GLOBAL NETWORK COMPANY

JS INTERNATIONAL

THE WORLD BEST IN HYDRAULIC COMPONENTS

PISTON PUMPS | PISTON MOTORS | ORBITAL MOTORS
WINCH MOTORS | GEAR PUMPS | RCV | CARTERIDGE VALVES
ACCUMULATORS | HYDRAULIC HOSE

Thank you our valued customers for your continuous support.

JS International, Inc., has been working hard to help our customers apply their design for key components of their products in a broad range of industries by applying and supplying our various hydraulic products in such areas as construction equipment, agricultural machinery and industrial equipment since it started business.

Products such as hydraulic motors, hydraulic pumps, hydraulic valves and HST have been developed based on the designs that reflect intents and opinions of our customers and we are supplying optimized products that fit our customers' needs. Currently, we are working on the development of various products that can be applied to varied areas of application in heavy industries including construction equipment, agricultural machinery, special-purpose equipment, and shipbuilding. We promise you we will develop more products that our customers will be in need of.

As a company which is doing its best for customer satisfaction with its best quality and customer services, we will work hard in the future too to become world best company JS International, Inc.,
a world class company specializing in hydraulic pressure systems.

In response to any types of applications, we supply very varied spiral hose products to our customers.

This product line is highly appropriate to all types of applications of hose products, including high and low pressure varied industrial fixed type applications and on/off highway mobile applications.
Our HYDRAULIC HOSE products, providing maximum durability and continuing performance, are designed to make them fit to needs of any industries such as construction equipment, agricultural machinery and shipbuilding.

CEO. Hansu Yoon

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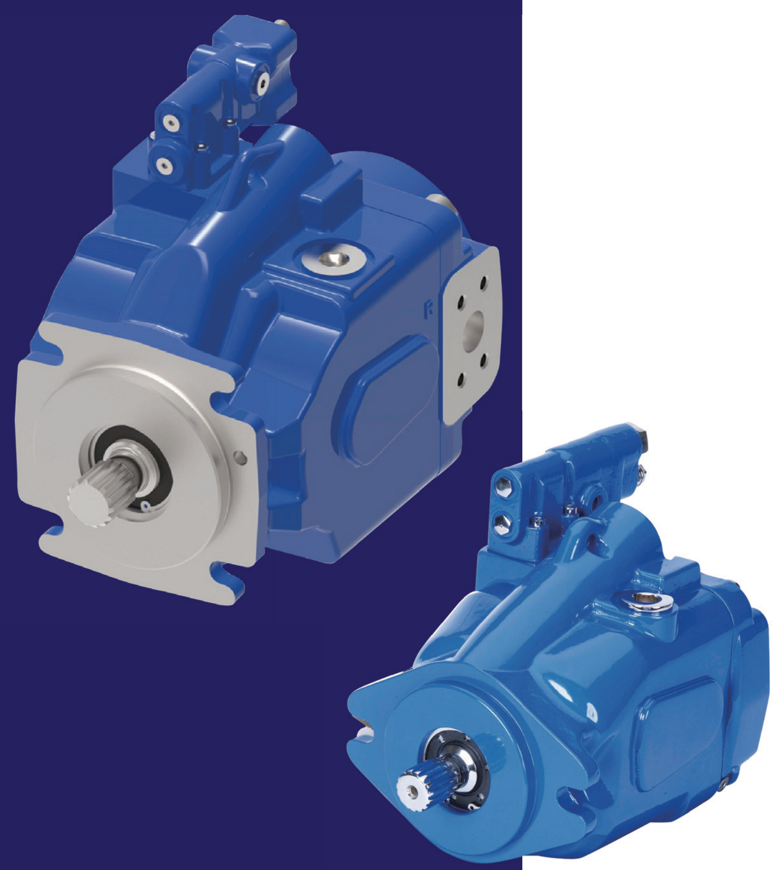
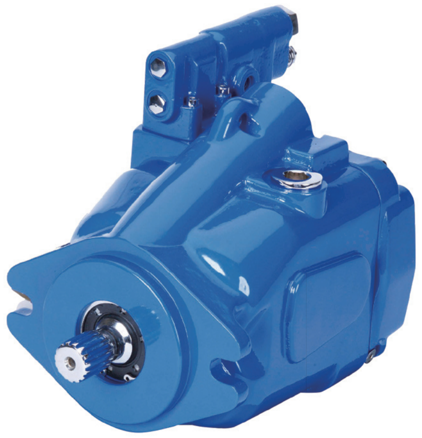


Variable DISPLACEMENT PISTON PUMP

420 MOBILE PISTON PUMP



INTRODUCTION

Eaton's 420 Series mobile pumps are open circuit, axial piston designs with displacements of 41cc, 49cc, 62cc, and 80cc for operating speeds up to 2,650 rpm.

They are available with a variety of control options to match their performance to a broad range of mobile applications.

The highly efficient pump controls reduce cooling system requirements, allowing a smaller and less expensive design to be used. Or, cooling capacity can be kept the same and the flow capability of the system increased to improve performance.

A strong, field-proven rotating group allows the pumps to handle pressures to 280 bar (4000 psi) continuous and 320 bar (4600 psi) intermittent – with less maintenance cost. 420 Series pumps use a saddle-type swashplate with steel-backed polymer bearings and a pressure lubrication passage to reduce wear and support internal loads.

The swashplate is very stiff, which reduces deflection and allows even loading of the bearings to extend the unit's service life. The combination of high load capacity bearings and a stiff drive shaft help provide a pump B10 bearing life of up to 10,280 hours at rated mobile conditions, reducing operating costs and extending operating life.

A single control piston is used to vary pump output.

This design reduces the forces acting on the swashplate, resulting in reduced package size, which allows pump installation into tighter locations.

In response to customer expectations and regulatory requirements, Eaton has designed the 420 Series pumps to operate at very low noise levels. A bimetal timing plate is used to improve pump filling characteristics which further reduces fluid-borne noise and extends pump life.

Both SAE and ISO mounting flange configurations are available as well as SAE and ISO tube-and flange-type ports. Side- or end-ported models are available to facilitate plumbing and help fit the pump to machine space needs, as are multiple drain ports to allow many mounting orientations.

Typical Applications

- Loader backhoes
- Vibratory cable plows
- Mining machinery
- Dump truck lifts
- Agriculture tractors
- Chemical applicator trucks
- Railroad equipment
- Container handling, all-terrain, and truck cranes
- Vibratory cable plows
- Mining machinery and tunnel boring equipment
- Utility boom, off-road dump, and refuse trucks
- Material handling trucks Material handling trucks
- Concrete and asphalt Concrete and asphalt
- Feller/bunchers, forwarders, and log loaders
- Crawler dozers
- Articulate haulers
- Mini-excavators

Features and Benefits

- Long pump life
- Quiet pump operation
- Low installed and operating costs
- Reduced maintenance
- Flexibility in machine design
- Compact size saves space
- Design promotes leak-free Design promotes leak-free

SPECIFICATIONS AND PERFORMANCE

Genenral Perfomance Specifications

		Unit	ADU041	ADU049	ADU062	ADU080
Displacement		cc/r (in^3/r)	41.0 (2.50)	49.2 (3.00)	62.3 (3.80)	80.0 (4.88)
Weight	Sing Seal[1]	kg (lbm)	22.9 (50.4)	22.9 (50.4)	23.8 (52.4)	24.2 (53.4)
	Dual Seal[1]		24.1 (53.1)	24.1 (53.1)	25.0 (55.1)	25.4 (56.1)
Pressure	Continuous	bar (psi)	280 (4060)	280 (4060)	280 (4060)	210 (3050)
	Intermittent[2]		320 (4600)	320 (4600)	320 (4600)	230 (3335)
	Peak[3]		350 (5000)	350 (5000)	350 (5000)	250 (3625)
Speed[4]	At 1 bar abs (0 psig)	rpm	2650	2650	2600	2500
	At .85 bar abs (5 in.Hg)		2450	2450	2400	2200
	At 2 bar abs (15 psig)		2950	2950	2800	2800
	Max (standby)		3600	3600	3600	3600
	Min		600	600	600	600
Power	Max (theoretical)	kW (hp)	50.7 (68.0)	60.8 (81.5)	75.6 (101.3)	61.7 (82.7)
	Standby		.98 (1.3)	.98 (1.3)	1.1 (1.5)	1.4 (1.9)
Torque	Max (theoretical)	Nm (lb-ft)	183 (135)	219 (162)	278 (205)	268 (198)
Bearing Life[5]	At 140 bar (2030 psi)	B10 Hours	103,650	55,580	33,500	17,150
	At 210 bar (3045 psi)		26,830	14,380	8,670	4,440
	At 280 bar (4060 psi)		10,280	5,510	3,320	N/A
Mass Moment of Inertia		Nm-sec^2	.0033	.0033	.0046	.0058
		(lb-in0sec^2)	(.0288)	(.0288)	(.0403)	(.0517)

1 Standard SAE B non-through drive.
2 Less than 10% of duty cycle.
3 Momentary system pressure spikes only.
4 Ratings based on Flange ports. Note: Tube ports are not available on the 62cc and 80cc displacements.
5 Bearing life ratings at rated speed - 1 bar abs (0 psig) inlet.

Inlet Pressure, Case Pressure, and Operating Temperature Requirements

Inlet Pressure			Case Pressure			Operating Temperature		
Rated bar abs (psig)	Minimum bar abs (in.Hg)	Maximum bar abs (psig)	Maximum Continuous bar abs (psig)	Maximum Intermittent bar abs (psig)	Peak bar abs (psig)	Rated °C (°F)	Minimum Temperature °C (°F)	Maximum Intermittent °C (°F)
1.0 (0)	0.85 (5)	4.4 (50)	1.3 (5)	3.1 (30)	6.2 (75)	93 (200)	-37 (-35)	104 (220)

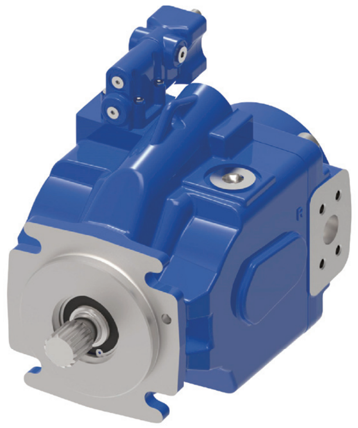
Hydraulic Fluids

Fluld	Recommended Operating Viscosity Range cSt (SUS)	Maximum Continuous cSt (SUS)	Maximum Viscosity at Startup cSt (SUS)	Minimum Viscosity @ Max. Temperature of 93°C (200°F) cSt (SUS)	Minimum Intermittent cSt (SUS)
Use antiwear hydraulic oil, or automotive type crankcaseoil (designations SC, SD, SE or SF) per SAE J183 FEB80	16 to 40 (80 to 188)	430 (1192)	2100 (9720)	10 (59)	6 (46)

For more information, see Eaton pubilcation 579. For operation on other altemative or environmentally friendly fluids, please contact your Eaton Representative.

Variable DISPLACEMENT PISTON PUMP

620 MOBILE PISTON PUMP



INTRODUCTION

The Eaton® X20 portfolio of open-circuit piston pumps is built to maximize machine performance and productivity. With sophisticated controls that enhance system efficiency and a compact design that delivers incredible power, the X20 portfolio empowers mobile machine operators to do more work in less time using less fuel.

Sophisticated controls that improve performance while optimizing efficiency.

"Excellent pressure responsiveness" The X20 portfolio delivers the fastest response and recovery times in the open-circuit piston segment, helping customers get the job done faster.

"Low standby pressure" The X20 portfolio can maintain low margin pressure (~150 psi) with exceptional stability, reducing heat generation and helping to eliminate wasted energy.

"Stable fan drive functionality" Eaton's fan drive control reaches desired speed more quickly and remains stable once there, reducing energy-wasting oscillation.

"Advanced electronic controls" The cold start and fan drive controls are Pro-FX Ready, meaning they can be easily configured with pre-programmed development tools and controlled electronically for maximum flexibility and precision.

"Winning load sense combination" X20 works in conjunction with Eaton's CLS Load Sense Sectional Mobile Valve, providing OEMs one resource for their machine's load sense needs.

Compact design that enables greater flexibility and cost savings.

"Simplified pump architecture" The X20 pump has 25% fewer components than traditional pumps, reducing the number of leak points and simplifying maintenance.

"Compact package size" The X20 portfolio's small size satisfies Tier 4 requirements and provides more flexibility when designing the engine compartment.

"More horsepower" The compact rotating group delivers a remarkable amount of horsepower, improving productivity without using more fuel.

"One-piece housing" Single-piece pump housing removes leak points and makes maintenance faster and easier versus more complicated multi-piece housings

Multiple option that make it easy to specify exactly what you need.

"Variety of control options" Including pressure control, load sense, cold start, torque control, remote pressure control, inverse proportional pressure control, proportional pressure control, electronic displacement control, and swash sensor feedback, giving you more ways to design more efficient, productive machines.

"Several displacement options" With seven displacement options, there's an X20 pump to fit virtually and mobile application need.

Eaton's 620 Series is currently available in 74cc (4.54 in3/r) and 98cc (5.98 in3/r) displacements. It is rated at 310 bar and is capable of generating over 100 kW (134 hp), making it the ideal pump for an array of different mobile and stationary applications. The 620 design also incorporates many new advances in product reliability. Once equipment is in the field, failures can prove to be extremely expensive by causing costly downtime. The 620 blends Eaton's long tradition in providing quality pumps with the latest design and technology methods to ensure long lasting product reliability. The result is a very simple design with 25% fewer parts and a B-10 bearing life rated to over 80,000 hours at 2,000 psi far exceeding the requirements for most applications.

"Variety of mounting options" The X20 series portfolio is available with SAE monuting flange configurations, can be side-or rear-ported, and offers multiple drain ports to help overcome any installation challenges.

Exceptional quality that provides remarkable reliability.

"Unique control piston design" Single-acting control piston with special coating helps minimize friction, increasing operating life.

"Bronze piston shoes" Bronze piston shoes are robust against contamination should particles enter the fluid, enhancing system performance and component service life.

"High-load bearings" Larger, more durable bearings resist wear and deliver industry-leading bearing life.

"3-year manufacturer's warranty" Eaton's warranty terms provide peace of mind for three full years, helping you get through your warranty period with complete confidence.

Global network of Eaton-certified experts for end-to-end support.

"More partners in more regions" Growing network of Eaton distributors around the world ensures there's local service and support anywhere you need it.

"World-class system design and assembly" Our expert distribution partners can help with everything from specifying to prototyping and assembly to commissioning, so you can focus on other areas of your business.

"Eaton-standardized practices and processes" Eaton employs a unique system of tools and processes, known as the Eaton Business System, to ensure quality development and delivery of the X20 product. These tools and process include such known methods as Design for Six Sigma, Lean Manufacturing and ISO certification.

SPECIFICATIONS AND PERFORMANCE

Genenral Perfomance Specifications

		Unit	ADY074	ADY098
Displacement		cc/r (in^3/r)	74.4 (4.54)	98.0 (5.98)
Mounting (SAE)		4 Bolt C, 2/4 Bolt C		
Pressure	Continuos	bar (psi)	310 (4495)	280 (4060)
	Intermittent[2]		346 (5020)	320 (4600)
	Peak[4]		373 (5410)	350 (5000)
Speed[5]	Rated	rpm	2400	2200
	Max		2880	2640
	Min		600	600
Power	Max (theoretical)	kW (hp)	92.3 (123.7)	100.6 (134.9)
	Standby		2.1 (2.8)	2.6 (3.5)
Torque	Max (theoretical)	Nm (lb-ft)	367.3 (270.9)	436.7 (322.1)
Wdight[1]		kg (lbf)	43.5(96.1)	45.9 (101.3)
Bearing Life[6]	At 140 bar (2030 psi)	B10 Hours	125,200	81,400
	At 210 bar (3045 psi)		32,900	21,400
	At 280 bar (4060 psi)		12,100	7,900
	At 310 bar (4495 psi)		8,600	
Mass Moment of Inertia		$kg\text{-}m^2$ ($lbm\text{-}ft^2$)	0.0089 (0.211)	0.0118 (0.279)

1 Standard SAE B non-through drive.

2 The 620 is capable of running at higher pressures than shown. In order to not void the warranty, you must provide duty cycle information and receive written approval.

3 Less than 10% of duty cycle.

4 Momentary system pressure spikes only.

5 Ratings based on Flange ports. Rated speed at 1 bar absolute [0 in Hg vac] inlet pressure and 100% displacement. For Max Speed see inlet pressure vs. speed charts.

6 Bearing life ratings at rated speed – 1 bar abs (0 psig) inlet. Will vary based on thrust and side loads. For additional information, contact EATON engineering

Inlet pressure, case pressure, and operating temperature requirements

Inlet Pressure			Case Pressure			Operating Temperature		
Rated bar abs (psig)	Minimum bar abs (in.Hg)	Maximum bar abs (psig)	Maximum Continuous bar abs (psig)	Maximum Intermittent bar abs (psig)	Peak bar abs (psig)	Rated °C (°F)	Minimum Temperature °C (°F)	Maximum Intermittent °C (°F)
1.0 (0)	0.85 (5)	4.4 (50)	1.3 (5)	3.1 (30)	6.2 (75)	93 (200)	-37 (-35)	104 (220)

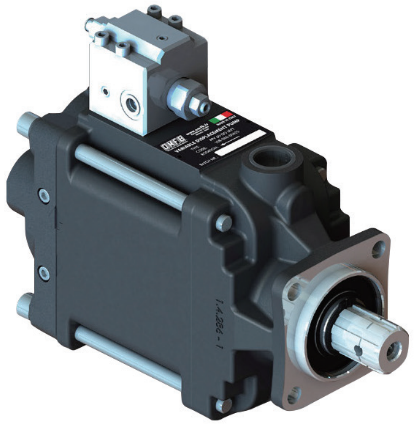
Hydraulic Fluids

Fluld	Recommended Operating Viscosity Range cSt (SUS)	Maximum Continuous cSt (SUS)	Maximum Viscosity at Startup cSt (SUS)	Minimum Viscosity @ Max. Temperature of 93°C (200°F) cSt (SUS)	Minimum Intermittent cSt (SUS)
Use antiwear hydraulic oil, or automotive type crankcaseoil (designations SC, SD, SE or SF) per SAE J183 FEB80	16 to 40 (80 to 188)	430 (1192)	2100 (9720)	10 (59)	6 (46)

For more information, see Eaton pubilcation 579. For operation on other altemative or environmentally friendly fluids, please contact your Eaton Representative.

