LESER

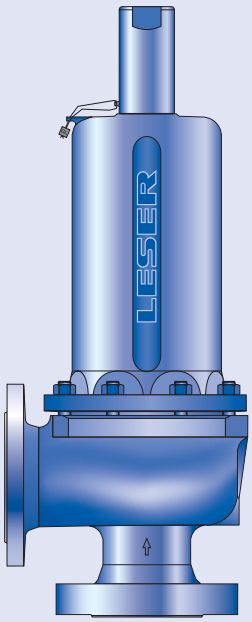
Type 455, 456

Flanged Safety Relief Valves – spring loaded

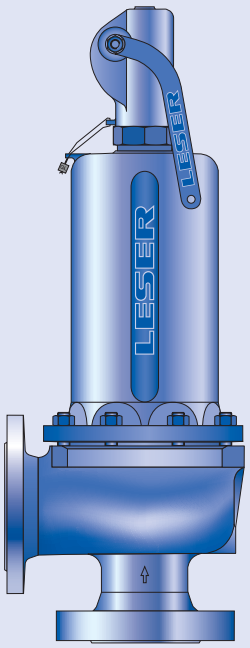
Type 456
Packed lever H4
Closed bonnet
Conventional design

Contents **Chapter/Page**

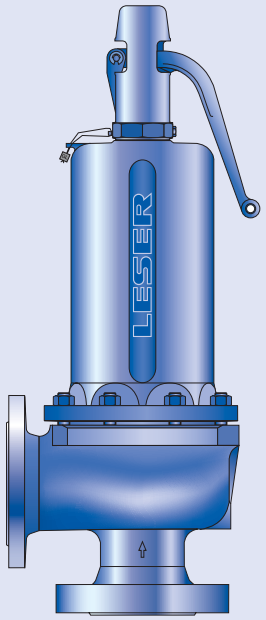
How to order – Article numbers



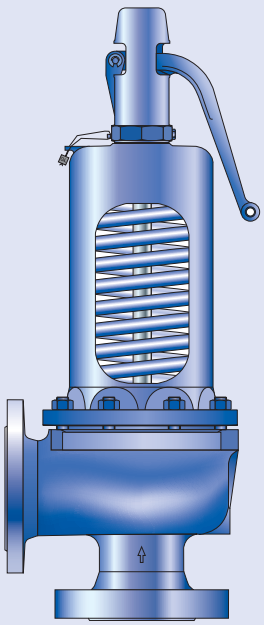
Type 456
Cap H2
Closed bonnet
Conventional design



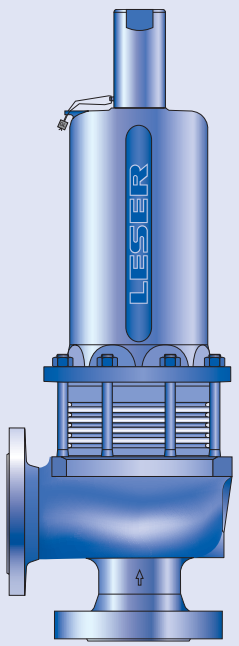
Type 456
Packed lever H4
Closed bonnet
Conventional design



