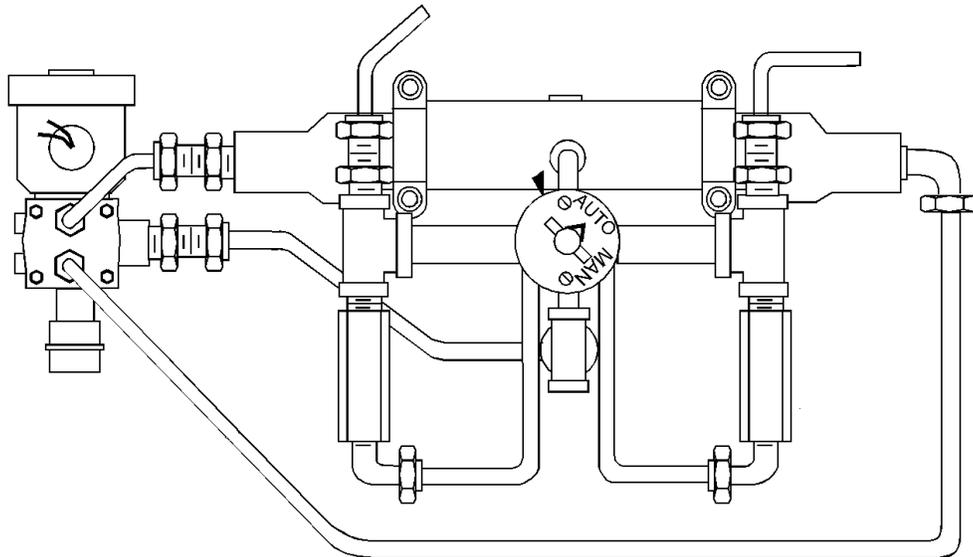




DeZURIK EP PUMP CHECK ACCESSORIES



Instruction D10024
December 2015

Instructions

These instructions are for use by personnel who are responsible for the installation, operation and maintenance of DeZURIK valves, actuators or accessories.

Safety Messages

All safety messages in the instructions are identified by a general warning sign and the signal word CAUTION, WARNING or DANGER. These messages indicate procedures to avoid injury or death.

Safety label(s) on the product indicate hazards that can cause injury or death. If a safety label becomes difficult to see or read, or if a label has been removed, please contact DeZURIK for replacement label(s).

⚠WARNING

Personnel involved in the installation or maintenance of valves should be constantly alert to potential emission of pipeline material and take appropriate safety precautions. Always wear suitable protection when dealing with hazardous pipeline materials. Handle valves which have been removed from service with suitable protection for any potential pipeline material in the valve.

Inspection

Your DeZURIK product has been packaged to provide protection during shipment; however, items can be damaged in transport. Carefully inspect the unit for damage upon arrival and file a claim with the carrier if damage is apparent.

Parts

Replaceable wear parts are listed on the assembly drawing. These parts can be stocked to minimize downtime. Order parts from your local DeZURIK sales representative or directly from DeZURIK. When ordering parts please provide the following information:

If the valve has a data plate: please include the 7-digit part number with either 4-digit revision number (example: 9999999R000) or 8-digit serial number (example: S1900001) whichever is applicable. The data plate will be attached to the valve assembly. Also, include the part name, the assembly drawing number, the balloon number and the quantity stated on the assembly drawing.

If there isn't any data plate visible on the valve: please include valve model number, part name, and item number from the assembly drawing. You may contact your local DeZURIK Representative to help you identify your valve.

DeZURIK Service

DeZURIK service personnel are available to maintain and repair all DeZURIK products. DeZURIK also offers customized training programs and consultation services. For more information, contact your local DeZURIK sales representative or visit our website at DeZURIK.com.

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Description

The DeZURIK Pump Check valve can serve the purpose of both a check valve and isolation valve in your system. Its unique design reduces the possibility of water hammer by controlling valve opening and closing speeds, thus the operation does not cause pressure surges in either direction.

The Pump Check valve is normally actuated by an electrical signal from a pressure switch, either remote or local, while speed control metering valves control the speed of actuation.

Pump Check Installation

Suspended Solids

It is critical that valves in these environments are properly installed so that sediments do not pack the valve body.

In **HORIZONTAL** Pipelines:

1. Install the valve so that the flow is against the face of plug when closed.
2. Position the valve so that the plug rotates 90° to the top to open.

