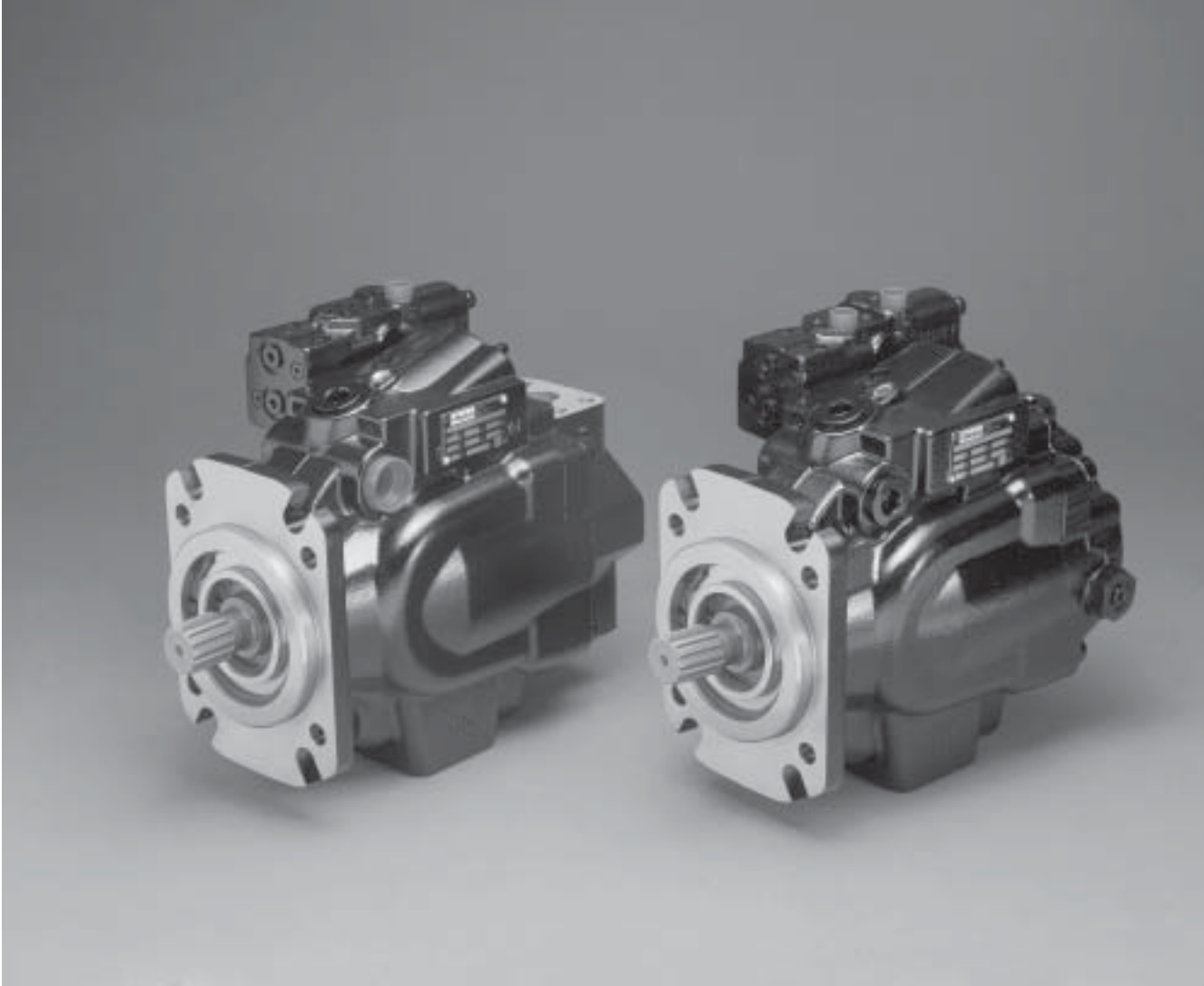




P2/P3 Series Piston Pumps Variable Displacement

Catalog HY13-2600-700-001/US



General Information

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

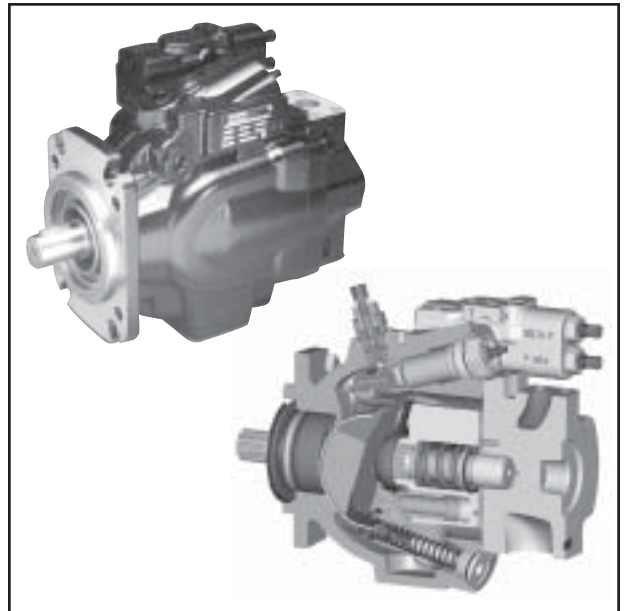
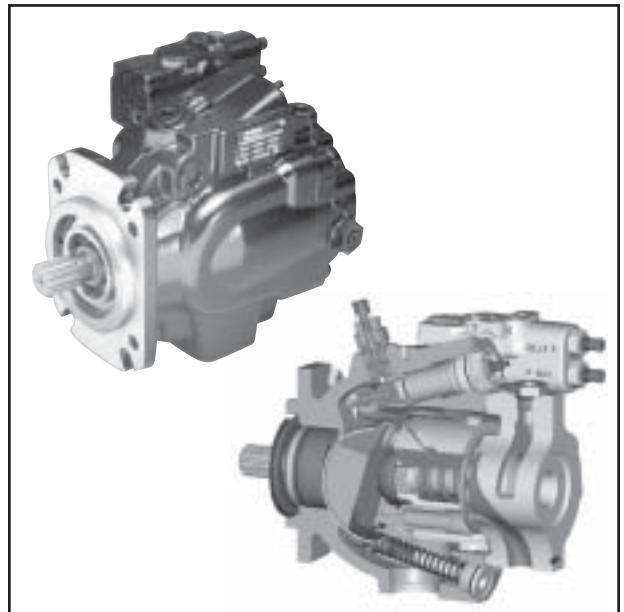
The pumps are very stable and respond quickly to system demands in many different types of mobile machinery, and are designed for cost effective installation within the limited space available on modern mobile machines.

The P2 series is available in four frame sizes from 60 to 145 cm³/rev and features control options that are suitable for most mobile vehicle applications.

The P3 offers a built-in impeller to suit applications requiring higher self-priming speeds or when the vehicle is operating in high altitudes.

The P3 pump line is available in three frame sizes from 75 to 145 cm³/rev and features control options that are suitable for most mobile applications. Both of these pumps offer benefits like:

- **Compact and easy to install**
- **Less noise to insulate**
- **High self-priming speeds**
- **Gauge ports are standard**

P2 Series**P3 Series**

Ordering Information

	Pump Series	Displacement	Shaft Rotation	Percent of Max Displacement	Shaft Options	Mounting Flange	Pressure Setting																																																																																																																																				
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P2/P3 Torque Control Options TA, TB, TC, TD Ordering Guide

	Maximum Rated Torque		TA/TB Adjustment Range 20%-60% of Max Torque		TC/TD Adjustment Range 50%-90% of Max Torque	
	Nm	Lb. In.	Nm	Lb. In.	Nm	Lb. In.
	P2/P3060	339	3004	68-204	600-1802	170-306
P2/P3075	424	3755	85-254	751-2253	212-382	1877-3379
P2/P3105	594	5257	119-356	1051-3154	297-535	2628-4731
P2/P3145	820	7259	164-492	1451-4355	410-738	3629-6533

Code Pressure Setting

XX Factory max setting, in Bar times 10 (100-320 bar range)

For example "32" = 320 Bar Pressure Compensator Setting

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 P2/P3075-TC pump with an input torque limit setting required of 300Nm, divide 300 into 424, which equals 71%, so 71 is specified in Torque Control Setting (%) box.

