

FASTER QUIETER STRONGER

A large, stylized graphic of the word "DRIVEN" in a bold, italicized, sans-serif font. The letters are black with a white outline and a yellow-to-white gradient. A yellow swoosh underline starts under the "D" and curves around the "N".

DRIVEN
PARKER HYDRAULIC
PISTON PUMPS



NEW PD Piston Pump



Operations

HPD Overview

Plant Locations



Marysville, Ohio

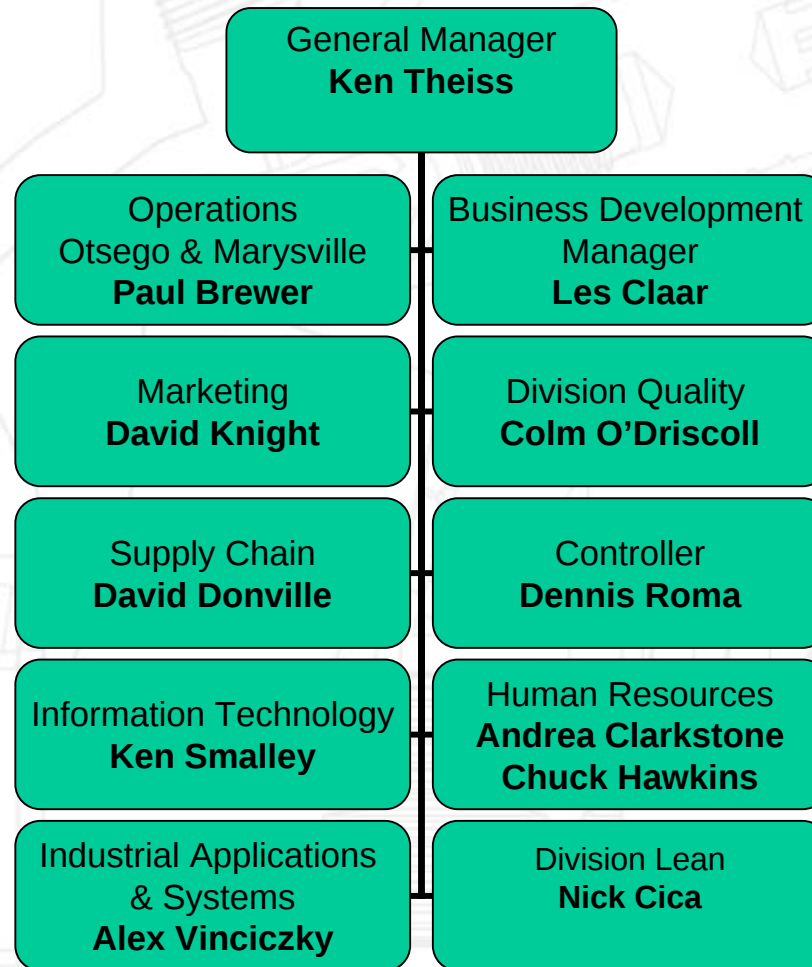
- Division Headquarters
- 155,000 Sq. Ft.
- 205 employees



Otsego, Michigan

- Mfg's Piston Pumps
& Power Units
- 100,00 Sq. Ft.
- 100 employees

HPD Organization



HPD Contacts

Marketing

- David Knight , Marketing Manager
- Dave Busser , Product Manager Calzoni & Power Units
- Dave Ebert , Industrial Channel Product Manager
- Pat Larkin , Mobile Channel Product Manager
- Pete Medins, Bent Axis Product Manager
- Patrick Petroff , Application Support, Mobile Products
- Chad Todd , Application Support , Vane Products
- Mike Green, Application Support, Valve Products

HPD Contacts

Customer Services

- Mary Jo Rohner, Marysville

Special Pricing

- Harold Williamson, Piston Products,
- Dave Busser , Calzoni Products
- Chad Todd , Vane Products
- Mike Green , Denison Valve

Quality

- Colm O'Driscoll , Marysville
- William Bailey , Otsego

HPD Contacts

Standard List Prices and Lead Time Information

Parker Distributor Forum on POL A& H Distributor Forum
<http://pol/Forums/Room.asp?ID=AHDISTRIBUTOR&Room=AHD1425791231N>

Go to Hydraulic Pump Division folder for
price lists effective Jan. 1, 2005

This site is Password Protected

Products

A circular inset image showing a wheel loader in operation, dumping material from its bucket. The image is tinted with a green and blue color scheme. The background of the slide features faint, light-colored line drawings of various hydraulic components, including pistons and pumps.

HPD Overview

Marysville Products



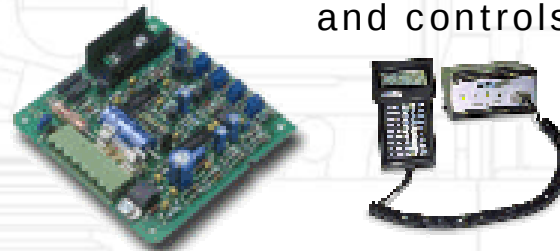
Vane Pumps and
Motors

Piston Pumps and
Motors



Radial Piston Motors

Electronic systems
and controls



Valves



Manifolds



Otsego Products



P2/P3/PE Piston Pump



PVP Piston Pump



PV Piston Pump



PAVC Piston Pump

Bent axis piston
motors



Industrial
Power Units



Vane Pump

HPD Lead Times

PD Piston Pumps	15 <u>DAYS</u> !
PVP Piston Pumps	10 <u>DAYS</u> !
PAVC Piston Pumps	10 <u>DAYS</u> !
P2/P3 Piston Pumps	10 <u>DAYS</u> !
World Cup, Gold Cup	30 <u>DAYS</u> !
Premier Piston Pumps	30 <u>DAYS</u> !
PFV Classic Vane Pumps	10 <u>DAYS</u> !
PFV6 / PFV7 Vane Pumps	40 <u>DAYS</u> !

Competitor's Lead Times:

12 WEEKS Plus!!

NEW PD Piston Pumps



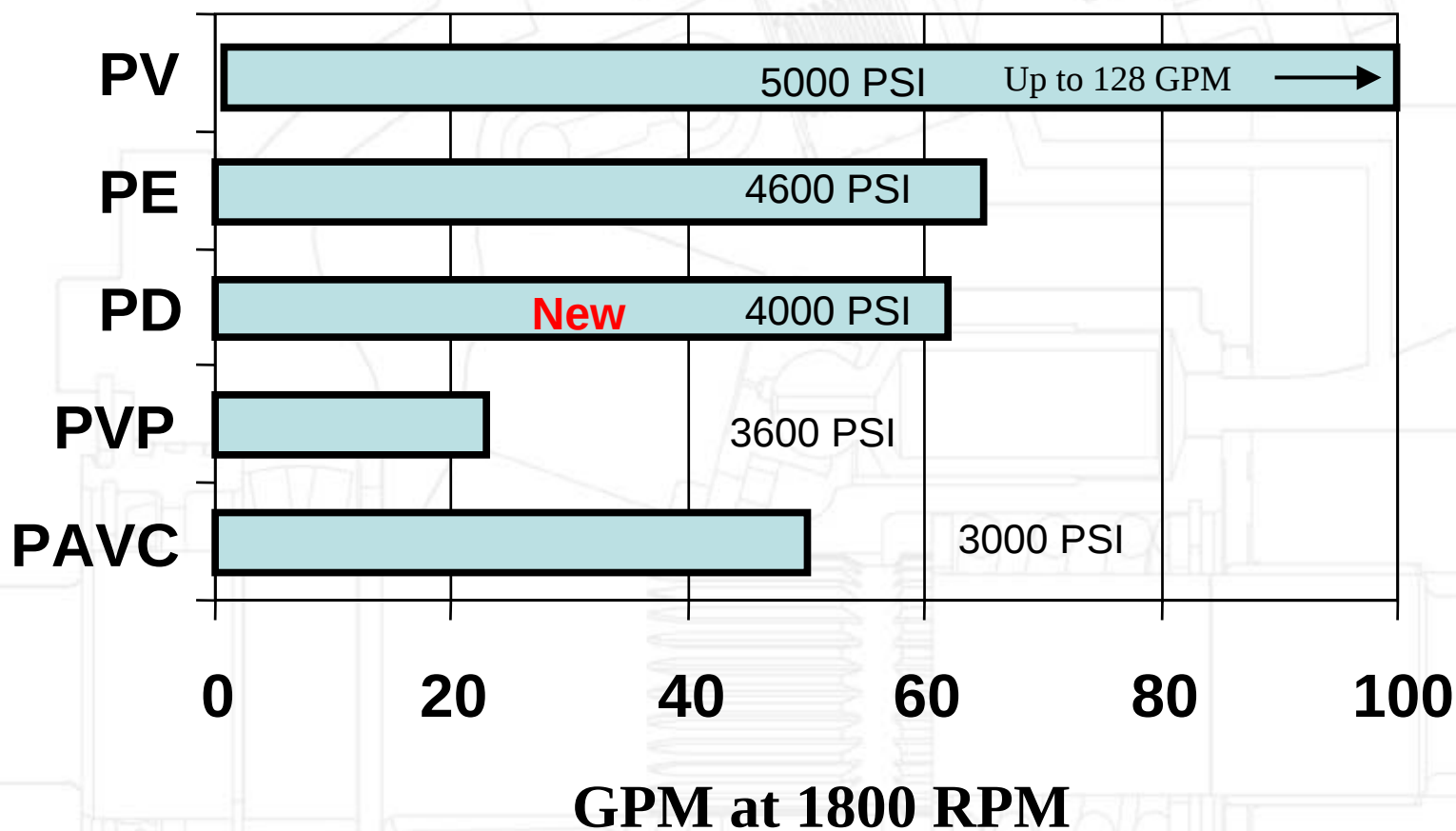
NEW PD Piston Pumps

PD - Piston Pump

Displacement cc/rev.	75	100	140
Pressure (psi) (Cont. / Int.)	All sizes 4000 / 4600		
Self priming speed (rpm)	1800	1800	1800



