Mounting positions, installation, commissioning

Separate delivery

If the ball valve is delivered separately from the rotary actuator, they can be assembled directly on site.

No special tools are needed for installation. Full instructions are supplied with the valves and actuators.

Commissioning

Commissioning must not be carried out until the ball valve and the rotary actuator have been properly assembled in accordance with the instructions.

Recommended mounting positions

The ball valves may be mounted either **vertically** (Fig. 1) or **horizontally** (Fig. 2). However, mounting the valves with the stem pointing downwards, i.e. upside down, is not recommended (Fig. 3).

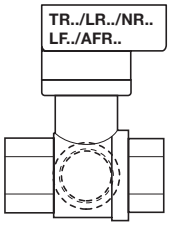


Fig. 1

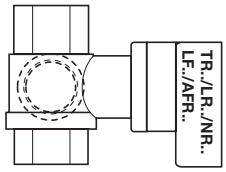


Fig. 2

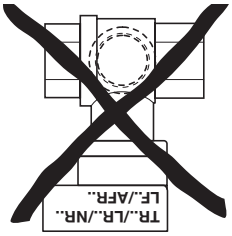


Fig. 3

Maintenance

- The ball valves and rotary actuators are maintenance-free.
- Before any kind of service work is carried out on actuator sets of this type, it is essential to isolate the rotary actuator from the power supply (by unplugging the power lead). Any pumps in the part of the piping system concerned must also be switched off and the appropriate isolating fittings closed (allow everything to cool down first if necessary and reduce the pressure in the system to atmospheric).
- The system must not be returned to service until the ball valve and the rotary actuator have been properly reassembled in accordance with the instructions and the pipework has been refilled in the proper manner.

Subsequent removal

If the application requires the ball valve to be removed subsequently, it is advisable to take appropriate precautions. Example: Provide additional, detachable ZR23.. pipe connectors (page 13).

Disposal

When a complete actuator set (ball valve and rotary actuator) has come to the end of its service life, the two parts must be dismantled, segregated and disposed of in a suitable manner.

Project design

Installation of R2.. characterized control valves, 2-way

R2.. characterized control valves are throttling devices and must therefore be installed in the return line of the system in order to ensure minimum thermal stress on the seals in the fitting. The specified direction of flow must be adhered to.

Installation of R3.. characterized control valves, 3-way

R3.. characterized control valves (3-way) are mixing devices. The specified direction of flow for each application must be adhered to. Whether they are installed in the supply or the return of a system depends on the type of hydraulic circuit that is employed.
In the case of **diverter circuits**, a balancing valve is not required in the bypass line owing to the reduced flow rate in the bypass.

Water quality requirements

The water quality requirements specified in VDI 2035 must be adhered to.

Strainers recommended

Characterized control valves are relatively sensitive control devices. In order to ensure a long service life, it is advisable to fit strainers.

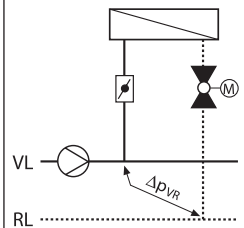
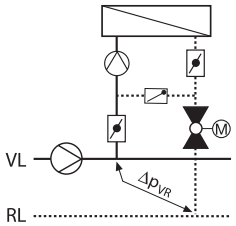
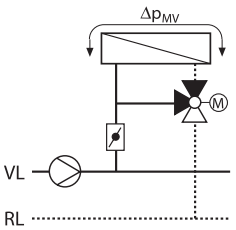
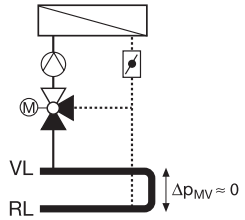
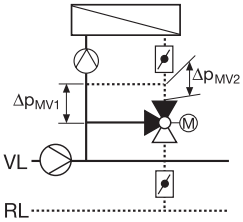
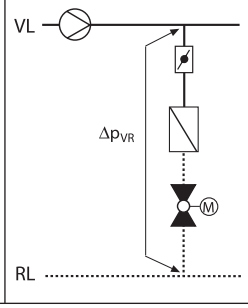
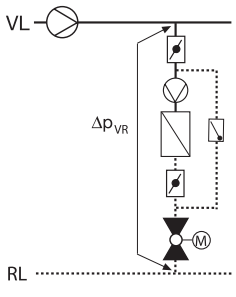
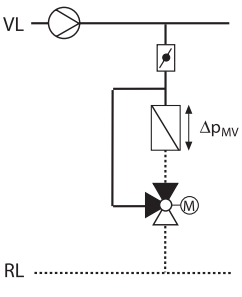
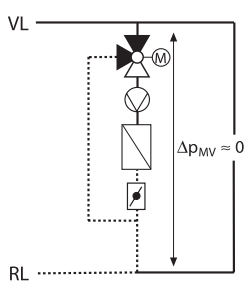
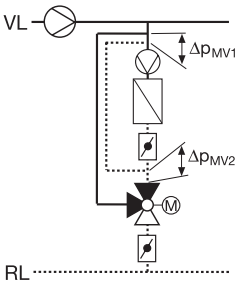
Sufficient shut-off devices

It is essential to ensure that sufficient shut-off devices are provided.

Correct valve selection and sizing

In order to ensure that the actuator set (characterized control valve and rotary actuator) achieves a long service life, it is essential for the valve to be rated for the correct differential pressure Δp_{v100}, i.e. with adequate valve authority ($Pv > 0.5$). The differential pressure Δp_{v100} depends on the type of hydraulic circuit in which the valve is employed.

Pressure differences Δp_{v100} with characterized control valves fully open

	Δp_{v100} R2.. characterized control valve, 2-way		Δp_{v100} R3.. characterized control valve, 3-way		
	Throttling circuit	**Injection circuit with throttling device**	**Diverter circuit**	**Mixing circuit**	**Injection circuit with 3-way characterized control valve**
	$\Delta p_{v100} > \Delta p_{VR} / 2$ Typical values: 15 kPa < Δp_{v100} < 150 kPa	$\Delta p_{v100} > \Delta p_{VR} / 2$ Typical values: 10 kPa < Δp_{v100} < 100 kPa	$\Delta p_{v100} > \Delta p_{MV}$ Typical values: 5 kPa < Δp_{v100} < 50 kPa	$\Delta p_{v100} > \Delta p_{MV}$ Typical values: Δp_{v100} > 3 kPa (unpressurized manifold). Other mixing circuits: 3 kPa < Δp_{v100} < 30 kPa	$\Delta p_{MV1} + \Delta p_{MV2} \approx 0$ Typical values: Δp_{v100} > 3 kPa
Geographic presentation					
Synoptic presentation					

Legend:

	Characterized control valve, 2-way, with rotary actuator	**VL** ——	Supply	Δp_{VR}	Differential pressure across specified section at rated load
	Characterized control valve, 3-way, with rotary actuator	**RL** ·····	Return	Δp_{MV}	Differential pressure across variable-flow section at rated load (e.g. heat exchanger)
	Pump				
	Non-return valve				
	Balancing valve				

Note: Strainers and shut-off devices are not shown.

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