



imagination at work

flowgrid



slam shut

**FLOWGRID® SLAM SHUT**

## Mooney® Flowgrid® Slam Shut

The Flowgrid Slam Shut Valve is an easy to maintain automatic emergency shutoff device. The Slam Shut is designed for use with a pressure reducing regulator to provide secondary downstream pressure protection.

The device is designed to shut off the flow of gas when the sense or outlet pressure in the system either exceeds or drops below the set point pressures. It can be used as a stand alone device or integrated into the two inch, three inch and four inch Flowgrid regulators.

The Flowgrid® Slam Shut stand alone valve consists of a Flowgrid body with housing module and cover mounted on top. The pressure sensing/actuation module mounts on the side of the housing module.

The Flowgrid® Slam Shut integrated into the Flowgrid Valve consists of a Flowgrid body with housing module and the Flowgrid, throttle plate, spacer, diaphragm, main spring and spring case mounted on top. The pressure sensing/actuation module mounts on the side of the housing module.

The pressure sensing/actuation module can be supplied in two different interchangeable configurations; one providing high pressure protection only **Figure 1** and a second providing high and low pressure protection **Figure 2**.

### Features

- ✓ Retrofit to existing Flowgrid® regulators
- ✓ Pneumatic actuator
- ✓ Bubble tight shutoff with floating flapper design
- ✓ High / Low trip or High trip only
- ✓ Water tight for below grade vault installations
- ✓ Stand alone or Integral design
- ✓ Automatic pressure equalization for flapper reset



**Figure 1** - Two inch Flowgrid® Slam Shut regulator with over pressure protection.



**Figure 2** - Two inch Flowgrid Slam Shut regulator with over and under pressure protection.

## Principle of Operation

During normal operation the latch mechanism holds the closure element (flapper) open as shown in Figure 5. The sense or downstream pressure is monitored by the high and low trip controller diaphragms. The controller diaphragms convert the sense pressure into a force proportional to the pressure. The force produced by the set point adjustment spring is counter balanced by the controller diaphragm. The force produced by the set point adjustment spring is counter balanced by the spring case. The adjusting screw is used to vary the spring force and control the over pressure set point or the optional under pressure set point.

When the downstream pressure exceeds the over pressure set point or is less than the optional under pressure set point, the controller diaphragm and spring move opening a valve. The open valve allows inlet pressure to flow to the latch diaphragm, see Figure 6. The pressure acts on the diaphragm which pushes on the pin. The pin moves the “L” shaped pawl lever and releases the flapper lever. When the flapper lever is released, a set of springs pushes the flapper valve closed and provides the initial force to seal the valve.

Once the flapper valve closes the inlet pressure is cut off as shown in Figure 7. The pressure equalizes on both sides of the latch diaphragm and the pawl lever returns to the latched position.

To return the system to operation the technician closes the up and downstream block valves to isolate the system. Then repairs are made as required to correct the cause of the over or under pressure condition. Resetting the slam shut requires removing the cover which automatically equalizes the pressure up and downstream of the flapper valve. Then the flapper valve can be rotated open and re-latched. A pin is provided that will lock the flapper valve open while the system is being returned to operation. When the system is returned to operation the pin is returned to its storage hole allowing the cover to be reinstalled. Reinstalling the cover closes the equalization valve and returns the slam shut to normal operation.

## Spring Range and Accuracy

Spring Color	Outlet Pressure Range		Accuracy Group AG* †
	psig	Bar	
RED	3-12	.207-.827	5
CADMIUM	10-40	.689-2.76	2
BLUE	25-90	1.72-6.20	1
PURPLE	60-200	4.14-13.8	1
BLACK	100-260	6.89-17.9	1
WHITE/GREEN	200-450	13.8-31.0	1

\* AG (percent accuracy) is based on a maximum inlet pressure change of  $\pm 10$  psi ( $\pm .69$  bar) at the minimum outlet pressure for the spring range.