Ordering Information

Controls	Differential Pressure Setting	Seal Type	Torque Control Setting (%)	Thru Drive	Port Location	Multiple Pump Option	Paint Option

Code	Multiple Pump Option
1	Single pump
2 ⁵	Front pump of multiple pump combination
3 ⁵	Middle pump of multiple pump combination
4 ⁵	Rear pump of multiple pump combination

⁵Multiple pump assemblies must be ordered on the same purchase order and must be comprised of Parker piston pumps only

Code	Port Location
A	Side flanges - UNC
B	Side flanges - ISO6149 (metric)
G ⁴	Rear flanges - UNC
H ⁴	Rear flanges - ISO6149 (metric)

⁴P2060 and P2075 only

Code	Thru Drive
S1	No thru drive
T1	Thru drive with cover, no coupling
A1	SAE A - 2 bolt, A spline
B1	SAE B - 2 bolt, B spline
B2	SAE B - 2 bolt, BB spline
C1	SAE C - 2 bolt, C spline
C2	SAE C - 2 bolt, CC spline (145 only)
C3	SAE C - 4 bolt, C spline
C4	SAE C - 4 bolt, CC spline (145 only)
D3	SAE D - 4 bolt, D spline (145 only)

Code	Torque Control Setting in %
00	Standard setting for non-torque control pumps
XX ³	20 to 90% of max. rated torque

³See chart on previous page for information and examples.

Code	Paint Option
P	Parker Black
U	No paint

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"

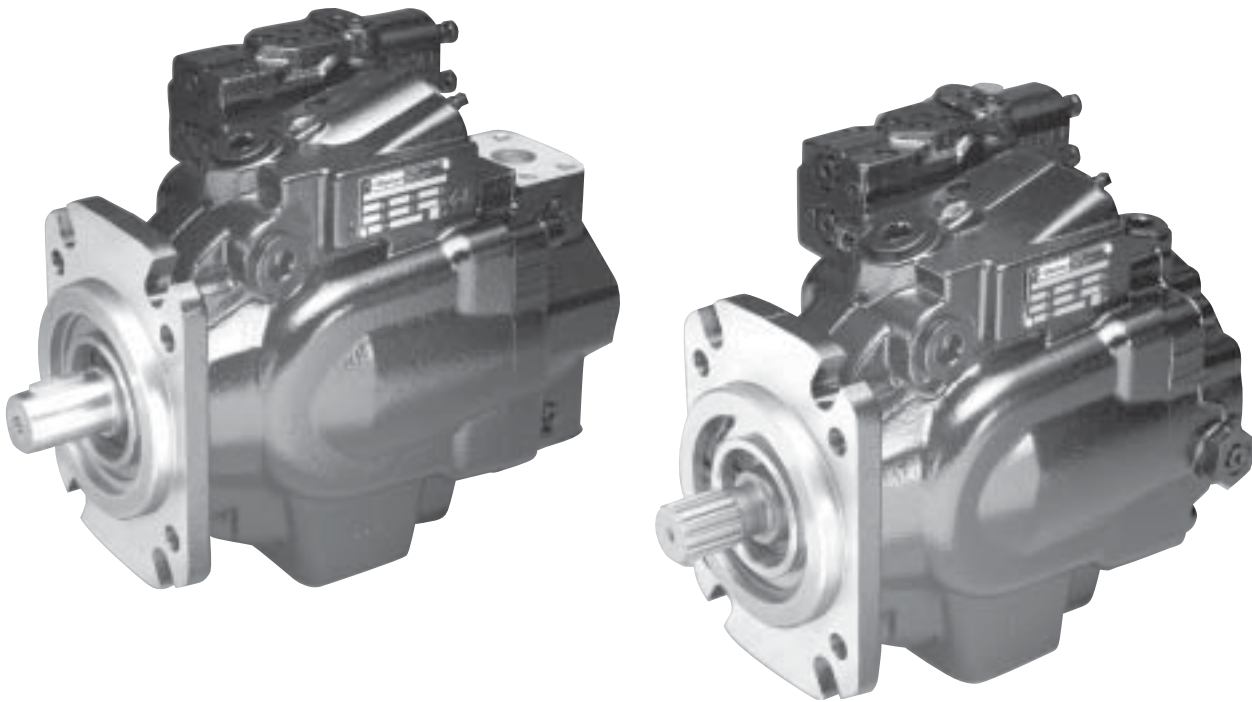
Code	Differential Pressure Setting
20	Recommended Initial Factory Setting
00	Use with PA Control Only
XX	Pressure Setting in Bar - Range 10-35

Code	Controls
PA	Standard Max Pressure Control (Pmax) 100-320 Bar (1450-4600 PSI)
RA	Remote/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 (2 spool) - torque range 20-60% of max rated torque
TB ³	Torque/LS/Pmax with bleed orifice (2 spool) - torque range 20-60% of max rated torque
TC ³	Torque/LS/Pmax without bleed orifice (2 spool) - torque range 50-90% of max rated torque
TD ³	Torque/LS/Pmax with bleed orifice (2 spool) - torque range 50-90% of max rated torque

³See previous page for information and examples.



