Type 459

Safety Relief Valves – spring loaded

Metric Units

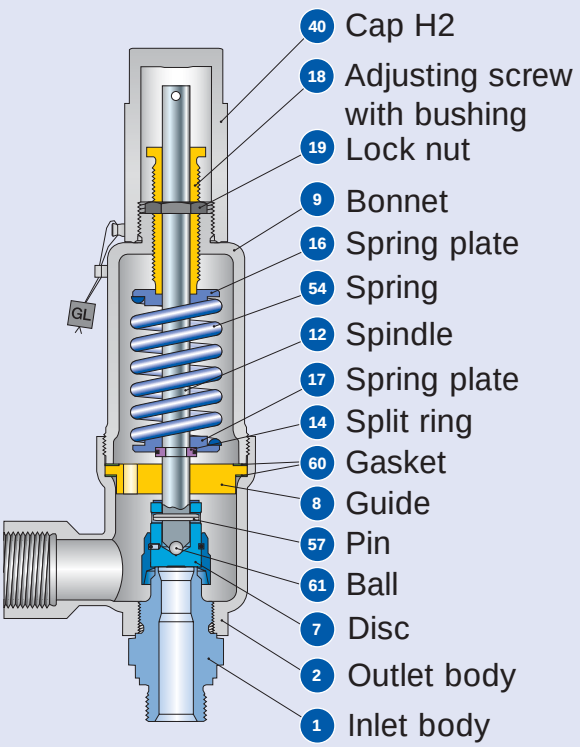
Facts

LESER

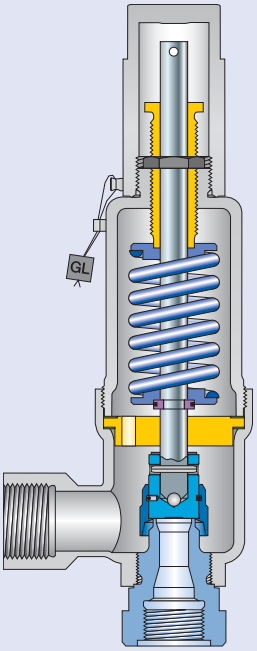
The-Safety-Valve.com

LWN 461.10-E

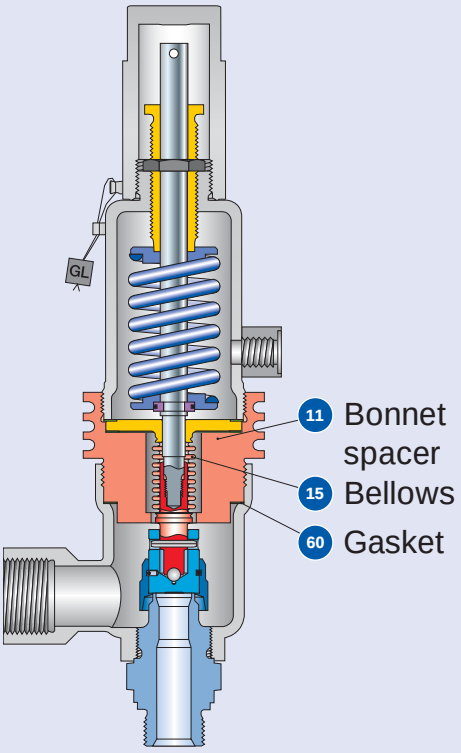
Available designs



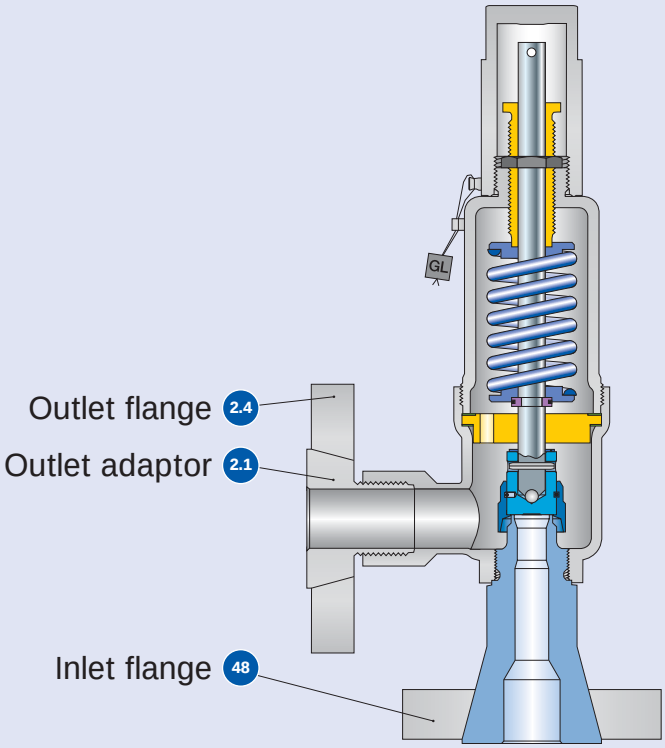
Conventional design
Threaded connection



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	1.4404 SA 479 316L	1.4404 SA 479 316L
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 Carbon steel	1.0460 Carbon steel	1.4404 316L
12	Spindle		1.4021 420	1.4404 316L	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 / 316	Graphite / 1.4401 Graphite / 316	Graphite / 1.4401 Graphite / 316
61	Ball		1.3541 Hardened stainless steel	1.3541 Hardened stainless steel	1.4401 316

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						
			Actual Orifice diameter d_0 [mm]	9	13	17,5
			Actual Orifice area A_0 [mm²]	63,9	133	241
			Actual Orifice diameter d_0 [inch]	0,354	0,512	0,689
			Actual Orifice area A_0 [inch²]	0,099	0,206	0,374
