

## VG 系列齿轮泵 Series Gear Pump



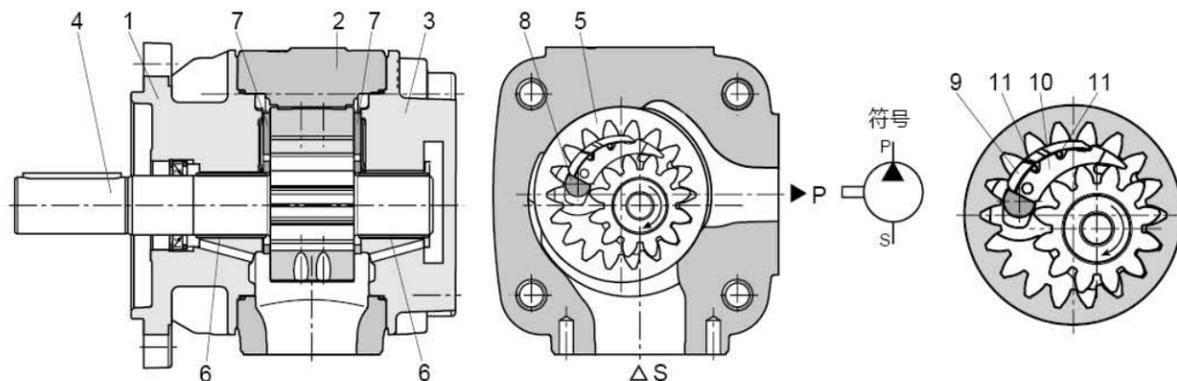
### 内啮合齿轮泵原理图 / Principle Diagram of Gear Pump

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 / Suction 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)。

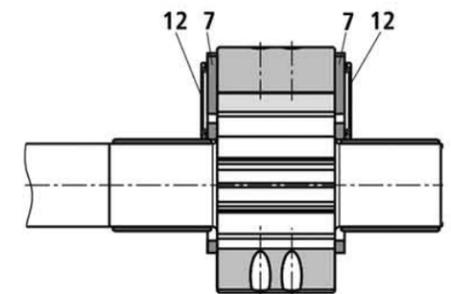
由此，油液从闭合的齿侧间隙排出并输送到压力油口 (P)。吸油区域和排放区域由径向补偿元件 (9 至 11) 以及内齿圈和外齿轮之间的齿轮啮合分隔开。

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

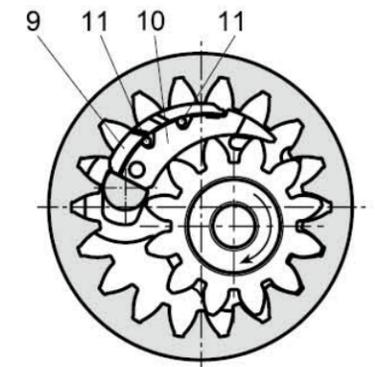
径向补偿元件包括月牙副板 (9)，月牙主板 (10) 和密封棒 (11)。其中月牙主板 (10) 紧贴外齿轴齿顶圆曲面，月牙副板 (9) 紧贴内齿圈齿顶圆曲面，定位杆用来限制月牙板圆周方向的运动。

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 / Tothing

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

**液压 /Hydraulic**

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

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<sup>-1</sup>  
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<sup>-1</sup>  
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.

