

**RAP R70: Installation and Adjustment Procedure**

Limit Valve Inst

05/09/11

# Shafer Limit Valve

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The purpose of this procedure is to guide the installation of a Shafer Limit Valve to an existing Rotary Vane Actuator.

This procedure is to be used in conjunction with the following Maintenance and Service Manual.

Shafer Rotary Vane Maintenance and Service Manual	Bulletin RVSM-3/98
Poppet Block Control Maintenance and Service Manual	Bulletin PBC-01101001
Your Shafer Hydraulic Schematic	

### Preparation

In the following procedure, information in ( ) is descriptive.

**WARNING:** Before beginning work on a Shafer Actuator Valve Operating System or any actuator using pressurized gas:



1. Turn power gas off.
2. Bleed down the power storage tank if applicable.
3. The pressure gage on the poppet control block must read zero.

### ESD Valve Installation

1. Remove the existing Lube Extension, if applicable. (See Figure 1.)
2. Remove the two hex head cap screws holding the Protective Cover and remove the existing Protective Cover.
3. Replace the Garlock Packing retained by the Protective Cover.
4. Install the new Protective Cover using the new Cap Screws and Lock Washers supplied. Ensure the direction arrows are in the correct position.
5. Install the new Lube Extension, if applicable.

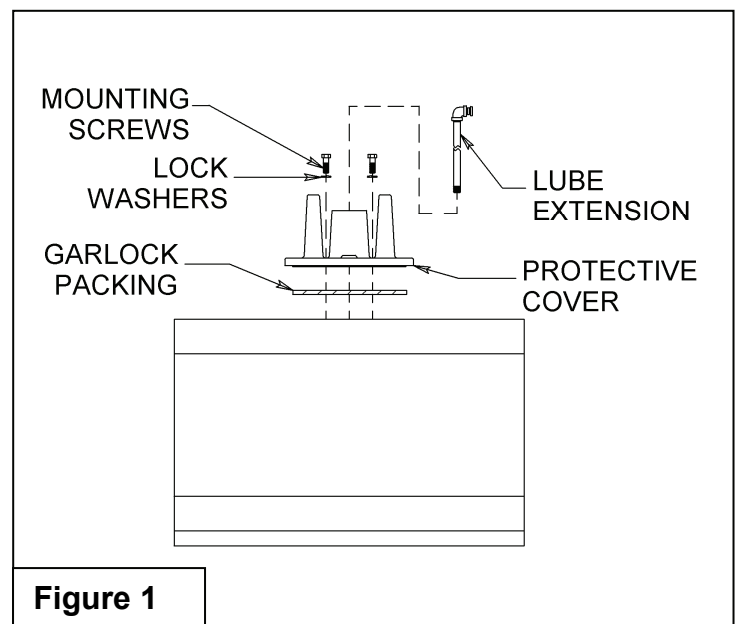


Figure 1

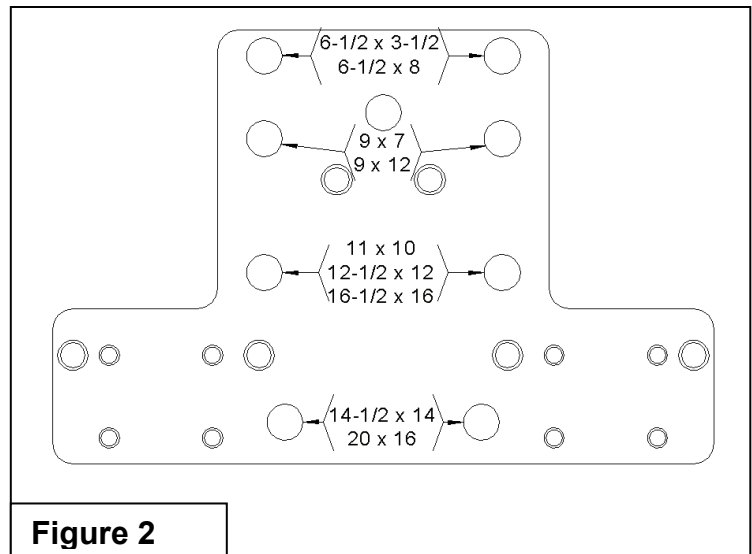
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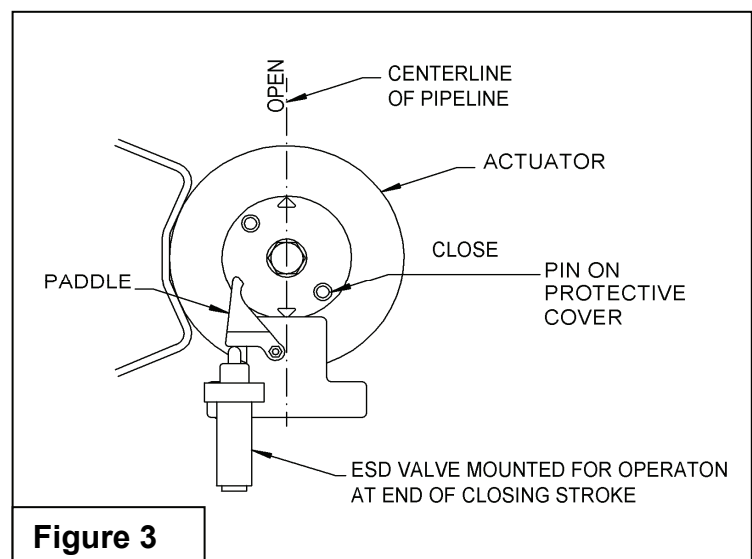
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6. Install the Limit Valve Mounting Plate supplied, using parts in the Limit Valve Mounting Kit. Clearance holes, used for mounting, are labeled for installation on different size actuators in Figure 2.
7. Install the ESD Valve in the position that will result in the desired action. Looking down on the top of the Actuator, the valve mounts to the left of the shaft to control a Fail Close stroke and to the right of the shaft to control a Fail Open stroke. (See Figure 3 below.)
8. Using your Hydraulic Schematic as a guide, run tubing to the ESD Valve.



