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climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding



Hydraulic Pump Division

Product Range - HY28-2673-01/HPD/US



ENGINEERING YOUR SUCCESS.



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(I) = Industrial (M) = Mobile (B) = both Industrial & Mobile



Parker Hydraulic Pump Division:

Continually Moving You Forward



The Hydraulic Pump Division (HPD) of Parker Hannifin Corporation is today's technology leader in the application, engineering and manufacture of piston and vane design hydraulic pumps and motors.

More than a superior-quality product supplier, Parker HPD is focused on performance that improves its customer's productivity and profitability. As a result, you're assured of highly reliable, durable designs that exceed requirements, as well as our leading technical capabilities, 24/7 accessibility and responsiveness, dependable on-time delivery and exceptional system support.

For applications ranging from medium-pressure to the most demanding on earth, Parker HPD provides product and system solutions to the world's mobile, industrial, mining and oil/gas markets. Our HPD centers are strategically located in Marysville, Ohio and Otsego, Michigan, where the industry's top teams design, engineer and manufacture HPD's lines as well as innovative solutions. Parker Hannifin, the world's largest motion and control company, supports the division's products with field sales, technical support, and distribution locations around the globe.

With leadership commitment, Parker HPD continually responds to customer and market requirements for greater speed, improved performance, more precise control, less noise and more flexibility. Many such results are evident in the following descriptions of Parker HPD's most in-demand products and innovations. For the performance advantages your systems need now, and in the changing environment ahead, look to the name you trust. The one in constant motion for your success: Parker's Hydraulic Pump Division.





The Powerful Advantages of Parker HPD

- Technology Leadership for engineered solutions that exceed expectations
- Complete Product Lines
- Pumps – open and closed circuit, axial piston, bent axis and vane
- Pressures – medium, high, extreme
- Motors – fixed and variable; wide speed capability
- Power Units
- Custom Systems
- Added-Value Capabilities
- New-Product Development
- Customized Solutions
- Industry-Leading Lead Times
- 24/7 Access and Response
- Applications Team
- Industry-Leading Technical Support





Piston Pumps

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ENGINEERING YOUR SUCCESS.

P1/PD Medium Pressure Piston Pumps



P1



PD

- Variable displacement, axial piston pump for open-circuit applications
- Medium pressure, continuous operation at pressures up to 4060 PSI (280 BAR)
- Compact, quiet and efficient control
- Wide temperature range suitable for mobile applications

P1 Mobile Pump Performance Data

Model Series	Displacement in ³ /rev (cc/rev)	Max. Outlet Pressure PSI (BAR)	Rated Drive Speed RPM	Flow GPM (LPM)	Input Horsepower HP (KW)
P1018	1.10 (18)	4000 (280)	3200	15 (56.8)	44 (32.8)
P1028	1.71 (28)	4000 (280)	3200	24 (90.8)	70 (52.2)
P1045	2.75 (45)	4000 (280)	2600	31 (117.3)	90 (67.1)
P1060	3.66 (60)	4000 (280)	2500	37 (140.1)	117 (87.2)
P1075	4.58 (75)	4000 (280)	2300	42 (159.0)	127 (94.7)
P1100	6.10 (100)	4000 (280)	2100	54 (204.4)	155 (115.6)
P1140	8.54 (140)	4000 (280)	2000	71 (268.8)	206 (153.6)

Markets

Applications

Forestry	Feller Bunchers, Knuckle Boom Loader, Skidder, Forwarder, Cranes
Oil & Gas	Nitrogen Pumps, Cementers, Coil Tubing
Construction	ADTs, Fan Drives
Mining	Drill Rigs, Top Drives, Loaders, Dump Trucks, Tunneling Equipment
Power Gen	Lube Oil Skids
Recycling	Shredders, Balers, Compactors, Vacuum Truck Systems, Refuse Trucks - ASL, Rear Loaders
Military	Fan Drives
Utility	Cranes, Digger Derricks, Man Lifts, Cable Placers, Fan Drives, Horizontal Directional Drills

PD Industrial Pump Performance Data

Model Series	Displacement in ³ /rev (cc/rev)	Max. Outlet Pressure PSI (BAR)	Rated Drive Speed RPM	Flow GPM (LPM)	Input Horsepower HP (KW)
PD018	1.10 (18)	4000 (280)	1800	8 (30.3)	23 (17.2)
PD028	1.71 (28)	4000 (280)	1800	13 (49.2)	33 (24.6)
PD045	2.75 (45)	4000 (280)	1800	21 (79.5)	53 (39.5)
PD060	3.66 (60)	4000 (280)	1800	27 (102.2)	79 (58.9)
PD075	4.58 (75)	4000 (280)	1800	34 (128.7)	100 (74.6)
PD100	6.10 (100)	4000 (280)	1800	46 (174.1)	133 (99.2)
PD140	8.54 (140)	4000 (280)	1800	63 (238.5)	185 (138.0)

Markets

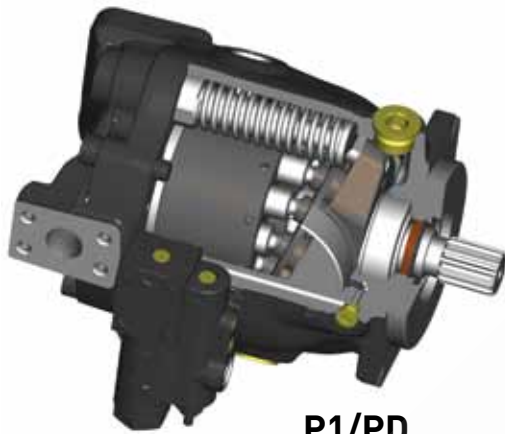
Applications

Industrial	Power Units, Industrial Molding, Press
Oil & Gas	Oil Lift Pumps
Power Gen	Turbine Start
Material Handling	Conveyor Drives



Piston Pumps (Mobile or Industrial)

P1/PD Medium Pressure Mobile Piston Pumps

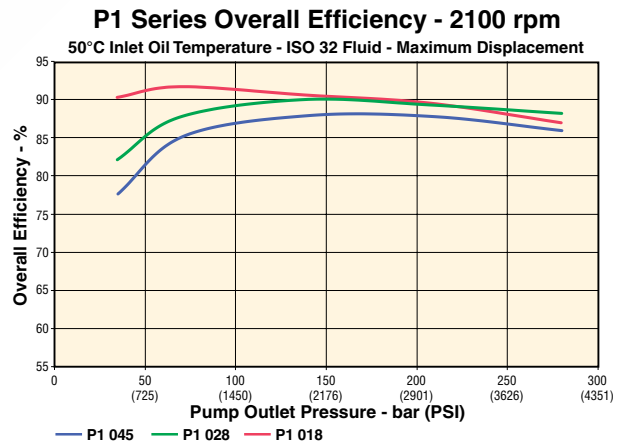
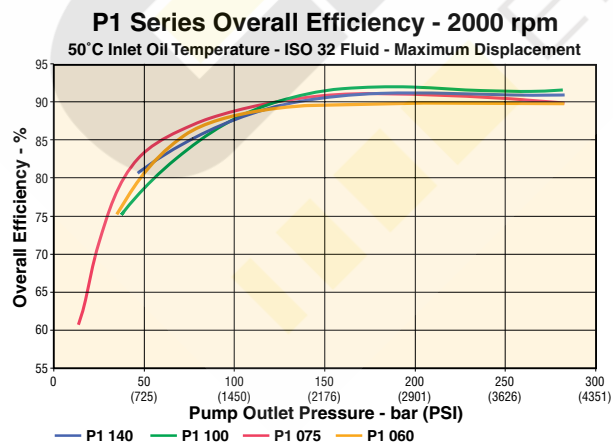
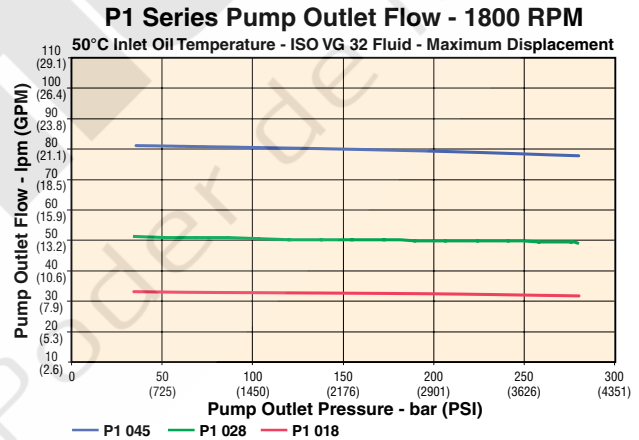
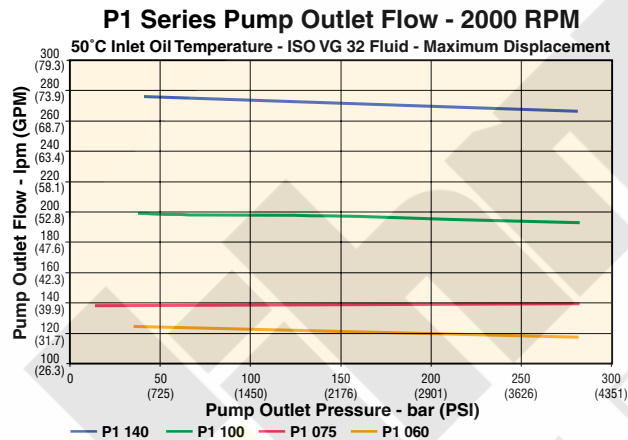
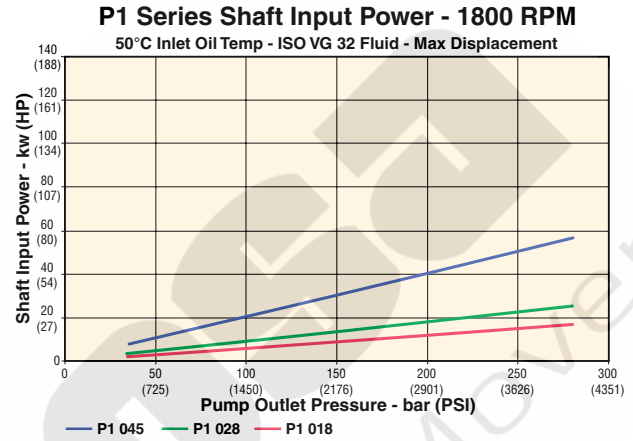
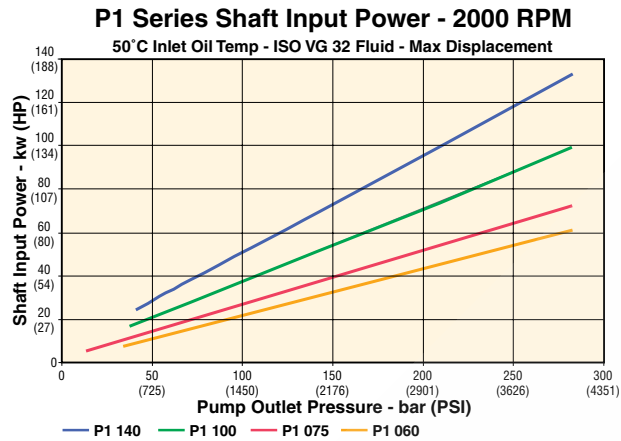


Benefits/Features

- Compact overall package size
- Quiet operation
- Low flow ripple to further reduce noise
- Elastomer seals that eliminate gaskets and external leakage
- High operating efficiency for lower power consumption and reduced heat generation
- Simple hydraulic controls with “no-leak” adjustments
- SAE and ISO standard mounting flanges and ports
- Long life, tapered-roller shaft bearings
- Long life, low friction, hydrostatically balanced cam bearings
- Full power through-drive capability
- End or side inlet and outlet ports
- Case drain ports for horizontal or vertical, shaft-up mounting
- Optional minimum and maximum displacement adjustments
- Optional case-to-inlet check valve to extend shaft seal life
- Easy to service

P1 Medium Pressure Mobile Piston Pumps

Performance Characteristics

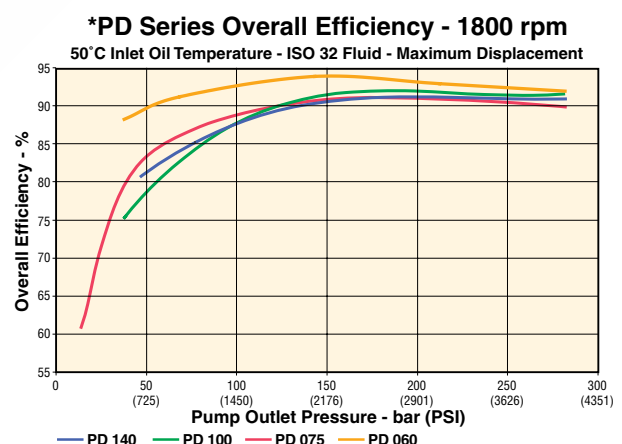
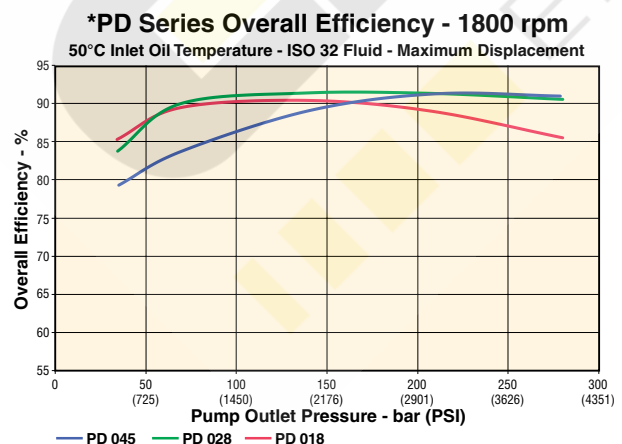
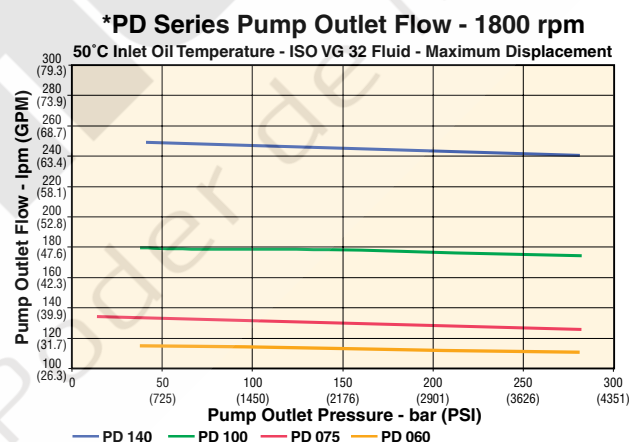
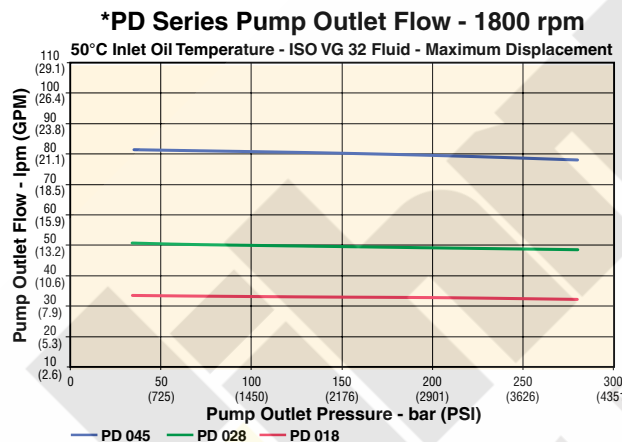
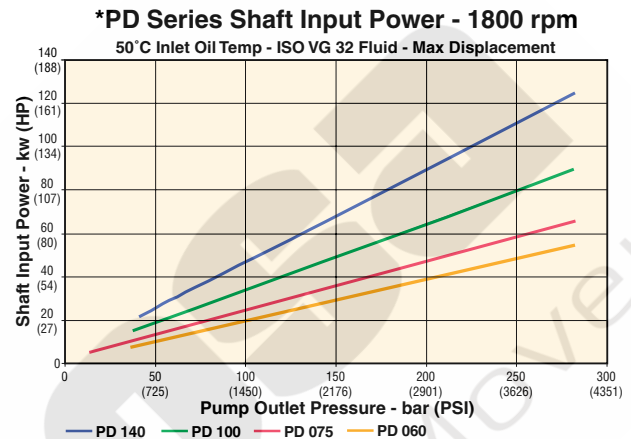
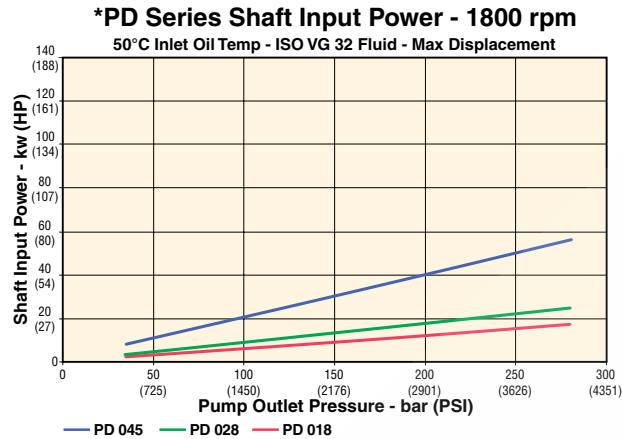




Piston Pumps (Industrial)

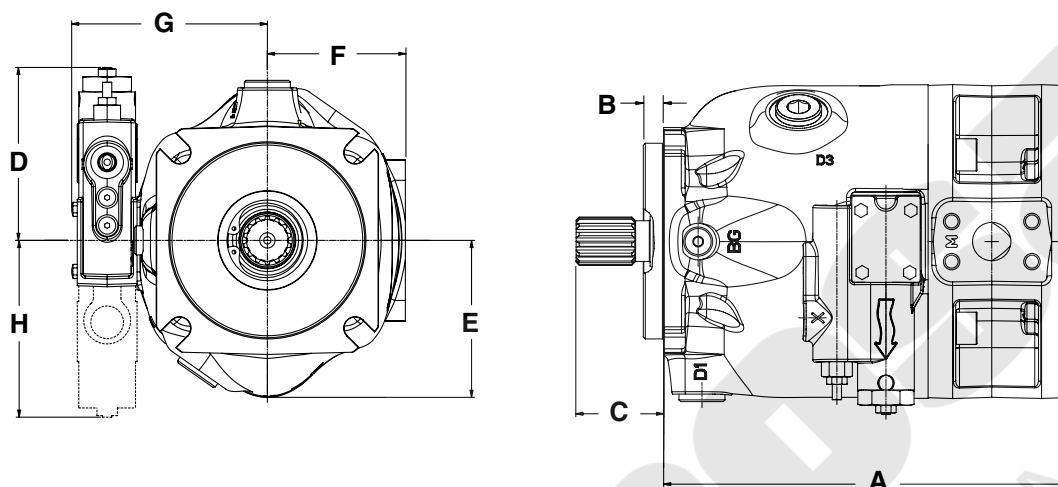
PD Medium Pressure Industrial Piston Pumps

Performance Characteristics



* For additional speeds, see enclosed CD

P1/PD Medium Pressure Mobile Piston Pumps



Dimensions, inch (mm)

Series	A	B	C Max.	D	E	F	G	H Max.
P1/PD018	6.46 (164.2)	0.24 (6.2)	1.29 (32.8)	4.72 (120)	2.97 (75.5)	2.60 (66)	4.24 (107.7)	4.80 (122)
P1/PD028	9.25 (235.5)	0.37 (9.5)	1.84 (46.8)	4.72 (120)	3.21 (81.5)	2.93 (74.5)	4.48 (113.8)	4.80 (122)
P1/PD045	9.00 (228.7)	0.37 (9.5)	1.84 (46.8)	4.72 (120)	3.63 (92.3)	2.92 (74.2)	4.75 (120.7)	4.80 (122)
P1/PD060	9.96 (253.0)	0.50 (12.7)	2.24 (56.8)	4.72 (120)	3.98 (101.2)	3.23 (82)	4.88 (123.9)	4.80 (122)
P1/PD075	10.37 (263.5)	0.50 (12.7)	2.24 (56.8)	4.72 (120)	4.09 (103.8)	3.54 (90)	5.03 (127.7)	4.80 (122)
P1/PD100	13.37 (339.6)	0.50 (12.7)	2.47 (62.8)	4.72 (120)	4.61 (117.1)	3.98 (101)	5.66 (143.7)	4.80 (122)
P1/PD140	14.34 (364.3)	0.50 (12.7)	2.97 (75.5)	4.72 (120)	5.24 (133)	4.45 (113)	6.13 (155.7)	4.80 (122)

SAE Flanges & Shafts

	PD018	PD028, PD045	PD060, PD075	PD100	PD140
Mounting flange, SAE	82-2 (A)	101-2 (B)	127-4 (C)	127-4 (C)	152-4 (D)
Pilot diameter, in (mm)	3.2 (82.5)	4.0 (101.6)	5.0 (127)	5.0 (127)	6.0 (152.4)
Keyed shaft, SAE	19-1 (A)	25-1 (B-B)	32-1 (C)	38-1 (C-C)	44-1 (D)
Spline shaft, SAE	11T-16/32P	15T-16/32P (B-B)	14T-12/24P (C)	17T-12/24P (C-C)	13T-8/16P (D)



Piston Pumps

P1/PD 18cc, Model Ordering Code

	018	P			S			5	A							00
Pump Series	Displacement 18cc/rev. (1.10 in³/rev)	Open Circuit	Mounting & Ports	Shaft Options	Single Shaft Seal	Shaft Rotation	Configuration	Fluorocarbon Seal Material	Design Letter	Control Options	Additional Control Options	Port Orientation	Adjustable Displacement Stops	Thru-Drive Mounting Pad/Coupling	Paint	Special Features

Pump Series	
P1	Mobile
PD	Industrial

Mounting & Ports	
S	SAE A Pilot SAE Threaded Work Ports with SAE Aux Ports
A	SAE A Pilot Metric Work Ports with BSPP Aux Ports
M	ISO - 80mm Pilot Metric Work Ports with Metric Aux Ports
B	ISO - 80mm Pilot Metric Work Ports with BSPP Aux Ports

Shaft Options	
01	Splined shaft - SAE 19-4 11T
02	Keyed shaft - SAE 19-1 .75" Dia.
04	ISO keyed 20MM Dia.
06	Splined shaft - SAE A 9T*

*Not available with Thru-Drive

Shaft Rotation	
R	Clockwise
L	Counterclockwise

Configuration	
M	Mobile (P1)
S	Industrial (PD)

Control Options	
C0	Pressure limiter 1160.30 - 4061.05 PSI (80 - 280 bar)
C1	Pressure limiter 290.08 - 1160.30 PSI (20 - 80 bar)
L0	Load sensing 145.04-435.11 PSI ΔP (10-30 bar ΔP) with pressure limiter 1160.30 - 4061.05 PSI (80 - 280 bar)
L2	Load sensing 145.04-435.11 PSI ΔP (10-30 bar ΔP) with bleed & pressure limiter 1160.30 - 4061.05 PSI (80 - 280 bar)
AN*	Pilot operated pressure limiter with ISO4401 interface & SAE 4 Vent Port
AM	Pilot operated pressure limiter with mechanical adjustment and SAE 4 Vent Port
AE	Pilot operated pressure limiter with mechanical and electrical adjustment 12 VDC
AF	Pilot operated pressure limiter with mechanical and electrical adjustment 24 VDC
##	See chart below for electronic control options

*Not functional control as such

Additional Control Options	
0	No other options
2	Displacement sensor **

** mandatory with "W***", "X***",
"Y***", "Z***" "D**" and "Y**"

Port Orientation	
E	End Ports
R	Side ported with ripple chamber
T	Side ported with Thru-Drive

Adjustable Displacement Stops	
0	None
1	Adjustable maximum displacement stop
2	Adjustable minimum displacement stop
3	Adjustable maximum and minimum displacement stop

Port Type	
0	Flange Ports*
2	Threaded Ports

*With Thru-Drive Only

Thru-Drive Mounting Pad/Coupling	
0	No Thru-Drive
A	SAE 82-2(A), 16(A), 9T coupling
H	SAE 82-2(A), 19(--), 11T coupling

Paint	
00	No Paint
PB	Black Paint

Electronic Control Options	
#	#

0	No ECU
D	Proportional displacement control
Y	Proportional pressure and displacement control

P	Electronic valve with zero displacement default
T	Electronic valve with max displacement default
S	Electronic valve with zero displacement default and hydromechanical Pmax
U	Electronic valve with max displacement default and hydromechanical Pmax
W	Electronic valve with zero displacement default (CANBUS compatible)
Y	Electronic valve with max displacement default (CANBUS compatible)
X	Electronic valve with zero displacement default and hydromechanical Pmax (CANBUS compatible)
Z	Electronic valve with max displacement default and hydromechanical Pmax (CANBUS compatible)

*** W, X, Y and Z only available with *D* and *Y*

Piston Pumps

P1/PD 28cc, Model Ordering Code



Pump Series	028	P	Shaft Options	S	Shaft Rotation	Configuration	5	A	Control Options	Additional Control Options	Port Orientation	Adjustable Displacement Stops	Port Type	Thru-Drive Mounting Pad/Coupling	Paint	Special Features
	Displacement 28cc/rev. (1.71 in ³ /rev)	Open Circuit	Mounting & Ports	Single Shaft Seal			Fluorocarbon Seal Material	Design Letter								00

Pump Series	
P1	Mobile
PD	Industrial

Mounting & Ports	
S	SAE B Pilot SAE Work Ports with SAE Aux Ports
A	SAE B Pilot Metric Work Ports with BSPP Aux Ports
M	ISO - 100MM Pilot Metric Work Ports with Aux Ports
B	ISO - 100MM Pilot Metric Work Ports with BSPP Aux Ports

Shaft Options	
01	Splined shaft - SAE B-B 15T
02	Keyed shaft - SAE B-B 1" Dia.
04	ISO keyed 25MM Dia.
08	Splined shaft - SAE B 13T

Shaft Rotation	
R	Clockwise
L	Counterclockwise

Configuration	
M	Mobile (P1)
S	Industrial (PD)

Control Options	
C0	Pressure limiter 1160.30 - 4061.05 PSI (80 - 280 bar)
C1	Pressure limiter 290.08 - 1160.30 PSI (20 - 80 bar)
L0	Load sensing 145.04-435.11 PSI ΔP (10-30 bar ΔP) with pressure limiter 1160.30 - 4061.05 PSI (80 - 280 bar)
L2	Load sensing 145.04-435.11 PSI ΔP (10-30 bar ΔP) with bleed & pressure limiter 1160.30 - 4061.05 PSI (80 - 280 bar)
AN*	Pilot operated pressure limiter with ISO4401 interface & SAE 4 Vent Port
AM	Pilot operated pressure limiter with mechanical adjustment and SAE 4 Vent Port
AE	Pilot operated pressure limiter with mechanical and electrical adjustment 12 VDC
AF	Pilot operated pressure limiter with mechanical and electrical adjustment 24 VDC
##	See chart below for electronic control options

*Not functional control as such

Additional Control Options	
0	No other options
2	Displacement sensor **

** mandatory with "W***", "X***",
"Y***", "Z***" *D* and *Y*

Port Orientation	
E	End Ports
R	Side ported with ripple chamber
T	Side ported with through drive

Adjustable Displacement Stops* (For E & R Port Orientation Only)	
0	None
1	Adjustable maximum displacement stop
2	Adjustable minimum displacement stop
3	Adjustable maximum and minimum displacement stop

*Not available with Thru-Drive

Port Type	
0	Flange Ports
2	Threaded Ports

Thru-Drive Mounting Pad/Coupling	
0	No Thru-Drive
A	SAE 82-2 (A), 16 (A), 9T coupling
H	SAE 82-2 (A), 19 (-), 11T coupling
B	SAE 101-2 (B), 22 (B), 13T coupling
Q	SAE 101-2 (B), 25 (B-B), 15T coupling

Paint	
00	No Paint
PB	Black Paint

Electronic Control Options	
#	#

0	No ECU
D	Proportional displacement control
Y	Proportional pressure and displacement control

P	Electronic valve with zero displacement default
T	Electronic valve with max displacement default
S	Electronic valve with zero displacement default and hydromechanical Pmax
U	Electronic valve with max displacement default and hydromechanical Pmax
W	Electronic valve with zero displacement default (CANBUS compatible)
Y	Electronic valve with max displacement default (CANBUS compatible)
X	Electronic valve with zero displacement default and hydromechanical Pmax (CANBUS compatible)
Z	Electronic valve with max displacement default and hydromechanical Pmax (CANBUS compatible)

*** W, X, Y and Z only available with *D* and *Y*



Piston Pumps

P1/PD 45cc, Model Ordering Code

Pump Series	045	P	Shaft Options	S	Shaft Rotation	Fluorocarbon Seal Material	5	A	Additional Control Options	Port Orientation	Adjustable Displacement Stops	Thru-Drive Mounting Pad & Coupling	Paint	Special Features
	Displacement 45cc/rev. (2.75 in ³ /rev)	Open Circuit	Mounting & Ports	Single Shaft Seal	Configuration	Design Letter	Control Options	Port Type						

Pump Series	
P1	Mobile
PD	Industrial

Mounting & Ports	
S	SAE B Pilot with SAE Threaded or Flange Work Ports with SAE Aux Ports
A	SAE B Pilot with Metric Threaded or Metric Flange Work Ports with BSPP Aux Ports
M	ISO - 100MM Pilot Metric Threaded or Metric Flange Work Ports with Aux Ports
B	ISO - 100MM Pilot Metric Threaded or Metric Flange Work Ports with Aux Ports

Shaft Options	
01	Splined shaft - SAE B-B 15T
02	Keyed shaft - SAE B-B 1" Dia.
04	ISO keyed 25MM Dia.
08	Splined shaft - SAE B 13T

Shaft Rotation	
R	Clockwise
L	Counterclockwise

Configuration	
M	Mobile (P1)
S	Industrial (PD)
U	Universal (SAE Mounting Option, S, Only)

Control Options	
C0	Pressure limiter 1160.30 - 4061.05 PSI (80 - 280 bar)
C1	Pressure limiter 290.08 - 1160.30 PSI (20 - 80 bar)
L0	Load sensing 145.04-435.11 PSI ΔP (10-30 bar ΔP) with pressure limiter 1160.30 - 4061.05 PSI (80 - 280 bar)
L2	Load sensing 145.04-435.11 PSI ΔP (10-30 bar ΔP) with bleed & pressure limiter 1160.30 - 4061.05 PSI (80 - 280 bar)
AN*	Pilot operated pressure limiter with ISO4401 interface & SAE 4 Vent Port
AL	Pilot operated pressure limiter with Load sensing (only available with "T" Torque Limiter option, i.e. "ALT ")
AM	Pilot operated pressure limiter with mechanical adjustment and SAE 4 Vent Port
AE	Pilot operated pressure limiter with mechanical and electrical adjustment 12 VDC
AF	Pilot operated pressure limiter with mechanical and electrical adjustment 24 VDC
##	See chart below for electronic control options

*Not functional control as such

Additional Control Options	
0	No other options
2	Displacement sensor **
T	Torque Limiter Control (Used with AM, AN or AL control options)

** mandatory with "W***", "X***", "Y***", "Z***" and "D" and "Y"

Port Orientation	
E	End Ports
R	Side ported with ripple chamber
T	Side ported with through drive

Adjustable Displacement Stops* (For E & R Port Orientation Only)	
0	None
1	Adjustable maximum displacement stop
2	Adjustable minimum displacement stop
3	Adjustable maximum and minimum displacement stop

*Not available with Thru-Drive

Port Type	
0	Flange Ports
2	Threaded Ports

Thru-Drive Mounting Pad/Coupling	
0	No Thru-Drive
A	SAE 82-2 (A), 16 (A), 9T coupling
H	SAE 82-2 (A), 19 (-), 11T coupling
B	SAE 101-2 (B), 22 (B), 13T coupling
Q	SAE 101-2 (B), 25 (B-B), 15T coupling

Paint	
00	No Paint
PB	Black Paint

Electronic Control Options	
#	#

0	No ECU
D	Proportional displacement control
Y	Proportional pressure and displacement control

P	Electronic valve with zero displacement default
T	Electronic valve with max displacement default
S	Electronic valve with zero displacement default and hydromechanical Pmax
U	Electronic valve with max displacement default and hydromechanical Pmax
W	Electronic valve with zero displacement default (CANBUS compatible)
X	Electronic valve with max displacement default (CANBUS compatible)
Y	Electronic valve with zero displacement default and hydromechanical Pmax (CANBUS compatible)
Z	Electronic valve with max displacement default and hydromechanical Pmax (CANBUS compatible)

*** W, X, Y and Z only available with "D" and "Y"

Piston Pumps

P1/PD 60cc, Model Ordering Code



Pump Series	060	Open Circuit	Mounting & Ports	Shaft Options	Single Shaft Seal	Shaft Rotation	Configuration	5	A	Control Options	Additional Control Options	Port Orientation	Adjustable Displacement Stops	Thru-Drive Mounting Pad & Coupling	Paint	00	Special Features
	Displacement 60cc/rev. (3.66 in ³ /rev)							Fluorocarbon Seal Material	Design Letter								

Pump Series	
P1	Mobile
PD	Industrial

Open Circuit	
P	Open Circuit (One Side of Center)
X	Open Circuit (100% over Center)

Mounting & Ports	
S	SAE C Pilot SAE Flange Connection Ports with SAE Aux Ports
A	SAE C Pilot Metric Flange Connection Ports with BSPP Aux Ports
M	ISO - 125MM Pilot Metric Flange Connection Ports with Metric Aux Ports
B	ISO - 125MM Pilot, Metric Flange Connection Ports with BSPP Aux Ports
C	SAE C 2-Bolt Pilot SAE Flange Connection Ports with SAE Aux Ports
D	SAE C 2-Bolt Pilot SAE Flange Connection Ports with BSPP Aux Ports

Shaft Options	
01	Splined shaft - SAE C 14T
02	Keyed shaft - SAE C 32-1 KEY
04	Keyed shaft - ISO / DIN KEY 32MM Dia.

