

Type 442 DIN
Plain lever H3
Open bonnet
Conventional design



Type 441 DIN
Packed lever H4
Closed bonnet
Conventional design

Type 441 DIN 442 DIN

Type 441, 442 DIN

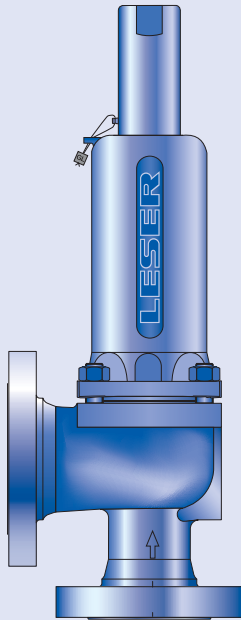
Flanged Safety Relief Valves – spring loaded

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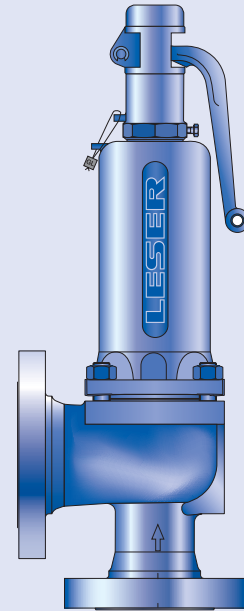
Type 441, 442 DIN

How to order – Article numbers

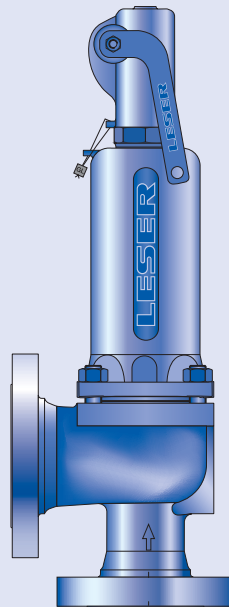
Type 441, 442 DIN



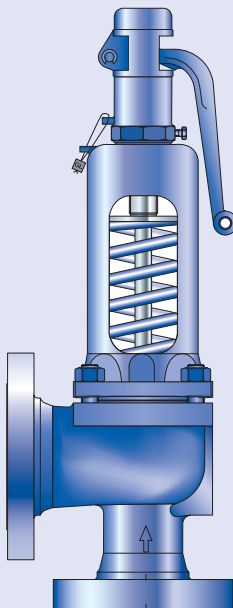
Type 441
Cap H2
Closed bonnet
Conventional design



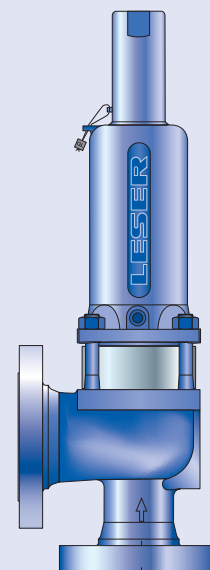
Type 441
Plain lever H3
Closed bonnet
Conventional design



