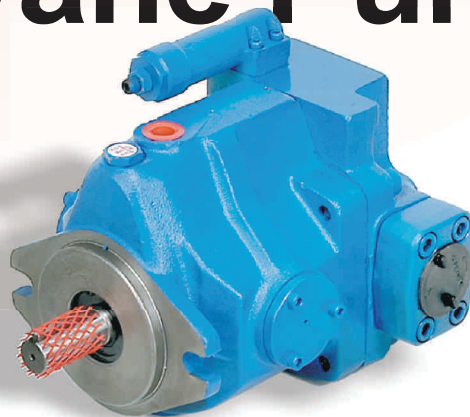


Fixed Displacement Vane Pumps



Performance

These cost-effective pumps provide volumetric efficiencies of more than 90% and sound levels as low as 62 dB(A) with operating pressure to 210 bar. On site repair via the replaceable pump cartridge reduces downtime to increase productivity.

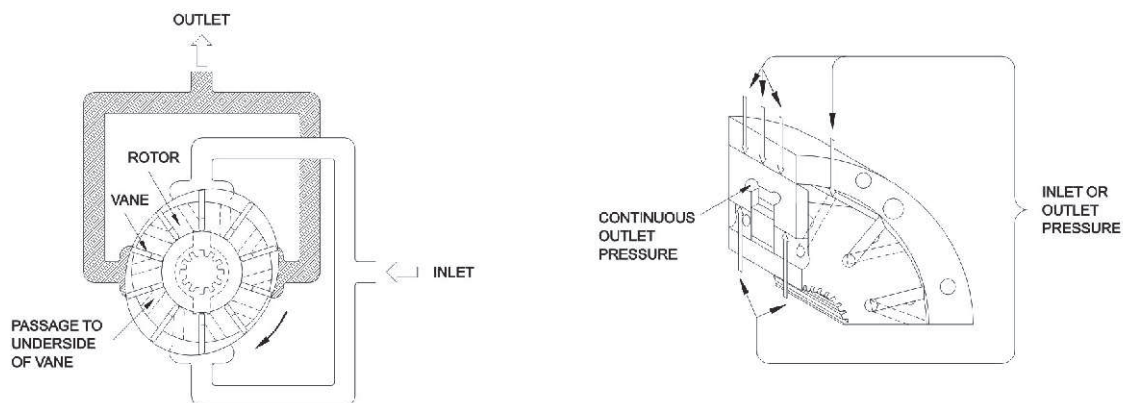
General Description

Intravane pumps provide longer life. Increased productivity and application versatility. Extremely low sound levels are compatible with the most demanding industrial applications. Compact size and of service allow maximum equipment design flexibility. Pumps are available in single and double configurations.

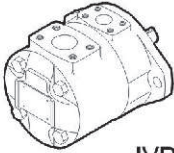
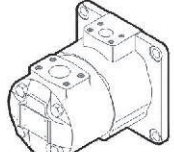
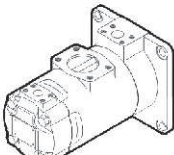
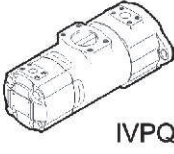
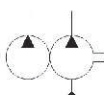
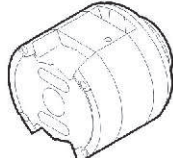
Features and Benefits

- High operating pressure capabilities in compact packages provide high power to weight ratios and lower installed costs.
- Low noise characteristics inherent in intravane design enhance operator comfort.
- Twelve vane system provides low amplitude flow pulsations resulting in low system noise characteristics.
- Hydraulic balancing, designed to prevent internally-induced radial shaft and bearing loads, provides long life.
- Double pumps arrangements save installation space and cost by eliminating double shaft extension electric motors or by reducing the number of motors and drive couplings.
- Thirty-one flow displacements and high operating pressure capability provide optimum selection and single-source capability for your complete range of flow and pressure requirements.
- Factory tested cartridge kits provide new pump performance upon installation.
- The cartridge kit design offers fast and efficient field serviceability. The cartridge is independent of the drive shaft, allowing for easy change of flow capacity and servicing without removing the pump from its mounting.
- Inlet and outlet ports can be oriented in four different positions relative to each other, providing greater installation flexibility and ease of machine design.

Intravane Pump's Operation Figure





Model Code		Graphic Symbol	Q max. cm ³ / r.p.m		P max. bar	Max. r.p.m
Single Pump  IVP	IVP1		7.5 ~ 236		138 ι 207	1800
	IVP2					
	IVP3					
	IVP4					
Single Pump  IVPQ	IVPQ1		7.5 ~ 236		138 ι 207	1800
	IVPQ2					
	IVPQ3					
	IVPQ4					
Model Code		Graphic Symbol	Shaft end pump Q max. cm ³ / r.p.m	Cover end pump Q max. cm ³ / r.p.m	P max. bar	Max. r.p.m
Double Pump  IVP	IVP21		32.5 ~ 236	7.5 ~ 134	69 ι 172	1800 F3=1200 F11=1500
	IVP31					
	IVP32					
	IVP41					
	IVP42					
	IVP43					
Double Pump  IVPQ	IVPQ21		32.5 ~ 236	7.5 ~ 134	69 ι 172	1800 F3=1200 F11=1500
	IVPQ31					
	IVPQ32					
	IVPQ41					
	IVPQ42					
	IVPQ43					
Cartridge Kit		Geometric Displacement Code				
		Single Pump		Double Pump		
				Shaft end pump	Cover end pump	
		2 ~ 75		10 ~ 75	2 ~ 42	

IVP SINGLE PUMPS MAX. CONTINUOUS PRESSURES

A3

Frame size	●Code	Geometric displacement cm ³ /r	IVP(Q)		F11-IVP(Q)		F3-IVP(Q)		Min. speed rpm	
			▲ Using antiwear oil or phosphite ester fluid		Using water glycol fluid		Using water-in-oil emulsions			
			Max.Pressure bar	Max.Speed rpm	Max.Pressure bar	Max.Speed rpm	Max.Pressure bar	Max.Speed rpm		
IVP(Q)1	2	7.5	138	1800	138	1500	138	1200	600	
	3	10.2								
	4	12.8	207							157
	5	16.7								
	6	19.2								
	7	22.9								
	8	26.2								
	10	31.0								
	11	35.0								
	12	37.9			157					
14	44.2	138								
IVP(Q)2	10	32.5	172	1800	157	1500	138	1200	600	
	12	38.3								
	14	43.3								
	15	46.7								
	17	52.5								
	19	59.2								
	21	65.0								
	25	78.6	138		138					
IVP(Q)3	17	53.3	172	1800	157	1500	138	1200	600	
	21	66.7								
	25	79.2								
	30	95.0								
	32	100								
	35	109								
	38	118								
	42	134	138		138					
IVP(Q)4	30	96.0	172	1800	157	1500	138	1200	600	
	35	109								
	38	128								
	42	134								
	50	156								
	60	189								
	67	210								157
	75	236	138							

● Rated capacity in USgpm at 1200rpm and 6.9bar.

▲ A transient (peak) pressure 10% over the max. continuous pressure rating for 0.5 seconds or less duration is allowed.

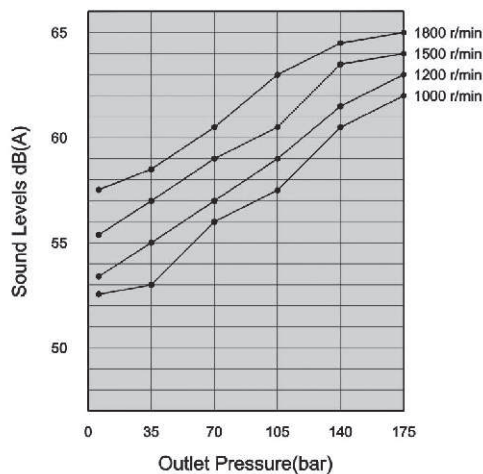
IVP Single Pumps Weight

kg(lb)

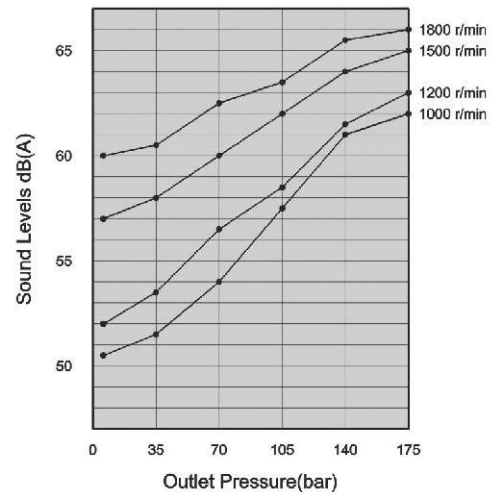
Frame size	IVP		IVP(Q)	
	Flange mounting	Foot mounting	Flange mounting	Foot mounting
IVP(Q)1	16(35.24)	19(41.85)	18.5(40.75)	21.5(47.36)
IVP(Q)2	25(55.07)	34.5(75.99)	29.5(64.98)	39(85.9)
IVP(Q)3	35(77.09)	44.5(98.02)	43(94.71)	52.5(115.64)
IVP(Q)4	59.5(131.06)	84.5(186.12)	71(156.39)	96(211.45)

IVP Single Pumps Sound Data

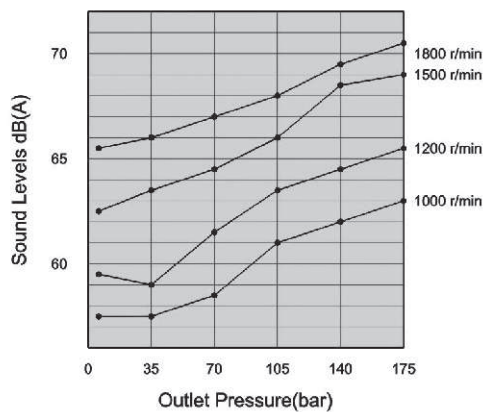
IVP1-11



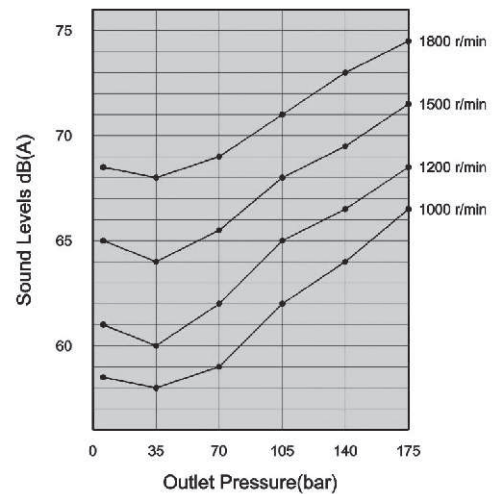
IVP2-21



IVP3-38



IVP4-60



Conditions: ISO VG32, (50 °C), 0 bar inlet, distance: 1m

IVP SINGLE PUMPS - PERFORMANCE CHARACTERISTICS

MODEL	Speed rpm	Output flow (lpm)				Input power (kw)			
		6.9bar	69bar	138bar	172bar	6.9bar	69bar	138bar	172bar
IVP(Q)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	
IVP(Q)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	
IVP(Q)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
IVP(Q)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
IVP(Q)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
IVP(Q)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
IVP(Q)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
IVP(Q)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
IVP(Q)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
IVP(Q)1-12	1000	37.9	36.4	34.4		0.7	5.6	10.4	
	1200	44.5	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	
IVP(Q)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	
IVP(Q)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
IVP(Q)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
IVP(Q)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
IVP(Q)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
IVP(Q)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
IVP(Q)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
IVP(Q)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

IVP SINGLE PUMPS - PERFORMANCE CHARACTERISTICS

MODEL	Speed rpm	Output flow (lpm)				Input power (kw)			
		6.9bar	69bar	138bar	172bar	6.9bar	69bar	138bar	172bar
IVP(Q)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	
IVP(Q)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
IVP(Q)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
IVP(Q)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
IVP(Q)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
IVP(Q)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
IVP(Q)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
IVP(Q)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
IVP(Q)3-42	1800	134	125	118		4.5	27.1	52.1	65.4
	1800	160	152	144		5.0	32.2	62.2	65.4
	1800	201	193	185		5.8	39.8	77.4	65.4
	1800	241	233	225		6.6	47.5	92.5	65.4
IVP(Q)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
IVP(Q)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
IVP(Q)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
IVP(Q)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
IVP(Q)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
IVP(Q)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
IVP(Q)4-67	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	
IVP(Q)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	

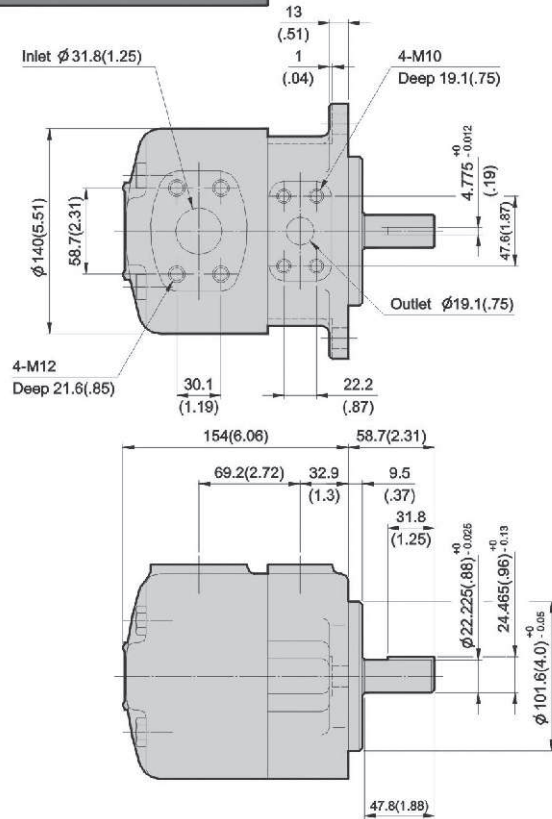
Typical flows at 50 °C, 10W oil at 26 sSt, 0 bar inlet at specified speeds.

