The Cla-Val Model 40-36 Rate of Flow and Fuel Shutoff Check Valve is a hydraulically operated, pilot controlled, diaphragm actuated control valve that limits flow to a preselected maximum rate, regardless of changing line pressure. The pilot control responds to the differential pressure produced across an orifice plate installed downstream of the valve. Accurate control is assured as very small changes in the controlling differential pressure produce immediate corrective action of the main valve. The orifice bore is factory sized based on flow rate to ensure proper control valve performance. Flow rate adjustments can be made by turning an adjusting screw on the pilot control. The fuel shutoff feature closes the main valve when remote pressure from a Cla-Val Model CFF18T-H2 or CFF21-H2 flanged float control is admitted into the cover of an auxiliary Hytrol. The integrated check feature protects upstream equipment like filter separators by admitting downstream pressure into the main valve cover chamber, closing the main valve upon pressure reversal.

**Schematic Diagram**

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<tr>
<th>Item</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>100-34 Hytrol (Reverse Flow)</td>
</tr>
<tr>
<td>2</td>
<td>100-37 Hytrol</td>
</tr>
<tr>
<td>3</td>
<td>X47A Ejector</td>
</tr>
<tr>
<td>4</td>
<td>CDHS18 Pressure Differential Control</td>
</tr>
<tr>
<td>5</td>
<td>X101 Valve Position Indicator</td>
</tr>
<tr>
<td>6</td>
<td>X105L Switch Assembly</td>
</tr>
<tr>
<td>7</td>
<td>X52A Orifice Plate Assembly</td>
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<tr>
<td>8</td>
<td>100-01 Hytrol (Reverse Flow)</td>
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</tbody>
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**Optional Features**

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<thead>
<tr>
<th>Item</th>
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<tbody>
<tr>
<td>A</td>
<td>X46A Flow Clean Strainer</td>
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<tr>
<td>B</td>
<td>CK2 (Isolation Valve)</td>
</tr>
<tr>
<td>C</td>
<td>CV Flow Control (Closing)</td>
</tr>
<tr>
<td>G</td>
<td>Check Feature (81-01)</td>
</tr>
<tr>
<td>Q</td>
<td>Quick Connect Assembly</td>
</tr>
<tr>
<td>S</td>
<td>CV Flow Control (Opening)</td>
</tr>
<tr>
<td>T</td>
<td>55°F Thermal Relief Control</td>
</tr>
<tr>
<td>Y</td>
<td>X43 “Y” Strainer</td>
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</tbody>
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**Specifications**

**Sizes**
- **Globe:** 1 1/2” - 16” flanged
- **Angle:** 2” - 16” flanged

**End Details**
- **Flanged:**
  - Cast Aluminum, 150 ANSI B16.1
  - Cast Bronze, 150 & 300 ANSI B16.24
  - Ductile Iron, 150 & 300 ANSI B16.42
  - Cast Steel, 150 & 300 ANSI B16.5

**Temperature Range**
- Light Petroleum Product -40° to +140°F

**Pressure Ratings**
- 150 class 175-PSI Max.
- 150 class 275-PSI Max.
- 250 class 300-PSI Max.
- 300 class 400-PSI Max.

**Material**
- **Body & cover:**
  - Cast Aluminum 356-T6
  - Cast Bronze ASTM B62
  - Ductile Iron ASTM A-536
  - Cast Stainless Steel 303
  - Cast Steel ASTM A216-WCB
- **Valve trim:**
  - Bronze ASTM B61
  - Stainless Steel 303
- **Rubber parts:**
  - Buna-N® Synthetic Rubber
  - Viton

**Other Materials**
- Available on Special Order
Principle of Operation

Modulating Action

The valve modulates when diaphragm chamber pressure is held at an intermediate point between inlet and discharge pressure changes, the pressure above the diaphragm is varied allowing the valve to modulate and compensate for the changes.

The valve opens when diaphragm chamber pressure is equal to or less than pressure on the inlet side, the valve closes when the pressure on the outlet side is equal to or less than the pressure in the diaphragm chamber.

Full Open Operation

When pressure in the diaphragm chamber is relieved to zone of lower pressure under the valve. Flow in either direction is permitted.

Tight Closing Operation

When pressure from the valve inlet (or an equivalent independent operating pressure) is applied to the diaphragm chamber, the valve closes drip-tight.

Pilot Control System

The 40-36 Rate of Flow Non-Surge Check Valve shall limit flow to a preselected maximum rate regardless of changing line pressure. The hydraulic control valve pilot system shall consist of a direct acting diaphragm valve designed to close when the controlling differential exceeds the adjustable spring setting. The pilot control system shall contain a fixed orifice. No variable orifices shall be permitted. A flanged orifice plate assembly shall be included and mounted to the downstream (outlet) flange. The fuel shutoff feature shall close the main valve when remote pressure is introduced into the cover of an auxiliary Hytrol incorporated into the pilot control system. Optional pilot system features shall include (A) Flow Clean Strainer, (B) CK2 Isolation Ball Valves, (C) CV Closing Speed Control, (G) Check Feature, (Q) Quick Connect Assembly, (S) CV Opening Speed Control, (T) 55°F Thermal Pressure Relief Control, (Y) X43 "Y" Strainer.

Main Valve

The valve shall be hydraulically operated, single diaphragm-actuated, globe or angle pattern. It shall contain a resilient, synthetic disc with a rectangular cross-section contained on three and one-half sides by a disc retainer and forming a tight seal against a single removable seat insert. The diaphragm assembly shall be the only moving part and shall form a sealed chamber in the upper portion of the valve, separating operating pressure from line pressure. The diaphragm consists of nylon fabric bonded with synthetic rubber and shall not be used as the seating surface. The valve stem shall be fully guided at both ends by a bearing in the valve cover and an integral bearing in the valve seat. To insure proper alignment of the valve stem, the valve body and cover shall be machined with a locating lip. No "pinned" covers to the valve body shall be permitted. Packing glands and/or stuffing boxes are not permitted and there shall be no pistons operating the main valve or pilot controls. All necessary repairs and/or modifications other than replacement of the main valve body shall be possible without removing the valve from the pipeline. The valve manufacturer shall warrant the valve to be free of defects in material and workmanship for a period of three years from date of shipment, provided the valve is installed and used in accordance with all applicable instructions.

Cv factor is defined as the number of gallons per minute of water at 60°F that will flow with a 1 psi pressure differential across the valve.

Purchase Specifications