

# Vane Product Technical Catalog

Pumps & Components - V10/V20, V, VQ, Series



# VQ系列叶片泵

## VQ Series vane Pumps

### 产品简介/Product Introduction

适用于工程机械的高压高性能子母叶片泵。

主要特点为：

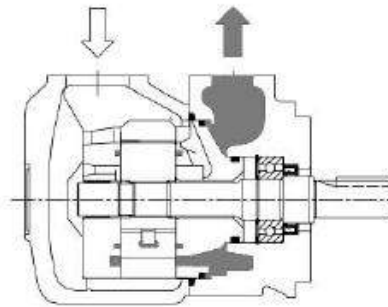
- 1、采用液压平衡的子母叶片结构及10叶片制的设计，压力更高，最高达到21MPa。
- 2、采用浮动侧板结构，可自动补偿端面间隙，使泵在高压下能保持高的容积效率。
- 3、侧板采用双金属材料，提高了抗咬合性能，使泵的使用寿命更长。

The high-pressure and high-performance Intra-vane pumps for Mobile Equipment.

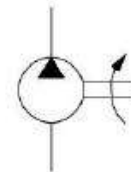
**Features:**

1. To adopt balanced hydraulic for the struction of Intra-vane and ten-Vane design,higher pressure,top to 21MPa.
2. To adopt floating structure for side plate,it will do a compensation for end-face clearance by automatic,so that even the pump under high pressure it can maintain a high volumetric efficiency.
3. The side plate is made of dual-metal material,it improved the seizure resistance,and so that the life of pump will be longer

### VQ系列叶片泵/VQ Series vane pumps



液压符号  
Hydraulic Sign



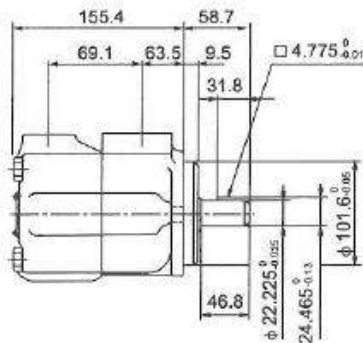
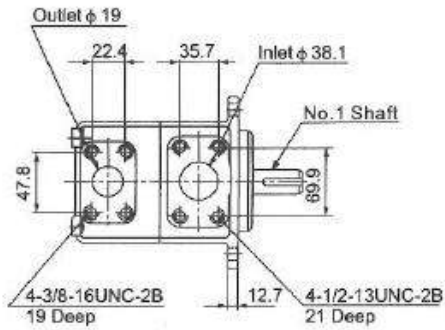
(F3-)	25VQ	19	A	(F)	-1	A	30	R
前注 Note	系列号 Series	▲排量代号 Flow code	油口连接 Port connections	安装形式 Installation type	轴伸形式 shaft type	出油口位置 Outlet Positions	设计号 Design number	旋转方向 Rotation
无标记 No-marking 石油系油 Petroleum series oil 乳化液 emulsification fluid 水-乙二醇 water glycol-fluid F3: 磷酸酯液 phosphate ester fluid	20VQ	2、3、4、5、6、 7、8、9、10、 11、12、14	A- SAE 4 螺栓法兰/ A- SAE 4-bolt flange	无标记 No-marking -法兰安装型 Flange Mounting  F-脚座安装型 F-Foot Mounition	1-平键轴Str key 151-花键轴Spline	(从泵的盖端看) (Viewed from cover end of pump) A-进油口对面Opposite inlet port	30	(从泵的轴端看) (Views from 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
	25VQ	10、12、14、15、 17、19、21、25			1-平键轴Str key 86-重型平键轴HD str key	B-从进油口逆时针90° 90° CCW from inlet C-进油口同侧 Inline with inlet	20	
	35VQ	21、25、30、32、 35、38、45			11-花键轴Spline	D-从进油口顺时针90° 90° CW from inlet		
	45VQ	42、45、50、57、 60、66、75						

注：在1200r/min和0.69Mpa(100psi)下的额定排量 USgpm Flow (USgpm) at 1200r/min and 0.69MPa

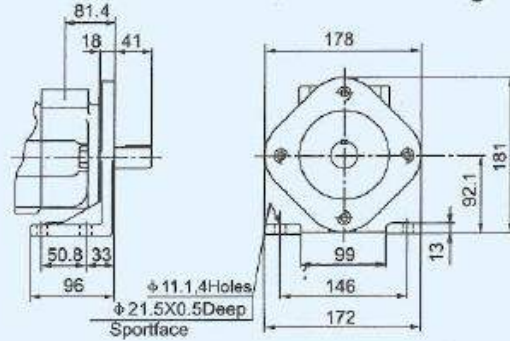
## 技术规格/Specifications

系列号 Series	排量代号 Flow code (USgpm)	理论排量 Grometric displacement mL/r (in <sup>3</sup> /r)	最高使用压力 Max. operating pressure (Mpa)	最高转速 Max.speed (r/min)	最低转速 Min.speed (r/min)
20VQ	2	7(0.43)	21	2700	600
	3	10(0.61)			
	4	13(0.79)			
	5	16.5(1.01)			
	6	19(1.16)			
	7	22(1.40)			
	8	27(1.67)			
	9	30(1.85)			
	10	31.5(1.92)			
	11	35(2.14)			
		12	40(2.44)	16	
	14	45(2.78)	14		
25VQ	10	32(1.95)	21	2700	600
	12	38(2.32)			
	14	43.5(2.65)			
	15	47(2.89)		2500	
	17	54(3.30)			
	19	60(3.66)			
	21	67(4.13)			
25	79.2(4.83)				
35VQ	21	67(4.13)	21	2500	600
	25	81(4.94)			
	30	95(5.80)			
	32	101(6.16)			
	35	109(6.65)		2400	
	38	119(7.26)			
	45	143(8.72)			
45VQ	42	134(8.17)	17.5	2400	600
	45	143(8.72)			
	50	159(9.70)		2200	
	57	181(11.05)			
	60	189(11.53)			
	66	210(12.81)			
	75	237(14.46)			

