



P1M Series Mobile Open Circuit

Medium Pressure Axial Piston Pumps

MSG28-2712-01/P1M/US

Effective: October 2021 | Replaces: March 2021



ENGINEERING YOUR SUCCESS.

Designed for Mobile. Built to Perform.

P1M Series delivers higher speeds and efficiency that increases machine productivity, reduces costs, and extends pump life in a robust, compact envelope.

- 1

Patented inlet design increases speed ratings and fill capabilities while reducing erosion, cavitation, & pressure ripples
- 2

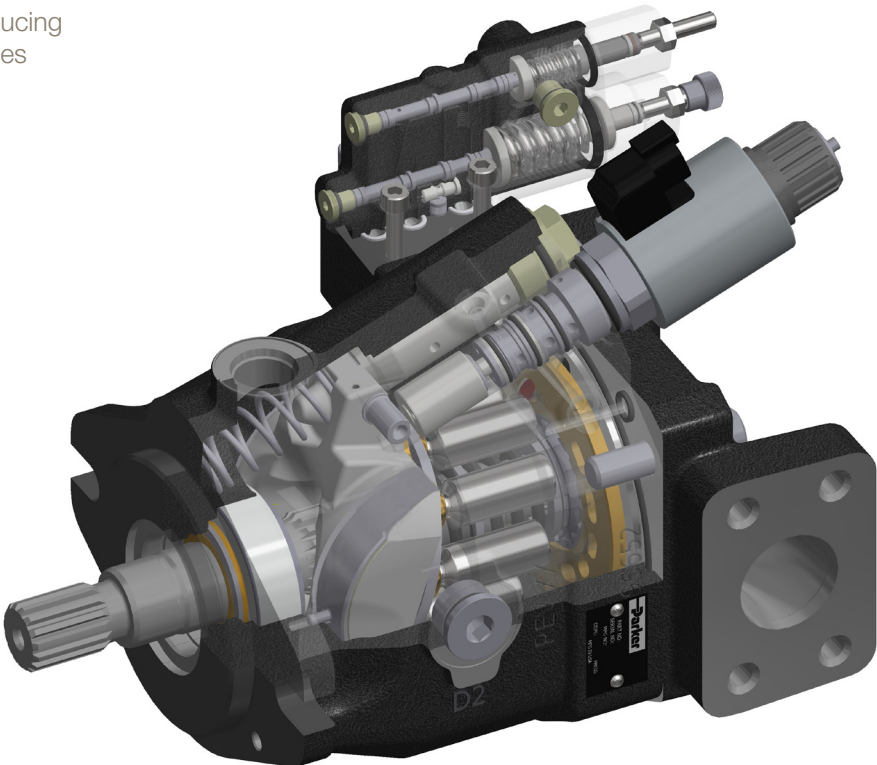
Compact package allows fit into tighter spaces
- 3

Best-in-class power density due to higher pressure ratings, speeds, and efficiency
- 4

Fast response EDC for increased productivity
- 5

Nine piston design reduces pressure ripples
- 6

Optional dual shaft seals for wet PTO mounting for all sizes



Technical Specifications

	Units	28cc	45cc	54cc	65cc	85cc
Displacement	cc/rev (in3/rev)	28 (1.71)	45 (2.75)	54 (3.29)	65 (3.97)	85 (5.19)
Maximum Continuous Pressure	bar (psi)	280 (4060)	280 (4060)	250 (3625)	280 (4060)	280 (4060)
Maximum Speed (at 1 bar abs inlet pressure)	rpm	3300	3000	2900	2800	2700
Weight (non-thru drive)	kg (lbs)	16.8 (37)	20.5 (45)	21.3 (47)	28.2 (62)	30.1 (66)
Weight (thru drive)	kg (lbs)	21.3 (47)	25.9 (57)	26.8 (59)	32.3 (71)	35.2 (77)
Maximum Case Pressure	bar (psi)	2.0 (29) or 0.5 (7.3) above inlet				
Fluid Temperature Range	C (F)	-40 to 95 (-40 to 203)				
Fluid Viscosity Continuous Range	cSt	7 to 160				
Maximum Fluid Viscosity	cSt	5000 (cold start only)				
Minimum Intermittent Fluid Viscosity	cSt	6 (less than 1% of duty cycle)				



Model Code

P1M

Pump Family

Displacement

Design Series

Control Pad Options

Control Bore Options

Additional Control Information

Sensor

Rotation

Mounting Flange

Port Standard

Port Block

Port Type

Shaft

Shaft Seal

Paint

Displacement	
028	28cc/rev
045	45cc/rev
054	54cc/rev
065	65cc/rev
073	73cc/rev (in development)
085	85cc/rev
105	105cc/rev (in development)

Design Series	
A	Design Series A (45 & 54cc)
B	Design Series B (28, 65, 85, 73, & 105cc)

Control Options - Control Pad	
00	None
PC	Pressure Compensator
LS	Load Sense with Pressure Compensator
LB	Load Sense with Bleed Orifice
RC	Remote Compensator
EP	Electronic Pressure

Control Options - Control Bore	
00	None
ED	Electronic Displacement
EU	Electronic Unload (45 & 54cc)
VS	Maximum Volume Stop

Additional Control Information	
00	None
1H	12 VDC; Max Default
1L*	12 VDC; Min Default
2H	24 VDC; Max Default
2L*	24 VDC; Min Default
##	50-99% Max Displacement (vol stop only)

* Not available with EP or EU control

Sensor	
0	None
D	Displacement Sensor

Rotation	
R	Clockwise from Shaft End
L	Counterclockwise from Shaft End

Mounting Flange	
B2	SAE-B 2-bolt (28, 45, 54, 65, & 73cc)
C6	SAE-C 2/4-bolt (65, 73, 85, & 105cc)

Port Standard	
S	SAE Work & Aux Ports
M	Metric Work & Aux Ports

Port Block	
S	Side Ports, no thru drive
E	End Ports, no thru drive
A	SAE-A 2-bolt Thru Drive; 9T coupling
H	SAE-A 2-bolt Thru Drive; 11T coupling
B	SAE-B 2-bolt Thru Drive; 13T coupling
Q	SAE-B 2-bolt Thru Drive; 15T coupling
C	SAE-C 2/4-bolt Thru Drive; 14T coupling
N	SAE-C 2/4-bolt Thru Drive; 17T coupling
T	Thru Drive with Cover, no coupling

