A3FO (ISO2) Bent Axis Pumps -2022-

ISO2 Mounting Flange High Pressure Bent Axis Pump

High Pressure Hydraulic Bent Axis Piston Pumps, High Pressure, 400/450 BAR Working Pressure. High Rotational Speed, High Efficiency, Slim Design, Cast Iron Pump Body, Re-Designed in 2022.

Designation;

5cc, 10cc, 12cc, 18cc, 25cc, 32cc, 41cc, 50cc, 56cc, 63cc,

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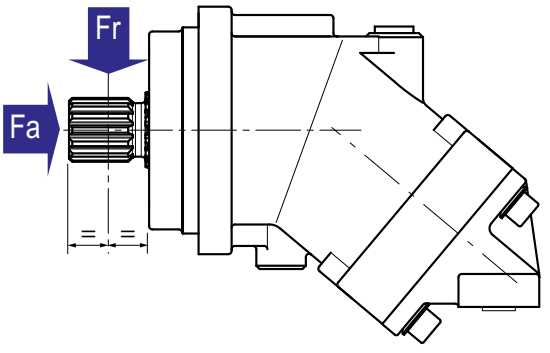
Characteristics of the A3FO - ISO2 Flange Bent Axis Pumps

Pump MODEL	DISPL. (cc)	CONTINOUS MAX. SPEED (rpm)	INTERMITTED MAX. SPEED (rpm)	MAX. FLOW ABSORBED (l/mn)	TORQUE BAR (m.N/bar)	TORQUE AT 350 BAR (m.N)	THEORETCL MAX. POWER AT 400 BAR (HP / kW)	MAX. ALLOW PRESSURE CONTN./PEAK (bar)	WEIGHT (kg)
5 cc	5.1	8800	9600	45	0.09	46	64.1 / 48.2	400 / 450	5.2
10 cc	10.2	8600	9400	88	0.14	58	72.9 / 54.4	400 / 450	5.5
12 cc	12.0	8000	8800	96	0.19	67	85.5 / 64.4	400 / 450	5.5
18 cc	18.0	8000	8800	144	0.28	99	128.5 / 95.9	400 / 450	5.5
25 cc	25.0	6300	6900	158	0.40	139	140.0 / 104.4	400 / 450	11.4
32 cc	32.0	6300	6900	202	0.50	178	180.5 / 134.4	400 / 450	11.5
41 cc	41.0	5600	6200	230	0.65	228	205.2 / 153.1	400 / 450	11.6
45 cc	45.0	5600	6200	252	0.72	253	202.4 / 151.8	400 / 450	17.9
50 cc	50,3	5000	5500	252	0.80	280	224.1 / 167.5	400 / 450	18.1
56 cc	56,0	5000	5500	280	0.90	320	244.5 / 187.1	400 / 450	18.1
63 cc	63.0	5000	5500	315	1.00	351	281.6 / 209.1	400 / 450	18.2



Pump model	5, 10, 12	18 cc	25 cc	32 cc	41. 45	50 cc	56, 63cc
Fr (lbf)	630	900	1350	1462.5	1462.5	1686	2023
Fr (N/bar)	2800	4000	6000	6500	6500	7500	9000
Fa (lbf)	0.23	0.31	0.42	0.46	0.62	0.62	0.77
Fa (N/bar)	(15)	(20)	(27)	(30)	(40)	(40)	(50)

Ordering Code; A3FO - ISO2 Flange Bent Axis Pumps

Model Code
A3FO — Bent Axis Hydraulic Piston Pump (ISO2) Mounting Flange

Displacement
63 — 5 | 10 | 12 | 18 | 25 | 32 | 41 | 45 | 50 | 56 | 63

Flange Type 4 bolts ISO2 3019-2
4B — 4B | 4B | 4B | 4B | 4B | 4B | 4B | 4B | 4B | 4B | 4B

Shaft Type Keyed or Splined
S14

5	10	12	18	25	32	41	45	50	56	63
S18	S18	S18	S18	S18	S18	S18	S16	S16	S16	S16
K25	K25	K25	K25	S14	S14	S14	S14	S14	S14	S14
K20	K20	K20	K20	K25	K25	K25	K30	K30	K30	K30
				K30	K30	K30	K35	K35	K35	K35

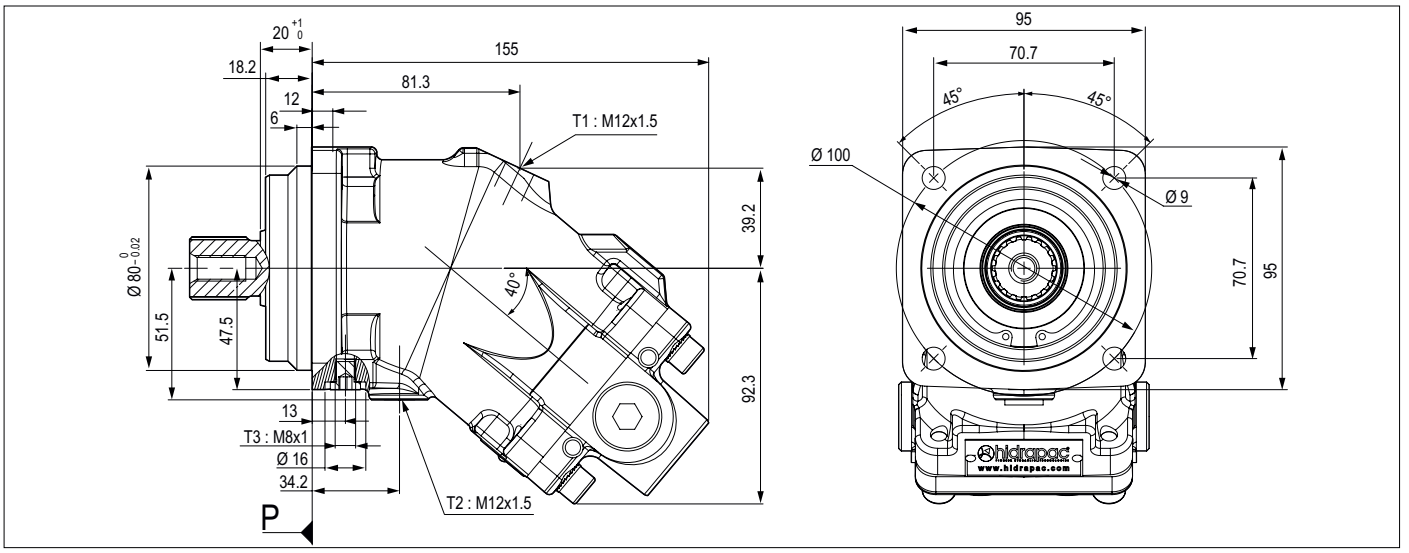
Rear Cover Type
RD1

5	10	12	18	25	32	41	45	50	56	63
RS1	RS1	RS1	RS1	RD1	RD1	RD1	RD1	RD1	RD1	RD1
RS2	RS2	RS2	RS2	RD2	RD2	RD2	RD2	RD2	RD2	RD2
				SD2	SD2	SD2	SD2	SD2	SD2	SD2

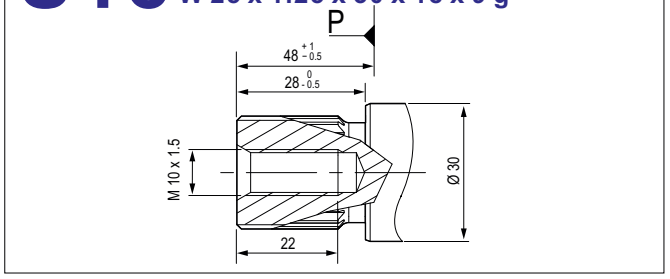
Direction of Rotation
W — W Bi-Directional Rotation - ~~New~~ Design

Seal Options
V — V Viton Seals | N Nitrile Seals | H High Pressure Seals

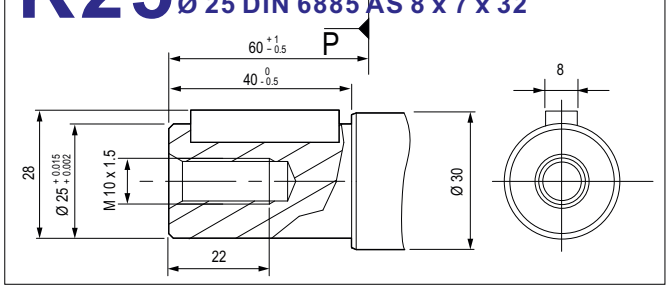
A3FO - 5 cc (ISO2) Bent Axis Pump



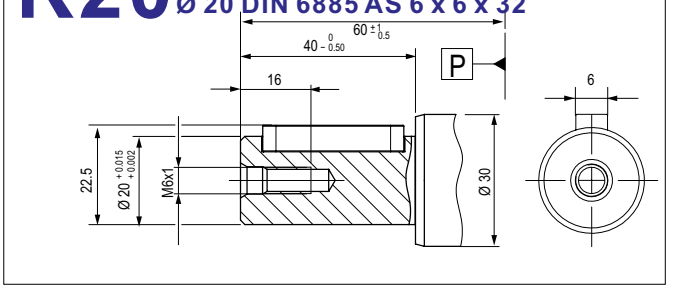
S18 Splined shaft DIN 5480
W 25 x 1.25 x 30 x 18 x 9 g



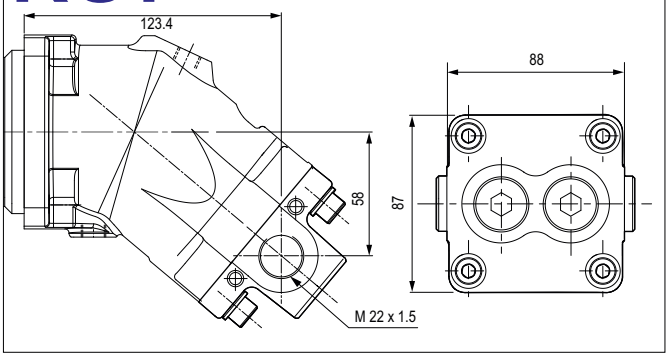
K25 Cylindrical keyed shaft
Ø 25 DIN 6885 AS 8 x 7 x 32



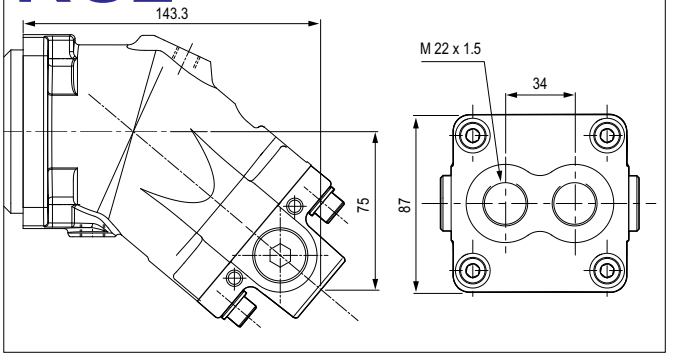
K20 Cylindrical keyed shaft
Ø 20 DIN 6885 AS 6 x 6 x 32



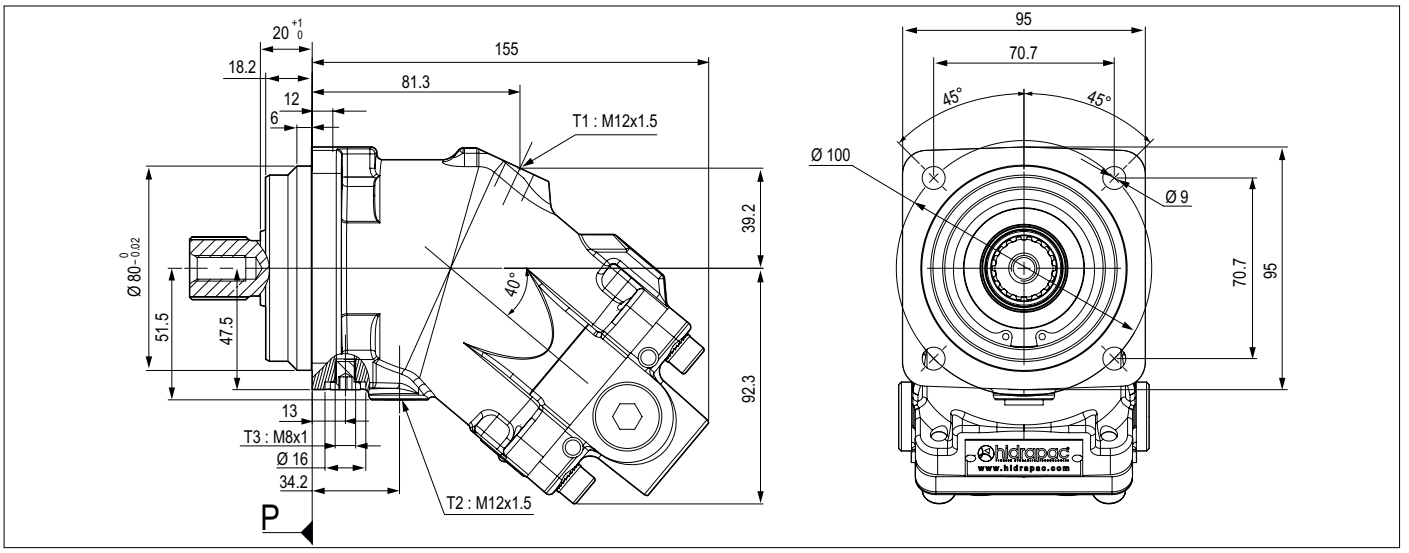
RS1 Side threaded ports A and B



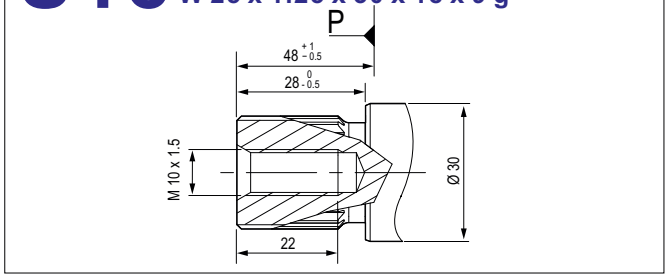
RS2 Rear threaded ports A and B



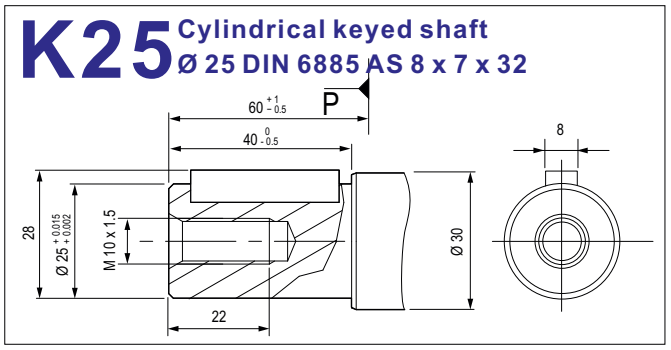
A3FO - 10 cc (ISO2) Bent Axis Pump



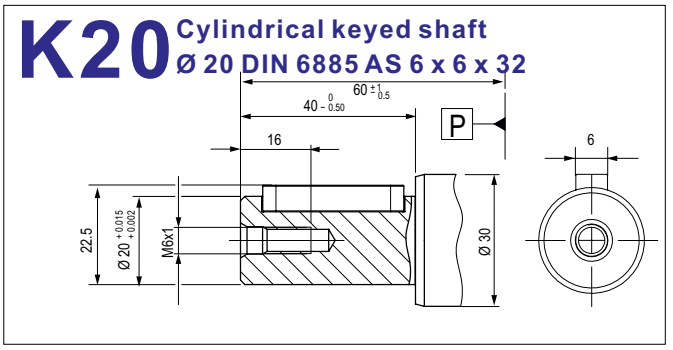
S18 Splined shaft DIN 5480
W 25 x 1.25 x 30 x 18 x 9 g



