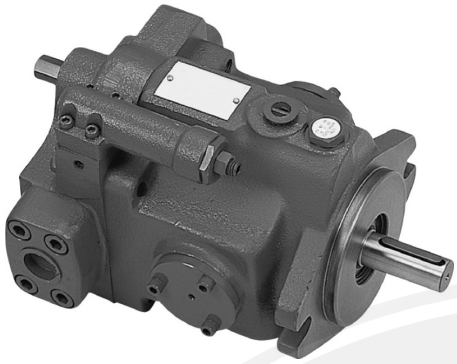
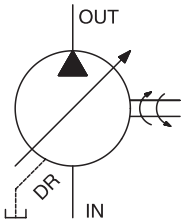
V Series Variable Displacement Piston Pump





1.Combing special structure designs and precision machining and strict control of quality, V series pump has reduced noise level to new lows in whole pressure zones.
2.For satisfying variety of application needs, many different and unique compensators are available. It does not only reduce a number of unnecessary horses, pipes and control valves but also saves cost and space.
3.Because of higher efficency and higher performances of pump, lower heat gerneration and lower noise achives. The oil tank can be shink and more space can be saved.
4.V series pump has been widely applied in machine tools, plastic injection molding machines, forging machines and other industrial machines.

Specifications

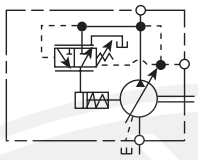
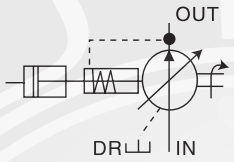
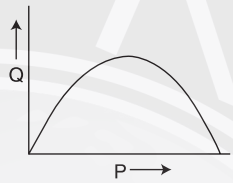
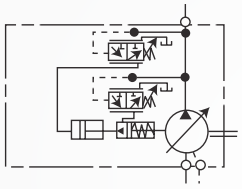
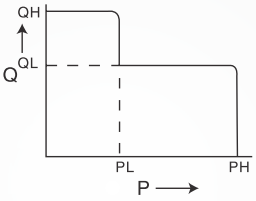
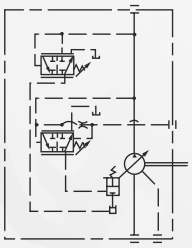
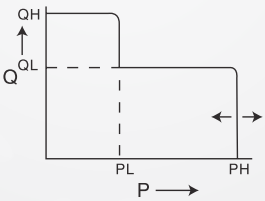
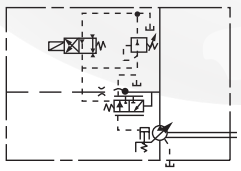
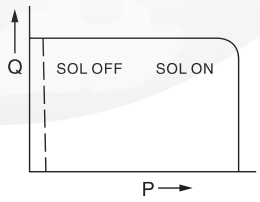
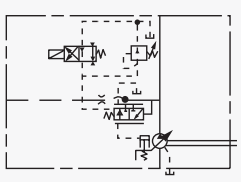
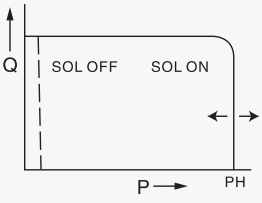
Model	Max, Pressure kgf/cm²(psi)	Displacement cc/rev(in³/rev)	Unloading conditions I/min(GPM)		Pressure Adj, Range kgf/cm²(psi)	Input Speed Range		Weight kg(lb)
			1500rpm	1800rpm		min	max	
V15A	250(3500)	15(0.90)	22.5(5.78)	27.0(7.05)	1:8~70(115~100) 2:15~140(210~2000) 3:20~210(280~3000) 4:20~250(280~3500)	500	180	13(28.6)
V18A	250(3500)	17.8(1.09)	26.7(7.05)	32.0(8.45)				13(28.6)
V23A	250(3500)	23.0(1.40)	35.4(9.11)	41.4(10.94)				22(48.4)
V25A	210(3000)	25.0(1.52)	37.5(9.66)	45.0(11.60)				22(48.4)
V38A	250(3500)	37.8(2.31)	56.7(14.98)	68.0(17.96)				26(57.2)
V42A	210(3000)	42.0(2.56)	63.0(16.23)	76.0(19.58)				26(57.2)
V50A	210(3000)	51.5(3.14)	77.2(20.37)	92.7(4.49)				55(121)
V70A	210(3000)	69.7(4.25)	104.5(27.60)	125.4(33.13)				56(123.2)
V15A-V15A	250(3500)	15/15	22.5/22.5	27/27				28.5(62.7)
V23A-V23A	250(3500)	23.0/23.0	35.4/35.4	41.4/41.4				46.5(102.3)
V15A-V38A	250(3500)	15/37.8	22.5/34.5	27/68				41.5(91.3)
V38A-V38A	250(3500)	37.8/37.8	56.7/56.7	68/68				54.5(119.39)
V15A-V70A	210(3000)	15/69.7	22.5/104.5	27/125.4				71.5(157.3)
V38A-V70A	210(3000)	37.8/69.7	56.7/104.5	68/125.4				84.5(185.9)

How To Order

V23	-A	-3	-R	-R	-S1	-A	-10	-Y
Series no.	Compensator code	Pressure Range kgf/cm³ (Mpa)	Rotation Direction	Port Position	Shaft type	Voltage	Threading Code	2nd & Multi-pump Interface & coupling
V15 V18 V23 V25 V38 V42 V50 V70 V15-V15 V23-V23 V38-V15 V38-V38 V70-V15 V70-V38 VR15 VR18 VR23 VR25 VR38 VR42	A: Standard compensator Other: refer to page 34-36	1: 8-70 kgf/cm² 2: 15-140 kgf/cm² 3: 20-210 kgf/cm² 4: 20-250 kgf/cm²	Viewed from Shaft End R:Clockwisez (Standard) L: counter Clockwise	None: Side Port B: Axial Port B2: Axial and Side ports	S: 13 teeth 16/32DP S1: 9 teeth 16/32DP S2: 11 teeth 16/32DP	0:None A: AC100 50/60Hz B:AC110/60Hz C: AC200 50/60Hz D: AC220/60Hz E:DC12V F:DC24V	10: PT(RC) 40: BSPP(G) 50: NPT 60: SAE (O-ring) 70: M□	X *Y
					S: 13 teeth 16/32DP S1: 15 teeth 16/32DP S3: 13 teeth extension 16/32DP			
					S: 14 teeth 12/24DP S1: 17 teeth 12/24DP			
					None: Cylindrical Key shaft (Standard) S: Spline shaft (SAE J498b)			
				Axial Pipe Connecting	S: 13 teeth 16/32DP S1: 9 teeth 16/32DP S2: 11 teeth 16/32DP			
					S: 13 teeth 16/32DP S1: 15 teeth 16/32DP S3: 13 teeth extension 16/32DP			

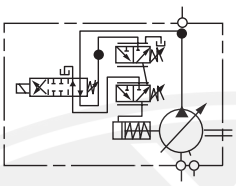
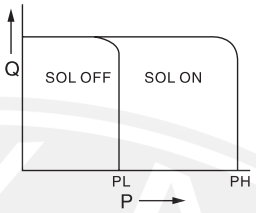
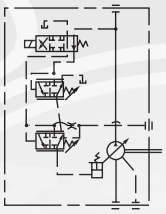
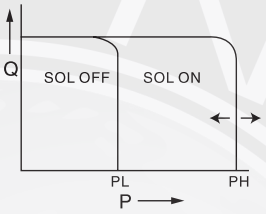
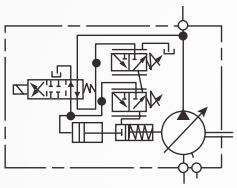
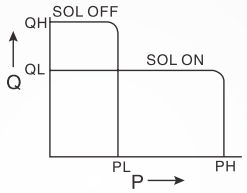
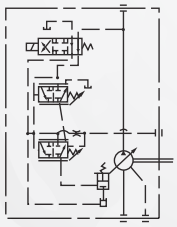
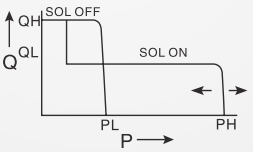
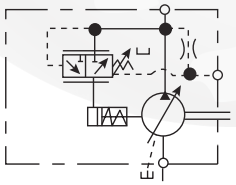
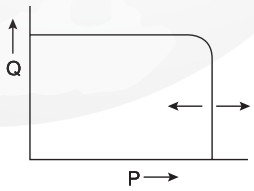
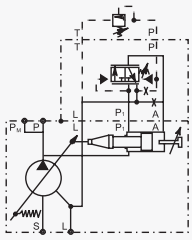
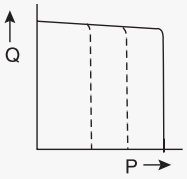
V Series Variable Displacement Piston Pump

Control Type

Control Type	JIS Symbols	Characteristics	Feature
A type: Pressure Compensator Control			1.When system pressure reaches preset pressure, the flow decrease automatically and pressure maintains steady. 2.Flow and pressure can be adjusted manually.
B type: Continuous Variable Flow Control Type			1.Flow can be adjusted from 0 to maximum and pressure still maintains at preset value. 2.It can absorb the impact and vibration which caused by start and stop motions of actuators. It is suitable for lifting equipment etc.
C type: 2 Pressue & 2 Flow Control Type			1.This compensator is very good for energy saving when system need high speed at low pressure and low speed at high pressure. 2.When pressure increase and reach preset pressure "PH", flow will reduce to preset flow "QL" automaticly. 3.Pressure "PH""PL", and flow "QH"QL" can be adjused manually according to system demand.
CG Type: 2 Pressure & 2 Flow Remote Control Type			1.Similar function with "C" type compensator with remote control 2.Pressure and Flow can be adjusted by the remote pressure control valve. 3.The pressure can also be controlled proportionally, by Electro-hydraulic proportional control valve.
D Type: Solenoid Controlled Unloading Compensator			1.Similar with A type compensator with unloading function added. 2.It is applied to systems requiring long period of idling. 3.When solenoid is off, pump runs under unloading condition and maintains pressure. It reduce noise and oil temperature and saving energy.
DG Type: Solenoid Controlled Unloading compensator and remote valve			1.Similar function with "D" type compensator with remote control. 2.Pressure and Flow can be adjusted by the remote pressure control valve. 3.The pressure can also be controlled proportionally, by Electro-hydraulic proportional control valve.

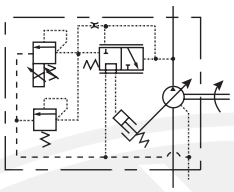
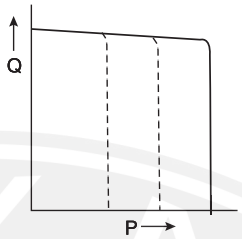
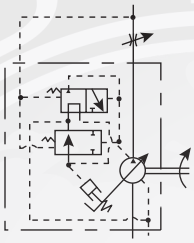
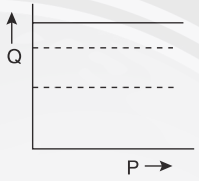
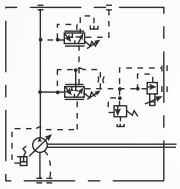
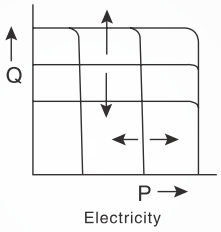
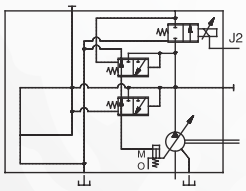
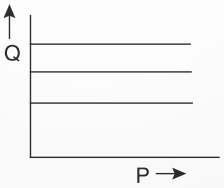
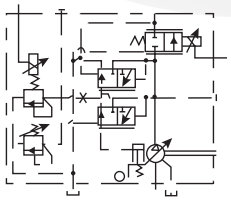
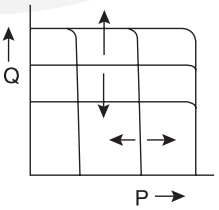
V Series Variable Displacement Piston Pump

Control Type

Control Type	JIS Symbols	Characteristics	Feature
E type: 2 Pressure Control			1.High pressure and low pressure can be switched by solenoid controlled directional valve. 2.This compensator is suitable for actuator which need 2 different pressure at same speed.
EG Type: 2 Pressure with Remote Control			1.Similar function with "E" type compenstor with remote control. 2.The pressure range can be adjusted remotely by the integrated remote pressure control valve. 3.The pressure can also be controlled proportionally, by Electro-hydraulic proportional control valve.
F Type: 2 flow-2 pressure compensator with solenoid controlled directional valve			1.Actuators can be shifted to slow (high pressure low flow) or to quick (low pressure high flow) by solenoid controlled directional valve. 2.When solenoid valve turns on, pressure increase to "PH", and flow decrease to "QL" 3.Pressure "PH""PL", and flow "QH"QL" can be adjused manually according to system demand.
FG Type: 2 flow-2 pressure p.c. by solenoid operated & remote valve			1.Similar function with "F" type compensator with remote controls. 2.The pressure range can be adjusted by remote pressure control valve. 3.The pressure can also be controlled proportionally, by Electro-hydraulic proportional control valve.
G Type: Remote controlled pressure compensator			1.Similar function with "A" type compensator control type. 2.Pressure can be adjusted by the integrated remote pressure control valve.
GM Type: Remote controlled pressure compensator with NG6 interface			1.Similar with G type compensator reserve a NG6 interface reserve for pilot valve. The pressure can be set directly from the control panel of machine. 2.The remote pressure compensator responds faster and offers more stable pressure control.

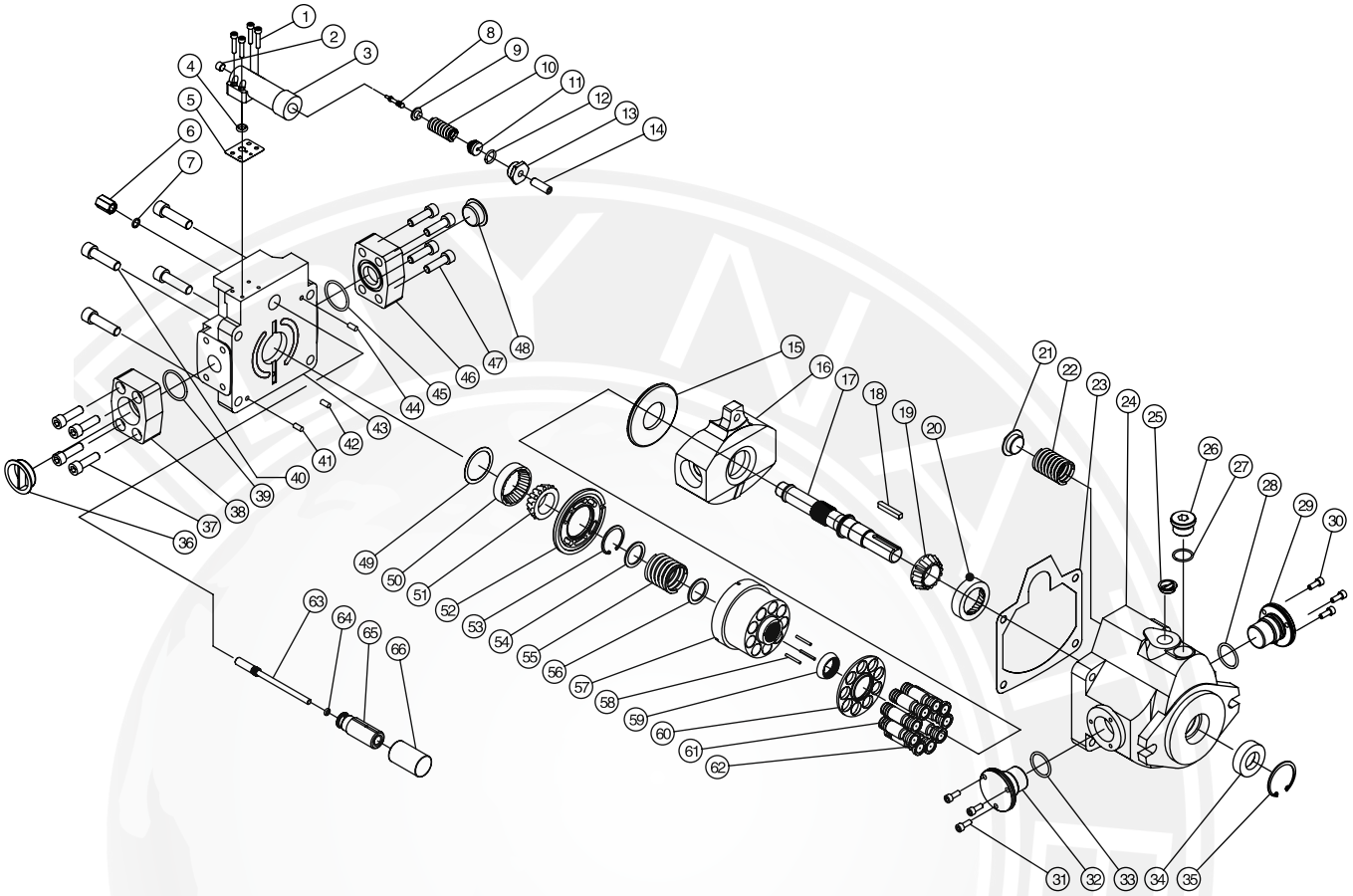
V Series Variable Displacement Piston Pump

Control Type

Control Type	JIS Symbols	Characteristics	Feature
GJ Type: Proportional Pressure compensator with NG6 interface			1.Similar with GM type compensator, proportional valve added. 2.The proportional valve is installed on the NG6 interface to reach proportional Electro-hydraulic control for energy saving.
HL Type: Load Sensing Compensator			1.HL Load Sensing compensator controls pump output flow constantly by the sensing pilot flow which comes from main pipe after throttle valve. The pressure difference is the control signal of the compensator. 2.Load sensing compensator controls the main output flow and its pressure drop. When pump rotation changes or the load of actuator changes, the working speed will not be influenced under compensator controls.
HJ Type: Load Sensing & Proportronal Elector-hydaulic pressure Valve			1.Similar with HL type compensator, proportional pressure control function added. 2.With proportional electro-hydraulic pressure valve, it can reaches horsepower-saving and energy-saving.
HQ Type: Load-sensing Proportional Flow Control			1.Similar with HL type compensator, proportional pressure control function added. 2.With proportional flow control, it allows the pump output flow be adjusted by electrical input signal.
HK Type: Proportional Electro-hydraulic Load Sensing Type			1.HK type compensator equipped with proportional pressure and proportional flow control valves. It sensing the load of system and provide flow and pressure precisely according to system demand. Saving energy and the system output is nearly zero during idling. 2.Oil temperature and noise level can be controlled very low, and oil tank can be shrink and saving space. 3.HK type can save 30%~50% energy compare to vane pump and gear pump + PQ valve. It is an ideally option of energy-saving and environment-friendly.

V Series Variable Displacement Piston Pump

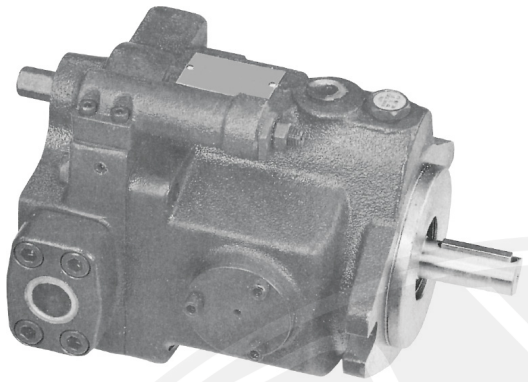
Assembly & Parts List :

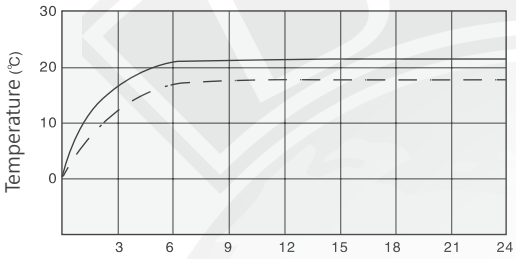


No.	DescriptionIm	No.	DescriptionIm	No.	DescriptionIm
1	Bolt	23	End cover seal	45	O-ring
2	Prot plug	24	Pump body	46	Flange
3	Pressure compensator	25	Drain plug	47	Bolt
4	O-ring	26	Filling screw	48	Plug
5	Gasket	27	O-ring	49	Washer cylinder block
6	Lock nut	28	O-ring	50	Bearing of pump cover
7	O-ring	29	Swash shaft	51	Bearing of pump cover
8	Control compensator shaft	30	Bolt	52	Valve plate
9	Spring washer	31	Bolt	53	Snap ring
10	Control spring	32	Swash shaft	54	Washer cylinder block
11	O-ring washer	33	O-ring	55	Retainer spring
12	O-ring	34	Shaft seal	56	Washer cylinder block
13	Lock nut	35	M snap ring	57	Cylinder block
14	Screw	36	Plug	58	Roller
15	Slipper plate	37	Bolt	59	Cylinder block holder
16	Swash	38	Flange	60	Slipper retainer
17	Shaft	39	O-ring	61	Pistons
18	Shaft Key	40	Bolt	62	Pistons
19	Bearing of shaft	41	Roller	63	Flow screw
20	Bearing of shaft	42	Roller	64	O-ring
21	Servo spring washer	43	End cover	65	Sleeve piston
22	Servo spring	44	Roller	66	Servo piston sleeve

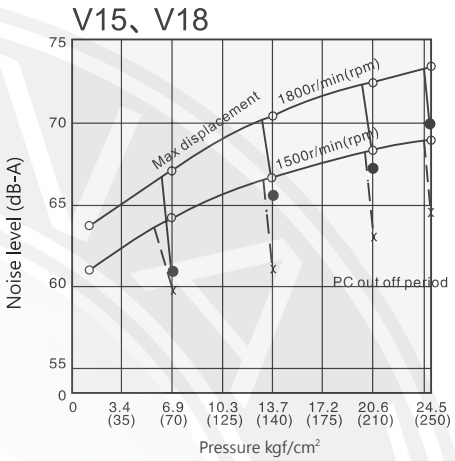
V Series Variable Displacement Piston Pump

V15、V18 Series

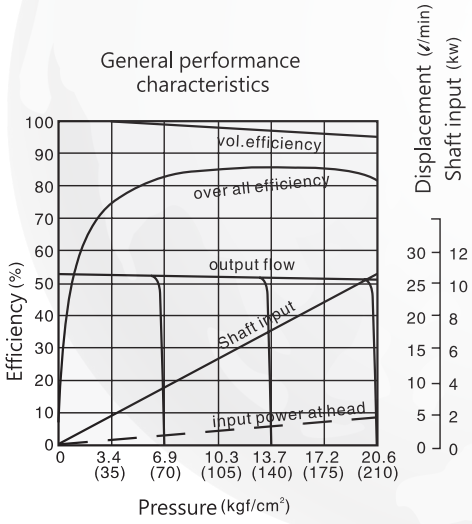


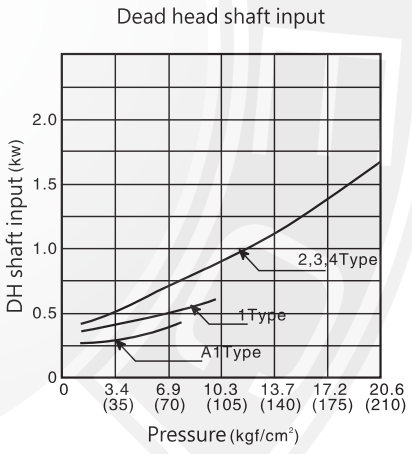


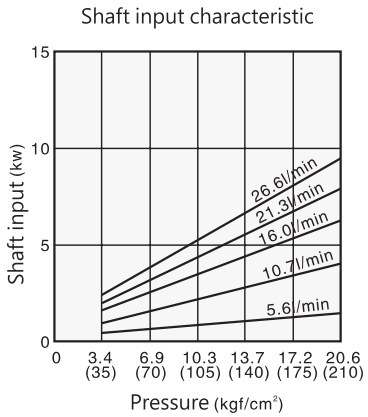
Conditions:
Room temperature: 20 ± 2°C
Input speed: 1800 rpm
Oil: ISO VG32, 40l/min
Oil temperature: 50°C
Close loop: 70kgf/cm^2 (1000psi)
Adjusting pressure: 35kgf/cm^2 (500psi)

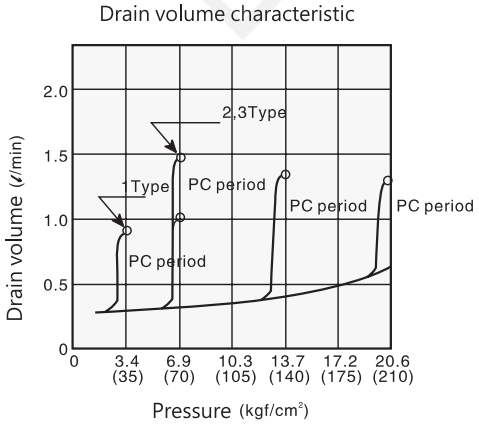


■ TYPICAL PERFORMANCE CHARACTERISTICS



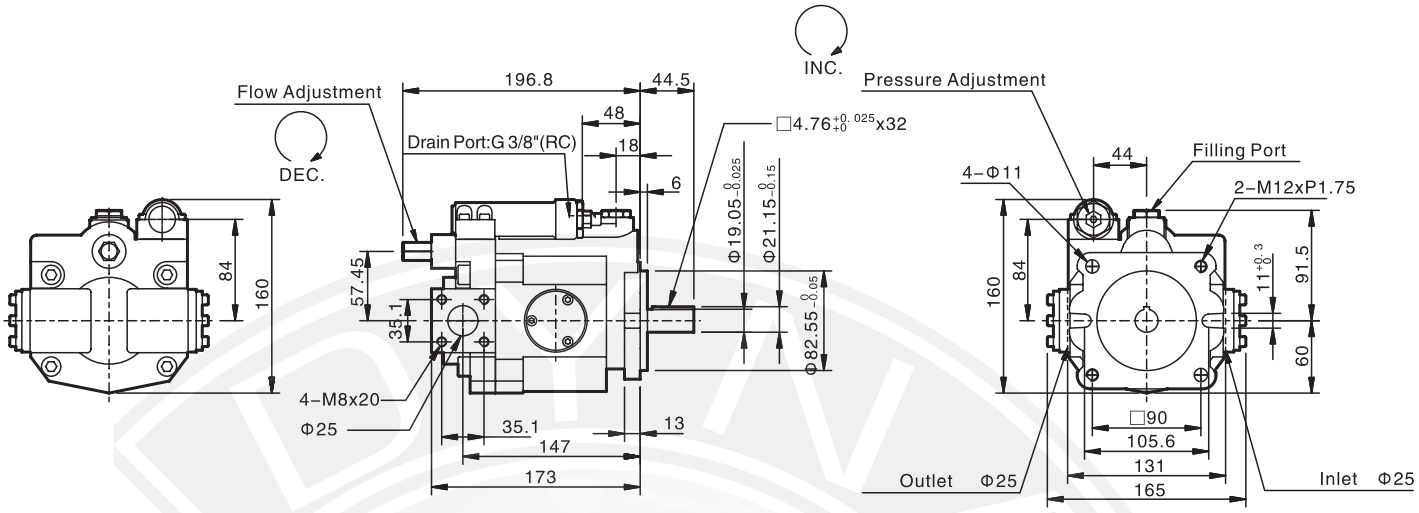




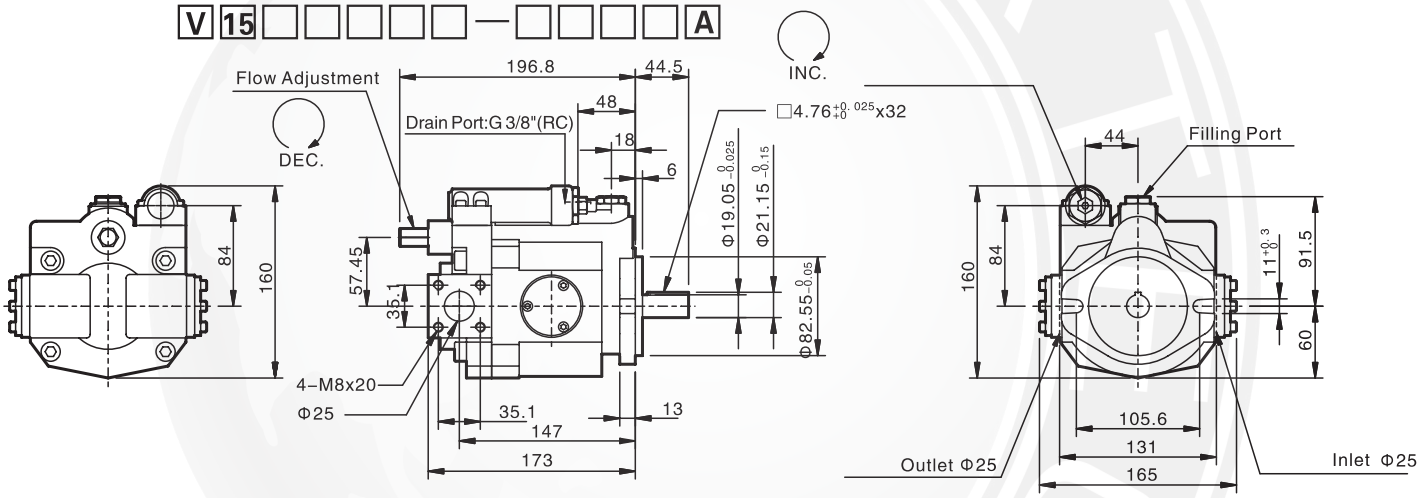


V Series Variable Displacement Piston Pump

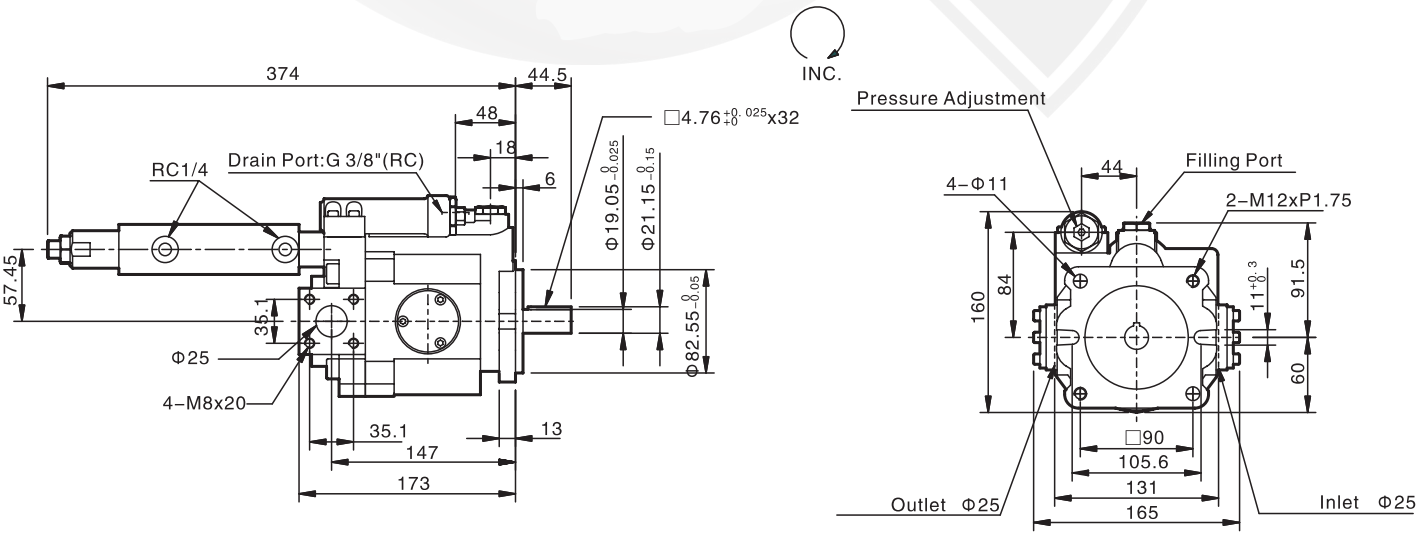
V15A, V18 Pressure Compensator



V15A, V18 Pressure Compensator (SAE A 2 bolt)

