

**APPLICATIONS:**

- Shut-in valve on separators
- Shut-in on plastic flow lines
- Any system which must be protected from an over pressure or low pressure condition

**FEATURES:**

- 0-300 psig High and Low set point ranges
- 20 psig instrument gas supply
- Snap acting for fast valve response
- Easily adjustable set points
- Rugged construction
- 1000, 2000, 4000 and 6000 psig maximum upstream pressure

**OPERATION:**

The Kimray Hi/Low Controller has two pilots. PILOT 1 controls the HIGH SHUT-IN PRESSURE and Pilot 2 controls the LOW SHUT-IN PRESSURE. Each pilot is adjustable from 0 to 300 psig. Full output to the MOTOR VALVE is provided when the SENSE PRESSURE is between the HIGH and LOW set point of both pilots. When the SENSE PRESSURE decreases below the LOW set point or above the HIGH set point, the output is vented to atmosphere with a snap action, closing the MOTOR VALVE.




Assume the SENSE PRESSURE (Blue) is between the HIGH and LOW set points. In PILOT 2 the SENSE PRESSURE (Blue) acting on the PILOT DIAPHRAGM results in a force greater than the force exerted by the PILOT SPRING. This allows the pilot assembly to move upward opening the top seat of the PILOT PLUG (Brown to Atmosphere) and closing the bottom seat (Violet to Brown). With LOW set SHUT-OFF PRESSURE (Brow) vented to ATMOSPHERE, the top seat of the PILOT PLUG in the 3 PS is opened (Violet to Orange) and the bottom seat is closed (Orange to Atmosphere). Therefore SUPPLY PRESSURE (Violet) is relayed to PILOT 1.

The SENSE PRESSURE (Blue) is also acting on PILOT 1. The force exerted by the PILOT SPRING is greater than the resultant force of the SENSE PRESSURE (Blue) acting on the PILOT DIAPHRAGM. As a result the top seat of the PILOT PLUG is closed (Yellow to Atmosphere) and the bottom seat is opened (Orange to Yellow). This allows MOTOR VALVE DIAPHRAGM PRESSURE (Yellow) to open the MOTOR VALVE.

Assume the SENSE PRESSURE (Blue) decreases below the LOW set point of PILOT2. The top seat of the PILOT PLUG closes (Brown to Atmosphere) and the bottom seat opens (Violet to Brown). With LOW SET SHUT-OFF PRESSURE (Brown) acting on the MAIN DIAPHRAGM of the 3 PS the top seat of the PILOT PLUG is closed (Violet to Orange) and the bottom seat is opened (Orange to Atmosphere). This allows venting of the MOTOR VALVE DIAPHRAGM PRESSURE (Yellow) through PILOT 1 and the 3 PS closing the MOTOR VALVE. This process is a snap action resulting in fast response of the MOTOR VALVE.

Assume the SENSE PRESSURE (Blue) increases above the HIGH set point of PILOT 1. The top seat of the PILOT PLUG is opened (Yellow to Atmosphere) and the bottom seat is closed (Orange to Yellow). This allows venting of the MOTOR VALVE DIAPHRAGM PRESSURE (Yellow to Atmosphere) resulting in the closing of the MOTOR VALVE.

For start-up after the valve has been shut-in, the valve must be by-passed to bring the SENSE PRESSURE (Blue) up between the HIGH and LOW set points of the PILOTS.

-  3 PS Diaphragm Assembly
-  Motor Valve Diaphragm Assembly
-  Upstream Pressure
-  Downstream or Sense Pressure
-  20 PS.I.G. Supply Pressure
-  Low Set Shut-off Pressure
-  High Set Supply Pressure
-  Motor Valve Diaphragm Pressure

