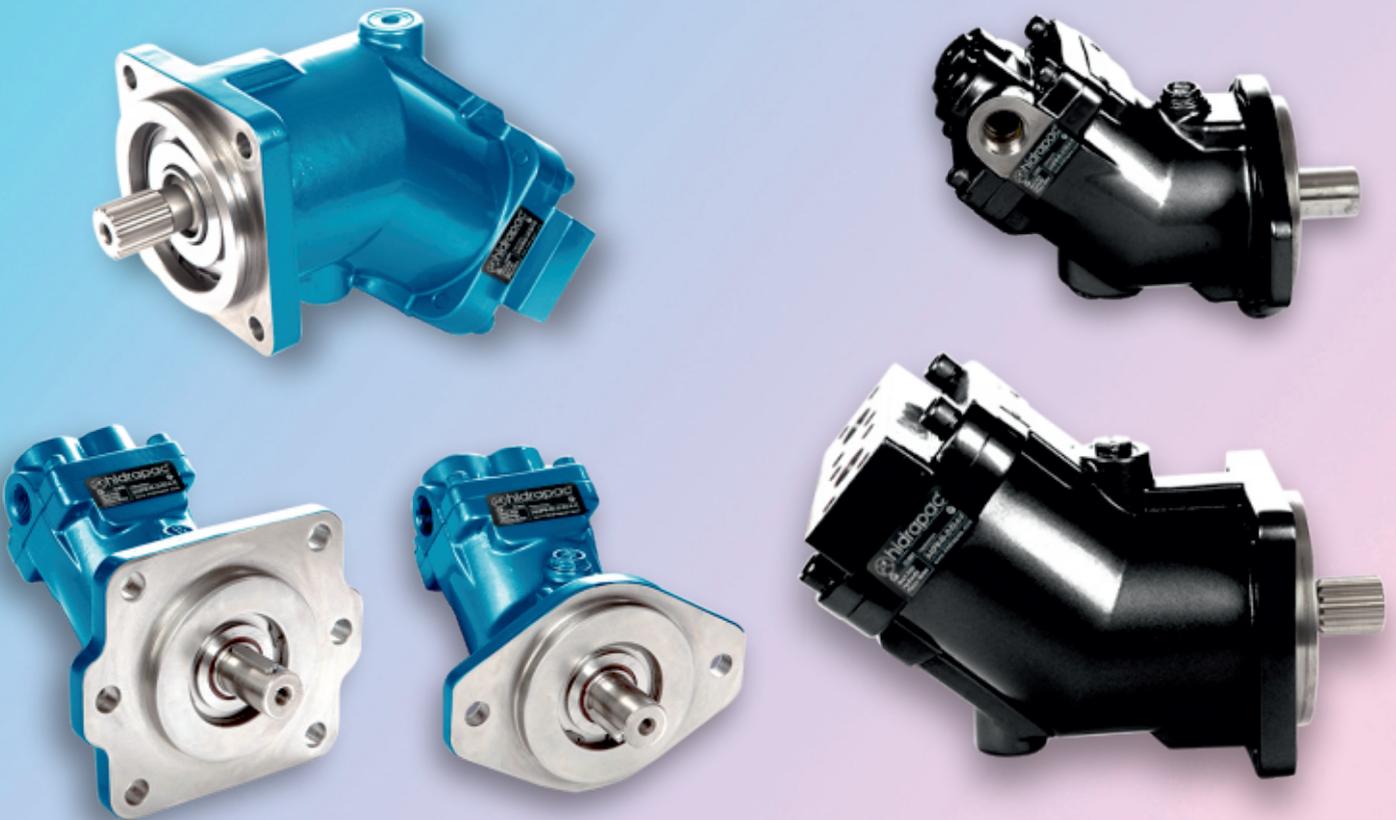


A2MS (SAE) Bent Axis Motors -2022-

SAE B, SAE B2, SAE B6, SAE C and SAE D Versions of Mounting Flange High Pressure Hydraulic Bent Axis Piston Motors, High Pressure, 450/500 BAR Working Pressure. High Rotational Speed, High Efficiency, Slim Design, Cast Iron Motor Body, Re-Designed in 2022.

Designation;

5cc, 10cc, 12cc, 18cc, 25cc, 32cc, 41cc, 50cc,
56cc, 63cc, 80cc, 108cc, 126cc



Hidrapac **Store**

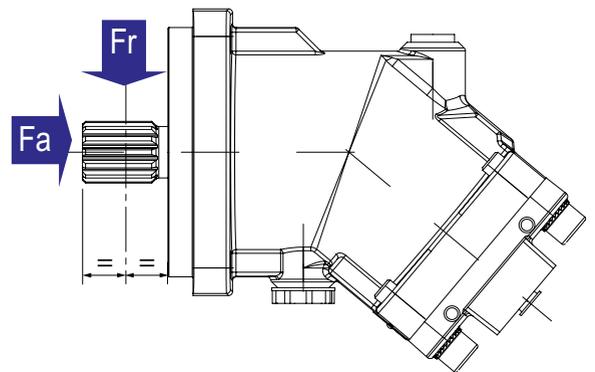
www.HIDRAPAC.com.tr

Index

Cover.....	1
Index.....	2
A2MS Motors.....	3
Ordering Code of A2MS Motors.....	4
A2MS - 5 cc (SAE B) - 2 Bolt.....	5
A2MS - 5 cc (SAE B) - 4 Bolt.....	6
A2MS - 5 cc (SAE B) - 6 Bolt.....	7
A2MS - 10 cc (SAE B) - 2 Bolt.....	8
A2MS - 10 cc (SAE B) - 4 Bolt.....	9
A2MS - 10 cc (SAE B) - 6 Bolt.....	10
A2MS - 12 cc (SAE B) - 2 Bolt.....	11
A2MS - 12 cc (SAE B) - 4 Bolt.....	12
A2MS - 12 cc (SAE B) - 6 Bolt.....	13
A2MS - 18 cc (SAE B) - 2 Bolt.....	14
A2MS - 18 cc (SAE B) - 4 Bolt.....	15
A2MS - 18 cc (SAE B) - 6 Bolt.....	16
A2MS - 25 cc (SAE C) - 4 Bolt.....	17
A2MS - 32 cc (SAE C) - 4 Bolt.....	19
A2MS - 41 cc (SAE C) - 4 Bolt.....	21
A2MS - 45 cc (SAE C) - 4 Bolt.....	23
A2MS - 50 cc (SAE C) - 4 Bolt.....	25
A2MS - 56 cc (SAE C) - 4 Bolt.....	27
A2MS - 63 cc (SAE C) - 4 Bolt.....	29
A2MS - 80 cc (SAE C) - 4 Bolt.....	31
A2MS - 90 cc (SAE C) - 4 Bolt.....	33
A2MS - 108 cc (SAE C) - 4 Bolt.....	35
A2MS - 108 cc (SAE D) - 4 Bolt.....	37
A2MS - 125 cc (SAE C) - 4 Bolt.....	39
A2MS - 125 cc (SAE D) - 4 Bolt.....	41
A2MS - 160 cc (SAE D) - 4 Bolt.....	43
A2MS - 180 cc (SAE D) - 4 Bolt.....	45
Direction of Rotation.....	47
Installation and Assemble Information.....	48
Formulas, Calculations.....	49
Complete Product Range.....	50
Contact Information.....	51

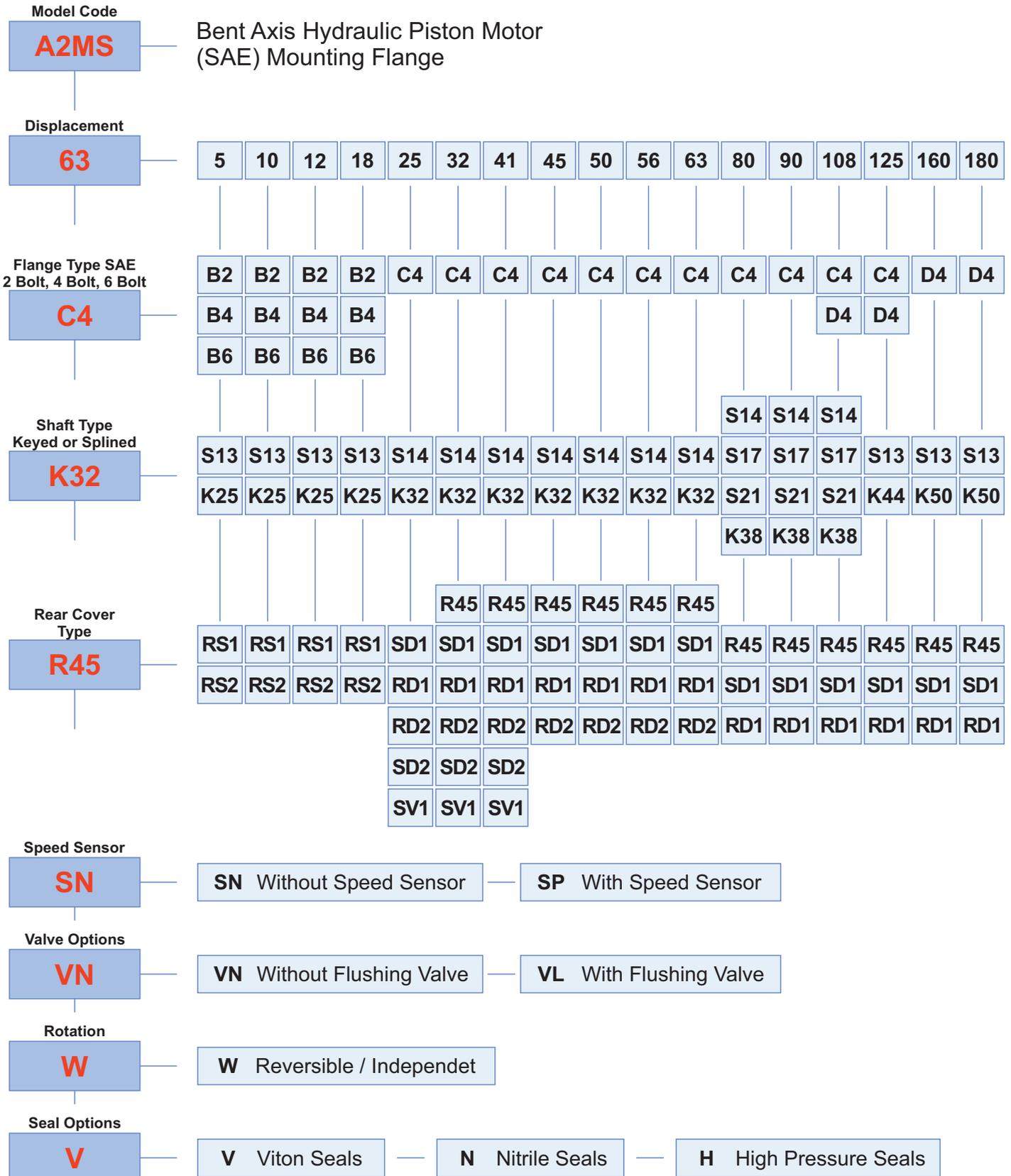
Characteristics of the A2MS - SAE Flange Bent Axis Motors

MOTOR MODEL	DISPL. (cc)	CONTINUOUS MAX. SPEED (rpm)	INTERMITTENT MAX. SPEED (rpm)	MAX. FLOW ABSORBED (l/mn)	TORQUE BAR (m.N/bar)	TORQUE AT 350 BAR (m.N)	THEORETICAL 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	6.4
10 cc	10.2	8600	9400	88	0.14	58	72.9 / 54.4	400 / 450	6.5
12 cc	12.0	8000	8800	96	0.19	67	85.5 / 64.4	400 / 450	6.5
18 cc	18.0	8000	8800	144	0.28	99	128.5 / 95.9	400 / 450	6.5
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
80 cc	80,4	4500	5000	362	1.27	447	323.6 / 241.5	400 / 450	23.1
90 cc	90,1	4500	5000	405	1.43	500	361.5 / 269.9	400 / 450	23.2
108 cc	108	4000	4400	435	1.70	598	328.8 / 245.6	400 / 450	35.2
125 cc	125	3400	4400	428	2.00	698	382.6 / 284.6	400 / 450	38.8
160 cc	160	3400	4000	486	2.55	890	514.6 / 383.9	400 / 450	48.6
180 cc	180	3400	4000	612	2.86	1004	581.2 / 433.6	400 / 450	52.6

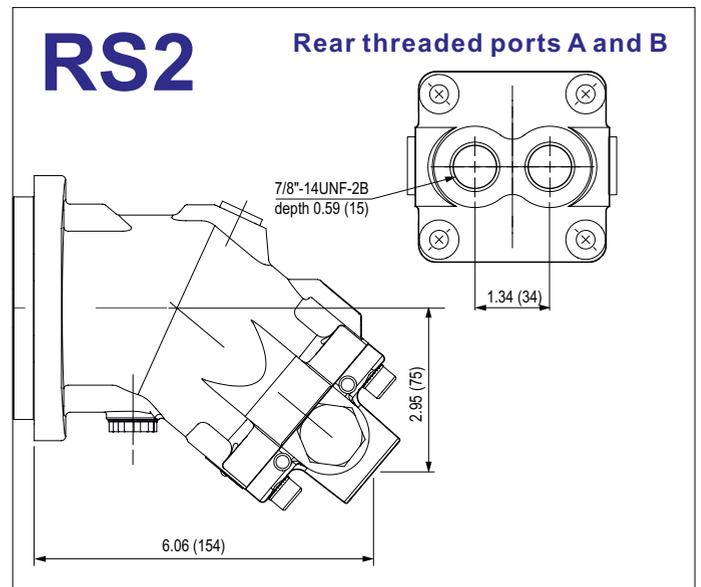
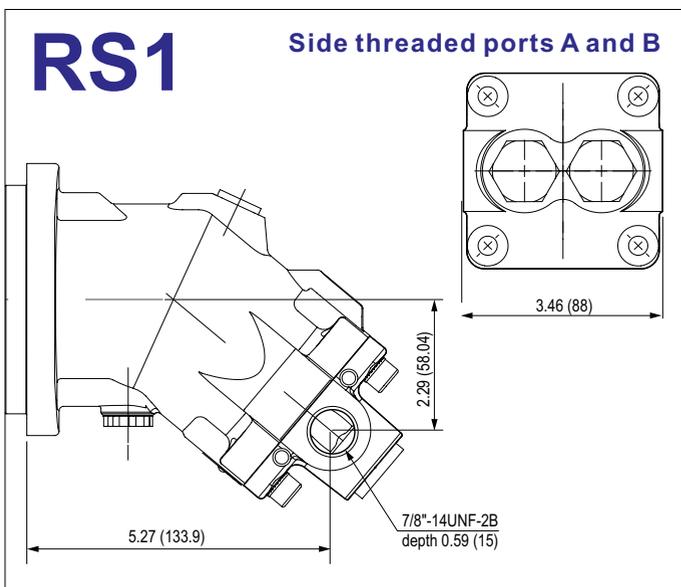
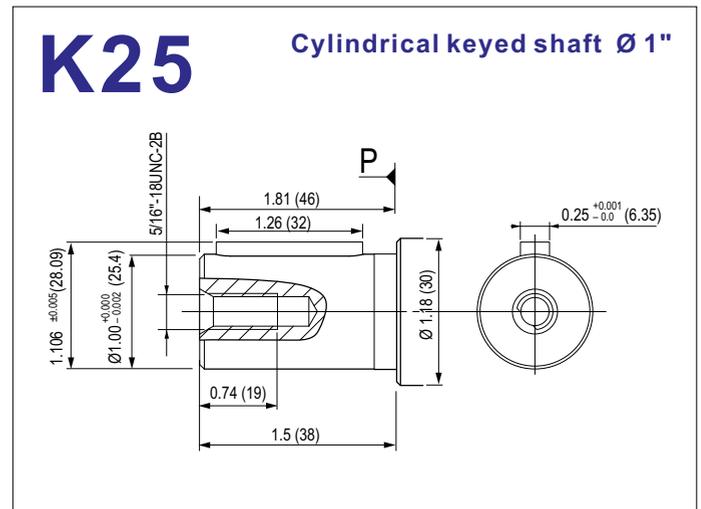
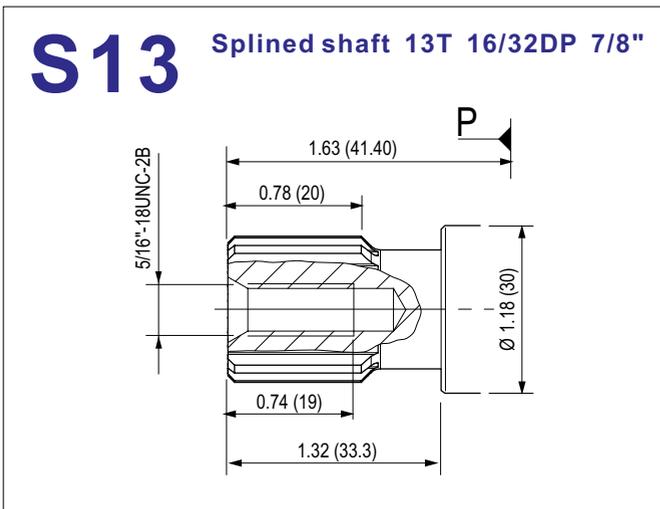
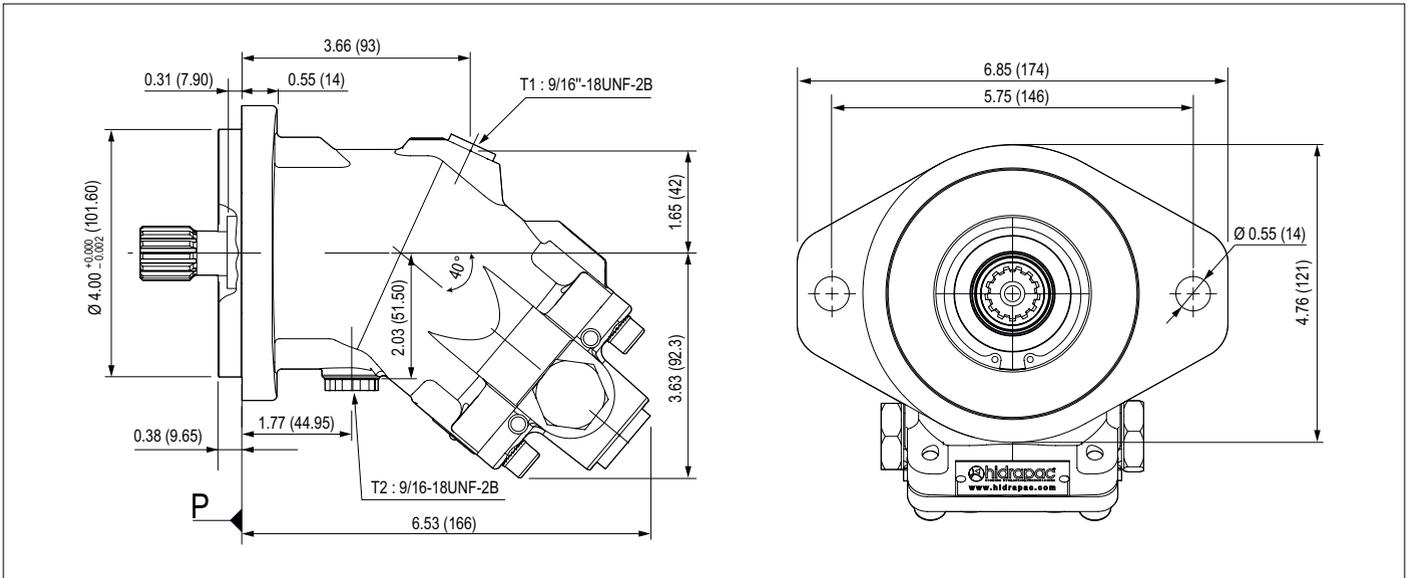


Motor model	5, 10, 12	18 cc	25 cc	32 cc	41. 45	50 cc	56, 63cc	80,90,108	125 cc	160, 180
Fr (lbf)	630	900	1350	1462.5	1462.5	1686	2023	2812	3262	4500
Fr (N/bar)	2800	4000	6000	6500	6500	7500	9000	12500	14500	20000
Fa (lbf)	0.23	0.31	0.42	0.46	0.62	0.62	0.77	1.24	1.33	1.47
Fa (N/bar)	(15)	(20)	(27)	(30)	(40)	(40)	(50)	(80)	(86)	(95)

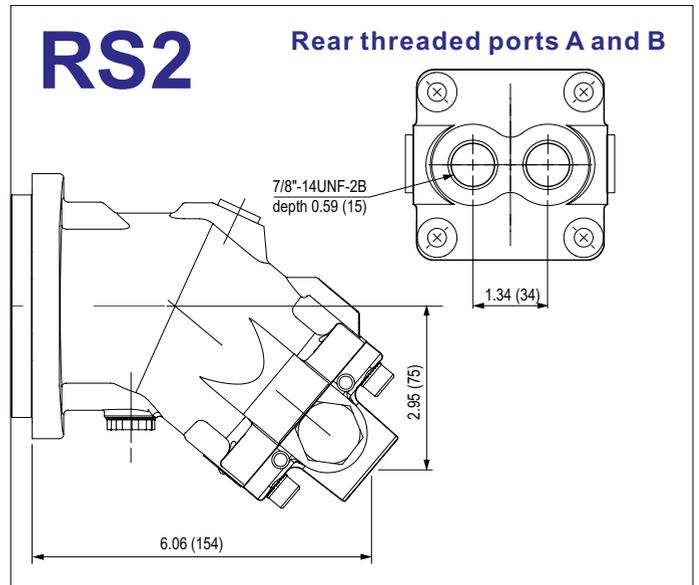
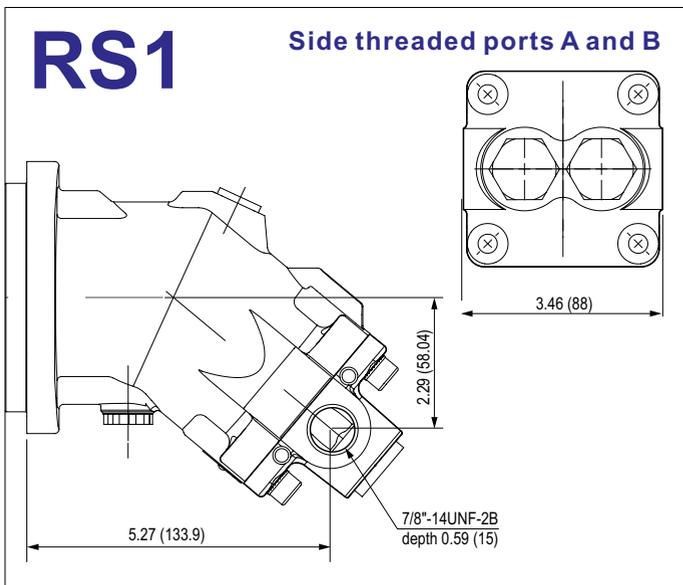
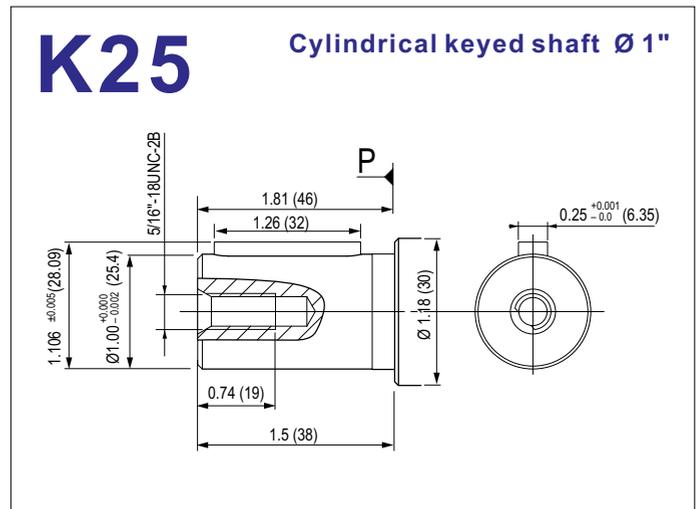
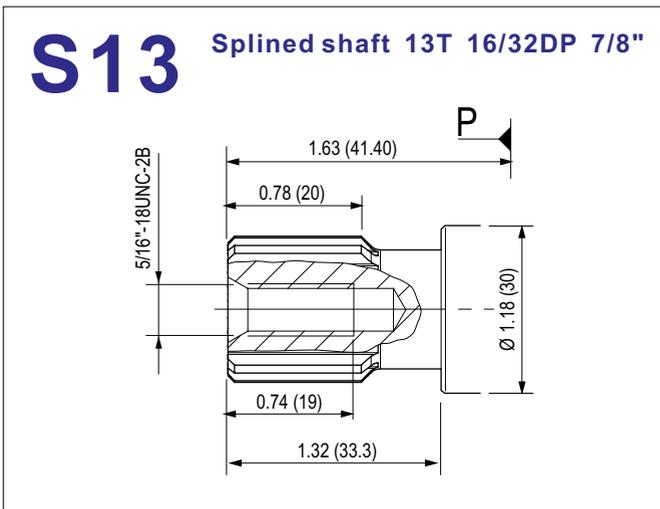
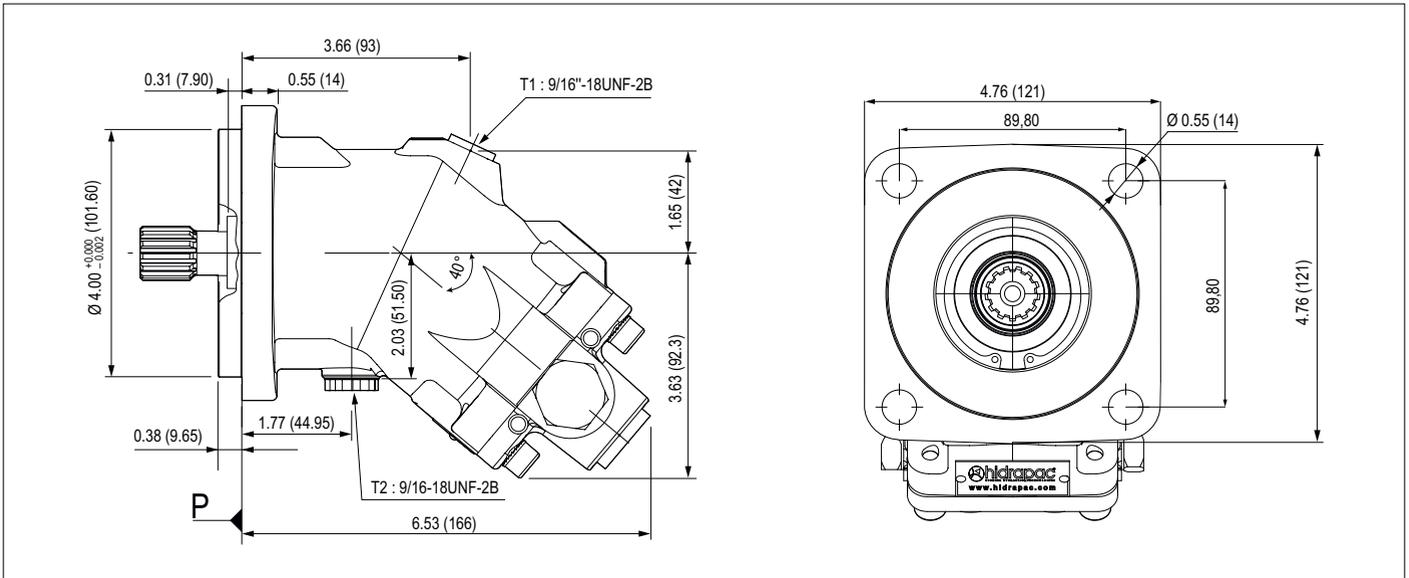
Ordering Code; A2MS - SAE Flange Bent Axis Motors



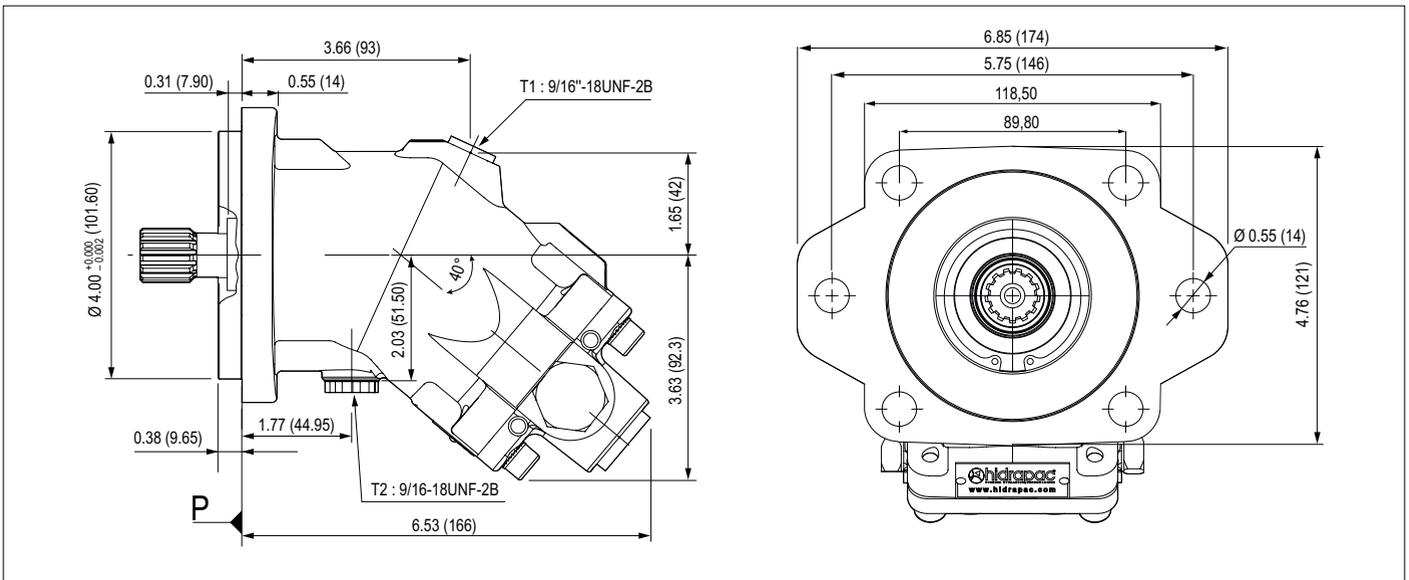
A2MS - 5 cc (SAE B) - 2 Bolt



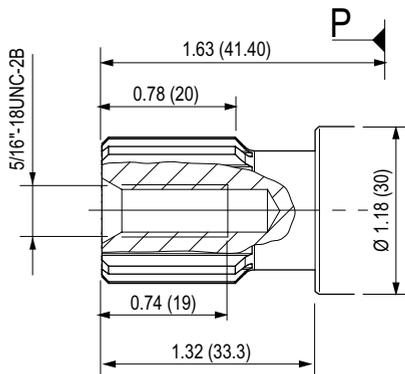
A2MS - 5 cc (SAE B) - 4 Bolt



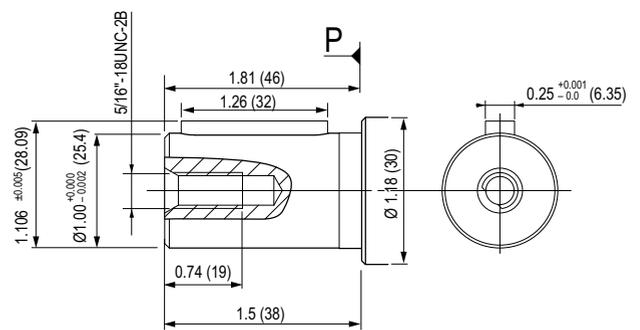
A2MS - 5 cc (SAE B) - 6 Bolt



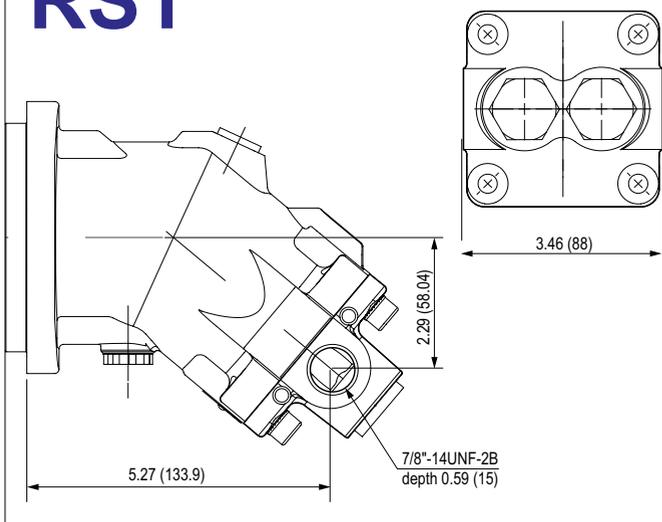
S13 Splined shaft 13T 16/32DP 7/8"



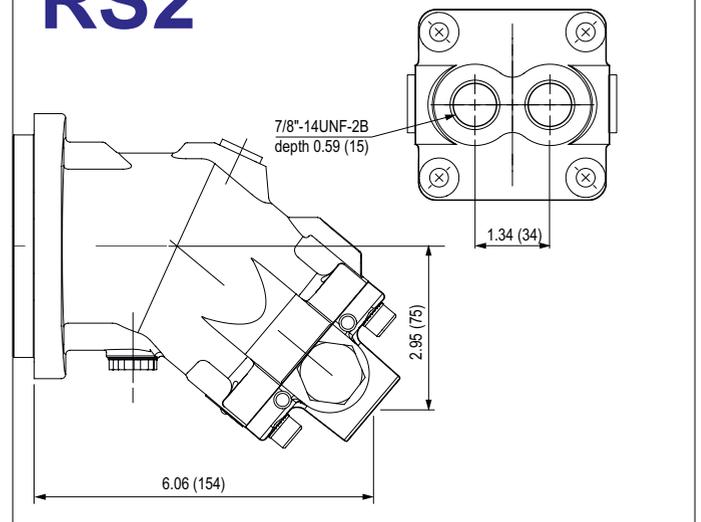
K25 Cylindrical keyed shaft Ø 1"