DIMENSIONS

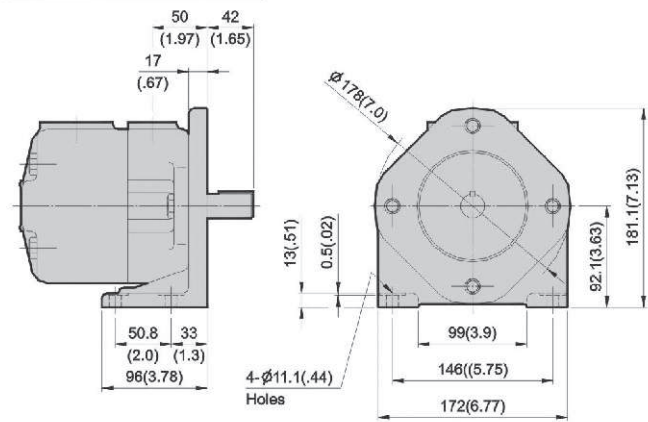
MILLIMETERS(INCHES)

A3

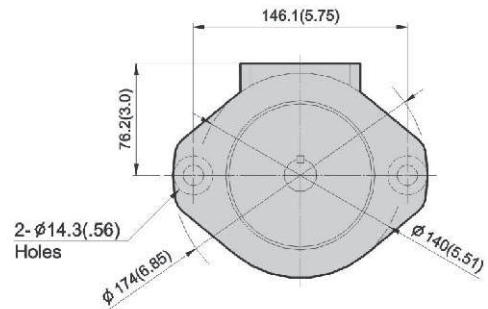
IVP1 Flange Mounting



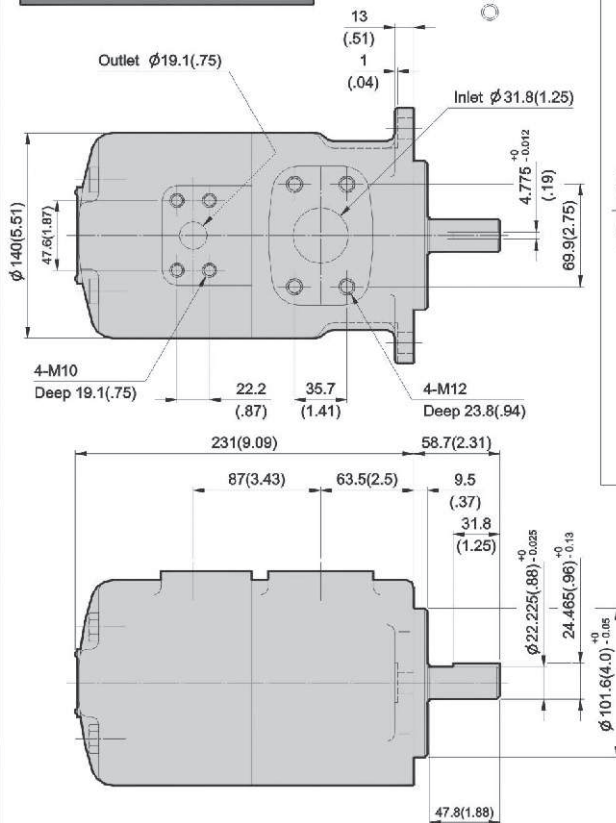
IVP1 Foot Mounting



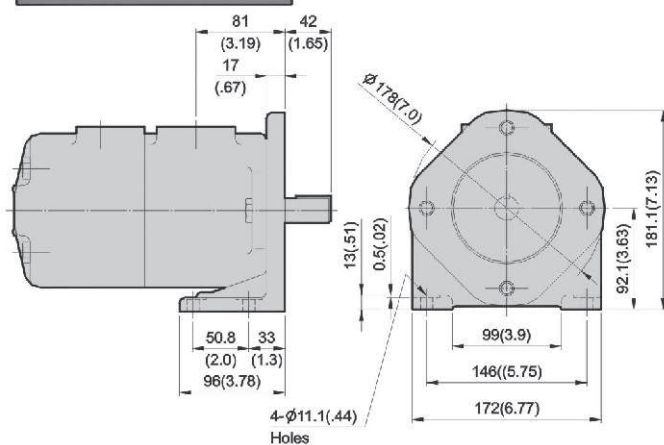
For other dimensions, refer to "Flange Mounting" type



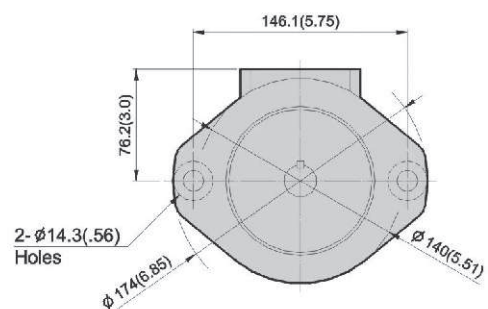
IVPQ1 Flange Mounting



IVPQ1 Foot Mounting



For other dimensions, refer to "Flange Mounting" type

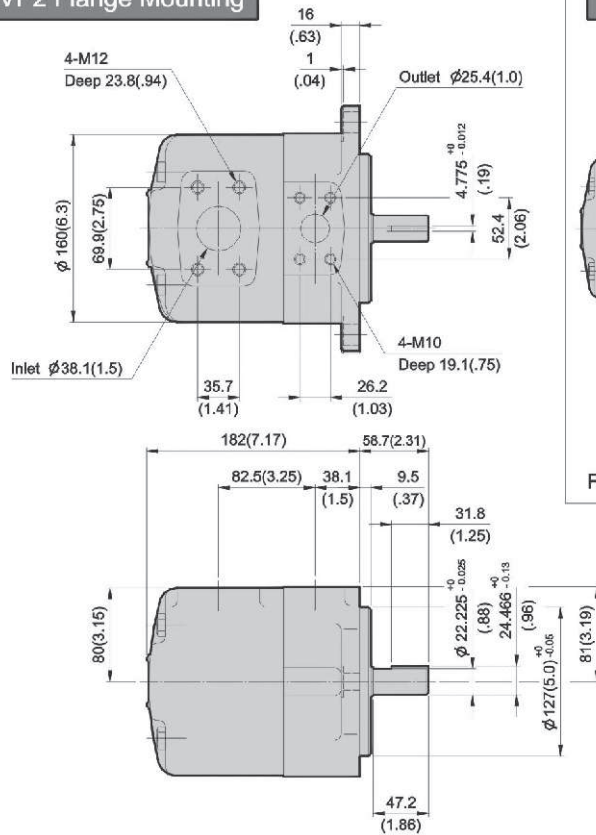


DIMENSIONS

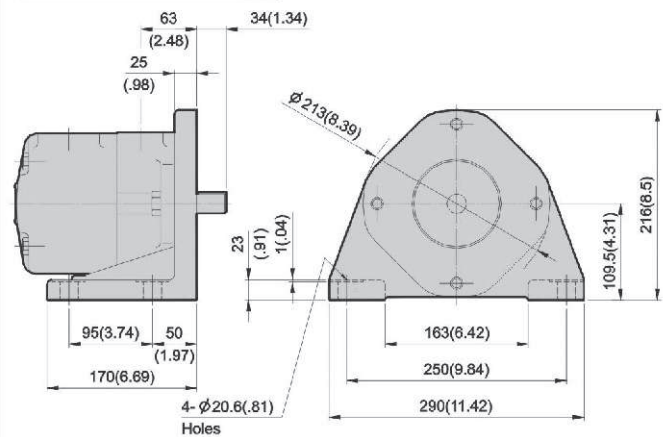
MILLIMETERS(INCHES)

A3

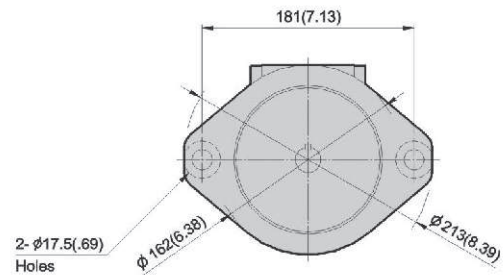
IVP2 Flange Mounting



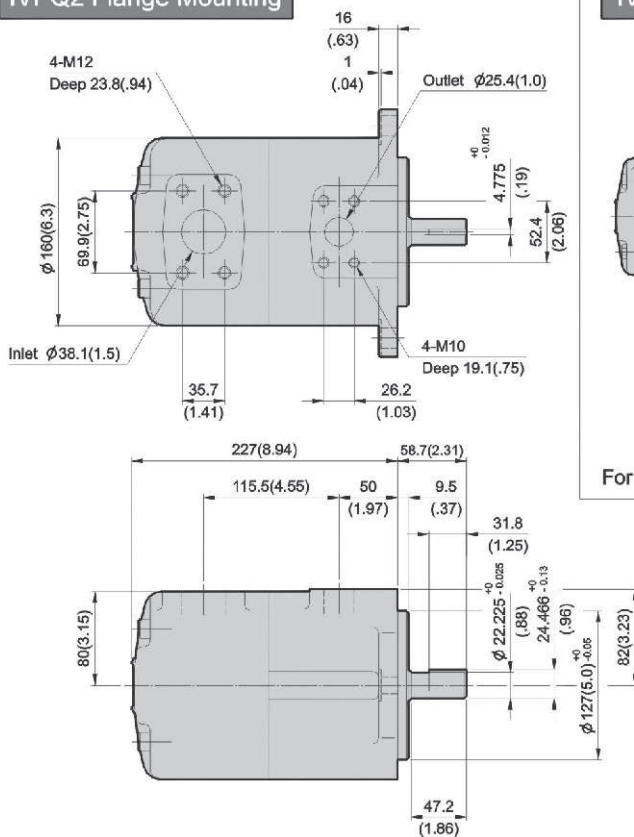
IVP2 Foot Mounting



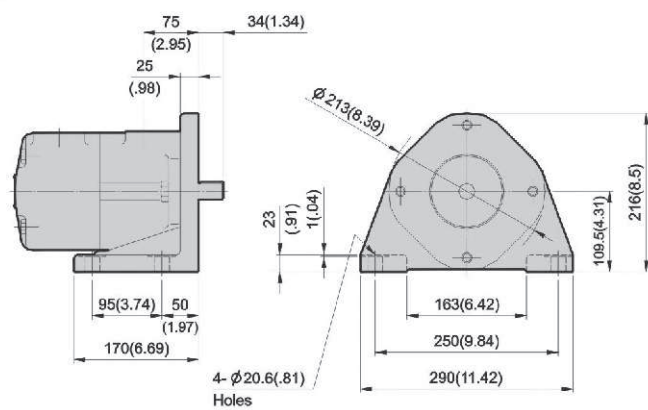
For other dimensions, refer to "Flange Mounting" type



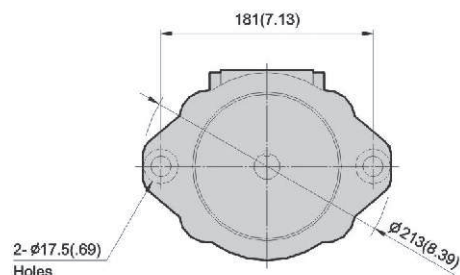
IVPQ2 Flange Mounting



IVPQ2 Foot Mounting



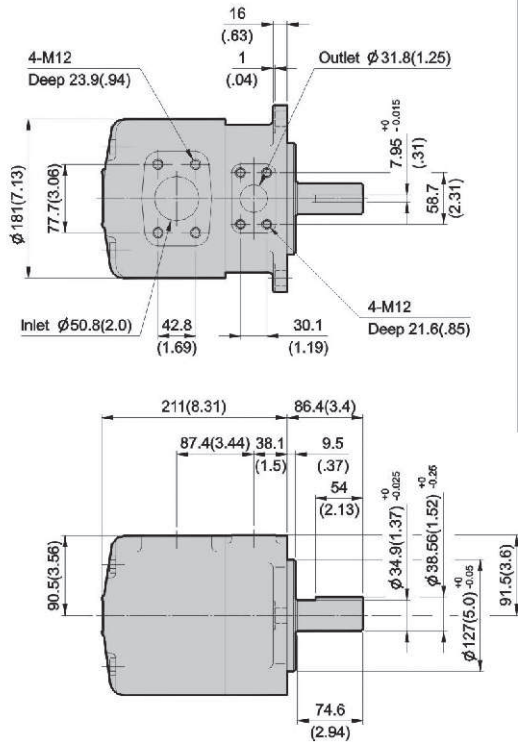
For other dimensions, refer to "Flange Mounting" type



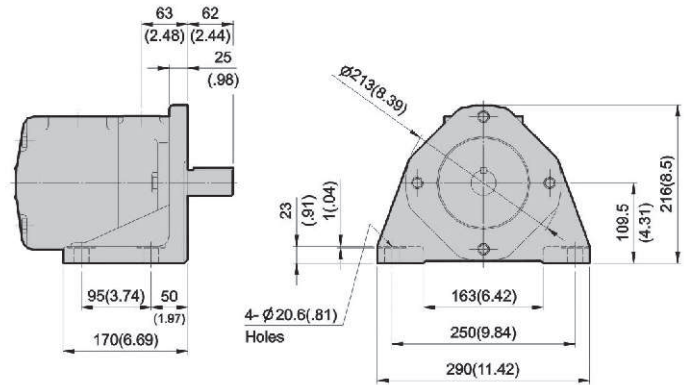
DIMENSIONS

MILLIMETERS(INCHES)

