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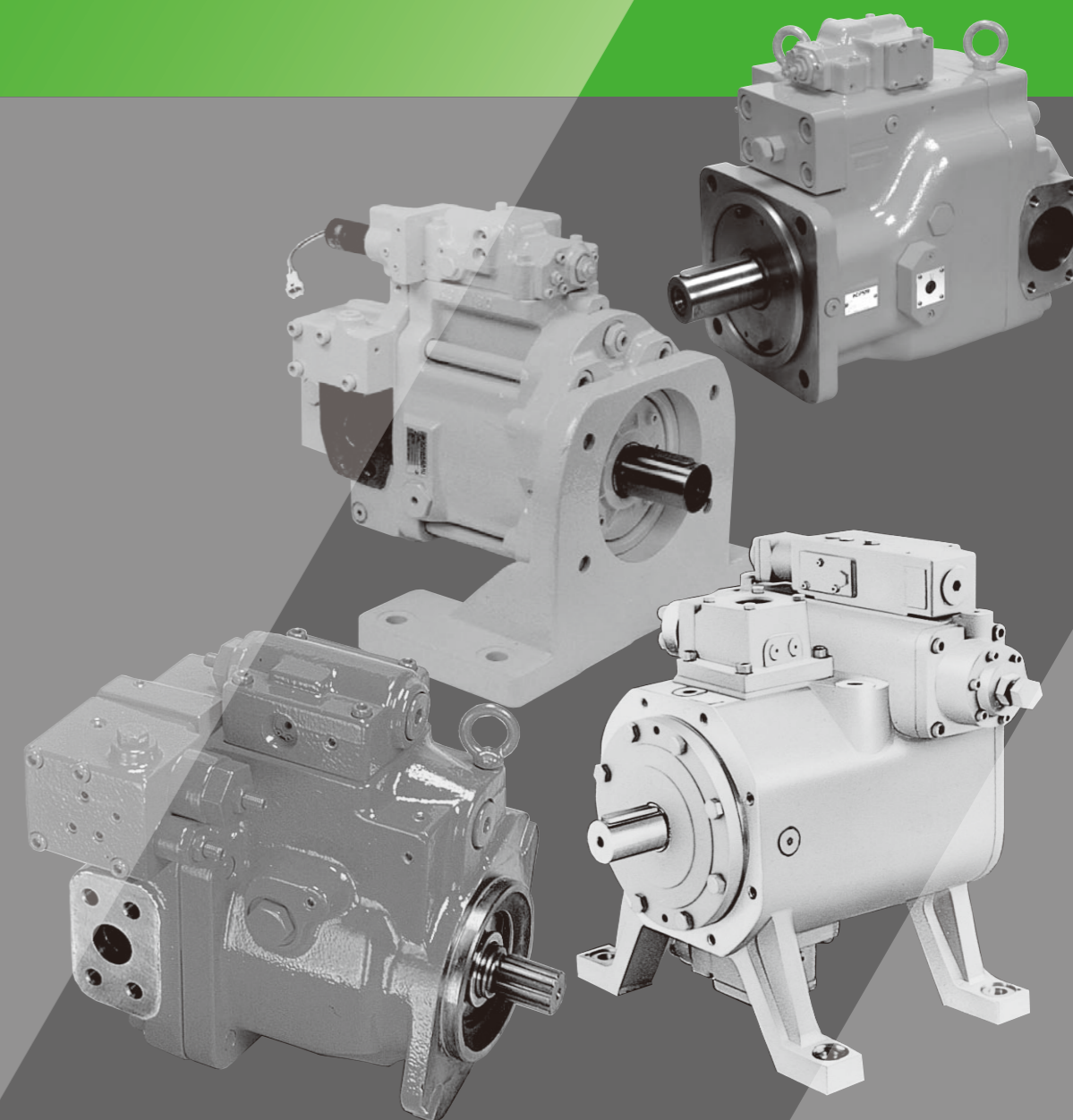
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本产品样本所记载的内容, 为了改进有无预告而改订、更改的情况。
Materials and specifications are subject to change without manufacturer's obligation.

一般产业机械用 轴向柱塞泵

Axial Piston Pumps for General Industrial Machinery



采用、使用本产品时

本公司的产品，虽设计基于充分的知识和长期的经验、和严格的质量管理下进行生产，但仍请考虑和照顾以下几点。

1

本产品目录刊载的产品，由于使用条件多样，有关产品系统适应性的决定，请由液压系统的设计者或规格的决策者，根据需要进行分析和试验后再作出判断。另外，请随时根据最新的产品目录和资料就规格进行研讨，考虑到机械故障的可能性状况，进行系统的构成。

2

在使用产品之际，请遵守安全注意事项，以正确的使用方法予以使用。

3

本产品目录记载的技术信息，是说明产品特性和性能的代表值，不是保证值。

4

在下列所示的条件和环境使用之际，请事前与本公司进行洽谈。

- ①明确记载的规格以外的条件和环境。
- ②用于原子能、航空、医疗、食品等用途时。
- ③用于对人和财产有较大影响的用途，特别是有安全性要求的用途时。

5

本产品目录刊载的信息，有时会有变更，恕不预告。有关最新信息，请向本公司予以查询。

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ON APPLICATION / USAGE OF THE PRODUCTS

Although our products are designed on the basis of our profound knowledge and long experience, and manufactured under the strict quality control system, the following must be taken into consideration in actual use.

1

The operating conditions of the products shown in this catalog vary depending upon each application. Therefore, the decision of the products' suitability to the system considered must be made by the designer of the hydraulic system and/or the person in charge of determining the specification after making analysis and conducting tests, if necessary. The study of the specification shall be done based on the latest catalog and technical documents, and the system must be composed taking into account situations regarding the possibility of machine failure.

2

Prior to use of the products, descriptions given in the SAFETY PRECAUTIONS must be observed for the proper use.

3

The technical information in this catalog represents typical characteristics and performance of the products, and is not guaranteed one.

4

In case the products are used in the following conditions or environments, please consult us prior to the use.

- ①Unspecified conditions or environments
- ②Use for atomic power, aviation, medical treatment, and/or food
- ③Use likely to affect human beings or assets significantly or requiring particular safety

5

The information described in this catalog is subject to change without notice. For updated information, please consult us.

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安全注意事项

关联法规的注意

为了安全使用本产品目录的产品，请充分理解下列“产品使用的注意事项”和该产品的使用说明书，认真遵守关联规格的安全法规等。予以使用。

[与安全关联的规格]

- | | | |
|----------|-------|----------------------|
| ①高压气体管理法 | ③消防法 | ⑤JIS B 8243 压力容器的构造 |
| ②劳动安全卫生法 | ④防爆等级 | ⑥JIS B 8361 液压系统通用规则 |

产品使用的注意事项

(1) 产品使用时的注意事项

- ① 注意 使用产品时可能会受伤，请针对情况着用保护器具。
- ② 注意 有时因产品的重量、作业姿势等，会造成夹手、腰痛等情况，请充分注意作业方法。
- ③ 注意 请不要骑坐、敲打产品，也不要使产品掉落、施以外力冲击等。因为这样会引起运转不良、破损、漏油等。
- ④ 注意 请将产品和地板附着的运转机油充分擦净，避免出现产品掉上附着的工作情况。

(2) 产品安装、拆卸时的注意事项

- ① 注意 安装、拆卸、配管、配线等作业，请由具有专业知识者进行。
*具有专业知识者：液压调整技能士2级或接受过本公司培训中心进修者。
- ② 警告 进行作业时，请务必将装置的电源关闭，就电动机、发动机等均已停止进行确认。另外，还请就液压配管压力为“0”进行确认。

- ③ 警告 电气配线工程请务必将电源关闭再予以进行，避免触电。
- ④ 注意 请将安装孔、安装面整理到洁净的状态。螺栓的紧固不良、密封破损等，会造成破损和漏油等。
- ⑤ 注意 产品安装时，请务必使用规定的螺栓，以规定的扭矩予以紧固。如果进行规定外的安装，会造成动作不良、破损、漏油等，请予以注意。

(3) 运转时的注意事项

- ① 危险 在爆炸或燃烧危险性可能的场所，除了已采取对策的产品以外，绝对不要使用其他物品。
- ② 警告 泵和马达等的回转轴请务必安上保护罩，防止手和衣服等卷入。
- ③ 警告 发生异常（异音、漏油、烟等）时应立即停止运转，采取必要的处置。避免破损、火灾、受受伤等。
- ④ 注意 装置初次运转时，应就液压回路、电气配线是否正确及连接部有无松弛等予以确认，然后再开始运转。

- ⑤ 注意 产品除了产品目录、图纸、规格书等记载的规格以外，请不要使用。
- ⑥ 注意 运转中，产品会因油温和电磁线圈温度上升等出现高温的情况，请注意不要用手和身体与之接触，以免烫伤。
- ⑦ 注意 工作油请使用适当牌号的油，污染度也请根据推荐值予以管理，以免出现运转不良、破损。

(4) 保养·保管的注意事项

- ① 注意 请顾客绝对不要对产品进行改造。
- ② 注意 请不要擅自对产品进行分解、改装、以免规定性能不能发挥，造成故障和事故。如果必须进行分解、改装时，应委托具有专业知识者进行。
- ③ 注意 搬运、保管产品时，请注意周围温度、湿度等环境条件、确保防尘、防锈等。
- ④ 注意 产品长期保管后再予使用时，需要对密封件类进行更换。

SAFETY PRECAUTIONS

Before you use the product, you MUST read the operation or operators manual and MUST fully understand how to use the product.

To use the product safely, you MUST carefully read all Warnings and Cautions in this manual. You MUST also observe the related regulations and rules regarding safety.

■ Cautions related to operation

- ① CAUTION Use the safety equipment to avoid the injury when you operate the product.
- ② CAUTION Pay enough attention on handling method to avoid pinching hands or back problems that may be caused by heavy weight of the product or handling posture.
- ③ CAUTION Do not step on the product, hit it, drop it or give strong outside force to it, as one of these actions may cause the failure of work, damage or oil leakage.
- ④ CAUTION Wipe the oil on the product or floor off completely, as the oil creates slippery conditions that may result in dropping the product or injuring.

- ③ WARNING Turn off the power before starting wiring or other works related to the electric power, otherwise you may be stuck by an electric shock.
- ④ CAUTION Clean the threads and mounting surface completely, otherwise you may experience damages or oil leakage caused by insufficient tightening torque or broken seal.
- ⑤ CAUTION Use the specified bolts and keep the specified tightening torque when you install the product. Usage of unauthorized bolts, lack of torque or excess of torque may create problems such as failure of work, damage and oil leakage.

- ⑤ CAUTION Use the product under the specification mentioned in the catalog, drawings and specification sheet.
- ⑥ CAUTION Keep your body off the product during the operations as it may become hot and burn your body.
- ⑦ CAUTION Use the proper hydraulic oil, and maintain the contamination in the recommended level, otherwise it may not work or be damaged.

■ Warnings and Cautions related to installation and removal of the product

- ① CAUTION Installation, removal, plumbing, and wiring must be done by the certified person.
*CERTIFIED PERSON : a person who has enough knowledge like a person who is trained by Kawasaki's hydraulic school.
- ② WARNING Make it sure that the power of 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 the system pressure has dropped to zero.

- ### ■ Warnings and Cautions for operation
- ① DANGER Never use the product not equipped with anti-explosion protection in the circumstances of possible explosion or combustion.
 - ② WARNING Shield the rotating part such as motor shaft and pump shaft to avoid injuries caused by being caught of fingers or cloths.
 - ③ WARNING Stop the operation immediately if you find something wrong such as unusual noise, oil leakage or smoke, and fix it properly. If you continue operating, you may encounter damage, fire or injury.
 - ④ CAUTION Make it sure that plumbing and wiring are correct and all the connection is tightened correctly before you start operating, especially if it is the first run.















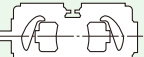























■ Cautions related to maintenance

- ① CAUTION Never modify the product without approval of Kawasaki.
- ② CAUTION Do not disassemble and assemble without approval by Kawasaki. It may cause troubles and failure, or it may not work as specified. If it is necessary by all means to disassemble and assemble, it must be done by an authorized person.
- ③ CAUTION Keep the product from dust and rust by paying attention to the surrounding temperature and humidity when you transport or store the product.
- ④ CAUTION Replacing the seals may be required if you use the product after long time storage.

在丰富的轴向柱塞泵的种类中，介绍最适合产业机械的泵。
Out of a Wide Variety of Our Axial Piston Pumps, We Introduce

Hydraulic components for Industrial Applications.

川崎的轴向柱塞泵 Kawasaki Axial Piston Pumps Programs

排量 Displacement (cm ³)	一般产业机械用 for Industrial Applications	注塑成型机用 for Injection Molding Machines	一般产业机械用·产业车辆用 for Industrial Applications for Industrial Vehicles	一般产业机械用 for Industrial Applications	产业车辆用 for Industrial Vehicles	
	开式回路 Open Circuits	开式回路 Open Circuits	开式回路 Open Circuits	开式回路·闭式回路 Open Circuits-Closed Circuits	开式回路 Open Circuits	
	单联/双联泵 Single / Double Pump	单联泵 Single Pump			串联式双联泵 Double Pump (Tandem Type)	单联泵 Single Pump
40			K3VL28 	LVP017 		
50			K3VL45 	LZ·LX-030 		
60	K3VG63 		K3VL60 	LZ·LX-060 	K3V63DT/K5V80DT 	K3V63S/K5V80S 
110	K3VG112 		K3VL80 	LZ·LX-090 		
			K3VL112 	LZ·LX-120 LZV120 	K3V112DT/K5V140DT 	K3V112S/K5V140S 
140			K3VL140 		K3V140DT 	K3V140S 
	K3VG180/K7VG180 					
180	K3VG180DT 	K3VG180 	K3VL200 	LZ·LX-180 LZV·LXV180 	K5V200DT 	K5V200S 
	K7VG265 			LZ·LX-260 LZV·LXV260 	K5V200DTH 	K5V200SH 
280	K3VG280 				K3V280DTH 	K3V280S 
	K3VG280DT 					K3V280SH 
360	K3VG180DT(合流) 			LZ·LX-500 LZV·LXV500 		
560	K3VG280DT(合流) 					

K3VG Series

这是适用于一般产业机械的斜盘式轴向柱塞泵，是紧凑型、高效率、高可靠性、低噪声型的高压泵，备有以高精度的电液伺服调节器及丰富的控制方式。

The K3VG series swash plate type axial piston pump is high-pressure pump for industrial machinery with high efficiency, reliability and low noise. Good varieties of control methods are available as well as a highly precise electro-hydraulic servo regulator "ILIS".

K3VL Series

这是最适合一般产业机械、产业车辆用的负载敏感及恒压的液压回路的斜盘式轴向柱塞泵。有SAE、ISO、JIS规格为的各种类型。以负载敏感和恒压控制为基本，功率控制也可以任选。

The K3VL series pump is the swash plate type axial piston pump designed for industrial machinery and mobile corresponding to American (SAE), International (ISO) and Japanese (JIS) standard mounting. The horsepower control is possible in addition to load-sensing and pressure constant control.

K7VG Series

这是适合高压、大流量用途的产业机械用斜盘式变量泵。通过独自的技术达到了长寿、低噪声化。最适合用于冶金机械、锻压机械等重载型领域。

The K7VG series pump is the swash plate type axial piston pump designed for high-pressure application with long life and low noise. This pump is especially suitable for steel making plant and press machinery.

LVP017

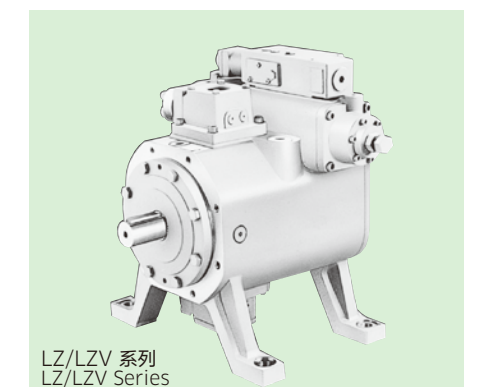
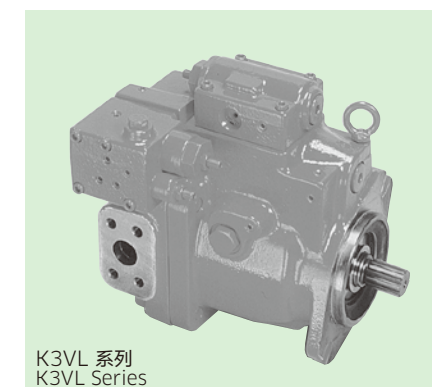
这是最适合高压千斤顶、隧道挖掘机等的超高压手动变量的斜轴式柱塞泵。

The LVP017 pump is a manual variable displacement pump of super-high-pressure up to 49 MPa. It is suitable for the high-pressure jack and the tunnel boring machine.

LZ·LZV/LX·LXV Series

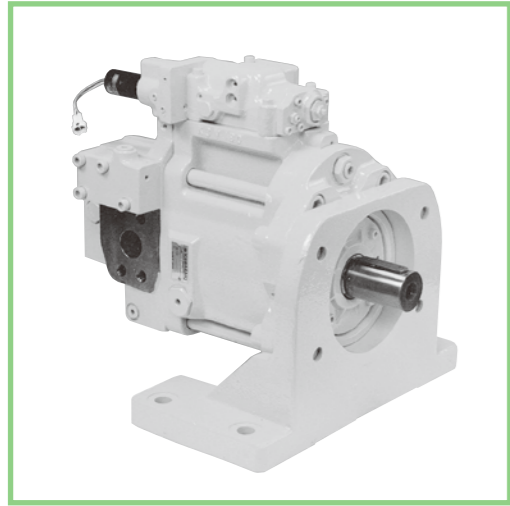
这是最适合冶金机械、锻压机械等的高效率、长寿命的斜轴式柱塞泵，其中LZV/LXV系列是就轴承部进一步强化的长寿型泵。可在高压连续负载状态或使用抗燃性工作油等苛刻条件下长期使用。

The LZ·LZV / LX·LXV series pump is suitable for the heavy duty application in the press machine and steel making plants. The LZV / LXV series pump is long life type with reinforced bearings. They can operate for long periods of time under severe conditions: high-pressure continuous drive, use of fire resistant fluid, etc.



高压·低噪声 斜盘式
Silent and High-pressure Swash Plate Type

K3VG Series



这是以拥有丰富实际业绩的工程机械用柱塞泵——K3V系列泵为基础，根据产业机械的各种需求开发的产业机械专用的斜盘式轴向柱塞泵。其高效率、高可靠性素有好评。还汇集了丰富的调节器，辅助泵也可任选安装等，实现了使用方便性、牢固性和低噪音化，请一定有效利用K3VG泵。

The K3VG Series is a newly developed swash-plate type axial piston pump exclusively for application to industrial machinery, and has been designed based upon the K3V Series having rich experience as a pump for application to construction machines. In addition to the well-reputed high efficiency and excellent reliability, varieties of regulators and optional auxiliary pumps are available. Do try the K3VG Series that is durable and silent to your satisfaction.

■ 特长 FEATURES

1. 高压·长寿命

这是依据长期、丰富的经验和实际业绩，作为一般产业机械用而开发的斜盘式高压泵。通过采用大负载容量的轴承、压紧滑靴的磨损补偿型机构，实现了长寿命化，具有高度的可靠性。

2. 低噪声

通过采用了半圆筒形的斜板，再加上抑制振动的斜盘支撑机构，及因紧凑性而使刚性较高的独特的泵壳体结构，从而减少了噪声（参照 9-10 页的噪声数据）。进而，利用本公司独特的结构，使压力脉动的减少也得以成功。另外，使用压力脉动吸收器（任选），为进一步减少噪声作出了贡献（参照 22 页的低脉动）。

3. 高效率·高自吸性能

通过采用球面配油盘和改进最佳液压平衡，因而获得了稳定的缸体旋转姿势，并使低压、小倾角的领域也获得了高效。另外，因缸体吸排口的半径变小，降低了圆周的线速度，而获得了高自吸性。

4. 丰富的控制方式

汇集了作为输入液压、电子的丰富的控制方式。另外，就流量控制、压力控制、功率控制等各种复合控制实现了标准化。

5. 辅助齿轮泵

作为任选可以安装各种尺寸的齿轮泵。主泵及液压回路控制用的低压源和作业中压源无需另行设置泵装置，使液压装置实现了紧凑化（参照 7 页的型号表示和 21 页的辅助齿轮泵安装形状）。

1. Reliable High-Pressure and Long-Life Type

This series is a high-pressure, swash-plate type pump developed for general industrial machinery based upon our long and rich experience. The adoption of the high-load bearings and friction-free contacting mechanism of shoes has achieved high reliability and long life.

2. Low Noise

The unique compact and rigid housing construction in addition to the semi-cylindrical swash-plate and its anti-vibration supporting mechanism has reduced noise. (See the data relating to noise on pages 9 and 10) The unique mechanism has reduced pressure pulsation. Attaching the optional pressure pulsation absorber, contributes further system noise reduction. (See the reduced pressure pulsation on page 22)

3. High Efficiency and High Self-Priming Capability

The spherical valve plate and improved hydraulic balance provide stable cylinder rotation, thus achieving high efficiency even in a low-pressure and low-speed operating range. Besides, the shortened radius of the cylinder port lowers the peripheral speed enabling the high self-priming capability.

4. Varieties of Control Methods

Good varieties of hydraulic and electrical control methods are available. The flow control, pressure control, horsepower control, and the combination of these are standardized and available.

5. Auxiliary Gear Pump

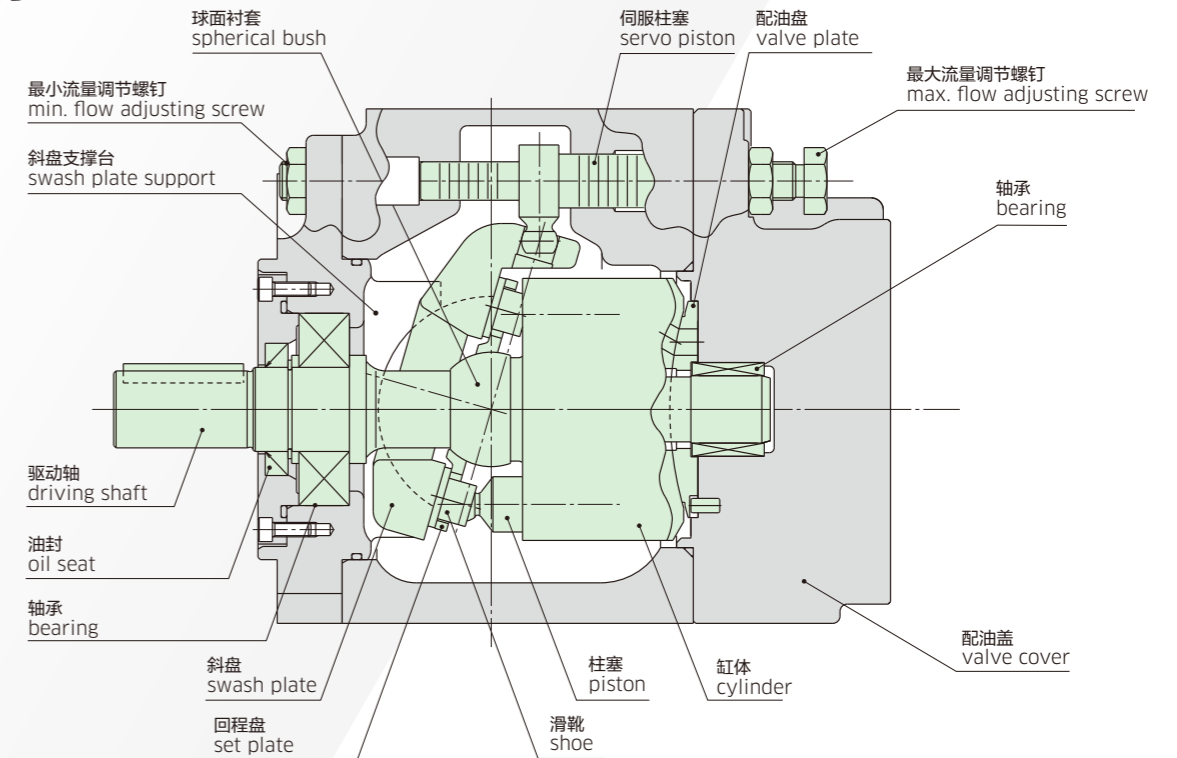
Various sizes of optional gear pumps are attachable. Accordingly, no separate pump unit is necessary as control pressure source or as a medium-pressure system pressure source. Hydraulic units can thus be made compact. (See the Ordering Code on page 7 and the Installation Dimensions on page 22)

■ 规格 SPECIFICATIONS

尺寸 size		63	112	180	280	180DT	280DT
排量 displacement cm ³		63	112	180	280	180DT	280DT
压力 pressure MPa(kgf/cm ²)	额定 rated *1	34.3(350)					
	最高 max.	34.3(350)					
	峰值 peak	39.2(400)					
转速 speed min ⁻¹	额定 rated	1,800		1,200	1,800	1,200	
	自吸最高 *2 max. for self-priming	2,600	2,200	1,850	1,600	1,850	1,600
	最高 max. *3	3,250	2,700	2,300	2,000	2,300	2,000
最大输入扭矩 Maximum allowable total input torque N·m		314	559	902	1,400	1,804	2,800
质量 mass kg		48	68	86	160	160	300
工作油 hydraulic fluid	种类 *4 type	矿物类抗磨液压油 mineral antiwear hydraulic fluid					
	温度范围 oil temperature range °C	-20~80					
	粘度范围 *5 oil viscosity range mm ² /s	10~1,000					
	洁净度 contamination level	NAS 9级以内 at least the level of NAS Class 9					
过滤器 filtration	吸入管路 suction line	150号 150 mesh					
	回油管路 return line	标称10μm nominal 10 micron meter					

- *1 是可以保证性能、功能、寿命的压力，强度上没有问题，但轴承寿命有限。
 - *2 请确保吸入压力在吸入部为 -0.01MPa (-0.1 kgf/cm²) 以上（稳法兰盘）。
 - *3 在吸入法兰盘部，需要0.1MPa (1kgf/cm²) 以上的升压压力。
 - *4 使用其他工作油时，请务必进行洽谈。
 - *5 200~1,000mm²/s 时，需要在正式运转前进行加热运转。
- *1 Pressure to allow guarantee of performance, functions and service life. Durability is unlimited (except for the bearing life).
 - *2 The suction pressure should be -0.01 MPa (-0.1 kgf/cm²) and above. (at normal condition)
 - *3 Minimum boost pressure at suction port 0.1 MPa (1 kgf/cm²)
 - *4 When other kinds of fluid are used, please consult Kawasaki.
 - *5 In case of 200~1,000 mm²/s, please allow system to warm up before using at operating pressure.

■ 结构 CONSTRUCTION

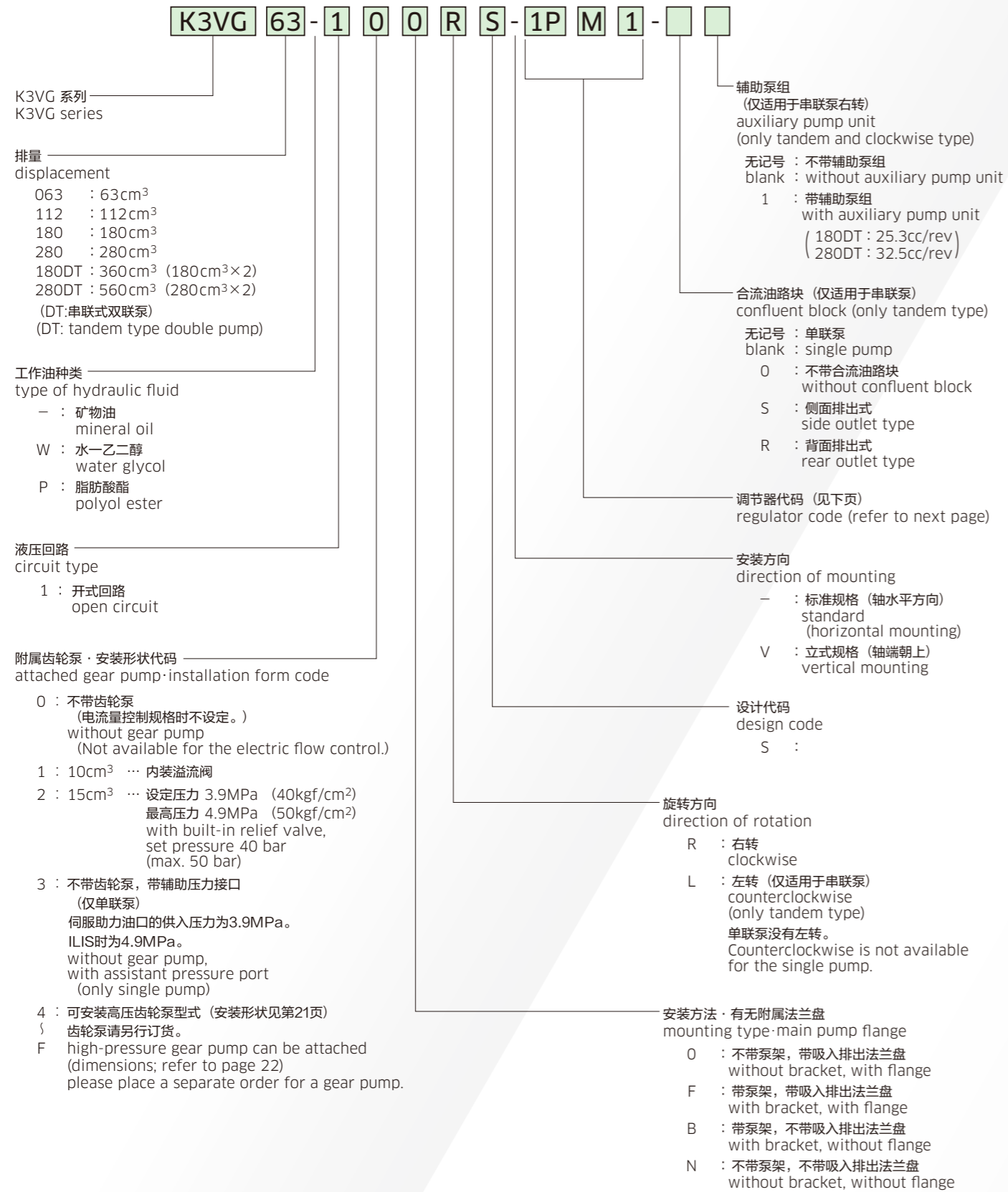


■ 最大流量调节范围 ADJUSTABLE RANGE OF MAX. DISPLACEMENT

尺寸 size	螺钉每转一圈的调节量 cm ³ approx. displacement change per revolution of screw	最小调排量 cm ³ min. setting of max. displacement
63	6.3	25.7
112	9.2	63
180/180DT	15.3	87
280/280DT	20.3	140

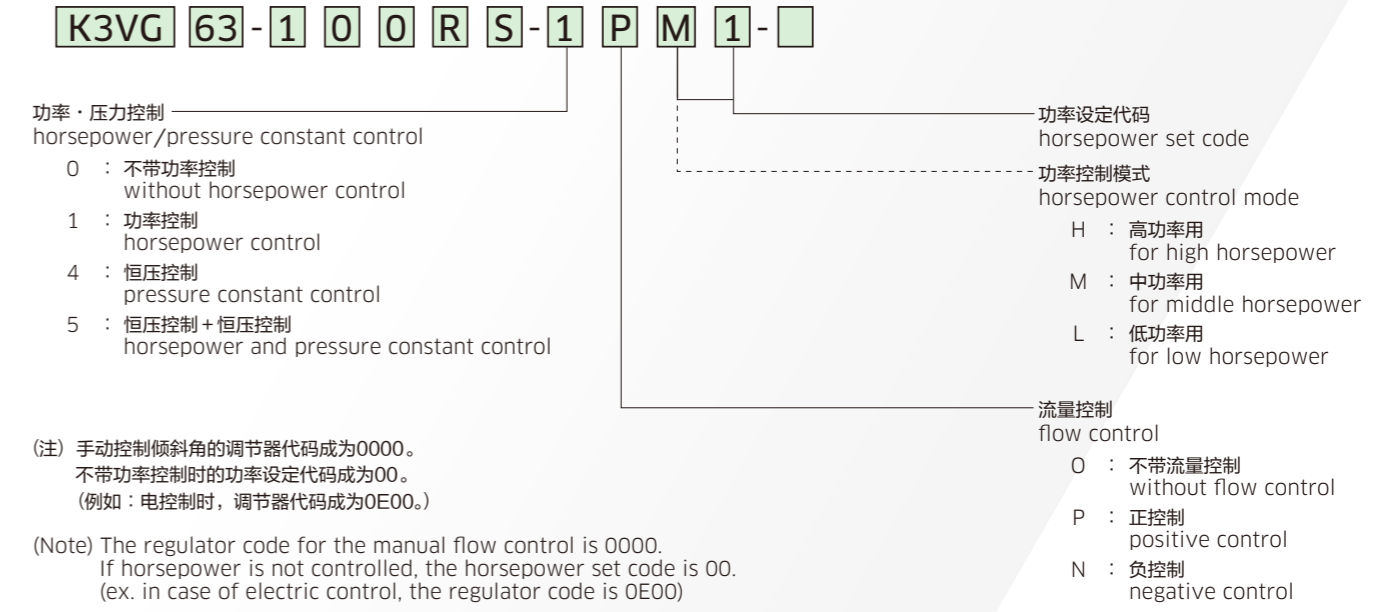
出厂时设定为最大流量。
Setting flow at delivery is maximum.

