Pressure Independent Characterised Control Valve (PICCV)

PICCV – consists of a Differential Pressure Regulator in series with a Control Valve
**Product overview**

**PICCV Rotary Actuator**

<table>
<thead>
<tr>
<th>V</th>
<th>Default [l/s]</th>
<th>Flow range** [l/s]</th>
<th>DN [mm]</th>
<th>[inches]</th>
<th>Type</th>
<th>Rotary Actuator</th>
<th>Frequency</th>
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</thead>
<tbody>
<tr>
<td>0.06</td>
<td>0.04...0.10</td>
<td>15</td>
<td>1/2&quot;</td>
<td>PICCV-15-006</td>
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<td>0.09</td>
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<td>0.27...0.60</td>
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<td>LR24A(-S)/LR230A(-S)</td>
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<td>0.69</td>
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<td>LR24A(-S)/LR230A(-S)</td>
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<td>0.88</td>
<td>0.50...1.10</td>
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<td>PICCV-25-088</td>
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<td>0.98</td>
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<tr>
<td>0.99</td>
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<td>32</td>
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<td>1.12</td>
<td>0.72...1.60</td>
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<td>1 1/4&quot;</td>
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<td>1.27</td>
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<td>1 1/4&quot;</td>
<td>PICCV-32-127</td>
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<tr>
<td>1.51</td>
<td>0.72...1.60</td>
<td>32</td>
<td>1 1/4&quot;</td>
<td>PICCV-32-151</td>
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<td>1.56</td>
<td>0.72...1.60</td>
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<td>1.90</td>
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<tr>
<td>2.08</td>
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<tr>
<td>2.35</td>
<td>1.22...2.70</td>
<td>50</td>
<td>2&quot;</td>
<td>PICCV-50-235</td>
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<td>2.55</td>
<td>1.22...2.70</td>
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<td>2&quot;</td>
<td>PICCV-50-255</td>
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<td>3.00</td>
<td>2.48...5.50</td>
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<td>2&quot;</td>
<td>PICCV-50-300</td>
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<tr>
<td>3.50</td>
<td>2.48...5.50</td>
<td>50</td>
<td>2&quot;</td>
<td>PICCV-50-350</td>
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<tr>
<td>4.20</td>
<td>2.48...5.50</td>
<td>50</td>
<td>2&quot;</td>
<td>PICCV-50-420</td>
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<td>5.06</td>
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<td>50</td>
<td>2&quot;</td>
<td>PICCV-50-506</td>
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</tr>
</tbody>
</table>

**Remark:**

**Flow setting is depending on combination of actuators (Angle). For detail, please refer to PICCV Flow Limitation at our website www.belimo.ch**

**Note:**

- Emergency control function (Mechanical Fail-Safe Actuators) is available on request for PICCV valve.
Energy savings with maximum convenience and low installation cost are requirements for the construction of new buildings and renovations. Selecting the correct valves for the entire pipe line system and a professional hydraulic balancing cost money.

Valves are conventionally designed with a valve authority of 0.5 and installed after each consumer (e.g. air heater, heat exchanger, supply controls).

However, pressure conditions vary depending on the installation site of the consumer and the load. In the case of consumers (#1) that are placed near the main pump, the differential pressure between the supply/return pipes is much higher than at the end of the pipes (#n). With nominal volumetric flow, the necessary delivery height of the main pump depends on the selected pipe network (DN and pipe lengths) and on the minimum differential pressure at the last consumer (pressure drop at the consumer and valve).

Pressure diagram at full load

The pressure difference \( \Delta p \#1 \) consists of the pressure drop at consumer \( T\#1 \), valve \( V\#1 \) and the balancing valve \( D\#1 \). The valve \( V\#1 \) is fully opened. If valve \#1 closes, the differential pressure across valve \( V\#1 \) can increase up to \( \Delta p \#1 \), the valve authority sinks markedly, and the flow quantity increases disproportionately.