Type 441
Packed lever H4
Closed bonnet
Conventional design



Type 442
Plain lever H3
Open bonnet
Conventional design



Type 441
Cap H2
Closed bonnet
Balanced bellows design

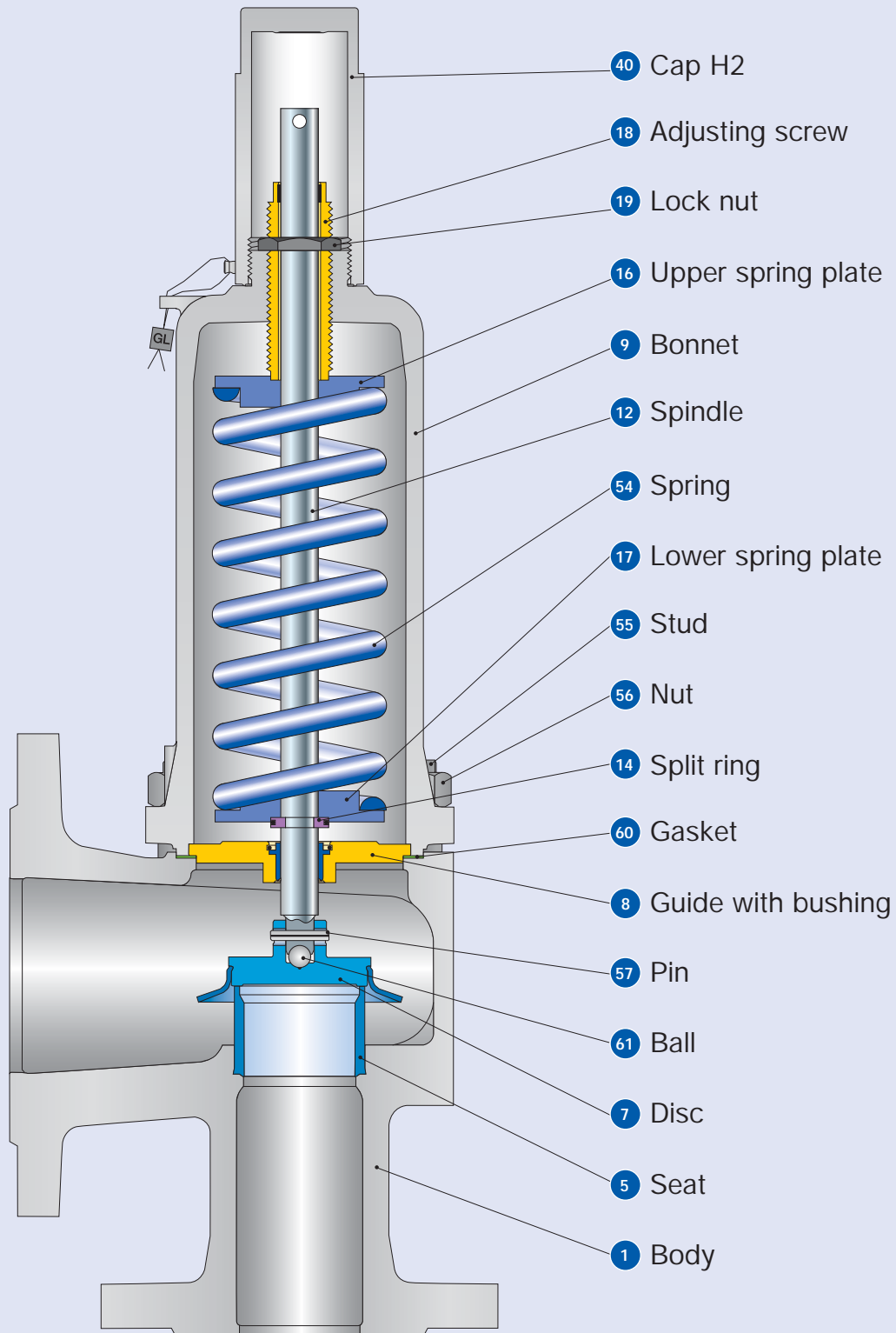
How to order – Article numbers

Article numbers			20	20	25	32	40	50	65	80	100	125	150	200
		DN _i	20	20	25	32	40	50	65	80	100	125	150	200
		DN _o	32	40	40	50	65	80	100	125	150	200	250	300
		Actual Orifice diameter d ₀ [mm]	18	18	23	29	37	46	60	74	92	98	125	165
		Actual Orifice area A ₀ [mm ²]	254	254	416	661	1075	1662	2827	4301	6648	7543	12272	21382
Body material: 0.6025 (cast iron)														
Bonnet	H2	Art.-No. 4411.	4372	–	4382	4392	4402	4412	4422	4432	4442	4452	4462	–
closed	H3	Art.-No. 4411.	4373	–	4383	4393	4403	4413	4423	4433	4443	4453	–	–
	H4	Art.-No. 4411.	4374	–	4384	4394	4404	4414	4424	4434	4444	4454	4464	–
open	H3	Art.-No. 4421.	4375	–	4385	4395	4405	4415	4425	4435	4445	4455	4465	–
Body material: 0.7043 (ductile Gr. 60-40-18)														
Bonnet	H2	Art.-No. 4415.	–	–	7382	7392	7402	7412	7422	7432	7442	7452	7462	7472
closed	H3	Art.-No. 4415.	–	–	7383	7393	7403	7413	7423	7433	7443	7453	–	–
	H4	Art.-No. 4415.	–	–	7384	7394	7404	7414	7424	7434	7444	7454	7464	7474
open	H3	Art.-No. 4425.	–	–	7385	7395	7405	7415	7425	7435	7445	7455	7465	7475
Body material: 1.0619 (WCB)														
Bonnet	H2	Art.-No. 4412.	–	4502	4512	4522	4532	4542	4552	4562	4572	4582	4592	4612
closed	H3	Art.-No. 4412.	–	4503	4513	4523	4533	4543	4553	4563	4573	4583	–	–
	H4	Art.-No. 4412.	–	4504	4514	4524	4534	4544	4554	4564	4574	4584	4594	4614
open	H3	Art.-No. 4422.	–	4505	4515	4525	4535	4545	4555	4565	4575	4585	4595	4615
Body material: 1.4408 (CF8M)														
Bonnet	H2	Art.-No. 4414.	–	–	4642	4652	4662	4672	4682	4692	4702	4712	4722	–
closed	H4	Art.-No. 4414.	–	–	4644	4654	4664	4674	4684	4694	4704	4714	4724	–