Shaft Rotation	
R	Clockwise
L	Counterclockwise

Configuration	
M	Mobile (P1)
S	Industrial (PD)
U	Universal

Control Options	
C0	Pressure limiter 1160.30 - 4061.05 PSI (80 - 280 bar)
C1	Pressure limiter 290.08 - 1160.30 PSI (20 - 80 bar)
L0	Load sensing 145.04-435.11 PSI ΔP (10-30 bar ΔP) with pressure limiter 1160.30 - 4061.05 PSI (80 - 280 bar)
L2	Load sensing 145.04-435.11 PSI ΔP (10-30 bar ΔP) with bleed & pressure limiter 1160.30 - 4061.05 PSI (80 - 280 bar)
AN*	Pilot operated pressure limiter with ISO4401 interface & SAE 4 Vent Port
AL	Pilot operated pressure limiter with Load sensing (only available with "T" Torque Limiter option, i.e. "ALT ")
AM	Pilot operated pressure limiter with mechanical adjustment and SAE 4 Vent Port
AE	Pilot operated pressure limiter with mechanical and electrical adjustment 12 VDC
AF	Pilot operated pressure limiter with mechanical and electrical adjustment 24 VDC
##	See chart below for electronic control options

*Not functional control as such

Additional Control Options	
0	No other options
2	Displacement sensor **
T	Torque Limiter Control (Used with AM, AN or AL control options)

** mandatory with "W***", "X***",
"Y***", "Z***" and "D" and "Y"

Port Orientation	
E	End Ports
S	Side Ports
T	Side Ports with Thru-Drive

Adjustable Displacement Stops* (For E & S Port Orientation Only)	
0	None
1	Adjustable maximum displacement stop
2	Adjustable minimum displacement stop
3	Adjustable maximum and minimum displacement stop

*Not available with Thru-Drive

Port Type	
0	Flange Ports
2	SAE Threaded Ports (Available only on "E" port and "S" or "C" mount)
4	BSPP Threaded Ports (Available only on "E" port and "D" mount)

Thru-Drive Mounting Pad/Coupling	
0	No Thru-Drive
A	SAE 82-2 (A), 16 (A), 9T coupling
H	SAE 82-2 (A), 19 (-), 11T coupling
B	SAE 101-2 (B), 22 (B), 13T coupling
Q	SAE 101-2 (B), 25 (B-B), 15T coupling
J	SAE 101-2 (B), rotated 45 degrees, 22 (B), 13T coupling
K	SAE 101-2 (B), rotated 45 degrees, 25 (B-B), 15T coupling
C	SAE 127-4 (C), 32 (C), 14T coupling

Paint	
00	No Paint
PB	Black Paint

Electronic Control Options	
#	#

0	No ECU
D	Proportional displacement control
Y	Proportional pressure control

P	Electronic valve with zero displacement default
T	Electronic valve with max displacement default
S	Electronic valve with zero displacement default and hydromechanical Pmax
U	Electronic valve with max displacement default and hydromechanical Pmax
W	Electronic valve with zero displacement default (CANBUS compatible)
Y	Electronic valve with max displacement default (CANBUS compatible)
X	Electronic valve with zero displacement default and hydromechanical Pmax (CANBUS compatible)
Z	Electronic valve with max displacement default and hydromechanical Pmax (CANBUS compatible)

*** W, X, Y and Z only available with "D" and "Y"



Piston Pumps

P1/PD 75cc, Model Ordering Code

																	
Pump Series	Displacement 75cc/rev. (4.58 in ³ /rev)	Open Circuit	Mounting & Ports	Shaft Options	Single Shaft Seal	Shaft Rotation	Configuration	Fluorocarbon Seal Material	Design Letter	Control Options	Additional Control Options	Port Orientation	Adjustable Displacement Stops	Flange Ports	Thru-Drive Mounting Pad & Coupling	Paint	Special Features

Pump Series	
P1	Mobile
PD	Industrial

Open Circuit	
P	Open Circuit (One Side of Center)
X	Open Circuit (100% over Center)

Mounting & Ports	
S	SAE C Pilot SAE Flange Connection Ports with SAE Aux Ports
A	SAE C Pilot Metric Flange Connection Ports with BSPP Aux Ports
M	ISO - 125MM Pilot Metric Flange Connection Ports with Metric Aux Ports
B	ISO - 125MM Pilot, Metric Flange Connection Ports with BSPP Aux Ports
C	SAE C 2-Bolt Pilot SAE Flange Connection Ports with SAE Aux Ports
D	SAE C 2-Bolt Pilot SAE Flange Connection Ports with BSPP Aux Ports

Shaft Options	
01	Splined shaft - SAE C 14T
02	Keyed shaft - SAE C 32-1 KEY
04	Keyed shaft - ISO / DIN KEY 32MM Dia.

Shaft Rotation	
R	Clockwise
L	Counterclockwise

Configuration	
M	Mobile (P1)
S	Industrial (PD)
U	Universal

Control Options	
C0	Pressure limiter 1160.30 - 4061.05 PSI (80 - 280 bar)
C1	Pressure limiter 290.08 - 1160.30 PSI (20 - 80 bar)
L0	Load sensing 145.04-435.11 PSI ΔP (10-30 bar ΔP) with pressure limiter 1160.30 - 4061.05 PSI (80 - 280 bar)
L2	Load sensing 145.04-435.11 PSI ΔP (10-30 bar ΔP) with bleed & pressure limiter 1160.30 - 4061.05 PSI (80 - 280 bar)
AN*	Pilot operated pressure limiter with ISO4401 interface & SAE 4 Vent Port
AM	Pilot operated pressure limiter with mechanical adjustment and SAE 4 Vent Port
AE	Pilot operated pressure limiter with mechanical and electrical adjustment 12 VDC
AF	Pilot operated pressure limiter with mechanical and electrical adjustment 24 VDC
##	See chart below for electronic control options

*Not functional control as such

Additional Control Options	
0	No other options
2	Displacement sensor **
T	Torque Limiter Control (Used with AM, AN or L0 control options)

** mandatory with "W***", "X***",
"Y***", "Z***" "D*" and "Y*"

Port Orientation	
E	End Ports
S	Side Ports
T	Side Ports with Thru-Drive

Adjustable Displacement Stops* (For E & S Port Orientation Only)	
0	None
1	Adjustable maximum displacement stop
2	Adjustable minimum displacement stop
3	Adjustable maximum and minimum displacement stop

*Not available with Thru-Drive

Thru-Drive Mounting Pad/Coupling	
0	No Thru-Drive
A	SAE 82-2 (A), 16 (A), 9T coupling
H	SAE 82-2 (A), 19 (-), 11T coupling
B	SAE 101-2 (B), 22 (B), 13T coupling
Q	SAE 101-2 (B), 25 (B-B), 15T coupling
J	SAE 101-2 (B), rotated 45 degrees, 22 (B), 13T coupling
K	SAE 101-2 (B), rotated 45 degrees, 25 (B-B), 15T coupling
C	SAE 127-4 (C), 32 (C), 14T coupling

Paint	
00	No Paint
PB	Black Paint

Electronic Control Options	
#	#

0	No ECU
D	Proportional displacement control
Y	Proportional pressure control

P	Electronic valve with zero displacement default
T	Electronic valve with max displacement default
S	Electronic valve with zero displacement default and hydromechanical Pmax
U	Electronic valve with max displacement default and hydromechanical Pmax
W	Electronic valve with zero displacement default (CANBUS compatible)
Y	Electronic valve with max displacement default (CANBUS compatible)
X	Electronic valve with zero displacement default and hydromechanical Pmax (CANBUS compatible)
Z	Electronic valve with max displacement default and hydromechanical Pmax (CANBUS compatible)

*** W, X, Y and Z only available with "D*" and "Y*"

Piston Pumps

P1/PD 100cc, Model Ordering Code



Pump Series	100	Open Circuit	Mounting & Ports	Shaft Options	Single Shaft Seal	Shaft Rotation	Configuration	5	A	Control Options	Additional Control Options	Port Orientation	Adjustable Displacement Stops	Thru-Drive Mounting Pad & Coupling	Paint	Special Features
	Displacement 100cc/rev. (6.1 in ³ /rev)							Fluorocarbon Seal Material	Design Letter						Flange Ports	

Pump Series	
P1	Mobile
PD	Industrial

Open Circuit	
P	Open Circuit (One Side of Center)
X	Open Circuit (100% over Center)

Mounting & Ports	
S	SAE C Pilot SAE Flange Connection Ports with SAE Aux Ports
A	SAE C Pilot Metric Flange Connection Ports with BSPP Aux Ports
M	ISO - 125MM Pilot Metric Flange Connection Ports with Metric Aux Ports
B	ISO - 125MM Pilot, Metric Flange Connection Ports with BSPP Aux Ports

Shaft Options	
01	Splined shaft - SAE C-C 17T
02	Keyed shaft - SAE C-C 38-1
04	Keyed shaft - ISO / DIN 40MM Dia.
06	Splined shaft - SAE C 14T

Shaft Rotation	
R	Clockwise
L	Counterclockwise

Configuration	
M	Mobile (P1)
S	Industrial (PD)
U	Universal

Control Options	
C0	Pressure limiter 1160.30 - 4061.05 PSI (80 - 280 bar)
C1	Pressure limiter 290.08 - 1160.30 PSI (20 - 80 bar)
L0	Load sensing 145.04-435.11 PSI ΔP (10-30 bar ΔP) with pressure limiter 1160.30 - 4061.05 PSI (80 - 280 bar)
L2	Load sensing 145.04-435.11 PSI ΔP (10-30 bar ΔP) with bleed & pressure limiter 1160.30 - 4061.05 PSI (80 - 280 bar)
AN*	Pilot operated pressure limiter with ISO4401 interface & SAE 4 Vent Port
AM	Pilot operated pressure limiter with mechanical adjustment and SAE 4 Vent Port
AE	Pilot operated pressure limiter with mechanical and electrical adjustment 12 VDC
AF	Pilot operated pressure limiter with mechanical and electrical adjustment 24 VDC
##	See chart below for electronic control options

*Not functional control as such

Additional Control Options	
0	No other options
2	Displacement sensor **
T	Torque Limiter Control (Used with AM, AN or L0 control options)

** mandatory with "W***", "X***",
"Y***", "Z***" "D*" and "Y*"

Port Orientation	
E	End Ports
S	Side Ports
T	Side Ports with Thru-Drive

Adjustable Displacement Stops* (For E & S Port Orientation Only)	
0	None
1	Adjustable maximum displacement stop
2	Adjustable minimum displacement stop
3	Adjustable maximum and minimum displacement stop

*Not available with Thru-Drive

Thru-Drive Mounting Pad/Coupling	
0	No Thru-Drive
A	SAE 82-2 (A), 16 (A), 9T coupling
H	SAE 82-2 (A), 19 (-), 11T coupling
B	SAE 101-2 (B), 22 (B), 13T coupling
Q	SAE 101-2 (B), 25 (B-B), 15T coupling
J	SAE 101-2 (B), rotated 45 degrees, 22 (B), 13T coupling
K	SAE 101-2 (B), rotated 45 degrees, 25 (B-B), 15T coupling
C	SAE 127-4 (C), 32 (C), 14T coupling
N	SAE 127-4 (C), 38 (C-C), 17T coupling

Paint	
00	No Paint
PB	Black Paint

Electronic Control Options	
#	#

0	No ECU
D	Proportional displacement control
Y	Proportional pressure control

P	Electronic valve with zero displacement default
T	Electronic valve with max displacement default
S	Electronic valve with zero displacement default and hydromechanical Pmax
U	Electronic valve with max displacement default and hydromechanical Pmax
W	Electronic valve with zero displacement default (CANBUS compatible)
Y	Electronic valve with max displacement default (CANBUS compatible)
X	Electronic valve with zero displacement default and hydromechanical Pmax (CANBUS compatible)
Z	Electronic valve with max displacement default and hydromechanical Pmax (CANBUS compatible)

*** W, X, Y and Z only available with "D*" and "Y*"



Piston Pumps

P1/PD 140cc, Model Ordering Code

Pump Series	140	Open Circuit	Shaft Options	S	Shaft Rotation	Configuration	5	A	Control Options	Additional Control Options	Port Orientation	Adjustable Displacement Stops	Thru-Drive Mounting Pad & Coupling	Paint	Special Features
	Displacement 140cc/rev. (8.54 in ³ /rev)		Mounting & Ports	Single Shaft Seal			Fluorocarbon Seal Material	Design Letter							

Pump Series	
P1	Mobile
PD	Industrial

Open Circuit	
P	Open Circuit (One Side of Center)
X	Open Circuit (100% over Center)

Mounting & Ports	
S	SAE D Pilot SAE Flange Connection Ports with SAE Aux Ports
A	SAE D Pilot BSPP Flange Connection Ports with BSPP Aux Ports
M	ISO - 180MM Pilot Metric Flange Connection Ports with Metric Aux Ports
B	ISO - 180MM Pilot Metric Flange Connection Ports with BSPP Aux Ports

Shaft Options	
01	Splined shaft - SAE D 13T
02	Keyed shaft - SAE D 44-1
04	Keyed shaft - ISO / DIN 50MM Dia.

Shaft Rotation	
R	Clockwise
L	Counterclockwise

Configuration	
M	Mobile (P1)
S	Industrial (PD)
U	Universal

Control Options	
C0	Pressure limiter 1160.30 - 4061.05 PSI (80 - 280 bar)
C1	Pressure limiter 290.08 - 1160.30 PSI (20 - 80 bar)
L0	Load sensing 145.04-435.11 PSI ΔP (10-30 bar ΔP) with pressure limiter 1160.30 - 4061.05 PSI (80 - 280 bar)
L2	Load sensing 145.04-435.11 PSI ΔP (10-30 bar ΔP) with bleed & pressure limiter 1160.30 - 4061.05 PSI (80 - 280 bar)
AN*	Pilot operated pressure limiter with ISO4401 interface & SAE 4 Vent Port
AM	Pilot operated pressure limiter with mechanical adjustment and SAE 4 Vent Port
AE	Pilot operated pressure limiter with mechanical and electrical adjustment 12 VDC
AF	Pilot operated pressure limiter with mechanical and electrical adjustment 24 VDC
##	See chart below for electronic control options

*Not functional control as such

Additional Control Options	
0	No other options
2	Displacement sensor **
T	Torque Limiter Control (Used with AM, AN or L0 control options)

** mandatory with "W***" "X***",
"Y***", "Z***" "D*" and "Y*"

Port Orientation	
E	End Ports
S	Side Ports
T	Side Ports with Thru-Drive

Adjustable Displacement Stops* (For E & S Port Orientation Only)	
0	None
1	Adjustable maximum displacement stop
2	Adjustable minimum displacement stop
3	Adjustable maximum and minimum displacement stop

*Not available with Thru-Drive

Thru-Drive Mounting Pad/Coupling	
0	No Thru-Drive
A	SAE 82-2 (A), 16 (A), 9T coupling
B	SAE 101-2 (B), 22 (B), 11T coupling
Q	SAE 101-2 (B), 25 (B-B), 13T coupling
J	SAE 101-2 (B), rotated 45 degrees, 22 (B), 15T coupling
K	SAE 101-2 (B), rotated 45 degrees, 25 (B-B), 13T coupling
C	SAE 127-4 (C), 32 (C), 14T coupling
N	SAE 127-4 (C), 38 (C-C), 17T coupling
D	SAE 152-4 (D), 44 (D), 13T coupling

Paint	
00	No Paint
PB	Black Paint

Electronic Control Options	
#	#

0	No ECU
D	Proportional displacement control
Y	Proportional pressure control

P	Electronic valve with zero displacement default
T	Electronic valve with max displacement default
S	Electronic valve with zero displacement default and hydromechanical Pmax
U	Electronic valve with max displacement default and hydromechanical Pmax
W	Electronic valve with zero displacement default (CANBUS compatible)
Y	Electronic valve with max displacement default (CANBUS compatible)
X	Electronic valve with zero displacement default and hydromechanical Pmax (CANBUS compatible)
Z	Electronic valve with max displacement default and hydromechanical Pmax (CANBUS compatible)

*** W, X, Y and Z only available with "D*" and "Y*"

P2 High Pressure/High Speed Mobile Piston Pumps



The variable displacement piston pumps from Parker Hannifin, designated “P2”, are intended for mobile and industrial applications, featuring a very compact design, low noise level and low pressure ripple.

Stable and quick to respond to system demands in many different types of mobile machinery, the P2 is designed for cost effective installation within the limited space available on modern mobile machines.

Pump Performance Data

Model Series	Displacement in ³ /rev (cc/rev)	Max. Outlet Pressure PSI (BAR)	Rated Drive Speed RPM	Flow GPM (LPM)	Input Horsepower HP (KW)
P2060	3.66 (60)	4600 (320)	2800	42 (159)	96 (72)
P2075	4.58 (75)	4600 (320)	2500	48 (182)	145 (108)
P2105	6.41 (105)	4600 (320)	2300	61 (231)	185 (138)
P2145	8.85 (145)	4600 (320)	2200	78 (295)	240 (179)

Markets

Applications

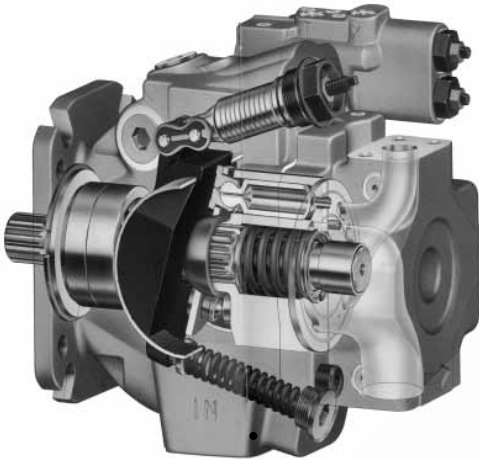
Forestry	Feller Bunchers, Knuckle Boom Loader, Skidder, Forwarder
Construction	Wheel Loader, Dozers, Off-Highway Trucks,
Mining	Drill Rigs, Loaders
Material Handling	Truck Mounted Cranes, Lift Trucks, Reachstacker
Recycling	Shredders, Balers, Compactors



Piston Pumps (Mobile & Industrial)

P2 High Pressure/High Speed Mobile Piston Pumps

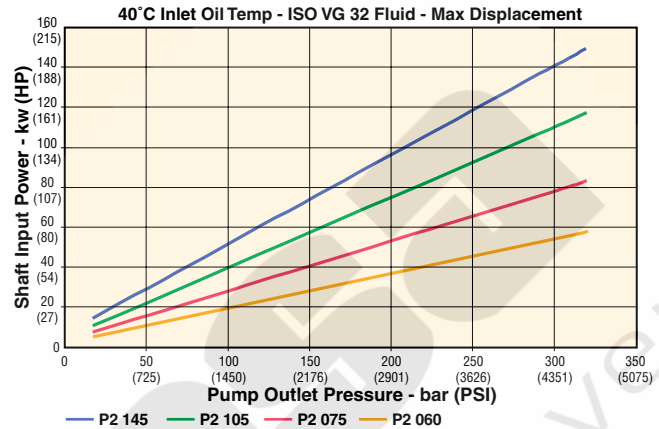
Performance Characteristics



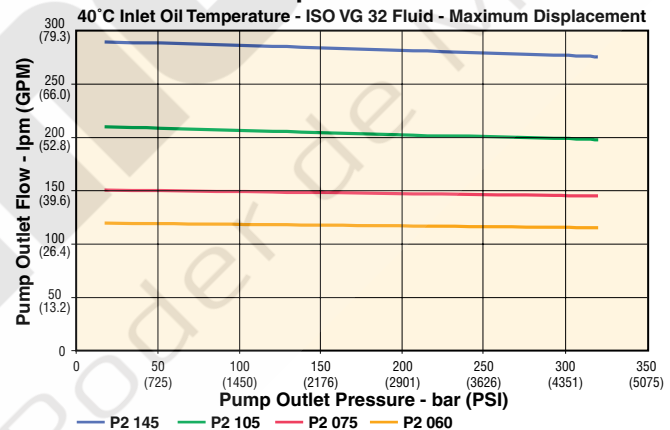
Benefits/Features

- Compact
- Low noise level
- Sealed shaft bearing
- Service friendly
- Reliable
- Long-lasting
- Flexible
- Easy to install
- High self-priming speed

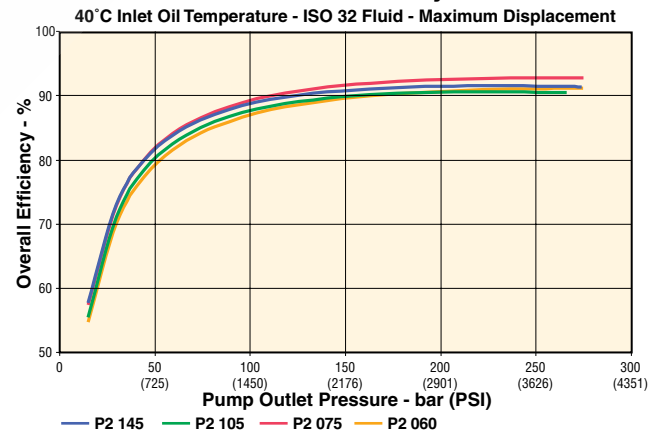
P2 Series Input Drive Power - 2000 RPM



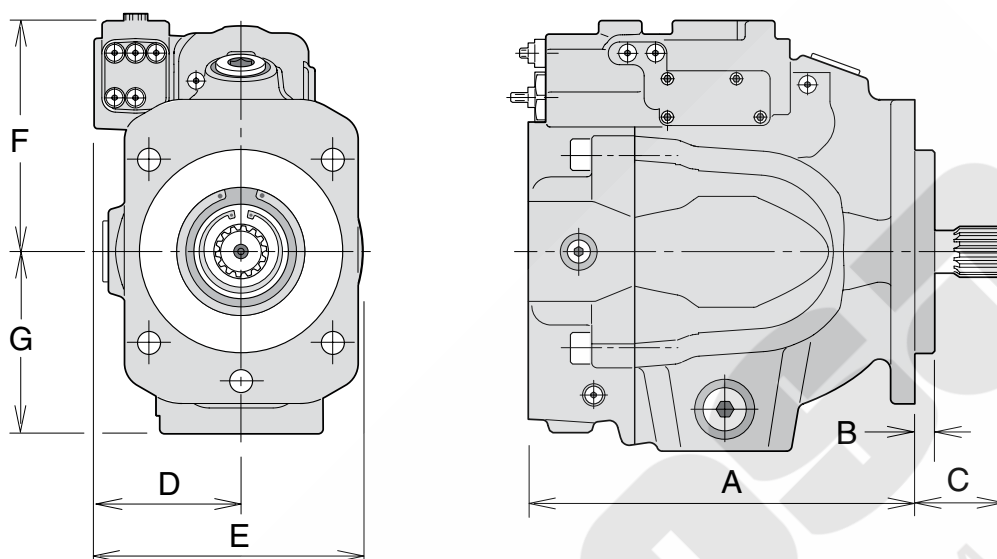
P2 Series Pump Outlet Flow - 2000 RPM



P2 Series Overall Efficiency - 2000 RPM



P2 High Pressure/High Speed Piston Pumps



Dimensions, inch (mm)

Series	A Max*	B Max.	C Max.	D	E Max.	F	G
P2060	11.8 (299)	0.49 (12.5)	2.19 (55.6)	3.62 (92)	6.74 (171.3)	5.55 (141)	4.49 (114)
P2075	12.9 (327.5)	0.49 (12.5)	2.44 (62.0)	4.41 (112)	7.63 (193.8)	5.71 (145)	4.84 (123)
P2105	14.1 (358)	0.49 (12.5)	2.98 (75.7)	4.41 (112)	8.35 (212.0)	6.89 (175)	—
P2145	14.7 (375)	0.50 (12.7)	2.98 (75.7)	4.65 (118)	8.86 (225.0)	7.13 (181)	6.46 (164)

* With thru-shaft option

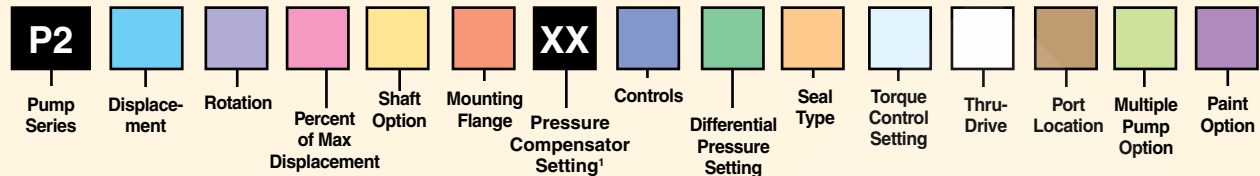
Thru-Drive Kits for P2 Series (Nitrile Seals, UNC Threads, Couplings)

Thru-Drive Mounting	P2060 Kit #	P2075 Kit #	P2105 Kit #	P2145 Kit #
SAE A with 9 tooth spline	P2-060-0215-01N	P2-075-0215-01N	P2-105-0215-01N	P2-145-0215-01N
SAE B with 13 tooth spline	P2-060-0216-01N	P2-075-0216-01N	P2-105-0216-01N	P2-145-0216-01N
SAE B with 15 tooth spline	P2-060-0217-01N	P2-075-0217-01N	P2-105-0217-01N	P2-145-0217-01N
SAE C with 14 tooth spline	P2-060-0218-01N	P2-075-0218-01N	P2-105-0218-01N	P2-145-0218-01N
SAE D with 13 tooth spline	Not Available	Not Available	Not Available	P2-145-0220-01N



Piston Pumps

P2 Model Ordering Code



Code	Displacement in ³ /rev (cm ³ /rev)
060	3.7 (60)
075	4.6 (75)
105	6.4 (105)
145	8.8 (145)

Code	Rotation*
R	Right (CW)
L	Left (CCW)

* Viewed from shaft end.

Code	Percent of Max. Displacement
00	100% Stroke, standard factory setting
XX	Range is 70-99 (70% to 99%)

Code	Shaft Option			
	Type	060	075	105 145
B1	SAE B Spline ⁽¹⁾	x		
B2	SAE BB Spline	x		
C1	SAE C Spline	x	x	x x
C2	SAE CC Spline ⁽²⁾		x	x
C3	SAE C Spline ⁽²⁾		x	x x
C5	SAE C Key	x	x	x x
C6	SAE CC Key ⁽²⁾		x	x x
D1	SAE D Spline			x x
D3	SAE D Key			x

⁽¹⁾ 060 non thru-drive only ⁽²⁾ 075 thru-drive version only

Code	Mounting Flange			
	060	075	105	145
B	SAE B 2-Bolt			
C	SAE C 4-Bolt	SAE C 2/4-Bolt	SAE C 2/4-Bolt	SAE C 2-Bolt
D				SAE D 4-Bolt

Code	Controls
PA	Std. max pressure control (Pmax), 120-320 bar (1740-4600 PSI)
LA	Load sensing (2 spool)/Pmax without bleed orifice
LB	Load sensing (2 spool)/Pmax with bleed orifice
TA ⁽³⁾	Torque/LS/Pmax without bleed orifice, Torque range 20-60% of max
TB ⁽³⁾	Torque/LS/Pmax with bleed orifice, Torque range 20-60% of max
TC ⁽³⁾	Torque/LS/Pmax without bleed orifice, Torque range 50-90% of max
TD ⁽³⁾	Torque/LS/Pmax with bleed orifice, Torque range 50-90% of max

⁽³⁾ See table at left for information and example.

⁽⁴⁾ For Remote Pressure Compensator, order the "PA" model and remove plug from "X" port.

■ = Not Available

¹ For example, 32 = 320 bar setting

Pressure Compensator Setting¹
Factory set in bar times 10;
Range 12-32

Code	Differential Pressure Setting
20	Recommended Initial Factory Setting
00	Use with PA Control only
XX	Factory set in bar – Range 12-35

Code	Seal Type
N	Nitrile, single shaft seal
D	Nitrile, double shaft seal – "wet flange"
V	Fluorocarbon, single shaft seal
T	Fluorocarbon, double shaft seal – "wet flange"

Code	Torque Control Setting (%)
00	For Non-torque Control Pumps
XX	20-90% of Max. Rated Torque ⁽³⁾

⁽³⁾ See table below at left for information and example.

Code	Thru-drive
S1	No Thru-drive
T1	Thru-drive with Cover
A1	SAE A – 2-Bolt with SAE A Spline
B1	SAE B – 2-Bolt with SAE B Spline
B2	SAE B – 2-Bolt with SAE BB Spline
C2	SAE C – 2-Bolt with SAE CC Spline (145 only)
C3	SAE C – 4-Bolt with SAE C Spline
C4	SAE C – 4-Bolt with SAE CC Spline (145 only)
D3	SAE D – 4-Bolt with SAE D Spline (145 only)

P2 Torque Control Options TA, TB, TC, TD Ordering Guide

Model	Maximum Rated Torque		TA/TB Adj. Range 20%-60% of Max Torque		TC/TD Adj. Range, 50%-90% of Max Torque	
	Nm	lb-in	Nm	lb-in	Nm	lb-in
P2060	339	3004	68-204	600-1802	170-306	1502-2703
P2075	424	3755	85-254	751-2253	212-382	1877-3379
P2105	594	5257	119-356	1051-3154	297-535	2628-4731
P2145	820	7259	164-492	1451-4355	410-738	3629-6533

The input torque limit is factory set at a percentage of the maximum rated input torque. The percentage needs to be specified in Torque Control Setting (%) box of the ordering code. For example, for a P2075-TC pump with an input torque limit setting required of 300 Nm, divide 300 into 424, which equals 71%, so 71 is specified in Torque Control Setting (%) box.

