Parker Hydraulics

Series PHP60 Variable Volume, Piston Pumps

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Bulletin 2600-109/USA

Performance Information Series PHP60 Pressure Compensated, Variable Volume, Piston Pumps

Features

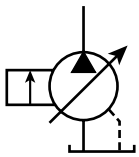
- High Strength Cast-Iron Housing for Reliability and Quiet Operation
- Replaceable Bronze Port Plate to Allow Easy Field Serviceability
- Replaceable Piston Slipper Plate
- Thru-Shaft Capability SAE A, B and C Pilots Available
- Low Noise Levels
- Fast Response Times
- Metric Pilot, Shaft, and Ports Available
- Low Control Pressures for Reduced Power Draw (Energy Efficient)

Controls

- Pressure Compensation
- Remote Pressure Compensation
- Load Sensing
- Hi/Lo Torque (Horsepower) Limiting
- Adjustable Maximum Volume Stop
- Low Pressure Standby

Schematic Symbol

(Basic Pump)



Special Installation or Fluids

Consult your Parker representative on applications requiring higher than rated pressure, over-speed conditions, indirect drive, fluids other than mineral base fluid, and operation at temperatures above 160°F (71°C).

Specifications

Pressure Ratings

Outlet Port:	5000 PSI (345 bar) Continuous (P1) 5500 PSI (380 bar) Peak (P3)
Inlet Port:	10 PSI (0.69 bar) Maximum 5 In. Hg. Minimum @ 1800 RPM
Case Drain:	5 PSI Maximum Differential over Inlet Port. 15 PSI Maximum.
Speed Ratings:	600 to 2200 RPM
Operating Temperature Range:	– 40˚F to 160˚F (– 40˚C to 71˚C)
Housing Material:	Cast-Iron
Filtration:	ISO 16/13 Recommended, ISO 18/15 Maximum
Mounting:	SAE “C” 2-Bolt or Metric

Installation Data:
See “Installation Information” on page A116 of Catalog 2600-102-1/USA for specific recommendations pertaining to system cleanliness, fluids, start-up, inlet conditions, shaft alignment, drain line restrictions and other important factors relative to the proper installation and use of these pumps.

Quick Reference Data Chart

Pump Model	Displacement cc/rev (In³/rev)	Pump Delivery @ 100 PSI (7 bar) in GPM (LPM)		*Approx. Noise Levels dB(A) @ Full Flow 1800 RPM (1200 RPM)						Horsepower At 1800 RPM, Max. Displacement & 5000 PSI
		1200 RPM	1800 RPM	500 PSI (34 bar)	1000 PSI (69 bar)	2000 PSI (138 bar)	3000 PSI (207 bar)	4000 PSI (275bar)	5000 PSI (345 bar)	
PHP60	60 (3.66)	19.5 (73.8)	28.2 (106.7)	72 (68)	73 (69)	75 (70)	77 (70)	81 (76)	81 (80)	92.0

* Since many variables such as mounting, tank style, plant layout, etc., effect noise levels, it cannot be assumed that the above readings will be equal to those in the field. The above values are for guidance in selecting the proper pump. Noise levels are A-weighted, mean sound pressure levels at 1 meter from the pump, measured and recorded in accordance with applicable ISO and NFPA standards.

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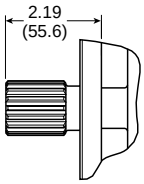
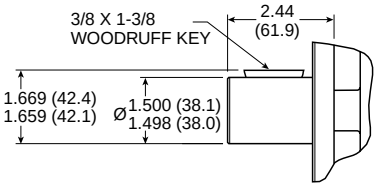
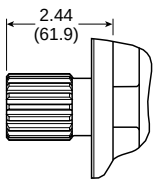
Dimensions - Standard Pressure Compensator Pump



SHAFT OPTION "B" (SAE "C")
14 TOOTH 12/24 PITCH
30° INVOLUTE SPLINE
(MAX TORQUE = 5680 IN LBS)



