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VQ 系列高速高压叶片泵

VQ Series Vane Pumps with High Speed and High Pressure

产品简介 Products Introduction

VQ 系列是专为工程机械开发的高压高性能子母叶片泵，适用于工程机械，尤其是行走机械。功能特点：

1. 结构设计为子母叶片，最大程度降低了叶片对定子的高压冲击，在中 高压和高转速下，性能更稳定，寿命更长。
2. 采用浮动侧板，自动补偿间隙，达到压力平衡，实现高转速，高压，最高达到 21MPa。
3. 侧板采用双金属挠性材料，提高抗咬合性能，排量齐全，插装式结构的泵芯，高精度的零部件，使用灵活，维修方便。

VQ Series vane pumps with high performance and high pressure which designed for construction machinery especially for mobile machinery. Features:

1. Designed by intra-vane structure, reduce the vane pressure to rotor, makes stable performance and longer life in high speed and pressure.
2. To adopt floating structure for side plate, will do a compensation for end-face clearance by automatic, makes high speed and high pressure which can up to 21MPa.
3. The plate is made of dual-metal material, improved the seizure resistance. Complete displacement, composite structure and high precise spare parts allows convenient maintenance.



型号说明 Model Code

· 单泵 Single Pump

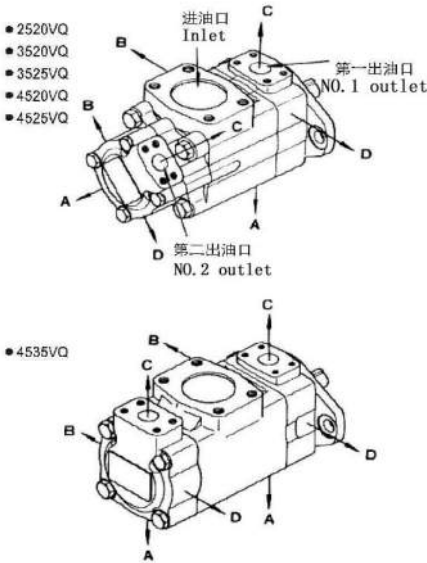
(F3-)	25VQ	19	A	(F)	-1	B	L
	系列号 Series designation	排量代号 Displacement	油口连接 Port connections	安装型式 Mounting form	轴伸形式 Form of shaft	出口口位置 Outlet positions	旋转方向 Rotation
无要求可 省略 Omit if not required	20VQ	2,3,4,5,6,7,8,9, 10,11,12,14	A-SAE 4- 螺栓连接 A-SAE 4-Bolt flange	无标记 - 法兰安装型 Omit- Flange mounting F- 脚座安装型 F- Foot mounting	见第 97 页 See page 97	(从泵的盖端看) (Viewed from cover end of pump)	(从泵的轴端看) (Viewed from shaft end of pump)
	25VQ	10,12,14,15,17, 19,21,25				A- 在进油口对面 A-Opposite inlet port	
	35VQ	21,25,30,32,35, 38,45				B- 在进油口逆时 针转 90° B-90° CCW from inlet	
	45VQ	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	
F3- 氟橡胶密封 F3- Viton seals							

• 双联泵 Double Pumps

(F3-)	4520VQ	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 Displacemen	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	2520VQ	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 97 页 See page97	见下表 See table below	(从泵的轴端看) (Viewed from shaft end of pump)		
	3520VQ	21,25,30,32, 35,38,45		2,3,4,5,6,7,8,9, 10,11,12,14				R- 顺时针旋转 (无标记) R-Clockwise (Omit)		
	3525VQ	21,25,30,32, 35,38,45		10,12,14,15, 17,19,21,25						
	4520VQ	42,45,50,57, 60,66,75	A-SAE 4-Bolt flange	2,3,4,5,6,7,8,9, 10,11,12,14	F- 脚座安装型 F- Foot mounting			L- 逆时针旋转 L-Counter clockwise		
	4525VQ	42,45,50,57, 60,66,75		10,12,14,15, 17,19,21,25						
	4535VQ	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 4535VQ 外） All series except 4535VQ	4535VQ
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