Type 441, 442 DIN

Conventional design

Type 441, 442 DIN



Conventional design

Materials		Type 4411 / 4421 DIN	Type 4415 / 4425 DIN	Type 4412 / 4422 DIN	Type 4414 DIN
1	Body	0.6025	0.7043	1.0619	1.4408
		Cast iron	Ductile Gr. 60-40-18	SA 216 WCB	SA 351 CF8M
5	Seat	1.4404	1.4404	1.4404	1.4404
		316L	316L	316L	316L
7	Disc	1.4122	1.4122	1.4122	1.4404
		Hardened stainless steel	Hardened stainless steel	Hardened stainless steel	316L
8	Guide with bushing	1.4104, 1.0501, 0.7040	1.4104, 1.0501, 0.7040	1.4104, 1.0501, 0.7040	1.4404
		Chrome or carbon steel	Chrome or carbon steel	Chrome or carbon steel	316L
		1.4104 tenifer	1.4104 tenifer	1.4104 tenifer	-
		Chrome steel tenifer	Chrome steel tenifer	Chrome steel tenifer	-
9	Bonnet	0.7040, 0.7043, 1.0619	0.7040, 0.7043, 1.0619	0.7040, 0.7043, 1.0619	1.4408, 1.4404, 1.4571
		Ductile Gr. 60-40-18, SA 216 WCB	Ductile Gr. 60-40-18, SA 216 WCB	Ductile Gr. 60-40-18, SA 216 WCB	SA 351 CF8M, SA 479 316L, SA 479 316Ti
12	Spindle	1.4021	1.4021	1.4021	1.4404
		420	420	420	316L
14	Split ring	1.4104	1.4104	1.4104	1.4404
		Chrome steel	Chrome steel	Chrome steel	316L
16/17	Spring plate	1.0718	1.0718	1.0718	1.4404
		Steel	Steel	Steel	316L
18	Adjusting screw with bushing	1.4104 PTFE	1.4104 PTFE	1.4104 PTFE	1.4404 PTFE
		Chrome steel PTFE	Chrome steel PTFE	Chrome steel PTFE	316L PTFE
19	Lock nut	1.0718	1.0718	1.0718	1.4404
		Steel	Steel	Steel	316L
40	Cap H2	1.0718 or 0.7043	1.0718 or 0.7043	1.0718 or 0.7043	1.4404
		12L13 or Gr. 60-40-18	12L13 or Gr. 60-40-18	12L13 or Gr. 60-40-18	316L
54	Spring standard	1.1200, 1.8159, 1.7102	1.1200, 1.8159, 1.7102	1.1200, 1.8159, 1.7102	1.4310
		Carbon steel	Carbon steel	Carbon steel	Stainless steel
54	Spring optional	1.4310	1.4310	1.4310	-
		Stainless steel	Stainless steel	Stainless steel	-
55	Stud	1.1181	1.1181	1.1181	1.4401
		Steel	Steel	Steel	B8M
56	Nut	1.0501	1.0501	1.0501	1.4401
		2H	2H	2H	8M
57	Pin	1.4310	1.4310	1.4310	1.4310
		Stainless steel	Stainless steel	Stainless steel	Stainless steel
60	Gasket	Graphite / 1.4401	Graphite / 1.4401	Graphite / 1.4401	Graphite / 1.4401
		Graphite / 316	Graphite / 316	Graphite / 316	Graphite / 316
61	Ball	1.3541	1.3541	1.3541	1.4401
		Hardened stainless steel	Hardened stainless steel	Hardened stainless steel	316