The solution

As a result of the consistent further development of the tried-and-tested Belimo Characterised Control Valve, the valve design has been simplified with the new Pressure Independent Characterised Control Valve (PICCV). The flow rate is constant, even when the valve closes and the differential pressure increases. The valve authority is 1, even with over-sized valves.

The advantages

Hydraulic balancing is no longer necessary. Equipping a building becomes simpler, and only one valve per consumer is needed. Since no more balancing valves are needed and the hydraulic balancing is eliminated, it is possible to minimise cost while - at the same time - increase convenience.

PICCV: The simplest way to control the flow rate

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PICCV: The simplest way to control the flow rate
**Principle of operation**

**Cross-section of the Pressure Independent Characterised Control Valve PICCV**

Simple direct mounting of the Rotary Actuator using a central screw, without shaft adapter

Thermal decoupling of Rotary Actuator and control device

Belimo characterising disk for equal-percentage flow characteristic

Internal thread connection (BSP acc. to ISO7/1)

Forged fitting, nickel-plated brass body

Regulator assembly

Flow direction

Identical mounting flange for all nominal sizes, without lateral pressure on the stem

Vent port to prevent the accumulation of condensation

Stem with two O-rings, blow-out proof

Chrome-plated ball

Teflon seat with O-ring ensures tight leakage rate with low torque requirement

Maintenance-free differential pressure measurement for the pressure-reducing valve

**The characteristics**

The Pressure Independent Characterised Control Valve PICCV contains two valves: The pressure self-regulating valve [PI] and the Characterised Control Valve [CCV] that works with equal-percentage. When the differential pressure increases, the pressure-regulating valve closes and ensures a constant pressure over the control valve.

**The selection**

The range of motorised Pressure Independent Characterised Control Valves comprises a practical spectrum. All valves are:

- 2-way valves in the most common nominal sizes (DN15...50)
- Designed for a flow rate of 0.04l/s to 5.5l/s

**The corresponding drives**

Optimum function ability of the Belimo Pressure Independent Characterised Control Valve is ensured by the corresponding motorisation. Depending on the application, the Pressure Independent Characterised Control Valves are supplied with different Rotary Actuators. You can choose from the LR..A.., NR..A.. and SR..A.. Rotary Actuators. Depending on the type, they can be controlled by a modulating, Open/Close or 3-point control system.
The differential pressure across the PICCV should be within the range of 35...350kPa. If the differential pressure is lower than 35kPa, the PICCV behaves like a conventional control valve, where the flow decreases with the differential pressure.

The PICCV is not recommended if $\Delta p$ over the PICCV is greater than the differential pressure of 350kPa.

$\Delta p$ definition

Closing pressure at which the Rotary Actuator is still able to close the valve in relation to the corresponding leakage rate.

$\Delta p = 350kPa$

Ordering sample

PICCV-32-151

Nominal flow rate in l/s, e.g. 1.51 l/s

DN in mm

Pressure Independent Characterised Control Valve

Design

In the case of conventional control valves, the valves are selected $k = \frac{V_{100}}{\Delta p_{100}}$.

The decisive factor for the design of the Pressure Independent Characterised Control Valve is the flow rate through the consumer or the heat exchanger. In the case of a maximum flow rate of <2m/s, the diameter of the pipe connector at the heat exchanger can be set equal to the diameter of PICCV (max. flow rate).

Examples

The flow rate through the Pressure Independent Characterised Control Valve should be higher than that through the consumer or heat exchanger.

Example of an air cooler (throttling circuit)

Example of an air preheater (injection circuit with 2-way valve)
Pressure Independent Characterised Control Valve: DN15...50
For modulating, Open/Close or 3-point control of cold and warm water

Applications
- Water-side control of air handling unit in ventilations and air-conditioning plants
- Water side control in heating plants
- Fancoil control
- VAV reheat

