Conoflow's GC31 Commandaire Positioner

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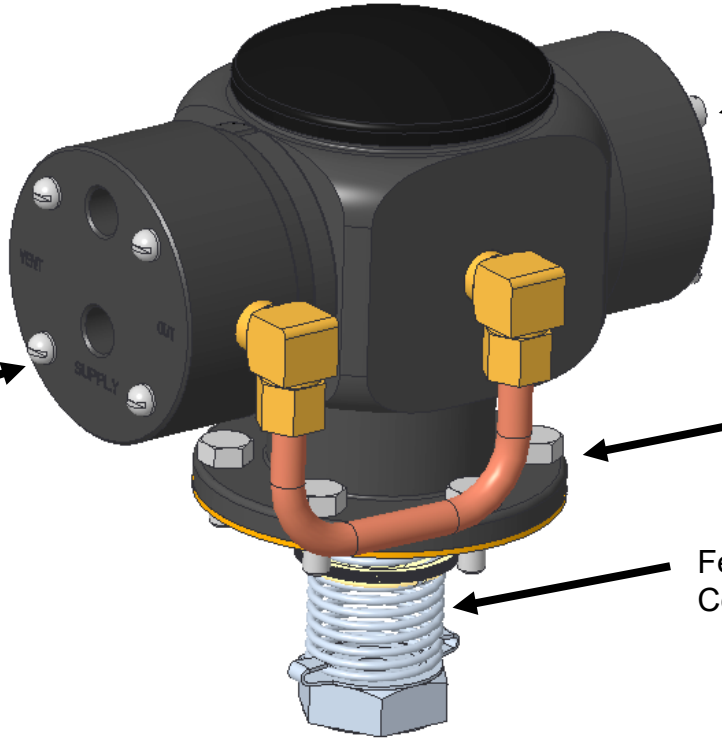
GC31 Commandaire Positioner Description

- The Conoflow GC31 Commandaire Positioner is a single acting air pressure and movement control for piston or diaphragm actuators.
- This positioner uses an air signal to proportionately move an actuator's piston or diaphragm position.
- This positioner mounts on the end of the actuator, and drives the piston or diaphragm downward and moves the actuator stem out with an increasing control signal.
  - A cushion load regulator or reversing relay is required to drive the piston or diaphragm back, towards the positioner if there is no actuator spring return.
    - This pressure retracts the actuator stem when the positioner no longer commands the piston to extend the stem.
- A range spring beneath the positioner, inside the actuator cylinder, connects to the actuator piston or diaphragm to provide the position feedback for the positioner's internal controls.
  - This range spring is required for the positioner to control actuator position.

GC31 Commandaire Positioner Description



Instrument Pressure (INST)
Typically 3-15 psig

Supply Pressure
100 psig max.

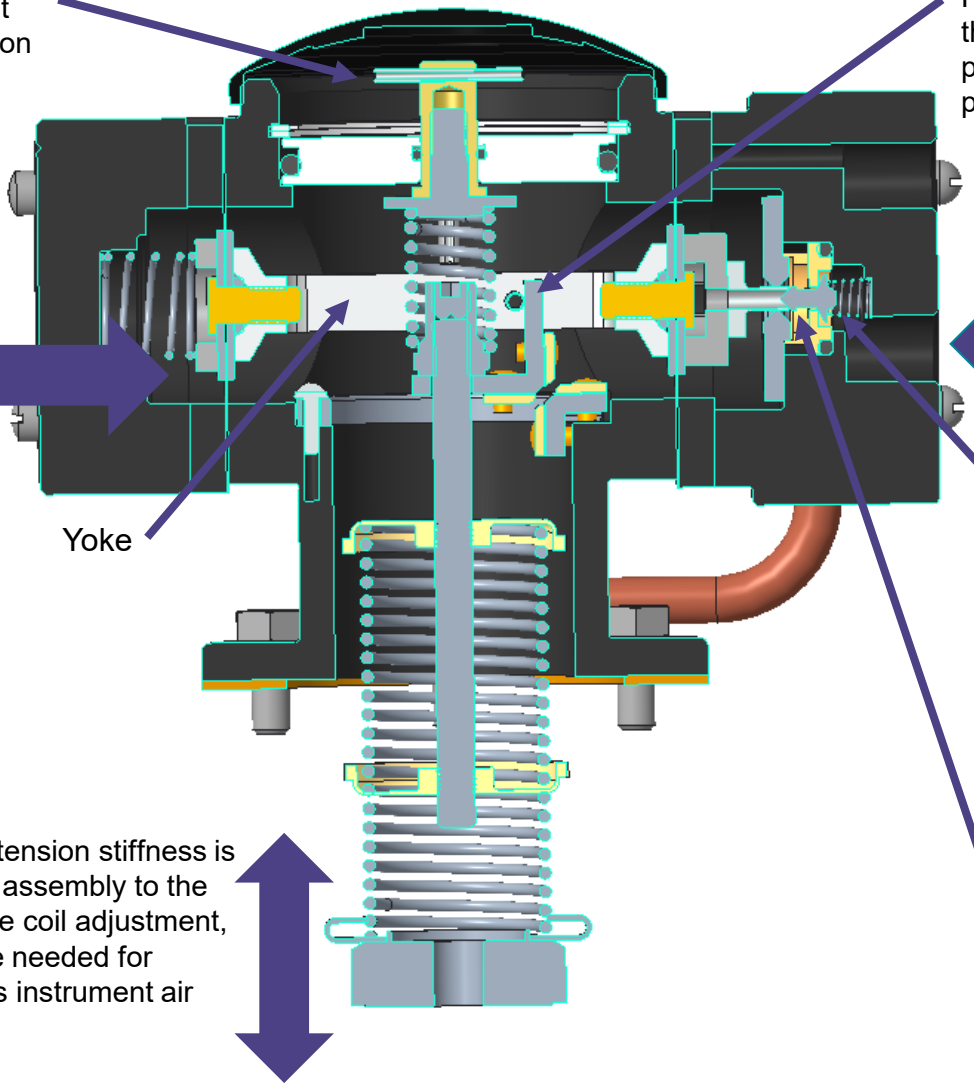
Flange and gasket to mount
to end of piston actuator.

