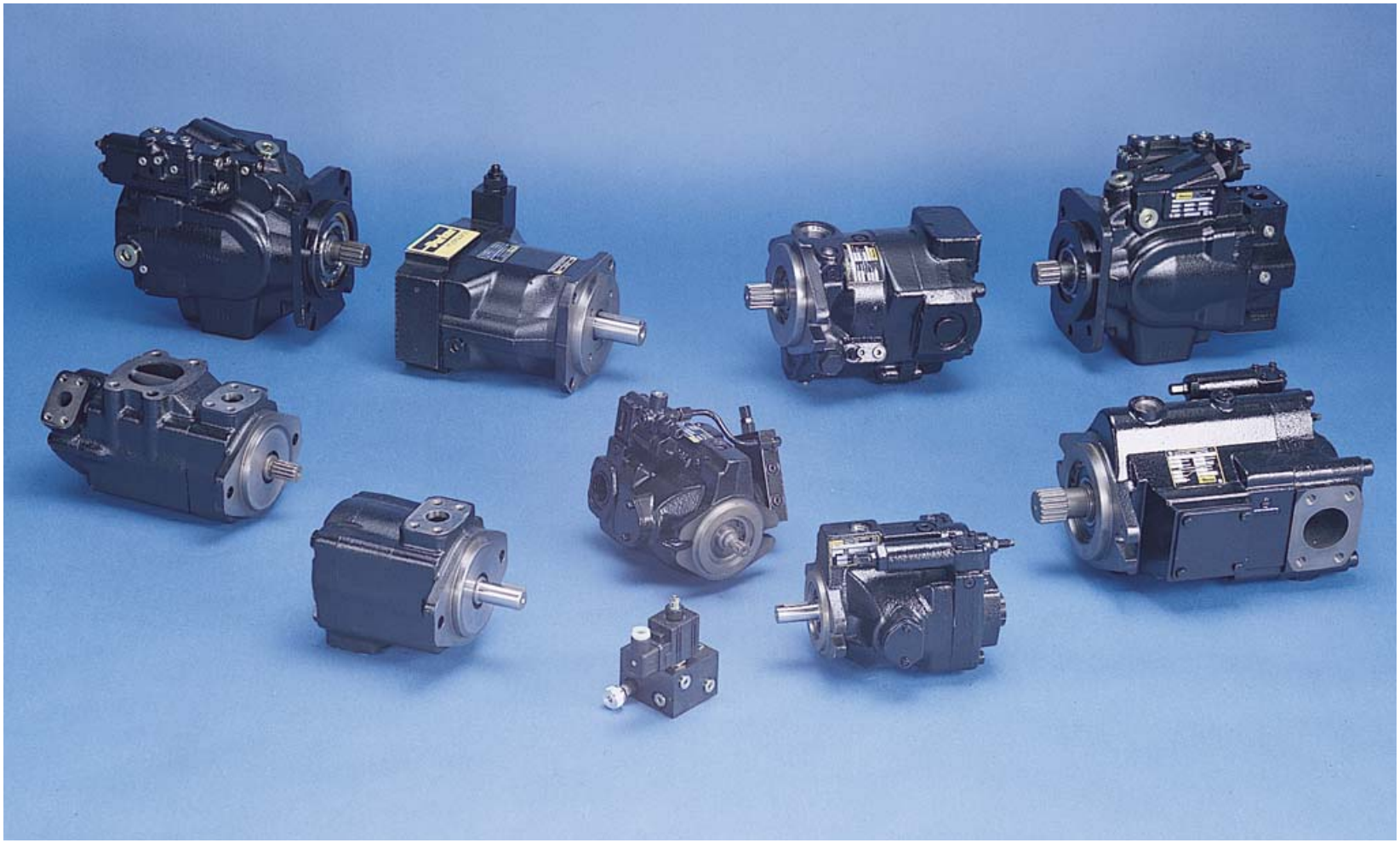
Parker Piston Pumps

Otsego Core Competency...



Piston Pumps

PAVC Series : 4 displacements from 33-100 cc/r , 207 Bar , 3000 RPM

PVP Series : 9 displacements from 16-140 cc/r , 250 Bar, 3000 RPM

PV Plus : 12 displacements from 16-270 cc/r , 350 Bar, 2750 RPM

PHP Series : 3 displacements from 10-60 cc/r , 350 Bar, 3000 RPM

P2 / PE Series : 4 displacements from 60-145 cc/r , 320 Bar, 2800 RPM

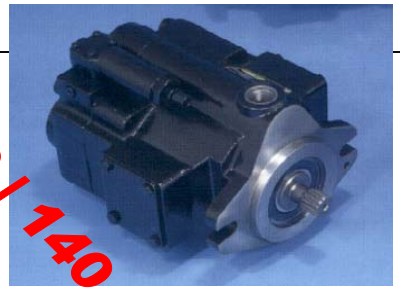
P3 Series : 3 displacements from 60-145 cc/r , 320 Bar, 2800 RPM

PVP Piston Pumps

PVP100/140???

- ***PVP100/140 phase out***
  - **This model has been removed from the 2003 list price guide.**
  - **PVP100/140's are available as replacements for current applications.**
    - ***Pricing is available from your sales coordinator.***
  - **Currently there has been no date set for the final phase out of the PVP100/140.**
- ***PE105 & PE145 is the replacement.***
  - **These models should be used for new applications and as upgrades to existing applications if the change can be made.**

PVP100 / 140

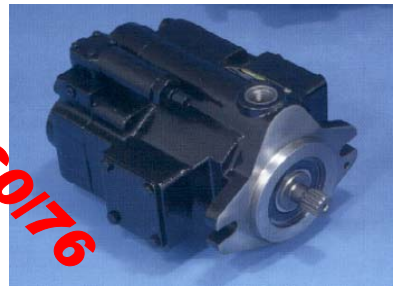


Change to...

PE105 / 145

PVP60/76???

- ***PVP60/76 phase out***
  - **This model will be removed from the *2004* list price guide.**
  - **PVP60/76's will be available as replacements for current applications.**
    - ***Pricing will be available from your sales coordinator.***
  - **Currently there has been no date set for the final phase out of the PVP60/76.**
- ***PE60 & PE075 is the replacement.***
  - **These models should be used for new applications and as upgrades to existing applications if the change can be made.**



PVP60/76

Change to...

PE60/75

PVP Pump Series

Displacement cc/rev.	16	23	33	41	48
Max Pressure Continuous (psi)	3600	3600	3600	3600	3600
Max Pressure Peak (psi)	4500	4500	4500	4500	4500
Self Priming Speed (rpm)	3000	3000	3000	2800	2400

PHP Pump Series

Displacement cc/rev.	**10**
Max Pressure Continuous (psi)	**5000**
Max Pressure Peak (psi)	**5500**
Self Priming Speed (rpm)	**3000**

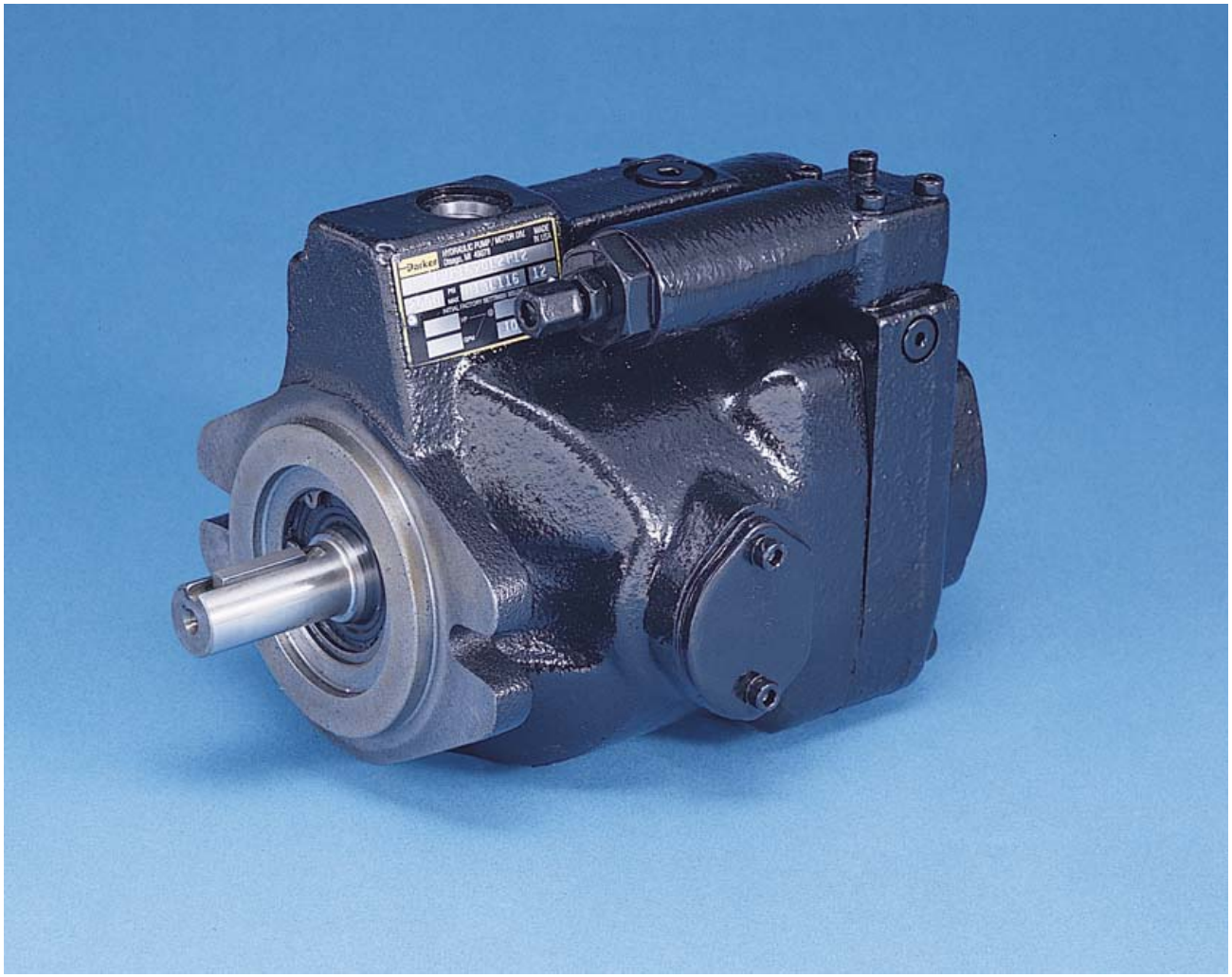
Destroked PVP16

Bigger Trunnion Bearings

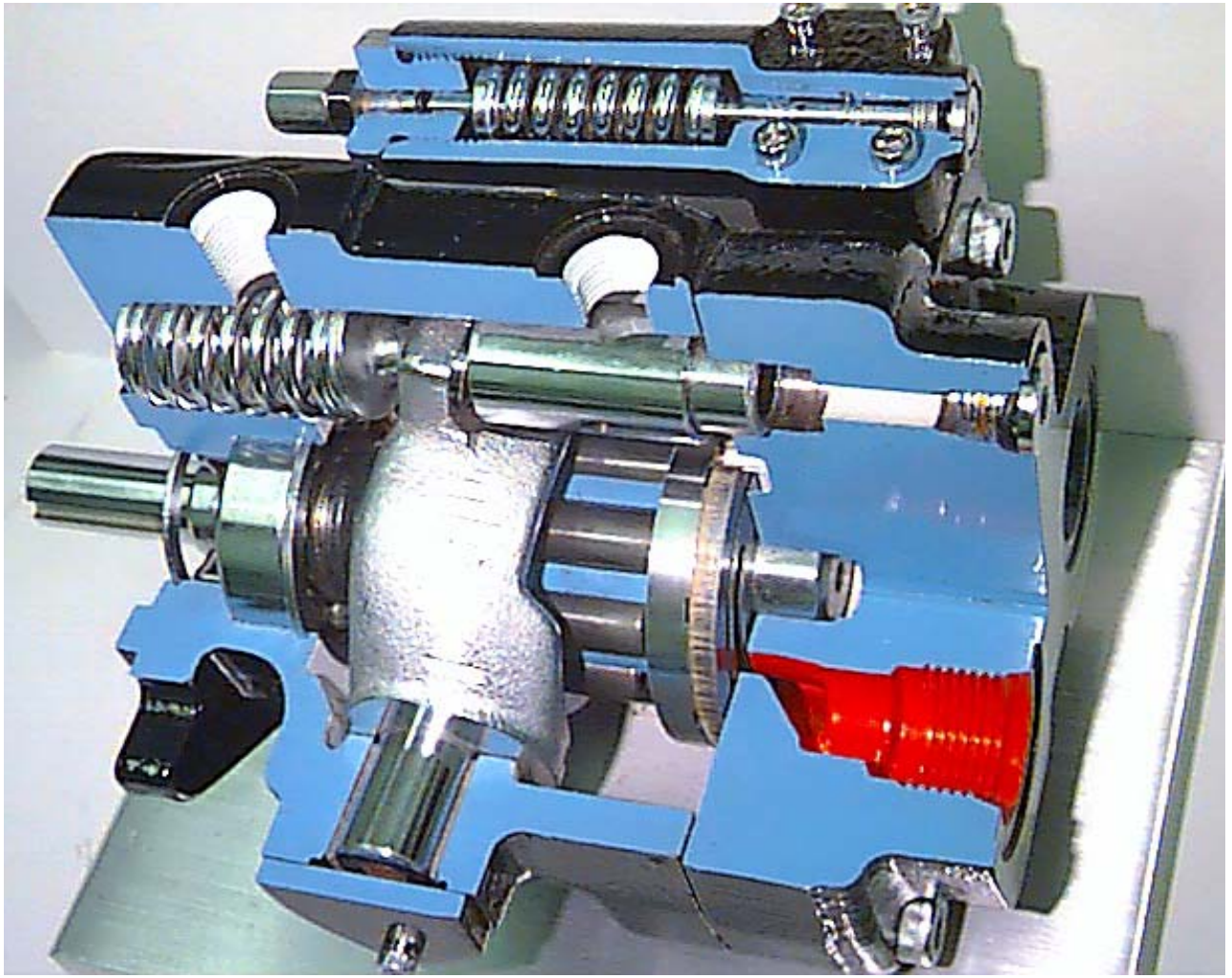
Ductile Control Body

Code 62 Flange Outlet Port

PVP Piston Pump



PVP Piston Pump



PVP Piston Pump

Designed For Low Noise Levels

- **Cast Iron Housing**
- **Heavy duty “DU” trunnion bearings**
- **9 Pistons - PVP16, 23, 33**
- **11 Pistons - PVP41, 48**

PVP Piston Pump

Designed For Low Noise

	Full Flow @ 1200 RPM	Full Flow @ 1800 RPM
- PVP16	56 dBa	62 dBa
- PVP23/33	65 dBa	70 dBa
- PVP41/48	68 dBa	75 dBa

PVP Piston Pump

Designed For Fast Response

	On Stroke	Off Stroke
- PVP16	100 ms	50 ms
- PVP23/33	70 ms	40 ms
- PVP41/48	100 ms	50 ms