Type 456
Plain lever H3
Closed bonnet
Conventional design



Type 455
Plain lever H3
Open bonnet
Conventional design



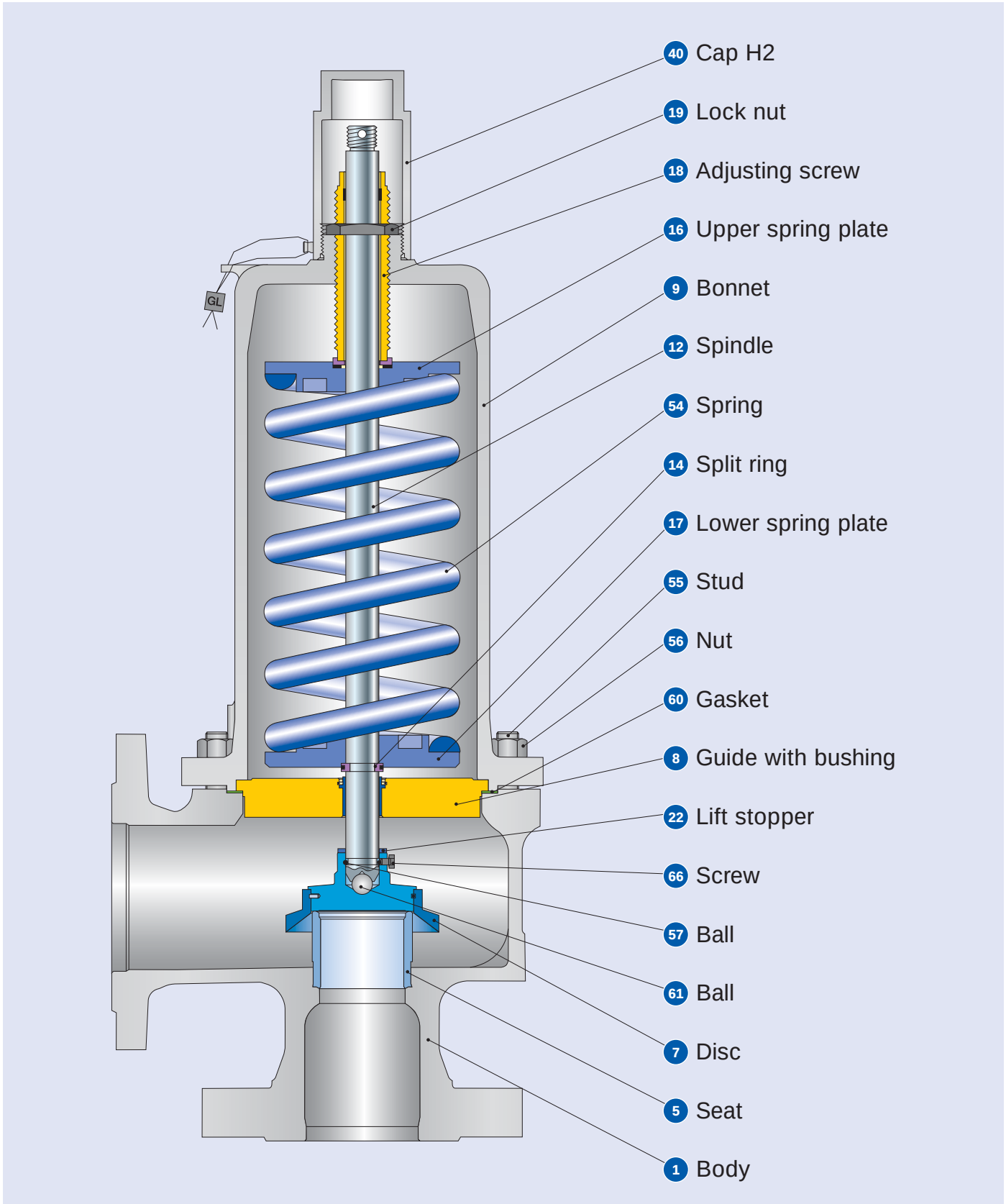
Type 456
Cap H2
Closed bonnet
Balanced bellows design

How to order – Article numbers

Article numbers

			DN_{I+O}	25 x 50	50 x 80	80 x 100	100 x 150
			Valve size	1" x 2"	2" x 3"	3" x 4"	4" x 6"
			Actual Orifice diameter d_0 [mm]	20	40	60	74
			Actual Orifice area A_0 [mm²]	314	1257	2827	4301
Body material: 1.0619 (WCB)							
Bonnet closed	**H2**	Art.-No. **4562.**		**6012**	**6022**	**6032**	**6042**
	H3	Art.-No. **4562.**		**6013**	**6023**	**6033**	**–**
	H4	Art.-No. **4562.**		**6014**	**6024**	**6034**	**6044**
open	**H3**	Art.-No. **4552.**		**6015**	**6025**	**6035**	**6045**
Body material: 1.4581 (CF10M)							
Bonnet closed	**H2**	Art.-No. **4564.**		**6052**	**6062**	**6072**	**6082**
	H4	Art.-No. **4564.**		**6054**	**6064**	**6074**	**6084**

