

Swash-plate Type Axial Piston Pump K3VL Series

For use in potentially explosive atmosphere



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Applications/Product Usage

The K3VL Series for use in Potentially Explosive Atmospheres

The ATEX directive 2014/34/EU specifies the necessary safety requirements for products intended to be used in potentially explosive atmospheres.

The K3VL ATEX range meet the requirements as stated in BS EN ISO 80079-36:2016 to operate within the areas and zones as indicated by the marking below.



Please refer to document BS EN ISO 80079-36:2016 for details.

The following must be taken into consideration before use.

- The operating condition of the products shown in this catalog varies depending upon each application. Therefore, the product suitability must be judged by the designer of the hydraulic system and/ or the person who finalizes the technical specifications of the machine after analysis and testing. The product specification shall be determined based on the latest catalog and technical documents. The system must be designed taking into account the possibility of machine failure to ensure that all safety, warning, and application requirements are met.
- 2. For the proper use of the products, descriptions given in the SAFETY PRECAUTIONS must be observed.
- 3. The technical information in this catalog represents typical characteristics and performance of the products as of the published date.

- 4. If the intended use of the products is included in the following, please consult with Kawasaki in advance.
 - Use of the product in operating conditions or environments other than those described in the technical documents.
 - (2) Use of the product in the nuclear sector, aviation sector, medical sector, and/or food sector.
 - (3) Use of the product in applications which may cause substantial harm to others and their property, and especially in applications where ensuring safety is a requirement.
- 5. The information described in this catalog is subject to change without notice. For the latest information, please contact Kawasaki or visit us at www.kpm-uk.co.uk
- 6. KPMUK shall not be held responsible for failing to correctly install or maintain the products supplied. It is the user's responsibility to ensure that the products contained within this datasheet are installed correctly and only used within the environments stated on nameplate coding.

Safety Precautions

Before using the product, you MUST read this catalog and MUST fully understand how to use the product. To use the product safely, you MUST carefully read all Warnings and Cautions in this catalog.

1. Cautions related to operation



- Use the personal protective equipment to prevent injury when the product is in operation.



- Some components are heavy. Handle the product carefully not to hurt your hands and lower back.



- Do not step on, hit or drop, or apply strong force to the product, as these actions may cause operation failure, product damage, or oil leakage.



- Wipe off any oil on the product or the floor completely, as oil can create slippery conditions that may cause drop of the product and personal iniury.

2. Warnings and cautions related to installation and removal of the product



- Installation, removal, piping, and wiring must be done by a qualified technician.



- Make sure that the hydraulic power unit is turned off and that the electric motor or engine has completely stopped before starting installation or removal. You must also check that the system pressure has dropped to zero.



- Make sure that the power source is turned off before installing electric components to reduce the risk of electric shock.



- Clean the threads and the mounting surface to prevent damage or oil leakage. Inadequate cleaning may cause insufficient torque and broken seals.



- Use the designated bolts and fasten them with prescribed torque when installing the product. Use of undesignated bolts, and excessive or insufficient tightening torque may induce operation failure, damage, or oil leakage.



- Ensure pump is earthed.



- System must be fitted with an Atex approved temperature sensor and cut out switch such that in catastrophic failure power unit is shut down. (Fitted by customer).

3. Warnings and cautions for operation



- Always equip the product with explosion or ignition protection if it is used in potentially explosive or combustible atmospheres.



- Shield rotary parts, such as the motor and pump shaft, to avoid injury.



- Stop operation immediately, and take proper measures when the abnormality such as washing unusual noise, oil leakage, and smoke is found. Continuing operation under such condition may bring about damage, a fire hazard, or injury.



- Make sure that all pipes, hoses, and connecting points with pipes or hoses, are correctly connected and tightened before starting operation.



- Use the product under the operating conditions and limitations described in the catalog, drawings, and specification sheets.



- Do not touch the product in operation. to reduce the risk of skin burn.



- Use the proper hydraulic oil and maintain the filtration at the recommended level to prevent premature wear and damage.



- The pump unit is not intended to be used as a safety device for the system and an ATEX approved pressure relief valve should be fitted by the system designer.



- It is the users responsibility to ensure that suction pressure is mointored at all times.

4. Cautions related to maintenance



Never modify the product without approval from Kawasaki.





- Keep the product clean and dry when storing or transporting.



- The seals may need to be replaced if the product has been stored for an extended period of time.



- Making adjustments of this product will result in the warranty being null and void.



- A regular maintenance and overhaul schedule should be followed based on bearing life

Handling Precautions

1. Operating Fluid and Temperature Range

1) Operating Fluid

Values shown in this catalog are based upon using mineral oil based anti-wear hydraulic fluid. To ensure optimal performance use of mineral oil based anti-wear hydraulic fluid is recommended.

2) Viscosity and temperature range

To minimize both oil and seal deterioration, a maximum operating temperature of 60°C should be considered. Please note that the regulator may become slow to respond when operating at low temperatures (below 20°C) in extreme cold environments. At such low temperature it is strongly suggested that a warm up cycle is introduced until an operating temperature of 20°C is achieved.

	Normal operating range			
Viscosity [mm ² /s(cSt)]	10 to 200	10 to 1,000		
Fluid temperature [°C (°F)]	-20 to +80 (-	4 to +176)		



2. Filtration and Contamination Control

1) Filtration of working oil

The most important means to prevent premature damage to the pump and associated equipment and to extend its working life, is to ensure that hydraulic fluid contamination control of the system is working effectively.

This begins by ensuring that at the time of installation that all piping, tanks etc. are rigorously cleaned in a sanitary way. Flushing should be provided using an off line filtration system and after flushing the filter elements should be replaced.

2) Suggested acceptable contamination level

The relationship between contamination level and pump life is very difficult to predict as it depends on the type and nature of the contaminant present in the system. Sand or Silica in particular, due to its abrasive nature, does significantly reduce the expected life of a pump. Based on the precondition that there is no significant presence of Silica type substances then a minimum Cleanliness level of -/18/15 ISO 4406 or SAE AS 4059E Table 1 Class 9 (NAS 1638 Class 9).

3. Drive Shaft Coupling

Alignment between the prime mover and the pump shaft should be within 0.05 mm TIR*. In case the pump is directly coupled to the engine flywheel, use a flexible coupling.

*TIR = Total Indicator Reading



4. Oil Filling and Air Bleeding

1) Pump case filling

Be sure to fill the pump casing with oil through the drain port, filling only the suction line with oil is totally in-sufficient. The pump contains bearings and high-speed sliding parts including pistons with shoes and a spherical bush that need to be continuously lubricated. Part seizure or total premature failure will occur very quickly if this procedure is not rigidly followed.

2) Air bleeding

Run the pump unloaded for a period to ensure that all residual air within the system is released.

3) Long term out of usage

It is undesirable to leave the pump out of use for a long period e.g. a year or more. In such a situation it is recommended that the pump is run for a short period on a more frequent basis even if it is just unloaded. With regard to a pump held in storage then rotating the shaft on a frequent basis is sufficient. If the pump is left out for more than the suggested time it will require a service inspection.

5. Earthing

It is the end users responsibility to ensure that for use in explosive atmospheres the K3VL is earthed. A suitable earthing point would be the eye bolt position.



6. Drain Piping

1) Installation of drain line

It is the preferred option to mount the pump with the case drain piping initially rising above the pump before continuing to the tank. Do not connect the drain line to the inlet line.



Cautions

- A) Inlet and drain pipes must be immersed by 200 mm minimum from the lowest level under operating conditions.
- **B)** Height from the oil level to the centre of the shaft must be within 1 meter maximum.
- **C)** The oil in the pump case must be refilled when the pump has not been operated for one month or longer.