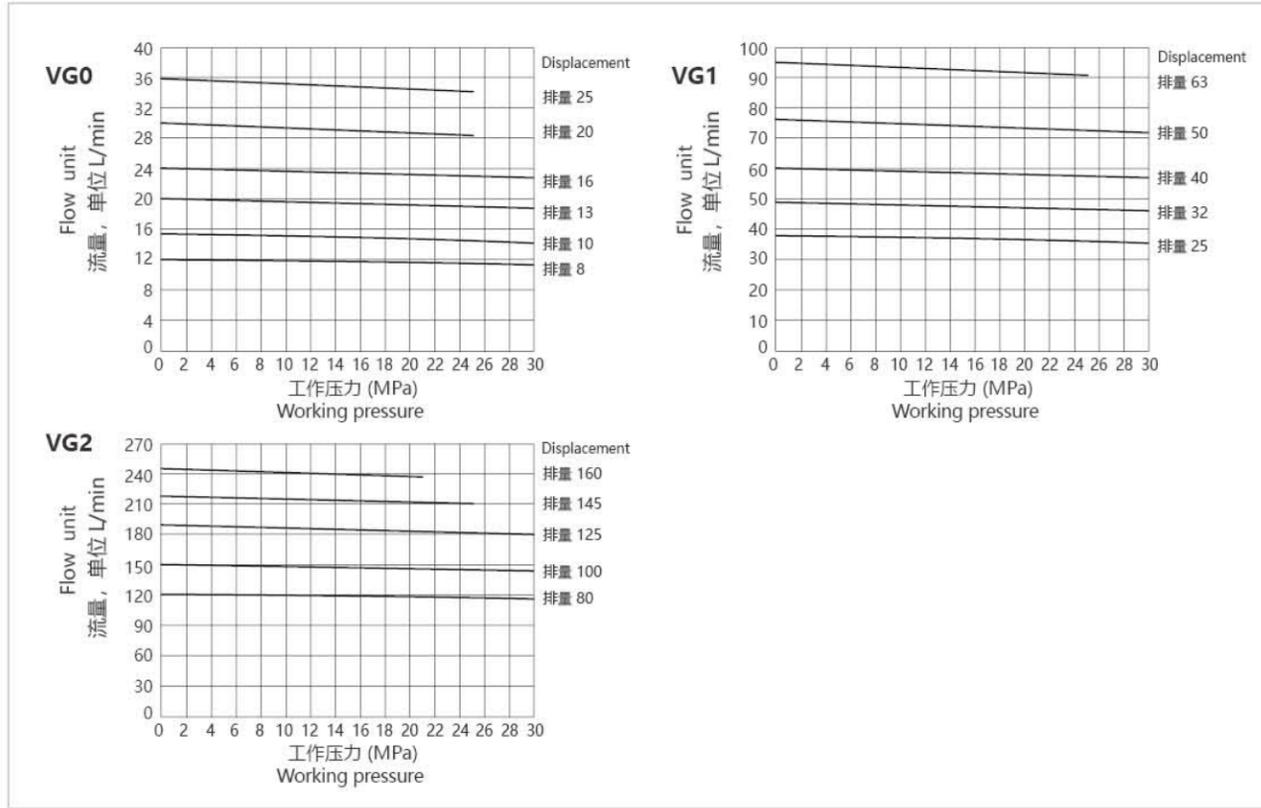
**型号说明/Model Designation**

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

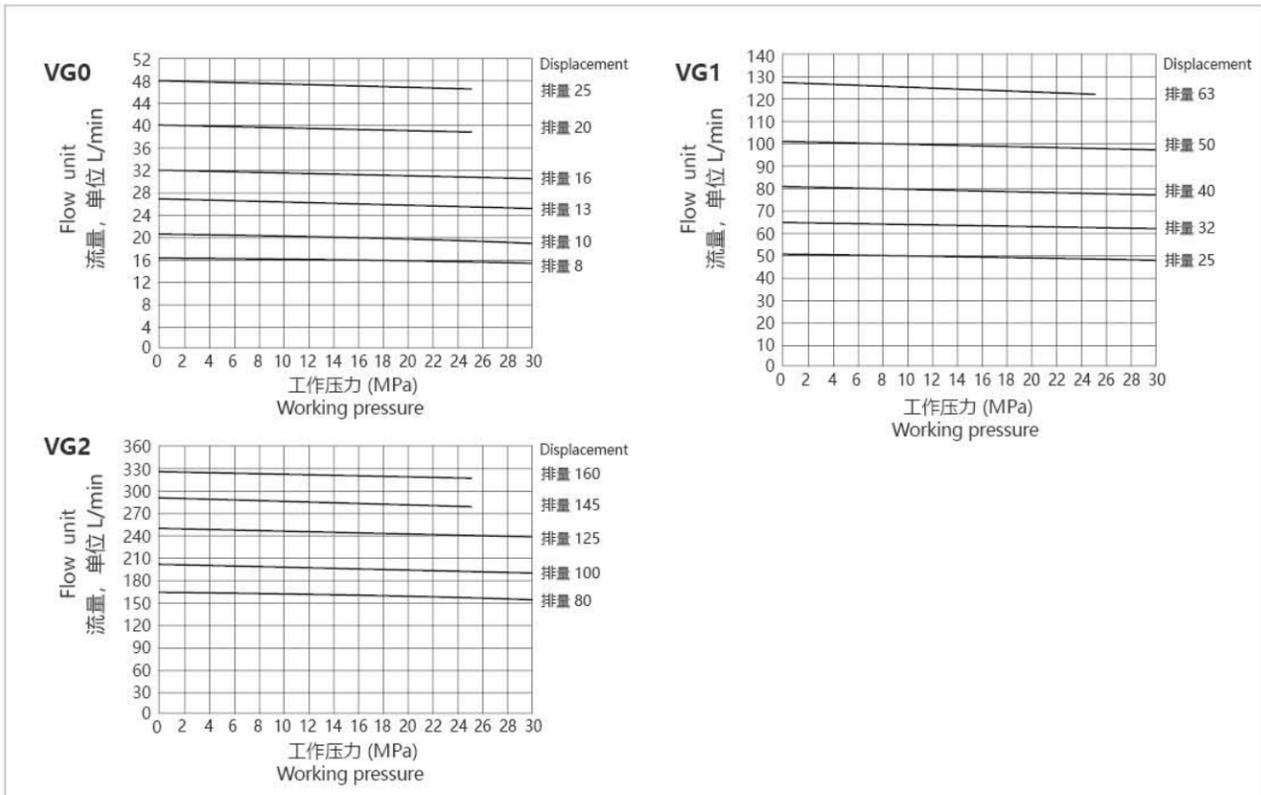
**技术参数/Technical Data**

系列号 Series	排量 ml/r Displacement	理论排量 ml/r Theory Displacement	额定压力 Mpa Rated Pressure	最高压力 Mpa Max.pressure	最高转速 r/min Max.speed	重量 kg 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	6.0			
	25	24.0	6.4			
VG1	25	25.3	31.5	35	3000	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	3000	43.5
	100	100.2				45.5
	125	125.3	48			
	145	145.2	25	28		50
	160	162.8	21	26		52