Code	Port Location
A	Side Flanges, UNC
B	Side Flanges, ISO 6149 (Metric)
G*	Rear Flanges, UNC
H*	Rear Flanges, ISO 6149 (Metric)

* Available on P2060 only.

Code	Multiple Pump Option
1	Single Pump
2	Front Pump of Multiple Pumps
3	Middle Pump of Multiple Pumps
4	Rear Pump of Multiple Pumps

Code	Paint Option
P	Parker Black
U	No Paint

P3 High Pressure/Super Charged Mobile Piston Pumps



P3 Piston Pumps are ideal for open circuit mobile applications with high self priming speed and operating pressure up to 4650 PSI (320 BAR). These high performance pumps are suited for mobile applications where inlet fill characteristics are not ideal; i.e. high altitudes, long inlet lines, cold weather and high pump drive speeds.

Pump Performance Data

Model Series	Displacement in ³ /rev (cc/rev)	Max. Outlet Pressure PSI (BAR)	Rated Drive Speed RPM	Flow GPM (LPM)	Input Horsepower HP (KW)
P3075	4.58 (75)	4650 (320)	3000	57 (215.8)	173 (129.0)
P3105	6.41 (105)	4650 (320)	2600	67 (253.6)	210 (156.6)
P3145	8.85 (145)	4650 (320)	2500	90 (340.7)	270 (201.3)

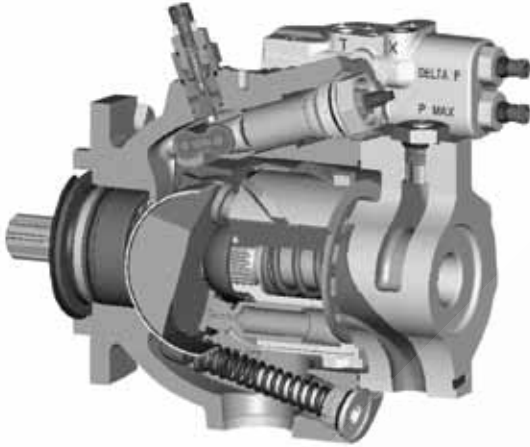
Markets

Applications

Forestry	Feller Bunchers, Knuckle Boom Loader, Skidder, Forwarder
Construction	Wheel Loader, Dozers, Off-Highway Trucks,
Mining	Drill Rigs, Loaders
Material Handling	Truck Mounted Cranes, Lift Trucks, Reachstacker

P3 High Pressure/Super Charged Mobile Piston Pumps

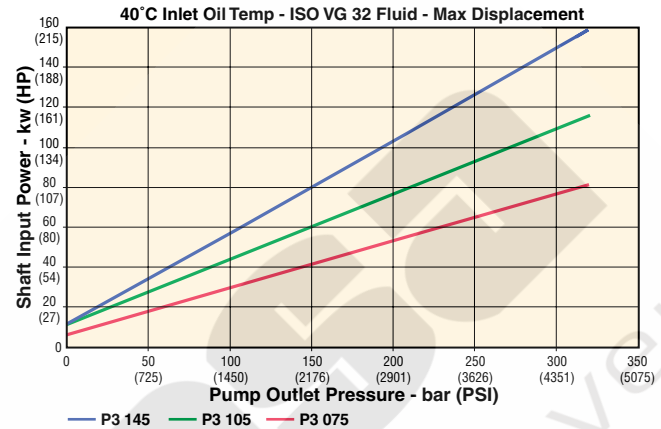
Performance Characteristics



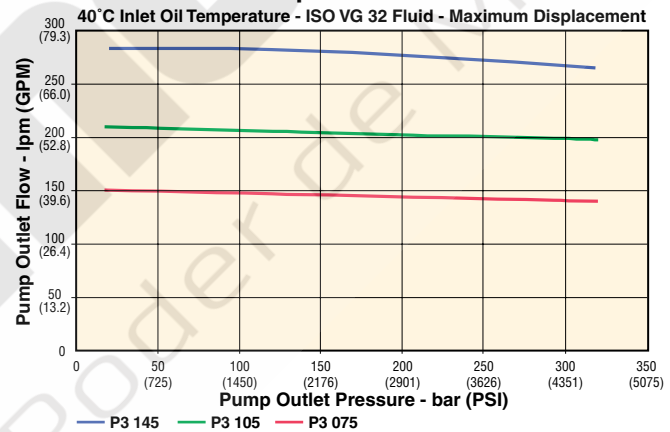
Benefits/Features

- Compact
- Low noise level
- Sealed shaft bearing
- Service friendly
- Reliable
- Long-lasting
- Flexible
- Easy to install
- High self-priming speed

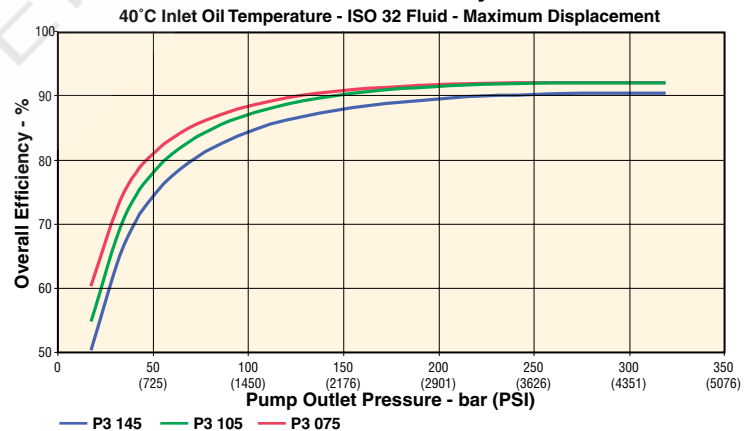
P3 Series Input Drive Power - 2000 RPM



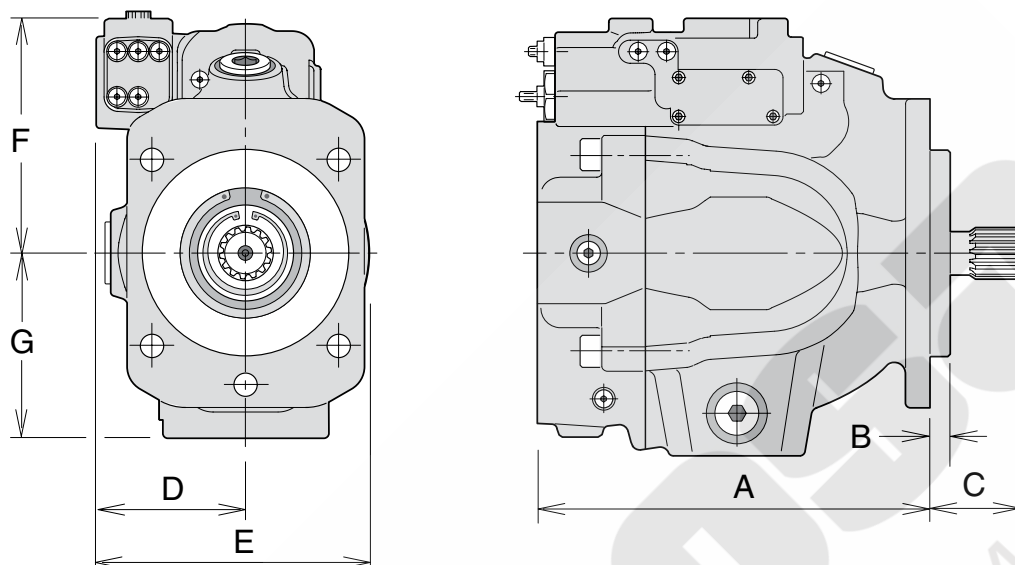
P3 Series Pump Outlet Flow - 2000 RPM



P3 Series Overall Efficiency - 2000 RPM



P3 High Pressure/Super Charged Mobile Piston Pumps



Dimensions, inch (mm)

Series	A Max*	B Max.	C Max.	D	E Max.	F	G
P3075	12.89 (327.5)	14.76 (12.5)	2.44 (62)	4.41 (112)	6.86 (176)	5.71 (145)	4.72 (120)
P3105	12.89 (327.5)	0.49 (12.5)	2.98 (75.6)	4.41 (112)	8.26 (210)	7.17 (182)	5.87 (150)
P3145	14.76 (375.0)	0.50 (12.7)	2.98 (75.6)	4.49 (114)	8.98 (228)	7.13 (181)	6.34 (161)

* With thru-shaft option

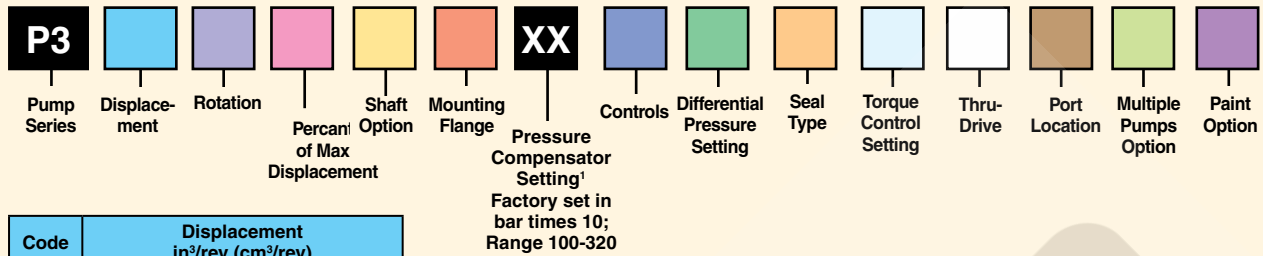
Thru-drive Kits for P2 Series (Nitrile Seals, UNC Threads, Couplings)

Thru-drive Mounting	P3075 Kit #	P3105 Kit #	P3145 Kit #
SAE A with 9 tooth spline	P2-075-0215-01N	P2-105-0215-01N	P2-145-0215-01N
SAE B with 13 tooth spline	P2-075-0216-03N	P2-105-0216-03N	P2-145-0216-03N
SAE B with 15 tooth spline	P2-075-0217-03N	P2-105-0217-03N	P2-145-0217-03N
SAE C with 14 tooth spline	P2-075-0218-03N	P2-105-0218-03N	P2-145-0218-03N
SAE D with 13 tooth spline	Not Available	Not Available	P2-145-0220-03N



Piston Pumps

P3 Model Ordering Code



Code	Displacement in ³ /rev (cm ³ /rev)
075	4.6 (75)
105	6.4 (105)
145	8.8 (145)

Code	Rotation*
R	Right (CW)
L	Left (CCW)

* Viewed from shaft end.

Code	Percent of Max. Displacement
00	100% Stroke, standard factory setting
XX	Range is 70-99 (70% to 99%)

Code	Shaft Option			
	Type	075	105	145
C1	SAE C Spline	x	x	x
C2	SAE CC Spline ⁽²⁾	x	x	
C3	SAE C Spline ⁽²⁾	x	x	x
C5	SAE C Key	x	x	x
C6	SAE CC Key ⁽²⁾	x	x	x
D1	SAE D Spline		x	x
D3	SAE D Key			x

⁽²⁾ 075 thru-drive version only

Code	Mounting Flange		
	075	105	145
C	SAE C 2/4-Bolt	SAE C 2/4-Bolt	SAE C 2-Bolt
D			SAE D 4-Bolt

Code	Controls
PA ⁽⁴⁾	Std. max pressure control (Pmax), 100-320 bar (1450-4600 PSI)
LA	Load sensing (2 spool)/Pmax without bleed orifice
LB	Load sensing (2 spool)/Pmax with bleed orifice
TA ⁽³⁾	Torque/LS/Pmax without bleed orifice, Torque range 20-60% of max
TB ⁽³⁾	Torque/LS/Pmax with bleed orifice, Torque range 20-60% of max
TC ⁽³⁾	Torque/LS/Pmax without bleed orifice, Torque range 50-90% of max
TD ⁽³⁾	Torque/LS/Pmax with bleed orifice, Torque range 50-90% of max

⁽³⁾ See table at left for information and example.

⁽⁴⁾ For Remote Pressure Compensator, order the
"PA" model and remove plug from "X" port.

■ = Not Available

¹ For example, 32 = 320 bar setting

Code	Differential Pressure Setting
20	Recommended Initial Factory Setting
00	Use with PA Control only
XX	Factory set in bar – Range 10-35

Code	Seal Type
N	Nitrile, single shaft seal
D	Nitrile, double shaft seal – "wet flange"
V	Fluorocarbon, single shaft seal
T	Fluorocarbon, double shaft seal – "wet flange"

Code	Torque Control Setting (%)
00	For Non-torque Control Pumps
XX	20-90% of Max. Rated Torque ⁽³⁾

⁽³⁾ See table at bottom left for information and example.

Code	Thru-drive
S1	No Thru-drive
T1	Thru-drive with Cover
A1	SAE A – 2-Bolt with SAE A Spline
B1	SAE B – 2-Bolt with SAE B Spline
B2	SAE B – 2-Bolt with SAE BB Spline
C2	SAE C – 2-Bolt with SAE CC Spline (145 only)
C3	SAE C – 4-Bolt with SAE C Spline
C4	SAE C – 4-Bolt with SAE CC Spline (145 only)
D3	SAE D – 4-Bolt with SAE D Spline (145 only)

P3 Torque Control Options TA, TB, TC, TD Ordering Guide

Model	Maximum Rated Torque		TA/TB Adj. Range 20%-60% of Max Torque		TC/TD Adj. Range, 50%-90% of Max Torque	
	Nm	lb-in	Nm	lb-in	Nm	lb-in
P3075	424	3755	85-254	751-2253	212-382	1877-3379
P3105	594	5257	119-356	1051-3154	297-535	2628-4731
P3145	820	7259	164-492	1451-4355	410-738	3629-6533

The input torque limit is factory set at a percentage of the maximum rated input torque. The percentage needs to be specified in Torque Control Setting (%) box of the ordering code. For example, for a P3075-TC pump with an input torque limit setting required of 300 Nm, divide 300 into 424, which equals 71%, so 71 is specified in Torque Control Setting (%) box.

PVplus High Pressure Industrial Piston Pumps



PVplus piston pumps are ideal for heavy duty industrial applications with operating pressure up to 5000 PSI (350 BAR). These pumps respond quickly to system demands and, with the use of “ripple chamber” technology, are some of the quietest piston pumps available.

- High strength cast-iron housing
- Modular controls
- Large control piston for fast response
- Thru-shaft option with 100% thru torque capability
- Multiple pressure control
- Pre-Compression chamber

Pump Performance Data

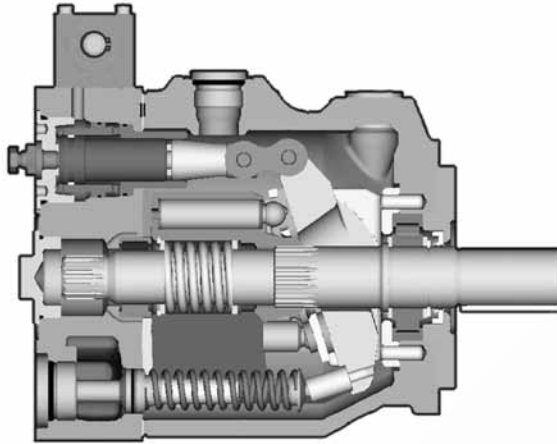
Model Series	Displacement in ³ /rev (cc/rev)	Max. Outlet Pressure PSI (BAR)	Max Rated Drive Speed RPM	Pump Flow 1800 RPM & 100 PSI GPM (LPM)	Input Horsepower 1800 RPM & 5000 PSI HP (KW)
PV016	0.98 (16)	5000 (350)	3000 RPM	8 (30.3)	25 (18.6)
PV020	1.22 (20)	5000 (350)	3000 RPM	9.5 (36.0)	31 (23.1)
PV023	1.40 (23)	5000 (350)	3000 RPM	11 (41.6)	34 (25.4)
PV028	1.71 (28)	5000 (350)	3000 RPM	13 (49.2)	40 (29.8)
PV032	1.95 (32)	5000 (350)	2800 RPM	15 (56.8)	47 (35.0)
PV040	2.44 (40)	5000 (350)	2800 RPM	19 (71.9)	62 (46.2)
PV046	2.81 (46)	5000 (350)	2800 RPM	22 (83.3)	67 (50.0)
PV063	3.84 (63)	5000 (350)	2800 RPM	30 (113.6)	94 (70.1)
PV080	4.88 (80)	5000 (350)	2500 RPM	38 (143.9)	120 (89.5)
PV092	5.61 (92)	5000 (350)	2300 RPM	44 (166.6)	184 (137.2)
PV140	8.54 (140)	5000 (350)	2400 RPM	67 (253.6)	200 (149.1)
PV180	10.98 (180)	5000 (350)	2200 RPM	86 (235.5)	282 (210.3)
PV270	16.48 (270)	5000 (350)	1800 RPM	128 (484.5)	400 (298.3)
PV360	21.97 (360)	5000 (350)	1750 RPM	160 (605.7)	500 (372.8)

Markets

Industrial	Presses, Shears, Injection Molding, Aircraft Test Stands, Test Equipment, Simulators
Oil & Gas	Nitrogen Pumps, Cementers, Coil Tubing, Oil Lift Pumps
Construction	Wheel Loader
Mining	Drill Rigs, Tunneling Equipment
Material Handling	Conveyor Drives, Apron Feeders, Rail Car Tippers, Mixers
Recycling	Shredders, Balers, Compactors

Applications

PVplus High Pressure Industrial Piston Pumps

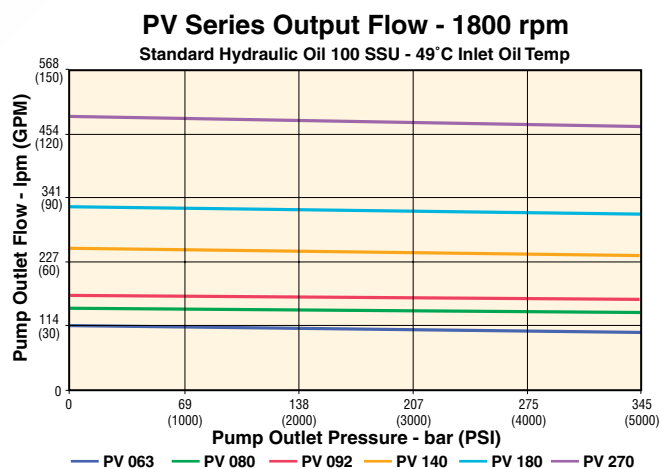
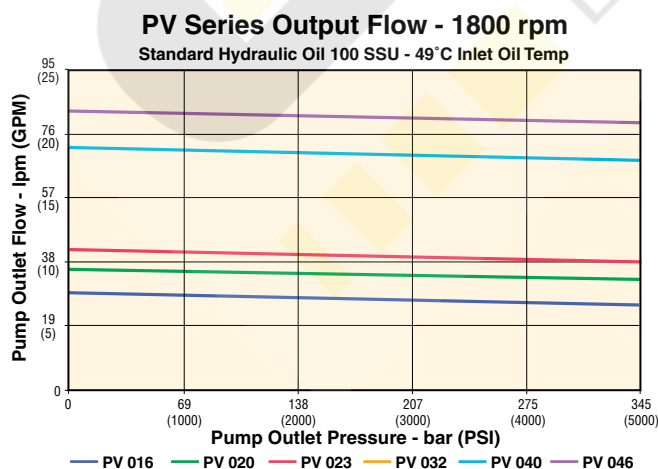
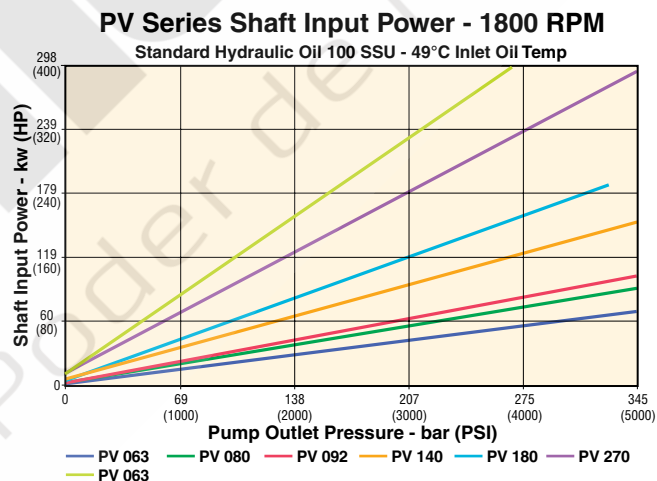
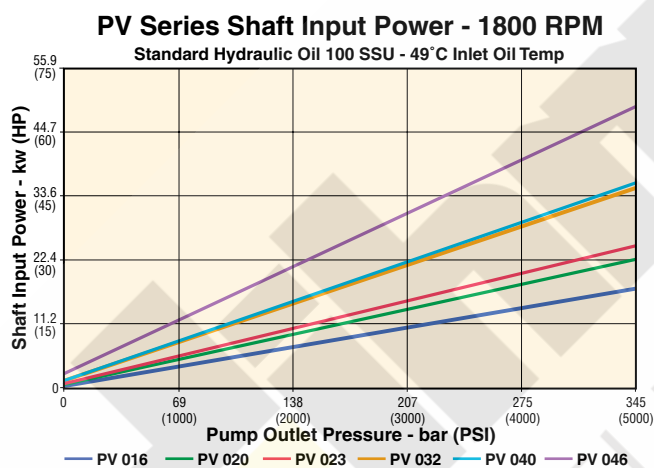
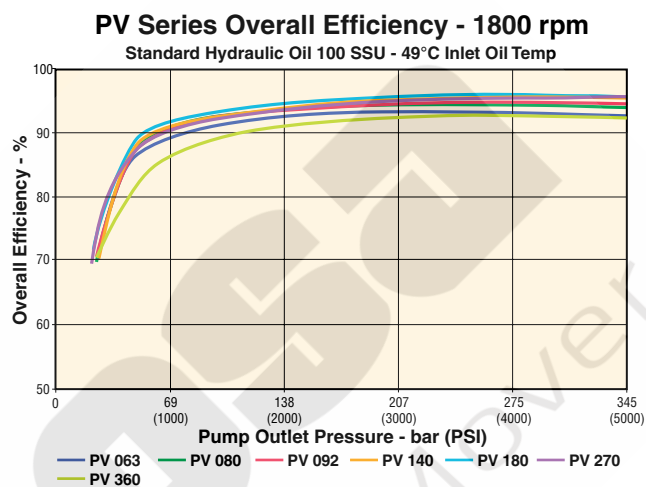
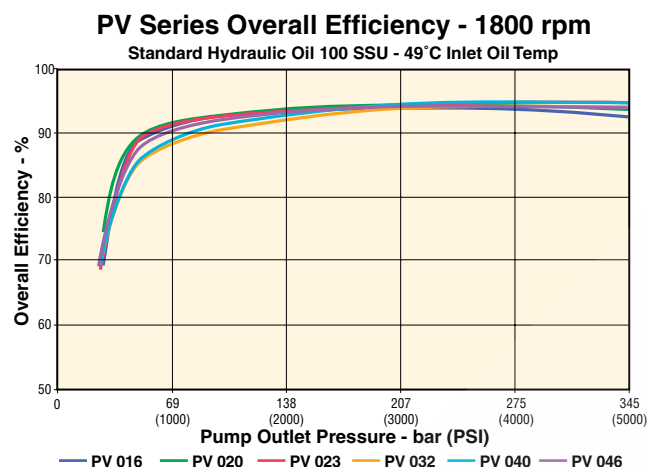


Benefits/Features

- High strength cast-iron housing for high reliability and quiet operation
- Modular controls for field convertibility
- Large control piston for fast response
- Thru-shaft option with 100% thru torque capability
- Multiple pressure control with valves mounted directly on pump
- Pre-compression chamber to minimize over-all system noise
- High self-priming speed and cold start capability

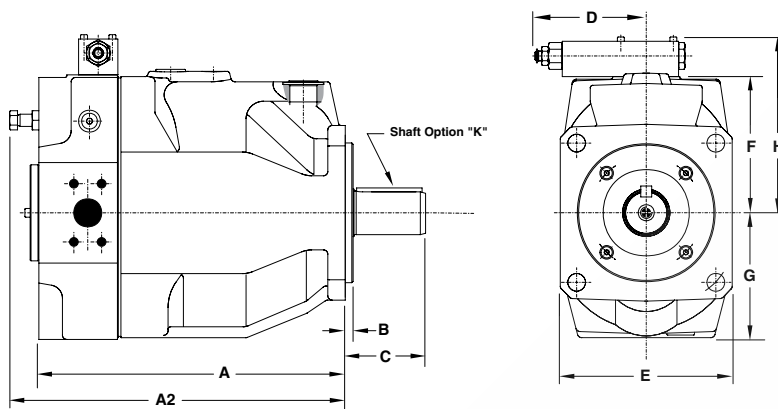
PVplus High Pressure Industrial Piston Pumps

Performance Characteristics



For 360 Consult Factory

PVplus High Pressure Industrial Piston Pumps



Dimensions, inch (mm)

Model	A	A2 Max.	B	C	D Max.	E	F	G	H
PV016/020/023	77.8 (195)	83.5 (212)	0.37 (9)	2.0 (52)	0.49 (12.44)	5.2 (132)	3.7 (94)	3.1 (80)	5.5 (140)
PV032/040/046	89 (227)	96 (245)	0.50 (9)	2.7 (68)	2.19 (55.62)	6.1 (156)	4.2 (107)	3.6 (92)	6.0 (153)
PV063/080/092	112.9 (287)	120.5 (306)	0.50 (9)	3.6 (92)	4.25 (107.95)	8.0 (204)	5.3 (135)	4.6 (118)	7.1 (181)
PV140/180	138 (350)	152 (385)	0.50 (9)	3.6 (92)	4.25 (107.95)	7.8 (200)	6.2 (158)	5.7 (145)	8.0 (204)
PV270	186 (472.5)	201 (510)	0.50 (9)	4.5 (115)	—	10.4 (265)	7.2 (184)	6.9 (176)	9.1 (230)
PV360	187.7 (477)	201 (510)	0.50 (9)	4.5 (115)	—	98.4 (250)	7.2 (184)	6.9 (176)	9.1 (230)

Filtration and auxiliary function pump suggestions



Pump

Model Code	Flow @1800 RPM GPM (LPM)	Pressure PSI (BAR)
T67B-B02-3R00-A100	3 (11.4)	4000 (275.8)
T67B-B04-3R00-A100	6 (22.7)	4000 (275.8)
T67B-B07-3R00-A100	10 (37.9)	4000 (275.8)

Thru-Drive Kits

Pump Series	Kit #	Mount
PV016/020/023	MK-PVBG1BSN45 plus MK-PVBG1K1342	SAE B
PV032/040/046	MK-PVBG2BSN40 plus MK-PVBG2K1340	SAE B
PV063/080/092	MK-PVBG3BSN41 plus MK-PVBG3K1341	SAE B
PV140/180	MK-PVBG4BSN40 plus MK-PVBG4K1340	SAE B
PV270	MK-PVBG5BSN40 plus MK-PVBG5K1340	SAE B
PV270	MK-PVBG5BSN40 plus MK-PVBG5K1340	SAE B

* Verify correct design series

Piston Pumps

PVplus 016-046cc Model Ordering Code



PV									
Pump Variable Piston	Displacement	Rotation	Pump Variations	Shaft & Mounting	Threads Code	Thru-Drive Option	Coupling Code	Seals	Control Options

Code	Displacement in ³ /rev (cc/rev)
016	.98 (16)
020	1.2 (20)
023	1.4 (23)
028	1.7 (28)
032	1.9 (32)
040	2.4 (40)
046	2.8 (46)

Code	Rotation*
R	CW
L	CCW

*As viewed from shaft end.

Code	Pump Variations
1	Standard
9*	Customized Displacement and/or Pressure Setting

*Specify in cc/rev and/or bar.

Code	Shaft & Mounting			
	PV016/020/023		PV032/040/046	
	Shaft	Pilot	Shaft	Pilot
D	1" Keyed (SAE BB)	4 Bolt SAE B	1 1/4" Keyed (SAE C)	4 Bolt SAE C
E	15T Spline (SAE BB)	4 Bolt SAE B	14T Spline (SAE C)	4 Bolt SAE C
K	25mm Keyed	4 Bolt 100mm	32mm Keyed	4 Bolt 125mm
L	W25 x 1.5 x 15 x 8f Spline DIN 5480	4-Bolt 100mm	W32 x 1.5 x 20 x 8f Spline DIN 5480	4 Bolt 125mm

Code	Threads Code	
	Port*	Threads**
1	BSPP	Metric
3	UNF	UNC
7	ISO 6149	UNC
8	ISO 6149	Metric

*Drain, gage, and flushing ports.

** Mounting and connecting threads

Code	Thru-Drive Option (1st Digit)	Code	Second Pump (2nd Digit)
T	Single Pump Prepared for Thru-Drive	1	Single Pump, No Coupling
	With Adapter for Second Pump	H	w/Coupling, 25 x 1.5 x 15, DIN 5480
Y ¹	SAE AA, Ø2.00in (Ø50.8mm)	J	w/Coupling, 32 x 1.5 x 20, DIN 5480
A	SAE A, Ø3.25in (Ø82.55mm)	Y	w/SAE Coupling, 9T-16/32 DP
B	SAE B, Ø4.00in (Ø101.6mm)	A	w/SAE Coupling, 11T-16/32 DP
C ²	SAE C, Ø5.00in (Ø127mm)	B	w/SAE Coupling, 13T-16/32 DP
G	Metric, Ø2.48in (Ø63mm)	C*	w/SAE Coupling, 15T-16/32 DP
H	Metric, Ø3.15in (Ø80mm)	D	w/SAE Coupling, 14T-12/24 DP
J	Metric, Ø3.94in (Ø100mm)	E	w/SAE Coupling, 17T-12/24 DP
K ²	Metric, Ø4.92in (Ø125mm)		

¹ Only for PV016 thru PV023

² Only for PV032 and larger

* Only for PV032 and larger

Code	Coupling Code
1	Single pump, no coupling
H	with coupling 25 x 1.5 x 15, DIN 5480
J	with coupling 32 x 1.5 x 20, DIN 5480
Y	with coupling SAE A 9T-16/32 DP
A	with coupling SAE - 11T-16/32 DP
B	with coupling SAE B 13T-16/32 DP
C	with coupling SAE B-B 15T-16/32 DP
D	with coupling SAE C 14T-12/24 DP

Code	Seals
N	Nitrile
V	Fluorocarbon
W	Nitrile w/PTFE Shaft Seal
P	FPM w/PTFE Shaft Seal

Code	Control Options
Standard Pressure Compensator	
0 0 1	No Compensator
1 0 0	With Cover Plate, No Control Function
M M	Standard pressure control, integrated pilot valve
M R	Remote pressure control, integrated pilot valve
M F	Load Sensing (flow) control, integrated pilot valve
M T	Two spool LS control
Remote/Load Sense Compensator	
C	Standard version ¹
1	NG6 interface top side for pilot valves
W	With unloading function, 24VDC solenoid ¹
K	Prop.-pilot valve type PVACRE..35 mounted
Z	Without integrated pilot valve, NG6 interface, for mounting of accessory code PVAC
P	MT1 with mounted pilot valve PVAC1P ²
Horsepower Compensator Control	
Nominal Horsepower at 1500 RPM	
B	3 HP (19.5 Nm Torque)
C	4 HP (26 Nm Torque)
D	5.5 HP (36 Nm Torque)
E	7.5 HP (49 Nm Torque)
G	11 HP (71 Nm Torque)
H	15 HP (97 Nm Torque)
K	18.5 HP (120 Nm Torque)
M	22 HP (142 Nm Torque)
S	30 HP (195 Nm Torque)
Function	
L	Horsepower Compensator
C	Horsepower Compensator & Load Sensing
Variation	
A	NG6 Interface Top Side
B	No Pressure Compensation
C	Adjustable Pressure Compensation
D	Proportion Pilot Valve PVACPP* Mounted
Z	Accessories Mounted
Electro Hydraulic Control Options	
F P V	Proportional displacement control, no pressure compensation
U P	Proportional displacement control, with pressure compensation

¹ Not for MT

² Only for MT

NOTES:
Compensator differential Δp is to be adjusted:
Remote pressure comp., horsepower comp. 15 $\pm$ 1 bar
Load-sensing comp. (not horsepower comp.) 10 $\pm$ 1 bar
(Codes MF* and LS part of MT*)
Consult catalog on CD for electrohydraulic control options.



