

Product Overview

Power Precision Control

Hydraulic pumps, motors and valves



Welcome

Around the globe, the name **Kawasaki** has become synonymous with **quality and innovation**.

Kawasaki is a total systems engineering company, leading the way in hydraulics and supplying equipment for a huge range of applications including industrial, construction and marine.

Each component we design, and every system we manufacture is the result of nearly 100 years of engineering experience. We not only draw on cutting-edge research from our own R&D facilities, but from across the entire Kawasaki Group. Combining this world-class R&D with global manufacturing means we can keep pushing the boundaries of efficiency and controllability to really maximise our customers' output.

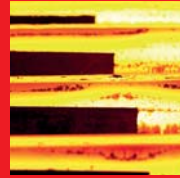
Power Precision Control

Wherever there's a need for lifting, pumping, moving, steering or controlling, you will find Kawasaki's advanced technologies. Every day our products work hard to boost fuel efficiency, cut energy wastage and maximise output.

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Mobile and Off-Highway

Our hydraulic components and systems are used in mobile and off-highway industries around the world.

From construction, earthmoving and road building to agricultural and material handling machinery, we have a reputation for providing high-quality components in high-power machines where precision and control are critical.

Our R&D focuses on giving our customers greater output at a lower cost. That means maximised uptime and greater fuel efficiency.

Kawasaki products are rigorously tested to ensure they offer the reliability and controllability our customers need, even in the most difficult operating conditions.

**Excavators
Cranes
Forklifts
Wheel loaders
Crushers
Telehandlers
Backhoe Loaders
Agricultural Tractors
Crop Sprayers**



Industrial

We developed our first product for the industrial sector in 1962.

Now, our total systems engineering has made us leaders in this advancing and demanding sector. Owners of today's industrial machines need control, durability and reliability, wherever their machines are working. Our advanced hydraulic technology not only boosts control and efficiency but also lowers noise and maximises uptime - essential for 24/7 operations.

Designing efficiency

Thanks to recent Kawasaki innovations, our hydraulic pumps now deliver a significant improvement in energy efficiency, making them the most effective on the market.

**Presses
Machine Tools
Injection Moulding Machines
Steel works
Automation
Civil Engineering
Recycling Machinery
Paper Mills**

Quality built in

We design our hydraulics to adapt to a variety of working fluids, with improved tolerance to contamination.

Marine



Whatever the conditions, trust Kawasaki Marine

Extreme weather and rough seas are all part of the course for Kawasaki's hydraulic components and machines in the marine industry. Each has been designed to work hard around the clock in hazardous weather. So whatever the conditions you can rely on Kawasaki's components to give you the highest levels of reliability, efficiency and performance.

Staffa motors

Our Staffa radial piston motors are the most technically advanced on the market, thanks to their hydrostatically balanced design. Built-in efficiency means they wear less, with superior torque due to minimal metal-to-metal contact.

Capstans

Winches

Marine cranes

Deck machinery

Bow thrusters

Steering gear

Off-shore systems

Efficiency built in

We're innovating to deliver improved control of marine systems whilst ensuring safety and reliability.

Agricultural

Innovative technology that's kinder to the planet

Population growth, climate change and economic instability means that as today's agricultural and forestry industries struggle to keep up with demand, efficiency has become a priority.

Kawasaki's leading engineers collaborate to meet the needs of the agriculture and forestry industry with a cutting-edge range of components by drawing on our cross sector expertise and combining it with extensive research, advanced technology and innovation, we have created a range of components that are proven to provide best-in-class efficiency for the agriculture industry.

Tractors
Combine Harvesters
Crop Sprayers
Harvesters
Telehandlers
Forwarders



Kawasaki's complete range

Built for **quality, efficiency and technological excellence**, Kawasaki's components are setting a new standard in construction machinery.

You can use our products individually, but for maximum machine efficiency, we highly recommend using them to **build a total system solution**:

- /// Superior controllability
- /// Greater efficiency
- /// Light & compact
- /// Low noise
- /// High reliability and long life



AXIAL PISTON PUMPS

Kawasaki is a world-leader in pump efficiency and performance. Inside our range you'll find some of the most efficient axial piston pumps available on the market today. And because our engineers understand our customers' needs, each pump has been designed to deliver high performance across a diverse range of applications.