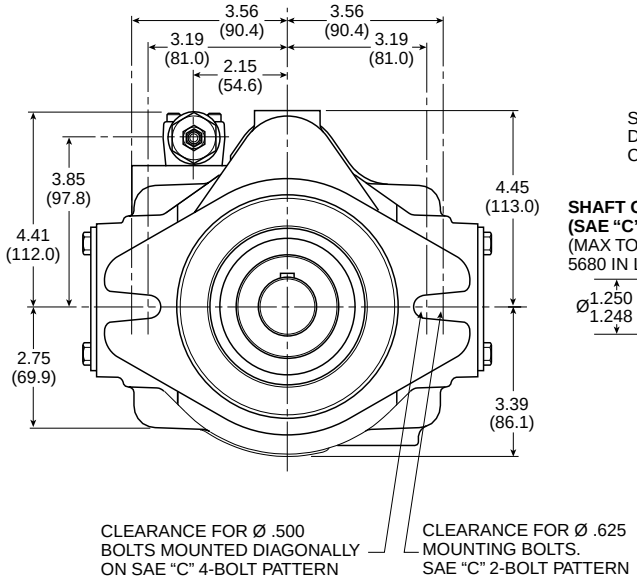
SHAFT OPTION "C" (SAE "C-C")
(MAX TORQUE = 10,780 IN LBS)



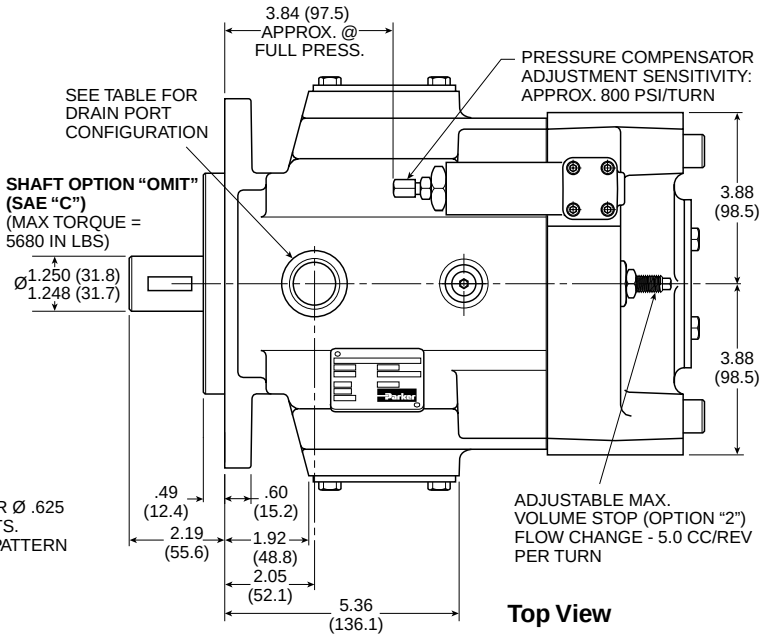
SHAFT OPTION "D" (SAE "CC")
17 TOOTH 12/24 PITCH
30° INVOLUTE SPLINE
(MAX TORQUE = 10,780 IN LBS)

Drain Port Table

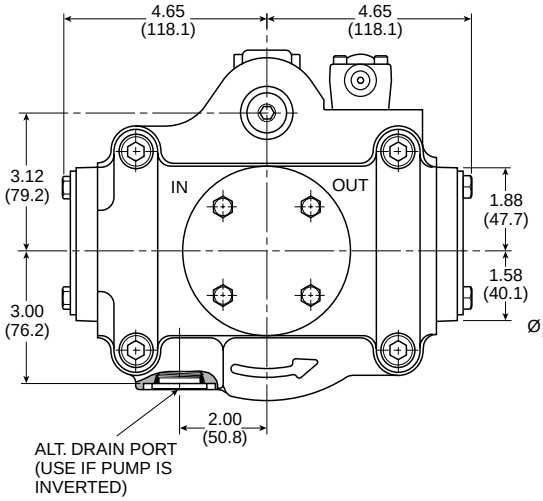
Port Option	Drain Port Configuration
2	Straight Thread O-Ring SAE -12 (1-1/16-12 UN)
8	Straight Thread O-Ring ISO 6149-12 (M27 X 2.0)