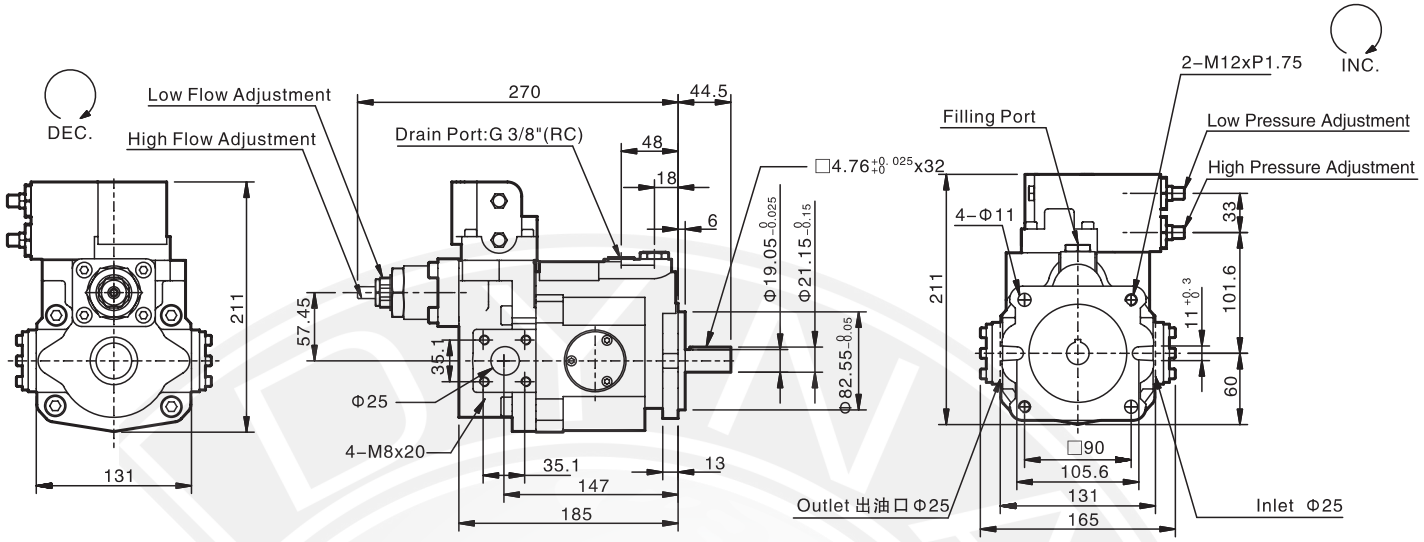


V15B, V18B Multi-Stage Flow & Single-Stage Pressure Compensator Control (With Cylinder)

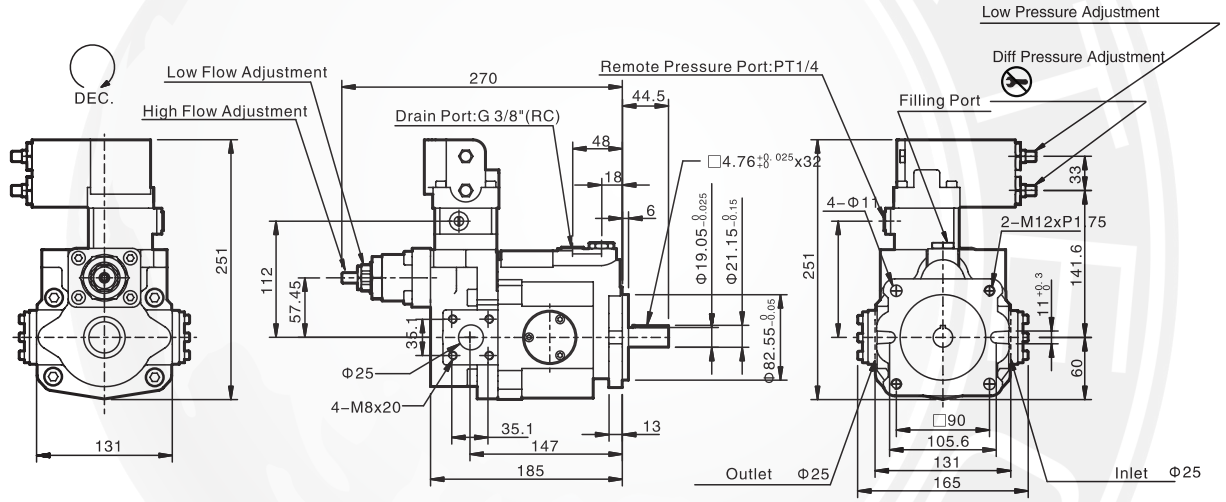


V Series Variable Displacement Piston Pump

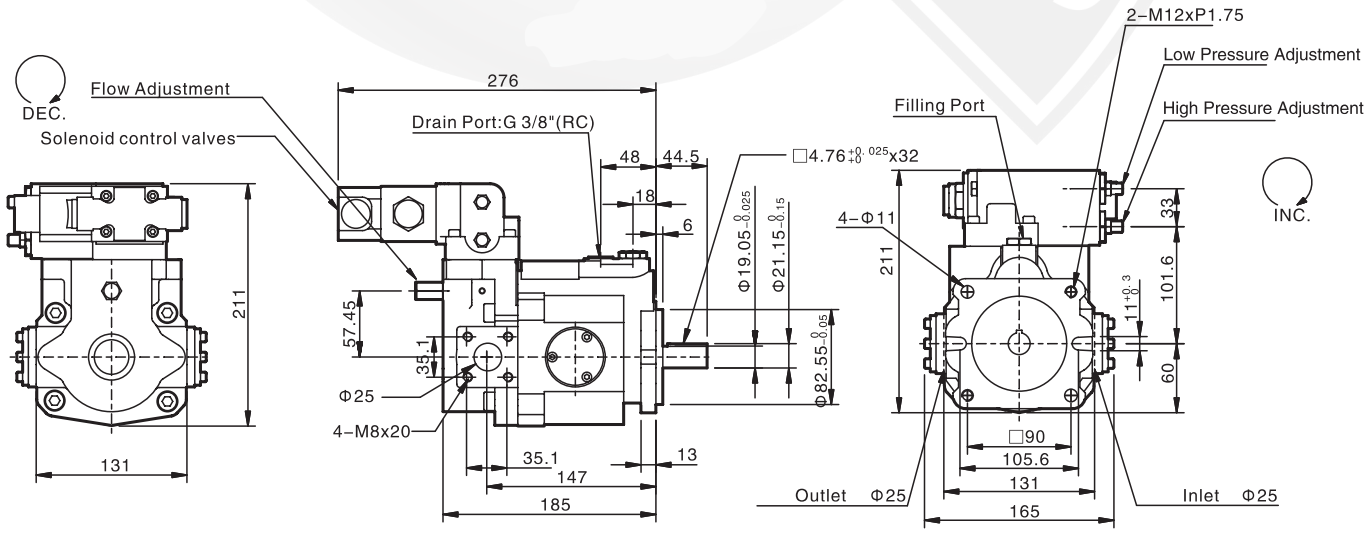
V15C, V18C 2-Stage Pressure & Flow Control Type



V15CG, V18CG 2-Stage Pressure & Flow Control Type with Remote

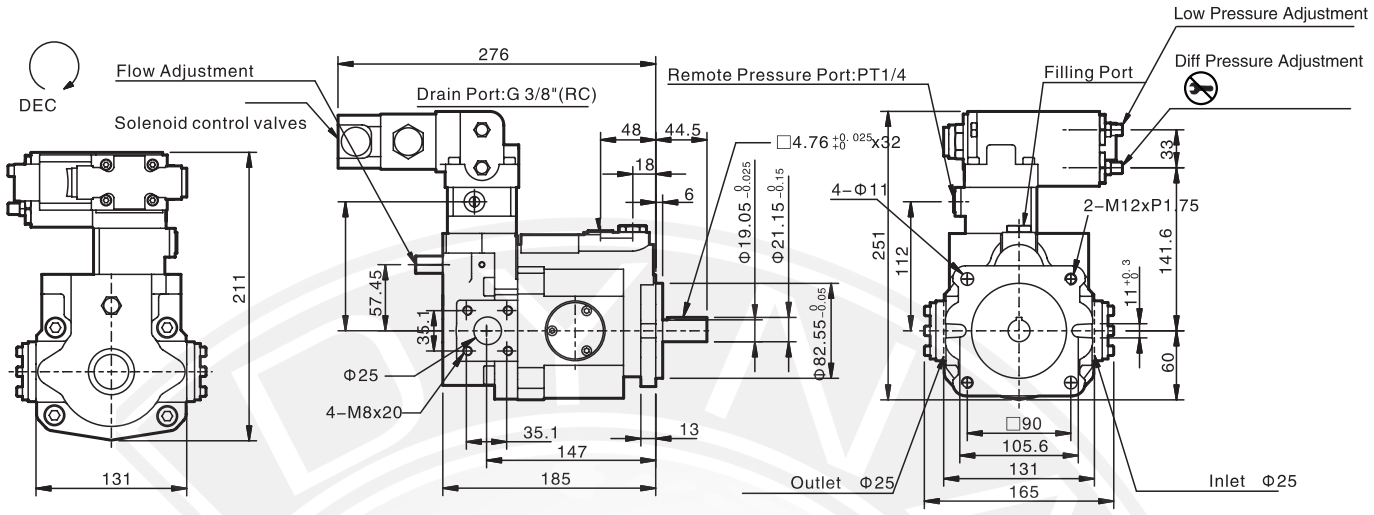


V15D, V18D Solenoid Controlled Pressure Compensating Type With Unloading Device

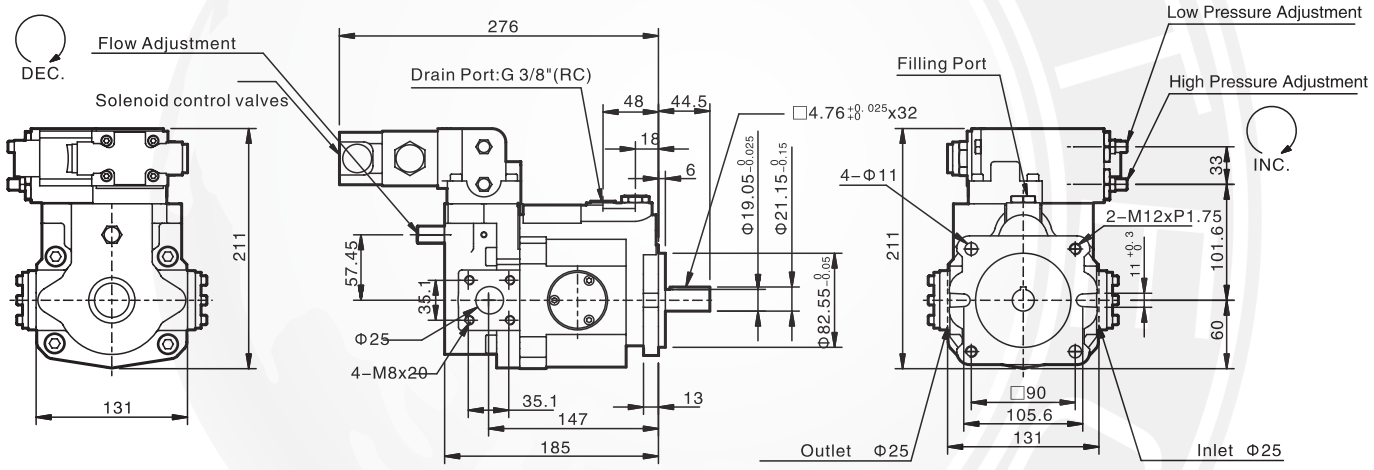


V Series Variable Displacement Piston Pump

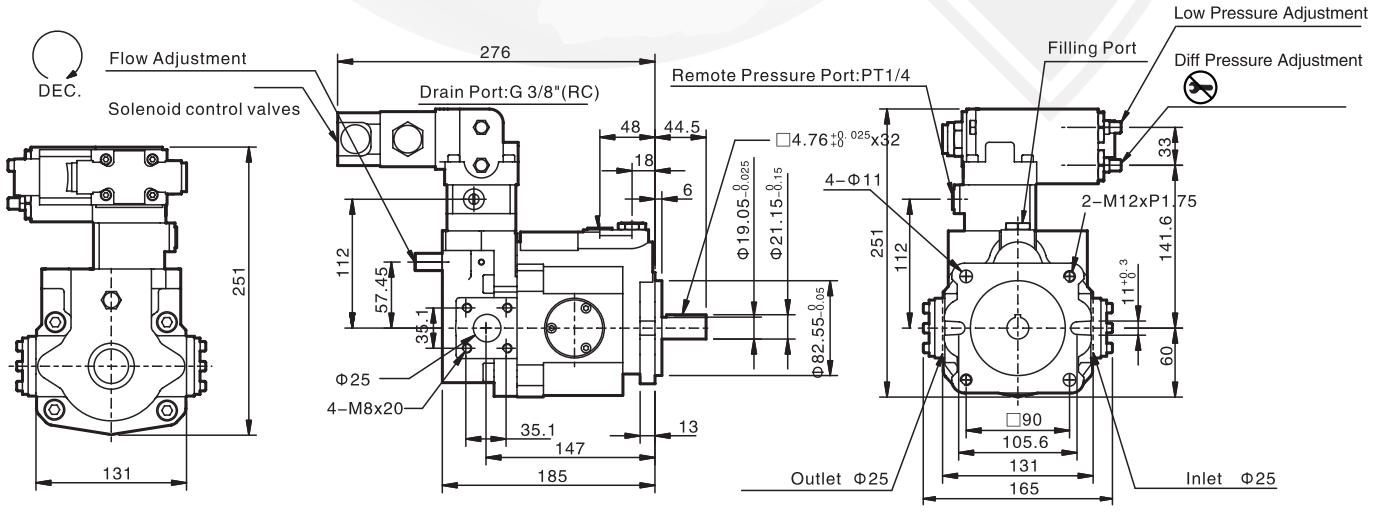
V15DG, V18DG: Solenoid Controlled Pressure Compensator With Unloading & Remote



V15E, V18E: 2 Pressure Control

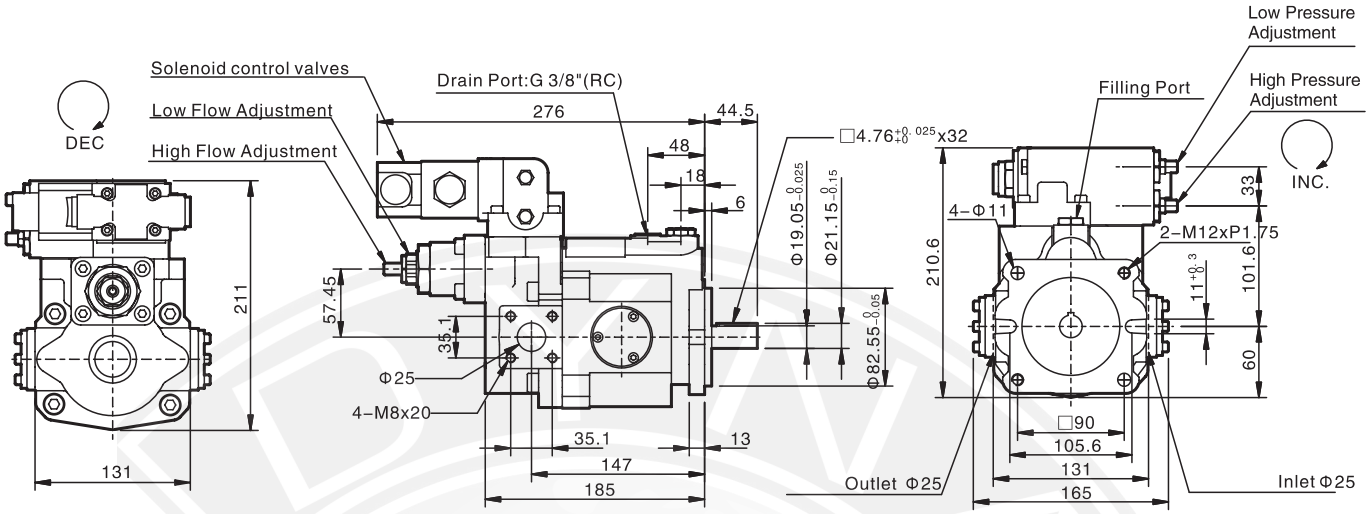


V15EG, V18EG: 2 Pressure with Remote Control

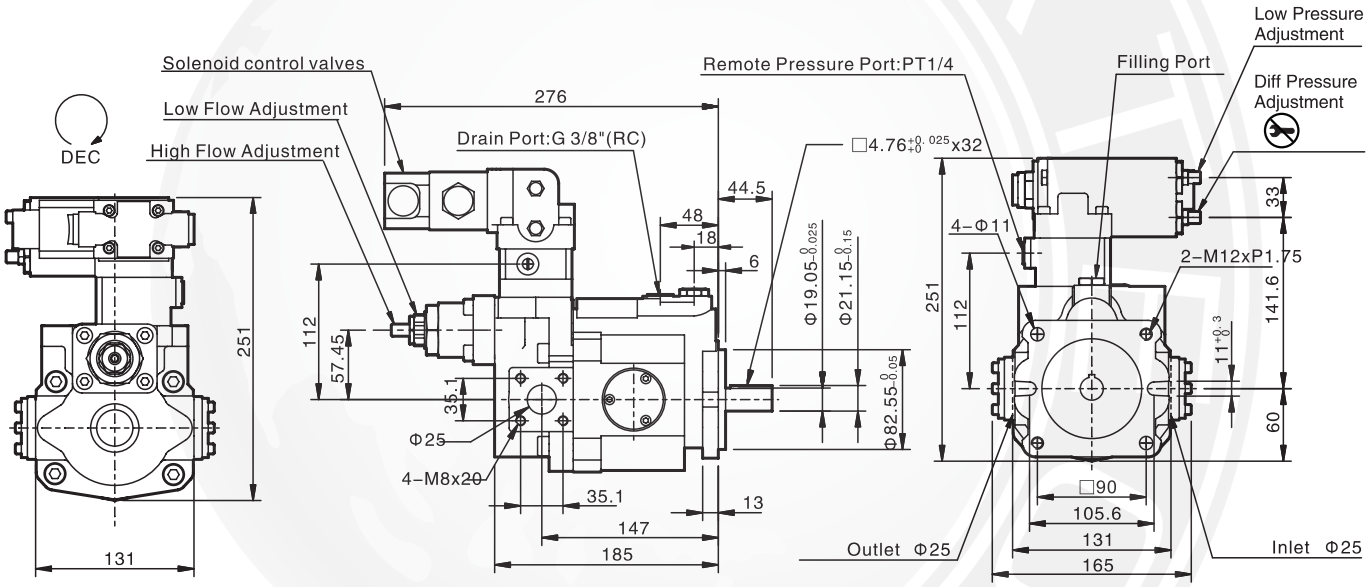


V Series Variable Displacement Piston Pump

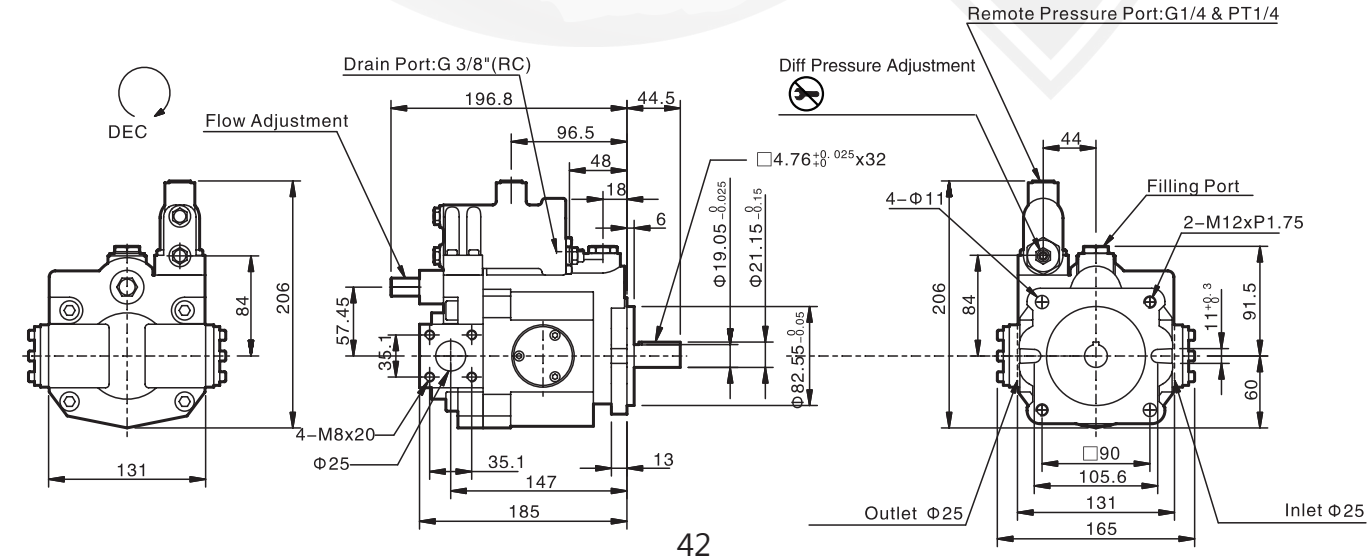
V15F, V18F 2 Flow-2 Pressure Control by Solenoid Operated Valve



