



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



# Pneumatic Weld Control Products

Catalog PCD2005-3



ENGINEERING YOUR SUCCESS.

## **Parker Means Components, Systems and Partnerships that Work**

Parker is committed to offering the automotive industry the most comprehensive array of motion control products and technologies. We are continuously improving the performance and value of our products to meet the current and future needs of the global automotive industry.

Parker's auto manufacturing focus includes body and assembly, powertrain, metal stamping, components and trim.

## **Industry Leader**

No one can match Parker's expertise in supplying motion control components and complete systems. For more than half a century, automotive manufacturers have trusted Parker with their motion control needs.

## **Parker in Automobile Manufacturing**

The specification list of Parker Products for the automotive Industry - Bulletin SAE 1 - lists 290 automotive plants around the world. This is a result of the technical and commercial competence we provide through close relationships with purchasers, engineers, project managers and shop floor personnel of the industry. Performance, efficiency, economy and reliability of Parker products make us the preferred source.

## **Parker partnership benefits include:**

- Simultaneous engineering service, standardization, of components reduces part numbers, and provides easy maintenance
- Added value through subassemblies, systems and kits
- 24 hour service with drop shipping
- Low watt valve technology lowers energy and maintenance costs
- Total systems and experienced project management support

We help to reduce your inventory, procurement costs, machine down time and to find solutions for environmental issues.

### **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 including consequences of any failure, 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.

## **Offer of Sale**

The items described in this document are hereby offered for sale by Parker Hannifin Corporation, its subsidiaries or its authorized distributors. This offer and its acceptance are governed by the provisions stated on the separate page of this document entitled "Offer of Sale".

**Table of Contents**

General information .....	Inside Cover
Features	
The Parker “Low Impact” Effect .....	2
The Parker “Rapid Approach” Effect .....	2
Other Options .....	3
Program Overview .....	3
Description & Operation – Spotwelding Units .....	4-5
Installation & Setup Instructions .....	6-7
Pneumatic System with Low Impact and Rapid Approach Control .....	8
Model Number Index	
B6 Namur valves .....	9
ISO Size 2 Cylinder & Base Plate Mountable .....	10
ISO Size 2 Manifold Mountable .....	11
5599-1 & 5599-2 .....	12
Replacement Components .....	13
Dimensions	
B6 Series .....	14
WH ISO Size 2 Cylinder & Base Plate Mountable .....	15
WP ISO Size 2 Cylinder & Base Plate Mountable .....	16
WH ISO Size 2 Manifold Mountable .....	17
WP ISO Size 2 Manifold Mountable .....	17
DH Series Pneumatic Spot Welding Cylinder .....	18-19
WB Series Waterblock .....	20-21
Switch Electrical Specifications .....	22
Functions .....	23
Electronic Proportional Regulator .....	24-27
Air Valves & Cylinders .....	28-29
Air Preparation Products .....	30-31
Weld Fittings and Tubing	
Imperial Fittings .....	32
Metric Fittings .....	33
Tubing & Hose .....	34-35
Maintenance, Troubleshooting & Warnings .....	36
Safety Guide .....	38-39
Offer of Sale .....	40

**Features**

Over the last decades we have developed and manufactured, in close collaboration with the major car manufacturers, a number of specific products for spot welding applications.

Parker Pneumatic is part of the Automation Group of the Parker Hannifin Corp. Cleveland, Ohio, USA. Parker Hannifin is the world leader in Fluid Power technology.

**The Parker “Low-Impact” Effect**

A specific feature in Parker Pneumatic spot weld cylinder is the “Low-Impact” effect.

This is reached by means of an integrated pneumatic control which ensures that the electrodes are touching the sheet metal with low force and speed (kinetic energy) and that immediately after touch down of the electrodes the press-force is built-up instantly.

This gives following advantages:

- Less noise because the electrodes only touch the metal sheets softly.
- No bouncing of the electrodes on the metal sheets, hence the spot welding can start immediately after the first contact.
- Less wear on electrodes (measured lifetime-improvement of 30%) and sensitive electrode-caps (measured lifetime improvement of 200%).
- No damaging of the metal sheets. Additional polishing can be avoided.
- Less shocking movements in the welding gun and between electrodes
- On robot-guns: water-hoses and electric cabling show less wear.
- On manual guns: less physical stress for the operator
- Less sparking because both metal sheets are pressed together properly and immediately after first contact.
- Less welding points required because the quality of the weld is improved.
- Lower welding current can be used.
- An electrical feedback signal is available when 75% of the clamping force has been reached.

One of the features of the Parker “Low-Impact” system is that it is stroke-independent. This means that the system works on every position of the cylinder. The nominal stroke of the cylinder should be longer than the maximum required stroke.

**The Parker “Rapid-Approach” Effect**

Another specific feature is the “Rapid-Approach” effect. This allows, especially at welding guns with a big opening between both electrodes, for high speed in the beginning of the movement. At a certain point this speed is reduced after which the normal movement follows with the “Low-Impact” feature as described above. Also the “Rapid-Approach” feature is stroke-independent.

This feature provides advantages when longer strokes are to be made, e.g. on C-type of welding guns with a stroke > 60 mm (2.36”).

**Other Options**

- A Built-in P/E Switch.  
This outputs an electric signal as soon as the cylinder reaches 75% of its full force.  
This signal indicates that after a very short squeeze-time or immediately welding can start.
- Completely Isolated Cylinder  
This prevents both electrodes from getting a short-circuit through the piston rod, piston and housing of the cylinder.
- Non-rotating Piston Rod.  
This prevents that the electrode connected to the piston rod does not get out of position and damages the electric cabling and water hoses.

**Program Overview**

The weld system consists of the following product options:

1. Pneumatic Cylinders
  - Single Stroke
  - Double Stroke
  - With Pre-stroke
  - With Weld Stroke
2. Valve Blocks
3. Air and Water Treatment Units
4. Proportional Valves

Parker can combine these products into one system that features both “Low-Impact” and “Rapid-Approach” into your application. We would like to get the opportunity to explain to you how this can be done for your application.

**General Description of Spotwelding Units**

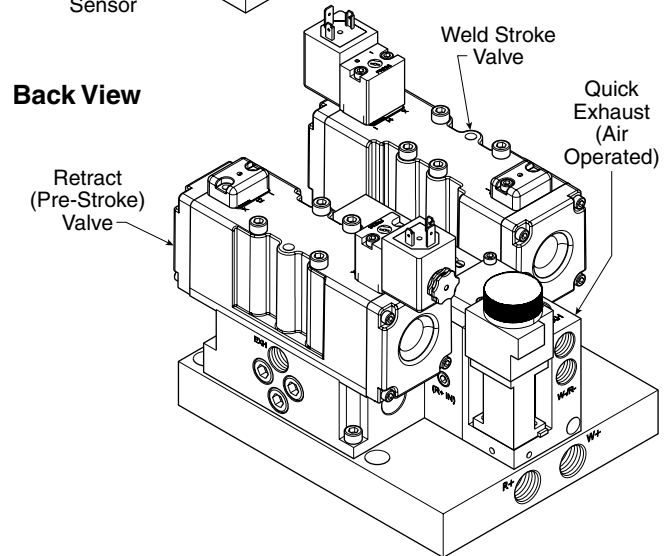
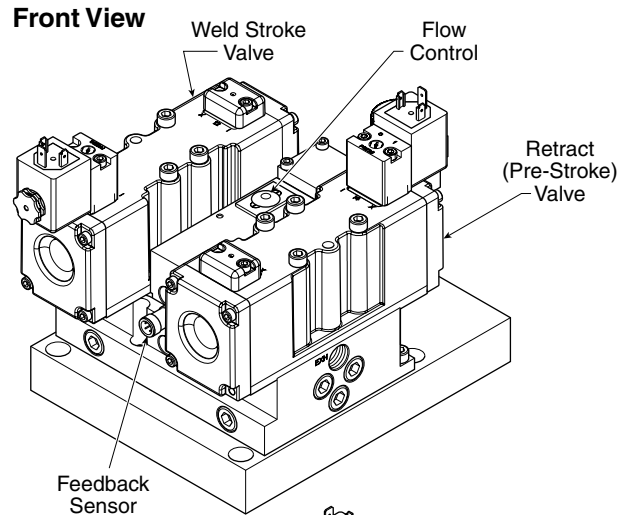
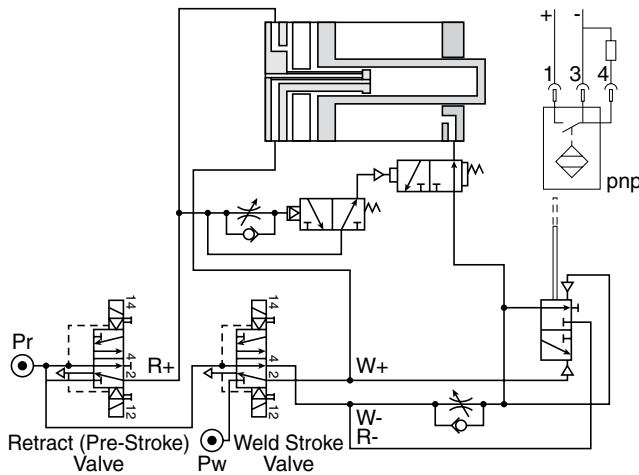
The spotwelding system is an integrated pneumatic controlled circuit that is specifically designed to increase production throughput, while improving weld quality and reducing decibel noise level.

Each unit consists of 2 independent, 2 position, directional control valves for retract (pre-stroke) and weld stroke. Each valve is dual pressure, with single solenoid / spring assist return or double solenoid available. Also included with each unit is a proportional / quick dump valve, a feedback sensor for initiating the welding process, and a flow control for metering the impact speed of the weld tips.

**ANSI (3 Ported Cylinder Option)**

**Inductive Sensor / Connection: Turck  
Connection Diagram Inductive Sensor**

- 1 Brown +24 VDC Power Supply
- 3 Blue 0 V Power Supply
- 4 Black Switch Wire



**General Operation of  
Spotwelding Units – 3 ported guns**

Spotwelding systems control both retract (pre-stroke) and weld stroke motions. When a 3 ported cylinder is used, the control block functions as follows:

1. The pre-stroke (retract) valve is energized, allowing the weld cylinder to extend under full line pressure by actuating the quick exhaust valve and moving to its predetermined position prior to welding.
2. The quick exhaust valve time is adjusted by the knob on top of the unit. To start, the white line on the dial is set at top dead center. Turn knob clockwise to set quick exhaust valve open time. Continuing to turn knob clockwise will lengthen time until it reaches a full 360° rotation, which covers the complete timing range.
3. The weld stroke valve is then energized using a selected weld schedule pressure. The closure speed of the weld tips is controlled by the use of an adjustable flow control, thus creating “low impact”.
4. Immediately following weld tip contact with the sheet metal, two actions take place.

- a. The proportional / quick dump valve that senses pressure allows the front end of the cylinder to exhaust (by-passing the flow control), providing weld schedule pressure instantly.
- b. The proportional / quick dump valve also actuates a feedback sensor to start the weld cycle.
5. Once the weld cycle is complete, the weld stroke valve is de-energized, allowing the weld tips to open under full pressure.
6. The retract (pre-stroke) valve is then de-energized, allowing the weld cylinder to open completely under full line pressure.

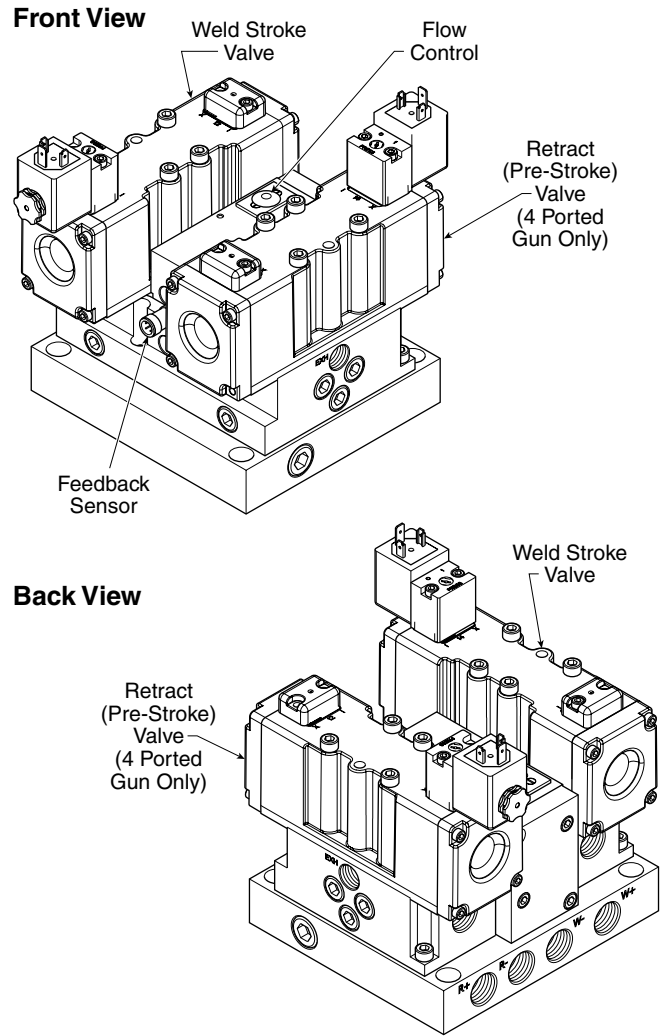
**Note:** Dual pressure is provided to the control block. Line (high) pressure is used for both retract stroke and weld stroke open. Weld schedule pressure is used for weld stroke close. Dual pressure provides for weld tips to be closed for tip dressing using any pressures available, from as low as 5 PSIG to maximum line pressure.

**General Operation of  
Spotwelding Units – 2 and 4 ported guns**

Spotwelding systems control both retract (pre-stroke) and weld stroke motions. When a 4 ported cylinder is used, the control block functions as follows:

1. The retract (pre-stroke) valve is energized, allowing the weld cylinder to extend under full line pressure and moving to its predetermined position prior to welding.
2. The weld stroke valve is then energized using a selected weld schedule pressure. The closure speed of the weld tips is controlled by the use of an adjustable flow control, thus creating “low impact”.
3. Immediately following weld tip contact with the sheet metal, two actions take place.
  - a. The proportional / quick dump valve that senses pressure allows the front end of the cylinder to exhaust (by-passing the flow control), providing weld schedule pressure instantly.
  - b. The proportional / quick dump valve also actuates a feedback sensor to start the weld cycle.
4. Once the weld cycle is complete, the weld stroke valve is de-energized, allowing the weld tips to open under full pressure.
5. The retract (pre-stroke) valve is then de-energized, allowing the weld cylinder to open completely under full line pressure.

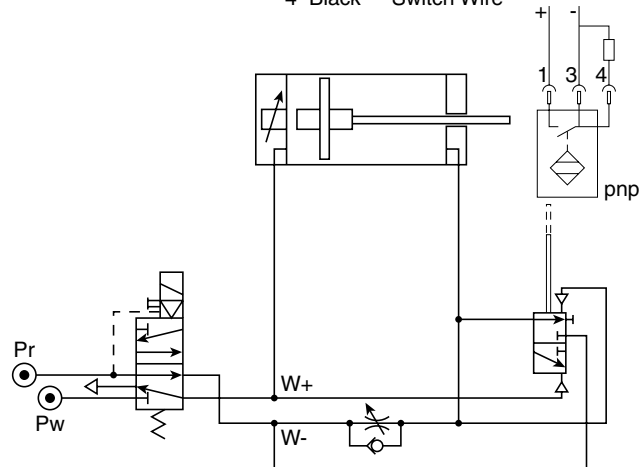
**Note:** Dual pressure is provided to the control block. Line (high) pressure is used for both retract stroke and weld stroke open. Weld schedule pressure is used for weld stroke close. Dual pressure provides for weld tips to be closed for tip dressing using any pressures available, from as low as 5 PSIG to maximum line pressure. 2 ported guns perform the same steps as above, except that the retract (pre-stroke) portion of the cylinder does not exist. Steps 2–4 only apply.



**ANSI (2 Ported Cylinder Option)**

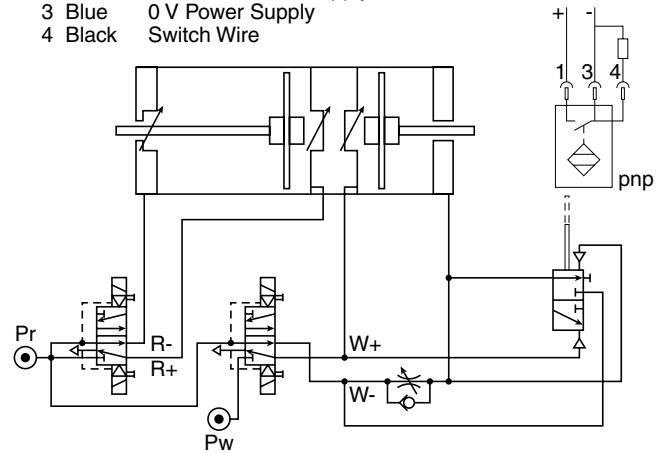
**Inductive Sensor / Connection: Turck  
Connection Diagram Inductive Sensor**

- 1 Brown +24 VDC Power Supply
- 3 Blue 0 V Power Supply
- 4 Black Switch Wire



**Inductive Sensor / Connection: Turck  
Connection Diagram Inductive Sensor**

- 1 Brown +24 VDC Power Supply
- 3 Blue 0 V Power Supply
- 4 Black Switch Wire



## Installation – Air and Electrical

### A. Installing Weld Block with Existing Equipment

1. Shut off air supply to weld gun and turn power off to cell.
2. Disconnect air hoses from existing weld block ports. This will vary depending on weld gun type, and whether the existing weld block is single or dual pressure.  
 Note: If the current weld block is mounted directly to the cylinder, then only the inlet port hoses will be disconnected.
3. Disconnect solenoid connectors from valves. Be sure to note which connectors are being used for pre-stroke (retract) valves and weld stroke valves.
4. Remove current weld block from gun.

### B. Installing Weld Block on New Equipment

5. Mount weld block spotwelding system to robot using (4) M8 screws and torque to 130 to 145 in. lbs (14.7 to 16.4 Nm).
6. Connect all air hoses to weld block (see schematic on pages 2 or 3).  
 Note: An additional air hose may be necessary for the inlet, since this unit is dual pressure. If so, connect the already existing hose to the Pw port (pressure weld). This hose should be supplying scheduled pressures from a proportional regulator. Connect the additional hose before the proportional regulator using a T-fitting so that full line pressure is being used. This hose should be connected to the Pr port (pressure retract).
7. Connect the solenoid cables to the proper valves. Connect an M12 sensor cable to the feedback sensor on the unit. The other end of this cable should be wired to the PLC controller.

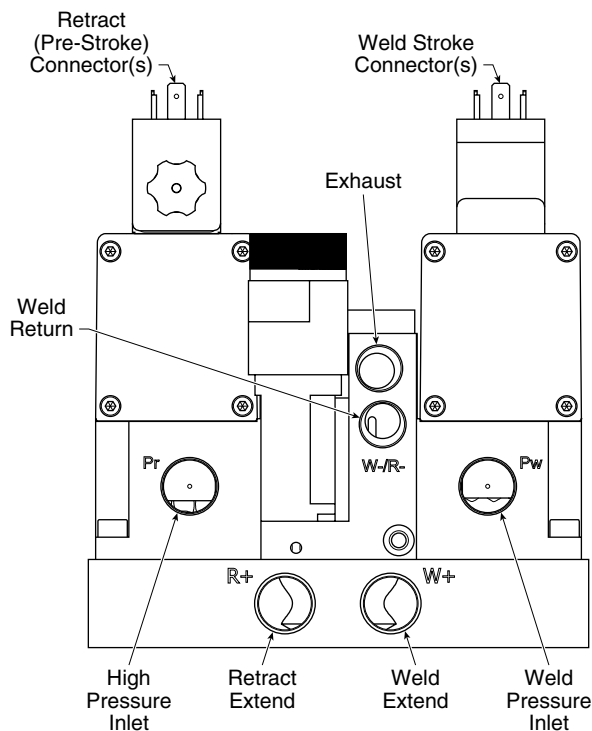
8. Turn air supply and power on.
9. Check for air leaks. The weld cylinder should be in the home position (completely open). If not, check that all air hoses are connected to the correct ports. Verify that all solenoids are de-energized, and valve overrides are unactuated. Once this is done, verify the function of the weld block, by actuating the weld block valves using the manual overrides. Press and hold the retract (pre-stroke) valve manual override. The weld cylinder should move to the weld stroke position. Press and hold the weld stroke valve manual override [still holding the retract (pre-stroke) override]. The weld cylinder should now close. Release the weld stroke override and the retract (pre-stroke) override. The weld cylinder will return to home position.

**Note:** The weld stroke portion of the cylinder will move slower than the pre-stroke. This is due to the regulated pressure being used, as well as the flow control. Adjusting the speed of the cylinder will be covered in the Setup Instructions. Repeat this process, now energizing the solenoids. The cylinder should perform the same. If not, verify that the solenoid connectors are located on the proper valves. Once the unit has been properly installed, the following setup procedure can be used to ensure that the Parker weld system is used to its fullest potential.