Outlet chamber casted						
Inlet body	**1.4104**	**H2**	Art.-No. **4593.**	**2502**	**2512**	**2522**
Outlet body	**0.7043**	**H3**	Art.-No. **4593.**	**2503**	**2513**	**2523**
Bonnet	**0.7043**	**H4**	Art.-No. **4593.**	**2504**	**2514**	**2524**
	p [bar_g]		S/G/L	**1,5 – 250**	**0,2 – 200**	**0,2 – 100**
	p [psig]			**21,7 – 3626**	**2,9 – 2901**	**2,9 – 1450**
Outlet chamber deep-drawn						
Inlet body	**1.4404**	**H2**	Art.-No. **4592.**	**2472**	**2992**	**2492**
Outlet body	**1.4404**	**H3**	Art.-No. **4592.**	**2473**	**2994**	**2493**
Bonnet	**1.0460**	**H4**	Art.-No. **4592.**	**2474**	**68 – 180**	**2494**
	p [bar_g]		S/G/L	**1,5 – 250**	**0,2 – 200**	**0,2 – 100**
	p [psig]			**21,7 – 3626**	**986 – 2611**	**2,9 –1450**
Outlet chamber deep-drawn						
All body and trim parts	**1.4404**	**H2**	Art.-No. **4594.**	**2552**	**2562**	**2572**
		H4	Art.-No. **4594.**	**2554**	**2564**	**2574**
	p [bar_g]		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 – Metric Units

