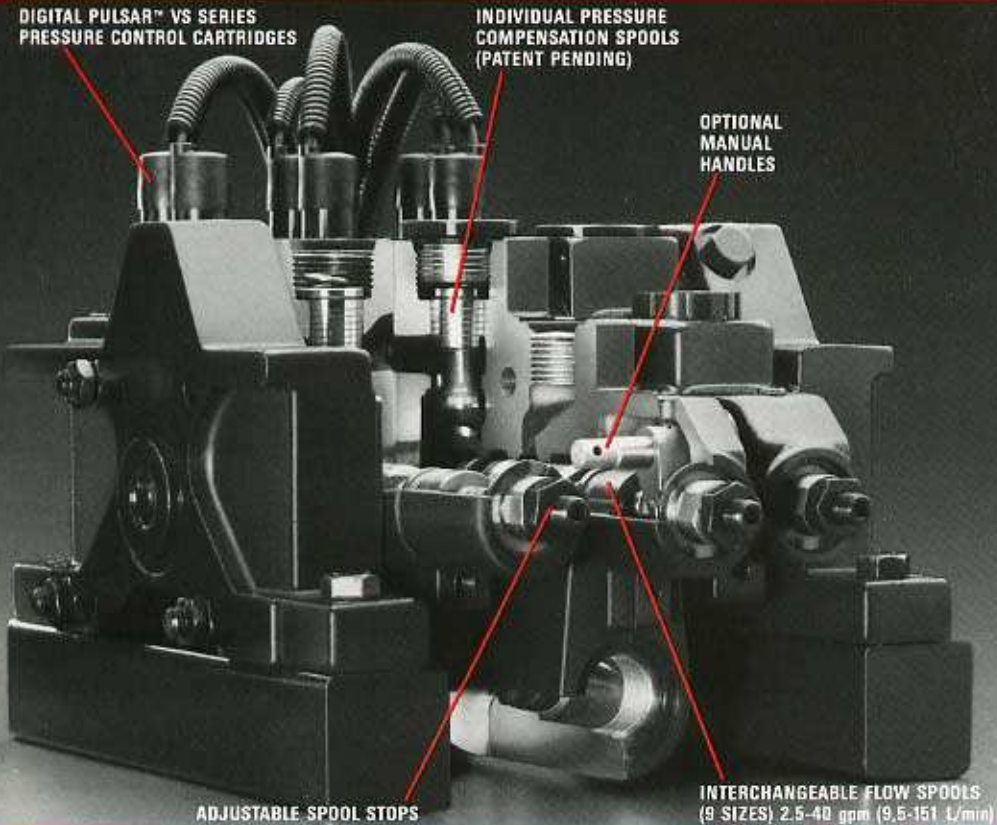


**COMBINING BRAINS AND BRAWN
FOR ACCURACY, FLEXIBILITY AND ECONOMY**

HIGH ACCURACY, LOW COST MAKE THE PULSAR® VP/VPO SERIES YOUR VALVE OF CHOICE



If you're looking for a way to enhance your products' performance without increasing your costs, here's the solution: the Pulsar® VP/VPO Series Proportional control valve from Parker Hannifin Corporation.

This three-position, four-way sectional valve is the only one to offer you all the benefits of digital design — plus unprecedented applications flexibility.

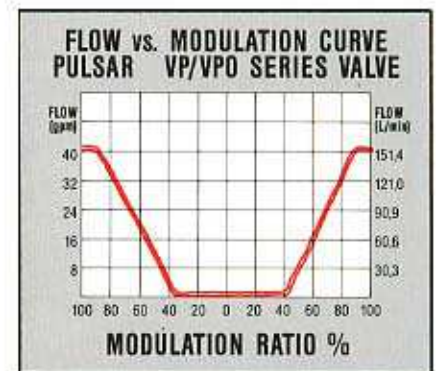
ACCURACY APPROACHING A SERVO VALVE...

The Pulsar® VP/VPO Series delivers low hysteresis... which makes it the only proportional valve to offer you accuracy approaching that of a servo valve.