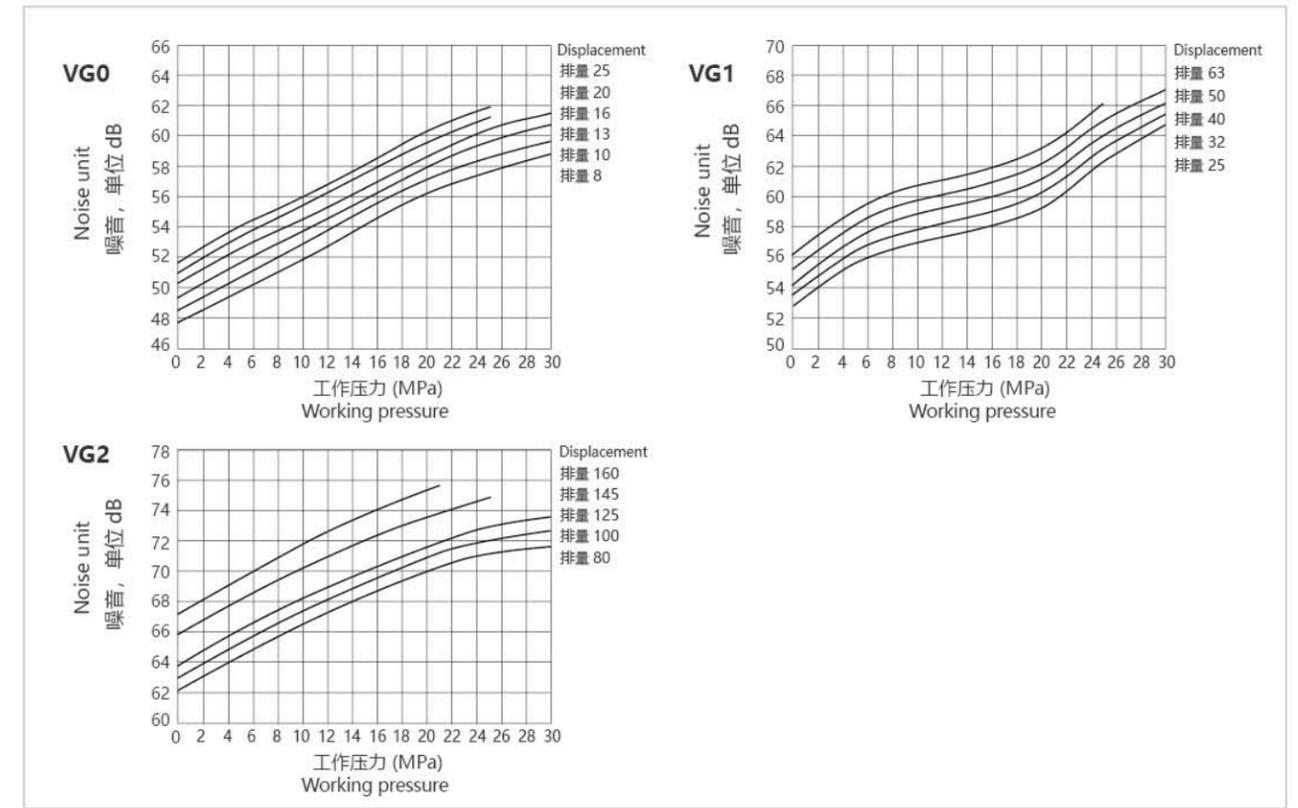
### 1500r/min 特性曲线/Characteristic curve



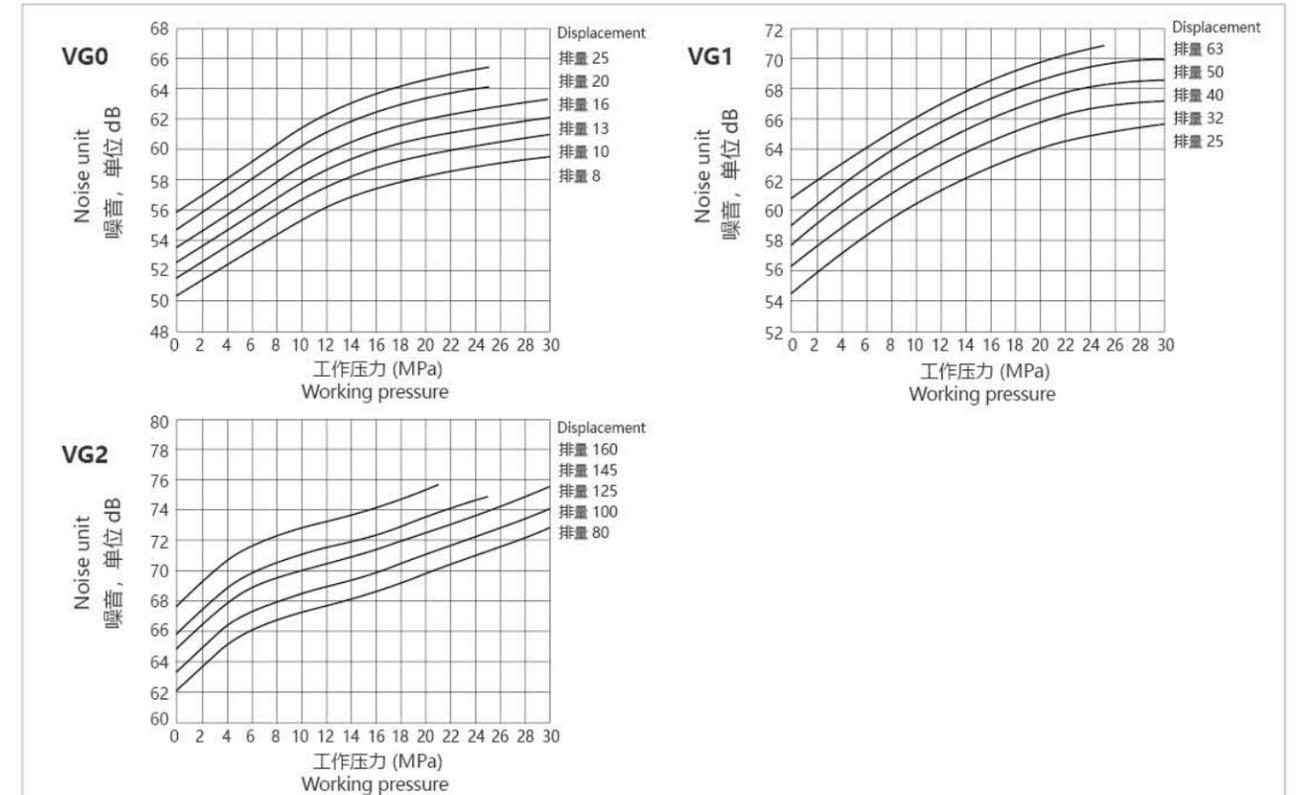
### 2000r/min 特性曲线/Characteristic curve



### 1500r/min 噪音曲线/Noise curve

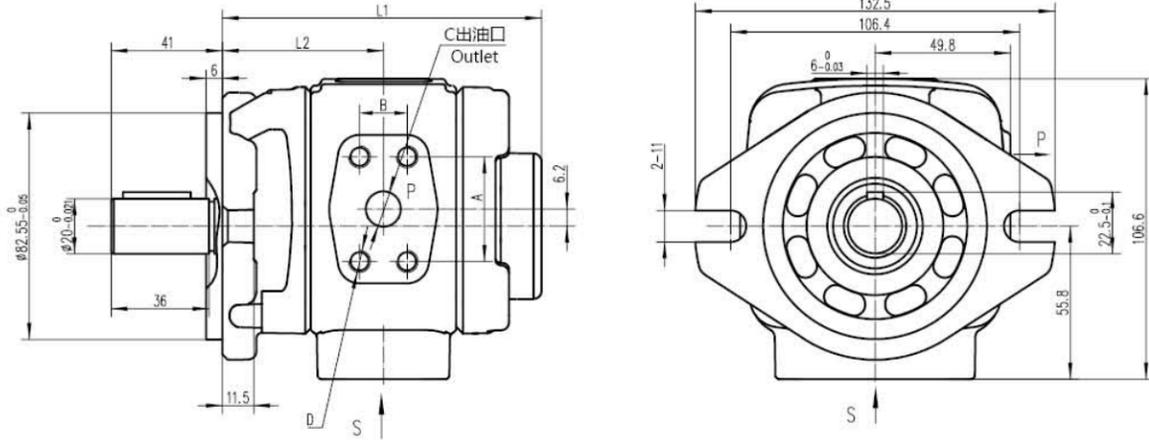