Port Type	
F	Flanged
T	Threaded ¹

¹ Not available with 85, 105, or 45, 54, 65, & 73 thru drive

Shaft	
B	SAE-B, 13T (28, 45, 54, 65, & 73cc)
Q	SAE-BB, 15T (28, 45, 54, 65 & 73cc)
J	SAE-BB, 15T, no undercut (45 & 54cc)
C	SAE-C, 14T (65, 73, 85, & 105cc)
N	SAE-CC, 17T (85 & 105cc)

Shaft Seal	
S	Single FKM Shaft Seal
D	Dual FKM Shaft Seal

Paint	
0	No Paint
P	Paint Black

Thru Drive Options Per Displacement

Code	28cc	45cc	54cc	65cc	73cc	85cc	105cc
A	✓	✓	✓	✓	✓	✓	✓
H	✓	✓	✓	✓	✓	✓	✓
B	✓	✓	✓	✓	✓	✓	✓
Q		✓	✓	✓	✓	✓	✓
C				✓	✓	✓	✓
N						✓	✓



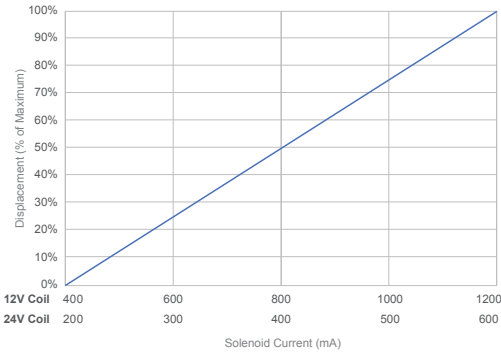
Controls

Electronic Displacement “ED” and Pressure “EP” Control

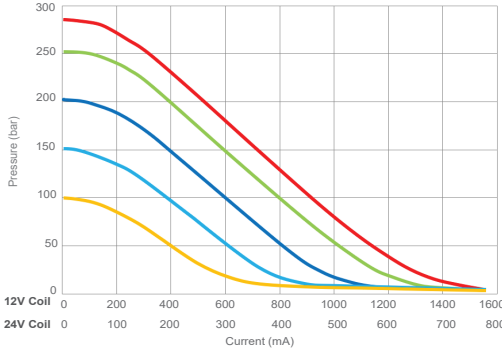
ED & EP Control		
Technical Data	12VDC	24VDC
Resistance (@ 20 C)	5.5 Ohm	22 Ohm
Max Current	2.2 A	1.1 A
PWM Signal*	100-200 Hz	
Recommended min Dither Amplitude	350 mA	175 mA
Connector	Deutsch DT04-2P	

* With ED control, good results found with superimposed 35Hz dither

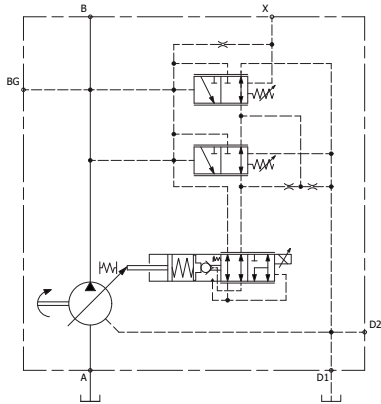
Electrical Displacement Control
Nominal Characteristics



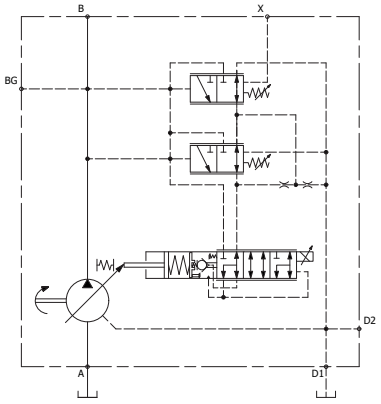
Electronic Pressure Control (max default)
Nominal Characteristics



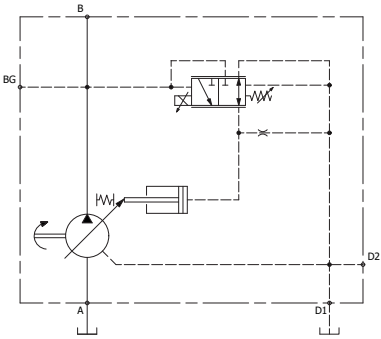
Electronic Displacement (min default)
with Remote Compensator



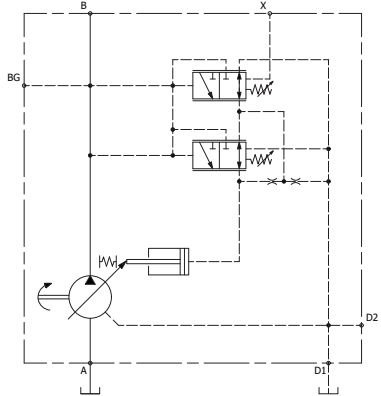
Electronic Displacement (max default) with
Load Sense and Pressure Compensator



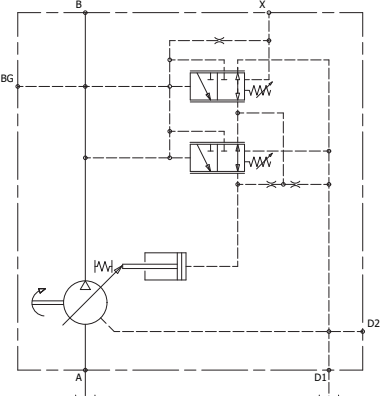
Electronic Pressure Control
(max default)



