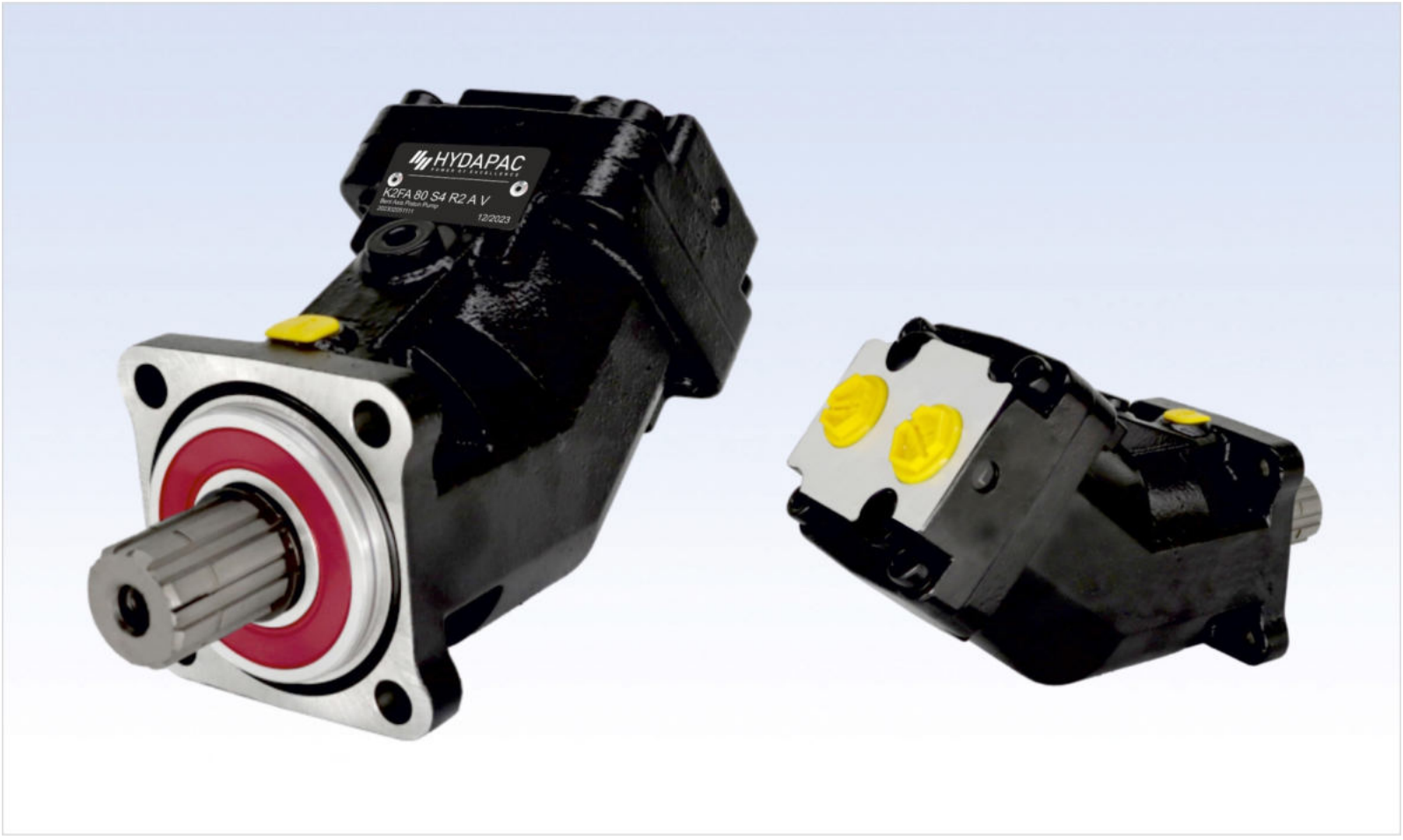
HYDAPAC
POWER OF EXCELLENCE

A9MD (DIN) Bent Axis Piston Motor

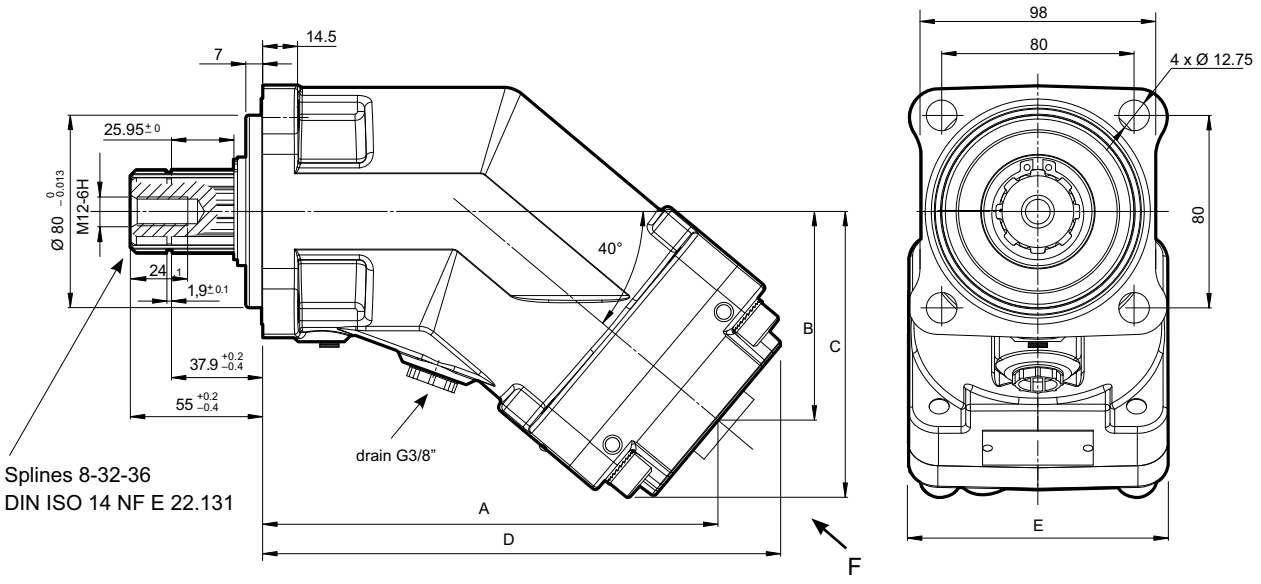
High Pressure Hydraulic Bent Axis Piston Motors, High Pressure, 450/500 BAR Working Pressure. High Rotational Speed, High Efficiency, Slim Design, Cast Iron Motor Body, Re-Designed in 2025.

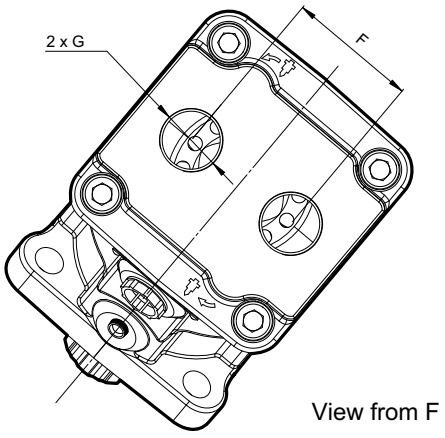
Designation;
5cc, 10cc, 12cc, 18cc, 25cc, 32cc, 41cc, 50cc, 56cc, 63cc, 80cc, 108cc, 126cc



