HYDROGOLD
HYDRAULIC PUMPS & MOTORS

A9ML (SAE2) Eksenel Pistonlu 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;
12cc, 18cc, 25cc, 32cc, 41cc,
50cc, 56cc, 63cc,

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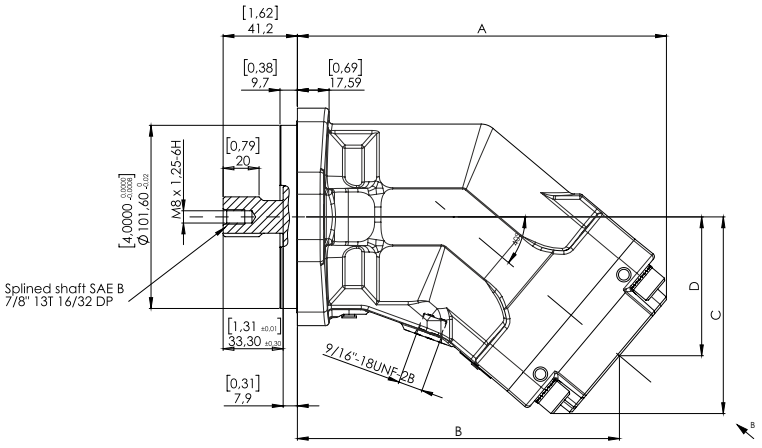
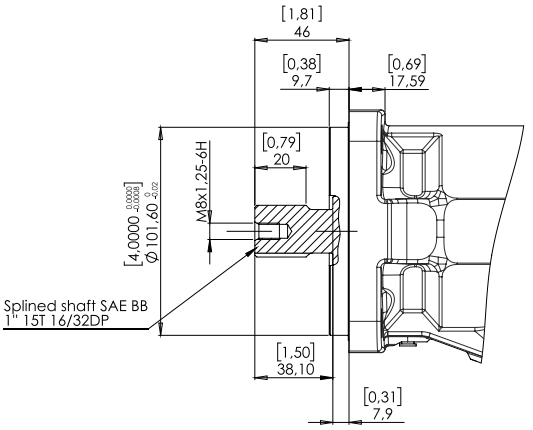
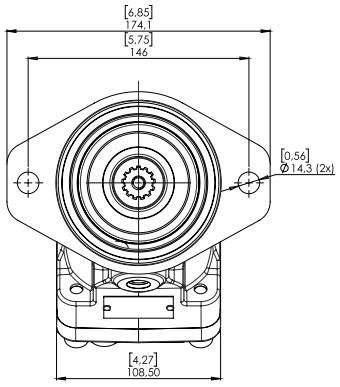
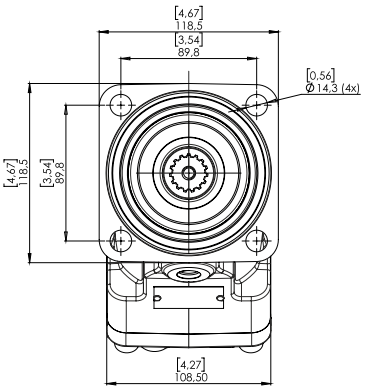