PVP Piston Pump

Designed For Serviceability

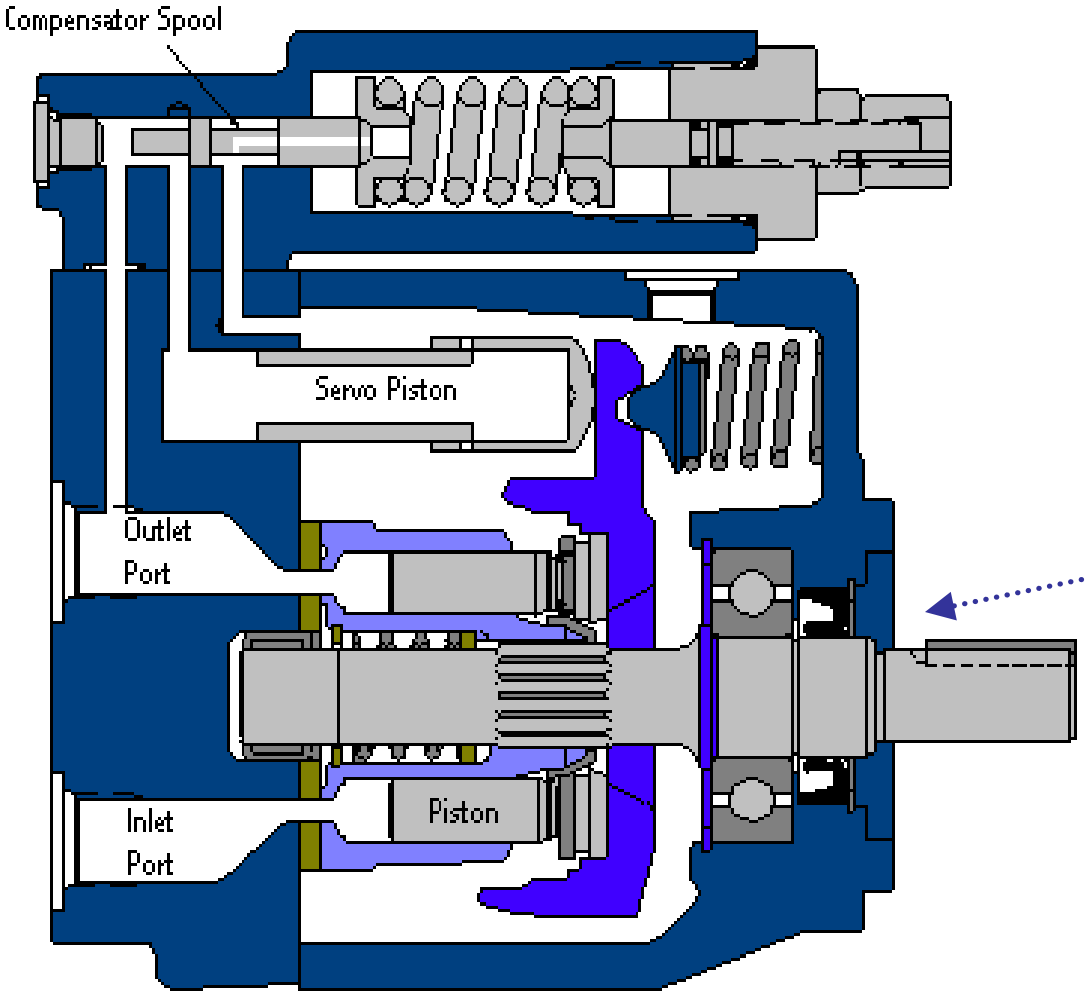
- Replaceable bronze wear plate
- Replaceable piston slipper plate
- PVP23/33/41/48
  - Service shaft, bearing and seal without disassembling the pump.
- Modular controls

PVP Piston Pump

Designed For Flexibility

- Variety of Ports and Mounting Shaft Options
- Thru – Drives Available All Sizes
  - PVP16 : SAE “AA” , “A”
  - PVP23/33/41/48: SAE “AA” , “A” , “B” , “BB”
- Variety of controls
  - Pressure Compensator
  - Remote Pressure Compensator
  - Load Sense
  - Torque Control

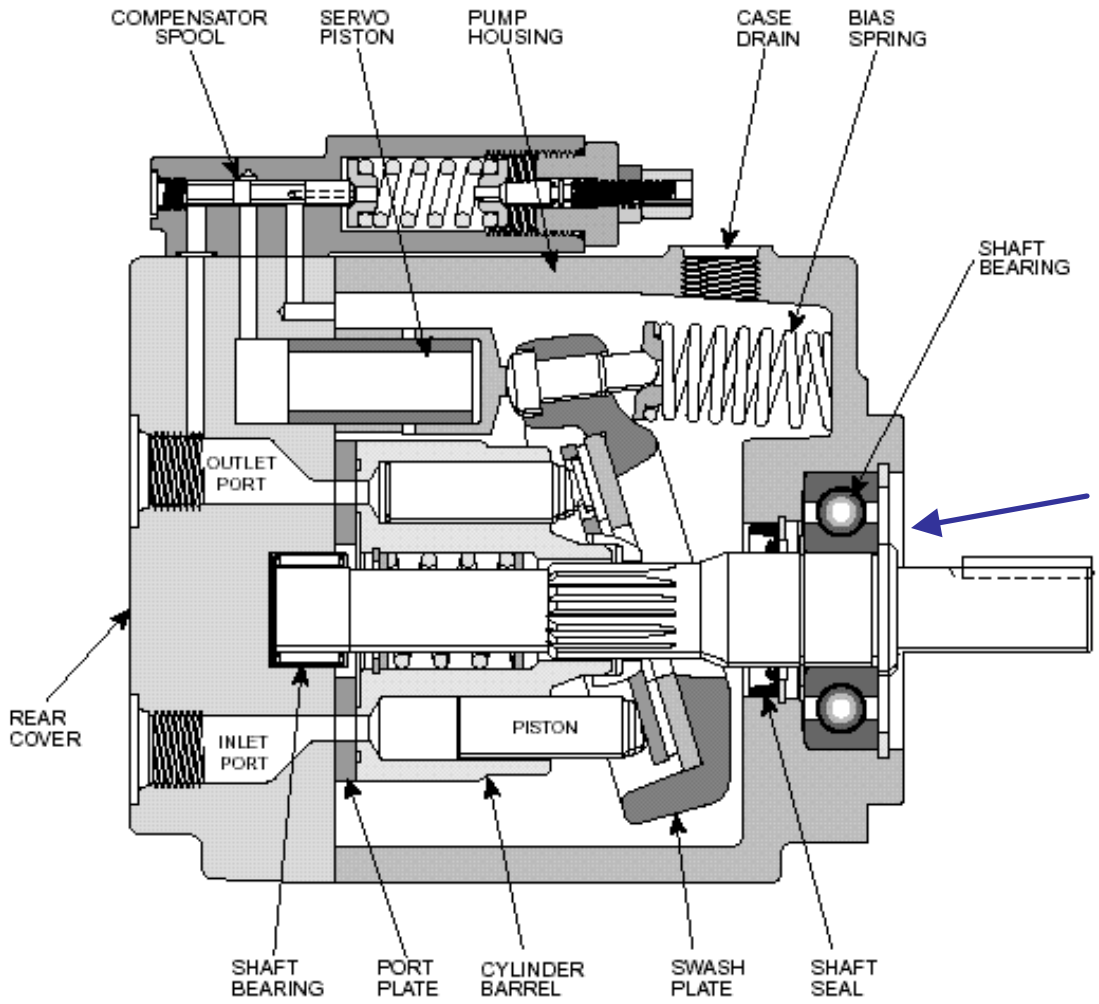
PVP16 Piston Pump



Shaft Seal is outside of bearing.

Good lubrication to shaft bearing , means better bearing life.

PVP23/33/41/48 Piston Pump

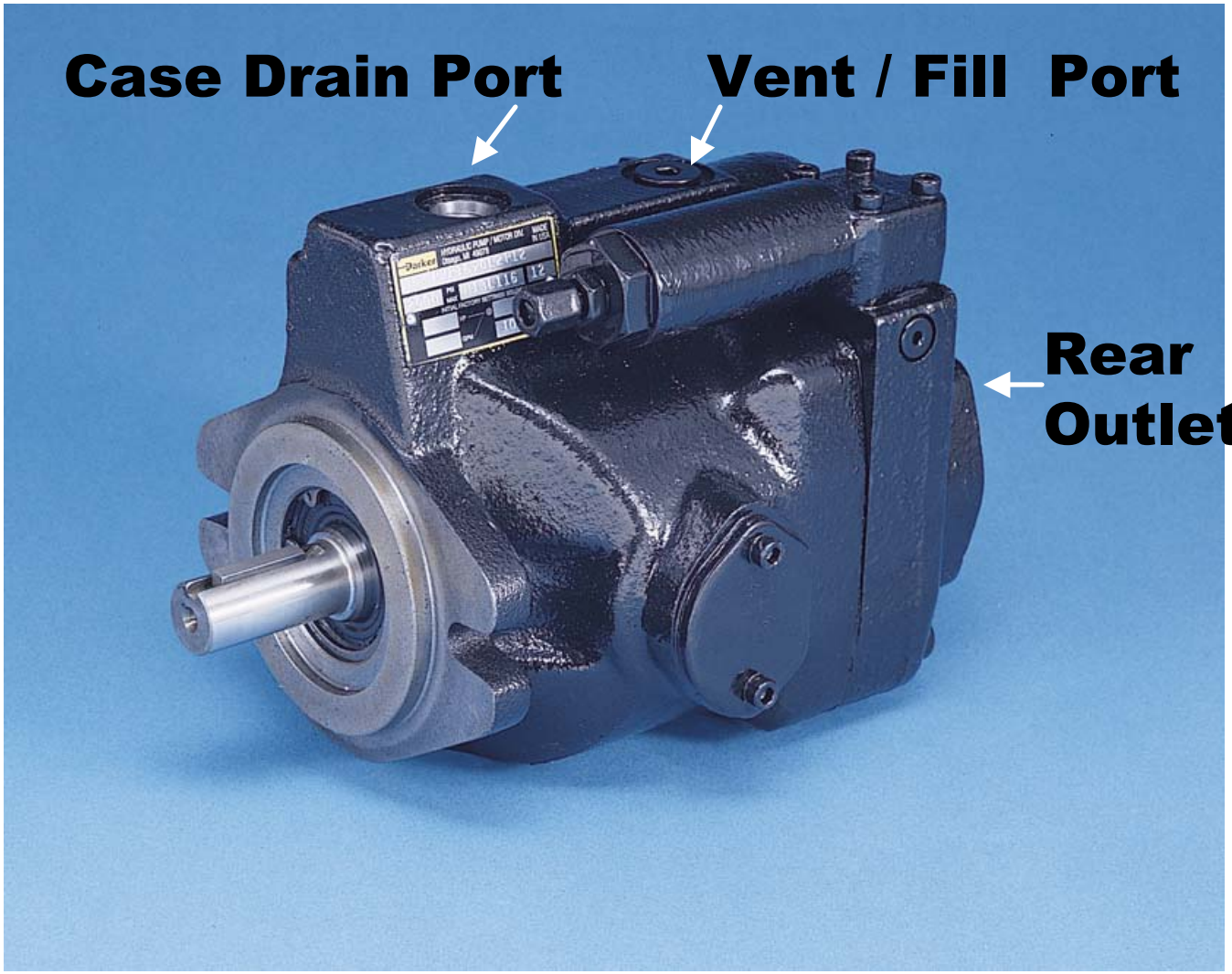


Shaft Seal is inside of sealed bearing .

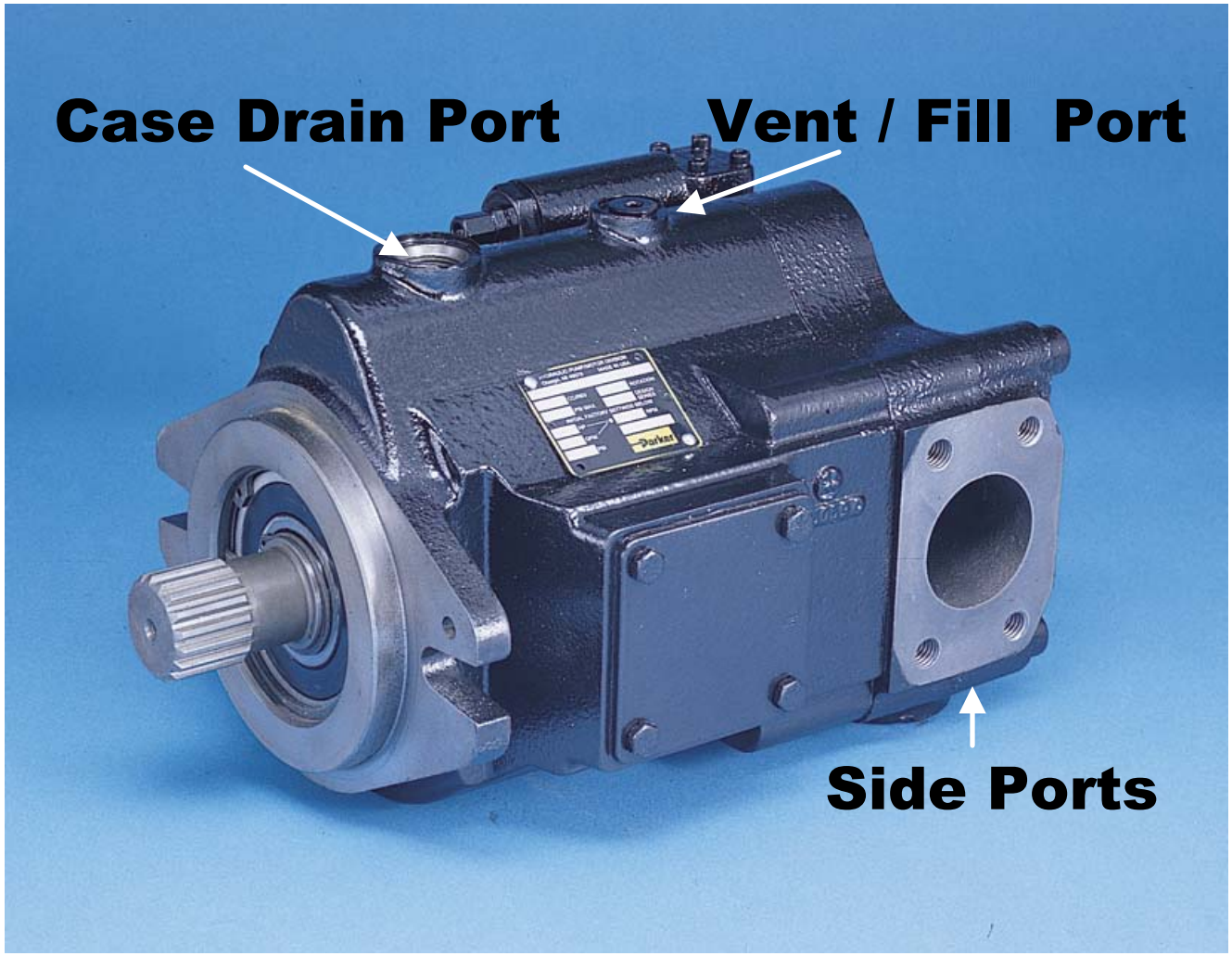
Can change shaft without disassembling the pump.

