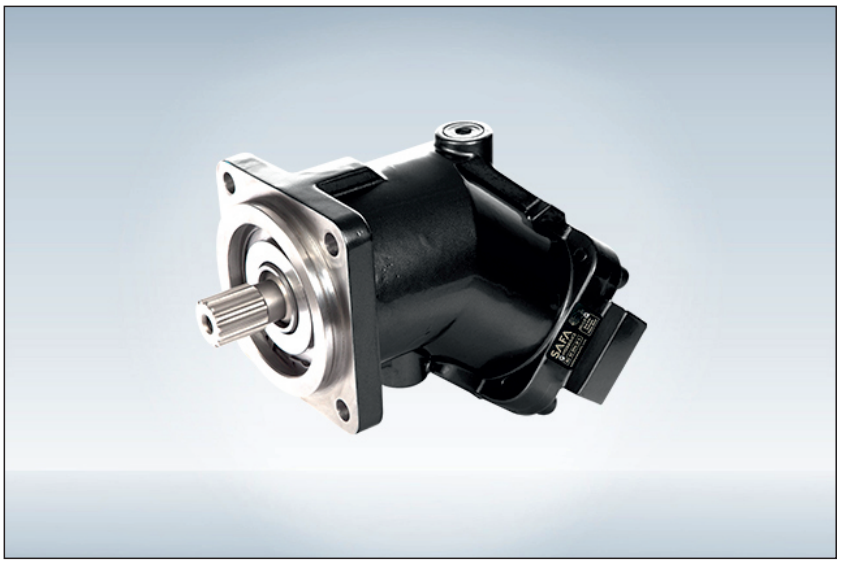
SAFA HYDRAULICS

MA-SAE

Bent Axis Motor



SAE Mounting Flange, Flange, 2, 4, 6 Bolt 12cc to 130cc

SAE 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.

info@safahydraulic.com

www.safahydraulic.com

Ordering Code of MA Motors

Motor Code	Displacement (cm^3)	Drive Shafts	Inlet Ports A - B	Mounting Flange	Sealing
MA	108	J2	R1	A	N

N Nitrile

V Viton

A	10	12	18	25	32	40	50	56	63	80	108
	SAE B	SAE B	SAE B	SAE C	SAE C	SAE C	SAE C	SAE C	SAE C	SAE C	SAE D

			10	12	18	25	32	40	50	56	63	80	108
SAE Flange Ports	B1	Bottom	–	–	–	–	●	●	●	●	●	●	●
	R1	Rear	–	–	–	●	●	●	●	●	●	●	●
	D1	Side	–	–	–	●	●	●	●	●	●	●	●
	D2		–	–	–	●	●	●	●	●	●	●	●
Threaded	R2	Rear	●	●	●	●	●	●	●	●	●	–	–
	D3	Side	●	●	●	●	●	●	–	–	–	–	–
	D4		–	–	–	●	●	●	–	–	–	–	–

		10	12	18	25	32	40	50	56	63	80	108
SAE J498b SPLINED	J1	●	●	●	●	●	●	●	●	●	●	●
SAE J744 KEYED	J2	●	●	●	●	●	●	●	●	●	●	●

10	12	18	25	32	40	50	56	63	80	108

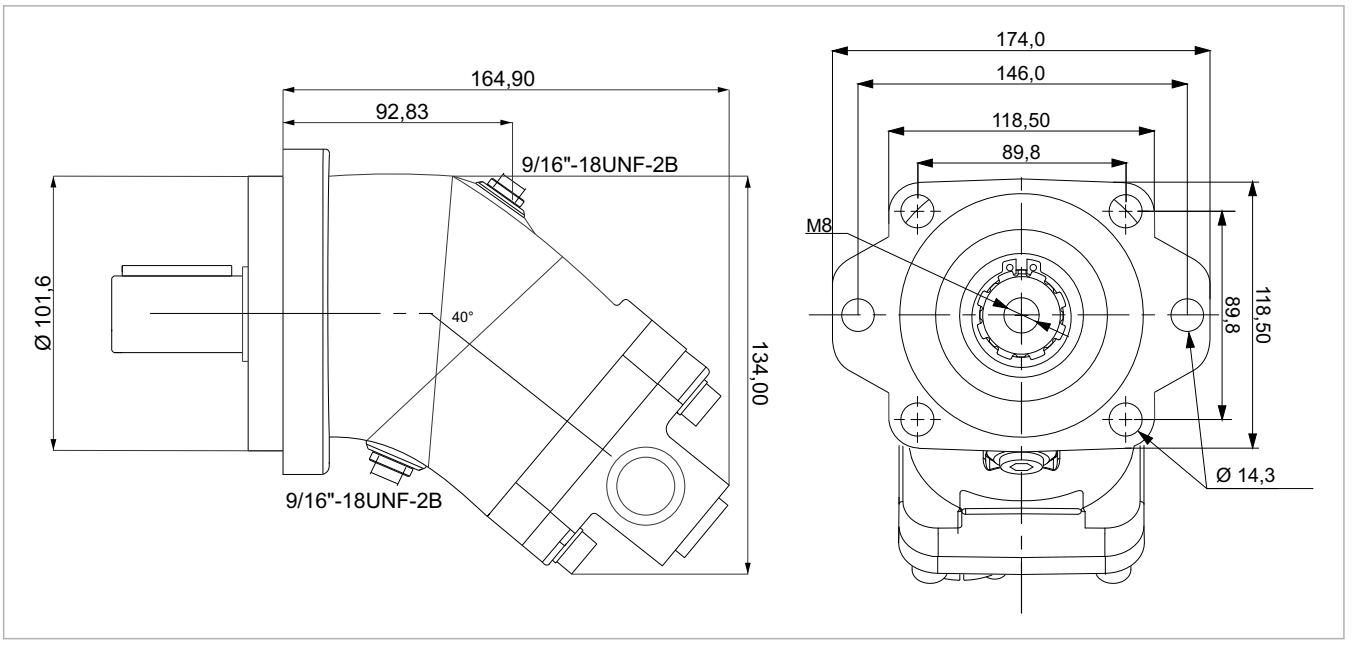
MA Bent Axis Piston Motor - SAE, Fixed Displacement.

Technical Data

		10	12	18	25	32	40	50	56	63	80	108
Displacement	***cc***	10,00	12,00	18,00	25,00	32,00	40,20	50,00	56,40	63,00	80,00	108,4
Theoretical oil flow l/min at pump speed	***1000 rpm***	10,00	12,00	18,00	25,00	32,00	40,20	50,00	56,40	63,00	80,00	108,4
	1500 rpm	15,00	18,00	27,00	37,50	48,00	60,30	75,00	84,60	94,50	120,0	162,6
Maximum Speed												
- Continuous	***rpm***	8000	8000	8000	6250	6250	5600	5000	5000	5000	4400	4000
- Intermittent	***rpm***	8800	8800	8800	6800	6800	6300	5500	5500	5500	4900	4400
Max. Continuous Pressure	***bar***	400	400	400	400	400	400	400	400	400	400	400
Max. Peak Pressure	***bar***	450	450	450	450	450	450	450	450	450	450	450
Torque bar	***m.N/bar***	0.17	0.18	0.28	0.40	0.51	0.65	0.80	0.92	1.00	1.28	1.69
Torque at 350 bar	***m.N***	64	66	98	140	174	228	280	320	350	440	600
Max. Flow	***l/mn.***	80	96	144	156	200	225	250	282	315	352	433
Weight												
- Without accessories	***kg***	6,50	6,50	6,50	11,50	11,50	11,50	17,50	18,00	18,00	22,00	22,50
- With accessories	***kg***	7,00	7,00	7,00	11,80	11,90	11,90	18,00	18,50	18,50	22,50	23,00
Motor Temperature												
- Minimum	***°C***	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25
- Maximum	***°C***	110	110	110	110	110	110	110	110	110	110	110

Dimensions Size;

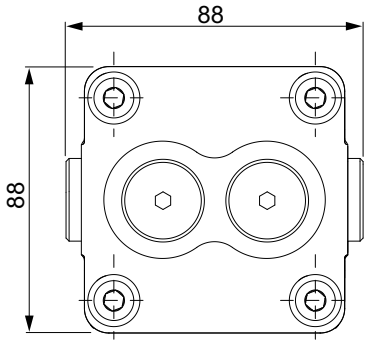
MA 10

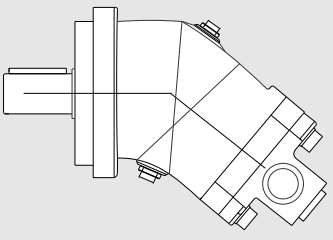


x 1000 rpm	*x 1500 rpm*	*Max. Contin. Pump Speed*	*Max. Intermit. Pump Speed*	*Max. Contin. Pressure*	*Max. Peak Pressure*	*Torque bar*	*Torque at 350 bar*	*Max. Flow*	*Weight without accessor.*	*Weight with accessor.*	*Max. Motor Temp.*	*Min. Motor Temp.*
10,00 cc	15,00 cc	8000 rpm	8800 rpm	400 bar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

D3

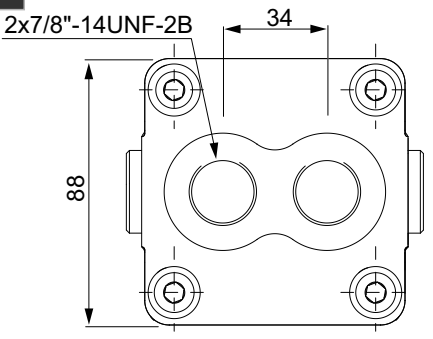
Side threaded ports A and B

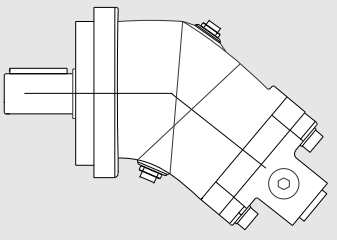




R2

Rear threaded ports A and B



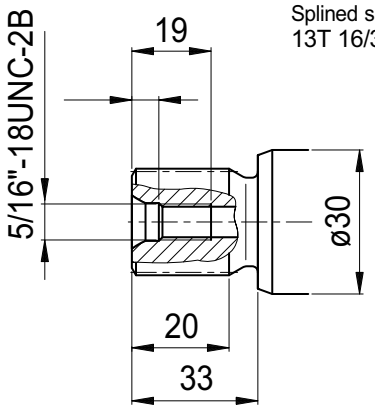


Dimensions Size;

MA 10

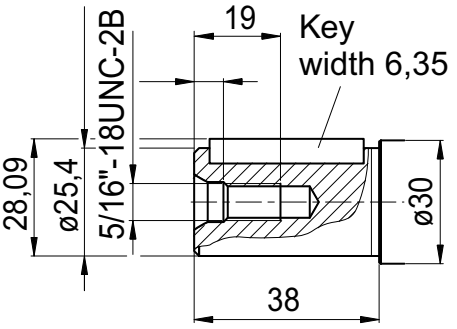
J1

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



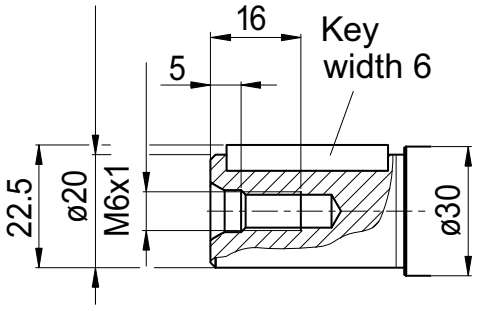
J2

Cylindrical keyed shaft
Ø 1"



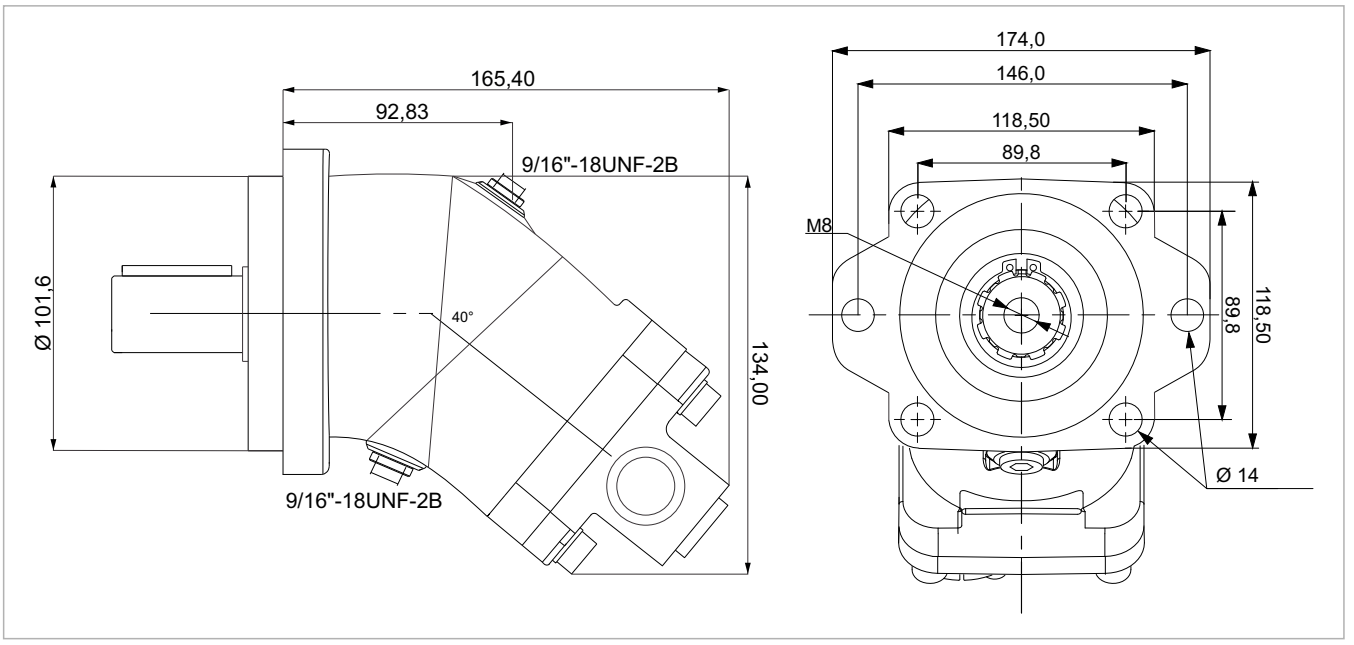
K2 !! Special

Parallel keyed shaft
DIN 6885, AS6x6x32



Dimensions Size;