K3VLS



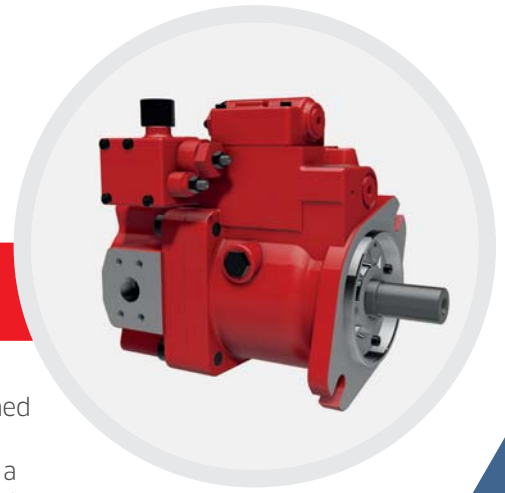
Lighter and more compact than any similar product on the market, the K3VLS Axial Piston Pump has been developed for machines and equipment that use load-sensing or electronic control systems. Its development follows extensive research and development: our engineers combined efficiency with simplicity to deliver the most technologically advanced medium pump available.

While most variable displacement axial piston pumps suffer a dramatic drop in efficiency at lower displacements, the K3VLS demonstrates best-in-class efficiency across the full operating range.

- /// 50, 65, 85, 105, 125 and 150cc displacements
- /// 280 bar continuous pressure rating
- /// 350 bar peak pressure rating
- /// Load sensing, torque limiting, power shift and electronic displacement controls

Type		K3VLS50	K3VLS65	K3VLS85	K3VLS105	K3VLS125	K3VLS150
Displacement (cc/rev)		50	65	85	105	125	150
Pressure (bar)	Rated	280					
	Peak	350					
Speed (rpm)	Max	2,700	2,600	2,500	2,300	2,200	2,200

K3VL



The K3VL Series swash plate type axial piston pumps are designed to satisfy a wide variety of construction and off-highway applications. Each has been engineered to be suitable wherever a medium to high-pressure variable displacement pump is required.

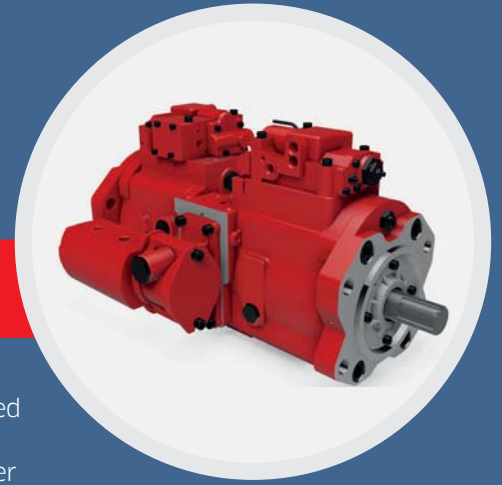
- /// 28 to 200cc displacements
- /// 320 bar continuous pressure rating
- /// Load sensing, torque limiting, power shift and electronic displacement control
- /// Integral impellor pump available on 200cc unit

Model		K3VL28	K3VL45	K3VL60	K3VL80	K3VL112	K3VL140	K3VL200	K3VL200H
Displacement (cc/rev)		28	45	60	80	112	140	200	200
Pressure (bar)	Rated	320		250	320				
	Peak	350		280	350				
Speed (rpm)	Max. for self priming	3,000	2,700	2,400	2,400	2,200	2,200	1,900	2,200
	Max.	3,600	3,250	3,000	3,000	2,700	2,500	2,200	2,200

Reduced noise

We've optimised the K3VL to deliver low pulsation, providing a much reduced noise level during operation.

K3V/K5V



Kawasaki's K3V/K5V pump range has been specifically designed to meet the tough demands of hydraulic excavators and other mobile machinery. The K5V series now provides an even higher power density as well as industry-leading levels of reliability and a long life.

- // 63 to 280cc displacements available
- // 343 bar continuous pressure rating
- // Single, tandem and parallel versions
- // Wide range of power, pressure and displacement controls available

Model		K3V63	KV3112	K3V140	K3V280	K5V80	K5V140	K5V160	K5V200
Displacement (cc/rev)		63	112	140	280	80	140	160	200
Pressure (bar)	Rated	343	343	343	343	343			
	Peak	392	392	392	392	392			
Speed (rpm)	Max. for self priming	3,650	2,360	2,150	1,600	2,460	2,160	2,000 (2,350)*	1,900 (2,200)*
	Max.	3,250	2,700	2,500	2,000	3,000	2,500	2,350	2,200

*with centrifugal pump

Handling displacement

The K5V pump range easily handles enlargement of displacement, despite having the same installation dimensions and regulator variations as the K3V.