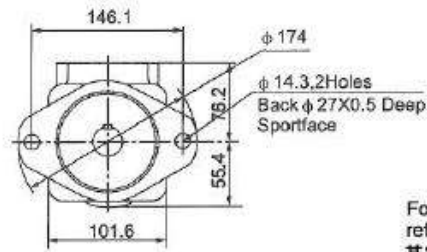
20VQ法兰安装尺寸  
20VQ Flange Mounting



20VQ脚座安装尺寸  
20VQ Foot Mounting

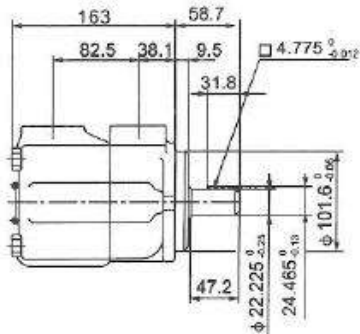
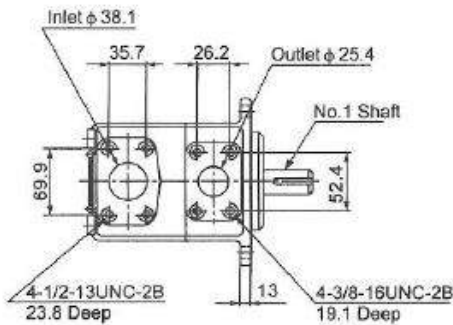


For other dimensions, refer to "Flange Mounting" type.

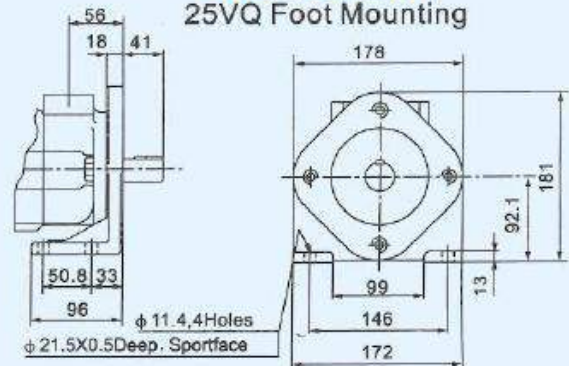


For other shaft dimensions, refer to page 78  
其它轴类尺寸见78页

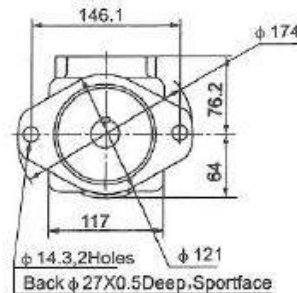
25VQ法兰安装尺寸  
25VQ Flange Mounting



25VQ脚座安装尺寸  
25VQ Foot Mounting

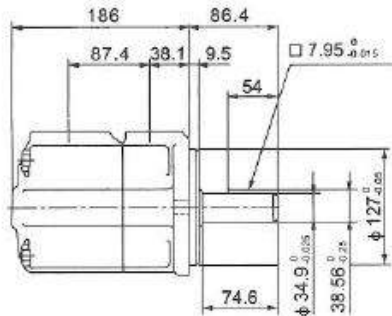
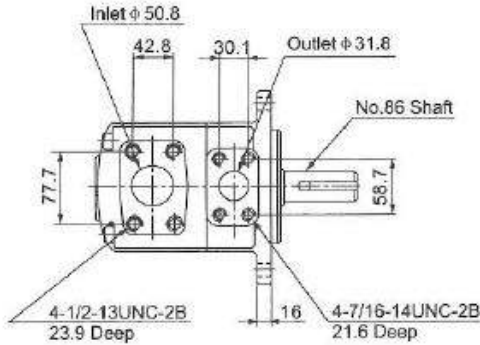


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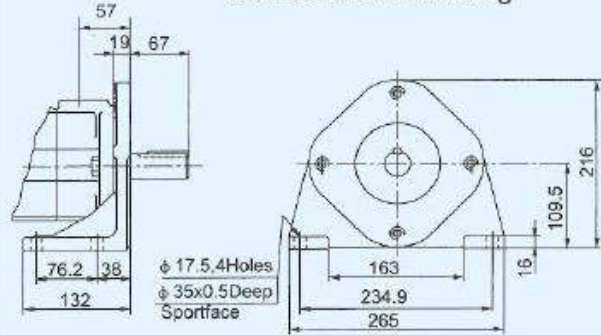


For other shaft dimensions, refer to page 78  
其它轴类尺寸见78页

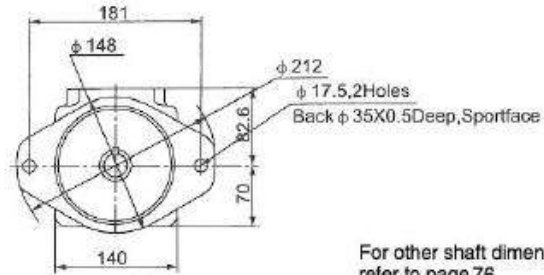
**35VQ法兰安装尺寸**  
35VQ Flange Mounting



**35VQ脚座安装尺寸**  
35VQ Foot Mounting

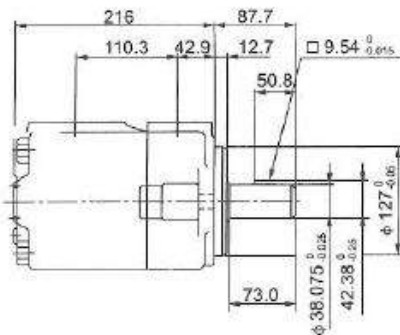
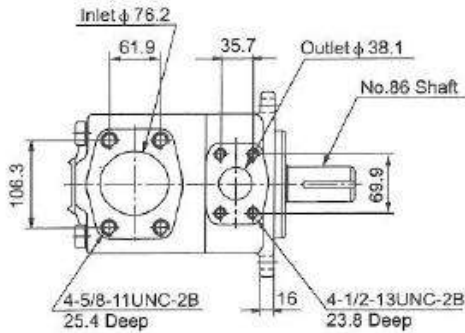


For other dimensions, refer to "Flange Mounting" type.

