

# MS-ISO

## Bent Axis Motor

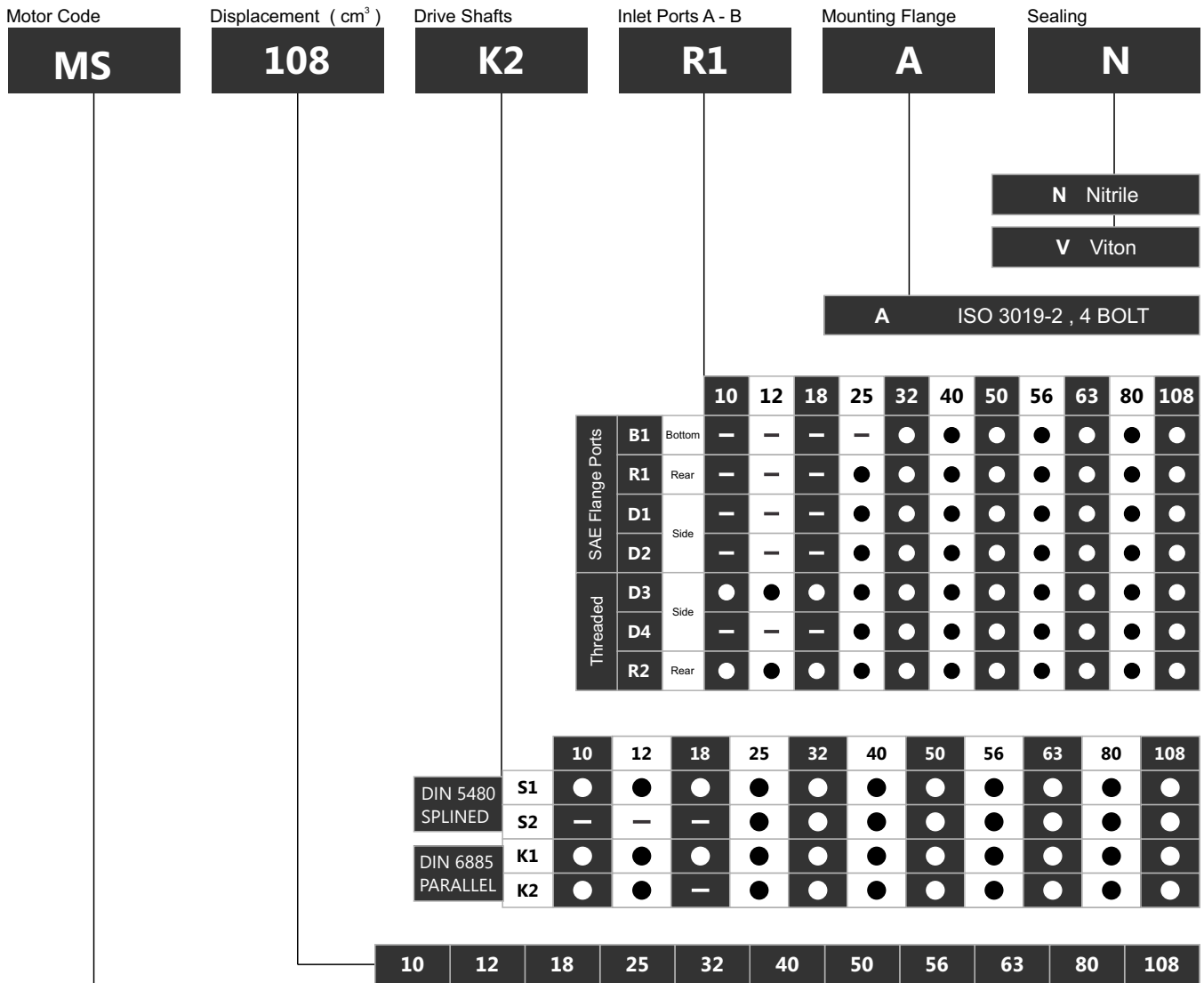


### ISO Mounting Flange, Flange, 4 Bolt, 12cc to 130cc

ISO Mounting Flange, High Pressure Bent Axis Piston Motors. Reversible Direction of Rotation.  
Displacement Range starting at; 12cc, 18cc, 25cc, 32cc, 40cc, 50cc, 63cc, 80cc, 108cc, 130cc  
400/450 Bar, High Pressure, High Rotational Speed, Slim Design, High Efficiency.



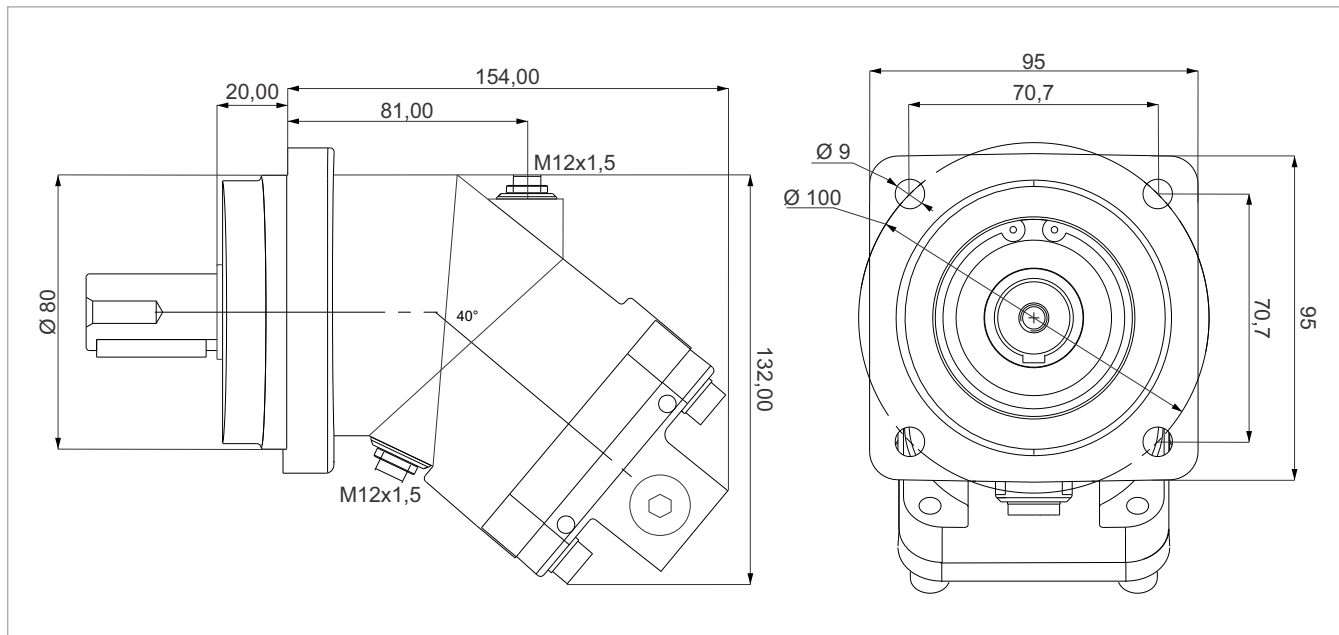
# Ordering Code of MS Motors



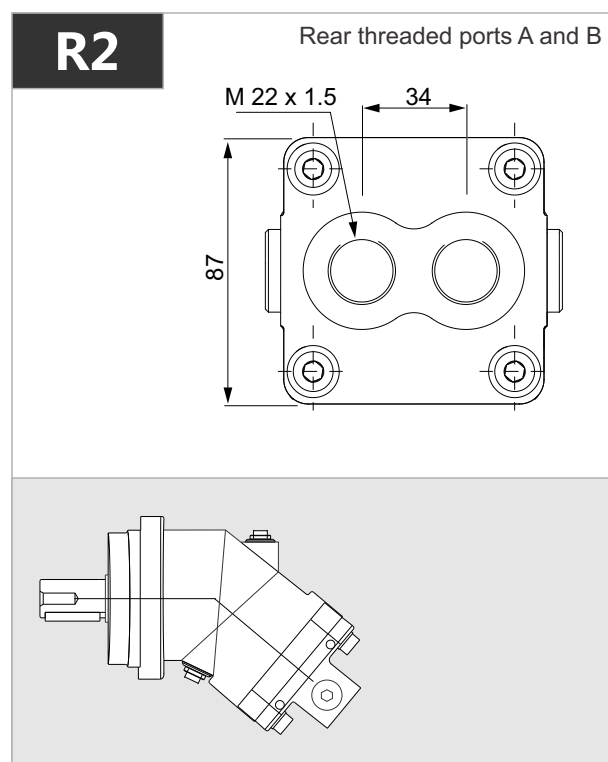
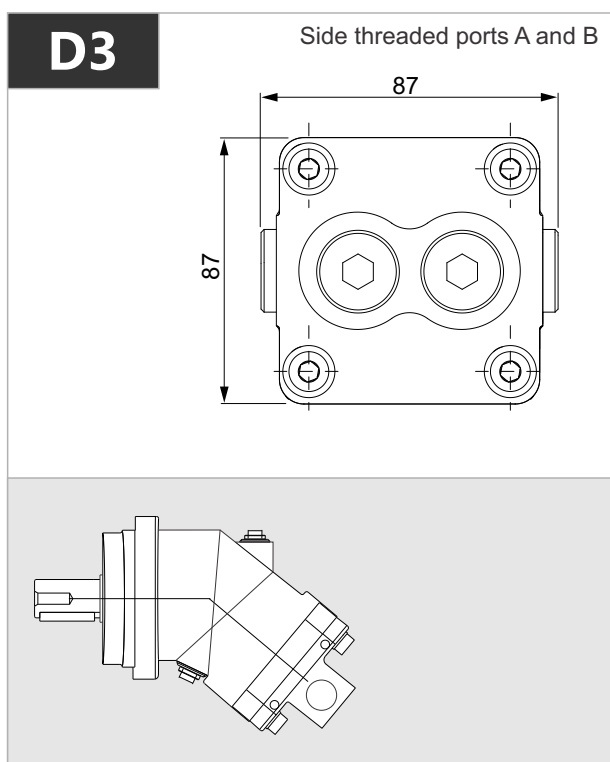
MS Bent Axis Piston Motor - ISO, Fixed Displacement.



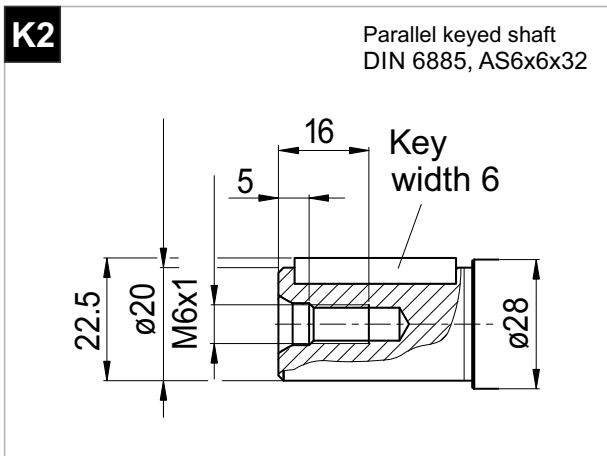
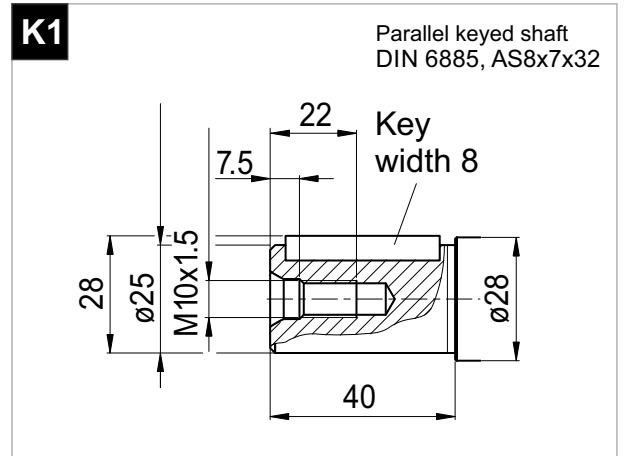
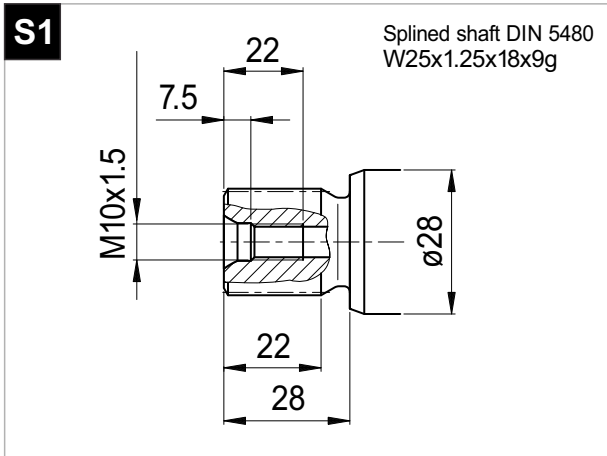
# MS 10



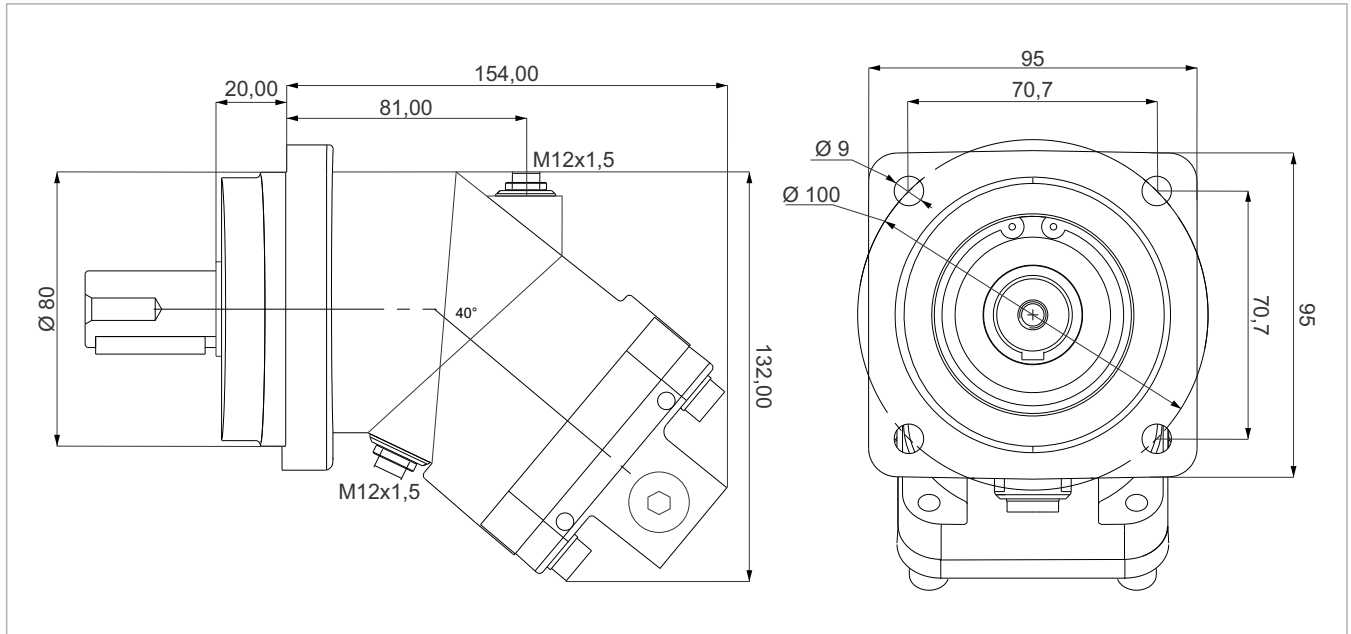
x 1000 rpm	x 1500 rpm	Max. Contin. Pump Speed	Max. Intermit. Pump Speed	Max. Contin. Pressure	Max. Peak Pressure	Torque bar	Torque at 350 bar	Max. Flow	Weight without accessor.	Weight with accessor.	Max. Motor Temp.	Min. Motor Temp.
10,00 cc	15,00 cc	8000 rpm	8800 rpm	400 bar	450 bar	0.17 m.N/bar	64 m.N	80	6,00 kg	6,20 kg	-25°	110°