型号表示 ORDERING CODE

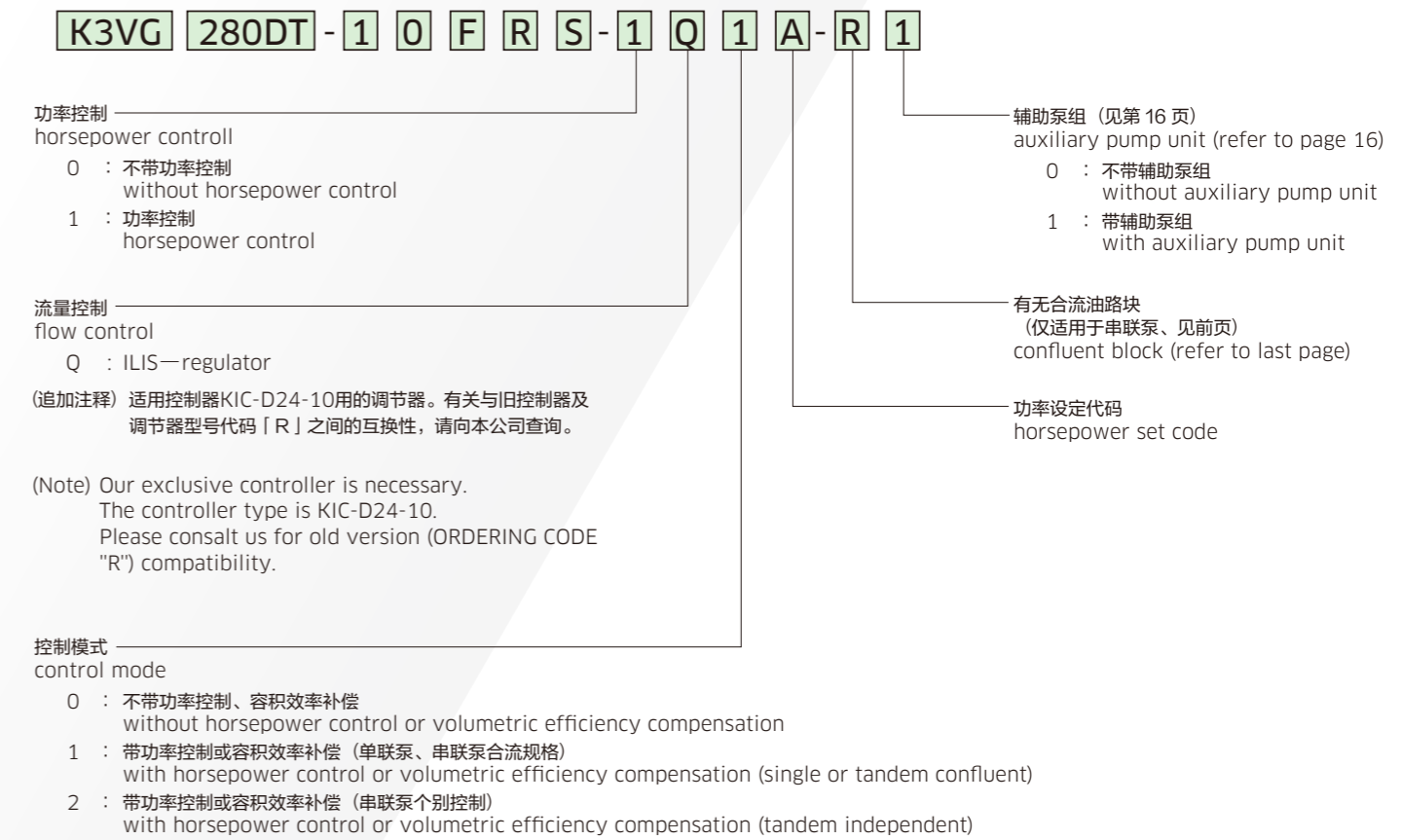


调节器代码 REGULATOR CODE

◆标准式 Standard type



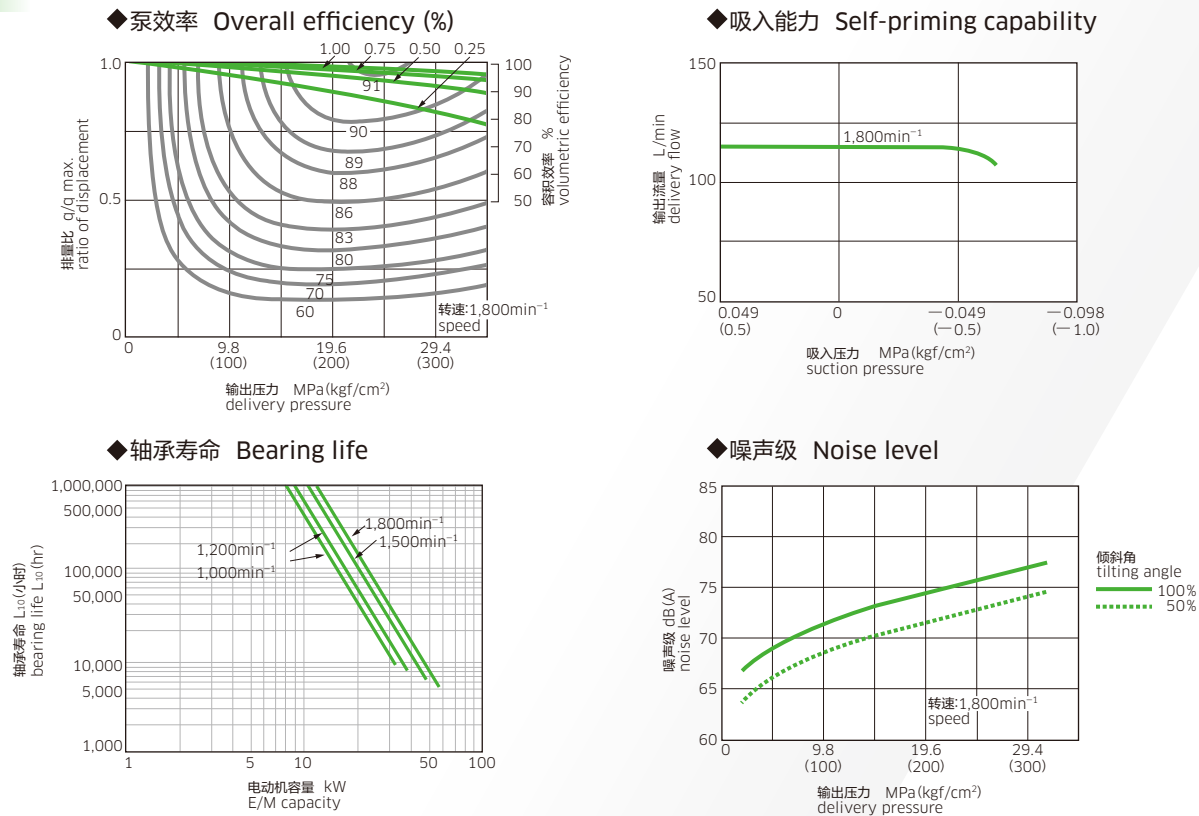
◆电-液伺服“ILIS”/Electro-hydraulic servo “ILIS”



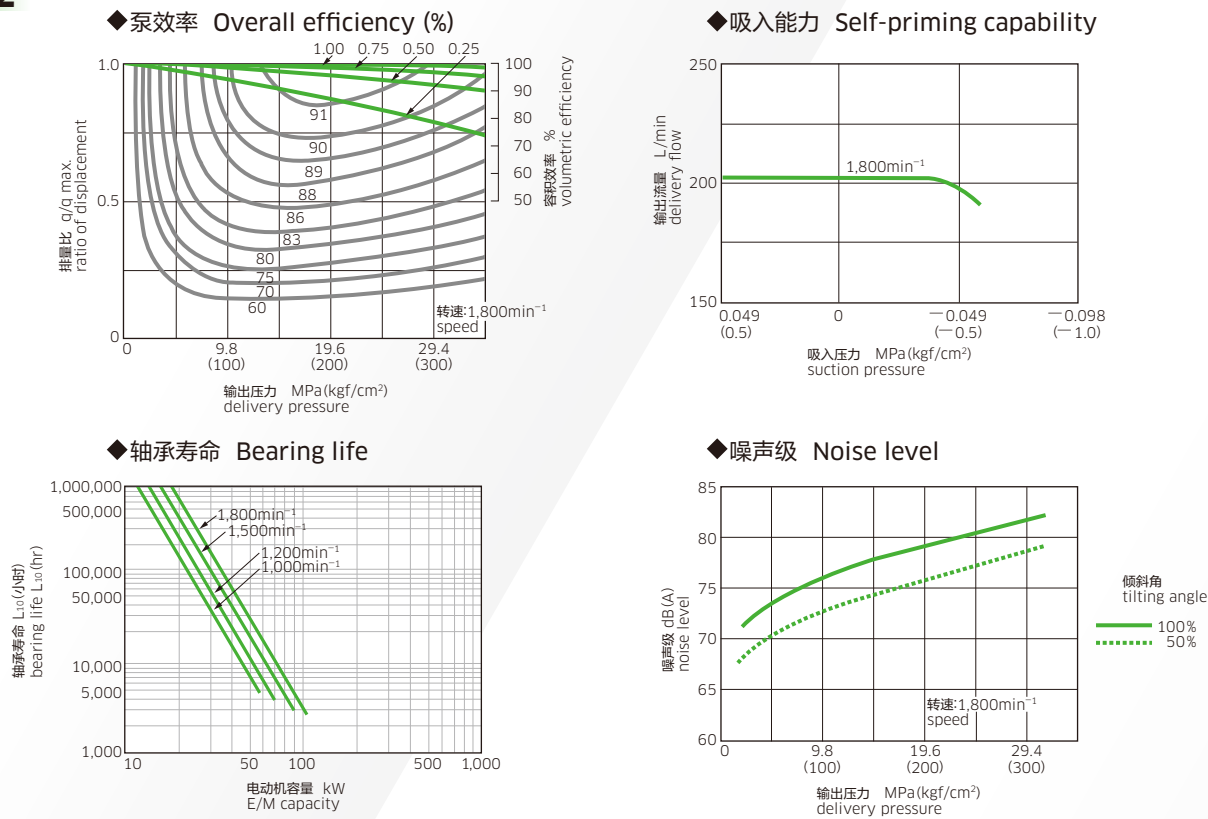
性能 PERFORMANCE CURVE

•矿物油 mineral oil •油温 50°C oil temperature •粘度 32mm²/s oil viscosity

K3VG63



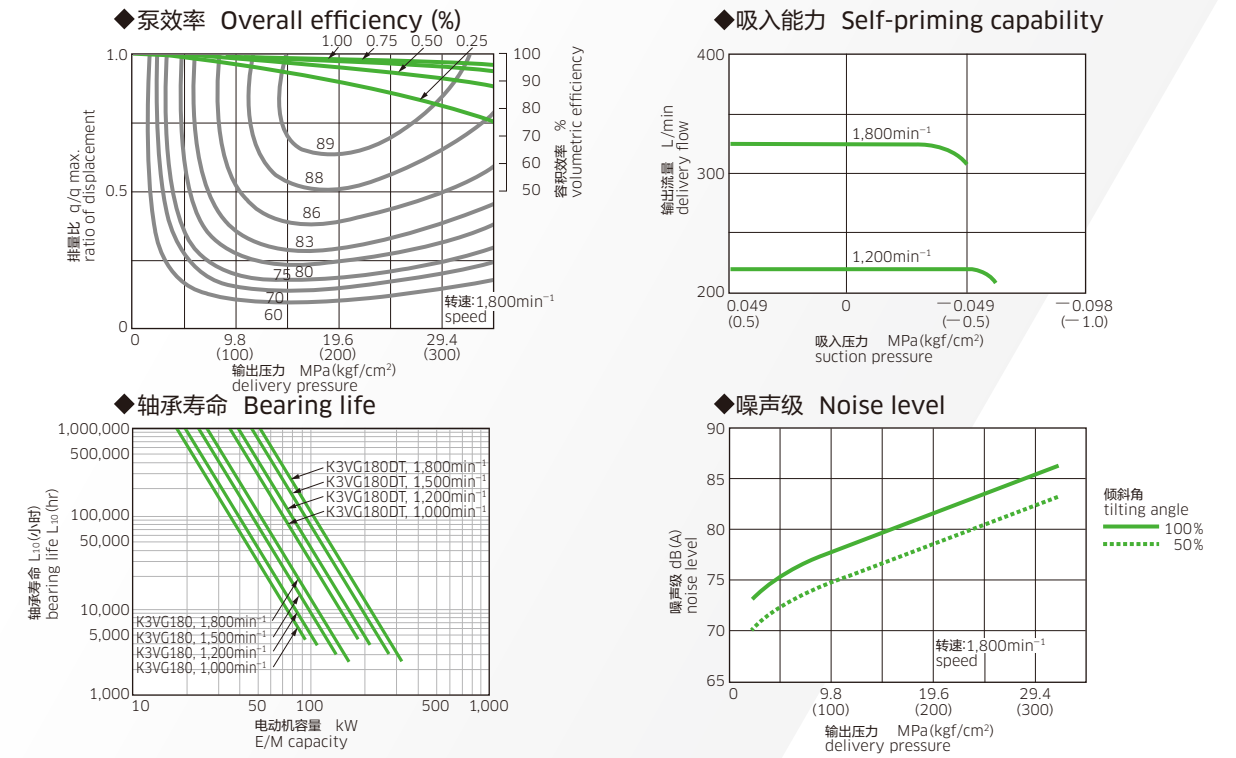
K3VG112



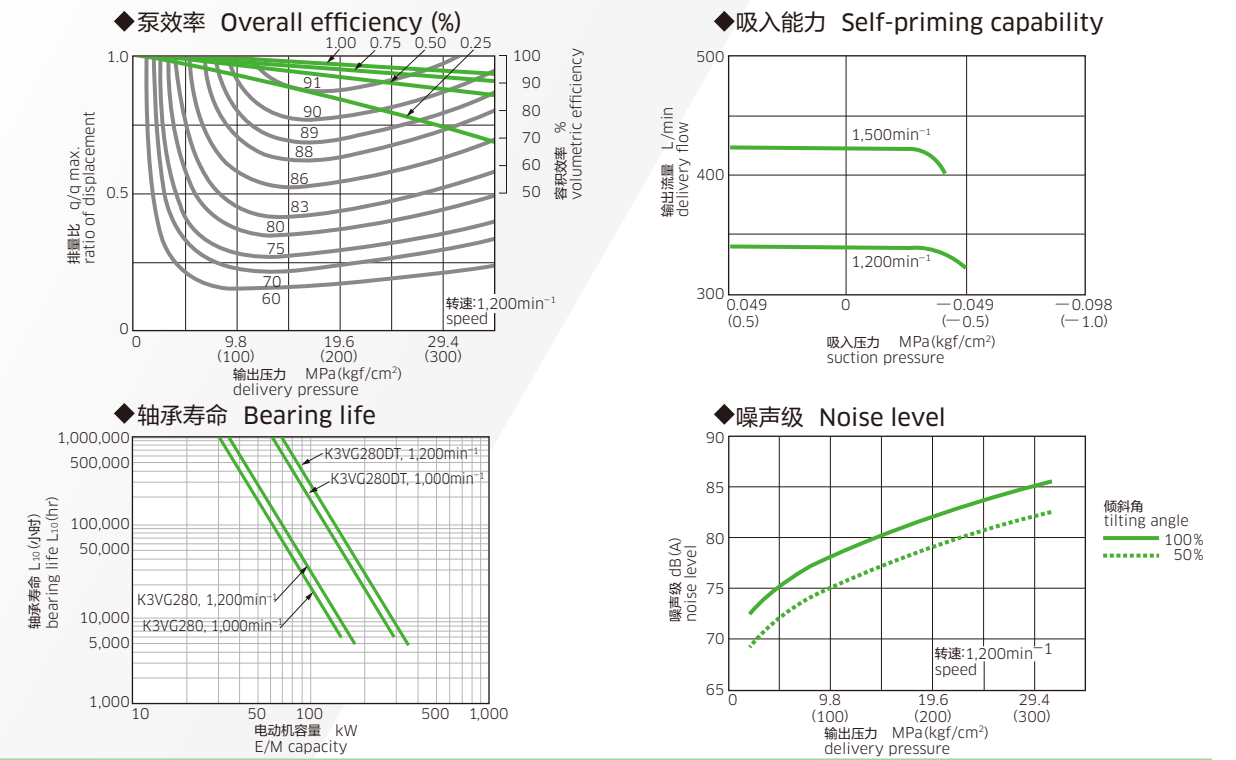
轴承寿命以外的图标数值, 不是保证值, 而是平均值。轴承寿命为基本额定寿命(可靠度90%)的计算值。
 噪声值无音室的泵单体噪声(泵斜后方1m音)。
 实际泵装置的噪声值比上图数值偏高。

The values shown in the above figures, excluding those for the bearing life, are not guaranteed values, but average ones.
 The values for the bearing life show the calculated values of the basic rated life (90% of reliability).
 Noise level is measured in an anechoic room (Distance from microphone to pump=1m).
 The noise level at the actual pump unit will be higher than the value shown in the above figure.

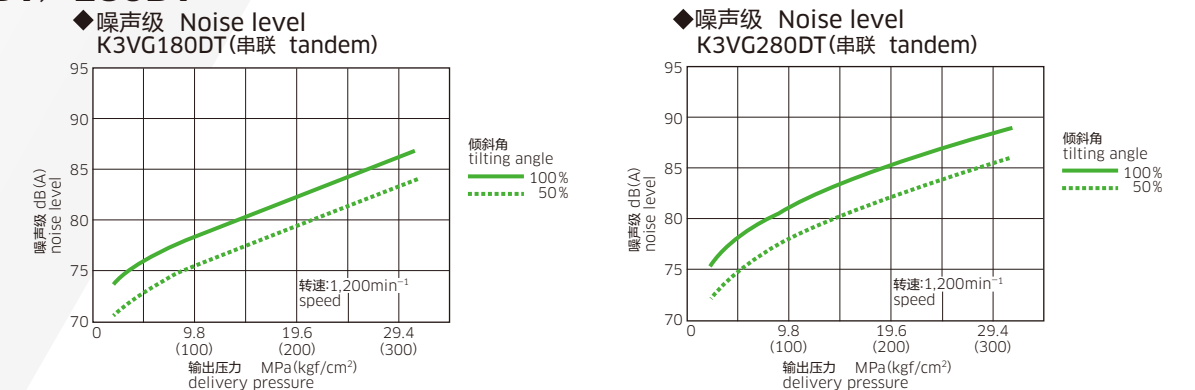
K3VG180 / 180DT



K3VG280 / 280DT

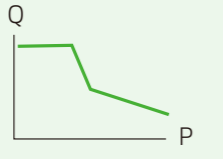

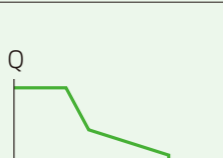


K3VG180DT / 280DT



调节器一览 REGULATORS

◆压力控制 Pressure Control

代码 code	控制型号 control type	控制线图 control curve	功能及特长	function & features
1*	功率控制型 horsepower control type		对应输出压力的上升使泵倾角自动变小, 限制输入扭矩。通过这种功能, 防止对原动机的过大负荷。	In response to the rise of the delivery pressure, the pump tilting angle is decreased, and the input torque is restricted. This function prevents excessive load to the motor.
4*	恒压型 pressure constant type		即使流量变化, 也可控制回路压力保持在恒定。回路请务必设置溢流阀。最高设定压力为31.4 MPa(320 kgf/cm ²)。发货时设定压力为19.6 MPa(200 kgf/cm ²)。截止压力调整范围为10~31.4 MPa。	Regardless of the flow change, the circuit pressure is controlled constant. Be sure to install the safety valve in the circuit. Maximum pressure setting is 31.4 MPa (320 kgf/cm ²). Pressure setting at delivery is 19.6 MPa (200 kgf/cm ²). Cut off pressure adjustable range is 10 ~ 31.4 MPa.
5*	功率控制+恒压型 horsepower and pressure constant type		当输出压力变成设定压力以上时, 便使输出流量自动减少, 这样从回路溢流阀溢出的多余流量减少到最小限度。通过这种功能, 不仅实现了节省能源的目的, 而且可以减少油箱温度的上升。与功率控制组合使用时, 选择这种代码。回路请务必设置溢流阀。出厂时的设定压力为31.4 MPa(320 kgf/cm ²)。截止压力调整范围为20~34.3 MPa。	If the discharge pressure exceeds the preset value, the discharge flow is automatically decreased, and thus the waste flow relieved out of the safety valve in the circuit is reduced down to the minimum possible level. This function not only saves energy but also reduces the temperature rise in the tank. When the pump is used in combination with the horsepower type, select this code. Be sure to install the safety valve in the circuit. Pressure setting at delivery is 31.4 MPa (320 kgf/cm ²). Cut off pressure adjustable range is 20 ~ 34.3 MPa.

◆流量控制 Flow Control

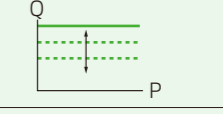
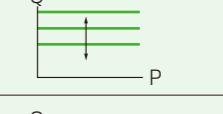
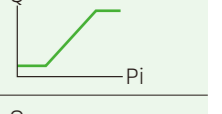
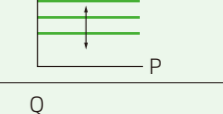
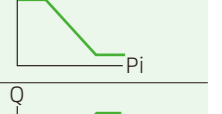
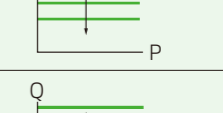
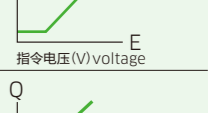
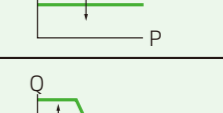
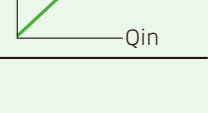
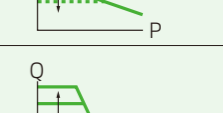
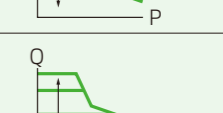
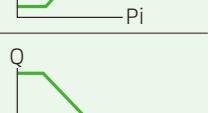
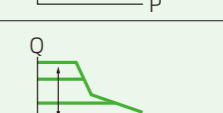
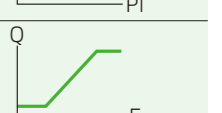
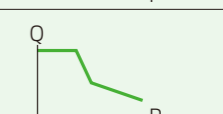
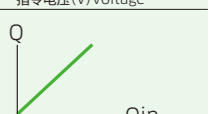
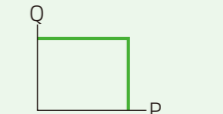
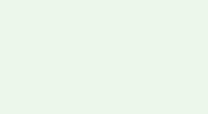
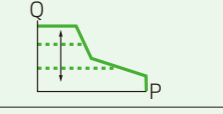
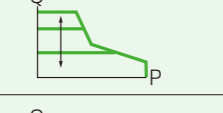
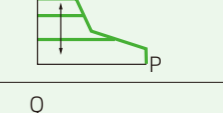
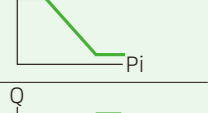
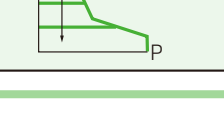
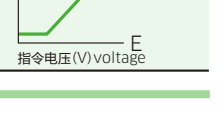


代码 code	控制型号 control type	控制线图 control curve	流量可设定范围 limit of flow set	功能及特长	function & features
00	输出流量无级调整型 (手动操作) stepless flow control type (manual control)		50~100%	可以通过手动操作任意设定输出流量。本调节已装备在所有型号的调节器。	The discharge flow can be steplessly adjusted by manual control. This adjustment is possible for all regulator models.
*P	正流量控制型(正) positive flow control		2.5~100%	通过先导压力可对输出流量进行无级调节。(先导压力 Pi: 0.7~2.5 MPa) 如不供入伺服压(支援压)、则有泵响应迟缓的情况。	Infinitely variable adjustment of the delivery flow is possible by the pilot hydraulic pressure. (Pilot pressure Pi: 0.7~2.5 MPa) Response of the pump may be slow in case no servo pressure is supplied.
*N	负流量控制型(负) negative flow control		15~100%	通过外部的先导压力的指令可无级调节最大流量。另外, 使用换向阀的卸载功能, 也可进行输出流量2级控制等。(先导压力 Pi: 1.2~3.3 MPa)	The external pilot pressure can steplessly adjust the maximum flow. With a directional control valve, unloading and 2-stage discharge flow control are possible. (Pilot pressure Pi: 1.2~3.3 MPa)
*E	电流量控制 electric flow control		2.5~100%	通过指令电压可以对输出流量进行无级调节(使用电液比例减压阀)。作为比例减压阀的压源, 如果利用本公司的10cm ³ 齿轮泵, 可以经内部通路连通, 就不需要多余的外部配管。(需要本公司制专用控制器。控制器型号:C-B10或KC-B10)	Infinitely variable adjustment of the delivery flow is possible by the pilot voltage. (Utilizing a solenoid-operated proportional pressure-reducing valve) As a power source for the solenoid-operated proportional pressure-reducing valve, our 10cm ³ gear pump is available which eliminates redundant external piping. (Our exclusive controller is necessary. The controller type is C-B10 or KC-B10)
*R	ILIS (隔膜) 高精度电·液伺服 accurate electro-hydraulic servo 请参照15-18页 urefer to page 15~18		0~100%	通过微机控制采用本公司独特的PID控制方式, 由指令电压可高精度地输出任意的流量。作为任选项, 备有控制压源用的标准辅助泵装置(内装)。(需要本公司制专用控制器。控制器型号:KIC-D24-10)	By our original PID control system with a built-in micro-processor, output flow is accurately controlled at will. Auxiliary pump unit as control pressure source is standardized and available. (Our exclusive controller is necessary. The controller type is KIC-D24-10)

(注) 最大输出流量(最大倾角)及功率控制的调节, 可通过调节螺钉从外部进行调整。以特殊目的需将标准线变更使用时, 请向本公司索要调整要领及标准功率控制线圈。

(Note) Adjustment of the max. flow (max. tilting angle) and control horsepower can be made with the external adjusting screws. In case the pump is used deviating from the standard control curve, consult us for adjusting procedure and standard horsepower control curve.

可就上述内容组合, 进行下列控制。

Combining each pressure control and flow control shown left gives the following combinations of control.

代码 code	压力控制线图 pressure control curve	流量控制线图 flow control curve
00		
0P		
0N		
0E		
0R		
10		
1P		
1N		
1E		
1R		
40		
50		
5P		
5N		
5E		

功率设定代码一览 SUMMARY OF HORSEPOWER SET CODE

■ 进行恒功率控制时，请按以下代码表指定功率设定代码。

■ Select the right horsepower set code from among those shown in the table below for the needed constant horsepower control.

■ 使用电液伺服调节器K3VG“ILIS”时，代码有所不同。请参照17页。

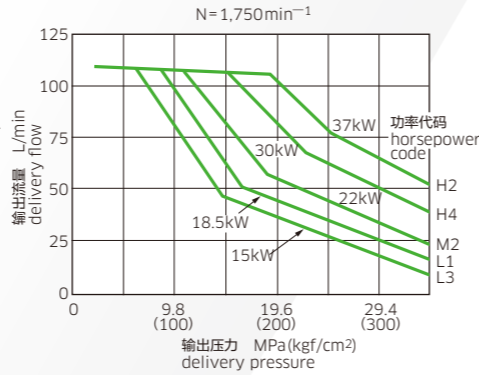
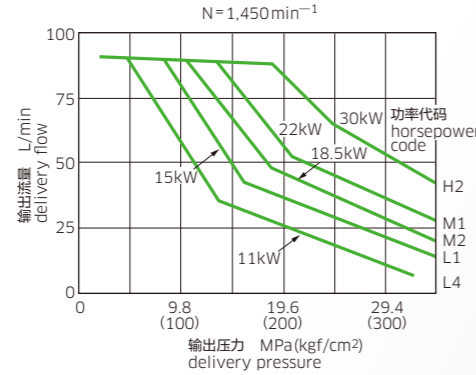
■ In case of electro-hydraulic servo regulator K3VG "ILIS", the horsepower set code is different. Refer to page 17.

■ 带10/15cm³齿轮泵时请向本公司询问。部分与本表代码不同。

■ In case a 10 or 15 cm³ gear pump is attached, please consult us. Some part of the code table is different.

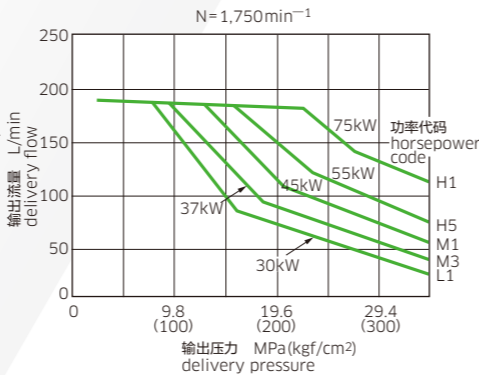
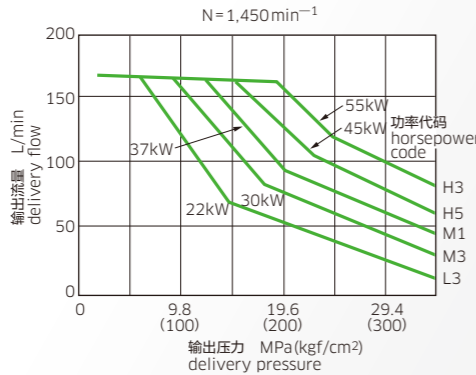
K3VG63

电动机容量 (kW) E/M capacity	970min ⁻¹	1,150min ⁻¹	1,450min ⁻¹	1,750min ⁻¹
7.5	L4			
11.0	M3	L2	L4	
15.0	M1	M2	L1	L3
18.5	H3	H5	M2	L1
22.0	H1	H3	M1	M2
30.0			H2	H4
37.0				H2



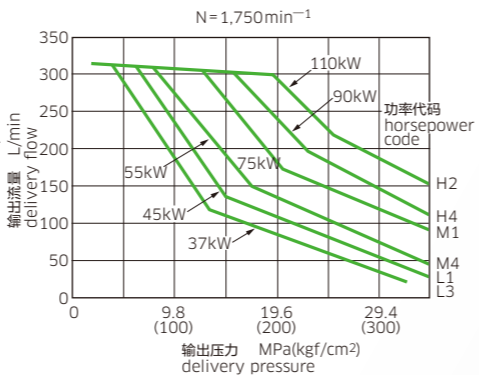
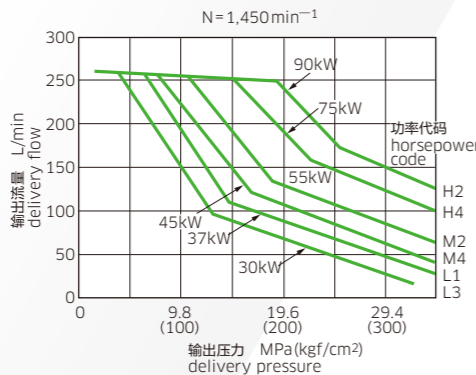
K3VG112

电动机容量 (kW) E/M capacity	970min ⁻¹	1,150min ⁻¹	1,450min ⁻¹	1,750min ⁻¹
15	L3			
18.5	M4	L2		
22.0	M2	M4	L3	
30	H5	M1	M3	L1
37.0	H3	H4	M1	M3
45.0		H2	H5	M1
55			H3	H5
75				H1



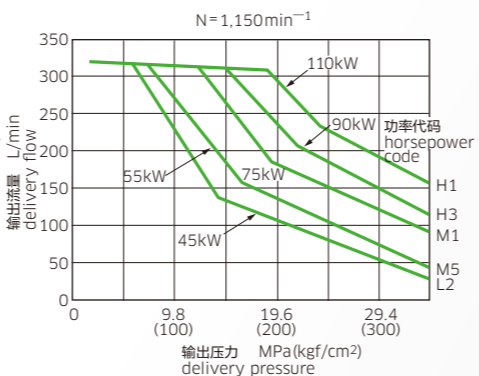
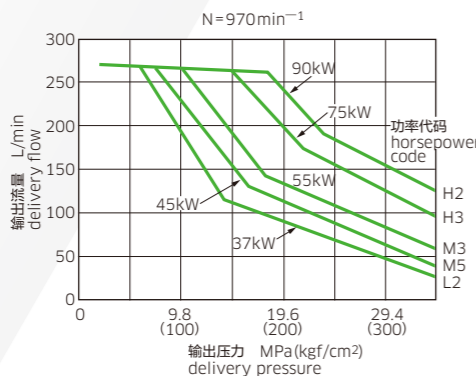
K3VG180

电动机容量 (kW) E/M capacity	970min ⁻¹	1,150min ⁻¹	1,450min ⁻¹	1,750min ⁻¹
22	L2			
30	M4	L1	L3	
37	M2	M3	L1	L3
45	H5	M2	M4	L1
55	H3	H5	M2	M4
75		H1	H4	M1
90			H2	H4
110				H2



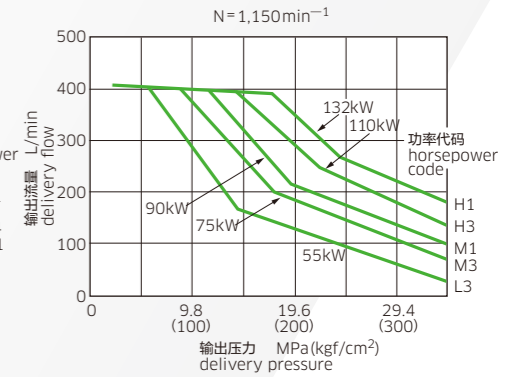
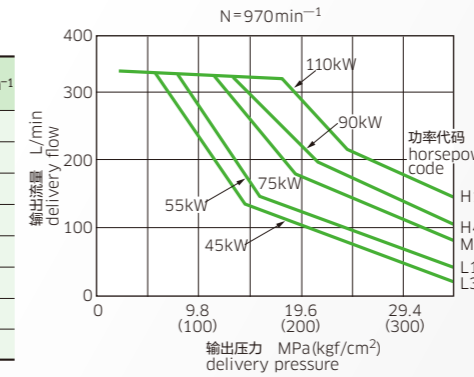
K3VG280

电动机容量 (kW) E/M capacity	970min ⁻¹	1,150min ⁻¹	1,450min ⁻¹	1,750min ⁻¹
37	L2			
45	M5	L2		
55	M3	M5	L2	
75	H3	M1	M4	
90	H2	H3	M2	
110		H1	H4	
132			H2	



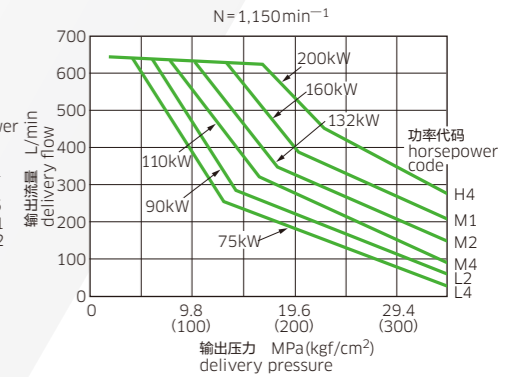
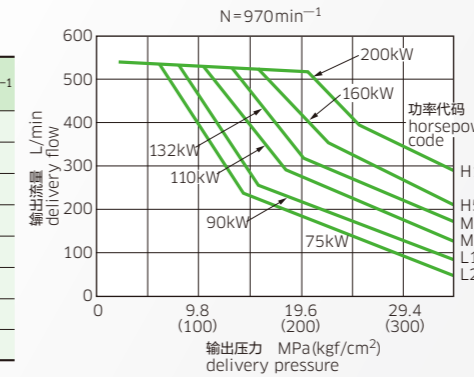
K3VG180DT

电动机容量 (kW) E/M capacity	970min ⁻¹	1,150min ⁻¹	1,450min ⁻¹	1,750min ⁻¹
45	L3			
55	L1	L3		
75	M1	M3	L2	L4
90	H4	M1	M4	L2
110	H1	H3	M2	M4
132		H1	H4	M2
160			H2	H4
200				H1



K3VG280DT

电动机容量 (kW) E/M capacity	970min ⁻¹	1,150min ⁻¹	1,450min ⁻¹	1,750min ⁻¹
75	L2	L4		
90	L1	L2		
110	M2	M4	L3	
132	M1	M2	L1	
160	H5	M1	M3	
200	H1	H4	M1	
250			H4	
280				H2



功率可调节范围 ADJUSTABLE RANGE OF HORSEPOWER

■ 功率控制是在安装在主机状态下，能用调节螺钉从外部进行调节。有关各功率控制模式的功率调节范围如下所示。调整要领请向本公司索要。

■ Without disassembling, the horsepower control can be adjusted externally with the set screw. The adjusting range of each horsepower control mode is given below. Consult us for the correct adjusting procedure.

K3VG63

功率控制模式 horsepower control mode	970min ⁻¹	1,150min ⁻¹	1,450min ⁻¹	1,750min ⁻¹
H 高功率用 high horsepower	14.7~22.6	17.5~26.8	22.0~33.8	26.6~40.8
M 中功率用 middle horsepower	10.5~15.0	12.4~17.8	15.6~22.4	18.9~27.1
L 低功率用 low horsepower	7.1~12.6	8.4~15.0	10.6~18.9	12.8~22.8

K3VG112

功率控制模式 horsepower control mode	970min ⁻¹	1,150min ⁻¹	1,450min ⁻¹	1,750min ⁻¹
H 高功率用 high horsepower	24.7~41.6	29.3~49.3	37.0~62.1	44.6~75.0
M 中功率用 middle horsepower	18.1~30.5	21.5~36.1	27.1~45.6	32.7~55.0
L 低功率用 low horsepower	12.7~20.5	15.1~24.3	19.1~30.7	23.0~37.0

K3VG180

功率控制模式 horsepower control mode	970min ⁻¹	1,150min ⁻¹	1,450min ⁻¹	1,750min ⁻¹
H 高功率用 high horsepower	36.8~64.5	43.6~76.5	55.0~96.5	66.4~116.4
M 中功率用 middle horsepower	29.4~50.2	34.8~59.5	43.9~75.0	53.0~90.5
L 低功率用 low horsepower	20.0~30.5	23.7~36.1	29.9~45.6	36.1~55.0

K3VG280

功率控制模式 horsepower control mode	970min ⁻¹	1,150min ⁻¹	1,450min ⁻¹	1,750min ⁻¹
H 高功率用 high horsepower	60.2~100.4	71.4~119.1	90.0~150.1	
M 中功率用 middle horsepower	45.0~75.9	53.4~90.0	67.3~113.5	
L 低功率用 low horsepower	31.3~50.2	37.1~59.5	46.8~75.0	

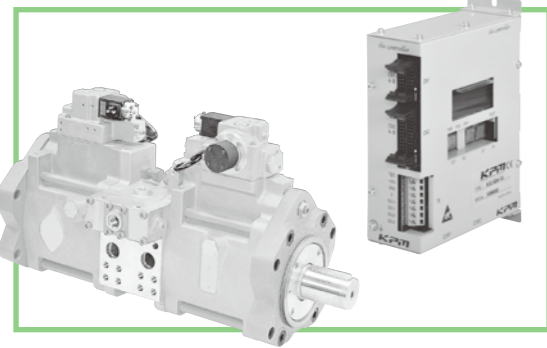
K3VG180DT

功率控制模式 horsepower control mode	970min ⁻¹	1,150min ⁻¹	1,450min ⁻¹	1,750min ⁻¹
H 高功率用 high horsepower	73.2~129.1	86.7~153.0	109.4~192.9	132.0~232.9
M 中功率用 middle horsepower	58.8~90.0	69.7~106.7	87.9~134.5	106.0~162.4
L 低功率用 low horsepower	40.1~61.0	47.5~72.3	59.9~91.1	72.3~110.0

K3VG280DT

功率控制模式 horsepower control mode	970min ⁻¹	1,150min ⁻¹	1,450min ⁻¹	1,750min ⁻¹
H 高功率用 high horsepower	132.0~200.9	156.5~238.1	197.3~300.3	
M 中功率用 middle horsepower	91.8~160.0	108.8~189.7	137.2~239.2	
L 低功率用 low horsepower	62.6~107.0	74.2~126.9	93.5~160.0	

电—液伺服调节器 "ILIS" ELECTRO-HYDRAULIC SERVO REGULATOR K3VG "ILIS"



装有高精度电—液伺服调节器 "ILIS" 的电控制泵K3VG-ILIS, 对应电指令的高精度地输出任意的流量。在继续以往素有好评的LZ-ROTAS的高可靠性传统的同时, 还融入了最新的控制技术, 使高精度、高响应的控制特性得以提高。

The electric control pump K3VG-ILIS with electro-hydraulic servo regulator "ILIS" delivers flow accurately according to the pilot voltage signal. ILIS has succeeded the advantage of the LZ-ROTAS well-reputed excellent reliability, and has further improved accurate and highly responsive controllability by the latest control technology.

特长 FEATURES

1. 高精度

通过采用微机控制的本公司独特的PID控制方式, 实现了较高的控制精度(滞后1%/FS以下, 线性±0.5%/FS以下)。

2. 稳定的控制特性·高响应

通过倾角传感器的反馈控制, 再加上机械式局部反馈构成了双重的反馈组合, 实现了稳定的控制性和高响应。

3. 抗污垢较强的高可靠性

由于使用的不是喷嘴挡板式的伺服阀, 而是吸引力较强的比例阀, 具有较强的抗污垢的可靠性。

4. 优异的功率控制特性

以压力传感器的信号进行电控制。作为多段的折线逼近(最大6段), 实现了从低功率到高功率的高近似精度。

5. 附有容积效率补偿功能

利用压力传感器信号, 就泵的泄漏特性予以补偿。由此实现了定流量特性, 即使负载压力发生变化, 输出流量也几乎没有变化。

规格 SPECIFICATIONS

◆ 调节器规格 Regulator specifications

电气驱动部 electronic-driven part	电液比例减压阀 proportional reducing valve
控制压力 control pressure	4.9MPa(50kgf/cm ²)
控制流量 control flow	3~40 L/min
滞后 hysteresis	≤1.0%/FS
直线性 linearity	≤±0.5%/FS
阶跃响应 response to unit step	≤0.3mm ² /s(0 ↔ 100%)
频率响应 response in the frequency domain	≥3Hz(-3dB)

(注) K3VG-ILIS泵与控制器1对1调整后发货的, 请务必配合使用。
(Note) Please use pump and controller as a set because they have been adjusted one - to - one basis and shipped.

1. Accuracy

Our original PID control system with a built-in micro-processor has achieved accurate controllability. (hysteresis ; below 1%/FS, linearity; below 0.5%/FS)

2. Stable and Highly Responsive Controllability

The double feedback system of the sensed tilting angle and mechanical minor-feedback has realized stable and highly responsive controllability.

3. Excellent Reliability to Overcome Contamination

ILIS utilizes a powerful proportional valve instead of a servo valve of the nozzle-flapper type, and consequently retains high reliability against contamination.

4. Good Performance of Horsepower Control

Horsepower is electrically limited by the sensed pressure. The adoption of linear approximation with many steps (max. 6 steps) enables to control horsepower accurately from low to high power level.

5. With Volumetric Efficiency Compensating Function

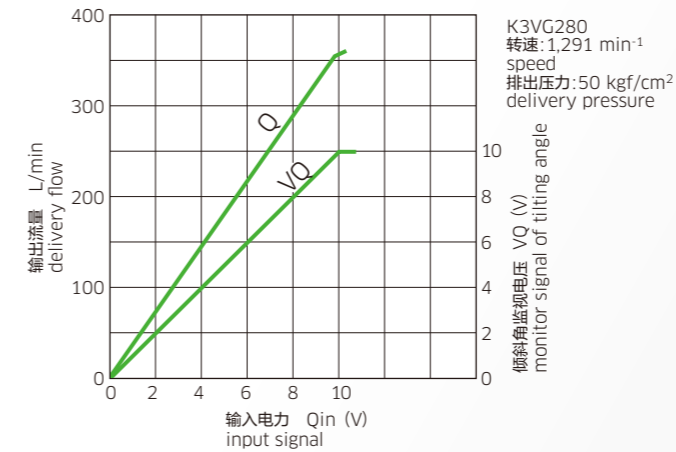
The sensed pressure signal compensates the volumetric efficiency of pump. Regardless of the delivery pressure change, you will get the almost constant delivery flow.