Technical data

<table>
<thead>
<tr>
<th>Medium</th>
<th>Cold and warm water, with 60% volume of glycol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature of medium</td>
<td>-5...+100°C (DN 15...20), lower temperature on request</td>
</tr>
<tr>
<td></td>
<td>-5...+80°C (DN 25...50), lower temperature on request</td>
</tr>
<tr>
<td>Rated pressure</td>
<td>4140kPa (DN15...25), 2760kPa (DN32...50)</td>
</tr>
<tr>
<td>Flow characteristic</td>
<td>equal percentage (following VDE2173)</td>
</tr>
<tr>
<td>Rangeability</td>
<td>DN15 Sv&gt;50</td>
</tr>
<tr>
<td></td>
<td>DN20...50 Sv&gt;100</td>
</tr>
<tr>
<td>Pipe connector</td>
<td>Internal thread to ISO 7/1</td>
</tr>
<tr>
<td>Differential pressure</td>
<td>35...350kPa</td>
</tr>
<tr>
<td>Closing Pressure $\Delta p_s$</td>
<td>1400kPa (actuator still capable of closing valve, leakage rate exceeds 0.01% maximum flow)</td>
</tr>
<tr>
<td></td>
<td>350kPa (leakage 0.01% maximum flow)</td>
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<tr>
<td>Angle of rotation</td>
<td>90°</td>
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<tr>
<td>Installation position</td>
<td>Vertical to horizontal (referred to the valve stem)</td>
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<tr>
<td>Maintenance</td>
<td>Maintenance-free</td>
</tr>
<tr>
<td>Valve body</td>
<td>Forged nickel-plated brass</td>
</tr>
<tr>
<td>Ball</td>
<td>Chrome-plated brass</td>
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<tr>
<td>Seal</td>
<td>PTFE</td>
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<tr>
<td>Shaft</td>
<td>Chrome-plated brass</td>
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<tr>
<td>O-ring</td>
<td>EPDM</td>
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<tr>
<td>Characterising disk</td>
<td>TEFZEL</td>
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<tr>
<td>Regulator</td>
<td>Stainless steel</td>
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<tr>
<td>Cage</td>
<td>Brass/Delrin 500 AF (DN25)</td>
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<tr>
<td>Diaphragm</td>
<td>Polyester-reinforced silicone</td>
</tr>
<tr>
<td>Spring for valve cone</td>
<td>Stainless steel</td>
</tr>
</tbody>
</table>

Mode of operation

The Pressure Independent Characterised Control Valve is motor-operated by a type of LR..A.., NR..A.., or SR..A.. General Rotary Actuator. The actuator is controlled by a modulating, Open/Close or 3-point control system and move the ball of the PICCV, the throttling element, to the opening position dictated by the control signal.

Product features

Equal-percentage characteristic

Equal-percentage characteristic of the flow ensured by the integrated characterising disk. Constant flow volume $V^*$ with various differential pressure of 35...350kPa, thanks to the integrated pressure regulator. A valve authority of 1 is attained, regardless of differential pressure variations across the valve.

Even in the part-load range, the flow rate remains constant with each opening position (angle of rotation) and ensures a steady control.

Manual operation by lever

Manual operation by lever after disengaging the gearing latch on the type of LR..A.., NR..A.. or SR..A.. Rotary Actuator (manual operation is not possible with LF..).

Accuracy

$\pm 5\%$ variance due to differential pressure fluctuation or $\pm 10\%$ total assembly error incorporating differential pressure fluctuation, manufacturing tolerances and is valve hysteresis.
The Pressure Independent Characterised Control Valve (PICCV) should be ordered together with the corresponding LR..A.., NR..A.. or SR..A.. Rotary Actuator.

Ordering examples (with NR24A-MF):

a) PICCV-40-215 with NR24A-MF Rotary Actuator fitted:
   - order code: PICCV-40-215+NR24A-MF

b) PICCV-40-215 with NR24A-MF Rotary Actuator supplied separately or not fitted:
   - order code: PICCV-40-215/NR24A-MF

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<td>3.54</td>
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<td>23</td>
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<td>12.25</td>
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<td>22</td>
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**LR..A. General Rotary Actuators**

- General Rotary Actuators for: DN15...25 PICCV
- Torque: 5Nm
- Multifunction control: LR24A-MF (AC/DC 24V)
- Open/Close or 3-point control: LR24A(-S) (AC/DC 24V) LR230A(-S) (AC 100...240V)