Variable DISPLACEMENT PISTON PUMP

PPV SERIES



INTRODUCTION

The PPV pumps allow a direct coupling onto PTO's having ISO 7653 standard flange.

- Before installation of the pump, make sure the direction of rotation is the correct one.
- The pump can be fitted either horizontally or vertically (with shaft pointing upward).
- In case of horizontal mounting always use the upper drain port and make sure the oil hose going to tank is discharging under the oil level.
- In case of vertical mounting always use the upper drain port. In this case, connect also the breather (used only for vertically mounted pumps). When ordering please specify if the pumps is vertically mounted.
- Arrange the hoses in such a way to avoid air gaps and to allow proper oil deareation.
- The drain line has to have a minimum diameter of G3/4 and connect directly the pump to tank.
- Provide the installation of suitable filter to guarantee the pump to work with fluid having a purity class 19/17/14 according to IS04406.
- The pump cannot be installed above the oil level. Make sure it is fitted at least 200mm lower the oil level of the hydraulic tank.
- The oil entering into the pump has to have sufficient deareation in order to avoid problems with suction of the pump itself.
- The hydraulic circuit has to be equipped with a pressure relief valve fitted near the pump so as to ensure a quick intervention.
- The hydraulic circuit has to be equipped with a proper cooling unit on a separate system.
- Before starting up the pump, fill it up with hydraulic oil and bleed the air.
- In case of low temperature the pump has to run without load until the oil reaches a proper viscosity.
- During its first start up, let the pump run for at least 10 minutes at pressure range between 50 and 100 bar.

POMPE A CILINDRATA VQRIABILE / VARIABLE DISPLAYCEMENT PUMPS

DATI TECNICI / TECHNICAL FEATURES	PPV60	PPV90	PPV110	PPV130
Portata / Flow	60 l/min	90 l/min	110 l/min	130 l/min
Angolo di regolazione massima / Max. swach plate angle	21,5°			
Pressione di lavoro / Working pressure	Continua Continuous 375 bar Intermittente Intermittent 400 bar	Continua Continuous 375 bar Intermittente Intermittent 400 bar	Continua Continuous 375 bar Intermittente Intermittent 400 bar	Continua Continuous 375 bar Intermittente Intermittent 400 bar
Pressione d'ingresso assoluta necessaria nel circuito aperto Absolute inlet pressure required in open circuit	0,85 bar			
Pressione massima ammissibile sul corpo (statica/dinamica) Max. permissible housing pressure (static/dynamic)	3 bar			
Pressione d'ingresso massima ammissibile Max. permissible inlet pressure (static/dynamic)	2 bar			
Numero di giri max. con angolo di regolazione max.a una pressione d'ingresso assoluta di 1 bar. / Max. speed during suction operation and max. swash plate angle at 1 bar abs. Inlet pressure	2500 rpm	2300 rpm	2200 rpm	2100 rpm
Numero giri max. in annullamento e pressione d'ingresso assoluta 1bar. / Max. speed with zero stroke and 1 bar abs. Inlet pressure	3000 rpm			
Numero di giri minimo in funzionamento continuo Min. speed in continuous operation	500 rpm			
Coppia motrice necessaria a 100 bar Required drive torque at 100 bar	100 Nm	150 Nm	185 Nm	220 Nm
Potenza motrice a 250 bar e 2.000 rpm Drive power at 250 bar and 2000 rpm	53 kW	80 kW	100 kW	145 kW
Peso / Weight	24 Kg	29 Kg	30 Kg	27 Kg

BENT AXIS PISTON PUMP

HDS SERIES

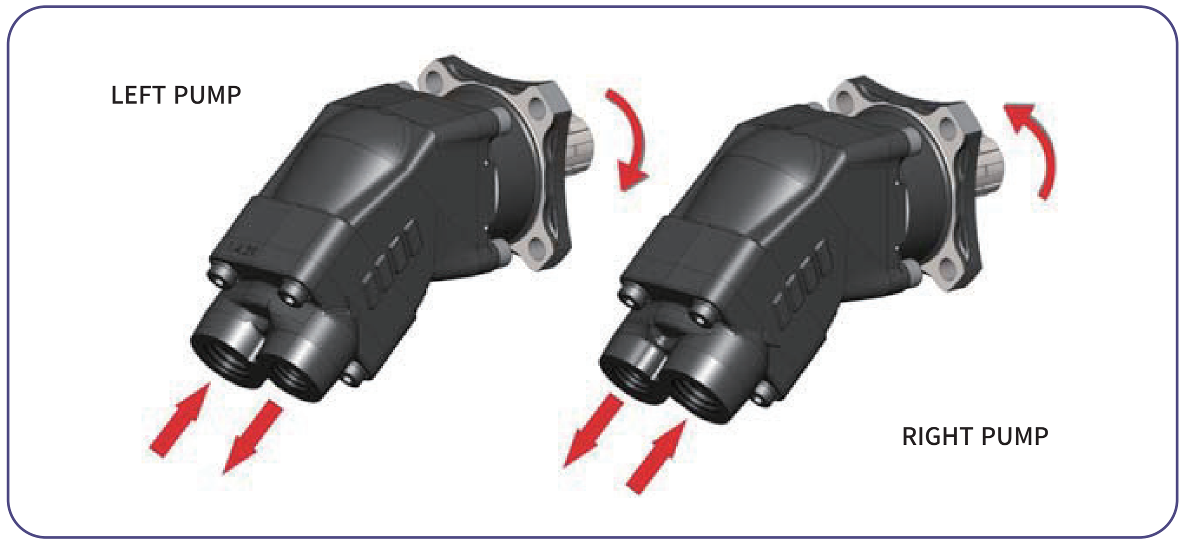
INTRODUCTION

A very nuique pump

- *Compact size cast iron body.*
  Overall dimensions reduced and high resistance to pressure peaks (up to 400 Bar) to match higher working pressure of the latest machines.
- *Hardened splined output shaft.*
  Better resistance to the torque driven by the PTO.
- *FKM and reinforced oil-seals.*
  This solutionallows the pump to bear back pressures.
- *Operating temperature.*
  Special gaskets allow the pump to operate at a temparature ranging from -40°C and +140°C.
- *Seven pistons.*
  The optimal solution to allow a more constant load on bearing and, consequently, a more fluent delivery and less pulsation.
- *Improved suction port.*
  Optimised in order to achieve lower noise level.
- *Pistons' barrel driven by the shaft.*
  The already proven tapered toothing allows the pistons to work without radial load resulting in a longer resistance to fatigue.
- *Choice of compatible materials for sliding surfaces.*
  Sliding surfaces made of aluminum and nitrated cast iron to guarantee a longer life against contaminated fluid.
- *Tapered roller bearings.*
  The tapered roller bearings can offer bigger load capacity against high working pressure.
- *3-piece body.*
  This solution allows constant lubrication of the bearings.
- *By-pass valve option.*
  The by-pass valve is mainly used in applications where the pump is permanently driven.
- *Special versions available:*
  Versions with SAE shafts and UNF ports.

BENT AXIS PISTON PUMP

HDS SERIES



Pump type	Displacement (cm³/rev)	Max.pressure (bar)	Max.Speed (rpm)	Min.Speed (rpm)	Weight (kg)
HDS-12-ISO	12,62	350	2300	300	8.7
HDS-17-ISO	16,98	350	2300	300	8.7
HDS-25-ISO	25,12	350	2300	300	8.7
HDS-34-ISO	33,80	350	2300	300	8.7
HDS-40-ISO	41,25	350	1900	300	13.2
HDS-47-ISO	47,13	350	1900	300	13.2
HDS-55-ISO	56,70	350	1900	300	13.2
HDS-64-ISO	63,56	350	1900	300	13.2
MDS-80-ISO	77,25	250	1800	300	13.2
HDS-84-ISO	84,33	350	1500	300	18.2
HDS-108-ISO	107	350	1500	300	18.2
MDS-130-ISO	131,62	250	1500	300	18.2

Fluid	Mineral or synthetic compatible with the following seals : FKM, FPM, HNBR				
Kinematic viscosity suggested	Average ambient temp. (°C)	<-40	<-40	<-40	<-40
	VG (cSt = mm² /s)	16	16	16	16
Optimale kinematic viscosity			VG = 10 cSt÷100 cSt		
Max kinematic viscosity suggested at the start-up			VG = 750 cSt		
Viscosity index suggested VI > 100	Working temperature -40°C÷140°C				
Oil filtering			> 200 bar: 10㎛, < 200 bar: 25㎛		
Inlet pressure			0,85 ÷ 2 bar absolut		
Pump rotation			Unidirectional (Right or Left)		
Verify that pump is, at least, 100 mm under the minimum level of the tank. Before starting the pump bleed the air.					

AXIAL PISTON PUMP

PPF SERIES

INTRODUCTION

The highly reliable in a suitable structure for high pressure and fixed capacity-type piston pump of PPF Series is designed to be used as a main pump for special vehicles, industrial machines and ship machinery.

- Maintenance and repair are easy because the pump structure is simple.
- Durability is excellent by using high quality materials for the friction parts.

APPLICATION

CRANE

SHIP

ORDERING CODE

PPF ········· 48 ········· 01

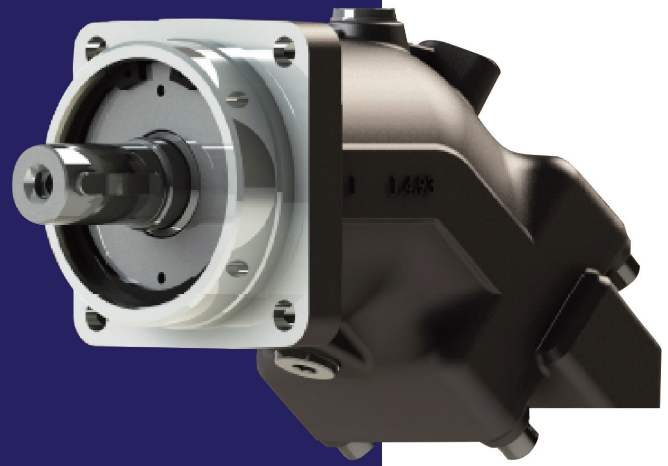
- PPF: Fixed Pump
- 48: Displacement (cc/rev)
- 01: Series Number

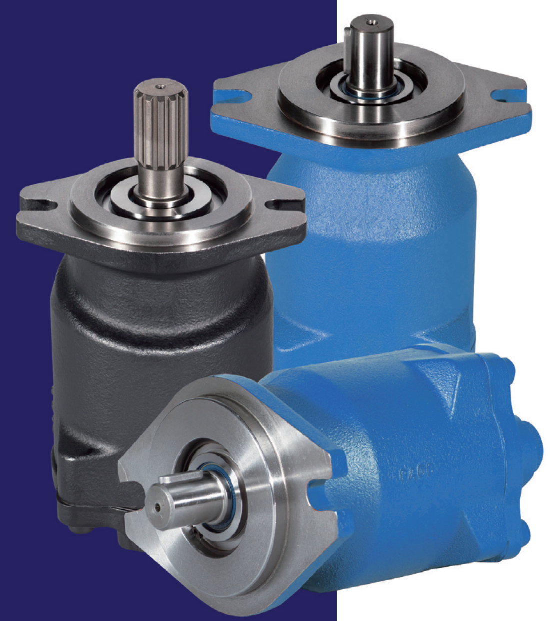
SPECIFICATIONS

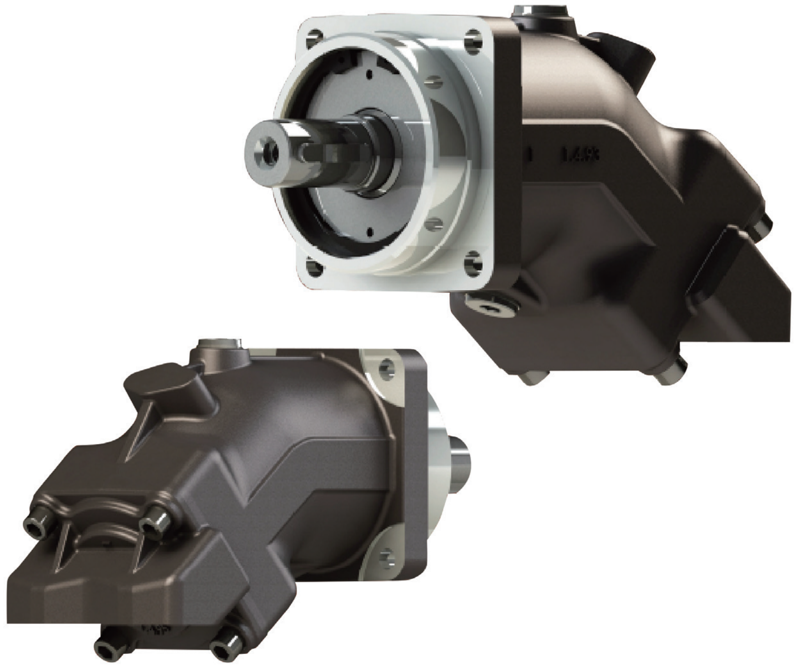
Model	Displacement (cc/rev)	Rated pressure (bar)	Speed(rpm)		Weight (kg)
			Min	Min	
PPF-48-01	48	250	500	3000	19.0
PPF-54-01	54	250	500	2300	19.0
PPF-54-03	54	250	500	3000	19.0
PPF-54-04	54	250	500	2300	19.0

PISTON MOTORS

- BENT AXIS PISTON MOTOR
- AXIAL PISTON MOTOR
- PISTON MOTOR
- DOWMAX AXIAL PISTON MOTOR







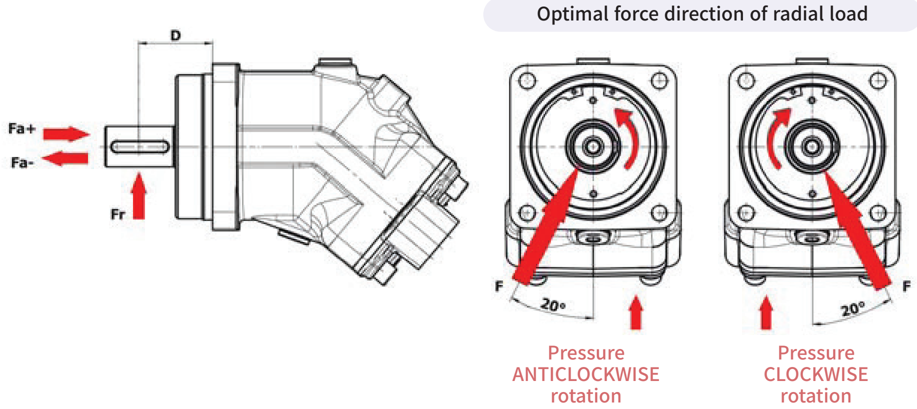
INTRODUCTION

The birotational bent axis piston motors series HPM are suitable for any kind of hydraulic applications, which require high performances. These motors ensure low level noise in combination with compact size and robust design and are produced using the latest technology.
The range includes sizes from 12 up to 130cc combined with different transmission shafts, coupling flanges and ports.

SHAFT LOADS

The lifetime of the motor depends on how the bearings are working. Operational parameters such as speed, pressure, oil viscosity and grade of cleanness when are dimensioned and applied correctly can guarantee a longer lifetime to the motor along with higher performances and reduced noise level. Also external factors such as dimensions, weight and position of the external load on the shaft can influence the lifetime of the bearings. For different conditions and/or check of your working conditions please contact our technical/sales department.

Optimal force direction of radial load



TECHNICAL REATURES

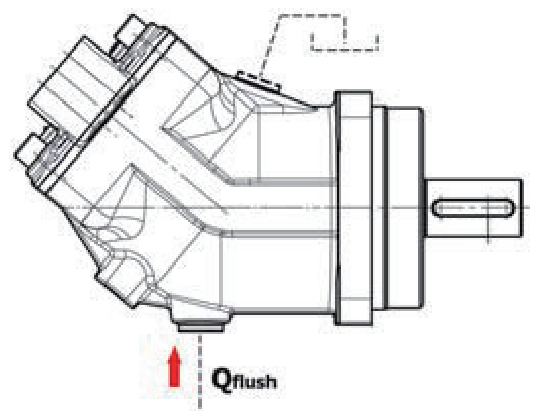
TEMPERATURE / COOLING OF MOTOR CASING

High oil temperature reduces the lifetime of shaft oil seal and can lower the oil viscosity below the recommended level- The temperature of the system shall not exceed 60°C while temperature of return line shall not exceed 90°C.
Cooling/flushing of motor casing might be necessary to keep return temperature within the recommended level.

MOROR	FLUSHING	CONT.
12-34	2-8 l/min.	≥ 2800 rev/min.
40-64	4-10 l/min.	≥ 2500 rev/min.
80-130	6-12 l/min.	> 2200 rev/min.

Reference value for motor casing flushing.

The motor casing flushing can be achieved by means of a flushing valve or directly from the return hose. Too low return pressure must be compensated by a back-pressure valve. The tank hose must be connected into the highest point as shown in the picture.