◆ 控制器规格 Controller specifications

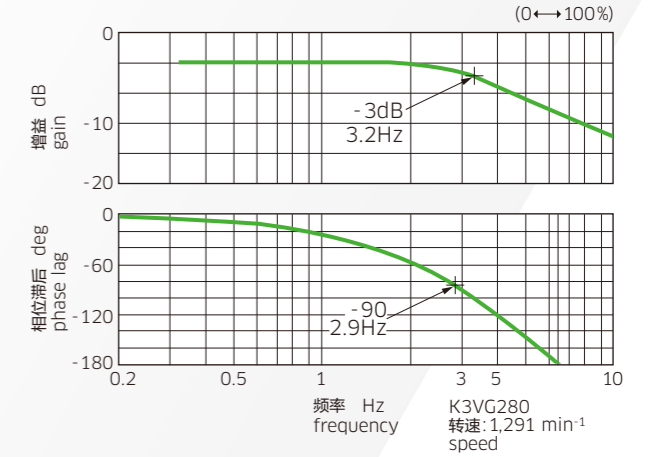
控制器形式 controller type	KIC-D24-10
使用电源 voltage supply	DC 24 V
消费电力 power consumption	最大/MAX. 100 W
最大输出电流 max. output current	1.4 A × 2
输入阻抗 input impedance	200KΩ
指令电压 input voltage	额定/rated DC 0~10V
周围温度 ambient temperature	0~50°C
周围湿度 ambient humidity	95%RH 以下/below

性能 PERFORMANCE CURVE

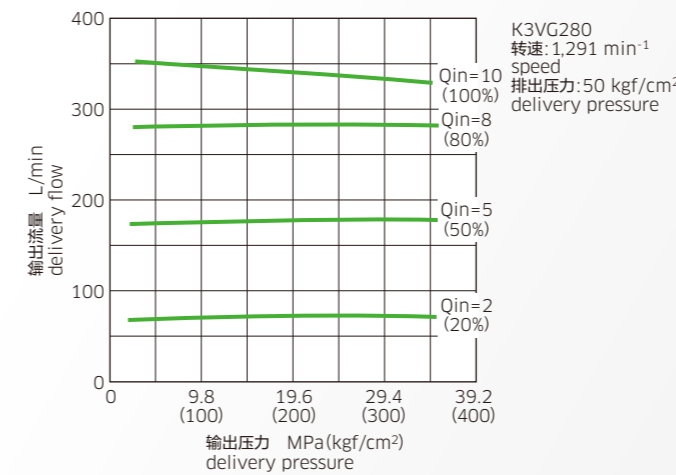
◆ 电压—流量特性 Voltage-flow characteristics



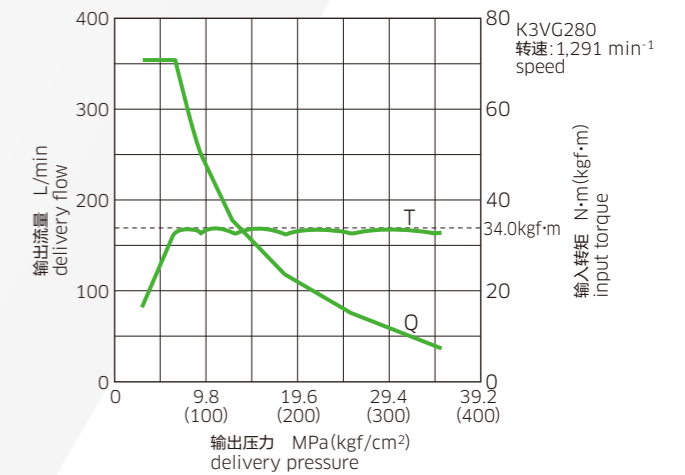
◆ 频率响应 Response in the frequency domain



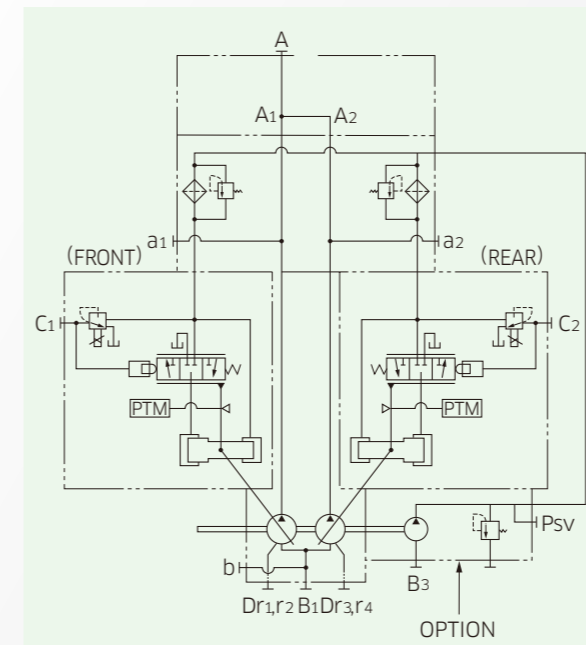
◆ 压力—流量特性 Pressure-flow characteristics



◆ 马力控制特性 Horsepower control characteristics



液压回路图 HYDRAULIC CIRCUIT



标准辅助泵组 STANDARD AUXILIARY PUMP UNIT

控制压源用的辅助泵组可以作为任选予以安装。无需另行设置泵组, 因此很便利。备有最适合各泵尺寸要领的泵组(带溢流阀、管道)。

An auxiliary pump unit can be attached as a control pressure source, no separate pump unit is needed. The optimum capacity pump unit for each main pump size is standardized and available (with relief valve and connecting pipe).

表1. 标准辅助泵容量和响应时间
table 1. Standard auxiliary pump capacity & control time

带辅助泵组的型号标记 ordering code with a gear pump	齿轮泵排量 gear pump capacity	响应时间(sec) control time
K3VG63-11□R-□□□-1	10.0 cm ³	0.09~0.12
K3VG112-11□R-□□□-1	10.0 cm ³	0.12~0.17
K3VG180-12□R-□□□-1	15.0 cm ³	0.15~0.18
K3VG280-1A□R-□□□-1	20.3 cm ³	0.20~0.22
K3VG180DT-1A□R-□□□-1	25.3 cm ³	0.15~0.20
K3VG280DT-1A□R-□□□-1	32.5 cm ³	0.20~0.22

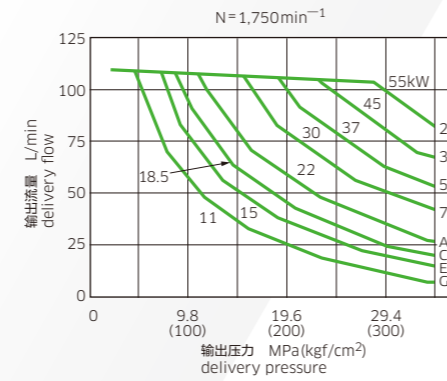
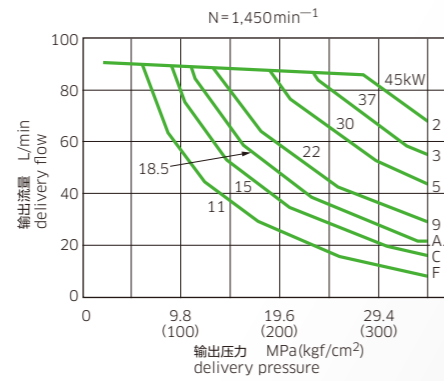
ILIS功率设定代码一览 SUMMARY OF HORSEPOWER SET CODE FOR ILIS-REGULATOR

■用K3VG-ILIS泵进行恒功率控制时，请根据以下代码表指定功率设定代码。
■带有标准辅助泵组时，功率控制设定代码相同，但控制范围有所不同。具体请向本公司索要资料。

■ Select the right horsepower set code of ILIS-Regulator from among those shown in the table below for the needed constant horsepower control.
■ In case of attached an auxiliary pump unit, the horsepower set code is same, but control curve is different. Please consult us for the control curve characteristics.

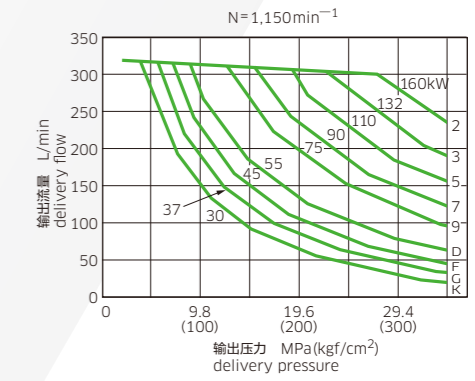
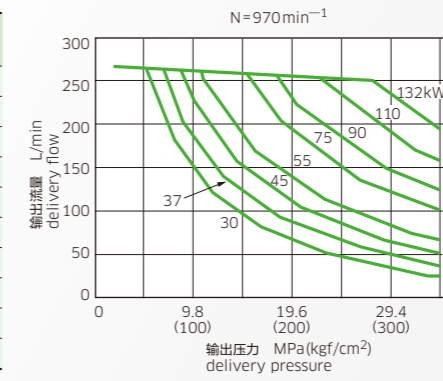
K3VG63-ILIS

电动机容量(kW) E/M capacity	970min ⁻¹	1,150min ⁻¹	1,450min ⁻¹	1,750min ⁻¹
7.5	F	G		
11.0	B	D	F	G
15.0	9	A	C	E
18.5	6	8	A	C
22.0	4	6	9	A
30.0	2	3	5	7
37.0		1	3	5
45.0			2	3
55.0				2



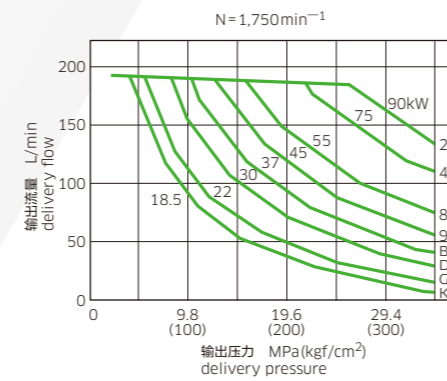
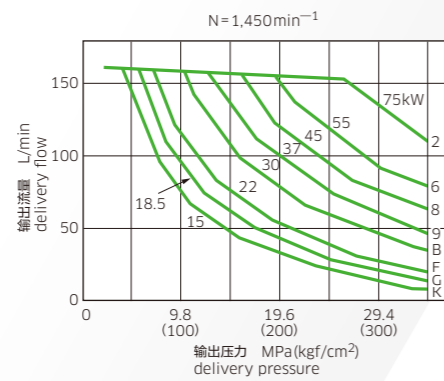
K3VG280-ILIS

电动机容量(kW) E/M capacity	970min ⁻¹	1,150min ⁻¹	1,450min ⁻¹	1,750min ⁻¹
30	H	K		
37	F	G	K	
45	D	F	H	
55	B	D	F	
75	7	9	C	
90	6	7	A	
110	3	5	8	
132	2	3	6	
160		2	4	
200			2	



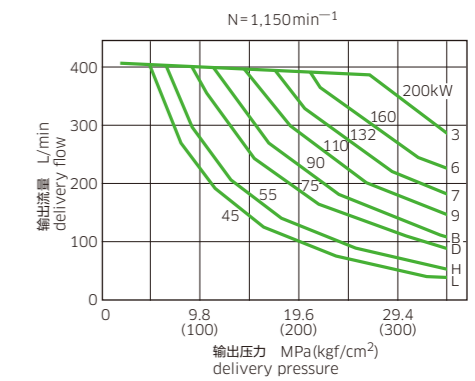
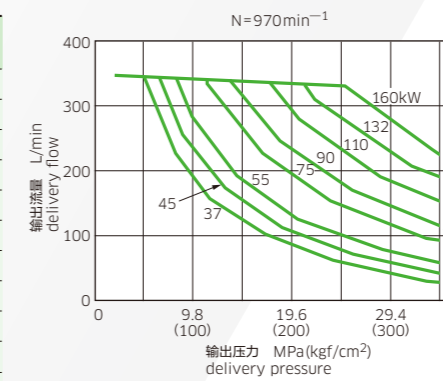
K3VG112-ILIS

电动机容量(kW) E/M capacity	970min ⁻¹	1,150min ⁻¹	1,450min ⁻¹	1,750min ⁻¹
11	H			
15	F	G	K	
18.5	C	E	G	K
22	A	C	F	G
30	8	9	B	D
37	6	7	9	B
45	3	5	8	9
55	1	3	6	8
75			2	4
90				2



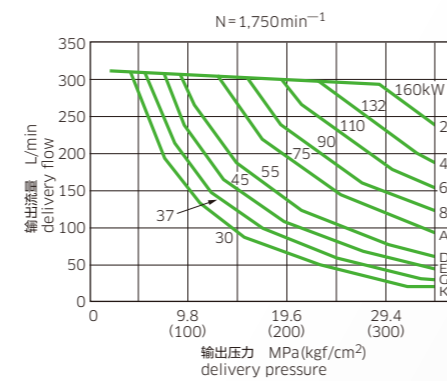
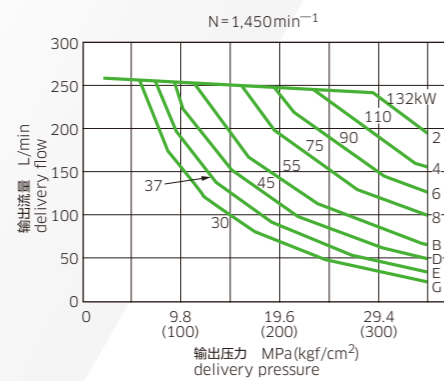
K3VG180DT-ILIS

电动机容量(kW) E/M capacity	970min ⁻¹	1,150min ⁻¹	1,450min ⁻¹	1,750min ⁻¹
37	L			
45	H	L		
55	F	H	L	
75	B	D	G	K
90	A	B	E	G
110	7	9	C	E
132	6	7	A	C
160	4	6	8	A
200		3	6	7
250			3	5
280			1	4
315				2



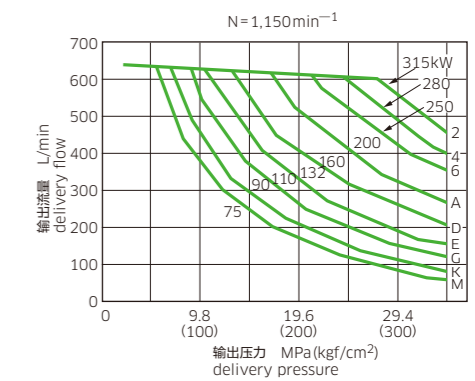
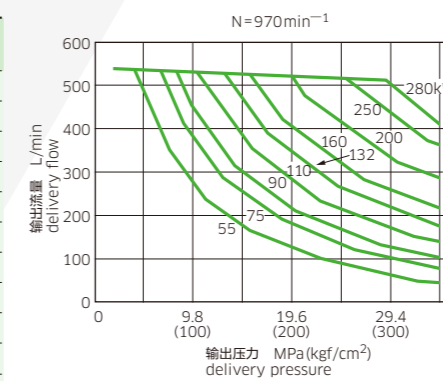
K3VG180-ILIS

电动机容量(kW) E/M capacity	970min ⁻¹	1,150min ⁻¹	1,450min ⁻¹	1,750min ⁻¹
18.5	H			
22	F	H		
30	D	E	G	K
37	B	C	E	G
45	9	B	D	E
55	7	9	B	D
75	3	5	8	A
90	2	3	6	8
110		1	4	6
132			2	4
160				2



K3VG280DT-ILIS

电动机容量(kW) E/M capacity	970min ⁻¹	1,150min ⁻¹	1,450min ⁻¹	1,750min ⁻¹
55	P			
75	K	M	Q	
90	H	K	N	
110	E	G	L	
132	D	E	H	
160	B	D	F	
200	7	A	D	
250	3	6	A	
280	1	4	8	
315		2	6	
355			4	
400			2	



尺寸 DIMENSIONS

K3VG63 / 112 / 180 / 280 (泵单体 without attachment)

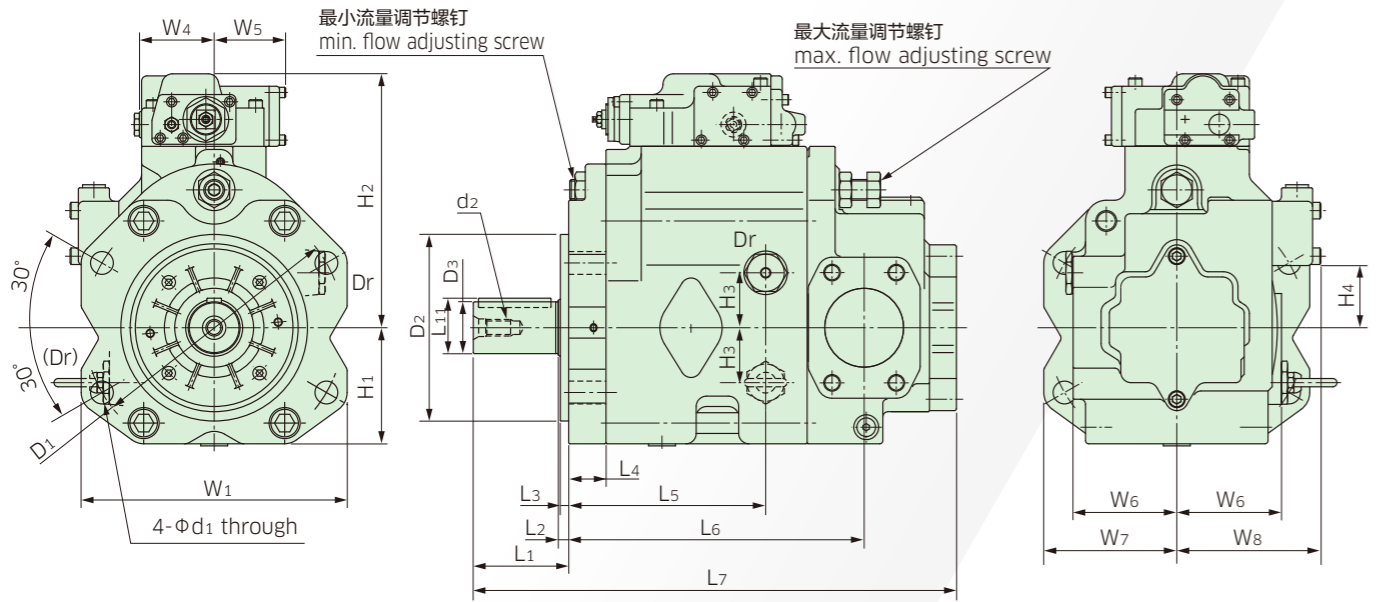
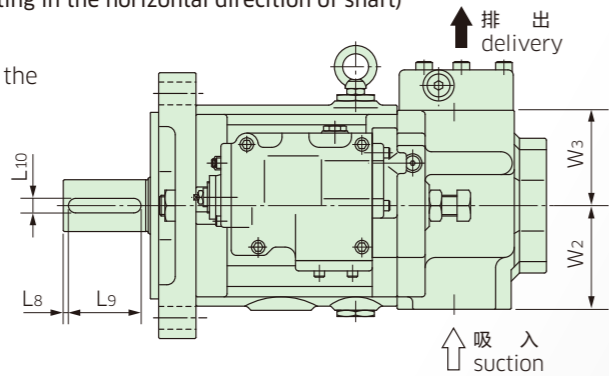
◆标准规格 (轴水平方向安装)

The standard mounting type (mounting in the horizontal direction of shaft)

有关立式安装规格, 资料另请索要。
For the vertical mounting type, see the separate information.

当泵安装到本公司以外泵架时, 请考虑安装侧的形状不要与最小流量调节螺钉自身之间有干涉 (63尺寸和280尺寸) 以及与调整用工具 (内六角扳手等) 之间有干涉。

For K3VG63 and 280, design the bell housing or the bracket to prevent interference with the Qmin adjustment screw and tools in case the bracket supplied by KHI is not used.

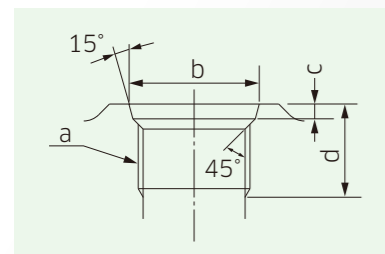


尺寸 size	D1	D2	D3	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11
63	180	125 ^{-0.050} / _{-0.090}	32K6	68	10	8	27	138	210	349	4	50	10	35
112	224	160 ^{-0.050} / _{-0.090}	40K6	92	10	8	33	167	249	419	5	70	12	43
180	250	180 ^{-0.050} / _{-0.090}	50K6	92	10	8	36	190	285	466	5	70	14	53.5
280	300	200 ^{-0.050} / _{-0.090}	55K6	92	10	9	50	203	351	539	5	70	16	59

尺寸 size	H1	H2	H3	H4	W1	W2	W3	W4	W5	W6	W7	W8	d1	d2
63	89	195	37	41	190	70	70	72	69	76	95	113	18	M12
112	100	220	41	49	234	90	80	72	69	90	117	125	22	M12
180	112	245	53	58	256	100	92	72	69	101	129	139	22	M16
280	127	286	70	68	300	120	120	72	69	118	150	167	26	M16

◆外部泄漏油接口 Dr Drain Port

(mm)



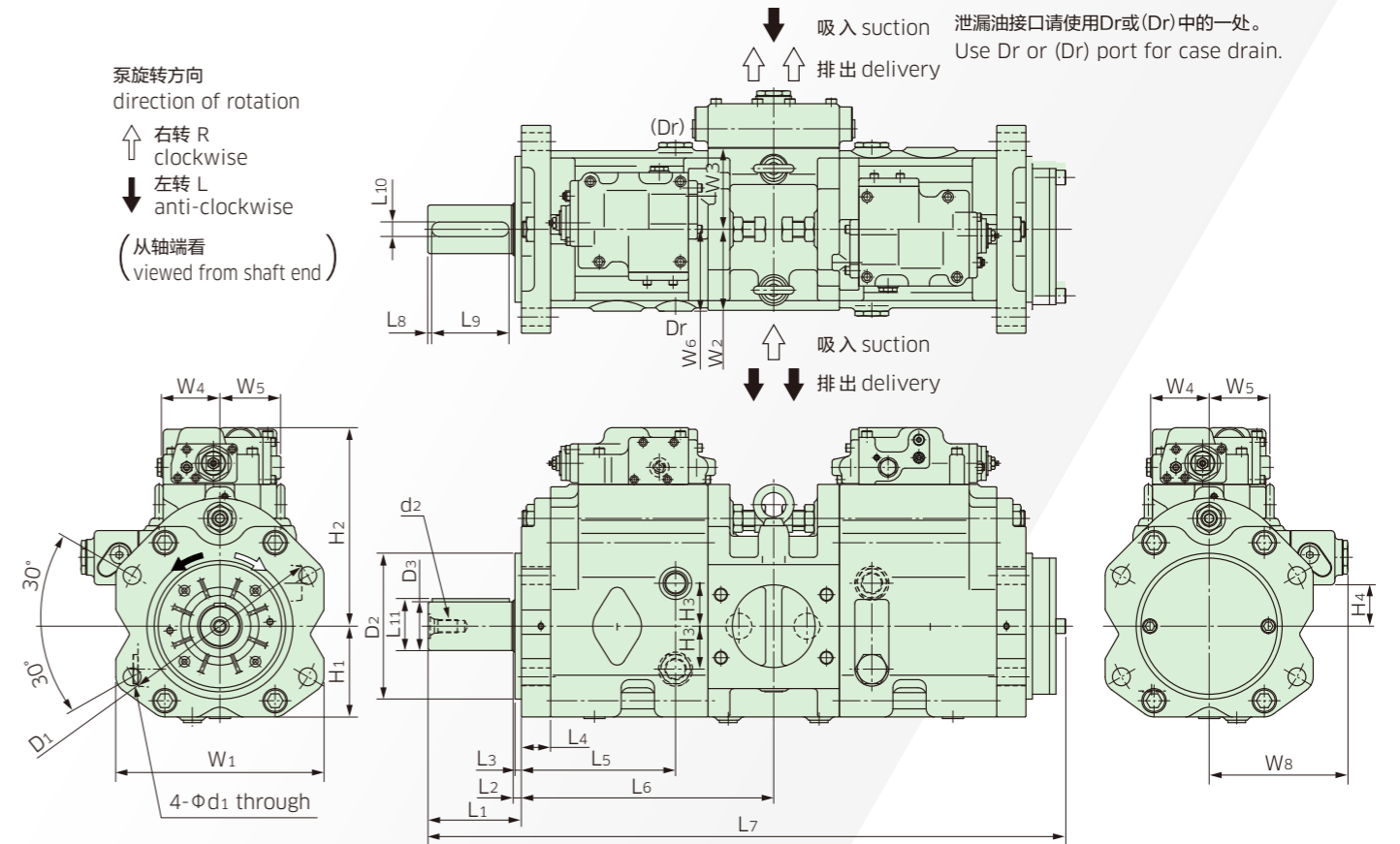
尺寸 size	a	b	c	d
63	G1/2	22.6	2.5	19
112	G3/4	30.8	3.5	20
180, 180DT	G3/4	30.8	3.5	20
280, 280DT	G3/4	30.8	3.5	20

K3VG180DT / 280DT (泵单体 without attachment)

泵旋转方向
direction of rotation

↑ 右转 R
clockwise
↓ 左转 L
anti-clockwise

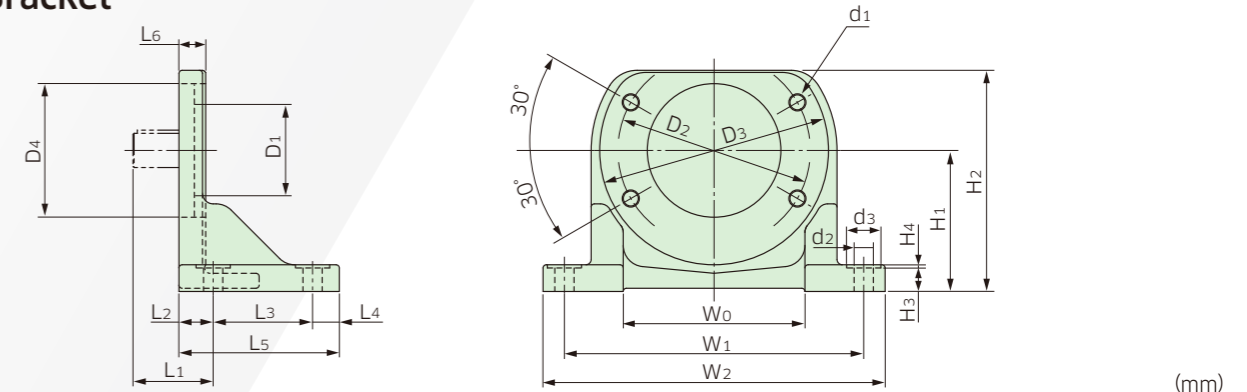
(从轴端看
viewed from shaft end)



尺寸 size	D1	D2	D3	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11
180DT	250	180 ^{-0.050} / _{-0.090}	60K6	115	10	8	36	190	311	786	5	95	18	64
280DT	300	200 ^{-0.050} / _{-0.090}	70K6	115	10	9	50	203	374	896	5	95	20	74.5

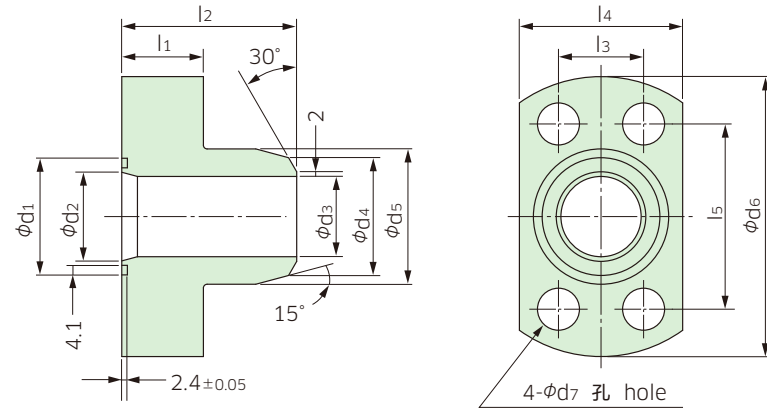
尺寸 size	H1	H2	H3	H4	W1	W2	W3	W4	W5	W6	W8	d1	d2
180DT	112	245	53	51	256	100	100	72	69	101	165	22	M16
280DT	127	286	70	59	300	120	120	72	69	118	185	26	M16

◆泵架 Bracket



尺寸 size	质量 mass	D1	D2	D3	D4	L1	L2	L3	L4	L5	L6	H1	H2	H3	H4	W0	W1	W2	d1	d2	d3
63	12	125	180	214	-	75	32	93	25	150	25	132	207	22	3	170	280	320	M16	18	32
112	21	160	224	264	-	100	38	112	30	180	30	160	252	27	3	206	335	384	M20	22	40
180	32	180	250	290	-	100	44	132	36	212	36	180	284	33	3	230	375	428	M20	22	40
280	80	200	300	340	250	100	50	400	50	500	42	225	358	39	3	262	450	520	M24	34	60
180DT	44	180	250	290	204	123	44	320	36	400	36	200	304	33	3	230	375	428	M20	22	40
280DT	80	200	300	340	250	123	50	400	50	500	42	225	358	39	3	262	450	520	M24	34	60

◆ 输出法兰盘 (SAE规格) Flange for Delivery Port (SAE Rule)

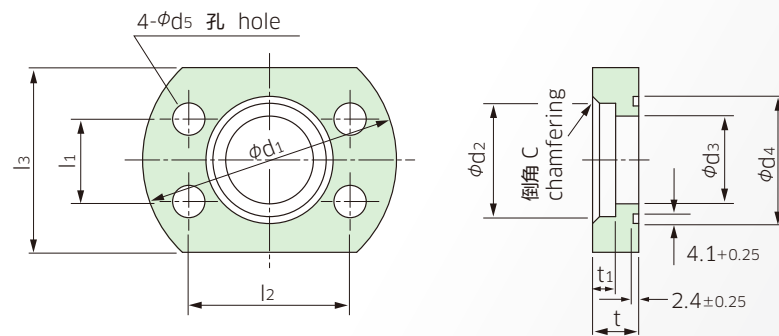


尺寸 size	l1	l2	l3	l4	l5	φd1	φd2	φd3	φd4	φd5	φd6	φd7	参考 reference			
													钢管公称尺寸 steel pipe:inch	钢管材质 steel pipe:material	使用螺栓 screw	O形密封圈 O-ring
63	25	55	27.8	54	57.2	40	26	21.2	34.0	43	82	11	1	STPG	M10-40	G35
112	30	65	31.8	61	66.7	45	32	29.9	42.7	50	96	14	1 1/4	STPG	M12-45	G40
180	35	75	36.5	70	79.4	50	38	34.4	48.6	58	115	18	1 1/2	STPG	M16-55	G45
280	35	75	36.5	70	79.4	50	38	34.4	48.6	58	115	18	1 1/2	STPG	M16-55	G45
180DT	30	65	31.8	61	66.7	45	32	29.9	42.7	50	96	14	1 1/4	STPG	M12-45	G40
280DT	35	75	36.5	70	79.4	50	38	34.4	48.6	58	115	18	1 1/2	STPG	M16-55	G45

● 使用合流油路块 When using confluent block

180DT	40	90	44.5	86	96.8	65	51	43.1	60.5	71	140	22	2	STPG	M20-65	G60
280DT	40	90	44.5	86	96.8	65	51	43.1	60.5	71	140	22	2	STPG	M20-65	G60

◆ 吸入法兰盘 (SAE规格) Flange for Suction Port (SAE Rule)

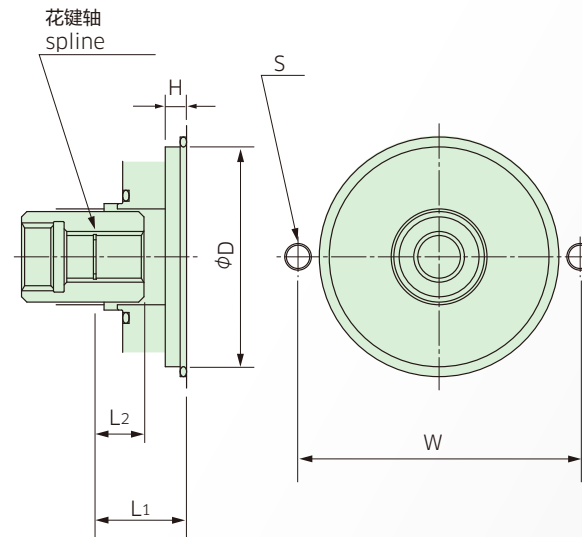


尺寸 size	l1	l2	l3	t	t1	φd1	φd2	φd3	φd4	φd5	C	参考 reference			
												钢管公称尺寸 steel pipe:inch	钢管材质 steel pipe:material	使用螺栓 screw	O形密封圈 O-ring
63	35.7	69.9	80	20	10	110	49.1	38	55	14	3	1 1/2	SGP	M12-35	G050
112	50.8	88.9	105	25	15	130	77.0	64	80	14	3	2 1/2	SGP	M12-40	G075
180	62.0	106.4	125	30	20	160	90.0	76	90	18	3	3	SGP	M16-50	G085
280	69.9	120.7	135	30	-	170	90.0	90	105	18	4	3*1	SGP	M16-50	G100
180DT	77.8	130.2	145	30	20	190	115.4	100	120	18	4	4	SGP	M16-50	G115
280DT	77.8	130.2	145	30	20	190	115.4	100	120	18	4	4	SGP	M16-50	G115

*1 吸口的口径为3 1/2英寸, 但附属吸口用法兰盘的适用钢管则为3英寸。

*1 Please note that suction port size is 3-1/2 inches, but the applicable steel pipe size for the attached suction flange is 3 inches.

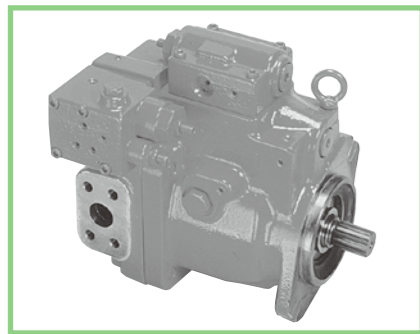
◆ 辅助泵安装形状 Dimensions of Installation form for Attached Gear Pump



尺寸 size	63, 112, 180, 280					280,180DT, 280DT		
安装形状代码 install form code	不带辅助压力接口 without assist pressure port	5	7	9	C	E	A	
	带辅助压力接口 with assist pressure port	4	6	8	D	F		
安装尺寸 dimensions (mm)	φD	82.5					101.6	
	H	8					11	
	W	106					146	
	S	2-M10 depth16					2-M12 depth20	
	L1	34	43	37	34	43		
	L2	18	26	26	17	26		
花键轴规格 dimensions of spline (mm)	规格 rule	SAE 平底齿面对准 SAE flat root, side fit						
	齿数 number of teeth	11	13	11	10	13		
	齿距 diametral pitch	16/32						
	压力角 pressure angle	30°						
	齿根圆直径 root diameter	19.05 ^{+0.279} ₀	22.225 ^{+0.279} ₀	19.05 ^{+0.279} ₀	17.463 ^{+0.279} ₀	22.225 ^{+0.279} ₀		
	滚柱外母线直径 measurements over pins	13.358 ^{-0.076}	16.589 ^{-0.067}	13.358 ^{-0.076}	11.887 ^{-0.084}	16.589 ^{-0.067}		
	销直径 pin diameter	2.743						
允许转矩 allowable max. torque (kgf·m)	12.8	21.8	12.7	9.3	21.8			

恒压·负载敏感型 斜盘式
Load-sensing Circuit Swash Plate Type

K3VL Series



K3VL系列,是根据作为工程机械用泵具有丰富实际业绩的K3V系列开发的对应负载敏感及恒压的液压回路型的泵。

这是最适合要求节省空间化的工程机械、产业车辆及一般产业机械的泵。

The Kawasaki K3VL series swash-plate type axial piston pump is a heavy duty variable displacement hydraulic pump newly developed for mobile and industrial applications.

The K3VL pumps are based on the proven design of the K3V and K3VG pumps whereby the controls and general construction have been optimized for load-sensing and pressure-constant requirements.

特长 FEATURES

1. 低脉动、低噪声

通过采用长期研究形成的本公司独特的新机构,大幅度降低了噪声发生源的压力脉动。

2. 高效率、卓越的吸入能力、长寿命

通过最佳配油盘的设计实现了高效、卓越的吸入能力,并通过采用大负载容量轴承和高强度的柱塞·滑靴从而实现了长寿命。

3. 辅助齿轮泵连接和泵的复合化、SAE/ISO规格的对应

可对应SAE规格的辅助齿轮泵连接和串联柱塞泵化。固定件和轴端形状对应SAE、ISO的规格。

4. 丰富的控制方式

以负载敏感和恒压型为基本,可使其卸载及压力可调。还可进行功率控制及其复合控制。

规格 SPECIFICATIONS

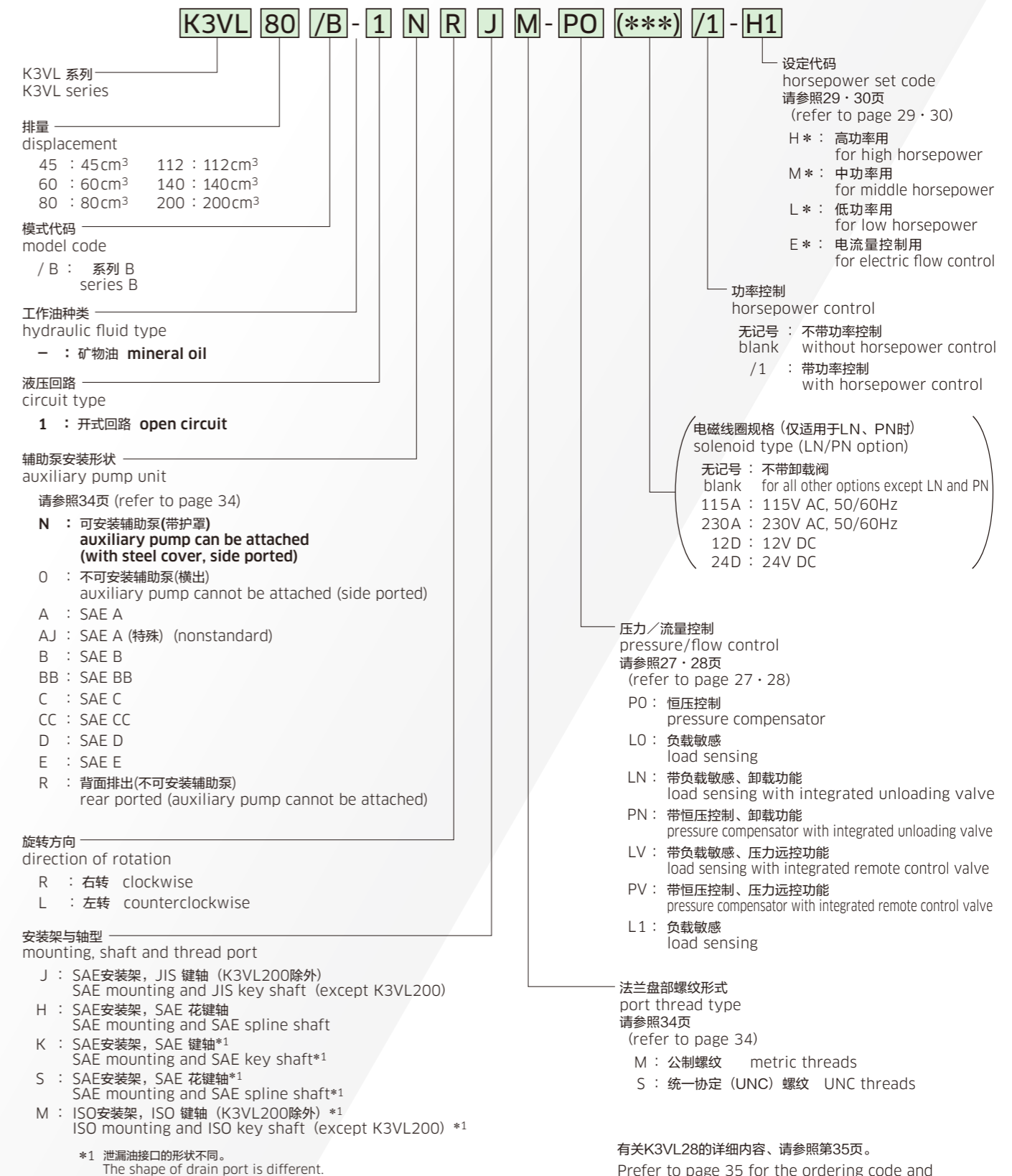
尺寸 size		28	45	60	80	112	140	200
排量 displacement	cm ³	28	45	60	80	112	140	200
压力 pressure	MPa	32	32	25	32	32	32	32
	(kgf/cm ²)	35	35	28	35	35	35	35
转速 speed	自吸最高 max. for self-priming*1	2,600	2,700	2,400	2,400	2,200	2,200	1,900
	最高 max.*2	3,000	3,250	3,000	3,000	2,700	2,500	2,200
质量 mass	kg	20	25	25	35	65	65	95
壳体内油量 Quantity of oil to fill pump case	L	0.6	0.6	0.6	0.8	1.5	1.5	2
最大输入扭矩 Maximum allowable total input torque	Nm	155	230	230	410	1,020	1,020	1,020
辅助泵允许扭矩 Permissible through drive torque	SAE A	123	123	123	123	123	123	123
	SAE B	155	290	290	340	340	340	340
	SAE B-B	-	290	290	400	550	550	550
	SAE C	-	-	-	400	700	700	990
	SAE D	-	-	-	-	700	700	990
SAE E	-	-	-	-	-	-	990	
温度范围 Temperature range	°C	-20~95						
粘度范围 Viscosity range	mm ² /s	10~1,000*3						

*1 吸入压力请确保在法兰盘处且稳定状态时0MPa(0kgf/cm²)在绝对压力0.1MPa(1kgf/cm²)以上。
Steady state suction pressure should be 0MPa (0kgf/cm²) and above. (at normal condition)

*2 需要增压压力。 *3 粘度为200~1,000mm²/s时,在正式运转之前要使用加热器加热。

Boost pressure should be required. In case of 200~1,000 mm²/s, please allow system to warm up before using at operating pressure.