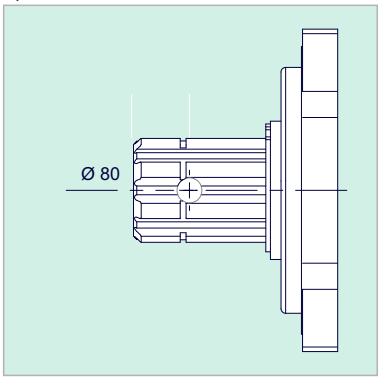
www.**hydapac.com**

mail@**hydapac.com**

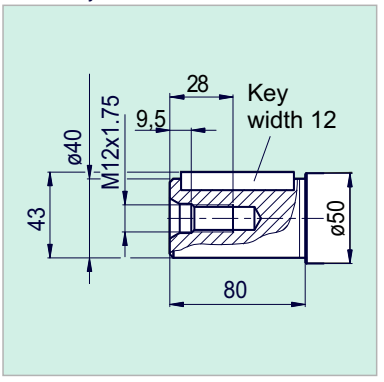




Splined Shaft : 8x32x36 DIN ISO 14 NF



Parallel Keyed Shaft: DIN 6885 12x8x63



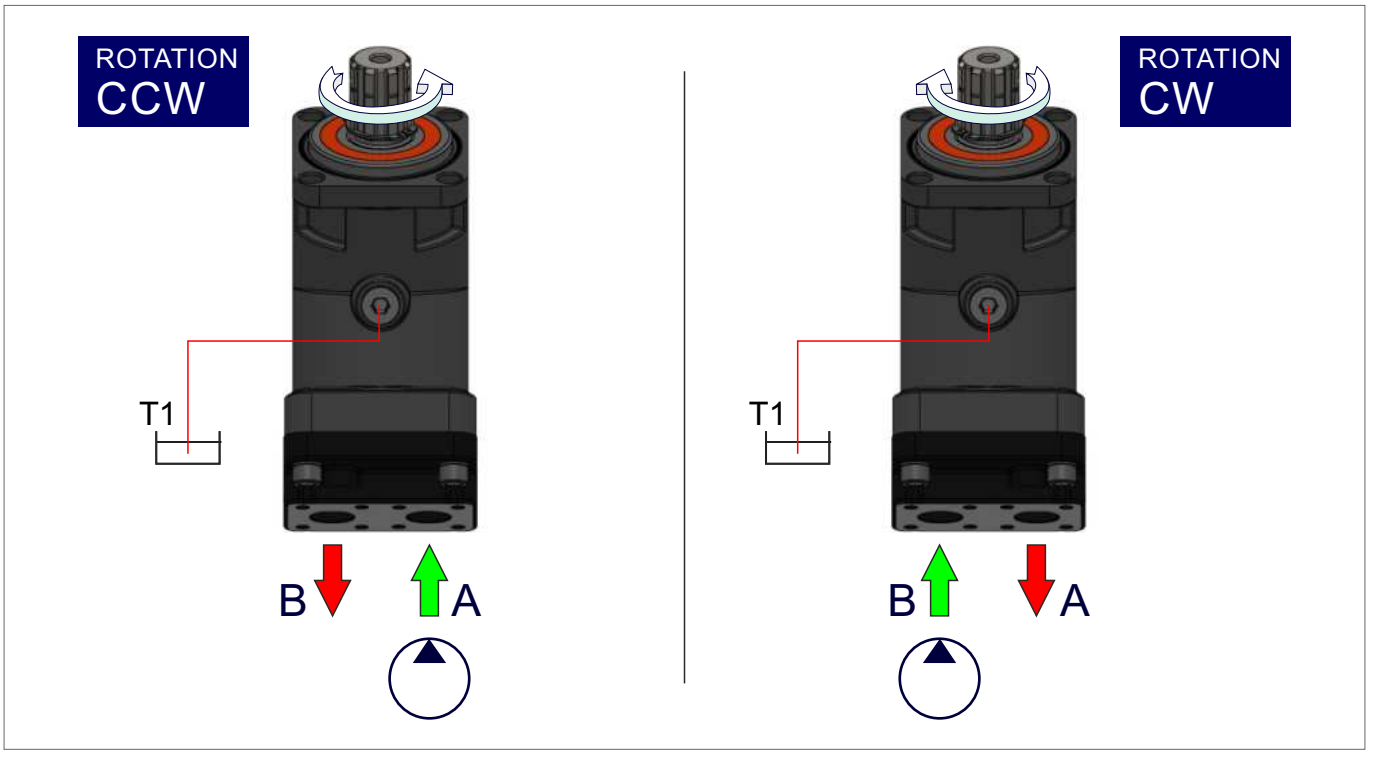
MOTOR MODEL	DISPL. (cc)	A	B	C	D	E	F	G	WEIGHT (kg)
5 cc	5.1	171.5	71.9	103.9	197.9	108.5	54	G 3/4"	9.3
10 cc	10.2	171.5	71.9	103.9	197.9	108.5	54	G 3/4"	9.3
12 cc	12.0	171.5	71.9	103.9	197.9	108.5	54	G 3/4"	9.3
18 cc	18.0	171.5	71.9	103.9	197.9	108.5	54	G 3/4"	9.3
25 cc	25.0	171.5	71.9	103.9	197.7	108.5	54	G 3/4"	9.3
32 cc	32.0	177.7	77.0	109.1	203.8	108.5	54	G 3/4"	10.3
41 cc	41.0	177.7	77.0	109.1	203.8	108.5	54	G 3/4"	10.3
50 cc	50,3	189.3	86.8	118.9	215.4	108.5	54	G 3/4"	11.5
56 cc	56,0	189.3	86.8	118.9	215.4	108.5	54	G 3/4"	11.5
63 cc	63.0	189.3	86.8	118.9	215.4	108.5	54	G 3/4"	11.5
80 cc	80,4	216.2	99.5	133.3	241.7	123.5	60	G 1"	14.5
108 cc	108	216.2	99.5	133.3	241.7	123.5	60	G 1"	14.5