型号 Model	排量代号 Displacement Code	理论排量 Geometric Displacement mL/r	抗磨液压油 antiwear oil		质量 Weight kg
			最高压力 Max. pressure MPa	最高转速 Max. speed r/min	
20VQ	2	7.5	21	2700	12
	3	10.2			
	4	12.8			
	5	16.7			
	6	19.2			
	7	22.9			
	8	26.2			
	9	28.8			
	10	31			
	11	35			
	12	37.9	16		
	14	44.2	14		
25VQ	10	32.5	21	2700	14.8
	12	38.3		2500	
	14	43.3			
	15	47.3			
	17	52.5			
	19	60			
	21	65			
	25	78.6	14		
35VQ	21	64	21	2500	22.7
	25	79.2		2400	
	30	95			
	32	101			
	35	109			
	38	118			
	45	142	14		
45VQ	42	134	17.5	2400	34
	45	142		2200	
	50	156			
	57	180			
	60	189			
	66	208			
	75	237	14		

注：①性能常数：SAE 10W 油液 @82℃，泵进口 @0 PSIG（14.7PSIA）；
②出口压力必须始终高于进口压力。

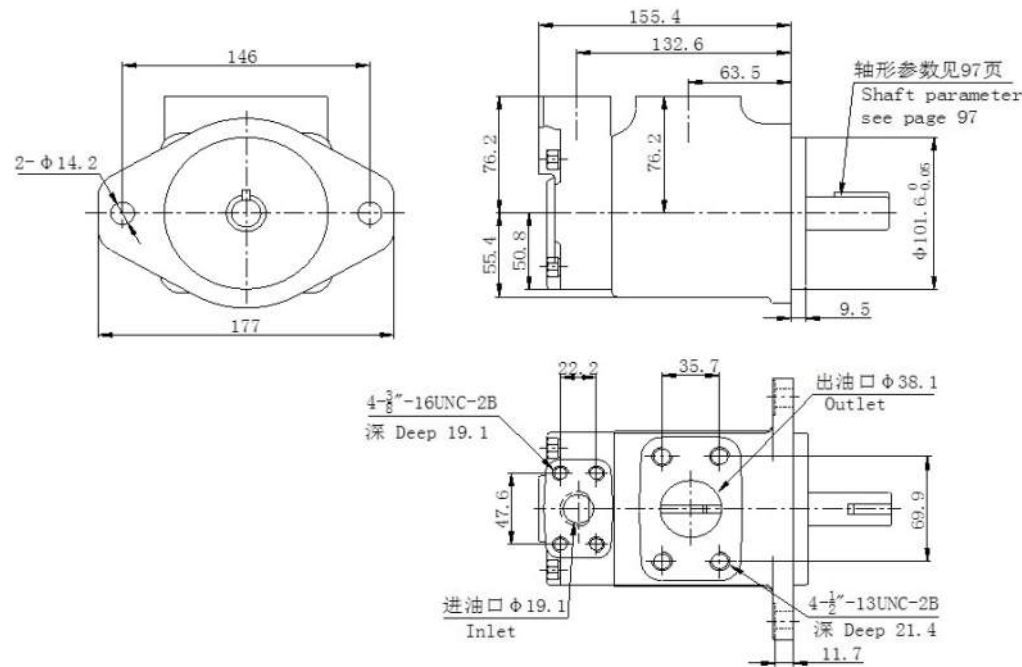
Note: ① Performance constants: SAE 10W fluid @82℃, and pump inlet @0PSIG（14.7PSIA）.
② The outlet pressure must always be higher than the inlet pressure.

