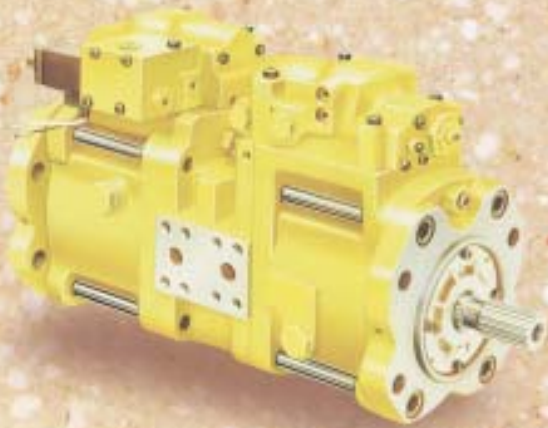


Kawasaki

Kawasaki Hydraulic Products Application



Power and Control from Kawasaki.

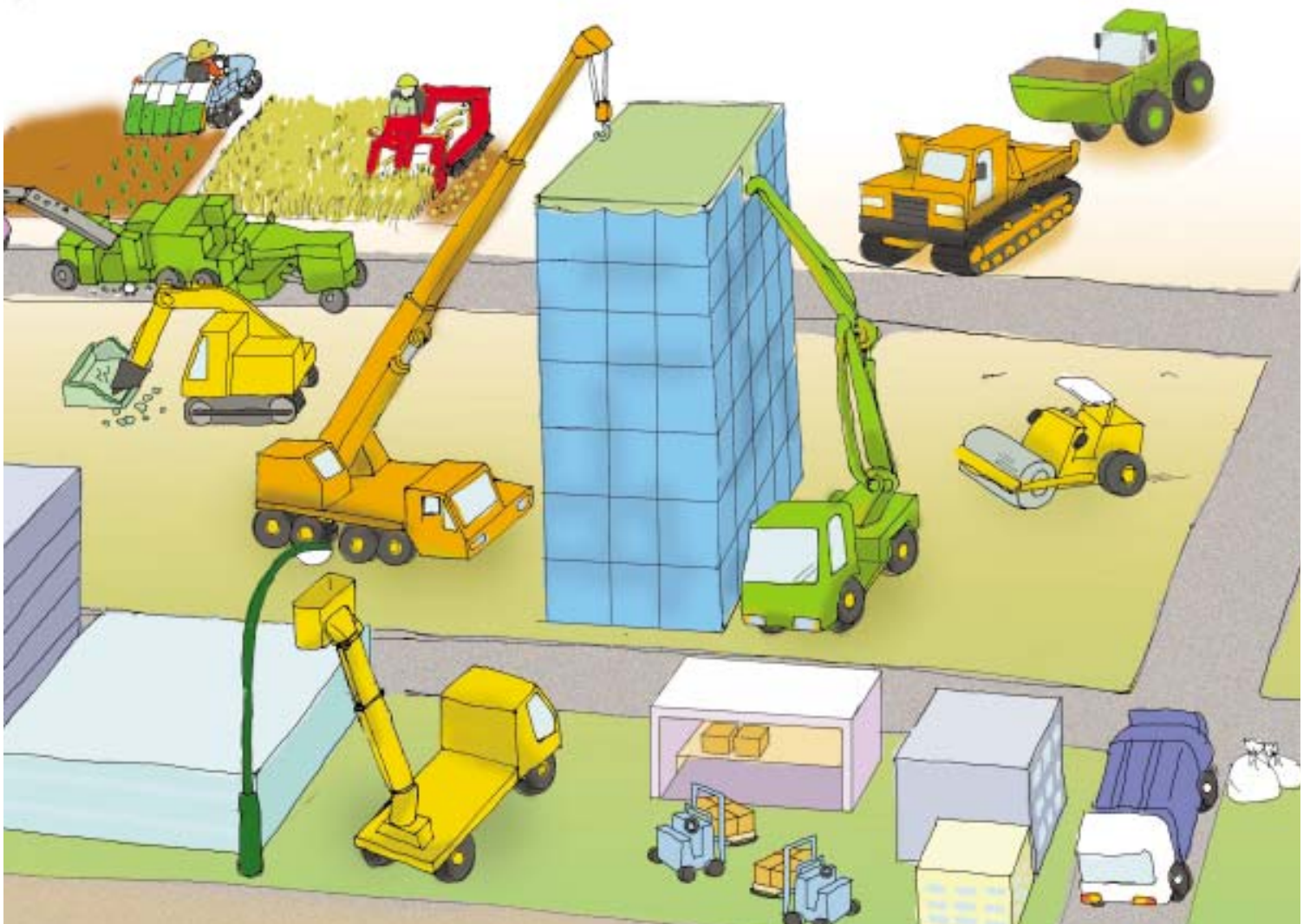


Kawasaki's Hydraulic Components and Systems are utilized world-wide to provide the power source in Excavators, Cranes, Fork Lifts, Agricultural Machinery and many other Special Purpose Vehicles.

Kawasaki has an enviable reputation for producing high quality hydraulic components for high power applications requiring precise control. Designed for operation in the most rigorous of operating conditions Kawasaki's Hydraulic components are market leaders in reliability and controllability.

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 - Hydraulic Excavators(3) / Crawler Crane, Earth Drill, Pile Driver(5) /
 - Rough Terrain Crane(7) /Truck Mounted Crane(8) / Wheel Loader(9) /
 - Carrier(10) / Roller(11) / Asphalt Finisher(12) / Road Surface Planer(13) /
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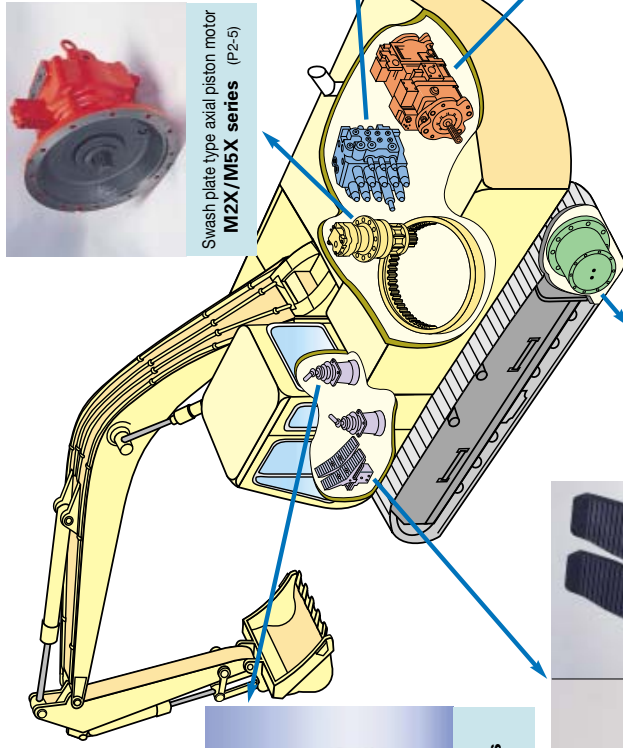
Construction Machinery

Hydraulic Excavator

Kawasaki has been supplying hydraulic components to this market since the 1960's when Hydraulic Excavators first became widely established. Since then Kawasaki has been successively developing and manufacturing hydraulic pumps to provide the immense power source required by these earth moving machines. Kawasaki has also developed Hydraulic Motors to apply this power to enable the machines

movement and various Control Valves to provide the operator with the precise-feel and control required to undertake a wide range of tasks from delicate soil grading to trenching, rock breaking and demolition.

As a total Hydraulic System engineering company, Kawasaki is continually contributing to the development of these high tech machines.



Pilot valve
PV48K series
(P2-10)



Pilot valve
RCV8C/RCVD8C series
(P2-10)



Pilot valve
PVD6P series
(P2-10)



Case rotating type geared motor
DNB series
(P2-6)



Swash plate type axial piston motor
MCB series
(P2-6)



Multiple control valve
KMX series
(P2-8)



Swash plate type axial piston pump
K3V/K5V-DTP/DPH/DP series
(P2-1)



Swash plate type axial piston pump
K3V/K5V series
(P2-1,2-2)



Swash plate type axial piston pump
K3SP36 series
(P2-2)
(for mini excavator)



Holding valve
KHV series
(P2-11)



Solenoid-operated directional control valve block
KWES
(P2-11)



Solenoid-operated directional control valve (cartridge type)
KWESK
(P2-11)



Proportional pressure-reducing valve (cartridge type)
KDRDESK
(P2-11)

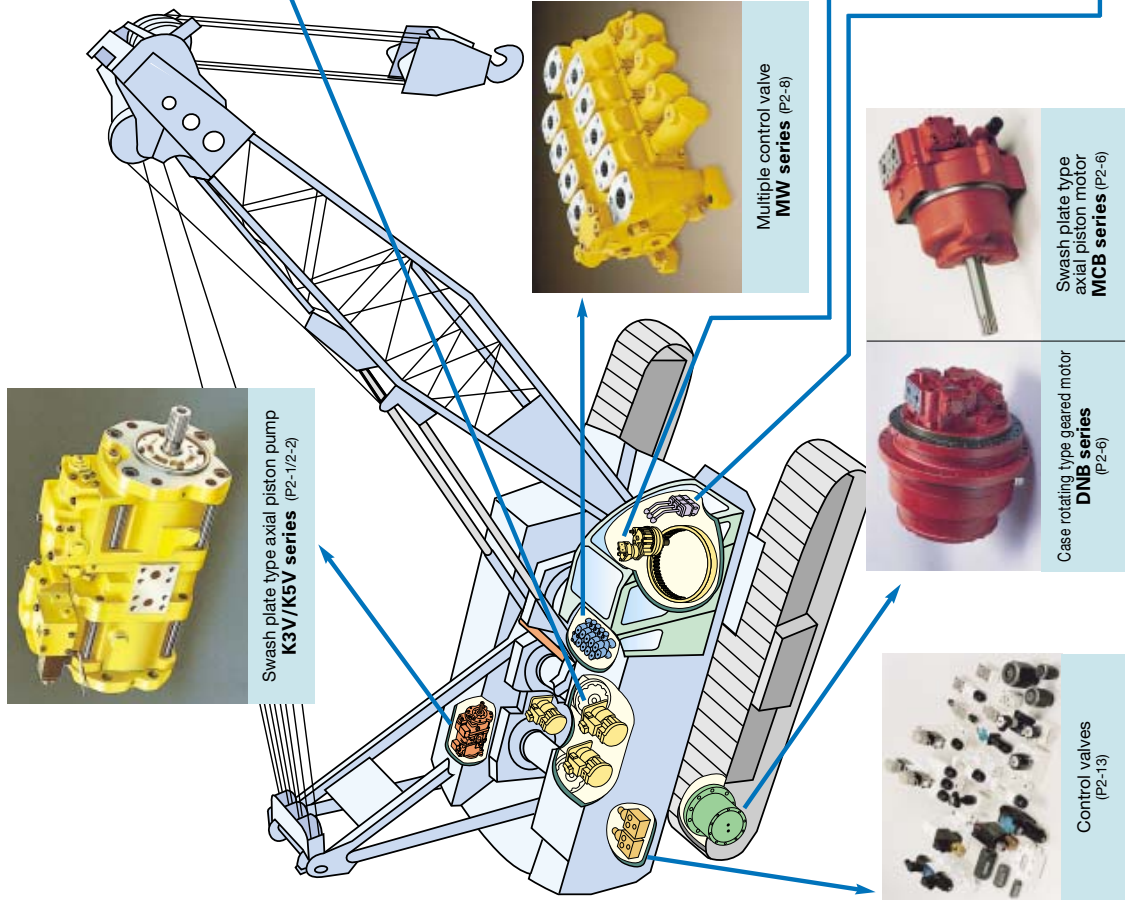
Option

Control valve
KMX 19
(P2-8)

Crawler Crane

Hydraulic Systems used in Crawler Cranes require very high powers with precise control and high reliability. In these systems Kawasaki's robust K3V/K5V series of pumps are utilized as the main hydraulic power source

with M3X/M3B series motors enabling the hoisting application. The M2X-RG motor with an integral reduction gear is used to rotate the main body.



Swash plate type axial piston motor
M3X series (P2-6)



Swash plate type axial piston motor
M3B series (P2-6)



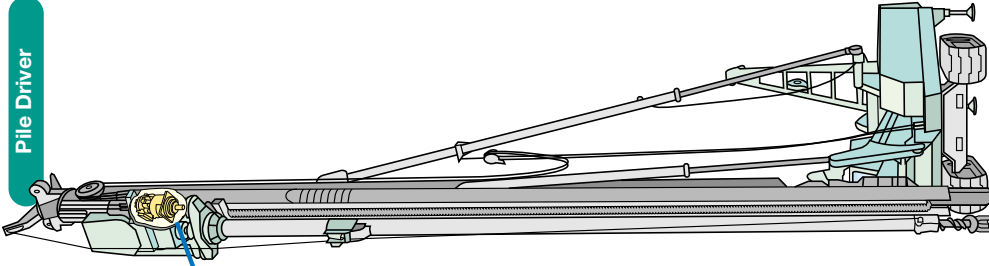
Swash plate type axial piston motor with reduction gear
M3X/M3B-RG series (P2-6)



Swash plate type axial piston motor with reduction gear
M2X-RG series (P2-5)



Earth Drill



Pile Driver



Pilot valve
TH40P series (P2-10)



Pilot valve
PV6P series (P2-10)



Solenoid-operated directional control valve block
KWE5 (P2-11)

Rough Terrain Crane

Various Kawasaki Hydraulic components are utilized on these vehicles including High Pressure Pumps, Motors for winching and precise control valves enabling intricate lifting operations.