Load Sense with
Pressure Compensator

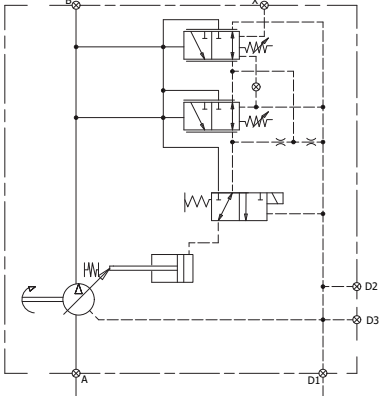


Remote Compensator



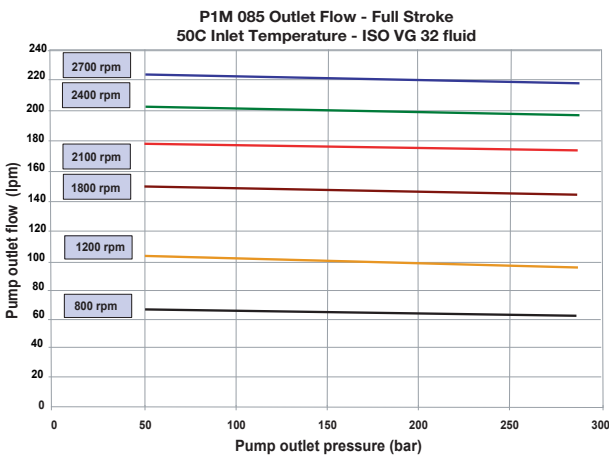
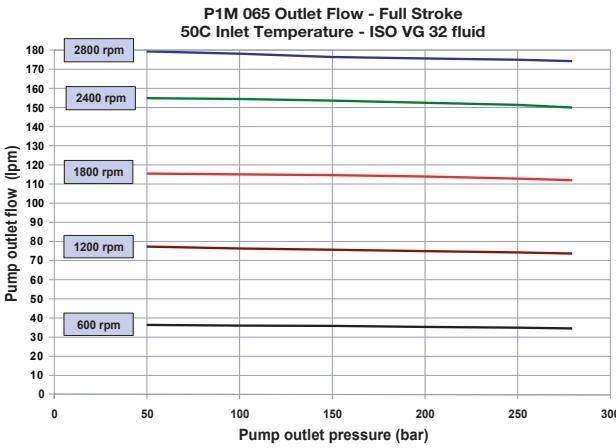
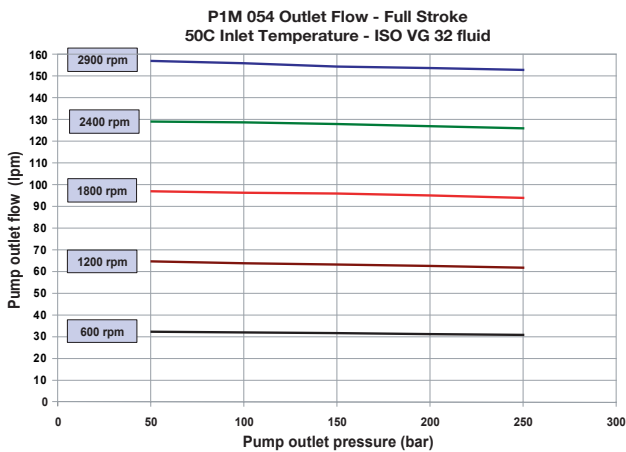
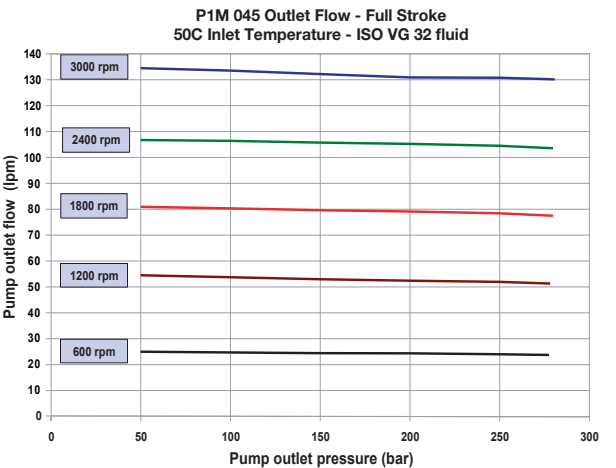
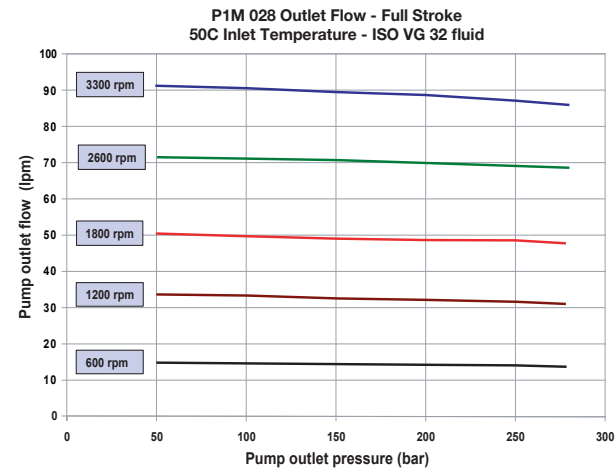
Note: P1M-028 does not have BG port.

