



ГИДРООТВЕТ

доступная гидравлика

8 V 系列低噪声叶片泵 V Series Vane Pumps with Lower Noise

产品简介 Products Introduction

V 系列低噪声叶片泵采用子母式叶片结构，具有结构合理、压力高、运转平稳、噪声低、脉动小、使用寿命长等特点，广泛应用于切削机械、塑料机械、皮革机械、压力机械、工程机械、冶金机械等高性能工业设备的液压系统。

V Series vane pumps with lower noise are intra vane pumps, featured by advanced performance, high pressure, stable operation, lower noise, ultra-low pulse, long life-span and so on, and are widely used in cutting, plastic, leather, pressure, engineering, metallurgical machinery fields, and the like.



型号说明 Model Code

· 单泵 Single Pump

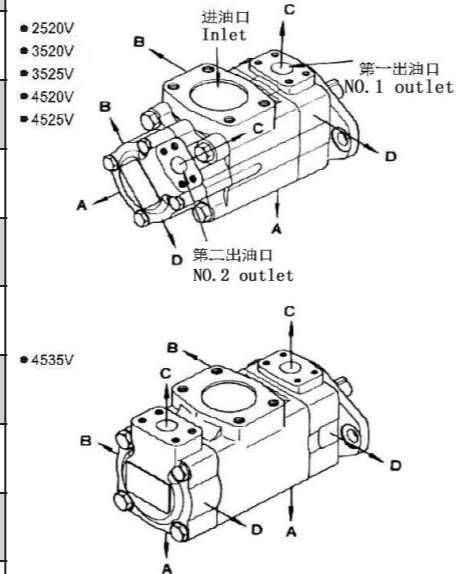
| (F3-) | 25V | 19 | A | (F) | -1 | B | L |
|--|------------------------------|-----------------------------|---|--|------------------------|---|---|
| | 系列号 Series designation | 排量代号 Displacement | 油口连接 Port connections | 安装型式 Mounting form | 轴伸形式 Form of shaft | 出油口位置 Outlet positions | 旋转方向 Rotation |
| 无要求可省略 Omit if not required F3- 氟橡胶密封 F3- Viton seals | 20V | 2,3,4,5,6,7,8,9,10,11,12,14 | A-SAE 4-螺栓连接 A-SAE 4-Bolt flange | 无标记 - 法兰安装型 Omit- Flange mounting F- 脚座安装型 F- Foot mounting | 见第 85 页 See page 85 | (从泵的盖端看) (Viewed from cover end of pump) | (从泵的轴端看) (Viewed from shaft end of pump) |
| | 25V | 10,12,14,15,17,19,21,25 | | | | A- 在进油口对面 A-Opposite inlet port | R- 顺时针旋转 (无标记) R-Clockwise (Omit) |
| | 35V | 21,25,30,32,35,38,45 | | | | B- 在进油口逆时针转 90° B-90° CCW from inlet | L- 逆时针旋转 L-Counter clockwise |
| | 45V | 42,45,50,57,60,66,75 | | | | C- 在进油口同侧 C-Inline with inlet | |
| | | | | | | D- 在进油口顺时针转 90° D-90° CW from inlet | |

· 双联泵 Double Pumps

| (F3-) | 4520V | 75 | A | 8 | (F) | -86 | CA | L |
|--|---------------------------|-----------------------------|-----------------------------|---------------------------------|---|-----------------------|---------------------------|---|
| | 系列号 Series designation | 排量代号 轴端泵 Displacement | 油口连接 Port connections | 排量代号 盖端泵 Displacement | 安装型式 Mounting form | 轴伸形式 Form of shaft | 出口位置 Outlet positions | 旋转方向 Rotation |
| 无要求可省略 Omit if not required F3- 氟橡胶密封 F3- Viton seals | 2520V | 10,12,14,15,17,19,21,25 | A- SAE 4- 螺栓连接 | 2,3,4,5,6,7,8,9,10,11,12,14 | 无标记 - 法兰安装型 Omit- Flange mounting | 见第 85 页 See page85 | 见下表 See table below | (从泵的轴端看) (Viewed from shaft end of pump) |
| | 3520V | 21,25,30,32,35,38,45 | | 2,3,4,5,6,7,8,9,10,11,12,14 | | | | F- 脚座安装型 F- Foot mounting |
| | 3525V | 21,25,30,32,35,38,45 | 10,12,14,15,17,19,21,25 | L- 逆时针旋转 L-Counter clockwise | | | | |
| | 4520V | 42,45,50,57,60,66,75 | 2,3,4,5,6,7,8,9,10,11,12,14 | | | | | |
| | 4525V | 42,45,50,57,60,66,75 | 10,12,14,15,17,19,21,25 | | | | | |
| | 4535V | 42,45,50,57,60,66,75 | 21,25,30,32,35,38,45 | | | | | |

· 出口口位置 (从泵的盖端看) Sheet of outlet positions (Viewed from cover end of pump)

| 油口位置 Port positions | 所有系列 (除 4535V 外) All series except 4535V | 4535V |
|--|--|---|
| 第一出油口 在进油口对面 No.1 outlet opposite inlet | AA 第二出油口在进油口逆时针转 135° No.2 outlet 135° CCW from inlet | 第二出油口在进油口对面 No.2 outlet opposite inlet |
| | AB 第二出油口在进油口逆时针转 45° No.2 outlet 45° CCW from inlet | 第二出油口在进油口逆时针转 90° No.2 outlet 90° CCW from inlet |
| | AC 第二出油口在进油口顺时针转 45° No.2 outlet 45° CW from inlet | 第二出油口在进油口同侧 No.2 outlet inlin with inlet |
| | AD 第二出油口在进油口顺时针转 135° No.2 outlet 135° CW from inlet | 第二出油口在进油口顺时针转 90° No.2 outlet 90° CW from inlet |
| 第一出油口 在进油口逆时针 转 90° No.1 outlet 90° CCW from inlet | BA 第二出油口在进油口逆时针转 135° No.2 outlet 135° CCW from inlet | 第二出油口在进油口对面 No.2 outlet opposite inlet |
| | BB 第二出油口在进油口逆时针转 45° No.2 outlet 45° CCW from inlet | 第二出油口在进油口逆时针转 90° No.2 outlet 90° CCW from inlet |
| | BC 第二出油口在进油口顺时针转 45° No.2 outlet 45° CW from inlet | 第二出油口在进油口同侧 No.2 outlet inlin with inlet |
| | BD 第二出油口在进油口顺时针转 135° No.2 outlet 135° CW from inlet | 第二出油口在进油口顺时针转 90° No.2 outlet 90° CW from inlet |
| 第一出油口 在进油口同侧 No.1 outlet inlin with inlet | CA 第二出油口在进油口逆时针转 135° No.2 outlet 135° CCW from inlet | 第二出油口在进油口对面 No.2 outlet opposite inlet |
| | CB 第二出油口在进油口逆时针转 45° No.2 outlet 45° CCW from inlet | 第二出油口在进油口逆时针转 90° No.2 outlet 90° CCW from inlet |
| | CC 第二出油口在进油口顺时针转 45° No.2 outlet 45° CW from inlet | 第二出油口在进油口同侧 No.2 outlet inlin with inlet |
| | CD 第二出油口在进油口顺时针转 135° No.2 outlet 135° CW from inlet | 第二出油口在进油口顺时针转 90° No.2 outlet 90° CW from inlet |
| 第一出油口 在进油口顺时针 转 90° No.1 outlet 90° CW from inlet | DA 第二出油口在进油口逆时针转 135° No.2 outlet 135° CCW from inlet | 第二出油口在进油口对面 No.2 outlet opposite inlet |
| | DB 第二出油口在进油口逆时针转 45° No.2 outlet 45° CCW from inlet | 第二出油口在进油口逆时针转 90° No.2 outlet 90° CCW from inlet |
| | DC 第二出油口在进油口顺时针转 45° No.2 outlet 45° CW from inlet | 第二出油口在进油口同侧 No.2 outlet inlin with inlet |
| | DD 第二出油口在进油口顺时针转 135° No.2 outlet 135° CW from inlet | 第二出油口在进油口顺时针转 90° No.2 outlet 90° CW from inlet |