The uppermost drain port should be used and the drain piping must be larger in size than the drain port to minimise pressure in the pump case. The pump case pressure must not exceed 1 bar as shown in the illustration below. (Peak pressure must never exceed 4 bar.)



2) Size of drain hose or drain pipe

The internal bore size of the drain hose or drain pipe must be larger than that of the drain port. Arrange the drain line as short as possible.

7. Mounting the Pump Above the Tank



8. Mounting the Pump Vertically (shaft up)

Note: Both the Tair and one case drain port must be used.

For applications requiring vertical installation (shaft up) please remove the Tair bleed plug and connect piping as shown in the illustration below.

When installing the pump in the tank and submerged in the oil, open the drain port and Tair bleed port to provide adequate lubrication to the internal components. See illustration [A]. If required pumps can be supplied unpainted to avoid the risk of contaminating fluid. Please contact KPMUK.

The oil level in the tank should be higher than the pump-mounting flange as shown in illustration [A] below. If the oil level in the tank is lower than the pump mounting flange then forced lubrication is required through the Tair bleed port $1 \sim 2$ l/min.

If the drain or Tair bleed piping rise above the level of oil (see illustration [B]). Fill the lines with oil before operation, then confirm pump case pressure is within specification during commissioning. When installing the pump outside the tank, run piping for the drain and Tair bleed ports to tank (see illustration [C])



9. Shaft Loading and Bearing Life

Although K3VL pumps are equipped with bearings that can accept some external thrust and radial forces, application of such loads will affect bearing life. Depending on the load magnitude, the load position, and the load orientation, bearing life may be significantly reduced.

10. Maintenance Schedule

To prevent malfunction the bearing should be replaced at regular intervals based on pump duty. See page.... for predicted bearing life.

11. Warning

System must be fitted with an Atex approved temperature sensor and cut out switch such that in catastrophic failure power unit is shut down. (Fitted by customer).

Conversion Factors, Formula and Definition



Conversion Factors

	Formula	Note
Displacement	1 cm ³ = 0.061 in ³	
Pressure	1 MPa - 145 psi	
Flow	1 L/min = 0.264 gpm	US gallon
Torque	1 Nm = 0.74 lb ft	
Power	1 kW = 1.341 hp	
Weight	1 kg = 2.205 lb	



Formula

	Metric system		Imperial system	
Output flow	$Q = q \times N \times \eta_{v} / 1000$	L/min	$Q = q \times N \times \eta_v / 231$	gal/min
Input torque	$T = q \times \Delta P / 2 \prod / \eta_m$	Nm	$T = q \times \Delta P / 24 \Pi / \eta_m$	lbf ft
Input power	L = T x N / 9550 = Q x Δ P / 60 / η_{t}	kW	L = T x N / 5252 = Q x Δ P / 1714 / η_{t}	hp

Definition

q	= Pump displacement	cm ³ (in ³)
L	= Input power	kW (hp)
Ν	= Speed	min-1 (rpm)
ΔP	= P _d - P _s	MPa (psi)
P _d	= Pump delivery pressure	MPa (psi)
Ps	= Pump suction pressure	MPa (psi)
PL	= Load sensing pressure	MPa (psi)
P _{dr}	= Pump case pressure	MPa (psi)
P _f	= Power shift pressure	MPa (psi)
P _{sv}	= Servo pressure	MPa (psi)
Т	= Input torque	Nm (lbf-ft)
T _{max}	= Maximum input torque	Nm (lbf-ft)
$\eta_{_{ee}}$	= Pump volumetric efficiency	
$\eta_{ m m}$	= Pump mechanical efficiency	
$\eta_{ m t}$	= Pump total efficiency	

MEMO

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K3VL Series (Ex)

Swash-plate Axial Piston Pump

For use in potentially explosive atmosphere



General Descriptions

The K3VL series Swash Plate Type Axial Piston Pumps are designed to satisfy the marine, mobile and industrial markets where a medium/high pressure variable displacement pump is required.

K3VL pumps are available in nominal displacements ranging from 28 to 200 cm³/rev with various pressure, torque limiter, and combination of load sensing control options.

Pump Type	Capacity (cm ³ /rev) Rated pressure (bar)		Maximum self-priming speed (rpm)
K3VL28	28	320	3,000
K3VL45	K3VL45 45 320		2,700
K3VL80	80	320	2,400
K3VL112	112	320	2,300
K3VL140	140	320	2,200
K3VL200 200		320	1,900
K3VL200H	200	320	2,200



II 2 G Ex h IIB T4 Gb II 2 D Ex h IIIB T135°c Db

- Features
- 320 bar continuous pressure rating
- 350 bar peak pressure

High overall effciency (>90% peak)

Exceptional self priming capability

SAE and ISO mounting and shaft

Excellent reliability and very long service life

High power to weight ratio

Numerous control options

Highly responsive controls

Low pulsation and noise emissions

High speed version with integral impeller (K3VL200H)

1-1 Pump Options

1	2		3	4	5	6	7	8	9		10	11	12	13
K3VL	200	/	В	-	1	Ν	R	М	М	-	LO	/1	-H**	L500

1. K3VL Series Pump		Preferred product range
K2V/L Sorias Variable Displacement		AVAILABLE
Axial Piston, Open Loop Pump		NOT AVAILABLE IN COUNTER CLOCKWISE
	0	PLEASE CONTACT KPM UK
	-	NOT AVAILABLE

2. Pump Size							
Maximum Displacement cm ³ /rev (H-Impeller)	28	45	80	112	140	200	200H

3. De	sign Series							
В	Series	-						•
С	Series		-	-	-	-	-	-

4. Hydraulic Fluid Type								
-	Mineral Oil, Nitrile seal + Viton Shaft Seal							
V	Viton Seal Throughout	0	0				0	0
W	Water Glycol (Nitrile Seal & Nitrile Shaft Seal) *1	-	0	0	0	0	-	-

5. Cir	cuit Type				
1	Open Circuit				

6. Th	rough Drive & Porting							
0	Without Through Drive							-
A	SAE-A Through Drive, Side Ported							
В	SAE-B Through Drive, Side Ported							
BB	SAE-BB Through Drive, Side Ported	-						
С	SAE-C, 2 Bolt, Through Drive, Side Ported	-	-					
C4	SAE-C, 4 Bolt, Through Drive, Side Ported	-	-					
CC	SAE-CC, 2 Bolt, Through Drive, Side Ported	-	-	-				
D	SAE-D Through Drive, Side Ported	-	-	-				
E	SAE-E Through Drive, Side Ported	-	-	-	-	-		
R	Single Pump, Rear Ported	-					-	-
N	Single Pump with Steel Cover, Side Ported							

7. Dir	rection of Rotation				
R	Clockwise Rotation				
L	Counter Clockwise Rotation				

*1 : Non through drive only

1-1 Pump Options

1	2		3	4	5	6	7	8	9		10	11	12	13
K3VL	200	/	В	-	1	Ν	R	Μ	Μ	-	LO	/1	-H**	L500

8. Mou	nting Flange & Shaft	28	45	80	112	140	200	200H
К	SAE Key & Mount							-
М	ISO Key & Mount	-					-	-
S	SAE Spline & Mount							
R	SAE-C Spline & SAE-D Mount	-	-	-			-	-
С	SAE-C Spline & SAE-C2 Mount	-	-	-			-	-
Х	SAE-C Key & SAE-C2 Mount	-	-	-			-	-
Y	SAE-CC Key & SAE-C2 Mount	-	-	-			-	-
W	SAE-CC Spline & SAE-C2 Mount	-	-	-			-	-
F	SAE-F Spline & SAE-E Mount	-	-	-	-	-		
	SAE-B Spline & SAE-B, 2 Bolt Mount	-		-	-	-	-	-
	SAE-CC Spline & SAE-D, 4 Bolt Mount	-	-	-			-	-
9. Port	ing Threads							
М	Metric Threads							
S	UNC Thread (Not Available with 'M' ISO Key Shaft & Mount)							
10 00	rulator Typo							