Industrial Variable Piston Pumps

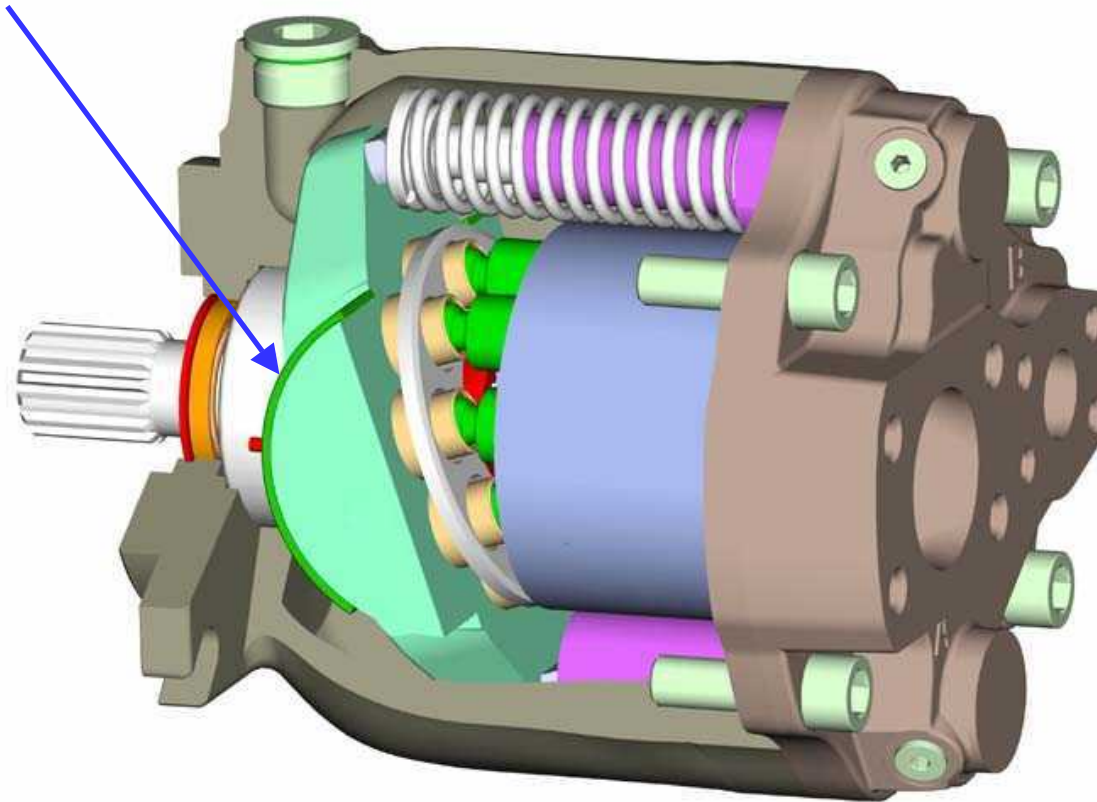


NEW PD Piston Pumps

- **Three frame sizes in Initial Release**
 - **75, 100, 140 cc/r**
 - **75 and 140 in production (originally called XL)**
 - **100 will be available in March, 2005**
 - **100 Thru Drives will be available in June, 2005**
 - **60 cc/r in development, availability late 2005**

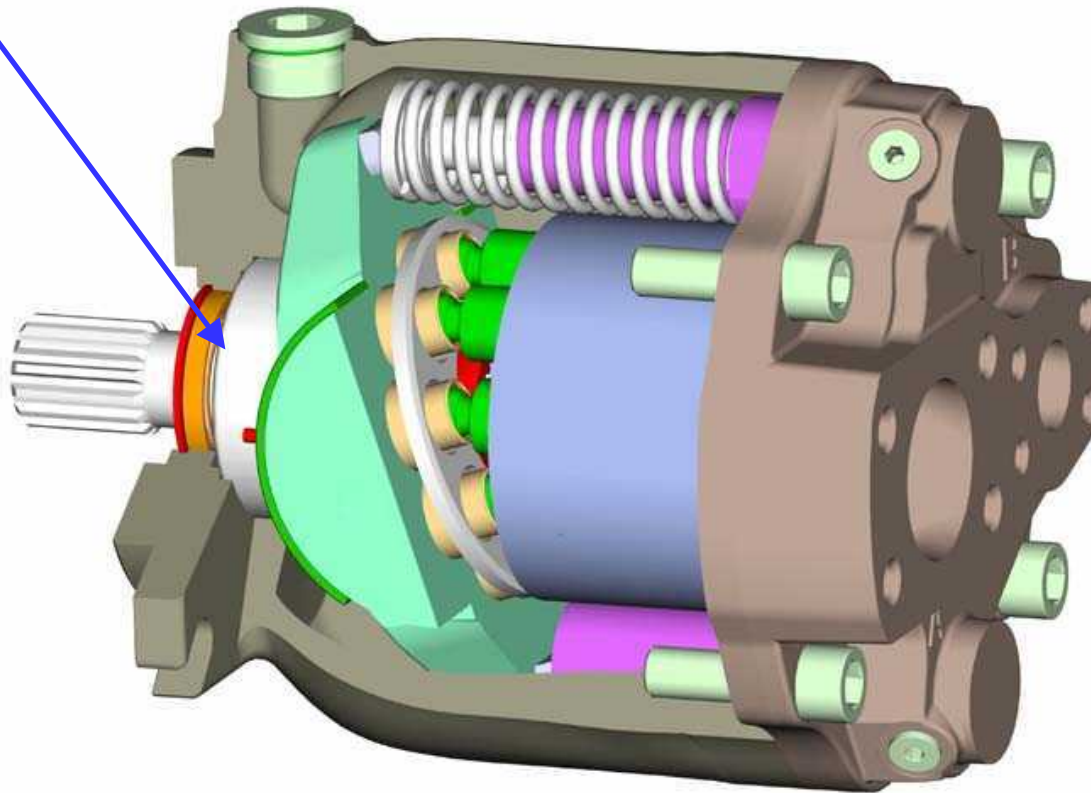
NEW PD Piston Pump Design... Reliability

Hydrostatic Saddle Bearing



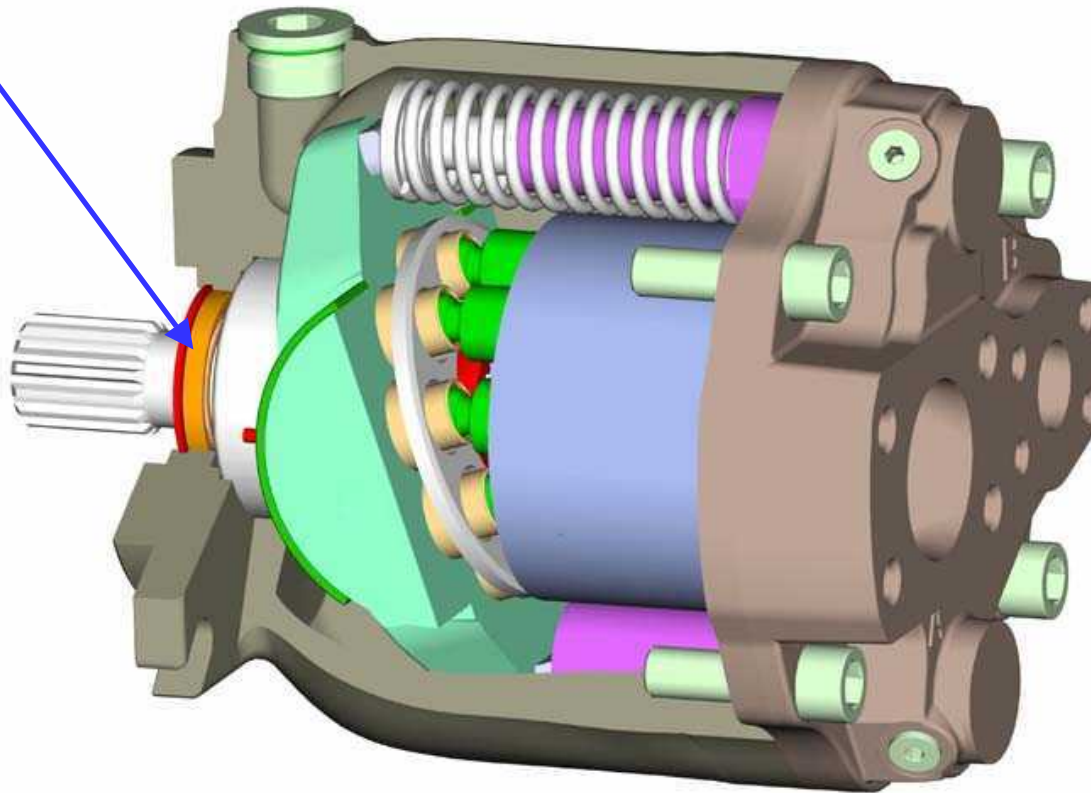
NEW PD Piston Pump Design... Reliability

Tapered Roller Bearings , Sized for 20,000 Hours of B10 Life



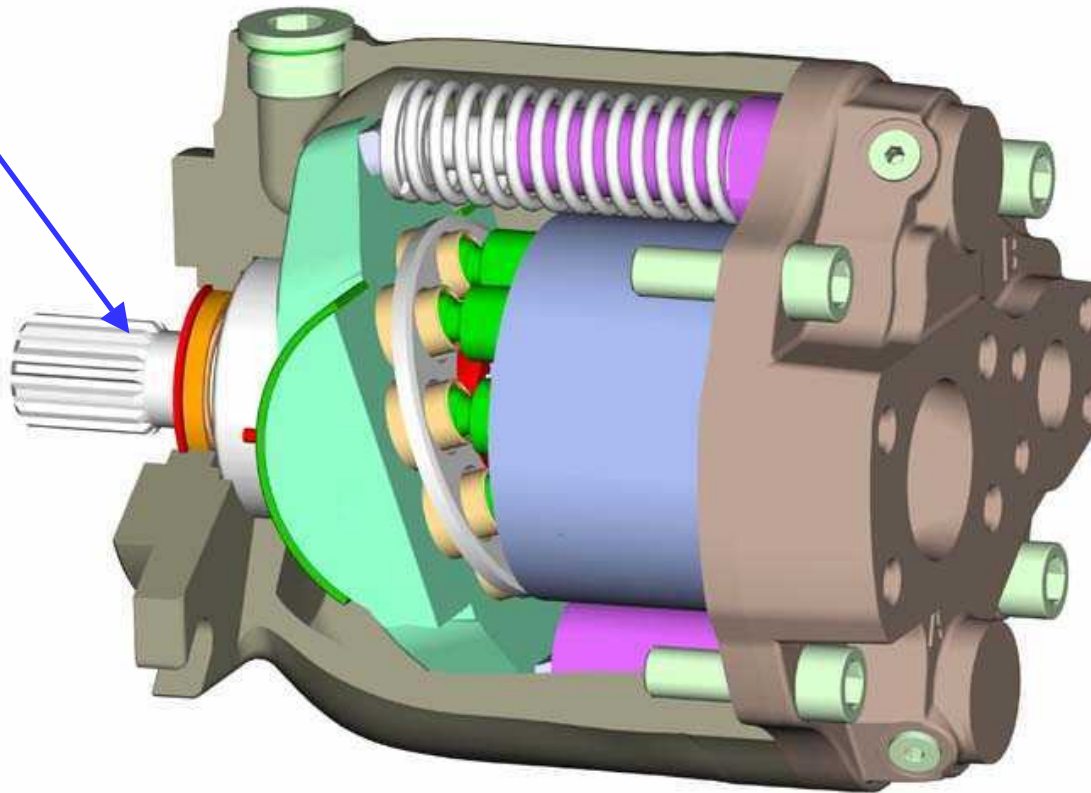
NEW PD Piston Pump Design... Reliability