技术参数 Technical parameters

· 单泵 Single Pump

| 子系列代号 Subsidiary Series | 排量代号 Displacement Code | 理论排量 Geometric Displacement mL/r | 抗磨液压油或磷酸酯 Using antiwear oil or Phosphate ester fluid | | 水乙二醇液 Water glycol fluid | | 油包水乳化液 Water-in-oil emulsions | | 最低转速 Min. speed r/min | 质量 Weight kg | |
|----------------------------|---------------------------|-------------------------------------|--|--------------------------|-----------------------------|--------------------------|----------------------------------|--------------------------|--------------------------|-----------------|----|
| | | | 最高压力 Max. pressure MPa | 最高转速 Max. speed r/min | 最高压力 Max. pressure MPa | 最高转速 Max. speed r/min | 最高压力 Max. pressure MPa | 最高转速 Max. speed r/min | | | |
| 20V | 2 | 7.5 | 14 | 1800 (1200) | 14 | 1500 | 7 | 1200 | 600 | 16 | |
| | 3 | 10.2 | | | | | | | | | |
| | 4 | 12.8 | | | | | | | | | |
| | 5 | 16.7 | 21 | | | | | | | | |
| | 6 | 19.2 | | | | | | | | | |
| | 7 | 22.9 | | | | | | | | | |
| | 8 | 26.2 | | | | | | | | | |
| | 9 | 28.8 | | | | | | | | | |
| | 10 | 31 | | | | | | | | | |
| | 11 | 35 | | | | | | | | | |
| | 12 | 37.9 | 16 | | | | | | | | |
| | 14 | 44.2 | | | | | | | | | |
| | 14 | 44.2 | | | 14 | | | | | | |
| | 14 | 44.2 | | | 14 | | | | | | |
| 25V | 10 | 32.5 | 17.5 | 1800 (1200) | 16 | 1500 | 7 | 1200 | 600 | 25 | |
| | 12 | 40 | | | | | | | | | |
| | 14 | 43 | | | | | | | | | |
| | 15 | 45 | | | | | | | | | |
| | 17 | 55 | | | | | | | | | |
| | 19 | 59 | | | | | | | | | |
| | 21 | 67 | | | | | | | | | |
| | 25 | 78.6 | | | | | | | | | 14 |
| 35V | 21 | 67 | 17.5 | 1800 (1200) | 16 | 1500 | 7 | 1200 | 600 | 35 | |
| | 25 | 81 | | | | | | | | | |
| | 30 | 95 | | | | | | | | | |
| | 32 | 100 | | | | | | | | | |
| | 35 | 112 | | | | | | | | | |
| | 38 | 121 | | | | | | | | | |
| | 45 | 145 | | | | | | | | | 14 |
| | 45 | 145 | | | | | | | | | 14 |
| 45V | 42 | 138 | 17.5 | 1800 (1200) | 16 | 1500 | 7 | 1200 | 600 | 59.5 | |
| | 45 | 147 | | | | | | | | | |
| | 50 | 162 | | | | | | | | | |
| | 57 | 183 | | | | | | | | | |
| | 60 | 193 | | | | | | | | | |
| | 66 | 212 | | | | | | | | | 16 |
| | 75 | 237 | | | | | | | | | 14 |
| | 75 | 237 | | | | | | | | | 14 |

注：①工作液为磷酸酯液时，最高转速见 () 值，因需要采用特殊性密封 (氟橡胶)，订货时请在指定型号前加 [F3-]；

②允许 0.5s 以内超过最高压力 10% 的瞬态 (尖峰) 压力。

Note: ① When the working fluid is phosphate ester fluid, Max. speed see () value, It uses special sealing (FPM), Prefix [F3-] to the specified model when ordering.

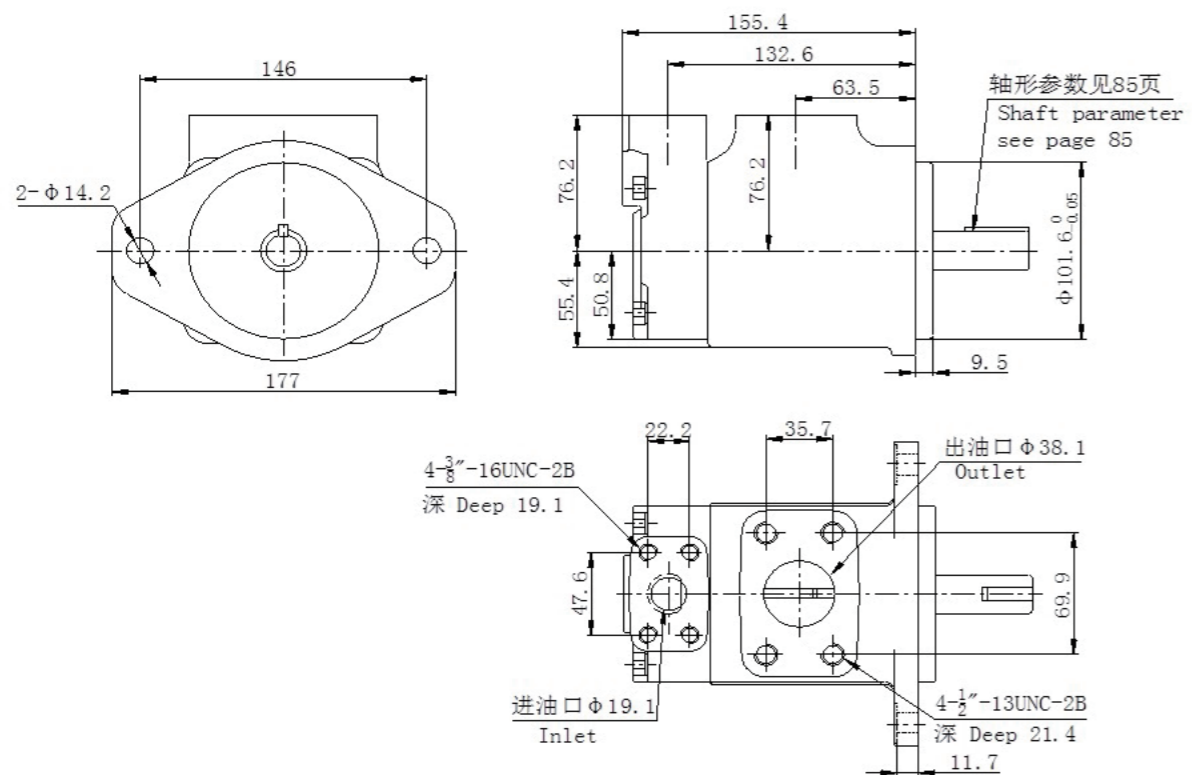
② A transient (Peak) pressure 10% over the Max. pressure rating for 0.5s is allowed.