Technical Data

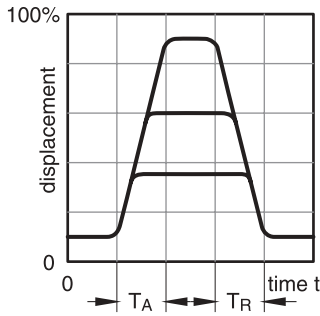


	P2 Series				P3 Series		
Frame size	P2060	P2075	P2105	P2145	P3075	P3105	P3145
Max displacement cm ³ /rev [cu in/rev]	60 3.66	75 4.58	105 6.41	145 8.85	75 4.58	105 6.41	145 8.85
Self-priming speed at 1 bar/14.5 psi abs. inlet pressure [rpm]	2800	2500	2300	2200	3000	2600	2500

Max continuous pressure bar [psi]	320 4600	320 4600	320 4600	320 4600	320 4600	320 4600	320 4600
Peak pressure bar [psi]	370 5365	370 5365	370 5365	370 5365	370 5365	370 5365	370 5365
Minimum Inlet Pressure bar abs at max speed [in Hg vacuum]	.8 5.8	.8 5.8	.8 5.8	.8 5.8	.8 5.8	.8 5.8	.8 5.8
Maximum Inlet Pressure bar [psi]	10 145	10 145	10 145	10 145	1.5 22.7	1.5 22.7	1.5 22.7
Maximum Case Drain Pressure bar continuous psi	.5 7.75	.5 7.75	.5 7.75	.5 7.75	1 14.5	1 14.5	1 14.5
Noise level at full flow, 1800 rpm, and 250 bar (3600 psi) [dbA]	74	76	78	80	76	78	80
Weight with load sense control kg [lbs]	37 81	44 97	63 139	78 172	42 92	62 136	76 167
Mass moment of inertia kg m ² (about axis of shaft)	.0061	.0101	.0168	.0241	.0106	.0177	.0264

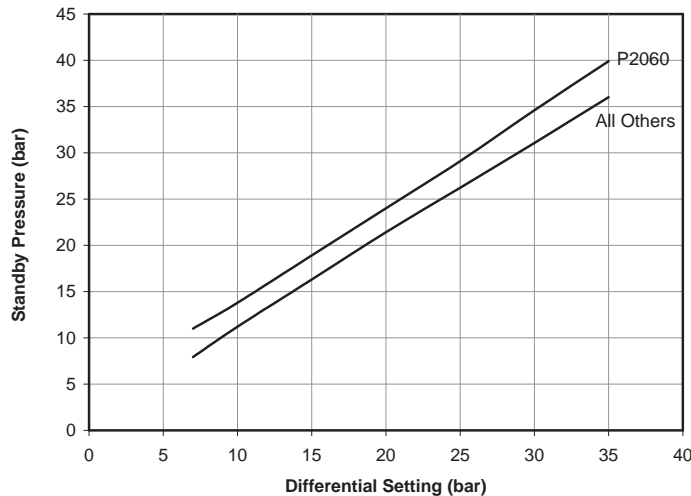
P2/P3 Typical Control Characteristics
Typical Response Times

Input Speed: 1500 RPM
 Fluid: Mineral Oil ISO VG 32 @ 40° C



Size	Pressure Condition				
	Stand by to 250 bar	250 bar to stand by	50 bar to stand by	Stand by to 300 bar	300 bar to stand by
	Flow Condition				
	TA (ms) 0-100%	TR (ms) 100%-0	TR (ms) 100%-0	TA (ms) 0-100%	TR (ms) 100%-0
P2060	60	35	35	70	40
P2075	80	35	35	70	40
P2105	100	35	35	80	40
P2145	120	35	35	100	40
P3075	80	35	35	70	35
P3105	100	35	35	80	35
P3145	110	35	35	100	35

