

RAP R20: Automatic Line Break Control
Adjustment and Set-up Procedure
ALBC 1983-Present
05/05/11

Automatic Linebreak Control

Adjustment and Set-up Procedure

Function

The Shafer™ Automatic Linebreak Control is designed to sense a predetermined rate of pressure drop, which occurs for a definite length of time. Both of these conditions must be satisfied before the control is tripped.

Initial Installation

A sensing line must be tubed, or piped, from the pipeline to the auxiliary strainer block mounted on the control. This line should be no smaller than 3/8" O.D. tubing. Under ideal conditions, the pipeline connection should be at least one pipeline diameter away from the connection to the control block. The Power Gas connection to the control block should be no less than 1/2" O.D. tubing. (If using a 1/2" Control Block a minimum of 3/4" O.D. tubing should be used.)

Diaphragm Assembly Adjustment

Figures 1 through 4

Figure 1

1. With no pressure on the diaphragm, loosen the two Locknuts (2) and (3) and back them away from the actuating washer (1).
2. Flip the Toggle Valve Lever (11) towards the Diaphragm Assembly (13).

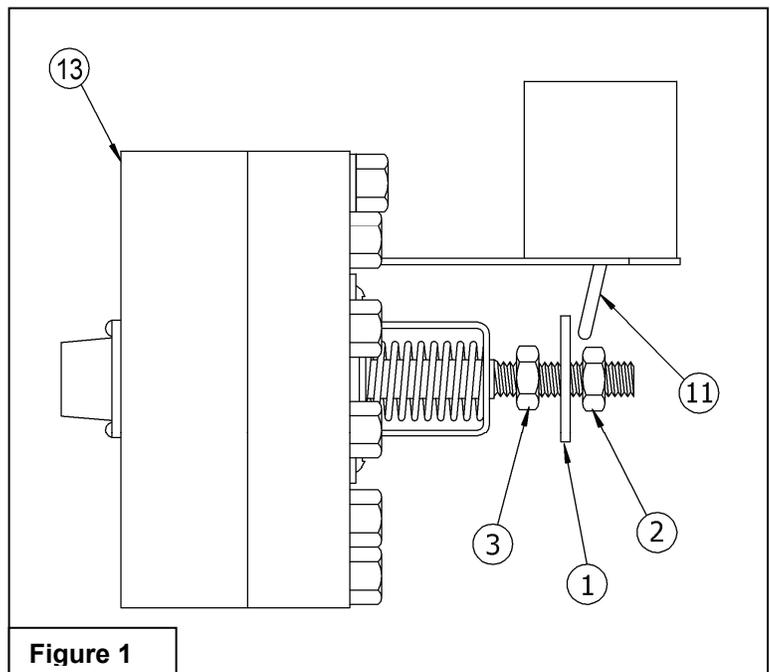


Figure 2

1. Remove the tubing to port (5) and apply air or gas (500 PSI maximum) to move the diaphragm stem (10) to its maximum travel as shown in Figure 2.
2. Advance the Lock Nut (3) and Actuating Washer (1) until the Toggle Valve Lever (11) snaps over center. Move the Locknut (3) and Actuating Washer (1) and additional 1/8" (3 millimeters) to insure that the Toggle Lever (11) will completely trip.
3. Run Lock Nut (2) up against the Actuating Washer (1) and tighten the Locknuts.

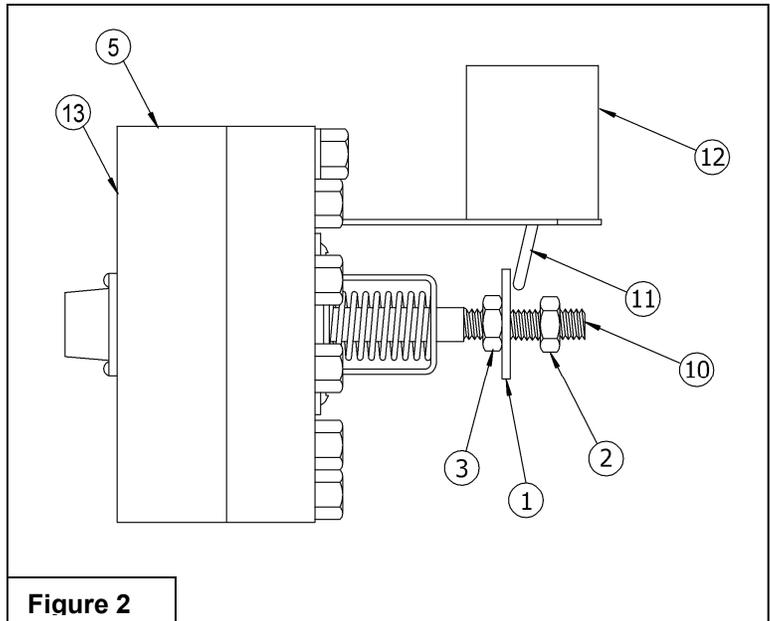


Figure 3

1. Remove pressure from Port (5) and the Diaphragm Stem (10) will move back to its normal position due to the Return Spring (9).
2. Reinstall the tubing to Port (5).

