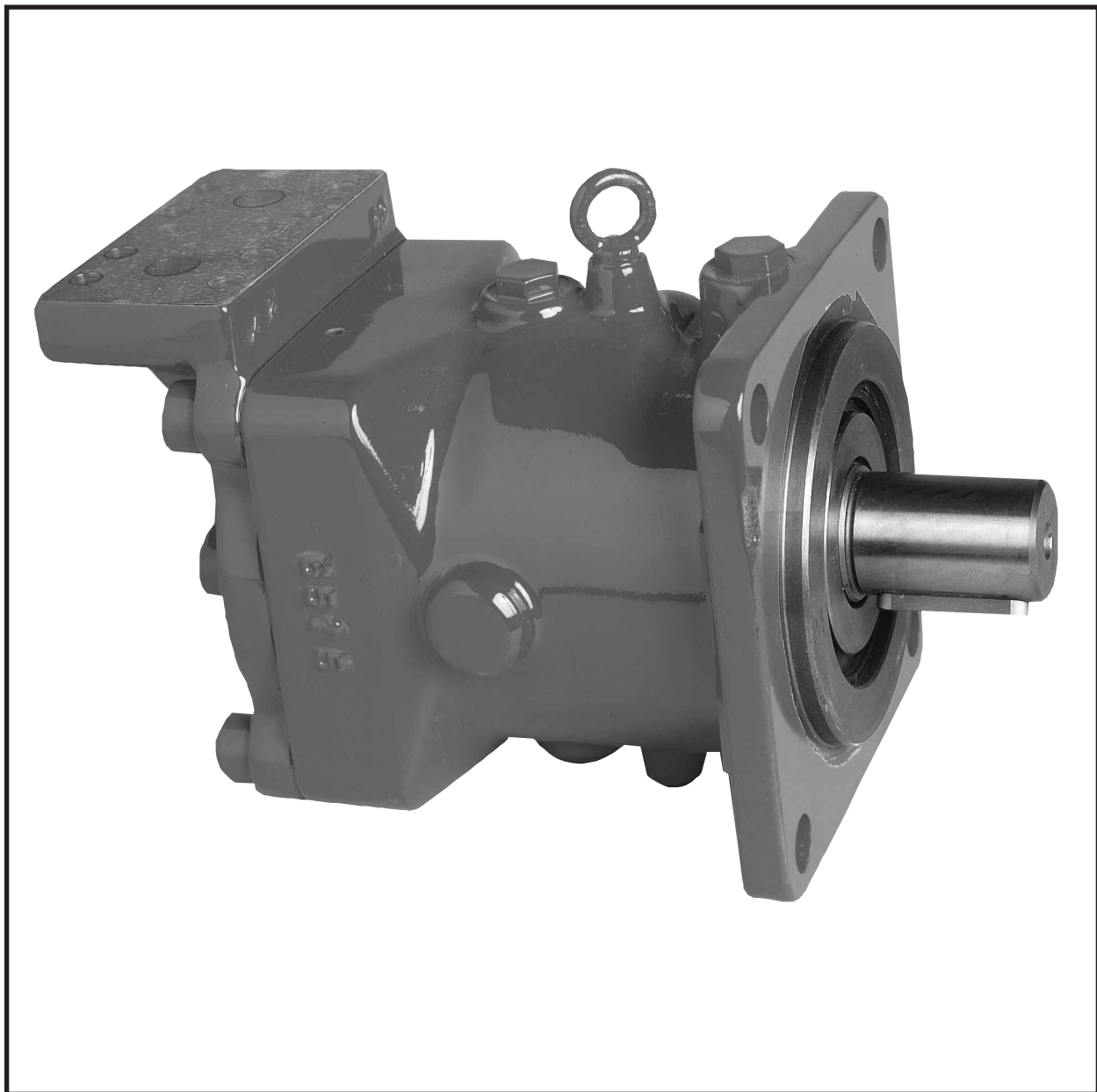


Kawasaki K3X Series Axial Piston Motors Service Manual



Features

High Efficiency

A spherical valve plate surface and full-balancing mechanism provide excellent cylinder support which results in a significant efficiency increase.