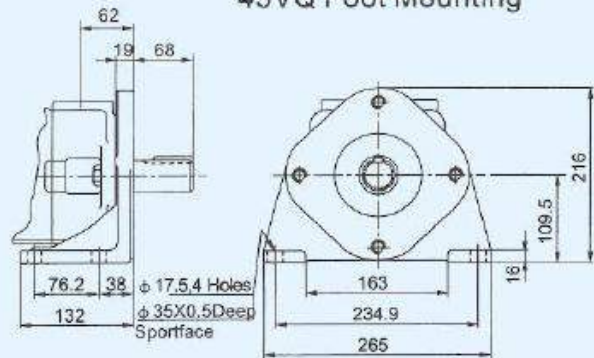


For other shaft dimensions, refer to page 76  
其它轴类尺寸见76页

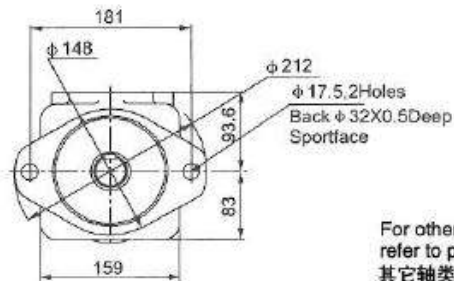
**45VQ法兰安装尺寸**  
45VQ Flange Mounting



**45VQ脚座安装尺寸**  
45VQ Foot Mounting



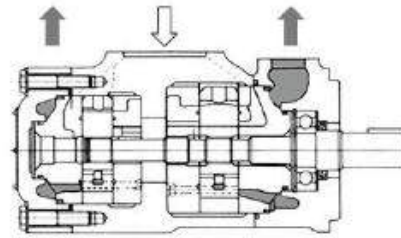
For other dimensions, refer to "Flange Mounting" type.



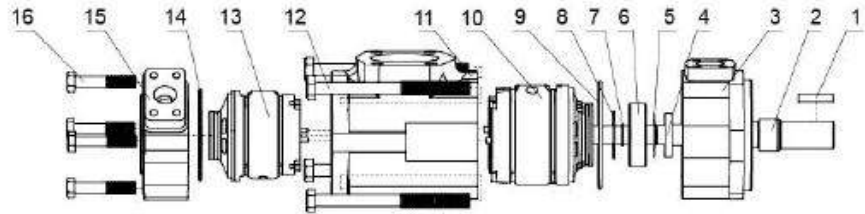
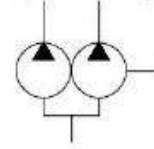
For other shaft dimensions, refer to page 76  
其它轴类尺寸见76页

# VQ系列双联泵

## VQ Series double Pumps



液压符号  
Hydraulic Sign



序号NO.	名称Part	数量Qty	序号NO.	名称Part	数量Qty	序号NO.	名称Part	数量Qty
1	平键 straight key	1	7	轴用弹性挡圈 cir clip for shaft	1	13	后泵芯 rear cartridge	1
2	轴 shaft	1	8	叠形挡圈 pile type retainer	1	14	O型圈 O ring	1
3	前盖 front cover	1	9	O型圈 O ring	1	15	后盖 rear cartridge	1
4	油封 shaft seal	1	10	前泵芯 front cartridge	1	16	六角头螺栓 hexagon headed bolt	4
5	垫片 gasket	1	11	泵体 body	1			
6	滚动轴承 ball bearing	1	12	六角头螺栓 hexagon headed bolt	4			

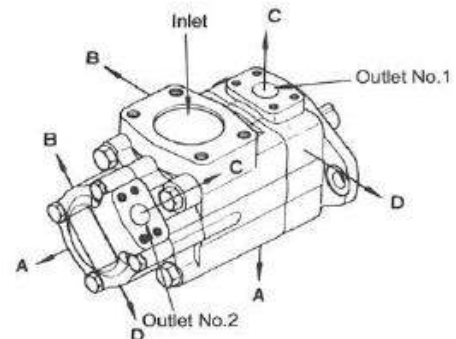
### 型号说明 Model Designation

(F3-)	3525VQ	38	A	17	(F)	-1	AB	20	R
前注 Note	系列号 Series	▲轴端泵排量代号 Flow-shaft end Pump	油口连接 Port connections	▲盖端泵排量代号 Flow-cover end Pump	安装形式 Installation type	轴伸形式 shaft type	出油口位置 Outlet Positions	设计号 Design number	旋转方向 Rotation
无标记: No-marking 石油系油 Petroleum series oil 乳化液 emulsification fluid 水-乙二醇 water glycol-fluid F3: 磷酸酯液 phosphate ester fluid	2520VQ	10, 12, 14, 15, 17, 19, 21, 25	A-SAE 4螺栓法兰 A-SAE 4-bolt flange	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14	无标记 No-marking -法兰安装型 Flange Mounting F-脚座安装型 F-Foot Mountion	1-平键轴Str key 86-重型平键轴HD str key 11-花键轴Spline	见下表 See below	20	R-顺时针旋转 right hand for clockwise L-逆时针旋转 left hand for counter- clockwise
	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							

注: 在1200r/min和0.69MPa(100psi)下的额定排量/ USgpm Flow (USgpm) at 1200r/min and 0.69MPa

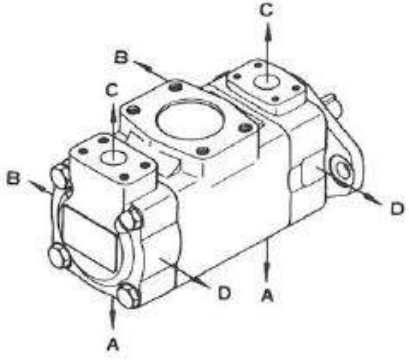
### 出油口位置 (从泵的盖端看) / Outlet Positions (Viewed from cover end of pump)