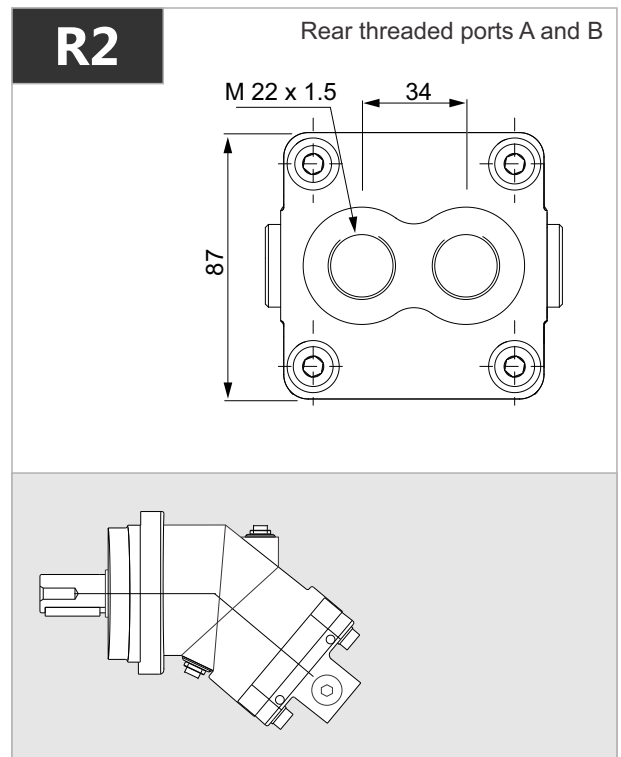
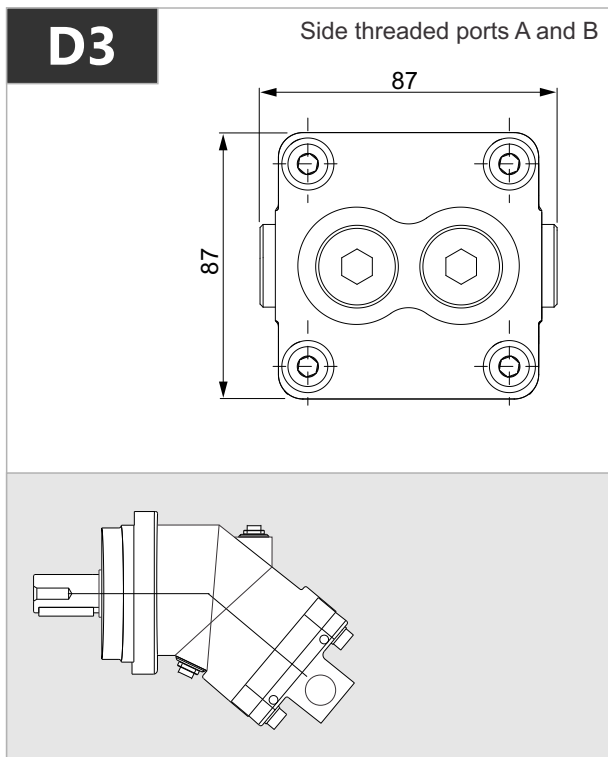
# MS 10



# MS 12



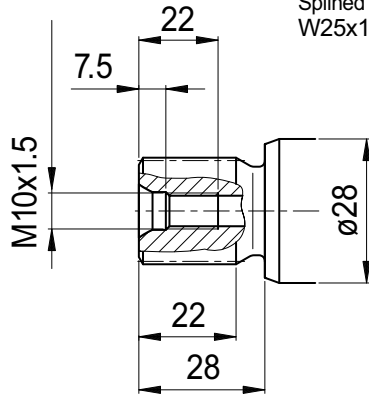
x 1000 rpm	x 1500 rpm	Max. Contin. Pump Speed	Max. Intermit. Pump Speed	Max. Contin. Pressure	Max. Peak Pressure	Torque bar	Torque at 350 bar	Max. Flow	Weight without accessor.	Weight with accessor.	Max. Motor Temp.	Min. Motor Temp.
12,00 cc	18,00 cc	8000 rpm	8800 rpm	400 bar	450 bar	0.18 m.N/bar	66 m.N	96	6,00 kg	6,20 kg	-25°	110°



# MS 12

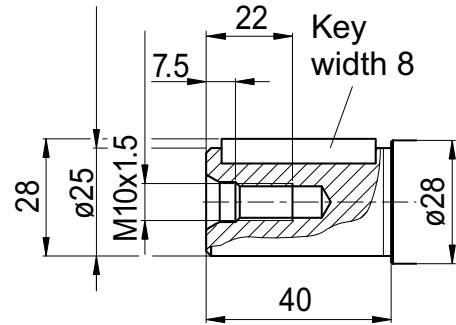
**S1**

Splined shaft DIN 5480  
W25x1.25x18x9g



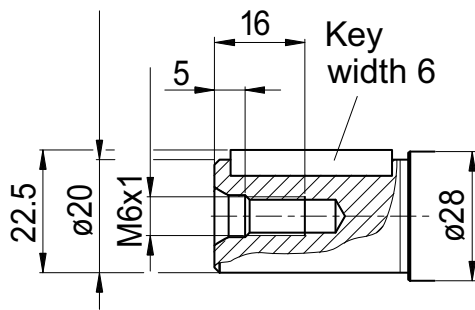
**K1**

Parallel keyed shaft  
DIN 6885, AS8x7x32

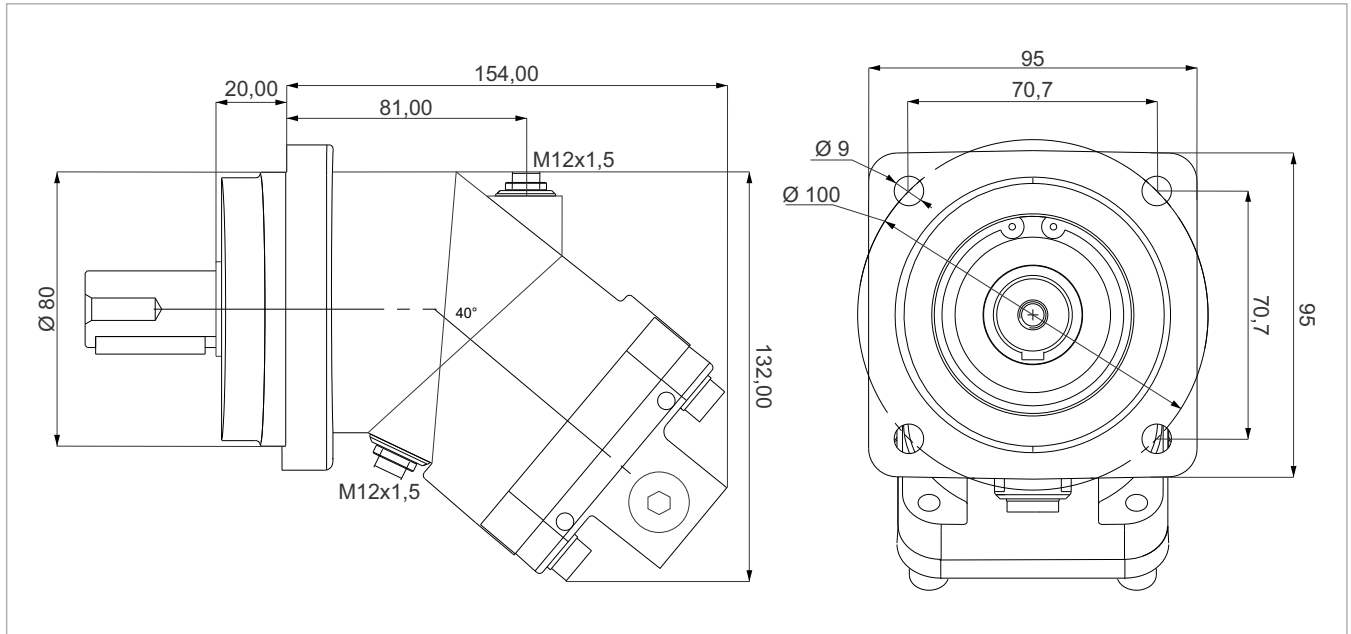


**K2**

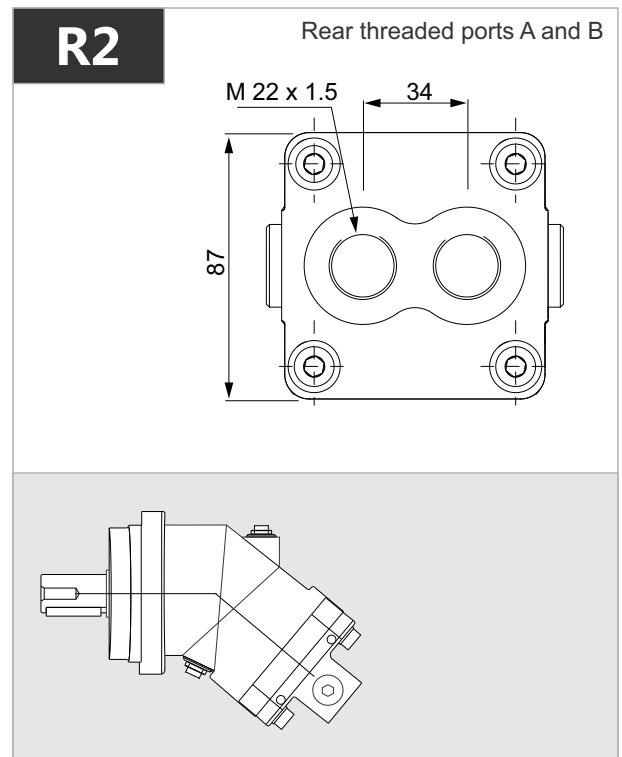
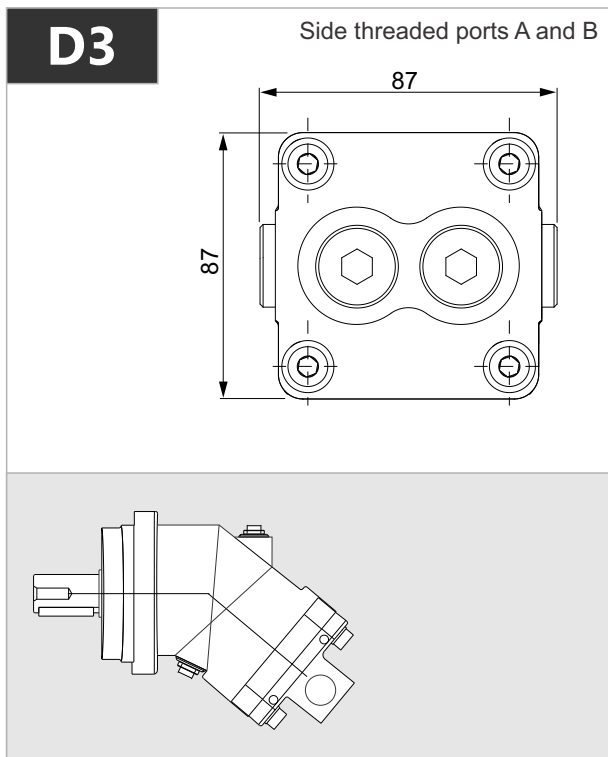
Parallel keyed shaft  
DIN 6885, AS6x6x32



# MS 18



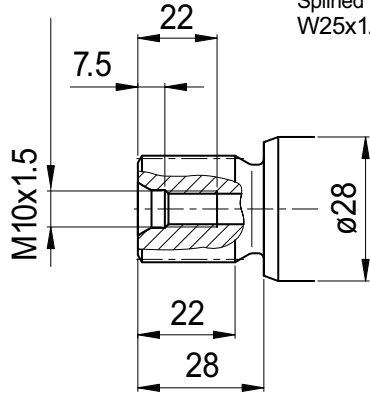
x 1000 rpm	x 1500 rpm	Max. Contin. Pump Speed	Max. Intermit. Pump Speed	Max. Contin. Pressure	Max. Peak Pressure	Torque bar	Torque at 350 bar	Max. Flow	Weight without accessor.	Weight with accessor.	Max. Motor Temp.	Min. Motor Temp.
18,00 cc	27,00 cc	8000 rpm	8800 rpm	400 bar	450 bar	0.28 m.N/bar	98 m.N	144	6,00 kg	6,20 kg	-25°	110°





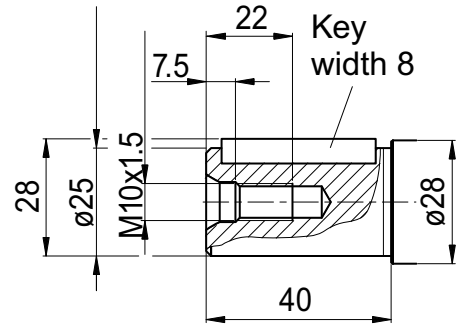
**S1**

Splined shaft DIN 5480  
W25x1.25x18x9g

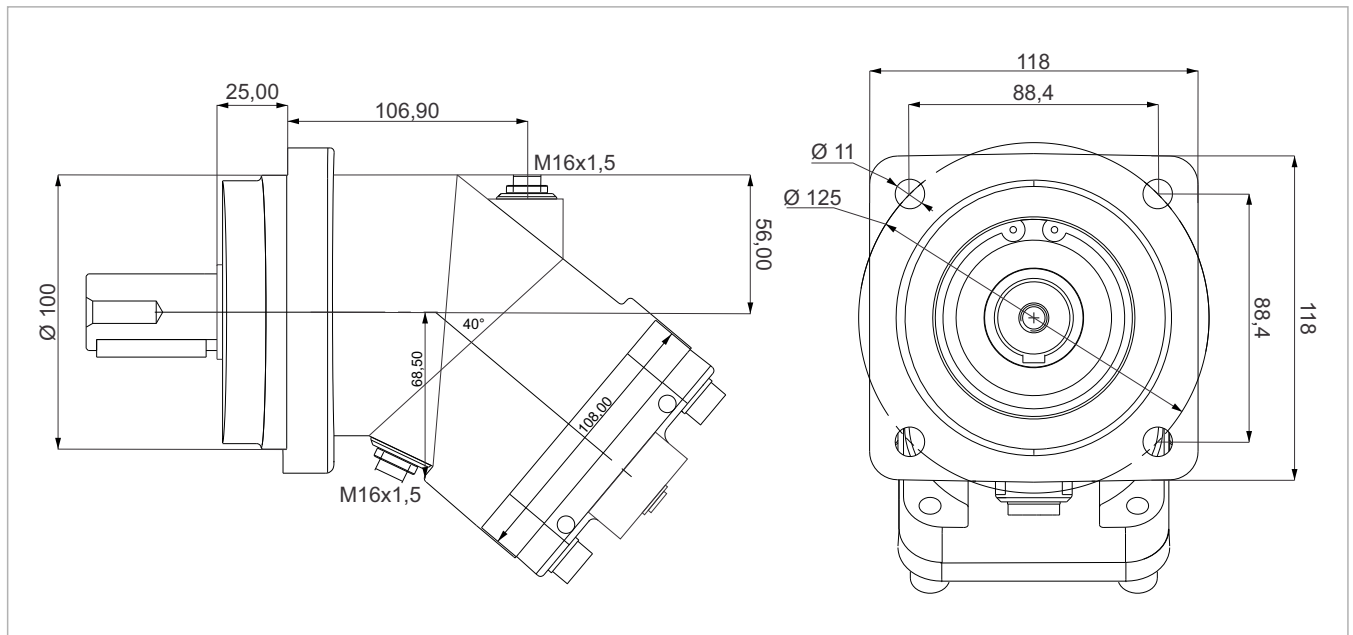


**K1**

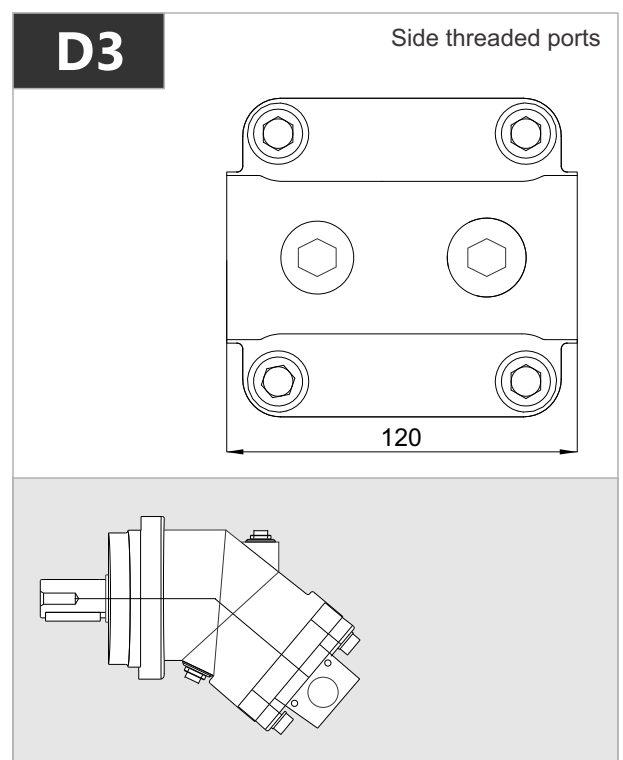
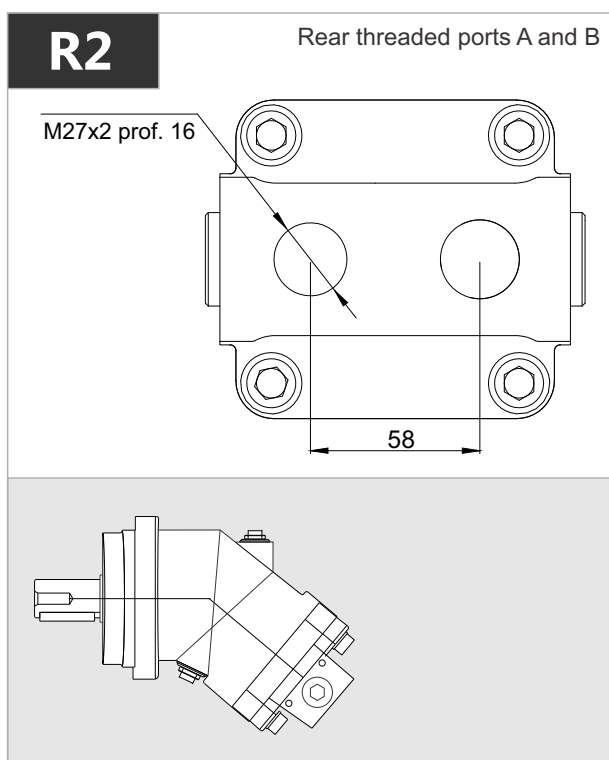
Parallel keyed shaft  
DIN 6885, AS8x7x32



