

FIVC Static Balancing Valve

DZR Brass - PN 25 - ISO 228



FSB series

Technical data

Main features and materials

- ABS (hand wheel, white color)
- DZR - Dezincification Resistant Brass (EN 12165 - CW602N)
- Connection for drain ISO 228 - G 1/4" Female
- Sensor holder for needle \varnothing 3 mm and length 30 - 40 mm
- Shut-off function
- Pre-setting possibility
- Venturi flowmeter for flowrate measurement by means of pressure probes

Field of applications

- Maximum working temperature: 110 °C (other versions available on request)
- Maximum working pressure: 25 bar

Description

The balancing is essential for saving the energy used in hydro-thermo-sanitary systems. The FSB series are static balancing valves, that permit a gradual and precise regulation of the flow rate.

The FIVC Static balancing valves have a flowmeter with calibrated orifice (Venturi principle), that is with fixed Kv, that through the pressure outlets (depending on the versions they are provided with or they are optional acces-

sory) and a common differential manometer, permits to measure carefully the flow rate that is really circulating.

Installation

- Effect the washing of the systems before installing the FIVC Static balancing valve
- To protect the valve from possible impurities of the system, insert a filter upstream the valve

Dimensions

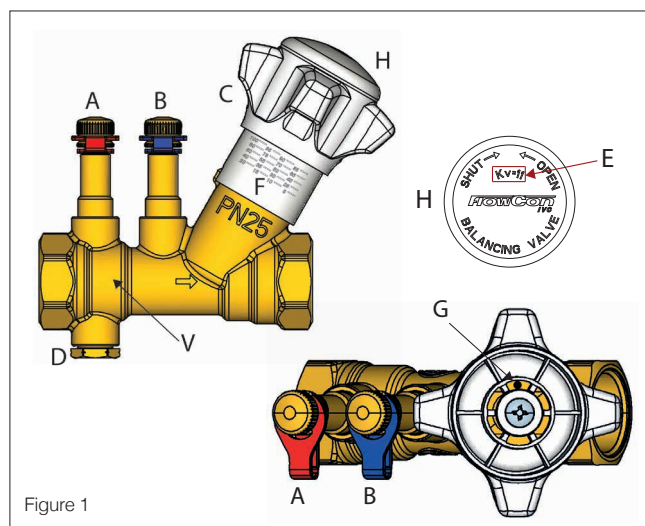


Figure 1

| | | | |
|----------|------------------------------|----------|---|
| A | high pressure probe | F | scale for 0% - 100% setting (20 positions) |
| B | low pressure probe | G | presetting screw (limiting the stroke) |
| C | ABS hand wheel | H | removable head (to do presetting) with imprinted the Venturi Kv |
| D | drain (1/4" F) | I | Venturi flow meter |
| E | Kv of the Venturi flow meter | | |

Product codes

| Product code | Size |
|--------------|--------|
| FSB015D25 | 1/2" |
| FSB020D25 | 3/4" |
| FSB025D25 | 1" |
| FSB032D25 | 1 1/4" |
| FSB040D25 | 1 1/2" |
| FSB050D25 | 2" |

Kv values

| Kv | | |
|--------|------------------------|---------------------|
| Size | Kv (Venturi flowmeter) | Kv (complete valve) |
| 1/2" | 4,0 | 2,7 |
| 3/4" | 7,5 | 5,5 |
| 1" | 11,0 | 7,0 |
| 1 1/4" | 13,5 | 9,5 |
| 1 1/2" | 24 | 18,5 |
| 2" | 31 | 25,5 |

Flowrate

| Flowrate (l/h) | | | |
|----------------|-------------|-----------|-------------|
| Size | 0,5 kPa (*) | 3 kPa (*) | 10 kPa (**) |
| 1/2" | 280 | 690 | 860 |
| 3/4" | 530 | 1300 | 1740 |
| 1" | 780 | 1900 | 2220 |
| 1 1/4" | 950 | 2340 | 3000 |
| 1 1/2" | 1700 | 4160 | 5850 |
| 2" | 2190 | 5370 | 8065 |

Table 3 - Flowrate values related to differential pressure on Venturi flowmeter (*) or for the complete valve (**)

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Operation

Presetting

FIVC Static balancing valves are equipped with a mechanism of mechanical memory of the opening (pre-regulation).

This mechanism works by limiting the handle stroke (ref. C - fig. 2) through a locking screw (ref. G - fig. 2). Operationally the pre-regulation shall be effected as follows:

- Select the desired flow rate Q depending on the differential pressure Δp ;
- Through the diagram of figure 3, determine the regulation to be carried out to obtain the desired flow rate Q depending on the differential pressure Δp according to the valve size.
- Make the regulation of the FSB valve by means of the handle (ref. C - fig. 2), on the regulation scale (ref. F - fig. 1);
- Screw clockwise until it stops the locking screw of the pre-regulation (ref. G - fig. 2) by using an allen key of:
1,5 mm for versions $\frac{1}{2}$ ", $\frac{3}{4}$ ", 1", 1 $\frac{1}{4}$ ";
2,0 mm for versions 1 $\frac{1}{2}$ ", 2".

