

Regulator Loading Ring Instructions

- ▶ B-34
- ▶ B-38
- ▶ B-838
- ▶ CL-34
- ▶ CL-38
- ▶ CL-838
- ▶ CL-231

Adjustable Port Loading Ring

All regulators use a loading device to draw gas out from the lower diaphragm chamber. The objective is to lower pressure under the diaphragm as the spring loses tension. The loss in spring tension occurs as the diaphragm drops to open the valve.

The above listed Actaris regulators use a ported metal loading ring. It is a heat-treated spring steel stamping with two beads which fit into a groove on the orifice. The orifice also has a radical notched shoulder into which a tip on the ring rests. This locks the ring from turning after it has been positioned. The 34, 38, and 231 series regulators use a dual ported loading ring while the 38 and 838 series use a single port style.

A perfect flow pattern would be one that reduces pressure under the diaphragm at a rate that would equal the loss of spring tension when the diaphragm moves down and increase the pressure at a rate that would equal the increase in spring tension as the diaphragm moves up. This would result in a perfectly controlled outlet pressure with no pressure change above or below the desired set pressure, regardless of volume change, except at zero flow.

With a given change of inlet pressure there is no perfect setting of the loading ring that will give a constant outlet pressure. Therefore the loading ring is set for a position that will give the best outlet pressure control over the given range of inlet pressure and corresponding orifice size. The loading ring position and orifice size selected for the catalog data for Actaris regulators limit the maximum loading to 2" w.c. above set point at the highest inlet pressure shown per orifice size for pounds to inches regulation. For pounds to pounds regulation the

maximum loading is .2 PSIG for spring loaded regulators and 1% of absolute outlet pressure for constant loaded regulators.

Loading Ring Positions for B-34 Regulators Except IM

▶ For M and D models

Set at 0 degrees

▶ For R and N models with outlet pressure of 1 PSIG or less

If inlet pressure is 50 PSIG or less
set at 15 degrees off center

If inlet pressure is 50 PSIG or more
set at 21 degrees

▶ For R and N models with outlet pressure more than 1 PSIG

Set at 0 degrees

If inlet pressure varies from below 50 PSIG to 60 PSIG max,

Set at 18 degrees

If inlet pressure is never above 10 PSIG,
Set at 12.5 degrees

Loading Ring Positions for B34IM Regulators

▶ For outlet pressure less than 1 PSIG

If inlet pressure is 50 PSIG or less
set at 18 degrees

If inlet pressure is more than 50 PSIG
set at 21 degrees

▶ For outlet pressure of 1 to 2 PSIG

set at 12.5 degrees

▶ For outlet pressure more than 2 PSIG

set at 0 degrees

Loading Ring Positions for B38 and B838 Regulators

Loading ring should be set at 0 degrees for M and D models. For all other B38 and B838 loading ring positions, use the setting shown in the capacity tables in the catalog for the respective models.

Loading Ring Positions for CL231 Regulators

- ▶ For inlet pressure 15 PSIG and below
set at 12 degrees
- ▶ For inlet pressure more than 15 PSIG
set at 15 degrees

Loading Ring Positions for CL34 Regulators

- ▶ For M and D models
set at 0 degrees
- ▶ For all remaining CL34 models
If inlet pressure is 50 PSIG or less
set at 15 degrees
If inlet pressure is more than 50 PSIG
set at 21 degrees

Loading Ring Positions for CL38 and CL838 Regulators

- ▶ For M and D models
set at 0 degrees
- ▶ For all remaining CL38 and CL838 models
If outlet pressure is less than 1 PSIG
set at 25 degrees
If outlet pressure is 1 PSIG or more
set at 0 degrees

Adjusting The Loading Ring Position

Remove the diaphragm case from the valve body. Remove the loading ring from the orifice by spreading the loading ring slightly with both thumbs and pulling it off the orifice. Consider the casting seam opposite the outlet as the centerline of the valve body. Use a pencil or fine line marker to mark the radial notch on the orifice that lines up with the seam and use it for 0 degrees. Count, in a clockwise direction, the number of notches required to give the desired position and again mark the orifice. Each notch on a 34 orifice is 2.5 degrees. Each notch on a 38 or 838 orifice is 1.9

degrees. Divide the specified degree setting by 2.5 for the 34 series or by 1.9 for the 38 series to determine the number of notches to count for the second mark.

Examples:

- B34 set at 15 degrees
 $15 \text{ divided by } 2.5 = 6 \text{ notches}$
- B38 set at 40 degrees
 $40 \text{ divided by } 1.9 = 21 \text{ notches}$

With the desired position marked, reinstall the loading ring. Place both thumbs inside the loading ring, spread outward and push down onto orifice so that the small indentation on the inside of the loading ring engages the desired notch and the two beads on each side lock into the orifice groove.

Loading ring positioning tool 799081 is available from the factory for use with the B34 and CL34 series regulators. An instruction sheet is available to explain usage. There is no tool currently available for the 38 and 838 series.

While the catalog data is based on regulators with the positions listed, performance can sometimes be enhanced by custom settings. The B838 series of regulators perform best when one loading ring is turned clockwise and one is turned counterclockwise.

When the regulator is used close to a rotary meter and pressure surges occur in reaction, the pressure can sometimes be stabilized by rotating the loading ring a few degrees from zero. This will cause a decrease in the listed catalog capacity at the stated droop point and should be done only if the flow requirement is not 100% of the orifice capacity for the application. "Hunting" in the B38 and 838 series regulators can often be stopped by turning the loading ring counterclockwise the same number of degrees from zero as the clockwise setting. Due to the harmonics set up by various meter set piping arrangements, any design regulator can experience instability on a given meter set. The loading ring allows for fine-tuning to correct for problems unique to a given set.

Actaris U.S. Gas, Inc.

970 Highway 127 North
Owenton, Kentucky 40359-9302, USA
For more information, www.actarismusgas.com

tel +1 800 490 0657
+1 502 484 5747
fax +1 502 484 6223