Threaded connections

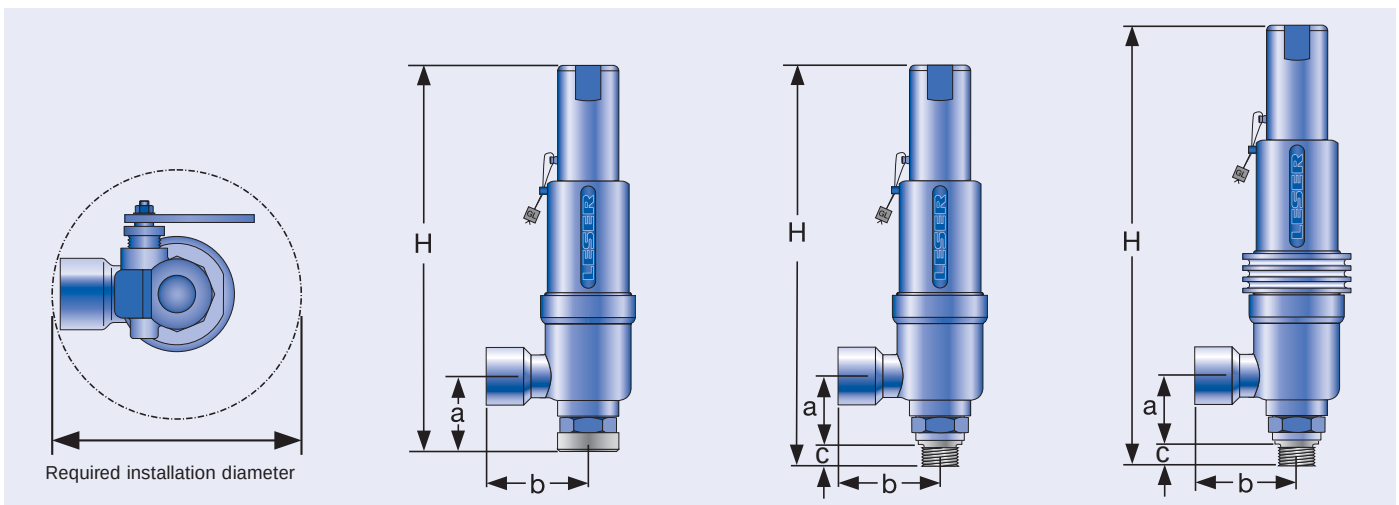
Size Outlet body				1"	1"	1"	1"	1"	1"	$1^1/_2$"	$1^1/_2$"	$1^1/_2$"	$1^1/_2$"	$1^1/_2$"
Actual Orifice diameter d_0 [mm]				9	9	9	13	13	13	17,5	17,5	17,5	17,5	17,5
Actual Orifice area A_0 [mm^2]				63,6	63,6	63,6	133	133	133	241	241	241	241	241
Weight	Standard	[kg]		2,6	2,6	2,6	2,6	2,6	2,6	3,0	3,0	3,0	3,0	3,0
	Balanced bellows			3,4	3,4	3,4	3,4	3,4	3,4	3,8	3,8	3,8	3,8	3,8
Required installation diameter		[mm]		165	165	165	165	165	165	165	165	165	165	165
Inlet thread "Male"														
DIN ISO 228-1 Center to face	**G**	[mm]	Inlet a	–	55,5	55,5	–	55,5	55,5	55,5	55,5	55,5	55,5	–
			Outlet b	–	75	75	–	75	75	75	75	75	75	–
ISO 7-1/BS 21 Center to face	**R**	[mm]	Inlet a	–	52,5	52,5	–	52,5	52,5	–	52,5	–	52,5	–
			Outlet b	–	75	75	–	75	75	–	75	–	75	–
ANSI/ASME B1.20.1 Center to face	**NPT**	[mm]	Inlet a	–	52,5	52,5	–	52,5	52,5	–	52,5	52,5	52,5	53
			Outlet b	–	75	75	–	75	75	–	75	75	75	75
Inlet thread "Female"														
DIN ISO 228-1 Center to face	**G**	[mm]	Inlet a	60,5	65,5	70	60,5	65,5	70,5	65,5	70,5	75,5	80,5	–
			Outlet b	75	75	75	75	75	75	75	75	75	75	–
Height		[mm]	H max.	290,5	295,5	300,5	290,5	295,5	300,5	292,5	297,5	302,5	307,5	–
ISO 7-1/BS 21 Center to face	**Rc**	[mm]	Inlet a	60,5	70,5	70,5	60,5	70,5	70,5	70,5	70,5	–	–	–
			Outlet b	75	75	75	75	75	75	75	75	–	–	–
Height		[mm]	H max.	290,5	300,5	300,5	290,5	300,5	300,5	297,5	297,5	–	–	–
ANSI/ASME B1.20.1 Center to face	**NPT**	[mm]	Inlet a	60,5	70,5	70,5	60,5	70,5	70,5	70,5	70,5	75,5	80,5	–
			Outlet b	75	75	75	75	75	75	75	75	75	75	–
Height		[mm]	H max.	290,5	300,5	300,5	290,5	300,5	300,5	297,5	297,5	302,5	307,5	–

