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SQP 系列低噪声叶片泵

SQP Series Vane Pumps with Lower Noise

产品简介 Products Introduction

该产品采用子母式叶片结构，具有压力高、噪声低、运转平稳、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、工程机械等领域。

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



型号说明 Model Code

· 单泵 Single Pump

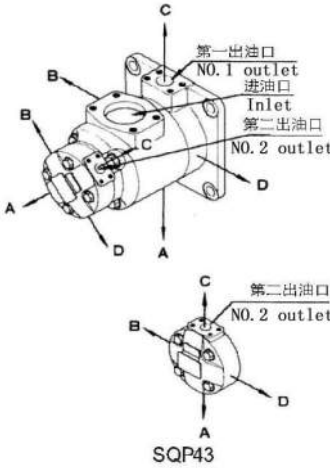
(F3-)	SQP2	-19	-1	A	(F)	-L
	系列号 Series designation	排量代号 Displacement	轴伸形式 Form of shaft	出油口位置 Outlet positions	安装型式 Mounting form	旋转方向 Rotation
无要求可省略 Omit if not required F3- 氟橡胶密封 F3- Viton seals	SQP1	2,3,4,5,6, 7,8,9,10,11, 12,14	见第 72~73 页 See page 72~23	(从泵的盖端看) (Viewed from cover end of pump)	无标记 - 法兰安装型 Omit- Flange mounting F- 脚座安装型 F- Foot mounting	(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
	SQP2	10,12,14,15, 17,19,21,25		A- 在进油口对面 A-Opposite inlet port		
	SQP3	21,25,30,32, 35,38,45		B- 在进油口逆时针转 90° B-90° CCW from inlet		
	SQP4	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-)	SQP41	-75	-8	-86	CA	(F)	-R
	系列号 Series designation	排量代号 轴端泵 Displacement	排量代号 盖端泵 Displacemen	轴伸形式 Form of shaft	出油口位置 Outlet positions	安装型式 Mounting form	旋转方向 Rotation
无要求可省略 Omit if not required F3- 氟橡胶密封 F3- Viton seals	SQP21	10,12,14,15, 17,19,21,25	2,3,4,5,6, 7,8,9,10, 11,12,14	见第 72~73 页 See page72~73	见下表 See table below	无标记 - 法兰安装型 Omit- Flange mounting F- 脚座安装型 F- Foot mounting	(从泵的轴端看) (Viewed from shaft end of pump)
	SQP31	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)
	SQP32	21,25,30,32, 35,38,45	10,12,14,15, 17,19,21,25				L- 逆时针旋转 L-Counter clockwise
	SQP41	42,45,50,57, 60,66,75	2,3,4,5,6,7, 8,9,10,11, 12,14				
	SQP42	42,45,50,57, 60,66,75	10,12,14,15, 17,19,21,25				
	SQP43	42,45,50,57, 60,66,75	21,25,30,32, 35,38,45				

· 出油口位置（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 SQP43 外） All series except SQP43	SQP43
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	抗磨液压油或磷酸脂 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		
SQP1	2	7.5	14	1800 (1200)	14	1500	7	1200	600	16
	3	10.2								
	4	12.8								
	5	16.7	21		16					
	6	19.2								
	7	22.9								
	8	26.2								
	9	28.8								
	10	31								
	11	35								
	12	37.9	16		14					
14	44.2	14								
SQP2	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	14							
SQP3	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		14					
SQP4	42	138	17.5	1800 (1200)	16	1500	7	1200	600	59.5
	45	147								
	50	162								
	57	183								
	60	193								
	66	212								
	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 allowder.