Electronic Unload with Load Sense
and Pressure Compensator



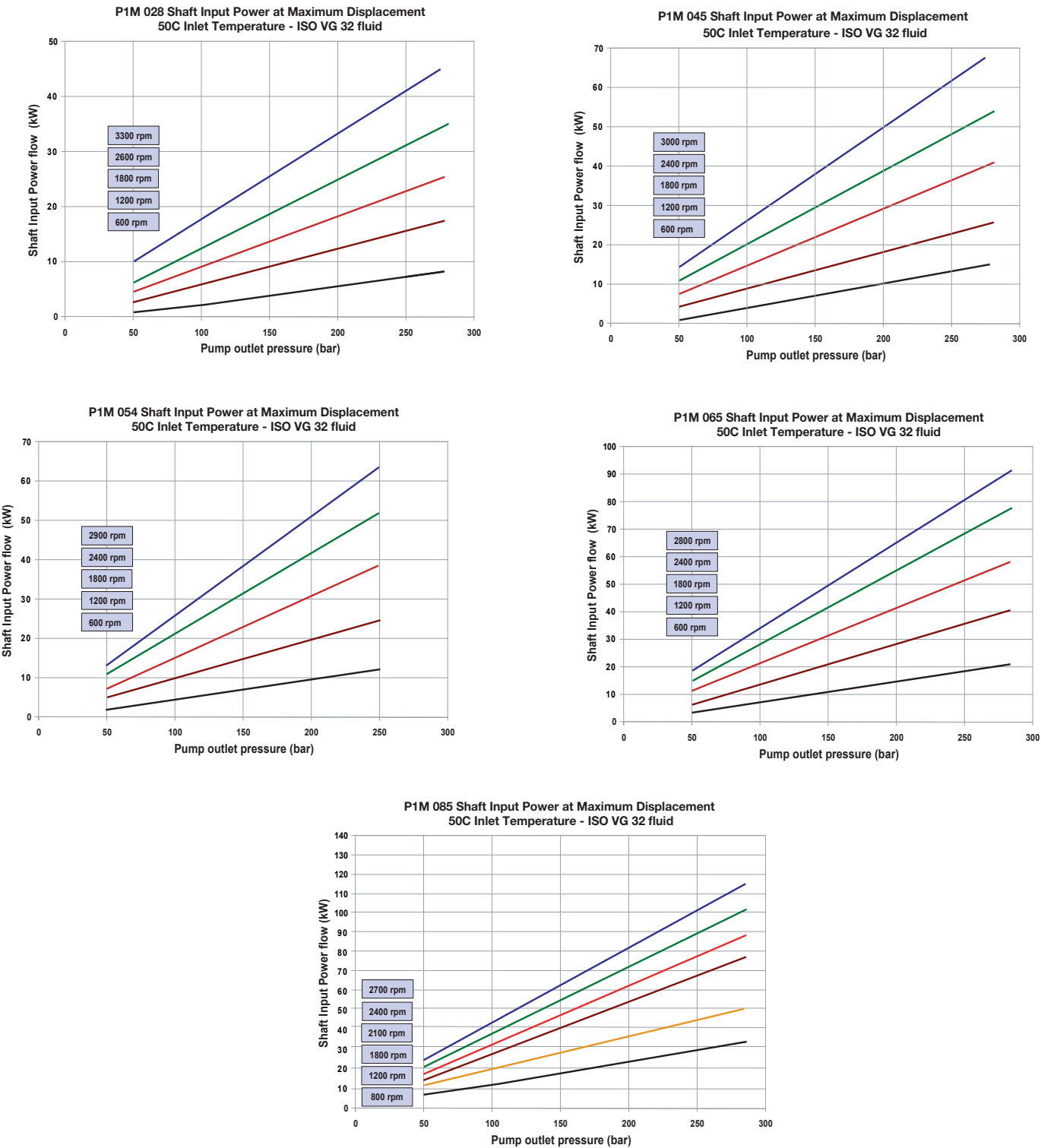
Performance Charts

Typical Pump Outlet Flow



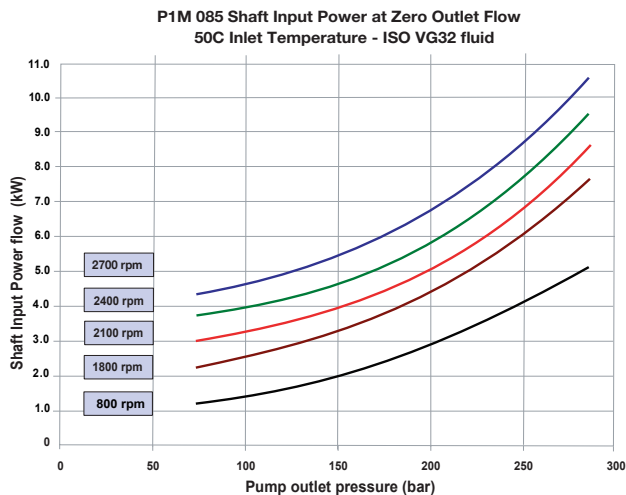
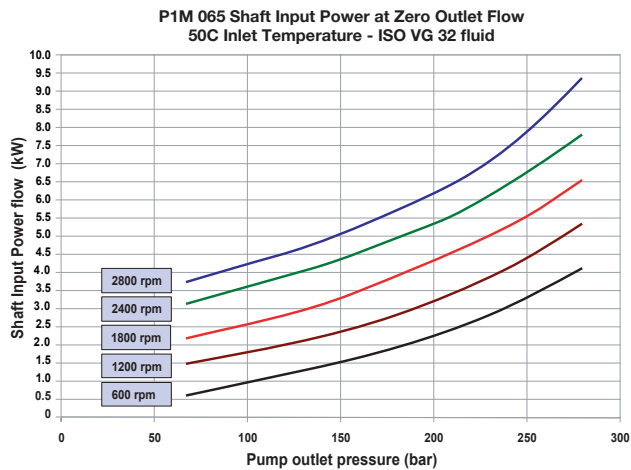
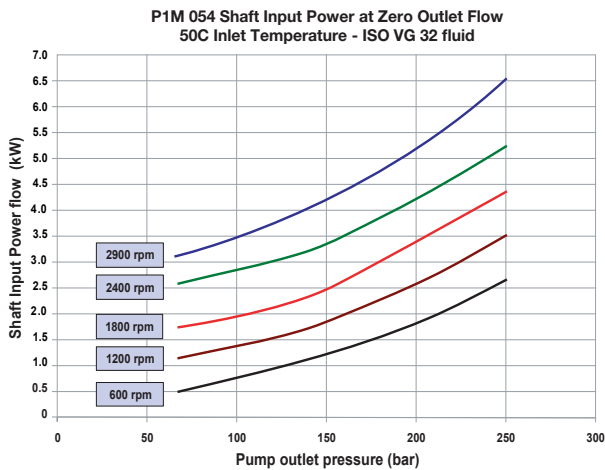
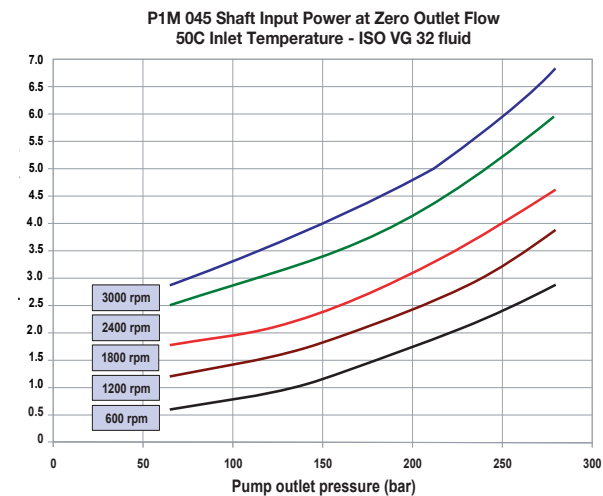
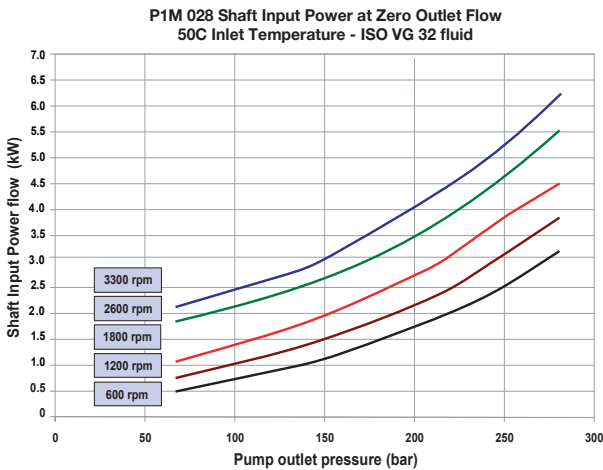
Performance Charts (Continued)