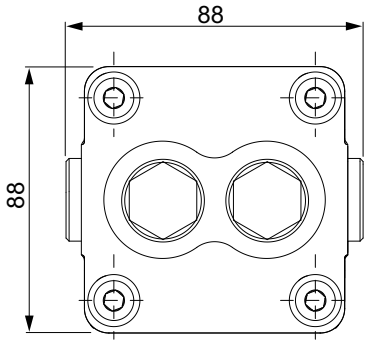
MA 12

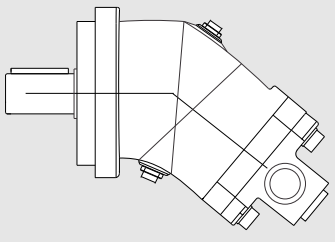


x 1000 rpm	*x 1500 rpm*	*Max. Contin. Pump Speed*	*Max. Intermit. Pump Speed*	*Max. Contin. Pressure*	*Max. Peak Pressure*	*Torque bar*	*Torque at 350 bar*	*Max. Flow*	*Weight without accessor.*	*Weight with accessor.*	*Max. Motor Temp.*	*Min. Motor Temp.*
12,00 cc	18,00 cc	8000 rpm	8800 rpm	400 bar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

D3

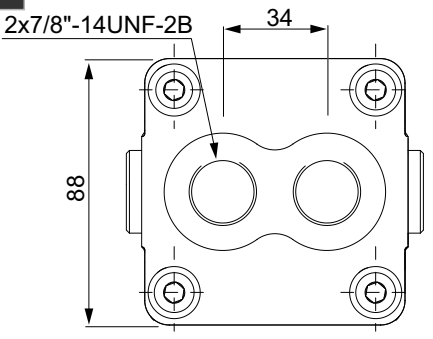
Side threaded ports A and B

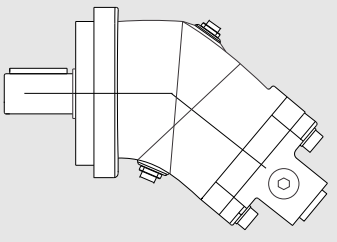




R2

Rear threaded ports A and B



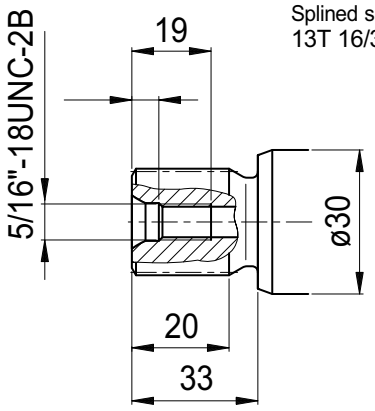


Dimensions Size;

MA 12

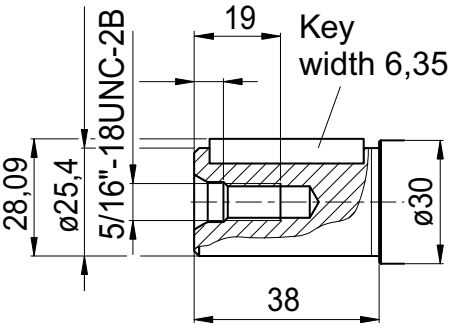
J1

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



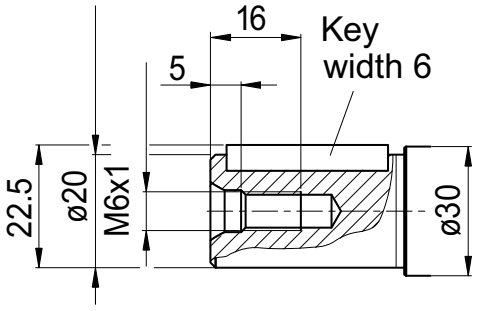
J2

Cylindrical keyed shaft
Ø 1"



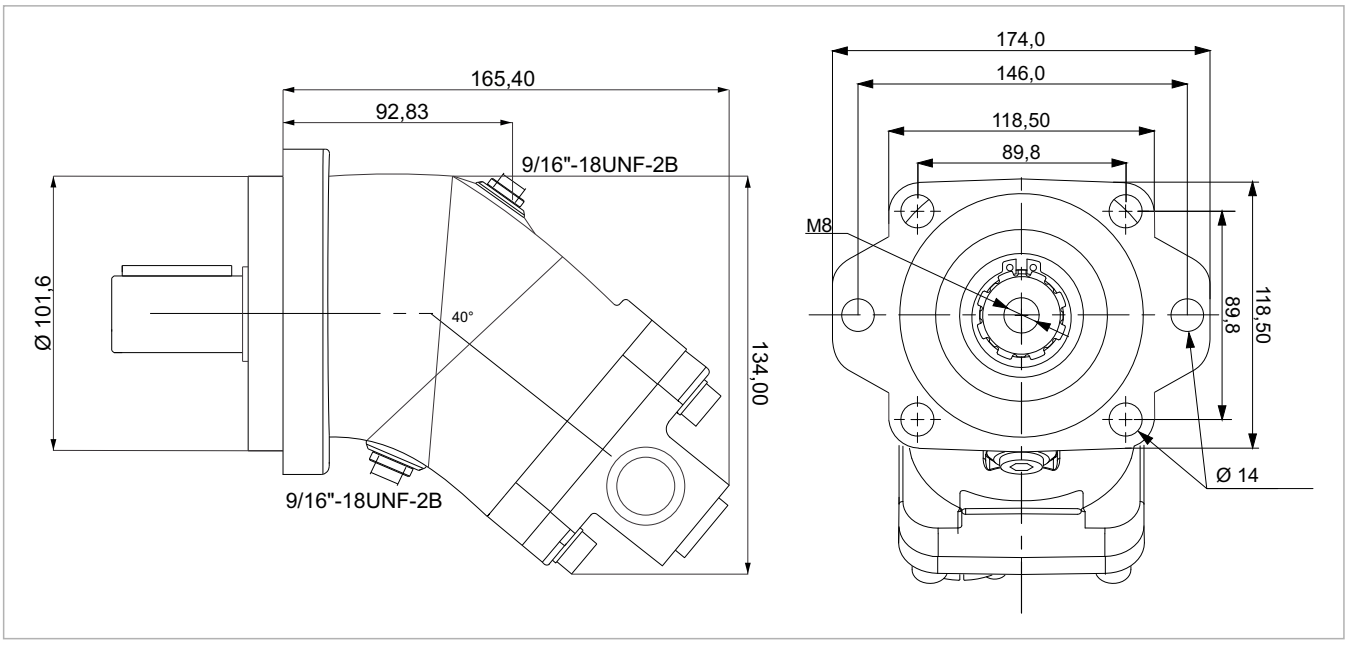
K2 !! Special

Parallel keyed shaft
DIN 6885, AS6x6x32



Dimensions Size;

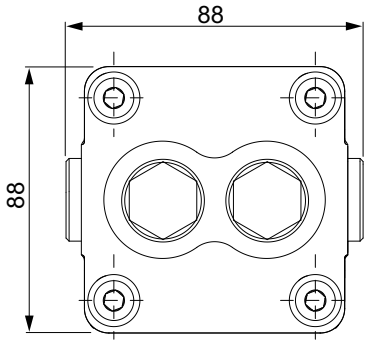
MA 18

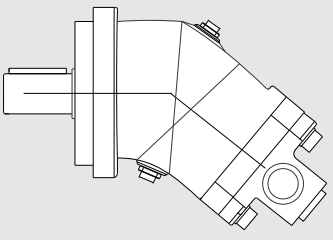


x 1000 rpm	*x 1500 rpm*	*Max. Contin. Pump Speed*	*Max. Intermit. Pump Speed*	*Max. Contin. Pressure*	*Max. Peak Pressure*	*Torque bar*	*Torque at 350 bar*	*Max. Flow*	*Weight without accessor.*	*Weight with accessor.*	*Max. Motor Temp.*	*Min. Motor Temp.*
18,00 cc	27,00 cc	8000 rpm	8800 rpm	400 bar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

D3

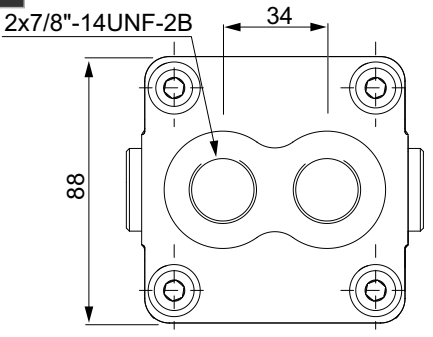
Side threaded ports A and B

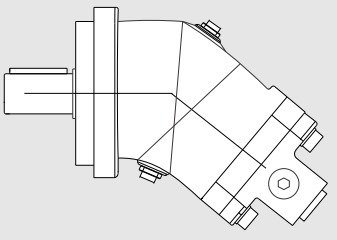




R2

Rear threaded ports A and B



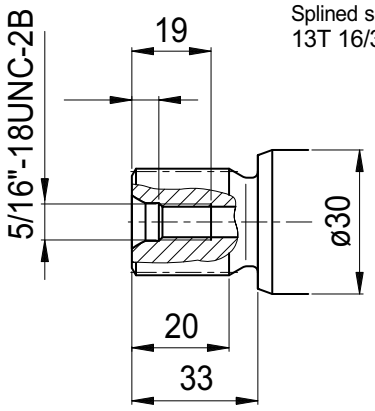


Dimensions Size;

MA 18

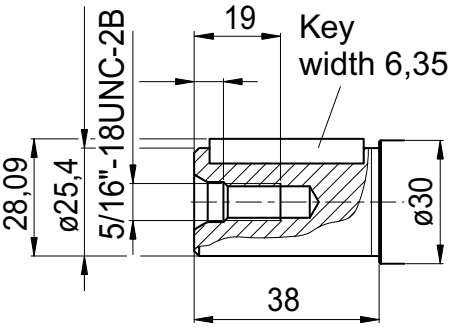
J1

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



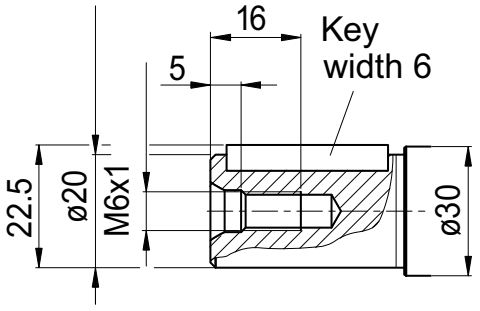
J2

Cylindrical keyed shaft
Ø 1"



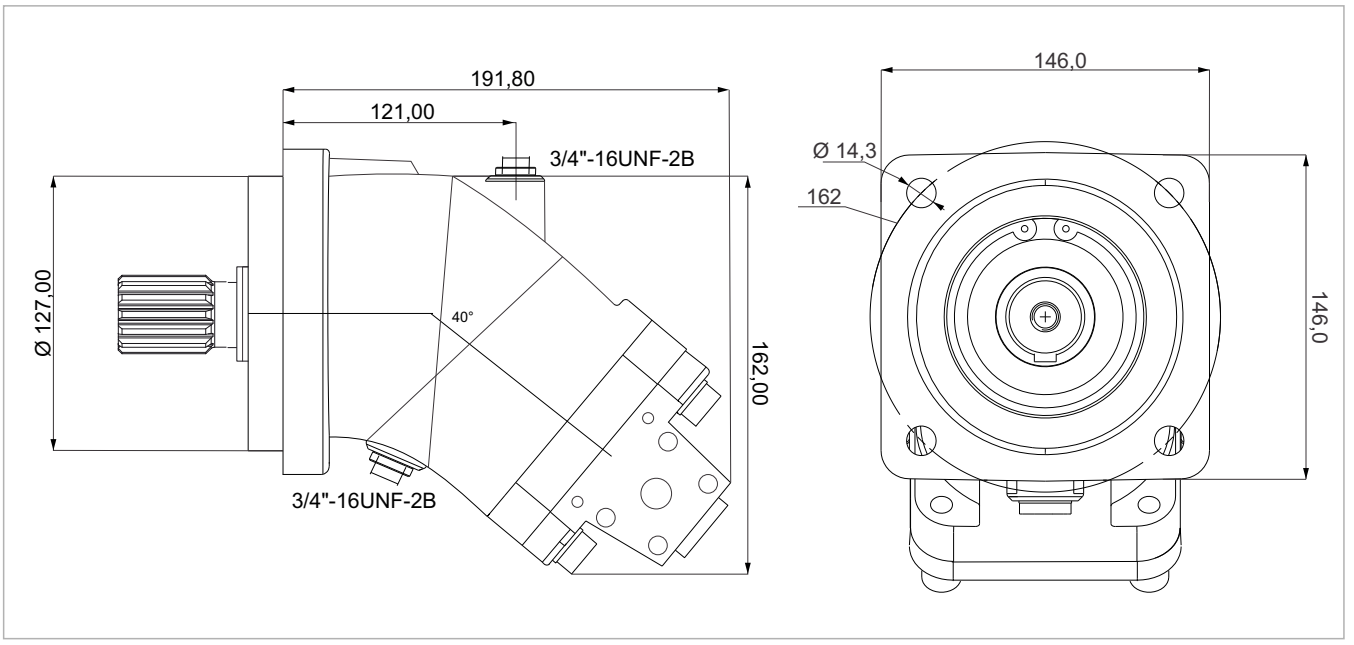
K2 !! Special

Parallel keyed shaft
DIN 6885, AS6x6x32



Dimensions Size;