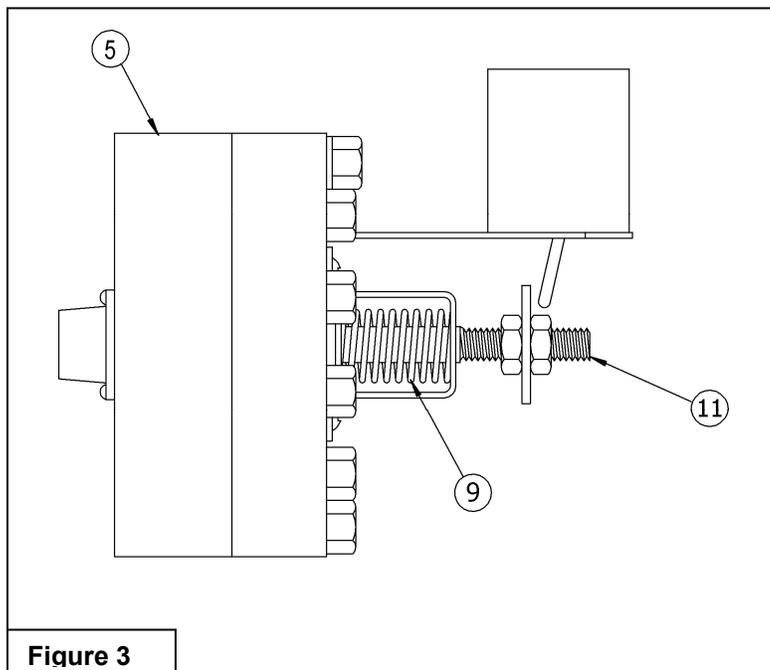
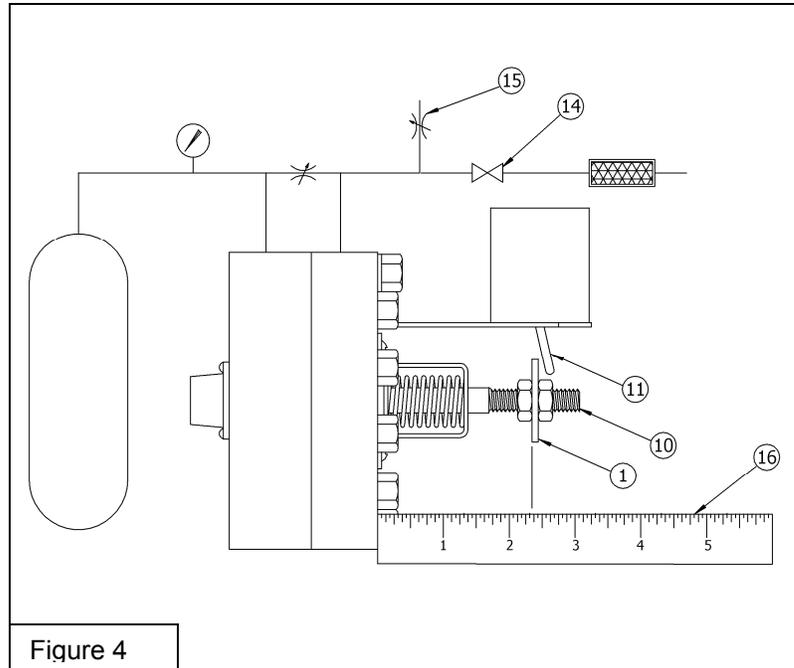


Figure 4

1. Pressurize the Linebreak System to approximately 50 PSI and close Pilot Isolation Valve (14).
2. Open Blowdown Orifice (15) slowly to allow the Actuating Washer (1) to move out enough to trip Toggle Valve Lever (11).
3. When the toggle trips, use a machinist scale or tape measure (16) to accurately measure the distance from the front of the diaphragm to the back of the Actuating Washer (1) per Figure 4. Subtract 1/16" (1.5 millimeter), and record this dimension. This is the distance the Actuating Washer (1) can move out and not trip the toggle lever (11), nor close the mainline valve.