Fluorocarbon Seals Standard, 200 Deg. F Rating



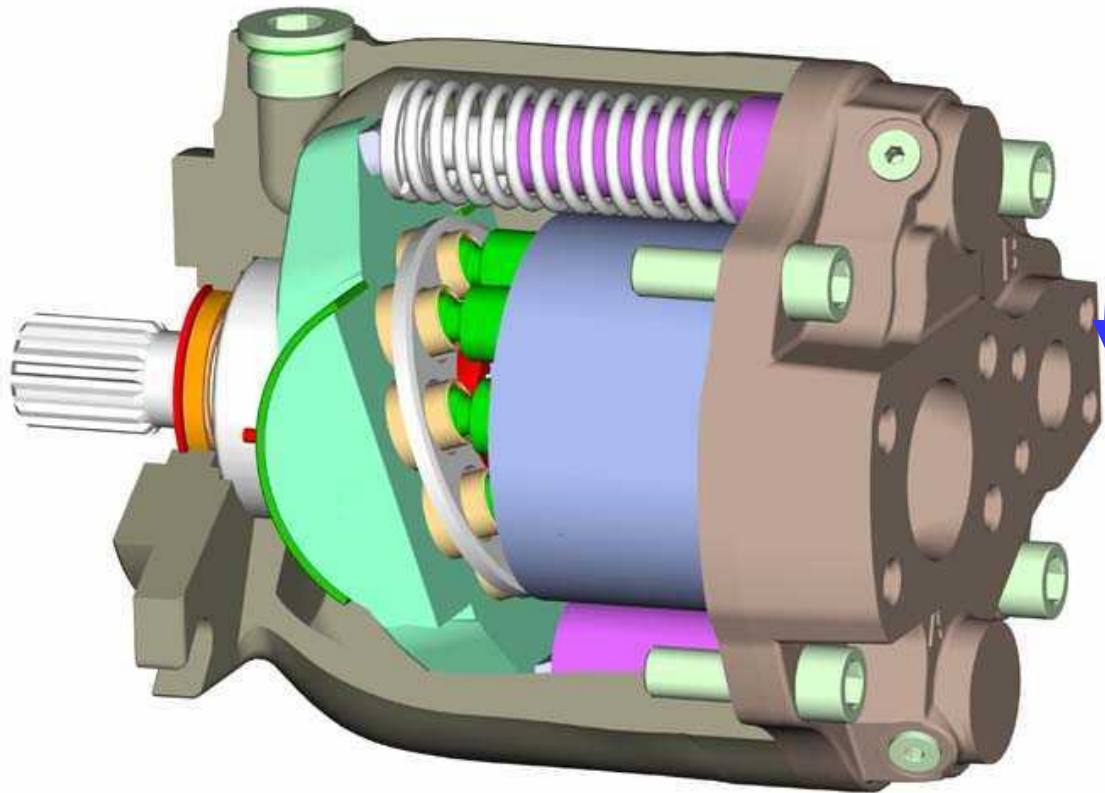
NEW PD Piston Pump Design... Flexibility

Spline and Keyed Shafts



NEW PD Piston Pump Design... Flexibility

Rear and Side Ports Available



NEW PD Piston Pump Options

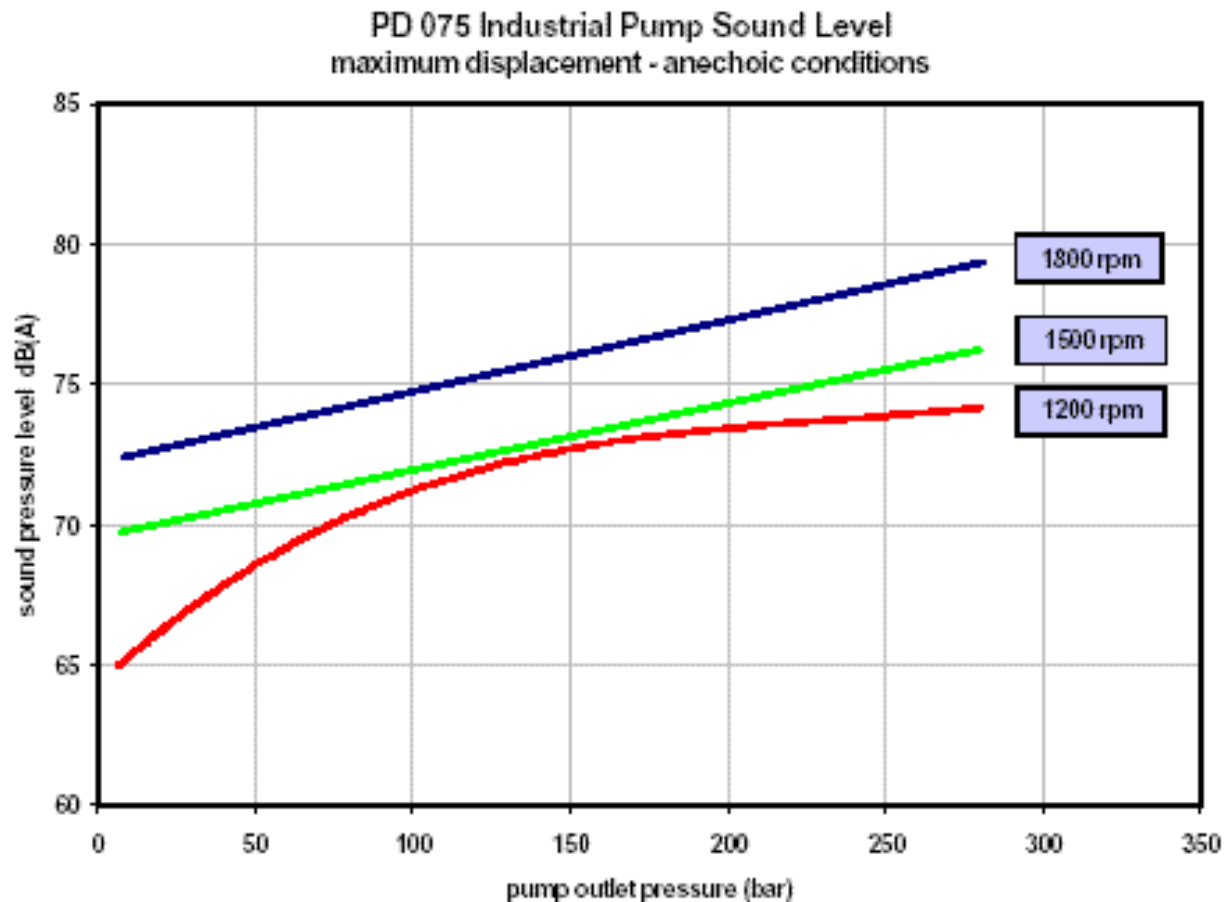
- ✓ **Thru Drives Available**
 - **SAE A, B, C on all sizes**
 - **SAE D available on 140**
- ✓ **Outlet Gage Port Standard**
- ✓ **Adjustable Maximum Displacement & Minimum Displacement Stops Optional**

NEW PD Piston Pump Features

- ✓ Low Noise
- ✓ High Efficiency
- ✓ Fast Response
- ✓ High Temperature Capability
- ✓ Compact Size

NEW PD Piston Pump Design

- ✓ Low Noise , Low Ripple 9 Piston Design

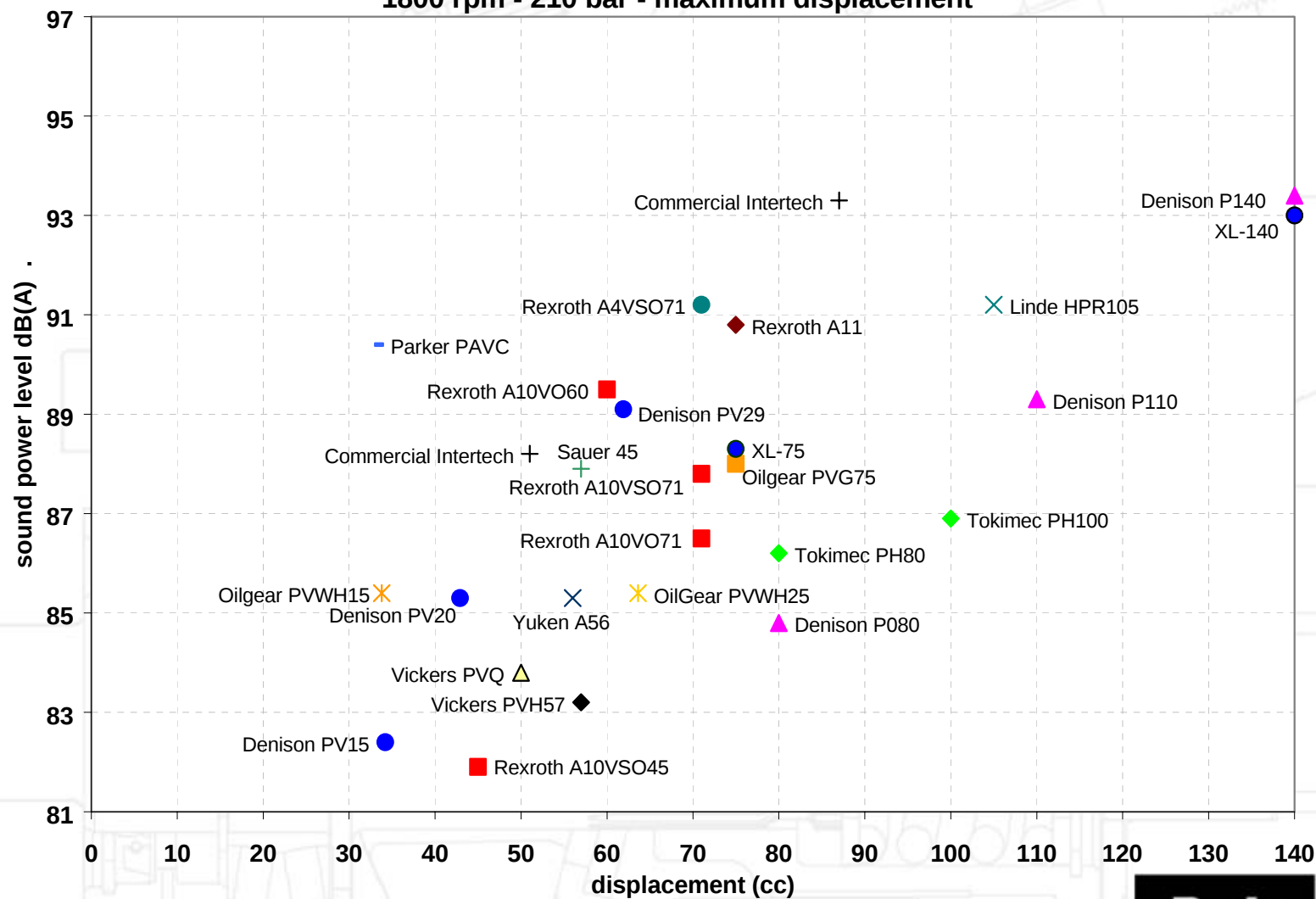


NEW PD Piston Pump Competitive Benchmarking

- Denison
- Rexroth
- Eaton - Vickers
- Sauer - Danfoss
- Oilgear
- Parker
- Linde
- Tokimec
- Yuken
- Casappa