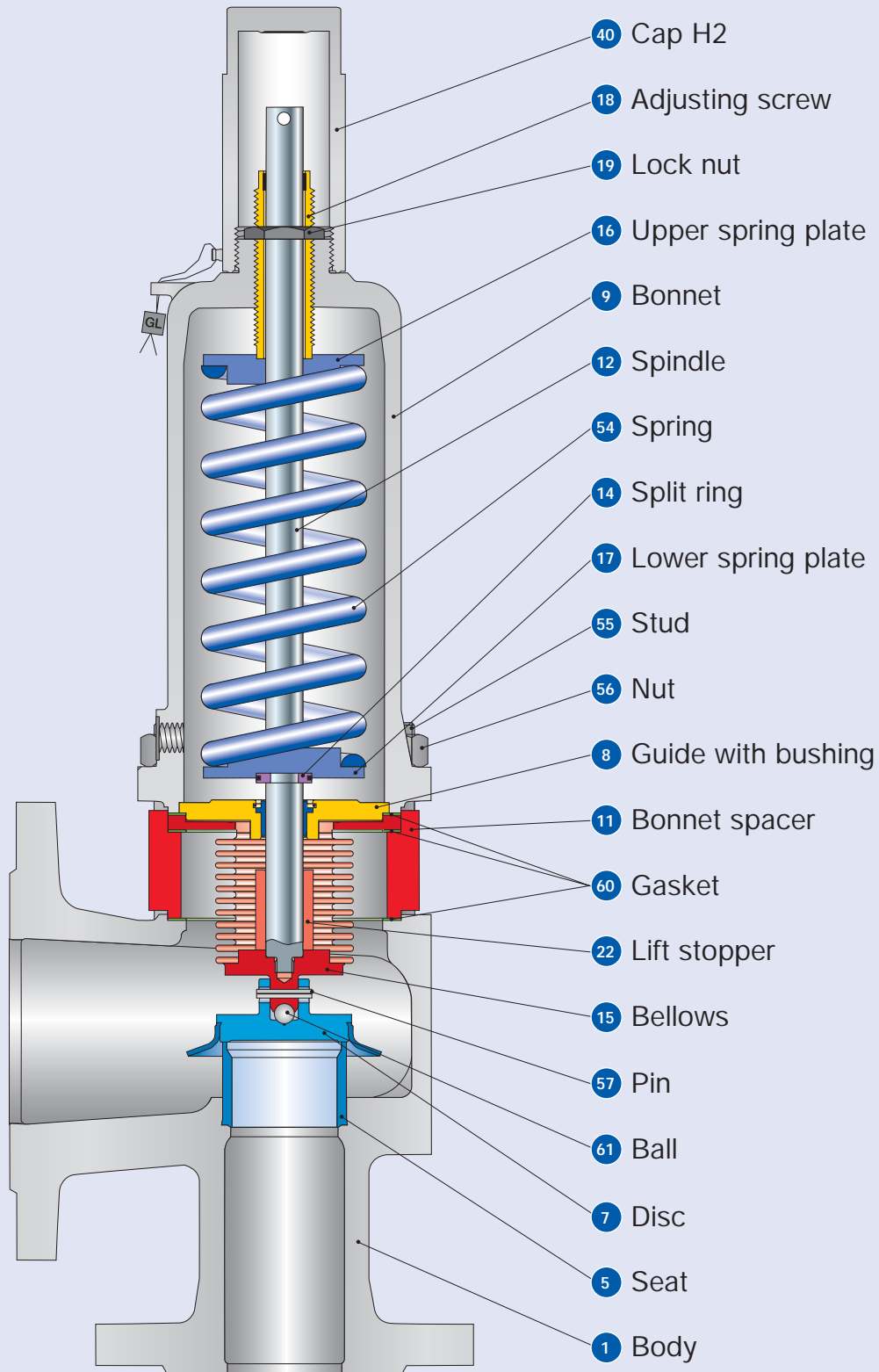
Please notice:

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

Type 441, 442 DIN

Balanced bellows design

Type 441, 442 DIN



Type 441, 442 DIN

Balanced bellows design

Materials					
Item	Component	Type 4411 / 4421 DIN	Type 4415 / 4425 DIN	Type 4412 / 4422 DIN	Type 4414 DIN
1	Body	0.6025	0.7043	1.0619	1.4408
		Cast iron	Ductile Gr. 60-40-18	SA 216 WCB	SA 351 CF8M
5	Seat	1.4404	1.4404	1.4404	1.4404
		316L	316L	316L	316L
7	Disc	1.4122	1.4122	1.4122	1.4404
		Hardened stainless steel	Hardened stainless steel	Hardened stainless steel	316L
8	Guide with bushing	1.4104, 1.0501, 0.7040	1.4104, 1.0501, 0.7040	1.4104, 1.0501, 0.7040	1.4404
		Chrome or carbon steel	Chrome or carbon steel	Chrome or carbon steel	316L
		1.4104 tenifer	1.4104 tenifer	1.4104 tenifer	-
		Chrome steel tenifer	Chrome steel tenifer	Chrome steel tenifer	-
9	Bonnet	0.7040, 0.7043, 1.0619	0.7040, 0.7043, 1.0619	0.7040, 0.7043, 1.0619	1.4408, 1.4404, 1.4571
		Ductile Gr. 60-40-18, SA 216 WCB	Ductile Gr. 60-40-18, SA 216 WCB	Ductile Gr. 60-40-18, SA 216 WCB	SA 351 CF8M, SA 479 316L, SA 479 316Ti
11	Bonnet spacer	1.0460	1.0460	1.0460	1.4404
		Carbon steel	Carbon steel	Carbon steel	316L
12	Spindle	1.4404	1.4404	1.4404	1.4404
		316L	316L	316L	316L
14	Split ring	1.4104	1.4104	1.4104	1.4404
		Chrome steel	Chrome steel	Chrome steel	316L
15	Bellows	1.4571	1.4571	1.4571	1.4571
		316Ti	316Ti	316Ti	316Ti
16/17	Spring plate	1.0718	1.0718	1.0718	1.4404
		Steel	Steel	Steel	316L
18	Adjusting screw with bushing	1.4104 PTFE	1.4104 PTFE	1.4104 PTFE	1.4404 PTFE
		Chrome steel PTFE	Chrome steel PTFE	Chrome steel PTFE	316L PTFE
19	Lock nut	1.0718	1.0718	1.0718	1.4404
		Steel	Steel	Steel	316L
22	Lift stopper	1.4404	1.4404	1.4104	1.4404
		316L	316L	Chrome steel	316L
40	Cap H2	1.0718 or 0.7043	1.0718 or 0.7043	1.0718 or 0.7043	1.4404
		12L13 or Gr. 60-40-18	12L13 or Gr. 60-40-18	12L13 or Gr. 60-40-18	316L
54	Spring standard	1.1200, 1.8159, 1.7102	1.1200, 1.8159, 1.7102	1.1200, 1.8159, 1.7102	1.4310
		Carbon steel	Carbon steel	Carbon steel	Stainless steel
54	Spring optional	1.4310	1.4310	1.4310	-
		Stainless steel	Stainless steel	Stainless steel	-
55	Stud	1.4401	1.4401	1.4401	1.4401
		B8M	B8M	B8M	B8M
56	Nut	1.4401	1.4401	1.4401	1.4401
		8M	8M	8M	8M
57	Pin	1.4310	1.4310	1.4310	1.4310
		Stainless steel	Stainless steel	Stainless steel	Stainless steel
60	Gasket	Graphite / 1.4401	Graphite / 1.4401	Graphite / 1.4401	Graphite / 1.4401
		Graphite / 316	Graphite / 316	Graphite / 316	Graphite / 316
61	Ball	1.3541	1.3541	1.3541	1.4401
		Hardened stainless steel	Hardened stainless steel	Hardened stainless steel	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.