126 cc	126	218.5	101.4	135.2	244	123.5	60	G 1"	14.5

Characteristics of the A9MD - DIN Flange Bent Axis Motors

MOTOR 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)	MOTOR MAX./MIN. TEMP. (celsius)	MAX. ALLOW PRESSURE CONTN./PEAK (bar)
5 cc	5.1	8800	9600	45	0.09	46	-25 / 110	400 / 450
10 cc	10.2	8600	9400	88	0.14	58	-25 / 110	400 / 450
12 cc	12.0	8000	8800	96	0.19	66	-25 / 110	400 / 450
18 cc	18.0	8000	8800	144	0.28	98	-25 / 110	400 / 450
25 cc	25.0	6300	6900	158	0.40	140	-25 / 110	400 / 450
32 cc	32.0	6300	6900	202	0.50	175	-25 / 110	400 / 450
41 cc	41.0	5600	6200	230	0.65	227	-25 / 110	400 / 450
50 cc	50,3	5000	5500	252	0.80	280	-25 / 110	400 / 450
56 cc	56,0	5000	5500	280	0.90	320	-25 / 110	400 / 450
63 cc	63.0	5000	5500	315	1.00	350	-25 / 110	400 / 450
80 cc	80,4	4500	5000	362	1.27	445	-25 / 110	400 / 450
108 cc	108	4000	4400	435	1.70	595	-25 / 110	400 / 450
126 cc	126	3400	4400	428	2.0	700	-25 / 110	400 / 450