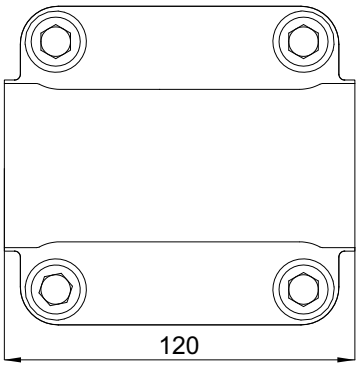
MA 25

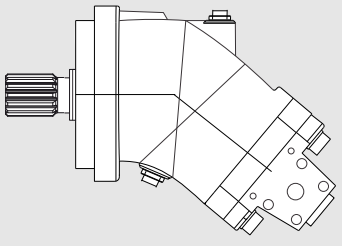


x 1000 rpm	*x 1500 rpm*	*Max. Contin. Pump Speed*	*Max. Intermit. Pump Speed*	*Max. Contin. Pressure*	*Max. Peak Pressure*	*Torque bar*	*Torque at 350 bar*	*Max. Flow*	*Weight without accessor.*	*Weight with accessor.*	*Max. Motor Temp.*	*Min. Motor Temp.*
25,00 cc	37,50 cc	6250 rpm	6800 rpm	400 bar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

D1-D2

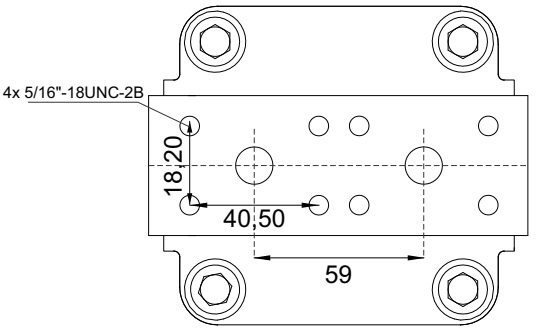
Side SAE flange ports A and B
SAE 1/2" 6000 PSI

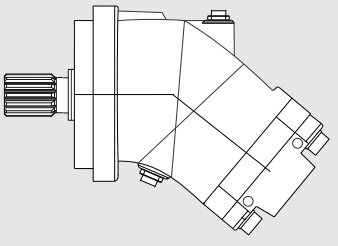




R1

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



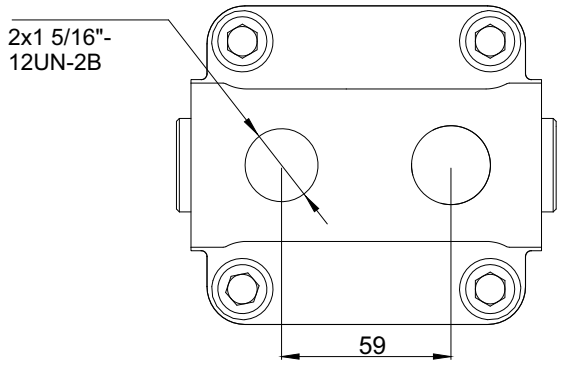


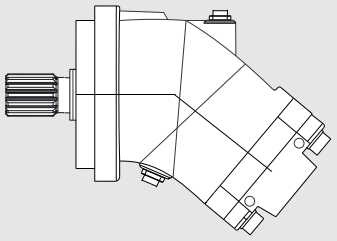
Dimensions Size;

MA 25

R2

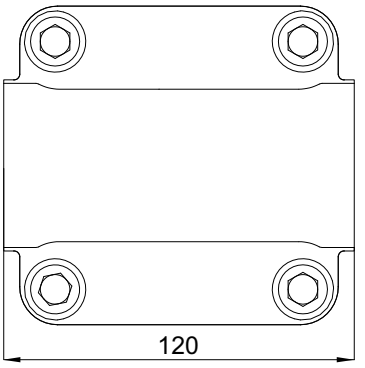
Rear threaded ports A and B

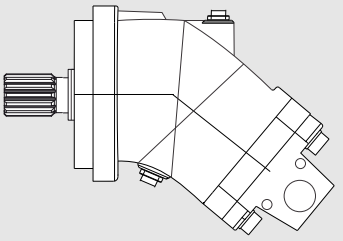




D3

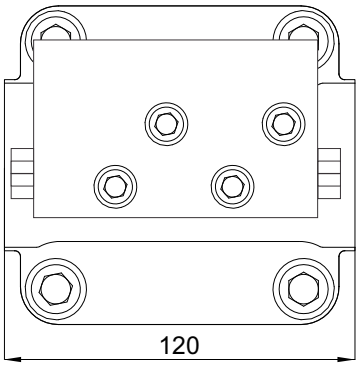
Side threaded ports

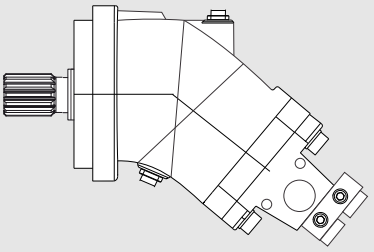




D4

Side threaded ports



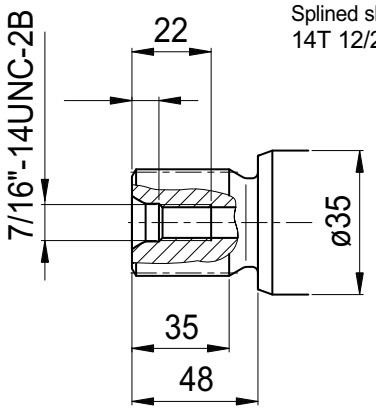


Dimensions Size;

MA 25

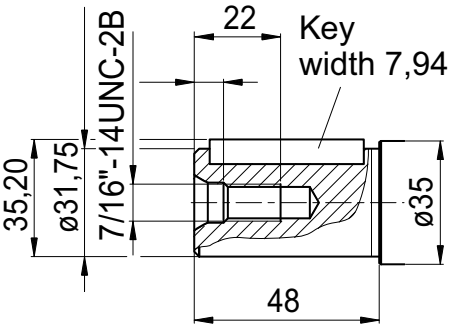
J1

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



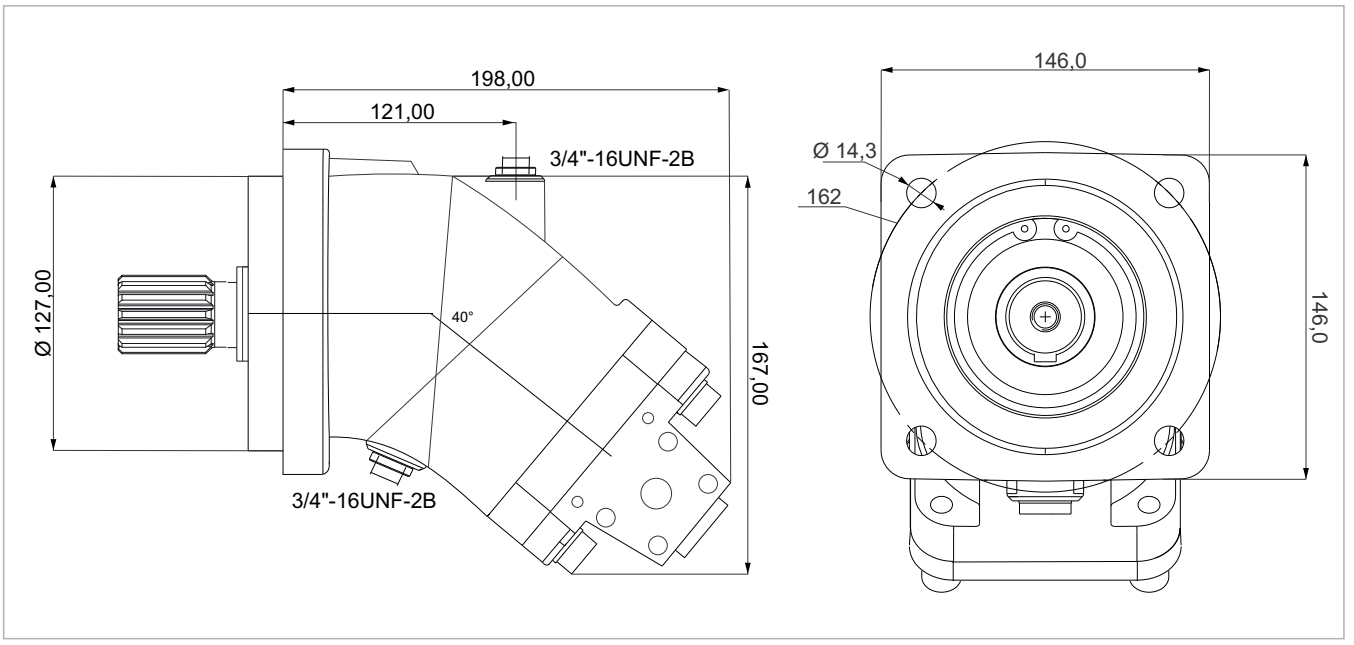
J2

Cylindrical keyed shaft
Ø 1 1/4"



Dimensions Size;

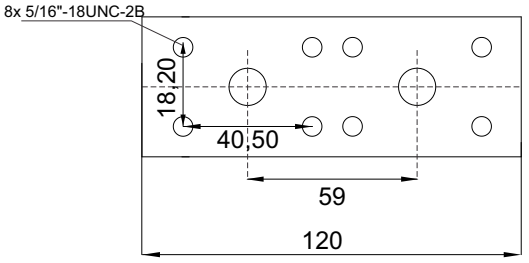
MA 32

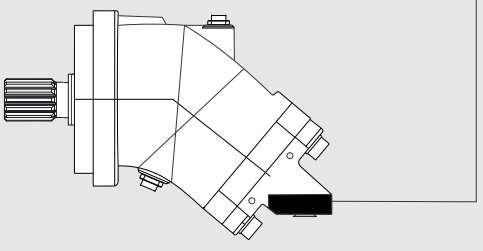


x 1000 rpm	*x 1500 rpm*	*Max. Contin. Pump Speed*	*Max. Intermit. Pump Speed*	*Max. Contin. Pressure*	*Max. Peak Pressure*	*Torque bar*	*Torque at 350 bar*	*Max. Flow*	*Weight without accessor.*	*Weight with accessor.*	*Max. Motor Temp.*	*Min. Motor Temp.*
32,00 cc	48,00 cc	6250 rpm	6800 rpm	400 bar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

B1

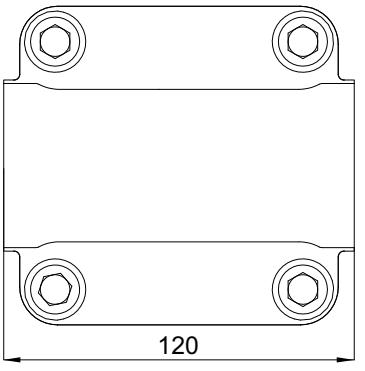
SAE flange ports, bottom
SAE 1/2" 6000 PSI

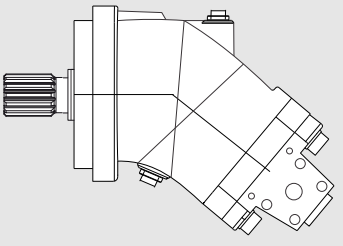




D1-D2

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



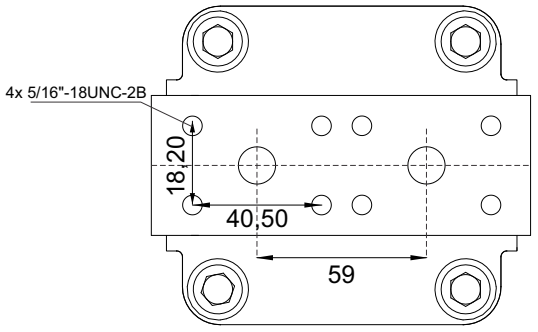


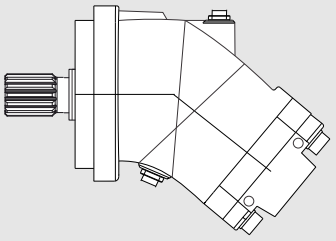
Dimensions Size;

MA 32

R1

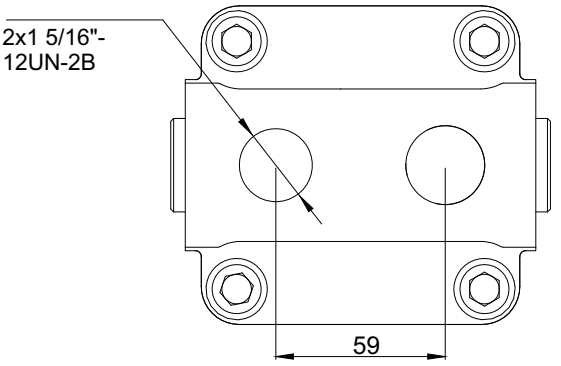
Rear SAE flange ports A and B
SAE 1/2" 6000 PSI