Typical Shaft Input Power at Full Flow



Performance Charts (Continued)

Typical Shaft Input Power at Zero Flow



P1M Dimensions

28cc

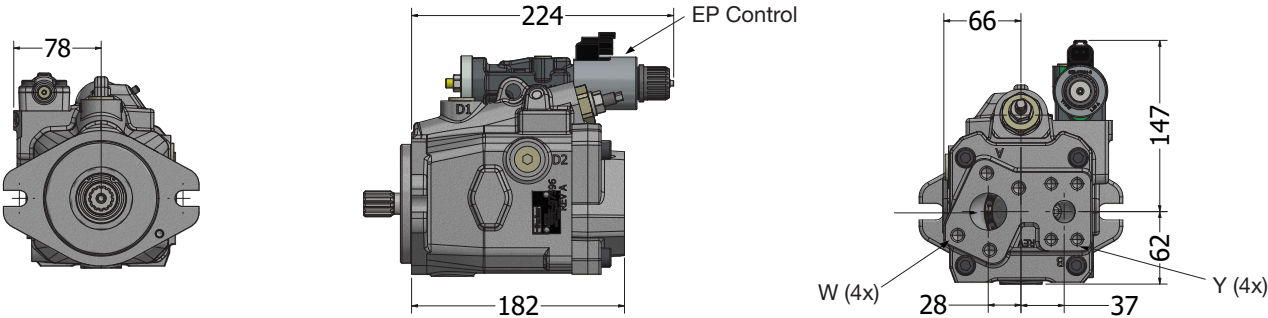
P1M-028 Port Sizes				
Ports	SAE Flanged	SAE Threaded	Metric Flanged	Metric Threaded
"A" Inlet	1-1/4" Code 61	SAE-20	DN32	M42x2
W Threads	7/16-14 UNC-2B	-	M10x1.5-6H	-
"B" Outlet	3/4" Code 61	SAE-12	DN19	M27x2
Y Threads	3/8-16 UNC-2B	-	M10x1.5-6H	-
X	SAE-4		M12x1.5	
D1, D2, D3	SAE-8		M22x1.5	

Note A: SAE flanged ports conform to SAE J518
Note B: SAE o-ring port conforms to SAE J514
Note C: Metric flanged ports conform to ISO 6162
Note D: Metric o-ring boss port conforms to ISO 6149-1

Note: For opposite rotation, inlet and outlet location are swapped.

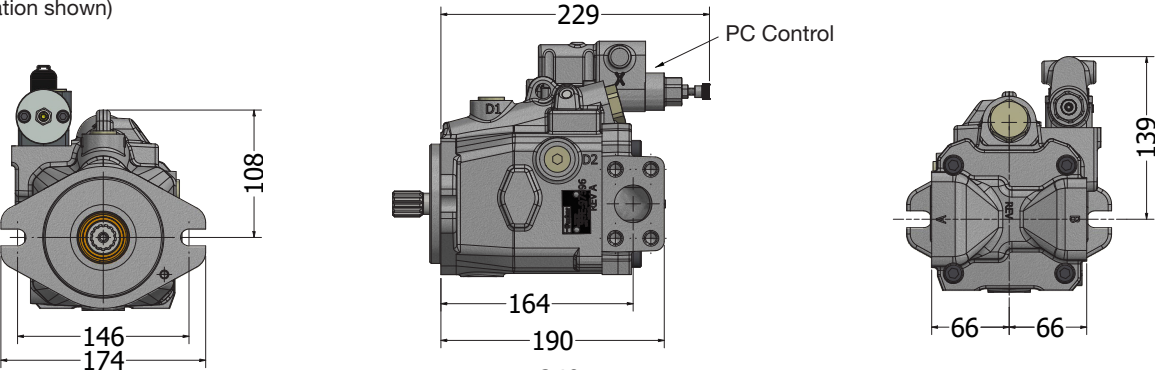
End Ports

(CW rotation shown)



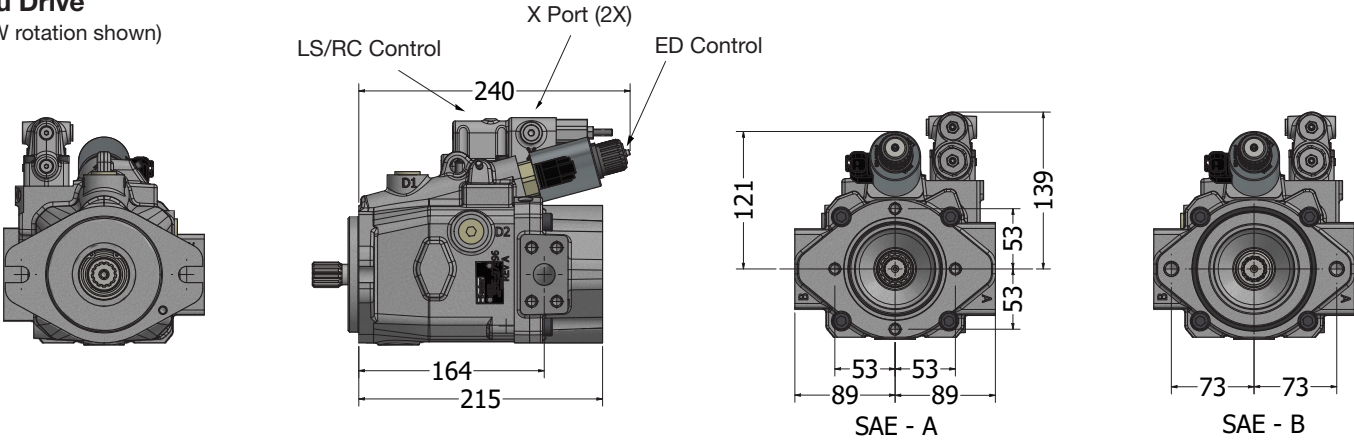
Side Ports

(CW rotation shown)



Thru Drive

(CCW rotation shown)