K8V



The K8V series is Kawasaki's new closed loop pump. Engineered to deliver in any conditions, it provides excellent controllability, low noise and superior efficiency. The K8V is regularly used in hydrostatic transmissions on a variety of off-highway machinery.

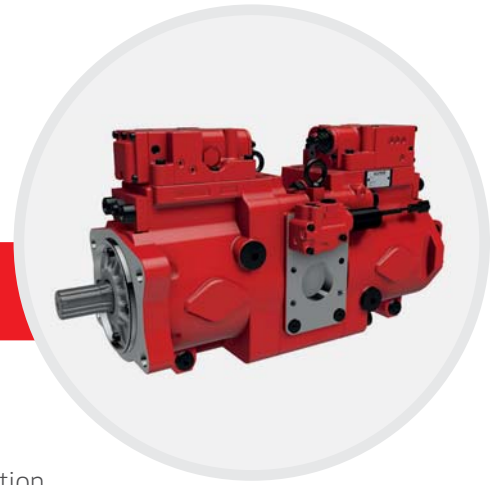
- 71, 90 and 130cc displacements
- 400 bar rated pressure
- Electronic and hydraulic displacement control
- Through drive and tandem versions available

Type		K8V71	K8V90	K8V125
Displacement (cc/rev)		71	90	130
Pressure (bar)	Rated	400		
	Peak	450		
Speed (rpm)	Max	3,300	3,050	2,850

New generation of pump

The K8V has been designed to deliver outstanding controllability with multiple control options.

K7V



When your installation space is small, the K7V pump is an excellent choice. While its power density is greater than the K3V and K5V series, its pump still delivers exceptionally high efficiency by optimising clearance and stabilising cylinder rotation.

- /// 63 and 180cc displacements available
- /// 350 bar continuous pressure rating
- /// Tandem configuration
- /// Wide range of power, pressure and displacement controls available

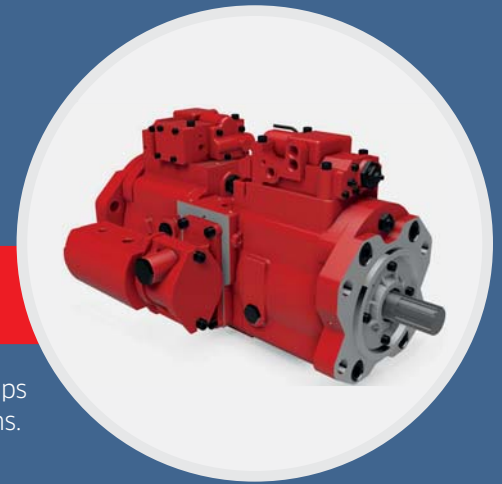
Model		K7V63	K7V125	K7V140	K7V160	K7V180
Displacement (cc/rev)		63	130	140	160	180
Pressure (bar)	Rated	350	350	350	350	350
	Peak	400	400	400	400	400
Speed (min ⁻¹)	Max. Self-Priming	2,650	2,360	2,200	2,100	2,000
	Max.	3,250	2,700	2,500	2,350	2,300

Long Life

In developing the K7V, Kawasaki's engineers adopted high-load bearings and our friction free hydrostatically balanced piston shoes. The result: an impressively high level of reliability and a much longer life.



K3VG



The K3VG-DT series of tandem swash-plate type axial piston pumps provides excellent performance in high-flow industrial applications. The series is a particularly compact and cost-effective package.

