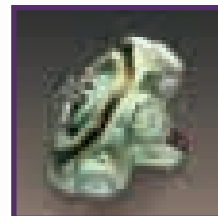
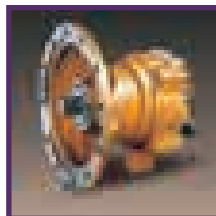
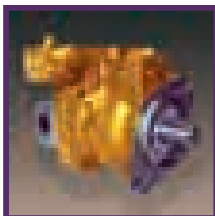




## Product Line Catalog



# Kawasaki History

**K**awasaki Heavy Industries, Ltd. has been providing technological innovations to the world for over one hundred years. Operating on a global scale, Kawasaki designs, manufactures and markets products ranging from ships, railroad cars, aircraft and motorcycles to industrial plants, steel structures and hydraulic equipment.

**Kawasaki Precision Machinery Group is an integral part of Kawasaki. With over 80 years experience in the hydraulics industry, Kawasaki manufactures and markets a wide variety of hydraulic products for mobile, industrial, marine and other applications. Dedicated to global customer support, Kawasaki has operations in Japan, England and the United States. In addition to total commitment toward global customer support, Kawasaki places great emphasis on quality — the hydraulic production facilities in both Japan and England have obtained ISO 9001 and 14001 certification.**

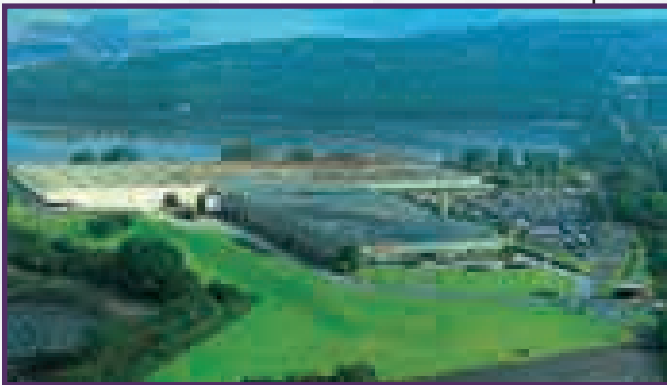
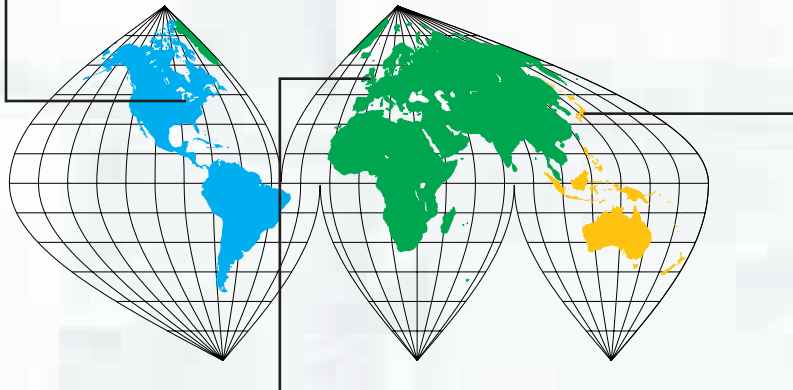
**Kawasaki Motors Corp., U.S.A., Precision Machinery Division, based in Grand Rapids, Michigan, is responsible for marketing, sales and service of Kawasaki Hydraulic Products throughout North and Latin America. Kawasaki's technically oriented staff focuses on understanding and assessing its customers' ever-changing needs. Taking full advantage of Kawasaki's worldwide resources, our staff works closely with factory engineers to provide engineered solutions to customers' hydraulic requirements. Through technological leadership and a customer-centered philosophy, Kawasaki Precision Machinery Group has built relationships with top firms around the world who value the high performance and reliability Kawasaki Hydraulic Products deliver.**

## A Brief History of Kawasaki's Hydraulic Business

- 1916** Began work on Hele-shaw type radial piston pumps at the marine machinery works (now Kobe Works), formerly Kawasaki Dockyard.
- 1936** Started producing and selling screw pumps.
- 1962** Began producing and selling bent axis type piston pumps/motors.
- 1963** Started producing and selling low speed high torque radial piston motors.
- 1964** Production and sales of hydraulic control valves.
- 1968** Established and relocated to Nishi Kobe Works, started Hydraulic Machinery Division. Developed swash plate type piston pumps/motors.
- 1979** Developed bent axis type piston pumps/motors (L series). Developed swash plate type piston pumps/motors (NV series).
- 1982** Developed piston type medium-speed motors (MX/MB series).
- 1983** Initiated production and sales of bent-axis type piston pumps/motors for open circuits (LVP series).
- 1984** Started sales of two speed motors with built in reduction gear for travel function of construction machinery (DNB series).
- 1987** Renamed the division Precision Machinery Division. Developed middle speed axial piston motors (M2X series). Developed and commenced sales of swash plate type piston pumps (K3V series).
- 1992** Initiated sales of swash-plate type piston pumps for general industrial machinery (K3VG series).
- 1994** Established Kawasaki Motors Corp., U.S.A., Precision Machinery Division, in Grand Rapids, U.S.A., as a sales base in the United States.  
  
Established Kawasaki Precision Machinery (UK) Ltd. and commenced production of Staffa Motors in the UK.  
  
Kawasaki Precision Machinery (UK) Ltd. has been certified by DNV (DET NORSE VERITAS) to conform to the Quality System Standard ISO 9001.
- 1999** KMC Grand Rapids, MI, facility expansion and renovation completed. Additional 70,000 sq. ft. warehouse and technical facilities to support expanding North American Hydraulics business.
- 2000** Developed North American (SAE) version axial piston pump (K3VL Series).

