



aerospace  
climate control  
electromechanical  
filtration  
fluid & gas handling  
hydraulics  
**pneumatics**  
process control  
sealing & shielding














# Air Preparation Products

Filters, Regulators, Lubricators,  
& Airline Accessories

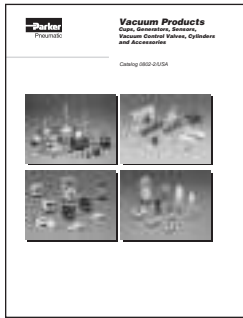
Catalog 0700P-5/USA



ENGINEERING YOUR SUCCESS.

<b>Filters, Regulators, Lubricators</b>		<b>A</b> Filters, Regulators, Lubricators
<b>Proportional Regulators “P3HP”, “P3P-R” &amp; “PAR™-15”</b>		<b>B</b> Proportional Regulators
<b>Flow Controls &amp; Accessories</b>		<b>C</b> Flow Controls and Accessories
<b>Control Panel Products</b> (Human / Machine Dialog)		<b>D</b> Control Panel Products
<b>Sensing</b> (Pneumatic Control Components)		<b>E</b> Sensing
<b>“LV” / “EZ”</b> (Lockout Valves)		<b>F</b> “LV” / “EZ”
<b>Ball Valves / Plug Valves / Drain Cocks</b>		<b>G</b> Ball Valves / Plug Valves
<b>Safety Blow Guns</b>		<b>H</b> Safety Blow Guns
<b>Fittings &amp; Hose</b>		<b>J</b> Fittings and Hose
<b>Fittings &amp; Tubing</b>		<b>K</b> Fittings and Tubing
<b>Quick Couplings</b>		<b>L</b> Quick Couplings
<b>Safety Guide, Offer of Sale</b>		<b>M</b> Model to Page Number

## Other Products from Parker Pneumatic...



Catalog 0600P/USA

### Air Control Valves & Accessories

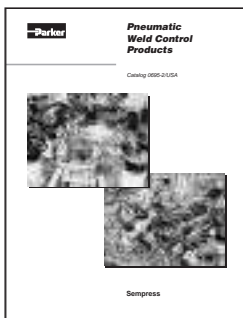
- Solenoid Valves
- Control Panel Products
- Collective Wiring Systems
- Limits & Sensors
- Manual / Mechanical Valves
- Flow Controls & Accessories
- Fittings & Tubing
- Ball Valves / Plug Valves



Catalog 0802/USA

### Vacuum Cups, Vacuum Generators Pressure Sensors

- Versatile Bellows Cup Designs
- Vacuum Generators that Create High Vacuum with Fast Response
- Semi-Conductor Based Pressure Sensors with an Integrated Digital Display, Includes Interfacing User-Programming Capabilities



Catalog 0695/USA

### Weld Control Products

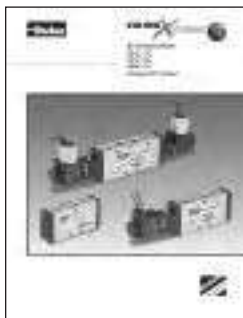
- Cylinders for Manual and Robotic Spot Welding
- Valve Blocks with Rapid Approach for Pre-Stroke and Low-Impact with Electrical feedback for Weld Stroke
- Air and Water Service Units



Catalog FRL-PAI-3/USA

### Prep-Air® I

- Air Preparation Units – FRL's
- Heavy Duty Construction
- 1/8 to 1 Inch Ports Available



Catalog 0677-2/USA

### Viking Xtreme

- ATEX Optional Available
- Global Product
- Designed Specifically for the Transportation Market
- Suitable for Low Temp Applications
- 4-Way Directional Control Valves



Catalog VAL-CYC-3/USA

### Cyclone Series

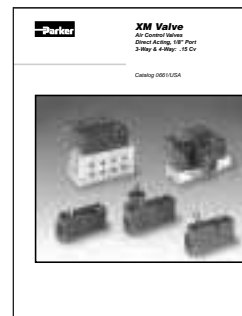
- General Purpose, Stainless Steel or Brass Solenoid Valves
- Used with Air and Inert Liquids and Gasses
- Available in a Variety of Pressure and Flow Ranges
- 1/8 & 1/4 Inch Ports Available



Bulletin 0600-B75

### Pneumatic Solutions for Transportation

- Mobile Pneumatic Cylinders
- Mobile Pneumatic Valves
- Mobile *LOAD-TAMER™*
- Parker Kneeling Module
- Auxiliary Products
- Viking Xtreme



