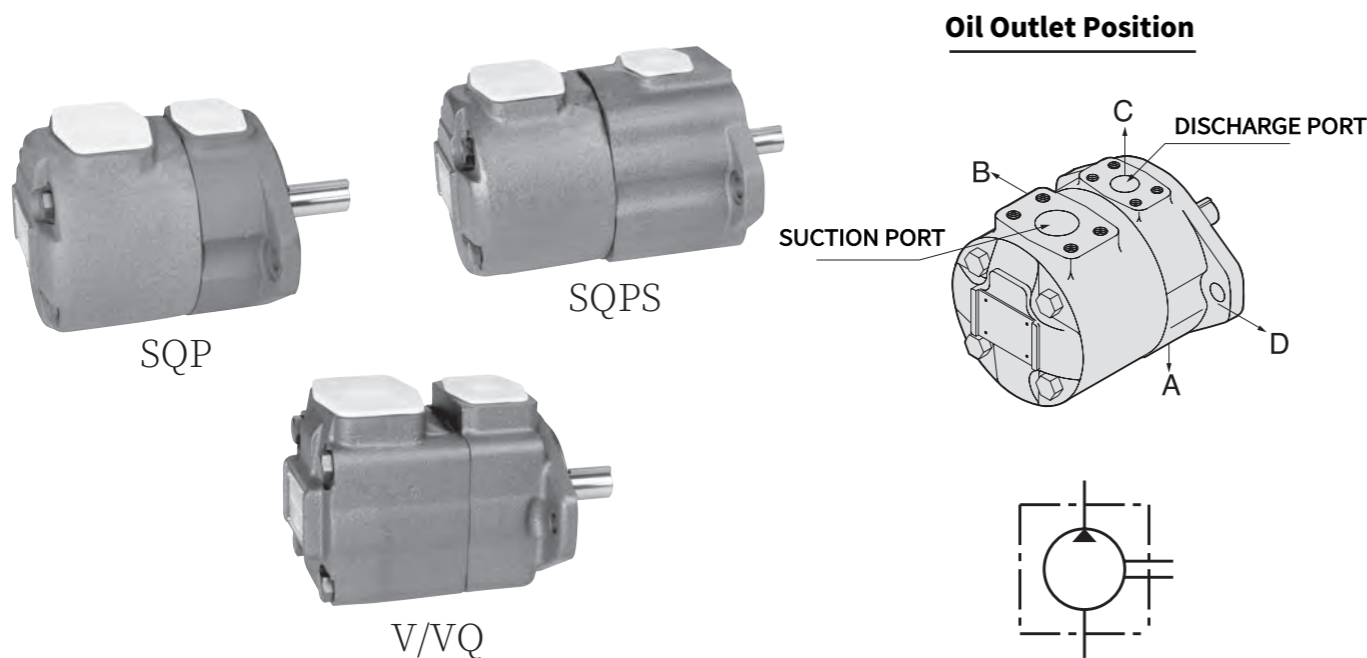


SQP Series Single Vane Pumps Maximum pressure 210 bar



SQP(S/V) Series Single-Pump Model Description							
(F3-)	SQP(S/V)	21	86			A	18
Fluid Compatibility	Model	Geometric displacement •Code	Spindle Type			Oil Outlet Position	Design Number
			Parallel Key	Heavy-Duty Parallel Key	Spline		
No Label: Use anti-wear hydraulic oil or phosphate ester oil.	SQP(S)1	2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 14	1	N/A	151	Viewed from the cover end of the pump A- Opposite the oil inlet B- 90° counter-clockwise from the oil inlet C- On the same side as the oil inlet D- 90° clockwise from the oil inlet	18
	SQP(S)2	10, 12, 14, 15, 17, 19, 21, 25	1	86	11		
F11 — Use Water-Glycol Fluid	SQP(S)3	17, 21, 25, 30, 32, 35, 38, 42	1	86	11		
	SQP(S)4	30, 35, 38, 42, 50, 57, 60, 66, 75	1	86	11		

• SQPS Series Spindle — Spline-less Type. • The code represents the rated capacity (US gpm) at 1200 r/min and 6.9 bar (100 psi).

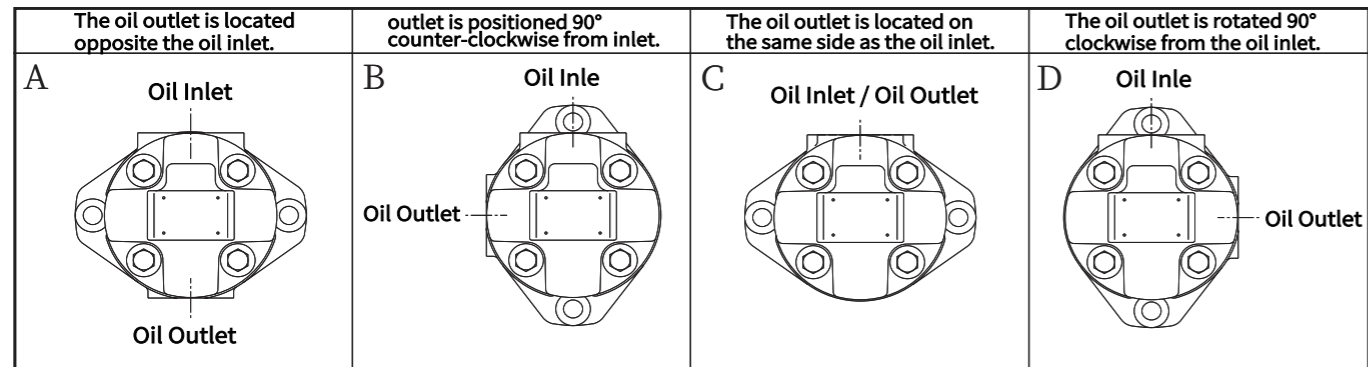
SQP Series Single Vane Pumps Maximum pressure 210 bar

Maximum Operating Pressure of SQP(S/V) Series Single Pumps														
Model	•Code	Geometric Displacement (cm ³ /r)	SQP(S/V)		F11-SQP(S/V)		F3-SQP(S/V)		Minimum Rotational Speed (r/min)					
			▲ Use anti-wear hydraulic oil or phosphate esters.		Use water-glycol fluid.		Use a water-in-oil emulsion.							
			Maximum Operating Pressure (bar)	Maximum Rotational Speed (r/min)	Maximum Operating Pressure (bar)	Maximum Rotational Speed (r/min)	Maximum Operating Pressure (bar)	Maximum Rotational Speed (r/min)						
SQP(S)1	2	7.5	138	1800	138	157	1500	138	600					
	3	10.2												
	4	12.8												
	5	16.7	207		1800			157		1500	138	1200		
	6	19.2												
	7	22.9												
	8	26.2												
	10	31.0	157		1800			138		1500	138	1200		
	11	35.0												
	12	37.9												
	SQP(S)2	14	44.2		172			1800		157	1500	138	1200	
10		32.5												
12		38.3												
14		43.3												
15		46.7												
17		52.5												
19		59.2												
21		65.0												
25		78.6	138	1800		157	1500		138					1200
17		53.3												
SQP(S)3	21	66.7	172	1800	157	1500	138	1200						
	25	79.2												
	30	95.0												
	32	100												
	35	109												
	38	118												
	42	134							138	1800	157	1500	138	1200
30	96.0													
SQP(S)4	35	109	172	1800	157	1500	138	1200						
	38	128												
	42	134												
	50	156												
	57	181												
	60	189												
	66	210												
	75	236							138	1800	157	1500	138	1200
	30	96.0												

• The code represents the rated capacity in USgpm at 1200 r/min and 6.9 bar.
▲ Marking: Permits instantaneous (spike) pressure exceeding the "Maximum Operating Pressure" by up to 10% for a duration of 0.5 seconds or less.

SQP Series Single Vane Pumps Maximum pressure 210 bar

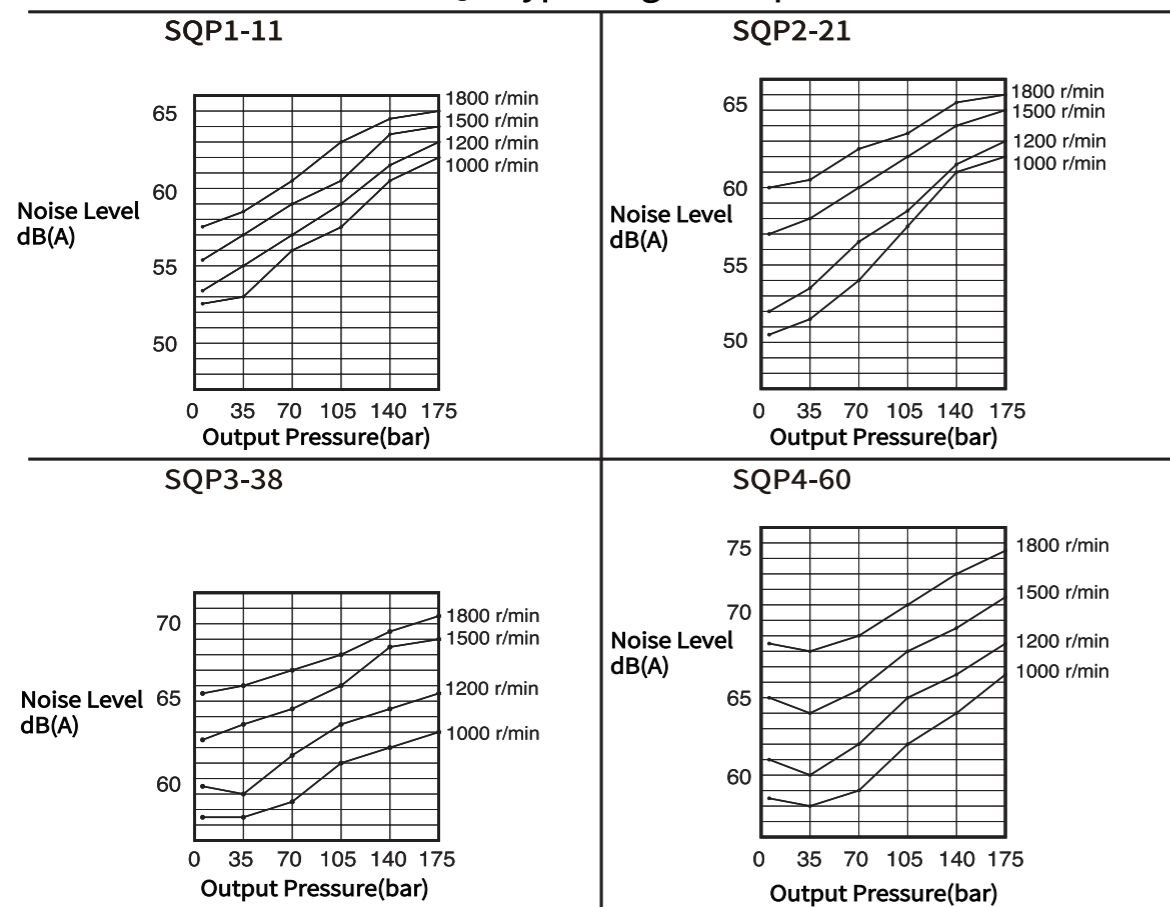
Port Orientation: Viewed from the Rear Cover End of the Pump (Single-Stage Pump Series)



Weight of SQP(S/V) Series Single Pump

Model	SQP		Model	SQPS		Model	V/VQ
	Flange-Mount Type	Foot-Mounted Type		Flange-Mount Type	Foot-Mounted Type		Flange-Mount Type
SQP1	18.0 kg	23.4 kg	SQPS1	24.0 kg	29.4 kg	20V	20.0 kg
SQP2	26.7 kg	35.4 kg	SQPS2	32.9 kg	41.6 kg	25V	17.0 kg
SQP3	36.9 kg	45.6 kg	SQPS3	49.6 kg	58.3 kg	35V	27.6 kg
SQP4	68.9 kg	94.8 kg	SQPS4	79.4 kg	105.3 kg	45V	38.7 kg

Noise Characteristics of SQP-Type Single Pumps



Measurement Conditions: Using ISO VG32 hydraulic oil (at 50°C) with an inlet pressure of 0 bar, the operating noise of the pump itself was measured at a distance of 1 meter behind the pump casing.

SQP Series Single Vane Pumps Maximum pressure 210 bar

Flow Rate and Input Power Characteristics of SQP(S/V) Series Single Pumps

Model	Rotational Speed (r/min)	Flow (L/min)				Input Power (kw)			
		6.9bar	69bar	138bar	172bar	6.9bar	69bar	138bar	172bar
SQP(S)1-2	1000	7.5	6.0	4.5		0.2	1.2	2.1	
	1200	9.5	8.5	6.5		0.3	1.5	2.5	
	1500	11.2	9.3	7.5		0.3	1.8	3.2	
	1800	13.5	11.2	9.0		0.4	2.2	3.8	
SQP(S)1-3	1000	10.2	8.8	7.4		0.3	1.5	3.1	
	1200	12.5	11.0	9.5		0.4	1.8	3.7	
	1500	15.3	13.7	12.1		0.5	2.3	4.7	
	1800	18.4	16.9	15.3		0.5	2.7	5.6	
SQP(S)1-4	1000	12.8	12.3	10.8	10.0	0.4	1.8	3.7	4.6
	1200	16.0	15.0	13.5	13.0	0.5	2.2	4.4	5.5
	1500	19.2	17.7	16.2	15.7	0.6	2.7	5.6	6.9
	1800	23.1	21.3	19.5	19.0	0.7	3.2	6.7	8.3
SQP(S)1-5	1000	16.7	15.7	14.7	14.2	0.4	2.8	4.8	6.0
	1200	20.0	19.0	18.0	17.5	0.5	3.2	5.8	7.2
	1500	25.0	24.0	23.0	22.5	0.6	3.9	7.3	9.0
	1800	30.0	29.0	28.0	27.5	0.6	4.2	8.6	10.7
SQP(S)1-6	1000	19.2	18.2	17.0	16.2	0.4	3.0	5.5	6.6
	1200	23.0	22.0	20.5	20.0	0.5	3.5	6.5	7.9
	1500	28.5	27.5	26.0	25.0	0.6	4.3	8.1	9.8
	1800	34.5	33.5	32.0	31.0	0.7	5.2	9.7	11.8
SQP(S)1-7	1000	22.9	21.4	19.9	18.9	0.5	3.4	6.2	7.6
	1200	27.5	26.0	24.5	23.5	0.6	4.0	7.4	9.1
	1500	34.4	32.9	31.4	30.4	0.7	5.0	9.2	11.3
	1800	41.3	39.8	38.3	37.3	0.8	5.9	11.0	13.6
SQP(S)1-8	1000	26.2	24.2	22.7	21.2	0.5	3.9	6.7	8.3
	1200	31.5	29.5	28.0	26.5	0.6	4.5	8.0	10.0
	1500	39.4	37.4	35.9	34.4	0.8	5.5	10.0	12.5
	1800	47.2	45.2	43.7	42.2	0.8	6.6	11.8	14.8
SQP(S)1-10	1000	31	29.2	26.5	24.8	0.6	4.6	8.4	10.4
	1200	37.2	34.7	32.4	30.9	0.7	5.4	10.0	12.5
	1500	46.5	43.1	41.3	39.4	0.9	6.5	12.5	15.6
	1800	55.8	53.2	50.6	48.5	0.9	7.8	14.7	18.5
SQP(S)1-11	1000	35.0	33.0	30.5	29.5	0.7	4.9	9.2	11.4
	1200	42.0	40.0	37.5	36.5	0.8	5.7	11.0	13.7
	1500	52.5	50.5	48.0	47.0	1.0	6.9	13.8	17.1
	1800	63.2	61.0	58.5	57.5	1.0	8.3	16.2	20.3
SQP(S)1-12	1000	37.9	36.4	34.4		0.7	5.6	10.4	
	1200	45.5	44.0	42.0		0.9	6.5	12.5	
	1500	56.9	55.4	53.4		1.1	7.9	15.6	
	1800	68.2	66.7	64.7		1.1	9.4	18.4	
SQP(S)1-14	1000	44.2	42.7	40.7		1.0	6.6	12.2	
	1200	53.0	51.5	49.5		1.1	7.8	14.6	
	1500	66.0	64.0	62.0		1.3	9.6	18.2	
	1800	79.5	77.5	75.5		1.4	11.5	21.7	
SQP(S)2-10	1000	32.5	29.5	26.0	24.5	0.9	4.9	9.3	11.3
	1200	39.0	36.0	32.5	31.0	1.0	5.8	11.1	13.5
	1500	48.8	45.8	42.3	40.8	1.2	7.2	13.8	16.8
	1800	58.5	55.5	52.0	50.5	1.3	8.5	16.5	20.1
SQP(S)2-12	1000	38.3	35.9	33.3	31.8	1.0	5.7	10.9	13.4
	1200	46.0	43.6	41.0	39.5	1.1	6.5	13.0	16.0
	1500	57.5	55.1	52.5	51.0	1.3	8.3	16.1	19.9
	1800	69.0	66.6	64.0	62.5	1.4	9.8	19.3	23.8
SQP(S)2-14	1000	43.3	40.2	36.8	35.8	1.2	6.4	12.2	15.1
	1200	52.0	48.5	45.5	44.5	1.3	7.5	14.5	18.0
	1500	65.0	61.9	58.5	57.5	1.5	9.4	18.0	22.4
	1800	78.0	74.9	71.5	70.5	1.7	11.1	21.5	26.7
SQP(S)2-15	1000	46.7	43.7	40.7	39.2	1.2	6.8	13.0	15.9
	1200	56.0	53.0	50.0	48.5	1.3	8.0	15.5	19.0
	1500	70.0	67.0	64.0	62.5	1.5	9.9	19.3	23.6
	1800	84.0	81.0	78.0	76.5	1.7	11.8	23.0	28.3
SQP(S)2-17	1000	52.5	49.7	46.5	44.5	1.4	7.4	14.3	17.6
	1200	63.0	60.6	57.0	55.0	1.5	9.0	17.0	21.0
	1500	78.8	76.0	72.8	70.8	1.7	10.8	21.1	26.1
	1800	94.5	91.7	88.5	86.5	1.9	12.9	25.1	31.2
SQP(S)2-19	1000	59.2	56.2	53.2	50.2	1.5	8.5	16.0	20.1
	1200	71.0	68.0	65.0	62.0	1.7	10.0	19.0	24.0
	1500	88.7	85.7	82.7	79.7	1.9	12.3	24.1	29.8
	1800	106.5	103.7	100.7	97.7	2.2	14.7	28.2	35.7
SQP(S)2-21	1000	65.0	62.2	59.0	57.0	1.6	9.2	17.6	21.8
	1200	78.0	75.0	72.0	70.0	1.8	11.0	21.0	26.0
	1500	97.5	94.7	91.5	89.5	2.1	13.4	26.1	32.3
	1800	117	114	111	109	2.3	16.0	31.1	38.6