In **VERTICAL** pipelines:

1. Install the valve with the plug at the top.

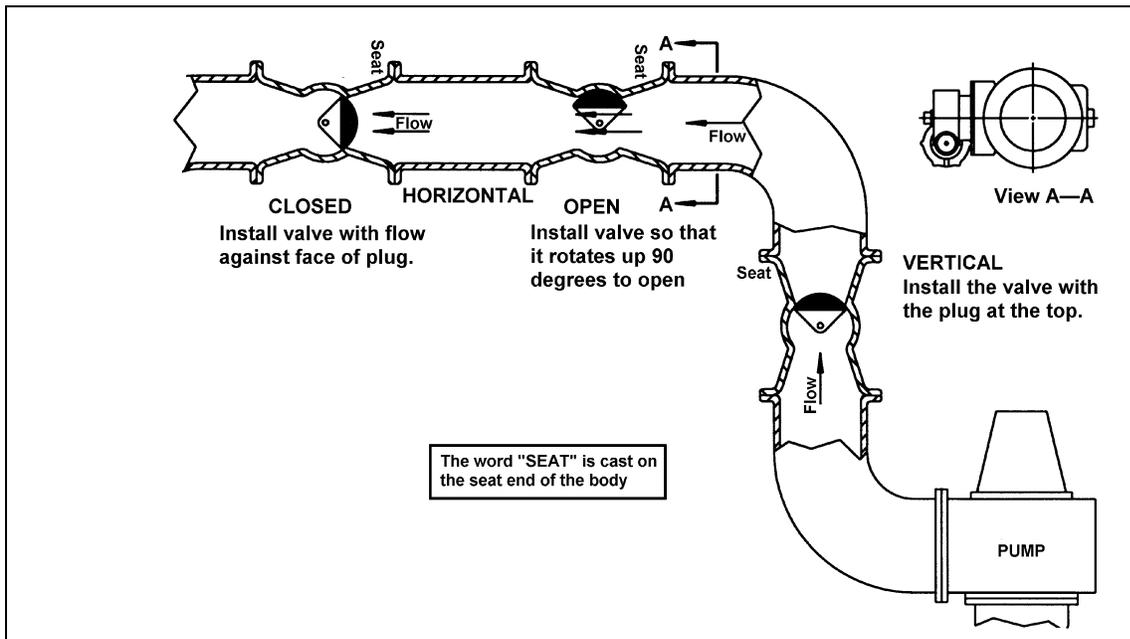


Figure 1 – Liquids with Suspended Solids

Pump Check Installation (continued)

Liquids and Gases

For liquids and gases, install the valve with the higher pressure opposite the seat.

In horizontal pipelines, install valve so the plug is horizontal and rotates upward to open.

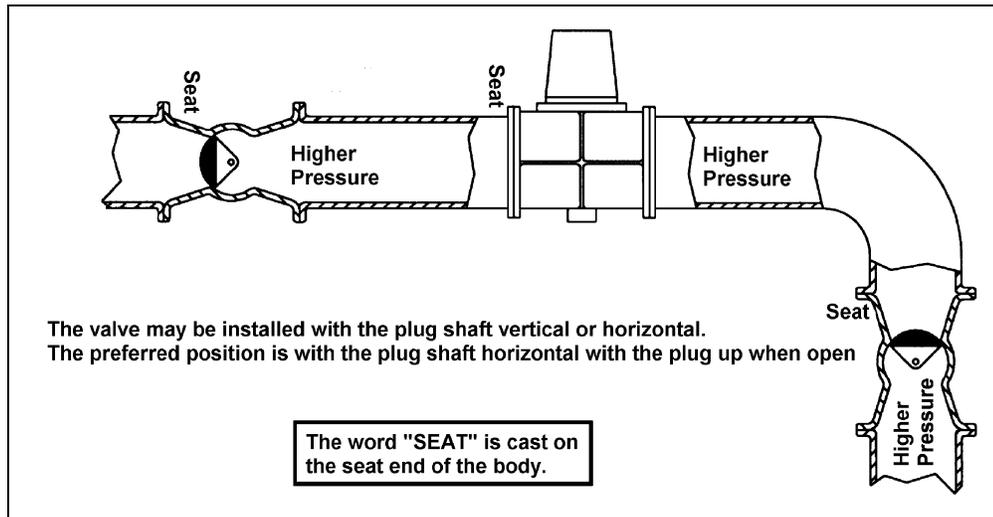


Figure 2 – Liquids and Gases

Electrical

See wiring diagram, Figure 3:

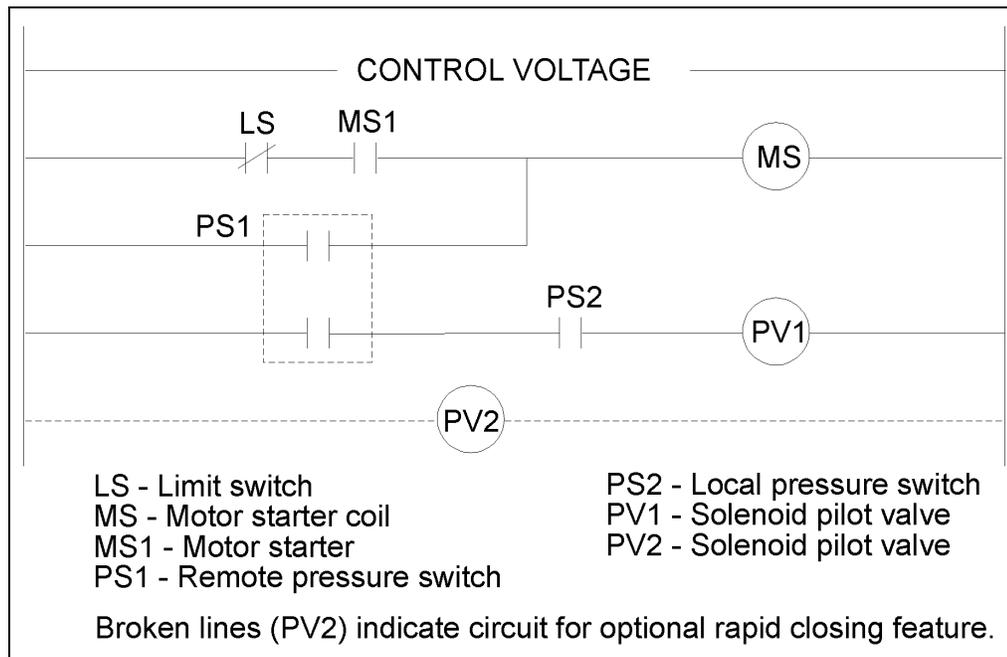


Figure 3 – Wiring Diagram

Piping Connections

Hydraulic

1. Connect 50–100 psi clean liquid media to the fitting in the port of the 4-way manual valve.

Note: It is strongly recommended that a screen filter or strainer (may be purchased as an accessory item from DeZURIK) be installed in the supply line to keep dirt particles in the media from entering the pump check system.

Pneumatic

1. Connect 50–100 psi clean, dry air to remaining port of the 4-way manual valve. **Note:** It is strongly recommended that a filter (may be purchased as an accessory item from DeZURIK) be installed in the supply line to keep dirt particles in the air from entering the pump check system.

Note: It is strongly recommended that a screen filter or strainer (may be purchased as an accessory item from DeZURIK) be installed in the supply line to keep dirt particles in the media from entering the pump check system.

Operation

The DeZURIK Pump Check valve can be connected to provide either AUTOMATIC OPEN or AUTOMATIC CLOSE operation, depending upon the customer's requirements. Each of the modes is described below.

Automatic Open Pneumatic Pump Check Valve FIG 390 and 390, R

In the automatic open mode, the pump check valve opens when pressure or liquid levels decrease.