Feedback (Range) Spring
Connects to Actuator Piston

The Supply (Supply) and Instrument (INST) pressure port are on opposite ends.

The controlled outlet pressure is routed to the central housing, where it pressurizes the top of the piston through a flange and gasket connection on the end of the piston actuator.

GC31 Commandaire Positioner – Internal Operation



"Zero" adjustment to balance loads on bellcrank, and yoke position

Flexure mounted bellcrank tied to the Range Spring pushes against pin on yoke to offset instrument air pushing diaphragm and yoke.

Instrument air signal ported into the chamber and pushes the diaphragm and yoke.

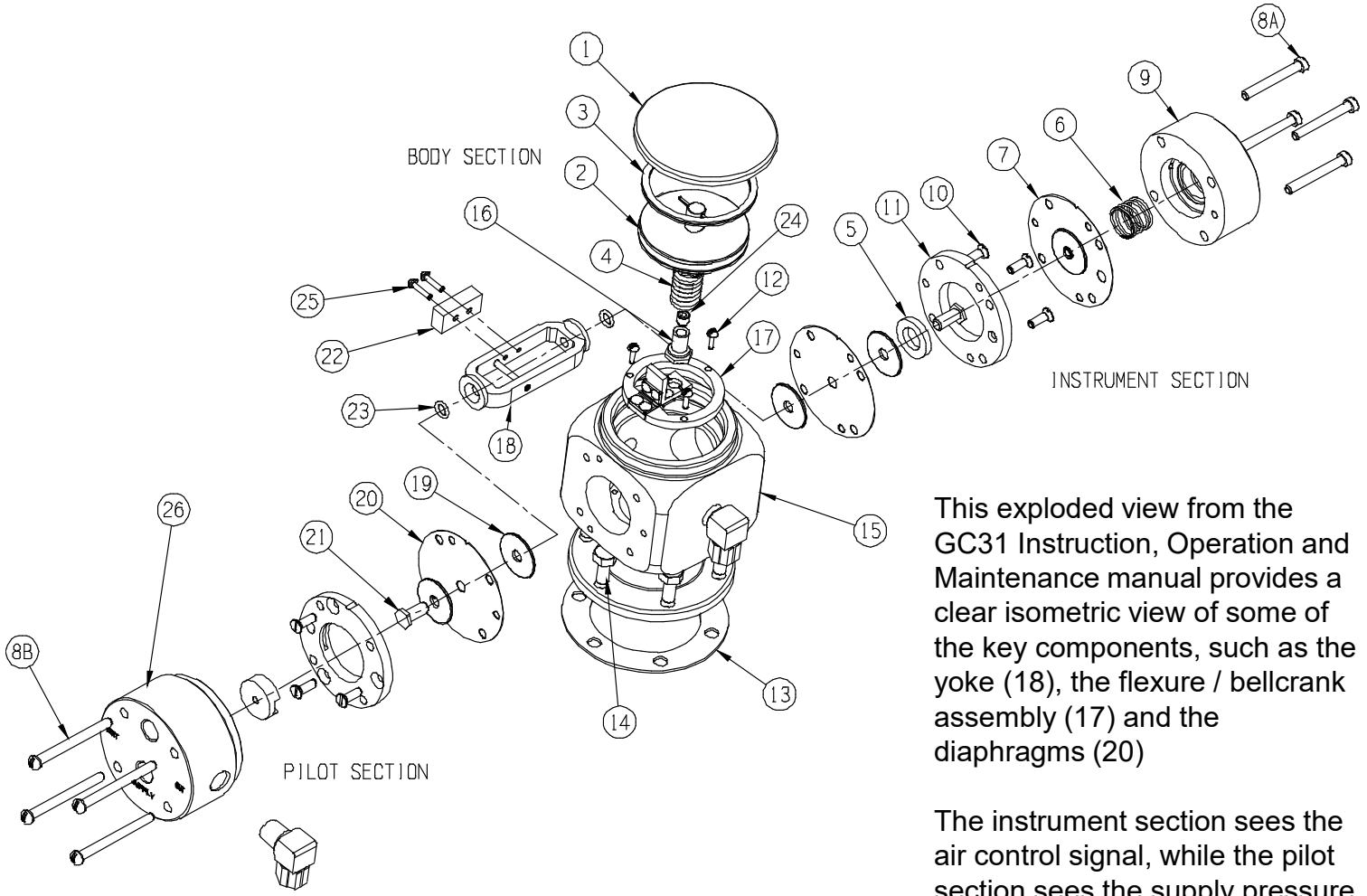
Supply air pressure ported to main poppet valve.