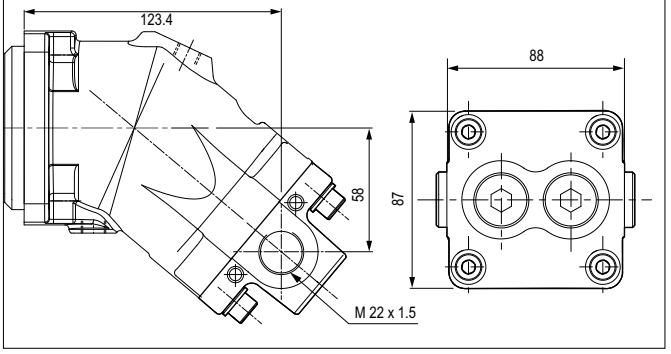
K25 Cylindrical keyed shaft
Ø 25 DIN 6885 AS 8 x 7 x 32



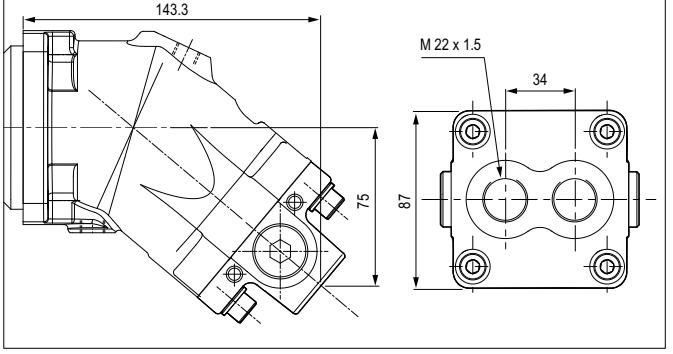
K20 Cylindrical keyed shaft
Ø 20 DIN 6885 AS 6 x 6 x 32



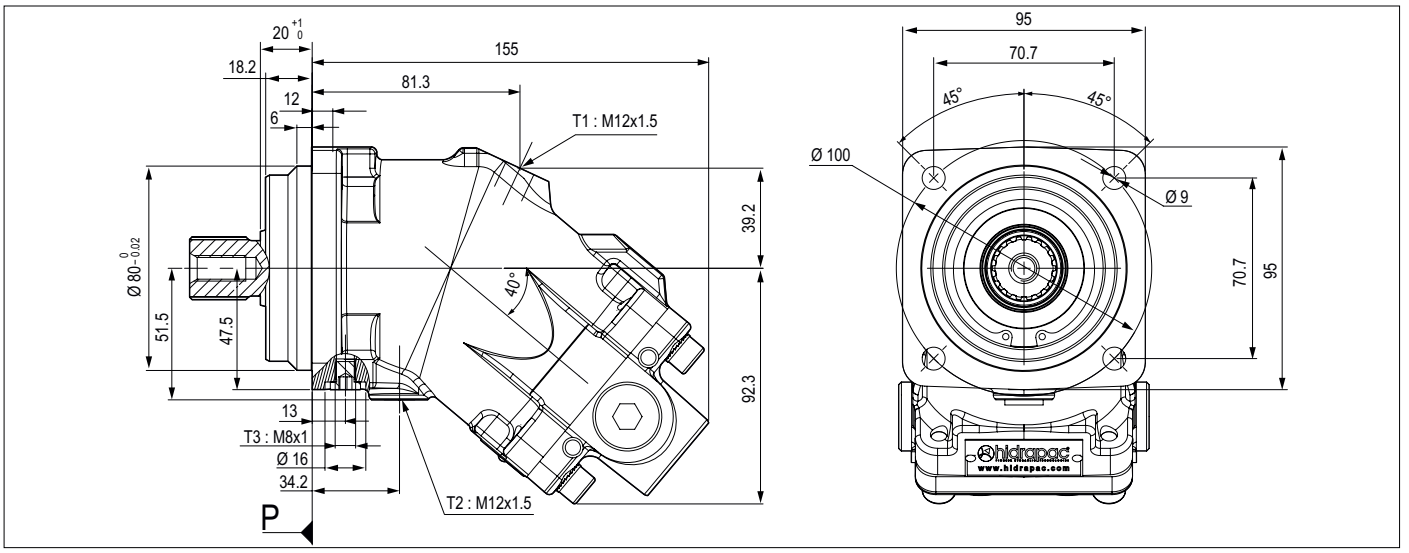
RS1 Side threaded ports A and B



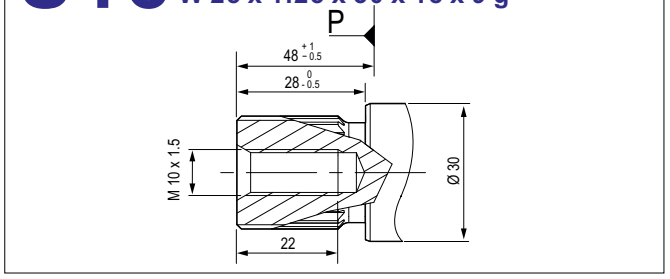
RS2 Rear threaded ports A and B



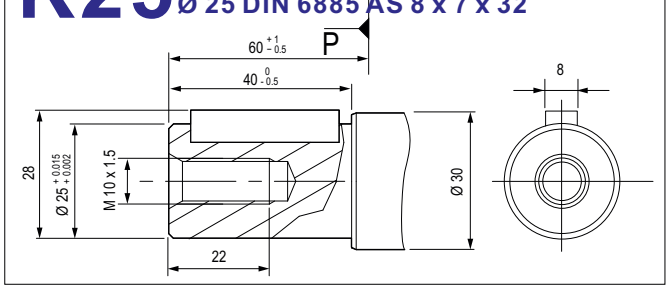
A3FO - 12 cc (ISO2) Bent Axis Pump



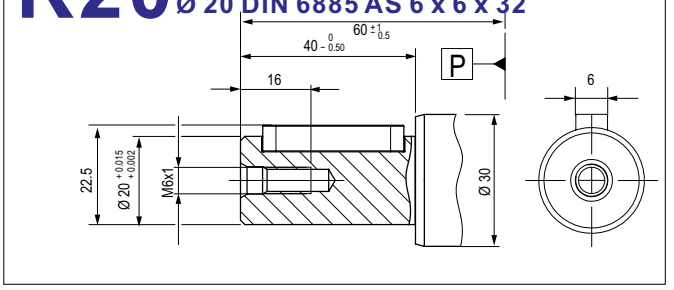
S18 Splined shaft DIN 5480
W 25 x 1.25 x 30 x 18 x 9 g



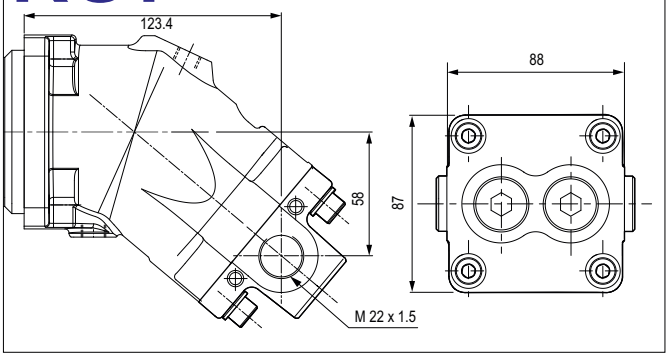
K25 Cylindrical keyed shaft
Ø 25 DIN 6885 AS 8 x 7 x 32



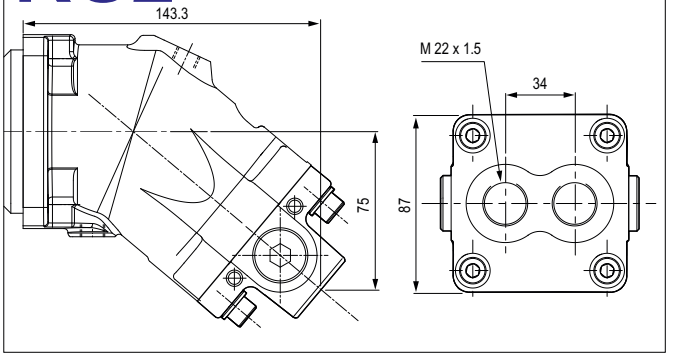
K20 Cylindrical keyed shaft
Ø 20 DIN 6885 AS 6 x 6 x 32



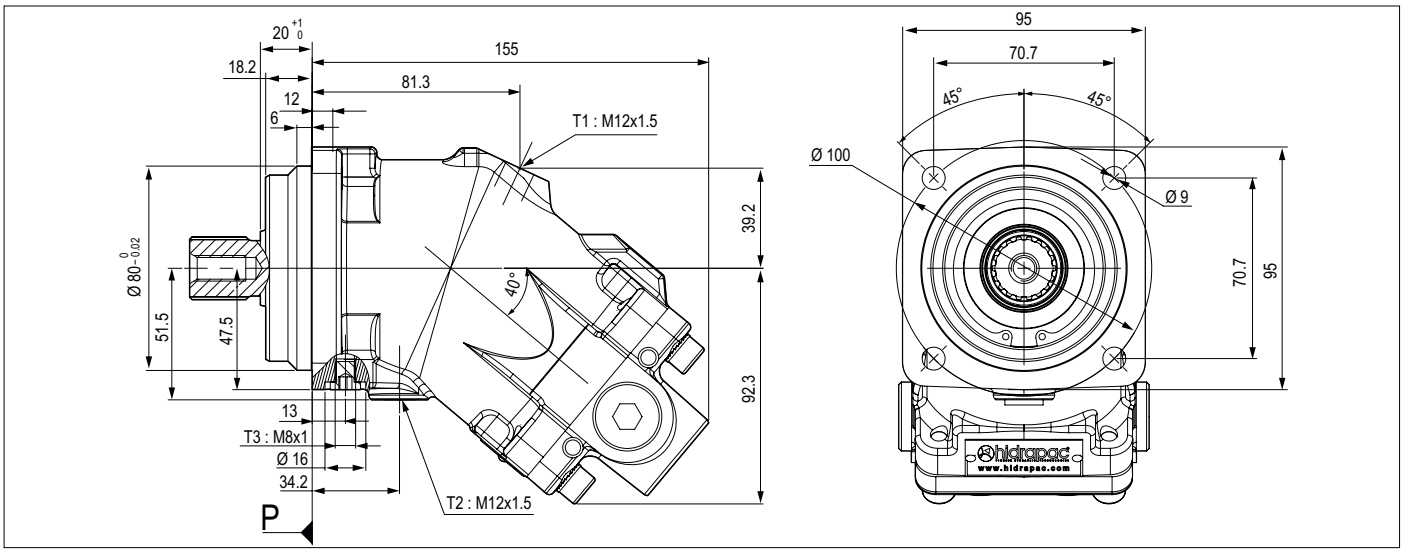
RS1 Side threaded ports A and B



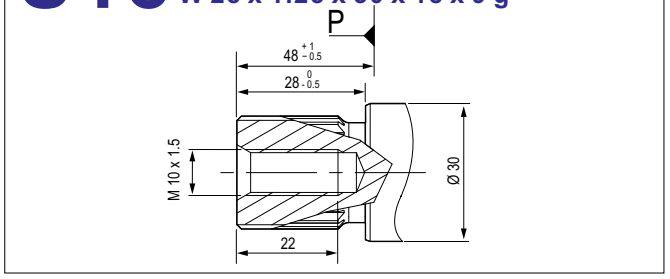
RS2 Rear threaded ports A and B



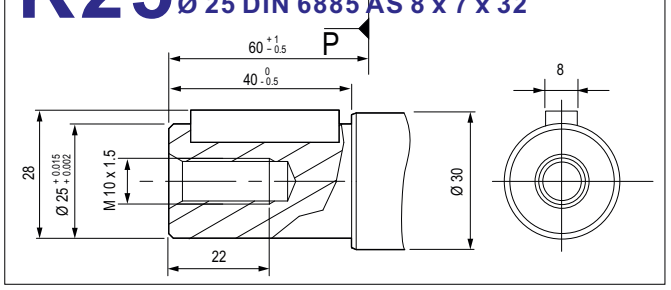
A3FO - 18 cc (ISO2) Bent Axis Pump



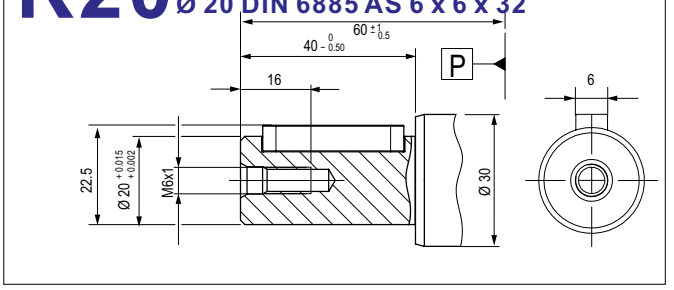
S18 Splined shaft DIN 5480
W 25 x 1.25 x 30 x 18 x 9 g



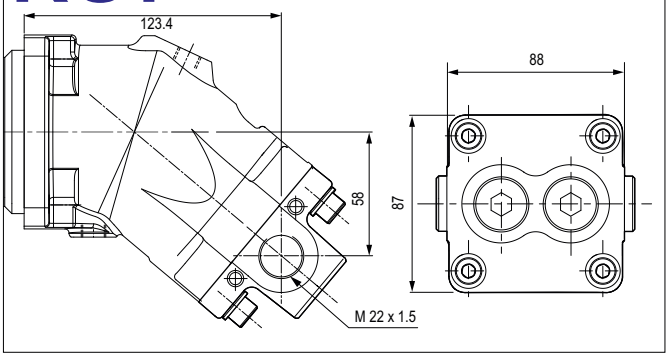
K25 Cylindrical keyed shaft
Ø 25 DIN 6885 AS 8 x 7 x 32