· 双联泵 Double Pumps

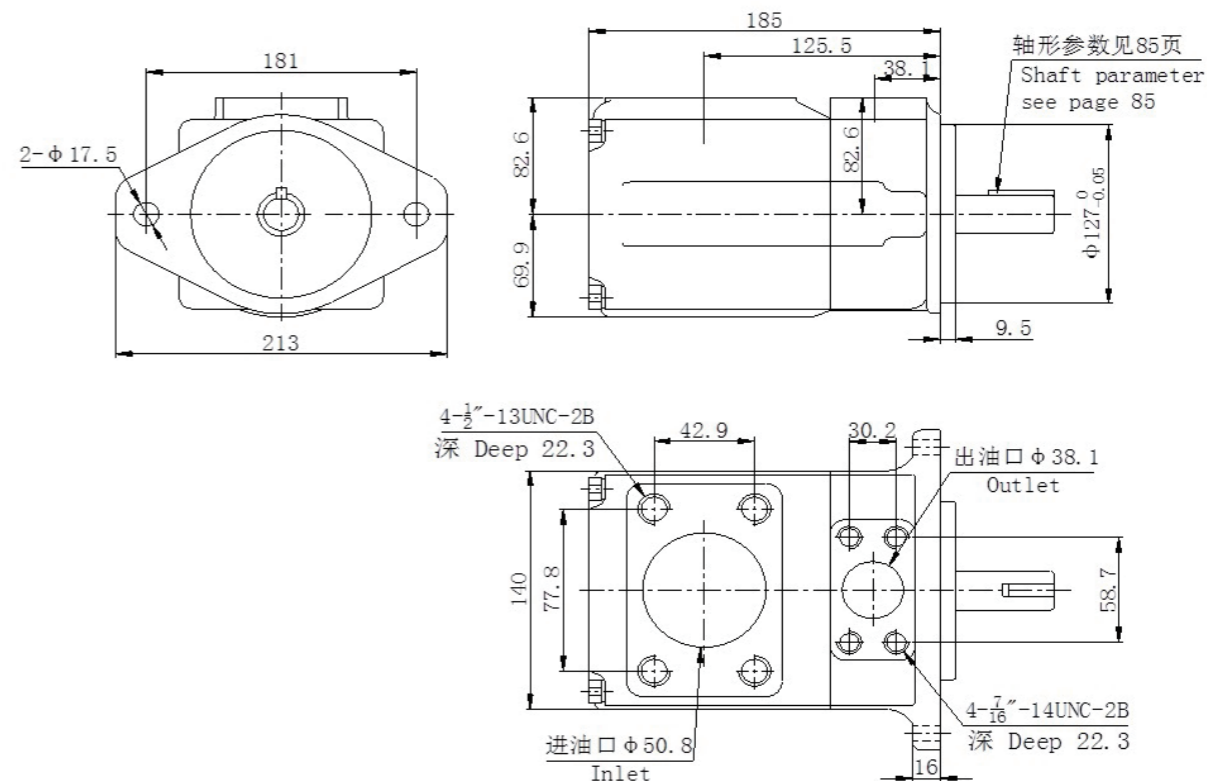
| 子系列代号 Series | 轴端泵排量代号 Displacement code of shaft end pump | 盖端泵排量代号 Displacement code of cover end pump |
|-----------------|--|--|
| 2520V | 10, 12, 14, 15, 17, 19, 21, 25 | 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14 |
| 3520V | 21, 25, 30, 32, 35, 38, 45 | 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14 |
| 3525V | 21, 25, 30, 32, 35, 38, 45 | 10, 12, 14, 15, 17, 19, 21, 25 |
| 4520V | 42, 45, 50, 57, 60, 66, 75 | 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14 |
| 4525V | 42, 45, 50, 57, 60, 66, 75 | 10, 12, 14, 15, 17, 19, 21, 25 |
| 4535V | 42, 45, 50, 57, 60, 66, 75 | 21, 25, 30, 32, 35, 38, 45 |

