Type 431, 433

Flanged Safety Relief Valves – spring loaded

Metric Units

Facts

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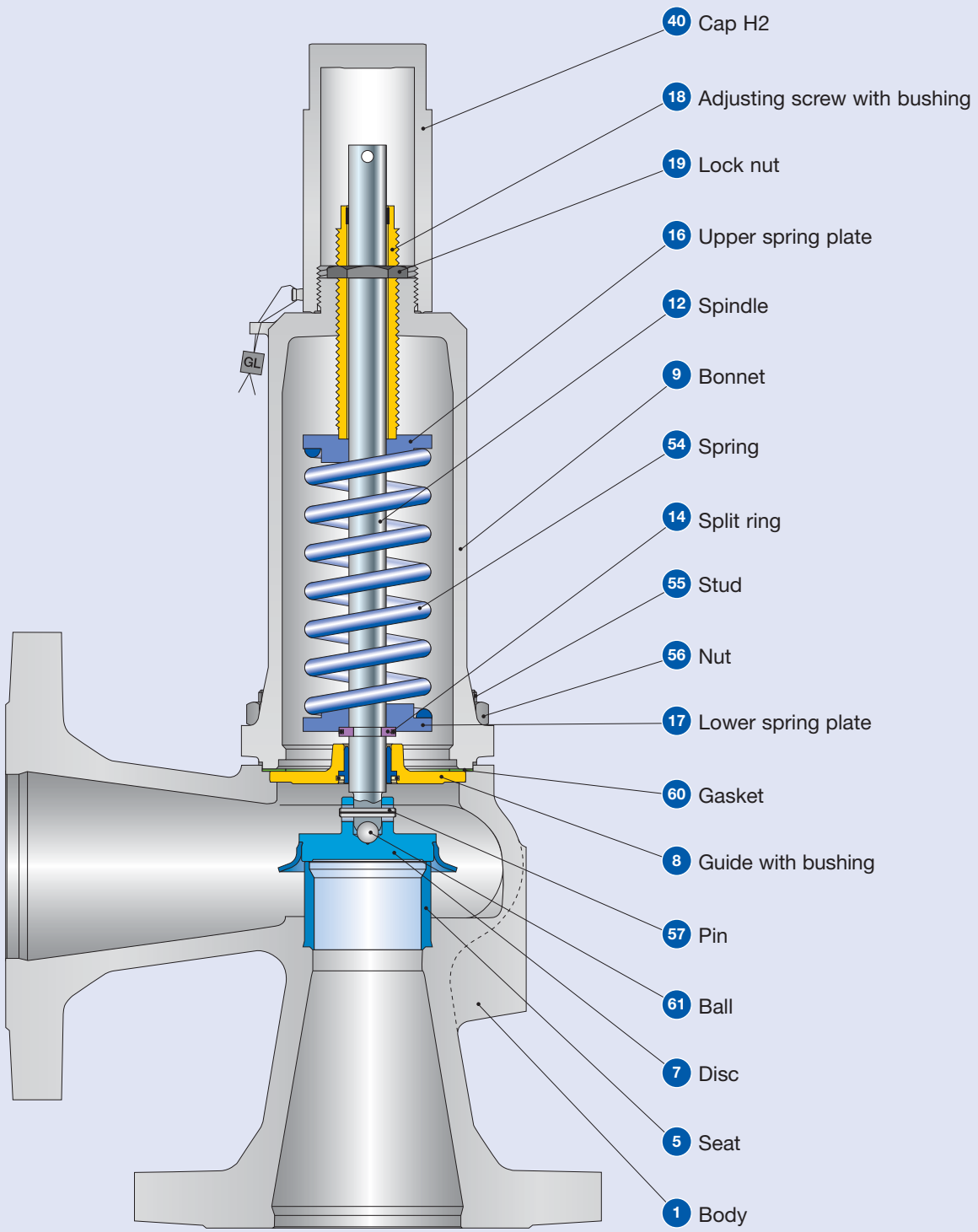
Conventional design



