

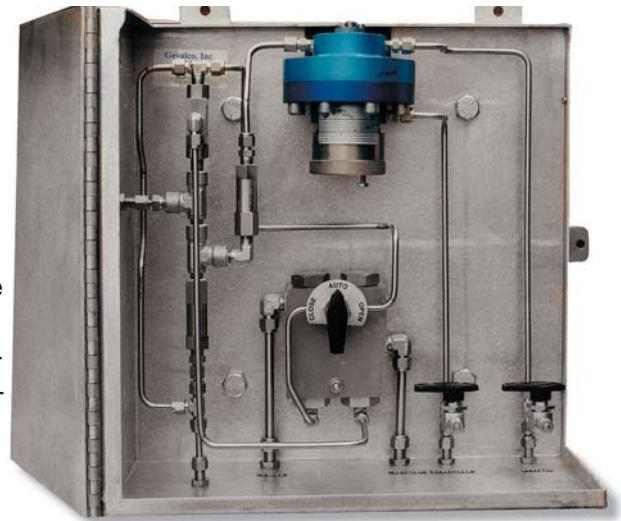


Automatic Bi-Directional Station Bypass Control

The Gevalco "Automatic Bi-Directional Station Bypass Control" module is designed to keep gas flowing in the event there are major compressor problems in a bi-directional flowing pipeline. In instances where a single station bypass valve is used, the normal "Automatic Station Bypass Control" system must be manually reconfigured to change the pressure sensing lines from suction to discharge and vice-versa. This manual reconfiguration presents an opportunity for operational error.

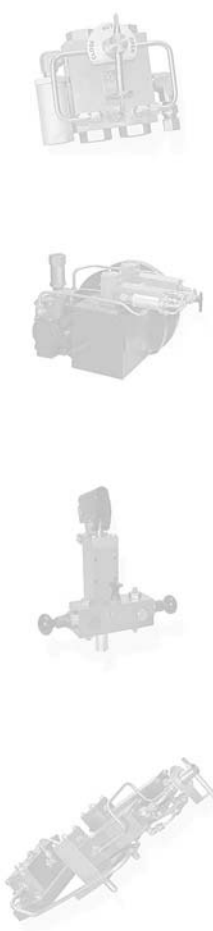
The Gevalco "Automatic Bi-Directional Station Bypass Control" is self-configuring to provide protection regardless of flow direction. Based on the Gevalco "Automatic Station Bypass Control" module, the bi-directional system provides ultimate reliability of control action. To achieve this objective, the proven Gevalco hi-pressure "poppet" valve is combined with a reliable, differential pilot valve to form a stand-alone control module. The unique Gevalco "Hi/Lo Selector" module routes the appropriate suction and discharge signal, depending on flow direction, to the sensing inputs of the differential pilot valve. When the differential drops below the adjustable setpoint, pilot gas is passed to the pilot of the "poppet" valve and control action is initiated.

Utilizing the pipeline gas itself, for both the pilot gas and power media, makes the "Automatic Bi-Directional Station Bypass Control" system independent of regulator and other power media failure. The simplicity of design, utilizing minimal components, ensures the bypass valve opens only when required. The Gevalco "Rate-of-Drop" (R.O.D.) calibration kit provides for an accurate calibration of the trip point, as well as, the simulation of various operational failure scenarios for testing control action.



The Gevalco Advantage

- Hi-pressure construction - no regulator, relief valve, or mechanical switching valve.
- Differential pilot valve utilizes a stainless steel diaphragm for accuracy and repeatability.
- Marine-grade, hard-anodized aluminum body for both poppet and differential pilot valves.
- Easily adjustable differential trip setpoint (1.0 psi to 40 psi).
- No mechanical linkages, which are subject to environmental failure.
- Limit valve ensures complete opening of bypass valve.



Sequence of Operation

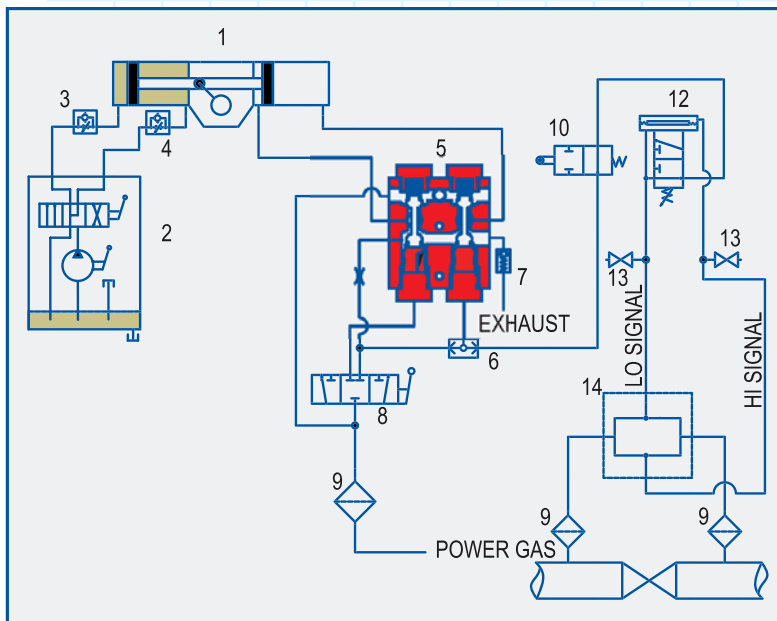


The Gevalco "Automatic Bi-Directional Station Bypass Control" is self-configuring to provide protection regardless of flow direction.

1 The Bi-Directional Station Bypass Control module is interfaced to the normal local "Auto/Manual" control circuit (Reference: Auto/Manual Sequence description) by connection to the "open" pilot port of the poppet control valve (5) thru a shuttle valve (6). The shuttle valve acts as a signal selector between the Station Bypass signal and the local manual "open" signal.

2 With the manual selector valve (8) in the "auto" position, the system is ready to react to a shutdown signal. Pipeline pressure from the suction and discharge of the compressor station are routed thru filters (9) to a hi/lo selector module (14), which automatically routes the lo-pressure signal (suction) and hi-pressure signal (discharge) to the appropriate side of the diaphragm in the switching valve (12). Under normal conditions, the positive differential across the diaphragm (i.e., the discharge pressure is higher than the suction pressure) keeps the valve energized and the flow blocked. When trouble within the station causes the discharge pressure to decrease below the differential setpoint, the valve de-energizes. This allows pilot gas to flow thru the normally open limit valve (10) to the "open" pilot port of the poppet valve. The poppet valve then opens, allowing power gas to flow to the cylinder to open the bypass valve. The differential switching valve setpoint is adjustable from 1.0 psi to 40.0 psi.

3 When the valve reaches the fully open position, the limit valve (10) closes to block the pilot signal. The pilot pressure on the poppet bleeds off thru an internal orifice, which resets the poppet valve and vents the actuator cylinder.



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