Catalog 0661/USA

### XM Valve

- 3 & 4-Way, Direct Operated Solenoid Valves
- Inline, Subbase or Manifold Mounted
- Continuous Duty
- Balanced Poppet
- 1/8 Inch Ports

**Electronic Only. See [www.parker.com/pneumatics](http://www.parker.com/pneumatics)**

**C/CW/CC Series**

- Manual, Cam, Hand and Foot Operated
- 1/4 and 3/8 Inch Ports Available
- Suitable for Vacuum Service
- Can Be Used as a Diverter
- C/CW – 3-Way, Single Solenoid & Air Pilot, Inline Mounting
- CC – 4-Way, Single & Double Solenoid & Air Pilot, Side Ported Base



**Catalog 0640-E/USA**

**Directional Control Valves**

- Schrader Bellows Pilot, Mini-King, Electroair, Multi-Purpose, Sliding Seals and Brass Poppet Valves



**Catalog VAL-MISC-E/USA**

**Directair Series**

- Direct Pipe Ported & Base Mounted
- 3 & 4-Way Directional Control Valves
- Solenoid & Air Pilot Operated
- 1/8 to 3/8 Inch Ports Available



**Catalog VAL-DA-E/USA**

**HHB Series**

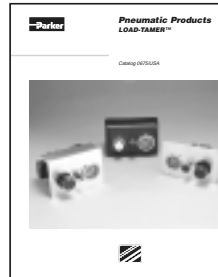
- Heavy Duty, 4-Way Directional Control Valves
- Shur-shift chamber "Accumulator" Assures Positive Shifting Even at Low Pressure
- Suitable for Non-Lube Service
- Subbase or Manifold Mounted
- 3/8, 1/2 or 1 Inch Ports Available



**Catalog 0665-E/USA**

**Load-Tamer™**

- Pressure Control Panels Designed Specifically for Vehicular Air Suspension Applications
- Various Control Options including Electrical Switch, Toggle Switch, Push-Pull or External Remote Pilot
- 1/8 and 1/4 Inch Ports Available



**Catalog 0675/USA**

**Valvair Sprint Series**

- Heavy Duty, 4-Way Directional Control Valves
- 1/4 & 3/8 Inch Ports Available
- Dual O-Ring Design for Non-Lube, Dirty Environments
- Sandwich Regulators and Flow Controls Available



**Catalog VAL-VS-E/USA**

**Speed King SK200 Series**

- Heavy Duty, 4-Way Directional Control Valves
- Base Mounted and Direct Pipe Ported
- 1/4 thru 1-1/4 Inch Ports Available
- Ideal for Non-Lube & Harsh Environments



**Catalog VAL-SK-E/USA**

**T, GG & SS Series**

- Compact Inline, for Easy Mounting
- 3 & 4-Way Directional Control Valves



**Catalog 0620-E/USA**

**Valvair Manual Spool Valves**

- Air Pilot, Manual & Mechanically Operated
- 1/4" to 1" NPTF Ports (to 1-1/2" in lock-out)
- Interchangeable Operators
- Interchangeable End Sections
- Service without Disturbing Plumbing
- Dual Mounting Brackets on Most Models



**Catalog VAL-MO-E/USA**

**AIR PREPARATION UNITS**

Symbol	Description
	FILTER / SEPARATOR with manual drain
	FILTER / SEPARATOR with automatic drain
	OIL REMOVAL FILTER
	AUTOMATIC DRAIN
	LUBRICATOR less drain
	LUBRICATOR with manual drain
	LUBRICATOR with automatic filling
	AIR LINE PRESSURE REGULATOR adjustable, relieving
	AIR LINE PRESSURE REGULATOR pilot controlled, relieving
	FILTER / REGULATOR (piggyback) Manual Drain Relieving (With Gauge)
	FILTER / REGULATOR (piggyback) Auto Drain Relieving
	AIR LINE COMBO F-R-L simplified

**PNEUMATIC VALVES**

Symbol	Description
	CHECK
	FLOW CONTROL
	RELIEF VALVE

**PNEUMATIC VALVES (Cont'd)**

Symbol	Description
	2-POSITION 2-WAY
	2-POSITION 3-WAY
	2-POSITION 4-WAY
	2-POSITION, 4-WAY 5-PORTED
	3-POSITION, 4-WAY, APB ports closed, center pos.
	3-POSITION, 4-WAY, CE 5-PORTED cylinder ports open to exhaust in center position
	3-POSITION, 4-WAY, PC 5-PORTED pressure ports open to exhaust in center position
	QUICK EXHAUST
	SHUTTLE

