

# Type 447

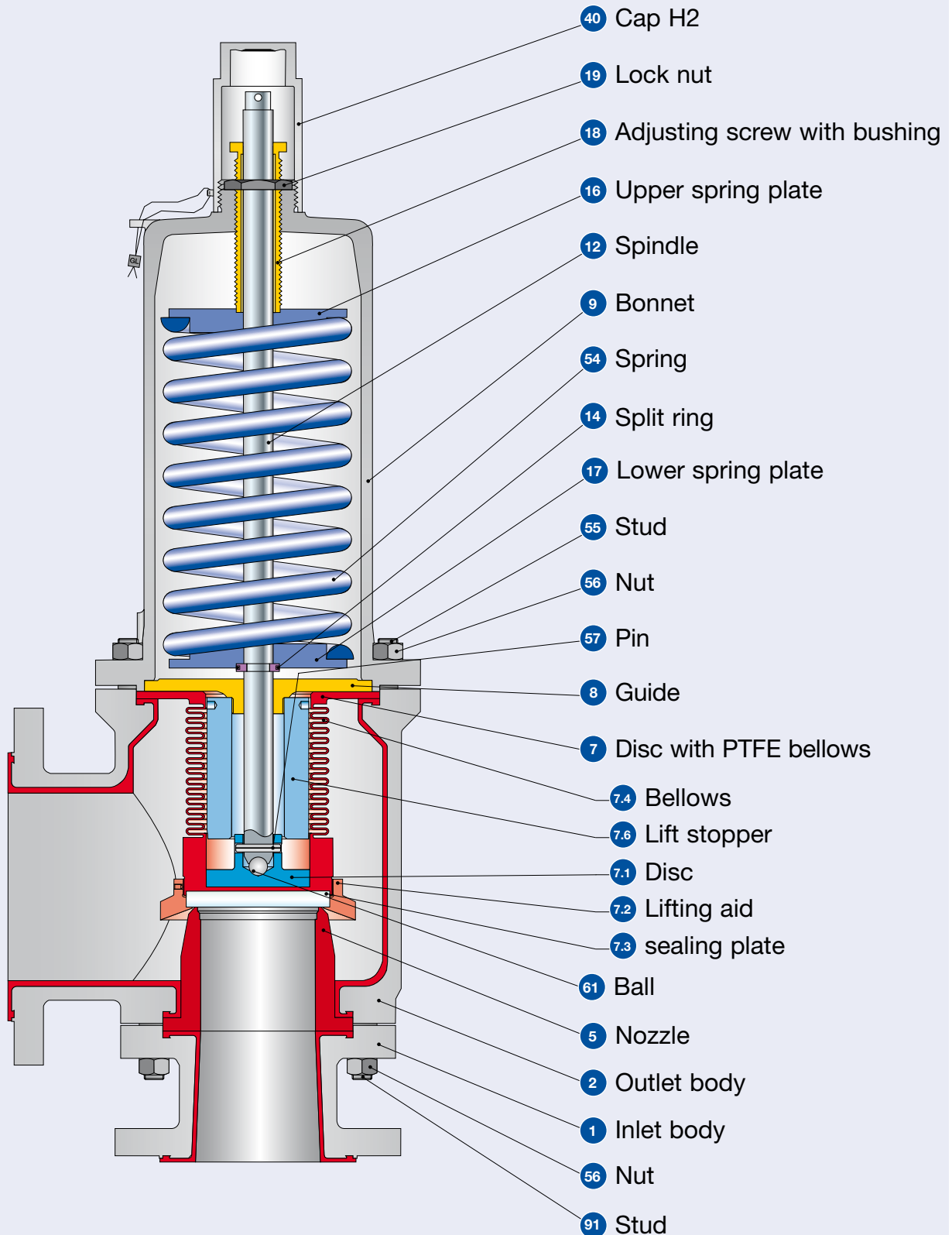


Type 447  
PTFE-lined  
Packed lever H4  
Closed bonnet  
Bellows design

## Flanged Safety Relief Valves – spring loaded

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## Conventional design



Type 447

## Conventional design

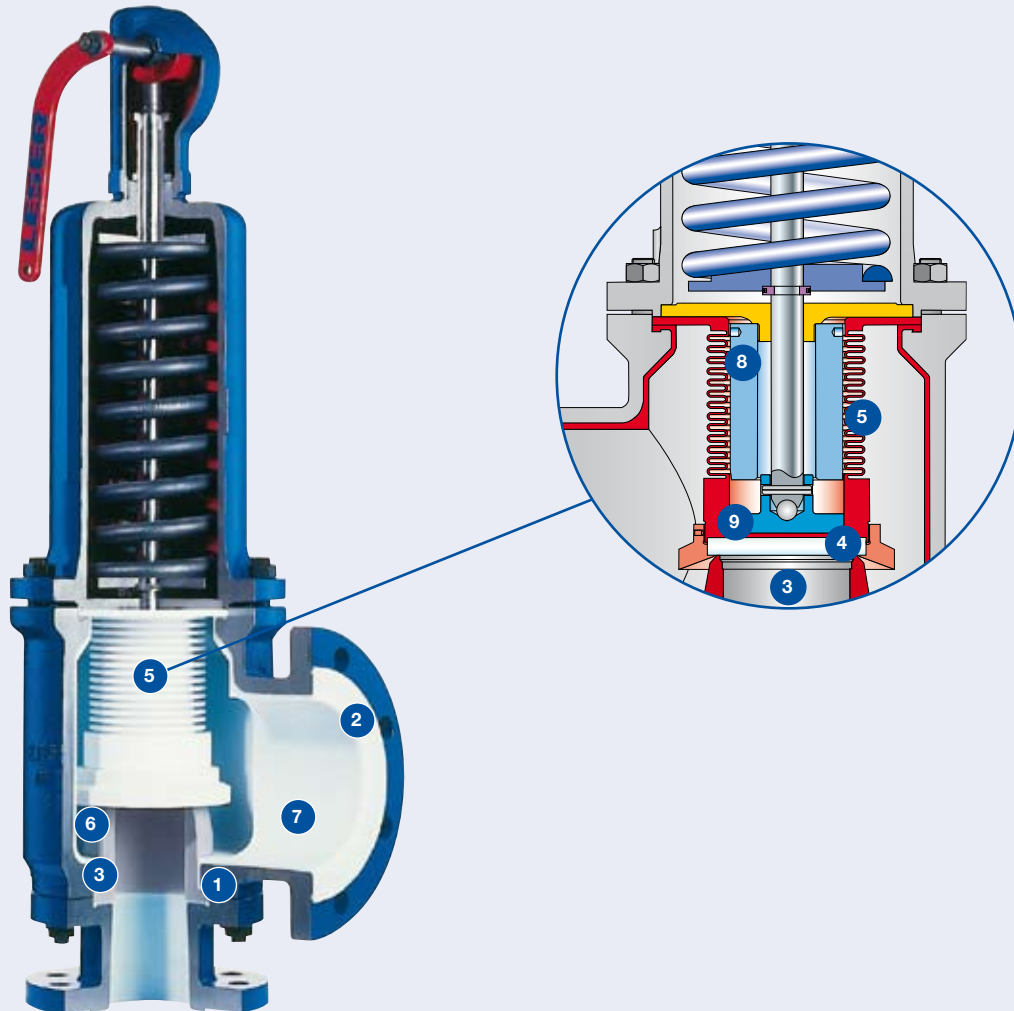
Materials		
Item.	Components	Type 447
<b>1</b>	<b>Inlet body</b>	1.0460 + Virgin PTFE Steel / PTFE-TF
<b>2</b>	<b>Outlet body</b>	1.0619 + Virgin PTFE SA 216 WCB / PTFE-TF
<b>5</b>	Nozzle	Virgin PTFE with 25 % glass PTFE-TF with 25 % glass
<b>7</b>	Disc with PTFE bellows	Virgin PTFE / BOROFLOAT glass PTFE-TF / BOROFLOAT glass
<b>7.1</b>	Disc	1.4404 316L
<b>7.2</b>	Lifting aid	Virgin PTFE with 25 % glass PTFE-TF with 25 % glass
<b>7.3</b>	sealing plate	BOROFLOAT glass
<b>7.4</b>	Bellows	Virgin PTFE PTFE-TF
<b>7.6</b>	Lift stopper	1.4404 Stainless steel
<b>8</b>	Guide	1.4404 Stainless steel
<b>9</b>	<b>Bonnet</b>	0.7043 Ductile Gr. 60-40-18
<b>12</b>	Spindle	1.4404 Stainless steel
<b>14</b>	Split ring	1.4104 Chrome steel
<b>16/17</b>	Spring plate	1.0718 Steel
<b>18</b>	Adjusting screw with bushing	1.4104 PTFE Chrome steel PTFE
<b>19</b>	Lock nut	1.0718 Steel
<b>40</b>	<b>Cap H2</b>	1.0718 12L13
<b>54</b>	Spring, standard	1.1200, 1.8159 Steel
	Spring, optional	1.4310 Stainless steel
<b>55</b>	Stud	1.1181 Steel
<b>56</b>	Nut	1.0501 2H
<b>57</b>	Pin	1.4310 Stainless steel
<b>61</b>	Ball	1.3541 Hardened stainless steel
<b>91</b>	Stud	1.1181 Steel