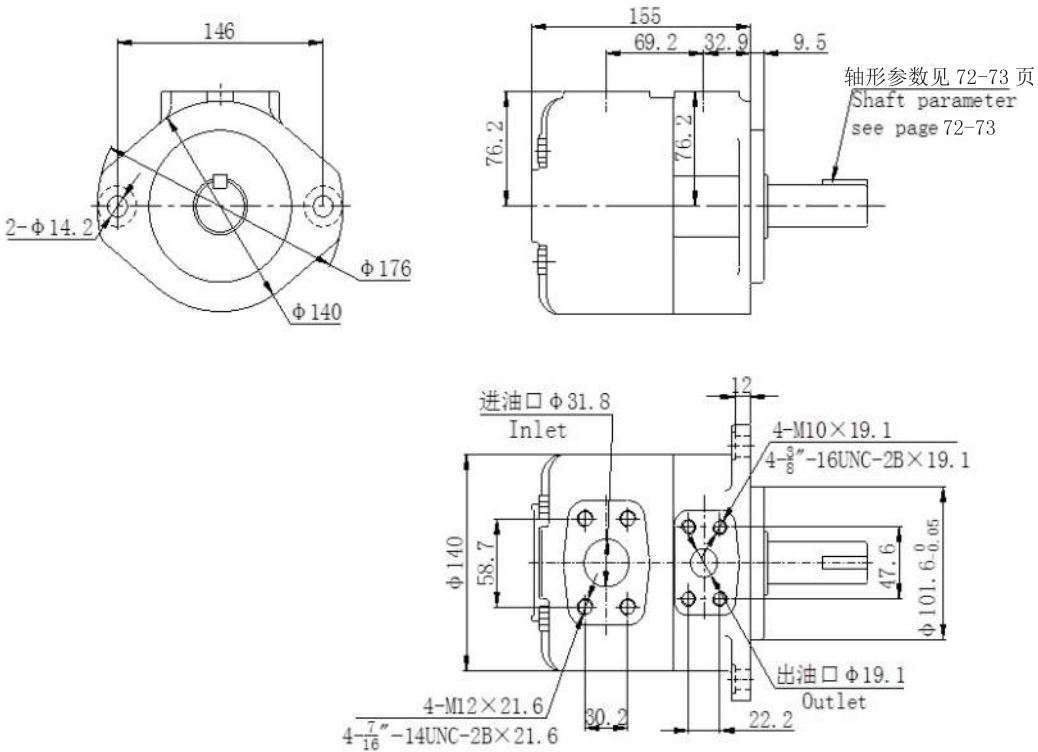
· 双联泵 Double Pumps

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
SQP21	10、12、14、15、17、19、21、25	2、3、4、5、6、7、8、9、10、11、12、14
SQP31	21、25、30、32、35、38、45	2、3、4、5、6、7、8、9、10、11、12、14
SQP32	21、25、30、32、35、38、45	10、12、14、15、17、19、21、25
SQP41	42、45、50、57、60、66、75	2、3、4、5、6、7、8、9、10、11、12、14
SQP42	42、45、50、57、60、66、75	10、12、14、15、17、19、21、25
SQP43	42、45、50、57、60、66、75	21、25、30、32、35、38、45