# MS 25



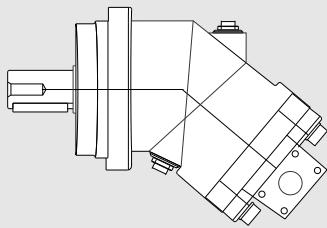
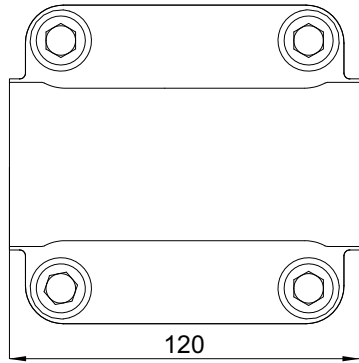
x 1000 rpm	x 1500 rpm	Max. Contin. Pump Speed	Max. Intermit. Pump Speed	Max. Contin. Pressure	Max. Peak Pressure	Torque bar	Torque at 350 bar	Max. Flow	Weight without accessor.	Weight with accessor.	Max. Motor Temp.	Min. Motor Temp.
25,00 cc	37,50 cc	6250 rpm	6800 rpm	400 bar	450 bar	0.40 m.N/bar	140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



# MS 25

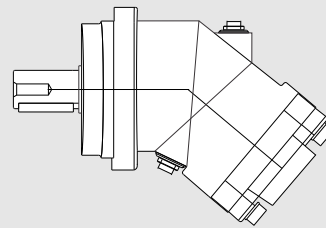
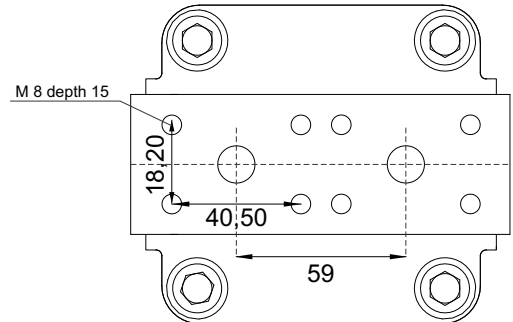
## D1-D2

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



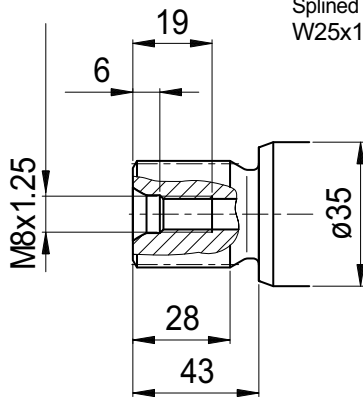
## R1

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



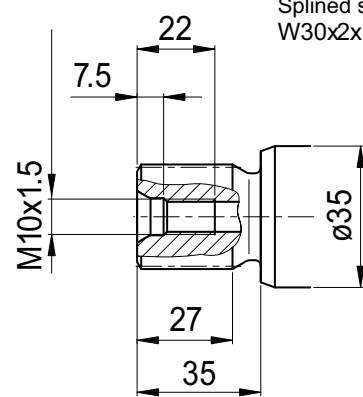
## S1

Splined shaft DIN 5480  
W25x1.25x18x9g



## S2

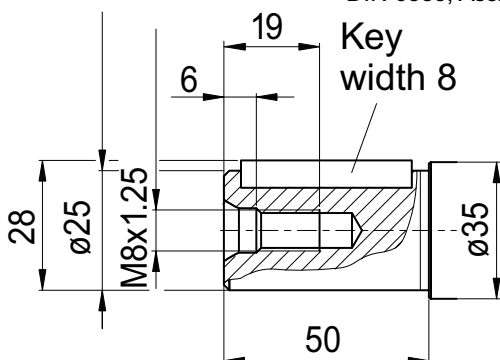
Splined shaft DIN 5480  
W30x2x14x9g



## K1

Parallel keyed shaft  
DIN 6885, As8x7x40

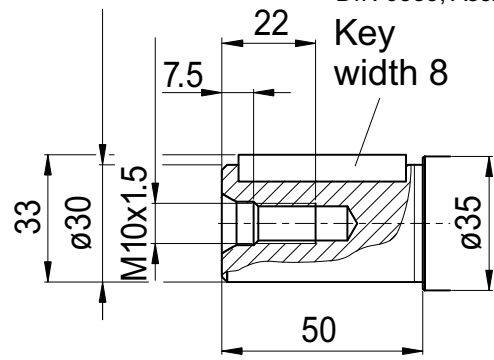
Key  
width 8



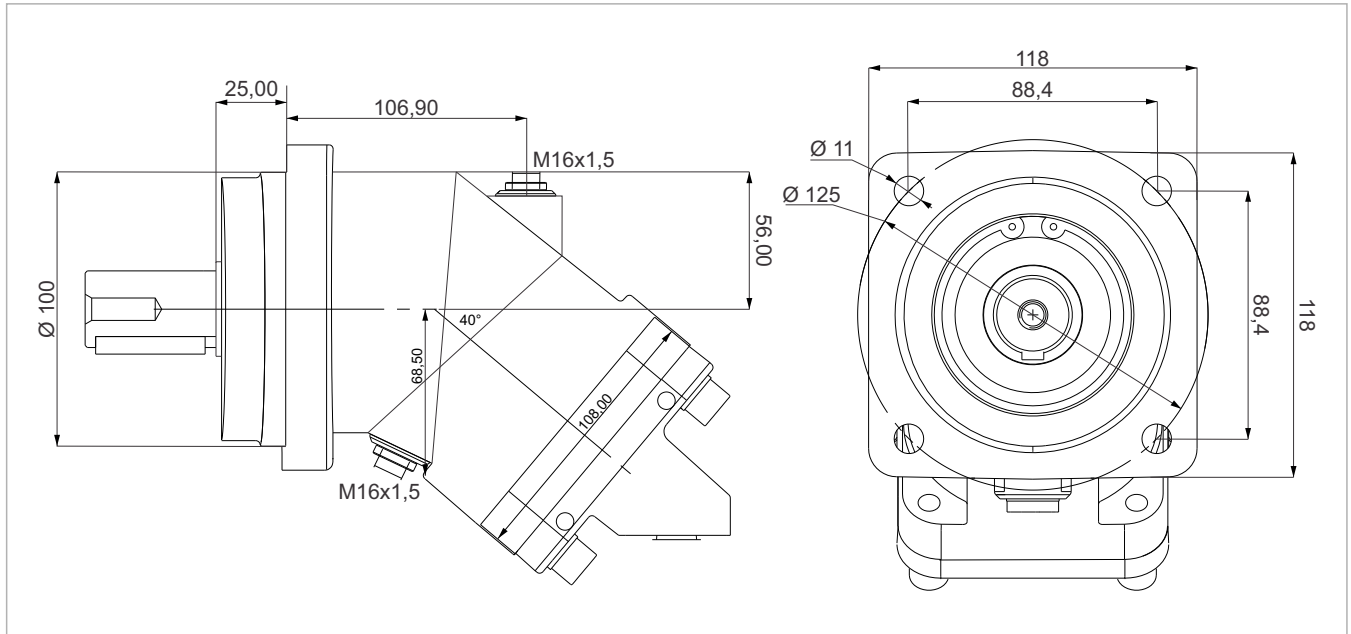
## K2

Parallel keyed shaft  
DIN 6885, As8x7x40

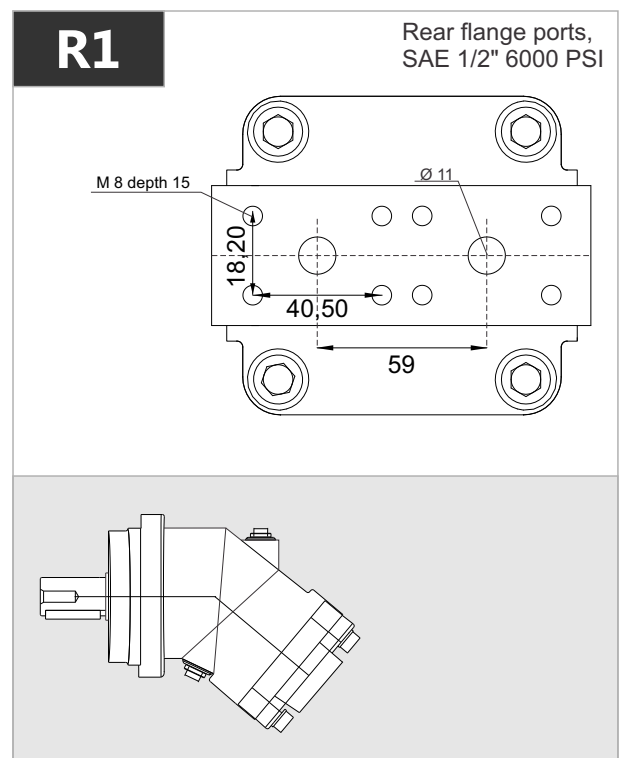
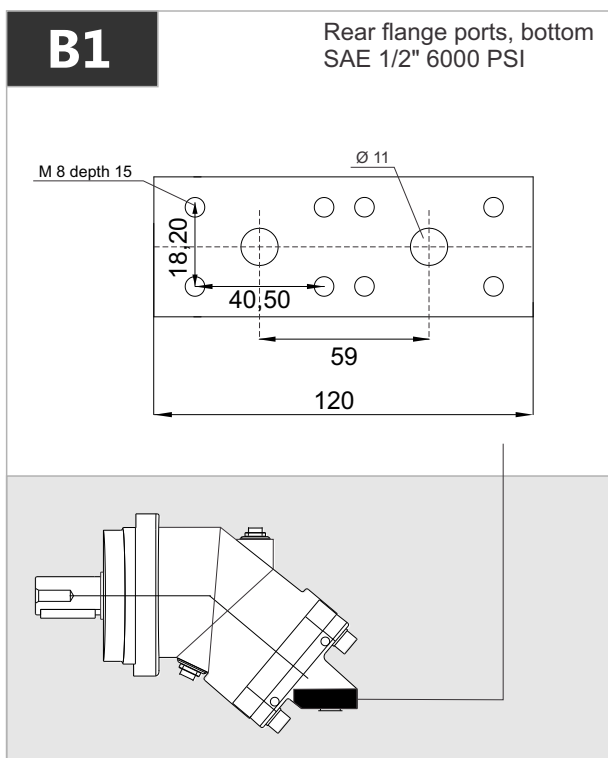
Key  
width 8



# MS 32

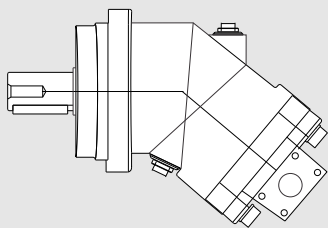
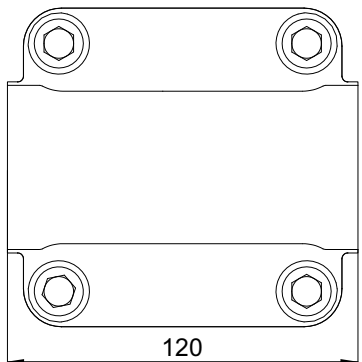


x 1000 rpm	x 1500 rpm	Max. Contin. Pump Speed	Max. Intermit. Pump Speed	Max. Contin. Pressure	Max. Peak Pressure	Torque bar	Torque at 350 bar	Max. Flow	Weight without accessor.	Weight with accessor.	Max. Motor Temp.	Min. Motor Temp.
32,00 cc	48,00 cc	6250 rpm	6800 rpm	400 bar	450 bar	0.51 m.N/bar	174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



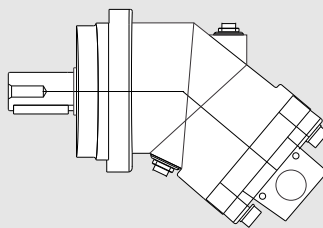
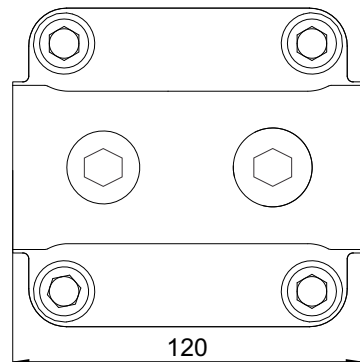
## D1-D2

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



## D3

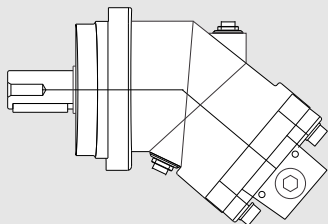
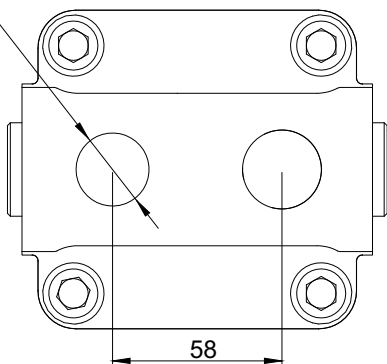
Side threaded ports A and B



## R2

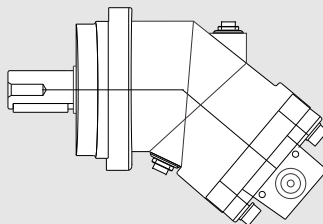
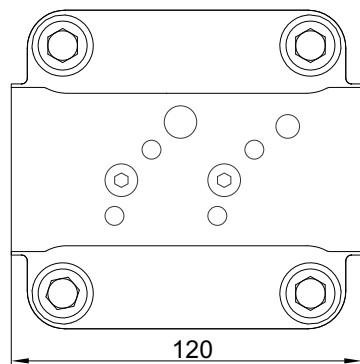
Rear threaded ports

M27x2 prof. 16

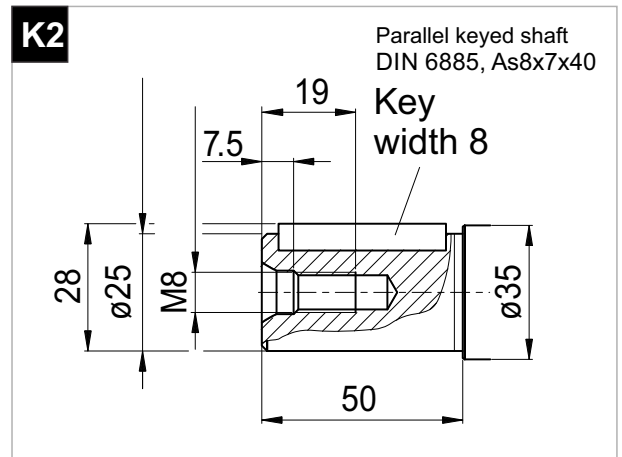
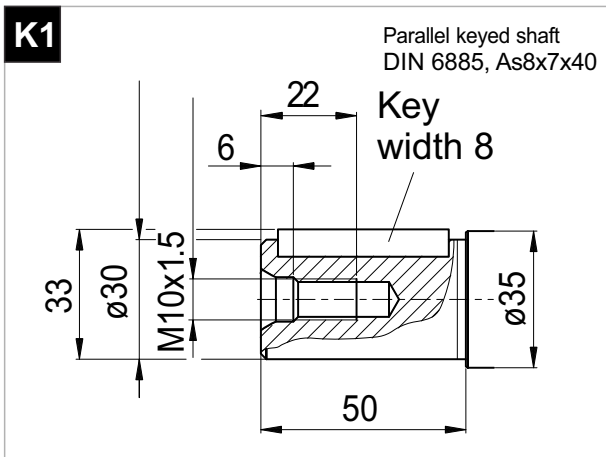
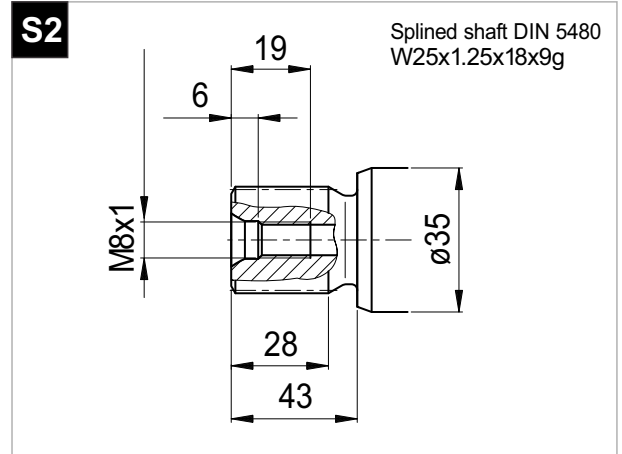
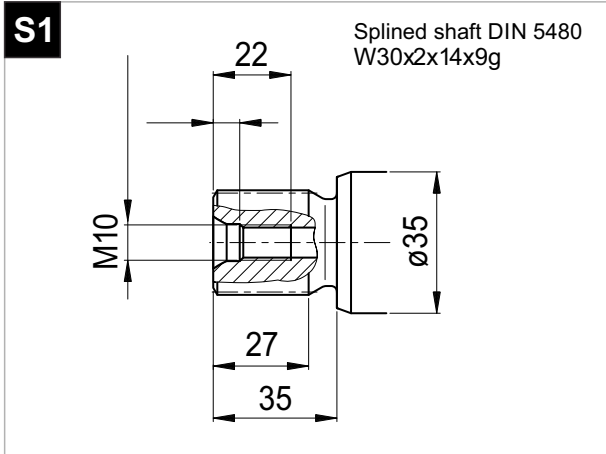