**Please observe:**

- LESER reserves the right to make changes.
- LESER may use higher quality materials without giving prior notice.
- Each component can be replaced by another material according to the customer's specification.
- All components exposed to pressure are highlighted in bold.

## Configuration Features

### Design features



### Design features

Item.	Component	Information
1	Inlet body + outlet body	Inlet body of material 1.0460 (SA 105) and outlet body of material 1.0619 (WCB) with PTFE lining for highest corrosion resistance
2	PTFE lining	Vacuum-proof, isostatic full lining of the body components of virgin PTFE with a minimum thickness of $\geq 3$ mm. All lined surfaces are mechanically processed and have a smooth surface ( $R_a = 1.6 \mu\text{m}$ ). This prevents build-ups of the medium.
3	Nozzle	Nozzle of high-quality, inert gas sintered PTFE with 25% glass for high strength.
4	Sealing plate	Sealing plate of BOROFLOAT glass for maximum chemical resistance.
5	PTFE bellows	PTFE bellows protect the bonnet space against corrosive and aggressive media.
6	Inlet body, nozzle and sealing plate	To fulfil individual material requests, the following components are exchangeable: inlet body (Item 1), nozzle (Item 5), and sealing plate (Item 7.3).
7	Outlet body	Self-emptying outlet body prevents collection of the medium in the blow-off chamber.
8	Bellows support	Interior bellows support reduces flow loads resulting in a longer service life.
9	Disc insert	Completely metallic support of the sealing plate with disc insert of 1.4404 (316L).

## Configuration Features

### Lining procedure-Isostatical manufacturing process

Linings made of isostatic PTFE have proven themselves successfully everywhere where extremely aggressive media is processed. The PTFE lining for cast or metal bodies is produced following the isostatic compression moulding process. PTFE-lined bodies are manufactured in three main production steps:

- Preparation of the surfaces on metal bodies to be lined
- Lining with a sintering process
- Final machining

Main production steps		Information
Preparation for lining		
		Machining of the body surfaces that will be lined / coated. Roughening the surfaces by subsequent sand blasting.
Lining with a sintering process		
		Press moulds are placed over the surfaces to be lined and filled with powdery PTFE.
		The body is put under pressure of > 500 bar acts on all directions in a pressure vessel. This strongly compacts the PTFE powder and presses it onto the roughened surface of the metal. This results in a form-locked and friction-locked connection between the PTFE and metal. Afterwards, the casing is sintered, through which the lining obtains the strength and low permeability.
Final machining		
		Machining of the functional surfaces (flange, support areas, etc.)
		The minimum PTFE wall thickness is $\geq 3$ mm ( $\geq 1/8$ inch).