Conventional design

Materials

Item.	Component	Type 4311 / 4331	Type 4315 / 4335	Type 4312 / 4332	Type 4334
1	**Body**	0.6025 Cast iron	0.7043 Ductile Gr. 60-40-18	1.0619 SA 216 WCB	1.4408 SA 351 CF8M
5	Seat	1.4404 316L	1.4404 316L	1.4404 316L	1.4404 316L
7	Disc	1.4122 Hardened stainless steel	1.4122 Hardened stainless steel	1.4122 Hardened stainless steel	1.4404 316L
8	Guide	1.4104, 1.0501 Chrome or carbon steel	1.4104, 1.0501 Chrome or carbon steel	1.4104, 1.0501, 1.0570 Chrome or carbon steel	1.4404 316L
	with bushing	1.4104 tenifer Chrome steel tenifer	1.4104 tenifer Chrome steel tenifer	1.4104 tenifer Chrome steel tenifer	– –
9	**Bonnet**	0.7040 Ductile Gr. 60-40-18	0.7040 Ductile Gr. 60-40-18	0.7040 Ductile Gr. 60-40-18	1.4408, 1.4404 SA 351 CF8M, SA 479 316L
12	Spindle	1.4021 420	1.4021 420	1.4021 420	1.4404 316L
14	Split ring	1.4104 Chrome steel	1.4104 Chrome steel	1.4104 Chrome steel	1.4404 316L
16/17	Spring plate	1.0718 Steel	1.0718 Steel	1.0718 Steel	1.4404 316L
18	Adjusting screw with bushing	1.4104 PTFE Chrome steel PTFE	1.4104 PTFE Chrome steel PTFE	1.4104 PTFE Chrome steel PTFE	1.4404 PTFE 316L PTFE
19	Lock nut	1.0718 Steel	1.0718 Steel	1.0718 Steel	1.4404 316L
40	**Cap H2**	1.0718 12L13	1.0718 12L13	1.0718 12L13	1.4404 316L
54	Spring, standard	1.1200, 1.8159, 1.7102 Carbon steel	1.1200, 1.8159, 1.7102 Carbon steel	1.1200, 1.8159, 1.7102 Carbon steel	1.4310 Stainless steel
	Spring, optional	1.4310 Stainless steel	1.4310 Stainless steel	1.4310 Stainless steel	– –
55	Stud	1.1181 Steel	1.1181 Steel	1.1181 Steel	1.4401 B8M
56	Nut	1.0501 2H	1.0501 2H	1.0501 2H	1.4401 8M
57	Pin	1.4310 Stainless steel	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	Graphite / 1.4401 Graphite / 316
61	Ball	1.3541 Hardened stainless steel	1.3541 Hardened stainless steel	1.3541 Hardened stainless steel	1.4401 316

Please note:

- LESER reserves the right to make changes.
- LESER may use higher quality materials without giving prior notice.
- Each component can be constructed of another material according to the customer's specification.
- All components exposed to pressure are highlighted in bold. The material will be specified according to DIN and ASTM here.

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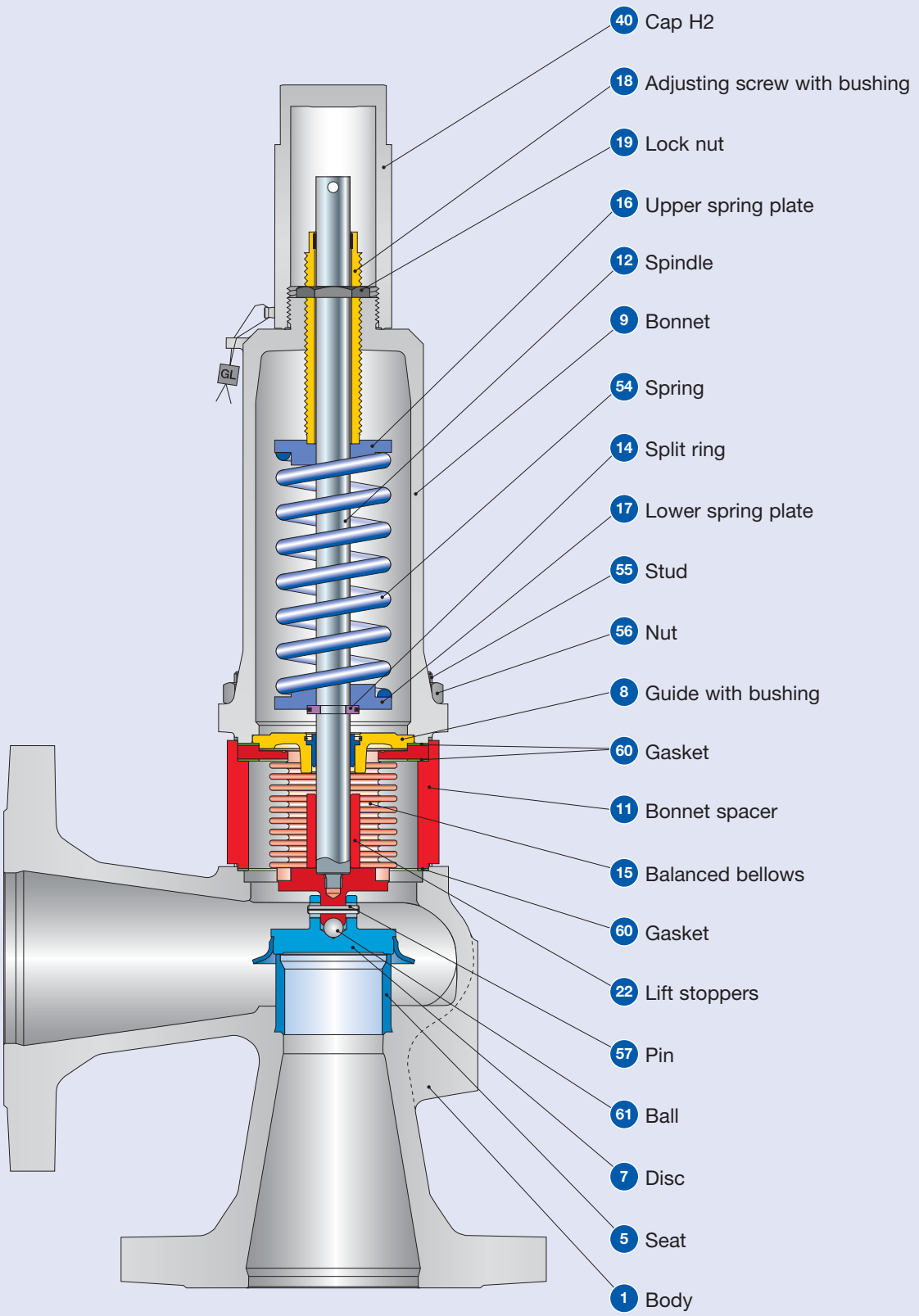
Balanced bellows design