安装联接尺寸 Install Connection Dimensions

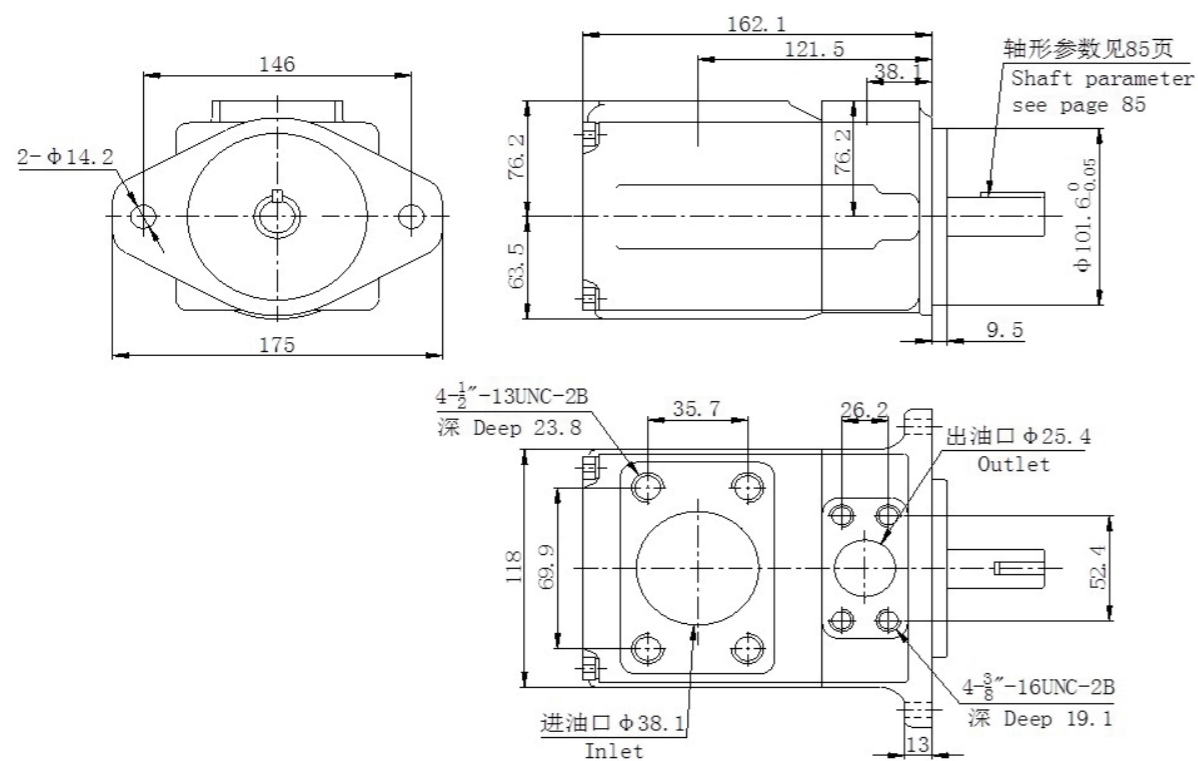
• 单 泵 Single Pump
• 20V



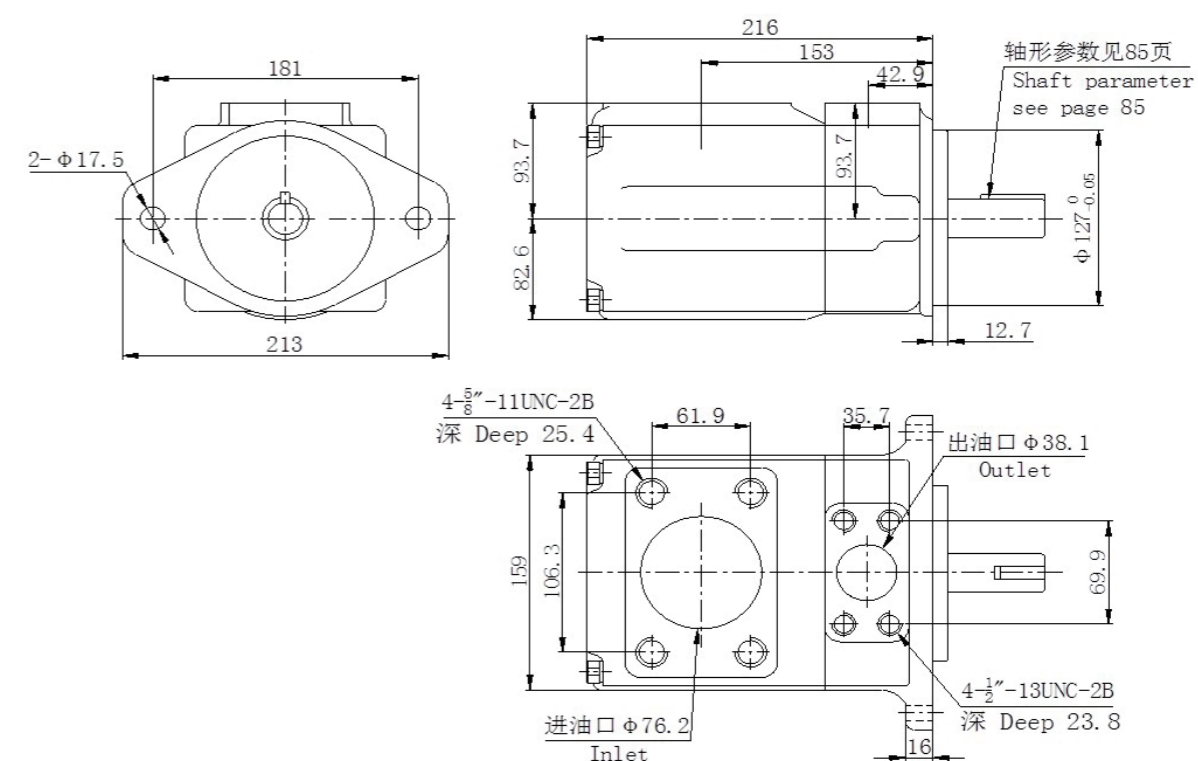
• 35V



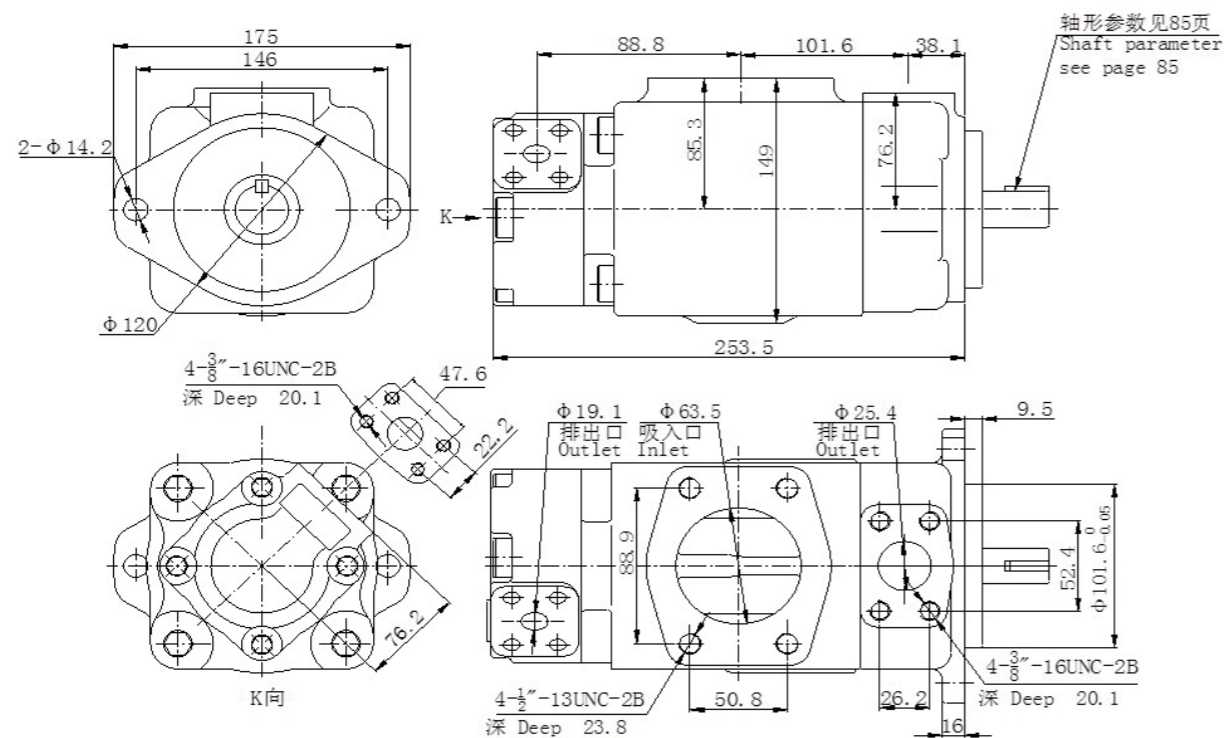
• 25V



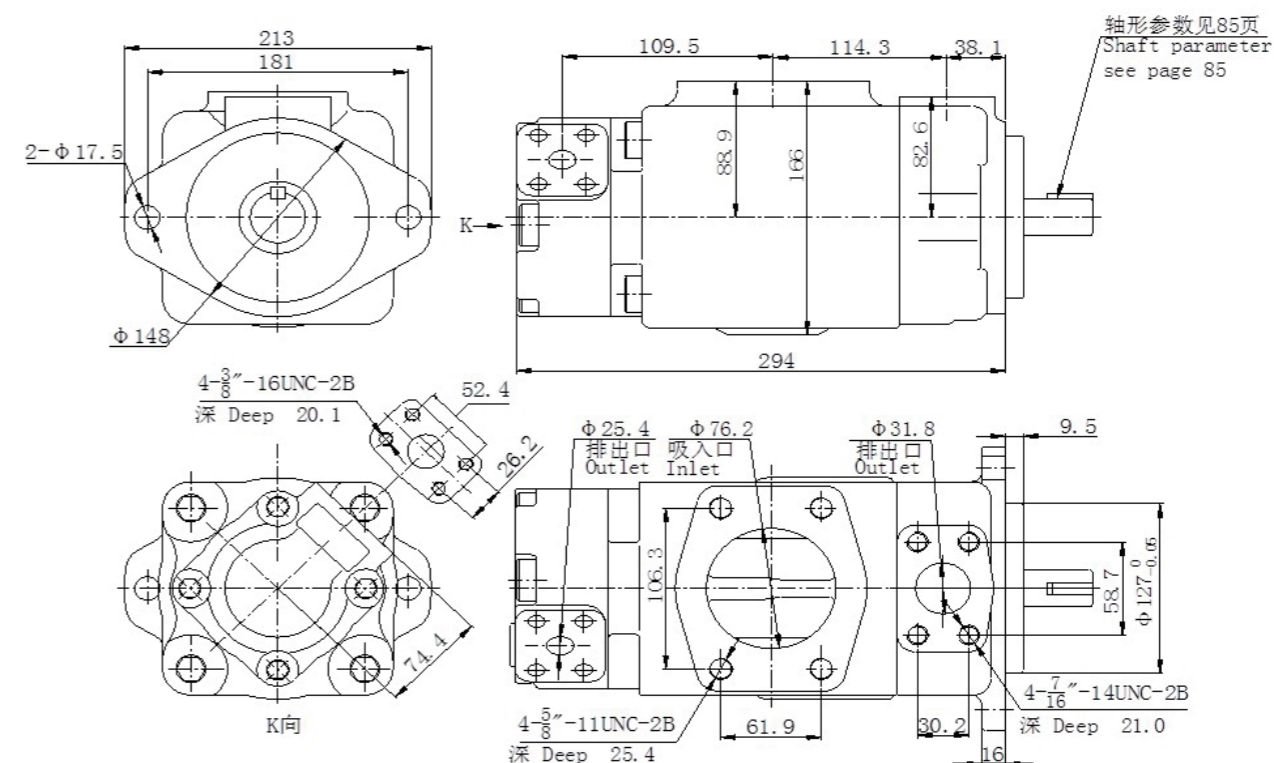
• 45V



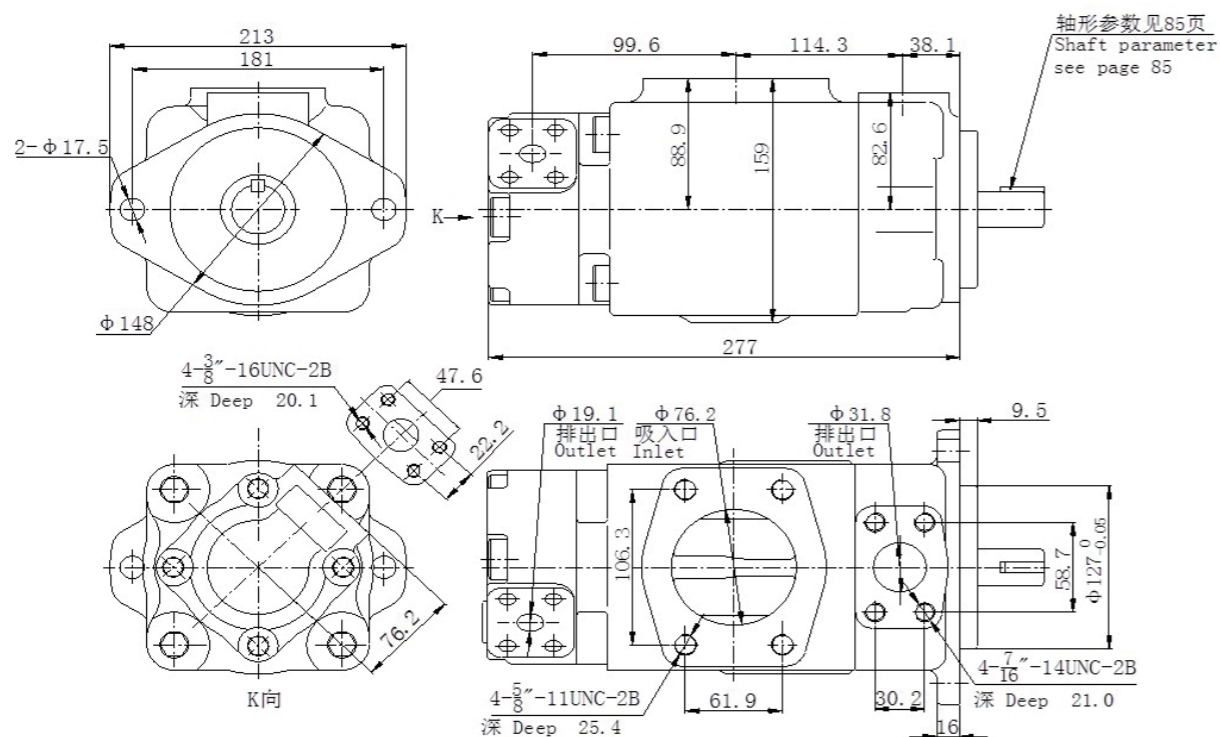
• 双联泵 Double Pumps
• 2520V



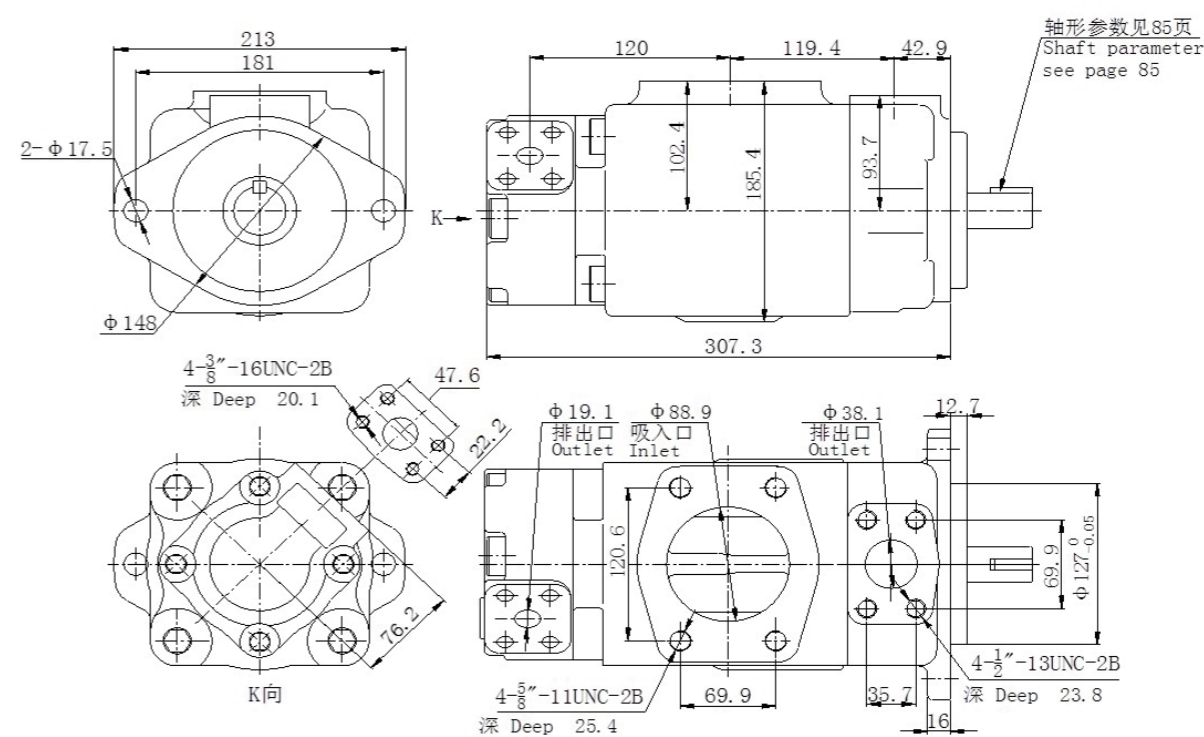
• 3525V



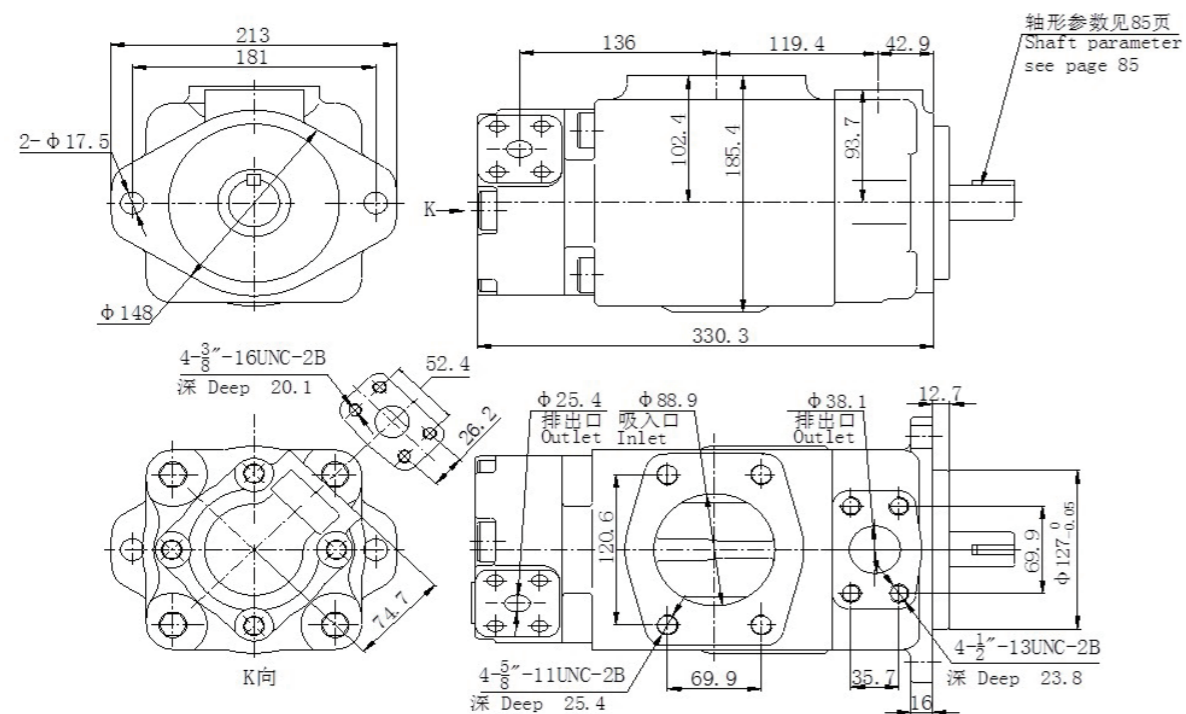
• 3520V



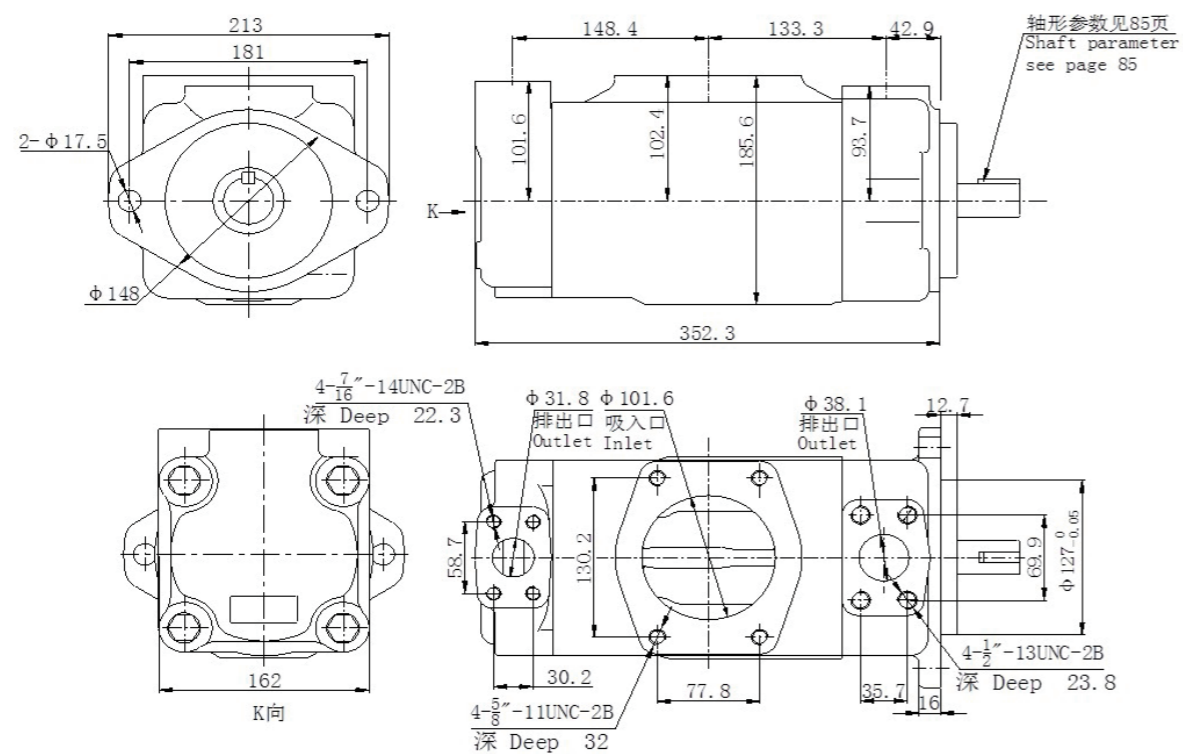
• 4520V



• 4525V

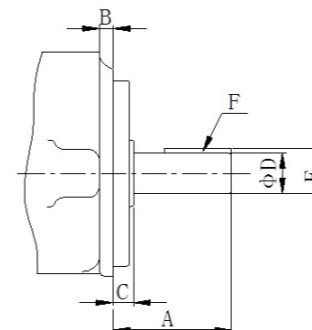


• 4535V

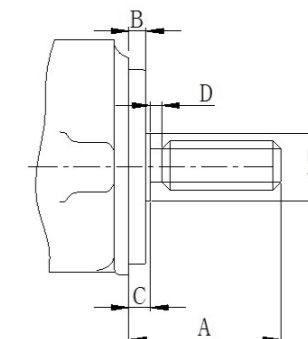


轴伸形式 Form of shaft

• 平键直轴 Str. Key shaft



• 花键轴 Spline shaft



• 平键直轴 Str. Key shaft

| 型号 Model | 轴伸代号 Cold of shaft | A | B | C | D | E | F 键 Key 宽 × 长 width × Length |
|--------------------------|-----------------------|------|------|------|--------------|-------------|------------------------------------|