Direction of Rotation; Reversible

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



Ordering Code; A9MD - DIN Flange Bent Axis Motors

Model Code	Displacement	Shaft Type	Flange Type	Rotation	Sealing
A9MD	**108**	**S**	**H4**	**W**	**V**
A9MD Bent Axis Hydraulic Motor DIN Flange	**5** **10** **12** **18** **25** **32** **41** **50** **56** **63** **80** **108** **126**	**S** Splined Shaft (default) 8x32x36 DIN ISO 14NF **K** Parallel Keyed Shaft (special) DIN 6885	**H4** ISO 7653 Ø80 4 Bolt Flange	**W** Direction of Rotation Reversible Independet	**V** Viton High Pressure Seal **N** Nitrile Seal 5/10 Bar

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	$D_{splcmnt}$ ($In.^3$ / 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.

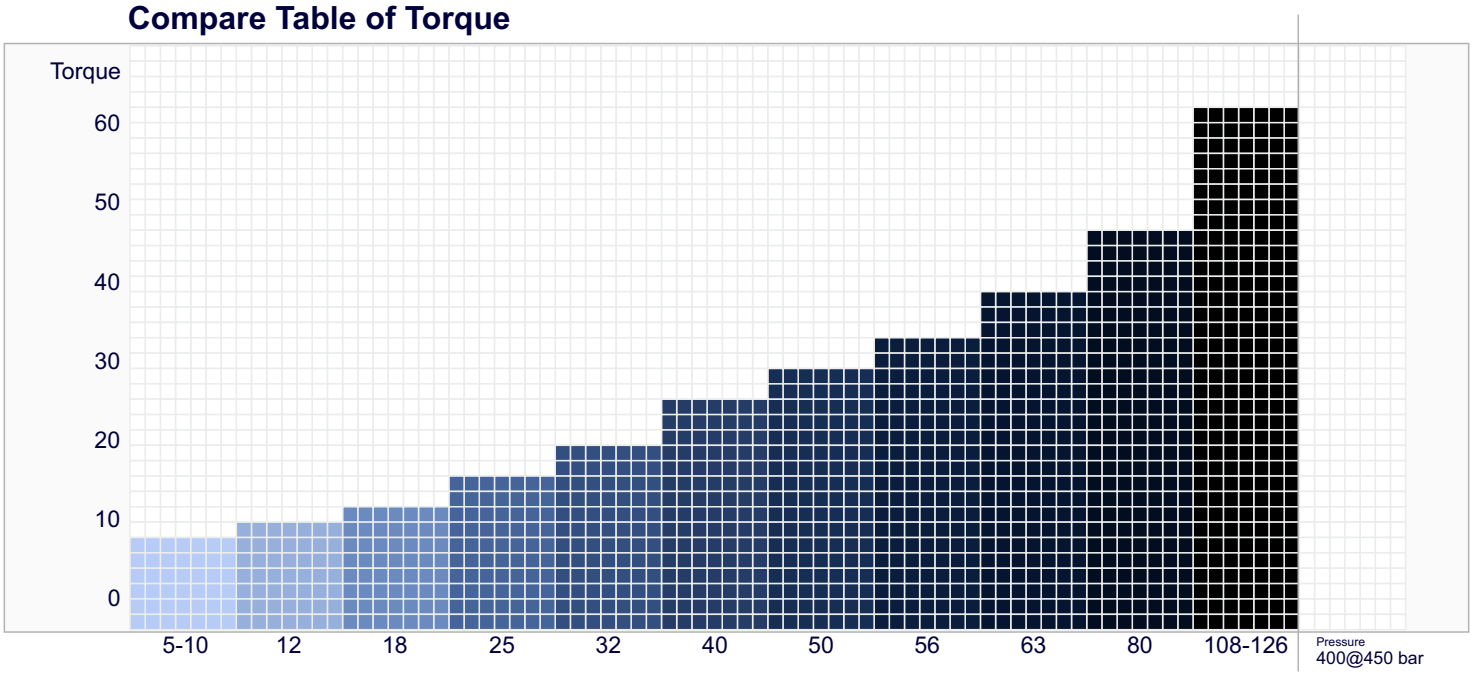
Horsepower for idling a pump : To idle a pump when it is unloaded will require about 5% of it's full rated power