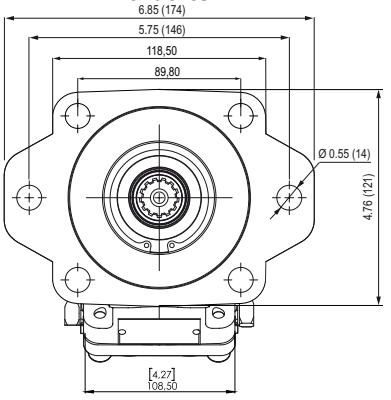
2 bolts



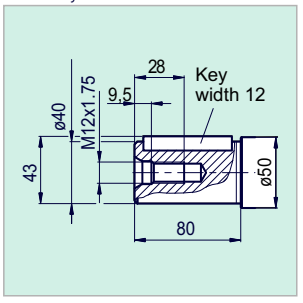
4 bolts

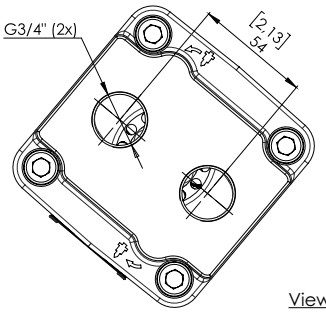


6 bolts



Parallel Keyed Shaft: DIN 6885





View from B

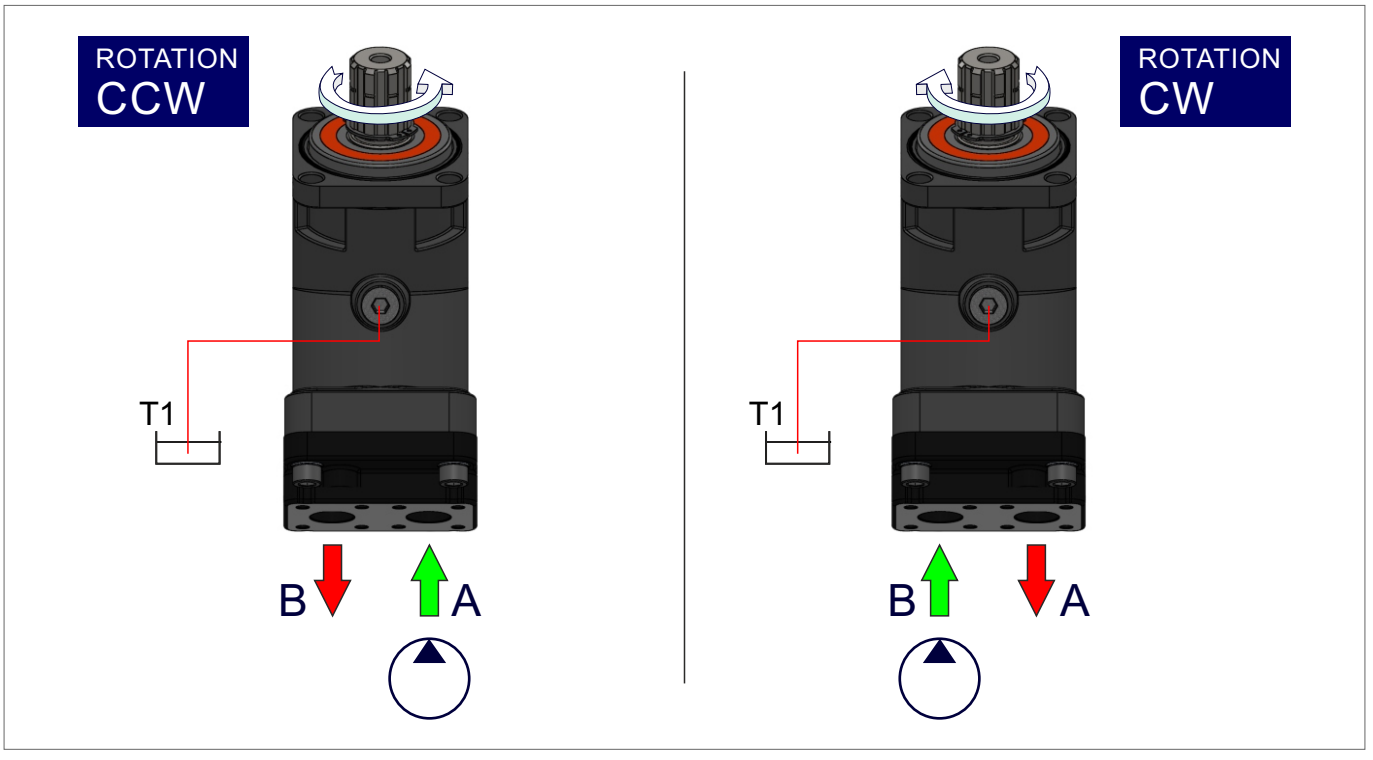
MOTOR MODEL	DISPL. (cc)	A	B	C	D	SHAFT (SPLINED)	SHAFT (KEYED)
12 cc (SAE J744)	12.1	197.2	172.5	103.7	73.0	SAE B 7/8"13T-16/32DP	Parallel Keyed Shaft: DIN 6885
18 cc (SAE J744)	18.0	197.2	172.5	103.7	73.0	SAE B 7/8"13T-16/32DP	Parallel Keyed Shaft: DIN 6885
25 cc (SAE J744)	25.1	197.2	172.5	103.7	73.0	SAE B 7/8"13T-16/32DP	Parallel Keyed Shaft: DIN 6885
32 cc (SAE J744)	32.0	203.2	178.5	108.7	77.0	SAE B 7/8"13T-16/32DP	Parallel Keyed Shaft: DIN 6885
41 cc (SAE J744)	41.2	203.2	178.5	108.7	77.0	SAE B 7/8"13T-16/32DP	Parallel Keyed Shaft: DIN 6885
50 cc (SAE J744)	50.2	214.7	190.0	118.2	86.5	SAE BB 1" 15T-16/32DP	Parallel Keyed Shaft: DIN 6885
56 cc (SAE J744)	56.0	214.7	190.0	118.2	86.5	SAE BB 1" 15T-16/32DP	Parallel Keyed Shaft: DIN 6885
63 cc (SAE J744)	63,3	214.7	190.0	118.2	86.5	SAE BB 1" 15T-16/32DP	Parallel Keyed Shaft: DIN 6885