Sound Power Level

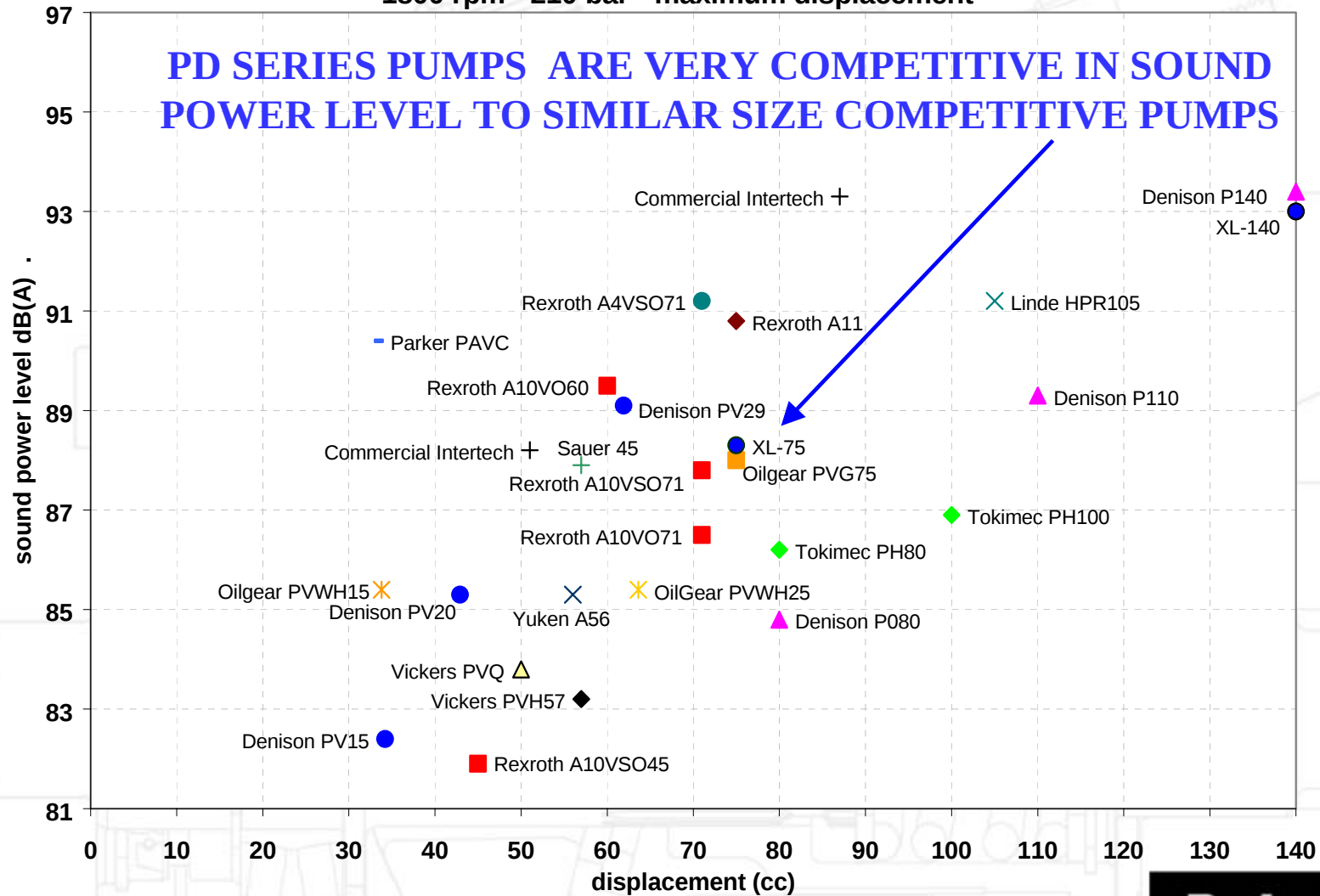
1800 rpm - 210 bar - maximum displacement



Sound Power Level

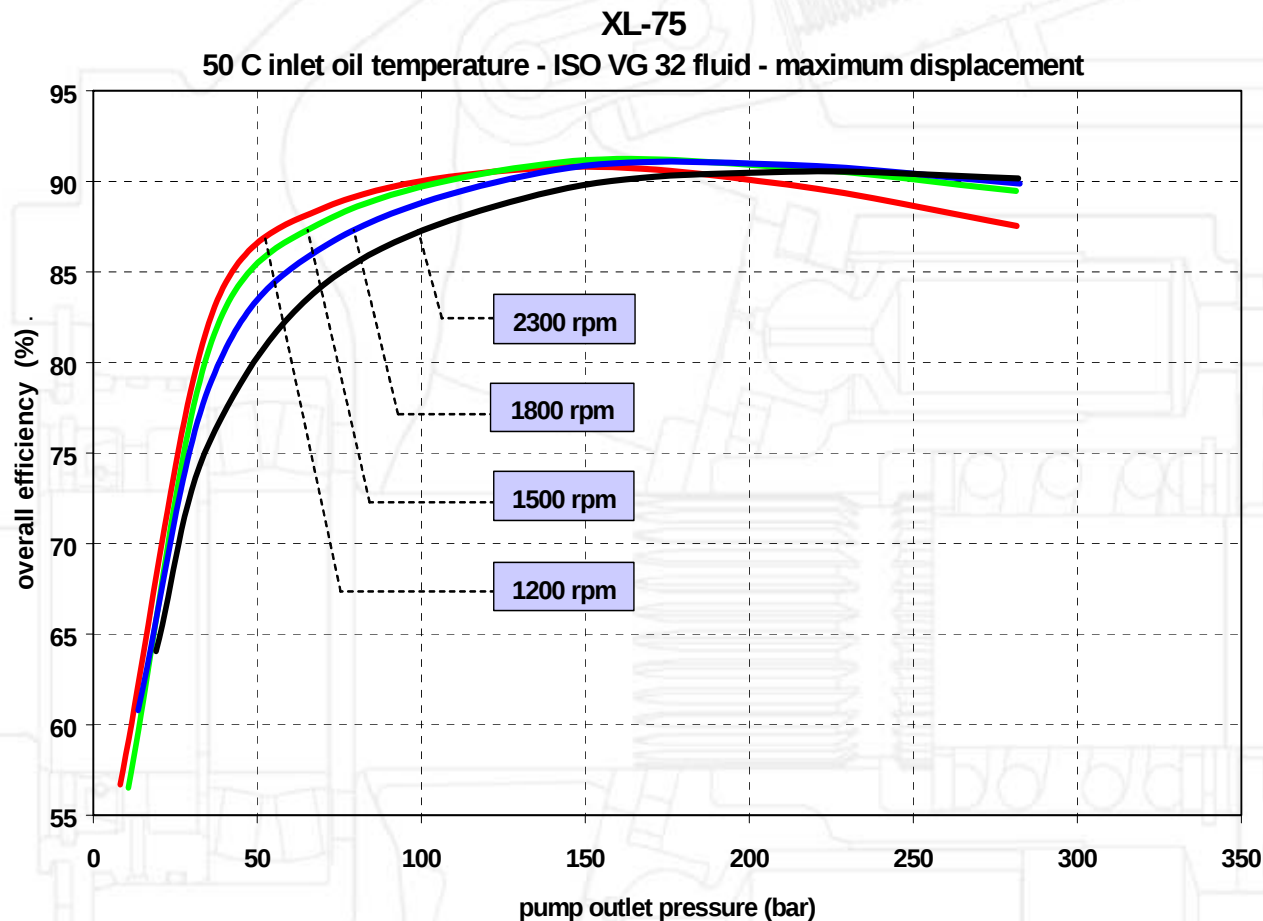
1800 rpm - 210 bar - maximum displacement

PD SERIES PUMPS ARE VERY COMPETITIVE IN SOUND POWER LEVEL TO SIMILAR SIZE COMPETITIVE PUMPS



NEW PD Piston Pump Design

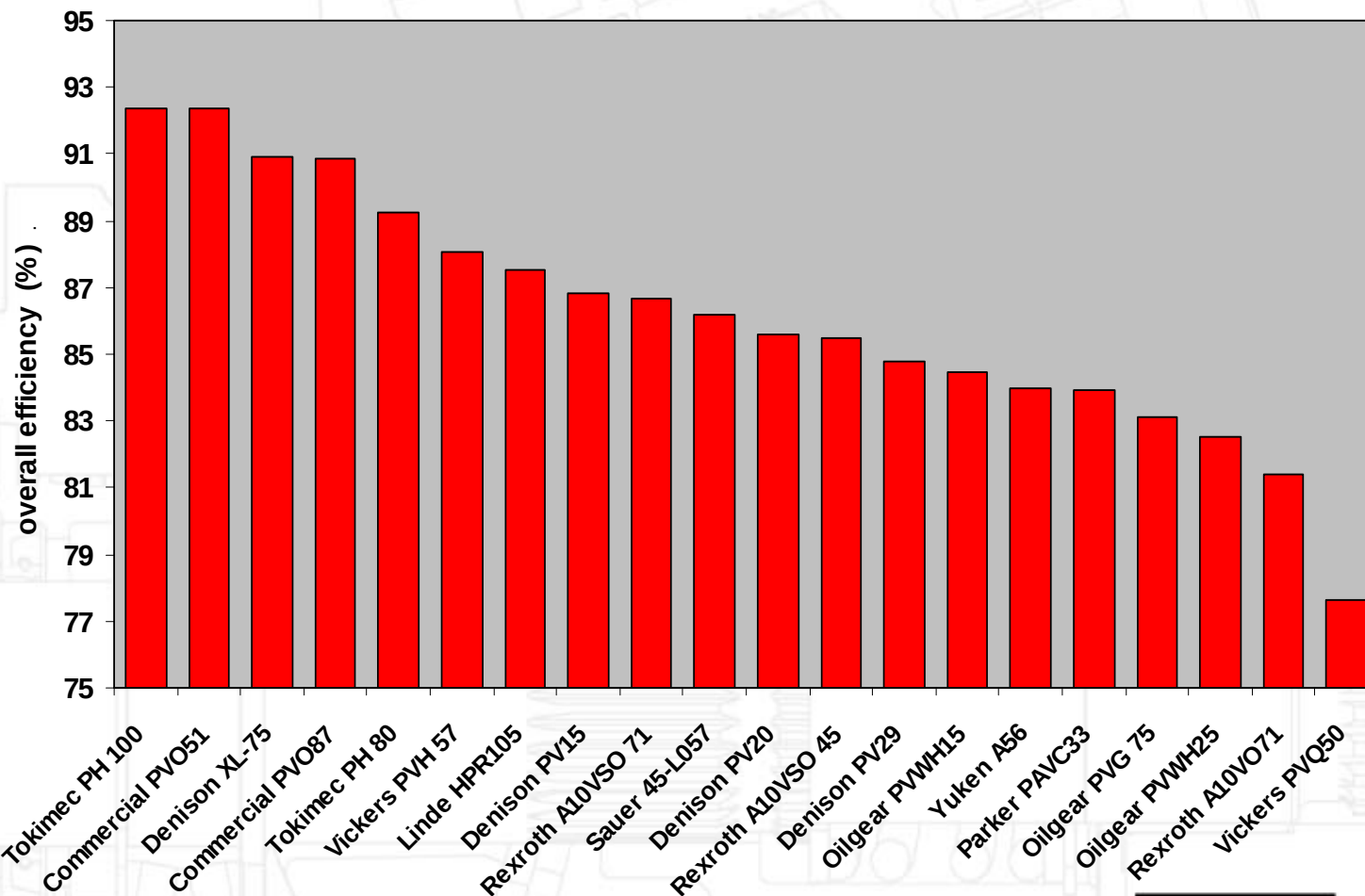
✓ High Efficiency , Means More Productivity



