

# Type 459

Safety Relief Valves  
– spring loaded

US Units

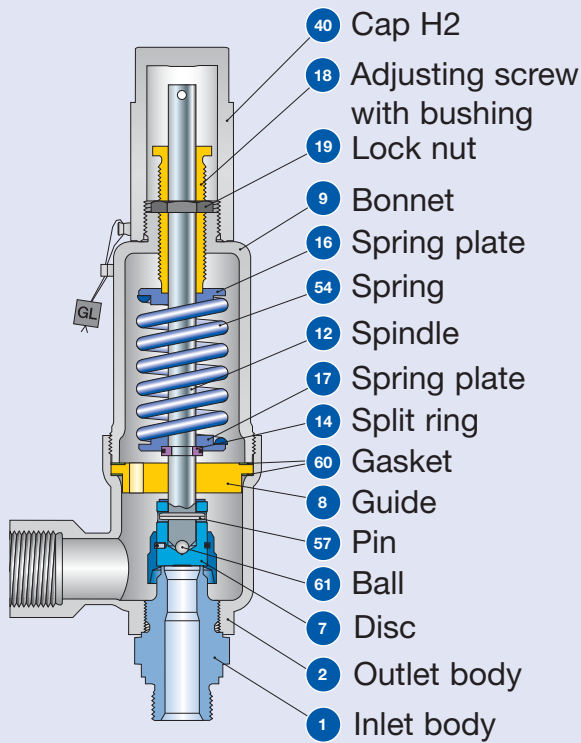


## Facts

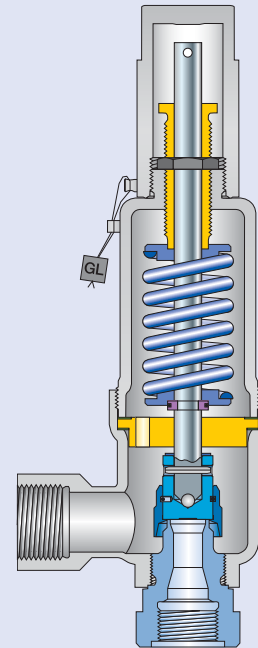
**LESER**

[The-Safety-Valve.com](http://The-Safety-Valve.com)

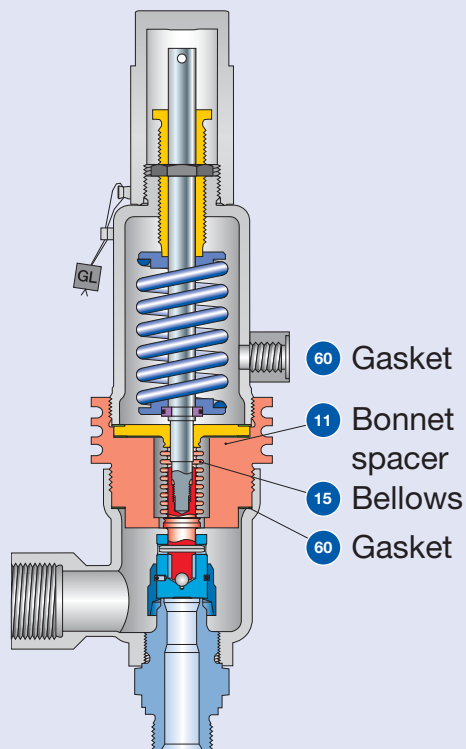
## Available designs



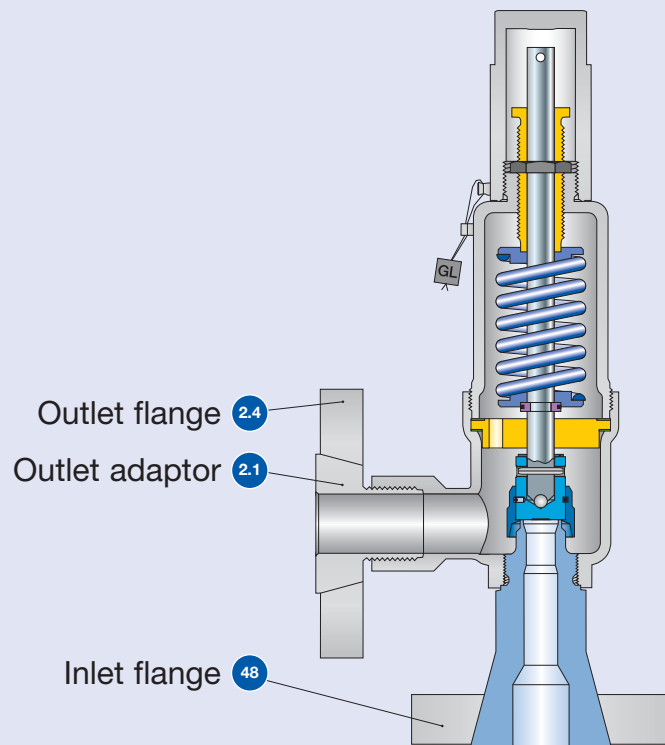
**Conventional design**  
Threaded connection