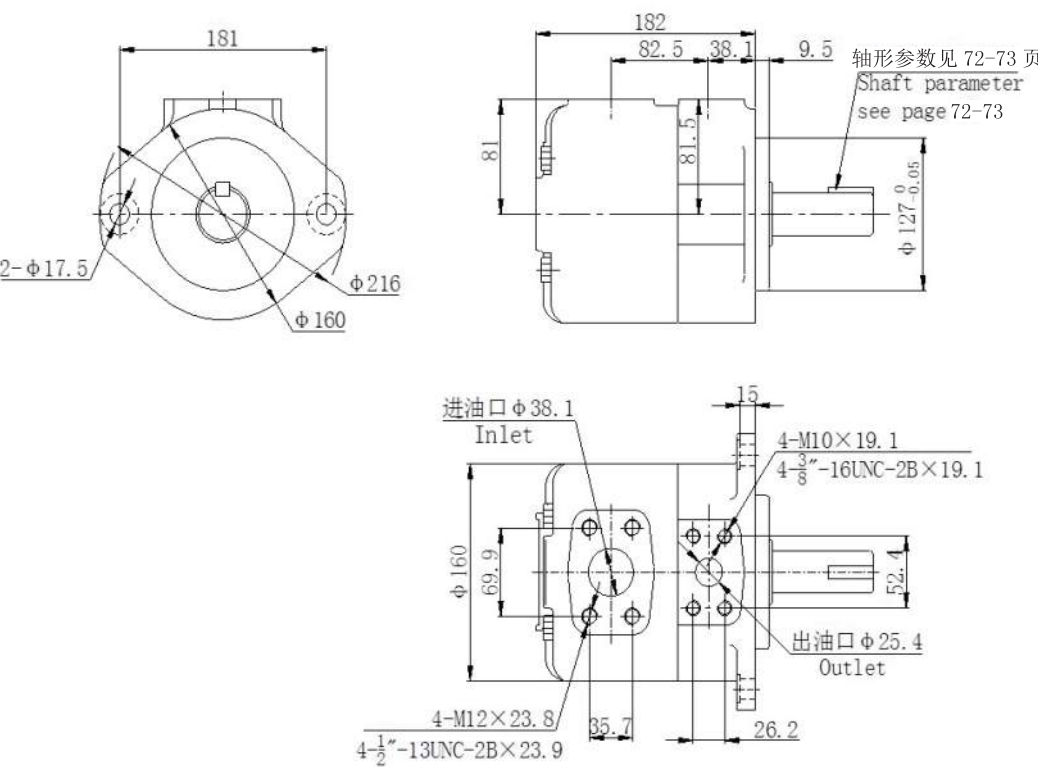
安装联接尺寸 Install Connection Dimensions

· 单 泵 Single Pump

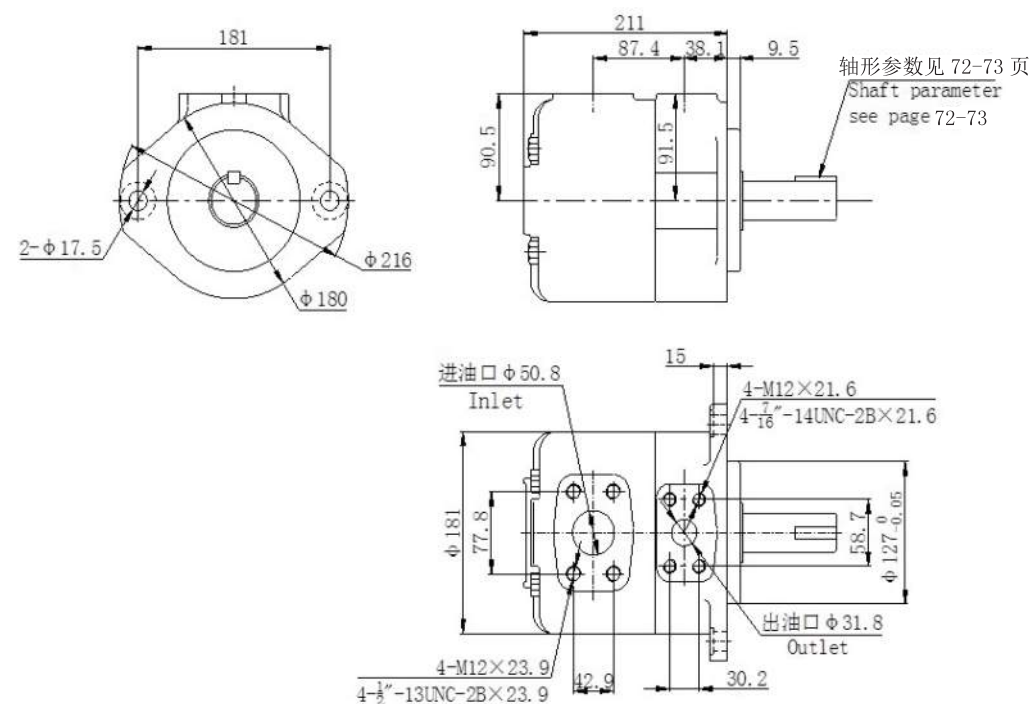
· SQP1



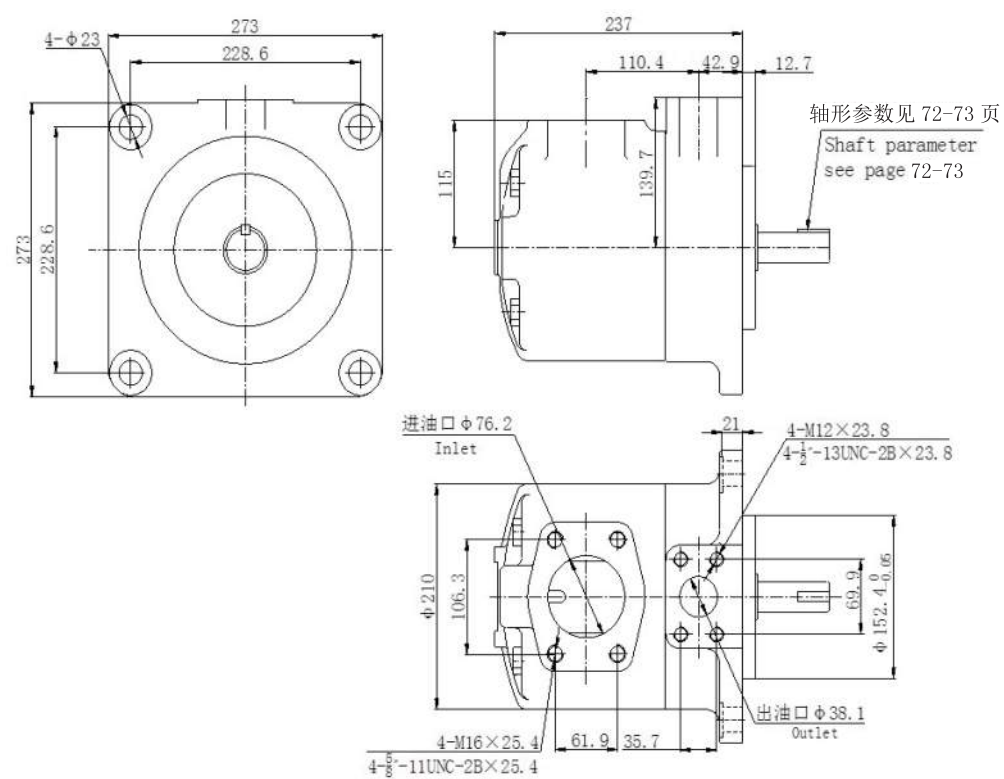
· SQP2



- SQP3