Swash plate type axial piston motor
M3X series (P2-6)



Swash plate type axial piston motor
M2X/M5X-RG series (P2-5)



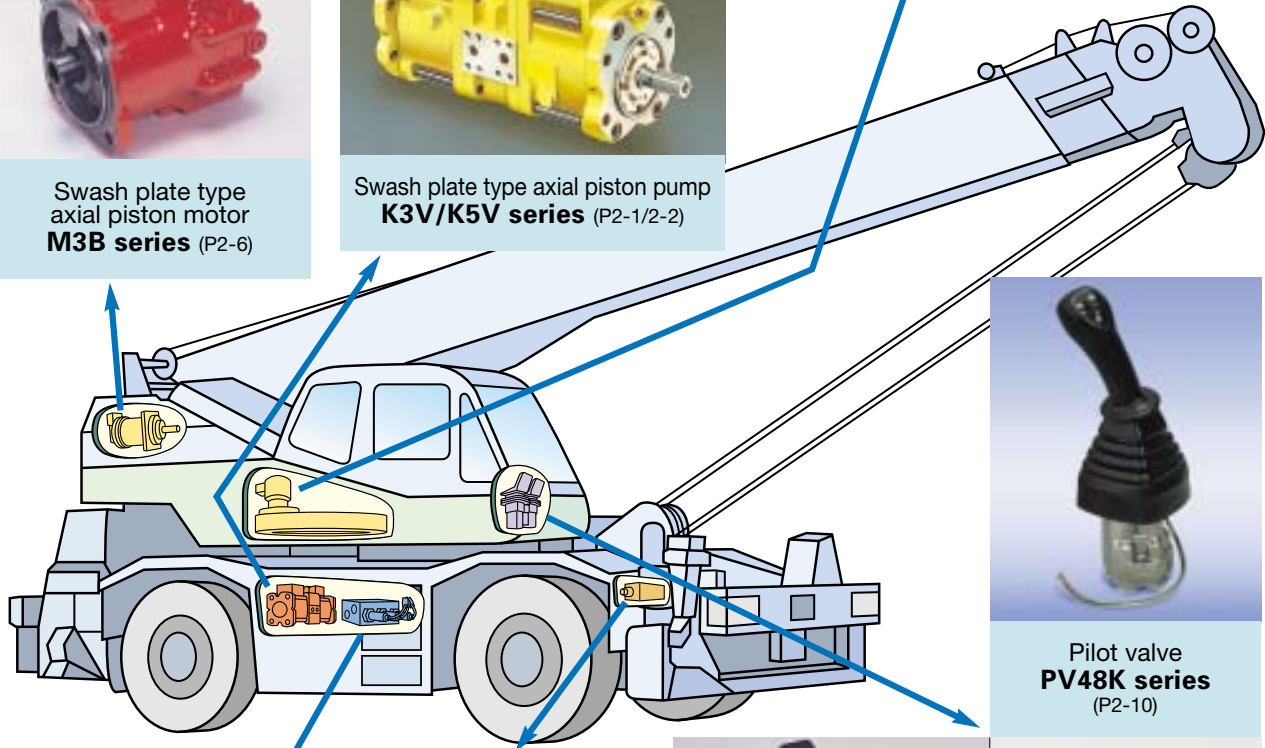
Swash plate type axial piston motor
M2X/M5X series (P2-5)



Swash plate type axial piston motor
M3B series (P2-6)



Swash plate type axial piston pump
K3V/K5V series (P2-1/2-2)



Pilot valve
PV48K series (P2-10)



Solenoid-operated directional control valve block
KWE5 (P2-11)



SUN cartridge valves
(P2-14)



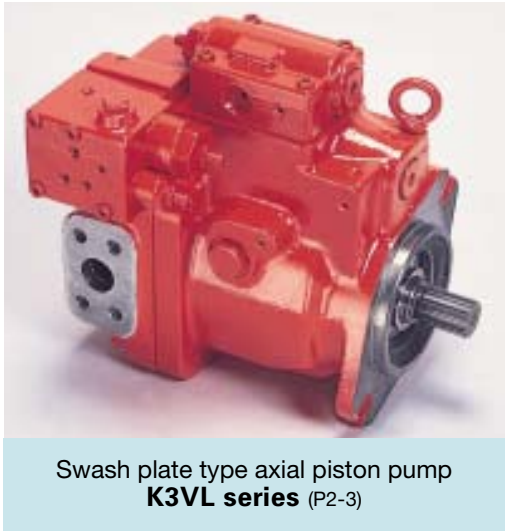
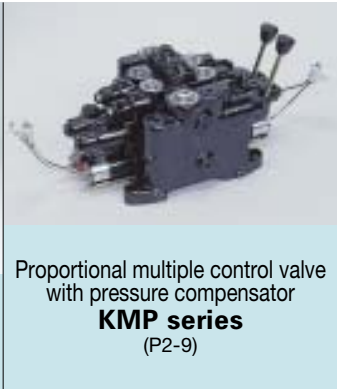
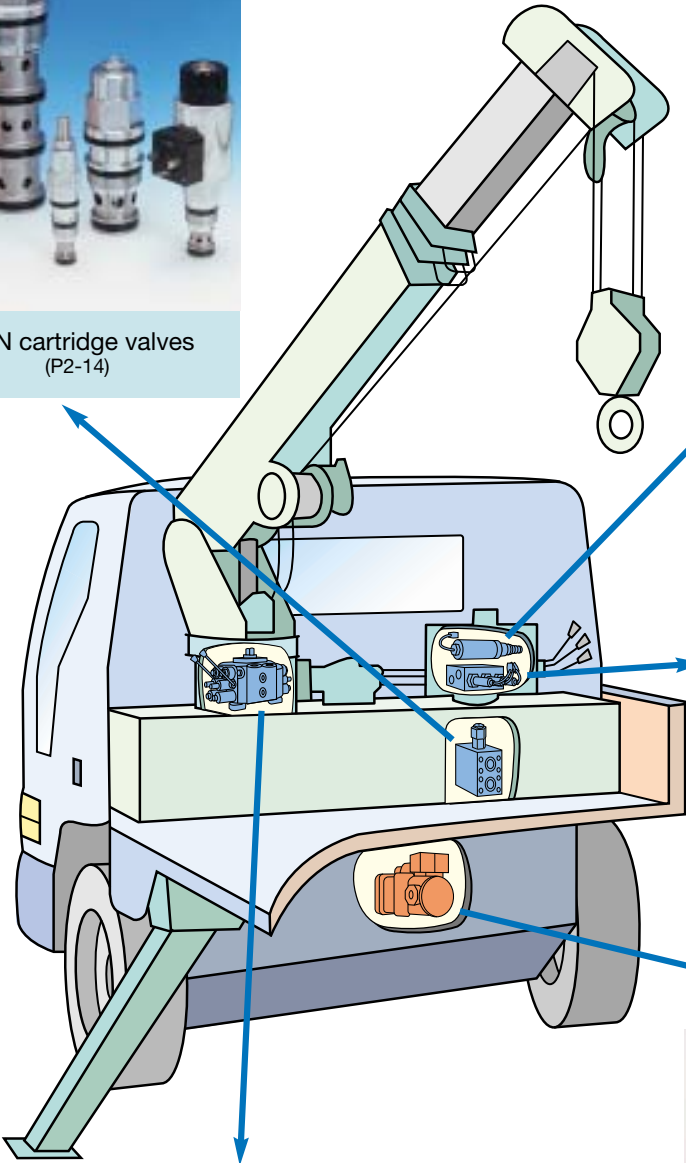
Pilot valve
RCV8C/RCVD8C series (P2-10)



Pilot valve
PV6P series (P2-10)

Truck Mounted Crane

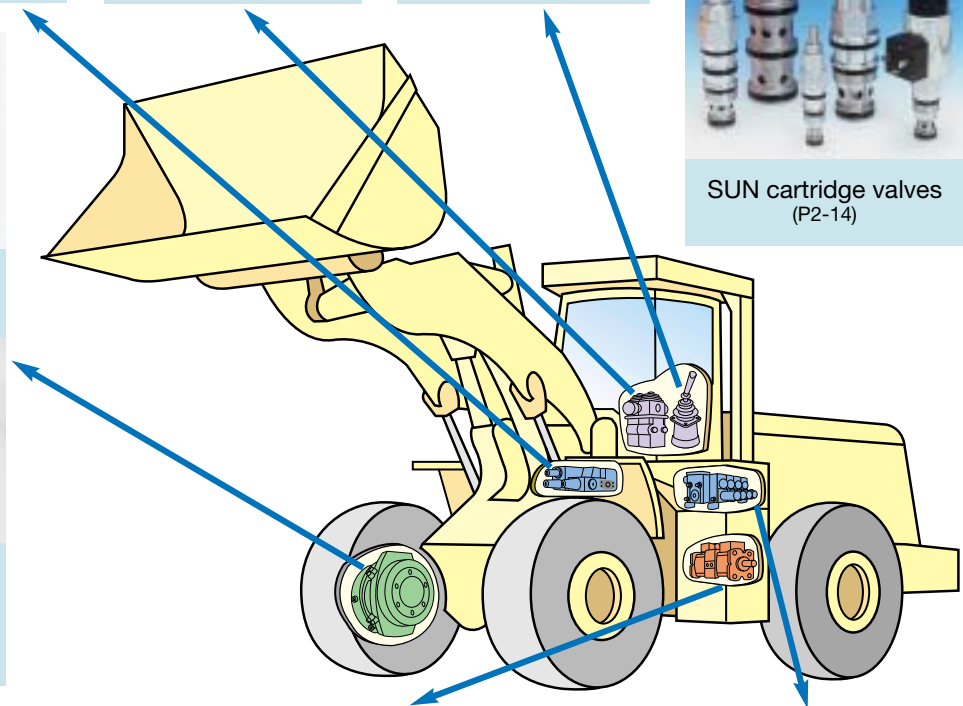
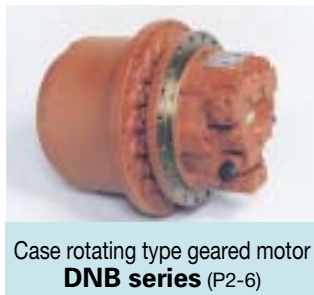
Various control options are available including the use of proportional and conventional cartridge valves with appropriate manifolds.



Wheel Loader

Kawasaki provide case rotating geared motors, the DNB series, and Multicam radial piston motors for wheeled loaders that run on finished or rough roads.

KML multiple control valves and a range of remote control valves enable the precise operation of this vehicle.



Carrier

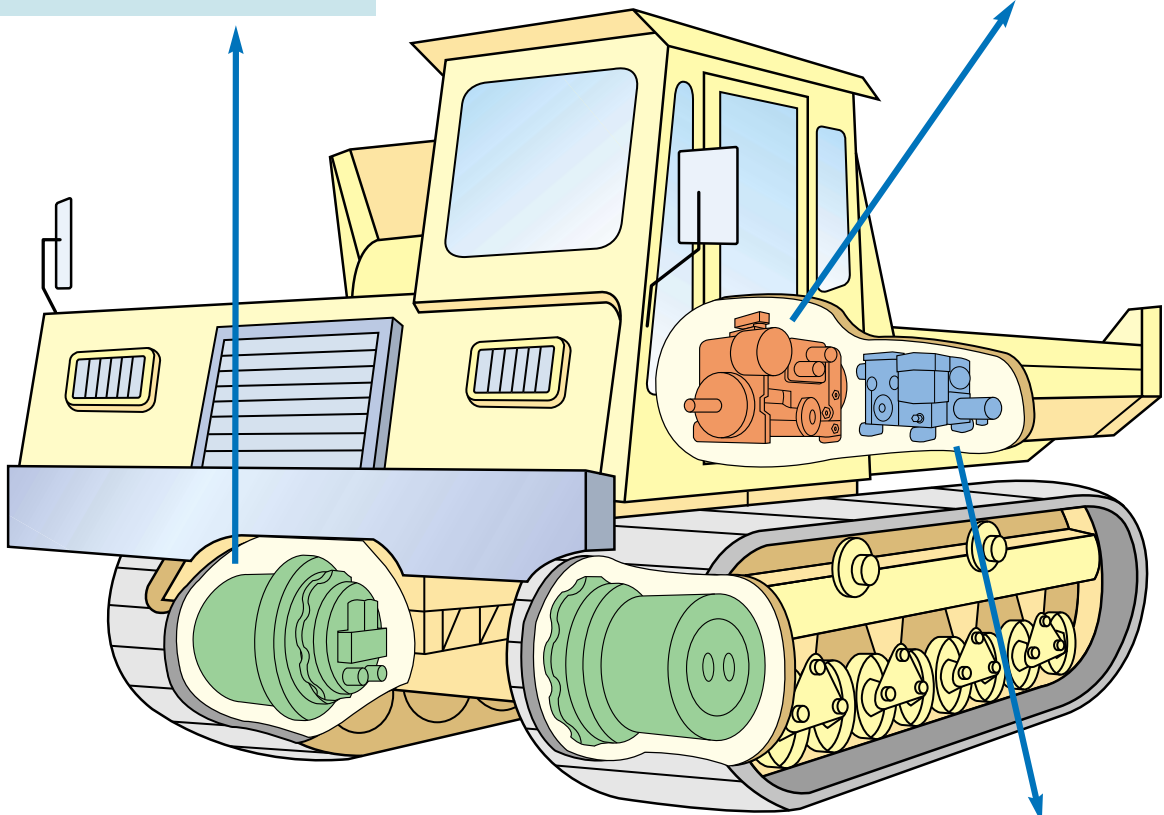
The closed loop K4V pump combined with the DNB rotating case motor provides a very smooth, high torque means of travel for this vehicle.



