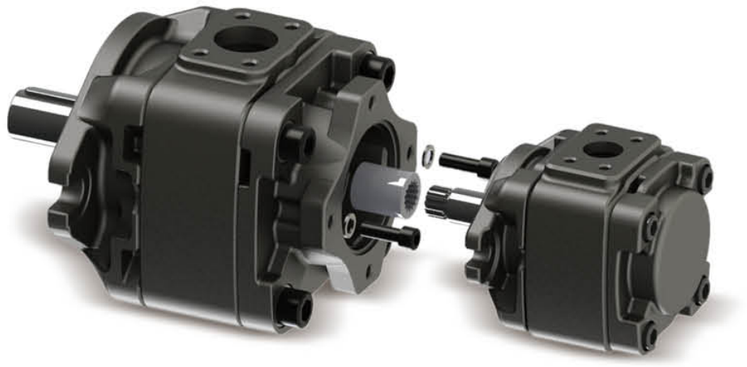
VG 系列组合泵 Series Combied Pump



组合泵简介/Introduction Combied pump

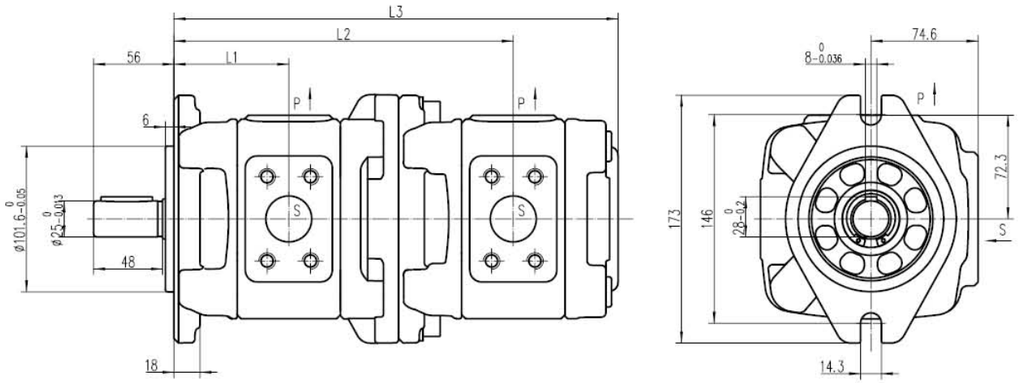
组合泵是由两个单泵串联组装而成，具有两个独立的进油口和独立的出油口，按照两个泵的系列组合，
可获得多种排量：VG11 系列、VG21 系列、VG22 系列

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 R=顺时针旋转 Right hand for clockwise L-逆时针旋转 Left hand for counter-clockwise	E= 平键轴 Straight key shaft R=SAE 花键轴 Spline shaft	W=丁腈橡胶 NBR 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				

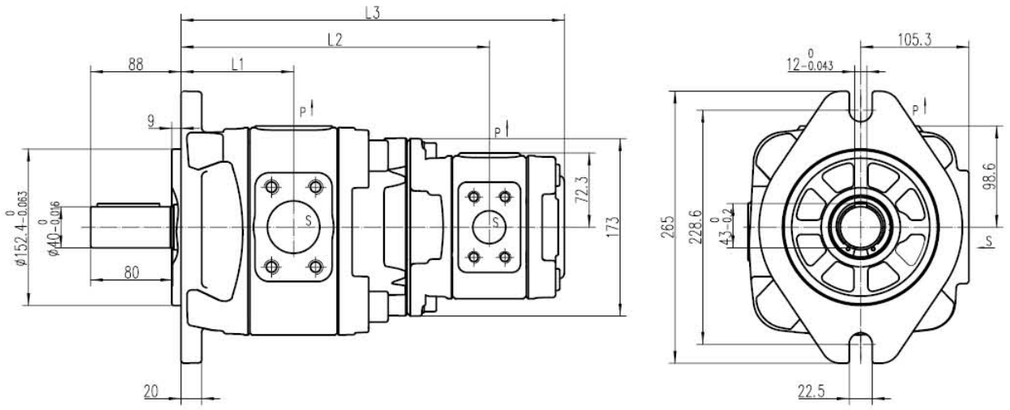
VG11安装连接尺寸/Installation Dimensions



* 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

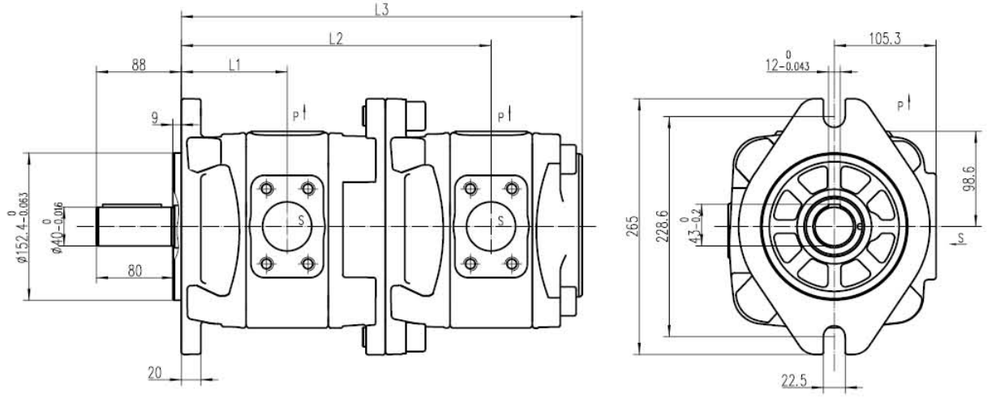
VG21安装连接尺寸/Installation Dimensions



* 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

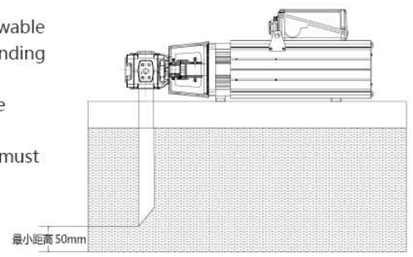
1. 油泵安装 /Oil pump installation

- 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

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

T: 扭矩 Torque（Nm）
△p: 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.