- /// 63 to 560cc displacements
- /// 343 bar continuous pressure rating
- /// Long bearing life
- /// ISO Shaft
- /// Optional through-drive

Model		K3VG63	K3VG112	K3VG180	K3VG280	K3VG180DT	K3VG280DT	
Displacement (cc/rev)		63	112	180	280	360	560	
Pressure (bar)	Rated	343						
	Peak	392						
Speed (rpm)	Max. for self priming	2,600	2,200	1,850	1,600	1,850	1,600	
	Max.	3,250	2,700	2,300	2,000	2,300	2,000	

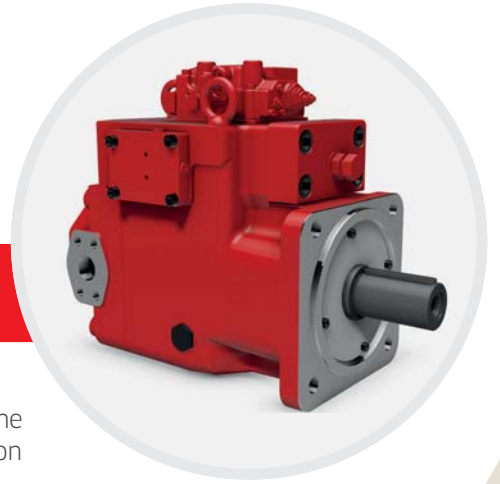
*with centrifugal pump

Responsive

The K3VG has been designed to provide excellence in controllability with an extensive range of highly responsive control options.



K7VG



The K7VG series of high-pressure swash plate type pumps was developed for general industrial machinery use. The adoption of the high-load bearings and friction-free contacting mechanism of piston shoes, results in a high level of reliability and long life.

- /// 180 and 270cc displacements
- /// 350 bar continuous pressure rating
- /// Long bearing life
- /// ISO Mount and Shaft
- /// Optional through-drive
- /// Highly responsive controls

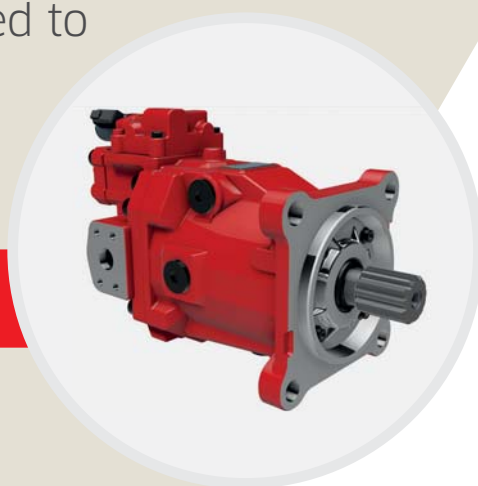
Model		K7VG180	K7VG265
Displacement (cc/rev)		180	270
Pressure (bar)	Rated	350	
	Peak	400	
Speed (rpm)	Max. for self priming	1,850	1,600
	Max.	2,200	1,900

Reliability

This high pressure pump is based on our unique technologies and rich experiences. Long life are made possible by utilizing an optimized piston/slipper and high-load bearings.

AXIAL PISTON MOTORS

Kawasaki is a world-leader in motor efficiency and performance. Inside our range you'll find some of the most efficient axial piston motors available on the market today. And because our engineers understand our customers' needs, each motor has been designed to deliver high performance across a diverse range of applications.



M7V

The M7V series is a high-speed variable displacement swash plate type axial piston motor. It provides a best-in-class choice in hydrostatic transmissions, drill rigs and crane winch systems.

- /// 85, 112 and 160cc displacements
- /// 400 bar continuous pressure rating
- /// Electronic and hydraulic displacement control
- /// Fixed displacement version available

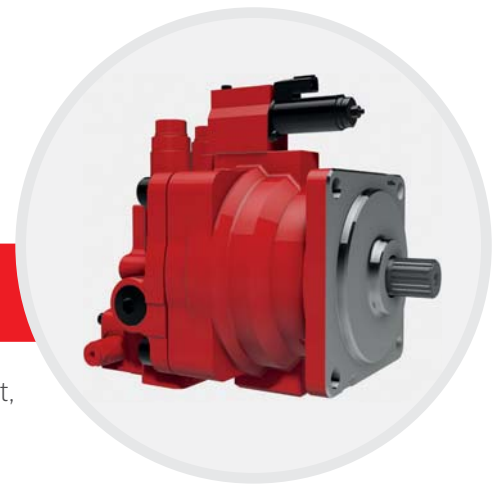
Type		M7V85	M7V112	M7V160
Displacement (cc/rev)		85	112	160
Pressure (bar)	Rated	400		
	Peak	450		
Speed (rpm)	Max	3,900	3,550	3,100
Speed (rpm)*		6,150	5,600	4,900

*Max speed at <0.6q_{max}

Superior results

The M7V combines excellent reliability with exceptionally low noise.

