

# Self-operated Regulators



## Versions with valves balanced by a diaphragm Type 2114 · Type 2422 · Type 2423

as pressure-balanced, single-seated globe valve

### Application

Valves used in temperature regulators, pressure regulators, differential pressure regulators, flow regulators as well as differential pressure regulators with flow limitation · Nominal sizes **DN 125** to **DN 250** · Nominal pressure **PN 16** to **PN 40** · Suitable for water up to **150 °C** and non-flammable gases up to **80 °C**

### Special features

- Very large Kvs coefficients
- Very high maximum flow rates to be controlled in flow regulators
- Plug with soft sealing to minimize seat leakage
- Seat/plug trim made of red brass
- Lower overall height compared to valves balanced by a bellows

This Data Sheet supplements the data sheets of the following regulators:

#### Type 4 and Type 4u Temperature Regulators

- T 2121 EN (DIN), T 2025 EN (ANSI) and T 2123 EN (DIN)

#### Type 2422/2424 and Type 2422/2425 Pressure Regulators

- T 2547 EN (DIN), T 2548 EN (ANSI) and T 2549 EN (DIN), T 2550 EN (ANSI)

#### Type 42-24 and Type 42-25 Differential Pressure Regulators

- T 3003 EN (DIN), T 3004 EN (ANSI) and T 3007 EN (DIN), T 3008 EN (ANSI)

#### Type 42-36 Flow Regulator

- T 3015 EN (DIN), T 3016 EN (ANSI)

#### Type 42-34 Differential Pressure Regulator with Flow Limitation

- T 3013 EN

#### Type 42-37 Differential Pressure and Flow Regulator

#### Type 42-39 Differential Pressure and Flow or Pressure and Flow Regulator

- T 3017 EN

#### Type 42-36 E Flow Regulator with Electric Actuator

#### Type 42-37 E Differential Pressure and Flow Regulator with Electric Actuator

#### Type 42-39 E Differential Pressure and Flow or Pressure and Flow Regulator with Electric Actuator

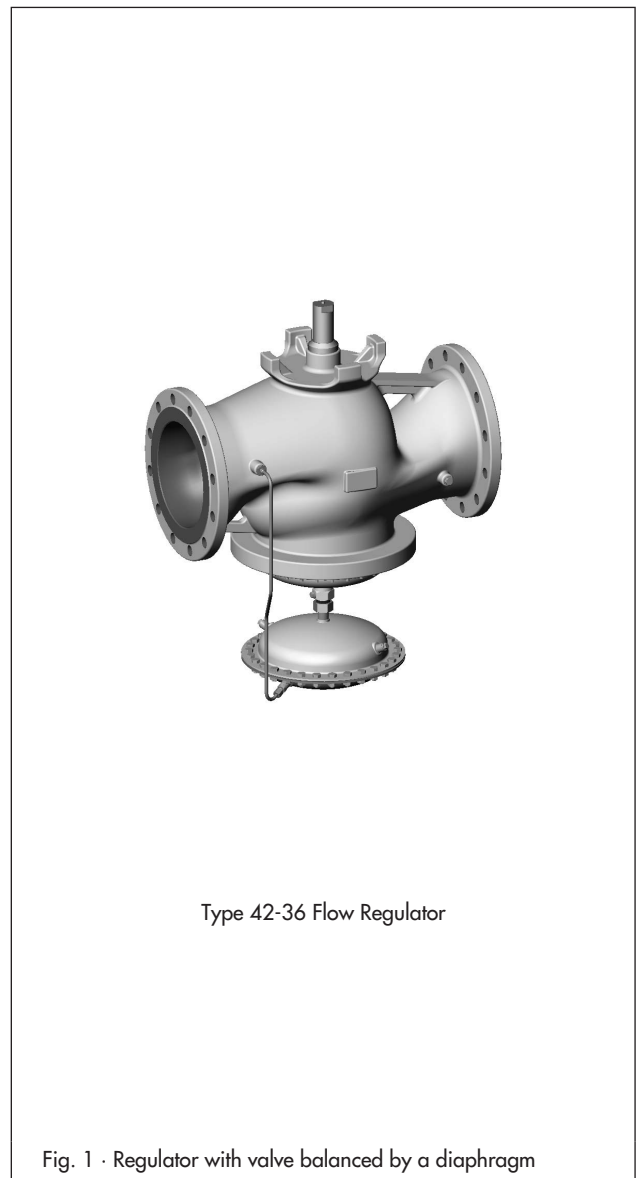
- T 3018 EN

#### Regulators with double connections

- T 3018 EN

### Versions

Valves with soft-seated plug · Valve body made of cast iron (EN-JL1040), spheroidal graphite iron (EN-JS1049) and cast steel (1.0619), stainless cast steel (1.4581)



### Special versions

- Version for oxygen, materials according to BAM list
- Dimensions and materials according to ANSI

### Principle of operation

The regulators with valves balanced by a diaphragm differ in their principle of operation in comparison to valves balanced by a bellows only where the pressure balancing is concerned.