SQP Series Single Vane Pumps

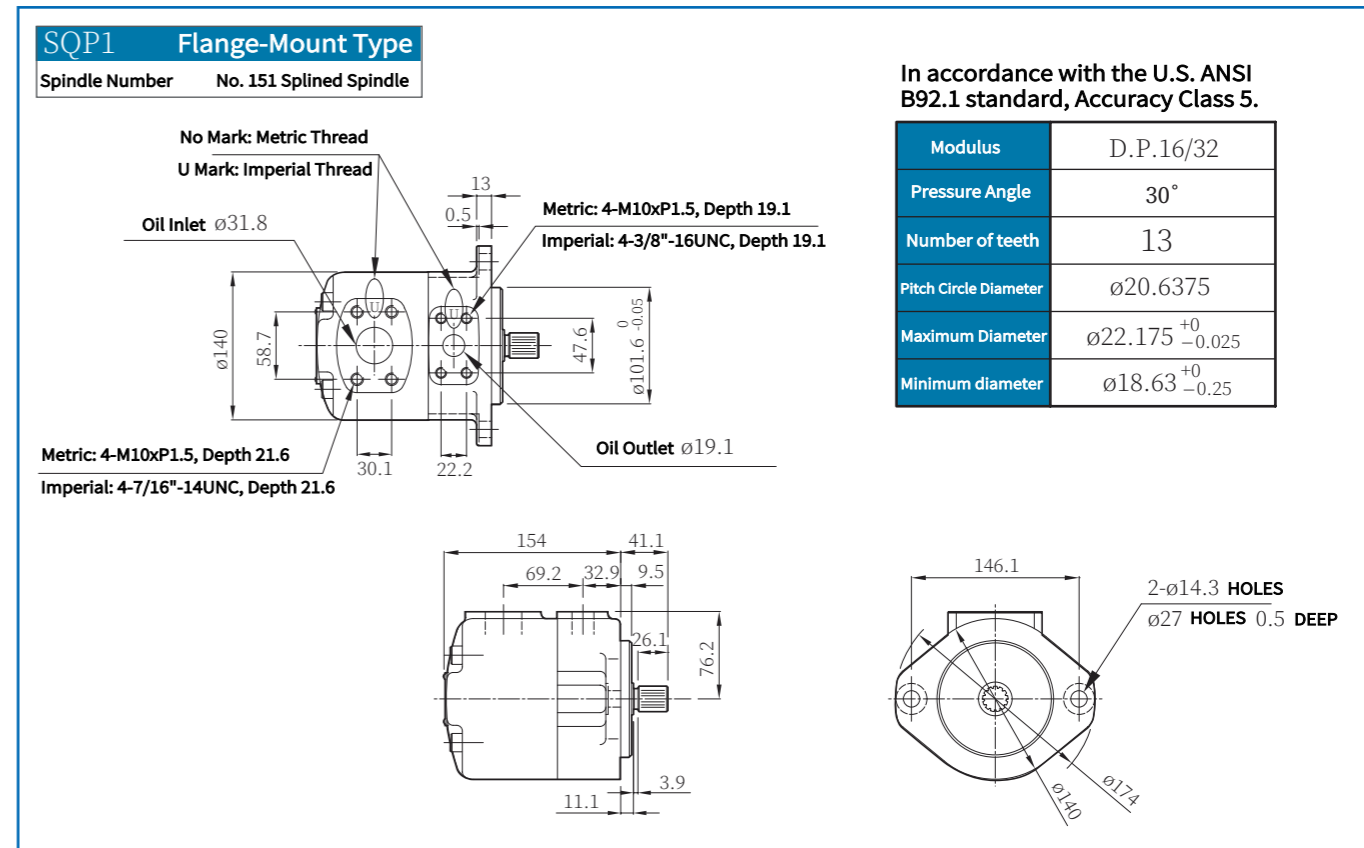
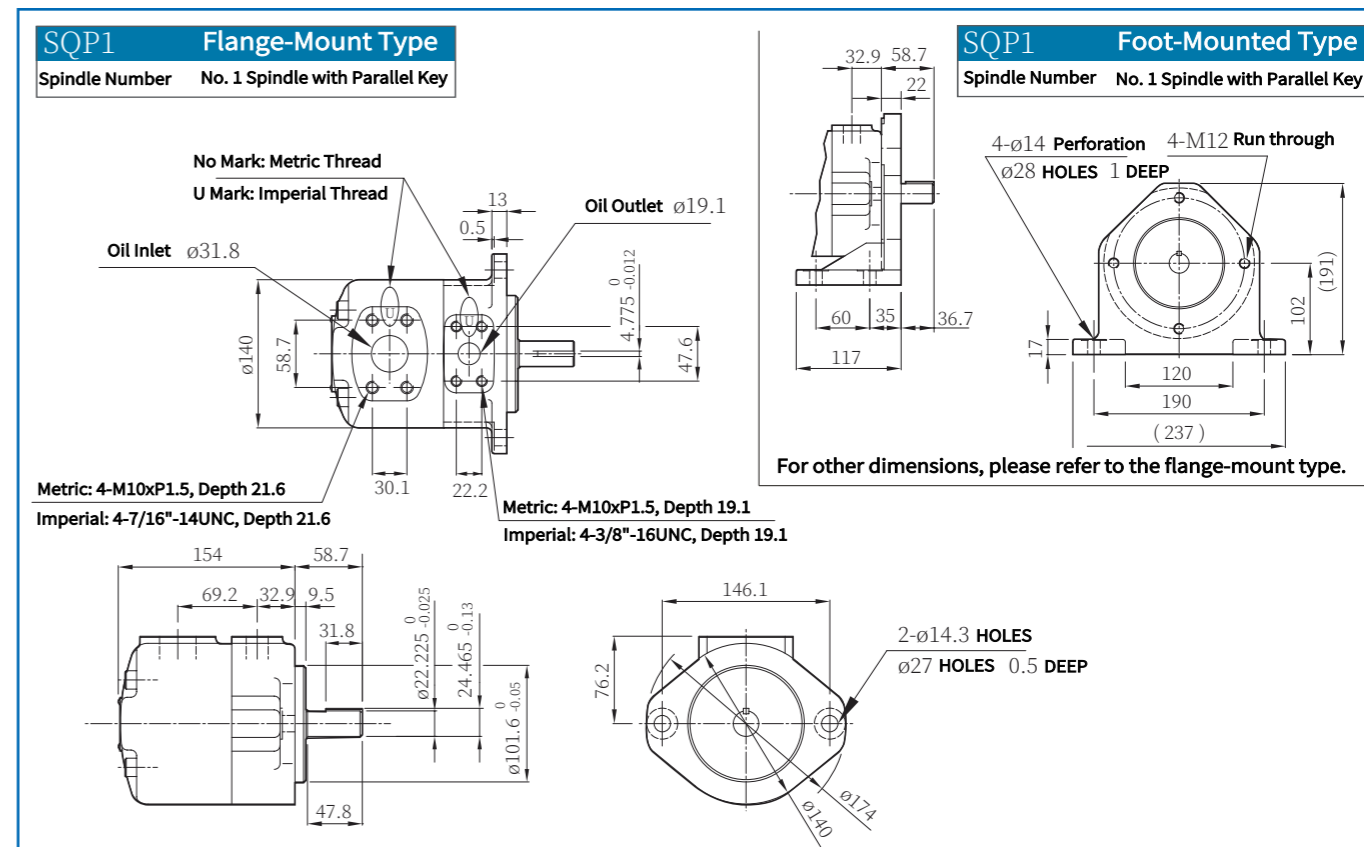
Maximum pressure 210 bar

Flow Rate and Input Power Characteristics of SQP(S) Series Single Pumps									
Model	Rotational Speed (r/min)	Flow (L/min)				Input Power (kW)			
		6.9bar	69bar	138bar	172bar	6.9bar	69bar	138bar	172bar
SQP(S)2-25	1000	78.8	74.8	71.5		2.0	11.2	21.4	
	1200	94.6	90.3	87.8		2.2	13.4	25.6	
	1500	118.2	113.0	110.0		2.6	16.3	31.8	
	1800	141.0	137.0	134.0		2.8	19.5	32.4	
SQP(S)3-17	1000	53.3	47.3	41.3	38.3	1.4	6.8	12.6	15.5
	1200	64.0	58.0	52.0	49.0	1.5	8.0	15.0	18.5
	1500	80.0	74.0	68.0	65.0	1.7	9.8	18.6	22.9
	1800	96.0	90.0	84.0	81.0	1.9	11.6	22.1	27.4
SQP(S)3-21	1000	66.7	60.7	54.7	51.7	1.6	8.9	16.8	20.6
	1200	80.0	74.0	68.0	65.0	1.8	10.5	20.0	24.5
	1500	100	94.0	88.0	85.0	2.0	12.9	24.8	30.4
	1800	120	114	108.0	105.0	2.3	15.4	30.5	36.4
SQP(S)3-25	1000	79.2	73.5	67.2	64.2	1.8	10.7	20.5	25.1
	1200	95.0	89.0	83.0	80.0	2.0	12.5	24.5	30.0
	1500	119	113	107.0	104.0	2.3	15.7	30.4	37.3
	1800	142	136	130.0	127.0	2.6	18.7	36.4	44.6
SQP(S)3-30	1000	95.0	88.4	81.0	78.0	1.8	12.6	24.7	30.5
	1200	114	107	100	97.0	2.0	15.0	29.5	36.5
	1500	142	136	128	125	2.4	18.6	36.7	45.5
	1800	171	164	157	154	2.7	22.2	44.0	54.5
SQP(S)3-32	1000	100	92.0	85.0	82.0	2.1	13.5	26.0	32.2
	1200	120	112	105	102	2.3	16.0	31.0	38.5
	1500	150	142	135	132	2.7	19.8	38.6	47.9
	1800	180	172	165	162	3.1	23.6	46.1	57.4
SQP(S)3-35	1000	109	103	95.2	92.2	2.2	14.2	27.6	34.3
	1200	131	124	117	114	2.5	17.0	33.0	41.0
	1500	164	157	150	147	2.9	20.9	41.0	51.0
	1800	196	189	182	179	3.3	24.9	50.4	61.1
SQP(S)3-38	1000	118	111	102	99.3	2.7	15.5	29.8	36.9
	1200	142	134	126	123	3.0	18.5	35.5	44.0
	1500	177	170	161	158	3.4	22.7	44.0	54.7
	1800	213	205	197	194	3.9	27.0	52.6	65.4
SQP(S)3-42	1000	134	125	118		4.5	27.1	52.1	
	1200	160	152	144		5.0	32.2	62.2	
	1500	201	193	185		5.8	39.8	77.4	
	1800	241	233	225		6.6	47.5	92.5	
SQP(S)4-30	1000	96.0	87.0	77.0	72.0	1.6	13.4	25.1	30.9
	1200	115	106	96.0	91.0	2.0	15.0	30.0	37.0
	1500	144	135	125	120	2.4	18.6	37.4	46.1
	1800	172.5	163.5	153.5	148.5	2.8	22.3	44.7	55.2
SQP(S)4-35	1000	109	100	90.0	85.0	1.7	14.2	28.4	35.1
	1200	131	122	112	107	2.0	17.0	34.0	42.0
	1500	164	157	145	140	2.4	21.2	42.4	52.4
	1800	196.5	187.5	177.5	172.5	2.9	25.4	50.9	62.9
SQP(S)4-38	1000	128	119	109	104	2.7	16.8	33.5	41.0
	1200	154	145	135	130	3.0	20.0	40.0	49.0
	1500	192.5	183.5	173.5	168.5	3.5	24.8	49.8	61.0
	1800	231	222	212	207	4.0	29.5	59.5	73.0
SQP(S)4-42	1000	134	125	115	110	2.7	17.7	35.2	43.5
	1200	161	152	142	137	3.0	21.0	42.0	52.0
	1500	201	192	182	177	3.5	26.0	52.3	64.7
	1800	241	232	222	217	4.0	31.0	62.5	77.5
SQP(S)4-50	1000	156	147	137	132	3.1	20.2	39.4	49.3
	1200	187	178	168	163	3.5	24.0	47.0	59.0
	1500	234	225	215	210	4.0	29.7	58.5	73.4
	1800	280	271	261	256	4.7	35.4	69.9	87.9
SQP(S)4-60	1000	189	178	166	160	4.0	24.4	46.9	58.6
	1200	227	216	204	198	4.5	29.0	56.0	70.0
	1500	284	273	261	255	5.2	35.8	69.6	87.1
	1800	340	329	317	311	5.9	42.7	83.2	104
SQP(S)4-66	1000	210	199	187		4.5	27.1	52.1	
	1200	252	241	229		5.0	32.2	62.2	
	1500	315	304	292		5.8	39.8	77.4	
	1800	378	366	354		6.6	47.5	92.5	
SQP(S)4-75	1000	236	225	213		5.0	30.5	58.7	
	1200	289	280	269		5.6	36.3	70	
	1500	354	343	331		6.5	44.8	87	
	1800	424	414	401		7.4	53.4	104.0	

Typical flow rate for 10W hydraulic oil at 50°C and 26 cSt, at the specified speed with a 0 bar inlet pressure.