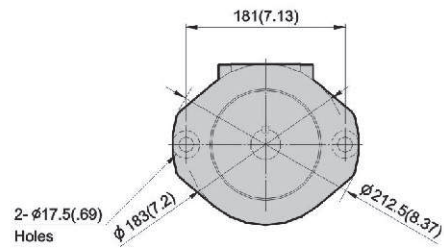
IVP3 Flange Mounting



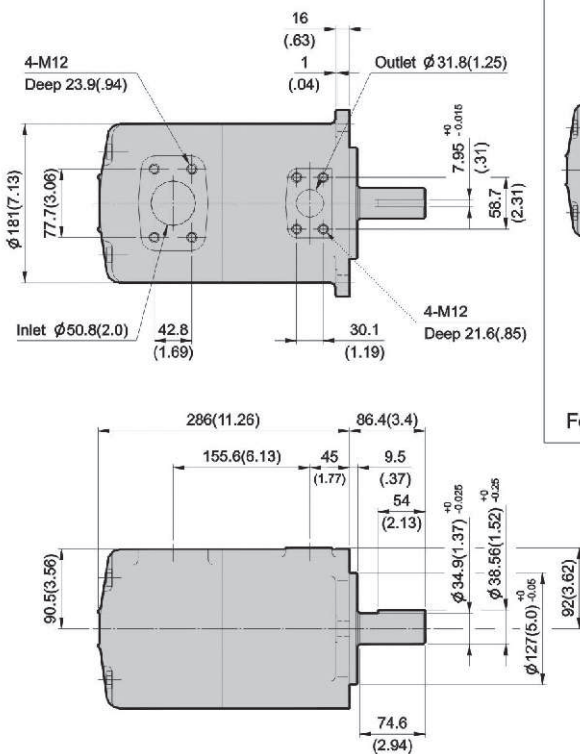
IVP3 Foot Mounting



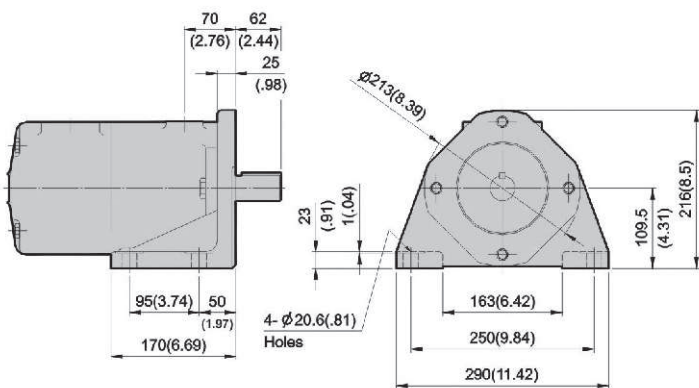
For other dimensions, refer to "Flange Mounting" type



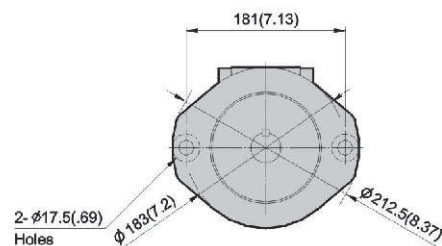
IVPQ3 Flange Mounting



IVPQ3 Foot Mounting



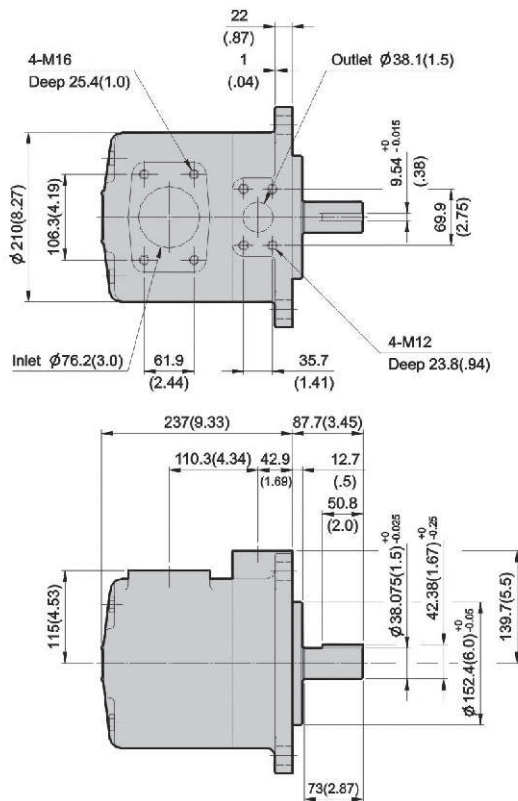
For other dimensions, refer to "Flange Mounting" type



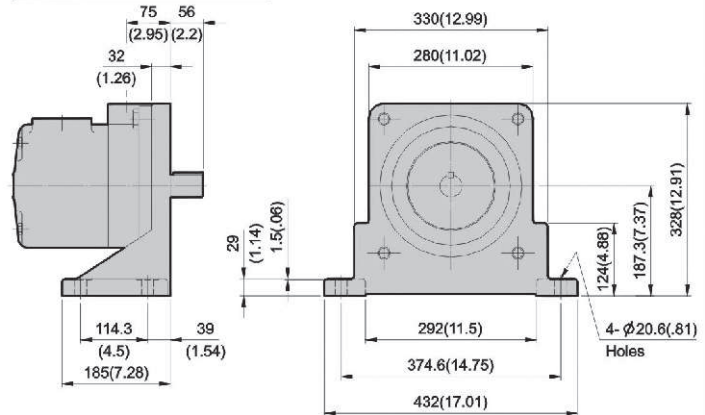
DIMENSIONS

MILLIMETERS(INCHES)

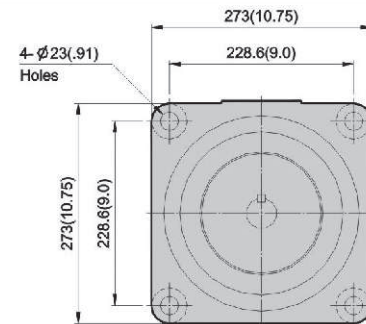
IVP4 Flange Mounting



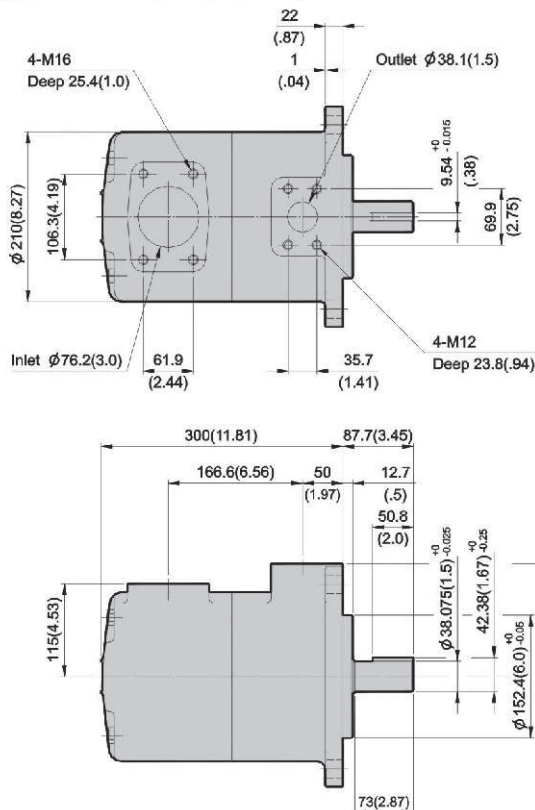
IVP4 Foot Mounting



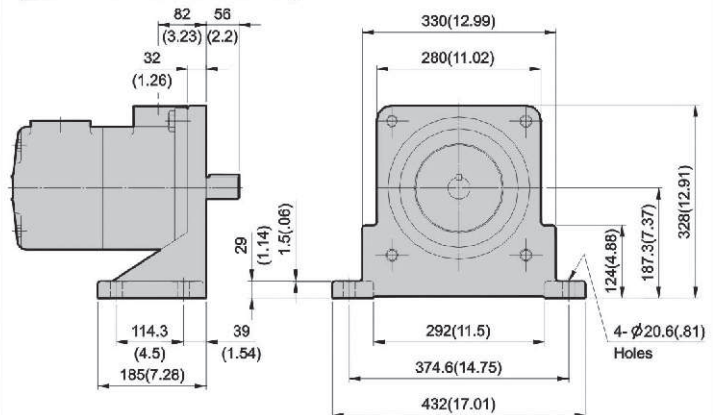
For other dimensions, refer to "Flange Mounting" type



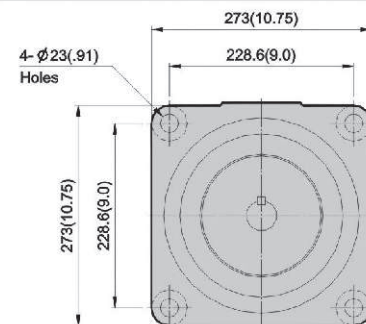
IVPQ4 Flange Mounting



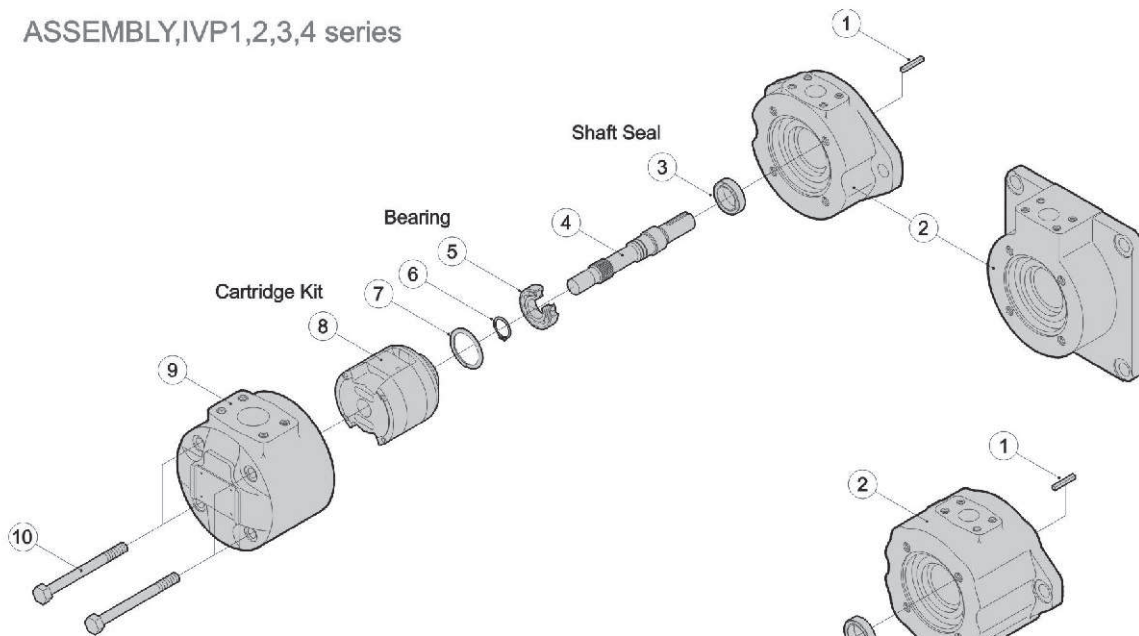
IVPQ4 Foot Mounting



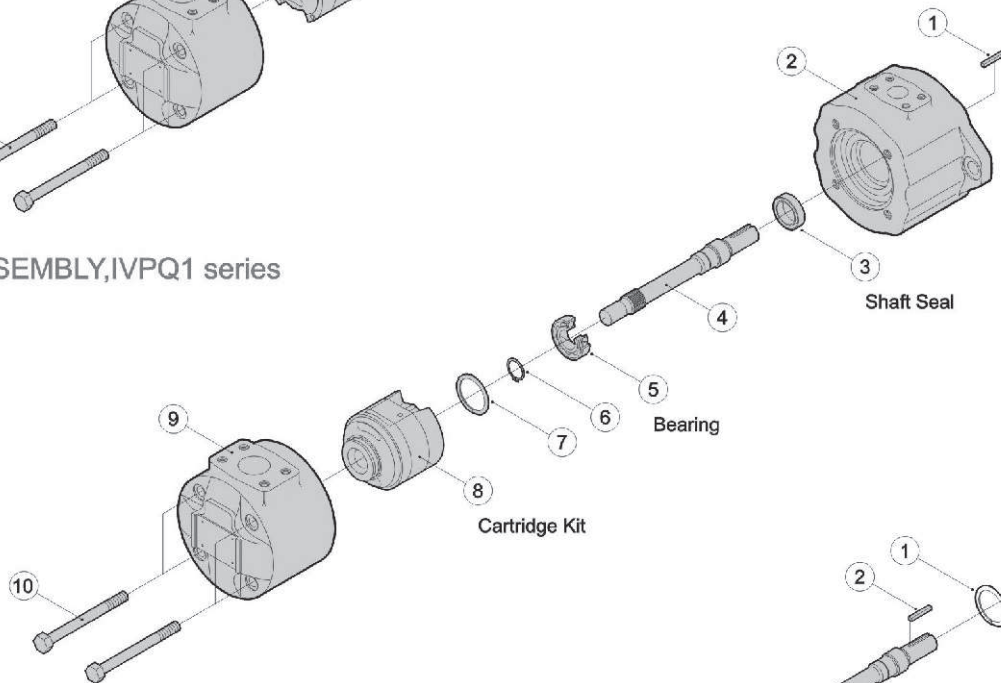
For other dimensions, refer to "Flange Mounting" type