# Kawasaki Facilities

**Kawasaki Precision Machinery (U.S.A.), Inc.**  
5080 36th St. S.E., Grand Rapids, MI 49512, U.S.A.  
Tel: (616) 949-6500  
Fax: (616) 975-3103  
[www.kmp-usa.com](http://www.kmp-usa.com)



## **Kawasaki Precision Machinery (UK) Limited**

Ernesettle Lane, Ernesettle,  
Plymouth, Devon, PL5 2SA England  
Tel: (1752) 364394  
Fax: (1752) 364816

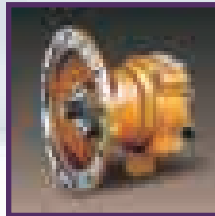


## **Kawasaki Precision Machinery, Ltd.**

Tokyo Head Office, World Trade Center Bldg.,  
4-1 Hamamatsu-cho 2-chome, Minato-ku, Tokyo, Japan  
Tel: Tokyo (03) 3435-6862  
Fax: (03) 3435-2023

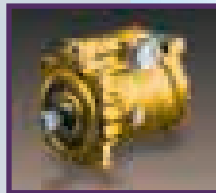
# Kawasaki Mobile Applications

**H**ydraulic components and systems from Kawasaki Precision Machinery Division are used around the world in mobile machinery where high performance and reliability are critical. Mobile vehicles require power, efficiency, and steady, controlled load movements. Designed to operate under severe conditions, Kawasaki motors, pumps, valves and hydraulic control circuits are rigorously tested and documented before shipment. Mobile equipment operators everywhere depend upon the efficiency and reliability of Kawasaki Hydraulic Products.



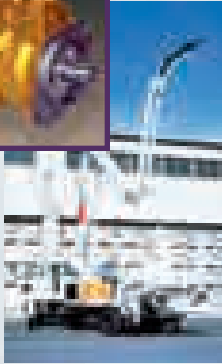
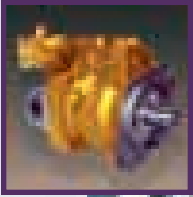
A successor to our widely used **NV Series**, the **K3V Series** axial piston pump has 35% fewer parts for longer life and higher reliability essential to large construction machines. The spherical valve plate and cylinder block provide excellent balancing capability, assuring maximum efficiency regardless of pressure or flow rate.

The **M2X Series** swash plate type piston motor is equipped with a built-in mechanical brake to provide precise holding. These motors are ideal for swing applications where upper body control is required, such as in large excavators.

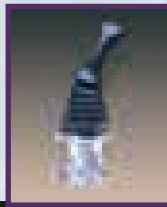


The variable displacement **M(3)B Series** axial piston hydraulic motor comes in a wide variety of sizes, providing flexibility to meet applications from small to very large crawler cranes and other construction machines. The motor's spherical valve plate assures good cavitation resistance and high starting efficiency. The flexible **MW Series** multiple control valves provide stackable valve sections, configured in parallel, series or tandem circuits for precise control of a variety of hydraulic systems.

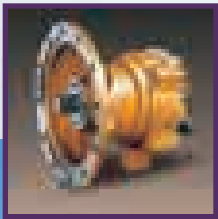
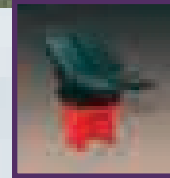




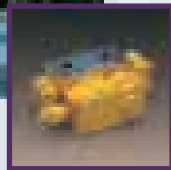
The new **K3VL Series** pumps are based on the K3V design, where more than 900,000 units have been supplied to the mobile industry. The **K3VL Series** pumps were specifically designed for the American and European markets, having SAE and ISO mounting, shaft, and through-drive configurations.



**PV48K Series** joysticks and **RCV Series** foot control valves have become the industry standard in mobile applications. The PV48K features an aluminum body and dual area spool design, which results in light weight and reduced operating torque. The **RCV Series** is available with an internal damping option, which provides excellent stability.



Widely used as a winch motor for construction machines such as truck cranes, the compact **M2X Series** hydraulic motor features a built-in mechanical brake to hold the load securely. Built-in relief and make-up valves allow easy installation directly on a gearbox. Connected directly to the ports of the hydraulic motors, the **KDC Series** counterbalance valve prevents loads from dropping freely and regulates lowering speed smoothly by generating the required back pressure to the winch motor.



Kawasaki **MX-RG, M3X-RG Series** low speed, high torque hydraulic motors are the right solution for cutters and other large mobile units with high torque demands. A variety of motor sizes and gearboxes provide a wide range of geared high torque motors for heavy duty applications.



Compact and modular, the geared case-rotating type **DNB Series** dual-speed motor is ideal for direct drive applications. Mounted inside transport wheels or winch pulleys, the DNB Series provides high efficiency and long life. The low noise motor has large internal bearings that can handle the weight and thrust of road rollers and other heavy machinery.

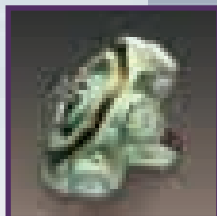
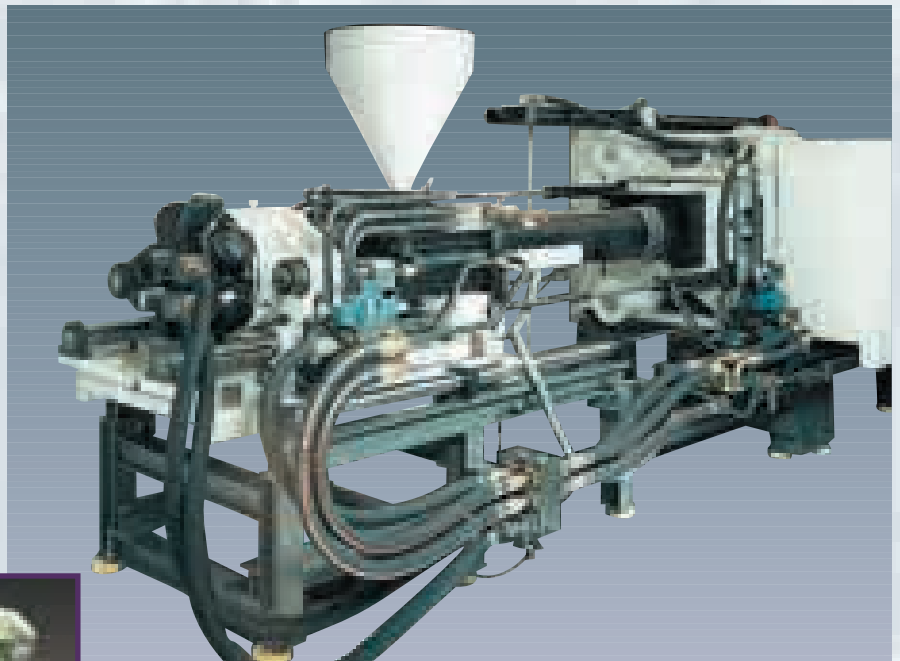
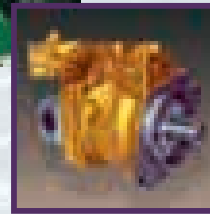
The high efficiency **K4V Series** bi-directional piston pump provides highly accurate control and excellent resolution. An optional flow cut-off can be added for energy saving systems. The accessory pumps and valves required by hydrostatic transmission specifications are compactly assembled inside the K4V pump. A system configured with a K4V pump and a DNB case-rotating geared motor supplies a wide range of available speeds.