| 20V | 1 | 59 | 9.5 | 12.0 | 22.225/22.20 | 24.5/24.35 | 4.75×32 |
| 25V 2520V | 1 | 59 | 9.5 | 11.0 | 22.225/22.20 | 24.5/24.35 | 4.75×32 |
| | 2 | 73.2 | 9.5 | 11.0 | 27/26.975 | 30.45/30.32 | 7.94×40 |
| 35V 3520V 3525V | 86 | 78 | 9.5 | 11.0 | 25.4/25.37 | 28.3/28.2 | 6.35×50.8 |
| | 1 | 73.2 | 9.5 | 11.1 | 31.75/31.72 | 35.25/35.10 | 7.94×40 |
| 45V 4520V 4525V 4535V | 86 | 86.4 | 9.5 | 11.1 | 34.90/34.87 | 38.4/38.15 | 7.94×54 |
| | 1 | 62 | 12.7 | 14.2 | 31.75/31.70 | 35.25/35.10 | 7.94×28.5 |
| | 86 | 87.4 | 12.7 | 14.2 | 38.075/38.05 | 42.4/42.25 | 9.54×50.8 |

• 花键轴 Spline shaft

| 型号 Model | 轴伸代号 Cold of shaft | A | B | C | D | E | 花键数据 Spline Data | | | | |
|--------------------------|-----------------------|------|------|------|------|------|-----------------------|-------------|----------------------|----------------------|-----------------------------|