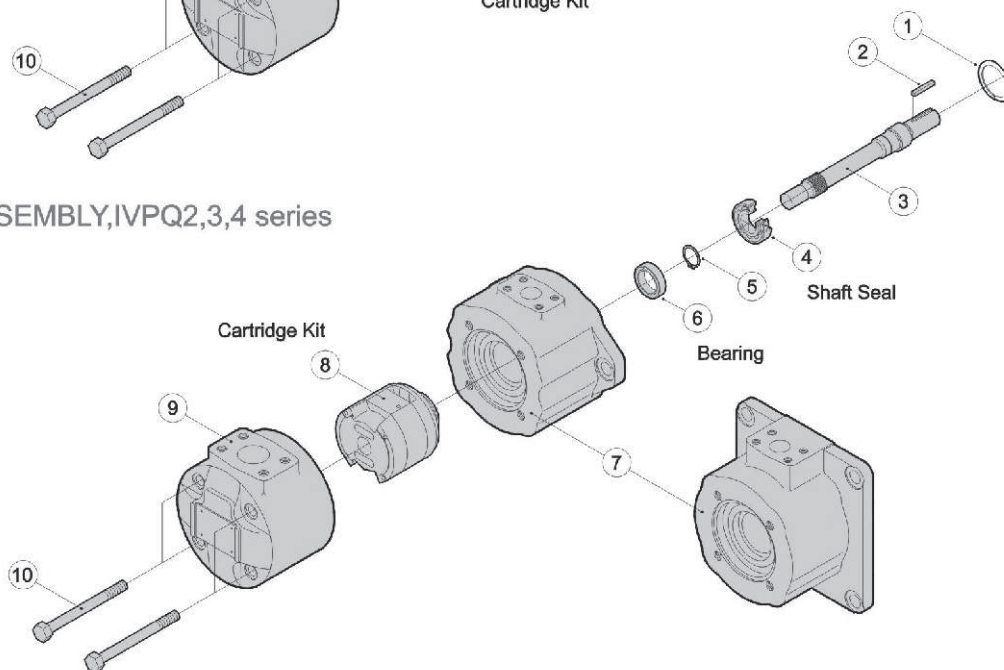
ASSEMBLY, IVP1,2,3,4 series



ASSEMBLY, IVPQ1 series



ASSEMBLY, IVPQ2,3,4 series



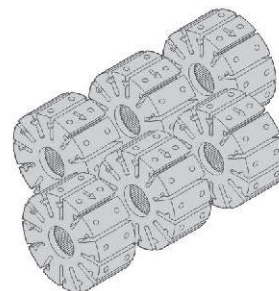
IVP(Q) SINGLE PUMPS - CARTRIDGE KIT ORDERING CODE

(F3-)	CK- ♦ IVP(Q)2	-17	-R	-10
Prefix, fluid compatibility	Cartridge Kit Model	Geometric displacement Cartridge Kit • Code	Rotation	Design No.
Omit- Using antiwear oil or phosphate ester fluid. F11- Using water glycol fluid. F3- Using water-in-oil emulsions.	CK-IVP(Q)1	2 , 3 , 4 , 5 , 6 , 7 , 8 , 10 , 11 , 12 , 14	Viewed from shaft end of pump. R- Right hand for clock- wise. L- Left hand for counter- clockwise.	10
	CK-IVP(Q)2	10 , 12 , 14 , 15 , 17 , 19 , 21 , 25		10
	CK-IVP(Q)3	17 , 21 , 25 , 30 , 32 , 35 , 38 , 42		10
	CK-IVP(Q)4	30 , 35 , 38 , 42 , 50 , 60 , 67 , 75		10

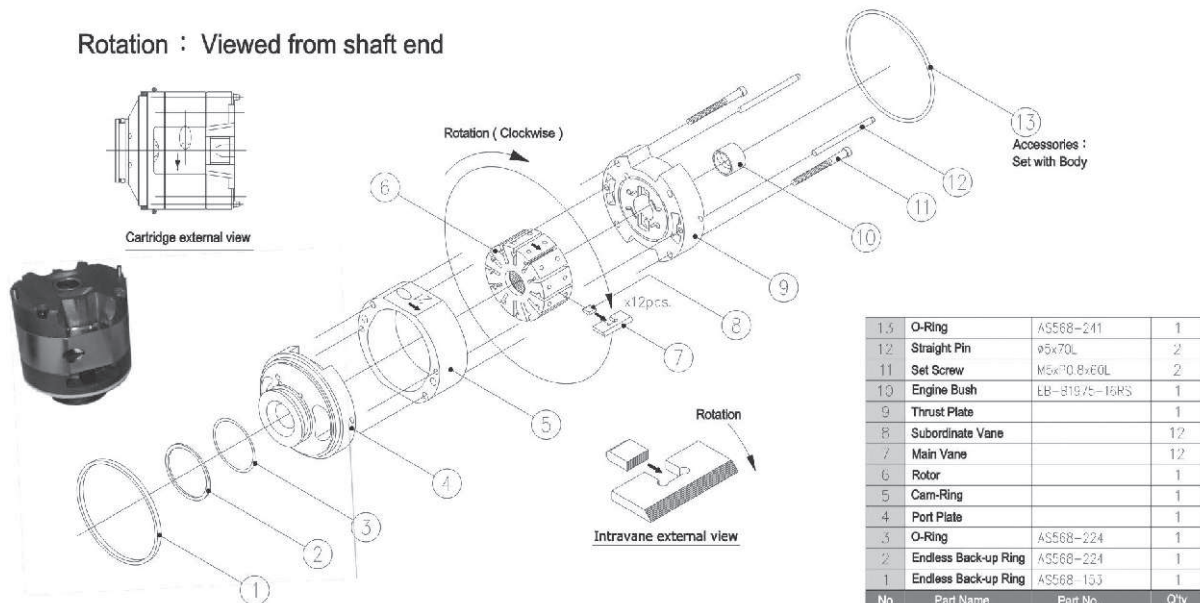
- ♦ Rated capacity in USgpm at 1200rpm and 6.9bar.
- ♦ Is the model for frame size.

IVP(Q) Single Pumps - Shaft Seal & Bearing

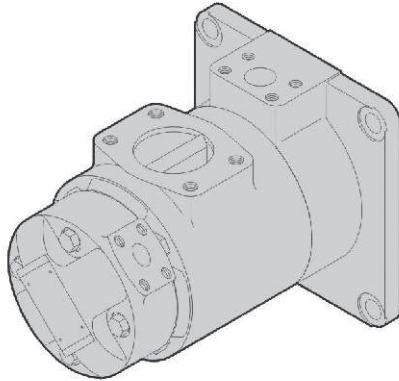
MODEL	Shaft seal	Bearing
IVP1	TBY 29.36X42.82X7.9	6204
IVP2	TBY 29.36X42.82X7.9	6205
IVP3	TBY 36.5X50.8X7.9	6306
IVP4	TBY 41.28X60.32X9.5	6307
IVPQ1	TBY 29.36X42.82X7.9	6204
IVPQ2	TBY 24.69X44.5X7.9	6205zz
IVPQ3	TBY 29.36X42.82X7.9	6306zz
IVPQ4	TBY 34.93X57.15X7.9	6307zz



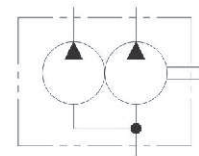
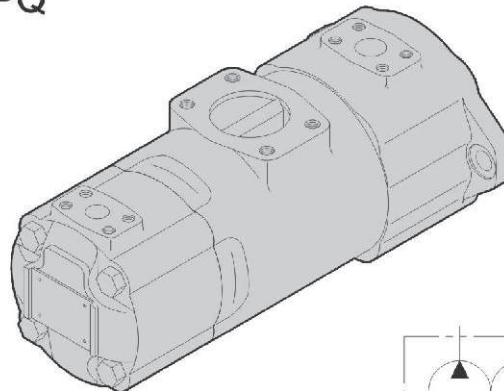
Rotation : Viewed from shaft end



IVP



IVPQ

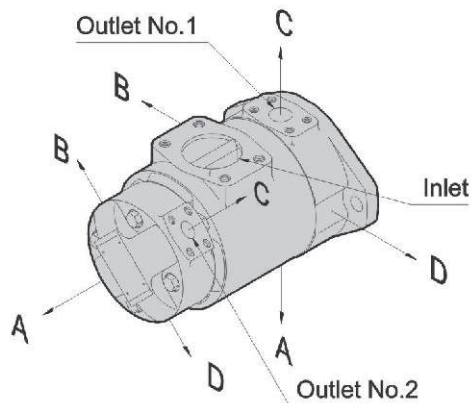


IVP(Q) Ordering Code - Double Pumps

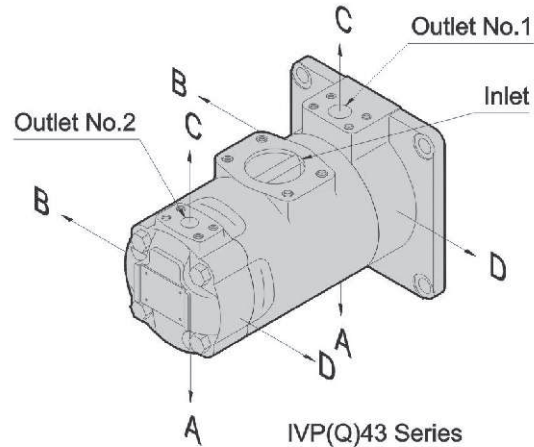
(-3)	IVP(Q)21	-17	-12	-F	-R
Prefix, fluid compatibility	Frame size	Geometric displacement shaft end pump • Code	Geometric displacement cover end pump • Code	Mounting form	Rotation
Omit- Using antiwear oil or phosphate ester fluid.	IVP(Q)21	10 , 12 , 14 , 15 , 17 , 19 , 21 , 25	2 , 3 , 4 , 5 , 6 , 7 , 8 , 10 , 11 , 12 , 14	F- Flange mounting.	Viewed from shaft end of pump.
F11- Using water glycol fluid.	IVP(Q)31	17 , 21 , 25 , 30 , 32 , 35 , 38 , 42	2 , 3 , 4 , 5 , 6 , 7 , 8 , 10 , 11 , 12 , 14	L- Foot mounting.	R- Right hand for clockwise.
F3- Using water-in-oil emulsions.	IVP(Q)32	17 , 21 , 25 , 30 , 32 , 35 , 38 , 42	10 , 12 , 14 , 15 , 17 , 19 , 21 , 25		L- Left hand for counter-clockwise.
	IVP(Q)41	30 , 35 , 38 , 42 , 50 , 60 , 67 , 75	2 , 3 , 4 , 5 , 6 , 7 , 8 , 10 , 11 , 12 , 14		
	IVP(Q)42	30 , 35 , 38 , 42 , 50 , 60 , 67 , 75	10 , 12 , 14 , 15 , 17 , 19 , 21 , 25		
	IVP(Q)43	30 , 35 , 38 , 42 , 50 , 60 , 67 , 75	17 , 21 , 25 , 30 , 32 , 35 , 38 , 42		

• Rated capacity in USgpm at 1200rpm and 6.9bar.

Port Orientation



All series except IVP(Q)43



IVP(Q)43 Series

-AA	-10
Port orientation	Design No.
Viewed from cover end of pump	
With No.1 outlet opposite inlet	10
AA - No.2 outlet 135° CCW from inlet.(No.2 outlet opposite inlet.)	
AB - No.2 outlet 45° CCW from inlet.(No.2 outlet 90° CCW from inlet.)	
AC - No.2 outlet 45° CW from inlet.(No.2 outlet inline with inlet.)	10
AD - No.2 outlet 135° CW from inlet.(No.2 outlet 90° CW from inlet.)	
With No.1 outlet 90° CCW from inlet	
BA - No.2 outlet 135° CCW from inlet.(No.2 outlet opposite inlet.)	
BB - No.2 outlet 45° CCW from inlet.(No.2 outlet 90° CCW from inlet.)	10
BC - No.2 outlet 45° CW from inlet.(No.2 outlet inline with inlet.)	
BD - No.2 outlet 135° CW from inlet.(No.2 outlet 90° CW from inlet.)	
With No.1 outlet inline with inlet	
CA - No.2 outlet 135° CCW from inlet.(No.2 outlet opposite inlet.)	10
CB - No.2 outlet 45° CCW from inlet.(No.2 outlet 90° CCW from inlet.)	
CC - No.2 outlet 45° CW from inlet.(No.2 outlet inline with inlet.)	
CD - No.2 outlet 135° CW from inlet.(No.2 outlet 90° CW from inlet.)	
With No.1 outlet 90° CW from inlet	10
DA - No.2 outlet 135° CCW from inlet.(No.2 outlet opposite inlet.)	
DB - No.2 outlet 45° CCW from inlet.(No.2 outlet 90° CCW from inlet.)	
DC - No.2 outlet 45° CW from inlet.(No.2 outlet inline with inlet.)	
DD - No.2 outlet 135° CW from inlet.(No.2 outlet 90° CW from inlet.)	10
Note: () the port orientation of IVP(Q)43.	