## How to order – Article numbers

Type 447					
	DN <sub>i</sub>	25	50	80	100
	DN <sub>o</sub>	50	80	100	150
	Valve size	1" x 2"	2" x 3"	3" x 4"	4" x 6"
	Actual orifice diameter d <sub>o</sub> [mm]	23	46	60	92
	Actual orifice area A <sub>o</sub> [mm <sup>2</sup> ]	415	1662	2827	6648
Body material 1.0619 + PTFE-TF (WCB + PTFE-TF)					
PTFE fully lined					
<b>Closed bonnet</b>	<b>H2</b>	Art. no. <b>4472.</b>	<b>3872</b>	<b>3882</b>	<b>3892</b>
	<b>H4</b>	Art. no. <b>4472.</b>	<b>3874</b>	<b>3884</b>	<b>3904</b>

### Note on export inspection

Type 447 is subject to an export restriction according to EU regulation No. 1334/2000 as well as regulation No. 1167/2008 Position 2B350g.

In the event of an export project, LESER requests the respective information on the final destination / use in the inquiry / order.

### Exception

For direct export by LESER, exception EU 001 can be used for the following countries:  
Australia, Japan, Canada, New Zealand, Norway, Switzerland and USA.



**Type 447**  
Cap H2  
Closed bonnet  
Conventional design

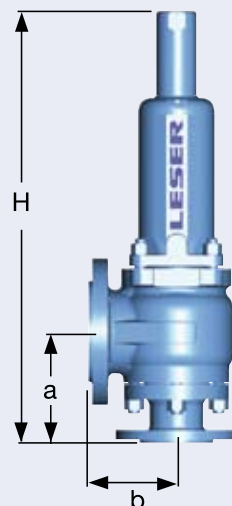


**Type 447**  
Packed lever H4  
Closed bonnet  
Conventional design

## Dimensions and weights

Metric units					
	DN <sub>i</sub>	25	50	80	100
	DN <sub>o</sub>	50	80	100	150
	Valve size	1" x 2"	2" x 3"	3" x 4"	4" x 6"
	Actual orifice diameter d <sub>0</sub> [mm]	23	46	60	92
	Actual orifice area A <sub>0</sub> [mm <sup>2</sup> ]	416	1662	2827	6648
<b>Weight [kg]</b>		15	29	50	105
<b>Centre to face [mm]</b>	Inlet a	105	152	155	220
	Outlet b	100	120	155	200
<b>Height (H4) [mm]</b>		465	605	786	943
<b>Body material 1.0619 + virgin PTFE (WCB + PTFE-TF)</b>					
<b>DIN Flange<sup>1)</sup></b>	Inlet			PN 16	
	Outlet			PN 16	
US units					
	DN <sub>i</sub>	25	50	80	100
	DN <sub>o</sub>	50	80	100	150
	Valve size	1" x 2"	2" x 3"	3" x 4"	4" x 6"
	Actual orifice diameter d <sub>0</sub> [inch]	0,91	1,81	2,36	3,62
	Actual orifice area A <sub>0</sub> [inch <sup>2</sup> ]	0,645	2,576	4,382	10,304
<b>Weight [lbs]</b>		33	64	110	231
<b>Centre to face [inch]</b>	Inlet a	4 <sup>1</sup> / <sub>4</sub>	6	6 <sup>1</sup> / <sub>8</sub>	8 <sup>3</sup> / <sub>4</sub>
	Outlet b	3 <sup>7</sup> / <sub>8</sub>	4 <sup>3</sup> / <sub>4</sub>	6 <sup>1</sup> / <sub>8</sub>	7 <sup>7</sup> / <sub>8</sub>
<b>Height (H4) [mm]</b>		18 <sup>1</sup> / <sub>4</sub>	23 <sup>3</sup> / <sub>4</sub>	30 <sup>15</sup> / <sub>16</sub>	37 <sup>1</sup> / <sub>8</sub>
<b>Body material 1.0619 + virgin PTFE (WCB + PTFE-TF)</b>					
<b>DIN Flange<sup>1)</sup></b>	Inlet			PN 16	
	Outlet			PN 16	
<b>ASME Flange<sup>1)</sup></b>	Inlet			Class 150	
	Outlet			Class 150	

<sup>1)</sup> Standard flange class. For other flange drillings, see page 02/13.