**Conventional design**  
Threaded connection



**Balanced bellows**  
Threaded connection



**Conventional design**  
Flange connection

## Available designs – materials

Materials					
Item	Component	Remarks	Type 4593	Type 4592	Type 4594
1	Base / Inlet body	Threaded connection	1.4104 SA 479 430	1.4404 SA 479 316L	1.4404 SA 479 316L
		Flange connection	1.4404 SA 479 316L	1.4404 SA 479 316L	1.4404 SA 479 316L
2	Outlet body		0.7043 Ductile Gr. 60-40-18	1.0619 WCB	1.4408 <sup>1)</sup> CF8M <sup>1)</sup>
2.1	Outlet adaptor	Flange connection	1.4404 316L	1.4404 316L	1.4404 316L
2.4	Outlet flange	Flange connection	1.4404 316L	1.4404 316L	1.4404 316L
7	Disc	Metal seat	1.4122 Hardened stainless steel	1.4122 Hardened stainless steel	1.4404 316L
8	Guide		1.4104 tenifer Chrome steel tenifer	1.4104 tenifer Chrome steel tenifer	1.4404 316L
		Balanced bellows design	1.4404 / SA 316L Upper conn. part of balanced bellows	1.4404 / SA 316L Upper conn. part of balanced bellows	1.4404 / SA 316L Upper conn. part of balanced bellows
9	Bonnet		0.7043 Ductile Gr. 60-40-18	1.0460 105	1.4404 316L
		Balanced bellows design	1.4404 316L	1.4404 316L	1.4404 316L
11	Bonnet spacer	Balanced bellows design	1.0460 Steel	1.0460 Steel	1.4404 316L
12	Spindle		1.4021 420	1.4021 420	1.4404 316L
		Balanced bellows design	1.4404 316L	1.4404 316L	1.4404 316L
14	Split ring		1.4104 Chrome steel	1.4104 Chrome steel	1.4404 316L
15	Bellows	Balanced bellows design	1.4571 SA 316Ti	1.4571 316Ti	1.4571 316Ti
16/17	Spring plate		1.0718 Steel	1.0718 Steel	1.4404 316L
18	Adjusting screw with bushung		1.4104 / PTFE Chrome steel / PTFE	1.4104 / PTFE Chrome steel / PTFE	1.4404 / PTFE 316L / PTFE
19	Lock nut		1.4104 Chrome steel	1.4104 Chrome steel	1.4404 316L
40	Cap H2		1.0718 Steel	1.0718 Steel	1.4404 316L
48	Inlet flange	Flange connection	1.4404 316L	1.4404 316L	1.4404 316L
54	Spring	Standard	1.1200 / 1.8159 / 1.7107 Carbon steel	1.1200 / 1.8159 / 1.7107 Carbon steel	1.4310 Stainless steel
		Optional	1.4310 Stainless steel	1.4310 Stainless steel	- -
57	Pin		1.4310 Stainless steel	1.4310 Stainless steel	1.4310 Stainless steel
60	Gasket		Graphite / 1.4401	Graphite / 1.4401	Graphite / 1.4401
			Graphite / 316	Graphite / 316	Graphite / 316
61	Ball		1.3541 Hardened stainless steel	1.3541 Hardened stainless steel	1.4401 316

**Please notice:**

- Modifications reserved by LESER.
- If several materials are specified LESER defines the material.
- LESER can upgrade materials without notice.
- Every part can be replaced by other material acc. to customer specification.

<sup>1)</sup>Type 4594 with outlet body deep-drawn: outlet body material 1.4404 / 316L