IVP Double Pumps Max. Continuous Pressures

MODEL	Shaft end pump (No.1 outlet)			Cover end pump (No.2 outlet)			Max. speed rpm	Min. speed rpm		
	●Code	Geometric displacement cm ³ /r	Max. pressure bar	●Code	Geometric displacement cm ³ /r	Max. pressure bar				
IVP(Q)21	10	32.5	▲172 F3=69 F11=157	2	7.5	▲138 F3=69 F11=138	1800 F3=1200 F11=1500	600		
	12	38.3		3	10.2					
	14	43.3								
	15	46.7		4	12.8	▲172,F3=69 F11=138				
	17	52.5								
	19	59.2		5	16.7					
	21	65.0								
IVP(Q)31	25	78.6		5	16.7					
	17	53.3	▲172 F3=69 F11=157	6	19.2					
	21	66.7		7	22.9	▲207 F3=69 F11=157				
	25	79.2		8	26.2					
	30	95.0								
	32	100		10	31.0					
	35	109								
IVP(Q)41	38	118		▲172 F3=69 F11=157	11	35.0				
	42	134	12		37.9	▲157,F3=69 F11=138				
	42	134	14		44.2	▲138,F3=69 F11=138				
	30	96.0								
	35	109								
	38	128								
	42	134								
IVP(Q)32	50	156	▲172 F3=69 F11=157	10	32.5		1800 F3=1200 F11=1500	600		
	60	189		12	38.3					
	67	210		14	43.3					
	75	236		15	46.7	▲172 F3=69 F11=157				
	17	53.3								
	21	66.7								
	25	79.2								
IVP(Q)42	30	96.0	▲172 F3=69 F11=157	17	52.5					
	35	109		19	59.5					
	38	128		21	65.0					
	42	134		25	78.6					
	50	156								
	60	189								
	67	210								
IVP(Q)43	75	236	▲172 F3=69 F11=157	17	53.3	▲172 F3=69 F11=157	1800 F3=1200 F11=1500	600		
	30	96.0		21	66.7					
	35	109		25	79.2					
	38	128		30	95.0					
	42	134		32	100					
	50	156		35	109					
	60	189		38	118					
	67	210		42	134					

● Rated capacity in USgpm at 1200rpm and 6.9bar.

▲ A transient (peak) pressure 10% over the max. continuous pressure rating for 0.5 seconds or less duration its allowed.

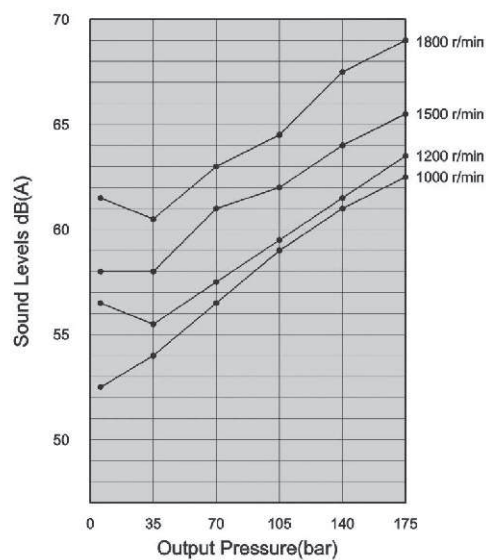
IVP Double Pumps Weight

kg(lb)

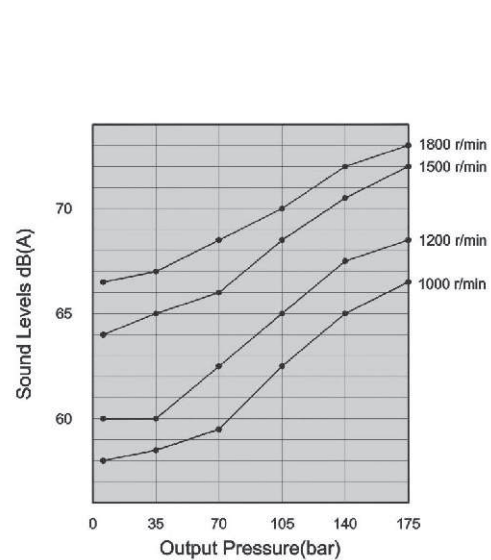
MODEL	IVP		IVP(Q)	
	Flange mounting	Foot mounting	Flange mounting	Foot mounting
IVP(Q)21	31.5(69.38)	41(90.31)	41(90.31)	50.5(111.23)
IVP(Q)31	46(101.32)	55.5(122.25)	56(123.35)	65.5(144.27)
IVP(Q)32	48(105.73)	57.5(126.65)	62(136.56)	71.5(157.49)
IVP(Q)41	74(163.0)	99(218.06)	83(182.82)	108(237.89)
IVP(Q)42	80(176.21)	105(231.28)	88(193.83)	113(248.9)
IVP(Q)43	88.5(194.93)	113(248.9)	99(218.06)	123(270.93)

IVP Double Pumps Sound Data

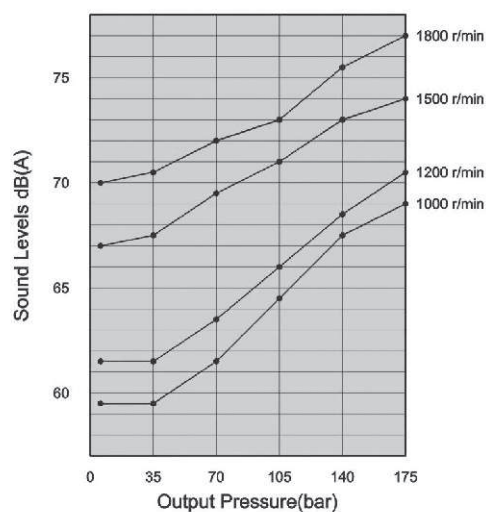
IVP21-17-8



IVP32-35-17

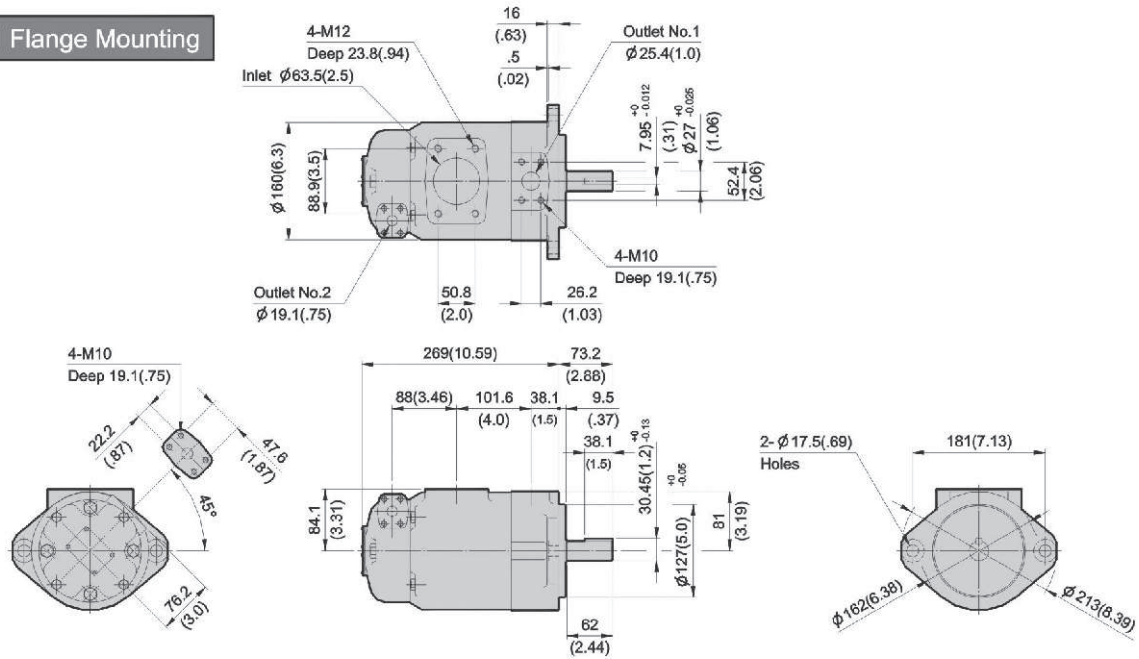


IVP43-50-35

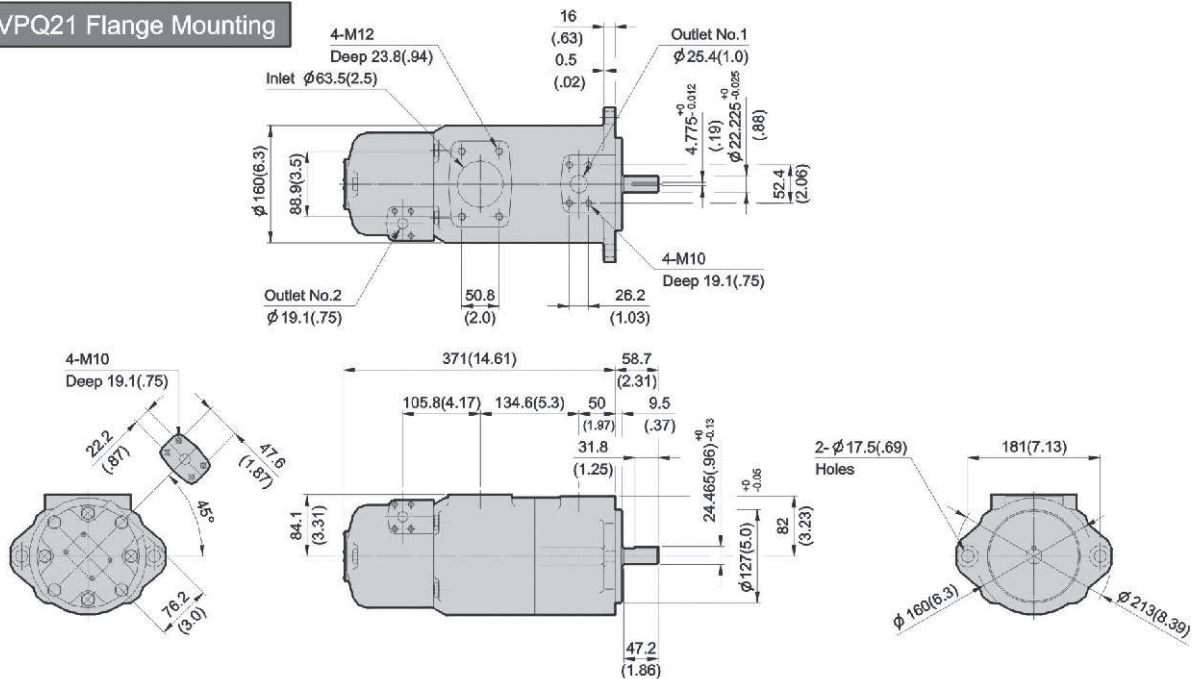


Conditions: ISO VG32, (50°C), 0 bar inlet, distance: 1m

IVP21 Flange Mounting

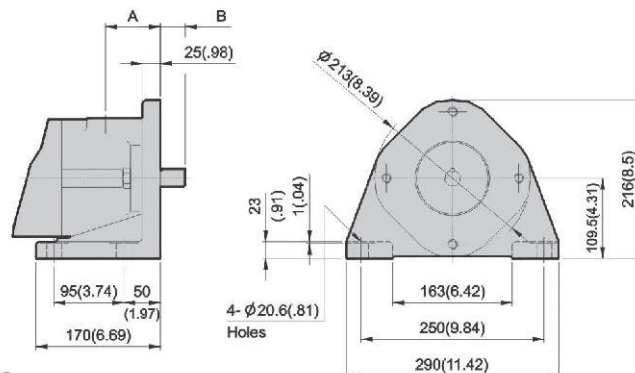


IVPQ21 Flange Mounting



IVP(Q)21 Foot Mounting

MODEL	DIMENSION	
	A	B
IVP21	63(2.48)	48(1.89)
IVPQ21	75(2.95)	34(1.34)



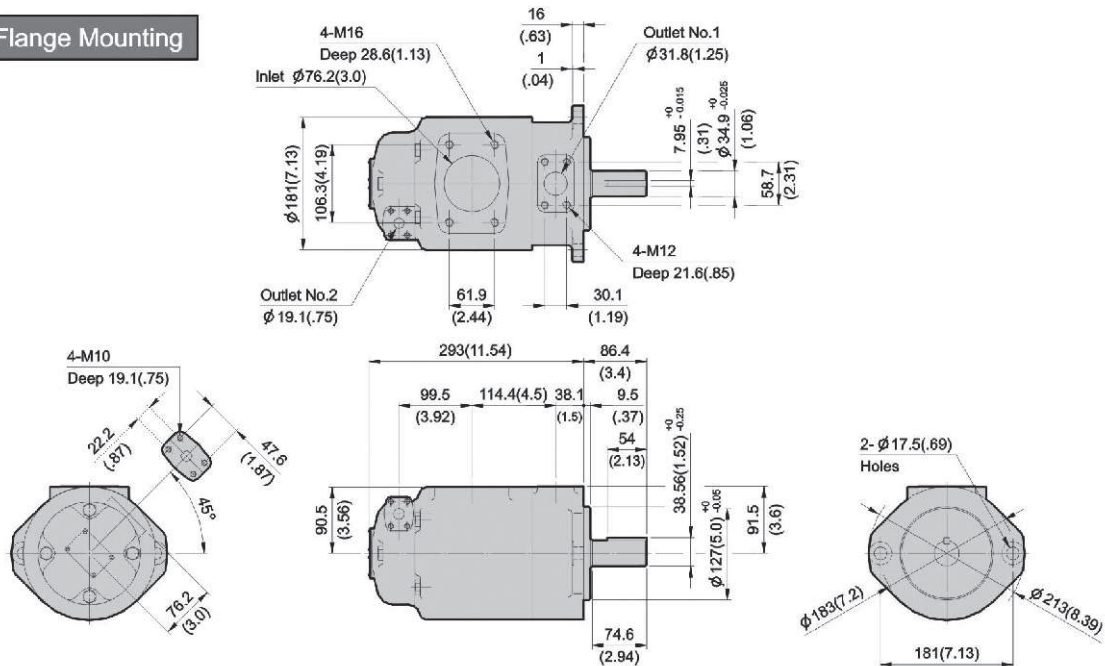
For other dimensions, refer to "Flange Mounting" type

