Control and Shut-Off Valves | Variety of Trim Designs in Different Materials | Electric and Pneumatic Actuators as Standard

Sales Brochure
NPS ½ - 12 (DN 15 - 300)
CL 150 - 900 (PN 16 - 160)

www.rtk.de
REflex Product Information

BROADEST RANGE IN THE INDUSTRY
The REflex line of two and three way valves offers more possibilities than any other valve brand 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 trims are also available with **Quick Change** option, which allows an easy replacement of the seat ring.

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) are available with a nickel/cobalt overlay (Stellite®) or in a hardened version 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.

PNEUMATIC 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 Product Information

### 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 and electrical Emergency Closing Unit. This unit gives valves with electric actuators a proven and reliable fail safe option. The unit closes/opens 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.

## REflex Specifications

### Body Assembly:
- **Style:** Single seated, top entry bolted bonnet, globe style body, stem guided unbalanced plug

### Size, Ratings:
- **Two Way**
  - CL 150: NPS ½ – 12
  - CL 300: NPS ½ – 12
  - CL 600: NPS ½ – 12
  - CL 900: NPS 1 – 6
- **Three Way**
  - CL 150: NPS 1 – 12
  - CL 300: NPS 1 – 12

### Body Materials:
- Carbon Steel, SA216 WCB
- Stainless Steel, SA351 CF8M
- Chrome Moly, SA217 WC6
- Chrome Moly, SA217 WC9

### End Connections:
- Flanges according to ANSI B16.5 - 2017 RF (Raised Face) and RTJ* (Ring Type Joint)
- Butt Weld Ends according to ASME B16.25 - 2012*
- Threaded NPT Connections according to ASME B16.11 – 2016 up to NPS 2)*
- Socked Weld Ends according to ASME B16.11 – 2016 up to NPS 2)*
- Face-to-face dimensions per ANSI / ISA-S75.03 *(two way only)

### Trim Types:
- **Plug & Flow Characteristics**
  - **Two Way**
    - On/Off Plug (Quick Opening)
    - Parabolic Plug (Equal Percentage or Linear)
    - V-Port Plug (Equal Percentage or Linear)
    - Perforated Plug (Equal Percentage or Linear)
  - **Three Way**
    - Mixing Plug (Linear)
    - Diverting Plug (Linear)

### Seat:
- Screwed Seat Ring (CL 150 – 300)
- Welded Seat Ring (CL 600 – 900)
- Quick Change Seat Ring 1-Stage (CL 150 – 600)
- Quick Change Seat Ring 2-Stage (CL 150 – 600)

### Trim Materials:
- Plug 1.4122 (Martensitic)
- Stem and Seat AISI 316 Ti
- Retainer SA487 C6NM (Quick Change) (iron-chromium-nickel-molybdenum alloy)
- **Optional**
  - Plug AISI 316 Ti
  - Parabolic Plug stellited or hardened
  - Perforated Plug hardened
  - Seat Ring stellited or hardened

### Shutoff Class (according to ANSI/FCI 70-2):
- Leakage Class IV, metal seat (Standard)
- Leakage Class V, lapped in metal seat (Optional)
- Leakage Class VI, soft seat, max 392˚F (200°C) (Optional)
- Diverting plug port B Leakage Class III

### Bonnet:
- Bolted Bonnet
- Bonnet with cooling fins for high temperatures
- Extended Bonnet for valves with bellow seal

### Stem Packing:
- PTFE/Graphite: -76°F to 482°F (-60°C to 250°C)
- Pure Graphite: -76°F to 986°F (-60°C to 530°C)
- Bellow Seat: -76°F to 662°F (-60°C to 350°C)
- Chloroprene: -40°F to 212°F (-40°C to 100°C)

### Actuators:
- **Standard:** Pneumatic Spring & Diaphragm and Electric
- **Optional:** Customer specified actuators (Electric, Pneumatic and Hydraulic)
### REflex Features & Benefits

**Full range of ANSI and DIN Valves Available as Standard**

#### Feature

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

Robust Modular Industrial Electric Actuators available with multiple Options and Accessories

Compact and Robust Multi-Spring Actuator

VDE / VDI & Namur Accessory Mounting Compliance

Maintenance-Friendly Interchangeable Seat and Plugs

Optimized High Capacity Flow Path
REflex Trim Designs

**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
This plug covers all Cv ranges and is especially suitable for low differential pressures. The equal percentage flow characteristic provides excellent low flow control.

**Two-Way V-Port**
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 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.

**Quick Change One-Stage**
Characteristic: Linear or Equal Percentage
Flow direction: To open or close
This trim offers an easy tool-free seat exchange and can be combined with all on/off, parabolic, perforated and V-port plugs.

**Quick Change Two-Stage**
Characteristic: Linear or Equal Percentage
Flow direction: To close
This trim offers an easy tool-free seat exchange and is used for high differential pressures to provide cavitation and for noise reduction.

**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)

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### REflex C, Table (gpm)

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<thead>
<tr>
<th>Valve Size</th>
<th>On/Off Plug</th>
<th>Parabolic Plug</th>
<th>V-Port Plug</th>
<th>Perforated Plug</th>
<th>Mixing Plug</th>
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CIRCOR RTK
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.

1. 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 gear wheels and motors these actuators effectively buffer high fluid dynamic forces experienced in extreme flow conditions. A variety of accessories, including feedback potentiometers, positioners, hydraulic and electrical fail safe units are available for these actuators, providing the best range in industry. Approved according to industrial standards like NEMA, NRTL, CE and IP.

2. Robust modular industrial design covering a wide range of actuating forces, speeds and operating voltages.

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

Standard REflex Accessories

Pneumatic Actuators
- Several electro-pneumatic Positioners
- Pneumatic Positioner
- Air Filter / Regulator
- Solenoid Valves
- Limit / Proximity Switches
- Manual Override Handwheels

Electric Actuators
- Feedback Potentiometer
- Feedback Transducer
- Digital Valve Positioner
- CANopen/Profinet Systems
- Hydraulic Emergency Closing Units
- Electrical Fail Safe Units

Noise Reduction Devices
- Integrated Silencer on Valve Outlet
- Perforated Disc for Noise Reduction
- 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 rate up to 10% of Cv value. Hardened recirculation plug and seat for low wear operation.

**Continuous Blowdown Valve**
Parabolic Plug with linear characteristic for precise control of blowdown rate. Hardened trim for low wear operation. Available with or without manual sample valve.

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

**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.

**Valve with Silencer**
Used to Reduce Noise for steam and gases. Also used to suppress cavitation and reduce noise for liquids. Available with two to four throttle plates included in pipe expansion.

Applications

- Automotive Industry
- Boiler Feedwater Control
- Bottom Blowdown
- Chemical Industry
- Continuous Blowdown
- District 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 is a market-leading, global provider of integrated flow control solutions, specializing in the manufacture of highly engineered valves, instrumentation, pipeline products and services, and associated products, for critical and severe service applications in the oil and gas, power generation, process, aerospace, and defense industries.

**Excellence In Flow Control**

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

![Germany](https://via.placeholder.com/15)  
Designed and manufactured in Germany

![US](https://via.placeholder.com/15)  
Assembled and supported in the US & Canada

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