Dimensions and weights

Metric Units

DN _i	20	20	25	32	40	50	65	80	100	125	150	200
DN _o	32	40	40	50	65	80	100	125	150	200	250	300
Actual Orifice diameter d ₀ [mm]	18	18	23	29	37	46	60	74	92	98	125	165
Actual Orifice area A ₀ [mm ²]	254	254	416	661	1075	1662	2827	4301	6648	7543	12272	21382

Weight [kg]		9	9	9	12	16	22	32	56	75	85	131	285
	with bellows	9,4	9,4	10	13	17	24	36	60	83	93	142	289
Center to face [mm]	Inlet a	85	85	105	115	140	150	170	195	220	250	285	400
	Outlet b	95	95	100	110	115	120	140	160	180	200	225	477
Height (H4) [mm]	Standard H max.	304	304	339	446	512	569	699	801	883	913	1083	1380
	Bellows H max.	337	337	378	488	550	615	769	860	939	969	1141	1380
Support brackets [mm] (drilled only on request)	A									277	277	320	490
	B									160	160	185	1)
	C									Ø 18	Ø 18	Ø 18	Ø 18
	D									293	318	392	1)
	E									21	21	28	1)

Body material: 0.6025 (cast iron)

DIN Flange ²⁾	Inlet	PN 16	-										PN 16
	Outlet	PN 16	-										PN 16

Body material: 0.7043 (ductile Gr. 60-40-18)

DIN Flange ²⁾	Inlet	-	-										PN 25
	Outlet	-	-										PN 10

Body material: 1.0619 (WCB)

DIN Flange ²⁾	Inlet	-	-										PN 25
	Outlet	-	-										PN 16

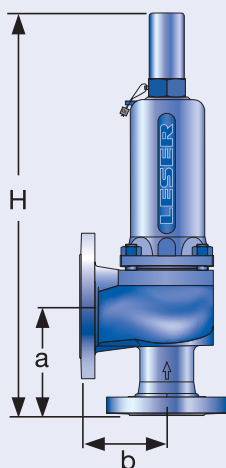
Body material: 1.4408 (CF8M)

DIN Flange ²⁾	Inlet	-	-										PN 40
	Outlet	-	-										PN 16

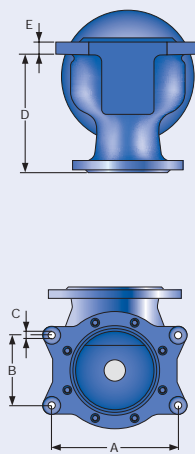
1)

Body material	B [mm]	D [mm]	E [mm]
0.6025	150	290	16
0.7043	150	489	25
1.0619	160	489	25
1.4408	150	489	25

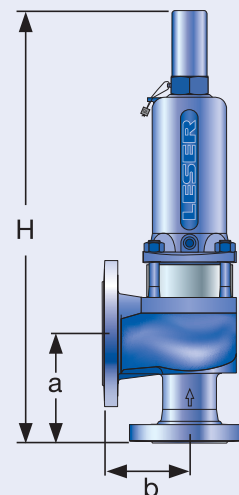
²⁾ Standard flange rating. For other flange drillings and facings please refer to page 01/16 and 01/17.



Conventional design



Support brackets



Balanced bellows design

Pressure temperature ratings

Metric Units

	DN _I	20	20	25	32	40	50	65	80	100	125	150	200
	DN _O	32	40	40	50	65	80	100	125	150	200	250	300
	Actual Orifice diameter d ₀ [mm]	18	18	23	29	37	46	60	74	92	98	125	165
	Actual Orifice area A ₀ [mm ²]	254	254	416	661	1075	1662	2827	4301	6648	7543	12272	21382
Body material: 0.6025 (cast iron)													
DIN Flange	Inlet	PN 16	-	PN 16									-
	Outlet	PN 16	-	PN 16									-
Minimum set pressure	p [bar _g] S/G/L	0,1	-	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	-
Min. set pressure¹⁾ standard bellows	p [bar _g] S/G/L	3	-	3	3	3	3	3	3	3	3	3	-
Min. set pressure low press. bellows	p [bar _g] S/G/L	2,00	-	0,98	1,41	1,11	1,81	1,50	1,05	1,18	1,41	-	-
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 acc. to DIN EN	min. [°C]	-10	-	-10									-
	max. [°C]	+300	-	+300									-
Temperature acc. to ASME	min. [°C]	-	-	-									-
	max. [°C]	-	-	-									-