DIMENSIONS

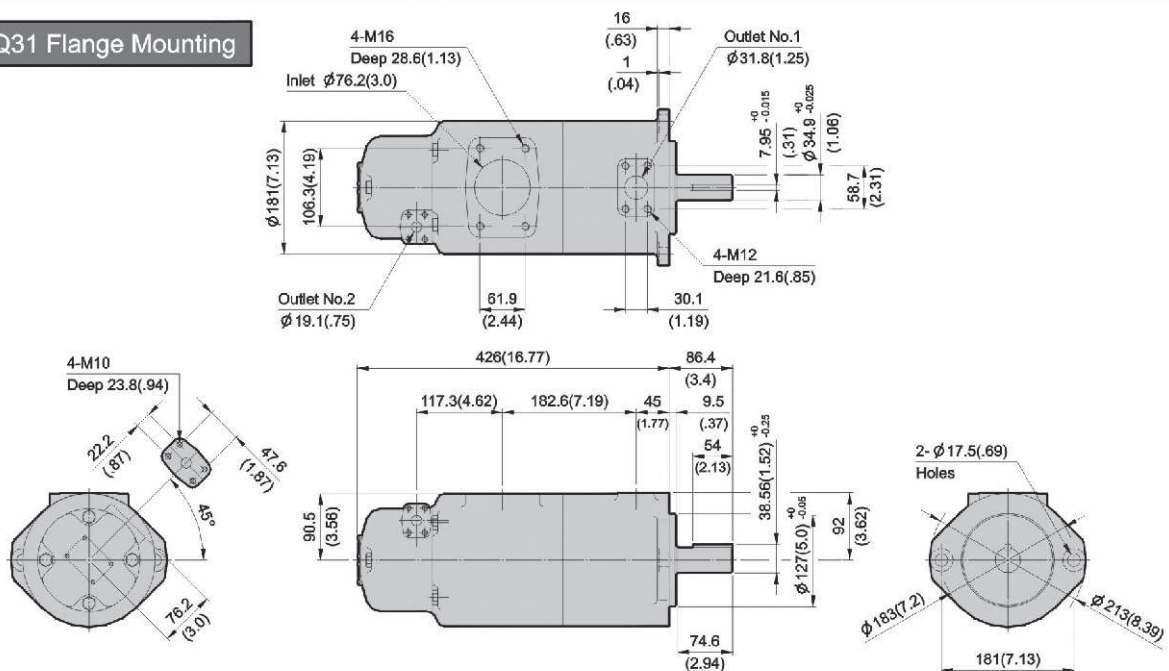
MILLIMETERS(INCHES)

A3

IVP31 Flange Mounting

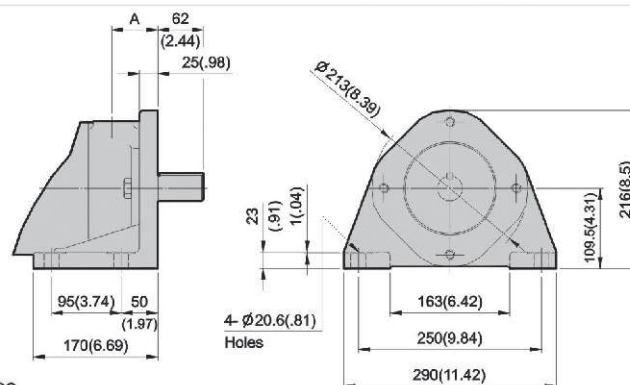


IVPQ31 Flange Mounting



IVP(Q)31 Foot Mounting

MODEL	DIMENSION
	A
IVP31	63(2.48)
IVPQ31	70(2.76)



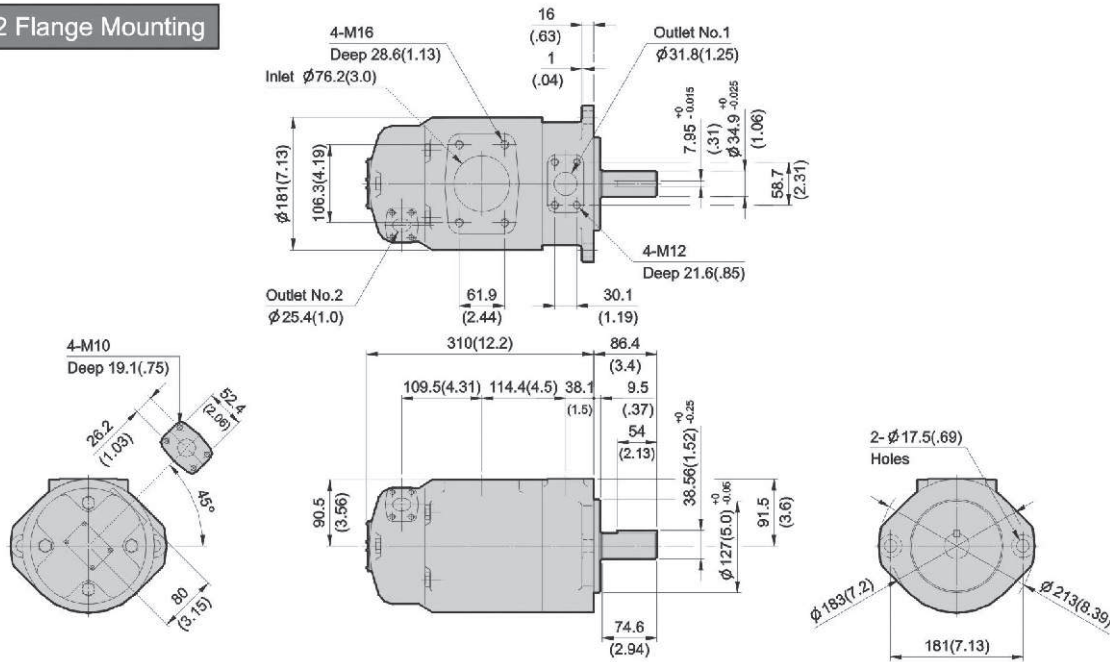
For other dimensions, refer to "Flange Mounting" type

DIMENSIONS

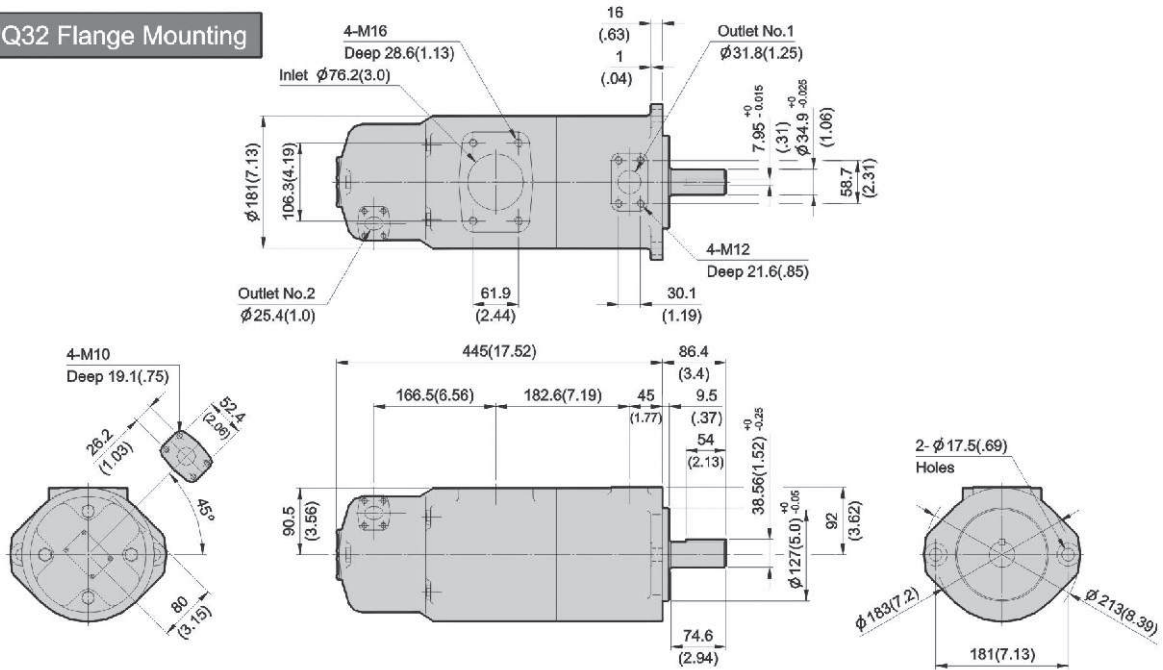
MILLIMETERS(INCHES)

A3

IVP32 Flange Mounting

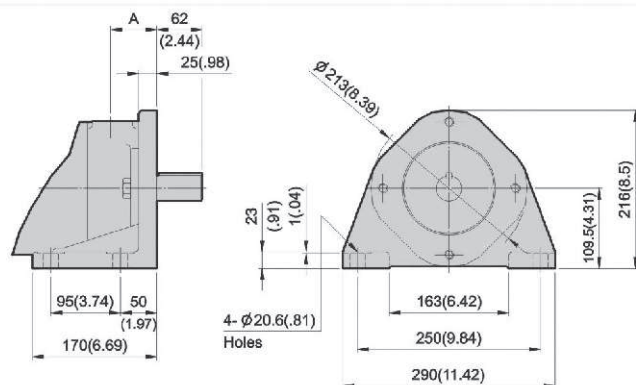


IVPQ32 Flange Mounting



IVP(Q)32 Foot Mounting

MODEL	DIMENSION
	A
IVP32	63(2.48)
IVPQ32	70(2.76)



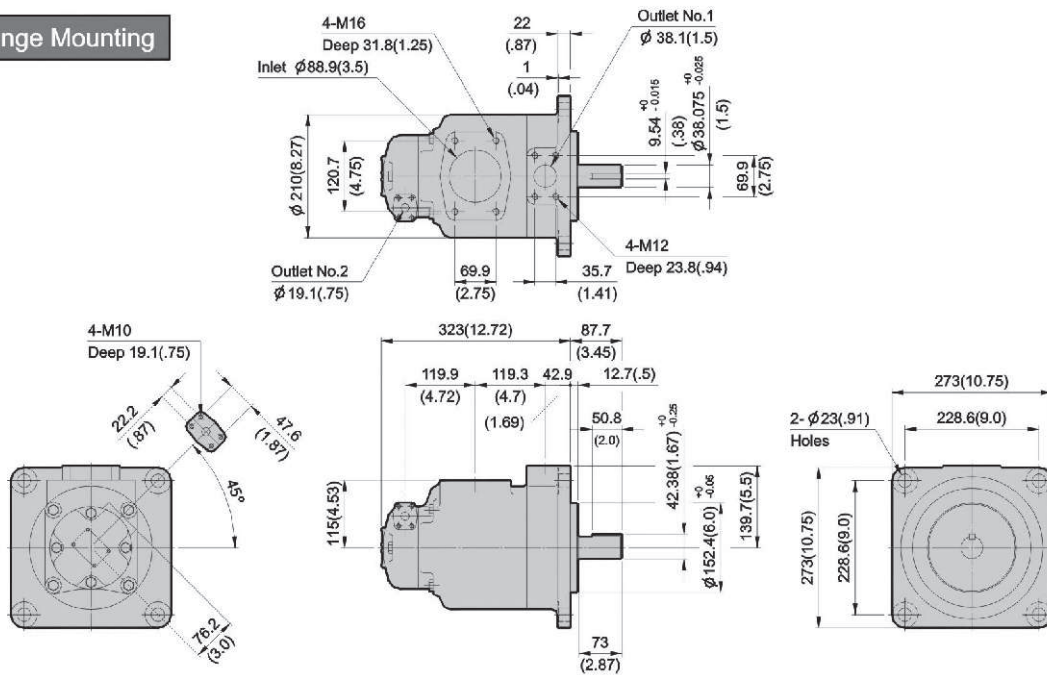
For other dimensions, refer to "Flange Mounting" type

DIMENSIONS

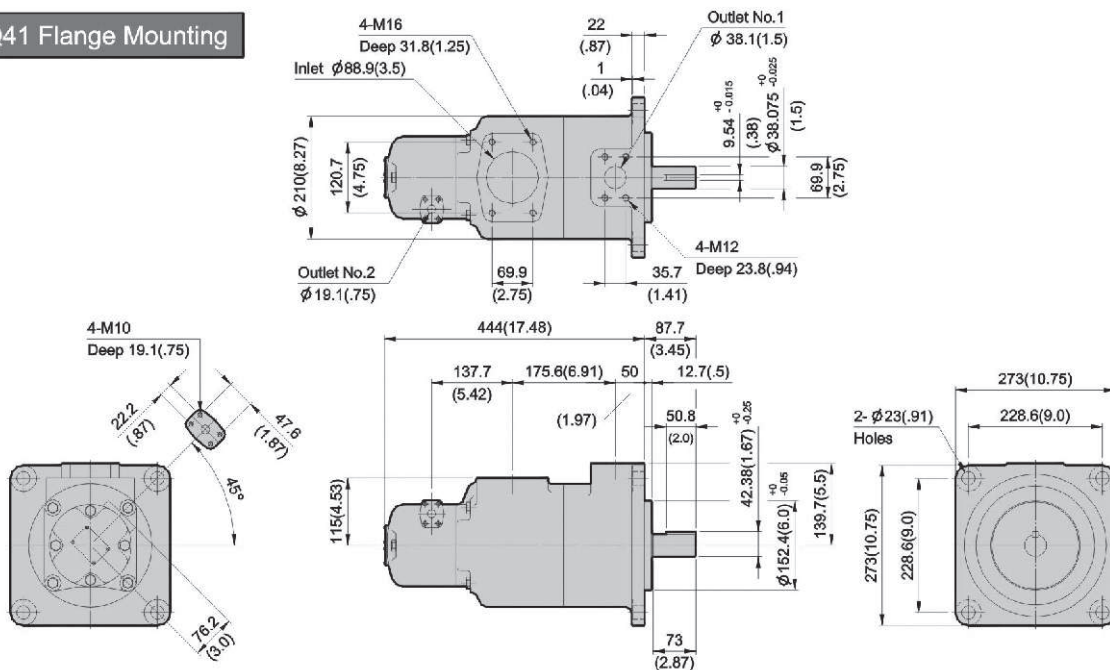
MILLIMETERS(INCHES)