出油口位置 Outlet positions		除4535VQ外的所有系列 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 inline 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
第一出油口从进油口 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 inline 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



**出油口位置 (从泵的盖端看) / Outlet Positions (Viewed from cover end of pump)**

出油口位置 Outlet positions		除4535VQ外的所有系列 All series except 4535VQ	4535VQ
第一出油口在进油口同侧 NO.1 outlet inline 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 inline 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
第一出油口从进油口顺时针转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 inline 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

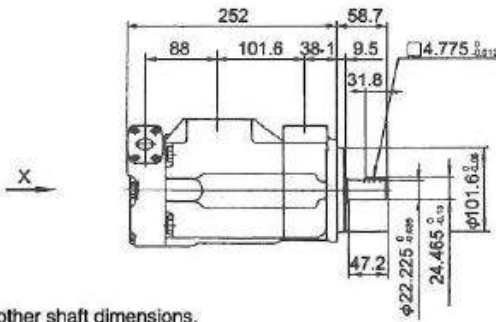
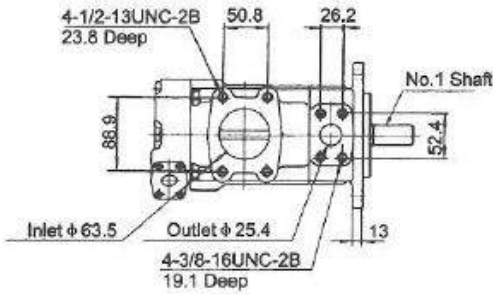


**产品重量 / Product Weight**

产品名称 Product name	型号 Series	重量 Weight Kg	产品名称 Product name	型号 Series	重量 Weight Kg	产品名称 Product name	型号 Series	重量 Weight Kg
泵芯 Cartridge	20V、20VQ、SQP1	3.0	单泵 Single pump	20V、20VQ	13.0	单泵 Single pump	SQP1	16.7
	25V、25VQ、SQP2	4.0		25V、25VQ	15.0		SQP2	28.0
	35V、35VQ、SQP3	7.0		35V、35VQ	24.0		SQP3	38.0
	45V、45VQ、SQP4	11.0		45V、45VQ	37.0		SQP4	65.0
	T6C、T6CC	4.1		T6C	15.7		PV2R1	9.0
	T6D	8.3		T6D	24.0		PV2R2	17.0
	T6E	12.8		T6E	43.0		PV2R3	33.0

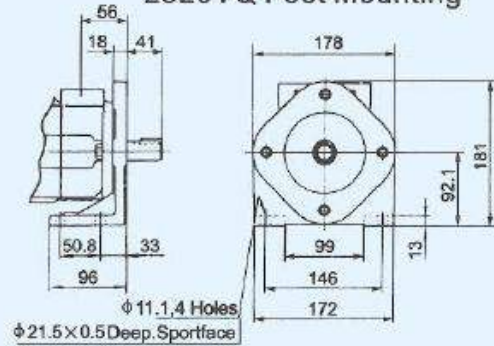
产品名称 Product name	型号 Series	重量 Weight Kg	产品名称 Product name	型号 Series	重量 Weight Kg	产品名称 Product name	型号 Series	重量 Weight Kg
双联泵 Double pumps	2520V、2520VQ	23.0	双联泵 Double pumps	SQP21	34.0	双联泵 Double pumps	T6CC	26.0
	3520V、3520VQ	33.0		SQP31	48.0		T6DC	36.6
	3525V、3525VQ	35.0		SQP32	50.0		T6EC	55.0
	4520V、4520VQ	46.0		SQP41	80.0		T6ED	66.0
	4525V、4525VQ	48.0		SQP42	85.0		PV2R21	23.0
	4535V、4535VQ	58.0		SQP43	95.0		PV2R31	41.0
				PV2R32	45.0			

2520VQ法兰安装尺寸  
2520VQ Flange Mounting

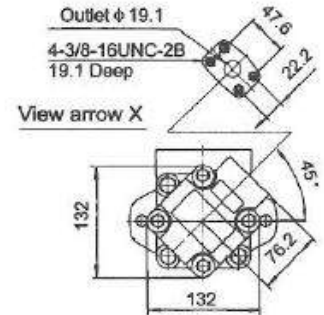
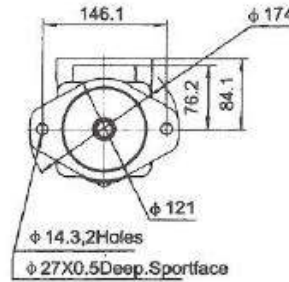


For other shaft dimensions,  
refer to page 76  
其它轴类尺寸见76页

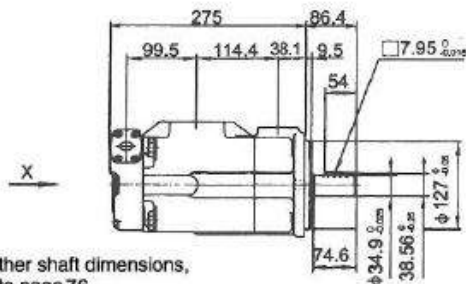
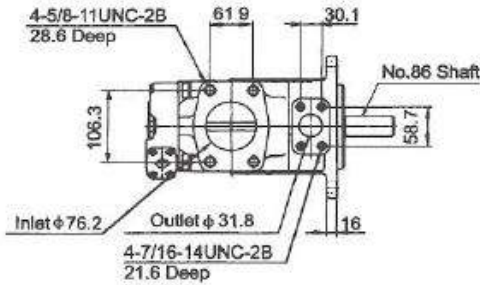
2520VQ脚座安装尺寸  
2520VQ Foot Mounting



For other dimensions, refer to "Flange Mounting" type.