Balanced bellows design

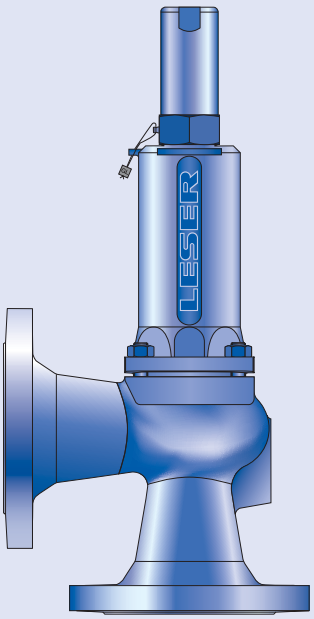
Materials

Item.	Component	Type 4311 / 4331	Type 4315 / 4335	Type 4312 / 4332	Type 4334
1	**Body**	0.6025 Cast iron	0.7043 Ductile Gr. 60-40-18	1.0619 SA 216 WCB	1.4408 SA 351 CF8M
5	Seat	1.4404 316L	1.4404 316L	1.4404 316L	1.4404 316L
7	Disc	1.4122 Hardened stainless steel	1.4122 Hardened stainless steel	1.4122 Hardened stainless steel	1.4404 316L
8	Guide	1.4104, 1.0501 Chrome or stainless steel	1.4104, 1.0501 Chrome or stainless steel	1.4104, 1.0501, 1.0570 Chrome or stainless steel	1.4404 316L
	with bushing	1.4104 tenifer Chrome steel	1.4104 tenifer Chrome steel	1.4104 tenifer Chrome steel	– –
9	**Bonnet**	0.7040 Ductile Gr. 60-40-18	0.7040 Ductile Gr. 60-40-18	0.7040 Ductile Gr. 60-40-18	1.4408, 1.4404 SA 351 CF8M, SA 479 316L
11	Bonnet spacer	1.4404 316L	1.4404 3316L	1.4404 316L	1.4404 316L
12	Spindle	1.4404 316L	1.4404 316L	1.4404 316L	1.4404 316L
14	Split ring	1.4104 Chrome steel	1.4104 Chrome steel	1.4104 Chrome steel	1.4404 316L
15	Balanced bellows	1.4571 316Ti	1.4571 316Ti	1.4571 316Ti	1.4571 316Ti
16/17	Spring plate	1.0718 Steel	1.0718 Steel	1.0718 Steel	1.4404 316L
18	Adjusting screw with bushing	1.4104 PTFE Chrome steel PTFE	1.4104 PTFE Chrome steel PTFE	1.4104 PTFE Chrome steel PTFE	1.4404 PTFE 316L PTFE
19	Lock nut	1.0718 Steel	1.0718 Steel	1.0718 Steel	1.4404 316L
22	Lift stoppers	1.4404 316L	1.4404 316L	1.4404 316L	1.4404 316L
40	**Cap H2**	1.0718 12L13	1.0718 12L13	1.0718 12L13	1.4404 316L
54	Spring, standard	1.1200, 1.8159, 1.7102 Chrome steel	1.1200, 1.8159, 1.7102 Chrome steel	1.1200, 1.8159, 1.7102 Chrome steel	1.4310 Stainless steel
	Spring, optional	1.4310 Stainless steel	1.4310 Stainless steel	1.4310 Stainless steel	– –
55	Stud	1.4401 B8M	1.4401 B8M	1.4401 B8M	1.4401 B8M
56	Nut	1.4401 8M	1.4401 8M	1.4401 8M	1.4401 8M
57	Pin	1.4310 Stainless steel	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	Graphite / 1.4401 Graphite / 316
61	Ball	1.3541 Hardened stainless steel	1.3541 Hardened stainless steel	1.3541 Hardened stainless steel	1.4401 316