Conventional design



Conventional design

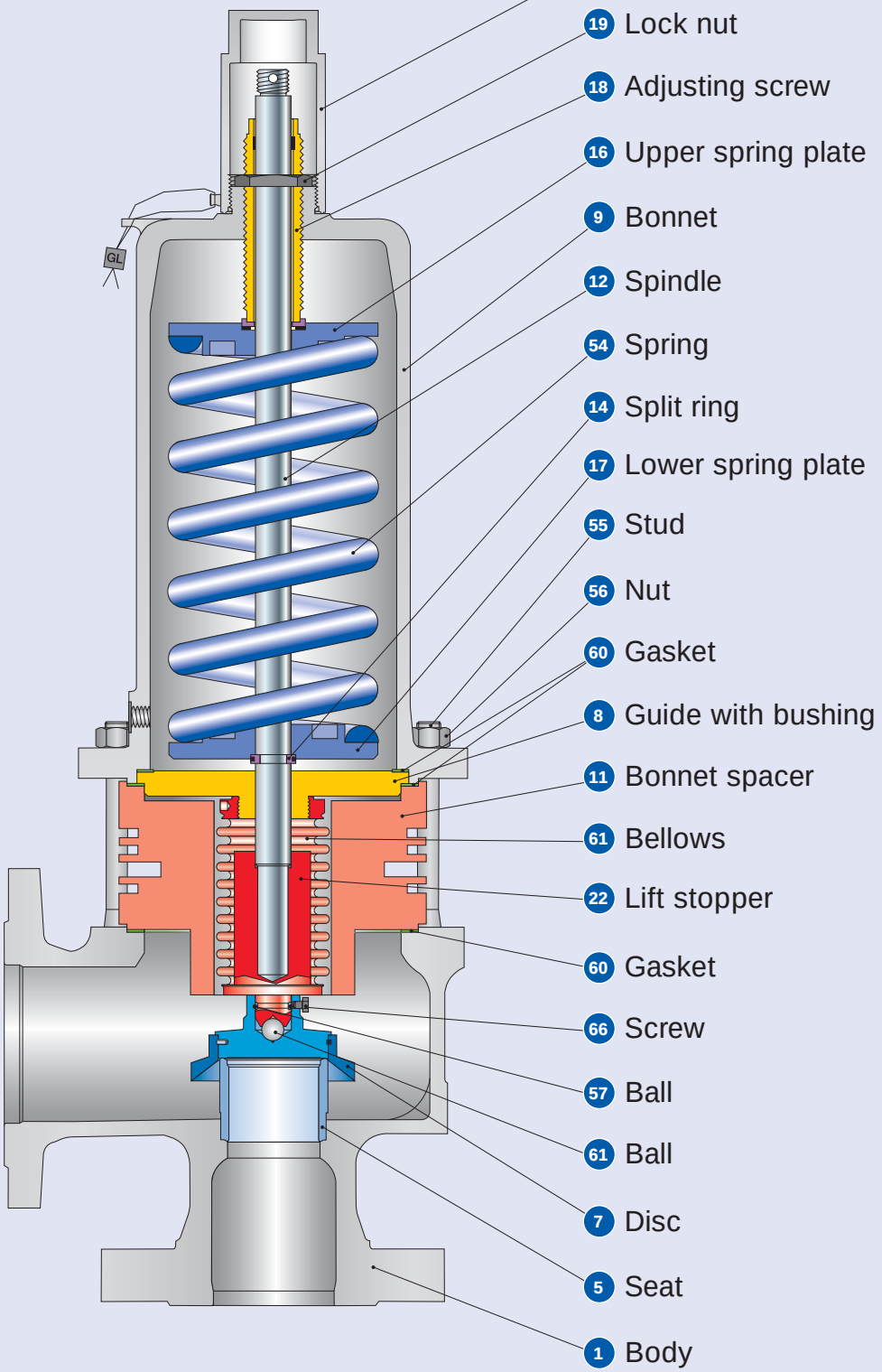
Materials

Item	Component	Type 4552 / 4562	Type 4564
1	**Body**	1.0619 SA 216 WCB	1.4581 SA 351 CF10M
5	Seat	1.4404 316L	1.4404 316L
7	Disc	1.4122 Hardened stainless steel	1.4404 316L
8	Guide	1.0501, 0.7040 Chrome or carbon steel	1.4404 316L
	with bushing	1.4104 tenifer Chrome steel	– –
9	**Bonnet**	0.7043 (Open bonnet 0.7040), 1.0619 Ductile Gr. 60-40-18, SA 216 WCB	1.4408, 1.4404, 1.4571 SA 351 CF8M, SA 479 316L, 316Ti
12	Spindle	1.4404 316L	1.4404 316L
14	Split ring	1.4104 Chrome steel	1.4404 316L
16 / 17	Spring plate	1.0718 Steel	1.4404 316L
18	Adjusting screw with bushing	1.4104 PTFE Chrome steel PTFE	1.4404 PTFE 316L PTFE
19	Lock nut	1.0718 Steel	1.4404 316L
22	Lift stopper	1.4404 316L	1.4404 316L
40	Cap H2	1.0718 12L13	1.4404 316L
54	Spring standard	1.1200, 1.8159, 1.7102 Carbon steel	1.4310 Stainless steel
	Spring optional	1.4310 Stainless steel	– –
55	Stud	1.1181 Steel	1.4401 B8M
56	Nut	1.0501 2H	1.4401 8M
57	Ball	1.4401 316	1.4401 316
60	Gasket	Graphite / 1.4401 Graphite / 316	Graphite / 1.4401 Graphite / 316
61	Ball	1.3541 Hardened stainless steel	1.4401 316
66	Screw	1.4401 B8M	1.4401 B8M

Please notice:

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

Balanced bellows design



Balanced bellows design

Materials

Item	Component	Type 4552 / 4562	Type 4564
1	**Body**	1.0619 SA 216 WCB	1.4581 SA 351 CF10M
5	Seat	1.4404 316L	1.4404 316L
7	Disc	1.4122 Hardened stainless steel	1.4404 316L
8	Guide	1.0501, 0.7040 Chrome or carbon steel	1.4404 316L
	with bushing	1.4104 tenifer Chrome steel	– –
9	**Bonnet**	0.7043 or 1.0619 Ductile Gr. 60-40-18 or SA 216 WCB	1.4408, 1.4404, 1.4571 SA 351 CF8M, SA 479 316L, 316Ti
11	Bonnet spacer	1.0460 Carbon steel	1.4404 316L
12	Spindle	1.4404 316L	1.4404 316L
14	Split ring	1.4104 Chrome steel	1.4404 316L
15	Bellows	1.4571 316Ti	1.4571 316Ti
16 / 17	Spring plate	1.0718 Steel	1.4404 316L
18	Adjusting screw with bushing	1.4104 PTFE Chrome steel PTFE	1.4404 PTFE 316L PTFE
19	Lock nut	1.0718 Steel	1.4404 316L
22	Lift stopper	1.4404 316L	1.4404 316L
40	Cap H2	1.0718 12L13	1.4404 316L
54	Spring standard	1.1200, 1.8159, 1.7102 Carbon steel	1.4310 Stainless steel
	Spring optional	1.4310 Stainless steel	– –
55	Stud	1.1181 Steel	1.4401 B8M
56	Nut	1.0501 2H	1.4401 8M
57	Ball	1.4401 316	1.4401 316
60	Gasket	Graphite / 1.4401 Graphite / 316	Graphite / 1.4401 Graphite / 316
61	Ball	1.3541 Hardened stainless steel	1.4401 316
66	Screw	1.4401 B8M	1.4401 B8M