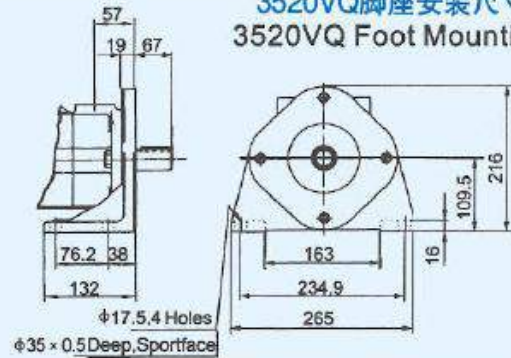


3520VQ法兰安装尺寸  
3520VQ Flange Mounting

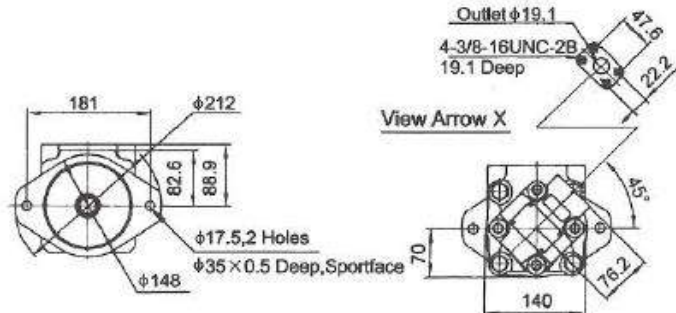


For other shaft dimensions,  
refer to page 76  
其它轴类尺寸见76页

3520VQ脚座安装尺寸  
3520VQ Foot Mounting

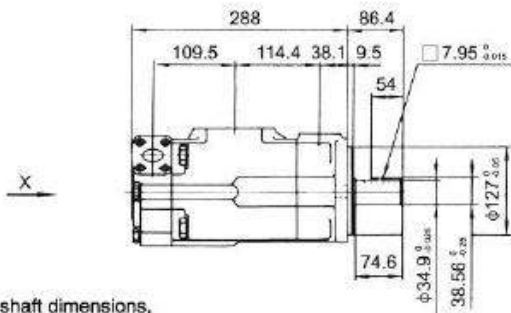
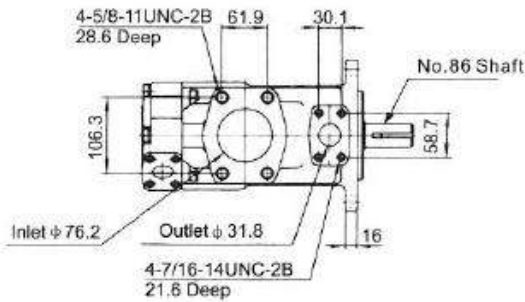


For other dimensions, refer to "Flange Mounting" type.



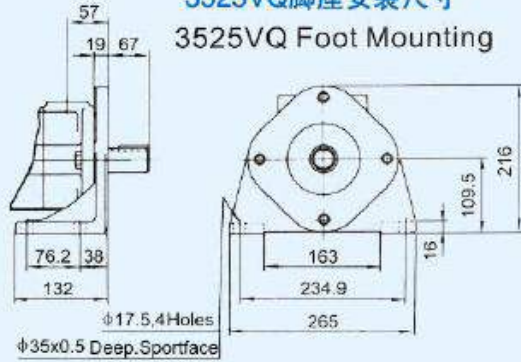


**3525VQ法兰安装尺寸**  
3525VQ Flange Mounting

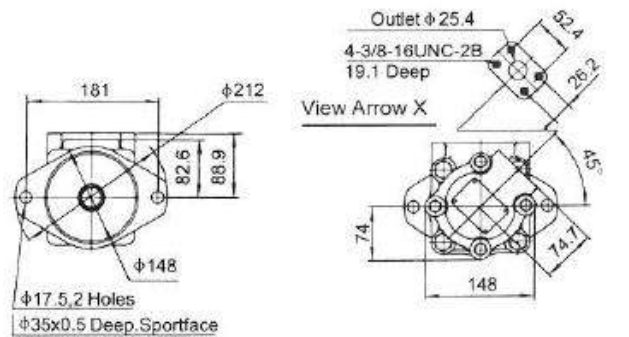


For other shaft dimensions,  
refer to page 76  
其它轴类尺寸见76页

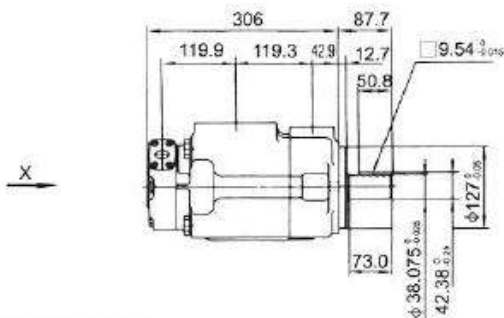
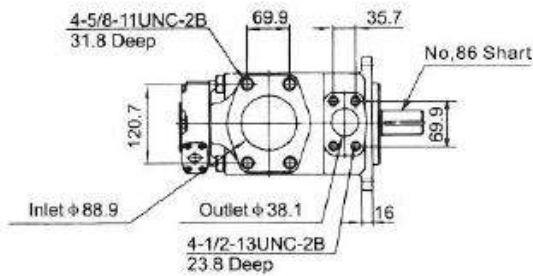
**3525VQ脚座安装尺寸**  
3525VQ Foot Mounting



For other dimensions, refer to "Flange Mounting" type.