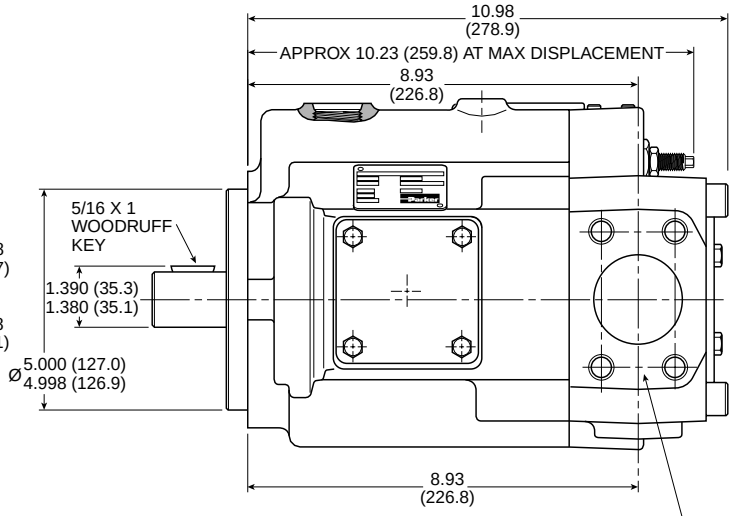
Front View



Top View



Rear View

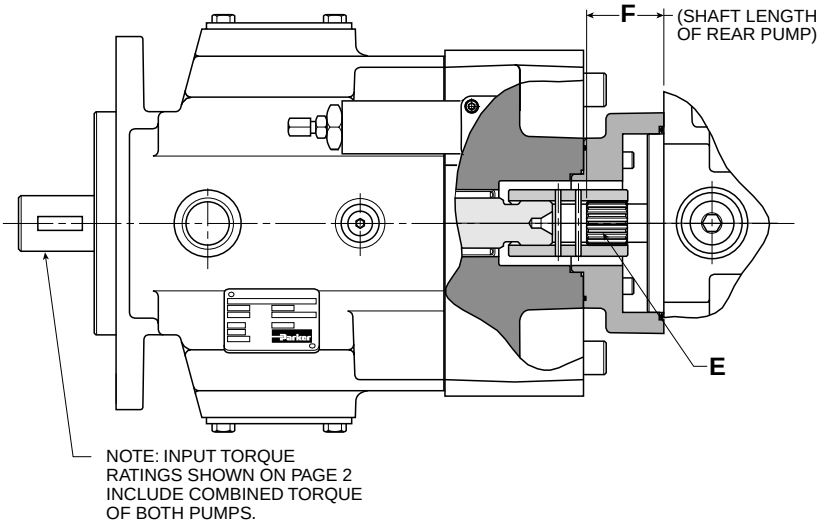


INLET - 2" SAE 4-BOLT FLANGE
STANDARD PRESSURE SERIES (CODE 61) - THIS SIDE
(1/2-13 THREAD FOR PORT OPTION "2" PUMPS)
(M12 x 1.75 THREAD FOR PORT OPTION "8" PUMPS)

OUTLET - 1-1/4" SAE 4-BOLT FLANGE
HIGH PRESSURE SERIES (CODE 62) - OPPOSITE SIDE
(1/2-13 THREAD FOR PORT OPTION "2" PUMPS)
(M14 x 2 THREAD FOR PORT OPTION "8" PUMPS)