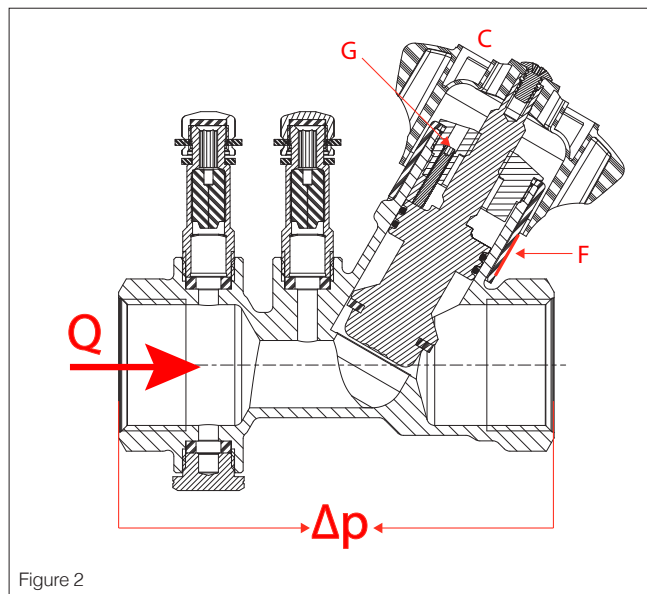


Figure 2

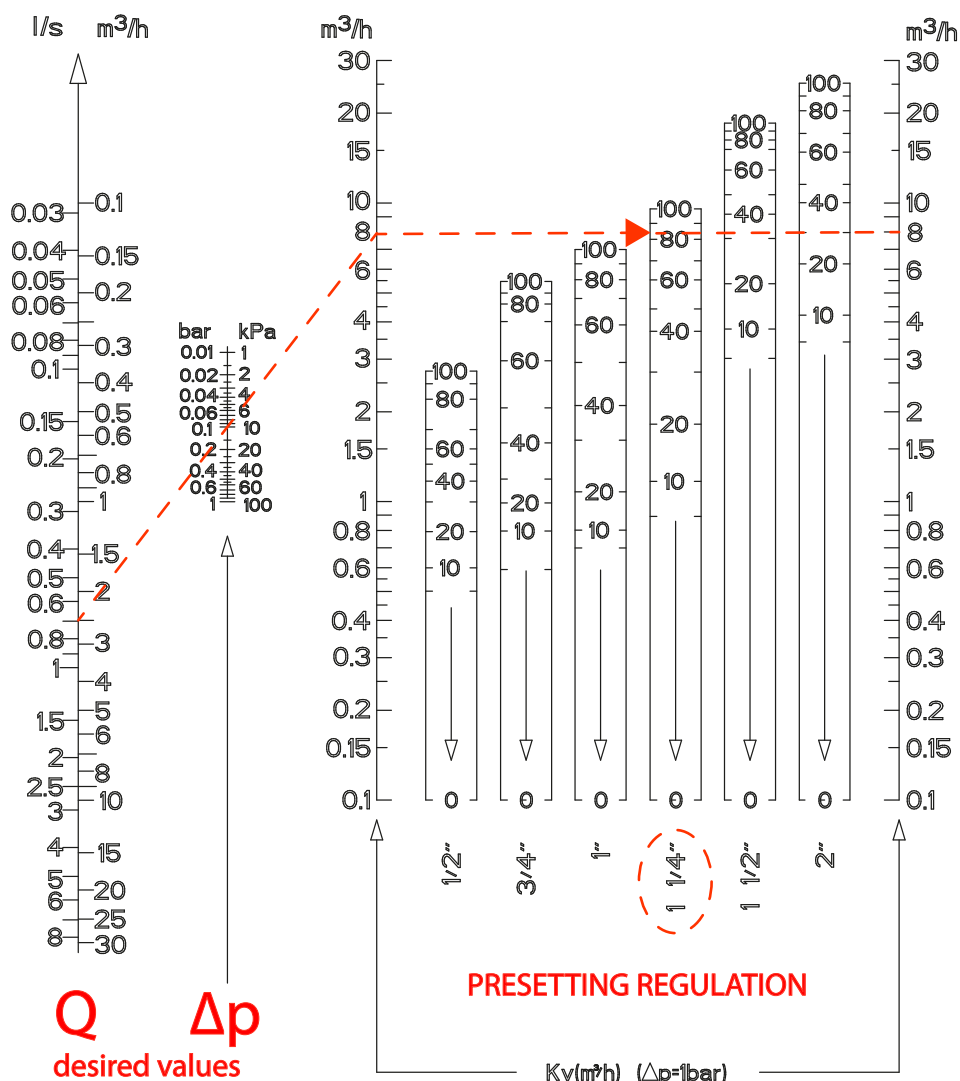


Figure 3

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Flowrate calculation

FIVC Static balancing valves are equipped with a flowmeter having calibrated orifice (Venturi principle), that is with fixed K_v , that through the pressure outlets (ref.A-fig.4) and a common differential manometer, permits to calculate the really circulating flow rate. The flow rate Q can be determined with the following formula:

$$Q = K_{v_{\text{venturi}}} \cdot \sqrt{\Delta p}$$

Refer to table 2 for the $K_{v_{\text{venturi}}}$ values;

Δp has to be measured through the pressure outlets.

Use the following formula for the liquids having density ρ different from water:

$$Q = K_{v_{\text{venturi}}} \cdot \sqrt{\Delta p / \rho}$$

As alternative to the formula, you can use the diagram in figure 5: with the measured Δp value, the flow rate Q can be determined according to the valve size.