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

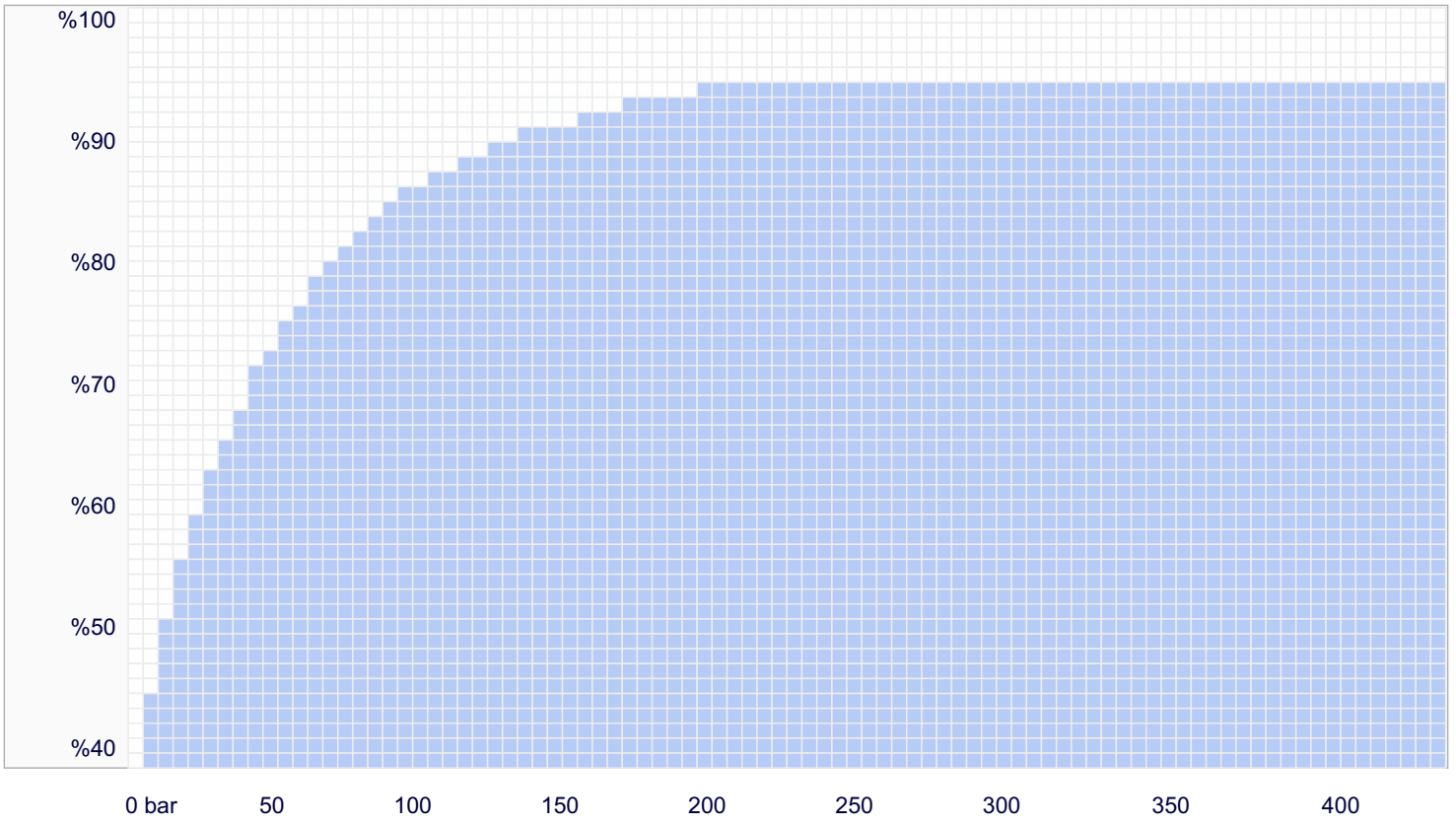
Flow velocity in hydraulic lines : Pump suction lines 2 to 4 feet per second, pressure lines up to 500 psi - 10 to 15 ft./sec., pressure lines 500 to 3000 psi - 15 / 20 ft./sec.; all oil lines in air-over-oil systems; 4 ft./sec.

Performance, Torque, Speed and Pressure Charts

Compare Table of Torque



Efficiency of Bent Axis Motors (1000 rpm)