Well-balanced and Simple Construction

The K3X's helical coil springs press the shoe against the swash plate at a constant load, which minimizes shoe wear and dramatically improves reliability. The shoe has a hydrostatic pocket that absorbs hydraulic thrust developed by the piston, enabling the shoe to lightly slide against the swash plate.

Low Noise

Low noise has been achieved by the optimum valve plate design and casing rigidity.

High Reliability

K3X series has proven high reliability. The K3X utilizes internal components having similar design to components in K3V pumps and MX motors, thus ensuring high reliability based on years of experience in construction machinery applications.

Specifications

Size	63	80	90	112
Displacement — in ³ (cm ³)	3.91 (64.0)	5.02 (82.2)	5.45 (89.3)	6.77 (110.9)
Rated Pressure — psi (Bar) ^{*1}	4550 (314) ^{*4}			4550 (314) ^{*5}
Max. Pressure — psi (Bar) ^{*2}	5000 (350)			
Max. Back Pressure — psi (Bar)	700 (48)			
Maximum Speed (rpm)	3000			3000 ^{*5}
Output Torque — lbf•ft (Nm) ^{*3}	236 (320)	302 (410)	329 (446)	408 (554)
Weight — lb (kg)	51 (23)	88 (40)		
Operating Fluid Type	Antiwear Hydraulic Fluid			
Fluid Temperature Range	-4~194°F (-20~90°C)			
Fluid Viscosity Range	10~1000 mm ² /S (cSt)			

*1 The continuous pressure rating to ensure the motor's performance, function and life. The motor has infinite life in strength (excluding the bearings) at or below this rating.

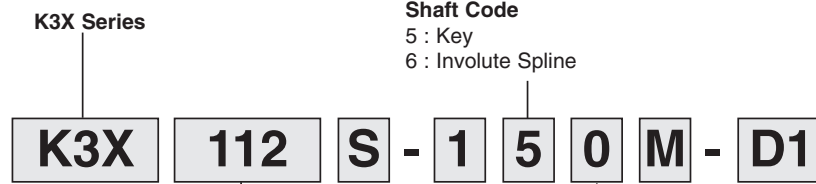
*2 The value at which the motor can be used without a functional problem. The motor has finite life in strength in this range.

*3 The theoretical value at the rated pressure, not including mechanical efficiency.

*4 For the K3X63S with keyed shaft, rated pressure is 3550 psi.

*5 When K3X112S is used at max. speed of 3000 rpm, rated pressure is 3630 psi.
When K3X112S is used at rated pressure of 4550 psi, max. speed is 2400 rpm.