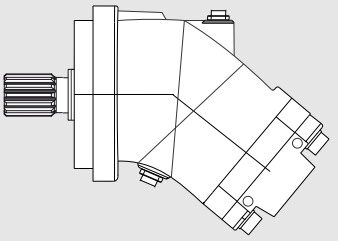




R2

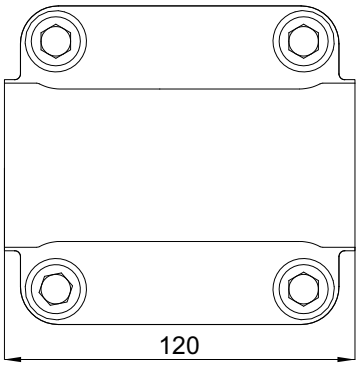
Rear threaded ports

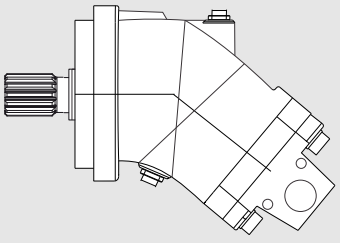




D3

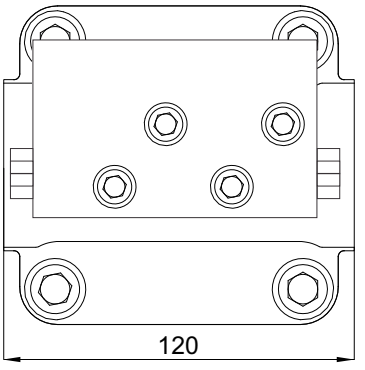
Side threaded ports A and B

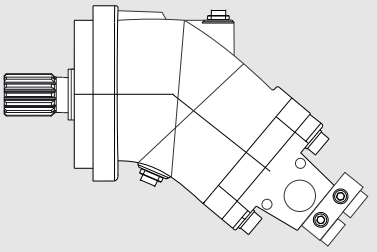




D4

Side threaded ports A and B



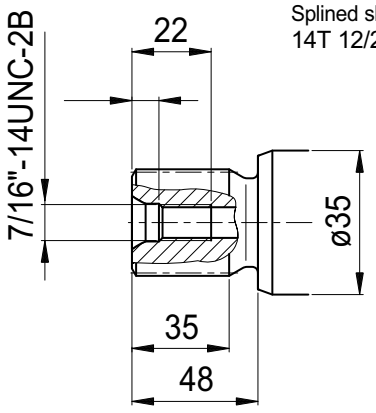


Dimensions Size;

MA 32

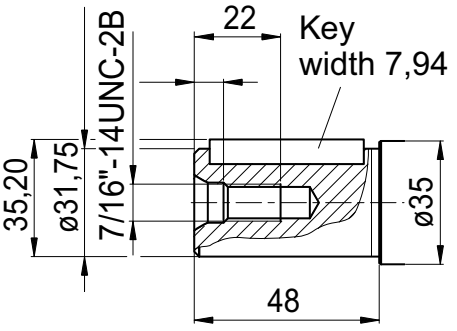
J1

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



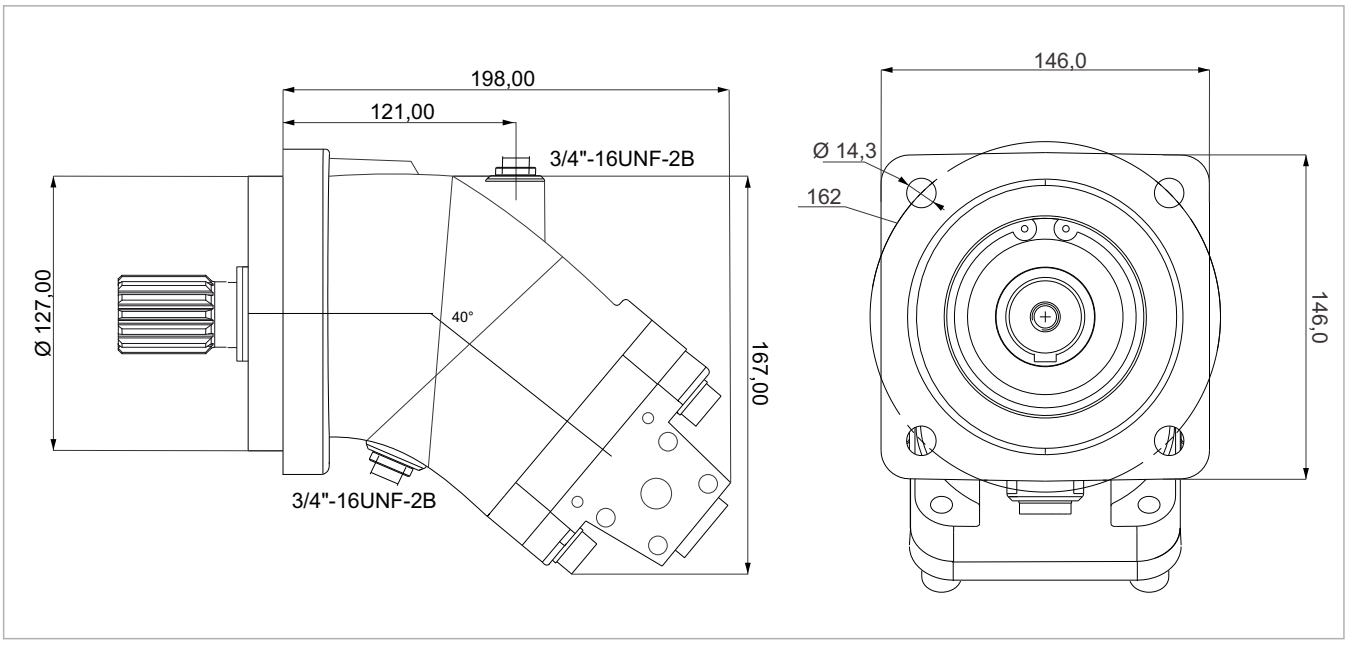
J2

Cylindrical keyed shaft
Ø 1 1/4"



Dimensions Size;

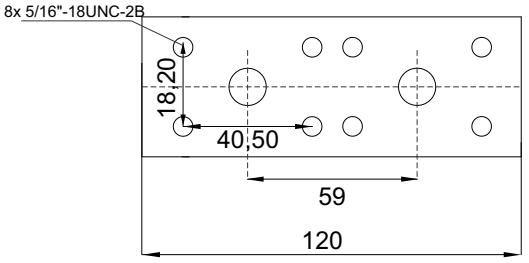
MA 40

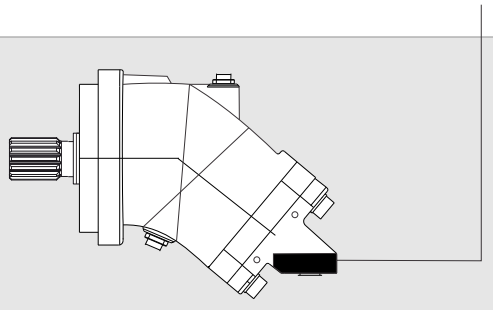


x 1000 rpm	*x 1500 rpm*	*Max. Contin. Pump Speed*	*Max. Intermit. Pump Speed*	*Max. Contin. Pressure*	*Max. Peak Pressure*	*Torque bar*	*Torque at 350 bar*	*Max. Flow*	*Weight without accessor.*	*Weight with accessor.*	*Max. Motor Temp.*	*Min. Motor Temp.*
40,20 cc	60,30 cc	5600 rpm	6300 rpm	400 bar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

B1

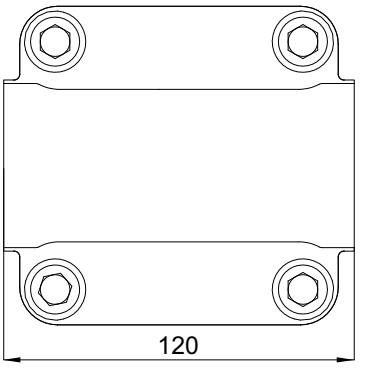
SAE flange ports, bottom
SAE 1/2" 6000 PSI

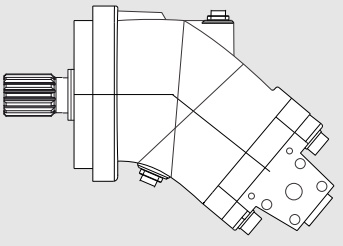




D1-D2

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



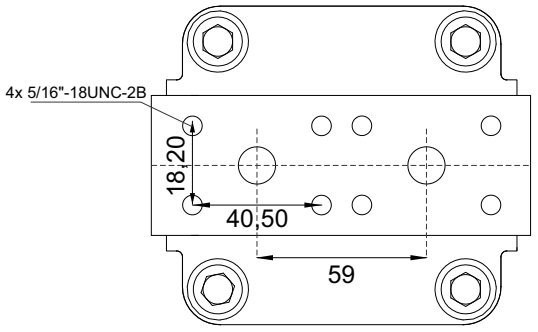


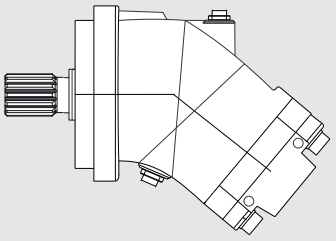
Dimensions Size;

MA 40

R1

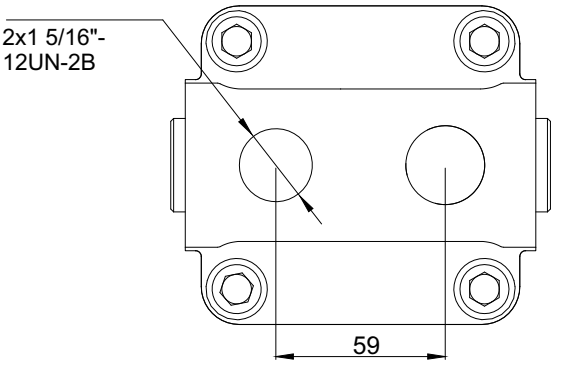
Rear SAE flange ports A and B
SAE 1/2" 6000 PSI

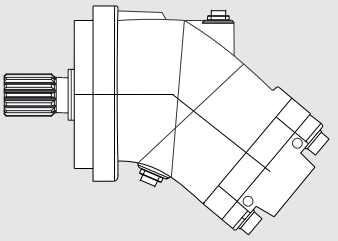




R2

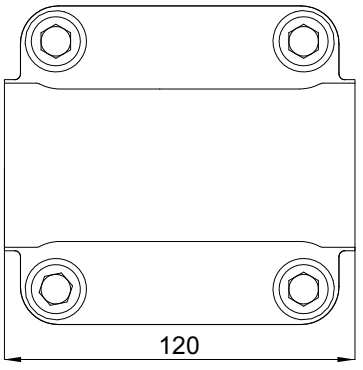
Rear threaded ports

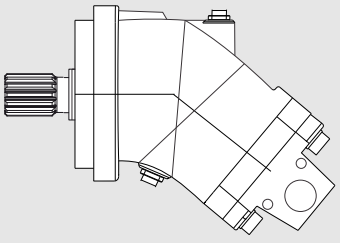




D3

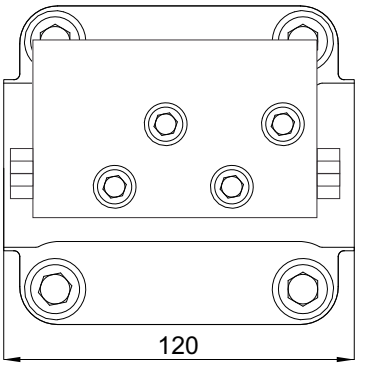
Side threaded ports A and B

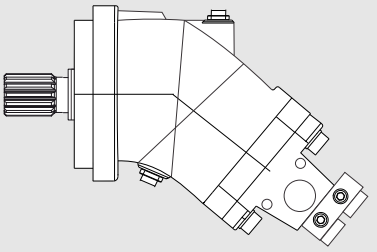




D4

Side threaded ports A and B



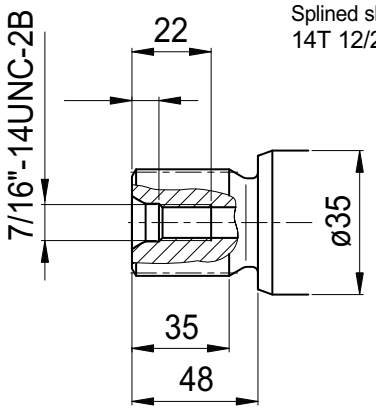


Dimensions Size;