### Basic technical data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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<tr>
<td>Torque</td>
<td>5Nm</td>
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<tr>
<td>Angle of rotation</td>
<td>90°</td>
</tr>
<tr>
<td>Direction of rotation</td>
<td>CCW (setting close position)</td>
</tr>
<tr>
<td>Sound power level</td>
<td>~35dB(A) (without the valve)</td>
</tr>
<tr>
<td>Position indicator</td>
<td>Mechanical</td>
</tr>
<tr>
<td>Manual override</td>
<td>Gearing disengaged by pressing the push button, manual operate while the button is held depressed</td>
</tr>
<tr>
<td>Running time</td>
<td>90s</td>
</tr>
<tr>
<td>Mode of operation</td>
<td>Type 1 (EN60730)</td>
</tr>
<tr>
<td>Ambient temp.</td>
<td>0...+50°C</td>
</tr>
<tr>
<td>Non-operation temp.</td>
<td>-40...+80°C</td>
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<tr>
<td>Humidity</td>
<td>5...95% RH, non-condensing</td>
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<tr>
<td>Degree of protection</td>
<td>IP54</td>
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<tr>
<td>EMC</td>
<td>CE according to 89/336/EEC</td>
</tr>
<tr>
<td>Low voltage directive</td>
<td>CE according to 73/23/EWG</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Maintenance-free</td>
</tr>
</tbody>
</table>

**LR24A-MF**

- Nominal voltage: AC 24V 50/60Hz, DC 24V
- Nominal voltage range: AC 19.2...28.8V / DC 21.6...28.8V
- Power consumption:
  - running: 2W
  - holding: 1.2W
- For transformer sizing: 3.5VA
- Connecting cable: Cable 1m, 4x0.75mm²
- Control signal Y: DC (0)2...10V @ input impedance 100kΩ
- Working range: DC 0...10V
- Position feedback signal U: DC 2...10V max. 0.5mA
- Position accuracy: ±5%
- Protection class: III (safety extra-low voltage)
- Weight: Approx 0.5kg

**LR24A(-S)**

- Nominal voltage: AC 24V 50/60Hz, DC 24V
- Nominal voltage range: AC/DC 19.2...28.8V
- Power consumption:
  - running: 1W
  - holding: 0.2W
- For transformer sizing: 2VA
- Connecting cable:
  - motor: Cable 1m, 3x0.75mm²
  - auxiliary switch: Cable 1m, 3x0.75mm²
- Protection class: III (safety extra-low voltage)
- Auxiliary switch (LR24A-S): 1XSPDT, 1mA...3(0.5)A, AC 250V 0...100% adjustable
- Weight: Approx 0.6kg

**LR230A(-S)**

- Nominal voltage: AC 100...240V 50/60Hz
- Nominal voltage range: AC 100...240V 50/60Hz
- Power consumption:
  - running: 1.5W
  - holding: 0.4W
- For transformer sizing: 4VA
- Connecting cable:
  - motor: Cable 1m, 3x0.75mm²
  - auxiliary switch: Cable 1m, 3x0.75mm²
- Protection class: II (totally insulated)
- Auxiliary switch (LR230A-S): 1XSPDT, 1mA...3(0.5)A, AC 250V 0...100% adjustable
- Weight: Approx 0.6kg

UL marked actuators is optional, please contact your local Sales Representative for details.
NR..A.. General Rotary Actuators

• General Rotary Actuators for:
• Torque:
• Multifunction control:
• Open/Close or 3-point control:

DN32...50 PICCV
10Nm
NR24A-MF (AC/DC 24V)
NR24A(-S) (AC/DC 24V)
NR230A(-S) (AC 100...240V)

