General Stem-Guided Control Valves
Sizes ½" - 12" (15mm - 300mm)
ANSI Class 150 - 900 (PN16 - 160)
**REflex Product Information**

**BROADEST RANGE IN THE INDUSTRY**

The REflex line of two and three way valves offers more possibilities than any other valve family in the Industry. It is an all-purpose stem guided control valve, suitable for use in a wide range of industries. Using a modular design, and with numerous trim styles and materials available, there is a valve for nearly every application. All valves are available either as ANSI or DIN, ensuring that direct replacement is always possible.

**TRIM OPTIONS**

Interchangeable plugs and seats offer maximum versatility in flow control applications.

Plug variations include:

- **On/Off Plug** – Provides maximum flow with minimum pressure drop.
- **Parabolic Plug** – Covers all Cv ranges and is especially suitable for low differential pressures.
- **V Port Plug** – Shorter stroke allows smaller actuators to be used.
- **Perforated Plug** – Reduces noise and offers protection against cavitation.
- All of the above trims are available with Soft Seat option, increasing the shut off from standard Class IV to Class VI.

**TRIM MATERIALS**

Standard valve trim consists of series 400 stainless steel plugs with 316 stainless steel seats. In addition, 316 stainless steel plugs are available offering superior corrosion resistance. Seating surfaces (both plug and seat ring) can be armored in a nickel/cobalt overlay (Stellite®) which provides significantly longer service life. Complete trims (plug and seat) are also available in Ferro-Titanium offering a trim for the most demanding applications.

**WIDE VARIETY OF STEM PACKINGS**

Including: Maintenance free self-adjusting multilayer PTFE packing, pure graphite packing, Bellows Seal and Chloroprene packing (for refrigeration). The REFLEX can be delivered with a stem packing for the given application. On top of the wide selection of different packings available, all valve stems are roller burnished preventing burrs that can damage the packing, thus extending the service life of the packing.

**HIGH FLOW CAPACITIES**

Widest Cv range in the industry, coupled with optimized flow geometry, reduces body velocities and pressure losses, maximizing valve body life.

**PEUMATIC AND ELECTRIC ACTUATORS AVAILABLE**

Large range of standard pneumatic and electric actuators. Other industry typical electric, pneumatic and hydraulic actuators can easily be mounted on the REflex, giving greater flexibility to tailor to the requirements of each plant.

**REflex Specifications**

**Body Assembly:**

Style: Single seated, top entry bolted bonnet, globe style body, stem guided unbalanced plug.

**Size, Ratings:**

<table>
<thead>
<tr>
<th>Two Way</th>
<th>150# 1/2” – 12”</th>
<th>300# 1/2” – 12”</th>
<th>900# 1/2” – 12”</th>
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<tbody>
<tr>
<td>Dimensions (face-to-face) per ANSI/ISA-S75.03 (DIN EN 558-1)</td>
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<table>
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<tr>
<th>Three Way</th>
<th>150# 1” – 12”</th>
<th>300# 1” – 12”</th>
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<td>Dimensions (face-to-face) per ANSI/ISA-S75.03 (DIN EN 558-1)</td>
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</tbody>
</table>

**Body Materials:**

- Carbon Steel, ASTM A216 WC8 (Class 150 – 900)
- Stainless Steel, ASTM A351 CF8M (Class 150 – 900)
- Chrome Moly, ASTM A217 WC9 (Class 600 & 900)

**Bonnet:**

- Bolted Bonnet
- Bonnet with cooling fins for high temperatures
- Extended bonnet for valves with bellows seal

**End Connections:**

- Flanges according to ANSI B16.5 RF (Rasied Face)
- Bolt Weld Ends according to ASME B16.25 - 2007
- Threaded NPT Connections (up to 2”)

**Trim Materials:**

- Plug: 1.4412 (Martensitic)
- Stem and Seat AISI 316 Ti

**Actuators:**

- Pneumatic Spring & Diaphragm
- Electromechanical

**Options:**

- Optional: Actuator with certified hydraulic fail close function and comes with a hand wheel for manual operation as standard.
- Force. A wide range of actuating speeds and all standard voltages are available, giving the customer an actuator to suit their needs. Many options and accessories are available, including two extra limit switches (for the customer) as standard. These actuators are also available with a certified hydraulic fail close function and come with a hand wheel for manual operation as standard.

**Electrical Specifications:**

- All actuators are powder coated as standard for long service life and are also available in stainless steel for use in demanding environments.
- All actuators can be easily reversed between direct and reverse-acting function and the simple design allows easy mounting of all Industry standard positioners and other typical accessories.