M5X



The M5X series has been developed to provide a lighter weight, more compact swing drive motor. The M5X includes built-in parking brake, antishock valves, deceleration valves and brake release timing valves. It can be combined with the Kawasaki reduction gearbox to provide a complete swing drive solution.

- /// 50 to 250cc displacements
- /// Up to 330 bar continuous pressure rating
- /// Built-in anti-shock, parking brake and deceleration valves
- /// Available with Kawasaki swing drive gearbox

Model	M5X50	M5X80	M5X130	M5X180	M5X250
Displacement (cc/rev)	44	79	129	180	250
Pressure (bar)	Rated	280	330	324	330
	Max	330	400	392	400
Max. Speed (rpm)	2,000	2,200	1,850	1,650	1,520

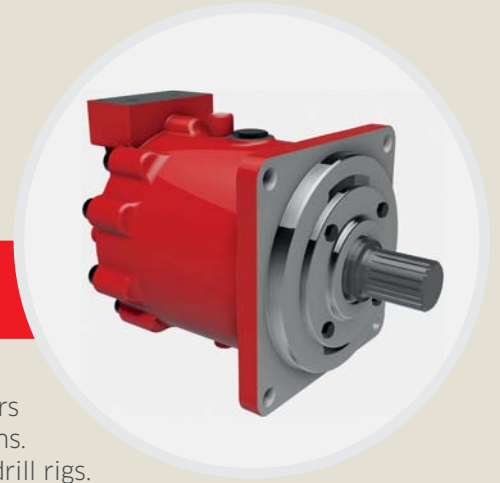
Model	M5X80-RG08D	M5X130-RG11	M5X130-RG14	M5X180-RG14	M5X180-RG16	M5X180-RG20	M5X250-RG27
Displacement (cc/rev)	1,580	2,437	2,437	3,395	4,128	4,539	6,303
Rated Pressure (bar)	318	255	309	255	240	284	269
Max. Speed (rpm)	110	92	92	84	68	67	60

Model	M5X130-RG17C27	M5X130-RG23C34	M5X180-RG17C27	M5X180-RG23C34
Displacement (cc/rev)	3,350	4,380	4,630	5,740
Rated Pressure (bar)	302	322	230	245
Theoretical output torque N-m (Kgf-m)	17,000 (1,730)	22,400 (2,280)	17,000 (1,730)	22,400 (2,280)
Service Brake	Handbrake	Handbrake	Handbrake	Handbrake

Developed for excellence

Improving on M2X technology, the M5X combines a best-in-class output power with a compact design.

M3X/M3B



The M3X and M3B series are swash plate type axial piston motors available in fixed (M3X) and variable (M3B) displacement versions. They are used extensively in mobile crusher drives, cranes and drill rigs.

- /// 200, 280, 530 and 800cc displacements
- /// Up to 320 bar continuous pressure rating
- /// Constant horsepower control option
- /// Available with parking brake

Model		M3X200	M3X280	M3X530	M3X800	M3B200	M3B280	M3B530	M3B800	
Displacement (cc/rev)		195	280	533	800	195	280	533	800	Max.
						106	93	178	267	Min.
Pressure (bar)	Rated	294				320	300	294		
	Max	343				350	350	343		
Max. Speed (rpm)		1,900	1,700	1,400	1,200	1,900	1,700	1,400	1,200	Max.
						2,930	2,200	1,700	1,500	Min.

Built on experience

The M3X and M3B are based on Kawasaki's long history of designing swash plate type pumps and motors.



STAFFA RADIAL PISTON MOTORS

For more than 60 years the Staffa name has been synonymous with the best in class radial piston hydraulic motors.



HMF 3 Speed Motor

Kawasaki's HMF 3 Speed Motor offers three displacements, providing consistent controlled acceleration. The HMF is the very latest addition to our Staffa motor range and so benefits from all our research and innovation to offer market-leading levels of reliability and performance.

- /// Dynamic displacement change
- /// 3 displacement modes or two displacement modes plus free wheel
- /// Speed sensing
- /// A wide range of displacements from 1475cc/rev to 5326cc/rev
- /// Greater flexibility
- /// Faster response times

Type		HMF100	HMF200	HMF270	HMF325
Displacement (cc/rev)		1,600	3,087	4,588	5,326
Pressure (bar)	Rated	250			
	Peak	275			
Speed (rpm)	Max	270	175	150	130

* Performance figures as HMC range

Innovation

Kawasaki "Staffa" high torque, low speed radial piston motors use hydrostatic balancing techniques to achieve high efficiency, combined with good breakout torque and smooth running capability.