Main poppet valve pushes supply air to outlet port (and central housing), pushing piston down when instrument air pushes yoke to right and main valve opens, extending the actuator.

Range Spring extension stiffness is calibrated during assembly to the actuator, by active coil adjustment, providing the rate needed for actuator stroke vs instrument air signal range.

Relief valve opens when force on yoke from instrument air is less than the extension spring load on the bellcrank, and yoke moves to the left. This lets the actuator retract.

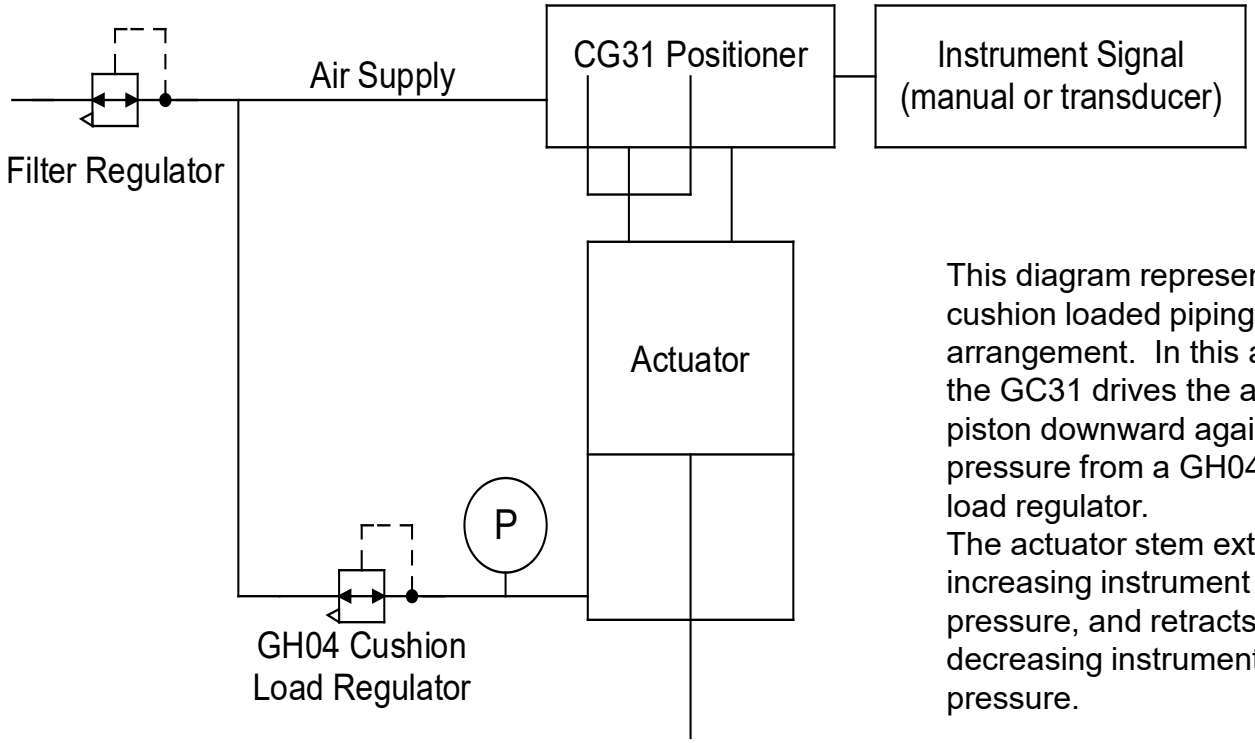
GC31 Commandaire Positioner – Internal Operation