## Adjusting a Limit Valve

1. Before trying to adjust a Limit Valve, use the Shafer Hand Pump to position the actuator so that the pin on the Protective Cover is away from the paddle. (See Figure 3.)



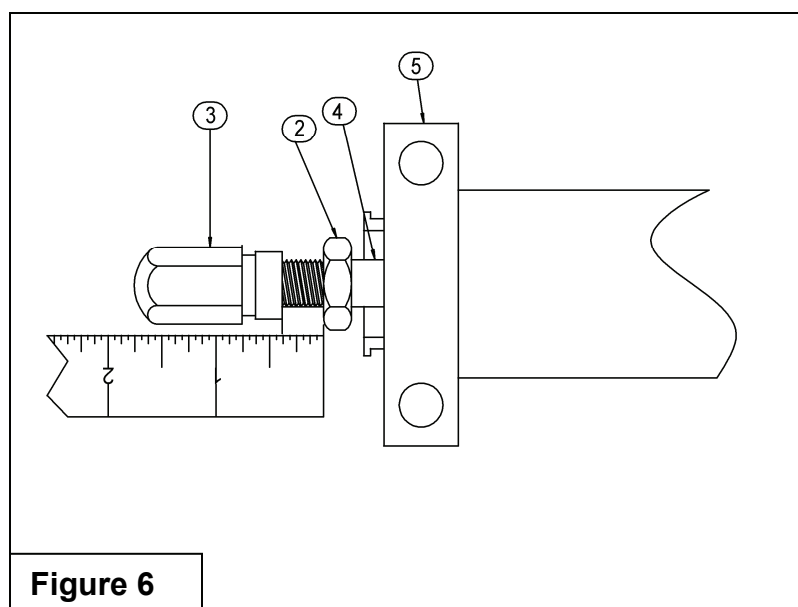
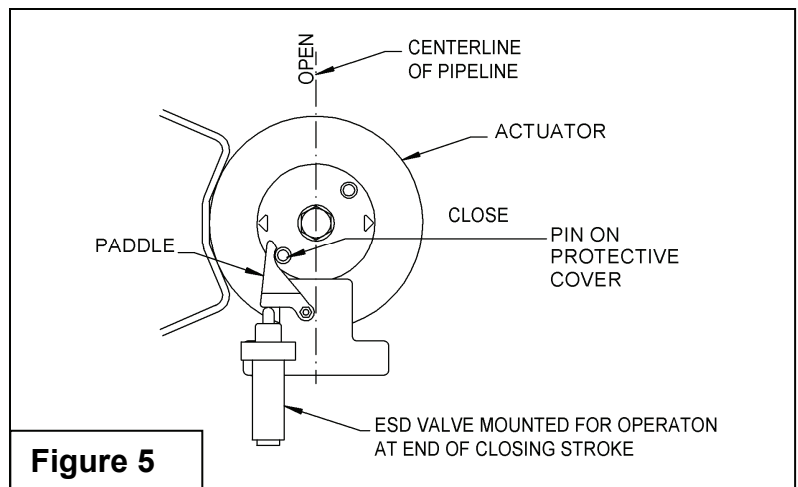
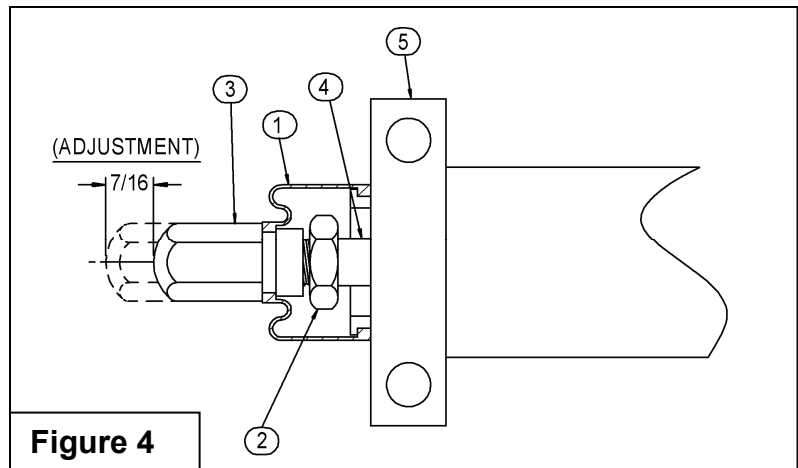
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2. Remove the Protective Boot (Item 1). (See Figure 4.)
3. Loosen the Lock Nut (Item 2) and back the nut away from the nubbin shaped Adjusting Cap (Item 3). (See Figure 4)
4. Screw the Adjusting Cap (Item 3) onto the Stem (Item 4) as far as possible.
5. With the control in the failed condition (see your hydraulic schematic), open Power Gas.
6. The Stem (Item 4) should extend to its maximum travel out of the Valve Body.
7. The Actuator will stroke to the end of the stroke as designed (see your schematic for position). This is where the Limit Valve should operate. (See Figure 5.)
8. Turn the Adjusting Cap (Item 3) counterclockwise until it is against the Paddle. Follow with the Lock Nut (Item 2), but do not tighten yet. Leave the Lock Nut against the Adjusting Nut (3).
9. Put the actuator control back in run condition and stroke the actuator, with the hand pump, until the pin is away from the paddle.
10. Turn the Adjusting Nut counterclockwise until the distance between the Adjusting Nut and the Lock Nut is close to  $\frac{3}{8}$ ". (See Figure 6)