## How to order – Article numbers

Article numbers						
	Actual Orifice diameter $d_0$ [mm]			9	13	17.5
	Actual Orifice area $A_0$ [mm <sup>2</sup> ]			63.6	133	241
	Actual Orifice diameter $d_0$ [inch]			0.354	0.512	0.689
	Actual Orifice area $A_0$ [inch <sup>2</sup> ]			0.099	0.206	0.374
Outlet body casted						
<b>Inlet body</b>	<b>1.4104</b>	<b>H2</b>	<b>Art.-No. 4593.</b>	<b>2502</b>	<b>2512</b>	<b>2522</b>
<b>Outlet body</b>	<b>0.7043</b>	<b>H3</b>	<b>Art.-No. 4593.</b>	<b>2503</b>	<b>2513</b>	<b>2523</b>
<b>Bonnet</b>	<b>0.7043</b>	<b>H4</b>	<b>Art.-No. 4593.</b>	<b>2504</b>	<b>2514</b>	<b>2524</b>
	$p$ [bar <sub>g</sub> ]		S/G/L	1.5 – 250	0.2 – 200	0.2 – 100
	$p$ [psig]			21.7 – 3626	2.9 – 2901	2.9 – 1450
Outlet body investment casted						
<b>Inlet body</b>	<b>1.4404</b>	<b>H2</b>	<b>Art.-No. 4592.</b>	<b>2472</b>	<b>2482</b>	<b>2492</b>
<b>Outlet body</b>	<b>1.0619</b>	<b>H3</b>	<b>Art.-No. 4592.</b>	<b>2473</b>	<b>2483</b>	<b>2493</b>
	<b>(WCB)</b>					
<b>Bonnet</b>	<b>1.0460</b>	<b>H4</b>	<b>Art.-No. 4592.</b>	<b>2474</b>	<b>2484</b>	<b>2494</b>
	$p$ [bar <sub>g</sub> ]		S/G/L	1.5 – 250	0.2 – 200	0.2 – 100
	$p$ [psig]			21.7 – 3626	2.9 – 2901	2.9 – 1450
Outlet body investment casted						
<b>Inlet body</b>	<b>1.4404</b>	<b>H2</b>	<b>Art.-No. 4594.</b>	<b>2162</b>	<b>2172</b>	<b>2182</b>
<b>Outlet body</b>	<b>1.4408</b>					
	<b>(CF8M)</b>					
<b>Bonnet</b>	<b>1.4404</b>	<b>H4</b>	<b>Art.-No. 4594.</b>	<b>2164</b>	<b>2174</b>	<b>2184</b>
	$p$ [bar <sub>g</sub> ]		S/G/L	1.5 – 250	0.2 – 200	0.2 – 100
	$p$ [psig]			21.7 – 3626	2.9 – 2901	2.9 – 1450
Outlet body deep-drawn						
<b>All body and trim parts</b>	<b>1.4404</b>	<b>H2</b>	<b>Art.-No. 4594.</b>	<b>2552</b>	<b>2562</b>	<b>2572</b>
		<b>H4</b>	<b>Art.-No. 4594.</b>	<b>2554</b>	<b>2564</b>	<b>2574</b>
	$p$ [bar <sub>g</sub> ]		S/G/L	1.5 – 250	0.2 – 200	0.2 – 100
	$p$ [psig]			21.7 – 3626	2.9 – 2901	2.9 – 1450

For selection of inlet and outlet connection please refer to page 09/06 – 09/07.

## Dimensions and weights – US Units

### Threaded connections

Size Outlet body	1/2" x 1"	3/4" x 1"	1" x 1"	1/2" x 1"	3/4" x 1"	1" x 1"	3/4" x 1 1/2"	1" x 1 1/2"	1 1/4" x 1 1/2"	1 1/2" x 1 1/2"
Actual Orifice diameter d <sub>0</sub> [inch]	0.354	0.354	0.354	0.512	0.512	0.512	0.689	0.689	0.689	0.689
Actual Orifice area A <sub>0</sub> [inch <sup>2</sup> ]	0.099	0.099	0.099	0.206	0.206	0.206	0.374	0.374	0.374	0.374

Weight [lbs]	5.7	5.7	5.7	5.7	5.7	5.7	6.6	6.6	6.6	6.6
Balanced bellows [lbs]	7.5	7.5	7.5	7.5	7.5	7.5	8.4	8.4	8.4	8.4
Required installation diameter [inch]	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2

### Inlet thread "Female"

Size outlet body	1/2" x 1"	3/4" x 1"	1" x 1"	1/2" x 1"	3/4" x 1"	1" x 1"	3/4" x 1 1/2"	1" x 1 1/2"	1 1/4" x 1 1/2"	1 1/2" x 1 1/2"
Actual Orifice diameter d <sub>0</sub> [inch]	0.354	0.354	0.354	0.512	0.512	0.512	0.689	0.689	0.689	0.689