BENT AXIS PISTON MOTORS SERIES "HPM" FLANGE ISO 3019-2

TECHNICAL FEATURES														
Displacement	cm^3/rev		12	17	25	34	40	47	55	64	90	90	108	130
Working pressure	bar	*Max. intermittent*	400											
		Max. continuous	350											
Rotation speed	rpm	*Max. intermittent*	6800				5500				4500			
		Max. continuous	6300				5000				4000			
		Min. continuous	100											
Power	kW	*Max. intermittent*	54	77	113	154	147	172	202	235	240	270	324	390
		Max. continuous	18	26	38	51	49	57	67	78	80	90	108	130
Torque	Nm/bar		0,26	0,33	0,43	0,56	0,63	0,7	0,83	0,97	1,3	1,43	1,6	1,8
Mass inertial moment ($x10^{-4}$)	kg m^2		11,5		12,5		35,5				61			
Max. pressure in the housing	bar		20											
Weight	kg		14				18,2				23			

JMV SERIES

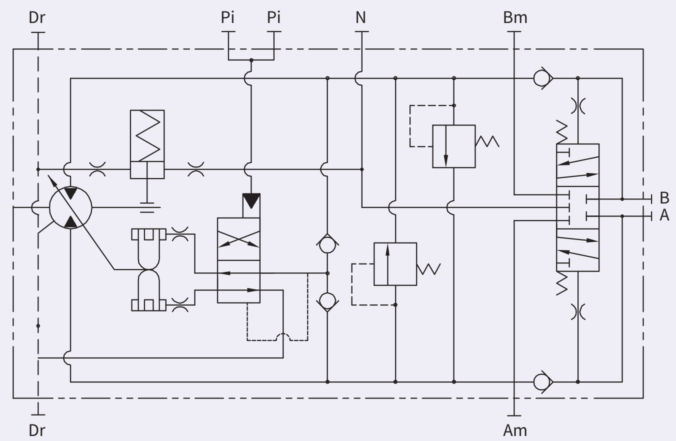
INTRODUCTION

Features & Benefits

- Integrated gearbox with 2-speed Axial Piston Motor
- Rated pressure: 214 ~ 365 bar
- Displacement: 16cc ~ 274cc
- Suitable for 1.5ton ~ 50 ton mobile applications
- Integrated Relief and Counterbalance valves
- Integrated fail-safe mechanical Parking Brake
- Higher mechanical and volumetric efficiency helps reduce power loss
- Improved design for higher start up torque and overall efficiency
- Optimum design ensures smooth start/accelerate and decelerate/stop
- Compact design with high power density
- Auto-shift from high-speed low torque to low-speed high torque and vice versa
- High performance and reliability, high market acceptance with over half million units in the field
- Compatible fit for most popular installation requirements in the market

Typical Applications

- Excavator and mini excavator
- Crawler crane
- Winch
- Combine harvester
- Windrow turning
- Rotary drilling
- Horizontal directional drilling
- Paver
- Asphalt milling
- Special crawler vehicle



CIRCUIT DIAGRAM

PERFORMANCE

Model	Max. output torque (Reducer)		Motor displace-ment		Gear ratio	Max. speed (Motor)		Max. flow	Normal pressure*	Peak pressure	Mechanical brake torque		Automatic shift pressure	Relief valve	Mass	Typical vehicle application
	Low speed	High speed	Low speed	High speed		Low speed	High speed				Reduce	Motor				
	N.m		cc/r			rpm		l.min	bar	bar	N.m				Kg	Ton
016	1666	X	16.1	X	31	1056	X	17	214	255	547	18	X	X	25	1.5
021	3696	1969	21	11.2	53.7	1667	3125	35	220	260	2637	49	X	▲	38	3.5
023	4724	2955	23.5	14.7	53.7	1489	2381	35	240	285	2631	49	X	▲	38	3.5
044	6831	3528	43.7	22.7	45.5	1259	2423	55	220	260	3746	82	X	●	79.5	5
	8056	4185	43.7	22.7	53.7	1259	2423	55	220	260	4421	82	X	●	79.5	5~6
047	11711	6909	46.6	27.5	53.7	1622	2744	75.6	300	360	3869	82	X	●	87	7
053	11720	6909	53.2	31.4	47	1597	2710	85	300	360	3869	82	X	●	89	7~8
067	18707	11452	67.3	41.2	54	1664	2718	112	330	395	10584	196	290	●	140	11
076	23549	13775	76.62	44.8	54	1612	2757	123.5	365	430	10425	193	290	●	135	14
118	645	366	118	67	X	1356	2388	160	350	420	X	480	260	●	121	16
120	618	362	120	69.9	X	1333	2289	160	330	395	X	480	260	●	121	18
137	747	432	136.7	79	X	1626	2814	222.3	350	420	X	480	290	●	121	25
147	41548	26940	146.5	95	50.5	1707	2632	250	360	430	24250	480	260	●	300	20~22
155	61671	35257	154.8	88.5	73	1718	3005	275	350	420	28607	392	270	●	404	29~32
168	46433	28263	168.4	102.5	50.5	1469	2413	247.3	350	420	24250	480	260	●	310	25
173	65010	37976	173	101	73	1561	2673	270	330	395	28607	392	270	●	404	33
185	72892	44972	185	114.13	70.2	1557	2523	288	360	430	30537	435	X	●	425	36~38
274	94438	59016	274.6	171.6	63	1383	2214	380	350	420	63592	1009	X	●	610	45~50

● - Standard ▲ - Option X - Not available

※ Normal Pressure is the max. relief valve setting pressure.

TECHNICAL DATA

1	Operation temperature rating	-20°C - +95°C	
2	Oil viscosity recommendation		
		Gear oil: 80W-90	Hydraulic oil: VG-46
	Viscosity at 40°C	143 mm²/s	46mm²/s
	Viscosity at 100°C	16mm²/s	7mm²/s
3	Oil cleanliness recommendation	NAS 8, or ISO 17/15/12	
4	Case pressure	2 bar max.	

JMF SEREIS

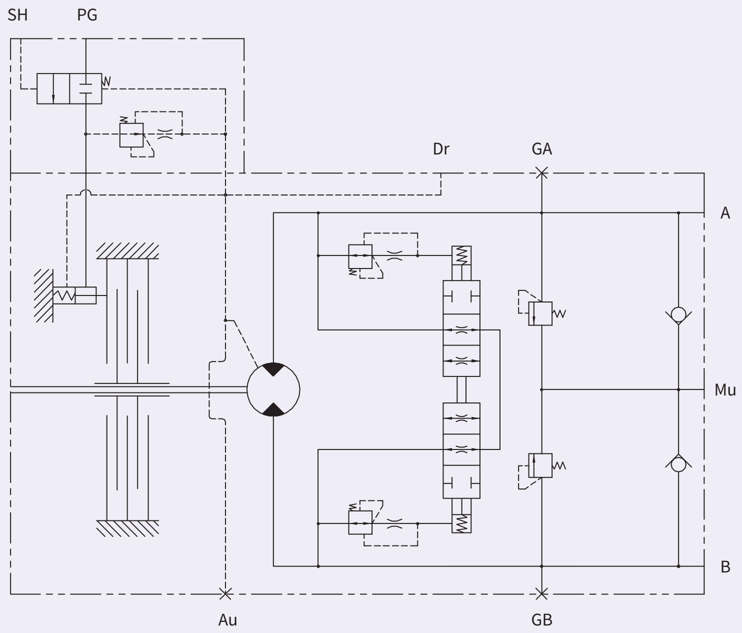
INTRODUCTION

Features & Benefits

- Fixed displacement axial piston motor for swing applications
- Displacement from 27cc to 250cc is available and rated pressure is up to 320 bar
- Integrated fail-safe mechanical parking brake, brake release valve, shockless relief and anti-reverse valves
- Compact integrated planetary reduction gearbox
- Smooth and precise positioning eliminates mechanical shocks
- High performance and reliability proven by high market acceptance
- Higher mechanical and volumetric efficiency helps reduce power loss

Typical Applications

- Excavator and mini excavator
- Concrete pump
- Crane
- Drilling



CIRCUIT DIAGRAM

PERFORMANCE

Model	Motor Displacement	Max. Output Torque	Gear Ratio	Reducer Max. speed	Max. Flow	Normal Pressure*	Peak pressure	Mechanical Brake Torque (Motor)	Time Delay Valve	Anti-reverse Valve	Output Pinion		Mass	Typical vehicle application
	cc/rev	N.m		rpm	l/min	bar	bar	N.m			Module	Number	Kg	Ton
027	27	2116	22.5	59	36.6	230	276	98	●	X	7	13	50	4~5
029	29	1929	19.5	63	35.6	230	276	137	●	X	7	13	75	5~6
030	30	2118	19.5	60	35.6	230	276	137	●	X	7	13	75	5~6
032	32	2156	19.5	58	36.6	230	276	137	●	X	16/32	15	75	5~6
033	33	2277	19.5	63	40	230	276	137	●	X	7	13	75	5~6
036	36	2569	19.5	51	36	230	276	137	●	X	7	13	75	7
039	39	2213	19.5	90	75.6	230	276	137	●	X	16/32	15	75	8
043	43	2873	19.5	72	60	230	276	137	●	X	8	12	75	8
047	47	3182	19.5	74	68	230	276	137	●	X	8	12	77	8
053	53	3034	19.5	78	81	230	276	137	●	X	8	12	77	8
064	64	4565	19.0	107	130	280	336	245	●	●	10	12	160	13
068	68	4850	19.0	101	130	280	336	245	●	●	10	12	160	14
118	118	8122	17.6	82	170	280	336	579	●	●	12	13	237	18
151	151	9977	17.6	84	225	280	336	579	●	●	12	13	237	22
169	169	17787	23.6	62	250	320	385	686	●	●	14	15	140	29
195	195	18331	22.0	58	250	320	385	864	●	●	14	14	400	30
233	233	23166	22.0	56	288	320	385	1049	●	●	14	15	440	33~36
250	250	24858	22.0	52	288	320	385	1049	●	●	14	15	440	33~36

● - Standard　　X - Not available

※ Normal Pressure is the max. relief valve setting pressure.

※ For 32cc, 39cc, gearbox integrated option is not available. Please consult AP product marketing for further information.

TECHNICAL DATA

1	Operation temperature rating	-20°C - +95°C	
2	Oil viscosity recommendation		
		Gear oil: 80W-90	Hydraulic oil: VG-46
	Viscosity at 40°C	143 mm²/s	46mm²/s
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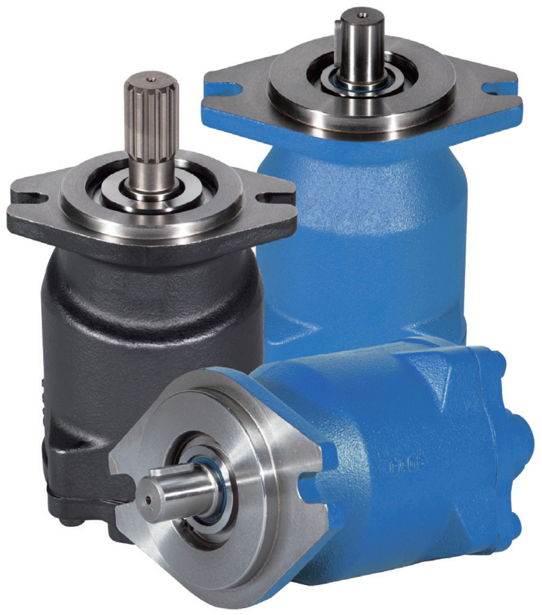
4	Case pressure	2 bar max.	



INTRODUCTION

The PMF Series is an axial piston motor which is used for traveling, swing and winching of industrial machinery and industrial vehicles.
PMF Series is a fixed displacement swash type piston motor which combines with weight reduction, down-size and high durability.
PMF Series is designed with a simple structure to keep the outstanding durability against rapid acceleration/deceleration, torque changes by frequent rotation/reverse rotation, and pressure variation.

APPLICATION

CRANE

SHIP

ORDERING CODE

PMF ·········· 20 ·········· 01 ·········· K

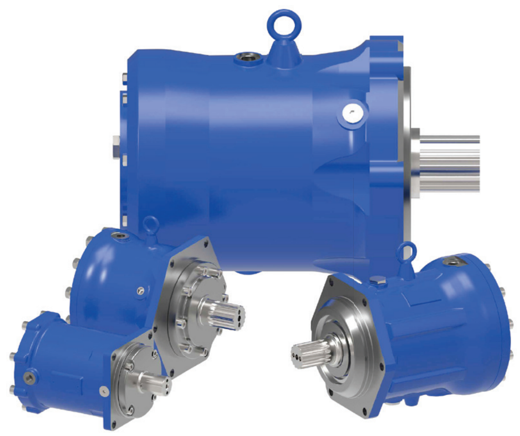
- PMF: Fixed Motor For Winch
- 20: Displacement (cc/rev)
- 01: Series Number
- K: Shape of Shaft
  - K : Straight
  - S : Spline

SPECIFICATIONS

Model	Displacement (cc/rev)	pressure(kgf/cm²)		Torque(kgf·m)		Speed (rpm)	Weight (kg)
		Rated	Max	Rated	Max		
PMF-20-01-K	20	210	250	6.6	8	3000	7.5
PMF-25-01-S	25.7	210	250	8.6	10.2	3000	7.5
PMF-25-01-K	25.7	210	250	8.6	10.2	3000	7.5
PMF-25-01-K, D	25.7	210	250	8.6	10.2	3000	7.5
PMF-25-01-S, F	25.7	210	250	8.6	10.2	3000	7.5
PMF-25-02-K	25.7	210	250	8.6	10.2	3000	8
PMF-25-02-S	25.7	210	250	8.6	10.2	3000	8
PMF-25-03-K	25.7	210	250	8.6	10.2	3000	8
PMF-25-05-S	25.7	210	250	8.6	10.2	3000	8
PMF-25-06-S	25.7	210	250	8.6	10.2	3000	8
PMF-25-07-K	25.7	210	250	8.6	10.2	3000	8
PMF-36-01-K	36	210	250	12	14.3	3000	10.4
PMF-36-01-S	36	210	250	12	14.3	3000	10.4
PMF-36-04-S	36	210	250	12	14.3	2800	10.4
PMF-39-01-K	39	210	250	13	15.5	2500	10.4
PMF-39-01-S	39	210	250	13	15.5	2500	10.4
PMF-39-02-K	39	210	250	13	15.5	2500	10.4
PMF-43-01-K	43	210	250	14.3	17.1	3000	10.4
PMF-43-02-K	43.2	210	250	14.3	17.2	2800	10.4
PMF-43-03-S	43.2	210	250	14.3	17.2	2800	10.4
PMF-43-05-K	43.2	210	250	14.3	17.2	2800	10.4
PMF-47-01-K	47	210	250	15.7	18.7	3000	10.4
PMF-47-01-S	47	210	250	15.7	18.7	3000	10.4
PMF-47-11-K	47	210	250	15.7	18.7	3000	10.4

DOWMAX AXIAL PISTON MOTOR

DOWMAX® ME MOTOR



INTRODUCTION

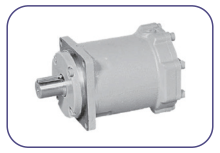
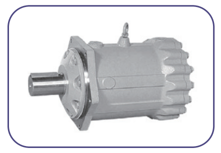
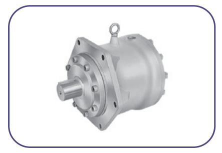
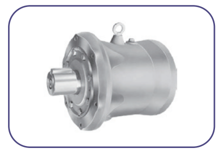
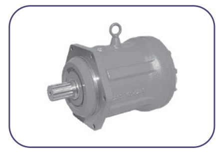
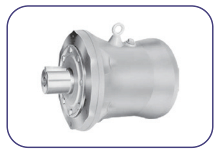
The DOWMAX ME Motor is an axial piston High Torque Low Speed (HTLS) motor. Incorporating a unique and compact double swash plate design with up to 22 pistons it differs from the more traditional, radial piston (HTLS) motors.
As well as outstanding power to weight performance and compactness, the unique design offers significant benefits by reducing speed fluctuations, minimizing flow drift and ripple.

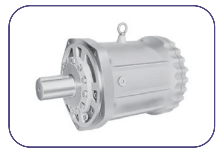
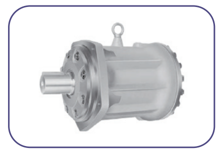
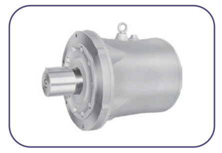
Perfect for applications such as directional drilling machinery, top head drives and marine winches, the Eaton DOWMAX ME Series motors feature a double swash plate design and multiple opposed pistons.
The low-speed, high-torque design of the DOWMAX ME Series provides optimal power output with smooth operation and reduced torque ripple.

- Multiple pistons and double swash plate allow for smoother operation at speeds as low as 1rpm
- Numerous shaft and mounting options promote flexibility of possible applications
- Speed pickup system available
- Smooth operation at low speeds
- High starting torque and the need for higher overall efficiency
- Compact with easy installation
- Quiet operation
- Unaffected by thermal shock and good for starting in cold temperatures
- ME Series Pressure Range: Up to 4000 psi
- Torque Range: Up to 16136 Nm (11,900 lb-ft)
- Speed Range: Up to 1000 rpm

ME LOW-SPEED HIGH-TORQUE MOTOR IS A DOUBLE SWASH PLATE TYPE AXIAL PISTON MOTOR AND HAS HIGHEST PERFORMANCE AT LOW-SPEED RANGE.

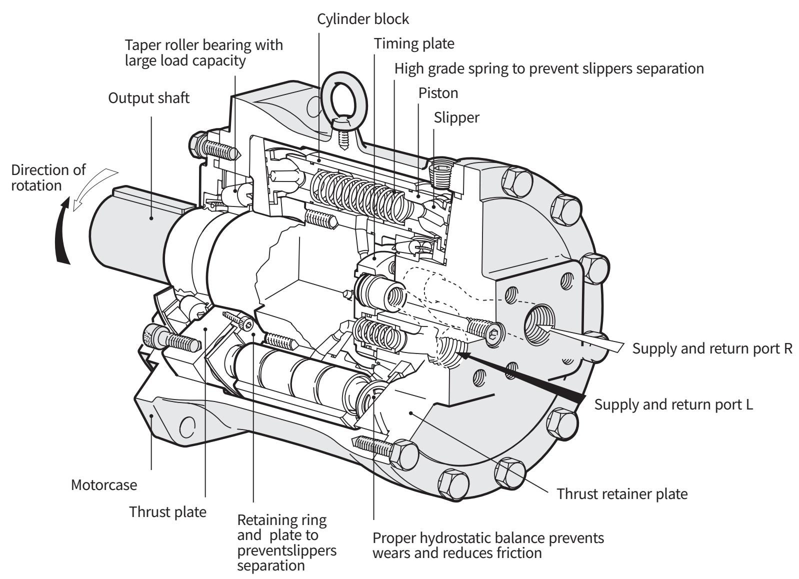
- Wide range of models - 13 displacements from 99 to 4097cm³/rev are available.
- High pressure-Continuous operating pressure 27.5Mpa (280kgf/cm2) & 24.5Mpa (250kgf/cm²).
- Smooth operation at low-speed.
- Multiple pistons and double swash plate result in smooth rotation at speeds down to 1 rev/min.
- High starting torque and high overall efficiency.
- Compact and easy installation.
- Robust construction.
- Quiet operation.
- Unaffected by thermal shock (good for starting at cold temperature).
- Speed pickup system is available.