# Kawasaki Industrial Applications

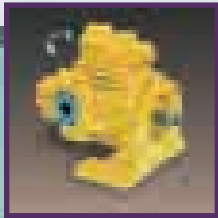
**W**ith hydraulic experience that originated over 80 years ago, Kawasaki remains an industry leader with some of the most technically advanced designs on the market today. Kawasaki's Hydraulic Components are known around the world for providing the high reliability and controllability valued in today's complex industrial environment. Highly advanced hydraulic control systems contribute to productivity improvements by achieving high-speed, precise control of industrial machinery. Superior technology, global acceptance, and proven reliability make Kawasaki Hydraulic Components a leading choice of machine builders for today's innovative applications.



The **K3VL Series** pump is designed for medium to heavy-duty applications where high pressure and low output pulsation are critical. Various control options are available including integral unloading and proportional pressure control.



**HMB, HMC Series Staffa** radial piston, high torque, low speed motors offer consistent, controlled acceleration of loads and smooth, steady operation. Direct drives are a preferred solution to combination drives in injection molding machines and other industrial high torque applications. Engineered for long life under demanding loads, Staffa motors provide exceptional starting torque and mechanical efficiency.

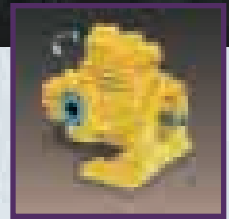


In applications that demand rapid, precise control, the **K3VG Series** hydraulic pump has built-in electronic controls for outstanding controllability.



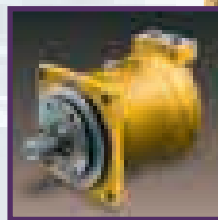
Electronic pump controls can be actuated by computer to provide integrated control systems for precision, high speed applications such as the test platform shown here. The "ILIS" control module features integral sensors that measure swash plate angle for feedback control to the computer.

Industries that operate around the clock depend upon Kawasaki **K3VG Series** high efficiency axial piston pumps, which use the same internal components as K3V Series pumps to ensure ultra-high reliability. In a steel rolling mill, K3VG pumps supply a continuous flow and steady pressure to cylinders that control the movement of the rollers.



The sturdy, highly efficient **MX, M2X, M3X Series** axial piston motor is a mid-speed, mid-torque motor with high load capacity bearings, enabling it to withstand the axial load of the screw in injection molding applications. Eliminating the bearing box inside the injection molding machine provides design flexibility, simplifies construction, and reduces cost.

Multiple **MX, M3X Series** axial piston hydraulic motors provide the driving force to turn a giant boring machine efficiently. A special spherical surface type valve plate significantly improves the starting efficiency, enabling the motor to start the machine under full load.

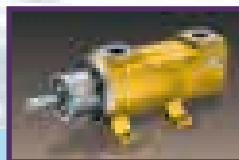


# Kawasaki Marine Applications

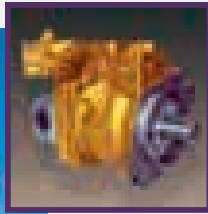
**F**rom small cartridge valves that control a single function to powerful hydraulic motors and pumps with complex multi-valve controls, Kawasaki Hydraulic Components and complete systems are on the job in marine applications around the world. Kawasaki provides supplemental packages for your motor and pump needs. Whether your motor requires a stable brake system or your pump needs a controlled and uniform valve package, Kawasaki's engineered solutions cover a wide variety of marine applications. Because equipment designers demand well-documented performance and reliability when they choose hydraulic components, Kawasaki offers a wide selection of carefully tested components to fulfill customer needs. With over 80 years of experience in hydraulic technology, Kawasaki remains the choice of industry leaders today.



**HMB, HMC Series Staffa** radial piston high torque, low speed motors meet the needs of applications that demand fine control or have special control requirements. The motor's modular design allows for a variety of valve attachments. It has multi-port surfaces which support several different control valves, such as counterbalance valves for braking pressure in winch drums.



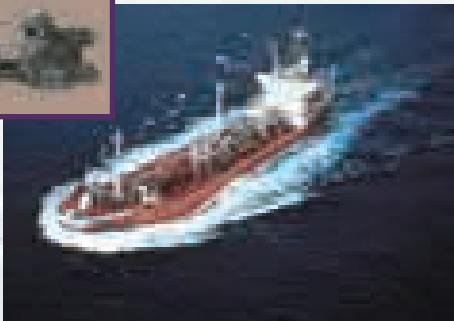
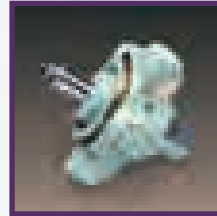
**Kawasaki B Series screw pumps** are popular in marine applications because the screw mechanism is extremely quiet compared with piston type pumps. Continuous operation and very low fluctuation of hydraulic pressure minimizes vibration, resulting in quieter overall system operation.



Kawasaki high pressure, long life **K3VL & K3VG Series** hydraulic pumps provide high pressure (4500 & 5000 psi) and continuous driving capability required for applications such as derrick cranes and winches.

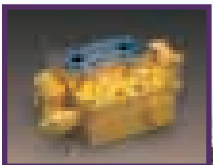


For applications such as mooring winches, where reliability and high torque are required, a **Staffa** high torque, low speed radial piston motor coupled with a ring gear offers a simple, economical solution. The motor's hydrostatically balanced design minimizes internal metal to metal contact, reducing friction for high mechanical efficiency and long life. Staffa motors have demonstrated their reliability in over 45 years of successful operation worldwide.



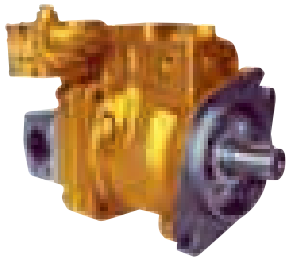
**Kawasaki steering gear** mechanisms provide hydraulic control of the rudder to guide ocean-going vessels. To provide continuous operation without interruption, a complete back-up system with duplicated electric motors, reservoirs, and pumps are engineered to ensure reliable guidance even if an individual unit fails.

The **MX, M3X Series** swash plate type axial piston motor has good self-priming capability and high starting efficiency due to its spherical valve plate design. Shaft creep is minimized because of stable retention of the cylinder, enabling the motor to hold a windlass drum steady with less slip.



