引进 创新 超越
IMPORTING INNOVATION EXCELLING

BSC 股票代码
鲍斯股份 300441
NVICKS 威克斯液压 VICKS HYDRAULIC

# 内啮合齿轮泵
# Internal Gear Pump



**宁波威克斯液压有限公司**
**NINGBO VICKS HYDRAULIC CO.,LTD.**

地址: 浙江省宁波市奉化区溪口镇后旺南路一号
Add: No.1, South Houwang Road, Xikou Zone, Fenghua, Ningbo, Zhejiang, China

**公司总部/Domestic Sales:**
Tel: 86-574-88901118 88900002
Fax: 86-574-88900007
Email: vicksxia@163.com
Http://www.nvicks.cn

**国际业务部/International Sales:**
Tel: 86-574-88876506
Fax: 86-574-88876505
Email: sales@hydnvicks.com

---

**美国分公司:**
地址: 加利福尼亚州洛杉矶喜瑞都制鞋大道16300号
邮编: CA 90703
电话: 909-594-1683

**广东分公司:**
东莞办地址: 东莞寮步上屯良平西路142号
江门办地址: 广东省江门鹤山市桃源镇桃源大道341号厂房三楼 (农商银行对面)
电话: 0769-81101311
传真: 0769-89610893

**福建分公司:**
地址: 晋江市安海镇可慕恒安生活区2号楼104
电话: 0595-85668821
传真: 0595-85668821

工厂实景/Factory Live-action

# 关于我们

宁波威克斯液压有限公司是上市公司鲍斯股份（股票代码：300441）控股子公司，创始于2007年，是一家拥有多项发明专利的国家高新技术企业，现有8条世界领先的液压泵生产检测流水线。年产液压泵10万多台，节能伺服系统1万多套。

公司是叶片泵行业标准修订主持单位。荣获中国液气密行业技术进步奖、区长质量奖和国家创新基金项目支持。

公司拥有VG0、VG1、VG2高压内啮合齿轮泵，ABT系列伺服叶片泵，T6、T7、V、VQ、V10、V20、SQP、PV2R叶片泵，M3B、M4C、M4D、M4E、25M、35M、45M、50M叶片马达的核心技术。产品通过中国CCS、挪威DNV、美国ABS、法国BV、英国LR等世界五大权威船级社认证，广泛应用在注塑橡塑、压铸、工程、船舶、农机、油压、打包、港口等机械行业。

公司是台湾台达、奥地利KEBA、菲仕电机、厦门钨业、住友泵的战略合作伙伴。

公司坚持引进、创新、超越的发展之路和优质、高效、低耗、安全的经营理念，致力于打造世界著名的液压泵制造商及伺服节能成套解决方案专家，为装备升级造“中国心脏”。

公司以学习、和谐、坚持、专业为企业文化的核心思想，倡导至真、至善、至美的价值观和开明开拓、和谐和乐的精神。


办公区/Office


科研中心/Scientific Research Centre

# ABOUT **US**

Ningbo Vicks Hydraulic Co.,Ltd. is a holding subsidiary of Listed Company Baosi Stock (stock code:30441), founded in 2007, is a national high-tech enterprise with a number of invention patents, with 8 world-leading hydraulic pump production and testing line now. Annual output of hydraulic pump is more than 100,000pcs, energy-saving servo system is more than 10,000sets.

Our company is the Vane Pump Industry Standard Revision Presiding Unit. It has won the Technical Progress Award of China Hydraulics Pneumatics & Seals Association, Ningbo Fenghua District Chief Quality Award and the project support of National Innovation Fund.

Our company has core technology of VG0. VG1.VG2 high pressure internal gear pump, ABT series servo vane pump, T6, T7, V, VQ, V10, V20, SQP, PV2R vane pump and M3B, M4C, M4D, M4E, 25M, 35M, 45M, 50M vane motor. The products have been certified by five authoritative classification societies in the world, such as CCS in China, DNV in Norway, ABS in USA, BV in France, LR in UK. And the products are widely used in injection molding, rubber plastic, die casting, engineering, shipping, agricultural machinery, oil pressure, packaging, port and other machinery industries.

Our company is the strategic cooperation partner with Taiwan DELTA, Austria KEBA, Phase Motor, Xiamen Tungsten and Sumitomo Pump.

Our company adheres to the development path of introduction, innovation and transcendence, and the business philosophy of high quality, high efficiency, low consumption and safety. And it is committed to build the world-renowned hydraulic pump manufacturer and servo energy-saving complete set solution expert, and building the “Chinese Heart” for equipment upgrading.

Our company takes learning, harmony, persistence and professionalism as the core ideas of corporate culture, and advocates the values of truth, goodness and beauty as well as the spirit of open exploration, harmony and joy.


生活区/Staff Living Area


活动中心/Activity Center

# Certification/ Honorary Certificate

## 认证/荣誉证书

### 科研合作高校/Cooperation of colleges




### 船级社认证 / Classification society certification

挪威 / Norwegian DNV　美国 / American ABS　法国 / French BV　英国 / British LR　中国 / China CCS



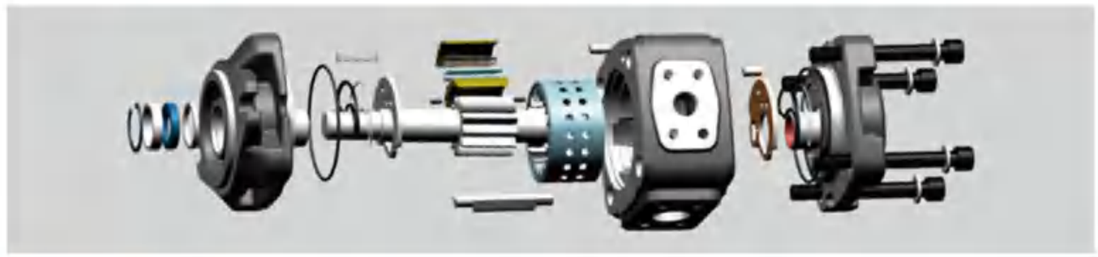


# VG 系列齿轮泵 Series Gear Pump

VG系列齿轮泵是我司与美国艾伯特流体动力有限公司（宁波威克斯液压有限公司全资子公司，简称ABT）、浙江大学合作共同研发的高性能内啮合齿轮泵，引入德国齿轮泵技术的基础上加以改良，并引进了一批国外先进的生产和检测设备，全力打造的一款高压、低噪音和低脉动的齿轮泵。

本产品我公司拥有自主知识产权并获得国家创新基金支持，广泛应用于橡塑、压铸、鞋革、锻压、挤压、折弯、剪板机械等伺服液压系统中。

VG series gear pumps are developed by our company and American Albert Fluid Power Co., LTD.(Ningbo Vicks Hydraulic Co.,LTD., a wholly owned subsidiary; short for ABT) , cooperated with Zhejiang University . They're high performance internal gear pumps. The technology on the basis of the introduction of Germany to be improved,and we introduced a number of foreign advanced production and testing equipments, to make a pump of high pressure, low noise and low pulse.
Our company has independent intellectual property rights and National Innovation Fund support, widely used in rubber and plastic, die casting, shoe leather, forging, extrusion, bending, plate Shearing machinery and other servo hydraulic system.



## 其主要特点/Main Features

- 采用轴向和径向压力补偿设计，即使在低转速和低粘度下仍保持较高的容积效率。
- 超低的噪音，采用高强度铸铁和内部独特的消音设计，使噪音更低。
- 极低的流量和压力脉动，在低速状况仍可保持稳定的流量和压力输出。
- 高压力设计，最高使用压力可达到35MPa
- 转速范围宽广，最高转速可达3000r/min
- 可任意进行组合形成双联泵。
- 对油液污染不敏感，使用寿命长。
- 可广泛适用于工业，如塑机、鞋机、压铸机械以及叉车等行业的液压系统，尤其适用于伺服变频驱动的节能系统。

- Adopting axial and radial pressure compensation design to maintain high volumetric efficiency even at low speed and low viscosity.
- Ultra-low noise, using high-strength cast iron and a unique internal noise reduction design, make the noise lower.
- Very low flow and pressure pulsation, stable flow and pressure output can still be maintained at low speeds.
- High pressure design, the maximum working pressure can reach 35MPa
- Wide speed range, the highest speed can reach 3000r/min
- Can be combined arbitrarily to form a double pump.
- It is not sensitive to oil pollution and has a long service life.
- It can be widely applied to hydraulic systems in industries such as plastic machines, shoe machines, die-casting machinery and forklifts, and is especially suitable for energy-saving systems driven by servo inverters.