P1M Dimensions

45 & 54cc

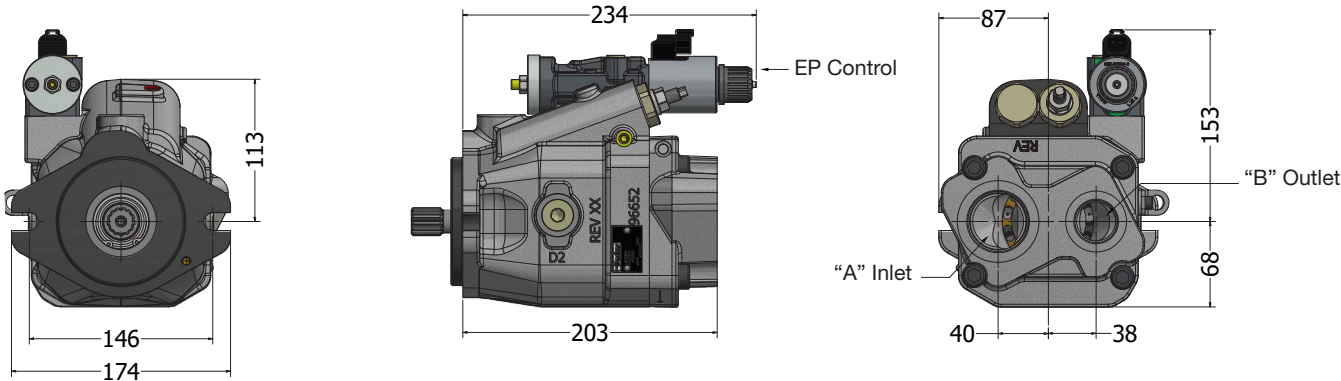
P1M-045/054 Port Sizes				
Ports	SAE Flanged	SAE Threaded	Metric Flanged	Metric Threaded
"A" Inlet	1-1/2" Code 61	SAE-24	DN38	M48x2
W Threads	1/2-13 UNC-2B	-	M12x1.75-6H	-
"B" Outlet	1" Code 61	SAE-16	DN25	M33x2
Y Threads	3/8-16 UNC-28	-	M10x1.5-6H	-
X	SAE-4		M12x1.5	
D1, D2, D3	SAE-10		M22x1.5	

Note: For opposite rotation, inlet and outlet location are swapped.

Note A: SAE flanged ports conform to SAE J518
Note B: SAE o-ring port conforms to SAE 1926
Note C: Metric flanged ports conform to ISO 6162
Note D: Metric o-ring boss port conforms to ISO 6149-1

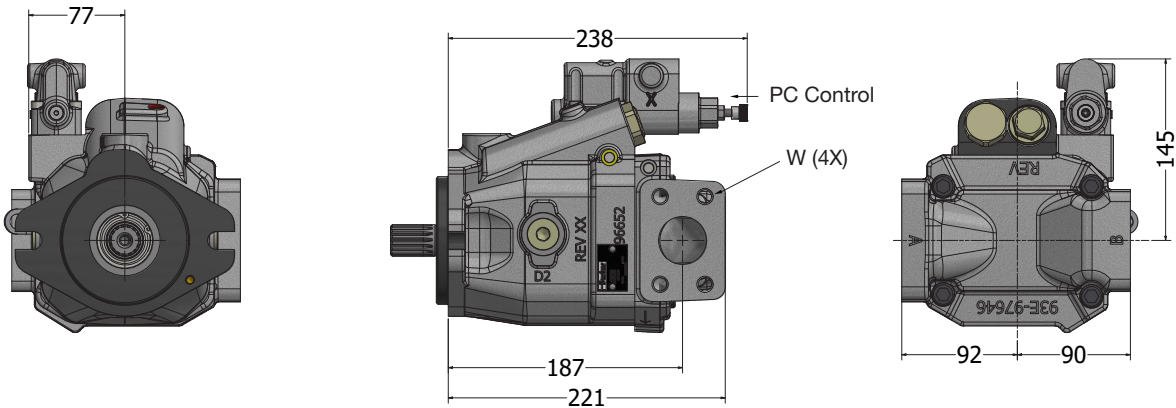
End Ports

(CW rotation shown)



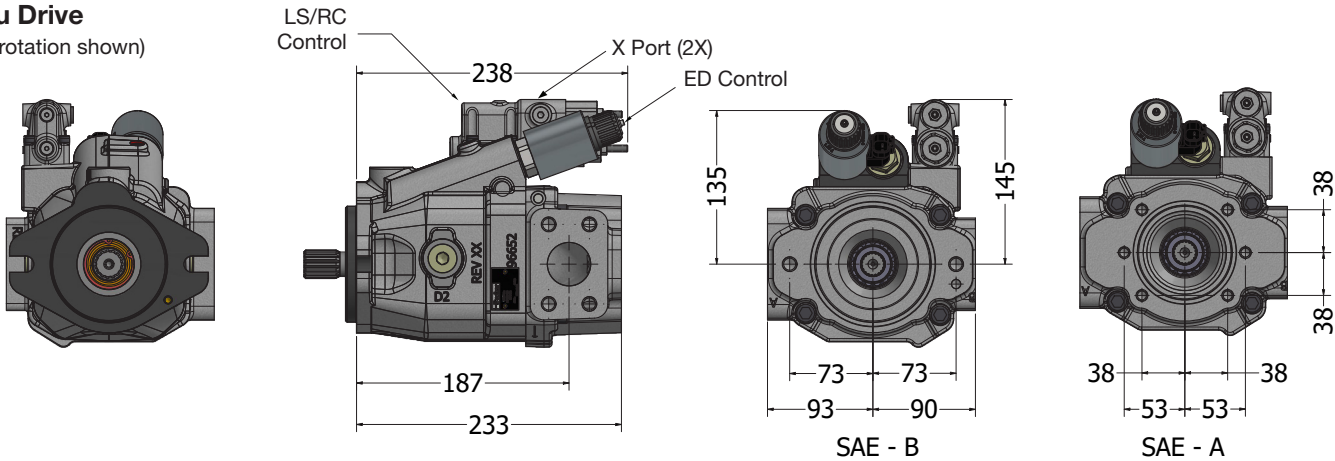
Side Ports

(CW rotation shown)



Thru Drive

(CW rotation shown)