Piston Pumps

PVplus 063-360cc Model Ordering Code

PV									
Pump Variable Piston	Displace- ment	Rotation	Variations	Shaft & Mounting	Threads Code	Thru-Drive Option	Coupling Code	Seals	Control Options

Code	Displacement in ³ /rev (cc/rev)
063	3.8 (63)
080	4.8 (80)
092	5.6 (92)
140	8.5 (140)
180	10.9 (180)
270	16.5 (270)
360	22.0 (360)

Code	Rotation*
R	CW
L	CCW

*As viewed from shaft end.

Code	Pump Variations
1	Standard
g*	Customized Displacement and/or Pressure Setting

*Specify in cc/rev and/or bar.

Code	Shaft & Mounting					
	PV063/ 080/092		PV140/ 180		PV270	
	Shaft	Pilot	Shaft	Pilot	Shaft	Pilot
D	1 3/4" Keyed (SAE D)	4 Bolt SAE D	2" Keyed SAE F	4 Bolt SAE D	2" SAE Keyed	4 Bolt SAE E
E	13T Spline (SAE D)	4 Bolt SAE D	15T Spline SAE F	4 Bolt SAE D	15T Spline SAE F	4 Bolt SAE E
F			1 3/4" Keyed SAE D	4 Bolt SAE D		
G			13T Spline SAE D	4 Bolt SAE D		
K	40mm Keyed	4 Bolt 160 mm	50mm Keyed	4 Bolt 160 mm	65mm Keyed	4 Bolt 200 mm
L	W40 x 1.5 x 25 x 8T Spline DIN 5480	4 Bolt 160 mm	W50 x 2 x 24 x 9g Spline DIN 5480	4 Bolt 160 mm	W60 x 2 x 28 x 9g Spline DIN 5480	4 Bolt 200 mm

Code	Threads Code	
	Port*	Threads**
1	BSPP	Metric
3	UNF	UNC
4***	BSPP-M14	Metric
7	ISO 6149	UNC
8	ISO 6149	Metric

* Drain, gage, and flushing ports.

** Mounting and connecting threads

*** Only for PV063-PV180; pressure port 1 1/4" with 4xM14 instead of 4xM12

Code	Thru-Drive Option (1st Digit)
T	Single Pump Prepared for Thru-Drive
With Adapter for Second Pump	
A	SAE A, Ø3.25in (Ø82.55mm)
B	SAE B, Ø4.00in (Ø101.6mm)
C	SAE C, Ø5.00in (Ø127mm)
D ¹	SAE D, Ø6.00in (Ø152.4) mm
E ²	SAE E, Ø6.50in (Ø165.1mm)
G ³	Metric, Ø2.48in (Ø63mm)
H	Metric, Ø3.15in (Ø80mm)
J	Metric, Ø3.94in (Ø100mm)
K	Metric, Ø4.92in (Ø125mm)
L ¹	Metric, Ø6.30in (Ø160mm)
M ²	Metric, Ø7.87in (Ø200mm)

1 Only for PV063 and larger

2 Only for PV270

3 Only up to PV092

Code	Coupling Code
1	Single pump, no coupling
H	with coupling 25 x 1.5 x 15, DIN 5480
J	with coupling 32 x 1.5 x 20, DIN 5480
K	with coupling 40 x 1.5 x 25, DIN 5480
L	with coupling 50 x 2 x 24, DIN 5480
Y	with coupling SAE A 9T-16/32 DP
A	with coupling SAE - 11T-16/32 DP
B	with coupling SAE B 13T-16/32 DP
C	with coupling SAE B-B 15T-16/32 DP
D	with coupling SAE C 14T-12/24 DP
E	with coupling SAE C - C
F	with coupling SAE D, E
G	with coupling SAE F

Code	Seals
N	Nitrile
V	Fluorocarbon
W	Nitrile w/PTFE Shaft Seal
P	FPM w/PTFE Shaft Seal

Code	Second Pump* (2nd Digit)
1	No Second Pump and Coupling
2	PV140 or PV180 Mounted
3	PV Pump Mounted
4	Gear Pump Series PGP Mounted

* Specify 2nd pump with full model code.

COMPENSATOR NOTES:
Compensator differential Δp is to be adjusted:

Remote pressure comp., power comp. 15 $\pm$ 1 bar.
(Codes FR*, FT*, *L*, *C*, FPR, FPZ, FPG)

Load-sensing comp. (not power comp.) 10 $\pm$ 1 bar (Codes FF*)

Consult catalog on CD for electrohydraulic control options.

Code	Control Options
Standard Pressure Compensator	
0 0 1	No Compensator
1 0 0	With Coverplate, No Control Function
M M	Standard pressure control, integrated pilot valve
M R	Remote pressure control, integrated pilot valve
M F	Load Sensing (flow) control, integrated pilot valve
M T	Two spool LS control

Remote/Load Sense Compensator	
C	Standard version ¹
1	NG6 interface top side for pilot valves
W	With unloading function, 24VDC solenoid ¹
K	Prop.-pilot valve type PVACRE..35 mounted
Z	Without integrated pilot valve, NG6 interface, for mounting of accessory code PVAC
P	MT1 with mounted pilot valve PVAC1P ²

Horsepower Compensator Control	
Input Horsepower at 1500 RPM	
G	11 HP (71 Nm Torque)
H	15 HP (97 Nm Torque)
K	18.5 HP (120 Nm Torque)
M	22 HP (142 Nm Torque)
S	30 HP (195 Nm Torque)
T	37 HP (240 Nm Torque)
U	45 HP (290 Nm Torque)
W	55 HP (355 Nm Torque)
Y	75 HP (485 Nm Torque)
Z	90 HP (585 Nm Torque)
2	110 HP (715 Nm Torque)
3	132 HP (850 Nm Torque)
4	160 HP (850 Nm Torque)
5	180 HP (850 Nm Torque)
6	200 HP (850 Nm Torque)

Function	
Horsepower Compensator	
Horsepower Compensator & Load Sensing	
Variation	
A	NG6 Interface Top Side
B	No Pressure Compensation
C	Adjustable Pressure Compensation
D	Proportional Pilot Valve PVACPP* Mounted
Z	Accessories Mounted ³

Electro Hydraulic Control Options	
F P V	Proportional displacement control, no pressure compensation
U P	Proportional displacement control, with pressurecompensation

1 Not for MT

2 Only for MT

3 Accessories not included. Please specify on order with full model code.

Premier Series High Pressure/Performance Piston Pumps



The open circuit Premier Series pumps are variable displacement piston pumps with emphasis on superior design with few maintenance requirements. Superior inlet characteristics allow the pumps to run faster than competitive models without the added expense of boosting the inlet. Modified pistons that reduce the amount of trapped fluid volume result in improved efficiency.

The Premier Series pumps have been designed to operate on a variety of fluid types and in a wide range of industries where variable flow, high pressure and/or high speeds are required; such as: presses, construction machinery, injection molding, wood, aircraft, drilling, mining, steel and cranes.

Pump Performance Data

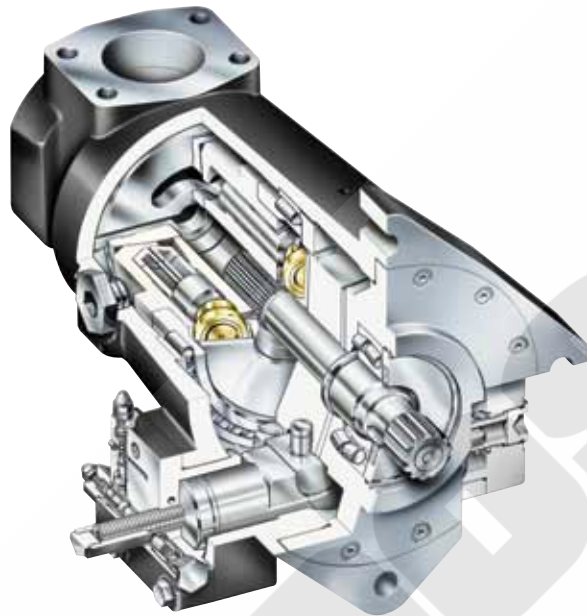
Model Series	Displacement in ³ /rev (cc/rev)	Max. Continuous Pressure PSI (BAR)	Max. Intermittent Pressure PSI (BAR)	Max Rated Drive Speed RPM	Pump Flow 1800 RPM & 100 PSI GPM (LPM)	Input Horsepower 1800 RPM & 5000 PSI HP (KW)
P05/P080	4.90 (80.3)	6000 (420)	7250 (500)	2550	38 (143.8)	113 (84.3)
P07/P110	6.70 (109.8)	6000 (420)	7250 (500)	2450	52 (196.8)	171 (127.5)
P09/P140	8.60 (140.9)	6000 (420)	7250 (500)	2300	66.5 (251.7)	217 (161.8)
P12/P200	12.20 (200.0)	6000 (420)	7250 (500)	2100	95 (359.6)	308 (229.7)
P16/P260	16.00 (262.2)	6000 (420)	7250 (500)	1850	124 (469.4)	404 (301.3)

Markets

Industrial	Presses, Shears, Aircraft Test Stands, Test Equipment, Simulators
Oil & Gas	Cementer & Pumper Centrifugal Drives
Mining	Tram, Steering, Conveyors

Applications

Premier Series High Pressure/Performance Piston Pumps

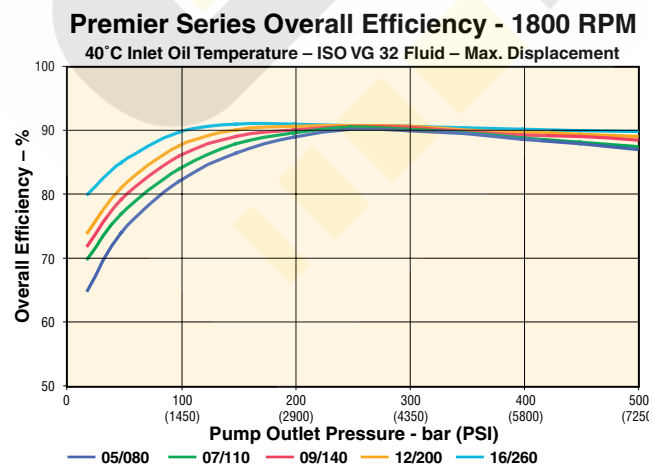
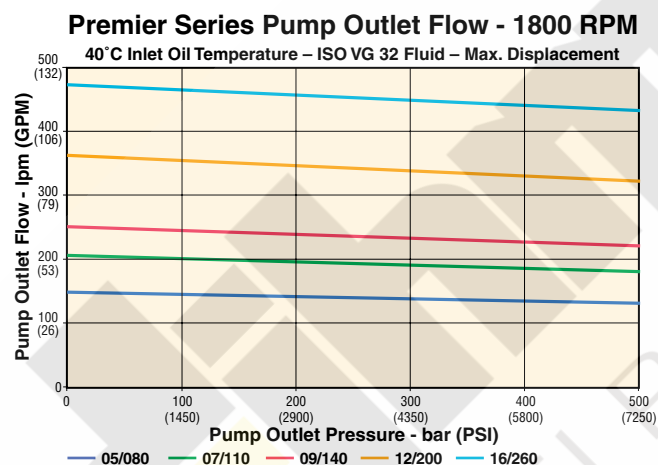
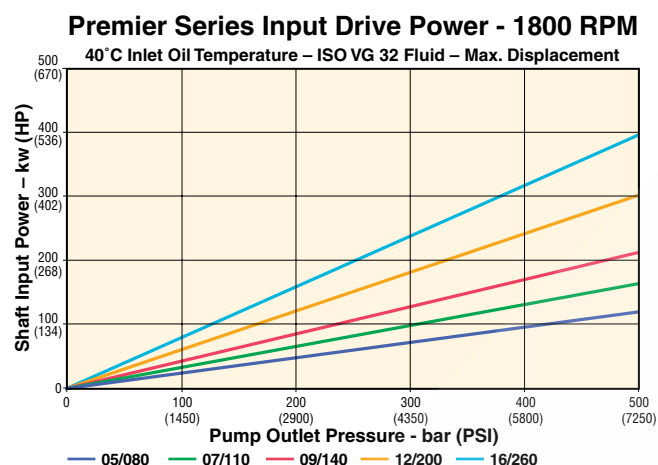


Benefits/Features

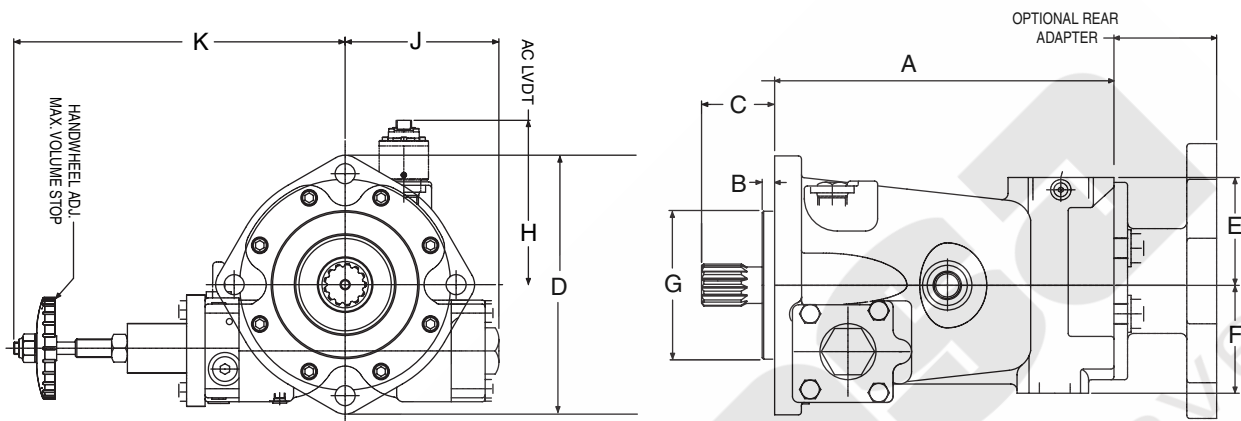
- Highest rated pressure of any comparable pump available in the market place today.
- Full power thru-drive capability allows two (2) pumps of the same displacement to be run in tandem at full rated pressure and flow, simultaneously.
- Fast, compensator response minimizes pressure overshoot.
- Two stage, pilot operated compensator provides sharp pressure cutoff at compensator setting, typically regulating pressure within 50 PSI (3.5 BAR). Compensator may easily be remotely controlled or used in load-sensing circuits.
- Precision barrel bearing absorbs radial forces, allowing longer operation at higher pressure and higher speeds.
- Piston design minimizes trapped oil volume to maximize efficiency.
- Angled barrel ports reduce the piston circle diameter, which allows oil to enter at reduced velocity. This allows the pump to run faster, with atmospheric inlet pressure.
- Spherical port plate and barrel face provides support to barrel to offset forces from angled ports.
- Large suction port reduces inlet flow velocity to allow the pumps to run at higher speeds with atmospheric inlet.
- Standard SAE split flange with inch or metric bolts, depending on pump version (SAE or metric)
- Conforms to SAE or ISO mounting standards.
- Damped low inertia rocker cam allows very quick compensation, resulting in more stable and quieter pump.
- Heavy duty shaft bearing to absorb side and thrust loads.
- High pressure shaft seal allows higher case pressure without external leakage. Note: it is always advisable to maintain the lowest possible case pressure.
- Drive shaft options include keyed or splined in SAE, ISO and DIN.
- A wide variety of optional controls are available and are designed with simplicity and a maximum of common elements.

Premier Series High Pressure/Performance Piston Pumps

Performance Characteristics



Premier Series High Pressure/Performance Piston Pumps



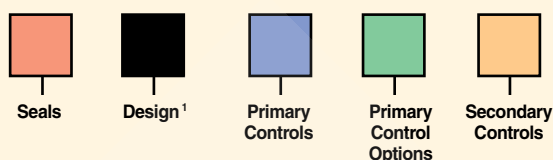
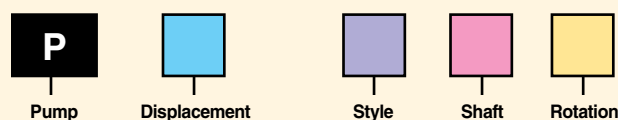
Dimensions, inch (mm)

Series	A1*	A2*	B	C max	D	E	F	G	H	J	K
P05	13.76 (225.5)	13.4 (218.6)	0.49 (8.0)	—	10.5 (172.1)	4.37 (71.6)	4.37 (71.6)	6.000-5.998 (98.32-98.29)	7.61 (124.7)	6.23 (102.1)	13.44 (220.2)
P080	21.33 (349.5)	20.77 (340.4)	0.61 (10.0)	5.61 (92)	16.28 (266.7)	6.78 (111.1)	6.78 (111.1)	10.984-10.980 (180.00-179.93)	11.80 (193.4)	9.65 (158.2)	20.83 (341.3)
P07	14.89 (224.0)	14.71 (241.1)	0.49 (8.0)	—	10.5 (172.1)	4.37 (71.6)	4.52 (74.1)	6.000-4.998 (98.32-81.90)	7.77 (127.3)	6.26 (102.6)	13.47 (220.7)
P110	23.08 (378.2)	22.80 (373.6)	0.61 (10.0)	5.61 (92)	16.28 (266.7)	6.78 (111.1)	7.01 (114.9)	10.984-10.980 (180.00-179.93)	12.05 (197.5)	9.71 (159.2)	23.94 (392.3)
P09	16.09 (267.7)	15.91 (260.7)	0.49 (8.0)	—	11.9 (31.1)	4.5 (73.7)	4.83 (79.1)	6.000-5.998 (98.32-98.29)	8.43 (138.1)	6.79 (111.3)	14.19 (232.5)
P140	24.94 (408.7)	24.66 (404.1)	0.64 (10.5)	5.61 (92)	18.44 (302.2)	6.98 (114.3)	7.49 (122.7)	10.984-10.980 (180.00-179.93)	13.07 (214.2)	10.51 (172.3)	22.00 (360.5)
P12	17.26 (282.8)	17.15 (281.0)	0.63 (10.3)	—	14.8 (242.5)	4.5 (73.7)	5.37 (88.0)	6.500-6.498 (106.52-106.48)	8.26 (135.4)	6.92 (113.4)	14.31 (234.5)
P200	26.75 (438.4)	26.58 (435.6)	0.58 (9.5)	5.61 (92)	22.94 (376)	6.98 (114.3)	8.32 (136.4)	13.669-13.666 (224.00-223.95)	12.81 (209.9)	10.73 (175.8)	22.19 (363.7)
P16	19.02 (311.7)	18.75 (307.3)	0.63 (10.3)	—	14.66 (240.2)	4.5 (73.7)	5.5 (90.1)	6.500-6.498 (106.52-106.48)	8.43 (138.1)	7.27 (119.1)	14.57 (238.8)
P260	29.85 (489.2)	29.43 (482.3)	0.58 (9.5)	5.61 (92)	22.73 (372.4)	6.98 (114.3)	8.91 (146.0)	15.256-15.254 (250.00-249.96)	13.07 (214.2)	11.28 (184.8)	22.59 (370.2)

*A1 = without rear drive, A2 = with rear drive

Piston Pumps

Premier Model Ordering Code



Code	Displacement
05	4.90 in ³ /rev (80.3 cc/rev)
07	6.70 in ³ /rev (109.8 cc/rev)
09	8.60 in ³ /rev (140.9 cc/rev)
12	12.20 in ³ /rev (200.0 cc/rev)
16	16.00 in ³ /rev (262.2 cc/rev)
080	4.90 in ³ /rev (80.3 cc/rev)
110	6.70 in ³ /rev (109.8 cc/rev)
140	8.60 in ³ /rev (140.9 cc/rev)
200	12.20 in ³ /rev (200.0 cc/rev)
260	16.00 in ³ /rev (262.2 cc/rev)

Code	Style
H	High Speed (> 1800 RPM) – P16, P260, P12, P200, P09 & P140 only
Q	High Speed (≤ 1800 RPM) – P16, P260, P12, P200, P09 & P140 only
Omit	P07, P110, P05 & P080

Code	Shaft
2	Keyed – SAE or ISO
3	Splined – SAE or ISO
5	Splined – SAE High Torque (P16 only)
6	Keyed – DIN (metric pumps only) – DIN 40mm for sizes 080 & 110 DIN 50mm for sizes 140 & 200 DIN 60mm for size 200
7	Splined – DIN (metric pumps only) DIN 40mm for sizes 080 & 110 DIN 50mm for sizes 140 & 200 DIN 60mm for size 200
8	Keyed – DIN (DIN 60mm for size 200 only)
9	Splined – DIN (DIN 60mm for size 200 only)

Code	Rotation
R	Clockwise
L	Counterclockwise

Code	Seals
1	Nitrile (Buna-N)
4	EPR ²
5	Fluorocarbon

Code	Primary Controls
C	Compensator
L	Load Sensing Compensator (50 PSI (3.4 BAR) Pressure Drop)
M	Load Sensing Compensator (200 PSI (13.8 BAR) Pressure Drop)
R	Rotary Servo
H	Hydraulic Servo
E	Electrohydraulic Servo**
J	Low Torque Limiter
K	High Torque Limiter
V	Load Sensing (L) + Low Torque Limiter (J)
W	Load Sensing (L) + High Torque Limiter (K)
Y	Load Sensing (M) + Low Torque Limiter (J)
Z	Load Sensing (M) + High Torque Limiter (K)

Code	Primary Control Options
1	Max. Volume Screw without Indicator
2	Handwheel Max. Volume Control without Indicator (not available w/R, H, E & X primary controls)
3	Max. Volume Screw with Potentiometer**
4	Max. Volume Screw with LVDT**
5	Max. Volume Screw with Mechanical Cam Angle Indicator
6	Handwheel Max. Volume Control with Potentiometer** (not available with R, H, E & X primary controls)
7	Handwheel Max. Volume Control with LVDT** (not available with R, H, E & X primary controls)
8	Handwheel Max. Volume Control with Mechanical Cam Angle Indicator (not available w/R, H, E & X primary controls)

Code	Secondary Controls
0	None
P	Compensator Override (for E, H & R primary controls only)
J	Low Torque Limiter Override (for E, H & R primary controls only)
K	High Torque Limiter Override (for E, H & R primary controls only)

¹ Assigned by manufacturer.

² Not approved for ATEX applications.



Piston Pumps

Premier Model Ordering Code



External
Drive



External
Mounting



Special
Modifications

Code	External Drive
0	None
M	Rear Blanking Plate
A	SAE-A (SAE 82-2) with SAE-A (SAE 16-4) Coupling
G	SAE-A (SAE 82-2) with SAE-B (SAE 22-4) Coupling
B	SAE-B (SAE 101-2 & SAE 101-4) with SAE-B (SAE 22-4) Coupling
Q	SAE-B (SAE 101-2 & SAE 101-4) with SAE-BB (SAE 25-4) Coupling
C	SAE-C (SAE 127-2 & SAE 127-4) with SAE-C (SAE 32-4) Coupling
N	SAE-C (SAE 127-2 & SAE 127-4) with SAE-CC (SAE 38-4) Coupling
D	SAE-D (SAE 152-2 & SAE 152-4) with SAE-D & SAE-E (SAE 44-4) Coupling
E	SAE-E (SAE 165-2 & SAE 165-4) with SAE-D & SAE-E (SAE 44-4) Coupling – P12/200 & P16/260 only
T	ISO 180 B4HW Flange, K40N Coupling
U	ISO 180 B4HW Flange, K50N Coupling
L	ISO 180 B4HW Flange, DIN 40-18 Coupling – P16/260 only
S	ISO 180 B4HW Flange, DIN 50-24 Coupling – P16/260 only
R	ISO 224 B4HW Flange, K50N Coupling – P12/200 & P16/260 only
V	ISO 250 B4HW Flange, K50N Coupling – P16/260 only
W	ISO 200 B4HW Flange, K50N Coupling – P12/200 & P26/260 only
X	ISO 160 B4HW Flange, K40N Coupling
Y	ISO 125 B4HW Flange, K32N Coupling
Z	ISO 100 B4HW Flange, K25N Coupling

Code	External Mounting
0	No External Pump Mounted
1	External Pump Mounted (must be separately specified) – Requires Special Modification “-M2”

Code	Special Modifications
Omit	None
NP	No Paint ³
EX	ATEX APPROVED PUMP (May include additional modifications.)
M2	Other Special Modification (example: bronze caged barrel bearing for low viscosity fluids, mechanical shaft seal, hydrostatic cam, tandem pumps, etc.) ³

³ These options are not approved for ATEX applications.

Allowable Controls **

Primary Control	Primary Option Plus Secondary Control																			
	10	20	30	40	50	60	70	80	1P	3P	4P	5P	1J	3J	4J	5J	1K	3K	4K	5K
C	•	•	•	•	•	•	•	•												
E	•		•	•	•				•	•	•	•	•	•	•	•	•	•	•	•
H	•		•	•	•				•	•	•	•	•	•	•	•	•	•	•	•
J	•	•	•	•	•	•	•	•												
K	•	•	•	•	•	•	•	•												
L	•	•	•	•	•	•	•	•												
M	•	•	•	•	•	•	•	•												
R	•		•	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•
V	•	•	•	•	•	•	•	•												
W	•	•	•	•	•	•	•	•												
Y	•	•	•	•	•	•	•	•												
Z	•	•	•	•	•	•	•	•												

** The following control options are not available for ATEX 94/9EC: Electrohydraulic Servo (E**) and use of either potentiometer or LVDT position feedback (*3*, *4*, *6*, *7*)



= Omit if not required

VP1 Load Sensing Truck Pumps



The VP1 is the world's first variable displacement pump for truck applications. It can be close-coupled to a gearbox PTO (power take-off) or to a coupling independent PTO (e.g. an engine PTO) which meets ISO standard 7653-1985.

- Variable displacement
- Low noise level
- High power-to-weight ratio
- Compact and lightweight
- Highly efficient
- Sturdy design
- Withstands low temperatures
- Can be close coupled and tandem mounted

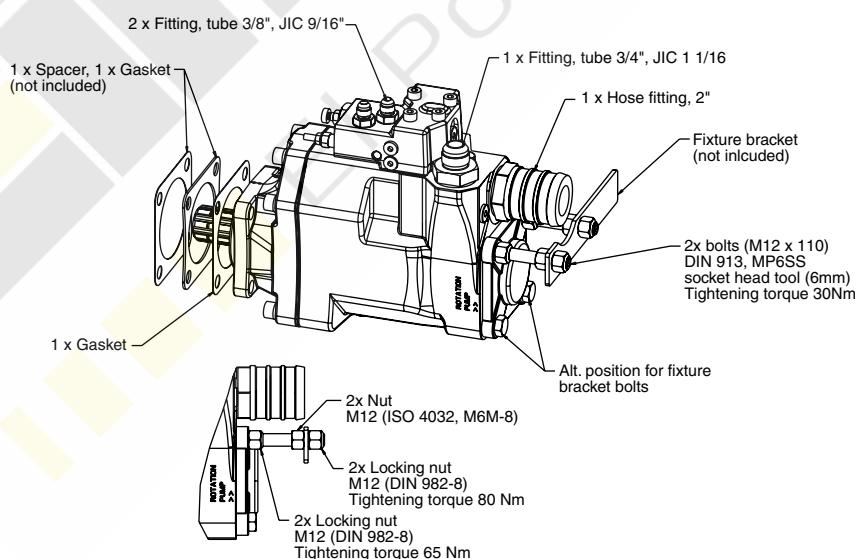
Pump Performance Data

Model Series	Max. Displacement in ³ /rev (cc/rev)	Outlet Pressure PSI (BAR)	Drive Speed RPM	Flow @ Rated RPM GPM (LPM)	Max. Horsepower HP (KW)
VP1-45	2.75 (45)	4350 (300)	2400	26 (98.4)	80 (59.7)
VP1-75	4.58 (75)	4350 (300)	2100	39 (147.6)	120 (89.5)
VP1-120	7.32 (120)	4350 (300)	1800	53 (200.6)	165 (123.0)

Markets

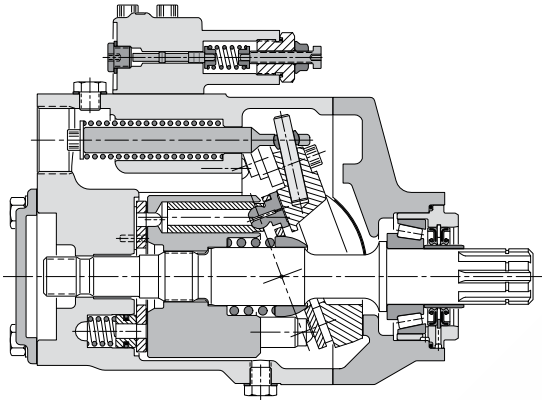
Forestry	Knuckle Boom Loader, Cranes
Construction	Off-Highway Trucks, Fan Drives
Mining	Dump Trucks
Material Handling	Truck Mounted Cranes, Lift Trucks
Recycling	Vaccum Truck Systems, Refuse Trucks - ASL, Rear Loaders
Military	Fan Drives

Applications



Note: Complete Mounting and Fitting Kit available as part number dwg of kit 3785286. Contains BSP to JIC fittings for suction, pressure, load sense and drain lines along with studs for rear support and optional PTO shim plate with extra gasket.