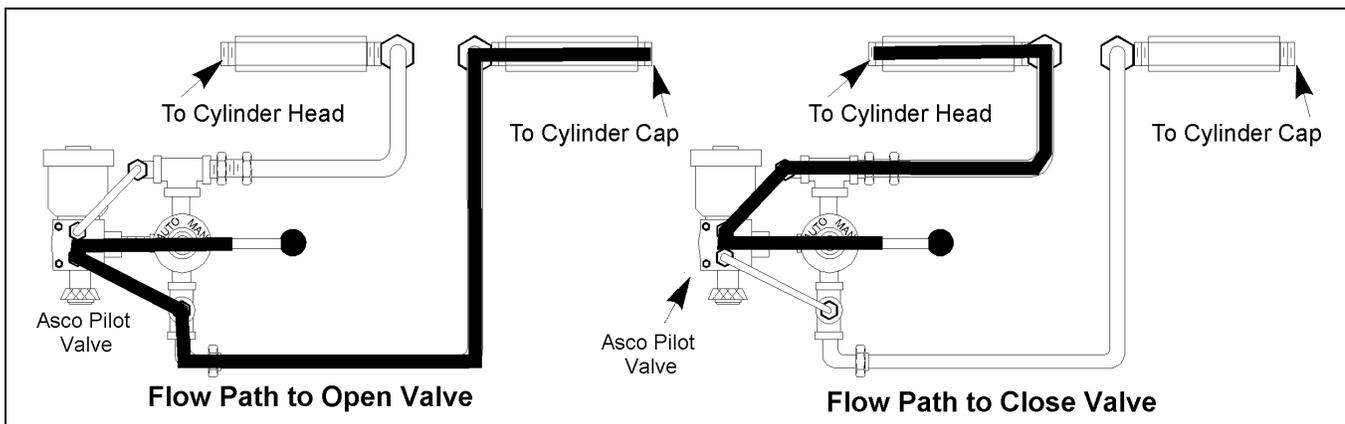


Figure 4 – Flow Path: Automatic Open Pneumatic Pump check valve

Automatic open operation of the **PNEUMATIC** pump check valve follows this sequence:

1. When the system pressure or liquid level decreases, contacts in the remote pressure switch close and energize the motor starter coil.
2. The motor starter coil closes the contacts in the motor starter, which starts the pump motor.
3. The pumping pressure closes the local pressure switch contacts.

Operation (continued)

4. The local pressure switch energizes the ASCO pilot valve, which directs air through the pilot valve to the cylinder.

Note: See Figure 3 for Wiring Diagram.

Automatic Open Hydraulic Pump Check Valve FIG 391 and 391, R

In the automatic open mode, the pump check valve opens when pressure or liquid levels decrease.

Automatic open operation of the HYDRAULIC pump check valve follows this sequence:

1. When the system pressure or liquid level decreases, contacts in the remote pressure switch close and energize the motor starter coil.
2. The motor starter coil closes the contacts in the motor starter, which starts the pump motor.
3. The pumping pressure closes the local pressure switch contacts.
4. The local pressure switch energizes the ASCO pilot valve.
5. The pilot valve directs hydraulic fluid to one side of the pilot valve.
6. The spool inside the pilot valve moves and opens a flow path from the supply to the cylinder.

Note: See Figure 3 for Wiring Diagram.