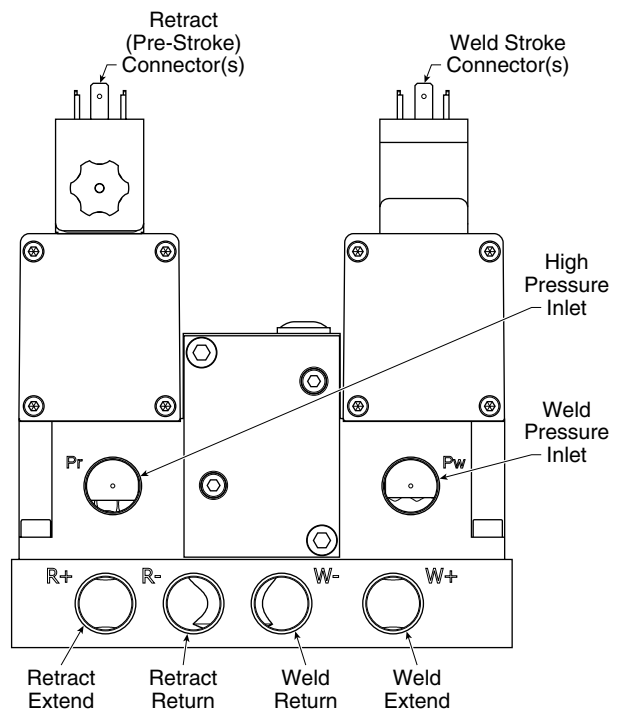
### Wiring

Refer to valve Instruction Sheet for proper wiring connections. Available at: [www.parker.com/pneumatic](http://www.parker.com/pneumatic) (see B6 and ISO size 2 valves Installation and Service Instructions).

#### 3 Ported Installation



#### 4 Ported Installation





**Setup**

Below are the step by step setup procedures for properly setting the flow control and feedback sensor.

**How to Set the Flow Control Properly**

Begin by turning the flow control clockwise until it stops. If this is done properly, then the weld stroke should move extremely slow or not at all.

**Note:** As stated in the Installation procedure, the pre-stroke valve must be actuated prior to the weld stroke valve in order for the weld cylinder to move correctly.

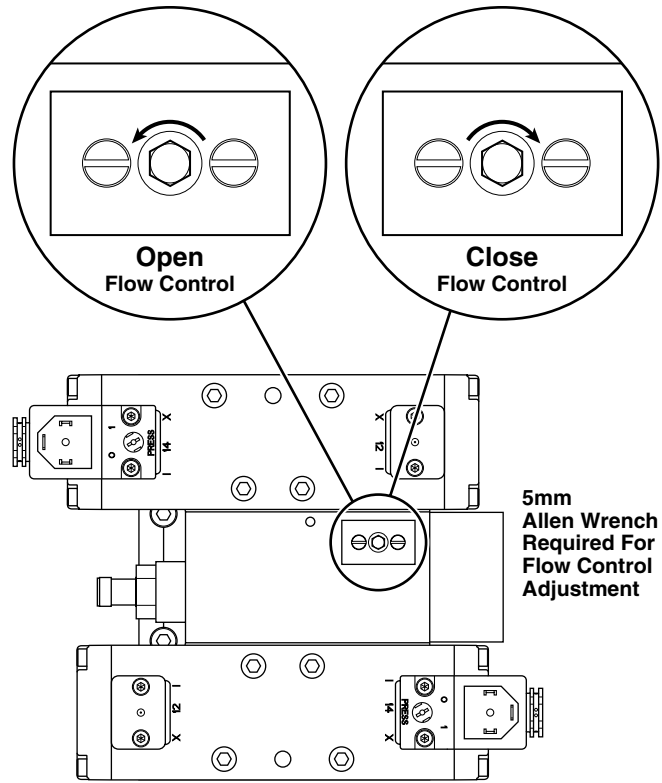
Slowly (1/4 to 1/2 turn at a time) begin to open the flow control by turning counterclockwise. The weld tips should now close upon actuation of the valves. At this point, you should begin to hear a second exhaust coming from the weld unit once the weld tips have made contact. This second exhaust is the air from the front side of the cylinder bypassing the flow control. As you continue to speed up the weld stroke by turning the flow control, the delay between the tips closing and the second exhaust will get shorter. Also, check the feedback sensor while this is occurring. The indicator light from the sensor should illuminate when you hear the second exhaust. This is the key to determining the proper setting of the flow control. The optimum setting for each weld block will be different for each gun, based on the bore size and weld stroke used. Continue to open the flow control, allowing the weld tips to close faster until:

1. You have reached an impact speed you are happy with.
2. You have reached an acceptable decibel noise level.
3. You see that the second exhaust and feedback sensor illumination occur "just" as the weld tips contact.

**Note:** This is a judgement call. If the flow control is set too far open, then the weld block could result in welding misfire causing the gun to fire before the weld tips close fully. The reason this would occur is because the flow control has been opened so much that all the air on the front side of the cylinder has exhausted before the tips fully close, thus negating the "low impact" benefit of the system. To guarantee proper performance, find the setting where the exhaust / illumination occurs "just" as the tips close, and then adjust the flow control 1/2 turn clockwise.

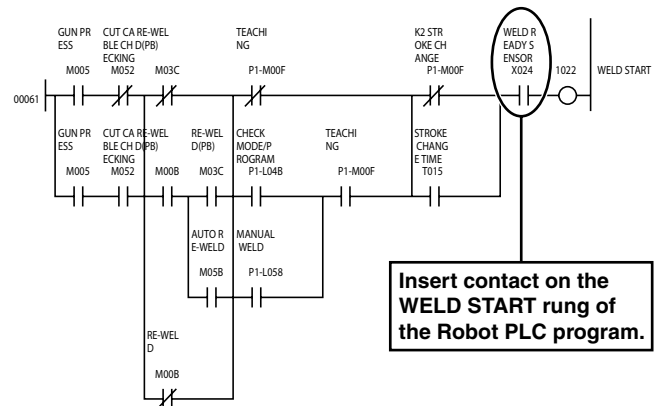
**How to Set the Feedback Sensor Properly**

The purpose of the feedback sensor is to provide an input signal at the exact moment that full weld pressure has been obtained at the weld tips. Traditionally this is achieved using squeeze time. An experienced weld / electrical engineer is needed to place the feedback sensor input into the PLC program. The location of this input will vary depending on the PLC manufacturer. Consult the robot manufacturer for the proper input location.



**5mm  
Allen Wrench  
Required For  
Flow Control  
Adjustment**

**Electrical Changes (Sample):**

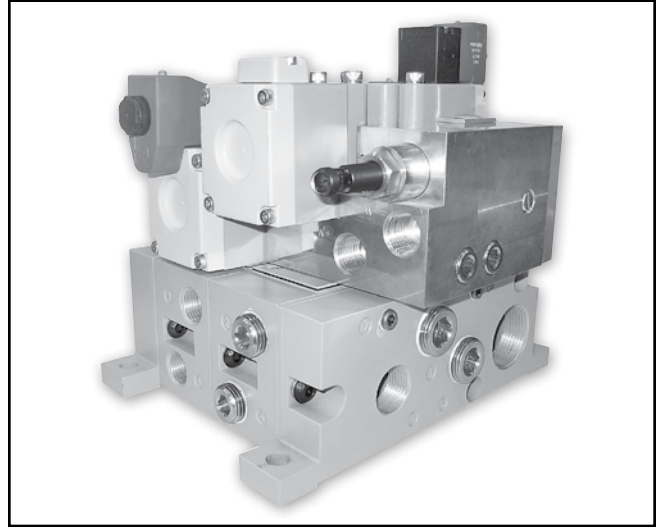
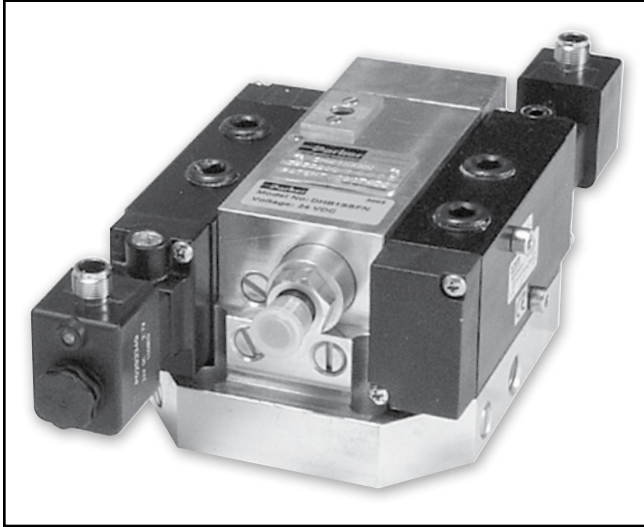


Above is a sample PLC program where the feedback sensor was placed during a typical install. The location of the input should be right before the weld start command. Once the input has been placed into the program, disconnect the sensor cable from the feedback sensor. This will allow you to determine whether or not the input was placed in the correct spot.

Perform a trial run. If on the first weld, the weld tips close and the robot stops, then the sensor input has been located correctly in the program. If the robot continues to run, despite the cable being disconnected, then the sensor input is not correct. Review the location and then try the trial run again.

**Note:** The weld block should perform the same whether the robot is in manual or automatic mode.

## Pneumatic System with Low Impact and Rapid Approach Control



### Description

Pneumatic valve block for use with pneumatic weld gun cylinders. The block has an integrated low impact system and is provided with two solenoid operated "Namur" or ISO size 2 valves. One valve for the retract (pre-stroke) and one for the weld stroke. The valves can be of the single solenoid type or the double solenoid type. The block is available for different constructions of cylinders:

- DH / WH = 3 Ported Cylinders
- DP / WP = 2 and 4 Ported Cylinders

**Ordering Code:** See pages 9 – 12.

**Dimensions:** See pages 14 – 17.

### Applications

The Spotwelding System can be used with any Pneumatic Spot Weld Cylinder.

### Mounting

The weld block can either be mounted on the side of the robot or directly to the cylinder. Consult Parker for cylinder mount application.

### Technical Data

Medium Compressed air, filtered to 40μ and dried to a dewpoint of 37°F (3°C), lubricated or non-lubricated. Once lubricated air is applied, this must be maintained.

Working Pressure ..... 21 to 145 PSIG (1.5 to 10 bar)  
 WH Series Air Operated  
 Quick Exhaust ..... 40 to 115 PSIG (2.7 to 7.9 bar)

Ambient Temperature ..... 41°F to 120°F (5°C to 49°C)

Weight –

- DP ..... 12.0 lbs (5.4 kgs)
- DH ..... 7.0 lbs (3.2 kgs)
- WP (with Baseplate) ..... 14.0 lbs (6.4 kgs)
- WH (with Baseplate) ..... 18.0 lbs (8.2 kgs)

Pneumatic Valve  
 24 VDC

- Operating Voltage Solenoids ..... 24 VDC +10/-15%
- Power Consumption..... 4.8W
- Class of Protection..... IP65 (with plug mounted)
- Connector ..... M12, 22mm, 30mm, Auto (ISO 2 only)

Proximity Sensor  
 24 VDC

- Supply Voltage ..... 10 to 30 VDC
- Rated Operational Current..... 200mA
- Degree of Protection..... IP67
- Ambient Temperature Range ..... -13°F to 158°F  
 (-25°C to 70°C)
- Switching Indication..... By LED (Yellow)
- Output..... PNP or NPN

**Service Kits:** See page 13.

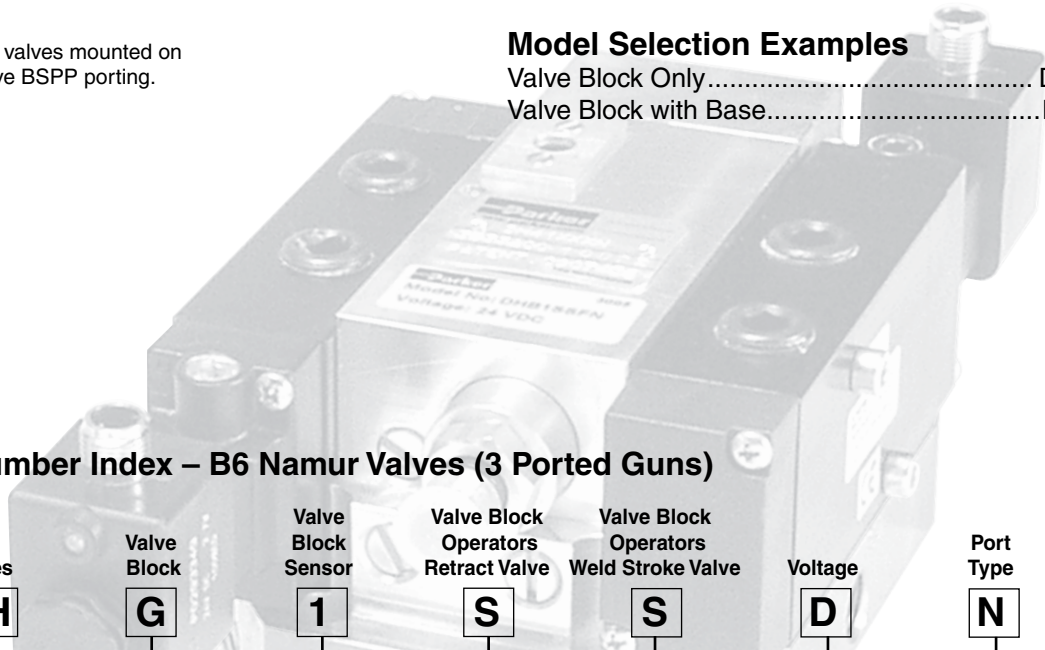
**Model Number Index – B6 Namur Valves (2 and 4 Ported Guns)**

Series	Valve Block	Valve Block Sensor	Valve Block Operators Retract Valve	Valve Block Operators Weld Stroke Valve	Voltage	Port Type	Engr. Level
<b>DP</b>	<b>A</b>	<b>1</b>	<b>S</b>	<b>S</b>	<b>D</b>	<b>N</b>	<b>B</b>
<b>DP</b> B6 NAMUR (2 or 4 Cylinder Ports)	<b>A</b> Valve Block w/Base Plate <b>X</b> Valve Block for Base Plate Less Base Plate	<b>1</b> PNP Sensor-24 VDC	<b>S</b> Single Solenoid <b>D</b> Double Solenoid <b>X</b> Valve Block w/o Pre-Stroke Valve	<b>S</b> Single Solenoid <b>D</b> Double Solenoid <b>X</b> Valve Block w/o Weld Stroke Valve	<b>D</b> 24VDC 22mm Coil <b>E</b> 24VDC 30mm Coil <b>F</b> 24VDC M12 Connector <b>X</b> Without Valves	<b>N</b> NPT <b>G</b> BSPP	

**Note:** NAMUR valves mounted on valve block have BSPP porting.

**Model Selection Examples**

Valve Block Only..... DPX1SSDNB  
 Valve Block with Base..... DPA1SSDNB



**Model Number Index – B6 Namur Valves (3 Ported Guns)**

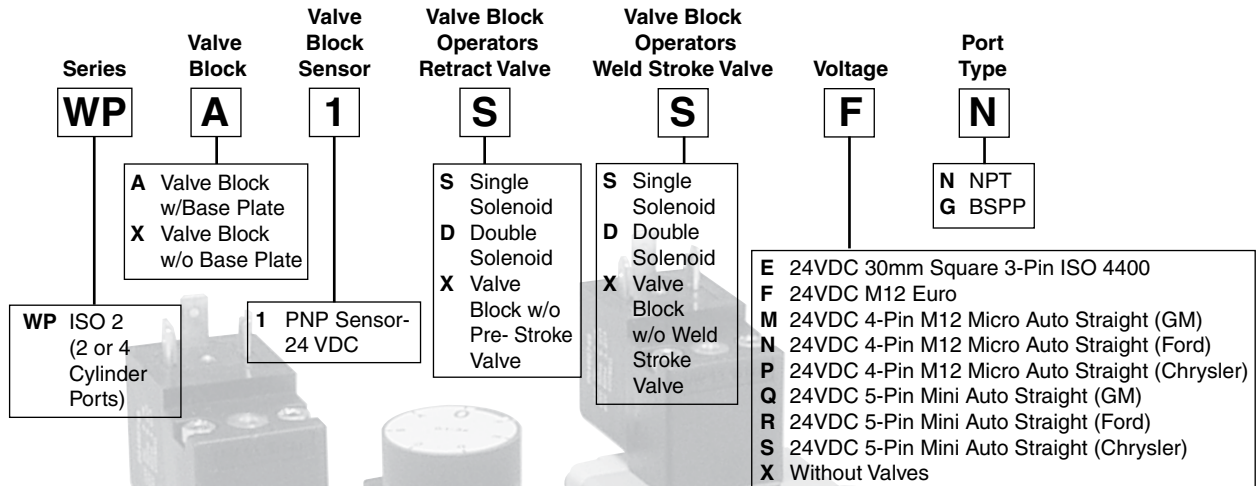
Series	Valve Block	Valve Block Sensor	Valve Block Operators Retract Valve	Valve Block Operators Weld Stroke Valve	Voltage	Port Type	Engr. Level
<b>DH</b>	<b>G</b>	<b>1</b>	<b>S</b>	<b>S</b>	<b>D</b>	<b>N</b>	<b>B</b>
<b>DH</b> B6 NAMUR (3 Cylinder Ports)	<b>4</b> Valve Block High Pressure Quick Exhaust Mounted (w/o base) <b>G</b> Valve Block High Pressure Quick Exhaust Mounted (w/Base)	<b>1</b> PNP Sensor-24 VDC	<b>S</b> Single Solenoid <b>D</b> Double Solenoid <b>X</b> Valve Block w/o Pre-Stroke Valve	<b>S</b> Single Solenoid <b>D</b> Double Solenoid <b>X</b> Valve Block w/o Weld Stroke Valve	<b>D</b> 24VDC 22mm Coil <b>E</b> 24VDC 30mm Coil <b>F</b> 24VDC M12 Connector <b>X</b> Without Valves	<b>N</b> NPT <b>G</b> BSPP	

**Note:** NAMUR valves mounted on valve block have BSPP porting.

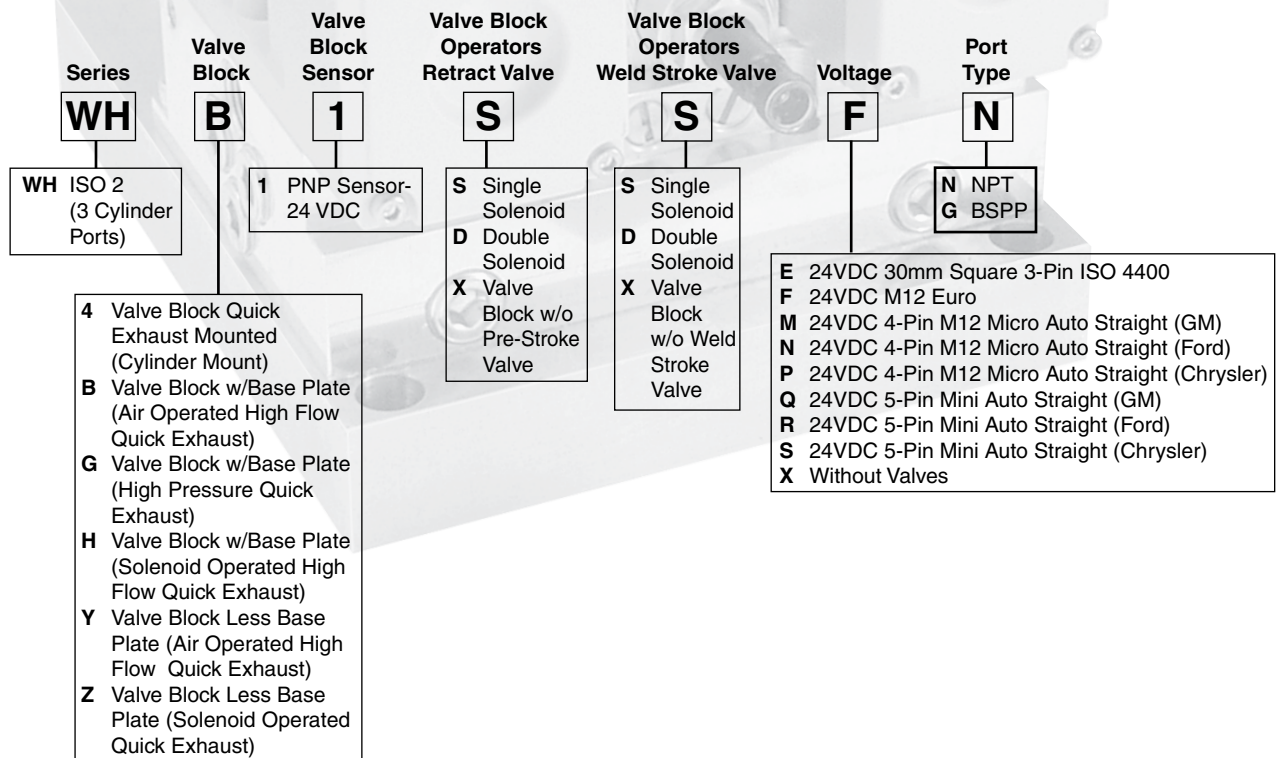
**Model Selection Examples**

Valve Block with Quick Exhaust (w/ Base) .... DHG1SSDNB

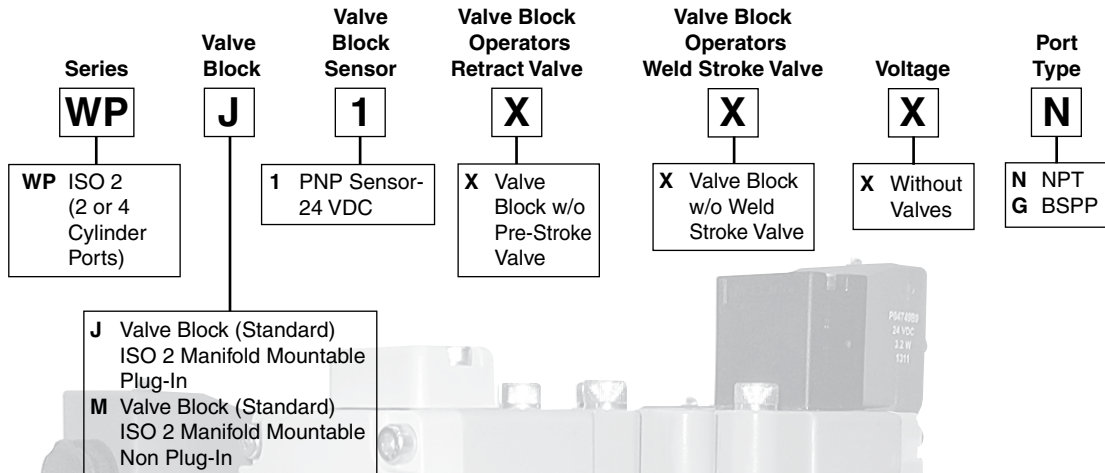
**Model Number Index – ISO Size 2 Cylinder & Base Plate Mountable (2 and 4 Ported Guns)**