Overall Efficiency Comparison

1800 rpm - 210 bar pump outlet pressure - maximum displacement

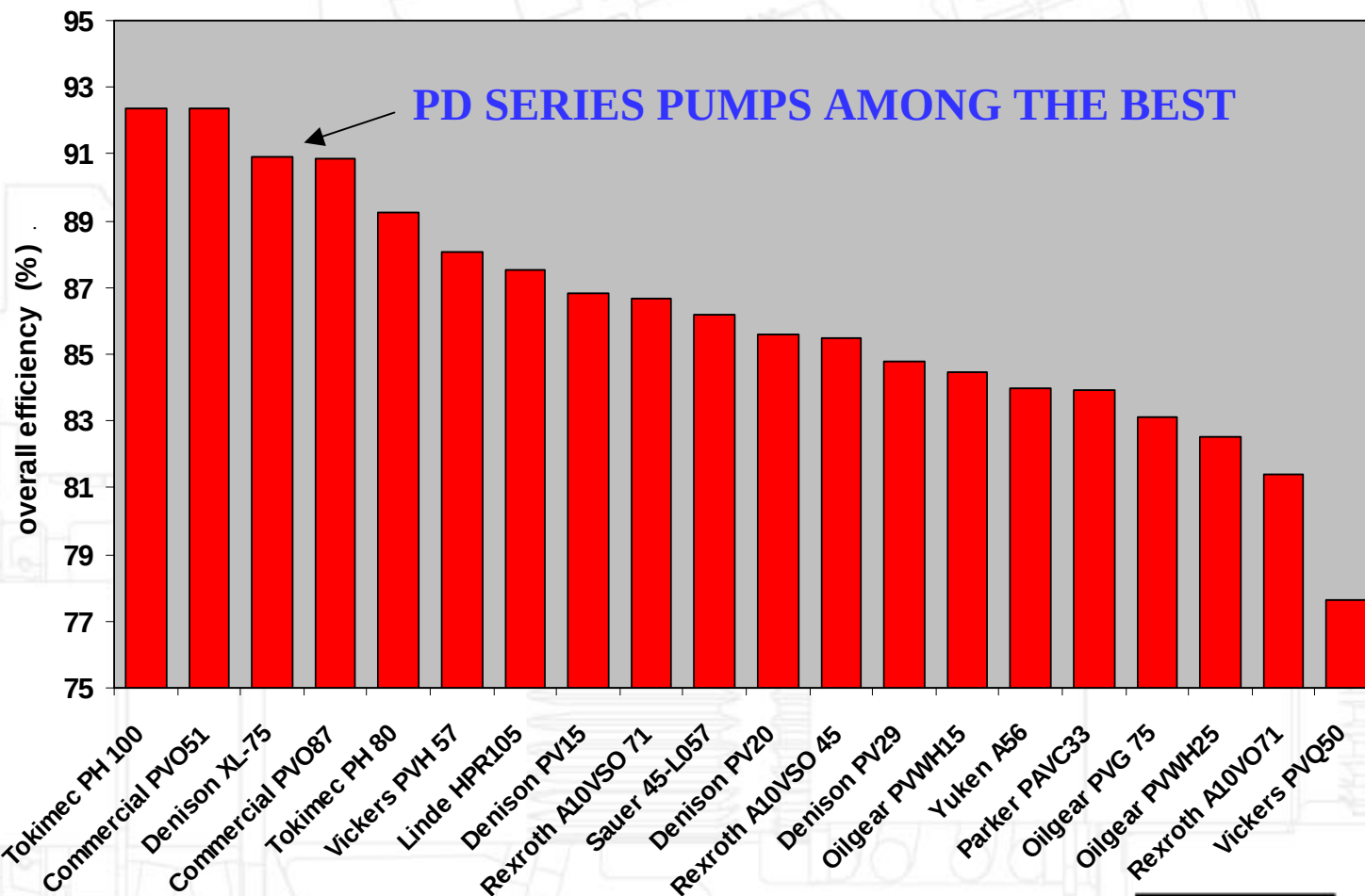
50 C inlet oil temperature - ISO VG 32 fluid



Overall Efficiency Comparison

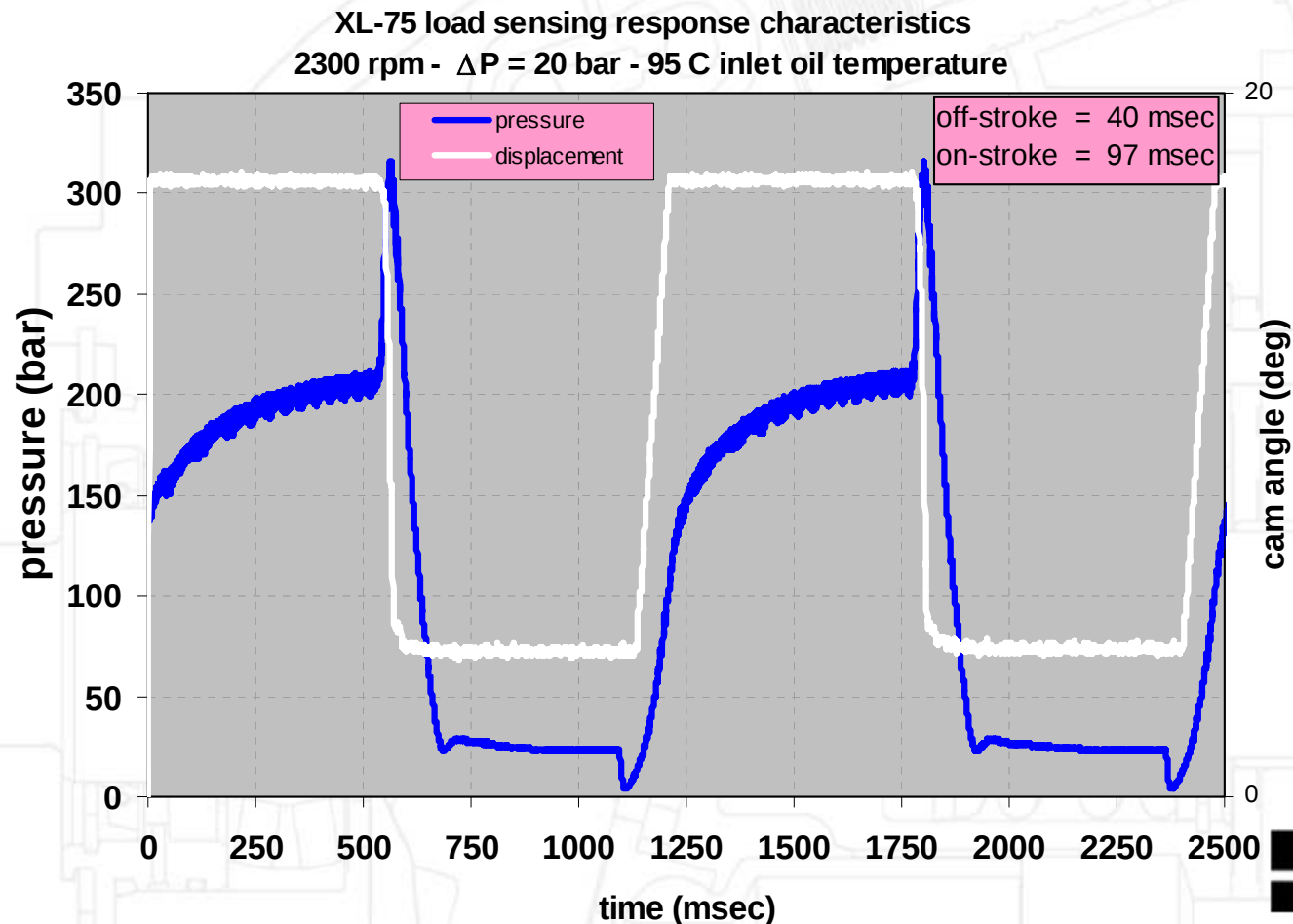
1800 rpm - 210 bar pump outlet pressure - maximum displacement