SQP Series Single Vane Pumps

Maximum pressure 210 bar

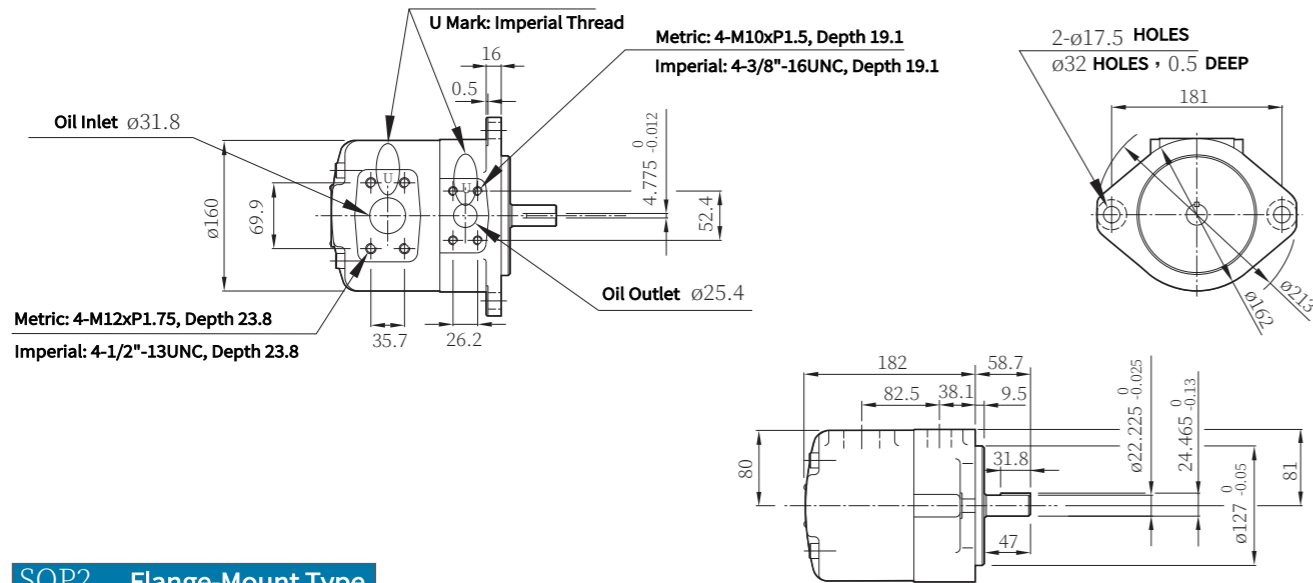


SQP Series Single Vane Pumps

Maximum pressure 210 bar

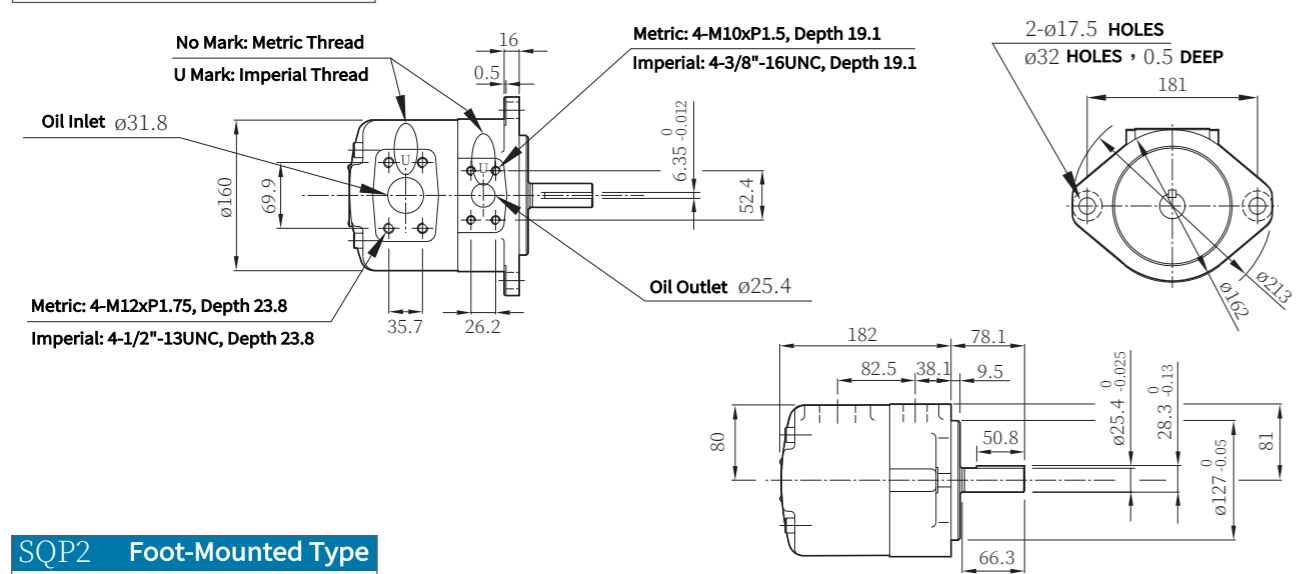
SQP2 Flange-Mount Type

Spindle Number No. 1 Spindle with Parallel Key No Mark: Metric Thread



SQP2 Flange-Mount Type

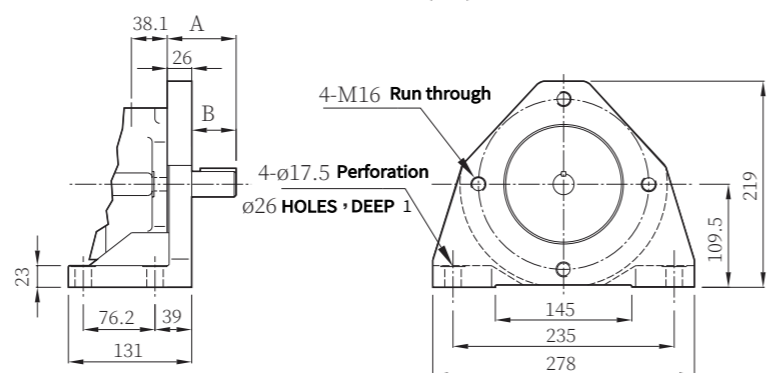
Spindle Number No. 86 Keyed Spindle



SQP2 Foot-Mounted Type

Spindle Number Spindles 1 & 86

SQP2 Size Chart		
Spindle Type	A	B
Spindle 1	58.7	32.7
Spindle No. 86	78.1	52.1

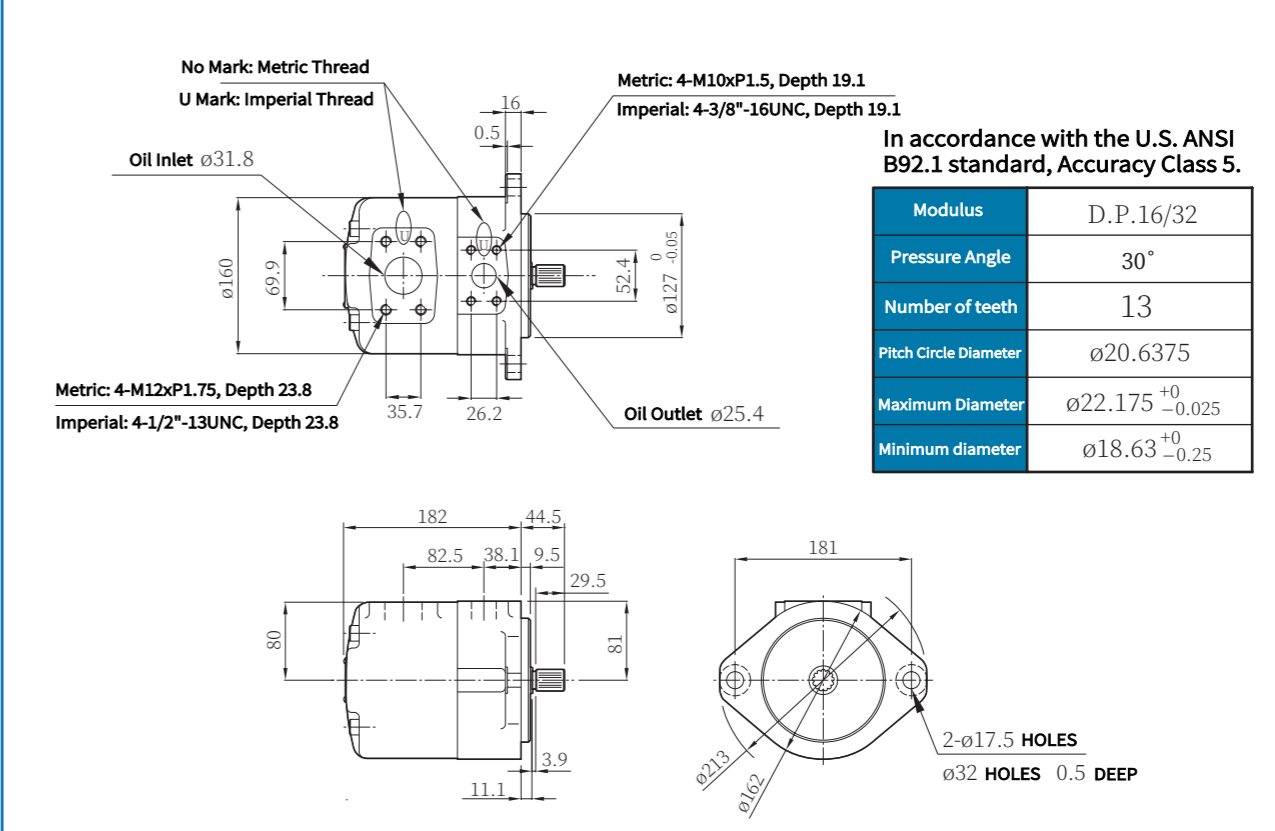


SQP Series Single Vane Pumps

Maximum pressure 210 bar

SQP2 Flange-Mount Type

Spindle Number No. 11 Splined Spindle

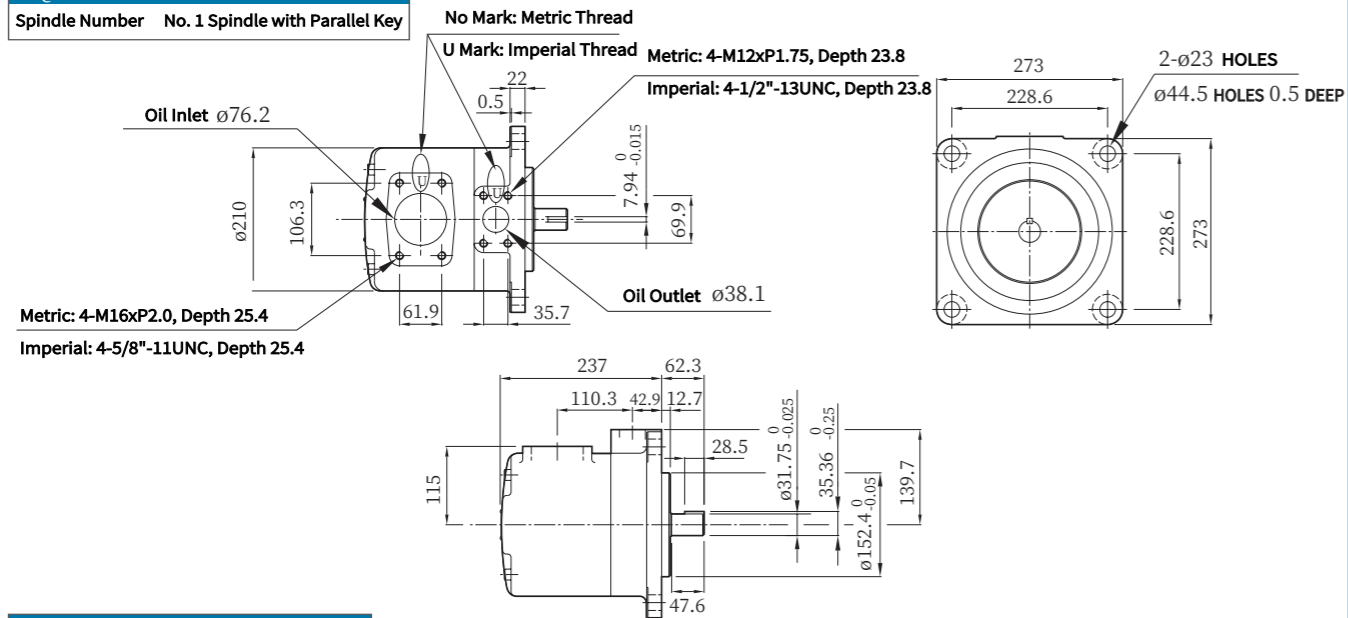


SQP Series Single Vane Pumps

Maximum pressure 210 bar

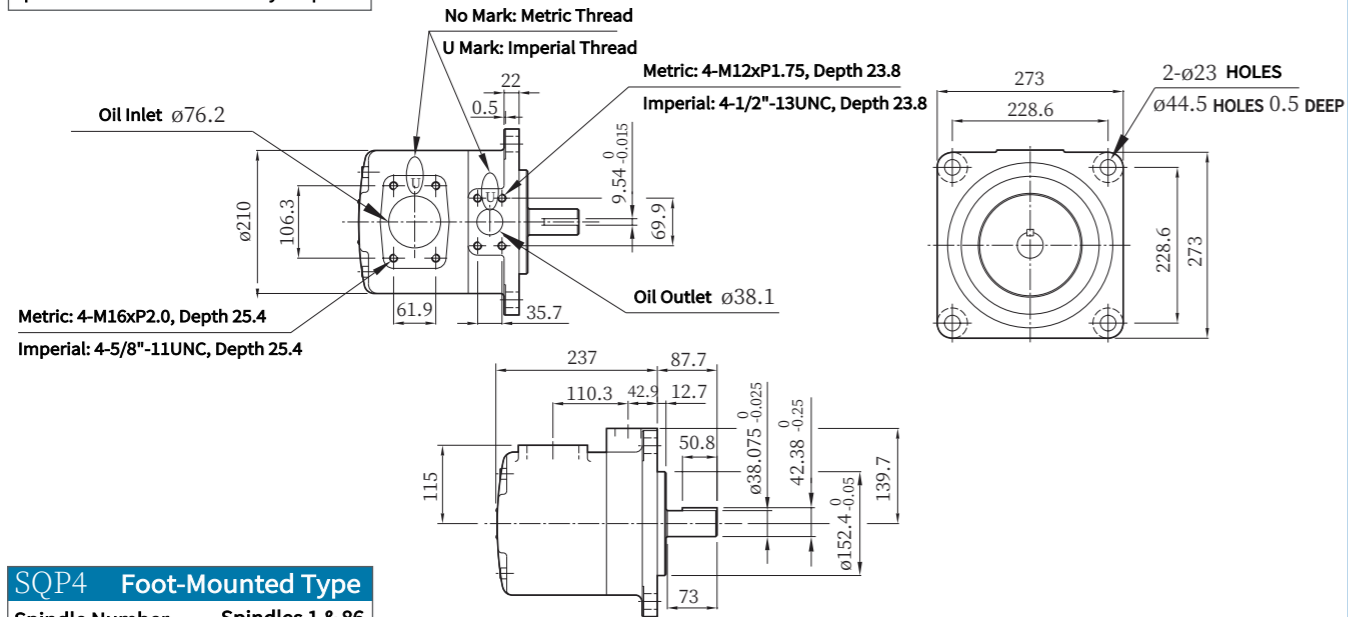
SQP4 Flange-Mount Type

Spindle Number No. 1 Spindle with Parallel Key



SQP4 Flange-Mount Type

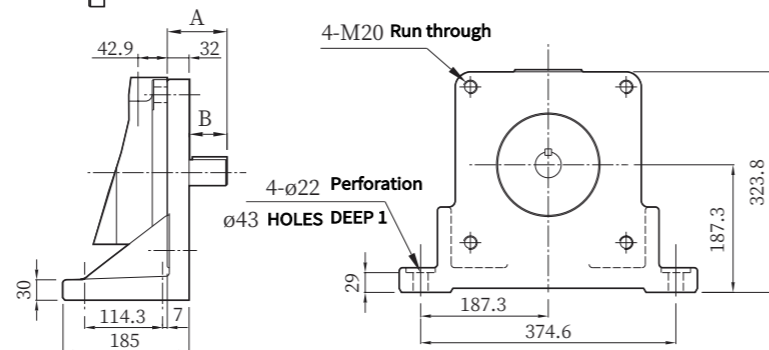
Spindle Number No. 86 Keyed Spindle



SQP4 Foot-Mounted Type

Spindle Number Spindles 1 & 86

SQP4 Size Chart		
Spindle Type	A	B
Spindle 1	62.3	30.3
Spindle No. 86	87.7	55.7

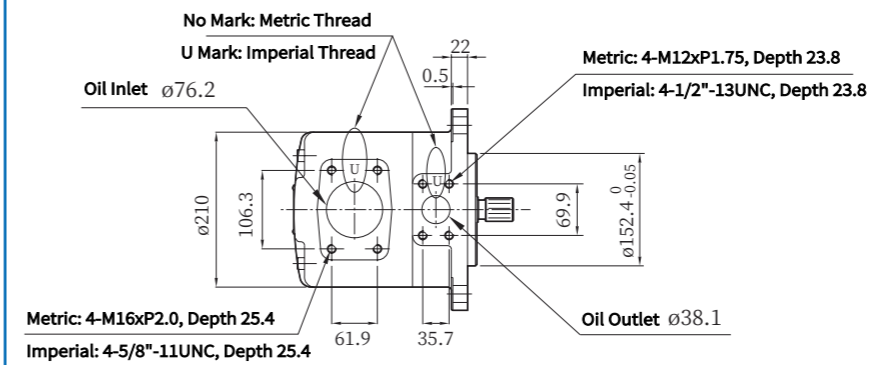


SQP Series Single Vane Pumps

Maximum pressure 210 bar

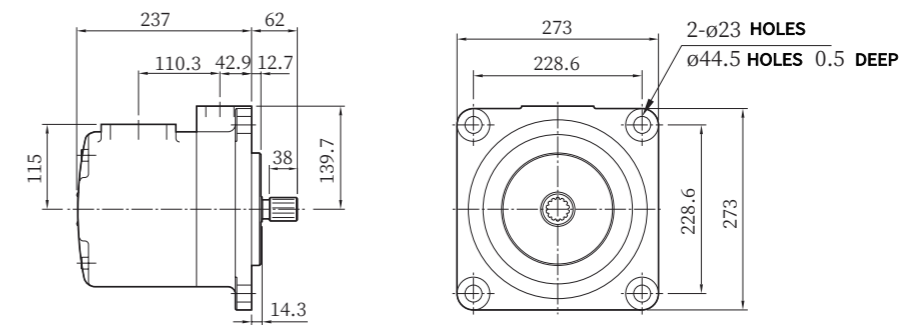
SQP4 Flange-Mount Type

Spindle Number No. 11 Splined Spindle



In accordance with the U.S. ANSI B92.1 standard, Accuracy Class 5.

Modulus	D.P.12/24
Pressure Angle	30°
Number of teeth	14
Pitch Circle Diameter	ø29.6333
Maximum Diameter	ø31.75 ⁺⁰ _{-0.025}
Minimum diameter	ø26.924 ⁺⁰ _{-0.25}

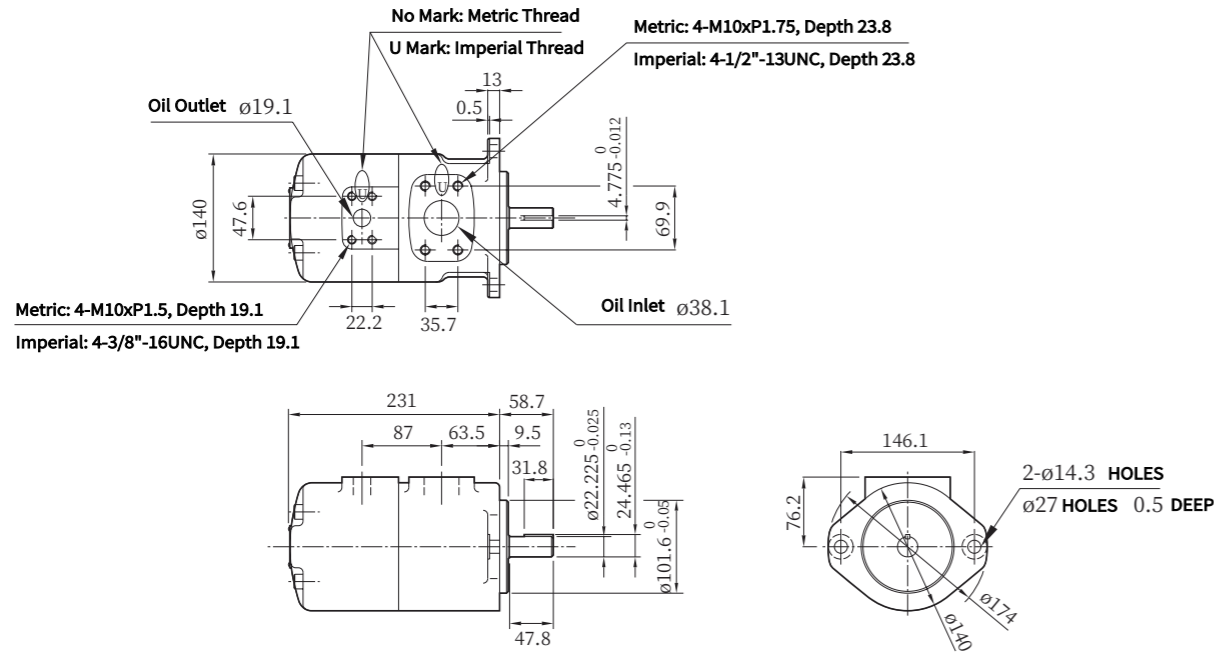


SQPS Series Single Vane Pumps

Maximum pressure 210 bar

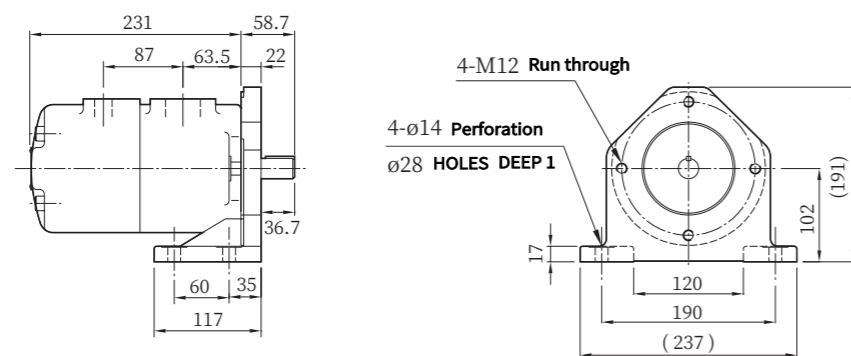
SQPS1 Flange-Mount Type

Spindle Number No. 1 Spindle with Parallel Key



SQPS1 Foot-Mounted Type

Spindle Number No. 1 Spindle with Parallel Key

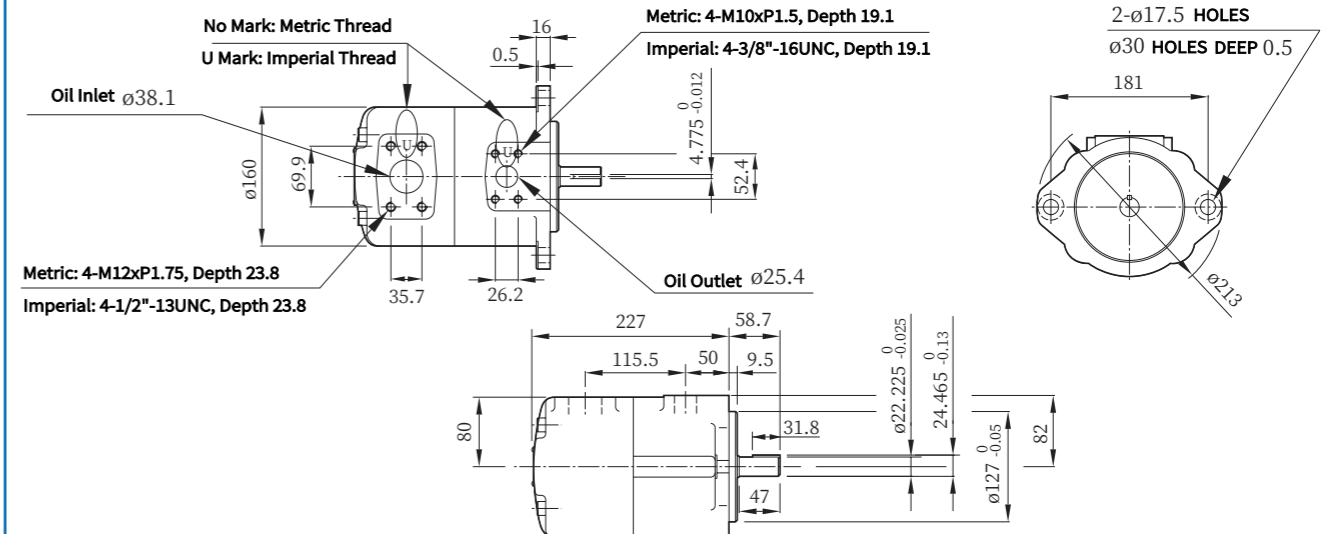


SQPS Series Single Vane Pumps

Maximum pressure 210 bar

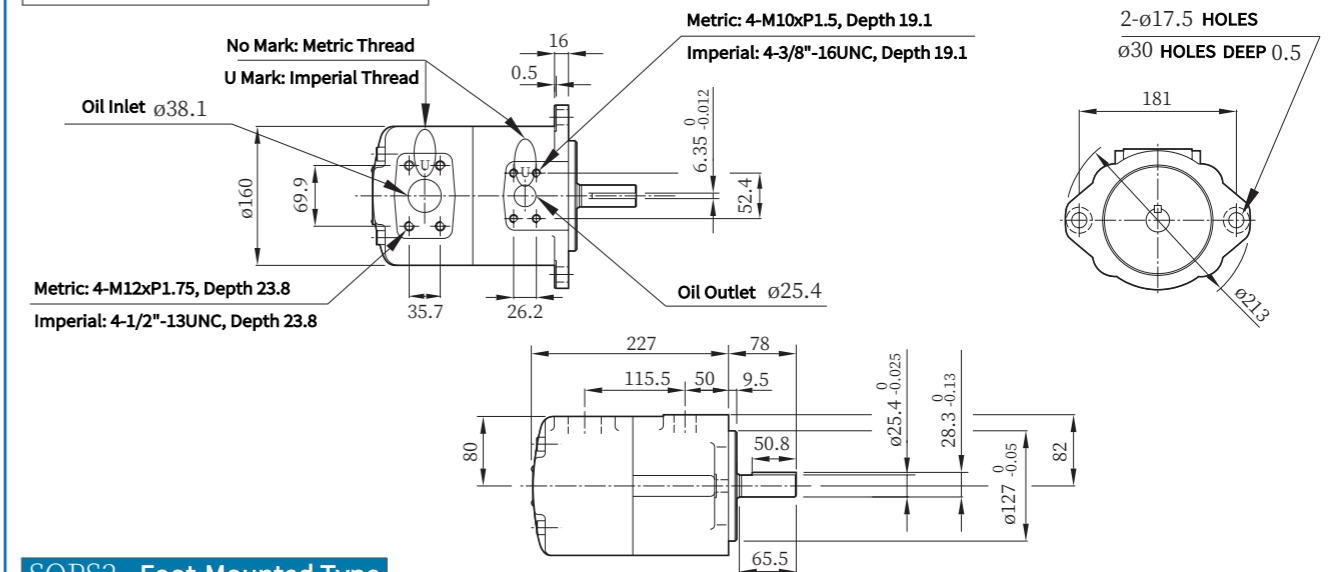
SQPS2 Flange-Mount Type

Spindle Number No. 1 Spindle with Parallel Key



SQPS2 Flange-Mount Type

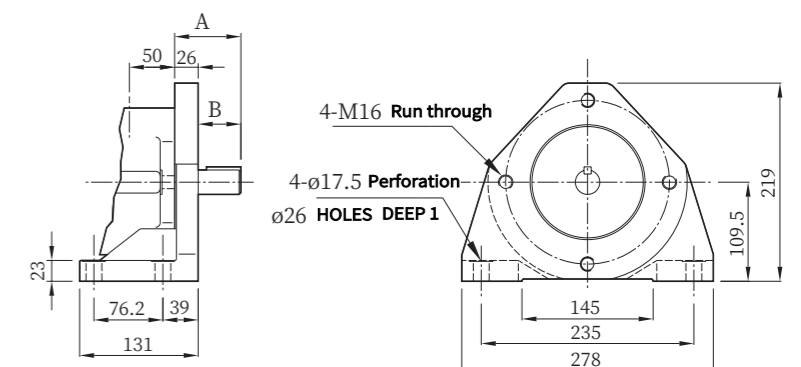
Spindle Number No. 86 Keyed Spindle



SQPS2 Foot-Mounted Type

Spindle Number Spindles 1 & 86

SQPS2 Size Chart		
Spindle Type	A	B
Spindle 1	58.7	32.7
Spindle No. 86	78.0	52.0



SQPS Series Single Vane Pumps Maximum pressure 210 bar

SQPS3 Flange-Mount Type
 Spindle Number No. 1 Spindle with Parallel Key
 No Mark: Metric Thread
 U Mark: Imperial Thread
 Metric: 4-M10xP1.5, Depth 21.6
 Imperial: 4-7/16"-14UNC, Depth 21.6