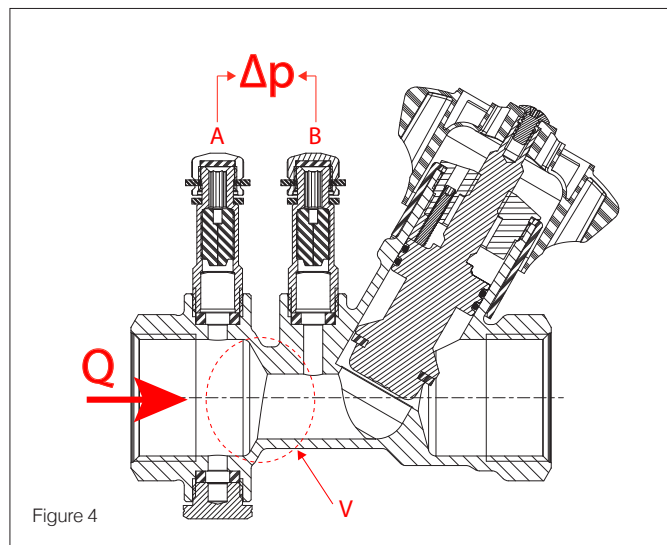


Figure 4



Caution!

Leakage of hot water can occur through the pressure outlets during the sensor introduction of the sensors. Wear protective clothes and glasses in order to prevent personal physical damages during the pressure measure.

Do not use lubricants on the sensors to ease the outlet insertion. If needed simply wet the sensors with clean water.

Do not leave the measure needle too much time in the pressure outlet, as it could cause leakages.