50 C inlet oil temperature - ISO VG 32 fluid



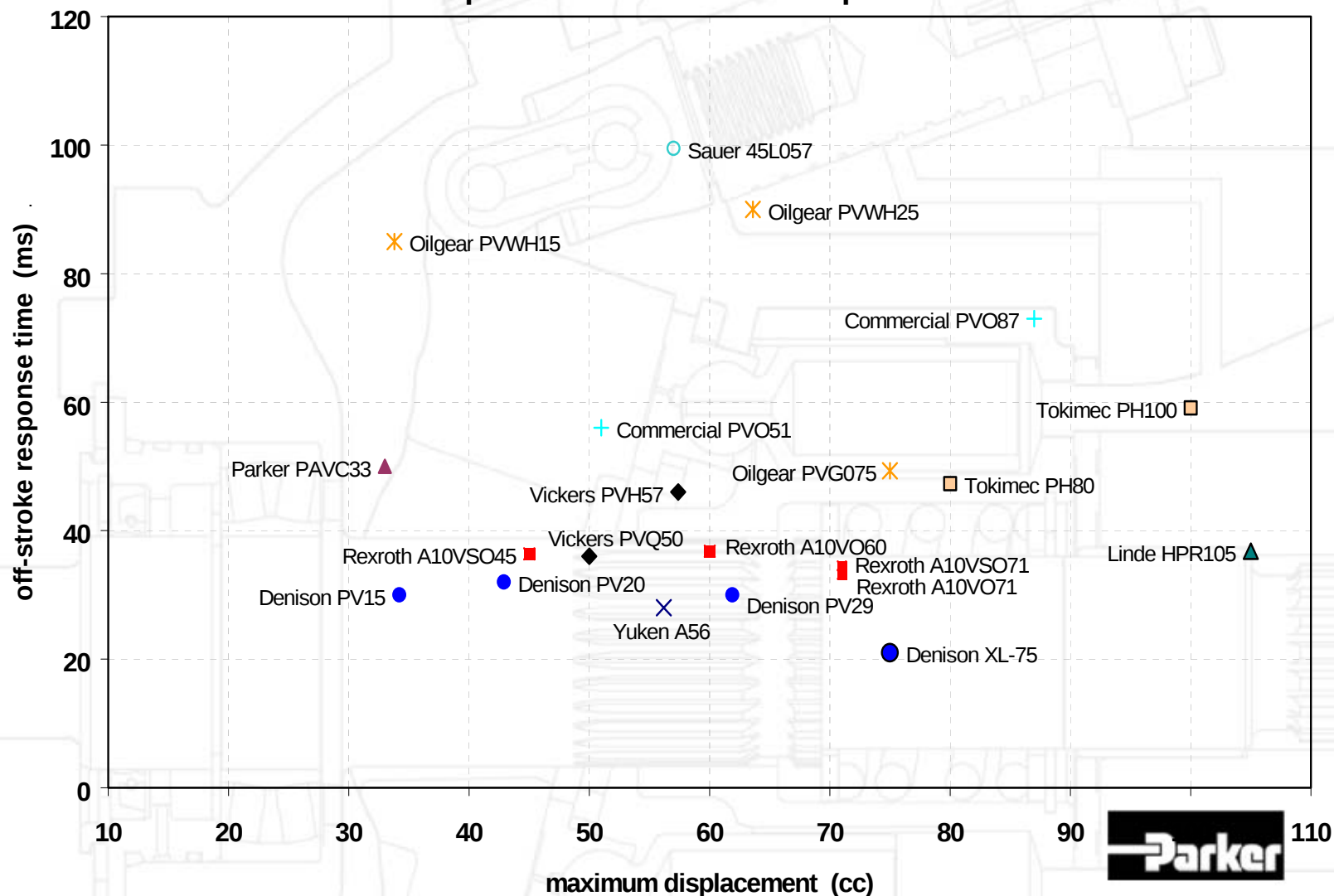
NEW PD Piston Pump Design

✓ Fast Response , Responsive Load Sense Systems

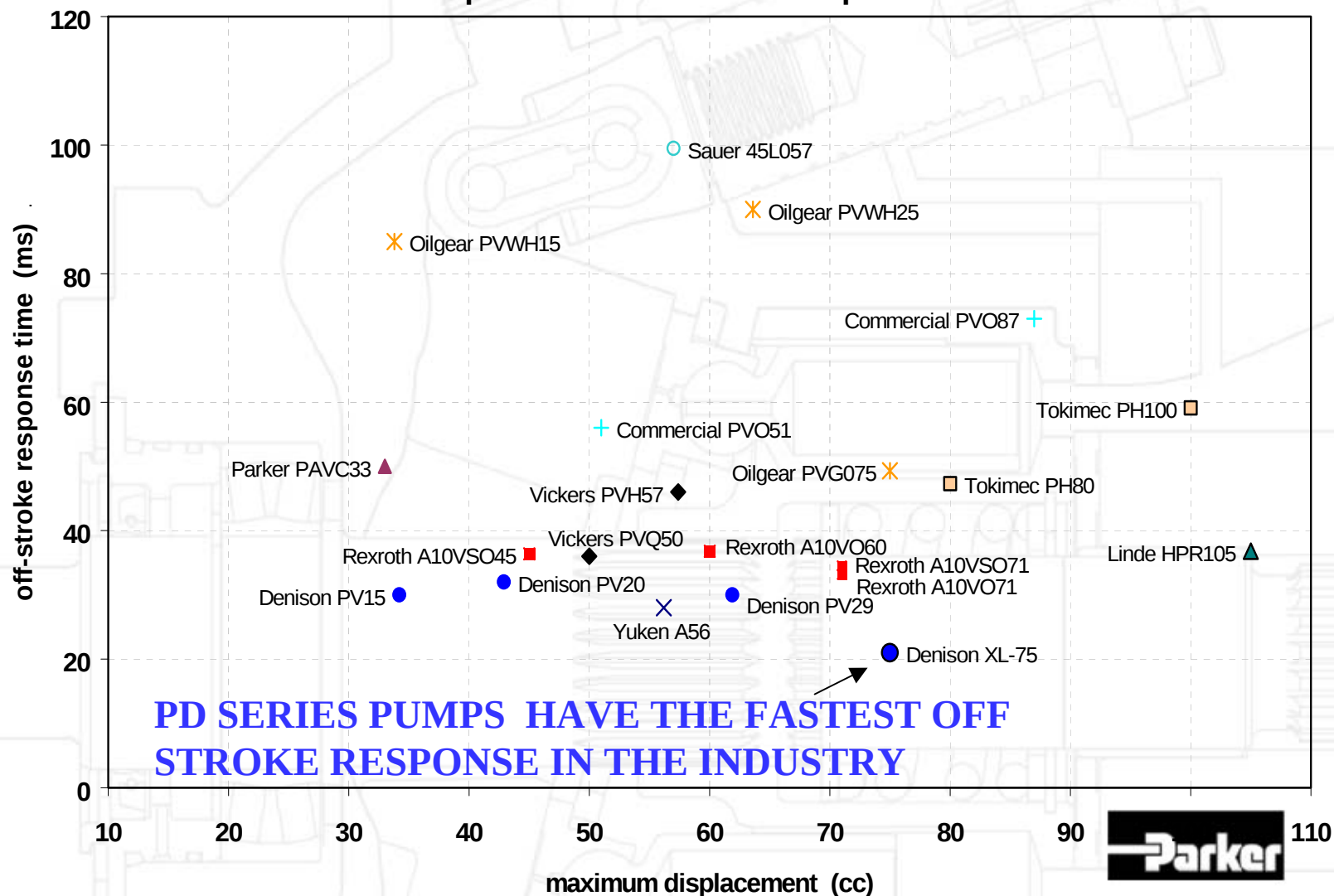


Pressure Compensator Response Comparison

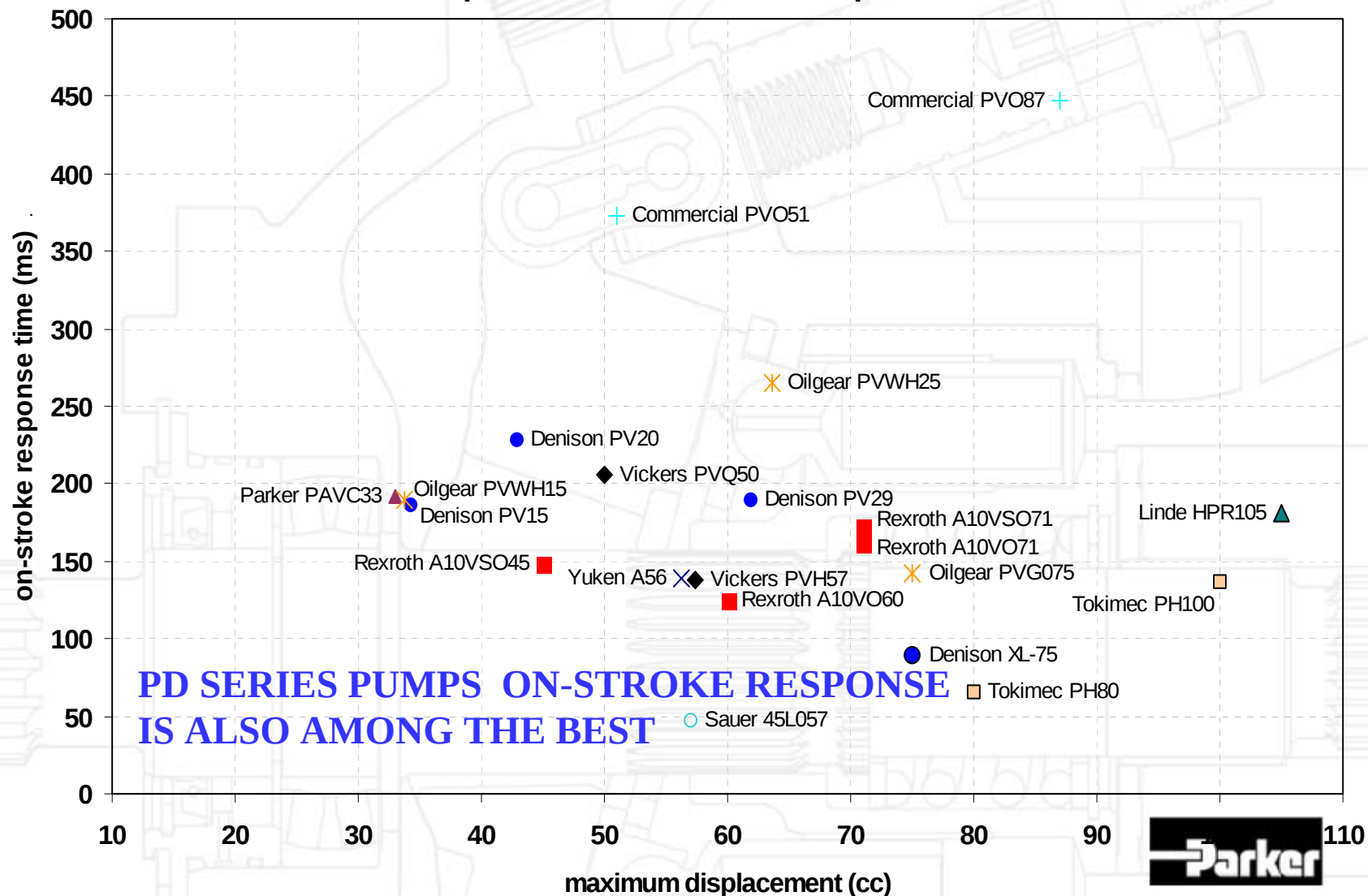
1800 rpm - 210 bar - off-stroke response time



Pressure Compensator Response Comparison 1800 rpm - 210 bar - off-stroke response time



Pressure Compensator Response Comparison 1800 rpm - 210 bar - on-stroke response time



NEW PD Piston Pump Design

✓ **Wide Temperature Range & Low Viscosity Capability**

Operating Temperature Range

-40 degrees F to 203 degrees F

(Fluorocarbon Seals are Standard)