**VALVE ACTUATORS**

Symbol	Description
	MANUAL general symbol
	PUSH BUTTON
	LEVER
	PEDAL OR TREADLE
	MECHANICAL cam, toggle, etc.
	SPRING
	DETENT line indicates which detent is in use

**VALVE ACTUATORS (Cont'd)**

Symbol	Description
	SOLENOID
	INTERNAL PILOT SUPPLY
	REMOTE PILOT SUPPLY complete simplified
	AND / OR COMPOSITE solenoid and pilot or manual override
	AND / OR COMPOSITE solenoid and pilot or manual override and pilot

**LINES AND FUNCTIONS**

Symbol	Description
	solid line - MAIN LINE
	dashed line - PILOT LINE
	dotted line - EXHAUST OR DRAIN LINE
	center line - ENCLOSURE OUTLINE
	LINES CROSSING (90° intersection not necessary)
	LINES JOINING (90° intersection not necessary)
	LINES JOINING
	FLOW DIRECTION hydraulic medium
	FLOW DIRECTION gaseous medium
	ENERGY SOURCE
	LINE WITH FIXED RESTRICTION
	LINE WITH ADJUSTABLE RESTRICTION
	FLEXIBLE LINE
	PLUGGED PORT, TEST STATION, POWER TAKE-OFF
	QUICK DISCONNECT WITHOUT CHECKS connected disconnected
	QUICK DISCONNECT WITH CHECKS connected disconnected
	QUICK DISCONNECT WITH ONE CHECK connected disconnected

**Technical Information**

**Saving Money and Space by Sizing Your Valves Properly**

This catalog gives you a flow rating (Cv) for each valve in the Parker Hannifin line. You can “plug” your requirements into the following simple formula, and determine the Cv needed to do the job. By not oversizing, you’ll save space and money, and you’ll ensure the valve you select will do the job.

Converting the Job Requirements Into Cv  
(Capacity Coefficient).

$$Cv = \frac{\text{Cylinder Area (Sq. In.)} \times \text{Stroke (In.)} \times \text{Compression Factor (Table 2)} \times \text{“A” (Table 2)}}{\text{(See Table 1)} \times \text{Stroke Time (sec.)} \times 28.8}$$

Let’s work through an example:

We want to extend a 3 1/4" bore cylinder which has a 12" stroke in one second, and we have a supply pressure of 80 PSI to do the work. Here’s what we know:

- Cylinder Area for a 3-1/4" Bore, from Table 1 ..... 8.30 sq. in.
- Cylinder Stroke ..... 12 in.
- Stroke Time Required in Seconds ..... 1 sec.
- Compression Factor at 80 PSI, from Table 2 ..... 6.4
- “A” Constant for 80 PSI, from Table 2 ..... .048

Substituting in the formula, we have:

$$Cv = \frac{8.30 \times 12 \times 6.4 \times .048}{1 \times 28.8} = 1.06$$

Any valve, therefore, which has a Cv of *at least* 1.06, will extend our cylinder the specified distance in the required time.

**Choosing the Valve “Series”**

Your next step is to choose a basic valve design to do the job. For a quick guide to valve designs, see Table 3.

Having selected the basic valve design, consult the Capacity Coefficient (Cv) tables which describe the individual valve capacities.

**Selecting the Valve Model, Options and Accessories**

Having determined Cv, series, port size, flow-path configuration (pre-determined by circuit design), and actuation method, you’re ready to choose the *exact* valve model number.

Read the pertinent catalog pages; note the exact model numbers, options and accessories you want. Then phone or write your Parker Hannifin air valve distributor. They will give you prompt, accurate service.

**Note:** Need circuit design help? Contact your local Parker Hannifin distributor. They are backed up by our regional Sales Engineers and offices. Between them, you’ll find answers to all of your questions.

**Table 1**

**Effective Square-Inch Areas for Standard-Bore-Size Cylinders**

Bore Size	Cylinder Area (Sq. In.)	Bore Size	Cylinder Area (Sq. In.)
3/4"	.44	4"	12.57
1"	.79	4-1/2"	15.90
1-1/8"	.99	5"	19.64
1-1/4"	1.23	6"	28.27
1-1/2"	1.77	7"	38.48
1-3/4"	2.41	8"	50.27
2"	3.14	10"	78.54
2-1/2"	4.91	12"	113.10
3-1/4"	8.30	14"	153.94
3-5/8"	10.32		