### 2000r/min 噪音曲线/Noise curve



## VG0安装连接尺寸/Installation Dimensions

**E 型平键轴 Keyed shaft**



**R 型花键轴 Spline shaft**

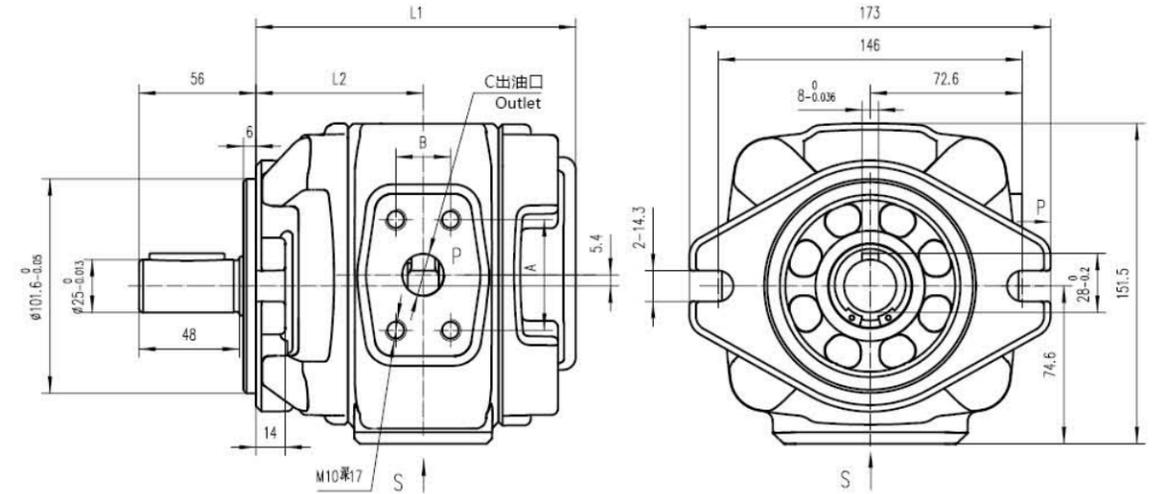


\* 油口尺寸见15页  
See page 15 oil port size

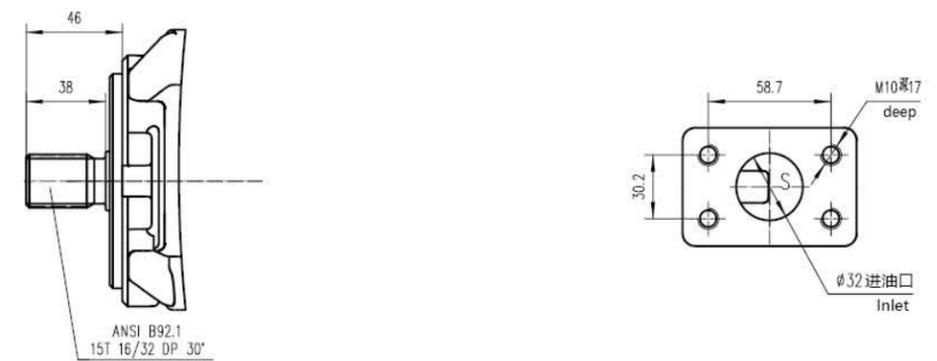
产品型号 Model	L1	L2	A	B	C	D	E	F	G	
VG0-08	107	54	38.1	17.5	Φ13	M8 Depth 13	47.6	22.2	Φ19	
VG0-10	111	56					52.4	26.2		
VG0-13	117.5	59.25					52.4	26.2		
VG0-16	123	62	47.6	22.2	Φ18	M10 Depth 15	58.7	30.2	Φ26	
VG0-20	131	66							Φ19	Φ28
VG0-25	139	70							Φ19	Φ28
VG0-28	145	73								