Height inlet thread "Male"

				Conventional design						Balanced bellows					
Inlet thread			Size	$^1/_2$"	$^3/_4$"	1"	$1^1/_4$"	$1^1/_2$"	2"	$^1/_2$"	$^3/_4$"	1"	$1^1/_4$"	$1^1/_2$"	2"
DIN ISO 228-1	[mm]	**G**	H max.	–	301,5	303,5	302,5	304,5	–	–	346,5	348,5	347,5	349,5	–
ISO 7-1/BS 21	[mm]	**R**	H max.	–	302,5	305,5	–	307,5	–	–	347,5	350,5	–	352,5	–
ASME B1.20.1	[mm]	**NPT**	H max.	–	304,5	309,5	307,5	307,5	308	–	349,5	354,5	352,5	352,5	353

Length of screwed end "c" inlet thread "Male"

Inlet thread			Size	$^1/_2$"	$^3/_4$"	1"	$1^1/_4$"	$1^1/_2$"	2"
DIN ISO 228-1	[mm]	**G**		14	16	18	20	22	–
ISO 7-1/BS 21	[mm]	**R**		19	20	23	–	28	–
ASME B1.20.1	[mm]	**NPT**		22	22	27	28	28	28



Conventional design – Female thread | Conventional design – Male thread | Balanced bellows

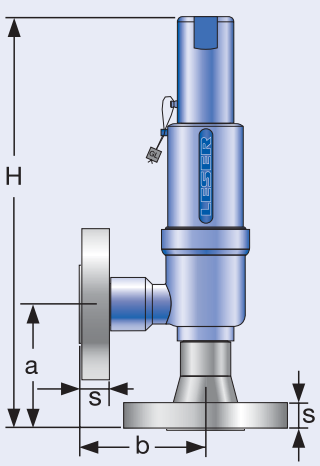
Dimensions and weights – Metric Units

Flanged connection

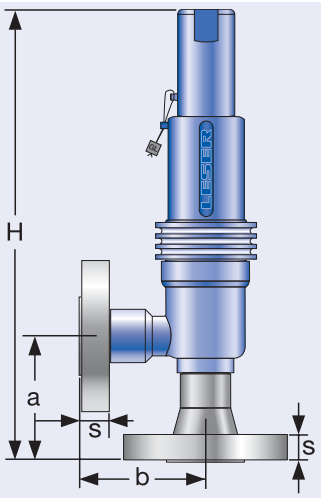
			Conventional design			Balanced bellows		
Actual Orifice diameter d_0 [mm]			9	13	17,5	9	13	17,5
Actual Orifice area A_0 [mm²]			63,6	133	241	63,6	133	241
DIN ISO 1092-1 (Available flange sizes refer to page 09/07)								
			Flange rating PN 40 – PN 400					
Center to face	[mm]	Inlet a	100	100	105	100	100	105
		Outlet b	100	100	100	100	100	100
Height [H4]	[mm]	H max.	330	330	333	375	375	378
ASME B 16.5 (Available flange sizes refer to page 09/07)								
			Flange rating class 150 – 2500					
Center to face	[mm]	Inlet a	100	100	105	100	100	105
		Outlet b	100	100	100	100	100	100
Height [H4]	[mm]	H max.	330	330	333	375	375	378
Weight								
For the calculation of the total weight please use the Formular: $W_T = W_N + W_F$ (Inlet) + W_F (Outlet)								
Weight net (without inlet and outlet flange)	[kg]	W_N	2,6	2,6	3	3,8	3,8	4,2

