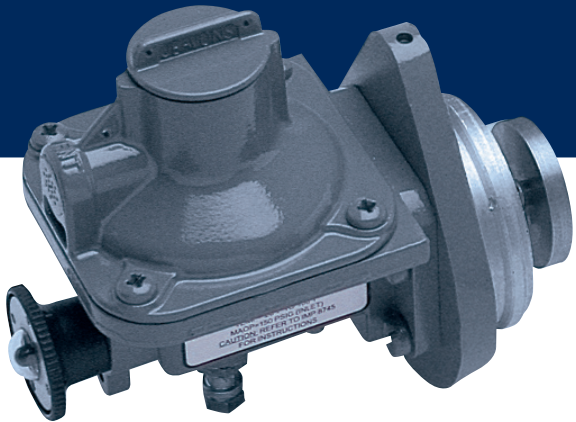


USSA — Universal Safety Shutoff Assembly

Technical Bulletin



Universal Safety Shut-off Assembly

USSA is a new design of integral shutoff, created to fulfill the requirements of the North American & associated markets. It uses well proven principles to give exceptional consistency of operation and an unrivaled insensitivity to nuisance tripping in a low-cost unit designed for high-volume production. USSA allows the use of standard orifices in regulators to achieve optimum capacities.

Application

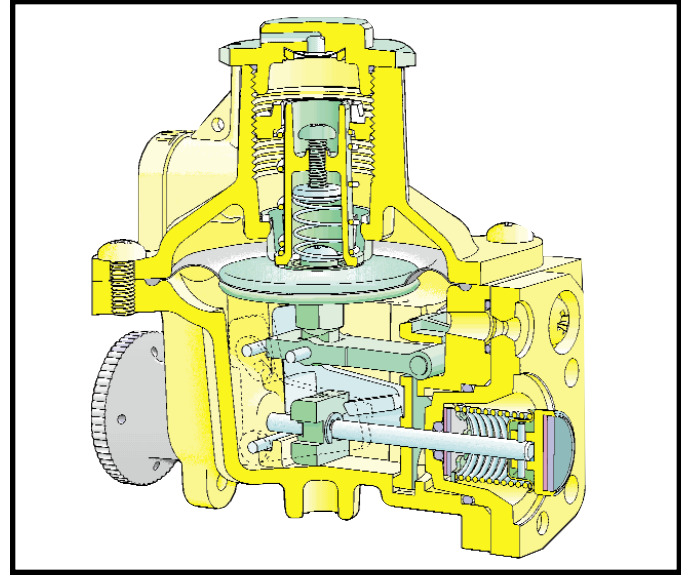
The USSA can be fitted to any group regulator with the appropriate connecting face (see connection requirements), with inlet pressures up to 125 PSIG. USSA is designed to meet the requirements of the standards in North America. The unit has the following performance features.

- **Diaphragm Burst Pressure** greater than 60 PSIG
- **Shutoff Pressure** OPSS 7.5" W.C. - 7 PSIG
UPSS 3" W.C. - 60" W.C.
- **Repeatability** OPSS within ±5%
UPSS within ±15%
- **Response Time** less than 1 second
- **Shock Insensitivity** Withstands dropping a weight of 5.5 lbs. from 3 in. 10 times without tripping, more than 3000 shut-off/reset cycle maintaining repeatability.
- **Visual trip indicator**
- **Tapped vent cover** (optional)
- **Bugshield fitted to vent** (when machined)
- **Sealing of setting and latching is available**
- **Temperature Range** -20° F to 140° F

Options

The USSA is available in three shut-off versions:

- **Over pressure only** OPSS
- **Under Pressure only** UPSS
- **Over and Under Pressure** OUPSS



Material Specification

Component	Material
Body and Top Cover	Aluminum
Diaphragm	Nitrile Rubber (Buna)
Valve Discs and "O" Rings	Nitrile
Latch Mechanism	Acetal Resin
Spindle	Stainless Steel

Material Specification

"W.C.	Part Number	Color Code
7.5 - 24	71403P020	Black
20 - 32	71403P021	Orange
24 - 44	71403P022	Red
40 - 84	71403P023	Dark Green
3 - 5 PSIG	71403P024	Yellow
4 - 7 PSIG	71403P025	White

OPSS Springs

"W.C.	Part Number	Color Code
3 - 6	71403P026	Light Blue
6 - 24	71403P027	Brown
24 - 60	71403P028	Purple

Operation

USSA is fitted to a service regulator (Series 1200B and 1800) and is designed to replace existing shutoffs. It senses the outlet pressure of the regulator through the sensing hole and, in the event of an over or under pressure condition, it operates to shutoff the inlet pressure at the inlet side of the regulator orifice.