Oil Inlet $\phi 50.8$
 Oil Outlet $\phi 31.8$
 2- $\phi 17.5$ HOLES
 $\phi 30$ HOLES 0.5 DEEP
 Metric: 4-M12xP1.75, Depth 23.9
 Imperial: 4-1/2"-13UNC, Depth 23.9

SQPS3 Flange-Mount Type
 Spindle Number No. 86 Keyed Spindle
 No Mark: Metric Thread
 U Mark: Imperial Thread
 Metric: 4-M10xP1.5, Depth 21.6
 Imperial: 4-7/16"-14UNC, Depth 21.6

Oil Inlet $\phi 50.8$
 Oil Outlet $\phi 31.8$
 2- $\phi 17.5$ HOLES
 $\phi 30$ HOLES 0.5 DEEP
 Metric: 4-M12xP1.75, Depth 23.9
 Imperial: 4-1/2"-13UNC, Depth 23.9

SQPS3 Foot-Mounted Type
 Spindle Number Spindles 1 & 86

SQPS3 Size Chart		
Spindle Type	A	B
Spindle 1	73.6	47.6
Spindle No. 86	86.4	60.4

4-M16 Run through
 4- $\phi 17.5$ Perforation
 $\phi 26$ HOLES DEEP 1

SQPS Series Single Vane Pumps Maximum pressure 210 bar

SQPS4 Flange-Mount Type
 Spindle Number No. 1 Spindle with Parallel Key
 No Mark: Metric Thread
 U Mark: Imperial Thread
 Metric: 4-M12xP1.75, Depth 23.8
 Imperial: 4-1/2"-13UNC, Depth 23.8

Oil Inlet $\phi 76.2$
 Oil Outlet $\phi 38.1$
 4- $\phi 23$ HOLES
 $\phi 44.5$ HOLES 0.5 DEEP
 Metric: 4-M16xP2.0, Depth 25.4
 Imperial: 4-5/8"-11UNC, Depth 25.4

SQPS4 Flange-Mount Type
 Spindle Number No. 86 Keyed Spindle
 No Mark: Metric Thread
 U Mark: Imperial Thread
 Metric: 4-M12xP1.75, Depth 23.8
 Imperial: 4-1/2"-13UNC, Depth 23.8

Oil Inlet $\phi 76.2$
 Oil Outlet $\phi 38.1$
 4- $\phi 23$ HOLES
 $\phi 44.5$ HOLES 0.5 DEEP
 Metric: 4-M16xP2.0, Depth 25.4
 Imperial: 4-5/8"-11UNC, Depth 25.4

SQPS4 Foot-Mounted Type
 Spindle Number Spindles 1 & 86

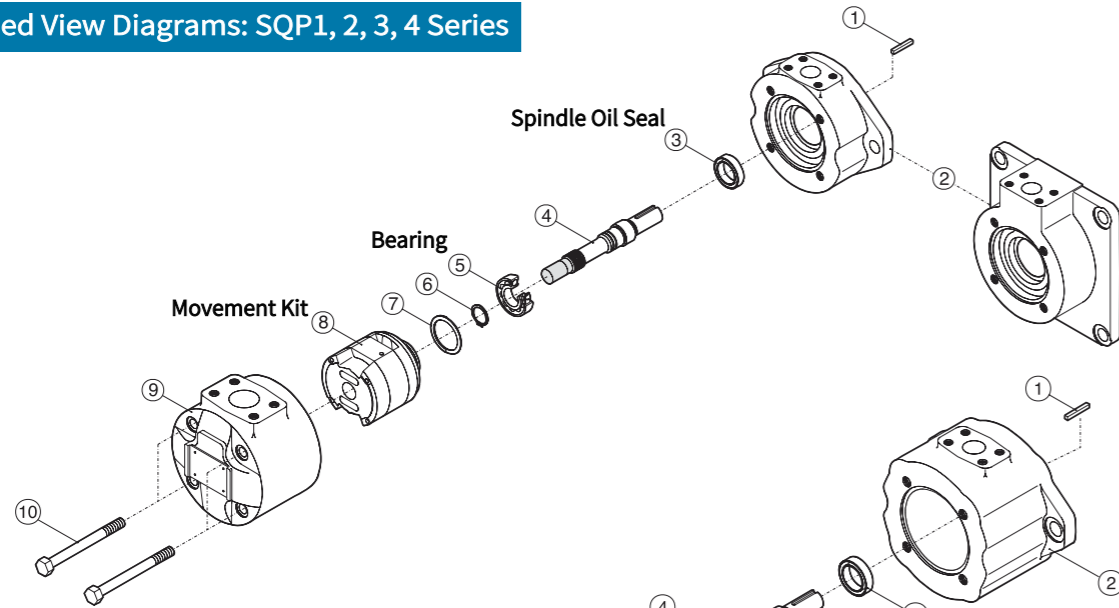
SQPS4 Size Chart		
Spindle Type	A	B
Spindle 1	62.3	30.3
Spindle No. 86	87.7	55.7

4-M20 Run through
 4- $\phi 22$ Perforation
 $\phi 43$ HOLES DEEP 1

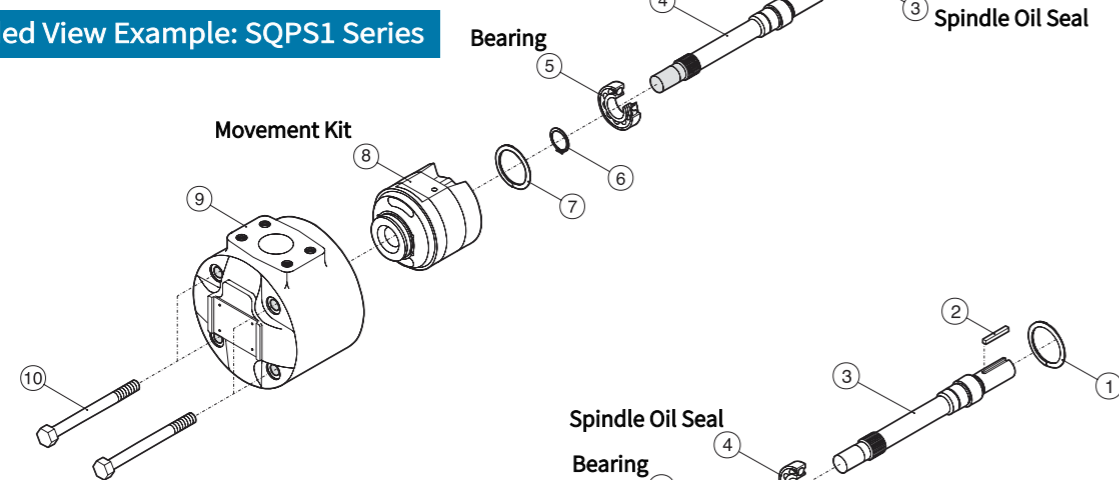
SQP Series Single Vane Pumps

Maximum pressure 210 bar

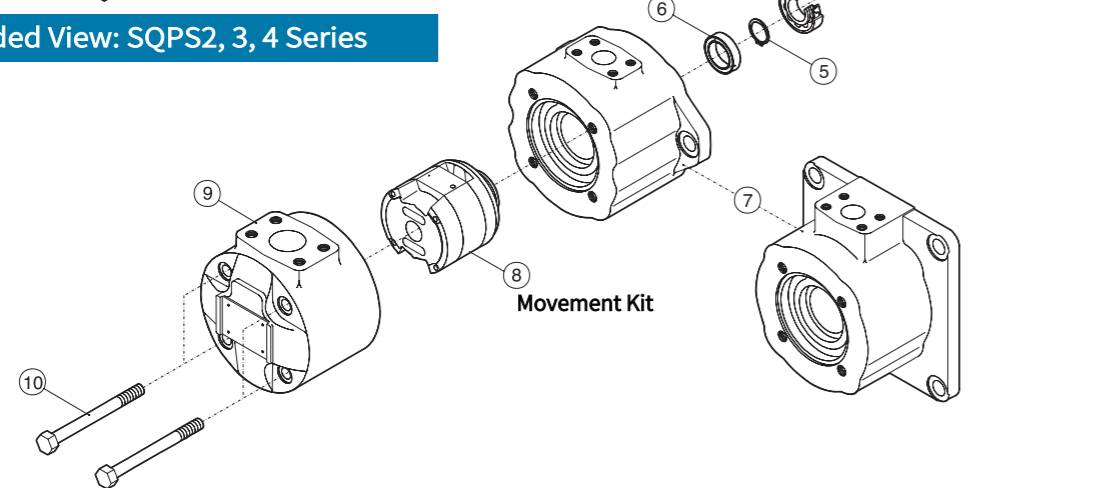
Exploded View Diagrams: SQP1, 2, 3, 4 Series



Exploded View Example: SQPS1 Series



Exploded View: SQPS2, 3, 4 Series



SQP Series Single Vane Pumps

Maximum pressure 210 bar

SQP(S) Series Single-Stage Pump Cartridge Kit Model Designation

(F3-)	CK-◆SQP(S)2	-17	-R	-18
Pre-injection Fluid Compatibility	Movement Kit Model	Core Kit Geometric Displacement • Code	Rotation Direction	Design Code
No Mark: Use anti-wear hydraulic oil or phosphate ester	CK-SQP(S)1	2、3、4、5、6、7、8、10、11、12、14	Viewed from the pump shaft end: R — Clockwise rotation L — Counter-clockwise rotation	18
F11- Use water-glycol fluid	CK-SQP(S)2	10、12、14、15、17、19、21、25		
F3- Use water-in-oil emulsion	CK-SQP(S)3	17、21、25、30、32、35、38、42		
	CK-SQP(S)4	30、35、38、42、50、57、60、66、75		

- Code represents the rated capacity in US gpm at 1200 r/min and 6.9 bar.
- ◆ Code represents the casing type number.

SQP(S) Series Single Pump Cartridge Kit Weight

Movement Kit Model	Weight (KG)
CK-SQP(S)1	2.5
CK-SQP(S)2	3.8
CK-SQP(S)3	6.5
CK-SQP(S)4	10.2

SQP(S) Series Single-Stage Pump: Spindle Oil Pump and Bearings List

Model	Spindle Oil Seal	Bearing
SQP1	TBY 29.36x42.82x7.9	6204
SQP2	TBY 29.36x42.82x7.9	6205
SQP3	TBY 36.5x50.8x7.9	6306
SQP4	TBY 41.28x60.32x9.5	6307
SQPS1	TBY 29.36x42.82x7.9	6204
SQPS2	TBY 24.59x44.5x7.9	6205zz
SQPS3	TBY 29.36x42.82x7.9	6306zz
SQPS4	TBY 34.93x57.15x7.9	6307zz

SQP Series Double Vane Pumps

Maximum pressure 210 bar



SQP



SQPS

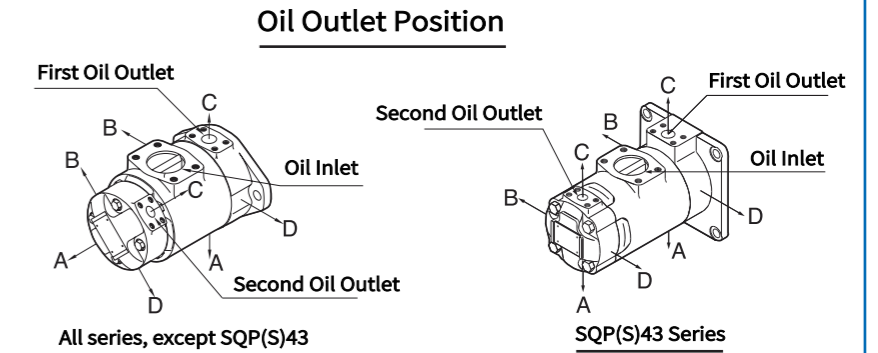
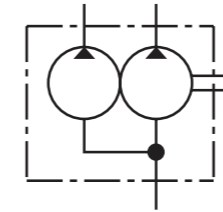
SQP(S) Series Dual Pump Model Designation

F3	SQP(S)	17	12
Pre-injection Fluid Compatibility	Model	Shaft-End Pump Geometric Displacement • Code	End-face Pump Geometric Displacement • Code
No Label: Use anti-wear hydraulic oil or phosphate ester fluid	SQP(S)21	10 , 12 , 14 , 15 , 17 , 19 , 21 , 25	2 , 3 , 4 , 5 , 6 , 7 , 8 , 10 , 11 , 12 , 14
	SQP(S)31	17 , 21 , 25 , 30 , 32 , 35 , 38 , 42	2 , 3 , 4 , 5 , 6 , 7 , 8 , 10 , 11 , 12 , 14
F11- Use water-glycol fluid	SQP(S)32	17 , 21 , 25 , 30 , 32 , 35 , 38 , 42	10 , 12 , 14 , 15 , 17 , 19 , 21 , 25
F3- Use water-in-oil emulsion	SQP(S)41	30 , 35 , 38 , 42 , 50 , 57 , 60 , 66 , 75	2 , 3 , 4 , 5 , 6 , 7 , 8 , 10 , 11 , 12 , 14
	SQP(S)42	30 , 35 , 38 , 42 , 50 , 57 , 60 , 66 , 75	10 , 12 , 14 , 15 , 17 , 19 , 21 , 25
	SQP(S)43	30 , 35 , 38 , 42 , 50 , 57 , 60 , 66 , 75	17 , 21 , 25 , 30 , 32 , 35 , 38 , 42

• SQPS Series Spindle — Spline-less Type. • Code represents the rated capacity in US gpm at 1200 r/min and 6.9 bar.

SQP Series Double Vane Pumps

Maximum pressure 210 bar



86			AA	-18
Spindle Type			Oil Port Direction	Design Code
Parallel Key	Heavy-Duty Parallel Key	Spline		
1	86	11	<p>Viewed from the cover end of the pump</p> <p>The first oil outlet is located opposite the oil inlet.</p> <p>AA — 2nd Outlet rotated 135° counter-clockwise from the Inlet (The 2nd Outlet is positioned opposite the Inlet)</p> <p>AB — 2nd Outlet rotated 45° counter-clockwise from the Inlet (The 2nd Outlet is positioned 90° counter-clockwise from the Inlet)</p> <p>AC — 2nd Outlet rotated 45° clockwise from the Inlet (The 2nd Outlet is positioned on the same side as the Inlet)</p> <p>AD — 2nd Outlet rotated 135° clockwise from the Inlet (The 2nd Outlet is positioned 90° clockwise from the Inlet)</p> <p>The first oil outlet is positioned 90° counter-clockwise from the oil inlet.</p> <p>BA — 2nd Outlet rotated 135° counter-clockwise from the Inlet (The 2nd Outlet is located opposite the Inlet)</p> <p>BB — 2nd Outlet rotated 45° counter-clockwise from the Inlet (The 2nd Outlet is located 90° counter-clockwise from the Inlet)</p> <p>BC — 2nd Outlet rotated 45° clockwise from the Inlet (The 2nd Outlet is located on the same side as the Inlet)</p> <p>BD — 2nd Outlet rotated 135° clockwise from the Inlet (The 2nd Outlet is located 90° clockwise from the Inlet)</p> <p>The first oil outlet is located on the same side as the oil inlet.</p> <p>CA — 2nd Oil Outlet: 135° counter-clockwise from the Oil Inlet (The 2nd oil outlet is opposite the oil inlet)</p> <p>CB — 2nd Oil Outlet: 45° counter-clockwise from the Oil Inlet (The 2nd oil outlet is 90° counter-clockwise from the oil inlet)</p> <p>CC — 2nd Oil Outlet: 45° clockwise from the Oil Inlet (The 2nd oil outlet is on the same side as the oil inlet)</p> <p>CD — 2nd Oil Outlet: 135° clockwise from the Oil Inlet (The 2nd oil outlet is 90° clockwise from the oil inlet)</p> <p>The first oil outlet is positioned 90° clockwise from the oil inlet.</p> <p>DA — 2nd Oil Outlet: 135° counter-clockwise from the Oil Inlet (The 2nd oil outlet is located opposite the oil inlet)</p> <p>DB — 2nd Oil Outlet: 45° counter-clockwise from the Oil Inlet (The 2nd oil outlet is located 90° counter-clockwise from the oil inlet)</p> <p>DC — 2nd Oil Outlet: 45° clockwise from the Oil Inlet (The 2nd oil outlet is located on the same side as the oil inlet)</p> <p>DD — 2nd Oil Outlet: 135° clockwise from the Oil Inlet (The 2nd oil outlet is located 90° clockwise from the oil inlet)</p>	18
1	86	11		
1	86	11		
1	86	11		
1	86	11		
1	86	11		
1	86	11		
1	86	11		
1	86	11		
1	86	11		

Maximum Operating Pressure of SQP(S) Dual Pumps							
Model	Shaft-End Pump (First Oil Outlet)		End-Suction Pump (Second Oil Outlet)			Maximum Rotational Speed (r/min)	Minimum Rotational Speed (r/min)
	Code	Geometric Displacement (cm ³ /r)	Maximum Operating Pressure (bar)	Code	Geometric Displacement (cm ³ /r)		
SQP(S)21	10	32.5	▲172 F3=138 F11=157	2	7.5	▲138 F3=138 F11=138	1800 F3=1200 F11=1500
	12	38.3		3	10.2		
	14	43.3		4	12.8		
	15	46.7		5	16.7		
	17	52.5		6	19.2		
	19	59.2		7	22.9		
	21	65.0		8	26.2		
SQP(S)31	17	53.3	▲172 F3=138 F11=157	10	31.0	▲157, F3=138 F11=138	600
	21	66.7		11	35.0		
	25	79.2		12	37.9		
	30	95.0		14	44.2		
	32	100		17	52.5		
	35	109		19	59.2		
	38	118		21	65.0		
SQP(S)41	30	96.0	▲172 F3=138 F11=157	25	78.6	▲172 F3=138 F11=157	1800 F3=1200 F11=1500
	35	109		21	66.7		
	38	128		25	79.2		
	42	134		30	95.0		
	50	156		32	100		
	57	181		35	109		
	66	210		38	118		
SQP(S)32	17	53.3	▲172 F3=138 F11=157	17	53.3	▲172 F3=138 F11=157	600
	21	66.7		21	66.7		
	25	79.2		25	79.2		
	30	95.0		30	95.0		
	32	100		32	100		
	35	109		35	109		
	38	118		38	118		
SQP(S)42	30	96.0	▲172 F3=138 F11=157	30	96.0	▲172 F3=138 F11=157	1800 F3=1200 F11=1500
	35	109		32	100		
	38	128		35	109		
	42	134		38	118		
	50	156		42	134		
	57	181		42	134		
	66	210		42	134		
SQP(S)43	30	96.0	▲172 F3=138 F11=157	30	96.0	▲172 F3=138 F11=157	600
	35	109		32	100		
	38	128		35	109		
	42	134		38	118		
	50	156		42	134		
	57	181		42	134		
	66	210		42	134		

● The code represents the rated capacity in US gpm at 1200 r/min and 6.9 bar.
 ▲ The mark permits instantaneous (spike) pressure exceeding the "Maximum Operating Pressure" by up to 10% for a duration of 0.5 seconds or less.