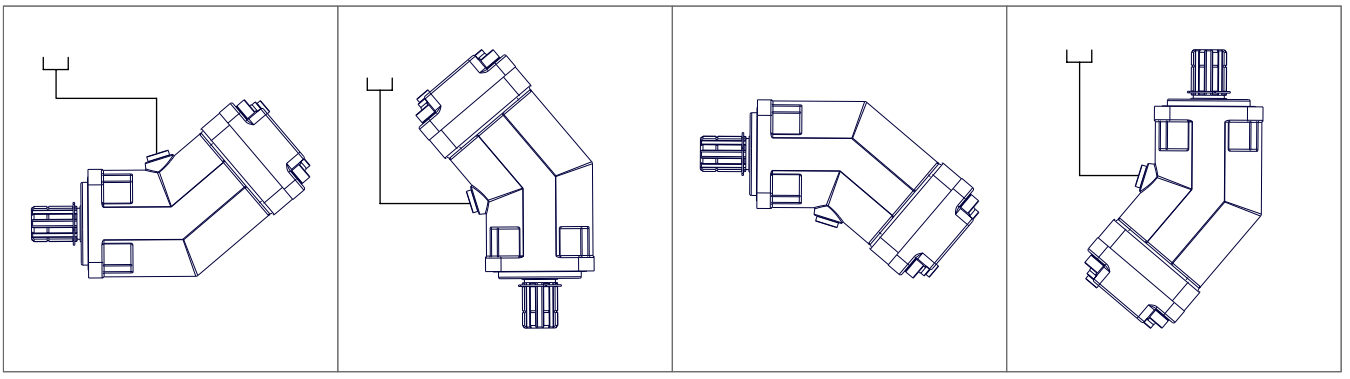
Installation & Assemble Informations for Bent Axis Motors

POSITION
DIN Flange Bent Axis Motors can be operate any position.

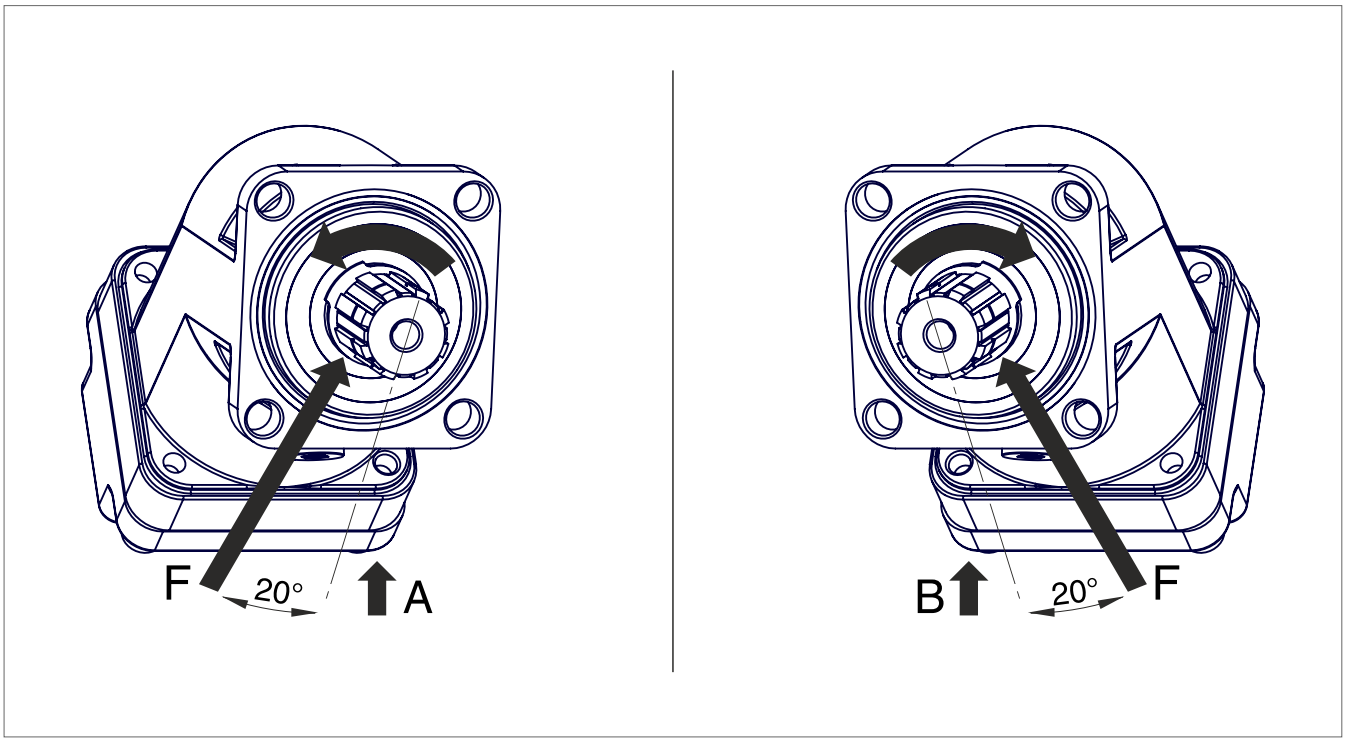
DIRECTION OF ROTATION
DIN Flange Bent Axis Motors can be operate in both directions of rotation.

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.



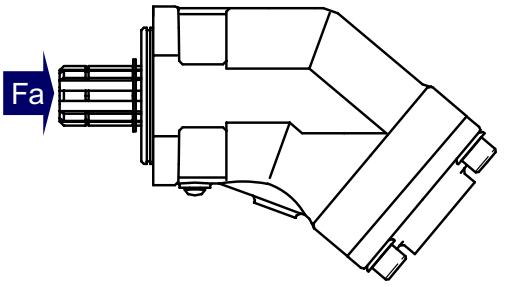
FOR USE;
Available via e-mail on request or each motor is supplied via Starting datasheet.