HMB



The fixed displacement HMB series radial piston motors have a well-proven design that incorporates high efficiency with a good breakout torque and smooth running capability.

- ✓ 188 to 6,800cc displacements in 12 frames
- ✓ 250 bar continuous pressure rating
- ✓ High volumetric and mechanical efficiency
- ✓ Unique hydrostatic balancing provides minimum wear and extended life

Model	HMB10	HMB30	HMB45	HMB60	HMB80	HMB100
Displacement (cc/rev)	188	442	740	983	1,344	1,639
Average actual running torque (Nm/bar)	2.79	6.56	10.95	14.5	19.9	24.3
Max. continuous speed (rpm)	500	450	400	300		250
Max. continuous output (Kw)	25	42	60	80	100	110
Max. continuous pressure (bar)	207		250			
Max. intermittent pressure (bar)	241	241	275			

Model	HMB125	HMB150	HMB200	HMB270	HMB325	HMB400	HMB500
Displacement (cc/rev)	2,050	2,470	3,087	4,310	5,310	6,800	8,000
Average actual running torque (Nm/bar)	30.66	36.95	46.07	63.79	79.4	101	114
Max. continuous speed (rpm)	220		175	125	100	120	100
Max. continuous output (Kw)	100	115	130	140		190	170
Max. continuous pressure (bar)	250						190
Max. intermittent pressure (bar)	275						227

Diverse applications

HMB motors are suited to a wide variety of industrial applications, including injection-moulding machines.

HMC



The HMC series variable displacement models have two pre-set displacements that can be chosen to suit your specific application requirements. These motors are also available as a continuously variable version, using either hydro-mechanical or electro-hydraulic control methods.

- // 492 to 5,326cc displacements in 7 frame sizes
- // 250 bar continuous pressure rating
- // Dynamic displacement change
- // Freewheel option available
- // Constant horsepower control option

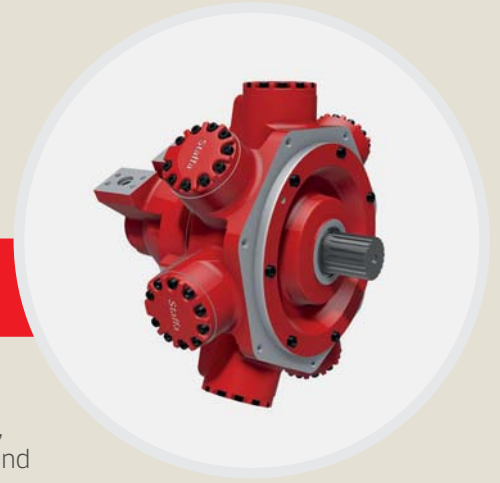
Model	HMC30	HMC45	HMC80	HMC125	HMC200	HMC270	HMC325	
Displacement (cc/rev)*	492	737	1475	2048	3080	4588	5326	Max.
	246	573	737	983	1470	1310	1557	Min.
Average actual running torque (Nm/bar)	6.86	10.63	23.9	29.9	46.6	69.4	80.4	Max.
	3.2	4.4	12	12.8	21	22.4	27.9	Min.
Max. continuous speed (rpm)	450	450	270	215	175	150	130	Max.
	600	600	500	450	300	375	330	Min.
Max. continuous output (Kw)	60	99	138	135	174	213	213	Max.
	35	42	105	81	105	107	120	Min.
Max. continuous pressure (bar)	207	250						
Max. intermittent pressure (bar)	241	275						

*Many other displacement options are available upon request

Complete systems

Used individually, the HMC models offer market-leading efficiencies and performance. These benefits are further enhanced when combined with other Kawasaki components.

HPC



The enhanced variable displacement HPC models include special low friction components. Combined with crankcase flushing flow, these achieve increased shaft power. The HPC can be found around the world in numerous marine and offshore winch applications.