#### Center to face / Height

DIN ISO 228-1 ASME B1.20.1	G NPT	Inlet a	Center to face / Height									
			2 <sup>3</sup> / <sub>32</sub>	2 <sup>7</sup> / <sub>32</sub>	2 <sup>7</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>32</sub>	2 <sup>7</sup> / <sub>32</sub>	2 <sup>7</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>8</sub>	2 <sup>19</sup> / <sub>32</sub>	2 <sup>5</sup> / <sub>8</sub>	2 <sup>7</sup> / <sub>8</sub>
Center to face [inch]	Outlet b	2 <sup>15</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>16</sub>
		H max.	11 <sup>5</sup> / <sub>32</sub>	11 <sup>1</sup> / <sub>14</sub>	11 <sup>1</sup> / <sub>2</sub>	11 <sup>5</sup> / <sub>32</sub>	11 <sup>1</sup> / <sub>14</sub>	11 <sup>1</sup> / <sub>2</sub>	11 <sup>5</sup> / <sub>16</sub>	11 <sup>17</sup> / <sub>32</sub>	11 <sup>9</sup> / <sub>16</sub>	11 <sup>13</sup> / <sub>16</sub>
Height [inch]	Balanced bellows H max.	12 <sup>13</sup> / <sub>32</sub>	12 <sup>17</sup> / <sub>32</sub>	12 <sup>3</sup> / <sub>4</sub>	12 <sup>13</sup> / <sub>32</sub>	12 <sup>17</sup> / <sub>32</sub>	12 <sup>3</sup> / <sub>4</sub>	12 <sup>9</sup> / <sub>16</sub>	12 <sup>25</sup> / <sub>32</sub>	12 <sup>27</sup> / <sub>32</sub>	13 <sup>1</sup> / <sub>16</sub>	
		ISO 7-1/BS 21 Rc	Inlet a	2 <sup>3</sup> / <sub>32</sub>	2 <sup>7</sup> / <sub>32</sub>	2 <sup>17</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>32</sub>	2 <sup>7</sup> / <sub>32</sub>	2 <sup>17</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>8</sub>	2 <sup>1</sup> / <sub>16</sub>	–
Center to face [inch]	Outlet b	2 <sup>15</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>16</sub>	–	2 <sup>15</sup> / <sub>16</sub>	
		H max.	11 <sup>5</sup> / <sub>32</sub>	11 <sup>1</sup> / <sub>14</sub>	11 <sup>9</sup> / <sub>16</sub>	11 <sup>5</sup> / <sub>32</sub>	11 <sup>1</sup> / <sub>14</sub>	11 <sup>9</sup> / <sub>16</sub>	11 <sup>5</sup> / <sub>16</sub>	11 <sup>5</sup> / <sub>8</sub>	–	11 <sup>31</sup> / <sub>32</sub>
Height [inch]	Balanced bellows H max.	12 <sup>13</sup> / <sub>32</sub>	12 <sup>17</sup> / <sub>32</sub>	12 <sup>27</sup> / <sub>32</sub>	12 <sup>13</sup> / <sub>32</sub>	12 <sup>17</sup> / <sub>32</sub>	12 <sup>27</sup> / <sub>32</sub>	12 <sup>9</sup> / <sub>16</sub>	12 <sup>7</sup> / <sub>8</sub>	–	13 <sup>7</sup> / <sub>32</sub>	

### Inlet thread "Male"

Size outlet body	1"	1"	1 1/2"
Actual Orifice diameter d <sub>0</sub> [inch]	0.354	0.512	0.689

#### Center to face [inch]

DIN ISO 228-1 ISO 7-1/BS 21 ASME B1.20.1	G R NPT	Inlet 1/2" – 1" a Inlet 1" – 2" a <sup>1)</sup> Outlet b	Conventional design				Balanced bellows							
			1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
Center to face [inch]	Outlet b	2 <sup>1</sup> / <sub>16</sub>	–	–	–	–	–	–	–	–	–	–	–	–
		2 <sup>15</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>16</sub>
Height [inch]	Inlet 1/2" – 1" a <sup>1)</sup> Inlet 1" – 2" a <sup>1)</sup> Outlet b	1 <sup>15</sup> / <sub>16</sub>	–	–	–	–	–	–	–	–	–	–	–	
		2 <sup>3</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>32</sub>	

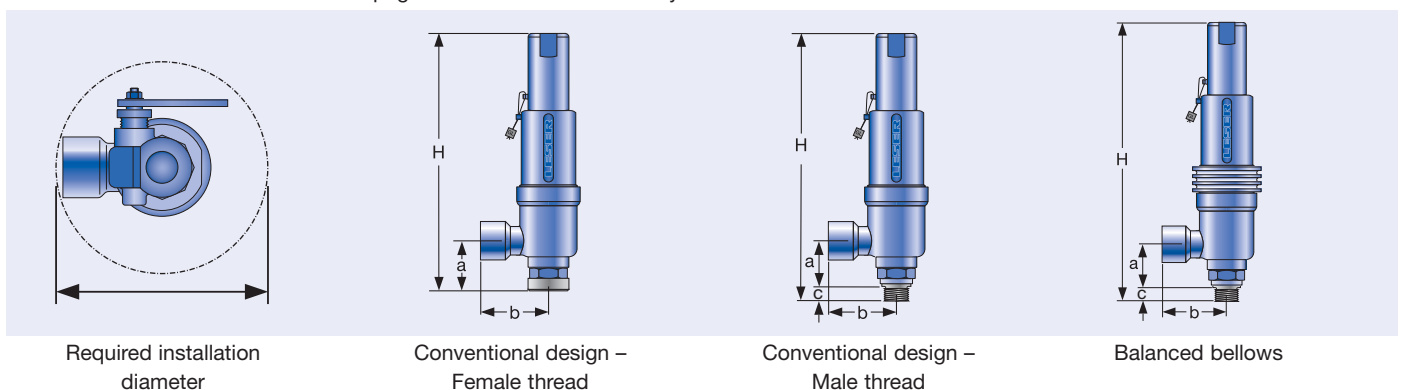
#### Height [inch]