# VG 系列齿轮泵 Series Gear Pump

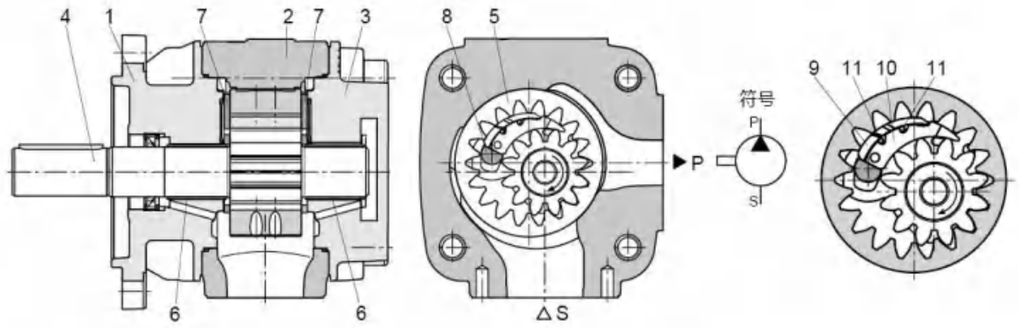

液压符号
Hydraulic Sign

## 内啮合齿轮泵原理图/Principle Diagram of Gear Pump

VG 型液压泵是具有固定排量的间隙补偿内啮合齿轮泵。

其基本构成是：安装前盖 (1)，泵体 (2)，后盖 (3)，外齿轴 (4)，内齿圈 (5)，滑动轴承 (6)，配油盘 (7) 和定位杆 (8)，以及由月牙副板 (9) ，月牙主板 (10) 和密封棒 (11) 组成.

The VG hydraulic pump is a backlash compensation internal gear pump with a fixed displacement.
Its basic structure is: install front cover (1), pump body (2), rear cover (3), outer gear shaft (4), inner gear ring (5), sliding bearing (6), oil distribution plate (7) And positioning rod (8), and consist of crescent sub-board (9), crescent main board (10) and sealing rod (11)








## 吸油和排油过程 /Suntion and spilling process

根据流体动力学安装的外齿轴（4）按所示旋转方向传动内齿圈（5）。

通过在吸油区域中打开的齿侧间隙来加注油液。油液通过外齿轴和内齿圈之间的齿侧间隙从吸油区域（S）输送到压力区域（P）。

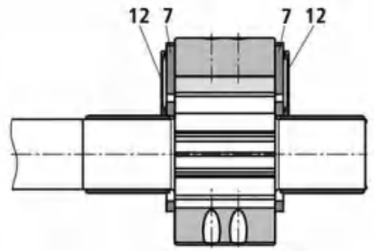
由此，油液从闭合的齿侧间隙排出并输送到压力油口（P）。吸油区域和排放区域由径向补偿元件（9 至 11）以及内齿圈和外齿轮之间的齿轮啮合分隔开。

The external gear shaft (4) installed according to fluid dynamics drives the internal gear ring (5) in the direction of rotation shown. Fill the oil through the tooth gap opened in the oil suction area. The oil is transported from the oil suction area (S) to the pressure area (P) through the side clearance between the outer gear shaft and the inner gear ring. As a result, the oil is discharged from the closed tooth gap and delivered to the pressure oil port (P). The oil suction area and the discharge area are separated by the radial compensation element (9 to 11) and the gear mesh between the inner ring gear and the outer gear.

## 轴向补偿结构 /Axial compensation

压力区域中的排放室由配油盘（7）进行轴向密封。配油盘背对排放区域的一侧受压力场（12）的背压。这些压力场使配油盘与排放区域达到平衡，从而以较低的机械损失实现理想的密封效果。

The discharge chamber in the pressure zone is axially sealed by the oil distribution plate (7). The oil distribution pan faces away from the discharge area one side is back pressured by the pressure field (12). These pressure fields make the oil distribution plate and the discharge area reach a balance, from the ideal sealing effect is achieved with lower mechanical loss.



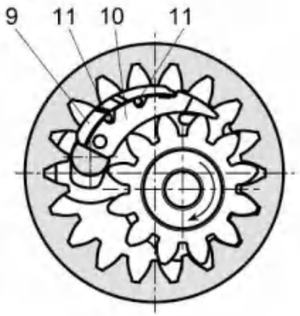

## 径向补偿结构 /Radial compensation

径向补偿元件包括月牙副板 (9) , 月牙主板 (10) 和密封棒 (11) 。其中月牙主板 (10) 紧贴外齿轴齿顶圆曲面，月牙副板（9）紧贴内齿圈齿顶圆曲面，定位杆用来限制月牙板圆周方向的运动。

这样可通过自动间隙调整将压力区域与吸油区域分隔开。

这是在整个工作时间内持续保持高容积效率的先决条件。

The radial compensation element includes a crescent sub-plate (9), a crescent main plate (10) and a sealing rod (11). The crescent main plate (10) is closely attached to the round surface of the tooth tip of the outer gear shaft, the crescent sub-plate (9) is closely attached to the round surface of the tooth tip of the inner gear ring, and the positioning rod is used to restrict the movement of the crescent plate in the circumferential direction.
In this way, the pressure zone can be separated from the suction zone by automatic clearance adjustment. This is a prerequisite for maintaining high volumetric efficiency continuously throughout the working hours.




## 啮合 /Toothing

渐开线齿边的啮合具有用于较低流量和压力脉动的长啮合长度，因此可确保低噪音运行。

The toothing with involute flanks features a long meshing length for low flow and pressure pulsation and therefore ensures lownoise operation.

## 技术数据（使用时如果超出了规定的技术参数的范围，请务必向威克斯公司咨询！）
## Technical data (if using is beyond the scope of the specified technical parameters, please be sure to consult Nvicks!)

### 概述 /Overview

| | |
|---|---|
| 设计<br>Design | 内啮合齿轮泵，间隙补偿<br>Internal gear pump, clearance compensation |
| 连接型式<br>Connection type | 符合 ISO 3019-1 的 SAE 2 标准的 孔法兰<br>SAE 2 standard flanges to ISO 3019-1 |
| 管路连接<br>Pipeline connection | 法兰油口<br>Oil Flange |
| 轴负载<br>Shaft load | 仅调整后的径向力和轴向力（例如皮带轮）<br>Radial and axial forces only after adjustment (e.g., pulley) |
| 旋转方向（从轴端查看）<br>Rotation direction<br>(viewed from shaft end) | 顺时针或逆时针（应要求提供）– 并非双向旋转!<br>Clockwise or counterclockwise (available on request)- not bidirectional! |

### 液压 /Hydraulic

| | | |
|---|---|---|
| 液压油<br>Hydraulic oil | | HLP – 符合 DIN 51524 第 2 部分的矿物油<br>HFC – 符合 DIN EN ISO 12922 [1) 2)] 的水性聚合物溶液：密封设计 W<br>HEES – 符合 DIN ISO 15380 [1)] 的液压油<br>HFD-U – 符合 VDMA 24317 [1)]，DIN EN ISO 12922 [1)] 的液压油<br>HLP- Mineral oil conforming to DIN 51524 Part 2<br>HFC- Waterborne polymer solutions in accordance with DIN EN ISO 12922 [1) 2)]: Sealing design W<br>HEES- Hydraulic oils according to DIN ISO 15380 [1)]<br>HFD-U- Hydraulic fluid in accordance with VDMA 24317[1)], DIN EN ISO 12922 [1)] |
| 液压油<br>Hydraulic oil | HLP 液压油 °C<br>hydraulic oil | –10 至 +80；有关其它温度，请向我们咨询!<br>- 10 to + 80; For other temperature, please consult us! |
| | 特殊液压油 °C<br>Special hydraulic oil | –10 至 +50；有关其它温度，请向我们咨询!<br>- 10 to 50 +; For other temperatures, please consult us |
| 环境温度范围 °C<br>Ambient temperature range | | –20 至 +60<br>–20 to +60 |
| 粘度范围 $mm^2/s$<br>Viscosity range | | 10 至 300（至 n = 1800 $min^{-1}$）<br>10 至 100（至 n = 3000 $min^{-1}$）<br>2000 允许的启动粘度（400 至 1800 $min^{-1}$）<br>10 to 300（to n = 1800 $min^{-1}$）<br>10 to 100（to n = 3000 $min^{-1}$）<br>2000 Allowable starting viscosity (400 to 1800 $min^{-1}$) |
| 液压油最大允许污染度符合 ISO 4406 (c) 的清洁度等级<br>The maximum allowable contaminati on of hydraulic oil is in line with ISO Cleanliness grade of 4406 (c) | | 等级 20/18/15 [3)]<br>Grade 20/18/15 [3)] |

1）注意!
对于这些介质，针对特殊液压油的限制可以适用
2）液压油 HFC：输入速度 n 最大 = 2000 $min^{-1}$
3）在液压系统中必须遵循规定的组件清洁度等级。有效过滤能够避免发生故障，同时还可延长组件使用寿命。

1. Attention !
For these media, restrictions on specific hydraulic oils may apply.
2. Hydraulic oil HFC: input speed n maximum =2000 $min^{-1}$
3. The specified component cleanliness level must be followed in the hydraulic system. Effective filtration can avoid failures and extend the service life of the components.