A3

IVP41 Flange Mounting

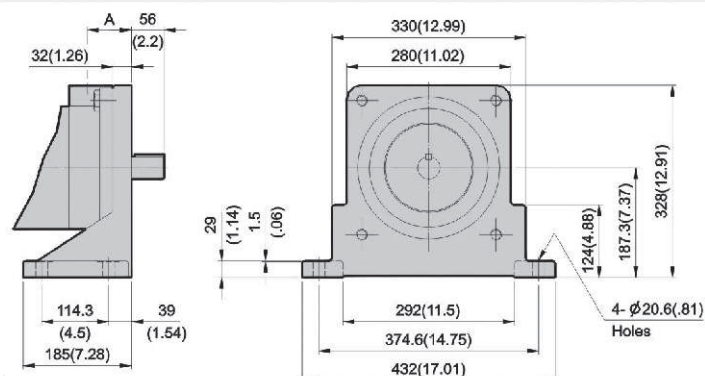


IVPQ41 Flange Mounting



IVP(Q)41 Foot Mounting

MODEL	DIMENSION
	A
IVP41	75(2.95)
IVPQ41	82(3.23)



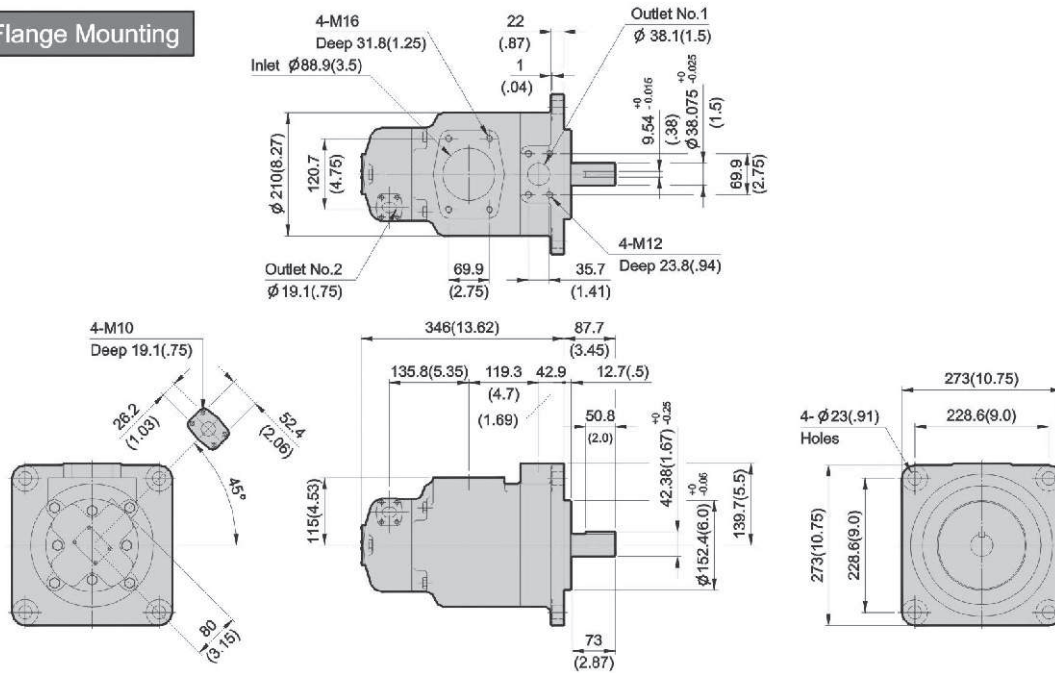
For other dimensions, refer to "Flange Mounting" type

DIMENSIONS

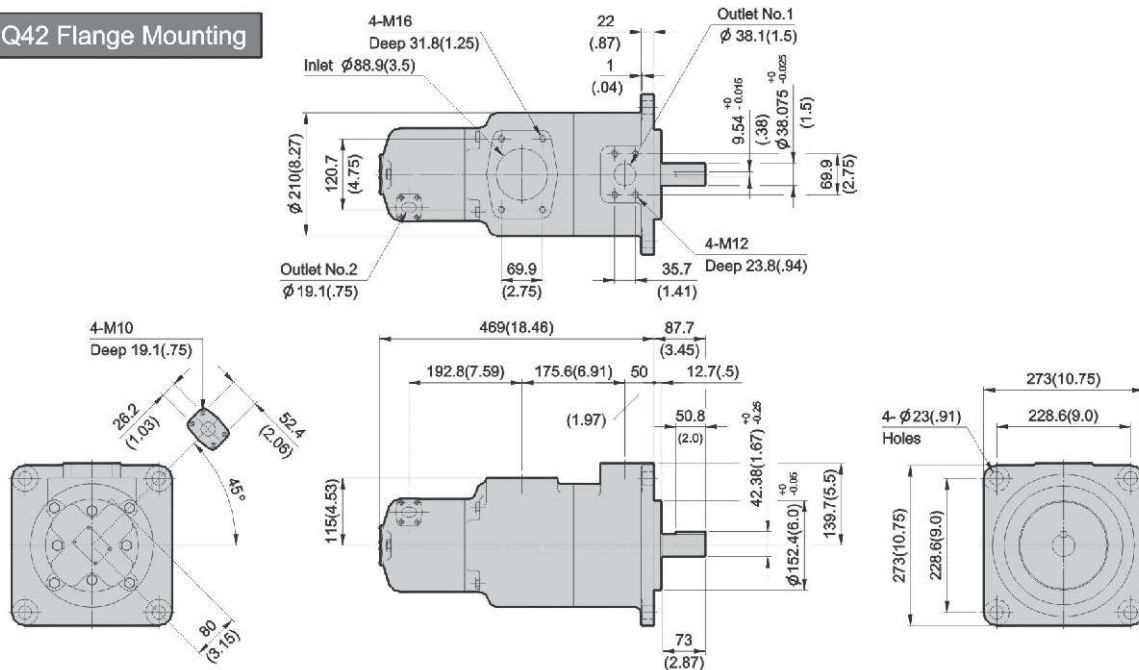
MILLIMETERS(INCHES)

A3

IVP42 Flange Mounting

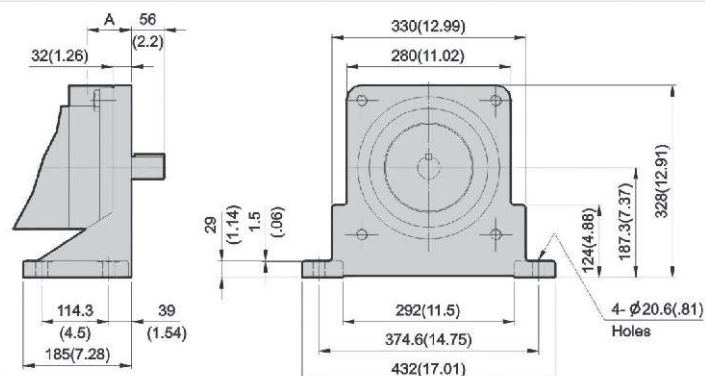


IVPQ42 Flange Mounting



IVP(Q)42 Foot Mounting

MODEL	DIMENSION
	A
IVP42	75(2.95)
IVPQ42	82(3.23)



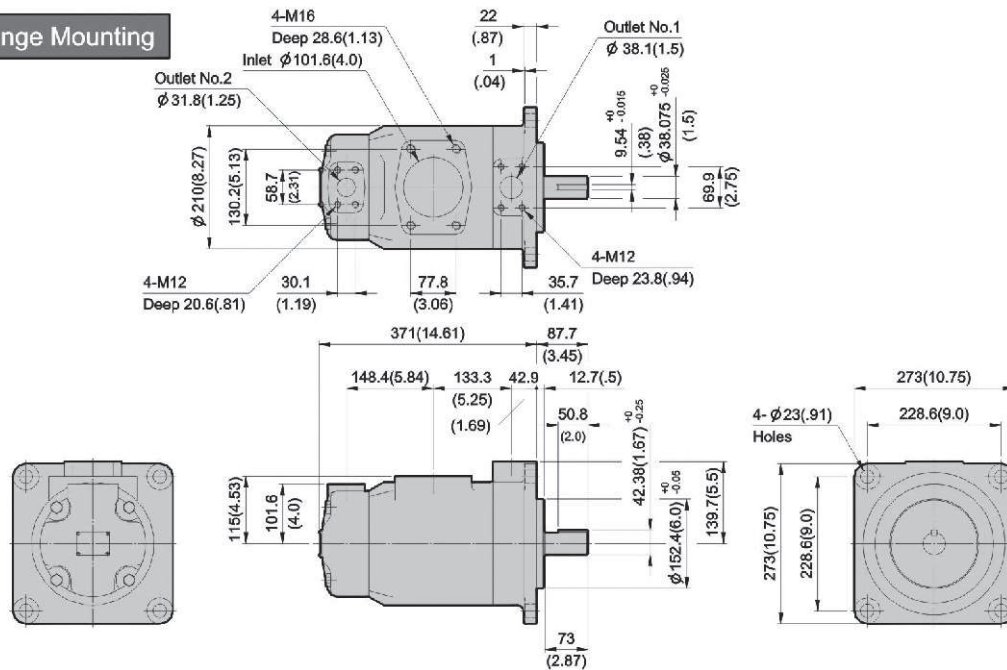
For other dimensions, refer to "Flange Mounting" type

DIMENSIONS

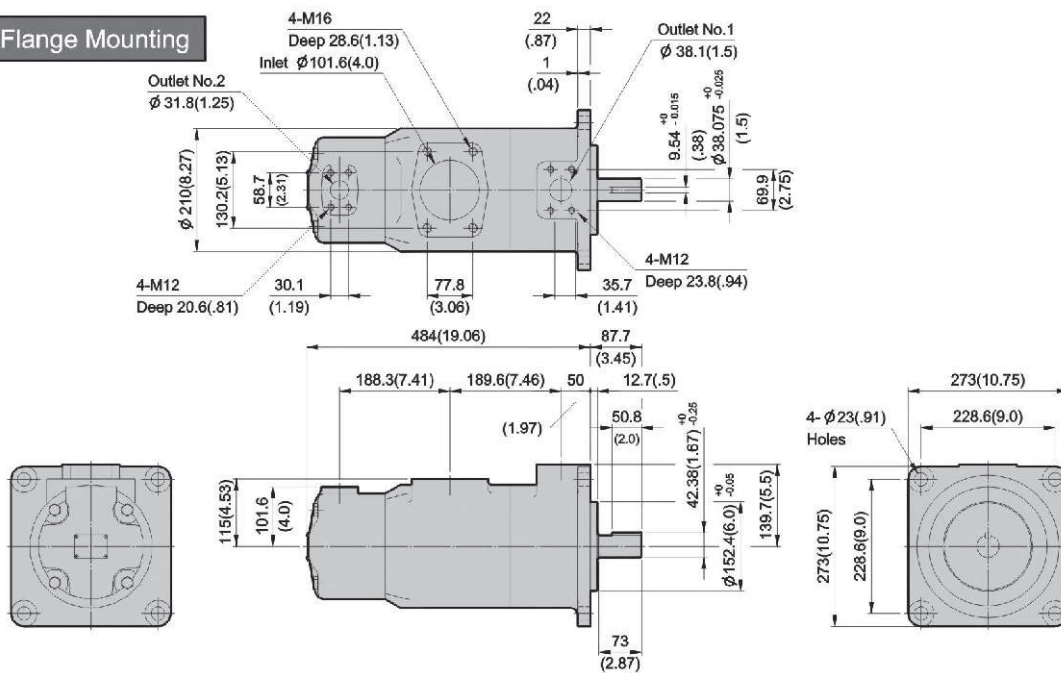
MILLIMETERS(INCHES)