VP1 Load Sensing Truck Pumps



Benefits/Features

- Thru-drive capability on VP1-045 and VP1-075
- Higher self-priming speeds
- Operating pressures to 5801.51 PSI (400 BAR)
- New frame sizes to meet market requirements
- Higher overall efficiency
- Increased reliability
- Reduced noise level
- Smaller installation dimensions

Control

- Load sense and pressure limiter

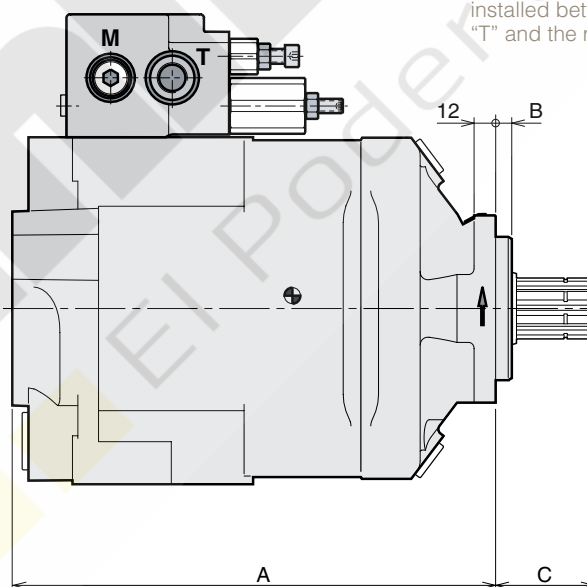
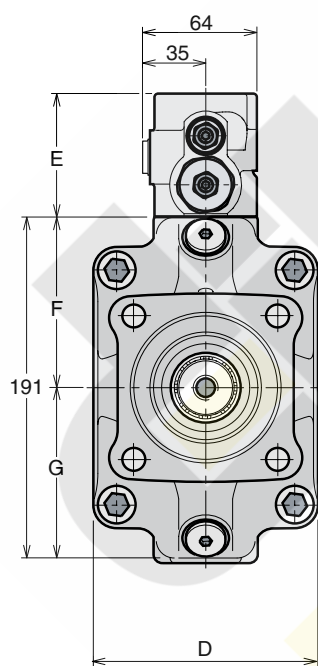
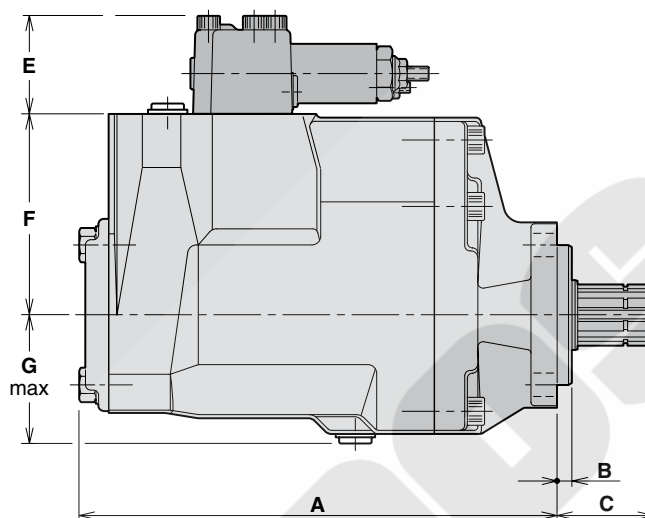
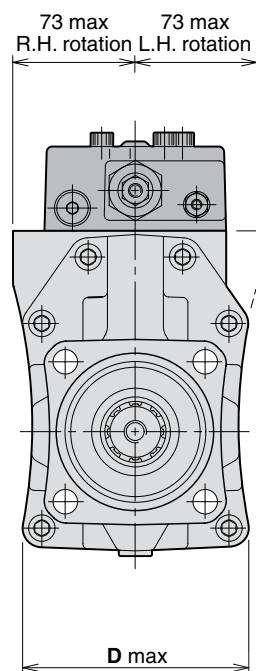
Control Performance

- Data on response

Thru-drive

- Fitting Kit 3797795 will accommodate mounting a DIN 5462 pump to the rear of the VP1. Check the factory for torque limitations on rear mount.

VP1 Load Sensing Truck Pumps



IMPORTANT!
The control is not drained through the pump case. An external line must be installed between the control drain port "T" and the reservoir.

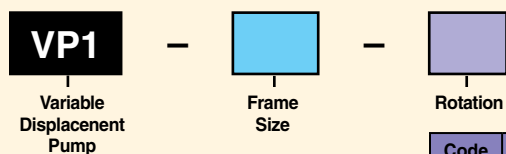
Dimensions, inch (mm)

Series	A max	B	C	D max	E	F	G max	H max
VP1-045 VP1-075	10.89 (276.5)	0.33 (8.5)	2.17 (55)	5.20 (132)	2.20 (56)	4.53 (115)	2.80 (71)	2.87 (73)
VP1-120	10.59 (269)	0.35 (9)	2.17 (55)	4.92 (125)	2.68 (68)	3.78 (96)	3.74 (95)	—



Piston Pumps

VPI Model Ordering Code



Code	Frame Size
045	2.75 in ³ /rev (45 cc/rev)
075	4.58 in ³ /rev (75 cc/rev)
120	7.32 in ³ /rev (120 cc/rev)

Code	Rotation
L	Left Hand (CCW)
R	Right Hand (CW)

- NOTES:**
1. All fittings must be ordered separately.
 2. Use seven digit number when placing order.
 3. Fitting Kit 378 5286 provides adapter fittings for inlet /outlet,

Ordering Code	Ordering No.
VP1-045-R	378 0334
VP1-045-L	378 0335
VP1-075-R	378 0336
VP1-075-L	378 0337
VP1-120-R	378 3182
VP1-120-L	378 3183

load sense and drain ports to JIC connections, along with the mounting gasket and support studs for installation.

Fitting Kits

Each kit consists of a pressure fitting, a suction fitting and corresponding seal washers.

Kits with straight suction fitting

Ordering no.	C ₁	C ₂ dia.
370 4936	BSP ¾" (19.1mm)	2" (50.8mm)
370 7220*	BSP 1" (25.4mm)	2" (50.8mm)

* Above 100 l/min

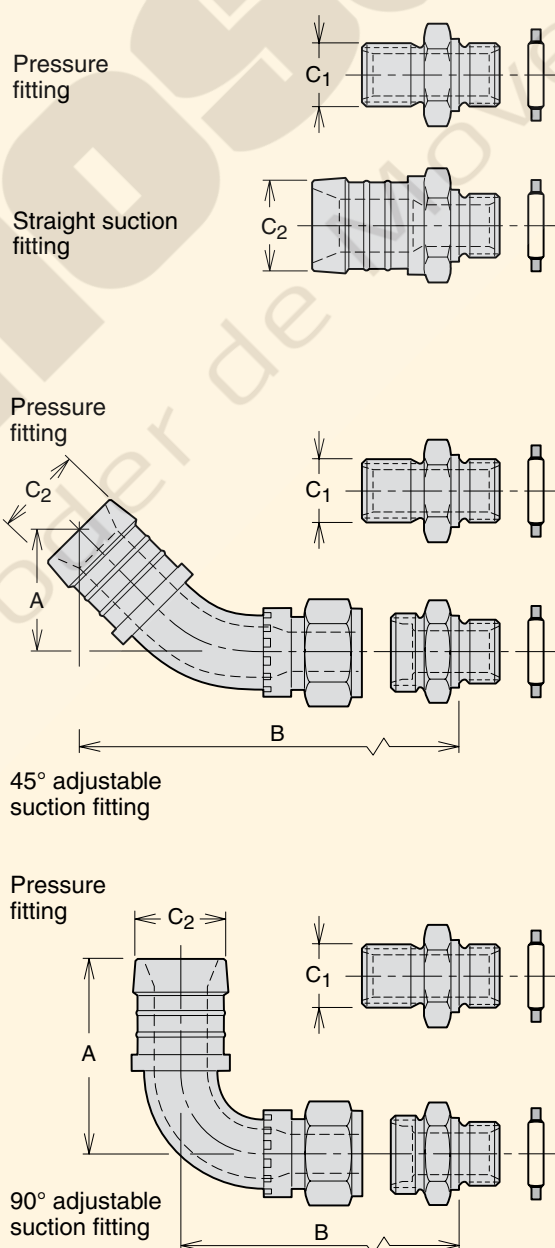
Kits with 45° suction fitting

Ordering no.	A in. (mm)	B in. (mm)	C ₁	C ₂ dia.
379 9563	2.80 (71)	6.06 (154)	BSP ¾" (19.1mm)	2" (50.8mm)
379 9562*	2.52 (64)	5.79 (147)	BSP 1" (25.4mm)	2½" (63.5mm)

* Above 100 l/min

Kits with 90° suction fitting

Ordering no.	A in. (mm)	B in. (mm)	C ₁	C ₂ dia.
379 9918	5.67 (144)	5.04 (128)	BSP 1" (25.4mm)	2" (50.8mm)



PAVC Medium Pressure/Super Charged Piston Pumps



PAVC piston pumps are ideal for many applications with operating pressure up to 3000 PSI (210 BAR). These compact pumps feature convenient cartridge style controls and carry a full pressure rating on most water glycol fluids.

- High strength cast-iron housing
- Built-in supercharger
- High speed capability - 3000 RPM (2600 RPM PAVC100)
- Sealed shaft bearing

- Two piece design for ease of service
- Cartridge bronze clad port plate
- Airbleed standard for quick priming
- Hydrodynamic cylinder barrel bearing
- Thru-shaft (PAVC100 only)
- Full pressure rating on water glycol fluids
- Pump case and shaft seal - see inlet pressure only
- Filter and/or cool drain line (100 PSI Max.) (6.9 BAR Max.)

Pump Performance Data

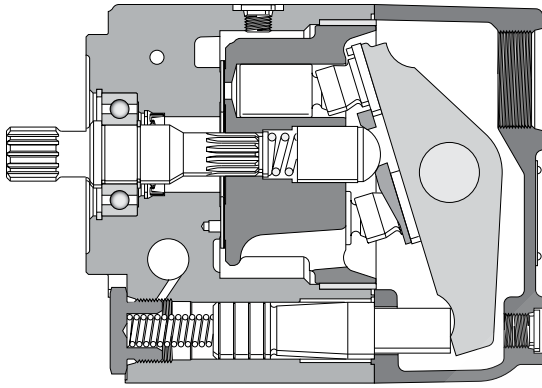
Model Series	Max. Displacement in ³ /rev (cc/rev)	Rated Outlet Pressure PSI (BAR)	Drive Speed RPM	At MAX RPM and 3000 PSI	
				Flow GPM (LPM)	Input Horsepower HP (KW)
PAVC33	2.01 (33)	3000 (210)	3000	25 (94.6)	50 (37.3)
PAVC38	2.32 (38)	3000 (210)	3000	28 (106.0)	55 (41.0)
PAVC65	3.97 (65)	3000 (210)	3000	52 (196.8)	96 (71.6)
PAVC100	6.10 (100)	3000 (210)	2600	69 (261.2)	140 (104.4)



Piston Pumps (Mobile & Industrial)

PAVC Medium Pressure/Super Charged Piston Pumps

Performance Characteristics



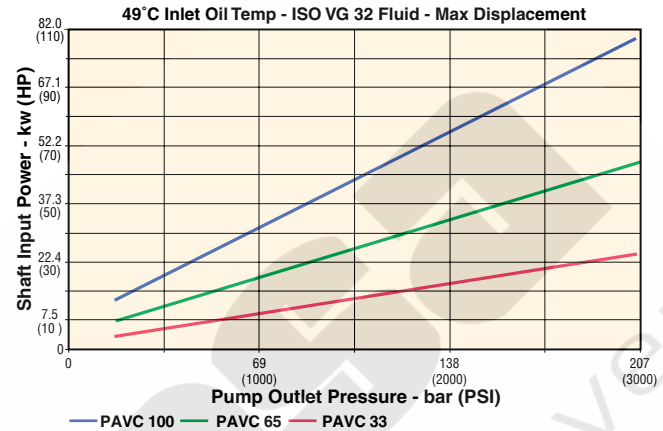
Benefits/Features

- High strength cast-iron housing
- Built-in supercharger ensures high speed capability - 3000 RPM (2600 RPM PAVC100)
- Sealed shaft bearing
- Two-piece design for ease of service
- Cartridge type controls field changeable
- Replaceable bronze clad port plate
- Airbleed standard for quick priming
- Hydrodynamic cylinder barrel bearing
- Thru-shaft (PAVC100 only)
- Full pressure rating on most water glycol fluids
- Pump case and shaft seal are subjected to inlet pressure only
- Filter and/or cool drain line 100 PSI (7 BAR) maximum

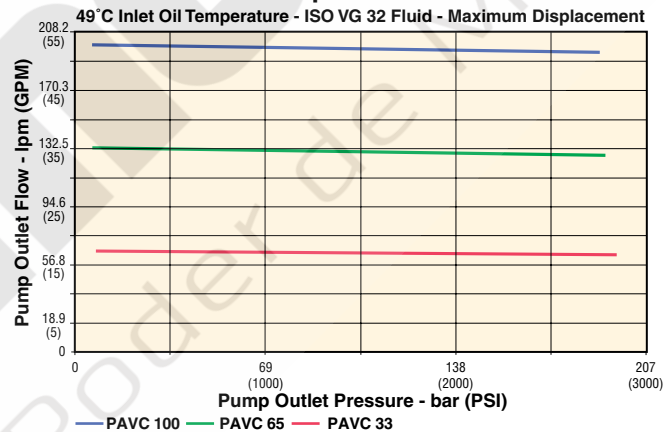
Controls

- Pressure compensation
- Load sensing
- Power (torque) limiting
- Power and load sensing
- Remote pressure compensation
- Adjustable maximum volume stop
- Low pressure standby

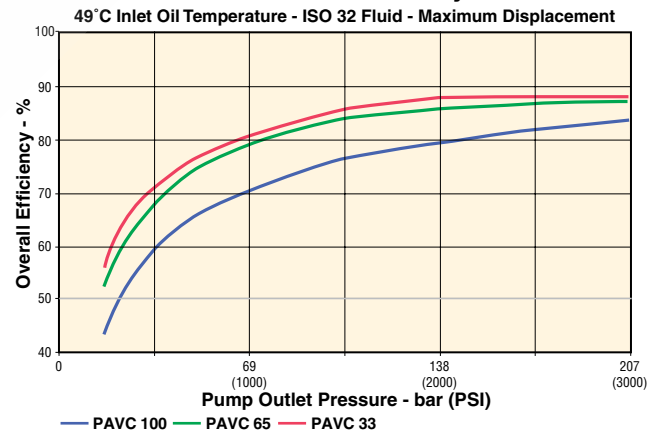
PAVC Series Shaft Input Power - 2000 RPM



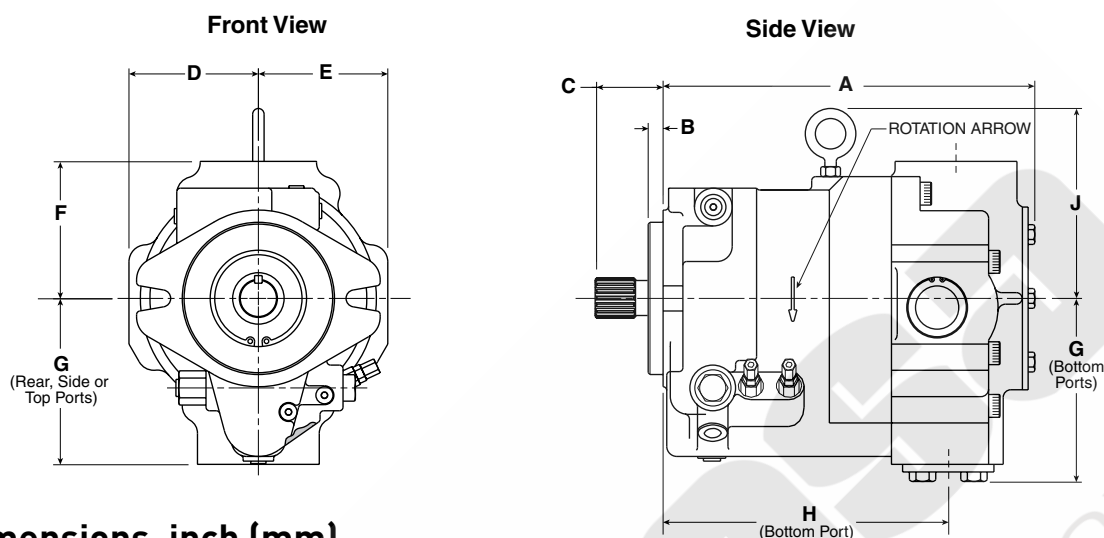
PAVC Series Pump Outlet Flow - 2000 RPM



PAVC Series Overall Efficiency - 2000 RPM



PAVC Medium Pressure/Super Charged Piston Pumps



Dimensions, inch (mm)

Dim.	PAVC33/38		PAVC65		PAVC100	
	Rear Ported	Side Ported	Rear Ported	Top Ported	Rear Ported	Top/Bottom Ported
A	7.25 (184.15)	7.32 (185.93)	8.82 (224.03)	8.82 (224.02)	11.95 (303.53)	12.21 (310.13)
B	0.37 (9.39)	0.37 (9.37)	0.49 (12.45)	0.49 (12.44)	0.49 (12.44)	0.49 (12.44)
C	2.31 (58.67)	2.31 (58.67)	2.19 (55.63)	2.19 (55.62)	2.19 (55.62)	2.19 (55.62)
D	3.31 (84.07)	4.17 (105.92)	4.00 (101.60)	4.00 (101.60)	4.25 (107.95)	4.25 (107.94)
E	3.31 (84.07)	3.53 (89.66)	4.00 (101.60)	4.00 (101.60)	4.25 (107.95)	4.25 (107.94)
F	2.50 (63.50)	2.50 (63.50)	3.50 (88.90)	3.38 (85.85)	4.62 (117.34)	4.50 (114.30)
G	3.81 (96.77)	4.12 (104.65)	4.56 (115.82)	4.56 (115.82)	5.57 (141.47)	6.25 (159.25)
H	—	—	—	—	—	9.37 (237.99)
J	—	—	—	—	6.24 (158.49)	6.24 (159.49)

PAVC100 SAE B, SAE BB and SAE C Thru-drive Kits

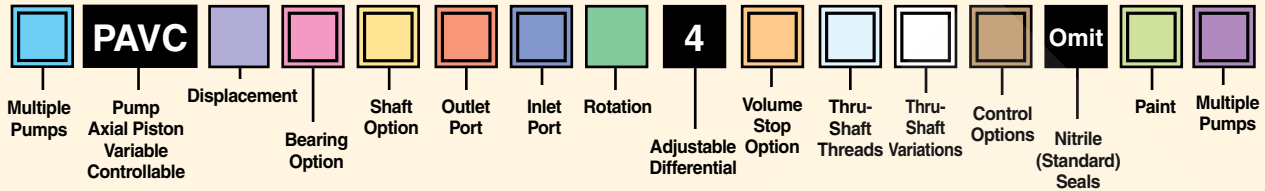
Pump Series	Mount	Spline	Kit #
PAVC 100...6B3	SAE B	SAE B	787076
PAVC 100...6B4	SAE B	SAE BB	787077
PAVC 100...6C3	SAE C	SAE C	787076

Note: Pumps can be converted from/to SAE B, BB or SAE C thru-drives by using the kits listed.



Piston Pumps

PAVC Model Ordering Code



Code	Multiple Pumps
Omit	Single Pump
—	Factory Mounted to Rear of Another Pump

Code	Displacement in ³ /rev (cm ³ /rev)
33	2.0 (33)
38	2.3 (38)
65	4.0 (65)
100	6.1 (100)

Code	Bearing Option
Omit	Single Piece Shaft
9*	Dual Bearing

* For applications where side loading may be experienced. Max. side load = 113.4 kg (250 lbs).

Typical Applications:
Belt/chain drive
Universal joint drive
Massive couplings
Foot mount installations

Code	Shaft Option	
	Size 33/38	Size 65/100
Omit	7/8" Keyed SAE B	1 1/4" Keyed SAE C
B	13T Spline SAE B	14T Spline SAE C
C*	—	1 1/2" Keyed SAE CC
D*	—	17T Spline SAE CC

* Size 100 only

Code	Outlet Port		
	Outlet	Location	Type
Omit	Str. Thread	Top	SAE/Inch
3*	Flange	Top	SAE/Inch

* Size 100 only

Code	Inlet Port			
	33/38 Inlet	65 Inlet	100 Inlet	Type
Omit	Str. Thd., Rear	Str. Thd., Rear	Flange, Rear	SAE/Inch Threads
2	Flange, Side	Flange, Top	Flange, Top/Bottom	SAE/Inch Threads

Code	Rotation*
R	Right CW
L	Left CCW

* Viewed from shaft end.

Code	Volume Stop Options
Omit	Volume Stop Plugged
2	Maximum Volume Stop
5*	Max. Volume Stop with O-ring

* Not available with Thru-Shaft option on Size 100.

Code	Thru-Shaft Threads*
Omit	No Thru-Shaft
6	Thru-Shaft, UNC

* Available on Size 100 only.

Code	Thru-Shaft Variations
Omit	No Thru-Shaft Option
A3	Thru-Shaft, SAE AA Pilot, 9 Tooth 20/40 Pitch Spline Coupling, PAVC 100 Only
A4	Thru-Shaft, SAE A Pilot, 9 Tooth 16/32 Pitch Spline Coupling, PAVC 100 Only
*B3	Thru-Shaft, SAE B Pilot, 13 Tooth 16/32 Pitch Spline Coupling, PAVC 100 Only
*B4	Thru-Shaft, SAE B Pilot, 15 Tooth 16/32 Pitch Spline Coupling, PAVC 100 Only
*C3	Thru-Shaft, SAE C Pilot, 14 Tooth 12/24 Pitch Spline Coupling, PAVC 100 Only

Inlet port option "2" or "8" (top/bottom) must be used with all Thru-Shaft pumps.

* Use SAE C-C shaft on thru-shaft pump variation when combined input torque of front and rear pumps exceeds 565 N·m (5000 In-Lbs).

Code	Control Option
Omit	Standard Pressure Compensated Setting Pressure 41-207 bar (600-3000 PSI)
A	Pressure & Flow (Load Sensing)
*C	Pressure, Flow & Power
*H	Pressure Comp. & Power
**†M	Remote Pressure
**†ME	Remote Pressure
†AM	Remote Pressure & Flow
††CM	Remote Pressure, Flow & Power
††HM	Remote Pressure & Power

* Power controlled pumps (H, C, HM or CM) must have maximum input power limit specifications at a particular drive speed (RPM) and compensator pressure setting (PSI) included with order. Power controlled pumps that do not have input power limit specifications, will be set at default setting (22.5 HP @ 1800 RPM and 3000 PSI) "H" & "C" (60 HP @ 1800 RPM and 3000 PSI) "HM" & "CM"

** "M" may be remotely controlled;

"ME" requires external pilot

† Pumps with M, ME, AM, CM or HM controls will be set to compensate at 207 bar (3000 PSI) unless Chart #1 specifies otherwise.

Code	Painting
Omit	No Paint
P	Paint

Code	Multiple Pumps
Omit	Single Pump
—	Pump Factory Mounted on Rear

Chart #1

Item	Setting
RPM	—
PSI	—
HP	—
GPM	—

Ordering Notes

Unless otherwise specified, pump is shipped at maximum GPM (1800 RPM) and set to 69 bar (1000 PSI) [See † Exceptions].

When factory settings are required, the items shown in Chart #1 must be included with order.

= Omit if not required or to select standard option coded "omit".

F11 Small Frame Fixed Displacement Bent-Axis Pumps



F11 is a well proven bent axis, fixed displacement heavy-duty pump Series. They can be used in open or closed circuit applications where high efficiency, high drive speeds, high pressure and indirect drives are desired. The F11 will provide high output flows in a very compact package.

Pump Performance Data

Model Series	Displacement in ³ /rev (cc/rev)	Continuous Pressure PSI (BAR)	Rated Speed RPM	Flow @ Rated RPM GPM (LPM)
F11005	0.30 (4.9)	5000 (350)	4600	5.5 (20.8)
F11006	0.37 (6.0)	5000 (350)	4200	6.6 (25.0)
F11010	0.60 (9.8)	5000 (350)	4200	11 (41.6)
F11012	0.76 (12.5)	5000 (350)	3850	12.5 (47.3)
F11014	0.87 (14.3)	5000 (350)	3900	14 (53.0)
F11019	1.16 (19.0)	5000 (350)	3500	17 (64.4)

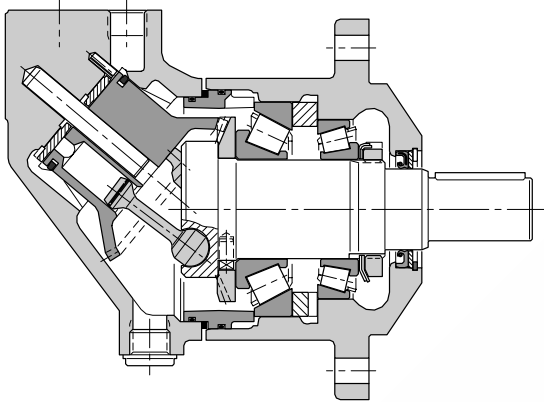
Markets

Applications

Forestry	Saw Drives, Feller Bunchers, Skidder, Forwarder, Cranes, Mowers / Cutters
Industrial	Aircraft Test Stands
Marine	Deck Cranes, Constant Tension Winches, Hatch Covers
Oil & Gas	Nitrogen Pumps, Frac Trucks, Coil Tubing
Construction	Skid Steer, Off-Highway Trucks, Fan Drives, Cranes, Dust Collector, Excavator
Mining	Drill Rigs, Top Drives, Loaders, Subsurface Loaders, Tunneling Equipment
Material Handling	Conveyor Drives, Truck Mounted Cranes, Mixers
Recycling	Shredders, Vacuum Truck Systems
Military	Fan Drives

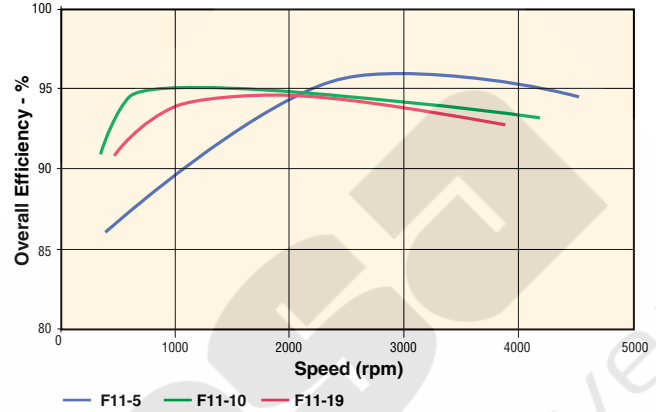
F11 Small Frame Fixed Displacement Bent-Axis Pumps/Motors

Performance Characteristics



F11 Series Overall Efficiency

Pump - 250 bar (3625 PSI)



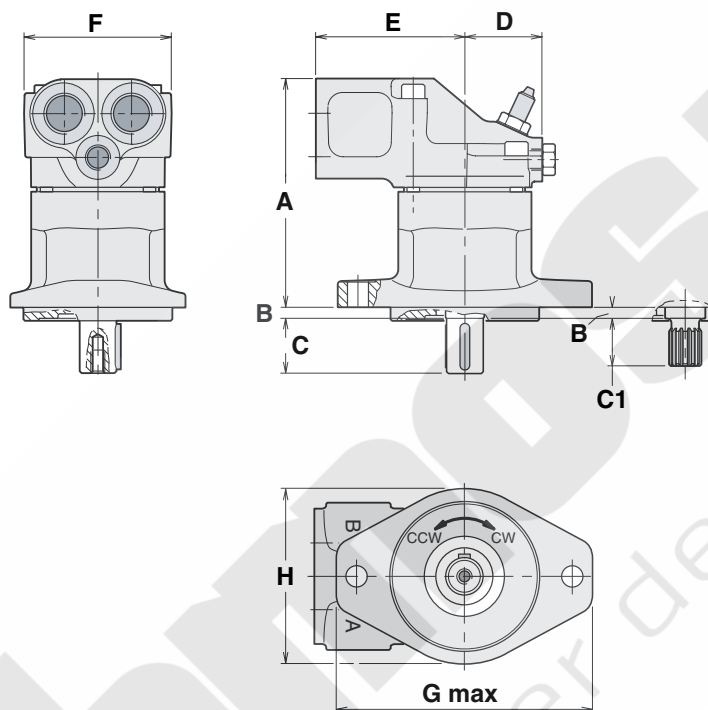
Benefits/Features

- F11 fixed pumps can be used at unusually high shaft speeds
- Intermittent operating pressures to 6000 PSI (413.7 BAR)
- Compact, lightweight pump, high power to weight ratio
- Laminated piston ring provides low internal leakage and thermal shock resistance
- F11 Series have very few moving parts providing long life and service friendly design
- Heavy duty roller bearings for indirect drive

F11 Small Frame Fixed Displacement Bent-Axis Pumps/Motors

F11-14

(SAE versions)



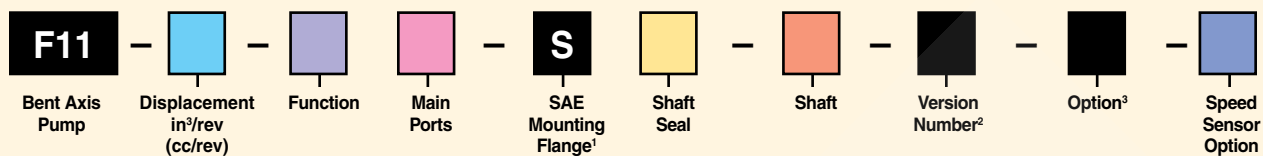
Dimensions, inch (mm)

Series	A max	B	C	C1	D	E	F	G max	H
F11-05	5.28 (134.1)	.31 (7.8)	1.57 (39.9)	0.39 (8.89)	1.87 (47.5)	2.56 (65.0)	3.31 (84.1)	5.0 (127.0)	3.78 (96.0)
F11-06	6.21 (175.7)	0.31 (7.9)	1.50 (38.1)	1.30 (33.0)	2.09 (53.1)	4.02 (102.1)	3.98 (101.1)	6.85 (174.0)	4.72 (119.9)
F11-10	6.21 (175.7)	0.31 (7.9)	1.50 (38.1)	1.30 (33.0)	2.09 (53.1)	4.02 (102.1)	3.98 (101.1)	6.85 (174.0)	4.72 (119.9)
F11-12	6.14 (156.0)	.55 (14.0)	1.97 (50.0)	.87 (22.1)	2.09 (53.1)	4.02 (102.1)	3.98 (101.1)	5.98 (151.9)	4.57 (116.1)
F11-14	6.21 (175.7)	0.31 (7.9)	1.50 (38.1)	1.30 (33.0)	2.09 (53.1)	4.02 (102.1)	3.98 (101.1)	6.85 (174.0)	4.72 (119.9)
F11-19	7.13 (181.1)	0.31 (7.9)	1.50 (38.1)	1.30 (33.0)	2.48 (63.0)	3.46 (87.9)	4.49 (114.0)	6.93 (176.0)	4.84 (122.9)



Piston Pumps

F11 Model Ordering Code



Code	Displacement in^3/rev (cc/rev)
005*	0.30 in^3/rev (4.9 cc/r)
010*	0.60 in^3/rev (9.8 cc/r)
012*	0.76 in^3/rev (12.5 cc/r)
014	0.87 in^3/rev (14.3 cc/r)
019	1.16 in^3/rev (19.0 cc/r)

* ISO or CETOP mounting options, see catalog on CD

Code	Function	005	010	012	014	019
R	Pump, CW Rotation	x	x	x	x	x
L	Pump, CCW Rotation	x	x	x	x	x

Code	Main Ports	005	010	012	014	019
U	SAE, UN Threads	x	x	—	x	x
B	BSP Threads	x	x	x	—	x
F	SAE 6000 PSI Flange*	—	x	x	x	—

* Metric threads

x: Available —: Not Available

¹CETOP and ISO mounting also available.
See catalog on CD.