Please notice:

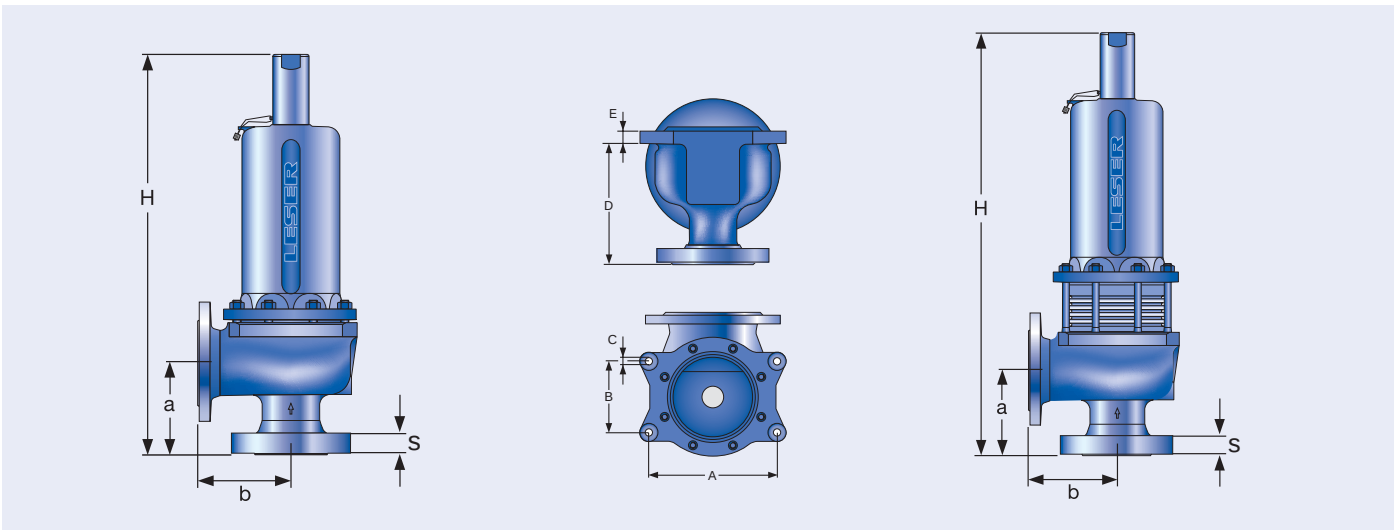
- Modifications reserved by LESER.
- LESER can upgrade materials without notice.
- Every part can be replaced by other material acc. to customer specification.

Dimensions and weights

Metric Units

		DN_{i+o}	25 x 50	50 x 80	80 x 100	100 x 150
		Valve size	1" x 2"	2" x 3"	3" x 4"	4" x 6"
		Actual Orifice diameter d_0 [mm]	20	40	60	74
		Actual Orifice area A_0 [mm^2]	314	1257	2827	4301
Weight [kg]			18	43	85	154
		with bellows	20	46	102	185
Center to face [mm]		Inlet a	122	155	168	205
	Outlet b	(PN 40)	120	145	180	235
	Outlet b	(PN 63)	120	145	205	265
Measure [mm]	Used to find bolt length for inlet flange	s	28	38	38	45
Height (H4) [mm]	Standard H	max.	493	684	807	1059
	Bellows H	max.	528	764	905	1150
Support brackets [mm] (drilled only on request)		**A**	140	184	278	364
		B	–	110	160	210
		C	Ø 14	Ø 14	Ø 18	Ø 18
		D	149	194	225	288
		E	18	18	27	32
Body material: 1.0619 (WCB)						
DIN Flange[1)]		Inlet	PN 63 – 160			
		Outlet	PN 40 – 63		PN 40	
Body material: 1.4581 (CF10M)						
DIN Flange[1)]		Inlet	PN 63 – 160			
		Outlet	PN 40 – 63		PN 40	

[1)] Standard flange rating. For other flange drillings and facings please refer to 08/14.