V15FG, V18FG 2 Flow-2 Pressure Control by Solenoid Operated & Remote Valve

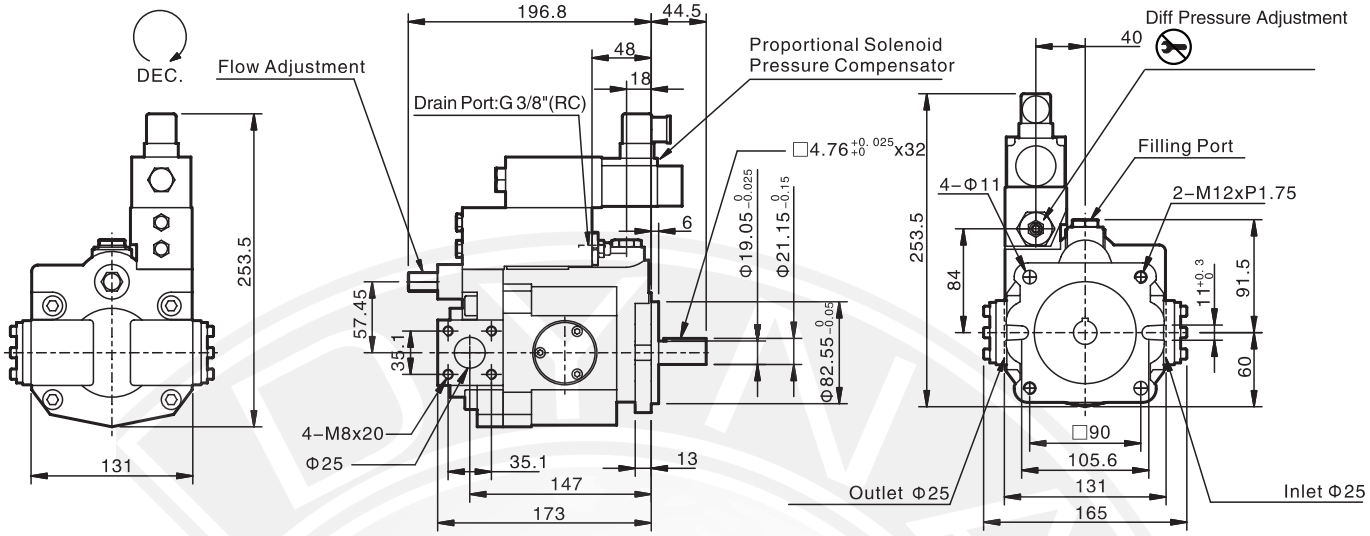


V15G, V18G Remoted Pressure Compensator Control

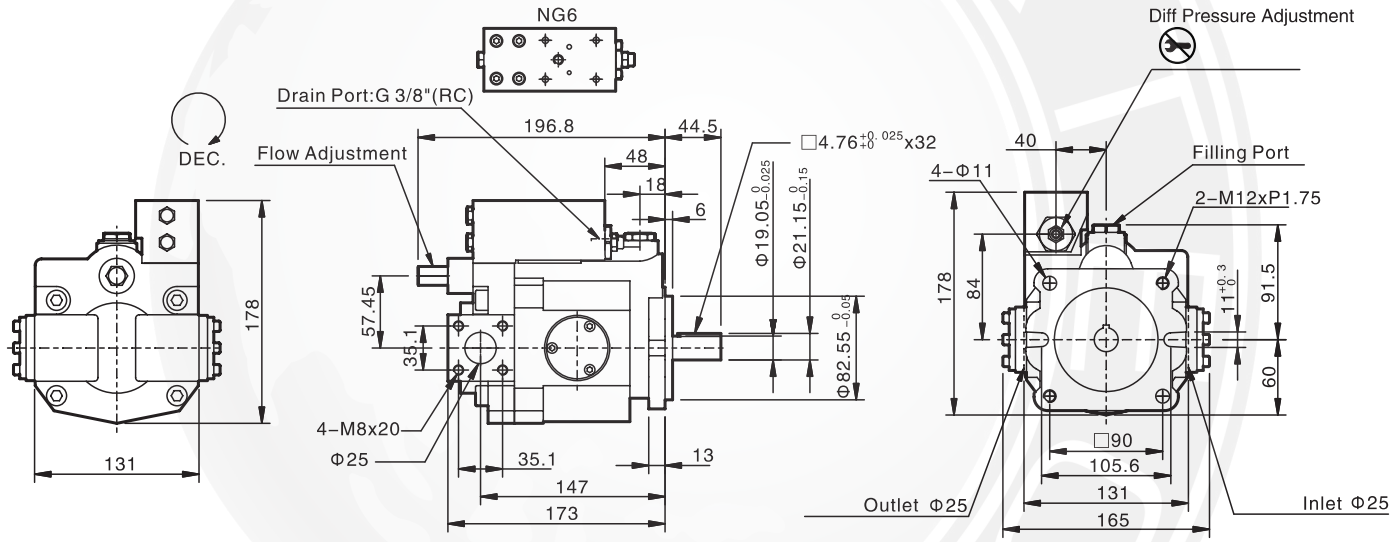


V Series Variable Displacement Piston Pump

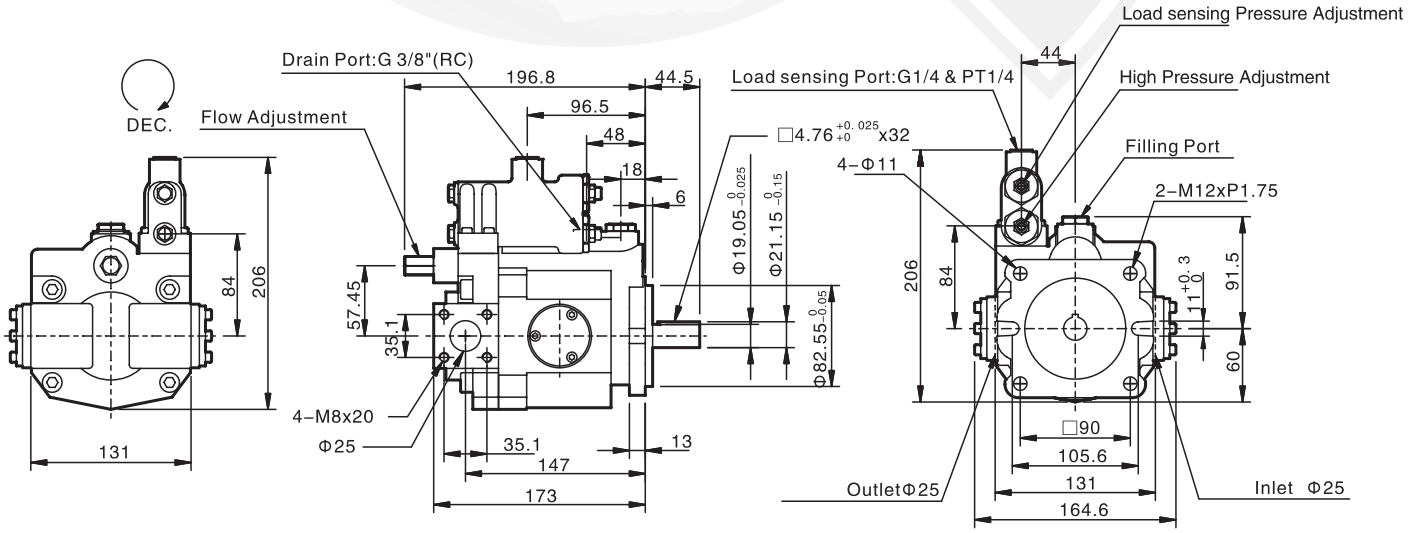
V15GJ, V18GJ Proportional Pressure With Interface



V15GM, V18GM Remote Interface (Not include valve)

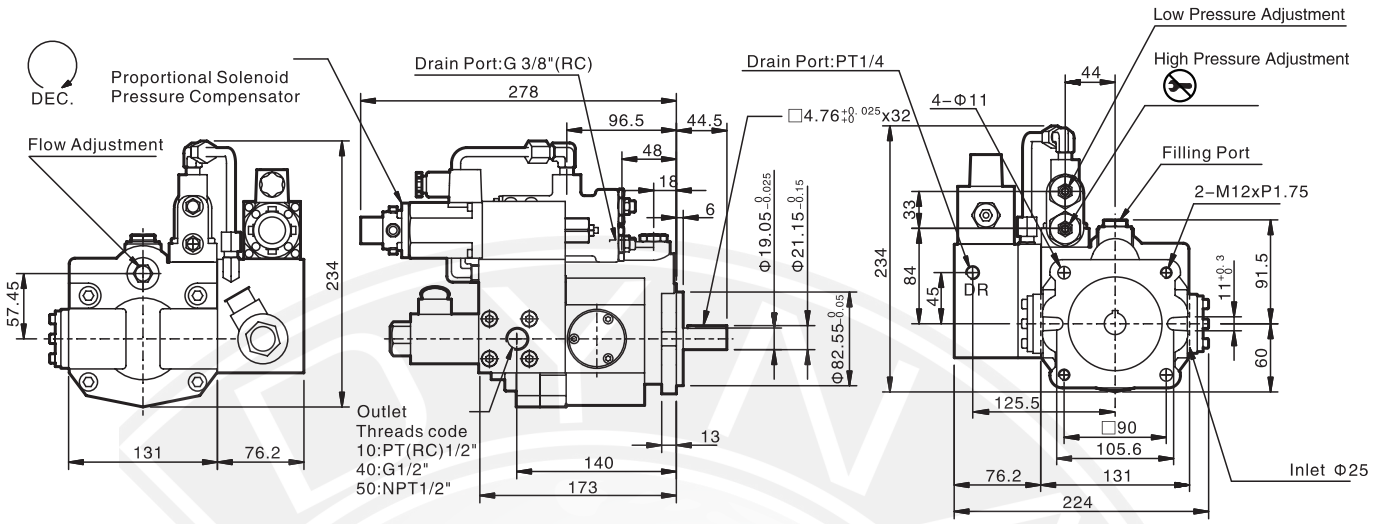


V15HL, V18HL Load-sensing Compensator

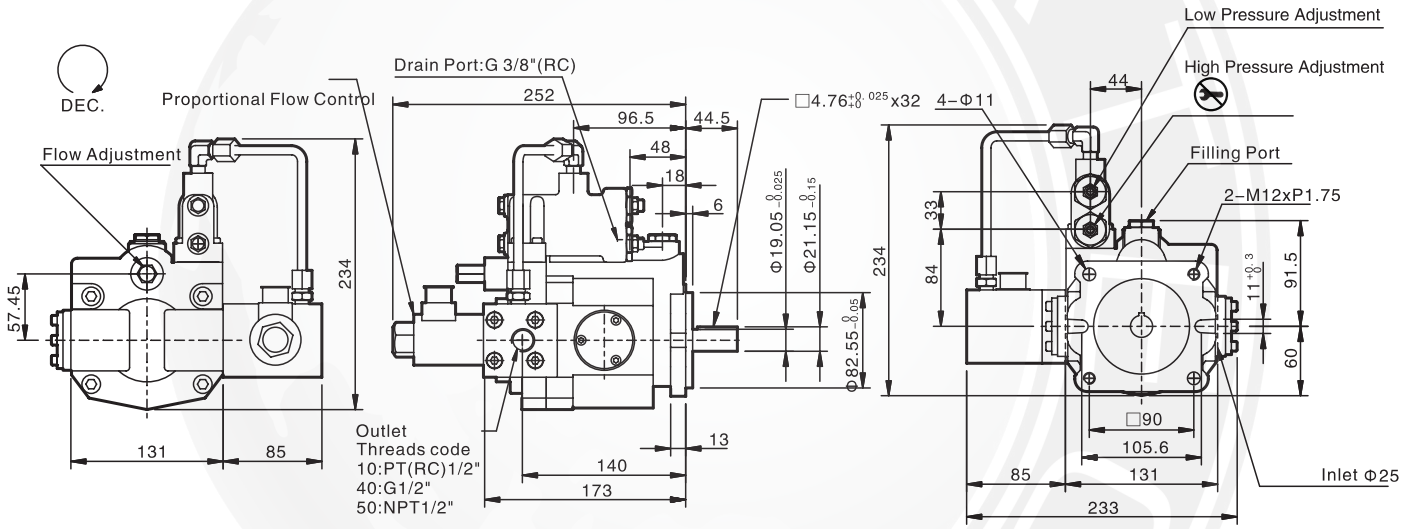


V Series Variable Displacement Piston Pump

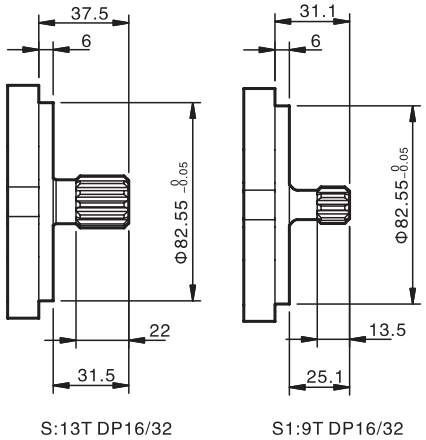
V15HK, V18HK Proportional Electro-Hydraulic Load Sensing Type



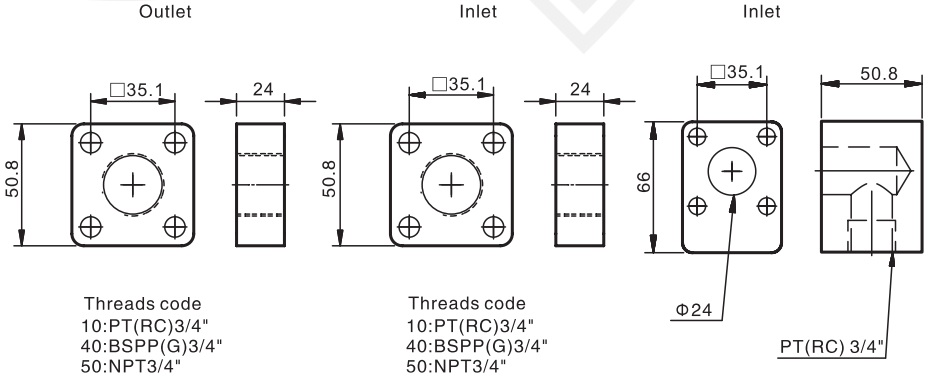
V15HQ, V18HQ Load-Sensing Proportional Flow Control



V15, V18 Splined Shaft Type



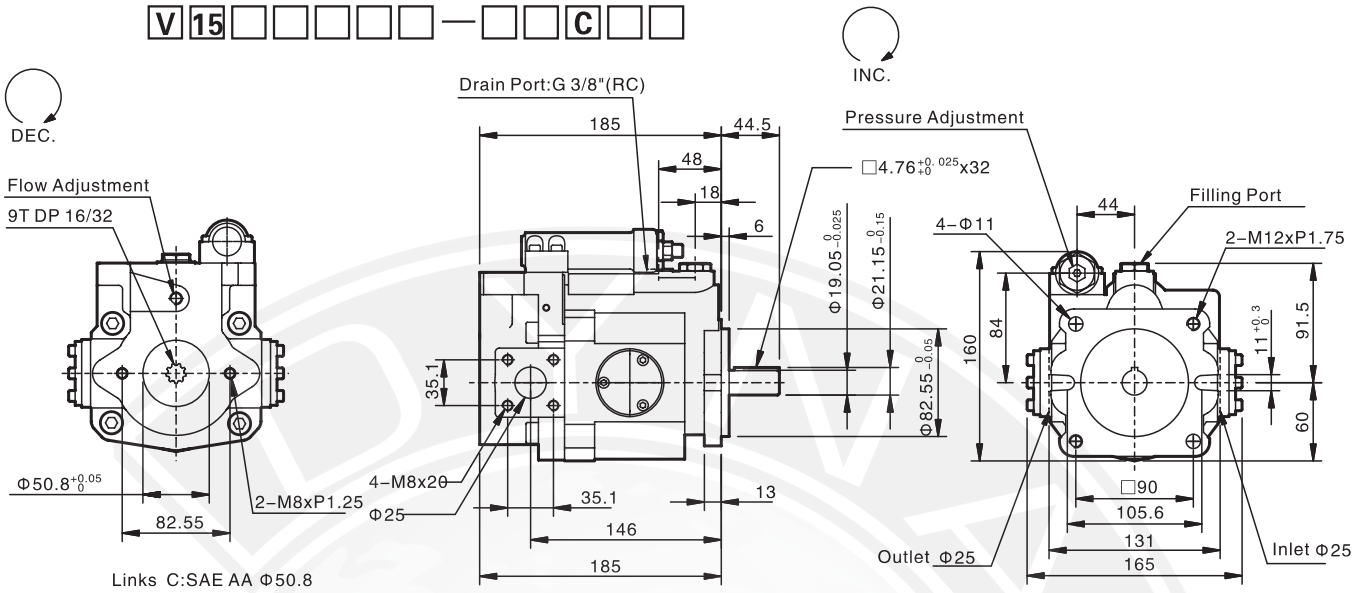
V15, V18 Hydraulic Flange



V Series Variable Displacement Piston Pump

V15, V18 Preparded For Thru Drive (SAE AA Ø 50.8)

V 15 □□□□□ — □□ C □□

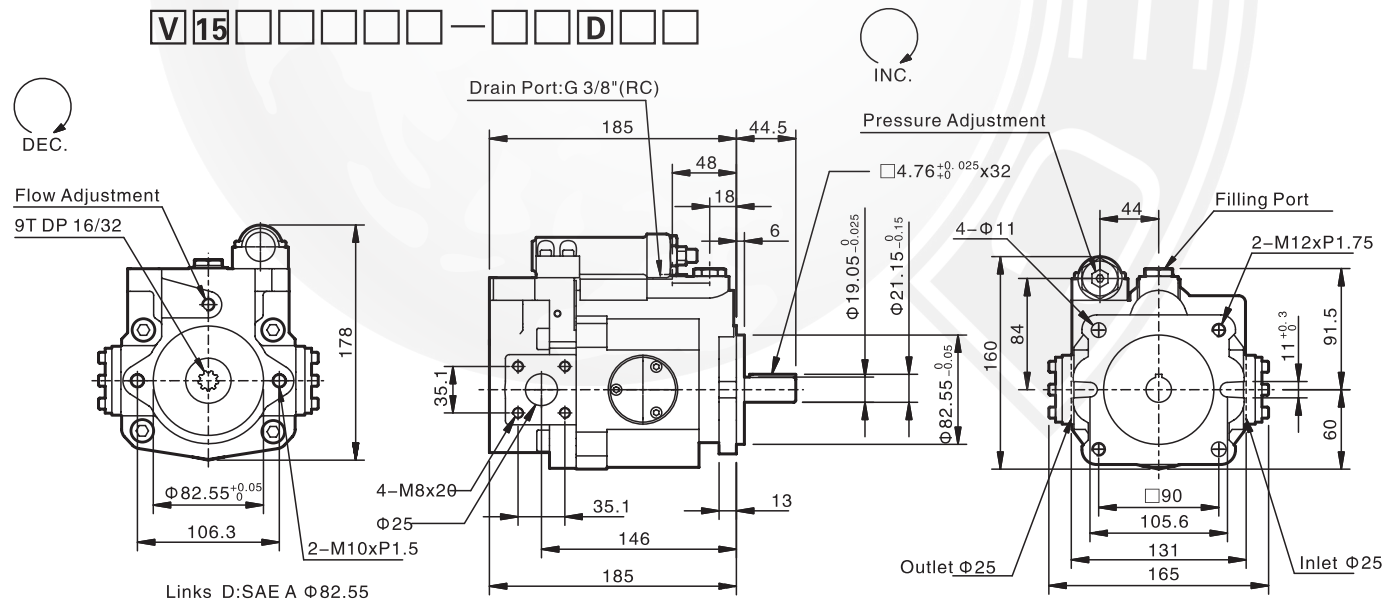


Type	A	B	C	CG	D	DG	E	EG	F	FG	G	GJ	GM	HL	HK	HQ
	○				○	○	○	○			○	○	○	○	○	○

Thru Drive Option

V15, V18 Preparded For Thru Drive (SAE A Ø 82.55)

V 15 □□□□□ — □□ D □□

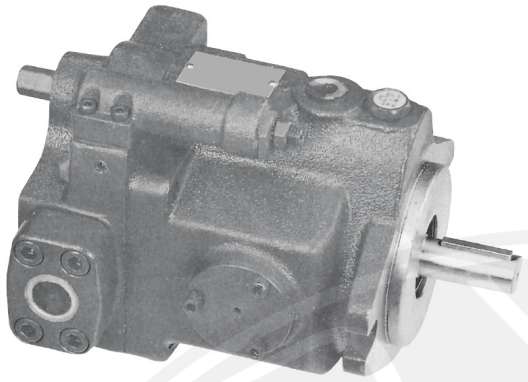


Type	A	B	C	CG	D	DG	E	EG	F	FG	G	GJ	GM	HL	HK	HQ
	○				○	○	○	○			○	○	○	○	○	○

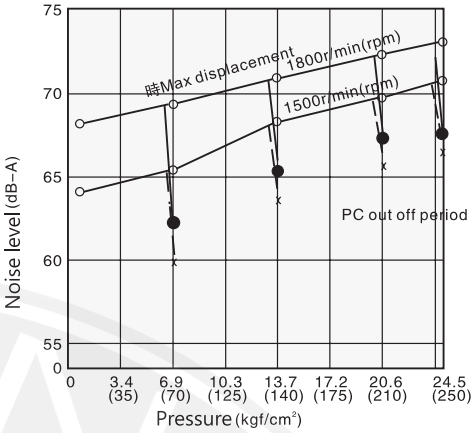
Thru Drive Option

V Series Variable Displacement Piston Pump

V23、V25 Series



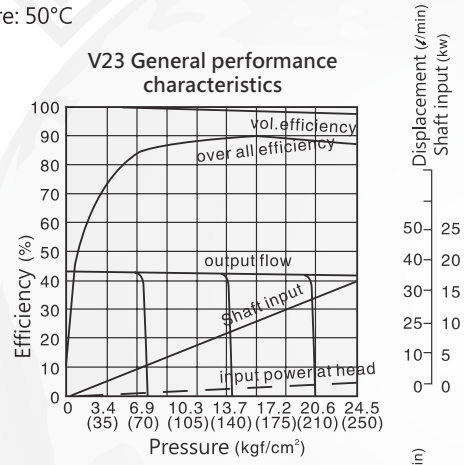
V23、V25



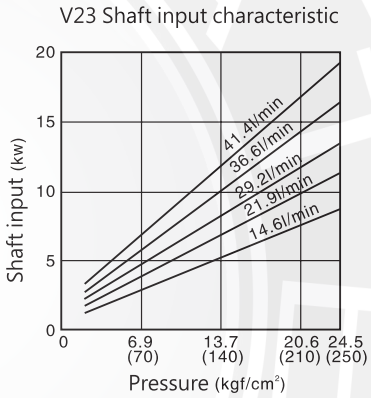
TYPICAL PERFORMANCE CHARACTERISTICS

Conditions:
Input speed: 1,800r/min
Oil: ISO VG32
Oil temperature: 50°C

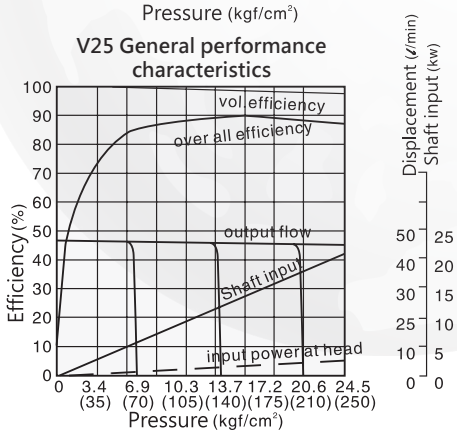
V23 General performance characteristics



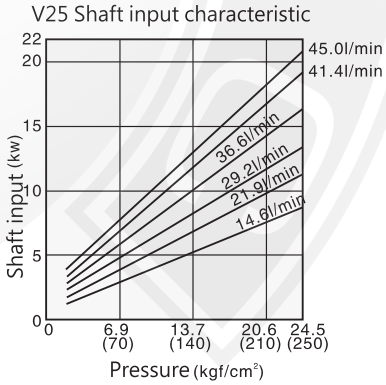
V23 Shaft input characteristic



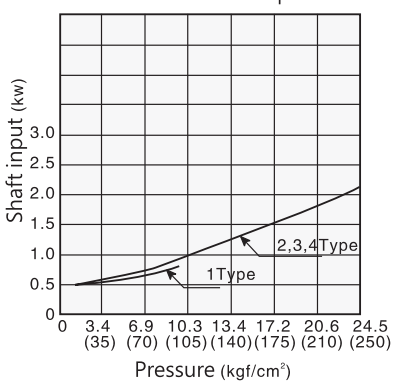
V25 General performance characteristics



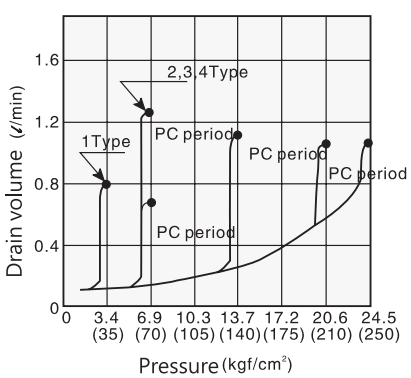
V25 Shaft input characteristic



Dead head shaft input

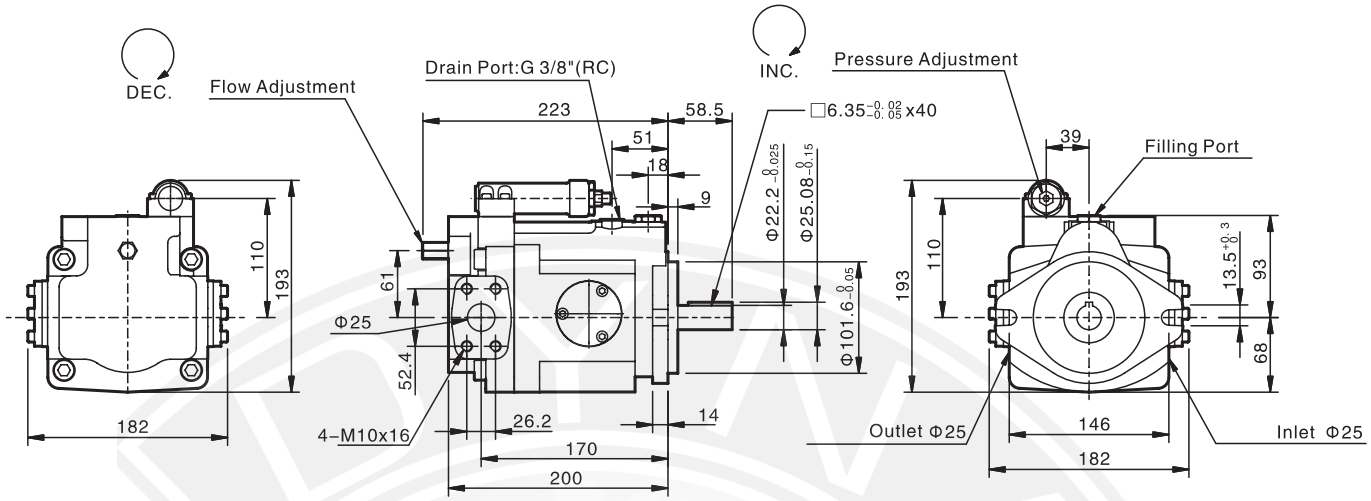


Drain volume characteristic

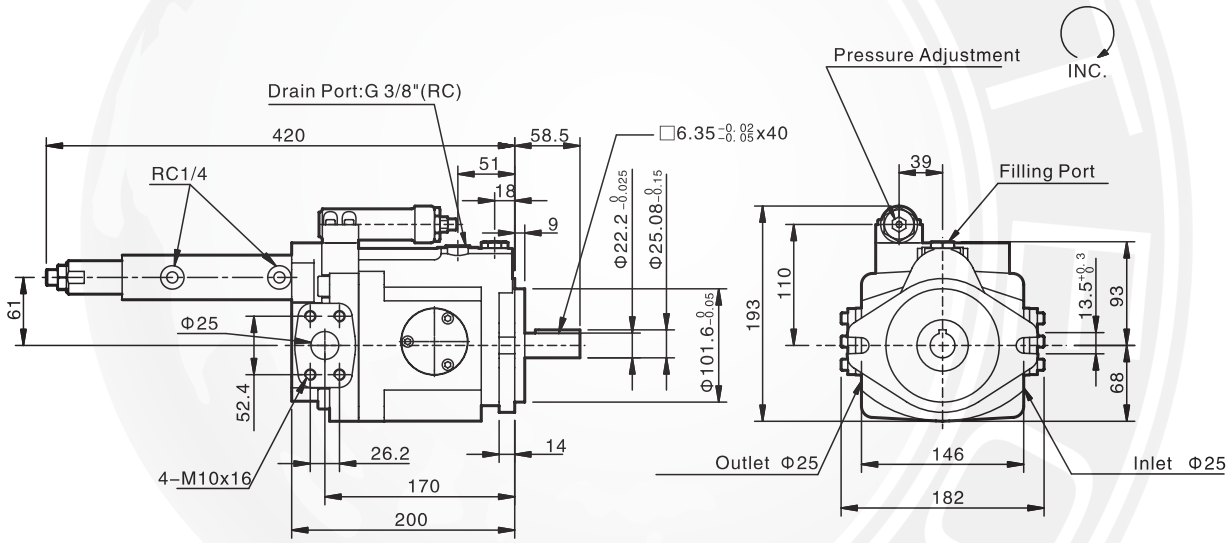


V Series Variable Displacement Piston Pump

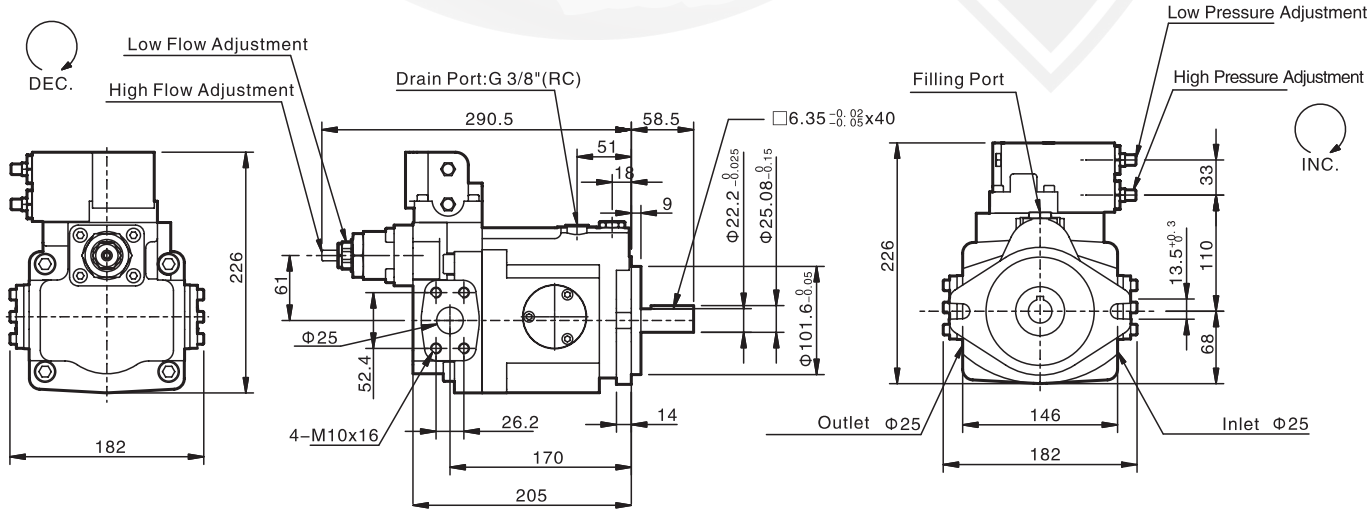
V23A, V25A Pressure Compensator



V23B, V25B Multi-Stage Flow & Single-Stage Pressure Compensator Control (With Cylinder)