## D4

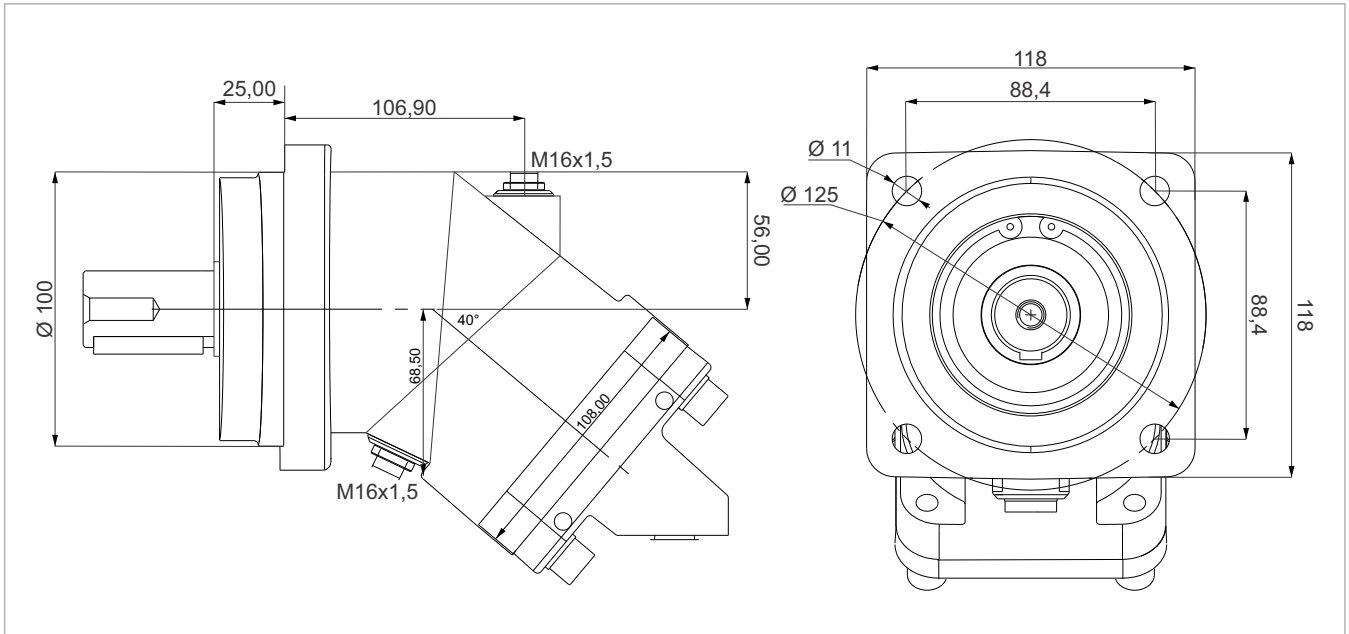
Side threaded ports A and B



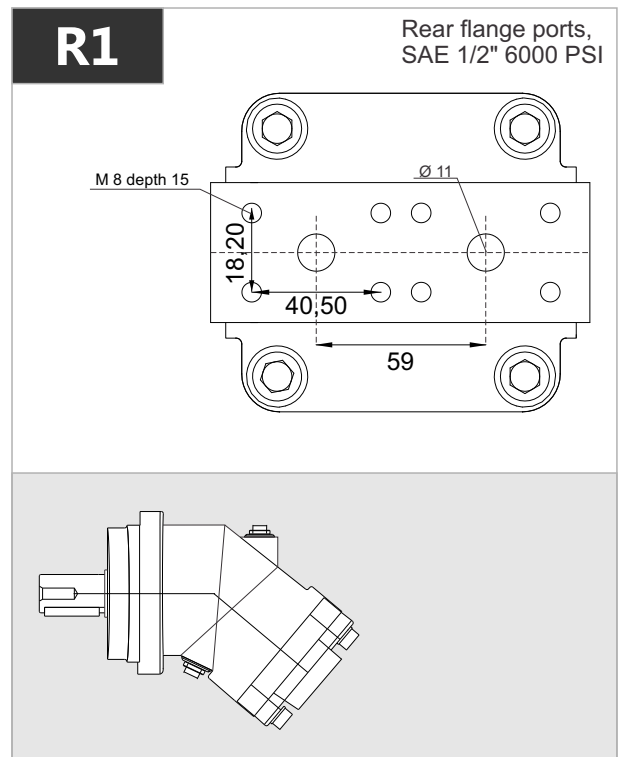
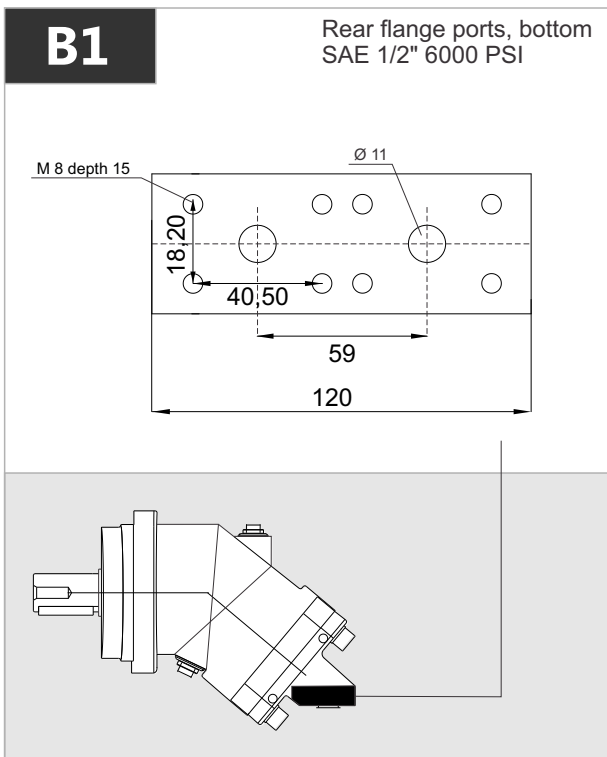
# MS 32



# MS 40



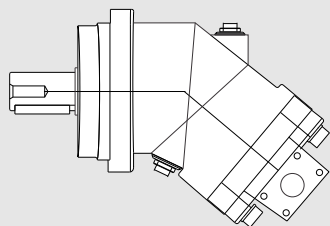
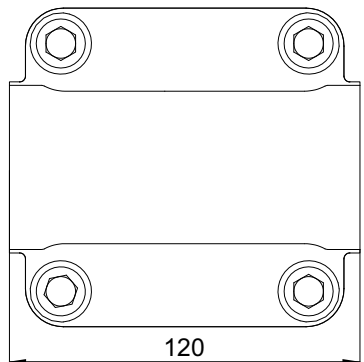
x 1000 rpm	x 1500 rpm	Max. Contin. Pump Speed	Max. Intermit. Pump Speed	Max. Contin. Pressure	Max. Peak Pressure	Torque bar	Torque at 350 bar	Max. Flow	Weight without accessor.	Weight with accessor.	Max. Motor Temp.	Min. Motor Temp.
40,20 cc	60,30 cc	5600 rpm	6300 rpm	400 bar	450 bar	0.68 m.N/bar	228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



# MS 40

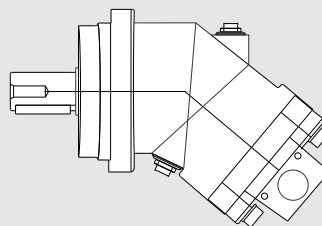
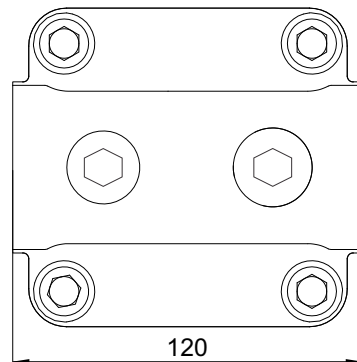
## D1-D2

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



## D3

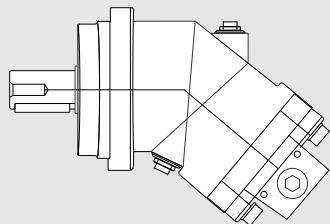
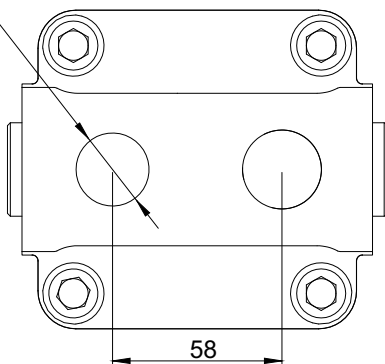
Side threaded ports A and B



## R2

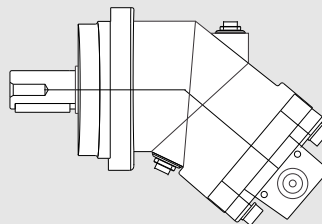
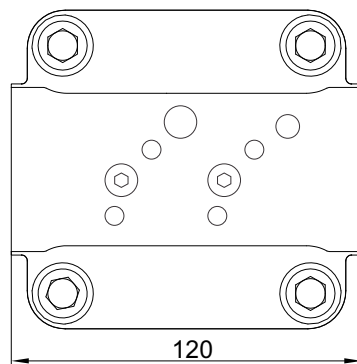
Rear threaded ports

M27x2 prof. 16



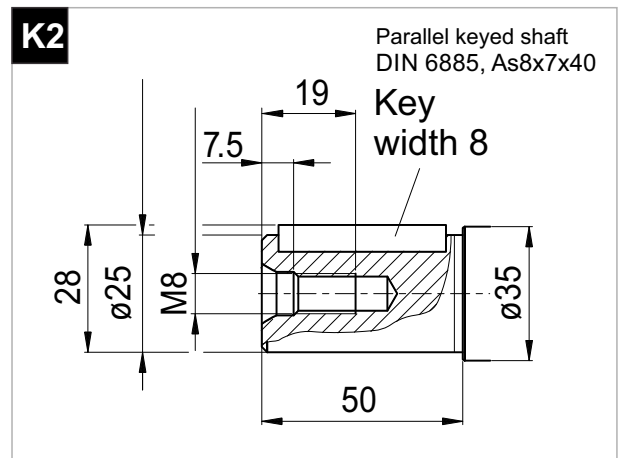
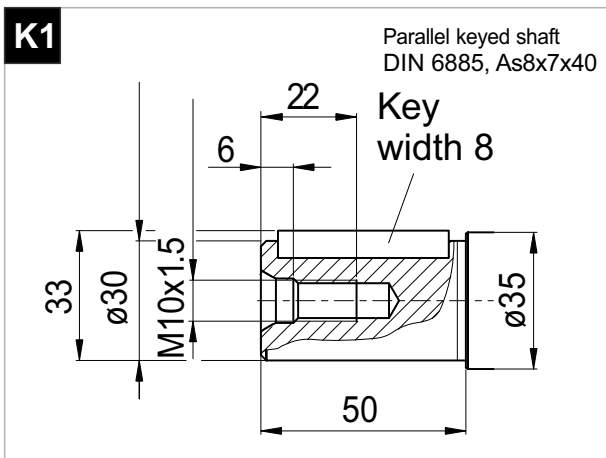
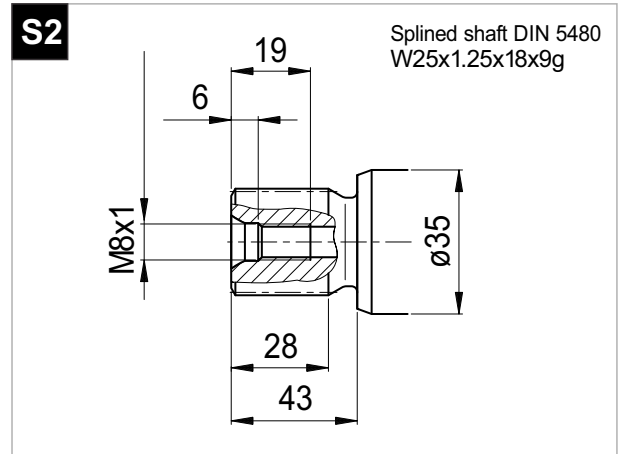
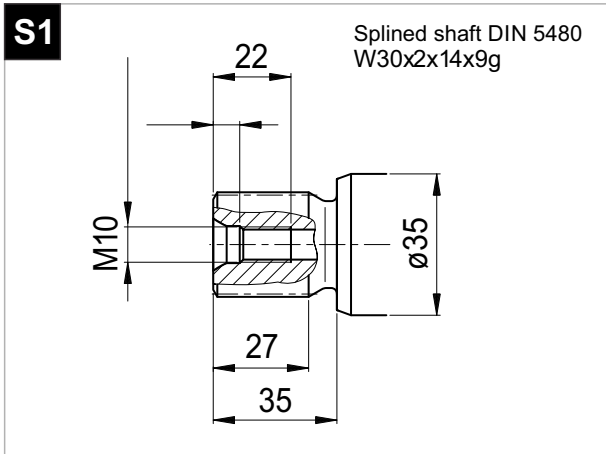
## D4

Side threaded ports A and B

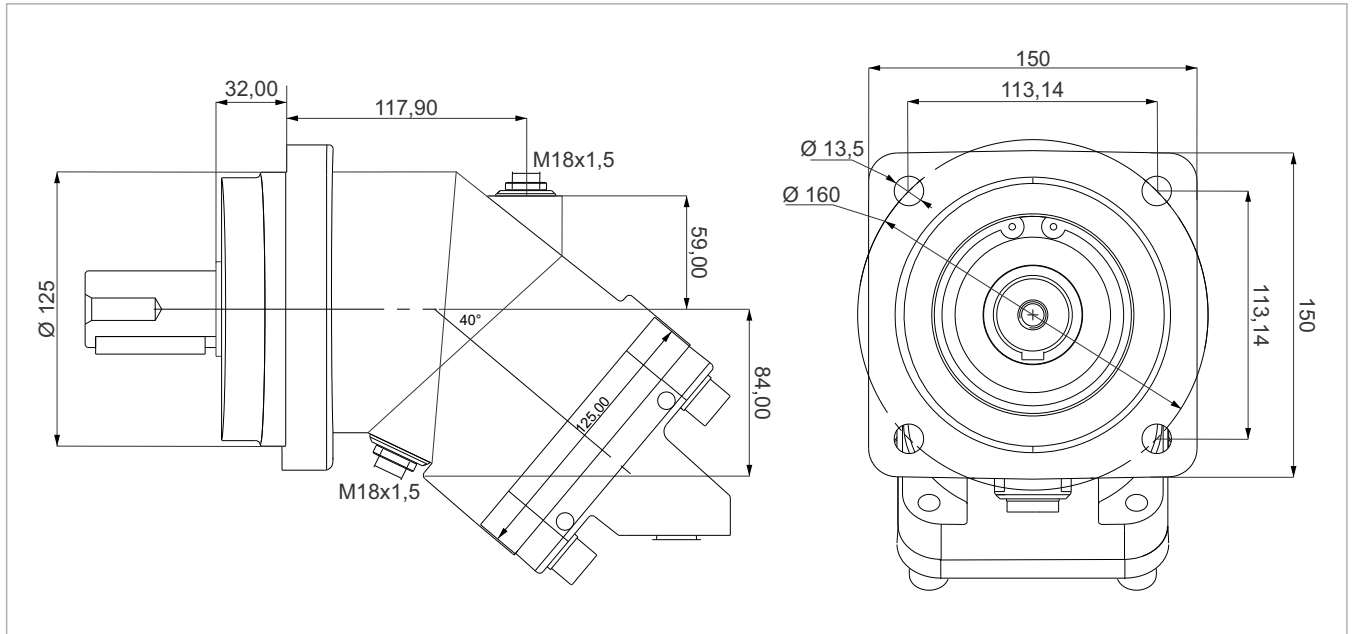




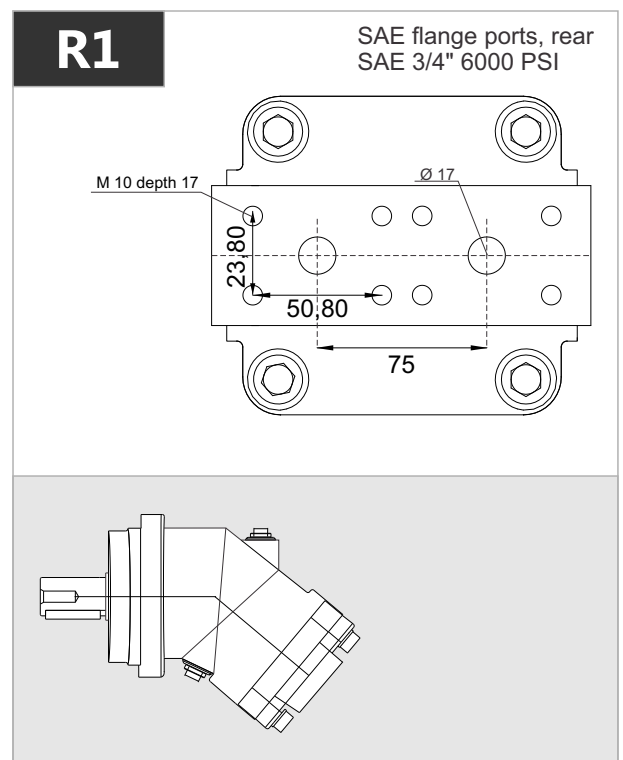
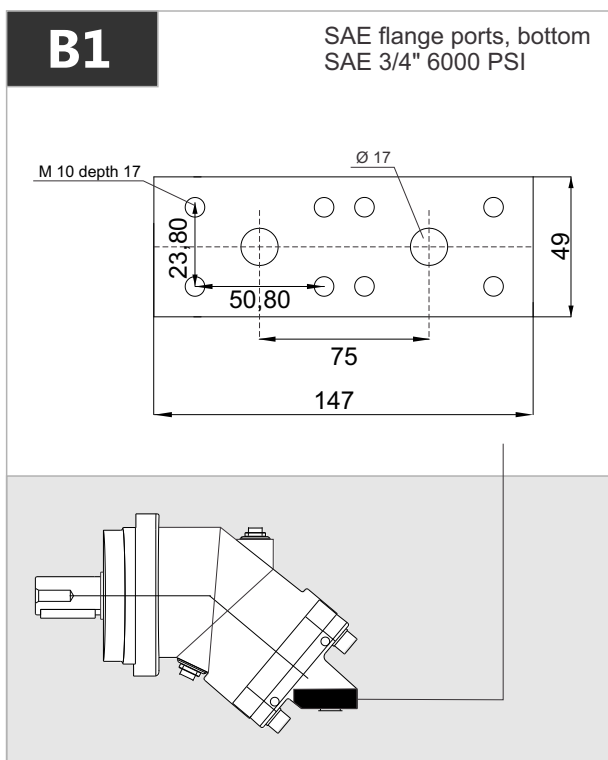
# MS 40