Better on water glycol fluid.

PVP Piston Pump



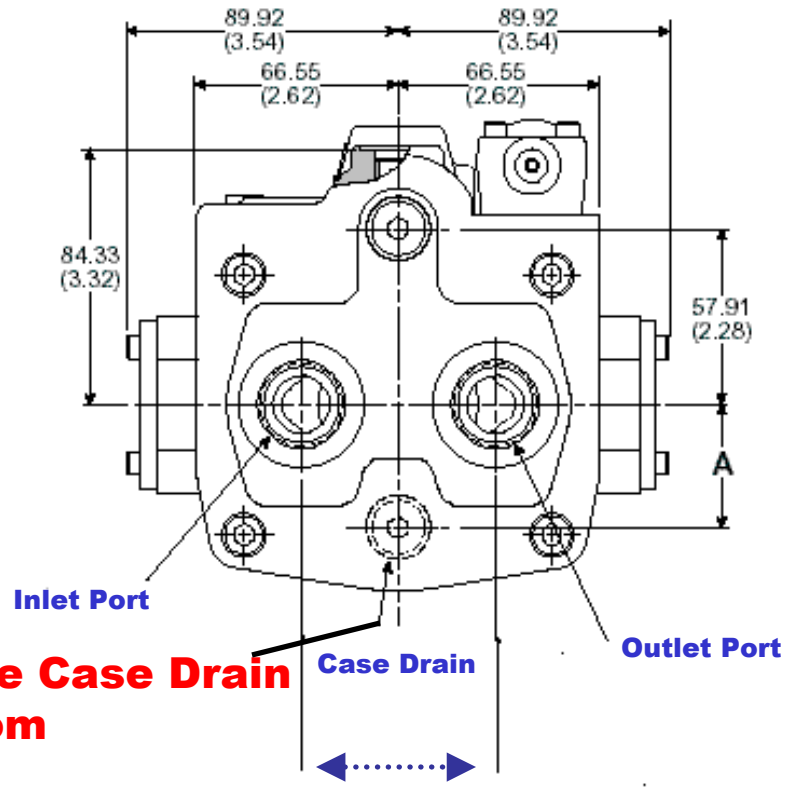
PVP Piston Pump



PVP Piston Pump

Port Options	16	23/33	41/48
Rear Ports	"Omit"	"Omit"	"Omit"
Rear Ports *Vickers*	"5"	N/A	N/A
Side Ports Flange	"2"	"2"	"2"
Side Ports Str. Thread	"4"	"3"	"3"
Metric Side Flange(6149)	"8"	"8"	"8"
Metric Side Flange(BSPP)	"9"	"9"	"9"

PVP16 “5” Port Option



.38 “ Shorter than standard rear port PVP16

Alternate Case Drain on Bottom

Port Spacing Same as Eaton Vickers PVB 5/6

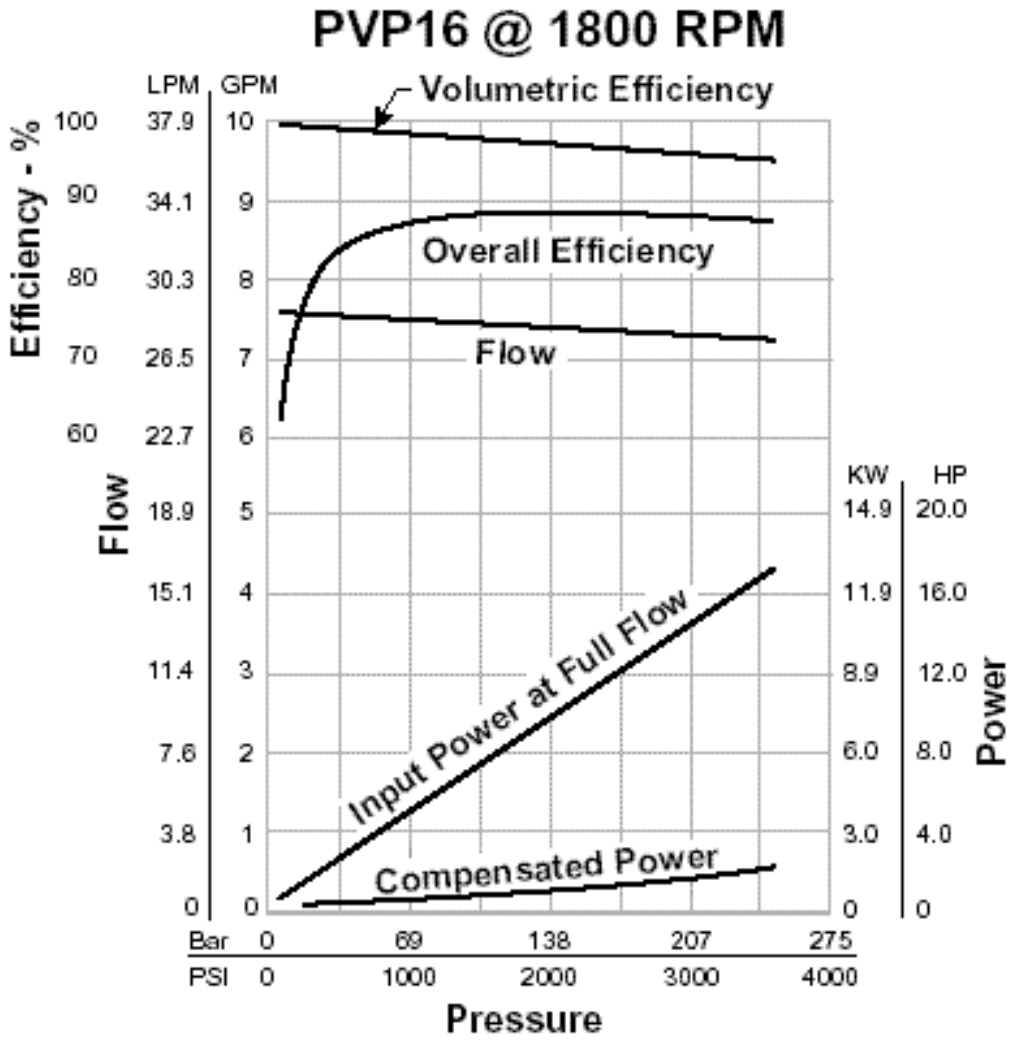
Direct Mounting Interchange with Vickers PVB5/6

PVP Piston Pump

Port Connections	16	23/33	41/48
Rear Outlet Threaded	SAE 12 1-1/16-12 UNC	SAE 20 1-5/8-12 UNC	SAE 16 1-5/16-12 UNC
Rear Inlet Threaded	SAE 12 1-1/16-12 UNC	SAE 20 1-5/8-12 UNC	SAE 24 1-7/8-12 UNC
Side Inlet Flange	3/4 “, Code 61 4 Bolt Flange	1-1/4, Code 61 4 Bolt Flange	1-1/2 inch, Code 61 4 Bolt Flange
Side Outlet Flange	3/4 “, Code 61 4 Bolt Flange	1-1/4, Code 61 4 Bolt Flange	1 inch, Code 61 4 Bolt Flange
Case Drain	SAE 6 9/16-18 UNC	SAE 8 9/16-20 UNF	SAE 10 7/8-14 UNF
Signal Port	SAE 4 7/16-20 UNF	SAE 4 7/16-20 UNF	SAE 4 7/16-20 UNF

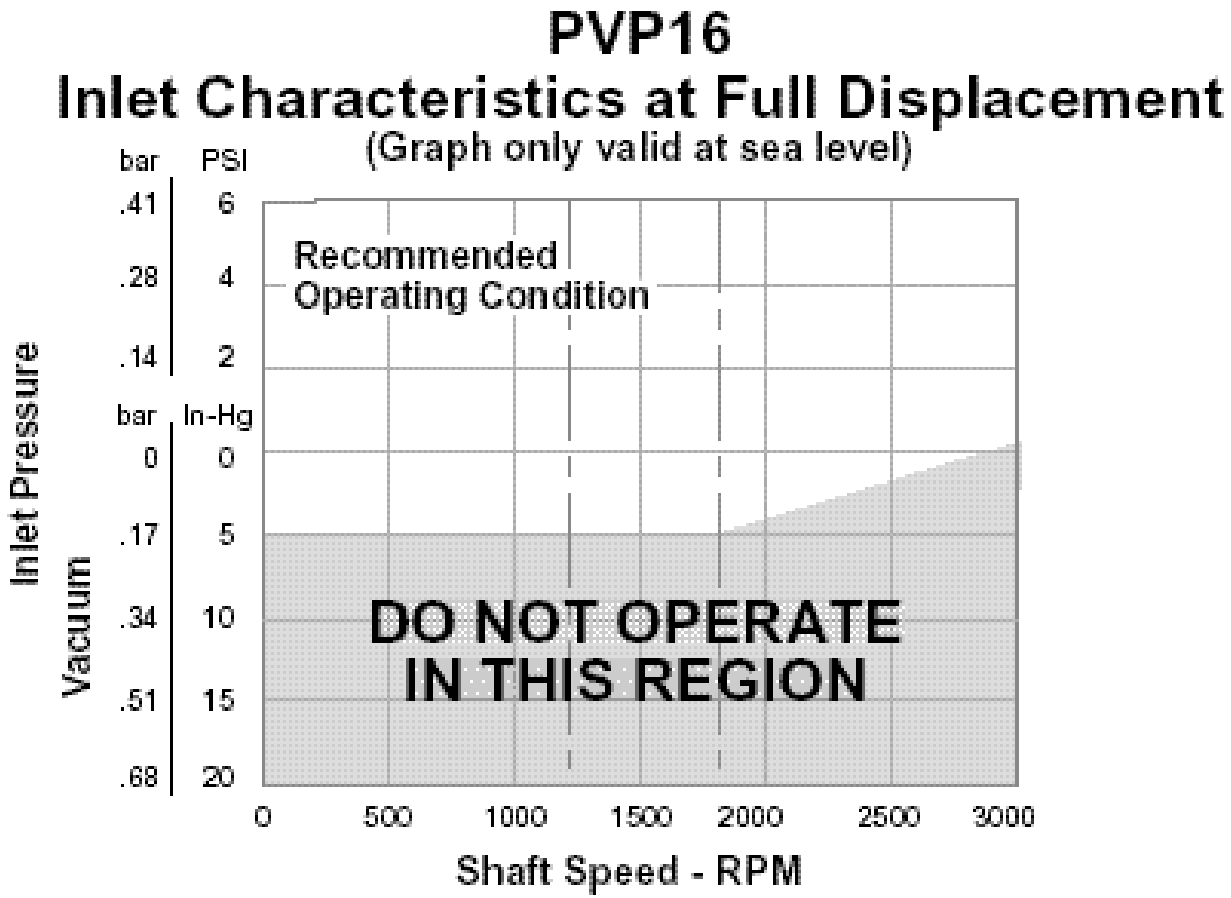
There are metric equivalents readily available

PVP Piston Pump



Fluid: Standard Hydraulic Oil 100 SSU @ 49°C (120°F)

PVP Piston Pump



PVP Piston Pump

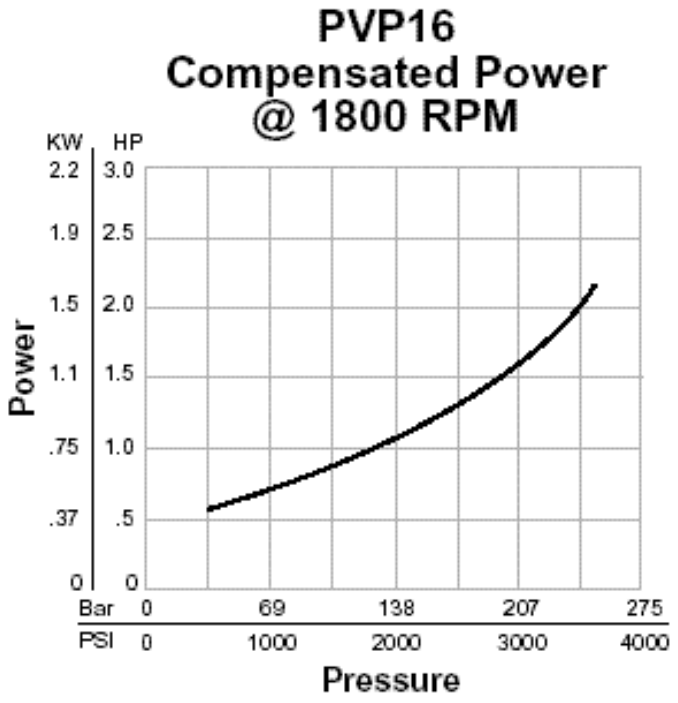
NOTE: The efficiencies and data in the graph are nominal values and good only for pumps running at 1800 RPM and stroked to maximum. To calculate approximate horsepower for the other conditions, use the following formula:

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

Actual GPM is directly proportional to drive speed and maximum volume setting. Flow loss, however, is a function of pressure only.

