

# Type 462 HDD



Safety Relief Valves  
Heavy Duty Design  
- spring loaded

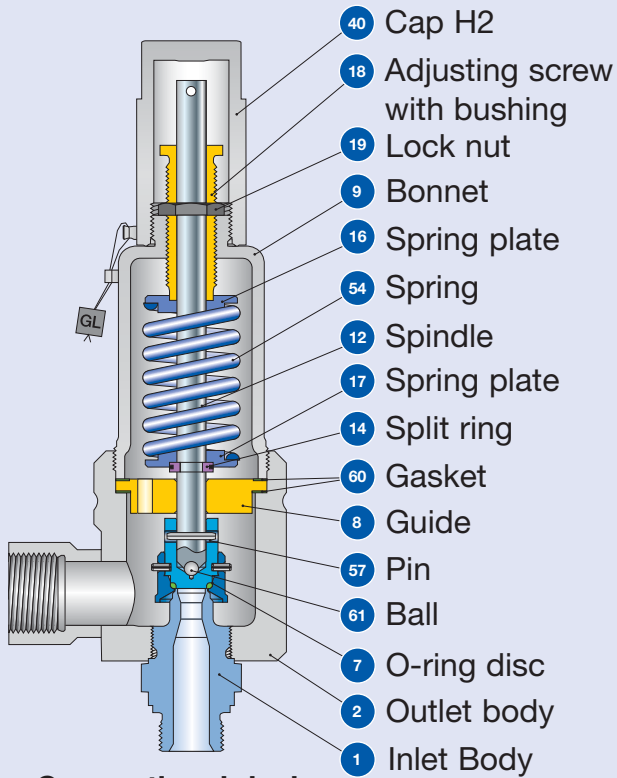
US Units

## Facts

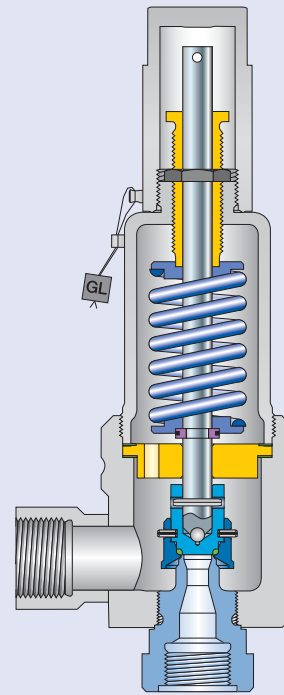
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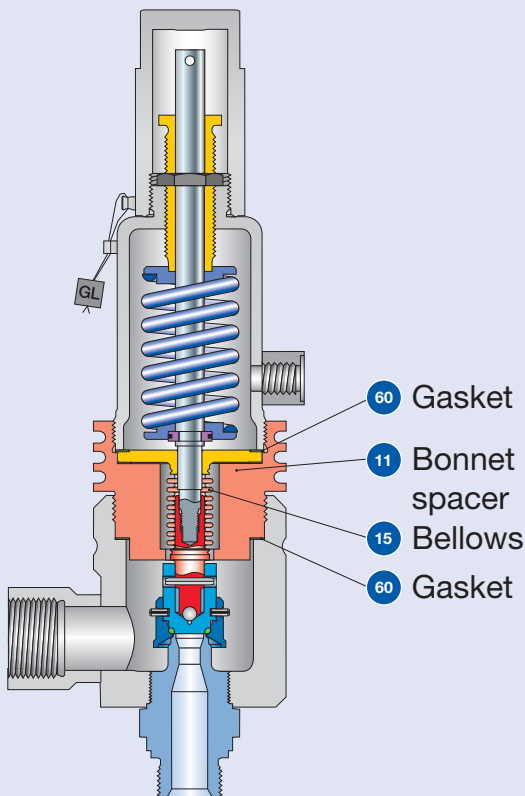
## Available designs