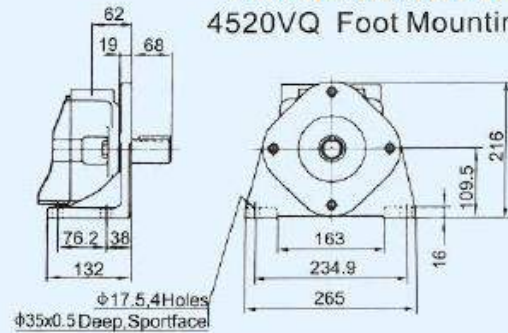


**4520VQ法兰安装尺寸**  
4520VQ Flange Mounting

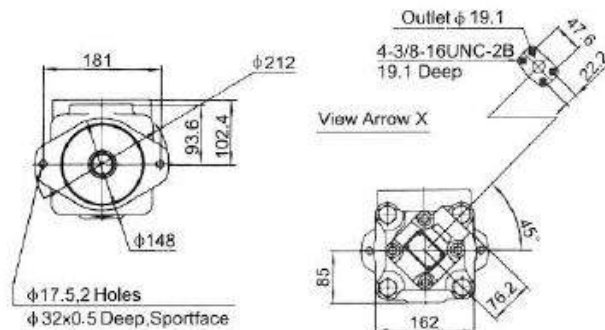


For other shaft dimensions,  
refer to page 76  
其它轴类尺寸见76页

**4520VQ脚座安装尺寸**  
4520VQ Foot Mounting

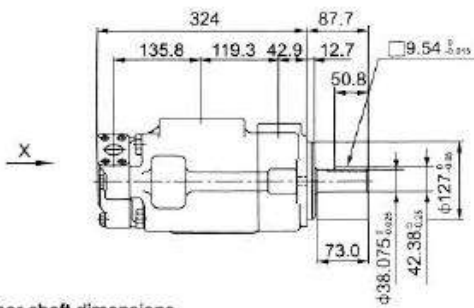
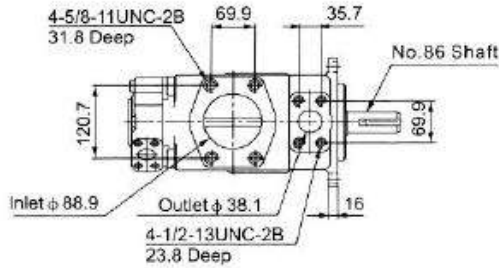


For other dimensions, refer to "Flange Mounting" type.



4525VQ法兰安装尺寸

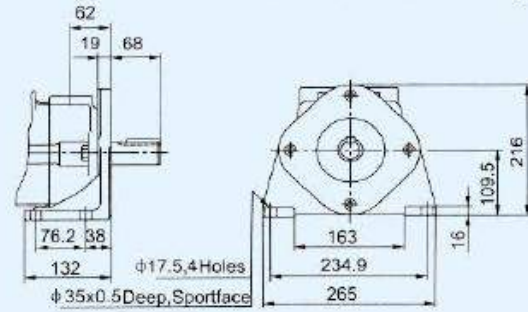
4525VQ Flange Mounting



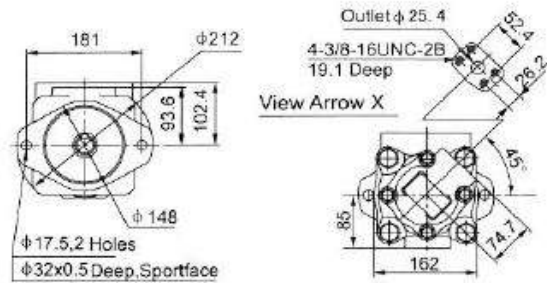
For other shaft dimensions,  
refer to page 76  
其它轴类尺寸见76页

4525VQ脚座安装尺寸

4525VQ Foot Mounting

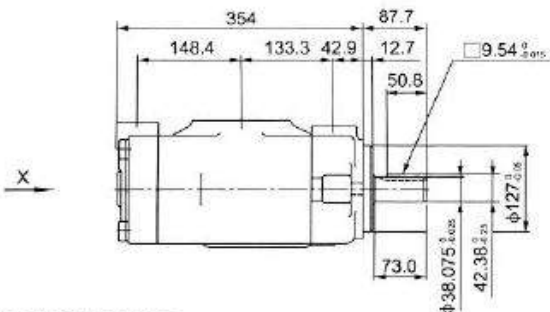
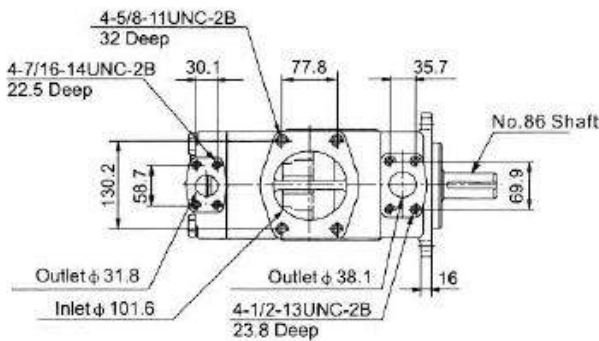


For other dimensions, refer to "Flange Mounting" type.



4535VQ法兰安装尺寸

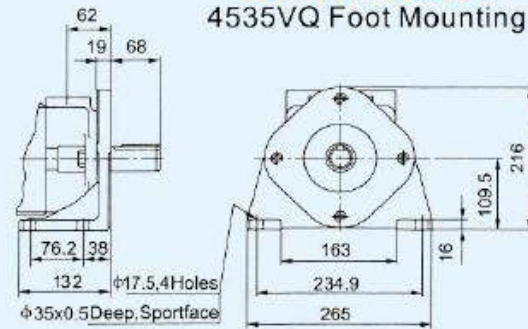
4535VQ Flange Mounting



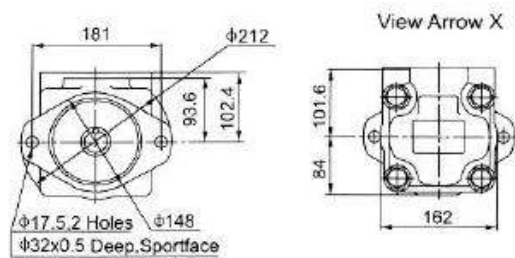
For other shaft dimensions,  
refer to page 76  
其它轴类尺寸见76页