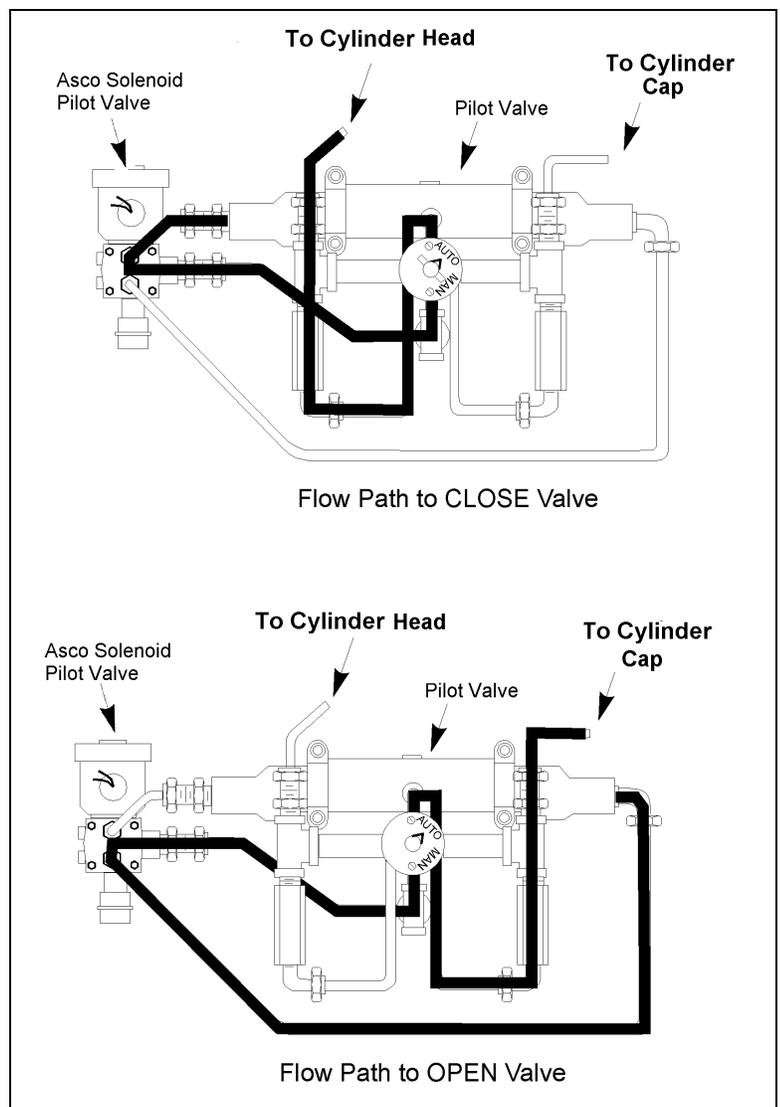


Figure 5—Flow Path: Automatic Open Hydraulic Pump Check Valve

Operation (continued)

Automatic Close

In the automatic close mode, the pump check valve closes when pressure or liquid level reaches a pre-set level.

1. When pressure or liquid level requirements are met, the remote pressure switch contacts open and de-energize the ASCO pilot valve.
2. This causes the pump check valve to begin closing at the pre-set speed.
3. The contacts on the limit switch then open at a pre-set point and de-energize the motor starter coil, opening the motor starter contacts and stopping the pump.
4. The valve continues to close as the pump slows down, completely shutting just as the forward flow from the pump stops.