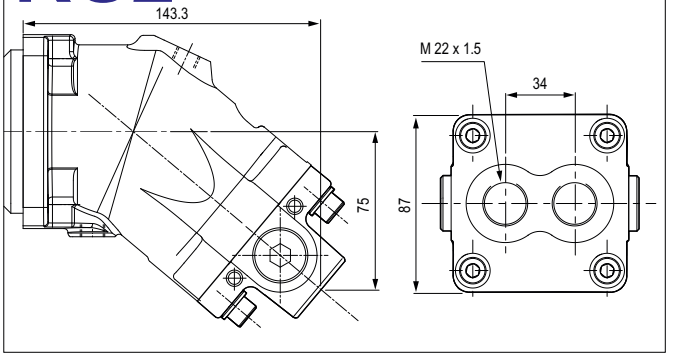
K20 Cylindrical keyed shaft
Ø 20 DIN 6885 AS 6 x 6 x 32



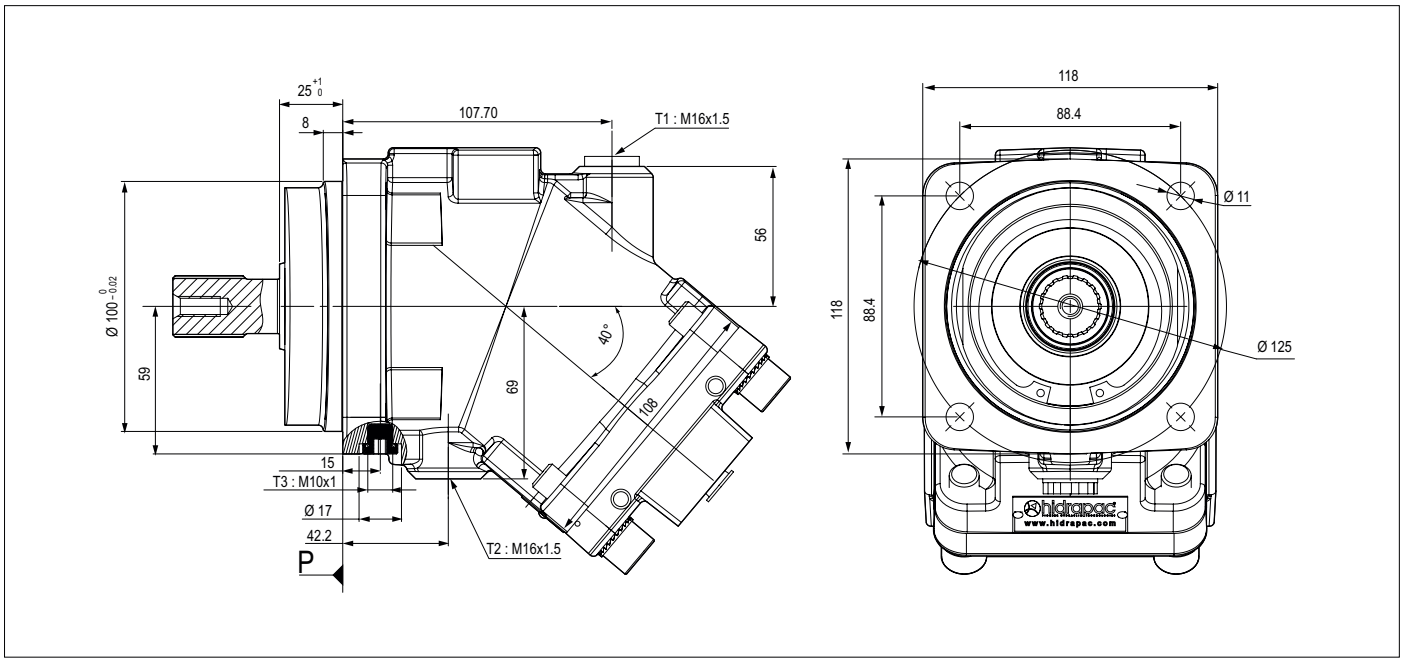
RS1 Side threaded ports A and B



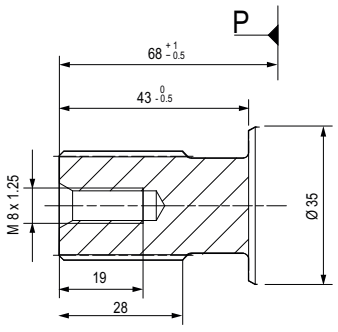
RS2 Rear threaded ports A and B



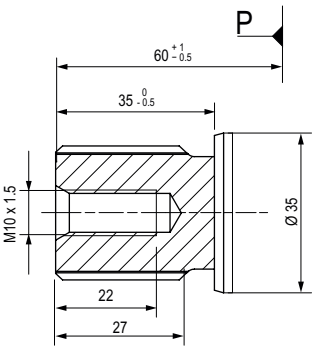
A3FO - 25 cc (ISO2) Bent Axis Pump



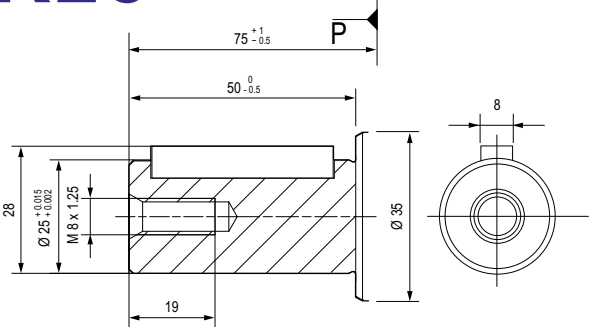
S18 Splined shaft DIN 5480 W 25 x 1.25 x 30 x 18 x 9 g



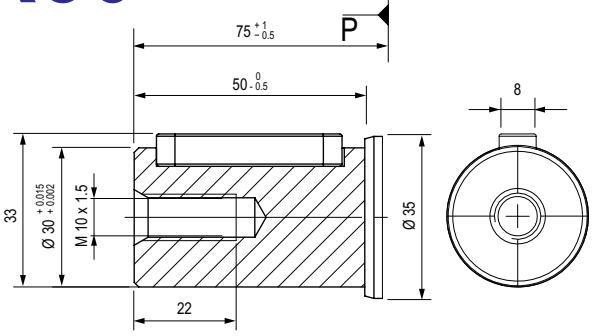
S14 Splined shaft DIN 5480 W 30 x 2 x 30 x 14 x 9 g



K25 Cylindrical keyed shaft Ø 25 DIN 6885 AS 8 x 7 x 40

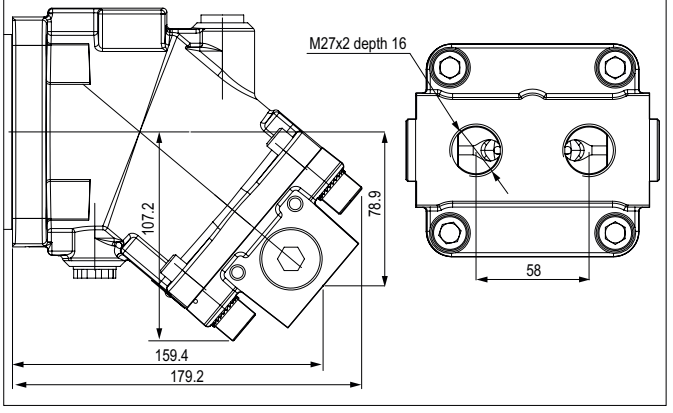


K30 Cylindrical keyed shaft Ø 30 DIN 6885 AS 8 x 7 x 40

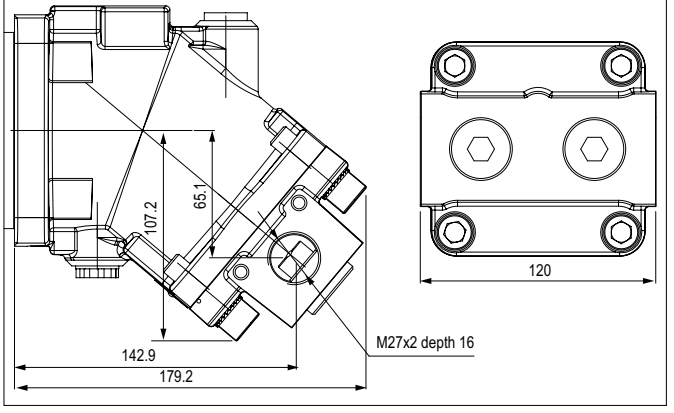


A3FO - 25 cc (ISO2) Bent Axis Pump

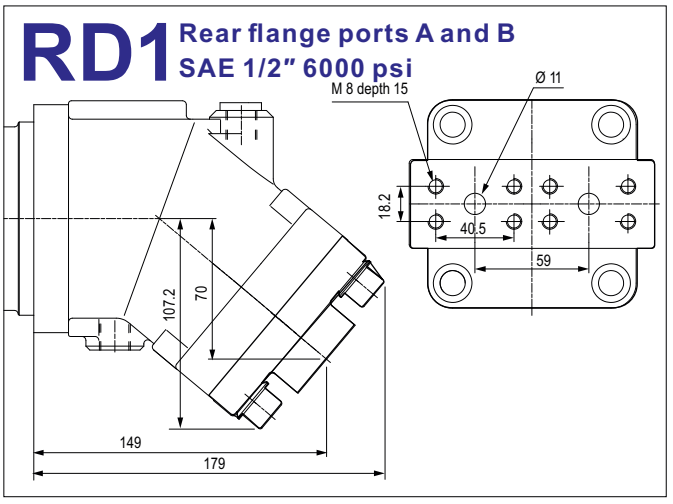
RD2 Rear threaded ports A and B



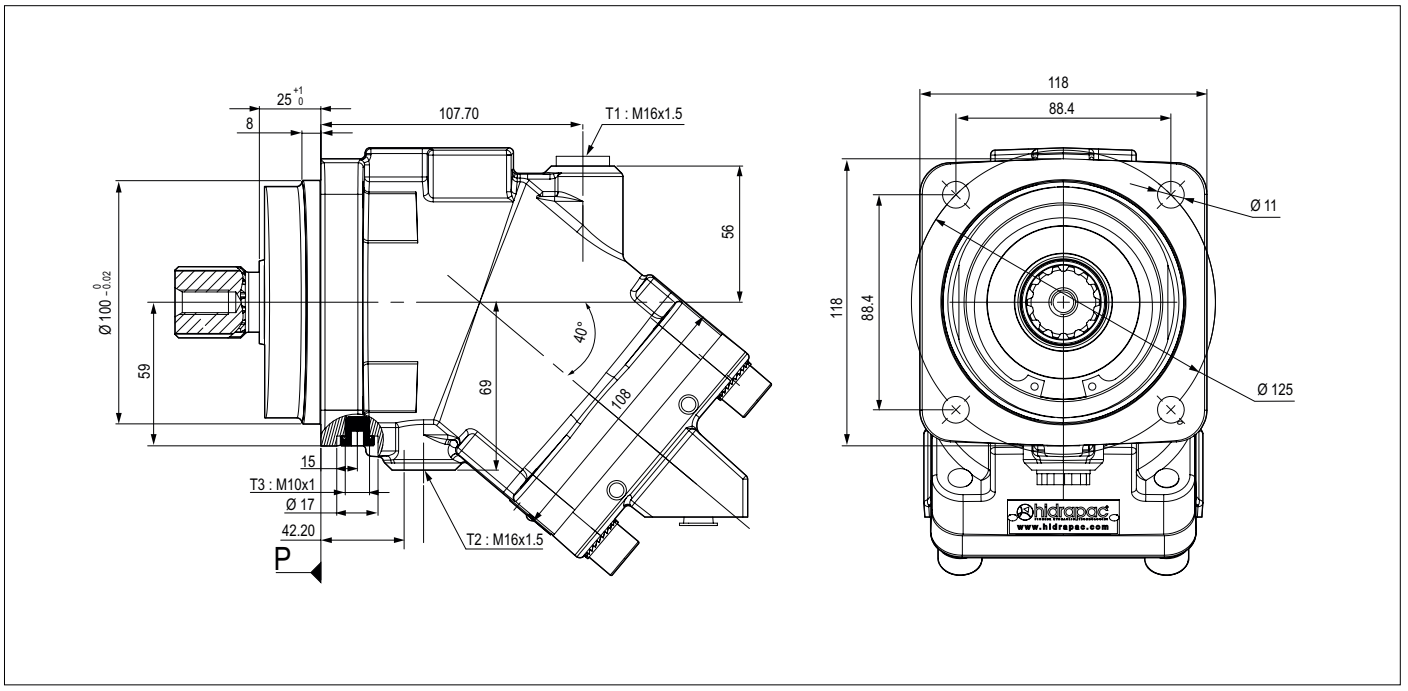
SD2 Side threaded ports A and B



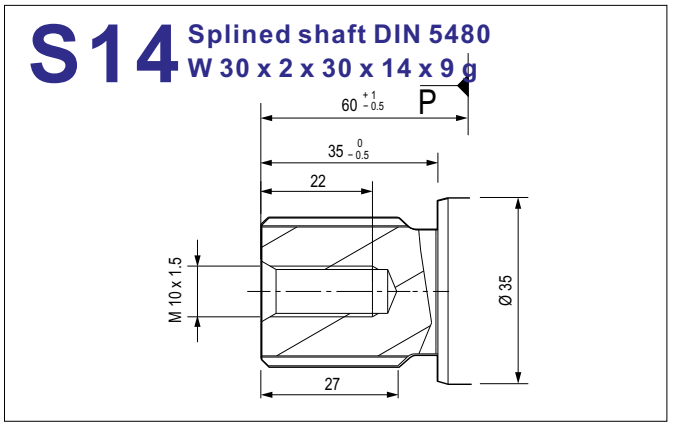
RD1 Rear flange ports A and B SAE 1/2" 6000 psi



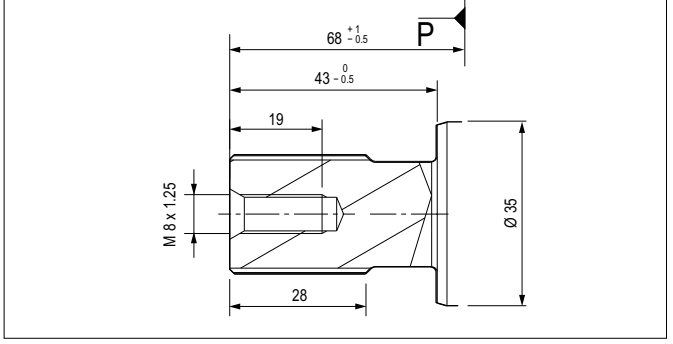
A3FO - 32 cc (ISO2) Bent Axis Pump



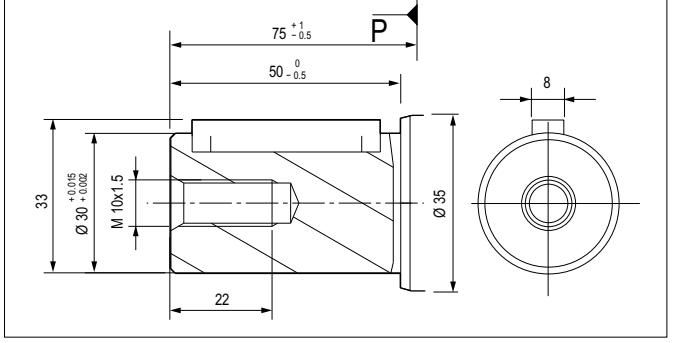
S14 Splined shaft DIN 5480 W 30 x 2 x 30 x 14 x 9 g