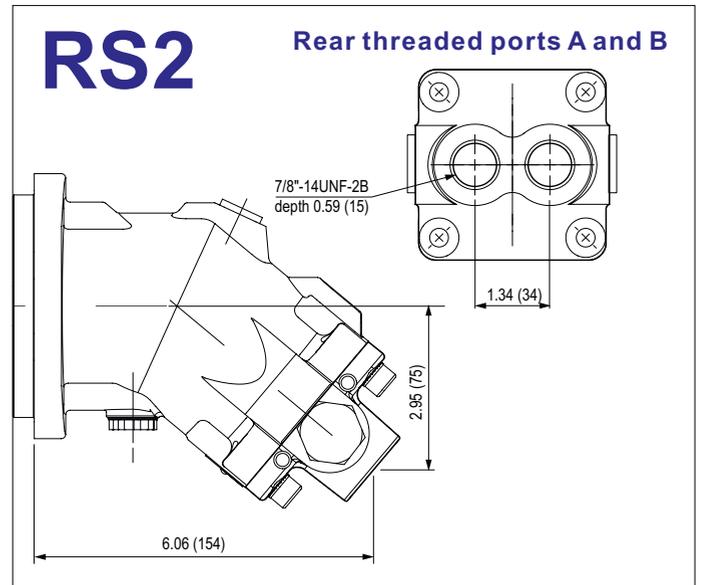
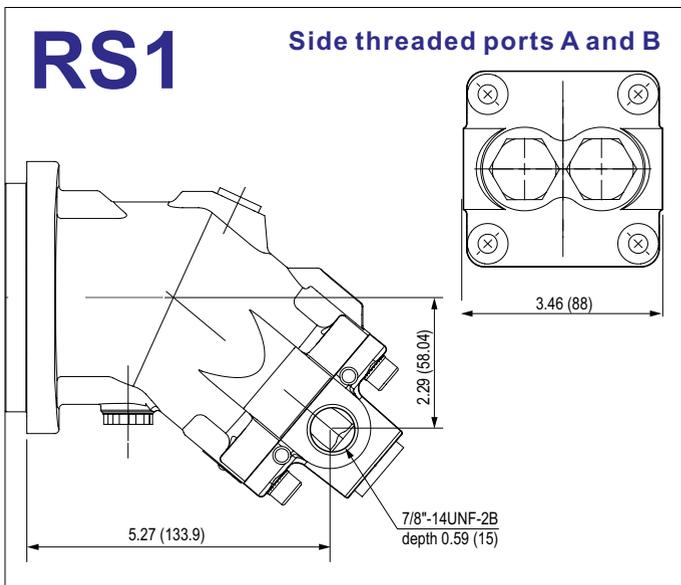
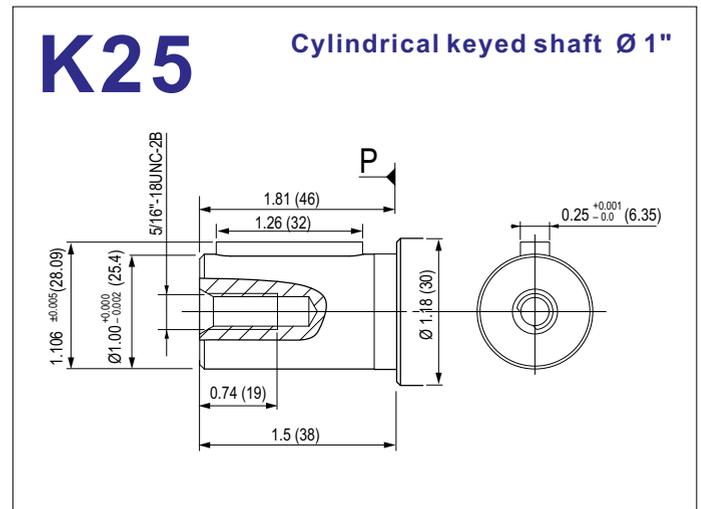
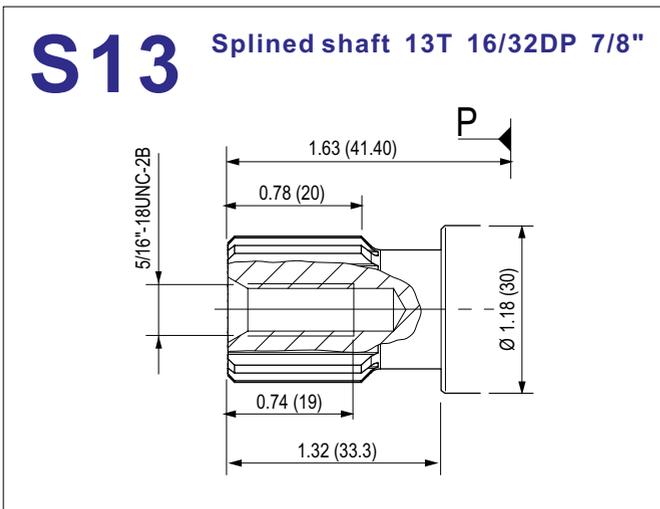
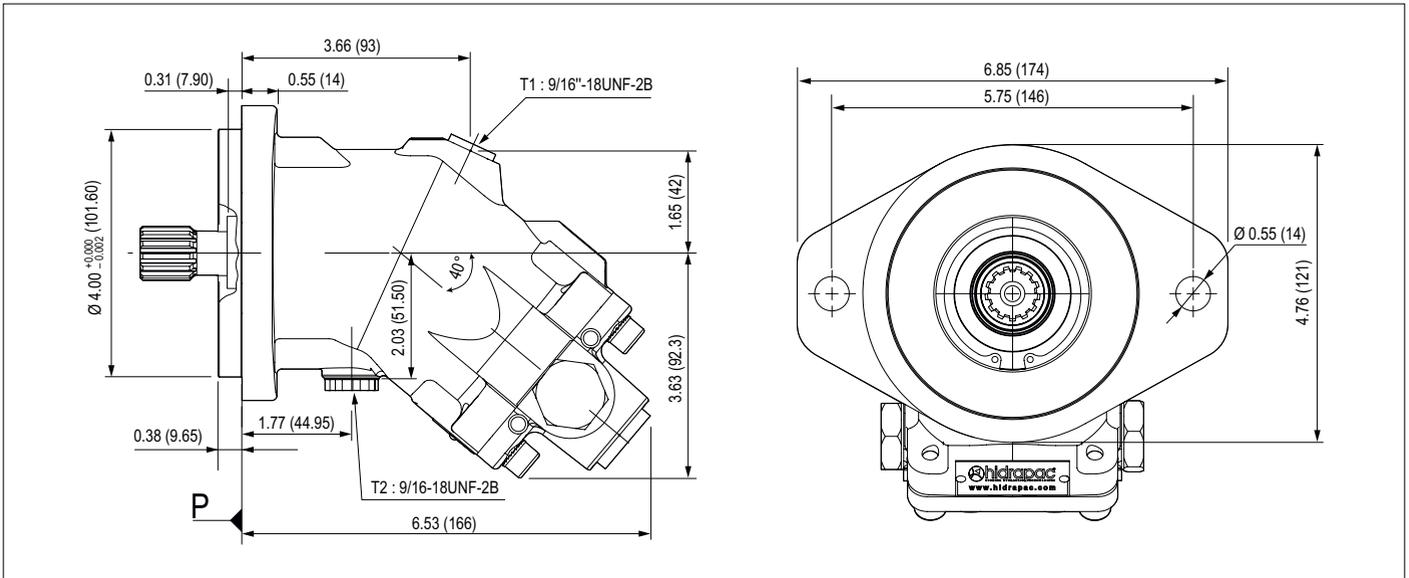
RS1 Side threaded ports A and B



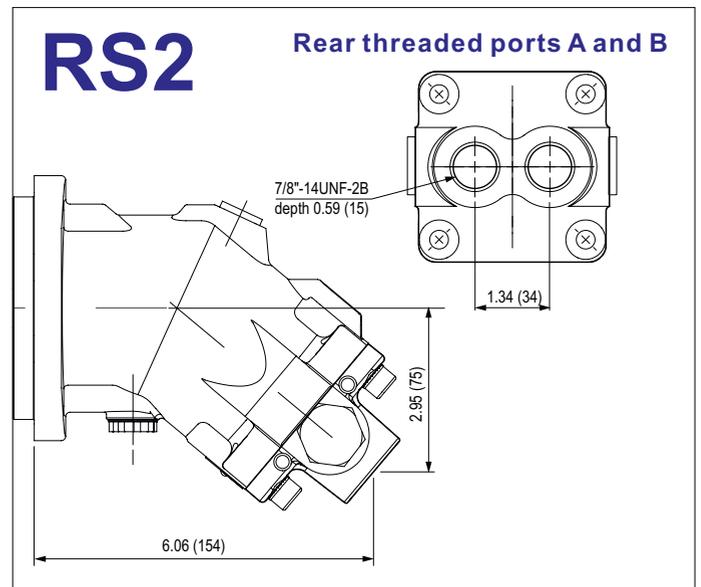
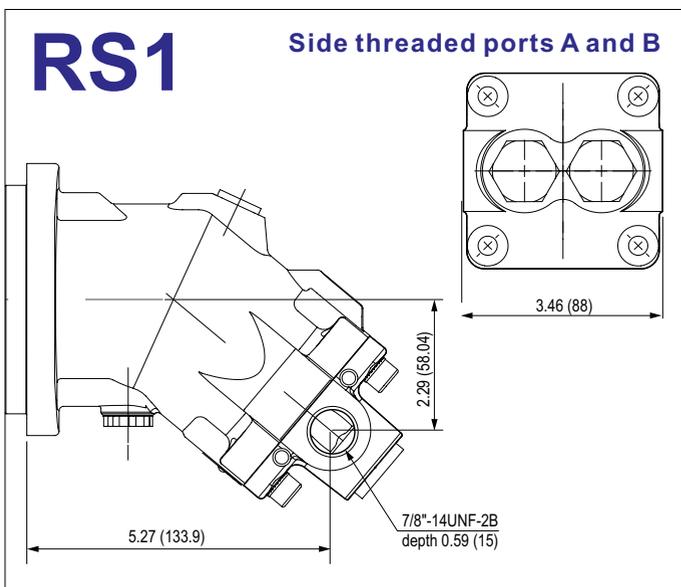
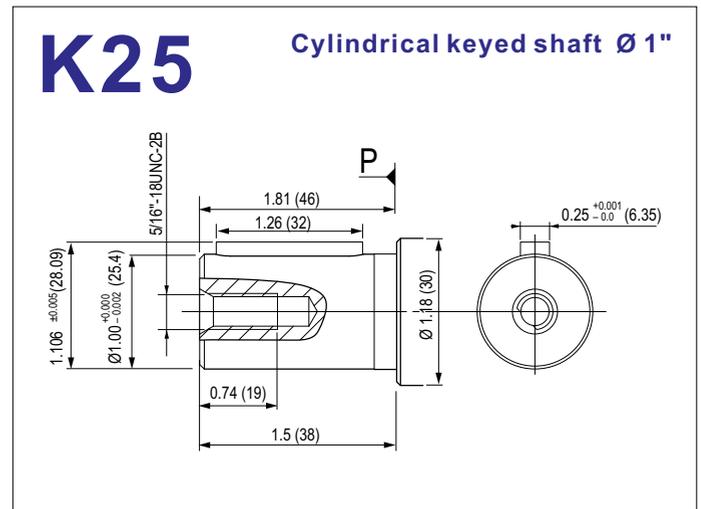
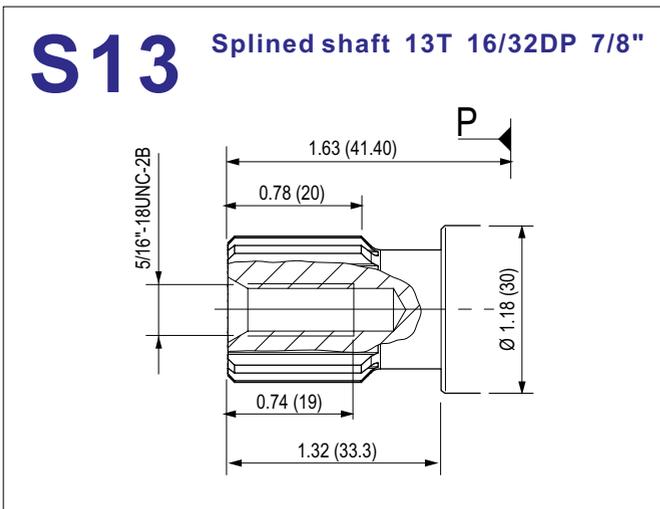
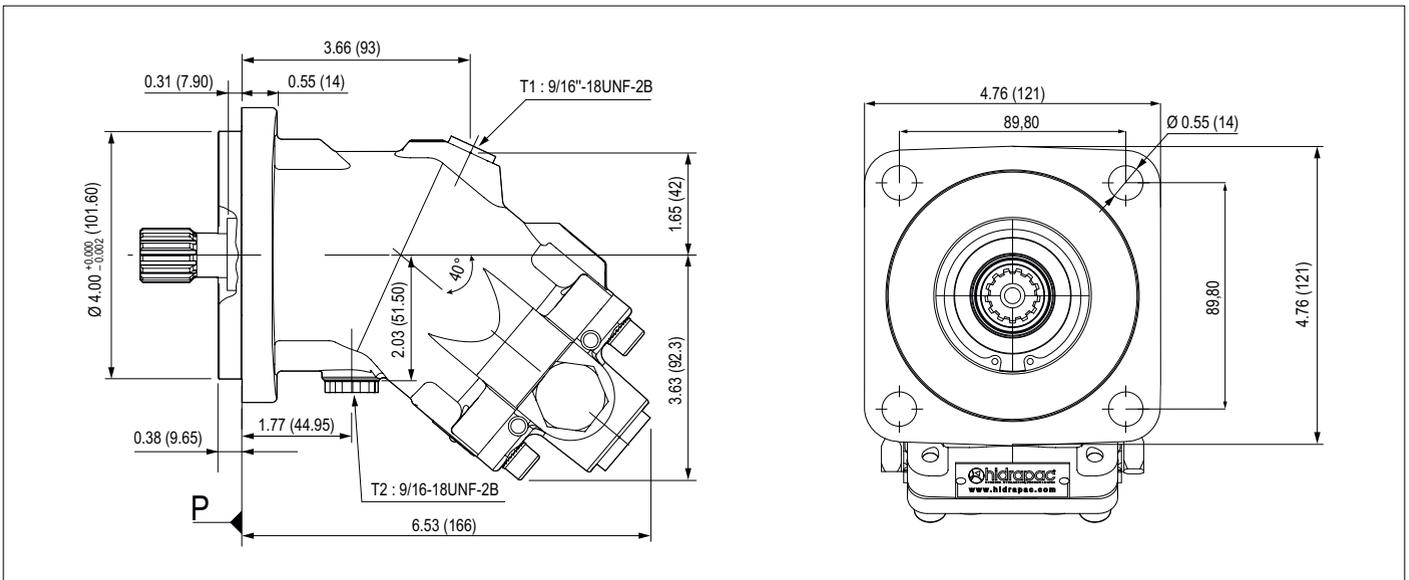
RS2 Rear threaded ports A and B



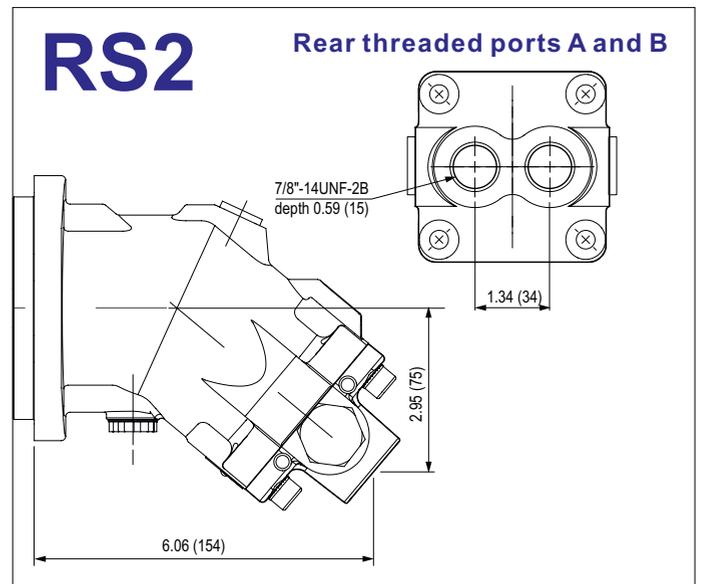
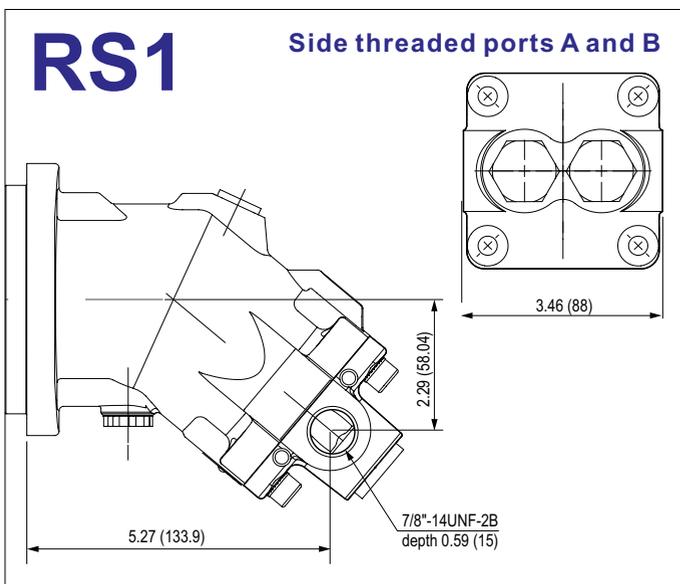
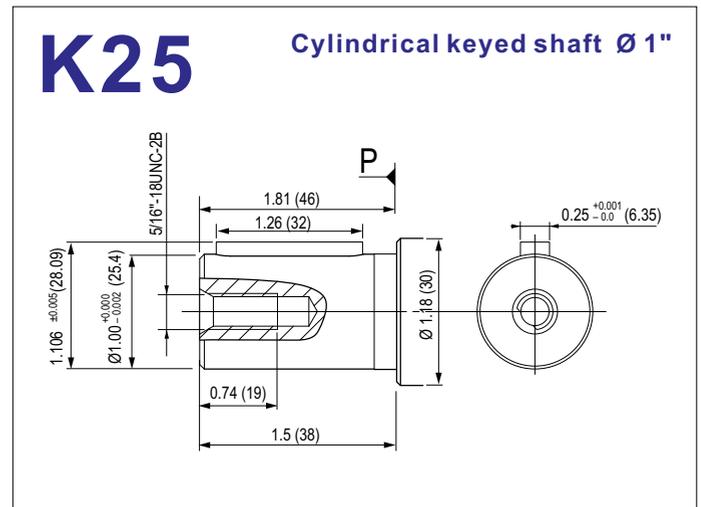
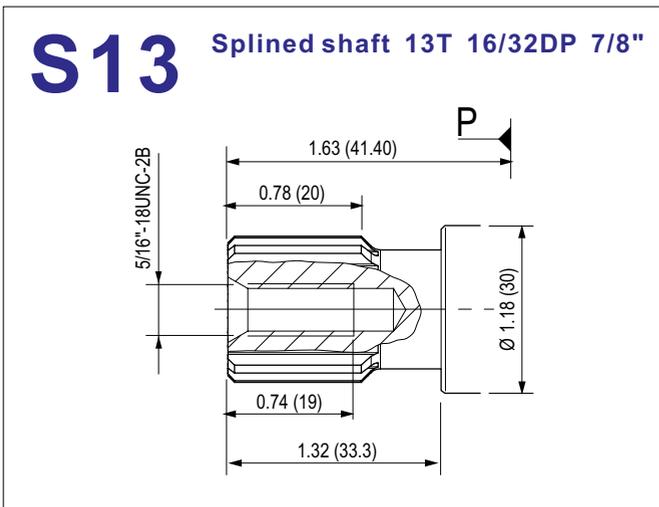
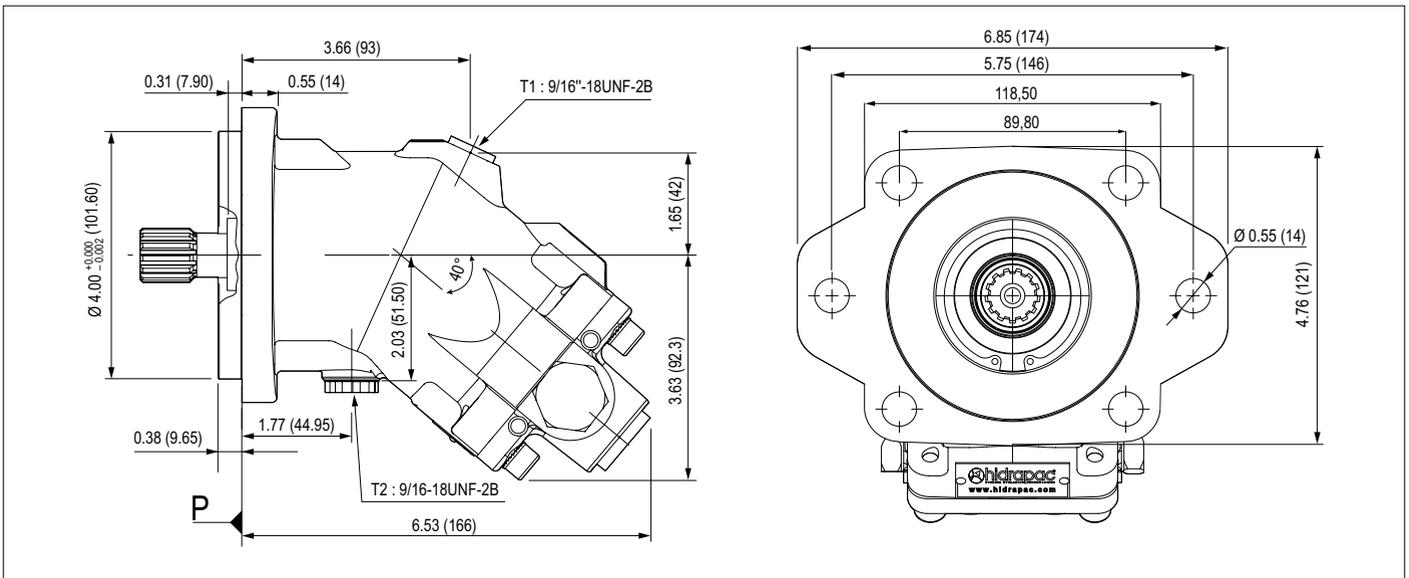
A2MS - 10 cc (SAE B) - 2 Bolt



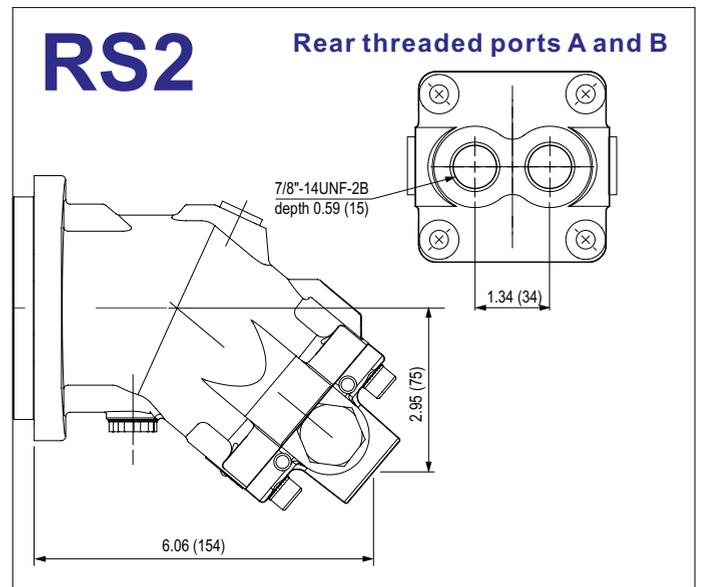
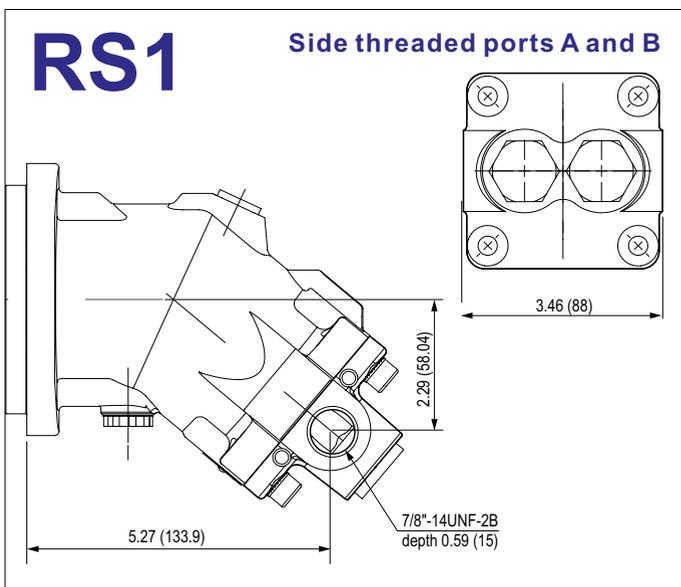
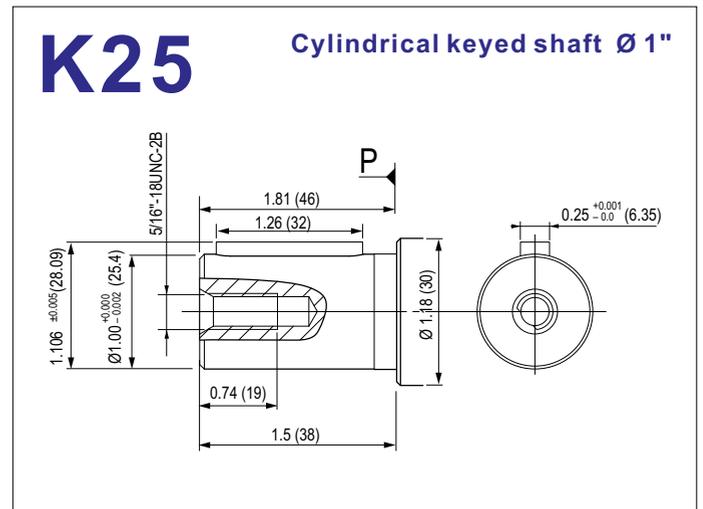
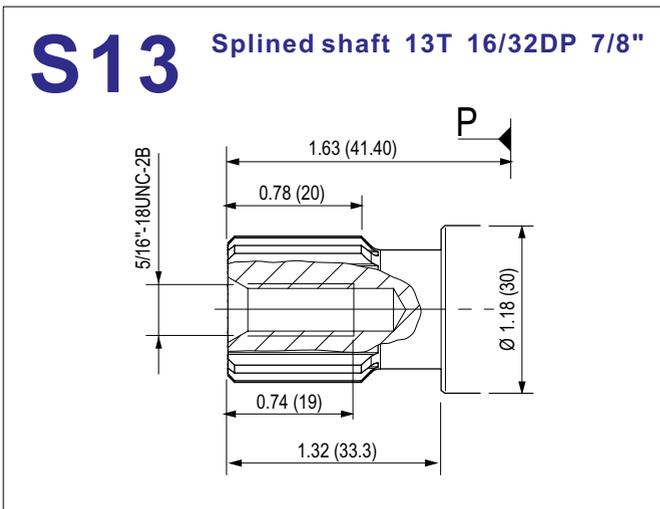
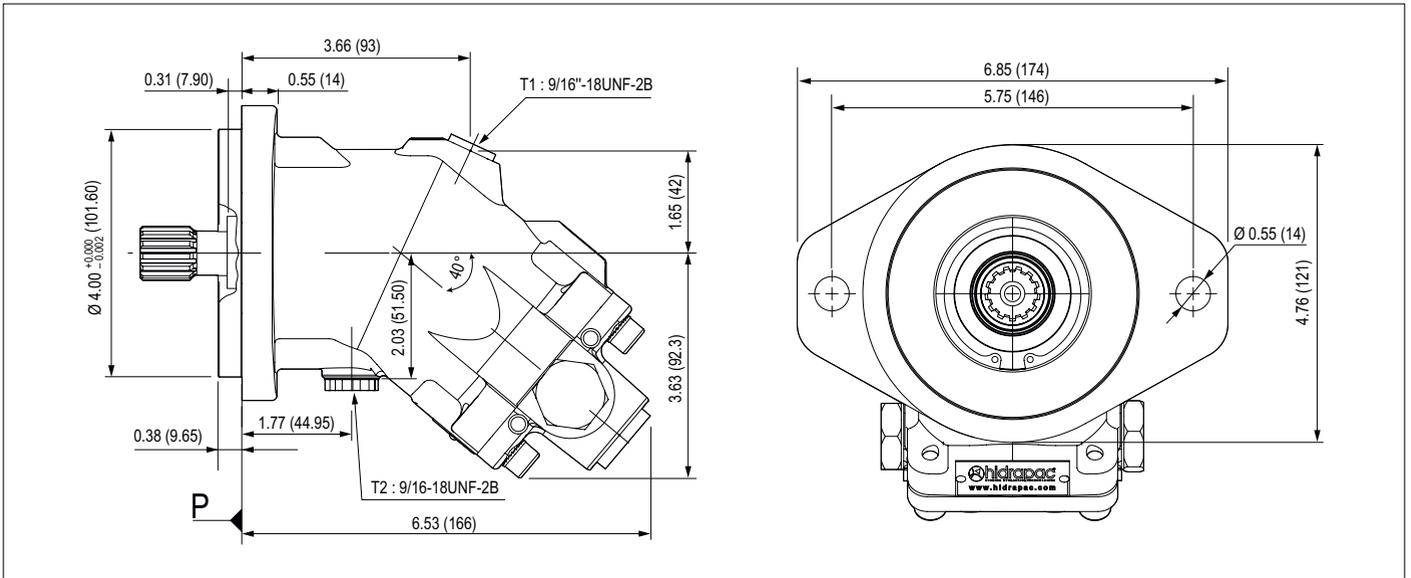
A2MS - 10 cc (SAE B) - 4 Bolt



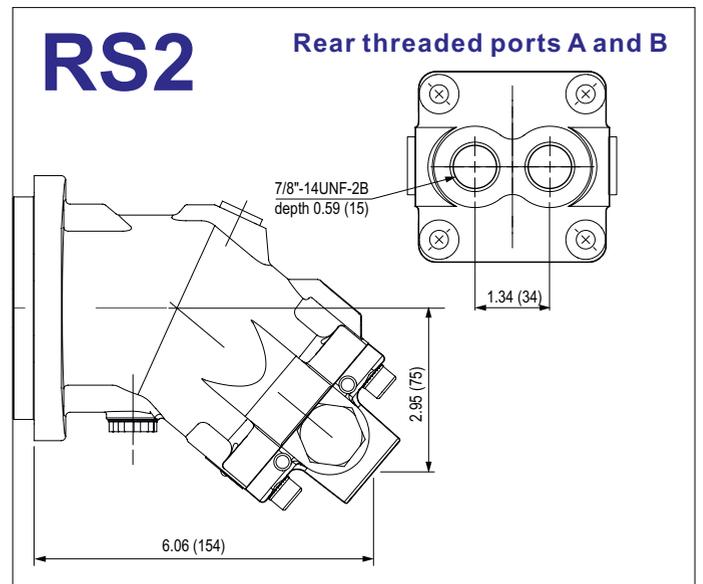
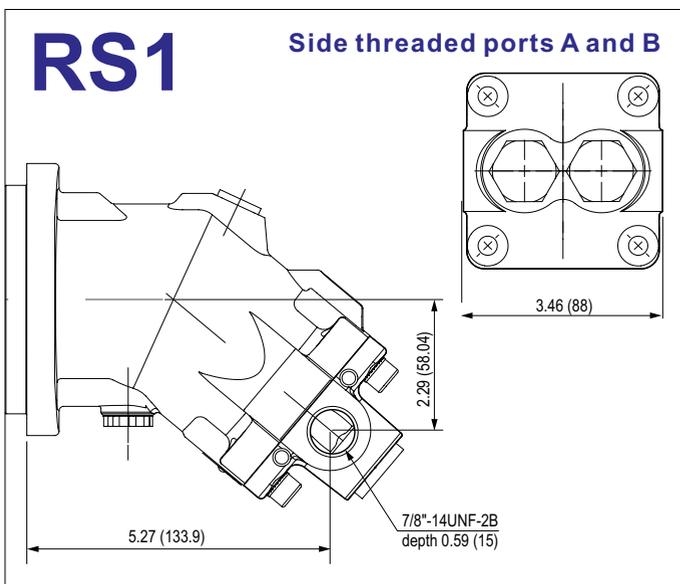
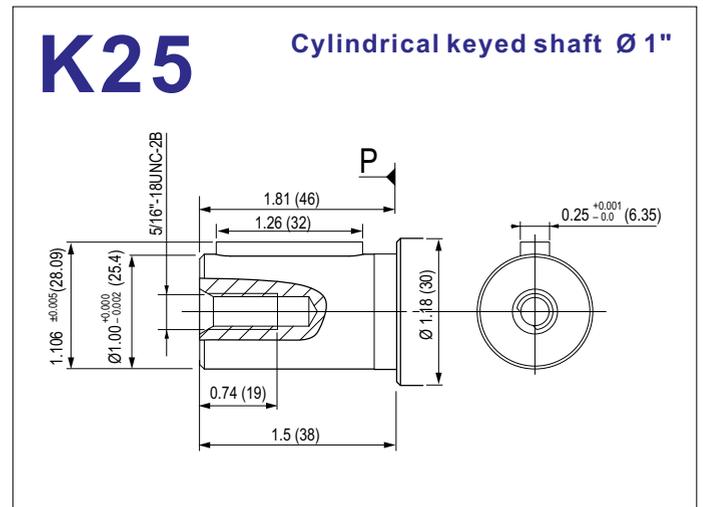
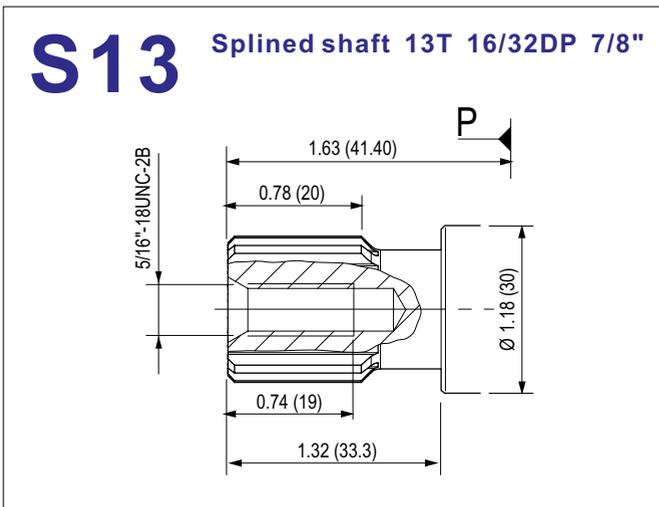
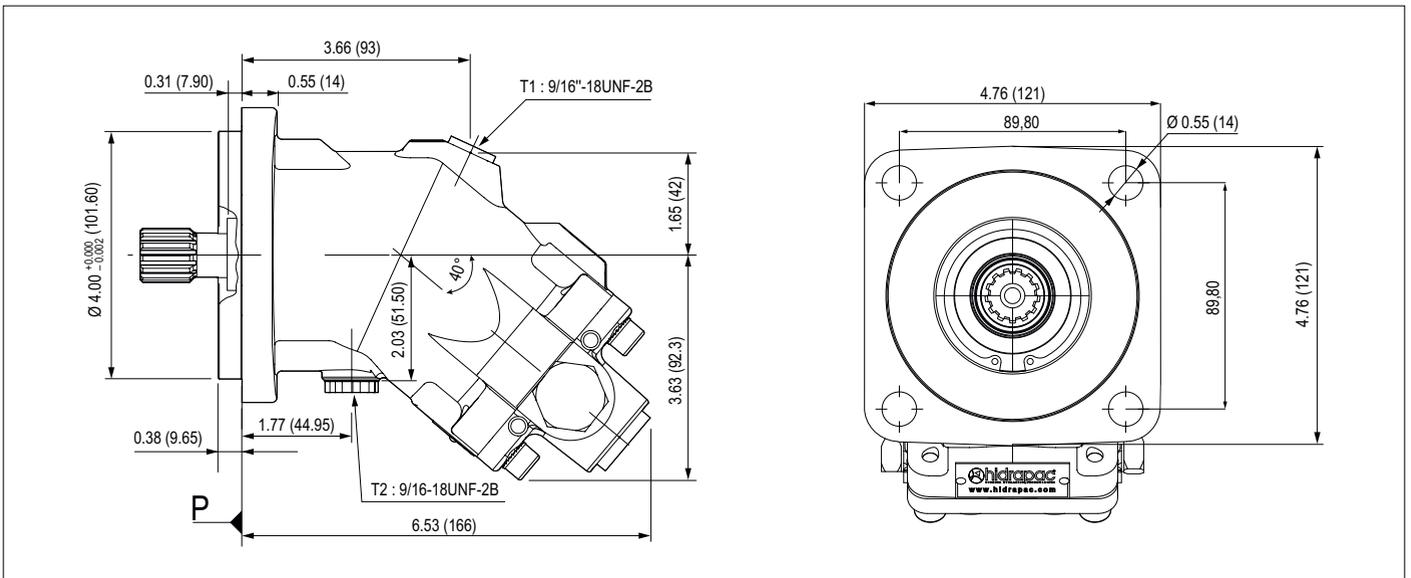
A2MS - 10 cc (SAE B) - 6 Bolt