Technical data

Basic technical data

<table>
<thead>
<tr>
<th>Torque</th>
<th>10Nm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angle of rotation</td>
<td>90°</td>
</tr>
<tr>
<td>Direction of rotation</td>
<td>CCW (setting close position)</td>
</tr>
<tr>
<td>Sound power level</td>
<td>~35dB(A) (without the valve)</td>
</tr>
<tr>
<td>Position indicator</td>
<td>Mechanical</td>
</tr>
<tr>
<td>Manual override</td>
<td>Gearing disengaged by pressing the push button, manual operate while the button is held depressed</td>
</tr>
<tr>
<td>Running time</td>
<td>90s</td>
</tr>
<tr>
<td>Mode of operation</td>
<td>Type 1 (EN60730)</td>
</tr>
<tr>
<td>Ambient temp.</td>
<td>0...+50°C</td>
</tr>
<tr>
<td>Non-operation temp.</td>
<td>-40...+80°C</td>
</tr>
<tr>
<td>Humidity</td>
<td>5...95% RH, non-condensing</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP54</td>
</tr>
<tr>
<td>EMC</td>
<td>CE according to 89/336/EEC</td>
</tr>
<tr>
<td>Low voltage directive</td>
<td>CE according to 73/23/EWG</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Maintenance-free</td>
</tr>
</tbody>
</table>

NR24A-MF

| Nominal voltage | AC 24V 50/60Hz, DC 24V |
| Nominal voltage range | AC 19.2...28.8V / DC 21.6...28.8V |
| Power consumption | 3.5W / 1.25W |
| For transformer sizing | 5.5VA |
| Connecting cable | Cable 1m, 4x0.75mm² |
| Control signal Y | DC (0)2...10V @ input impedance 100kΩ |
| Working range    | DC 0...10V     |
| Position feedback signal U | DC 2...10V max. 0.5mA |
| Position accuracy | ±5%           |
| Protection class | III (safety extra-low voltage) |
| Weight           | Approx 0.85kg  |

NR24A(-S)

| Nominal voltage | AC 24V 50/60Hz, DC 24V |
| Nominal voltage range | AC/DC 19.2...28.8V |
| Power consumption | 1.5W / 0.2W |
| For transformer sizing | 3.5VA |
| Connecting cable | -motor Cable 1m, 3x0.75mm² |
| -auxiliary switch | Cable 1m, 3x0.75mm² |
| Protection class | III (safety extra-low voltage) |
| Auxiliary switch (LR24A-S) | 1XSPDT, 1mA...3(0.5)A, AC 250V 0...100% adjustable |
| Weight           | Approx 0.8kg  |

NR230A(-S)

| Nominal voltage | AC 100...240V 50/60Hz |
| Nominal voltage range | AC 85...265V |
| Power consumption | 2.5W / 0.4W |
| For transformer sizing | 5.5VA |
| Connecting cable | -motor Cable 1m, 3x0.75mm² |
| -auxiliary switch | Cable 1m, 3x0.75mm² |
| Protection class | II (totally insulated) |
| Auxiliary switch (NR230A-S) | 1XSPDT, 1mA...3(0.5)A, AC 250V 0...100% adjustable |
| Weight           | Approx 0.8kg  |
Technical data

<table>
<thead>
<tr>
<th>Basic technical data</th>
<th>Torque</th>
<th>20Nm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angle of rotation</td>
<td>90°</td>
<td></td>
</tr>
<tr>
<td>Direction of rotation</td>
<td>CCW (setting close position)</td>
<td></td>
</tr>
<tr>
<td>Sound power level</td>
<td>~45dB(A) (without the valve)</td>
<td></td>
</tr>
<tr>
<td>Position indicator</td>
<td>Mechanical</td>
<td></td>
</tr>
<tr>
<td>Manual override</td>
<td>Gearing disengaged by pressing the push button, manual operate while the button is held depressed</td>
<td></td>
</tr>
</tbody>
</table>

**SR24A-MF**
- Nominal voltage: AC 24V 50/60Hz, DC 24V
- Nominal voltage range: AC 19.2...28.8V / DC 21.6...28.8V
- Power consumption: -running 4W, -holding 1.25W
- For transformer sizing: 6VA
- Connecting cable: Cable 1m, 4x0.75mm²
- Control signal Y: DC (0)...10V @ input impedance 100kΩ
- Working range: DC 0...10V
- Position feedback signal U: DC 2...10V max. 0.5mA
- Position accuracy: ±5%
- Protection class: III (safety extra-low voltage)
- Weight: Approx 1.0kg