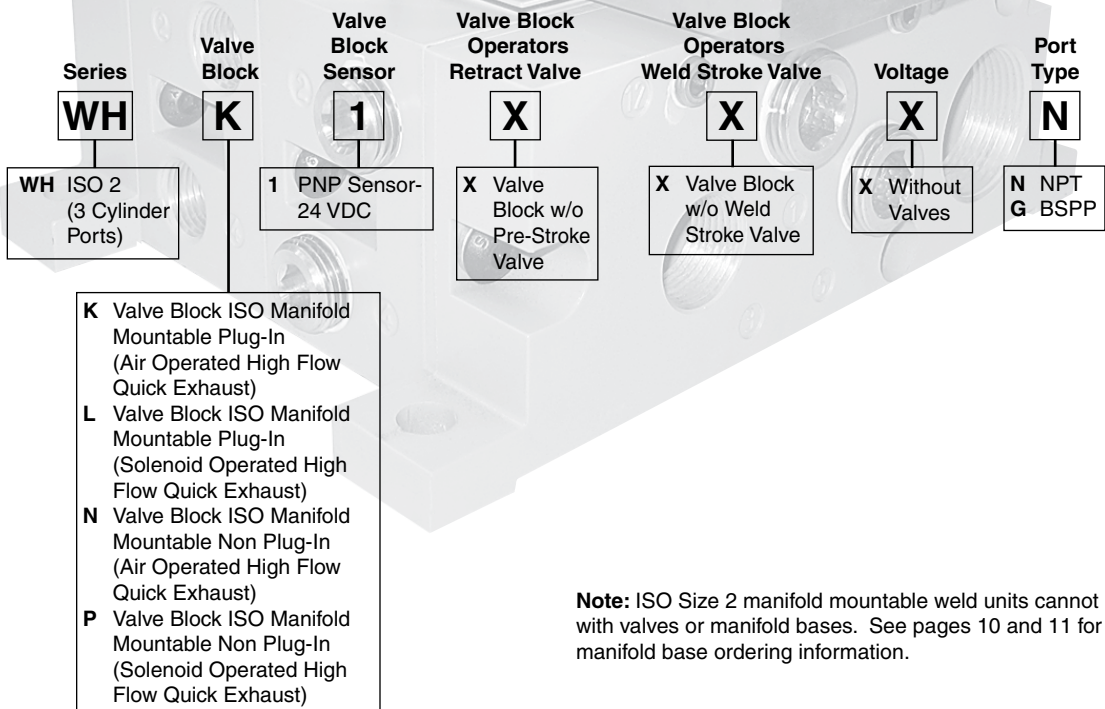
**Model Number Index – ISO Size 2 Cylinder & Base Plate Mountable (3 Ported Guns)**



**Model Number Index – ISO Size 2 Manifold Mountable (2 and 4 Ported Guns)**

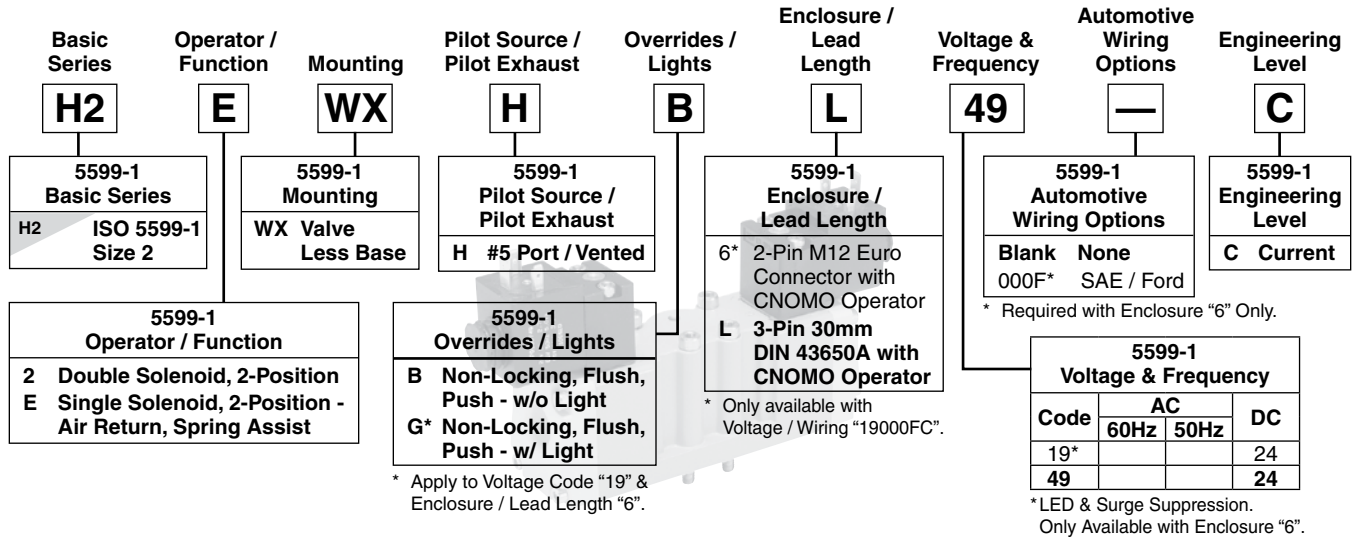


**Model Number Index – ISO Size 2 Manifold Mountable (3 Ported Guns)**

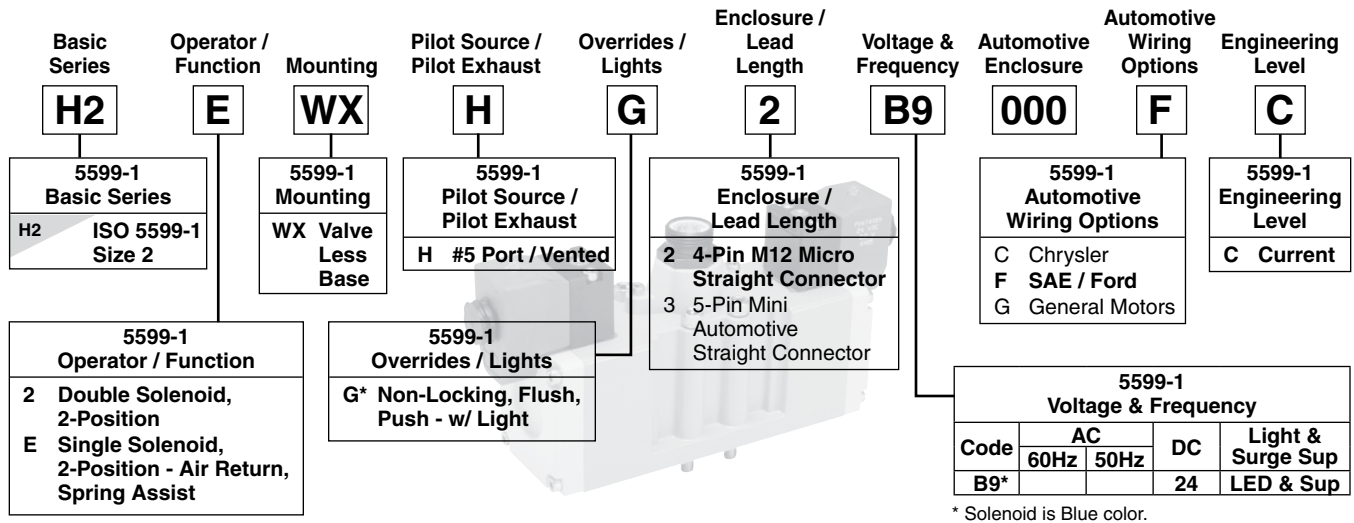


**Note:** ISO Size 2 manifold mountable weld units cannot be ordered with valves or manifold bases. See pages 10 and 11 for valve and manifold base ordering information.

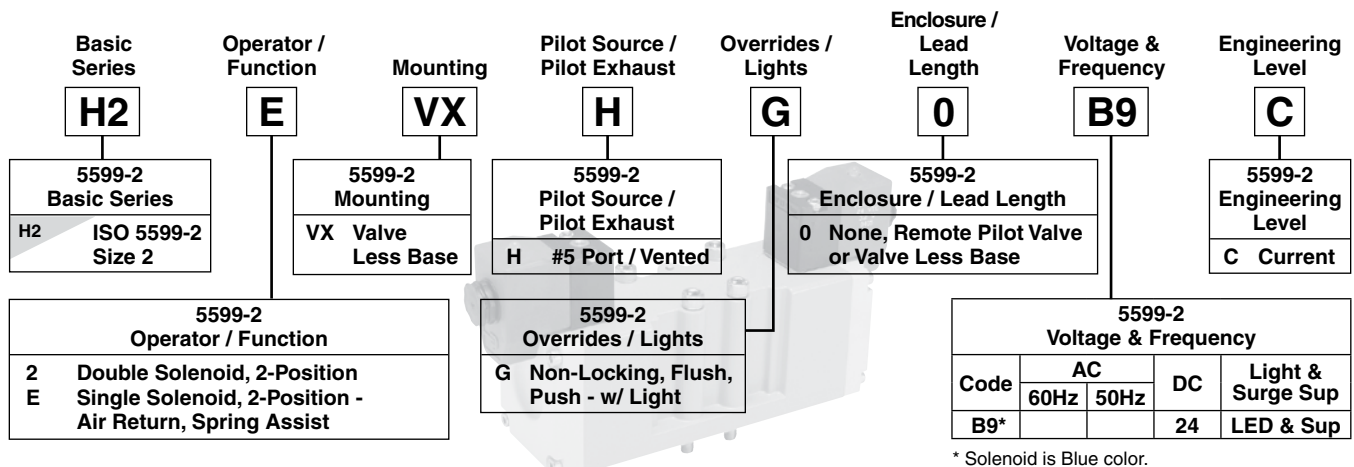
**Model Number Index – 5599-1 CNOMO - Size 2**



**Model Number Index – 5599-1 AUTO - Size 2**



**Model Number Index – 5599-2 Size 2**



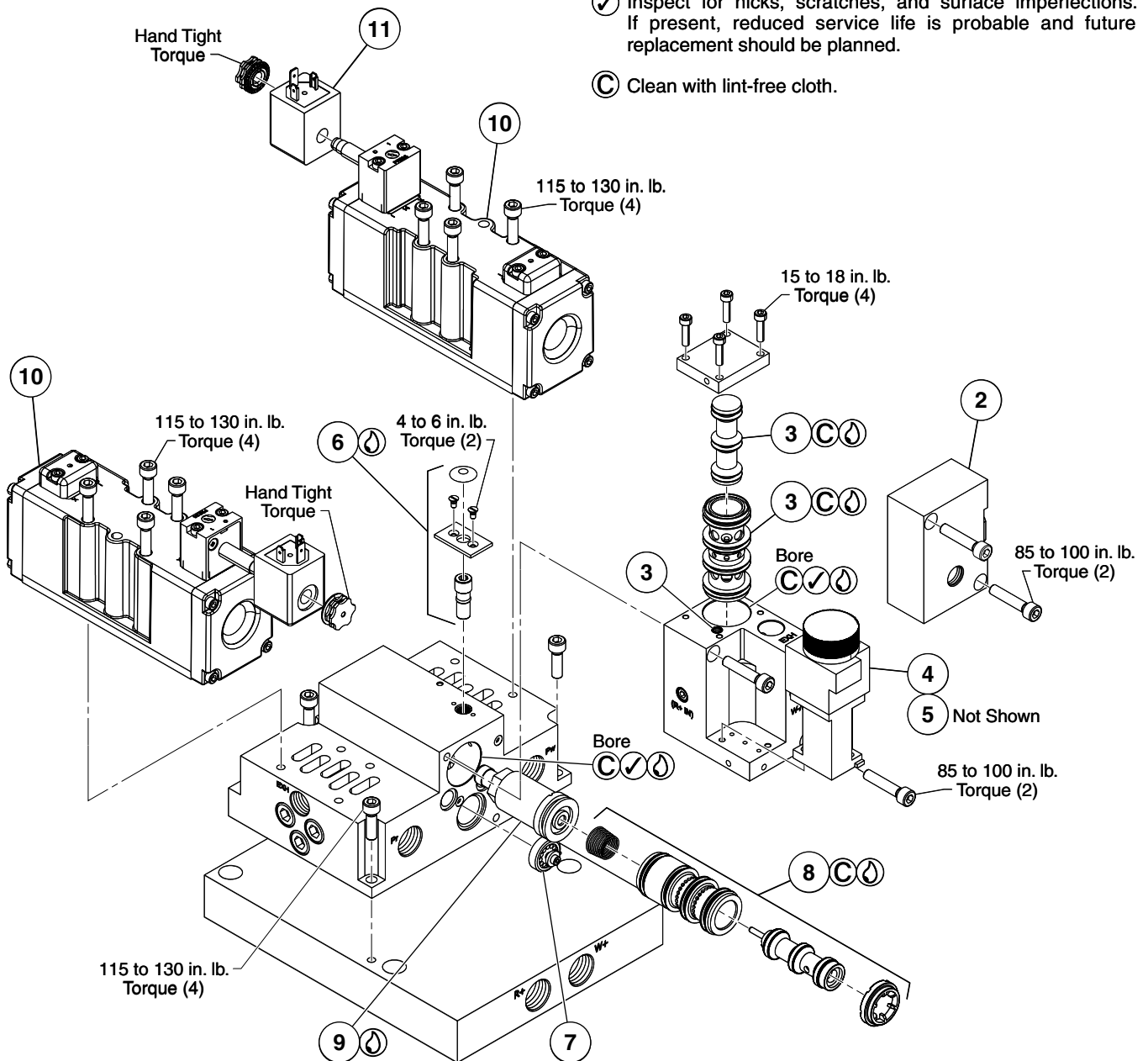
**BOLD OPTIONS ARE MOST POPULAR**



**Replacement Components**

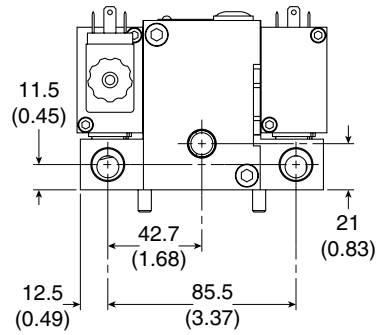
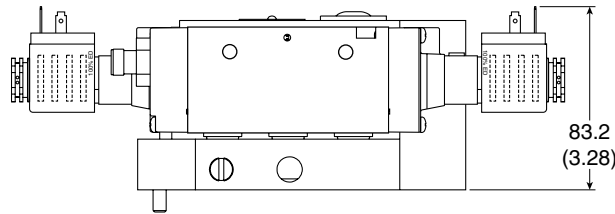
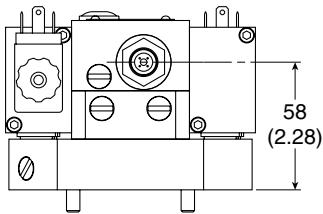
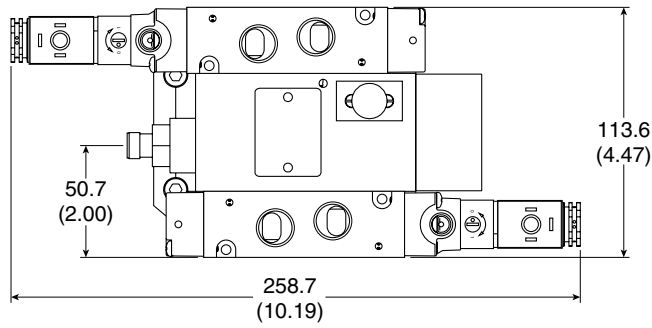
Item	Kit Number	Description	Item	Kit Number	Description
1	6505953	DP/DH Weld Block Sleeve Kit (1 pc.) (Not Shown)	8	3087900	Sensor Valve Kit
2	3540700	Quick Exhaust Kit - High Pressure	9	3087800	PNP 24 VDC Sensor Kit
3	3538600	High Flow Quick Exhaust Kit	10	See page 10	ISO 2 Replacement Valve for WP/WH Weld Blocks
4	PRTF10	Air Operated Timer for High Flow Quick Exh.	11	PS2828619P	24 VDC M12 Euro Coil Kit
5	WHQE49	Sol. Oper. Kit for High Flow Quick Exh. 24VDC	12	Contact Parker	B6 Replacement Valve for DP/DH Weld Blocks
6	3059500	Flow Control Kit			
7	3059900	Check Valve Kit			

- Ⓐ Lightly grease with provided lubricant.
- Ⓑ Inspect for nicks, scratches, and surface imperfections. If present, reduced service life is probable and future replacement should be planned.
- Ⓒ Clean with lint-free cloth.