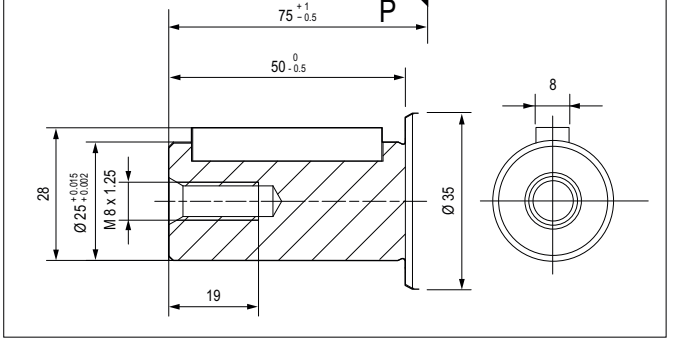
S18 Splined shaft DIN 5480 W 25 x 1.25 x 30 x 18 x 9 g



K30 Cylindrical keyed shaft Ø 30 DIN 6885 AS 8 x 7 x 40

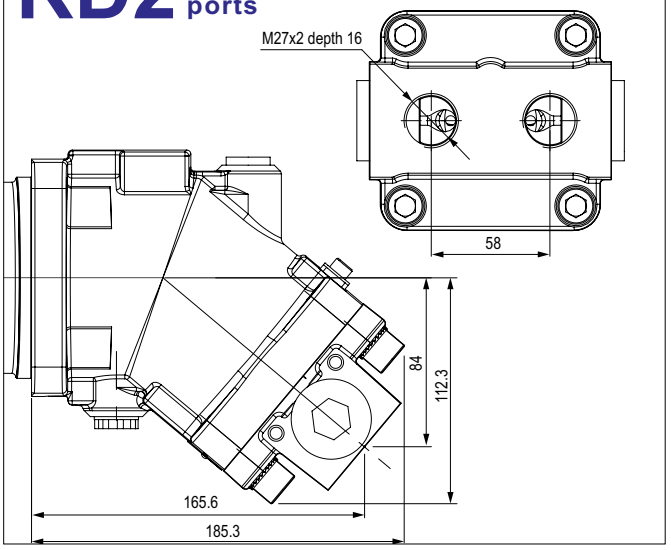


K25 Cylindrical keyed shaft Ø 25 DIN 6885 AS 8 x 7 x 40

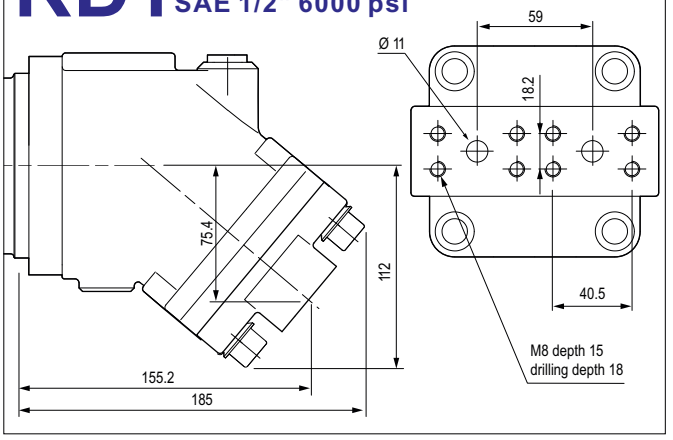


A3FO - 32 cc (ISO2) Bent Axis Pump

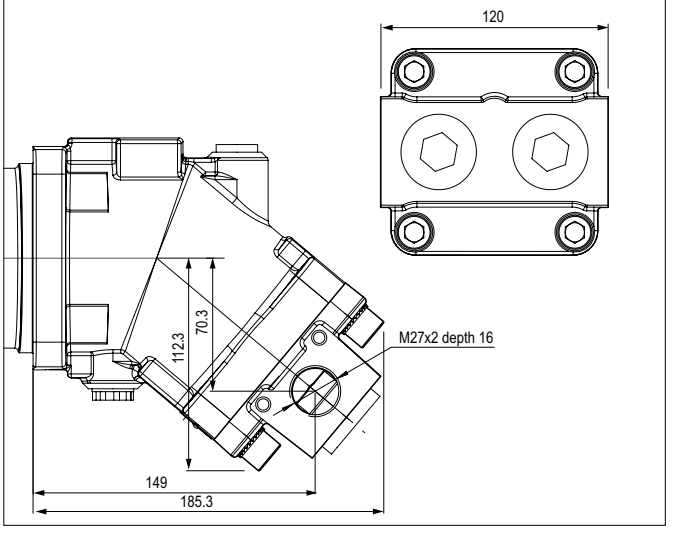
RD2 Rear threaded ports



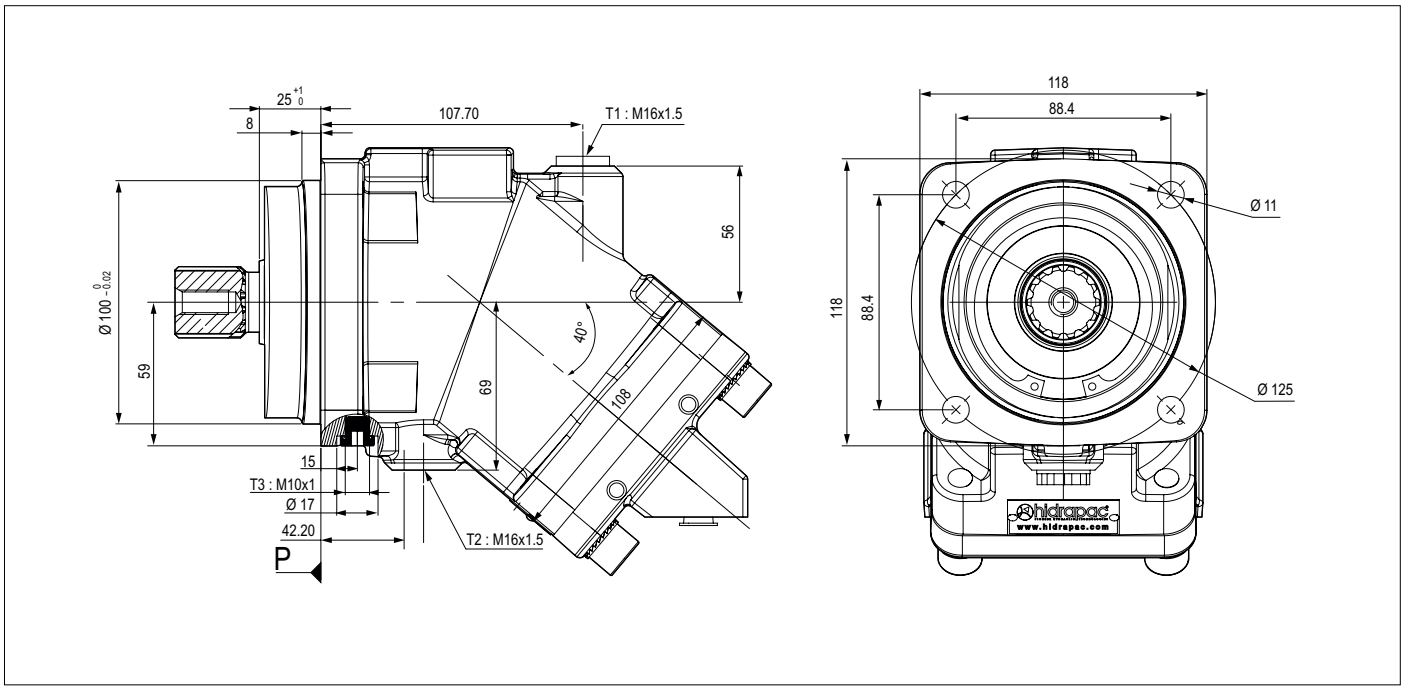
RD1 Rear flange ports SAE 1/2″ 6000 psi



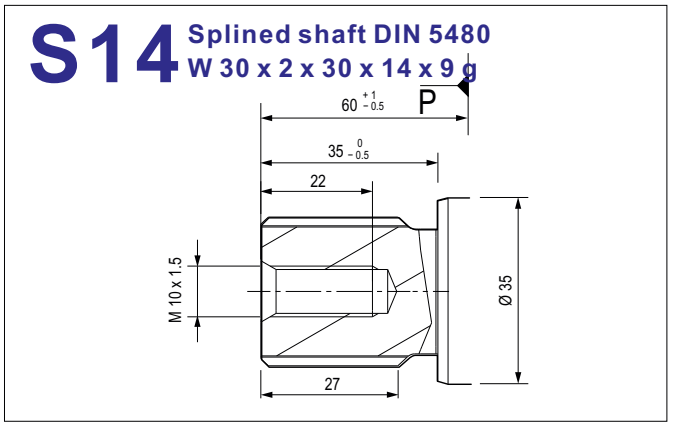
SD2 Side threaded ports A and B



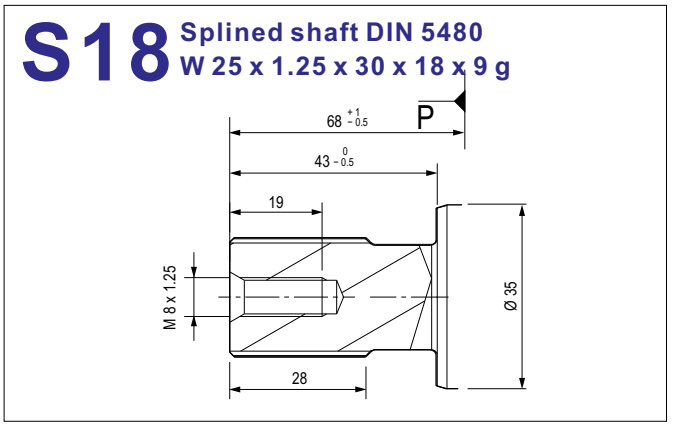
A3FO - 41 cc (ISO2) Bent Axis Pump



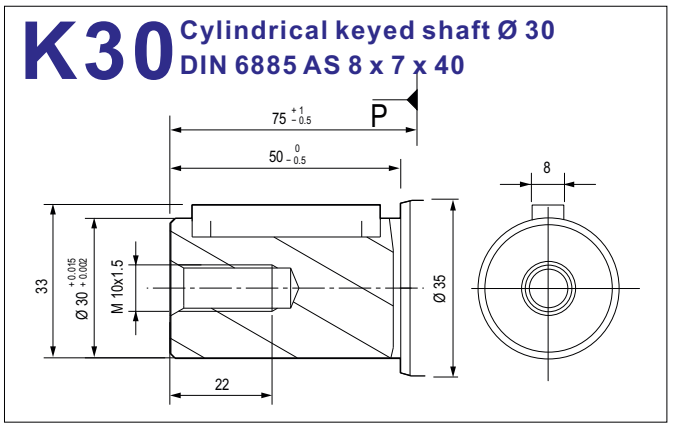
S14 Splined shaft DIN 5480 W 30 x 2 x 30 x 14 x 9 g



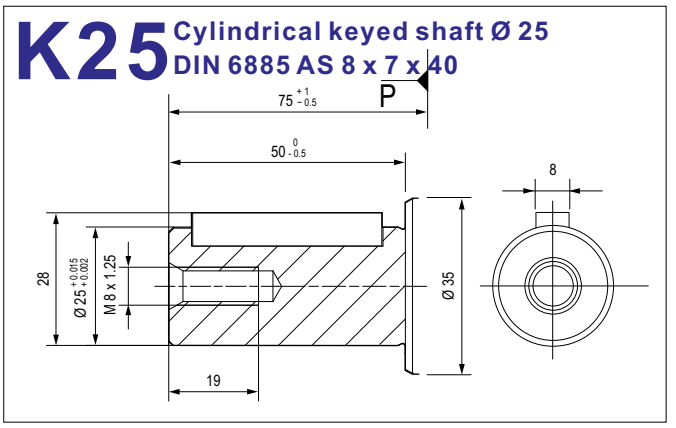
S18 Splined shaft DIN 5480 W 25 x 1.25 x 30 x 18 x 9 g