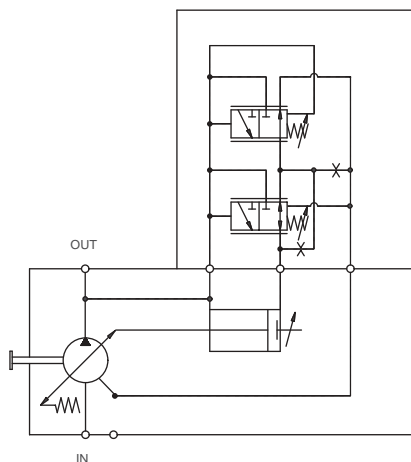
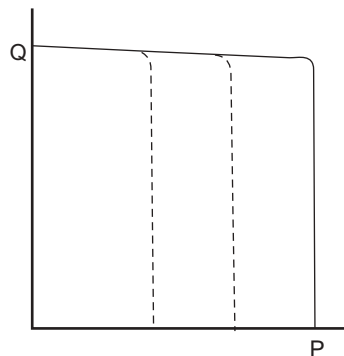
Differential Setting vs Standby Pressure



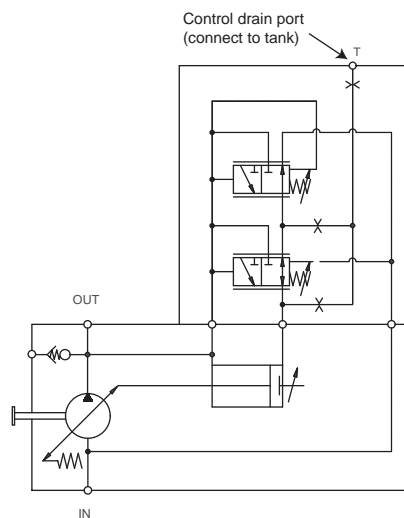
This chart shows the difference between differential pressure setting and stand by pressure. The P2060 utilizes a different control from the rest of the product family. "All others" refers to all other pump sizes P2 and P3 075 thru 145.

Control Option "PA"
Pressure Compensator Control

The pressure compensator control is used to limit the maximum system pressure. The control acts such that full pump displacement is achieved unless the system valve restricts the output flow or the load pressure reaches the maximum setting of the control. If pump flow is restricted by the system valve, the pump will provide only the flow demanded, but at the maximum pressure setting of the compensator control. If the outlet flow is completely blocked, the pump will destroke to zero displacement and maintain the pressure at the setting of the compensator spring.



P2 Control Schematic

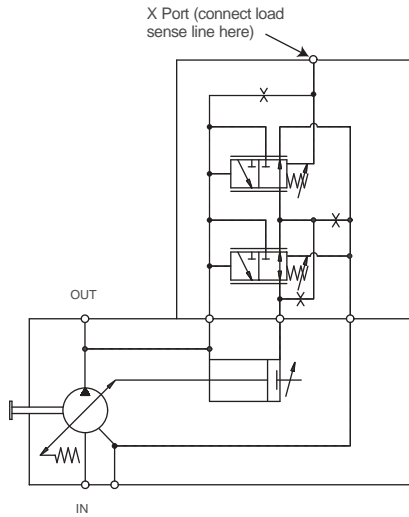
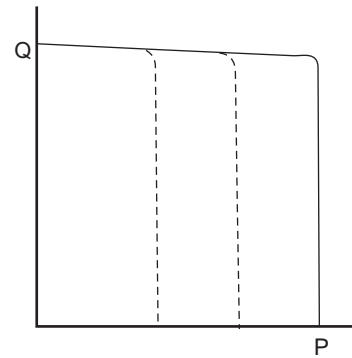


