

# Self-operated Pressure Regulators

## Pressure Limiters (PL) with Type 2401 Pressure Element



### Application

Limitation of the maximum pressure in heat generators or heat exchangers by closing and locking a valve. Additional limitation of the energy supply if equipped with a type-tested control thermostat or safety thermostat.

For limit from 1 to 10 bar · Valves DN 15 to 150 · PN 16 to 40 · Max. 350 °C

### Note

Further details on the application of safety temperature limiters can be found in Information Sheet ▶ T 2040.

Typetested by TÜV

Pressure limiters (PL) with a valve and Type 2401 Pressure Element operate without auxiliary energy. A spring mechanism closes and locks the valve when the pressure reaches the adjusted limit. It can only be reset and put back into operation with a suitable tool after the fault has been remedied and the pressure has fallen below the limit by 0.5 bar.

### Versions

#### Type 2401 Pressure Element consisting of:

Housing with a spring mechanism · Pressure measuring element with limit adjustment · Capillary tube and Type 1 NI Strainer (G  $\frac{3}{8}$  connection, PN 16)

#### Optionally available with:

Electric signal transmitter to indicate the plant state or a type-tested control thermostat and/or safety thermostat.

#### Pressure limiters (PL) · See Fig. 1 to Fig. 3

**Type 2111/2401** · With Type 2111 Globe Valve for DN 15 to 50 and Type 2401 Pressure Element · Unbalanced · Flanged connection

**Type 2422/2401** · With Type 2422 Globe Valve for DN 15 to 150 and Type 2401 Pressure Element · Balanced · Flanged connection

**Type 2119/2401** · With Type 2119 Three-way Valve for DN 15 to 150 and Type 2401 Pressure Element · Balanced <sup>1)</sup> Flanged connection

**Temperature regulators, safety temperature limiters and pressure limiters (TR/STL/PL)** are available.

Details in Data Sheets ▶ T 2040 and ▶ T 2046.

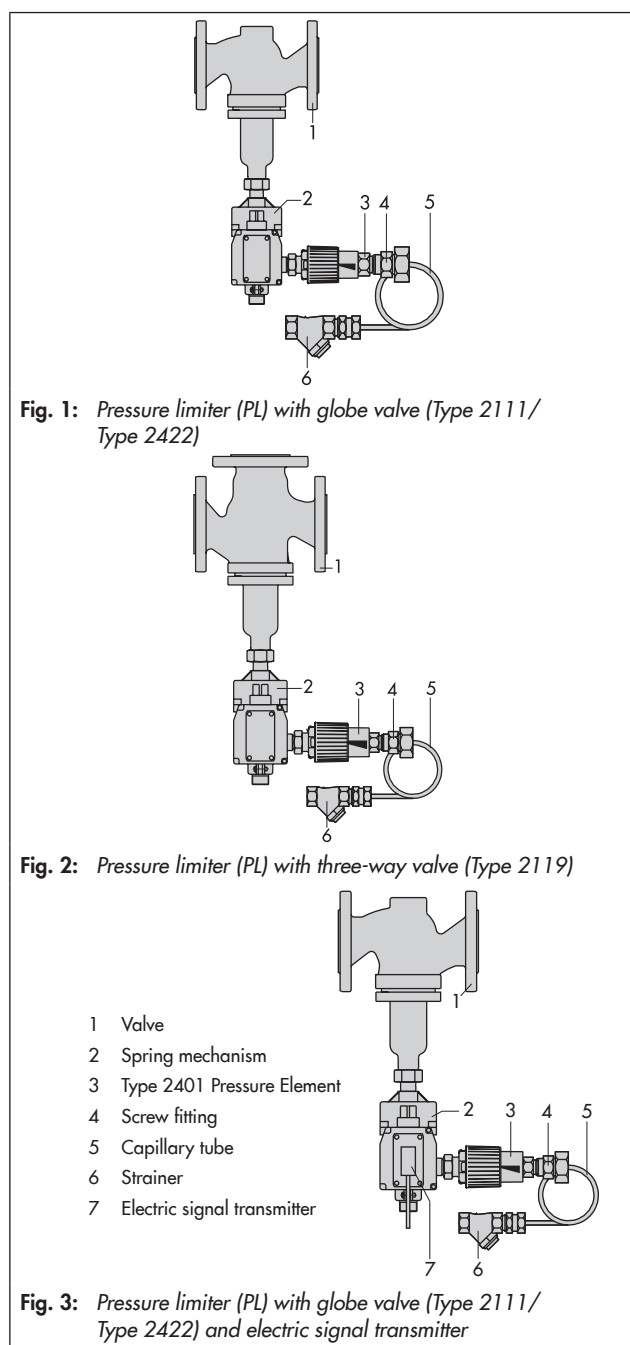
Details and technical data of the valves:

Data Sheet ▶ T 2111 · With Type 2111 Globe Valve

Data Sheet ▶ T 2121 · With Type 2422 Globe Valve

Data Sheet ▶ T 2133 · With Type 2119 Three-way Valve

<sup>1)</sup> DN 15 to 25 unbalanced



### Principle of operation (see Fig. 4)

The medium passes through the strainer (13) and the capillary tube (12) to an operating bellows. It is converted into a positioning force which is compared to the force of the set point spring. The spring force depends on the limit adjustment (10).

When the pressure exceeds the adjusted limit value, the spring mechanism in the connecting element (8) is released. It moves the pin (6) and the plug stem (5) attached to it, closing and locking the valve. Additionally, the pressure limiter closes the valve when the pressure falls below 0.8 bar (gauge pressure).

The limiters can only be unlocked and put back into operation with a special tool (**lever with order no. 1490-7399**) after the temperature has fallen below the limit by 0.5 bar and the fault has been remedied.

### Special version

#### • Version with safety pressure element

The safety pressure element has increased safety according to DIN EN 14597.

The valve is locked when the pressure exceeds the adjusted limit and when the pressure fails.

The valve can only be unlocked when the pressure is higher than 1 bar and approx. 0.5 bar below the adjusted limit value.

#### • Additional electrical equipment

An additional electric signal transmitter for remote transmission of the plant state can be attached to the operating element (8) on request.

#### • Special $K_{VS}$ coefficient

Special  $K_{VS}$  coefficient (reduced) with Type 2111/2401 and Type 2422/2401

### Register number

The test marks for the type test of the Type 2111, Type 2422 and Type 2119 Valves with Type 2401 Pressure Element are available on request.

### Accessories

**Extension piece** to protect the connecting element against excessively high temperatures <sup>1)</sup>

- Brass
- CrNi steel
- CrNi steel (with seal for water or oil)

### Separating piece

- Brass (for water or steam)
- CrNi steel (for water or oil)