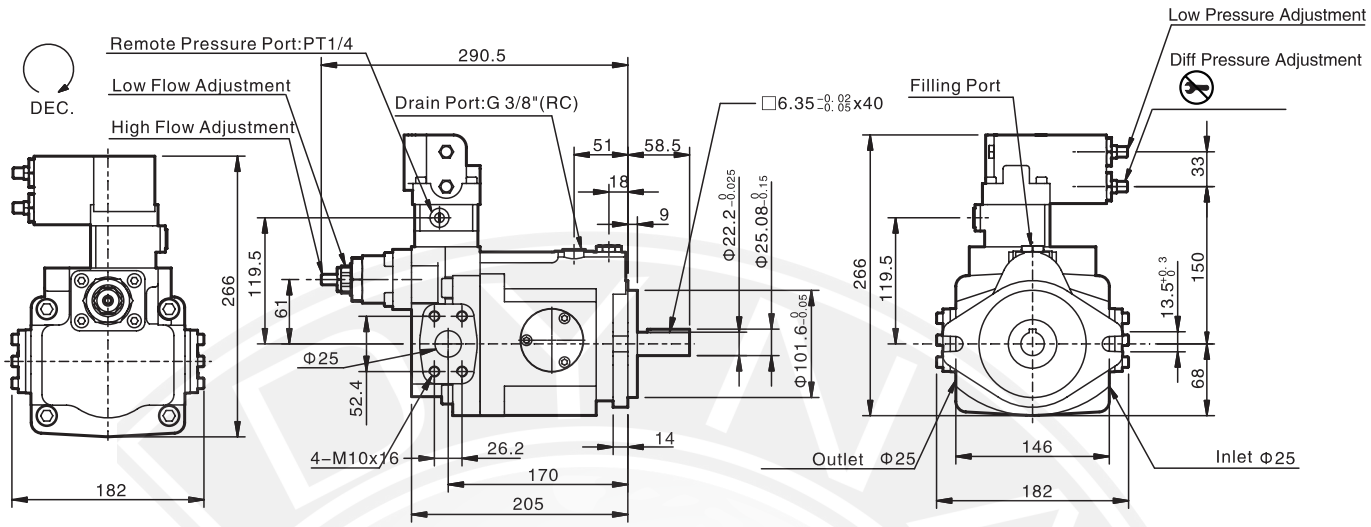


V23C, V25C 2-Stage Pressure & Flow Control Type

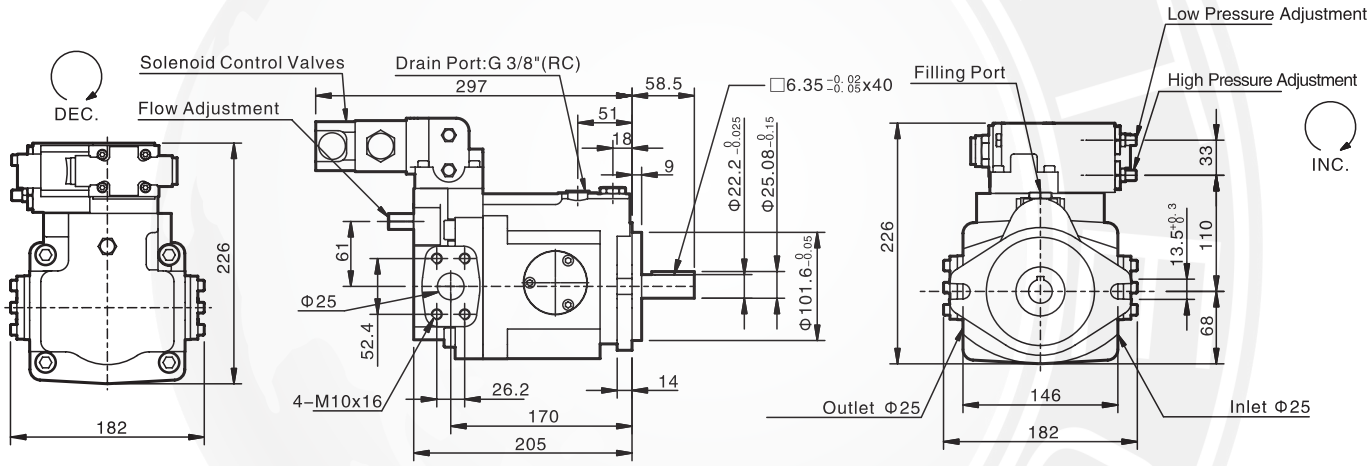


V Series Variable Displacement Piston Pump

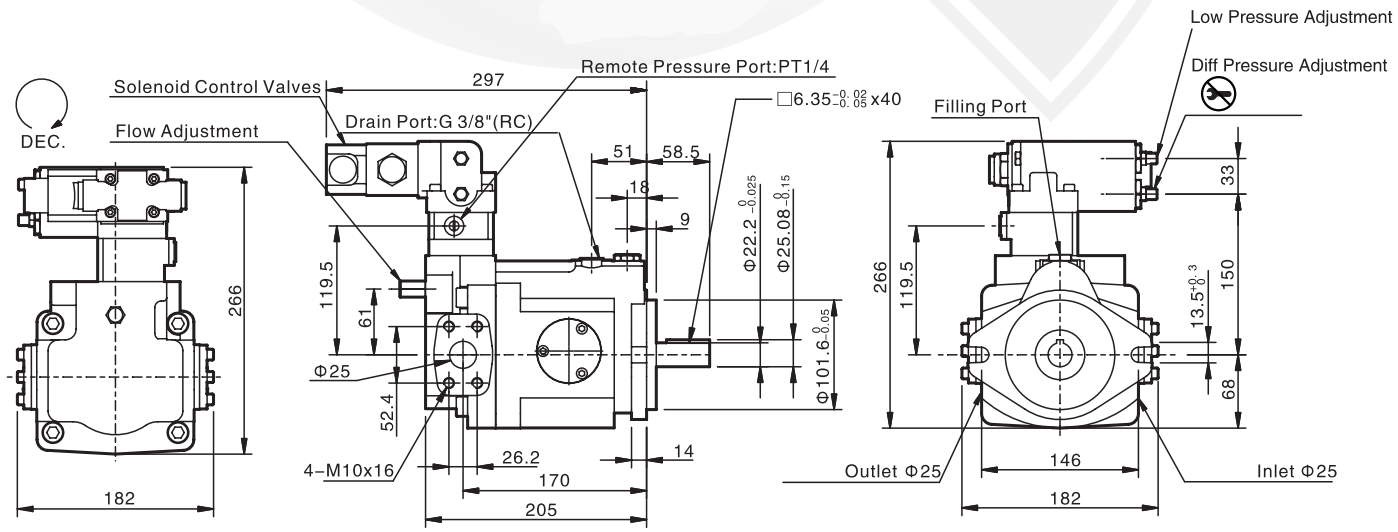
V23CG, V25CG 2-Stage Pressure & Flow Control Type With Remote



V23D, V25D Solenoid Controlled Pressure Compensating Type With Unloading Device

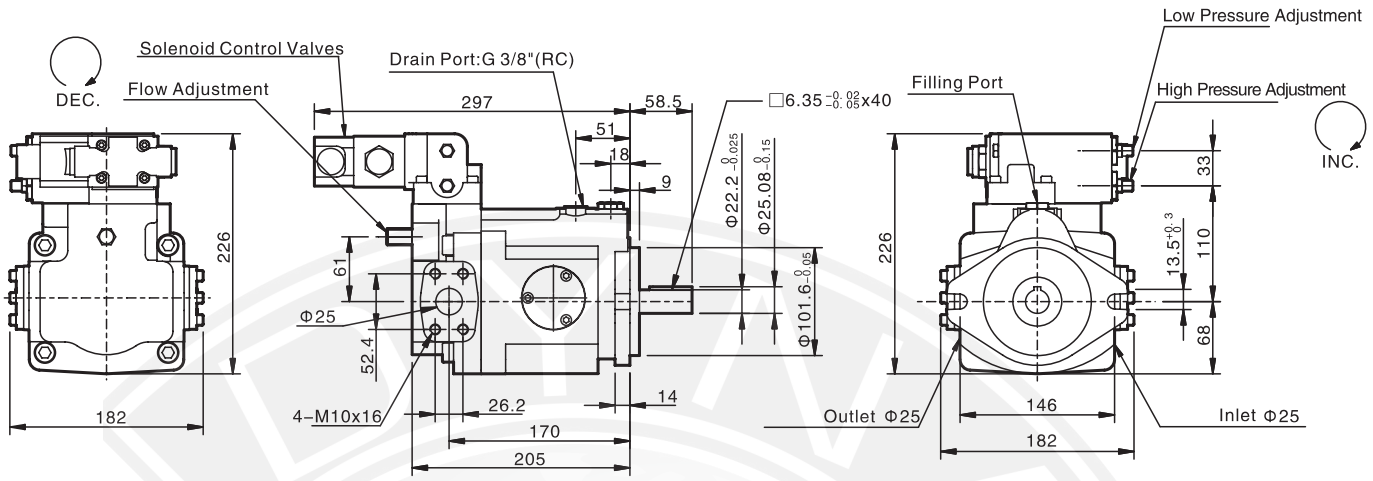


V23DG, V25DG Solenoid Controlled Pressure Compensating Type With Unloading Device & Remote

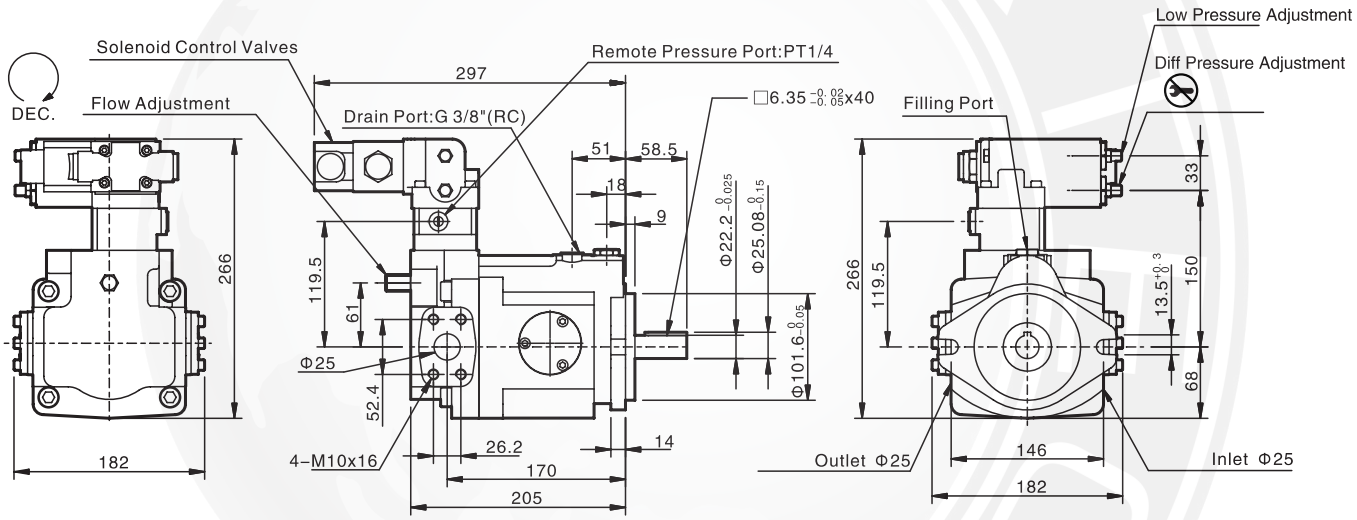


V Series Variable Displacement Piston Pump

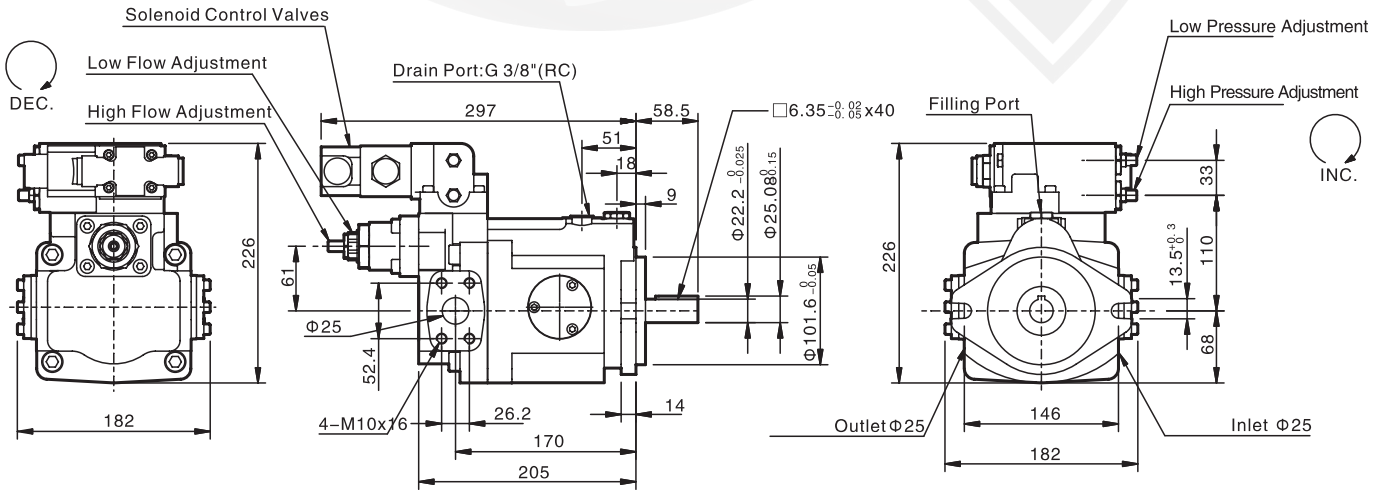
V23E, V25E Dual Pressure Control



V23EG, V25EG Dual & Remote Pressure Control

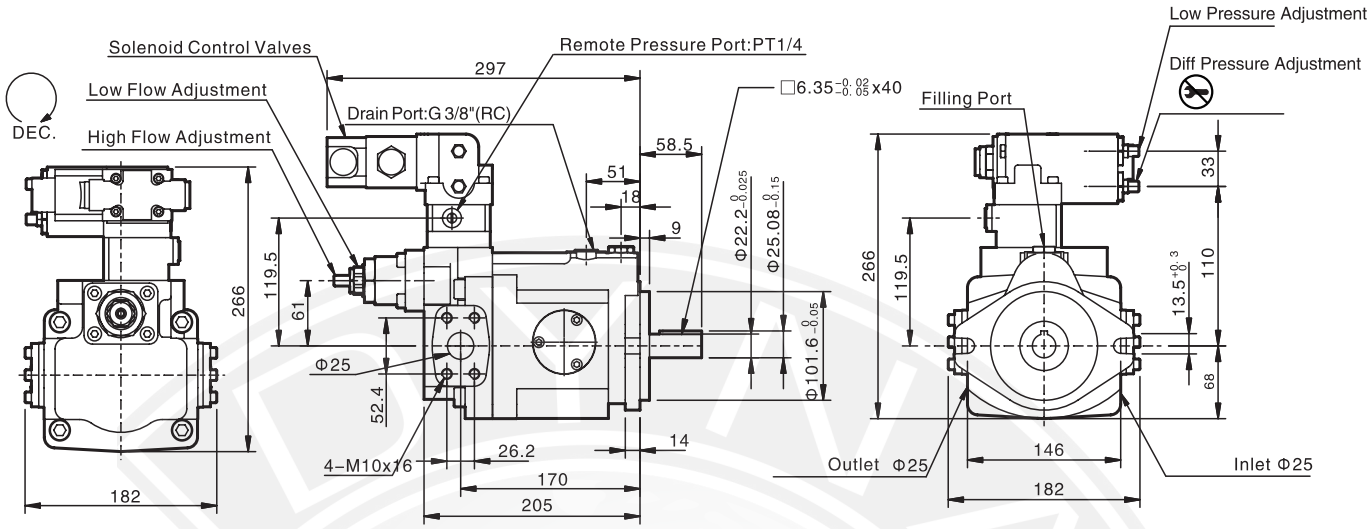


V23F, V25F 2 Flow-2 Pressure Control By Solenoid Operated Valve

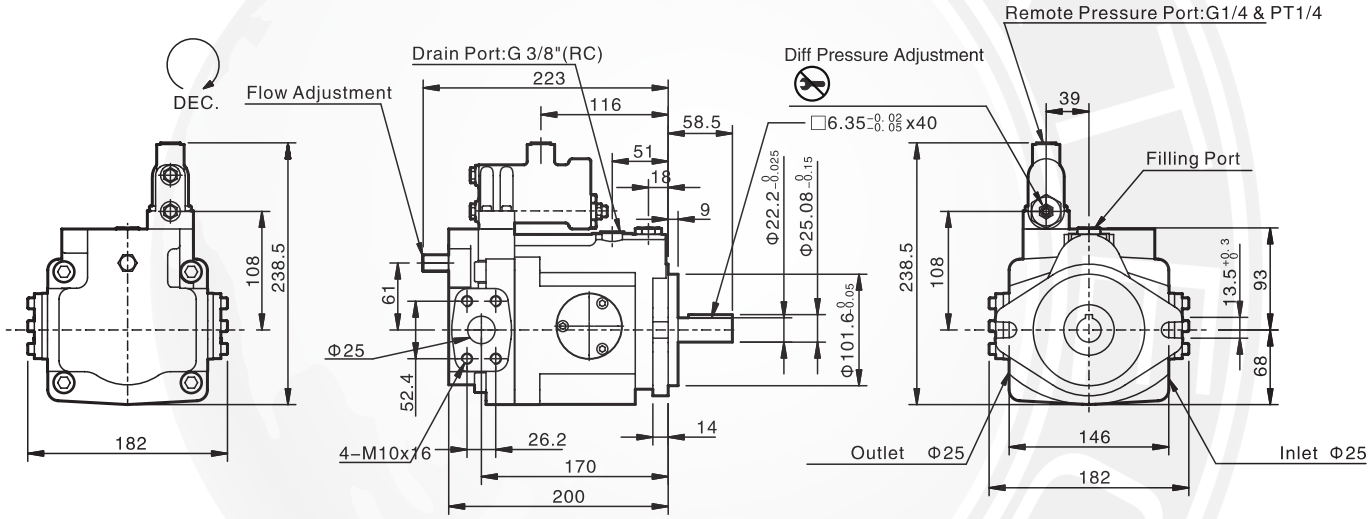


V Series Variable Displacement Piston Pump

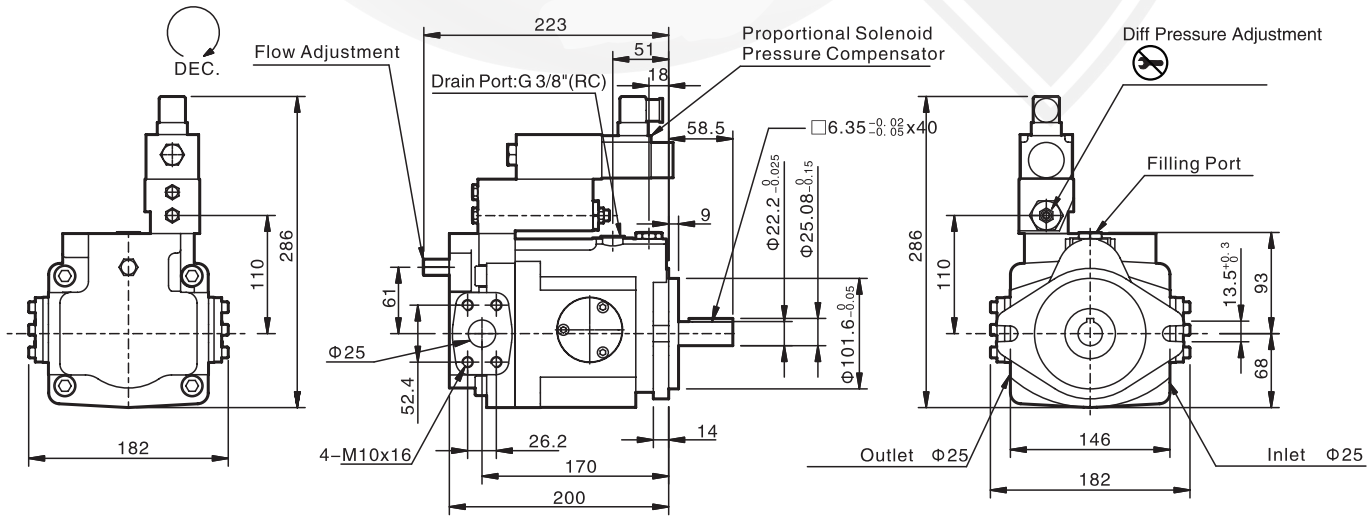
V23FG, V25FG 2 Flow-2 Pressure Control By Solenoid Operated & Remote Valve



V23G, V25G Remoted Pressure Compensator Control

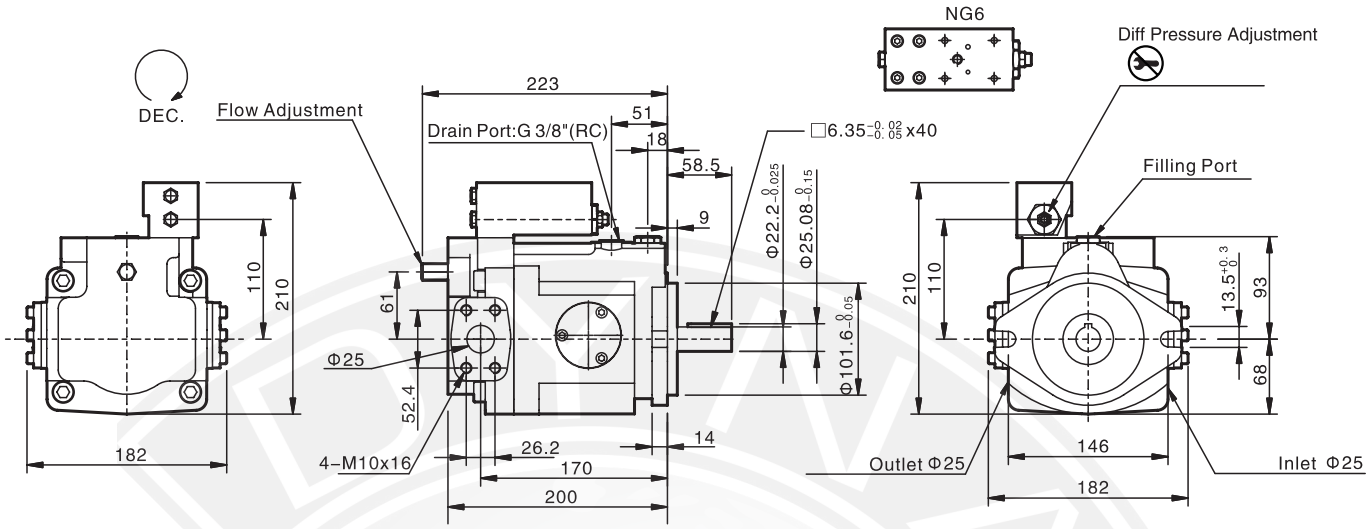


V23GJ, V25GJ Proportional Pressure With Interface

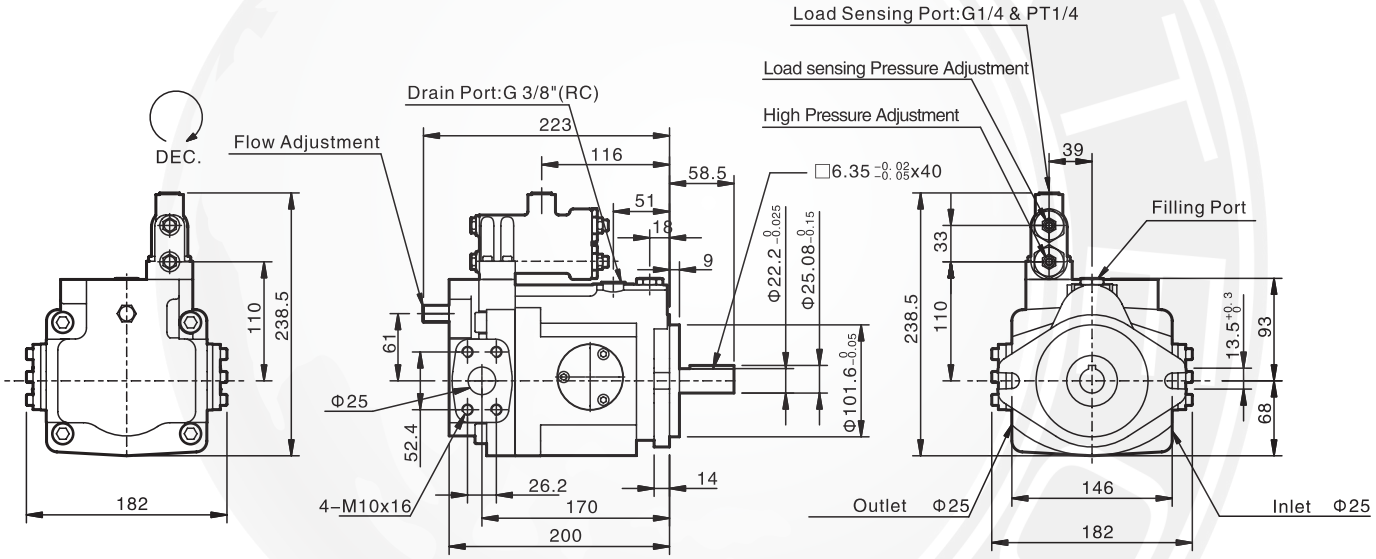


V Series Variable Displacement Piston Pump

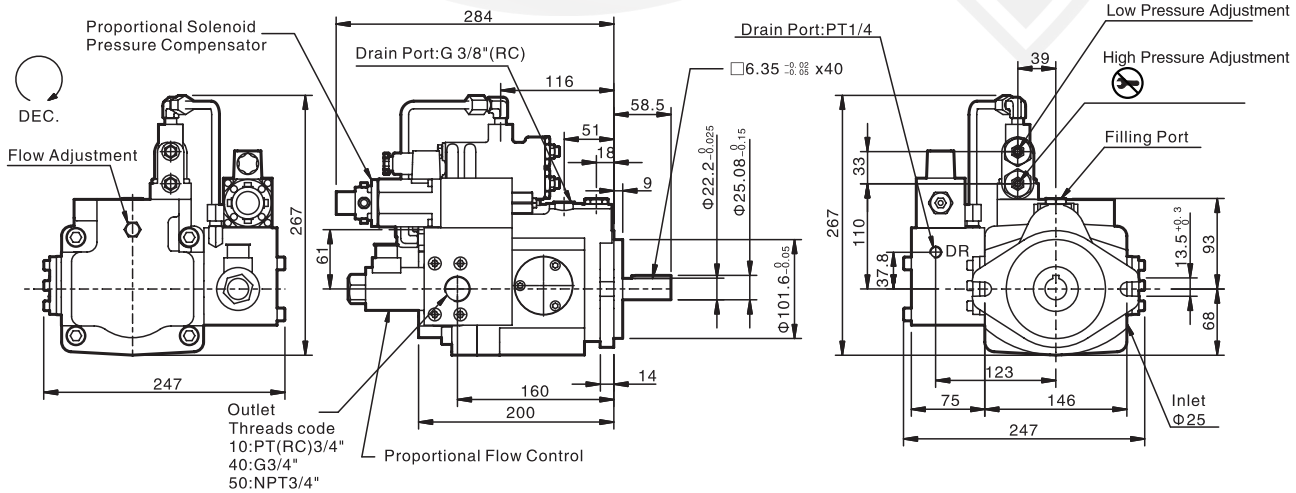
V23GM, V25GM Remoted Interface (Not Include Valve)