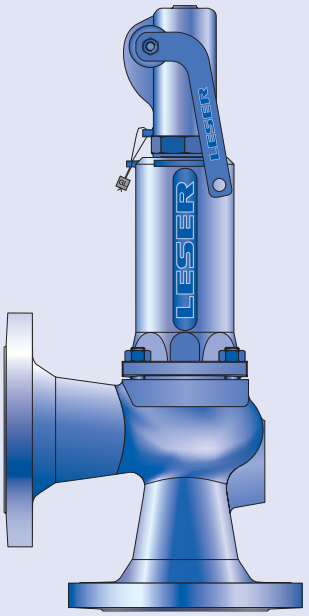
Please note:

- LESER reserves the right to make changes.
- LESER may use higher quality materials without giving prior notice.
- Each component can be constructed of another material according to the customer's specification.
- All components exposed to pressure are highlighted in bold. The material will be specified according to DIN and ASTM here.

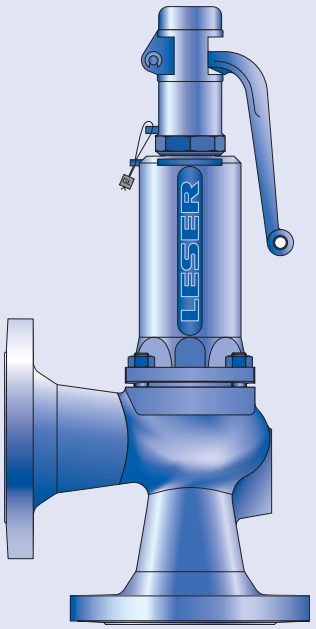
How to order – article numbers



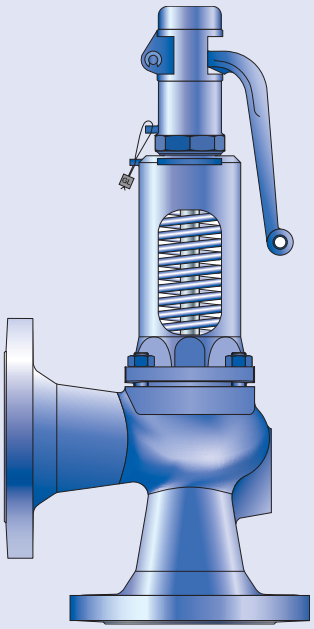
Type 433
Cap H2
Closed bonnet
Conventional design



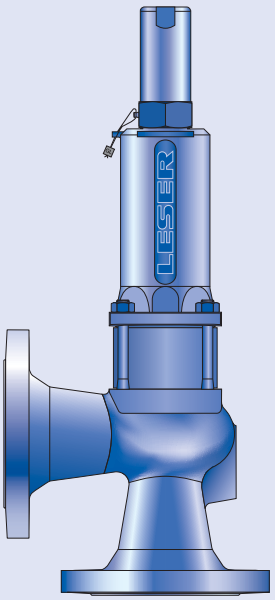
Type 433
Packed lever H4
Closed bonnet
Conventional design