We back that accuracy up with a control bandwidth exceeding 40%, to make its operation even more precise.

The reason: digital control with micro-processor compatibility.

The result: predictable, accurate performance for your end users.



Precise Control

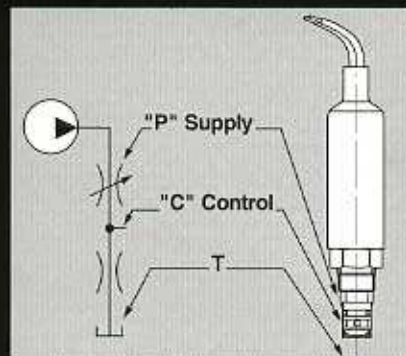
...AT A PRICE BELOW CONVENTIONAL PROPORTIONAL VALVES

Digital technology lets us offer you this level of performance for far less than you'd pay for servos or conventional proportional valves.

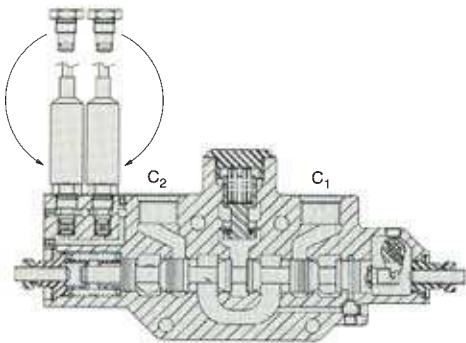
That's because a digital approach is inherently less expensive than analog: It's simpler, employs fewer parts, and is less expensive to manufacture.

Pulsar VP/VPO Series valves are stackable, accommodating up to nine sections, each with interchangeable spools and flow ranges of 2.5 to 40 gpm (9.5 to 151 L/min). Their solenoid cartridges and pilot filters are field replaceable. Maximum coil current draw is just 0.43 amps.

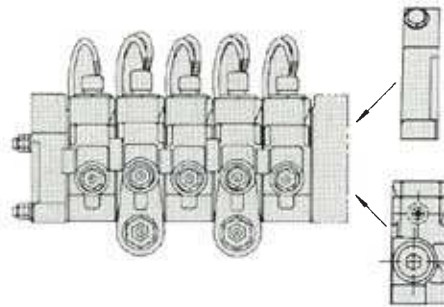
All of which means they will continue saving you (and your customers) money, in terms of lower installation, maintenance and energy costs, and reduced inventory requirements.



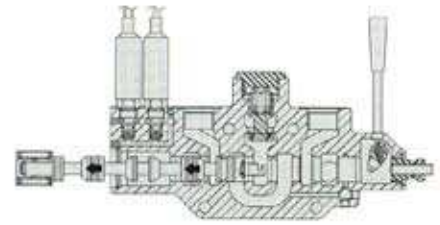
Digital pilot stage dramatically lowers both hysteresis and cost.



Pilot oil operation is achievable simply by installing optional fittings into standard bodies in place of the Pulsar solenoid cartridges.

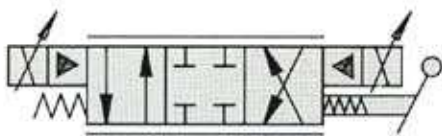


Simply switch inlets to change a stack from a load-sense to open-center application.



Fully interchangeable spools* permit off-the-shelf changes of spools and flows from 2.5 to 40 gpm (9,5 to 151 L/min).

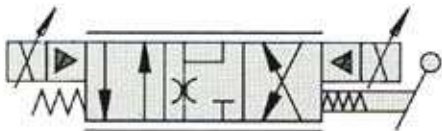
*VP spools cannot be used in VPO work segments and VPO spools cannot be used in VP work segments.



Closed 4-way, 3-position spool provides proportional control in each direction, typically for double-acting cylinders.



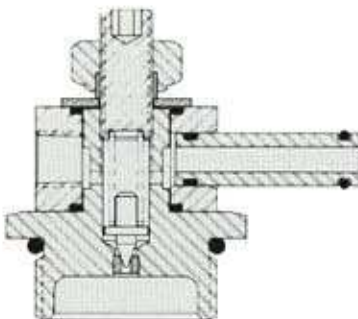
Closed 3-way, 3-position spool provides proportional, bi-directional control of single-acting cylinders. Spool is sized for flow force compensation at high pressure drops.