K30 Cylindrical keyed shaft Ø 30 DIN 6885 AS 8 x 7 x 40

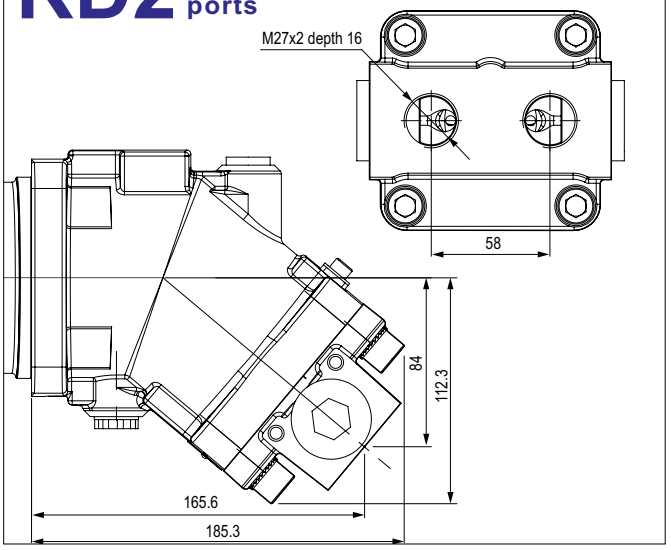


K25 Cylindrical keyed shaft Ø 25 DIN 6885 AS 8 x 7 x 40

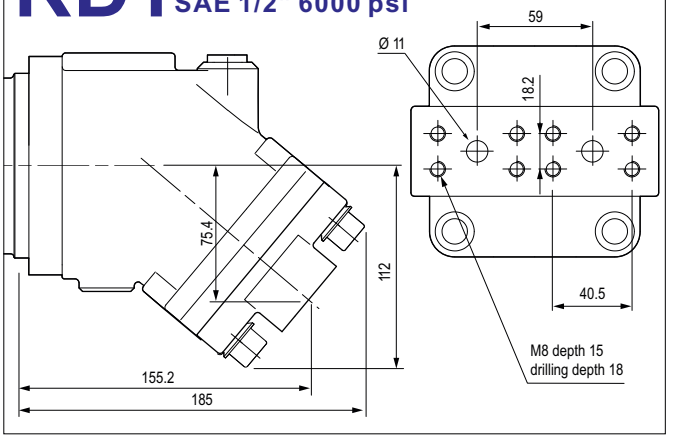


A3FO - 41 cc (ISO2) Bent Axis Pump

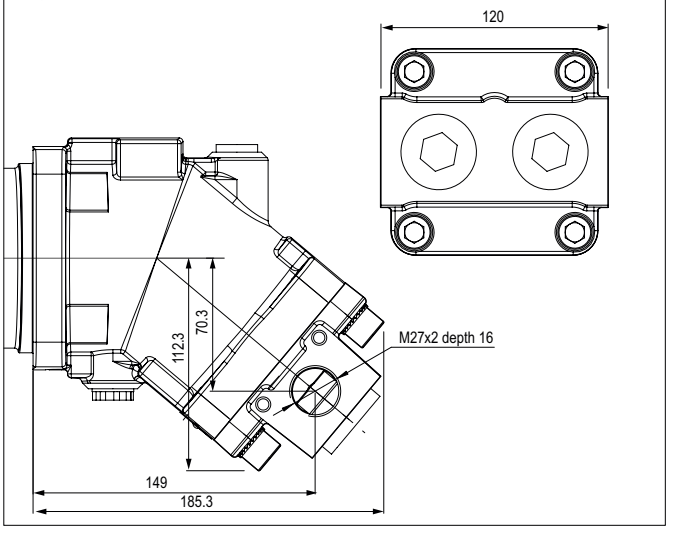
RD2 Rear threaded ports



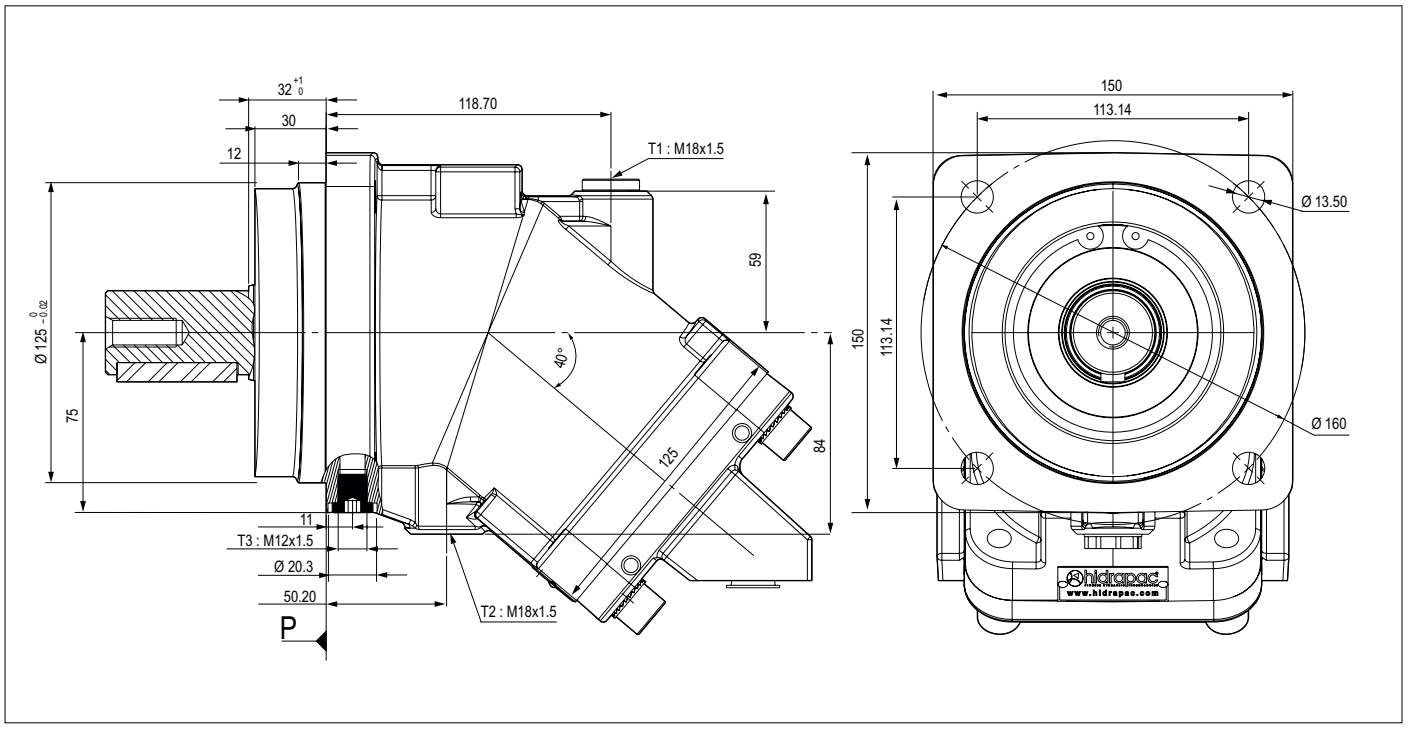
RD1 Rear flange ports SAE 1/2″ 6000 psi



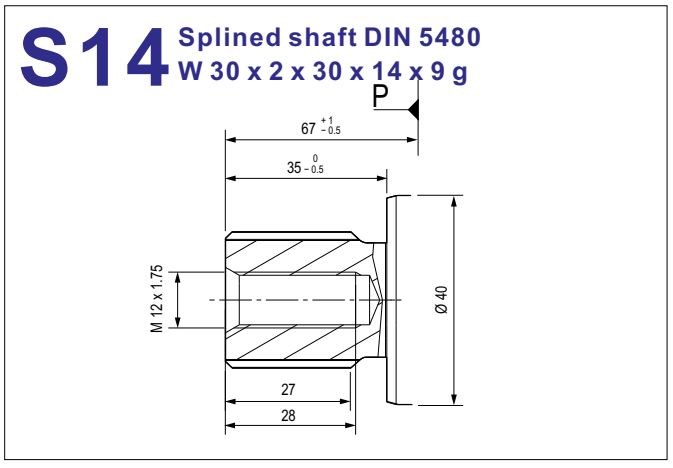
SD2 Side threaded ports A and B



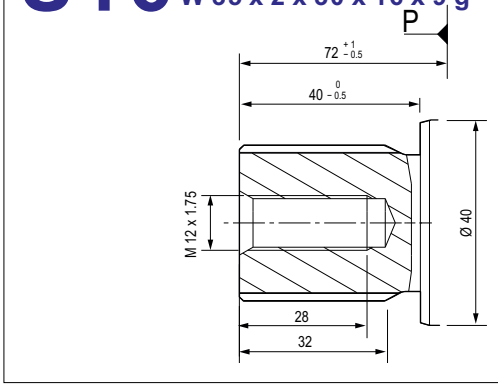
A3FO - 45 cc (ISO2) Bent Axis Pump



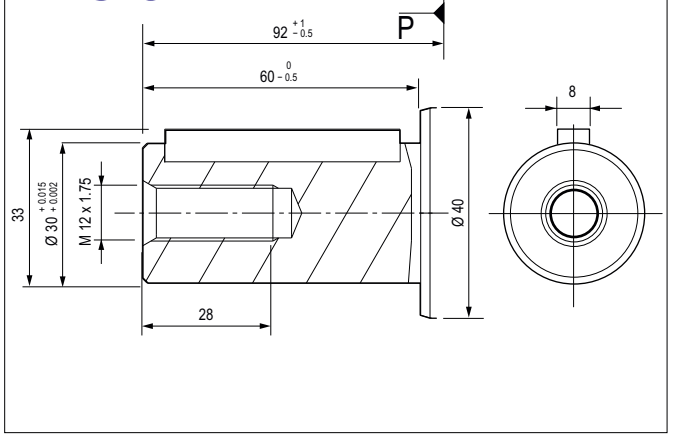
S14 Splined shaft DIN 5480 W 30 x 2 x 30 x 14 x 9 g



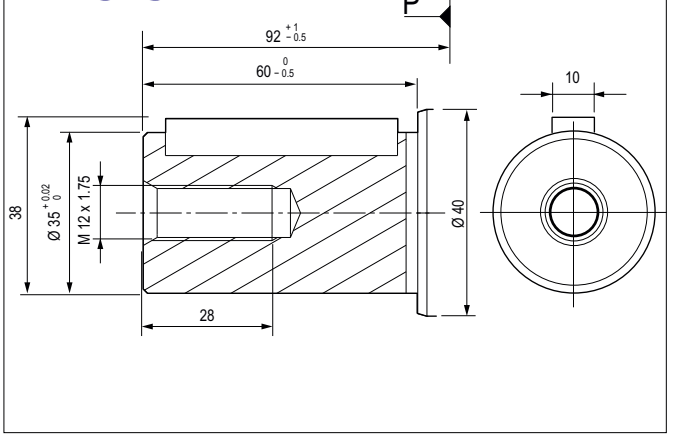
S16 Splined shaft DIN 5480 W 35 x 2 x 30 x 16 x 9 g



K30 Cylindrical keyed shaft Ø 30 DIN 6885 AS 8 x 7 x 40

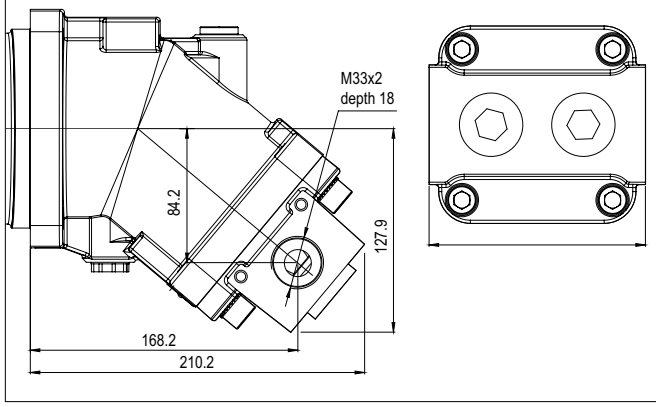


K35 Cylindrical keyed shaft Ø 35 DIN 6885 AS 10 x 8 x 50

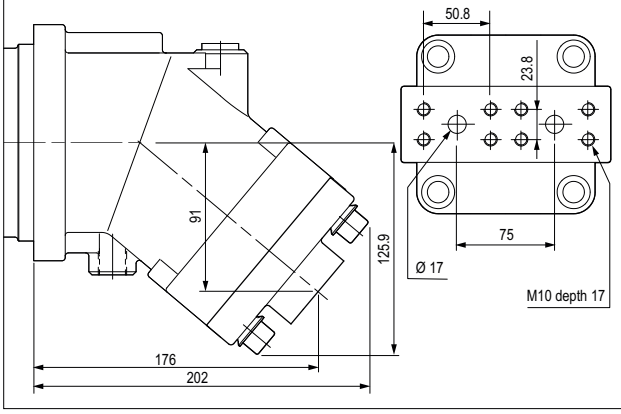


A3FO - 45 cc (ISO2) Bent Axis Pump

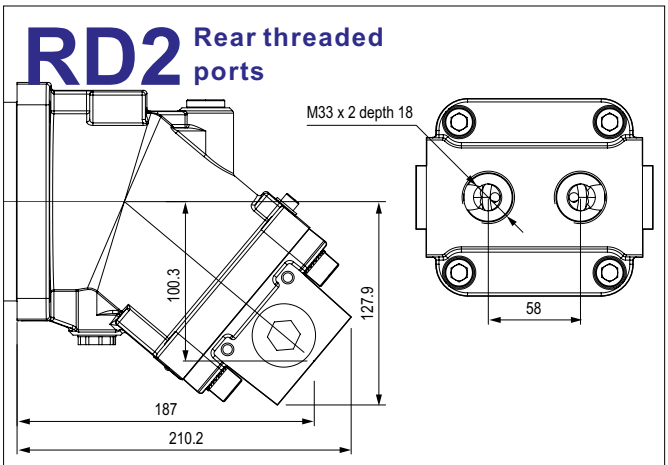
SD2 Side threaded ports A and B



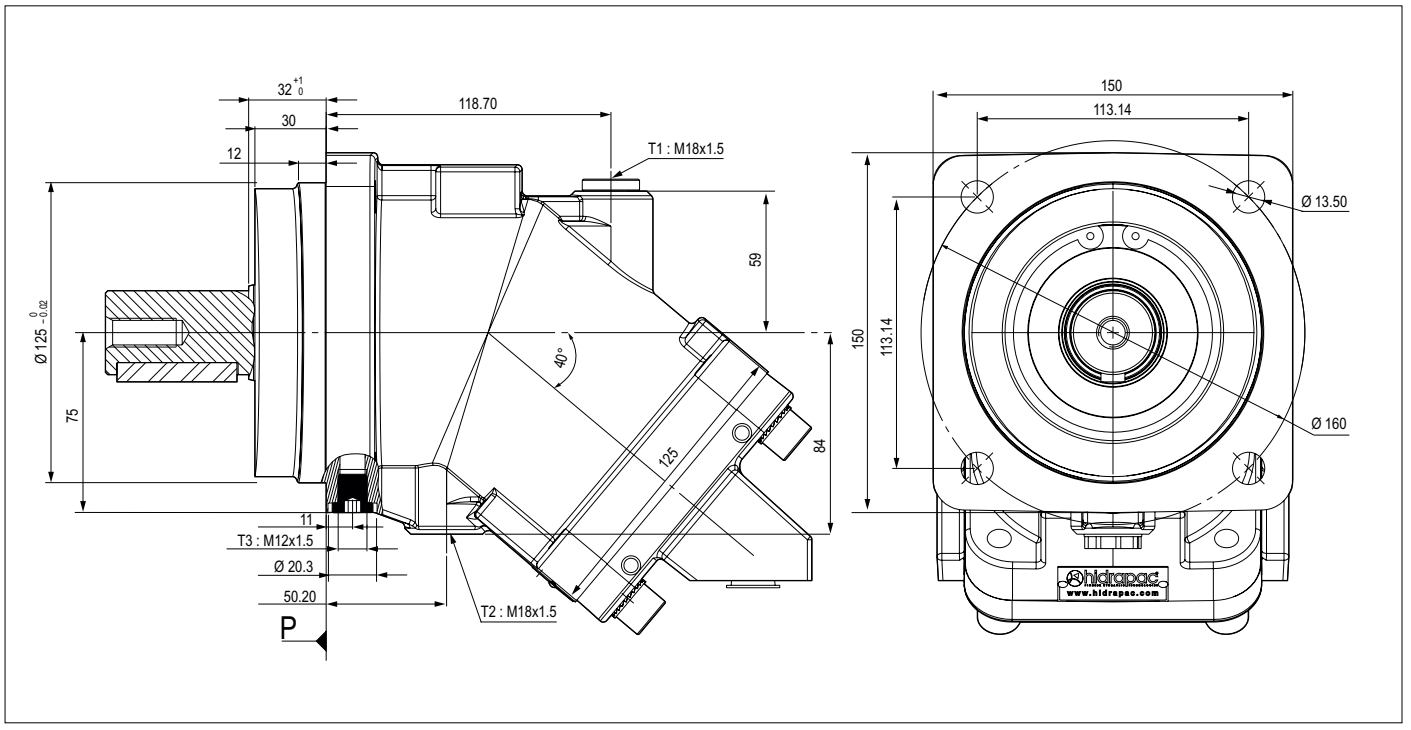
RD1 SAE flange ports, rear SAE 3/4″ 6000 psi