4535VQ脚座安装尺寸

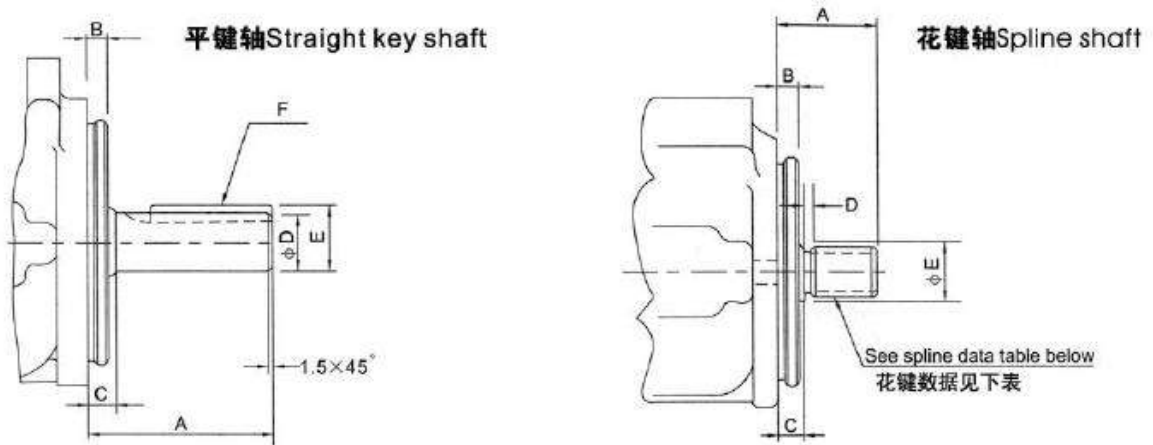
4535VQ Foot Mounting



For other dimensions, refer to "Flange Mounting" type.



### 轴伸选择/ Shaft type



### 平键轴/ Straight Key shaft

型号 Model	轴伸代号 Shaft code	A	B	C	ΦD	E	F键宽*长 F key width x length
20V, 20VQ, SQP1	1	59	9.53	12.1	22.23/22.20	24.5/24.4	4.76*32
25V, 2520V 25VQ, 2520VQ SQP2, SQP21	1	59	9.53	11.1	22.23/22.20	24.5/24.4	4.76*32
	86	78	9.53	11.1	25.37/25.35	28.3/28.1	6.36*50.8
35V, 35※V 35VQ, 35※VQ SQP3, SQP3※	1	73.2	9.53	11.1	31.75/31.70	35.36/35.10	7.94*38.1
	86	86	9.53	11.1	34.90/34.87	38.6/38.3	7.94*54
45V, 45※V 45VQ, 45※VQ SQP4, SQP4※	1	62	12.7	14.22	31.75/31.70	35.36/35.10	7.94*28.5
	86	87.4	12.7	14.22	38.07/38.05	42.4/42.1	9.54*50.8

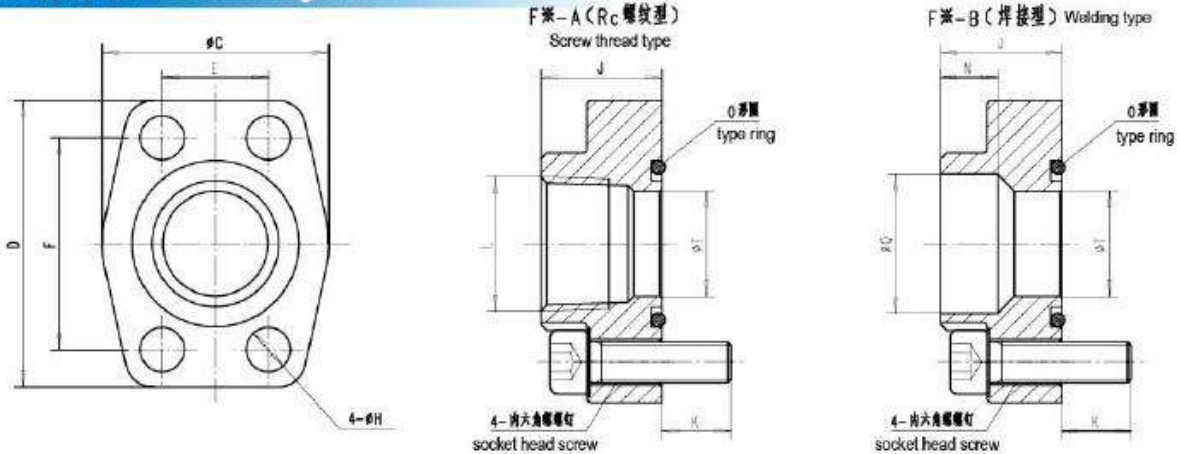
### 花键轴/Spline shaft

型号 Model	轴伸代号 Shaft code	A	B	C	D	E	花键数据(见下表) Spline data(see below)
20V, 20VQ	151	41.1	9.53	11.1	3.9	27.8	A
25V, 2520V 25VQ, 2520VQ	11	44.5	9.53	11.1	3.9	27.8	A
35V, 35※V 35VQ, 35※VQ	11	58.7	9.53	11.1	6.35	35.1	C
45V, 45※V 45VQ, 45※VQ	11	61.9	12.7	14.3	9.7	39.6	C

### 花键数据表(渐开线花键)/Spline Data Table(Involute spline)

花键数据标记 Spline Data Reference	齿数 Number of teeth	径节 Pitch	大径 Major Diameter	成形直径 Form Diameter	小径 Minor Diameter	平齿根配合 Minor Diameter
A	13	16/32	22.17/22.15	19.03	18.63/18.35	大径配合 Major diameter fit
C	14	12/24	31.70/31.67	27.2	26.99/26.64	