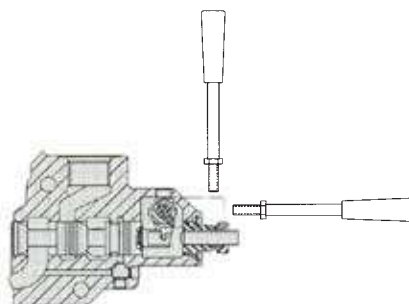
Restricted open 4-way, 3-position spool provides proportional, bi-directional flow control. Permits free actuator movement in neutral, but restricts flow to 1 gpm (3,8 L/min) at a 100 psi (7,0 bar) drop.



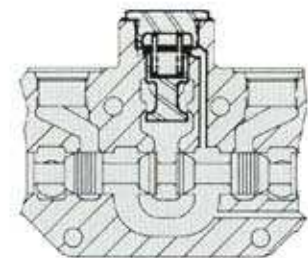
Open (motor) 4-way, 3-position spool provides proportional, bi-directional flow control. Permits free actuator movement in neutral.



Individual pressure limiters limit the supply pressure to the section to a setting less than the system relief pressure, thereby protecting motors and cylinders.

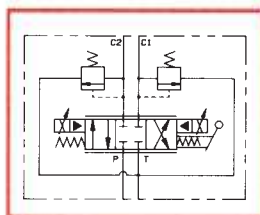


Manual override is standard, provides the user with a direct mechanical link to the main spool.

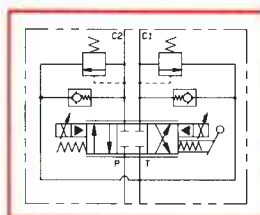


Patented individual pressure compensation is standard on all Pulsar VP/VPO Series sections — particularly useful when many functions will operate simultaneously.

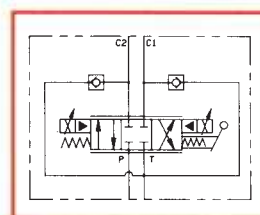
WORKPORT OPTIONS



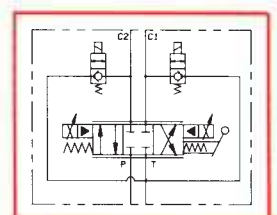
■ **Relief valve**
Closed 4-way, 3-position