Conventional design | Support brackets | Balanced bellows design

Pressure temperature ratings

Metric Units

	DN_{I+O}	25 x 50	50 x 80	80 x 100	100 x 150
	Valve size	1" x 2"	2" x 3"	3" x 4"	4" x 6"
	Actual Orifice diameter d_0 [mm]	20	40	60	74
	Actual Orifice area A_0 [mm^2]	314	1257	2827	4301
Body material: 1.0619 (WCB)					
DIN Flange	Inlet	**PN 63 – 100**			
	Outlet	**PN 40 – 63**		**PN 40**	
Minimum set pressure	p [bar_g] S/G/L	2,5	2,5	2,5	2,5
Min. set pressure[1] standard bellows	p [bar_g] S/G/L	13,5	2,5	10	5
Min. set pressure low press. bellows	p [bar_g] S/G/L		on request		
Maximum set pressure	p [bar_g] S/G/L	100	98	63	53
Max. set pressure with special spring	p [bar_g] S/G/L	100	100	63	63
Temperature acc. to DIN EN	min. [°C]	-85			
	max. [°C]	+450			
Temperature acc. to ASME	min. [°C]	-29			
	max. [°C]	+427			

Body material: 1.4581 (CF10M)					
DIN Flange	Inlet	**PN 63 – 100**			
	Outlet	**PN 40 – 63**		**PN 40**	
Minimum set pressure	p [bar_g] S/G/L	2,5	2,5	2,5	2,5
Min. set pressure[1] standard bellows	p [bar_g] S/G/L	13,5	2,5	10	5
Min. set pressure low press. bellows	p [bar_g] S/G/L		on request		
Maximum set pressure	p [bar_g] S/G/L	100	61	35	16,9
Max. set pressure with special spring	p [bar_g] S/G/L	100	65	43	43
Temperature acc. to DIN EN	min. [°C]	-85			
	max. [°C]	+550			
Temperature acc. to ASME	min. [°C]	-29			
	max. [°C]	+538			

[1] Min. set pressure standard bellows = Max. set pressure low pressure bellows.

Flange drillings and facings

Flange drillings

			DN_{I+O}	25 x 50	50 x 80	80 x 100	100 x 150
			Valve size	1" x 2"	2" x 3"	3" x 4"	4" x 6"
			Actual Orifice diameter d_0 [mm]	20	40	60	74
			Actual Orifice area A_0 [mm²]	314	1257	2827	4301
Body material: 1.0619 (WCB), 1.4581 (CF10M)							
Inlet	**DIN EN 1092**	PN 16		H47	H47	H47	H47
		PN 25		H47	H47	H47	H47
		PN 40		H47	H47	H47	H47
		PN 63		*	H10	H10	H10
		PN 100		*	*	*	*
		PN 160		*	*	*	*
		PN 250		–	–	–	–
		PN 320		–	–	–	–
		PN 400		–	–	–	–
	ASME B16.5	CL150		–	–	–	–
		CL300		H65	H65	H65	H65
		CL600		H67	H67	H67	H67
		CL900		H69	H69	–	–
		CL1500		H69	H69	–	–
		CL2500		–	–	–	–
Outlet	**DIN EN 1092**	PN 10		*	*	H51	H51
		PN 16		*	*	H51	H51
		PN 25		*	*	*	*
		PN 40		*	*	*	*
		PN 63		H16	H16	–	–
	ASME B16.5	CL150		H79	H79	H79	H79
		CL300		H80	H80	–	–

Flange facings

Indication	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. with hydrogen
Lens seal form L (without sealing lens)	DIN 2696 LWN 313.35	J11	J12				

Acc. to DIN EN								
Flange facing			**Inlet**		**Outlet**		**Remark**	
DIN EN 1092 (new)		**DIN 2526 (old)**					Rz-data according to DIN EN 1092 in µm	
see also LWN 313.40)			PN 10 – PN 40	PN 63 – PN 400	PN 10 – PN 40	PN 63		
Raised face	Type B1	Type C	*	–	*	–	Facing: Rz = 12,5 – 50	
		Type D						
	Type B2	Type E	L36	*	L38	*	Facing: Rz = 3,2 – 12,5	Steel flanges only
Tongue face C[1]		Tongue face F	H94		H92			
Groove face D		Groove face N	H93		H91			
Male face E		Male face V13	H96		H98			
Female face F		Female face R13	H97		H99			
O-ring male face G		Male face V14	J01		J02			
O-ring female face H		Female face R14	J03		J04			

Acc. 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**		**RTJ-Class**	**Option code**	**RTJ-Class**	**Option code**
1.0619, 1.4581	all	all	L51	L53	*	*	CL300 –1500	H62	CL150	H63
							CL2500	–	CL300	H63

[1] According to DIN EN 1092 groove depths and tongue heights increased compared to the formerly valid DIN (refer to LWN 313.40). LESER manufactures the groove at flanged valves by milling. If a customer demands a turned surface in the soil of the groove according to DIN 2512 and/or DIN EN 1092-1 an additional option code is necessary: "S01: bottom of the groove drilled". Groove and tongue for PN160 flanges refer to DIN 2512/LWN 313.32.

[2] Smooth finish is not defined in the effective standards. For LESER's definition for smooth finish see page 00/07.

For signs and symbols refer to page 00/07

Note: Flange drillings and facings meet always the requirements of mentioned flange standards. Flange thickness and outer diameter may vary from flange standard.