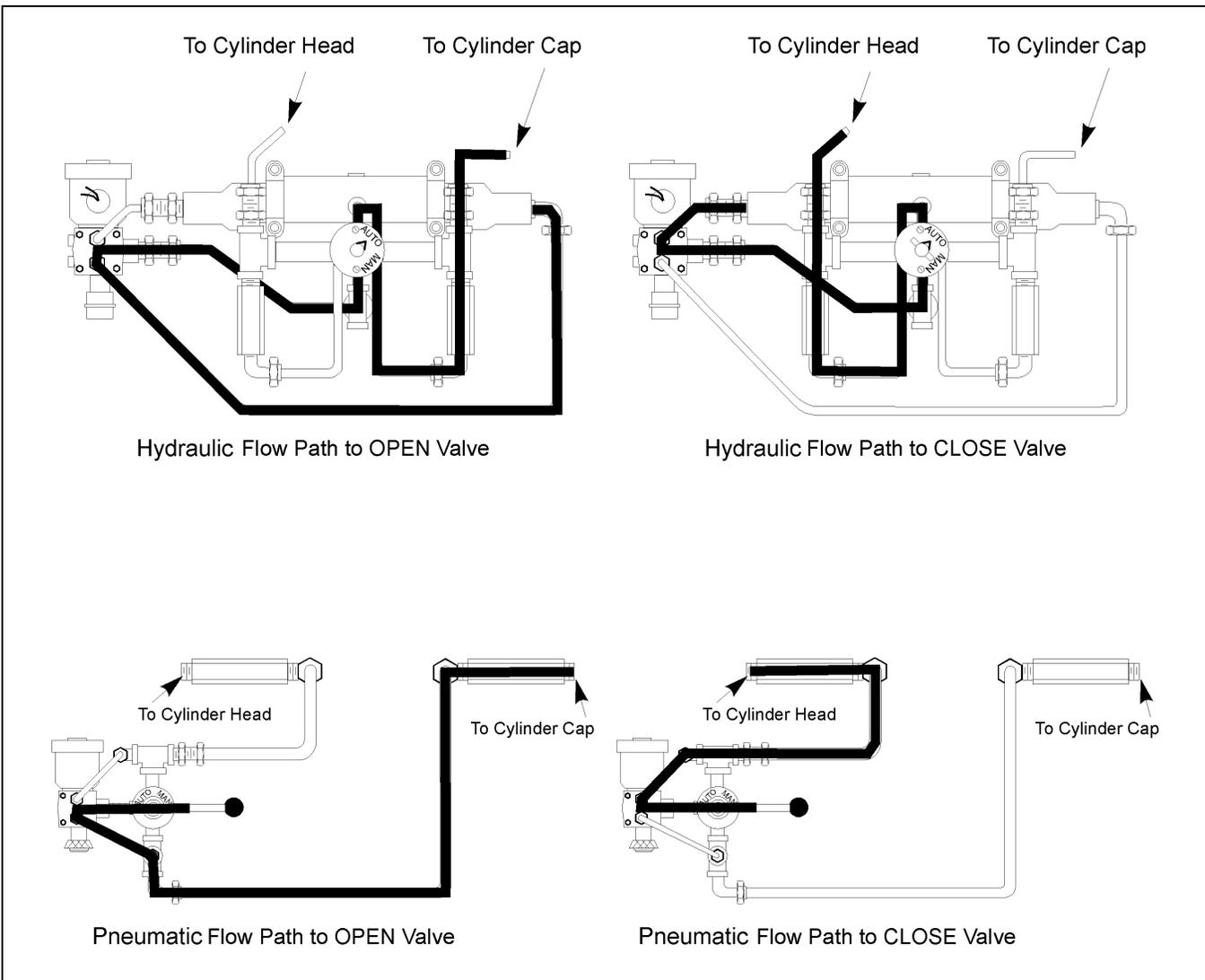


Figure 7 – Automatic Close Flow Paths

Operation (continued)

Close On Power Failure

In case of power failure, the pump motor stops and all coils are de-energized. The valve will then move to its fully closed position.

Emergency Shutdown



CAUTION!

Pump backspin may occur when the emergency stop is used. Pump backspin is the result of backflow, which may occur in the pipeline when the pump motor is de-energized and the valve is not fully closed.

Pressing the emergency button (supplied by the customer) interrupts the power supply to the pump motor and the valve. This de-energizes the ASCO pilot valve and causes the valve to move to its fully closed position.

Actuation Without Electrical Power

The pump check valve can be actuated without electrical power by using the manual override on the ASCO pilot valve.

To use the manual override:

1. Push the red knob in.
2. Turn knob clockwise to lock it in the override position.
3. Release the knob. The knob must stay “in” to be in the override position.

To return the pilot valve to automatic operation:

1. Turn knob counter-clockwise.
2. Release the knob, it should pop out.

Note: To control the pilot valve electrically, the knob must be in the automatic position.

Actuation Without Cylinder Pressure

The DeZURIK Pump Check valve can be manually actuated by setting the 4-way valve to the Manual (MAN) position, then turning the wrenching square which is located on the actuator just under the switch housing.

Note: Clockwise rotation closes the valve.

Rapid Close Option

The rapid close option allows the pump check valve to close rapidly by allowing an additional exhaust port to open. This option includes an ASCO pilot valve and a speed control.

Speed Adjustments

Opening Speed

Opening speed is controlled by a speed control located in the piping connected to the cylinder head. To set the opening speed, adjust the screw in the speed control until you get the desired opening speed.

Closing Speed

Closing speed is controlled by a speed control located in the piping connected to the cylinder cap. To set the closing speed, adjust the screw in the speed control until you get the desired closing speed.

Note: These adjustments are written for a pump check valve that is piped to provide the AUTOMATIC CLOSE mode of operation. If your pump check is piped for AUTOMATIC OPEN, exchange the terms "Cylinder Head" and "Cylinder Cap" with each other.

