

Technical Data

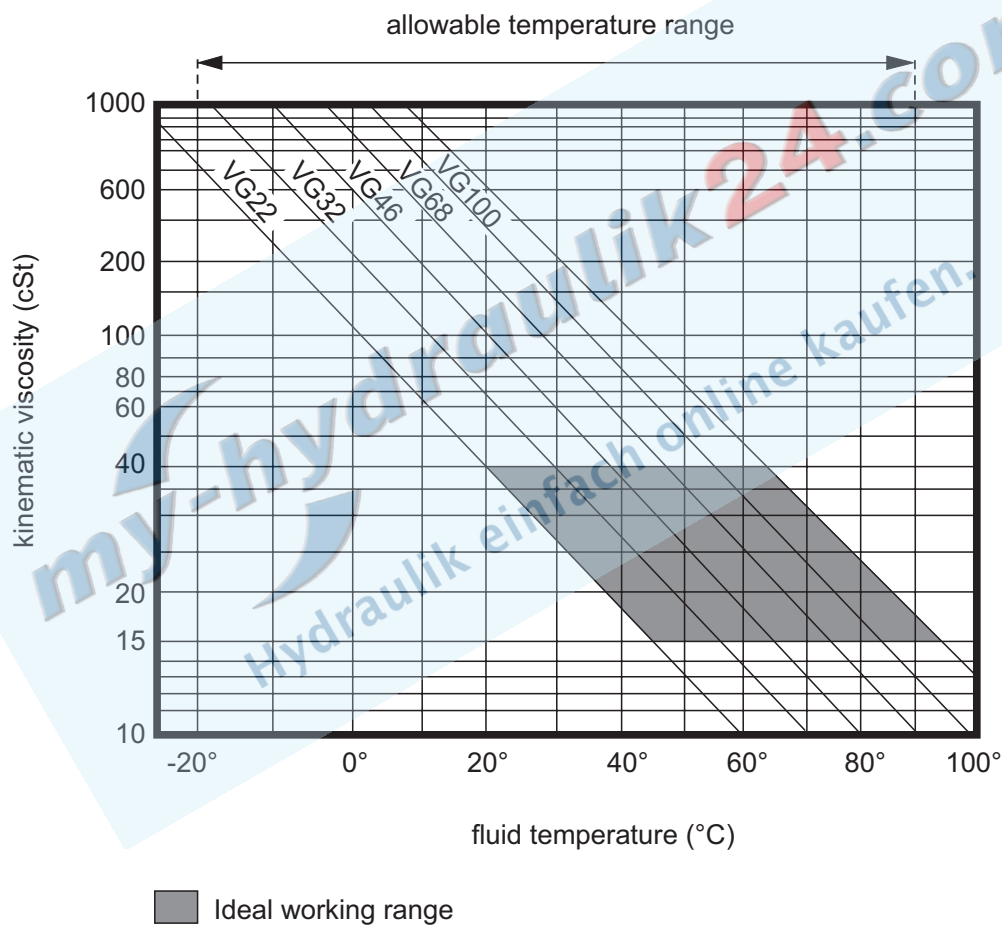
For applications outside the following parameters, please consult Kawasaki Precision Machinery (UK) Ltd.

Hydraulic Data

Pressure Fluid Mineral oil, polyol ester and water glycol.

Use a high quality, anti-wear, mineral based hydraulic fluid when the pressure exceeds 206 bar. In applications where fire resistant fluids are required consult Kawasaki Precision Machinery (UK) Ltd.

Fluid selection



Technical Data (continued)**Filtration & Contamination Control****Filtration**

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.

A full flow return line filter of 10 micron nominal should be utilised to prevent contaminant ingress from the external environment, a 5 to 10 micron filter within the tank's breather is also recommended.

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).

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 206 bar.

Fire-resistant Fluids

Some kind of fire-resistant fluids require special materials for seals, paint and metal finishing. Please consult Kawasaki Precision Machinery (UK) Limited 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 Kawasaki Precision Machinery (UK) Limited. The following table provides an overview of the precautions and characteristics that can be expected with these types of fluids.

Technical Data (continued)

Fire-resistant Fluids (continued)

parameter:- fluid type:-	mineral oil	polyol ester	water glycol
Maximum Pressure (bar)	320	320	210
Recommended Temperature Range (deg C)	20 ~ 60	20 60	10 ~ 50
Cavitation susceptibility	○	△	△
Expected life expectancy compared to mineral oil	100%	< 100%	20%

○ recommended △ usable (higher density)



Technical Data (continued)**Pump Start Up Precautions****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 insufficient. The pump contains bearings and high-speed sliding parts including pistons with shoes and spherical bushes that need to be continuously lubricated. Part seizure or total premature failure will occur very quickly if this procedure is not rigidly followed.

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.

Case Drain Pressure

Please ensure, that the maximum steady state drain line pressure at the pump casing does not exceed 1 bar. (Maximum peak pressure 4 bar). A suitable drain line hose must be selected and return directly back to the tank and terminate below the oil level.

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.