²Assigned by factory for special versions

³None (see catalog on CD)

Code	Shaft Seal	005	010	012	014	019
N	NBR*, Low Pressure	x	x	—	—	x
V	FPM**, High Pressure, High Temperature	x	x	x	x	x

* NBR - Nitrile rubber

**FPM - Fluorocarbon rubber

Code	Shaft	005	010	012	014	019
T	SAE Key	—	—	—	x	x
S	SAE Spline	x	x	x	x	x
K	Metric Key	x	x	x	x	x
D	DIN 5480 Spline	x	x	x	x	x

Code	Speed Sensor	005	010	012	014	019
P	Prepared for Speed Sensor	—	—	x	x	x

Order speed sensor kit# 3785190 separately

F12 Large Frame Fixed Displacement Bent-Axis Pumps



F12 is a high performance, bent axis, fixed displacement heavy-duty pump series. They can be used in numerous applications where high efficiency, high drive speeds, high pressure and indirect drives are desired. The F12 will provide high output flows in a very compact package.

Pump Performance Data

Model Series	Displacement in ³ /rev (cc/rev)	Continuous Pressure PSI (BAR)	Rated Speed RPM	Flow GPM (LPM)
F12-030	1.83 (30.0)	6000 (420)	3150	23 (87.1)
F12-040	2.44 (40.0)	6000 (420)	2870	28 (106.0)
F12-060	3.64 (59.6)	6000 (420)	2500	37 (140.1)
F12-080	4.91 (80.4)	6000 (420)	2300	46 (174.1)
F12-090	5.68 (93.0)	6000 (420)	2300	53.5 (202.5)
F12-110	6.72 (110.1)	6000 (420)	2290	63 (238.5)
F12-125	7.63 (125.0)	6000 (420)	2290	72 (272.5)
F12-150	9.15 (150.0)	5000 (350)	3200	103 (389.9)
F12-250	14.77 (242.0)	5000 (350)	2700	154 (583.0)

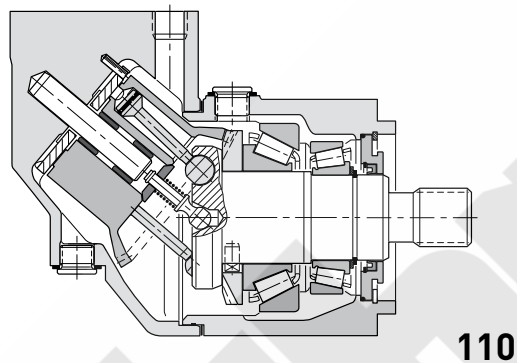
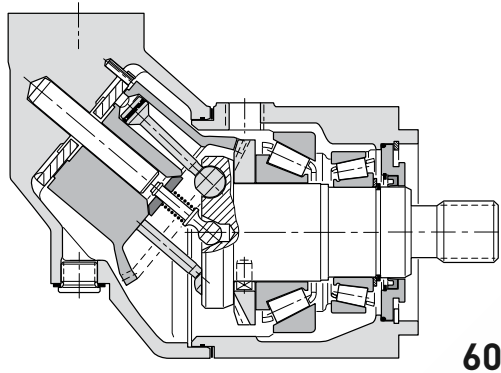
Markets

Applications

Forestry	Saw Drives, Feller Bunchers, Skidder, Forwarder, Cranes, Mowers / Cutters
Industrial	Aircraft Test Stands
Marine	Deck Cranes, Constant Tension Winches, Hatch Covers
Oil & Gas	Nitrogen Pumps, Frac Trucks
Construction	Skid Steer, Off-Highway Trucks, Fan Drives, Cranes, Dust Collector, Excavator
Mining	Drill Rigs, Top Drives, Loaders, Subsurface Loaders, Tunneling Equipment
Material Handling	Conveyor Drives, Truck Mounted Cranes, Mixers
Recycling	Shredders, Vacuum Truck Systems
Military	Fan Drives

F12 Large Frame Fixed Displacement Bent-Axis Pumps

Performance Characteristics

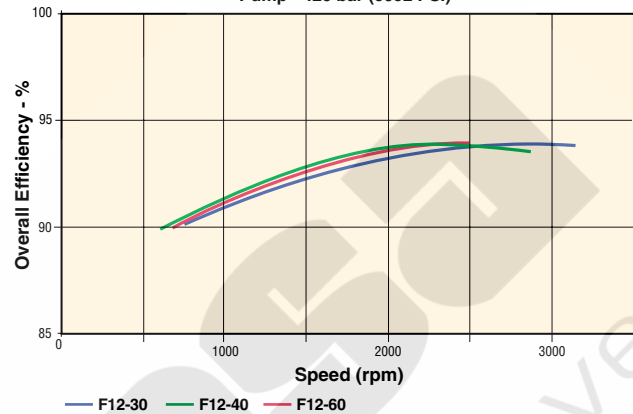


Benefits/Features

- Intermittent operating pressures to 7000 PSI (482.6 BAR)
- Compact, lightweight pump with high power to weight ratio
- Laminated piston ring provides low internal leakage and thermal shock resistance
- F12 Series have very few moving parts providing long life and service friendly design
- Heavy duty roller bearings provide indirect drive capability

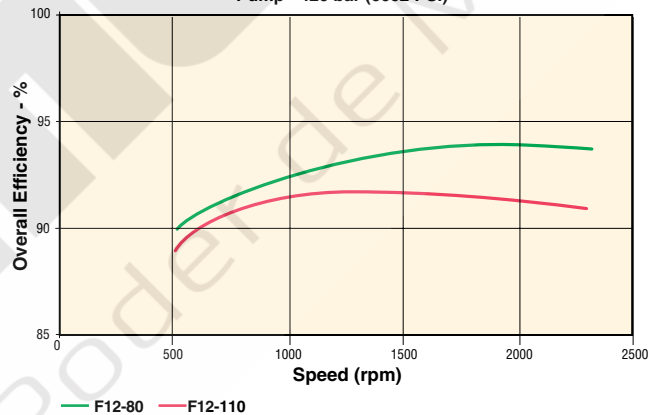
F12 Series Overall Efficiency

Pump - 420 bar (6092 PSI)



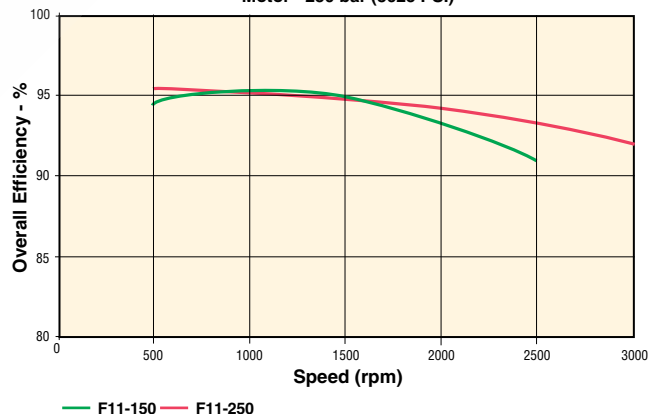
F12 Series Overall Efficiency

Pump - 420 bar (6092 PSI)

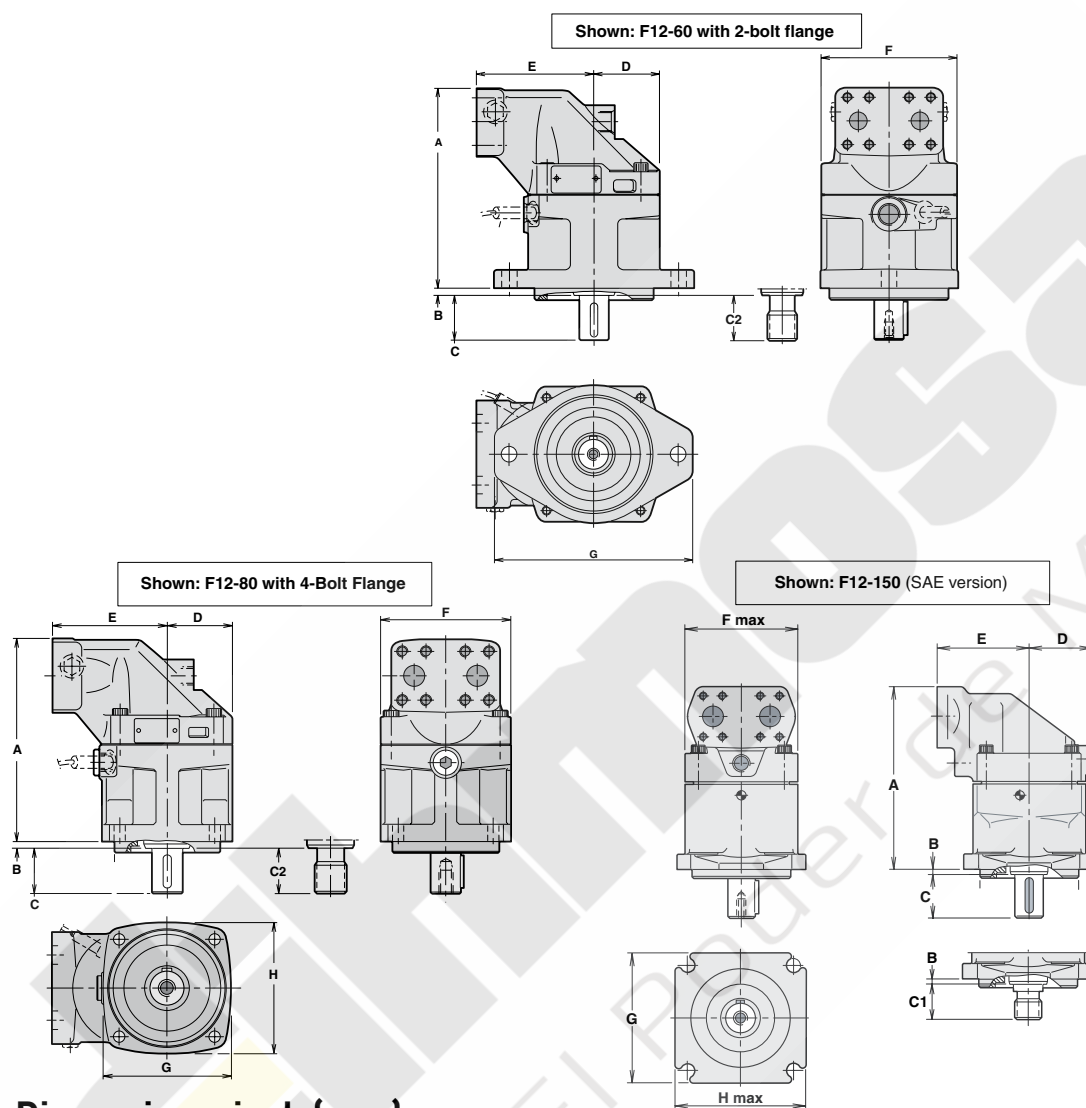


F12 Series Overall Efficiency

Motor - 250 bar (3625 PSI)



F12 Large Frame Fixed Displacement Bent-Axis Pumps



Dimensions, inch (mm)

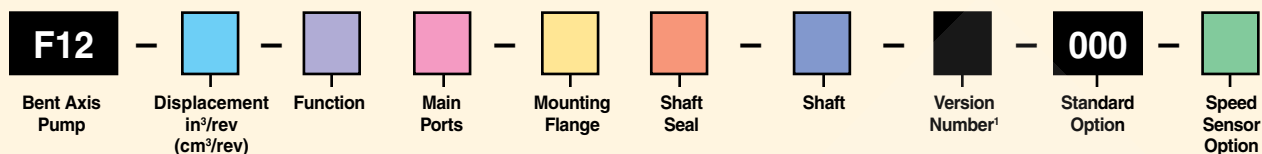
Series 2-BOLT	A	B	C	C2	D	E	F	G
F12-30	7.46 (189.5)	0.31 (7.9)	1.5 (38.1)	1.3 (33.0)	2.32 (58.9)	3.94 (100.1)	4.80 (121.9)	6.93 (176.0)
F12-40	7.76 (197.1)	0.31 (7.9)	1.89 (48.0)	1.89 (48.0)	2.56 (64.0)	4.33 (110.0)	5.28 (134.1)	8.46 (214.9)
F12-60	8.43 (214.1)	0.31 (7.9)	1.89 (48.0)	1.89 (48.0)	2.76 (70.1)	4.92 (125.0)	5.67 (144.0)	8.46 (214.9)

Series 4-BOLT	A	B	C	C2	D	E	F	G	H
F12-30	7.46 (189.5)	0.31 (7.9)	1.50 (38.1)	1.30 (33.0)	2.32 (58.9)	3.94 (100.1)	4.80 (121.9)	4.65 (118.1)	4.65 (118.1)
F12-40	7.76 (197.1)	0.31 (7.9)	1.89 (48.0)	1.89 (48.0)	2.56 (65.0)	4.33 (110.0)	5.28 (134.1)	5.83 (148.1)	5.67 (144.0)
F12-60	8.43 (214.1)	0.31 (7.9)	1.89 (48.0)	1.89 (48.0)	2.76 (70.1)	4.92 (125.0)	5.67 (144.0)	5.83 (148.1)	5.67 (144.0)
F12-80	9.45 (240.0)	0.31 (7.9)	2.13 (54.1)	2.13 (54.1)	3.05 (77.5)	5.31 (134.9)	6.10 (154.9)	6.10 (154.9)	6.10 (154.9)
F12-110	10.39 (263.9)	0.31 (7.9)	2.64 (67.1)	2.63 (66.8)	3.35 (85.1)	5.71 (145.0)	6.69 (169.9)	8.03 (204.0)	7.87 (199.9)
F12-150	13.98 (355.1)	.31 (7.9)	2.63 (66.8)	2.63 (66.8)	4.65 (118.1)	6.77 (172.0)	8.74 (222.0)	7.48 (190.0)	8.35 (212.1)
F12-250	15.55 (395.0)	.31 (7.9)	3.23 (82.0)	2.63 (66.8)	4.65 (118.1)	7.76 (197.1)	9.13 (231.9)	7.87 (199.9)	7.87 (199.9)



Piston Pumps

F12 Model Ordering Code



Code	Displacement in ³ /rev (cm ³ /rev)
30	1.83 in ³ /rev (30.0 cc/r)
40	2.44 in ³ /rev (40.0 cc/r)
60	3.65 in ³ /rev (59.8 cc/r)
80	4.91 in ³ /rev (80.4 cc/r)
90	5.68 in ³ /rev (93.0 cc/r)
110	6.72 in ³ /rev (110.1 cc/r)
125	7.63 in ³ /rev (125.0 cc/r)
150	9.15 in ³ /rev (150.0 cc/r)
250	14.77 in ³ /rev (242.0 cc/r)

Code	Function
R	Pump, CW Rotation
L	Pump, CCW Rotation

Code	Main Ports	30	40	60	80	90	110	125	150	250
S	SAE Flange	x	x	x	x	x	x	x	—	—
U	SAE, UN Threads	x	x	x	x	x	x	x	—	—
F	SAE 6000 PSI Flange	—	—	—	—	—	—	—	x	x

Code	Mounting Flange	30	40	60	80	90	110	125	150	250
S	SAE 4 bolt	x	x	x	x	x	x	x	x	x
T	SAE 2 bolt	x	x	x	—	—	x	x	—	—
X	SAE D 4 bolt	—	—	—	x	x	—	—	—	—

NOTE: ISO and cartridge mounting also available. See catalog on CD.

x: Available —: Not Available

¹Assigned by factory for special versions

²Order speed sensor kit# 3785190 separately

Code	Shaft Seal	30	40	60	80	90	110	125	150	250
N	NBR*, Low Pressure	x	x	x	x	x	x	x	x	—
V	FPM**, High Pressure, High Temperature	x	x	x	x	x	x	x	x	x

* NBR - Nitrile rubber
** FPM - Fluorocarbon rubber

Code	Shaft	30	40	60	80	90	110	125	150	250
S	SAE Spline (std)	x	x	x	x	x	x	x	x	x
U	SAE Spline (opt.)	—	—	—	x	x	—	—	—	—
T	SAE Key (std)	x	x	x	x	x	x	x	x	—
K	Metric Key	—	—	—	—	—	—	—	x	x
F	SAE Spline	—	—	—	—	—	—	—	—	x
D	Spline, DIN 5480	—	—	—	—	—	—	—	—	x

Code	Speed Sensor Option	30	40	60	80	90	110	125	150	250
0	Standard	x	x	x	x	x	x	x	x	x
P	Prepared for Speed Sensor	x	x	x	x	x	x	x	x	x

F1 Fixed Displacement Bent-Axis Truck Pumps



F1 fixed displacement piston pumps are widely used on truck applications with operating pressure up to 5000 PSI (350 BAR). These lightweight, efficient pumps were designed specifically for truck applications including cargo cranes, hook loaders, forest cranes and concrete mixer trucks.

(For T1 pump version see catalog on CD)

Pump Performance Data

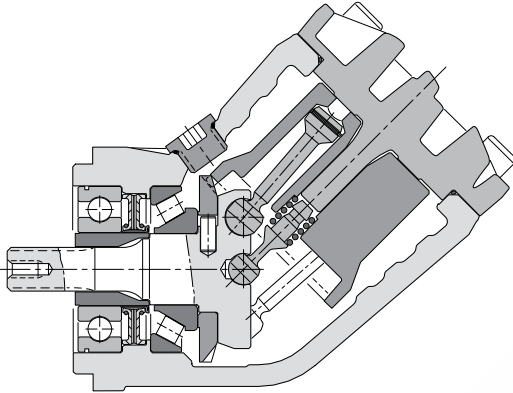
Model Series	Displacement in ³ /rev (cc/rev)	Maximum Outlet Pressure PSI (BAR)	Rated Drive Speed RPM	Theoretical Max Flow GPM (LPM)	Maximum Input Horsepower HP (KW)
F01-25	1.56 (25.6)	5000 (350)	2600	16 (60.6)	39 (29.1)
F01-41	2.50 (40.9)	5000 (350)	2400	24 (90.8)	57 (42.5)
F01-51	3.12 (51.1)	5000 (350)	2200	28 (106.0)	67 (50.0)
F01-61	3.63 (59.5)	5000 (350)	2200	35 (132.5)	84 (62.6)
F01-81	4.98 (81.6)	5000 (350)	2000	43 (162.8)	102 (76.1)
F01-101	6.28 (102.9)	5000 (350)	1800	49 (185.5)	115 (85.8)

Markets

Applications

Forestry	Knuckle Boom Loader, Cranes, Mowers / Cutters
Construction	Off-Highway Trucks, Fan Drives
Mining	Dump Trucks
Material Handling	Truck Mounted Cranes, Lift Trucks
Recycling	Vaccum Truck Systems, Refuse Trucks - ASL, Rear Loaders
Military	Fan Drives

F1 Fixed Displacement Bent-Axis Truck Pumps

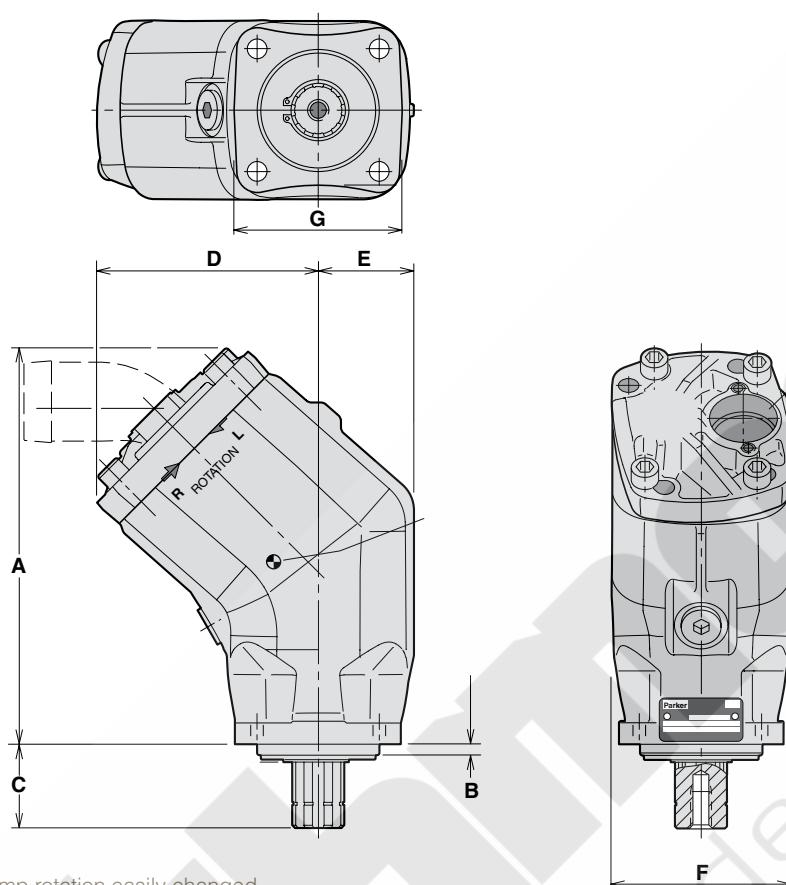


SAE spline shaft shown

Benefits/Features

- Higher self-priming speeds
- Operating pressures to 5801.51 PSI (400 BAR)
- New frame sizes to meet market requirements
- Higher overall efficiency
- Increased reliability
- Reduced noise level
- Smaller installation dimensions
- Pump rotation easily changed

F1 Fixed Displacement Bent-Axis Truck Pumps



Pump rotation easily changed

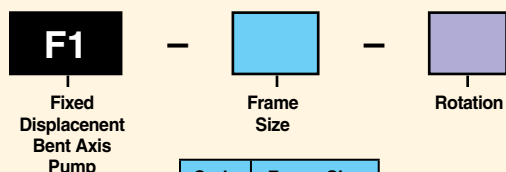
Dimensions, inch (mm)

Series	A	B	C	D	E	F	G
F1-25 F1-41 F1-51 F1-61	8.07 (205)	0.27 (7)	2.17 (55)	5.10 (129.5)	2.22 (56.5)	4.25 (108)	4.29 (109)
F1-81 F1-101	10.20 (259)	0.27 (7)	2.17 (55)	5.67 (144)	2.48 (63)	4.65 (118)	4.33 (110)



Piston Pumps

F1 Model Ordering Code



Code	Frame Size
25	1.56 in ³ /rev (25.6 cc/rev)
41	2.50 in ³ /rev (40.9 cc/rev)
51	3.12 in ³ /rev (51.1 cc/rev)
61	3.66 in ³ /rev (59.5 cc/rev)
81	4.98 in ³ /rev (81.6 cc/rev)
101	6.28 in ³ /rev (102.9 cc/rev)

Code	Rotation
L	Left Hand (CCW)
R	Right Hand (CW)

NOTES:

1. Pressure port on 25, 41, 51 and 61 sizes is 3/4". Pressure port on 81 and 101 sizes is 1".
2. Suction fitting must be ordered separately.
3. Use seven digit number when placing order.

ISO/DIN mounting:

Ordering Code	Ordering No.
F1-25-R	378 1024
F1-25-L	378 1025
F1-41-R	378 1040
F1-41-L	378 1041
F1-51-R	378 1050
F1-51-L	378 1051
F1-61-R	378 1060
F1-61-L	378 1061
F1-81-R	378 1080
F1-81-L	378 1081
F1-101-R	378 1100
F1-101-L	378 1101

See CD for SAE mount versions

Suction Fittings

A suction fitting consists of a straight, 45°, 90° or 135° suction fitting, 2 clamps, 2 cap screws and an O-ring.

Straight Suction Fittings

Ordering no.	A in. (mm)	B in. (mm)	C dia. in. (mm)
378 0635	0 (0)	3.35" (85)	1.5" (38)
378 0636	0.67" (17)	5.35" (136)	2.0" (50)
378 0637	0.98" (25)	5.71" (145)	2.5" (63)
378 0973	0.67" (17)	5.35" (136)	1.77" (45)
378 0974	0.67" (17)	5.35" (136)	1.77" (48)

45° Suction Fittings

Ordering no.	A in. (mm)	B in. (mm)	C dia. in. (mm)
378 1234 ¹⁾	2.36" (60)	4.09" (104)	1.25" (32)
378 0633 ¹⁾	2.36" (60)	4.09" (104)	1.5" (38)
378 0364 ²⁾	2.64" (67)	4.33" (110)	2" (50)
378 0634	2.95" (75)	4.61" (117)	2.5" (63)
378 1062	2.64" (67)	4.33" (110)	1.57" (40)
378 0975	2.64" (67)	4.33" (110)	1.77" (45)
378 0965	2.64" (67)	4.33" (110)	1.89" (48)

1) Suitable for frame size F1-25.

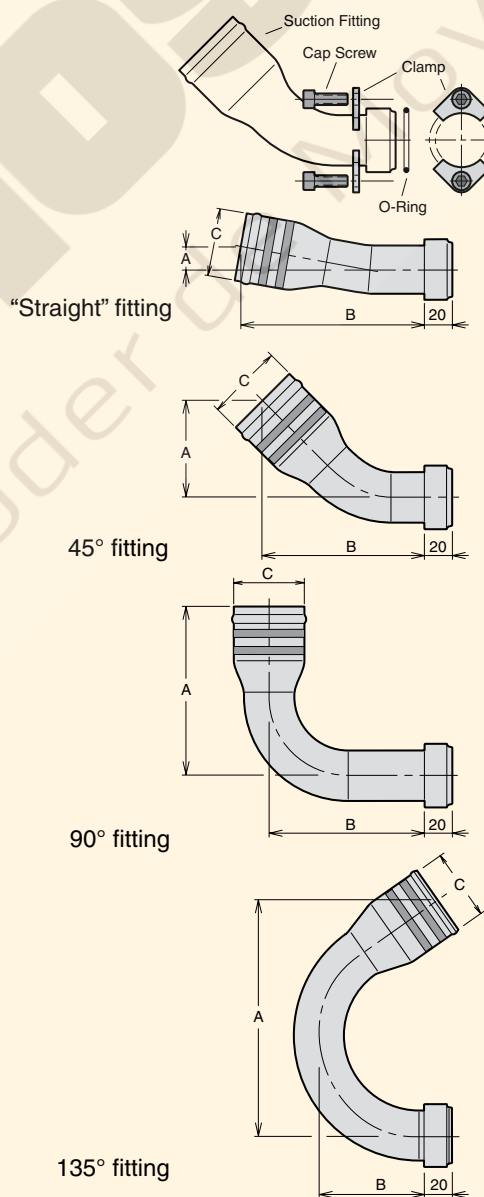
2) Suitable for pump sizes F1-41,-51,-61,-81 and -110.

90° Suction Fittings

Ordering no.	A in. (mm)	B in. (mm)	C dia. in. (mm)
378 0978	4.96" (126)	3.27" (83)	1.5" (38)
378 0979	5.31" (135)	3.27" (83)	2" (50)
378 0976	5.31" (135)	3.27" (83)	1.77" (45)
378 0977	5.31" (135)	3.27" (83)	1.89" (48)
378 1980	5.79" (147)	4.06" (103)	2.5" (63)

135° Suction Fitting

Ordering no.	A in. (mm)	B in. (mm)	C dia. in. (mm)
378 1867	6.54" (166)	2.87" (73)	2" (50)



F2 Twin Flow Bent-Axis Truck Pumps



F2 Fixed Displacement Piston Pumps are widely used on truck applications with operating pressure up to 5000 PSI (350 BAR). These twin flow pumps provide two independent output flows with a single inlet in a compact package. These lightweight, efficient pumps were designed specifically for truck applications including cargo cranes, hook loaders, forest cranes and concrete mixer trucks.

Pump Performance Data

Model Series	Max. Displacement in ³ /rev (cc/rev)	Outlet Pressure PSI (BAR)	Drive Speed RPM	Flow** @ 1800 RPM		Max. Input Power HP (KW)
				Port A GPM (LPM)	Port B GPM (LPM)	
F2-42/42	2.62/2.50 (43/41)*	5000 (350)	1800	20.4 (77.2)	19.5 (73.8)	118 (88.0)
F2-55/28	3.36/1.71 (55/28)*	5000 (350)	1800	26.1 (98.6)	13.3 (50.3)	118 (88.0)
F2-53/53	3.30/3.17 (54/52)*	5000 (350)	1800	25.5 (96.5)	24.8 (93.9)	147 (109.8)
F2-70/35	4.21/2.20 (69/36)*	5000 (350)	1800	32.7 (123.8)	17.2 (65.1)	147 (109.8)
F2-70/70	4.15/4.15 (68/68)*	4350 (300)	1650	32.3 (122.3)	32.3 (122.3)	150 (111.9)

*Port A/Port B

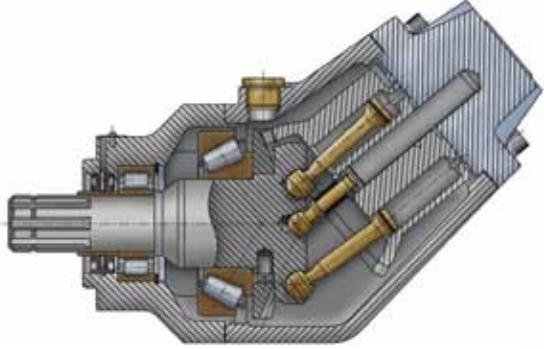
** Port A + Port B

Markets

Applications

Forestry	Knuckle Boom Loader, Cranes, Mowers / Cutters
Construction	Off-Highway Trucks, Fan Drives
Mining	Dump Trucks
Material Handling	Truck Mounted Cranes, Lift Trucks
Recycling	Vaccum Truck Systems, Refuse Trucks - ASL, Rear Loaders
Military	Fan Drives

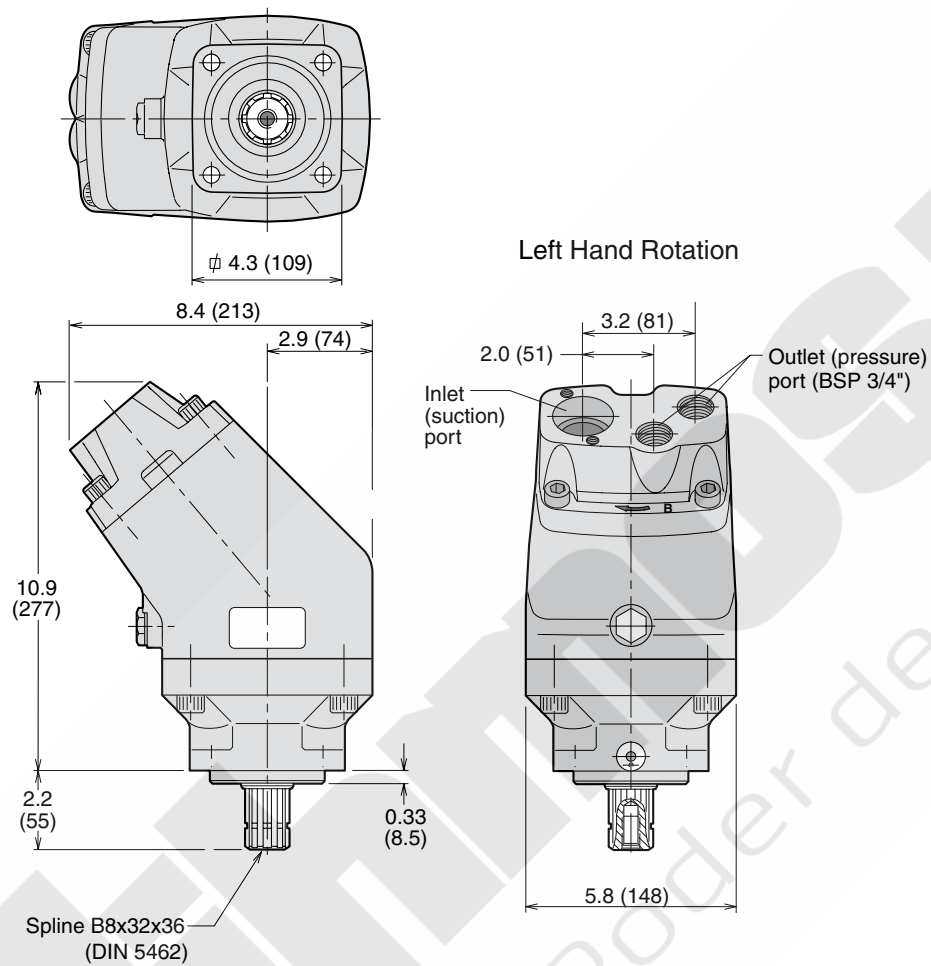
F2 Twin Flow Bent-Axis Truck Pumps



Benefits/Features

- Two separate outlet flows with a single inlet
- Operating pressures to 6000 PSI (413.7 BAR) intermittent
- Higher overall efficiency
- Increased reliability
- Low noise level
- Compact package that only weighs 42 lbs (19.1 kg).