The valves are fitted with a balancing diaphragm. The downstream pressure  $p_2$  acts on one side of the diaphragm and the upstream pressure  $p_1$  on the other side of the diaphragm. As a result, the forces created by the upstream and downstream pressures acting on the valve plug are compensated for.

### Installation

- Mount the valve in horizontally running pipelines.
- The medium must flow through the valve in the direction indicated by the arrow on the body.
- The balancing diaphragm and actuator must face downwards.
- Install a strainer upstream of the regulator, e.g. SAMSON Type 2 N/Type 2 NI Strainer.

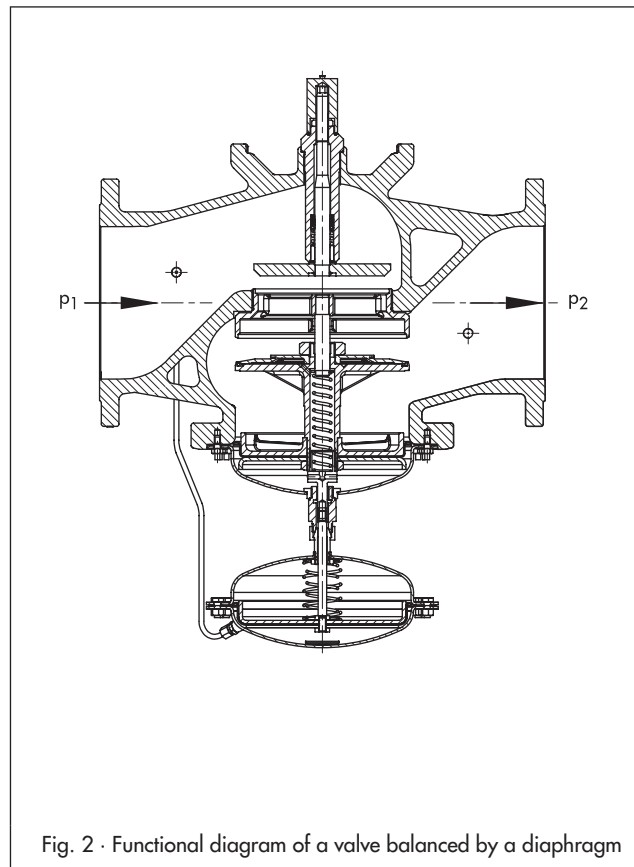


Fig. 2 · Functional diagram of a valve balanced by a diaphragm

**Table 1 · Technical data****Type 2114 · Type 2422 · Type 2423 · Type 2423 E · Balanced by a diaphragm**

| Nominal size DN                                       |                            | 125 | 150 | 200 | 250 |
|---|----------------------------|-----|-----|-----|-----|
| $K_{VS}$<br>in m <sup>3</sup> /h                      | 22 mm travel               | 190 | 290 | 550 | 600 |
|   | 35 mm travel <sup>1)</sup> | 250 | 380 | 650 | 800 |
| Max. perm. differential pressure<br>$\Delta p$ in bar |                            | 12  | 12  | 10  | 10  |

<sup>1)</sup> Not with Type 2114**Flow rate set point range  $\dot{V}$  for water in m<sup>3</sup>/h****Type 2423 · Type 2423 E · Balanced by a diaphragm**

| Nominal size DN   |                               | 125       | 150       | 200       | 250       |
|---|-------------------------------|-----------|-----------|-----------|-----------|
| Flow rate set point range in<br>m <sup>3</sup> /h with $\Delta p_{restriction} = 0.2$ bar | Type 2423 · 22/35 mm travel   | 11 to 120 | 18 to 180 | 20 to 320 | 26 to 350 |
|   | Type 2423 E · 22/35 mm travel | 40 to 80  | 50 to 120 | 70 to 180 | 90 to 220 |

**Weight in kg (cast iron valves)**

| Nominal size DN |                 | 125 | 150 | 200 | 250 |
|-----------------|-----------------|-----|-----|-----|-----|
| Type 2114       | 22 mm travel    | 52  | 72  | 217 | 227 |
| Type 2422       | 22/35 mm travel | 52  | 72  | 217 | 227 |
| Type 2423       | 22/35 mm travel | 65  | 85  | 248 | 268 |
| Type 2423 E     | 22/35 mm travel | 65  | 85  | 248 | 268 |
| <b>Actuator</b> |                 |     |     |     |     |
| Type 2424/2425  | 22 mm travel    | 15  | 15  | 22  | 22  |
|                 | 35 mm travel    | 20  | 20  | 30  | 30  |
| Type 2427/2429  | 22 mm travel    | 27  | 27  | 35  | 35  |
|                 | 35 mm travel    | 32  | 32  | 55  | 55  |