• 双联泵 Double Pumps

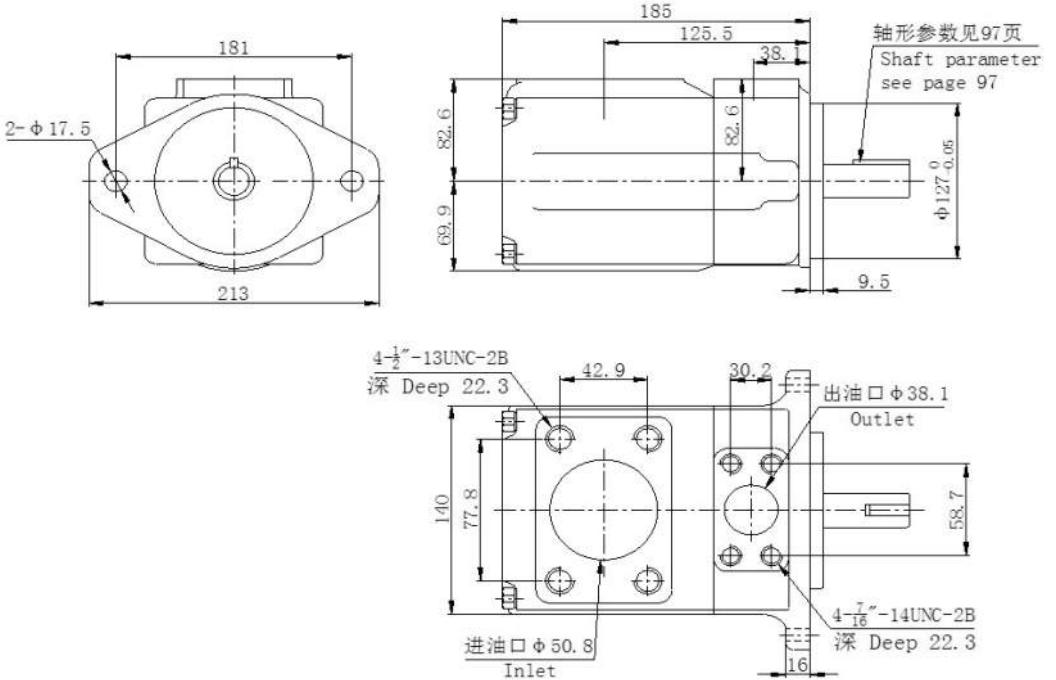
子系列代号 Series	轴端泵排量代号 Displacement code of shaft end pump	盖端泵排量代号 Displacement code of cover end pump
2520VQ	10、12、14、15、17、19、21、25	2、3、4、5、6、7、8、9、10、11、12、14
3520VQ	21、25、30、32、35、38、45	2、3、4、5、6、7、8、9、10、11、12、14
3525VQ	21、25、30、32、35、38、45	10、12、14、15、17、19、21、25
4520VQ	42、45、50、57、60、66、75	2、3、4、5、6、7、8、9、10、11、12、14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