V23HL, V25HL Load-Sensing Compensator

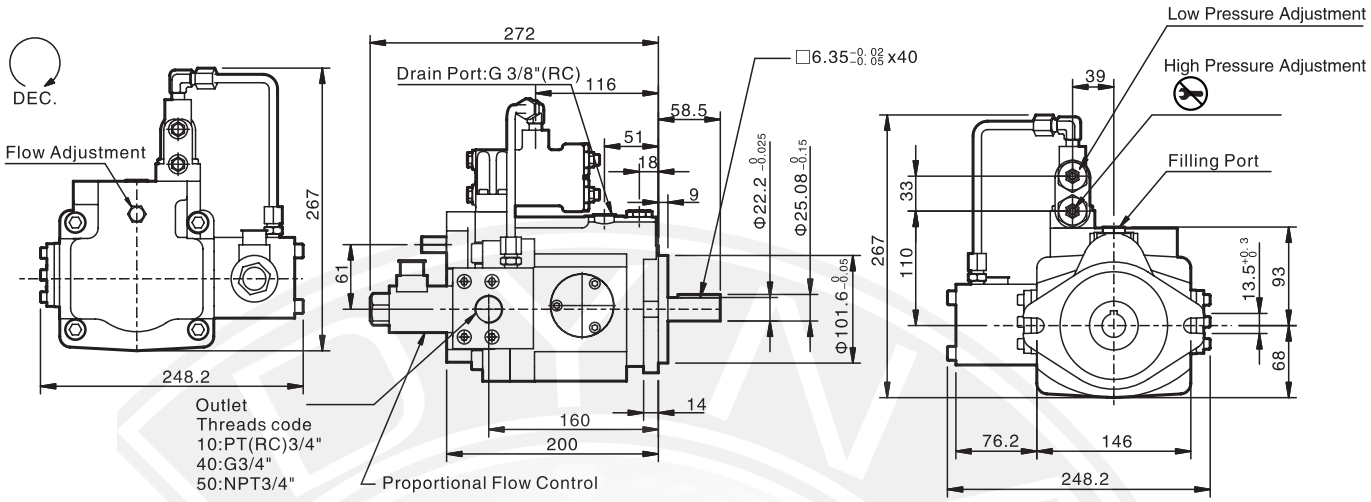


V23HK, V25HK Proportional Electro-Hydraulic Load Sensing Type

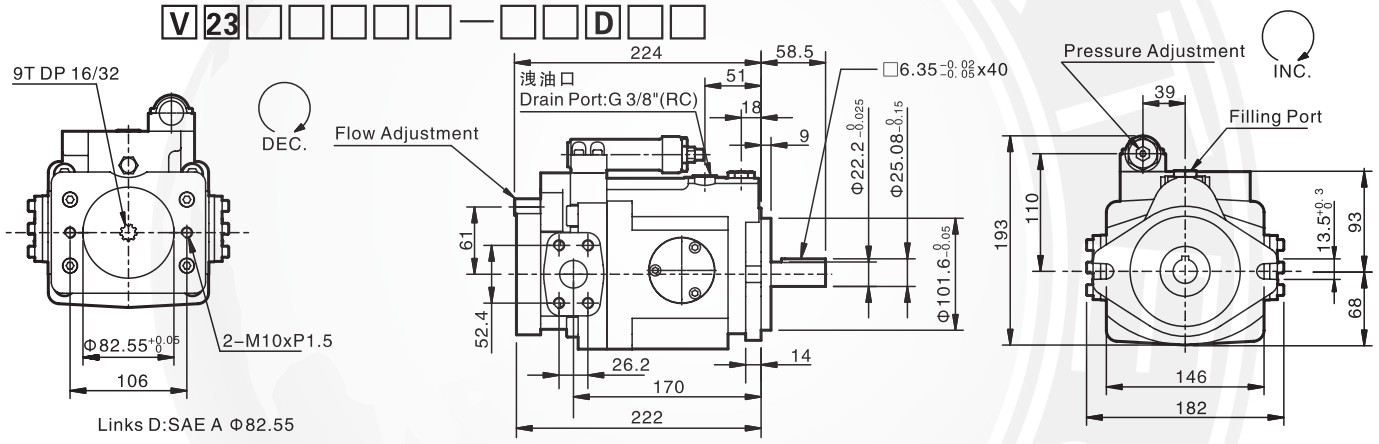


V Series Variable Displacement Piston Pump

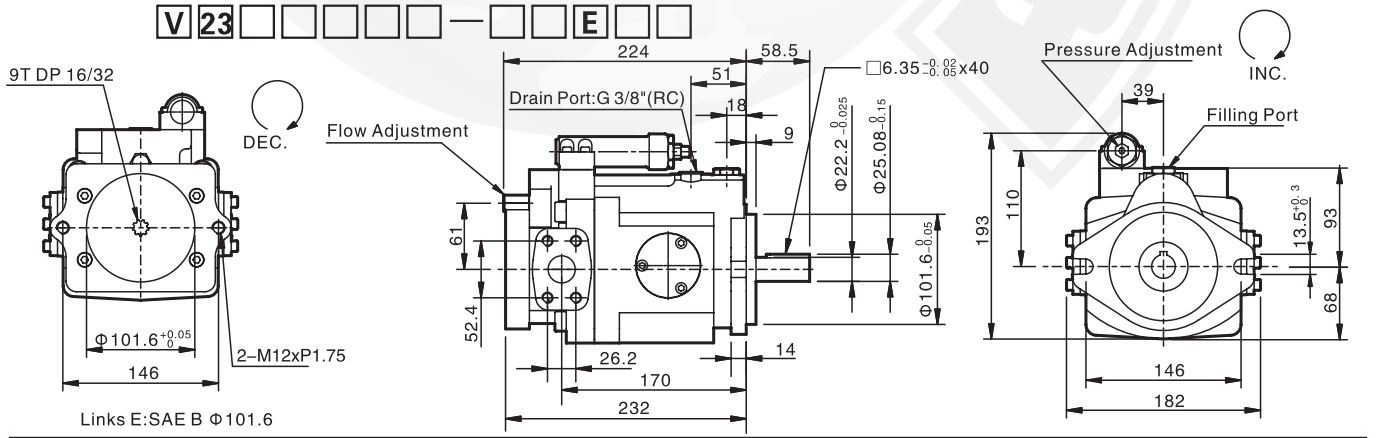
V23HQ, V25HQ Load-Sensing Proportional Flow Control



V23, V25 Preparded For Thru Drive (SAE A Ø 82.55)



V23, V25 Preparded For Thru Drice (SAE B Ø 101.6)

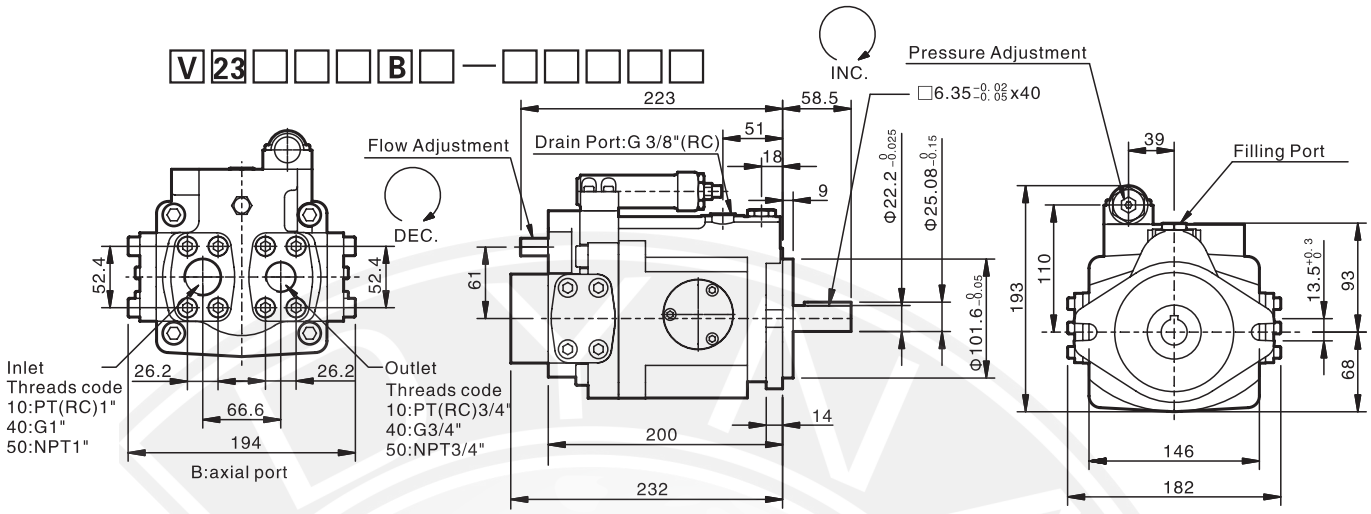


Type	A	B	C	CG	D	DG	E	EG	F	FG	G	GJ	GM	HL	HK	HQ
	○				○	○	○	○			○	○	○	○	○	○

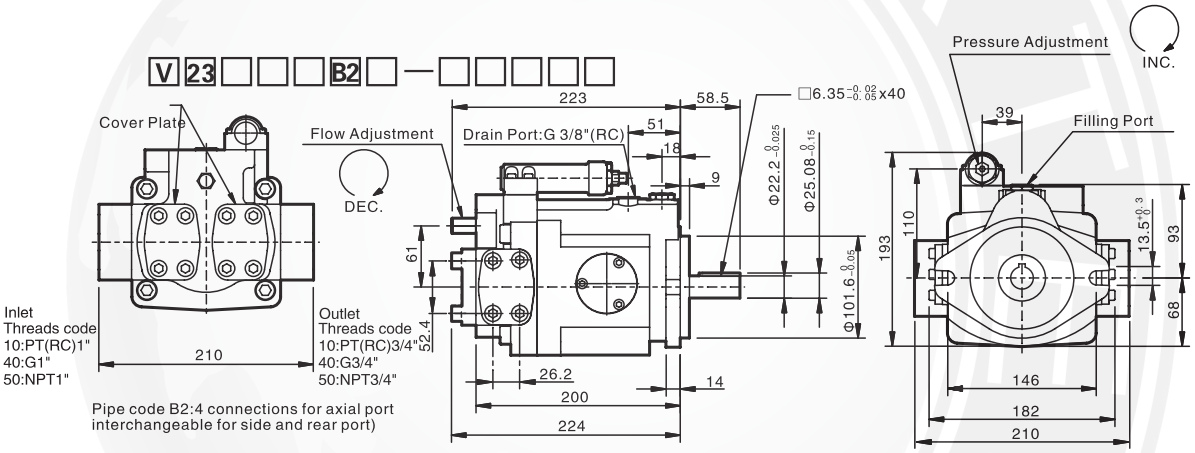
Thru Drive Option

V Series Variable Displacement Piston Pump

V23, V25 Axial Port



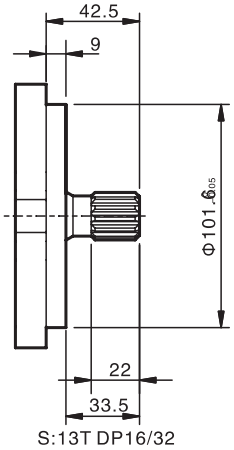
V23, V25 4 Connections For Axial Port



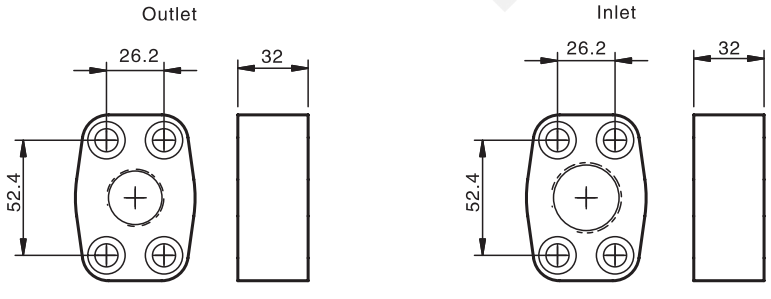
型式Type	A	B	C	CG	D	DG	E	EG	F	FG	G	GJ	GM	HL	HK	HQ
	○	○									○	○	○	○		

Axial Port Option

V23, V25 Splined Shaft Type

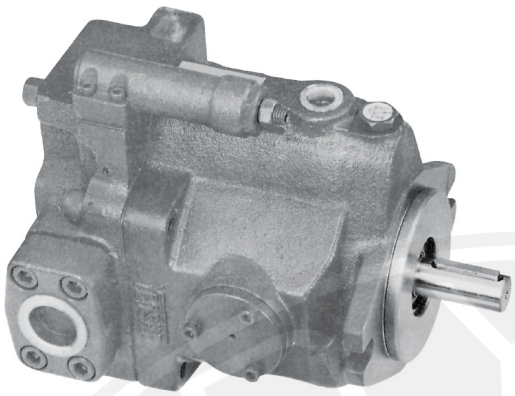


V23, V25 Hydraulic Flang

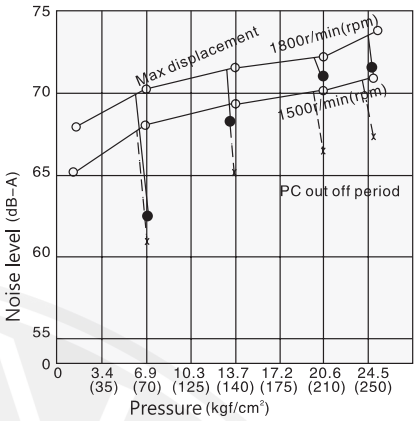


V Series Variable Displacement Piston Pump

V38、V42 Series



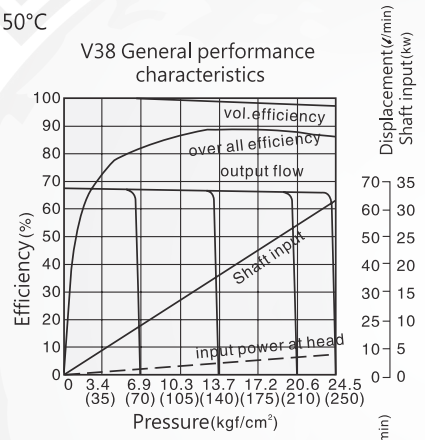
V38、V42



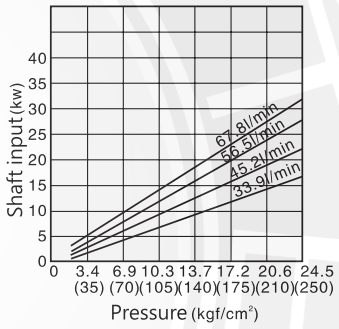
TYPICAL PERFORMANCE CHARACTERISTICS

Conditions:
Input speed: 1,800r/min
Oil: ISO VG32
Oil temperature: 50°C

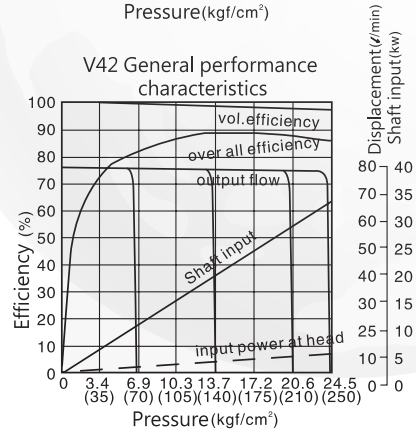
V38 General performance characteristics



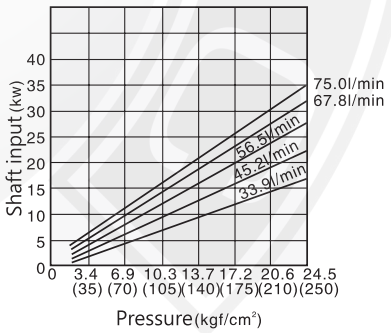
V38 Shaft input characteristic



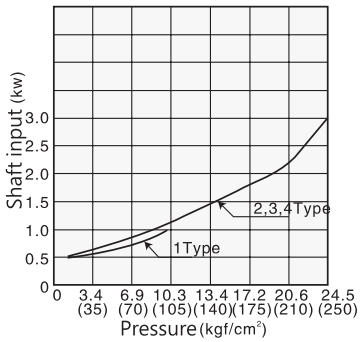
V42 General performance characteristics



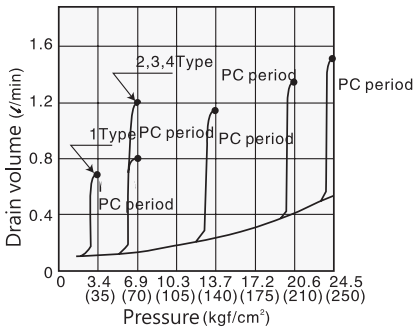
V42 Shaft input characteristic



Dead head shaft input

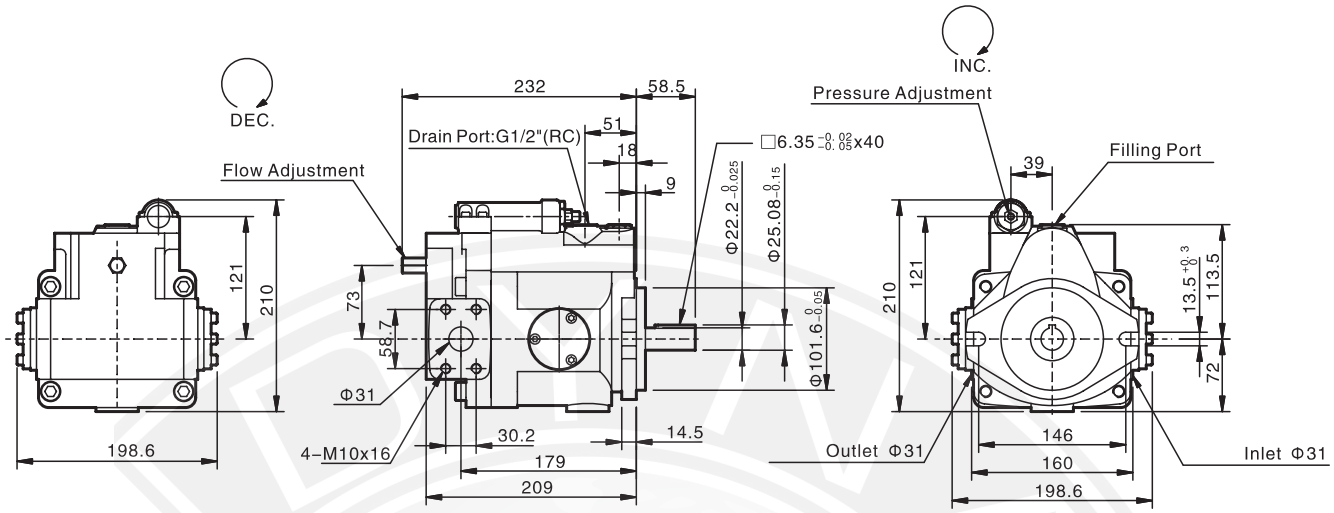


Drain volume characteristic

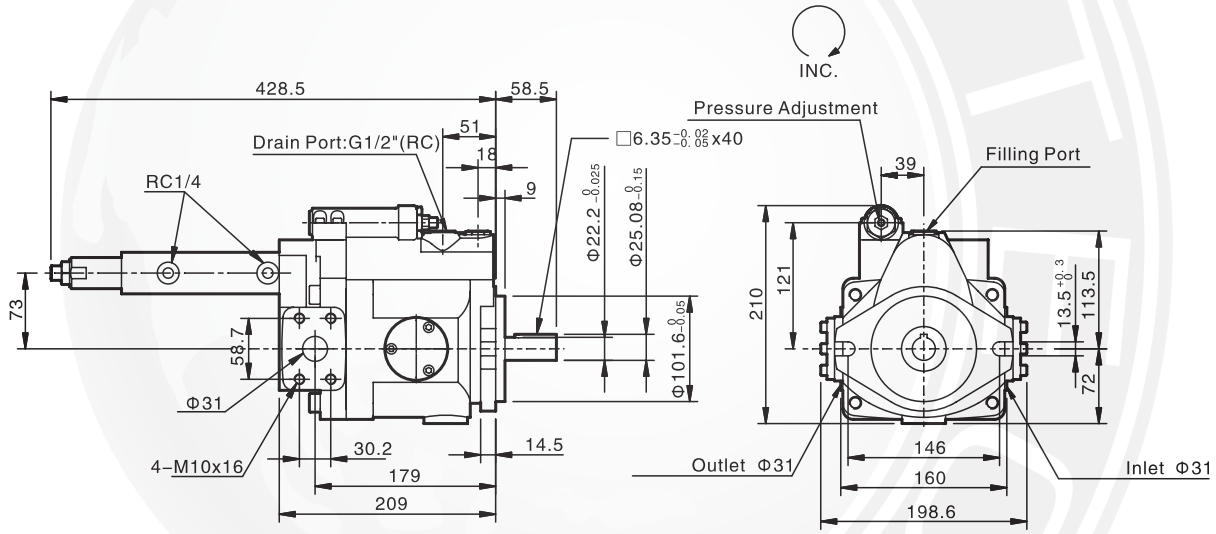


V Series Variable Displacement Piston Pump

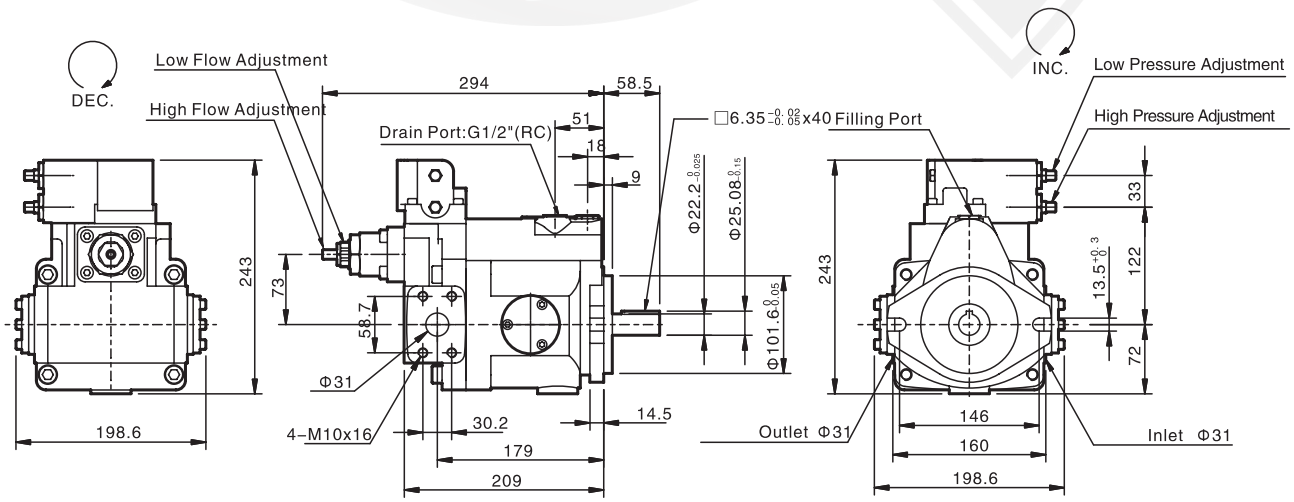
V38A, V42A Pressure Compensator



V38B, V42B Multi-Stage Flow & Single-Stage Pressure Compensator Control (With Cylinder)

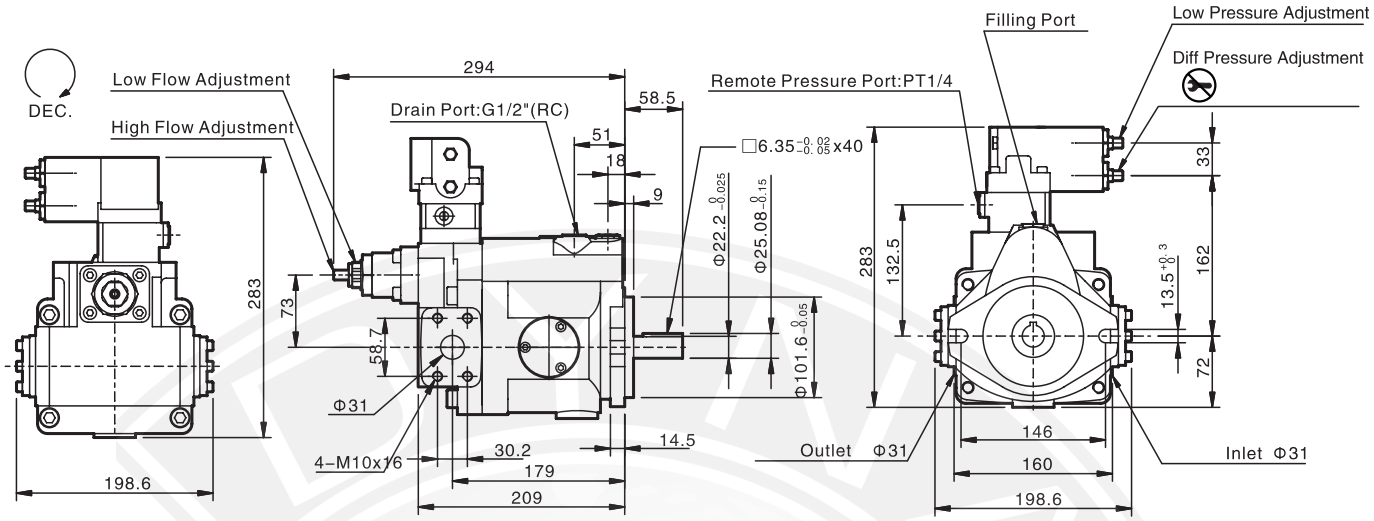


V38C, V42C 2-Stage Pressure & Flow Control Type

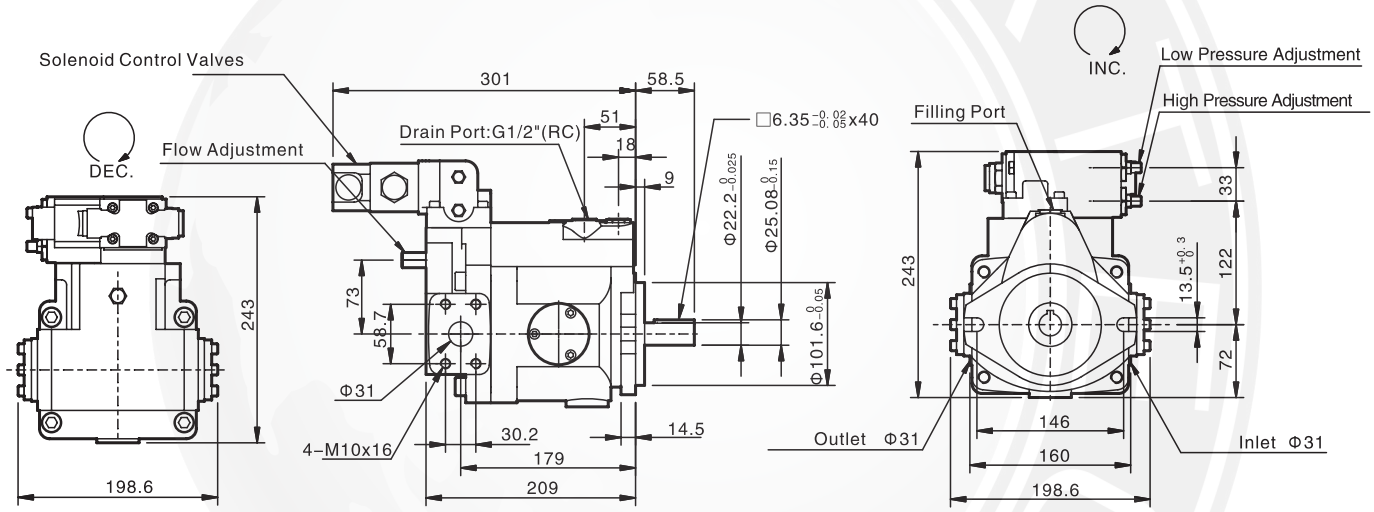


V Series Variable Displacement Piston Pump

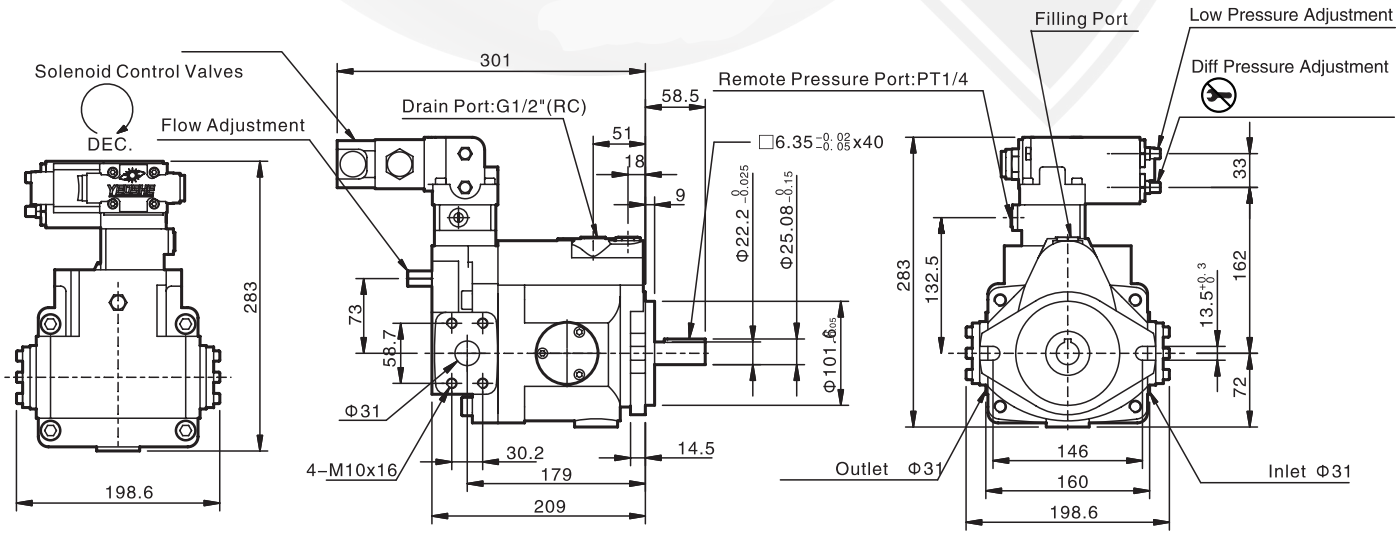
V38CG, V42CG 2-Stage Pressure & Flow Control Type With Remote



