



**ERHARD
VALVES**

Pressure and Flow Control Valves

DBGM, German and European Patents



Absolutely Reliable Pressure and Flow Control

In water mains of sizes DN 50 to DN 150, **ERHARD** Control Valves in straight or angle pattern

throttle and control

showing excellent results.

Globe type **ERHARD** Control Valves with body of ductile cast iron (SG GGG-50) are equipped with a fixed slotted cylinder of stainless steel. The control piston guided in PTFE lined slide rings moves within this cylinder covering or opening the ports according to the control position required. The actual valve seat which is an integral part of the slotted cylinder seals by means of an O-ring in a bubbletight manner. Travel is limited by a fixed stop in fully closed position.

The slotted cylinder provides for inoffensive energy conversion,

minimizing noise and material stress. **The control is very much appropriate for long-time operation under cavitation conditions.** The piston is connected to the valve stem without end play.

All **ERHARD** Control Valves are equipped with mechanical position indicator as a standard.

ERHARD Control Valves may be equipped with the following interchangeable operating gears:

1. Handwheel
2. Electric actuator
3. Hydraulic or pneumatic actuator

It is always possible to retrofit locally from handwheel to electric actuator valve operation or vice versa without removing the valve from the pipeline. The same

applies to replacement of the slotted cylinder including the piston.

Due to their sensitive port control, **ERHARD** Control Valves with handwheel or electric actuator provide starting or stopping of flows causing only very little water hammer, even at the end of long pipelines.

Dimensioning of the valves according to the duty involved has to be based on the valve K_V parameters considering the differential pressure across the valve and the pipe characteristic curve.

For perfect adaptation to the plant, special slotted cylinders can also be used.

For range of sizes DN 100 to DN 1800, see also our leaflet „Needle Valves“.



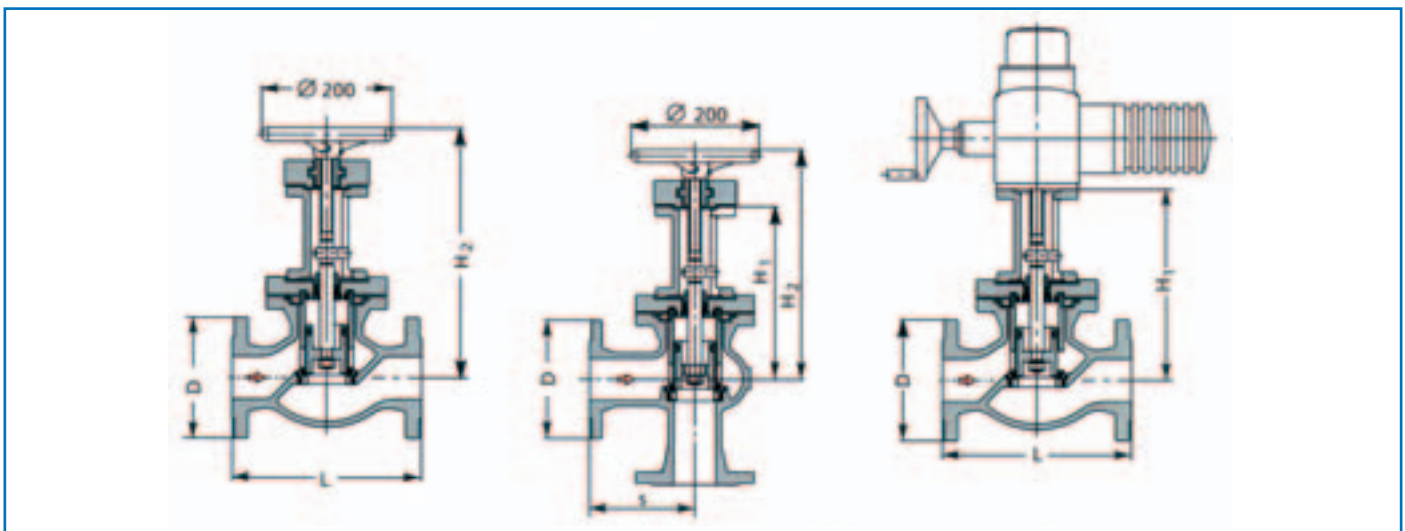
For Water Service

| Size | Nominal Pressure | Hydrostatic body test pressure in bars | Hydrostatic seat test pressure in bars | Max. admissible working pressure in bars at a working temperature up to 40° C |
|----------|------------------|--|--|---|
| DN | PN | | | |
| 50 - 150 | 16 | 24 | 16 | 16 |
| 50 - 150 | 25 | 37,5 | 25 | 25 |
| 50 - 150 | 40 | 60 | 40 | 40 |

When placing the order, please specify pressures upstream and downstream of the valve, max. flow rate and flow medium.