油口连接法兰 Port flange kits



法兰型号 Flange model	对应管子规格 Corresponding pipe specifications	尺寸/Dimensions mm										O形圈/Ring GB3452.1-2005	PV2R系列/Series		
		C	D	E	F	H	J	L	N	Q	T		内六角螺钉 socket head screw	尺寸 Dimensions K	对应油泵接口 Corresponding oil pump interface
F04-A	1/2"	40	54	17.5	38.1	9.0	27	Rc1/2"	-	-	13	21.2x2.65	M8x30mm	12.5	PVR1出油口/outlet, PV2R21, PV2R31 盖端泵出油口/ outlet of cover end pump
F04-B								-	11	22.5					
F06-A	3/4"	50.5	65.5	22.2	47.6	11.0	28	Rc3/4"	-	-	19	30x3.55	M10x30mm	12.5	PVR2出口/outlet, PV2R21泵端泵出油口/ outlet of shaft end pump PV2R32盖端泵出油口/ outlet of cover end pump
F06-B								-	12	28.5					
F08-A	1"	56	71	26.2	52.4	11.0	30	Rc1"	-	-	26	34.5x3.55	M10x35mm	17.0	PVR1吸油口/inlet port
F08-B								-	14	34.5					
F10-A	1-1/4"	64.5	79.5	30.2	58.7	12.0	32	Rc1-1/4"	-	-	32	40x3.55	M10x40mm	19	PVR2吸油口/inlet port, PV2R3出油口/ outlet, PV2R31, PV2R32 轴端泵出油口/ outlet of shaft end pump
F10-B								-	16	43.0					
F12-A	1-1/2"	71	94	35.7	69.9	13.8	37	Rc1-1/2"	-	-	38	50x3.55	-	-	-
F12-B								-	18	49.1					
F16-A	2"	87.5	103	42.9	77.8	13.8	38	Rc2"	-	-	51	65x3.55	M12x45mm	17.5	PVR3, PV2R21吸油口/inlet
F16-B								-	20	61.0					
F20-A	2-1/2"	96	115	50.8	88.9	13.8	42	Rc2-1/2"	-	-	63	75x3.55	-	-	-
F20-B								-	22	77.1					
F24-A	3"	123	136	61.9	106.4	17.0	45	Rc3"	-	-	76	85x3.55	M16x45mm	16.5	PVR31, PV2R32吸油口/inlet
F24-B								-	25	90.0					
F28-A	3-1/2"	135	153	69.9	120.7	17.5	46	Rc3-1/2"	-	-	89	100x3.55	-	-	-
F28-B								-	20	102.8					
F32-A	4"	145	162	77.8	130.2	17.0	50	Rc4"	-	-	102	115x3.55	-	-	-
F32-B								-	28	115.5					

法兰型号 Flange model	V、VQ、SQP、T6系列/Series		
	内六角螺钉 socket head screw	尺寸K Dimensions	对应油泵接口 Corresponding oil pump interface
F04-A	-	-	-
F04-B	-	-	-
F06-A	3/8"-16UNCx1.5"(38.1mm)	20.6	20V(Q)、SQP1出油口/outlet, 2520V(Q)、3520V(Q)、4520V(Q)、SQP21、SQP31、SQP41、T6CC (油口尺寸01、11/oil port dimensions)、T6DCC(油口尺寸01/oil port dimensions)、T6DDCS(油口尺寸01/oil port dimensions)、T6EDC(S)(油口尺寸01/oil port dimensions)盖端泵出油口/outlet of cover end pump
F06-B			
F08-A	3/8"-16UNCx1.5"(38.1mm)	20.1	25V(Q)、SQP2、T6C出油口/outlet port, 2520V(Q)、SQP21、T6CC轴端泵出油口/outlet of shaft end pump, 3525V(Q)、4525V(Q)、SQP32、SQP42、T6CC(油口尺寸00、10/oil port dimensions)、T6EC、T6DCC (油口尺寸00/oil port dimensions)、T6DDCS(油口尺寸00/oil port dimensions)、T6EDC(S)(油口尺寸00/oil port dimensions) 盖端泵出油口/outlet of cover end pump、T6DCC中间泵出油口/outlet of middle pump
F08-B			
F10-A	7/16"-14UNCx1.575"(40mm)	19.0	SQP1吸油口/inlet, 35V(Q)、SQP3、T6D出油口/outlet, 3520V(Q)、3525V(Q)、SQP31、SQP32、T6DC、T6DCC、T6DDCS轴端泵出油口/outlet of shaft end pump, 4535V(Q)、SQP43、T6ED盖端泵出油口/outlet of cover end pump, T6DDCS、T6EDC(S)中间泵出油口/outlet of middle pump
F10-B			
F12-A	1/2"-13UNCx1.75"(44.5mm)	19.0	20V(Q)、25V(Q)、SQP2、T6C吸油口/inlet, 45V(Q)、SQP4、T6E出油口/outlet, 4535V(Q)、SQP43、T6EC、T6ED、T6EDC(S)轴端泵出油口/outlet of shaft end pump
F12-B			
F16-A	1/2"-13UNCx1.75"(44.5mm)	17.0	35V(Q)、SQP3、T6D吸油口/inlet
F16-B			
F20-A	1/2"-13UNCx1.75"(44.5mm)	16.5	2520V(Q)、SQP21、T6CC(油口尺寸10、11/oil port dimensions)吸油口/inlet
F20-B			
F24-A	5/8"-11UNCx2"(50.8mm)	22.3	45V(Q)、SQP4、T6E吸油口/inlet, 3520V(Q)、3525V(Q)、SQP31、SQP32、T6CC (油口尺寸00、01/oil port dimensions)、T6DC吸油口/inlet
F24-B			
F28-A	5/8"-11UNCx2"(50.8mm)	22.3	4520V(Q)、4525V(Q)、SQP41、SQP42、T6EC吸油口/inlet
F28-B			
F32-A	5/8"-11UNCx2"(50.8mm)	19.3	4535V(Q)、SQP43、T6ED、T6DCC、T6DDCS、T6EDC(S)吸油口/inlet
F32-B			
F32-B	5/8"-11UNCx1.75"(44.5mm)	23.0	