F2 Twin Flow Bent-Axis Truck Pumps





Piston Pumps

F2 Model Ordering Code

F2

Twin Flow
Bent Axis
Pump

Frame Size

Frame Size
42/42
55/28
53/53
70/35
70/70

Rotation

Code	Rotation
L	Left Hand (CCW)
R	Right Hand (CW)

NOTES:

1. Pressure port on 25, 41, 51 and 61 sizes is 3/4". Pressure port on 81 and 101 sizes is 1".
2. Suction fitting must be ordered separately.
3. Use seven digit number when placing order.

Ordering Code	Ordering No.
F2-42/42-R	378 4042
F2-42/42-L	378 4043
F2-55/28-R	378 4128
F2-55/28-L	378 4129
F2-53/53-R	378 1453
F2-53/53-L	378 1454
F2-70/35-R	378 1470
F2-70/35-L	378 1471
F2-70/70-R	378 4070
F2-70/70-L	378 4071

Suction Fittings

A suction fitting consists of a straight, 45°, 90° or 135° suction fitting, 2 clamps, 2 cap screws and an O-ring.

Straight Suction Fittings

Ordering no.	A in. (mm)	B in. (mm)	C dia. in. (mm)
378 0635	0 (0)	3.35" (85)	1.5" (38)
378 0636	0.67" (17)	5.35" (136)	2.0" (50)
378 0637	0.98" (25)	5.71" (145)	2.5" (63)
378 0973	0.67" (17)	5.35" (136)	1.77" (45)
378 0974	0.67" (17)	5.35" (136)	1.77" (48)

45° Suction Fittings

Ordering no.	A in. (mm)	B in. (mm)	C dia. in. (mm)
378 1234 ¹⁾	2.36" (60)	4.09" (104)	1.25" (32)
378 0633 ¹⁾	2.36" (60)	4.09" (104)	1.5" (38)
378 0364 ²⁾	2.64" (67)	4.33" (110)	2" (50)
378 0634	2.95" (75)	4.61" (117)	2.5" (63)
378 1062	2.64" (67)	4.33" (110)	1.57" (40)
378 0975	2.64" (67)	4.33" (110)	1.77" (45)
378 0965	2.64" (67)	4.33" (110)	1.89" (48)

1) Suitable for frame size F1-25.

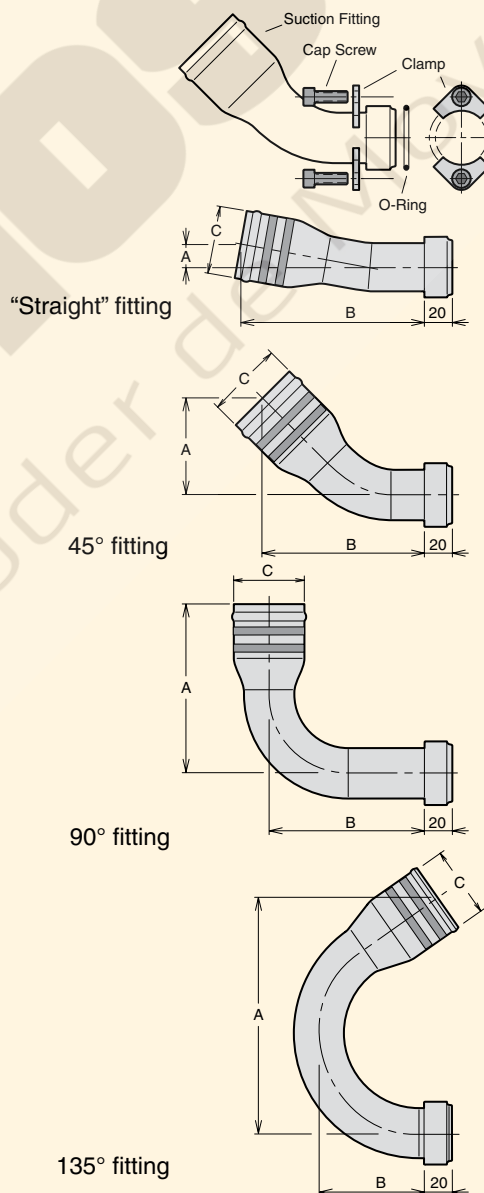
2) Suitable for pump sizes F1-41,-51,-61,-81 and -110.

90° Suction Fittings

Ordering no.	A in. (mm)	B in. (mm)	C dia. in. (mm)
378 0978	4.96" (126)	3.27" (83)	1.5" (38)
378 0979	5.31" (135)	3.27" (83)	2" (50)
378 0976	5.31" (135)	3.27" (83)	1.77" (45)
378 0977	5.31" (135)	3.27" (83)	1.89" (48)
378 1980	5.79" (147)	4.06" (103)	2.5" (63)

135° Suction Fitting

Ordering no.	A in. (mm)	B in. (mm)	C dia. in. (mm)
378 1867	6.54" (166)	2.87" (73)	2" (50)





Gold Cup Hydrostatic Transmissions

Page

(B) Gold Cup Open & Closed Circuit Pumps & Motors for Hydrostatic Transmissions

63-74



ENGINEERING YOUR SUCCESS.

Hydrostatic Transmissions (Mobile & Industrial)



Gold Cup Open & Closed Circuit Pumps & Motors for Hydrostatic Transmissions



The Gold Cup Hydrostatic Transmission pumps are variable displacement piston pumps of an unparalleled rugged design. Rated to 5000 PSI (350 BAR) continuous pressure and continuous duty, the Gold Cup design has the unique feature of an internal servo/replenish and the ability to utilize system over pressure to directly control the stroking chambers. This affords the fastest and most stable control strategy available. The controls are completely modular in design and can be configured to meet most any system requirements with standard factory options.

All internal wear surfaces are hydrostatically balanced and/or hydraulically linked allowing for a long and serviceable life. The Gold Cup pump also has the ability to run in many open circuit applications and also has digital (Flow/Pressure) capability for the most difficult of control requirements.

The Gold Cup Series has been designed to operate in a wide range of industries needing closed-loop control, high pressure, high power density such as Blast Hole Drill Rigs, Shredding, Cranes, Mining, Hydraulic Test Stands, Pulp and Paper, Military, Marine, and Power Generation.

Pump Performance Data

Model Series	Displacement in ³ /rev (cc/rev)	Max Continuous Pressure PSI (BAR)	Max Intermittent Pressure** PSI (BAR)	Rated Drive Speed RPM	Flow @ 1800 RPM GPM(LPM)	Input Horsepower @ Max Continuous Pressure & 1800 RPM & 40cSt Petroleum Oil HP (KW)
P6	6.00 (98.3)	5000 (344.8)	6000 (420)	3000	47 (177.9)	153 (114.1)
P7	7.25 (118.8)	5000 (344.8)	6000 (420)	3000	57 (215.8)	183 (136.5)
P8	8.00 (131.1)	5000 (344.8)	5000 (350)	2100	62 (234.7)	145 (108.1)
P11	11.00 (180.3)	5000 (344.8)	6000 (420)	2400	86 (325.5)	275 (205.1)
P14	14.00 (229.5)	5000 (344.8)	6000 (420)	2400	109 (412.6)	348 (259.5)
P24	24.60 (403.2)	5000 (344.8)*	5000 (350)*	2100***	192 (726.8)	626 (466.8)
P30	30.60 (501.5)	5000 (344.8)*	5000 (350)*	1800	238 (900.9)	765 (570.5)

* Variable speed. Higher servo pressure may be required.

** 10% of operating time, not exceeding 6 successive seconds.

*** On HF-1 fluids, 1800 RPM max on HF-0 fluids.

Motor Performance Data

Model Series	Displacement in ³ /rev (cc/rev)	Max Continuous Pressure PSI (BAR)	Max Intermittent Pressure** PSI (BAR)	Max Rated Shaft Speed RPM	Input Flow Required for 1800 RPM GPM (LPM)	Output Torque at Maximum Rated Pressure lb-in (kg-cm)	Output Horsepower @ Max Continuous Pressure and 1800 rpm and 40cSt Petroleum Oil HP (KW)
M6	6.00 (98.3)	5000 (344.8)	6000 (420)	3000	47 (177.9)	4327 (304.2)	123 (91.7)
M7	7.25 (118.8)	5000 (344.8)	6000 (420)	3000	57 (215.8)	5348 (376.0)	153 (114.1)
M8	8.00 (131.1)	5000 (344.8)	5000 (350)	2100	62 (234.7)	4216 (296.4)	120 (89.5)
M11	11.00 (180.3)	5000 (344.8)	6000 (420)	2400	86 (325.5)	8146 (572.8)	232 (173.0)
M14	14.00 (229.5)	5000 (344.8)	6000 (420)	2400	109 (412.6)	10,410 (731.9)	297 (221.5)
M24	24.60 (403.2)	5000 (344.8)*	5000 (350)*	2100***	192 (726.8)	18,320 (1288.0)	523 (390.0)
M30	30.60 (501.5)	5000 (344.8)*	5000 (350)*	1800	238 (900.9)	23,000 (1617.1)	657 (489.89)

* Variable speed. Higher servo pressure may be required.

** 10% of operating time, not exceeding 6 successive seconds.

*** On HF-1 fluids, 1800 RPM max on HF-0 fluids.



Hydrostatic Transmissions (Mobile & Industrial)

Gold Cup Open & Closed Circuit Pumps & Motors for Hydrostatic Transmissions



Benefits/Features

- Quick change valve block - easy to service or replace
- Modular controls - easy to service and change
- Versatile controls - can be located on either side of pump or motor for maximum freedom of design
- Dampened low inertia rocker cam - more stable, quieter and faster than other designs
- Exclusive zero-backlash rotary servo design - lifetime accuracy
- Field adjustable compensator override - easily adjusted without removing from machinery
- Precision barrel bearing, a distinctive Parker Denison Hydraulics feature for over 30 years - permits high speeds, high pressure and provides long life
- Ring style replenishing checks fastest operation with no sliding poppets or parts and low pressure drop
- Hot oil shuttle available - fast, reliable operation
- Auxiliary pump can be changed without disassembling the transmission
- Standard SAE keyed or splined drive shafts are available
- High pressure mechanical shaft seals can be changed without disassembling the transmission (excluding the P24 and P30 models). Double lip seals are also available
- One piece stroking vane/cam means no lost motion, zero backlash, better control, and no linkages to wear out
- Stroking vane seals are pressure loaded for longer life
- Standard compensator vent ports allow for a wide variety of controls (See applications manual)
- Rocker cam displacement indicator helps troubleshoot the system
- Modulated servo pressure saves power
- Standard Code 62 SAE split flange connections
- Fastest compensator response: Gives maximum of 10% pressure overshoot at rated conditions (guaranteed times under all conditions faster response times possible depending upon application)
- Variable motors with reverse available for multiple speed ranges or constant power
- Certification Approvals: ATEX, ABS, MIL-P-17869A, and MIL-S-901-C Grade A

Markets

Applications

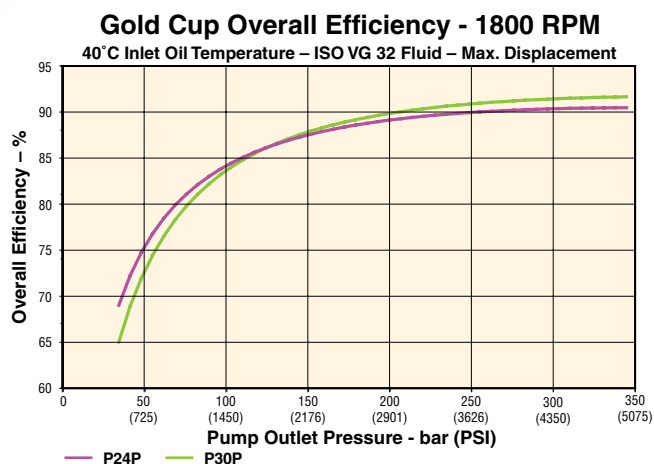
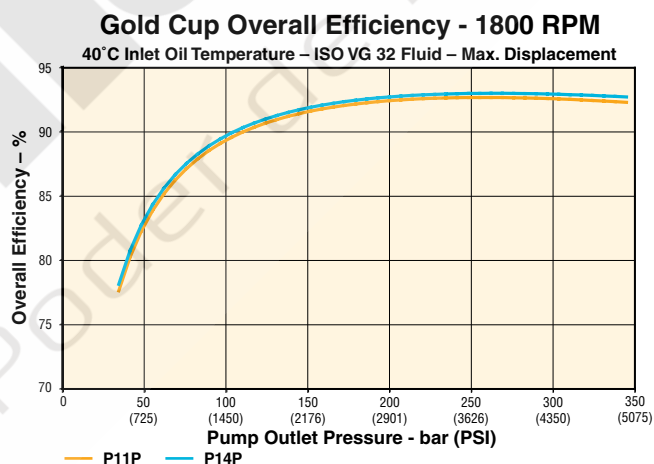
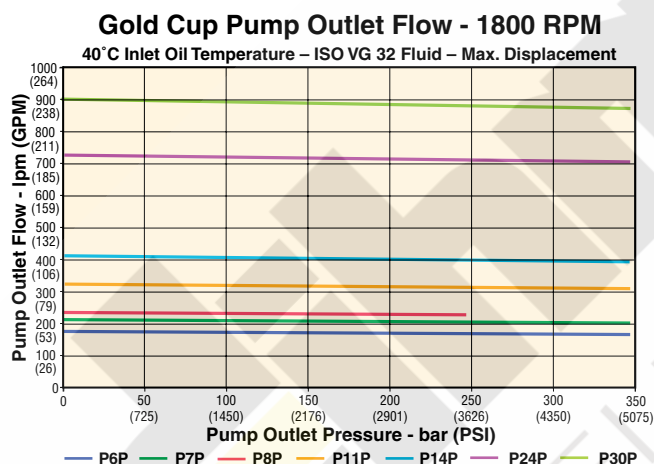
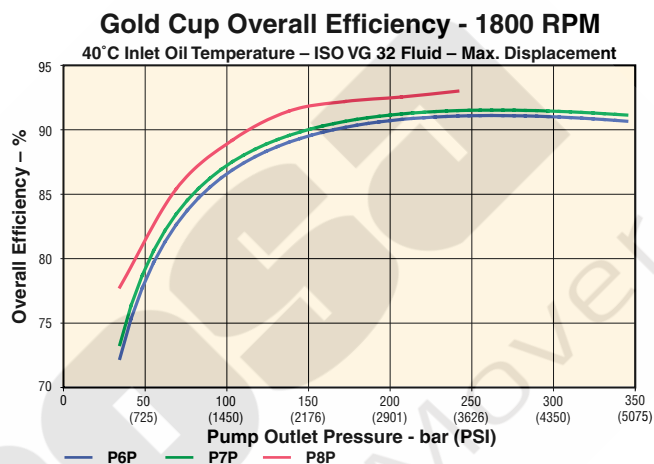
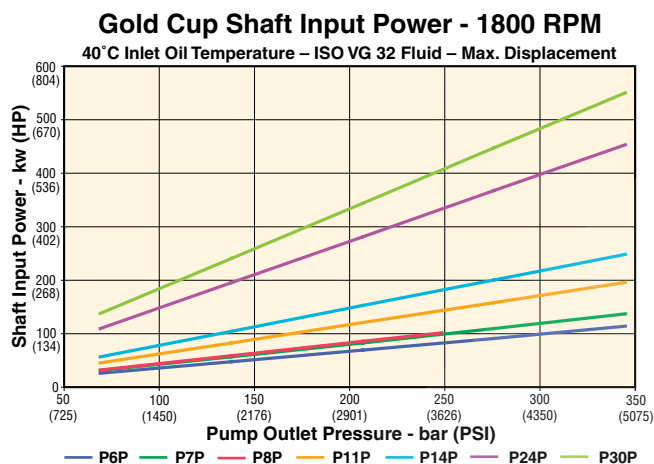
Marine	Deck Cranes, Constant Tension Winches, Steering Gear, Fin Stabilizers,
Oil & Gas	Nitrogen Pumpers, Frac Trucks, Cementers, Coil Tubing
Mining	Drill Rigs, Top Drives, Bucket Reclaimers
Power Gen	Turbine Start
Material Handling	Mixers, Dewatering, Conveyor Drives, Shredders

Hydrostatic Transmissions (Mobile & Industrial)



Gold Cup Open & Closed Circuit Pumps & Motors for Hydrostatic Transmissions

Gold Cup Performance Data





Hydrostatic Transmissions (Mobile & Industrial)

Gold Cup Open & Closed Circuit Pumps & Motors for Hydrostatic Transmissions

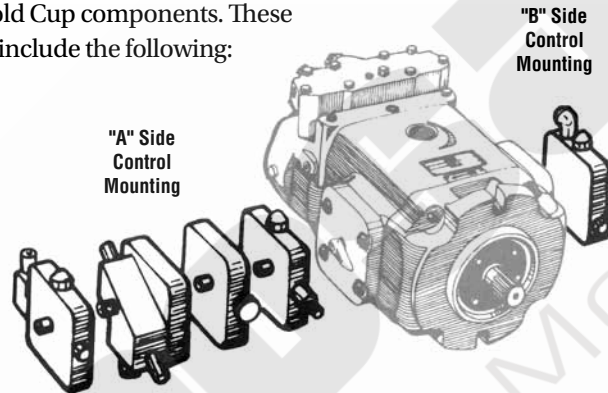
Gold Cup Controls

The spring centered rotary servo input, pressure compensator override, and displacement indicator are all standard features on all Gold Cup package pumps.

Spring centering is used in addition to the rotary servo input control to provide a positive return-to-neutral action. It includes an adjustable neutral position to allow fine tuning the neutral position, or offsetting the neutral position. Variable motors have spring offset rotary servo inputs,

cylinder controls and displacement indicators as standard features.

Additional, optional controls are available which increase the utility of the Gold Cup components. These controls include the following:



Primary Controls

Rotary servo	The rotary servo is a mechanically actuated shaft that proportionally positions the pump to the desired flow (all variable units) and direction. A lever is commonly attached and an external mechanical signal of $\pm 19^\circ$ is applied to overcome the spring centering mechanism (20 in lbs spring force) and is directly proportional to the resulting cam angle of the pump.
Hydraulic stroker	The hydraulic stroker is used on both pump and motors. This control positions the rotary servo proportionally to externally controlled pilot pressure.
Electrohydraulic stroker	The electrohydraulic stroker is used on both pumps and motors. It provides an input rotary servo position proportional to input current. It is used primarily with remote electrical controllers. It may be used with programmed controllers as long as the system does not require rapid response.
Electrohydraulic servo	The electrohydraulic servo provides a control for electrohydraulic systems requiring rapid response and precise control. RVDVT feedback or Potentiometer feedback are available options.
3-Position cylinder control	The three position cylinder control permits a pump to be offset to an adjustable displacement on either side of center by supplying a pilot signal to the appropriate control port. With no signal the pump returns to an adjustable zero stroke position.
2-Position cylinder control	The two position pump cylinder control permits a pump to be offset to an adjustable displacement on one side of center by supplying a pilot signal to the appropriate control port. With no signal the pump returns to an adjustable zero position. The two position motor cylinder control permits a motor to be stroked to a reduced displacement by supplying a pilot signal to the appropriate control port. With no signal the motor returns to an adjustable maximum stroke position.
Electrohydraulic cylinder control	By mounting an electric directional control valve on the cylinder control, the pump or motor stroke may be controlled by energizing the appropriate solenoid valve, eliminating the need for separate mounting and fluid connections to the control valve.

Options and Secondary Controls

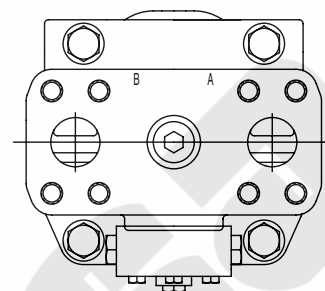
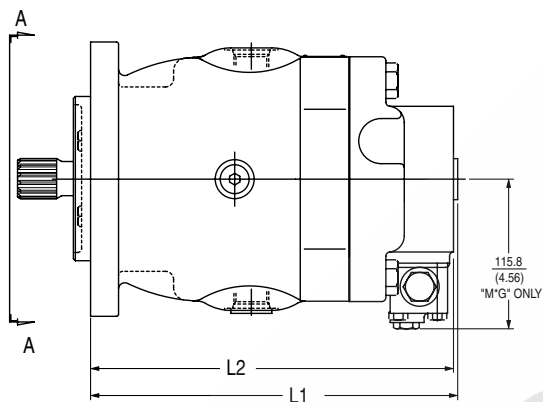
Adjustable displacement stops	Adjustable stops are available as an option. They provide an adjustment to limit the maximum displacement of the rotary servo input between zero and full displacement on both sides of center.
Manual screw adjustment	A manual screw adjustment is available to provide an easily set pump displacement which will not move during operation. It is used when pump displacement will be adjusted infrequently.
Automatic brake and neutral bypass control	The automatic brake and neutral bypass control is used to actuate a spring set pressure released parking brake and open a small channel between the system ports when the rotary servo input and rocker cam are coincident in the neutral position. If one or the other device is not in the neutral position, the control will not shift into the brake and bypass mode. This control is used on track drives, swing drives, hoist drives and any other system where creeping is intolerable. In some cases this control may be used for the bypass function alone.
Torque limit override	The torque limit override control is used for limiting the input shaft torque. At constant speeds it serves as a horsepower limit override. This control maintains a relationship between displacement and pressure which results in a limitation of the input torque.

Hydrostatic Transmissions (Mobile & Industrial)



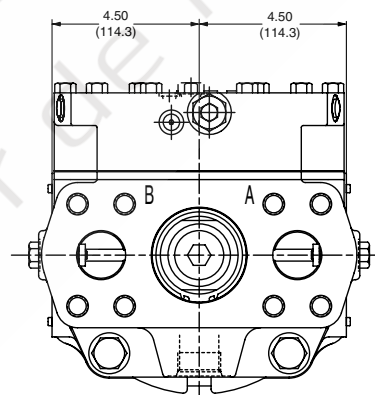
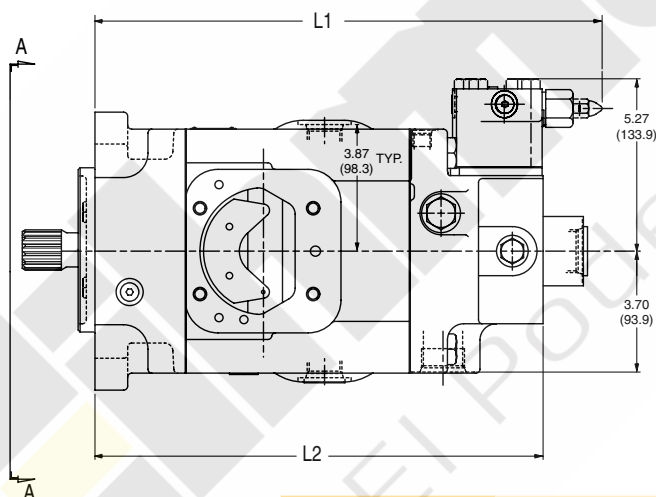
Gold Cup Open & Closed Circuit Pumps & Motors for Hydrostatic Transmissions

**M6
M7
M8
M*F Shown**



Mounting	L1	L2
SAE127-2 (SAE-C)	11.19 (284.2)	11.06 (280.9)
SAE 152-4 (SAE-D)	11.59 (294.3)	11.46 (291.1)

**P6
P7
P8
P*P Shown**



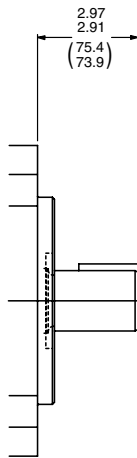
Mounting	L1	L2
SAE127-2 (SAE-C)	15.51 (393.9)	13.70 (348.0)
SAE 152-4 (SAE-D)	16.85 (427.9)	15.04 (382.1)



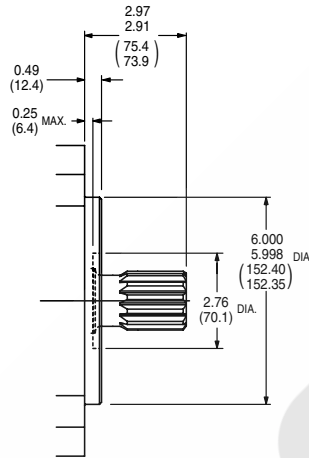
Hydrostatic Transmissions (Mobile & Industrial)

Gold Cup Open & Closed Circuit Pumps & Motors for Hydrostatic Transmissions

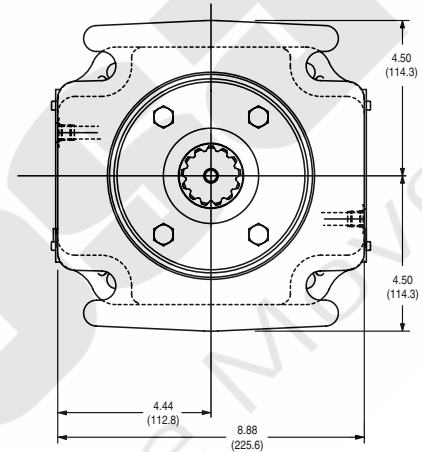
Size 6, 7 and 8 Flange and Shaft Detail



Shaft Code 04
SAE D Keyed

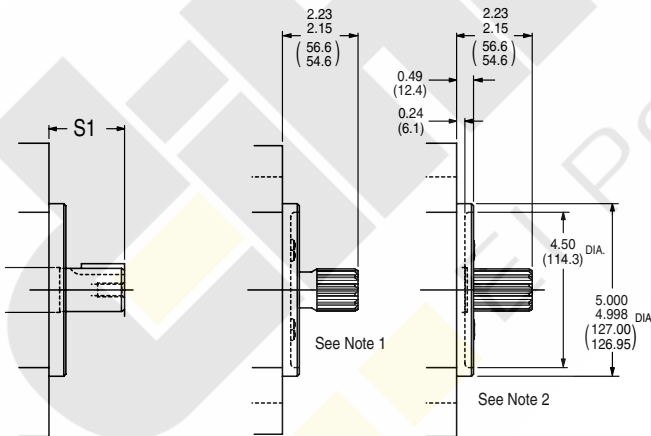


Shaft Code 05
SAE D Spline



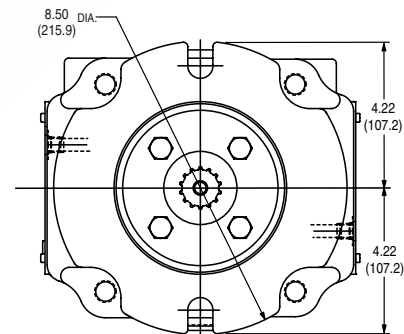
VIEW A-A
FOR SAE 152-4
(\"D\" 4-BOLT)

Code	S1
02, 07	2.23 (56.6) 2.15 (54.6)
09, 10	3.36 (85.3) 3.28 (83.3)



Shaft Codes
02, 07, 09, 10
SAE C Keyed

Shaft Codes 03 or 08
SAE C Spline



VIEW A-A
FOR SAE 127-2
(\"C\" 2-BOLT)

NOTES

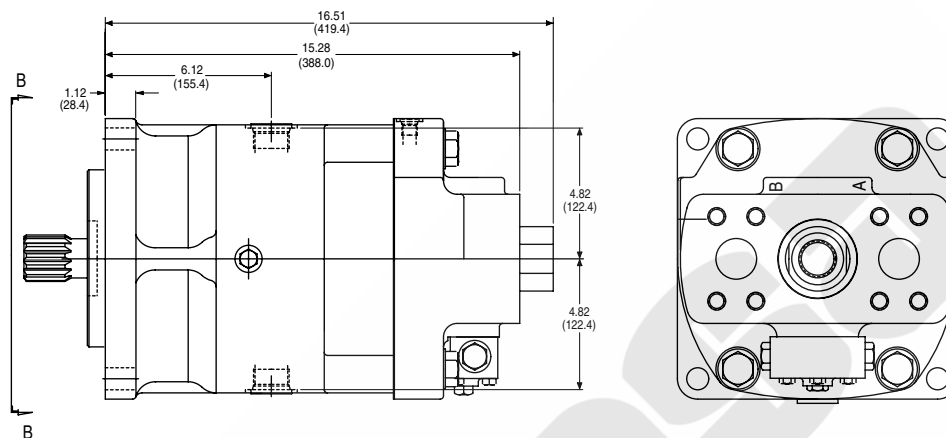
- 1 Spline length for M*F, M*G, M*H, M*V, P*S, P*X, P*D, P*P, P*V & P*F.
- 2 Spline length for M*R, M*L, M*M, M*N, P*L, P*R.

Hydrostatic Transmissions (Mobile & Industrial)

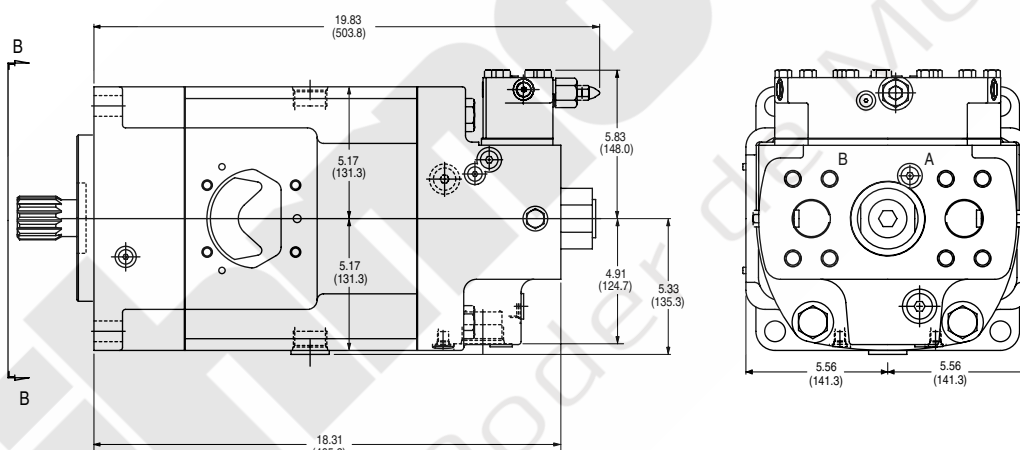


Gold Cup Open & Closed Circuit Pumps & Motors for Hydrostatic Transmissions

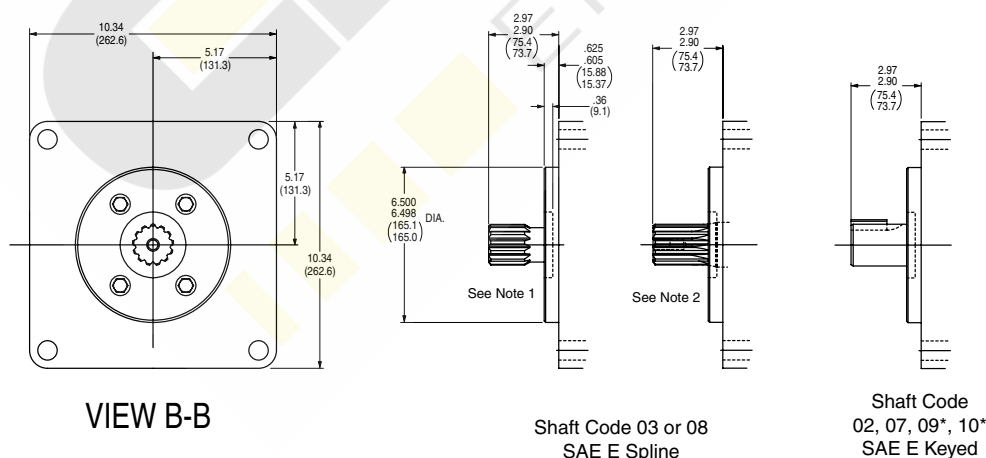
M11
M14
M*F Shown



P11
P14
P*P Shown



Size 11 and 14 Flange and Shaft Detail



* For Codes 09 and 10, add 1" (25.4mm) to shaft length.