- /// 1,344 to 6,555cc displacements in 6 frame sizes
- /// 250 bar continuous pressure rating
- /// Dynamic displacement change
- /// Freewheel option available
- /// Constant horsepower control option

Model	HPC80	HPC125	HPC200	HPC270	HPC325	
Displacement (cc/rev)*	1,600	2,048	4,588	2048	5,326	Max.
	819	1,147	737	1,966	2,294	Min.
Average actual running torque (Nm/bar)	24.1	30.8	47.2	70.1	81.6	Max.
	11.9	16.5	24.1	28.6	33.6	Min.
Max. continuous speed (rpm)	270	215	175	150	130	Max.
	500	390	270	310	275	Min.
Max. continuous output (Kw)	165	173	216	278	278	Max.
	120	123	170	156	174	Min.
Max. continuous pressure (bar)	250					
Max. intermittent pressure (bar)	275					

*Many other displacement options are available upon request

Reputation

Kawasaki's HPC models are particularly well known for their efficiency and reliability under even the toughest marine conditions.

C400



The HPC400 motor is designed to meet the needs of maritime equipment manufacturers in the 21st century. As part of the Staffa HPC range of motors, the HPC400 boasts a peak shaft power rating of 430 kW and a rated torque of 25,000 Nm.

- /// Max. Continuous Power of 430 kW
- /// Smooth Operation at Low Speed
- /// Dynamic Displacement Change
- /// Rated Torque of 25,000 Nm
- /// Freewheel Option available
- /// Rugged Staffa Design
- /// High Starting Torque
- /// 250 bar Continuous Rating

Type		HPC400
Displacement (cc/rev)		6,555
Pressure (bar)	Rated	250
	Peak	275
Speed (rpm)	Max	220

Heavy duty

The C400 model is suitable for heavy duty use and is designed to perform to high standards even within harsh environments. Its long service life makes it suitable even for harsh environments.



VALVES

Kawasaki hydraulic valves and controllers provide superior performance and control for a wide variety of industrial vehicles. Every component in our range offers excellent efficiency and controllability when used alone. However, when combined with our pumps and motors, you will find they provide even greater levels of performance and reliability.



KLSV

The KLSV is a series of flow-sharing, load-sensing main control valves for multifunction construction machinery. Their low hysteresis and excellent pressure-drop characteristics provide superior performance and efficiency.

- /// Post-compensated, flow-sharing design
- /// Hydraulic pilot and electro-hydraulic actuation
- /// Up to 400 bar continuous pressure rating
- /// Special versions for wheel loaders, midi excavators and skid steer loaders
- /// Three sizes with sectional flow rates of 180, 250 and 400 l/min

Model		KLSV18	KLSV22*	KLSV28*
Max. Pressure (bar)		400	350	350
Max. Flow (L/min)	P port	240	350	450
	Spool Section at $\Delta P=1.5\text{MPa}$	180	300	400
Max. Number of Sections		9	10	7

*under development

Reduced energy wastage

Thanks to the KLSV Series' optimised fluid flow path, the design of these valves significantly reduces energy wastage throughout your entire hydraulic system.

KLW/KLR



The KLW is a flow-sharing, load-sensing main control valve specifically designed for wheel loaders. It provides low hysteresis and superior pressure-drop characteristics to deliver high performance and excellent levels of efficiency.

The KLR is a flow-sharing, load-sensing main control valve designed for skid-steer loaders. The KLR includes a self-levelling feature that delivers real improvements in machine productivity.

- /// Post-compensated, flow-sharing design
- /// Integrated lock valves and integrated damping valve for ride control
- /// Up to 350 bar continuous pressure rating
- /// Regeneration and double actuator ports available
- /// Three sizes with sectional flow rates of 180, 250 and 400 l/min

Model		KLW18*	KLW22*	KLW28	KLR18
Max. Flow (L/min)	P port	240	300	450	180
	Section	180	250	400	150
*Differential Pressure = 1.5 MPa					
Max. Pressure (bar)		350			270
Control		Electro-hydraulic control			
		Hydraulic control			

*under development

Precision

The KLR's impressive levels of performance are due to Kawasaki's extensive valve experience across almost every engineering industry.

KMX



The KMX series consists of three sizes of main control valve designed specifically for the control of hydraulic excavators. Their semi-monoblock construction provides a very compact installation for main and pilot circuits. The KMX gives excellent controllability and superior system efficiency.

- // Negacon, Posicon and Electronic Posicon systems supported
- // 130, 240 and 360 l/min service flow rates
- // 343 bar continuous pressure rating
- // Straight travel, swing priority and circuit confluence features

Model	KMX13	KMX15	KMX32
Max. Pressure (bar)	343		
Rated Flow (L/min)	130	240	500

Built for your needs

Depending on requirements, the KMX can include sets of special-function circuits.