This exploded view from the GC31 Instruction, Operation and Maintenance manual provides a clear isometric view of some of the key components, such as the yoke (18), the flexure / bellcrank assembly (17) and the diaphragms (20)

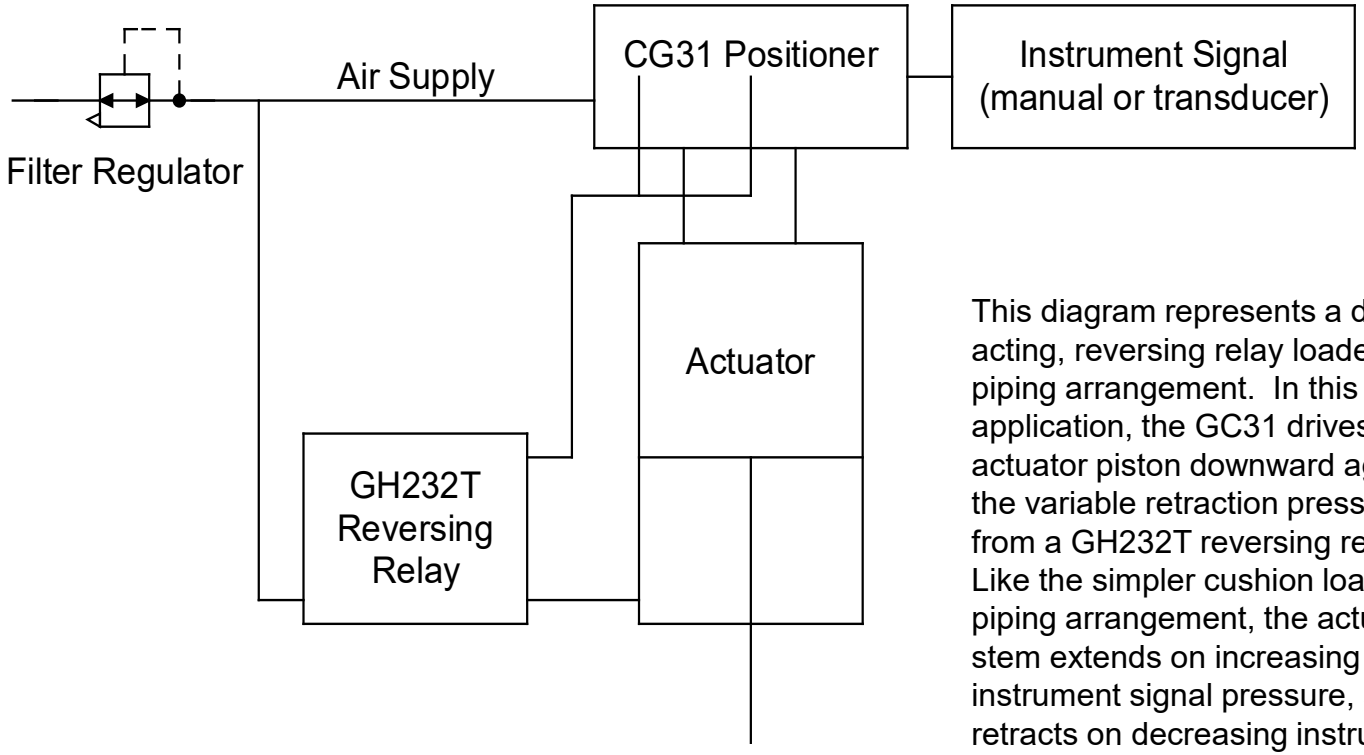
The instrument section sees the air control signal, while the pilot section sees the supply pressure and houses the main supply valve.