Type 433
Plain lever H3
Closed bonnet
Conventional design



Type 431
Plain lever H3
Open bonnet
Conventional design



Type 433
Cap H2
Closed bonnet
Balanced bellows design

How to order – article numbers

Article numbers

			O-ring disc	Metal disc										
		DN_I	15	15	20	25	32	40	50	65	80	100	125	150
		DN_O	15	15	20	25	32	40	50	65	80	100	125	150
		Actual orifice diameter d_0 [mm]	12	12	18	18	18	23	29	37	46	60	74	92
		Actual orifice area A_0 [mm²]	113	113	254	254	254	416	661	1075	1662	2827	4301	6648
Body material: 0.6025 (cast iron)														
Bonnet closed	**H2**	Art. no. **4331.**	**8502**	**3992**	**4012**	**4022**	**4032**	**4042**	**4052**	**4062**	**4072**	**4082**	–	–
	H3	Art. no. **4331.**	**8503**	**3993**	**4013**	**4023**	**4033**	**4043**	**4053**	**4063**	**4073**	**4083**	–	–
	H4	Art. no. **4331.**	**8504**	**3994**	**4014**	**4024**	**4034**	**4044**	**4054**	**4064**	**4074**	**4084**	–	–
open	**H3**	Art. no. **4311.**	**8505**	**3995**	**4015**	**4025**	**4035**	**4045**	**4055**	**4065**	**4075**	**4085**	–	–
Body material: 0.7043 (Ductile Gr. 60-40-18)														
Bonnet closed	**H2**	Art. no. **4335.**	**8532**	**8752**	**8762**	**8772**	**8782**	**8792**	**8802**	**8812**	**8822**	**8832**	–	–
	H3	Art. no. **4335.**	**8533**	**8753**	**8763**	**8773**	**8783**	**8793**	**8803**	**8813**	**8823**	**8833**	–	–
	H4	Art. no. **4335.**	**8534**	**8754**	**8764**	**8774**	**8784**	**8794**	**8804**	**8814**	**8824**	**8834**	–	–
open	**H3**	Art. no. **4315.**	**8535**	**8755**	**8765**	**8775**	**8785**	**8795**	**8805**	**8815**	**8825**	**8835**	–	–
Body material: 1.0619 (WCB)														
Bonnet closed	**H2**	Art. no. **4332.**	**8512**	**4122**	**4142**	**4152**	**4162**	**4172**	**4182**	**4192**	**4202**	**4212**	**4222**	**4232**
	H3	Art. no. **4332.**	**8513**	**4123**	**4143**	**4153**	**4163**	**4173**	**4183**	**4193**	**4203**	**4213**	**4223**	**4233**
	H4	Art. no. **4332.**	**8514**	**4124**	**4144**	**4154**	**4164**	**4174**	**4184**	**4194**	**4204**	**4214**	**4224**	**4234**
open	**H3**	Art. no. **4312.**	**8515**	**4125**	**4145**	**4155**	**4165**	**4175**	**4185**	**4195**	**4205**	**4215**	**4225**	**4235**
Body material: 1.4408 (CF8M)														
Bonnet closed	**H2**	Art. no. **4334.**	**8522**	**4252**	**4272**	**4282**	**4292**	**4302**	**4312**	**4322**	**4332**	**4342**	–	–
	H4	Art. no. **4334.**	**8524**	**4254**	**4274**	**4284**	**4294**	**4304**	**4314**	**4324**	**4334**	**4344**	–	–

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Pressure temperature ratings

Metric units

		O-ring disc	Metal disc										
DN_I		15	15	20	25	32	40	50	65	80	100	125	150
DN_O		15	15	20	25	32	40	50	65	80	100	125	150
Actual orifice diameter d_0 [mm]		12	12	18	18	18	23	29	37	46	60	74	92
Actual orifice area A_0 [mm²]		113	113	254	254	254	416	661	1075	1662	2827	4301	6648
Body material: 0.6025 (cast iron)													
DIN flange	Inlet		**PN 16**									–	–
	Outlet		**PN 16**									–	–
Minimum set pressure	p [bar_g] S/G/L	0,3	0,3	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	–	–
Min. set pressure[1] Standard bellows	p [bar_g] S/G/L	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	–	–
Min. set pressure low pressure Bellow	p [bar_g] S/G/L	–	–	2,0	2,0	2,0	1,8	1,9	1,8	1,8	1,2	–	–
Maximum set pressure	p [bar_g] S/G/L	16	16	16	16	16	16	16	16	16	16	–	–
Max. set pressure with special spring	p [bar_g] S/G/L	16	16	16	16	16	16	16	16	16	16	–	–
Temperature[2] acc. to DIN EN	min. [°C]	-10	-10									–	–
	max. [°C]	+150	+300									–	–
Body material: 0.7043 (Ductile Gr. 60-40-18)													
DIN flange	Inlet		**PN 40**									–	–
	Outlet		**PN 40**									–	–
Minimum set pressure	p [bar_g] S/G/L	0,3	0,3	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	–	–
Min. set pressure[1] Standard bellows	p [bar_g] S/G/L	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	–	–
Min. set pressure low pressure Bellow	p [bar_g] S/G/L	–	–	2,0	2,0	2,0	1,8	1,9	1,8	1,8	1,2	–	–
Maximum set pressure	p [bar_g] S/G/L	16	16	16	16	16	16	16	16	16	16	–	–
Max. set pressure with special spring	p [bar_g] S/G/L	16	16	16	16	16	16	16	16	16	16	–	–
Temperature[2] acc. to DIN EN	min. [°C]	-45	-10									–	–
	max. [°C]	+150	+300									–	–

[1] Min. set pressure of standard bellows = max. set pressure of bellows for low set pressure.

[2] The temperature is limited by the soft seal material (see page 99/10). The values given here are valid for EPDM. Between -10°C and the lowest specified application temperature, proceed acc. to AD-Merkblatt W10.