STRUCTURE AND OPERATION

Fluid entering the supply port is directed via internal passages and timing plate to the center of the cylinder bores. Fluid pressure forces the pistons apart causing the slippers to slide on the angled faces of the swash plates and rotate the barrel and shaft assembly. After work, fluid is exhausted through the timing plate and internal passages to the return port.



PERFORMANCE DATA

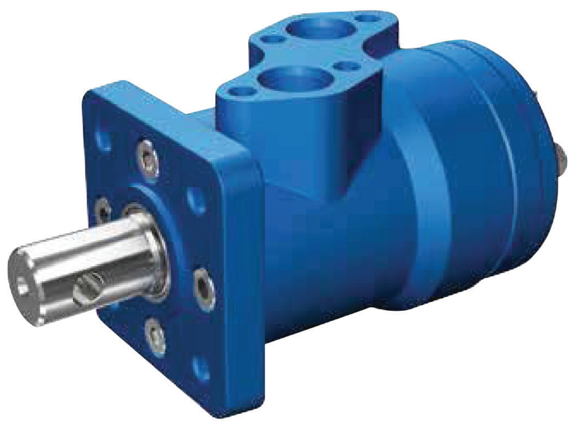
Model	Displace-ment cm³/rev	Rated Pressure MPa(kgf/cm²)	Peak Pressure MPa(kgf/cm²)	Rated Torque N·m(kfg·m)	Rated Speed rpm	Max. Speed rpm	Rated horse power kW(PS)	Mass kg
ME100	99	27.5 (280)	31.9 (325)	432 (44)	1000	1000	45 (62)	22
ME150※	152			667 (68)	600	800	42 (57)	42
ME175※	175			765 (78)	600	800	48 (65)	42
ME300B	300			1320 (135)	660	800	90 (123)	60
ME350B	350			1530 (156)	660	800	106 (144)	60
ME600B	600			2620 (267)	500	600	137 (186)	96
ME750B	750			3280 (334)	450	520	154 (210)	123
ME850B	848			3708 (378)	400	450	155 (211)	123
ME1300A	1345			5250 (535)	200	390	138 (188)	170
ME1900	1868	24.5 (250)		7290 (743)	140	260	128 (174)	270
ME2600	2578			10070 (1026)	110	230	159 (216)	350
ME3100	3104			12120 (1235)	110	230	186 (253)	364
ME4100	4097			15990 (1630)	75	200	211 (287)	520

※ Limit of hydraulic fluid temperature; -200℃~800℃
※ Limit of hydraulic fluid viscosity; 15~500cSt (Advisable fluid viscosity range; 25~100cSt)

ORBITAL MOTORS

- XLH SERIES
- XLS SERIES
- XL2 SERIES
- XL4 SERIES
- XL6 SERIES

ORBITAL MOTOR
XLH SERIES



INTRODUCTION

Eaton's Xcel™ Series Low Speed High Torque Spool Valve motors offer the most popular features and are optimized to bring the highest value in medium duty applications.
Xcel spool valve motors distribute pressurized fluid into and out of the orbit gear set via valve slots integrated into the output shaft. The spool valve motors incorporate both valving and hydrodynamic journal bearings into a common shaft design.
These motors incorporate the proven orbit motor principle to provide high torque at low speeds. Motor shaft rotation can be instantly reversed by changing direction of input/output flow while generating equal torque in either direction.
The displacements available provide a wide variety of speeds and torque.
XLS motor feature Eaton's Geroler™ technology to minimize friction and increase operating efficiency, while internal check valves limit case pressure to that of the outlet port.

Features and Benefits

- Proven orbit motor principle
- Hydrodynamic journal bearings
- Three moving components (Gerotor-star, drive, and shaft)
- Three –zone pressure design
- Optimized drive running angle
- Variety of displacements and shafts
- Designed for medium and low duty
- Compact, powerful package
- High efficiency
- Design flexibility
- Economically tailored solutions
- Long bearing life (at rated loads)

Applications

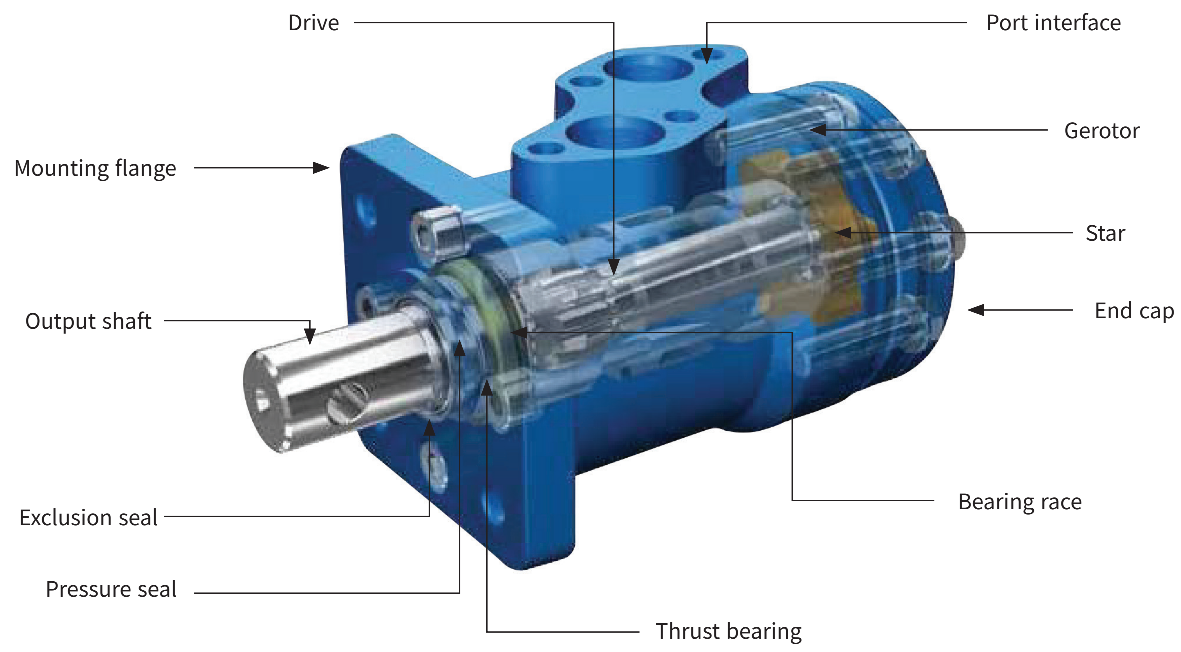
- Augers
- Conveyors
- Food processing
- Harvesters
- Machine tools
- Spreaders
- Turf care equipment
- Winches

Specifications XLH Motor

Geroler Element	11 Displacements
Flow L/min [GPM]	57 [15] Continuous*** 68 [18] Intermittent**
Speed rpm	Up to 800 rpm inter. **
ΔPressure bar [psi]	124 [1800] Cont.*** 138 [2000] Inter.**
Torque Nm [in-lbs]	426 [3770] Cont.*** 507 [4485] Inter.**

*** Continuous-(Cont.) Continuous rating, motor may be run continuously at these ratings.
** Intermittent-(Inter.) Intermittent operation,10%of every minute.

SPECIFICATIONS



Specification Data

Displacementcm3/r [in3/r]		53[3.2]	63[3.8]	80[4.9]	100[6.2]	125[7.6]	160[9.6]	200[12.2]	245[14.9]	315[19.2]	390[23.8]	485[30.0]
Flow LPM [GPM]	Continuous	38[10]	45[12]	57[15]	57[15]	57[15]	57[15]	57[15]	57[15]	57[15]	57[15]	57[15]
	Intermittent	45[12]	53[14]	68[18]	68[18]	68[18]	68[18]	68[18]	68[18]	68[18]	68[18]	68[18]
Max. Speed RPM	Continuous	721	693	710	568	462	354	286	234	174	144	114
	Intermittent	864	806	848	678	551	421	341	282	209	171	138
Pressure ΔBar [Δpsi]	Continuous	124[1800]	124[1800]	124[1800]	124[1800]	124[1800]	115[1650]	110[1600]	100[1450]	90[1300]	83[1200]	69[1000]
	Intermittent	138[2000]	138[2000]	138[2000]	138[2000]	138[2000]	124[1800]	124[1800]	124[1800]	124[1800]	110[1600]	90[1300]
Torque* Nm [lb-in]	Continuous	83[735]	104[920]	130[1150]	162[1430]	242[2140]	242[2140]	287[2815]	318[2815]	377[3340]	419[3705]	426[3770]
	Intermittent	93[825]	116[1025]	145[1285]	181[1600]	260[2300]	260[2300]	324[4495]	391[3460]	508[4495]	547[4840]	507[4485]
Weight Kg [lbs]		5[11.0]	5.3[11.6]	5.5[12.1]	6.1[13.4]	6.4[14.1]	6.4[14.1]	6.7[14.7]	7.1[15.6]	7.4[16.3]	7.7[16.9]	8[17.6]

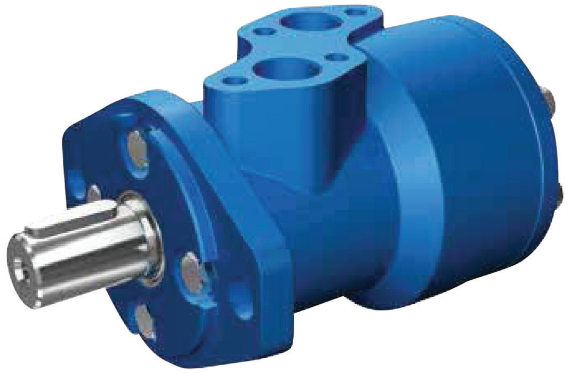
Maximum Case Pressure: See case pressure seal limitation graph *See shaft torque ratings for limitations.

- **Max. inlet pressure:** 150 bar [2175 psi] ※Do not exceed Δ pressure rating. (see chart above)
- **ΔBar[Δpsi]:** The true pressure difference between inlet port and outlet port.
- **Continuous rating:** Motor may be run continuously at these ratings.
- **Intermittent operation:** 10% of every minute.
- **Recommended fluids:** Premium quality anti-wear type hydraulic oil with a viscosity of not less than 20-32 cSt at operating temperature.
- **Recommended system operating temp :** 82°C [180 °F]
- **Recommended filtration** Per ISO Cleanliness code, 4406:20/18/13

Note: A simultaneous maximum torque and maximum speed NOT recommended.
To assure best motor life, run motor for approximately 1 hour at 30% of rated pressure before application to full load.
Be sure motor is filled with fluid prior to any load applications.

ORBITAL MOTOR

XLS SERIES



INTRODUCTION

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- Optimized drive running angle
- Variety of displacements and shafts
- Designed for medium and low duty
- Compact, powerful package
- High efficiency
- Design flexibility
- Economically tailored solutions
- Long bearing life (at rated loads)

Specifications XLS Motor

Geroler Element	9 Displacements
Flow L/min [GPM]	57 [15] Continuous*** 68 [18] Intermittent**
Speed rpm	Up to 875 rpm inter. **
ΔPressure bar [psi]	138 [2000] Cont.*** 155 [2250] Inter.**
Torque Nm [in-lbs]	473 [4190] Cont.*** 512 [4540] Inter.**

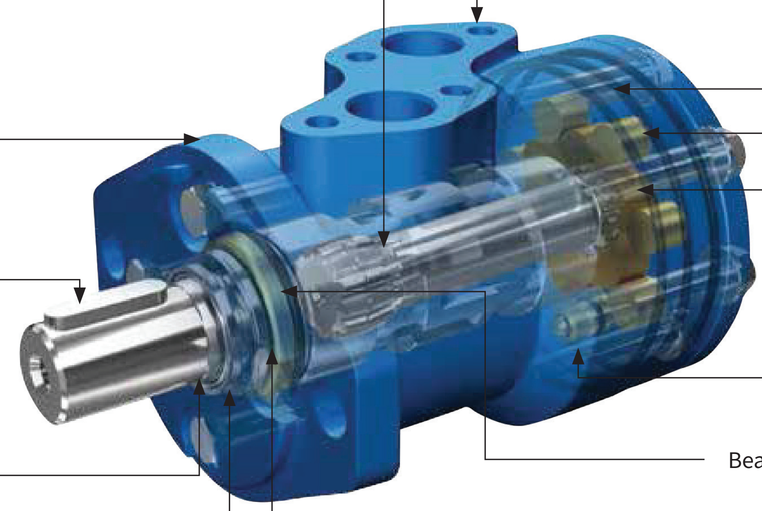
Applications

- Augers
- Conveyors
- Food processing
- Harvesters
- Machine tools
- Spreaders
- Turf care equipment
- Winches

*** Continuous-(Cont.) Continuous rating, motor may be run continuously at these ratings.

** Intermittent-(Inter.) Intermittent operation,10%of every minute.

SPECIFICATIONS



The XLS series features the same basic construction and layout as the XLH series. XLS uses Geroler technology to further reduce friction and increase volumetic efficiency. XLS also has
check valves as standard that drain the case chamber to the motor outlet port. In many applications this enables the case drain to be omitted.

Specification Data

Displacementcm3/r [in3/r]		50[3.1]	80[4.9]	100[6.2]	130[8.0]	160[9.6]	195[11.9]	245[14.9]	305[18.7]	395[24.0]
Flow LPM [GPM]	Continuous	38[10]	57[15]	57[15]	57[15]	57[15]	57[15]	57[15]	57[15]	57[15]
	Intermittent	45[12]	68[18]	68[18]	68[18]	68[18]	68[18]	68[18]	68[18]	68[18]
Max. Speed RPM	Continuous	741	701	554	430	353	286	230	180	141
	Intermittent	875	830	665	515	425	344	275	215	171
Pressure ΔBar [Δpsi]	Continuous	138[2000]	138[2000]	138[2000]	124[1800]	124[1800]	124[1800]	110[1600]	97[1405]	83[1200]
	Intermittent	155[2250]	155[2250]	155[2250]	138[2000]	138[2000]	138[2000]	124[1800]	110[1600]	90[1300]
Torque* Nm [lb-in]	Continuous	103[920]	171[1515]	216[1310]	246[2180]	298[2640]	342[3030]	391[3465]	417[3695]	473[4190]
	Intermittent	116[1030]	192[1700]	241[2135]	273[2420]	328[2905]	379[3360]	437[3870]	444[3935]	512[4540]
Weight Kg [lbs]		6.3[13.8]	7.0[15.4]	7.5[16.5]	7.7[16.9]	7.1[15.6]	8.0[17.6]	8.4[18.5]	9.4[20.6]	9.6[21.1]

Maximum Case Pressure: See case pressure seal limitation graph *See shaft torque ratings for limitations.

- **Max. inlet pressure:** 170 bar [2465 psi] ※Do not exceed Δ pressure rating. (see chart above)
- **ΔBar[Δpsi]:** The true pressure difference between inlet port and outlet port.
- **Continuous rating:** Motor may be run continuously at these ratings.
- **Intermittent operation:** 10% of every minute
- **Recommended fluids:** Premium quality anti-wear type hydraulic oil with a viscosity of not less than 20-32 cSt at operating temperature.
- **Recommended system operating temp :** 82°C [180 °F]
- **Recommended filtration** Per ISO Cleanliness code, 4406:20/18/13

Note: A simultaneous maximum torque and maximum speed NOT recommended.
To assure best motor life, run motor for approximately 1 hour at 30% of rated pressure before application to full load.
Be sure motor is filled with fluid prior to any load applications.

XL2 SERIES

INTRODUCTION

Eaton's Xcel™ Series Low Speed High Torque Disc Valve motors offer the most popular features and options from the parallel Char-Lynn™ range and are optimized to bring the highest value in medium duty applications.

Features and Benefits

- Three zone design for longer life and true bi-directionality
- Bearings that meet the highest standards of the industry
- Options to optimize performance in every application
- Integrated cross-over relief and counterbalance valve options
- Easy to design in a system
- Reliability in multiple applications
- Integrated valve options to minimize installed size and weight

Applications

- Skid steer attachments
- Swing motor
- Brush Cutters & Mowers
- Augers
- Sweepers
- Snow blowers
- Conveyors

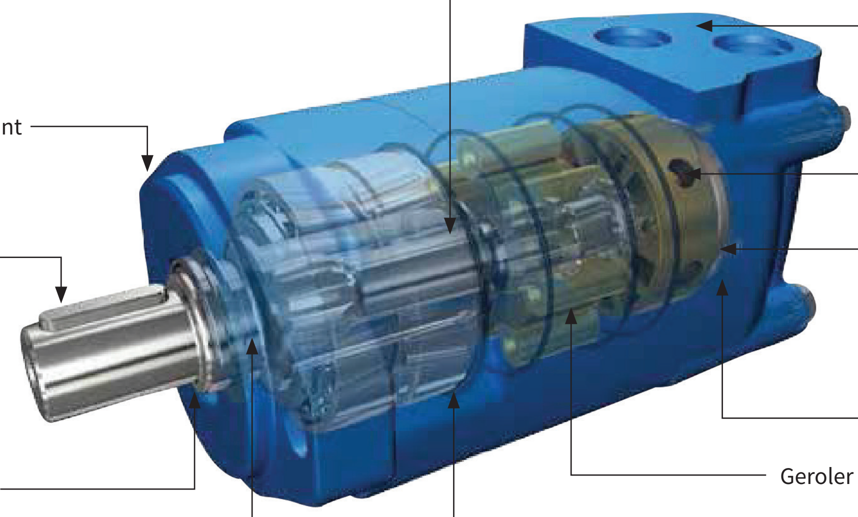
XL2 Series Motors

Geroler Element	9 displacements
Flow L/min [GPM]	75 [20] Continuous* 115 [30] Intermittent **
Speed rpm	908 Cont.* 924 Inter **
ΔPressure bar [psi]	205[3000] Cont.* 310 [4500] Inter **
Torque Nm [in-lbs]	845 [7470] Cont.* 930 [8225] Inter **

* Continuous-(Cont.) Continuous rating, motor may be run continuously at these ratings.