Kawasaki **KDC Series** counterbalance valves prevent loads from dropping freely by generating the necessary back pressure for the motor driving a windlass drum. The counterbalance valve smoothly regulates the speed of the load during lowering or hauling with adequate damping to minimize fluctuation. Valves can be directly connected to Kawasaki hydraulic motors to reduce assembly time and complexity.

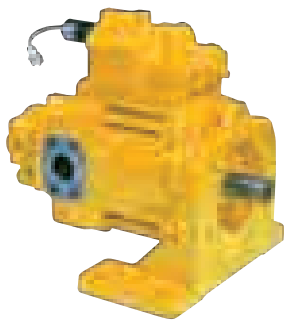
# Kawasaki Hydraulic Pumps



K3VL pumps are medium pressure, open loop, axial piston pumps designed for both industrial and mobile use.

## K3VL Series: Variable Displacement Swash Plate Type Piston Pump

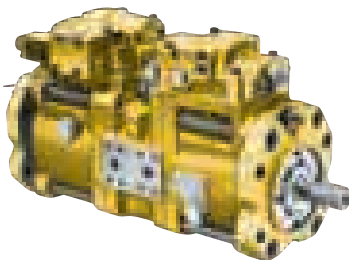
Model	Displacement		Pressure				Speed rpm		Weight	
	cm <sup>3</sup>	in <sup>3</sup>	psi		bar		Self Prime	Max.	lb	kg
			Rated	Peak	Rated	Peak				
K3VL45	45	2.75	4600	5075	320	350	2700	3250	55	25
K3VL60	60	3.66	3625	4060	250	280	2400	3000	55	25
K3VL80	80	4.88	4600	5075	320	350	2400	3000	77	35
K3VL112	112	6.83	4600	5075	320	350	2200	2700	143	65
K3VL140	140	8.54	4600	5075	320	350	2200	2500	143	65
K3VL200	200	12.20	4600	5075	320	350	1900	2200	220	100



K3VG pumps are high pressure, open loop, axial piston pumps designed specifically for industrial applications.

## K3VG Series: Variable Displacement Swash Plate Type Piston Pump

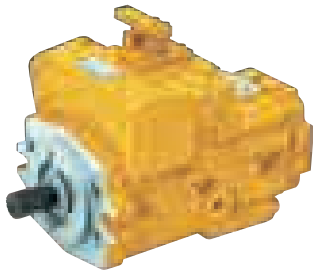
Model	Displacement		Pressure				Speed rpm		Weight	
	cm <sup>3</sup>	in <sup>3</sup>	psi		bar		Self Prime	Max.	lb	kg
			Rated	Peak	Rated	Peak				
K3VG63	63	3.84	5075	5800	350	400	2600	3250	106	48
K3VG112	112	6.83	5075	5800	350	400	2200	2700	150	68
K3VG180	180	11.0	5075	5800	350	400	1850	2300	190	86
K3VG280	280	17.1	5075	5800	350	400	1600	2000	353	160
K3VG180DT	180x2	11.0x2	5075	5800	350	400	1850	2300	353	160
K3VG280DT	280x2	17.1x2	5075	5800	350	400	1600	2000	661	300



K3V pumps are high pressure open loop axial piston pumps designed specifically for the earth moving and construction industries where in excess of 900,000 units have been supplied.

## K3V Series: Variable Displacement Swash Plate Type Piston Pump

Model	Displacement		Pressure				Speed rpm		Weight	
	cm <sup>3</sup>	in <sup>3</sup>	psi		bar		Self Prime	Max.	lb	kg
			Rated	Peak	Rated	Peak				
K3V63DT	63x2	3.84x2	5075	5800	350	400	2600	3250	179	81
K3V112DT	112x2	6.83x2	5075	5800	350	400	2200	2700	276	125
K3V140DT	140x2	8.54x2	5075	5800	350	400	2000	2500	353	160
K3V180DT(H)	180x2	11.0x2	5075	5800	350	400	1850	2300	353	160
K3V280DT(H)	280x2	17.1x2	5075	5800	350	400	1600	2000	661	300



## K4V Series: Variable Displacement Swash Plate Type Piston Pump

Model	Displacement		Pressure				Speed rpm Max.	Weight	
	cm <sup>3</sup>	in <sup>3</sup>	psi		bar			lb	kg
			Rated	Max.	Rated	Max.			
K4V45	45	2.75	4600	5075	320	350	3650	106	48
K4V112	112	6.83	4600	5075	320	350	2700	256	116

K4V pumps are medium pressure, closed loop, axial piston pumps designed for mobile use.



## B Series: Screw Pump

Model	Displacement		Pressure		Max. Speed rpm	Weight	
	cm <sup>3</sup>	in <sup>3</sup>	Max. psi	Max. bar		lb	kg
B38-4L	34.9	2.13	3000	207	3600	71	32
B45-4L	58.0	3.54	3000	207	3600	108	49
B52-4L	88.9	5.43	3000	207	3600	176	80
B60-4L	137.0	8.38	3000	207	3600	265	120
B70-4L	217.0	13.20	3000	207	3600	353	160
B38-6L	34.9	2.13	3500	245	3600	198	90
B45-6L	58.0	3.54	3500	245	3600	243	110
B52-6L	88.9	5.43	3500	245	3600	309	140
B60-6L	137.0	8.38	3500	245	3600	397	180
B70-6L	217.0	13.20	3500	245	3600	661	300

Kawasaki B Series pumps are fixed displacement, rotary, screw type pumps featuring a power rotor and two idler rotor design — which propels fluid axially at constant flow.

# Kawasaki Hydraulic Motors



The Staffa HMB high torque, low speed, fixed displacement, radial piston motor is designed for rigorous industrial and mobile applications.