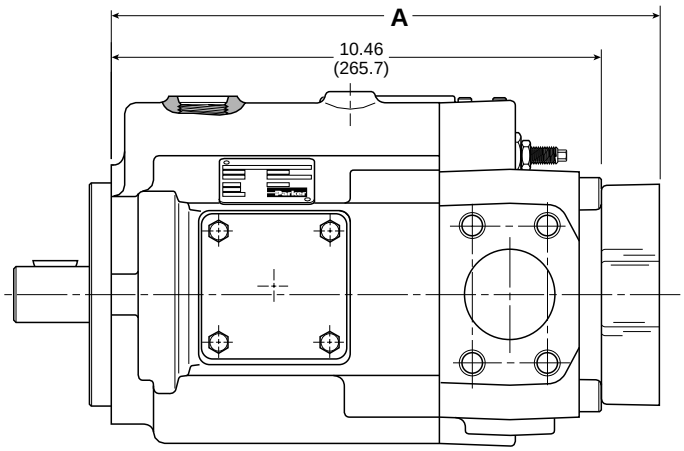
Side View

Dimensions - Thru-Shaft Pump

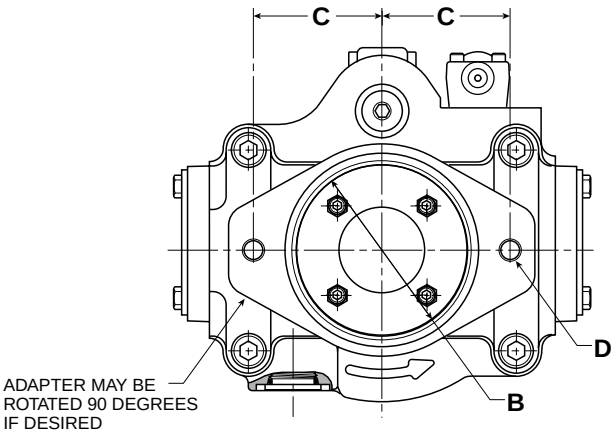


Top View

Note: Maximum torque transmitting capacity for rear mounting of pumps = 3000 IN LBS
Lower allowables may apply based on pump mounted on rear.



Side View



Front View

Dimensions – Thru Shaft Options

VARIATION	A	B	C	D	E	F
6A4	11.71 (297.43)	3.251/3.252 (82.58/82.60)	2.094 (53.19)	3/8–16UNC–2B	9 Tooth 16/32 Pitch	1.25 (31.8)
6B3	12.26 (311.40)	4.001/4.002 (101.63/101.65)	2.875 (73.03)	1/2–13UNC–2B	13 Tooth 16/32 Pitch	1.62 (41.1)
6B4	12.26 (311.40)	4.001/4.002 (101.63/101.65)	2.875 (73.03)	1/2–13UNC–2B	15 Tooth 16/32 Pitch	1.81 (46.0)
6C3	12.64 (321.06)	5.001/5.002 (127.03/127.05)	3.563 (90.50)	5/8–11UNC–2B	14 Tooth 12/24 Pitch	2.18 (55.4)
9A4	11.71 (297.43)	3.251/3.252 (82.58/82.60)	2.094 (53.19)	M10 X 1.5	9 Tooth 16/32 Pitch	1.25 (31.8)
9B3	12.26 (311.40)	4.001/4.002 (101.63/101.65)	2.875 (73.03)	M12 X 1.75	13 Tooth 16/32 Pitch	1.62 (41.1)
9B4	12.26 (311.40)	4.001/4.002 (101.63/101.65)	2.875 (73.03)	M12 X 1.75	15 Tooth 16/32 Pitch	1.81 (46.0)
9C3	12.64 (321.06)	5.001/5.002 (127.03/127.05)	3.563 (90.50)	M16 X 2.0	14 Tooth 12/24 Pitch	2.18 (55.4)

Note: Right Hand (CW) rotation, side ported pump shown. Left Hand (CCW) pumps have inlet port, outlet port, cover drain port and compensator on opposite side as viewed from rear of pump.