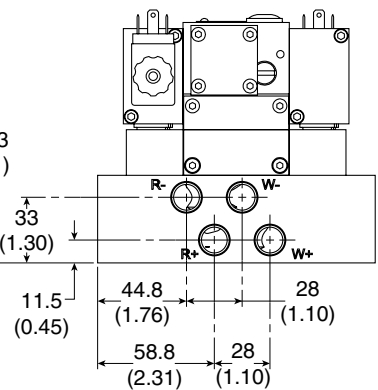
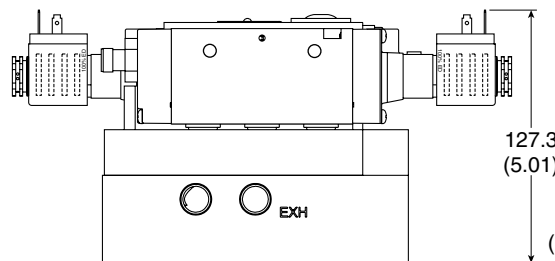
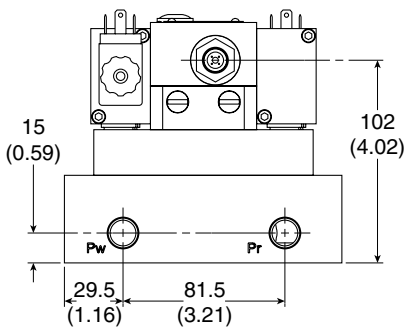
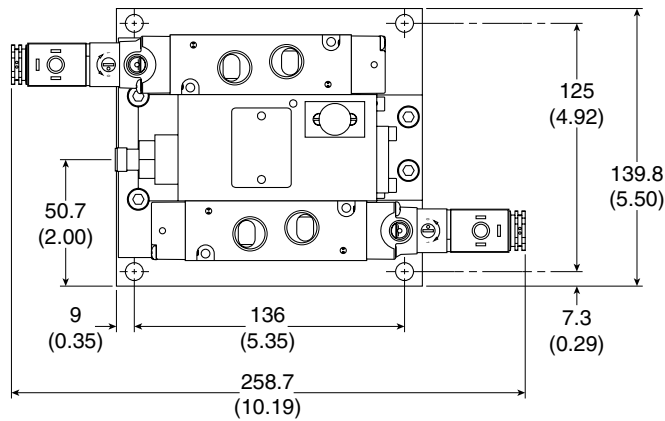


**ISO 2 Weld Block - Exploded View**

**DH Series – 3 Ported Guns Dimensions**



**DP Series – 2 and 4 Ported Guns Dimensions**

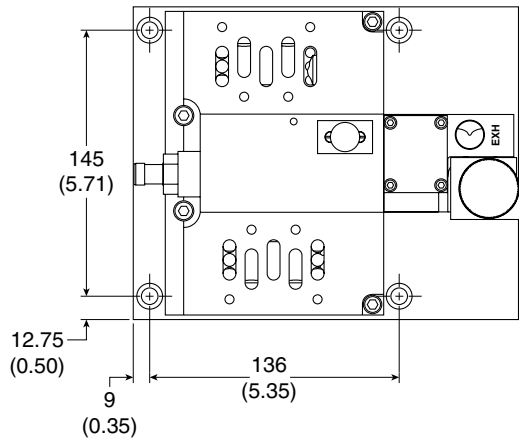
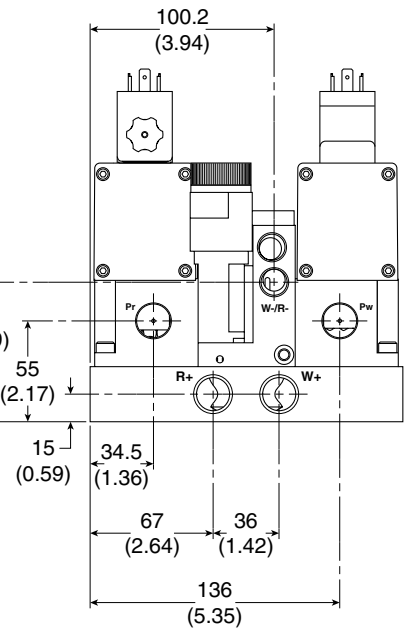
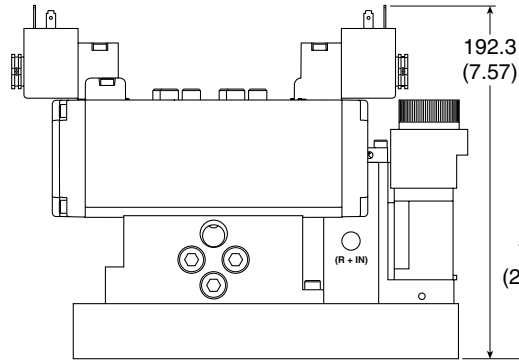
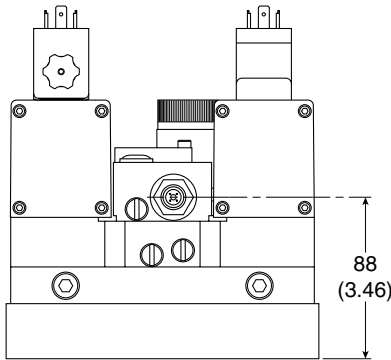
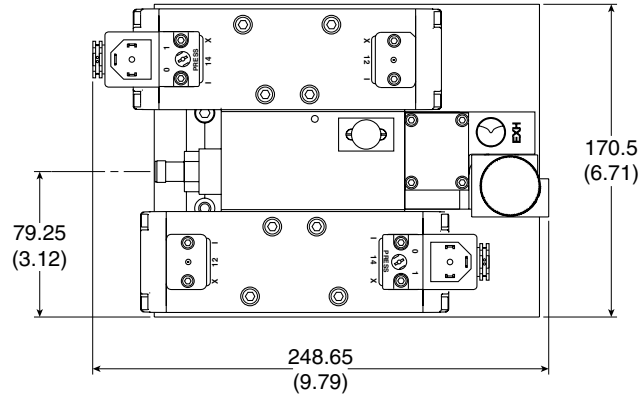


mm  
(inches)



WH Series – For 3 Ported Gun Dimensions

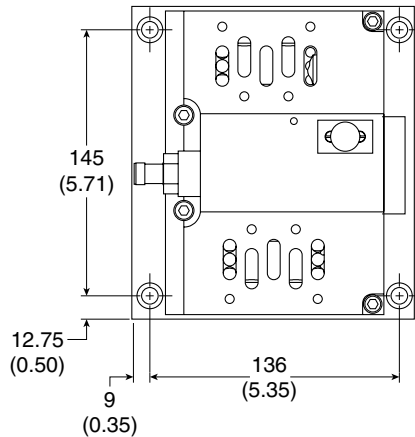
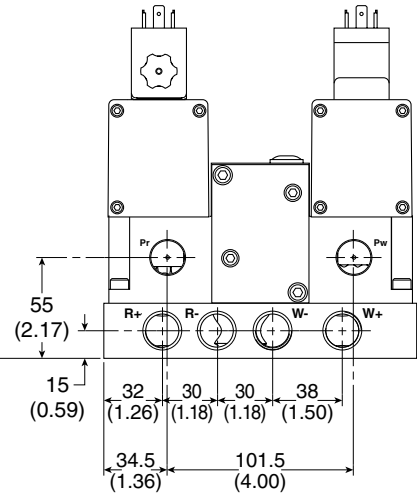
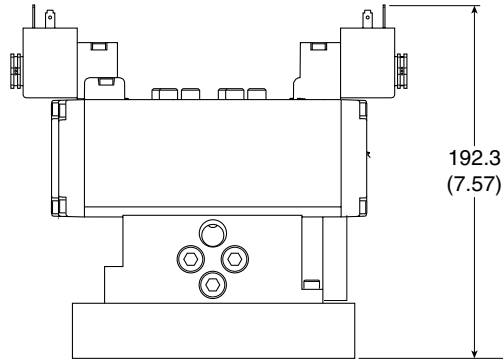
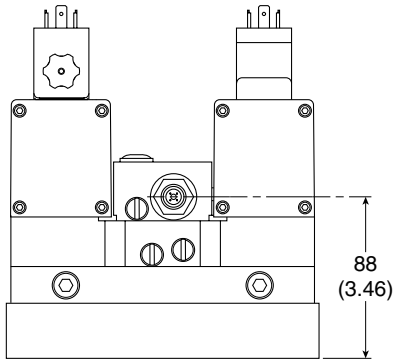
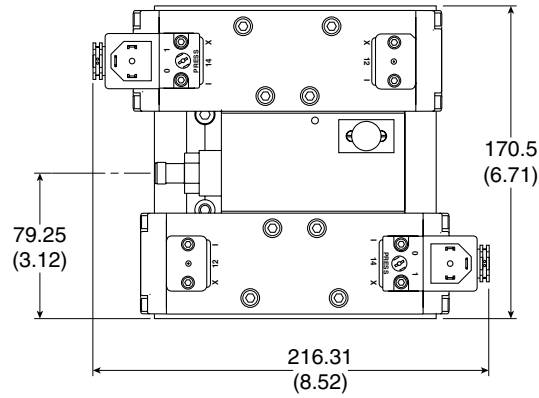
WH ISO Size 2 Cylinder & Base Plate Mountable



mm  
(inches)

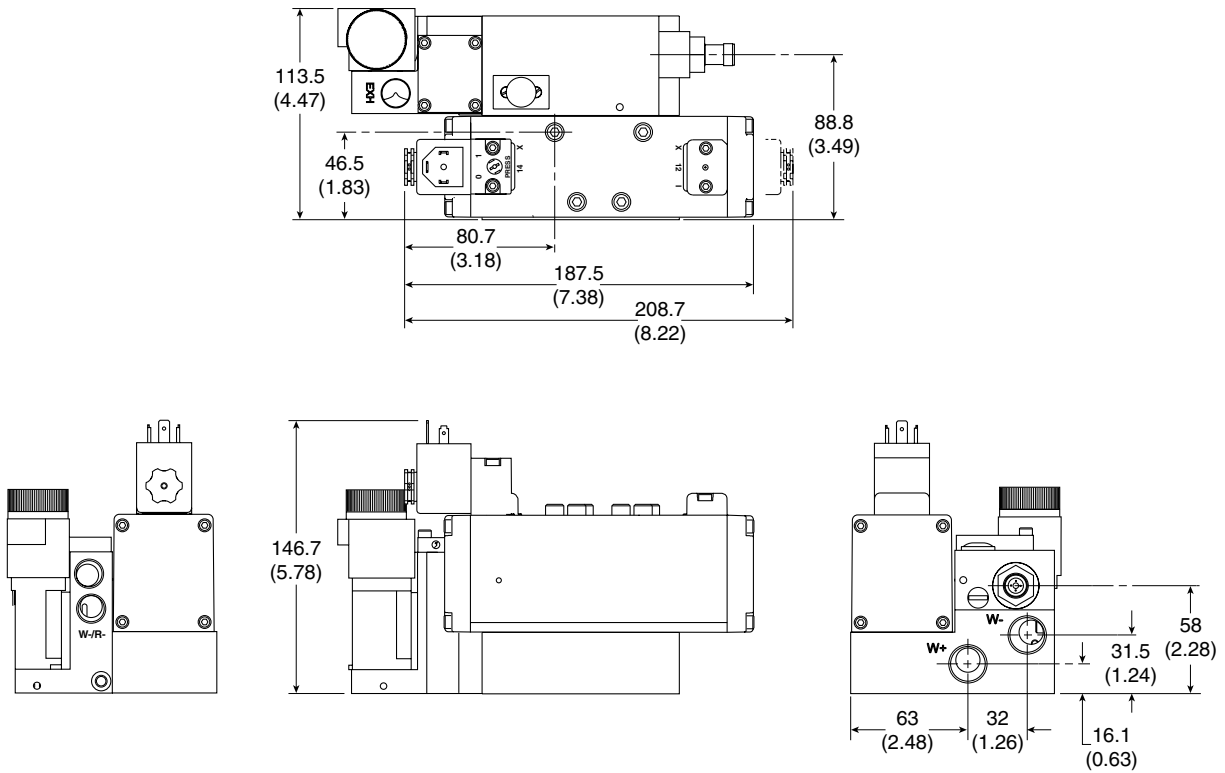
WH Series – For 3 Ported Gun Dimensions

WP ISO Size 2 Cylinder & Base Plate Mountable

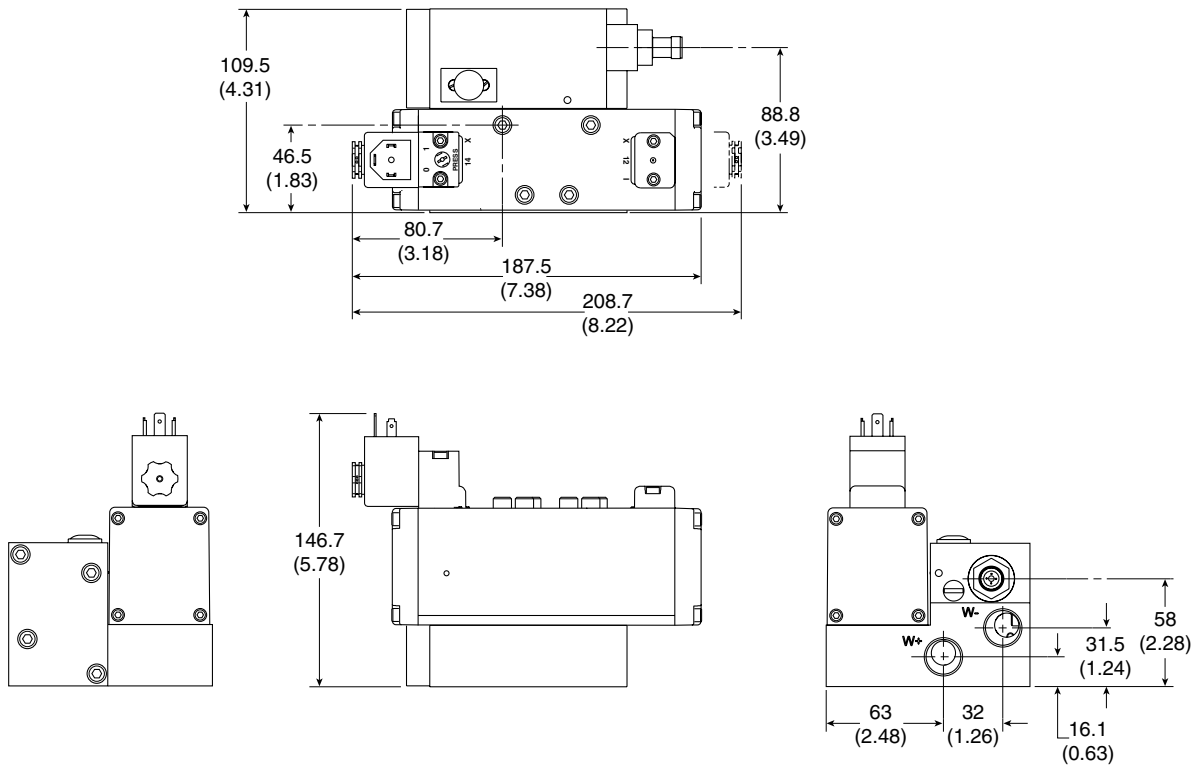


mm  
(inches)

**WH ISO Size 2 Manifold Mountable**

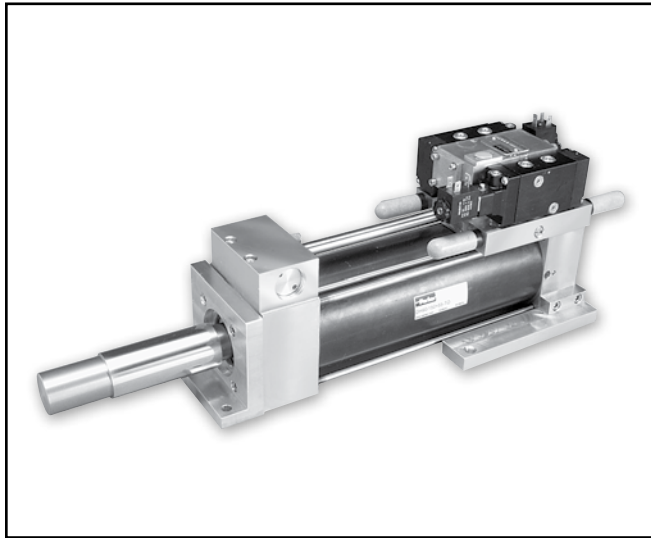


**WP ISO Size 2 Manifold Mountable**



mm  
(inches)

**DH Series  
Pneumatic Spot Welding Cylinder**



**Description**

DH-Series pneumatic spot weld cylinder comes with a pre-stroke and weld stroke. Construction type of cylinder is double stroke, piston to piston. The cylinder is designed with built-in cushions for the pre-stroke return and weld stroke return.

DH-Series pneumatic spot weld cylinders are used with a built-in pneumatically controlled exhaust valve for rapid controlled speed during pre-stroke extension.

DH-Series pneumatic spot weld cylinders are used in combination with a valve block with integrated low- impact system.

This valve block is built on a DH-welding cylinder.

The Low-Impact system controls the closing speed of the welding gun and the impact of the electrodes which contact the sheet metal.

**Application**

Robot Welding Guns Type C and Type X.

Cylinder Type: 3-Ported

**Mounting**

Cylinder can have the following mounting options:

- Front Nose Mounting Standard
- Alternate Mountings Consult Factory

**Materials**

Covers ..... Aluminum  
 Tube.....Aluminum  
 Piston Rod.....Stainless Steel  
 Seals..... PTFE Glide-ring, Synthetic Rubber  
 Others..... Stainless Steel, Aluminum, Steel, POM

**Technical Data**

Medium:

Compressed air, filtered to 5µ and dried to a dewpoint of 37°F (3°C), lubricated or non-lubricated. Once lubricated air is applied, this must be maintained.

Lubrication:

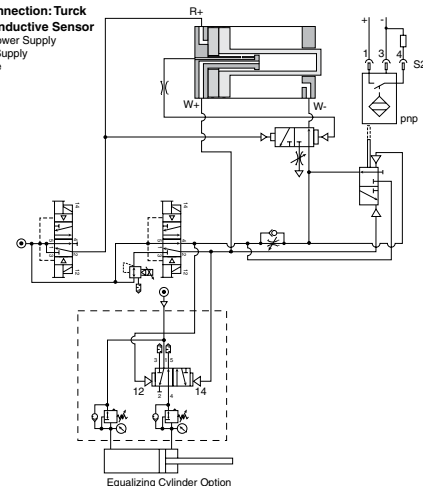
Both cylinder and valve block are shipped with life time lubrication, silicone-free grease.

Working Pressure ..... 21 to 145 PSIG (1.5 to 10 bar)

Ambient Temperature ..... 41°F to 120°F (5°C to 49°C)

**ANSI**

Inductive Sensor / Connection:Turck  
 Connection Diagram Inductive Sensor  
 1 Brown +24VDC Power Supply  
 3 Blue 0V Power Supply  
 4 Black Switch Wire



Equalizing Cylinder Option

**The Parker “Rapid-Approach” Effect**

Another specific feature is the “Rapid-Approach” effect. This allows, especially at welding guns with a big opening between both electrodes, for high speed in the beginning of the movement. At a certain point this speed is reduced after which the normal movement follows with the “Low-Impact” feature as described below. Also the “Rapid-Approach” feature is stroke-independent.

This feature provides advantages when longer strokes are to be made, e.g. on C-type of welding guns with a stroke > 60 mm (2.36”).

**The Parker “Low-Impact” Effect**

A specific feature in Parker Sempress Pneumatic spot weld cylinder is the “Low-Impact” effect.

This is reached by means of an integrated pneumatic control which ensures that the electrodes are touching the sheet metal with low force and speed (kinetic energy) and that immediately after touch down of the electrodes the press-force is built-up instantly.

This gives following advantages:

- Less noise because the electrodes only touch the metal sheets softly.
- No bouncing of the electrodes on the metal sheets, hence the spot welding can start immediately after the first contact.
- Less wear on electrodes (measured lifetime-improvement of 30%) and sensitive electrode-caps (measured lifetime improvement of 200%).

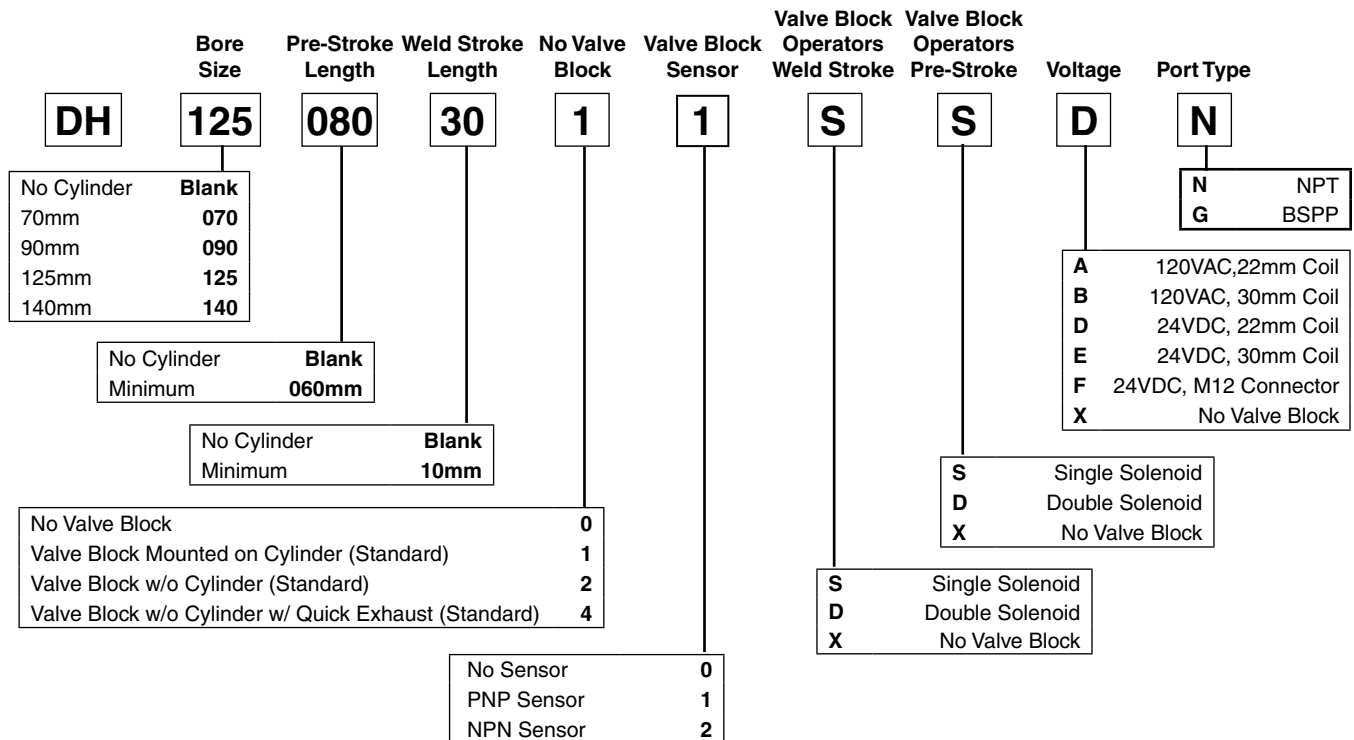
- No damaging of the metal sheets. Additional polishing can be avoided.
- Less shocking movements in the welding gun and between electrodes.
- On robot-guns: water-hoses and electric cabling show less wear.
- On manual guns: less physical stress for the operator.
- Less sparking because both metal sheets are pressed together properly and immediately after first contact.
- Less welding points required because the quality of the weld is improved.
- Lower welding current can be used.