Port Orientation: Viewed from the Cover End of the Pump (All Series, Except SQP(S)43)			
AA	AB	AC	AD
The first oil outlet is located opposite the oil inlet. The second oil outlet is positioned 135° counter-clockwise from the oil inlet.	The first oil outlet is located opposite the oil inlet. The second oil outlet is positioned 45° counter-clockwise from the oil inlet.	The first oil outlet is located opposite the oil inlet. The second oil outlet is positioned 45° clockwise from the oil inlet.	The first oil outlet is located opposite the oil inlet. The second oil outlet is located 135° clockwise from the oil inlet.
BA	BB	BC	BD
The first oil outlet is positioned 90° counter-clockwise from the oil inlet. The second oil outlet is positioned 135° counter-clockwise from the oil inlet.	The first oil outlet is positioned 90° counter-clockwise from the oil inlet. The second oil outlet is positioned 45° counter-clockwise from the oil inlet.	The first oil outlet is positioned 90° counter-clockwise from the oil inlet. The second oil outlet is positioned 45° clockwise from the oil inlet.	The first oil outlet is positioned 90° counter-clockwise from the oil inlet. The second oil outlet is positioned 135° clockwise from the oil inlet.
CA	CB	CC	CD
The first oil outlet is located on the same side as the oil inlet. The second oil outlet is positioned 135° counter-clockwise from the oil inlet.	The first oil outlet is located on the same side as the oil inlet. The second oil outlet is positioned 45° counter-clockwise from the oil inlet.	The first oil outlet is located on the same side as the oil inlet. The second oil outlet is positioned 45° clockwise from the oil inlet.	The first oil outlet is located on the same side as the oil inlet. The second oil outlet is positioned 135° clockwise from the oil inlet.
DA	DB	DC	DD
The first oil outlet is positioned 90° clockwise from the oil inlet. The second oil outlet is positioned 135° counter-clockwise from the oil inlet.	The first oil outlet is positioned 90° clockwise from the oil inlet. The second oil outlet is positioned 45° counter-clockwise from the oil inlet.	The first oil outlet is positioned 90° clockwise from the oil inlet. The second oil outlet is positioned 45° clockwise from the oil inlet.	The first oil outlet is positioned 90° clockwise from the oil inlet. The second oil outlet is positioned 135° clockwise from the oil inlet.

SQP Series Double Vane Pumps

Maximum pressure 210 bar

Port Orientation: Viewed from the cover end of the pump (Applicable only to SQP(S)43 series)

AA	AB	AC	AD
The first oil outlet is located opposite the oil inlet. The second oil outlet is located opposite the oil inlet.	The first oil outlet is located opposite the oil inlet. The second oil outlet is located 90° counter-clockwise from the oil inlet.	The first oil outlet is located opposite the oil inlet. The second oil outlet is located on the same side as the oil inlet.	The first oil outlet is located opposite the oil inlet. The second oil outlet is located 90° clockwise from the oil inlet.
BA	BB	BC	BD
The first oil outlet is positioned 90° counter-clockwise from the oil inlet. The second oil outlet is located opposite the oil inlet.	The first oil outlet is positioned 90° counter-clockwise from the oil inlet. The second oil outlet is positioned 90° counter-clockwise from the oil inlet.	The first oil outlet is positioned 90° counter-clockwise from the oil inlet. The second oil outlet is located on the same side as the oil inlet.	The first oil outlet is positioned 90° counter-clockwise from the oil inlet. The second oil outlet is positioned 90° clockwise from the oil inlet.
CA	CB	CC	CD
The first oil outlet is located on the same side as the oil inlet. The second oil outlet is located opposite the oil inlet.	The first oil outlet is located on the same side as the oil inlet. The second oil outlet is positioned 90° counter-clockwise from the oil inlet.	The first oil outlet is located on the same side as the oil inlet. The second oil outlet is located on the same side as the oil inlet.	The first oil outlet is located on the same side as the oil inlet. The second oil outlet is positioned 90° clockwise from the oil inlet.
DA	DB	DC	DD
The first oil outlet is positioned 90° clockwise from the oil inlet. The second oil outlet is located opposite the oil inlet.	The first oil outlet is positioned 90° clockwise from the oil inlet. The second oil outlet is positioned 90° counter-clockwise from the oil inlet.	The first oil outlet is positioned 90° clockwise from the oil inlet. The second oil outlet is located on the same side as the oil inlet.	The first oil outlet is positioned 90° clockwise from the oil inlet. The second oil outlet is positioned 90° clockwise from the oil inlet.

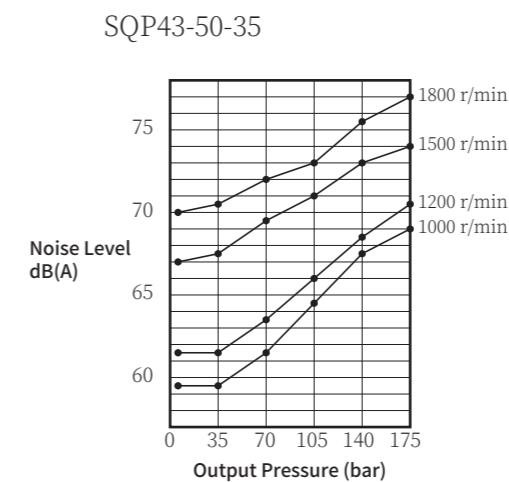
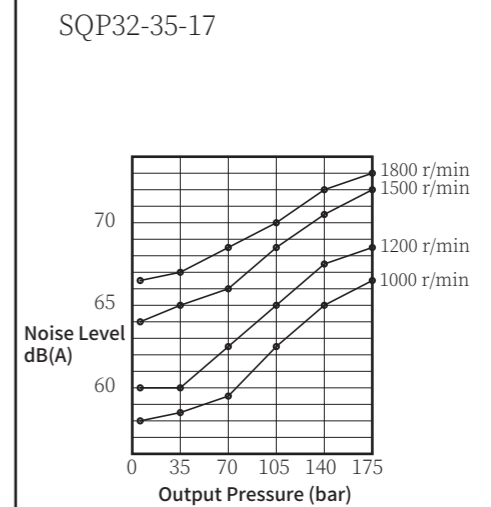
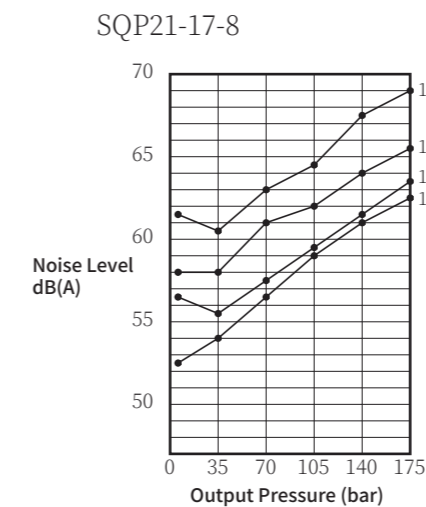
SQP Series Double Vane Pumps

Maximum pressure 210 bar

Weight of SQP(S) Series Dual Pumps

Model	Flange-Mount Type	Foot-Mounted Type	Model	Flange-Mount Type	Foot-Mounted Type	Model	Flange-Mount Type
SQP21	31.5 kg	41 kg	SQPS21	41 kg	50.5 kg	2520V	20.5 kg
SQP31	46 kg	55.5 kg	SQPS31	56 kg	65.5 kg	3520V	34 kg
SQP32	48 kg	57.5 kg	SQPS32	62 kg	71.5 kg	3525V	34.3 kg
SQP41	74 kg	99 kg	SQPS41	83 kg	108 kg	4520V	44.8 kg
SQP42	80 kg	105 kg	SQPS42	88 kg	113 kg	4525V	48.3 kg
SQP43	88.5 kg	113 kg	SQPS43	99 kg	123 kg	4535V	55.75 kg

Noise Characteristics of SQP-Type Double Pumps



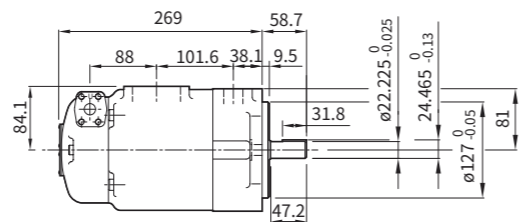
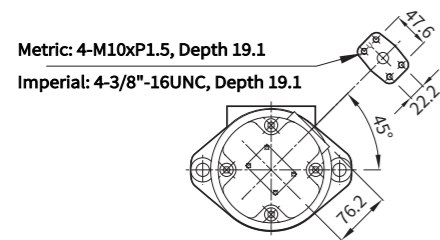
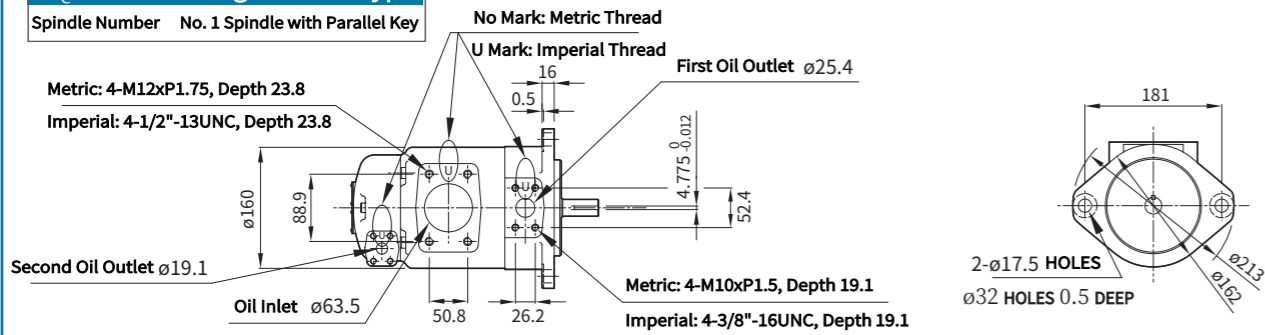
Measurement Conditions: Using ISO VG32 hydraulic oil (at 50°C) and an inlet pressure of 0 bar, the operating noise of the pump itself was measured at a distance of 1 meter behind the pump casing.

SQP Series Double Vane Pumps

Maximum pressure 210 bar

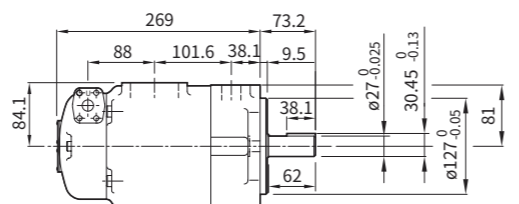
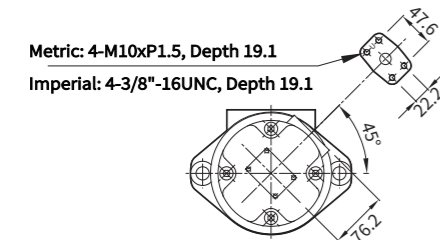
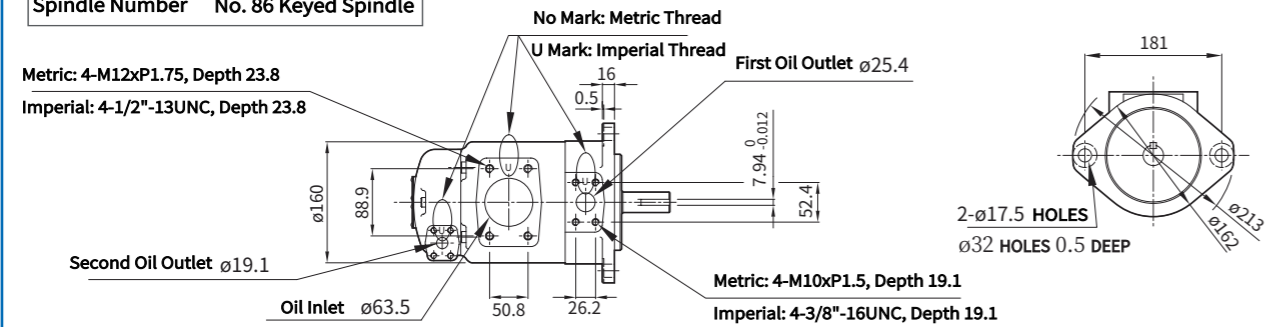
SQP21 Flange-Mount Type

Spindle Number No. 1 Spindle with Parallel Key



SQP21 Flange-Mount Type

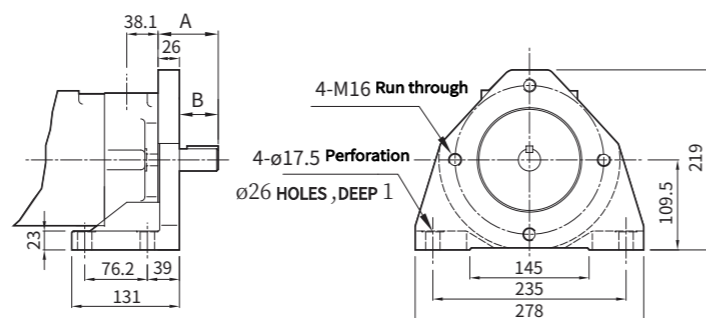
Spindle Number No. 86 Keyed Spindle



SQP21 Foot-Mounted Type

Spindle Number Spindles 1 & 86

SQP21 Size Chart		
Spindle Type	A	B
Spindle 1	58.7	32.7
Spindle No. 86	73.2	47.2

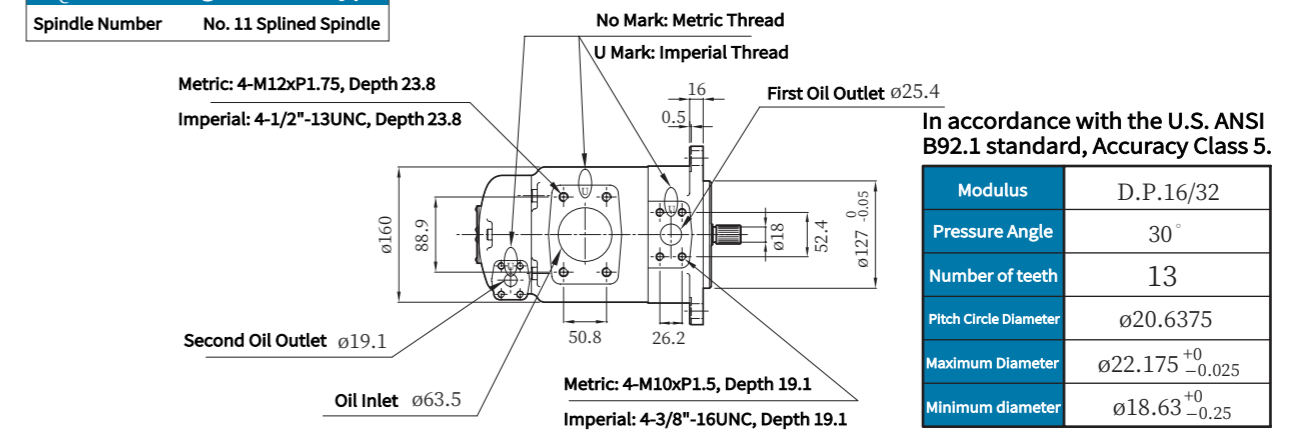


SQP Series Double Vane Pumps

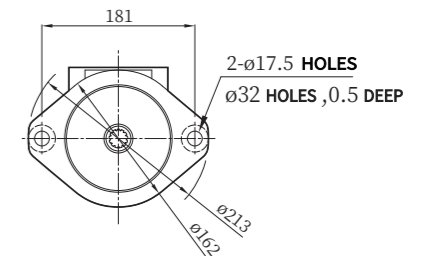
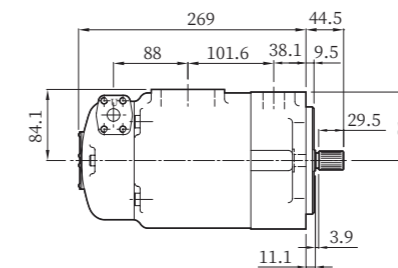
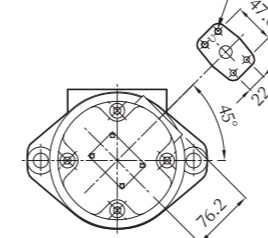
Maximum pressure 210 bar