**Do1 double adapter** for connection of a second thermostat

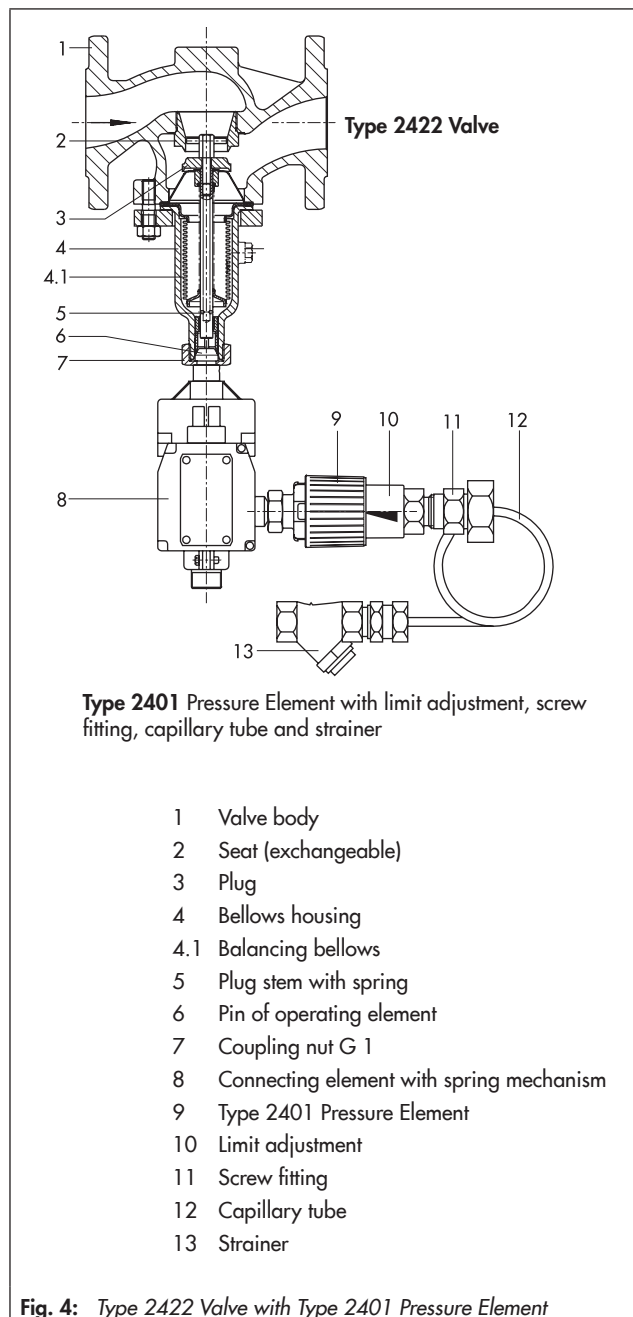


Fig. 4: Type 2422 Valve with Type 2401 Pressure Element

### Installation

- Install in horizontal pipelines.
- The connecting element must hang downward.
- The direction of flow must match the direction indicated by the arrow on the body
- The pressure measuring connection can be mounted in any desired position.
- The capillary tube must be run in such a way that it cannot be damaged.

Make sure the permissible ambient temperature does not exceed 80 °C.

**Table 1: Technical data · All pressure stated as gauge pressure in bar**

Valves	Types 2111, 2422, 2119										
Valve size	DN 15	DN 20	DN 25	DN 32	DN 40	DN 50	DN 65	DN 80	DN 100	DN 125	DN 150
Type 2111	Data Sheet ▶ T 2111						-				
Type 2422	Data Sheet ▶ T 2121										
Type 2119	Data Sheet ▶ T 2133										
Nominal pressure	PN 16 to 40										
Type 2401 Pressure Element	Size 50 <sup>1)</sup>						Size 150 <sup>1)</sup>				
Adjustment range of limit value	1 to 10 bar										
Permissible operating pressure	10 bar										
Permissible ambient temperature	Max. +80 °C										
Permissible operating temperature	200 °C										
Compliance	CE · EAC										
Capillary tube length	Approx. 2 m										
Strainer	G 3/8, PN 16										
Switching cycles according to DIN 3440	500										
Electric signal transmitter Max. load at 230 V (AC)	10 A with resistive load										

<sup>1)</sup> Size 50: Type 2401 for valve DN 15 to 50 | Size 150: Type 2401 for valve DN 65 to 150

**Table 2: Materials · Material numbers according to DIN EN**

Type 2401 Pressure Element	
Connecting element	GD AlSi 12 (230)
Connecting piece	Brass
Operating bellows	CuSn6F35
Screw fitting	Brass
Capillary tube	Copper
Strainer	Brass