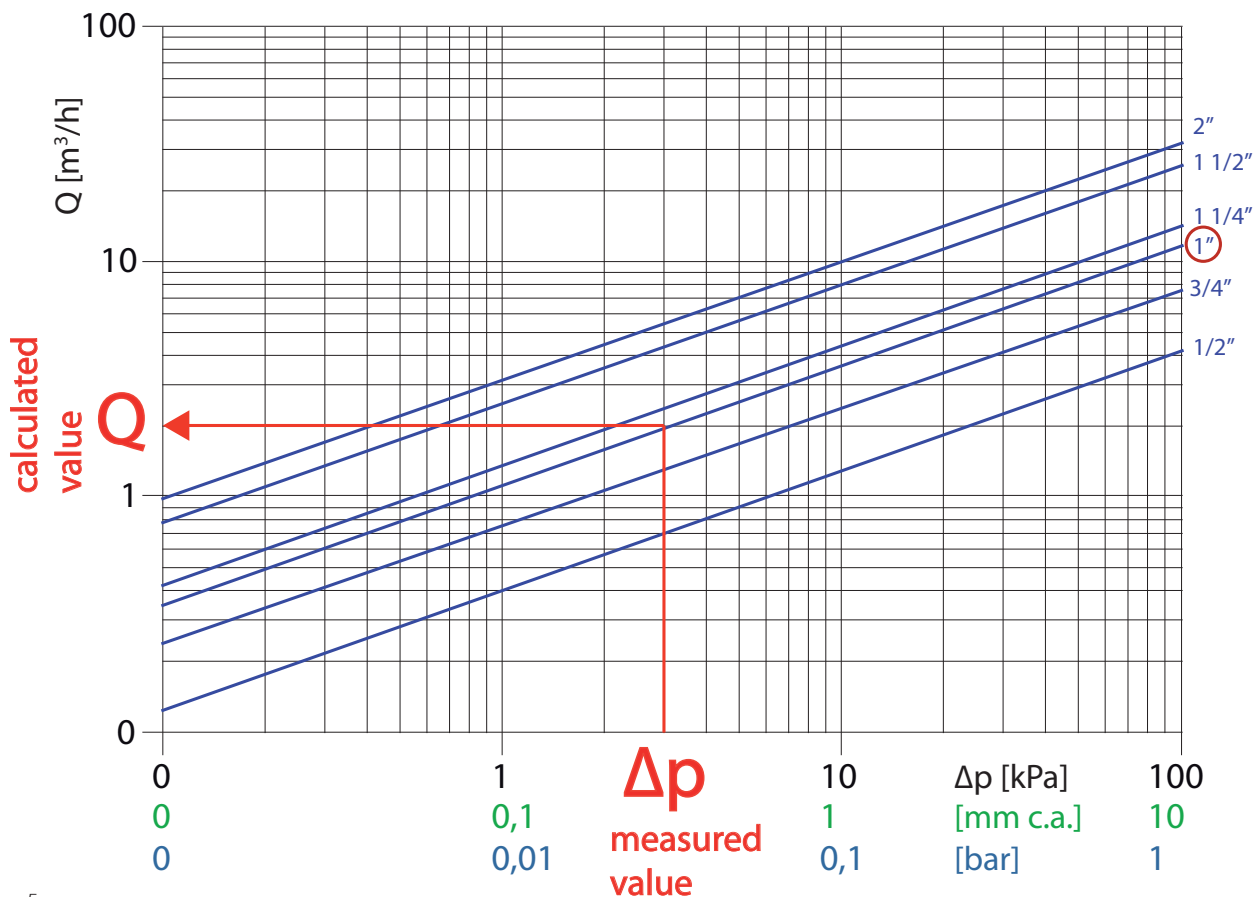
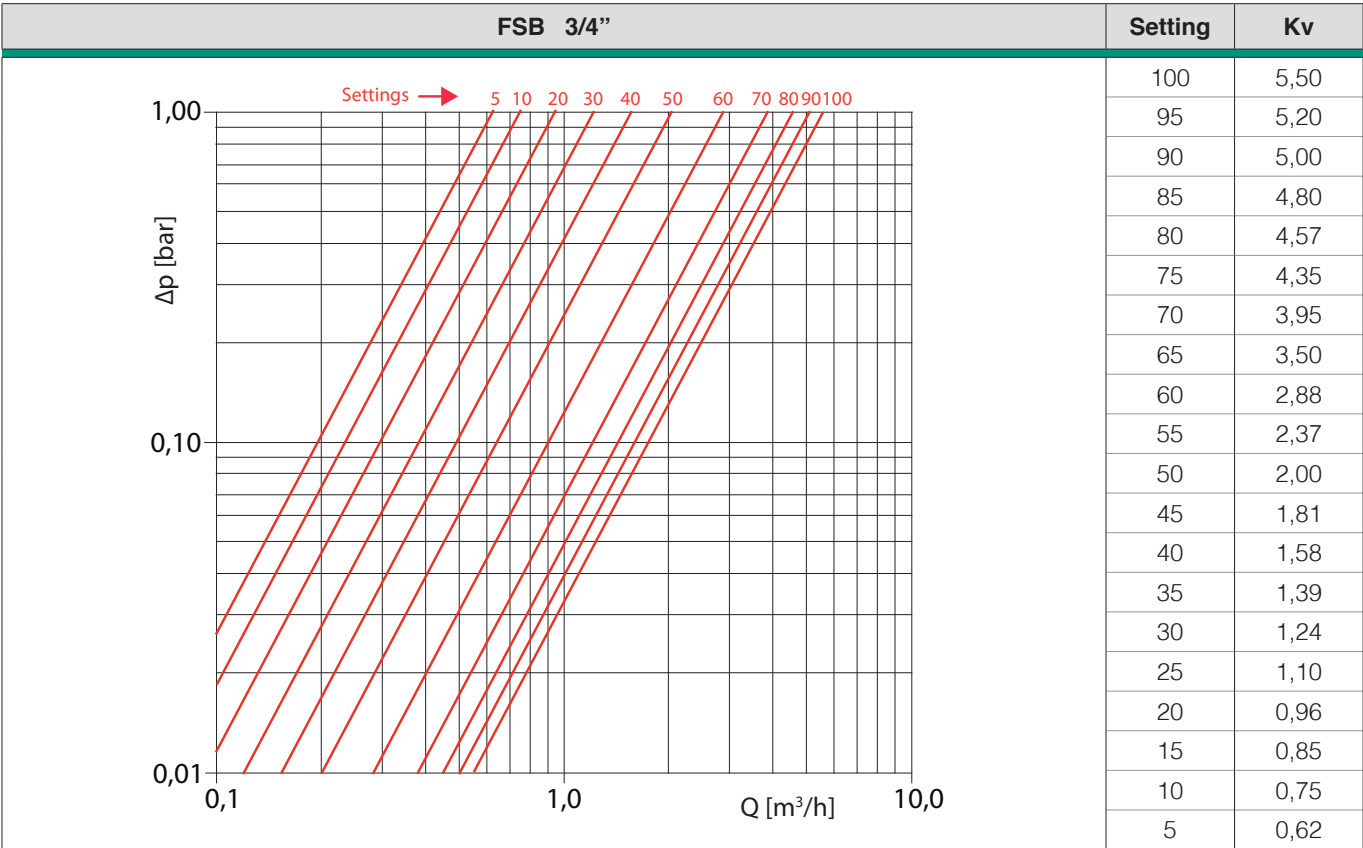