型号表示 ORDERING CODE



选用型号时,推荐使用表示中用粗体字表示的型号。
有关详情,请与本公司洽商。

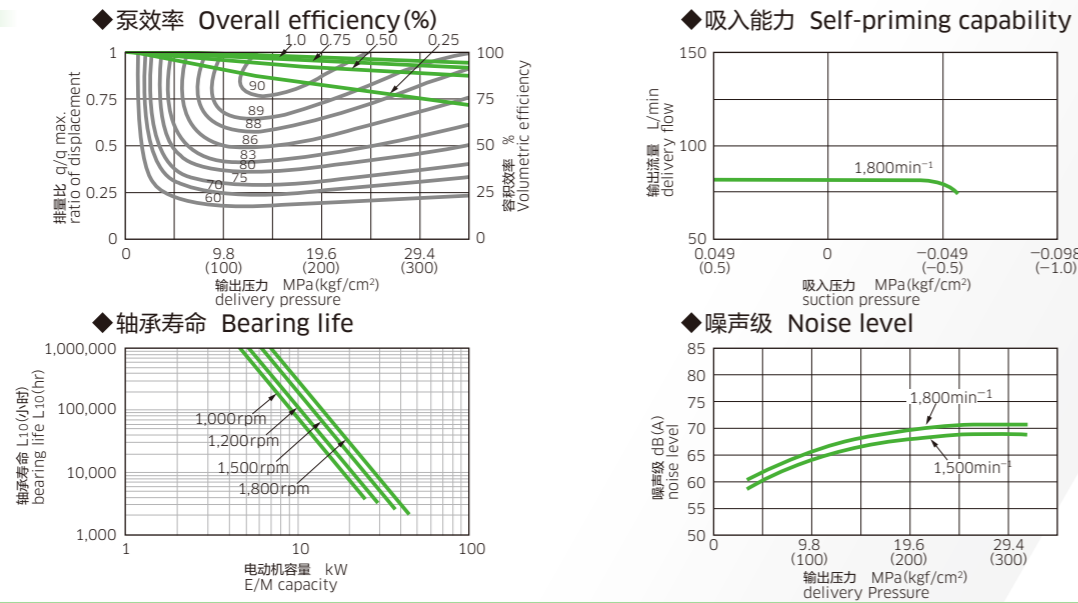
Preferred pump type is shown in bold characters.
Please consult us about detail.

有关K3VL28的详细内容,请参照第35页。
Refer to page 35 for the ordering code and technical information for K3VL28.

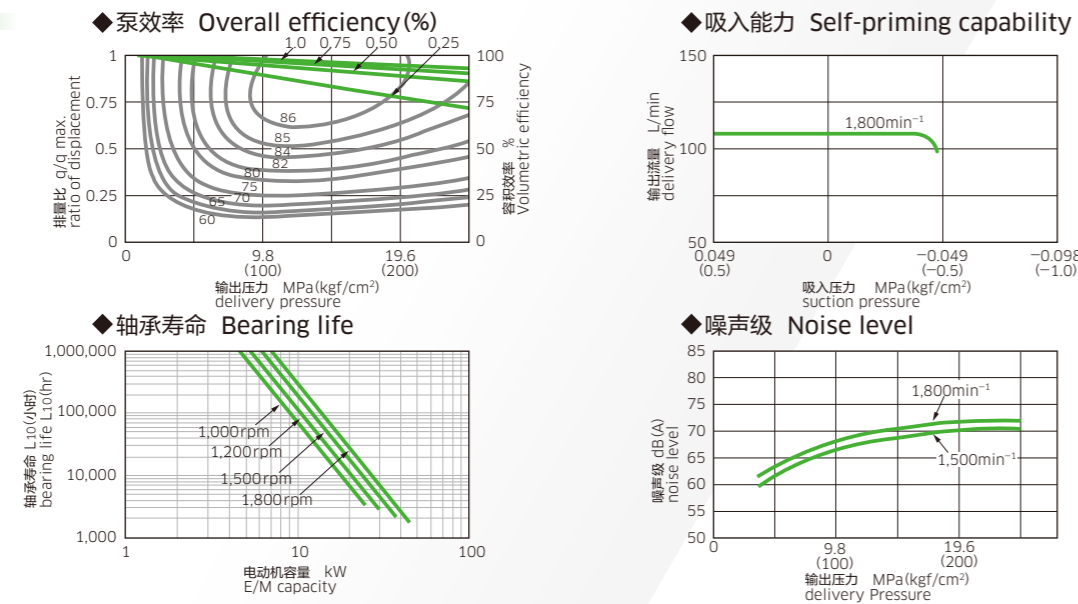
性能 PERFORMANCE CURVE

•矿物油 mineral oil •油温 50°C oil temperature •粘度 32mm²/s oil viscosity

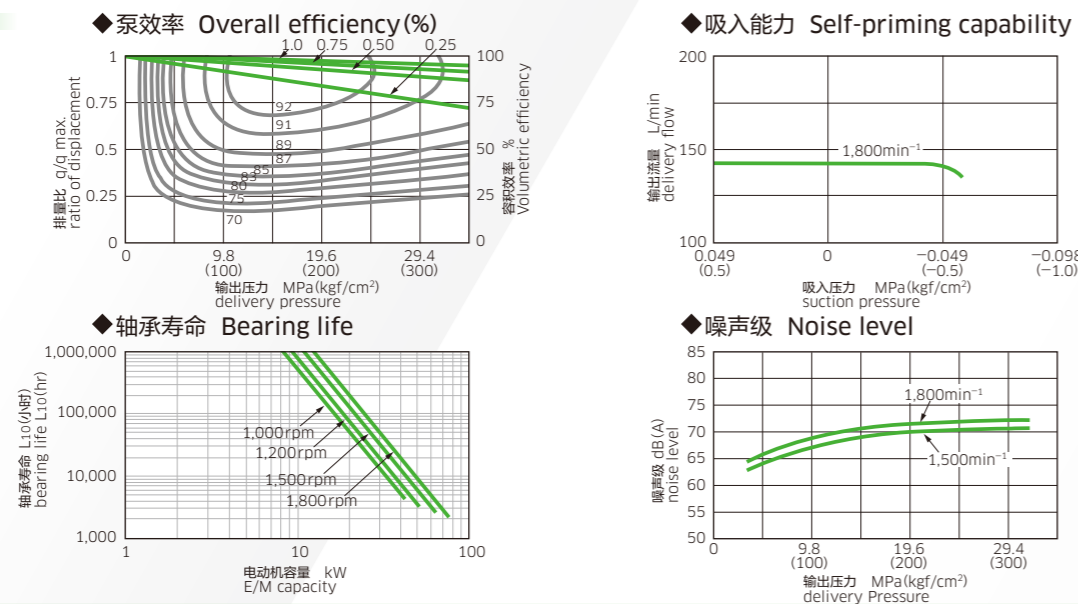
K3VL45



K3VL60

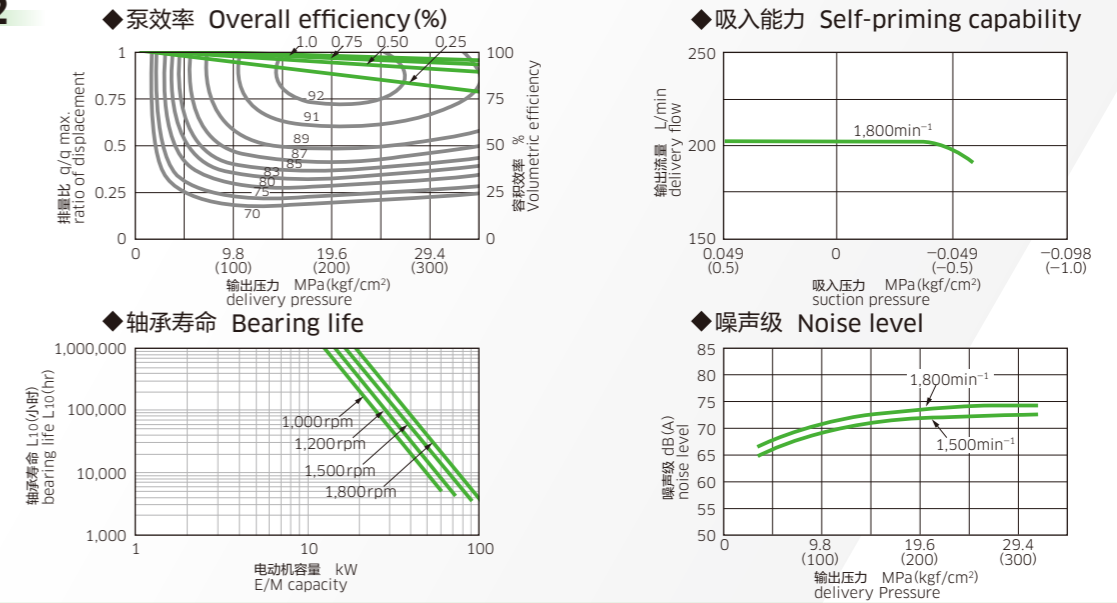


K3VL80

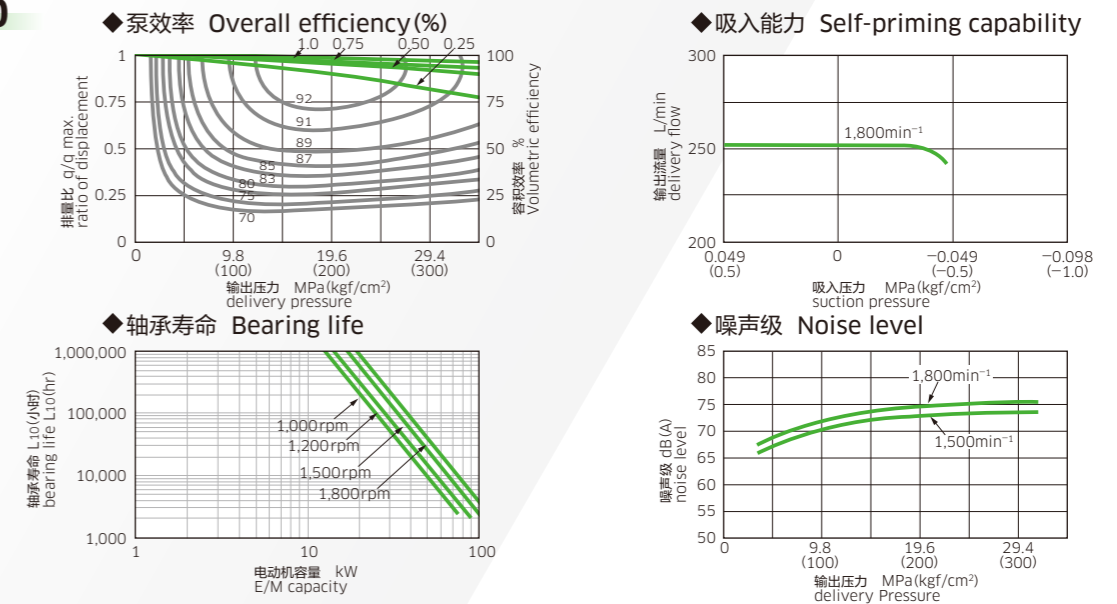


轴承寿命以外的图标数值，不是保证值，而是平均值。轴承寿命为基本额定寿命(可靠度90%)的计算值。噪声值为无音室的泵单体噪声(泵斜后方1m音)。实际泵装置的噪声值比上图数值偏高。

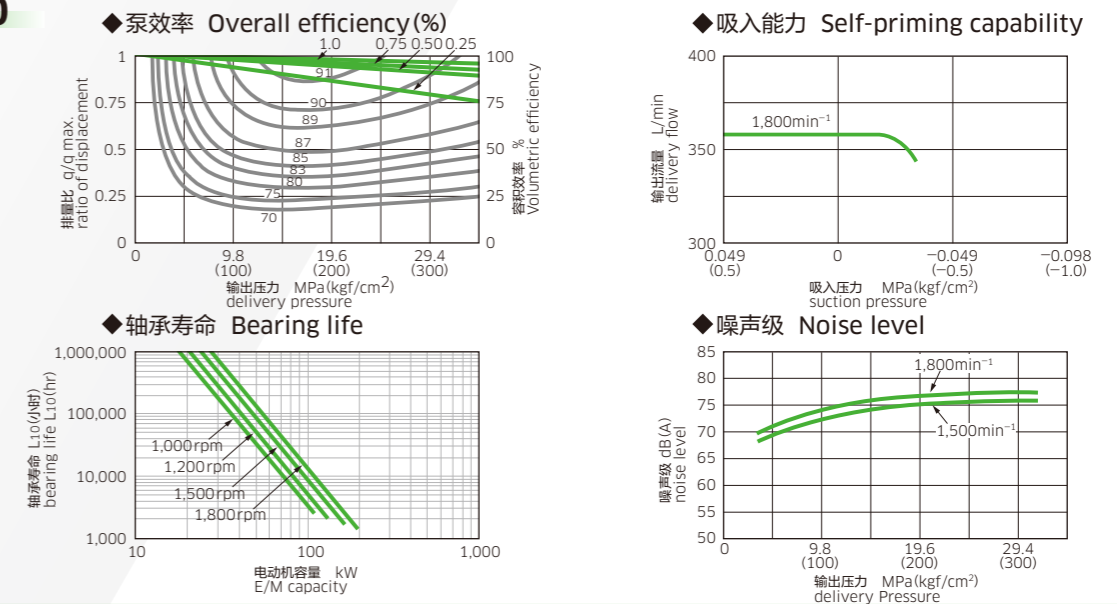
K3VL112



K3VL140



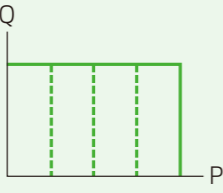
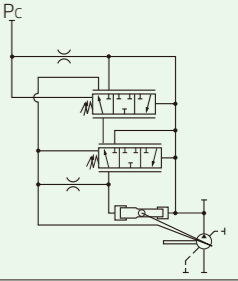
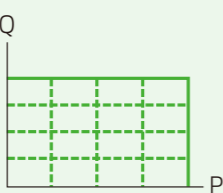
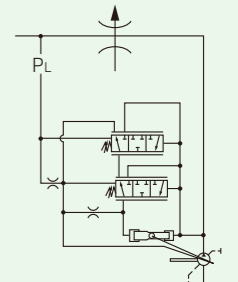
K3VL200



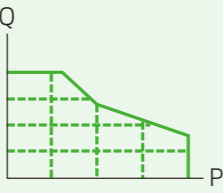
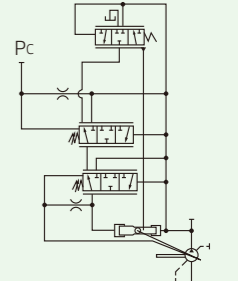
The values shown in the above figures, excluding those for the bearing life, are not guaranteed values, but average ones. The values for the bearing life show the calculated values of the basic rated life (90% of reliability). Noise level is measured in an anechoic room (Distance from microphone to pump=1m). The noise level at the actual pump unit will be higher than the value shown in the above figure.

调节器一览 REGULATORS

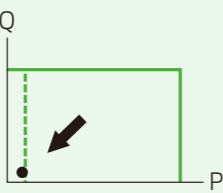
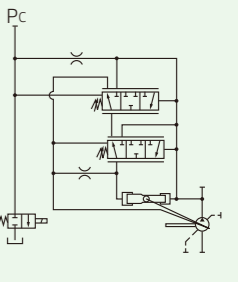
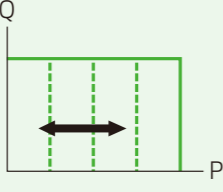
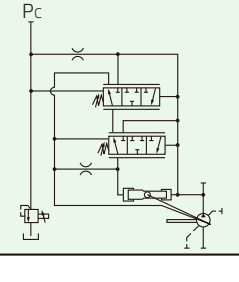
◆基本控制 Basic Control

代码 code	控制型式 control type	控制线图 control curve	功能及特长	function & features	液压回路图 hydraulic circuit
P	恒压控制 pressure constant control		回路压力达到设定压力时，泵输出流量变成保持在设定压力的最小流量。 利用这种功能，可以减少压力保持时的能量。 回路请务必设置溢流阀。 在先导接口设有溢流阀，设定压力可远程操作。 发货时的设定压力为32 MPa(326 kgf/cm ²)。(K3VL60为25MPa)	When circuit pressure reaches to the set pressure, pump displacement decrease to the minimum required displacement to keep circuit pressure. This function saves energy when maintaining pressure. Be sure to install the safety valve in the circuit. Set pressure can be remotely controlled by external relief valve, which is installed at pilot port. Pressure setting at delivery is 32 MPa (326 kgf/cm ²)(25 MPa for K3VL60)(225 kgf/cm ²).	
L	负载敏感控制 load sensing control		在泵输出管路与负载之间设有控制流量用的节流口，使负载侧压力与泵输出的压力差(负载敏感压差)保持一定。通过此功能，因泵常时仅输出必要的流量，故达到节能效果，并能降低油箱温度的上升。 本调节器需将负载侧压力导入到泵侧。 还有，除上述以外的恒压控制功能。 出厂时的设定压力为32 MPa(326 kgf/cm ²)。(K3VL60为25MPa(255 kgf/cm ²))压差设定为1.5 MPa(15 kgf/cm ²)。	With flow control orifice installed between pump delivery line and load, pump displacement is controlled to keep the pressure difference that arises by flow control orifice. Through this function, pump displacement is controlled only to discharge the required flow. Therefore it can save energy and reduces the temperature rise in the tank. External piping from load pressure to the regulator port is required. In addition, pressure constant control function is attached. Pressure setting at delivery is 32 MPa (326 kgf/cm ²)(25 MPa (255 kgf/cm ²) for K3VL60), and differential pressure setting at delivery is 1.5 MPa (15 kgf/cm ²).	

◆功率控制 Horsepower Control

代码 code	控制型式 control type	控制线图 control curve	功能及特长	function & features	液压回路图 hydraulic circuit
/1	功率控制 horsepower control		随着泵输出压力的上升，使泵的输出流量自动减少，将转矩控制在恒定。 通过此功能不仅达到节能，还能降低油箱的温度上升。 (可以与上述基本控制配合使用)	According to the rise of discharge pressure of the pump, the discharge flow is automatically decreased, and the constant torque control is achieved. This function not only saves energy but also reduces the temperature rise in the tank. (This function can use with pressure constant control or load sensing control.)	

◆压力控制任选(特殊规格) Pressure Control Option (special specification)

代码 code	控制型式 control type	控制线图 control curve	功能及特长	function & features	液压回路图 hydraulic circuit																																																																																				
N	卸载功能 integral unloading		通过泵的附属电磁换向阀，可以使压力、流量为最小。 ◆电磁换向阀的电磁线圈规格 <table border="1" data-bbox="697 1480 1350 1669"> <tr> <td>电磁线圈电压</td> <td>115VAC</td> <td>230VAC</td> <td>6VDC</td> <td>12VDC</td> <td>24VDC</td> </tr> <tr> <td>连接器类型</td> <td colspan="5">ISO 4400/DIN 43650</td> </tr> <tr> <td>电磁线圈电阻</td> <td>551Ω</td> <td>2010Ω</td> <td>3.5Ω</td> <td>12.8Ω</td> <td>45.8Ω</td> </tr> <tr> <td>保持电流</td> <td>0.18A</td> <td>0.09A</td> <td>1.71A</td> <td>0.94A</td> <td>0.52A</td> </tr> <tr> <td>必要电力</td> <td colspan="2">21VA</td> <td colspan="3">12W</td> </tr> <tr> <td>响应时间</td> <td colspan="5">30ms</td> </tr> <tr> <td>防水性能</td> <td colspan="5">IEC 144/DIN 40050 Class IP65</td> </tr> </table>	电磁线圈电压	115VAC	230VAC	6VDC	12VDC	24VDC	连接器类型	ISO 4400/DIN 43650					电磁线圈电阻	551Ω	2010Ω	3.5Ω	12.8Ω	45.8Ω	保持电流	0.18A	0.09A	1.71A	0.94A	0.52A	必要电力	21VA		12W			响应时间	30ms					防水性能	IEC 144/DIN 40050 Class IP65					Discharge pressure and flow can be reduced to the minimum possible level by the solenoid-unloading valve. ◆Solenoid data : Unloading valve - *N <table border="1" data-bbox="1617 1480 2374 1669"> <tr> <td>Solenoid voltage</td> <td>115VAC</td> <td>230VAC</td> <td>6VDC</td> <td>12VDC</td> <td>24VDC</td> </tr> <tr> <td>Connector type</td> <td colspan="5">ISO 4400/DIN 43650</td> </tr> <tr> <td>Solenoid resistance (22°C)</td> <td>551Ω</td> <td>2010Ω</td> <td>3.5Ω</td> <td>12.8Ω</td> <td>45.8Ω</td> </tr> <tr> <td>Holding Current (22°C)</td> <td>0.18A</td> <td>0.09A</td> <td>1.71A</td> <td>0.94A</td> <td>0.52A</td> </tr> <tr> <td>Power consumption</td> <td colspan="2">21VA</td> <td colspan="3">12W</td> </tr> <tr> <td>Response time at rated voltage</td> <td colspan="5">30ms</td> </tr> <tr> <td>Protection</td> <td colspan="5">IEC 144/DIN 40050 Class IP65</td> </tr> </table>	Solenoid voltage	115VAC	230VAC	6VDC	12VDC	24VDC	Connector type	ISO 4400/DIN 43650					Solenoid resistance (22°C)	551Ω	2010Ω	3.5Ω	12.8Ω	45.8Ω	Holding Current (22°C)	0.18A	0.09A	1.71A	0.94A	0.52A	Power consumption	21VA		12W			Response time at rated voltage	30ms					Protection	IEC 144/DIN 40050 Class IP65					
电磁线圈电压	115VAC	230VAC	6VDC	12VDC	24VDC																																																																																				
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V	压力远控功能 pressure remote control		通过泵的附属电液比例溢流阀，可使输出压力达到无级变化。 (需要使用本公司制专用控制器。控制器型号：C-B10或KC-B10)	Discharge pressure can be controlled by the proportional relief valve. (Our exclusive controller is necessary. The controller type is C-B10 or KC-B10)																																																																																					

(注) 上述以外的控制方式请向本公司询问。

(Note) About other control options, please consult us.

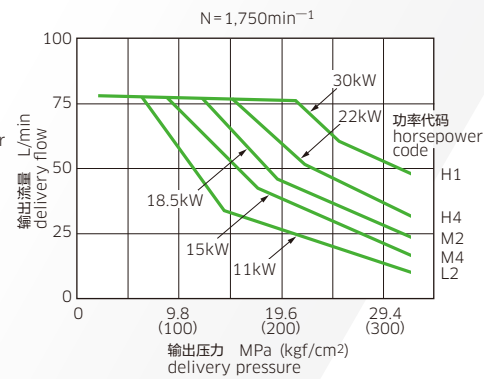
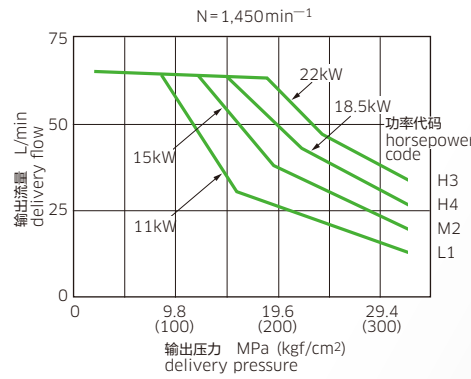
功率设定代码一览 SUMMARY OF HORSEPOWER SET CODE

■ 进行功率恒定控制时，请按以下代码表指定功率设定代码。

■ Select the right horsepower set code from among those shown in the table below for the needed constant horsepower control.

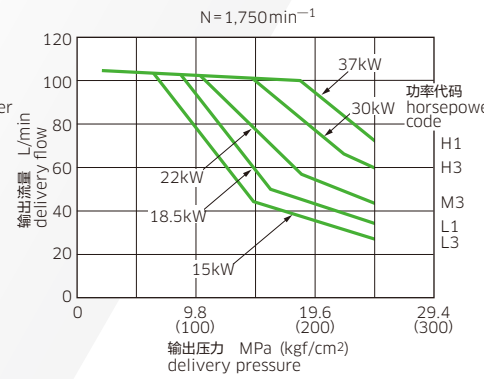
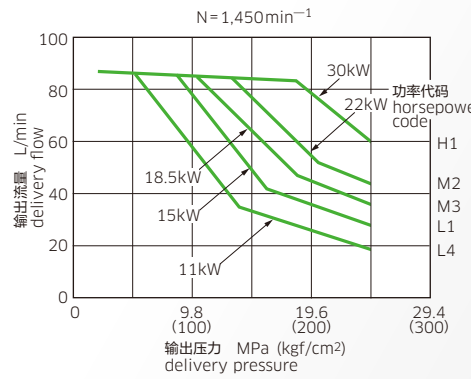
K3VL45

电动机容量 (kW) E/M capacity	970min ⁻¹	1,150min ⁻¹	1,450min ⁻¹	1,750min ⁻¹
5.5	L3			
7.5	L1	L2		
11.0	M1	M3	L1	L2
15	H3	H4	M2	M4
18.5		H2	H4	M2
22.0			H3	H4
30.0				H1



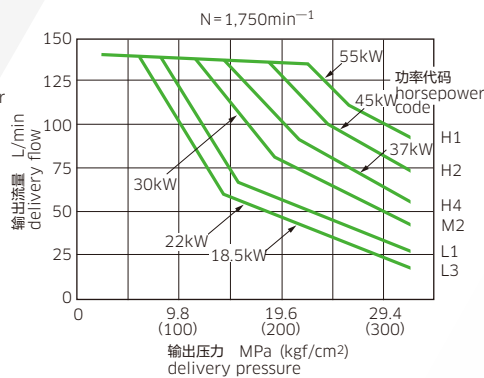
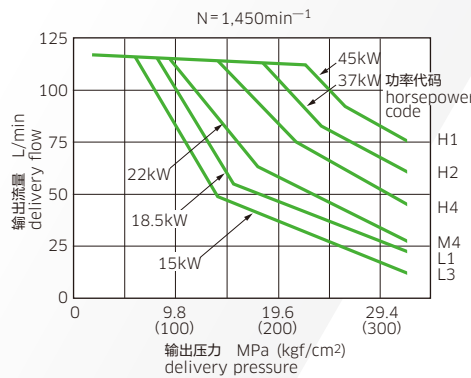
K3VL60

电动机容量 (kW) E/M capacity	970min ⁻¹	1,150min ⁻¹	1,450min ⁻¹	1,750min ⁻¹
7.5	L4			
11	M4	L2	L4	
15	M2	M3	L1	L3
18.5	H2	M1	M3	L1
22		H2	M2	M3
30			H1	H3
37				H1



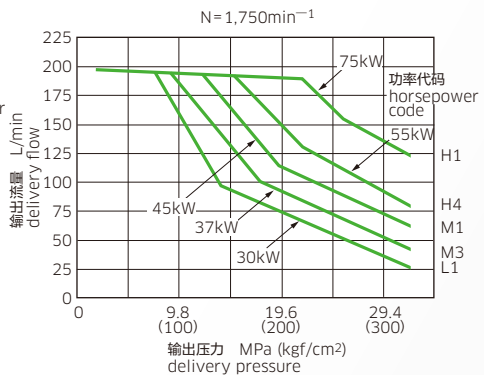
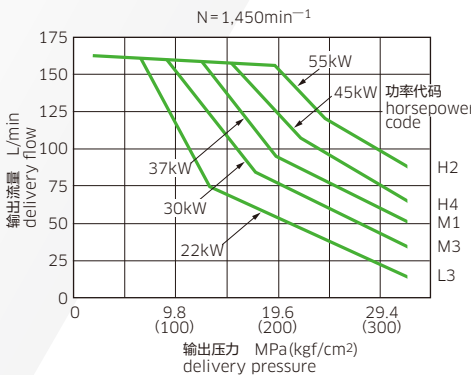
K3VL80

电动机容量 (kW) E/M capacity	970min ⁻¹	1,150min ⁻¹	1,450min ⁻¹	1,750min ⁻¹
11	L2	L4		
15.0	M4	L1	L3	
18.5	M1	M3	L1	L3
22	H3	M1	M4	L1
30.0	H1	H2	H4	M2
37.0			H2	H4
45			H1	H2
55				H1



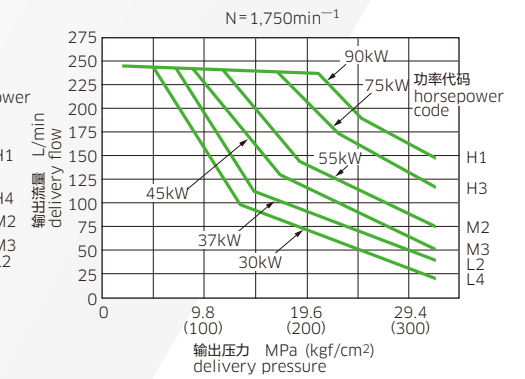
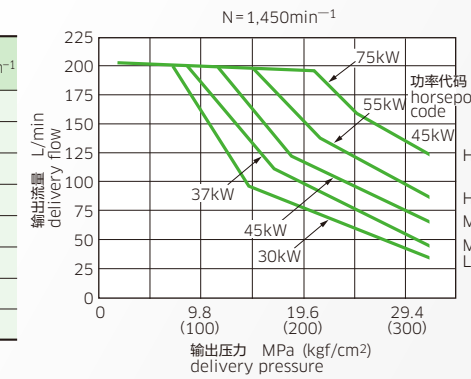
K3VL112

电动机容量 (kW) E/M capacity	970min ⁻¹	1,150min ⁻¹	1,450min ⁻¹	1,750min ⁻¹
15	L3			
18.5	M4	L2		
22	M2	M4	L3	
30	H4	M1	M3	L1
37	H2	H3	M1	M3
45		H2	H4	M1
55			H2	H4
75				H1



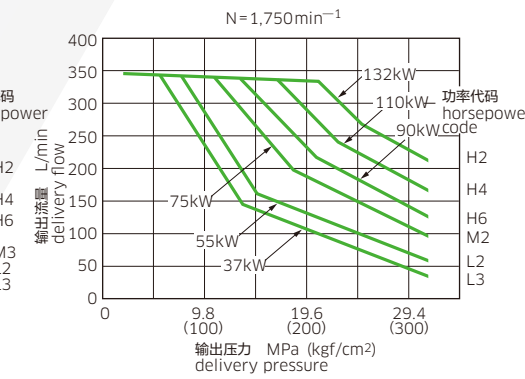
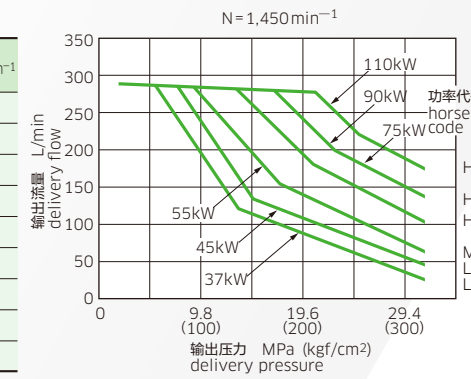
K3VL140

电动机容量 (kW) E/M capacity	970min ⁻¹	1,150min ⁻¹	1,450min ⁻¹	1,750min ⁻¹
18.5	L3			
22	L1	L3		
30	M2	M3	L2	L4
37	H4	M1	M3	L2
45	H2	H4	M2	M3
55		H2	H4	M2
75			H1	H3
90				H1



K3VL200

电动机容量 (kW) E/M capacity	970min ⁻¹	1,150min ⁻¹	1,450min ⁻¹	1,750min ⁻¹
22	L4			
30	L2	L3		
37	M3	L1	L3	
45	M1	M3	L2	L3
55	H5	M1	M3	L2
75	H1	H3	H6	M2
90		H1	H4	H6
110			H2	H4
132				H2



压力控制调节器的调节范围 ADJUSTABLE RANGE OF PRESSURE CONTROL REGULATOR

尺寸 size	螺钉转一圈所相当的调整量 MPa approx. pressure change per revolution of screw	
	恒定控制 pressure limiter	压差设定 differential pressure
28/45/60/80	8.0	1.3
112/140/200	9.2	1.4

出厂时的压力设定
Setting pressure at delivery
恒压控制: 32 MPa (K3VL60是25MPa)
pressure limiter: 32 MPa (25 MPa for K3VL60)
压差设定: 1.5 MPa
differential pressure: 15 MPa

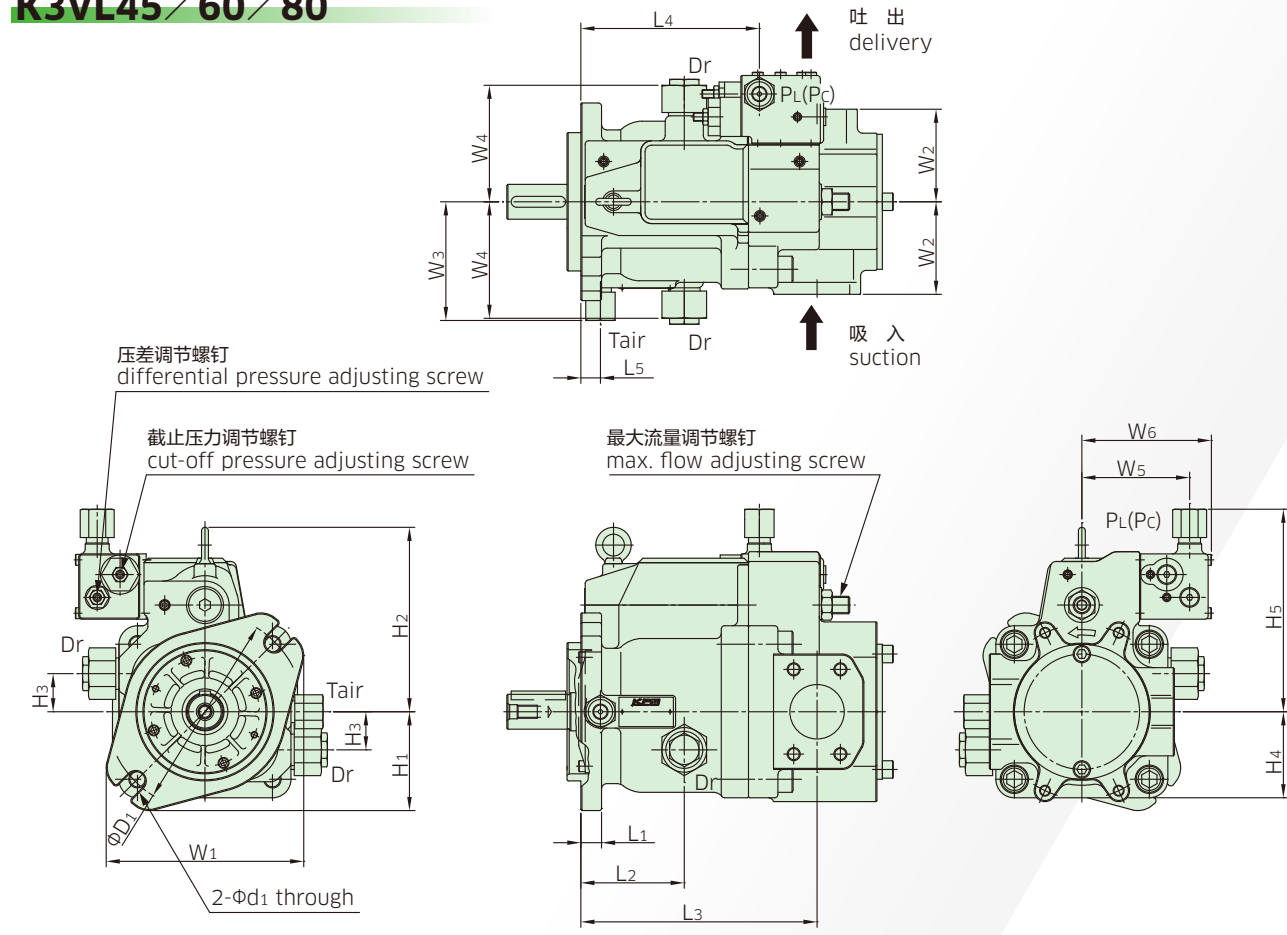
最大流量调节范围 ADJUSTABLE RANGE OF MAX. DISPLACEMENT

尺寸 size	螺钉转一圈所相当的调整量 cm ³ approx. displacement change per revolution of screw	最小调整排量 cm ³ min. setting of max. displacement
45	4.9	16
60	6.0	24
80	6.0	35
112	11.5	56
140	12.0	70
200	15.3	100

出厂时设定为最大流量。
Setting flow at delivery is maximum.