Flanges DN 50 - 150, C... connecting dimensions to DIN 28 605, PN 16²⁾ Prod. no. 6031 95..
 connecting dimensions to DIN 28 606, PN 25 Prod. no. 6032 95..
 connecting dimensions to DIN 28 607, PN 40 Prod. no. 6033 95..

Dimensions



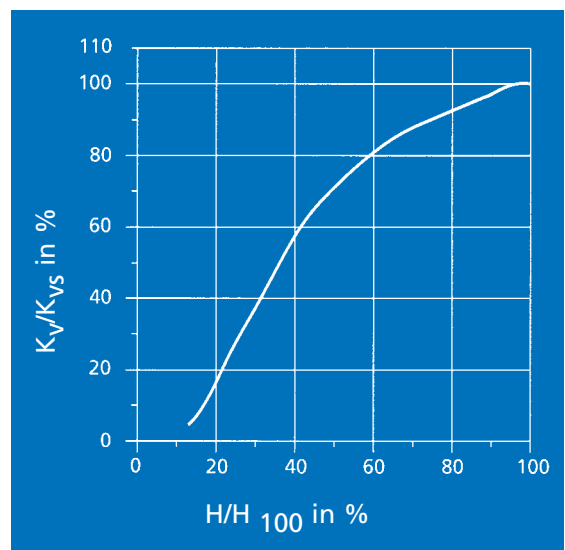
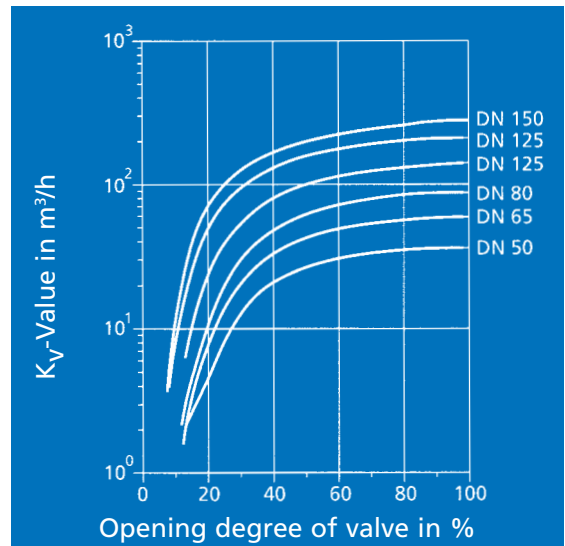
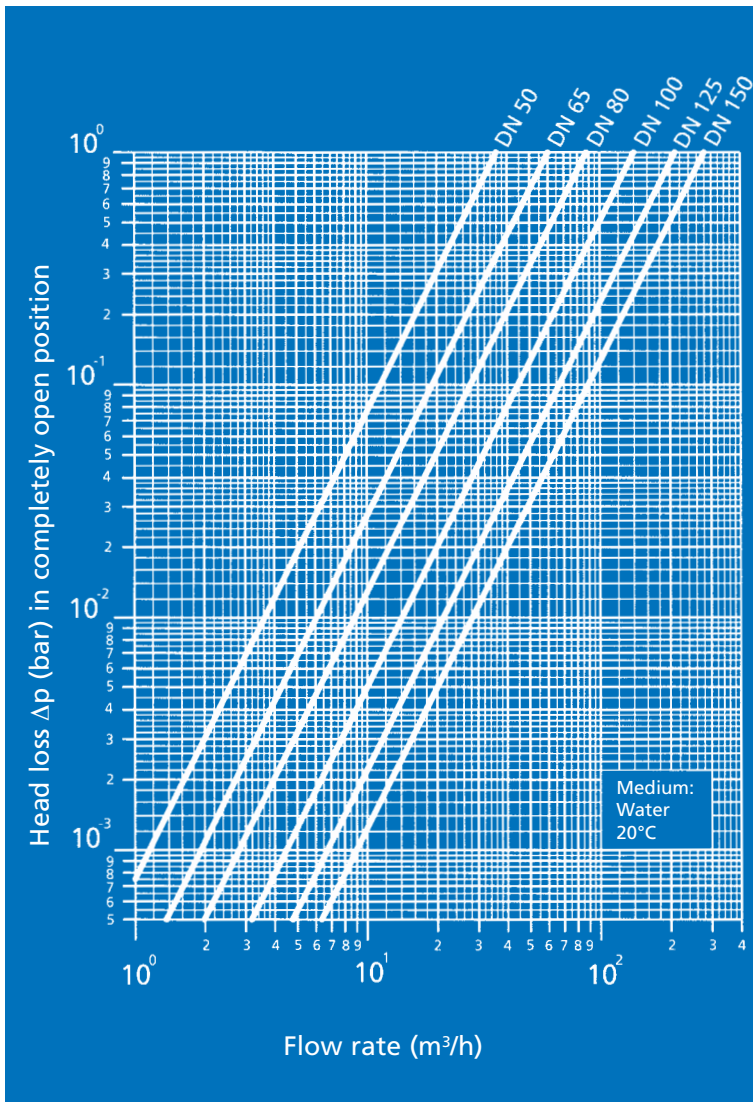
| Size | Face-to-face dimension ⁴⁾ | Face-to-face dimension | Height | Height | PN 16 | PN 25/40 | Handwheel turns per travel | Weight ³⁾ with handwheel kg | Volume |
|------|--------------------------------------|------------------------|--------|--------|-------|----------|----------------------------|--|----------------|
| DN | L mm | s mm | H1 mm | H2 mm | D mm | D mm | | | m ³ |
| 50 | 230 | 115 | 285 | 380 | 165 | 165 | 8,0 | 28 | 0,02 |
| 65 | 290 | 145 | 290 | 385 | 185 | 185 | 9,5 | 36 | 0,03 |
| 80 | 310 | 155 | 310 | 400 | 200 | 200 | 10,5 | 45 | 0,03 |
| 100 | 350 | 175 | 330 | 420 | 220 | 235 | 12,5 | 59 | 0,04 |
| 125 | 400 | 200 | 355 | 445 | 250 | 270 | 14,5 | 80 | 0,06 |
| 150 | 480 | 240 | 385 | 475 | 285 | 300 | 17,0 | 112 | 0,08 |