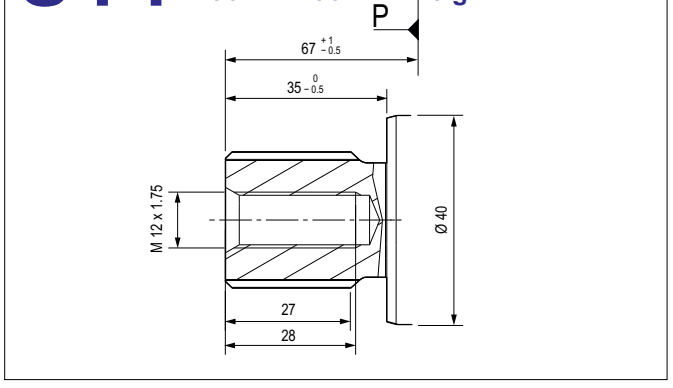
RD2 Rear threaded ports



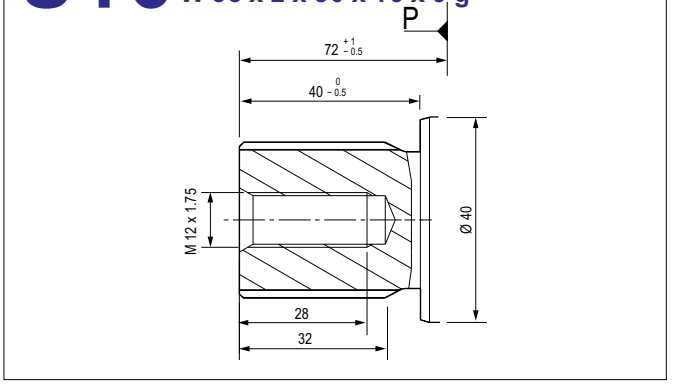
A3FO - 50 cc (ISO2) Bent Axis Pump



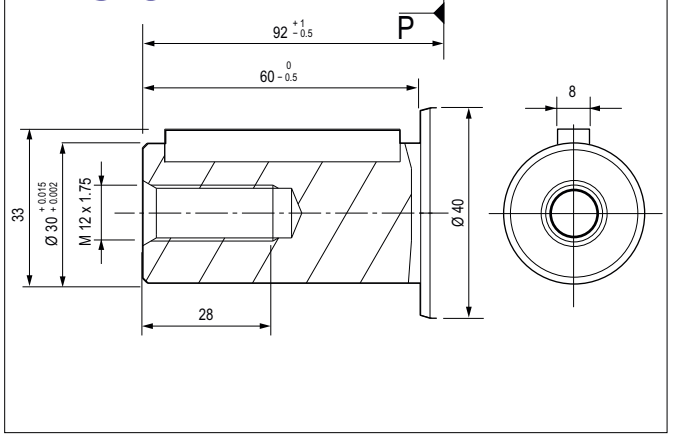
S14 Splined shaft DIN 5480 W 30 x 2 x 30 x 14 x 9 g



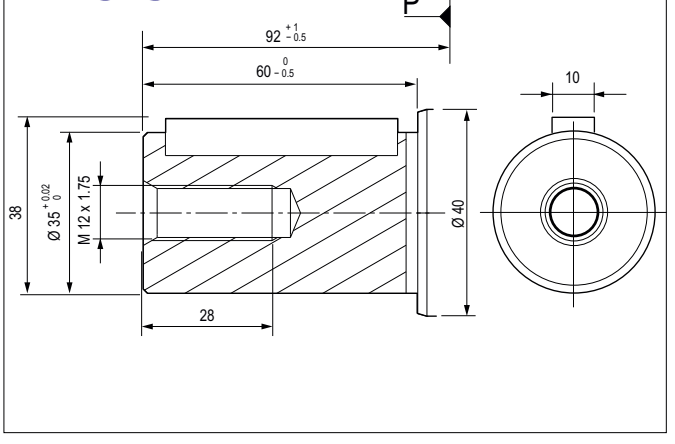
S16 Splined shaft DIN 5480 W 35 x 2 x 30 x 16 x 9 g



K30 Cylindrical keyed shaft Ø 30 DIN 6885 AS 8 x 7 x 40

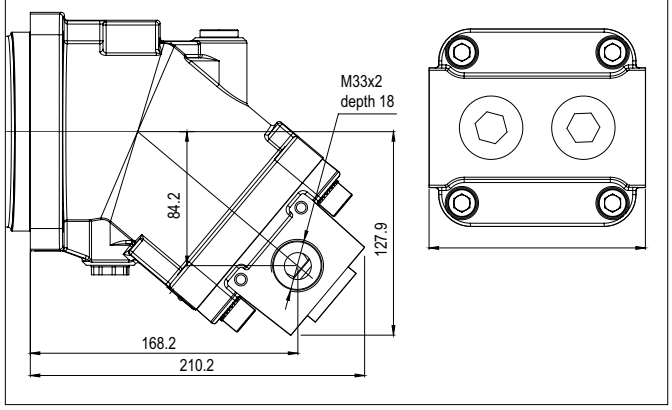


K35 Cylindrical keyed shaft Ø 35 DIN 6885 AS 10 x 8 x 50

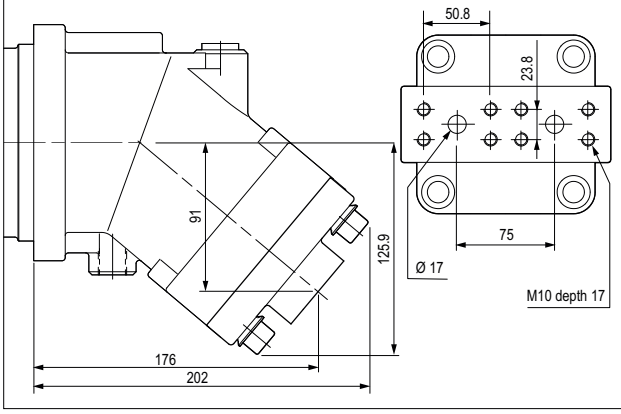


A3FO - 50 cc (ISO2) Bent Axis Pump

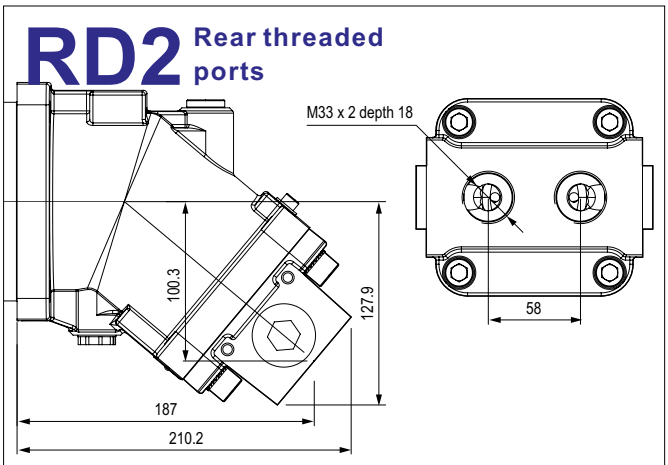
SD2 Side threaded ports A and B



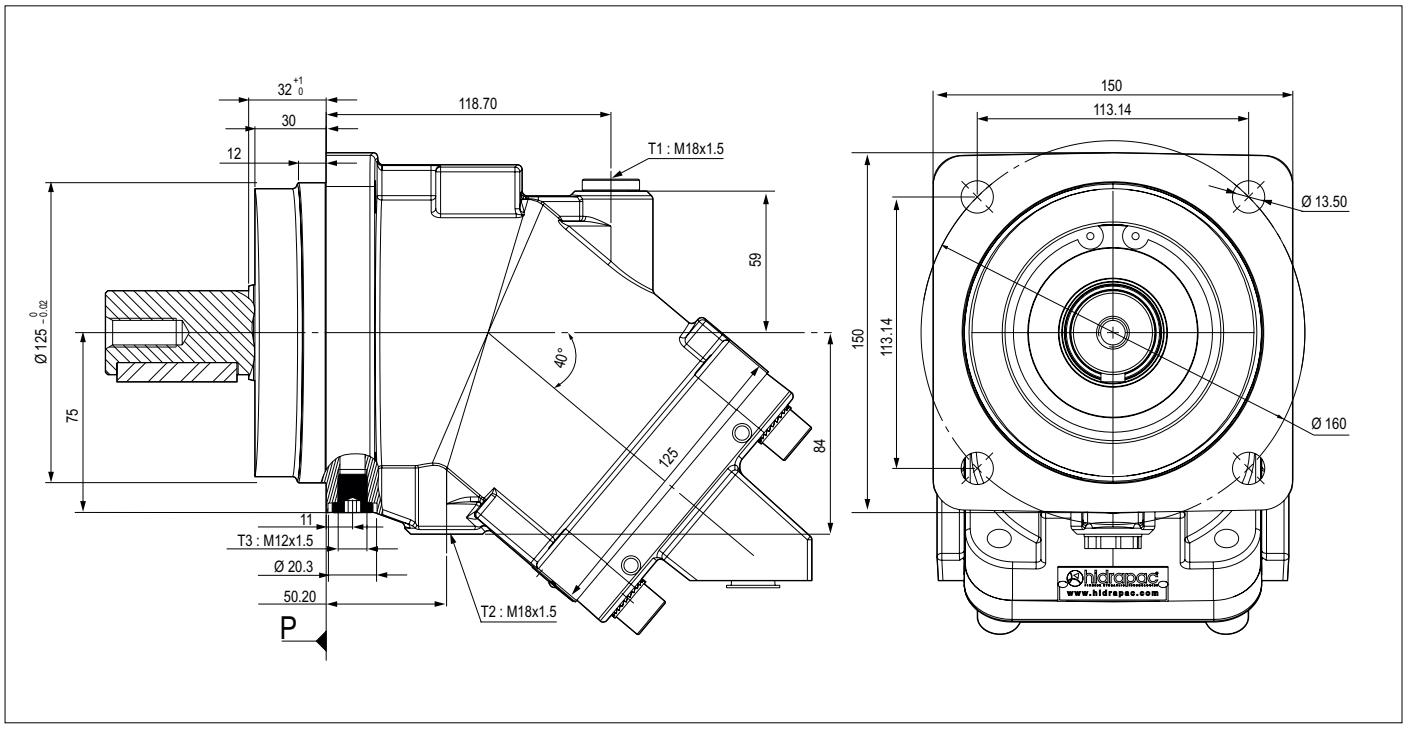
RD1 SAE flange ports, rear SAE 3/4″ 6000 psi



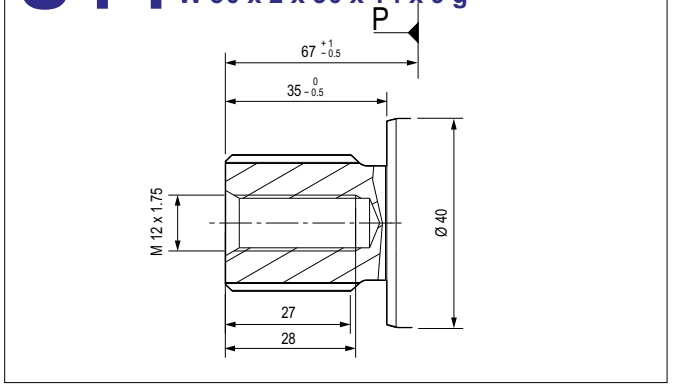
RD2 Rear threaded ports



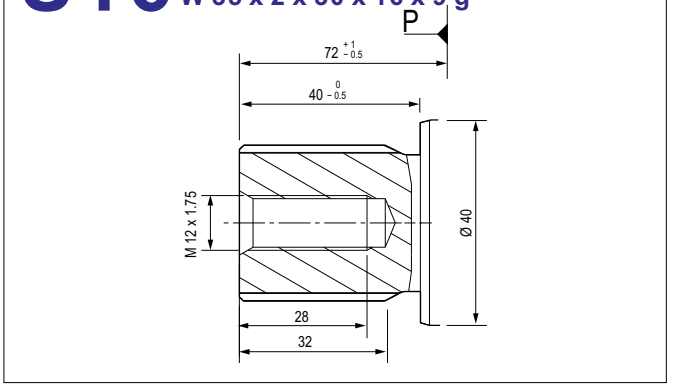
A3FO - 56 cc (ISO2) Bent Axis Pump



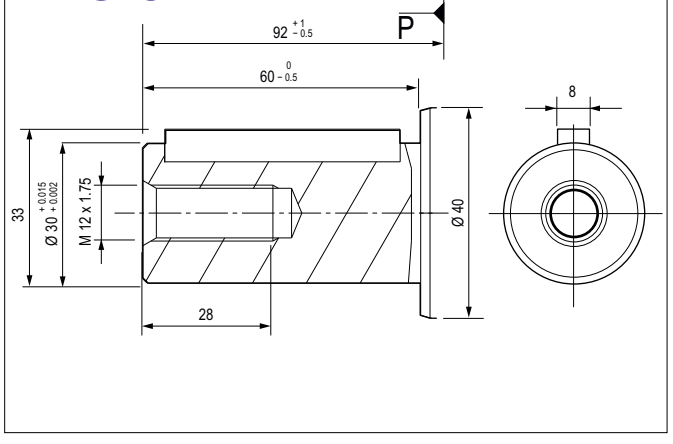
S14 Splined shaft DIN 5480 W 30 x 2 x 30 x 14 x 9 g



S16 Splined shaft DIN 5480 W 35 x 2 x 30 x 16 x 9 g



K30 Cylindrical keyed shaft Ø 30 DIN 6885 AS 8 x 7 x 40



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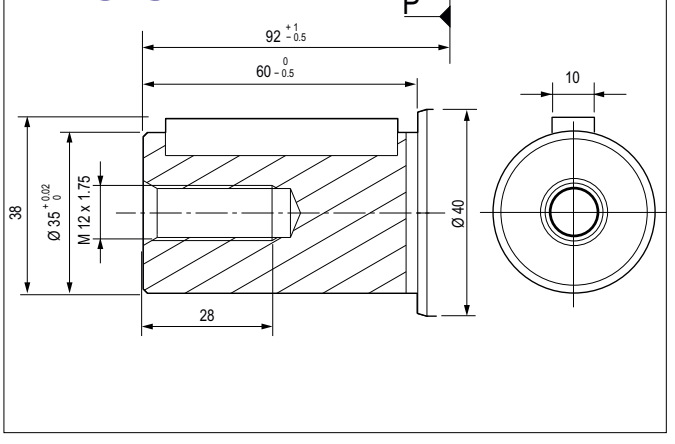
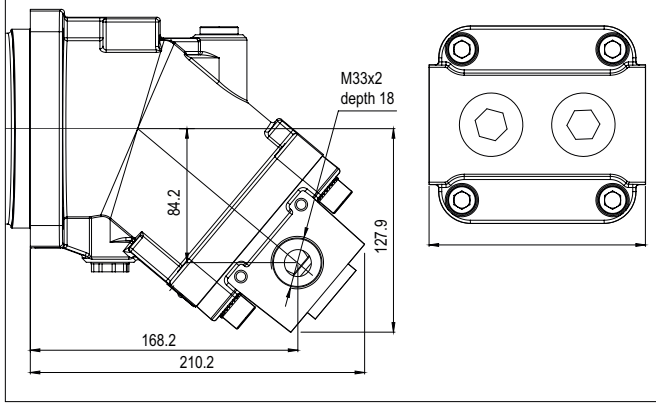
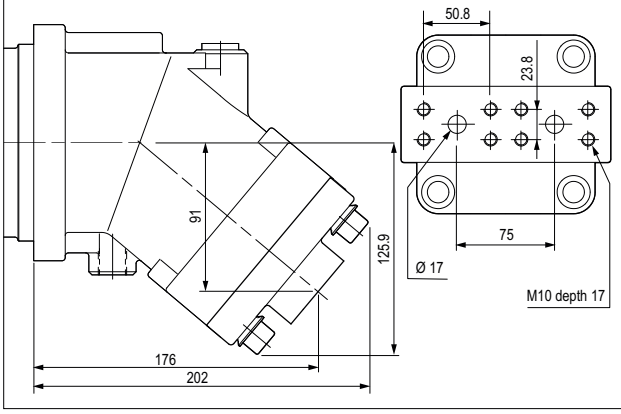