SQP21 Flange-Mount Type

Spindle Number No. 11 Splined Spindle



Metric: 4-M10xP1.5, Depth 19.1
Imperial: 4-3/8"-16UNC, Depth 19.1

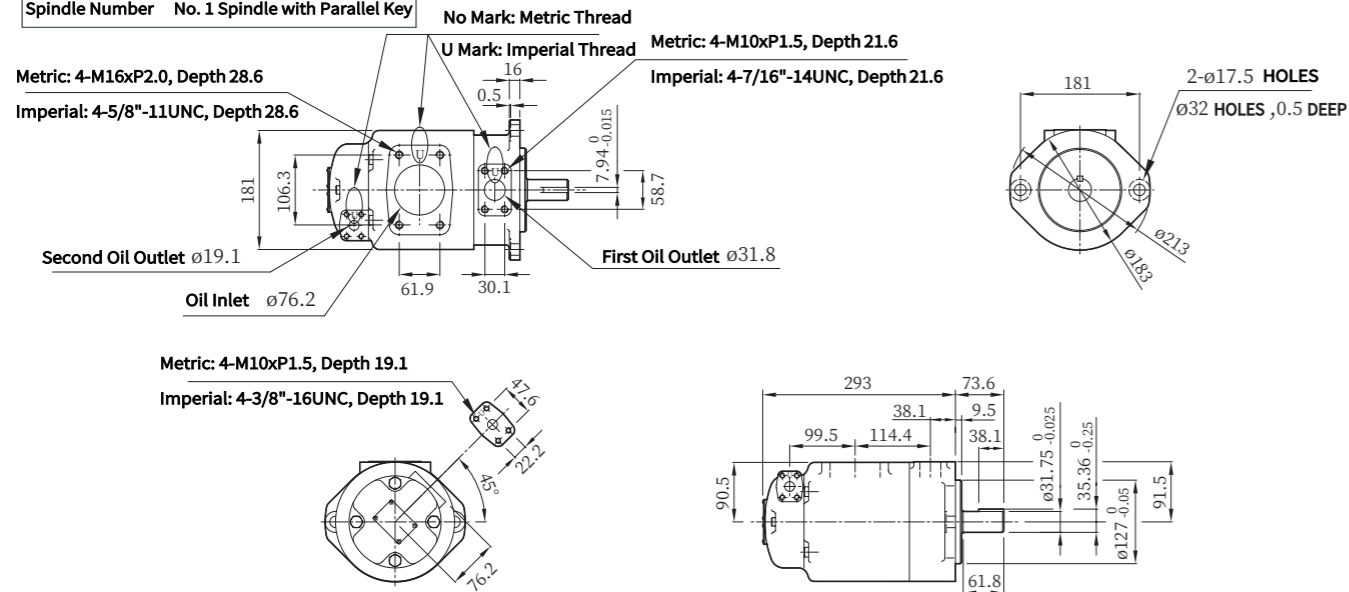


SQP Series Double Vane Pumps

Maximum pressure 210 bar

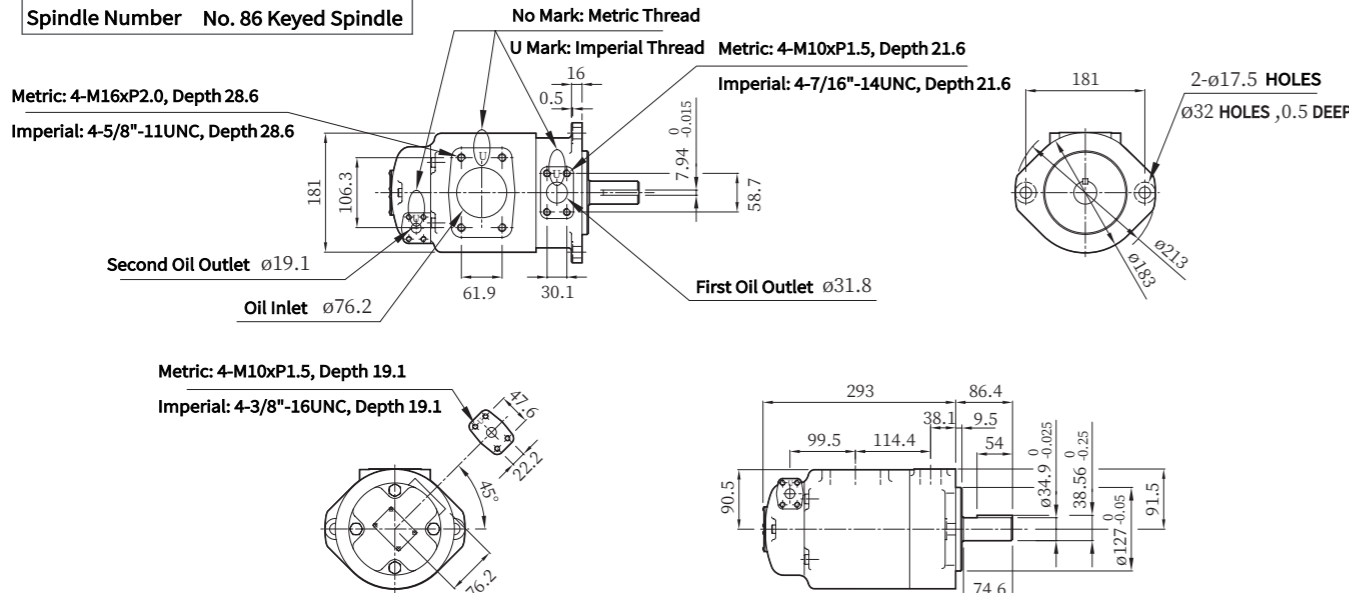
SQP31 Flange-Mount Type

Spindle Number No. 1 Spindle with Parallel Key



SQP31 Flange-Mount Type

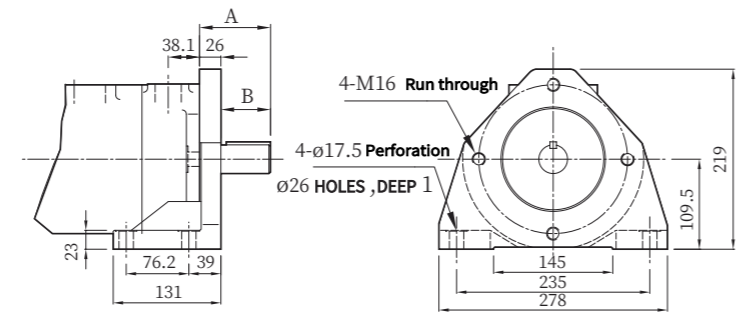
Spindle Number No. 86 Keyed Spindle



SQP31 Foot-Mounted Type

Spindle Number Spindles 1 & 86

SQP31 Size Chart		
Spindle Type	A	B
Spindle 1	73.6	47.6
Spindle No. 86	86.4	60.4

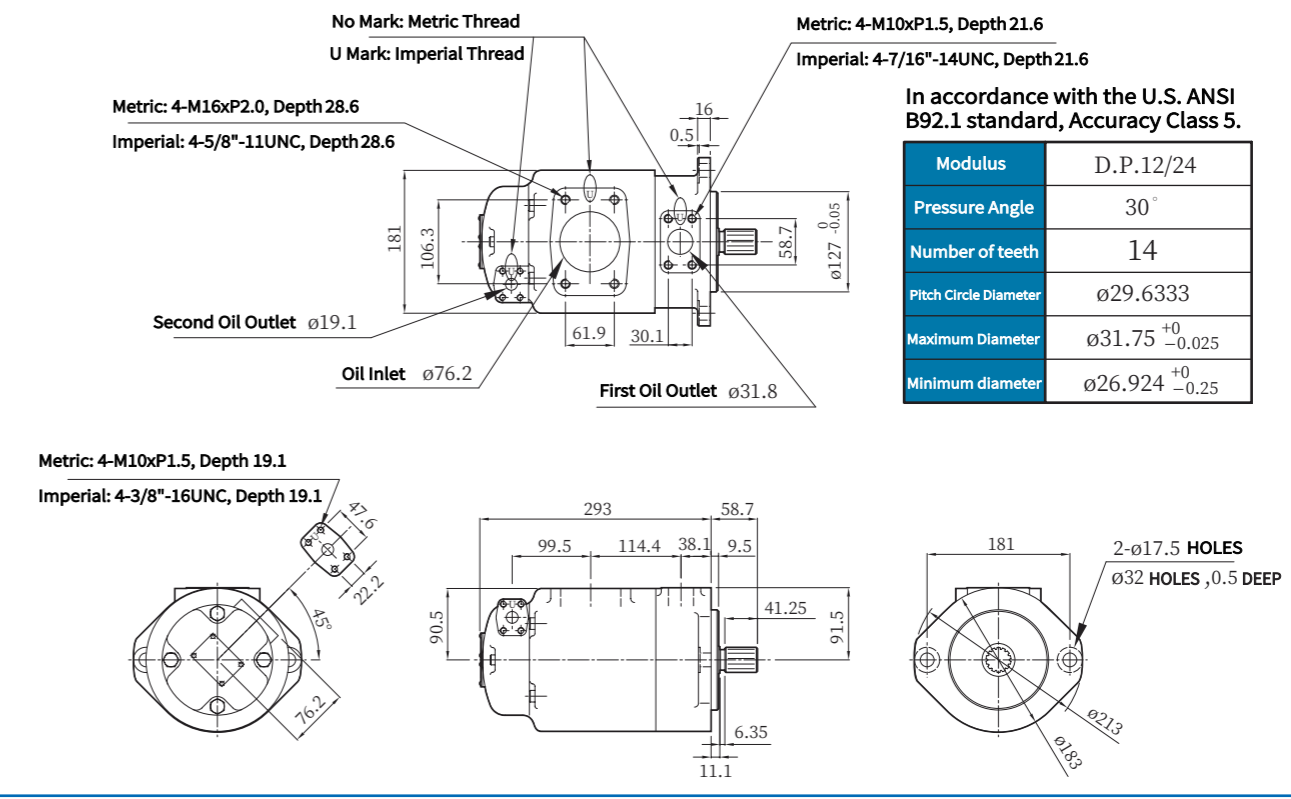


SQP Series Double Vane Pumps

Maximum pressure 210 bar

SQP31 Flange-Mount Type

Spindle Number No. 11 Splined Spindle



In accordance with the U.S. ANSI B92.1 standard, Accuracy Class 5.

Modulus	D.P.12/24
Pressure Angle	30°
Number of teeth	14
Pitch Circle Diameter	ø29.6333
Maximum Diameter	ø31.75 ⁺⁰ _{-0.025}
Minimum diameter	ø26.924 ⁺⁰ _{-0.25}

SQP Series Double Vane Pumps Maximum pressure 210 bar

SQP32 Flange-Mount Type
 Spindle Number No. 1 Spindle with Parallel Key
 No Mark: Metric Thread
 U Mark: Imperial Thread

Metric: 4-M16xP2.0, Depth 28.6
 Imperial: 4-5/8"-11UNC, Depth 28.6

Metric: 4-M10xP1.5, Depth 21.6
 Imperial: 4-7/16"-14UNC, Depth 21.6

2- ϕ 17.5 HOLES
 ϕ 32 HOLES ,0.5 DEEP

Second Oil Outlet ϕ 25.4
 Oil Inlet ϕ 76.2
 First Oil Outlet ϕ 31.8

Metric: 4-M10xP1.5, Depth 19.1
 Imperial: 4-3/8"-16UNC, Depth 19.1

SQP32 Flange-Mount Type
 Spindle Number No. 86 Keyed Spindle
 No Mark: Metric Thread
 U Mark: Imperial Thread

Metric: 4-M16xP2.0, Depth 28.6
 Imperial: 4-5/8"-11UNC, Depth 28.6

Metric: 4-M10xP1.5, Depth 21.6
 Imperial: 4-7/16"-14UNC, Depth 21.6

2- ϕ 17.5 HOLES
 ϕ 32 HOLES ,0.5 DEEP

Second Oil Outlet ϕ 25.4
 Oil Inlet ϕ 76.2
 First Oil Outlet ϕ 31.8

Metric: 4-M10xP1.5, Depth 19.1
 Imperial: 4-3/8"-16UNC, Depth 19.1

SQP32 Foot-Mounted Type
 Spindle Number Spindles 1 & 86

SQP32 Size Chart		
Spindle Type	A	B
Spindle 1	73.6	47.7
Spindle No. 86	86.4	60.4

SQP Series Double Vane Pumps Maximum pressure 210 bar

SQP32 Flange-Mount Type
 Spindle Number No. 11 Splined Spindle
 No Mark: Metric Thread
 U Mark: Imperial Thread

Metric: 4-M16xP2.0, Depth 28.6
 Imperial: 4-5/8"-11UNC, Depth 28.6

Metric: 4-M10xP1.5, Depth 21.6
 Imperial: 4-7/16"-14UNC, Depth 21.6

In accordance with the U.S. ANSI B92.1 standard, Accuracy Class 5.

Modulus	D.P.12/24
Pressure Angle	30°
Number of teeth	14
Pitch Circle Diameter	ϕ 29.6333
Maximum Diameter	ϕ 31.75 ⁺⁰ _{-0.025}
Minimum diameter	ϕ 26.924 ⁺⁰ _{-0.25}

Second Oil Outlet ϕ 25.4
 Oil Inlet ϕ 76.2
 First Oil Outlet ϕ 31.8

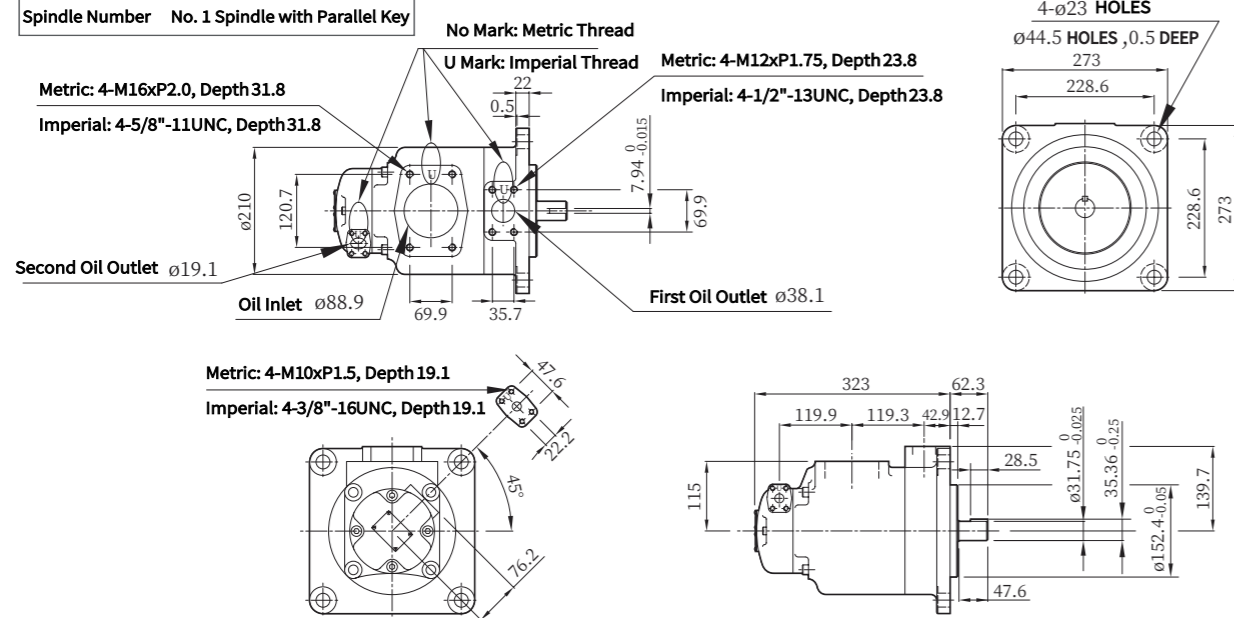
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 Imperial: 4-3/8"-16UNC, Depth 19.1

SQP Series Double Vane Pumps

Maximum pressure 210 bar

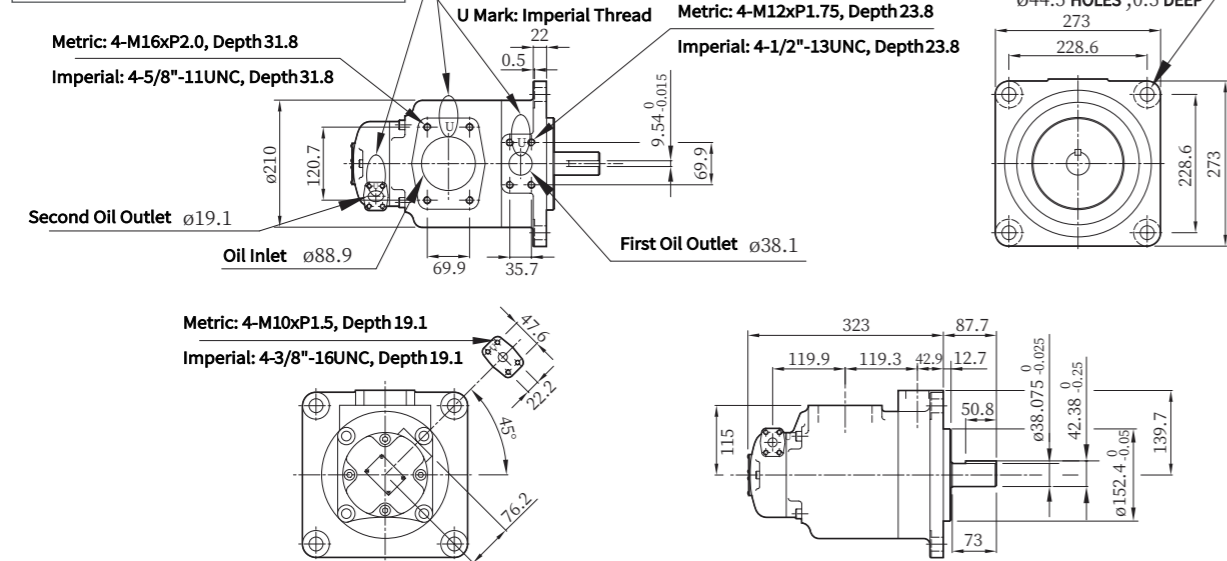
SQP41 Flange-Mount Type

Spindle Number No. 1 Spindle with Parallel Key



SQP41 Flange-Mount Type

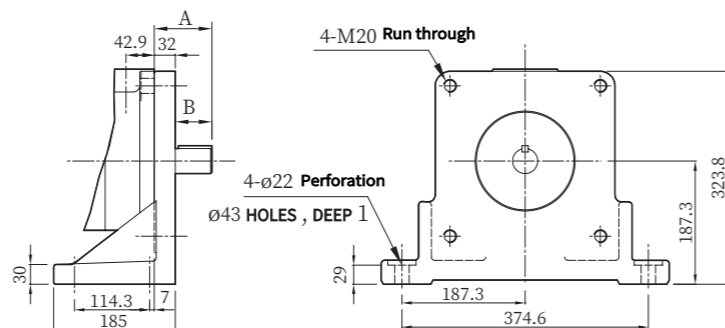
Spindle Number No. 86 Keyed Spindle



SQP41 Foot-Mounted Type

Spindle Number Spindles 1 & 86

SQP41 Size Chart		
Spindle Type	A	B
Spindle 1	73.6	47.7
Spindle No. 86	86.4	60.4

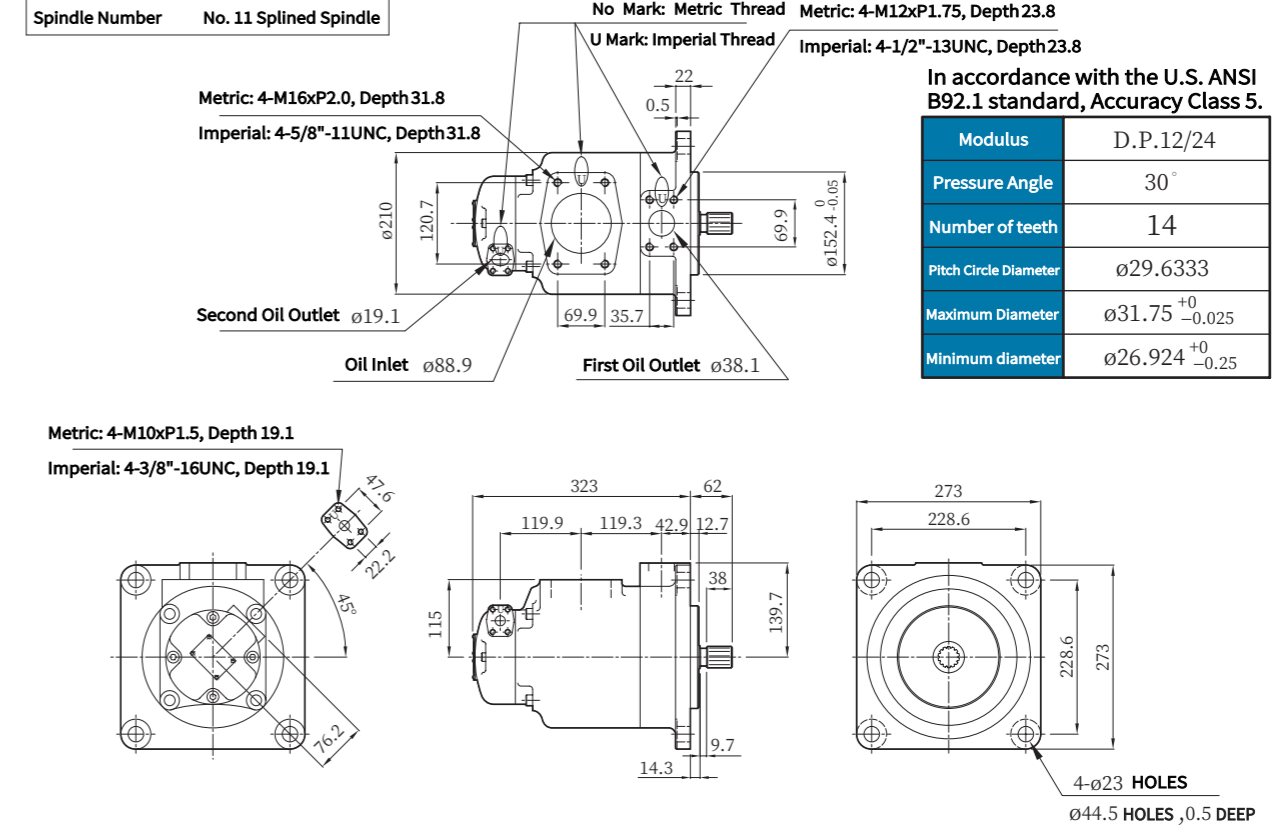


SQP Series Double Vane Pumps

Maximum pressure 210 bar

SQP41 Flange-Mount Type

Spindle Number No. 11 Splined Spindle



In accordance with the U.S. ANSI B92.1 standard, Accuracy Class 5.