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Pressure temperature ratings

Metric units

		O-ring disc	Metal disc										
DN_I		15	15	20	25	32	40	50	65	80	100	125	150
DN_O		15	15	20	25	32	40	50	65	80	100	125	150
Actual orifice diameter d_0 [mm]		12	12	18	18	18	23	29	37	46	60	74	92
Actual orifice area A_0 [mm²]		113	113	254	254	254	416	661	1075	1662	2827	4301	6648
Body material: 1.0619 (WCB)													
DIN flange	Inlet		**PN 40**										
	Outlet		**PN 40**										
Minimum set pressure	p [bar_g] S/G/L	0,3	0,3	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2
Min. set pressure[1] Standard bellows	p [bar_g] S/G/L	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0
Min. set pressure low pressure Bellow	p [bar_g] S/G/L	–	–	2,0	2,0	2,0	1,8	1,9	1,8	1,8	1,2	1,2	on request
Maximum set pressure	p [bar_g] S/G/L	40	40	40	40	40	40	40	35	35	30	32	16
Max. set pressure with special spring	p [bar_g] S/G/L	40	40	40	40	40	40	40	40	35	30	32	16
Temperature[2] acc. to DIN EN	min. [°C]	-45	-85									–	–
	max. [°C]	+150	+450									–	–
Body material: 1.4408 (CF8M)													
DIN flange	Inlet		**PN 40**									–	–
	Outlet		**PN 40**									–	–
Minimum set pressure	p [bar_g] S/G/L	0,3	0,3	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	–	–
Min. set pressure[1] Standard bellows	p [bar_g] S/G/L	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	–	–
Min. set pressure Bellows, low set pressure	p [bar_g] S/G/L	–	–	2,0	2,0	2,0	1,8	1,9	1,8	1,8	1,2	–	–
Maximum set pressure	p [bar_g] S/G/L	40	40	40	40	40	40	31,6	20,2	25	22	–	–
Max. set pressure with special spring	p [bar_g] S/G/L	40	40	40	40	40	40	40	26	25	22	–	–
Temperature[2] acc. to DIN EN	min. [°C]	-45	-270									–	–
	max. [°C]	+150	+400									–	–

[1] Min. set pressure of standard bellows = max. set pressure of bellows for low set pressure.

[2] The temperature is limited by the soft seal material (see page 99/10). The values given here are valid for EPDM. Between -10°C and the lowest specified application temperature, proceed acc. to AD-Merkblatt W10.

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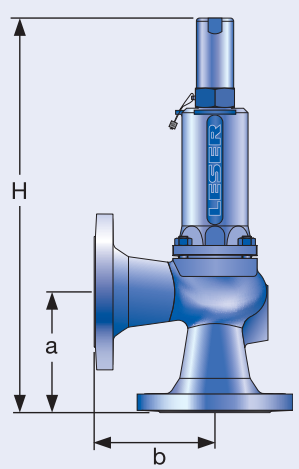
Dimensions and weights

Metric units

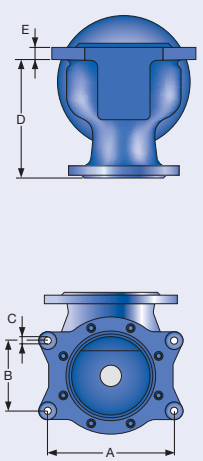
		O-ring disc	Metal disc									
DN_I		15	15	20	25	32	40	50	65	80	100	125	150
DN_O		15	15	20	25	32	40	50	65	80	100	125	150
Actual orifice diameter d_0 [mm]		12	12	18	18	18	23	29	37	46	60	74	92
Actual orifice area A_0 [mm²]		113	113	254	254	254	416	661	1075	1662	2827	4301	6648
Weight [kg]		5	5	6	6	8	9	12	15	20	33	48	65
	with bellows	6,3	6,3	6,4	6,4	8,4	9,6	13	16	21,6	35,6	52,1	78,4
Centre to face [mm]	Inlet a	90	90	95	100	105	115	125	145	155	175	200	225
	Outlet b	90	90	95	100	105	115	125	145	155	175	200	225
Height (H4) [mm]	Standard H max.	310	310	315	320	325	335	360	475	530	605	745	870
	Bellows H max.	362	362	345	350	360	390	425	535	600	680	825	965
Support brackets [mm]	A												277
	B												160
(Drilled only on request,	C												Ø 18
option code H42)	D												278
	E												21

Body material: 0.6025 (cast iron)				
DIN flange[1)]	Inlet	PN 16	–	–
	Outlet	PN 16	–	–
Body material: 0.7043 (Ductile Gr. 60-40-18)				
DIN flange[1)]	Inlet	PN 40	–	–
	Outlet	PN 40	–	–
Body material: 1.0619 (WCB)				
DIN flange[1)]	Inlet	PN 40		
	Outlet	PN 40		
Body material: 1.4408 (CF8M)				
DIN flange[1)]	Inlet	PN 40	–	–
	Outlet	PN 40	–	–

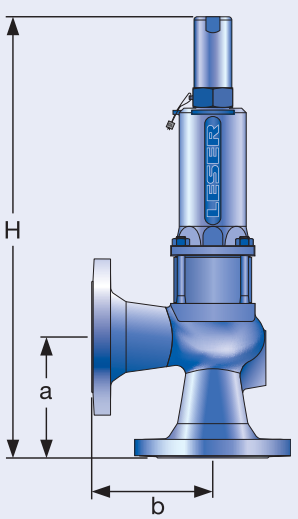
[1)] Standard flange class For other flange drillings, refer to page 01/14 and 01/15.