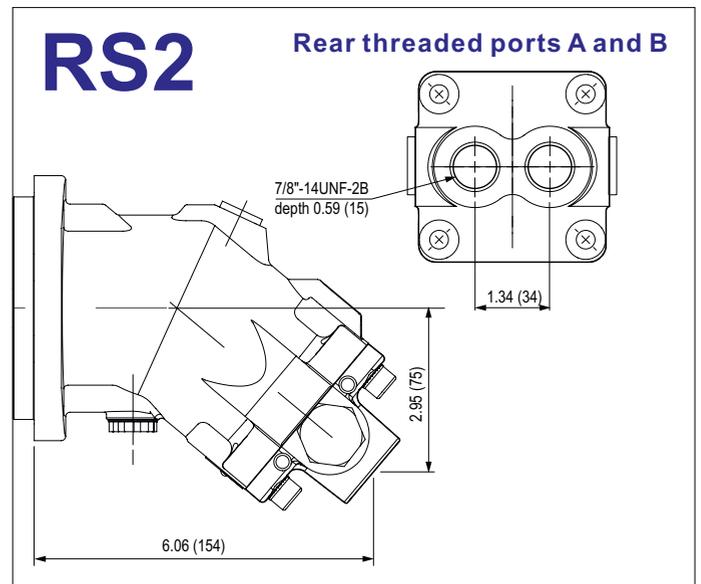
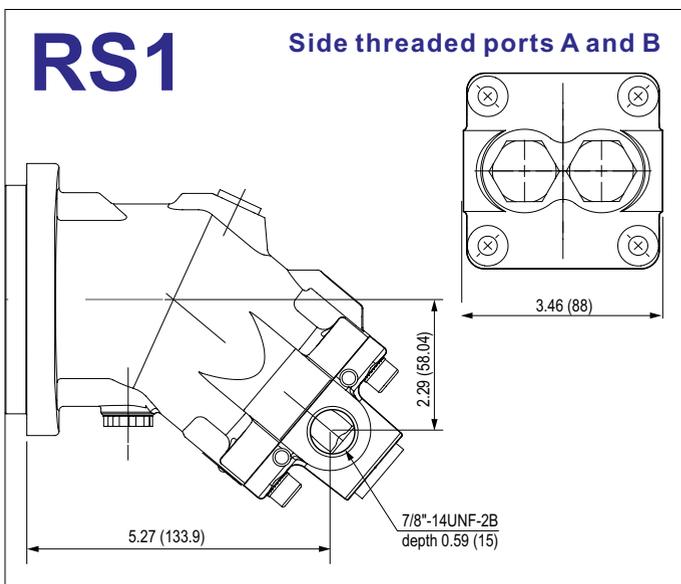
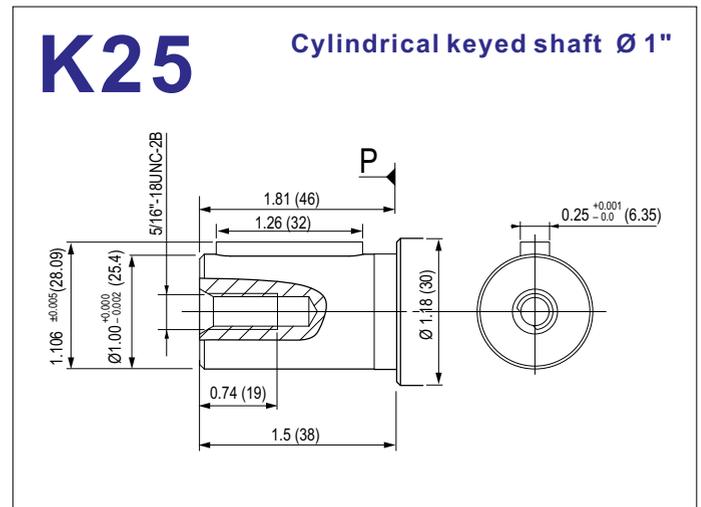
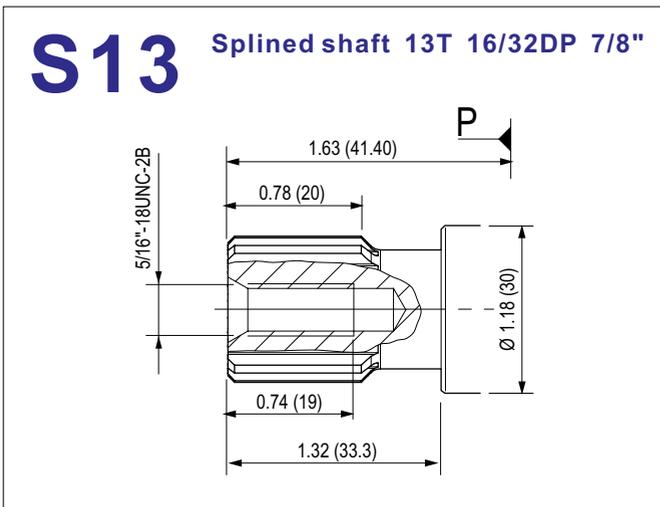
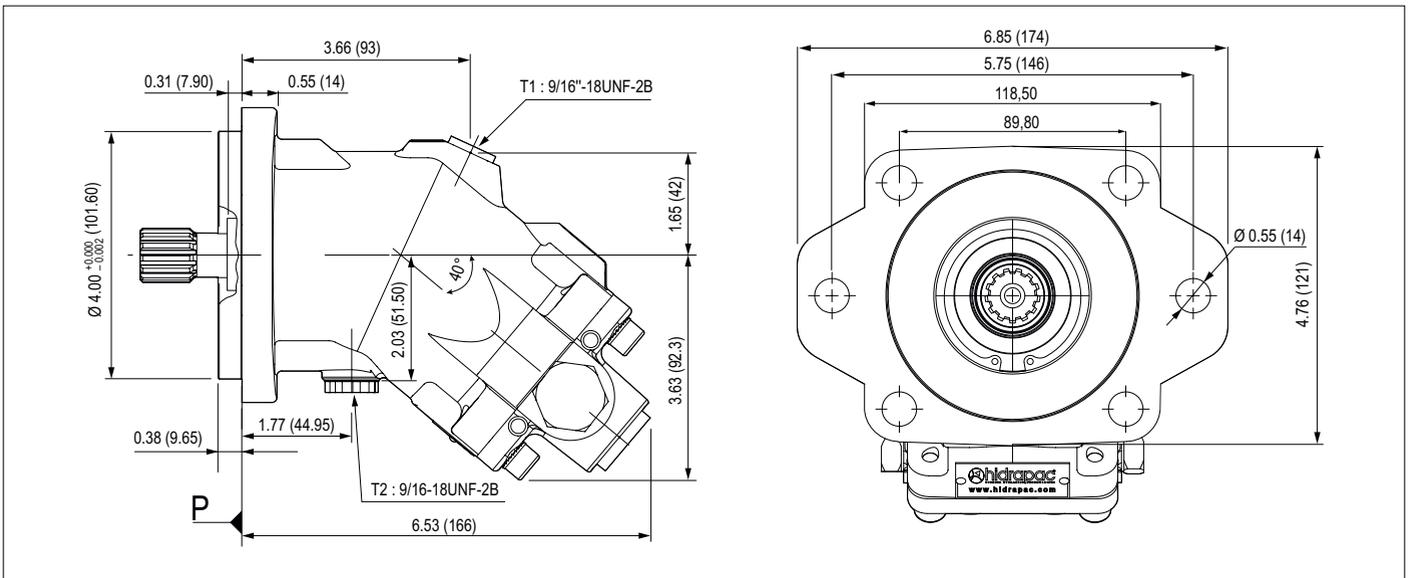
A2MS - 12 cc (SAE B) - 2 Bolt



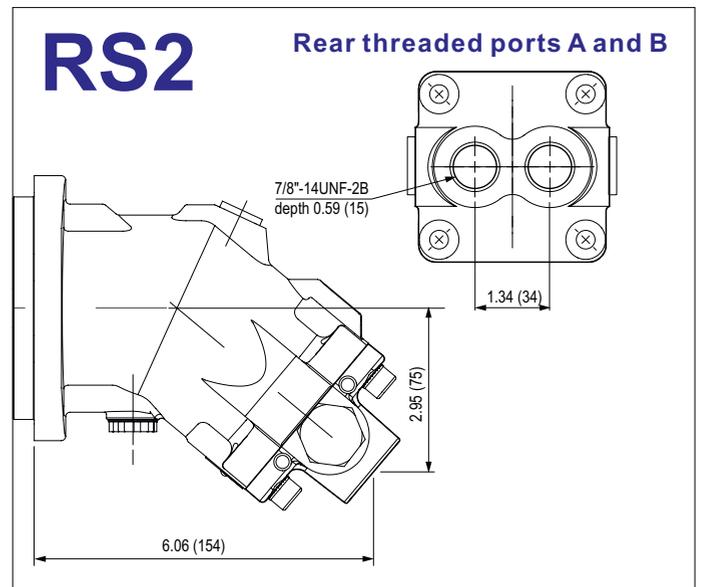
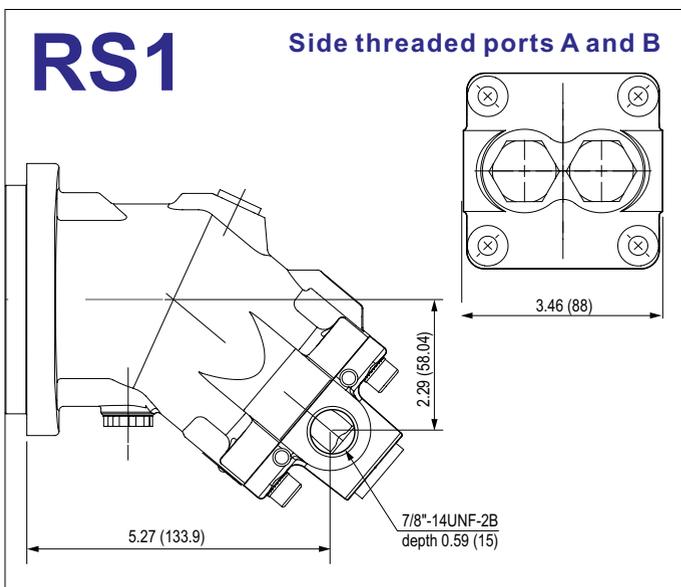
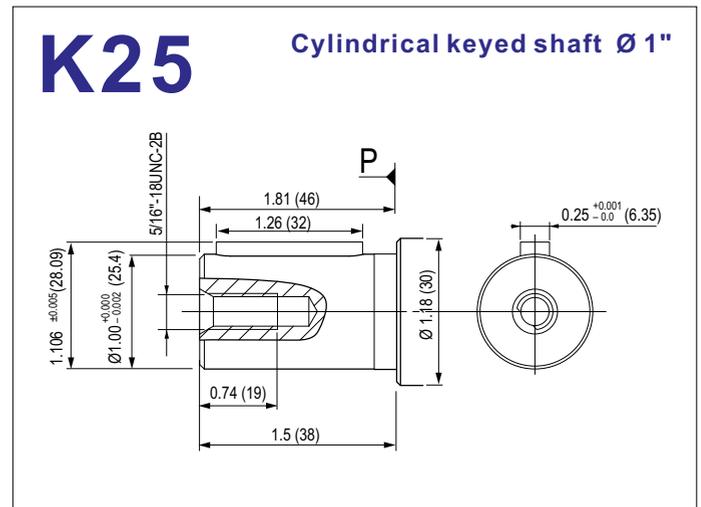
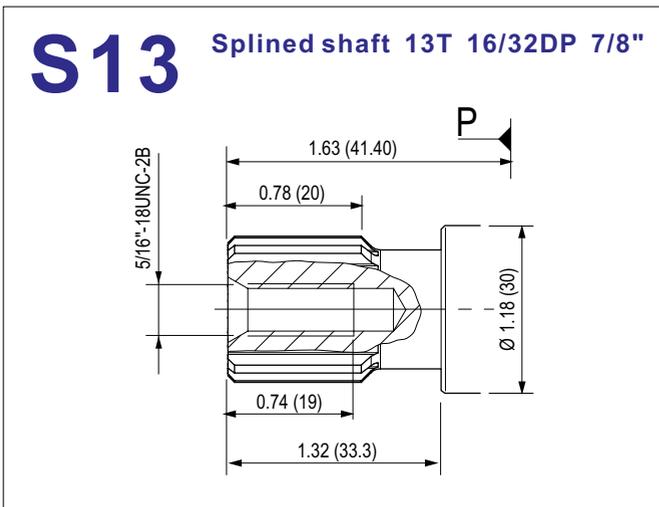
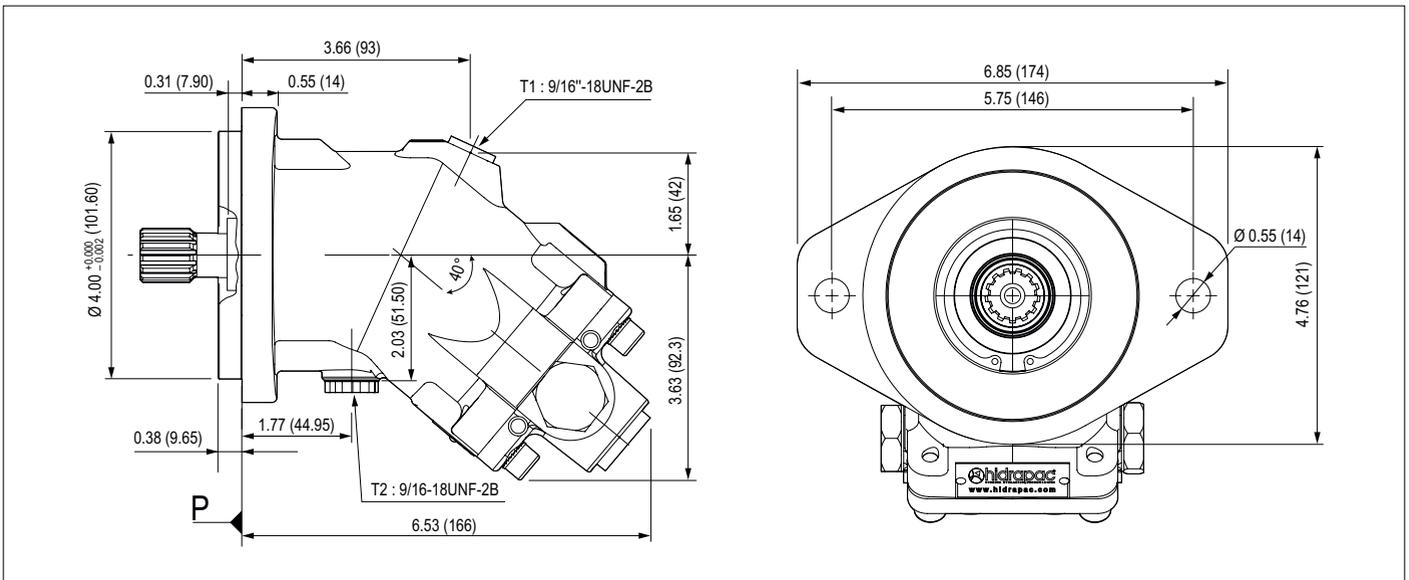
A2MS - 12 cc (SAE B) - 4 Bolt



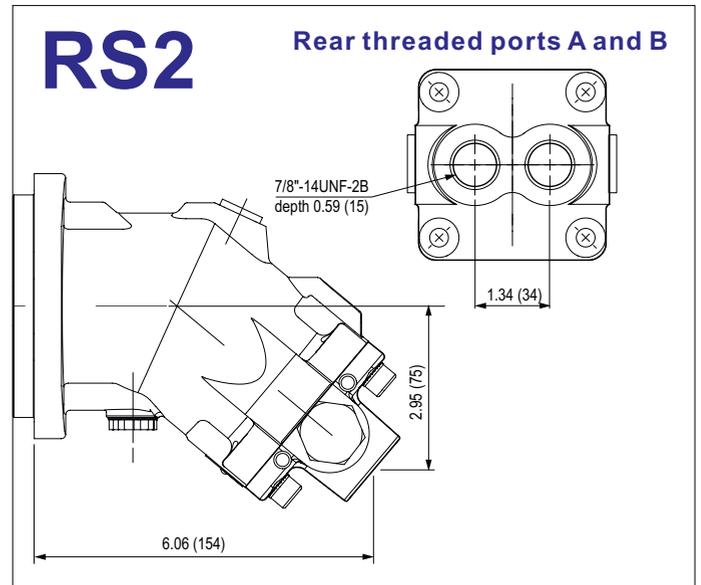
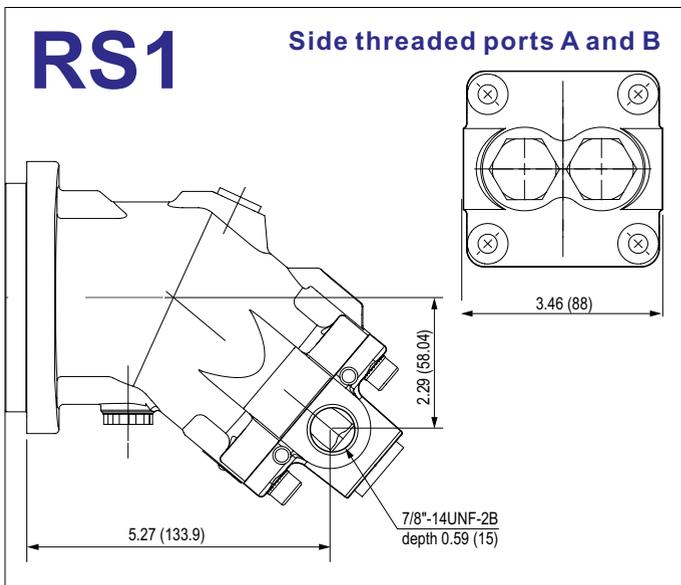
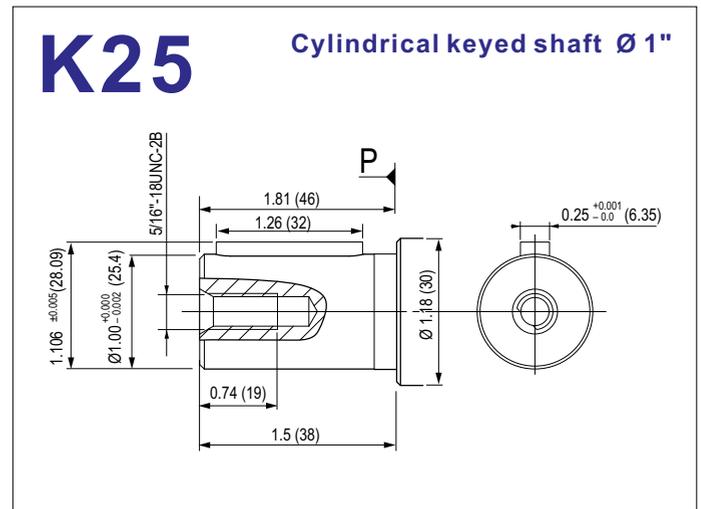
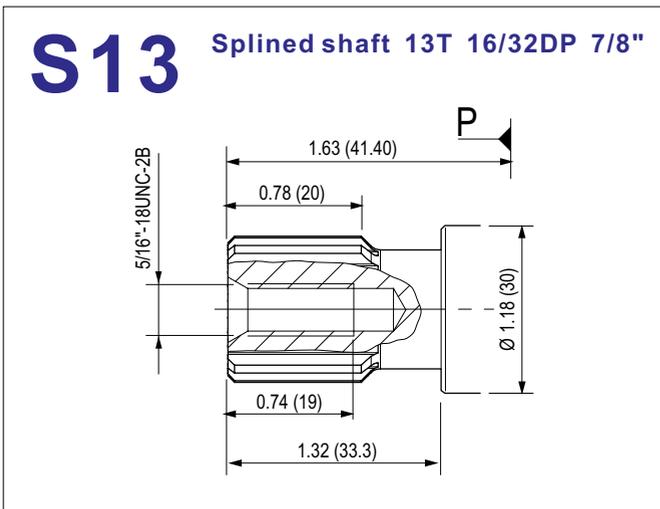
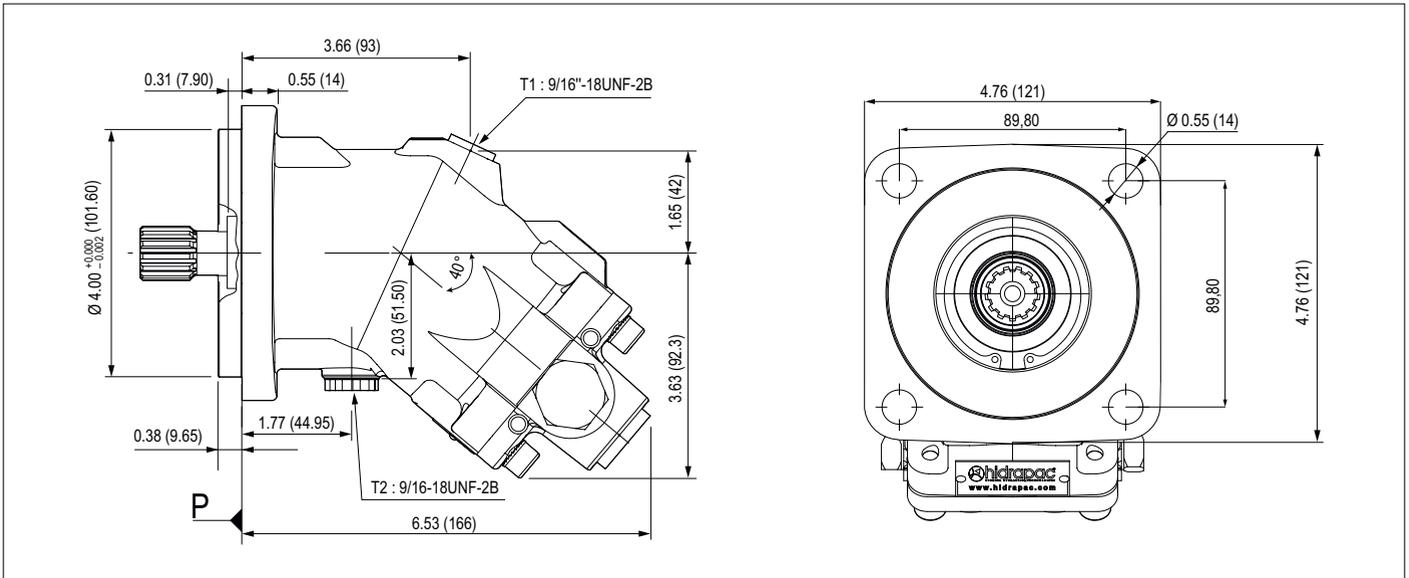
A2MS - 12 cc (SAE B) - 6 Bolt



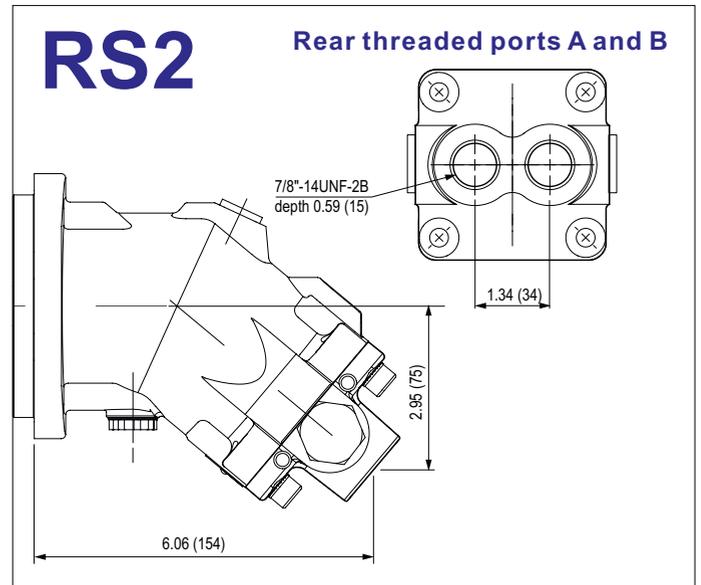
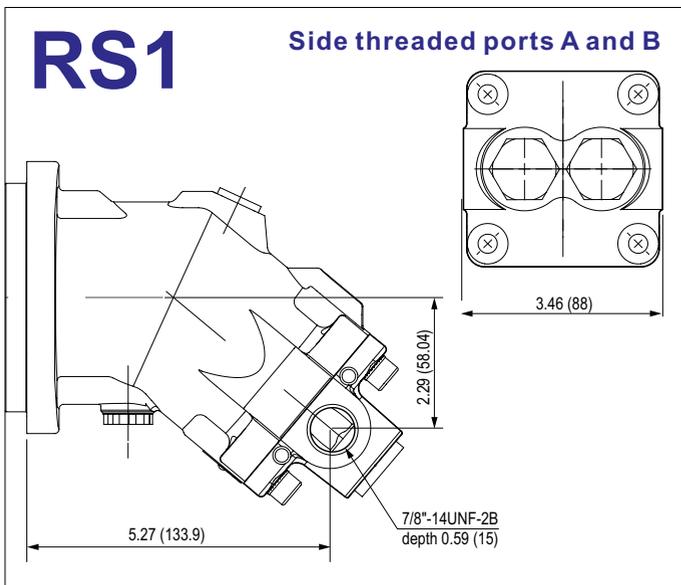
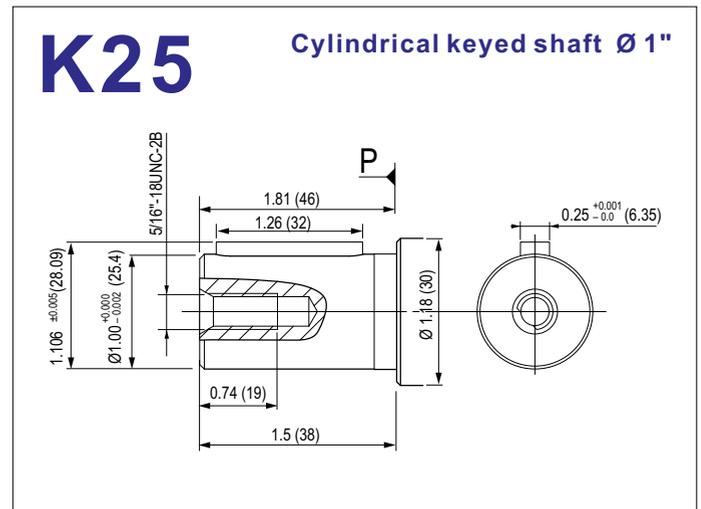
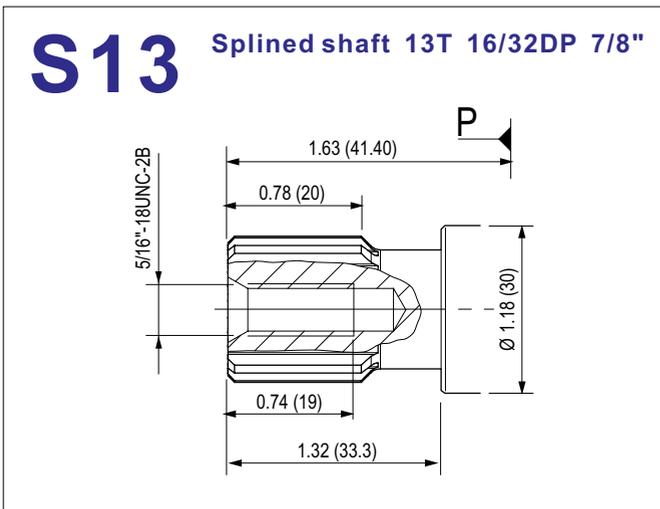
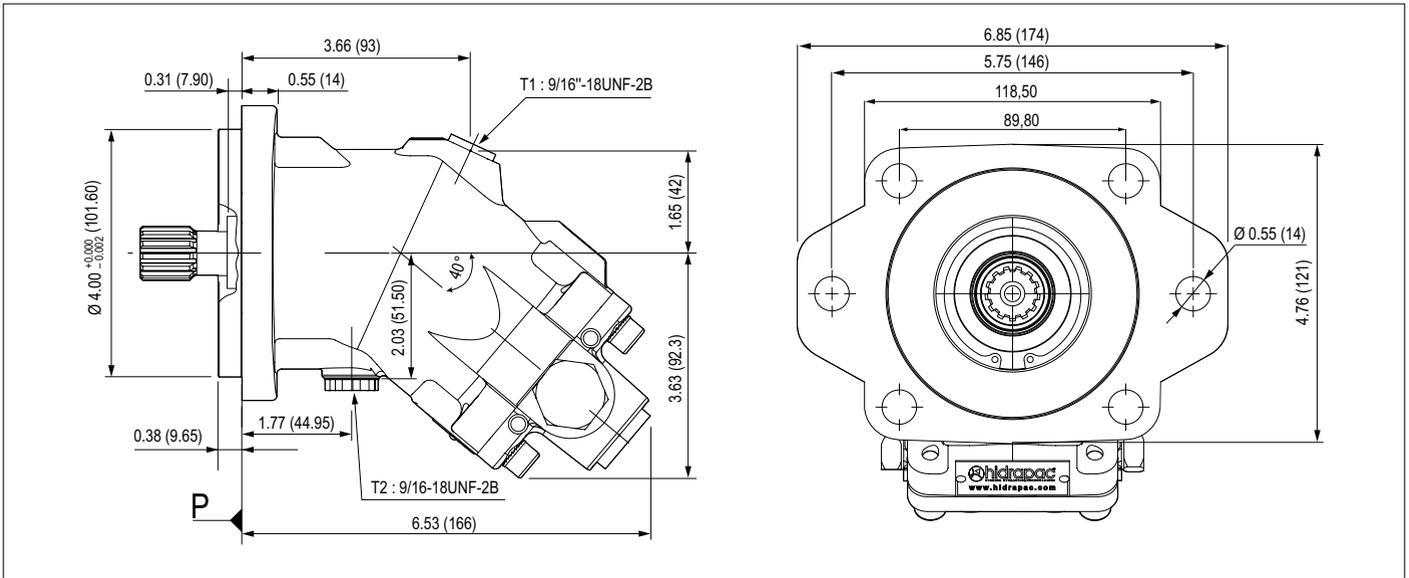
A2MS - 18 cc (SAE B) - 2 Bolt



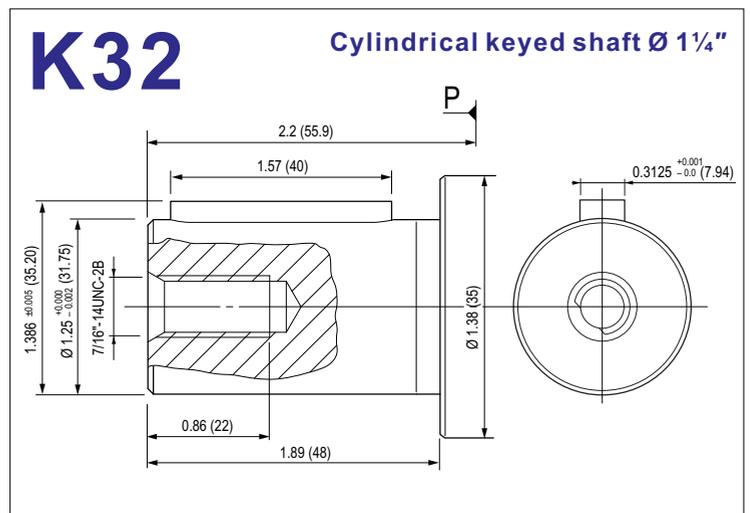
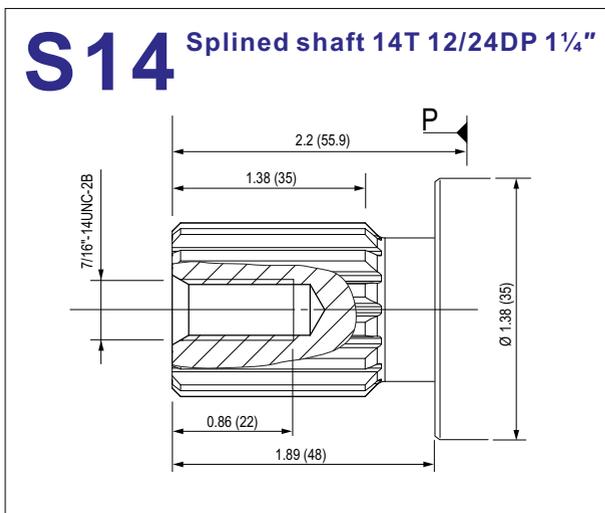
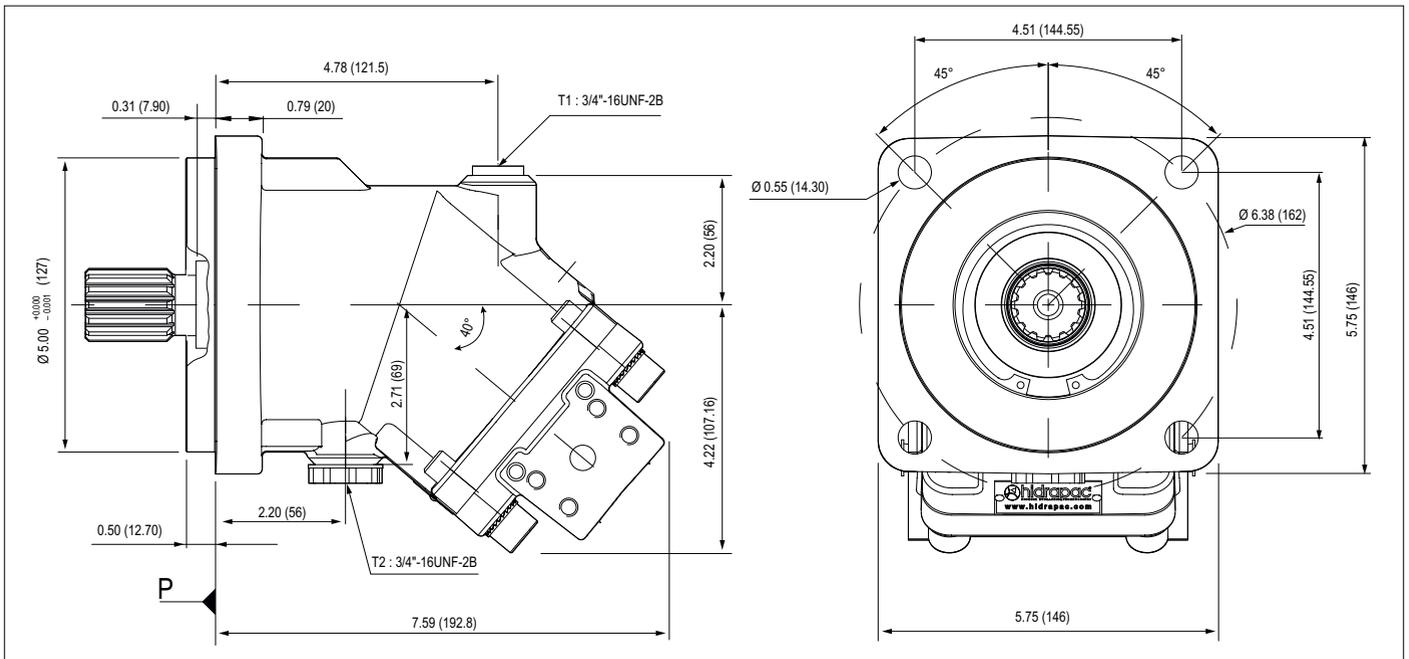
A2MS - 18 cc (SAE B) - 4 Bolt