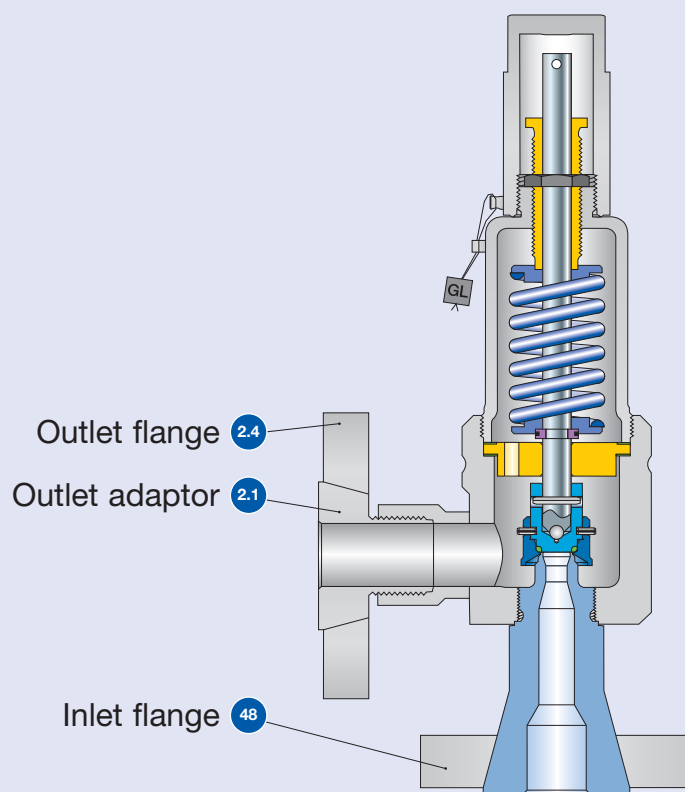
**Conventional design**  
Threaded connection



**Conventional design**  
Threaded connection



**Balanced bellows**  
Threaded connection



**Conventional design**  
Flange connection

## Available designs – materials

Materials			
Item	Component	Remarks	Type 4624 HDD
1	Base / Inlet body	Threaded connection	1.4404 SA 479 316L
		Flange connection	1.4404 SA 479 316L
2	Outlet body		1.4404 SA 479 316L
			1.4404 316L
2.1	Outlet adaptor	Flange connection	1.4404 316L
2.4	Outlet flange	Flange connection	1.4404 316L
7	O-ring disc		1.4404 SA 479 316L
			NBR Nitrile-Butadiene
7.4	Soft seal O-ring	“N”	CR Chloroprene
		“K”	EPDM Ethylen-Propylene-Diene
		“D”	FPM Fluorocarbon
		“L”	FFKM Perfluor
		“C”	1.4404 316L
8	Guide		1.4404 316L
		Balanced bellows design	1.4404 / SA 316L Upper conn. part of balanced bellows
9	Bonnet		1.4404 316L
		Balanced bellows design	1.4404 316L
11	Bonnet spacer		1.4404 316L
		Balanced bellows design	1.4404 316L
12	Spindle		1.4404 316L
		Balanced bellows design	1.4404 316L
14	Split ring		1.4404 316L
			1.4404 316Ti
15	Bellows	Balanced bellows design	1.4571 316Ti
16/17	Spring plate		1.4404 316L
			1.4404 / PTFE 316L / PTFE
18	Adjusting screw with bushing		1.4404 316L
19	Lock nut		1.4404 316L
40	Cap H2		1.4404 316L
			1.4404 316L
48	Inlet flange	Flange connection	1.4404 316L
			1.4310 Stainless steel
54	Spring	Standard	1.4310 Stainless steel
57	Pin		1.4310 Stainless steel
60	Gasket		Graphite / 1.4301 Graphite / 316L
			1.4401 316
61	Ball		1.4401 316

### Material Options

The Heavy Duty Design of Type 462 HDD offers the possibility to easily obtain special material versions. The fact that all product wetted parts are machined from bar stock materials makes it easier and faster to fulfill almost all material requirements according to the metal availability.

### Please notice:

- Modifications reserved by LESER.
- LESER can upgrade materials without notice.
- Every part can be replaced by other material acc. to customer specification.

## How to order – Article numbers

Article numbers			
<b>O-ring material</b>		NBR	“N” J30
		CR	“K” J21
		EPDM	“D” J22
		FKM	“L” J23
		FFKM	“C” J20
Actual Orifice diameter $d_0$ [mm]		9	13
Actual Orifice area $A_0$ [mm <sup>2</sup> ]		63,9	133
Actual Orifice diameter $d_0$ [inch]		0.354	0.512
Actual Orifice area $A_0$ [inch <sup>2</sup> ]		0.099	0.206
<b>Body material: 1.4404 (316L)</b>			
<b>All body and trim parts</b>	<b>1.4404</b>	<b>H2</b> Art.-No. <b>4624.</b>	<b>2252</b>
		<b>H4</b> Art.-No. <b>4624.</b>	<b>2254</b>
	$p$ [bar <sub>g</sub> ]	S/G/L	<b>0.5 – 350</b>
	$p$ [psig]		<b>7.3 – 5076</b>
			<b>0.5 – 180</b>
			<b>7.3 – 2611</b>