Flange dimensions and availability

			DIN ISO 1092-1 / Flange rating PN					ASME B16.5 / Flange rating class						
		Size	40	160	250	320	400	Size	150	300	600	900	1500	2500
DN 15								**NPS 1/2"**						
Flange thickness	[mm]	s	18	22	26	26	30		14	18		26		30,2
Weight slip on flange	[kg]	W_F	0,8	1,2	2,5	2,5	3,6		0,6	0,9		2,1		3
Available at Inlet			✓	✓	✓	✓	✓		✓	✓		✓		✓
Available at Outlet			✓	✓	✓				✓	✓		✓		
DN 20								**NPS 3/4"**						
Flange thickness	[mm]	s	20	22					15	18		25,4		32
Weight slip on flange	[kg]	W_F	1,1	1,3					0,8	1,4		2,3		3,5
Available at Inlet			✓	✓					✓	✓		✓		✓
Available at Outlet			✓	✓					✓	✓		✓		
DN 25								**NPS 1"**						
Flange thickness	[mm]	s	22	26	30	36	40		17	21,5		32,5		40
Weight slip on flange	[kg]	W_F	1,3	2,6	3,5	5	7,5		1	2,1		4,1		5,1
Available at Inlet			✓	✓	✓	✓	✓		✓	✓		✓		✓
Available at Outlet			✓	✓	✓				✓	✓		✓		
DN 40								**NPS 1 1/2"**						
Flange thickness	[mm]	s	23	23	34				22	24		38		
Weight slip on flange	[kg]	W_F	2,1	2,9	4,3				1,4	2,2		3,9		
Available at Inlet			✓	✓	✓				✓	✓		✓		
Available at Outlet			✓	✓	✓				✓	✓		✓		



Conventional design



Balanced bellows design

Pressure temperature ratings – Metric Units

Metric Units

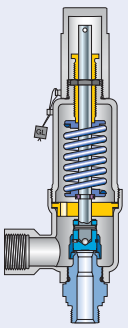
Actual Orifice diameter d_0 [mm]		9			13			17,5				
Actual Orifice Area A_0 [mm²]		63,6			133			241				
Body material: 1.4104 (430)		**Type 4593**										
Base / Inlet Body	Connection size	1/2"	3/4"	1"	1/2"	3/4"	1"	3/4"	1"	1 1/4"	1 1/2"	2"
	Pressure rating	PN 400			PN 250			PN 160				
Outlet body	Pressure rating	PN 40			PN 40			PN 40				
Minimum set pressure	p [bar$_g$] S/G/L	1,5			0,2			0,2				
Min. set pressure[1] standard bellows	p [bar$_g$] S/G/L	40			40			40				
Min. set pressure low press. bellows	p [bar$_g$] S/G/L	3			3			3				
Maximum set pressure	p [bar$_g$] S/G/L	250			200			100				
Temperature acc. to DIN EN	min [°C]	-10										
	max [°C]	+300										
Temperature acc. to ASME	min [°C]	-29										
	max [°C]	+300										

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"
	Pressure rating	PN 250 PN 500 (Option code L20)			PN 160 PN 500 (Option code L20)			PN 160				
Outlet Body	Pressure rating	PN 40			PN 40			PN 40				
Minimum set pressure	p [bar$_g$] S/G/L	1,5			0,2			0,2				
Min. set pressure[1] standard bellows	p [bar$_g$] S/G/L	40			40			40				
Min. set pressure low press. bellows	p [bar$_g$] S/G/L	3			3			3				
Maximum set pressure	p [bar$_g$] S/G/L	250			200			100				
Temperature acc. to DIN EN	min [°C]	-85										
	max [°C]	+400										
Temperature acc. to ASME	min [°C]	-29										
	max [°C]	+300										
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"
	Pressure rating	PN 250 PN 500 (Option code L20)			PN 160 PN 500 (Option code L20)			PN 160				
Outlet Body	Pressure rating	PN 40			PN 40			PN 40				
Minimum set pressure	p [bar$_g$] S/G/L	1,5			0,2			0,2				
Min. set pressure[1] standard bellows	p [bar$_g$] S/G/L	40			40			40				
Min. set pressure low press. bellows	p [bar$_g$] S/G/L	3			3			3				
Maximum set pressure	p [bar$_g$] S/G/L	250			200			100				
Temperature acc. to DIN EN	min [°C]	-200			-200			-200				
	max [°C]	+400			+400			+400				
Temperature acc. to ASME	min [°C]	-184			-184			-184				
	max [°C]	+427			+427			+427				