K3X Series Ordering Code

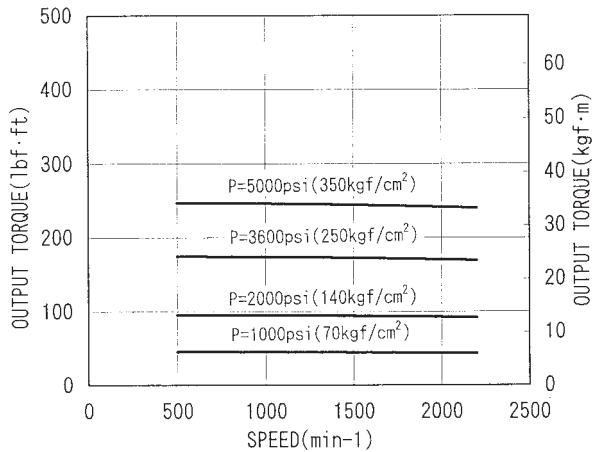


Displacement
63 : 64 cm³
80 : 82 cm³
90 : 89 cm³
112 : 111 cm³

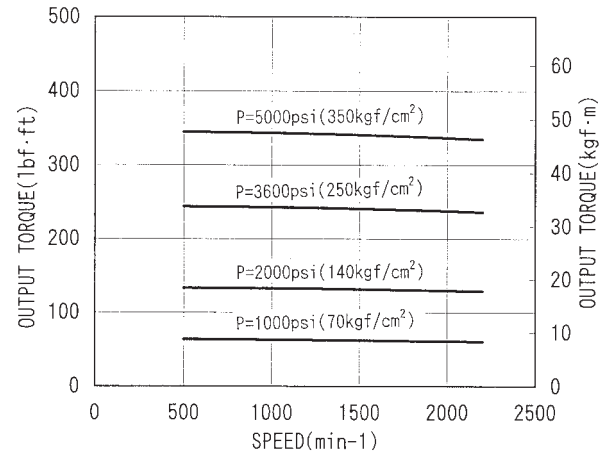
Valve Cover Code and Direction of Rotation*
0 : Split flange type ports and clockwise
1 : Thread flange type ports and clockwise
2 : Split flange type ports and counterclockwise
3 : Thread flange type ports and counterclockwise
* Direction of rotation viewed from the shaft end when the main port A is used as the inlet port.

Output Characteristics

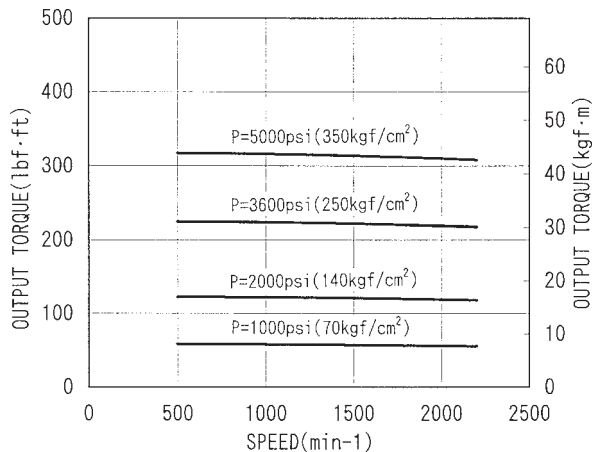
Oil	ISO VG46
Oil Temp	122°F (50°C)
Viscosity	30 cSt