尺寸 DIMENSIONS

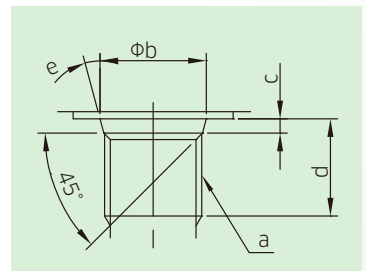
K3VL45 / 60 / 80



尺寸 size	φD1	L1	L2	L3	L4	L5	H1	H2	H3	H4	H5
45	146	13	91	184	154	20	73	144	40	73	175
60	181	19	95	217	164	18	91	169	35	79	186

尺寸 size	W1	W2	W3	W4	W5	W6	φd1
45	146	80	100	98	99	119	14.3
80	181	85	109	107	99	119	17.5

- 外部泄漏油接口 Drain Port (Dr)*1
- 调节器接口 Regulator Port (PL(PC))*2
- 排气接口 Air Bleeder Port (Tair)*2



●外部泄漏油接口 Drain port (Dr) (mm)

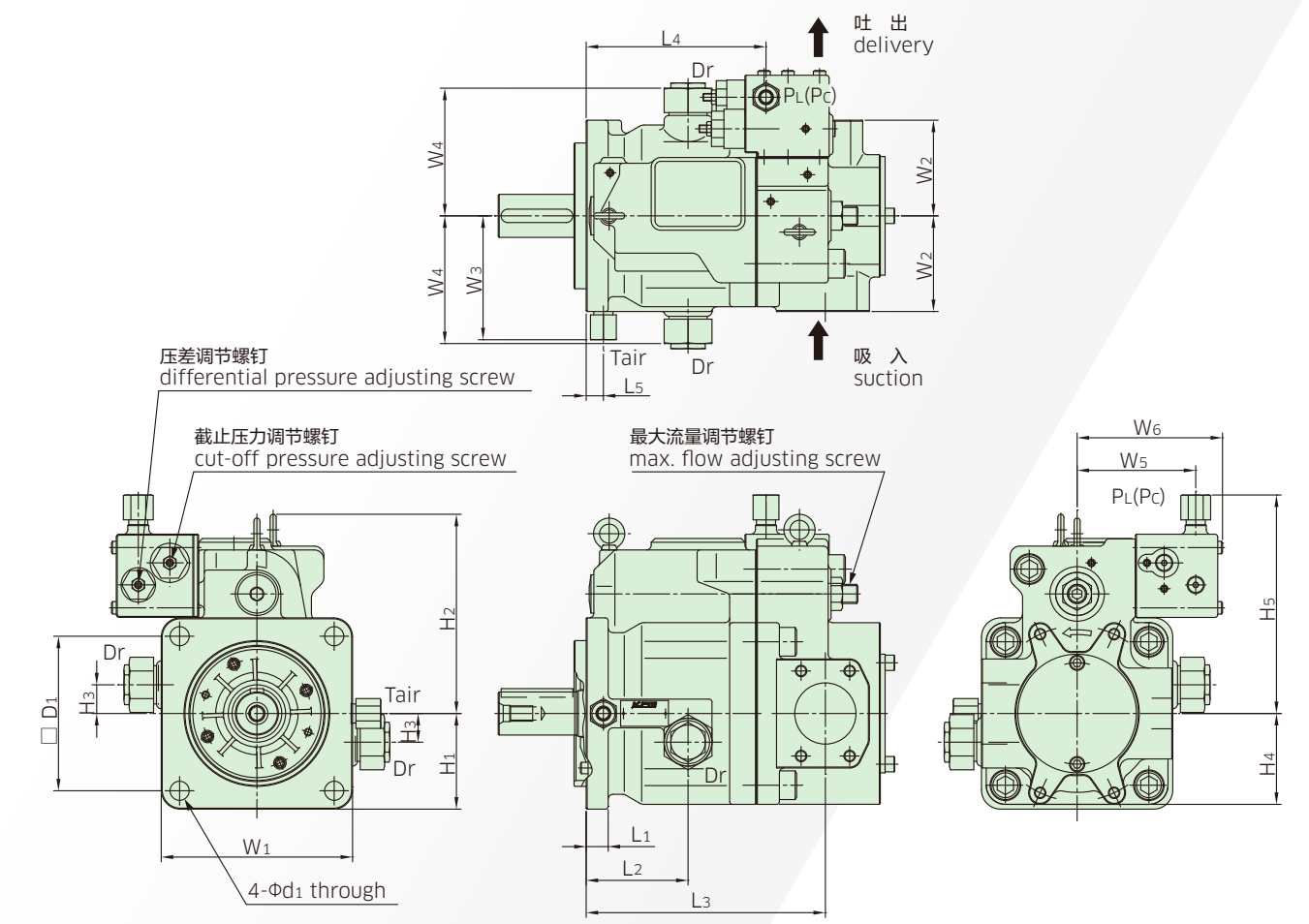
尺寸 size	a	φb	c	d
45	G1/2	22.6	2.5	19
60				
80				
112	G3/4	30.8	3.5	20
140				
200				

●调节器接口 Regulator port (PL(PC)) (mm)
●排气接口 Air bleeder port (Tair) (mm)

尺寸 size	a	φb	c	d
45				
60				
80	G1/4	15.6	2.5	19
112				
140				
200				

*1 安装形状除“J”及“H”不相同，请向本公司询问。
*2 出厂时安装有UNF油塞。在使用各接口时，请利用附属的接头。
*1 The following are applied only to "J" or "H" mount type. If the type is not "J" or "H", please consult us.
*2 UNF plug is attached at delivery.

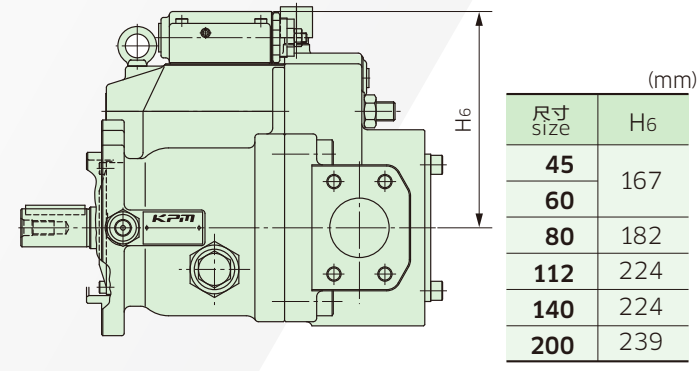
K3VL112 / 140 / 200



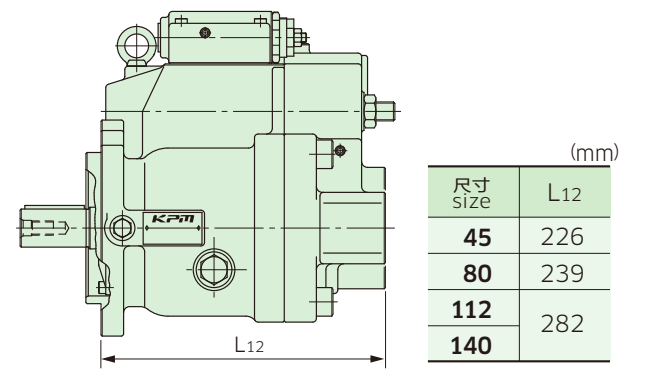
尺寸 size	□D1	L1	L2	L3	L4	L5	H1	H2	H3	H4	H5
112	161.6	23	106.5	250	188	18	100	208	30	95	228.5
140	224.5	26	122	292	221	17.5	132	230.5	53	112	243

尺寸 size	W1	W2	W3	W4	W5	φd1
112	200	100	133.5	124	152	20
140	265	115	143.5	134	162	22

带功率控制调节器泵的情况 Regarding the Pump with Horsepower Control Regulator

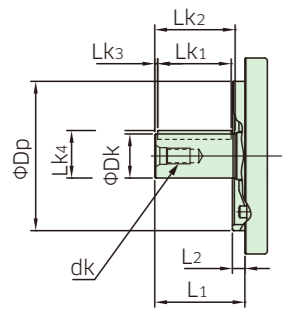


后侧输出型泵的情况 (特殊规格) Regarding the Rear Ported Pump (special specification)



◆ JIS规格输入轴形状 JIS Standard mounting

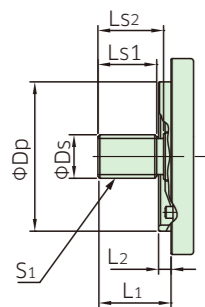
●安装形状代码为“J”时 Mounting code "J"



尺寸 SIZE	L1	L2	φDp	键轴 key shaft						
				φDk	Lk1	Lk2	Lk3	Lk4	dk	键宽 key width
45	53	9.7	101.6h7	25j6	36	42	—	28 ⁰ _{-0.3}	M8	8 ⁰ _{-0.0036}
60				32k6	50	58	4	35 ⁰ _{-0.3}	M12	10 ⁰ _{-0.0036}
80	68	12.7	127 ⁰ _{-0.05}	32k6	50	58	4	35 ⁰ _{-0.3}	M12	10 ⁰ _{-0.0036}
112	92	12.7	152.4 ⁰ _{-0.05}	45k6	75	82	3	48.5 ⁰ _{-0.3}	M16	14 ⁰ _{-0.0043}
140				45k6	75	82	3	48.5 ⁰ _{-0.3}	M16	14 ⁰ _{-0.0043}

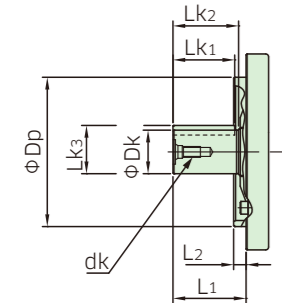
◆ SAE规格输入轴形状 SAE Standard mounting

●SAE花键输入轴形状/安装形状代码为“H”或“S”时 SAE splined shaft / Mounting code "H" and "S"



尺寸 SIZE	L1	L2	φDp	花键轴 splined shaft			
				φD5	Lk1	Lk2	S1
45	46	9.7	101.6h7	24.981 ⁰ _{-0.127}	34	38	SAE J744-25-4 15T 16/32DP
60				31.224 ⁰ _{-0.127}	44	—	SAE J744-32-4 14T 12/24DP
80	56	12.7	127 ⁰ _{-0.05}	31.224 ⁰ _{-0.127}	44	—	SAE J744-32-4 14T 12/24DP
112	75	12.7	152.4 ⁰ _{-0.05}	44.447 ⁰ _{-0.127}	63	67	SAE J744-44-4 13T 8/16DP
140				44.447 ⁰ _{-0.127}	63	67	SAE J744-44-4 13T 8/16DP
200	75	16	165.1 ⁰ _{-0.05}	44.447 ⁰ _{-0.127}	63	67	SAE J744-44-4 13T 8/16DP

●SAE键输入轴形状/安装形状代码为“K”时 SAE keyed shaft / Mounting code "K"

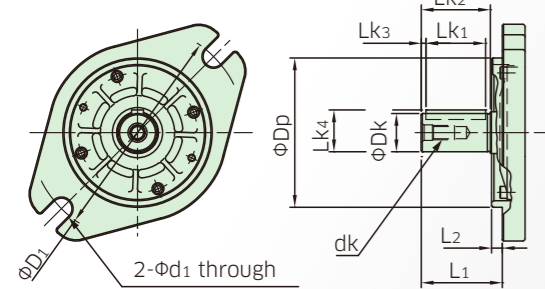


尺寸 SIZE	L1	L2	φDp	键轴 key shaft					
				φDk	Lk1	Lk2	Lk3	dk	键宽 key width
45	46	9.7	101.6h7	25.4 ⁰ _{-0.05}	34	38	28.1 ⁰ _{-0.3}	M8	6.35 ^{+0.025} _{+0.005}
60				31.75h7	44	—	35.2 ⁰ _{-0.3}	M8	7.94 ^{+0.025} _{+0.005}
80	56	12.7	127 ⁰ _{-0.05}	31.75h7	44	—	35.2 ⁰ _{-0.3}	M8	7.94 ^{+0.025} _{+0.005}
112	75	12.7	152.4 ⁰ _{-0.05}	44.45h7	63	67	49.3 ⁰ _{-0.3}	7/16-14UNC-2B	11.11 ^{+0.030} _{+0.015}
140				44.45h7	63	67	49.3 ⁰ _{-0.3}	7/16-14UNC-2B	11.11 ^{+0.030} _{+0.015}
200	75	16	165.1 ⁰ _{-0.05}	44.45h7	63	67	49.3 ⁰ _{-0.3}	7/16-14UNC-2B	11.11 ^{+0.030} _{+0.015}

◆ ISO规格输入轴形状 ISO Standard mounting

●安装形状代码为“M”时 Mounting code "M"

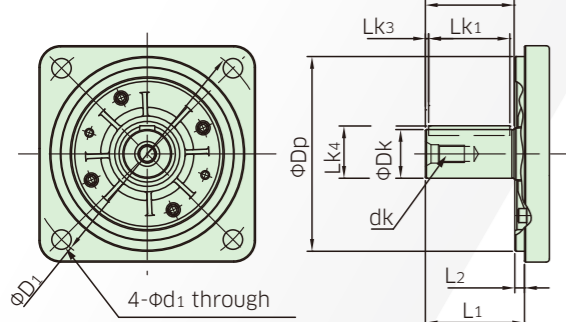
K3VL45/60/80



尺寸 SIZE	L1	L2	φD1	φDp	φd1
45	53	9	140	100h8	14.3
60					
80	68	9	180	125h8	17.5

尺寸 SIZE	键轴 key shaft						
	φDk	Lk1	Lk2	Lk3	Lk4	dk	键宽 key width
45	25j6	36	42	—	28 ⁰ _{-0.3}	M8	8 ⁰ _{-0.0036}
60	32k6	50	58	4	35 ⁰ _{-0.3}	M12	10 ⁰ _{-0.0036}

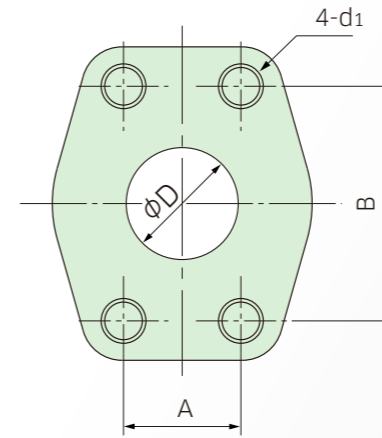
K3VL112/140



尺寸 SIZE	L1	L2	φD1	φDp	φd1
112	92	9	224	180h8	18
140					

尺寸 SIZE	键轴 key shaft						
	φDk	Lk1	Lk2	Lk3	Lk4	dk	键宽 key width
112	45k6	75	82	3	48.5 ⁰ _{-0.3}	M16	14 ⁰ _{-0.0043}
140	45k6	75	82	3	48.5 ⁰ _{-0.3}	M16	14 ⁰ _{-0.0043}

◆吸入·输出接口形状 Suction Port, Delivery Port



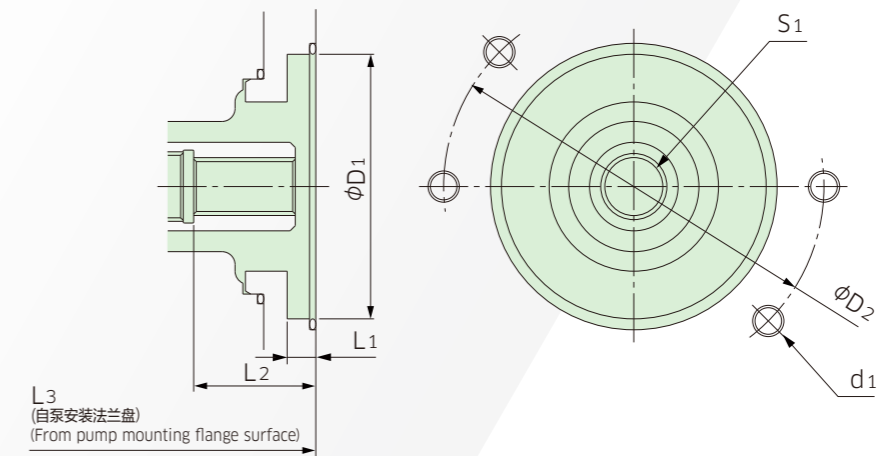
[吸入接口法兰盘] (mm)

尺寸 SIZE	A	B	φD	d1	规格 rules
28	30.2	58.7	32	M10×17	SAE
45/60	35.7	69.8	38	M12×20	
80	42.9	77.8	50	M12×20	
112/140	50.8	88.9	63	M12×17	
200	61.9	106.4	76	M16×24	

[排出接口法兰盘] (mm)

尺寸 SIZE	A	B	φD	d1	规格 rules
28	22.2	47.6	19	M10×17	SAE
45/60	26.2	52.4	25	M10×17	
80					
112/140	31.8	66.7	32	M14×19	
200	36.5	79.4	38	M16×24	

◆辅助泵安装形状 Dimensions of Installation for Auxiliary pump



	L1	L2	L3	φD1	φD2	d1	S1
A (AJ)	8	31	见下表 refer to under table	82.55H7	106	M10	SAE J744-16-4 9T(10T) 16/32DP
B	11	53		101.6H7	146	M12	SAE J744-22-4 13T 16/32DP
BB	11	53		101.6H7	146	M12	SAE J744-25-4 15T 16/32DP
C	14	58		127H7	181	M16	SAE J744-33-4 14T 12/24DP
CC	14	59		127H7	181	M16	SAE J744-38-4 17T 12/24DP
D	15	71		152.4H7	φ161.6*1	M16	SAE J744-47-4 13T 8/16DP
E	18	75	165.1H7	φ224.5*1	M20	SAE J744-47-4 13T 8/16DP	

*1:4个螺栓 four bolts

●L3尺寸

尺寸 SIZE	A(AJ)	B	BB	C	CC	D	E
28	204	224					
45/60	244	264	264				
80	272	292	292	296.5			
112/140	307.5	332.5	332.5	337.5	337.5	350.5	
200	365	384	384	384	384	397	397

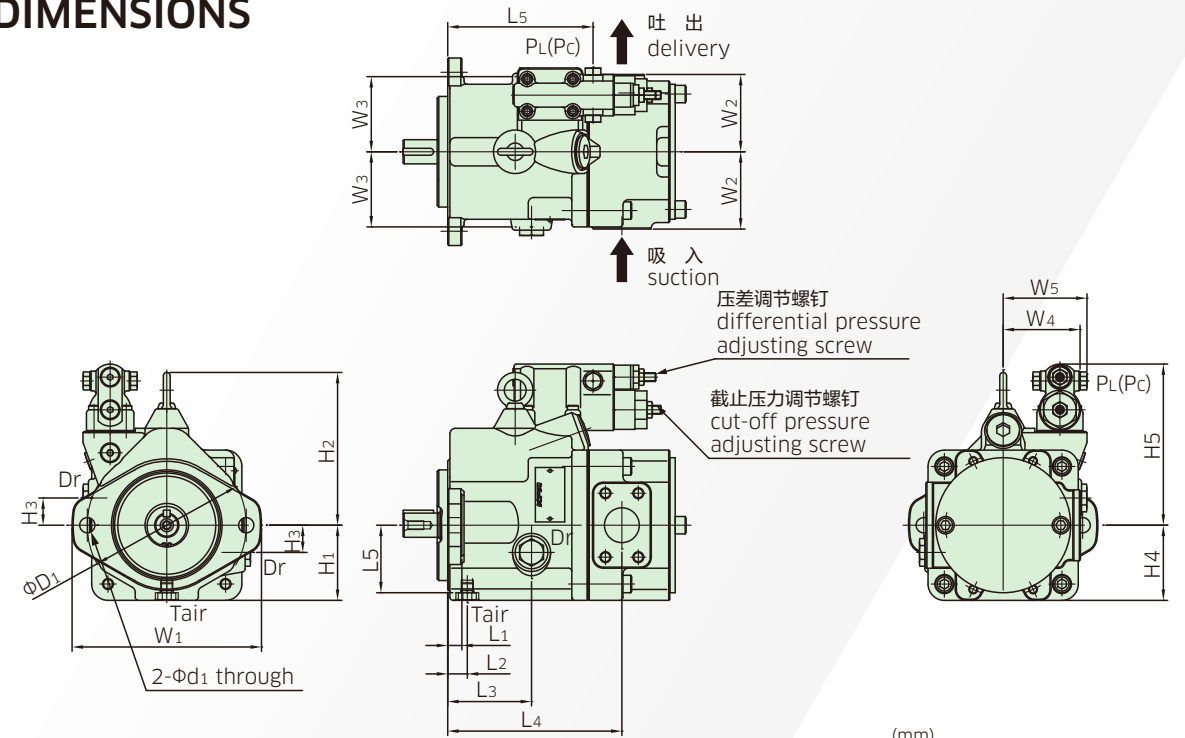
型号表示 ORDERING CODE

K3VL 28 /C - 1 O R S M - L1

- K3VL 系列 K3VL series
- 排量 displacement 28 : 28cm³
- 模式代码 model code /C : 系列 C series C
- 工作油种类 hydraulic fluid type - : 矿物油 mineral oil
- 液压回路 circuit type 1 : 开式回路 open circuit
- 辅助泵安装形状 through drive option auxiliary pump unit 见第 34 页 (refer to page 34)
 - O : 可安装辅助泵 without through drive
 - N : 不可安装辅助泵 with a cover on the through drive mounting face
 - A : SAE A SAE A through drive, spline
 - B : SAE B SAE B through drive, spline
- 调节器代码 regulator code
 - L1 : 负载敏感 load sensing
 - L0 : 负载敏感 load sensing
 - PO : 恒压控制 pressure compensator
- 法兰盘部螺纹形式 thread type on the port flange
 - M : 统一协定螺纹 Metric thread
 - S : 公制螺纹 UNF thread
- 驱动轴形式、接口螺纹形式 mounting, shaft and threaded port type 见第 36 页 (refer to page 36)
 - S : SAE花键轴、统一协定螺纹 SAE spline shaft and UNF threaded port
 - K : SAE键轴、统一协定螺纹 SAE straight key shaft and UNF threaded port
- 旋转方向 direction of rotation
 - R : 右转 clockwise
 - L : 左转 counterclockwise

尺寸 DIMENSIONS

K3VL28



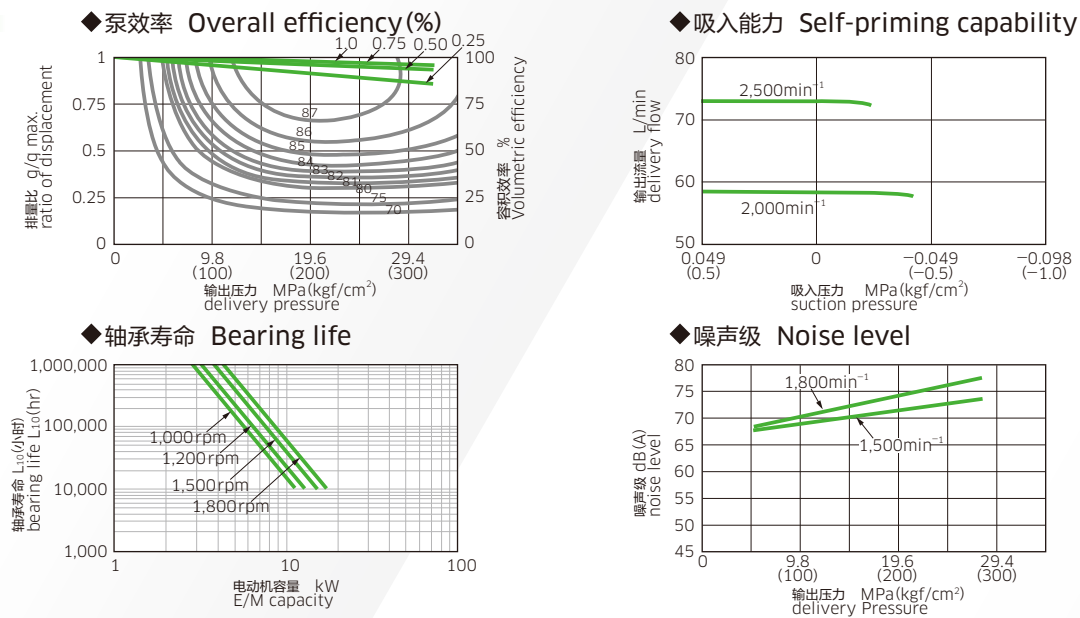
尺寸 size	φD1	L1	L2	L3	L4	L5	H1	H2	H3	H4	H5
28	146	13	18	77	180	133.5	69	140.5	23	69	148

尺寸 size	W1	W2	W3	W4	W5	φd1
28	174	71	69	70.5	76.9	14

性能 PERFORMANCE CURVE

矿物油 mineral oil 油温 50°C oil temperature 粘度 32mm²/s oil viscosity

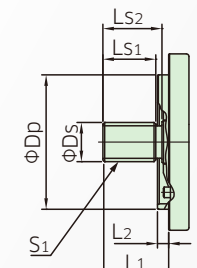
K3VL28



轴承寿命以外的图标数值, 不是保证值, 而是平均值。轴承寿命为基本额定寿命(可靠度90%)的计算值。噪声值为无音室的泵单体噪声(泵斜后方1m音)。实际泵装置的噪声值比上图数值偏高。
The values shown in the above figures, excluding those for the bearing life, are not guaranteed values, but average ones. The values for the bearing life show the calculated values of the basic rated life (90% of reliability). Noise level is measured in an anechoic room (Distance from microphone to pump=1m). The noise level at the actual pump unit will be higher than the value shown in the above figure.

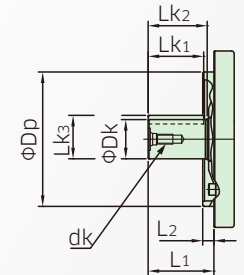
SAE规格输入轴形状 SAE Standard mounting

SAE花键输入轴形状/安装形状代码为“S”时 SAE splined shaft / Mounting code "S"



尺寸 size	L1	L2	φDp	花键轴 splined shaft			
				φDs	Ls1	Ls2	S1
28	41	9.7	101.6 ⁰ _{-0.05}	21.806 ⁰ _{-0.127}	28	33	SAE J744-22-2 13T 16/32DP

SAE键输入轴形状/安装形状代码为“K”时 SAE keyed shaft / Mounting code "K"

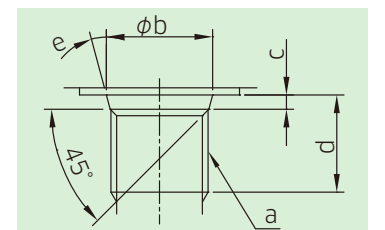


尺寸 size	L1	L2	φDp	键轴 key shaft					
				φDk	Lk1	Lk2	Lk3	dk	键宽 key width
28	41	9.7	101.6 ⁰ _{-0.05}	22.22 ⁰ _{-0.127}	34	38	24.9 ⁰ _{-0.3}	M8	6.35 ^{+0.025} _{+0.005}

外部泄漏油接口 Drain Port (Dr) 调节器接口 Regulator Port (PL(Pc)) 排气接口 Air Bleeder Port (Tair)

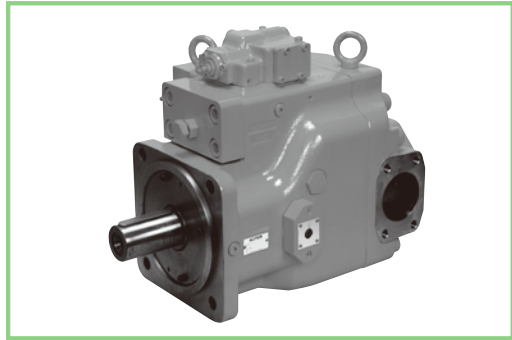
详细接口 Detail of ports (ISO 11926-1:1995)

符号 symbol	dimension 尺寸	a	φb	c	d	e
Dr	3/4-16UNF-2B	20.6	2.5	14.3	15	
PL(Pc)	7/16-20UNF-2B	12.4	2.4	11	12	
Tair	7/16-20UNF-2B	12.4	2.4	11.5	12	



斜盘式轴向柱塞泵 Swash-Plate Type Axial Piston Pump

K7VG Series



K7VG系列是以本公司长年的丰富经验和实绩为基础，新开发的高压、大排量面向产业机械用的变量型斜盘式泵。由于采用了大负载容量的轴承，从而使使用寿命达到了长寿化。最适合冶金机械和锻压机械。

K7VG series is a newly developed high-pressure swash plate type axial piston pump for application to industrial machinery, based on our unique technologies and rich experiences. This series is especially suitable for steel making plant and press machinery. The adoption of high-load bearings has achieved long life.

■ 特长 FEATURES

1. 高压、寿命长

以独自的技术和经验为基础对应高压。并通过采用大负载容量轴承和高强度的柱塞及滑靴，从而实现了长寿化。

2. 低噪声

通过提高泵壳体的刚性、和改进配油盘的设计，从而实现了低噪声化。

3. 高效和高自吸能力

使用球形配油盘而获得了高效和高自吸能力。

4. 复合泵化的反应

可与SAE规格泵连接(从泵的后部)，对应复合泵化。

5. 抗燃性工作油的对应

在一定的条件基础上，可以使用抗燃性工作油(水-乙二醇、脂肪酸酯)。

1. Reliable High-Pressure and Long-Life Type

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

2. Low Noise

Low-noise are made possible by suitable valve plate design and rigid pump casing.

3. High Efficiency, High Self-priming Capability

The adoption spherical valve plate has achieved high efficiency and high self-priming capability.

4. Optional through drive

Optional through drive allows an auxiliary or second pump to be direct mounted proving a compact, low-cost solution.

5. Applicable to fire-resistant fluids

Water Glycol and Ester based Bio-degradable oil is usable with pressure reservation.

■ 规格 SPECIFICATIONS

型式 code		K7VG180	K7VG265
排量 displacement	cm ³	180	270
压力 pressure	额定 rated MPa (kgf/cm ²)	35	
	峰值 peak MPa (kgf/cm ²)	40	
转速 speed	自吸最高 *1 max. for self-priming min ⁻¹	1,800	1,600
	最高 max. *2 min ⁻¹	2,200	1,900
工作油 *3 hydraulic fluid	种类 type	矿物类抗磨性液压工作油 mineral antiwear hydraulic fluid	
	温度范围 Temperature range °C	- 20 ~ + 80	
	粘度范围 Viscosity range mm ² /s	10 ~ 1,000 *4	

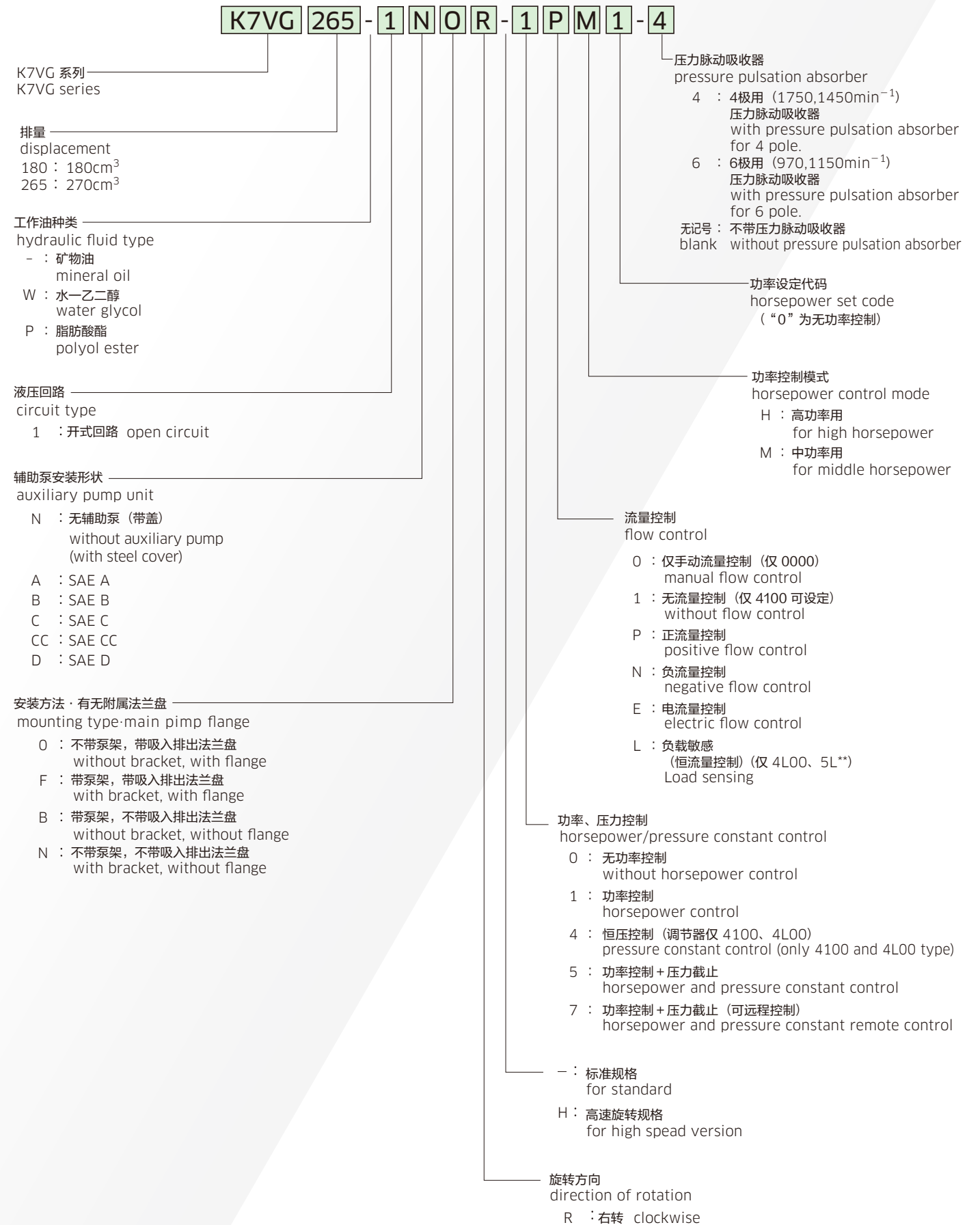
*1 吸入压力在吸入法兰盘部确保-0.01MPa以上。(正常状态)
The suction pressure should be -0.01MPa(-0.1kgf/cm²) and above. (at normal condition)

*2 在吸入法兰盘部必须增压到0.1MPa以上。(高速旋转规格)
Minimum boost pressure should be 0.1MPa(1kgf/cm²) and above at suction port. (Only high speed version) When the speed is higher than maximum self-priming speed, please consult KAWASAKI giving the specification and working parameters.

*3 上表所示为矿物型油的抗磨液压工作油的规格。若使用其他工作油时，请向本公司咨询。在限制使用规格前提下，可使用抗燃性工作油。
When other kinds of fluid are used, please consult Kawasaki. Water Glycol and Ester based Bio-degradable oil is usable with pressure reservation.

*4 粘度为200~1,000mm²/s时，在正式运转之前要使用加热器加热。
In case of 200~1,000mm²/s, please allow system to warm up before using at operating pressure.

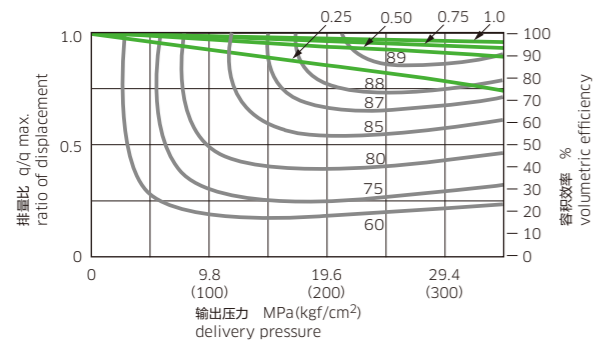
■ 型号表示 ORDERING CODE



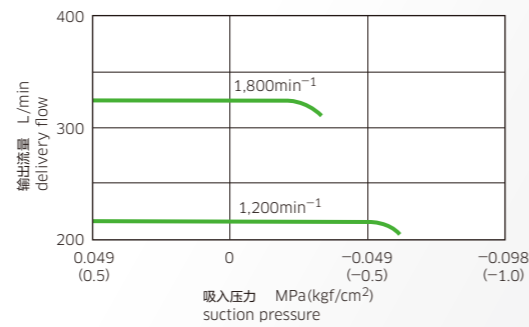
性能 PERFORMANCE CURVE • 矿物油 mineral oil • 油温 50°C oil temperature • 粘度 32mm²/s oil viscosity

K7VG180

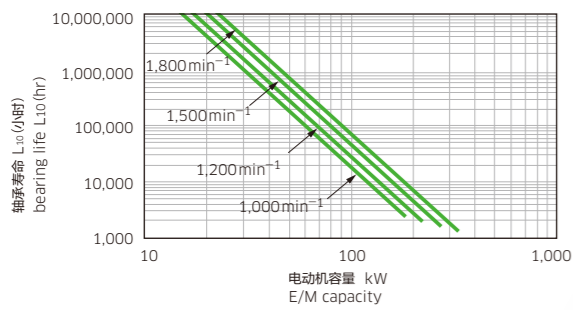
◆ 泵效率 Overall efficiency (%)



◆ 吸入能力 Self-priming capability

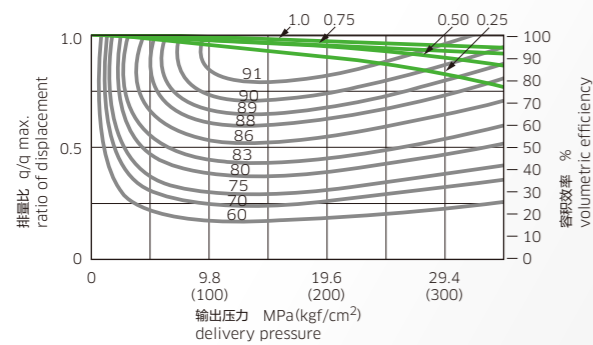


◆ 轴承寿命 Bearing life

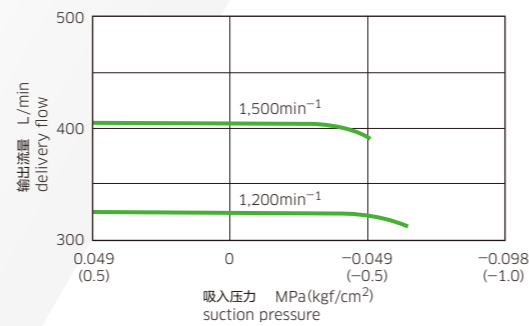


K7VG265

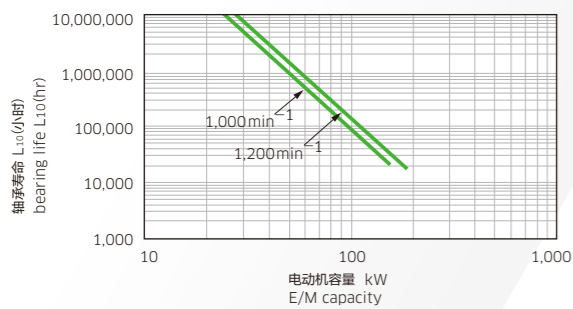
◆ 泵效率 Overall efficiency (%)



◆ 吸入能力 Self-priming capability



◆ 轴承寿命 Bearing life



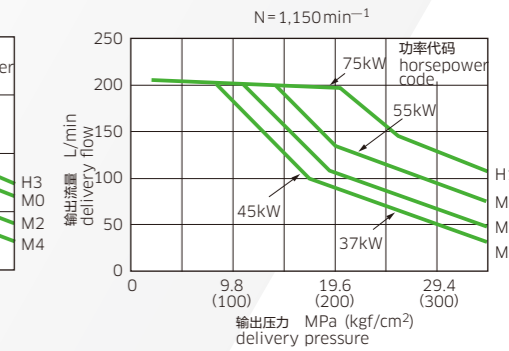
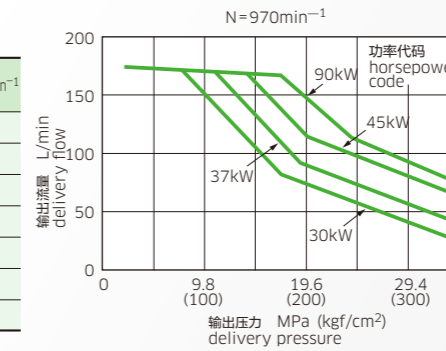
功率设定代码一览 SUMMARY OF HORSEPOWER SET CODE

■ 进行恒功率控制时, 请按以下代码表指定功率设定代码。

■ Select the right horsepower set code from among those shown in the table below for the needed constant horsepower control.