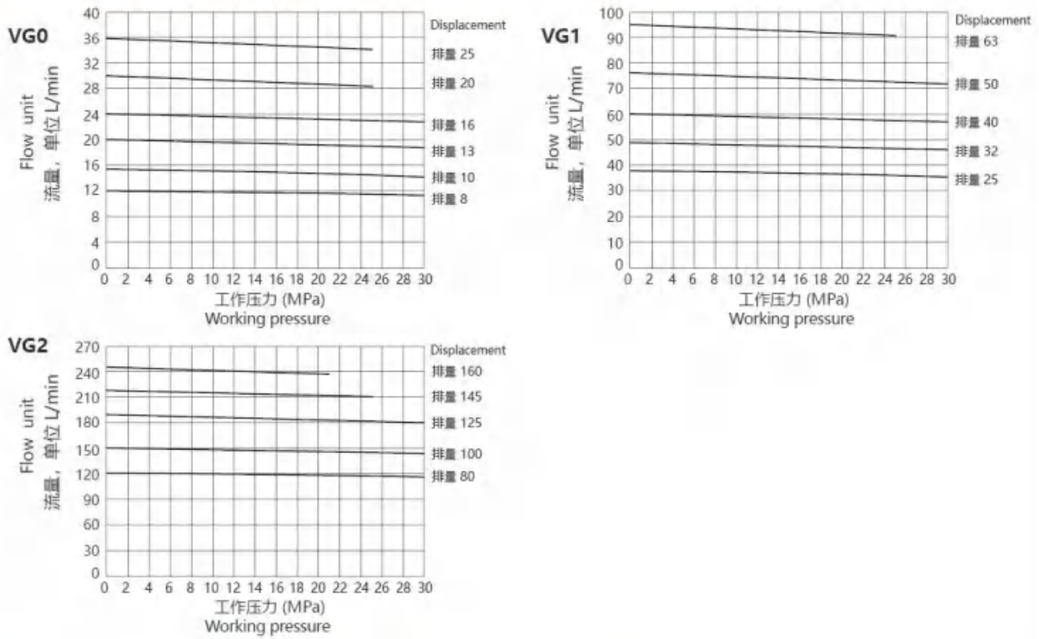
## 型号说明/Model Designation

| VG1 | -63 | R | E | W | -A1 |
|---|---|---|---|---|---|
| 系列号<br>Series | 排量 ml/r<br>Displacement | 旋转方向<br>Rotation | 轴伸形式<br>Shaft type | 密封材料<br>Sealing material | 设计号<br>Design number |
| VG0 | 8、10、13、16、20、25、28 | 从泵轴端看<br>Viewes form shaft end of pump<br>R=顺时针旋转<br>Right hand for clockwise<br>L=逆时针旋转<br>Left hand for counter-clockwise | E= 平键轴<br>Straight key shaft<br>R=SAE 花键轴<br>Spline shaft | W=丁腈橡胶<br>NBR<br>V=氟橡胶<br>FKM | A1 |
| VG1 | 25、32、40、50、63<br>50H、63H | | | | |
| VG2 | 80、100、125、145、160 | | | | |

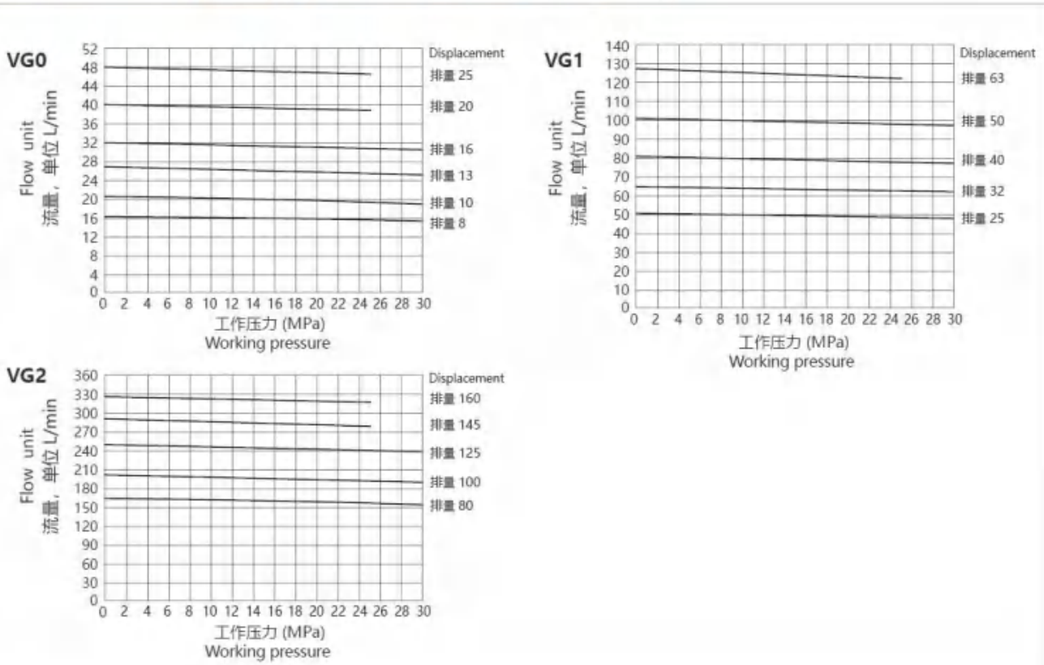
## 技术参数/Technical Data

| 系列号<br>Series | 排量 ml/r<br>Displacement | 理论排量 ml/r<br>Theory Displacement | 额定压力 Mpa<br>Rated Pressure | 最高压力 Mpa<br>Max.pressure | 最高转速 r/min<br>Max.speed | 重量 kg<br>Weight |
|---|---|---|---|---|---|---|
| VG0 | 8 | 8.2 | 31.5 | 35 | 3000 | 4.6 |
| | 10 | 10.2 | | | | 4.8 |
| | 13 | 13.3 | | | | 4.9 |
| | 16 | 16.0 | | | | 5.2 |
| | 20 | 20.0 | 25 | 30 | | 5.6 |
| | 25 | 24.0 | | | | 6.0 |
| | 28 | 27.0 | | | | 6.4 |
| VG1 | 25 | 25.3 | 31.5 | 35 | | 14.5 |
| | 32 | 32.7 | | | | 15 |
| | 40 | 40.1 | | | | 16 |
| | 50 | 50.7 | | | | 17 |
| | 63 | 63.7 | 25 | 30 | | 18.5 |
| VG2 | 80 | 81.4 | 31.5 | 35 | | 43.5 |
| | 100 | 100.2 | | | | 45.5 |
| | 125 | 125.3 | | | | 48 |
| | 145 | 145.2 | 25 | 28 | | 50 |
| | 160 | 162.8 | 21 | 26 | | 52 |