P1M Dimensions

65 & 73cc

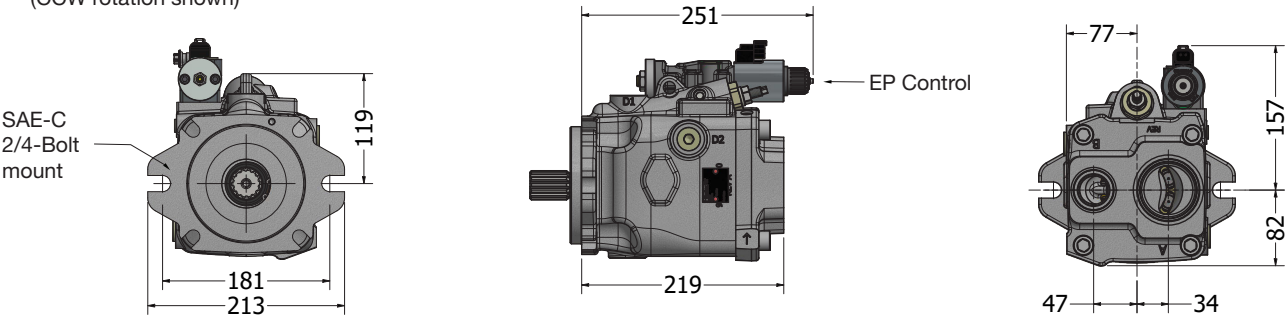
P1M-065/073 Port Sizes				
Ports	SAE Flanged	SAE Threaded	Metric Flanged	Metric Threaded
"A" Inlet	2" Code 61	SAE -32	DN51	M52x4
W Threads	1/2-13 UNC-2B	-	M12x1.75-6H	-
"B" Outlet	1" Code 61	SAE -16	DN25	M33x2
Y Threads	3/8-16 UNC-28	-	M10x1.5-6H	-
BG, X	SAE-4		M12x1.5	
D1, D2, D3	SAE-10		M22x1.5	

Note A: SAE flanged ports conform to SAE J518
Note B: SAE o-ring port conforms to SAE 1926
Note C: Metric flanged ports conform to ISO 6162
Note D: Metric o-ring boss port conforms to ISO 6149-1
Note E: BSPP port conforms to ISO 228-1

Note: For opposite rotation, inlet and outlet location are swapped.

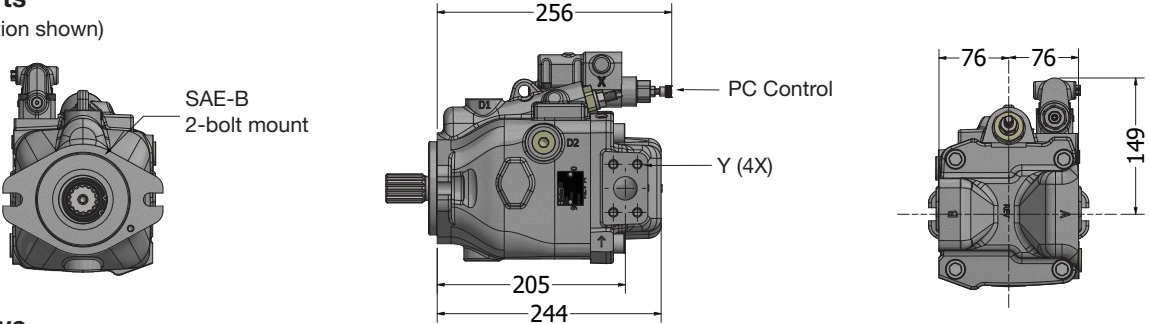
End Ports

(CCW rotation shown)



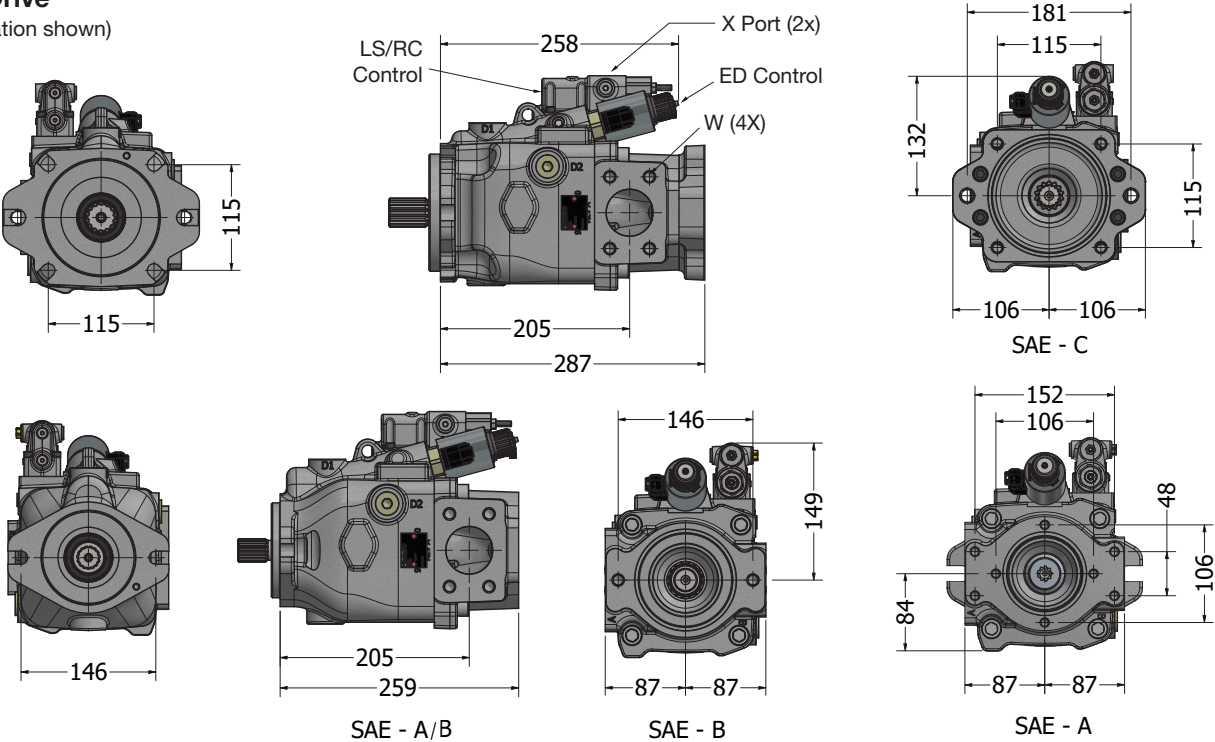
Side Ports

(CCW rotation shown)



Thru Drive

(CW rotation shown)