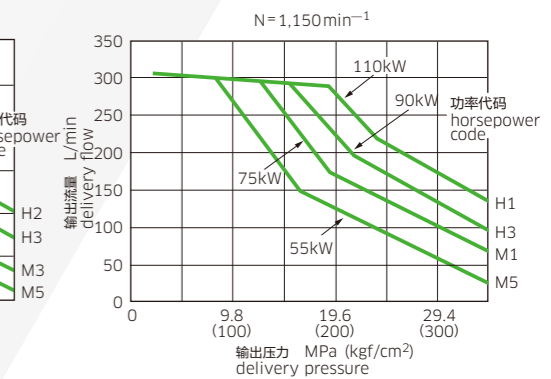
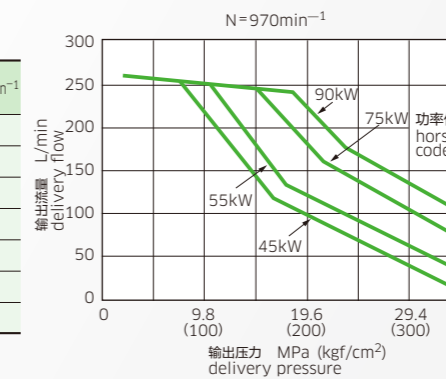
K7VG180

电动机容量 (kW) E/M capacity	970min ⁻¹	1,150min ⁻¹	1,450min ⁻¹	1,750min ⁻¹
30	M4			
37	M2	M3		
45	M0	M2	M4	
55	H3	M0	M2	M4
75		H1	MA	M1
90			H2	MA
110				H2



K7VG265

电动机容量 (kW) E/M capacity	970min ⁻¹	1,150min ⁻¹	1,450min ⁻¹	1,750min ⁻¹
37				
45	M5			
55	M3	M5		
75	H3	M1	M4	
90	H2	H3	M2	
110		H1	H4	
132			H2	

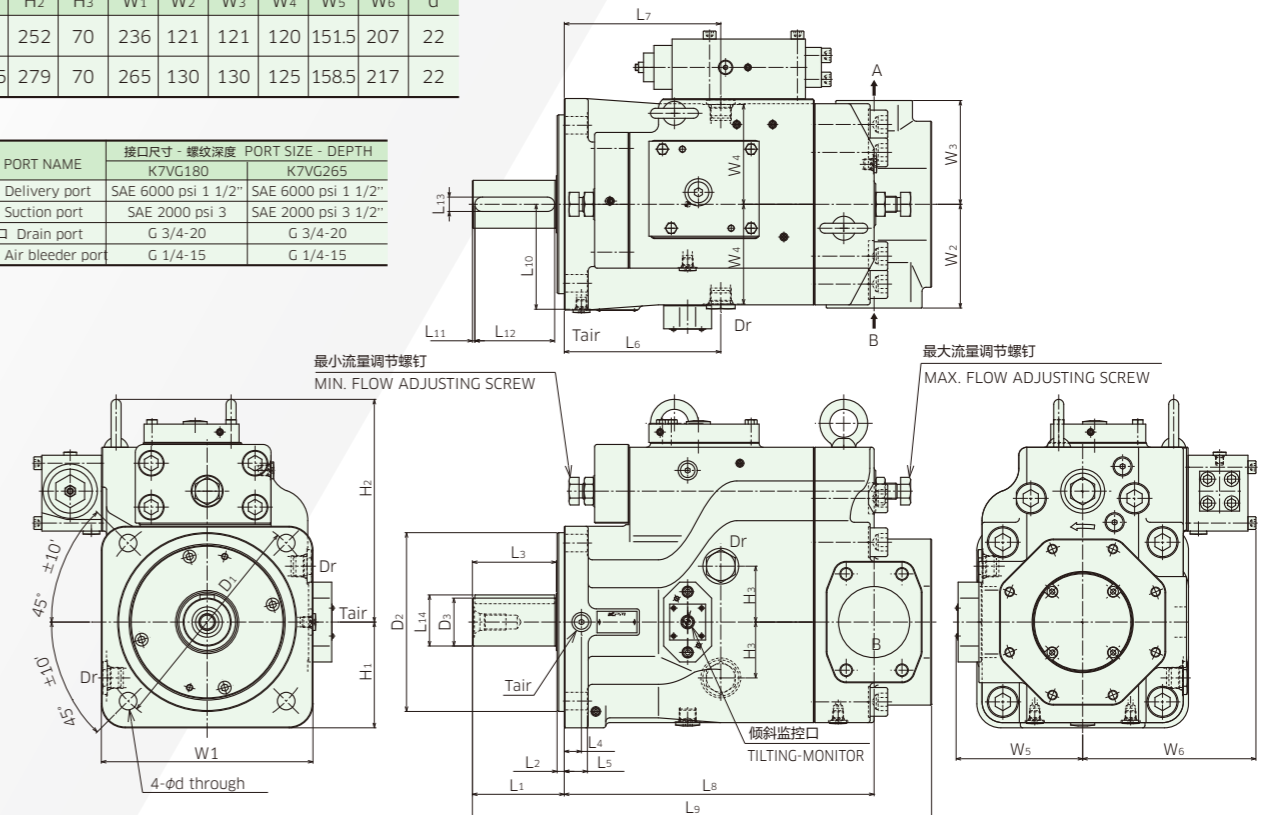


规格 SPECIFICATIONS

尺寸 size	D1	D2	D3	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	L13	L14
180	250	200 ^{0.072}	50k6	92	9	82	22	27	191.5	150	332	496	117	4	75	14	53.5
265	280	224 ^{0.05}	60k6	115	9	105	21.5	29	196	196	388	575	131.5	3	100	18	64

尺寸 size	H1	H2	H3	W1	W2	W3	W4	W5	W6	d
180	118	252	70	236	121	121	120	151.5	207	22
265	132.5	279	70	265	130	130	125	158.5	217	22

接口名 PORT NAME	接口尺寸 - 螺纹深度 PORT SIZE - DEPTH
A 排出口 Delivery port	SAE 6000 psi 1 1/2" SAE 6000 psi 1 1/2"
B 吸入接口 Suction port	SAE 2000 psi 3 SAE 2000 psi 3 1/2"
Dr 润滑油接口 Drain port	G 3/4-20 G 3/4-20
Tair 排气接口 Air bleeder port	G 1/4-15 G 1/4-15



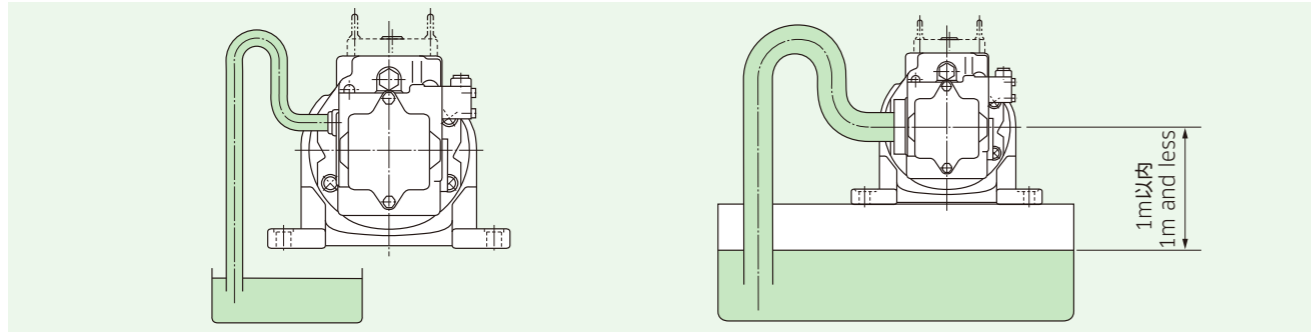
使用注意事项 (K3VG/K3VL/K7VG系列) CAUTION FOR INSTRUCTION (K3VG/K3VL/K7VG SERIES)

1 安装方向和外部泄漏油的配管 Mounting direction and drain piping

- 请将轴安装成水平方向。
- 设置外部泄漏油用的管道，并将软管设定得要比泵高的位置，然后请直接回入油箱。(请不要与吸入口管道、回油管道合流在一起回油。)
- 外部泄漏油请使用上部的泄漏油接口。
- 泄漏油的管道请使用泄漏油接口尺寸以上口径的管道。

1-1. 将泵设置在油箱上时

请将吸入管道先上升到比泵高的位置，然后下降至油箱内。(这是为防止泵停止时油被冲掉。) 另外，泵高度要控制在从油面到泵位置在1m以内、吸入压力在 -0.01MPa (-0.1kgf/cm^2)以上。



1-2. 竖型规格 (轴端向上) 时

- 竖型规格时，一部分零部件有所不同 (标准品不能使用(*1))。订货时，请务必明示竖型规格。
- (1) 油箱的油面请设置得比泵的法兰盘面要高。
 - (2) 油箱的油面低于泵法兰盘面时，或油面变动有可能低于法兰盘面时，请从排气口强制进行润滑。
(必要油量: $1\sim 2\text{ L/min}$)

油漫型时

- (1) 请将泄漏油接口、排气口都打开。

外置型时

- (1) 从泄漏油接口、排气口配管至油箱。
- (2) 泄漏油管道、排气管道比油面高的构造时 (图a)，开动前请向管道内务必加满油。
管道内被施加油箱的油面落差时 (图b)，由于泵内空气从油箱排出，因此没问题。

- Mount the pump with the shaft directed horizontal as shown in the figure below.
- The drain piping must be arranged above the top of the pump case and led to the tank directly. (Don't return it to the suction line nor the return line.)
- The upper drain port should be used, and the drain piping size must be equal to or larger than the drain port size so that the drain pressure in the casing does not exceed 0.2 MPa (2 kgf/cm^2).

1-1. Mounting a pump above a tank

The suction line must be arranged above the top of the pump case between the pump and the oil tank. Maximum mounting height above the oil level is 1m and the suction pressure should be -0.01 MPa (-0.1 kgf/cm^2) and above.

1-2. Vertical installation (Drive shaft facing upward)

When vertically mounted, some parts must be changed. (Do not use the standard pump in vertical mounting.) (*1) When ordering the pump, be sure to write clearly that it will be used vertically mounted.

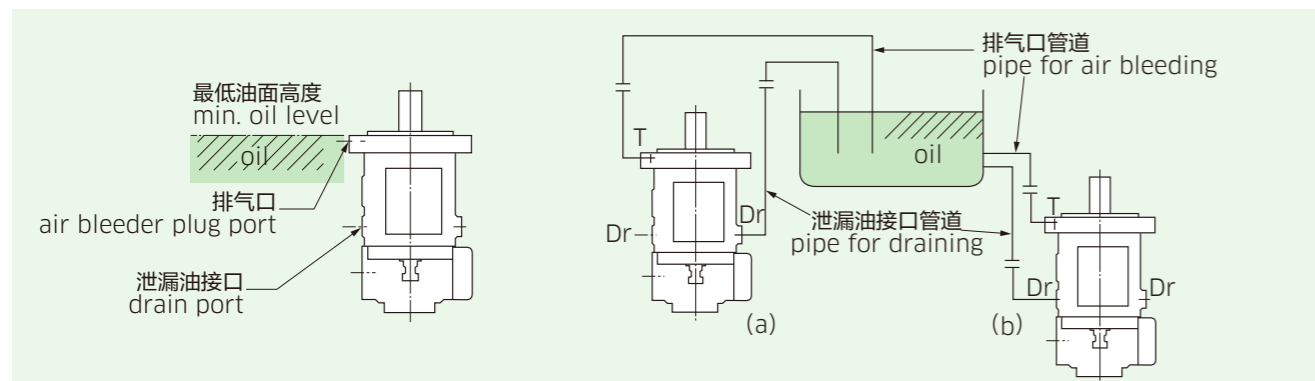
- (1) The oil level in the tank should be upper than the pump mounting flange.
- (2) If there is any possibilities that the oil level is lower than the pump flange level, forced lubrication should be made from the air bleeder plug port. (flow: $1\sim 2\text{ L/min}$)

Installation within a tank

- (1) Open the drain port and the air bleeder plug port.

Installation outside a tank

- (1) Pipe the drain port and the air bleeder plug port to tank.
- (2) If the pipe for draining or air bleeding is upper than the oil level (figure (a) below), the pipe should be filled with oil before starting the pump.



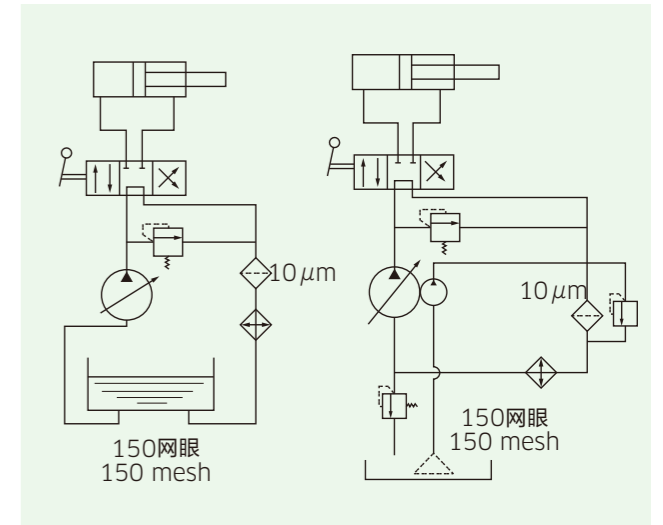
*1: K3VL / K7VG系列是标准品，为竖型规格。

*1: About K3VL / K7VG series, standard type can install vertically.

2 滤油器 Filtration

- 泵的使用寿命受污染的影响很大。请将油箱内的工作油，保持在ISO/DIS 18/15 (NAS9级以内)的洁净度。
- 请在执行机构的回油回路上设置 $10\mu\text{m}$ 滤油器。另外，请在吸入侧设置80~150网眼的滤网。

- For satisfactory service life of these pumps in application, the operating fluid should be continuously filtered to keep at least the cleanliness level ISO/DIS 18/15 or NAS1638 Class 9.
- A $10\mu\text{m}$ -filter must be used in the return line and an 80~150-mesh strainer, in the suction lines.

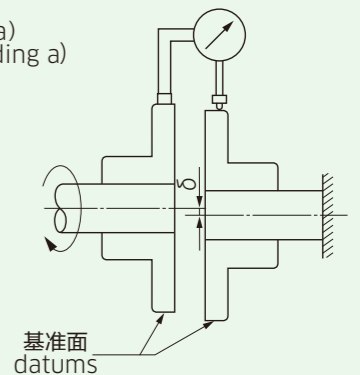


3 与驱动轴的连接 Connection of driving shaft

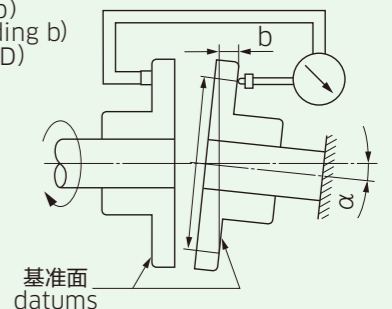
- 驱动轴和原动机的连接，请使用弹性联轴器。
- 安装时请保证轴心对中心的偏离在 0.025mm 以内。
- 轴端上请不要施加径向负载和轴向负载。
- 联轴器请不要敲打装入而是利用轴端的螺纹孔将其压入。
- 对中心标准值
偏心量 $\delta \leq 0.025\text{ mm}$
(千分表的读出 $a = 0.05\text{ mm}$ 以下)
偏角量 $\alpha \leq 0.2\text{ deg}$

- Use a flexible coupling for connection of the pump drive shaft with an engine flywheel or an electric motor shaft.
- Alignment should be so carried out that the parallel error may be held within $\pm 0.025\text{ mm}$.
- Do not put radial or thrust load at the shaft end.
- Use screws and thread for fixing the coupling without hammering.
- The acceptance standard of alignment
Parallel misalignment $\delta \leq 0.025\text{ mm}$
(Dial gauge reading $a = \text{below } 0.05\text{ mm}$)
Angular misalignment $\alpha \leq 0.2\text{ deg}$

千分表 (读出 a)
dial gauge (reading a)
 $\delta = a/2$



千分表 (读出 b)
dial gauge (reading b)
 $\alpha = \text{SIN}^{-1}(b/D)$



4 工作油的种类

The kind of working fluid

- 矿物类液压工作油请使用抗磨型液压工作油。(*1)
- 水—乙二醇等抗燃性工作油时，有需要特殊的密封材料、涂料及金属材料的情况，请务必事前向本公司予以询问。
- 抗燃性工作油的特性如下所示。
抗燃性工作油一般因其粘度—温度特性变化较大，故请在回路设置冷却器，或进行强制冷却，尽可能保持一定温度，避免高温，以适当粘度予以使用。
由于易于发生气蚀，因此较矿物油需要更高的吸入压。具体请向本公司予以询问。另外，长时间使用之际，需要充分的性状管理。适当使用粘度范围与矿物油相同。

- It is recommended to use the anti-wear type hydraulic fluid as mineral oil type when the pressure is higher than 20.6 MPa (210 kgf/cm²). (*1)
- Some fire-resistant fluids require the use of special materials. Therefore please consult KAWASAKI giving the fluid specification and working parameters.
- Generally fire-resistant fluids have a low viscosity index and the viscosity greatly changes with a change in temperature. For this reason, the circuit should be provided with a cooler or forced cooling to keep constant temperature so that the working fluid may be used at an adequate viscosity condition. A higher suction pressure than that in the case of mineral oil is required to prevent cavitation. Please contact KAWASAKI of application information. In case of a long-period operation, adequate control of working fluid condition is required. Proper viscosity range is the same as mineral oil. Precautions are shown on the table below.

种类 type		抗磨性液压工作油*1 mineral anti-wear hydraulic fluid	脂肪酸酯 polyol ester	水—乙二醇 water glycol
最高压力 max. pressure	MPa(kgf/cm ²)	34.3(350)	24.5(250)*3	20.6(210)
适当温度范围 the proper range of temperature	℃	20~60		10~50
气蚀*2 cavitation		○	△	△
对矿物油的寿命指数 expected life index against mineral oil		100	50	20

*2: ○良好 recommendable
△可 usable

*3: 根据使用条件最高压力有不一样的情况，详情请向本公司询问。

K7VG is available at 35 MPa. In application where polyolester oil is required, please consult us.

5 运转时的注意事项

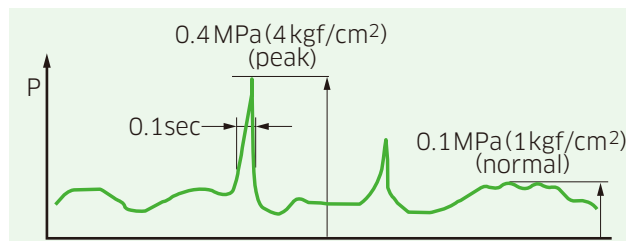
Starting

- 启动时，请务必从泄漏油接口向泵壳体内加满工作油。没有工作油时，会因为润滑油不足导致内部零部件发热胶着。
- 负载侧的液压回路，请使其在无负载状态或卸载回路状态下启动。
- Before starting-up, fill the pump case with system fluid through the case drain connection. Case must remain full of fluid to provide internal lubrication.
- At starting, the hydraulic circuit should be in the unload function.

6 壳体内压

Case Drain Pressure

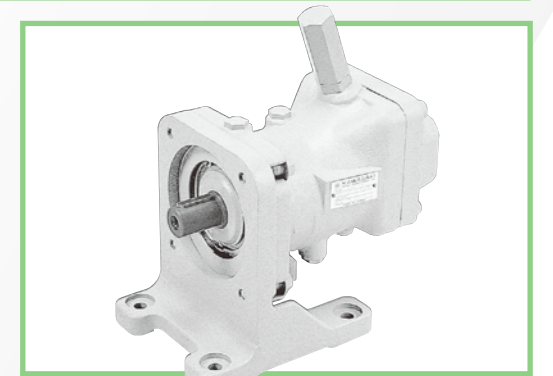
- 在选用泄漏油管道尺寸和滤油器尺寸时，请按照壳体内压在常用时保持在0.1MPa(1kgf/cm²)以下，峰值时也保持在0.4MPa(4kgf/cm²)以下进行选用。
- Please be careful so that the drain pressure in the casing does not exceed 0.1MPa (1kgf/cm²) normally and 0.4 MPa (4 kgf/cm²) at its peak. A suitable size of drain hose and drain filter should be selected.



超高压·变量型 斜轴式

Super-high-pressure Bent Axis Type

LVP017



特长 FEATURES

1. 超高压·长寿命的变量型泵

这是最高压力为49MPa(500kgf/cm²)的超高压·变量型泵。因由于用手动设定从4cm³至17.4cm³之间的任意排量，因此最适于高压千斤顶等。
由于采用了大负载容量轴承，所以即使高压也可长寿命。

2. 使高效率得以实现的倾斜机构

采用独特的倾斜中心的偏置机构，通过将小倾角时不需要的缸体容积抑制在最小，实现了从最小倾角到最大倾角的高效率。

3. 考虑使用方便性的紧凑型设计

通过将吸入排出接口布置成水平方向，消除了以往扇形泵状的排管的麻烦。另外，使泵架得以简化，使得较小空间的配置更加方便。

1. Variable Displacement Pump of Extra-high-pressure and Long Life

The LVP017 is a manual variable displacement pump of super-high-pressure up to 49 MPa. It can be set at any displacement of from 4 to 17.4 cm³ and is suitable for high-pressure jacks. Adoption of the high-load bearings has realized a long life at high pressure.

2. Achieved High Efficiency by Original Tilting Mechanism

The original off-set tilting center mechanism minimizes unnecessary cylinder volume and realizes high efficiency between minimum and maximum flow.

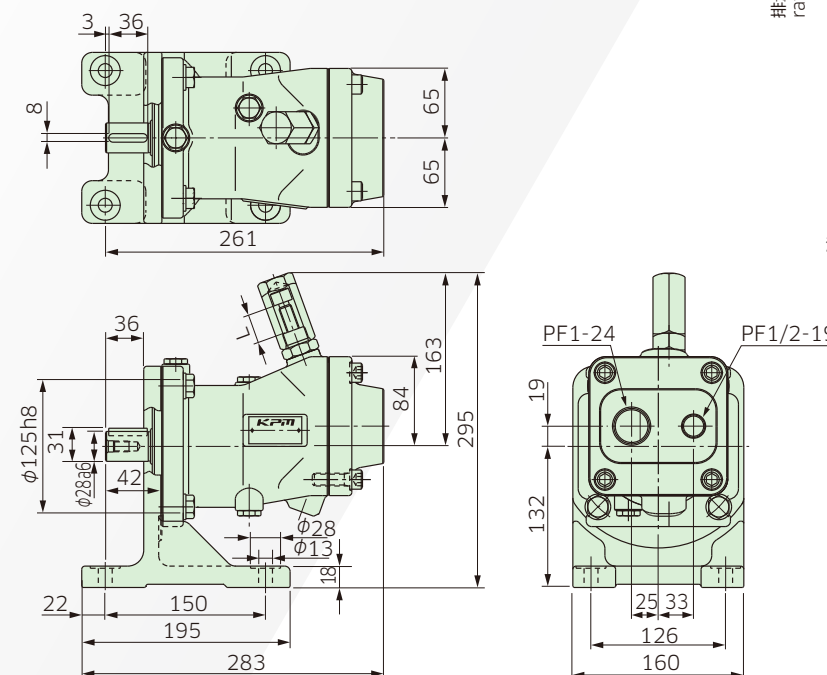
3. Compact Design Considering Use

Horizontal disposition of the suction and delivery ports has eliminated extra pipe work and realized simple installation. The slim bracket enables compact installation.

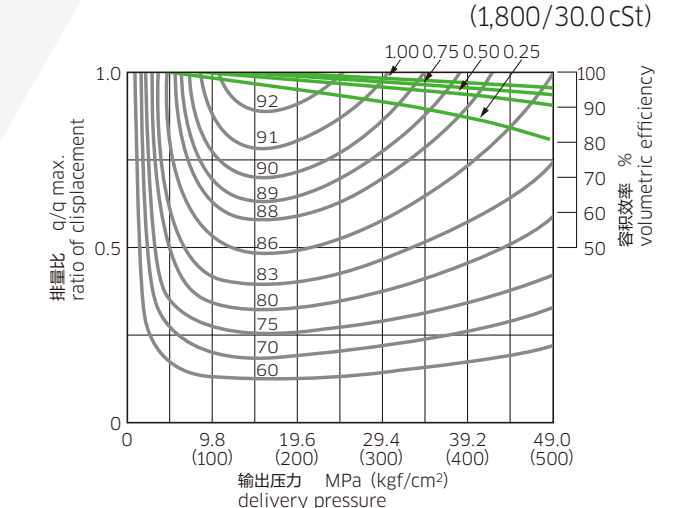
规格 SPECIFICATIONS

泵型号 pump type	LVP017-110R1-R1600	
排量 displacement	cm ³	4~17.4
压力 pressure MPa (kgf/cm ²)	额定 rated	34.3(350)
	最高 max.	49.0(500)
额定转数 rated speed	min ⁻¹	1,800
质量 mass	kg	18.3

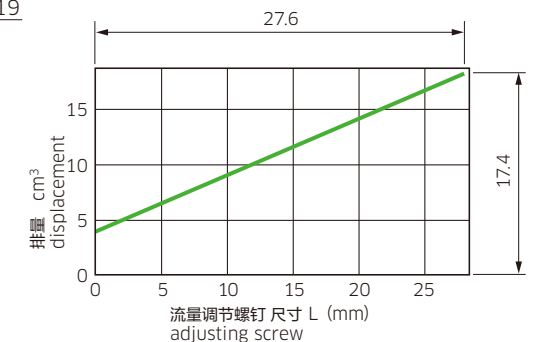
尺寸 DIMENSIONS



泵效率 PUMP EFFICIENCY



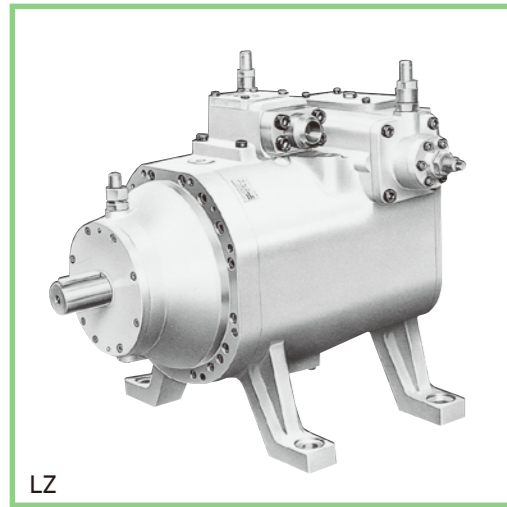
注: 该数据是标准值，不是保证值。
Note: Values shown in the above figure are not guaranteed values, but average ones.



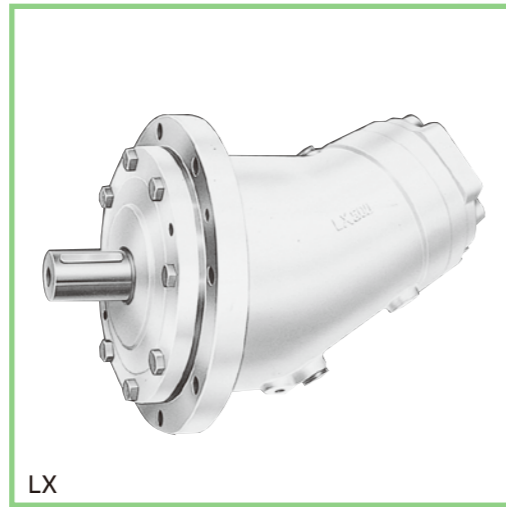
变量·定量型 斜轴式

Variable / Fixed Displacement Bent Axis Type

LZ·LZV/LX·LXV Series



LZ



LX

■ 特长 FEATURES

1. 高压·长寿

这是以独自的技术·经验的实际业绩为基础，为产业机械用而开发的斜轴式高压泵。特别适用于冶金机械、锻压机械等的重型机械的使用。

特别是LZV·LXV系列，是将轴承部进一步强化了的长寿型泵。即使在高压连续负载状态或抗燃型工作油时使用等较为恶劣条件下仍可保持长寿。

2. 高效率

在高压下也可实现泵内部较少泄漏的高效率，从小流量到大流量、从低压到高压的各领域都具有较高的效率。

3. 低噪音

通过独自开发高刚性独特的壳体构造的内部结构，从而降低了噪声。

4. 丰富的控制方式

备有根据恒转矩型、恒压型、先导压力的流量控制，电—液流量控制(ROTAS)等丰富的控制方式。

1. Reliable high-pressure and Long-Life

This bent axis type high pressure pump has been developed for industrial machinery based on our unique technologies and rich experiences.

LXV·LZV series hydraulic pumps are long life reinforced bearing type. They can operate for long periods of time under severe conditions: high pressure continuous drive, use of fire resistant fluid.

2. High Efficiency

The leakage from the internal parts is very small and high efficiency has been realized in any conditions of displacement and pressure.

3. Low Noise

The unique rigid housing construction and mechanism has achieved low noise operation.

4. Varieties of Control Methods

Good varieties of control methods are available such as torque constant control, pressure constant control, flow control with pilot pressure, electro-hydraulic servo control (ROTAS) and so on.

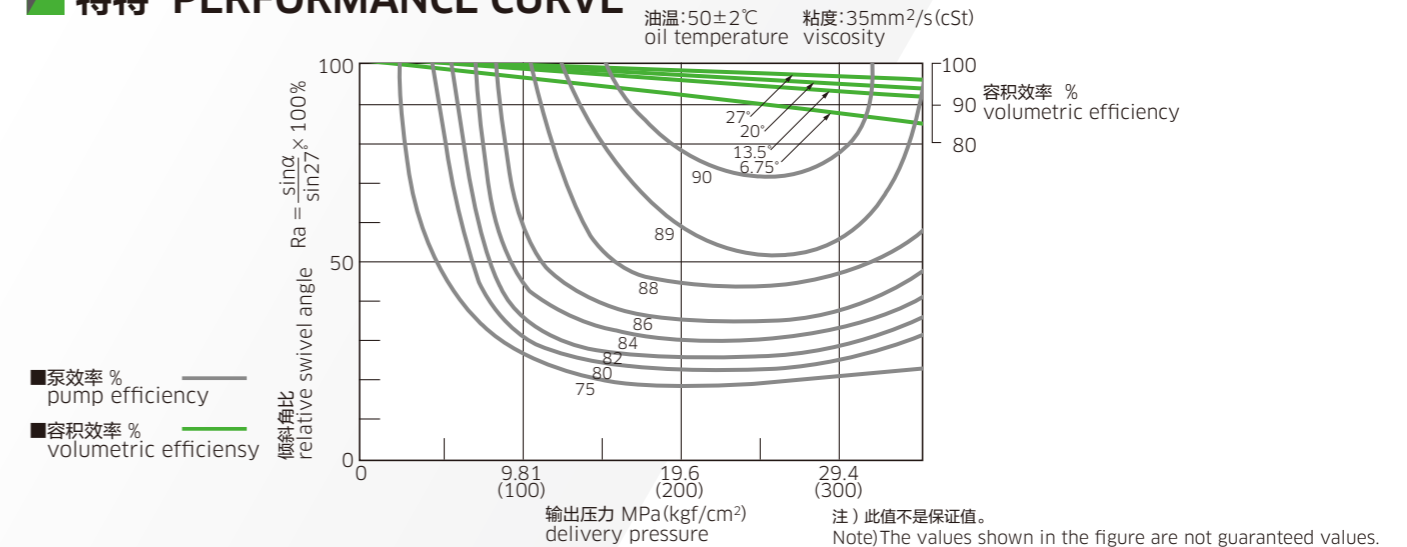
■ 规格 SPECIFICATIONS

尺寸 size		030	060	090	120	180	260	500	
排量 displacement		cm ³	32.4	63.4	84.3	124	174	260	507
倾斜角 tilting angle	deg	LZ·LZV ±0~27°							
		LX·LXV 27°							
压力*1 pressure MPa(kgf/cm ²)	额定 rated*2	34.3(350)							
	最高 max.	39.2(400)							
转速 speed min ⁻¹	自吸最高*3 max. for self-priming	3,600	2,880	2,620	2,300	2,060	1,800	1,440	
	最高 max.	3,760	3,000	2,730	2,400	2,140	1,880	1,500	
理论转矩*4 theoretical torque N·m(kgf·m) Δp=34.3 MPa(350kgf/cm ²) α=27°		177 (18.1)	346 (35.3)	460 (47.0)	675 (68.9)	949 (96.8)	1,417 (144.5)	2,767 (282.3)	
GD ² 值	kgf·m ²	LZ·LX	0.0087	0.028	0.044	0.083	0.151	0.320	0.947
		LZV·LXV				0.184 (LZVのみ)	0.329	0.668	2.010
moment of inertia about the drive axis	kg·m ²	LZ·LX	0.0022	0.0070	0.011	0.021	0.038	0.080	0.237
		LZV·LXV				0.046 (LZVのみ)	0.082	0.167	0.503
旋转变动容许值 permissible speed variation		aw(rad/s)	3.1	2.8	2.7	2.6	2.4	2.3	2.1
质量 mass	kg	LX	15	27	35	53	66	115	219
		LZ*5	42	74	101	135	184	310	591
		LXV					135	185	390
		LZV*5				171	257	372	714

- *1 使用抗磨性液压工作油时。
- *2 可以连续使用的最高压力。
- *3 开式回路使用矿物性工作机油，泵壳体内内压为0MPa(kgf/cm²)时的最高转速。
- *4 额定压力不包含机械效率的理论值。
- *5 包括调节器(R2600)的质量。

- *1 Pressure when using anti-wear type hydraulic fluid.
- *2 Maximum pressure for continuous use.
- *3 The maximum speed is with the suction pressure 0 MPa (kgf/cm²) in the pump casing using mineral oil and in the open circuit.
- *4 Theoretical value based on rated pressure and out of consideration of mechanical efficiency
- *5 Mass with regulator (type R2600)

■ 特特 PERFORMANCE CURVE



■ 规格选定计算式 CALCULATION FORMULA

◆ 泵 Pump

- 输出流量 L/min outlet flow $Q = \frac{q_{max} \cdot n \cdot \sin \alpha}{1,000 \sin 27^\circ} \cdot \eta_v$
- 输入扭矩 N·m(kgf·m) input torque $T = \frac{1.59q \max \cdot \Delta p \cdot \sin \alpha}{10 \sin 27^\circ \cdot \eta_m}, \left(\frac{1.59q \max \cdot \Delta p \cdot \sin \alpha}{1,000 \sin 27^\circ \cdot \eta_m} \right)$
- 输入功率 kW input horse power $N = \frac{Q \cdot \Delta P}{60 \eta_t}$

◆ 液压马达 Motor

- 必要流量 L/min required input flow $Q = \frac{q_{max} \cdot n \cdot \sin \alpha}{1,000 \sin 27^\circ \cdot \eta_v}$
- 输出扭矩 N·m(kgf·m) output torque $T = \frac{1.59q \max \cdot \Delta p \cdot \sin \alpha \cdot \eta_m}{10 \sin 27^\circ}, \left(\frac{1.59q \max \cdot \Delta p \cdot \sin \alpha \cdot \eta_m}{1,000 \sin 27^\circ} \right)$
- 输出功率 kW output horse power $N = \frac{Q \cdot \Delta P}{60} \cdot \eta_t$

α	倾斜角 deg tilting angle
q max	最大排量 cm ³ Max. displacement
n	转速 min ⁻¹ speed
ΔP	有效压力差 MPa(kgf/cm ²) effective pressure difference
ηv	容积效率 volumetric efficiency
ηm	机械效率 mechanical efficiency
ηt	总效率 overall efficiency

LZ·LZV型号表示 LZ·LZV ORDERING CODE

LZ - 260 - 1 1 0 R 1 F B - H R3041

系列 series
 变量型 variable displacement type
 轴承 bearing
 - : 标准 standard type
 V : 长寿命轴承式 long life bearing type
 排量 displacement
 030 : 32.4cm³
 060 : 63.4cm³
 090 : 84.3cm³
 120 : 124cm³
 180 : 174cm³
 260 : 260cm³
 500 : 507cm³
 工作油种类 type of hydraulic fluid
 - : 矿物油 mineral oil
 W : 水-乙二醇 water glycol
 Z : 磷酸酯 phosphate ester
 P : 脂肪酸酯 polyol ester
 E : 其他 others
 液压回路 type of circuit
 1 : 开式回路 open circuit
 2 : 闭式回路 closed circuit
 4 : 带吸入阀回路 semi-closed circuit
 调节器 regulator
 0 : 不带调节器 without regulator
 1 : 带调节器 with regulator

调节器型号 type of regulator
 调节器 regulator
 详情见下页 refer to next page
 转速 speed
 H : >1,400min⁻¹ 泵规格 (180, 260) pump type
 - : 其他 others
 下侧管法兰盘的方向 location of mounting face of lower pipe flange
 B : 左侧 left side
 D : 右侧 right side
 - : 不带下侧管法兰盘 without lower pipe flange
 上侧管法兰盘的方向 location of mounting face of upper pipe flange
 B : 左侧 left side
 D : 右侧 right side
 - : 不带上侧管法兰盘 without upper pipe flange
 安装方法 mounting type
 0 : 不带泵架 (030~180) without bracket
 1 : 带泵架 (030~180) with bracket
 F : 脚座安装式 (260~500) foot mounting type
 装配形状 assembly configuration
 0 : 不带后盖 without rear cover
 1 : 标准 standard type
 旋转方向 direction of rotation
 R : 右转 clockwise
 L : 左转 counterclockwise
 M : 双向旋转 both rotation
 从轴侧看 viewed from shaft end
 轴端形状 shaft end
 0 : 标准: 键 (JIS) standard: keyed (JIS)
 5 : 渐开线花键 (JIS) (060~500) involute splined (JIS)(060~500)
 键 keyed
 渐开线花键 involute splined

LZ·LZV调节器代码 LZ·LZV REGULATOR CODE

◆ R1100, R1120, R1130, R1602, R1220, R2600, R3041型的情况 for R1100,R1120,R1130,R1602,R1220,R2600,R3041 type
 ◆ EH (ROTAS) 型的情况 for EH (ROTAS) type

R3041 - D R

调节器型号 type of regulator
 R2600型的手柄位置*1 handle position of R2600
 R : 右侧 right
 L : 左侧 left
 - : R2600调节器 regulator type except for R2600
 倾斜方向*1 tilting direction
 R : 右侧 right
 L : 左侧 left
 D : 双向 both

R1220型的情况 for R1220
 H : 设定压力 >20.6MPa setting pressure
 空白 blank
 R3041型的情况 for R3041
 O : 不带恒转矩控制 without torque constant control
 R : 单侧恒转矩控制 右倾斜 with one-side torque constant control, tilted right
 L : 单侧恒转矩控制 左倾斜 with one-side torque constant control, tilted left
 D : 两侧恒转矩控制 with both-side torque constant control

调节器型号 type of regulator
 EH 7 3 0 - D R
 泵尺寸 pump size
 1 : 030
 2 : 060
 3 : 090
 4 : 120
 5 : 180
 6 : 260
 7 : 500
 3 : 260,500
 4 : 030~180 (*2)
 恒转矩控制 torque constant control
 O : 不带恒转矩控制 without torque constant control
 R : 单侧恒转矩控制 右倾斜 with one-side torque constant control, tilted right
 L : 单侧恒转矩控制 左倾斜 with one-side torque constant control, tilted left
 D : 两侧恒转矩控制 with both-side torque constant control
 倾斜方向*1 tilting direction
 R : 右侧 right
 L : 左侧 left
 D : 双向 both

*1 从驱动轴侧看的倾斜方向、手柄位置。
 The tilting direction and the handle position show views from the shaft-end.
 *2 力矩电机为旧式(TMA)时: 成为 1 : 260, 500 2 : 030~180。
 When the torque motor is the old type (TMA), the code is 1 : 260, 500 2 : 030~180.