KDRDE5K



The KDRDE5K and KWE5K series valves are proportional pressure-reducing and directional control valves of cartridge type. Available in 12 and 24 VDC versions, they can be used in combination to provide various compact control solutions for agricultural and mobile machinery.

- /// 88 bar supply pressure
- /// 10 l/min and 16 l/min flow rates
- /// Common cavity for KDRDE5K and KWE5K
- /// Excellent hysteresis

Model	KWE5K/KDRE5K
Max. Pressure (bar)	88
Max. Back Pressure (bar)	10
Max. Flow (L/min)	10

Reliability

The KDRDE5K is 100% waterproof, making it ideal for use outdoors.



PV



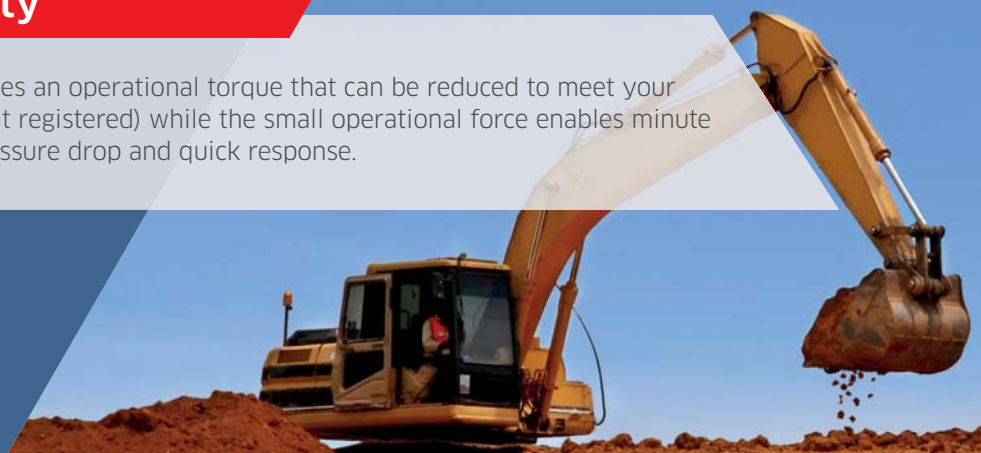
Our PV series valves are pressure-reducing type pilot valves that allow operators to simultaneously control spools of multiple control valves as well as the tilting angle of variable displacement pumps. The operational torque can be reduced to meet your requirements (Patent registered), while the small operational force enables minute control, reduced pressure drop and quick response.

- /// 70 bar supply pressure
- /// Up to 20 l/min flow rate
- /// Excellent operator feel
- /// Excellent hysteresis
- /// Hydraulic damping
- /// Excellent controllability

Model	PV48K	PV48M	PVD6P	PVD8P	PV6P
Inlet Pressure (max.) (bar)	70				
Outlet Pressure (max.) (bar)	3				
Rated Flow (L/min)	20	15	10		
Application	Excavator	Mini Excavator	(Mini) Excavator	(Mini) Excavator	Rough Terrain Crane
Features	Joystick type	Joystick type compact	Pedal for propelling with damper	Pedal for propelling with damper	Bankable type compact

Controllability

The PV series includes an operational torque that can be reduced to meet your requirements (Patent registered) while the small operational force enables minute control, reduced pressure drop and quick response.



ERU



The ERU Series of electrical remote control units are available in joystick and pedal version. They have the same look, feel and proven performance as Kawasaki's market-leading hydraulic pilot valves.

- /// Joystick, foot pedal, dual and single axis versions available
- /// Wide variety of handle options including potentiometer with integral amplifier
- /// FNR function for transmission control
- /// Integral damping feature on foot pedal type
- /// PWM and CanBus ERU versions available

Model	ERU2	ERUP2	ERUP1	ERUS1
Type	Joystick	Twin Pedal	Single Pedal	Single Axis Lever
Temperature Range (°C)	-40-75			
Lever Angle (deg)	23.0	12.4	12.4	21.5
Operating Torque (Nm)	1.3-2.6	6.5-15.3	4.9-8.8	0.5-2.0
Output Type	Analogue/PWM/CanBus			

Developed for the environment

The Kawasaki ERU Series uses an electromagnetic noise-proof, fully waterproof construction making it highly reliable in any conditions.