WHERE:

Q = Actual Output Flow in GPM
PSI = Pressure At Pump Outlet
CHp = Input Horsepower @ Full Compensation @ 1800 RPM (from graph read at operating pressure)



PVP Piston Pump

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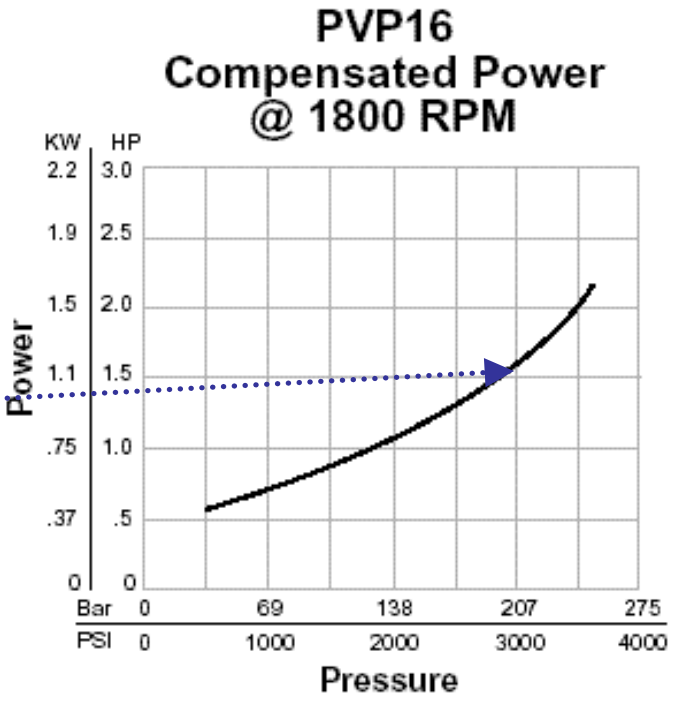
WHERE:
Q = Actual Output Flow in GPM
PSI = Pressure At Pump Outlet
CHp = Input Horsepower @ Full Compensation @ 1800 RPM (from graph read at operating pressure)

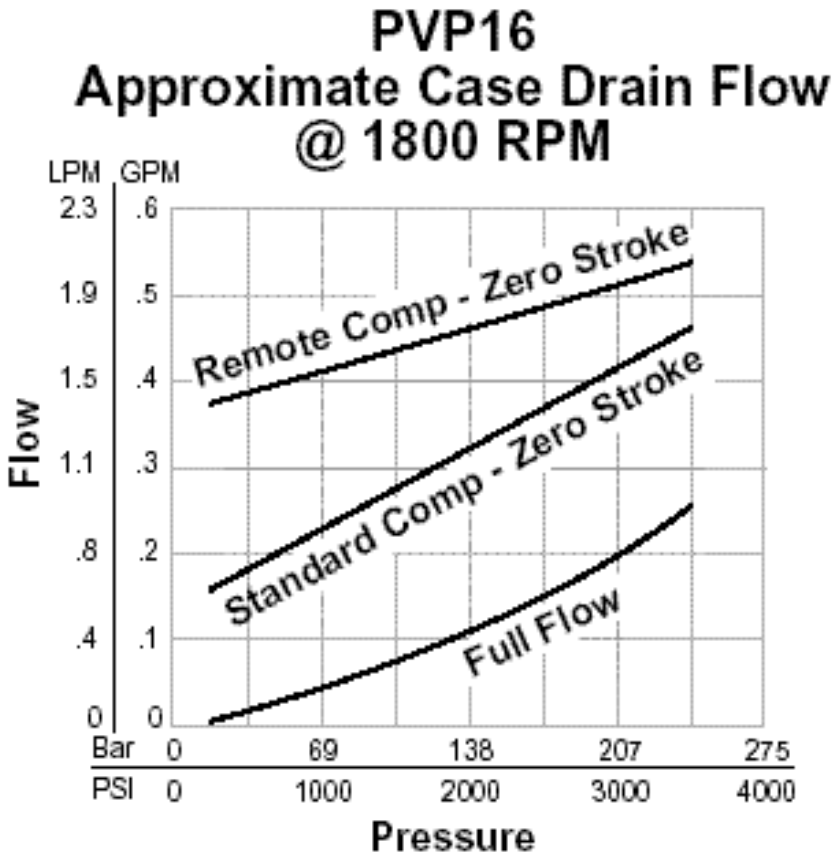
For Example , the approximate input power at 9 GPM and 3000 psi is calculated as follows:

HP = ((9 x 3000) / 1714) + 1.5 HP

= 17.25 HP



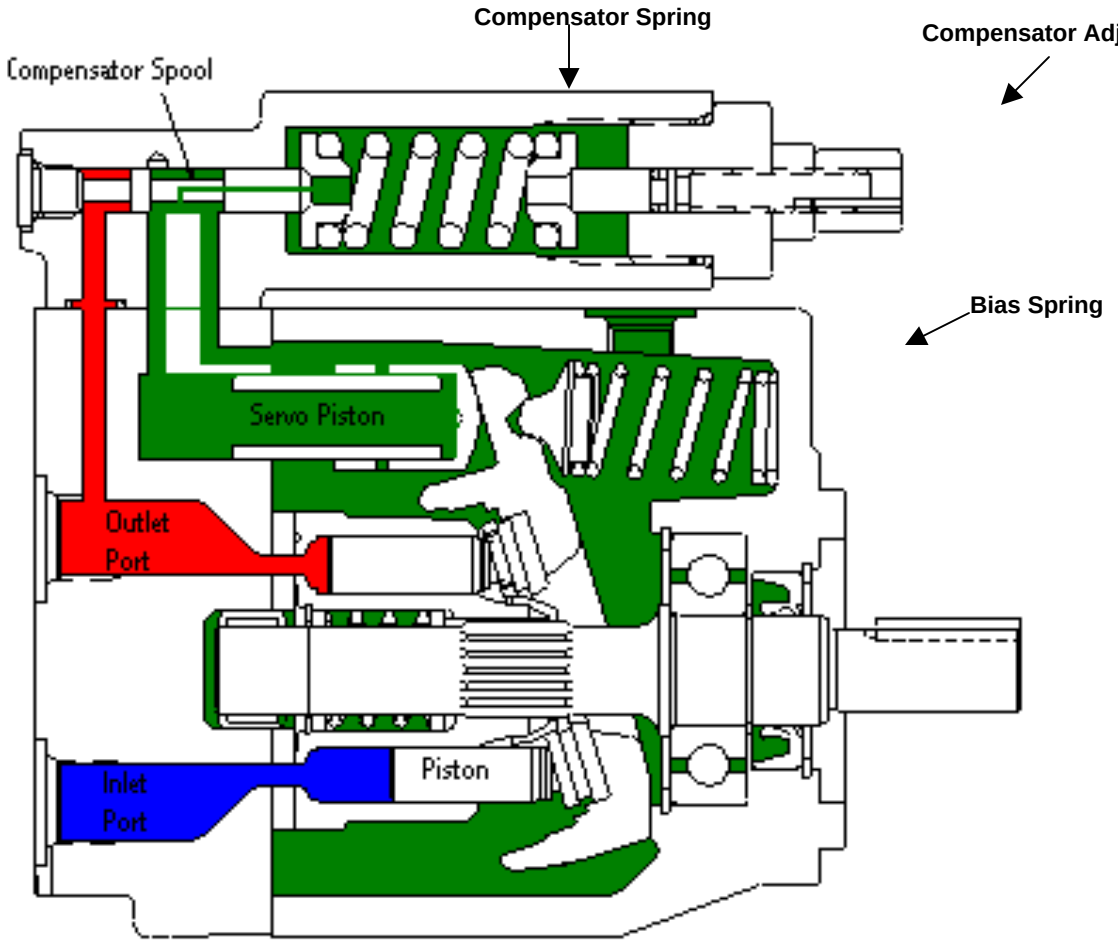
PVP Piston Pump



PVP Piston Pump

- **Case Drain Line Must Run Unrestricted back to the reservoir.**
- **Maximum Back Pressure at the Case Drain Port is 10 PSI.**
- **High Case Pressure can cause slipper roll which can lead to catastrophic failure.**

Case Pressure



- **Why can high case pressure cause slipper roll???**

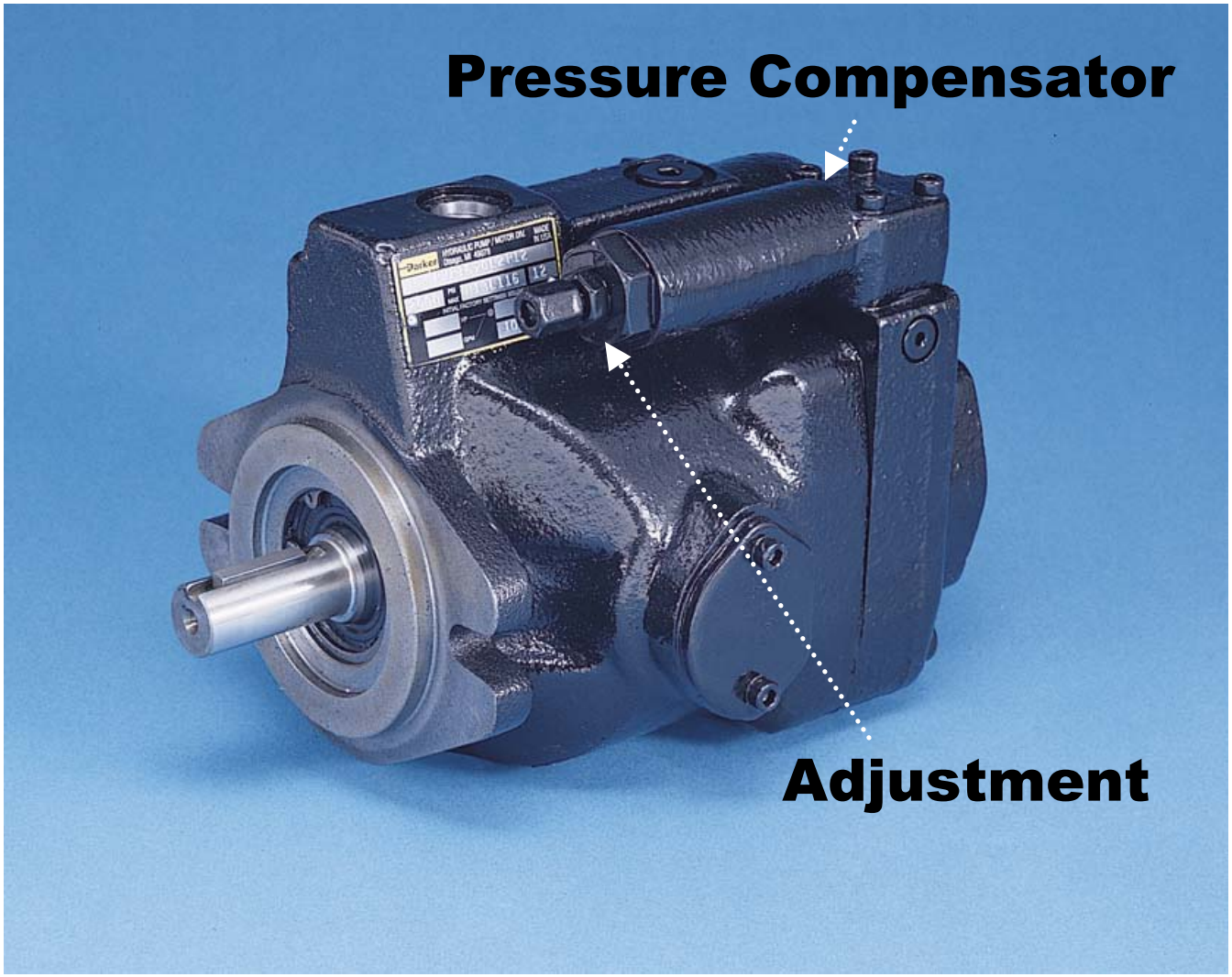
PVP Pump Controls

- **Pressure Compensator**
  - The pressure compensator control will limit pump outlet pressure to a predetermined level and adjust pump outlet flow to the level needed to maintain the set pressure.
- **Remote Pressure Compensator**
  - Same as the pressure compensator , except that the adjustment is done with a remotely located relief valve instead of at the pump control.
- **Load Sense Control**
  - Load sense control will adjust output flow to maintain a constant pressure drop across an orifice.

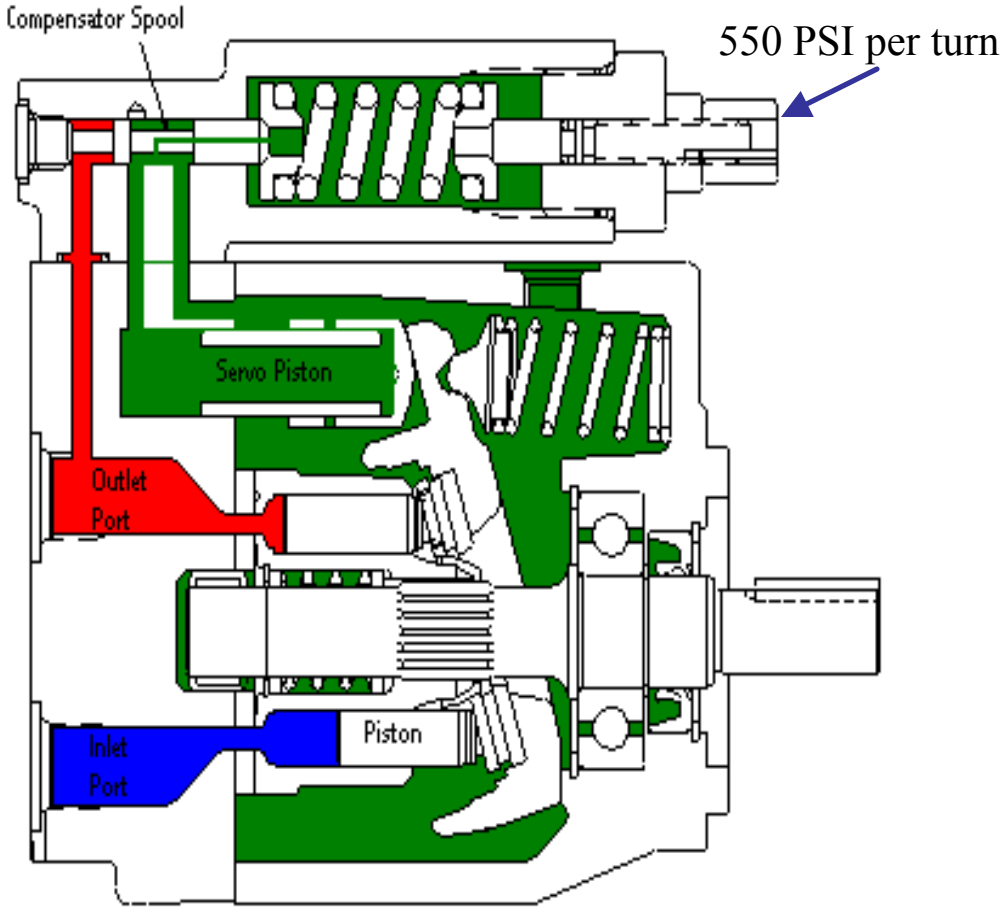
Torque Limiter Control

- Will adjust flow to limit the input torque demand of the pump.

PVP Pressure Compensator



PVP Controls



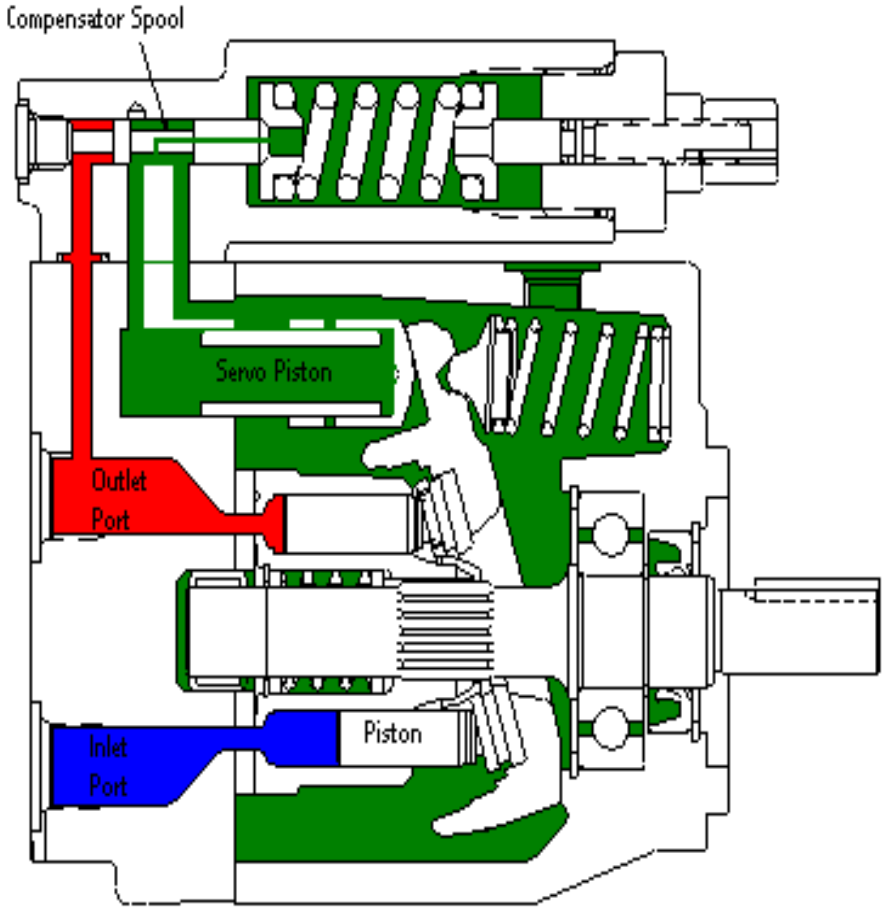
Pressure Compensator

Same Controls used on PVP16/23/33/41/48

Compensators can be selected with a maximum pressure adjustment of 1000, 2000, 3000, 3600 PSI

Minimum Pressure Compensator setting is 250 psi.