■ **Relief with anti-cavitation**
Closed 4-way, 3-position

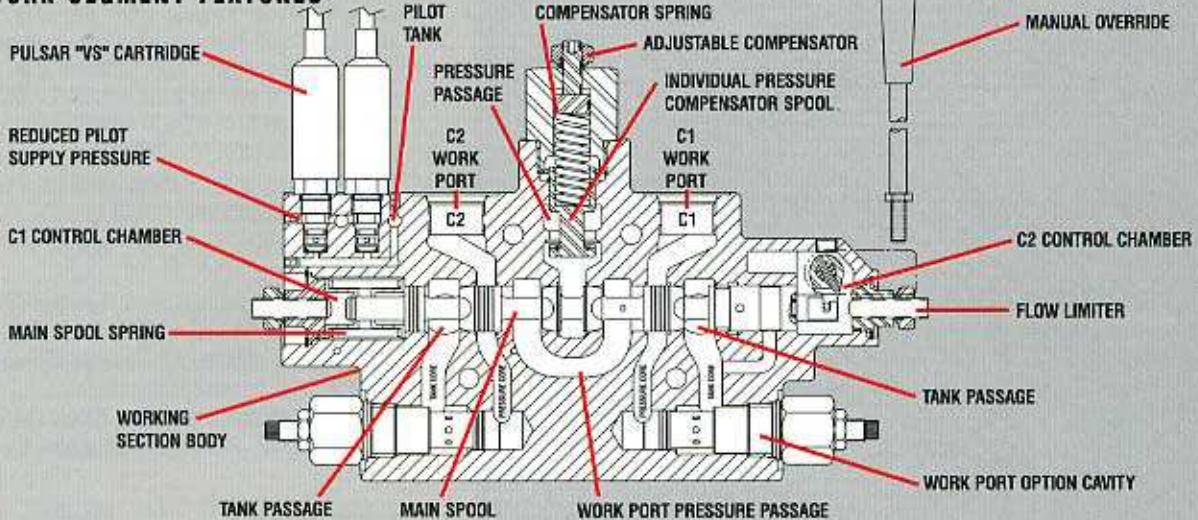


■ **Anti-cavitation check**
Closed 4-way, 3-position



■ **Float segment**
Closed 4-way, 3-position

WORK SEGMENT FEATURES



VP/VPO VALVE SPECIFICATIONS

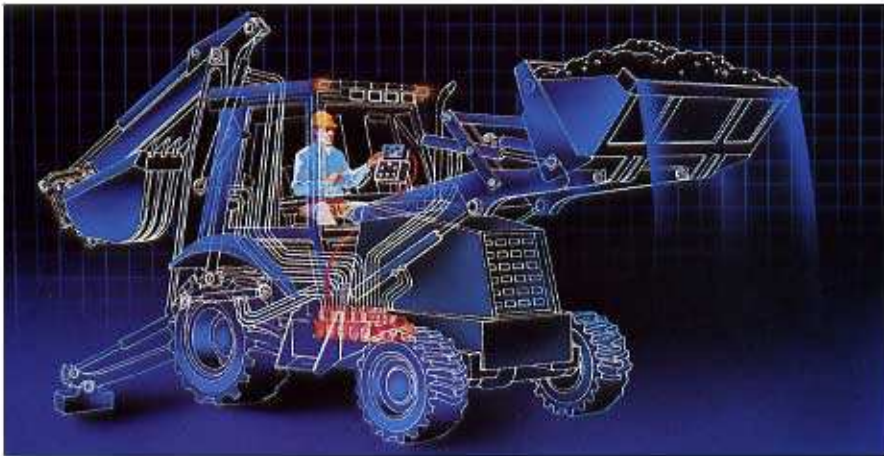
Operating Pressure — Pressure supply port	4000 psi (280,0 bar)
Work ports	5000 psi (350,0 bar)
Tank ports	200 psi (13,8 bar)
Pilot Supply Pressure	200 psi (13,8 bar) (plus tank psi)
Relief Valve Setting	500-3500 psi (34,5-241,4 bar)
Spool Flow Ratings	2.5, 3.5, 5, 7, 10, 14, 20, 28, & 40 gpm (9,5, 13, 19, 26, 38, 53, 76, 106, & 151 L/min)
Spool/Work Port Configuration	2-position, 2-way/open or closed work ports (P → C1) 2-position, 4-way/open or closed work ports (P → C1, C2 → T) 3-position, 3-way/open or closed work ports (P → C1 & C1 → T) 3-position, 4-way/open or closed work ports
Spool Deadband	25% of stroke
Electrical Deadband (from null)	40% ± 10% modulation ratio
Deadband Symmetry	± 5% of modulation ratio
Pressure Limiter Option	500-3500 psi (34,5-241,4 bar)
Neutral Leakage (per section)	0.01 gpm (typical) at 200 psi (13,8 bar) — VP 150 cc/minute @ 1000 psi (69,0 bar) — VPO
Recommended Filtration	SAE Class 5 (17/14-ISO 4406)
Maximum Fluid Temperature	250°F (121°C)
Ambient Temperature Range	-40°F to 180°F (-40°C to 82°C)
Step Response — 0% to 100% (proportional)	600 milliseconds (typical)
0% to 100% (on/off)	300 milliseconds (typical)
100% to 0% (either)	300 milliseconds (typical)
0% to 100% (high response)	80 milliseconds (typical)
100% to 0% (high response)	60 milliseconds (typical)
Options	Section Pressure Limiter, High Response Pilot, BSPP Port Threads
Seal Material	Buna-n
Mounting Attitude	Unrestricted
Weight (approximate)	10 lbs. (4,5 kg) (end cover); 15 lbs. (6,8 kg) (inlet valve) 15 lbs. (6,8 kg) (work segment) — VP; 21.5 lbs. (9,8 kg) — VPO