LX·LXV型号表示 LX·LXV ORDERING CODE

LX - 260 - P 0 R 1 1 00 H

系列 series
 变量型 fixed displacement type
 轴承 bearing
 - : 标准 standard type
 V : 长寿命轴承式 long life bearing type
 排量 displacement
 030 : 32.4cm³
 060 : 63.4cm³
 090 : 84.3cm³
 120 : 124cm³
 180 : 174cm³
 260 : 260cm³
 500 : 507cm³
 工作油种类 type of hydraulic fluid
 - : 矿物油 mineral oil
 W : 水-乙二醇 water glycol
 Z : 磷酸酯 phosphate ester
 P : 脂肪酸酯 polyol ester
 E : 其他 others
 法兰盘形状 type of flange
 P : 泵规格 pump type
 M : 液压马达规格 motor type
 转速 speed
 H : >1,400min⁻¹ 泵规格 (180, 260) pump type
 空白 : 其他 others
 设计代码 design code
 安装方法 mounting type
 0 : 不带泵架 without bracket
 1 : 带泵架 with bracket
 设计代码 design code
 旋转方向 direction of rotation
 R : 右转 clockwise
 L : 左转 counterclockwise
 M : 双向旋转 both rotation
 液压马达规格 both rotation motor type
 泵规格 pump type
 轴端形状 shaft end
 0 : 标准: 键 (JIS) standard: keyed (JIS)
 5 : 渐开线花键 (JIS) (060~500) involute splined (JIS)(060~500)

吸入·增压压力 SUCTION·BOOST PRESSURE

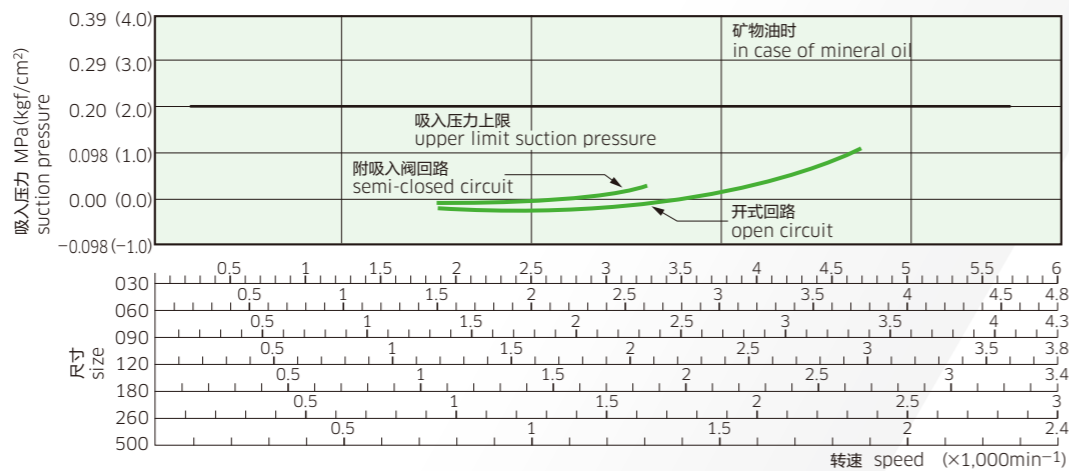
概略值如下图所示。具体各尺寸请向本公司予以询问。

Approximate values are shown below. Please contact us to obtain more detailed information of each size.

吸入压力:开式回路(LZ·LZV 100型/LX·LXV)·附吸入阀回路(LZ·LZV 400型)用 Suction Pressure: For Open Circuit(LZ·LZV 100 type/LX·LXV)·Semi-Closed Circuit(LZ·LZV 400 type)

■请将吸入压力(泵壳体内压)置于右图所示的容许范围之内。

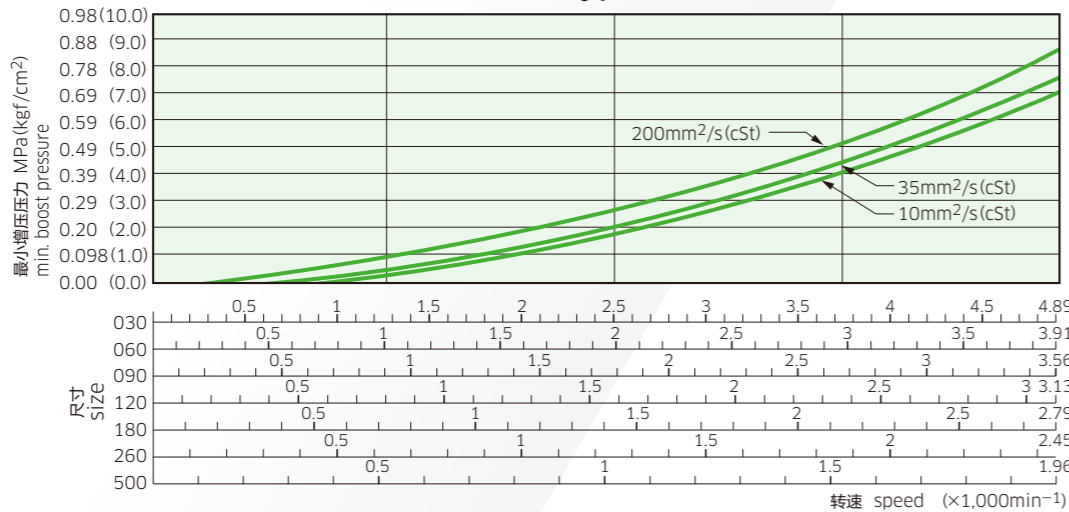
■Set the suction pressure (the inside pressure of the pump casing) within the allowable ranges shown in the figure.



最小升压压力:闭式回路用(LZ·LZV 200型) Min. Boost Pressure: For Closed Circuit(LZ·LZV 200 type)

■使用闭式回路时,请施加如右图所示数值以上的增压压力。

■In the case of closed circuit, please supply boost pressure higher than that indicated in the chart.



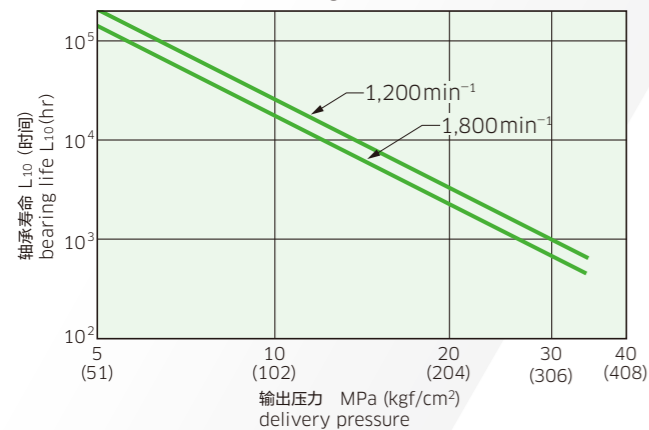
轴承寿命 BEARING LIFE

矿物油时 In Case of Mineral Oil

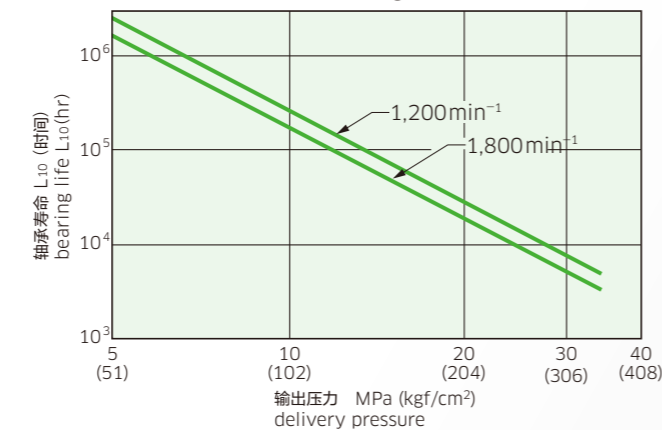
■抗燃性工作油时,请考虑对矿物油的寿命指数(请参照下一页的“工作油的种类”)。

■In case of fire-resistant fluids, should be considered expected life index against mineral oil. (Refer to next page "The Kind of Working Fluid")

●LZ·LX轴承寿命 LZ·LX Bearing life



●LZV·LXV轴承寿命 LZV·LXV Bearing life



轴承寿命表示为基本额定寿命(信赖度90%)的计算值。具体请向本公司予以询问。
The value for the bearing life show the calculated values of the basic rated life. (90% of reliability) Please contact us for details.

工作油 WORKING FLUID

工作油的温度·粘度范围 The Range of Temperature·Viscosity

工作油温度范围 the range of temperature	-20 ~ +80°C	
工作油粘度范围 the range of viscosity	开式回路 open circuit	10~200 mm ² /s(cSt)
	闭式或液压马达回路 closed or motor circuit	10~1,000 mm ² /s(cSt)
适当粘度范围 the proper range of viscosity	20~200 mm ² /s(cSt)	

工作油的种类 The Kind of Working Fluid

■作为矿物油类液压工作油,请使用抗磨性液压工作油。(*1)

■由于使用磷酸酯、水-乙二醇等抗燃性工作油时,有需要特殊的密封材料、涂料及金属材料的情况,因此请务必事前向本公司予以询问。

■抗燃性工作油的特性如下表所示。

抗燃性工作油一般因其粘度-温度特性变化较大,故请在回路设置冷却器,或进行强制冷却,尽可能保持一定温度,避免高温,以适当粘度予以使用。

由于易于发生气蚀,因此较矿物油需要更高的吸入压。具体请向本公司予以询问。另外,长时间使用之际,需要充分的性状管理。

适当使用粘度范围与矿物油相同。

■It is recommended to use the anti-wear type hydraulic fluid as mineral oil type when the pressure is higher than 20.6 MPa (210 kgf/cm²). (*1)

■Some fire-resistant fluids require the use of special materials. Therefore please consult KAWASAKI giving the fluid specification and working parameters.

■Generally fire-resistant fluids have a low viscosity index and the viscosity greatly changes with a change in temperature. For this reason, the circuit should be provided with a cooler or forced cooling to keep constant temperature so that the working fluid may be used at an adequate viscosity condition. A higher suction pressure than that in the case of mineral oil is required to prevent cavitation. Please contact KAWASAKI of application information. In case of a long-period operation, adequate control of working fluid condition is required. Proper viscosity range is the same as mineral oil. Precautions are shown on the table below.

		种类 type	抗燃性液压工作油*1 mineral anti-wear hydraulic fluid	磷酸酯 phosphate ester	脂肪酸酯 polyol ester	水-乙二醇 water glycol
额定压力 rated pressure	MPa (kgf/cm ²)	34.3 (350)			20.6 (210)	
最高转速 max. speed	min ⁻¹	请参照规格项 refer to SPECIFICATIONS	1,750 (泵尺寸 pump size:030~180) 1,150 (泵尺寸 pump size:260~500)			
适当温度范围 the proper range of temperature	°C	20~60			10~50	
气蚀*2 cavitation		○	△	△	△	
对矿物油的寿命指数 expected life index against mineral oil		100	60~100	50~100	20~80	

*2:○ 良好 recommendable
△ 可 usable

调节器一览 SUMMARY OF REGULATORS

型号 model	控制型式 control type	控制方法 control method	控制线图 control curve	功能说明 explanation of function	记号 symbol
R1100		输出有效压 working pressure		按照设定的P-Q线圈，对应泵输出有效压力控制输出流量。 Controls the outlet flow in accordance with torque control curve.	
R1120	恒转矩型 torque constant type	输出有效压 working pressure 手动手柄操作 operation by handwheel		R1100+手动式行程限制器 (通过手动手柄的操作可调节最大输出流量)。 R1100 type with manual stroke limiter. (It is adjustable to control the maximum outlet flow by manual operation.)	
R1130		输出有效压 working pressure 先导液压操作 operation by pilot pressure		R1100+液压式行程限制器 (通过先导液压力油可调节最大输出流量)。 R1100 type with hydraulic stroke limiter. (It can control the maximum outlet flow by the pilot hydraulic pressure.)	PL : 先导液压力油 pilot pressure max. 3.9 MPa (40 kgf/cm ²) 输出压力(P _L) = 1/10 Pilot pressure(P _L) = 1/10 Delivery pressure = 1/10
R1602	输出量2级切换型 two step flow type	先导液压切换操作 operation by changing pilot pressure		通过切换先导液压力油的流入方向可2级控制输出流量。 Controls the maximum and minimum outlet flow by changing the allocation of the pilot fluid.	PL : 先导液压力油 pilot pressure 1.5~4.9 MPa (15 ~50 kgf/cm ²)
R1220	恒压型 pressure constant type	输出有效压 working pressure 手动手柄操作 operation by handwheel		即使流量变化仍可回路压力保持在恒定的控制。通过手动操作可调节最大输出流量及设定压力。Qmin的设定请参照“使用注意事项7”(63页)。 Controls to keep a constant system pressure regardless of change of the outlet flow. It can control maximum outlet flow and setting pressure by manual operation. See Note 7 on Caution for instruction (63 page) about the minimum outlet flow rate Q min.	
R2600	输出量无级调节性 stepless flow control type	手动手柄操作 operation by handwheel		通过手动手柄的操作可无级调节输出流量。 Controls the outlet flow steplessly by manual operation.	
R3041	输出量无级调节型或恒转矩型 stepless flow control type or torque constant type	液压远程控制 hydraulic remote control 		通过先导液压力油(带操作阀时为控制杆操作)可无级调节输出流量。在上述功能上也可附加恒转矩控制功能。 Controls the outlet flow steplessly by changing the pilot hydraulic pressure. It is able to add the torque constant control function to the above function.	Ps : 伺服液压力油 servo pressure 2.0~4.9MPa (20~50kgf/cm ²) PL : 先导液压力油 pilot pressure max. 4.4MPa (45kgf/cm ²)
ROTAS EH	输出量无级调节型或恒转矩型 stepless flow control type or torque constant type	电-液远程控制 electric-hydraulic remote control 		输入微弱的电信号，作为输出大扭矩的角位移用“ROTAS”(电-液旋转伺服执行元件)，对输出量实行电控制。 "ROTAS" (electric-hydraulic rotary servo actuator), which generates large output torque in proportion to low level electric signal, can control the outlet flow steplessly.	Ps : 伺服液压力油 servo pressure 2.0~4.9MPa (20~50kgf/cm ²)

◆ 特长

1. 线性优异，滞后较小的高精度。
2. 通过各种电输入信号可进行远程操作，实现了反馈控制的构筑。
3. 内装位置反馈功能，不需要外部反馈的机构。
4. 与伺服阀的控制相比，抗污染性变高。

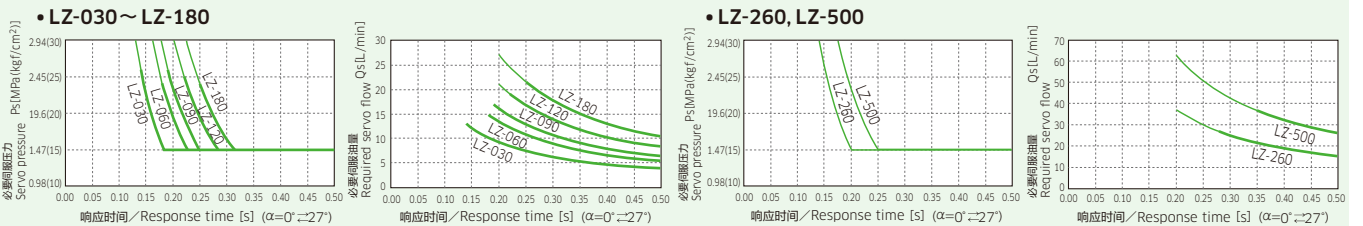
◆ Features

1. Good linearity and low level hysteresis.
2. By receiving various electrical signals, it enables remote control systems and feedback control systems.
3. A feed back mechanism is included inside, making the system simple (outside feed back is not necessary, unlike in servo valves).
4. Contamination-resist capability is improved compared with servo valve control.

◆ 规格 Specifications

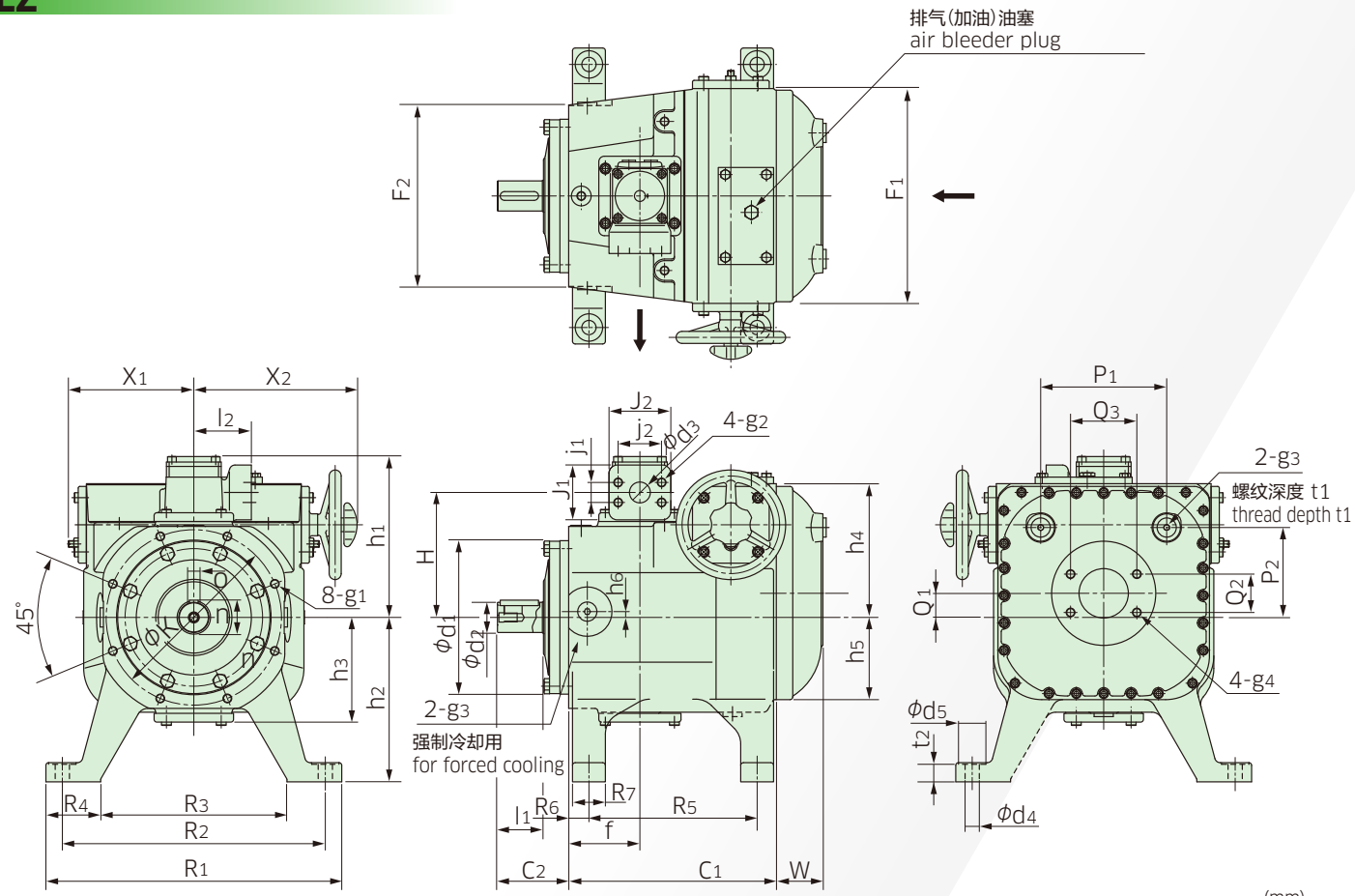
响应性 responsibility	阶跃响应 step response	0.3s (0°~27°)
	频率响应 frequency response	3Hz (±12.5°, -3dB)
滞后 hysteresis		1% (0.5°以下 less than 0.5°)
线性 linearity		<2%

◆ 响应时间和必要伺服压力·必要伺服流量的关系 Relationship between response time and required servo pressure/servo flow



尺寸 DIMENSIONS

LZ



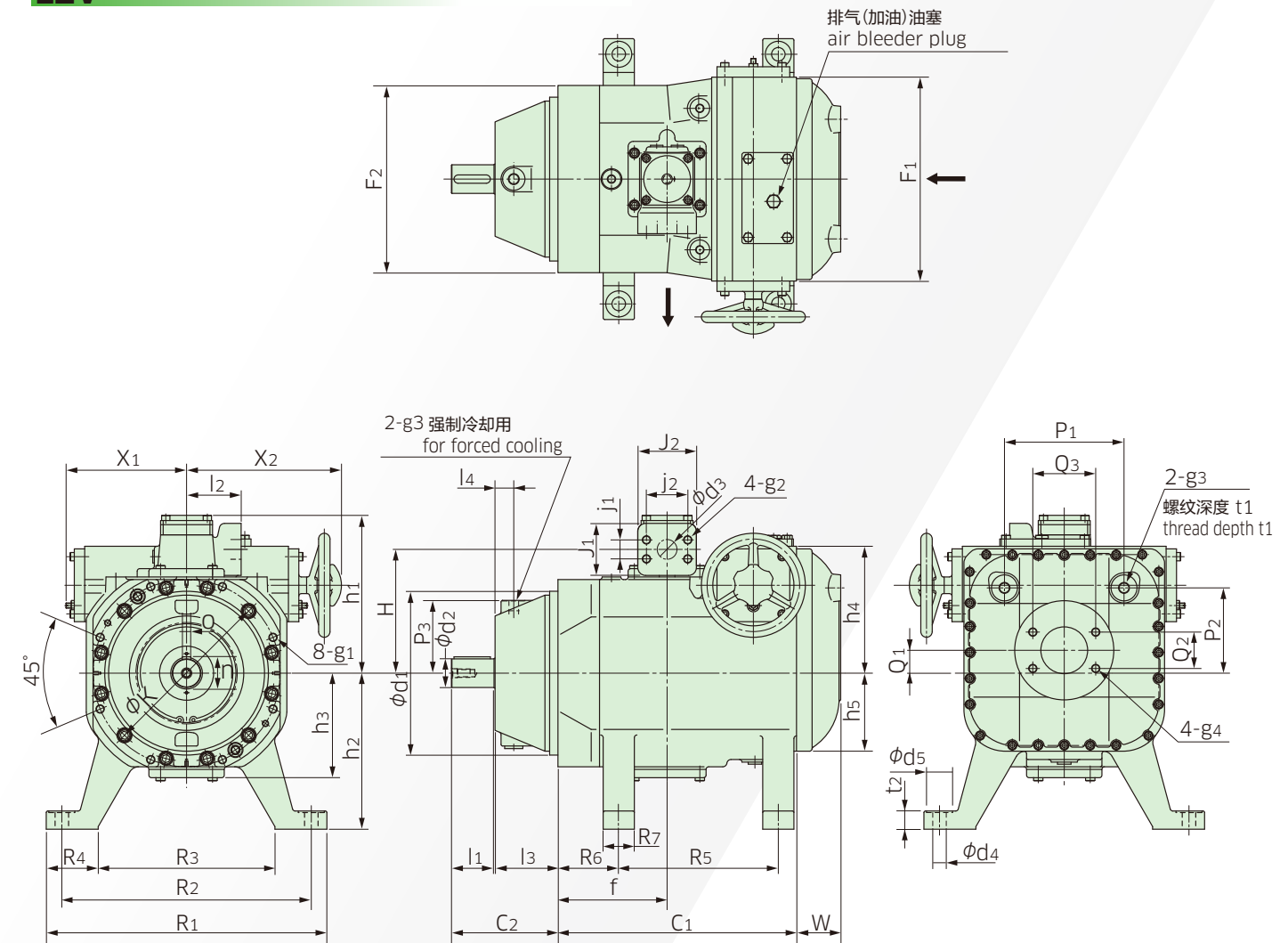
尺寸 size	C1	C2	d1	d2	d3	d4	d5	F1	F2	f	g1	g2	g3	g4	H	h1	h2	h3	h4
030	216	67	125 _{h8}	28 _{j6}	19	-	-	214	168	78	M10	M10	G1/4	M12	127.5	191.5	-	106	139
060	263	83	160 _{h8}	35 _{k6}	26	-	-	260	208	97	M12	M10	G1/4	M12	156	222	-	133	165
090	286	98	200 _{h8}	38 _{k6}	26	-	-	294	264	102	M16	M10	G1/2	M12	181	243.5	-	159	179
120	311	122	200 _{h8}	45 _{k6}	32	-	-	320	264	108	M16	M12	G1/2	M12	185	246.5	-	162	198
180	341	122	250 _{h8}	50 _{k6}	38	-	-	366	310	118	M16	M16	G1/2	M16	211.5	271	-	188	222
260	379	130	280 _{h8}	55 _{m6}	38	26	50	392	332	130	M16	M16	G1/2	M16	228	293.5	300	197	244
500	488	155	355 _{h8}	70 _{m6}	51	33	62	504	416	175	M20	M20	G3/4	M16	277	362.5	375	258	309

尺寸 size	h5	h6	J1	J2	j1	j2	K	l1	l2	n	o	P1	P2	Q1	Q2	Q3	R1	R2	R3
030	82	5	68	71.4	23.8	50.8	160	42	75	31	8 _{h9}	124	90	25	30.2	58.7	-	-	-
060	101	5	80	81	27.8	57.2	200	58	80	38	10 _{h9}	162	117	30	35.7	69.9	-	-	-
090	116	15	80	81	27.8	57.2	250	58	85	41	10 _{h9}	184	124	29	42.9	77.8	-	-	-
120	119	15	90	96	31.8	66.7	250	82	90	48.5	14 _{h9}	206	145	37	50.8	88.9	-	-	-
180	135	15	100	112.8	36.5	79.4	300	82	100	53.5	14 _{h9}	232	161	41	61.9	106.4	-	-	-
260	150	0	100	112.8	36.5	79.4	320	82	105	59	16 _{h9}	230	164	44	70	121	540	480	340
500	184	0	115	134	44.5	96.8	400	105	120	74.5	20 _{h9}	270	194	61	77.8	130	680	600	430

尺寸 size	R4	R5	R6	R7	t1	t2	W	X1	X2
030	-	-	-	-	14	-	54	126	172
060	-	-	-	-	贯通 thru	-	64	154.5	209
090	-	-	-	-	贯通 thru	-	65	172	229
120	-	-	-	-	贯通 thru	-	70	191	248
180	-	-	-	-	贯通 thru	-	78	214	271
260	100	307	37	60	15	32	85	230	298
500	125	385	55	80	20	41	95	302.5	369

(注) 泵规格030~180为泵架安装。
(Note) The pump size 030~180 are bracket mounting type.

LZV



尺寸 size	C1	C2	d1	d2	d3	d4	d5	F1	F2	f	g1	g2	g3	g4	H	h1	h2	h3	h4
120	368	169	200 _{h8}	45 _{k6}	32	-	-	320	264	165	M16	M12	G1/2	M12	185	246.5	-	162	198
180	398	177	250 _{h8}	50 _{k6}	38	-	-	366	310	175	M16	M16	G1/2	M16	211.5	271	-	188	222
260	459	205	315 _{h8}	55 _{m6}	38	26	50	392	360	210	M16	M16	G1/2	M16	238	303.5	300	207	244
500	543	277	400 _{h8}	70 _{m6}	51	33	62	504	452	230	M20	M20	G3/4	M16	292	377	375	273	309

尺寸 size	h5	J1	J2	j1	j2	K	l1	l2	l3	l4	n	o	P1	P2	P3	Q1	Q2	Q3	R1
120	119	90	96	31.8	66.7	250	82	90	85	28	48.5	14 _{h9}	206	145	95	37	50.8	88.9	-
180	135	100	112.8	36.5	79.4	300	82	100	93	30	53.5	14 _{h9}	232	161	115	41	61.9	106.4	-
260	150	100	112.8	36.5	79.4	360	82	105	121	36	59	16 _{h9}	230	164	140	44	70	121	540
500	184	115	134	44.5	96.8	450	105	120	170	48	74.5	20 _{h9}	270	194	160	61	77.8	130	680

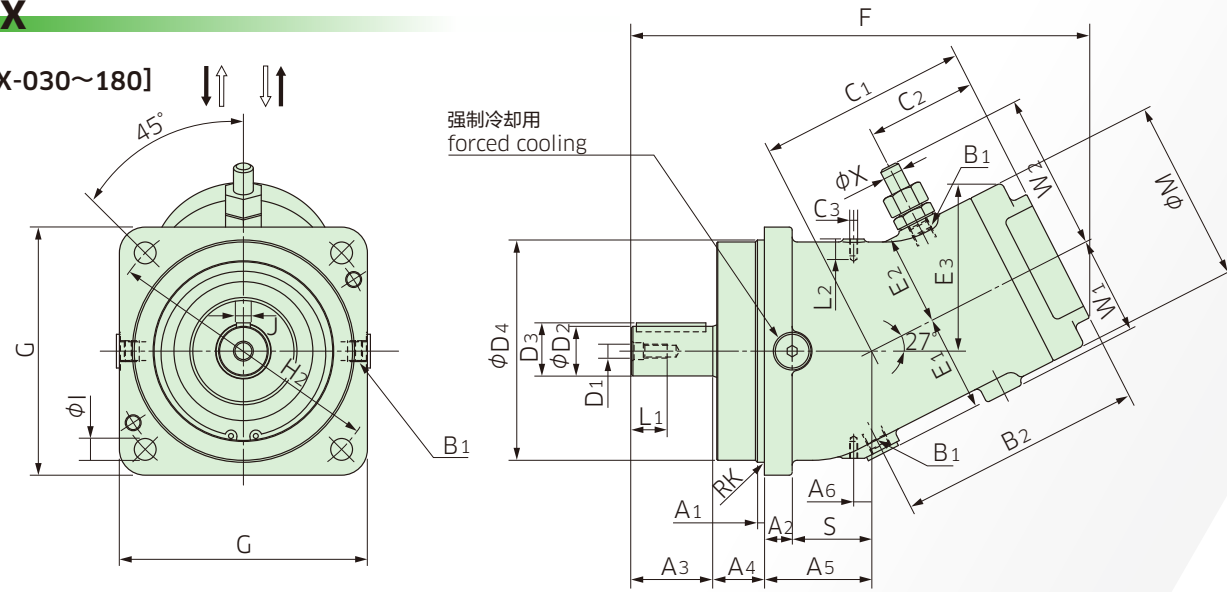
尺寸 size	R2	R3	R4	R5	R6	R7	t1	t2	t3	W	X1	X2
120	-	-	-	-	-	-	贯通 thru	-	19	70	191	248
180	-	-	-	-	-	-	贯通 thru	-	19	78	214	271
260	480	340	100	307	117	60	15	32	19	85	230	298
500	600	430	125	385	110	80	20	41	21	95	303	369

(注) 泵规格120、180为泵架安装。
(Note) The pump size 120,180 are bracket mounting type.

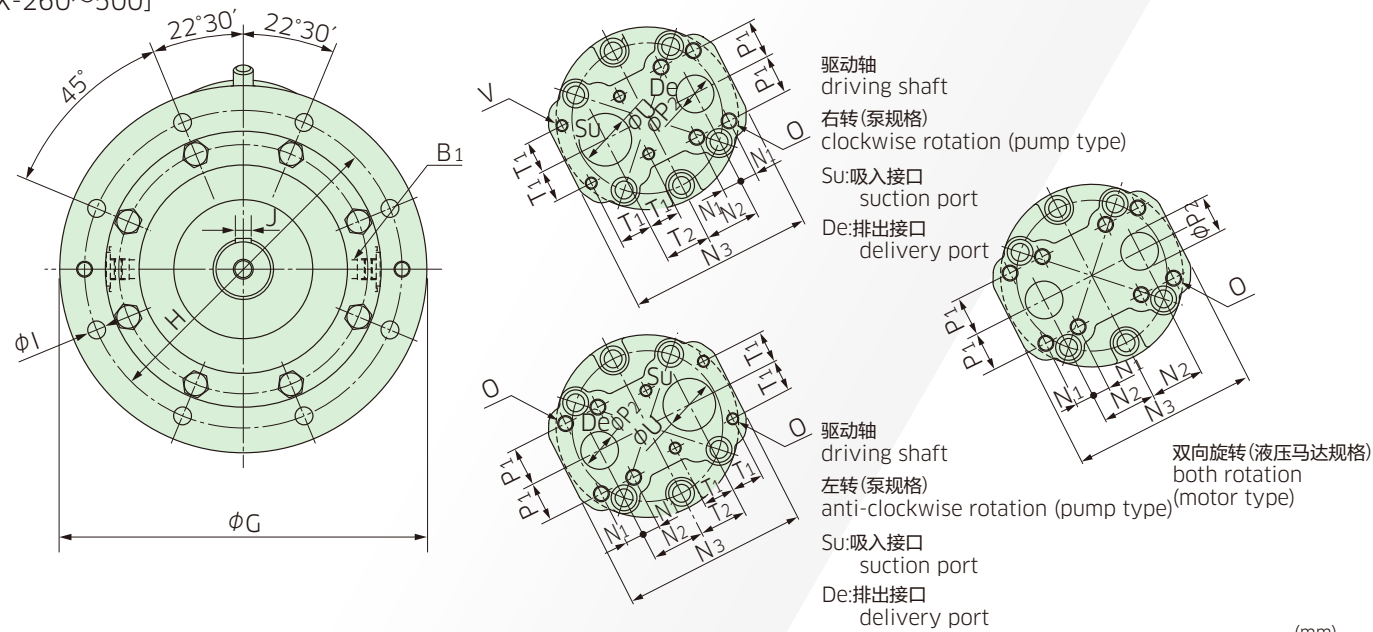
尺寸 DIMENSIONS

LX

[LX-030~180]



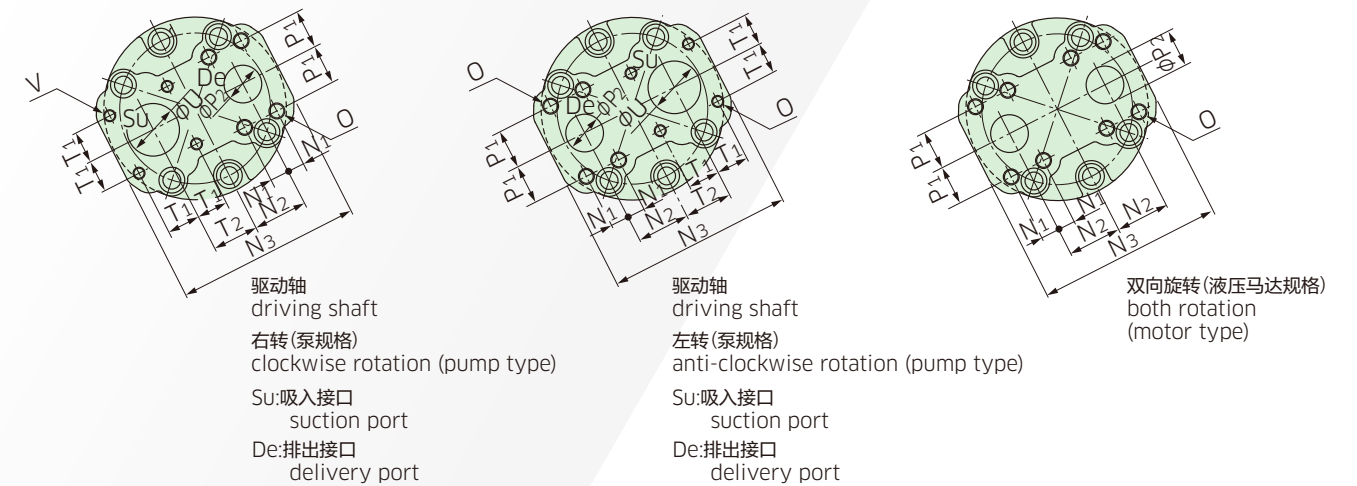
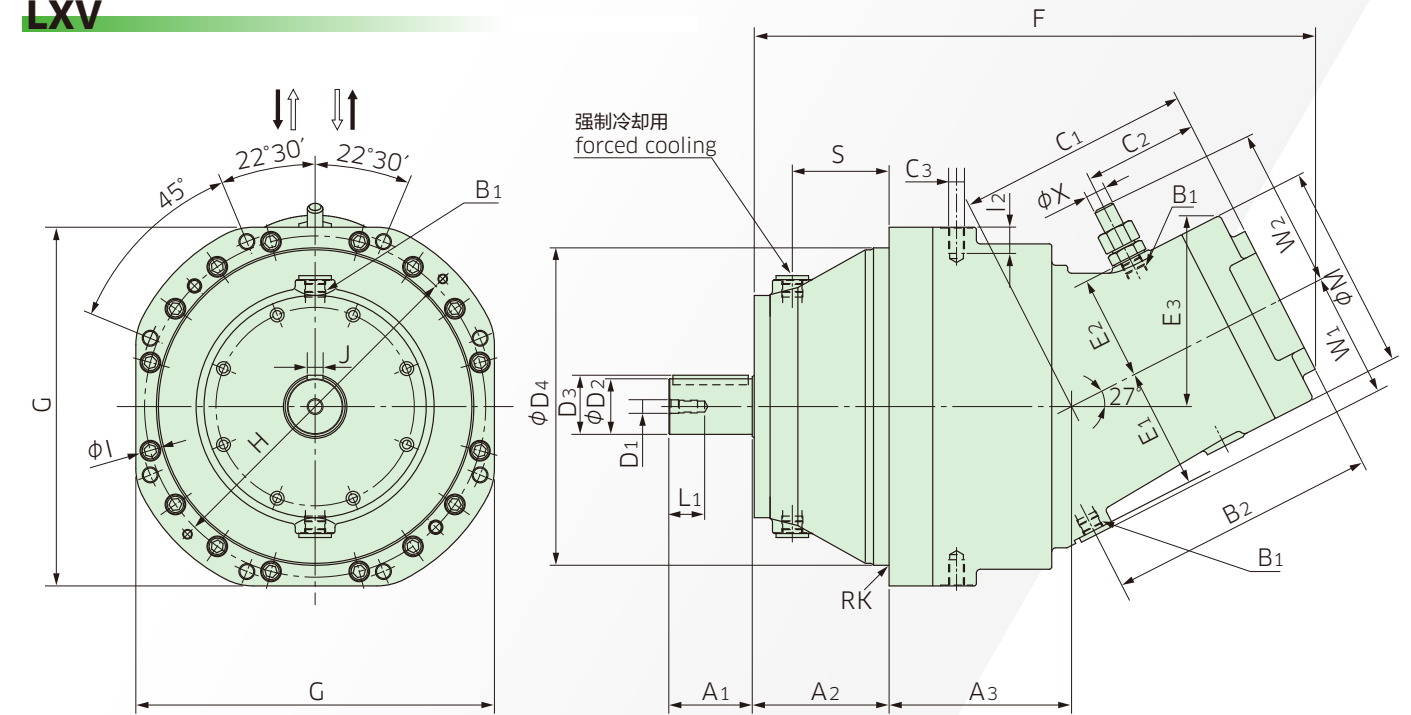
[LX-260~500]