## HMB Series: Fixed Displacement, High Torque, Low Speed, Radial Piston Type Motor

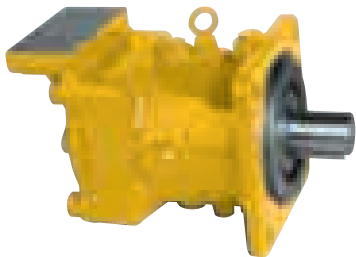
Model	Displacement		Pressure				Speed rpm	Rated Torque		Weight	
	cm <sup>3</sup>	in <sup>3</sup>	psi		bar			lb-ft	N-m	lb	kg
			Rated	Max.	Rated	Max.	Max				
HMB010	188	11.5	3000	3500	207	240	500	426	578	88	40
HMB030	442	27.0	3000	4250	207	293	450	1002	1359	161	73
HMB045	740	45.2	3625	4250	250	293	400	2019	2738	265	120
HMB060	983	60.0	3625	4250	250	293	300	2683	3638	317	144
HMB080	1344	82.0	3625	4250	250	293	300	3661	4964	317	144
HMB100	1639	100.0	3625	4250	250	293	250	4459	6046	317	144
HMB125	2050	125.0	3625	4250	250	293	220	5655	7668	478	217
HMB150	2470	151.0	3625	4250	250	293	220	6808	9232	584	265
HMB200	3080	188.0	3625	4250	250	293	175	8493	11517	584	265
HMB270	4310	263.0	3625	4250	250	293	125	11756	15941	926	420
HMB325	5310	324.0	3625	4250	250	293	100	14645	19859	946	429
HMHDB400	6800	415.0	3625	4250	250	293	120	18669	25315	1060	481
HMB500	8000	488.0	2750	3290	190	227	100	16731	22687	1122	510
HMB700	11600	708.0	3000	3625	207	250	100	26644	36129	2315	1050



The Staffa HMC high torque, low speed, dual displacement motor is designed for rigorous industrial applications where dual or continuous displacement is required.

## HMC Series: Dual Displacement, High Torque, Low Speed, Radial Piston Type Motor

Model	Displacement				Pressure				Max. Speed		Rated Torque				Weight	
	cm <sup>3</sup>		in <sup>3</sup>		psi		bar		rpm		lb-ft		N-m		lb	kg
	Max.	Min.	Max.	Min.	Rated	Max.	Rated	Max.	Max.	Min.	Max.	Min.	Max.	Min.		
HMC030	492	98	30	6.0	3000	3500	207	240	450	600	1047	174	1420	236	220	100
HMC045	737	163	45	9.9	3625	4000	250	275	450	600	1965	279	2665	378	331	150
HMC080	1475	164	90	10.0	3625	4000	250	275	300	600	4060	290	5505	393	379	172
HMC125	2048	164	125	10.0	3625	4000	250	275	190	600	5510	109	7472	148	516	234
HMC200	3080	160	188	9.8	3625	4000	250	275	175	600	8591	109	11649	148	622	282
HMC270	4588	328	280	20.0	3625	4000	250	275	120	350	12796	435	17351	590	992	450
HMC325	5326	1557	325	95.0	3625	4000	250	275	100	350	14826	3843	20104	5211	1014	460

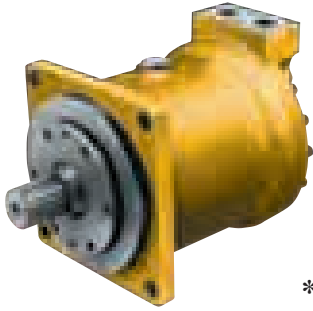


The K3X fixed displacement axial piston motor is a small, compact motor designed for mid and high speed applications.

## K3X Series: Fixed Displacement Axial Piston Type Motor

Model	Displacement		Pressure				Speed		Rated Torque		Weight	
	cm <sup>3</sup>	in <sup>3</sup>	psi		bar		rpm	(HP*)	lb-ft	N-m	lb	kg
			Rated	Max.	Rated	Max.	Max.					
K3X63	64.0	3.91	4550	5000	314	345	2400	(3000)	236	320	51	23
K3X80	82.2	5.02	4550	5000	314	345	2200	(3000)	302	410	88	40
K3X90	89.3	5.45	4550	5000	314	345	2200	(3000)	329	446	88	40
K3X112	110.9	6.77	4550	5000	314	345	2200	(3000)	409	554	88	40

\*High Speed Version



### MX, M3X Series: Fixed Displacement Axial Piston Type Motor

Model	Displacement			Pressure				Speed rpm Max.	Rated Torque		Weight	
	cm <sup>3</sup>		in <sup>3</sup>	psi		bar			lb-ft	N-m	lb	kg
	100%	50%		Rated	Max.	Rated	Max.					
MX150	149	9.1	3600	5000	248	345	1600	425	580	104	47	
M3X200	195	11.9	4300	5000	297	345	1900	671	910	93	42	
MX250	252	15.4	3600	5000	248	345	1200	723	980	144	65	
* M3X280	270	16.5	4300	5000	297	345	1700	930	1260	111	50	
MX500	485	29.6	3600	5000	248	345	960	1385	1890	252	114	
M3X530	533	32.5	4300	5000	297	345	1400	1840	2490	199	90	
MX750	737	45	3600	5000	248	345	830	2103	2870	365	165	
M3X800	800	48.8	4300	5000	297	345	1200	2760	3750	294	133	

\* Under development

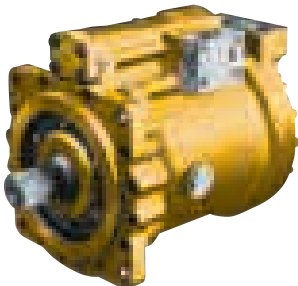
These multi-purpose motors are available in a wide range of fixed displacements. Optional integral mechanical static brakes are available.



### M3X/M3B-RG Series: Fixed/Variable Displacement Axial Piston Geared Type Motor

Model	Displacement			Pressure		Speed rpm Max.	Rated Torque		Weight	
	cm <sup>3</sup>		in <sup>3</sup>	psi			lb-ft	N-m	lb	kg
	100%	50%		Rated	Max.					
M3X200-RG03S5.7	840	51.3	3200	225	270	2161	2930	216	98	
M3X280-RG06S6.4	1610	98.2	3000	207	190	3894	5280	331	150	
M3B280-RG06S6.4	1610	98.2	3000	207	190	3894	5280	331	150	
M3X530-RG10S5.7	3010	183.7	3000	207	150	7280	9870	536	243	
M3B530-RG10S5.7	3010	183.7	3000	207	150	7280	9870	536	243	
M3X800-RG16S6.4	5120	312.4	2800	197	130	11801	16000	926	420	
M3B800-RG16S6.4	5120	312.4	2800	197	130	11801	16000	926	420	

M Series motors are available with reduction gear for applications requiring multiplied torque at lower speeds.