安装联接尺寸 Install Connection Dimensions

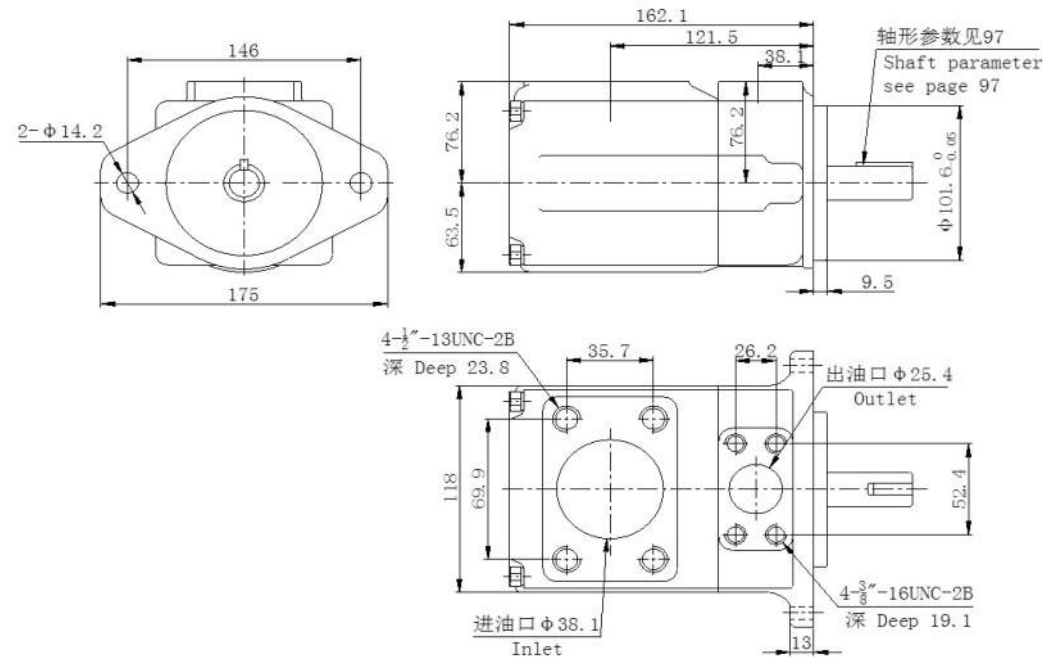
- 单 泵 Single Pump
- 20VQ



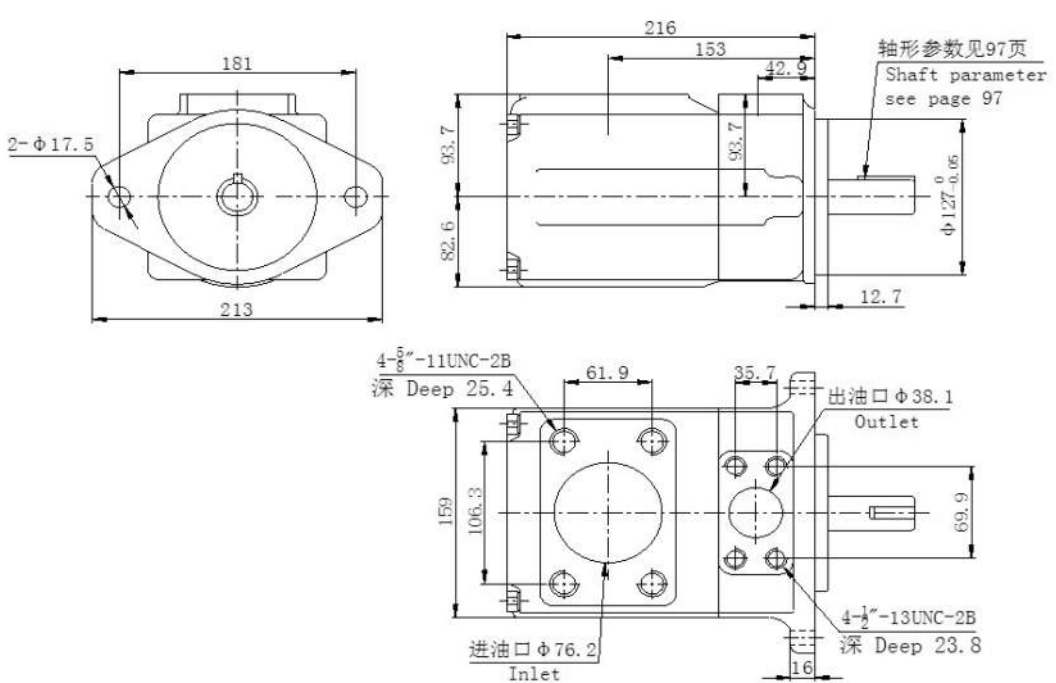
- 35VQ