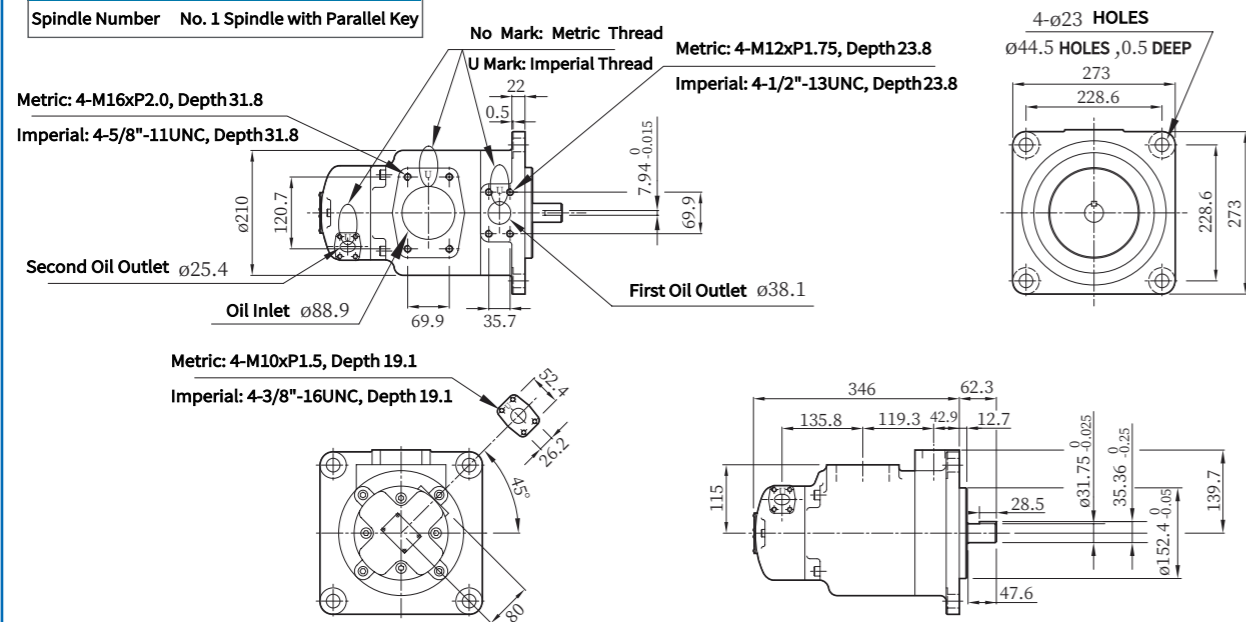
Modulus	D.P.12/24
Pressure Angle	30°
Number of teeth	14
Pitch Circle Diameter	ø29.6333
Maximum Diameter	ø31.75 ⁺⁰ _{-0.025}
Minimum diameter	ø26.924 ⁺⁰ _{-0.25}

SQP Series Double Vane Pumps

Maximum pressure 210 bar

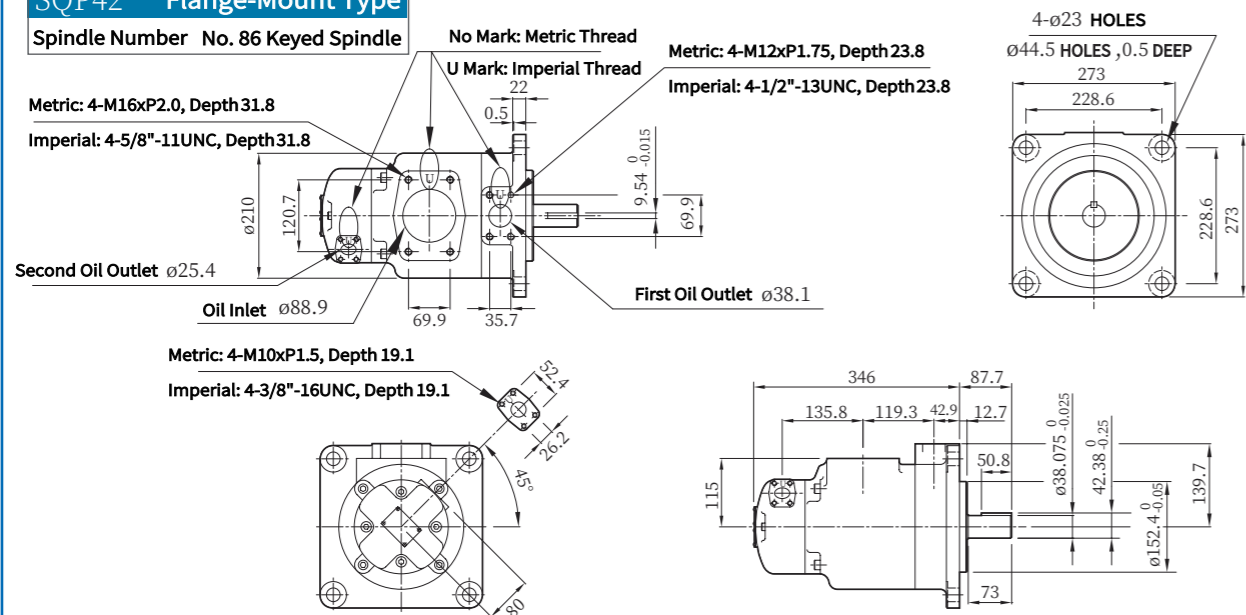
SQP42 Flange-Mount Type

Spindle Number No. 1 Spindle with Parallel Key



SQP42 Flange-Mount Type

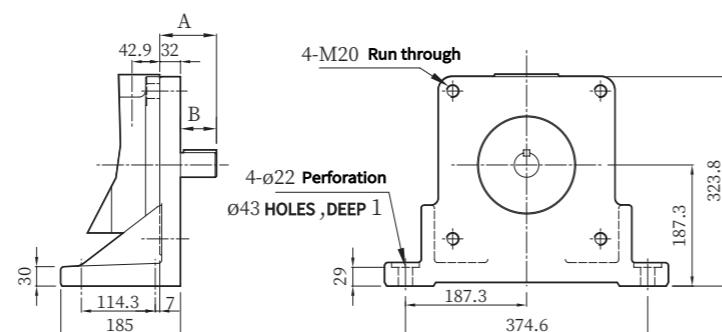
Spindle Number No. 86 Keyed Spindle



SQP42 Foot-Mounted Type

Spindle Number Spindles 1 & 86

SQP42 Size Chart		
Spindle Type	A	B
Spindle 1	62.3	30.3
Spindle No. 86	87.7	55.7

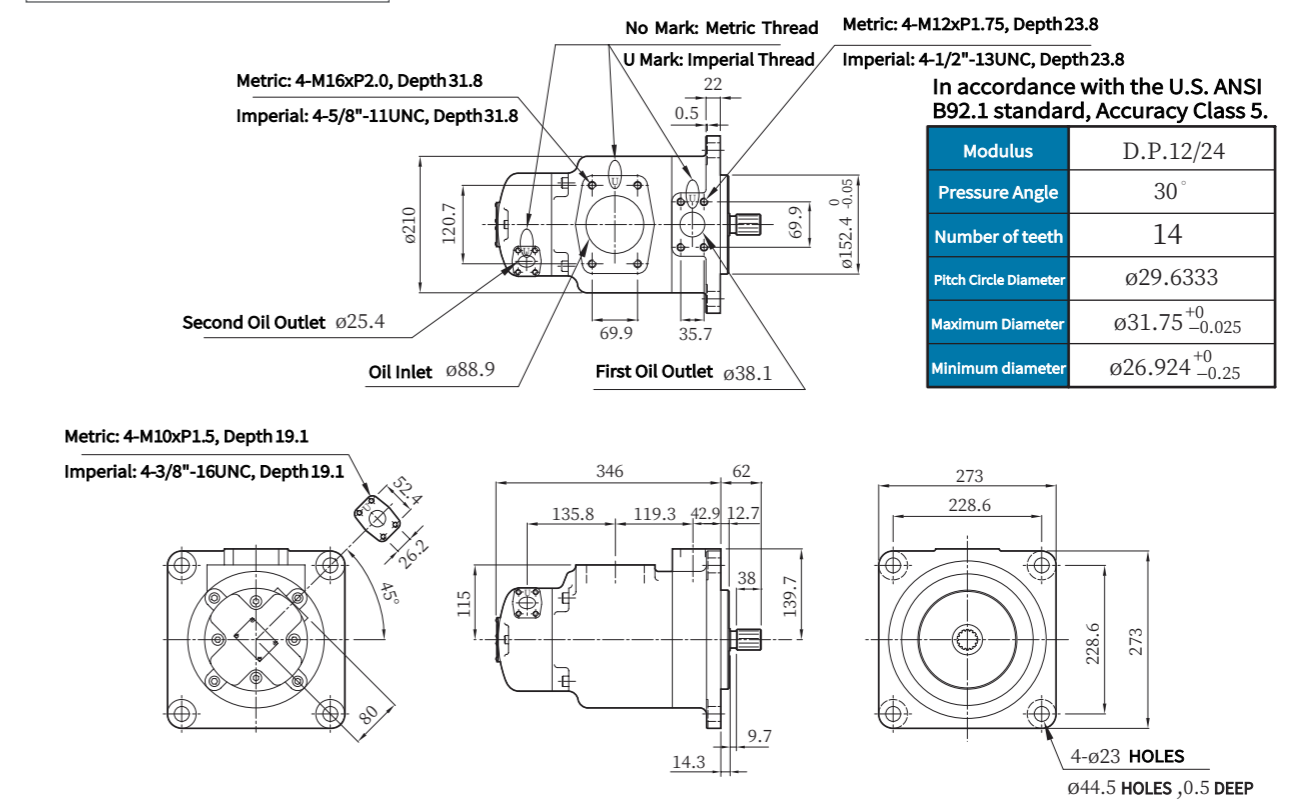


SQP Series Double Vane Pumps

Maximum pressure 210 bar

SQP42 Flange-Mount Type

Spindle Number No. 11 Splined Spindle

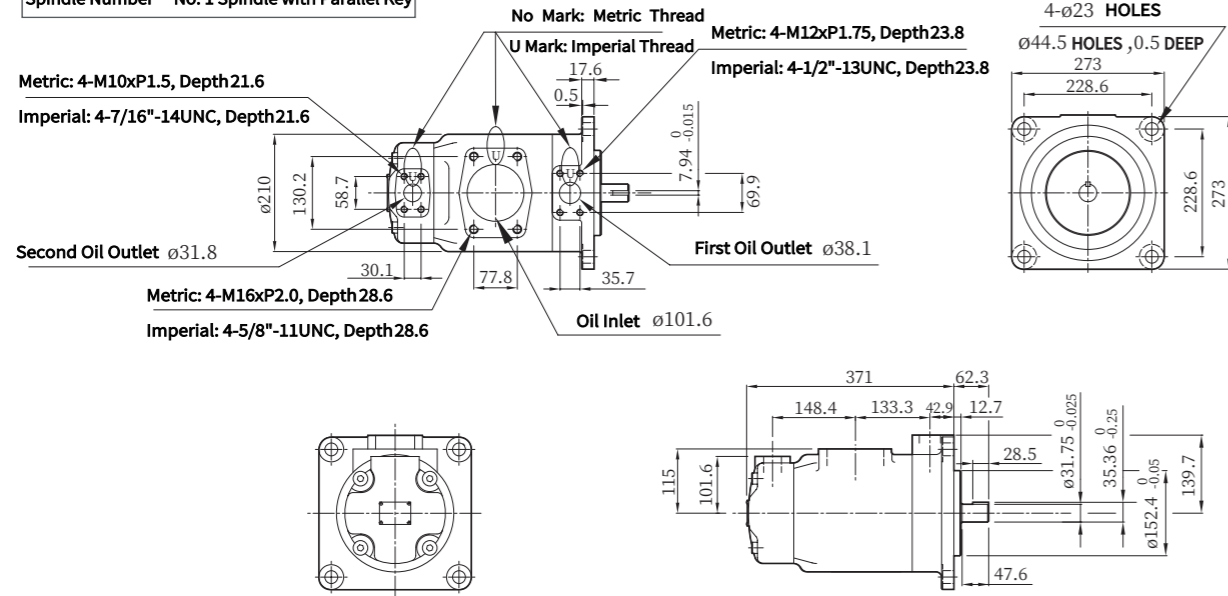


SQP Series Double Vane Pumps

Maximum pressure 210 bar

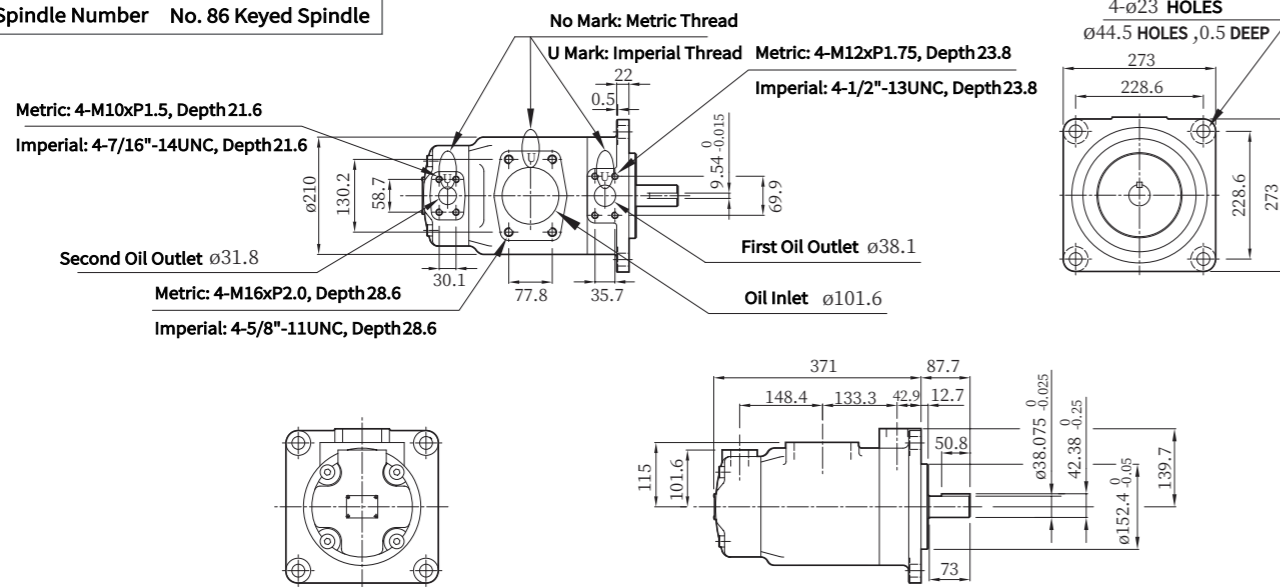
SQP43 Flange-Mount Type

Spindle Number No. 1 Spindle with Parallel Key



SQP43 Flange-Mount Type

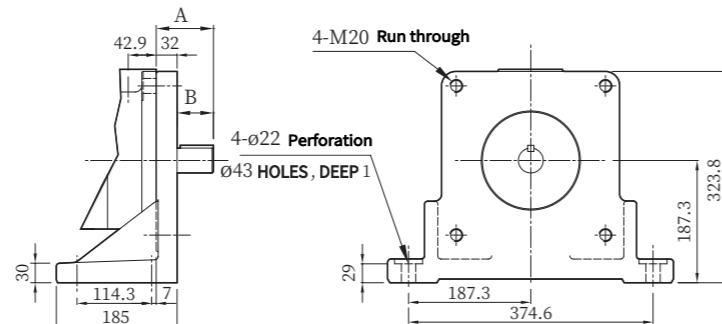
Spindle Number No. 86 Keyed Spindle



SQP43 Foot-Mounted Type

Spindle Number Spindles 1 & 86

SQP43 Size Chart		
Spindle Type	A	B
Spindle 1	62.3	30.3
Spindle No. 86	87.7	55.7

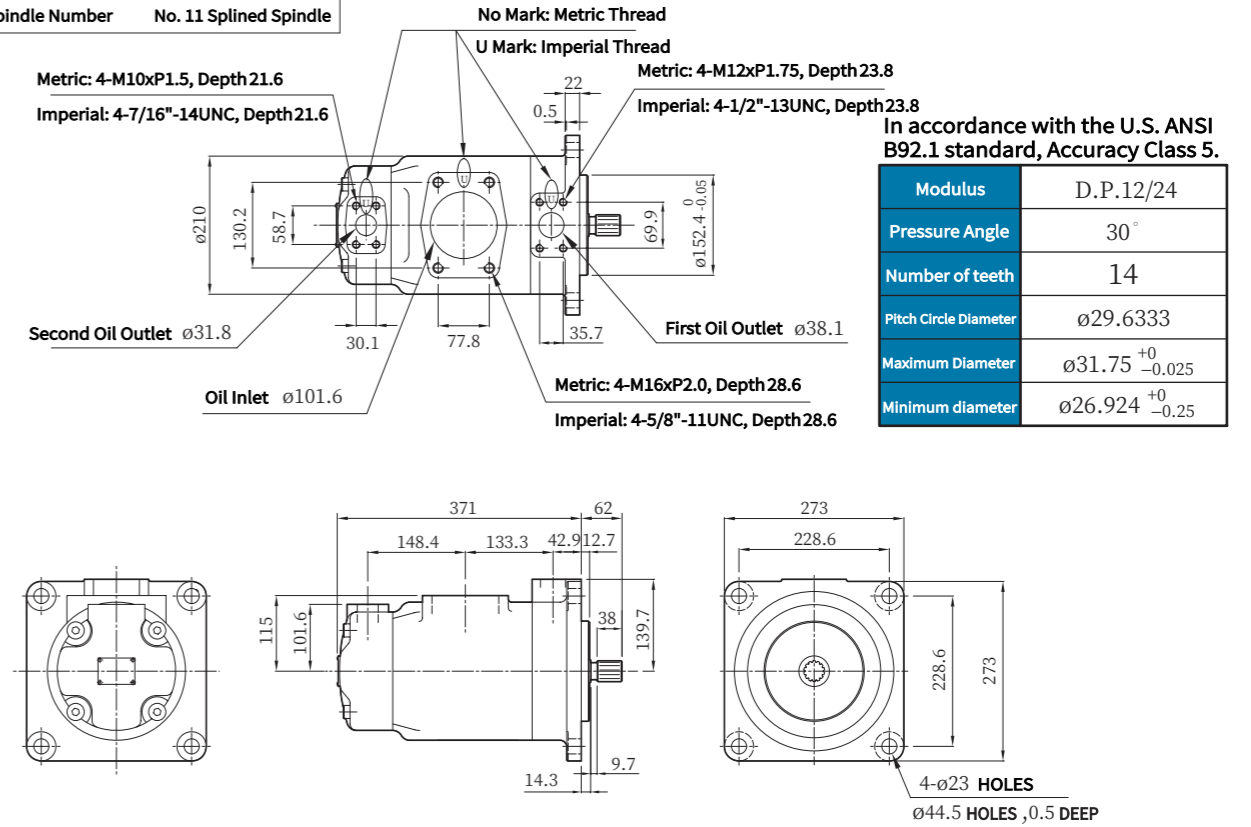


SQP Series Double Vane Pumps

Maximum pressure 210 bar

SQP43 Flange-Mount Type

Spindle Number No. 11 Splined Spindle



In accordance with the U.S. ANSI B92.1 standard, Accuracy Class 5.