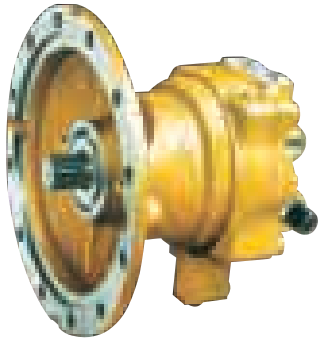


### M3B Series: Dual Displacement Axial Piston Type Motor

Model	Displacement						Pressure				Speed		Rated Torque		Weight	
	cm <sup>3</sup>			in <sup>3</sup>			psi		bar		rpm		lb-ft	N-m	lb	kg
	100%	50%	33%	100%	50%	33%	Rated	Max.	Rated	Max.	100%	50%/33%				
	100%	50%	33%	Rated	Max.	Rated	Max.	Rated	Max.	100%	50%/33%					
M3B200	195	106	—	11.9	6.47	—	4600	5000	317	345	1900	2400	673	913	150	68
M3B280	280	140	93	17.1	8.5	5.7	4300	5000	297	345	1700	2200	988	1340	205	93
M3B530	533	267	178	32.5	16.3	10.9	4300	5000	297	345	1400	1700	1824	2490	288	130
M3B800	800	400	267	48.8	24.4	16.3	4300	5000	297	345	1200	1500	2747	3750	398	180

These multi-purpose motors are available in a range of dual and continuous displacements. Optional integral mechanical static brakes are available.

# Kawasaki Hydraulic Motors



The M2X and M5X fixed displacement axial piston motors are specifically designed for excavator swing operation.

## M2X, M5X Series: Fixed Displacement Axial Piston Type Motor

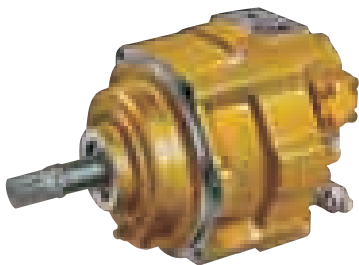
Model	Displacement		Pressure				Speed rpm Max.	Rated Torque		Weight	
	cm <sup>3</sup>	in <sup>3</sup>	psi		bar			lb-ft	N-m	lb	kg
M2X45	45.3	2.76	3000	3500	207	245	2000	110	149	53	24
M2X63	64.0	3.91	4300	5000	297	345	2200	221	300	57	26
M5X180-149	149	9.10	4700	5700	324	392	1680	566	768	133	60
M5X180-169	169	10.31	4700	5700	324	392	1680	642	871	133	60
M2X210	210.1	12.80	4300	5000	297	345	1400	726	984	157	71
M5X130	129	7.88	4700	5700	324	392	1850	490	665	111	50
M5X180	180	11.0	4700	5700	324	392	1680	684	928	133	60



M2X Series motors are available with reduction gear.

## M2X-RG, M5X-RG Series: Fixed Displacement Axial Piston Geared Type Motor

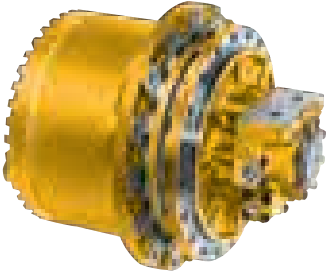
Model	Displacement		Pressure		Speed rpm Max.	Rated Torque		Weight	
	cm <sup>3</sup>	in <sup>3</sup>	psi Max.	bar Max.		lb-ft	N-m	lb	kg
M2X45CAX-RG035D26	1185	72.3	2571	177	75.9	2458	3330	203	92
M2X63CHB-RG06D19	1219	74.4	3643	251	115.0	3580	4850	251	114
M5X130CHB-RG10D20	2585	157.8	3698	255	92.3	7740	10500	454	206
M5X180CHB-RG16S24	4128	251.9	3500	241	61.5	11654	15800	706	320



MCB Series motors are dual displacement, axial piston design motors suitable for track drive applications.

## MCB Series: Dual Displacement Axial Piston Cartridge Type Motor

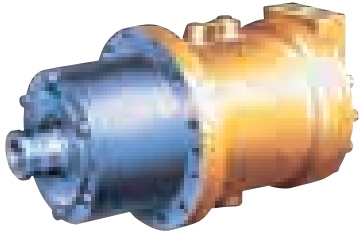
Model	Displacement				Pressure				Max. Speed		Rated Torque		Weight	
	cm <sup>3</sup>		in <sup>3</sup>		psi		bar		rpm		lb-ft	N-m	lb	kg
MCB195	195	116	11.9	7.08	5000	5800	345	400	1900	2300	786	1070	205	93
MCB530	530	340	32.3	20.7	5000	5800	345	400	1360	1630	2140	2900	408	185



### DNB Series: Dual Displacement Axial Piston Case Rotating Geared Type Motor

Model	Displacement				Pressure		Speed		Rated Torque		Weight	
	cm <sup>3</sup>		cu in <sup>3</sup>		psi	bar	rpm		lb-ft	N-m	lb	kg
	Max.	Min.	Max.	Min.	Max.	Max.	Max.	Min.	Max.	Max.		
DNB50B	12400	7405	760	452	5000	345	25	36	43440	58800	904	410
DNB60B	14100	8430	760	452	5000	345	25	36	54200	73600	904	410

The DNB Series is a case-rotating dual displacement motor, widely used for the traveling function on construction machines.



### MX, M2X, M3X Series: Fixed Displacement Axial Piston Type Motor

Model	Displacement		Pressure				Speed rpm Max.	Rated Torque		Weight	
	cm <sup>3</sup>	in <sup>3</sup>	psi		bar			lb-ft	N-m	lb	kg
			Rated	Max.	Rated	Max.					
<b>Light thrust force type</b>											
M3XA385	385	23.5	2500	3000	172	207	410	774	1050	132	60
M3XA600	600	36.6	2500	3000	172	207	350	1208	1638	220	100
M3XA824	824	50.3	2500	3000	172	207	320	1664	2256	265	120
M2XA1065	1065	65.0	2500	3000	172	207	300	2148	2913	330	150
<b>Heavy thrust force type</b>											
MX184-223	223	13.6	2500	3000	172	207	825	448	607	139	63
M2X406	406	24.8	2500	3000	172	207	680	817	1108	203	92
MX530-610	610	37.2	2500	3000	172	207	590	1230	1668	353	160

These M Series motors are designed to accept axial shaft thrust loads.