Approvals

Approvals					
	DN_{I+O}	25 x 50	50 x 80	80 x 100	100 x 150
	Valve size	1" x 2"	2" x 3"	3" x 4"	4" x 6"
	Actual Orifice diameter d_0 [mm]	20	40	60	74
	Actual Orifice area A_0 [mm²]	314	1257	2827	4301
Europe		**Coefficient of discharge K_{dr}**			
DIN EN ISO 4126-1	Approval No.	072020111Z0008/0/11			
	S/G	0,8	0,8	0,75	0,8
	L	0,6	0,54	0,5	0,56
Germany		**Coefficient of discharge α_w**			
AD 2000-Merkblatt A2		TÜV SV 934			
	S/G	0,8	0,8	0,75	0,8
	L	0,6	0,54	0,5	0,56
United States		**Coefficient of discharge K**			
ASME Sec. VIII	Approval No.	M37066	M37066	M37088	M37066
	S/G	0,798	0,798	0,754	0,798
	Approval No.	M37077	M37077	M37099	M37077
	L	0,572	0,572	0,479	0,572
Canada		**Coefficient of discharge K**			
Canada: CRN	Approval No.	–			
	S/G	0,798	0,798	0,754	0,798
	L	0,572	0,572	0,479	0,572
China		**Coefficient of discharge α_w**			
CSBQTS	Approval No.				
	S/G	0,8	0,8	0,75	0,8
	L	0,6	0,54	0,5	0,56
Russia		**Coefficient of discharge α_w**			
GGTN/ GOSGOTECHNADZOR GOST R	Approval No.	PPC 00-18458			
	S/G	0,8	0,8	0,75	0,8
	L	0,6	0,54	0,5	0,56
Classification societies					
		on request			

Capacities – Steam

Capacities for saturated steam according to AD 2000-Merkblatt A2, based on set pressure plus 10 % overpressure.
Capacities at 1 bar (14,5 psig) and below are based on 0,1 bar (1,45 psig) overpressure.

Metric Units	**AD 2000-Merkblatt A2** [kg/h]			
DN_{I+O}	25 x 50	50 x 80	80 x 100	100 x 150
Valve size	1" x 2"	2" x 3"	3" x 4"	4" x 6"
Actual Orifice diameter d_0 [mm]	20	40	60	74
Actual Orifice area A_0 [mm²]	314	1257	2827	4301
$LEO_{S/G}$*) [inch²]	0,399	1,594	3,389	5,456
Set pressure [bar]	**Capacities** [kg/h]			
2,5	509	2036	4403	7149
3	589	2385	5094	8265
4	743	3011	6352	10306
5	901	3605	7604	12338
6	1049	4197	8853	14363
7	1194	4774	10070	16339
8	1340	5362	11310	18351
9	1487	5949	12548	20360
10	1634	6535	13785	22367
12	1927	7707	16257	26378
14	2214	8855	18678	30306
16	2506	10024	21145	34308
18	2799	11195	23615	38316
20	3092	12368	26089	42330
22	3376	13506	28489	46224
24	3670	14681	30967	50245
26	3965	15859	33452	54276
28	4260	17040	35943	58319
30	4556	18225	38443	62374
32	4853	19414	40950	66443
34	5137	20549	43345	70328
36	5436	21743	45863	74414
38	5735	22941	48391	78515
40	6036	24144	50929	82632
50	7559	30235	63777	103480
60	9091	36366	76709	124462
70	10686	42745		
80	12293	49171		
90	13983	55932		
100	15689	62756		

Capacities for saturated steam according to ASME Section VIII (UV), based on set pressure plus 10% overpressure.
Capacities at 2,07 bar (30 psig) and below are based on 0,207 bar (3 psig) overpressure.

US Units	**ASME Section VIII** [lb/h]			
DN_{I+O}	25 x 50	50 x 80	80 x 100	100 x 150
Valve size	1" x 2"	2" x 3"	3" x 4"	4" x 6"
Actual Orifice diameter d_0 [inch]	0,79	1,57	2,36	2,91
Actual Orifice area A_0 [inch²]	0,487	1,948	4,383	6,666
$LEO_{S/G}$*) [inch²]	0,399	1,594	3,389	5,456
Set pressure [psig]	**Capacities** [lb/h]			
15	654	2614	5557	8947
20	754	3014	6408	10317
30	954	3815	8110	13056
40	1174	4695	9982	16070
50	1394	5576	11854	19083
60	1614	6456	13726	22097
70	1834	7337	15598	25111
80	2054	8217	17470	28124
90	2275	9098	19342	31138
100	2495	9979	21214	34152
120	2935	11740	24958	40179
140	3375	13501	28702	46206
160	3815	15262	32446	52233
180	4256	17023	36189	58261
200	4696	18784	39933	64288
220	5136	20545	43677	70315
240	5577	22306	47421	76342
260	6017	24067	51165	82370
280	6457	25828	54909	88397
300	6897	27589	58653	94424
320	7338	29350	62397	100451
340	7778	31111	66141	106478
360	8218	32872	69885	112506
380	8658	34633	73629	118533
400	9099	36395	77373	124560
500	11300	45200	96092	154696
600	13501	54005	114812	184833
700	15703	62810	133531	214969
800	17904	71616	152251	245105
900	20105	80421	170970	275241
1000	22307	89226		
1100	24508	98032		
1200	26709	106837		
1300	28911	115642		
1400	31068	124273		
1450	32265	129061		

*) $LEO_{S/G}$ = LESER Effective Orifice steam/gas please refer to page 00/11
How to use capacity-sheets refer to page 00/09

Capacities – Air

Capacities for air according to AD 2000-Merkblatt A2, based on set pressure plus 10 % overpressure at 0 °C and 1013 mbar.
Capacities at 1 bar (14,5 psig) and below are based on 0,1 bar (1,45 psig) overpressure.