## 1500r/min 特性曲线/Characteristic curve



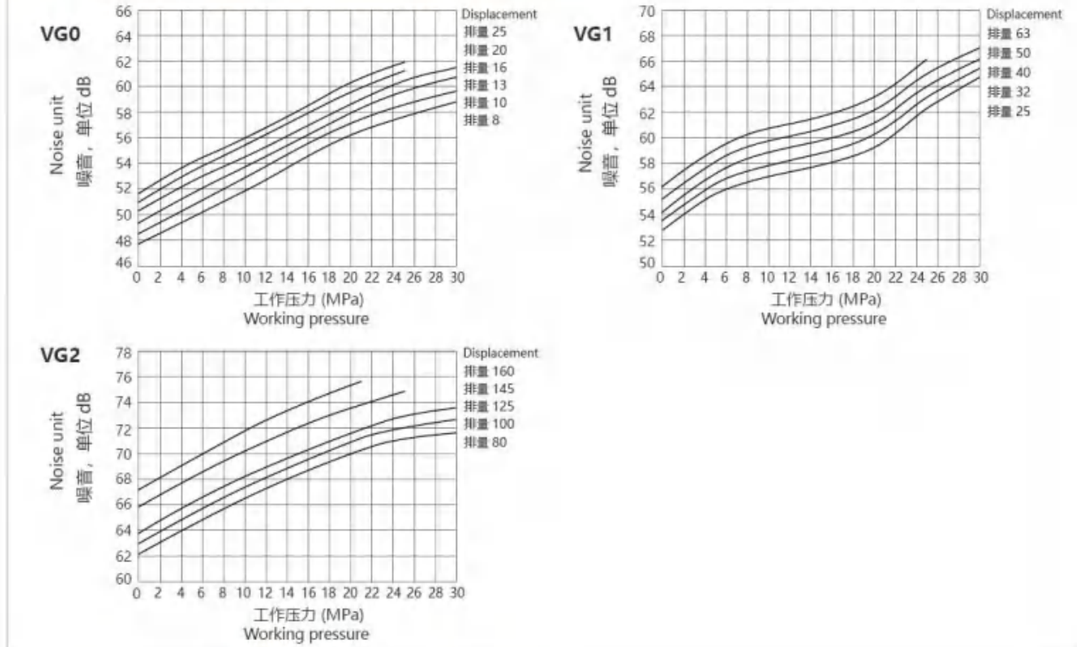

## 2000r/min 特性曲线/Characteristic curve



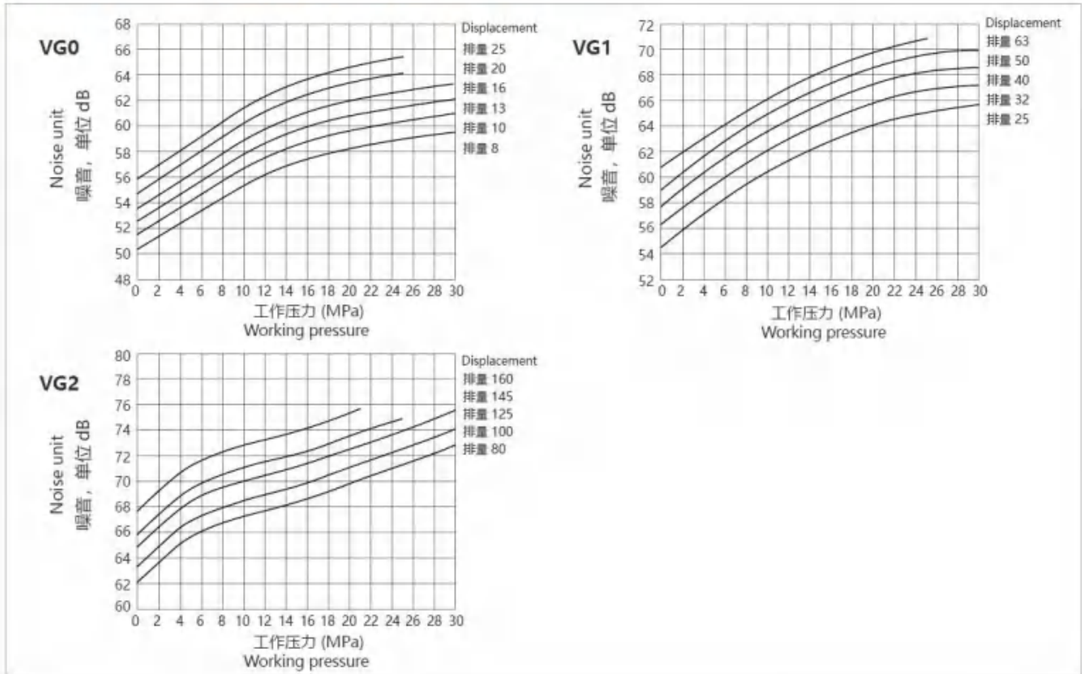





## 1500r/min 噪音曲线/Noise curve

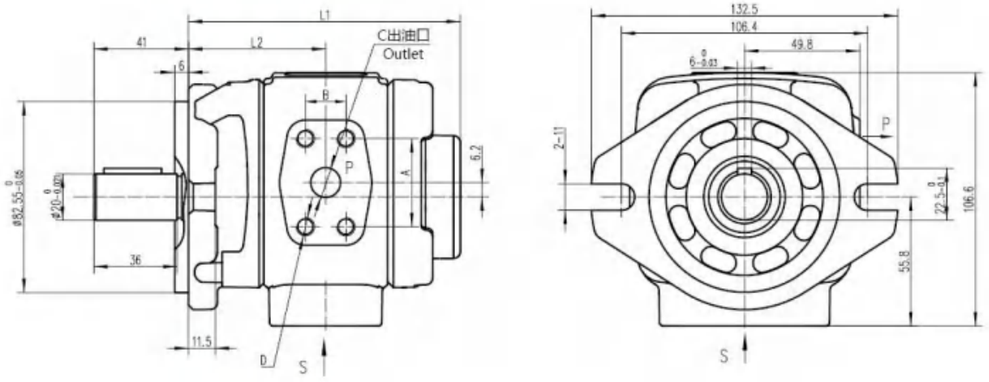



## 2000r/min 噪音曲线/Noise curve

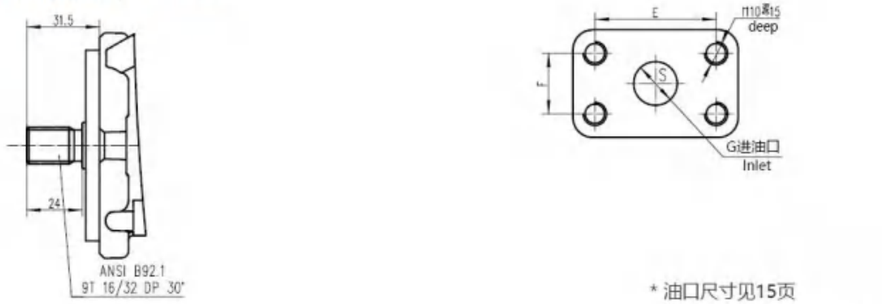


## VG0安装连接尺寸/Installation Dimensions

**E 型平键轴 Keyed shaft**




**R 型花键轴 Spline shaft**




* 油口尺寸见15页
See page 15 oil port size

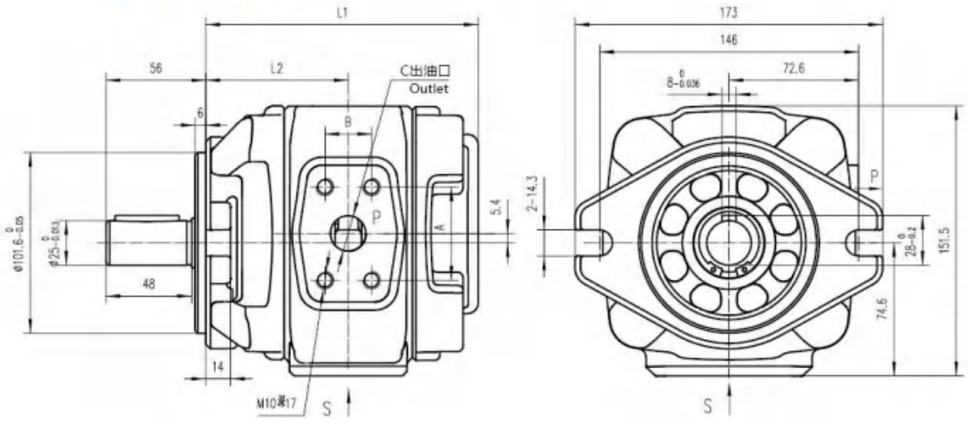
| 产品型号 Model | L1 | L2 | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|---|---|
| VG0-08 | 107 | 54 | 38.1 | 17.5 | Φ13 | M8 Depth 13 | 47.6 | 22.2 | Φ19 |
| VG0-10 | 111 | 56 | | | | | 52.4 | 26.2 | |
| VG0-13 | 117.5 | 59.25 | | | | | | | |
| VG0-16 | 123 | 62 | | | | | | | |
| VG0-20 | 131 | 66 | 47.6 | 22.2 | Φ18 | M10 Depth 15 | 58.7 | 30.2 | Φ26 |
| VG0-25 | 139 | 70 | | | Φ19 | | | | Φ28 |
| VG0-28 | 145 | 73 | | | | | | | |





## VG1安装连接尺寸/Installation Dimensions

**E 型平键轴 Keyed shaft**

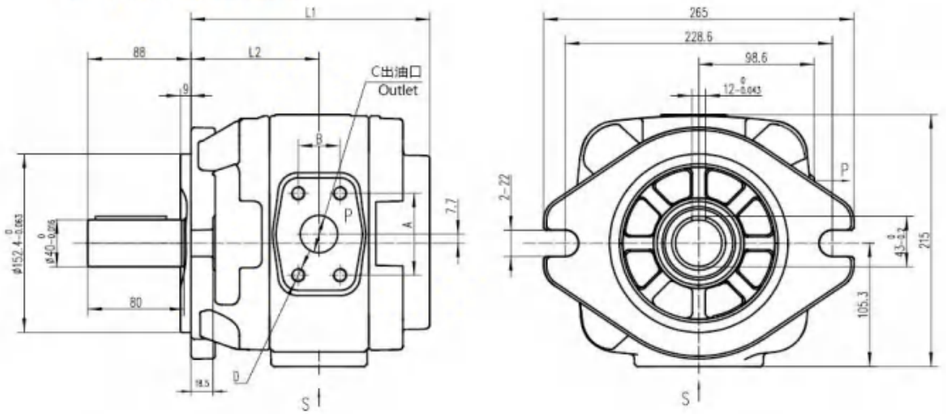



**R 型花键轴 Spline shaft**

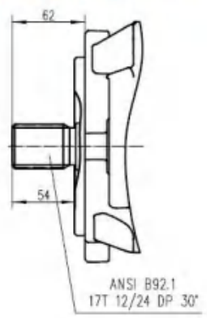

| 产品型号 Model | L1 | L2 | A | B | C |
|---|---|---|---|---|---|
| VG1-25 | 139 | 73 | 47.6 | 22.2 | Φ18 |
| VG1-32 | 146 | 76.5 | | | |
| VG1-40 | 153 | 80 | 52.4 | 26.2 | Φ20 |
| VG1-50 | 163 | 85 | | | |
| VG1-63 | 177 | 92 | | | |
| VG1-50H | 163 | 85 | 油口尺寸见15页 See page 15 oil port size | | |
| VG1-63H | 177 | 92 | | | |