### HR Series: Rotary Actuator

Model	Displacement				Pressure		Rotating Angle deg	Rated Torque		Weight	
	Per Radian		Total Travel		psi	bar		lb-ft	N-m	lb	kg
	cm <sup>3</sup>	in <sup>3</sup>	cm <sup>3</sup>	in <sup>3</sup>	Rated	Rated					
HR-08S-04	20.8	1.3	102	6.2	2000	138	280	166	225	15	7
HR-11S-06	57.3	3.5	280	17.1	2000	138	280	463	628	37	17
HR-15S-08	154.0	9.4	753	46.0	2000	138	280	1266	1717	77	35
HR-20S-10	438.0	26.7	1450	88.5	2000	138	190	3544	4806	198	90
HR-20S-18	755.0	46.1	2500	153.0	1000	69	190	2929	3972	231	105
HR-08D-04	41.6	2.5	73	4.5	2000	138	100	376	510	18	8
HR-11D-06	115.0	7.0	200	12.2	2000	138	100	1049	1422	40	18
HR-15D-08	308.0	18.8	538	32.8	2000	138	100	2821	3825	82	37

HR Series rotary actuators are suitable for applications requiring limited rotation.

# Kawasaki Hydraulic Valves

## PV Series: Pilot Valves (for Mobile Usage)

Model	Max. Inlet Pressure		Outlet Pressure Metering Range		Max. Back Pressure		Max. Cont. Flow		Lever Angle deg	Actuation Torque	
	psi	bar	psi	bar	psi	bar	GPM	l/min		lb-ft	N-m
PV48K	1,000	69	0 ~ 430	0 ~ 29.7	40	2.8	5.3	20	±19	0.7 ~ 3.0	0.95 ~ 4.07
PV48M	1,000	69	0 ~ 430	0 ~ 29.7	40	2.8	4	15	±19	0.7 ~ 3.0	0.95 ~ 4.07
PV6P	1,000	69	0 ~ 430	0 ~ 29.7	40	2.8	2.6	10	±15	2.1 ~ 9.0	2.8 ~ 12.2

The PV48K and PV48M are four-way (dual axis), hand operated, joystick type pilot valves. These valves feature a cast aluminum body and dual area spool design, having light weight and reduced lever input force. The PV6P is a two-way (single axis) joystick pilot valve. Internal damping is available in the mono-block version of the PV6P.



## RCV Series: Pilot Valves (for Mobile Usage)

Model	Max. Inlet Pressure		Outlet Pressure Metering Range		Max. Back Pressure		Max. Cont. Flow		Lever Angle deg	Actuation Torque	
	psi	bar	psi	bar	psi	bar	GPM	l/min		lb-ft	N-m
RCV8C	1,400	96.6	0 ~ 640	0 ~ 44.1	40	2.8	2.6	10	±12.4	3.5 ~ 12.0	4.70 ~ 15.70
RCVD8C	1,400	96.6	0 ~ 640	0 ~ 44.1	40	2.8	2.6	10	±12.4	3.5 ~ 12.0	4.70 ~ 15.70

The RCV8C is a foot operated, pedal type remote-control valve developed specifically for the mobile hydraulics industry. This valve is available in a 1 or 2-section or 2-section mono-block (2-way each) configuration. Internal damping is available as an option on the mono-block version.



## KMC Series: Proportional Multiple Control Valves (Sectional Type)

Model	Max. Flow		Max. Pressure		Weight (2 Sections)	
	l/min.	gpm	bar	psi	kg	lb
KMC10	70	18.5	248	3,600	15	33

Applicable to various mobile machines including fork-lift trucks and manlifts. Parallel or tandem circuits available. The internal pilot system eliminates external pilot pressure source requirements. Optional valves such as port relief valves available.

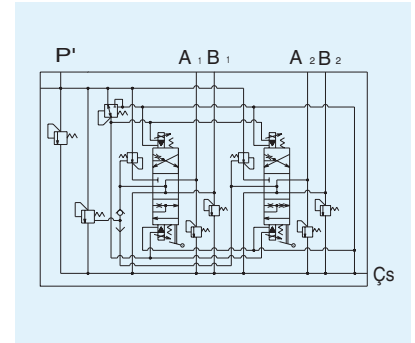


## KMP Series: Proportional Multiple Control Valves (Sectional Type)

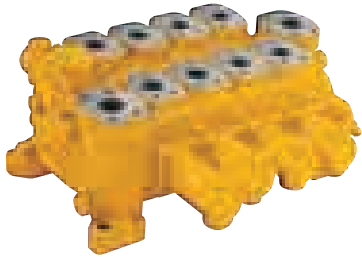


Model	Max. Flow		Max. Pressure		Weight (2 Sections)	
	l/min.	gpm	bar	psi	kg	lb
KMP10	80	21.1	310	4,500	20	44

Sectional type proportional control valve with pressure compensator and internal pilot supply for electro-hydraulic control of various industrial vehicles. Has manual lever actuation for emergency operation. Very high controllability allowing precise inching operation.



## MW Series: Multiple Control Valves (Sectional Type)



Model	Max. Flow		Max. Pressure		Weight (4 Sections)	
	l/min.	gpm	bar	psi	kg	lb
MW25	240	63.4	345	5,000	75	165
MW28	350	92.5	345	5,000	126	278

Sectional type with parallel, series, tandem or combination of these in one unit. Manual or hydraulic pilot control options available. Suitable for mobile applications. A combination of a remote control valve and a variable displacement pump attains an energy saving circuit for improved efficiency.



## KMX Series: Multiple Control Valves (Semi-monoblock Type)



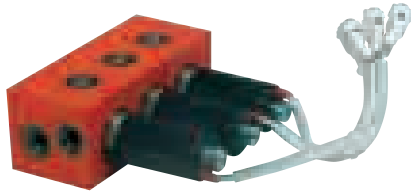
Model	Max. Flow		Max. Pressure		Weight	
	l/min.	gpm	bar	psi	kg	lb
KMX13	130	34.3	345	5,000	95	209
KMX15	240	63.4	345	5,000	130	287
KMX32	360	95.1	345	5,000	300	662

Multiple semi-monoblock type valves for systematic control of actuators. Excellent for mobile excavator-type applications. Special functions include straight traveling and swing priority, etc. A combination of a remote control valve and a variable displacement pump attains energy saving systems, such as a negative control system and a positive control system.

# Kawasaki Hydraulic Valves

## Solenoid-Operated Control Valves

### \*KWE5G Series: Monoblock Type Multiple Series



Model	Max. Flow		Max. Pressure		Weight (3 Sections)	
	l/min.	gpm	bar	psi	kg	lb
KWE5G	16	4.2	90	1,300	4	9

Monoblock design for directional control valve and/or proportional pressure-reducing valve. Splashproof design suitable for mobile applications. The monoblock design features a compact size, simple piping (common P port & T port for all valves), and carry-over port (enabling usage as a hydraulic power source for other circuits).