Standard and Marine Solenoids

Coil Resistance — 12V DC	28.0 ohms at 70°F (21°C)
24V DC	65.0 ohms at 70°F (21°C)
Operating Voltage Range	12 ± 3V DC; 24 ± 3V DC
Current Draw — 12V DC	430 mA at 70°F (21°C)
24V DC	370 mA at 70°F (21°C)
PWM Frequency	33 Hz
Connectors	WeatherPac, Hirschmann, Flying Leads (standard solenoid); Flying Leads (marine solenoid)

Intrinsically Approved Solenoids

Coil Resistance	28.0 ohms at 70°F (21°C)
Rated Operating Voltage	12.0V DC maximum
Current Draw @ 12V DC	430 mA at 70°F (21°C)
PWM Frequency	33 Hz
Connectors	WeatherPac, Electro Brand Immersible Waterproof Connector



EXCEPTIONAL VERSATILITY

Pulsar® VP/VPO valves offer you nine flow ratings in load-sensing, closed-center or open-center modes. And because they're individually pressure compensated, each one can provide complete control even when multiple functions are involved.

This flexibility makes them ideal for a wide range of applications, including:

- **Personnel lifts:** swing, lift, extend and drive control.
- **Spreader trucks:** conveyor, spinner, hoist, plow lift, angle and wing control.
- **Harvesting equipment:** reel speed, header height and auxiliary controls.
- **Material handling vehicles:** boom extend, boom crowd, fork level and frame tilt control.

In fact, the VP/VPO Series' accuracy, economy and flexibility make it ideal for just about any application — including your most challenging closed-loop configurations.

Take, for instance, our ability to consolidate a number of valve assemblies into a single VP/VPO stack. That makes this valve a highly efficient and cost-effective solution for such applications as salt and sand spreader control.

What's more, each stack can be tailored to perform only the number of functions initially required, and later expanded to accommodate more. Consolidated hydraulic plumbing makes such upgrades easy and inexpensive.

COMPREHENSIVE SAFETY FEATURES

The Pulsar VP/VPO Series also offers you a number of important safety features.

For example, individual pressure compensation is standard, to ensure precise control even when a number of functions are being used simultaneously. Applied to a vehicle like a personnel lift, this capability means you can rotate a boom at 2.5 gpm (9,5 L/min), while operating the ground drive function at 20 gpm (76,0 L/min) — with no loss in accuracy.

Another example: Every Pulsar valve gives you unique manual override capability, with a direct mechanical link to the main spool.

Still another: Because all hydraulics are centralized in a single, contamination-resistant stack, Pulsar valves can be placed outside of a vehicle's cab for greater user safety.

HOW TO MAKE PULSAR YOUR VALVE OF CHOICE

In the pages that follow, you should find just about everything you need to know about the remarkable Pulsar VP/VPO Series valve.

But if you'd like to know more about what it can do for your particular application, we'd be happy to help you. Just give us a call today.

WHEN IT COMES TO ADVANCED HYDRAULIC TECHNOLOGY, YOU'VE COME TO THE RIGHT PLACE

As manufacturers around the world look for innovative solutions in hydraulic power, they increasingly look to Parker Hannifin. We've become a leader in combining electronic control and hydraulic technologies for a wide variety of products.

Our family of Pulsar® control products, either as valves or packaged with electronics and sensors as systems, are finding wide application in off-highway, industrial, municipal and automotive markets. And more innovations in Pulsar valve products are on the way.

In fact, where there's a need for more precise control, greater versatility, improved safety and more efficient operation, Parker Hannifin has the solution. As a result, Parker Hannifin is making work easier, safer and more economical for end users around the world.

If you'd like more information about Parker Hannifin's products or services, contact your local Parker Hannifin distributor or call us as **440-366-5200**.

WARNING

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application and review the information concerning the product or system in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met.

The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice.

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