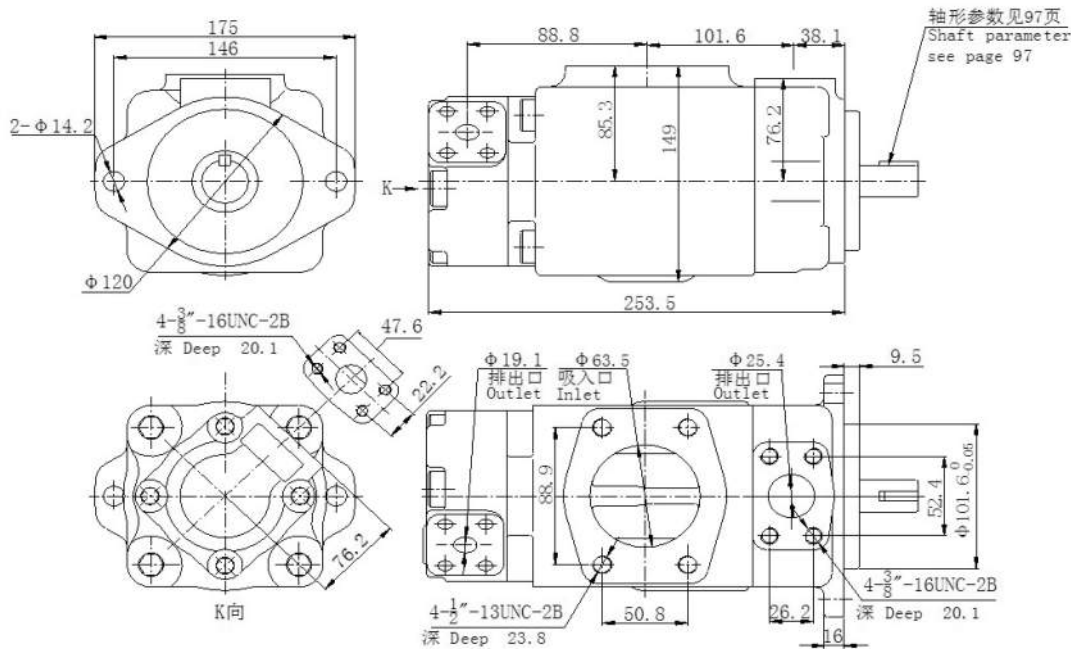
- 25VQ



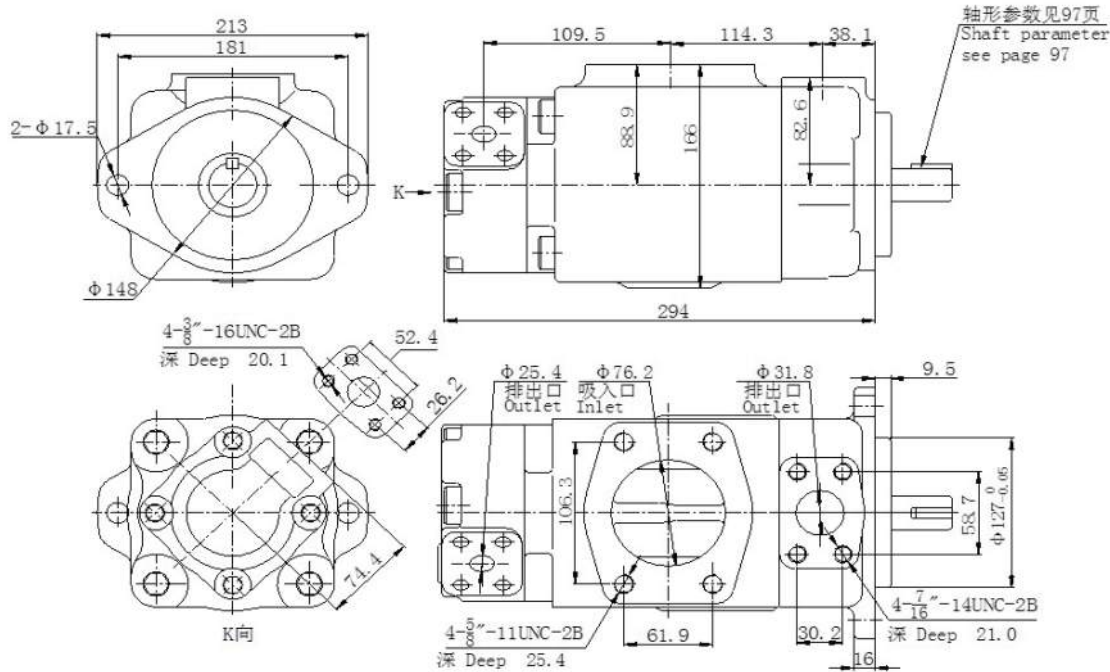
- 45VQ



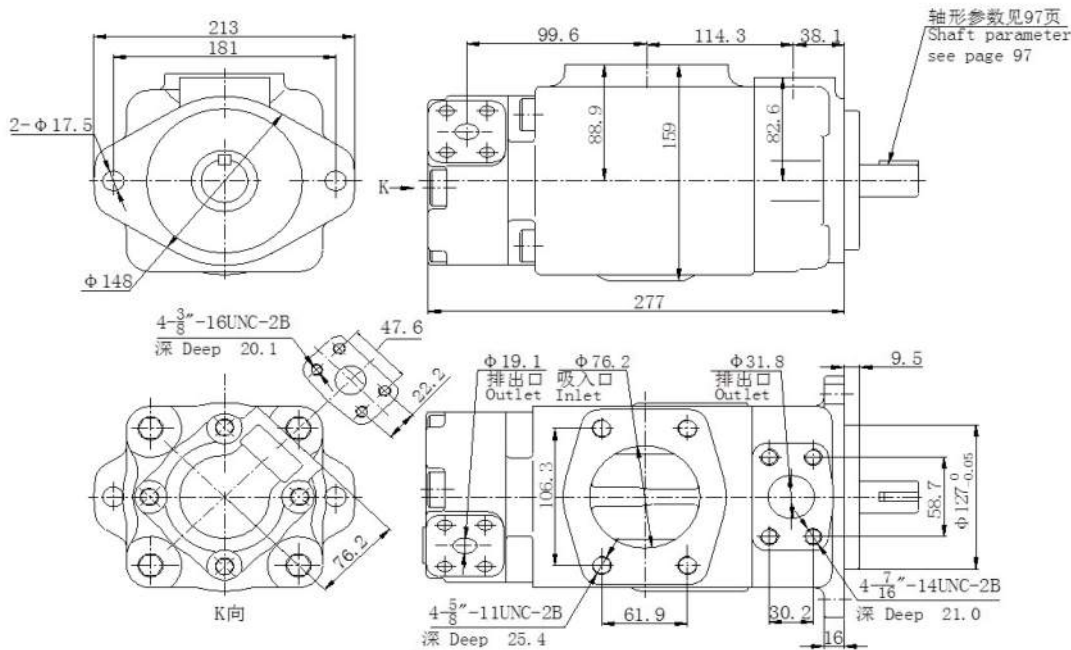
• 双联泵 Double Pumps
• 2520VQ