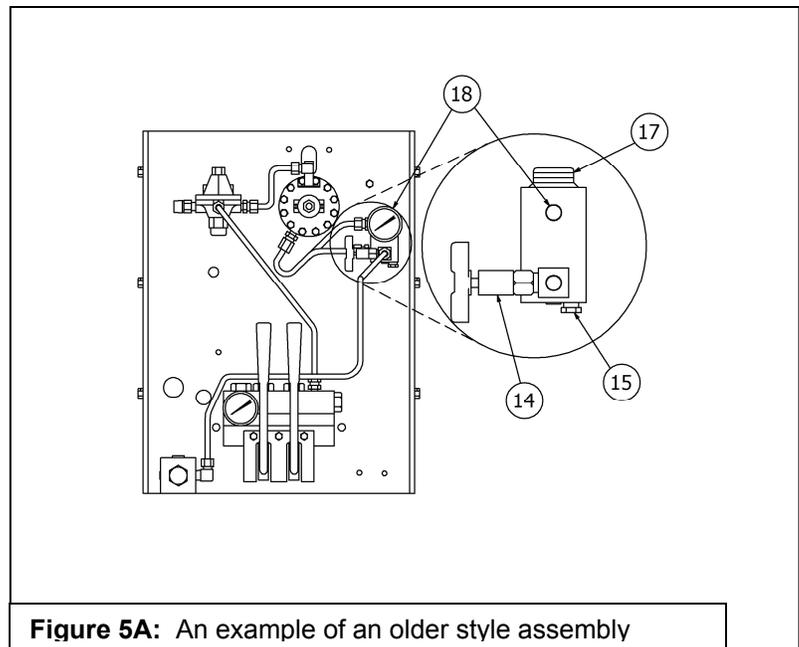
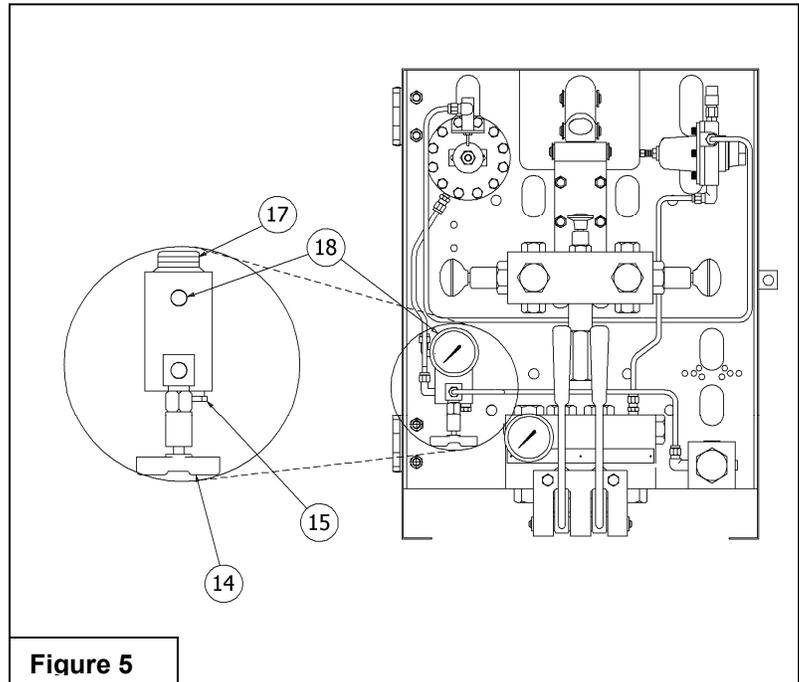


Note: Drawings are not to scale.

Rate of Pressure Drop Setting

1. Before pressure is applied to the control, replace pressure indicator (18) with a calibrated test gauge.
2. The normal fluctuations in the pipeline pressure must be determined. For this example, we will assume a pipeline pressure from 400 PSI minimum to 800 PSI maximum. We will use the mid-range pressure of 600 PSI for this procedure
3. The desired rate of pressure drop per minute must also be determined. In this case, we will assume a desired setting of 30 PSI per minute to close the mainline valve.

4. Open Adjustable Orifice (17) approximately four notches. If a fixed orifice is being used, start with an orifice the size of a number 72 drill (.025" [6 millimeter]).
5. Open Isolation Valve (14) and pressurize the control to 600 PSI. Close Isolation Valve (14). Allow 5 to 10 minutes for the pressure to stabilize. Open Blowdown Orifice (15) just enough to allow the Diaphragm Stem to move out to the dimension obtained in Figure 4. At that point, start timing with a stopwatch.
6. This rate of bleed past Orifice (15) must be maintained for a period of 5 minutes. At the end of 5 minutes close the Blowdown Orifice (15) and record the remaining pressure. In this example, we will say the pressure is 500 PSI. 100 PSI was lost over a 5 minute period. 100 PSI divided by 5 minutes equals a 20 PSI per minute pressure drop.
7. We wanted a pressure drop of 30 PSI per minute. To achieve this, the Adjustable Orifice (17) will need to be opened 1 or 2 notches more. If a fixed orifice is being used, it should be drilled out to a slightly larger size.
8. Repeat the same procedure (steps 4 through 6) until the desired setting is obtained.



RAP R20: Adjustment Procedure

AutoLineBreakControl

05/05/11

Automatic Linebreak Control

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

Emerson Process Management
Valve Automation Inc.
2500 Park Avenue West
Mansfield, Ohio 44906

Phone: (419) 529-4311
Fax (419) 529-3688

Please visit our website for up to date product data. www.shafervalve.com

The contents of this publication are presented for informational purpose only, and while every effort has been made to ensure their accuracy, they are not to be construed as warranties or guarantees, express or implied, regarding the products or services described herein or their use or applicability. We reserve the right to modify or improve the designs or specifications of such products at any time with out notice.