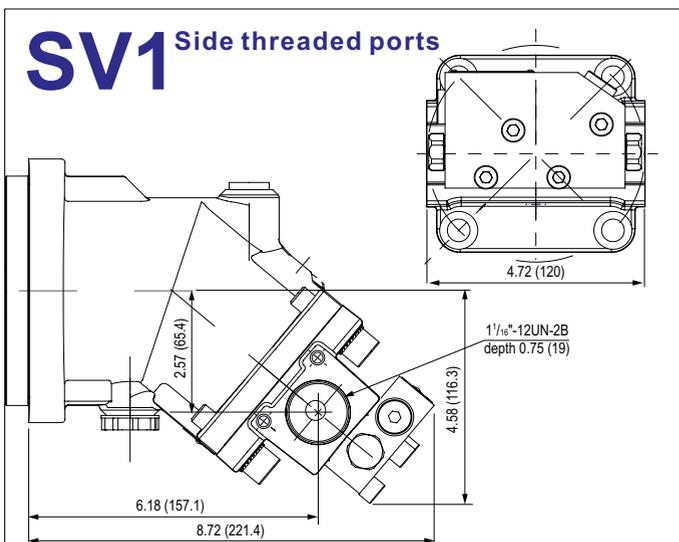
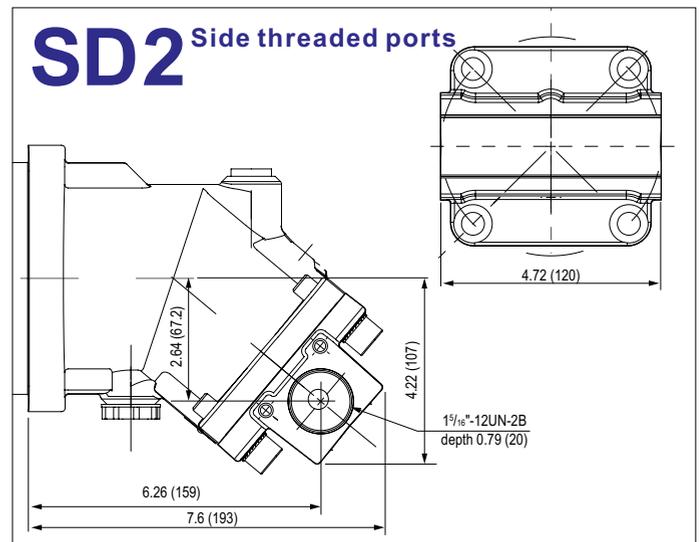
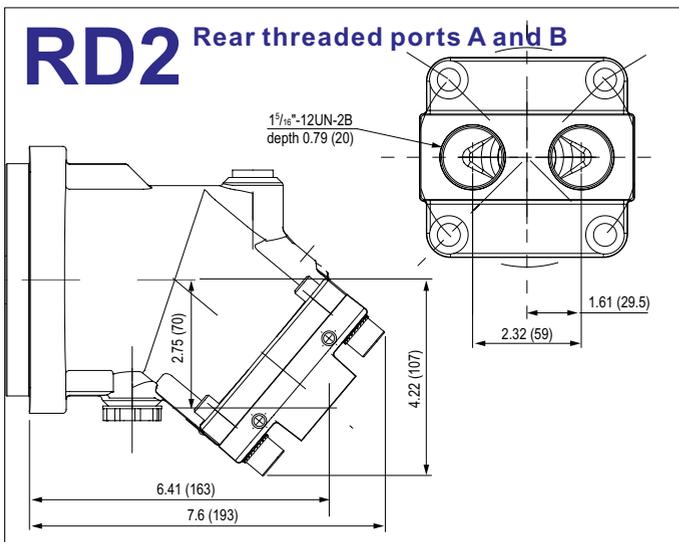
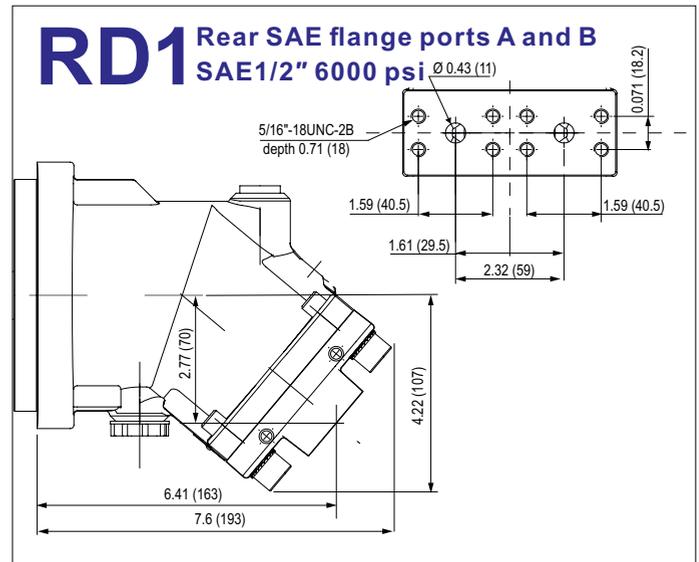
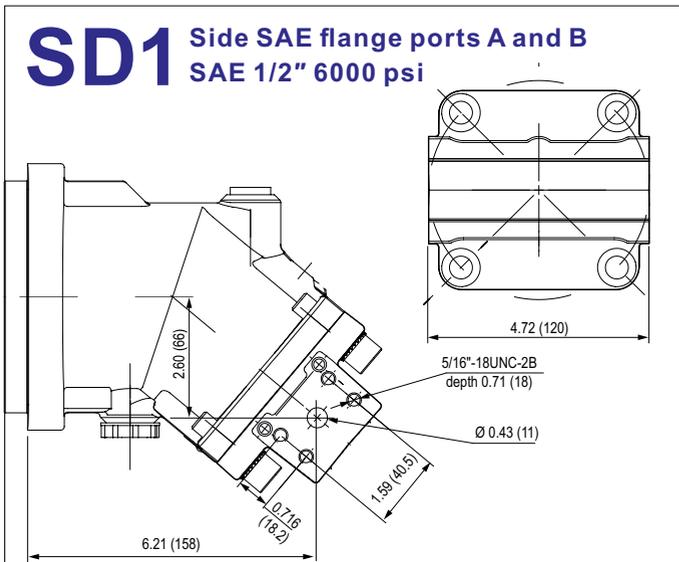


A2MS - 18 cc (SAE B) - 6 Bolt

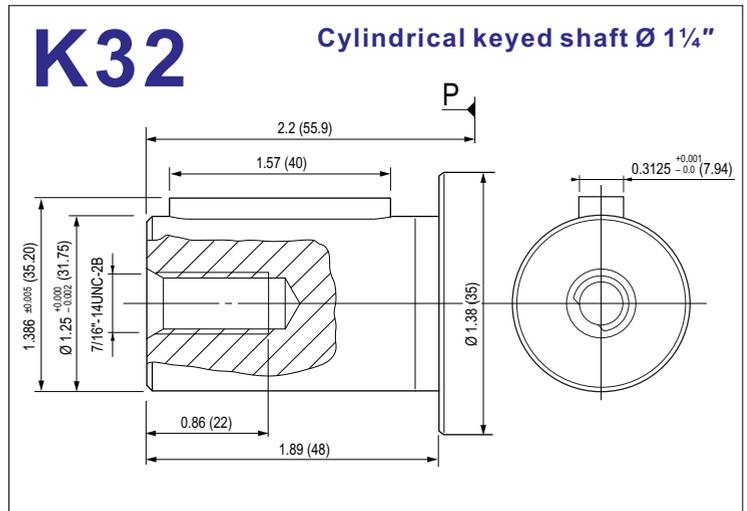
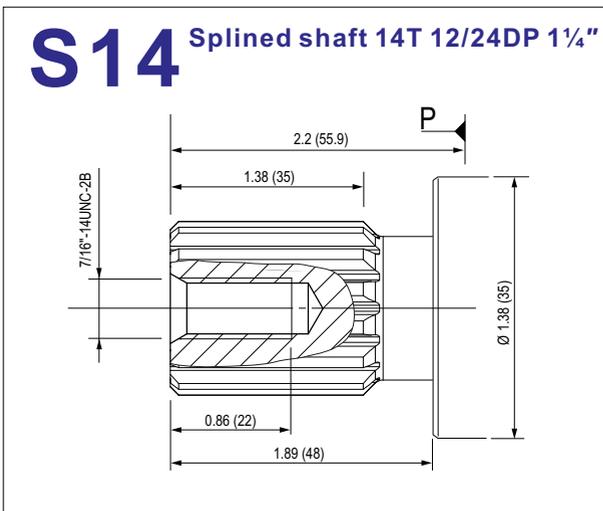
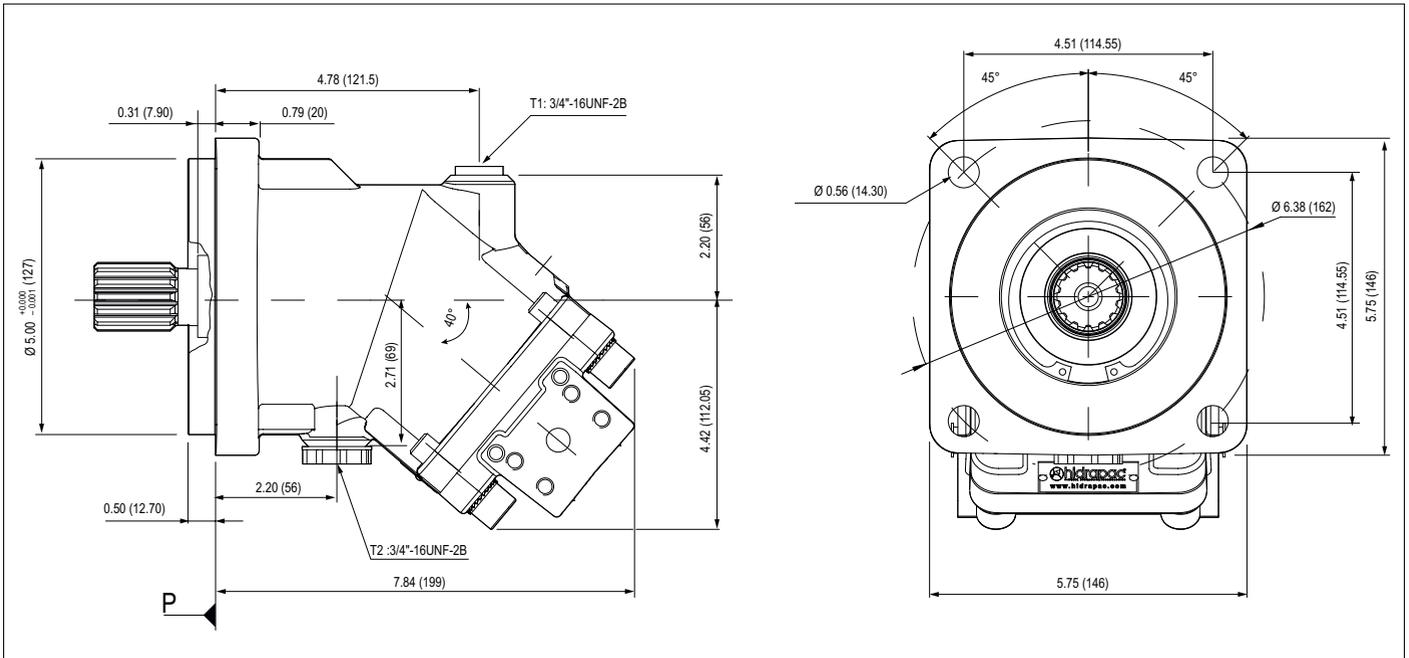


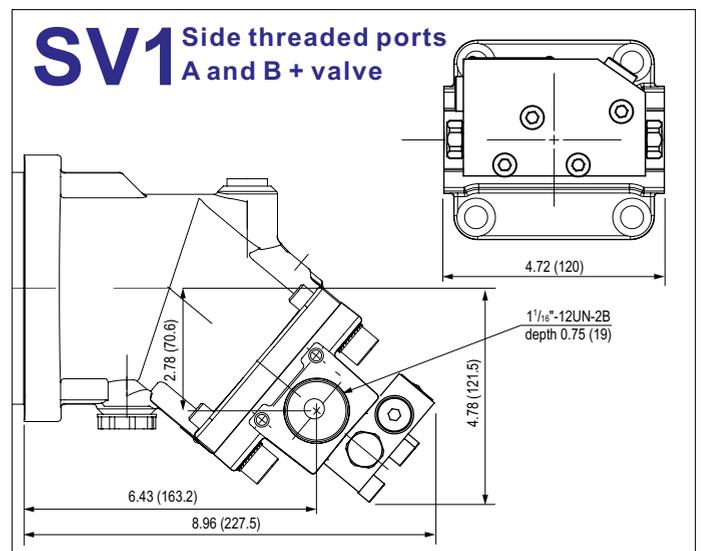
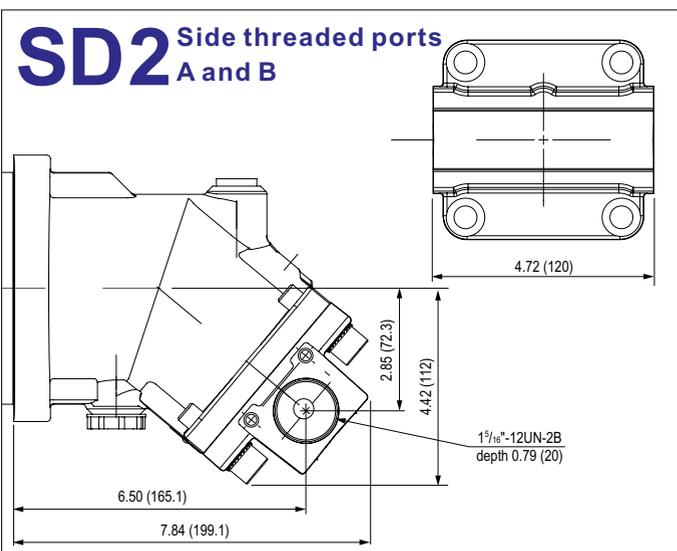
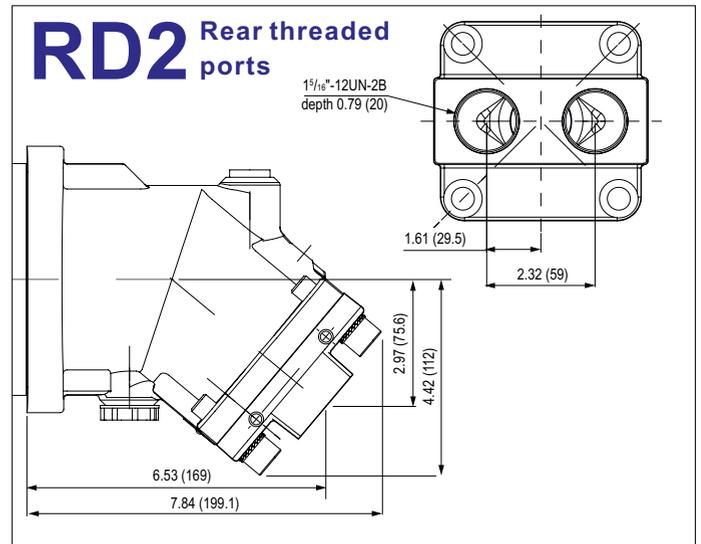
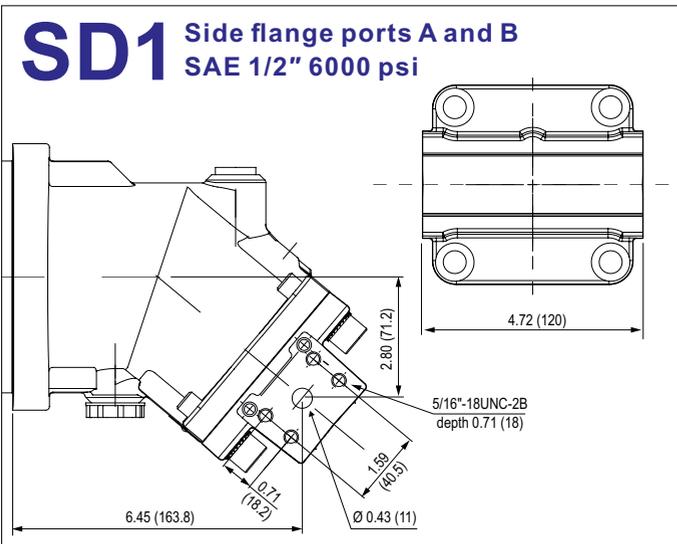
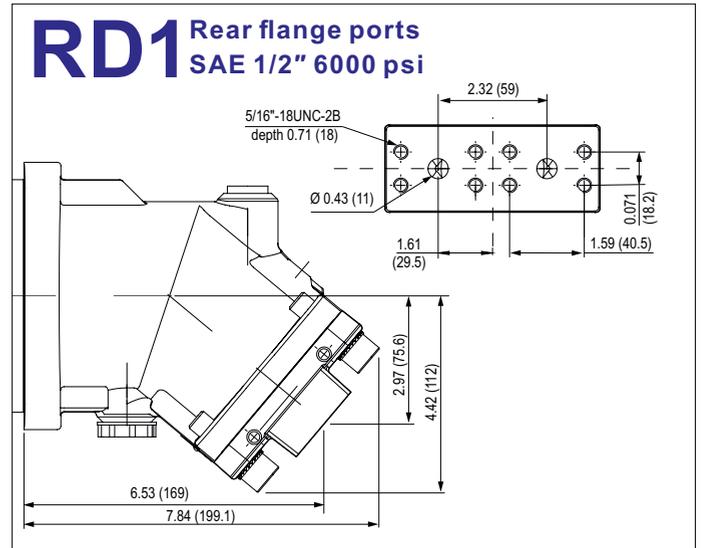
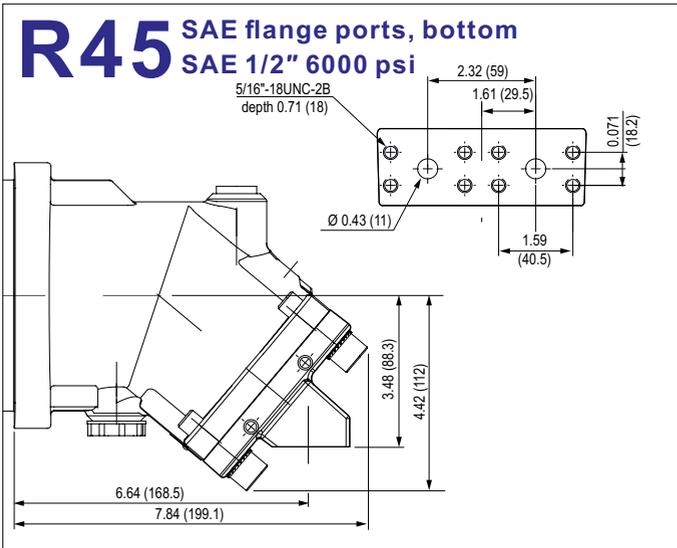
A2MS - 25 cc (SAE C) - 4 Bolt



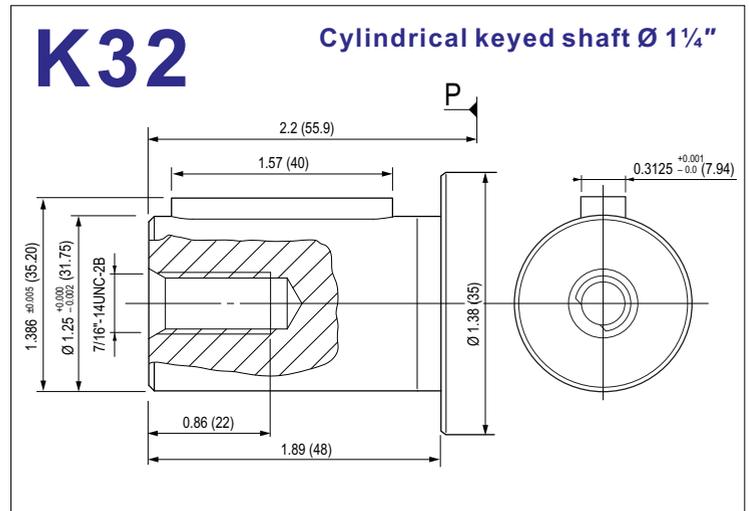
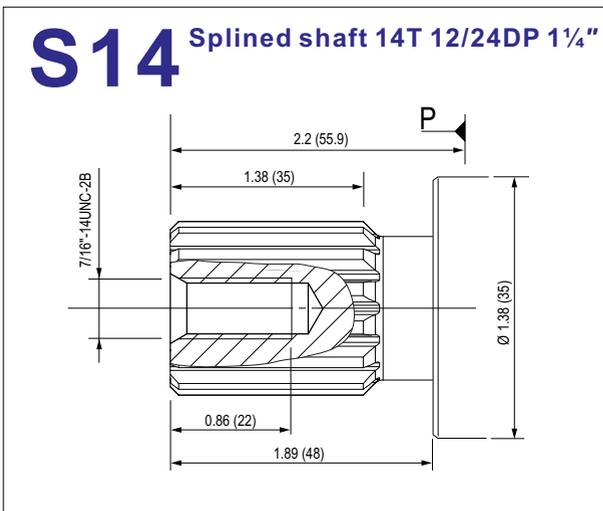
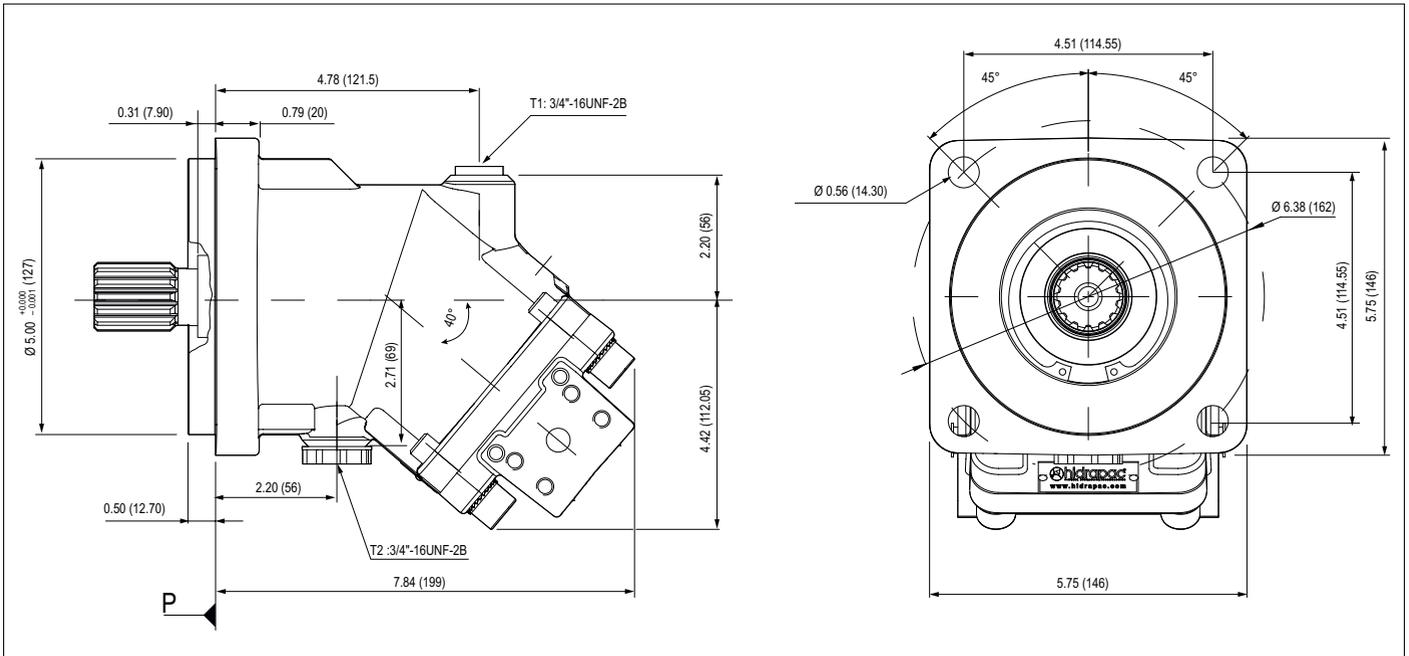


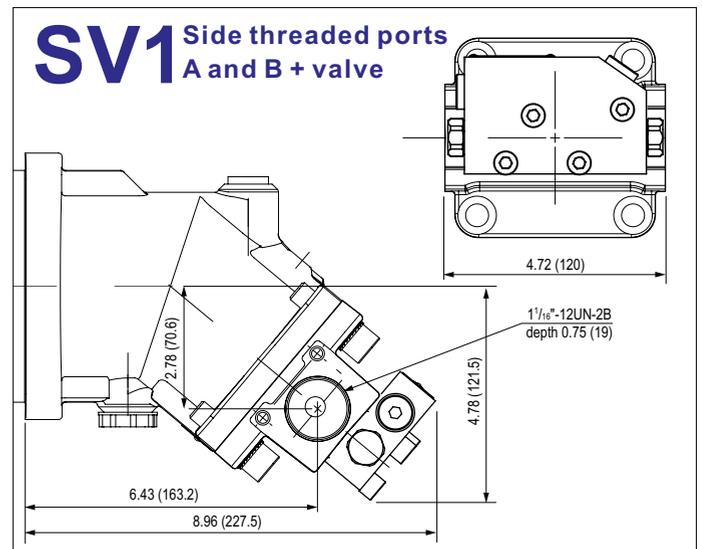
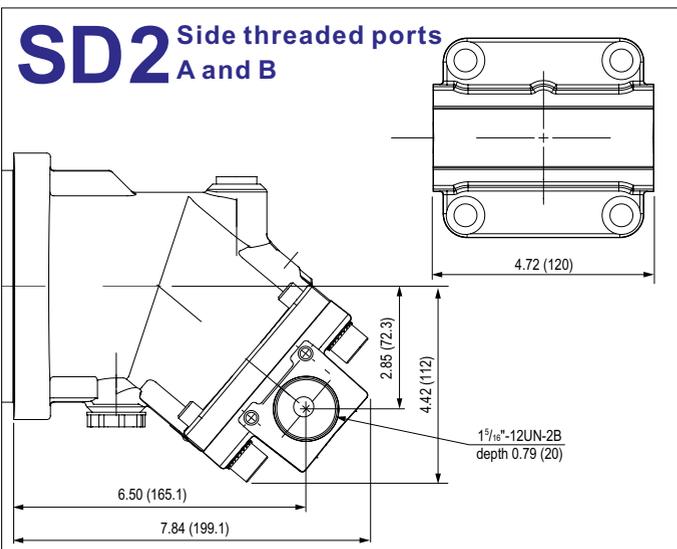
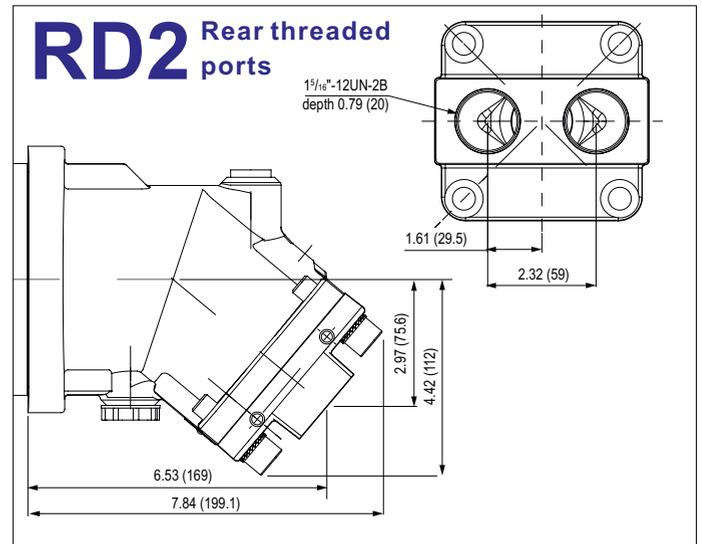
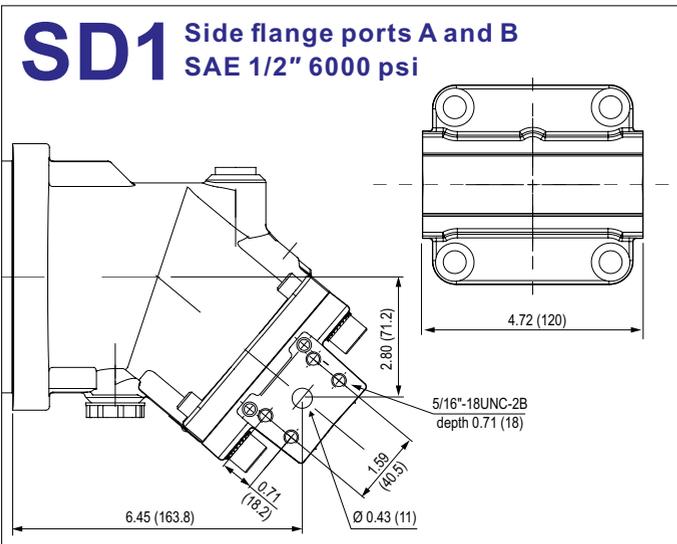
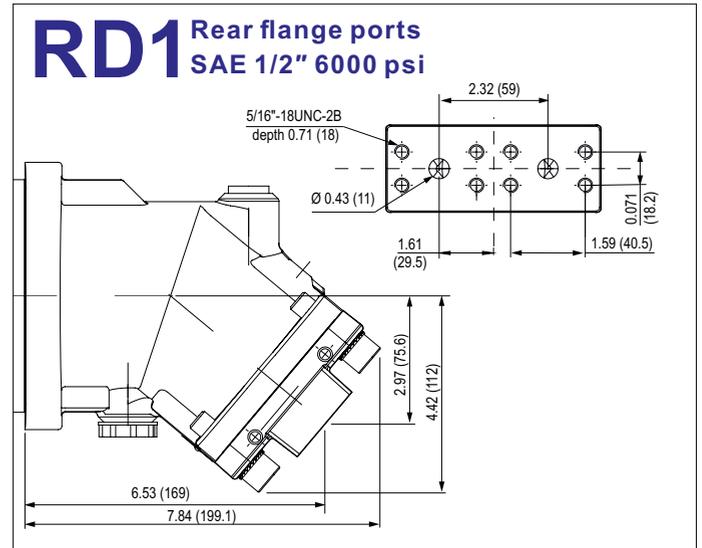
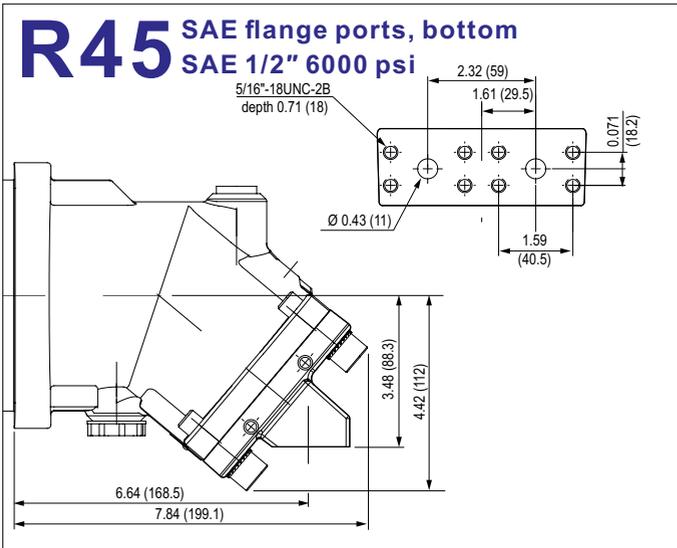
A2MS - 32 cc (SAE C) - 4 Bolt



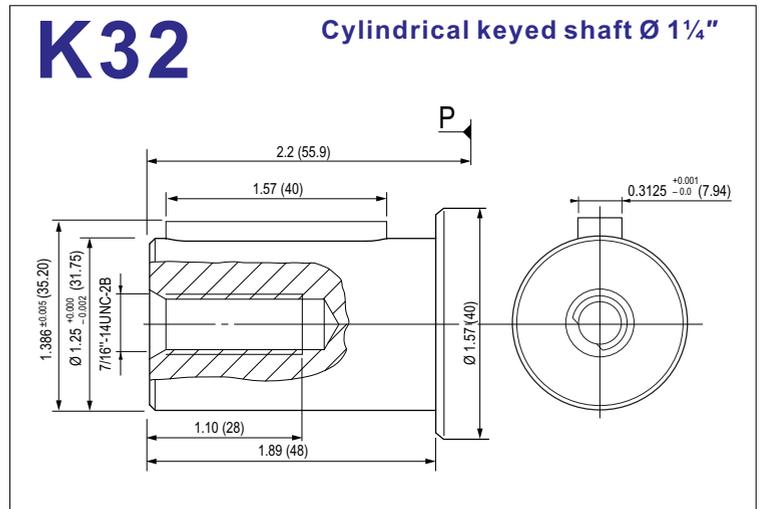
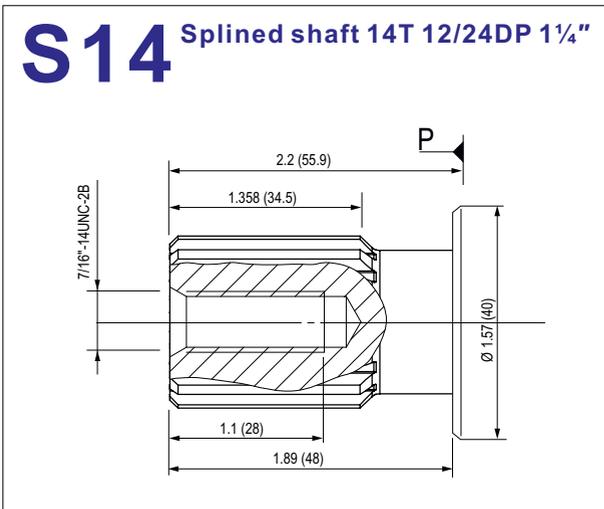
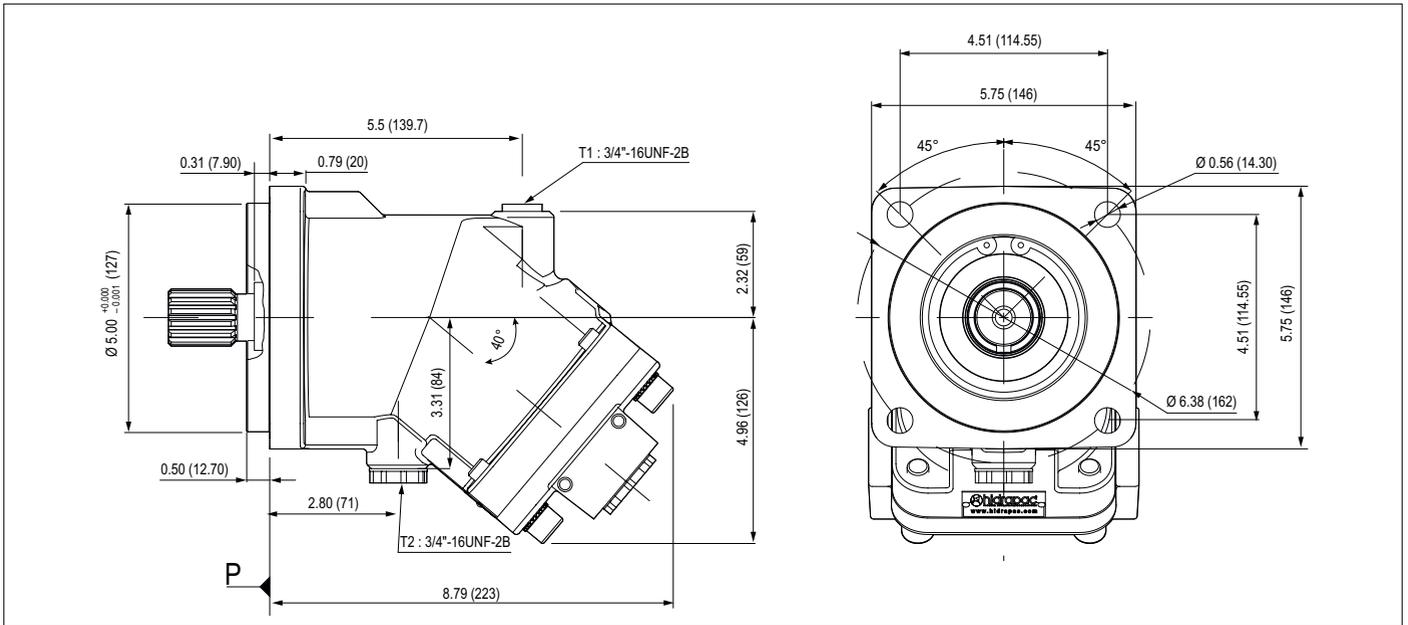