V38D, V42D Solenoid Controlled Pressure Compensating Type With Unloading Device

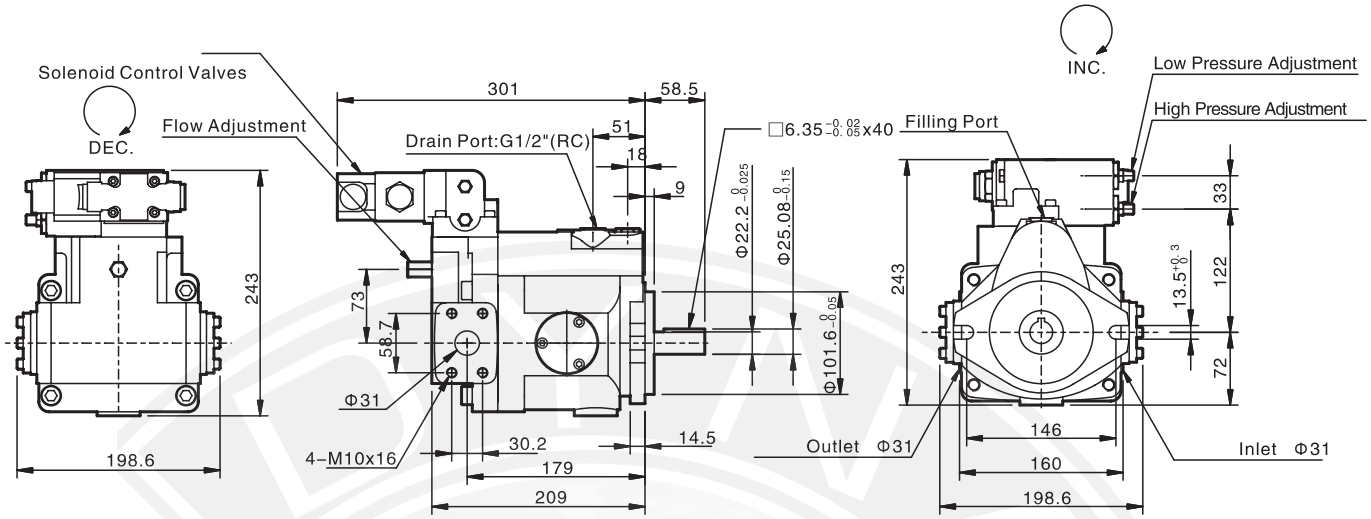


V38DG, V42DG Solenoid Controlled Pressure Compensating Type With Unloading Device & Remote

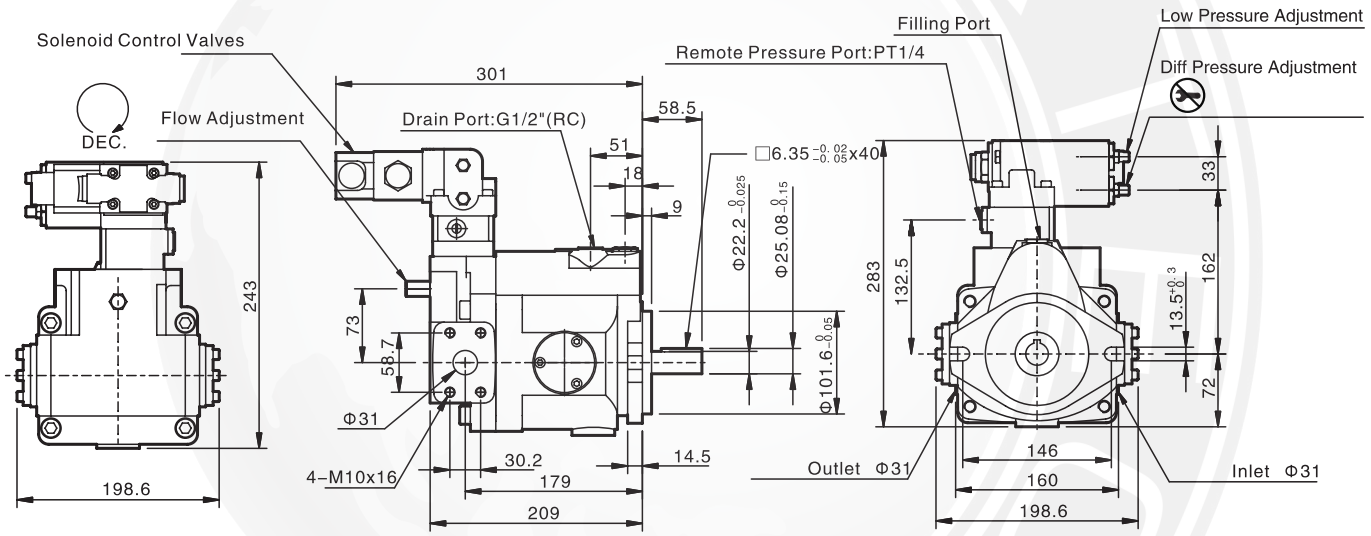


V Series Variable Displacement Piston Pump

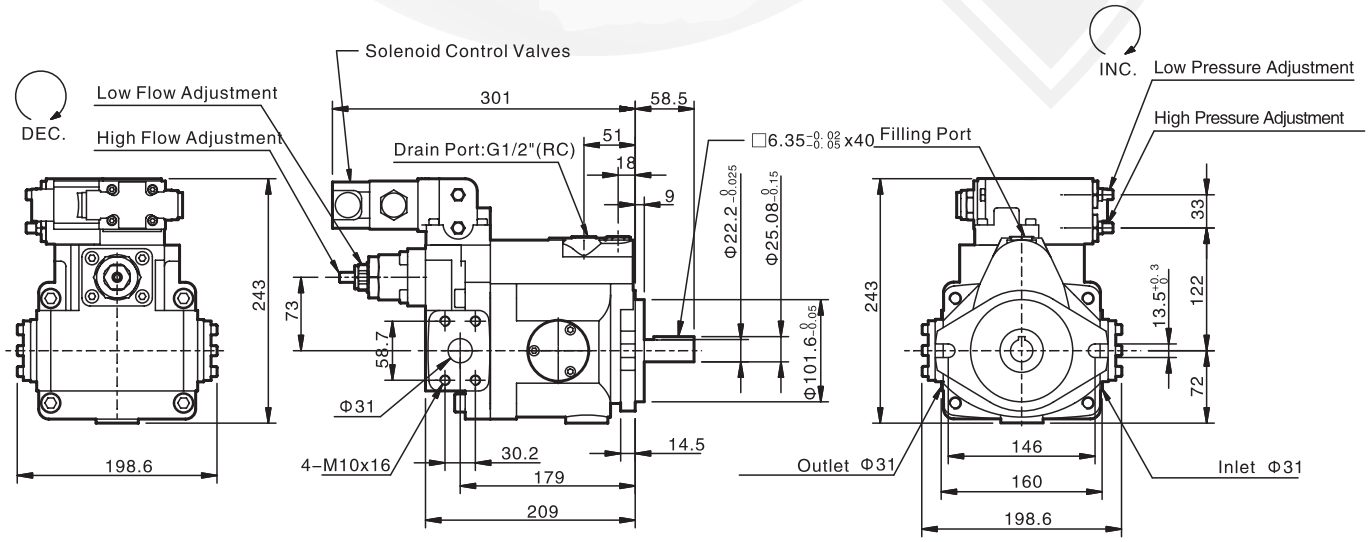
V38E, V42E Dual Pressure Control



V38EG, V42EG Dual & Remote Pressure Control

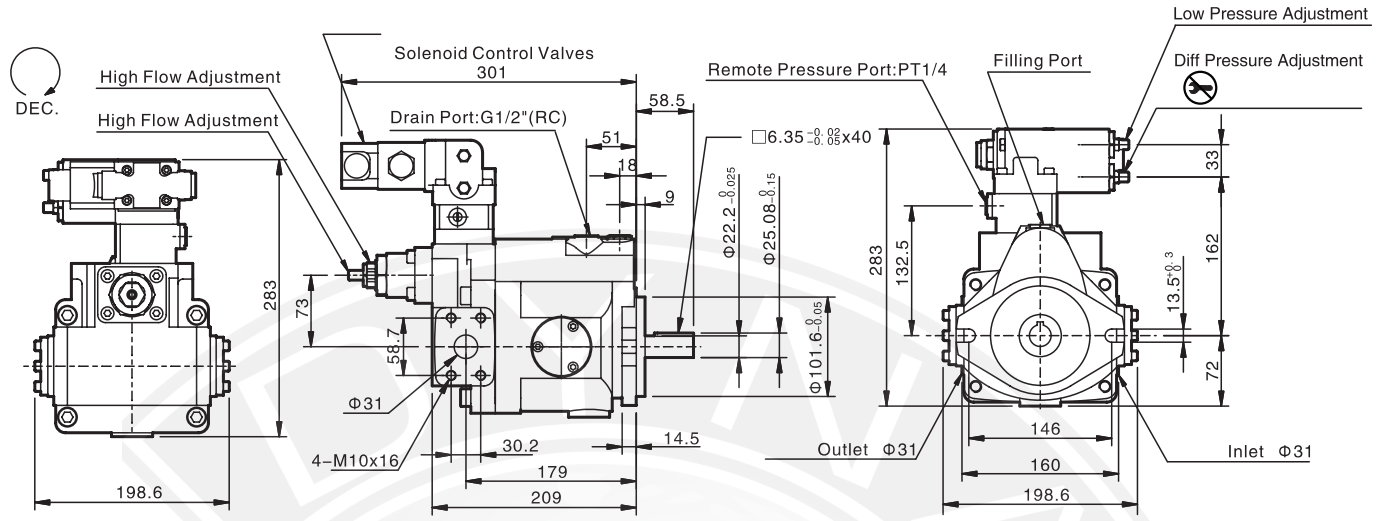


V38F, V42F 2 Flow-2 Pressure Control By Solenoid Operated Valve

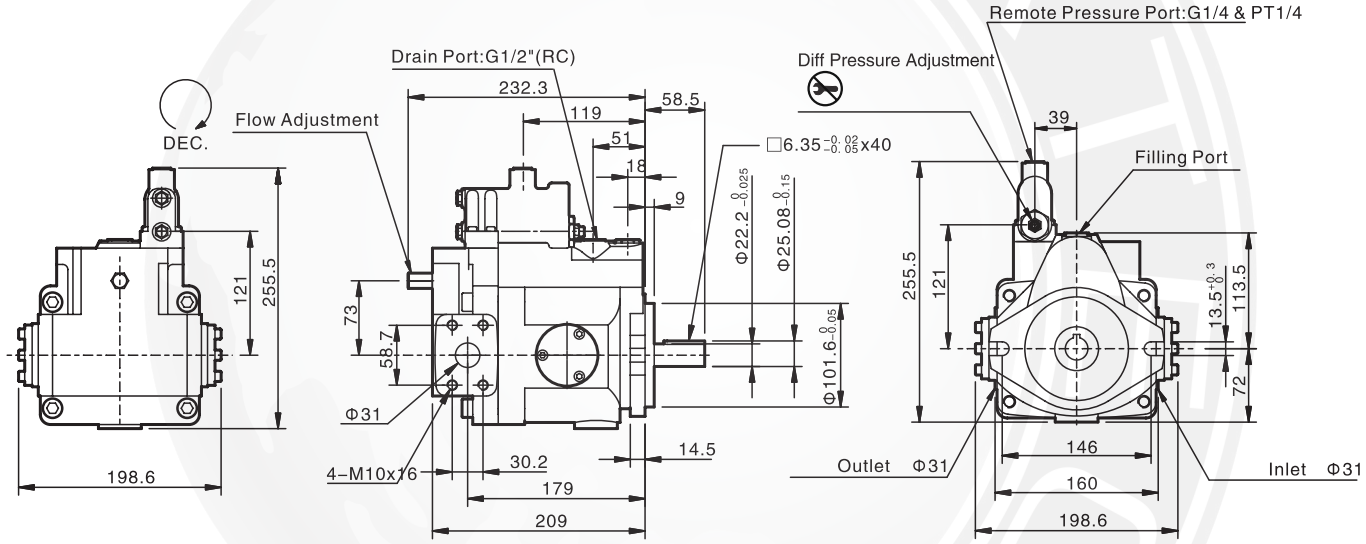


V Series Variable Displacement Piston Pump

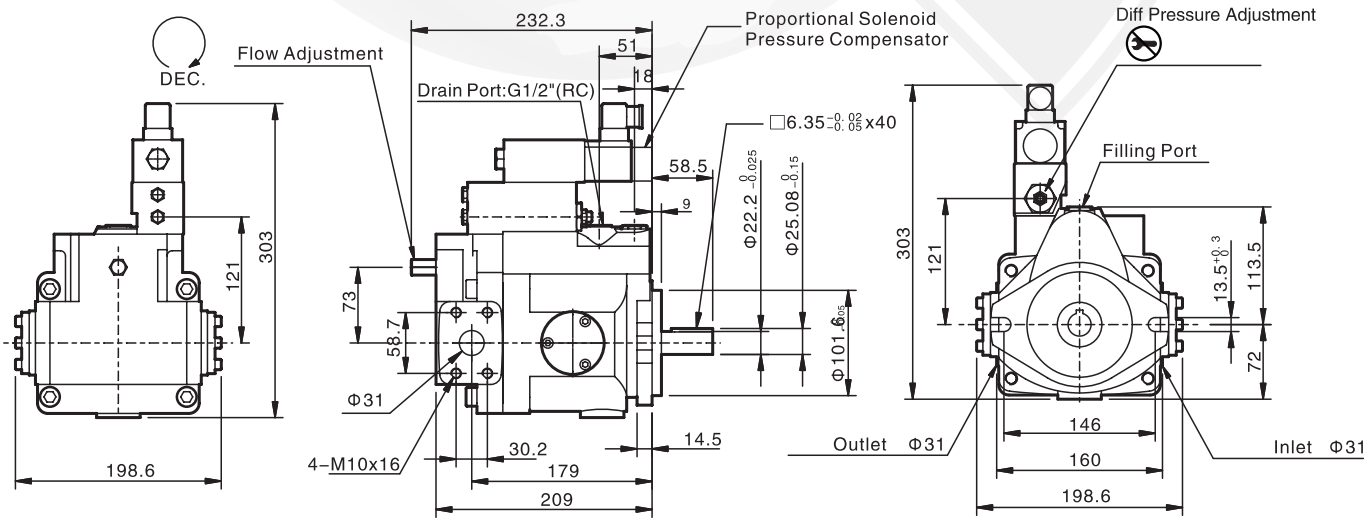
V38FG, V42FG 2 Flow - 2 Pressure Control By Solenoid Operated & Remote Valve



V38G, V42G Remoted Pressure Compensator Control

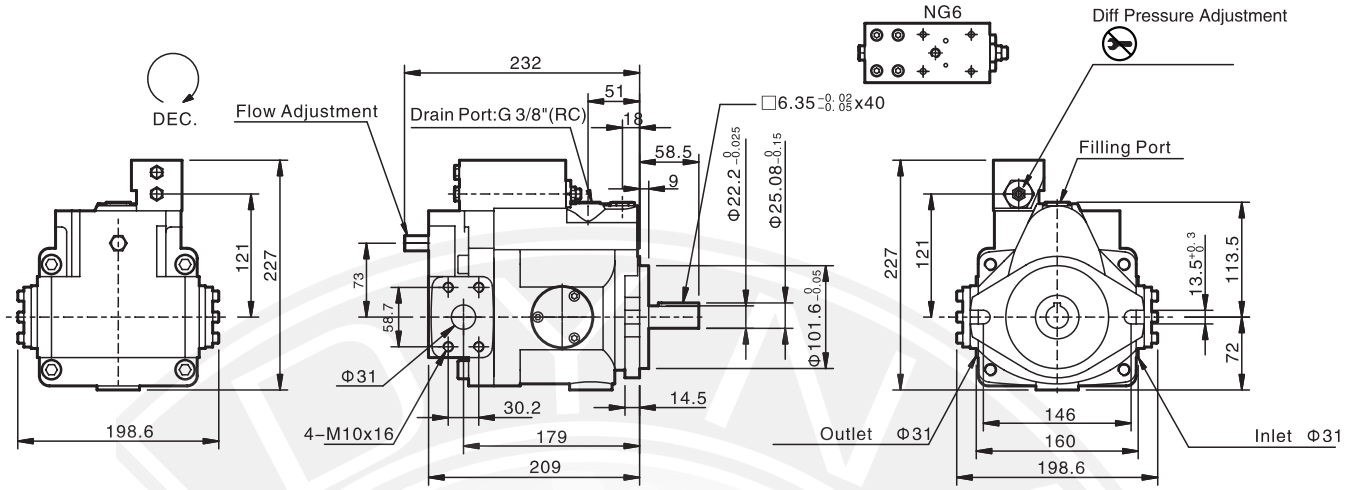


V38GJ, V42GJ Proportional Pressure With Interface

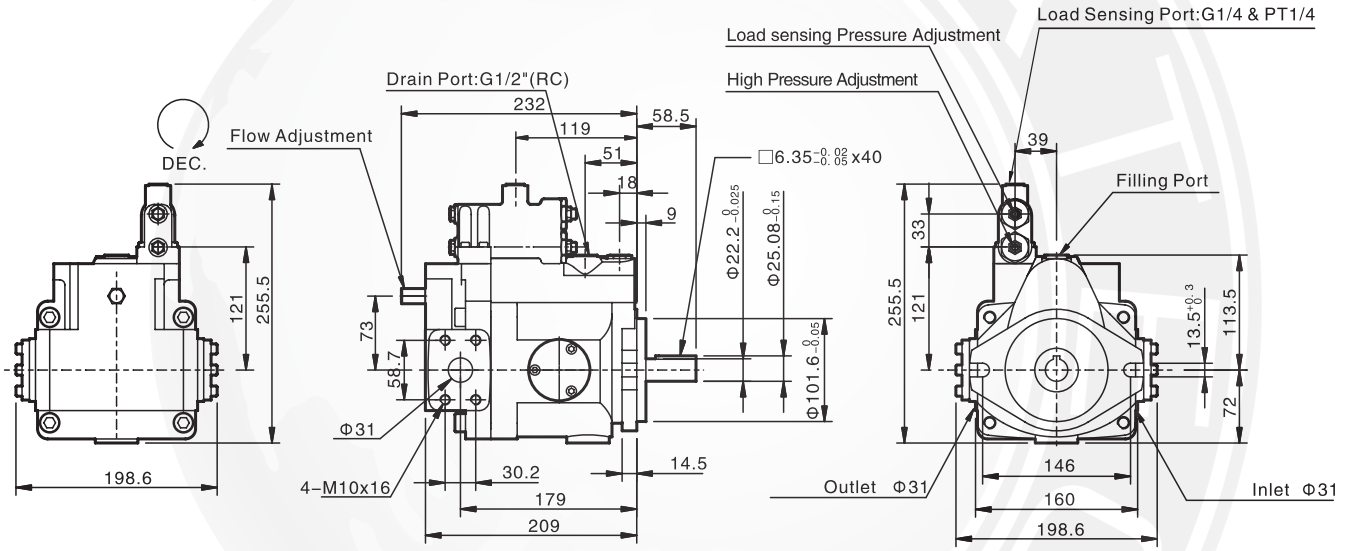


V Series Variable Displacement Piston Pump

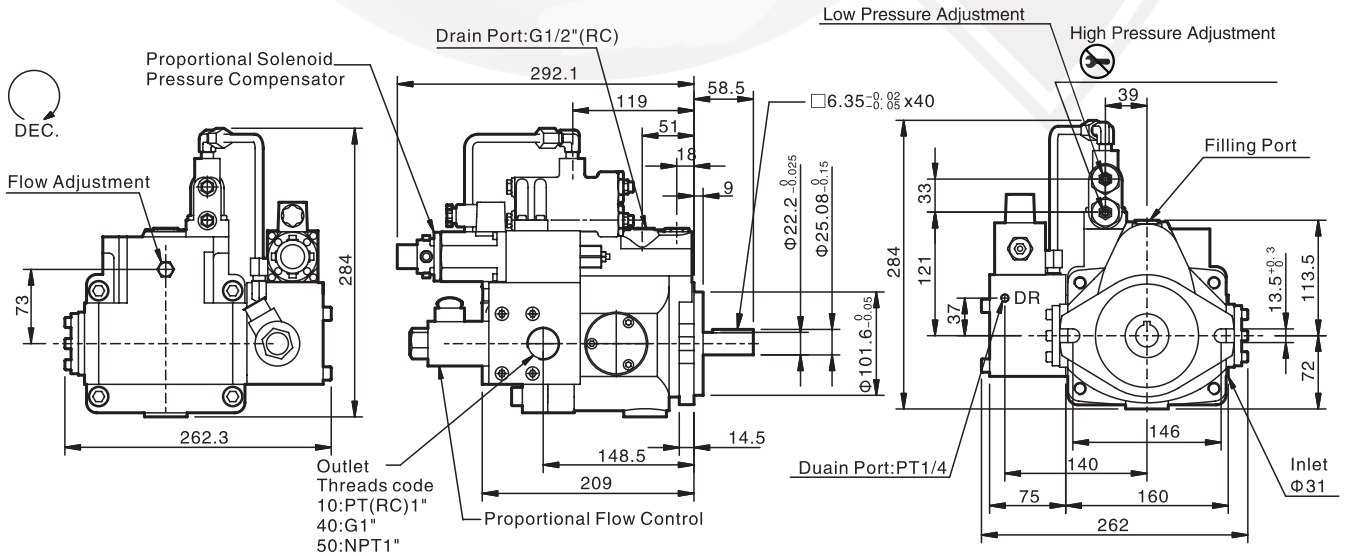
V38GM, V42GM Remote Interface (Not Include Valve)



V38HL, V42HL Load-Sensing Compensator

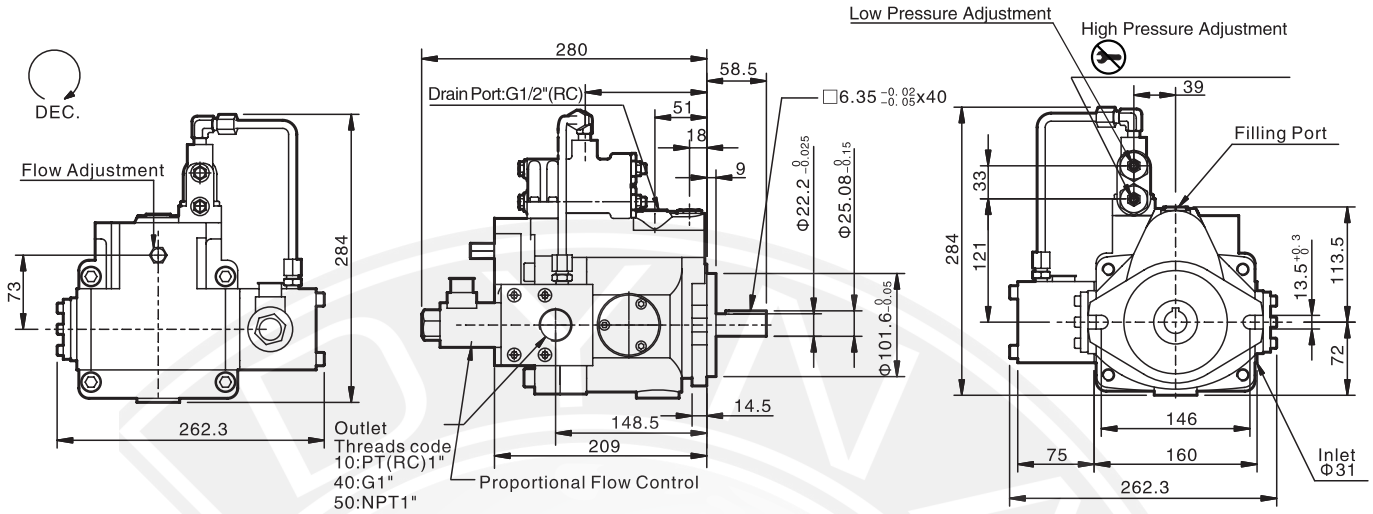


V38HK, V42HK Proportional Electro-Hydraulic Load Sensing Type



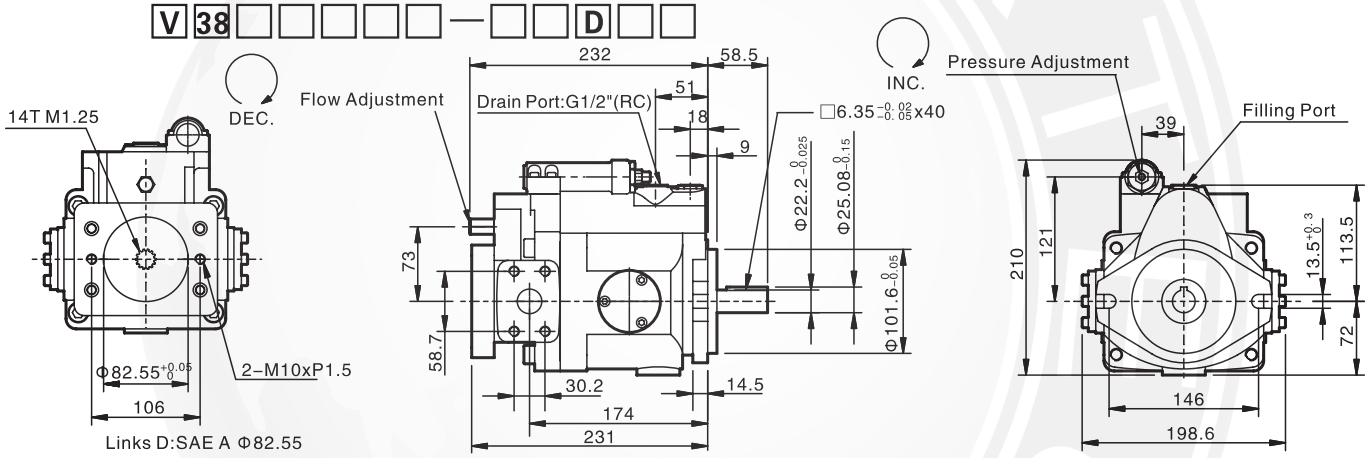
V Series Variable Displacement Piston Pump