P1M Dimensions

85cc

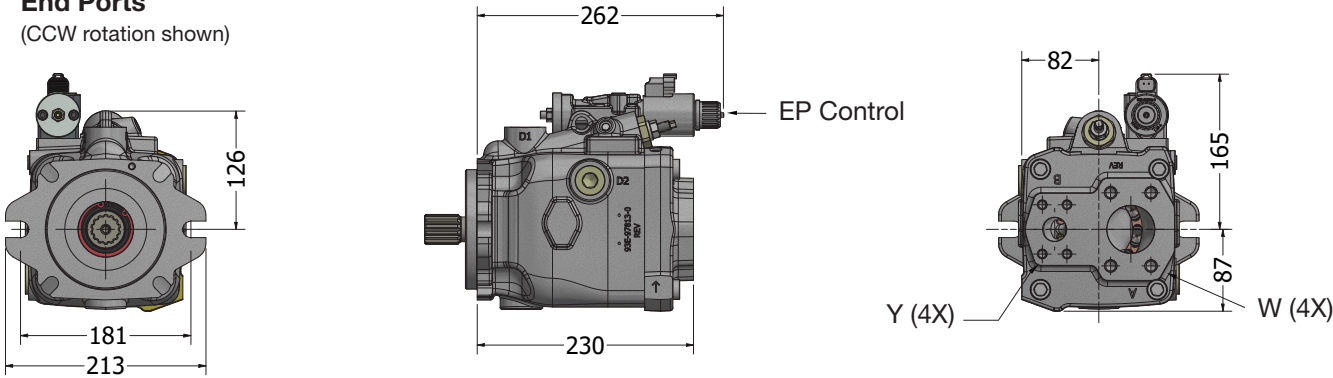
P1M-085 Port Sizes		
Ports	SAE Flanged	Metric Flanged
"A" Inlet	2" Code 61	DN51
W Threads	1/2-13 UNC-2B	M12x1.75-6H
"B" Outlet	1" Code 61	DN25
Y Threads	3/8-16 UNC-28	M10x1.5-6H
BG, X	SAE-4	M12x1.5
D1, D2, D3	SAE-12	M27x2

Note A: SAE flanged ports conform to SAE J518
Note B: SAE o-ring port conforms to SAE 1926
Note C: Metric flanged ports conform to ISO 6162
Note D: Metric o-ring boss port conforms to ISO 6149-1
Note E: BSPP port conforms to ISO 228-1

Note: For opposite rotation, inlet and outlet location are swapped.

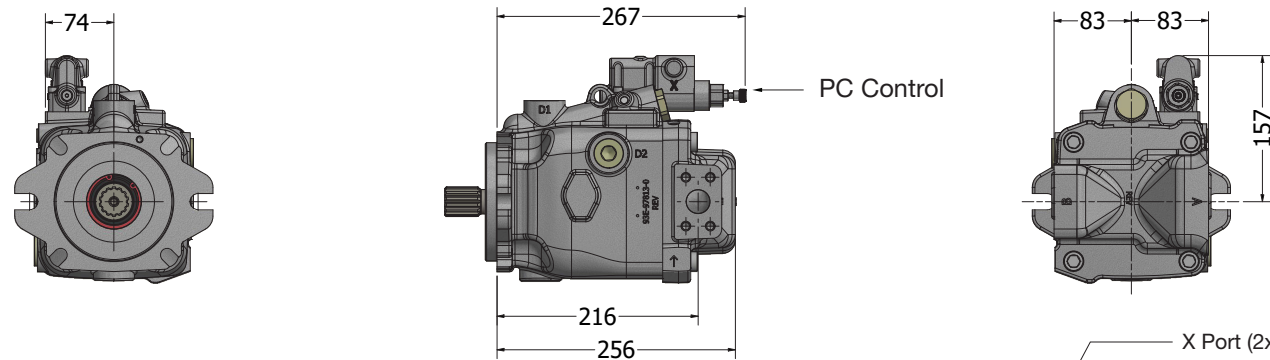
End Ports

(CCW rotation shown)



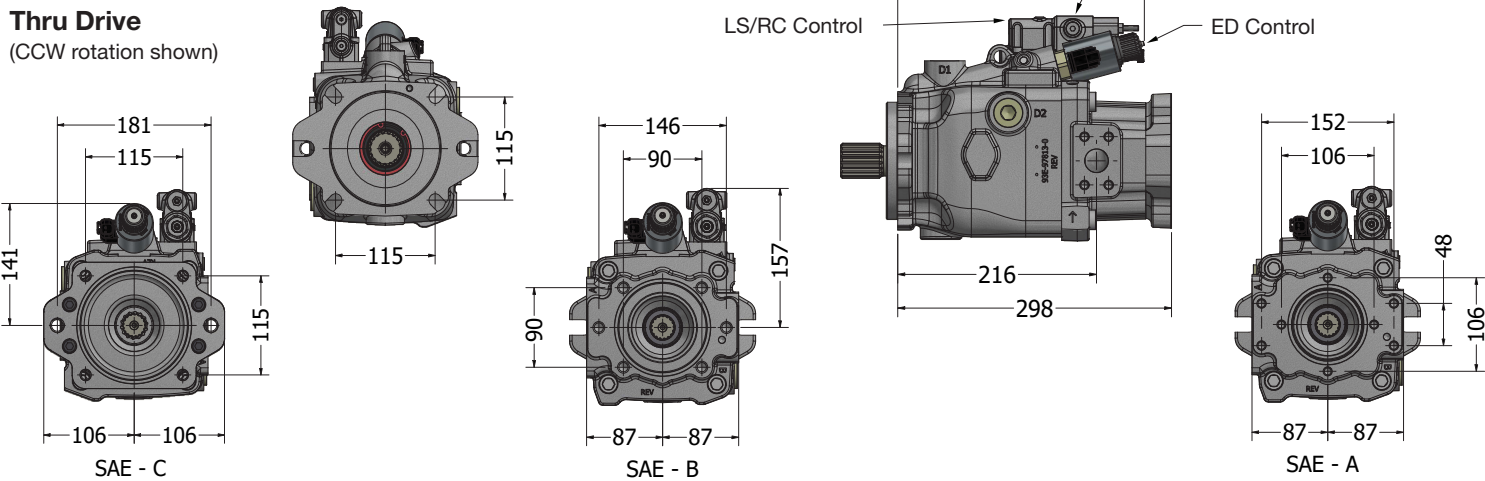
Side Ports

(CCW rotation shown)



Thru Drive

(CCW rotation shown)



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