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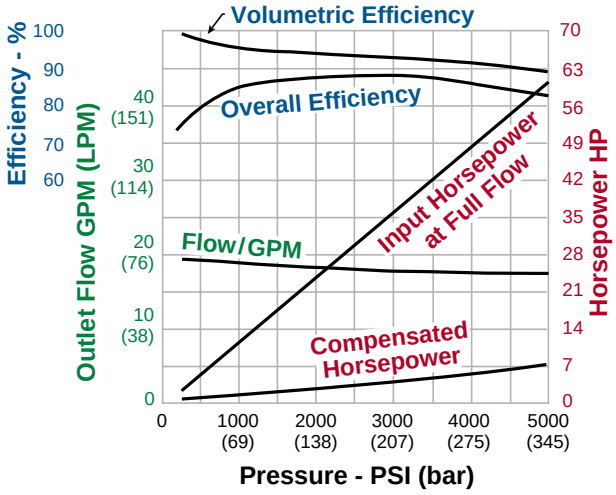
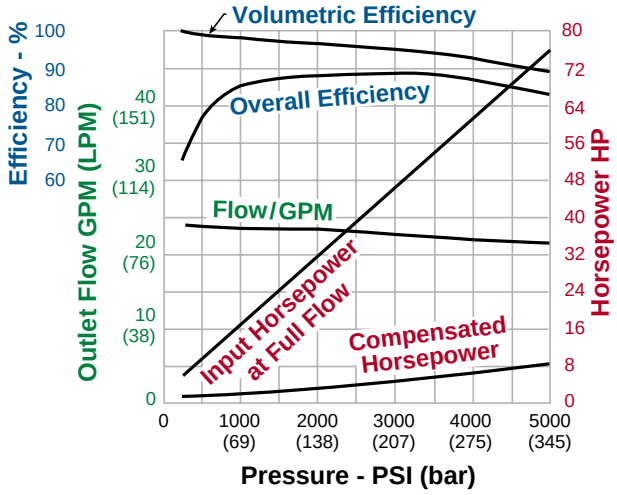
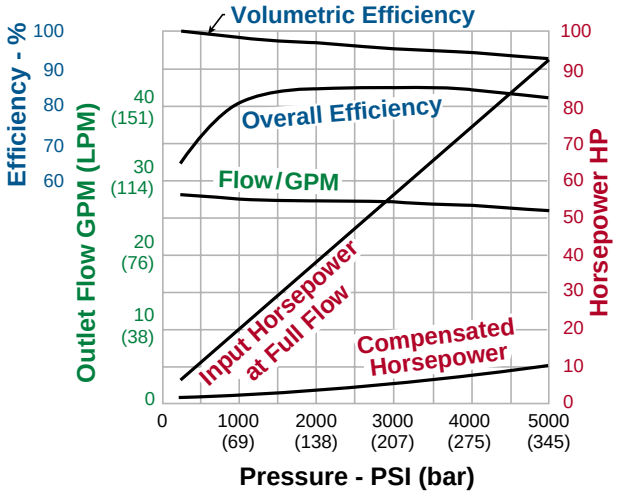
PHP60 @ 1200 RPM



PHP60 @ 1500 RPM



PHP60 @ 1800 RPM

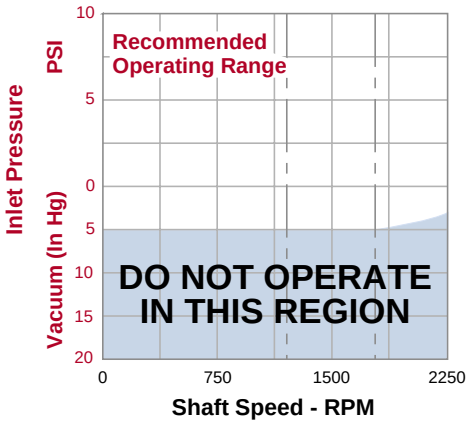


Note: Compensated horsepower curves are shown for the standard pressure compensator option. For remote type compensators the compensated horsepowers will be 10-15% higher.