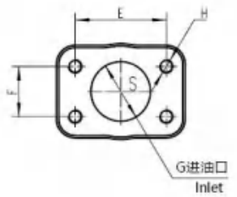
## VG2安装连接尺寸/Installation Dimensions

**E 型平键轴 Keyed shaft**




**R 型花键轴 Spline shaft**



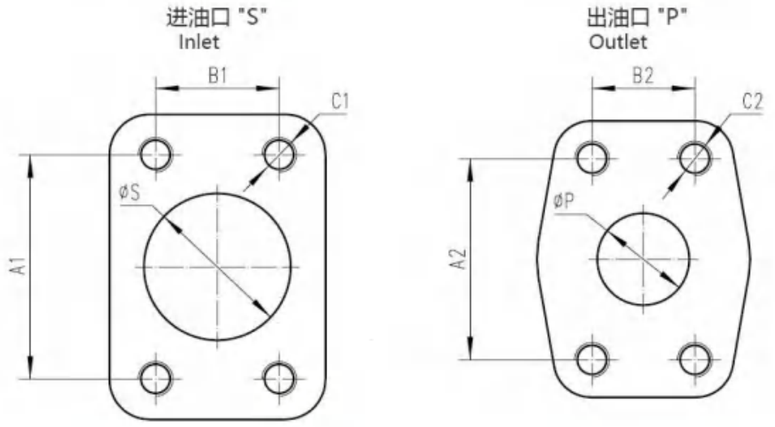

* 油口尺寸见15页
See page 15 oil port size

| 产品型号 Model | L1 | L2 | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|---|---|
| VG2-80 | 204 | 109.5 | 69.9 | 35.7 | Φ32 | M12 Depth 20 | 77.8 | 42.9 | Φ51 | M12 Depth 20 |
| VG2-100 | 213 | 114 | | | | | | | | |
| VG2-125 | 225 | 120 | 79.4 | 36.5 | Φ38 | M16 Depth 25 | 88.9 | 50.8 | Φ63.5 | |
| VG2-145 | 235.5 | 124.75 | | | | | | | | |
| VG2-160 | 243 | 129 | | | | | 106.4 | 61.9 | Φ76 | M16 Depth 25 |





## VG系列单泵进出油口连接尺寸
## VG series single pump inlet and outlet oil port connection size




| 型号 Model | 规格 Specifications | S | A1 | B1 | C1 | 对应法兰 Corresponding flange | P | A2 | B2 | C2 | 对应法兰 Corresponding flange |
|---|---|---|---|---|---|---|---|---|---|---|---|
| VG0 | 8 | 19 | 47.6 | 22.2 | M10 Depth 15 | F06 | 13 | 38.1 | 17.5 | M8 Depth 13 | F04 |
| | 10 | | 52.4 | 26.2 | | F08 | | | | | |
| | 13 | | | | | | | | | | |
| | 16 | | | | | | | | | | |
| | 20 | 26 | 58.7 | 30.2 | | F10 | 18 | 47.6 | 22.2 | M10 Depth 15 | F06 |
| | 25 | 28 | | | | | 19 | | | | |
| | 28 | | | | | | | | | | |
| VG1 | 25 | 32 | 58.7 | 30.2 | M10 Depth 17 | F10 | 18 | 47.6 | 22.2 | M10 Depth 17 | F06 |
| | 32 | | | | | | 20 | 52.4 | 26.2 | | F08 |
| | 40 | | | | | | | | | | |
| | 50 | | | | | | | | | | |
| | 63 | | | | | | | | | | |
| | 50(H) | 38 | 69.9 | 35.7 | M12 Depth 20 | F12 | | | | | |
| | 63(H) | 51 | 77.8 | 42.9 | | F16 | | | | | |
| VG2 | 80 | 51 | 77.8 | 42.9 | M12 Depth 20 | F16 | 32 | 69.9 | 35.7 | M12 Depth 20 | F12 |
| | 100 | | | | | | | | | | |
| | 125 | 63.5 | 88.9 | 50.8 | | F20 | 38 | 79.4 | 36.5 | M16 Depth 25 | F14 |
| | 145 | | | | | | | | | | |
| | 160 | 76 | 106.4 | 61.9 | M16 Depth 25 | F24 | | | | | |

# VG 系列双联泵 Series Double Pump

## 双联泵简介/Introduction double pump

双联泵是由两个单泵串联组装而成，具有一个共用的进油口和独立的出油口，按照两个泵的系列组合，可获得多种排量：
VG10D 系列、VG11D 系列、VG21D 系列、VG22D 系列

The double pump is composed of two single pumps assembled in series, with one oil inlet and independent oil outlet, according to the series of two pumps, can be obtained displacement:
VG10D series, VG11D series, VG21D series, VG22D series.

## 型号说明/Model Designation

| VG11D | -63 | -40 | R | E | W | -A1 |
|---|---|---|---|---|---|---|
| 系列号 Series | 轴端泵排量代号 ml/r Flow code of shaft end pump | 盖端泵排量代号 ml/r Flow code of cover end pump | 旋转方向 Rotation direction | 轴伸形式 Shaft type | 密封材料 Sealing material | 设计号 Design number |
| VG10D | 25、32、40、50、63 | 8、10、13、16、20、25 | 从泵轴端看 Viewes form shaft end of pump<br>R=顺时针旋转 Right hand for clockwise<br>L-逆时针旋转 Left hand for counter-clockwise | E= 平键轴 Straight key shaft<br>R=SAE 花键轴 Spline shaft | W=丁腈橡胶 NBR<br>V=氟橡胶 FKM | A1 |
| VG11D | 25、32、40、50、63 | 25、32、40、50、63 | | | | |
| VG21D | 80、100、125、145、160 | 25、32、40、50、63 | | | | |
| VG22D | 80、100、125、145、160 | 80、100、125、145、160 | | | | |

## 产品特点/Product Features

- 前后油泵采用浮动花键联轴器式结构，配合独特的润滑脂配方保证油泵性能稳定、长寿命和低噪音；
- 最大排量可以扩展到 320CC，为电机和驱动器选型、机型选配提供足够的选择空间；
- 油泵出油口和吸油口方向灵活调配，安装简易；
- 任意排量组合，适应不同工况需求；

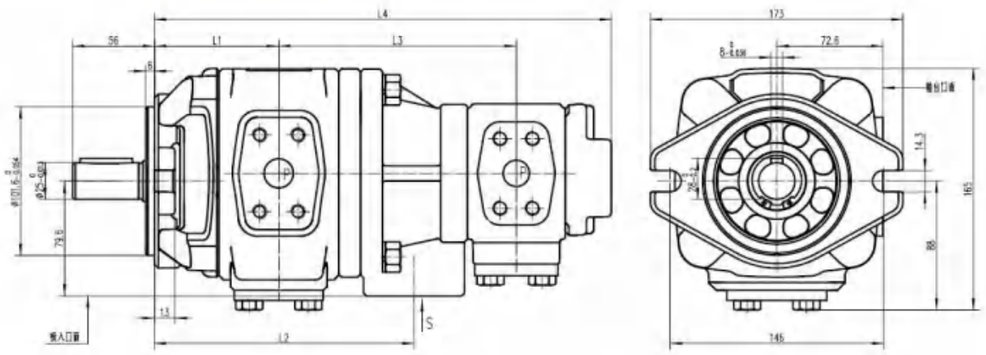
- The front and rear oil pumps adopt floating flower coupling structure, with a unique grease formula to ensure stable performance, long life and low noise of the oil pump;
- The maximum displacement can be extended to 320CC, which provides enough choice space for motor and driver selection and model selection;
- The direction of oil outlet and suction outlet of oil pump is flexible and easy to install;
- Any displacement combination, to meet the needs of different working conditions.