**SR24A(-S)**
- Nominal voltage: AC 24V 50/60Hz, DC 24V
- Nominal voltage range: AC/DC 19.2...28.8V
- Power consumption: -running 2W, -holding 0.2W
- For transformer sizing: 4VA
- Connecting cable: -motor Cable 1m, 3x0.75mm², -auxiliary switch Cable 1m, 3x0.75mm²
- Protection class: III (safety extra-low voltage)
- Auxiliary switch (LR24A-S): 1XSPDT, 1mA...3(0.5)A, AC 250V 0...100% adjustable
- Weight: Approx 1.0kg

**SR230A(-S)**
- Nominal voltage: AC 100...240V 50/60Hz
- Nominal voltage range: AC 85...265V
- Power consumption: -running 2.5W, -holding 0.4W
- For transformer sizing: 6VA
- Connecting cable: -motor Cable 1m, 3x0.75mm², -auxiliary switch Cable 1m, 3x0.75mm²
- Protection class: II (totally insulated)
- Auxiliary switch (SR230A-S): 1XSPDT, 1mA...3(0.5)A, AC 250V 0...100% adjustable
- Weight: Approx 1.0kg

UL marked actuators is optional, please contact your local Sales Representative for details.

**Product features**

- **Mode of operation**: LR24A-MF, NR24A-MF, SR24A-MF is controlled by means of a standard control signal DC (0)2...10V and travels to the position defined by this signal. The measuring voltage U allows the valve position (0...100%) to be electrically indicated and serves as a follow-up control signal for other actuators.

- **Simple direct mounting**: Simple direct mounting on the PICCV with the actuator integrated bracket.

- **Adjustable angle of rotation**: Adjustable angle of rotation with mechanical end stops. - MF with ZTH AP & PC-tool

- **High functional reliability**: The actuator is overload-proof, requires no limit switches and automatically stops when the end stop is reached.

- **Flexible Signalisation**: Flexible Signalisation of the LR..A..-S, NR..A..-S, SR..A..-S with adjustable auxiliary switch (0...100%).

- **MP-Bus Communication**: LR24A-MP, NR24A-MP, SR24A-MP support on MP-Bus Communication

**Wiring diagrams**

**LR24A(-S) / NR24A(-S) / SR24A(-S)**

- **Open/Close control**
  - AC 24V
  - DC 24V

- **3-point control**
  - AC 24V

**Notes**
- Connection via safety isolating transformer.
- Other actuators can be connected in parallel. Please note the performance data.

**Direction of rotation**
(factory setting, switch hidden)

**Auxiliary switch (-S)**

---

**LR230A(-S) / NR230A(-S) / SR230A(-S)**

- **Open/Close control**
  - AC 100...240V

- **3-point control**
  - AC 100...240V

**Notes**
- Caution: Power supply voltage
- Other actuators can be connected in parallel. Please note the performance data.

**Direction of rotation**
(factory setting, switch hidden)

**Auxiliary switch (-S)**
Notes:
1. The valve assembly can be installed in a vertical or horizontal arrangement, as long as the actuator is positioned to avoid condensation from dripping on the actuator.
2. PICCV shall be installed, with flow in the direction of the arrow on the valve body. If installed backwards, there could be damage to either the diaphragm or the regulator top.
UL marked actuators is optional, please contact your local Sales Representative for details.
Dimensions [mm]

- **SR24A**
  - Dimensions: 33 x 117 x 41

- **SR230A**
  - Dimensions: 33 x 140 x 41

- **SR24A-S**
  - Dimensions: 33 x 108 x 41

- **SR230A-S**
  - Dimensions: 33 x 131 x 41

UL marked actuators is optional, please contact your local Sales Representative for details.
Multi-Function Actuators: Simple technology with greater benefits

Individual parameterising and variable operation
The MF Actuators can be parameterised individually when necessary. This allows them to be matched precisely to the needs of the plant installation. In addition, the mode of operation for each actuator can be freely chosen. It is sufficient to have just a few different types to cover almost all the applications that arise in practice. This improves flexibility for planning purposes and also reduces the cost of procurement and warehousing.