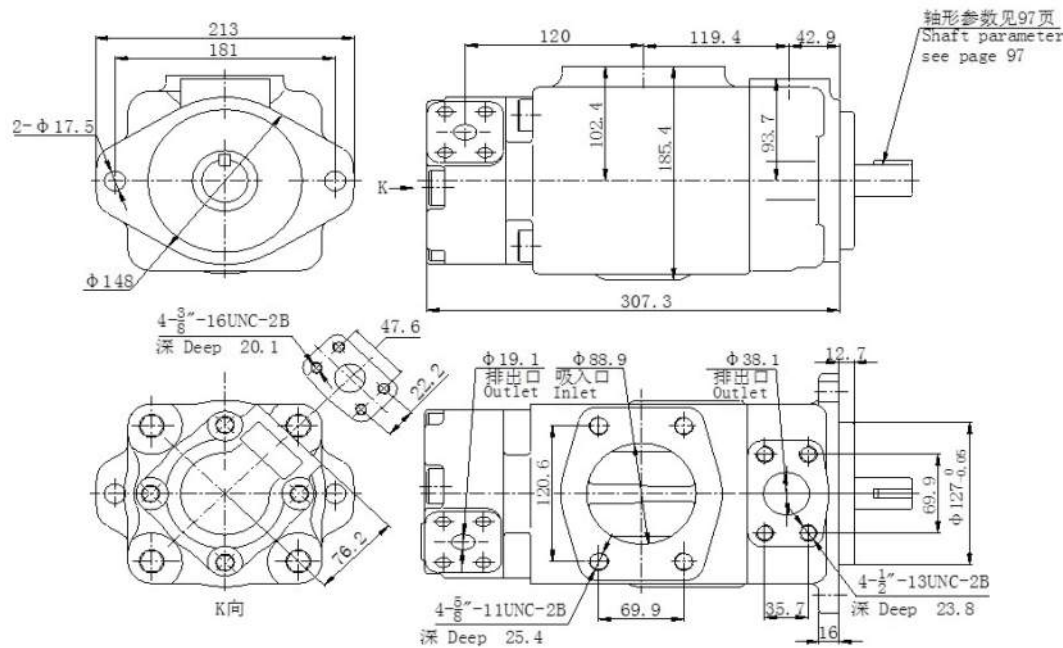
• 3525VQ



• 3520VQ



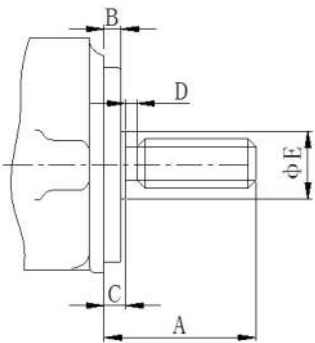
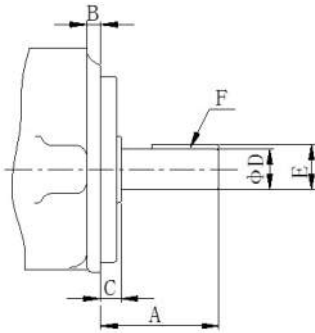
• 4520VQ