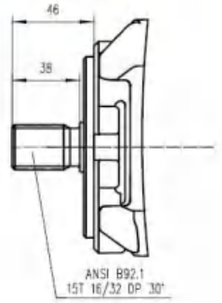


## VG10D安装连接尺寸/Installation Dimensions

**E 型平键轴 Keyed shaft**




**R 型花键轴 Spline shaft**

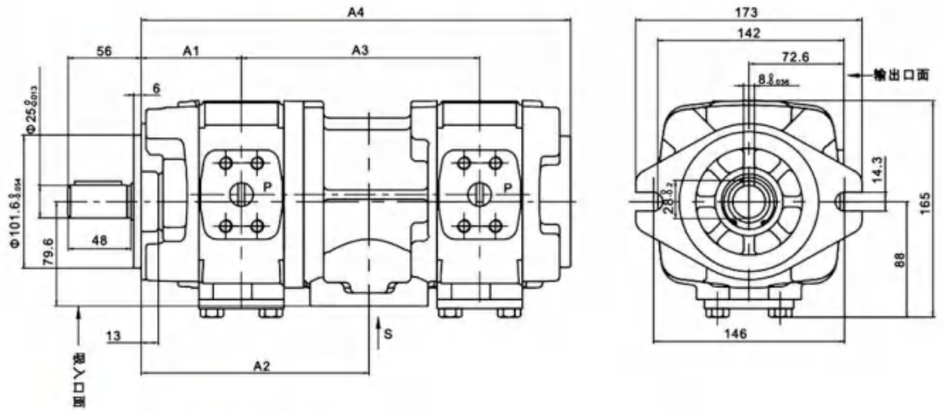



* 油口法兰尺寸见21页
See page 21 oil port size

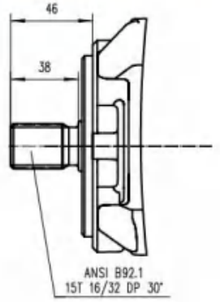
| 前泵型号 Front pump | L1 | L2 | 后泵型号/Rear pump | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 08 | | 10 | | 13 | | 16 | | 20 | | 25 | |
| | | | L3 | L4 | L3 | L4 | L3 | L4 | L3 | L4 | L3 | L4 | L3 | L4 |
| 25 | 73 | 153.5 | 73 | 264.5 | 140.5 | 268.5 | 143.8 | 275 | 146.5 | 280.5 | 150.5 | 288.5 | 154.5 | 296.5 |
| 32 | 76.5 | 160.5 | 76.5 | 271.5 | 144 | 275.5 | 147.3 | 282 | 150 | 287.5 | 154 | 295.5 | 158 | 303.5 |
| 40 | 80 | 167.5 | 80 | 278.5 | 147.5 | 282.5 | 150.8 | 289 | 153.5 | 294.5 | 157.5 | 302.5 | 161.5 | 310.5 |
| 50 | 85 | 177.5 | 85 | 288.5 | 152.5 | 292.5 | 155.8 | 299 | 158.5 | 304.5 | 162.5 | 312.5 | 166.5 | 320.5 |
| 63 | 92 | 191.5 | 92 | 302.5 | 159.5 | 306.5 | 162.8 | 313 | 165.5 | 318.5 | 169.5 | 326.5 | 173.5 | 334.5 |

# VG11D安装连接尺寸/Installation Dimensions

**E 型平键轴 Keyed shaft**




**R 型花键轴 Spline shaft**




* 油口法兰尺寸见21页
See page 21 oil port size

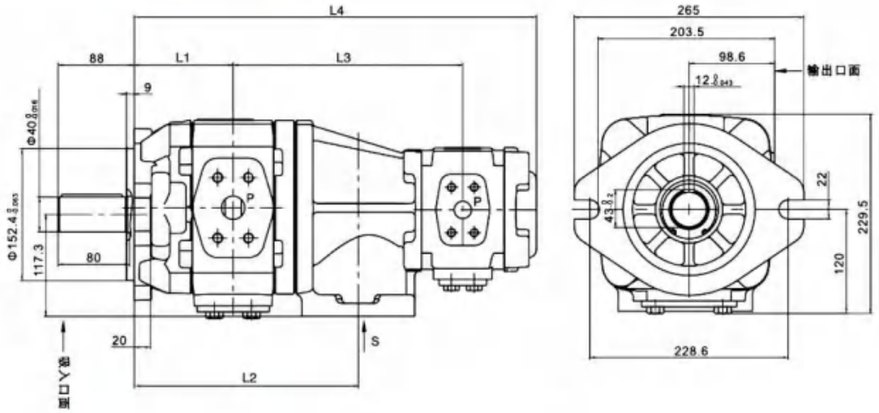
| 前泵型号 Front pump | L1 | L2 | 后泵型号/Rear pump | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 25 | | 32 | | 40 | | 50 | | 63 | |
| | | | L3 | L4 | L3 | L4 | L3 | L4 | L3 | L4 | L3 | L4 |
| 25 | 73 | 161 | 161 | 300 | | | | | | | | |
| 32 | 76.5 | 168 | 164.5 | 307 | 168 | 314 | | | | | | |
| 40 | 80 | 175 | 168 | 314 | 171.5 | 321 | 175 | 328 | | | | |
| 50 | 85 | 185 | 173 | 324 | 176.5 | 331 | 180 | 338 | 185 | 348 | | |
| 63 | 92 | 199 | 180 | 338 | 183.5 | 345 | 187 | 352 | 192 | 362 | 199 | 376 |



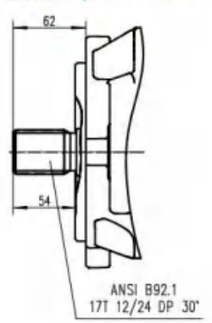


# VG21D安装连接尺寸/Installation Dimensions

**E 型平键轴 Keyed shaft**




**R 型花键轴 Spline shaft**

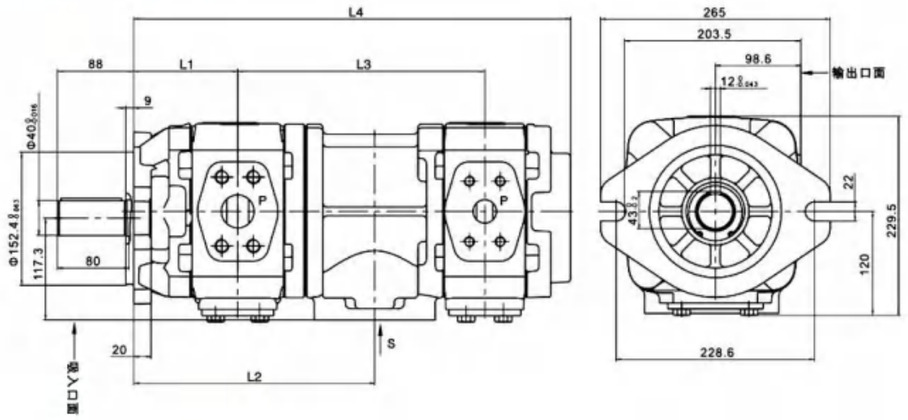



* 油口法兰尺寸见21页
See page 21 oil port size

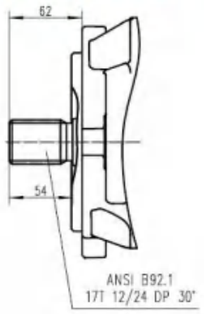
| 前泵型号 Front pump | L1 | L2 | 后泵型号/Rear pump | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 25 | | 32 | | 40 | | 50 | | 63 | |
| | | | L3 | L4 | L3 | L4 | L3 | L4 | L3 | L4 | L3 | L4 |
| 80 | 109.5 | 231 | 204.5 | 380 | 208 | 387 | 211.5 | 394 | 216.5 | 404 | 223.5 | 418 |
| 100 | 114 | 240 | 209 | 389 | 212.5 | 396 | 216 | 403 | 221 | 413 | 228 | 427 |
| 125 | 120 | 250.2 | 215 | 401 | 218.5 | 408 | 222 | 415 | 227 | 425 | 234 | 439 |
| 145 | 124.8 | 261.5 | 219.8 | 410.5 | 223.3 | 417.5 | 226.8 | 424.5 | 231.8 | 434.5 | 238.8 | 448.5 |
| 160 | 129 | 270 | 224 | 419 | 227.5 | 426 | 231 | 433 | 236 | 443 | 243 | 457 |

# VG22D安装连接尺寸/Installation Dimensions

**E 型平键轴 Keyed shaft**




**R 型花键轴 Spline shaft**



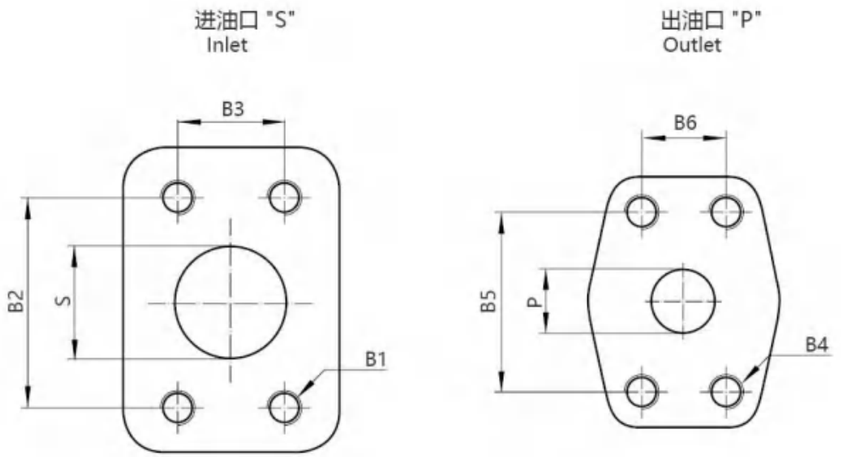

* 油口法兰尺寸见21页
See page 21 oil port size

| 前泵型号 Front pump | L1 | L2 | 后泵型号/Rear pump | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 80 | | 100 | | 125 | | 145 | | 160 | |
| | | | L3 | L4 | L3 | L4 | L3 | L4 | L3 | L4 | L3 | L4 |
| 80 | 109.5 | 238.5 | 233 | 437 | | | | | | | | |
| 100 | 114 | 247.5 | 237.5 | 446 | 242 | 455 | | | | | | |
| 125 | 120 | 259.5 | 243.5 | 458 | 248 | 467 | 254 | 479 | | | | |
| 145 | 124.5 | 269 | 248.5 | 467.5 | 252.8 | 476.5 | 258.8 | 488.5 | 263.5 | 498 | | |
| 160 | 129 | 277.5 | 251.5 | 476 | 257 | 485 | 263 | 497 | 268.3 | 506.5 | 272 | 515 |