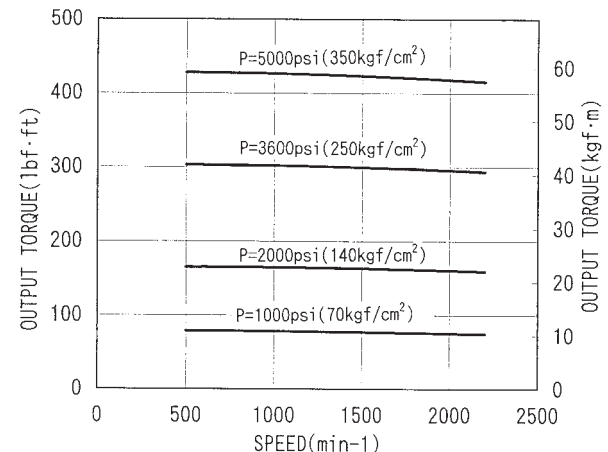
K3X63S Output Characteristics



K3X90S Output Characteristics

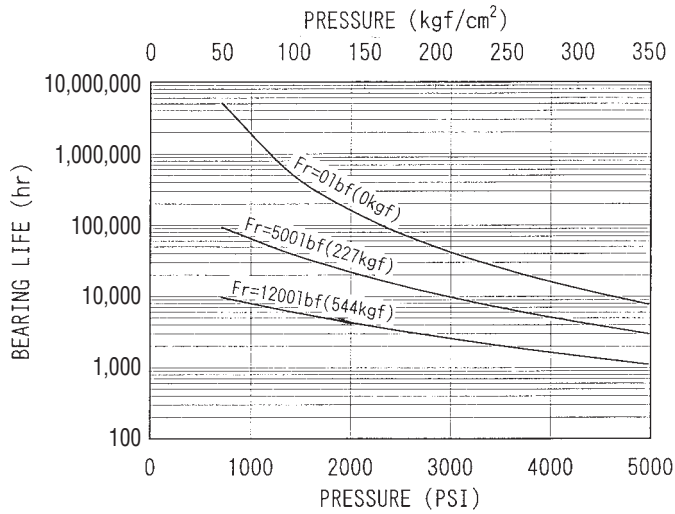


K3X80S Output Characteristics

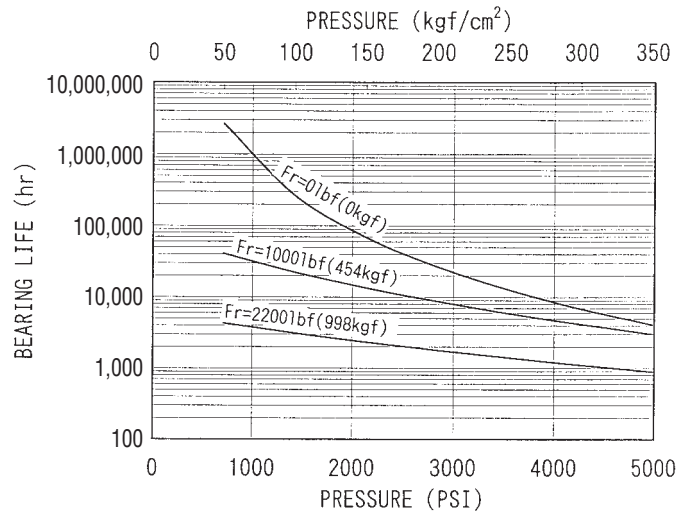


K3X112S Output Characteristics

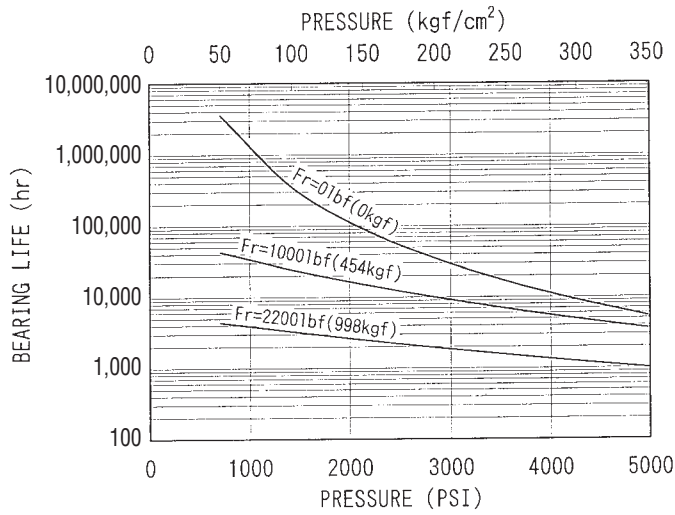
Bearing Life



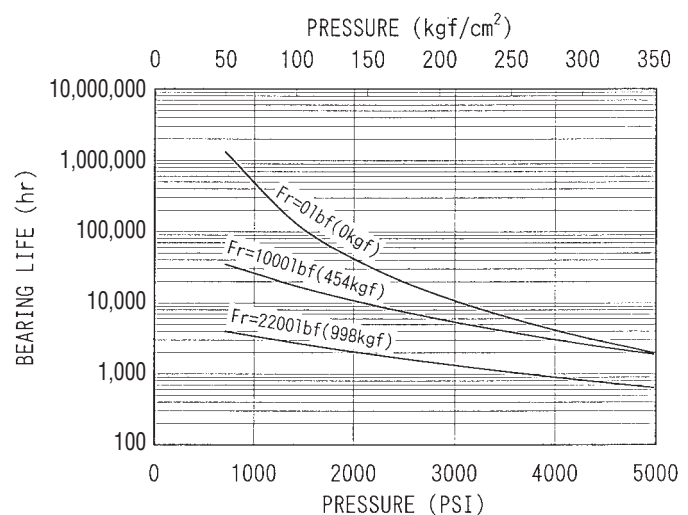
K3X63S Bearing Life (N=1800min⁻¹)



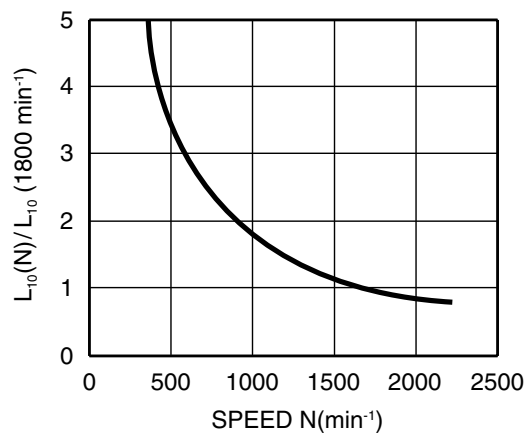
K3X90S Bearing Life (N=1800min⁻¹)