# MS 50



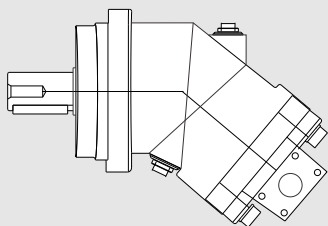
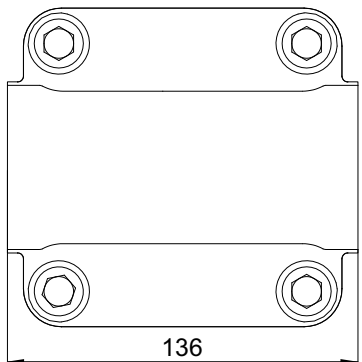
x 1000 rpm	x 1500 rpm	Max. Contin. Pump Speed	Max. Intermit. Pump Speed	Max. Contin. Pressure	Max. Peak Pressure	Torque bar	Torque at 350 bar	Max. Flow	Weight without accessor.	Weight with accessor.	Max. Motor Temp.	Min. Motor Temp.
50,00 cc	75,00 cc	5000 rpm	5500 rpm	400 bar	450 bar	0.80 m.N/bar	280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



# MS 50

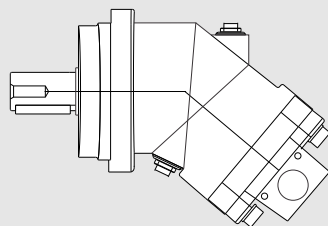
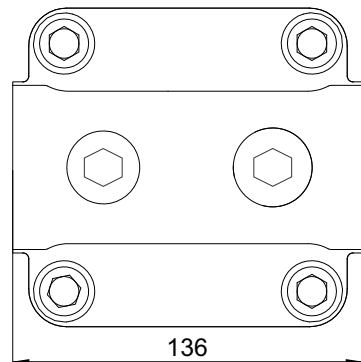
## D1-D2

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



## D3

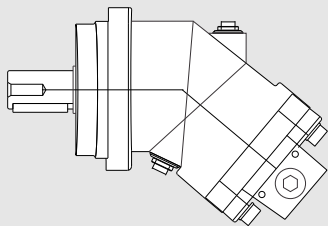
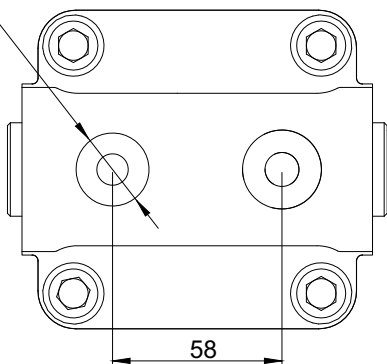
Side threaded ports A and B



## R2

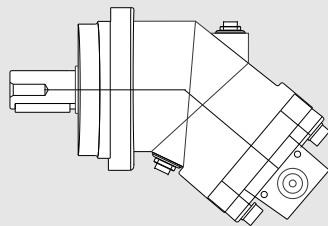
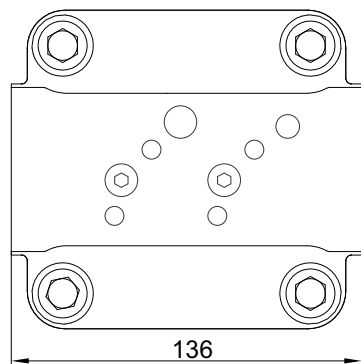
Rear threaded ports

M33x2 prof. 18

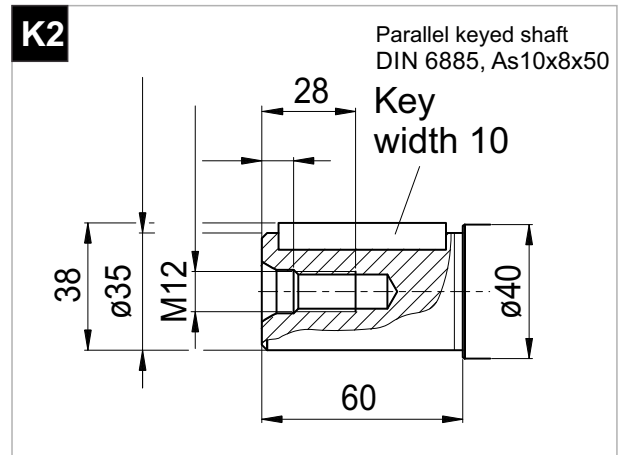
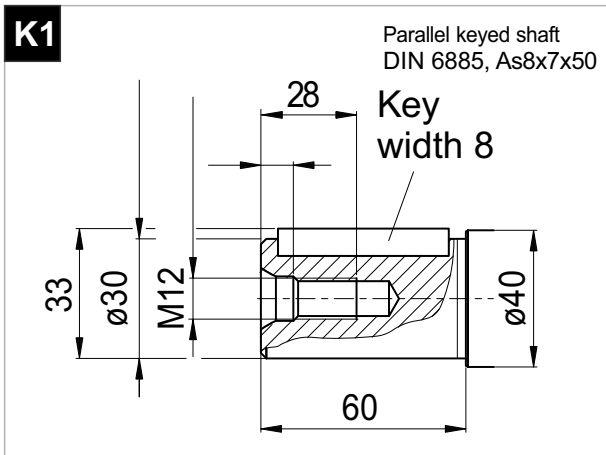
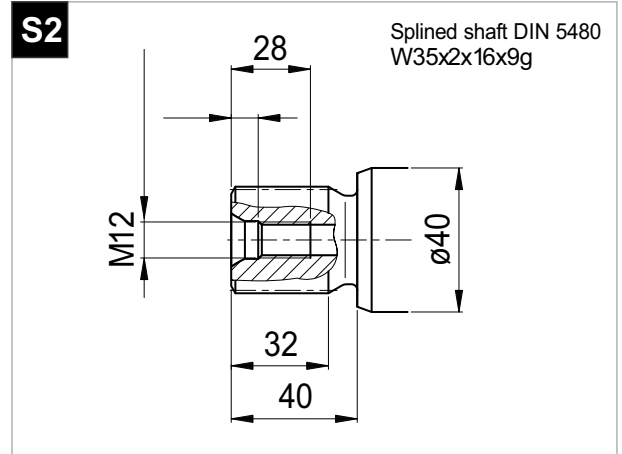
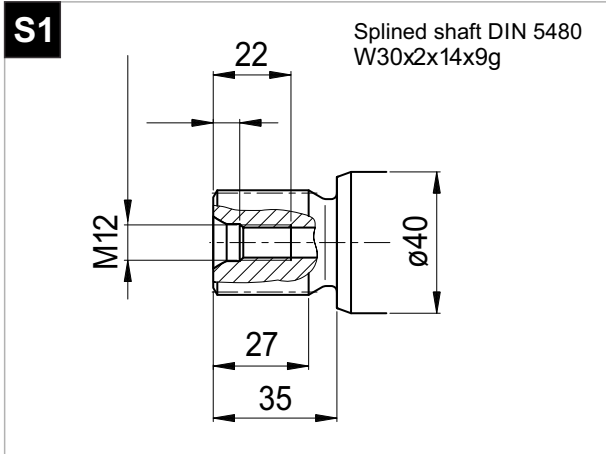


## D4

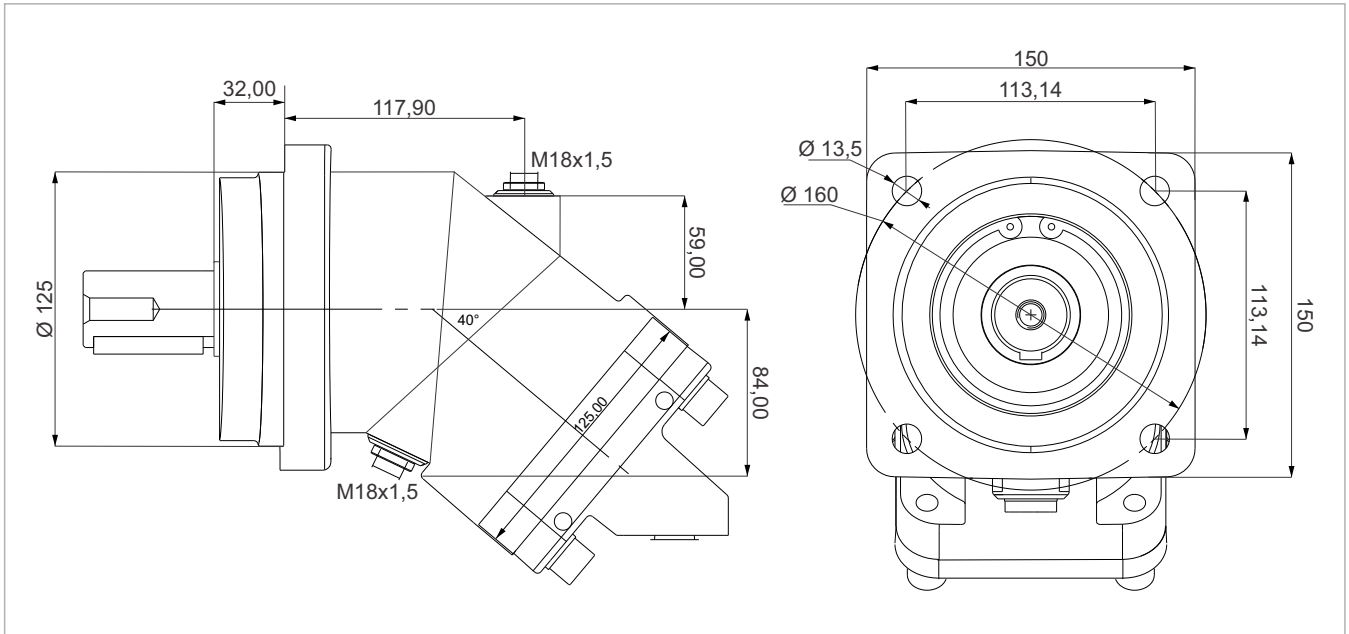
Side threaded ports A and B



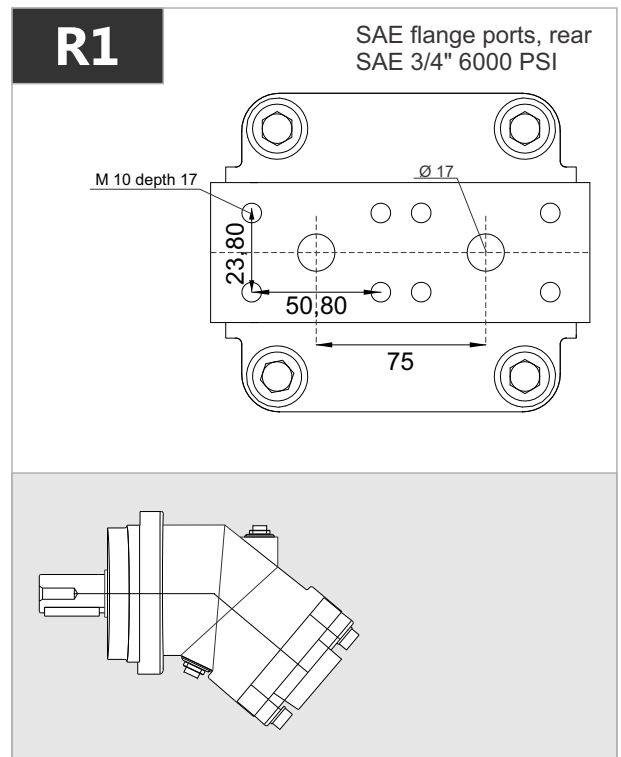
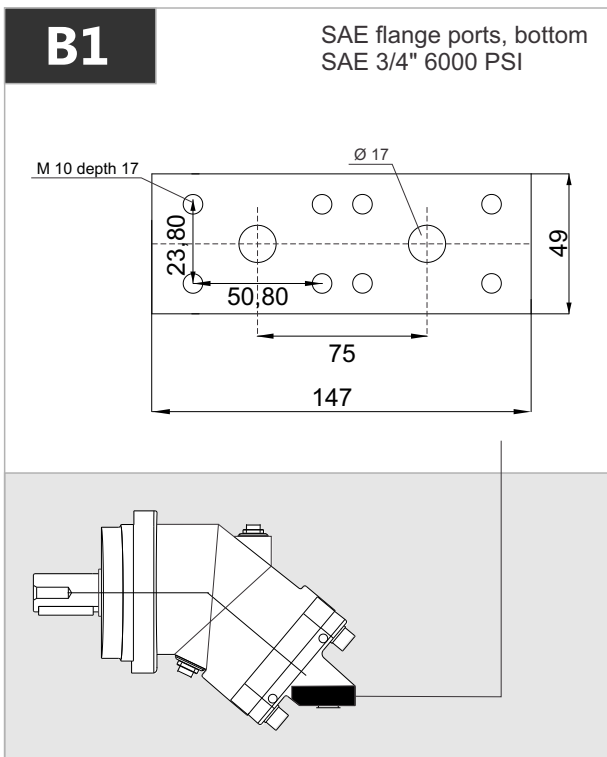
# MS 50



# MS 56



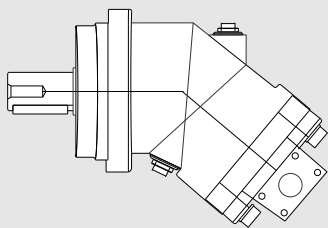
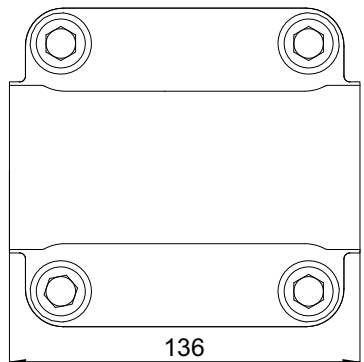
x 1000 rpm	x 1500 rpm	Max. Contin. Pump Speed	Max. Intermit. Pump Speed	Max. Contin. Pressure	Max. Peak Pressure	Torque bar	Torque at 350 bar	Max. Flow	Weight without accessor.	Weight with accessor.	Max. Motor Temp.	Min. Motor Temp.
56,40 cc	84,60 cc	5000 rpm	5500 rpm	400 bar	450 bar	0.92 m.N/bar	320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



# MS 56

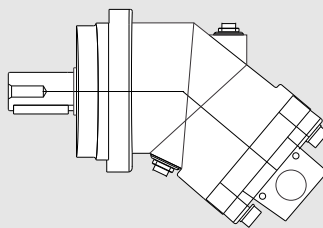
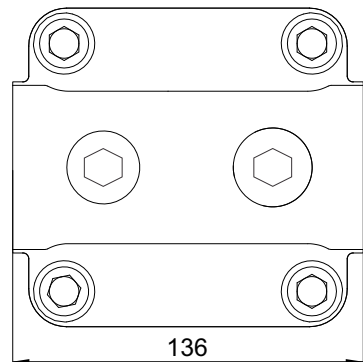
## D1-D2

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



## D3

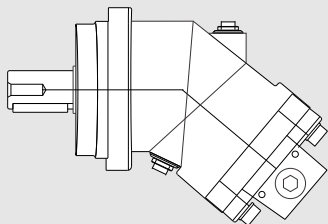
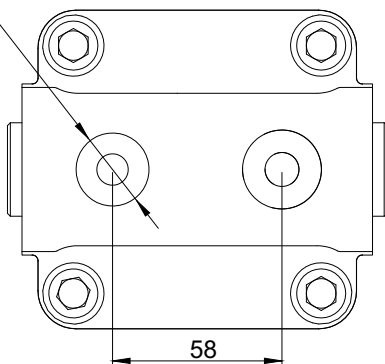
Side threaded ports A and B



## R2

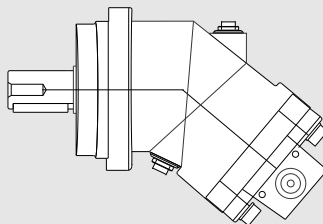
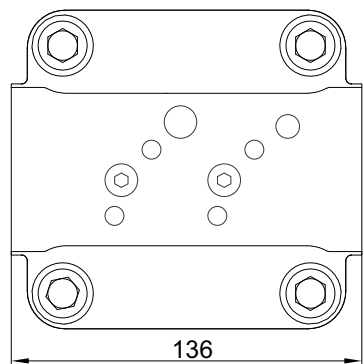
Rear threaded ports