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"
Actual Orifice diameter d <sub>0</sub> [inch]	0.354	0.354	0.354	0.512	0.512	0.512
Actual Orifice area A <sub>0</sub> [inch <sup>2</sup> ]	0.099	0.099	0.099	0.206	0.206	0.206
Weight [lbs]	8.7	8.7	8.7	8.7	8.7	8.7
Balanced bellows [lbs]	10.4	10.4	10.4	10.4	10.4	10.4
Required installation diameter [inch]	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"
Actual Orifice diameter d <sub>0</sub> [inch]	0.354	0.354	0.354	0.512	0.512	0.512

#### Center to face / Height

DIN ISO 228-1	G	Inlet a	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>	
			ASME B1.20.1	NPT	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>
Center to face [inch]	H max.	Balanced bellows	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>
			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>
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>	
			ASME B1.20.1	NPT	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>
Center to face [inch]	H max.	Balanced bellows	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>
			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>

### Inlet thread "Male"

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

#### Center to face [inch]

DIN ISO 228-1	G	Inlet a	2 <sup>1</sup> / <sub>16</sub>	-
		Outlet b	2 <sup>15</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>16</sub>
ISO 7-1/BS 21	R	Inlet a	1 <sup>15</sup> / <sub>16</sub>	1 <sup>15</sup> / <sub>16</sub>
		ASME B1.20.1	NPT	Outlet b

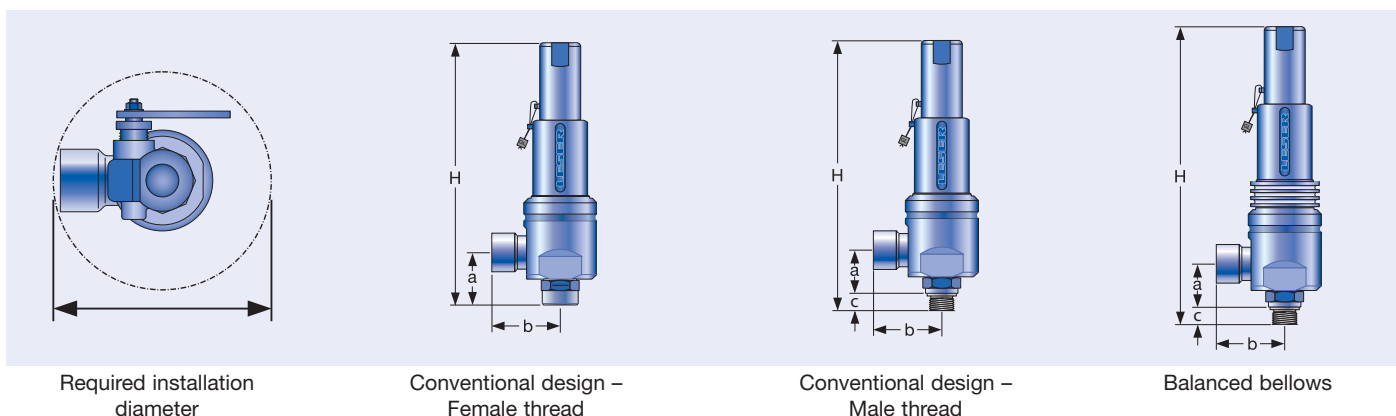
#### Height [inch]

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

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

Size inlet thread	1/2"	3/4"	1"	
DIN ISO 228-1	G	9/16	5/8	23/32
ISO 7-1/BS 21	R	3/4	25/32	29/32
ASME B1.20.1	NPT	7/8	7/8	11/16

Available threaded connections refer to page 09/06.