Body material: 0.7043 (ductile Gr. 60-40-18)													
DIN Flange	Inlet	-	-	PN 40						PN 16		PN 25	
	Outlet	-	-	PN 16								PN 10	
Minimum set pressure	p [bar _g] S/G/L	-	-	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1
Min. set pressure¹⁾ standard bellows	p [bar _g] S/G/L	-	-	3	3	3	3	3	3	3	3	3	3
Min. set pressure low press. bellows	p [bar _g] S/G/L	-	-	0,98	1,41	1,11	1,81	1,50	1,05	1,18	1,41	-	-
Maximum set pressure	p [bar _g] S/G/L	-	-	40	40	40	40	40	32	40	16	16	20
Max. set pressure with special spring	p [bar _g] S/G/L	-	-	40	40	40	40	40	40	40	16	16	25
Temperature acc. to DIN EN	min. [°C]	-	-							-60			
	max. [°C]	-	-							+350			
Temperature acc. to ASME	min. [°C]	-	-							-10			
	max. [°C]	-	-							+350			

¹⁾ Min. set pressure standard bellows = Max. set pressure low pressure bellows.

Pressure temperature ratings

Metric Units

DN _I	20	20	25	32	40	50	65	80	100	125	150	200
DN _O	32	40	40	50	65	80	100	125	150	200	250	300
Actual Orifice diameter d ₀ [mm]	18	18	23	29	37	46	60	74	92	98	125	165
Actual Orifice area A ₀ [mm ²]	254	254	416	661	1075	1662	2827	4301	6648	7543	12272	21382

Body material: 1.0619 (WCB)

DIN Flange	Inlet		PN 40											PN 25	
	Outlet		PN 16												
Minimum set pressure	p [bar _g]	S/G/L	-	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1
Min. set pressure ¹⁾ standard bellows	p [bar _g]	S/G/L	-	3	3	3	3	3	3	3	3	3	3	3	3
Min. set pressure low press. bellows	p [bar _g]	S/G/L	-	2,00	0,98	1,41	1,11	1,81	1,50	1,05	1,18	1,41	-	-	-
Maximum set pressure	p [bar _g]	S/G/L	-	40	40	40	40	40	40	32	40	28	17	20	-
Max. set pressure with special spring	p [bar _g]	S/G/L	-	40	40	40	40	40	40	40	40	28	25	25	-
Temperature acc. to DIN EN	min. [°C]		-	-85											
	max. [°C]		-	+450											
Temperature acc. to ASME	min. [°C]		-	-29											
	max. [°C]		-	+427											

Body material: 1.4408 (CF8M)

DIN Flange	Inlet		PN 40											-	
	Outlet		PN 16												
Minimum set pressure	p [bar _g]	S/G/L	-	-	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	-
Min. set pressure ¹⁾ standard bellows	p [bar _g]	S/G/L	-	-	3	3	3	3	3	3	3	3	3	3	-
Min. set pressure low press. bellows	p [bar _g]	S/G/L	-	-	0,98	1,41	1,11	1,81	1,50	1,05	1,18	1,41	-	-	-
Maximum set pressure	p [bar _g]	S/G/L	-	-	40	40	40	33	28	13,6	15	15	7	-	-
Max. set pressure with special spring	p [bar _g]	S/G/L	-	-	40	40	40	37	28	25	26	24	10	-	-
Temperature acc. to DIN EN	min. [°C]		-	-	-270										
	max. [°C]		-	-	+400										
Temperature acc. to ASME	min. [°C]		-	-	-268										
	max. [°C]		-	-	+538										

¹⁾ Min. set pressure standard bellows = Max. set pressure low pressure bellows.