K3X80S Bearing Life (N=1800min⁻¹)

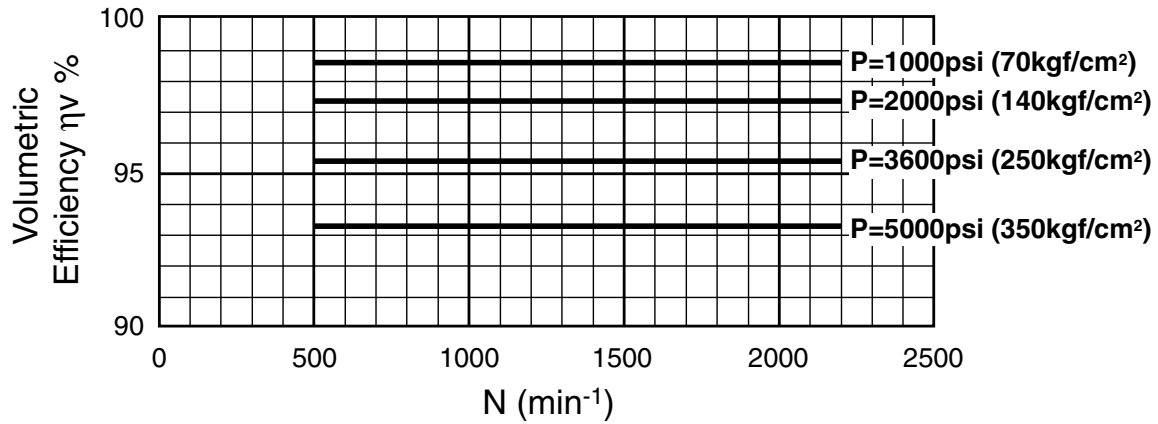


K3X112S Bearing Life (N=1800min⁻¹)