V38HQ, V42HQ Load-Sensing Proportional Flow Control



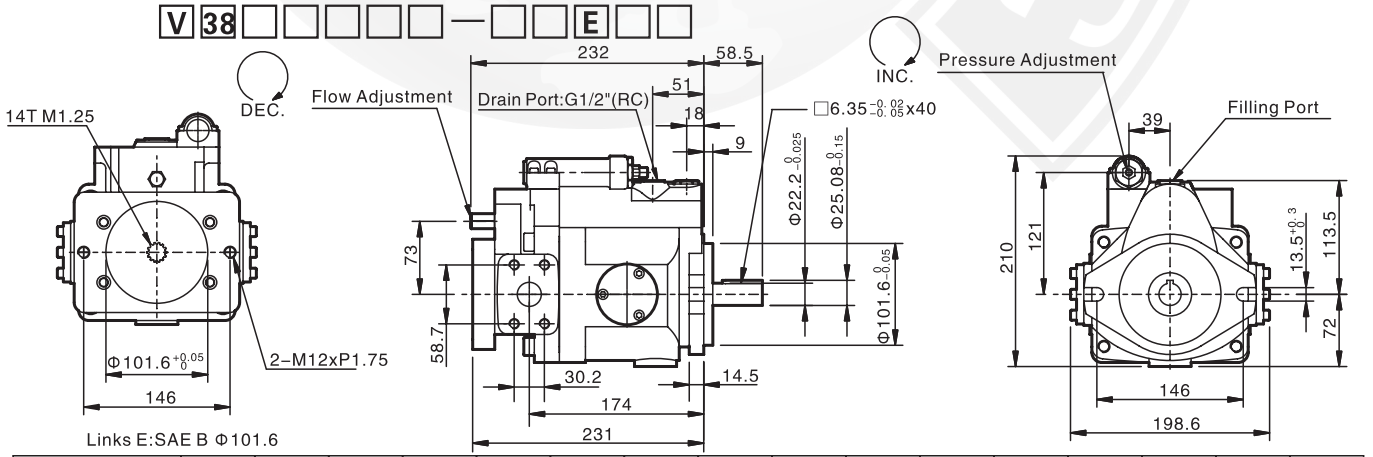
V38, V42 Prepared For Thru Drice (SAE Ø 82.55)

V38□□□□□—□□D□□



V38, V42 Preparded For Thru Drice (SAE B Ø 101.6)

V38□□□□□—□□E□□

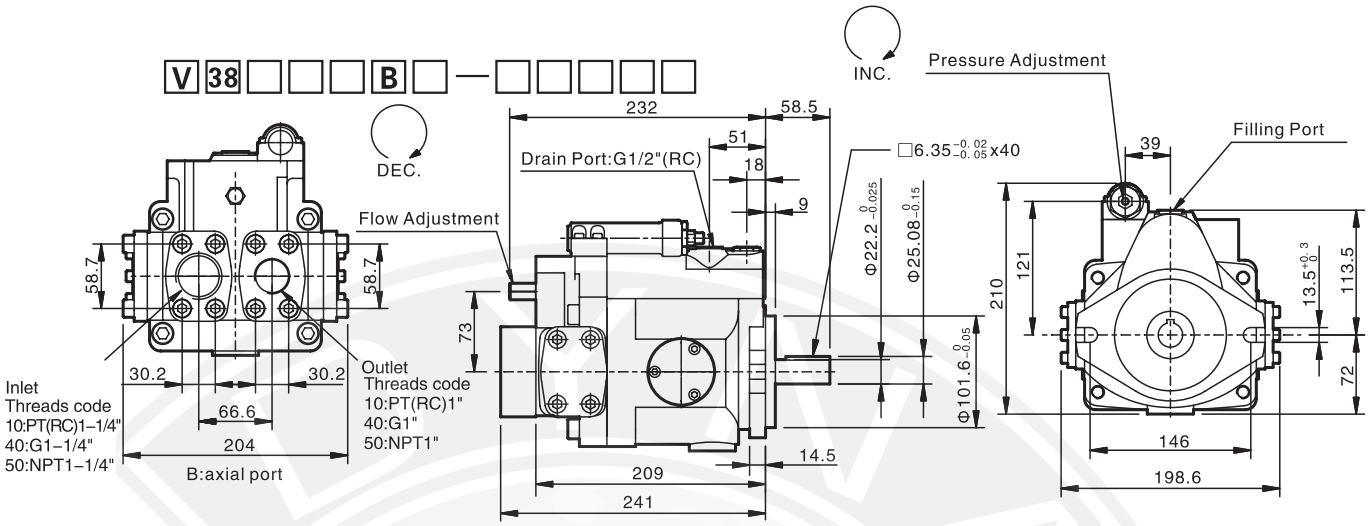


型式Type	A	B	C	CG	D	DG	E	EG	F	FG	G	GJ	GM	HL	HK	HQ
	○				○	○	○	○			○	○	○	○	○	○

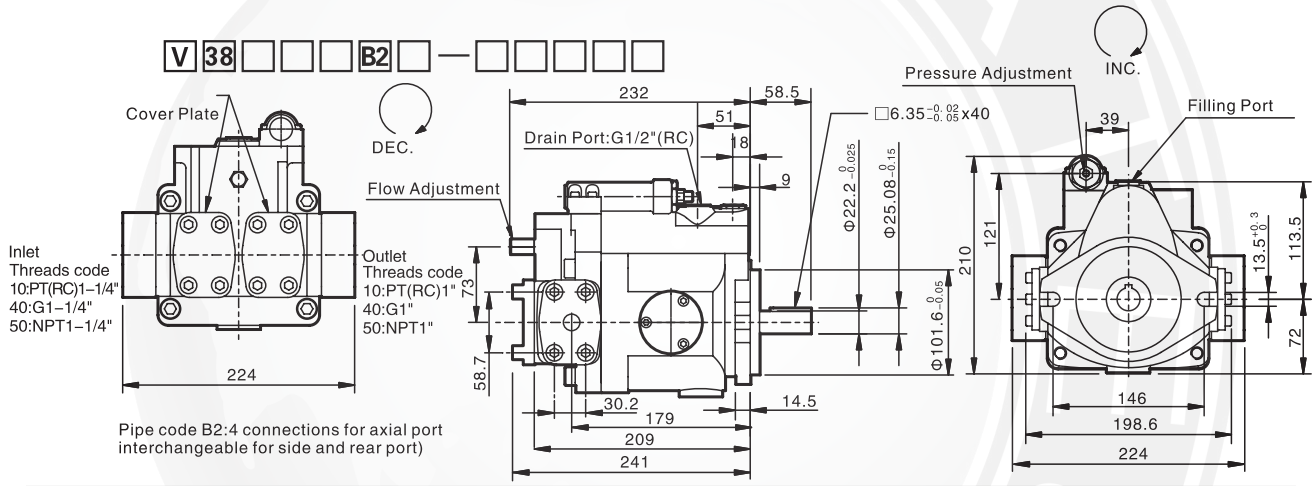
Thru Drive Option

V Series Variable Displacement Piston Pump

V38, V42 Axial Port



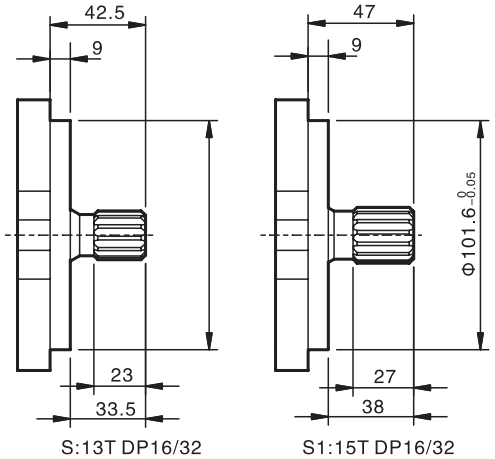
V38, V42 4 Connections For Axial Port



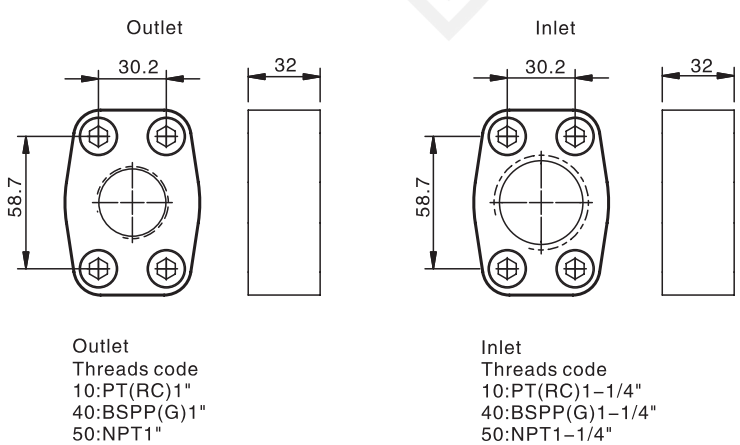
型式Type	A	B	C	CG	D	DG	E	EG	F	FG	G	GJ	GM	HL	HK	HQ
	○	○	○	○					○	○	○	○	○	○		

Axial Port Option

V38, V42 Splined Shaft Type

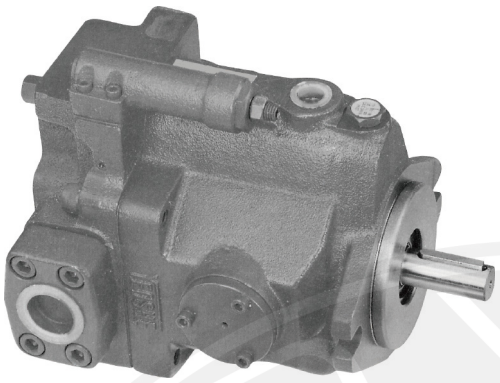


V38, V42 Hydraulic Flange

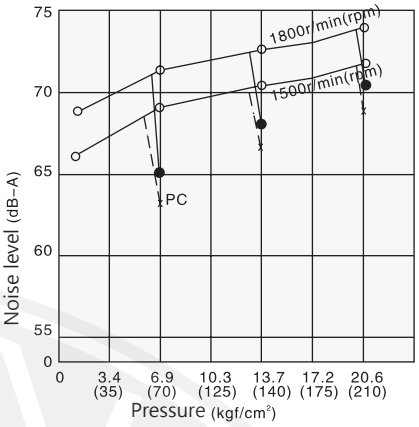


V Series Variable Displacement Piston Pump

V50、V70 Series



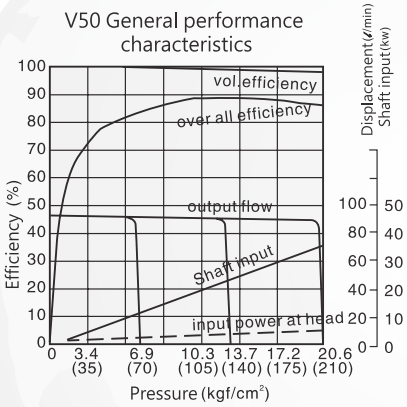
V50、V70



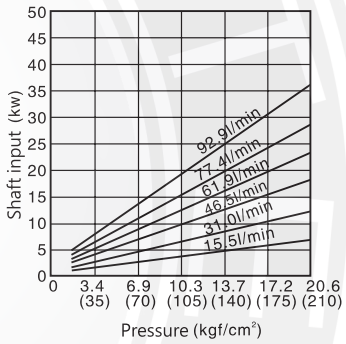
TYPICAL PERFORMANCE CHARACTERISTICS

Conditions:
Input speed: 1,800r/min
Oil: ISO VG32
Oil temperature: 50°C

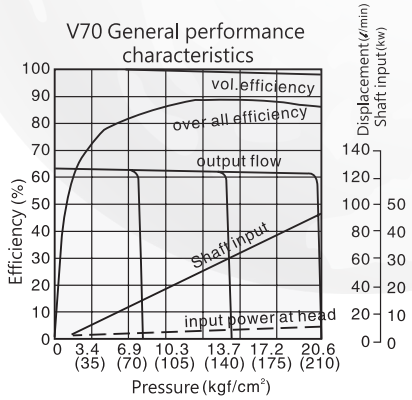
V50 General performance characteristics



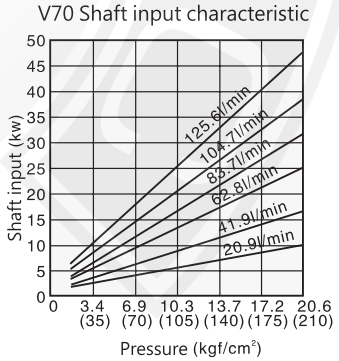
V50 Shaft input characteristic



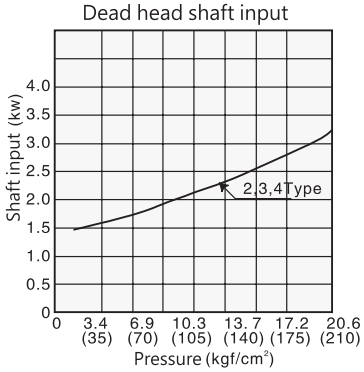
V70 General performance characteristics



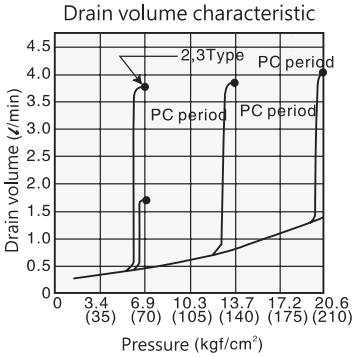
V70 Shaft input characteristic



Dead head shaft input

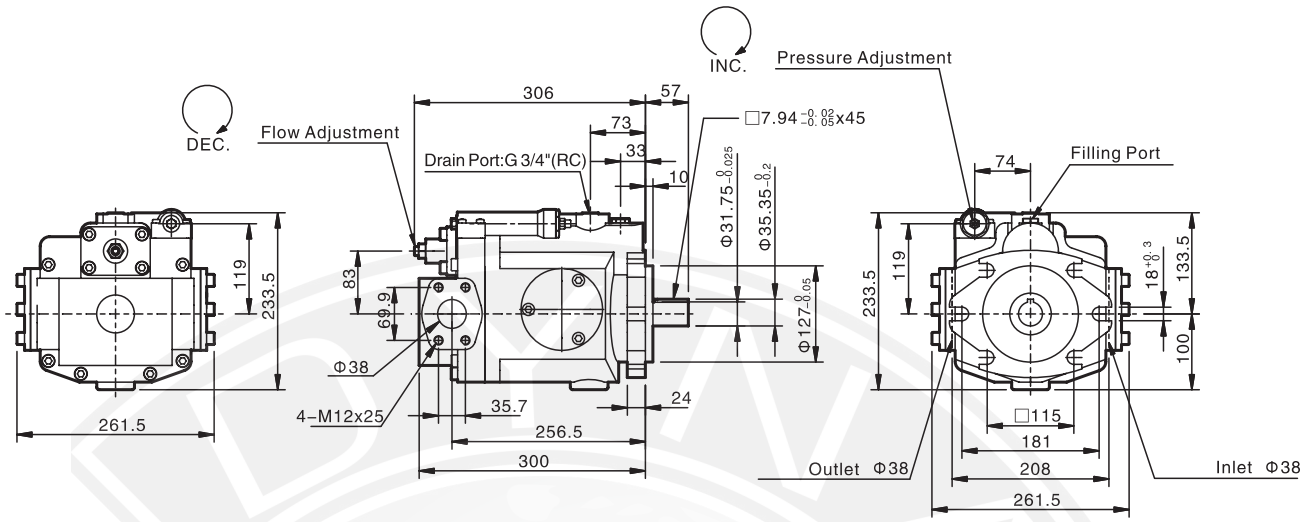


Drain volume characteristic

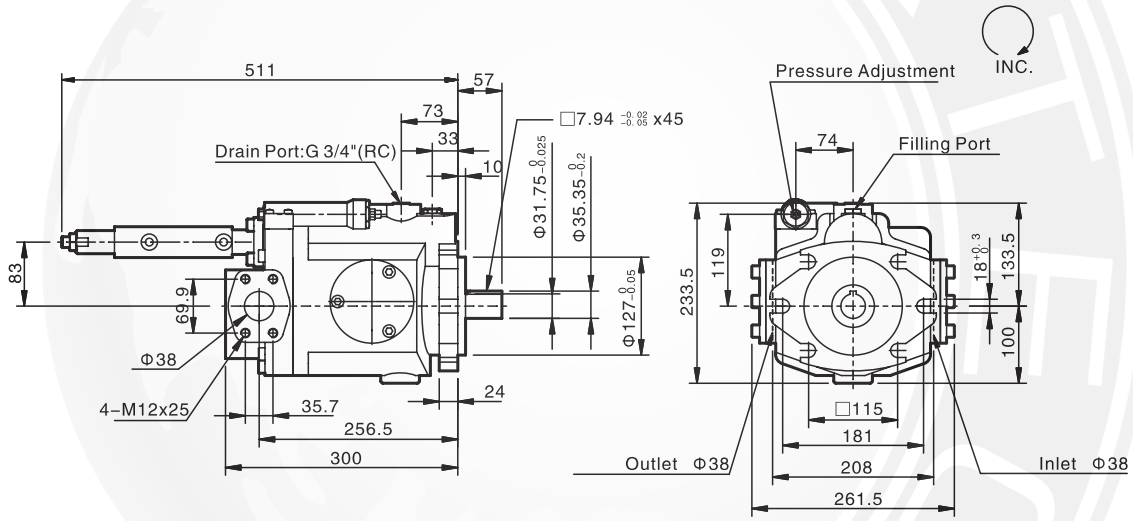


V Series Variable Displacement Piston Pump

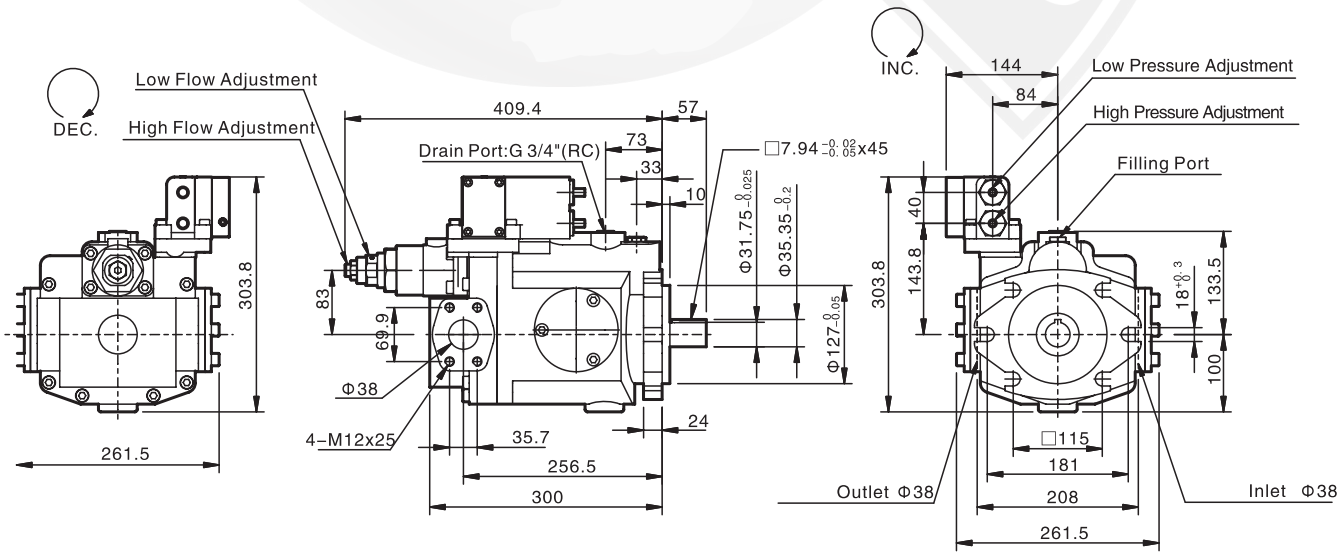
V50A, V70A Pressure Compensator



V50B, V70B Multi-Stage Flow & Single-Stage Pressure Compensator Control (With Cylinder)

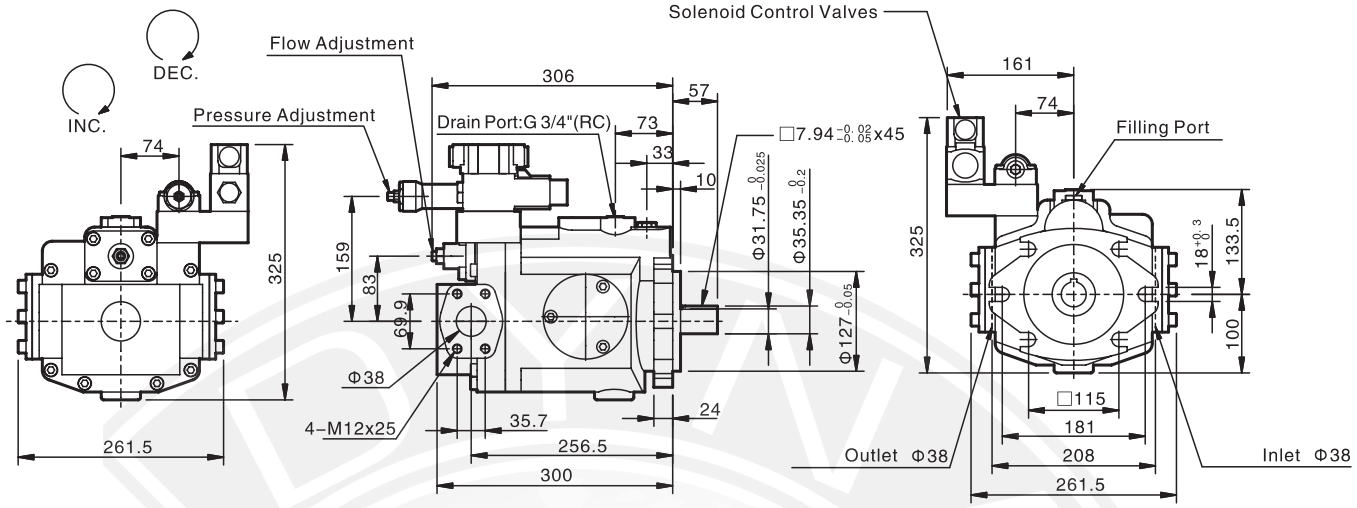


V50C, V70C 2-Stage Pressure & Flow Control Type

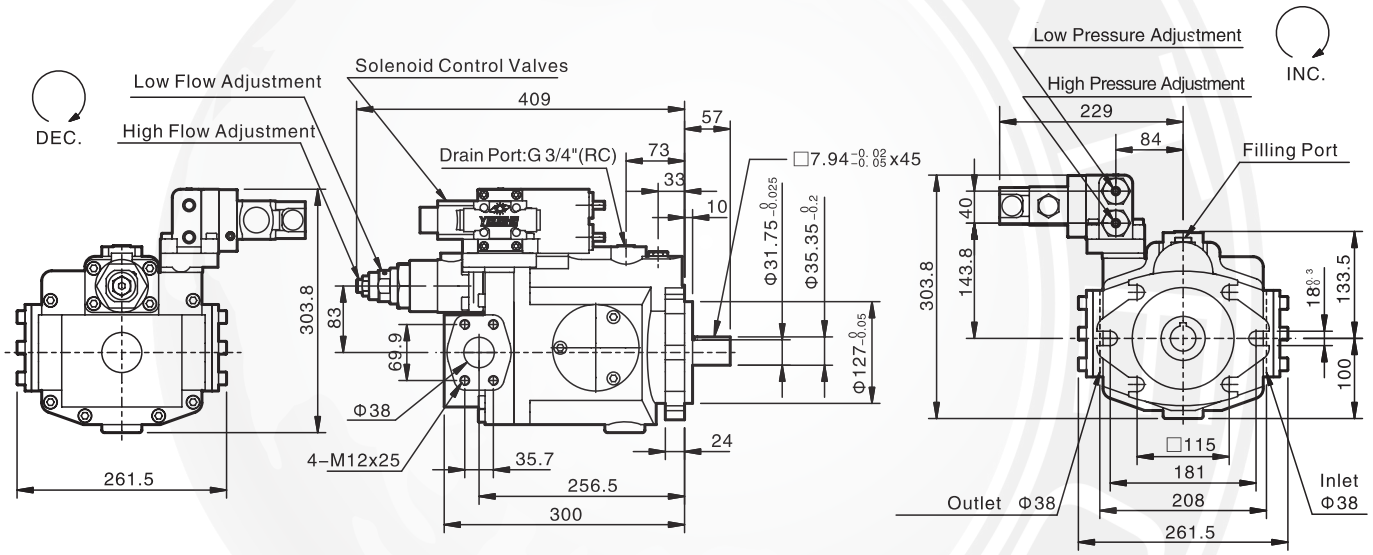


V Series Variable Displacement Piston Pump

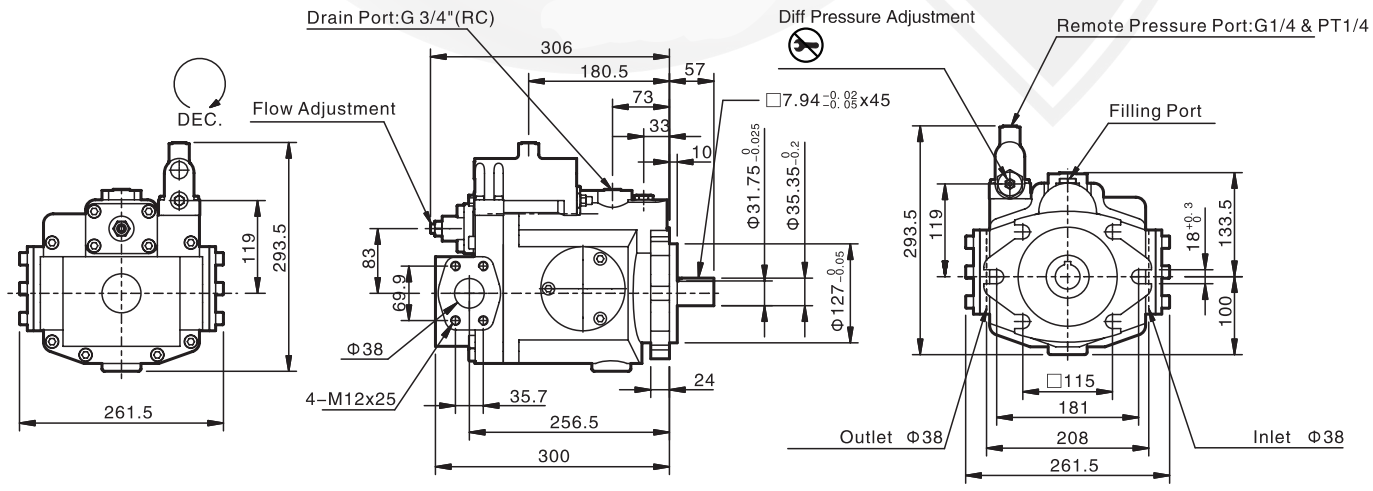
V50D, V70D Solenoid Controlled Pressure Compensating Type With Unloading Device