DIN ISO 228-1 ISO 7-1/BS 21 ASME B1.20.1	G R NPT	Size inlet thread	Conventional design						Balanced bellows					
			1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
Height [inch]	H max.	11 <sup>21</sup> / <sub>32</sub>	11 <sup>23</sup> / <sub>32</sub>	11 <sup>27</sup> / <sub>32</sub>	11 <sup>15</sup> / <sub>16</sub>	12	–	12 <sup>29</sup> / <sub>32</sub>	13	13 <sup>1</sup> / <sub>8</sub>	13 <sup>3</sup> / <sub>16</sub>	13 <sup>9</sup> / <sub>32</sub>	–	
		11 <sup>23</sup> / <sub>32</sub>	11 <sup>25</sup> / <sub>32</sub>	11 <sup>15</sup> / <sub>16</sub>	–	12	–	13	13 <sup>1</sup> / <sub>32</sub>	13 <sup>3</sup> / <sub>16</sub>	–	13 <sup>9</sup> / <sub>32</sub>	–	
Height [inch]	H max.	11 <sup>27</sup> / <sub>32</sub>	11 <sup>27</sup> / <sub>32</sub>	12 <sup>3</sup> / <sub>32</sub>	12 <sup>1</sup> / <sub>8</sub>	12 <sup>1</sup> / <sub>8</sub>	12 <sup>5</sup> / <sub>32</sub>	13 <sup>1</sup> / <sub>8</sub>	13 <sup>1</sup> / <sub>8</sub>	13 <sup>11</sup> / <sub>32</sub>	13 <sup>3</sup> / <sub>8</sub>	13 <sup>3</sup> / <sub>8</sub>	13 <sup>7</sup> / <sub>16</sub>	

#### Length of screwed end "c" [inch]

DIN ISO 228-1 ISO 7-1/BS 21 ASME B1.20.1	G R NPT	Size inlet thread	Conventional design				Balanced bellows						
			1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	1/2"	3/4"	1"	1 1/4"	1 1/2"
Length of screwed end "c" [inch]	c	9/16	5/8	23/32	25/32	7/8	–	–	–	–	–	–	–
		3/4	25/32	29/32	–	31/32	–	–	–	–	–	–	–
Length of screwed end "c" [inch]	c	7/8	7/8	1 1/16	1 3/32	1 3/32	1 5/32	–	–	–	–	–	–

Available threaded connections refer to page 09/06. <sup>1)</sup>Inlet thread R only to 1 1/2".



## Dimensions and weights – US Units

### Flanged connection

	Conventional design			Balanced bellows		
Actual Orifice diameter $d_0$ [inch]	0.354	0.512	0.689	0.354	0.512	0.689
Actual Orifice area $A_0$ [inch <sup>2</sup> ]	0.099	0.206	0.374	0.099	0.206	0.374

DIN EN 1092-1 (Available flange sizes refer to page 09/07)

#### Flange rating PN 40 – PN 400

Center to face	[inch]	Inlet a	$3^{15}/_{16}$	$3^{15}/_{16}$	$4^{1}/_{8}$	$3^{15}/_{16}$	$3^{15}/_{16}$	$4^{1}/_{8}$
		Outlet b	$3^{15}/_{16}$	$3^{15}/_{16}$	$3^{15}/_{16}$	$3^{15}/_{16}$	$3^{15}/_{16}$	$3^{15}/_{16}$
Height [H4]	[inch]	H max.	13	13	$13^{1}/_{8}$	$14^{3}/_{4}$	$14^{3}/_{4}$	$14^{7}/_{8}$

ASME B 16.5 (Available flange sizes refer to page 09/07)

#### Flange rating class 150 – 2500

Center to face	[inch]	Inlet a	$3^{15}/_{16}$	$3^{15}/_{16}$	$4^{1}/_{8}$	$3^{15}/_{16}$	$3^{15}/_{16}$	$4^{1}/_{8}$
		Outlet b	$3^{15}/_{16}$	$3^{15}/_{16}$	$3^{15}/_{16}$	$3^{15}/_{16}$	$3^{15}/_{16}$	$3^{15}/_{16}$
Height	[inch]	H max.	13	13	$13^{1}/_{8}$	$14^{3}/_{4}$	$14^{3}/_{4}$	$14^{7}/_{8}$

**Note** The outlet dimension b can differ at special combinations of nominal diameter and pressure range if flanged connections are used at the inlet and outlet. Special dimensions are possible. More information at sales@leser.com.

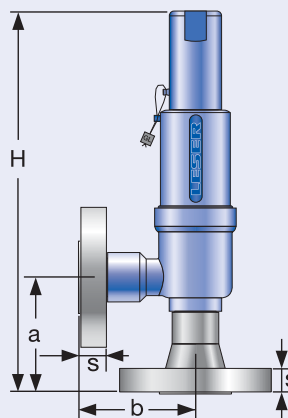
### Weight

For the calculation of the total weight please use the Formular:  $W_T = W_N + W_F$  (Inlet) +  $W_F$  (Outlet)