10. Reg	gulator Type				1
LO	Load Sense + Pressure Cut-Off (With LS Bleed)				
L1	Load Sense + Pressure Cut-Off (With LS Bleed Blocked)				
PO	Pressure Cut-Off				

1-1 Pump Options

1	2		3	4	5	6	7	8	9		10	11	11 12		1	.3	
K3VL	200	/	В	-	1	Ν	R	Μ	Μ	-	LO	/1		-H**	L5	00	
11. Add	litional Co	ontro	l Optio	ns							1 1						
Blank	Without	Addi	tional (Contro	ol						-	•					
/1	Torque L displace	.imite ment	er (with contro	n prov nl)	ision	for tor	que lin	niter o	r		-	•	•	•	•	•	•
/2	Torque L	.imite	r & Hy	drauli	ic Pov	ver Shit	ft				-	-					
12. Tor	12. Torque Limiting & Displacement Control																
Blank	Blank Without Additional Control								-								
-00	Blanking	; Plate	e (only	for '/	1' typ	e)					-						•
-S#	Low Sett	ing R	ange (a	availa	ble fo	r '/1' tỵ	ype or	ıly)			-	•					
-L#	Low Sett	ing R	ange (a	availa	ble fo	r '/1' tỵ	ype or	ıly)			-	•					
-M#	Medium	Setti	ng Ran	ge (av	ailabl	e for '/	'1' typ	e only)		-	•					
-H#	High Set	ting F	Range ((availa	able fo	or all '/	1', '/2'	& '/3'	option	s)	-	•					
-Q0	-Q0 Pilot Operated Displacement Control								-	•							
13. Spe	13. Special Suffix L500																
All stan will be	andard ATEX pumps will be given L500 suffix, a special suffi e designated if any special settings required								fix		•	•	•	•	•	•	

2 Technical Information

2-1 Specifications

	Pump Model		K3VL28	K3VL45	K3VL80	K3VL112	K3VL140	K3VL200	K3VL200H			
Ca	pacity	cc/rev	28	45	80	112	140	200	200			
Pressure	Rated	bar	3	20		•	320	•	•			
ratings	Peak *1	bar	3	50			350					
Speed	Self prime *2	rpm	3,000	2,700	2,400	2,200	2,200	1,900	2,200			
ratings	Max. boosted*3	rpm	3,600	3,250	3,000	2,700	2,500	2,200 *5	2,200			
Minimum o	perating speed	rpm		600								
Case drain Max.		bar		1								
pressure Peak		bar				4						
Weight		kg	20	27	35	65	65	95	130			
Case fi	II capacity	L	0.6	0.6	0.8	1.5	1.5	3.0	3.2			
Temper	ature range	٥C				-20 to 80						
Viscos	sity range	cSt	10 to 1,000 - viscosities greater than 200 will require a no load warm up									
Maximu	um contamination	n level			ISC	0 4406 18/2	15					
		Mounting	2 - SA	bolt E B	2 - bolt SAE C	4 - bolt SAE D		4 - SA	bolt E E			
Standard flange	dard SAE mounting		SAE B	SAE B-B	SAE C	SAE D		SAE D				
		Shaft	spline or key	spline or key	spline or key	spline or key		spline or key	spline			
Optional S	SAE mounting	Mounting		-		2 - SA	bolt E C	-				
flange	and shaft	Shaft	-	SAE B spline	-	SAE C spline	or C-C or key	SA sp	Æ F line			
Standard	ISO mounting	Mounting	-	2 bolt ISO 100	2 bolt ISO 100	4 b ISO	olt 180		-			
flange	and shaft	Shaft	-	ISO 25mm key	ISO 25mm key	ISO 4 ke	5mm ey		-			
Inpu	t shaft torque rat	ting			refer to	, table on pa	age 16					
		SAE A	61			12	3					
		SAE B	155	290			340					
		SAE B-B	-	290			550					
Through drive torque rating (Nm)	SAE C		-	400	70	00	9	90				
		SAE C-C		-		70	00	9	90			
		SAE D		-		70	00	990				
		SAE E *4			-			990				

*1 : The instant allowable surge pressure as defined by DIN24312. Life and durability of the pump will be affected.

*2 : Steady state inlet pressure should be greater or equal to 0.9 bar absolute.

*3 : Steady state inlet pressure should be greater or equal to 1.3 bar absolute. The maximum boost pressure should not exceed 10 bar.

*4 : SAE E through drive uses the SAE D shaft.

*5 : Please contact KPM UK to operate at speeds of above 1900 rpm for design suffix to be created.

2-1 Specifications (cont)

Input Shaft Torque Ratings

SAE Splined Shafts								
Shaft Designation	SAE B	SAE B-B	SAE C	SAE C-C	SAE D/E	SAE F		
Input Torque Rating (Nm)	171	272	552	925	1,470	1,950		

SAE Keyed Shafts								
Shaft Designation	SAE B	SAE B-B	SAE C	SAE C-C	SAE D/E			
Input Torque Rating (Nm)	145	230	430	700	1,250			

ISO Keyed Shafts									
Shaft Designation	ISO 25mm	ISO 32mm	ISO 45 mm						
Input Torque Rating (Nm)	230	430	980						

Note:

The shaft surface will have a finite life due to wear unless adequate lubrication is provided.

#1 Maximum allowable shaft torques are based on achieving an infinite life for a coupling assembly that is lubricated and completely clamped and utilises the full spline/key length as engagement.

The following points therefore need to be fully considered:-

i) Lubrication of shaft couplings should be in accordance with the coupling manufacturers instructions.

ii) The maximum allowable input shaft torque is based on ensuring an infinite life condition by limiting the resultant combined shaft bending and torsional stress.

iii) This allowable input shaft torque can be further increased dependant on the resultant surface stress at the spline interface which is highly dependant on coupling selection and the provision of adequate spline lubrication.

If you have an application that requires higher input torque please consult KPM UK.

#2 Allowable through drive torques are based on the achieving an infinite life for a fully lubricated coupling and full spline engagement with a mineral oil based anti-wear hydraulic fluid.

2-1 Specifications (cont)

Notes:

Rated Pressure

Pressure at which life and durability will not be affected.

Peak Pressure

The instant allowable surge pressure as defined by BS ISO 2944:2000. Life and durability however will be shortened.

Maximum Self Priming Speed

Values are valid for an absolute suction pressure of 0.9 bar. If the flow is reduced and the inlet pressure is increased the speed may also be increased.

Maximum Boosted Speed

Values stated are the absolute maximum permitted speed for which an increased inlet pressure will be required.

Weight

Approximate dry weights, dependant on exact pump type.

Hydraulic Fluid

Mineral anti wear hydraulic fluid - for other fluid types please consult KPM UK.

Viscosity Range

If viscosity is in range 200 to 1,000 cSt, then warming up is necessary before commencing full scale running.

2-2 Technical Data (cont)

Working Fluid Types

Anti-Wear Type Hydraulic fluid

It is generally recommended to use an anti-wear hydraulic fluid like mineral oil when the operating pressure exceeds 210 bar.

Fire-resistant Fluids

Some kind of fire-resistant fluids require special materials for seals, paint and metal finishing. Please consult KPM UK and provide details of the particular fluid specification and the working conditions so that any special requirements can be ascertained.

In general, fire-resistant fluids have a low viscosity index and their viscosity also changes significantly with operating temperature and service life. For this reason, the circuit should be provided with an adequately sized cooler or forced cooling so that temperatures can be stabilised. Due to the inherent water content of some of these fluids the minimum allowable suction pressure will be higher than that of an equivalent mineral oil and so needs to be fully evaluated by KPM UK. The following table provides an overview of the precautions and characteristics that can be expected with these types of fluids.