M33x2 prof. 18

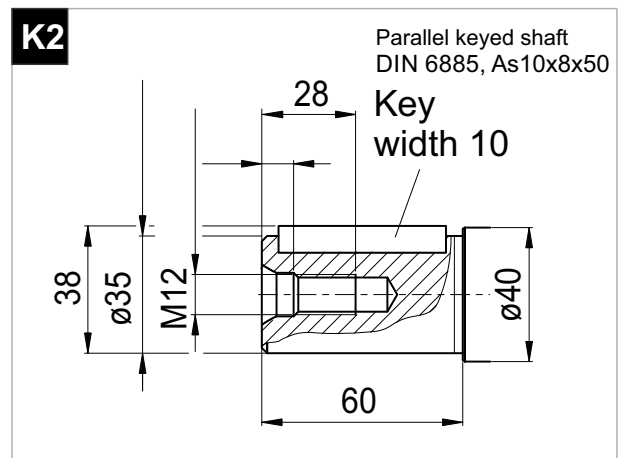
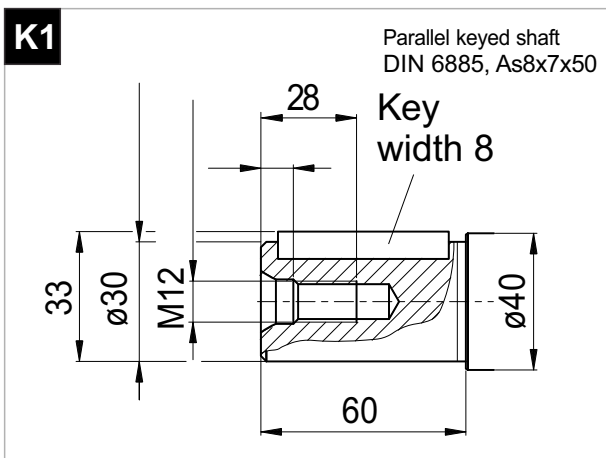
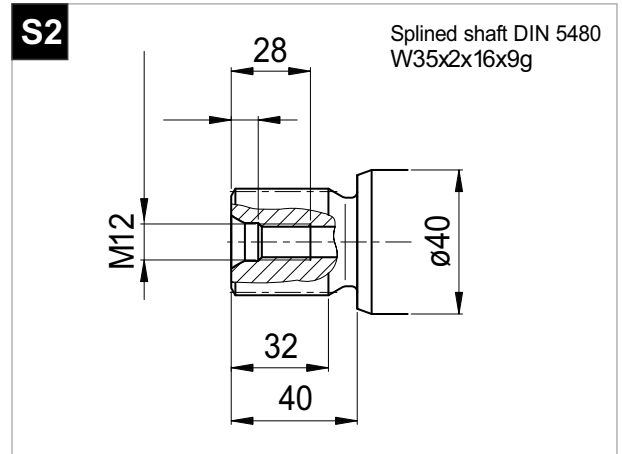
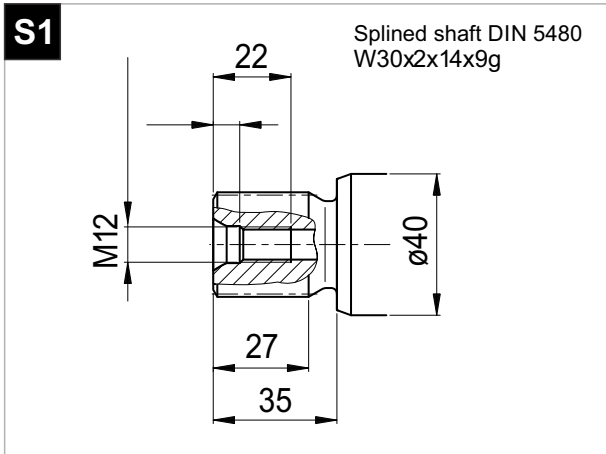


## D4

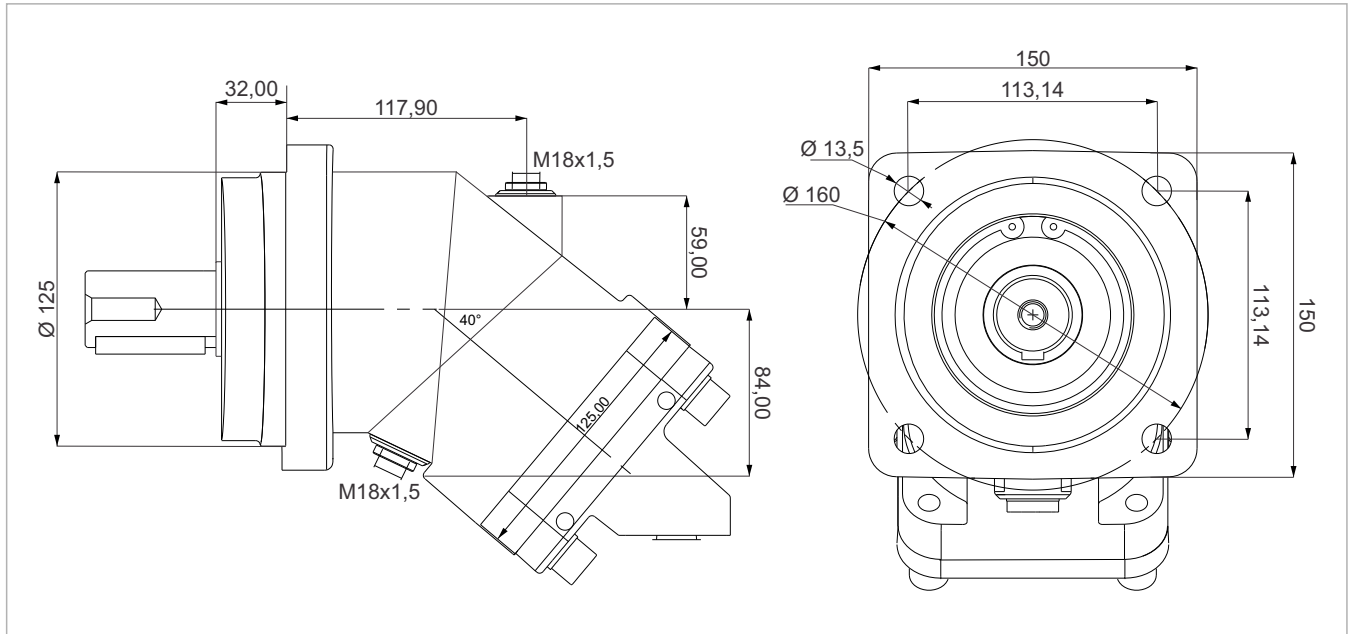
Side threaded ports A and B



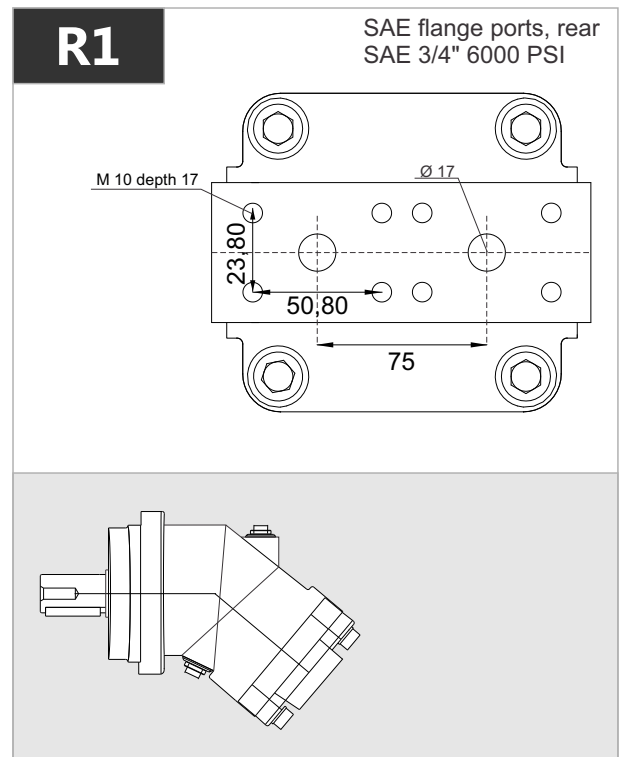
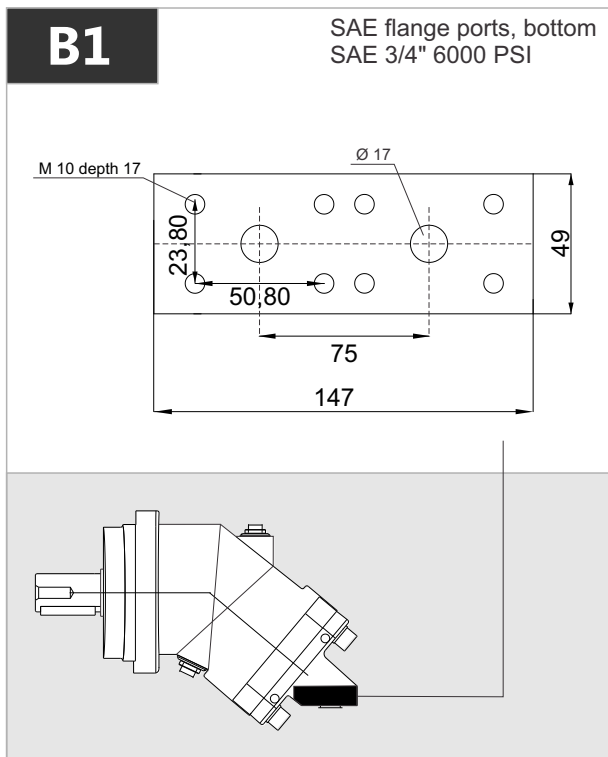
# MS 56



# MS 63



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

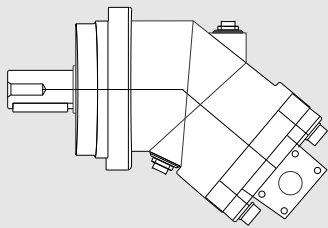
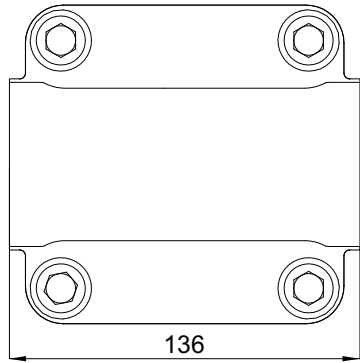




# MS 63

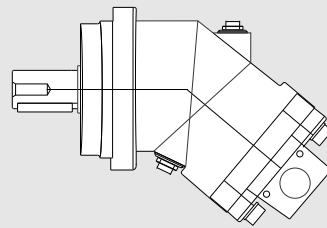
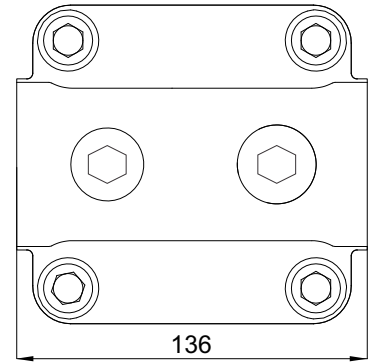
## D1-D2

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



## D3

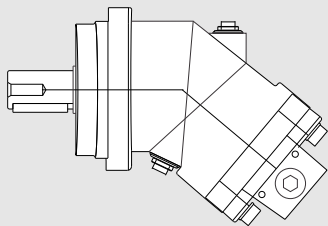
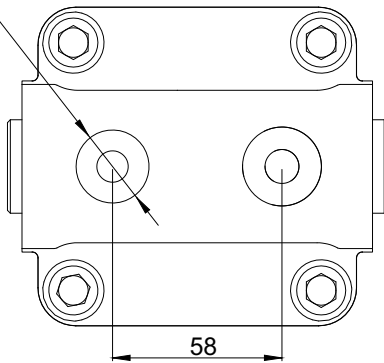
Side threaded ports A and B



## R2

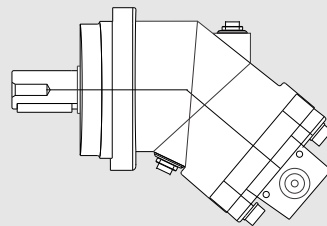
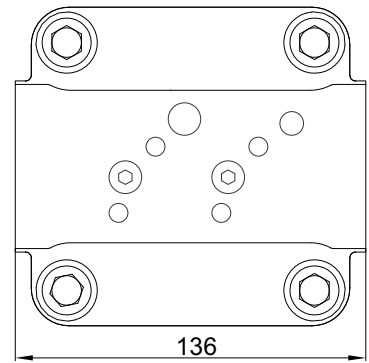
Rear threaded ports

M33x2 prof. 18

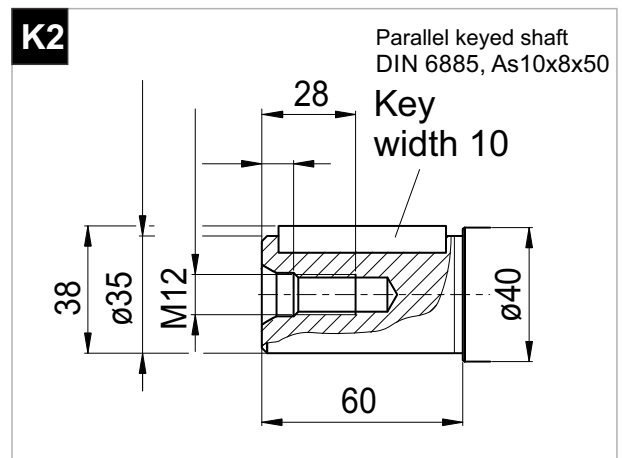
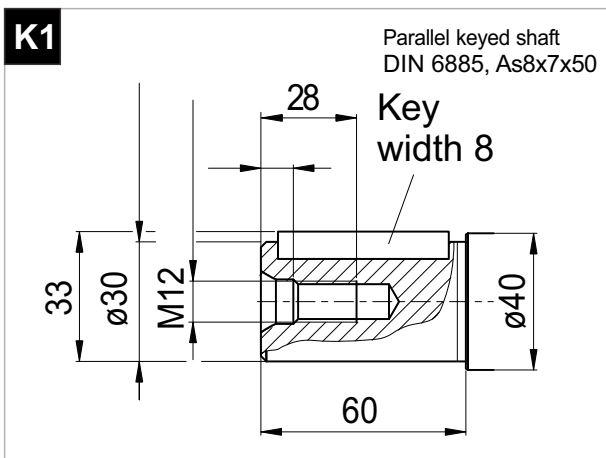
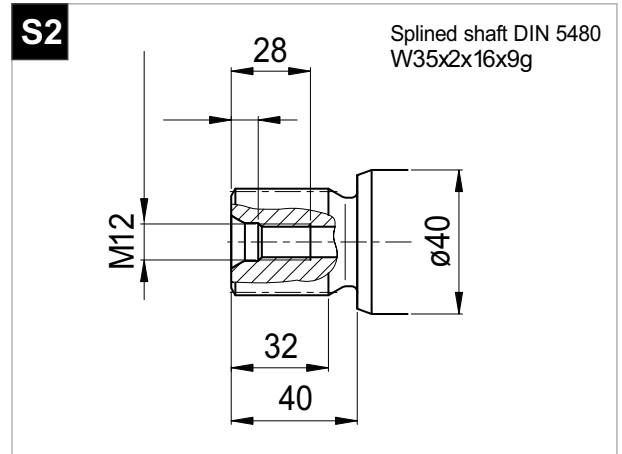
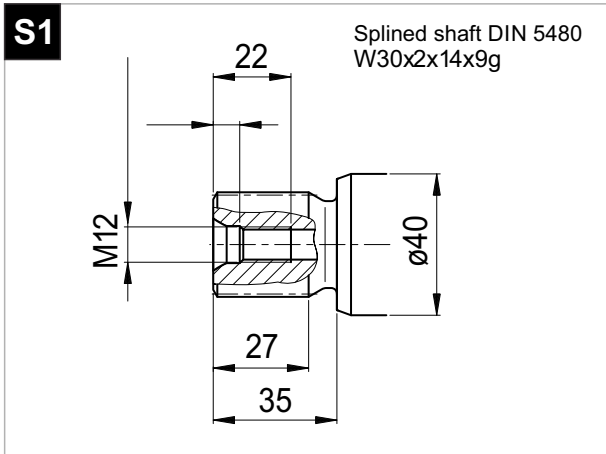