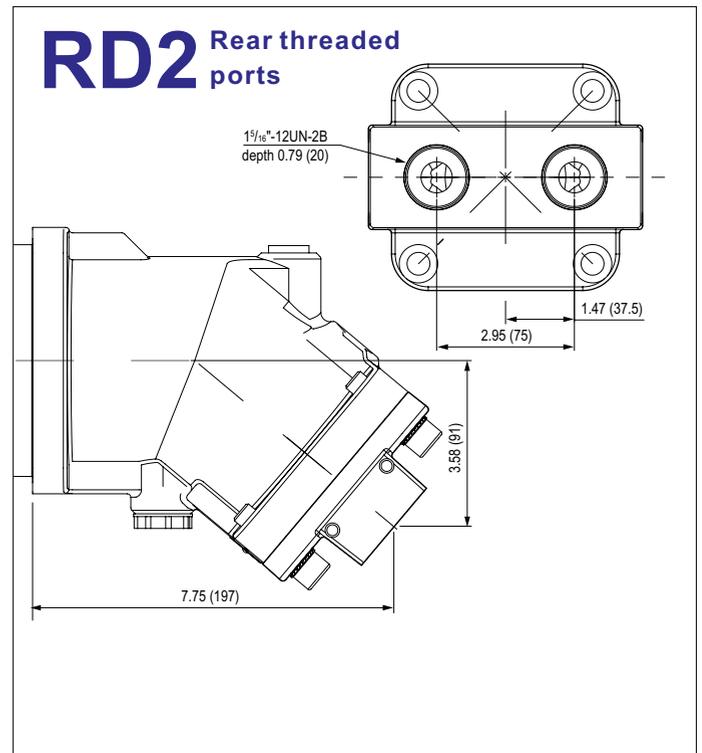
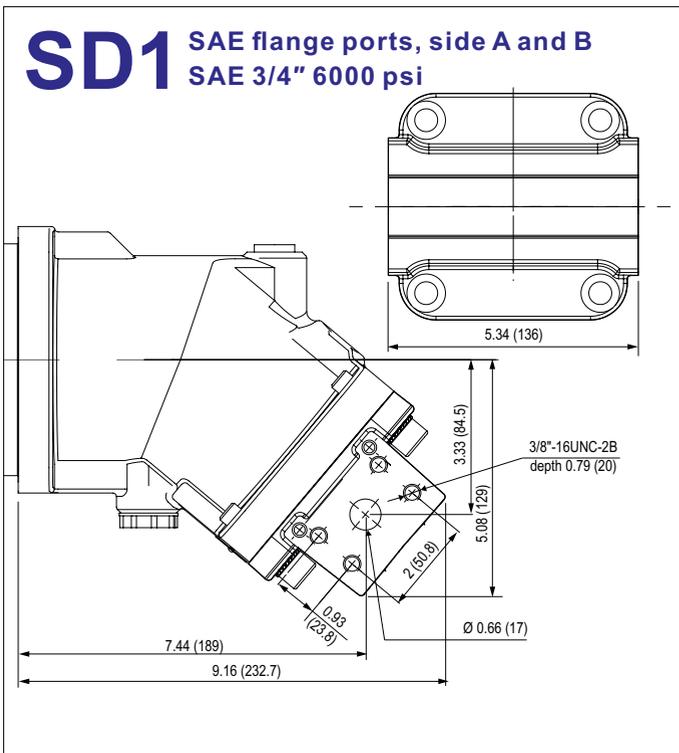
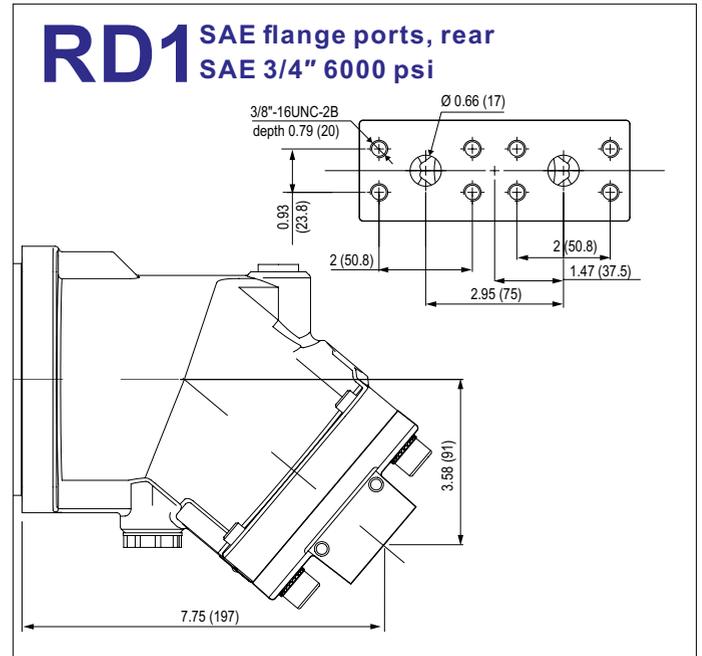
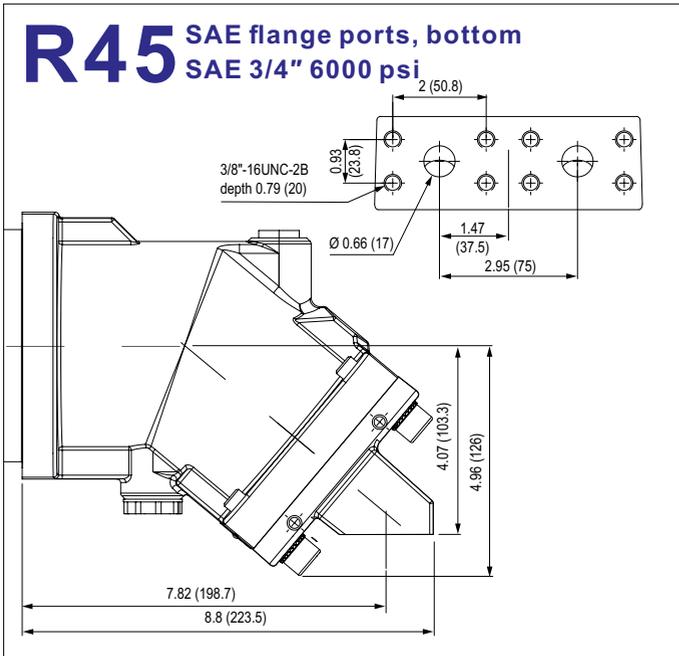
A2MS - 41 cc (SAE C) - 4 Bolt



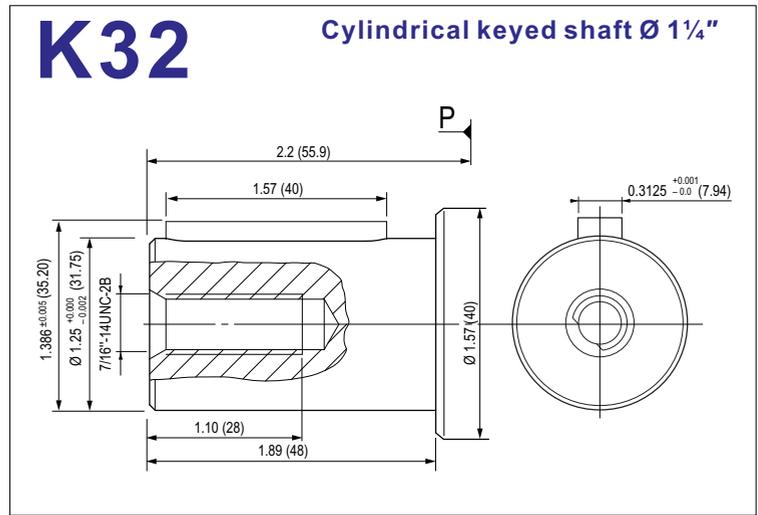
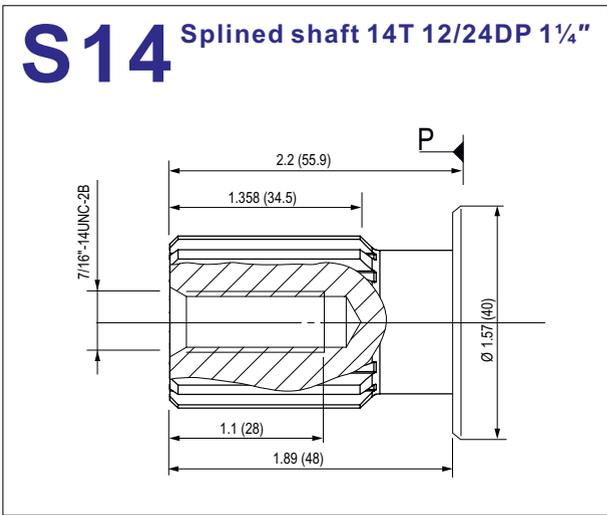
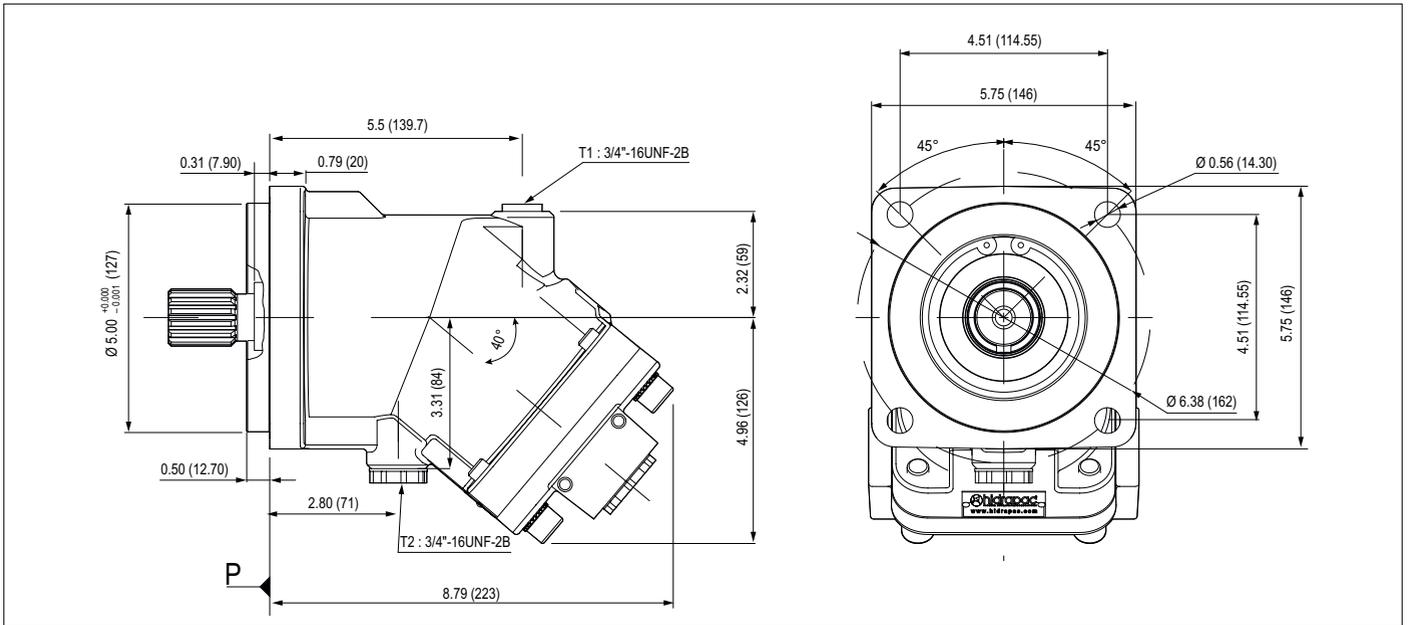


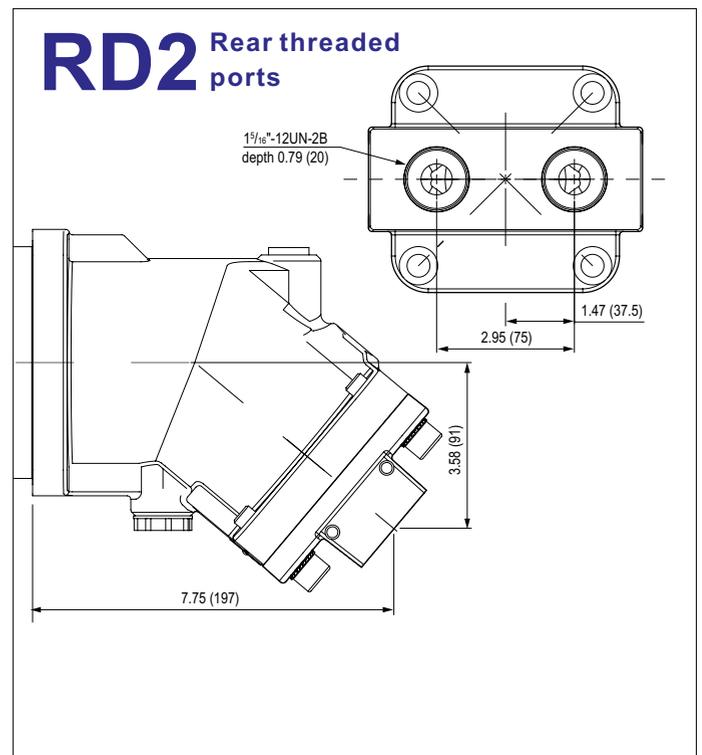
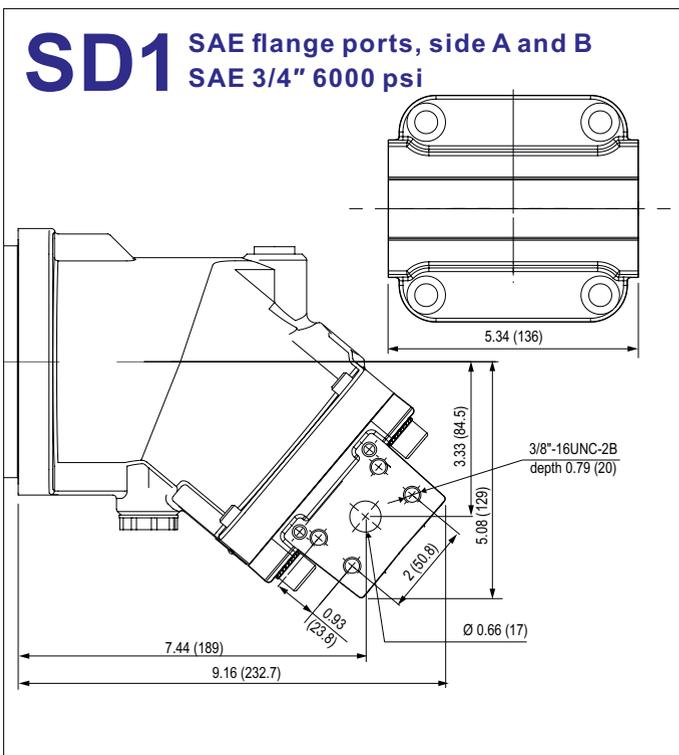
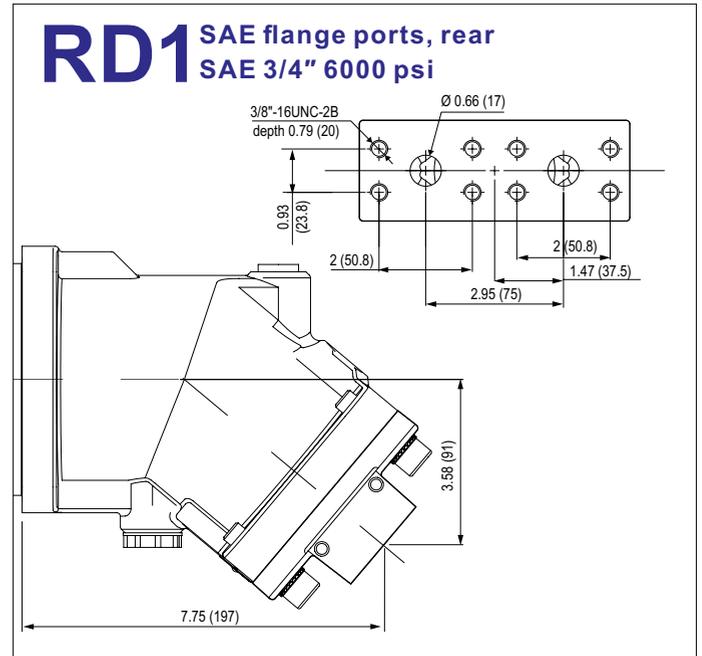
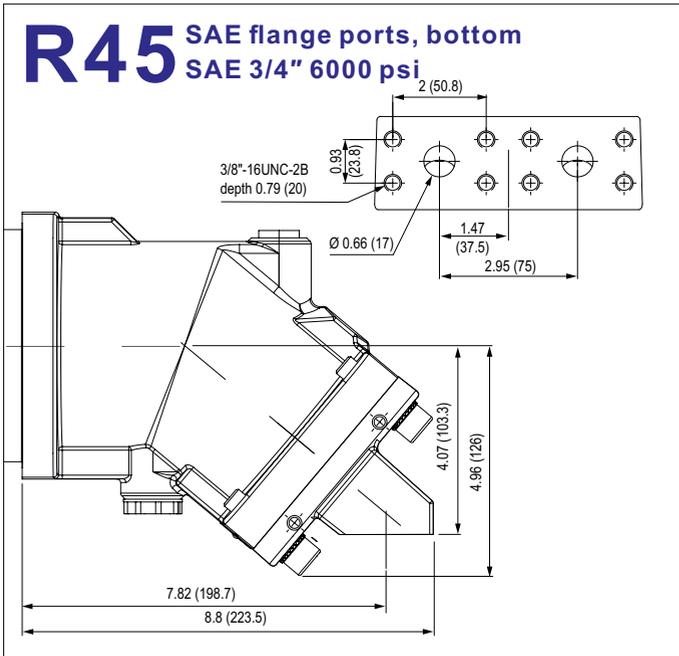
A2MS - 45 cc (SAE C) - 4 Bolt



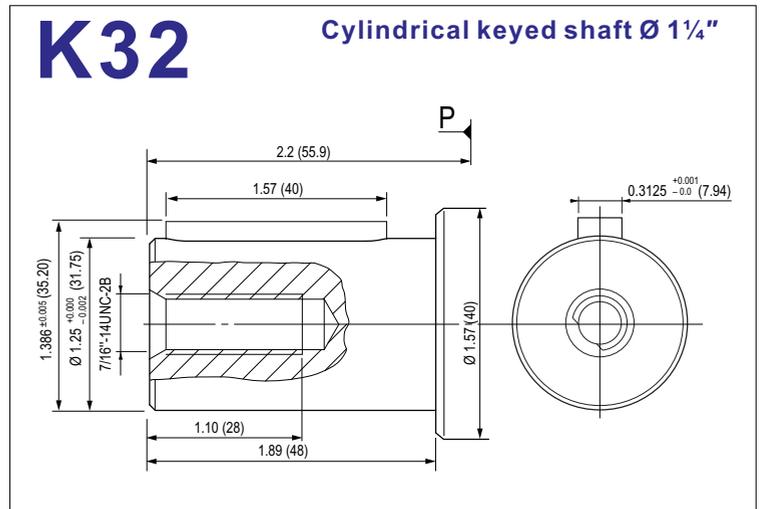
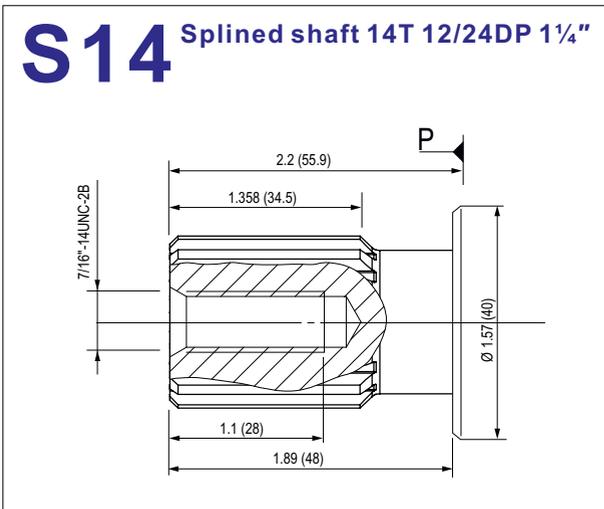
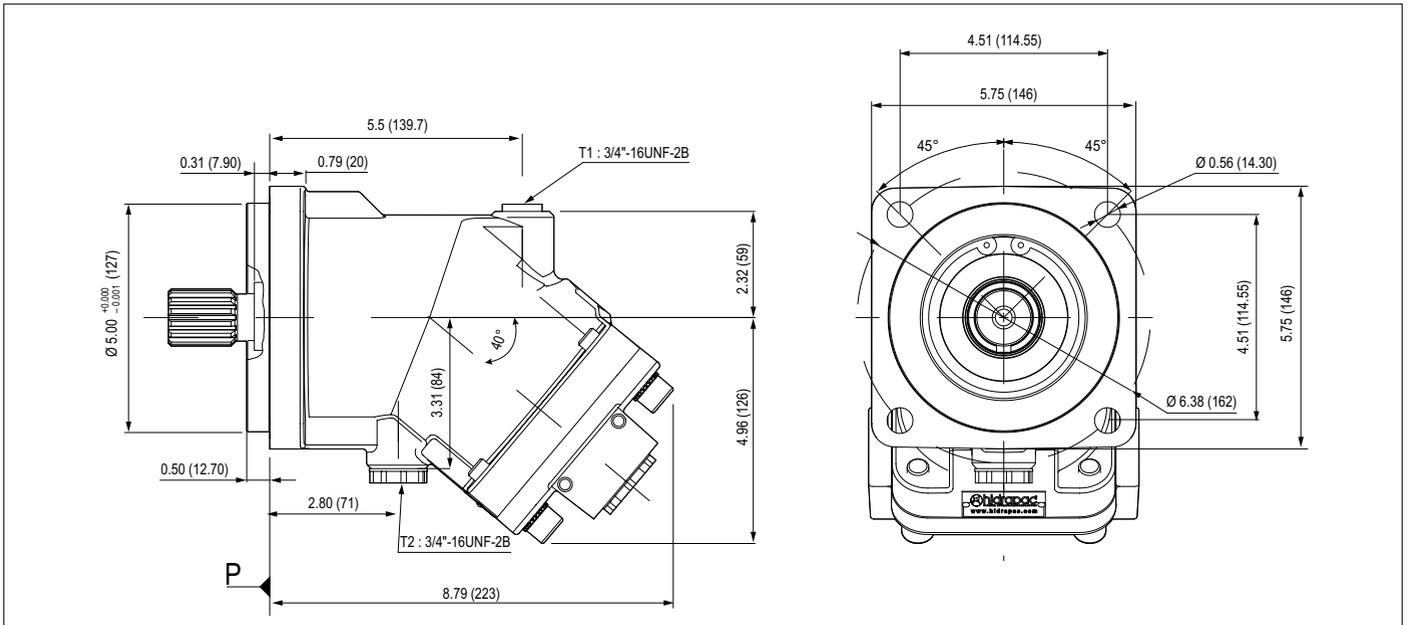


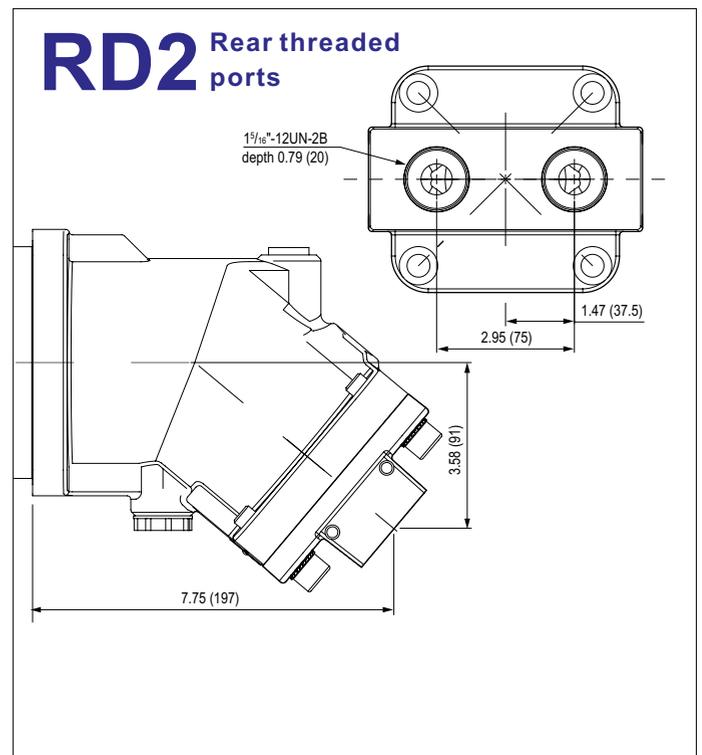
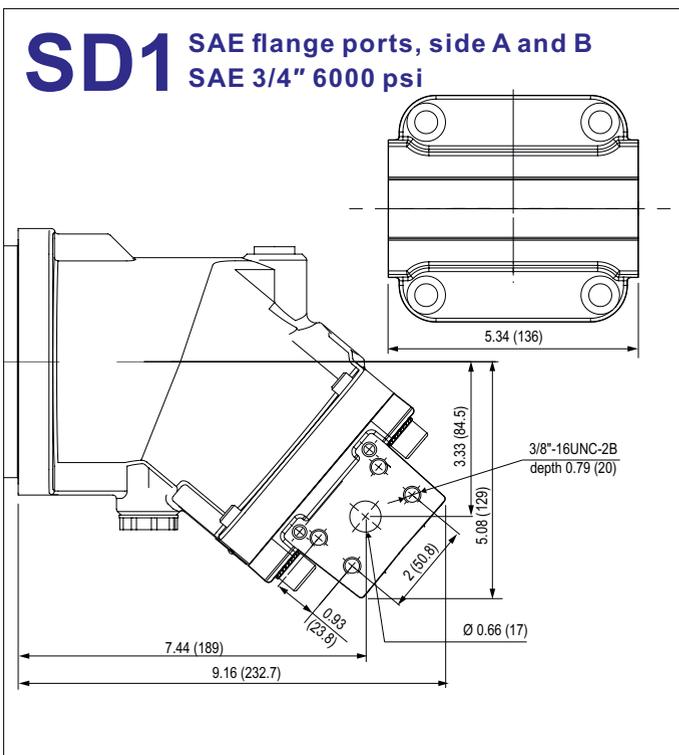
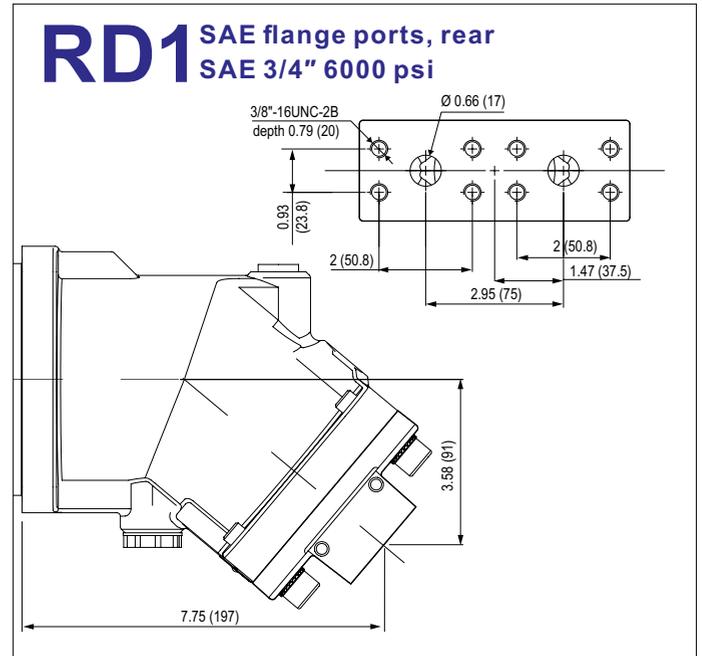
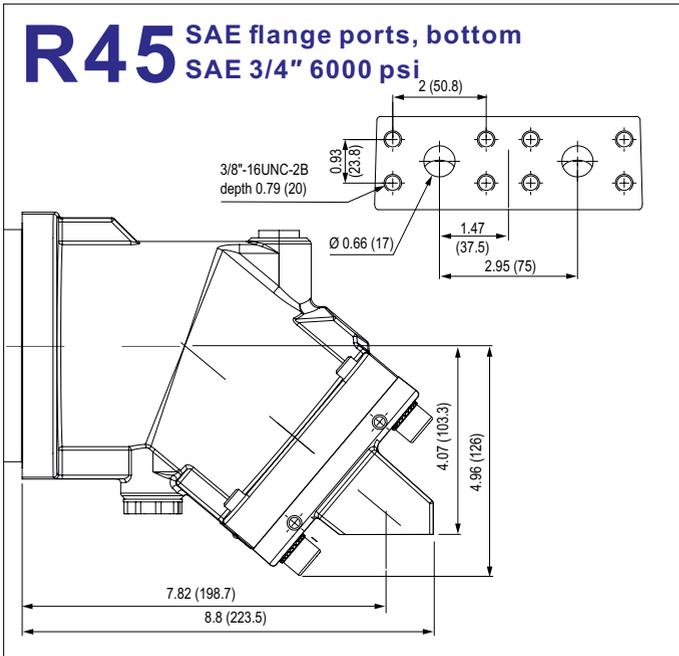
A2MS - 50 cc (SAE C) - 4 Bolt



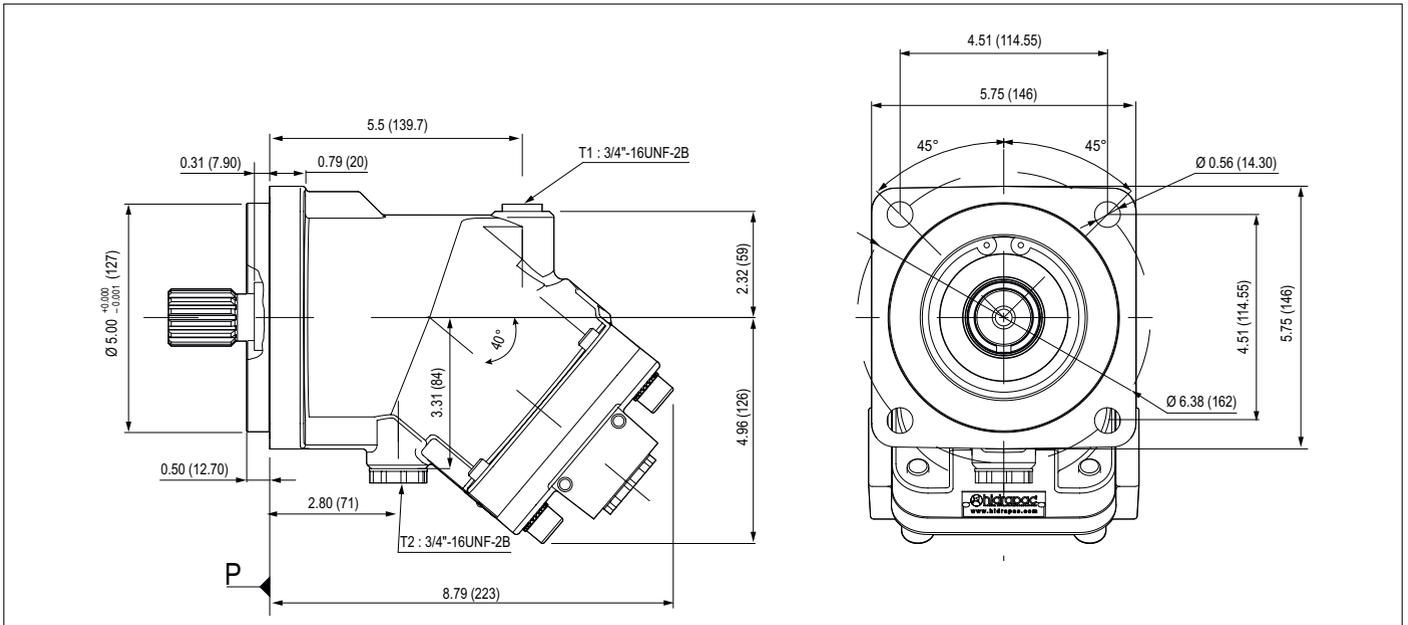


A2MS - 56 cc (SAE C) - 4 Bolt

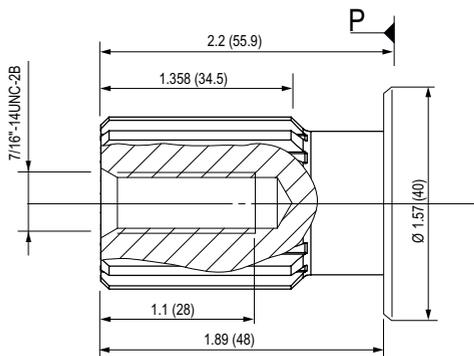




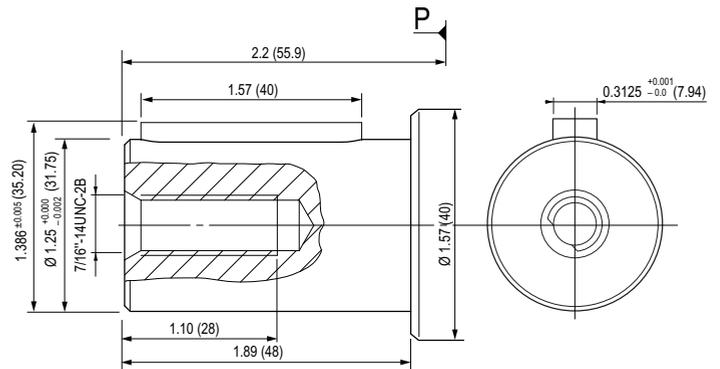
A2MS - 63 cc (SAE C) - 4 Bolt

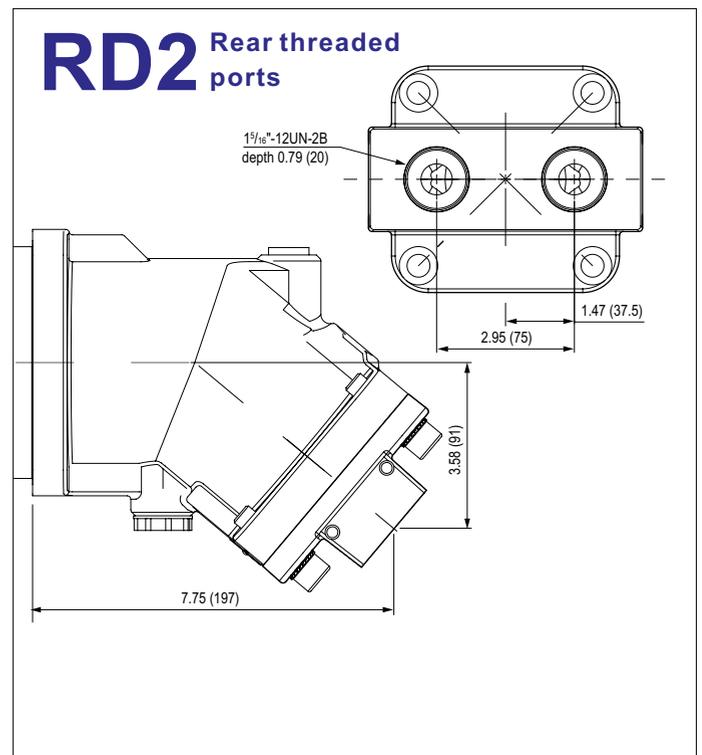
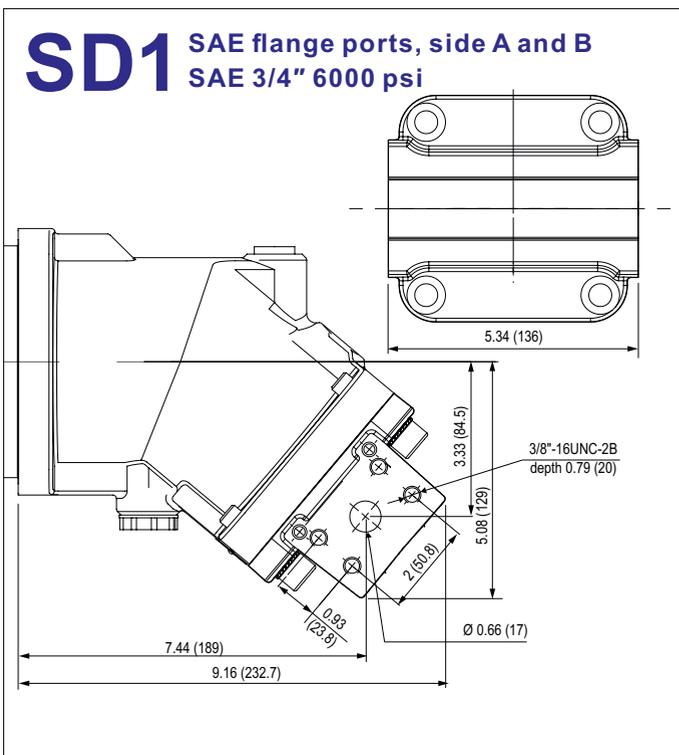
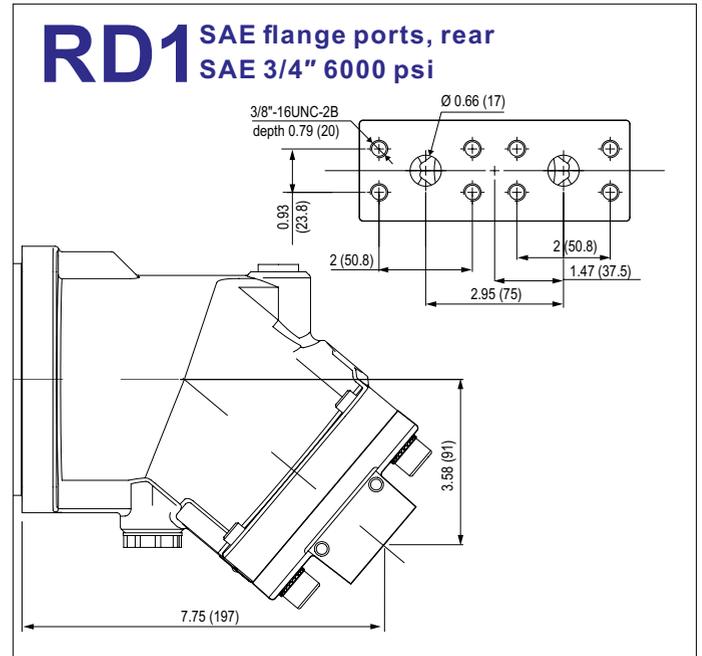
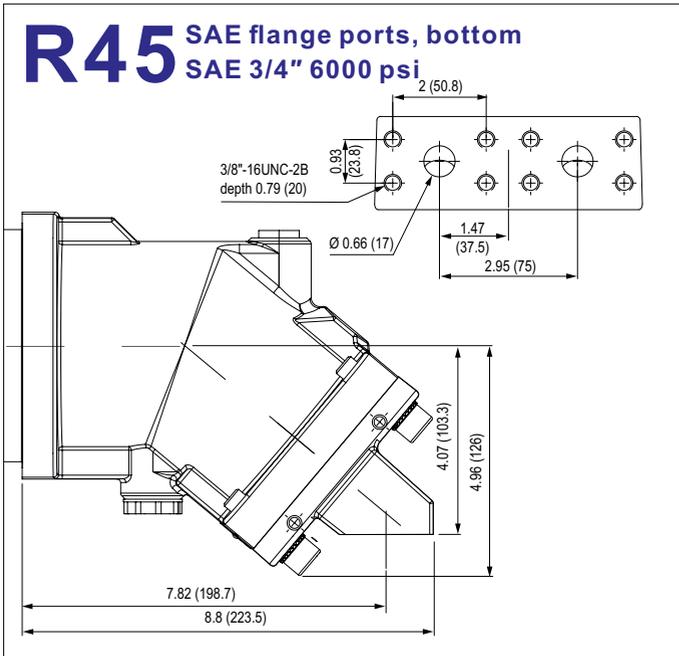