At normal working pressures the internal mechanism is 'latched' as shown in figure 1. The lever (A) and latch (B) are engaged with the diaphragm in rest position touching the base of the opss spring holder (C). The valve and its spindle are held open by the latch holding the tripoff bushing (D) attached to the spindle.

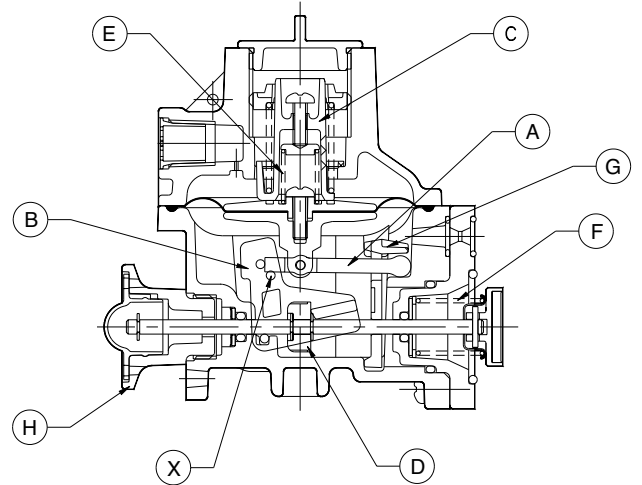


Figure 1 - Latched position

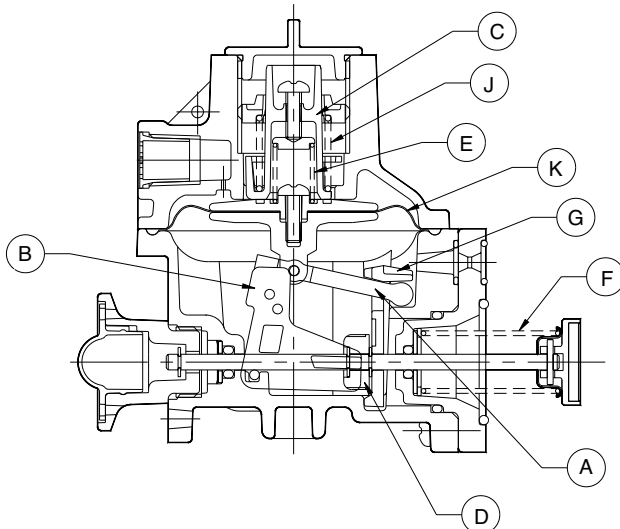


Figure 2 - Overpressure shut-off activated

Underpressure Shutoff

When the outlet pressure reduces to about 120% of the underpressure set by the underpressure (upss) spring (E), the diaphragm (K) moves downwards under the action of the smaller upss spring. The opss spring (J) is inactive as the opss spring holder (C) is held at the base of the turret. The diaphragm pulls the lever (A) downwards with it across the face of the latch (B). If the outlet pressure falls to the trip pressure, the lever is pulled off the latch. The latch pivots under the action of the force provided by the valve actuating spring (F). This allows the tripoff bushing (D) on the spindle to disengage from the latch allowing the spindle to move and the valve to close onto the orifice (see figure 3).

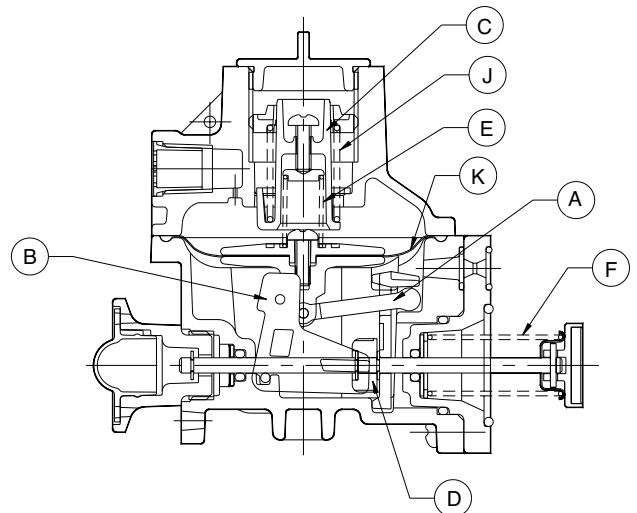


Figure 3 - Underpressure shut-off activated

Operation

Resetting The USSA

(Refer to Figure 1, Page 3)