Ease of installation
The MF Actuators are just as easy to install, connect up and use as conventional types.

MF Actuators are the best partner of PICCV

Alternatively enter your own settings with the software PC-Tool...

...or enter your own settings on-site with the ZTH AP.

Compatible to various control input signals: Modulating, 3-point and Open/Close.

The detailed information of multifunction is available on request.
Auxiliary switch adjustment

1. Press the push button and manually operate the actuator handle to the desired position of switch trip.
2. Turn the auxiliary switch pointer to the middle line.
3. Check the switch operation. The direction of switch operation is opposite to the running direction of the actuator. When the switch pointer passes the middle line position, the S1 will change the contact.

Note:
The switching point should be about 5° from the mechanical end stops (1 short step on the scale).

<table>
<thead>
<tr>
<th>Type</th>
<th>ZR2315</th>
<th>ZR2320</th>
<th>ZR2325</th>
<th>ZR2332</th>
<th>ZR2340</th>
<th>ZR2350</th>
</tr>
</thead>
<tbody>
<tr>
<td>DN [mm]</td>
<td>15</td>
<td>20</td>
<td>25</td>
<td>32</td>
<td>40</td>
<td>50</td>
</tr>
<tr>
<td>Weight [kg]</td>
<td>0.2</td>
<td>0.35</td>
<td>0.45</td>
<td>0.8</td>
<td>0.9</td>
<td>1.4</td>
</tr>
<tr>
<td>Dim.L [mm]</td>
<td>66</td>
<td>72</td>
<td>80</td>
<td>90</td>
<td>95</td>
<td>107</td>
</tr>
</tbody>
</table>

Included in scope of delivery of ZR23..: R-thread male part, G-thread union nut, Rp-thread female part, IT flat gasket.
Valve

The range includes the Pressure Independent Characterised Control Valve.

Sizes: DN15...50

Actuator types

For motorising valves, there are four rating classes of actuators available that are suitable for different power supplies and methods of control.

Other versions and Mechanical Fail-Safe Actuators are available on request.

Assembling

The prices quoted are per subassembly (valve and actuator).

A successful order will need the below-mentioned information:

Note: An option with individual pipe connectors is available and supplied separately.

Actuator types

The valves and actuators can be supplied as follows:

- Actuator fitted (+)
- Valve/actuator separately (I)
- Separately delivered at different times (on request)

Pipe connectors separately (option)

The Pressure Independent Characterised Control Valves are available as low-cost fittings with internal thread.

- As an option, the PICCV are available with individual pipe connectors supplied separately (Z).

Ordering example:

<table>
<thead>
<tr>
<th>Designation:</th>
<th>PICCV-25-098+LR24A-MF</th>
<th>Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Valve type:</td>
<td>2-way Pressure Independen Characterised Control Valve</td>
<td></td>
</tr>
<tr>
<td>Design</td>
<td>2-way PICCV</td>
<td></td>
</tr>
<tr>
<td>Size</td>
<td>Internal thread BSP 1&quot;, DN25</td>
<td></td>
</tr>
<tr>
<td>Flow rate</td>
<td>V = 0.98l/s</td>
<td></td>
</tr>
<tr>
<td>2 Assembling</td>
<td>Actuator fitted</td>
<td></td>
</tr>
<tr>
<td>3 Actuator:</td>
<td>Rotary Actuator AC/DC 24C</td>
<td></td>
</tr>
<tr>
<td>Nominal voltage</td>
<td>Multifunction</td>
<td></td>
</tr>
<tr>
<td>Control type</td>
<td>90s</td>
<td></td>
</tr>
<tr>
<td>Running time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Pipe connectors (option):</td>
<td>2xZR 2325 separately</td>
<td></td>
</tr>
<tr>
<td>(for prices, see current price list)</td>
<td></td>
<td></td>
</tr>
</tbody>
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5 year warranty

On site around the globe

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