NOTES

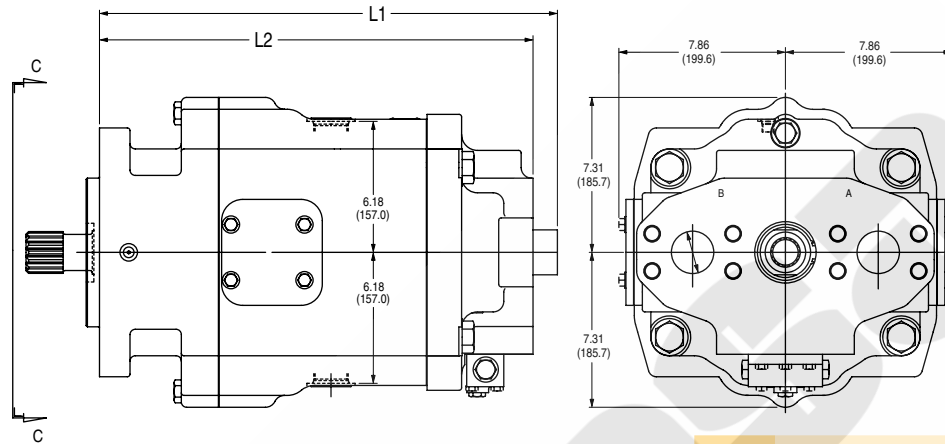
- 1 Spline length for M*F, M*G, M*H, M*V, P*S, P*X, P*D, P*P, P*V & P*F.
- 2 Spline length for M*R, M*L, M*M, M*N, P*L, P*R.



Hydrostatic Transmissions (Mobile & Industrial)

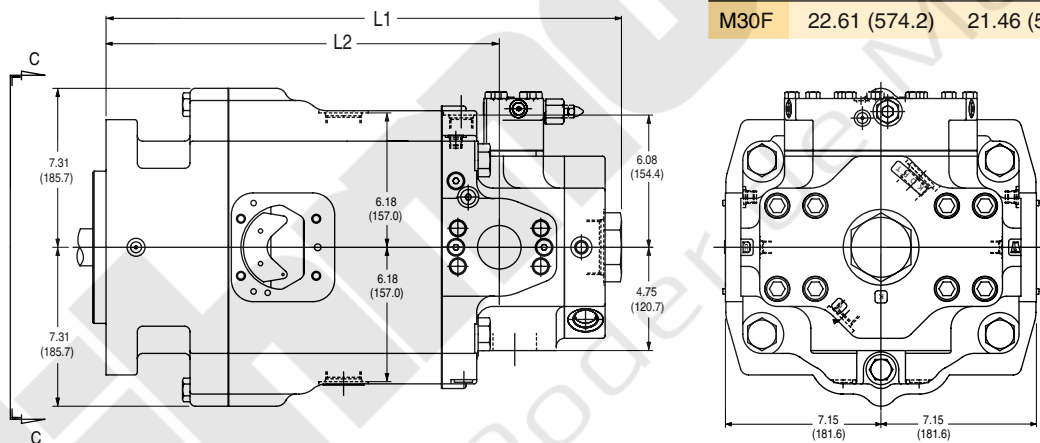
Gold Cup Open & Closed Circuit Pumps & Motors for Hydrostatic Transmissions

M24
M30
M*F Shown



Model	L1	L2
M24F	21.61 (548.8)	20.46 (519.6)
M30F	22.61 (574.2)	21.46 (545.0)

P24
P30
P*P Shown

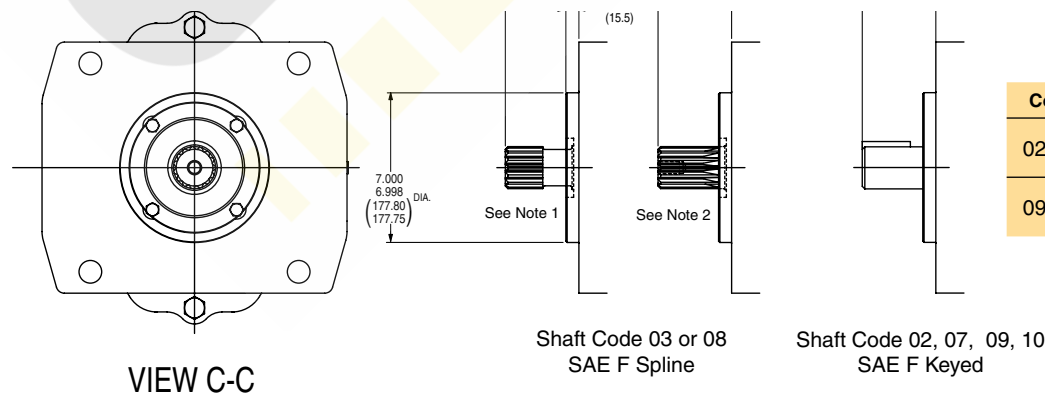


Model	L1	L2
P24P	23.70 (602.1)	18.08 (459.4)
P30P	24.70 (627.5)	19.08 (484.7)

Size 24 and 30 Flange and Shaft Detail

NOTES

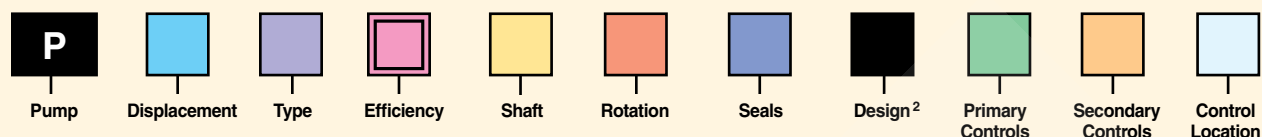
- 1 Spline length for M*F, M*G, M*H, M*V, P*S, P*X, P*D, P*P, P*V & P*F.
- 2 Spline length for M*R, M*L, M*M, M*N, P*L, P*R.



Code	S1
02, 07	3.47 (88.1) 3.41 (86.6)
09, 10	5.35 (135.9) 5.29 (134.4)

Hydrostatic Transmissions

GOLD CUP® Pump Model Ordering Code



Code	Displacement
6	6.00 in ³ /rev (98 cc/rev)
7	7.25 in ³ /rev (119 cc/rev)
8	8.00 in ³ /rev (131 cc/rev)
11	11.0 in ³ /rev (180 cc/rev)
14	14.0 in ³ /rev (229 cc/rev)
24	24.6 in ³ /rev (403 cc/rev)
30	30.6 in ³ /rev (501 cc/rev)

Code	Type
F	Fixed Displacement, Open/Closed Circuit
M	Fixed Displacement with High Torque Thru-Drive, Open/Closed Circuit
P	Variable Displacement, Closed Circuit
X	Variable Displacement with Medium Torque Thru-Drive, Closed Circuit
S	Variable Displacement with Medium Torque Thru-Drive & Shuttle Package, Closed Circuit
R	Variable Displacement with High Torque Thru-Drive, Closed Circuit
L	Variable Displacement with High Torque Thru-Drive & Shuttle Package, Closed Circuit
V	Variable Displacement, Open Circuit (P6, 7, 8, 11 & 14 only)
D	Variable Displacement, Open & Closed Circuit (P6, 7 & 8 only)

Code	Efficiency
H	High Efficiency (P24 only)
Omit	Standard Efficiency

Code	Shaft
2	Keyed SAE – Mechanical Shaft Seal (Single Lip Seal on P6, 7, 8F/M)
3	Splined SAE – Mechanical Shaft Seal (Single Lip Seal on P6, 7, 8F/M)
4	Keyed SAE-D (Mounting & Shaft) – Mechanical Shaft Seal (P6, 7 & 8 only, Single Lip Seal on Fixed Displacement Pumps)
-5	Splined SAE-D (Mounting & Shaft) – Mechanical Shaft Seal (P6, 7 & 8 only, Single Lip Seal on Fixed Displacement Pumps)
7	Keyed SAE – Double Lip Shaft Seal
8	Splined SAE – Double Lip Shaft Seal
9	Keyed (long) SAE – Double Lip Shaft Seal
10	Keyed (long) SAE – Mechanical Shaft Seal

Code	Rotation
R	Clockwise
L	Counterclockwise

Code	Seals
1	Nitrile (Buna-N)
4	EPR ^{1,3}
5	Fluorocarbon

Code	Primary Controls
Omit	None (Fixed Displacement only)
10	Screw Adjustment (Spring Offset to Maximum Displacement)
2A	Cylinder Control w/Adjustable Maximum Volume Stops
2H	Cylinder Control – 3-Position (Spring Control with Zero Adjustment)
2M	Cylinder Control – 2-Position Electrohydraulic w/Adjustable Maximum Volume Stop (Spring Offset to Maximum Displacement) ¹
2N	Cylinder Control – 3-Position (Spring Centered) Electrohydraulic ¹
40	Rotary Servo – Spring Centered
4A	Rotary Servo – Spring Centered w/Adjustable Maximum Volume Stops
4B	Rotary Servo – Spring Centered w/Automatic Brake Control
4C	Rotary Servo – Spring centered w/Adjustable Maximum Volume Stops & Automatic Brake Control
5A	Electrohydraulic Stroker w/Adjustable Maximum Volume Stops ¹
5C	Electrohydraulic Stroker w/Adjustable Maximum Volume Stops & Automatic Brake Control ¹
7D	High IQ with 10 GPM Servo Valve & Volume Indicator ¹
7F	High IQ with 10 GPM Servo Valve & 4A (Rotary Servo) Control ¹
7J	High IQ with DF+ Valve & Volume Indicator ¹
7K	High IQ with DF+ Valve & 4A (Rotary Servo) Control ¹
8A	Hydraulic Stroker w/Adjustable Maximum Volume Stops
8C	Hydraulic Stroker w/Adjustable Maximum Volume Stops & Automatic Brake Control
9A	Electrohydraulic Stroker w/Adjustable Maximum Volume Stops ¹
9C	Electrohydraulic Stroker w/Adjustable Maximum Volume Stops & Automatic Brake Control ¹
9D	Electro-hydraulic stroker w/adjustable maximum volume stops

Code	Secondary Controls
Omit	None (Fixed Displacement only)
2	Volume Indicator
4	Torque Limiter & Volume Indicator
6	Cam Position Feedback Potentiometer ¹
7	Cam Position Feedback RVD (AC) ¹
8	Cam Position Feedback RVD (DC) ¹

Code	Control Location
Omit	None (Fixed Displacement only)
A	Primary Control on Port A Side
B	Primary Control on Port B Side

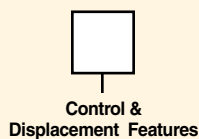
- 1 Not ATEX approved.
2 Assigned by manufacturer
3 Not available when using "5A" or "5C" primary controls. Pump will be unpainted unless otherwise specified.

= Omit if not required



Hydrostatic Transmissions

GOLD CUP® Pump Model Ordering Code



Control &
Displacement Features



Internal
Pump



External
Drive



External
Mounting



Special
Modifications

Control	Code	Control & Displacement Features
2M* & 2N*	00	CETOP3, NG6 Valve, 110AC/60Hz with Hirschmann Connector ¹
	01	CETOP3, NG6 Valve, 12VDC with Hirschmann Connector ¹
	02	CETOP3, NG6 Valve, 240VAC/50Hz with Hirschmann Connector ¹
	03	CETOP3, NG6 Valve, 110VAC/60Hz, Wiring Box ¹
	04	CETOP3, NG6 Valve, 12VDC, Wiring Box ¹
	05	CETOP3 (D03, NG6) Interface, No Valve ¹
	06	CETOP3, NG6 Valve, 24VDC with Hirschmann Connector ¹
	07	CETOP3, NG6 Valve, 110VAC/50Hz with Hirschmann Connector ¹
5**	00	With Deadband ¹
	01	Without Deadband ¹
7**	00	Without Manual Override Shutoff ¹
	01	With Manual Override Shutoff ¹ (required for F & K primary options)
8**	00	75-350 PSI (5-24 Bar)
	01	75-435 PSI (5-30 Bar)
	02	100-380 PSI (7-26 Bar)
	03	150-400 PSI (10-28 Bar)
	04	75-250 PSI (5-17 Bar)
9**	00	24VDC
	01	12VDC
All Other	00	None ¹
Pump	Code	Reduced Displacement
P**F & P**M	00	Standard Cam (19°)
	10	P6 with 17° Cam – 5.3 in ³ /rev (87cc/rev)
		P7 with 17° Cam – 6.4 in ³ /rev (105 cc/rev)
		P8 with 17° Cam – 7.1 in ³ /rev (116 cc/rev)
		P11 with 17° Cam – 9.7 in ³ /rev (160 cc/rev)
		P14 with 17° Cam – 12.5 in ³ /rev (205 cc/rev)
	20	P24 with 17° Cam – 22.0 in ³ /rev (360 cc/rev)
		P30 with 17° Cam – 27.2 in ³ /rev (446 cc/rev)
		P6 with 15° Cam – 4.6 in ³ /rev (76 cc/rev)
		P7 with 15° Cam – 5.6 in ³ /rev (92 cc/rev)
		P8 with 15° Cam – 6.2 in ³ /rev (102 cc/rev)
		P11 with 15° Cam – 8.5 in ³ /rev (140 cc/rev)
		P14 with 15° Cam – 10.9 in ³ /rev (179 cc/rev)
	30	P6 with 13° Cam – 4.0 in ³ /rev (66 cc/rev)
		P7 with 13° Cam – 4.8 in ³ /rev (79 cc/rev)
		P8 with 13° Cam – 5.3 in ³ /rev (88 cc/rev)

Code	Internal Pump
0	1.07 in ³ /rev (17.5 cc/rev) – P6, 7, 8P/S/X/V/D & P11, 14V only** 2.14 in ³ /rev (35 cc/rev) – P11, 14P/S/X only** 2.81 in ³ /rev (46 cc/rev) – P24, 30P/S/X only (standard)**
1	1.61 in ³ /rev (26.4 cc/rev) – P24, 30P/S/X only (auxiliary external replenishing flow required)
2	1.05 in ³ /rev (17.2 cc/rev) – P24, 30P/S/X only (auxiliary external replenishing flow required)
3	3.56 in ³ /rev (58.3 cc/rev) – P24, 30P/S/X only
4	4.84 in ³ /rev (79.3 cc/rev) – P24, 30P/S/X only
5	5.42 in ³ /rev (88.8 cc/rev) – P24, 30P/S/X only
6	6.10 in ³ /rev (100.0 cc/rev) – P24, 30P/S/X only
X	No Internal Pump (standard on P*R/L/F/M)

** Omit code if no external drive is required.

Code	External Drive
Omit	None ¹
M	Blanking plate – for P6, 7, 8, 11, 14S/X only
A	SAE-A (SAE 82-2) – P6, 7, 8, 11, 14S/X/R/L/M only
B	SAE-B (SAE 101-2) – P6, 7, 8, 11, 14, 24, 30S/X/R/L/M SAE-B (SAE 101-4) – P11, 14, 24, 30R/L/M
C	SAE-C (SAE 127-2) – P6, 7, 8, 11, 14, 24, 30R/L/M & P24, 30S/X SAE-C (SAE 127-4) – P11, 14, 24, 30R/L/M
D	SAE-D (SAE 152-4) – P11, 14, 24, 30R/L/M only
E	SAE-E (SAE 165-4) – P11, 14, 24, 30R/L/M only
F	SAE-F (SAE 177-4) – P24, 30R/L/M only

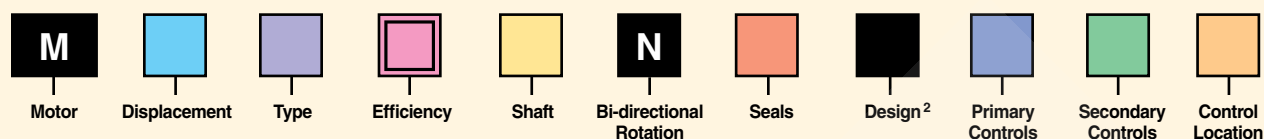
Code	External Mounting
Omit	No External Drive Required
0	No External Pump Mounted
1	External Pump Mounted (must be separately specified) – Requires Special Modification “-M2” ¹
2	ATEX Externally Mounted Pump

Code	Special Modifications
Omit	None
NP	No Paint ¹
EX	ATEX APPROVED PUMP (May contain additional modifications. Contact tech support.)
M2	Other Special Modification (example: bronze caged barrel bearing for low viscosity fluids, tandem pumps, etc.) ¹

 = Omit if not required

Hydrostatic Transmissions

GOLD CUP® Motor Model Ordering Code



Code	Displacement
6	6.00 in ³ /rev (98cc/rev)
7	7.25 in ³ /rev (119 cc/rev)
8	8.00 in ³ /rev (131 cc/rev)
11	11.0 in ³ /rev (180 cc/rev)
14	14.0 in ³ /rev (229 cc/rev)
24	24.6 in ³ /rev (403 cc/rev)
30	30.6 in ³ /rev (501 cc/rev)

Code	Type
F	Fixed Displacement
G	Fixed Displacement with Shuttle Package
M	Fixed Displacement with Thru-Drive
N	Fixed Displacement with Thru-Drive & Shuttle Package
V	Variable Displacement
H	Variable Displacement with Shuttle Package
R	Variable Displacement with Thru-Drive
L	Variable Displacement with Thru-Drive & Shuttle Package

Code	Efficiency
H	High Efficiency (M24 only)
Omit	Standard Efficiency

Code	Shaft
2	Keyed SAE – Mechanical Shaft Seal (Single Lip Seal on M6, 7, 8F/G/M/N)
3	Splined SAE – Mechanical Shaft Seal (Single Lip Seal on M6, 7, 8F/G/M/N)
4	Keyed SAE-D (Mounting & Shaft) – Mechanical Shaft Seal (M6, 7 & 8 only, Single Lip Seal on Fixed Displacement Motors)
5	Splined SAE-D (Mounting & Shaft) – Mechanical Shaft Seal (P6, 7 & 8 only, Single Lip Seal on Fixed Displacement Motors)
7	Keyed SAE – Double Lip Shaft Seal
8	Splined SAE – Double Lip Shaft Seal
9	Keyed (long) SAE – Double Lip Shaft Seal
10	Keyed (long) SAE – Mechanical Shaft Seal

Code	Seals
1	Nitrile (Buna-N)
4	EPR ³
5	Fluorocarbon

Code	Primary Controls
Omit	None (Fixed Displacement only)
2A	Cylinder Control w/Adjustable Maximum Volume Stops
2M	Cylinder Control – 2-Position Electrohydraulic w/Adjustable Maximum Volume Stop (Spring Offset to Maximum Displacement) ¹
5A	Electrohydraulic Stroker w/ Adjustable Maximum Volume Stops ¹
8A	Hydraulic Stroker w/Adjustable Maximum Volume Stops
9A	Electrohydraulic Stroker w/ Adjustable Maximum Volume Stops ¹

Code	Secondary Controls
Omit	None (Fixed Displacement only)
0	Volume Indicator
3	Reverse Compensator (spring offset to maximum displacement) + Volume Indicator
5	Reverse Compensator (spring offset to minimum displacement) + Volume Indicator
6	Cam Position Feedback Potentiometer ¹
7	Cam Position Feedback RVDT (AC) ¹
8	Cam Position Feedback RVDT (DC) ¹
U	Reverse Compensator (3) + Cam Position Feedback Potentiometer (6) ¹
W	Reverse Compensator (3) + Cam Position Feedback RVDT (8) ¹
X	Reverse Compensator (5) + Cam Position Feedback Potentiometer (6) ¹
Z	Reverse Compensator (5) + Cam Position Feedback RVDT (8) ¹

Code	Control Location
Omit	None (Fixed Displacement only)
A	Primary Control on Port A Side
B	Primary Control on Port B Side

1 Not ATEX approved.
2 Assigned by manufacturer.
3 Not available when using "5A" primary control. Motor will be unpainted unless otherwise specified.

= Omit if not required



Hydrostatic Transmissions

GOLD CUP® Motor Model Ordering Code



Control &
Displacement Features



Shuttle Valve
Features



External
Drive



External
Mounting



Special
Modifications

Control	Code	Control & Displacement Features
2M	0	CETOP3, NG6 Valve, 110AC/60Hz with Hirschmann Connector ¹
	1	CETOP3, NG6 Valve, 12VDC with Hirschmann Connector ¹
	2	CETOP3, NG6 Valve, 240VAC/50Hz with Hirschmann Connector ¹
	3	CETOP3, NG6 Valve, 110VAC/60Hz, Wiring Box ¹
	4	CETOP3, NG6 Valve, 12VDC, Wiring Box ¹
	5	CETOP3 (D03, NG6) Interface, No Valve ¹
	6	CETOP3, NG6 Valve, 24VDC with Hirschmann Connector ¹
	7	CETOP3, NG6 Valve, 110VAC/50Hz with Hirschmann Connector ¹
5A	0	With Deadband ¹
	1	Without Deadband ¹
8A	0	75-250 PSI (5-17 Bar)
	1	250-450 PSI (17-31 Bar)
9A	0	24VDC ¹
	1	12VDC ¹
All Other	0	None
Motor	Code	Reduced Displacement
M*F M*G M*M M*N	0	Standard Cam (19°)
	1	M6 with 17° Cam – 5.3 in ³ /rev (87cc/rev)
		M7 with 17° Cam – 6.4 in ³ /rev (105 cc/rev)
		M8 with 17° Cam – 7.1 in ³ /rev (116 cc/rev)
		M11 with 17° Cam – 9.7 in ³ /rev (160 cc/rev)
		M14 with 17° Cam – 12.5 in ³ /rev (205 cc/rev)
	2	M24 with 17° Cam – 22.0 in ³ /rev (360 cc/rev)
		M30 with 17° Cam – 27.2 in ³ /rev (446 cc/rev)
		M6 with 15° Cam – 4.6 in ³ /rev (76 cc/rev)
		M7 with 15° Cam – 5.6 in ³ /rev (92 cc/rev)
		M8 with 15° Cam – 6.2 in ³ /rev (102 cc/rev)
		M11 with 15° Cam – 8.5 in ³ /rev (140 cc/rev)
		M14 with 15° Cam – 10.9 in ³ /rev (179 cc/rev)
	3	M6 with 13° Cam – 4.0 in ³ /rev (66 cc/rev)
		M7 with 13° Cam – 4.8 in ³ /rev (79 cc/rev)
		M8 with 13° Cam – 5.3 in ³ /rev (88 cc/rev)

Code	Shuttle Valve Features
Omit	M*F/M/V/R Motors only
0	Without Orifices
2	With Orifices

Code	External Drive
Omit	None (M*F/G/V/H units only)
A	SAE-A (SAE 82-2) – M6, 7, 8, 11, 14M/N/R/L only
B	SAE-B (SAE 101-2) – M6, 7, 8M/N/R/L SAE-B (SAE 101-2 & 101-4) – M11, 14, 24, 30M/N/R/L
C	SAE-C (SAE 127-2) – M6, 7, 8M/N/R/L SAE-C (SAE 127-2 & 127-4) – M11, 14, 24, 30M/N/R/L
D	SAE-D (SAE 152-4) – M11, 14, 24, 30M/N/R/L only
E	SAE-E (SAE 165-4) – M11, 14, 24, 30M/N/R/L only
F	SAE-F (SAE 177-4) – M24, 30M/N/R/L only
M	Blanking Plate-less Coupling

Code	External Mounting
0	No External Motor Mounted
1	External Motor Mounted (must be separately specified) – Requires Special Modification “-M2”
2	ATEX Externally Mounted Motor

Code	Special Modifications
Omit	None
NP	No Paint
M2	Other Special Modification (example: bronze caged barrel bearing for low viscosity fluids, tandem motors, etc.)
EX	ATEX APPROVED (May contain additional modifications. Contact tech support.)



= Omit if not required



Vane Pumps

Page

(M) = Mobile **(I)** = Industrial **(B)** = Mobile & Industrial

(B)	SDV 10/20 Medium Pressure Single Vane Pumps	77-80
(B)	SDV2010 Medium Pressure Double Vane Pumps	81-84
(B)	T7A Series High Performance Small Displacement Single Vane Pumps	85-86
(B)	T6 Series Single, Double & Triple High Performance Vane Pumps	87-90
(B)	T7 Series Single, Double & Triple High Performance Vane Pumps	91-93
(B)	T67 Series High Performance Vane Pumps	94-96
(B)	T6H/T7H Hybrid Technology Variable Piston Fixed Vane Pumps	97-100



ENGINEERING YOUR SUCCESS.

SDV 10/20 Medium Pressure Single Vane Pumps



The SDV Series are a fixed displacement vane pump ideal for low to mid-pressure applications. Their compact design and low noise features make them well suited for filter carts, test stands and remote pilot pumps.

Pump Performance Data

Single Pump Model Series**	Displacement in ³ /rev (cc/rev)	Max. Outlet Pressure PSI (BAR)	Rated Drive Speed RPM	Flow @ 1800 rpm and 0 PSI GPM (LPM)	Input Horsepower @ 1800 rpm and 2500 PSI HP (KW)
SDV10-1*1	0.20 (3.3)	2500 (175)	1800	1.6 (6.1)	2.89 (2.2)
SDV10-1*2	0.40 (6.6)	2500 (175)	1800	3.1 (11.7)	4.83 (3.6)
SDV10-1*3	0.60 (9.8)	2500 (175)	1800	4.7 (17.8)	7.65 (5.7)
SDV10-1*4	0.80 (13.1)	2500 (175)	1800	6.2 (23.5)	9.87 (7.4)
SDV10-1*5	1.00 (16.4)	2500 (175)	1800	7.8 (29.5)	12.77 (9.5)
SDV10-1*6	1.19 (19.5)	2200 (150)	1800	9.3 (35.2)	15.11 (11.3)
SDV10-1*7	1.39 (22.8)	2000 (140)	1800	10.8 (40.9)	18.01 (13.4)

Single Pump Model Series**	Displacement in ³ /rev (cc/rev)	Max. Outlet Pressure PSI (BAR)	Rated Drive Speed RPM	Flow @ 0 PSI* GPM (LPM)	Input Horsepower @ 2500 PSI* HP (KW)
SDV20-1*6	1.19 (19.5)	2500 (175)	1800	9.27 (35.1)	14.5 (10.8)
SDV20-1*7	1.39 (22.8)	2500 (175)	1800	10.84 (41.0)	16.4 (12.2)
SDV20-1*8	1.62 (26.5)	2500 (175)	1800	12.60 (47.7)	19.5 (14.5)
SDV20-1*9	1.81 (29.7)	2500 (175)	1800	14.12 (53.5)	22.1 (16.5)
SDV20-1*11	2.22 (36.4)	2500 (175)	1800	17.31 (65.5)	28.6 (21.3)
SDV20-1*12	2.38 (39.0)	2200 (150)	1800	18.55 (70.2)	30.4 (22.7)
SDV20-1*13	2.59 (42.4)	2000 (140)	1800	20.16 (76.3)	33.2 (24.8)

* @ 1800 RPM.

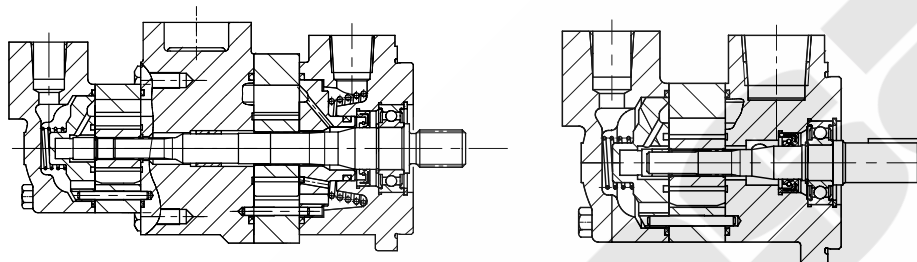
** Based on combinations of SDV20 pumps.

SDV 10/20 Medium Pressure Single Vane Pumps

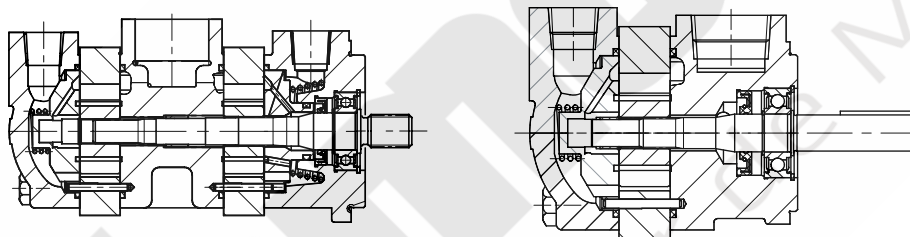
Benefits/Features

- Two compact frame sizes available
- Low noise
- 100% tested
- Easy to convert or repair

SDV10



SDV20



Pump Performance Data

SDV10	Output Flow (l/min)		Output Flow (GPM)		Input Power (kW)		Input Power (HP)	
Size	0 BAR	150 BAR	0 PSI	2000 PSI	7 BAR	150 BAR	80 PSI	2500 PSI
1	6.1	3.9	1.6	1.0	0.1	1.44	0.14	1.93
2	11.9	9.9	3.1	2.6	0.21	3.6	0.28	4.83
3	17.8	15.6	4.7	4.1	0.31	5.7	0.41	7.65
4	23.6	20.2	6.2	5.3	0.41	7.4	0.55	9.87
5	29.5	25.8	7.8	6.7	0.51	9.52	0.69	12.77
6	35.2	31.0	9.3	8.2	0.61	11.3	0.82	15.11
7	41.0	36.8	10.8	9.7	0.71	13.43	0.96	18.01

SDV20	Output Flow (l/min)		Output Flow (GPM)		Input Power (kW)		Input Power (HP)	
Size	0 BAR	150 BAR	0 PSI	2000 PSI	7 BAR	150 BAR	80 PSI	2500 PSI
6	35.1	31.5	9.27	8.32	0.5	10.8	0.7	14.5
7	41.0	35.7	10.84	9.42	0.7	12.2	0.9	16.4
8	47.7	42.3	12.60	11.18	0.7	14.5	1.0	19.5
9	53.5	48.1	14.12	12.70	0.8	16.5	1.1	22.1
11	65.5	62.1	17.31	16.41	1.0	21.3	1.4	28.6
12	70.2	66.0	18.55	17.44	1.1	22.7	1.5	30.4
13	76.3	72.1	20.16	19.05	1.2	24.8	1.2	33.2