Fluid Type Parameter	Mineral Oil	Water Glycol
Maximum Pressure (bar)	320	210
Recommended Temperature Range (deg C)	20 ~ 60	10 ~ 50
Cavitation susceptability	\bigcirc	\bigtriangleup
Expected life expectancy compared to mineral oil	100%	20-80%



Piping & Circuit Checking

Check to see that the piping and full hydraulic circuit is completed and that any gate valves etc. are open.

Direction of Rotation

Check to ensure that direction of rotation is correct and that the inlet and delivery lines are connected correctly.

Start Up

Jog start the motor and check once more for correct rotation. Run the pump unloaded for a period to ensure that all residual air within the system is released. Check for external leakage, abnormal noise and vibrations.

End of Life

The pump unit, hydraulic fluid and packaging must be disposed of carefully to avoid pollution to the environment. The pump unit must be completely empty upon disposal, it must be disposed of according to national regulations and you must also follow safety information for disposal of the hydraulic fluid.

All individual parts of the pump unit must be recycled. Separate the pump unit parts according to: cast parts, steel, aluminium, non-ferrous metal, electronic waste, plastic, and seals.

recommended // usable (higher density)

K3VL PUMPS

2-3 Performance Data

K3VL28







Noise level measured in an anechoic chamber where distance from microphone to pump is 1 metre. Measurement accuracy +/- 2 dB(A)

Performance Note:

- 1,500 rpm
- ISO VG46 mineral oil
- 50°C oil temperature
- Atmospheric inlet condition (0 bar)

2-3 Performance Data (cont)

K3VL45

Pump Efficiency (%)











Noise level measured in an anechoic chamber where distance from microphone to pump is 1 metre. Measurement accuracy +/- 2 dB(A)

Performance Note:

- 1,500 rpm
- ISO VG46 mineral oil
- 50°C oil temperature
- Atmospheric inlet condition (0 bar)

K3VL PUMPS

2-3 Performance Data (cont)

K3VL80







Noise Levels



Noise level measured in an anechoic chamber where distance from microphone to pump is 1 metre. Measurement accuracy +/- 2 dB(A)

Performance Note:

- 1,500 rpm
- ISO VG46 mineral oil
- 50°C oil temperature
- Atmospheric inlet condition (0 bar)

2-3 Performance Data (cont)

K3VL112

Pump Efficiency (%)





Noise Levels



Noise level measured in an anechoic chamber where distance from microphone to pump is 1 metre. Measurement accuracy +/- 2 dB(A)

Performance Note:

- 1,500 rpm
- ISO VG46 mineral oil
- 50°C oil temperature
- Atmospheric inlet condition (0 bar)

K3VL PUMPS

2-3 Performance Data (cont)

K3VL140







Noise Levels



Noise level measured in an anechoic chamber where distance from microphone to pump is 1 metre. Measurement accuracy +/- 2 dB(A)

Performance Note:

- 1,500 rpm
- ISO VG46 mineral oil
- 50°C oil temperature
- Atmospheric inlet condition (0 bar)

2-3 Performance Data (cont)

K3VL200

Pump Efficiency (%)







Noise level measured in an anechoic chamber where distance from microphone to pump is 1 metre. Measurement accuracy +/- 2 dB(A)

Performance Note:

- 1,500 rpm
- ISO VG46 mineral oil
- 50°C oil temperature
- Atmospheric inlet condition (0 bar)

2-3 Performance Data (cont)

Response times

Pressure Cut-off Dynamic Response

50 to 280 bar

	t _{off-stroke}	t _{on-stroke}	
Unit	mS		
K3VL28	20	40	
K3VL45	60	100	
K3VL80	95	170	
K3VL112/140	90	140	
K3VL200/H	110	210	

Test conditions:

Pump speed
Inlet Condition
Oil Type
Oil Temperature
Compressed oil volume

= 1800 rpm = 0 bar = ISO VG46 = 50°C = 5 litres

220 to 280 bar

	t _{off-stroke}	t _{on-stroke}	
Unit	mS		
K3VL28	20	40	
K3VL45	60	70	
K3VL80	100	110	
K3VL112/140	100	120	
K3VL200/H	110	220	
Test conditions: Pump speed	= 1800 rpm		

Pump speed	= 1800 rpm
Inlet Condition	= 0 bar
Oil Type	= ISO VG46
Oil Temperature	= 50°C
Compressed oil volume	= 5 litres

Load Sensing Dynamic Response 20 to 280 bar

	t _{off-stroke}	t _{on-stroke}		
Unit	mS			
K3VL28	20	70		
K3VL45	20	115		
K3VL80	55	155		
K3VL112/140	55	195		
K3VL200/H	65	190		
Test conditions:				

Pump speed Inlet Condition Oil Type Oil Temperature Compressed oil volume

= 1800 rpm
= 0 bar
= ISO VG46
= 50°C
= 5 litres







Note:

The response values shown in the table above are typical of those experienced in the laboratory. Actual reposnse time will vary with different hydraulic circuits.

2-4 Bearing life calculation

The graphs below show the expected L10 life of the K3VL pump bearings.

These graphs are to be used to by the system designer to calculate a regular maintenance and overhaul schedule.

The graphs show theoretical bearing lives and do not consider adjustment factors, for example:- fluid cleanliness "x", fluid temperature "x" and fluid quality "x". It is the system designer's responsibility to apply adjustment factors to the L10 bearing lives shown within the graphs in order to establish the required actual maintenance and overhaul schedules.

eg. L10 10000 hrs multiplied by adjustment factor "x" multiplied by adjustment factor "x" and so on.....

Please note: These bearing lives relate to mineral oil only. Please see page 18 for Water Glycol adjustment factor.



2-4 Bearing life calculation (cont)



2

2-5 Radial Loading Capacity

No axial shaft loading posible, radial loading is achievable but in specific orientation:-

Radial shaft loading can be allowed provided that its orientation is such that the front bearing takes the additional load (see diagram below).

Note: In this case bearing life will be reduced.



not acceptable

2-6 Functional Description of Regulator

Key to Hydraulic Circuit Annotations			
Annotations	Description		
А	Main pump delivery		
A1	Auxillary pump delivery		
B1	Gear pump inlet		
В	Main pump inlet		
Dr	Drain		
Pc	Remote pilot port, Pressure compensator		
PI	Pilot port displacement control		
PL	Load sense port		
Tair	Air bleed port		
P _f	Hydraulic power shift		
P _{sv}	Servo assist		



Regulator Code	Control Curves	Hydraulic Circuit
L0/1 Load Sense and Pressure Cut-off with Torque Limiting In response to a rise in delivery pressure the swashplate angle is decreased, restricting the input torque. This regulator prevents excessive load against the prime mover. The torque limit control module is comprised of two springs that oppose the spool force generated by the system pressure. By turning an outer and inner spring adjustment screw, the appropriate input torque limit can be set.	Q P	

2-6 Functional Description of Regulator (cont)

Regulator Code	Control Curves	Hydraulic Circuit
/2-** Hydraulic Power Shift with Load Sensing This function, as with the /1 type can be used with Pressure compensation, Load sense and additional control options such as unloader functions. The control has the same function as standard torque limit option. In response to a rise in delivery pressure the swashplate angle is reduced, restricting input torque. However if a pilot pressure is applied to the Pf port on the regulator, the torque setting can be further reduced proportionally to the pilot pressure applied. The input torque can be reduced by approximately 40%.	Q Q Power shifted value P	Pr PL PL R4 *1
PO Pressure Cut-off As system pressure rises to the cutoff setting, the swashplate de-strokes to prevent the system pressure from exceeding the compensator setting. It is imperative that a safety relief valve be installed in the system. Note: By connecting the Pc port to a remote pressure control, variable pump pressure control can be achieved.	QP	Pc

2-6 Functional Description of Regulator (cont)





2-7 Torque Limiter Settings

The following tables show the power limitation at various electric motor speeds for a specific frame size of pump. When selecting a control setting please ensure that the power limitation of a particularly sized electric motor to your national standard is not exceeded.