P3 Control Schematic

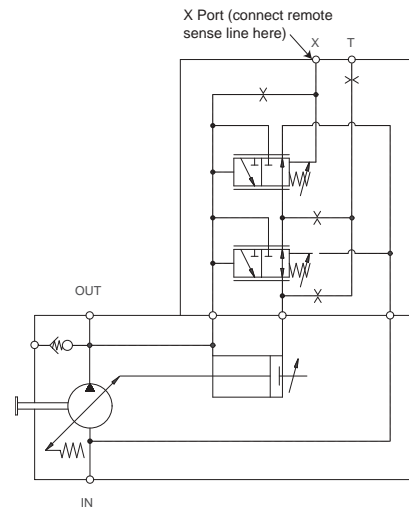
Technical Information

**Control Option “RA”
Remote Pressure Compensator Control**

This control allows the pump pressure compensator setting to be adjusted from a remote relief valve. The control acts such that full pump displacement is achieved unless the system valve restricts the output flow or the load pressure reaches the maximum setting of the control. If pump flow is restricted by the system valve, the pump will provide only the flow demanded, but at the maximum pressure setting of the compensator control. If the outlet flow is completely blocked, the pump will destroke to zero displacement and maintain the pressure at the setting of the remote relief valve.



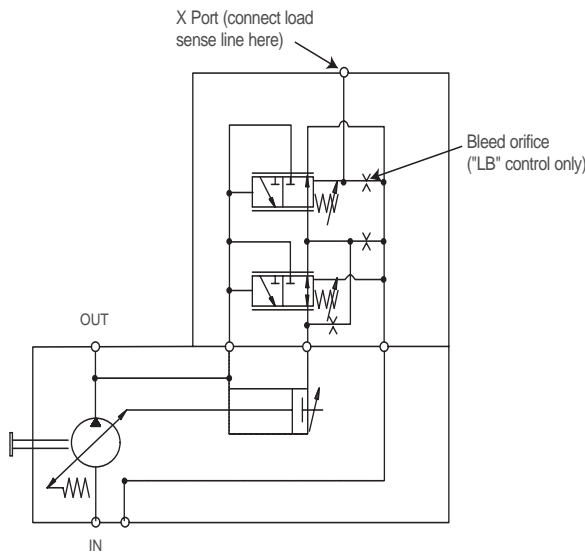
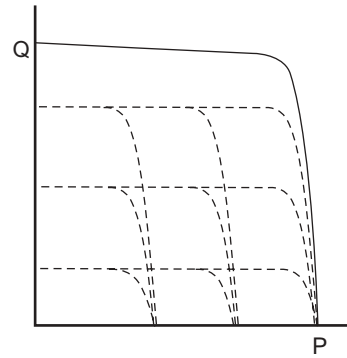
P2 Control Schematic



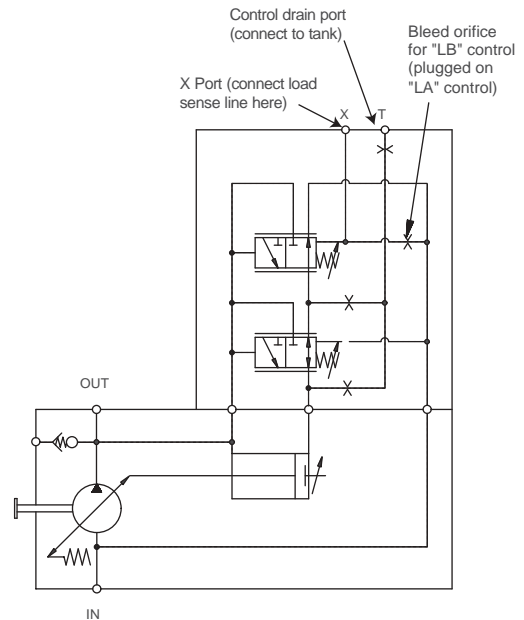
P3 Control Schematic

Control Options “LA” and “LB”
Load sensing controls with maximum pressure cut off

These controls feature load sensing and maximum pressure compensation. Load sense controls are used to match pump flow and pressure to system demands, thus minimizing losses due to wasted horsepower. The pump automatically adjusts for changes in drive speed and load pressures to match the pump output flow to the load requirement. Since the pump load sense control will maintain a constant pressure drop across the main system throttling valve, the flow rate will remain constant, independent of changes in load pressure and pump shaft speed.