MA 40

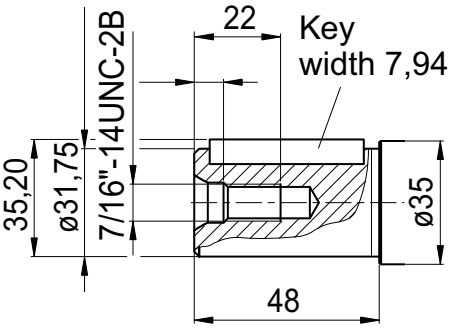
J1

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



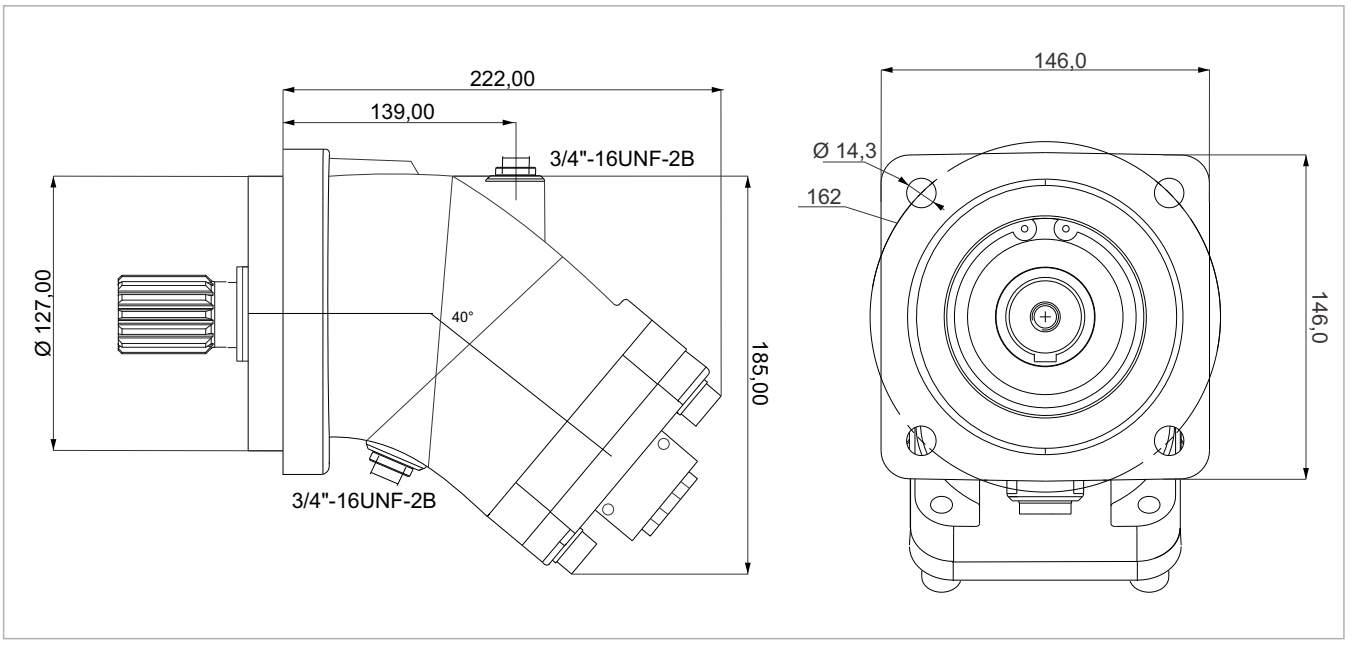
J2

Cylindrical keyed shaft
Ø 1 1/4"



Dimensions Size;

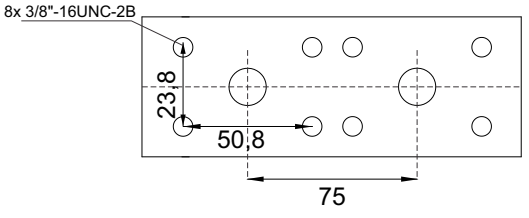
MA 50

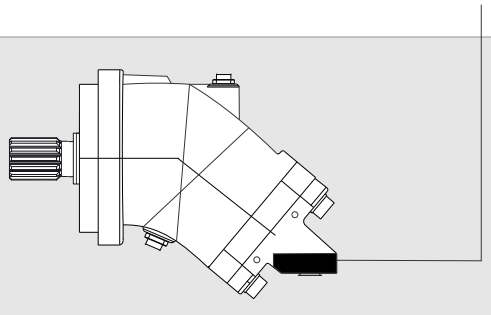


x 1000 rpm	*x 1500 rpm*	*Max. Contin. Pump Speed*	*Max. Intermit. Pump Speed*	*Max. Contin. Pressure*	*Max. Peak Pressure*	*Torque bar*	*Torque at 350 bar*	*Max. Flow*	*Weight without accessor.*	*Weight with accessor.*	*Max. Motor Temp.*	*Min. Motor Temp.*
50,00 cc	75,00 cc	5000 rpm	5500 rpm	400 bar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

B1

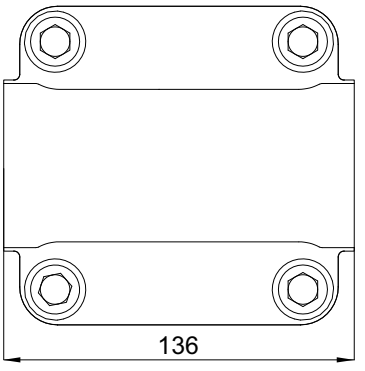
SAE flange ports, bottom
SAE 3/4" 6000 PSI

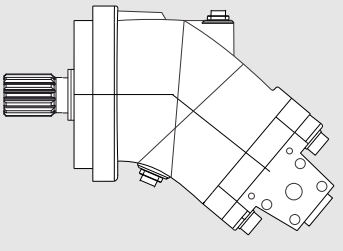




D1-D2

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



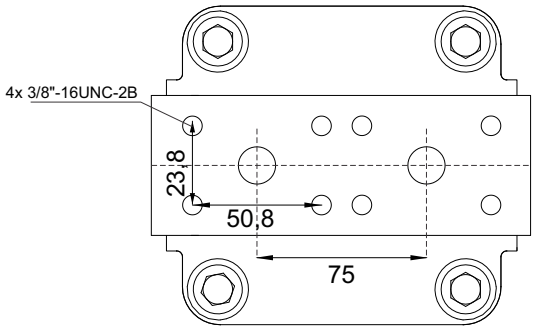


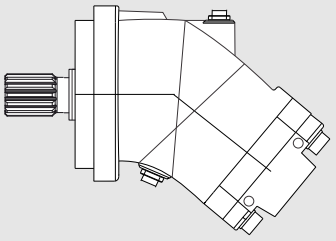
Dimensions Size;

MA 50

R1

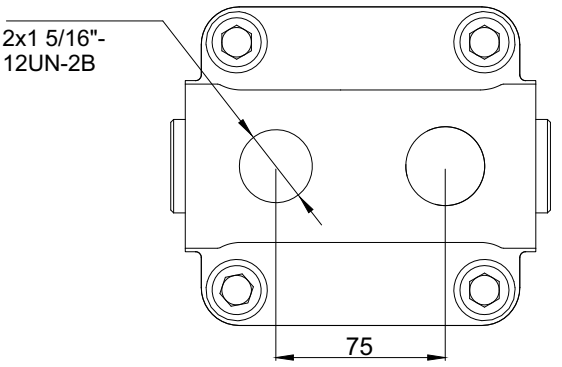
SAE flange ports rear
SAE 3/4" 6000 PSI

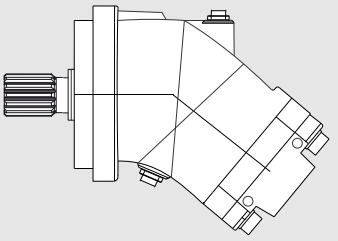




R2

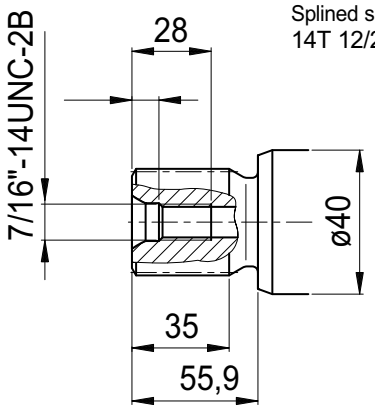
Rear threaded ports





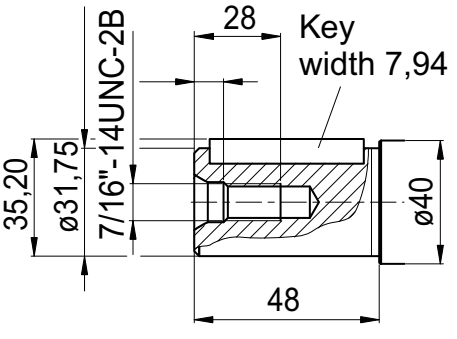
J1

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



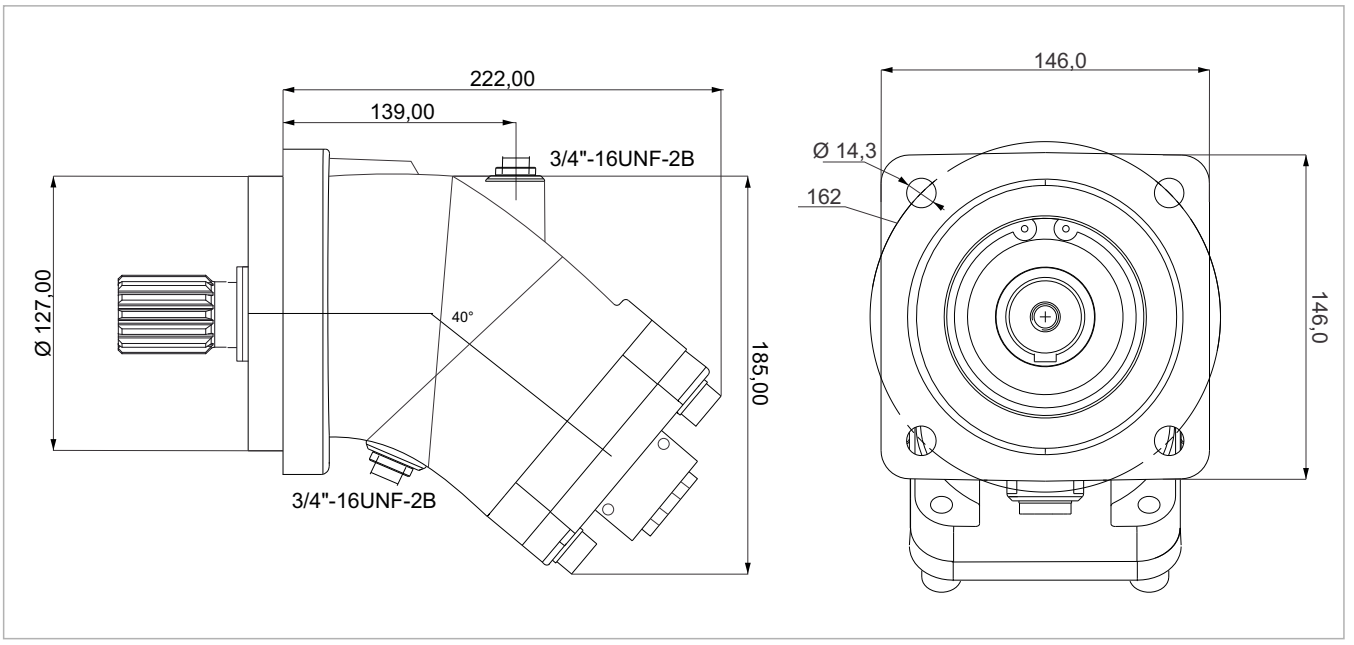
J2

Cylindrical keyed shaft
Ø 1 1/4"



Dimensions Size;

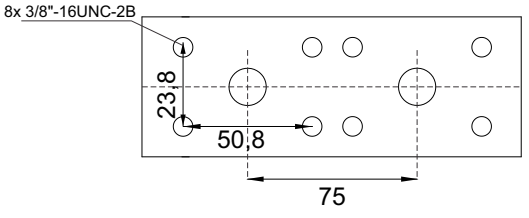
MA 56

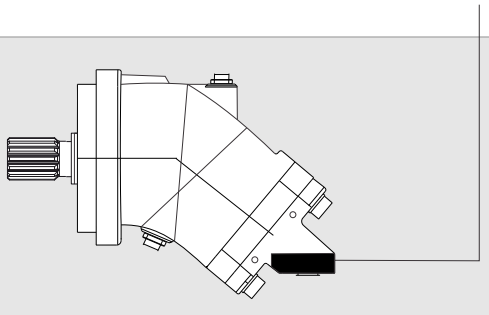


x 1000 rpm	*x 1500 rpm*	*Max. Contin. Pump Speed*	*Max. Intermit. Pump Speed*	*Max. Contin. Pressure*	*Max. Peak Pressure*	*Torque bar*	*Torque at 350 bar*	*Max. Flow*	*Weight without accessor.*	*Weight with accessor.*	*Max. Motor Temp.*	*Min. Motor Temp.*
56,40 cc	84,60 cc	5000 rpm	5500 rpm	400 bar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

B1

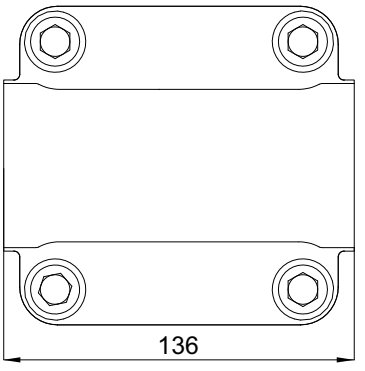
SAE flange ports, bottom
SAE 3/4" 6000 PSI

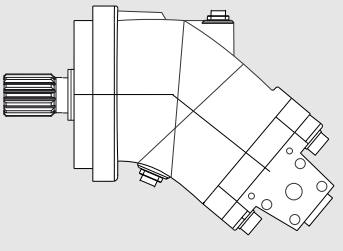




D1-D2

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



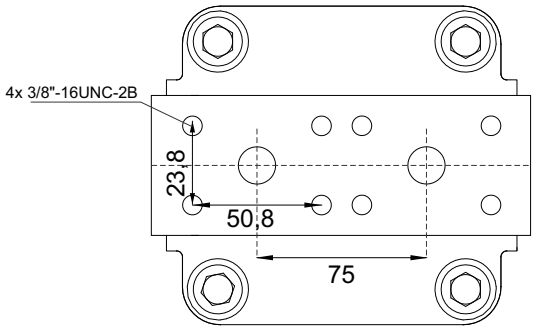


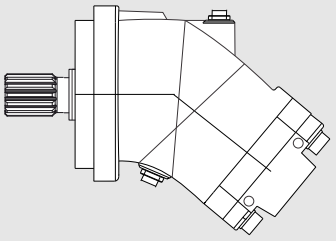
Dimensions Size;