**Table 3: Dimensions in mm and weights**

Valve size	DN 15	DN 20	DN 25	DN 32	DN 40	DN 50	DN 65	DN 80	DN 100	DN 125	DN 150
<b>Valve</b>	<b>Type 2422</b>			<b>Type 2111/(2422)</b>			<b>Type 2422</b>				
Length L	130	150	160	180	200	230	290	310	350	400	480
H1 <sup>Without</sup> extension	225			225 <sup>2)</sup> /52 <sup>3)</sup> /(225)			300	355	460	590	
H1 <sup>With</sup> extension	365			365 <sup>2)</sup> /- <sup>3)</sup> /(365)			440	495	600	730	
Weight (PN 16 body) <sup>1)</sup> , approx. kg	5	5.5	6.5	13	13.5	16	27	32	40	70	113
<b>Valve</b>	<b>Type 2119</b>										
Length L	130	150	160	180	200	230	290	310	350	400	480
H2	70	80	85	100	105	120	130	140	150	200	210
H1 <sup>Without</sup> extension	235			88/245			320	355	395	500	
H1 <sup>With</sup> extension	375			-/385			460	495	535	640	
Weight (PN 16 body) <sup>1)</sup> , approx. kg	6	7	8.5	12.5/15	14.5/17	17/19	32	50	71	On request	
Overall height H	H = H1 + 255 mm										
<b>Type 2401 Pressure Element</b>											
Weight, approx.	3.5 kg										

<sup>1)</sup> +15 % for PN 25/40

<sup>2)</sup> Type 2111, valve material 1.0619 and stainless steel

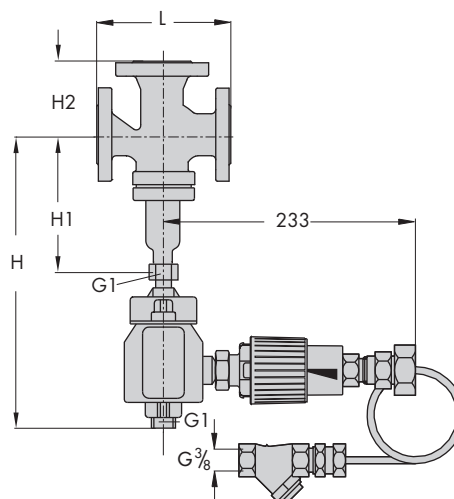
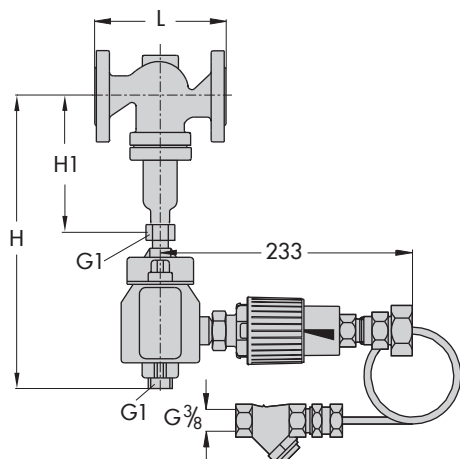
<sup>3)</sup> Type 2111, valve material EN-GJS-400-18-LT and EN-GJL-250

## Dimensions

Type 2422/2401

Type 2111/2401 · 1.0619, stainless steel

Type 2119/2401



Type 2111/2401 · EN-GJL-250, EN-GJS-400-18-LT

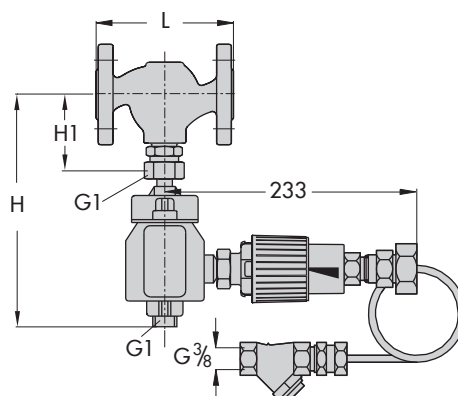


Fig. 5: Dimensions

## Ordering text

Type 2111/2401 or Type 2422/2401 Pressure Limiter as well as Type 2119/2401 Pressure Limiter for mixing/diverting service

With Type ... Valve, body material ..., DN ... , PN ... ,

Optionally, limit value set to/lead-sealed at ... bar,

Optionally, accessories ...

Optionally, special version

Specifications subject to change without notice



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