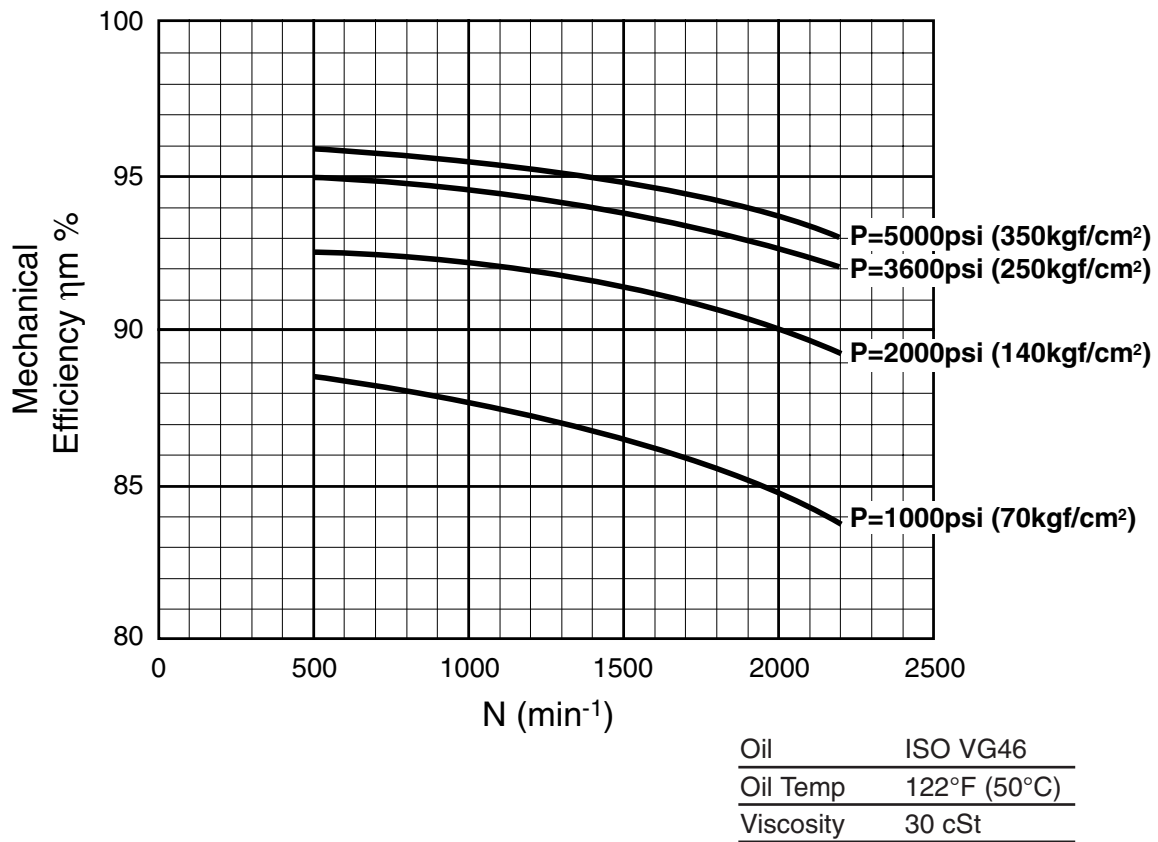


Relation of Bearing Life and Speed

Volumetric Efficiency



Mechanical Efficiency



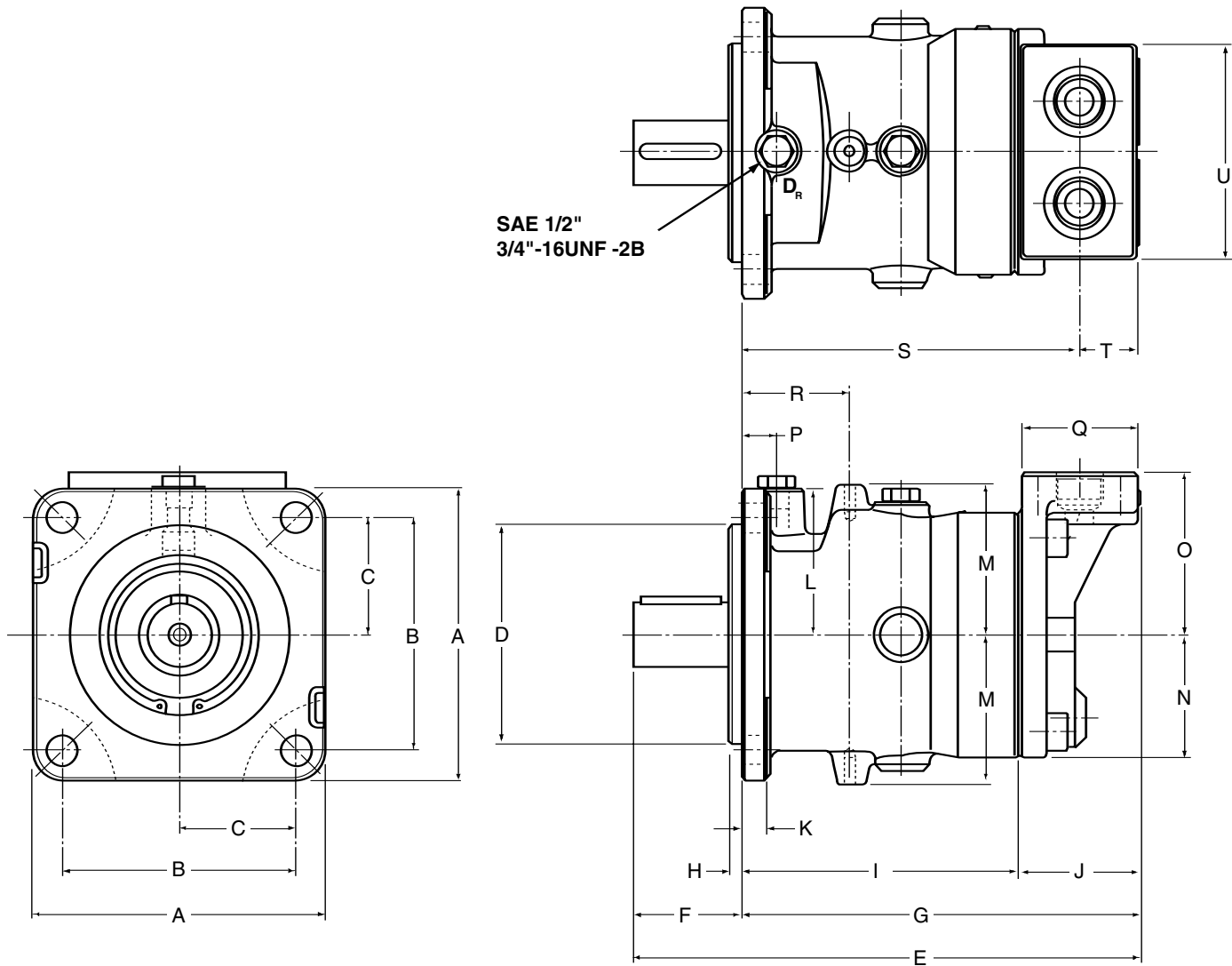
Dimensional Information

K3X63

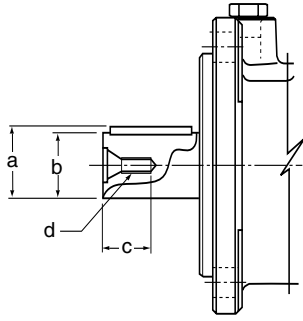
	A	B	C	D	E	F	G	H	I	J	K	L
in.	5.77	4.51	2.26	5.00	11.40	2.19	9.21	0.50	6.26	2.95	0.55	2.91
(mm)	(146.5)	(114.5)	(57.3)	(127.0)	(289.5)	(55.5)	(234.0)	(12.7)	(159.0)	(75.0)	(14.0)	(74.0)
	M	N	O	P	Q	R	S	T	U			
in.	3.59	2.84	4.02	0.79	2.84	2.95	7.80	1.42	4.96			
(mm)	(91.0)	(72.0)	(102.0)	(20.0)	(72.0)	(75.0)	(198.0)	(36.0)	(126.0)			

K3X80, 90, 112

	A	B	C	D	E	F	G	H	I	J	K	L
in.	7.95	6.36	3.18	6.00	13.82	2.95	10.87	0.35	7.52	3.35	0.67	4.02