Before resetting USSA, the problem causing the fault pressure in the regulator must be corrected and the inlet pressure at normal levels. To reset, unscrew the reset spindle end cap (H) counterclockwise until it is free, then pull back on the reset knob. This allows pressure into the regulator which will give the required working outlet pressure. The tripoff bushing (D) pulls the latch, pivoting it back allowing the lever to move freely with the diaphragm. To allow the regulator to give the correct outlet pressure and the shutoff mechanism time to restore itself under action of the outlet pressure, the spindle must be held back for about 3 seconds. The spindle is then released gently and will move into the shutoff a little before stopping as the tripoff bushing engages with the latch. The shutoff is now ready for use, screw the reset spindle end cap clockwise till it is tight.

Overpressure And Underpressure Units Only

(Refer to Figure 1, Page 3)

USSA can be easily modified to operate as an underpressure only or an overpressure only unit. The overpressure unit simply has an extra stainless steel pin (X) added during assembly. This stops the lever from falling and allowing shutoff when no pressure is in the body. Additionally, the upss spring and the opss spring holder can be removed.

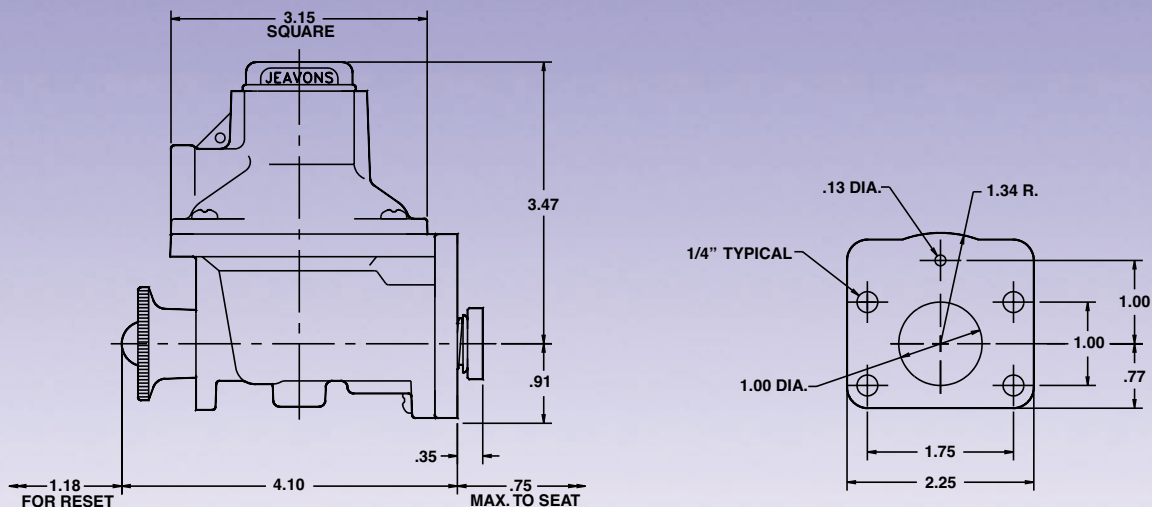
The underpressure unit replaces the overpressure spring with a solid tube. This prevents the mechanism from moving upwards if the outlet pressure rises.

Using USSA

With an OUPSS unit there is a small interaction between the OPSS & UPSS spring settings and the respective setting pressures cannot be too close together (e.g. don't expect to set the OPSS @ 10" W.C. when the UPSS is at 8" W.C.). Therefore, set the OPSS spring crudely first by winding in/out the larger OPSS spring adjuster. Then, set the UPSS spring using the metal screw in the center of the OPSS spring holder. Finally, recheck and modify if necessary the OPSS setting.

With the OPSS and the UPSS units there is only one spring and setting is straightforward.

Dimensions



American Meter Company has a program of continuous product development and improvement and, therefore, the information in this bulletin is subject to change or modification without notice.



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