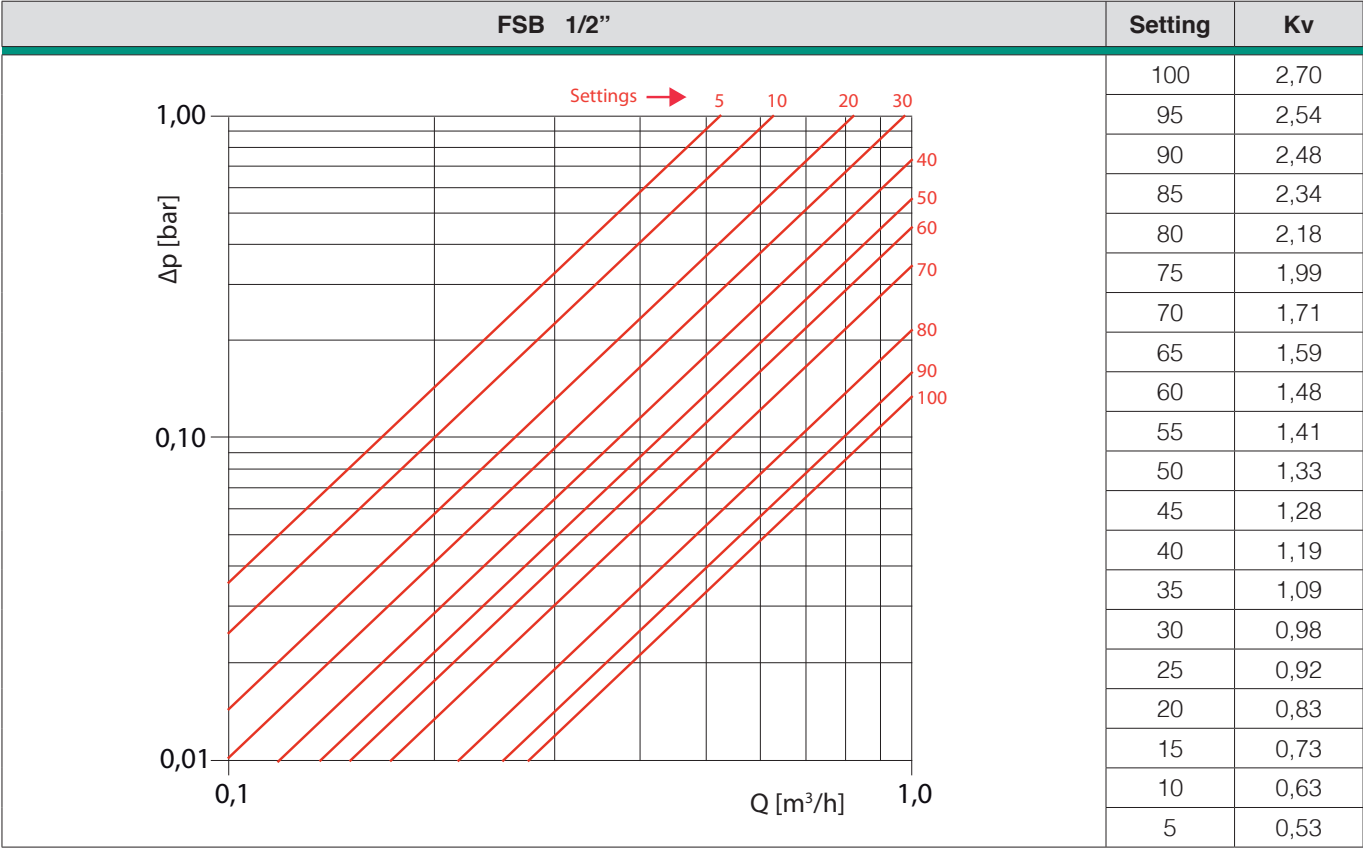