Note: The efficiencies and data in the graphs are accurate for pumps running at speeds shown and maximum stroke. To calculate approximate horsepower for other conditions, use the following formula...

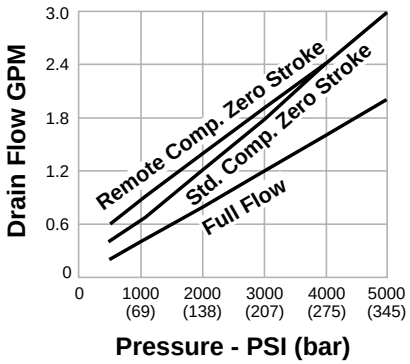
$$HP = \left[\frac{Q \times (PSI)}{1714}\right] + \text{Compensated HP}$$

PHP60 Inlet Characteristics

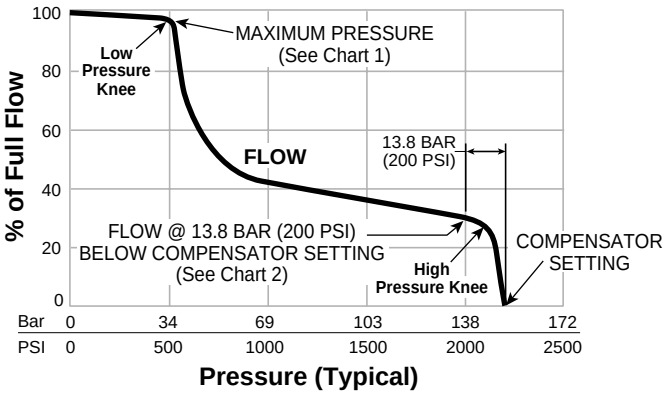


Nominal Case Drain Flow

1800 RPM



Typical Hi-Lo Flow Characteristics



Determining how much the pressure will increase at the **Low Pressure Knee** by manually destroking the pump.

1. From “Chart 1” read the maximum obtainable pressure (P1) at the low pressure knee at the input power desired for the desired speed (N).
2. Calculate the theoretical full flow (Q1) of the pump at the desired speed.

$$Q1\ (gpm) = \frac{(cc/rev)\ X\ (N)}{3785}$$

3. Pick a reduced output flow (Q2). This is done by decreasing the output of the pump using the optional volume stop.
4. Approximate the new maximum pressure at the low pressure knee for the input power desired (P2).

$$P2 = \frac{Q1\ X\ P1}{Q2}$$

Chart 1:

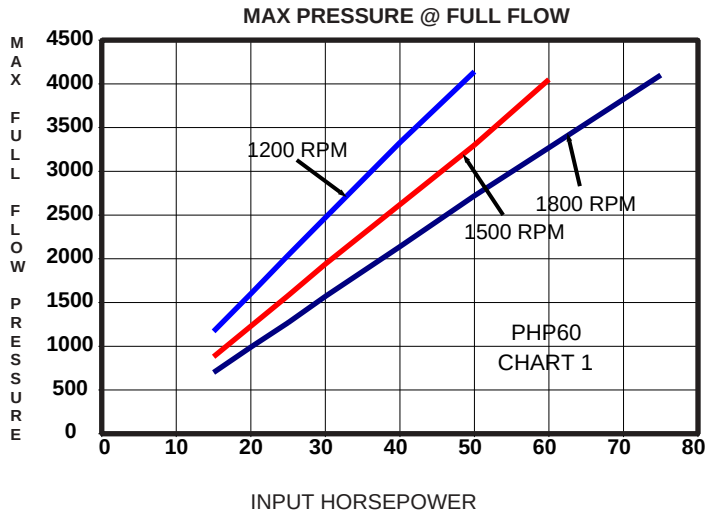
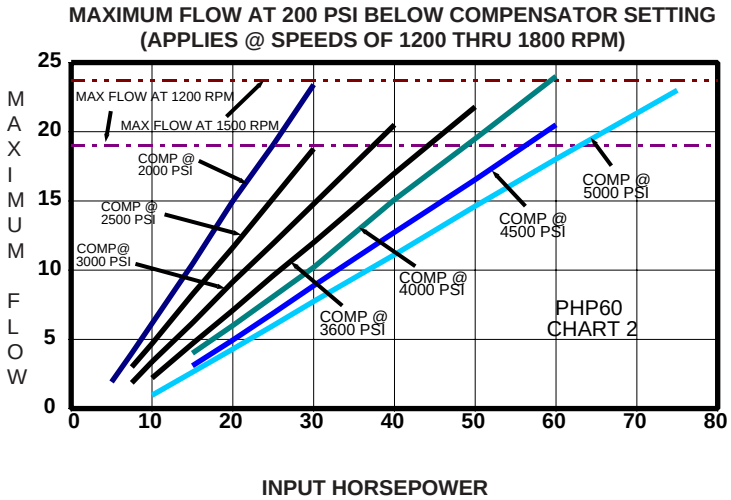


Chart 2:



	PHP	60											
Multiple Pumps	Pump Variable Piston	Series & Size	Pressure Range	Shaft	Port Location	Rotation	Volume Stop Option	Thru-Shaft Threads	Thru-Shaft Option	Control Option	Seals	Paint	Multiple Pumps

Code	Pressure Range
50	350-5000 PSI*

* Minimum value of pressure range only applies on control option "omit" code.

Code	Maximum Displacement CC's/REV. (Cu.In's/Rev.)
60	60 (3.7)

Rotation *	
R	CW
L	CCW

* As viewed from shaft end.

Code	Paint Option
Omit	Not Painted
P	Painted

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

Code	Multiple Pumps
Omit	Single Pump
—	Factory Mounted To Rear Of Another Pump

Code	Thru-Shaft Threads
Omit	No Thru-Shaft
6*	UNC
9**	Metric

* Available with 2 port option only.

** Available with 8 port option only.

Code	Seals
Omit	Nitrile
V	Fluoroelastomers*

* "**FLUOROELASTOMERS** are available under various registered trademarks, including **VITON** (a registered trademark of DuPont) and **FLUOREL** (a registered trademark of 3M)."

Code	Shaft	Pilot
Omit	1-1/4" Keyed (SAE C) x 2.19" Lg.	SAE C
B	14T Spline (SAE C)	SAE C
C	1-1/2" Keyed (SAE CC) x 2.44" Lg.	SAE C
D	17T Spline (SAE CC)	SAE C
K*	32mm Keyed	Metric

* Available with 8 port option only.

Code	Vol. Stop Option
Omit	No Volume Stop
2	Adj. Max. Vol. Stop

Code	Port Location	Port Type
2	Side - Flange (Inch Thds.)	SAE
8	Side - Flange (Metric Thds.)	ISO 6149

Code	Thru-Shaft Option
Omit	No Thru-Shaft
A4	SAE A Pilot/SAE A 9T Spline
A5	SAE Pilot 11T Spline
B3	SAE B Pilot/SAE B 13T Spline
B4	SAE B Pilot/SAE BB 15T Spline
C3	SAE C Pilot/SAE C 14T Spline

Code	Control Options
Omit	Press. Compensated
**M	Remote Pressure (Int.)
**ME	Remote Pressure (Ext.)
A	Pressure and Flow
HLM*	Remote Pressure & Hi/Lo HP
HLA*	Pressure, Flow & Hi/Lo HP

*Specify HP, RPM, Pressure and Flow when ordering.

** "M" (May be remotely controlled)
"ME" (Requires external pilot)