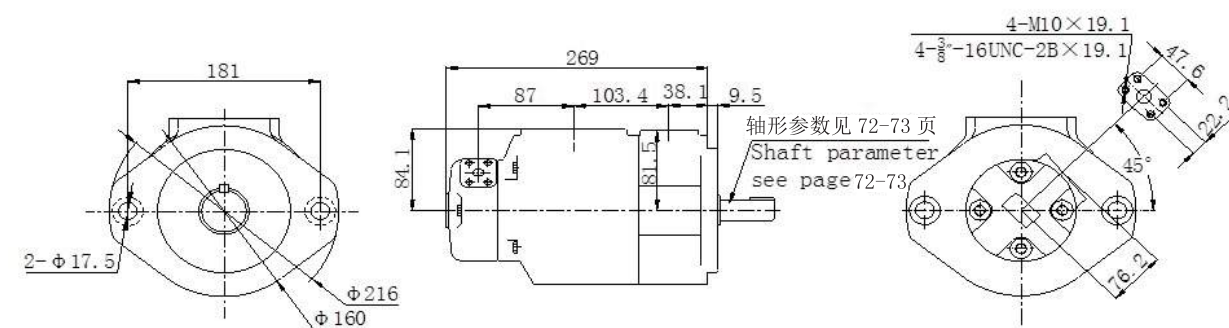
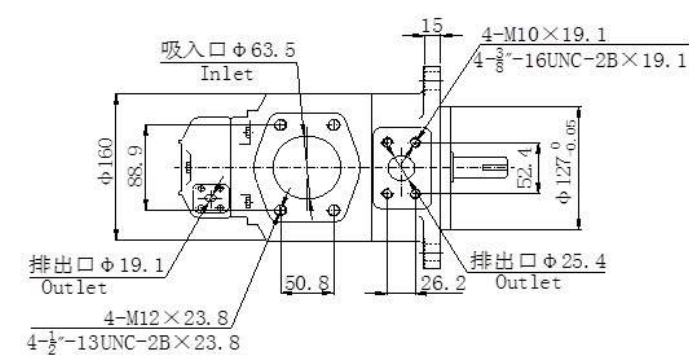


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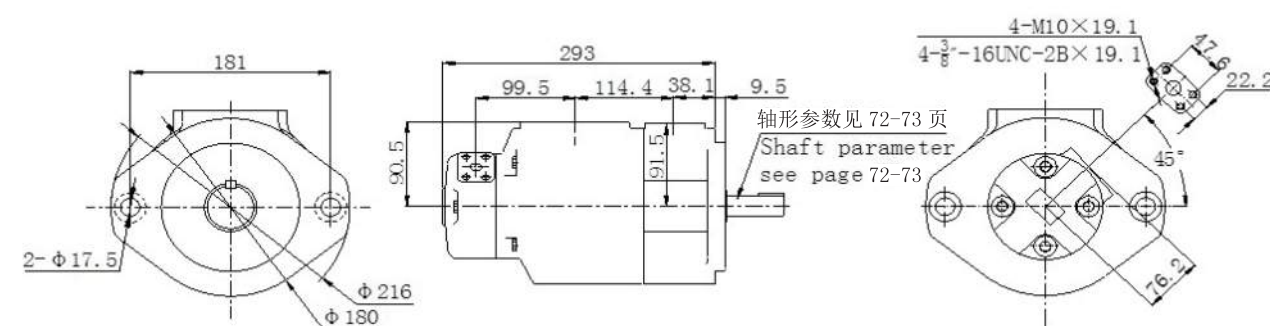
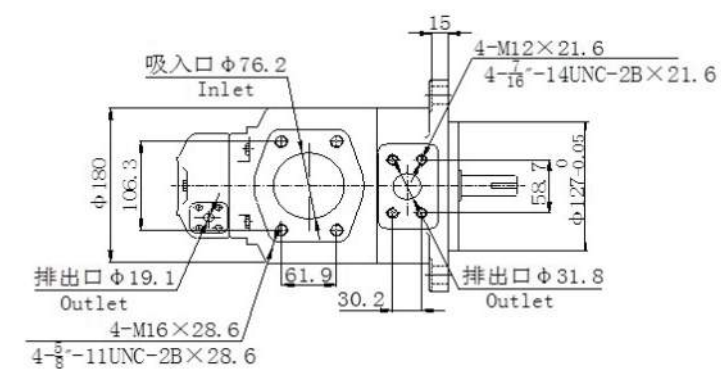