Formulas, Calculations, Installation Guide

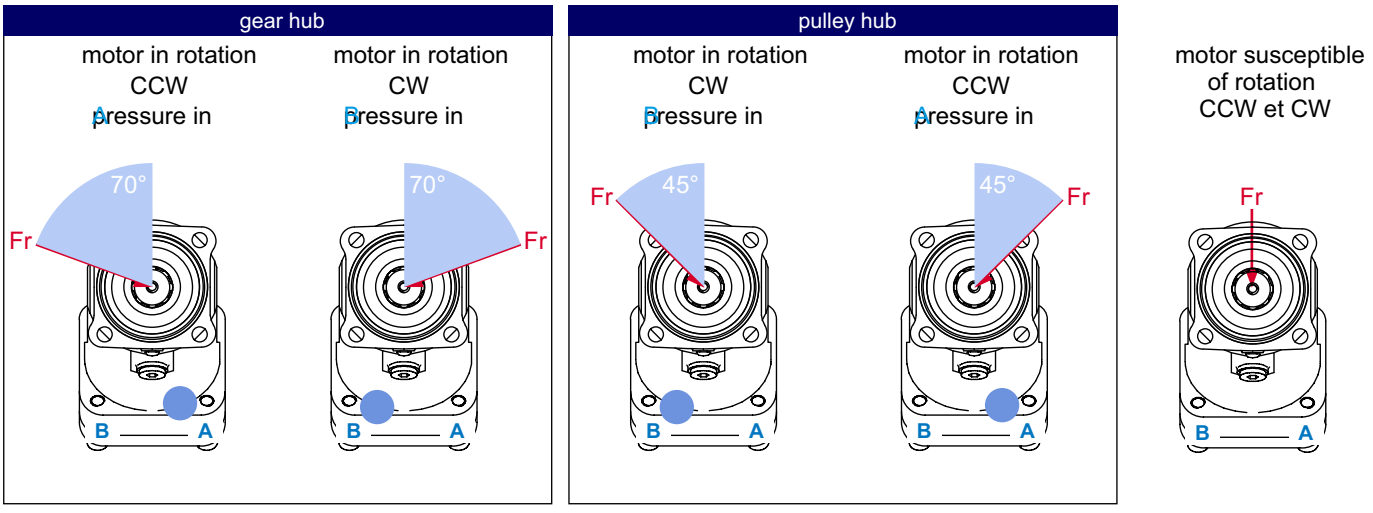
Quick Calculation

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

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



Motor model	5, 10, 12	18 cc	25 cc	32 cc	41 cc	50 cc	56, 63cc	80 cc	108 cc	126 cc
Fa (N/bar)	15	20	30	30	40	40	50	60	80	90