# VG系列双联泵进出油口连接尺寸
# VG series double pump inlet and outlet oil port connection size




| 型号 Model | S | B1 | B2 | B3 | | 规格 Specifications | P | B4 | B5 | B6 |
|---|---|---|---|---|---|---|---|---|---|---|
| VG10D | Φ38 | M12 深20 Depth | 69.9 | 35.7 | G0 | 8 | Φ13 | M8 Depth 13 | 38.1 | 17.5 |
| | | | | | | 10 | | | | |
| | | | | | | 13 | | | | |
| | | | | | | 16 | | | | |
| VG11D | Φ51 | | 77.8 | 42.9 | | 20 | Φ18 | M10 深15 Depth | 47.6 | 22.2 |
| | | | | | | 25 | Φ19 | | | |
| | | | | | G1 | 25 | Φ18 | M10 深17 Depth | 47.6 | 22.2 |
| | | | | | | 32 | | | | |
| | | | | | | 40 | Φ20 | | 52.4 | 26.2 |
| VG21D | Φ76 | M16 深25 Depth | 106.4 | 61.9 | | 50 | | | | |
| | | | | | | 63 | | | | |
| VG22D | Φ89 | | 120.7 | 69.9 | G2 | 80 | Φ32 | M10 深20 Depth | 69.9 | 35.7 |
| | | | | | | 100 | | | | |
| | | | | | | 125 | Φ38 | M16 深25 Depth | 79.4 | 36.5 |
| | | | | | | 145 | | | | |
| | | | | | | 160 | | | | |

# VG 系列组合泵 Series Combied Pump

## 组合泵简介/Introduction Combied pump

组合泵是由两个单泵串联组装而成，具有两个独立的进油口和独立的出油口，按照两个泵的系列组合，
可获得多种排量：VG11 系列、VG21 系列、VG22 系列

The Cobied pump is composed of two single pumps assembled in series, with two independent oil inlet an
d independent oil outlet, according to the series of two pumps,
can be obtained displacement: VG11 series, VG21 series, VG22 series.

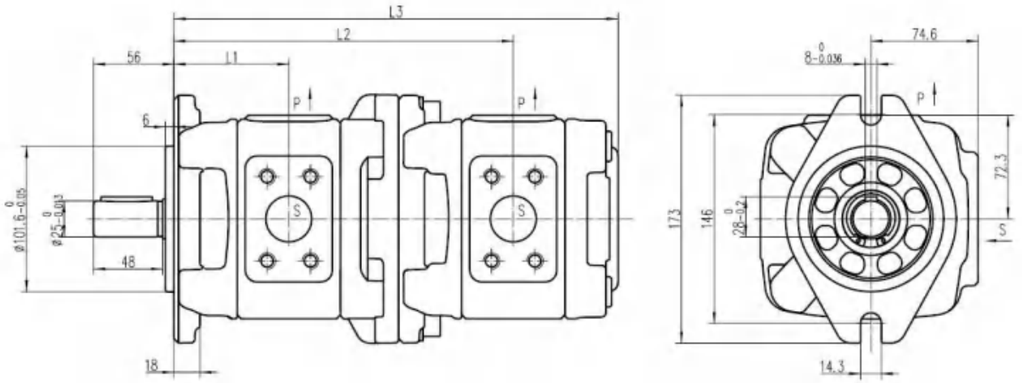
## 型号说明/Model Designation

| VG11 | -63 | -40 | R | E | W | -A1 |
|---|---|---|---|---|---|---|
| 系列号 Series | 轴端泵排量代号 ml/r Flow code of shaft end pump | 盖端泵排量代号 ml/r Flow code of cover end pump | 旋转方向 Rotation direction | 轴伸形式 Shaft type | 密封材料 Sealing material | 设计号 Design number |
| VG11 | 25、32、40、50、63 50H、63H | 25、32、40、50、63 50H、63H | 从泵轴端看 Viewes form shaft end of pump<br>R=顺时针旋转 Right hand for clockwise<br>L-逆时针旋转 Left hand for counter-clockwise | E= 平键轴 Straight key shaft<br>R=SAE 花键轴 Spline shaft | W=丁腈橡胶 NBR<br>V=氟橡胶 FKM | A1 |
| VG21 | 80、100、125、145、160 | 25、32、40、50、63 50H、63H | | | | |
| VG22 | 80、100、125、145、160 | 80、100、125、145、160 | | | | |





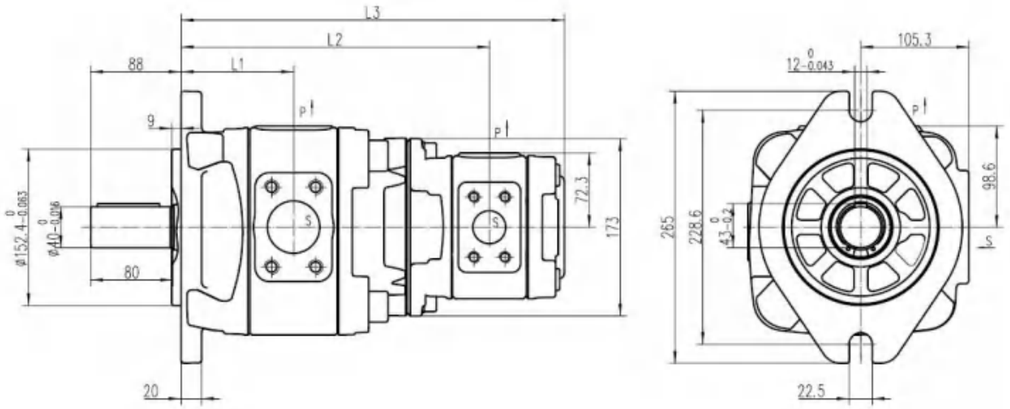
## VG11安装连接尺寸/Installation Dimensions




* 油口尺寸见15页
See page 15 oil port size

| 前泵型号 Front pump | L1 | 后泵型号/Rear pump | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 25 | | 32 | | 40 | | 50 | | 63 | |
| | | L2 | L3 | L2 | L3 | L2 | L3 | L2 | L3 | L2 | L3 |
| 25 | 73 | 215.5 | 283 | | | | | | | | |
| 32 | 76.5 | 222.5 | 290 | 226 | 297 | | | | | | |
| 40 | 80 | 229.5 | 297 | 233 | 304 | 236.5 | 311 | | | | |
| 50 | 85 | 239.5 | 307 | 243 | 314 | 246.5 | 321 | 251.5 | 331 | | |
| 63 | 92 | 253.5 | 321 | 257 | 328 | 260.5 | 335 | 265.5 | 345 | 272.5 | 359 |

## VG21安装连接尺寸/Installation Dimensions



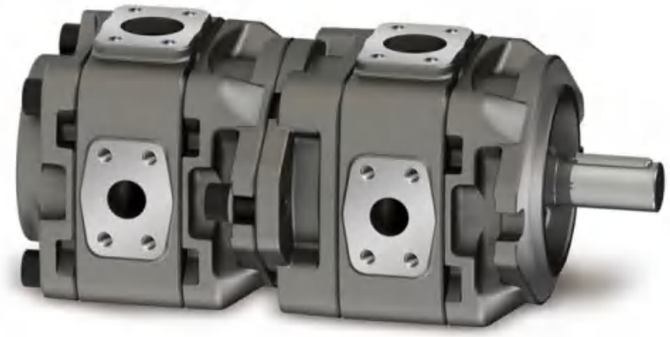

* 油口尺寸见15页
See page 15 oil port size

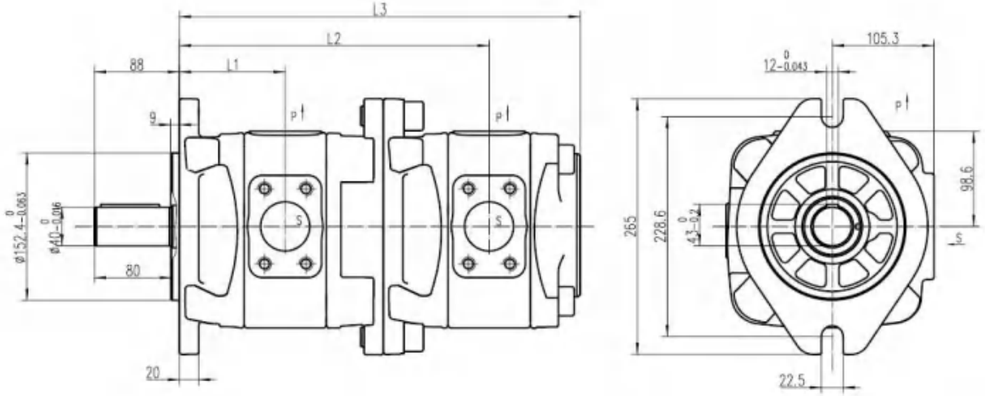
| 前泵型号 Front pump | L1 | 后泵型号/Rear pump | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 25 | | 32 | | 40 | | 50 | | 63 | |
| | | L2 | L3 | L2 | L3 | L2 | L3 | L2 | L3 | L2 | L3 |
| 80 | 109.5 | 293 | 359 | 296.5 | 346 | 300 | 373 | 305 | 383 | 312 | 397 |
| 100 | 114 | 302 | 368 | 305.5 | 375 | 309 | 382 | 314 | 392 | 321 | 406 |
| 125 | 120 | 314 | 380 | 317.5 | 387 | 321 | 394 | 326 | 404 | 333 | 418 |
| 145 | 124.8 | 323.5 | 389.5 | 326.5 | 396.5 | 330.5 | 403.5 | 335.5 | 413.5 | 342.5 | 427.5 |
| 160 | 129 | 332 | 398 | 335.5 | 405 | 339 | 412 | 344 | 422 | 351 | 436 |