• 双联泵 Double Pumps

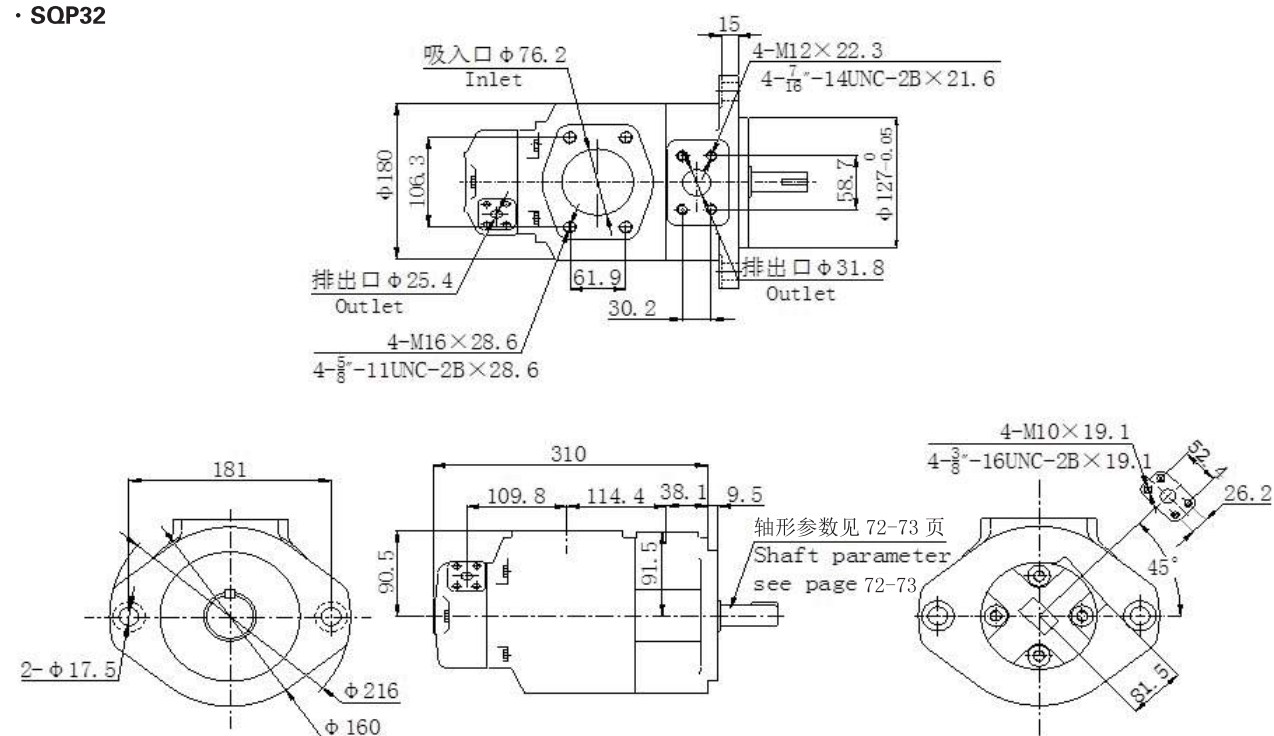
• SQP21