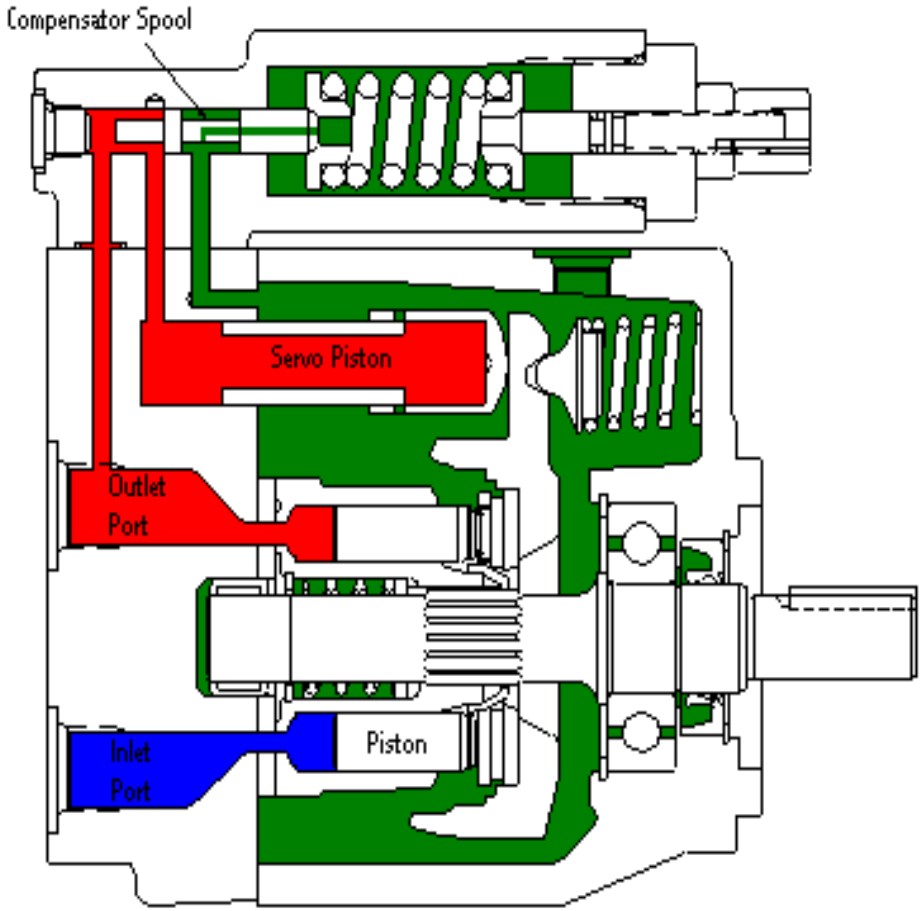
PVP Controls



Pressure Compensator

View Shows Pressure is below the Compensator Setting and the Pump is at Full Stroke.

PVP Controls

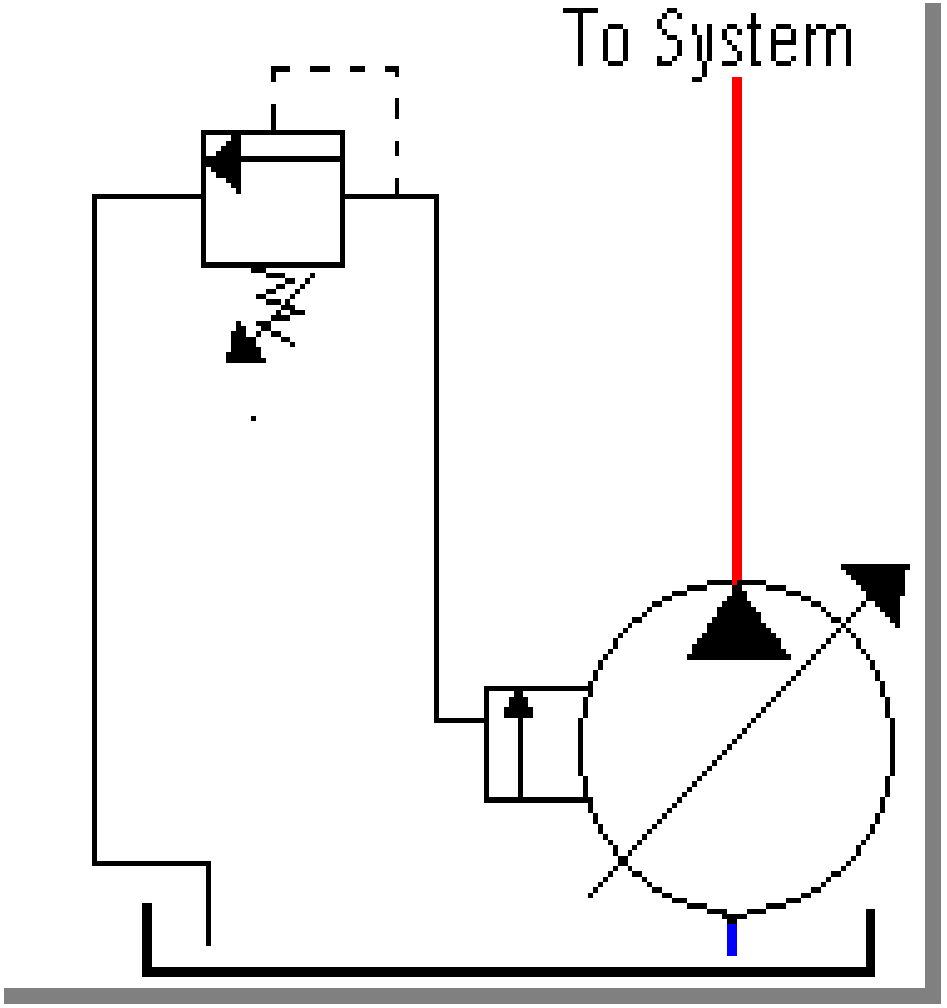


Pressure Compensator

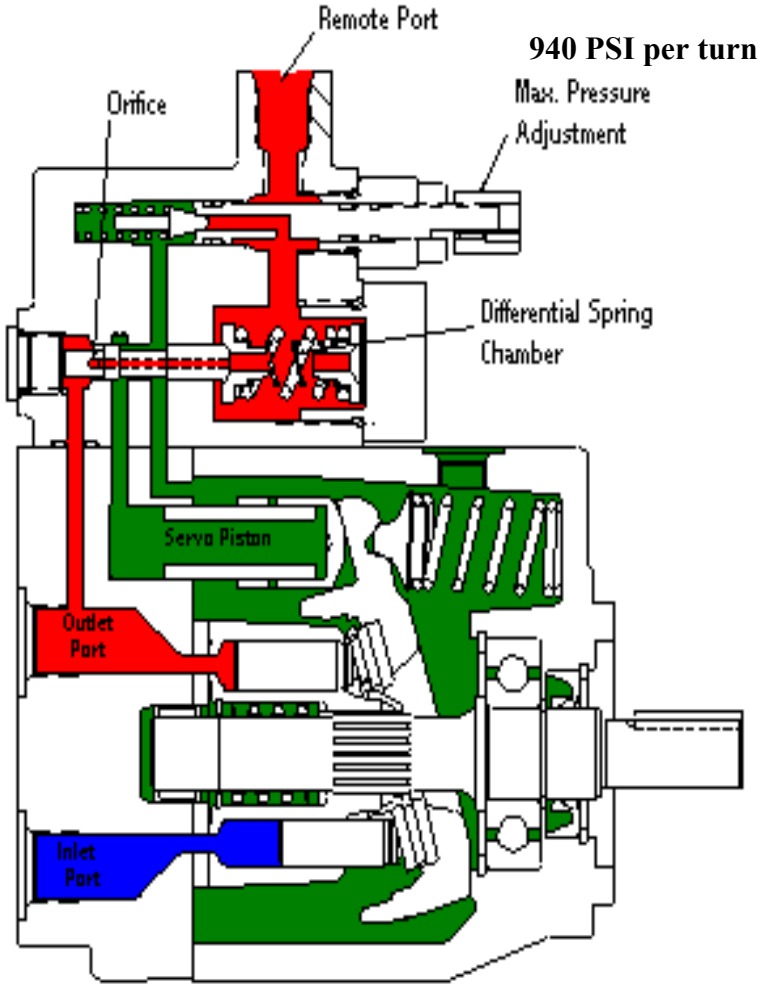
View Shows Outlet Pressure has reached the Compensator Setting and the Pump has Destroked.

Remote Compensator

Remote compensator allows control of pump from a remote location using a relief valve located in a different location.



PVP Controls



Remote Pressure Compensator

Same Controls used on PVP16/23/33/41/48

Compensators can be selected with a maximum pressure adjustment of 1000, 2000, 3000, 3600 PSI

Remote Compensator flow is .5 GPM.

Differential Spring is Factory Set at 150 PSI

PVP Controls

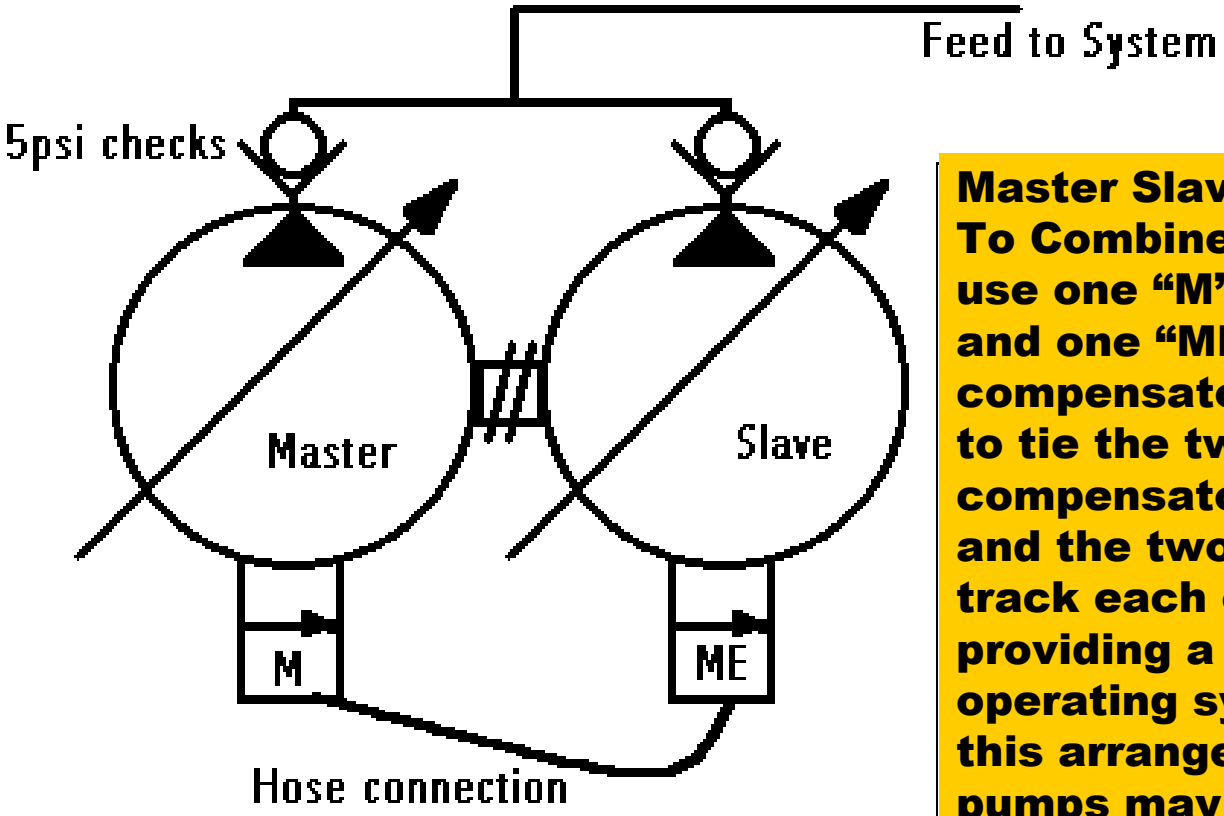
“M” Master & “ME” Slave Controls

Compensators of two pumps plumbed together, “ME” comp set higher than “M”

Safety in case one pump fails.

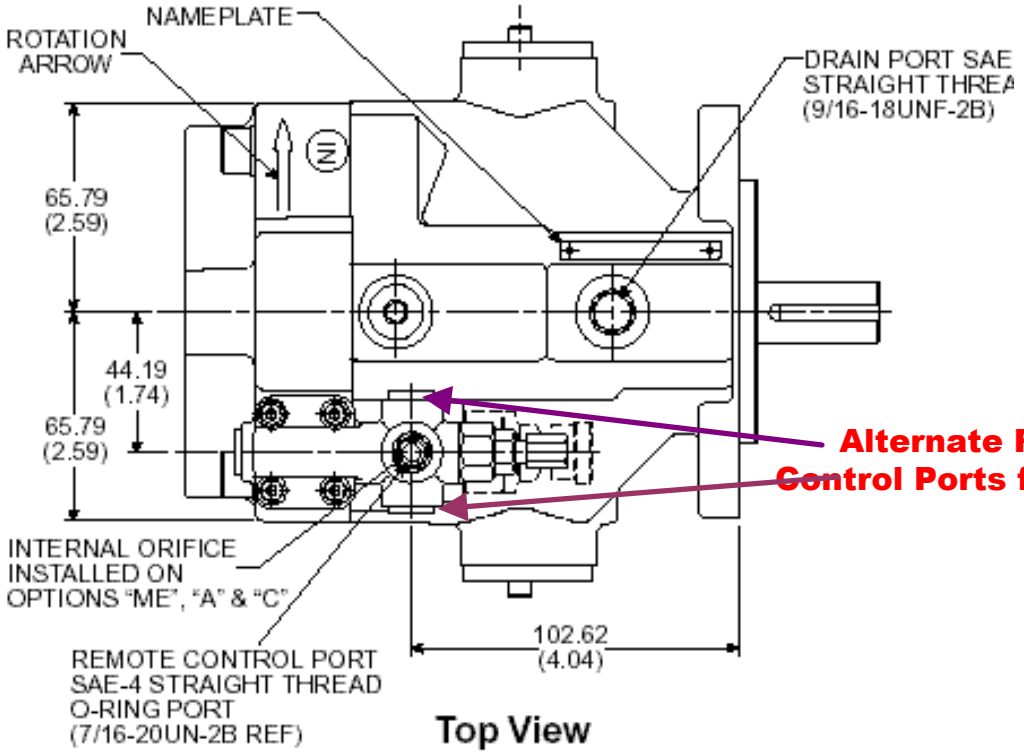
Higher flows than available with one pump

PVP Controls



Master Slave Arrangement, To Combine pump flows, use one "M" compensator and one "ME" compensator. Use a hose to tie the two compensators together and the two pumps will track each other , providing a smooth operating system. Without this arrangement , the pumps may become unstable.