(mm)	(202.0)	(161.6)	(80.8)	(152.4)	(351.0)	(75.0)	(276.0)	(9.0)	(191.0)	(85.0)	(17.0)	(102.0)
	M	N	O	P	Q	R	S	T	U			
in.	4.09	3.35	4.45	0.95	3.15	2.95	9.21	1.58	5.91			
(mm)	(104.0)	(85.0)	(113.0)	(24.0)	(80.0)	(75.0)	(234.0)	(40.0)	(150.0)			

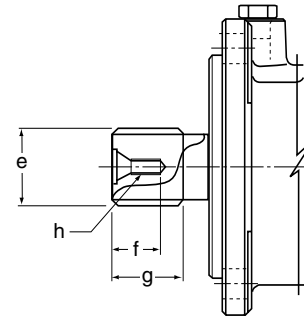


Shaft Configurations



Key Shaft

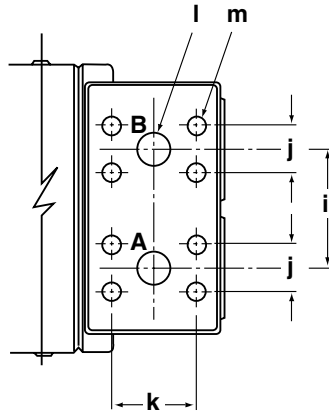
		a	b	c	d
K3X63	in.	1.39	1.25	0.75	M8
SAE C	(mm)	(35.2)	(31.8)	(19.0)	M8
K3X80, 90, 112	in.	1.94	1.75	0.87	M10
SAE D	(mm)	(49.4)	(44.5)	(22.0)	M10



Involute Spline Shaft

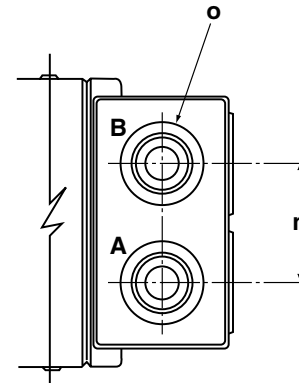
		e	f	g	h
K3X63		1.23	0.75	1.22	M8
SAE C		(31.2)	(19.0)	(31.0)	M8
K3X80, 90, 112		1.75	0.79	1.93	M10
SAE D		(44.5)	(20.0)	(49.0)	M10