## Dimensions and weights – US Units

### Flanged connection

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

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

#### Flange rating PN 40 – 400

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

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

#### Flange rating class 150 – 2500

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

**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.

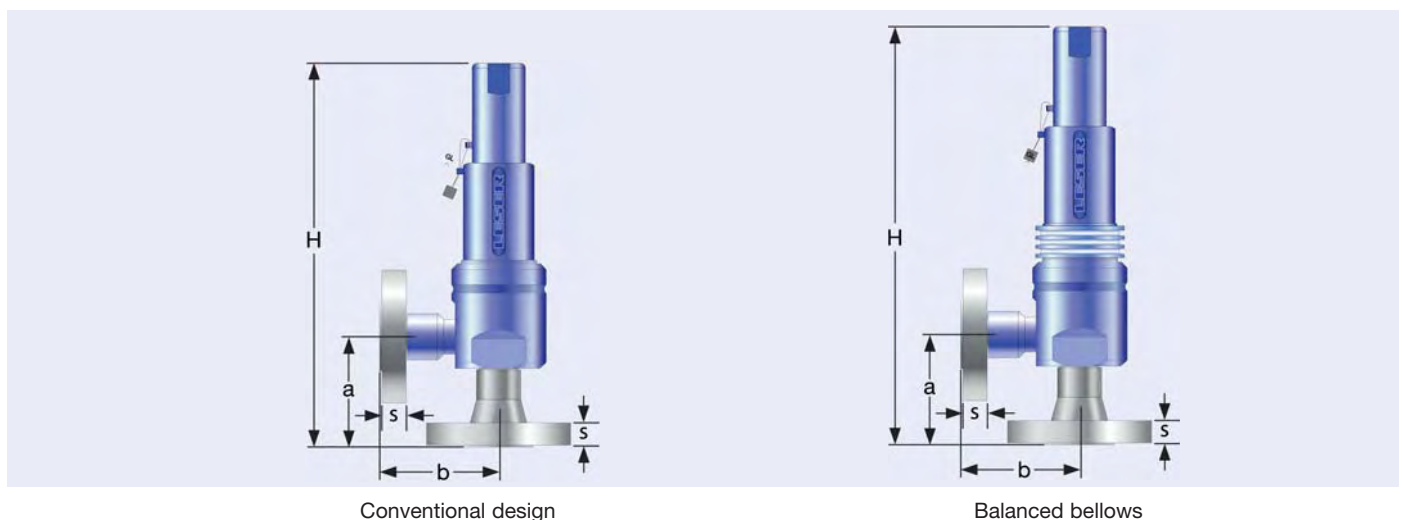
### Weight

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	8.4	8.4
(without inlet and outlet flange)					

### Flange dimensions

Size	DIN EN 1092-1 / Flange rating PN							ASME B16.5 / Flange rating class						
	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]	$2^{3}/_{32}$	–	$7/8$	$1^{3}/_{32}$	$1^{3}/_{32}$	$1^{3}/_{16}$		$9/_{16}$	$2^{3}/_{32}$	$2^{3}/_{32}$	$1^{1}/_{32}$	$1^{1}/_{32}$	$1^{3}/_{16}$	
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]	$2^{5}/_{32}$	$7/8$	–	–	–	–		$1^{9}/_{32}$	$2^{3}/_{32}$	$2^{3}/_{32}$	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]	$7/8$	–	$1^{1}/_{32}$	$1^{3}/_{16}$	$1^{3}/_{32}$	$1^{9}/_{16}$		$2^{1}/_{32}$	$2^{7}/_{32}$	$2^{7}/_{32}$	$1^{9}/_{32}$	$1^{9}/_{32}$	$1^{9}/_{16}$	
Flange thickness [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>						
Flanschblattdicke [inch]	$1^{3}/_{16}$	–	$2^{9}/_{32}$	$1^{1}/_{4}$	–	–		$7/8$	$1^{5}/_{16}$	$1^{5}/_{16}$	$1^{1}/_{4}$	–	–	
Weight slip on flange [lbs]	$m_F$	4.5	–	6.3	9.5	–	–	3.2	4.8	4.8	8.6	–	–	