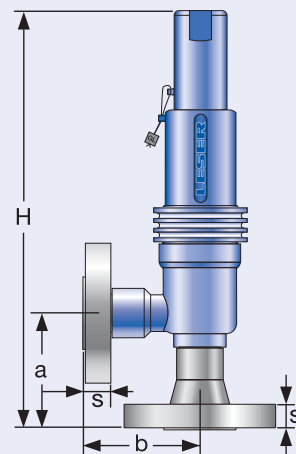
Weight net	[lbs]	$m_N$	5.7	5.7	6.6	8.4	8.4	9.3
(without inlet and outlet flange)								

### Flange dimensions

	Size	DIN EN 1092-1 / Flange rating PN						ASME B16.5 / Flange rating						
		40	100	160	250	320	400	Size	150	300	600	900	1500	2500
<b>DN 15</b>		<b>NPS 1/2"</b>												
Flange thickness [inch]	s	$23/_{32}$	–	$7/_{8}$	$1^3/_{32}$	$1^3/_{32}$	$1^3/_{16}$	$9/_{16}$	$23/_{32}$	$23/_{32}$	$1^1/_{32}$	$1^1/_{32}$	$1^3/_{16}$	
Weight slip on flange [lbs]	$m_F$	1.8	–	2.6	5.5	5.5	7.9	1.3	2.0	2.0	4.6	4.6	6.6	
<b>DN 20</b>		<b>NPS 3/4"</b>												
Flange thickness [inch]	s	$25/_{32}$	$7/_{8}$	–	–	–	–	$19/_{32}$	$23/_{32}$	$23/_{32}$	1	1	$1^1/_{4}$	
Weight slip on flange [lbs]	$m_F$	2.4	2.9	–	–	–	–	1.8	3.1	3.1	5.1	5.1	7.7	
<b>DN 25</b>		<b>NPS 1"</b>												
Flange thickness [inch]	s	$7/_{8}$	–	$1^1/_{32}$	$1^3/_{16}$	$1^{13}/_{32}$	$1^9/_{16}$	$2^1/_{32}$	$2^7/_{32}$	$2^7/_{32}$	$1^9/_{32}$	$1^9/_{32}$	$1^9/_{16}$	
Weight slip on flange [lbs]	$m_F$	2.9	–	5.7	7.7	11.0	16.5	2.2	4.6	4.6	9.0	9.0	11.2	
<b>DN 40</b>		<b>NPS 1 1/2"</b>												
Flange thickness [inch]	s	$1^3/_{16}$	–	$2^9/_{32}$	$1^1/_{4}$	–	–	$7/_{8}$	$1^5/_{16}$	$1^5/_{16}$	$1^1/_{4}$	–	–	
Weight slip on flange [lbs]	$m_F$	4.5	–	6.3	9.5	–	–	3.2	4.8	4.8	8.6	–	–	



Conventional design



Balanced bellows

## Pressure temperature ratings – US Units

US Units													
Actual Orifice diameter $d_0$ [inch]		0.354				0.512				0.689			
Actual Orifice Area $A_0$ [inch <sup>2</sup> ]		0.099				0.206				0.347			
Body material: 1.4104 (430) Type 4593													
Base / Inlet Body	Connection size	1/2"	3/4"	1"	1/2"	3/4"	1"	3/4"	1"	1 1/4"	1 1/2"	2"	
<b>Minimum set pressure</b>	p [psig] S/G/L	21.8			2.9			2.9					
<b>Min. set pressure<sup>1)</sup> standard bellows</b>	p [psig] S/G/L	580			580			580					
<b>Min. set pressure low press. bellows</b>	p [psig] S/G/L	43.5			43.5			43.5					
<b>Maximum set pressure</b>	p [psig] S/G/L	3626			2900			1450					
<b>Temperature acc. to DIN EN</b>	min. [°F]							+14					
	max. [°F]							+572					
<b>Temperature acc. to ASME</b>	min. [°F]							-20					
	max. [°F]							+572					
Body material: 1.4404 (316L) Type 4592													
Base / Inlet Body	Connection size	1/2"	3/4"	1"	1/2"	3/4"	1"	3/4"	1"	1 1/4"	1 1/2"	2"	
<b>Minimum set pressure</b>	p [psig] S/G/L	21.8			2.9			2.9					
<b>Min. set pressure<sup>1)</sup> standard bellows</b>	p [psig] S/G/L	580			580			580					
<b>Min. set pressure low press. bellows</b>	p [psig] S/G/L	43.5			43.5			43.5					
<b>Maximum set pressure</b>	p [psig] S/G/L	3626			2900			1450					
<b>Temperature acc. to DIN EN</b>	min. [°F]							-121					
	max. [°F]							+752					
<b>Temperature acc. to ASME</b>	min. [°F]							-20					
	max. [°F]							+572					
Body material: 1.4404 (316L) Type 4594													
Base / Inlet Body	Connection size	1/2"	3/4"	1"	1/2"	3/4"	1"	3/4"	1"	1 1/4"	1 1/2"	2"	
<b>Minimum set pressure</b>	p [psig] S/G/L	21.8			2.9			2.9					
<b>Min. set pressure<sup>1)</sup> standard bellows</b>	p [psig] S/G/L	580			580			580					
<b>Min. set pressure low press. bellows</b>	p [psig] S/G/L	43.5			43.5			43.5					
<b>Maximum set pressure</b>	p [psig] S/G/L	3626			2900			1450					
<b>Temperature acc. to DIN EN</b>	min. [°F]							-328					
	max. [°F]							+752					
<b>Temperature acc. to ASME</b>	min. [°F]							-300					
	max. [°F]							+800					