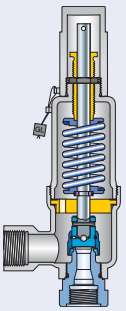
[1] Min. set pressure standard bellows = Max. pressure low pressure bellows.
Because there is no open bonnet for this type available, please use at a temperature of 300°C (572°F) a stainless steel bellows or a specific high temperature model without a bellows. For DIN EN applications at temperatures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

Available Options

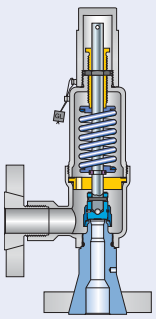
Male thread



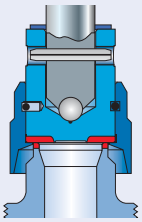
Female thread



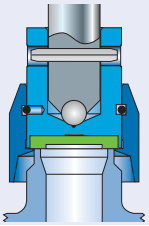
Flanged version



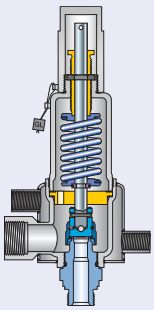
Stellited sealing surface
J25: Disc stellited
L20: Base/inlet body



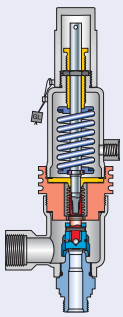
Disc with inserted sealing plate
J44: PTFE-FDA "N"
J48: PCTFE "D"
J49: VESPEL-SP "K"



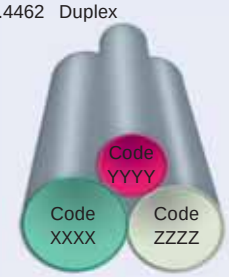
Heating jacket
H29



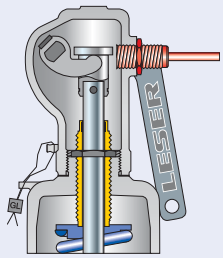
Balanced bellows



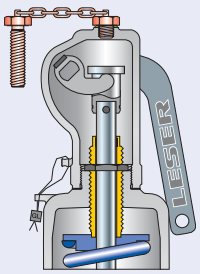
Special material
2.4610 Hastelloy® C4
2.4360 Monel® 400
1.4462 Duplex



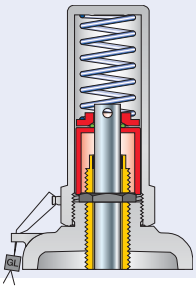
Lift indicator
J93: Lift indicator



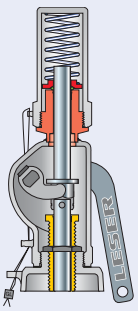
Test gag
J69: H4
J70: H2



O-ring-damper H2
J65

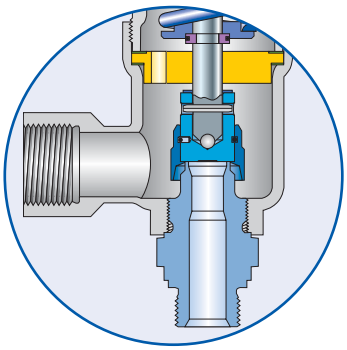


O-ring-damper H4
J66

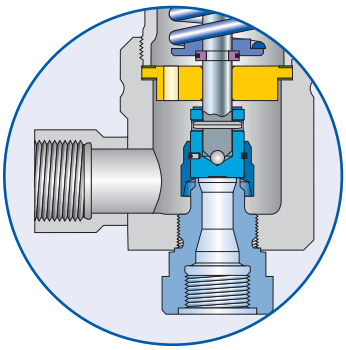


Available connections

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



Male thread



Female thread

Threaded connections

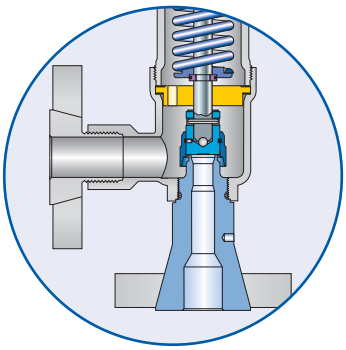
Actual Orifice diameter d_0 [mm]	**6**		**9 / 13**		**17,5**	
Actual Orifice area A_0 [mm²]	28,3		63,9 / 133		241	
Actual Orifice diameter d_0 [inch]	0,236		0,345 / 0,512		0,689	
Actual Orifice area A_0 [inch²]	0,044		0,099 / 0,206		0,374	