GC31 Commandaire Positioner – Piping / Hook Up



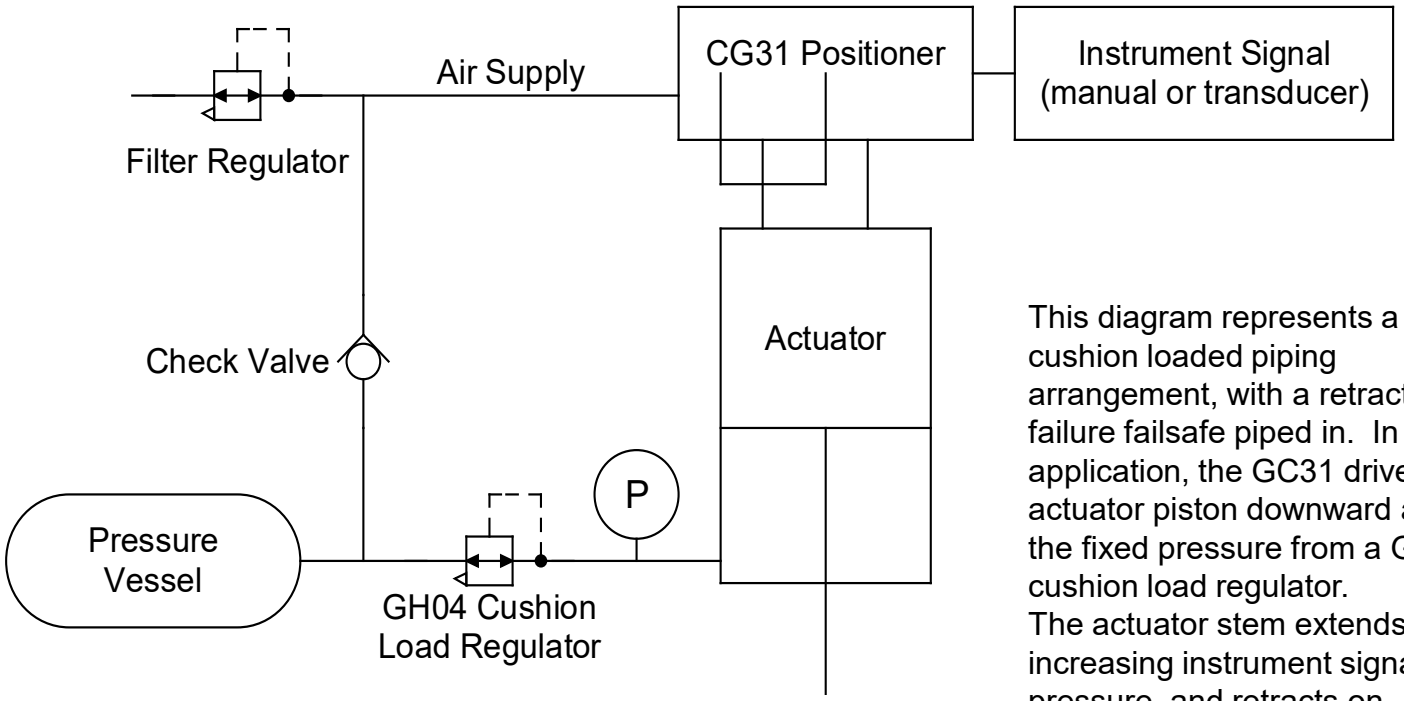
This diagram represents a simple, cushion loaded piping arrangement. In this application, the GC31 drives the actuator piston downward against the fixed pressure from a GH04 cushion load regulator.
The actuator stem extends on increasing instrument signal pressure, and retracts on decreasing instrument signal pressure.

GC31 Commandaire Positioner – Piping / Hook Up



This diagram represents a double acting, reversing relay loaded piping arrangement. In this application, the GC31 drives the actuator piston downward against the variable retraction pressure from a GH232T reversing relay. Like the simpler cushion load piping arrangement, the actuator stem extends on increasing instrument signal pressure, and retracts on decreasing instrument signal pressure.

GC31 Commandaire Positioner – Piping / Hook Up



This diagram represents a simple, cushion loaded piping arrangement, with a retract on failure failsafe piped in. In this application, the GC31 drives the actuator piston downward against the fixed pressure from a GH04 cushion load regulator.
The actuator stem extends on increasing instrument signal pressure, and retracts on decreasing instrument signal pressure.
If air pressure is disrupted, the air in the pressure vessel will continue to supply the cushion load regulator to retract the stem.