Figure 5

FIVC Static Balancing Valve

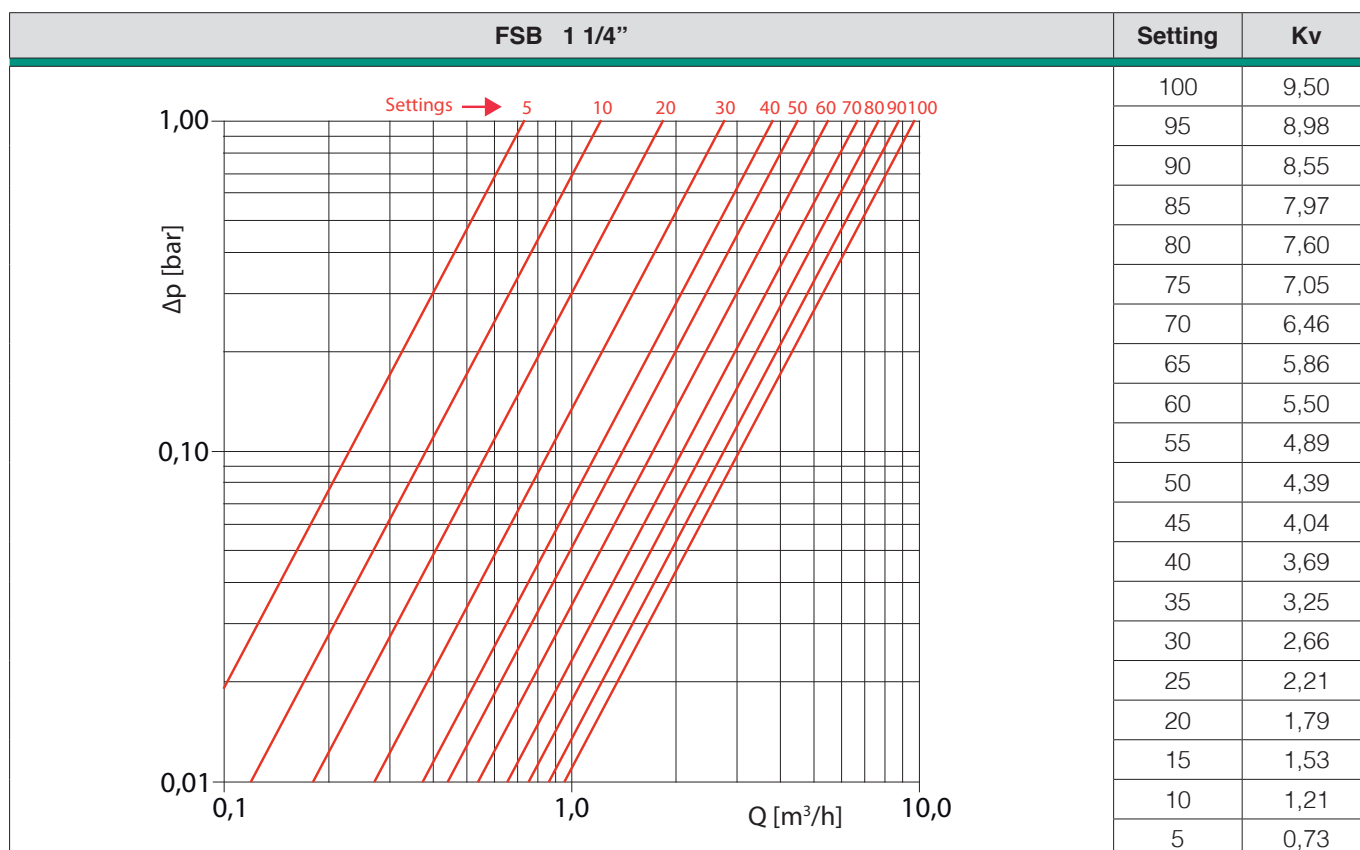
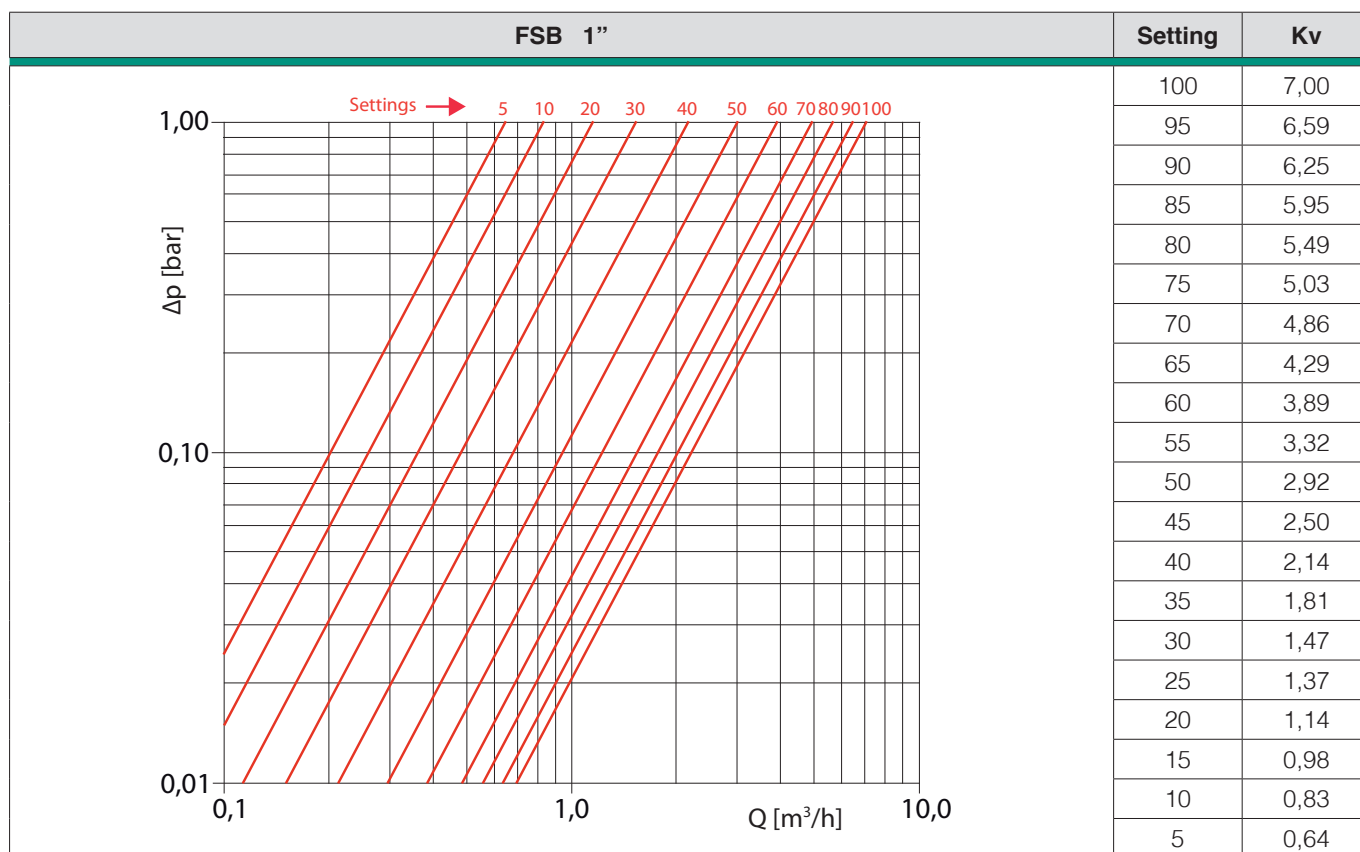
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Kv values