Case rotating type geared motor
DNB series
(P2-6)



Swash plate type axial piston pump
K4V series (P2-3)



Control valves
(P2-13)



SUN cartridge valves
(P2-14)



Multiple control valve
MW series (P2-8)

Roller

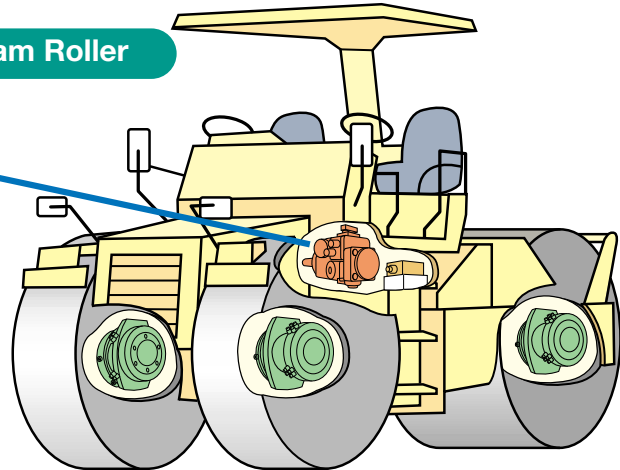
The K4V closed loop pump offers a wide range of power control which is fully utilized in this type of vehicle. Case rotating geared motors (DNB) and Multicam

radial piston motors are used as drive and travel motors which enable very smooth revolutions even at low operating speeds.

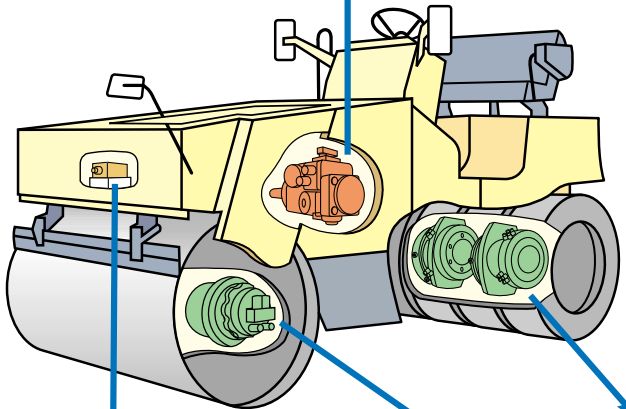


Swash plate type axial piston pump
K4V series
(P2-3)

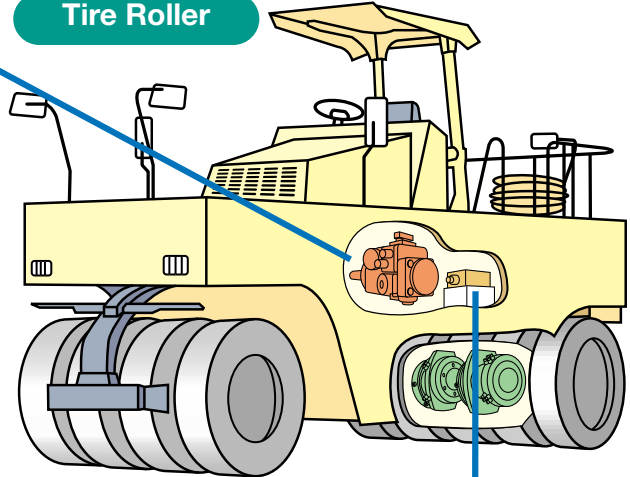
Macadam Roller



Vibratory Roller



Tire Roller



SUN cartridge valves
(P2-14)



Case rotating type geared motor
DNB series
(P2-6)



Multicam radial piston motor
MS/MK series
(P2-7)
(Available for Japanese customers only)



Control valves
(P2-13)

Asphalt Finisher

K3VL open loop pumps and K4V closed loop pumps are utilized in this vehicle. Motor drives are provided by DNB and MS/MK motors which are controlled by a range of multiple control valves. This combination enables a fixed speed of travel and even distribution of asphalt.



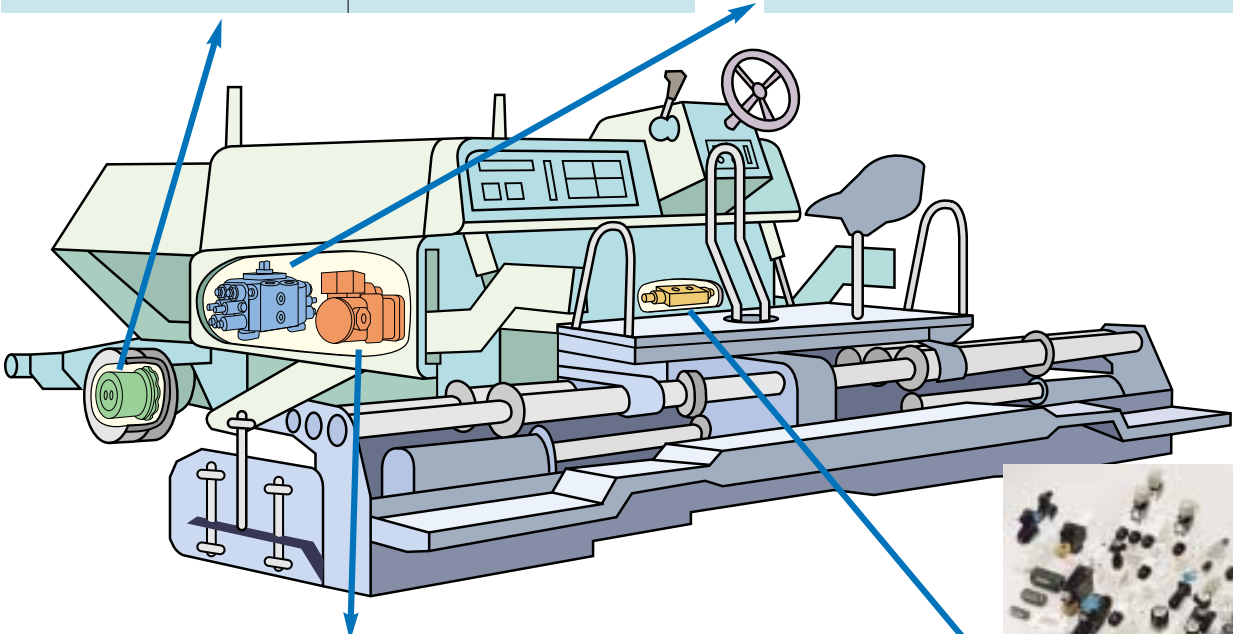
Case rotating type geared motor
DNB series
(P2-6)



Multicam radial piston motor
MS/MK series
(P2-7)
(Available for Japanese customers only)



Proportional multiple control valve with pressure compensator
KMP series
(P2-9)



Swash plate type axial piston pump
K3VL series
(P2-3)



Swash plate type axial piston pump
K4V series
(P2-3)



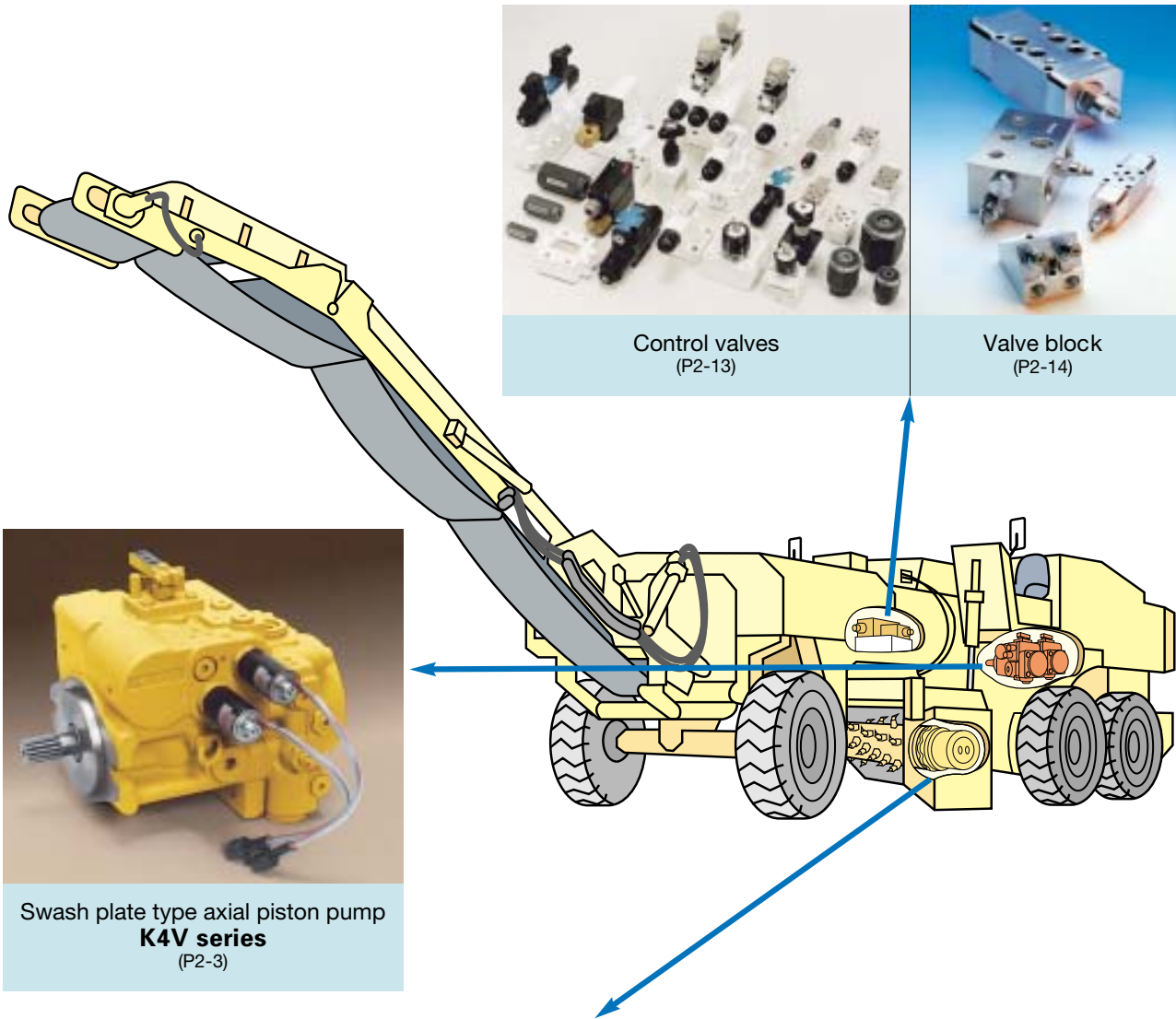
Control valves
(P2-13)



SUN cartridge valves
(P2-14)

Road surface Planer

The closed loop K4V pump is utilized as the main source of power for these machines with both M3X and DNB motors meeting the typical specifications for driving the cutter heads. Various control options are achieved by utilizing manifold blocks and cartridge valves.



Swash plate type axial piston pump
K4V series
(P2-3)

Control valves
(P2-13)

Valve block
(P2-14)

Swash plate type axial piston motor
M3B series
(P2-6)

Swash plate type axial piston motor
M3X series
(P2-6)

Case rotating type geared motor
DNB series
(P2-6)

Concrete Pump

High pressure K3V and medium pressure K3VL axial piston pumps are typically used in these concrete pumps. M3X Swing motors are used to rotate the boom. These components enjoy an established reputa-

tion in excavator manufacture and are equally suited to these applications. Shock less control of boom extension and contraction is achieved by utilising proportional multiple control valves with pressure compensator.