尺寸 size	A1	A2	A3	A4	A5	A6	B1	B2	C1	C2	C3	D1	φD2	D3	φD4	E1	E2	E3	F	φG	H
030	9	16	42	32	71	6	G1/4	137	126	72	M8	M10	28j6	31	125h8	57	55	99	276	144	160
060	9	20	58	40	82	8	G1/4	171	154	81	M8	M12	35k6	38	160h8	71	68	123	340	182	200
090	9	22	58	40	102	10	G1/2	185	167.5	94	M8	M12	38k6	41	180h8	76	75	135	374	200	224
120	9	25	82	50	98	15	G1/2	215	189	103	M8	M16	45k6	48.5	200h8	84	86	154	428	226	250
180	9	28	82	50	108	18	G1/2	247	211	111	M8	M16	50k6	53.5	224h8	93	95	170	460	250	280
260	16	32	82	48	130	20	G1/2	271	236	118	M10	M16	55m6	59	280h8	121	104	191	505	370	320
500	10	40	105	50	175	25	G3/4	341	295	145	M16	M16	70m6	74.5	355h8	152	132	241	637	445	400

尺寸 size	φI	J	RK	L1	L2	φM	N1	N2	N3	O	P1	φP2	S	T1	T2	φU	V	W1	W2	φX
030	14	8h9	0.4	22	11.5	106	11.9	31	118	M10	25.4	19	50	20	30	28	M10	62	108	13
060	18	10h9	0.4	28	16	132	13.9	39	138	M10	28.6	25	60	24	35	36	M10	76	121	13
090	18	10h9	0.4	28	16	146	13.9	39	138	M10	28.6	25	70	24	35	36	M10	82	138	20
120	22	14h9	0.8	36	17	168	15.9	46	155	M12	33.3	32	75	28	39	42	M10	90	149	20
180	22	14h9	0.8	36	17	184	18.3	54	187	M16	39.7	38	81	32.5	47.5	53	M12	99	158	20
260	18	16h9	0.8	36	20	204	18.3	52	204	M16	39.7	38	63	36.5	52	68	M12	127	167	20
500	22	20h9	0.8	42	27	260	22.3	66	260	M20	48.4	51	90	46	66	81	M16	158	206	26

LXV



尺寸 size	A1	A2	A3	B1	B2	C1	C2	C3	D1	φD2	D3	φD4	E1	E2	E3	F	G	H	φI
180	82	95	175	G1/2	247	211	111	M12	M16	50k6	53.5	250h8	93	95	170	572	310	300	M16
260	82	123	210	G1/2	271	236	118	M16	M16	55m6	59	315h8	121	104	191	660	360	360	M16
500	105	172	230	G3/4	341	295	145	M20	M16	70m6	74.5	400h8	152	132	241	814	452	452	M20

尺寸 size	J	RK	L1	L2	φM	N1	N2	N3	O	P1	φP2	S	T1	T2	φU	V	W1	W2	φX
180	14h9	0.8	36	24	184	18.3	54	187	M16	39.7	38	63	32.5	47.5	53	M12	99	158	20
260	16h9	0.8	36	30	204	18.3	52	204	M16	39.7	38	85	36.5	52	68	M12	127	167	20
500	20h9	0.8	36	32	260	22.3	66	260	M20	48.4	51	122	46	66	81	M16	158	206	26

◆ 泵架 Bracket

[LZ Series]

尺寸 size	重量 mass	A	B ₁	B ₂	C ₁	C ₂	φD ₁	φD _{2H9}	d ₁	H ₁	H ₂	φR ₁	φR ₂	T	X	C ₃
030	20	245	355	208	305	144	160	125	M10	200	100	21	43	18	5	82
060	38	310	440	260	380	180	200	160	M12	250	130	24	46	23	6	103
090	55	360	510	286	440	198	250	200	M16	280	150	28	55	27	10	110
120	69	370	530	325	450	225	250	200	M16	315	155	28	55	27	26	129
180	103	445	625	364	535	252	300	250	M16	380	180	34	66	32	14	144

[LZV Series]

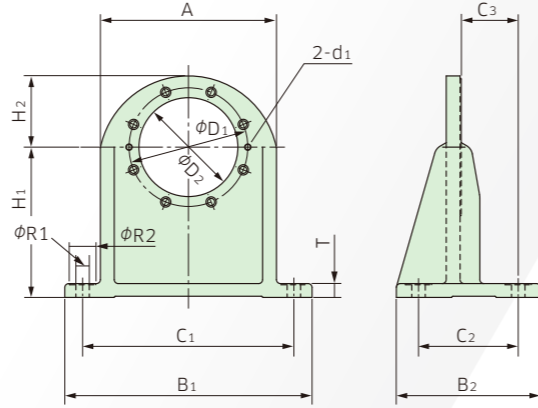
尺寸 size	重量 mass	A	B ₁	B ₂	C ₁	C ₂	φD ₁	φD _{2H9}	d ₁	H ₁	H ₂	φR ₁	φR ₂	T	X	C ₃
120	69	370	530	325	450	225	250	200	M16	315	155	28	55	27	73	129
180	103	445	625	364	535	252	300	250	M16	380	180	34	66	32	69	144

[LX Series]

尺寸 size	重量 mass	A	B ₁	B ₂	C ₁	C ₂	φD ₁	φD _{2H9}	d ₁	H ₁	H ₂	φR ₁	φR ₂	T	X	C ₃
030	11	200	310	165	270	100	160	125	-	160	90	21	43	17	83	109
060	22	260	390	210	330	130	200	160	-	200	115	24	46	22	110	142
090	33	290	440	230	370	140	224	180	-	225	125	28	55	27	109	151
120	42	320	480	260	400	160	250	200	-	250	140	28	55	27	149	177
180	60	360	540	290	450	180	280	224	-	280	160	34	66	31	150	198
260	94	480	670	335	570	205	320	280	-	315	195	34	66	36	152	227
500	189	580	780	420	680	260	400	355	-	400	235	41	76	46	182	287

[LXV Series]

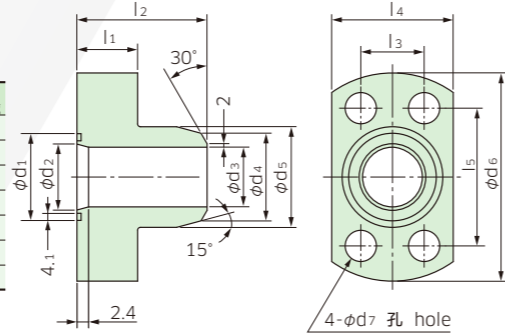
尺寸 size	重量 mass	A	B ₁	B ₂	C ₁	C ₂	φD ₁	φD _{2H9}	d ₁	H ₁	H ₂	φR ₁	φR ₂	T	X	C ₃
180	103	445	625	364	535	252	300	250	-	380	180	34	66	32	69	198
260	105	480	670	335	570	205	360	315	-	315	205	34	66	36	227	227
500	189	580	780	420	680	260	450	400	-	400	260	41	76	46	304	287



◆ 排出口法兰盘 Flange for Delivery Port

[LZ·LZV·LX·LXV Series]

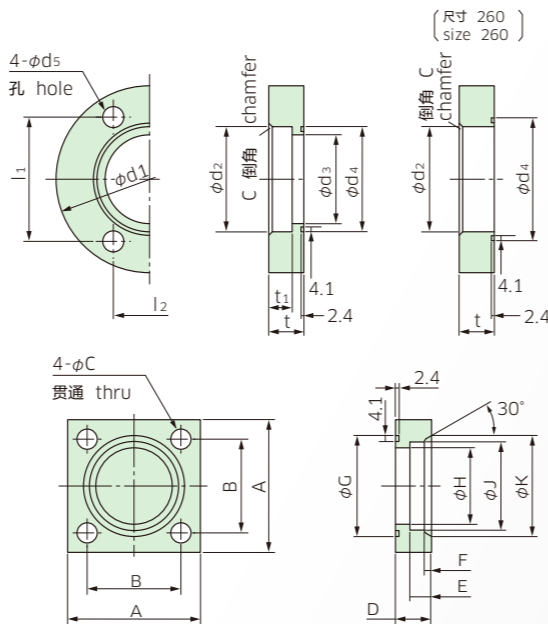
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030	20	50	23.8	48	50.8	30	19	16.2	27.2	36	74	11	3/4	M10-35	G 25
060	25	55	27.8	54	57.2	40	26	21.2	34.0	43	82	11	1	M10-40	G 35
090	25	55	27.8	54	57.2	40	26	21.2	34.0	43	82	11	1	M10-40	G 35
120	30	65	31.8	61	66.7	45	32	29.9	42.7	50	96	14	1 1/4	M12-45	G 40
180	35	75	36.5	70	79.4	50	38	34.4	48.6	58	115	18	1 1/2	M16-60	G 45
260	35	75	36.5	70	79.4	50	38	34.4	48.6	58	115	18	1 1/2	M16-60	G 45
500	40	90	44.5	86	96.8	65	51	43.1	60.5	71	140	22	2	M20-70	G 60



◆ 吸入口法兰盘 Flange for Suction Port

[LZ·LZV Series]

尺寸 size	l ₁	l ₂	t	t ₁	φd ₁	φd ₂	φd ₃	φd ₄	φd ₅	C	钢管公称尺寸 steel pipe inch	使用螺栓 used bolt	形密封圈 O-ring
030	30.2	58.7	20	10	90	43.2	32	45	14	3	1 1/4	M12-40	G 40
060	35.7	69.9	20	10	110	49.1	38	55	14	3	1 1/2	M12-40	G 50
090	42.9	77.8	25	15	120	61.1	51	65	14	3	2	M12-45	G 60
120	50.8	88.9	25	15	130	77	64	80	14	3	2 1/2	M12-45	G 75
180	62	106.4	30	20	160	90	76	90	18	3	3	M16-55	G 85
260	69.9	120.7	30	-	170	90	-	105	18	4	3	M16-55	G 100
500	77.8	130.2	30	20	190	115.4	100	120	18	4	4	M16-55	G 115

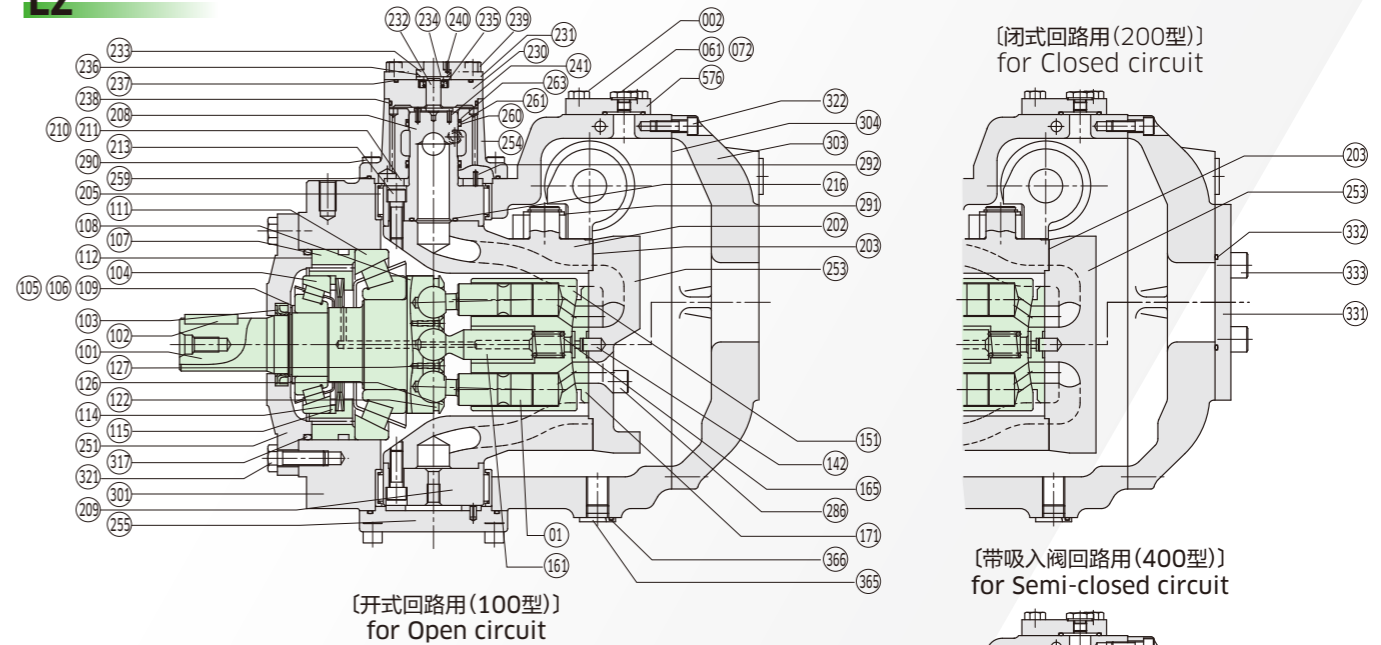


[LX·LXV Series]

尺寸 size	A	B	φC	D	E	F	φG	φH	φJ	φK	钢管公称尺寸 steel pipe inch	使用螺栓 used bolt	形密封圈 O-ring
030	58	40	11	20	10	3	40	28	34.5	38	1	M10-35	G 35
060	68	48	11	20	10	4	50	36	43.2	48	1 1/4	M10-35	G 45
090	68	48	11	20	10	4	50	36	43.2	48	1 1/4	M10-35	G 45
120	76	56	11	25	15	5	60	42	49.1	58	1 1/2	M10-40	G 55
180	92	65	14	25	15	5	70	53	61.1	70	2	M12-45	G 65
260	100	73	14	30	20	4	85	68	77.1	82	2 1/2	M12-50	G 80
500	128	92	18	40	30	6	100	81	90	100	3	M16-65	G 95

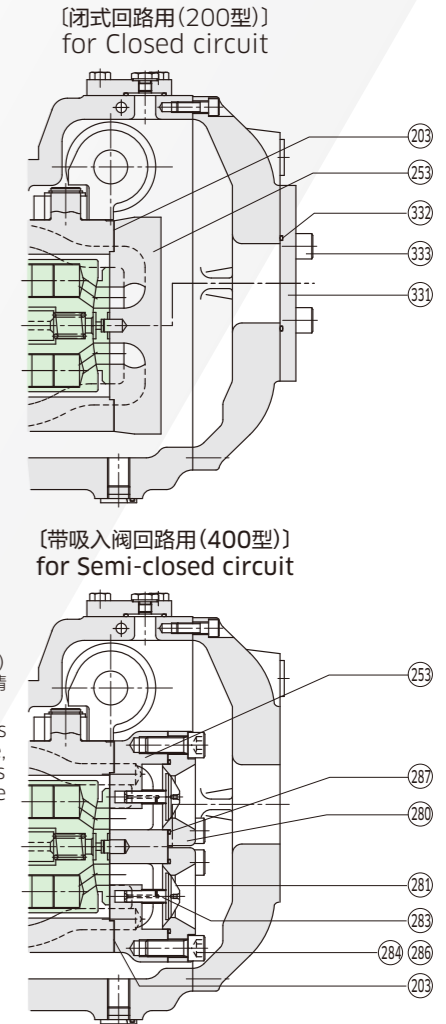
■ 结构、零件一览表 CONSTRUCTION·PARTS LIST

LZ



零件号码 Part No.	零件名称 Name	每一台数量 Qty/set
01	柱塞副 piston sub	7
002	六角螺栓 hexagon head bolt	4
061	油塞 plug	1
072	O形密封圈 O-ring	1
101	驱动轴 driving shaft	1
102	键 key	1
103	油封 oil seal	1
104	轴端圆锥滚柱轴承 tapered roller bearing (for shaft end)	1
105	止动圈 stop ring	1
106	内圈调整片2 inner shim 2	1 set
107	外圈调整片 outer spacer	1
108	内圈调整片1 inner shim 1	1 set
109	内圈衬垫 inner spacer	1
111	主圆锥滚柱轴承 tapered roller bearing	1
112	外圈调整片 outer shim	1 set
114	盘形弹簧 cup spring	2
115	盘形弹簧衬垫 cup spring spacer	1
122	调整圈 set ring	7
126	回程盘 set plate	1
127	固定螺钉 set screw	14
142	销 pin	1
151	缸体 cylinder	1
161	中心球纹杆 center rod	1
165	回程弹簧 cylinder spring	1
171	配油盘 valve plate	1
202	缸体壳 cylinder casing	1
203	铜密封垫 copper packing	2
205	滚针轴承 needle roller bearing	2
208	上倾斜支撑轴 supporting axle	1
209	下倾斜支撑轴 supporting axle	1
210	止推垫圈 thrust pad	2
211	调整片 shim	2 set
213	内六角螺栓 hexagon socket head bolt	14
216	O形密封圈 O-ring	1
230	密封盖 seal cover	1
231	盖 cover	1
232	倾斜轴 tilting axle	1
233	刻度盘 indicator plate	1
234	垫片 spacer	1
235	油封 oil seal	1
236	O形密封圈 O-ring	1
237	O形密封圈 O-ring	1
238	O形密封圈 O-ring	1
239	内六角螺栓 hexagon socket head bolt	4
240	弹簧销 spring pin	1

(注) 调节器为EH (电-液远控) 时,由于倾斜部不一样请向本公司查询。
(Note) If the regulator is EH (ROTAS) type, tilting design is different. Please consult us.



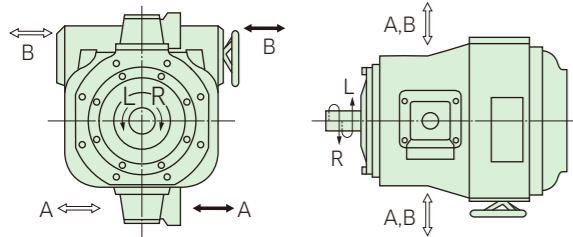
零件号码 Part No.	零件名称 Name	每一台数量 Qty/set
241	弹簧销 spring pin	2
251	前盖 front cover	1
253	配油盘 valve cover	1
254	管法兰盘 pipe flange	1
255	法兰盘 flange	1
259	O形密封圈 O-ring	2
260	O形密封圈 O-ring	2
261	保护圈1 back-up ring 1	2
263	保护圈2 back-up ring 2	2
280	吸入阀盖 (仅限400型) suction valve cover (only for 400 type)	2
281	锥阀 (仅限400型) poppet (only for 400 type)	2
283	弹簧 (仅限400型) spring (only for 400 type)	2
284	内六角螺栓 hexagon socket head bolt	6
286	内六角螺栓 hexagon socket head bolt	8
287	O形密封圈 (仅限400型) O-ring (only for 400 type)	2
290	内六角螺栓 hexagon socket head bolt	8
291	止动圈 stop ring	1
292	弹簧销 spring pin	2
301	泵壳体 pump casing	1
303	后盖 rear cover	1
304	密封垫 packing	1
317	O形密封圈 O-ring	1
321	带座六角螺栓 hexagon head bolt	8
322	内六角螺栓 hexagon socket head bolt	24
331	盖 (仅限200型) cover (only for 200 type)	1
332	O形密封圈 (仅限200型) O-ring (only for 200 type)	1
333	内六角螺栓 (仅限200型) hexagon socket head bolt (only for 200 type)	4
365	油塞 plug	3
366	O形密封圈 O-ring	3
576	顶盖 top cover	1

使用注意事项(LZ·LZV/LX·LXV 系列) CAUTION FOR INSTRUCTION (LZ·LZV/LX·LXV SERIES)

1 旋转方向和排出方向 Rotating direction and flow direction

泵的旋转方向和倾转方向决定的排出方向的关系如下图所示。旋转方向、倾转方向都是从驱动轴侧看到的方向。

Below table shows the flow direction as affected by the rotating direction and tilting direction of the cylinder. The rotating direction and the tilting direction show views from the driving-shaft side.



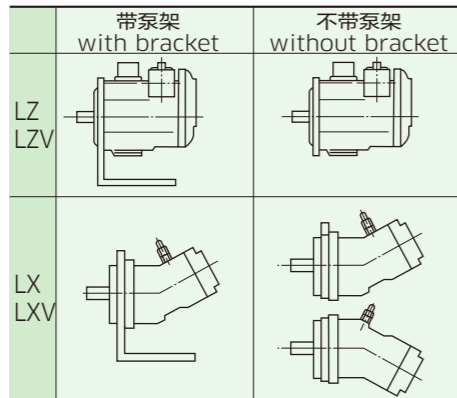
泵旋转方向 direction of rotation	右倾斜 tilted right		左倾斜 tilted left	
	排出接口 delivery port	吸入接口 suction port	排出接口 delivery port	吸入接口 suction port
右转 R clockwise	B	A	A	B
左转 L anti-clockwise	A	B	B	A

2 安装方向 Mounting direction

2-1. 使用卧式时 安装方向如下所示。

附泵架时
附泵架的泵以右图所示物品作为标准安装方向予以交货。如果是图示以外的情况时，请与本公司进行洽谈。

无泵架时
请按图示方向进行安装。

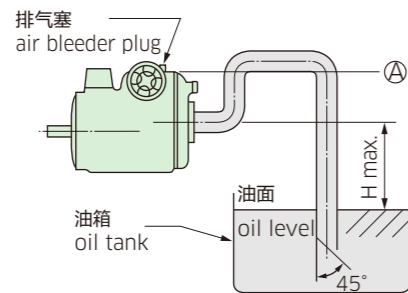


2-1. Use by Horizontal Mounting Mounting direction is indicated below.

With bracket
The pump is delivered with the style indicated in the left table as standard. When the style is not standard, please contact us.

Without bracket
The pump is delivered with the style indicated in the left table.

(注)
泵壳体内需要随时罐满油。油箱的油面低于泵时，吸入管道务必置于泵壳体内上端(图中的A线)以上。
油箱上的安装允许高度(Hmax)如表所示。但是，这些数值在记载条件和实际使用条件有异时不能适用，届时请向本公司予以询问。



(Note)
The pump casing should be filled with oil. When the oil level in the tank is lower than the pump, the suction piping should be arranged higher than the top of the pump casing (A line in the figure).
The allowable mounting heights (H max.) above the oil tank are shown below. If an actual service condition differs from those in the table, these values are inapplicable. In such a case, inform us of the condition in detail.

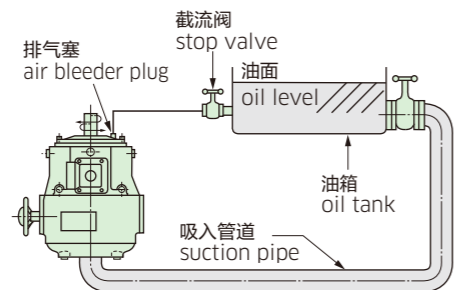
Working fluid: mineral hydraulic fluid
Viscosity : 15 or 30 mm²/s (cSt)

工作油:矿物系液压工作油
粘度:15~30 mm²/s(cSt)

安装容许高度 allowable mounting height	LZ·LZV	030	060	090	120	180	260	500
H max. mm					1,500			
转速 speed min ⁻¹				1,750			1,150	

2-2. 使用立式时

LZ·LZV系列泵可以立式(轴端向上)使用。这时，请将油箱的油面务必置于排气插塞的位置以上。为了切实进行排气，特推荐如图所示的排气塞接口与油箱的排管方式。
使用时，请务必向本公司具体询问。



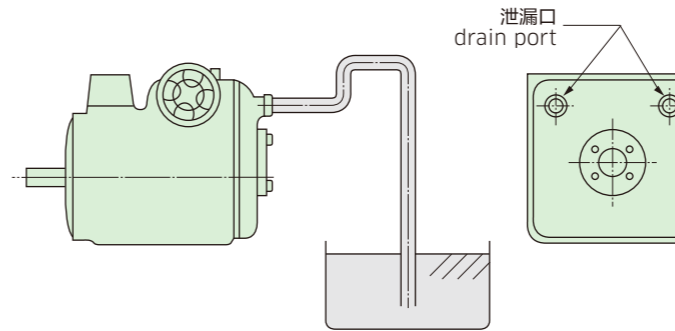
2-2. Use by Vertical Mounting

LZ and LZV series pumps can also be used by mounting vertically (drive shaft facing upward). When vertically mounted, the oil level in the tank should be higher than the height of the air bleed plug. To ensure the air bleeding, piping between the air bleeder plug port and the oil tank is recommended. Please be sure to contact us for details prior to the use.

3 泄漏油管道:闭式回路用(LZ·LZV200型) Drain piping: for closed circuit(LZ·LZV200 type)

- 请将泄漏油背压设在吸入压力上限值(0.2MPa)以下。
- 泵的泄漏油请从泄漏油口并用足够粗的管道直接返回油箱，或当油箱比泵的位置要低时，须将管道先上升到比泵的位置高之后，再返回油箱。

- Please ensure that the pressure in pump casing is not over the upper limit of suction pressure (0.2 MPa).
- The drain should be returned to the tank through a sufficiently large pipe, or if the tank is located below, the drain should be returned to the tank by raising the pipe to the position which is higher than the pump.



泄漏用接头 drain joint

尺寸 size	030	060	080	120	180	260	500
接头 joint	G1/4	G1/4	G1/2	G1/2	G1/2	G1/2	G3/4

4 轴端的承载 External load on the shaft end

- 驱动轴的轴端上虽可承受外部的径向负载或轴向负载。但是，由于会影响轴承的寿命，因此如有在皮带轮·齿轮及相当的零件上要施加上述负载时，请与本公司在说明规格的基础上，进行洽谈。

- It is permissible to supply an external radial load or thrust load on the shaft end. However, such loads mentioned above will affect the bearing life, therefore if there is any possibility of applying belt, gear or other equivalent load such as those mentioned above, please contact us, giving the specification of working.

5 与驱动轴的连接 Connection of the driving shaft

- 泵驱动轴与原动机轴的结合，请使用弹性联轴器。
- 将联轴器安装在驱动轴时，请不要敲打装入。请利用驱动轴端设置的螺钉、圆盘螺栓等予以压入。

- Please use a flexible coupling for the connection of the driving shaft of the pump and the main shaft of the coupled machine.
- In case of fixing the coupling to the driving shaft, it should not be made by hammering. Please use the thread provided on the front end of the driving shaft and disk bolt.

6 工作油 Working fluid

- 液压工作油的使用温度范围，由于油封、O形密封圈等，被限制在-20℃~80℃之间。超过65℃时工作油的劣化会加快，请不要超过60℃以上。
- 有关抗燃型工作油污染的详细管理要求，请向本公司予以询问。
- 将工作油罐满油箱回路时，为了防止异物和垃圾混入，请通过200网眼或以上的滤器，金属网等滤过后灌入。

- The range of working temperature is limited to -20℃~80℃ or so because of the oil seals, O-ring, etc. Further, the deterioration of the working fluid becomes excessively beyond 65℃, therefore, it is desirable not to exceed 60℃.
- Please contact us for details about control level of fire-resistant fluid.
- To fill the tank and the circuit with the working fluid, the working fluid should be passed through a filter or a wire mesh filter having a #200 mesh or over, in order to prevent the entry of dust and/or dirt.

防止泵本体温度的上升 Prevention of pump body temperature rise

在泵输出流量较小的状态进行长时间保压时，由于泵本体的温度上升，液体的粘度会降低。因此会影响泵的寿命。为防止温度的上升，如下所示，根据最小输出流量(Qmin)的设定方法，有通过导入冷却油的强制冷却的方法。

When pressure is maintained over a long period while the outlet flow rate is low, the pump body temperature increases and this may shorten service life because of viscosity lowering of working fluid. Pump body temperature rise can be prevented using the two methods mentioned below:

- *The minimum outlet flow rate Q min setting method.
- *The forced cooling method using cooling oil.

7-1. 最小输出流量(Qmin)的设定

$$Q_{min} = \frac{0.045 Vg \max. \times n \times a}{1,000} \text{ L/min}$$

但是

Vg max. : 理论最大排量 cm³

n : 泵转速 min⁻¹

a : 设定压力(Pset)

9.8 MPa

例如设定压力为24.5 MPa时 a = 2.5

7-1. Minimum Outlet (Q min)

$$Q_{min} = \frac{0.045 Vg \max. \times n \times a}{1,000} \text{ L/min}$$

Vg max. : Theoretical max. displacement cm³

n : Speed min⁻¹

a : Set pressure (Pset)

9.8 MPa

ex. in case of set pressure 24.5 MPa

a = 2.5

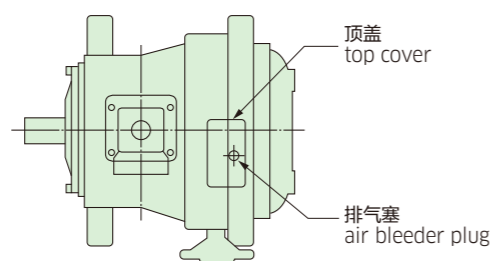
7-2. 强制冷却

Supply cooling oil through the two auxiliary ports in the pump mounting flange. The quantity of cooling oil to be used is shown in the table on the left.

规格 size	冷却油量 cooling quantity
030 ~ 120	3 ~ 5 L/min
180 ~ 500	10 ~ 15 L/min

8 向泵壳体内的加油 Filling oil the pump casing and regulator

泵启动时，必须向泵壳体内加满油为止。此时请利用如右图所示的泵壳体上部(带R3041调节器时，为调节器的上部)的排气塞进行。闭式回路(200型)时，请卸下顶盖进行加油。



Before starting pump, please make sure that the pump casing and the regulator are filled with oil. Oil shall be filled through the air bleeder plug on the top of the pump casing or regulator casing (in case of R3041 regulator). In case of closed circuit (type 200), please fill oil by removing the top cover.

9 滤油器 Filter

为防止泵的损坏，保持其长期使用，工作油的管理为必不可少。另外，液压回路上请务必设置滤油器。届时，滤油器请按下述进行设置。

* 回油油路：30~50μm滤油器

* 吸油油路：150~200网眼滤网

To prevent the pump from damage and ensure the long service life, working fluid must be controlled. Provide a filter in the pressure oil circuit. The filter must be used as follows:

* Return line : 30 to 50 μm filter

* Suction line : 150 - 200 mesh strainer

询问用规格表 Specification studies.

泵 系 列 Series	
泵 型 号 Model code	
客 户 名 称 Customer name	
用 途 Application	

泵规格 Pump type

排 量 Displacement	cm ³ /rev	
驱 动 方 法 Prime mover type	电动机 · 发动机 electric motor · engine	
转 速 Speed	额 定 rated	min ⁻¹
	最 高 max.	min ⁻¹
	最 低 min.	min ⁻¹
旋 转 方 向 Rotation (从轴端看) (Viewed from shaft end)	顺时针 · 逆时针 clockwise · counter clock wise	
使 用 压 力 Operating pressure	额 定 rated	MPa
	最 高 max.	MPa
	峰 值 peak	MPa
	平 均 ave.	MPa
吸 入 压 力 Suction pressure	稳 定 steady	MPa
	峰 值 peak	MPa
输 入 功 率 Input power	kW	
最 大 输 入 扭 矩 Max. input torque	N·m	
最 大 流 量 Max. flow	L/min@	MPa
最 小 流 量 Min. flow	L/min@	MPa

使用环境 Operation

工 作 油 Working fluid	制造厂名称:	
	牌 号:	
	粘 度 等 级: ISO VG	
油 温 Oil temperature	常 用 rated	°C
	最 高 max.	°C
	最 低 min.	°C
安 装 方 向 Mounting direction	水平 · 轴端朝上 Horizontal · Vertical	

控制规格 Control

截 止 设 定 压 力 Cut-off pressure	MPa
功 率 控 制 设 定 Horse power setting	kW@ min ⁻¹
流 量 控 制 方 式 Flow control type	
其他	

其他 Others

--

控制器 Controller



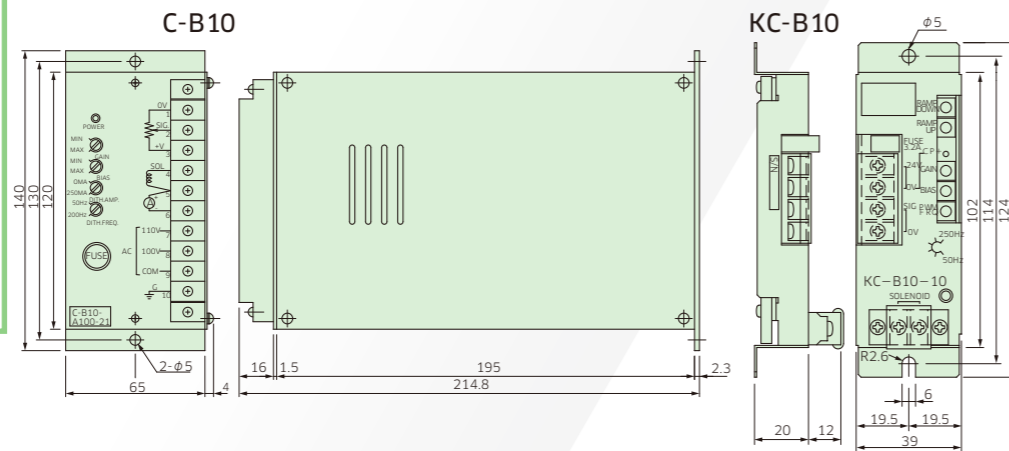
C-B10

■ C-B10/KC-B10 series

这是为了驱动K3VG电控制/L3VL压力远程控制用电液比例阀的专用控制器。
C-B10 and KC-B10 series are our exclusive controller for proportional valve of K3VG electric flow control or K3VL pressure remote control.

型号 model	电源电压 supply voltage	最大输出电流 max. output current	输入指令 input signal
C-B10	AC 100/110V AC 200/220V	1.0A	DC 0~10V (输入电压 voltage input) 可变电阻 variable resistor 5kΩ
KC-B10	DC 24V	1.0A	(输入电阻 resistor input) DC 0~+5V

■ 尺寸图 Dimensions



KC-B10



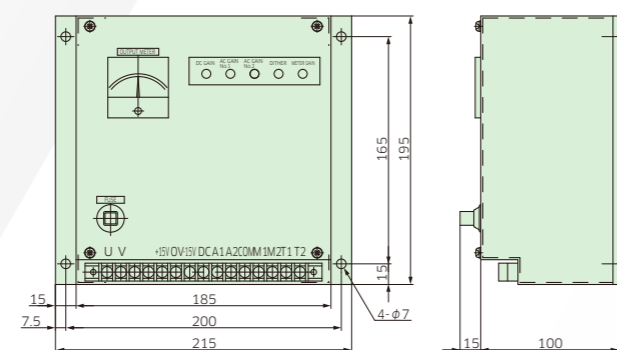
CB-40

■ CB-4

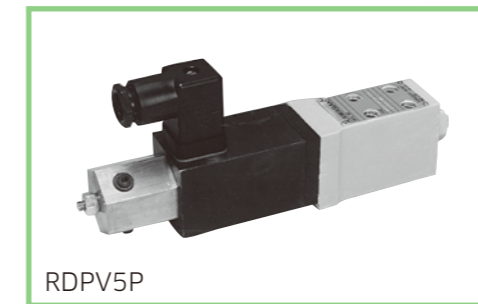
这是LZ-ROTAS控制用专用控制器。
CB-4 is our exclusive controller for LZ-ROTAS.

电源电压 supply voltage	输入信号 input signal	输入电阻 input resistor
AC 100/110V	±5V~±12V DC	100kΩ以上
	±5V~±12V AC	30kΩ以上
	±1V~±2V AC	3kΩ以上

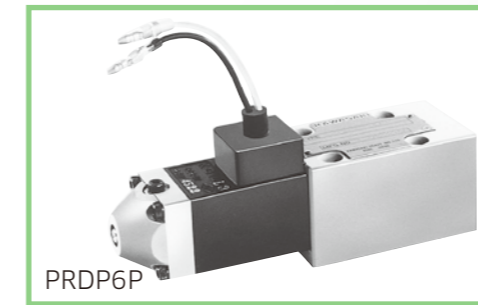
■ 尺寸图 Dimensions



先导压力控制用比例控制阀 Proportional Pressure Control Valve for Pump Pilot Pressure



RDPV5P



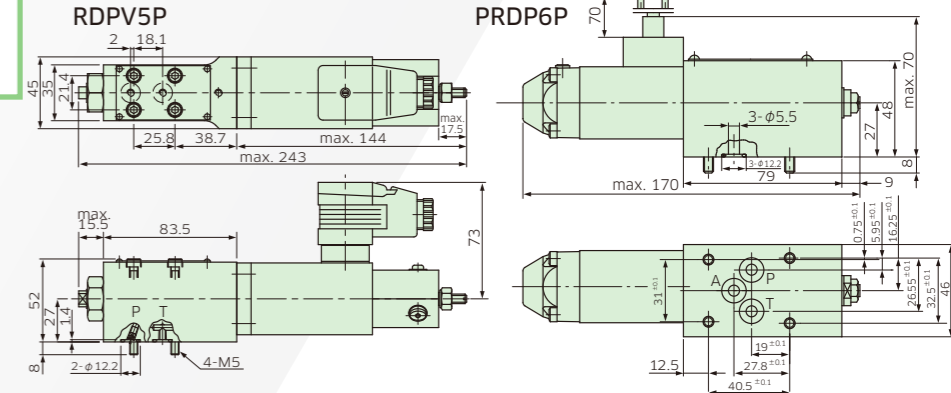
PRDP6P

■ RDPV5P/PRDP6P

这是适于泵控制用先导压力设定的电液比例压力控制阀。
RDPV and PRDP series are solenoid operated proportional pressure control valves for control of pump pilot pressure.

	型号 model	最高调整压力 max. control pressure	适用控制器型号 controller type
电液比例溢流阀 solenoid operated proportional pressure relief valve	RDPV5P	34.3 MPa (350 kgf/cm ²)	C-B10/KC-B10
电液比例减压阀 solenoid operated proportional pressure reducing valve	PRDP6P	4.9 MPa (50 kgf/cm ²)	C-B10/KC-B10

■ 尺寸图 Dimensions



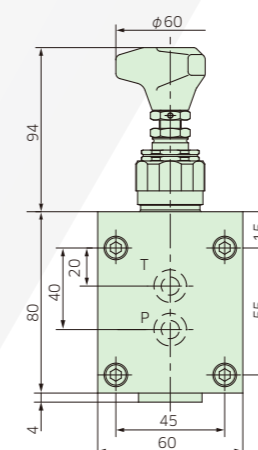
先导压力控制用压力控制阀 Pressure Control Valve for Pump Pilot Pressure

■ RDPV6P series 溢流阀 relief valve

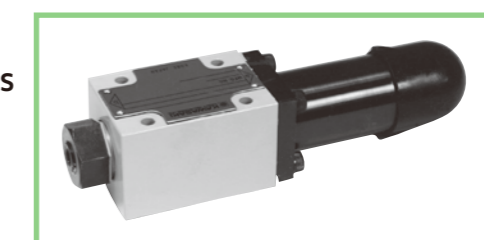


最高调整压力
max. control pressure
30.9 MPa
(315 kgf/cm²)

■ 尺寸图 Dimensions



■ PRD6 series 减压阀 reducing valve



最高调整压力
max. control pressure
20.6 MPa
(210 kgf/cm²)

■ 寸法图 Dimensions