K3VL45				
KW	970	1150	1450	1750
3.7	S3	S4	-	-
5.5	L3	S1	S3	S4
7.5	L1	L2	L4	S2
11	M1	М3	L1	L2
15	H3	H4	M2	M4
18.5	-	H2	H4	M2
22	-	-	H3	H4
30	-	-	-	H1
37	-	-	-	-
45	-	-	-	-
55	-	-	-	-
75	-	-	-	-
90	-	-	-	-
110	-	-	-	-
132	-	-	-	-

K3VL80					
KW	970	1150	1450	1750	
3.7	-	-	-	-	
5.5	S2	S4	-	-	
7.5	L6	S1	S3	-	
11	L2	L4	L6	S1	
15	M4	L1	L3	L5	
18.5	M1	М3	L1	L3	
22	H3	M1	M4	L1	
30	H1	H2	H4	M2	
37	-	-	H2	H4	
45	-	-	H1	H2	
55	-	-	-	H1	
75	-	-	-	-	
90	-	-	-	-	
110	-	-	-	-	
132	-	-	-	-	

	K3VL112										
KW	970	1150	1450	1750							
3.7	-	-	-	-							
5.5	-	-	-	-							
7.5	S5	S6	-	-							
11	S1	S3	S5	S6							
15	L3	L4	S2	S4							
18.5	M4	L2	L4	S2							
22	M2	M4	L3	L4							
30	H4	M1	М3	L1							
37	H2	H3	M1	М3							
45	-	H2	H4	M1							
55	-	-	H2	H4							
75	-	-	-	H1							
90	-	-	-	-							
110	-	-	-	-							
132	-	-	-	-							

	K3VL140										
KW	970	1150	1450	1750							
3.7	-	-	-	-							
5.5	-	-	-	-							
7.5	-	-	-	-							
11	S2	S4	-	-							
15	L6	S1	S3	-							
18.5	L3	L5	S1	S3							
22	L1	L3	L6	S1							
30	M2	М3	L2	L4							
37	H4	M1	М3	L2							
45	H2	H4	M2	М3							
55	-	H2	H4	M2							
75	-	-	H1	H3							
90	-	-	-	H1							
110	-	-	-	-							
132	-	-	-	-							

K3VL200										
KW	970	1150	1450	1750						
3.7	-	-	-	-						
5.5	-	-	-	-						
7.5	-	-	-	-						
11	-	-	-	-						
15	-	-	-	-						
18.5	S1	-	-	-						
22	L4	S1	-	-						
30	L2	L3	L5	S2						
37	М3	L1	L3	L5						
45	M1	М3	L2	L3						
55	H5	M1	М3	L2						
75	H1	H3	H6	M2						
90	-	H1	H4	H6						
110	-	-	H2	H4						
132	-	-	-	H2						

2-7 Torque Limiter Settings (cont)

Torque Limiter Control - Setting Table

K3VL		Prime Mover Input Torque (Nm)																													
size	30	36	41	46	49	53	61	73	82	91	100	107	121	146	154	163	182	200	216	246	298	307	367	409	450	492	540	610	618	711	752
45	S4	S3	S2	S1	L4	L3	L2	L1	Μ4	M3	M2	М1	Η4	Н3	H2	H1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
80	-	-	-	S4	S3	S2	S1	L6	L5	L4	L3	L2	L1	Μ4	М3	M2	М1	Η4	Н3	H2	H1	-	-	-	-	-	-	-	-	-	-
112	-	-	-	-	-	-	S6	S5	S4	S3	S2	S1	L4	L3	L2	L1	M4	M3	M2	M1	H4	H3	H2	Η1	-	-	-	-	-	-	-
140	-	-	-	-	-	-	-	-	-	S4	S3	S2	S1	L6	L5	L4	L3	L2	L1	М3	M2	M1	H4	H3	H2	Η1	-	-	-	-	-
200 & 200H	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	S2	S1	L5	L4	L3	L2	L1	M3	M2	M1	H6	H5	H4	H3	H2	H1

Note: Highlighted options show power shift

/2 Hydraulic Spring Setting		K3VL80				K3VL112			K3VL140				K3VL200(H)						
		H4	H3	H2	H1	H4	H3	H2	H1	H4	H3	H2	H1	H6	H5	H4	H3	H2	H1
	0	200	216	246	298	298	307	367	409	367	409	450	492	492	540	610	618	711	752
Pf	10	167	183	209	252	252	255	309	349	309	349	383	421	421	453	517	524	610	648
(bar)	20	138	152	175	210	210	208	256	292	256	292	322	356	356	374	432	439	517	553
	30	111	123	145	173	173	167	209	241	209	241	266	298	298	303	355	361	433	465

Power Shift Control - Setting Table

2-8 Installation

Eromo Sizo	Mome	Torsional Stiffness				
Fidille Size	I (kg.m²)	(N m/rad)				
K3VL28	2.09x10 ⁻³	8.36-10 ⁻³	2.20 x 10 ⁴			
K3VL45	3.85x10 ⁻³	1.54-10-2	3.59 x 10 ⁴			
K3VL80	7.30x10 ⁻³	2.92-10-2	4.83 x 104			
K3VL112	2.02x10 ⁻²	8.06-10-2	9.33 x 104			
K3VL140	2.02x10 ⁻²	8.06-10-2	9.33 x 104			
K3VL200	4.58x10 ⁻²	1.83-10-1	1.54 x 10⁵			
K3VL200H	4.58x10 ⁻²	1.83-10-1	1.54 x 10⁵			

Moment of Inertia and Torsional Stiffness

Through Drive Limitations

Pump over all length (LPX) (mm)								
Frame size	Single pump type N							
K3VL28	219							
K3VL45	244							
K3VL80	272							
K3VL112	307							
K3VL140	307							
K3VL200	359							
K3VL200H	424							

Frame size	Maximum Permisable Bending Moment
K3VL28	137
K3VL45	137
K3VL80	244
K3VL112	462
K3VL140	462
K3VL200	930
K3VL200H	930

2-8 Installation (cont)

Through Drive Limitations (cont)

	Pump approx weight (MPX)(Kg)								
Frame size	Single pump type N								
	Without Torque Limitor	With Torque Limitor							
K3VL28	20	na							
K3VL45	27	29							
K3VL80	35	37							
K3VL112	65	67							
K3VL140	65	67							
K3VL200	95	97							
K3VL200H	130	132							

Frame size	Pump CofG from mount (Lx) (mm)						
	Single pump type N						
K3VL28	115						
K3VL45	120						
K3VL80	130						
K3VL112	150						
K3VL140	150						
K3VL200	190						
K3VL200H	223						

Adaptor Kits Weights (MAX) & Width (LAX)								
Frame Size	Adaptor Kit	Weight (MAX) Kg	Width (LAX) mm					
	SAE 'A'	0	0					
K3VL28	SAE 'B'	2	20					
	SAE 'A'	0	0					
K3VL45	SAE 'B' & 'BB'	2	20					
	SAE 'A'	0	0					
K3VL80	SAE 'B' & 'BB'	3	20					
	SAE 'C', 'CC' & 'C4'	4	24.5					
	SAE 'A'	0	0					
K3VL112	SAE 'B' & 'BB'	3	25					
& 140	SAE 'C', 'CC' & 'C4'	5	30					
	SAE 'D'	10	43					
	SAE 'A'	1	6					
	SAE 'B' & 'BB'	8	25					
K3VL200	SAE 'C', 'CC' & 'C4'	8	30					
	SAE 'D'	10	38					
	SAE 'E'	15	38					

Apart from predefined maximum throughput limitations, one must also ensure that to prevent a possible excessive bending moment occurring that the maximum combined bending moment of the combination is not exceeded as determined in the following expression.