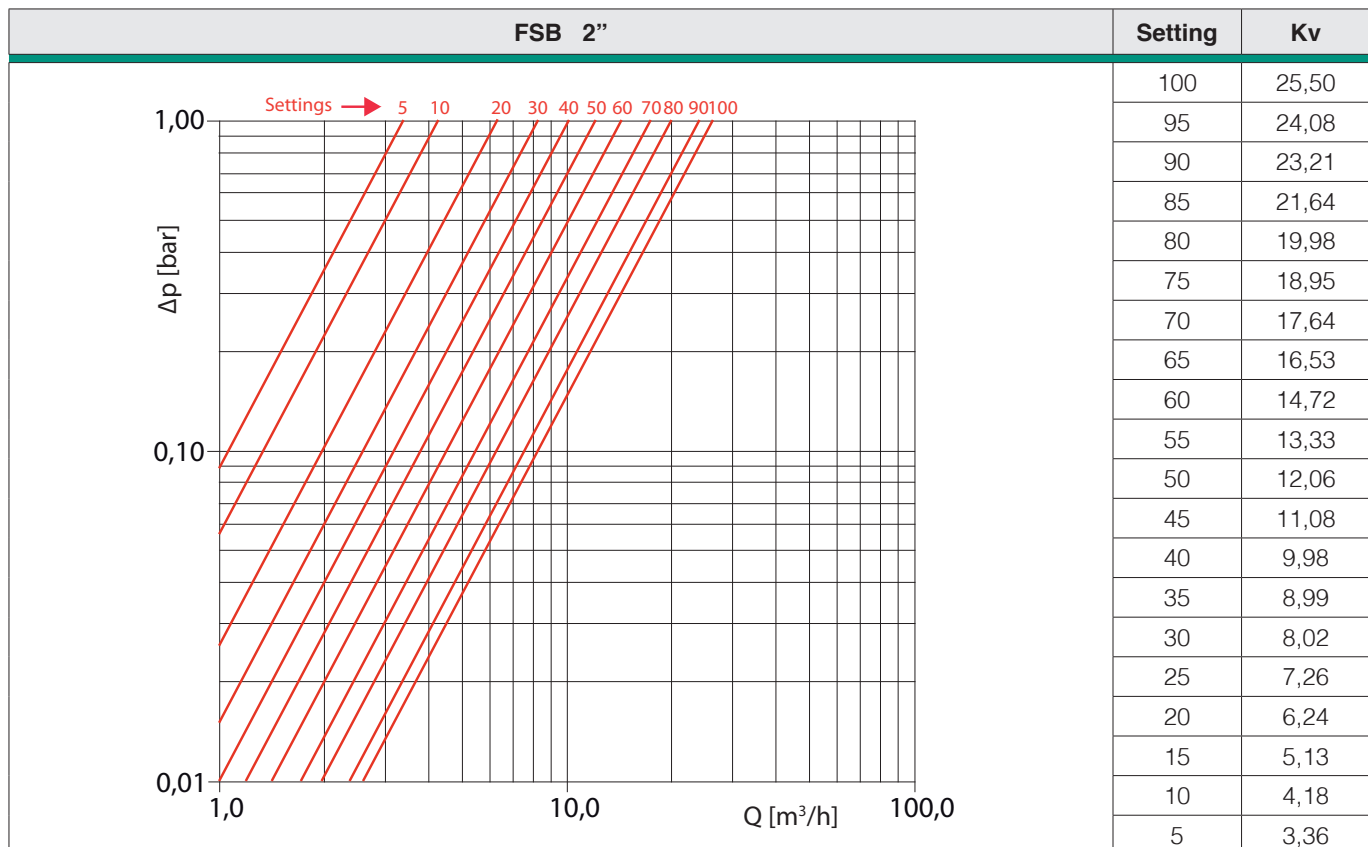
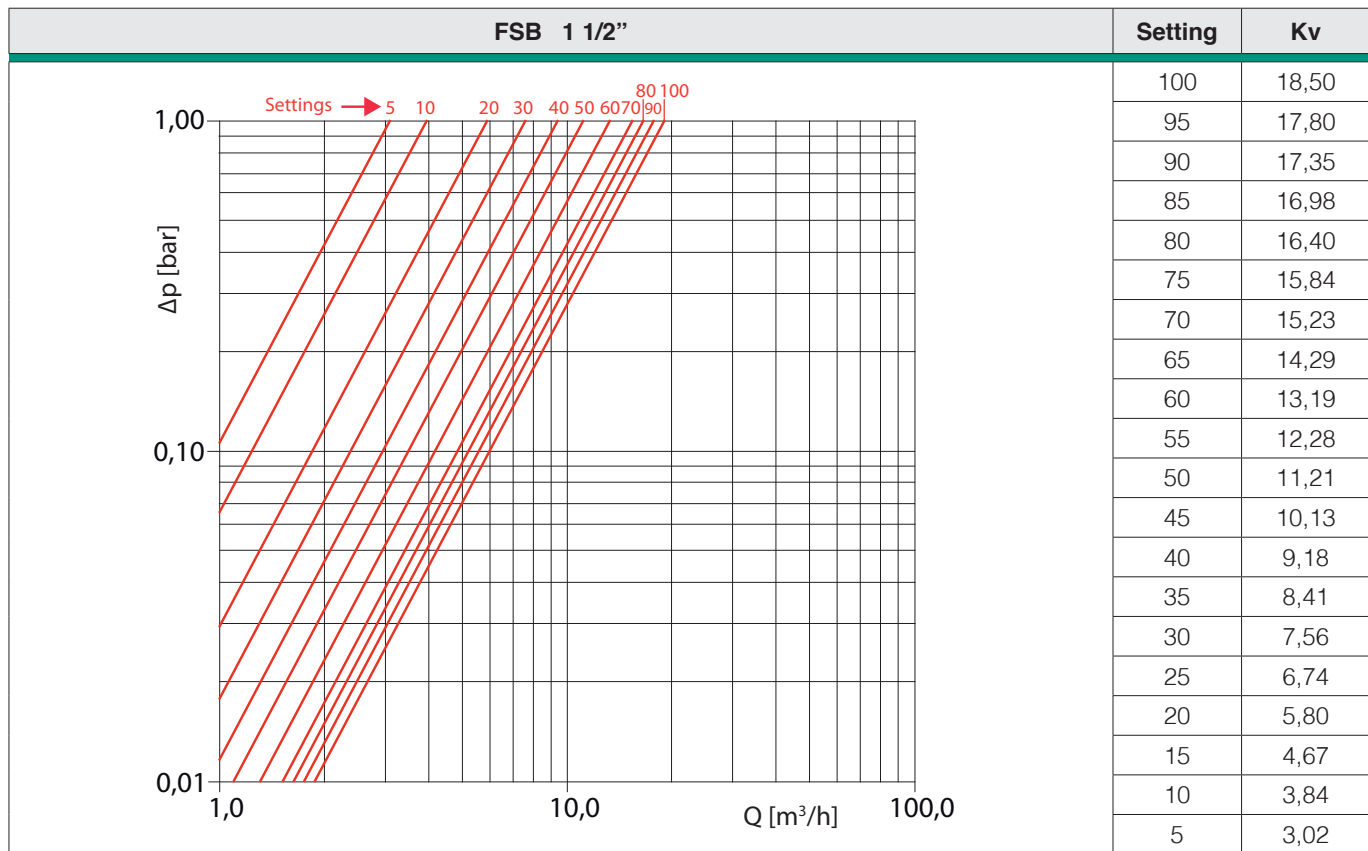