Pumps

Technical Data (continued)

Specifications

The following table indicates all of the specifications for the complete K3VL pump range from 45-200cc. More detailed efficiency curves and other related information will be found in a later section.

pump model			45				80			
capacity	cc/rev		45				80			
pressure ratings	rated	bar								
	peak	bar								
speed ratings	self prime	rpm	2,700				2,400			
	max. boosted	rpm	3,250				3,000			
minimum operating speed		rpm								
case drain pressure	max. continuous	bar								
	peak	bar								
weight		kg	25				35			
case fill capacity		L	0.6				0.8			
maximum allowable input torque #1 (basic coupling arrangement)		Nm	140	225	225	225	400	400	400	400
mounting flange	type		SAE B	SAE B-B		ISO100	SAE C		ISO125	
	bolts		2				2			
input shaft	type		SAE B-B			ISO 25mm	SAE C		ISO 32mm	SAE C
	form		Spline	Spline	Key	Key	Spline	Key	Key	Spline
allowable through drive torque #2	SAE "A"	Nm								
	SAE "B"		290							
	SAE "B-B"		290				400			
	SAE "C" / "C4"						400			
	SAE "C-C"									
	SAE "D"									
SAE "E"										
temperature range		°C								
viscosity range		cSt								
maximum allowable contamination level			20 / 18 / 15							

#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 Kawasaki.

#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.

112				140				200			
112				140				200			
320											
350											
2,200				2,100				1,900			
2,700				2,500				2,200			
600											
1											
4											
65				65				95			
1.5				1.5				2			
765	980	980	980	400	765	980	980	980	980	980	1800
SAE D			ISO180	SAE D				ISO180	SAE E		
2	4			2		4		4			
SAE C-C	SAE D		ISO 45mm	SAE C	SAE C-C	SAE D		ISO 45mm	SAE D		SAE F
Spline	Spline	Key	Key	Spline	Spline	Spline	Key	Key	Spline	Key	Spline
123											
340											
550											
700								990			
700								990			
700								990			
								990			
-20 to +95											
10 to 1,000											
ISO/DIS 4406 or SAE AS 4059E Table 1 Class 9 (NAS1638 Class 9)											

Technical Data (continued)**Specifications***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 1 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.

Viscosity Range

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

Ordering Code – K3VLSeries

K3VL 80 / B - 1 0 R S S - L 0 12D - /1-H*

<p>K3VL Series Pump</p> <p>Maximum displacement</p> <table border="1"> <tr><td>45</td><td>45 cm3/rev</td></tr> <tr><td>80</td><td>80 cm3/rev</td></tr> <tr><td>112</td><td>112 cm3/rev</td></tr> <tr><td>140</td><td>140 cm3/rev</td></tr> <tr><td>200</td><td>200 cm3/rev</td></tr> </table> <p>Design series B</p> <p>Hydraulic Fluid Type</p> <ul style="list-style-type: none"> - Mineral oil W Water glycol (not K3VL 200) <p><i>All other fluids contact Kawasaki</i></p> <p>Circuit Type</p> <p>1 Open Circuit</p> <p>Through drive & porting</p> <ul style="list-style-type: none"> 0 Single pump, side ported A SAE-A through drive, side ported B SAE-B through drive, side ported BB SAE-B-B through drive, side ported C SAE-C through drive, side ported CC SAE-C-C through drive, side ported C4 SAE-C4 through drive, side ported D SAE-D through drive, side ported E SAE-E (K3VL 200 only) R Single pump, rear ported N Single pump with Steel cover, side ported <p>Direction of rotation</p> <ul style="list-style-type: none"> R Clockwise rotation L Counter-clockwise rotation <p>Mounting flange & shaft</p> <ul style="list-style-type: none"> S SAE spline & mount (see drawing for detail) M ISO key & mount (see drawing for detail) (not 200) F SAE-E mount with SAE-F spline shaft K SAE key & mount (see drawing for detail) T* SAE-B spline & SAE- B 2 bolt mount for 45 (not 80) SAE- CC spline & SAE- D 4 bolt mount for 112/140 (not 200) U* 45 only, SAE-B key & SAE-B 2 bolt mount C* 112/140 only, SAE-C spline & SAE- C 2 bolt mount R* 112/140 only, SAE- C spline & SAE- D 4 bolt mount X* 112/140 only, SAE- C key & SAE- C 2 bolt mount W* 112/140 only, SAE -CC spline & SAE- C 2 bolt mount Y* 112/140 only, SAE -CC key & SAE- C 2 bolt mount <p>(*Non standard options)</p>	45	45 cm3/rev	80	80 cm3/rev	112	112 cm3/rev	140	140 cm3/rev	200	200 cm3/rev	<p>Additional control options Blank Without additional limiter</p> <p>Torque limit control</p> <ul style="list-style-type: none"> /1-S* Special low setting contact Kawasaki /1-L* Low setting range /1-M* Medium setting range /1-H* High setting range <p>Displacement control (Without torque limit)</p> <ul style="list-style-type: none"> /1-E0 Electrical displacement control (pilot pressure required) /1-Q0 Pilot operated displacement control <p>Unloader solenoid (Type N below)</p> <ul style="list-style-type: none"> blank For all other options except PN/LN & PM/LM 115A 115V AC, 50.60Hz, DIN 43550 Plug 235A 230V AC, 50.60Hz, DIN 43550 Plug 12D 12V DC, DIN 43550 Plug 24D 24V DC, DIN 43550 Plug <p>Additional pressure control</p> <ul style="list-style-type: none"> 0 No additional control N With integrated unloading valve N.C V With integrated remote control valve M With integrated unloading control valve N.O 1 Load sensing only (R4 plugged) <p>Control device configuration</p> <ul style="list-style-type: none"> P Remote pressure compensator L Load sensing & pressure control <p>Porting threads</p> <ul style="list-style-type: none"> M Metric threaded S UNC threaded
45	45 cm3/rev										
80	80 cm3/rev										
112	112 cm3/rev										
140	140 cm3/rev										
200	200 cm3/rev										