Control valves
(P2-13)



SUN cartridge valves
(P2-14)



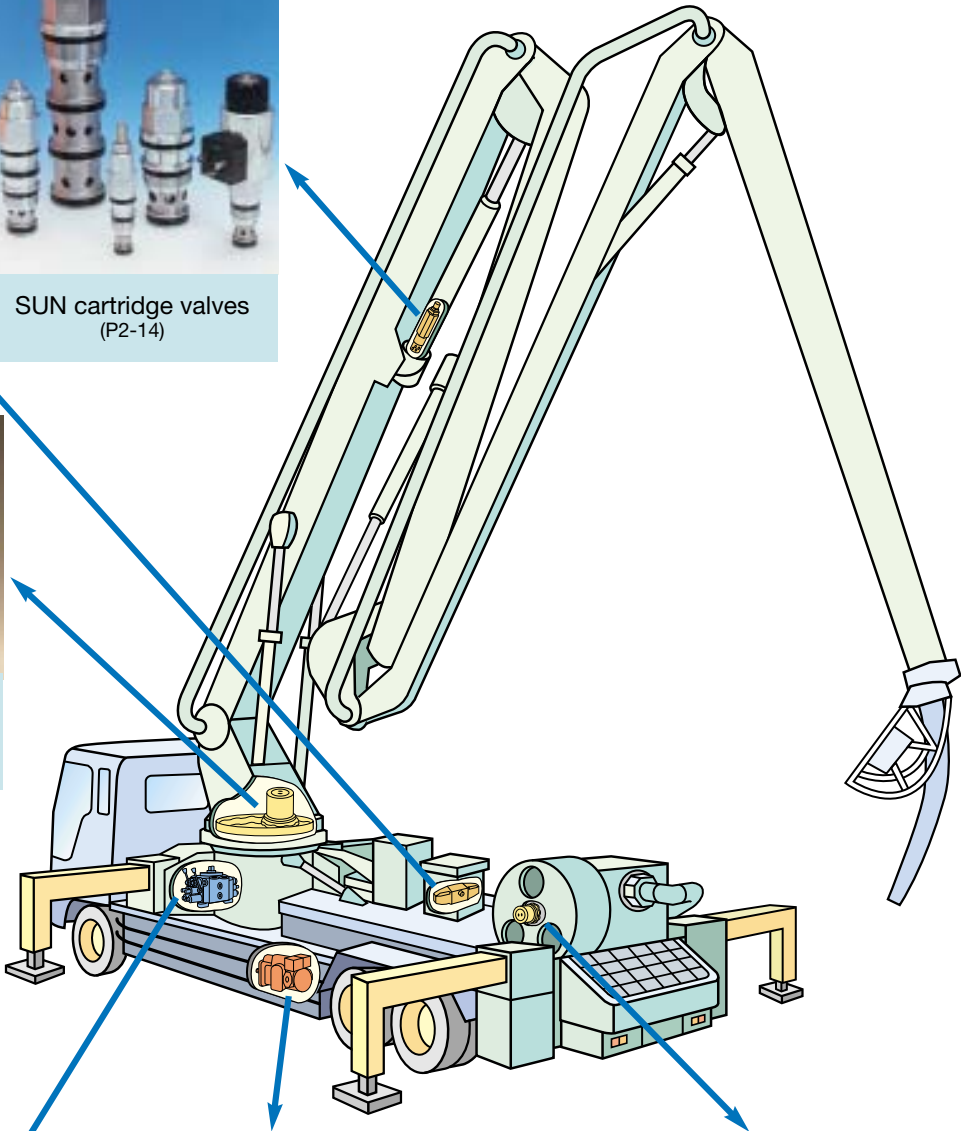
Swash plate type axial piston motor
M3X series
(P2-6)



Proportional multiple control valve
KMC series
(P2-9)



Proportional multiple control valve
with pressure compensator
KMP series
(P2-9)



Swash plate type axial piston pump
K3V/K5V series
(P2-1/2-2)



Case rotating type geared motor
DNB series
(P2-6)

Crawler Drill

K3V/K5V and K3VL open circuit piston pumps are again typically used in these applications. Composite valve blocks, remote pilot valves and cartridge valves provide a complete range of control options.



Swash plate type axial piston pump
K3V/K5V series
(P2-1/2-2)



RCV8C/RCVD8C series
(P2-10)



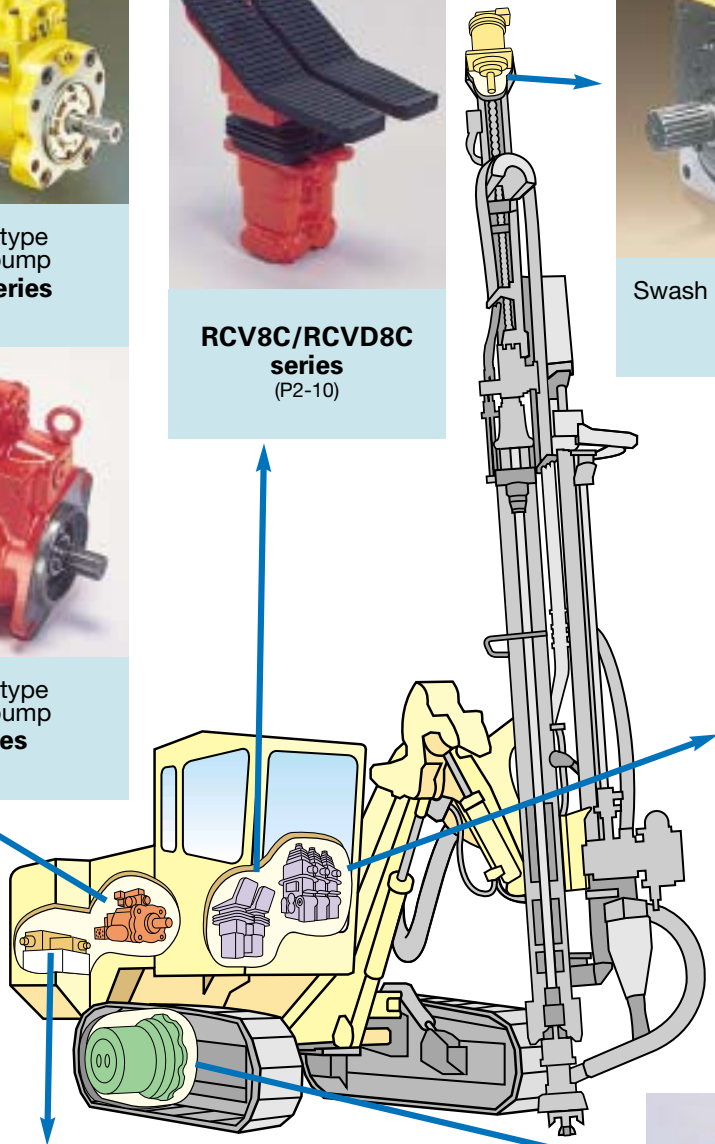
Swash plate type axial piston motor
M3X series
(P2-6)



Swash plate type axial piston pump
K3VL series
(P2-3)



Pilot valve
TH40P
(P2-10)



Control valves
(P2-13)



Valve block
(P2-14)



Case rotating type geared motor
DNB series
(P2-6)

Casing Driver

As to the Case rotating type driver that widely takes an active part in removing of the pillar line execution and foundation of the steel tube, the Swash plate type axial piston motor M3X/M3B series is used for the rotation of

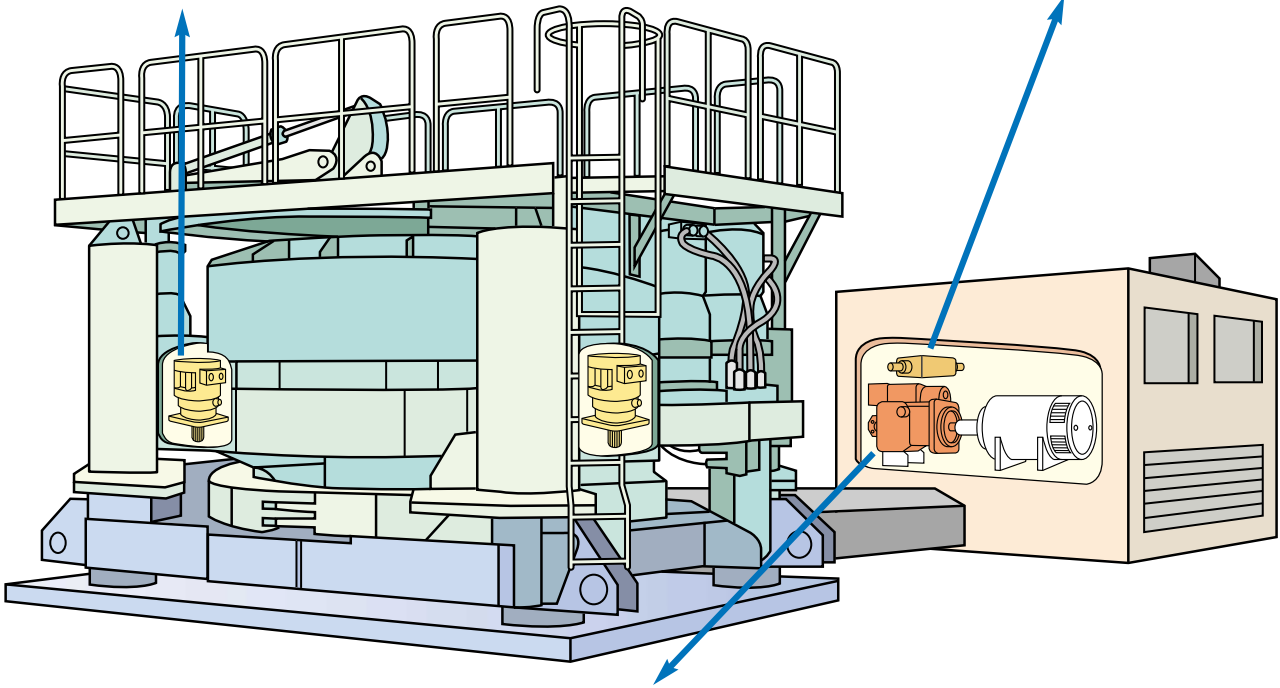
the casing that requires enormous power. The source of oil pressure is supported by the pumps of K3V, K3VG and K3VL series having the good reputation in high output density design.



Swash plate type axial piston motor
M3X/M3B series
(P2-6)



Control valves
(P2-13)



Swash plate type axial piston pump
K3V/K5V series
(P2-1/2-2)



Swash plate type axial piston pump
K3VG series
(P2-4)



Swash plate type axial piston pump
K3VL series
(P2-3)

Crusher

K3V/K5V and K3VL open circuit piston pumps are frequently installed in these machines.

A range of suitable motor types are also available

including Axial, Radial or Multicam Motors depending upon the specific application.



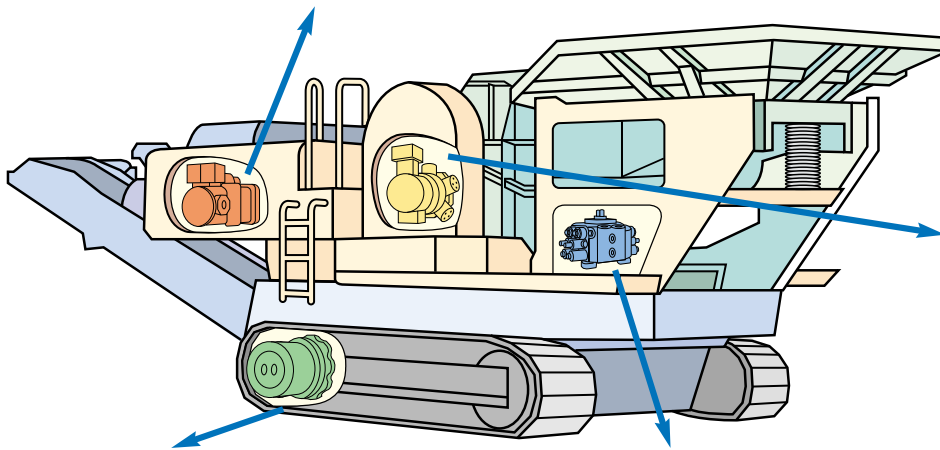
Swash plate type axial piston pump
K3V/K5V series
(P2-1/2-2)



Swash plate type axial piston pump
K3VL series
(P2-3)



Swash plate type axial piston motor
M3X/M3B series
(P2-6)



Low speed, high torque radial piston motor
HMKB series
(P2-7)



Case rotating type geared motor
DNB series
(P2-6)



Proportional multiple control valve with pressure compensator
KMP series
(P2-9)



Multicam radial piston motor
MS/MK series
(P2-7)
(Available for Japanese customers only)



Control valves
(P2-13)



SUN cartridge valves
(P2-14)

Hydraulic Braker / Crusher Jaw

These attachments are frequently used to break and crush work pieces and they require both fast powerful movement and, on occasion, the highly controlled

smooth and slow application of force. The variety of Proportional, Directional and Pilot valves available from Kawasaki ensure these specifications are always met.