轴伸形式 Form of shaft

· 平键直轴 Str. Key shaft

· 花键轴 Spline shaft



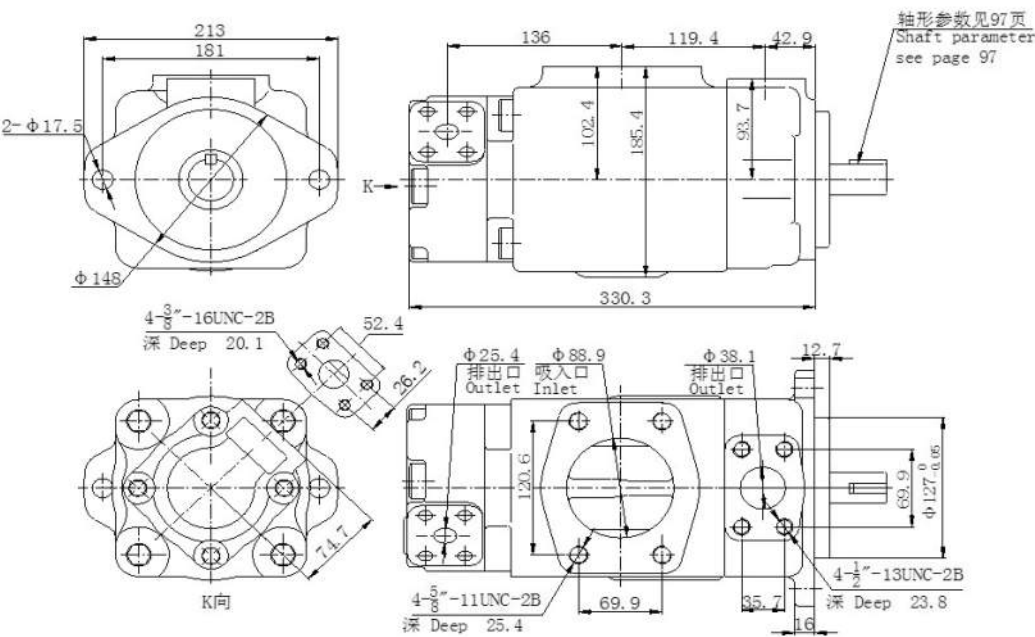
· 平键直轴 Str. Key shaft

型号 Model	轴伸代号 Cold of shaft	A	B	C	D	E	F 键 Key 宽 × 长 width × Length
20VQ	1	59	9.5	12.0	22.225/22.20	24.5/24.35	4.75×32
25VQ 2520VQ	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
35VQ 3520VQ 3525VQ	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
45VQ 4520VQ 4525VQ 4535VQ	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