MA 56

R1

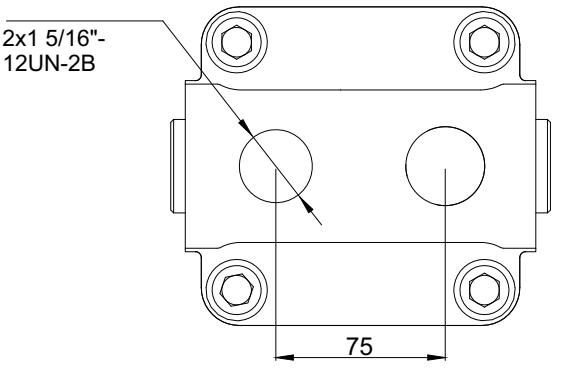
SAE flange ports rear
SAE 3/4" 6000 PSI

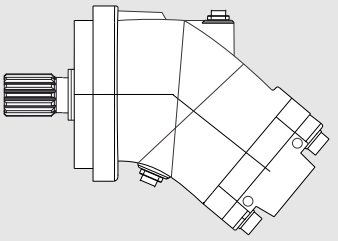




R2

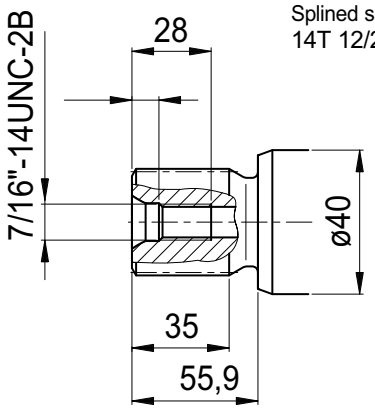
Rear threaded ports





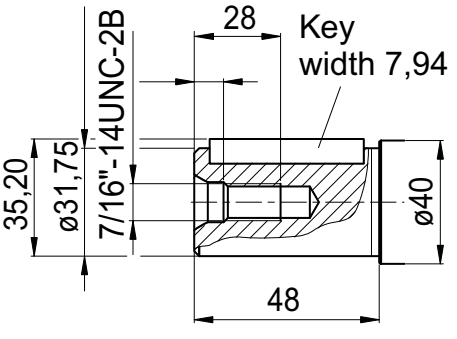
J1

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



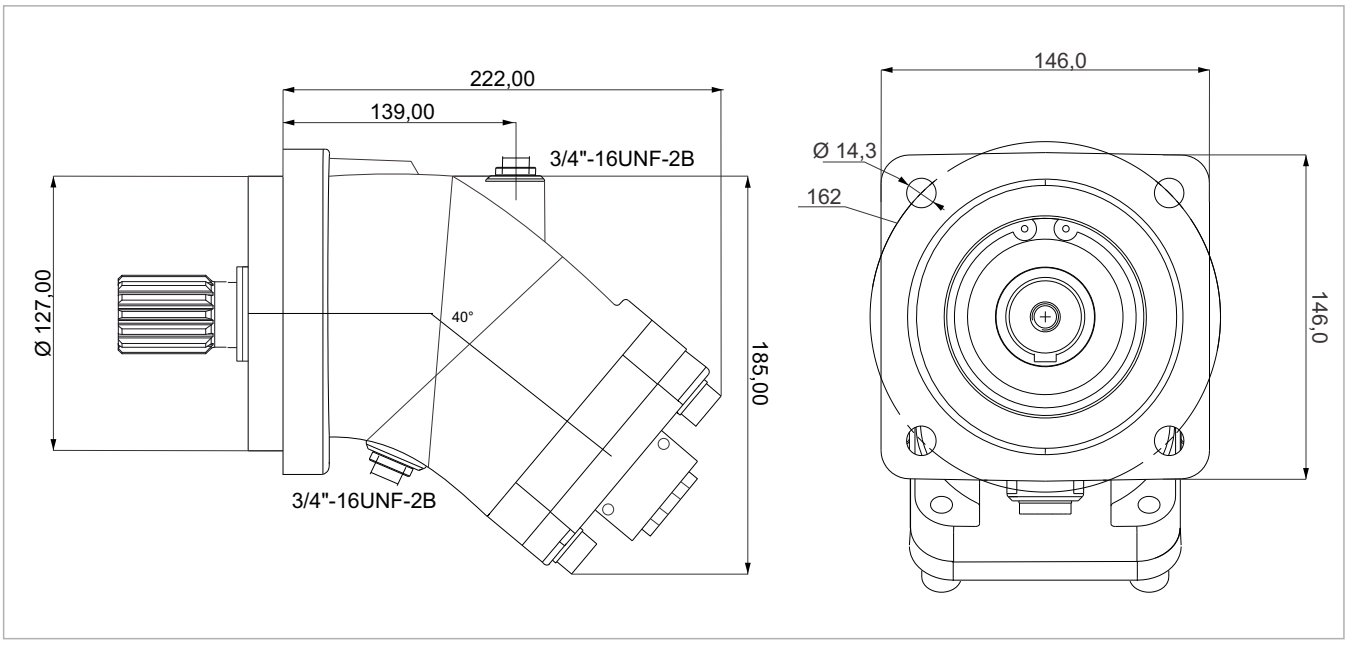
J2

Cylindrical keyed shaft
Ø 1 1/4"



Dimensions Size;

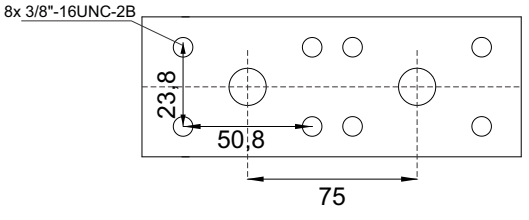
MA 63

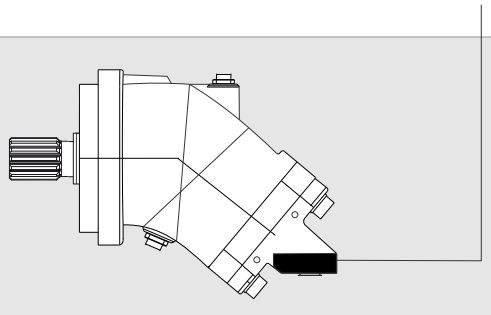


x 1000 rpm	*x 1500 rpm*	*Max. Contin. Pump Speed*	*Max. Intermit. Pump Speed*	*Max. Contin. Pressure*	*Max. Peak Pressure*	*Torque bar*	*Torque at 350 bar*	*Max. Flow*	*Weight without accessor.*	*Weight with accessor.*	*Max. Motor Temp.*	*Min. Motor Temp.*
63,00 cc	94,50 cc	5000 rpm	5500 rpm	400 bar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

B1

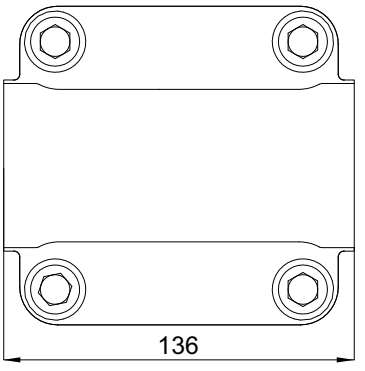
SAE flange ports, bottom
SAE 3/4" 6000 PSI

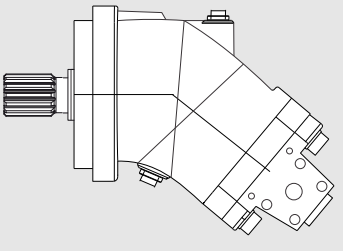




D1-D2

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



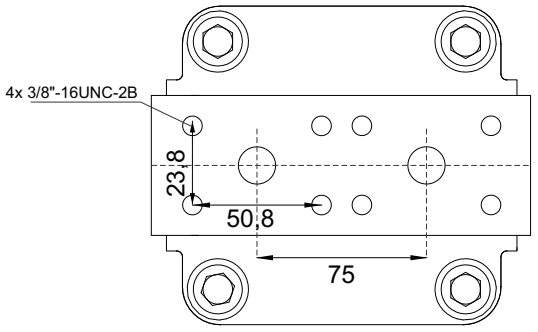


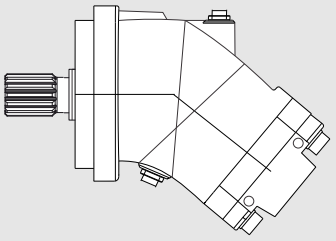
Dimensions Size;

MA 63

R1

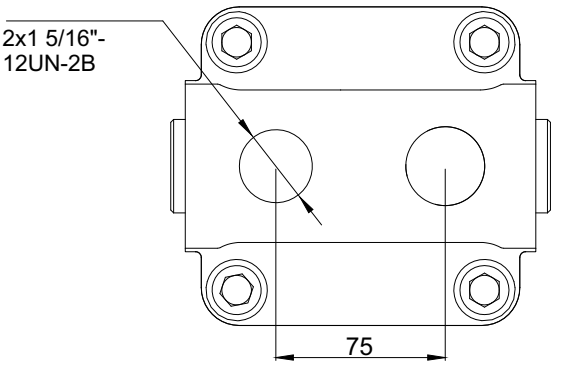
SAE flange ports rear
SAE 3/4" 6000 PSI

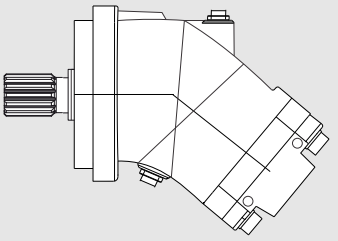




R2

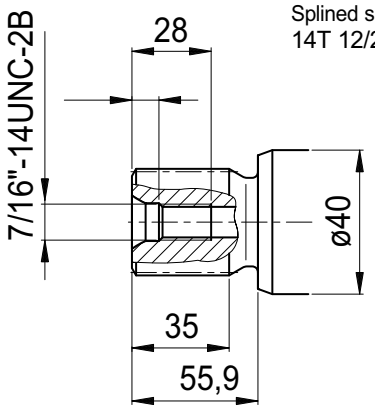
Rear threaded ports





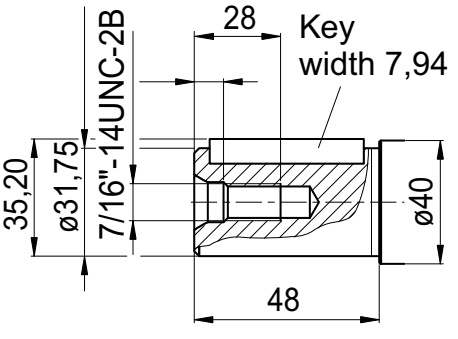
J1

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



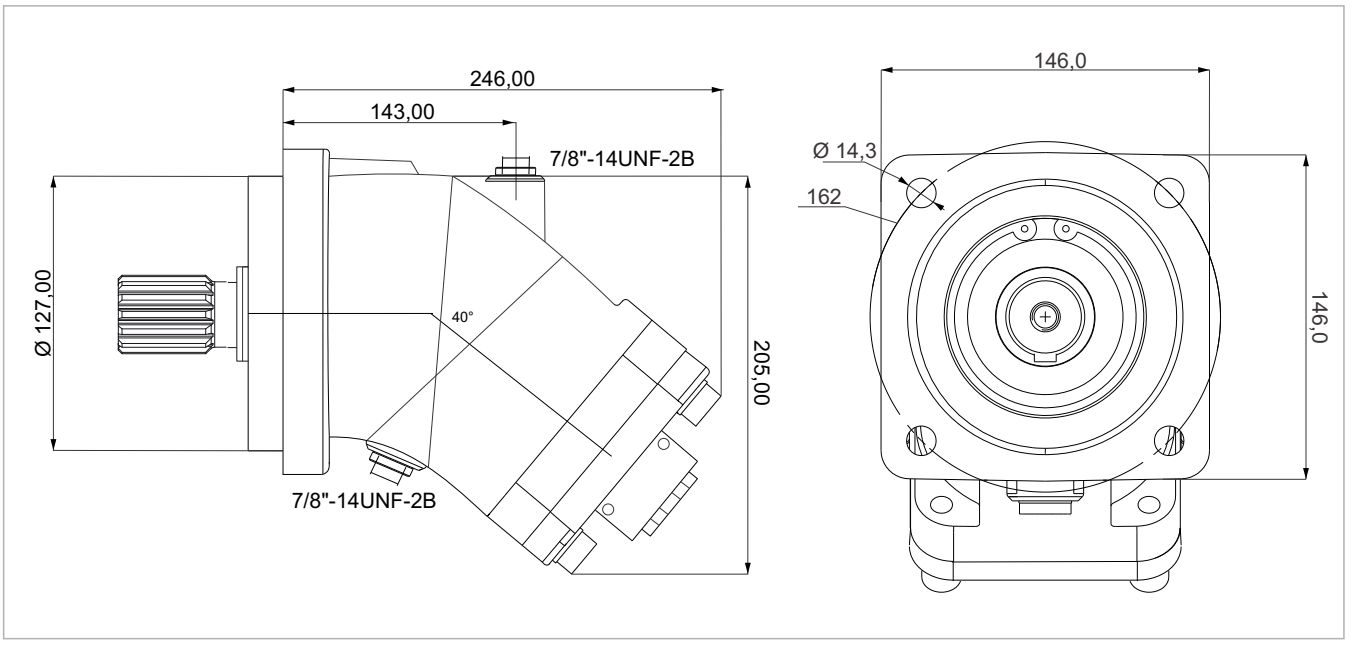
J2

Cylindrical keyed shaft
Ø 1 1/4"