**PNEUMATIC ACTUATORS**

- A full range of compact and robust multi-spring actuators available from 15 – 155 sq. in. All actuators are powder coated as standard for long service life and are also available in stainless steel for use in demanding environments. All actuators can be easily reversed between direct and reverse-acting function and the simple design allows easy mounting of all Industry standard positioners and other typical accessories.

**ELECTRIC ACTUATORS**

- The robust modular design covers a wide range of actuating forces from 675 – 3370 lbs. force. A wide range of actuating speeds and all standard voltages are available, giving the customer an actuator to suit their needs. Many options and accessories are available, including two extra limit switches (for the customer) as standard. These actuators are also available with a certified hydraulic fail close function and come with a hand wheel for manual operation as standard.

**Options:**

- Hydraulic Emergency Closing Unit. This unit gives valves with electric actuators a proven and reliable fail close option. The unit closes smoothly even at large differential pressures. The closing time can be adjusted to meet the system requirements. Automatic return to closed loop control is possible without any external components or wiring. This ensures that the valve resumes normal duties as soon as the plant returns to normal operations.

**Trim Options:**

- Interchangeable plugs and seats offer maximum versatility in flow control applications.
- Plug variations include:
  - On/Off Plug – Provides maximum flow with minimum pressure drop.
  - Parabolic Plug – Covers all Cv ranges and is especially suitable for low differential pressures.
  - V Port Plug – Shorter stroke allows smaller actuators to be used.
  - Perforated Plug – Reduces noise and offers protection against cavitation.
- All of the above trims are available with Soft Seat option, increasing the shut off from standard Class IV to Class VI.

**Trim Materials:**

- Extended bonnet for valves with bellows seal
- Bonnet with cooling fins for high temperatures
- Bolted Bonnet

**Bonnet Materials:**

- Chrome Moly, ASTM A217 WC9 (Class 600 & 900)
- Stainless Steel, ASTM A351 CF8M (Class 150 – 900)

**End Connections:**

- Perforated Plug hardened
- Parabolic Plug stellited or hardened
- Soft Seat Class VI (tight closing) with metal seat, lapped in
- Optional:
  - Plug AISI 316 Ti
  - Hardened

**Shutoff Class (ANSI/FEGI 70-2):**

- Standard Trim Class N (<0.01% Cv) metal seat
- Standard Trim Class N - S2 (<0.005% Cv) metal seat, lapped in Soft Seat Class V (light closing) with PTFE max +392°F
- Diverting Plug port B Class II (<0.1% Cv)

**Actuators:**

- Standard: Pneumatic Spring & Diaphragm and Electric
- Optional: Customer specified actuators (Electric, Pneumatic and Hydraulic)
REFLEX Trim Designs

Full range of ANSI and DIN Valves Available as Standard

Two-Way On/Off
Characteristic: On/Off (Quick Opening)
Flow direction: To open or to close
This plug provides maximum flow with minimum pressure drop and is ideal when large flows are required just after opening.

Two-Way Parabolic
Characteristic: Linear or Equal Percentage
Flow direction: To open or to close
This plug is ideally suited when actuator selection is critical, and the shorter stroke means smaller actuators can often be used.

Two-Way V-Port
Characteristic: Linear
Flow direction: To open or to close
This plug is ideally suited when actuator selection is critical, and the shorter stroke means smaller actuators can often be used.

Two-Way Perforated
Characteristic: Linear or Equal Percentage
Flow direction: To open or to close
The perforated plug is suitable for use where high differential pressures are present. It can also be used where noise is an issue, typically reducing the noise level by 10 dBA. The hardened version improves life expectancy in cavitation and/or flashing conditions.

Three-Way Mixing
Characteristic: Linear
Flow direction: A + B > AB

Three-Way Diverting
Characteristic: Linear
Flow direction: AB > A, B

All Plugs Available with Soft Seat, Offering Class VI Shut Off (Not Diverting)

REFLEX Features & Benefits

- Full Range of ANSI & DIN Valves Available as Standard
- Robust Modular Industrial Electric Actuators
- Multitude of Options and Accessories Available
- Compact and Robust Multi-Spring Actuator
- VDE / VDI & Namur Accessory Mounting Compatibility
- Multi-Layer Packing or Bellows Seal
- Maintenance-Friendly Interchangeable Seal and Plugs
- Optimized High Capacity Flow Path
- Self-Adjusting Maintenance-Free Multi-Layer Packing or Bellows Seal
- Variety of Trim Design & Materials
- Robust Modular Industrial Electric Actuators