MPX = mass of pump [kg] LPX = length of pump [mm] Lx = distance of CofG from pump mounting face [mm] MAX = mass of adaptor kit [kg] LAX = width of adaptor kit [mm]

Bending Moment = ((L1.mP1) + (LA1'.mA1) + (LP2'.mP2) + (LA2'.mA2) + LP3'.mP3) +...)/102[Nm] ((L1.mP1) + (LP1+(LA1/2)).mA1 + (LP1+LA1+L2).mP2 + (LP1+LA1+LP2(LA2/2)).mA2) + (LP1+LA1+LP2+LA2).mP3) +....)/102 3 Dimensions

3-1 K3VL28 Installation

160

K3VL28 with Cut-Off / Load Sense Control (Clockwise Rotation)

Inlet and outlet ports reversed for counter clockwise roation.



160 187 (196)


Main SAE Flanged Ports

Des.	Port Name	Port Size	Tightening Torque (Nm)	Flange Threads		
UNF Thread	JNF Threaded Version ('S' in position 9 of model code)					
А	Delivery Port	SAE J518C Std pressure (code 61) $\frac{3}{4}$ "	40	4-¾-16UNC-2B x 18mm		
В	Suction Port	SAE J518C Std pressure (code 61) 1 $\ensuremath{^{\prime\prime}\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!$	60	4-1/16-14UNC-2B x 24mm		
Metric Versi	Metric Version ('M' in position 9 of model code)					
А	Delivery Port	SAE J518C Std pressure (code 61) $\frac{3}{4}$ "	57	M10 x 17		
В	Suction Port	SAE J518C Std pressure (code 61) 1 $\frac{1}{4}$ "	57	M10 x 17		

Auxillary Ports

Des.	Port Name Port Size		Tightening Torque (Nm)
SAE Version	('S' or 'K' in position 8 c	of model)	
Dr	Drain Port (x2)	3/4-16UNF-2B-14.3 (ISO 11926-1:1995)	98
P _L /P _C	Load Sensing Port Pressure Control Port	7/16-20UNF-2B-11 (ISO 11926-1:1995)	12
T _{air}	Air Bleeder Port	7/16-20UNF-2B-11.5 (ISO 11926-1:1995)	12
a1	Gauge Port	7/16-20UNF-2B-11.5 (ISO 11926-1:1995)	12

K3VL28 Shaft & Through Drive Options

Model Code Option 'K' Shaft



Through Drive SAE 'A'



Through Drive SAE 'B'



4 - M12 Depth 20

Model Code Option 'S' Shaft





K3VL28 Adaptor Kits



Cover Kit





SAE 'A' T/D Kit

Part Name	Qty	Cover Kit	SAE 'A' T/D Kit	SAE 'B' T/D Kit
T/D	-	29L8TN	29L3TA	29L3TB
O-Ring	1	Item 743	Item 743	Item 743
O-Ring	1	-	-	Item 742
Screw Hex SHC	4	-	-	Item 415
Screw Hex SHC	2	Item 402	-	-
Subplate	1	-	-	Item 317
Cover	1	Item 263	-	-
Coupling	1	-	Item 116	Item 116

3-2 K3VL45 Installation

K3VL45 with Cut-Off / Load Sense Control & Torque Limit Module (Clockwise Rotation)



Note: for counter clockwise rotation, the inlet port 'B' and the delivery port 'A' are reversed.

K3VL45/60 Mounting Flange and Shaft Options

SAE Type





SAE 'BB' Straight Shaft - Option 'K'



SAE 'BB' Spline Shaft - Option 'S'



ISO Straight Shaft - Option 'M'



SAE 'B' Spline Shaft - Option 'T'



🗰 K3VL45/60 Rear Port





K3VL45 Porting Details

Main SAE Flanged Ports

Des.	Port Name	Port Size	Tightening Torque (Nm)	Flange Threads	
JNF Threaded Version ('S' in position 9 of model code)					
А	Delivery Port	SAE J518C Std pressure (code 61) 1"	57	¾-16UNC-2B x 18 mm	
В	Suction Port	SAE J518C Std pressure (code 61) 1.5" 98		½-13UNC-2B x 22 mm	
Metric Versi	Metric Version ('M' in position 9 of model code)				
А	Delivery Port	SAE J518C Std pressure (code 61) 1"	57	M10 x 17	
В	Suction Port	SAE J518C Std pressure (code 61) 1.5"	98	M12 x 20	

Auxillary Ports

Des.	Port Name Port Size		Tightening Torque (Nm)
SAE Version	('S', 'K', or 'T' in position	8 of model)	
Dr	Drain Port (x2)	¾-16UNF-2B-14.3 (ISO11926-1:1995)	98
P _L /P _C	Load Sensing Port Pressure Control Port	7/16-20UNF-2B-14 (ISO11926-1:1995)	12
T _{air}	Air Bleeder Port	7/16-20UNF-2B-14 (IS011926-1:1995)	12

ISO Version ('M' in position 8 of model code)

Dr	Drain Port (x2)	M22 x 1.5-14.5 DIN 3852	98
P_L/P_c	Load Sensing Port Pressure Control Port	M14 x 1.5-12.5 DIN 3852	25
T _{air}	Air Bleeder Port	M14 x 1.5-12.5 DIN 3852	25

K3VL45 Through Drive Options

Through Drive 'A'





Through Drive 'BB'



K3VL45 Adaptor Kits







Part Name	Qty	Cover Kit	SAE 'A' T/D Kit	SAE 'B' T/D Kit	SAE 'BB' T/D Kit
T/D	-	29L8TN	29L4TA	29L4TB	29L4T2
O-Ring	1	Item 743	Item 743	Item 743	Item 743
O-Ring	1	-	-	Item 742	Item 742
Screw Hex SHC	4	-	-	Item 415	Item 415
Screw Hex SHC	2	Item 402	-	-	-
Subplate	1	-	-	Item 317	Item 317
Cover	1	Item 314	-	-	
Coupling	1	-	Item 116	Item 116	Item 116

Note: for counter clockwise rotation, the suction port 'B' and the delivery port 'A' are reversed.

3-3 K3VL80 Installation

K3VL80 with Cut-Off / Load Sense Control & Torque Limit Module (Clockwise Rotation)



K3VL80 Mounting Flange and Shaft Options

SAE Type





SAE 'C' Spline Shaft - Option 'S'



SAE 'C' Straight Shaft - Option 'K'



ISO Straight Shaft - Option 'M'



K3VL80 Rear Port





K3VL80 Porting Details

Main SAE Flanged Ports

Des.	Port Name	Port Size	Tightening Torque (Nm)	Flange Threads	
JNF Threaded Version ('S' in position 9 of model code)					
А	Delivery Port	SAE J518C Std pressure (code 61) 1"	57	¾-16UNC-2B x 18 mm	
В	Suction Port	SAE J518C Std pressure (code 61) 2" 98		½-13UNC-2B x 22 mm	
Metric Versi	Metric Version ('M' in position 9 of model code)				
А	Delivery Port	SAE J518C Std pressure (code 61) 1"	57	M10 x 17	
В	Suction Port	SAE J518C Std pressure (code 61) 2"	98	M12 x 20	