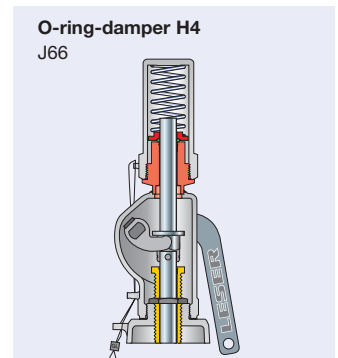
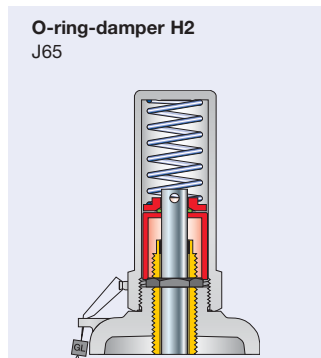
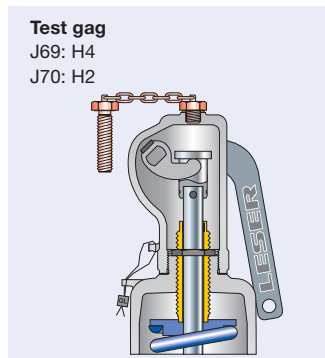
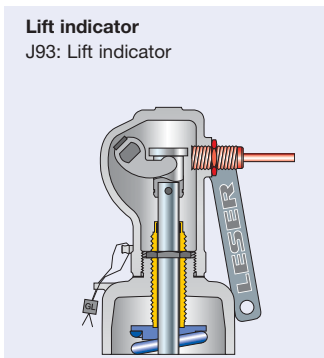
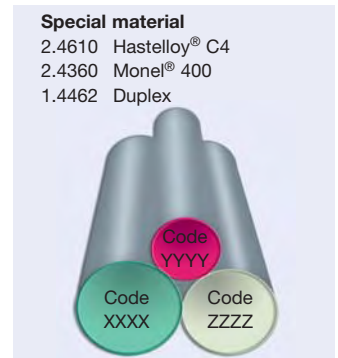
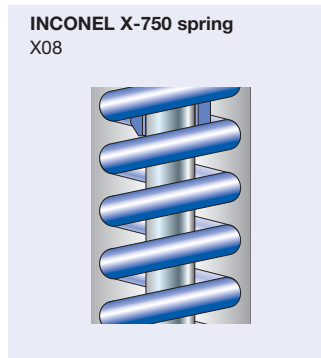
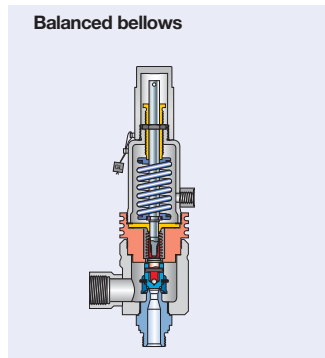
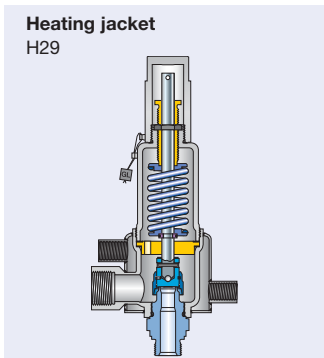
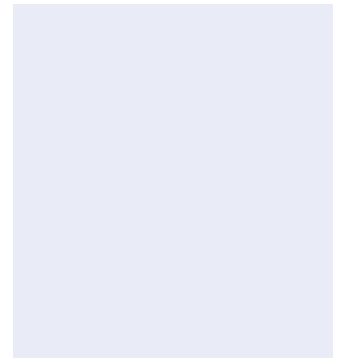
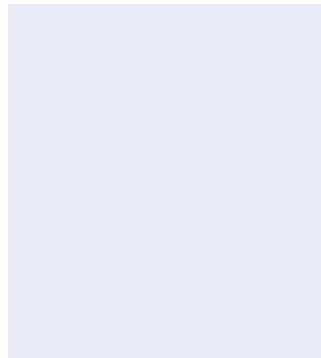
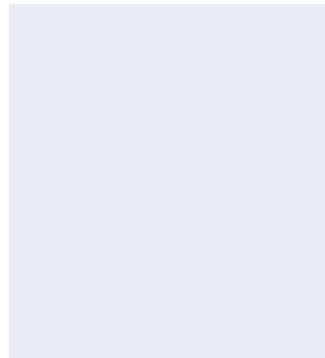
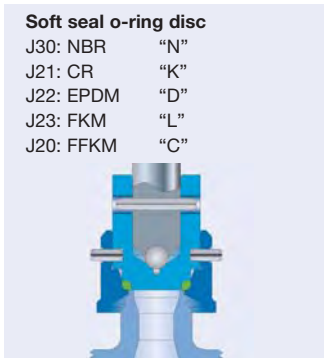
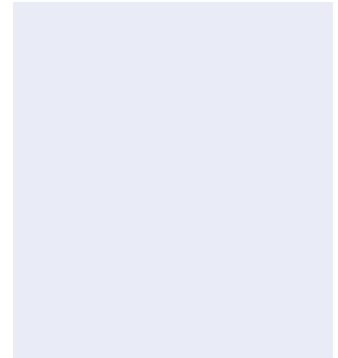
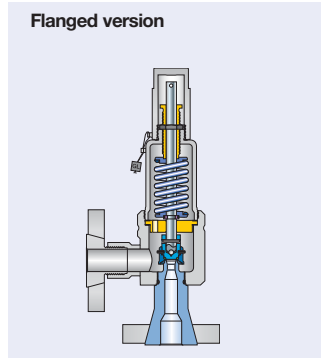
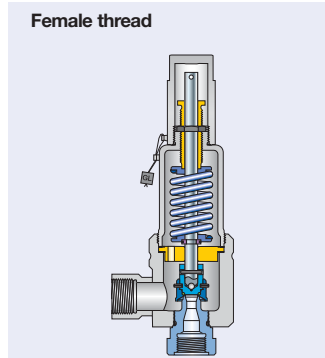
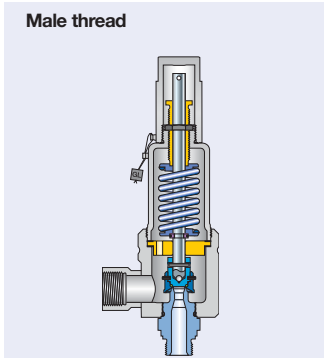
## Pressure temperature ratings