A3

IVP43 Flange Mounting

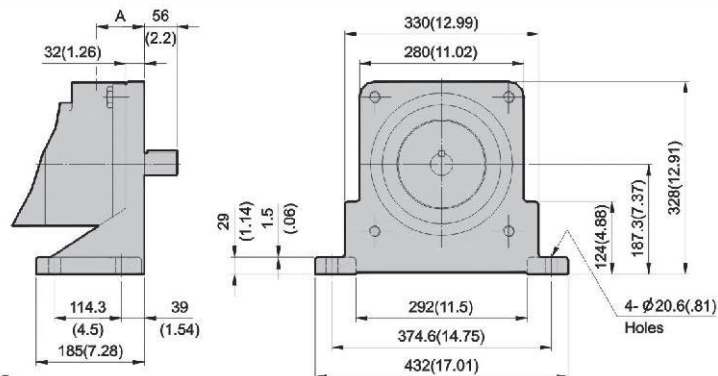


IVPQ43 Flange Mounting



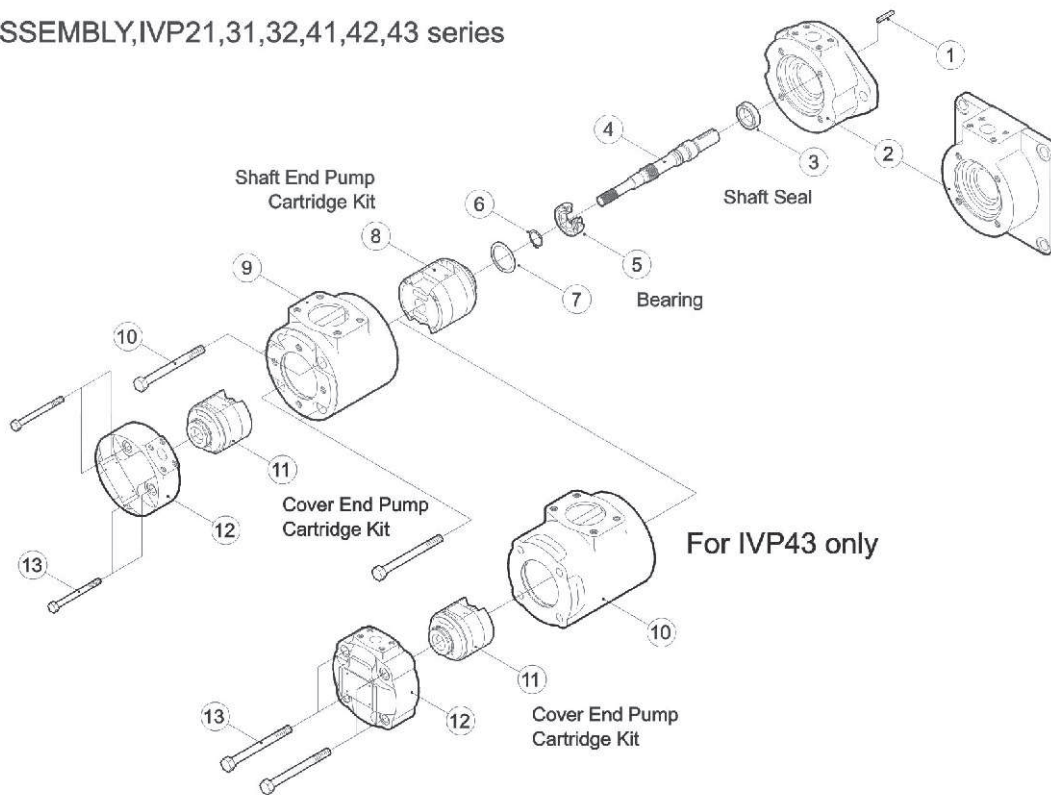
IVP(Q)43 Foot Mounting

MODEL	DIMENSION
	A
IVP43	75(2.95)
IVPQ43	82(3.23)

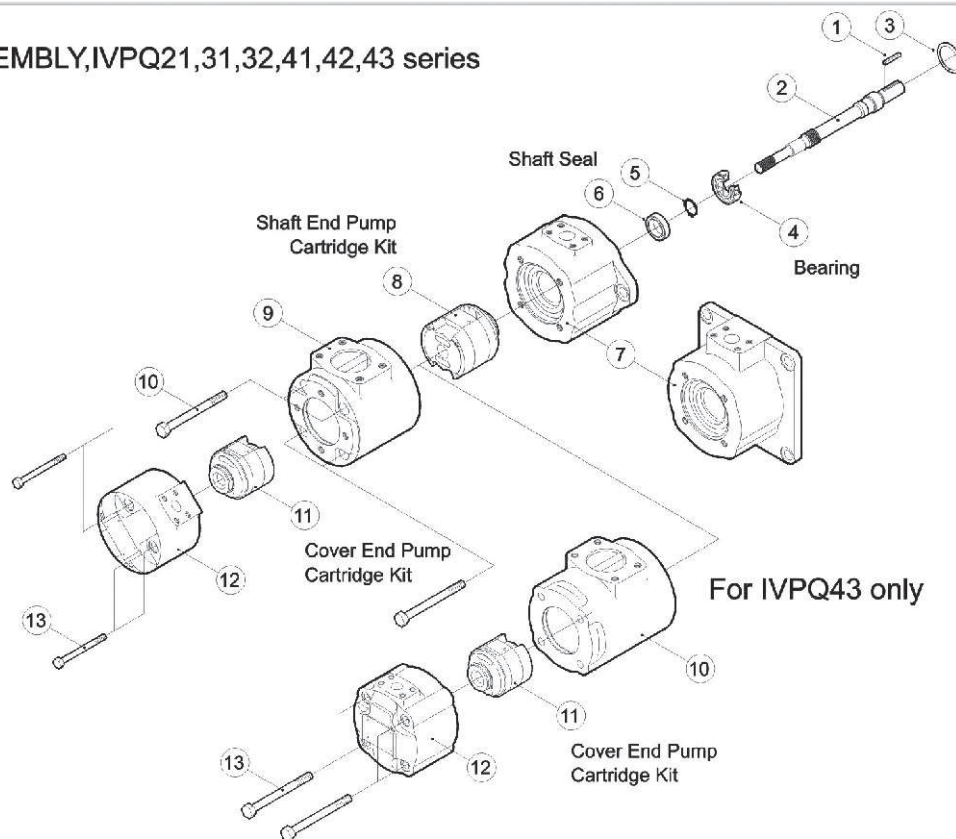


For other dimensions, refer to "Flange Mounting" type

ASSEMBLY, IVP21,31,32,41,42,43 series



ASSEMBLY, IVPQ21,31,32,41,42,43 series



IVP(Q) Double Pumps - Cartridge Kit Ordering Code

(F3-)	CK- ♦ IVP(Q)21	-(17)S	-(12)C	-R	-10
Prefix, fluid compatibility	Cartridge Kit Model	Geometric displacement shaft end pump Cartridge Kit • Code	Geometric displacement cover end pump Cartridge Kit • Code	Rotation	Design No.
Omit- Using antiwear oil or phosphate ester fluid. F11- Using water glycol fluid. F3- Using water-in-oil emulsions.	CK-IVP(Q)21	10 , 12 , 14 , 15 , 17 , 19 , 21 , 25	2 , 3 , 4 , 5 , 6 , 7 , 8 , 10 , 11 , 12 , 14	Viewed from shaft end of pump. R- Right hand for clockwise. L- Left hand for counter-clockwise.	10
	CK-IVP(Q)31	17 , 21 , 25 , 30 , 32 , 35 , 38 , 42	2 , 3 , 4 , 5 , 6 , 7 , 8 , 10 , 11 , 12 , 14		10
	CK-IVP(Q)32	17 , 21 , 25 , 30 , 32 , 35 , 38 , 42	10 , 12 , 14 , 15 , 17 , 19 , 21 , 25		10
	CK-IVP(Q)41	30 , 35 , 38 , 42 , 50 , 60 , 67 , 75	2 , 3 , 4 , 5 , 6 , 7 , 8 , 10 , 11 , 12 , 14		10
	CK-IVP(Q)42	30 , 35 , 38 , 42 , 50 , 60 , 67 , 75	10 , 12 , 14 , 15 , 17 , 19 , 21 , 25		10
	CK-IVP(Q)43	30 , 35 , 38 , 42 , 50 , 60 , 67 , 75	17 , 21 , 25 , 30 , 32 , 35 , 38 , 42		10

• Rated capacity in USgpm at 1200rpm and 6.9bar.

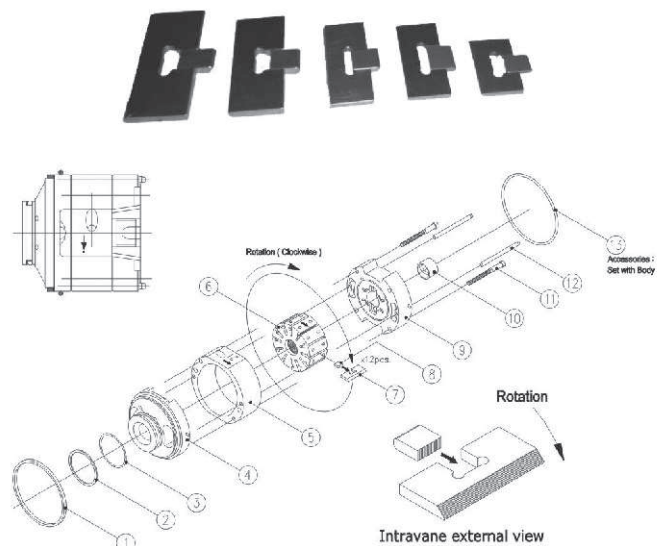
♦ Is the model for frame size.

Example: 1.CK-IVP21-10S-R-10, Ordering code for shaft end pump cartridge kit.

2.CK-IVP21-10C-R-10, Ordering code for cover end pump cartridge kit.

IVP(Q) Double Pumps - Max. input torque

MODEL	Max. input torque Nm(kgf-m)
IVP(Q)21	320(32)
IVP(Q)31	610(61)
IVP(Q)32	610(61)
IVP(Q)41	820(82)
IVP(Q)42	820(82)
IVP(Q)43	820(82)



IVP(Q) Double Pumps - Performance Characteristics

MODEL	Performance Characteristics	
	Shaft end pump (No.1 outlet)	Cover end pump (No.2 outlet)
IVP(Q)21	Data same as IVP(Q)2 Series	Data same as IVP(Q)1 Series
IVP(Q)31	Data same as IVP(Q)3 Series	
IVP(Q)41	Data same as IVP(Q)4 Series	
IVP(Q)32	Data same as IVP(Q)3 Series	Data same as IVP(Q)2 Series
IVP(Q)42	Data same as IVP(Q)4 Series	
IVP(Q)43	Data same as IVP(Q)4 Series	Data same as IVP(Q)3 Series

PS:For the performance characteristics of IVP(Q) 1-4 ,please refer to page 6&7.

IVP(Q) Double Pumps - Shaft Seal & Bearing

MODEL	Shaft seal	Bearing
IVP21	TBY 29.36X42.82X7.9	6205
IVP31	TBY 36.5X50.8X7.9	6306
IVP32	TBY 36.5X50.8X7.9	6306
IVP41	TBY 41.28X60.32X9.5	6307
IVP42	TBY 41.28X60.32X9.5	6307
IVP43	TBY 41.28X60.32X9.5	6307
IVPQ21	TBY 24.59X44.5X7.9	6205zz
IVPQ31	TBY 29.36X42.82X7.9	6306zz
IVPQ32	TBY 29.36X42.82X7.9	6306zz
IVPQ41	TBY 34.93X57.15X7.9	6307zz
IVPQ42	TBY 34.93X57.15X7.9	6307zz
IVPQ43	TBY 34.93X57.15X7.9	6307zz

IVP(Q) Operating Data

Hydraulic Fluids

Use antiwear industrial hydraulic oils or automotive crankcase oils having letter designations SC,SD,DE or SF with viscosity grades of 32 to 68 cSt at 40 °C(140 °F) Preferred viscosity at rated speed and pressures:Minimum 13 cSt (70 SUS) Maximum 54 cSt(70 SUS) Minimum 49 ° C(120 ° F) Maximum 65 ° C(120 ° F).

Cold Stares

When operating SAE 10W oil in the 860 to 54 cSt(400 to 251 SUS) 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's are greater than 860 cSt(4000 SUS).Care should be exercised to warm up the entire system,including remote cylinders and motors.

High Temperatures

Viscosities must not be less than the respective minimum values for each series of pumps.Temperatures should not exceed 99 °C(210 °F) because the expectancy of cartridge kite and elastomers will decrease.

Water-in-oil Emulsions

Water-in-oil emulsions may be used.However,they require careful selection and monitoring of the fluid.For assistance contact your HYKING representative.Soluble oil-in-water solutions are not recommended.

Synthetic Fire Resistant Fluids

Phosphate esters and their blends with operating viscosity of the petroleum oil described above may be used.These fluids are generally compatible with fluorocarbon and silicone elastomers.Add F3 prefix to the model code for special seals.

Filtration Requirements

For satisfactory service life of components,use full flow filtration to provide fluid cleanliness conforming to ISO code 18/15 or better.

Drive Data

Pumps are assembled for CW or CCW rotation.Right hand or clockwise rotation and left hand or counterclockwise rotation is viewed from the shaft end.

Inlet and outlet ports remain the same regardless of the direction of shaft rotation.Assembly change of internal parts is necessary,when change of shaft rotation is required.

Pump Drive

Direct coaxial drive is recommended.If drives imposing radial and/or axial shaft loads are considered,please consult your HYKING representative.

Air Bleed

At the time of first-starting,if the pump does not immediately prime,air should be bled from the pump delivery line.This may be accomplished by loosening a connection in the delivery line close to the pump until oil flows -indicating the pump has primed.An air bleed valve is available for this purpose.

Caution:No Case Drain

The pump is drained internally into its inlet.System pressure at the pump inlet connection may not exceed 1.4bar(20PSI).

Caution:Low Outlet Pressure

Do not run a pump with the outlet pressure lower than the inlet pressure.This causes operating noise and vane instability.

Start-up(Commissioning) Procedure

- Make sure the reservoir and circuit are clean and free of dirt/debris prior to filling with hydraulic fluid.
- Fill the reservoir with filtered oil and fill to a level sufficient enough to prevent vortexing at suction connection to pump inlet.It is goodpractice to clean up the system by flushing and filtering using an external slave pump.
- Before starting the pump,fill with fluid trough one of the ports.This is particularly important if the pump is above the fluid level of the reservoir.
- When initially starting the pump,bleed all trapped air from the system.This can be accomplished by loosening the pump outlet fittings or connections before starting the pump or by using an air bleed valve.All inlet connections must be tight to prevent air leaks.
- Once the pump is stated it should prime within a few seconds.If the pump dose not prime,check to make sure that there are no restrictions between the reservoir and the inlet to pump,and that there are no air leaks in the inlet line and connections.Also check to make sure that trapped air can escape at the pump outlet.
- After the pump primed,tighten the loose outlet connections,then operate for five to ten minutes unloaded to remove all trapped air from the circuit.
- If reservoir has a sight gage,make sure the fluid is clear-not milky.
- Add fluid to the reservoir to bring it up to the proper fill level.