Viscosity Ranges

Rated Operating Viscosity Range ... 6 – 160 cSt

Maximum Cold Start Capability ... 5000 cSt

Minimum Intermittent Viscosity ... 5 cSt

NEW PD Piston Pump Design

✓ **Wide Temperature Range & Low Viscosity Capability**

Viscosity Range Comparisons

	Rated Continuous	Minimum Intermittent
PD ...	6 – 160 cSt	5 cSt
PE ...	15- 40 cSt	10 cSt
RR A10V	16 - 36 cSt	10 cSt
Sauer 45	9 - 110 cSt	6.4 cSt
EV PVM	16- 40 cSt	10 cSt

NEW PD Piston Pump Design

✓ **Compact Size**

PD075



Length	253 mm
Port to Port	178 mm
Width with LS	219 mm
Weight	31 kg

Rexroth A10V074



Length	257 mm
Port to Port	208 mm
Width with LS	263 mm
Weight	33 kg

NEW PD Piston Pump Design

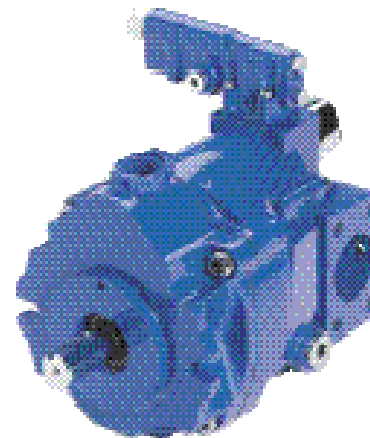
✓ **Compact Size**

PD075



Length	253 mm
Port to Port	178 mm
Width with LS	219 mm
Weight	31 kg

Eaton Vickers PVM074



Length	288 mm
Port to Port	183 mm
Width with LS	266 mm
Weight	45 kg

NEW PD Piston Pump Design

✓ **Compact Size**

PD075



Length	253 mm
Port to Port	178 mm
Width with LS	219 mm
Weight	31 kg

Sauer G74



Length	256 mm
Port to Port	157 mm
Width with LS	265 mm
Weight	36 kg

In Short ...**NEW** PD Piston Pump Outperforms the Competition

Oilgear



Rexroth
Bosch Group



SAUER
DANFOSS



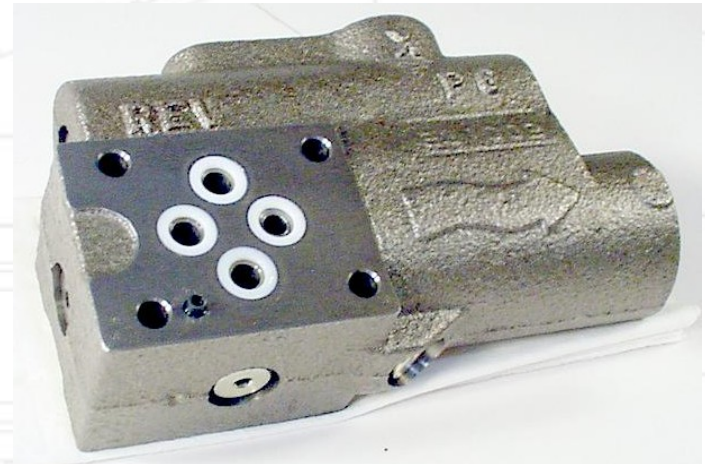
NEW PD Piston Pump Controls

- **Pressure limiter**
- **Load sensing and pressure limiter**
- **Pilot operated control (ISO 4401 interface)**
- *EH Flow and Pressure Control options planned .*



NEW PD Piston Pump Controls

- Control adjustments have o-ring seals for leak free service
- Mounting to pump is ISO 4401
- RH & LH control assemblies required depending on the pump rotation
- Control is designed to provide smaller pump envelope

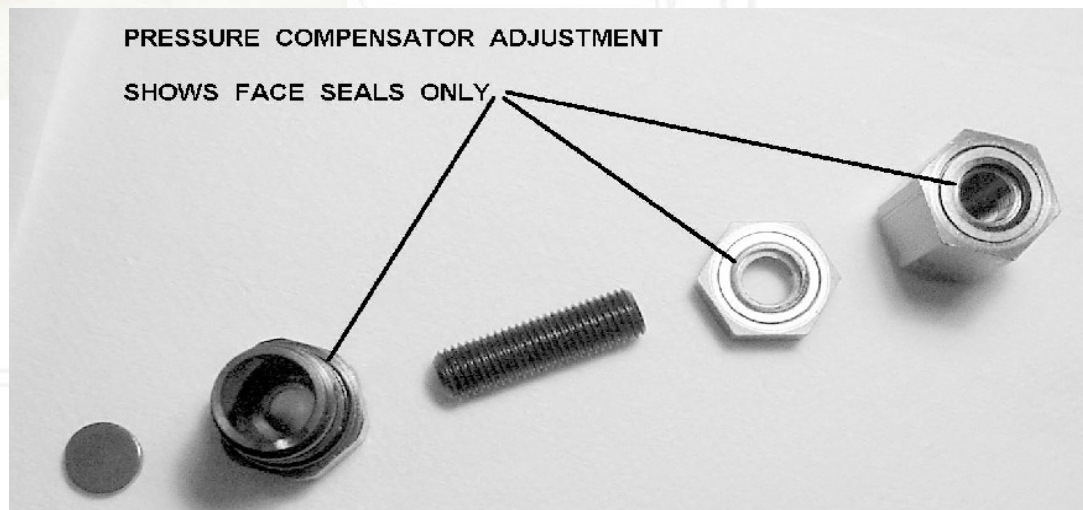
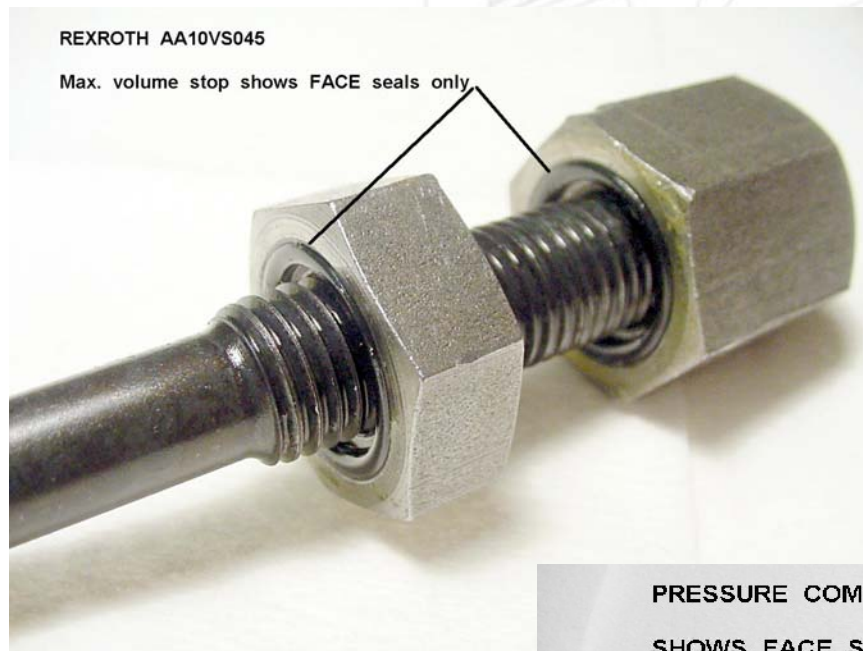


NEW PD Piston Pump Controls

- Control adjustments have o-ring seals for leak free service



Rexroth A10V Controls Leak During Adjustment



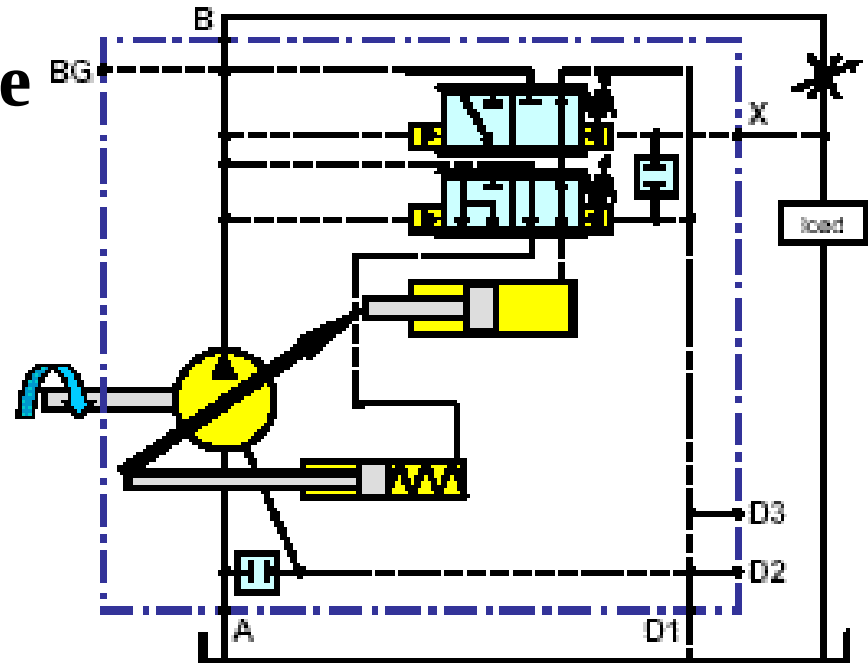
- **Pressure Compensator Control**

- [illegible]

NEW PD Piston Pump Controls

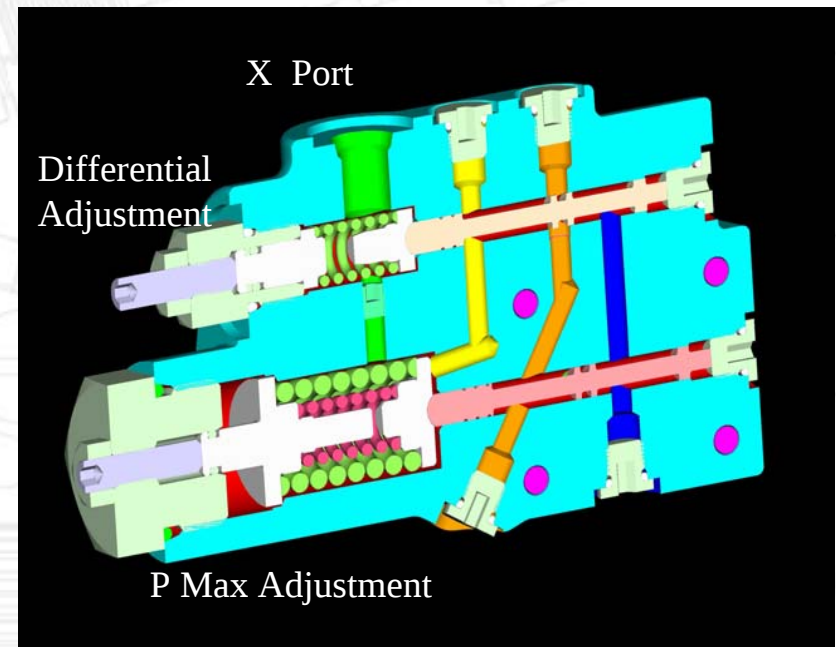
■ Load Sense and Pressure Compensator Control

- Two Spool Control
- Load Sense Differential is adjustable from 10-30 Bar.
- Two Pressure Compensator Adjustment Ranges
 - 80 – 280 Bar , Code “L00”
 - 20 – 80 Bar , Code “L10”
- Load Sense Bleed Option is available... To specify ...
 - 80 – 280 Bar , Code “L20”



NEW PD Piston Pump Controls

Load Sense and Pressure Compensator Control



Note : Relief Valve Must be added by the customer.