Metric Units		Type 4624					
Actual Orifice diameter $d_0$ [mm]		9			13		
Actual Orifice Area $A_0$ [mm <sup>2</sup> ]		63.6			133		
Body material 1.4404 (316L)		Type 4624					
Base / Inlet Body	Connection size	1/2"	3/4"	1"	1/2"	3/4"	1"
	Pressure rating	PN 500			PN 250		
Outlet body	Pressure rating	p ≤ 250 bar <sub>g</sub> = PN 40. p > 250 bar <sub>g</sub> = PN 160					
Minimum set pressure	p [bar <sub>g</sub> ] S/G/L	0.5			0.5		
Maximum set pressure	p [bar <sub>g</sub> ] S/G/L	350			180		
Temperature acc. to DIN EN <sup>1)</sup>	min. [°C]				-45		
	max. [°C]				+150		
Temperature acc. to ASME <sup>1)</sup>	min. [°C]				-45		
	max. [°C]				+150		

US Units		Type 4624					
Actual Orifice diameter $d_0$ [inch]		0.354			0.512		
Actual Orifice Area $A_0$ [inch <sup>2</sup> ]		0.099			0.206		
Body material 1.4404 (316L)		Type 4624					
Base / Inlet Body	Connection size	1/2"	3/4"	1"	1/2"	3/4"	1"
	Pressure rating	PN 500			PN 250		
Outlet body	Pressure rating	p ≤ 250 bar <sub>g</sub> = PN 40. p > 250 bar <sub>g</sub> = PN 160					
Minimum set pressure	p [psig] S/G/L	7.3			7.3		
Maximum set pressure	p [psig] S/G/L	5076			2611		
Temperature acc. to DIN EN <sup>1)</sup>	min. [°F]				-49		
	max. [°F]				+302		
Temperature acc. to ASME <sup>1)</sup>	min. [°F]				-49		
	max. [°F]				+302		

<sup>1)</sup> The temperature is limited by soft seal material. The stated values are valid for EPDM.

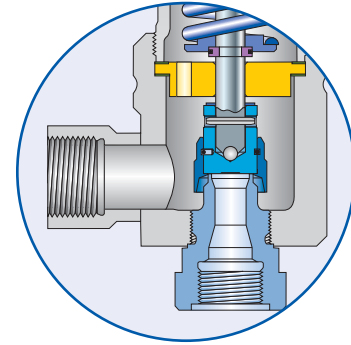
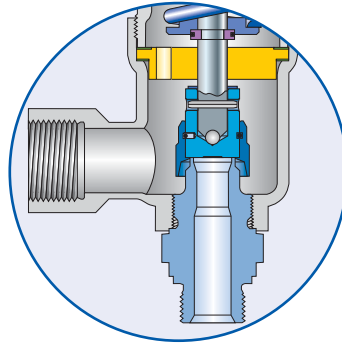
## Available Options





## 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

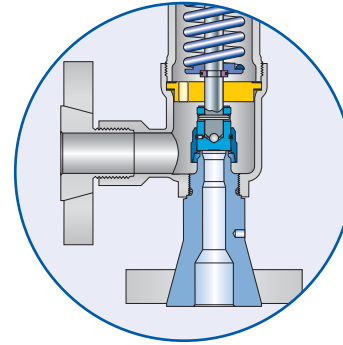
<sup>2)</sup>  $d_0$  9 mm: up to PN 420

<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).