Conventional design



Support brackets



Balanced bellows design

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Flange drillings

Flange drillings

			O-ring disc	Metal disc										
		DN_I	15	15	20	25	32	40	50	65	80	100	125	150
		DN_O	15	15	20	25	32	40	50	65	80	100	125	150
		Valve size	1/2" x 1/2"	1/2" x 1/2"	3/4" x 3/4"	1" x 1"	1 1/4"x1 1/4"	1 1/2"x1 1/2"	2" x 2"	2 1/2" x 2 1/2"	3" x 3"	4" x 4"	5" x 5"	6" x 6"
		Actual orifice diameter d_0 [mm]	12	12	18	18	18	23	29	37	46	60	74	92
		Actual orifice area A_0 [mm²]	113	113	254	254	254	416	661	1075	1662	2827	4301	6648
Body material: 0.6025 (cast iron)														
Inlet	**DIN EN 1092**	PN 10	*	*	*	*	*	*	*	*	*	*	*	*
		PN 16	*	*	*	*	*	*	*	*	*	*	*	*
		PN 25	–	–	–	–	–	–	–	–	–	–	–	–
		PN 40	–	–	–	–	–	–	–	–	–	–	–	–
Outlet	**DIN EN 1092**	PN 10	*	*	*	*	*	*	*	*	*	*	*	*
		PN 16	*	*	*	*	*	*	*	*	*	*	*	*
Body material: 0.7043 (Ductile Gr. 60-40-18), 1.0619 (WCB), 1.4408 (CF8M)														
Inlet	**DIN EN 1092**	PN 10	*	*	*	*	*	*	*	H44	H44	H44	H44	H44
		PN 16	*	*	*	*	*	*	*	H45	H45	H45	H45	H45
		PN 25	*	*	*	*	*	*	*	*	*	*	*	*
		PN 40	*	*	*	*	*	*	*	*	*	*	*	*
	ASME B16.5	CL150	H64	H64	H64	H64	H64	H64	H64	H64	H64	[H64]	H64	H64
		CL300	[H65]	[H65]	–	H65	H65	–	[H65]	[H65]	–	–	–	–
Outlet	**DIN EN 1092**	PN 10	*	*	*	*	*	*	*	H50	H50	H50	H50	H50
		PN 16	*	*	*	*	*	*	*	H51	H51	H51	H51	H51
	ASME B16.5	CL150	H79	H79	H79	H79	H79	H79	H79	H79	H79	[H79]	H79	H79
		CL300	H80	H80	–	H80	H80	–	[H80]	[H80]	–	–	–	–

For an explanation of the characters and symbols, refer to page 00/07.
Note: Flange drillings and facings always meet the requirements of the given flange standards.
Flange thickness and outside diameter may deviate from the standard.

Flange facings

Flange facings

Information	Standard	Inlet	Outlet	Remark
General				
Flange, undrilled	–	H38	H39	
Linde-V-Nut, Form V48	Linde Standard 420-08	J07	J08	Groove: Rz 16
Linde-V-Nut, Form V48A	LWN 313.36	J05	J06	Groove: Rz 4, e.g. for hydrogen
Lens-shape seal form L (without lens-shape seal)	DIN 2696 LWN 313.35	J11	J12	

According to DIN EN

Flange facings			Inlet		Outlet		Remark
DIN EN 1092 (new)		DIN 2526 (old)					Rz specification acc. to DIN EN 1092 in µm
(also see LWN 313.40)			PN 10 – PN 40	PN 40	PN 10 – PN 40	PN 40	
Sealing strip	Form B1	Form C	*	–	*	–	Seal. strip.: Rz = 12,5 – 50
		Form D					
	Form B2	Form E	L36	*	L38	*	Seal. strip.: Rz = 3,2 – 12,5
Tongue, Form C[1]		Tongue, Form F	H94	H94	H92	H92	
Groove, Form D[1]		Groove, Form N	H93	H93	H91	H91	
Male, Form E		Male, Form V13	H96	H96	H98	H98	
Female, Form F		Female, Form R13	H97	H97	H99	H99	
O-ring Male, Form G		Male, Form V14	J01	J01	J02	J02	
O-ring Female, Form H		Female, Form R14	J03	J03	J04	J04	

only for steel flange

According to ASME B16.5

Body material	Inlet	Outlet	Smooth Finish[2]		Serrated Finish		RTJ-Groove			
			Inlet	Outlet	Inlet	Outlet	Inlet		Outlet	
			Option code		Option code		Pressure level	Option code	Pressure level	Option code
0.7043	All	All	L52	L53	*	*	–	–	–	–
1.0619, 1.4408	All	All	L52	L53	*	*	CL150	H62	CL150	H63

[1] Groove depths or alternatively tongue heights have increased acc. to DIN EN 1092 compared to the former DIN construction (see LWN 313.40). By default, LESER uses milling to produce the groove for flange valves. If a customer requests a turned surface in soil of the groove acc. to DIN 2512 or DIN EN 1092-1, then “S01: bottom of the groove drilled” must be specified.