## D4

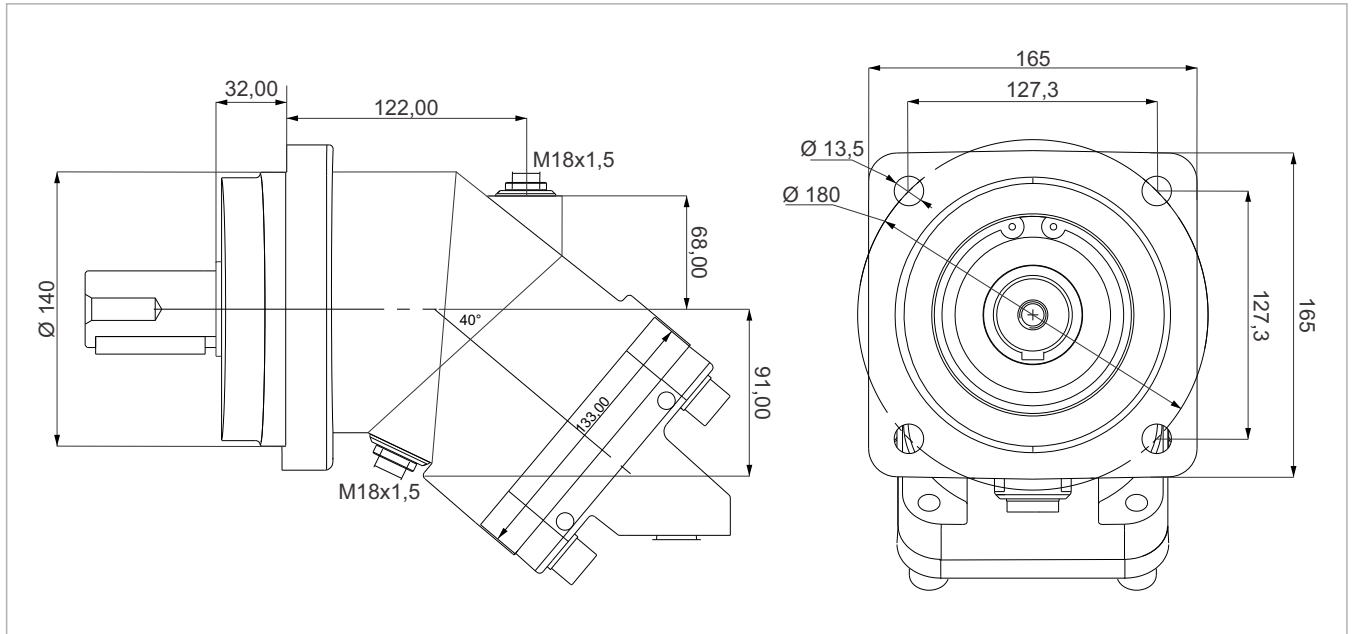
Side threaded ports A and B



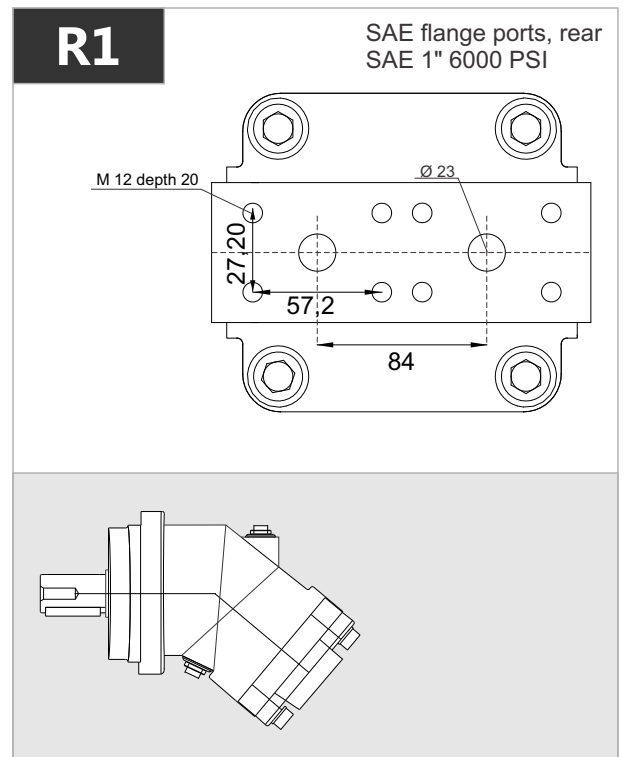
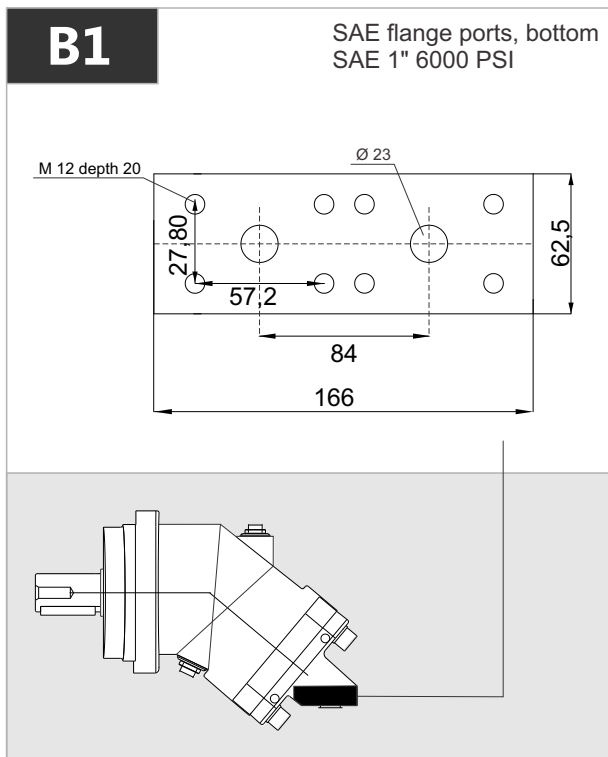
# MS 63



# MS 80



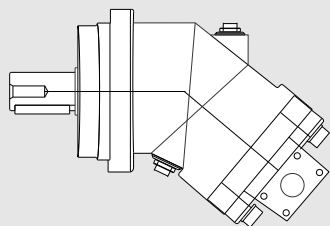
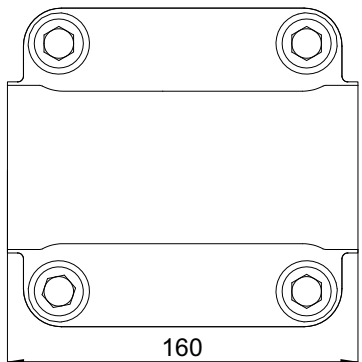
x 1000 rpm	x 1500 rpm	Max. Contin. Pump Speed	Max. Intermit. Pump Speed	Max. Contin. Pressure	Max. Peak Pressure	Torque bar	Torque at 350 bar	Max. Flow	Weight without accessor.	Weight with accessor.	Max. Motor Temp.	Min. Motor Temp.
80,00 cc	120,00 cc	4400 rpm	4900 rpm	400 bar	450 bar	1.28 m.N/bar	440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



# MS 80

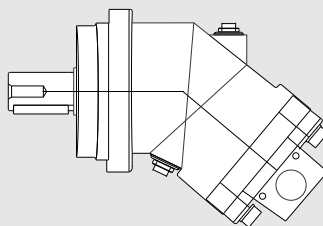
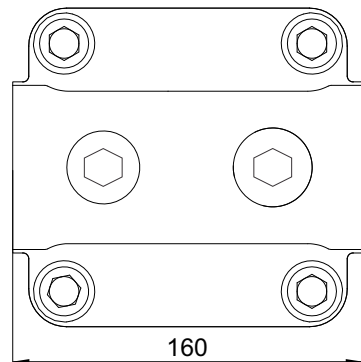
## D1-D2

SAE flange ports, side  
SAE 1" 6000 PSI



## D3

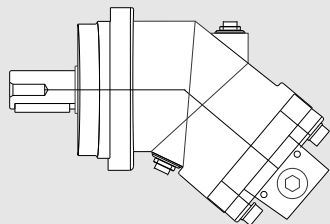
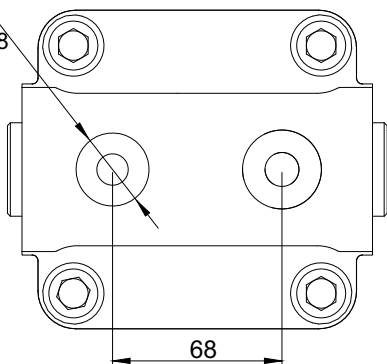
Side threaded ports



## R2

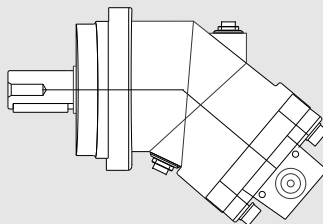
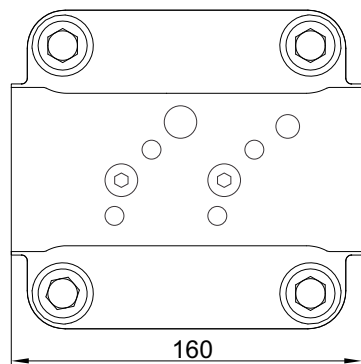
Rear threaded ports

M33x2 depth 18

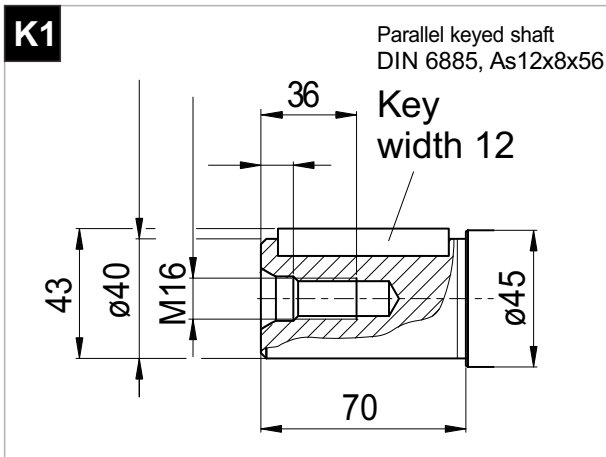
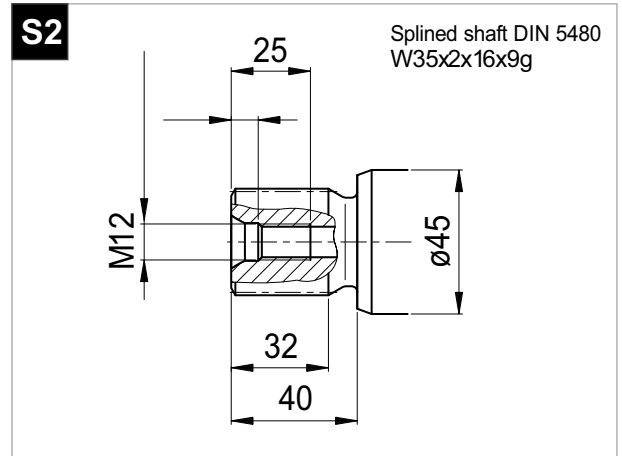
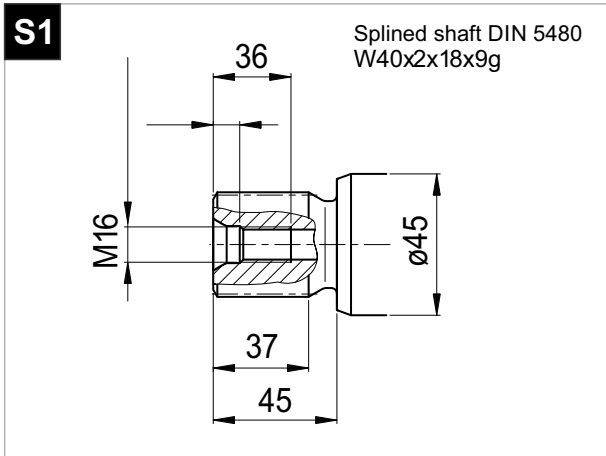


## D4

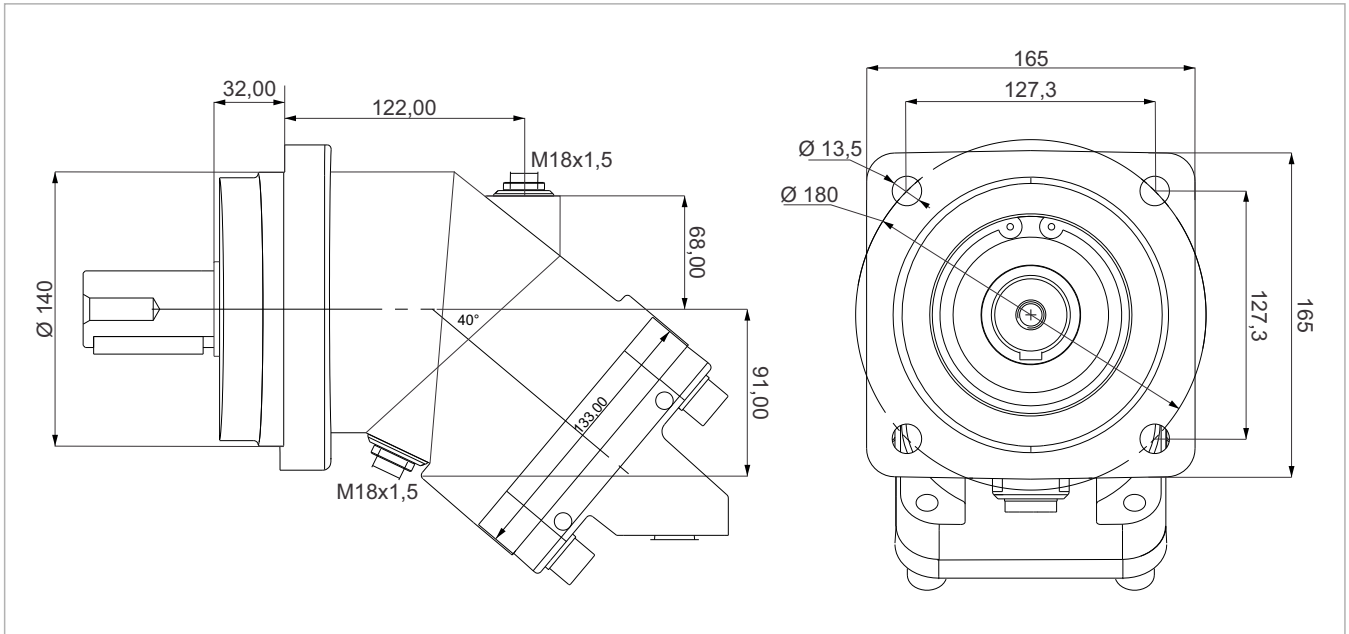
Side threaded ports



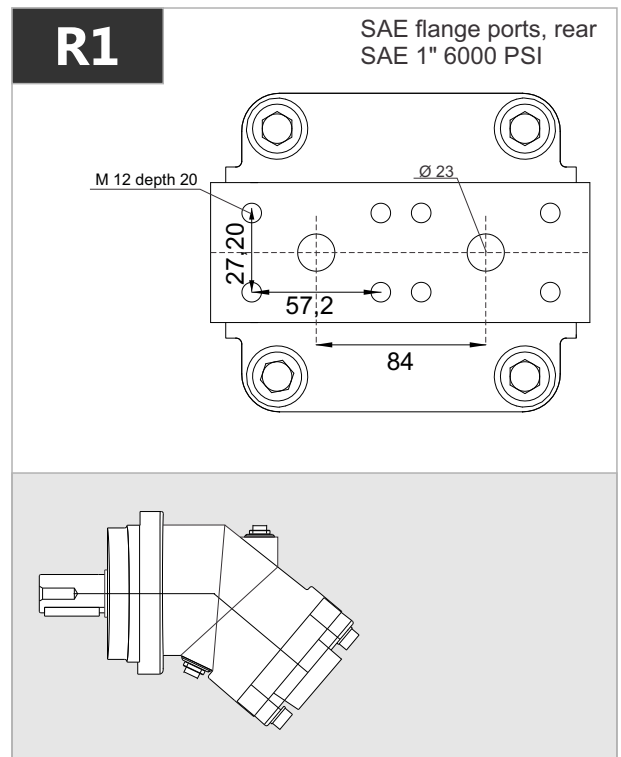
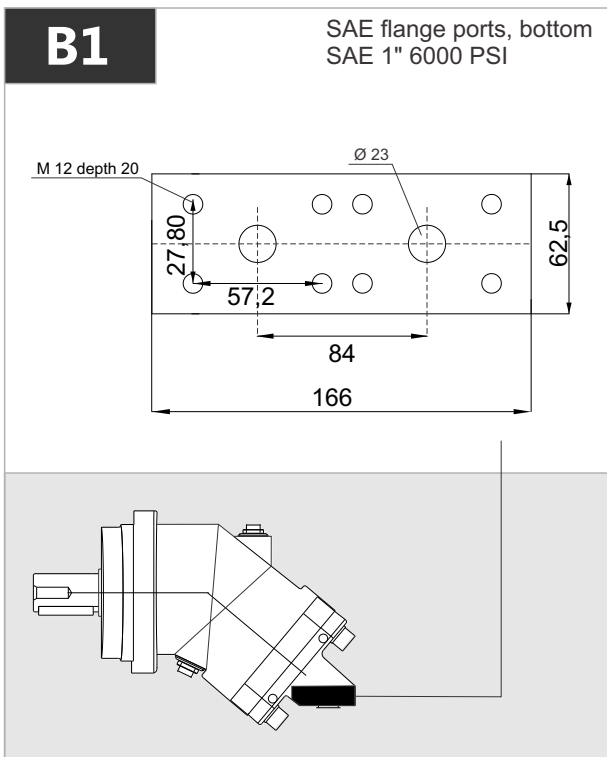
# MS 80



# MS 108



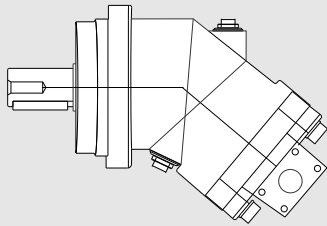
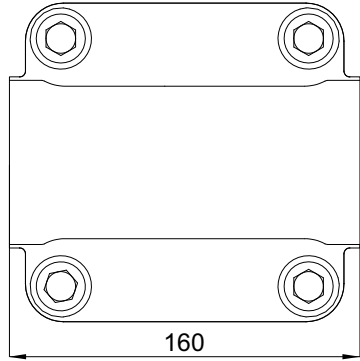
x 1000 rpm	x 1500 rpm	Max. Contin. Pump Speed	Max. Intermit. Pump Speed	Max. Contin. Pressure	Max. Peak Pressure	Torque bar	Torque at 350 bar	Max. Flow	Weight without accessor.	Weight with accessor.	Max. Motor Temp.	Min. Motor Temp.
108,4 cc	162,6 cc	4000 rpm	4400 rpm	400 bar	450 bar	1.69 m.N/bar	600 m.N	433	22,50 kg	23,00 kg	-25°	110°