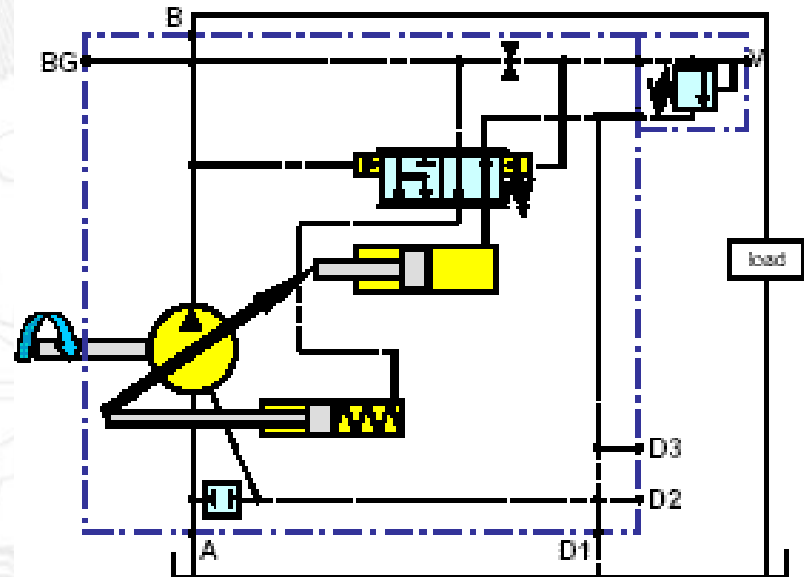
- **Three Versions Available**

-



NEW PD Piston Pump Controls

- Remote Pressure Compensator Control
 - Single, Pilot Operated Spool
 - Three Versions Available
 - “RN”, includes NG 6 mounting for customer added relief valve module.
 - “RH”, has vent port for connection to remote relief valve.
 - “RM”, with mechanical pressure limiter adjustment and vent port.



“RM” Control

Future PD Electronic Pump Controls

Coming Later This Year!



- new electronic control capabilities
- integrated digital electronics
- field-bus capability
- PC user interface

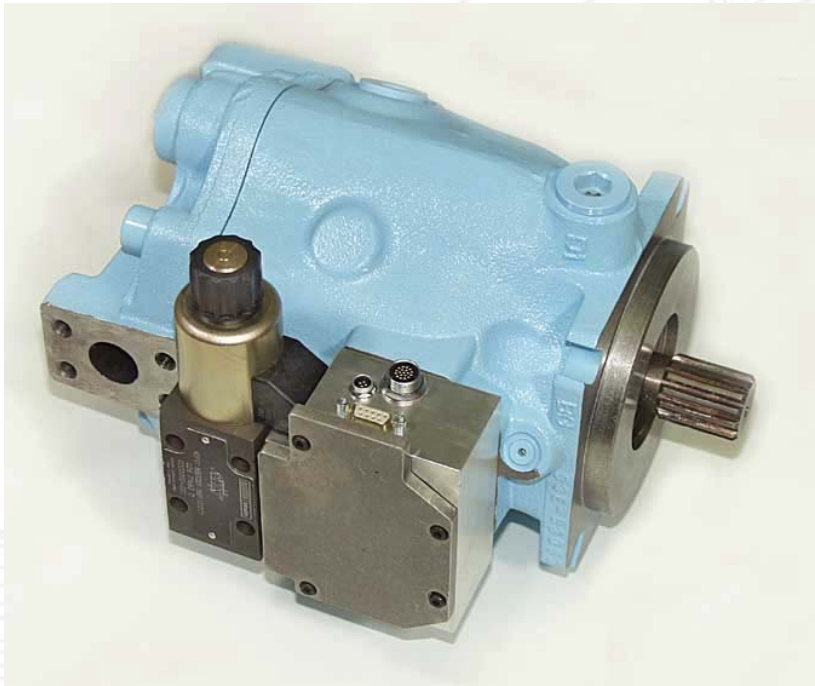
Future PD Electronic Pump Controls

- displacement control
- pressure limiter
- electronic PQ
- torque limiting
- torque summing
- load sensing
- anti-stall speed sensing
- constant flow

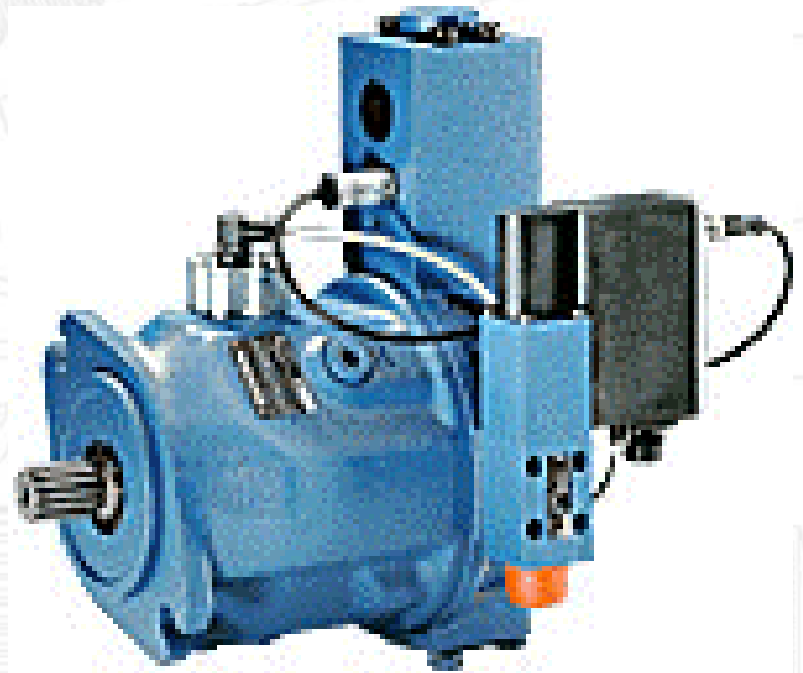


Future PD Electronic Pump Controls

Compare the Difference



PD with Electronic PQ Control



A10V with Electronic PQ Control

New PD Series Customers

Oil pumping station power units

Current largest PD-75 customer

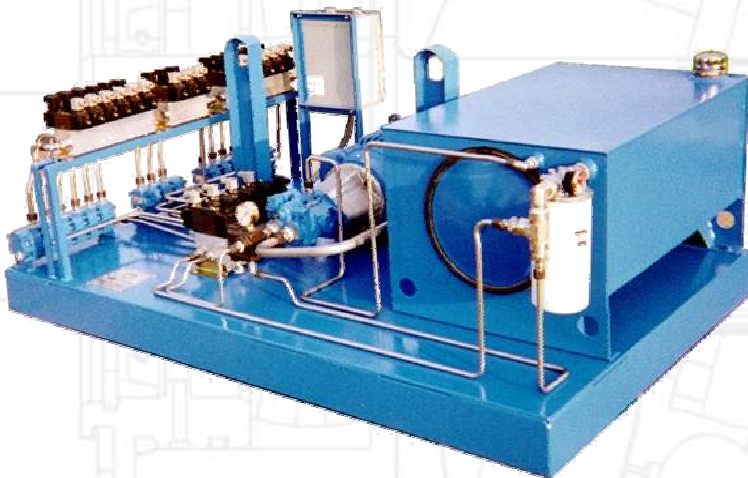
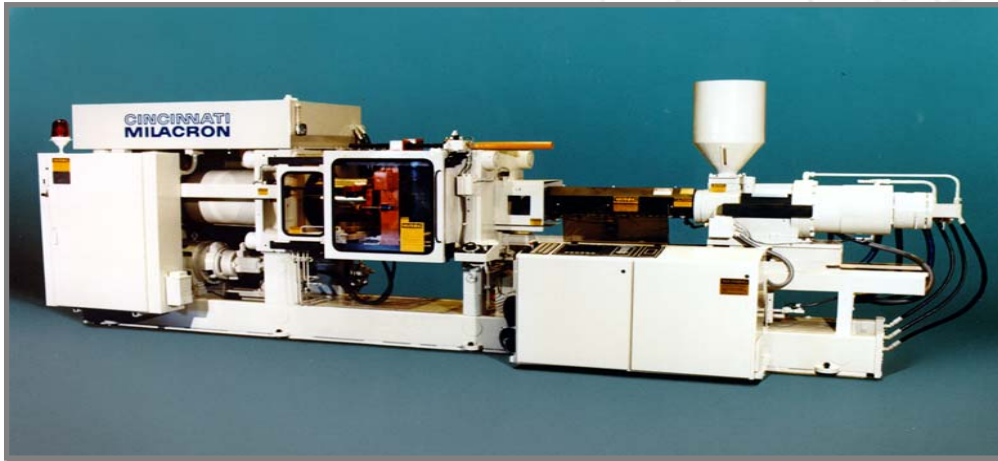


New PD Series Customers

Flight simulator main hydraulic pump
PD-140 pump



NEW PD Pump Potential Applications



HPD Catalog

The Catalog can be accessed at the following Web Pages ...

Parker Distributor Forum

<http://pol/Forums/Room.asp?ID=AHDISTRIBUTOR&Room=AHD1425791231N>

Parker Denison FTP Site

<ftp://www.denisonhydraulics.com/ParkerDenison/AXIAL%20PISTON%20PUMPS%20&%20MOTORS/XL%20Catalog%20LTE-00066-1%20P1.pdf>



DRIVEN Products Program will soon
include the PD pumps

- ✓ Standard Product Configurations
- ✓ Delivery in 5-10 days
- ✓ 5% Lower List Price

FASTER QUIETER STRONGER



DRIVEN
*PARKER HYDRAULIC
PISTON PUMPS*

The logo features the word "DRIVEN" in a large, bold, italicized sans-serif font. Below it, "PARKER HYDRAULIC" and "PISTON PUMPS" are written in a smaller, italicized sans-serif font. The text is set against a background of a stylized, glowing blue and yellow swoosh that curves around the word "DRIVEN". The background of the entire slide is a dark blue and green gradient with faint, technical line drawings of hydraulic components.

Thank you