Parker Hannifin Corporation 95 Edgewood Avenue New Britain, CT 06051 Telephone (860) 827-2300

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IOM PA SERIES

June 2015

#### INSTALLATION, OPERATING & MAINTENANCE INSTRUCTIONS PA SERIES ANGLE BODY VALVES 2-WAY NORMALLY CLOSED 2-WAY NORMALLY OPEN 2 WAY NORMALLY CLOSED ANTI-WATER HAMMER





## GENERAL SAFETY INSTRUCTIONS BEFORE INSTALLATION

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.

Carefully read installation, operation and maintenance procedures prior to installing or servicing valve.

Do not use valve as a safety shut-off valve when making repairs.

Do not install a valve before depressurizing system down to atmospheric pressure.

Care must be taken to ensure that the valve materials selected are suitable for the media being handled. Parker assumes no liability for damage caused by improper material selection in the case of corrosion from aggressive media.

**Caution:** Do not, at any time, make any alteration or modifications to any angle body valves without the express and written approval of Parker's Fluid Control Division.

#### DESCRIPTION

These valves are 2-way valves. The product line contains both normally closed (N.C.) and normally open (N.O.) valves in stainless steel construction. The valves can be actuated pneumatically. The pilot operated models require a minimum operating pressure differential to ensure valve operation.

Pilot valves may be ordered separately.

#### **PRINCIPLES OF OPERATION**

#### 2-way PA Series - NORMALLY CLOSED VALVES

The angle body valve is kept closed by a spring which presses against a piston and piston rod forcing the seating seal tightly against the valve seat. When pressure is applied to the actuator pilot connection, the piston, piston rod and thus the seating seal are raised opening the valve.

The valve tightly closes when pressure is removed from the pilot connection.

The maximum permitted angle body valve pressure and pilot valve pressure and temperature ranges are described on the valve nameplate.

#### 2-way PA Series - NORMALLY OPEN VALVES

The angle body valve is kept open by a spring which presses upward on a piston and piston rod forcing the seating seal off the valve seat. When pressure is applied to the actuator pilot connection, the piston, piston rod and thus the seating seal are driven down tightly closing the valve.

The valve opens when pressure is removed from the pilot connection.

The maximum permitted angle body valve pressure and pilot valve pressure and temperature ranges are described on the valve nameplate.

<u>CAUTION</u>: A minimum pilot operating pressure differential is required for proper angle body valve operation.

#### Installation Instructions

**Mounting position and pressure limits:** Valves can be mounted directly on piping and are designed to operate in any position. The valves may be installed in any line regardless of the direction in which the line runs. However, for optimum life and performance the valves should be mounted vertically upright so as to minimize wear and reduce the possibility of foreign matter accumulating inside the stem area.

Line pressure and pilot pressure must conform to Actuator nameplate rating.

Pilot pressure and voltage/frequency must conform to pilot valve nameplate rating.

<u>WARNING</u>: The actuator is spring loaded. Depressurize system and turn off electrical power to the pilot valve before attempting repair.

Failure to depressurize the system could result in injury.

Where the valve is to be removed from the piping system, the pipeline must be drained completely before removing the valve especially with hazardous or aggressive media that can be hazardous to health.

#### **Installation Steps**

Installation must be done according to all applicable Safety Codes and Standards and by qualified personnel.

Inspect valve prior to installation. Damaged valves or actuators must not be installed.

Ensure that the valves are installed whose pressure class, line pressure, type of connection and connection dimensions correspond to the usage conditions.

<u>WARNING</u>: Do not install a valve whose permitted pressure / temperature ratings are inadequate to meet the operating conditions.

**Piping:** Remove any protective enclosures from the body ports and connect line pressure to the inlet port of the valve. An arrow on the body indicates direction of flow. Use of Teflon tape, thread compound or sealant is permissible, but should be used sparingly on male pipe threads only. Connect outlet line to the opposite port.

Ports should not be subjected to excessive torque by use of an oversized wrench, wrench extension or by impacting the wrench handle. Do not use the valve to "stretch" or "align" the pipe. Using the pipe to close a large gap can distort the valve or at least stress it unduly, and possibly cause it to malfunction, or the threaded ports may be damaged or stripped.

## **Actuation Connection**

Actuator position can be adjusted with a clockwise rotation of the actuator.

Connecting the actuator to the control:

A 3-way pilot is required to connect the control pressure for actuator functionality.

For actuator types with springs, connect the pilot pressure to the inlet of the pilot valve and the outlet of the pilot valve to the threaded connection on the actuator head.

## **Pressure Testing and Valve Functioning**

It is recommended that newly installed pipeline systems first be flushed thoroughly to wash out all foreign matter.

The test pressure of an open valve must not exceed 1.5 times the maximum rated pressure of the angle body valve. The test pressure of a closed valve must not exceed 1.1 times the maximum rated pressure of the angle body valve.

#### **Normal Operation and Maintenance**

The angle body valves are operated by pneumatic control signals. The valves do not require regular maintenance work. During routine system checks, no leakage should be found in the valve. If unacceptable leakage occurs, reference "Troubleshooting" section for recommended solutions.

If a valve is to be removed from a pipeline carrying hazardous media, the parts of the valve in contact with the hazardous media must be properly cleaned and decontaminated before repairs are performed.

Note: Depending on service conditions, fluid being used, filtration, and lubrication, it may be required to periodically clean the valve and valve components.