# MS 108

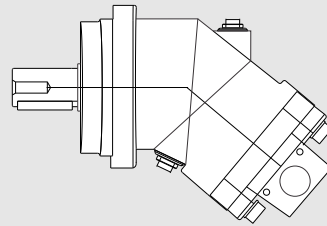
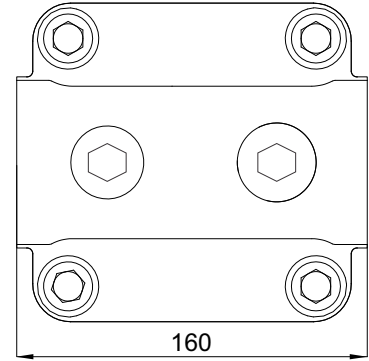
## D1-D2

SAE flange ports, side  
SAE 1" 6000 PSI



## D3

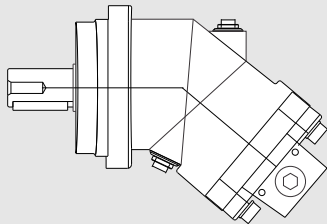
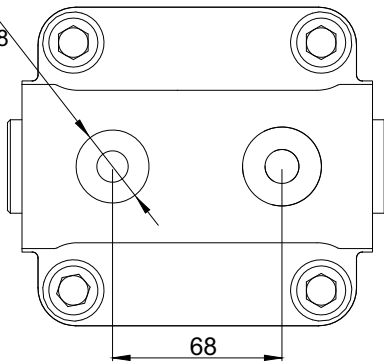
Side threaded ports



## R2

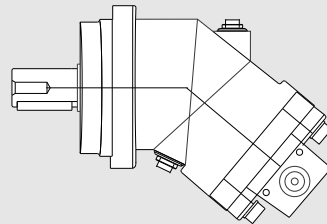
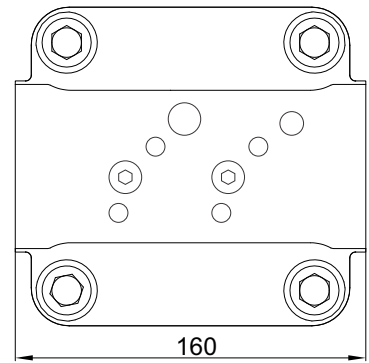
Rear threaded ports

M33x2 depth 18

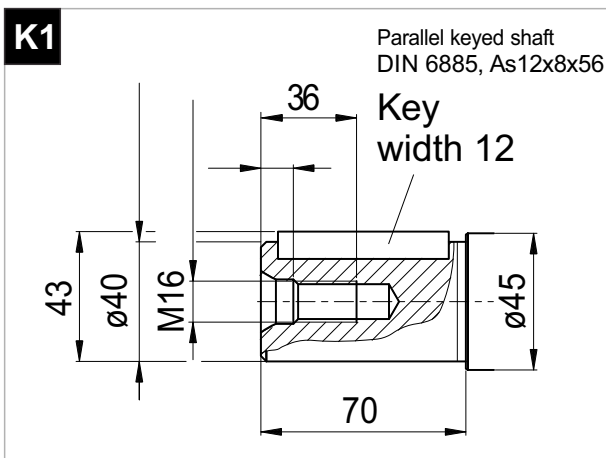
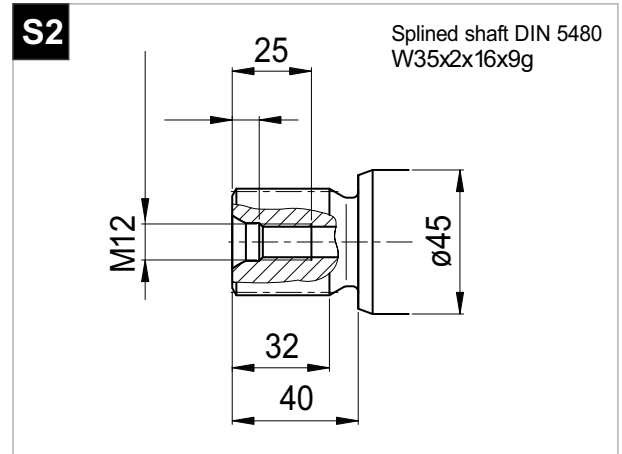
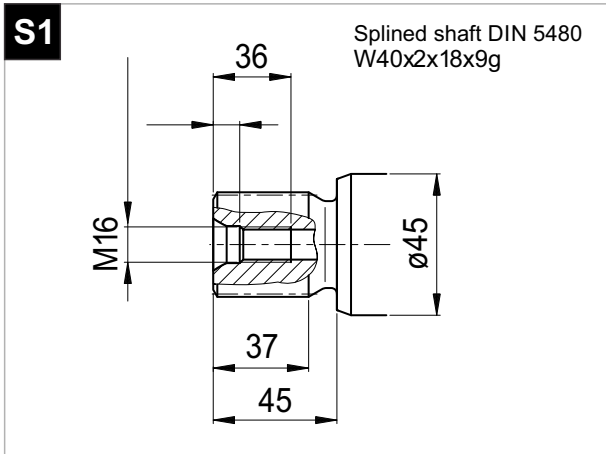


## D4

Side threaded ports



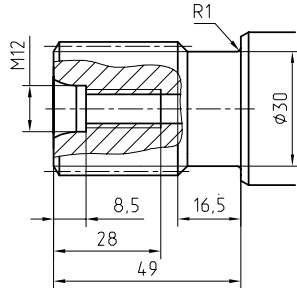
# MS 108



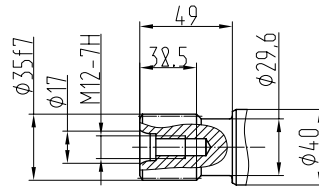


# Special Shaft Drive

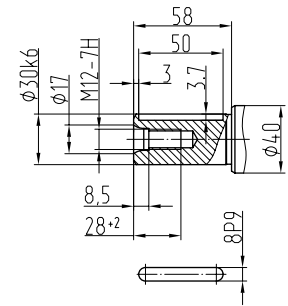
Splined shaft  
35xf7x2x9g GOST 6033-80



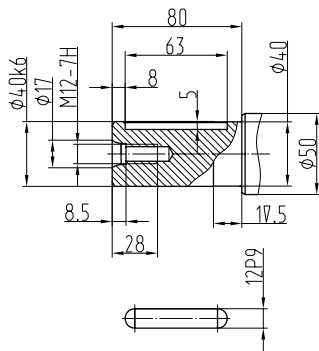
35xf7x2x9g ГOCT6033



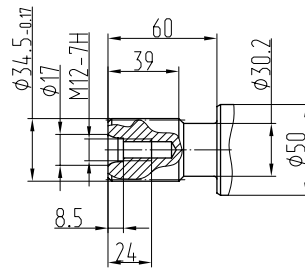
Parallel keyed shafts



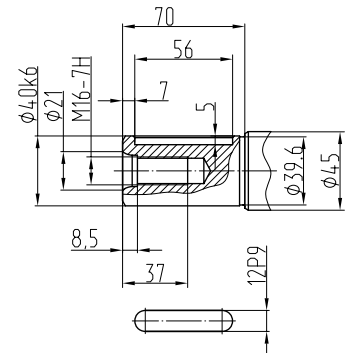
Parallel keyed shafts



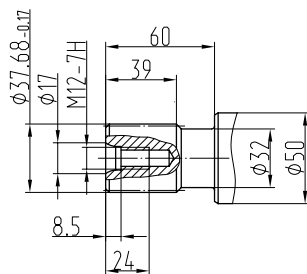
1 3/8' 21T 16/32DP ANSI B92



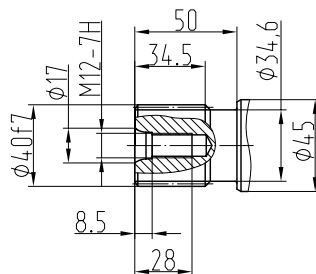
Parallel keyed shafts



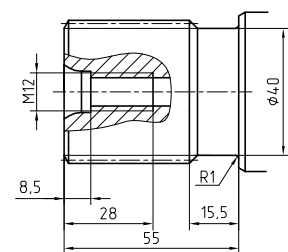
1 1/2' 23T 16/32DP ANSI B92



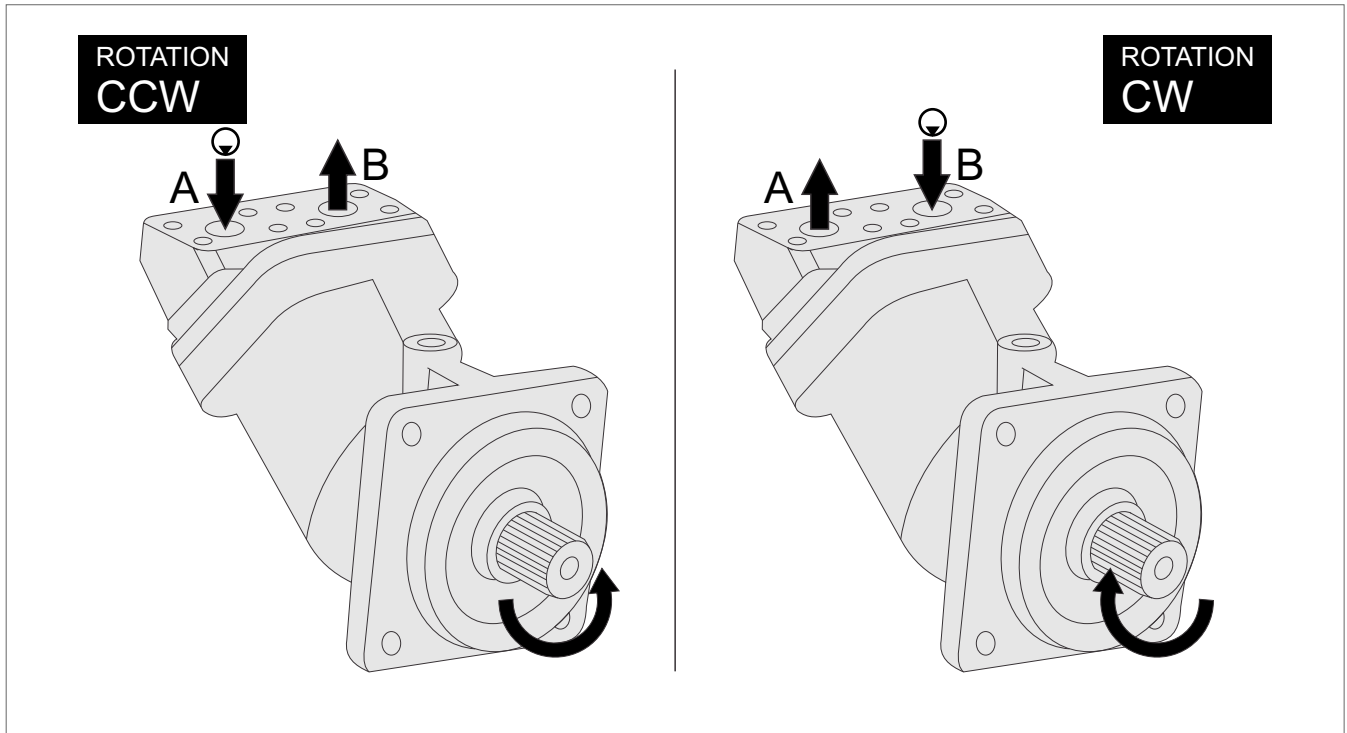
40xf7x2x9g GOST6033



45xh8x2x9g GOST 6033-80



# Direction of Rotation



## 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 ( $\eta_t = \eta_v \times \eta_{mh}$ )

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 MS Bent Axis Motors.

# Installation

## POSITION

MS Motors can be operate any position.

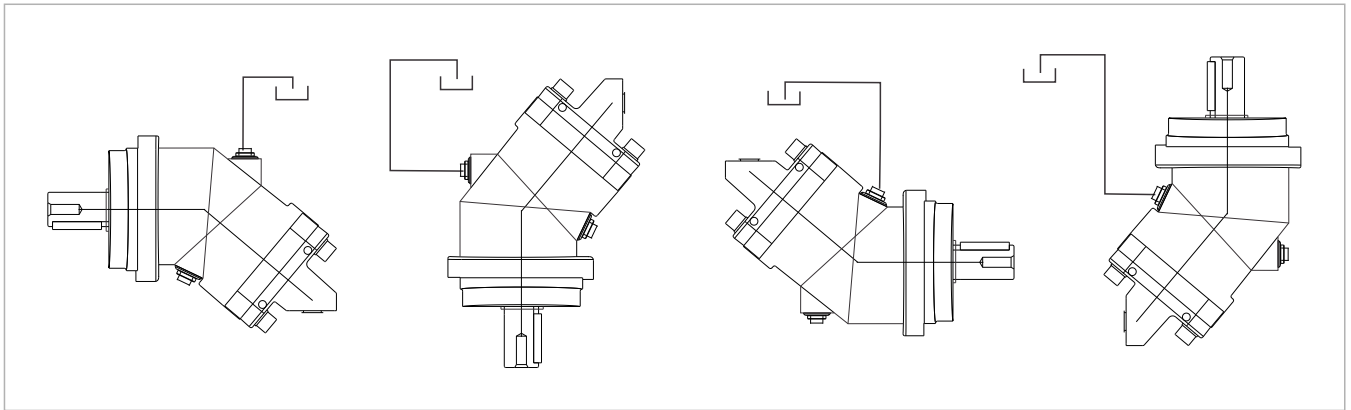
## DIRECTION OF ROTATION

MS 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.

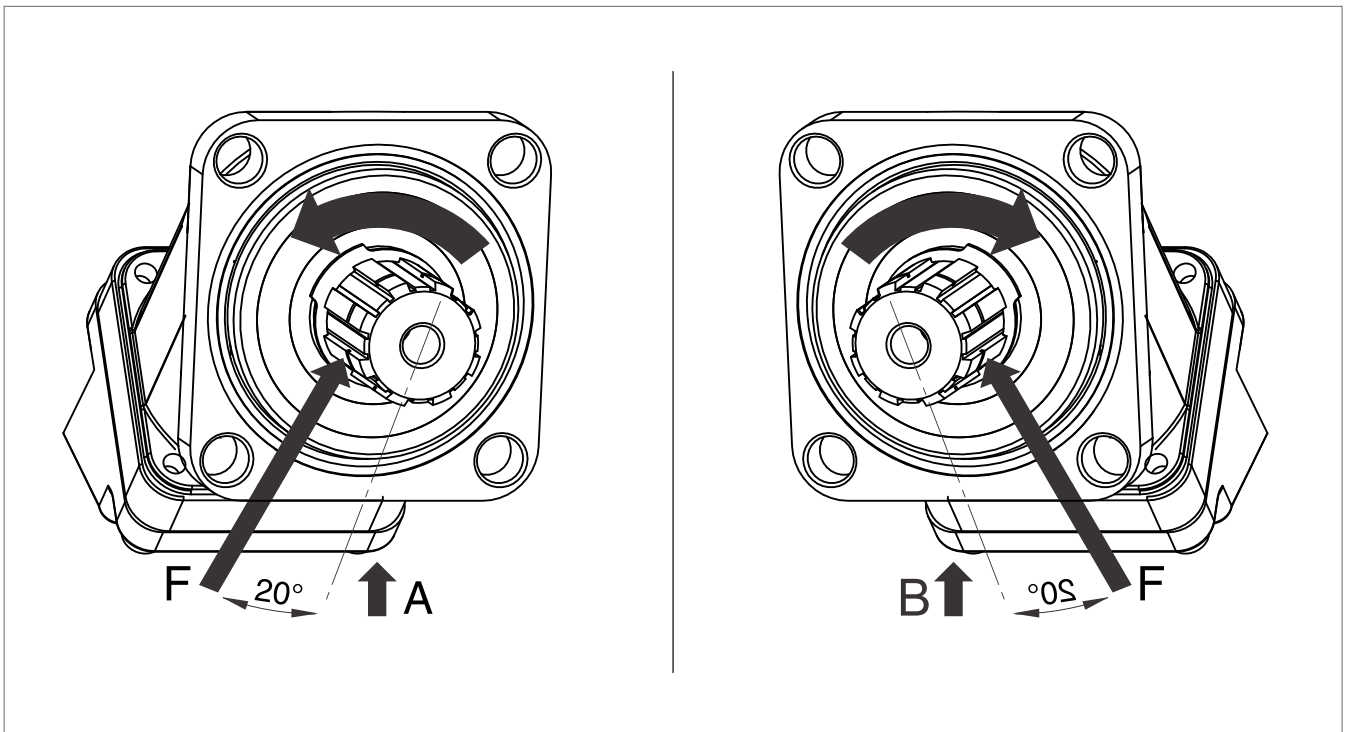


## HYDRAULIC FLUID

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

# SAFA

HYDRAULICS



**PD-DIN**  
Bent Axis Pumps



**MD-DIN**  
Bent Axis Motor



**PA-SAE**  
Bent Axis Pumps



**MA-SAE**  
Bent Axis Motor



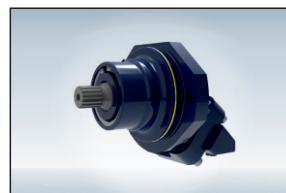
**PS-ISO**  
Bent Axis Pumps



**MS-ISO**  
Bent Axis Motor



**PD Dual**  
Dual Flow Pumps



**MF Fixed**  
Bent Axis Motor



**PV**  
Variable Disp.  
Piston Pumps

# SAFA HYDRAULICS

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f t i l p

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