PVP Controls



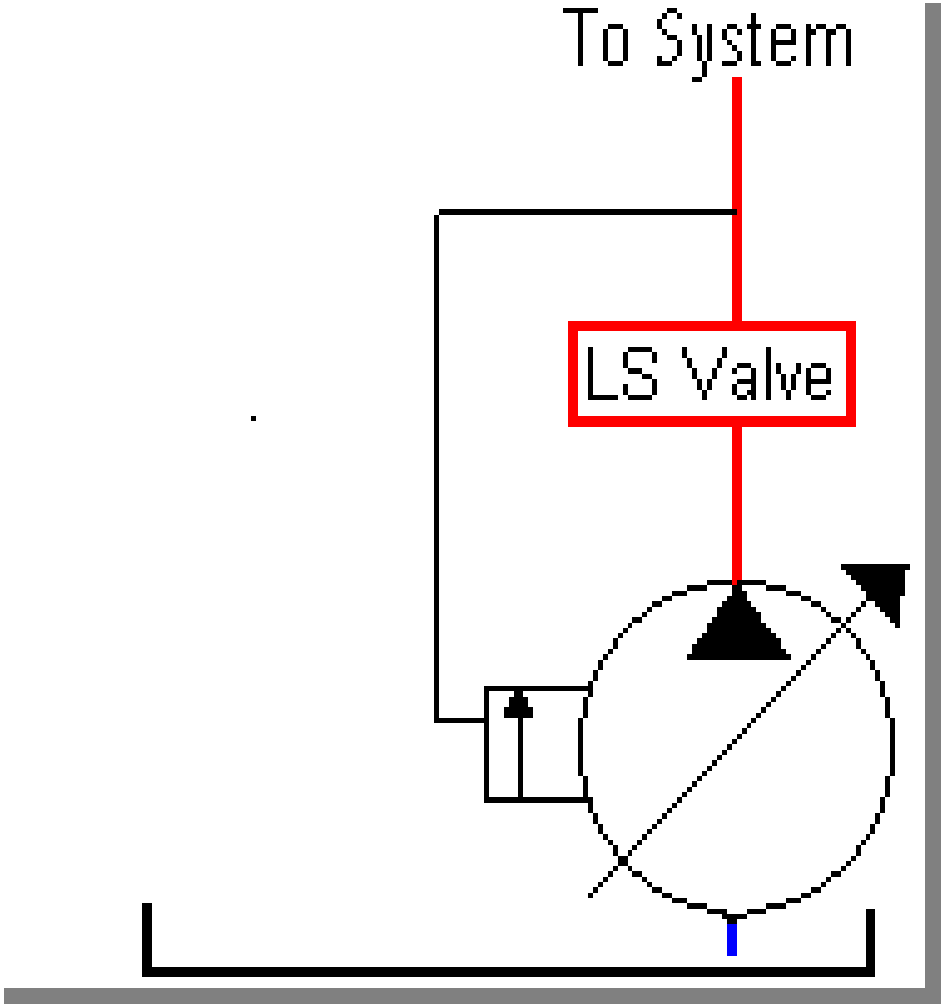
Alternate Remote Control Ports for M Option

Orifice Plug 800599

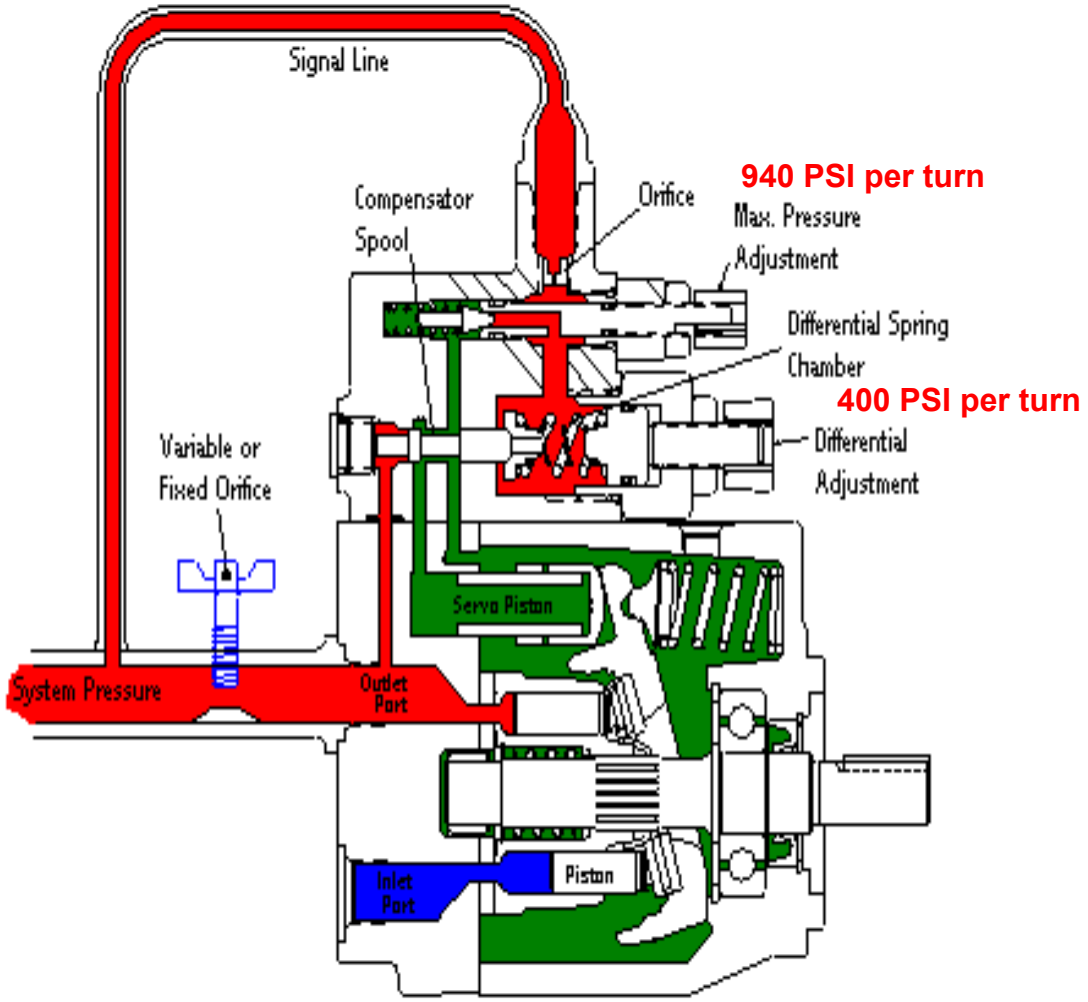
.034"

Load Sense Control

Load Sense control will match the output flow to the circuit demand at a pressure slightly above the load pressure.



PVP Controls



Load Sense & Pressure Compensator

Same Controls used on PVP16/23/33/41/48

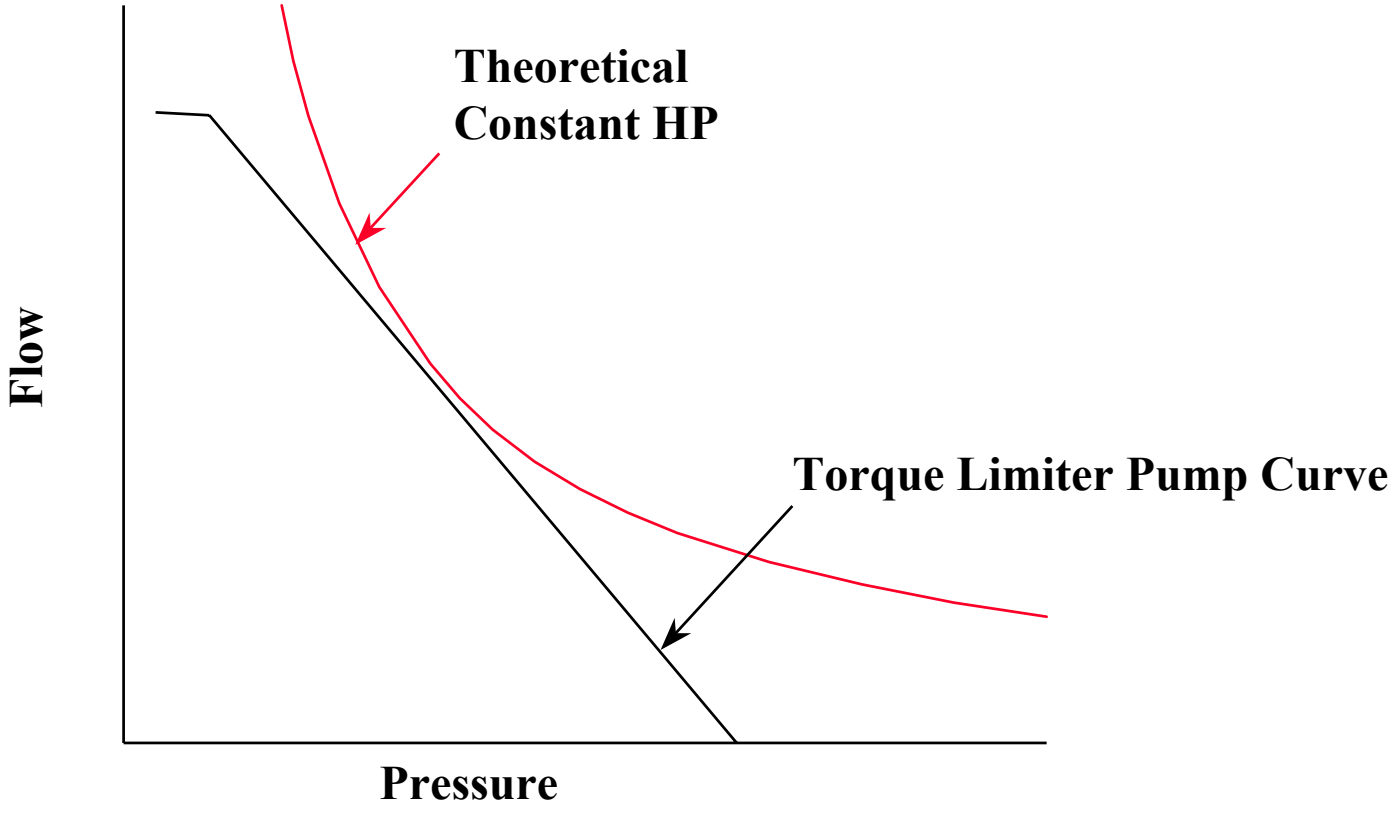
Compensators can be selected with a maximum pressure adjustment of 1000, 2000, 3000, 3600 PSI