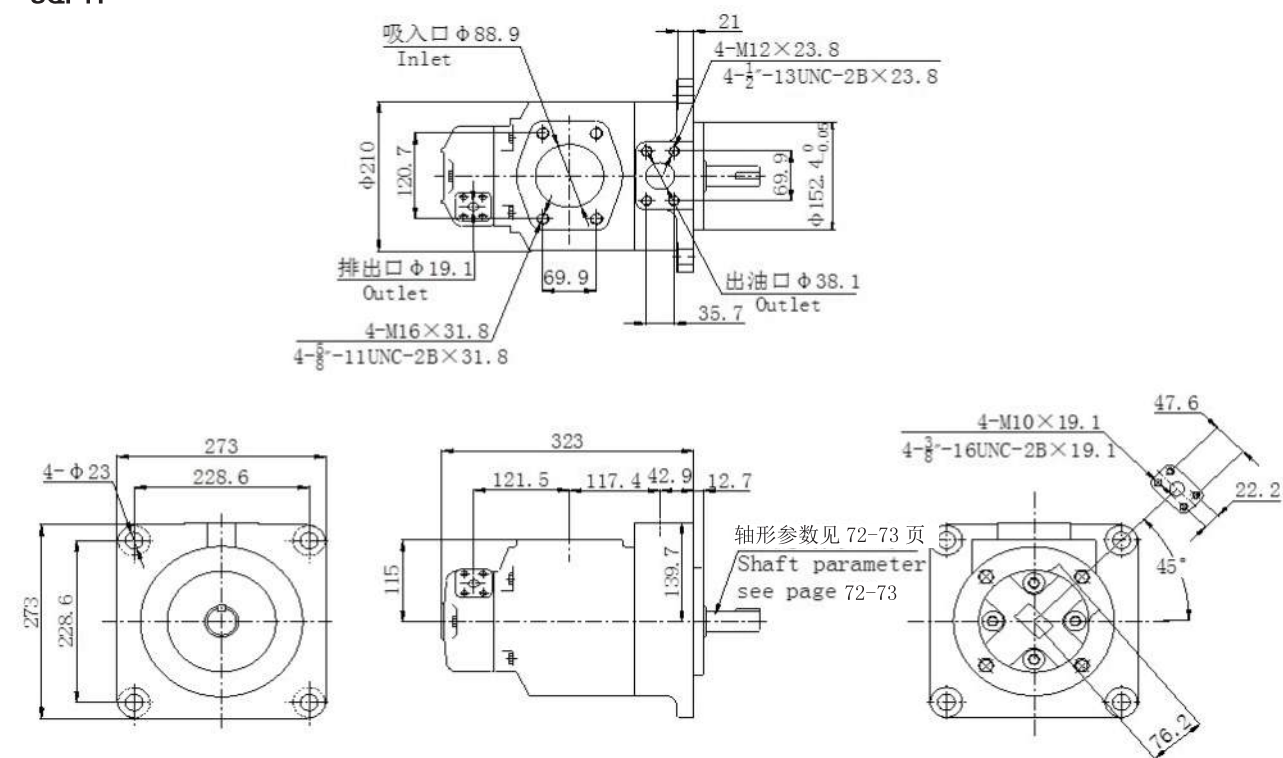
• **SQP31**



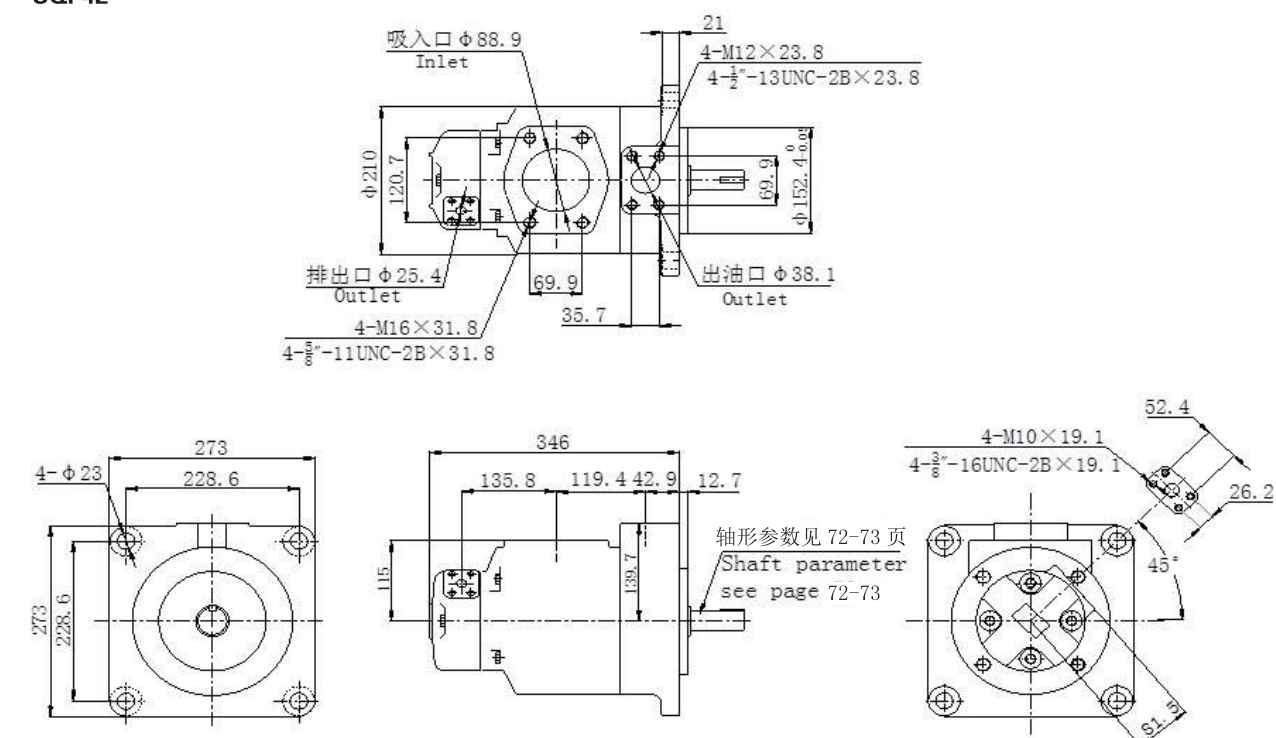