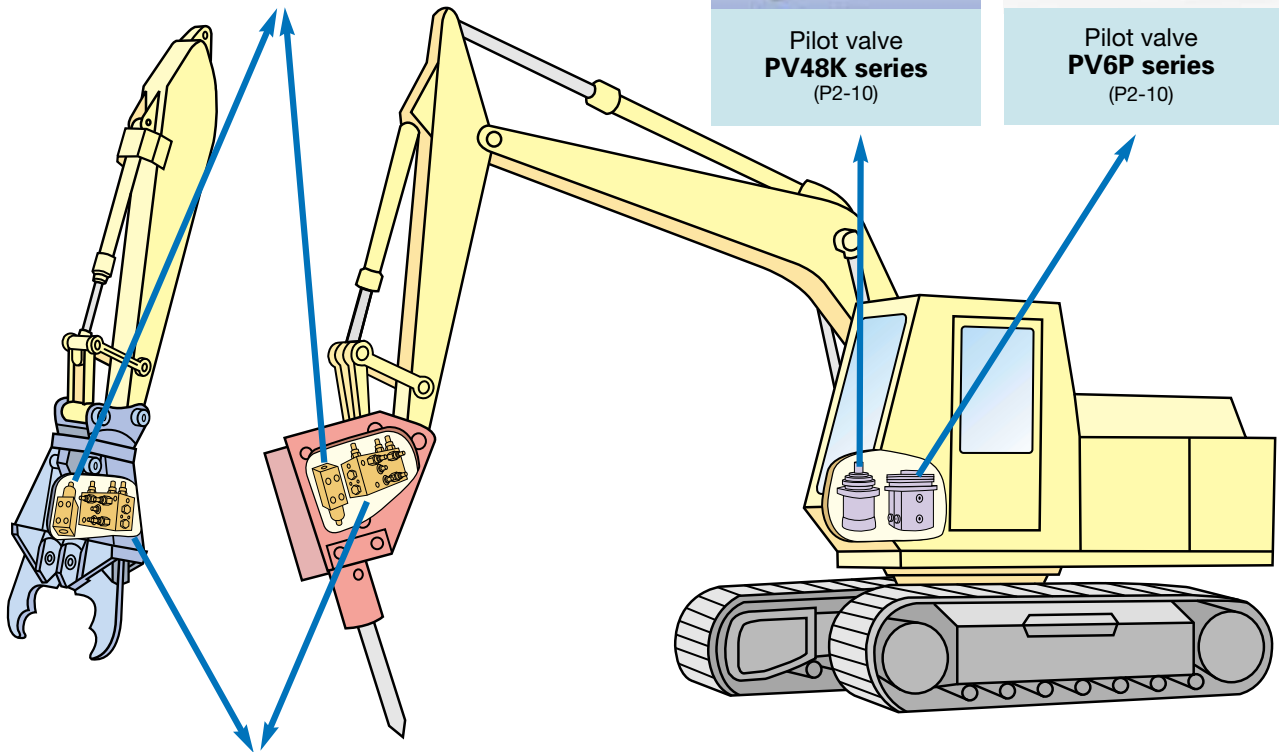
SUN cartridge valves (P2-14)



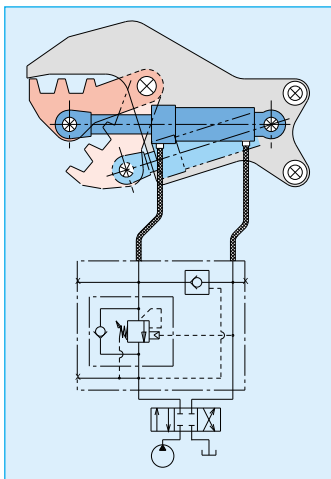
Pilot valve PV48K series (P2-10)



Pilot valve PV6P series (P2-10)



SUN cartridge valve block (P2-14)



Solenoid-operated directional control valve KWE5 (P2-11)

An application of regenerative circuit >

Industrial Vehicle

Forklift Truck

The KMC10L proportional multiple control valve and the compact MW multiple control valve have an exceptional reputation when applied to fork lift applications.

Excellent control characteristics, minimum leakage and a very compact installation envelope make these valves the preferred choice in fork lift applications.



Proportional multiple control valve for forklift truck
KMC10L (P2-9)



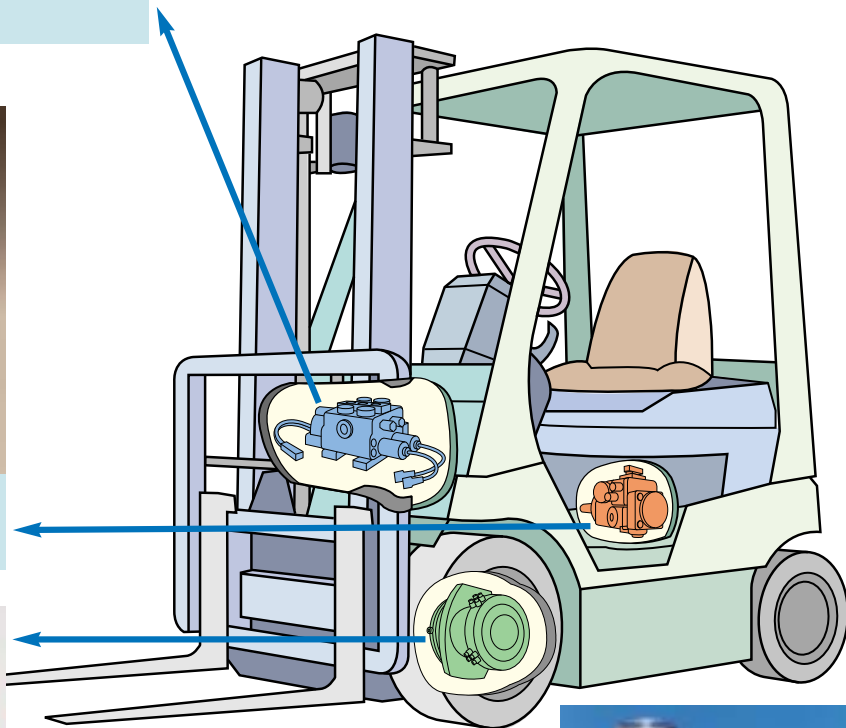
Multiple control valve
MW series (P2-8)



Swash plate type axial piston pump
K4V45 (P2-3)



Multicam radial piston motor
MS/MK series
(P2-7)
(Available for Japanese customers only)



Proportional pressure-reducing valve
KDRDE series
(P2-11)



SUN cartridge valves
(P2-14)

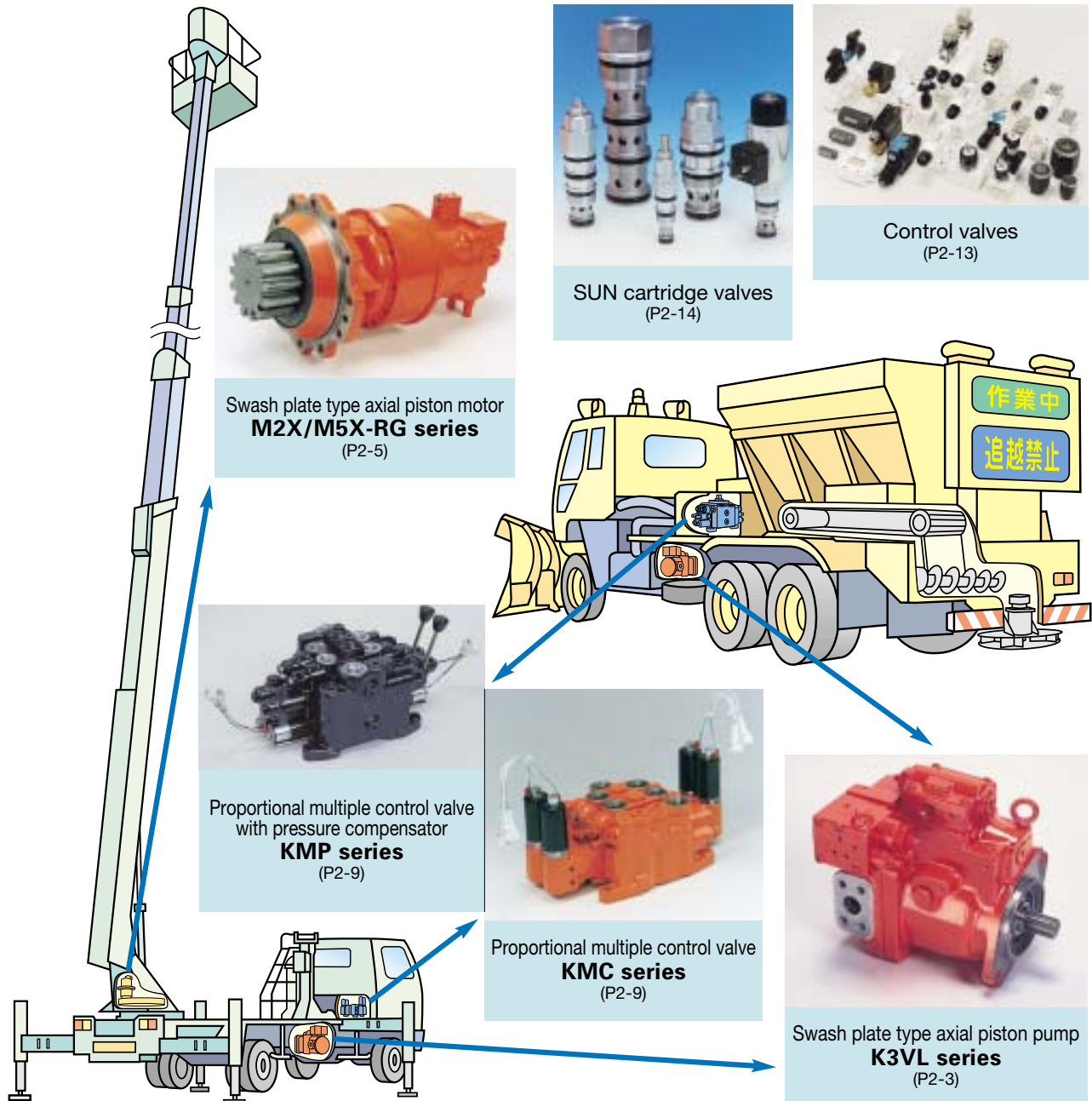


Manlift

A combination of the K3VL high pressure pump and the KMP proportional multiple control valve with pressure compensator provide the basis for a highly accurate speed and position control for man lift applications.

Snow Plough / Gritter

KMC and KMP multiple control valves are used to control the accurate scatter of de-icing road salts within these gritter applications.

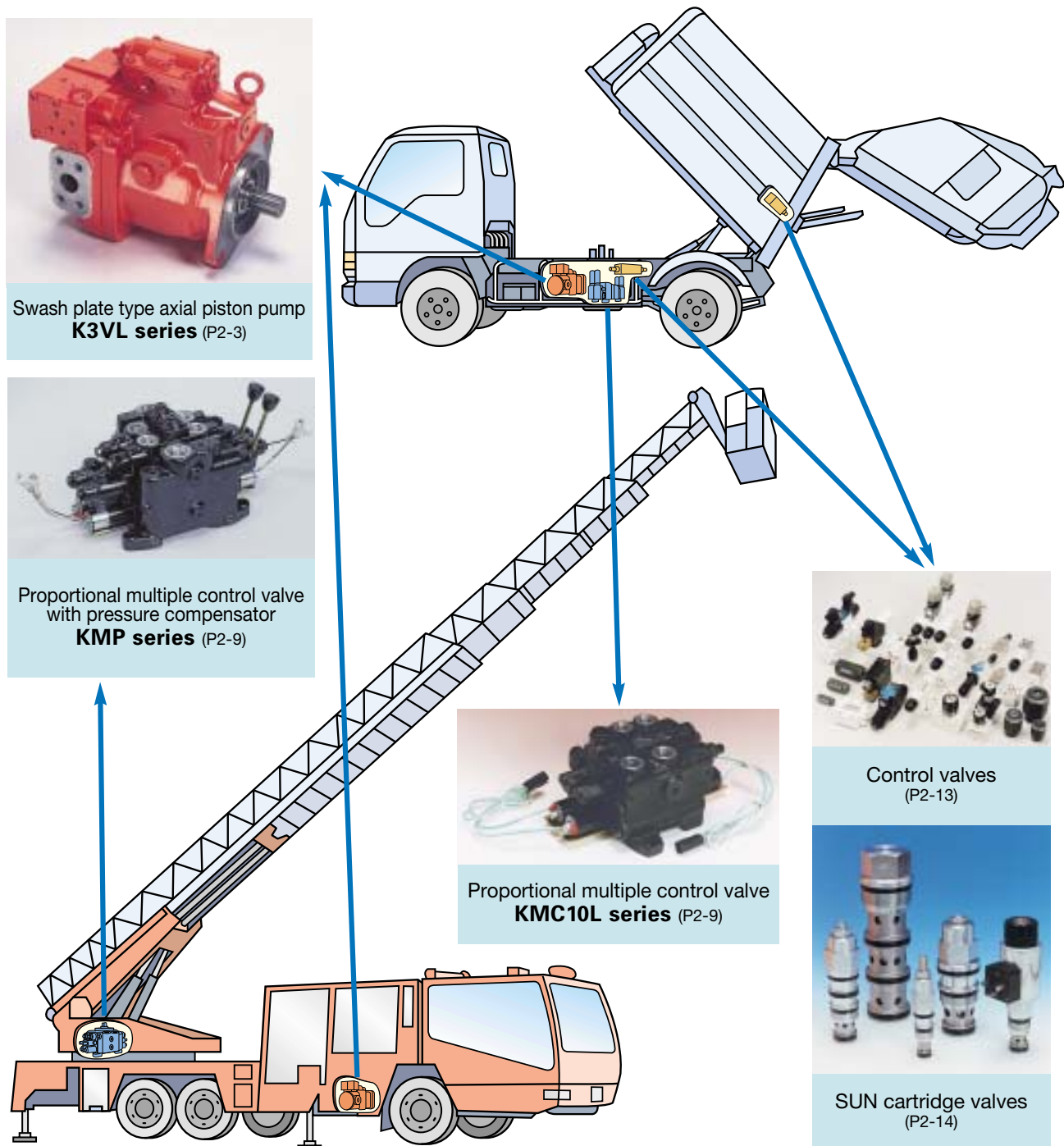


■ Refuse (Garbage) Truck

Small compact components such as the high pressure K3VL, KMP proportional multiple control valves and cartridge valves are ideally suited to these applications.