S14 Splined shaft 14T 12/24DP 1 1/4"

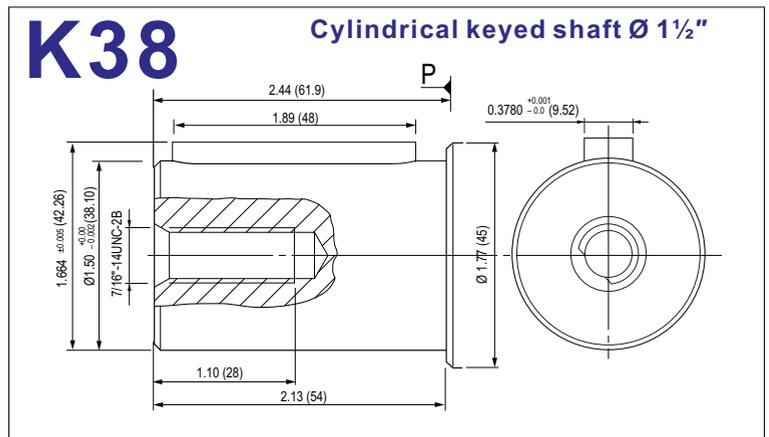
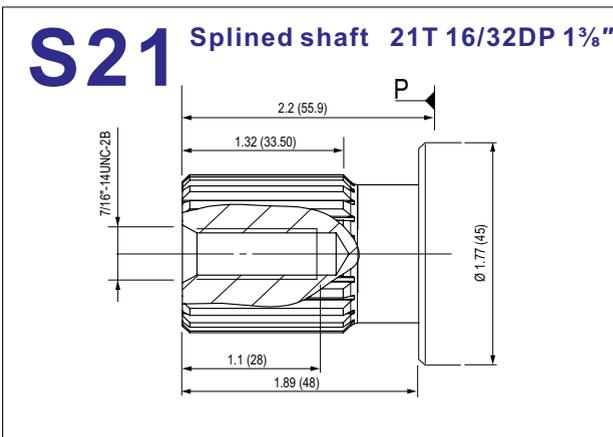
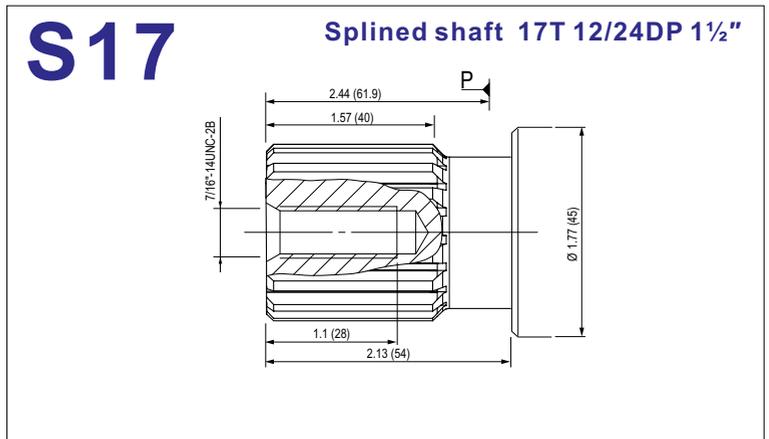
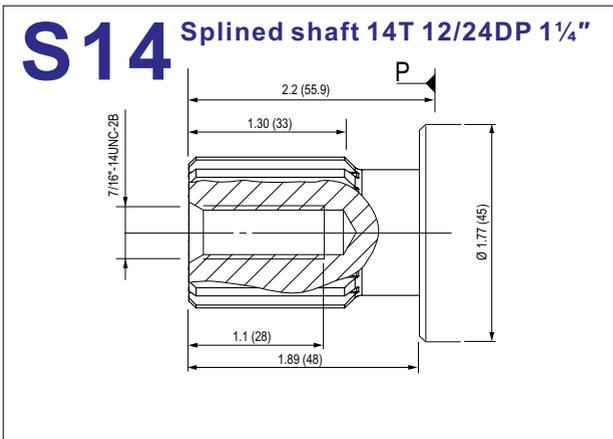
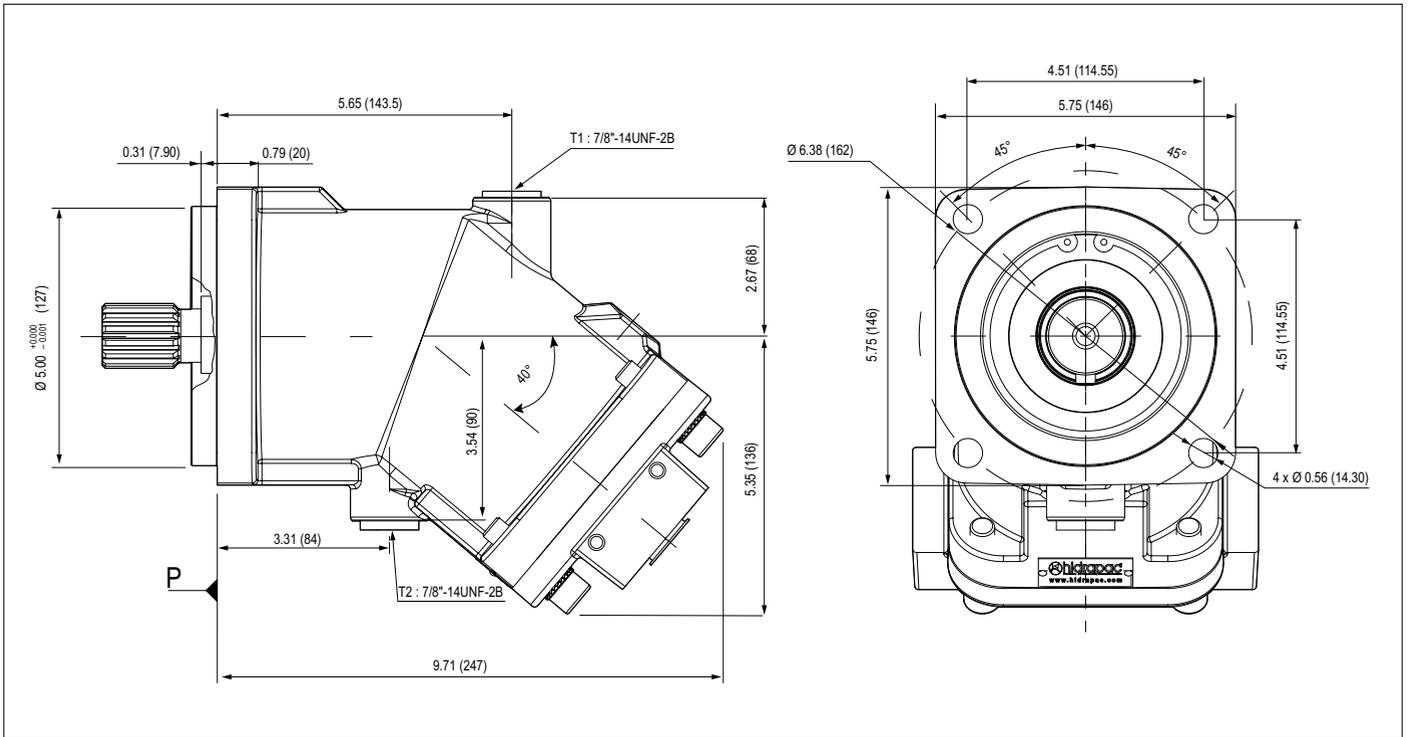


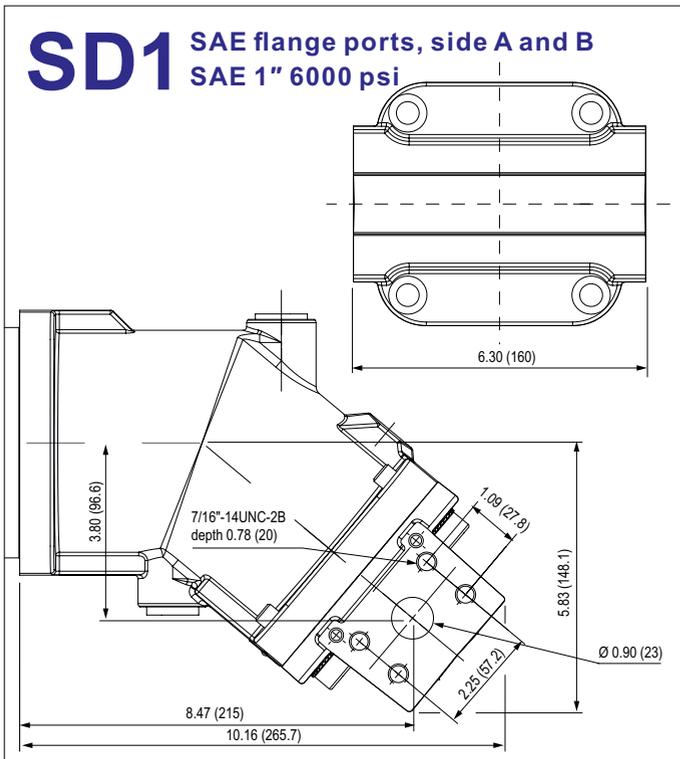
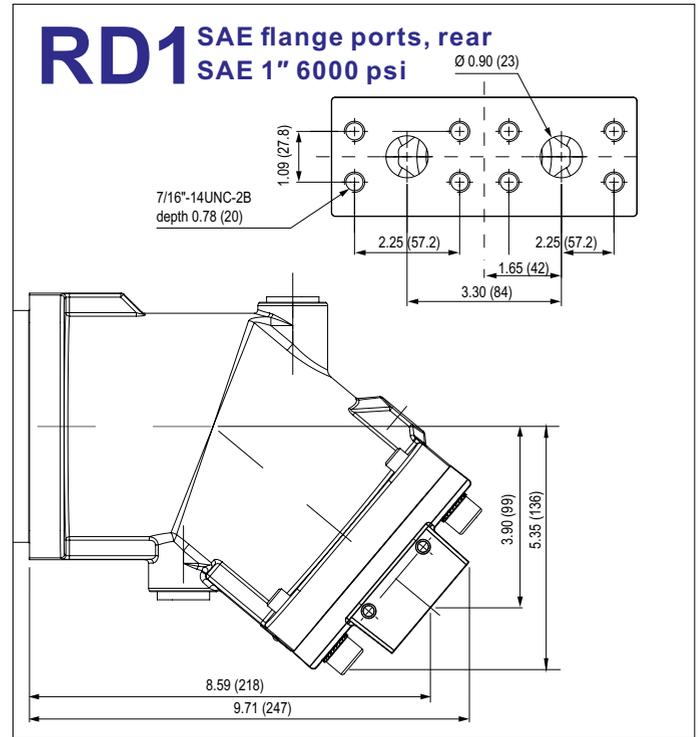
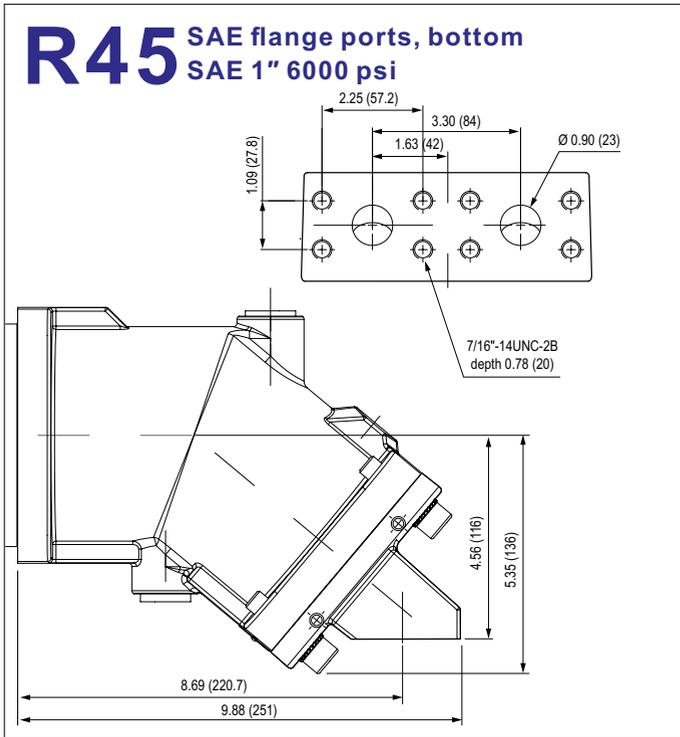
K32 Cylindrical keyed shaft $\varnothing 1 1/4$ "



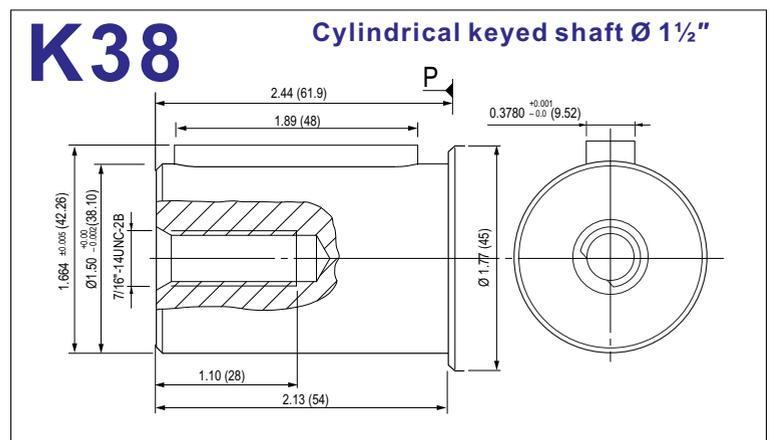
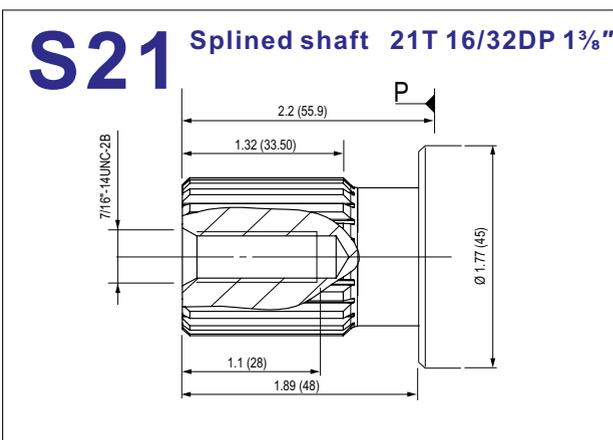
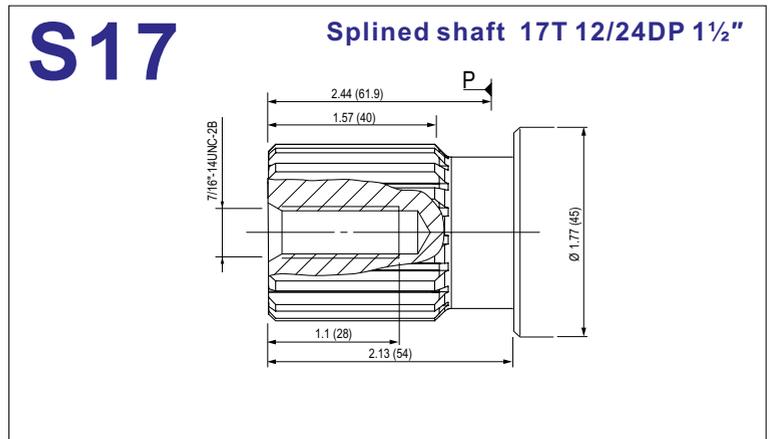
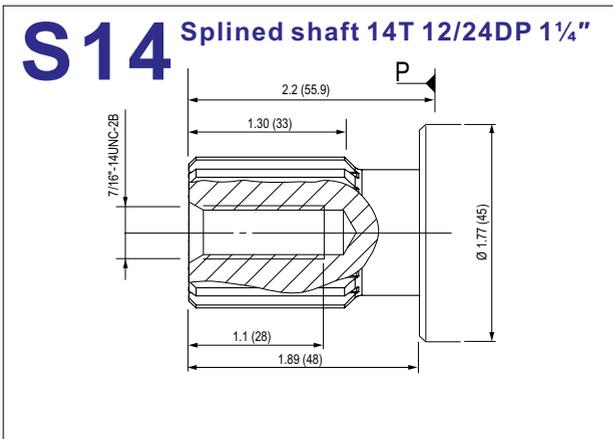
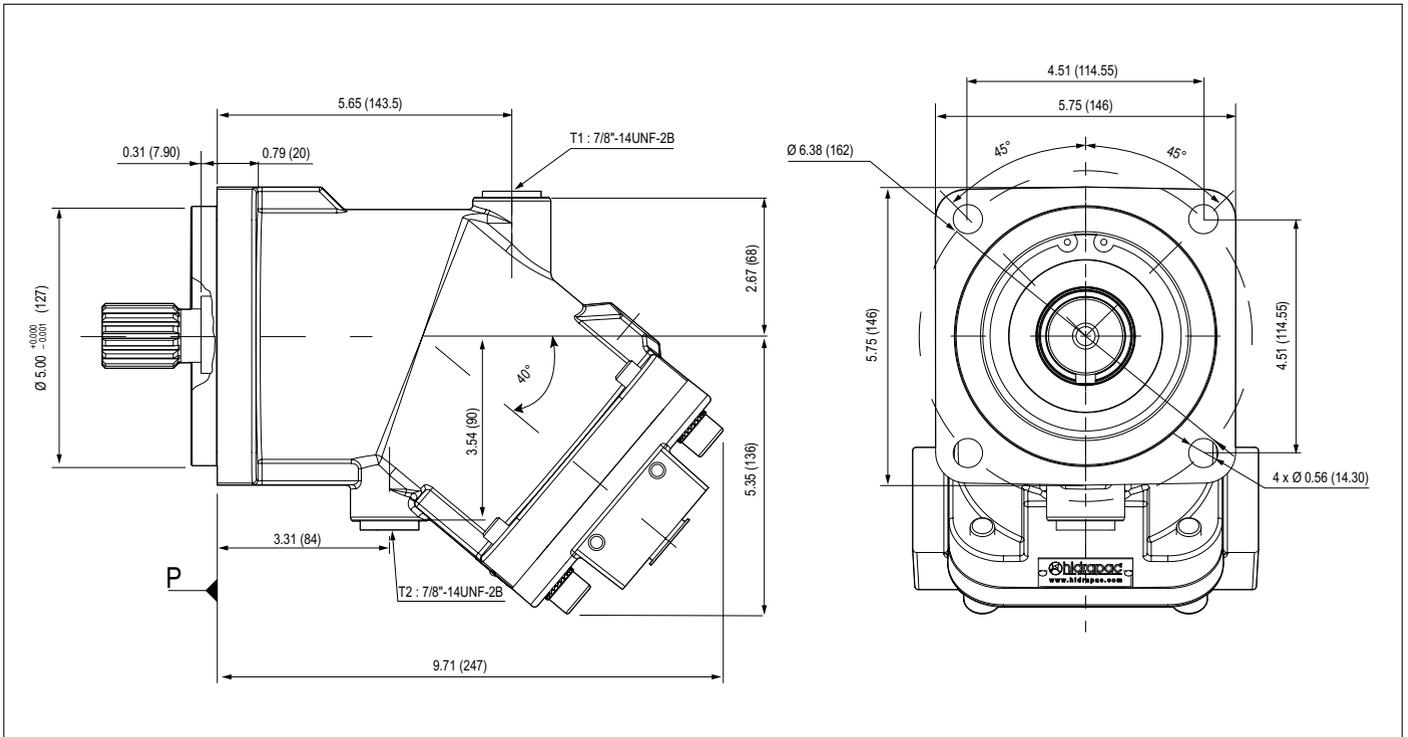


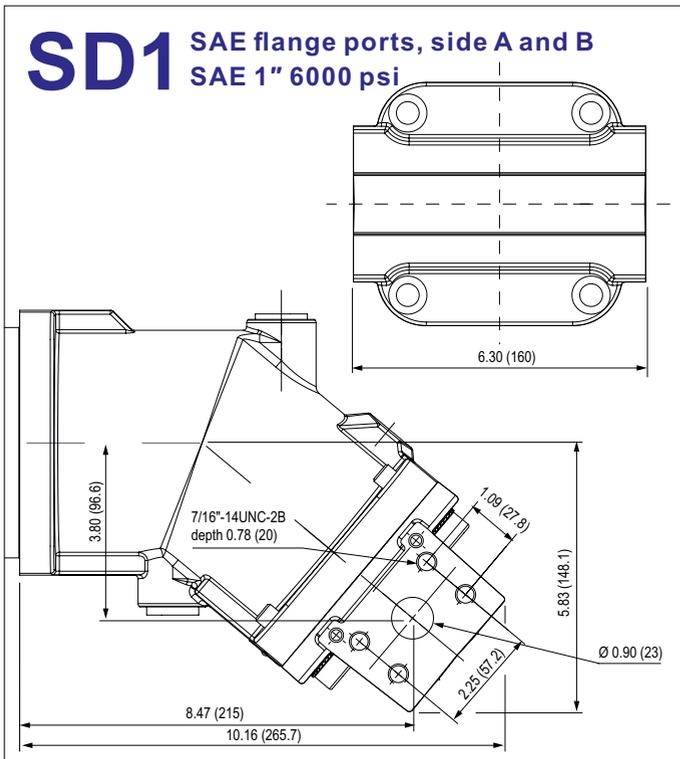
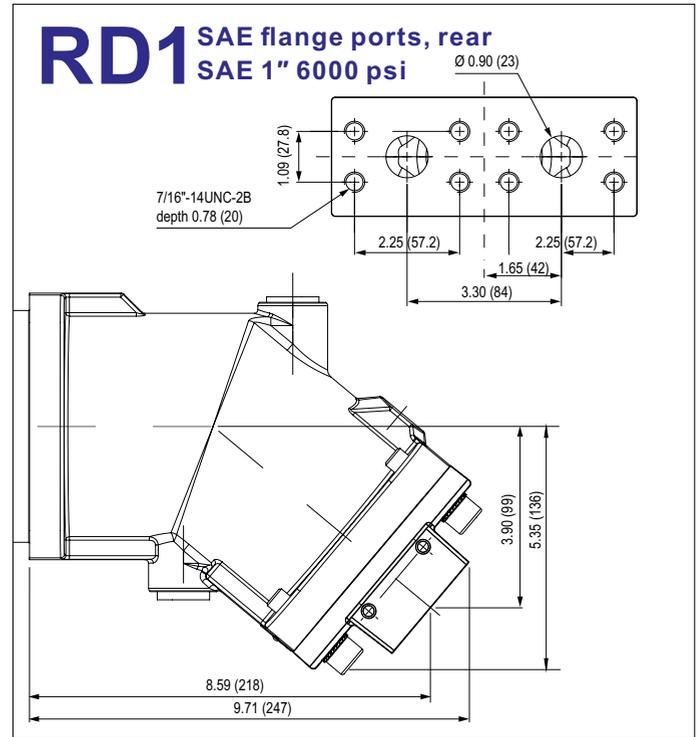
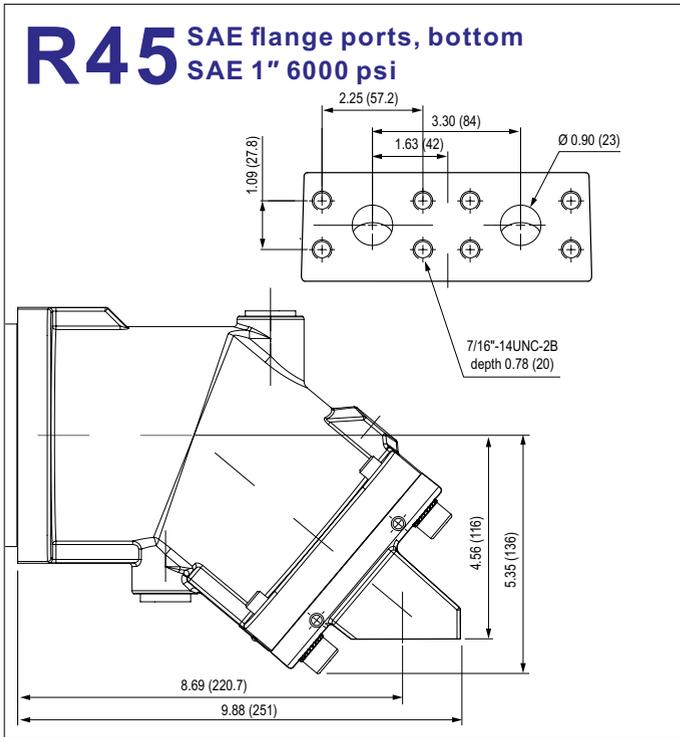
A2MS - 80 cc (SAE C) - 4 Bolt



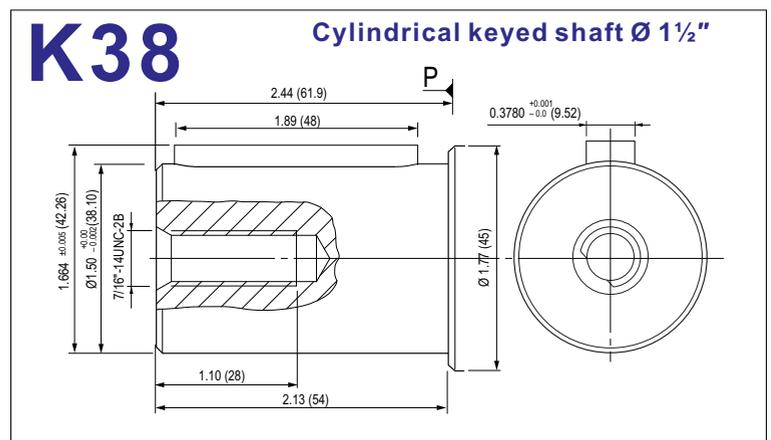
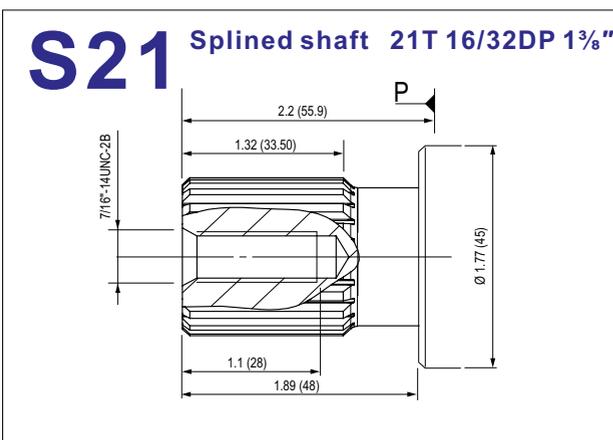
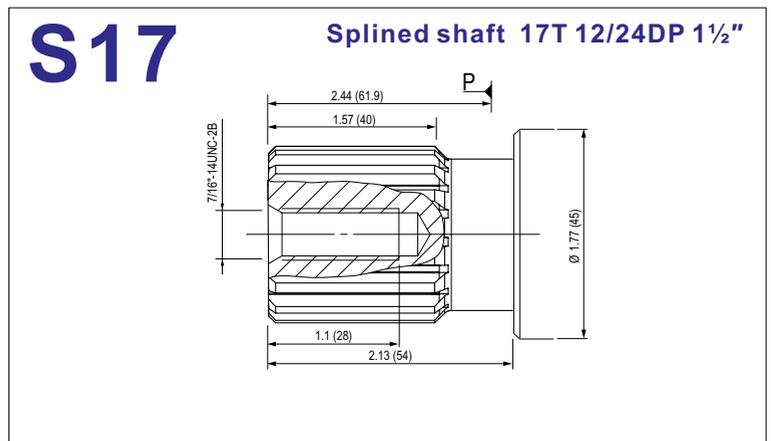
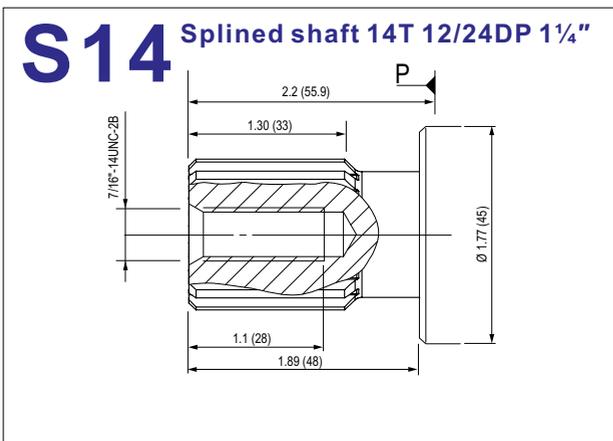
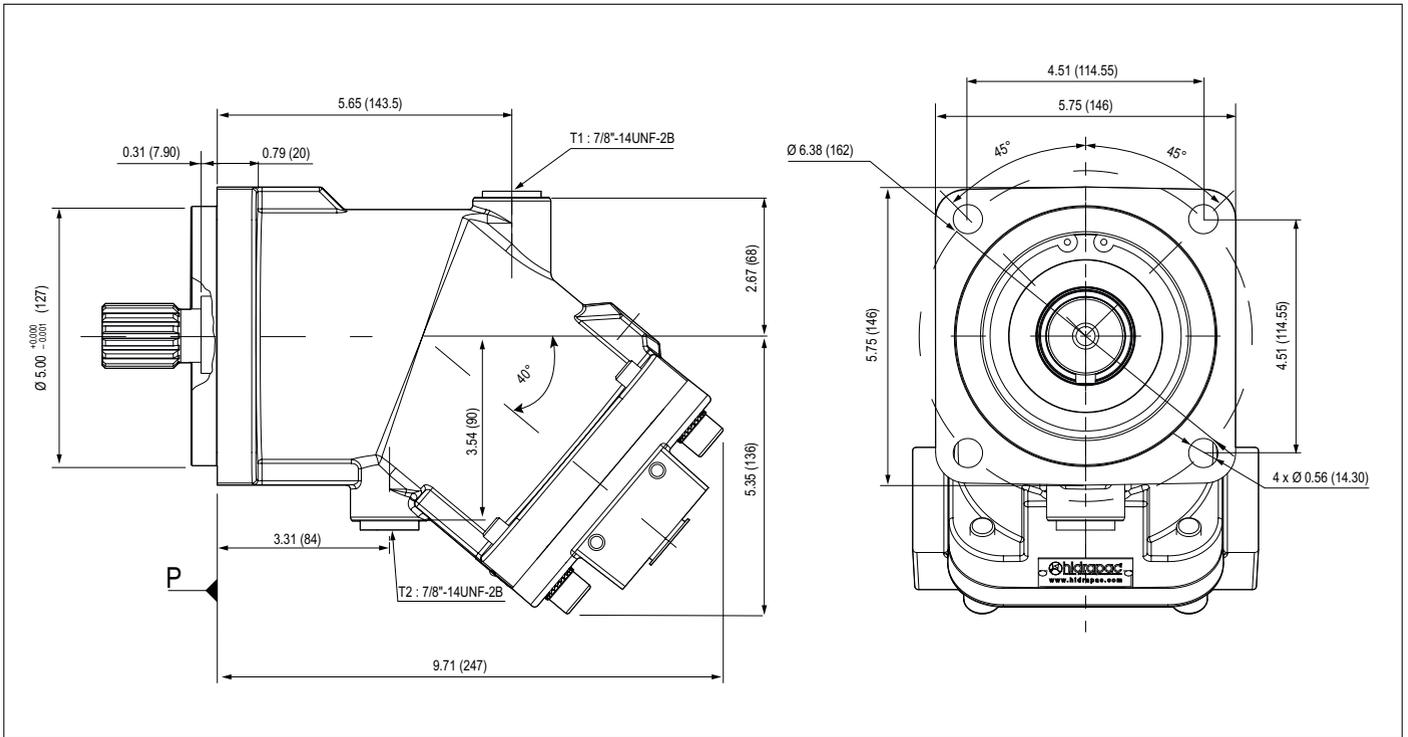