Auxillary Ports

Des.	Port Name	Port Size	Tightening Torque (Nm)
SAE Version	('S', 'K', or 'T' in position	8 of model)	
Dr	Drain Port (x2)	34-16UNF-2B-14.3 (ISO11926-1:1995)	98
P _L /P _C	Load Sensing Port Pressure Control Port	7/16-20UNF-2B-14 (ISO11926-1:1995)	12
T _{air}	Air Bleeder Port	7/16-20UNF-2B-14 (ISO11926-1:1995)	12

ISO Version ('M' in position 8 of model code)

Dr	Drain Port (x2)	M22 x 1.5-14.5 DIN 3852	98
P _L /P _C	Load Sensing Port Pressure Control Port	M14 x 1.5-12.5 DIN 3852	25
T _{air}	Air Bleeder Port	M14 x 1.5-12.5 DIN 3852	25

K3VL80 Through Drive Options









SAE 'A' T/D Kit



SAE 'B', 'BB', 'C' & 'C4' T/D Kit

Part Name	Qty	Cover Kit	SAE 'A' T/D Kit	SAE 'B' T/D Kit
T/D	-	29L8TN	29L8TA	29L8TB
O-Ring	1	Item 743	Item 743	Item 743
O-Ring	1	-	-	Item 742
Screw Hex SHC	4	-	-	Item 415
Screw Hex SHC	2	Item 402	-	-
Subplate	1	-	-	Item 317
Cover	1	Item 314	-	-
Coupling	1	-	Item 116	Item 116

Part Name	Qty	SAE 'BB' T/D Kit	SAE 'C' T/D Kit	SAE 'C4' T/D Kit
T/D	-	29L8T2	29L8TC	29L8TC4
O-Ring	1	Item 743	Item 743	Item 743
O-Ring	1	Item 742	Item 742	Item 742
Screw Hex SHC	4	Item 415	Item 415	Item 415
Screw Hex SHC	2	-	-	-
Subplate	1	Item 317	Item 317	Item 317
Cover	1	-	-	-
Coupling	1	Item 116	Item 116	Item 116

3-4 K3VL112/140 Installation

K3VL112/140 with Cut-Off / Load Sense Control & Torque Limit Module (Clockwise Rotation)



Note: for counter clockwise rotation, the suction port 'B' and the delivery port 'A' are reversed.

K3VL112/140 (SAE D 4 BOLT) Mounting Flange & Shaft Options



SAE 'D' Spline Shaft - Option 'S'



ISO Straight Shaft - Option 'M'

SAE 'D' Straight Shaft - Option 'K'



K3VL112/140 Rear Port





K3VL112/140 Porting Details

Main SAE Flanged Ports

Des.	Port Name	Port Size	Tightening Torque (Nm)	Flange Threads			
UNF Threaded Version ('S' in position 9 of model code)							
А	Delivery Port	SAE J518C High pressure (code 62) 1 ¼"	157	½-13UNC-2B x 22 mm			
В	Suction Port	SAE J518C Std pressure (code 61) 2 $\frac{1}{2}$ "	98	½-13UNC-2B x 22 mm			
Metric Versi	Metric Version ('M' in position 9 of model code)						
А	Delivery Port	SAE J518C high pressure (code 62) 1 ¼"	157	M14 x 19 *			
В	Suction Port	SAE J518C Std pressure (code 61) 2 $\frac{1}{2}$ "	98	M12 x 17			
* Note: ISO 61	62 quotes M12						

Auxillary Ports

Des.	Port Name	Port Size	Tightening Torque (Nm)			
SAE Version ('S', 'K', 'C', 'R', 'U', 'X' or 'T' in position 8 of model)						

Dr	Drain Port (x2)	1 1/16-12UN-2B-19 (IS011926-1:1995)	170
P _L /P _c	Load Sensing Port Pressure Control Port	7/16-20UNF-2B-14 (ISO11926-1:1995)	12
T _{air} *	Air Bleeder Port	7/16-20UNF-2B-14 (ISO11926-1:1995)	12

ISO Version ('M' in position 8 of model code)

Dr	Drain Port (x2)	M27 x 2-16.5 DIN 3852	167
P _L /P _c	Load Sensing Port Pressure Control Port	M14 x 1.5-12.5 DIN 3852	25
T _{air}	Air Bleeder Port	M14 x 1.5-12.5 DIN 3852	25

K3VL112/140 (2 Bolt) Installation











K3VL112/140 Mounting Flange (2 Bolt) and Shaft Options



SAE 'C' Spline Shaft - Option 'C'' & 'R'



SAE 'CC' Spline Shaft - Option 'W' & 'T'



SAE 'C' Straight Shaft - Option 'X'



SAE 'CC' Straight Shaft - Option 'Y'



K3VL PUMPS

3-4 K3VL112/140 Installation (cont)

K3VL112/140 Through Drive Options

Through Drive 'A'



K3VL112/140 Through Drive Options

Through Drive 'C4'



K3VL112/140 Adaptor Kits







COVER KIT

SAE 'A' T/D KIT

SAE 'B' T/D KIT









SAE 'BB' T/D KIT

SAE 'C' & 'C4' T/D KIT

SAE 'CC' T/D KIT

SAE 'D' T/D KIT

Part Name	Qty	Cover Kit	SAE 'A' T/D Kit	SAE 'B' T/D Kit	SAE 'BB' T/D Kit
T/D	-	29L8TN	29LHTA	29LHTB	29LHT2
O-Ring	1	Item 743	Item 743	Item 743	Item 743
O-Ring	1	-	-	Item 742	Item 742
Screw Hex SHC	4	-	-	Item 415	Item 415
Screw Hex SHC	2	Item 402	-	-	-
Subplate	1	-	-	Item 317	Item 317
Cover	1	Item 314	-	-	-
Coupling	1	-	Item 116	Item 116	Item 116
Part Name	Qty	SAE 'C' T/D Kit	SAE 'C4' T/D Kit	SAE 'CC' T/D Kit	SAE 'D' T/D Kit
Part Name	Qty -	SAE 'C' T/D Kit 29LHTC	SAE 'C4' T/D Kit 29LHTC4	SAE 'CC' T/D Kit 29LHT3	SAE 'D' T/D Kit 29LHTD
Part Name T/D O-Ring	Qty - 1	SAE 'C' T/D Kit 29LHTC Item 743	SAE 'C4' T/D Kit 29LHTC4 Item 743	SAE 'CC' T/D Kit 29LHT3 Item 743	SAE 'D' T/D Kit 29LHTD Item 743
Part NameT/DO-RingO-Ring	Qty - 1 1	SAE 'C' T/D Kit 29LHTC Item 743 Item 742	SAE 'C4' T/D Kit 29LHTC4 Item 743 Item 742	SAE 'CC' T/D Kit 29LHT3 Item 743 Item 742	SAE 'D' T/D Kit 29LHTD Item 743 Item 742
Part NameT/DO-RingO-RingScrew Hex SHC	Qty - 1 1 4	SAE 'C' T/D Kit 29LHTC Item 743 Item 742 Item 415	SAE 'C4' T/D Kit 29LHTC4 Item 743 Item 742 Item 415	SAE 'CC' T/D Kit 29LHT3 Item 743 Item 742 Item 415	SAE 'D' T/D Kit 29LHTD Item 743 Item 742 Item 415
Part NameT/DO-RingO-RingScrew Hex SHCScrew Hex SHC	Qty - 1 1 4 2	SAE 'C' T/D Kit 29LHTC Item 743 Item 742 Item 415 -	SAE 'C4' Z9LHTC4 Item 743 Item 742 Item 415	SAE 'CC' 29LHT3 Item 743 Item 742 Item 415	SAE 'D' 29LHTD Item 743 Item 742 Item 415 -
Part NameT/DO-RingO-RingScrew Hex SHCScrew Hex SHCSubplate	Qty 1 1 4 2 1	SAE 'C' T/D Kit 29LHTC Item 743 Item 742 Item 415 - Item 317	SAE 'C4' T/D Kit 29LHTC4 Item 743 Item 742 Item 415 - Item 317	SAE 'CC' T/D Kit 29LHT3 Item 743 Item 742 Item 415 - Item 317	SAE 'D' T/D Kit 29LHTD Item 743 Item 742 Item 415 - Item 317
Part NameT/DO-RingO-RingScrew Hex SHCScrew Hex SHCSubplateCover	Qty 1 1 4 2 1 1 1 1	SAE 'C' T/D Kit 29LHTC Item 743 Item 742 Item 415 - Item 317	SAE 'C4' 7/D Kit 29LHTC4 Item 743 Item 742 Item 415 - Item 317	SAE 'CC' 29LHT3 ltem 743 ltem 742 ltem 415 - ltem 317	SAE 'D' 29LHTD Item 743 Item 742 Item 415 - Item 317 -