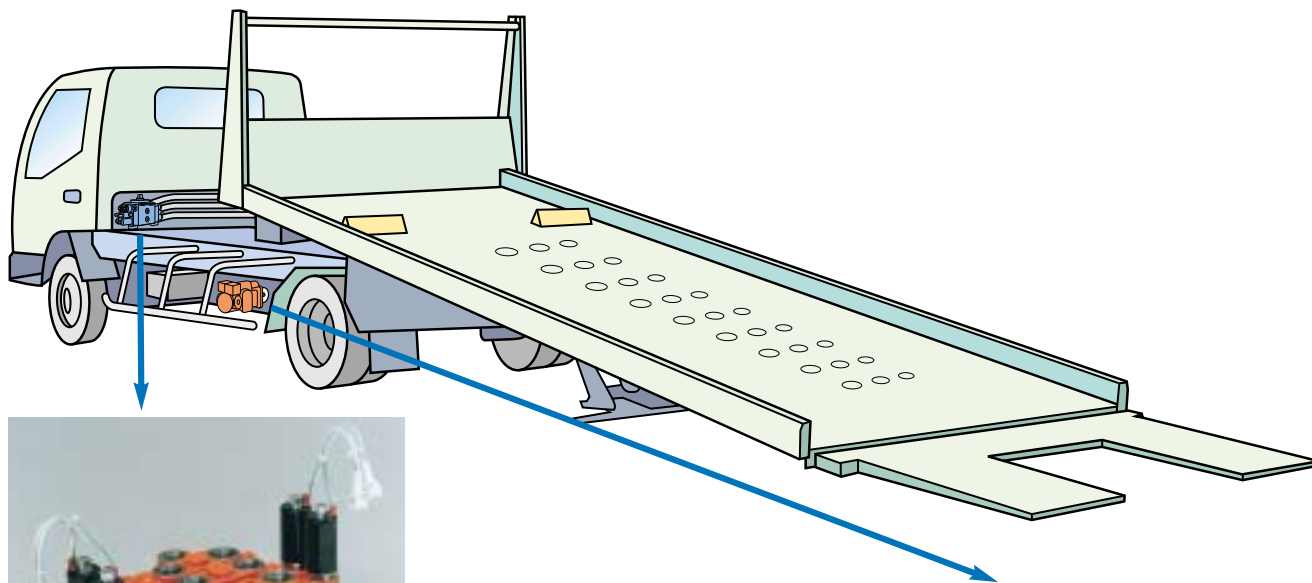
■ Fire Engine

Reliable, precise and fast extension of hydraulic ladders is imperative in these applications and the KMP proportional multiple control valve meets this requirement. It is often used in these applications to facilitate the rapid extension of ladder sections simultaneously.

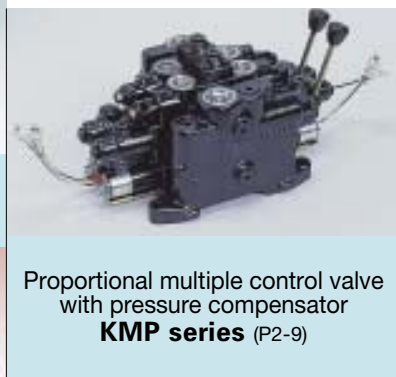


Car Carrier / Roll-off Dumpster Truck

Multiple control valves and the K3VL series of high pressure axial piston pumps are again well suited to these applications.



Proportional multiple control valve
KMC series (P2-9)



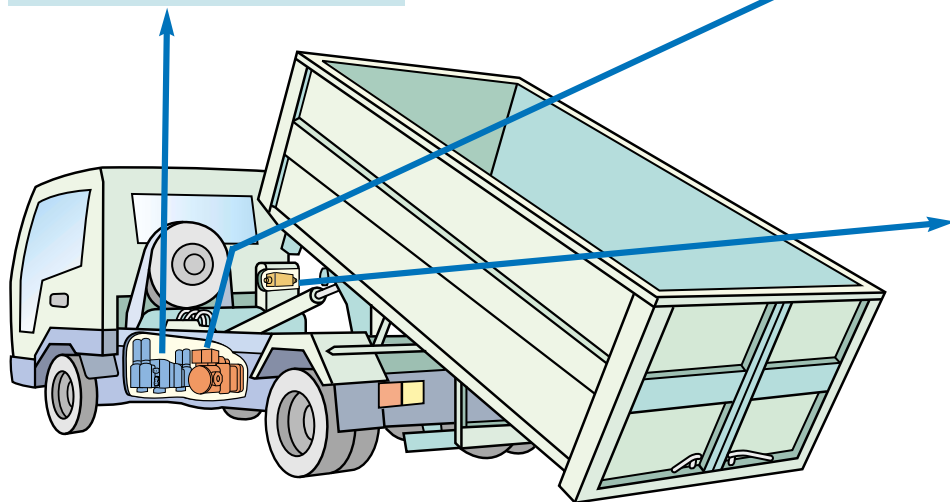
Proportional multiple control valve
with pressure compensator
KMP series (P2-9)



Swash plate type axial piston pump
K3VL series
(P2-3)



Proportional multiple control valve
KMC10L (P2-9)



SUN cartridge valves
(P2-14)

Agricultural Machinery

Tractor

The compact KTEM8 series of multiple control valves are often used on this vehicle, KFDZE flow divider and sequence valve are also applied to provide the optimum control of hydraulic attachments.



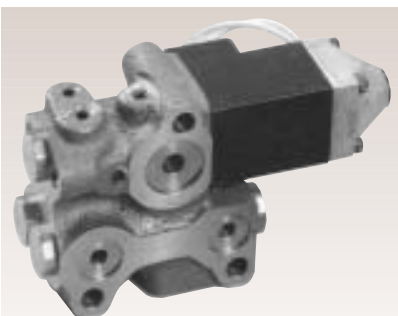
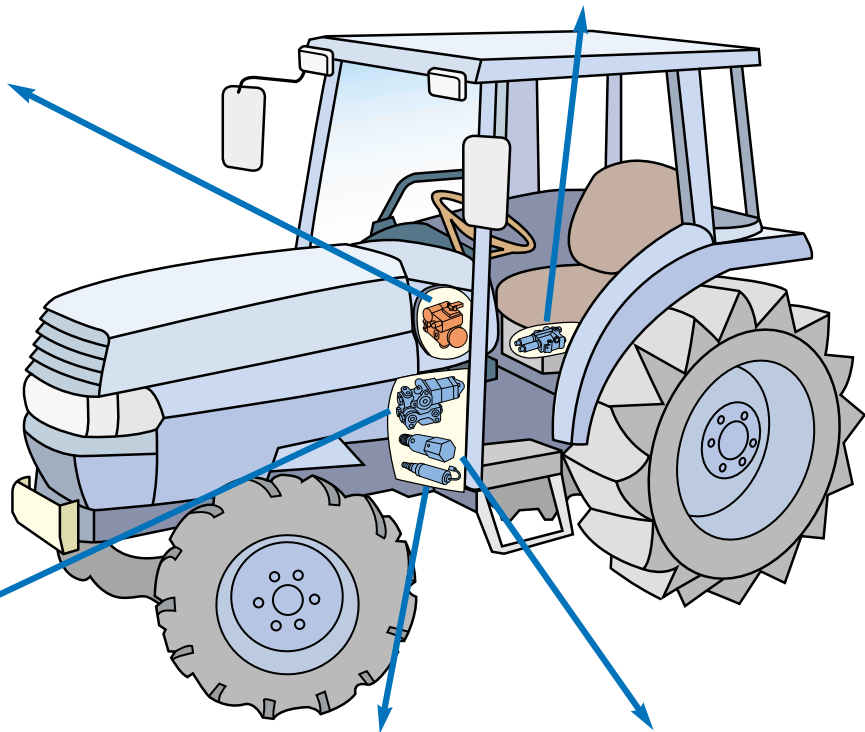
Swash plate type axial piston pump
K3VL series
(P2-3)



Proportional control valve
KTEM series
(P2-12)



Swash plate type axial piston pump
K4V series
(P2-3)



flow dividing valve
with sequence valve
KFDZE10
(P2-12)



Proportional pressure-reducing valve
(Cartridge type)
KDRDE5K (P2-11)

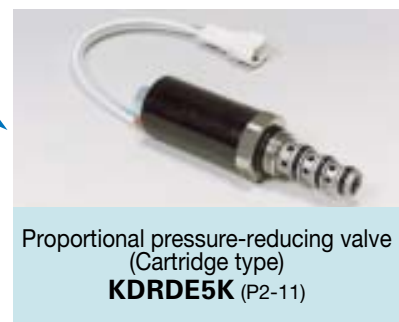
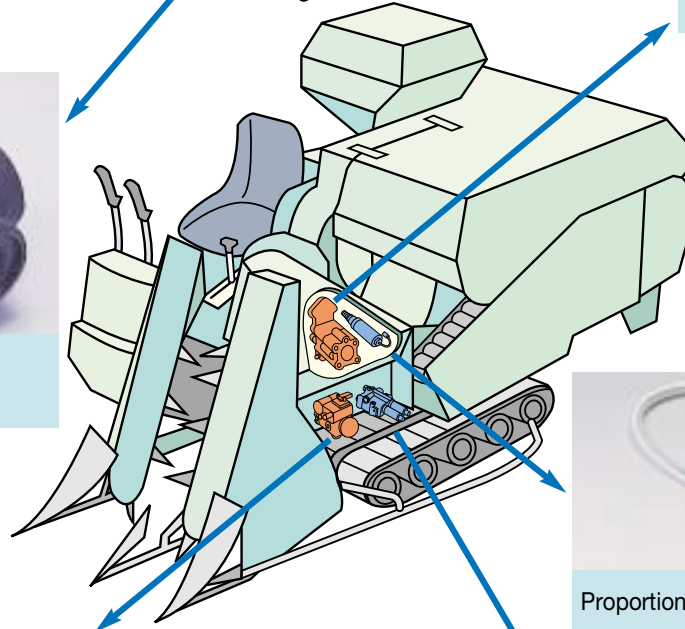
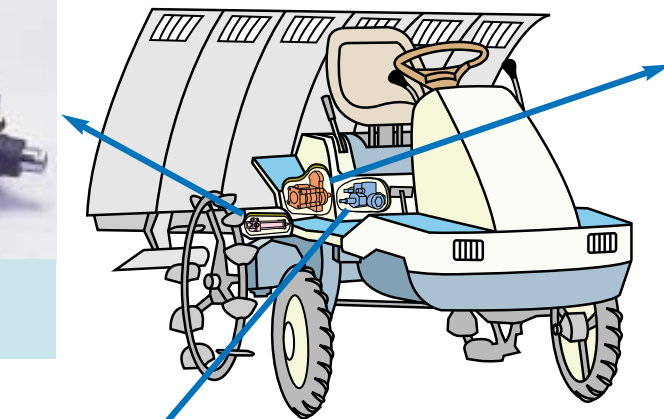


Shockless valve
KCLA (P2-12)



Rice-planting Machine / Combine

The very small and compact K3VL45 provides the power source in these machines which also utilise the KDRDE5K proportional pressure reducing valves to control the depth of planting and height of cutting implements.