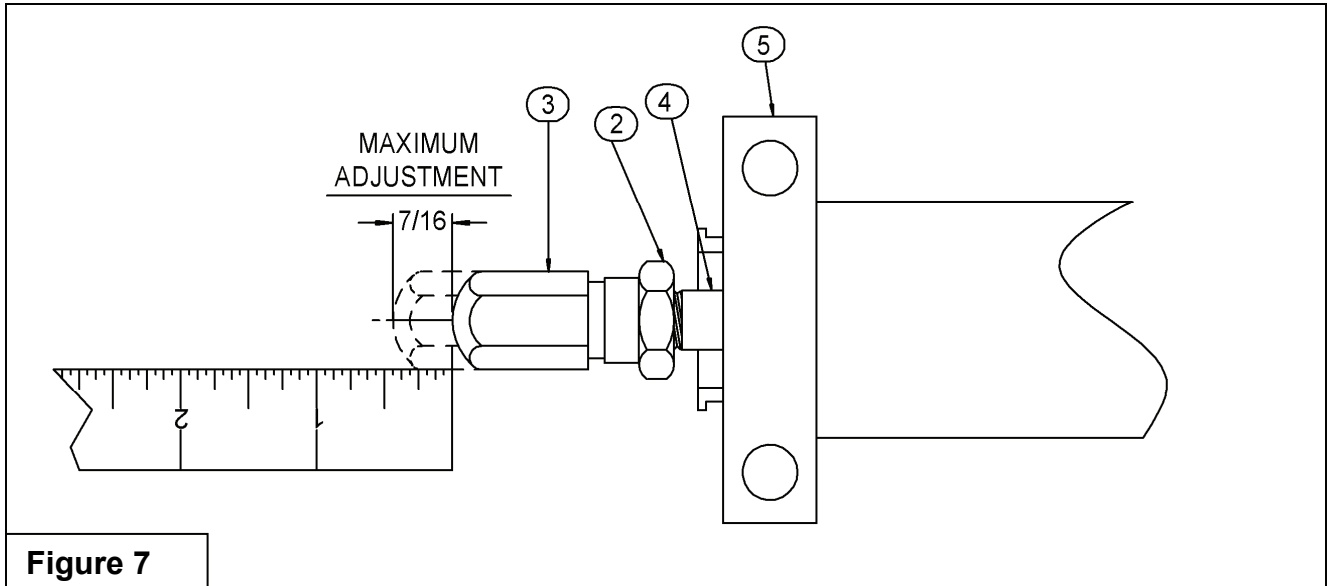


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**Caution:** Use caution not to over stroke the Limit Valve. If the adjusting cap is adjusted away from the valve too far, resulting in the paddle trying to stroke the valve past its limits, the poppet will be destroyed in the valve. (See Figure 7)

11. Lock the Adjusting Cap in place by tightening the Lock Nut against it. Do not move the Adjusting Cap while locking.
12. Test the valve to determine if it is activated at the end of stroke and the control is neutralized. If so, adjustment is complete and the Protective Boot can be reinstalled after packing stem area with light grease.
13. If the valve does not work correctly (there is an audible sign that power gas is leaking out of the exhaust of the poppet block) or there has been adjustment made to the actuator stops. Adjust the valve in small increments until the control is neutralized at the end of the stroke. The stroke of the valve must not exceed 7/16"; see Caution above and Figure 7.

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If any further information is required, please feel free to contact:

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Please visit our website for up to date product data. [www.shafervalve.com](http://www.shafervalve.com)

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