Dimensions Size;

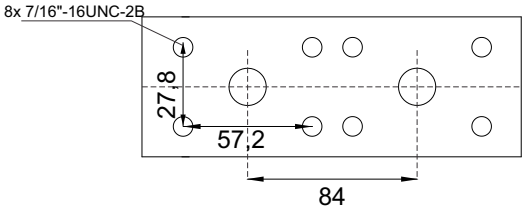
MA 80

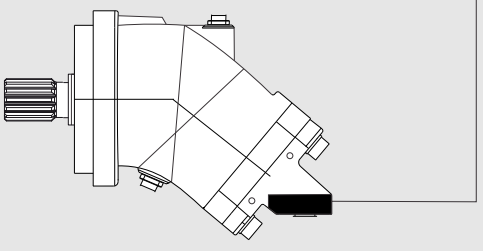


x 1000 rpm	*x 1500 rpm*	*Max. Contin. Pump Speed*	*Max. Intermit. Pump Speed*	*Max. Contin. Pressure*	*Max. Peak Pressure*	*Torque bar*	*Torque at 350 bar*	*Max. Flow*	*Weight without accessor.*	*Weight with accessor.*	*Max. Motor Temp.*	*Min. Motor Temp.*
80,00 cc	120,00 cc	4400 rpm	4900 rpm	400 bar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

B1

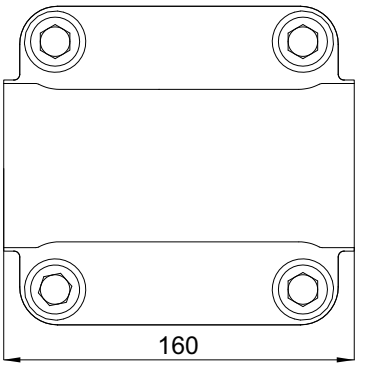
SAE flange ports, bottom
SAE 1" 6000 PSI

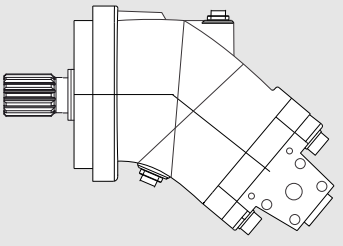




D1-D2

SAE flange ports side A and B
SAE 1" 6000 PSI

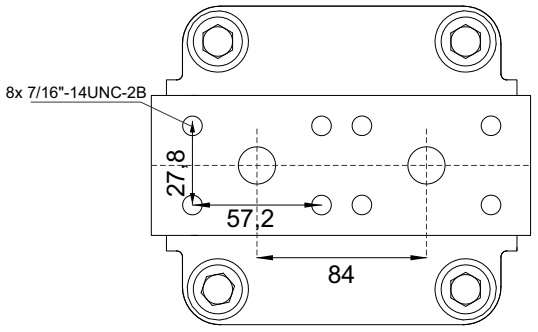


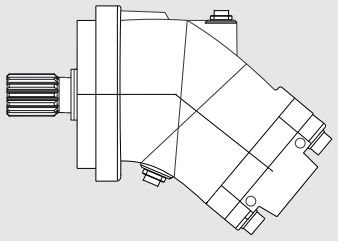


MA 80

R1

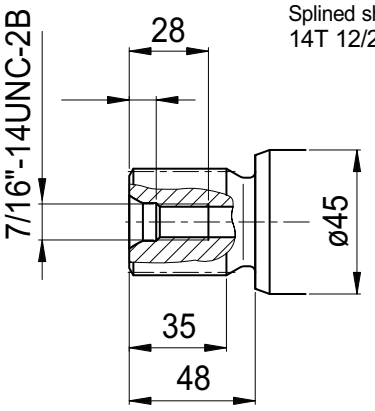
SAE flange ports rear
SAE 1" 6000 PSI





J1

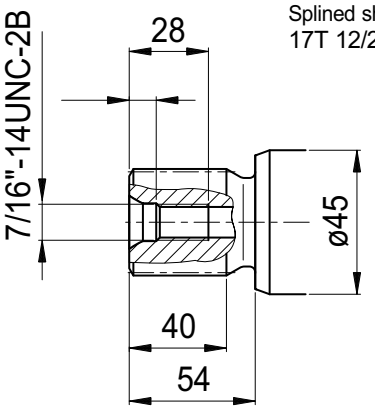
Splined shaft
14T 12/24DP 1 1/4"



!! Special

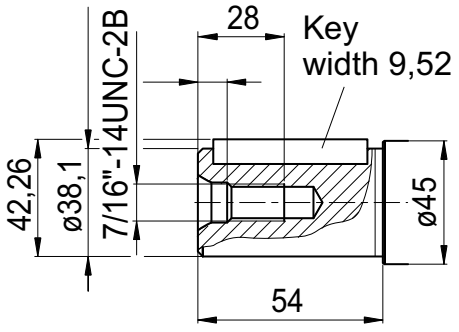
J1

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



J2

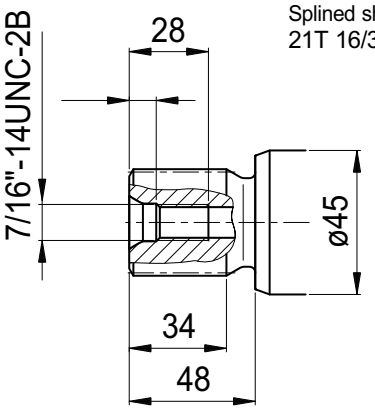
Cylindrical keyed shaft
Ø 1 1/2"



!! Special

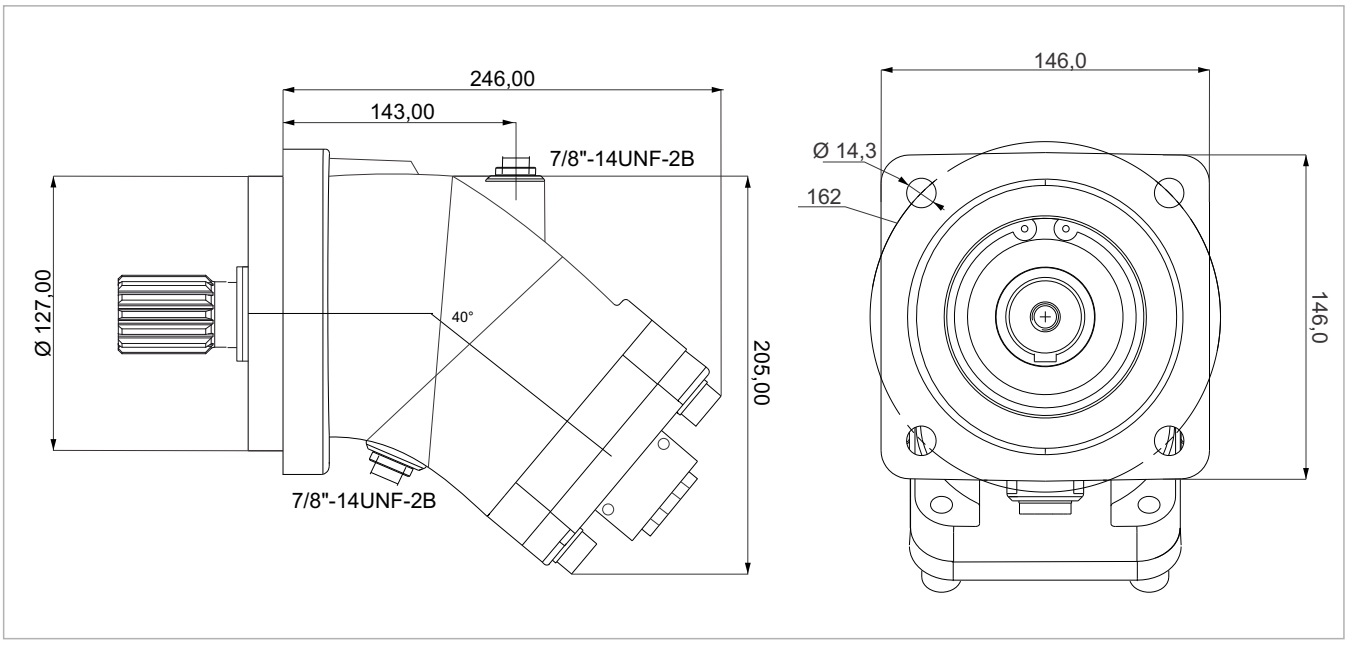
J1

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



Dimensions Size;

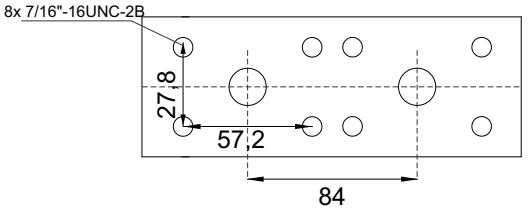
MA 108

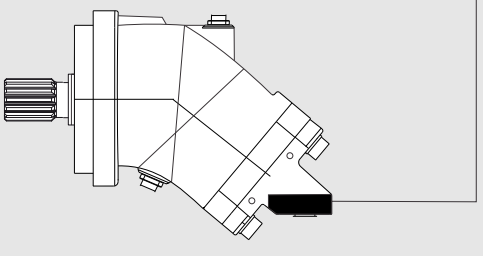


x 1000 rpm	*x 1500 rpm*	*Max. Contin. Pump Speed*	*Max. Intermit. Pump Speed*	*Max. Contin. Pressure*	*Max. Peak Pressure*	*Torque bar*	*Torque at 350 bar*	*Max. Flow*	*Weight without accessor.*	*Weight with accessor.*	*Max. Motor Temp.*	*Min. Motor Temp.*
108,4 cc	162,6 cc	4000 rpm	4400 rpm	400 bar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

B1

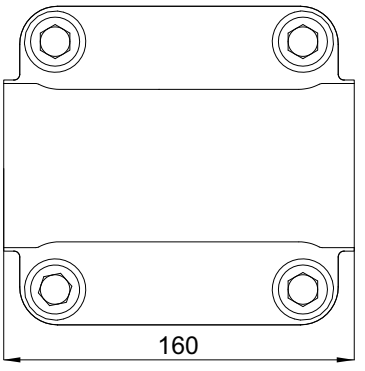
SAE flange ports, bottom
SAE 1" 6000 PSI

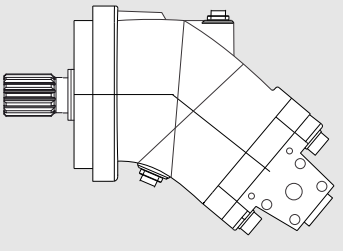




D1-D2

SAE flange ports side A and B
SAE 1" 6000 PSI



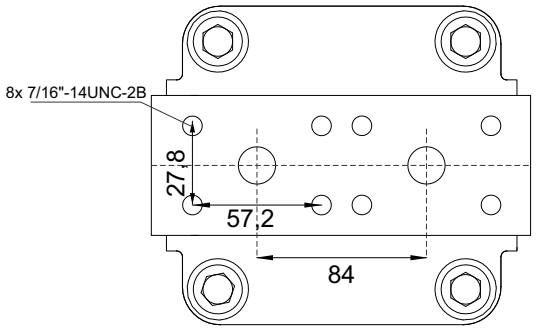


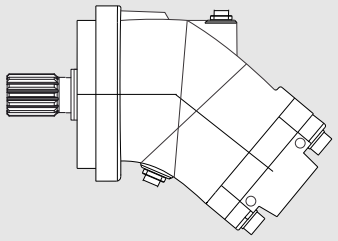
Dimensions Size;

MA 108

R1

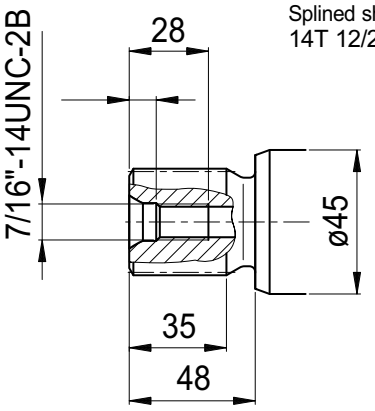
SAE flange ports rear
SAE 1" 6000 PSI





J1

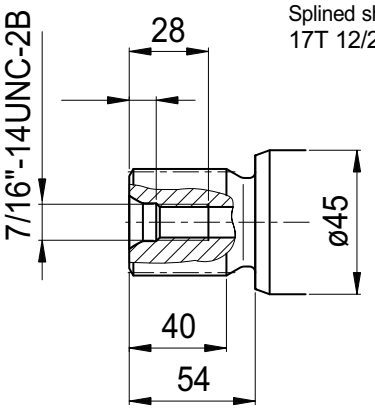
Splined shaft
14T 12/24DP 1 1/4"