Pumps

Swash plate type axial piston pumps

•K3V series



K3V-DTP

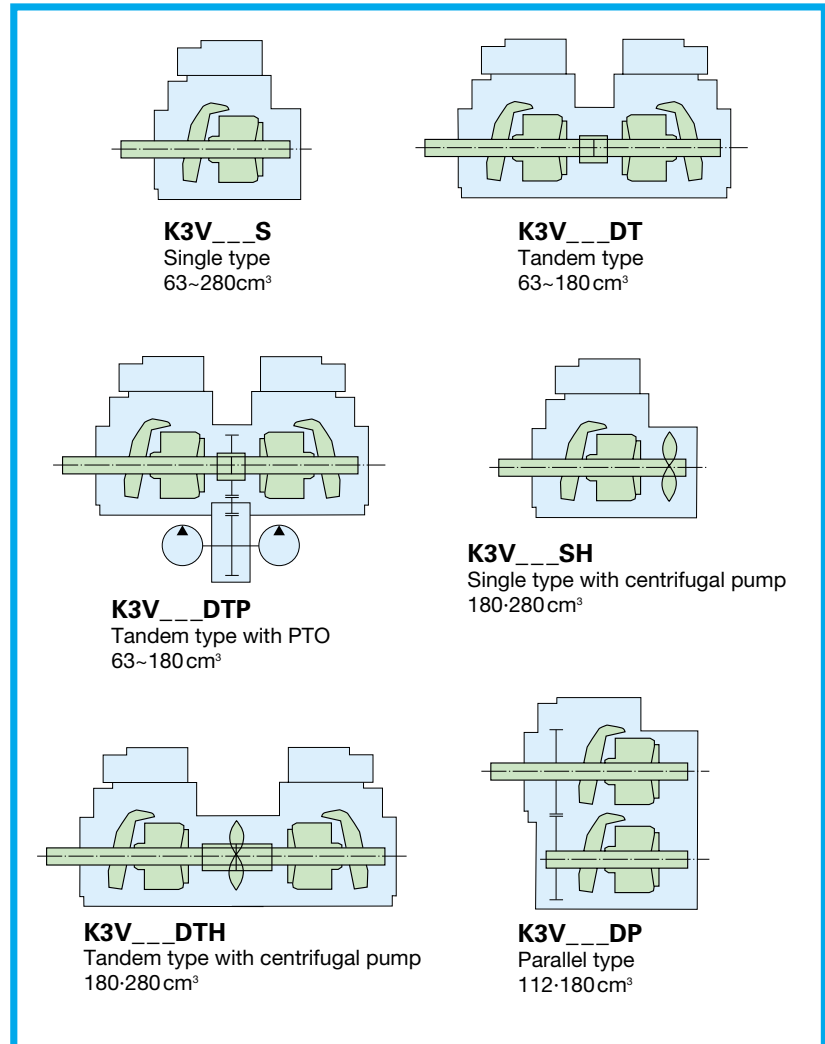


K3V112DP

1. K3V series pumps are very popular as reliable power source for construction machines.
2. Various rotary group layouts are available to respond to applications.
3. Tandem type with PTO and Parallel type have joined the series.

model		K3V63	K3V112	K3V140	K3V180	K3V280
displacement	cm ³	63	112	140	180	280
pressure MPa(kgf/cm ²)	rated	34.3 (350)				
	peak	39.2 (400)				
speed min ⁻¹	max.for self priming	2,650	2,360	2,150	1,950	1,600
	max.	3,250	2,700	2,500	2,300	2,000

Variation



Swash plate type axial piston pumps

•K5V series



K5V-DPH

1. With new technology the K5V series has realized higher power density.
2. K5V series can cope with enlargement of displacement despite the same installation dimensions and regulator variations as K3V's.
3. K5V series pumps have realized higher reliability and long life so as to meet requirement of larger torque.

model		K5V80DT/DTP	K5V140DT/DTP	K5V200DPH/DTH/DTP
displacement	cm ³	80 X 2	140 X 2	200 X 2
pressure MPa(kgf/cm ²)	rated	34.3 (350)		
	peak	39.2 (400)		
speed min ⁻¹	max.for self priming	2,460	2,160	1,850
	max.	3,000	2,500	2,200

Swash plate type axial piston pumps

•K3SP series



1. This is a compact double pump for a small size construction machine.
2. The tilting angle control of the swash plate is conducted by the hydraulic pressure piston which composes the pilot and the servomechanism.
3. The centrifugal pump for sucking pressure charge is built in the sucking passage to improve the self-inhale performance in a high revolution area.

model		K3SP36
displacement	cm ³	36 X 2
pressure MPa(kgf/cm ²)	rated	29.4 (300)
	peak	31.4 (320)
max. speed for self priming min ⁻¹		2,800

Swash plate type axial piston pumps

•K3VL series



1. The K3VL series swash-plate type axial piston pump is a heavy duty variable displacement hydraulic pump newly developed for mobile and industrial applications.
2. The unique mechanism obtained through our long research has drastically reduced pressure pulsation.
3. Unload and variable pressure controls are made possible remotely in addition to load-sensing and pressure constant.
In addition, the horsepower control is available.

model		K3VL45	K3VL80	K3VL112	K3VL140
displacement	cm ³	45	80	112	140
pressure MPa(kgf/cm ²)	rated	31.4 (320)			
	peak	34.3 (350)			
max. self priming speed	min ⁻¹	2,700	2,400	2,200	

Swash plate type axial piston pumps

•K4V series



1. The K4V series is a swash plate type piston pump developed for hydro-static transmissions used in a closed circuit, and has many optional accessories.
2. Achieving high efficiency not only at high pressure but also at low pressure and low flow.
3. A mechanical neutral position retaining mechanism with a spring return has been adopted to meet the HST requirement when kept in the neutral position.

model		K4V45C	K4V112
displacement	cm ³	45	112
pressure MPa(kgf/cm ²)	rated	31.4 (320)	
	max.	34.3 (350)	
speed min ⁻¹	rated	2,900	2,150
	max.	3,600	2,700

Swash plate type axial piston pumps

•**K3VG series**



1. The K3VG series is a very suitable pump for industrial machinery with open circuits and has 63-560cm³ pump sizes.
2. Including a highly precise electro-hydraulic servo regulator "ILIS", good varieties of control methods are available.
3. Silent and high-pressure pump with high efficiency and reliability.

model		K3VG-63	K3VG-112	K3VG-180	K3VG-280	K3VG-180DT	K3VG-280DT
displacement	cm ³	63	112	180	280	360	560
pressure MPa(kgf/cm ²)	rated	34.3 (350)					
	peak	39.2 (400)					
speed min ⁻¹	rated	1,800			1,200	1,800	1,200
	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

Gear pumps for farm machines

•**ZX series**



1. This is a gear pump with a high efficiency and a long life developed for the agricultural machinery based upon our rich production technology of a precision gear pump.
2. We also have another compact form in which both a gear pump and a switching valve are unified.

displacement	cm ³	2.4	4	7
pressure MPa(kgf/cm ²)	rated	3.1 (32)	6.4 (65)	5.4 (55)
	peak	3.9 (40)	9.3 (95)	8.3 (85)
max. self priming speed	min ⁻¹	1,750	2,000	1,900

Motors

Swash plate type axial piston motors

•M2X/M5X series



1. The M2X series are swash plate type piston motors developed for application to swinging operation of construction machines, and are provided with a built-in mechanical brake, a relief valve, and a make-up valve.
2. The design has enabled an extraordinarily compact motor with the piston/cylinder part, mechanical brake part, and attached valves part neatly arranged respectively.
3. The mounting flange of the motor has been so enlarged as to enable it to be directly connected with the ring gear of a reduction gear.
4. M5X has been developed to realize the lighter weight, more compact size and stronger output power on the basis of M2X technology.

model		M2X22	M2X45	M2X63	M5X130	M5X180	M2X210
displacement	cm ³	22.0	45.3	64.0	129	180	210
pressure MPa(kgf/cm ²)	rated	20.6 (210)	29.4 (300)	29.4 (300)	32.4 (330)	32.4 (330)	29.4 (300)
	max.	24.5 (250)	34.3 (350)	34.3 (350)	39.2 (400)	39.2 (400)	34.3 (350)
max.speed	min ⁻¹	2,500	2,000	2,200	1,850	1,680	1,400

Swash plate type axial piston motors with reduction gears

•M2X/M5X-RG series



model		M2X 22-RG015	M2X 45-RG035	M2X 63-RG06	M5X 130-RG10	M5X 180-RG16	M5X 180-RG20
displacement	cm ³	597	1,185	1,229	2,437	4,128	4,264
rated pressure	MPa(kgf/cm ²)	15.7 (160)	17.7 (180)	28.0 (285)	27.5 (280)	24.0 (245)	29.4 (300)
max.speed	min ⁻¹	92	76	115	92	68	66

Swash plate type axial piston motors with reduction gears for swinging operation of crane

•M2X/MX-RG series



1. The service brake (option) is possible to be installed.
2. The reduction gear of M2X series is designed to shorten the length in the axial direction.
3. The M2X series is a compact motor with good results in the shovel turn. The parking brake is built in the motor.

model		M2X170- RG17C27	M2X170- RG23C34	MX250- RG100C88
displacement	cm ³	4,625	5,743	22,226
rated pressure	MPa(kgf/cm ²)	23.0 (235)	24.5 (250)	27.5 (280)
theoretical output torque	N·m(kg·m)	16,960 (1,729)	22,410 (2,285)	97,100 (9,910)
service brake		hand brake	hand brake	hydraulic brake

Swash plate type axial piston motors

•M3X/M3B series



The M3X/M3B series is a swash plate type axial piston motor with a good self-priming capability and high starting efficiency, developed based on our many years of experience and technology obtained in swash plate type pumps and motors.

model		M3X 200	M3X 280	M3X 530	M3X 800		M3B 200	M3B 280	M3B 530	M3B 800
displacement	cm ³	195	280	533	800		195	280	533	800
						max. min.	106	93	178	267
pressure MPa(kgf/cm ²)	rated	29.4 (300)					32.0 (326)	29.4 (300)		
	peak	34.3 (350)					35.0 (357)	34.3 (350)		
max.speed	min ⁻¹	1,900	1,700	1,400	1,200	max. min.	1,900	1,700	1,400	1,200
							2,400	2,200	1,700	1,500

Swash plate type axial piston motors with reduction gears

•M3X/M3B-RG series



model		M3X200- RG03S6.0	M3X280- M3B280- RG06S6.4	M3X530- M3B530- RG10S6.4	M3X800- M3B800- RG16S6.4
displacement	cm ³	894	1,587	3,104	4,717
rated pressure	MPa(kgf/cm ²)	20.6(210)			
max.speed	min ⁻¹	270	190	150	130

Case rotating type geared motors

•DNB series



The DNB series is a case-rotating type dual speed motor. With various optional accessory valves, this series can be used in both open and closed circuits.

model		DNB04E	DNB08D	DNB15B	DNB50	DNB60
displacement	cm ³	880	2,046	4,010	10,700	11,600
		484	1,025	2,010	6,760	6,760
rated pressure	MPa(kgf/cm ²)	34.3 (350)				
max.speed	min ⁻¹	50	27	27	28	21
		91	55	55	36	36

Swash plate type axial piston motors

•MCB series



The MCB series is a built-in type dual speed motor for traveling of excavators and other industrial vehicles.

This series has been developed based upon the DNB series.

model		MCB195	MCB530
displacement	cm ³	195/116	530/325
rated pressure	MPa(kgf/cm ²)	34.3(350)	
max.speed	min ⁻¹	1,900/2,300	1,400/1,690

Low speed, high torque radial piston motors

●HMKB(C)series



1. Richest and longest service experiences in screw driving of injection molding machines.
2. Available of many kinds of options such as valve-mounting type for speed changing.
3. Available of a CHP valve which can auto-matically change the speed steplessly in response to the load. (Constant horse-power control)

Fixed displacement type

model		SX 504BM	SX 505BM	HMKB 046	HMKB 075	HMKB 100	HMKB 200	HM(HD)B 270	HM(HD)B 325	HMHDB 400	HMB 700
displacement	cm ³	189	492	745	1,281	1,510	3,087	4,310	5,310	6,800	11,600
pressure MPa(kgf/cm ²)	rated	20.6(210)									
	max.	24.5(250)									

Dual-displacement type

model		SB 504	SB 505	HMKC 046	HMKC 075	HMKC 080	HMKC 200	HMC 270	HMC 325
displacement	cm ³	202	492	745	1,241	1,475	3,087	4,588	5,326
pressure MPa(kgf/cm ²)	rated	20.6(210)							
	max.	24.5(250)							

Multicam radial piston motors

●MS/MK series



1. This series has been taking an active part in various fields as a running motor for the agricultural tractor and fork-lift, and for driving the cutter of the shielding machine, for the winch and for driving the screws of the injection molding machine and so on.
2. The piston strokes 6~8 times per revolution with the structure that the piston roller goes round inside the cam ring. Therefore smooth revolution can be obtained even at the low speed revolution.
3. Maximum working pressure can be as high as 45 MPa, and dual speed motors as well as various functions are available like parking brakes, free-wheeling (running idly), and so forth.

model		02	05	08	11	18	25	35	50	83	125
displacement	cm ³	213	468	780	1,048	1,747	2,498	3,494	4,996	8,328	12,492
pressure*	MPa(kgf/cm ²)	37.5(382)~45(459)									
max.speed	min ⁻¹	310	240	170	180	150	140	130	135	100	65

*Consult us for the working pressure range which varies depending on the form of the cam.