- An electrical feedback signal is available when 75% of the clamping force has been reached.

One of the features of the Parker “Low-Impact” system is that it is stroke-independent. This means that the system works on every position of the cylinder. The nominal stroke of the cylinder should be longer than the maximum required stroke.

The closing speed and impact force can be regulated by turning the regulating screw in the valve block. The electric signal “Start Welding” can be taken from the M12-Pin connection on the valve block.

**Model Number Index**



**Note:** NAMUR valves mounted on valve block have BSPP porting.

**Model Selection Examples**

- Cylinder Only DH1250803000XXXN
- Cylinder with Valve Block DH1250803011SSDN
- Valve Block Only DH21SSDN

**Cylinder Technical Data**

		<b>DH 070</b>	<b>DH 090</b>	<b>DH 125</b>	<b>DH 140</b>
Cylinder Bore	mm	70	90	125	140
	(inch)	(2.76)	(3.54)	(4.92)	(5.51)
Pre-Stroke	mm	100	100	100	100
	(inch)	(3.93)	(3.93)	(3.93)	(3.93)
Welding Stroke	mm	40	40	40	40
	(inch)	(1.57)	(1.57)	(1.57)	(1.57)
Pushing Force at 5 bar	N	1923	3179	6132	7690
	(lbf)	(432)	(714)	(1378)	(1728)
Pulling Force at 5 bar	N	1521	2777	5710	7268
	(lbf)	(341)	(624)	(1283)	(1633)
Weight Approx. (Cylinder Only)	kg	5.5	6.5	7.5	8.5
	(lbs.)	(12.12)	(14.33)	(16.53)	(18.73)



**Waterblock Series WB  
Designed for Welding Applications**

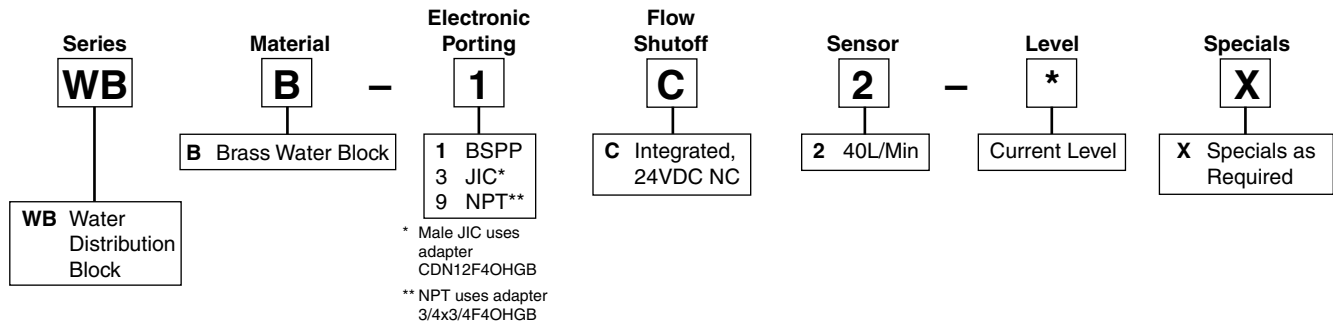


Waterblock is an integrated manifold made from brass that supplies and monitors water to the weld cell. Utilizing a highly sensitive Vortex Flow Sensor to detect leakage or improper supply to the cell, Waterblock will provide the essential protection for expensive welding equipment. The system includes both an integrated electronic shut-off along with a check valve to assure proper shutdown, should an event occur. System balance is maintained with the input flow restrictor, which allows repeatable setup, whether single or multiple systems are commissioned. Welding control circuit is included into the package to allow cooling control from ONE location. Maintenance is simple due to the unique manifold design allowing removal of all major components without the need to remove the connections to the manifold. Waterblock can be integrated to Frameblock for a complete air / water preparation system. Optional Waterblock components include ball valves, Y strainer, pressure or temperature sensors.

**Technical Data**

Water Service Unit	
Supply Return Connection	3/4" BSPP / NPT
Robot Connections	3/4" BSPP / NPT
Pressure	6 bar (87 PSI)
Operation Temperature	-25°C to + 80°C
Voltage	20 to 30VDC
Check Valve	Return Path
Flow	40 L/min (10.6 G/min)
<b>Performance</b>	
Leak Detection	< 1s
Shut-off	< 100ms
Outputs	2 PNP or NPN
Flow Restrictor	5 –100% (Approx)
<b>Materials</b>	
Housing	Plastic, Brass
Fittings	Brass
Weight	Plastic: 1 kg (2.2lb), Brass: 3.5 kg (7.8lb)

**Model Number Index**



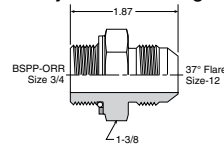
**Note:** Part number WBB1C2, supercedes part numbers WBB-1666-C1/C2, WBB112/4, 3554800. Refer to dimensions on page 21 for current model.

**Spare Parts**

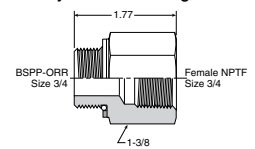
<b>CDN12F40MXB</b>	Water Fittings - Brass
<b>3/4 x 3/4F40HGB</b>	Water Fittings - Brass
<b>5554851</b>	Check Valve
<b>7321BAN00</b>	Skinner Valve N/C
<b>7321BAN01</b>	Skinner Valve N/C with Manual override
<b>481865C2</b>	Coil

**Fittings**

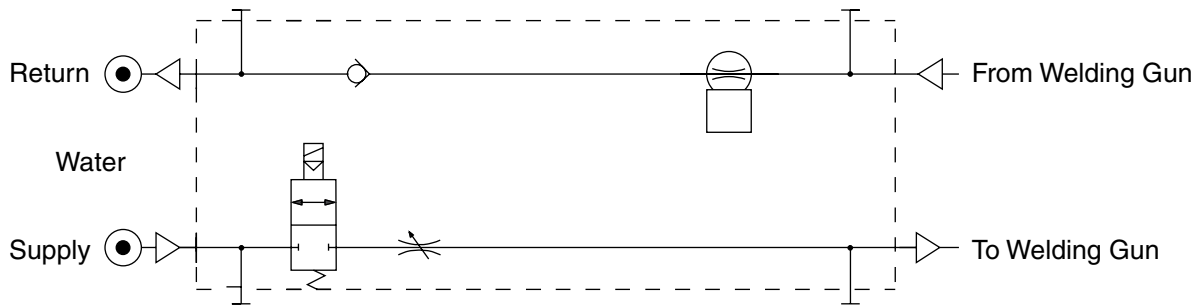
**CDN12F40MXB**  
 Male Connector - BSPP  
 Brass Body / Nitrile O-ring



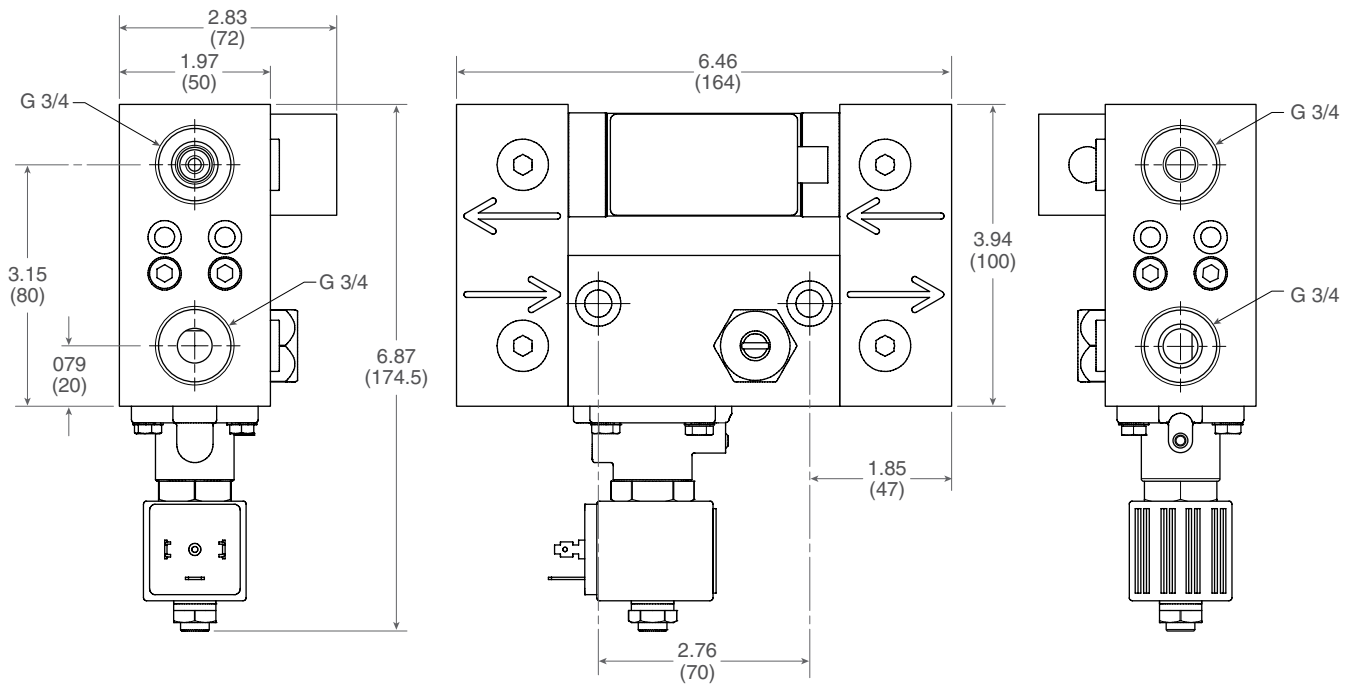
**3/4x3/4F40HGB**  
 Conversion Adapter  
 Brass Body / Nitrile O-ring



**Schematic**



**Dimensions**



## Specifications

<b>Measured field</b>		Water, Mixture of water (50%) and ethylene glycol (50%)	
<b>Flow rate measurement range</b>		3.5 to 4.5 l/min	
<b>Set flow rate range</b>		3.5 to 4.5 l/min	
<b>Rated flow range</b>		5 to 40 l/min	
<b>Minimum set unit</b>		0.5 l/min	
<b>Accumulated pulse flow rate exchange value (Pulse width: 50ms)</b>		0.5 l/pulse	
<b>Operating fluid temperature</b>		0 to 90°C (with no cavitation)	
<b>Linearity</b>		±5% F.S. or less	
<b>Repeatability</b>		±3% F.S. or less	
<b>Temperature characteristics (Note 1)</b>		±5% F.S. or less (0 to 90°C, based on 25°C)	
<b>Current consumption (No load)</b>		70mA or less	
<b>Weight (Note 2)</b>		710 g	
<b>Port size (Rc, NPT, G)</b>		1/2, 3/4	
<b>Detection type</b>		Karman vortex	
<b>Indicator light</b>		3-digit, 7-segment LED	
<b>Display units (Note 3)</b>	<b>Real-time flow rate</b>	l/min, gal (US) / min	
	<b>Accumulated flow</b>	l, gal (US)	
<b>Operating pressure range</b>		0 to 1 Mpa	
<b>Withstand pressure</b>		1.5 Mpa	
<b>Accumulated flow range (Note 4)</b>		0 to 999999 l	
<b>Output specifications (Note 5)</b>	<b>Switch output</b>	NPN open collector	Maximum load current: 80 mA; Internal voltage drop: 1V or less (with load current of 80 mA)
		PNP open collector	Maximum applied voltage: 30V; 2 outputs
	<b>Accumulated pulse output</b>	NPN or PNP open collector (same as switch output)	
<b>Status LED's</b>		Illuminates when output is ON OUT1: Green; OUT2: Red	
<b>Response time</b>		1 sec. or less	
<b>Hysteresis</b>		Hysteresis mode: Variable (can be set from 0); Window comparator mode Note 6): 3-digit fixed	
<b>Power supply voltage</b>		12 to 24 VDC (ripple ±10% or less)	
<b>Resistance</b>	<b>Enclosure</b>	IP65	
	<b>Operating temperature range</b>	Operating: 0 to 50°C, Stored: -25 to 85°C (with no freezing and condensation)	
	<b>Withstand voltage</b>	1000 VAC for 1 min. between external terminal and case	
	<b>Insulation resistance</b>	50M Ω and more (500 VDC Mega) between external terminal and case	
	<b>Vibration resistance</b>	10 to 500 Hz with a 1.5 mm amplitude or 98 m/s <sup>2</sup> acceleration in each X, Y, Z direction for 2 hrs, whichever is smaller	
	<b>Impact resistance</b>	490 m/s <sup>2</sup> in X, Y, Z directions 3 times each	
	<b>Noise resistance</b>	1000 Vp-p, Pulse width 1 μs, Rise time 1 ns	

**Note 1** ±5% F.S. or less (0 to 50°C, based on 25°C), ±3% F.S. or less (15 to 35°C, based on 25°C)

**Note 2** Without lead wire

**Note 3** For digital flow switch with unit switching function. (Fixed SI unit [l/min or l] will be set for switch type without the unit switching function)

**Note 4** Accumulated flow rate is reset when the power supply turns OFF.

**Note 5** Switch output and accumulated pulse output can be selected during initial setting

**Note 6** Window comparator mode--- Since hysteresis will reach 3 digits, keep P\_1 and P\_2 or n\_1 and n\_2 apart by 7 digits or more (In case of output OUT2, n\_1, 2 to be n\_3, 4 and P\_1, 2 to be P\_3, 4.)

**Note 7** The flow switch conforms to the CE mark.



---

**Functions**


---

**Flow Rate Measurement Selection**

Real-time flow rate and accumulated flow rate can be selected.

A flow rate of up to 999999 can be accumulated.

The accumulator flow rate is reset when the power supply turns OFF. (Switch maintains the values.)

**Unit Switching****For Water / High Temperature Fluid Type (For Water)**

Displace	Real-time Flow Rate	Accumulated Flow
U_1	l/min	l
U_2	FPM	gal(US)

GPM = gal(US)/min

**Note:** Fixed SI unit (l/min, or l) will be set for the type without the unit switching function

**Accumulation Clearance**

This function clears the accumulated value.

**Error Correction**

LED Displace	Contents	Solution
Er 1	A current of more than 80 mA is flowing to OUT1	Check the load and the wiring for OUT1
Er 2	A current of more than 80 mA is flowing to OUT2	Check the load and the wiring for OUT2
Er 4	The set data has changed for some reason	Perform the RESET operation, and reset all the data again
---	The flow rate is over the flow rate measurement range	Use an adjustment valve, etc. to reduce the flow rate until it is within the flow rate range

**Flow Rate Conversion**

Normal condition: 0°C, 101.3 kPa, dry air

Standard condition: 20°C, 101.3 kPa, 65% RH (ANR)

Switchable between these conditions.

**Flow Rate Measuring Unit Confirmation**

This function allows for the confirmation of the accumulated flow rate when real-time flow rate is selected and to confirm the real-time flow rate when accumulated flow rate is selected

**Key Lock**

This function prevents accidental operations such as changing the set value.

## Why Proportional Technology ?

### The Difference Between Open or Closed Circuit Control

Standard pressure regulators go a long way towards meeting customers needs. In most cases these regulators work well in general pneumatic and automation applications. However, sometimes the application calls for more precise pressure control. The effects of time, cycling, input, back pressure or pressure and flow variation can all cause inconsistencies in pneumatic systems. Proportional Regulators are designed to eliminate those inconsistencies.

### Open Control Circuit

In a normal pressure regulated control system, the inlet pressure ( $p_1$ ) is converted into the output pressure ( $p_2$ ) by the regulator. The set pressure (set value) is usually manually set by adjusting the control knob and in normal circumstances the regulator maintains the output pressure (actual value).

No facility for monitoring the output pressure is provided and there is consequently no way of checking that the set value and the actual value are the same. Also, no account is taken of external influences such as air consumption by the system, which can drastically alter the actual value.

### Closed Loop Control Circuit

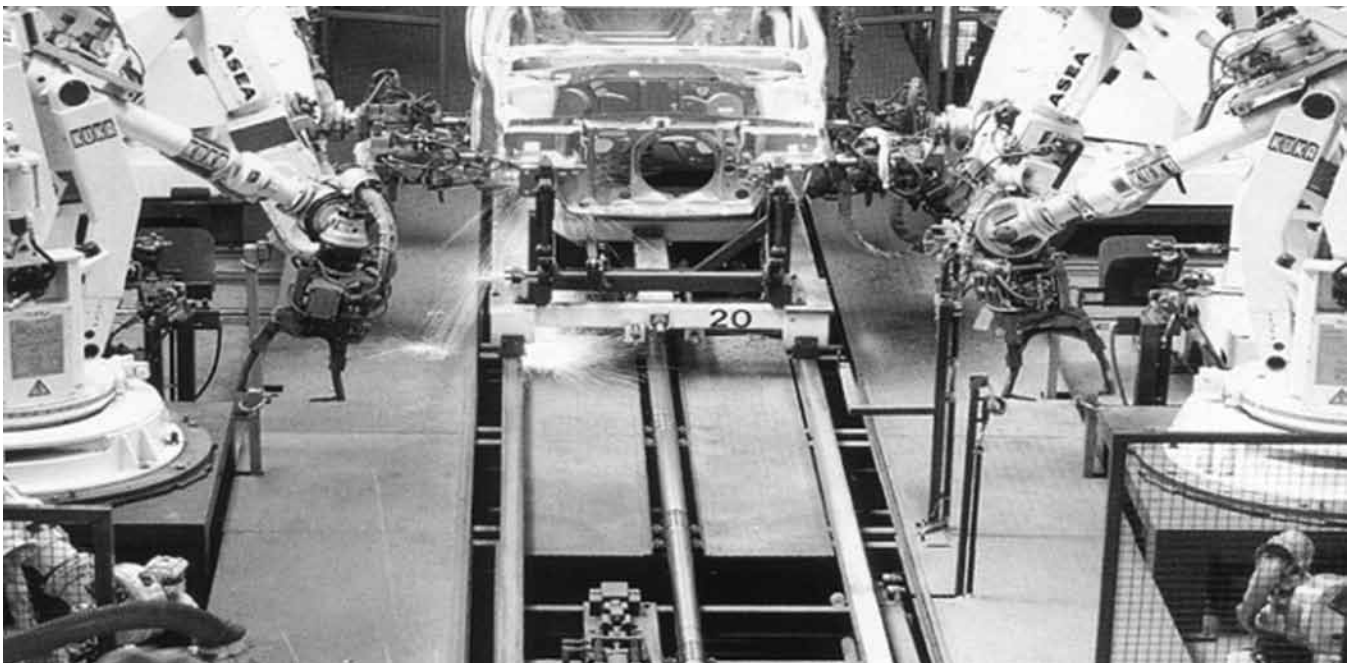
The input signal (Electronic Control Signal) is converted into the output value (P2 Output Pressure). This output value is continuously measured and compared with the input signal. If they are different, the unit adjusts the output value to correspond to the set value, to close the loop.

### Proportional Pressure Regulators

The P3HP provides all the advantages of a closed circuit regulated system. When a set value is defined via the input signal (e.g. 0-10 V), the pressure regulator sets the corresponding output pressure (e.g. 0-150 PSI/0-10 bar). At the same time the integrated pressure sensor measures the actual pressure at the unit's outlet (actual value).

If the electronic regulation system finds that the actual value has deviated from the set value, it immediately corrects the actual value. This is a continuous process ensuring fast, accurate pressure regulation.