| | | | | | | | 齿数 Number of Teeth | 径节 Pitch | 大径 Major Diameter | 小径 Minor Diameter | 平齿根 配合 Flast root fit |
| 20V | 151 | 41.1 | 9.5 | 11.1 | 3.9 | 27.8 | 13 | 16/32 | 22.17/22.15 | 18.63/18.35 | 大径配合 Large diameter fit |
| 25V 2520V | 11 | 44.5 | 9.5 | 11.1 | 3.9 | 27.8 | 13 | 16/32 | 22.17/22.15 | 18.63/18.35 | |
| 35V 3520V 3525V | 11 | 58.7 | 9.5 | 11.1 | 6.35 | 35.1 | 14 | 12/24 | 31.7/31.67 | 26.99/26.64 | |
| 45V 4520V 4525V 4535V | 11 | 61.9 | 12.7 | 14.3 | 9.7 | 39.6 | 14 | 12/24 | 31.7/31.67 | 26.99/26.64 | |

安装使用

1. 安装时，泵轴与驱动电机轴同轴度误差 $<0.10\text{mm}$ （百分表总读数差），最大允许角度误差 $<0.2^\circ$ ，并采用柔性联轴器，泵轴不得承受径向及轴向负载；支座结构要牢固，刚性好，能充分吸收振动。
2. 按油口尺寸配接管路，特别是进油管（进油管流速控制在 $0.5\sim 1.5\text{m/s}$ 之间），并在系统中安装安全溢流阀；安全阀调节压力不应大于泵的最高使用压力；进油管路要严格密封，不得漏气；油箱应设有隔板，用来分隔回油带来的气泡与脏物；回油管口应低于液面，浸入油液的最小深度为 50mm ，即使在较低的允许液面高度时也是如此，以避免形成泡沫。