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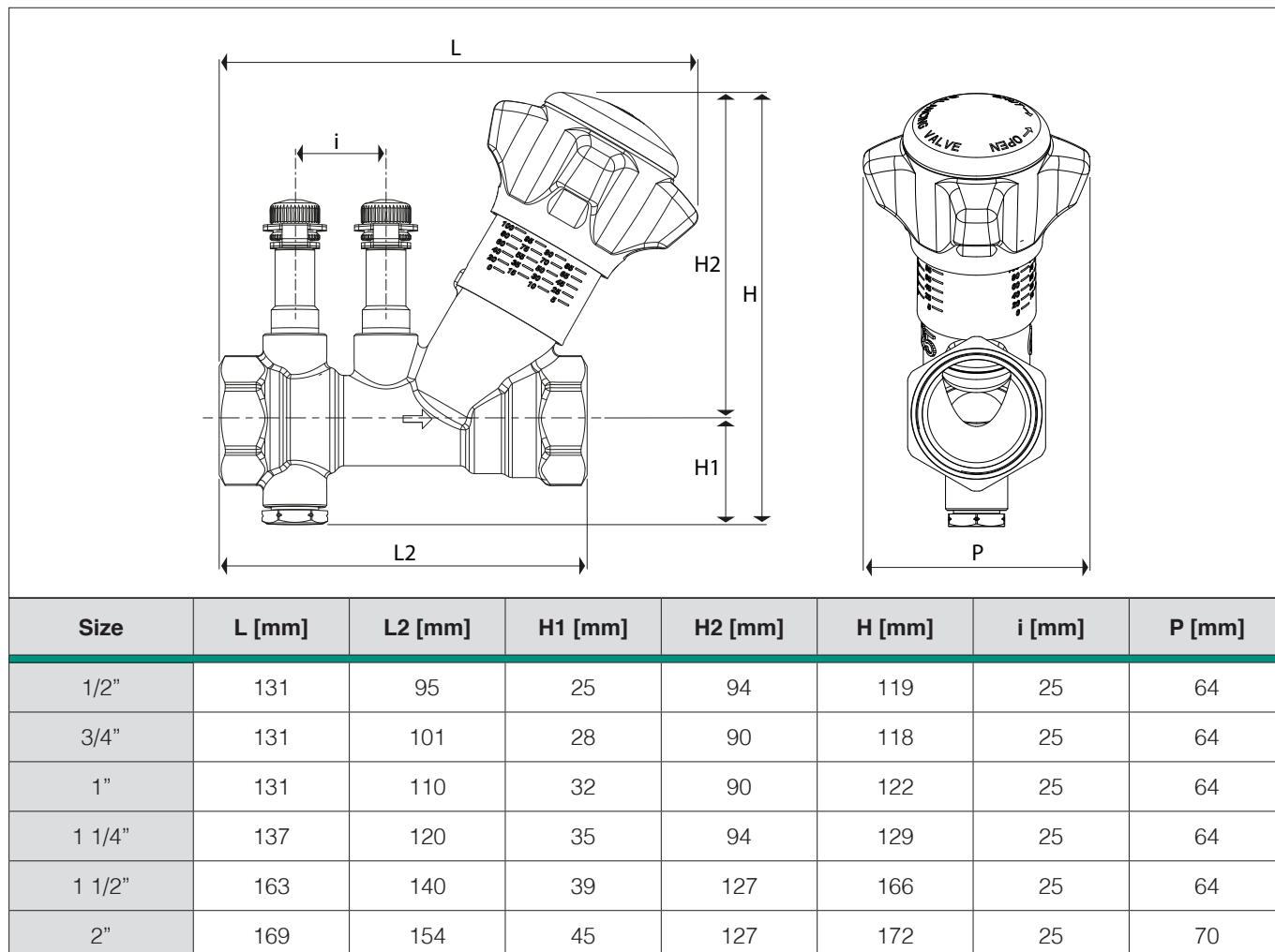


FIVC *Static Balancing Valve* DZR Brass - PN 25 - ISO 228



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Dimensions



Product specification

FSB – with pressure outlet

FIVC Static balancing valve with ISO 228 threaded connections female-female from 1/2" to 2", Max. working temperature: 110°C. Max. working pressure: 25 bar. Pressure outlets to determine the flow rate through fixed orifice (Venturi principle). 1/4" F discharge connection. Dezincification resistant brass. EPDM seals.