For liquids, use versions with flow direction under the seat to avoid water hammer effect

**<u>CAUTION:</u>** Do not expose plastic or elastomeric materials to any type of commercial cleaning fluid. Parts should be cleaned with a mild soap and water solution.

## Reference Cross Section drawings on the following page.

## APPROVAL

Parker Hannifin Fluid Control Division certifies its valve appliance products complies with the essential requirements of the applicable European Directives.

We hereby confirm that the appliance has been manufactured in compliance with the applicable standards and is intended for installation in a machine or application where commissioning is prohibited until evidence has been provided that the machine or application is also in compliance with EC directives.

The angle body valve family complies with European Pressure Equipment Directive 97/23/EC in accordance with Annex II, Category II, Group 2, Module A1.

The angle body valve family complies with European ATmosphere EXplosive Directive 94/9/EC in accordance with Annex VIII

Marking:

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# REFERENCE CROSS SECTION DRAWINGS AND PRODUCT PICTURE



TROUBLE SHOOTING	
PROBLEM	PROCEDURE
Angle Body Valve (NC, NO) fails	1. Check that pilot air supply is properly connected.
to operate.	<ol><li>Verify that pilot air supply meets the minimum pressure required to actuate the specific angle body valve model number.</li></ol>
	<ol> <li>Check pilot control valve for functionality. Make sure that pressure complies with pilot control valve nameplate rating and pressure is supplied to actuator head through the output port of the pilot valve.</li> </ol>
	4. Check pilot control valve electrical supply with voltmeter. Voltage must agree with nameplate rating.
	<ol> <li>If supply voltage is too low, locate and correct cause of low voltage. Minimum supply voltage is according to pilot valve specification.</li> </ol>
	6. Check coil with ohmmeter for shorted or open coil.
Angle Body Valve fails to close	1. Check Angle Body Valve for functionality.
(normally closed valve).	2. Verify that there is no obstruction in the valve.
	3. Verify that pilot valve is vented from valve actuator.
	4. Check pilot control valve functionality. Make sure pilot valve closes eliminating pressure to the actuator head.
	5. If the pilot control valve works properly, it will be necessary to disassemble angle body valve. WARNING:
	following all caution and safety precautions prior to Disassembly.
Angle Body Valve fails to open	1. Check Angle Body Valve for functionality.
(normally open valve).	2. Verify that there is no obstruction in the valve.
	3. Verify that pilot valve is vented from valve actuator.
	4. Check pilot control valve functionality. Make sure pilot valve closes eliminating pressure to the actuator head.
	5. If the pilot control valve works properly, it will be necessary to disassemble angle body valve. WARNING:
	following all caution and safety precautions prior to Disassembly.
Internal Seating Seal Leakage	1. Check if the actuator has closed the valve 100 percent.
	2. Verify that there is no obstruction in the valve that can prevent full closure.
	<ol><li>Examine orifice in body for nicks. Damage may require a new replacement valve.</li></ol>
	4. Inspect the seat sealing material for foreign matter or dirt accumulation. Worn sealing material requires
	replacement

## **Fluid Control Division**



### DECLARATION OF CONFORMITY DECLARATION DE CONFORMITE KONFORMITÄTSERKLÄRUNG



Name:Parker Hannifin Corporation, Fluid Control DivisionAddress:95 Edgewood AvenueCity/State:New Britain, CT 06051

declare under our sole responsibility that the product: déclarons sous notre seule responsabilité que le produit: erkären in alleiniger Verantwortung, daβ das Produkt:

Product Type (1): Angle Body Valves: PA... series Actuator Diameter (mm): 32, 40, 50, 63, 80, 100, 125 Valves specification: DN10, DN15, DN20, DN25, DN32, DN40, DN50, DN65

Certified : **( (** (x) II 3 GD T4

(1) Name, type or model, lot, batch or serial number, possibly sources and numbers of items or further information.
(1) Nom, type ou modèle, No. de lot, d'échantillon ou de série, eventuellement sources et nombre d'exemplaires ou autres renseignements.
(1) Bezeichnung, Typ oder Modell, Los-, Chargen- oder Seriennummer, möglichst Herkunft und Stückzahl oder sonstige Angaben.

to which this declaration relates is in conformity with the following standard(s) or other normative document(s): Auquel se réfère cette déclaration est conforme à la (aux) norme(s) ou autre(s) document(s) normatif(s): auf das sich diese Erklärung bezieht, mit der/den folgenden Norm(en) oder normativen Dokument(en) übereinstimmt:

#### Harmonised Standards :

ATEX directive 94/9/EC standards according to Annex VIII §3 - EN 13463-1 (2009) PEDirective 97/23/EC standards according to Annex II, Category II, Group 2, Module A1.

( if applicable ) following the provisions of directive(s): ( le cas échéant ) conformément aux dispositions de(s) directive(s): ( falls zutreffend ) gemä $\beta$  den Bestimmungen der Richtlinie(n): ATEX 94/9/EC PED 97/23/EC RoHS 2011/65/EC

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Name: Patrick McCotter Title: Division Quality Manager Date: 5/19/2015

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Parker Hannifin Motion & Control, No 200, Furong Zhong Si Lu, Xishan Economic Devolopment Zone, (WUXI) Company Ltd. - Wuxi 214192, Jiangsu Province P.R.China. Phone +86 (0)510 8116 7000 Fax +86 (0)510 8378 2220 Parker Hannifin Corporation, Fluid Control Division, 95 Edgewood Avenue, New Britain CT 06051 - Tel. (860) 827-2300 - Fax. (860) 827-2384