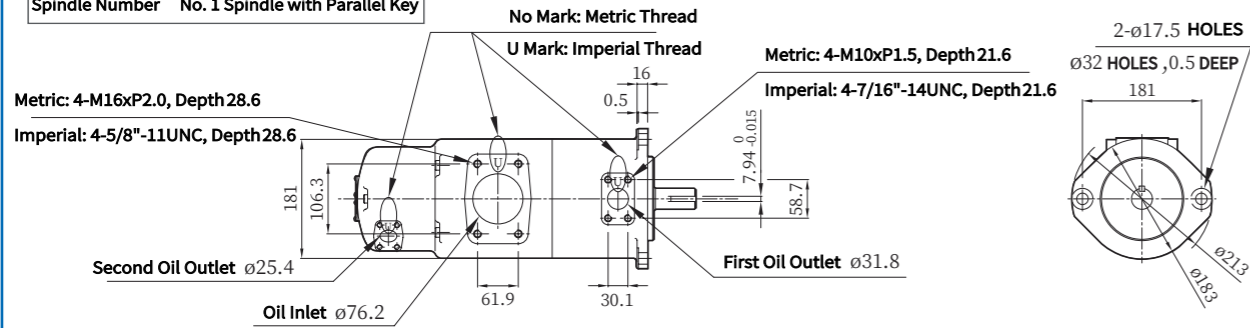
Modulus	D.P.12/24
Pressure Angle	30°
Number of teeth	14
Pitch Circle Diameter	ø29.6333
Maximum Diameter	ø31.75 ⁺⁰ _{-0.025}
Minimum diameter	ø26.924 ⁺⁰ _{-0.25}

SQP Series Double Vane Pumps

Maximum pressure 210 bar

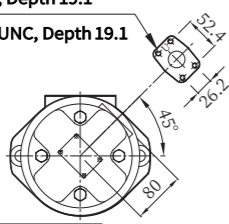
SQPS32 Flange-Mount Type

Spindle Number No. 1 Spindle with Parallel Key



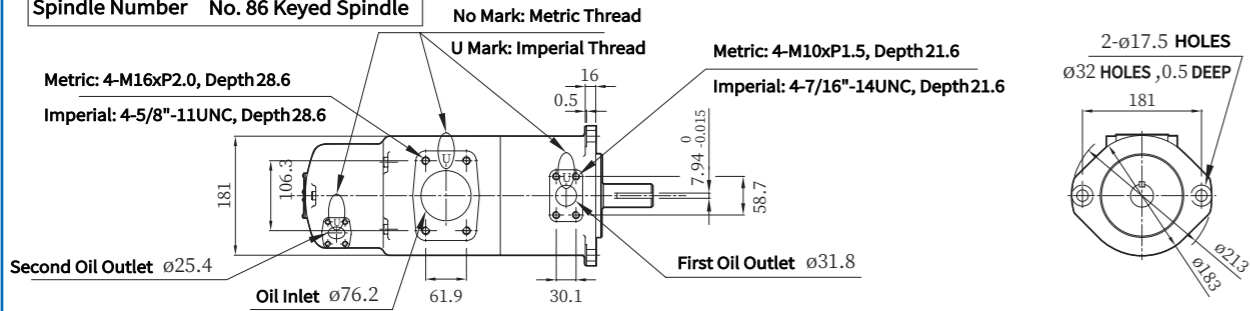
Metric: 4-M10xP1.5, Depth 19.1

Imperial: 4-3/8\"-16UNC, Depth 19.1



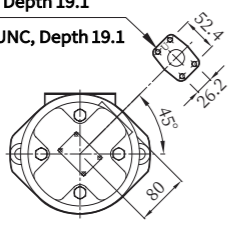
SQPS32 Flange-Mount Type

Spindle Number No. 86 Keyed Spindle



Metric: 4-M10xP1.5, Depth 19.1

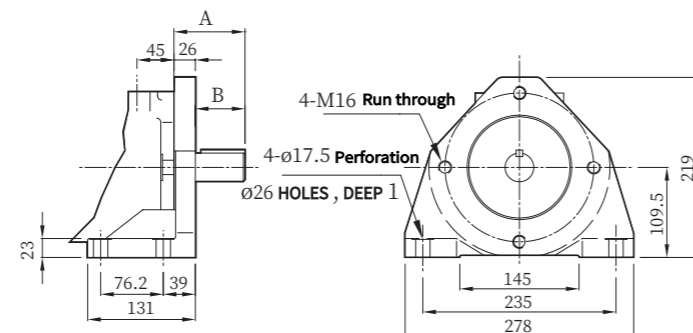
Imperial: 4-3/8\"-16UNC, Depth 19.1



SQPS32 Foot-Mounted Type

Spindle Number Spindles 1 & 86

SQPS32 Size Chart		
Spindle Type	A	B
Spindle 1	73.6	47.6
Spindle No. 86	86.4	60.4

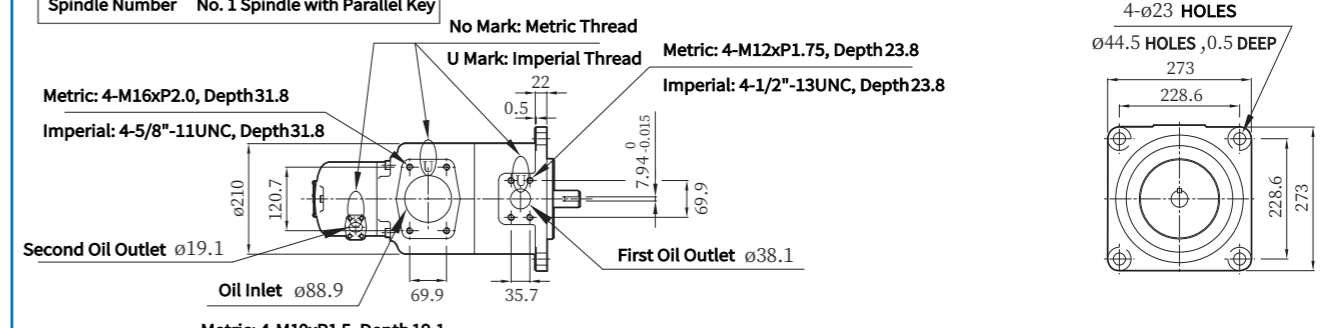


SQP Series Double Vane Pumps

Maximum pressure 210 bar

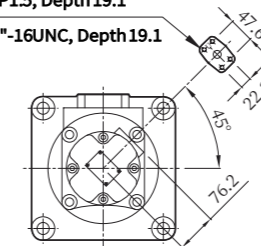
SQPS41 Flange-Mount Type

Spindle Number No. 1 Spindle with Parallel Key



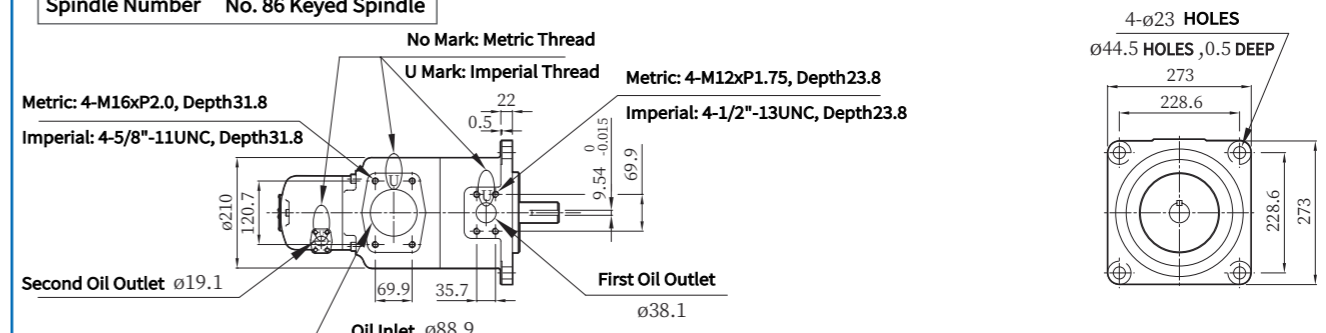
Metric: 4-M10xP1.5, Depth 19.1

Imperial: 4-3/8\"-16UNC, Depth 19.1



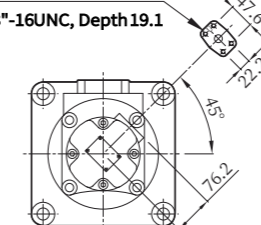
SQPS41 Flange-Mount Type

Spindle Number No. 86 Keyed Spindle



Metric: 4-M10xP1.5, Depth 19.1

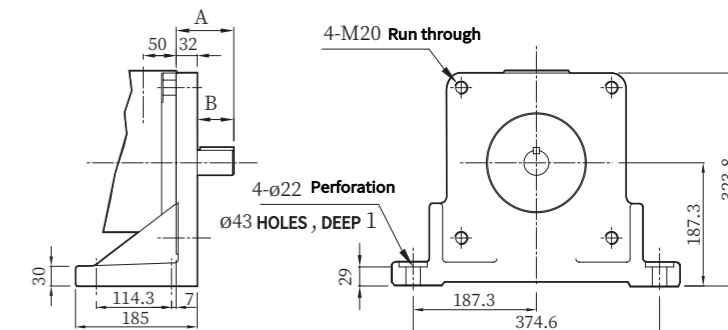
Imperial: 4-3/8\"-16UNC, Depth 19.1



SQPS41 Foot-Mounted Type

Spindle Number Spindles 1 & 86

SQPS41 Size Chart		
Spindle Type	A	B
Spindle 1	62.3	30.3
Spindle No. 86	87.7	55.7

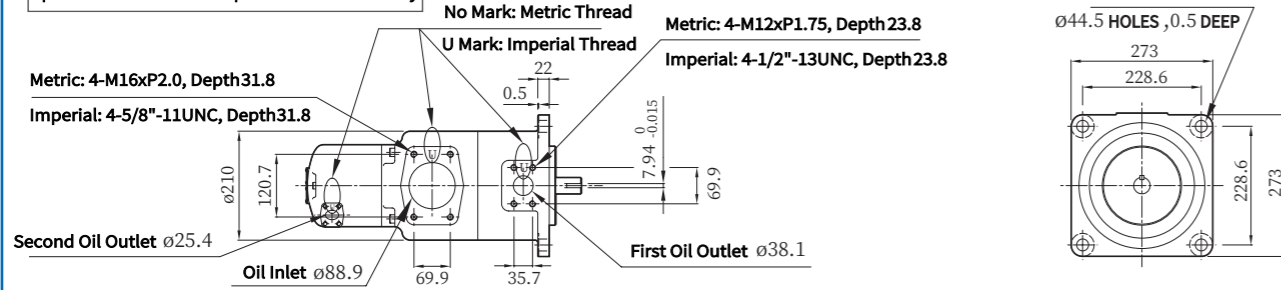


SQP Series Double Vane Pumps

Maximum pressure 210 bar

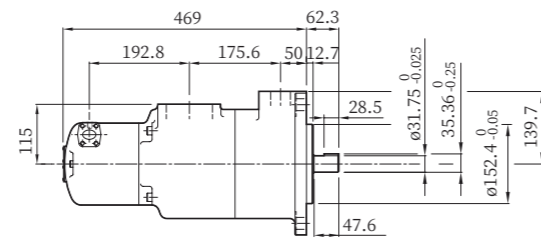
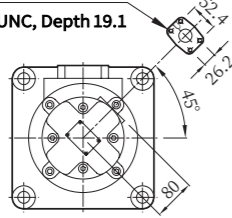
SQPS42 Flange-Mount Type

Spindle Number No. 1 Spindle with Parallel Key



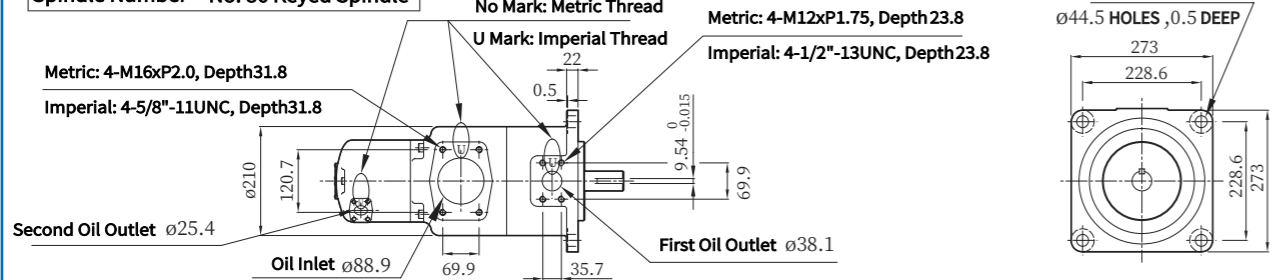
Metric: 4-M10xP1.5, Depth 19.1

Imperial: 4-3/8"-16UNC, Depth 19.1



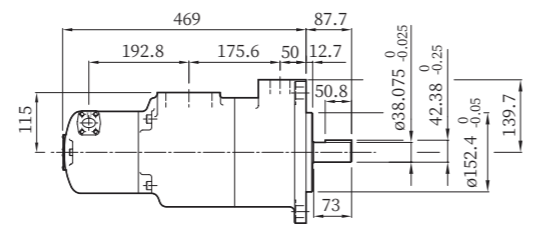
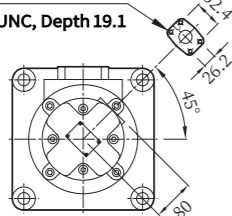
SQPS42 Flange-Mount Type

Spindle Number No. 86 Keyed Spindle



Metric: 4-M10xP1.5, Depth 19.1

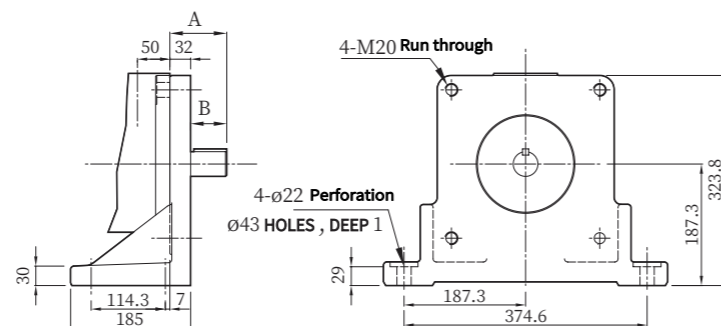
Imperial: 4-3/8"-16UNC, Depth 19.1



SQPS42 Foot-Mounted Type

Spindle Number Spindles 1 & 86

SQPS42 Size Chart		
Spindle Type	A	B
Spindle 1	62.3	30.3
Spindle No. 86	87.7	55.7

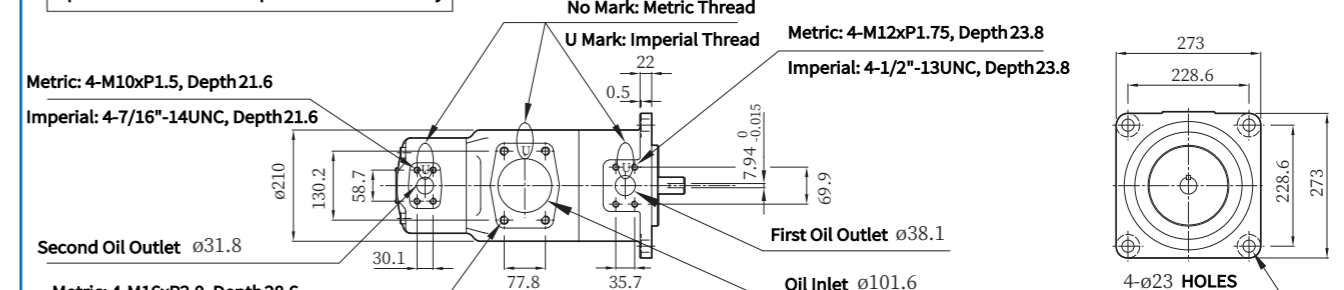


SQP Series Double Vane Pumps

Maximum pressure 210 bar

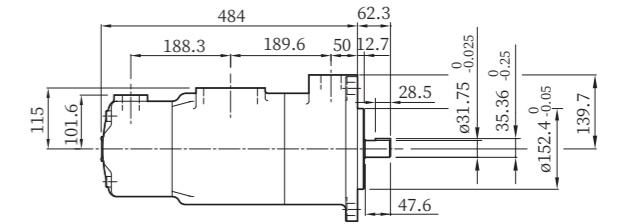
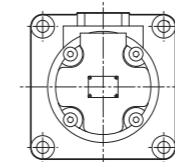
SQPS43 Flange-Mount Type

Spindle Number No. 1 Spindle with Parallel Key



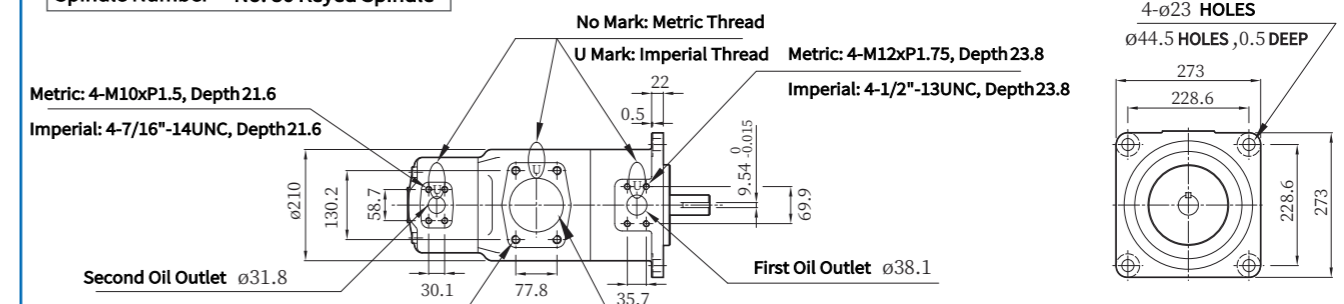
Metric: 4-M16xP2.0, Depth 28.6

Imperial: 4-5/8"-11UNC, Depth 28.6



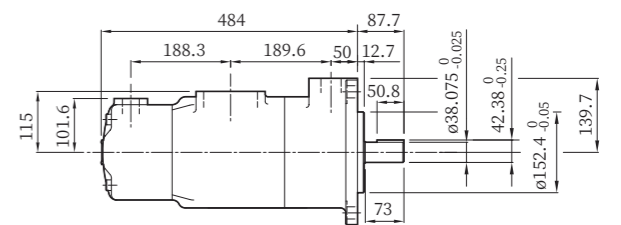
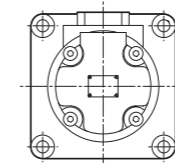
SQPS43 Flange-Mount Type

Spindle Number No. 86 Keyed Spindle



Metric: 4-M16xP2.0, Depth 28.6

Imperial: 4-5/8"-11UNC, Depth 28.6



SQPS43 Foot-Mounted Type

Spindle Number Spindles 1 & 86

SQPS43 Size Chart		
Spindle Type	A	B
Spindle 1	62.3	30.3
Spindle No. 86	87.7	55.7

