 cm³/rev
- Variable displacement, with LS (load sensing) control, from 40 to 150 cm³/rev.

PUMPS FOR MOBILE & INDUSTRIAL APPLICATIONS



The W series consists of fixed displacement pumps, and the TXVA series consists of variable displacement pumps. These pumps are capable of operating at high pressures while occupying minimal space.

► W Series (ISO) and WA Series (SAE)*

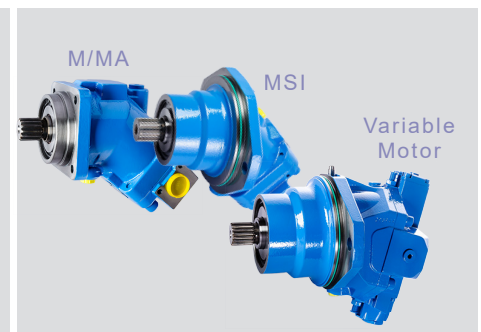
- Fixed displacements from 5 to 180 cm³/rev
- Flanges according to ISO 3019/2 or SAE standards
- Shafts according to DIN or SAE standards

► TXVA Series

- Variable displacements up to 92 cm³/rev
- SAE shafts and flanges

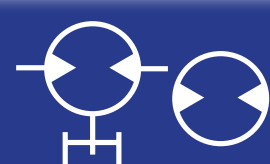
* For the SAE version, please contact our Customer Service.

HYDRAULIC MOTORS



Axial Piston Motors with Constant and Variable Displacement

- Models from 5 to 180 cc/rev
- DIN and SAE Versions
- Constant Displacement, Motors without Leak Oil Connection Special Version.



HYDROPNEUMATIC ACCUMULATORS



Diaphragm, Bladder, Bladder-Diaphragm, and Piston Accumulators in spherical and cylindrical designs.

- Storage capacities from 0.02 to 50 liters
- Operating pressures up to 400 bar
- Accessories for operating hydraulic pressure accumulators.

MICROHYDRAULIC



A specific field of application for Hydro Leduc's expertise.

- Axial and radial piston pumps with constant and variable displacement.
- Axial piston micro-hydraulic motors.
- Micro-hydraulic components (electric drives, valves, control devices, etc).
- HYDRO LEDUC offers a comprehensive range of reliable solutions for extreme applications and compact spaces.

Our development team takes care of your individual requirements.

In close collaboration with the decision-makers in your organization, we work together with you to develop solutions according to your specifications.



A passion for hydraulics



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RC Nancy B 319 027 421
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