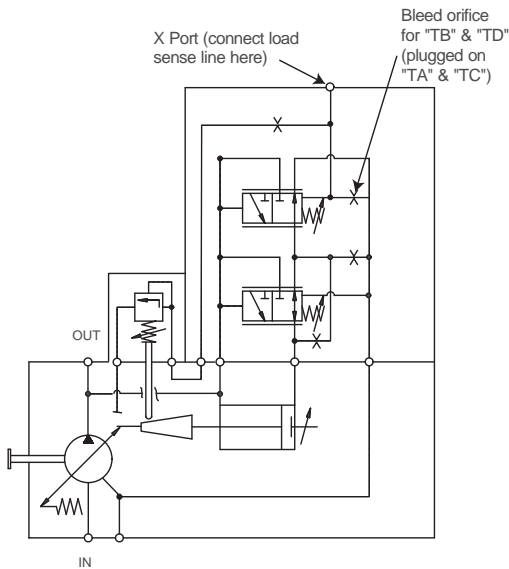
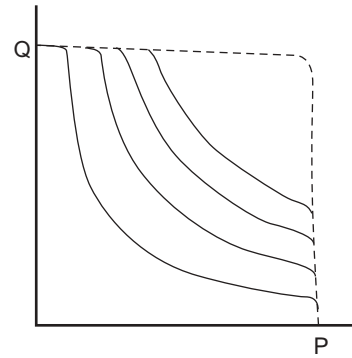
P2 Control Schematic



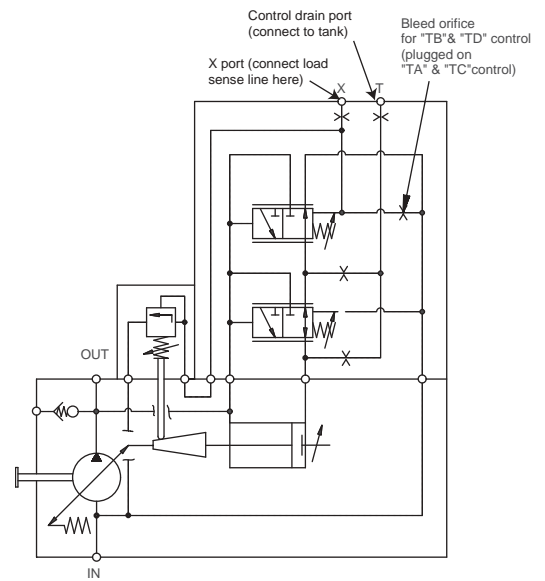
P3 Control Schematic

Control Options “TA”, “TB”, “TC” and “TD”
**Torque limiting control with load sensing and
 maximum pressure limiter**

These controls provide the benefits of the load sensing and pressure limiting controls, plus the ability to limit the input torque the pump will draw. These controls are beneficial when the power available from the prime mover for the hydraulics is limited or the application power demand has both high flow / low pressure and low flow / high pressure duty cycles.



P2 Control Schematic

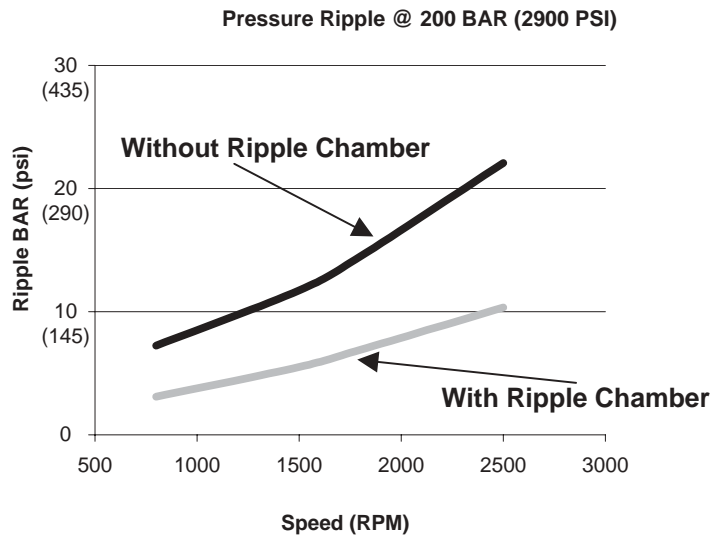


P3 Control Schematic

* See following pages for typical control characteristics

Performance Data

Ripple Chamber



The chart above refers to the “Ripple Chamber” technology that has been engineered into the P2 and P3 series pumps. The ripple chamber reduces pressure pulsation “ripple” at the outlet of the pump. This technology reduces the ripple by 40–60%. This leads to a significant reduction in overall system noise without additional components or cost.

The ripple chamber is standard on all P2 and P3 series *side ported* pumps.