Differential Spring is Factory Set at 150 PSI

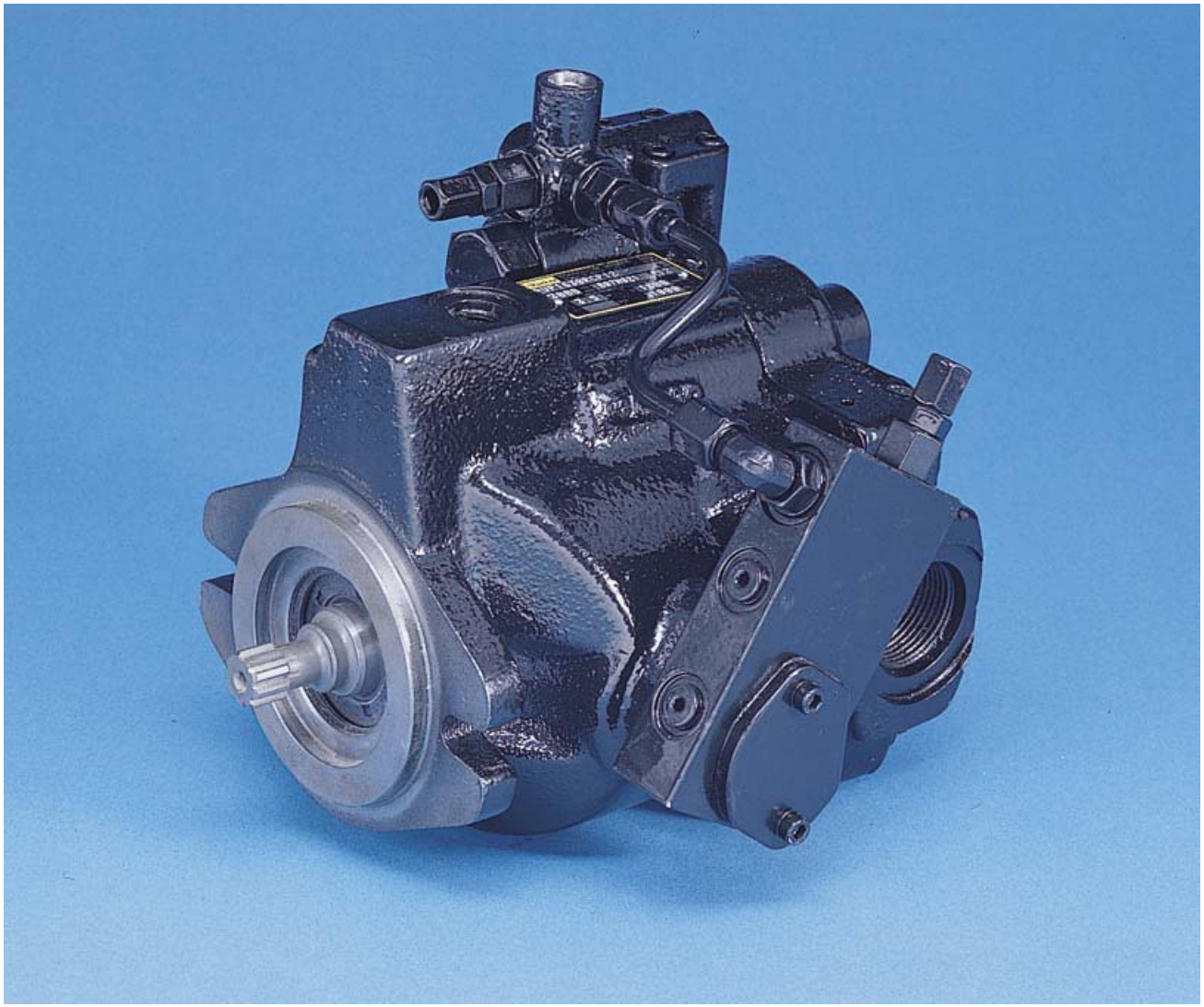
Factory Standby Setting

PVP16	210 PSI
PVP23/33	280 PSI
PVP41/48	260 PSI

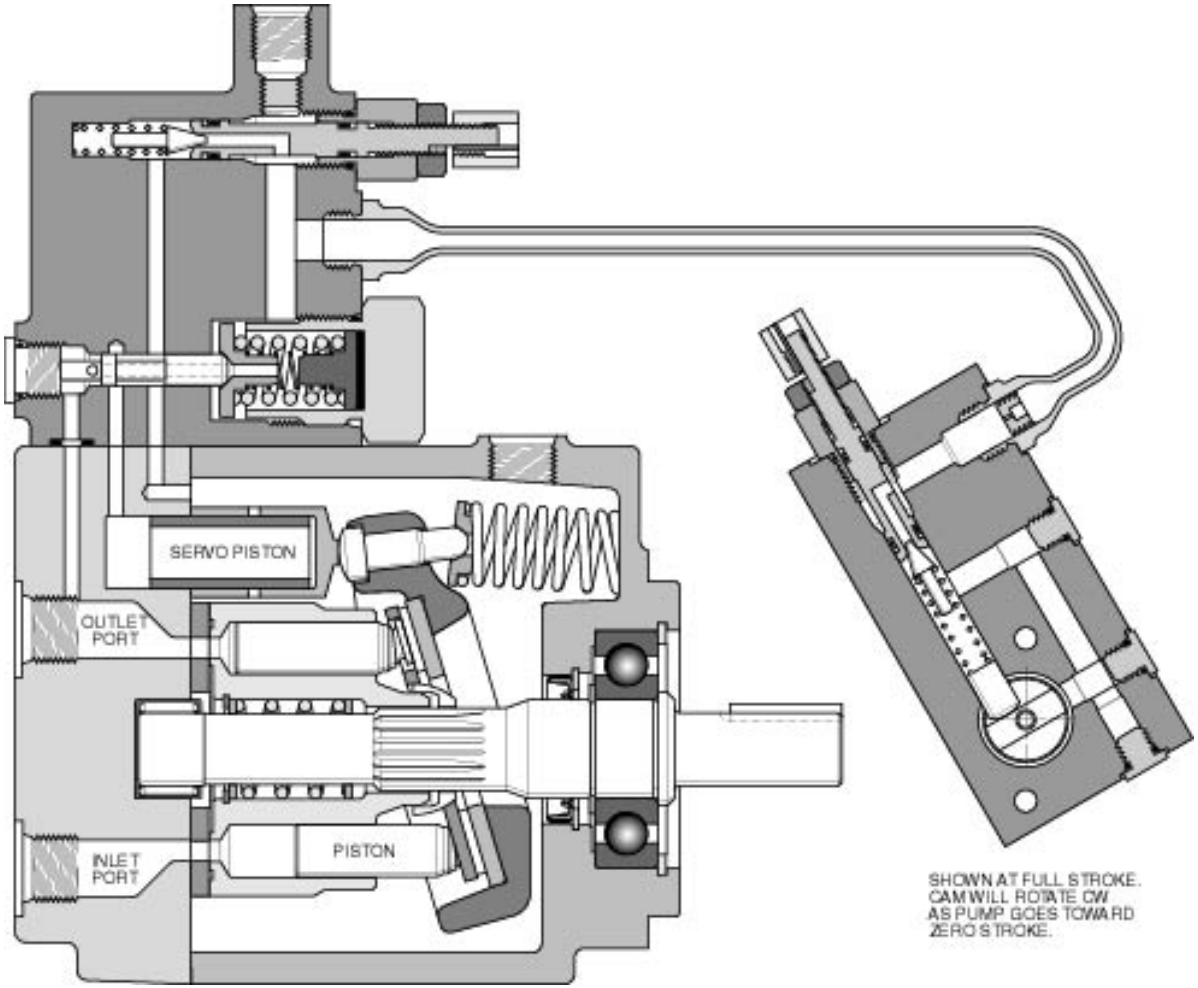
Torque Limiter Control



PVP with Torque Control



PVP with Torque Control



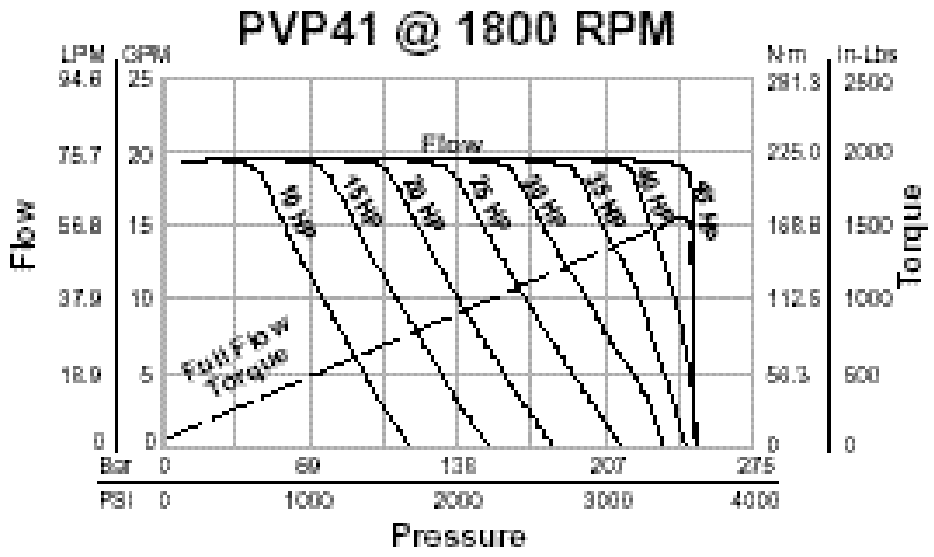
Torque Limiter & Load Sense with Pressure Compensator

Model Code
“ C”

Modular Style

Customer needs to specify the setting desired in HP at a particular drive speed and compensator setting.

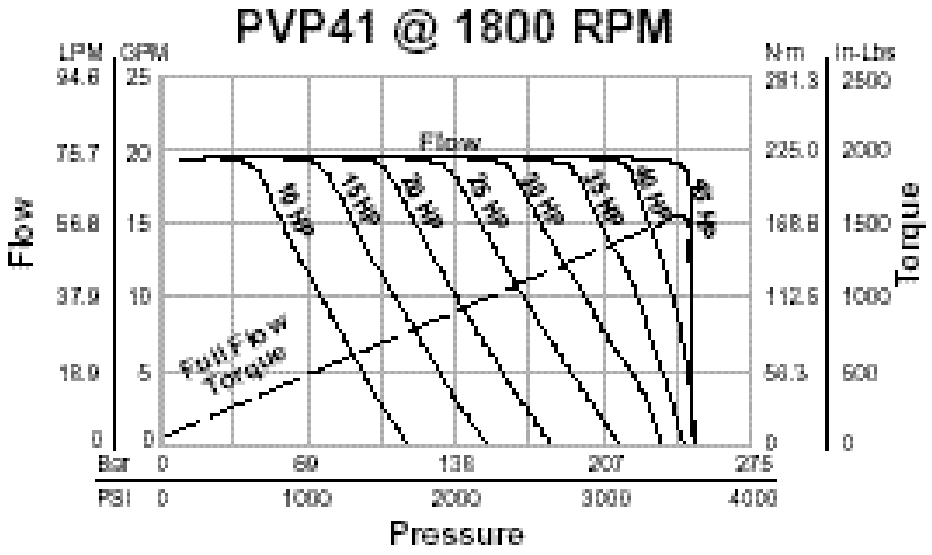
PVP Torque Control



Note:

Performance at other drive speeds can be extrapolated

PVP Torque Control

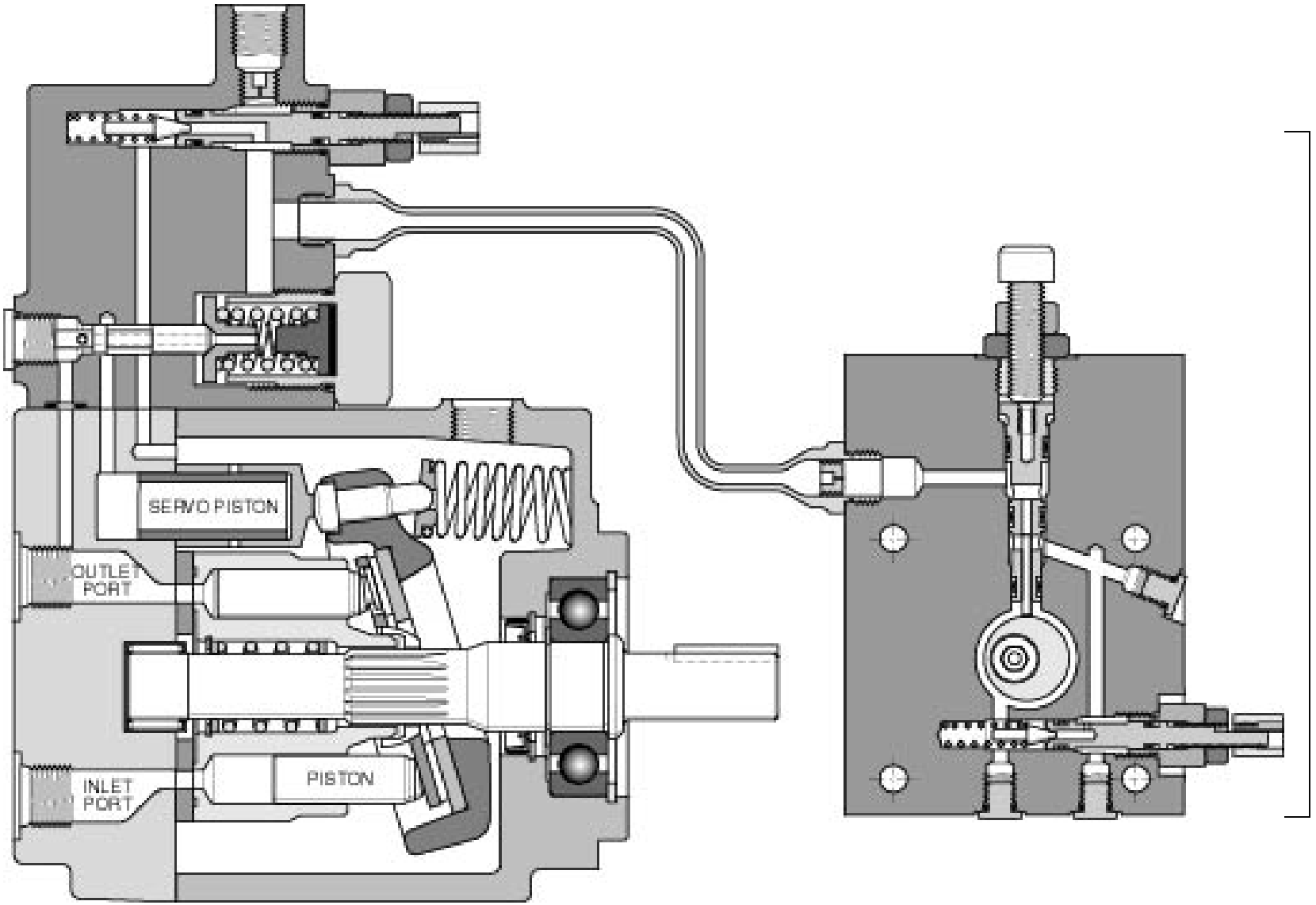


Note:

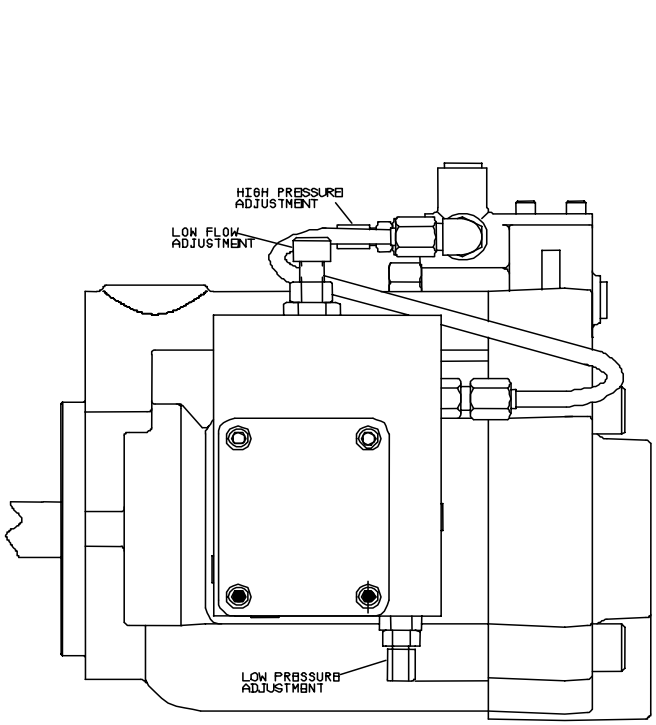
Performance at other drive speeds can be extrapolated

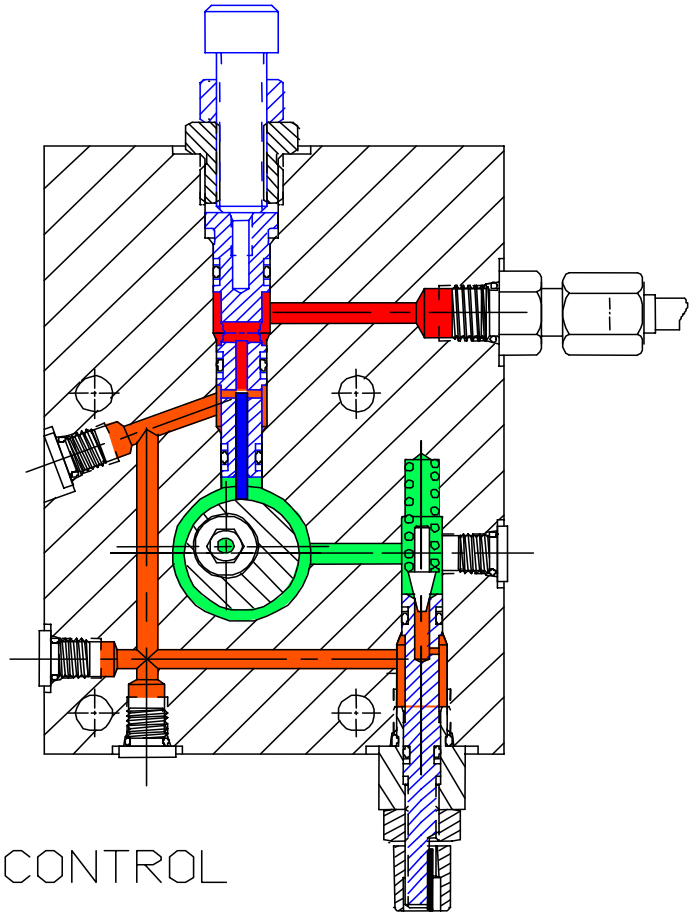
Note ***There is a High/Low Control for the PVP41 /48 that allows the pump to reach higher pressures at low horsepower settings, but it is very difficult to field set in mobile applications.***