- 1) Sizing to K_{vs} -value. We reserve the right to size the valve according to order specifications.
- 2) For DN 80 please indicate, if to be drilled with 4 or 8 holes (4 holes only for PN 10).
- 3) Net (without obligation).
- 4) Control Valves in angle pattern on request.

Note:

The valve are to be installed into the clean and flushed pipeline according to the cast-on arrow showing the flow direction. If the flow medium is polluted or subject to impurities, it is necessary to install a dirt trap upstream of the valve.

Dimensioning for water service: $K_v = \frac{Q \text{ (m}^3\text{/h)}}{\Delta p \text{ (bar)}} < K_{vs}$ (This sizing is only valid for service free from cavitation).



| DN | 50 | 65 | 80 | 100 | 125 | 150 |
|-----------------------------|---------|-------|-------|--------|--------|--------|
| K_{VS} (m³/h) | 36 | 59 | 87 | 140 | 210 | 280 |
| K | 7.6 | 8.1 | 8.5 | 7.8 | 8.7 | 10.2 |
| Q_{normal} (m³/h) | 11-28 | 18-47 | 27-72 | 43-113 | 65-175 | 97-255 |
| h_v at Q_{normal} (mWC) | 0,9-8,5 | | | | | |
| Q_{max} (m³/h) | 42 | 70 | 108 | 170 | 265 | 380 |
| h_v at Q_{max} (mWC) | 14-19 | | | | | |
| K_V min (m³/h) | 1.2 | 1.2 | 1.2 | 1.5 | 1.5 | 1.5 |

Characteristic curves for valves with special slotted cylinder according to operating data.

K_{VS} : The flow coefficient K_{VS} shows the amount of water in m³/h flowing through the fully open valve at 5°C to 30°C with a differential pressure of 1 bar.

K: Head loss coefficient under fully open conditions.

Q_{normal} : Flow rate corresponding to a flow velocity of 1,5 - 3 m/s (referring to nominal size).

h_v : Head loss (Δp) when valve is completely open.

Q_{max} : Max. admissible flow rate for long-time operation corresponding to a flow velocity of 5 m/s (referring normal size).

$K_{V\ min}$: Lowest controllable water flow rate at a differential pressure of 1 bar.