<sup>1)</sup> Min. set pressure standard bellows = Max. pressure low pressure bellows.  
 Because there is no open bonnet for this type available, please use at a temperature of 300 °C (572 °F) a stainless steel bellows or a specific high temperature model without a bellows. For DIN EN applications at temperatures under -10 °C please proceed according to AD-2000 Merkblatt W 10.

## Available Options

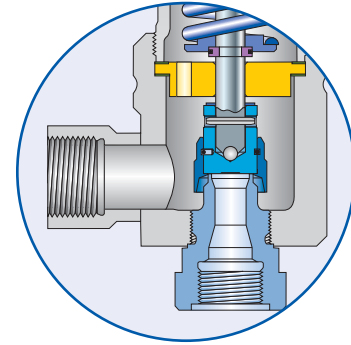
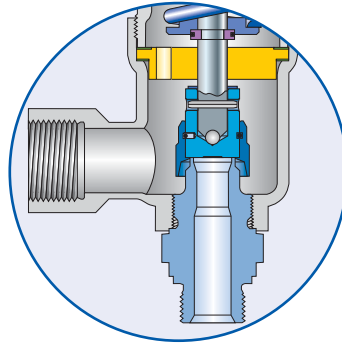
Type 459

<p><b>Male thread</b></p>	<p><b>Female thread</b></p>	<p><b>Flanged version</b></p>	
<p><b>Stellited sealing surface</b>                  J25: Disc stellited                  L20: Base/inlet body</p>	<p><b>Disc with inserted sealing plate</b>                  J44: PTFE-FDA "N"                  J48: PCTFE "D"                  J49: VESPEL-SP "K"</p>		
<p><b>Heating jacket</b>                  H29</p>	<p><b>Balanced bellows</b></p>	<p><b>INCONEL X-750 spring</b>                  X08</p>	<p><b>Special material</b>                  2.4610 Hastelloy® C4                  2.4360 Monel® 400                  1.4462 Duplex</p>
<p><b>Lift indicator</b>                  J93: Lift indicator</p>	<p><b>Test gag</b>                  J69: H4                  J70: H2</p>	<p><b>O-ring-damper H2</b>                  J65</p>	<p><b>O-ring-damper H4</b>                  J66</p>



## Available connections

For dimensions and weights refer to:  
 Type 459 – page 05/08 + 05/10  
 Type 459 HDD – page 06/08 + 06/10  
 Type 462 – page 07/08 + 07/10  
 Type 462 HDD – page 08/08 + 08/10



### Threaded connections

#### Male thread

#### Female thread

		Male thread		Female thread			
Actual Orifice diameter $d_0$ [mm]		6		9 / 13		17.5	
Actual Orifice area $A_0$ [mm <sup>2</sup> ]		28.3		63.9 / 133		241	
Actual Orifice diameter $d_0$ [inch]		0.236		0.345 / 0.512		0.689	
Actual Orifice area $A_0$ [inch <sup>2</sup> ]		0.044		0.099 / 0.206		0.374	
	<b>Valve size</b>	<b>Inlet</b>	<b>Outlet</b>	<b>Inlet</b>	<b>Outlet</b>	<b>Inlet</b>	<b>Outlet</b>
<b>Male thread DIN ISO 228-1</b>							
<b>G</b>	1/2"	V54	–	V54 <sup>1)</sup>	–	–	–
	3/4"	V55	–	V55	–	–	–
	1"	V56	V68	V56	V68	V56	–
	1 1/4"	–	V79	–	V79	V83	V79
	1 1/2"	–	V69	–	V69	V57	V69
<b>Female thread DIN ISO 228-1</b>							
<b>G</b>	1/2"	V50	–	V50	–	–	–
	3/4"	V51	–	V51	–	V51	–
	1"	–	V66	V52 <sup>2)</sup>	V66	V52	–
	1 1/4"	–	V81	–	V81	V84	V81
	1 1/2"	–	V67	–	V67	V53	V67
<b>Male thread DIN ISO 7-1/BS 21</b>							
<b>R/BSPT</b>	1/2"	V30 <sup>3)</sup>	–	V30	–	–	–
	3/4"	V31	–	V31	–	–	–
	1"	V32	V42	V32	V42	V32	–
	1 1/2"	–	V43	–	V43	V33	V43
<b>Female thread DIN ISO 7-1/BS 21</b>							
<b>Rc/BSPT</b>	1/2"	V38	–	V38	–	–	–
	3/4"	V39	–	V39	–	V39	–
	1"	V40	V36	V40	V36	V40	–
	1 1/2"	–	V37	–	V37	V41	V37
<b>Male thread ANSI/ASME B1.20.1</b>							
<b>NPT</b>	1/2"	V61	–	V61 <sup>4)</sup>	–	–	–
	3/4"	V62	–	V62	–	–	–
	1"	V63	V73	V63	V73	V63	–
	1 1/4"	–	V82	–	V82	V85	V82
	1 1/2"	–	V74	–	V74	V64	V74
	2"	–	–	–	–	V86	–
<b>Female thread ANSI/ASME B1.20.1</b>							
<b>NPT</b>	1/2"	V58	–	V58	–	–	–
	3/4"	V59	–	V59	–	V59	–
	1"	V60	V71	V60	V71	V60	–
	1 1/4"	–	V80	–	V80	V87	V80
	1 1/2"	–	V72	–	V72	V75	V72
	2"	–	–	–	–	–	V88