Hi / Lo Horsepower Control



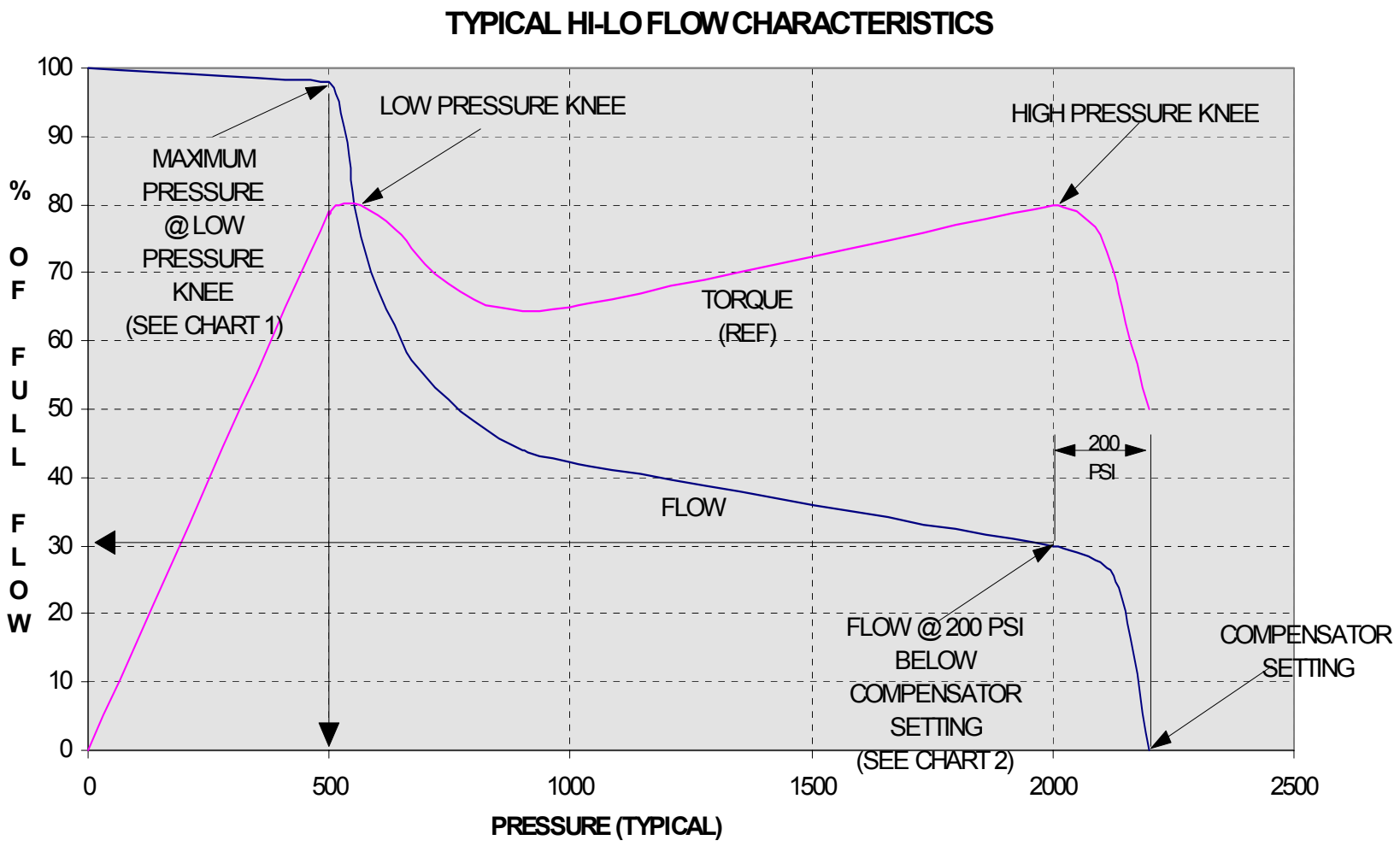
Hi/Lo Horsepower Control



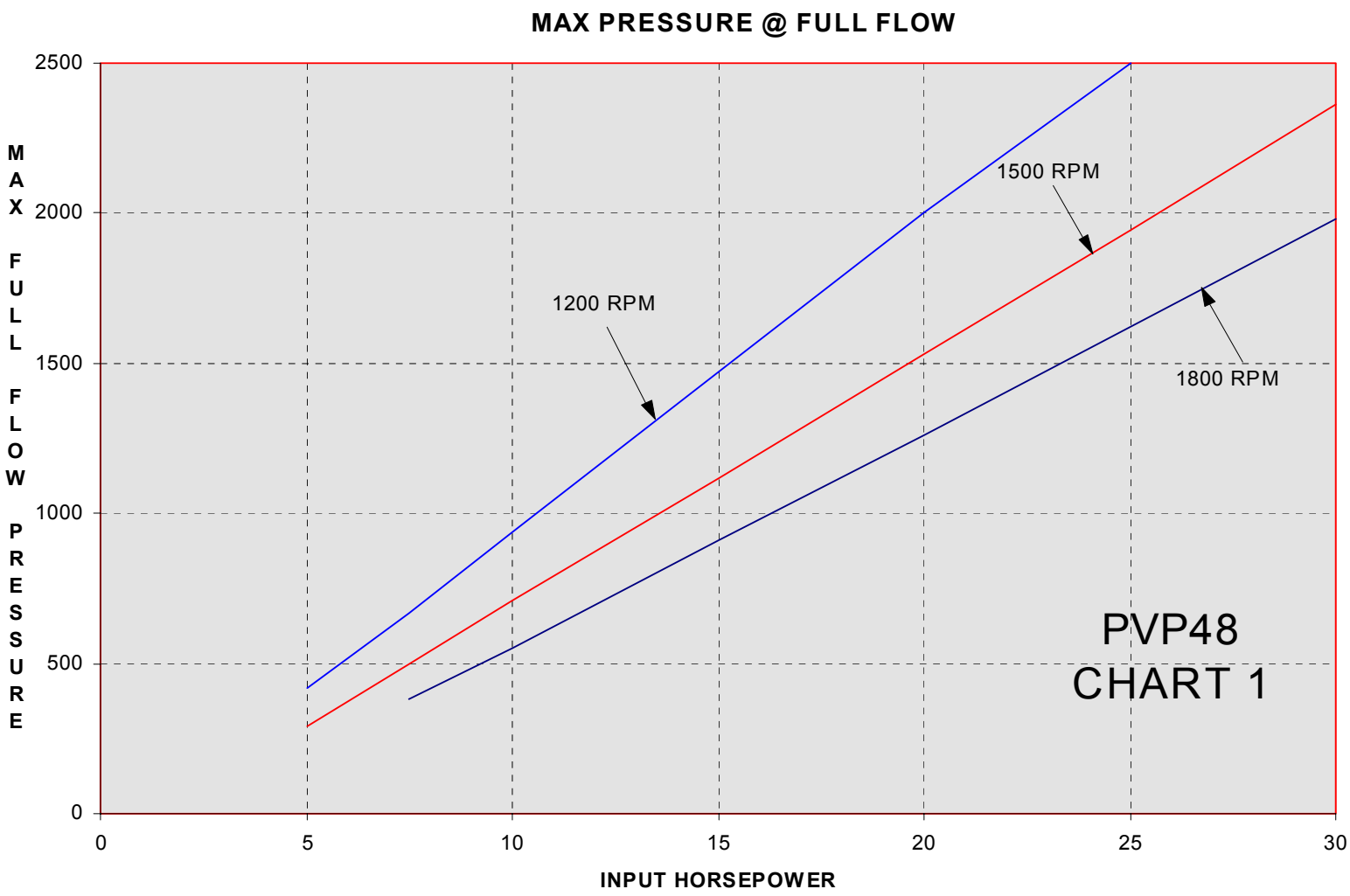


TYPICAL HI-LO CONTROL

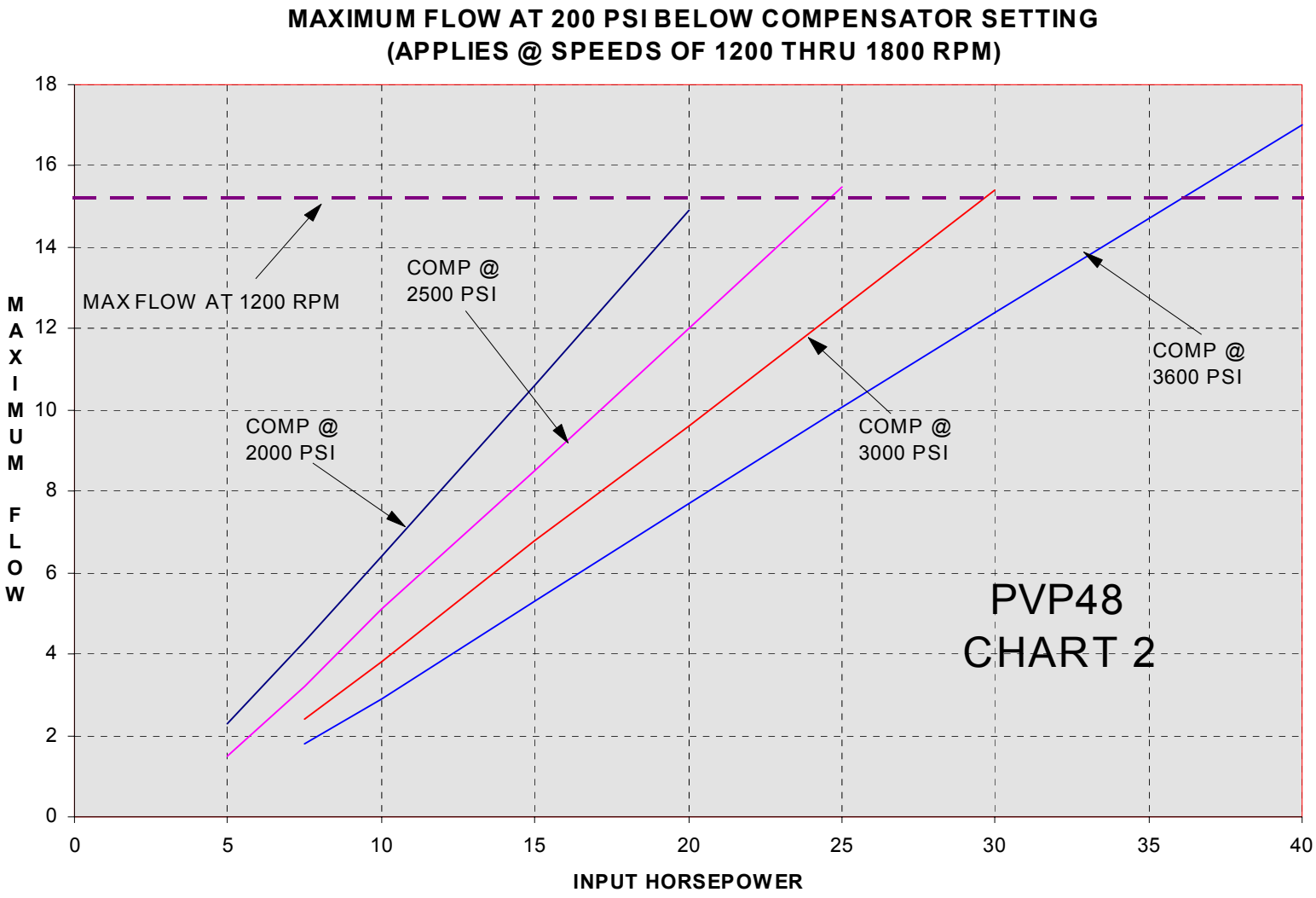
HiLo HP Control



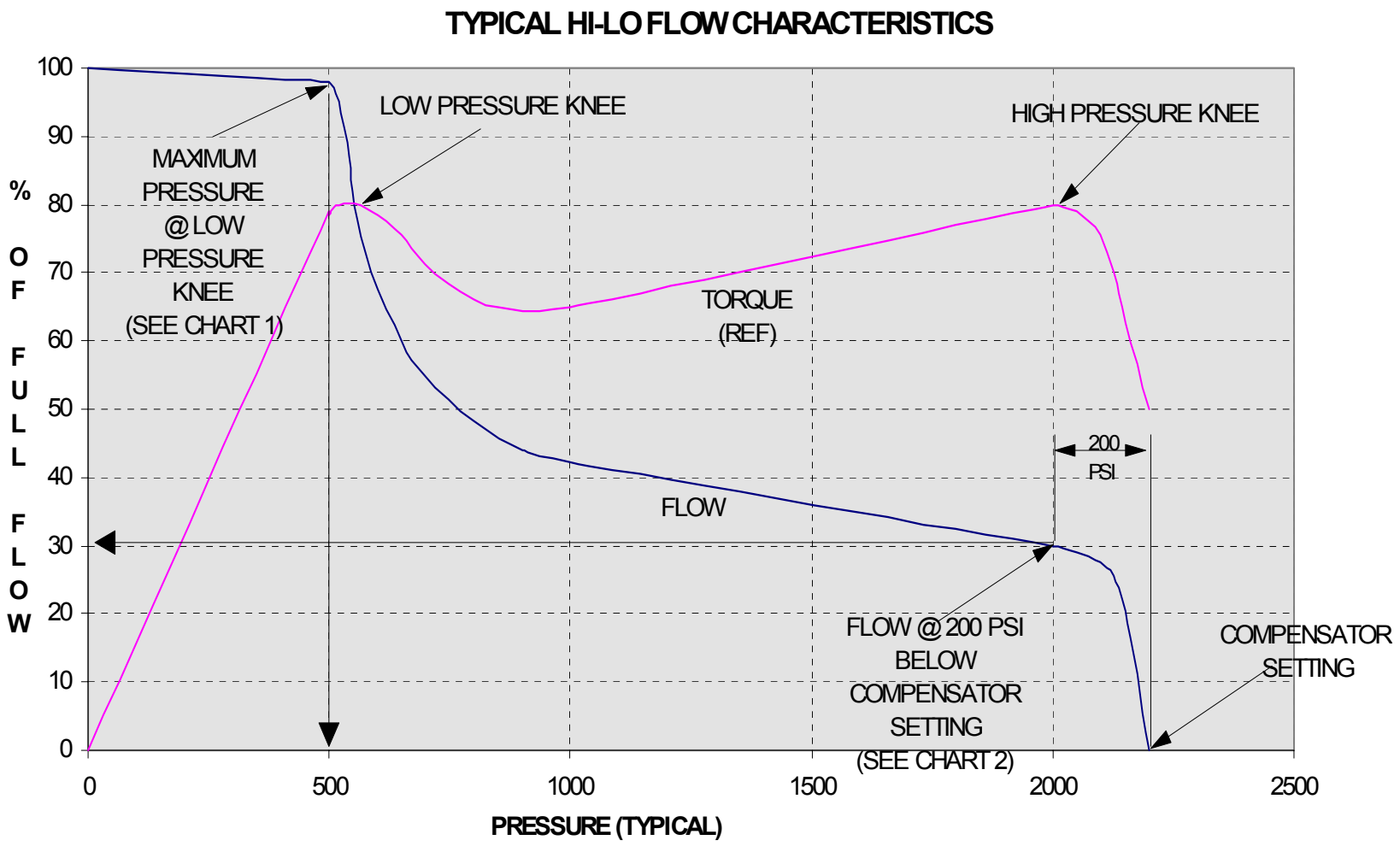
HiLo HP Control



HiLo HP Control



HiLo HP Control



Thank you!!!