3-5 K3VL200 Installation

K3VL200 with Cut-Off / Load Sense Control & Torque Limit Module (Clockwise Rotation)



K3VL200 Mounting Flange and Shaft Options

SAE Type

SAE 'D' Straight Shaft - Option 'K'



SAE 'D' Spline Shaft - Option 'S'



SAE 'F' Spline Shaft - Option 'F'



K3VL200 Through Drive Options



K3VL200 Through DriveOptions



Main SAE Flanged Ports

Des.	Port Name	Port Size	Tightening Torque (Nm)	Flange Threads		
UNC Thread	JNC Threaded Version ('S' in position 9 of model code)					
А	Delivery Port	SAE J518C High pressure (code 62) $1\frac{1}{2}$ "	235	⁵ / ₈ -11UNC-2B x 25mm		
В	Suction Port	SAE J518C Std pressure (code 61) 3"	235	⁵ / ₈ -11UNC-2B x 25mm		
В	K3VL200H Suction Port	SAE J518C Std pressure (code 61) 3 ½"	235	⁵ / ₈ -11UNC-2B x 25mm		

Metric Version ('M' in position 9 of model code)

А	Delivery Port	SAE J518C High pressure (code 62) $1\frac{1}{2}$ "	235	M16 x 24
В	Suction Port	SAE J518C Std pressure (code 61) 3"	235	M16 x 24
В	K3VL200H Suction Port	SAE J518C Std pressure (code 61) 3 $\frac{1}{2}$ "	235	M16 x 26

Auxillary Ports

Des.	Port Name	Port Size	Tightening Torque (Nm)
SAE Version			
Dr	Drain Port (x2)	1 %-12UN-2B-19 (ISO11926-1:1995)	167
P _L /P _c	Load Sensing Port Pressure Control Port	%-20UNF-2B-14 (ISO11926-1:1995)	12
T _{air}	Air Bleeder Port	7/16-20UNF-2B-14 (ISO11926-1:1995)	12

K3VL200 Through Drive Kits





SAE "A" T/D Kit





SAE "B" T/D Kit

SAE "BB" T/D Kit



COVER Kit







SAE "C" & "C4" T/D Kit

SAE "CC" T/D Kit

SAE "D" T/D Kit

SAE "E" T/D Kit

Part Name	Qty	SAE 'A'	SAE 'B'	SAE 'BB'	SAE 'C'
T/D Kit	-	29LKTA	29LKTB	29LKT2	29LKTC
Coupling K3VL200	1	Item 116	Item 116	Item 116	Item 116
Sub Plate K3VL200	1	Item 317	Item 317	Item 317	Item 317
SHCS	8	Item 402	Item 415	Item 415	Item 415
O-Ring	1	Item 743	Item 743	Item 743	Item 743
O-Ring	1	Item 742	Item 742	Item 742	Item 742

Part Name	Qty	SAE 'C4'	SAE 'CC'	SAE 'D'	SAE 'E'
T/D Kit	-	29LKTC4	29LKT3	29LKTD	29LKTE
Coupling K3VL200	1	Item 116	Item 116	Item 116	Item 116
Sub Plate K3VL200	1	Item 317	Item 317	Item 317	Item 317
SHCS	8	Item 415	Item 415	Item 415	Item 415
O-Ring	1	Item 743	Item 743	Item 743	Item 743
0-Ring	1	Item 742	Item 742	Item 742	Item 742

3-6 K3VL200H Installation

N Type Through Drive





SAE 'A' Throughdrive

Please contact KPM UK for dimensions.

SAE 'B' Throughdrive



SAE 'B-B' Throughdrive



Note: For K3VL200H shaft options please refer to page 62.

SAE 'C' Throughdrive



SAE 'C-C' Throughdrive



SAE 'C4' Throughdrive - Please contact KPM UK for dimensions.

Shaft Options

SAE 'D' Spline Shaft - Option 'S'



SAE 'F' Spline Shaft - Option 'F'



SAE 'D' Throughdrive



SAE 'E' Throughdrive



Part Name	Qty	SAE 'A'	SAE 'B'	SAE 'BB'	SAE 'C'
Coupling K3VL200	1	Item 116	Item 116	Item 116	Item 116
Sub Plate K3VL200	1	Item 317	Item 317	Item 317	Item 317
SHCS	8	Item 407	Item 407	Item 407	Item 407
O-Ring	1	Item 743	Item 743	Item 743	Item 743
O-Ring	1	Item 742	Item 742	Item 742	Item 742

Part Name	Qty	SAE 'C4'	SAE 'CC'	SAE 'D'	SAE 'E'
Coupling K3VL200	1	Item 116	Item 116	Item 116	Item 116
Sub Plate K3VL200	1	Item 317	Item 317	Item 317	Item 317
SHCS	8	Item 407	Item 407	Item 407	Item 407
O-Ring	1	Item 743	Item 743	Item 743	Item 743
O-Ring	1	Item 742	Item 742	Item 742	Item 742

3-7 Hydraulic Displacement Control Installation (Type Q0)



Installation Dimensions (mm)

Pump Size	А	В	С	D	E	F	G
K3VL45	21	52	90	187	157	226	210
K3VL80	25	59	83	202	172	233	217
K3VL112/140	38	64	78	244	214	247	231
K3VL200(H)	57	61	80	258	229	257	249

K3VL PUMPS

3-8 Power Shift Control Installation

Pump Size	А	В	С	
K3VL80	182	59	5	
1/2/// 112/140	224	50	4B 33.7	
K3VL112/140	224	29	2B 63.7	
K3VL200(H)	239	59	51.5	

/2-** Hydraulic Power Shift







- 1 Technical Documentation Receipt and Storage
- 2 ATEX & UKCA EPS REGULATIONS
- 3 File Number: EXVF-000003
- 4 Equipment: K3VL Product Range
- 5 Manufacturer: Kawasaki Precision Machinery (U.K) Ltd
- 6 Address: Ernesettle Lane, , Ernesettle, Plymouth, Devon, PL5 2SA
- 7 The Referenced Dossier has been received and is stored under the control of ExVeritas ApS (Denmark), **ATEX Notified Body Number 2804** and ExVeritas Limited, **UKCA Ex Approved Body Number 2585** who are both part of the ExVeritas Group.
- 8 ExVeritas takes no responsibility for the validity of any information or data supplied within the file by the manufacturer on which parts of the assessment may be based upon. ExVeritas undertakes that all documents lodged in its care will not be opened or reviewed.
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- 10 The file will be held for 10 years after the expiry date, but no further products can be placed on the market after the expire date.
- 11 File Receipt Date: 11/05/2021
- 12 Manufacture Period: 5 Years
- 13 File Lodge Expire Date: 11/05/2026

On behalf of ExVeritas

S L Clarke CEng MSc. FIET Managing Director

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Data sheet: PDC021/01.2021