A2MS - 90 cc (SAE C) - 4 Bolt

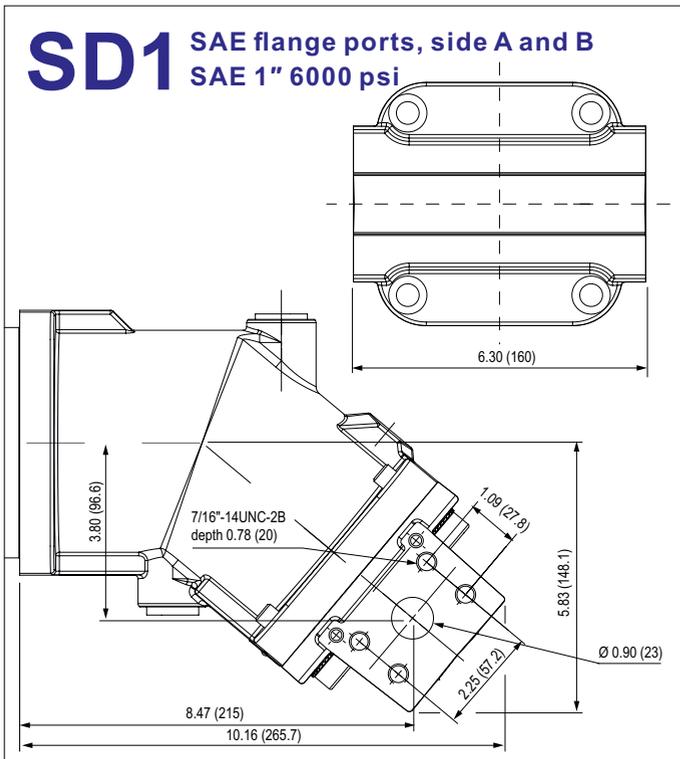
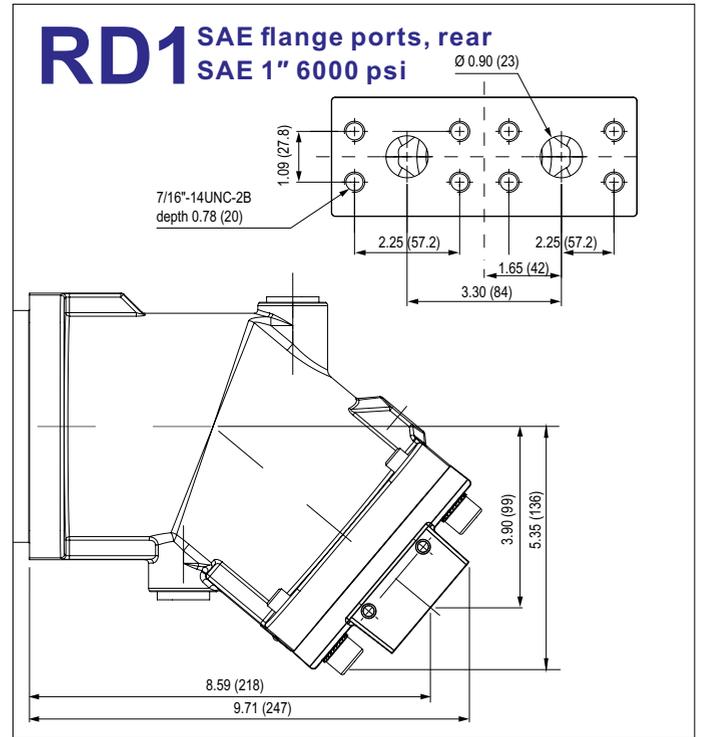
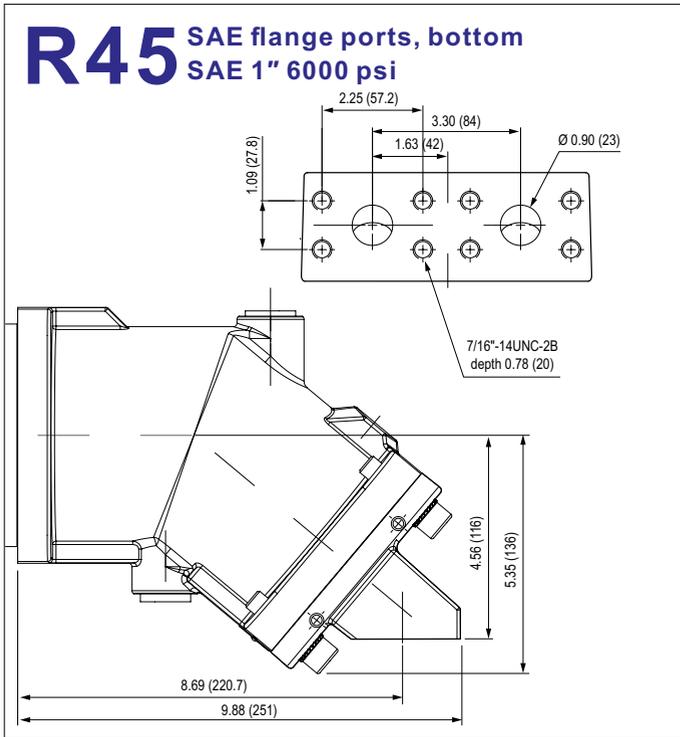




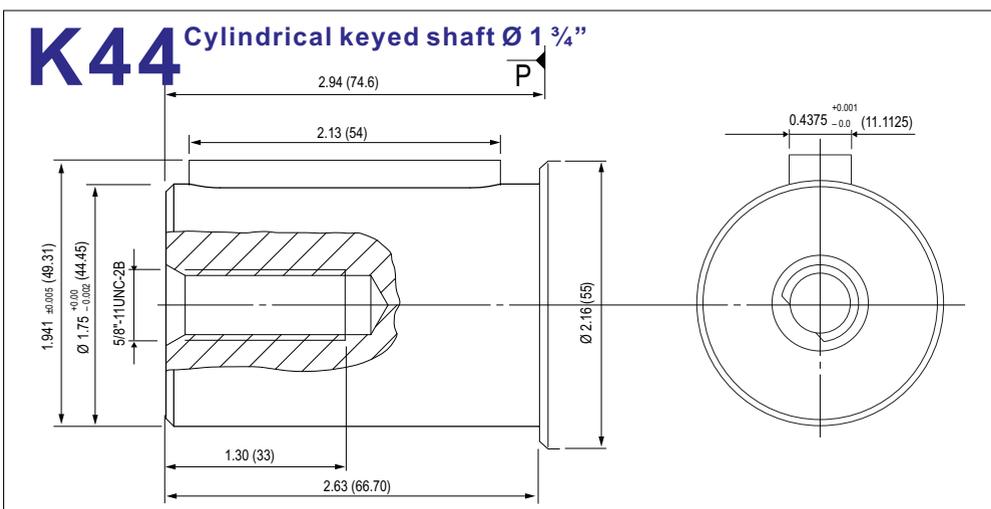
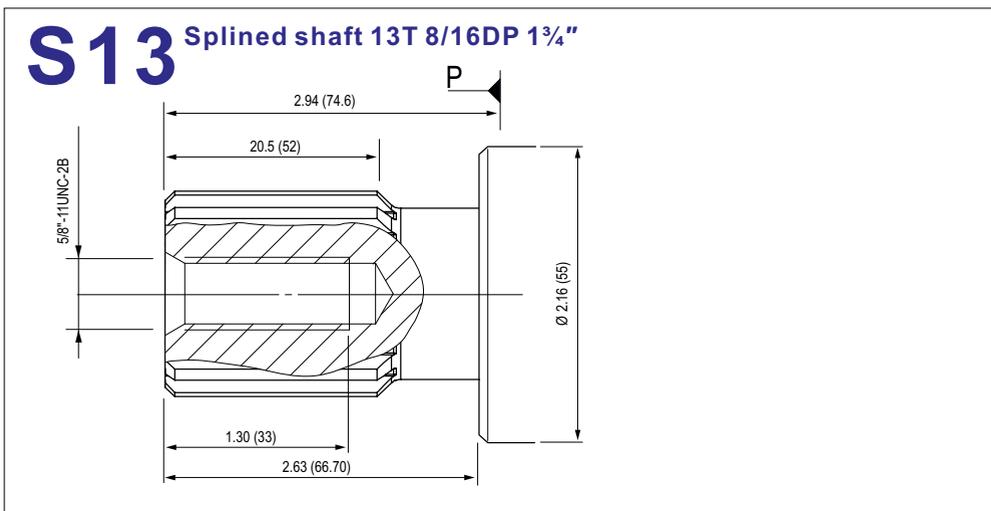
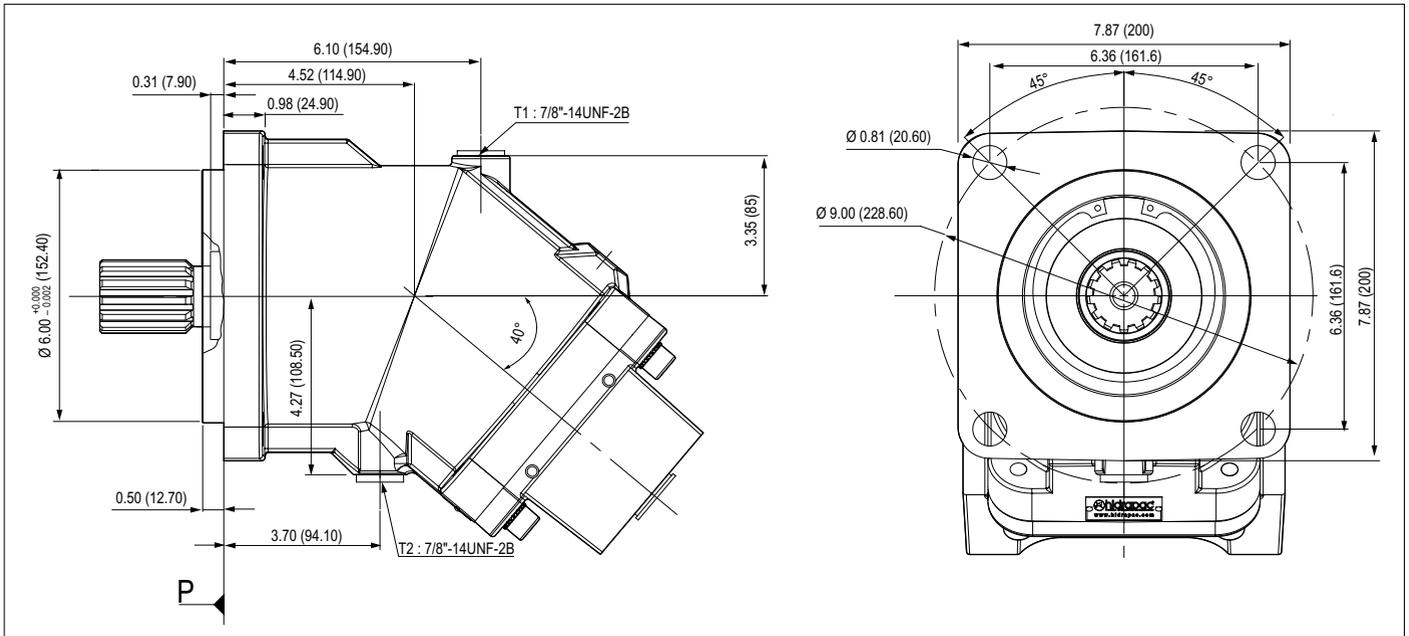
A2MS - 108 cc (SAE C) - 4 Bolt



A2MS - 108 cc (SAE C) - 4 Bolt

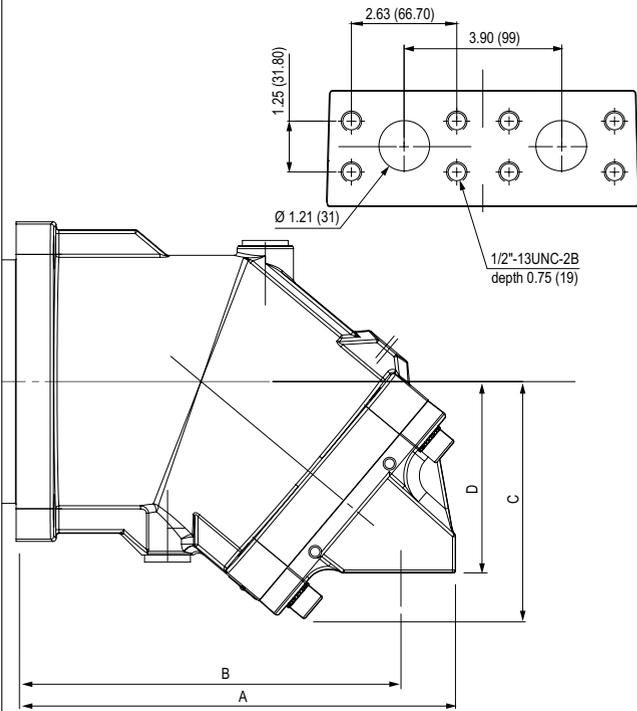


A2MS - 108 cc (SAE D) - 4 Bolt

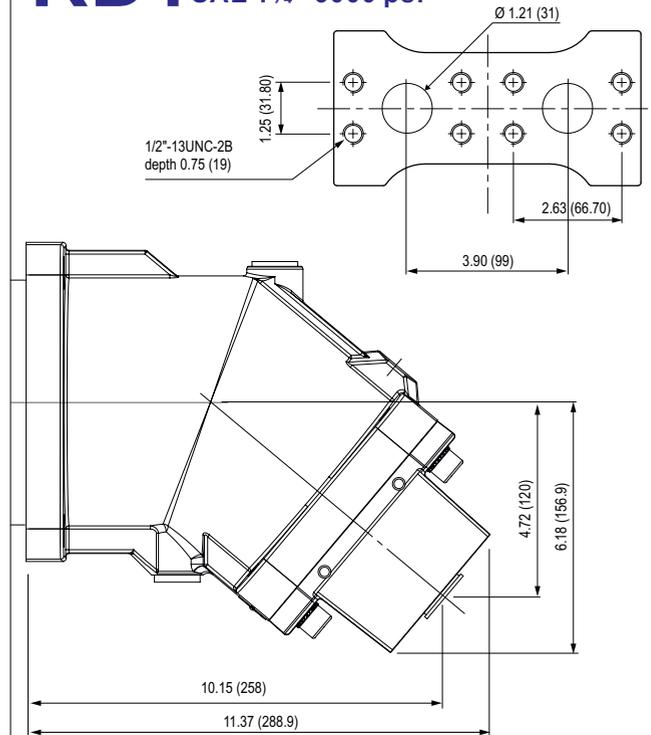


A2MS - 108 cc (SAE D) - 4 Bolt

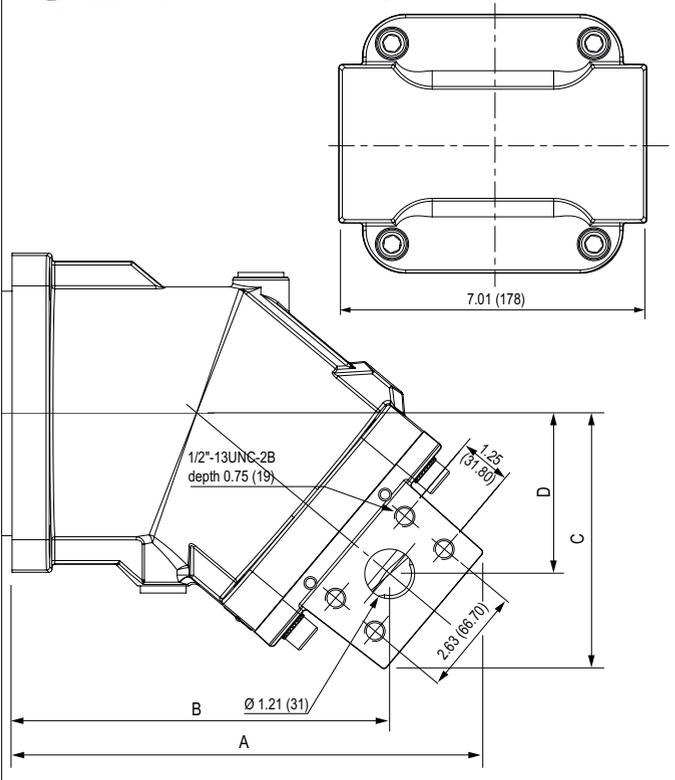
R45 SAE flange ports, rear SAE 1 1/4" 6000 psi



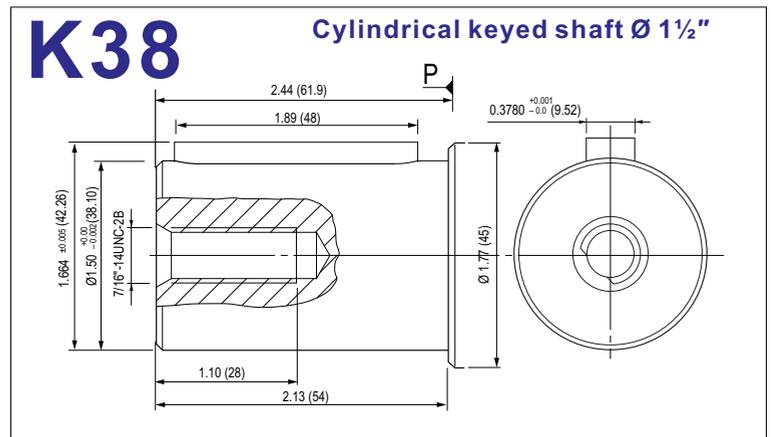
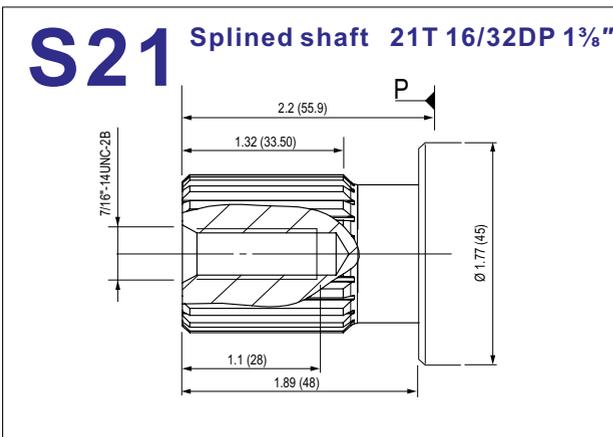
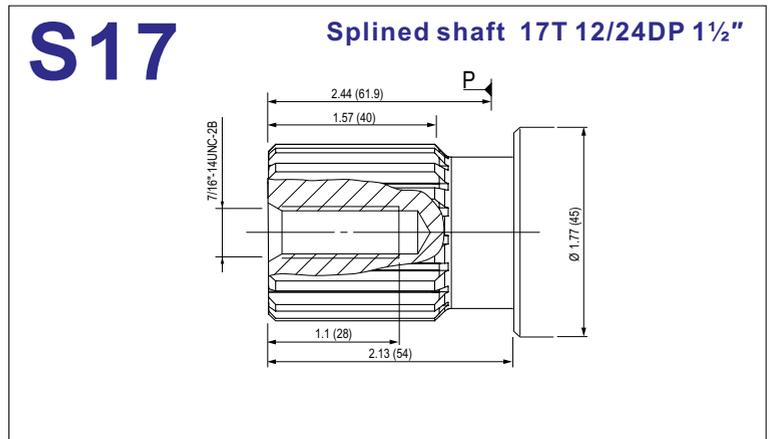
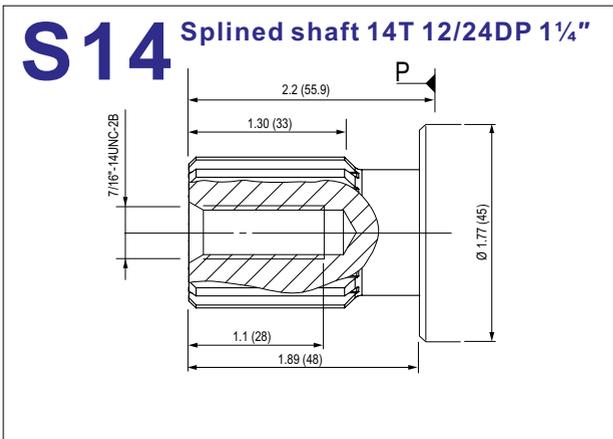
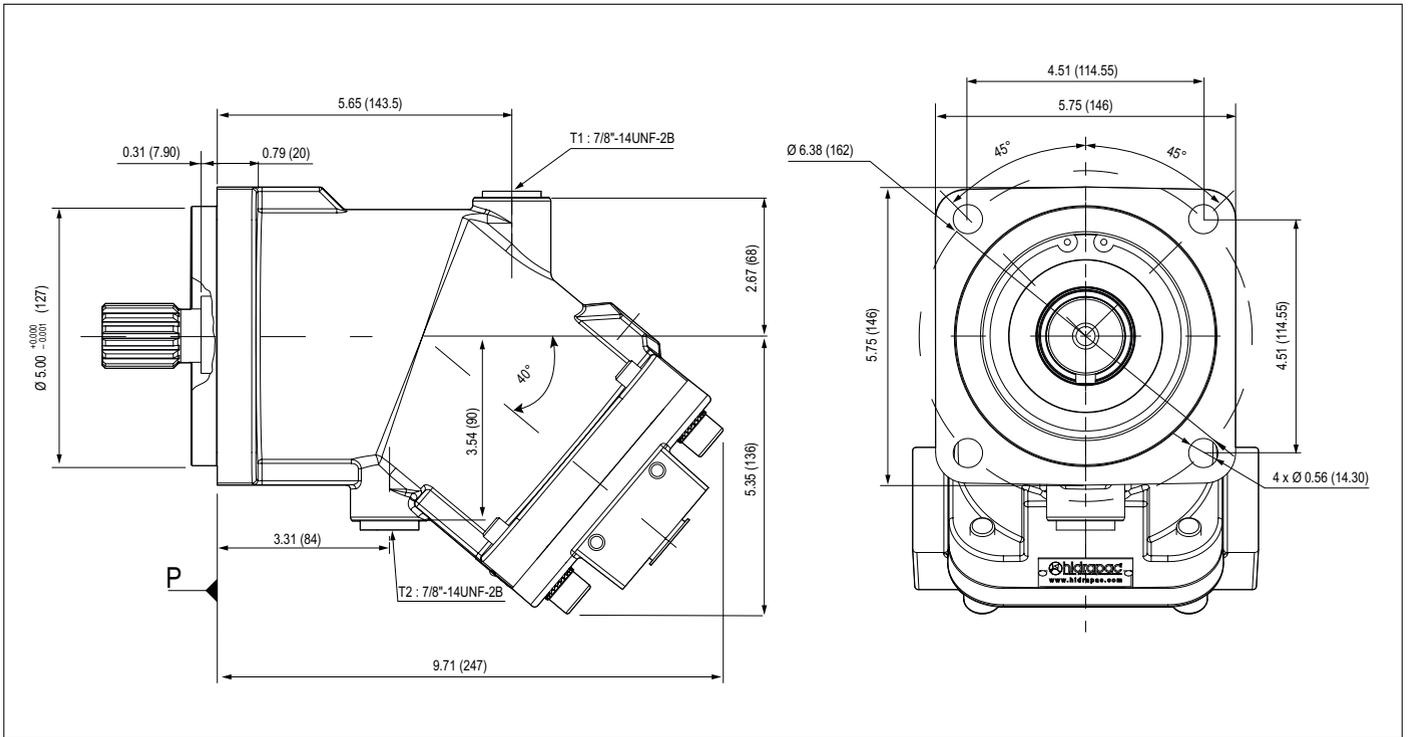
RD1 SAE flange ports, bottom SAE 1 1/4" 6000 psi



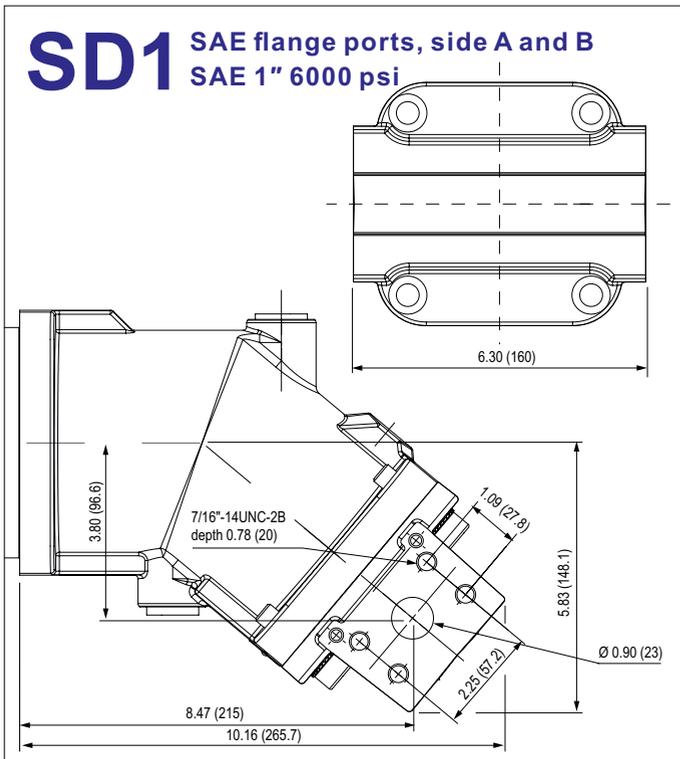
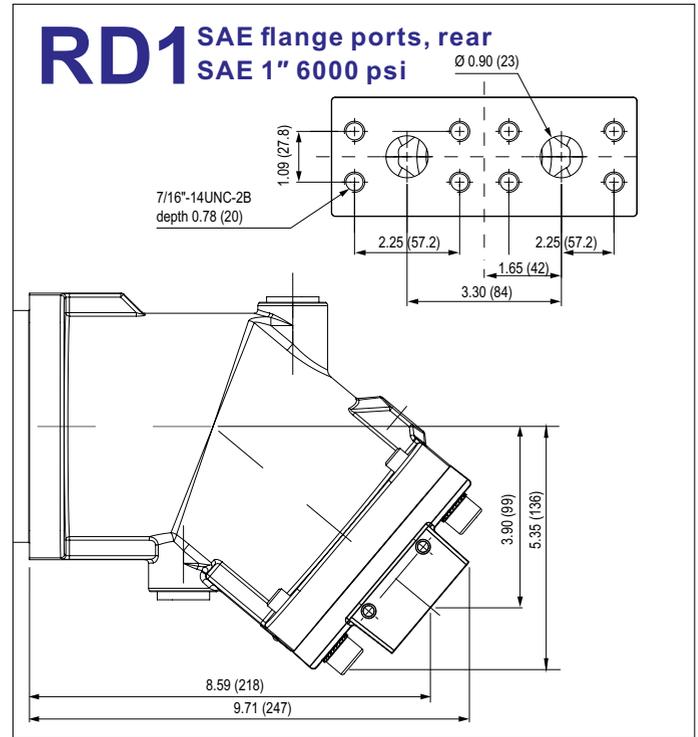
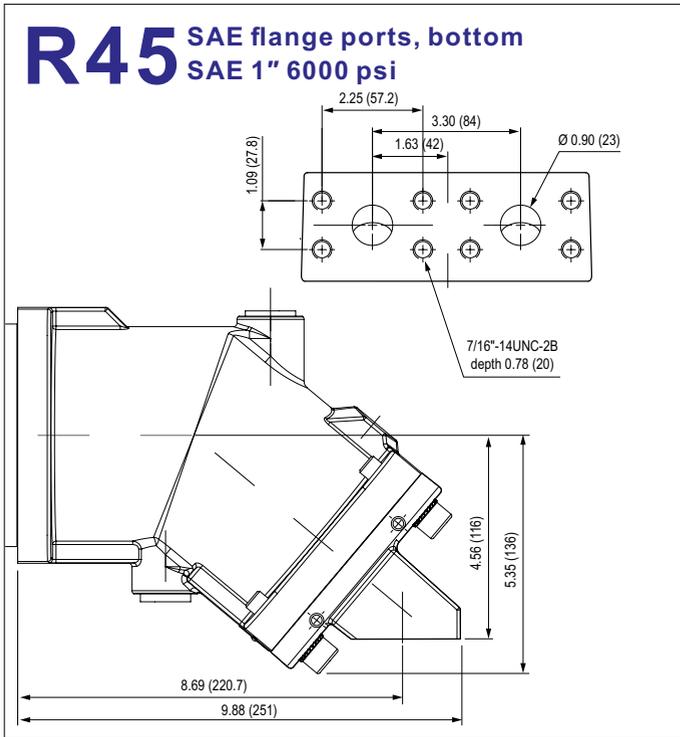
SD1 SAE flange ports, side A and B SAE 1 1/4" 6000 psi



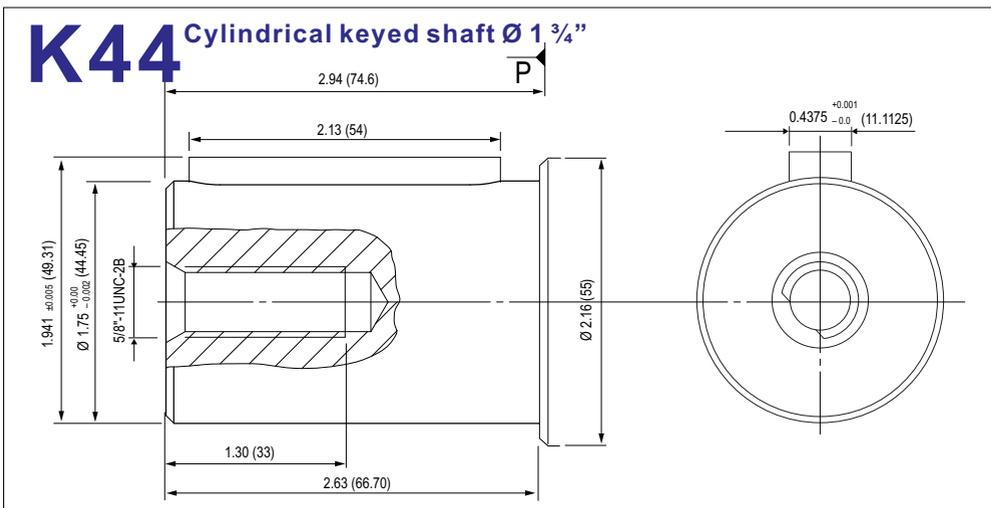
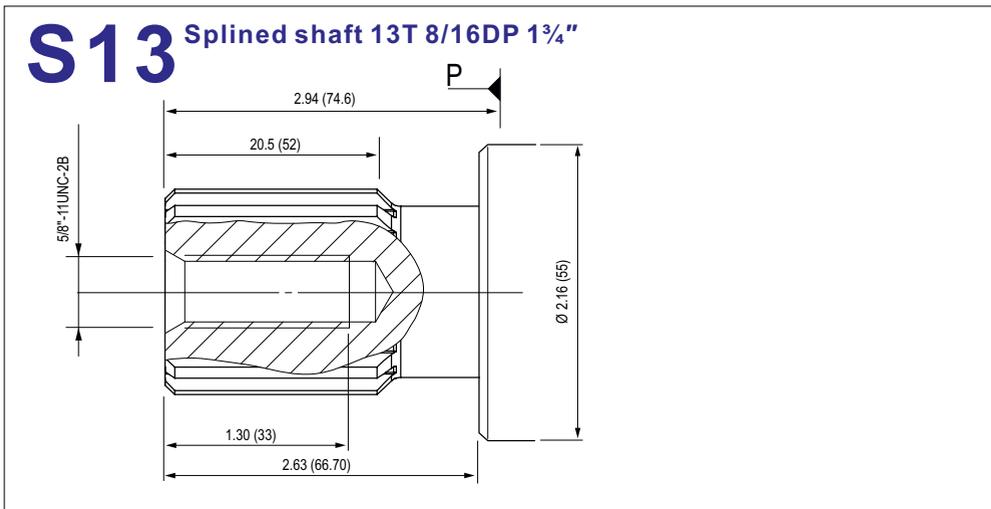
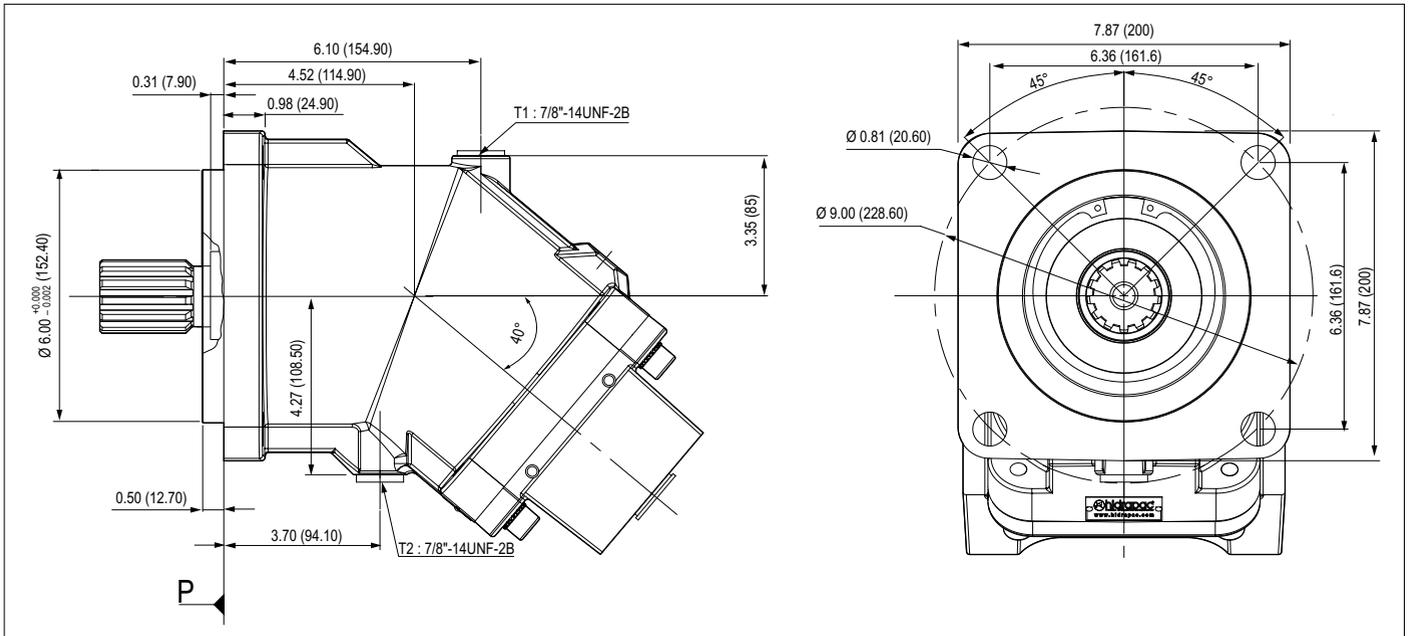
A2MS - 125 cc (SAE C) - 4 Bolt



A2MS - 125 cc (SAE C) - 4 Bolt

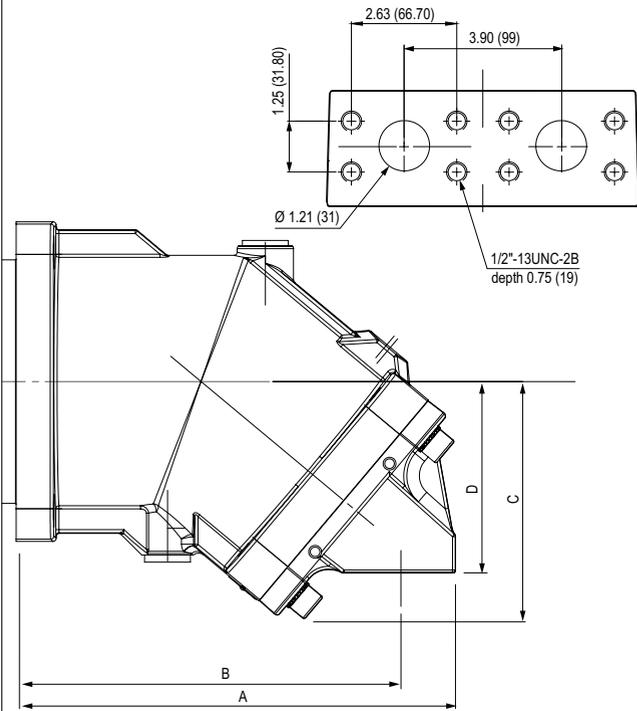


A2MS - 125 cc (SAE D) - 4 Bolt

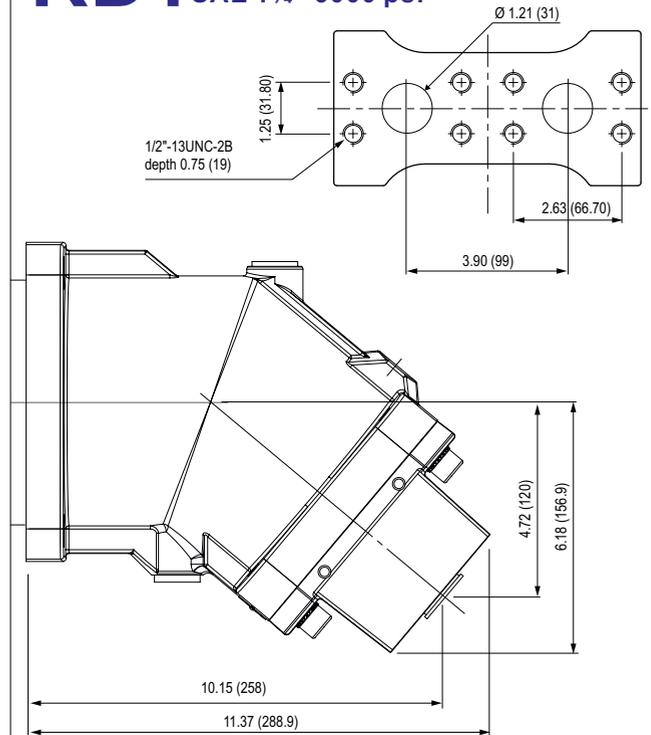


A2MS - 125 cc (SAE D) - 4 Bolt

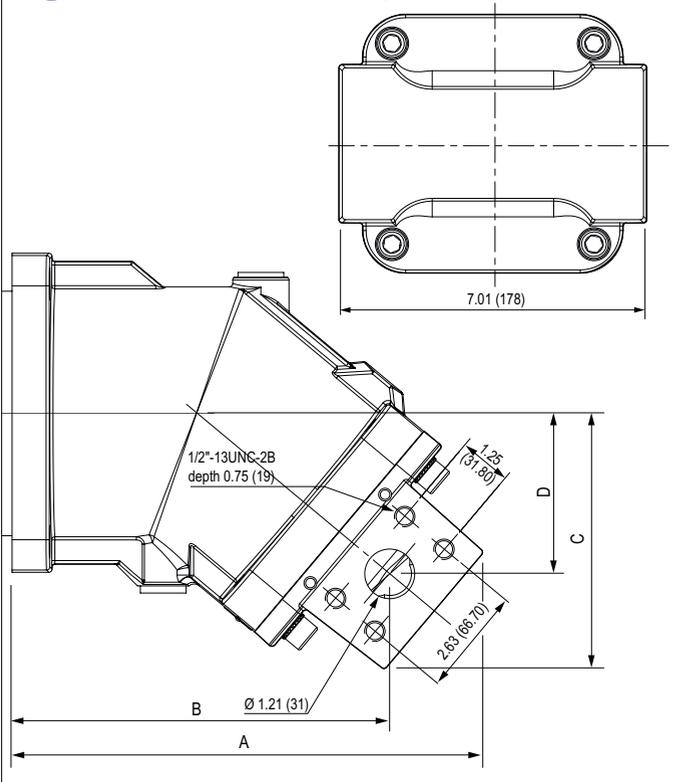
R45 SAE flange ports, rear SAE 1 1/4" 6000 psi