** Intermittent-(Inter.) Intermittent operation, 10% of every minute.

SPECIFICATIONS



Specification Data

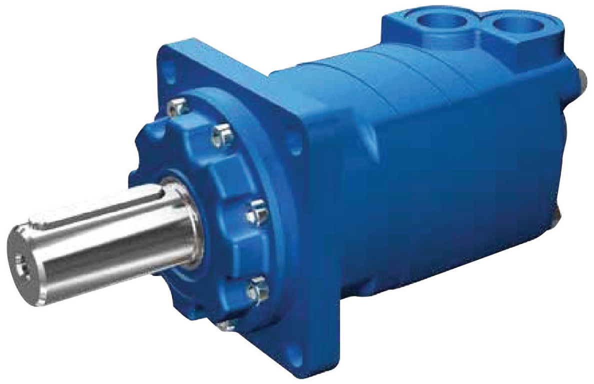
Displacementcm3/r [in3/r]		80[4.9]	100[6.1]	130[7.9]	160[9.8]	195[11.9]	245[15]	305[18.6]	395[24.1]	490[29.9]
Flow LPM [GPM]	Continuous	75[20]	75[20]	75[20]	75[20]	75[20]	75[20]	75[20]	75[20]	75[20]
	Intermittent	75[20]	95[25]	95[25]	115[30]	115[30]	115[30]	115[30]	115[30]	115[30]
Max. Speed RPM	Continuous	908	739	575	477	385	308	246	191	153
	Intermittent	908	924	719	713	577	462	365	287	230
Pressure ΔBar [Δpsi]	Continuous	205[3000]	205[3000]	205[3000]	205[3000]	205[3000]	205[3000]	205[3000]	115[2248]	120[1740]
	Intermittent	310[4500]	310[4500]	310[4500]	260[3771]	260[3771]	260[3771]	240[3481]	170[2466]	140[2031]
Torque* Nm [lb-in]	Continuous	235[2080]	295[2611]	295[2611]	455[3407]	540[4779]	660[5841]	765[6770]	775[6859]	845[7478]
	Intermittent	345[3053]	445[3938]	560[4956]	570[4956]	665[5885]	820[7257]	885[7832]	925[8186]	930[8231]
Weight Kg [lbs]	Standard or wheel mont	9.3[20.5]	9.5[20.9]	9.8[21.6]	10.0[22]	10.4[22.9]	10.9[24]	11.3[24.9]	11.8[26]	12.2[26.9]
	Bearingless	7.3[16.1]	7.5[16.5]	7.7[17]	7.9[17.4]	8.4[18.5]	8.8[19.4]	9.3[20.5]	9.5[21.6]	10.2[22.5]

Maximum Case Pressure: See case pressure seal limitation graph *See shaft torque ratings for limitations.

- **Max. inlet pressure:** 310 bar [4500 psi] ※Do not exceed Δ pressure rating (see chart above).
- **Max. return pressure:** 310 bar [4500 psi] with case drain line installed ※Do not exceed Δ pressurerating (see chart above).
- **ΔBar[Δpsi]:** The true pressure difference between inlet port and outlet port.
- **Continuous rating:** Motor may be run continuously at these ratings.
- **Intermittent operation:** 10% of every minute.
- **Recommended fluids:** Premium quality anti-wear type hydraulic oil with a viscosity of not less than 13 cSt (70 SUS) at operating temperature.
- **Recommended system operating temp :** -34°C to 82°C [-30°F to 180°F]
- **Recommended filtration** Per ISO Cleanliness code, 4406:20/18/13

Note: To assure best motor life, run motor for approximately one hour at 30% of rated pressure before application to full load. Be sure motor is filled with fluid prior to any load applications.

XL4 SERIES



INTRODUCTION

Eaton's Xcel™ Series Low Speed High Torque Disc Valve motors offer the most popular features and options from the parallel Char-Lynn™ range and are optimized to bring the highest value in medium duty applications.

Features and Benefits

- 6 displacements, a variety of mounting flanges and output shafts
- Reliable, proven design
- High efficiency
- Flexiblilty in designing this motor into a system
- Options that fit well into tough applications

Applications

- Mowers
- Snow Removal
- Sprayers
- Trenching machines
- Wood Processing Machines

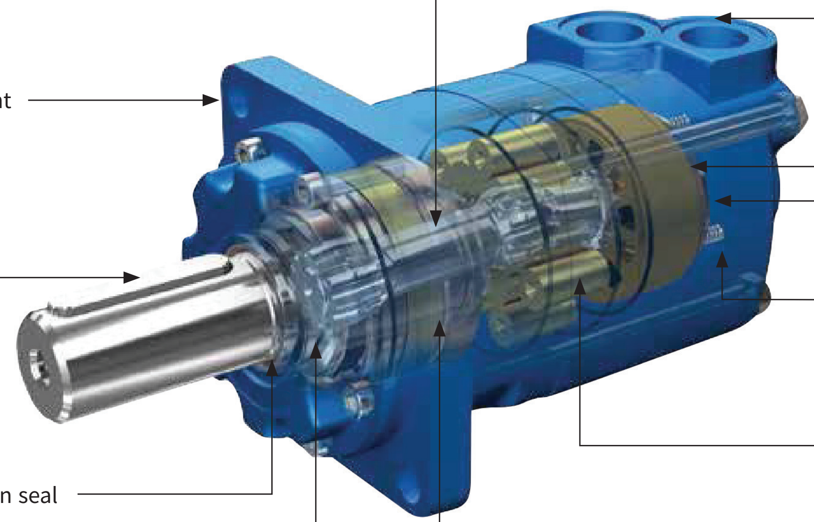
XL4 Series Motors

Geroler Element	6 Displacements
Flow L/min [GPM]	95 [25] Continuous** 150 [40] Intermittent*
Speed rpm	582 Cont.** 693 Inter.*
ΔPressure bar [psi]	205 [3000] Cont.** 310 [4500] Inter.*
Torque Nm [in-lbs]	945 [8400] Cont.** 1170 [10350] Inter.*

** Continuous— (Cont.) Continuous rating, motor may be run continuously at these ratings.

* Intermittent— (Inter.) Intermittent operation, 10% of every minute.

SPECIFICATIONS



Specification Data

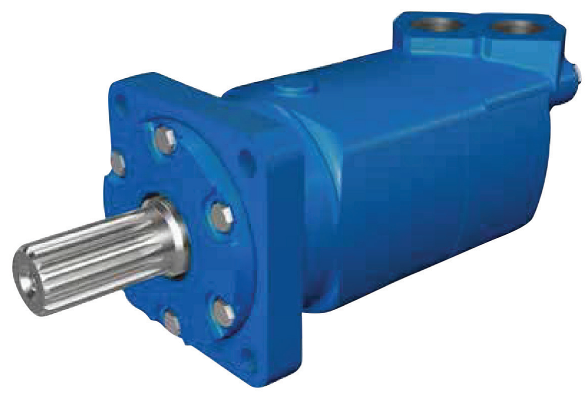
Displacementcm3/r [in3/r]		160[9.8]	205[12.5]	245[15.0]	310[19.0]	395[24.0]	495[30]
Flow LPM [GPM]	Continuous	95[25]	95[25]	95[25]	95[25]	95[25]	95[25]
	Intermittent	115[30]	115[30]	130[35]	130[35]	150[40]	150[40]
Max. Speed RPM	Continuous	582	459	383	303	239	191
	Intermittent	693	546	532	422	376	305
Pressure ΔBar [Δpsi]	Continuous	205[2973]	205[2973]	205[2973]	205[2973]	190[2750]	140[2000]
	Intermittent	310[4500]	310[4500]	310[4500]	260[3750]	240[3500]	170[2500]
Torque* Nm [lb-in]	Continuous	485[4292]	600[5310]	705[6239]	850[7523]	930[8240]	945[8375]
	Intermittent	705[6239]	800[7080]	845[7478]	1065[9425]	1185[10470]	1170[10350]
Weight Kg [lbs]	Standard or wheel mont	18.1[39.9]	18.4[40.6]	18.6[41]	19.5[43]	20.4[45]	21.8[48.1]
	Bearingless	14.1[31.1]	14.5[32]	14.7[32.4]	15.6[34.4]	16.6[36.6]	17.9[39.5]

Maximum Case Pressure: See case pressure seal limitation graph *See shaft torque ratings for limitations.

- **Max. inlet pressure:** 310 bar [4500 psi] ※Do not exceed Δ pressure rating (see chart above).
- **Max. return pressure:** 310 bar [4500 psi] with case drain line installed. ※Do not exceed Δ pressure rating (see chart above).
- **ΔBar[Δpsi]:** The true pressure difference between inlet port and outlet port.
- **Continuous rating:** Motor may be run Continuously at these ratings.
- **Intermittent operation:** 10% of every minute.
- **Recommended fluids:** Premium quality, anti-wear type hydraulic oil with a viscosity of not less than 13 cSt (70 SUS) at operating temperature.
- **Recommended system operating temp :** -34°C to 82°C [-30°F to 180°F]
- **Recommended filtration** Per ISO Cleanliness code, 4406:20/18/13

Note: To assure best motor life, run motor for approximately one hour at 30% of rated pressure before application to full load. Be sure motor is filled with fluid prior to any load applications.

ORBITAL MOTOR
XL6 SERIES



INTRODUCTION

Eaton's Xcel™ Series Low Speed High Torque Disc Valve motors offer the most popular features and options from the parallel Char-Lynn™ range and are optimized to bring the highest value in medium duty applications.

Features and Benefits

- 8 displacements, a variety of mounting flanges and output shafts
- Reliable, proven design
- High efficiency
- Flexibility in designing this motor into a system
- Options that fit well into tough applications

Applications

- Mobile Equipment
- Snow Removal, Mowing
- Sprayers
- Trenching Machines
- Wood Processing Machines

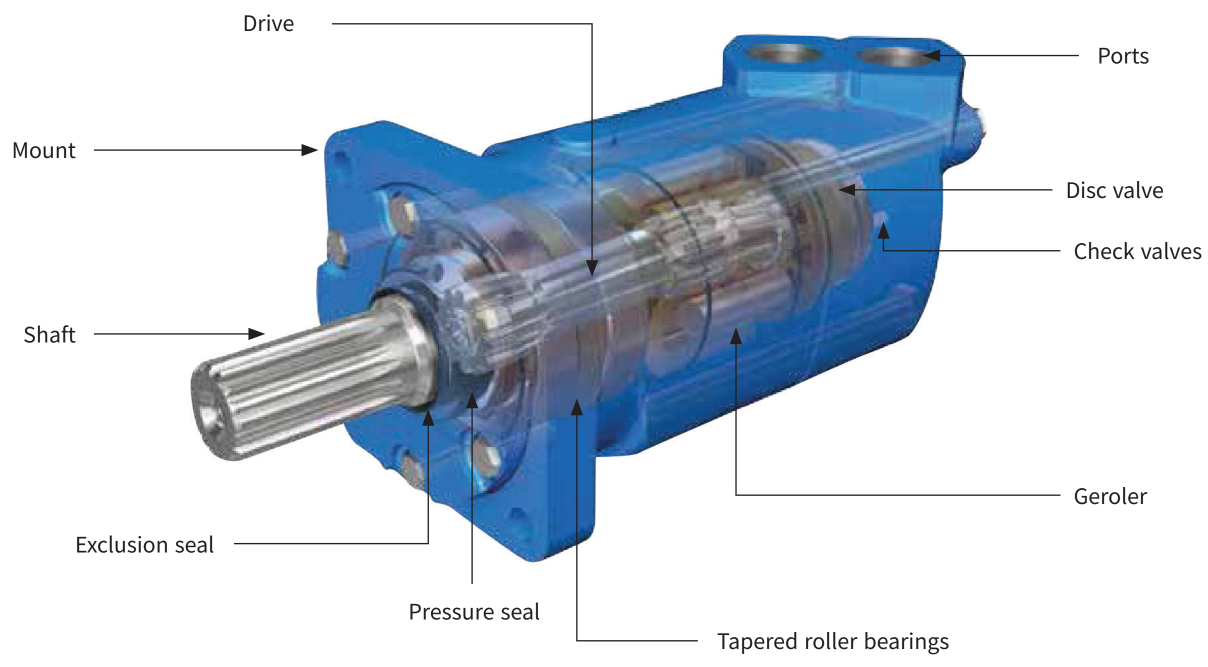
XL6 Series Motors

Geroler Element	8 Displacements
Flow L/min [GPM]	150 [40] Continuous** 225 [60] Intermittent*
Speed rpm	775 Cont.** 866 Inter.*
ΔPressure bar [psi]	205 [3000] Cont.** 310 [4500] Inter.*
Torque Nm [in-lbs]	1685 [14920] Cont.** 1875 [16580] Inter.*

** Continuous— (Cont.) Continuous rating, motor may be run continuously at these ratings.

* Intermittent— (Inter.) Intermittent operation, 10% of every minute.

SPECIFICATIONS



Specification Data

Displacementcm3/r [in3/r]		195[11.9]	245[15.0]	310[19.0]	390[23.9]	490[30.0]	625[38.0]	805[49.0]	985[60.0]
Flow LPM [GPM]	Continuous	150[40]	150[40]	150[40]	150[40]	150[40]	150[40]	150[40]	150[40]
	Intermittent	170[45]	210[55]	225[60]	225[60]	225[60]	225[60]	225[60]	225[60]
Max. Speed RPM	Continuous	775	615	485	387	241	241	187	153
	Intermittent	866	834	698	570	355	355	280	230
Pressure ΔBar [Δpsi]	Continuous	205[3000]	205[3000]	205[3000]	205[3000]	170[2500]	170[2500]	140[2000]	140[2000]
	Intermittent	310[4500]	310[4500]	310[4500]	310[4500]	221[3200]	221[3200]	170[2500]	140[2000]
Torque* Nm [lb-in]	Continuous	575[5100]	735[6510]	930[8230]	1155[10230]	1480[13100]	1480[13100]	1582[14004]	1685[14920]
	Intermittent	860[7620]	1100[9740]	1355[11990]	1635[14490]	1898[16800]	1898[16800]	1850[16377]	1875[16580]
Weight Kg [lbs]	Standard or wheel mont	24.9[55.0]	25.2[55.5]	25.6[56.5]	26.3[58.0]	27.9[61.5]	27.9[61.5]	29.0[64.0]	30.4[67.0]
	Bearingless	20.2[44.5]	20.4[45.0]	20.9[46.0]	21.5[47.5]	23.1[51.0]	23.1[51.0]	24.5[53.5]	25.7[56.5]

Maximum Case Pressure: See case pressure seal limitation graph *See shaft torque ratings for limitations.

- **Max. inlet pressure:** 310 bar [4500 psi] ※Do not exceed Δ pressure rating (see chart above).
- **Max. return pressure:** 310 bar [4500 psi] with case drain line installed. ※Do not exceed Δ pressurerating (see chart above).
- **ΔBar[Δpsi]:** The true pressure difference between inlet port and outlet port.
- **Continuous rating:** Motor may be run Continuously at these ratings.
- **Intermittent operation:** 10% of every minute.
- **Recommended fluids:** Premium quality, antiwear type hydraulic oil with a viscosity of not less than 13 cSt (70 SUS) at operating temperature.
- **Recommended system operating temp :** -34°C to 82°C [-30°F to 180°F]
- **Recommended filtration** Per ISO Cleanliness Code, 4406: 20/18/13

Note: To assure best motor life, run motor for approximately one hour at 30% of rated pressure before application to full load. Be sure motor is filled with fluid prior to any load applications.

WINCH MOTORS

- WINCH MOTOR

WINCH MOTOR

PMV SERIES

INTRODUCTION

The highly reliable in a suitable structure for high pressure and fixed capacity-type piston pump of PPF Series is designed to be used as a main pump for special vehicles, industrial machines and ship machinery.

- The PMV Series is a two-speed control-type axial piston motor in which a double-counter balance valve and a mechanical brake are built.
- The motor of high-pressure and high capacity has an optimized design at every part in it.
- It combines the hydraulic motor and the planetary reduction gear with various built-in functions.
- The two-speed of the motor is properly controlled by adjusting the exterior pilot.
- The double counter balance valve and the shockless, cross over relief valve being built in the motor's main body, the motor is equipped with a brake system which is excellent in the absorption of shocks.
- The mechanical brake is a negative brake and operates together with the counter balance valve. It operates and stops operation automatically as the motor runs and stops running.