† Preliminary data

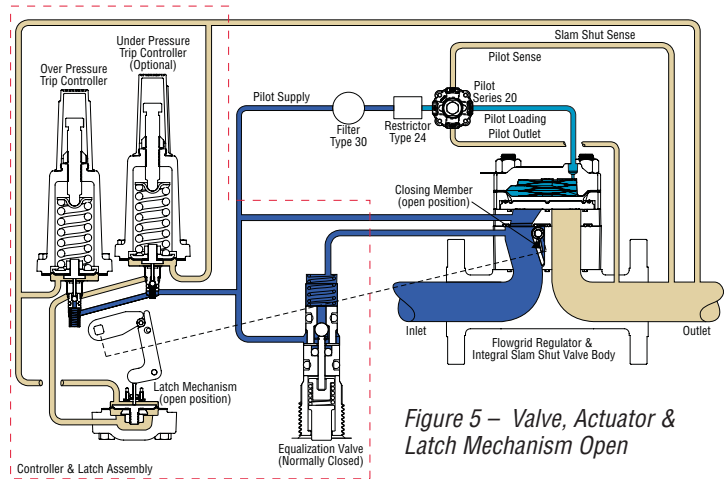


Figure 5 – Valve, Actuator & Latch Mechanism Open

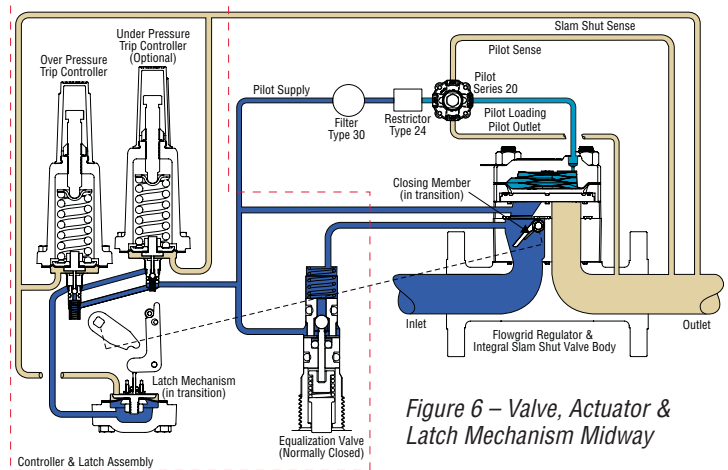


Figure 6 – Valve, Actuator & Latch Mechanism Midway

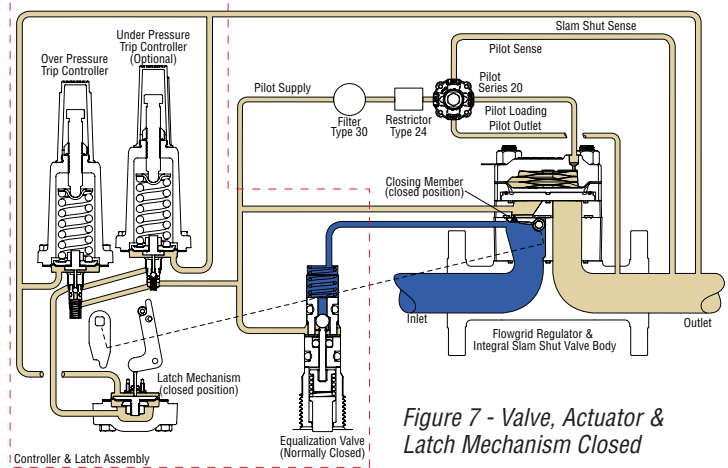


Figure 7 - Valve, Actuator & Latch Mechanism Closed

Materials of Construction	
<b>Housing Module</b>	Steel Castings per ASTM A216/A-04 GRADE WCB
<b>Flapper Valve</b>	Cast Stainless per ASTM A693-03 (17-4 PH)
<b>Studs</b>	ASTM A193/A -05 GRADE B7
<b>Nuts</b>	ASTM A194/A -05 GRADE 2H
<b>Mechanism Module</b>	Aluminum Castings per ASTM A356 T6 or 356 T6 Machined Aluminum Components per ASTM B211 -03
<b>Springs</b>	Stainless Steel per ASTM A 313-03
<b>Diaphragms</b>	Standard: Nitrile/Nylon Optional: Viton/Nylon
<b>O-Ring &amp; Seals</b>	Standard: Nitrile Optional: Viton

Specifications	
<b>Sizes</b>	2,3, 4 inch sizes
<b>Types</b>	Stand Alone or Integrated into Flowgrid
<b>Pressure Protection</b>	Standard: Over Optional: Over and Under
<b>Temperature</b>	-20° F to 150° F (-29° C to 65° C)
<b>Maximum Operating Inlet Pressure</b>	740 psig (51 Bar)
<b>Operating Sense Pressure</b>	3 to 450 psig (207 mBar to 31 Bar)
<b>Minimum Differential Pressure between inlet and sense ports</b>	15 psi (1.03 Bar)
<b>Response time†</b>	< .25 seconds

## How to Order

† Preliminary data

Slam Shut Figure Number System					
S	X	-XXX	-X	-XXX	-XXX
Slam Shut	Use	Figure#	Seal Mtrl	High Trip Spring Range	Low Trip Spring Range
	G, Flowgrid	Flowgrid Figure # for order	N, Nitrile	003	000
	S, Stand Alone		V, Viton	010	03
				025	010
				060	025
				100	060
				200	100
					200

## NOTES

- The Figure Number is required to define the valve body, which the Slam Shut will be integrated into. A 90X Figure Number indicates a Slam Shut that will be integrated into a Flowgrid regulator in the field and will not be shipped with a valve body. The X indicates the nominal size of the valve body.

Example: SG-004-N-060-010 (Slam Shut on 2" FG-4 300CL nitrile seal material with high trip spring range 60psi and low trip spring range 10psi).