## Typical Application in Automotive Body in White Welding Pressure Control



# P31P / P32P Electronic Proportional Regulator



P31P Series  
Bottom exhaust

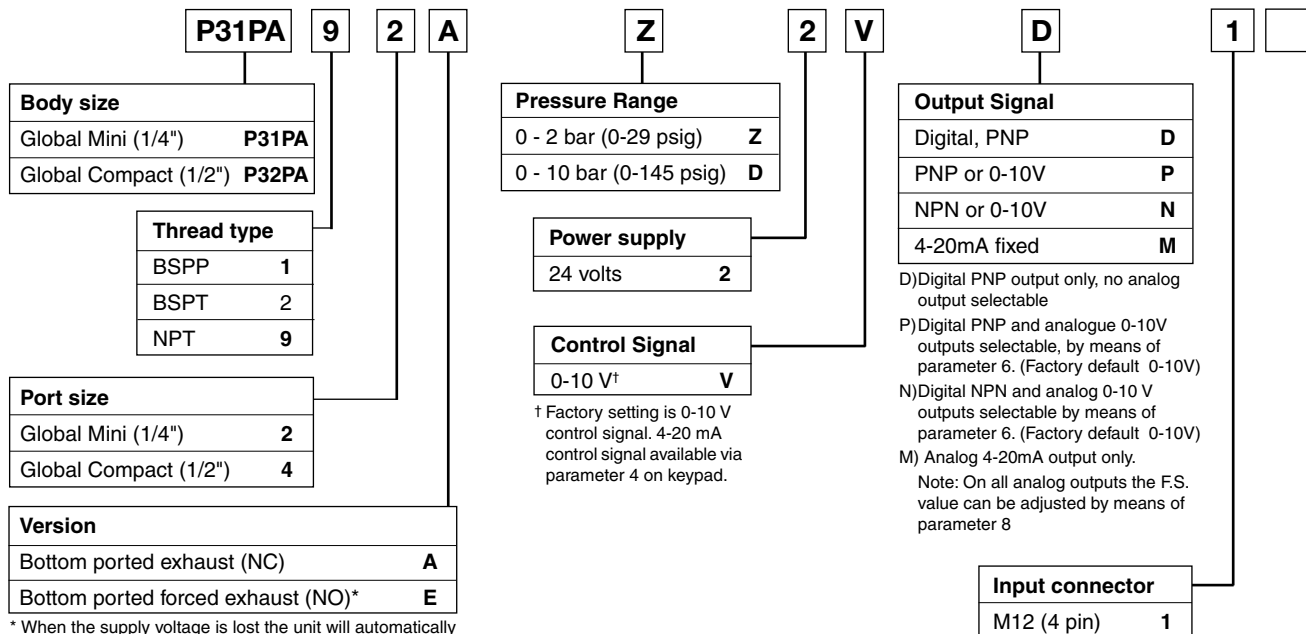


P32P Series  
Bottom exhaust

## Features

- Very fast response times
- Accurate output pressure
- Micro parameter settings
- Selectable I/O parameters
- Quick, full flow exhaust
- LED display indicates output pressure
- No air consumption in steady state
- Multiple mounting options
- Protection to IP65
- P31P flows to 19 dm<sup>3</sup>/s (40 scfm)
- P32P flows to 57 dm<sup>3</sup>/s (120 scfm)

## Ordering Information



**Thread type**

BSPP	1
BSPT	2
NPT	9

**Port size**

Global Mini (1/4")	2
Global Compact (1/2")	4

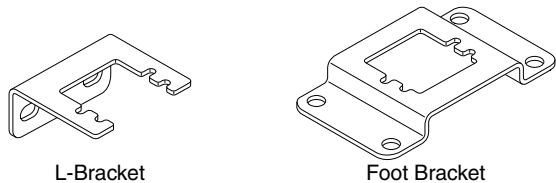
**Version**

Bottom ported exhaust (NC)	A
Bottom ported forced exhaust (NO)*	E

\* When the supply voltage is lost the unit will automatically exhaust the regulated pressure to 0 bar (atmospheric pressure)

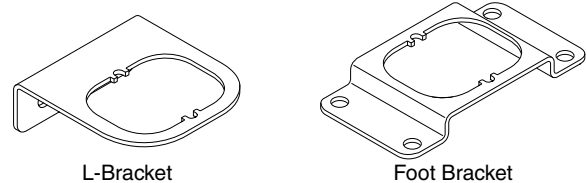
### P31P Mounting Brackets

Order Code	Description
P3HKA00ML	L-Bracket mounting kit
P3HKA00MC	Foot bracket mounting kit



### P32P Mounting Brackets

Order Code	Description
P3KKA00ML	L-Bracket mounting kit
P3KKA00MC	Foot bracket mounting kit



### P31P Mounting Brackets

Order Code	Description
CB-M12-4P-2M	2 mtr. cable with moulded straight M12x1 connector

**Technical Information**

**Working medium**

Compressed air or inert gasses, filtered to 40µ.

**Supply pressure**

Max. Operating Pressure:

2 bar unit:..... 3 bar (43.5 psig)  
 10 bar unit: ..... 10.5 bar (152 psig)  
 Min. Operating Pressure... P2 Pressure + 0.5 bar (7.3 psig)

**Pressure control range**

Available in three pressure ranges, 0-2 bar (0-29 psig), 0-7 bar (0-101.5 psig) or 0-10 bar (0-145 psig). Pressure range can be changed through the software at all times. (parameter 19)

**Temperature range**

0°C up to +50°C (32°F up to 122°F)

**Weights:**

P31P = 0.291 kg (0.64 lbs)  
 P32P = 0.645 kg (1.42 lbs)

**Air consumption**

No consumption in stable regulated situation.

**Display**

The regulator is provided with a digital display, indicating the output pressure, either in bar or psig. The factory setting is as indicated on the label, can be changed through to software at all times (parameter 14)

**Supply voltage**

24 VDC +/- 10%

**Power consumption**

Max. 1.1W with unloaded signal outputs

**Control signals**

The electronic pressure regulator can be externally controlled through an analogue control signal of either 0-10V or 4-20mA. (parameter 4).

**Output signals**

As soon as the output pressure is within the signal band a signal is given of 24VDC, PNP Ri = 1 kOhm Outside the signal band this connection is 0V.

**Connections**

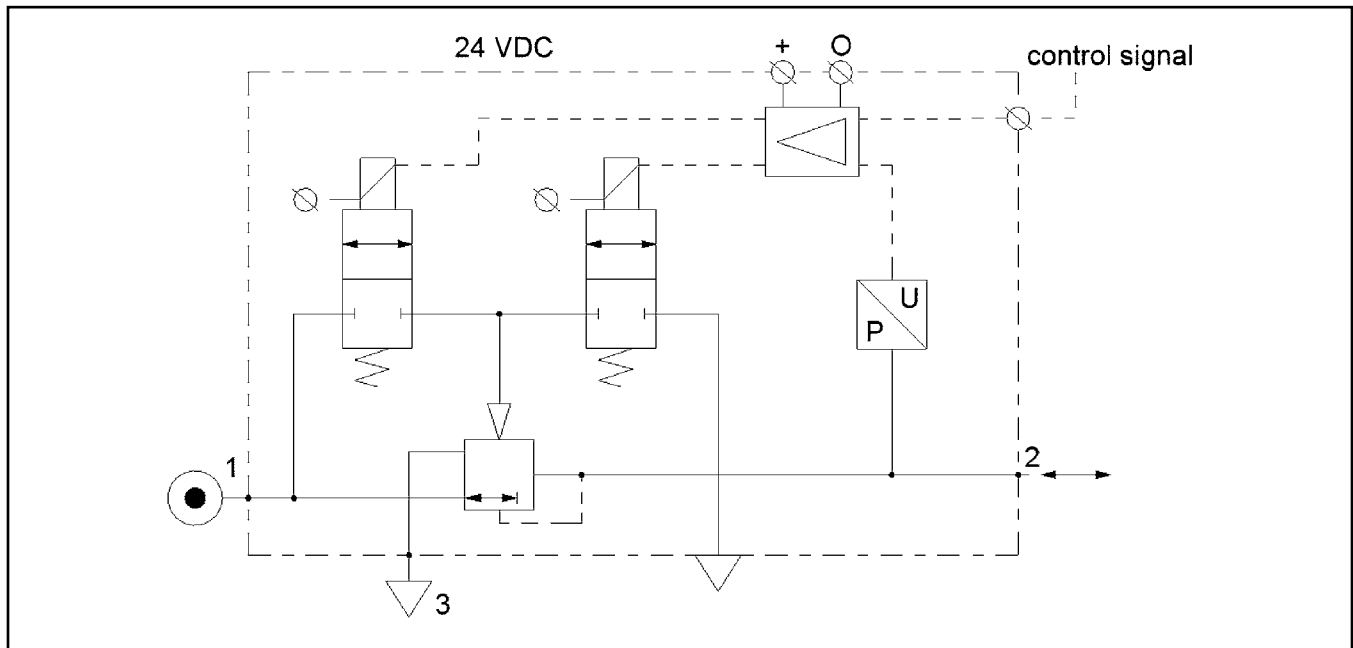
(In case of output signal (Option D)

Central M12 connector 4-pole

The electrical connections are as follows:

Pin No.	Function	Color	
1 24 V	Supply	Brown	
2	0 to 10 V 4 to 20mA	Control Signal Ri = 100k Ω Control Signal Ri = 500 Ω	White
3 0 V (GND)	Supply	Blue	
4 24 V	Alarm Output Signal	Black	

**Schematic**



**Technical information**

**Dead band**

The dead band is preset at 1.3% of Full Scale\*, adjustable via parameter 13.

**Accuracy**

Linearity: = < 0.3% of Full Scale.\*

**Proportional band**

The proportional band is preset at 10% of Full Scale.\*

**Fail safe operation**

- If the P31P / P32P unit has an “0” or “A” in the 12th digit of the model number
  - When the supply voltage drops, the electronic control reverts to the fail safe mode. The last known output pressure is maintained at approximately the same level depending upon air consumption. The digital display indicates the last known pressure setting.
  - When the supply voltage is reinstated to the correct level, the valve moves from the fail safe mode and the output pressure immediately follows the control signal requirement. The display indicates the actual output pressure.
  - Note: In the event of loss of both power and inlet pressure the unit will exhaust downstream pressure.
- If the P31P / P32P unit has an “E” in the 12th digit of the model number
  - When the supply voltage drops, the electronic control reverts to “Forced Exhaust Mode” and will automatically exhaust the downstream (regulated) pressure.
  - When the supply voltage is reinstated to the correct level the unit will return to normal operation and follows the control signal requirement. The display indicates the actual pressure.
- If the unit has been programmed in manual mode (not with a control signal) the unit will EXHAUST and the regulator will need to be reset when power is applied.

**Full exhaust**

Complete exhaust of the regulator is defined as  $P2 \leq 1\%$  Full Scale

**\* Full scale (F.S.)**

For 2 bar (29 psig) versions this will be 2 bar (29 psig), for the 10 bar (145 psig) version full scale will be 10 bar (145 psig).

**Degree of protection**

IP65

**EU conformity**

CE: standard

EMC: according to directive 89/336/EEC

The new pressure regulator is in accordance with:

- EN 61000-6-1:2001                      EN 61000-6-2:2001
- EN 61000-6-3:2001                      EN 61000-6-4:2001

These standards ensure that this unit meets the highest level of EMC protection.

**Mounting Position**

Preferably vertical, with the cable gland on top.

**Materials: P31P & P32P**

- Magnet Core ..... Steel
- Solenoid Valve Poppet ..... FPM
- Solenoid Valve Housing ..... Techno Polymer
- Regulator Body (P31P & P32P versions) ..... Aluminium
- Regulator Top Housing ..... Nylon
- Valve Head ..... Brass & NBR
- Remaining Seals ..... NBR

**Advanced functionality**

**Pilot valve protection**

When the required output pressure can not be achieved because of a lack of input pressure the unit will open fully and will display NoP. Approximately every 10 seconds the unit will retry. The output pressure will then be approximately equal to the inlet pressure. As soon as the input pressure is back on the required level, the normal control function follows.

**Safety exhaust**

Should the **control signal** fall below 0.1 volts the valve will automatically dump downstream system pressure .

**Input protection**

The unit has built-in protection against failure and burnout resulting from incorrect input value, typically:

The 24VDC supply is incorrectly connected to the setpoint input, the display will show ‘OL’, as an overload indication. The unit will need to be rewired and when correctly connected will operate normally.

The overload indicator ‘OL’ will also appear should the wrong input value be applied or the wrong input value be programmed: 4 - 20m instead of 0 - 10V. To correct this a different set point value should be input or the unit reprogrammed to correct the set point value acceptance. (via parameter 4).

Response time	P31P	P32P
2 to 4 bar	25 msecs	35 msecs
1 to 6 bar	55 msecs	135 msecs
4 to 2 bar	70 msecs	85 msecs
6 to 1 bar	80 msecs	225 msecs

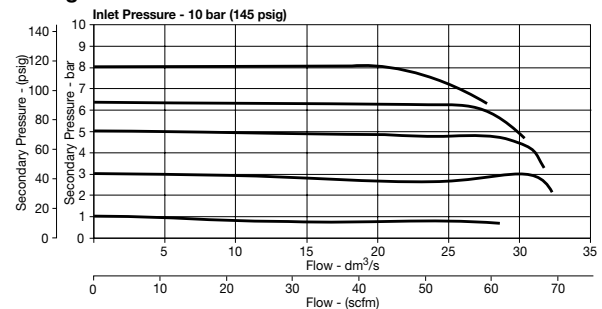
To fill volume of:  
100cm<sup>3</sup> - P31P  
330cm<sup>3</sup> - P32P  
connected to the outlet of the regulator.

**Settings**

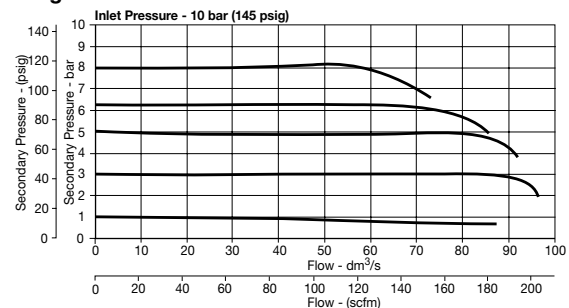
The regulator is pre-set at the factory. If required, adjustments can be made.

**Flow Charts**

**P31P Regulator 1/4" Ports**



**P32P Regulator 1/2" Ports**



## Valves & Cylinders

### ISO Pneumatic Directional Valves - 18mm-26mm ISO 15407-2



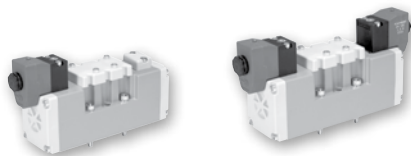
**Notes: 24VDC, Internal Pilot - for 120VAC, replace G9 with 23**

HBNVXBG0G9A	18mm, 3-way, 2-position, dual valve, NC / NC
HBEVXBG0G9A	18mm 4-way, 2-position, spring return
HAEVXBG0G9A	26mm 4-way, 2-position, spring return
HB2VXBG0G9A	18mm 4-way, 2-position
HA1VXBG0G9A	26mm 4-way, 2-position
HB7VXBG0G9A	18mm 4-way, 3-position, pressure center
HA7VXBG0G9A	26mm 4-way, 3-position, pressure center
HB6VXBG0G9A	18mm 4-way, 3-position, center exhaust
HA6VXBG0G9A	26mm 4-way, 3-position, center exhaust

### Accessories - 18mm-26mm ISO 15407-2

PS561161MP	15407-2 18mm HB - Plug-in manifold base, double address 1/8" NPT, bottom/end ported bases	
PS551163MP	15407-2 26mm HA - Plug-in manifold base, double address 1/4" NPT, bottom/end ported bases	
PS561162MP	15407-2 18mm HB - Plug-in manifold base, double address 1/8" BSPP, bottom/end ported bases	
PS551164MP	15407-2 26mm HA - Plug-in manifold base, double address 1/4" BSPP, bottom/end ported bases	
PS5634P	15407-2 18mm HB - Blanking plate	
PS5534P	15407-2 26mm HA - Blanking plate	
PS5620L20P	15407-2 18mm HB and 26mm HA - End plate kit, 25-Pin, D-Sub - NPT	
PS5620T20P	15407-2 18mm HB and 26mm HA - End plate kit, Turck fieldbus, 32 outputs - NPT	
PS5620L21P	15407-2 18mm HB and 26mm HA - End plate kit, 25-Pin, D-Sub - BSPP	
PS5620T21P	15407-2 18mm HB and 26mm HA - End plate kit, Turck fieldbus, 32 outputs - BSPP	



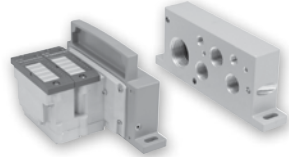
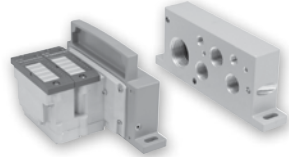
### ISO Pneumatic Directional Valves - Size 1, 2, 3 ISO 5599-2




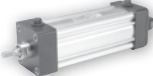


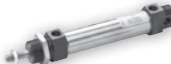

**Notes: 24VDC, Internal Pilot - for 120VAC, replace G9 with 23**

H1EVXBG0B9D	Size 1, 4-way, 2-position, spring return
H2EVXBG0B9D	Size 2, 4-way, 2-position, spring return
H3EVXBG0B9D	Size 3, 4-way, 2-position, spring return
H12VXBG0B9D	Size 1, 4-way, 2-position
H22VXBG0B9D	Size 2, 4-way, 2-position
H32VXBG0B9D	Size 3, 4-way, 2-position
H17VXBG0B9D	Size 1, 4-way, 3-position, pressure center
H27VXBG0B9D	Size 2, 4-way, 3-position, pressure center
H37VXBG0B9D	Size 3, 4-way, 3-position, pressure center
H16VXBG0B9D	Size 1, 4-way, 3-position, center exhaust
H26VXBG0B9D	Size 2, 4-way, 3-position, center exhaust
H36VXBG0B9D	Size 3, 4-way, 3-position, center exhaust

**Accessories - Size 1, 2, 3 ISO 5599-2**

PS401165MCP	5599-2 ISO 1 - H1 - Plug-in manifold base, double address 3/8" NPT, bottom/end ported	
PS401166MCP	5599-2 ISO 1 - H1 - Plug-in manifold base, double address 3/8" BSPP, bottom/end ported	
PS411167MCP	5599-2 ISO 2 - H2 - Plug-in manifold base, double address 1/2" NPT, bottom/end ported	
PS411168MCP	5599-2 ISO 2 - H2 - Plug-in manifold base, double address 1/2" BSPP, bottom/end ported	
PS421169MCP	5599-2 ISO 3 - H3 - Plug-in manifold base, double address 3/4" NPT, bottom/end ported	
PS421160MCP	5599-2 ISO 3 - H3 - Plug-in manifold base, double address 3/4" BSPP, bottom/end ported	
PS4020L20CP	5599-2 ISO 1 - H1 - End plate kit, 25-Pin, D-Sub - NPT	
PS4020L21CP	5599-2 ISO 1 - H1 - End plate kit, 25-Pin, D-Sub - BSPP	
PS4120L20CP	5599-2 ISO 2 - H2 - End plate kit, 25-Pin, D-Sub - NPT	
PS4120L21CP	5599-2 ISO 2 - H2 - End plate kit, 25-Pin, D-Sub - BSPP	
PS4220L20CP	5599-2 ISO 3 - H3 - End plate kit, 25-Pin, D-Sub - NPT	
PS4220L21CP	5599-2 ISO 3 - H3 - End plate kit, 25-Pin, D-Sub - BSPP	
PS4020T20CP	5599-2 ISO 1 - H1 - End plate kit, Turck fieldbus, 32 outputs - NPT	
PS4020T21CP	5599-2 ISO 1 - H1 - End plate kit, Turck fieldbus, 32 outputs - BSPP	
PS4120T20CP	5599-2 ISO 2 - H2 - End plate kit, Turck fieldbus, 32 outputs - NPT	
PS4120T21CP	5599-2 ISO 2 - H2 - End plate kit, Turck fieldbus, 32 outputs - BSPP	
PS4220T20CP	5599-2 ISO 3 - H3 - End plate kit, Turck fieldbus, 32 outputs - NPT	
PS4220T21CP	5599-2 ISO 3 - H3 - End plate kit, Turck fieldbus, 32 outputs - BSPP	

**Cylinders**

Series		Notes	Bore Size	
2A Series		NFPA steel body	1 to 20 inch	<a href="http://www.parker.com/pneu/2a">www.parker.com/pneu/2a</a>
4MA Series		NFPA aluminum body	1.5 to 8 inch	<a href="http://www.parker.com/pneu/4ma">www.parker.com/pneu/4ma</a>
P1D Series		ISO aluminum body	32 to 200 mm	<a href="http://www.parker.com/pneu/p1d">www.parker.com/pneu/p1d</a>
SR Series		Stainless steel round body - non repairable	5/16 to 3 inch	<a href="http://www.parker.com/pneu/sr">www.parker.com/pneu/sr</a>
P1A Series		ISO round body - non repairable	10 to 25mm	<a href="http://www.parker.com/pneu/p1a">www.parker.com/pneu/p1a</a>
P1Q Series		Economy compact	12 to 200mm	<a href="http://www.parker.com/pneu/p1q">www.parker.com/pneu/p1q</a>

## Air Preparation

### Particulate Filters



**Notes:**  
5 micron, metal bowl with sight gauge, auto drain

<b>P32FA*2ESAN</b>	1/4"
<b>P32FA*3ESAN</b>	3/8"
<b>P33FA*4ESAN</b>	1/2"
<b>P33FA*6EASN</b>	3/4"
<b>P3NFA18ESA</b>	1"
<b>P3NFA19ESA</b>	1-1/2"

\* 1 = BSPP or 9 = NPT

### Coalescing and Adsorber Filter



**Notes:**  
1 micron, differential pressure indicator, metal bowl, auto drain

<b>P32FA*2QSAN</b>	1/4" ports
<b>P32FA*3QSAN</b>	3/8" ports
<b>P33FA*4ESAN</b>	1/2" ports
<b>P33FA*6ESAN</b>	3/4" ports
<b>P3NFA18DSA</b>	1" ports
<b>P3NFA1PDSA</b>	1-1/2" ports