Flanged and threaded connections can be combined.

Threads according to other standards are available, Please specify in writing (diameter, pressure rating, standard).

<sup>1)</sup> Only for  $d_0$  9 mm

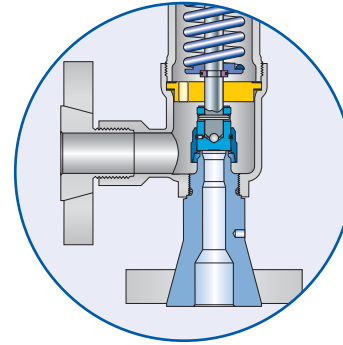
<sup>2)</sup>  $d_0$  9 mm: up to PN 420

<sup>3)</sup> Only as special design

<sup>4)</sup>  $d_0$  13 mm: up to 125 bar and 455 °C

## Available connections

For dimensions and weights refer to:  
 Type 459 – page 05/09 + 05/11  
 Type 459 HDD – page 06/09 + 06/11  
 Type 462 – page 07/09 + 07/11  
 Type 462 HDD – page 08/09 + 08/11



Flanged version

Flanged connections		Pressure rating	d <sub>0</sub> 6 mm		d <sub>0</sub> 9 mm		d <sub>0</sub> 13 mm		d <sub>0</sub> 17.5 mm	
DIN EN 1092-1 (PN > 100: DIN 2501)										
Valve size	Pressure rating	Option code		Option code		Option code		Option code		
DN	PN	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	
15	40	I21	-	I21	-	I21	-	-	-	
	160	I22	-	I22	-	I22	-	-	-	
	250	I23	-	I23	-	I23	-	-	-	
	320	I24	-	I24	-	I24	-	-	-	
	400	I25	-	I25	-	I25	-	-	-	
20	40	I26	-	I26	-	I26	-	I26	-	
	100	I27	-	I27	-	I27	-	I27	-	
25	40	I31	I46	I31	I46	I31	I46	I31	-	
	160	I32	I47	I32	I47	I32	I47	I32	-	
	250	I33	I48	I33	I48	I33	I48	I33	-	
	320	I34	-	I34	-	I34	-	I34	-	
	400	I35	-	I35	-	I35	-	I35	-	
40	40	-	-	-	I49	-	I49	-	I49	
	160	-	-	-	I50	-	I50	-	I50	
	250	-	-	-	I51	-	I51	-	I51	
ANSI/ASME B 16.5										
NPS	CL	Option code		Option code		Option code		Option code		
NPS	CL	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	
1/2"	150	V01	-	V01	-	V01	-	-	-	
	300	V02	-	V02	-	V02	-	-	-	
	600	V02	-	V02	-	V02	-	-	-	
	900	V03	-	V03	-	V03	-	-	-	
	1500	V03	-	V03	-	V03	-	-	-	
	2500	V04	-	V04	-	V04	-	-	-	
3/4"	150	V05	-	V05	-	V05	-	V05	-	
	300	V06	-	V06	-	V06	-	V06	-	
	600	V06	-	V06	-	V06	-	V06	-	
	900	V07	-	V07	-	V07	-	V07	-	
	1500	V07	-	V07	-	V07	-	V07	-	
	2500	V08	-	V08	-	V08	-	V08	-	
1"	150	V09	V18	V09	V18	V09	V18	V09	-	
	300	V10	V19	V10	V19	V10	V19	V10	-	
	600	V10	V19	V10	V19	V10	V19	V10	-	
	900	V11	V20	V11	V20	V11	V20	V11	-	
	1500	V11	-	V11	-	V11	-	V11	-	
	2500	V12	-	V12	-	V12	-	V12	-	
1 1/2"	150	-	-	-	V21	-	V21	-	V21	
	300	-	-	-	V22	-	V22	-	V22	
	600	-	-	-	V22	-	V22	-	V22	
	900	-	-	-	V23	-	V23	-	V23	

Flanged and threaded connections can be combined.

Threads according to other standards are available. Please specify in writing (diameter, pressure rating, standard).