## VG22安装连接尺寸/Installation Dimensions






* 油口尺寸见15页
See page 15 oil port size

| 前泵型号 Front pump | L1 | 后泵型号/Rear pump | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 80 | | 100 | | 125 | | 145 | | 160 | |
| | | L2 | L3 | L2 | L3 | L2 | L3 | L2 | L3 | L2 | L3 |
| 80 | 109.5 | 320.5 | 412 | | | | | | | | |
| 100 | 114 | 330.5 | 420 | 335 | 429 | | | | | | |
| 125 | 120 | 342.5 | 432 | 347 | 441 | 353 | 453 | | | | |
| 145 | 124.8 | 352 | 441.5 | 356.5 | 450.5 | 362.5 | 462.5 | 367 | 472 | | |
| 160 | 129 | 360.5 | 450 | 365 | 459 | 371 | 471 | 375.5 | 480.5 | 380 | 489 |

# 使用注意事项
Points for attention to use

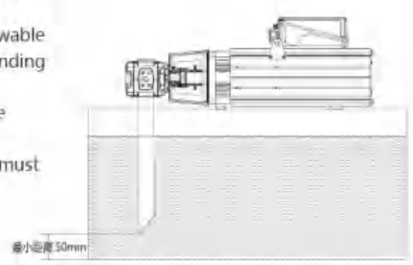
## 1. 油泵安装 /Oil pump installation

- 泵轴与电机轴连接尽可能使用挠性联轴器，以避免产生弯曲力矩或轴向推力，泵轴与电机轴最大允许同轴度误差 0.15mm;
- 在安装联轴器时避免产生轴向力，严禁使用敲击或强压力方式安装。
- As far as possible, flexible coupling is used for connection between pump shaft and motor shaft to avoid bending moment or axial thrust. The maximum allowable coaxiality error between pump shaft and motor shaft is 0.15mm

## 2. 进出口连接 /Inlet and outlet connection

- 根据油泵的油口选择管道的内径（最佳吸入口流速为 0.6~1.2m/s）；
- 吸油管路的设计尺寸必须遵守允许的入口工作压力（绝对值为 0.8bar 至 2bar），必须避免吸油管路弯曲和几个泵的吸油管组合；
- 如果使用吸油过滤器，推荐吸油过滤器按照油泵的最大流量选取，乘以系数 2-3 倍，过滤绝对精度为 50~180um，必须确保即使过滤器受到污染，也不会超过系统的最低允许入口工作压力；
- 所选吸油管浸没深度应尽可能深，即使在最大流量时也不得形成涡流，否则会有吸放空气的危险；
- 吸油管路设计时，吸油口不推荐垂直朝下安装，如油箱位于油泵下方，吸油口应朝上或位于水平两侧。

- Select the inner diameter of the pipeline according to the oil port of the oil pump (the optimal inlet velocity is 0.6-1.2m/s);
- The design dimensions of the suction tubing line must comply with the allowable inlet working pressure (absolute value of 0.8bar to 2bar), and must avoid bending the suctiontubing line and the combination of several pump suction tubing;
- If the oil suction filter is used, it is recommended that the oil suction filter be selected according to the maximum flow of the oil pump, multiplied by the coefficient of 2-3 times, and the absolute filtration accuracy is 50-180um. It must be ensured that even if the filter is polluted, it will not exceed the minimum allowable inlet working pressure of the system;
- The immersion depth of the selected suction tubing should be as deep as possible. Eddy currents should not be formed even at the maximum flow rate, otherwise there will be a risk of air suction and release;




- In the design of suction pipe, the oil inlet is not recommended to be installed vertically downward. If the oil tank is located below the oil pump, the oil inlet should be up or on both horizontal sides.

## 3. 组合泵 /The combination of pump

- 组合泵时必须确保每个阶段均遵守相关泵类型所允许的工作数据；
- 所有组合泵的旋转方向必须相同；
- 具有最大扭矩的泵，施加间歇负载的泵应作为组合泵的第一阶段予以提供；
- 最大通轴传动扭矩必须由项目规划员针对各种应用情况进行检查。

- When combining pumps, it is necessary to ensure that each stage complies with the allowable working data of the relevant pump type;
- The rotation direction of all combined pumps must be the same;
- Pumps with maximum torque, variable displacement or applied load shall be provided as the first stage of the combined pump;
- Maximum shaft drive torque must be checked by the project planner for various applications.

- 泵级驱动扭矩计算如下：
  Pump-stage driving torque is calculated as follows

$$T = \frac{\Delta p \cdot V \cdot 0.0159}{\eta \text{ 液压机械 Hydraulic machinery}}$$

T: 扭矩 Torque（Nm）
Δp: 工作压力 Working pressure（bar）
V: 排量 Displacement（$cm^3$）
η: 液压机械效率
Hydraulic mechanical efficiency





**最大允许扭矩 Maximum permissible torque（Nm）**

| 类 型 Type | 驱动扭矩 Drive torque | | 输出扭矩 Outlet torque |
|---|---|---|---|
| | 平键轴..E Keyed shaft | 花键轴 ..R Spline shaft | |
| VG0 | 250 | 250 | 150 |
| VG1 | 450 | 450 | 280 |
| VG2 | 1100 | 1400 | 700 |

- 组合泵的总扭矩不得超过最大驱动扭矩。
- 不允许联合吸入。
- 后面的泵的轴设计必须为 "R"（花键）。

- The total torque of the combined pump shall not exceed the maximum driving torque.
- Combination inhalation is not allowed.
- Rear pump shaft design must be "R" (spline).

## 4. 初次运转操作 /Initial operation

- 初次启动时检查液压系统是否正确安装连接；
- 在运转前应通过吸油管或出油管为油泵内部注满液压油，打开系统油路的安全阀，在无负载情况下间断运转马达，确保油泵充分润滑，并排放管路内的空气（如系统油路未设置安全阀，可采用油泵出口连接处稍微放松，造成些许泄露的方法进行排气。当泄露的油液中不再出现气泡时，再将松开部分按照规定的扭矩锁紧。注意：采用此方法时，必须在低压状况下，且保证压力不会升高）
- 不能进行加载启动，否则会导致油泵内部损坏；
- 反复进行点动操作后，吸气的声音随之消失，空气混入声音消失后方可连续运转。如果反复几次点动操作后空气混入声音不消失时，应该是进油侧管路有空气泄露。

- Check whether the hydraulic system is properly installed and connected at the initial start;
- Before operation, should through the suction tubing or flowline for internal filled with hydraulic oil pump, oil relief valve, open the system under the condition of no load operating motors, stay sufficient lubrication oil pump, and discharge the air in the piping (oil is not set the relief valve, such as system can use the pump export joint relax a little, some methods for exhaust gas leak. When bubbles no longer appear in the leaked oil, the loosened part shall be locked according to the specified torque. Note: when using this method, it must be under low pressure condition and ensure that the pressure does not rise.)
- Unable to start loading, otherwise it will cause internal damage of the oil pump;
- After repeated dot operation, the suction sound will disappear, and the continuous operation can be carried out only after the air mixing sound disappears. If the air mixing sound does not disappear after repeated dot operation for several times, it should be that there is air leakage in the pipeline at the inlet side.

## 5. 保养维修 /Maintenance

- 为提高油泵的使用寿命，应定期检查液压系统的异常震动、噪音、油液温度、油液情况、油箱内是否有气泡产生以及有无泄露等问题，并及时维护；
- 所有油泵在出厂前已通过性能测试，任何企业和个人未经本公司允许，请不要拆卸、重新组装、改造油泵。如果未经本公司允许，而进行拆卸、重新组装、改造，则不在本公司的报修范围内，本公司不承担任何责任。

- In order to improve the service life of the oil pump, the abnormal vibration, noise, oil temperature, oil condition of the hydraulic system, whether there are bubbles in the tank and whether there are leaks and other problems should be checked regularly and maintained in time;
- All the oil pumps have passed the performance test before leaving the factory. Any enterprise or individual shall not disassemble, reassemble or transform the oil pumps without the permission of the company. If disassemble, reassemble or transform the oil pumps without the permission of the company, it is not within the scope of the company's repair report and the company shall not assume any responsibility.