\* 1 = BSPP or 9 = NPT

### Pressure Regulator



**Notes:**  
Reverse flow, relieving. Purchase gauge separately

<b>P32RA*2RN**P</b>	1/4" ports
<b>P32RA*3RN**P</b>	3/8" ports
<b>P33RA*4RN**P</b>	1/2" ports
<b>P33RA*6RN**P</b>	3/4" ports
<b>P3NRA18BNG</b>	1" ports
<b>P3NRA1PBNG</b>	1-1/2" ports

\* 1 = BSPP or 9 = NPT; \*\* Adjustment range Y- 30 psig, L - 60 psig, N - 125 psig, H - 250 psig

### Filter / Regulator Combination



**Notes:**  
5 micron, 8 bar (125 PSIG) relieving, metal bowl, auto drain. Purchase gauge separately

<b>P32EA*2ESABN**P</b>	1/4" ports
<b>P32EA*3ESABN**P</b>	3/8" ports
<b>P33EA*4ESABN**P</b>	1/2" ports
<b>P33EA*6ESABN**P</b>	3/4" ports
<b>P3NEA98GSABNN</b>	1" ports
<b>P3NEA9PGSABNN</b>	1-1/2" ports

\* 1 = BSPP or 9 = NPT; \*\* Adjustment range Y- 30 psig, L - 60 psig, N - 125 psig, H - 250 psig

### Proportional Regulators



**Notes:**  
N.C. bottom exhaust, 0-145 PSIG 0-10 bar, 24VDC

<b>P31PA*2AD2V**1A</b>	1/4" ports
<b>P32PA*4AD2V**1A</b>	1/2" ports

\* 1 = BSPP or 9 = NPT

\*\* Output signal P - Digital PNP, P - PNP or 0 to 10V, N - NPN or 0-10V, M - 2-40mA fixed

### Modular Ball Valves with Lock



**Notes:**

<b>P32VA*3LBNN</b>	3/8" ports, 1/4" exhaust
<b>P32VA*4LBNN</b>	3/8" ports, 1/2" exhaust
<b>P33VA*4LBNN</b>	1/2" ports, 1/2" exhaust
<b>P33VA*6LBNN</b>	3/4" ports, 1/2" exhaust

\* 1 = BSPP or 9 = NPT



**Manifold Blocks**



Notes

<b>P32MA*4024N</b>	1/2" in / out, 1/4" & 1/2" aux ports NPT
<b>P33MA*6024N</b>	3/4" in / out, 1/4" & 1/2" aux ports NPT

\* 1 = BSPP or 9 = NPT

**Accessories**



<b>P32KA00MT</b>	T-bracket with body connector
<b>P32KA*2CP</b>	Port block kit , 1/4" ports
<b>P32KA*3CP</b>	Port block kit , 3/8" ports
<b>P32KA*4CP</b>	Port block kit , 1/2" ports
<b>P32KA*6CP</b>	Port block kit , 3/4" ports
<b>P31KA00MR</b>	Angle bracket for regulator and filter / regulator
<b>K4520N14060</b>	50mm round gauge, P32 / P33, 0-60 PSIG, 1/4" NPT
<b>K4520N14160</b>	50mm round gauge, P32 / P33, 0-160 PSIG, 1/4" NPT

\* 1 = BSPP or 9 = NPT

**Lockout Valves**



Notes:

<b>LV3*6B</b>	3/8" ports, 3/4" exhaust
<b>LV4*6B</b>	1/2" ports, 3/4" exhaust
<b>LV6*6B</b>	3/4" ports, 3/4" exhaust
<b>LV6*AB</b>	3/4" ports, 1-1/4" exhaust
<b>LV8*AB</b>	1" ports, 1-1/4" exhaust
<b>LVA*AB</b>	1-1/4" ports, 1-1/4" exhaust

\* B = BSPP or N = NPT

**Lockout Valves with Soft Start**





Notes:



<b>EZ03*B6</b>	3/8" ports, 3/4" exhaust
<b>EZ04*B6</b>	1/2" ports, 3/4" exhaust
<b>EZ06*BA</b>	3/4" ports, 1-1/4" exhaust
<b>EZ08*BA</b>	1" ports, 1-1/4" exhaust
<b>EZ0A*BA</b>	1-1/4" ports, 1-1/4" exhaust

\* B = BSPP or N = NPT



**Male NPT Connector**

W68PW 	Tube	NPT	3675 
W68PW-4-2	1/4"	1/8"	3675 56 11
W68PW-4-4	1/4"	1/4"	3675 56 14
W68PW-4-6	1/4"	3/8"	3675 56 18
W68PW-6-4	3/8"	1/4"	3675 60 14
W68PW-6-6	3/8"	3/8"	3675 60 18
W68PW-6-8	3/8"	1/2"	3675 60 22
W68PW-8-6	1/2"	3/8"	3675 62 18
W68PW-8-8	1/2"	1/2"	3675 62 22



**Male 90 Degree NPT Elbow**

W169PW 	Tube	NPT	3609 
W169PW-4-2	1/4"	1/8"	3609 56 11
W169PW-4-4	1/4"	1/4"	3609 56 14
W169PW-4-6	1/4"	3/8"	3609 56 18
W169PW-6-4	3/8"	1/4"	3609 60 14
W169PW-6-6	3/8"	3/8"	3609 60 18
W169PW-6-8	3/8"	1/2"	3609 60 22
W169PW-8-6	1/2"	3/8"	3609 62 18
W169PW-8-8	1/2"	1/2"	3609 62 22



**Male NPT Branch Tee Swivel**

W172PW 	Tube	NPT	3608 
W172PW-4-2	1/4"	1/8"	3608 56 11
W172PW-4-4	1/4"	1/4"	3608 56 14
W172PW-4-6	1/4"	3/8"	3608 56 18
W172PW-6-4	3/8"	1/4"	3608 60 14
W172PW-6-6	3/8"	3/8"	3608 60 18
W172PW-8-6	1/2"	3/8"	3608 62 18
W172PW-8-8	1/2"	1/2"	3608 62 22



**Male NPT Run Tee Swivel**

W171PW 	Tube	NPT	3603 
W171PW- 4-2	1/4"	1/8"	3603 56 11
W171PW-4-4	1/4"	1/4"	3603 56 14
W171PW-4-6	1/4"	3/8"	3603 56 17
W171PW-6-4	3/8"	1/4"	3603 60 14
W171PW-6-6	3/8"	3/8"	3603 60 17
W171PW-8-6	1/2"	3/8"	3603 62 17
W171PW-8-8	1/2"	1/2"	3603 62 22



**Inch Bulkhead Union**

68PWBH 	Tube	Tube	3616 
68PWBH-4	1/4"	1/4"	3616 56 00
68PWBH-5	5/16"	5/16"	3616 08 00
68PWBH-6	3/8"	3/8"	3616 60 00
68PWBH-8	1/2"	1/2"	3616 62 00



**Inch Union**

62PW 	Tube	Tube	3606 
62PW-4	1/4"	1/4"	3606 56 00
62PW-5	5/16"	5/16"	3606 08 00
62PW-6	3/8"	3/8"	3606 60 00
62PW-8	1/2"	1/2"	3606 62 00


**Inch Union 90 Degree Elbow**

165PW 	Tube	Tube	3602 
165PW-4	1/4"	1/4"	3602 56 00
165PW-5	5/16"	5/16"	3602 08 00
165PW-6	3/8"	3/8"	3602 60 00
165PW-8	1/2"	1/2"	3602 62 00



**Inch Union Tee**

164PW 	Tube	Tube	3604 
164PW-4	1/4"	1/4"	3604 56 00
164PW-5	5/16"	5/16"	3604 08 00
164PW-6	3/8"	3/8"	3604 60 00
164PW-8	1/2"	1/2"	3604 62 00



**Dust / Weld Spatter Boot**

	
DB	NPT
DB-4	1/4"
DB-6	3/8"
DB-8	1/2"



**Metric Fittings****Male BSPT Connector**

F3PB		Tube (mm)	BSPT	3675	
F3PB6-1/8		6	1/8"	3675 06 10	
F3PB6-1/4		6	1/4"	3675 06 13	
F3PB8-1/8		8	1/8"	3675 08 10	
F3PB8-1/4		8	1/4"	3675 08 13	
F3PB8-3/8		8	3/8"	3675 08 17	
F3PB10-3/8		10	3/8"	3675 10 17	
F3PB10-1/2		10	1/2"	3675 10 21	
F3PB12-3/8		12	3/8"	3675 12 17	
F3PB12-1/2		12	1/2"	3675 12 21	



**Adjustable Male 90 Degree BSPT Elbow**

C63PB		Tube (mm)	BSPT	3609	
C63PB6-1/8		6	1/8"	3609 06 10	
C63PB6-1/4		6	1/4"	3609 06 13	
C63PB8-1/4		8	1/4"	3609 08 13	
C63PB8-3/8		8	3/8"	3609 08 17	
C63PB10-3/8		10	3/8"	3609 10 17	
C63PB12-3/8		12	3/8"	3609 12 17	
C63PB12-1/2		12	1/2"	3609 12 21	



**Male BSPT Branch Tee Swivel**

S63PB		Tube (mm)	BSPT	3608	
S63PB6-1/8		6	1/8"	3608 06 10	
S63PB6-1/4		6	1/4"	3608 06 13	
S63PB8-1/4		8	1/4"	3608 08 13	
S63PB8-3/8		8	3/8"	3608 08 17	
S63PB10-3/8		10	3/8"	3608 10 17	
S63PB12-3/8		12	3/8"	3608 12 17	
S63PB12-1/2		12	1/2"	3608 12 21	



**Male BSPT Run Tee Swivel**

R63PB		Tube (mm)	BSPT	3603	
R63PB6-1/8		6	1/8"	3603 06 10	
R63PB6-1/4		6	1/4"	3603 06 13	
R63PB8-1/4		8	1/4"	3603 08 13	
R63PB10-3/8		10	3/8"	3603 10 17	
R63PB12-3/8		12	3/8"	3603 12 17	



**Parker Pneumatics  
Welding Products****Metric Bulkhead Union**

WPB		Tube (mm)	Tube (mm)	3616	
WPB6		6	6	3616 06 00	
WPB8		8	8	3616 08 00	
WPB10		10	10	3616 10 00	
WPB12		12	12	3616 12 00	



**Metric Union**

HPB		Tube (mm)	Tube (mm)	3606	
HPB6		6	6	3606 06 00	
HPB8		8	8	3606 08 00	
HPB10		10	10	3606 10 00	
HPB12		12	12	3606 12 00	

**Metric Union 90 Degree Elbow**

EPB		Tube (mm)	Tube (mm)	3602	
EPB6		6	6	3602 06 00	
EPB8		8	8	3602 08 00	
EPB10		10	10	3602 10 00	
EPB12		12	12	3602 12 00	

**Metric Union Tee**

JPB		Tube (mm)	Tube (mm)	3604	
JPB6		6	6	3604 06 00	
JPB8		8	8	3604 08 00	
JPB10		10	10	3604 10 00	
JPB12		12	12	3604 12 00	

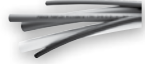
## Weld Spatter Resistant Tubing

### HUFR MicroWeld Tubing

Weld Spatter Resistant Polyurethane tubing

Available Colors - Enter color in place of XXX

BLK	BLU	GRN	WHT
-----	-----	-----	-----



Part number	I.D. inch	O.D. inch	Working pressure PSI	Bend radius inch
HUFR-4-045-XXX	0.16	1/4"	175	0.5
HUFR-6-062-XXX	0.251	3/8"	150	0.75
HUFR-8-090-XXX	0.32	1/2"	160	1

### PrestoWeld Soft

Weld Spatter Resistant Polyurethane tubing

Available Colors - Enter color code number in place of X

2 = RED	3 = BLU	4 = GRN	5 = BLK
---------	---------	---------	---------



Part number	I.D. mm	O.D. mm	Working Pressure PSI @ 23C°	Bend Radius mm
SGPWPU4X1/X	2.0	4.0	400	5
SGPWPU6X1/X	4.0	6.0	230	12
SGPWPU6X1.5/X	3.0	6.0	400	12
SGPWPU8X1.5/X	5.0	8.0	275	15
SGPWPU8X2/X	4.0	8.0	230	15
SGPWPU10X2/X	6.0	10.0	190	19
SGPWPU12X2/X	8.0	12.0	175	28
SGPWPU14X2/X	10.0	14.0	175	42

## Multi Purpose Hose

### 821FR - PUSH-LOK - Fire Resistant

Multipurpose - Fire Resistant fiber braid cover, PKR inner tube

Available Colors - Enter color in place of XXX

BLK	BLU	GRN	WHT	BRN
-----	-----	-----	-----	-----



Part number	I.D. Inch	O.D. Inch	Working Pressure PSI	Fitting Series
821FR-4-XXX	1/4"	0.5	350	82
821FR-6-XXX	3/8"	0.63	300	82
821FR-8-XXX	1/2"	0.78	300	82
821FR-12-XXX	3/4"	1.03	250	82

### 83FR - DuraGard - Weld Spatter Resistant

Multipurpose - Weld Spatter Resistant Urethane cover and Urethane inner tube

Available Colors - Enter color in place of XXX

BLU	GRN	BLK	GRA	BRN	RED
-----	-----	-----	-----	-----	-----



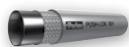
Part number	I.D. Inch	O.D. Inch	Working Pressure PSI	Fitting Series
83FR-4-XXX	1/4"	0.47	300	82
83FR-6-XXX	3/8"	0.59	300	82
83FR-8-XXX	1/2"	0.75	300	82
83FR-12-XXX	3/4"	1.03	300	82

### 801 - PUSH-LOK PLUS

Multipurpose - Synthetic rubber cover and inner tube

Available Colors - Enter color in place of XXX

GRA	RED	YEL	BLU	GRN	BLK
-----	-----	-----	-----	-----	-----



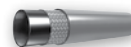
Part number	I.D. Inch	O.D. Inch	Working Pressure PSI	Fitting Series
801-4-XXX	1/4"	0.5	350	82
801-6-XXX	3/8"	0.63	350	82
801-8-XXX	1/2"	0.78	300	82
801-10-XXX	5/8"	0.91	300	82
801-12-XXX	3/4"	1.03	300	82
801-16-XXX	1"	1.28	200	82

### 837PU - HYBRID PUSH-LOK

Multipurpose - Synthetic rubber inner tube, Polyurethane cover for high abrasion resistance. Free of wetting disturbing substances

Available Colors - Enter color in place of XXX

GRA	RED	BLU	GRN	BLK
-----	-----	-----	-----	-----



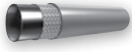
Part number	I.D. Inch	O.D. Inch	Working Pressure PSI	Fitting Series
837PU-4-XXX	1/4"	0.5	235	82
837PU-6-XXX	3/8"	0.63	235	82
837PU-8-XXX	1/2"	0.78	235	82
837PU-10-XXX	5/8"	0.91	235	82
837PU-12-XXX	3/4"	1.03	235	82

## Multi Purpose Hose

### 837BM - PUSH-LOK

Multipurpose - Synthetic rubber cover and inner tube  
 Free of wetting disturbing substances

Available Colors - Enter color in place of XXX


GRA	RED	BLU	GRN	BLK
				
Part number	I.D. Inch	O.D. Inch	Working Pressure PSI	Fitting Series
837BM-4-XXX	1/4"	0.5	235	82
837BM-6-XXX	3/8"	0.63	235	82
837BM-8-XXX	1/2"	0.78	235	82
837BM-10-XXX	5/8"	0.91	235	82
837BM-12-XXX	3/4"	1.03	235	82

### Multi Purpose PUSH-LOK Hose Barbs

#### 82 Series Push-on Fittings

For use with PUSH-LOK and 83FR Hoses


Male NPTF Pipe - Rigid

		
Part number	Thread	Hose I.D.
30182-2-4	1/8 x 27	1/4"
30182-4-4	1/4 x 18	1/4"
30182-6-4	3/8 x 18	1/4"
30182-4-6	1/4 x 18	3/8"
30182-6-6	3/8 x 18	3/8"
30182-8-6	1/2 x 14	3/8"
30182-8-8	1/2 x 14	1/2"
30182-8-10	1/2 x 14	5/8"
30182-8-12	1/2 x 14	3/4"
30182-12-12	3/4 x 14	3/4"
30182-16-16	1 x 1-1/2	1"

#### 82 Series Push-on Fittings

For use with PUSH-LOK and 83FR Hoses


Female JIC 37 - Swivel

		
Part number	Thread	Hose I.D.
30682-4-4	1/4 x 18	1/4"
30682-6-4	3/8 x 18	1/4"
30682-6-6	3/8 x 18	3/8"
30682-8-6	1/2 x 14	3/8"
30682-8-8	1/2 x 14	1/2"
30682-10-10	7/8 x 14	5/8"
30682-12-12	3/4 x 14	3/4"
30682-16-16	1 x 1-1/2	1"

### 82 Series Push-on Fittings

For use with PUSH-LOK and 83FR Hoses

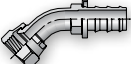
Male NPTF Pipe - Swivel

		
Part number	Thread	Hose I.D.
31382-4-4	1/4 x 18	1/4"
31382-6-6	3/8 x 18	3/8"
31382-8-8	1/2 x 14	1/2"
31382-8-10	1/2 x 14	5/8"
31382-12-12	3/4 x 14	3/4"

### 82 Series Push-on Fittings

For use with PUSH-LOK and 83FR Hoses

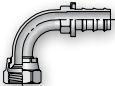
Female JIC 37 - Swivel - 90 Elbow

		
Part number	Thread	Hose I.D.
33782-4-4	1/4 x 18	1/4"
33782-6-6	3/8 x 18	3/8"
33782-8-8	1/2 x 14	1/2"
33782-10-10	7/8 x 14	5/8"
33782-12-12	3/4 x 14	3/4"

### 82 Series Push-on Fittings

For use with PUSH-LOK and 83FR Hoses

Female JIC 37 - Swivel - 45 Elbow

		
Part number	Thread	Hose I.D.
33982-4-4	1/4 x 18	1/4"
33982-6-6	3/8 x 18	3/8"
33982-8-8	1/2 x 14	1/2"
33982-10-10	7/8 x 14	5/8"

## Scheduled Maintenance

**Silencer** – Periodic maintenance of the exhaust mufflers may be required. The frequency of maintenance depends on the environment and condition of the air supply.

### Cautions

- Filtrate the inlet air to protect the weld block against contaminating matter typically found in compressed air systems (i.e. rust, water, compressor oil, or other foreign particles). A standard 40 micron filter is recommended.

If liquid aerosols, both water and oil, and submicron particulate matter need to be removed from your air system, then a coalescing filter is required.

- The inlet compressed air must be filtered, regulated, and periodically maintained to ensure maximum operating performance and warranty.

## Weld Block Troubleshooting

Always verify that air and electrical are connected properly per Installation Instructions on page 4. At startup, cylinder should be open fully with no electrical signal to solenoids. All air lines, filters, regulators, tubing, hoses, fittings and electrical cables should be in good working condition as specified in automotive plant maintenance schedule.

### 1. Cylinder does not extend / retract.

- Does the cylinder move using manual overrides?
  - If yes, then check electrical conditions. Check the following:
    - Solenoid connections
    - Coils – replace if necessary
    - PLC program

- If no, does the cylinder move freely with air turned off?
  - If no, then cylinder should be repaired / replaced.
  - If yes, is the flow control open?
    - If no, open flow control. See Setup Instructions on page 5.
    - If yes, verify with gauges that there is pressure on back side of cylinder when valve shifts. There is a possibility that the metering of exhaust air on the front side of the cylinder, due to the flow control, is creating a “Joe Block” effect occurring between the piston face and cylinder. Contact Parker Representative for assistance.
    - If yes, replace valves on System

### 2. Cylinder tips close too fast / slow.

- Adjust flow control. See Setup Instructions on page 7.
- Quick Exhaust only – Adjust air timer on quick exhaust.
- Check muffler for proper operation. If covered with weld slag, then replace muffler.

### 3. Weld gun does not fire weld.

- Is cable connected to sensor?
  - If no, connect to sensor
  - If yes, is cable connected to PLC?
    - If no, wire to controller
    - If yes, check PLC program on location of weld signal to start weld. Also verify feedback sensor is operating properly.

### 4. Weld gun fires before tips are closed

- Adjust flow control so that weld tips close slower. See Setup Instructions on page 7.
- Is sensor input in the PLC correct? See Setup Instructions on page 7.

## Warnings

### WARNING

To avoid unpredictable system behavior that can cause personal injury and property damage:

- Disconnect electrical supply (when necessary) before installation, servicing, or conversion.
- Disconnect air supply and depressurize all air lines connected to this product before installation, servicing, or conversion.
- Operate within the manufacturer's specified pressure, temperature, and other conditions listed in these instructions.
- Medium must be moisture-free if ambient temperature is below freezing.
- Service according to procedures listed in these instructions.
- Installation, service, and conversion of these products must be performed by knowledgeable personnel who understand how pneumatic products are to be applied.
- After installation, servicing, or conversion, air and electrical supplies (when necessary) should be connected and the product tested for proper function and leakage. If audible leakage is present, or the product does not operate properly, do not put into use.
- Warnings and specifications on the product should not be covered by paint, etc. If masking is not possible, contact your local representative for replacement labels.