**Table 2 · Materials · Material acc. to DIN EN**

| Type 2114 Valve · Type 2422 Valve · Type 2423 Valve · Type 2423 E · Balanced by a diaphragm |  |                                       |                      |                                |
|---|--|---------------------------------------|----------------------|--------------------------------|
| Nominal pressure  | PN 16  | PN 16/25                              | PN 16/25/40          | PN 16/25/40                    |
| Body  | Cast iron<br>EN-JL1040   | Spheroidal graphite iron<br>EN-JS1049 | Cast steel<br>1.0619 | Stainless cast steel<br>1.4581 |
| Valve seat  | Red brass  |                                       |                      |                                |
| Plug<br>Standard version  | Red brass · With EPDM soft sealing, max. 150 °C or with PTFE soft sealing, max. 150 °C                                 |                                       |                      |                                |
| Pressure balancing  | Balancing diaphragm case made of sheet steel DD11 · EPDM balancing diaphragm, max. 150 °C or NBR diaphragm, max. 60 °C |                                       |                      |                                |

**Dimensions**

| Type 2114       |     |     |     |     |
|-----------------|-----|-----|-----|-----|
| Nominal size DN | 125 | 150 | 200 | 250 |
| Length L        | 400 | 480 | 600 | 730 |
| Height H1       | 575 | 600 | 670 |     |
| Height H2       | 145 | 175 | 260 |     |

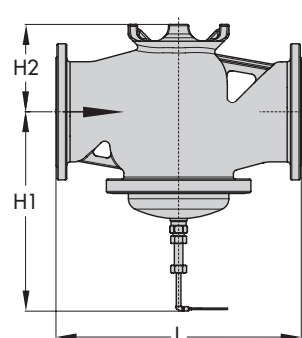
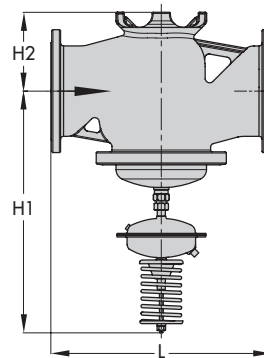


Fig. 3 · Dimensions of the Type 2114 Valve balanced by a diaphragm and with a thermostat connection

## Dimensions

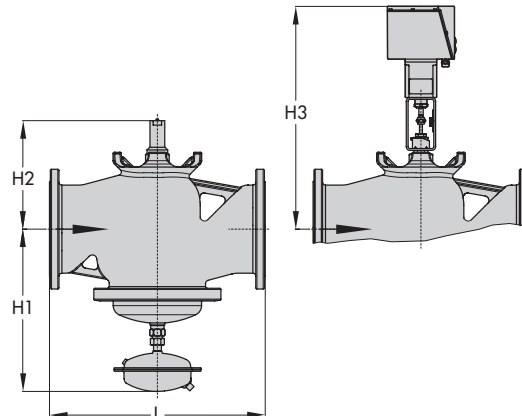
### Type 42-24 · Type 42-25

| Nominal size DN | 125 | 150 | 200 | 250 |
|-----------------|-----|-----|-----|-----|
| Length L        | 400 | 480 | 600 | 730 |
| Height H1       | 720 | 745 | 960 |     |
| Height H2       | 145 | 175 | 260 |     |



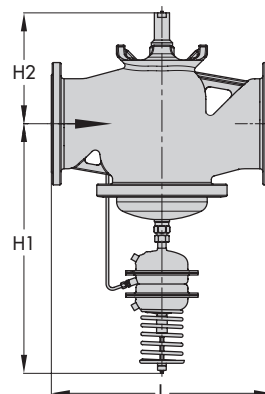
### Type 42-36 · Type 42-36 E · Type 42-37 E · Type 42-39 E

| Nominal size DN | 125 | 150 | 200 | 250 |
|-----------------|-----|-----|-----|-----|
| Length L        | 400 | 480 | 600 | 730 |
| Height H1       | 450 | 475 | 545 |     |
| Height H2       | 295 | 325 | 345 | 375 |
| Height H3       | 680 | 710 | 825 |     |



### Type 42-37 · Type 42-39

| Nominal size DN | 125 | 150 | 200  | 250 |
|-----------------|-----|-----|------|-----|
| Length L        | 400 | 480 | 600  | 730 |
| Height H1       | 910 | 935 | 1020 |     |
| Height H2       | 295 | 325 | 345  | 375 |



### Type 42-34

| Nominal size DN | 125 | 150 | 200 | 250 |
|-----------------|-----|-----|-----|-----|
| Nominal size L  | 400 | 480 | 600 | 730 |
| Height H1       | 720 | 745 | 960 |     |
| Height H2       | 295 | 325 | 345 | 375 |

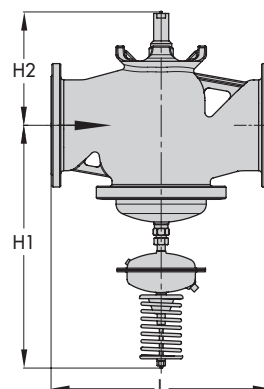


Fig. 4 · Dimensions of regulators and valves balanced by a diaphragm