V50F, V70F 2 Flow-2 Pressure Control By Solenoid Operated Valve

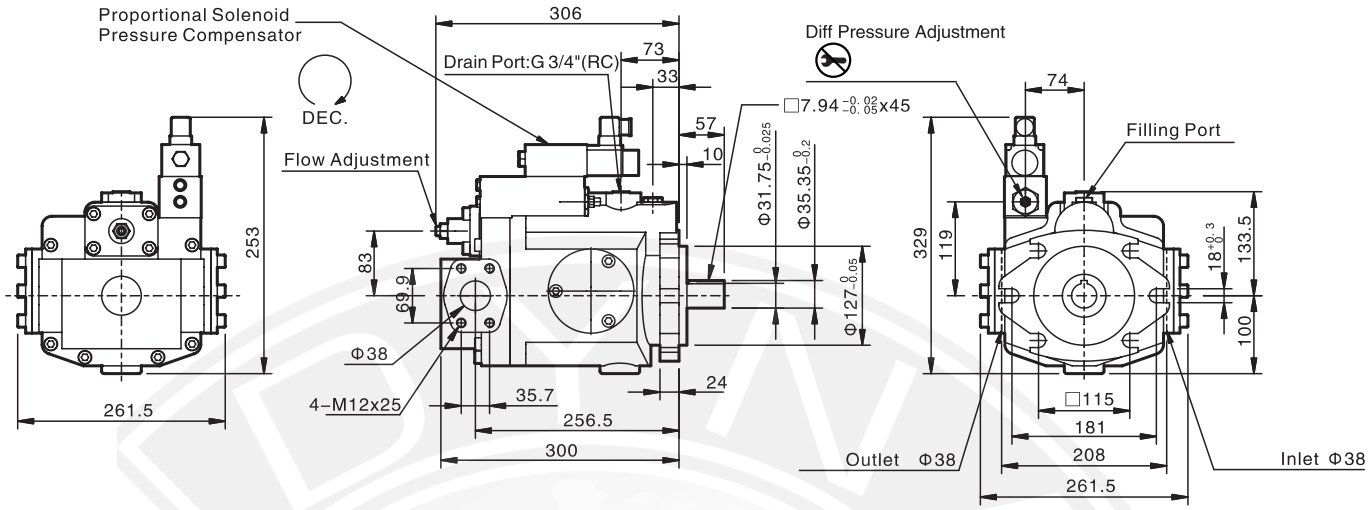


V50G, V70G Remoted Pressure Compensator Control

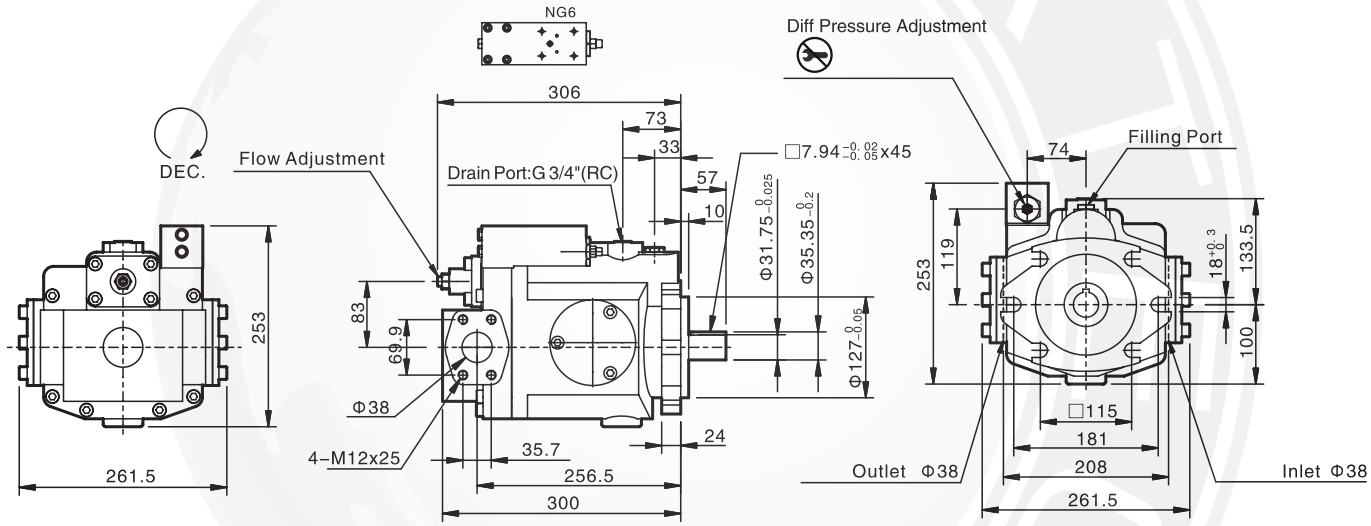


V Series Variable Displacement Piston Pump

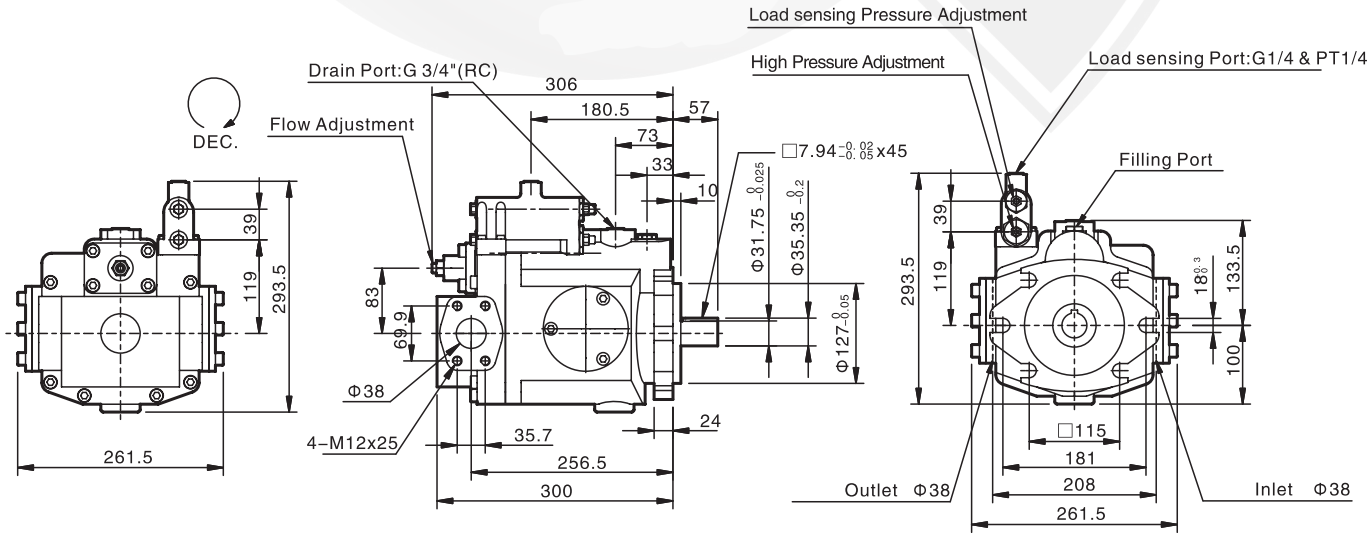
V50GJ, V70GJ Proportional Pressure With Interface



V50GM, V70GM Remote Interface (Not Include Valve)

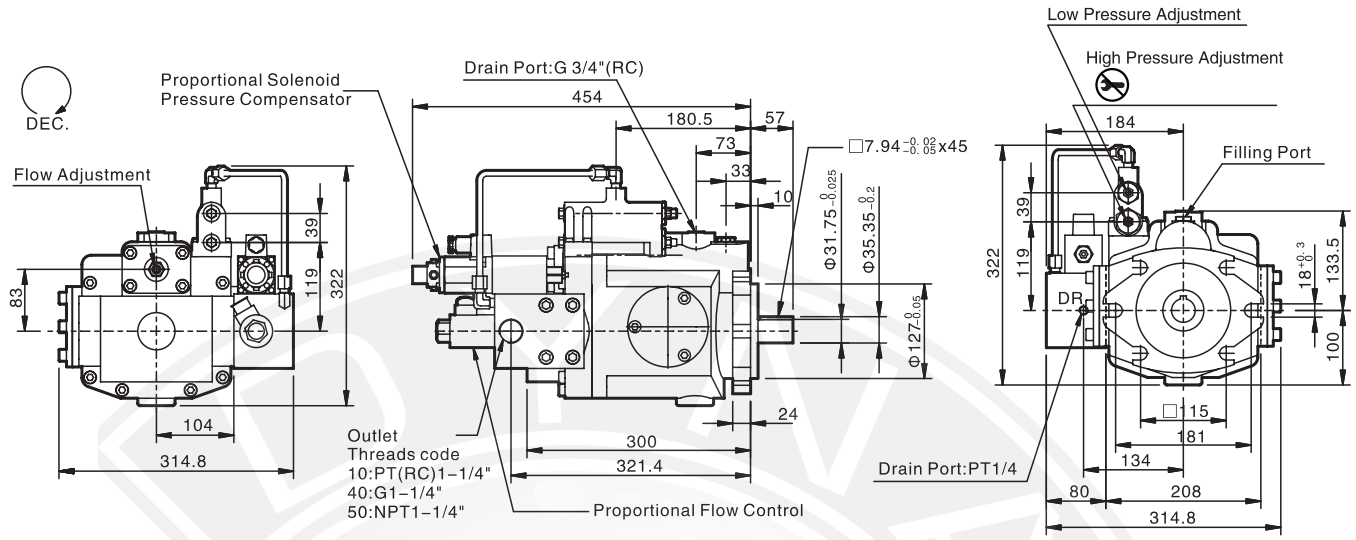


V50HL, V70HL Load-Sensing Compensator

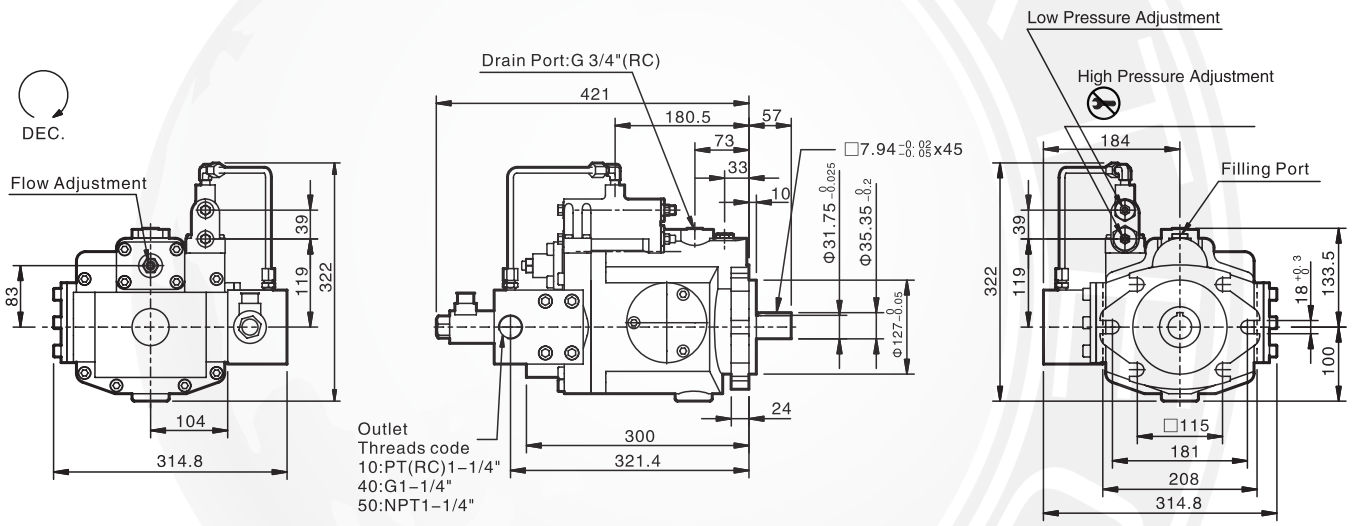


V Series Variable Displacement Piston Pump

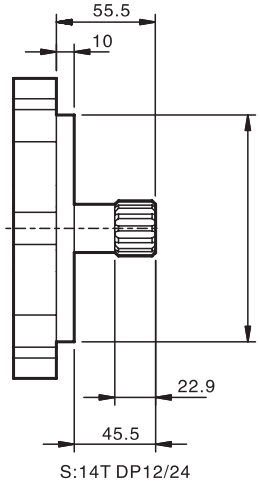
V50HK, V70HK Proportional Electro-Hydraulic Load Sensing Type



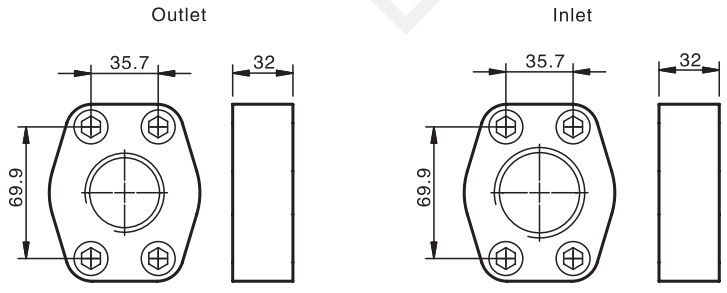
V50HQ, V70HQ Load-Sensing Proportional Flow Control



V50, V70 Splined Shaft Type



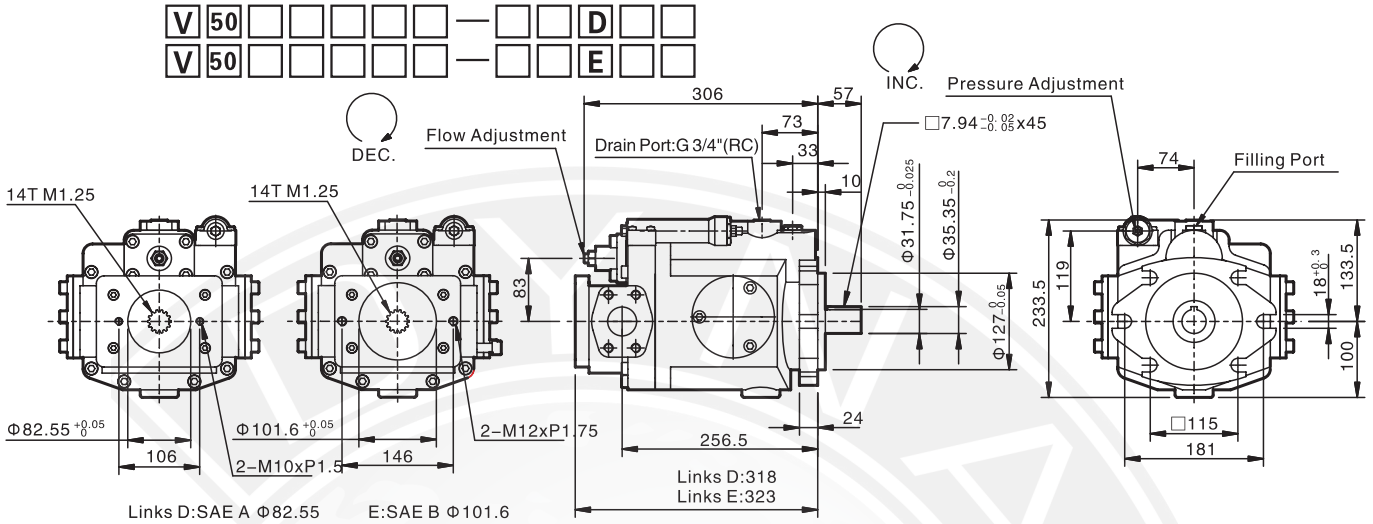
V50, V70 Hydraulic Flange



V Series Variable Displacement Piston Pump

V50, V70 Preparded For Thru Drive (SAE Ø 82.55, SAE B Ø 101.6)

V 50 □□□□□—□□D□□
V 50 □□□□□—□□E□□

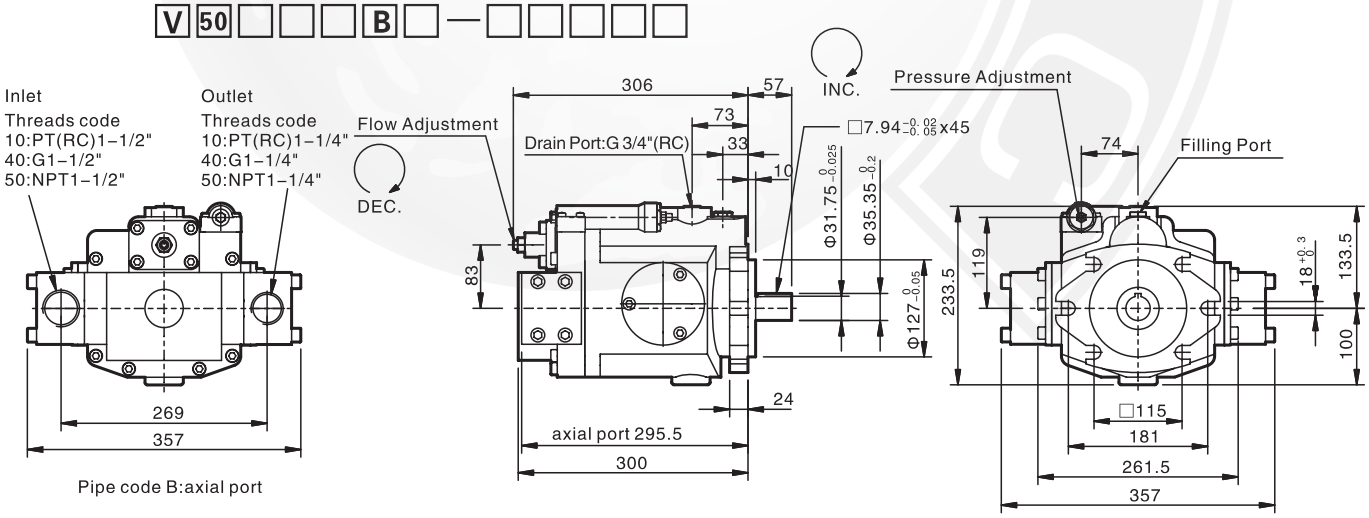


Type	A	B	C	CG	D	DG	E	EG	F	FG	G	GJ	GM	HL	HK	HQ
	○				○	○	○	○			○	○	○	○	○	○

Thru Drive Option

V50, V70 Axial Port

V 50 □□□B□—□□□□□



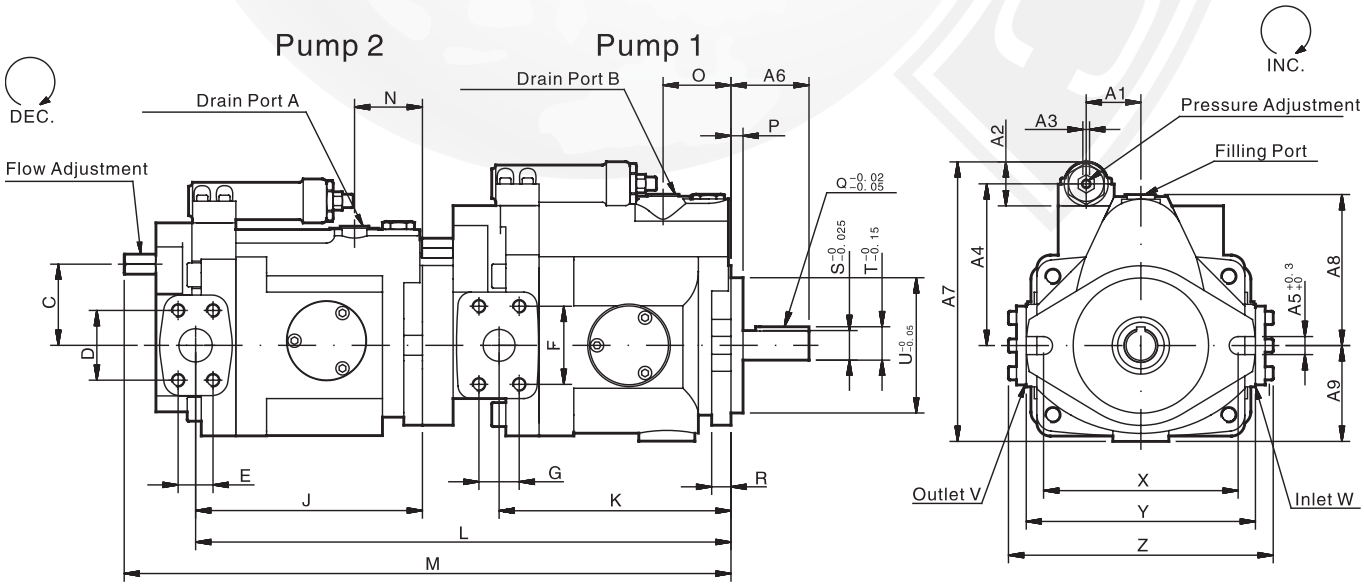
Type	A	B	C	D	F	G	GJ	GM	HL	HK	HQ
	○	○	○	○	○	○	○	○	○		

Axial Port Option

V Series Variable Displacement Piston Pump

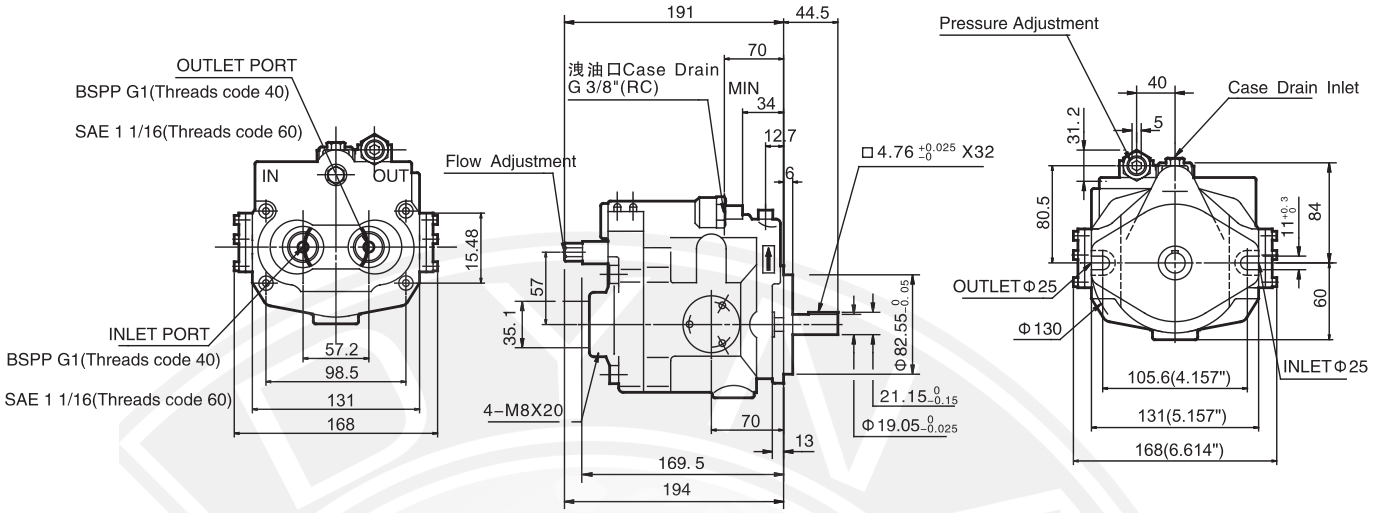
Tandem Pump (Multi-option for tandem pump)

Pump 1	V15(V18)	V23(V25)	V23(V25)	V38(V42)	V38(V42)	V38(V42)	V50(V70)	V50(V70)	V50(V70)
Pump 2	V15(V18)	V15(V18)	V23(V25)	V15(V18)	V23(V25)	V38(V42)	V15(V18)	V23(V25)	V38(V42)
A	G 3/8"	G 3/8"	G 3/8"	G 3/8"	G 3/8"	G 1/2"	G 3/8"	G 3/8"	G 1/2"
B	G 3/8"	G 3/8"	G 3/8"	G 1/2"	G 1/2"	G 1/2"	G 3/4"	G 3/4"	G 3/4"
C	57.45	57.45	61	57.45	61	73	57.45	61	73
D	35.1	35.1	52.4	35.1	52.4	58.7	35.1	52.4	58.7
E	35.1	35.1	26.2	35.1	26.2	30.2	35.1	26.2	30.2
F	35.1	52.4	52.4	58.7	58.7	58.7	69.9	69.9	69.9
G	35.1	26.2	26.2	30.2	30.2	30.2	35.7	35.7	35.7
H	M8x20	M8x20	M10x16	M8x20	M10x16	M10x16	M8x20	M10x16	M10x16
I	M8x20	M10x16	M10x16	M10x16	M10x16	M10x16	M12x25	M12x25	M12x25
J	147	147	170	147	170	179	147	170	179
K	147	170	170	179	179	179	256.5	256.5	256.5
L	332	369	402	378	401	410	464	493	502
M	382	419	455	428	454	465	515	546	555
N	48	48	51	48	51	51	48	51	51
O	48	51	51	51	51	51	73	73	73
P	6	9	9	9	9	9	10	10	10
Q	4.76x32	6.35x40	6.35x40	6.35x40	6.35x40	6.35x40	7.94x45	7.94x45	7.94x45
R	13	14	14	14.5	14.5	14.5	24	24	24
S	Φ19.05	Φ22.22	Φ22.22	Φ22.22	Φ22.22	Φ22.22	Φ31.75	Φ31.75	Φ31.75
T	21.15	25.08	25.08	25.08	25.08	25.08	35.35	35.35	35.35
U	Φ82.55	Φ101.6	Φ101.6	Φ101.6	Φ101.6	Φ101.6	Φ127	Φ127	Φ127
V	Φ25	Φ25	Φ25	Φ31	Φ31	Φ31	Φ38	Φ38	Φ38
W	Φ25	Φ25	Φ25	Φ31	Φ31	Φ31	Φ38	Φ38	Φ38
X	106	146	146	146	146	146	181	181	181
Y	131	146	146	160	160	160	208	208	208
Z	165	182	182	198.6	198.6	198.6	261.5	261.5	261.5
A1	44	39	39	39	39	39	74	74	74
A2	31.2	31.2	31.2	31.2	31.2	31.2	40	40	40
A3	5	5	5	5	5	5	8	8	8
A4	84	110	110	121	121	121	119	119	119
A5	11	13.5	13.5	13.5	13.5	13.5	18	18	18
A6	44.5	58.5	58.5	58.5	58.5	58.5	57	57	57
A7	160	193	193	210	210	210	233.5	233.5	233.5
A8	91.5	93	93	113.5	113.5	113.5	133.5	133.5	133.5
A9	60	68	68	72	72	72	100	100	100

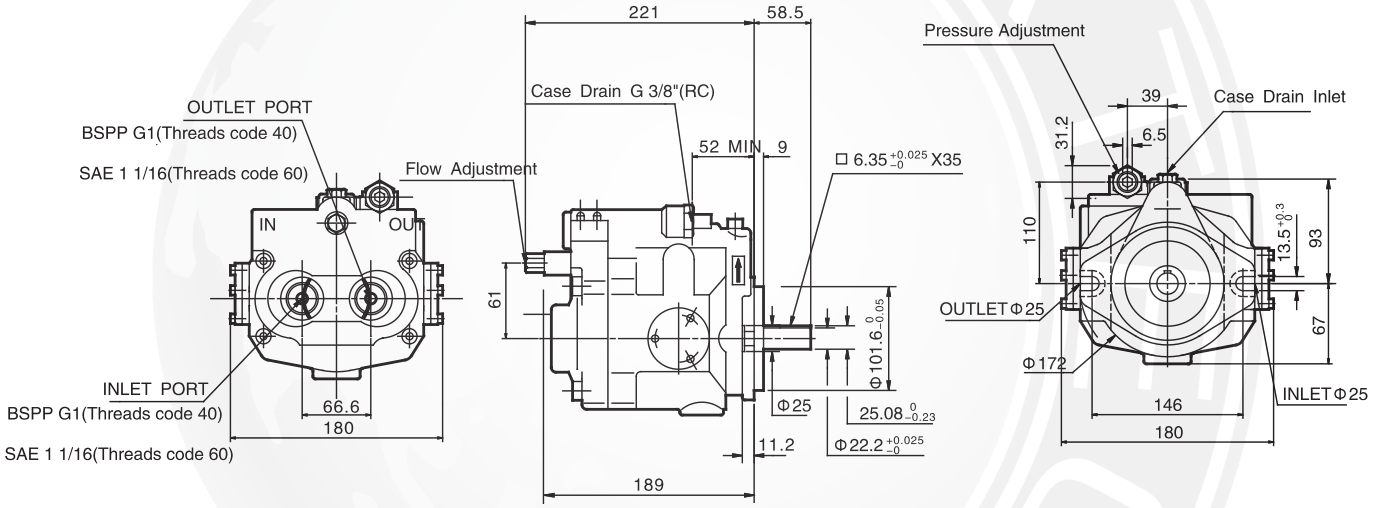


VR Series Variable Displacement Piston Pump

VR15A ※ ※ B-※ Axial Port (DAKIN TYPE)



VR23A ※ ※ B-※ Axial Port (PIPE TYPE)



VR38A ※ ※ B-※ Axial Port (PIPE TYPE)