### 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, including consequences of any failure and review the information concerning the product or systems 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.

**EXTRA COPIES OF THESE INSTRUCTIONS ARE AVAILABLE FOR INCLUSION IN EQUIPMENT / MAINTENANCE MANUALS THAT UTILIZE THESE PRODUCTS. CONTACT YOUR LOCAL REPRESENTATIVE.**



# Safety Guide For Selecting And Using Pneumatic Division Products And Related Accessories

## WARNING:

**FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF PNEUMATIC DIVISION PRODUCTS, ASSEMBLIES OR RELATED ITEMS (“PRODUCTS”) CAN CAUSE DEATH, PERSONAL INJURY, AND PROPERTY DAMAGE. POSSIBLE CONSEQUENCES OF FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THESE PRODUCTS INCLUDE BUT ARE NOT LIMITED TO:**

- Unintended or mistimed cycling or motion of machine members or failure to cycle
  - Work pieces or component parts being thrown off at high speeds.
  - Failure of a device to function properly for example, failure to clamp or unclamp an associated item or device.
  - Explosion
  - Suddenly moving or falling objects.
  - Release of toxic or otherwise injurious liquids or gasses.
- Before selecting or using any of these Products, it is important that you read and follow the instructions below.

## 1. GENERAL INSTRUCTIONS

- 1.1. Scope:** This safety guide is designed to cover general guidelines on the installation, use, and maintenance of Pneumatic Division Valves, FRLs (Filters, Pressure Regulators, and Lubricators), Vacuum products and related accessory components.
- 1.2. Fail-Safe:** Valves, FRLs, Vacuum products and their related components can and do fail without warning for many reasons. Design all systems and equipment in a fail-safe mode, so that failure of associated valves, FRLs or Vacuum products will not endanger persons or property.
- 1.3. Relevant International Standards:** For a good guide to the application of a broad spectrum of pneumatic fluid power devices see: ISO 4414:1998, Pneumatic Fluid Power – General Rules Relating to Systems. See [www.iso.org](http://www.iso.org) for ordering information.
- 1.4. Distribution:** Provide a copy of this safety guide to each person that is responsible for selection, installation, or use of Valves, FRLs or Vacuum products. Do not select, or use Parker valves, FRLs or vacuum products without thoroughly reading and understanding this safety guide as well as the specific Parker publications for the products considered or selected.
- 1.5. User Responsibility:** Due to the wide variety of operating conditions and applications for valves, FRLs, and vacuum products Parker and its distributors do not represent or warrant that any particular valve, FRL or vacuum product is suitable for any specific end use system. This safety guide does not analyze all technical parameters that must be considered in selecting a product. The user, through its own analysis and testing, is solely responsible for:
  - Making the final selection of the appropriate valve, FRL, Vacuum component, or accessory.
  - Assuring that all user's performance, endurance, maintenance, safety, and warning requirements are met and that the application presents no health or safety hazards.
  - Complying with all existing warning labels and / or providing all appropriate health and safety warnings on the equipment on which the valves, FRLs or Vacuum products are used; and,
  - Assuring compliance with all applicable government and industry standards.
- 1.6. Safety Devices:** Safety devices should not be removed, or defeated.
- 1.7. Warning Labels:** Warning labels should not be removed, painted over or otherwise obscured.
- 1.8. Additional Questions:** Call the appropriate Parker technical service department if you have any questions or require any additional information. See the Parker publication for the product being considered or used, or call 1-800-CPARKER, or go to [www.parker.com](http://www.parker.com), for telephone numbers of the appropriate technical service department.

## 2. PRODUCT SELECTION INSTRUCTIONS

- 2.1. Flow Rate:** The flow rate requirements of a system are frequently the primary consideration when designing any pneumatic system. System components need to be able to provide adequate flow and pressure for the desired application.
- 2.2. Pressure Rating:** Never exceed the rated pressure of a product. Consult product labeling, Pneumatic Division catalogs or the instruction sheets supplied for maximum pressure ratings.
- 2.3. Temperature Rating:** Never exceed the temperature rating of a product. Excessive heat can shorten the life expectancy of a product and result in complete product failure.
- 2.4. Environment:** Many environmental conditions can affect the integrity and suitability of a product for a given application. Pneumatic Division products are designed for use in general purpose industrial applications. If these products are to be used in unusual circumstances such as direct sunlight and/or corrosive or caustic environments, such use can shorten the useful life and lead to premature failure of a product.
- 2.5. Lubrication and Compressor Carryover:** Some modern synthetic oils can and will attack nitrile seals. If there is any possibility of synthetic oils or greases migrating into the pneumatic components check for compatibility with the seal materials used. Consult the factory or product literature for materials of construction.
- 2.6. Polycarbonate Bowls and Sight Glasses:** To avoid potential polycarbonate bowl failures:
  - Do not locate polycarbonate bowls or sight glasses in areas where they could be subject to direct sunlight, impact blow, or temperatures outside of the rated range.
  - Do not expose or clean polycarbonate bowls with detergents, chlorinated hydro-carbons, ketones, esters or certain alcohols.
  - Do not use polycarbonate bowls or sight glasses in air systems where compressors are lubricated with fire resistant fluids such as phosphate ester and di-ester lubricants.



**2.7. Chemical Compatibility:** For more information on plastic component chemical compatibility see Pneumatic Division technical bulletins Tec-3, Tec-4, and Tec-5

- 2.8. Product Rupture:** Product rupture can cause death, serious personal injury, and property damage.
- Do not connect pressure regulators or other Pneumatic Division products to bottled gas cylinders.
  - Do not exceed the maximum primary pressure rating of any pressure regulator or any system component.
  - Consult product labeling or product literature for pressure rating limitations.

### **3. PRODUCT ASSEMBLY AND INSTALLATION INSTRUCTIONS**

**3.1. Component Inspection:** Prior to assembly or installation a careful examination of the valves, FRLs or vacuum products must be performed. All components must be checked for correct style, size, and catalog number. DO NOT use any component that displays any signs of nonconformance.

**3.2. Installation Instructions:** Parker published Installation Instructions must be followed for installation of Parker valves, FRLs and vacuum components. These instructions are provided with every Parker valve or FRL sold, or by calling 1-800-CPARKER, or at [www.parker.com](http://www.parker.com).

**3.3. Air Supply:** The air supply or control medium supplied to Valves, FRLs and Vacuum components must be moisture-free if ambient temperature can drop below freezing

### **4. VALVE AND FRL MAINTENANCE AND REPLACEMENT INSTRUCTIONS**

**4.1. Maintenance:** Even with proper selection and installation, valve, FRL and vacuum products service life may be significantly reduced without a continuing maintenance program. The severity of the application, risk potential from a component failure, and experience with any known failures in the application or in similar applications should determine the frequency of inspections and the servicing or replacement of Pneumatic Division products so that products are replaced before any failure occurs. A maintenance program must be established and followed by the user and, at minimum, must include instructions 4.2 through 4.10.

**4.2. Installation and Service Instructions:** Before attempting to service or replace any worn or damaged parts consult the appropriate Service Bulletin for the valve or FRL in question for the appropriate practices to service the unit in question. These Service and Installation Instructions are provided with every Parker valve and FRL sold, or are available by calling 1-800-CPARKER, or by accessing the Parker web site at [www.parker.com](http://www.parker.com).

**4.3. Lockout / Tagout Procedures:** Be sure to follow all required lockout and tagout procedures when servicing equipment. For more information see: OSHA Standard – 29 CFR, Part 1910.147, Appendix A, The Control of Hazardous Energy – (Lockout / Tagout)

**4.4. Visual Inspection:** Any of the following conditions requires immediate system shut down and replacement of worn or damaged components:

- Air leakage: Look and listen to see if there are any signs of visual damage to any of the components in the system. Leakage is an indication of worn or damaged components.
- Damaged or degraded components: Look to see if there are any visible signs of wear or component degradation.
- Kinked, crushed, or damaged hoses. Kinked hoses can result in restricted air flow and lead to unpredictable system behavior.
- Any observed improper system or component function: Immediately shut down the system and correct malfunction.
- Excessive dirt build-up: Dirt and clutter can mask potentially hazardous situations.

**Caution: Leak detection solutions should be rinsed off after use.**

**4.5. Routine Maintenance Issues:**

- Remove excessive dirt, grime and clutter from work areas.
- Make sure all required guards and shields are in place.

**4.6. Functional Test:** Before initiating automatic operation, operate the system manually to make sure all required functions operate properly and safely.

**4.7. Service or Replacement Intervals:** It is the user's responsibility to establish appropriate service intervals. Valves, FRLs and vacuum products contain components that age, harden, wear, and otherwise deteriorate over time. Environmental conditions can significantly accelerate this process. Valves, FRLs and vacuum components need to be serviced or replaced on routine intervals. Service intervals need to be established based on:

- Previous performance experiences.
- Government and / or industrial standards.
- When failures could result in unacceptable down time, equipment damage or personal injury risk.

**4.8. Servicing or Replacing of any Worn or Damaged Parts:** To avoid unpredictable system behavior that can cause death, personal injury and property damage:

- Follow all government, state and local safety and servicing practices prior to service including but not limited to all OSHA Lockout Tagout procedures (OSHA Standard – 29 CFR, Part 1910.147, Appendix A, The Control of Hazardous Energy – Lockout / Tagout).
- Disconnect electrical supply (when necessary) before installation, servicing, or conversion.
- Disconnect air supply and depressurize all air lines connected to system and Pneumatic Division products before installation, service, or conversion.
- Installation, servicing, and / or conversion of these products must be performed by knowledgeable personnel who understand how pneumatic products are to be applied.
- After installation, servicing, or conversions air and electrical supplies (when necessary) should be connected and the product tested for proper function and leakage. If audible leakage is present, or if the product does not operate properly, do not put product or system into use.
- Warnings and specifications on the product should not be covered or painted over. If masking is not possible, contact your local representative for replacement labels.

**4.9. Putting Serviced System Back into Operation:** Follow the guidelines above and all relevant Installation and Maintenance Instructions supplied with the valve FRL or vacuum component to insure proper function of the system.

The items described in this document and other documents and descriptions provided by Parker Hannifin Corporation, its subsidiaries and its authorized distributors ("Seller") are hereby offered for sale at prices to be established by Seller. This offer and its acceptance by any customer ("Buyer") shall be governed by all of the following Terms and Conditions. Buyer's order for any item described in its document, when communicated to Seller verbally, or in writing, shall constitute acceptance of this offer. All goods or work described will be referred to as "Products".

- 1. Terms and Conditions.** Seller's willingness to offer Products, or accept an order for Products, to or from Buyer is subject to these Terms and Conditions or any newer version of the terms and conditions found on-line at [www.parker.com/saleterms/](http://www.parker.com/saleterms/). Seller objects to any contrary or additional terms or conditions of Buyer's order or any other document issued by Buyer.
- 2. Price Adjustments; Payments.** Prices stated on Seller's quote or other documentation offered by Seller are valid for 30 days, and do not include any sales, use, or other taxes unless specifically stated. Unless otherwise specified by Seller, all prices are F.C.A. Seller's facility (INCOTERMS 2010). Payment is subject to credit approval and is due 30 days from the date of invoice or such other term as required by Seller's Credit Department, after which Buyer shall pay interest on any unpaid invoices at the rate of 1.5% per month or the maximum allowable rate under applicable law.
- 3. Delivery Dates; Title and Risk; Shipment.** All delivery dates are approximate and Seller shall not be responsible for any damages resulting from any delay. Regardless of the manner of shipment, title to any products and risk of loss or damage shall pass to Buyer upon placement of the products with the shipment carrier at Seller's facility. Unless otherwise stated, Seller may exercise its judgment in choosing the carrier and means of delivery. No deferral of shipment at Buyers' request beyond the respective dates indicated will be made except on terms that will indemnify, defend and hold Seller harmless against all loss and additional expense. Buyer shall be responsible for any additional shipping charges incurred by Seller due to Buyer's acts or omissions.
- 4. Warranty.** Seller warrants that the Products sold hereunder shall be free from defects in material or workmanship for a period of twelve months from the date of delivery to Buyer or 2,000 hours of normal use, whichever occurs first. The prices charged for Seller's products are based upon the exclusive limited warranty stated above, and upon the following disclaimer: **DISCLAIMER OF WARRANTY: THIS WARRANTY COMPRISES THE SOLE AND ENTIRE WARRANTY PERTAINING TO PRODUCTS PROVIDED HEREUNDER. SELLER DISCLAIMS ALL OTHER WARRANTIES, EXPRESS AND IMPLIED, INCLUDING DESIGN, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.**
- 5. Claims; Commencement of Actions.** Buyer shall promptly inspect all Products upon delivery. No claims for shortages will be allowed unless reported to the Seller within 10 days of delivery. No other claims against Seller will be allowed unless asserted in writing within 30 days after delivery. Buyer shall notify Seller of any alleged breach of warranty within 30 days after the date the defect is or should have been discovered by Buyer. Any action based upon breach of this agreement or upon any other claim arising out of this sale (other than an action by Seller for an amount due on any invoice) must be commenced within 12 months from the date of the breach without regard to the date breach is discovered.
- 6. LIMITATION OF LIABILITY.** UPON NOTIFICATION, SELLER WILL, AT ITS OPTION, REPAIR OR REPLACE A DEFECTIVE PRODUCT, OR REFUND THE PURCHASE PRICE. **IN NO EVENT SHALL SELLER BE LIABLE TO BUYER FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF, OR AS THE RESULT OF, THE SALE, DELIVERY, NON-DELIVERY, SERVICING, USE OR LOSS OF USE OF THE PRODUCTS OR ANY PART THEREOF, OR FOR ANY CHARGES OR EXPENSES OF ANY NATURE INCURRED WITHOUT SELLER'S WRITTEN CONSENT, EVEN IF SELLER HAS BEEN NEGLIGENT, WHETHER IN CONTRACT, TORT OR OTHER LEGAL THEORY. IN NO EVENT SHALL SELLER'S LIABILITY UNDER ANY CLAIM MADE BY BUYER EXCEED THE PURCHASE PRICE OF THE PRODUCTS.**
- 7. User Responsibility.** The user, through its own analysis and testing, is solely responsible for making the final selection of the system and Product and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application and follow applicable industry standards and Product information. If Seller provides Product or system options, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the Products or systems.
- 8. Loss to Buyer's Property.** Any designs, tools, patterns, materials, drawings, confidential information or equipment furnished by Buyer or any other items which become Buyer's property, may be considered obsolete and may be destroyed by Seller after two consecutive years have elapsed without Buyer ordering the items manufactured using such property. Seller shall not be responsible for any loss or damage to such property while it is in Seller's possession or control.
- 9. Special Tooling.** A tooling charge may be imposed for any special tooling, including without limitation, dies, fixtures, molds and patterns, acquired to manufacture Products. Such special tooling shall be and remain Seller's property notwithstanding payment of any charges by Buyer. In no event will Buyer acquire any interest in apparatus belonging to Seller which is utilized in the manufacture of the Products, even if such apparatus has been specially converted or adapted for such manufacture and notwithstanding any charges paid by Buyer. Unless otherwise agreed, Seller shall have the right to alter, discard or otherwise dispose of any special tooling or other property in its sole discretion at any time.
- 10. Buyer's Obligation; Rights of Seller.** To secure payment of all sums due or otherwise, Seller shall retain a security interest in the goods delivered and this agreement shall be deemed a Security Agreement under the Uniform Commercial Code. Buyer authorizes Seller as its attorney to execute and file on Buyer's behalf all documents Seller deems necessary to perfect its security interest.
- 11. Improper use and Indemnity.** Buyer shall indemnify, defend, and hold Seller harmless from any claim, liability, damages, lawsuits, and costs (including attorney fees), whether for personal injury, property damage, patent, trademark or copyright

infringement or any other claim, brought by or incurred by Buyer, Buyer's employees, or any other person, arising out of: (a) improper selection, improper application or other misuse of Products purchased by Buyer from Seller; (b) any act or omission, negligent or otherwise, of Buyer; (c) Seller's use of patterns, plans, drawings, or specifications furnished by Buyer to manufacture Product; or (d) Buyer's failure to comply with these terms and conditions. Seller shall not indemnify Buyer under any circumstance except as otherwise provided.

- 12. Cancellations and Changes.** Orders shall not be subject to cancellation or change by Buyer for any reason, except with Seller's written consent and upon terms that will indemnify, defend and hold Seller harmless against all direct, incidental and consequential loss or damage. Seller may change product features, specifications, designs and availability with notice to Buyer.
- 13. Limitation on Assignment.** Buyer may not assign its rights or obligations under this agreement without the prior written consent of Seller.
- 14. Force Majeure.** Seller does not assume the risk and shall not be liable for delay or failure to perform any of Seller's obligations by reason of circumstances beyond the reasonable control of Seller (hereinafter "Events of Force Majeure") Events of Force Majeure shall include without limitation: accidents, strikes or labor disputes, acts of any government or government agency, acts of nature, delays or failures in delivery from carriers or suppliers, shortages of materials, or any other cause beyond Seller's reasonable control.
- 15. Waiver and Severability.** Failure to enforce any provision of this agreement will not waive that provision nor will any such failure prejudice Seller's right to enforce that provision in the future. Invalidation of any provision of this agreement by legislation or other rule of law shall not invalidate any other provision herein. The remaining provisions of this agreement will remain in full force and effect.
- 16. Termination.** Seller may terminate this agreement for any reason and at any time by giving Buyer thirty (30) days written notice of termination. Seller may immediately terminate this agreement, in writing, if Buyer: (a) commits a breach of any provision of this agreement (b) appoints a trustee, receiver or custodian for all or any part of Buyer's property (c) files a petition for relief in bankruptcy on its own behalf, or by a third party (d) makes an assignment for the benefit of creditors, or (e) the dissolves or liquidates all or a majority of its assets.
- 17. Governing Law.** This agreement and the sale and delivery of all Products hereunder shall be deemed to have taken place in and shall be governed and construed in accordance with the laws of the State of Ohio, as applicable to contracts executed and wholly performed therein and without regard to conflicts of laws principles. Buyer irrevocably agrees and consents to the exclusive jurisdiction and venue of the courts of Cuyahoga County, Ohio with respect to any dispute, controversy or claim arising out of or relating to this agreement.
- 18. Indemnity for Infringement of Intellectual Property Rights.** Seller shall have no liability for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights except as provided in this Section. Seller will defend and indemnify Buyer against allegations of infringement of U.S. patents, U.S. trademarks, copyrights, trade dress and trade secrets ("Intellectual Property Rights"). Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on an allegation that a Product sold pursuant to this Agreement infringes the Intellectual Property Rights of a third party. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of such allegations of infringement, and Seller having sole control over the defense of any allegations or actions including all negotiations for settlement or compromise. If a Product is subject to a claim that it infringes the Intellectual Property Rights of a third party, Seller may, at its sole expense and option, procure for Buyer the right to continue using the Product, replace or modify the Product so as to make it noninfringing, or offer to accept return of the Product and return the purchase price less a reasonable allowance for depreciation. Notwithstanding the foregoing, Seller shall have no liability for claims of infringement based on information provided by Buyer, or directed to Products delivered hereunder for which the designs are specified in whole or part by Buyer, or infringements resulting from the modification, combination or use in a system of any Product sold hereunder. The foregoing provisions of this Section shall constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for infringement of Intellectual Property Rights.
- 19. Entire Agreement.** This agreement contains the entire agreement between the Buyer and Seller and constitutes the final, complete and exclusive expression of the terms of sale. All prior or contemporaneous written or oral agreements or negotiations with respect to the subject matter are herein merged.
- 20. Compliance with Law, U. K. Bribery Act and U.S. Foreign Corrupt Practices Act.** Buyer agrees to comply with all applicable laws and regulations, including both those of the United Kingdom and the United States of America, and of the country or countries of the Territory in which the Buyer may operate, including without limitation the U. K. Bribery Act, the U.S. Foreign Corrupt Practices Act ("FCPA") and the U.S. Anti-Kickback Act (the "Anti-Kickback Act"), and agrees to indemnify and hold harmless Seller from the consequences of any violation of such provisions by Buyer, its employees or agents. Buyer acknowledges that they are familiar with the provisions of the U. K. Bribery Act, the FCPA and the Anti-Kickback Act, and certifies that Buyer will adhere to the requirements thereof. In particular, Buyer represents and agrees that Buyer shall not make any payment or give anything of value, directly or indirectly to any governmental official, any foreign political party or official thereof, any candidate for foreign political office, or any commercial entity or person, for the purpose of influencing such person to purchase products or otherwise benefit the business of Seller.

02/12





---

Catalog PCD2005-3 07/2013



Parker Hannifin Corporation  
**Parker Canada Division**  
160 Chisholm Drive  
Milton, ON Canada  
Tel: 905 693 3000  
Fax: 905 876 1958  
[www.parker.com/canada/weld](http://www.parker.com/canada/weld)