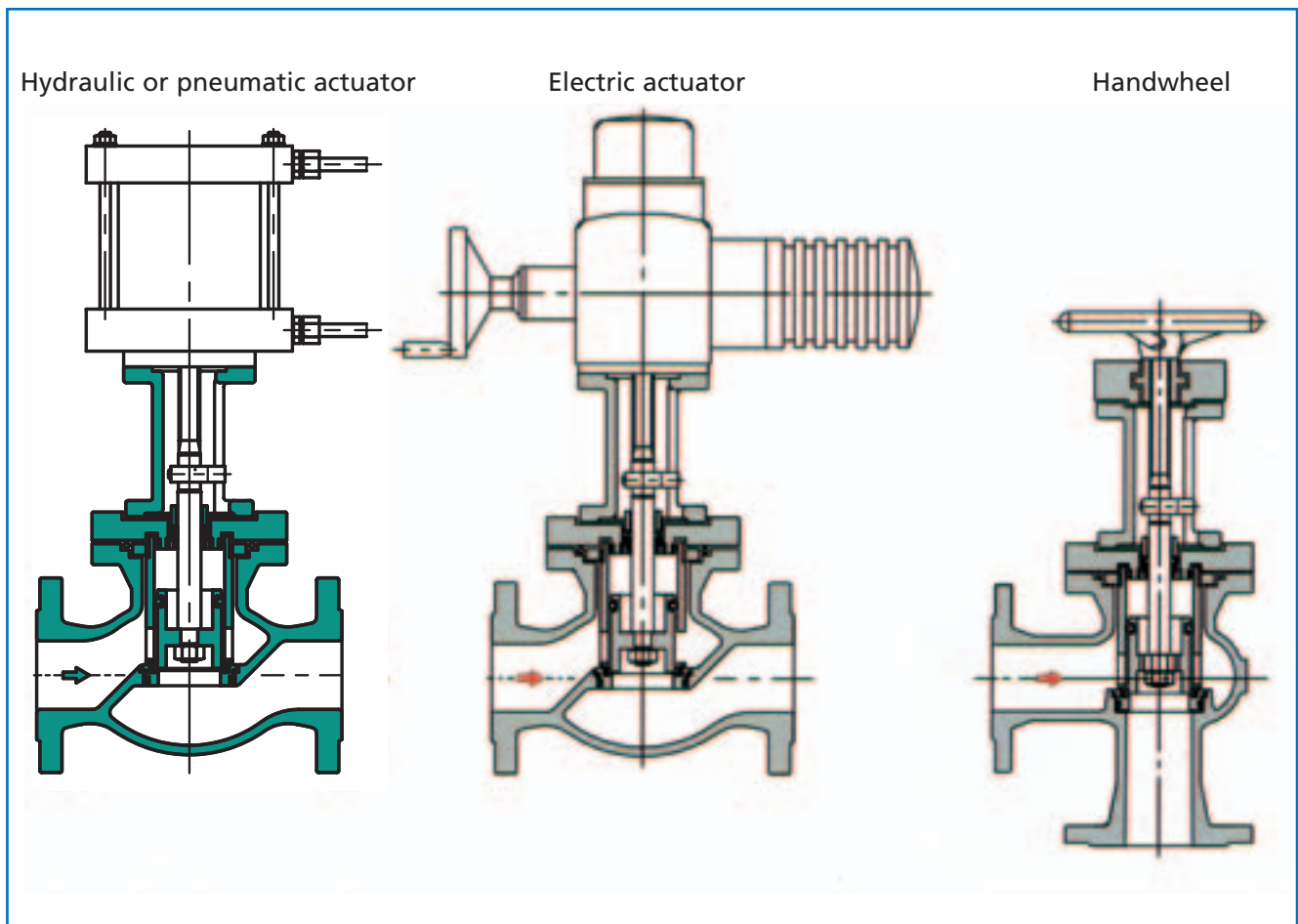
For any other differential pressure, the lowest controllable flow rate equals $Q_{min.} = K_V \min \cdot \sqrt{\Delta p}$ [m³/h] (Δp in bar).

ERHARD-Performance

User's Advantage

| | |
|---|--|
| State of the art | Universal control valves for water service |
| Equipped with slotted cylinder | Optimum flow characteristics |
| Compact design, long piston guide | Perfect and reliable operation |
| Components resistant to corrosion and ageing: Body of SG GGG-50/ EKB epoxy coated Trim and screws of stainless steel | Robust and insensitive |
| Piston sealing of PTFE/coal and elastomer outside the area of flow and cavitation | Long life |
| Replacement of trim without removing the valve from the pipeline | Easy maintenance |
| Slotted cylinder with graded control ports | Excellent control characteristics – even for small rates |
| Position indicator as a standard | Easy operation |
| Handwheel and electric actuator interchangeable | Retrofitting possible without removing valve from the pipeline |