Characteristics of the A9ML - SAE2 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)
12 cc	12.1	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	25.1	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	41.2	5600	6200	230	0.65	227	-25 / 110	400 / 450
50 cc	50,2	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	63.3	5000	5500	315	1.00	350	-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; A9ML - SAE2 Flange Bent Axis Motors

Model Code	Displacement	Shaft Type	Flange Type	Rotation	Sealing
A9ML	**25**	**S13**	**B6**	**W**	**V**
A9ML Bent Axis Hydraulic Motor SAE2 Flange	**12** **18** **25** **32** **41** **50** **56** **63**	**S13** Splined Shaft SAE B 7/8" 13T-16/32DP **S15** Splined Shaft SAE BB 1" 15T-16/32DP **K40** Keyed Shaft DIN 6885	**B2** 2 Bolt SAE2 Flange Shaft **B4** 4 Bolt SAE2 Flange Shaft **B6** 6 Bolt SAE2 Flange Shaft	**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	$Displacement (In.^3 / rev.) = Flow Rate (GPM) \times 231 / Pump RPM$	CIPR = GPM × 231 / RPM
Pump Torque	T	Torque = Horsepower × 63025 / RPM	T = 63025 × HP / RPM
		$Torque = Pressure (PSIG) \times Pump Displacement (CIPR) / 2\pi$	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.