Feature | Advantage | Benefit
--- | --- | ---
Full Range of ANSI & DIN Valves Available | Interchangeability With Control Valves From Other Manufacturers | Application Accessibility
Variety of Trim Designs and Materials | Longer Life and Greater Flexibility | Reduced Operating and Maintenance Costs, Longer Service Life
Self-Adjusting, Maintenance-Free Multi-Layer Packing or Bellows Seal | Reduced Leakage, Lower Emissions | Improved Environmental Compliance, No Adjustment Necessary
Interchangeable, Top-Entry Trim | Application Flexibility & Ease of Access | Reduces Spare Inventory Costs
Optimized High Capacity Flow Path | Per Size Or Higher Than Most Valves In Its Class | Lower Initial Costs
Compact Multi-Spring Actuator | Reduced Height & Weight | Lower Installation Costs
Industry Standard Accessory Mounting | Accommodates Most Valve Automation Products | Lower Automation Costs
Modular Industrial-Designed Electric Actuator | Covers Wide Array of Application Capabilities | Lower Inventory Costs
Multitude of Options and Accessories Available for Electric Actuator | Provides Product Modification Agility | Application Rangability

REFLEX CV Table

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<th>Valve Size (in)</th>
<th>DN</th>
<th>On/Off Plug Min</th>
<th>Parabolic Plug Min</th>
<th>V-Port Plug Min</th>
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Standard Actuator Offerings

Spring & Diaphragm Actuator
The REflex is available with a multi-spring diaphragm actuator which delivers excellent control performance in a compact package. This actuator design is based on decades-proven and highly reliable diaphragm technology. The spring and diaphragm actuator provides for inherent fail-safe operation and can be easily converted between direct and reverse acting functions. Standard positioners and a variety of accessories cleanly mount on this actuator.

Compact multi-spring actuator is field reversible. Can install anywhere from 2 to 7 springs depending on thrust requirements.

Electric Actuator
All valves are available with an electrically-operated actuator. These actuators provide higher actuating forces than comparable pneumatic actuators. A wide range of operating voltages and actuating speeds are available for each actuator version, ensuring the actuator is tailor made for each application. Due to the inherent stiffness of the gears, motors, and these actuators effectively buffer high fluid dynamic forces experienced in extreme flow conditions. A variety of accessories, including feedback potentiometers, positioners, and an emergency closing unit are available for these actuators, providing the best range in industry.

Robust modular industrial design covering a wide range of actuating forces and speeds.

Wide range of options available including feedback potentiometer, positioner and two extra limit switches as standard.

Standard REflex Accessories

Pneumatic Actuators
- Siemens PS2
- ABB TZIDC
- Electropneumatic Eckardt SRI 990 & SRI 986
- Pneumatic Eckardt SRP 981
- Air Filter/Regulator
- Solenoid Valves
- Limit/Proximity Switches
- Manual Override Handwheels

Electric Actuators
- Feedback Potentiometer
- Feedback Transducer
- Digital Valve Positioner
- CANopen/Profibus Systems
- Hydraulic Emergency Closing Units

Noise Reduction Devices
- Integrated Silencer on Valve Outlet
- Silencing Orifice

Specialty Valves

Feedwater Valve with Recirculation
Specially designed to Protect Feedwater Pumps against cavitation by combining boiler feedwater valve and By-pass valve in one. Adjustable recirculation plug and seat for low wear operation.

Continuous Blowdown Valve

Bottom Blowdown Valve
Available in either pneumatic or manual design. Hardened trim for low wear operation. Protection of stem packing by back sealing when the valve is opened.

Steam Converting Valve
Combined Pressure Reducing and Desuperheating in one valve. Optimized control characteristics with specially adapted Trim for Low Wear operation.

Applications
- Automotive Industry
- Boiler Feedwater Control
- Boiler Steam Control
- Chemical Industry
- Continuous Blowdown
- Distillation Heating
- Flow Control
- Food & Beverage Industry
- Gases
- Industrial Boilers
- Industrial Refrigeration
- Level Control
- Liquids
- Marine
- Mining
- Oil & Gas Industry
- Power Industry
- Pressure Reducing Desuperheating System (PRDS)
- Pressure Control
- Steam
- Steel Industry
- Temperature Control
- Textile Industry
- Thermal Oil
- Water
- Water Treatment
- Wood Industry
CIRCOR Energy is a global manufacturer of highly engineered valves, fittings, pipeline and associated products for general, critical and severe service applications in the Oil & Gas, Power Generation and Process Industry markets. CIRCOR Energy continuously develops precision technologies to improve our customers’ ability to control the flow of the world’s natural resources.

Continuously Improving Flow Control. Worldwide.

Asia  |  Europe  |  Middle East  |  North America  |  South America

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