Metric Units	**AD 2000-Merkblatt A2** [m_n^3/h]			
DN_{I+O}	25 x 50	50 x 80	80 x 100	100 x 150
Valve size	1" x 2"	2" x 3"	3" x 4"	4" x 6"
Actual Orifice diameter d_0 [mm]	20	40	60	74
Actual Orifice area A_0 [mm^2]	314	1257	2827	4301
$LEO_{S/G}$*) [$inch^2$]	0,399	1,594	3,389	5,456
Set pressure [bar]	**Capacities** [m_n^3/h]			
2,5	619	2478	5357	8700
3	719	2914	6224	10098
4	914	3704	7812	12676
5	1114	4457	9401	15253
6	1302	5210	10989	17830
7	1491	5963	12578	20407
8	1679	6716	14166	22985
9	1867	7469	15755	25562
10	2055	8222	17343	28139
12	2432	9728	20520	33294
14	2809	11234	23697	38449
16	3185	12740	26874	43603
18	3562	14246	30051	48758
20	3938	15752	33228	53912
22	4315	17258	36404	59067
24	4691	18764	39581	64221
26	5068	20271	42758	69376
28	5444	21777	45935	74531
30	5821	23283	49112	79685
32	6197	24789	52289	84840
34	6574	26295	55466	89994
36	6950	27801	58643	95149
38	7327	29307	61820	100304
40	7703	30813	64997	105458
50	9586	38344	80881	131231
60	11469	45874	96766	157004
70	13351	53404		
80	15234	60935		
90	17116	68465		
100	18999	75996		

Capacities for air according to ASME Section VIII (UV), based on set pressure plus 10% overpressure at 16 °C (60°F).
Capacities at 2,07 bar (30 psig) and below are based on 0,207 bar (3 psig) overpressure.

US Units	**ASME Section VIII** [S.C.F.M]			
DN_{I+O}	25 x 50	50 x 80	80 x 100	100 x 150
Valve size	1" x 2"	2" x 3"	3" x 4"	4" x 6"
Actual Orifice diameter d_0 [inch]	0,79	1,57	2,36	2,91
Actual Orifice area A_0 [$inch^2$]	0,487	1,948	4,383	6,666
$LEO_{S/G}$*) [$inch^2$]	0,399	1,594	3,389	5,456
Set pressure [psig]	**Capacities** [S.C.F.M.]			
15	233	931	1980	3187
20	268	1074	2283	3675
30	340	1359	2889	4651
40	418	1673	3556	5724
50	497	1986	4223	6798
60	575	2300	4890	7871
70	653	2614	5557	8945
80	732	2928	6224	10018
90	810	3241	6891	11091
100	889	3555	7558	12165
120	1046	4182	8891	14312
140	1202	4810	10225	16459
160	1359	5437	11559	18606
180	1516	6065	12893	20753
200	1673	6692	14227	22900
220	1830	7319	15560	25047
240	1987	7947	16894	27193
260	2144	8574	18228	29340
280	2300	9202	19562	31487
300	2457	9829	20896	33634
320	2614	10456	22229	35781
340	2771	11084	23563	37928
360	2928	11711	24897	40075
380	3085	12338	26231	42222
400	3241	12966	27565	44369
500	4026	16103	34234	55104
600	4810	19240	40903	65838
700	5594	22377	47572	76573
800	6378	25514	54241	87307
900	7163	28651	60910	98042
1000	7947	31788	67579	108777
1100	8731	34925	74248	119511
1200	9515	38062	80917	130246
1300	10300	41199	87586	140981
1400	11084	44336	94255	151715
1450	11476	45904	97589	157083

*) $LEO_{S/G}$ = LESER Effective Orifice steam/gas please refer to page 00/11
How to use capacity-sheets refer to page 00/09

Capacities – Water

Capacities for water according to AD 2000-Merkblatt A2, based on set pressure plus 10 % overpressure at 20 °C (68 °F).
Capacities at 1 bar (14,5 psig) and below are based on 0,1 bar (1,45 psig) overpressure..