!! Special

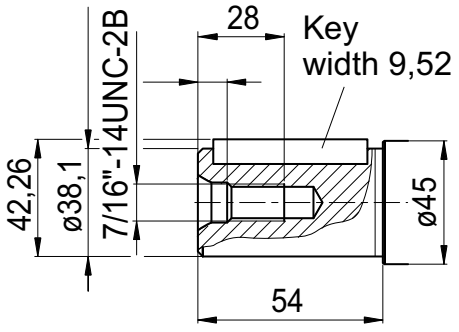
J1

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



J2

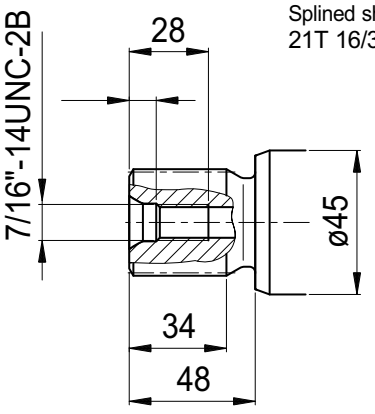
Cylindrical keyed shaft
Ø 1 1/2"



!! Special

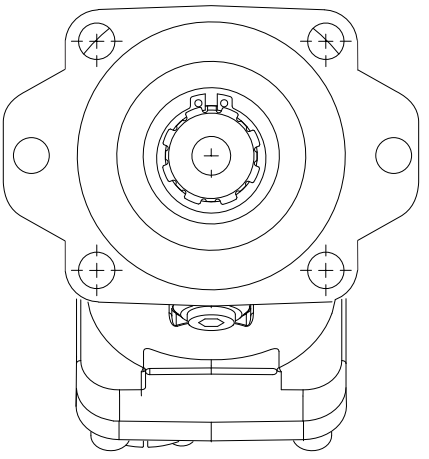
J1

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

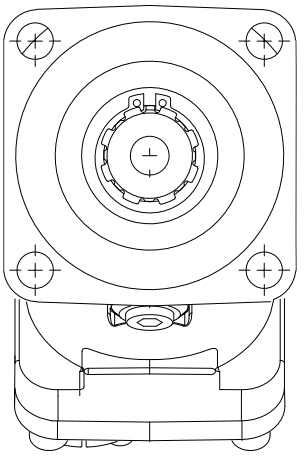


Special Mounting Flanges

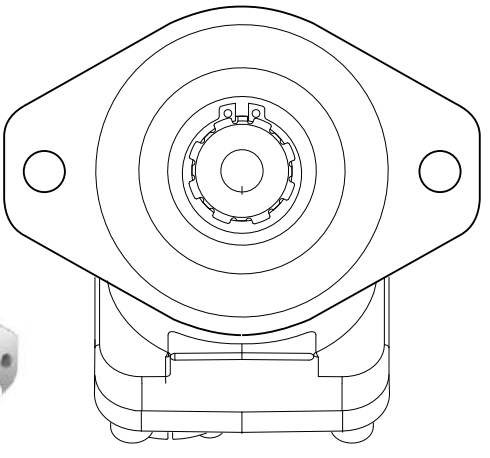
6 BOLT
Mounting Flange



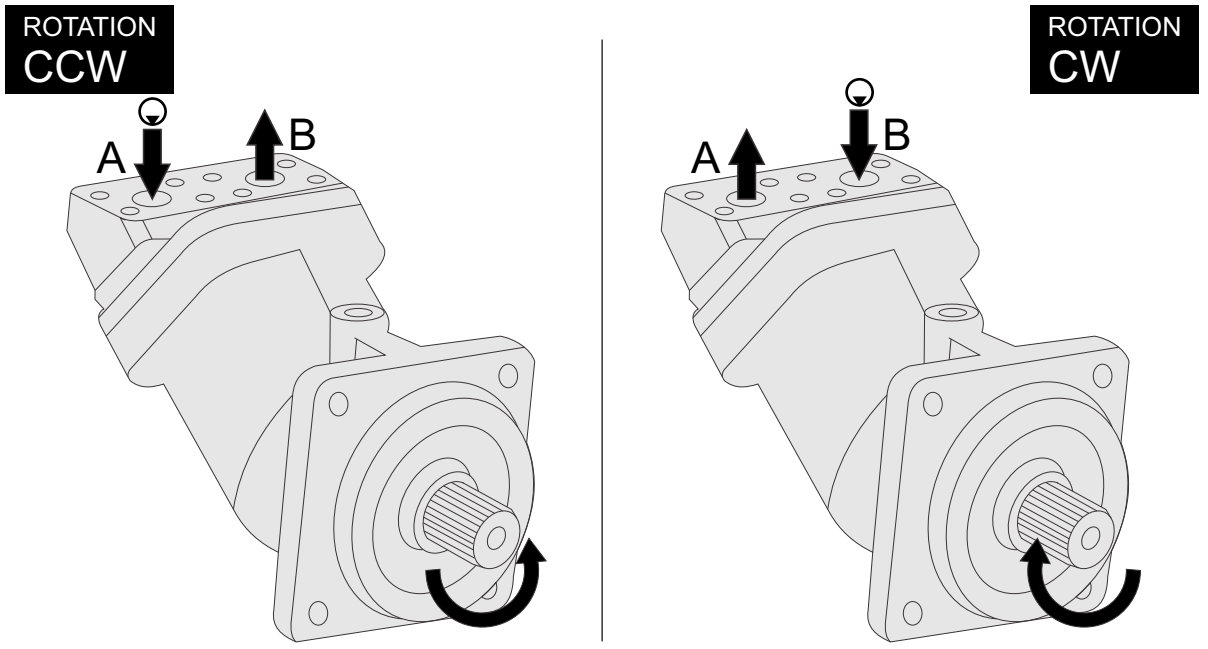
SAE B 4 BOLT



SAE B 2 BOLT



Direction of Rotation



Quick Calculation

Flow rate	Torque	Power	Speed
$Q = \frac{V_S \cdot n}{1000 \eta_v}$ (lpm)	$M = \frac{V_S \cdot \Delta p \cdot \eta_{mh}}{63}$ (Nm)	$P = \frac{2\pi \cdot M \cdot n}{60000} = \frac{M \cdot n}{9549} = \frac{Q \cdot \Delta p \cdot \eta_t}{600}$ (kw)	$n = \frac{1000 \cdot Q \cdot \eta_v}{V_S}$ (lpm)

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

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

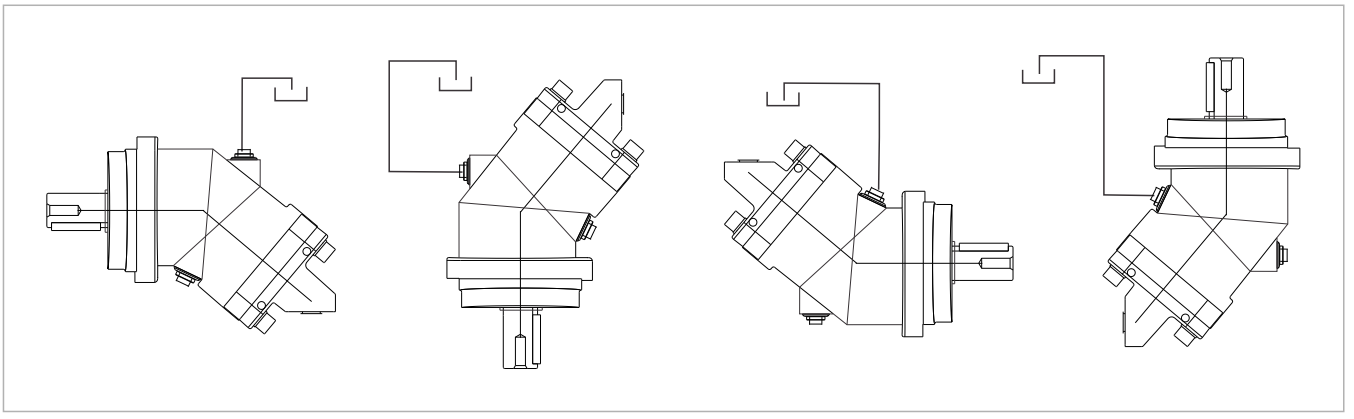
Installation

POSITION
MA Motors can be operate any position.

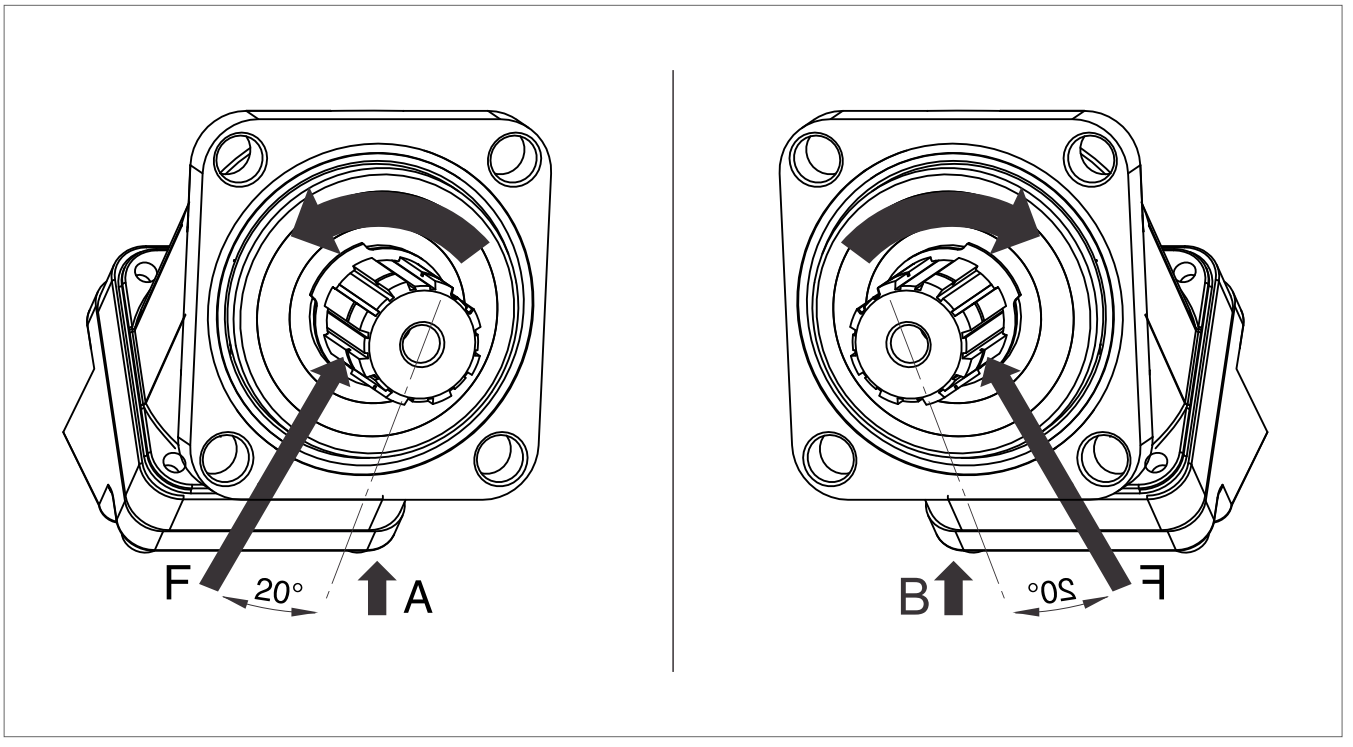
DIRECTION OF ROTATION
MA Motors can be operate in both directions of rotation.

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

INSTALLATION POSITION
See following examples.



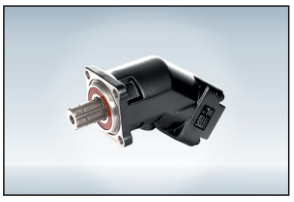
HYDRAULIC FLUID
Recommended ;
Generally : between 15 and 200 cSt.
Maximum : between 5 and 1600 cSt.



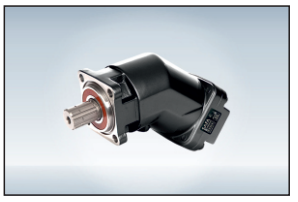
FOR USE;
Available via e-mail on request or each motor is supplied via Starting datasheet.

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

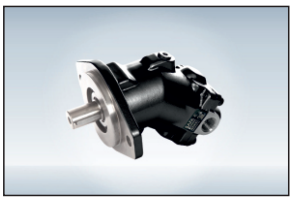
SAFA HYDRAULICS



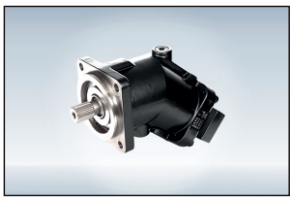
PD-DIN
Bent Axis Pumps



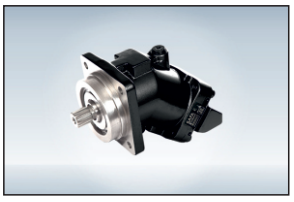
MD-DIN
Bent Axis Motor



PA-SAE
Bent Axis Pumps

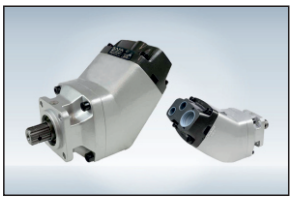


MA-SAE
Bent Axis Motor

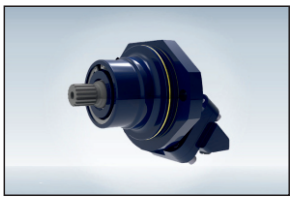


PS-ISO
Bent Axis Pumps

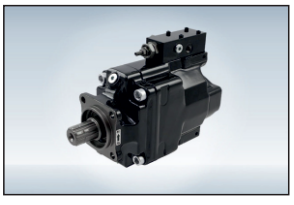
MS-ISO
Bent Axis Motor



PD Dual
Dual Flow Pumps



MF Fixed
Bent Axis Motor



PV
Variable Disp.
Piston Pumps

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