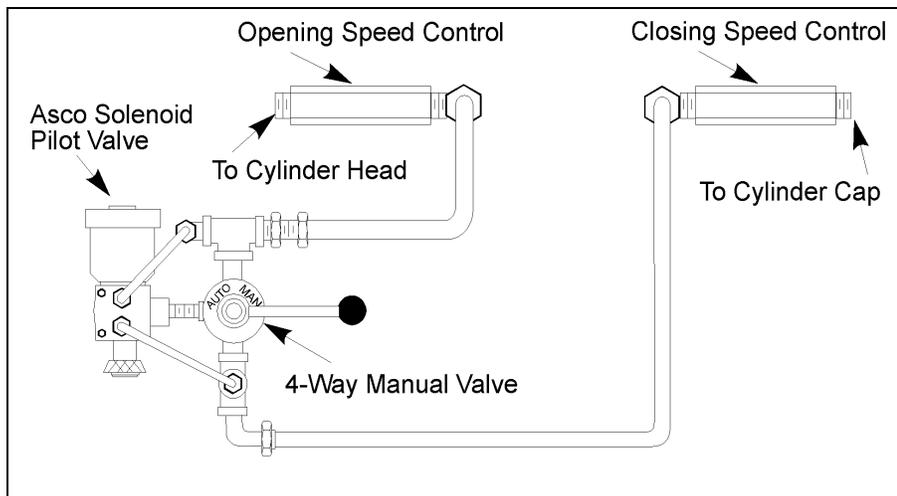


Figure 8—Pneumatic Pump Check Adjustments

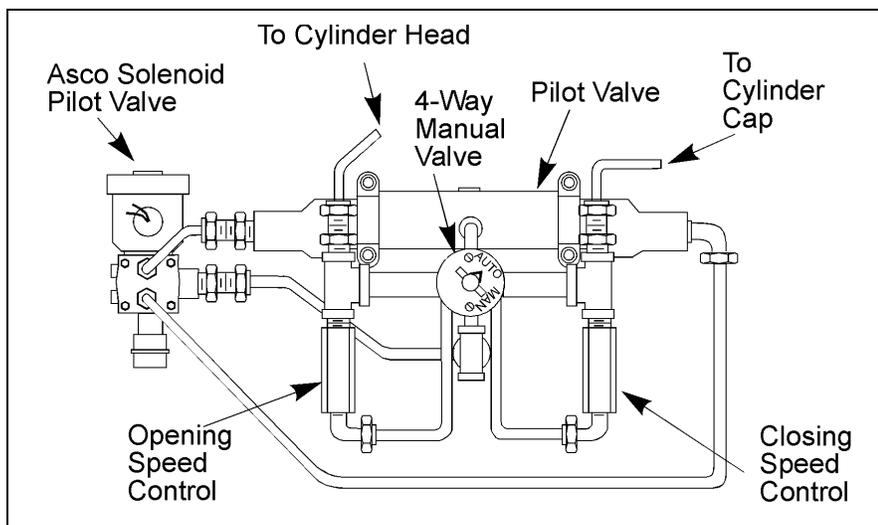


Figure 9 – Hydraulic Pump Check Adjustments

Speed Adjustments (continued)

Rapid Closing Speed

Rapid closing speed is controlled by a speed control located in the cylinder cap port. The rapid closing speed must be adjusted after the normal closing speed has been adjusted, and while the rapid-closing pilot valve is de-energized. Adjust the screw in the speed control until the desired rapid closing speed is obtained.

Switches

The limit switch, open position switch and auxiliary switches are all contained in the switch housing.

Switch Arrangement

The switches are arranged so the limit switch is the top switch; the open position switch is next, followed by the auxiliary switches.

Switch Adjustment

A rotating cam actuates each switch. To adjust a top switch:

1. Push the top cam down.
2. Rotate the cam to the new position.
3. Release the cam so it engages into the new position on the spline.

To adjust a bottom switch:

1. Lift the bottom cam up.
2. Rotate the cam to the new position.
3. Release the cam so it engages into the new position on the spline.

Each cam may be fine-tuned between spline positions by turning the set screw on the cam with a 1/16" hex driver.

Note: The set screw adjustment is limited to no more than one full turn.

Switch Rating

10 amps, 120, 240 VAC

1/3 HP 125, 250, 270 VAC

1/2 amp, 120 VDC

1/4 amp, 250 VDC

Limited Warranty

DeZURIK, Inc. ("Seller") manufactured products, auxiliaries and parts thereof that we manufacture for a period of twenty-four (24) months from date of shipment from Seller's factory, are warranted to the original purchaser only against defective workmanship and material, but only if properly stored, installed, operated, and serviced in accordance with Seller's recommendations and instructions.

For items proven to be defective within the warranty period, your exclusive remedy under this limited warranty is repair or replacement of the defective item, at Seller's option, FCA Incoterms 2020 Seller's facility with removal, transportation, and installation at your cost.

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No claim for transportation, labor, or special or consequential damages or any other loss, cost or damage is being provided in this limited warranty. You shall be solely responsible for determining suitability for use and in no event shall Seller be liable in this respect.

This limited warranty does not warrant that any Seller product or part is resistant to corrosion, erosion, abrasion or other sources of failure, nor does Seller warrant a minimum length of service.

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The foregoing limited warranty shall be null and void if, after shipment from our factory, the item is modified in any way or a component of another manufacturer, such as but not limited to; an actuator is attached to the item by anyone other than a Seller factory authorized service personnel.

All orders accepted shall be deemed accepted subject to this limited warranty, which shall be exclusive of any other or previous warranty, and this shall be the only effective guarantee or warranty binding on Seller, despite anything to the contrary contained in the purchase order or represented by any agent or employee of Seller in writing or otherwise, notwithstanding, including but not limited to implied warranties.

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Sales and Service

For information about our worldwide locations, approvals, certifications and local representative:

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