ORDERING CODE

PMF	48/24	01	R	45
Variable Motor For Winch	Displacement (cc/rev)	Series Number	With Reductiongear	Gear Ratio

APPLICATION

CRANE

SHIP

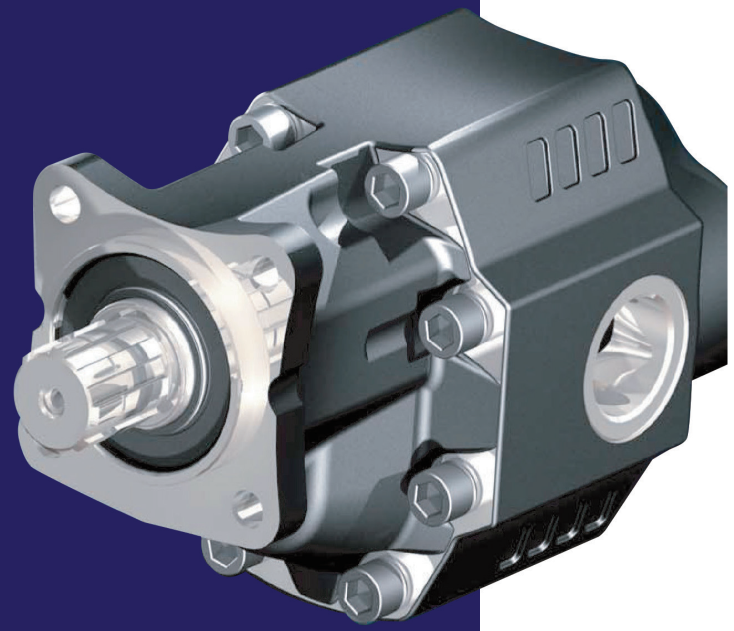
SPECIFICATIONS

Model	Output Torque (kgf·m)	Output Speed (rpm)	Gear Ratio	Motor			
				Displacement (cc/rev)	Max Speed (rpm)	Rated Pressure (kfg/cm²)	Two Speed Control Pressure (kgf/cm²)
PMV-28/19-02-VBCR42D	397/272	67.3/98.2	42.44	28.0/19.2	2857/4167	210	20
PMV-31-01-R45	467.5	60.8	45.569	30.7	2770	210	-
PMV-48/24-01-R45	736/373	34.1/67.2	45.569	48.3/24.5	1553/3061	210	20
PMV-53/31-02-R41	740/427	38.4/66.5	41.625	53.2/30.7	1598/2769	210	20
PMV-53/31-02-R45	810/468	35.1/60.8	45.569	53.2/30.7	1598/2769	210	20
PMV-56/28-01-VBCR45D	897/453	33.2/65.7	45.569	56.2/28.4	1512/2993	220	20
PMV-59/34-01-R45	903/521	31.5/54.5	45.569	59.3/34.2	1433/2485	210	20

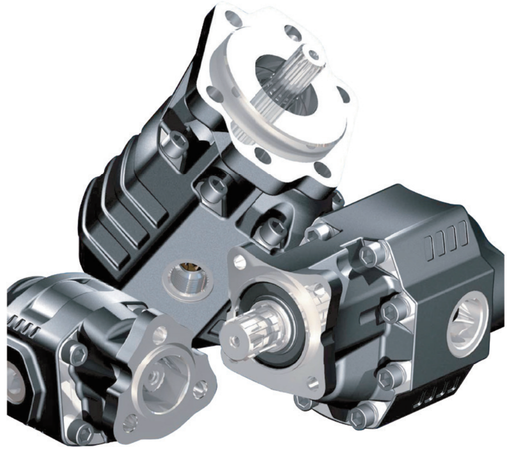
Model	Motor			Rotation Direction		Weight (kg)
	Parking Torque (kgf·m)	Brake Release Pressure (kgf/cm²)	Max Flow (ℓ·min)	"P1" Port Supply	"P2" Port Supply	
PMV-28/19-02-VBCR42D	1103	10	80	C.W	C.C.W	122.0
PMV-31-01-R45	1184	10	85	C.W	C.C.W	200.0
PMV-48/24-01-R45	1184	10	75	C.W	C.C.W	231.0
PMV-53/31-02-R41	1342	10	85	C.W	C.C.W	152.0
PMV-53/31-02-R45	1184	10	85	C.W	C.C.W	200.0
PMV-56/28-01-VBCR45D	1184	10	85	C.W	C.C.W	200.0
PMV-59/34-01-R45	1184	10	85	C.W	C.C.W	200.0

GEAR PUMPS

- HYDRAULIC GEAR PUMP



GEAR PUMP



INTRODUCTION

External gear pumps are a popular pumping principle and are often used as lubrication pumps in machine tools, in fluid power transfer units, and as oil pumps in engines.
External gear pumps can come in single or double (two sets of gears) pump configurations with spur (shown), helical, and herringbone gears. Helical and herringbone gears typically offer a smoother flow than spur gears, although all gear types are relatively smooth. Large-capacity external gear pumps typically use helical or herringbone gears. Small external gear pumps usually operate at 1500 or 2500 rpm and larger models operate at speeds up to 300 rpm. External gear pumps have close tolerances and shaft support on both sides of the gears. This allows them to run to pressures beyond 290 Bar, making them well suited for use in hydraulics. With four bearings in the liquid and tight tolerances, they are not well suited to handling abrasive or extreme high temperature applications.
Tighter internal clearances provide for a more reliable measure of liquid passing through a pump and for greater flow control. Because of this, external gear pumps are popular for precise transfer and metering applications involving polymers, fuels, and chemical additives.

- Various fuel oils and lube oils.
- Chemical additive and polymer metering.
- Chemical mixing and blending (double pump).
- Industrial and mobile hydraulic applications (log splitters, lifts, etc.).
- Acids and caustic (stainless steel or composite construction).
- Low volume transfer or application.

TECHNICAL FEATURES

Model	Displacement (cc/rev)	Max Pressure (bar)	Max Speed (rpm)	Max Speed (rpm)
NPH-17	17.04	290	2500	11
NPH-22	22.15	290	2500	11.5
NPH-27	26.18	290	2500	12
NPH-34	33.88	280	2200	13
NPH-43	43.12	270	2000	13.5
NPH-51	50.82	240	2000	14

Model	Displacement (cc/rev)	Max Pressure (bar)	Max Speed (rpm)	Max Speed (rpm)
NPH-61	60.06	220	1800	14.5
NPH-73	72.88	200	1600	15
NPH-82	81.08	190	1500	15.5
NPH-90	90.43	180	1500	15.5
NPH-100	98.18	180	1500	15
NPH-125	122.72	160	1500	17

SERIES NPLA

Single rotation pump with 2 rear ports, cast iron body from 6 to 40 cc, for light applications. available with uni 3-bolt and iso 4-bolt flange.

SERIES NPLU

Single rotation pump with 4 ports (2 on the side and 2 on the rear), cast iron body from 10 to 40 cc, for medium applications. Available with uni 3-bolt and iso 4-bolt flange.

SERIES NPLH

Recersible pumps with 4 ports (2 on the side and 2 on the rear), cast iron body from 6 to 40 cc, for medium applications 13 din, iso and tandem confiqurations available.

SERIES LTH

Bi-directional cast-iron gear pumps from 61 up to 100cc suitable for medium heavy-duty applications. Available with uni 3-bolt and iso 4-bolt flange.

SERIES NPH

Unidirectional* self-compensated cast-iron gear pumps, from 17 to 125 cc, for medium-heavy duty applications. Uni 3 bolt, iso 4 bolt, iso “short”, sae b and tandem configurations available.
* It is possible to change the direction of rotation of the pumps.

SERIES LTMH

Bi-directional cast iron gear pumps from 90 up to 120cc for medium/heavy-duty applications. Compact dimensions excellent for fitting onto direct pto’s. Available with uni 3-bolt flange and iso 4-bolt flange.

SERIES NPGH

Unidirectional* self-compensated cast-iron gear pumps, from 63 to 150 cc, for heavy duty applications uni 3 bolt, iso 4 bolt, iso “short” and tandem configurations available.
*Es possible invertir el sentido de rotacion de las bombas.

SERIES NPGH SHORT

Unidirectional* self-compensated cast-iron gear pumps, from 63 to 150 cc, for heavy duty applications uni 3 bolt, iso 4 bolt, iso “short” and tandem configurations available.
*Es possible invertir el sentido de rotacion de las bombas.

ACCESORIOS

Suction and delivery fitting kits are available in order to enhance the pump’s performances.

RCV

- HYDRAULIC REMOTE CONTROLS

JOYSTICK/PEDAL

INTRODUCTION

Hydraulic Remote Controls (HRCs) are used to activate and control directional valves or pumps from a remote and single operating station. HRCs come in hand, foot and mechanically operated version. On vehicles they are typically installed in seat armrests or in a console.

OPERATION

HRCs are fed a constant input pressure, from which they create reduced output pressures that vary proportionally with lever or pedal stroke. When the HRC is operated, output pilot pressure flows to the main directional control valves, precisely controlling main spool position and direction.

SUPPLY FLOW FROM A DEDICATED PUMP

There are various methods of supplying the flow to the Hydraulic Remote control. The most common and generally recommended is a separate pump. In all applications, filtrations must be installed to maintain the fluid cleanness level within the specified limit. Fluctuation of supply pump pressure will not generally cause the HRC output pressure to vary.

GENERAL DESCRIPTION

Features and Benefits

v **Higher productivity**
HRCs require very little operator effort. Increasing more productivity from both man and machine.

v **Optimum piping, quietness and heat dissipation**
HRCs allow main-stage directional valves to be mounted anywhere, thereby allowing designers to optimize critical system parameters.

v **Precise control**
Excellent pressure metering capabilities allows precise control of work functions and less wear and tear on the application.

v **A wide range of output pressure characteristics**
HRCs can be perfectly matched to the main stage valve to achieve optimum machine performance.

Features and Benefits

v **A safer, cleaner operating environment**
Designing an ergonomic workstation is easily achieved by leveraging benefits inherent in a system designed with HRCs. The benefits include; lowering noise levels, system oil temperature and the removal of fire hazards from the workstation.

v **Enhanced operator safety**
The HRC needs only low working pressure, about 30 bar (435 psi). Reducing the risk to the operator in a situation of pipe failure.

v **Freedom of system design**
Single-station control of widely placed directional valves is readily achieved. For example, in a vehicle, an HRC is easily mountable in the cab (or elsewhere) due to its compactness, eliminating cumbersome mechanical linkages.

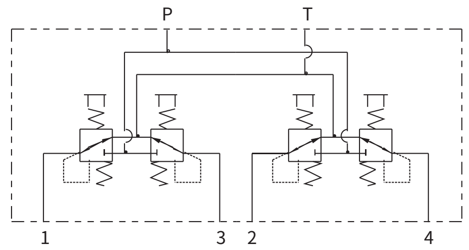
v **Less noise**
The use of an HRC allows better insulation between the cab, engine and other machine parts. Lower hysteresis provides superior control and as a result reduces vehicle shock and subsequent noise levels.

Additional features and benefits of HRC

v A safer, cleaner operating environment
v Rated flow: 8~30 LPM.
v Output Pressure: 0~30 bar.
v Maximum inlet pressure: 50 bar for aluminum / 100 bar for cast iron
v Wide variety of joystick options: standard lever, ergonomic multi-axis and pedal operated for various applications.
v High and consistent performance guaranteed over a wide range of temperature (-20oC ~90oC).

OPERATING DATA

	HRC4	HRC2	HRCP-A	HRCP-B	HRCP-C	HRCP-D	HRCP-E	HRCP-F	HRCP-G	HRCP-H
Max. inlet pressure (bar)	100	50	100	100	100	50	100	100	100	100
Max. back pressure (bar)	3	3	3	3	3	3	3	3	3	3
Rated flow (LPM)	20	8~35	20	10	10	8~27	20	10	10	20
Output pressure (bar)	0~30	0~28	0~27	0~28	0~28	0~30	0~27	0~28	0~28	0~27
Operation torque (NM)	5~36.7	2.4~32.6	55~160	60~173.8	5~135	1.6~43.8	55~160	5~135	60~170.8	55~160
Fluid	Mineral oil									
Fluid temperature	-20° to 90°C									
Ambient temperature	-40° to 60°C									
Viscosity	12 - 400 mm2/s									
Max level of fluid contamination	18/16/13 - ISO 4406									



FUNCTIONAL SYMBOL

HRC4

Model Code
Manual operated double function models

DESCRIPTION

The “HRC4” series is a double function valve that may be fitted with many different styles of hand-operated levers. This unit is typically used to control two double acting spools using a single joystick-style actuator. This provides a single-handed, user-friendly device to control two separate functions.

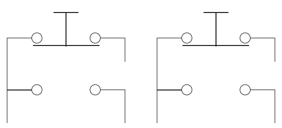
HRC4-Type D

DESCRIPTION

- P and T ports
- Four work ports
- All located on the underside of the valve
- Two electric button switch
- One electric proportional switch
- FNR (Front and Reverse) switch is optional

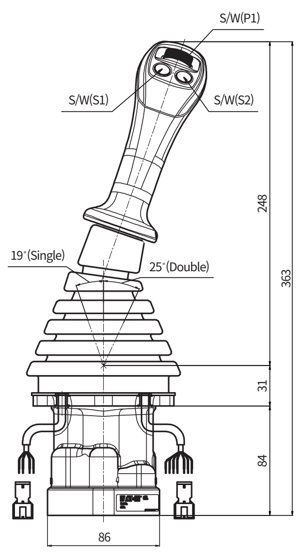
BUTTON

- Continuous rated current of switch: DC30Vx6A



SPRING BACK

DIMENSIONS (mm)



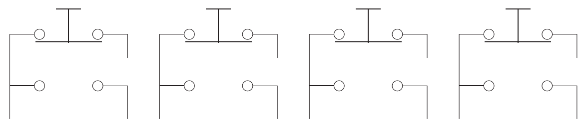
HRC4-Type D

DESCRIPTION

- P and T ports
- Four work ports
- All located on the underside of the valve
- Four electric button switch

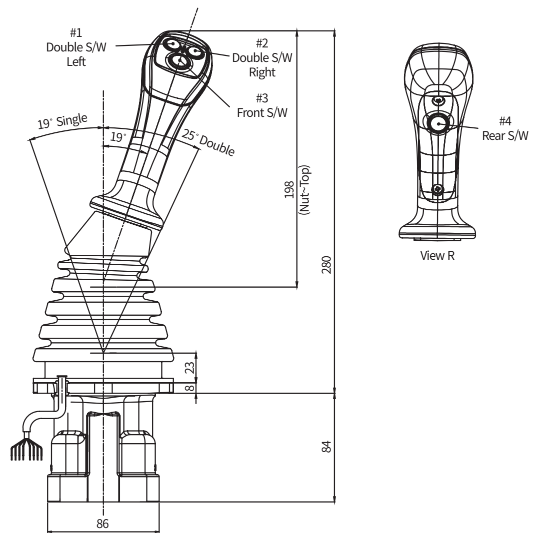
BUTTON

- Continuous rated current of switch: DC30Vx6A



SPRING BACK

DIMENSIONS (mm)

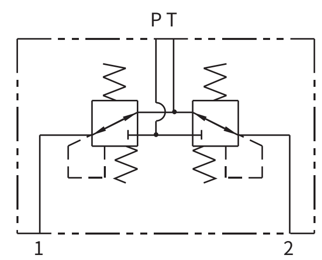


HRC2

Model Code
Single Joystick

DESCRIPTION

The “HRC2” series is the most basic form of HRC. It is typically used to control a dozer or similar single function. As with all HRC models, this valve operates on the pressure reducing concept, using a constant inlet pressure, and providing a metered variable outlet pressure as a direct result of the lever displacement.



FUNCTIONAL SYMBOL

HRCP

Model Code
Pedal

DESCRIPTION

The “HRCP” series is a single or dual pedal valve. Typically used to control a single double-acting spool as a travel pedal on a tracked vehicle. As with all HRC models, this valve operates on the pressure reducing concept, using a constant inlet pressure, and providing a metered variable outlet pressure as a direct result of the pedal displacement.

CARTERIDGE VALVES

- PRESSURE CONTROL VALVES
- FLOW CONTROL VALVES
- CHECK VALVES
-SANDWICH STACK VALVES
- DIRECTIONAL VALVES

CARTERIDGE VALVES

PRESSURE CONTROL VALVES

PILOT OPERATED RELIFE VALVES

Available with aluminium and steel body.

Max flow. from 5 up to 400 l/min.
Max pressure. up to 400 bar.

DIRECT ACTING RELIFE VALVES

Available with UNF and Metric caviry.

Max flow. from 5 up to 400 l/min.
Max pressure. up to 400 bar.

COUNTER BLANCE VALVES

Available with aluminium and steel body. Available for open and closed center, in line, flangealble on bydraulic motors and on hydraulic cylinders; with aluminium and steel body. Standard pilot ratio 4,25:1 and on request pilot ratio 3:1, 8:1, 10:1.

Max flow. from 40 up to 200 l/min.
Max pressure. up to 350 bar.

PILOT OPERATED SEQUENCE VALVES

Available with UNF and Metric cavity.

Max flow. from 5 up to 400 l/min.
Max pressure. up to 350 bar.

FLOW CONTROL VLAVES

NEEDLE VALVES & CARTRIDGE STYLE

Available with UNF and Metric caviry. with steel body.

Max flow. from 5 up to 200 l/min.
Max pressure. up to 350 bar.

FLOW DIVIDER COMBINER CARTRIDGE STYLE AND IN LINE VERSION

Available with UNF and Metric caviry. with aluminium body(steel body noly ot request).

Flow division ratio. 50%-50%, 7 different flow range from 3 up to 150 l/min
Max pressure. up to 350 bar.

CARTERIDGE VALVES

CHECK VALVES

CHECK VALVES CARTRIDGE STYLE

Available with UNF and Metric cavity.

Max flow. from 40 up to 200 l/min.
Max pressure. up to 350 bar.

SANDWICH STACK VALVES

SINGLE AND DOUBLE SANDWICH MOUNTING NG6, NG10 AND NG16 VALVES

Available with aluminium body (steel or cast iron body only to request).
The range includes counterbalance valves, two and three ways pressure compensated flow requlator valves pilot operated check valves, relief valves, solenoid directional valves, relief-unloading valves high low pressure, needle valves, sequence valves, pressure reducing valves, manifold plates, packing plates.

Max flow. from 40 up to 90 l/min.
Max pressure. up to 350 bar.

SINGLE AND DOUBLE PILOT OPERATED CHECK VALVES

Available in line and flangeable on hydraulic cylinders, with aluminium and steel body.

Max flow. 20 up to 80 l/min.
Max pressure. Up to 350 bar.

LEVER OPERATED HYDRAULIC VALVES AND HAND PUMPS

Available with cast iron body.

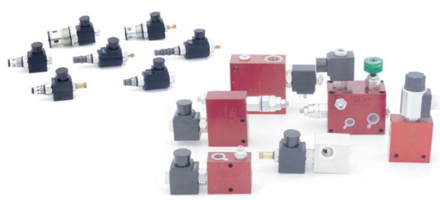
Max flow. From 10 up to 70 l/min.
Max pressure. Up to 400 bar.

IN LINE CHECK VALVES

Available with steel body.

Max flow. From 15 up to 200 l/min.
Max pressure. Up to 500 bar.

DIRECTIONAL VALVES



TOW, THREE, FOUR WAYS SOLENOID DIRECTIONAL VALVES NORMALLY OPEN AND NORMALLY CLOSE, POPPET TYPE AND SPOOL TYPE

Available with aluminium and steel body, with and without screw emergency.

Max flow. From 10 up to 200 l/min.
Max pressure. Up to 400 bar.

ACCUMULATORS

- BLADDER ACUMULATORS
- PISTON ACUMULATORS
- DIAPHRAGM ACUMULATORS
- ACUMULATOR ACCESSORIES

BLADDER ACUMULATOR

INTRODUCTION

Our standard bladder accumulators consist of a molded rubber bladder inside a forged steel shell with a nitrogen gas valve on one end and a fluid port at the other. The flexible bladder provides excellent separation between the fluid and gas in the accumulator, while the seamless shell reduces leak points. Additionally, our design ensures the accumulator cannot be disassembled while under pressure. Before typical use, the bladder must be charged with a calculated pressure of nitrogen gas as determined by the application requirements.