Port Configurations



Split Flange Ports

		i	j	k	l	m
K3X63	in.	2.60	0.94	2.00	0.63	M10
	(mm)	(66.0)	(23.8)	(50.8)	(16.0)	M10
K3X80,90,112	in.	2.95	1.09	2.25	0.79	M12
	(mm)	(75.0)	(27.8)	(57.2)	(20.0)	M12



Threaded Ports

	n	o
K3X63	2.60	SAE 3/4", 1-1/16"-12UN-2B
	(66.0)	SAE 3/4", 1-1/16"-12UN-2B
K3X80,90,112	2.76	SAE 1", 1-5/16"-12UN-2B
	(70.0)	SAE 1", 1-5/16"-12UN-2B

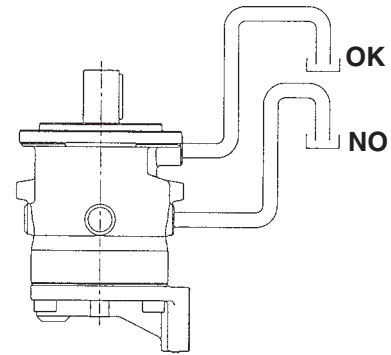
Port Specifications

	A and B Port Size	Drain Port Size
K3X63 Split Flange Ports	SAE 4-bolt Split Flange 3/4", 6000psi	SAE J1926 Threaded Port with O-ring seal 1/2"
K3X63 Thread Ports	SAE J1926 "O" type port 3/4"	SAE J1926 Threaded Port with O-ring seal 1/2"
K3X80,90,112 Split Flange Ports	SAE 4-bolt Split Flange 1", 6000psi	SAE J1926 Threaded Port with O-ring seal 1/2"
K3X80,90,112 Thread Ports	SAE J1926 "O" type port 1"	SAE J1926 Threaded Port with O-ring seal 1/2"

Cautions for Operating

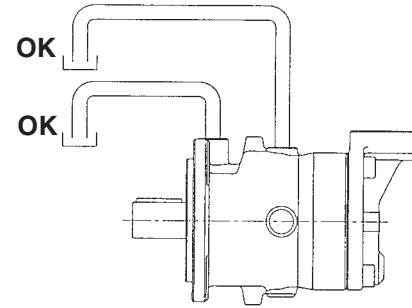
Drain piping

Use piping equal to or larger than the port size (SAE 1/2") of the motor, and keep the drain pressure inside the motor casing below 28psi (2kgf/cm²). The drain port, as shown in the following figure, should be located so that the casing will remain filled with oil.



Filtration

The operating fluid should be continuously filtered to the minimum cleanliness level of class 9 of NAS 1638. Install a 10 μ m filter in the hydraulic circuit.

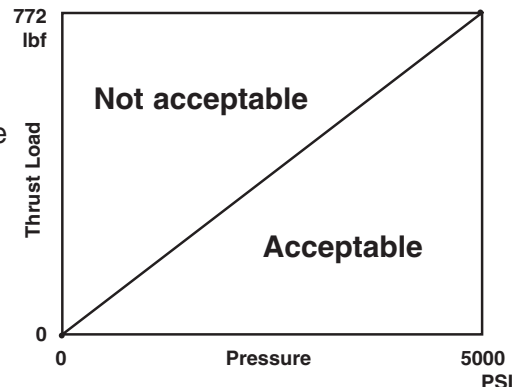


Oil filling and air venting

Before operation, be sure to fill the casing with oil through the drain port. Purge all air out of the motor and hydraulic circuit prior to operation.

Radial and thrust load

Radial and thrust load may be applied to the shaft. Radial load will affect the bearing life (contact Kawasaki). Thrust load should not exceed the acceptable region.



Mounting

Alignment should be carried out so that the parallel error shall be held within ± 0.002 " (0.05mm) tolerance.

Important safety precautions

Safe operation of this product requires that you read and understand the Installation and Maintenance Manual, including all warnings and cautionary notices. Product assembly, disassembly or installation must be performed by qualified individuals. Call Kawasaki for details.

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