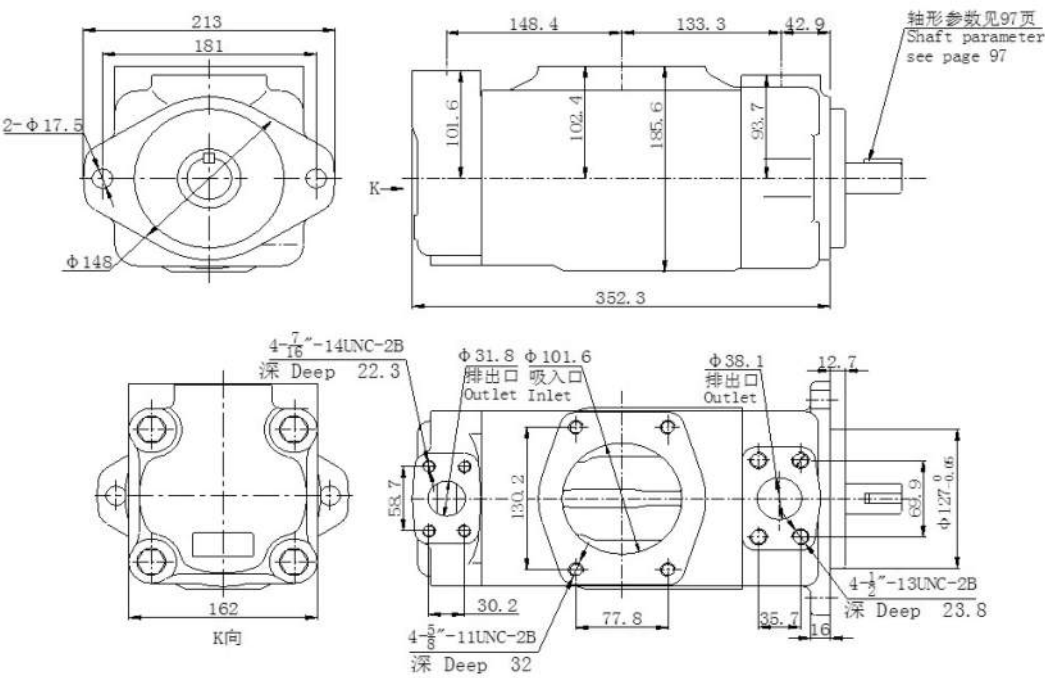
· 花键轴 Spline shaft

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
20VQ	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
25VQ 2520VQ	11	44.5	9.5	11.1	3.9	27.8	13	16/32	22.17/22.15	18.63/18.35	
35VQ 3520VQ 3525VQ	11	58.7	9.5	11.1	6.35	35.1	14	12/24	31.7/31.67	26.99/26.64	
45VQ 4520VQ 4525VQ 4535VQ	11	61.9	12.7	14.3	9.7	39.6	14	12/24	31.7/31.67	26.99/26.64	

· 4525VQ



· 4535VQ



Installation and Use

1. In installation, the tolerance of concentricity between shaft of pump and motor must be less than 0.10mm (TIR) 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. Set the suction pressure at pump inlet port : Recommended inlet pressure is 0 to +35Kpa.
3. Oil should be kept clean, pipes and tanks must be thoroughly cleaned; The cleanness level of oil should be within NSA12.
4. Nomal pump operation (at rated conditions)is based on the use of SAE10W oil in the 38°C to 82°C range (or comparable viscosities)
5. 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. At the time of first-starting, if the pump does not immediately prime , air should be bled from the pump delivery line .
6. When first put into use, the pump body and oil suction pipeline should be filled with oil, and the pump shall not be allowed to operate without oil.
7. Do not start the pump when the outlet pressure is lower than the inlet pressure. This will cause work noise and blade instability.
8. Cold start condition : When operating SAE10W oil in the 860 to 40cSt 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.
9. 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.

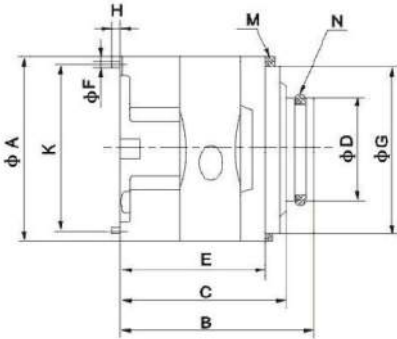
VQ 系列泵芯

VQ Series Cartridge Kits

型号说明 Model Code

(F3-)	PC-	25VQ	-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 PCT—双联泵盖端泵芯 PCT—Double pump cover end pump cartridge kits	20VQ	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
		25VQ	10,12,14,15,17, 19,21,25	
		35VQ	21,25,30,32,35,38,45	
		45VQ	42,45,50,57,60,66,75	

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)
20VQ	82.5	82.2	71	47.2	62	4.75	76.2	6	73.8	82.76×76.26×3.5	40×3.55
25VQ	96.8	99.2	87.2	52.2	72.2	4.75	90.5	6	88.19	97×91×3.5	43.7×3.55
35VQ	114.3	117.7	104.7	72.2	90.3	6.35	108	6	103.94	144.5×108.5×3.5	63.09×3.53
45VQ	133.3	141	129.4	80.2	105.4	6.35	127	11	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
20VQ	48/96	30	45°	16.617	15.56
25VQ	48/96	40	45°	21.9	20.86
35VQ	40/80	37	45°	24.38	23.10
45VQ	12/24	14	30°	32.59	27.60