3. 泵吸入口处的吸入压力：对石油系液压油为 $+35\sim -16.7\text{KPa}$ ；而对水 - 乙二醇及磷酸酯系液压油为 $+35\sim -10.1\text{KPa}$ 。
4. 泵安装高于油箱液面时，推荐吸入口离油液液面高度小于 500mm 。
5. 保持油液清洁，管路和油箱必须彻底洗净；系统中应安装精过滤器，建议为 $25\mu\text{m}$ ，油液精度等级应在 NSA12 级以内；同时，应在泵吸入口端安装足够容量的滤油器（其额定通流量应大于泵流量的两倍），建议精度为 $100\mu\text{m}$ （150 目），滤油器距油箱底部应大于 50mm 。
6. 液压油的选用：推荐使用 40°C 时粘度等级为 $32\sim 68\text{cSt}$ 抗磨液压油或带有字母标记 SC、SD、SE 或 SF 的汽车曲轴箱油，额定转速和压力下的推荐粘度、温度：

| | |
|-----------------------|-----------------------|
| 最低 13cSt | 最高 54cSt |
| 最低 49°C | 最高 65°C |
7. 泵启动前，应查对进油口、旋转方向是否正确；整泵安装好后用手转动泵轴，应均匀、灵活。在第一次运转或长期停机后再启动时，泵可能吸油困难，为此，应首先在输出口端安装排气阀，或稍松开输出端的接头以排出空气，并尽可能地空载情况下对泵进行点动式启动。
8. 当出油口压力低于进油口压力时不要启动泵，这将引起工作噪声和叶片不稳定。
9. 冷启动工况：当使用 SAE10W 油在 $860\sim 54\text{cSt}$ 范围内工作时，转速和压力应限制在它们各自额定的 50% 以内，直到系统热起来，油液粘度超过 860cSt 启动时要特别注意，要使整个系统包括远处的油缸和马达热起来。
10. 在高温运行时，粘度不得低于 13cSt ，温度不得超过 99°C ，因为泵芯组件和密封件的期望寿命将缩短。