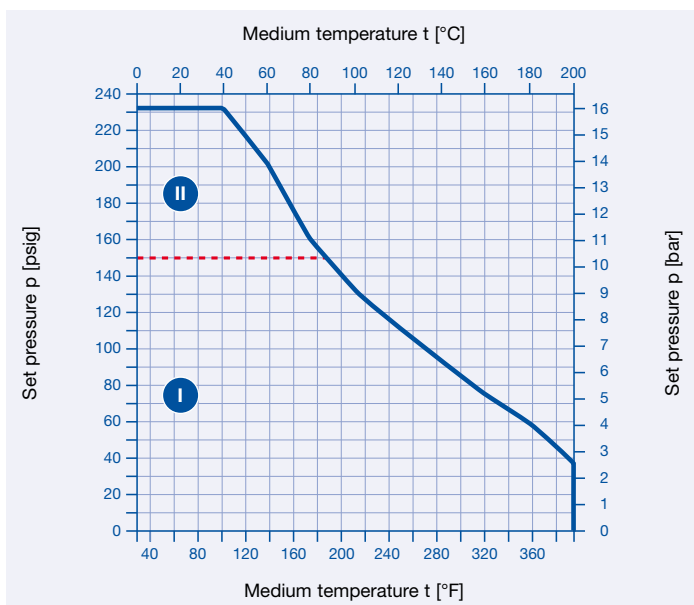


Conventional design

## Pressure temperature ratings

Metric units				
DN <sub>i</sub>	25	50	80	100
DN <sub>o</sub>	50	80	100	150
Valve size	1" x 2"	2" x 3"	3" x 4"	4" x 6"
Actual orifice diameter d <sub>0</sub> [mm]	23	46	60	92
Actual orifice area A <sub>0</sub> [mm <sup>2</sup> ]	416	1662	2827	6648
Body material 1.0619 + virginal PTFE (WCB + PTFE-TF)				
DIN Flange	Inlet	PN 16		
	Outlet	PN 16		
Min. set pressure	p [bar <sub>g</sub> ] S/G/L	0,1		
Max. set pressure	p [bar <sub>g</sub> ] S/G/L	16		
Temperature acc to. DIN EN <sup>1)</sup>	min. [°C]	-85		
	max. [°C]	+200		

US units				
DN <sub>i</sub>	25	50	80	100
DN <sub>o</sub>	50	80	100	150
Valve size	1" x 2"	2" x 3"	3" x 4"	4" x 6"
Actual orifice diameter d <sub>0</sub> [mm]	0,91	1,81	2,36	3,62
Actual orifice area A <sub>0</sub> [mm <sup>2</sup> ]	0,645	2,576	4,382	10,304
Body material 1.0619 + virginal PTFE (WCB + PTFE-TF)				
ASME Flange	Inlet	Class 150		
	Outlet	Class 150		
Min. set pressure	p [psig <sub>g</sub> ] S/G/L	1,45		
Max. set pressure	p [psig <sub>g</sub> ] S/G/L	232		
Temperature acc to. DIN EN <sup>1)</sup>	min. [°F]	121		
	max. [°F]	+392		



Pressure / temperature ranges

<sup>1)</sup> The pressure/temperature functional ranges of Type 447 are dependent on the PTFE components in the safety valve.

The chart shows the application ranges for:

- I** Standard safety valve with PTFE/glass nozzle and sealing plate made of BOROFLOAT glass
- II** Safety valve with metallic nozzle and sealing plate of Hastelloy<sup>®</sup>, nickel, etc.



## Available options

For further information, refer to "Accessories and options", page 99/01.

Type 447