As system pressure changes, the nitrogen-charged bladder expands of contracts within the shell, allowing the accumulator expands of contracts within the shell, allowing the accumulator to discharge of absorb fluid from the system as necessary. All of our bladder accumulators are CE and ASME code stamped.

Bladder accumulators are durable and efficient and have a wide variety of applications such as blowout preventer systems, pulsation dampening, hydraulic power units, fluid volume compensation, wind energy, and many other industrial applications.

FUNCTION

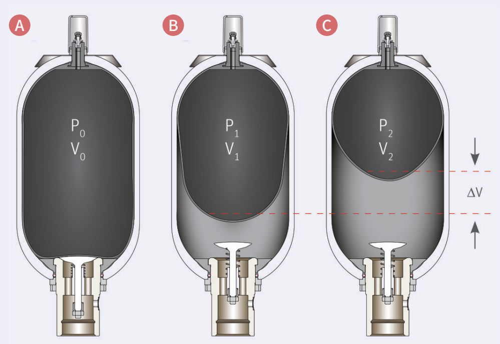
Our bladder accumulators enable the storage and release of hydraulic energy. As pressurized hydraulic fluid flows in at the oil port valve, the nitrogen within the accumulator bladder becomes compressed. Hydraulic energy is stored. When the pressure drops in the hydraulic system, the nitrogen gas and bladder expand and drive the hydraulic fluid out of the bladder accumulator back into the hydraulic system. Hydraulic energy is released. The bladder serves simultaneously as a media separator or transfer barrier.

The three basic settings of the bladder:

A The bladder is pre-charged with nitrogen.
The fluid valve is closed and prevents escape from the bladder.

B Position at minimum working pressure. A small volume of fluid must remain between the bladder and fluid valve so that the bladder does not close the valve disc at each emptying. P_0 therefore has to be less than P_1.

C Position at maximum working pressure. The volume change $\triangle V$ compared to the position at minimum working position corresponds to the stored fluid volume.

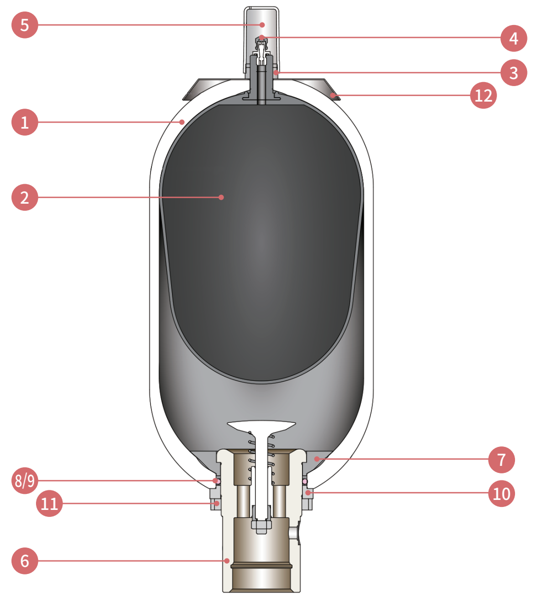


V_0 = Total gas volume of the accumulator
V_1 = Gas volume in the bladder accumulator at P_1
V_2 = Gas volume in the bladder accumulator at P_2
$\triangle V$ = Dissipated or absorbed useful volume between P_1/P_2

P_0 = Pre-charge pressure of the bladder in the bladder accumulator
P_1 = Minimum working pressure
P_2 = Maximum working pressure

CONSTRUCTION AND DESCRIPTION

the meterial of strandard(CE) / ASME series



Item	Designation	Material
1	Accumulator shell	Steel
2	Elastomer bladder	NBR
3	Lock nut	Steel
4	Gas-side valve	Satinless steel
5	Protection cap	Steel
6	Oil-side valve	Steel
7	Separated ring	Steel/Elastomer
8	O-ring	Elastomer
9	Back-up ring	PTFE
10	Spacer ring	Steel
11	Threaded ring	Steel
12	Type plate	Aluminium

ORDER CODE (standard/ce series)

Series — BS - - - - / - - - — Design number

Design number

1X	-

Pressure

330	330bar (Standard)
500	500bar

Volume

0.5	0.5 Liter
1	1 Liter
1.5	1.5 Liter
2	2 Liter
2.5	2.5 Liter
4	4 Liter
5	5 Liter
6	6 Liter
10	10 Liter
12	12 Liter
13	13 Liter
20	20 Liter
25	25 Liter
32	32 Liter
37	37 Liter
40	40 Liter
42	42 Liter
50	50 Liter
54	54 Liter
57	57 Liter
63	63 Liter
80	80 Liter
100	100 Liter
125	125 Liter
160	160 Liter
180	180 Liter

Note:
- Not all combination are possible.
- The high flow version are avaliable on request.

Type code

B	Bottom repairable (Standard)
T	Top repairable

Bladder material

N	NBR (Standard)
L	TT-NBR (Low temp')
H	HNBR
O	ECO
E	EPDM
V	Viton (FKM)
E	Chloroprene
B	Butyl (II R)

Fluid connection

G	Imperial thread (Standard)
M	Metric thread
N	NPT thread
S3	SAE Code61 Split flange (3000Psi)
S6	SAE Code62 Split flange (3000Psi)
F	Four bolt flange

INTRODUCTION

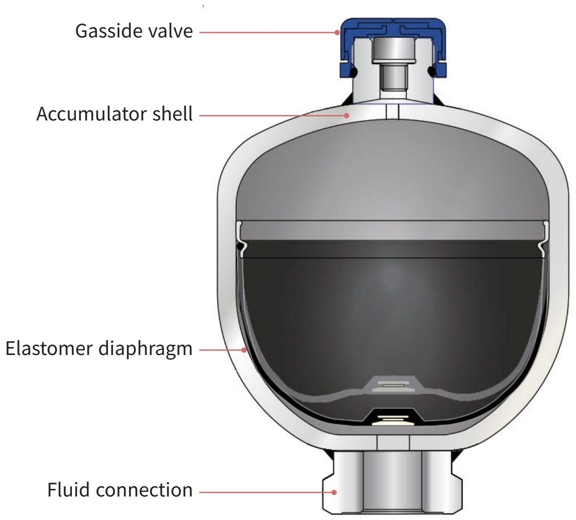
Our diaphragm accumulators are designed primarily for pulsation dampening and low-volume fluid storage.
The flexible diaphragm provides excellent gas and fluid separation, while the lightweight shell makes diaphragm accumulators a great choice for mobile markets and other applications where weight is a concern.

FUNCTION

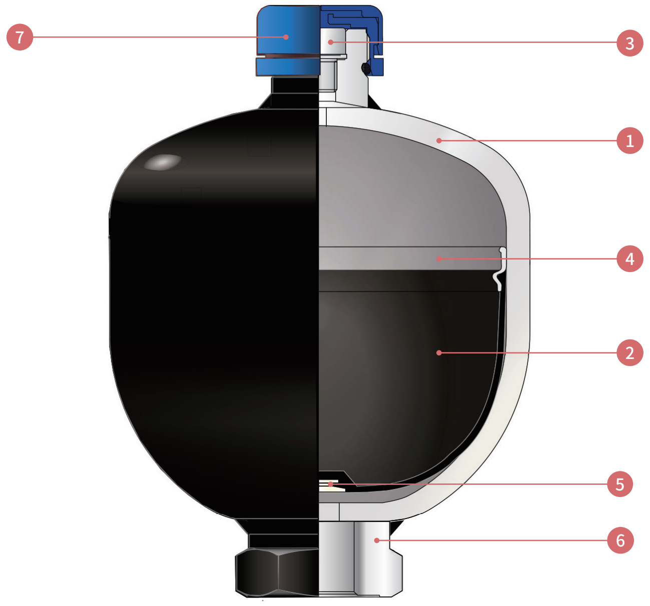
Our diaphragm accumulators enable the storage and release of hydraulic energy.

As pressurized fluid flows in at the oil connection, the nitrogen becomes compressed.
The fluid side and the gas side are separated by a flexible diaphragm. Hydraulic energy is stored.

When the pressure drops in the hydraulic system, the gas expands and drives the fluid out of the diaphragm accumulator back into the hydraulic system. Hydraulic energy is released.



THE METERIAL OF STRANDARD(CE) / ASME SERIES



Item	Designation	Material
1	Accumulator shell	Steel
2	Diaphragm	Elastomer
3	Gas-filling connection	Steel
4	Clamp ring	Steel
5	Diaphragm plate	Plastic
6	Fluid connection	Steel
7	Protection cap	Plastic

ORDER CODE

Series DA - [-] - [-] [-] / [-] [-] [-] Design number

Design number

1X	-

Pressure

100	100bar
140	140bar
210	210bar
250	250bar (Standard)
330	330bar

Volume

0.075	0.075 Liter
0.16	0.16 Liter
0.25	0.25 Liter
0.32	0.32 Liter
0.35	0.35 Liter
0.5	0.5 Liter
0.75	0.75 Liter
1	1 Liter
1.4	1.4 Liter
2	2 Liter
2.8	2.8 Liter
3.5	3.5 Liter

Fluid connection

AK	Female "G" thread (Standard)
AB	Femail "G" thread with male metric

Shell material

C	Carbon steel (Standard)
S	Stainless steel

Diaphragm material

N	NBR (Standard)
L	TT-NBR (Low temp')
H	HNBR
O	ECO
E	EPDM
V	Viton (FKM)
E	Chloroprene
B	Butyl (II R)

Note:
- Not all combination are possible.

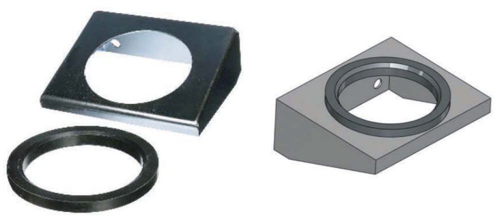
ACCUMULATOR SAFETY BLOCK

Max. opperating pressure	Meterial
Temperature range	-35°C...+80°C
Media	HFC, HLP, HFD...
Connection	S : G1/2 ~ G1 ¼ P : G1/2 ~ G1½ T : G3/8 ~ G1/2 M : G1/4
Material	Steel

CLAMP BAND AND MOUNTING BASE

	Bladder type	Piston type
MODEL	CB 230	By piston acc.model
I.D	230	100, 180, 250, 360
Weight(kg)	1.5	1 ~ 3

SUPPORT RING & MOUNTING BASE



• Accumulator : 1 ~ 57Liter

ACCUMULATOR SAFETY BLOCK

• Max. operating pressure : 600 bar
  - 4 types : 100 bar, 250 bar, 400 bar, 600 bar
• Connector :
  - 5/8" UNF, 7/8" UNF
  - ¼" ISO 228
• Pressure gauge
• Item list
  - Hose : 2.5m
  - Gas charging block
  - adapter

ACUMULATORS

BLADDER ACCUMULATORS

PISTON ACCUMULATORS

DIAPHRAGM ACCUMULATORS

ACCUMLATOR ACCESSORIES

HYDRAULIC HOSE

- EC640
- EC110
- EC210
- EC110S
- EC210S
- EC115
- EC215
- EHS005
- EHK007
- EC600
- GH493
- GH506
- GH466

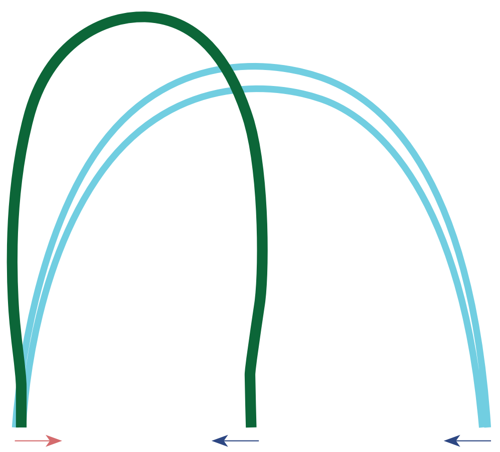
EC640 HYDRAULICS HOSE

EC640 meets SAE100 R15 performance and exceeds ISO 18752-CC requirements at 1/2 bend radius.

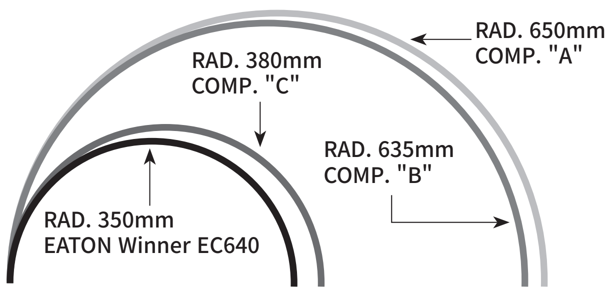
Eaton is proud to be your solution partner with the new EC640 flexible spiral hose.
This patent-pending high pressure spiral hydraulic hose was designed with material science and process innovation to meet the most demanding applications, where very high pressure and the nedd for easy installation in tight spaces come together.

Eaton EC640 new generation flexible hydraulic hose offers several advantages:

- Improved flexibility for easier installation in tight spaces, due to meeting and exceeding industry requirements at 50% of the installed hose bend.
- Improved compatibility against most general hydraulic fluids in the market, including new generation environmentally accepted hydraulic fluids such as HETG, HEES, HEPG and HEPR oils.
- Improved lifetime expectation, due to Eaton's patented better connection with the fitting as the enhanced synthetic rubber inner tube bears high compression-setproperies.
- Improved lifetime expectation due high elastic modulus properties of the inner tube, providing higher resistance against deformation in, for example, dynamic applications.
- Improved lifetime expectation due to higher abrasion and ozone resistant cover compared to requirements of SAE and EN standard.
- Improved energy saving due to reduction in weight of spiral hose assembly compared to our traditional hoses.
- Less shipping cost due to reduction in weight and outer diameter of hose assembly compared to our traditional hoses.



Force to bend test



420 bar -32

Standard

EC640 High performing hydraulic hose

Exceeds ISO 18752-CC, SAE100 R15 performance

Can replace 4SP, 4SH, R12, R13, R15

Dash size	Hose ID		WSOD (max)		Hose OD max		Working pressure		Burst pressure		Min. Bend radius	Weight
	mm	in	mm	in	mm	in	mm	in	bar	psi	mm	kg/m
EC640-06	9,5	0.37	18,1	0.71	20,9	0.82	420	6090	1680	24360	65	0,70
EC640-08	12,7	0.50	21,2	0.83	24,0	094	420	6090	1680	24360	90	0,92
EC640-10	15,9	0.63	24,6	0.97	27,7	1.09	420	6090	1680	24360	100	1,13
EC640-12	19,0	0.75	28,4	1.12	30,7	1.21	420	6090	1680	24360	150	1,25
EC640-16	25,4	1.00	35,4	1.39	37,9	1.49	420	6090	1680	24360	210	1,83
EC640-20	31,8	1.25	46,6	1.83	49,6	1.95	420	6090	1680	24360	260	3,17
EC640-24	38,1	1.50	54,0	2.13	56,9	2.24	420	6090	1680	24360	310	4,40
EC640-32	50,8	2.00	68,0	2.68	72,0	2.81	420	6090	1680	24360	350	6,28

CONSTRUCTION

- Special synthetic rubber tube resistant to mineral, vegetable and glycol based hydrauilc oil
- 4 or 6 high tensile strength steel wire reinforced
- Super high abrasion and weather resistance special synthetic rubber cover
- patent pending design

APPLICATION

For hydraulic systems with high peak pressure and arduous operating conditions such as high pressure hydraulic circuits (for example on booms) on mobile construction equipment, mining equipment, agricultural machines.

OPERATING TEMPERRATURE

-40℃ / +120℃

HIGHER FEATURE

- Bend radius improved up to 50% according to SAE standard products
- Force to bend improved up 40% according to standard products

MARKING

WINNER EC640-16 25.4mm (1.00in) DN25 420 bar (6090 psi) EXCEEDS ISO 18752-CC / SAE 100R15 PERFORMANCE MSHA IC-84/43 (-40℃/+120℃)

EC110, EC210 HYDRAULICS HOSE

EC110

EN853 1SN

Part No.	DN	Hose ID		Hose OD		Max. Working pressure		Min. Burst pressure		Min. Bend radius		Weight	
		mm	in	mm	in	bar	psi	bar	psi	mm	in	kg/m	lb/ft
EC110-04L	6	6,4	0.25	13,2	0.52	225	3250	900	13000	100,0	3.99	0,22	0.15
EC110-05L	8	7,9	0.31	14,8	0.58	215	3125	860	12500	115,0	4.53	0,26	0.17
EC110-06L	10	9,5	0.38	17,2	0.68	180	2600	720	10400	130,0	5.12	0,33	0.22
EC110-08L	12	12,7	0.50	20,4	0.80	160	2300	640	9200	180,0	7.09	0,41	0.28
EC110-10L	16	15,9	0.62	23,5	0.93	130	1900	520	7600	200,0	7.87	0,47	0.32
EC110-12L	19	19,0	0.75	27,5	1.08	105	1525	420	6100	240,0	9.45	0,59	0.40
EC110-16L	25	25,4	1.00	35,4	1.39	88	1275	352	5100	300,0	11.81	0,87	0.58
EC110-20L	31	31,8	1.25	43,5	1.71	63	925	252	3700	420,0	16.54	1,20	0.81
EC110-24L	38	38,1	1.50	50,0	1.97	50	725	200	2900	500,0	19.69	1,40	0.94
EC110-32L	51	50,8	2.00	63,6	2.50	40	580	160	2320	630,0	24.80	1,91	1.28

CONSTRUCTION
- Synthetic rubber tube
- Single wire braid
- Synthetic rubber cover
- White font, balck layline

OPERATING TEMPERATURE RANGE

-40°C to +100°C
(-40°F to + 212°F)

APPROVED FITTING
- TTC series
- Z series
- Winner 2-piece(non-skive)

APPLICATION
- Hydraulic system servied with petroleum and water based fluids
- General industrial service