**Table 2  
Compression Factors and “A” Constants**

Inlet Pressure (PSIG)	Compression Factor	“A” Constants for Various Pressure Drop*		
		2 PSI ΔP	5 PSI ΔP	10 PSI ΔP
10	1.6	.152	.103	—
20	2.3	.126	.084	.065
30	3.0	.111	.073	.055
40	3.7	.100	.065	.048
50	4.4	.091	.059	.044
60	5.1	.085	.055	.040
70	5.7	.079	.051	.037
80	6.4	.075	.048	.035
90	7.1	.071	.046	.033
100	7.8	.068	.044	.032
110	8.5	.065	.042	.030
120	9.2	.063	.040	.029
130	9.9	.061	.039	.028
140	10.6	.058	.037	.027
150	11.2	.057	.036	.026
160	11.9	.055	.035	.025
170	12.6	.053	.034	.024
180	13.3	.052	.033	.024
190	14.0	.051	.032	.023
200	14.7	.050	.032	.023

**Note:** Use “A” constant at 5 PSI ΔP for most applications. On very critical applications, use “A” at 2 PSI ΔP. You will find in many cases, a 10 PSI ΔP is not detrimental, and can save money and mounting space.

\* Tabulated values are the solution of  $\frac{1}{22.48} \sqrt{\frac{GT}{(P_1 - P_2) P_2}}$  where T is for 68°F and G = 1 for Air.

**Table 3**

**Characteristics of the Major Valve Designs**

<p><b>A. Poppet</b> 3-Way and 4-Way</p>	<ol style="list-style-type: none"> <li>High flow capacities</li> <li>Minimum lubrication requirements</li> <li>Fast response</li> <li>Self-cleaning poppet seats</li> <li>Pressures of 15 to 150 PSIG (modifications for vacuum to 250 PSIG)</li> </ol>
<p><b>B. Spool Valves (WCS)</b> 3-Way and 4-Way</p>	<ol style="list-style-type: none"> <li>Low friction</li> <li>Lower operating pressures</li> <li>Fast response</li> <li>Less wear</li> <li>Long Cycle Life - Under pressure, radial expansion of the seal occurs to maintain sealing contact with the valve bore</li> <li>Non-Lube Service - No lubrication required for continuous valve shifting</li> <li>Bi-Directional Spool Seals - Common spool used for any pressure, including vacuum</li> </ol>
<p><b>C. Packed Bore</b> 4-Way</p>	<ol style="list-style-type: none"> <li>Wide range of flow capacities</li> <li>Wide range of flow-path configurations</li> <li>Pilot-operated models available</li> <li>Pressures of vacuum to 150 PSIG</li> </ol>
<p><b>D. Rotary Or Reciprocating Disc</b> 4-Way, manually operated</p>	<ol style="list-style-type: none"> <li>Inexpensive</li> <li>Versatility in manual actuation</li> </ol>

**Cv – Capacity Coefficients** (sometimes called Flow Factors). Each flow path through the valve has its own Cv value. All Cv ratings for each valve cataloged on this page are listed on the front side of this sheet.

$$Cv = \frac{Q}{22.48} \sqrt{\frac{GT}{(P_1 - P_2) P_2}}$$

Q = Flow in Standard Cubic Feet per minute (14.7 PSIA at 60°F)  
 P<sub>1</sub> = Inlet Absolute Pressure (gauge pressure + 14.7)  
 P<sub>2</sub> = Outlet Absolute Pressure (gauge pressure + 14.7)  
 Note: P<sub>2</sub> must be greater than .53 x P<sub>1</sub>  
 G = Specific Gravity of flowing medium (Air, G = 1)  
 T = Absolute Temperature of Air (460 + °F)

Cv = Q x “A” (Table 2)



**5-Year Extended Warranty**

# The Parker 5-Year Extended Warranty

**P**arker Hannifin Corporation will extend its warranty on all pneumatic components to sixty (60) months providing they are correctly installed and protected by Parker pneumatic filters which are properly maintained. Components covered by this warranty include all cylinders, valves and pneumatic automation components manufactured by Parker in any of our global facilities. This warranty covers our components anywhere in the world you may ship your equipment.

Parker's obligation under this warranty is limited to the replacement or repair of any failed components. The buyer understands that the seller will not be liable for any other costs or damages.

The buyers of quality Parker components and filters benefit by having ONE source for all pneumatic needs - Parker.



Handwritten signature of Roger Sherrard.

**Roger Sherrard**  
President  
Automation Group



### Section A

[www.parker.com/pneu/frl](http://www.parker.com/pneu/frl)



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Air Line Lubricators, Mist .....	A160-A183

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**BOLD ITEMS ARE MOST POPULAR.**





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