\* Number of sections



## KDRDE & KWE5K Series: Solenoid-Operated Valves

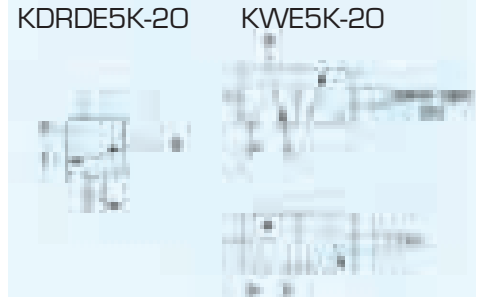
### KDRDE Pressure Reducing Valve (Cartridge Type)

### KWE5K Directional Control Valve (Cartridge Type)



Model	Max. Flow		Max. Pressure		Weight	
	l/min.	gpm	bar	psi	kg	lb
KDRDE5K	10	2.6	90	1,300	0.4	1
KWE5K	16	4.2	90	1,300	0.4	1

Solenoid-operated proportional pressure-reducing valve and directional control valve which are primarily used in pilot circuits for controlling spools of multiple control valves and tilting angles of variable displacement pumps. Features include a compact design and ease of service. Installation cavity common for proportional pressure-reducing valve and directional control valve.



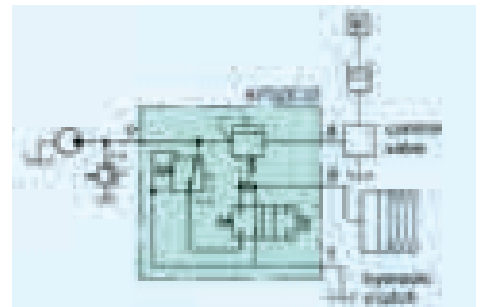
## Flow Dividing Valves

### KFDZ Series: Flow Dividing Valve With Sequence Valve



Model	Max. Flow		Max. Pressure		Weight	
	l/min.	gpm	bar	psi	kg	lb
KFDZE10	35	9.2	193	2,800	1.6	4

Built-in on/off valve controls necessary flow to a function (clutch) and built-in sequence valve maintains necessary pressure at divided flow, even when main circuit is unloaded. Suitable for controlling a hydraulic clutch. Manual or electrical control can be chosen.



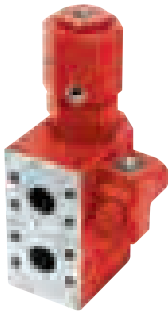
## Auxiliary Valves

### KDC Series: Counterbalance Valve



Model	Rated Flow		Max. Flow		Max. Pressure		Weight	
	l/min.	gpm	l/min.	gpm	bar	psi	kg	lb
KDC28MR	300	79.3	350	92.5	345	5,000	12	26
KDC30MR	400	105.7	500	132.1	345	5,000	20	44
KDC40MR	500	132.1	650	171.7	310	4,500	29	64

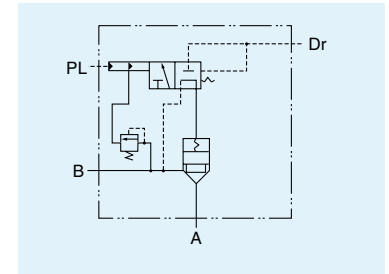
Developed for use with MX, M3X or M3B series motors. Designed to prevent loads from dropping freely and to obtain desired lowering speed proportional to flow by generating required back pressure for hydraulic motors driving overrunning loads. Commonly applied to cranes and winches.



### KHV Series: Holding Valve

Model	Max. Flow		Max. Pressure		Weight	
	l/min.	gpm	bar	psi	kg	lb
KHV10	140	36.8	345	5,000	3.5	7.7
KHV20	280	74.0	345	5,000	7	15

Holding valve for keeping the position of a hydraulic cylinder secure. Cartridge type also available.



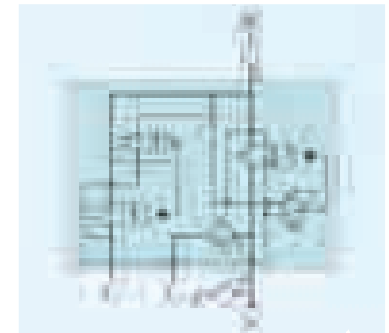
### KTEM Series: Proportional Control Valve



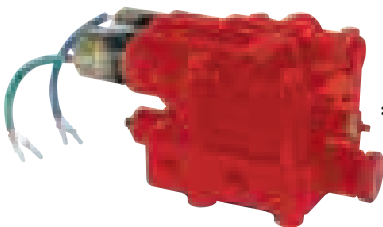
Model	Max. Flow		Max. Pressure		Weight	
	l/min.	gpm	bar	psi	kg	lb
KTEM8/25	25	6.6	207	3,000	4.5	10
KTEM8/35	35	9.2	207	3,000	4.5	10
KTEM8/45	45	11.9	207	3,000	4.5	10
* KTEM8/55	60	14.5	207	3,000	4.5	10

\* Under development

The valve features meter-in and meter-out functions in proportion to input currents to solenoids irrespective of working pressure. Suitable for controlling main actuator of a farm tractor.



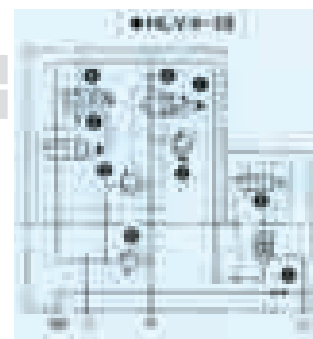
### HLV Series: Proportional Control Valve



Model	Max. Flow		Max. Pressure		Weight	
	l/min.	gpm	bar	psi	kg	lb
HLV20	20	5.3	138	2,000	8	18
* HLV40	40	10.6	138	2,000	10.5	23

\* Not in production, (development complete).

The valve features meter-in and meter-out functions in proportion to input currents to solenoids and is suitable for a broad range of equipment including table lifters and elevators.



- 1 up-flow control valve
- 2 down-flow control valve
- 3 up proportional pilot valve
- 4 down proportional pilot valve
- 5 pressure compensator
- 6 check valve
- 7 manual lowering valve
- 8 relief valve
- 9 solenoid-operated shut-off valve

# **Kawasaki**

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## **Hydraulics**

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