Other Advantages of DIN Flange Bent Axis Motors

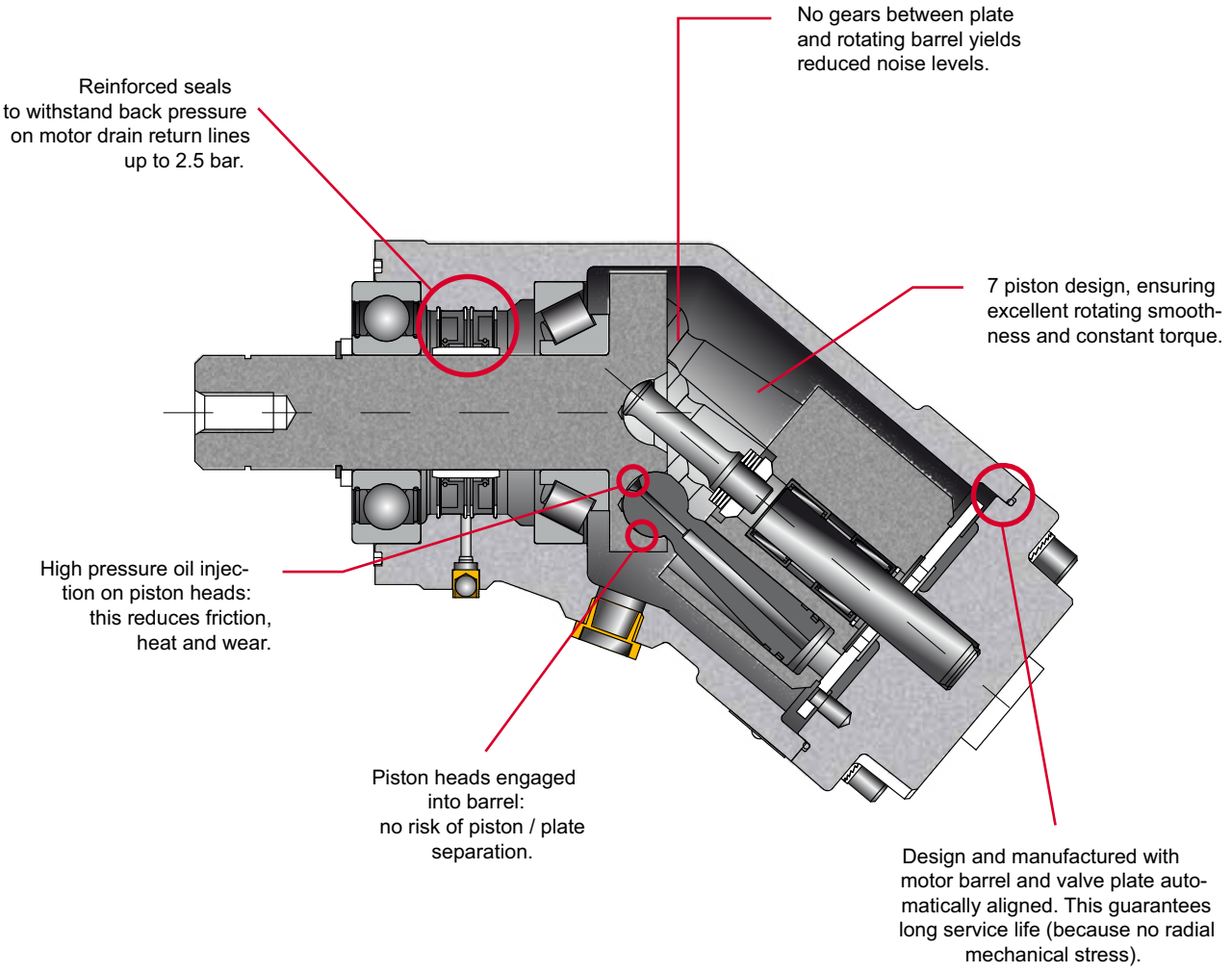
Interchangeable and Compatible with other DIN Bent Axis Motors,
Special Designed Pistons,
One-Piece Piston with Piston Rings,
For use in stationary and mobile applications,
Compact motor design and extra durable parts,
High Operational Reliability and High Starting Torque
Extra Warranty with Wide Service

Bent Axis Hydraulic Piston Motors

40° bent axis design giving high power, small overall dimensions, optimum efficiency and economic design. Flange and shaft designed for direct mounting on the equipments. The fixed displacement bent axis motors generates a hydraulic fluid flow. It is designed for use in trucks, commercial vehicles, construction type equipments and all stationary hydraulic applications. The DIN Flange is a motor with rotary group in bent-axis design. 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 motor covers the whole displacement range 5 to 126 cm3/rev. The motor has been developed with modern styling and design to satisfy market demand as to designed new generation plate, extra parts and pistons with give high flow performance, high pressures with high efficiency and very small dimensions.

The motor is available both to DIN and SAE world standards and can be mounted either directly at the gear box or via a drive shaft. Other brand bent axis motors compatible and interchangeable with DIN Fl. bent axis motors. Refer to the data sheet and order confirmation for the technical data, operating conditions and operating limits of the bent axis piston motors.



Complete Product Range

Bent Axis Piston Motors

A9MD (DIN) Bent Axis Motors
A9MO (ISO) Bent Axis Motors
A9MS (SAE) Bent Axis Motors
A9ML (SAE2) Bent Axis Motors
A9MF (Fixed Plugin) Bent Axis Motors
A10M (HYBRID) Bent Axis Motors
A7GM Hydraulic Gear Motors
A7GMT Tandem Hydraulic Gear Motors

Bent Axis Piston Pumps

A8PA (Aluminum) Bent Axis Pumps
A8PD (DIN) Bent Axis Pumps
A8PO (ISO) Bent Axis Pumps
A8PS (SAE) Bent Axis Pumps
A8PF (Fixed Plugin) Bent Axis Pumps
A10 (HYBRID) Bent Axis Pumps
A11 (ISO2) Bent Axis Pumps
A11 (SAE2) Bent Axis Pumps

Variable Displacement Pumps

A12V Variable Displacement Piston Pumps

Dual Flow Piston Pumps

A8PL (DIN) Dual Flow Pumps

Axial Piston & Gear Pumps

A4PP Axial Hydraulic Piston Pumps
A6HP High Pressure Piston Pumps
A7GP Hydraulic Gear Pumps
A7GPT Tandem Hydraulic Gear Pumps

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

www.hydapac.com

Address;

HYDAPAC HYDRAULIC PUMPS & MOTORS

Address; (Fabrika, İmalat)

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

Address; (Montaj, Sevkiyat)

Fevzicakmak Mah. Sıla Cad. Kobisan 3 San. Sit.
No: 71 / AD Karatay – Konya, PO Code; 42050, Turkiye

Phone; +90 551 148 26 88

mail@hydapac.com