## 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			Φ20
VG1-40	153	80			Φ20
VG1-50	163	85	52.4	26.2	Φ20
VG1-63	177	92			
VG1-50H	163	85			
VG1-63H	177	92	油口尺寸见15页 See page 15 oil port size		

### VG2安装连接尺寸/Installation Dimensions

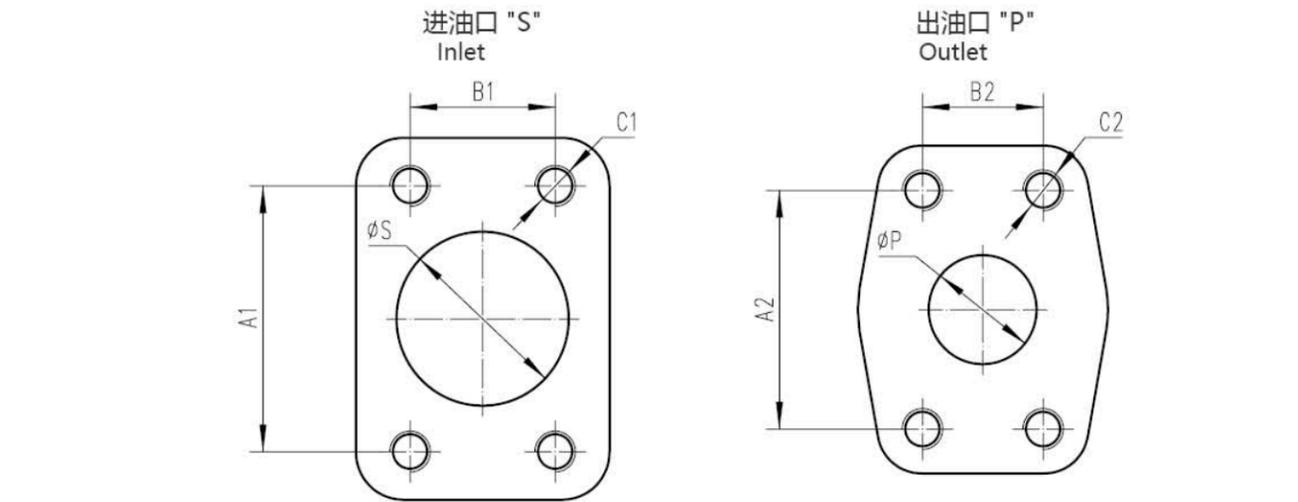
**E 型平键轴 Keyed shaft**

**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								

### VG系列单泵进油口连接尺寸 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		58.7	30.2		F10	18	47.6	22.2	M10 Depth 15	F06								
	16	26	19	18	47.6	22.2	M10 Depth 15					F06							
	20	28											18	47.6	22.2	F06			
	VG1	25	32	58.7	30.2	M10 Depth 17	F10	20	52.4	26.2	M10 Depth 17	F08							
32		51											77.8	42.9	F16				
40			38	69.9	35.7	M12 Depth 20	F12												
50								51	77.8	42.9	F16	32				69.9	35.7	M12 Depth 20	F12
63		76	106.4	61.9	M16 Depth 25	F24	38	79.4	36.5	M16 Depth 25	F14								
50(H)	38											69.9	35.7	M12 Depth 20	F12				
63(H)	51											77.8	42.9	F16	32	69.9	35.7	M12 Depth 20	F12
80	51											77.8	42.9	M12 Depth 20	F16	32	69.9	35.7	M12 Depth 20
VG2	100	63.5	88.9	50.8	M12 Depth 20	F20	38	79.4	36.5	M16 Depth 25	F14								
	125											76	106.4	61.9	M16 Depth 25	F24			
	145	38	79.4	36.5	M16 Depth 25	F14													
	160						76	106.4	61.9	M16 Depth 25	F24	38	79.4	36.5	M16 Depth 25	F14			