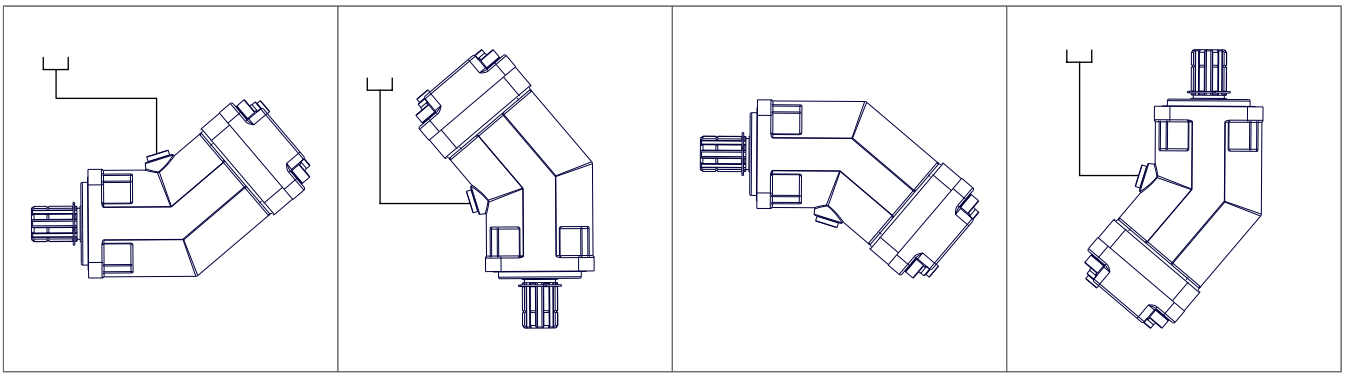
Installation & Assemble Informations for Bent Axis Motors

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

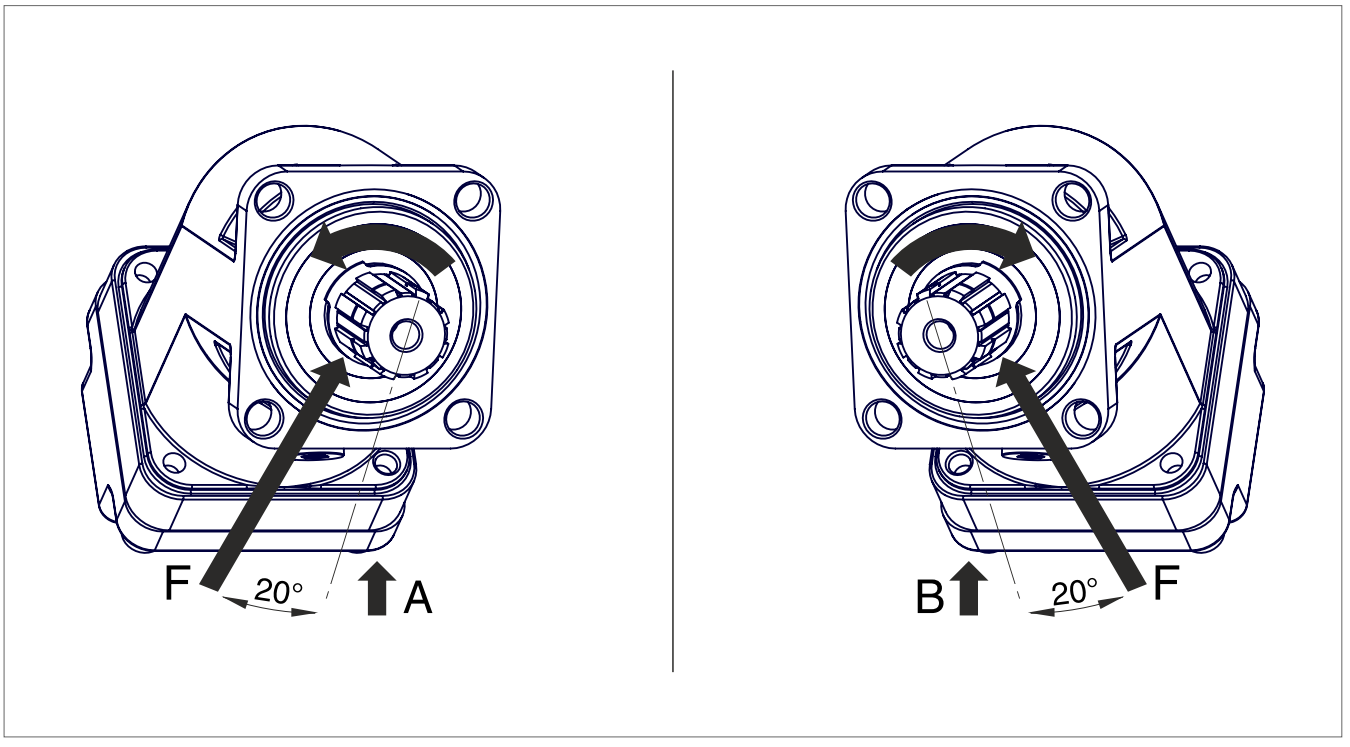
DIRECTION OF ROTATION
DIN Flange Bent Axis Motors can be operate in both directions of rotation.