[2] Smooth Finish is not defined in the effective standards. LESER’s definition for Smooth Finish can be found on page 00/07.

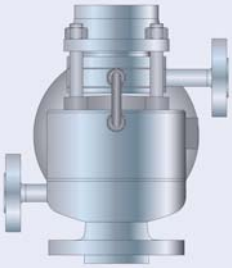
For an explanation of signs and symbols, refer to page 00/07.
Note: Flange drillings and facings always meet the requirements of mentioned flange standards.
Flange thickness and outer diameter may deviate from flange standard.

LESER

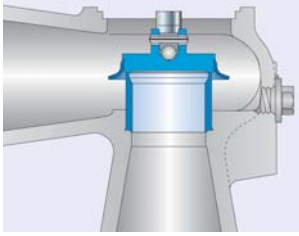
Available options

For more information, also see
“Accessories and Options” as of page 99/01.

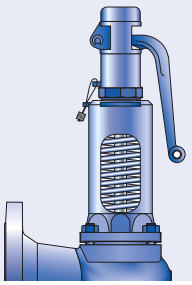
Heating jacket
H29, H30: Coupling G $^{3}/_{8}$, G $^{3}/_{4}$
H31, H32: Flange DN15, DN25



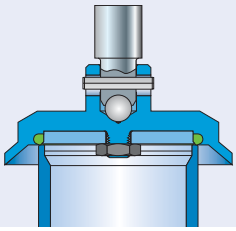
Drain hole
J18: G $^{1}/_{4}$
J19: G $^{1}/_{2}$



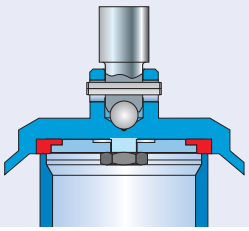
Open bonnet
See art. no.



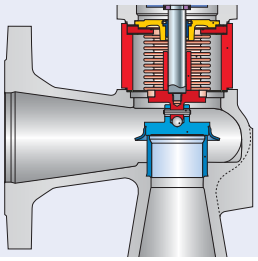
O-ring disc
J20: FFKM "C"
J21: CR "K"
J22: EPDM "D"
J23: FKM "L"



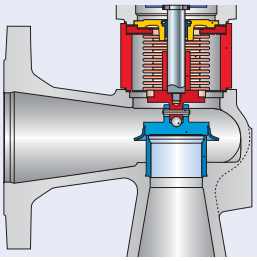
Disc with sealing plate
J68: Open bonnet
J78: Closed bonnet



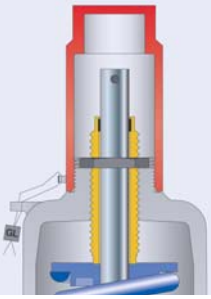
Balanced bellows
J68: Open bonnet
J78: Closed bonnet



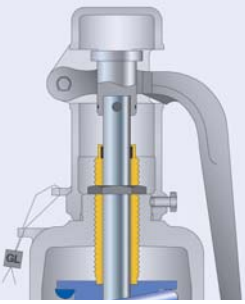
Conversion kit for balanced bellows bellows
art. no., see page 01/14



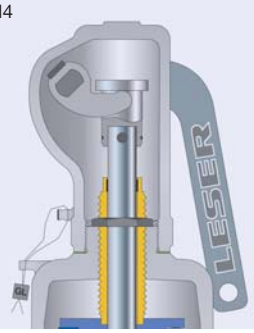
Screwed cap H2
H2



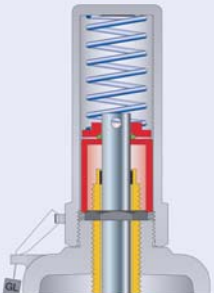
Plain lever H3
H3



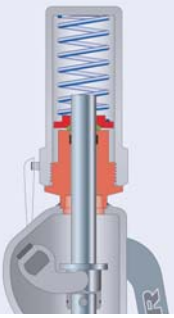
Packed lever H4
H4



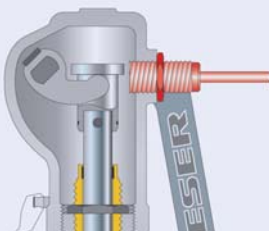
O-ring damper H2
J65



O-ring damper H4
J66



Lift indicator
J39: Adaptor H4
J93: Lift indicator



Test gag
J69: H4
J70: H4