Various Types of Actuators



1 **ERHARD** Control Valve

2 Electronic Controller

3 Pressure Gauge with Teletransmitter

4 Flow Meter

5 Float Switch

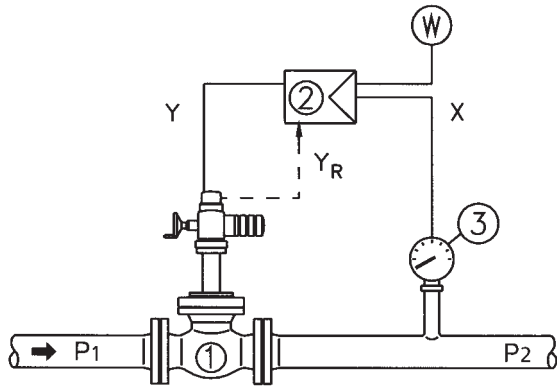
6 Pump

W Set point

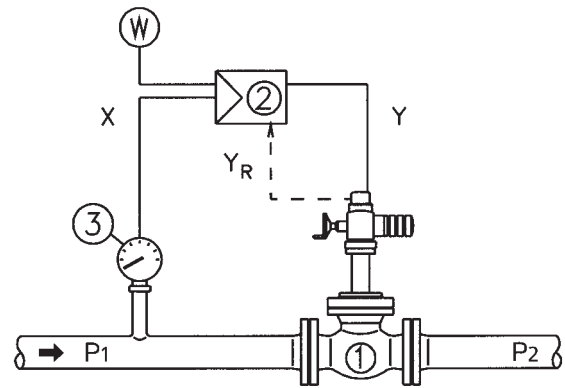
X Controller input parameter

Y Controller output signal

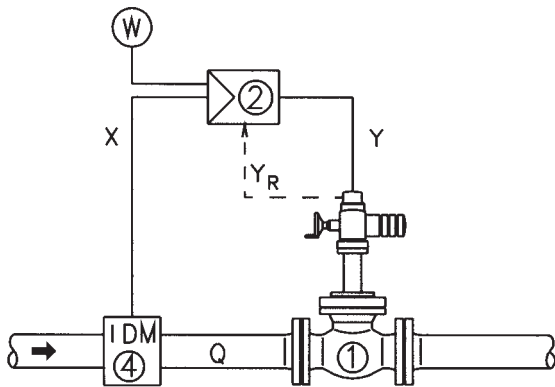
Y_R Signal feedback



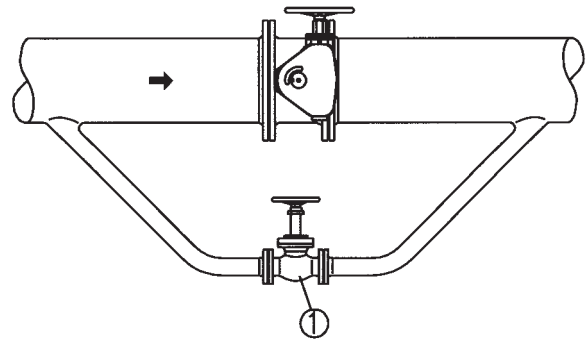
Pressure Control:
constant downstream pressure (P_d)



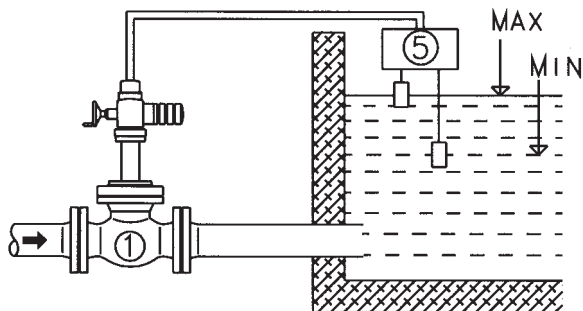
Pressure Control:
constant upstream pressure (P_2)



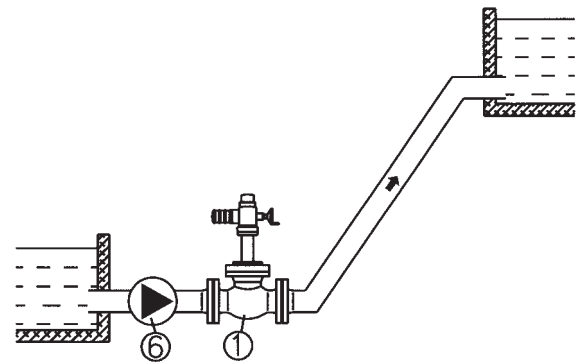
Flow Control: constant flow rate (Q)



By-pass Valve: For filling mains with the
main valve in closed position



Reservoir Feeding Valve



Pump-discharge valve: Minimizing water hammer
on closing a long delivery line

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