A3FO - 56 cc (ISO2) Bent Axis Pump

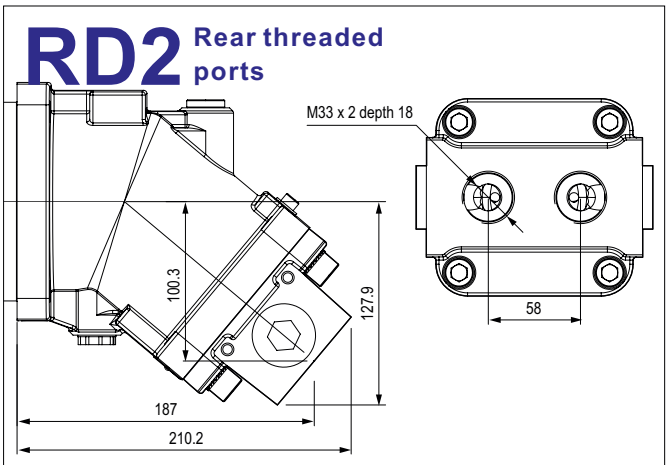
SD2 Side threaded ports A and B



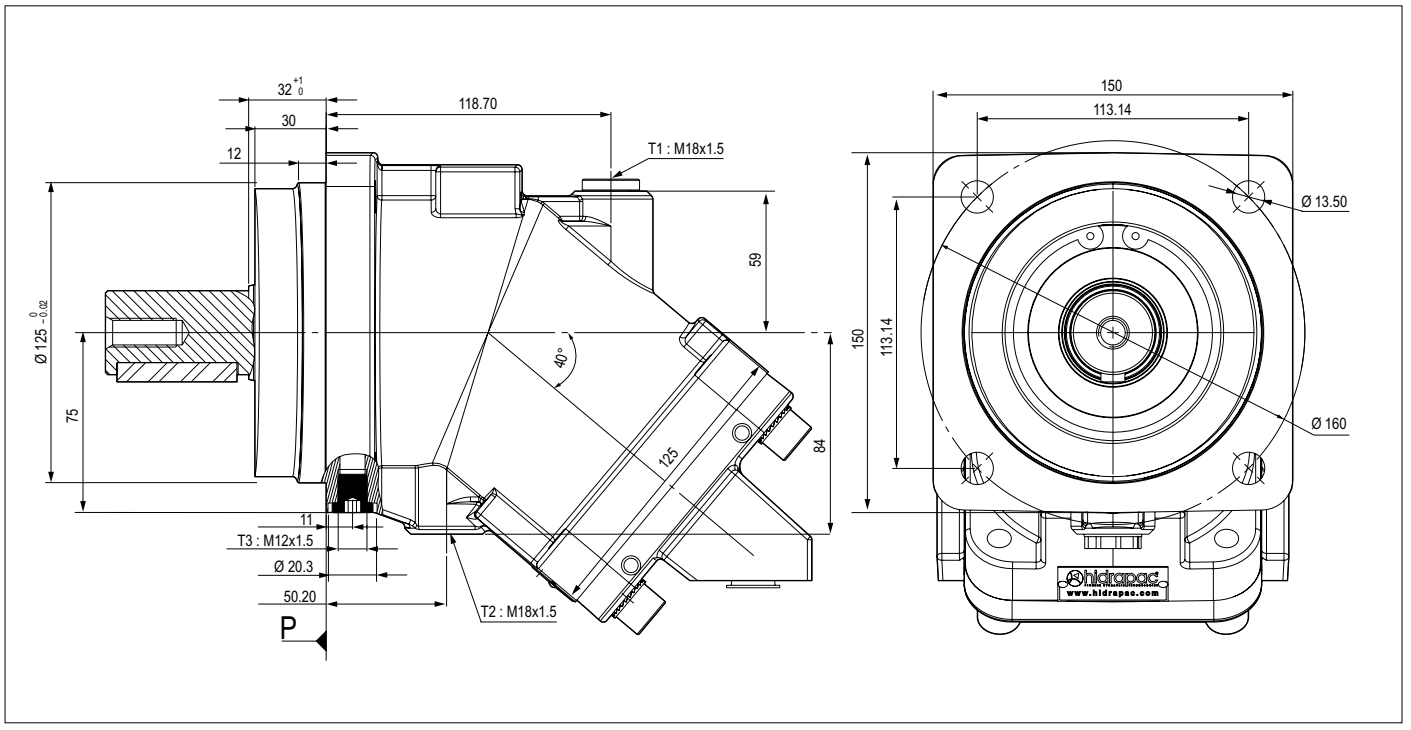
RD1 SAE flange ports, rear SAE 3/4″ 6000 psi



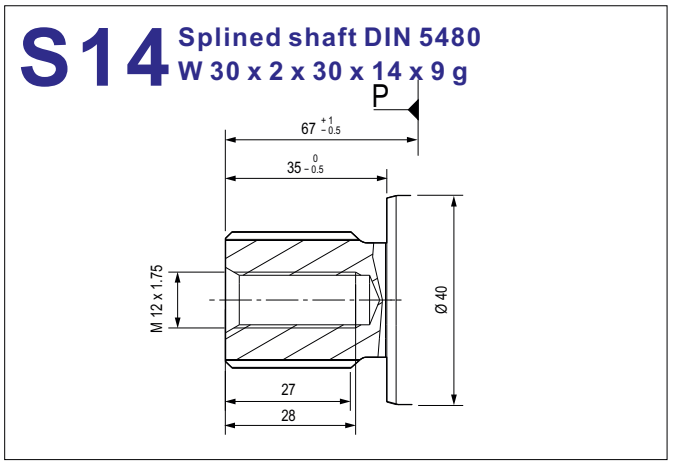
RD2 Rear threaded ports



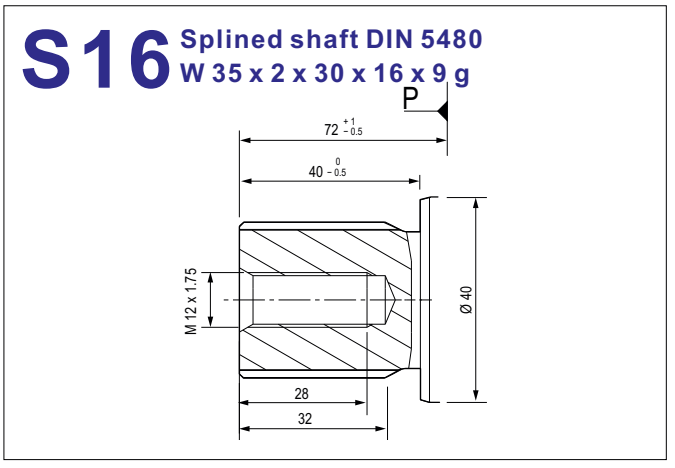
A3FO - 63 cc (ISO2) Bent Axis Pump



S14 Splined shaft DIN 5480 W 30 x 2 x 30 x 14 x 9 g



S16 Splined shaft DIN 5480 W 35 x 2 x 30 x 16 x 9 g



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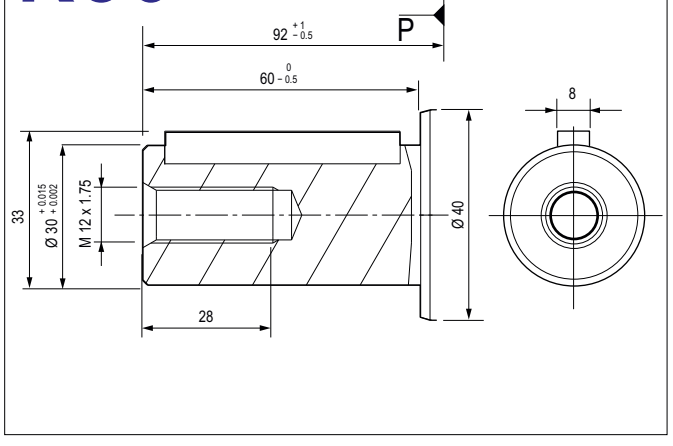

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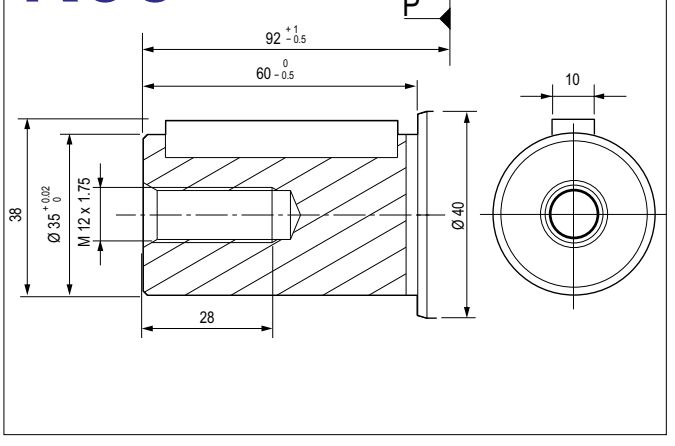
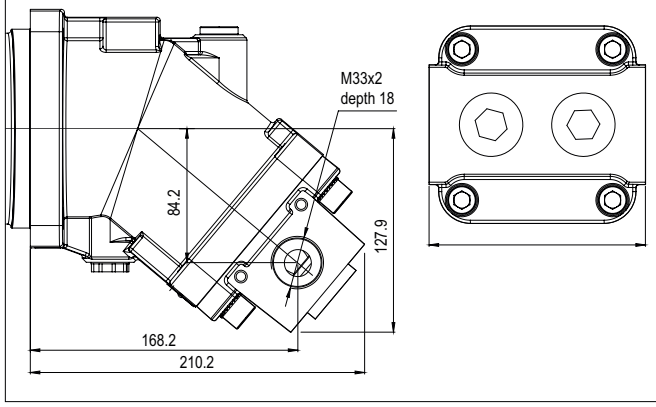


A3FO - 63 cc (ISO2) Bent Axis Pump

SD2 Side threaded ports A and B



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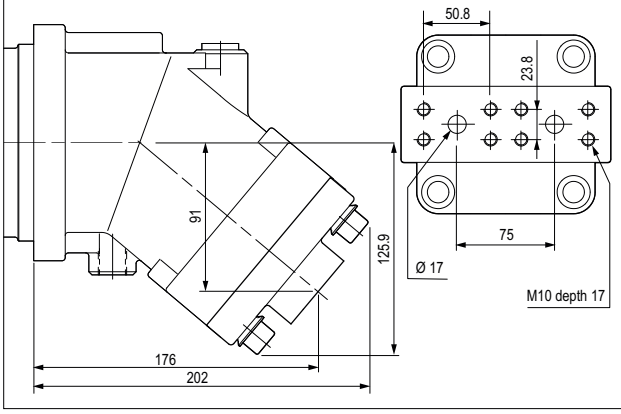
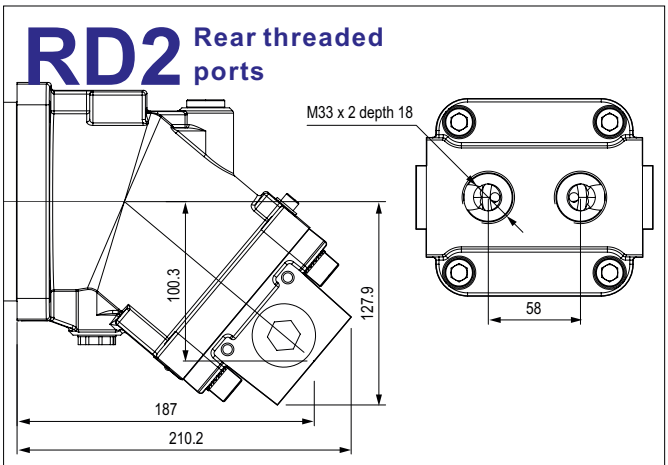


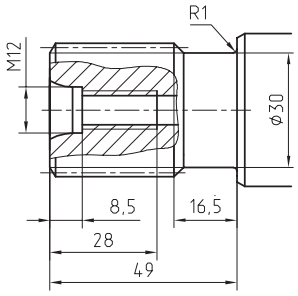
RD2 Rear threaded ports



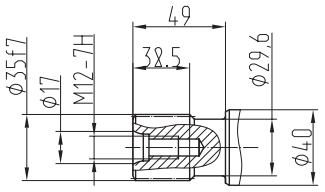
Special Shaft Drive Options for A3FO Pumps

For the Special applications, we produce Special Shaft Drive for the A3FO Pumps.
Details are listed in below.