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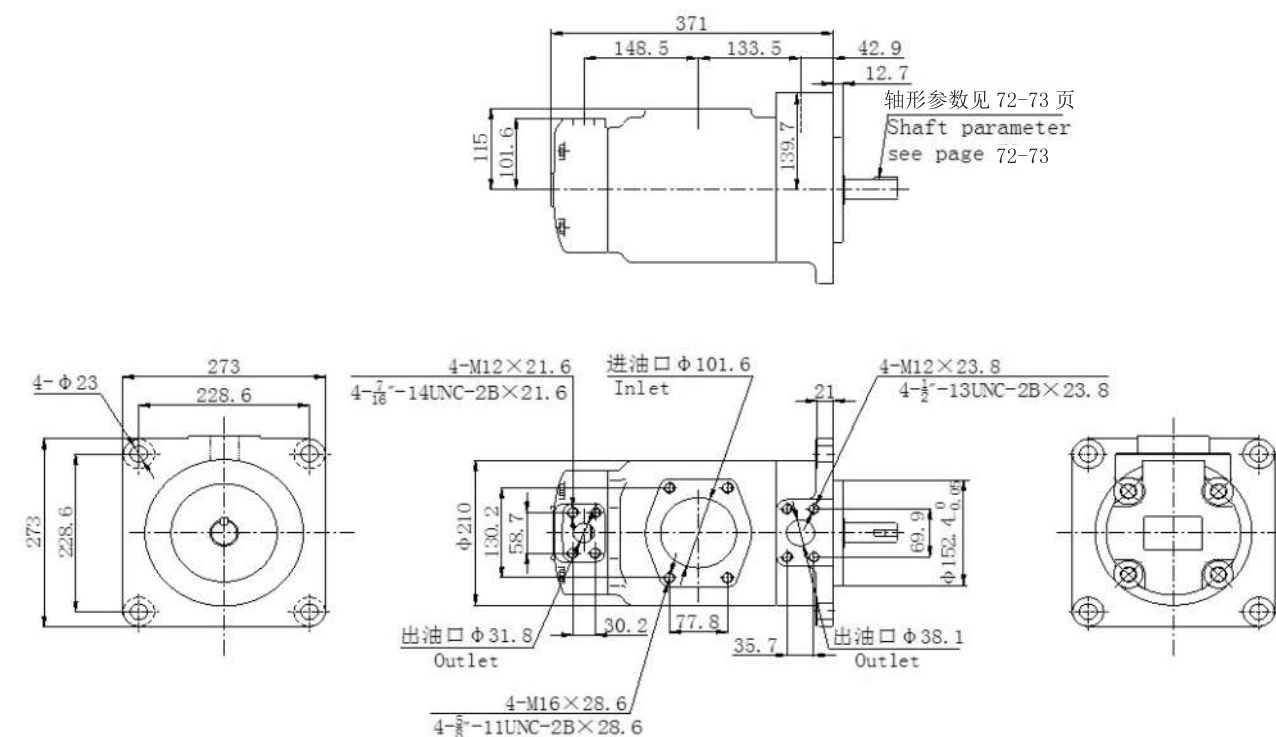
• SQP41