EC210

EN853 2SN

Part No.	DN	Hose ID		Hose OD		Max. Working pressure		Min. Burst pressure		Min. Bend radius		Weight	
		mm	in	mm	in	bar	psi	bar	psi	mm	in	kg/m	lb/ft
EC210-04L	6	6,4	0.25	15,0	0.89	400	5800	1600	23200	100,0	3.94	0,38	0.26
EC210-05L	8	7,9	0.31	16,5	0.65	350	5100	1400	20400	115,0	4.53	0,43	0.29
EC210-06L	10	9,5	0.38	18,9	0.74	330	4800	1320	19200	130,0	5.12	0,54	0.36
EC210-08L	12	12,7	0.50	22,2	0.87	275	4000	1100	16000	180,0	7.09	0,64	0.43
EC210-10L	16	15,9	0.62	25,2	0.99	250	3650	1000	14600	200,0	7.87	0,75	0.50
EC210-12L	19	19,0	0.75	29,2	1.15	251	3125	860	12500	240,0	9.45	0,93	0.62
EC210-16L	25	25,4	1.00	37,2	1.46	165	2400	660	9600	300,0	11.81	1,29	0.87
EC210-20L	31	31,8	1.25	47,3	1.86	125	1800	500	7200	420,0	16.54	1,89	1.27
EC210-24L	38	38,1	1.50	53,7	2.11	90	1300	360	5200	500,0	19.69	2,10	1.41
EC210-32L	51	50,8	2.00	66,7	2.63	80	1150	320	4600	630,0	24.80	2,76	1.85

CONSTRUCTION
- Synthetic rubber tube
- Double wire braid
- Synthetic rubber cover
- Green font, black layline

OPERATING TEMPERATURE RANGE

-40°C to +100°C
(-40°F to + 212°F)

APPROVED FITTING
- TTC series
- Z series
- Winner 2-piece(non-skive)

APPLICATION
- Hydraulic system servied with petroleum and water based fluids
- General industrial service

EC110S, EC210S HYDRAULICS HOSE

EC110S

EN853 1SN

Part No.	DN	Hose ID		Hose OD		Max. Working pressure		Min. Burst pressure		Min. Bend radius		Weight	
		mm	in	mm	in	bar	psi	bar	psi	mm	in	kg/m	lb/ft
EC110S-04L	6	6,4	0.25	13,2	0.52	225	3250	900	13000	100,0	3.99	0,22	0.15
EC110S-05L	8	7,9	0.31	14,8	0.58	215	3125	860	12500	115,0	4.53	0,26	0.17
EC110S-06L	10	9,5	0.38	17,2	0.68	180	2600	720	10400	130,0	5.12	0,33	0.22
EC110S-08L	12	12,7	0.50	20,4	0.80	160	2300	640	9200	180,0	7.09	0,41	0.28
EC110S-10L	16	15,9	0.62	23,5	0.93	130	1900	520	7600	200,0	7.87	0,47	0.32
EC110S-12L	19	19,0	0.75	27,5	1.08	105	1525	420	6100	240,0	9.45	0,59	0.40
EC110S-16L	25	25,4	1.00	35,4	1.39	88	1275	352	5100	300,0	11.81	0,87	0.58
EC110S-20L	31	31,8	1.25	43,5	1.71	63	925	252	3700	420,0	16.54	1,20	0.81
EC110S-24L	38	38,1	1.50	50,0	1.97	50	725	200	2900	500,0	19.69	1,40	0.94
EC110S-32L	51	50,8	2.00	63,6	2.50	40	580	160	2320	630,0	24.80	1,91	1.28

CONSTRUCTION
- Synthetic rubber tube
- Single wire braid reinforcement
- Synthetic rubber cover
- White font, balck layline

OPERATING TEMPERATURE RANGE

-40°C to +100°C
(-40°F to + 212°F)

APPROVED FITTING
- TTC series
- Z series
- Winner 2-piece(non-skive)

APPLICATION
- Hydraulic system servied with petroleum and water based fluids
- General industrial service

EC210S

EN853 2SN

Part No.	DN	Hose ID		Hose OD		Max. Working pressure		Min. Burst pressure		Min. Bend radius		Weight	
		mm	in	mm	in	bar	psi	bar	psi	mm	in	kg/m	lb/ft
EC210S-04L	6	6,4	0.25	15,0	0.89	400	5800	1600	23200	100,0	3.94	0,38	0.26
EC210S-05L	8	7,9	0.31	16,5	0.65	350	5100	1400	20400	115,0	4.53	0,43	0.29
EC210S-06L	10	9,5	0.38	18,9	0.74	330	4800	1320	19200	130,0	5.12	0,54	0.36
EC210S-08L	12	12,7	0.50	22,2	0.87	275	4000	1100	16000	180,0	7.09	0,64	0.43
EC210S-10L	16	15,9	0.62	25,2	0.99	250	3650	1000	14600	200,0	7.87	0,75	0.50
EC210S-12L	19	19,0	0.75	29,2	1.15	251	3125	860	12500	240,0	9.45	0,93	0.62
EC210S-16L	25	25,4	1.00	37,2	1.46	165	2400	660	9600	300,0	11.81	1,29	0.87
EC210S-20L	31	31,8	1.25	47,3	1.86	125	1800	500	7200	420,0	16.54	1,89	1.27
EC210S-24L	38	38,1	1.50	53,7	2.11	90	1300	360	5200	500,0	19.69	2,10	1.41
EC210S -32L	51	50,8	2.00	66,7	2.63	80	1150	320	4600	630,0	24.80	2,76	1.85

CONSTRUCTION
- Synthetic rubber tube
- Double wire braid reinforcement
- Synthetic rubber cover
- Green font, black layline

OPERATING TEMPERATURE RANGE

-40°C to +100°C
(-40°F to + 212°F)

APPROVED FITTING
- TTC series
- Z series
- Winner 2-piece(non-skive)

APPLICATION
- Hydraulic system servied with petroleum and water based fluids
- General industrial service

EC115, EC215 HYDRAULICS HOSE

EC115

EN853 1SN

Part No.	DN	Hose ID		Hose OD		Max. Working pressure		Min. Burst pressure		Min. Bend radius		Weight	
		mm	in	mm	in	bar	psi	bar	psi	mm	in	kg/m	lb/ft
EC115-04L	6	6,4	0.25	12,2	0.48	225	3250	900	13000	70,0	2.95	0,18	0.12
EC115-05L	8	7,9	0.31	13,6	0.54	215	3125	860	12500	85,0	3.35	0,20	0.13
EC115-06L	10	9,5	0.38	15,5	0.61	180	2600	720	10400	90,0	3.54	0,26	0.17
EC115-08L	12	12,7	0.50	19,0	0.75	160	2300	640	9200	130,0	5.12	0,34	0.23
EC115-10L	16	15,9	0.62	22,4	0.88	130	1900	520	7600	150,0	5.91	0,42	0.28
EC115-12L	19	19,0	0.75	25,8	1.02	105	1525	420	6100	180,0	7.09	0,50	0.34
EC115-16L	25	25,4	1.00	33,4	1.31	88	1275	352	5100	230,0	9.06	0,74	0.50
EC115-20L	51	31,8	1.25	41,5	1.63	63	925	252	3700	210,0	8.27	0,99	0.67

CONSTRUCTION
- Synthetic rubber tube
- Single wire braid reinforcement
- Synthetic rubber cover
- White font, balck layline

OPERATING TEMPERATURE RANGE

-40°C to +100°C
(-40°F to + 212°F)

APPROVED FITTING
- TTC series
- Z series
- Winner 2-piece(non-skive)

APPLICATION
- Hydraulic system servied with petroleum and water based fluids
- General industrial service

EC215

EN853 2SN

Part No.	DN	Hose ID		Hose OD		Max. Working pressure		Min. Burst pressure		Min. Bend radius		Weight	
		mm	in	mm	in	bar	psi	bar	psi	mm	in	kg/m	lb/ft
EC215-04L	6	6,4	0.25	13,2	0.52	400	5800	1600	23200	100,0	3.94	0,38	0.26
EC215-05L	8	7,9	0.31	15,0	0.59	350	5100	1400	20400	115,0	4.53	0,43	0.29
EC215-06L	10	9,5	0.38	17,1	0.67	330	4800	1320	19200	130,0	5.12	0,54	0.36
EC215-08L	12	12,7	0.50	20,7	0.81	275	4000	1100	16000	180,0	7.09	0,64	0.43
EC215-10L	16	15,9	0.62	23,8	0.94	250	3650	1000	14600	200,0	7.87	0,75	0.50
EC215-12L	19	19,0	0.75	27,7	1.09	251	3125	860	12500	240,0	9.45	0,93	0.62
EC215-16L	25	25,4	1.00	35,5	1.40	165	2400	660	9600	300,0	11.81	1,29	0.87
EC215-20L	31	31,8	1.25	43,6	1.72	125	1800	500	7200	420,0	16.54	1,89	1.27
EC215-24L	38	38,1	1.50	50,7	2.00	100	1300	360	5200	500,0	19.69	2,10	1.41

CONSTRUCTION
- Synthetic rubber tube
- Double wire braid reinforcement
- Synthetic rubber cover
- Green font, black layline

OPERATING TEMPERATURE RANGE

-40°C to +100°C
(-40°F to + 212°F)

APPROVED FITTING
- TTC series
- Z series
- Winner 2-piece(non-skive)

APPLICATION
- Hydraulic system servied with petroleum and water based fluids
- General industrial service

EH005, EHK007 HYDRAULICS HOSE

EHS005

Steel Wire Reinforced Steam
BS 53472 Type 2 Class A

Part No.			DN	Hose ID		Hose OD		Max. Oper pressure		Burst pressure		Min. Bend radius		Weight		Legth	
	mtr	ft		mm	in	mm	in	bar	psi	bar	psi	mm	in	kg/m	lbs/ft	mtr	ft
EHS005-08-	MXX	50	12	12,7	0.50	24,0	0.94	17,0	247	170	2465	70	2.76	0,49	0.32	40	50
EHS005-10-	MXX	50	16	15,9	0.62	27,0	1.06	17,0	247	170	2465	80	3.15	0,56	0.38	40	50
EHS005-12-	MXX	50	19	19,0	0.75	32,0	1.26	17,0	247	170	2465	100	3.94	0,72	0.48	40,61	50
EHS005-16-	MXX	50	25	25,4	1.00	38,5	1.52	17,0	247	170	2465	140	5.51	0,96	0.65	40,61	50
EHS005-20-	MXX	50	31	31,8	1.25	46,0	1.81	17,0	247	170	2465	200	7.87	1,27	0.85	40,61	50
EHS005-24-	MXX	50	38	38,1	1.50	52,0	2.05	17,0	247	170	2465	250	9.84	1,58	1.06	40,61	50
EHS005-32-	MXX	50	51	50,8	2.00	67,0	2.64	17,0	247	170	2465	350	13.78	2,37	1.59	40,61	50
EHS005-40-	MXX	50	60	63,5	2.50	79,5	3.13	17,0	247	170	2465	450	17.72	2,97	2.00	40,61	50
EHS005-48-	MXX	50	80	76,2	3.00	93,0	3.66	17,0	247	170	2465	550	21.65	3,88	2.61	40,61	50
EHS005-65-	MXX	50	102	101,6	4.00	124,0	4.88	17,0	247	170	2465	750	29.53	6,60	4.44	40,61	50

※ Product available BK-Black and RD-Red

CONSTRUCTION
- Butyl
- High-tensile steel wire cords
- Pin-pricked synthetic Rubber

OPERATING TEMPERATURE RANGE

-40°C to +208°C
(-40°F to +406°F)

TYPE OF COUPLINGS
- Eaton EJ series
- Ground joint female
- Boss male

APPLICATION
- Transfer of steam for processing products and cleaning equipment

MARKETS
- Refining and petrochemical
- Paper industry
- Industrial cleaning markets
- Oil and gas exploration
- Steel
- Ship building

EHK007

MARAUDER™ Heavy Duty
Concreat pumping

Part No.			DN	Hose ID		Hose OD		Max. Oper pressure		Burst pressure		Min. Bend radius		Weight		Legth	
	mtr	ft		mm	in	mm	in	bar	psi	bar	psi	mm	in	kg/m	lbs/ft	mtr	ft
EHK007-32-	MXX	100	51	50,8	2.00	70,0	2.76	85	1230	200	2900	275	10.83	3,03	2.04	40-61	100
EHK007-40-	MXX	100	60	63,5	2.50	88,0	3.46	85	1230	200	2900	300	11.81	4,48	3.01	40-61	100
EHK007-48-	MXX	100	80	76,2	3.00	102,0	4.02	85	1230	200	2900	350	13.78	5,46	3.67	40-61	100
EHK007-64-	MXX	100	102	101,6	4.00	130,0	5.12	85	1230	200	2900	400	15.75	8,46	5.69	40-61	100
EHK007-80-	MXX	100	130	127,0	5.00	155,0	6.10	85	1230	200	2900	500	19.69	9,63	6.47	40-61	100
EHK007-96-	MXX	100	150	152,4	6.00	180,0	7.09	85	1230	200	2900	650	25.59	10,99	7.39	40-61	100

※ Abrasion loss value acc. DIN53516 ≤60㎣

CONSTRUCTION
- Abrasion resistant synthetic rubber
- High-tensile steel cords
- Pin-pricked synthetic rubber

OPERATING TEMPERATURE RANGE

-40°C to +70°C
(-40°F to +158°F)

APPLICATION
- High-pressure concrete pumping

TYPE OF COUPLINGS
- Victaulic male NPT

MARKETS
- Construction
- Cement placement

EC600 X-FLEX, GH493 HYDRAULICS HOSE

EC600 X-FLEX

Four Spiral Wire
Exceeds: SAE 100R15, ISO 18752-DC*

Part No.	DN	Hose ID		Hose OD		Max. Operating pressure		Burst pressure		Min. Bend radius		Weight	
		mm	in	mm	in	bar	psi	bar	psi	mm	in	kg/m	lb/ft
EC600-12	19	19,1	0.75	33,3	1.31	420	6100	1680	24,400	135	5.31	1.52	1.01

CONSTRUCTION

- Synthetic Rubber Tube
- 4 Spiral Wire Reinforcement
- Highly abrasion resistant DURA-TUFF Plus Cover
- Ink Transfer Layline

OPERATING TEMPERATURE RANGE

-40°C to +121°C
(-40°F to +250°F)

AGENCY LISTING

MSHA IC-84/19

APPLICATION

- Approved with 4S fitting for SAE100R15 ½ Bend & ISO18752-CC
- *Approved with 1W fitting for SAE100R15 ½ Bend & ISO18752-DC

GH493

Four Spiral Wire
SAE 100R12, EN856 Type R12,
EN856 4SP Performance

Part No.	DN	Hose ID		Hose OD		Max. Operating pressure		Burst pressure		Min. Bend radius		Weight	
		mm	in	mm	in	bar	psi	bar	psi	mm	in	kg/m	lb/ft
GH493-6	10	9,7	0.38	21,1	0.79	448	6500	1792	26000	62,5	2.50	0,70	0.47
GH493-6	12	12,7	0.50	23,4	0.92	415	6000	1660	24000	90,0	3.50	0,88	0.59
GH493-6	16	16,0	0.63	28,2	1.11	415	6000	1660	24000	100,0	4.00	1,03	0.69
GH493-6	19	19,1	0.75	30,5	1.20	380	5500	1520	22000	120,0	4.75	1,37	0.92
GH493-6	25	25,4	1.00	37,6	1.48	350	5100	1400	20400	150,0	6.00	1,82	1.22
GH493-6	31	31,8	1.25	46,5	1.83	310	4500	1240	18000	210,0	8.25	2,44	1.64
GH493-6	38	38,1	1.50	53,8	2.12	275	4000	1100	16000	250,0	10.00	3,12	2.10
GH493-6	51	50,8	2.00	67,1	2.64	275	4000	1100	16000	320,0	12.50	4,18	2.81

CONSTRUCTION

- Tube: Synthetic rubber
- 4-spiral wire Reinforcement
- Dura-Tuff™ synthetic rubber

OPERATING TEMPERATURE RANGE

-40°C to +127°C
(-40°F to +260°F)

QUALIFIED FITTINGS

TTC12 Series

MSHA ACCEPTED MARINE APPLICATION J1942/1 HYDRAULIC ONLY, ABS

APPLICATION

- Hydraulic system service with petroleum and water-based fluids, for general industrial service.

GH506, GH466 HYDRAULICS HOSE

GH506

Four Spiral Wire EN 856 4SH

Part No.	Hose ID		Hose OD		Max.Operating pressure		Burst pressure		Min. Bend radius		Weight	
	mm	in	mm	in	mm	in	bar	psi	mm	in	kg/m	lbs/ft
GH506-12*	19,1	0.75	32,3	1.27	420,0	6100	1680,0	24400	280,0	11.00	1,49	1.00
GH506-16*	25,4	1.00	38,4	1.51	380,0	5500	1520,0	22000	340,0	13.38	2,05	1.38
					±420,0	6100	±1680,0	24400				
GH506-20	31,8	1.25	45,5	1.79	350,0	5100	1400,0	20400	460,0	18.11	2,54	1.71
GH506-24	38,1	1.50	53,6	2.11	300,0	4350	1200,0	17400	560,0	22.05	3,27	2.20
GH506-32	50,8	2.00	68,1	2.68	250,0	3650	1000,0	14600	700,0	27.56	4,58	3.08

CONSTRUCTION

- Synthetic rubber tube
- 4-heavy spiral wire reinforcement
- synthetic DURA-TUFF™ rubber cover

OPERATING TEMPERATURE RANGE

-40°C to +100°C
(-40°F to +212°F)

APPLICATION

- Four wire hose for high pressure hydraulic systems with petroleum and water-base fluids.

GH466

Six Spiral Wire SAE Look 15

Part No.	Hose ID		Hose OD		Max.Operating pressure		Burst pressure		Min. Bend radius		Weight	
	mm	in	mm	in	mm	in	bar	psi	mm	in	kg/m	lbs/ft
GH466-20*	31,8	1.25	49,3	1.94	420,0	6100	1680,0	24400	420,0	16.50	3,48	2.34
GH466-24*	38,1	1.50	57,4	2.26	420,0	6100	1680,0	24400	510,0	20.80	4,63	3.11
GH466-32*	51,4	2.02	71,7	2.82	420,0	6100	1680,0	24400	630,0	24.80	6,70	4.50

CONSTRUCTION

- Synthetic rubber tube
- 6-heavy spiral wire reinforcement
- synthetic DURA-TUFF™ rubber cover

OPERATING TEMPERATURE RANGE

-40°C to +100°C
(-40°F to +212°F)

APPLICATION

- Six wire spiral hose for pressure systems with extreme pressure peaks. For use with petroleum and water-base fluids.

JS International

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