Valves

Multiple control valves

•KMX series



KMX15



KMX13



KMX19

1. The KMX series multiple control valves are of semi-monoblock type valves which systematically control actuators of an excavator.
2. The complicated main circuits and the pilot circuits are arranged inside the semi-monoblock housing compactly.
3. In response to customers request, unique and original circuits including special functions; for instance, straight traveling, swing priority, highly pressurized traveling, confluence and differential circuit, are possible.

model	KMX13	KMX15	KMX19	KMX32
max. pressure MPa(kgf/cm ²)	34.3 (350)			
rated flow L/min	130	240	240	360

Multiple control valves

•MW series



1. The MW (P) series multiple valves are of sectional type with several directional control valves assembled in one unit. They include relief valves, load-check valves, etc.
2. These multiple valves have three kinds of sections of parallel, series, and tandem circuits. Accordingly, they are applicable to many hydraulic circuits.

model	MW(P)25	MW(P)28
max. pressure MPa(kgf/cm ²)	34.3 (350)	
rated flow L/min	240	350

Multiple control valves

•KML series



The multiple control valve has been developed for the wheel loader. The simultaneous control of the boom and the bucket operation is smoothly executed.

model	KML22	KML28	KML35
max. pressure MPa(kgf/cm ²)	25 (255)		
max. flow L/min	200	315	600

Valves

Proportional multiple control valves

•KMC series



1. The KMC series proportional multiple control valves are applicable to various industrial vehicles such as fork-lift truck, manlift etc.
2. The internal pilot system eliminates external pilot pressure sources.
3. Parallel or tandem circuit is available on request.

max. pressure		MPa(kgf/cm ²)		24.5(250)	
max. flow		L/min		70	
proportional solenoid	rated current	A	0.7	1.6	
	coil resistance	Ω	17.5	3.2	

Proportional multiple control valves

•KMC10L series



1. The proportion multiple control valve has been developed for the battery type fork lift based on KMC10.
2. The leakage has been reduced to 1/10 in comparison with KMC10. Natural subsidence and natural inclination while the fork is stopped have been substantially improved.
3. In comparison with KMC10, the pressure loss has been substantially reduced.

max. pressure		MPa(kgf/cm ²)		24.5(250)	
max. flow		L/min		70	
proportional solenoid	rated current	A	0.7	1.6	
	coil resistance	Ω	17.5	3.2	

Proportional multiple control valves with pressure compensator

•KMP series



1. The KMP Series proportional multiple control valves with pressure compensator are applicable to electrical control of various industrial vehicles.
2. The internal pilot system eliminates external pilot pressure sources.
3. In case of emergency, manual operation is available by the attached lever.

max. pressure		MPa(kgf/cm ²)		30.9(315)	
max. flow		L/min		80 (P,T port)	
max. controlled flow		L/min		70 (A,B port)	
proportional solenoid	rated current	A	0.7	1.6	
	coil resistance	Ω	17.5	3.2	

Pilot valves

•PV series



PV48K



PV48M



PV6P



PVD6P

1. PV series valves are pressure-reducing type pilot valves to simultaneously control spools of multiple control valves and the tilting angle of variable displacement pumps and so forth.
2. The operational torque can be reduced according to the customer's requirement (Patent registered), and the small operational force enables minute control.
3. Reduced pressure drop and quick response. (US PAT. No.6, 125, 886)
4. Ergonomic handle can contain 5 switches at the maximum.

model	PV48K	PV48M	PV6P	PVD6P
inlet pressure (max.) MPa(kgf/cm ²)	6.9 (70)			
output pressure MPa(kgf/cm ²)	0~2.9 (0~30)			
rated flow L/min	20	15	10	
main use	Excavator	Mini Excavator	Rough Terrain Crane	(Mini) Excavator
features	Joy stick type	Joy stick type compact	Bankable type compact	Pedal for propelling with damper

Pilot valves

•RCV series



1. Good anti-dust, splash-proof and durability construction (Patent registered).
2. Reduced pressure drop and quick response.
3. Our unique mechanism enables stable performance over a wide range of temperature.
4. Damping force depending on velocity is given at any position of the operating lever. (RCVD8C series)

inlet pressure (max.) MPa(kgf/cm ²)	9.8 (100)
output pressure MPa(kgf/cm ²)	0~4.4 (0~45)
rated flow L/min	10

Pilot valves

•TH40P series



TH40P



TH40PS

TH40P series is of a banked design, the number of the directional control valves to be incorporated can be changed as required, and they best suit applications to such industrial vehicles allowing small available mounting space as the operator's cabinet of a crane.

model	TH40P	TH40PS
inlet pressure (max.) MPa(kgf/cm ²)	9.8 (100)	
output pressure MPa(kgf/cm ²)	0~2.9 (0~30)	
rated flow L/min	20	

Valves

Solenoid-operated directional control valves

•KWE5K

Proportional pressure-reducing valves

•KDRDE5K



1. The KWE5K series valves are solenoid-operated directional control valves which work as on/off valves for various kinds of pilot circuits. They are the most suitable for industrial mobiles operated outdoors.
2. The KDRDE5K series valves are proportional pressure-reducing valves. They are mainly used for controlling spools of multiple control valves and tilting angles of variable displacement pumps.

max. supply pressure	MPa(kgf/cm ²)	8.8 (90)
max. back pressure (allowable pressure)	MPa(kgf/cm ²)	1 (10)
max. flow rate	L/min	10

Solenoid-operated directional control valve

•KWE5



1. Installation in small space is possible on account of monoblock construction.
2. Easy piping due to the provision of only one P port and one T port for all the valves.

max. pressure	MPa(kgf/cm ²)	port P.A	8.8 (90)
		port T	1 (10)
max. flow		L/min	16

Holding valves

•KHV/KHCV series



1. The usage of a poppet type holding part minimizes the leakage.
2. A relief valve is incorporated.
3. Position control of the poppet enables a fine control of flow rate. (KHCV series)

model		KHV		KHCV		
size		10	20	20	25	32
max. pressure	MPa(kgf/cm ²)	34.3 (350)		34.3 (350)		
	(A→B) L/min	100	280	150	250	330
rated flow leakage	(at 20cSt, 20MPa) cm ³ /min	5		5		

Steering control valves

•KVS

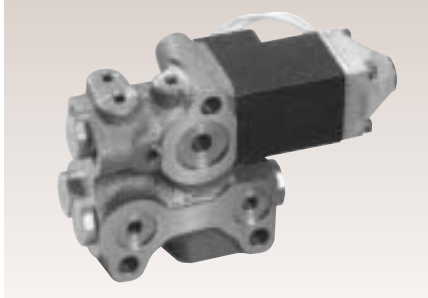


1. This is a control valve giving priority to the steering circuit.
2. Steering surplus oil is able to be used for other circuits with the carry-over.
3. Two methods of orbit-roll and hydraulic pressure pilot are possible.

model		KVS25	KVS32
max. pressure	MPa(kgf/cm ²)	21 (214)	32 (326)
max. flow rate	L/min	250	400

Flow dividing valves with sequence valve for farm machines

•KFDZ



- 1.KFDZ is a flow dividing valve with sequence valve.Necessary pressure at the divided flow can be maintained by operation of the built-in sequence valve even when the main circuit is unloaded.
2. As the maximum pressure of the branch flow is restricted by the reducing valve, this valve is especially suitable for controlling a hydraulic clutch.

max. pressure	MPa(kgf/cm ²)	19.6 (200)
max. flow	L/min	35

Proportional control valves for farm machines

•KTEM



This proportional control valve controls the flow rates into and from the actuator in proportion to the input currents to the solenoids irrespective of the working pressure.

model	KTEM8/20	KTEM8/30	KTEM8/60
max. pressure	MPa(kgf/cm ²) 20.6 (210)		
rated flow	L/min 20	L/min 30	L/min 60

Shockless valves

•KCLA6



1. This has a simple structure with a built in transmission case.
2. Excellent contamination-resistance has been realized.

max. pressure	MPa(kgf/cm ²)	2.9 (30)
max. flow	L/min	10

Control valve for rice-planting machine

•CV



1. This control valve is able to control the up-and-down operation of the setting out section.
2. The more compact size has been realized by the adoption of a rotary spool.

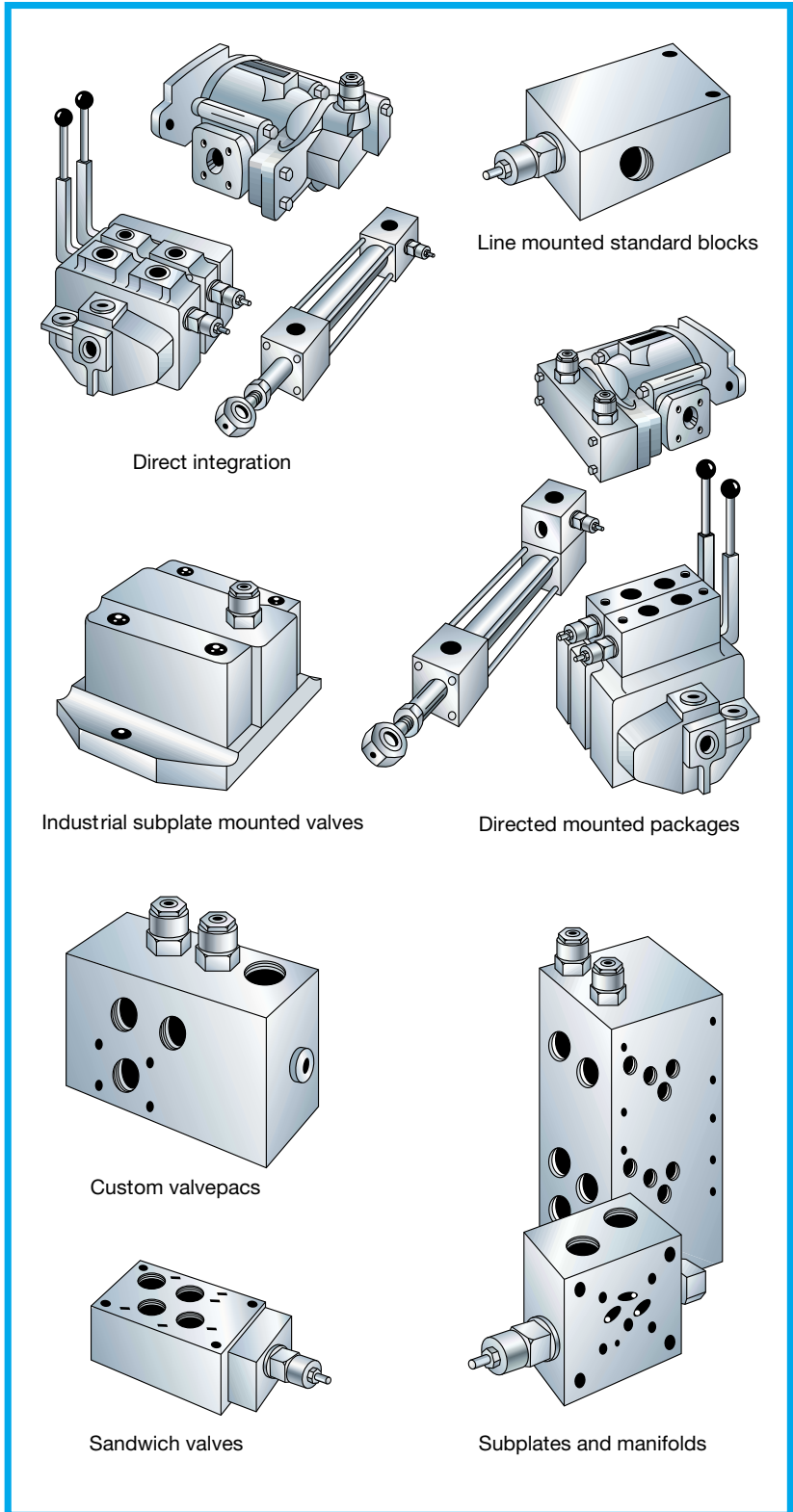
model	CV-8A
max. pressure	MPa(kgf/cm ²) 8.34 (85)
rated flow	L/min 15.6

•SUN cartridge valves

■Versatile application potential



Valve block



Line mounted standard blocks

Direct integration

Industrial subplate mounted valves

Directed mounted packages

Custom valvepacs

Sandwich valves

Subplates and manifolds

Shandong Topkit Construction Machinery Equipment Co., Ltd., is a high-tech company specialized in the manufacturing and supplying for hydraulic pumps, valves, motors, reducers, gearboxes, etc.

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