• SQP42

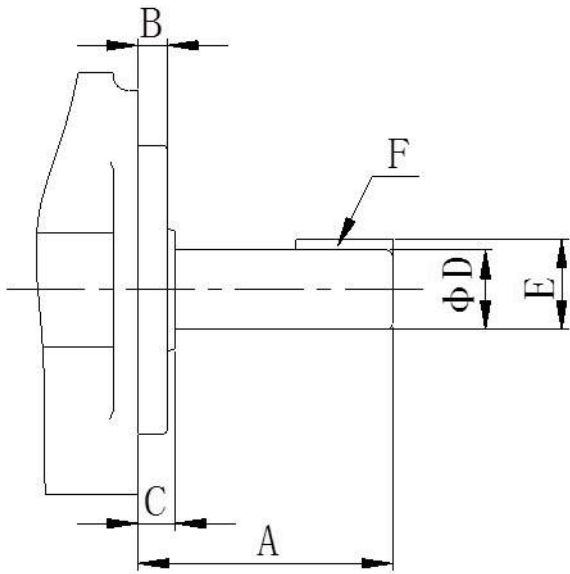


- **SQP43**

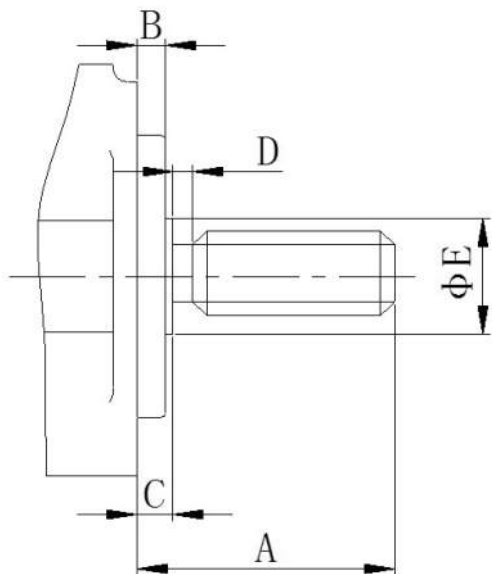


轴伸形式 Form of shaft

· 平键直轴 Str. Key shaft



· 花键轴 Spline shaft



型号 Model	轴伸代号 Cold of shaft	A	B	C	D	E	F 键 Key 宽 × 长 width × Length
SQP1	1	59	9.5	12.0	22.225/22.20	24.5/24.35	4.75×32
SQP2 SQP21	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
	86	78	9.5	11.0	25.4/25.37	28.3/28.2	6.35×50.8
SQP3 SQP31 SQP32	1	73.2	9.5	11.1	31.75/31.72	35.25/35.10	7.94×40
	86	86.4	9.5	11.1	34.90/34.87	38.4/38.15	7.94×54
SQP4 SQP41 SQP42 SQP43	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

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
SQP1	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
SQP2 SQP21	11	44.5	9.5	11.1	3.9	27.8	13	16/32	22.17/22.15	18.63/18.35	
SQP3 SQP31 SQP32	11	58.7	9.5	11.1	6.35	35.1	14	12/24	31.7/31.67	26.99/26.64	
SQP4 SQP41 SQP42 SQP43	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 <0.10mm（百分表总读数差），最大允许角度误差 <0.2°，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 0.5~1.5m/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~ -16.7KPa；而对水 - 乙二醇及磷酸脂系液压油为 +35~ -10.1KPa。
- 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 25µm，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 100µm（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℃时粘度等级为 32~68cSt 抗磨液压油或带有子母标记 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：
- | | |
|----------|----------|
| 最低 13cSt | 最高 54cSt |
| 最低 49℃ | 最高 65℃ |
- 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，并尽可能地在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 860~54cSt 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℃，因为泵芯组件和密封件的期望寿命将缩短。

Installation and Use

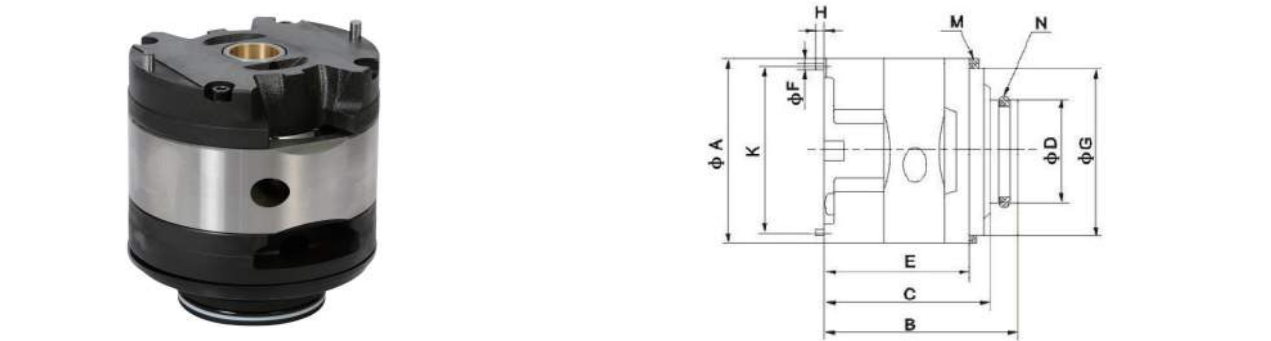
- 1 . In installation, the tolerance of concentricity between shaft of pump and motor must be less than 0.10mm(TIR) and the maximum permissible angle error is less than 0.2 degrees by using the flexible coupling; The pump shaft shall not bear the radial and axial load; The carrier must be firm with good 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 ~ -16.7KPa. The hydraulic oil of water - glycol and phosphate ester was + 35 ~ -10.1KPa.
- 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 25µm 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 100µm(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 68 cSt at 40°C ; Preferred viscosity at rated speed and pressures:
- | | |
|------------|------------|
| Min. 13cSt | Max. 54cSt |
| Min. 49℃ | Max. 65℃ |
- 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℃ because the expectancy of cartridge kite and elastomers will decrease.

SQP 系列泵芯

SQP Series Cartridge Kits

型号说明 Model Code				
(F3-)	PC-	SQP2	-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	SQP1	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
		SQP2	10,12,14,15,17, 19,21,25	
		SQP3	21,25,30,32,35,338,45	
		SQP4	42,45,50,57,60,666,75	

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)
SQP1	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
SQP2	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
SQP3	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
SQP4	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
SQP1	48/96	30	45°	16.617	15.56
SQP2	48/96	40	45°	21.9	20.86
SQP3	40/80	37	45°	24.38	23.10
SQP4	12/24	14	30°	32.59	27.60