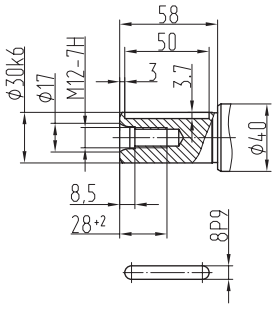
Splined shaft
35xf7x2x9g GOST 6033-80



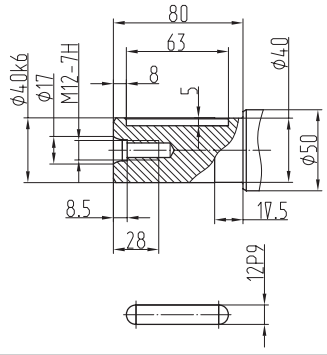
35xf7x2x9g ГОСТ6033



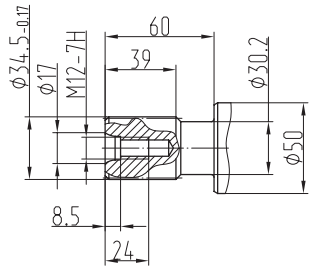
Parallel keyed shafts



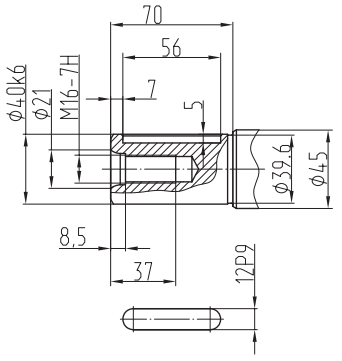
Parallel keyed shafts



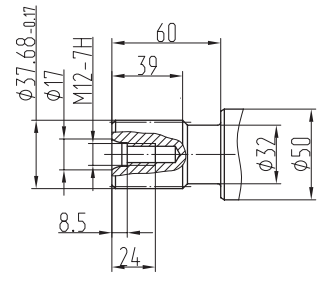
1 3/8’ 21T 16/32DP ANSI B92



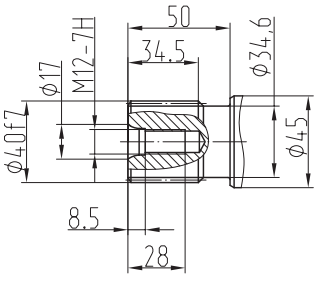
Parallel keyed shafts



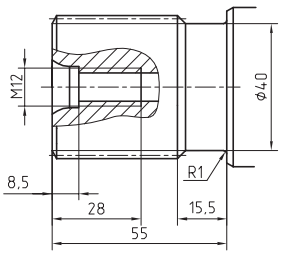
1 1/2’ 23T 16/32DP ANSI B92



40xf7x2x9g GOST6033

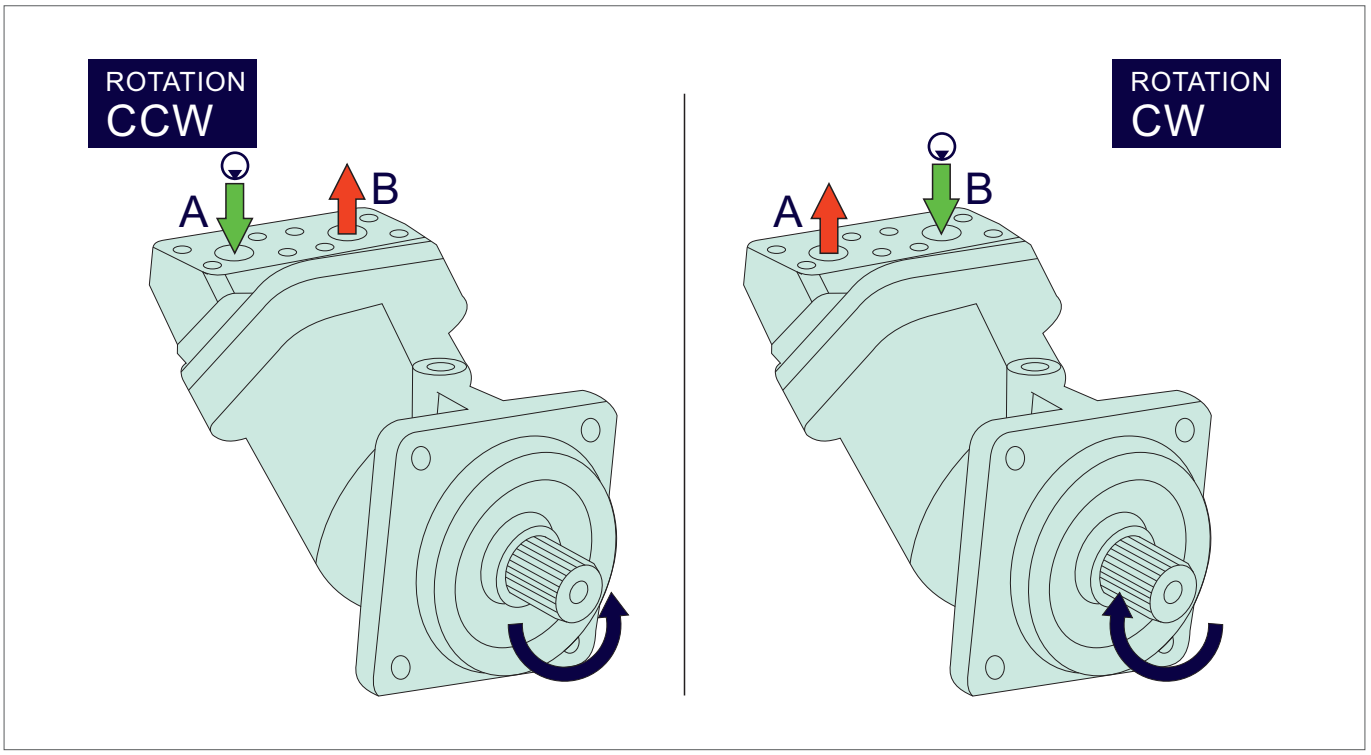


45xh8x2x9g GOST 6033-80



Direction of Rotation; Reversible

The Pumps rotate clockwise or counter-clockwise depending on the direction of hydraulic flow entering the Pump.



Formulas			
Pump Output Flow	GPM	GPM = (Speed (rpm) × disp. (cu. in.)) / 231	GPM = (n ×d) / 231
Pump Input Horsepower	HP	HP = GPM × Pressure (psi) / 1714 × Efficiency	HP = (Q ×P) / 1714 × E
Pump Efficiency	E	Overall Efficiency = Output HP / Input HP	Eoverall = HPOut / HPIn X 100
		Overall Efficiency = Volumetric Eff. × Mechanical Eff.	EOverall = EffVol. × EffMech.
Pump Volumetric Efficiency	E	Volumetric Efficiency = Actual Flow Rate Output (GPM) / Theoretical Flow Rate Output (GPM) × 100	EffVol. = QAct. / QTheo. X 100
Pump Mechanical Efficiency	E	Mechanical Efficiency = Theoretical Torque to Drive / Actual Torque to Drive × 100	EffMech = TTheo. / TAct. × 100
Pump Displacement	CIPR	Dsplcmnt ($In.^3$ / rev.) = Flow Rate (GPM) × 231 / Pump RPM	CIPR = GPM × 231 / RPM
Pump Torque	T	Torque = Horsepower × 63025 / RPM	T = 63025 × HP / RPM
		Torque = Pressure (PSIG) × Pump Displacement (CIPR) / 2π	T = P × CIPR / 6.28

Horsepower for driving a pump : For every 1 hp of drive, the equivalent of 1 gpm @ 1500 psi can be produced.

Horsepower for idling a pump : To idle a pump when it is unloaded will require about 5% of it's full rated power

Wattage for heating hydraulic oil : Each watt will raise the temperature of 1 gallon of oil by 1° F. per hour.

Flow velocity in hydraulic lines : Pump suction lines 2 to 4 feet per second, pressure lines up to 500 psi - 10 to 15 ft./sec., pressure lines 500 to 3000 psi - 15 / 20 ft./sec.; all oil lines in air-over-oil systems; 4 ft./sec.

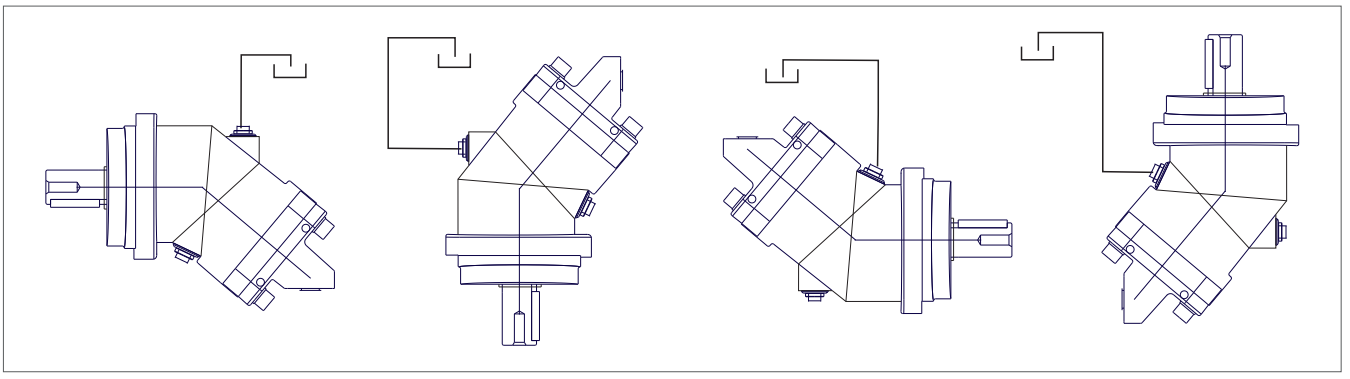
Installation & Assemble Informations for Bent Axis Pumps

POSITION
ISO2 Flange Bent Axis Pumps can be operate any position.

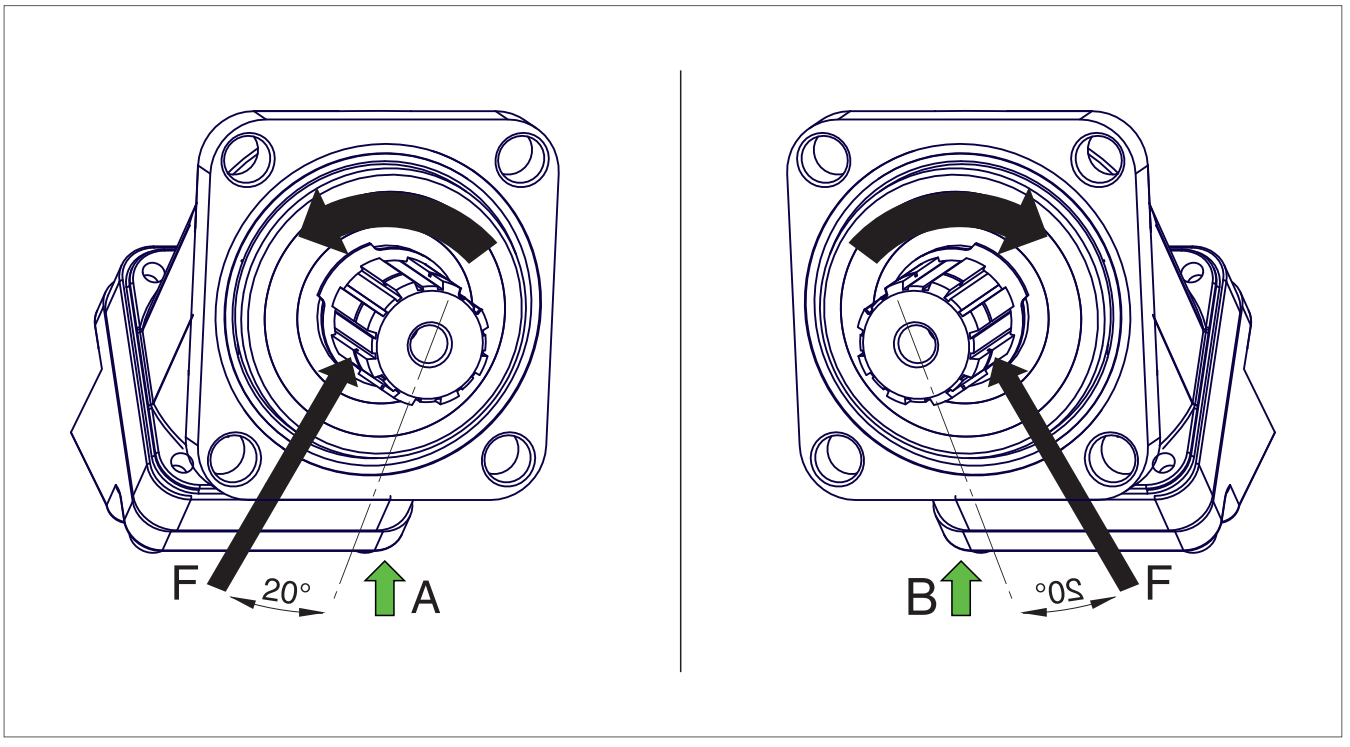
DIRECTION OF ROTATION
ISO2 Flange Bent Axis Pumps can be operate in both directions of rotation.

Before of Installation operation, the Pump 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 Pump is supplied via Starting datasheet.

Formulas, Calculations, Installation Guide

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

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

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

New frame sizes to meet market requirements.
Optional by-pass valve.
For use in mobile & industrial and stationary applications areas.
The pump drive shaft bearings are designed to give the service life expected in these areas of operation. Interchangeable with other bent axis pumps & Pumps

40° bent axis design giving high power, small overall dimensions, optimum efficiency and economic design. Flange and shaft designed for direct mounting on truck gearbox PTO's. The fixed displacement bent axis pumps generates a hydraulic fluid flow. It is designed for use in trucks, commercial vehicles and all stationary hydraulic applications. The pump is a fixed pump with rotary group in bent-axis design open circuits. Flow is proportional to drive speed and displacement.

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

The pump is available both to DIN and SAE world standards and can be mounted either directly at the gear box or via a drive shaft. If necessary it can also be augmented with a by-pass valve.

Other brand bent axis pumps compatible and interchangeable with bent axis pumps motors. Refer to the data sheet and order confirmation for the technical data,operating conditions and operating limits of the bent axis piston pumps.

Complete Product Range

Bent Axis Piston Motors
K2FM (DIN) Bent Axis Motor
K3FH (HYBRID) Bent Axis Motor
A2MS (SAE) Bent Axis Motor
A3MS (SAE2) Bent Axis Motor
A2FM (ISO) Bent Axis Motor
A2FE (Fixed Plugin) Bent Axis Motor
A2FE (Two Speed) Bent Axis Motor
A2FT 45 (Inline) Bent Axis Motor

Bent Axis Piston Pumps
K2FA (DIN) Bent Axis Pump
K2FH (HYBRID) Bent Axis Pump
K2FL (Aluminum) Bent Axis Pump
A2FS (SAE) Bent Axis Pump
A3FS (SAE2) Bent Axis Pump
A2FO (ISO) Bent Axis Pump
A3FO (ISO2) Bent Axis Pump
A2FP (Fixed Plugin) Bent Axis Pump

Variable Displacement Motors
AXMV Variable Piston Motor
AXMA Variable Piston Motor
AXMI Variable Piston Motor

Variable Displacement Pumps
AXVP Variable Piston Motor
AXVA Variable Piston Motor
AXVI Variable Piston Motor

Dual Flow Piston Pumps
A2FD (DIN) Dual Flow Pumps
A2FD (SAE) Dual Flow Pumps
A2PD Axial Dual Output Pumps

Axial Piston & Gear Pumps
A3PP Axial Piston Pumps
A3PH High Pressure Pumps
A2GP Gear Pumps
A2GPT Tandem Gear Pumps
A2GM Gear Motors
A2GMT Tandem Gear Motors

Valve (ByPass) (Flushing) (Cavitation)
Circulation Valve
ByPass Valve
Anti-Cavitation Valve
Flushing Valve
LS Valve
AntiShock Valve
Speed Sensor

Hydraulic Spare Parts
Suction Fittings
Couplars
Adapters
Flanges
Power Take Off
Monoblock Valve
Section Valve

Hydraulic Pumps, Pumps

Bent Axis Hydraulic Piston Pumps, Bent Axis Hydraulic Piston Pumps, Bent Axis Pumps, Variable Displacement Piston Pumps, Variable Displacement Piston Pumps, Axial Piston Pumps, High Pressure Piston Pumps, Gear Pumps, Gear Pumps, Hydraulic Valve.

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