Valve size		Inlet	Outlet	Inlet	Outlet	Inlet	Outlet
Male thread DIN ISO 228-1							
G	**1/2"**	V54	–	–	–	–	–
	3/4 "	V55	–	V55	–	–	–
	1"	V56	V68	V56	V68	V65	–
	1 1/4"	–	V79	–	V79	V83	V79
	1 1/2"	–	V69	–	V69	V57	V69
Female thread DIN ISO 228-1							
G	**1/2"**	V50	–	V50	–	–	–
	3/4 "	V51	–	V51	–	V51	–
	1"	V52	V66	V52	V66	V52	–
	1 1/4"	–	V81	–	V81	V84	V81
	1 1/2"	–	V67	–	V67	V53	V67
Male thread DIN ISO 7-1/BS 21							
R/BSPT	**1/2"**	V30	–	–	–	–	–
	3/4 "	V31	–	V31	–	–	–
	1"	V32	V42	V32	V42	V32	–
	1 1/2"	–	V43	–	V43	V33	V43
Female thread DIN ISO 7-1/BS 21							
Rc/BSPT	**1/2"**	V38	–	V38	–	–	–
	3/4 "	V39	–	V39	–	V39	–
	1"	V40	V36	V40	V36	V40	–
	1 1/2"	–	V37	–	V37	V41	V37
Male thread ANSI/ASME B1.20.1							
NPT	**1/2"**	V61	–	–	–	–	–
	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	–
Female thread ANSI/ASME B1.20.1							
NPT	**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).

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

Actual Orifice diameter d_0 [mm]	6	9 / 13	17,5
Actual Orifice area A_0 [mm²]	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 [inch²]	0,044	0,099 / 0,206	0,374

DIN ISO 1092-1 (PN > 100: DIN 2501)

	PN	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet
DN 15	40	I21	–	I21	–	–	–
	160	I22	–	I22	–	–	–
	250	I23	–	I23	–	–	–
	320	I24	–	I24	–	–	–
	400	I25	–	I25	–	–	–
DN 20	40	I26	–	I26	–	I26	–
	160	I27	–	I27	–	I27	–
	250	–	–	–	–	–	–
	320	–	–	–	–	–	–
	400	–	–	–	–	–	–
DN 25	40	I31	I46	I31	I46	I31	–
	160	I32	I47	I32	I47	I32	–
	250	I33	I48	I33	I48	I33	–
	320	I34	–	I34	–	I34	–
	400	I35	–	I35	–	I35	–
DN 40	40	–	–	–	I49	–	I49
	320	–	–	–	I50	–	I50
	400	–	–	–	I51	–	I51

ANSI/ASME B 16.5

	Class	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet
NPS $^1/_2$"	150	V01	–	V01	–	–	–
	300	V02	–	V02	–	–	–
	600	V02	–	V02	–	–	–
	900	V03	–	V03	–	–	–
	1500	V03	–	V03	–	–	–
	2500	V04	–	V04	–	–	–
NPS $^3/_4$"	150	V05	–	V05	–	V05	–
	300	V06	–	V06	–	V06	–
	600	V06	–	V06	–	V06	–
	900	V07	–	V07	–	V07	–
	1500	V07	–	V07	–	V07	–
	2500	V08	–	V08	–	V08	–
NPS 1"	150	V09	V18	V09	V18	V09	–
	300	V10	V19	V10	V19	V09	–
	600	V10	V19	V10	V19	V10	–
	900	V11	V20	V11	V20	V10	–
	1500	V11	–	V11	–	V11	–
	2500	V12	–	V12	–	V12	–
NPS 1 $^1/_2$"	150	–	–	–	V21	–	V21
	300	–	–	–	V22	–	V22
	600	–	–	–	V22	–	V22
	900	–	–	–	V23	–	V23

Flanged and threaded connections can be combined. Threads according to other standards are available. Please specify in writing (diameter, pressure rating, standard).