Installation and Use

1. In installation, the tolerance of concentricity between shaft of pump and motor must be less than 0.10mm (TIR) and the maximum permissible angle error is less than 0.2 degrees by using the flexible coupling; The pump shaft shall not bear the radial and axial load; The carrier must be firm with good rigidity and can fully absorb vibrations.
2. Fix pipes, especially inlet pipes in accordance with the size of port and assemble safety relief valves in the system(the inlet flow rate is between 0.5 and 1.5m/s). The regulating pressure of the safety valve shall not be greater than the maximum pressure of the pump; Inlet pipes must be strictly sealed with no leakage; Inlet pipes must be strictly sealed with no leakage; The fuel tank shall be equipped with a diaphragm to separate the bubbles and dirt from the oil; The oil return nozzle should be lower the fluid surface, the minimum depth of 50mm , even in a low, too, when the permissible level of to avoid the formation of bubbles.
3. Set the suction pressure at pump inlet port : Oil hydraulic oil is $+35\sim -16.7\text{KPa}$. The hydraulic oil of water - glycol and phosphate ester was $+35\sim -10.1\text{KPa}$.
4. In case where the pump is installed on the tank or at the position higher than the tank top cover, the height of the suction port of the pump should be less than 500mm .
5. Oil should be kept clean, pipes and tanks must be thoroughly cleaned; Precise filters should be assembled with the advised precision of $25\mu\text{m}$ in the system, the cleanness level of oil should be within NSA12. Fix the sufficient-volume filter (the rated flow rate should be greater than twice the pump flow)at the inlet of the pump 50mm above the bottom of the tank, with the suggested precision of $100\mu\text{m}$ (150 mesh).
6. It is recommended to use antiwear industrial hydraulic oils or automotive crankcase oils having letter designations SC,SD,SE or SF with viscosity grades of 32 to 68cSt at 40°C ; Preferred viscosity at rated speed and pressures:

| | |
|-------------------------|-------------------------|
| Min. 13cSt | Max. 54cSt |
| Min. 49°C | Max. 65°C |
7. Check the inlet, outlet and direction of rotation before starting the pump. Turn the shaft of pump evenly and nimbly by hand after fixing the pump. It is best to fill the pump with oil for the first time. At an initial operation or at an operation after a long rest, the pump may have difficulty in sucking up fluid; In such cases, an air bleed valve should be installed beforehand on the discharge side or discharge air by slightly slackening the connection on the discharge side. At starting, operate the pump intermittently as far as possible with no load.
8. Do not start the pump when the outlet pressure is lower than the inlet pressure. This will cause work noise and blade instability.
9. Cold start condition : When operating SAE10W oil in the 860 to 54cSt range, the speed and pressure should be limited to 50% or less of their respective rated values until the system has warmed up. Extreme caution must be used when starting units when fluid viscosity are greater than 860cSt , Care should be exercised to warm up the entire system, including remote cylinders and motors.
10. At high temperature, viscosities must not be less than 13cSt , Temperatures should not exceed 99°C because the expectancy of cartridge kite and elastomers will decrease.

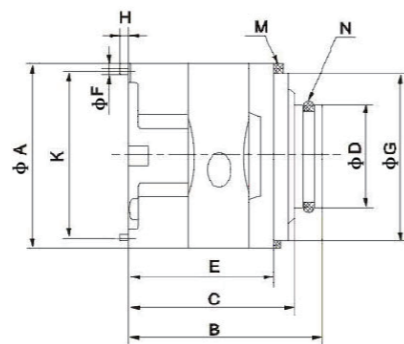
V 系列泵芯

V Series Cartridge Kits

型号说明 Model Code

| (F3-) | PC- | 25V | -19 | L |
|---|---|---------------------------|---------------------------------|--|
| | 泵芯标记 Cartridge Kits Mark | 系列号 Series designation | 排量代号 Displacement | 旋转方向 Rotation |
| 无要求可省略 Omit if not required F3- 氟橡胶密封 F3-Viton seals | PC—单泵泵芯或双联泵轴端泵芯 PC—Single pump cartridge kits or double pump shaft end pump cartridge kits | 20V | 2,3,4,5,6,7,8, 9,10,11,12,14 | (从泵的轴端看) (Viewed from shaft end of pump) R- 顺时针旋转 (无标记) R-Clockwise (Omit) L- 逆时针旋转 L-Counter clockwise |
| | | 25V | 10,12,14,15,17, 19,21,25 | |
| | 35V | 21,25,30,32,35,338,45 | | |
| | 45V | 42,45,50,57,60,666,75 | | |
| | PCT—双联泵盖端泵芯 PCT—Double pump cover end pump cartridge kits | | | |

外型尺寸 Installation Dimensions



| 系列号 Series | A | B | C | D | E | F | G | H | K | M (档圈 Gasket) | N (O 形圈 O-Ring) |
|---------------|-------|-------|-------|------|-------|------|------|-----|--------|--------------------|----------------------|
| 20V | 82.5 | 82 | 70.8 | 47.2 | 61.8 | 4.75 | 76.2 | 6 | 73.8 | 82.76×76.26×3.5 | 40×3.55 |
| 25V | 96.8 | 98.5 | 87.2 | 52.2 | 71.6 | 4.75 | 90.5 | 5 | 88.19 | 97×91×3.5 | 43.7×3.55 |
| 35V | 114.3 | 117.7 | 105 | 72.2 | 90.3 | 6.35 | 108 | 6.3 | 103.94 | 144.5×108.5×3.5 | 63.09×3.53 |
| 45V | 133.3 | 141 | 129.6 | 80.2 | 106.1 | 6.35 | 127 | 10 | 124 | 133.6×127.6×3.5 | 73×3.55 |

| 系列号 Series | 转子内花键参数 Internal spline parameter of rotor | | | | |
|---------------|--|-----------------------|-----------------------|----------------------|----------------------|
| | 齿节 Spline Pitch | 齿数 Number of teech | 压力角 Pressure angle | 大径 Major diameter | 小径 Minor diameter |
| 20V | 48/96 | 30 | 45° | 16.617 | 15.56 |
| 25V | 48/96 | 40 | 45° | 21.9 | 20.86 |
| 35V | 40/80 | 37 | 45° | 24.38 | 23.10 |
| 45V | 12/24 | 14 | 30° | 32.59 | 27.60 |