Metric Units	**AD 2000-Merkblatt A2** [10^3kg/h]			
DN_{I+O}	25 x 50	50 x 80	80 x 100	100 x 150
Valve size	1" x 2"	2" x 3"	3" x 4"	4" x 6"
Actual Orifice diameter d_0 [mm]	20	40	60	74
Actual Orifice area A_0 [mm^2]	314	1257	2827	4301
LEO_L*) [$inch^2$]	0,399	1,594	3,389	5,456
Set pressure [bar]	**Capacities** [10^3kg/h]			
2,5	15,9	57,2	119	203
3	17,4	62,7	131	223
4	20,1	72,4	151	257
5	22,5	80,9	169	287
6	24,6	88,7	185	315
7	26,6	95,8	200	340
8	28,4	102	213	363
9	30,2	109	226	385
10	31,8	114	238	406
12	34,8	125	261	445
14	37,6	135	282	481
16	40,2	145	302	514
18	42,7	154	320	545
20	45	162	337	575
22	47,2	170	354	603
24	49,3	177	369	629
26	51,3	185	385	655
28	53,2	192	399	680
30	55,1	198	413	704
32	56,9	205	427	727
34	58,6	211	440	749
36	60,3	217	452	771
38	62	223	465	792
40	63,6	229	477	813
50	71,1	256	533	909
60	77,9	280	584	995
70	84,1	303		
80	89,9	324		
90	95,4	343		
100	101	362		

Capacities for water according to ASME Section VIII (UV), based on set pressure plus 10 % overpressure at 21 °C (70 °F).
Capacities at 2,07 bar (30 psig) and below are based on 0,207 bar (3 psig) overpressure.

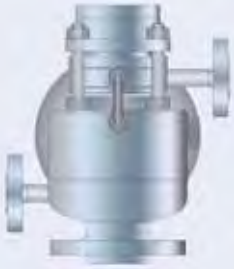
US Units	**ASME Section VIII** [US-G.P.M]			
DN_{I+O}	25 x 50	50 x 80	80 x 100	100 x 150
Valve size	1" x 2"	2" x 3"	3" x 4"	4" x 6"
Actual Orifice diameter d_0 [inch]	0,79	1,57	2,36	2,91
Actual Orifice area A_0 [$inch^2$]	0,487	1,948	4,383	6,666
LEO_L*) [$inch^2$]	0,399	1,594	3,389	5,456
Set pressure [psig]	**Capacities** [US-G.P.M.]			
15	44,8	179	338	614
20	50,7	203	382	694
30	60,7	243	458	831
40	70,1	280	528	960
50	78,4	314	591	1073
60	85,9	343	647	1175
70	92,8	371	699	1270
80	99,2	397	747	1357
90	105	421	793	1440
100	111	443	836	1517
120	121	486	915	1662
140	131	525	989	1795
160	140	561	1057	1919
180	149	595	1121	2036
200	157	627	1182	2146
220	164	658	1239	2251
240	172	687	1294	2351
260	179	715	1347	2447
280	186	742	1398	2539
300	192	768	1447	2628
320	198	793	1495	2714
340	204	818	1541	2798
360	210	841	1585	2879
380	216	864	1629	2958
400	222	887	1671	3035
500	248	992	1868	3393
600	272	1086	2047	3717
700	293	1173	2211	4015
800	314	1254	2363	4292
900	333	1330	2507	4552
1000	351	1402	2642	4799
1100	368	1471	2771	5033
1200	384	1536	2894	5257
1300	400	1599	3012	5471
1400	415	1659	3126	5678
1450	422	1689	3182	5778

*) LEO_L = LESER Effective Orifice liquids please refer to page 00/12
How to use capacity-sheets refer to page 00/09

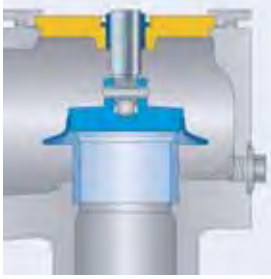
Available Options

For further information refer to
“Accessories and Options”, page 99/01

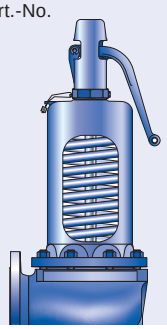
Heating jacket
H29, H30: Couplings G $^{3}/_{8}$, G $^{3}/_{4}$
H31, H32: Flanges DN 15, DN 25



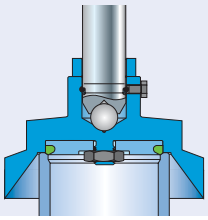
Drain hole
J18: G $^{1}/_{4}$
J19: G $^{1}/_{2}$



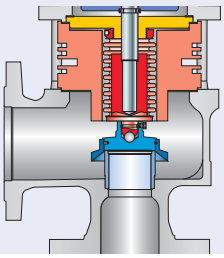
Open bonnet
See Art.-No.



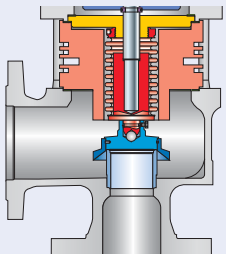
O-ring-disc
J20: FFKM “C”
J21: CR “K”
J22: EPDM “D”
J23: FKM “L”



Stainless steel bellows
J68: Open bonnet
J78: Closed bonnet



Conversion kit for stainless steel bellows
on request



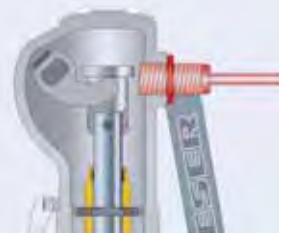
Screwed cap H2
H2

Plain lever H3
H3

Packed lever H4
H4

Test gag
J69: H4
J70: H2

Lift indicator
J39: Adaptor H4
J93: Lift indicator



O-ring-damper H2
J65

O-ring-damper H4
J66