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.



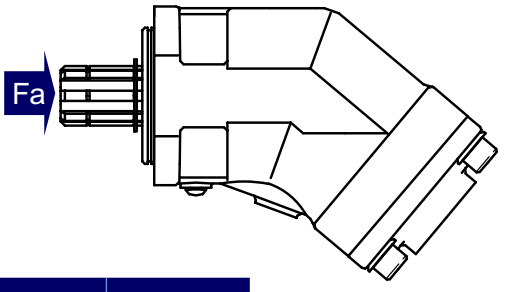
FOR USE;
Available via e-mail on request or each motor is supplied via Starting datasheet.

Formulas, Calculations, Installation Guide

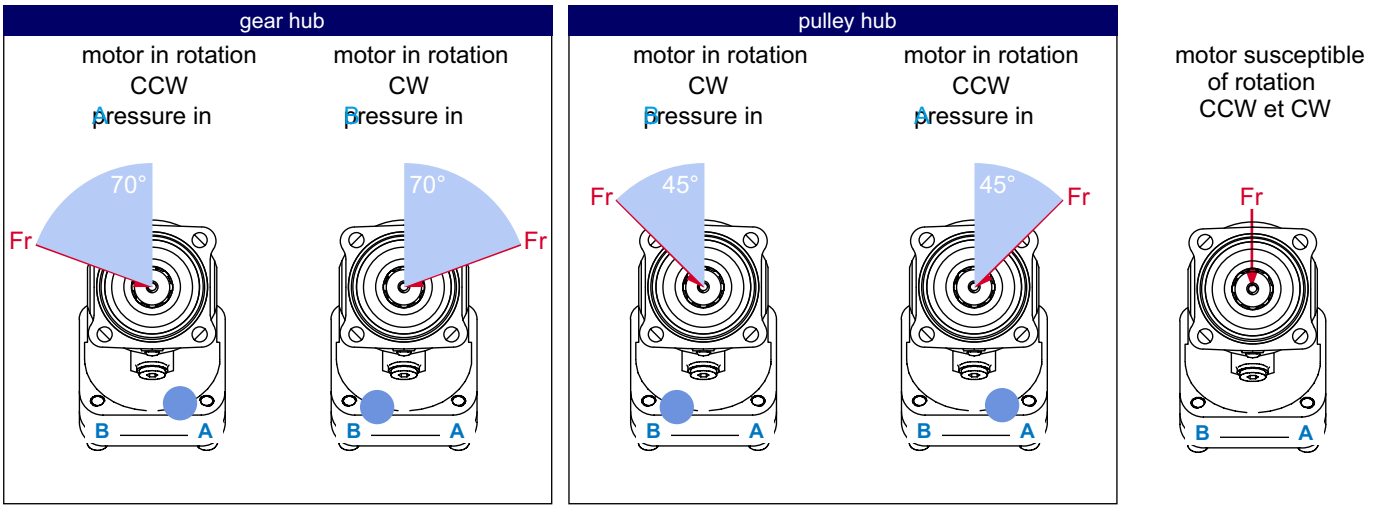
Quick Calculation

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.)
Δp = 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	18 cc	25 cc	32 cc	41 cc	50 cc	56, 63cc
Fa (N/bar)	20	30	30	40	40	50



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

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

- A8P (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

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HYDRAULIC PUMPS & MOTORS

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.

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Address;

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