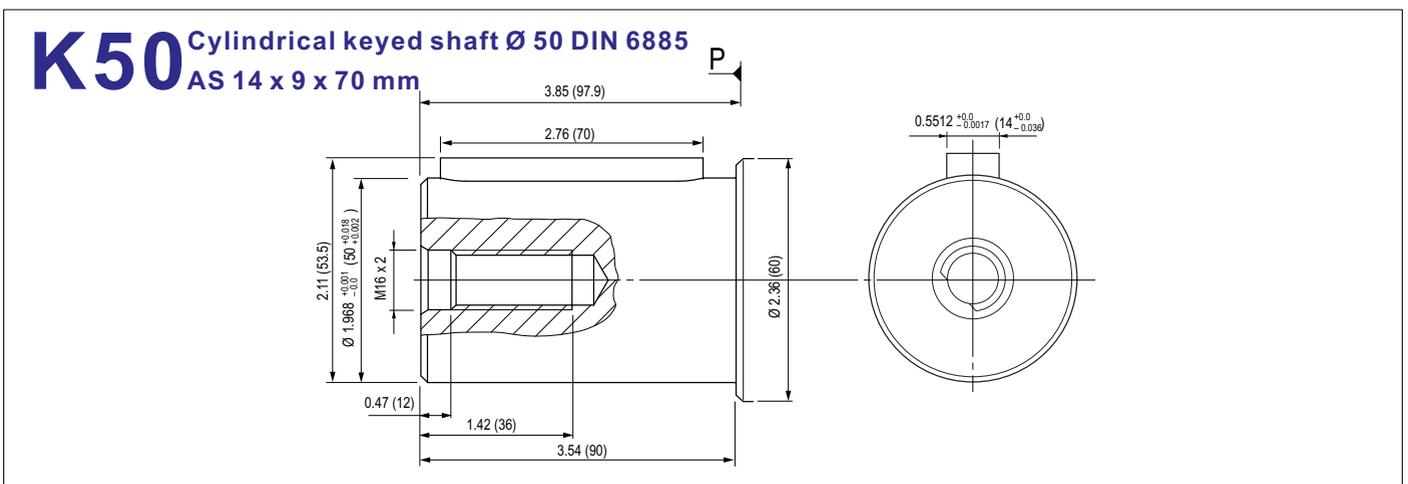
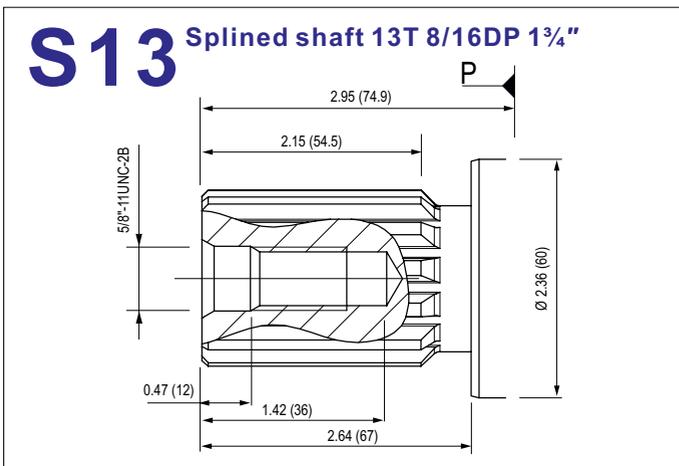
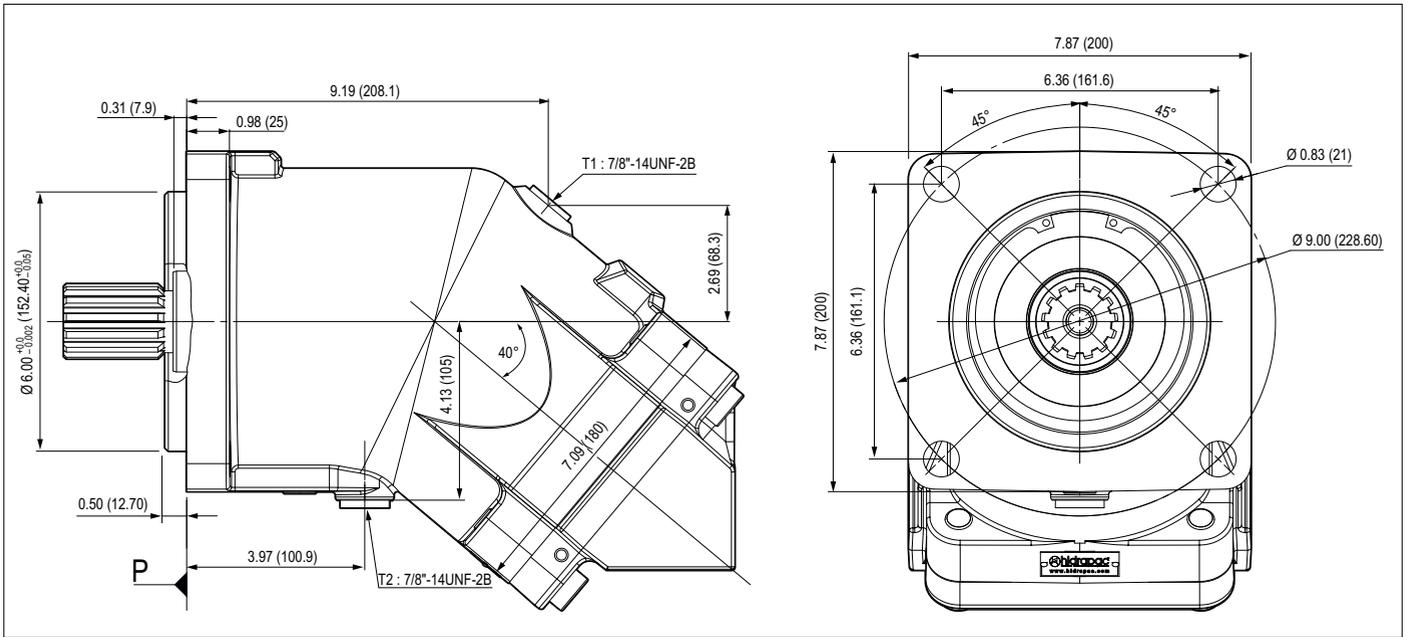
RD1 SAE flange ports, bottom SAE 1 1/4" 6000 psi



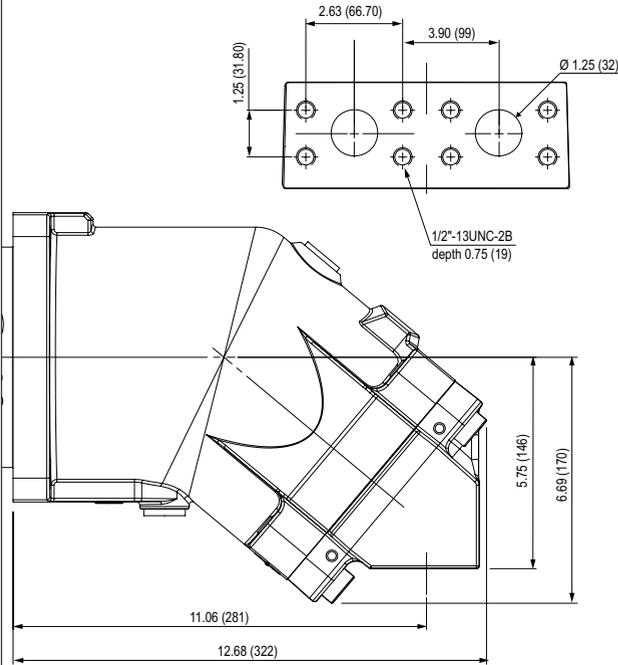
SD1 SAE flange ports, side A and B SAE 1 1/4" 6000 psi



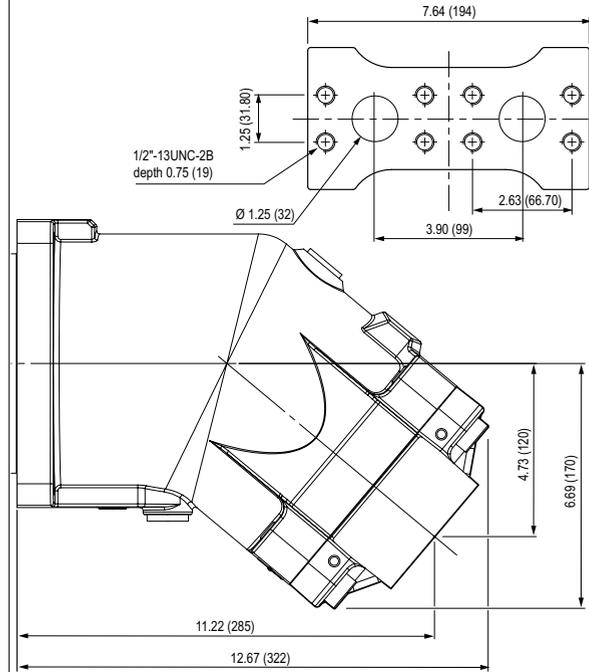
A2MS - 160 cc (SAE D) - 4 Bolt



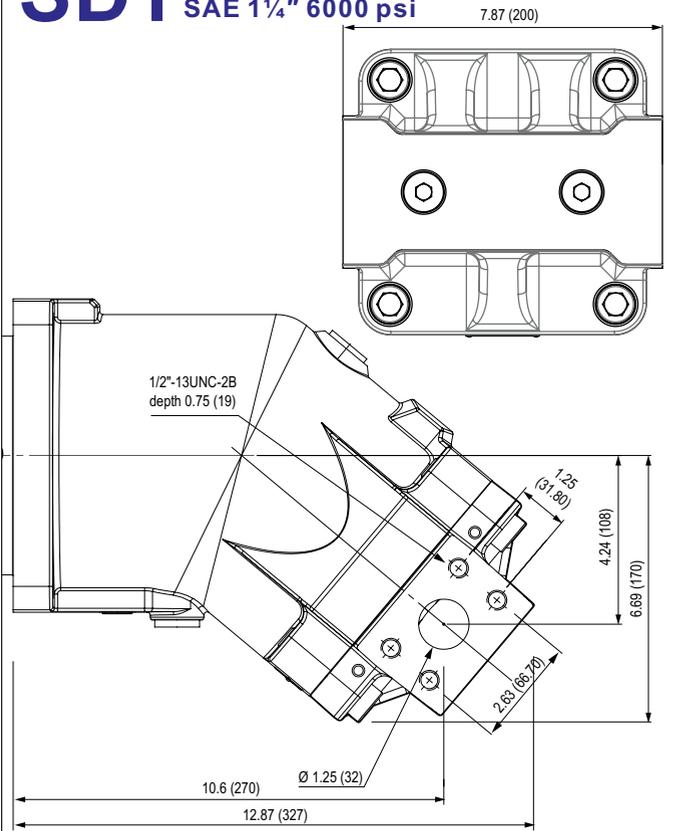
R45 SAE flange ports, rear SAE 1 1/4" 6000 psi



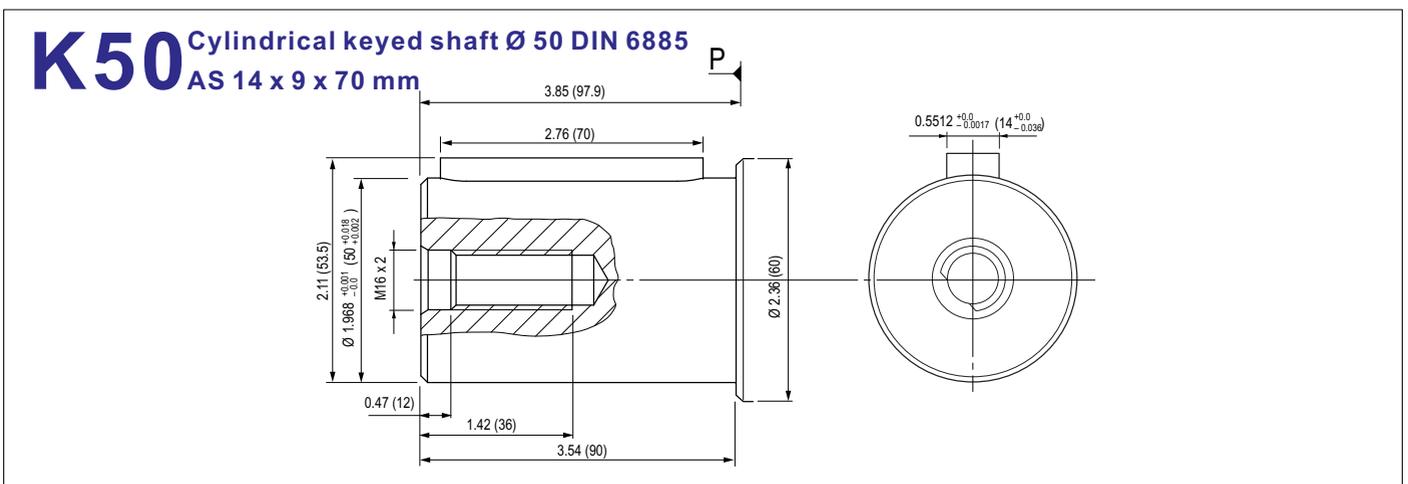
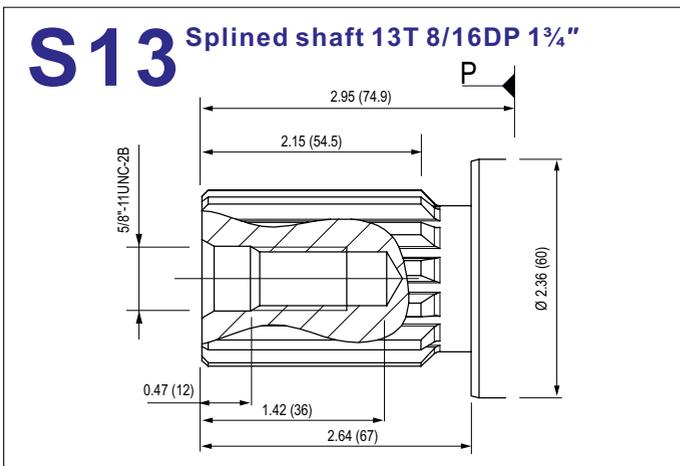
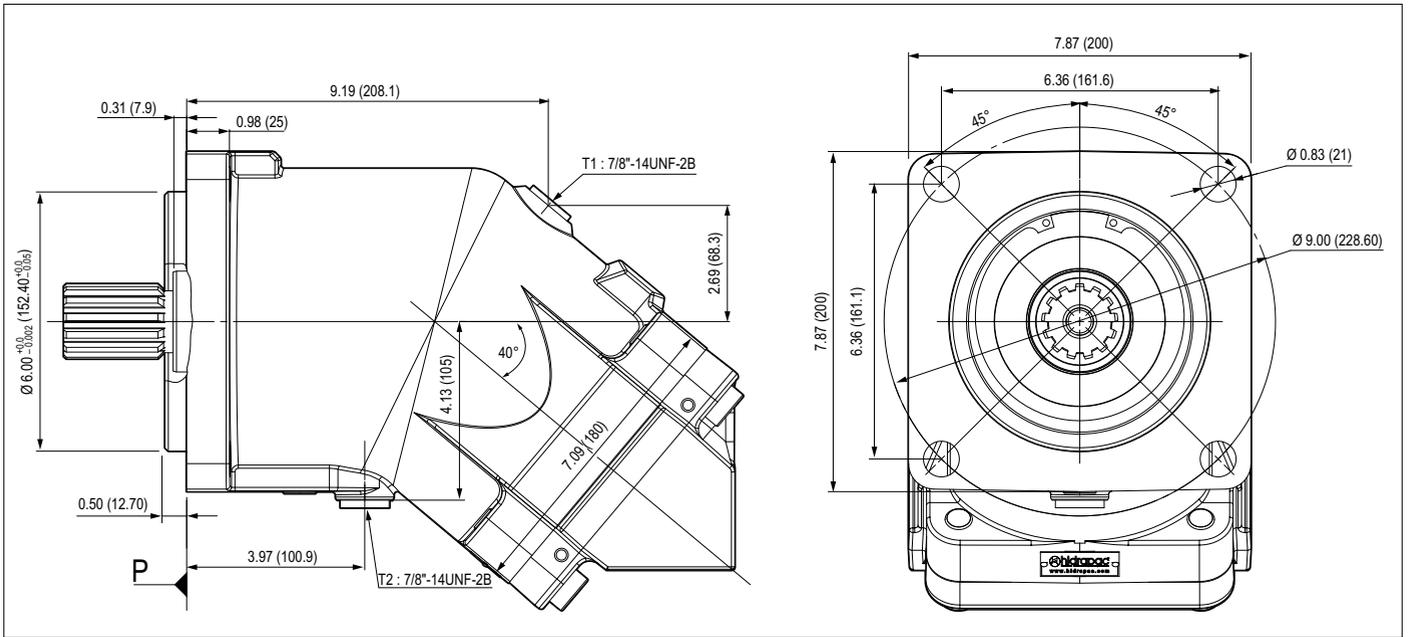
RD1 SAE flange ports, bottom SAE 1 1/4" 6000 psi



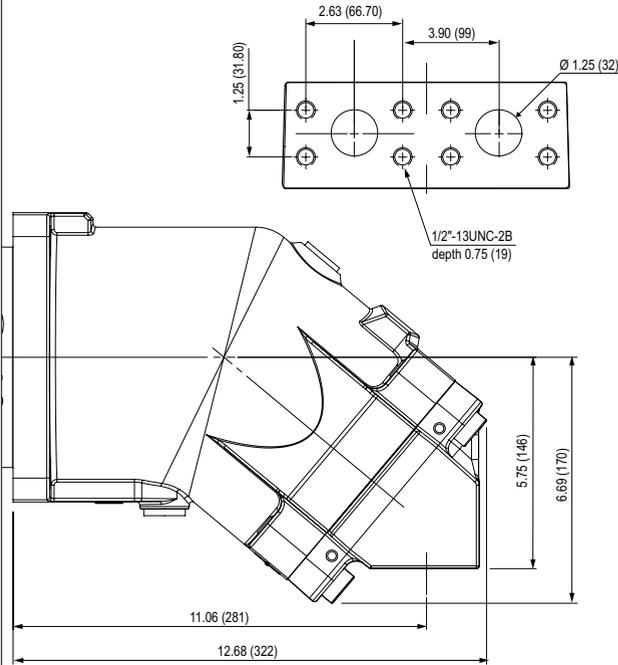
SD1 SAE flange ports, side A and B SAE 1 1/4" 6000 psi



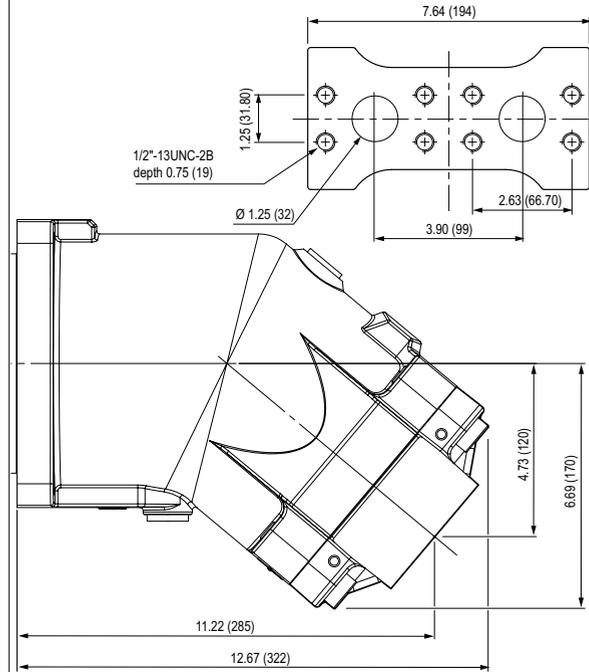
A2MS - 180 cc (SAE D) - 4 Bolt



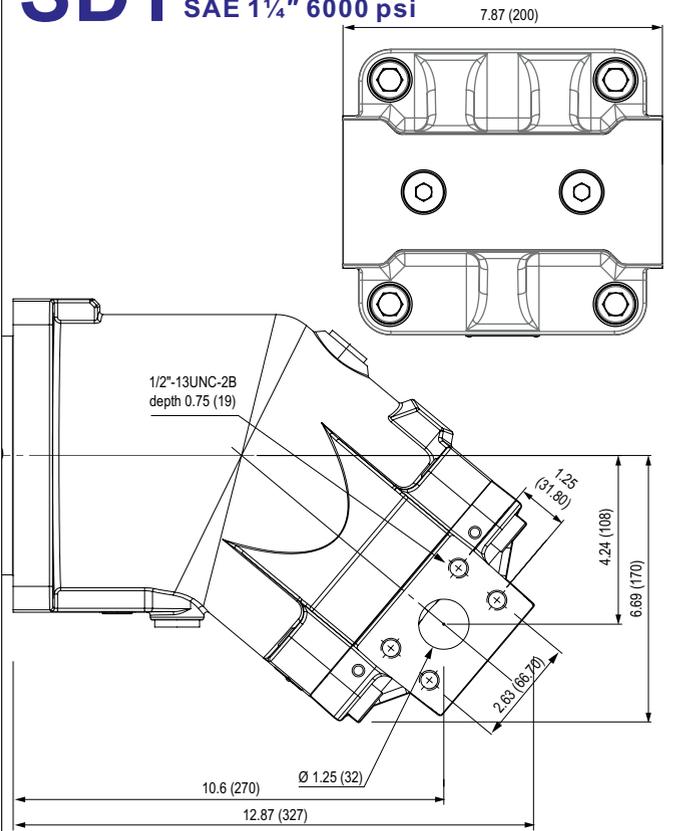
R45 SAE flange ports, rear SAE 1 1/4" 6000 psi



RD1 SAE flange ports, bottom SAE 1 1/4" 6000 psi

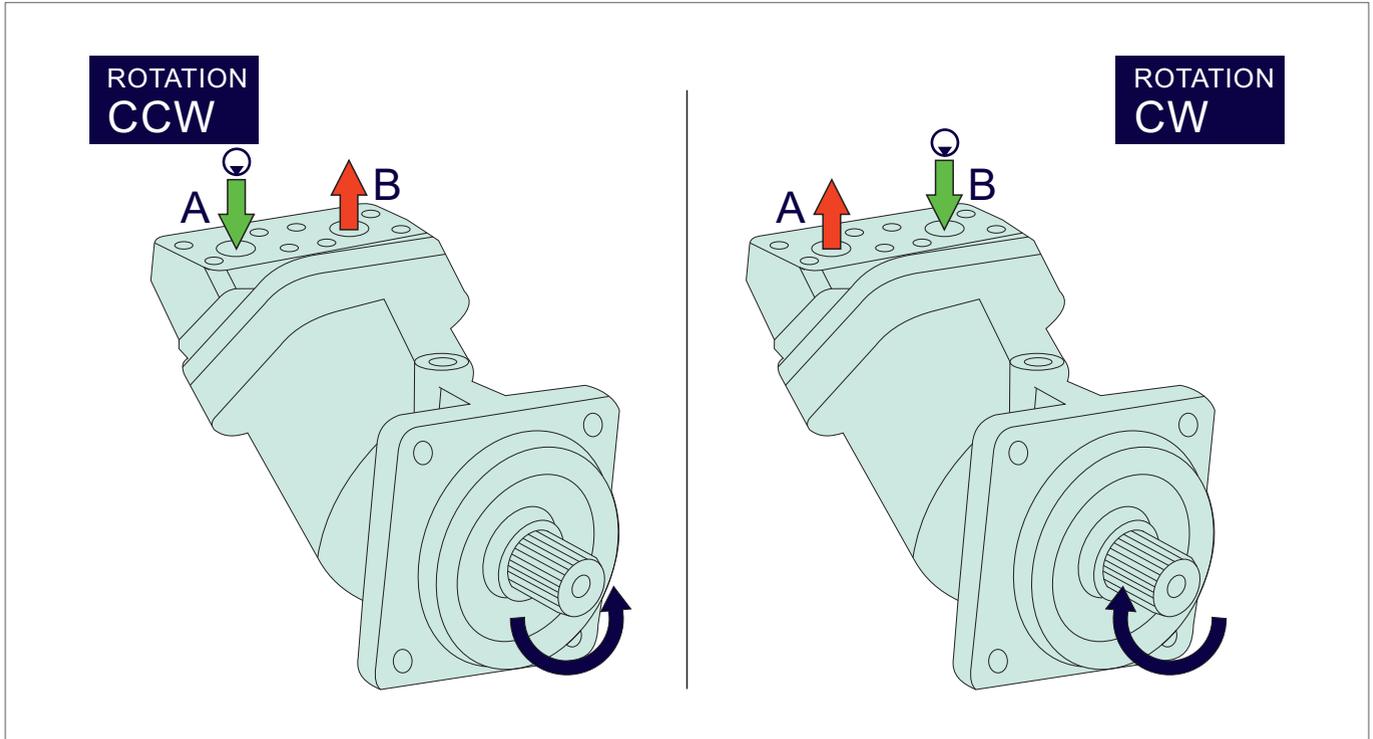


SD1 SAE flange ports, side A and B SAE 1 1/4" 6000 psi



Direction of Rotation; Reversible

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



Formulas			
Pump Output Flow	GPM	$GPM = (\text{Speed (rpm)} \times \text{disp. (cu. in.)}) / 231$	$GPM = (n \times d) / 231$
Pump Input Horsepower	HP	$HP = GPM \times \text{Pressure (psi)} / 1714 \times \text{Efficiency}$	$HP = (Q \times P) / 1714 \times E$
Pump Efficiency	E	Overall Efficiency = Output HP / Input HP	$E_{\text{Overall}} = \text{HP}_{\text{Out}} / \text{HP}_{\text{In}} \times 100$
		Overall Efficiency = Volumetric Eff. \times Mechanical Eff.	$E_{\text{Overall}} = \text{EffVol.} \times \text{EffMech.}$
Pump Volumetric Efficiency	E	Volumetric Efficiency = Actual Flow Rate Output (GPM) / Theoretical Flow Rate Output (GPM) \times 100	$\text{EffVol.} = \text{Q}_{\text{Act.}} / \text{Q}_{\text{Theo.}} \times 100$
Pump Mechanical Efficiency	E	Mechanical Efficiency = Theoretical Torque to Drive / Actual Torque to Drive \times 100	$\text{EffMech} = \text{T}_{\text{Theo.}} / \text{T}_{\text{Act.}} \times 100$
Pump Displacement	CIPR	$\text{Dsplcmnt (In.}^3 \text{ / rev.)} = \text{Flow Rate (GPM)} \times 231 / \text{Pump RPM}$	$\text{CIPR} = \text{GPM} \times 231 / \text{RPM}$
Pump Torque	T	Torque = Horsepower \times 63025 / RPM	$T = 63025 \times \text{HP} / \text{RPM}$
		Torque = Pressure (PSIG) \times Pump Displacement (CIPR) / 2 π	$T = P \times \text{CIPR} / 6.28$

- 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 Motors

POSITION

SAE Flange Bent Axis Motors can be operate any position.

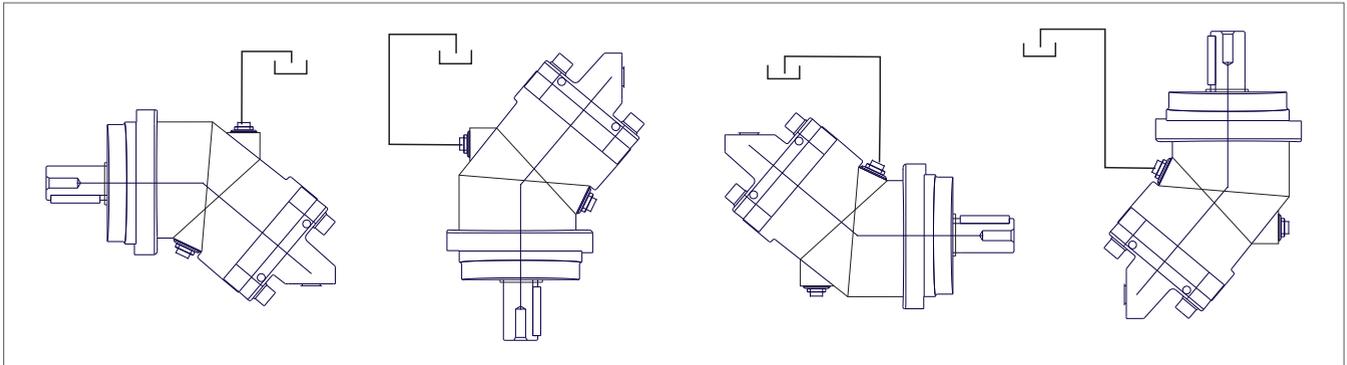
DIRECTION OF ROTATION

SAE Flange Bent Axis 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.

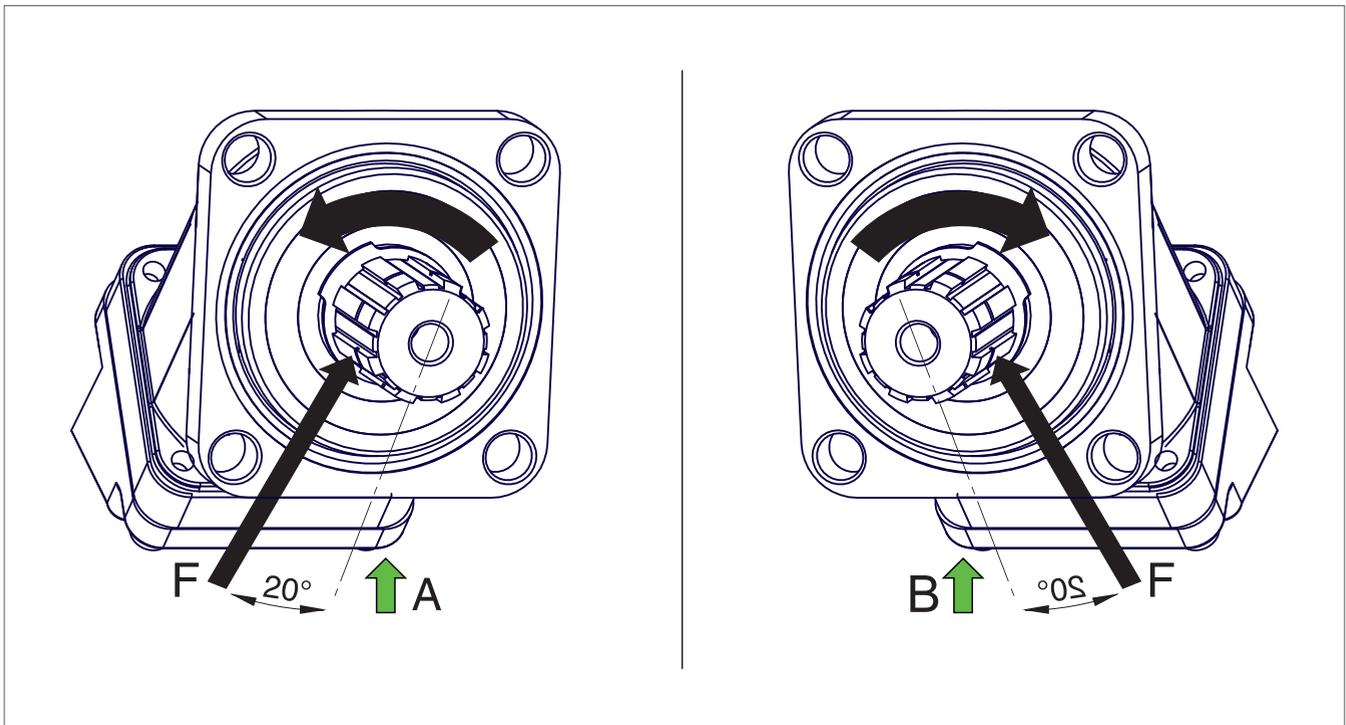


HYDRAULIC FLUID

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.

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

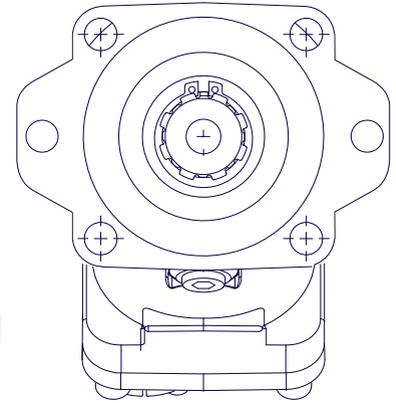
$$P = \frac{2\pi \cdot M \cdot n}{60000} = \frac{M \cdot n}{9549} = \frac{Q \cdot \Delta p \cdot \eta_t}{600} \text{ (kw)}$$

Speed

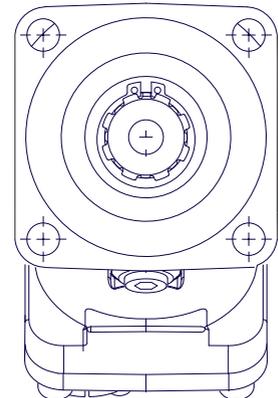
$$n = \frac{1000 \cdot Q \cdot \eta_v}{V_s} \text{ (rpm)}$$

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

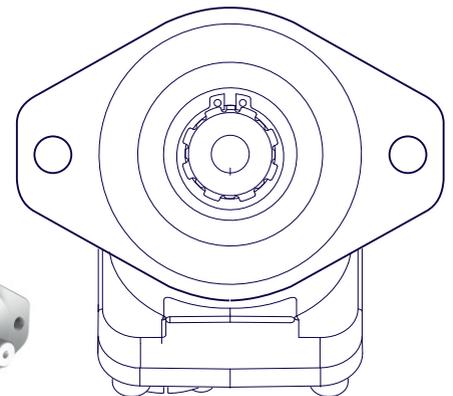
SAE B 6 Bolt Version



SAE C 4 Bolt Version



SAE B 2 Bolt Version



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, Motors

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

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HIDRAPAC HİDROLİK İÇ VE DIŞ TİC LTD ŞTİ

Address; Fevzicakmak Mah. Sıla Cad. Kobisan 3 San. Sit.
No:73 / C Karatay – Konya, PO Code; 42050, Türkiye

Phone; +90 551 111 77 44

VAT Number; 462 077 9143

www.HIDRAPAC.com

MAIL@HIDRAPAC.com

INFO@HIDRAPAC.com

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