Flange drillings

Type 441, 442 DIN

Flange drillings															
	DN _i	20	20	25	32	40	50	65	80	100	125	150	200		
	DN _O	32	40	40	50	65	80	100	125	150	200	250	300		
	Valve size	–	¾" x 1½"	1" x 1½"	1" x 2"	1" x 2½"	2" x 3"	2" x 4"	3" x 5"	4" x 6"	5" x 8"	6" x 10"	8" x 12"		
	Actual Orifice diameter d ₀ [mm]	18	18	23	29	37	46	60	74	92	98	125	165		
	Actual Orifice area A ₀ [mm ²]	254	254	416	661	1075	1662	2827	4301	6648	7543	12272	21382		
Body material: 0.6025 (cast iron)															
Inlet	DIN EN 1092	PN 10	*	*	*	*	*	*	*	*	*	*	*		
		PN 16	*	*	*	*	*	*	*	*	*	*	*		
		PN 25	–	–	–	–	–	–	–	–	–	–	–		
		PN 40	–	–	–	–	–	–	–	–	–	–	–		
Outlet	DIN EN 1092	PN 10	*	*	*	*	*	*	*	*	H50	H50			
		PN 16	*	*	*	*	*	*	*	*	*	*	*		
		PN 25	–	–	–	–	–	–	–	–	–	–	–		
		PN 40	–	–	–	–	–	–	–	–	–	–	–		
Body material: 0.7043 (ductile Gr. 60-40-18)															
Inlet	DIN EN 1092	PN 10			*	*	*	*	H45	*	H45	*	*	H44	
		PN 16			*	*	*	*	*	*	*	*	*	H45	
		PN 25			–	–	–	–	–	–	–	–	–	*	
		PN 40			–	–	–	–	–	–	–	–	–	–	
Outlet	DIN EN 1092	PN 10			*	*	*	*	*	*	H50	H50	*		
		PN 16			*	*	*	*	*	*	*	*	(H51)		
		PN 25			*	(*)	(H15)	(*)	–	–	–	–	–		
		PN 40			*	(*)	(H15)	(*)	–	–	–	–	–		
Body material: 1.0619 (WCB), 1.4408 (CF8M)															
Inlet	DIN EN 1092	PN 10			*	*	*	*	H45	H45	H45	H45	H45	H44	
		PN 16			*	*	*	*	H45	H45	H45	H45	H45	H44	
		PN 25			*	*	*	*	*	*	*	*	*	*	
		PN 40			*	*	*	*	*	*	*	*	*	*	
	ASME B16.5 ¹⁾	CL150			H64	H64	H64	H64	H64	H64	H64	[H64]	H64	H64	H64
		CL300			–	–	H65	–	[H65]	–	–	–	–	–	–
Outlet	DIN EN 1092	PN 10			*	*	*	*	*	*	H50	H50	H50		
		PN 16			*	*	*	*	*	*	*	*	*		
		PN 25			*	*	*	(H15)	(*)	–	–	–	–	H52	
		PN 40			*	*	*	(H15)	(*)	–	–	–	–	H52	
	ASME B16.5 ¹⁾	CL150			H79	H79	H79	H79	H79	[H79]	H79	H79	H79	H79	
		CL300			–	–	[H80]	–	–	–	–	–	–	–	

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.

¹⁾ For drillings according to ASME B16.5 please use preferred Type 441, 442 ANSI.

Approvals

Approvals		
	DN _i	20 – 200
	DN _o	32 – 300
	Actual Orifice diameter d ₀ [mm]	18 – 165
	Actual Orifice area A ₀ [mm ²]	254 – 21382
Europe		Coefficient of discharge K_{dr}
DIN EN ISO 4126-1	Approval No.	072020111Z0008/0/08-2
	S/G	0,7
	L	0,45
Germany		Coefficient of discharge α_w
AD 2000-Merkblatt A2	Approval No.	TÜV SV 576
	S/G	0,7
	L	0,45
United States		Coefficient of discharge K
ASME Sec. VIII	Approval No.	M37044
	S/G	0,699
	Approval No.	M37055
	L	0,521
Canada		Coefficient of discharge K
Canada: CRN	Approval No.	OG1182.9C
	S/G	0,699
	L	0,521
China		Coefficient of discharge α_w
CSBQTS	Approval No.	
	S/G	0,7
	L	0,45
Russia		Coefficient of discharge α_w
GGTN/ GOSGOTECHNADZOR GOST R	Approval No.	PPC 00-18458
	S/G	0,7
	L	0,45
Classification societies		Homepage
Bureau Veritas	BV	www.bureauveritas.com
Det Norske Veritas	DNV	www.dnv.com
Germanischer Lloyd	GL	www.gl-group.com
Lloyd' s register EMEA	LREMEA	www.lr.org
Registro Italiano Navale	RINA	www.rina.org
<p>The valid certification number is changed with every renewal.</p> <p>A sample certificate including the valid certification number can be taken from the homepage of the classification societies.</p>		

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	20	20	25	32	40	50	65	80	100	125	150	200	
DN _O	32	40	40	50	65	80	100	125	150	200	250	300	
Actual Orifice diameter d ₀ [mm]	18	18	23	29	37	46	60	74	92	98	125	165	
Actual Orifice area A ₀ [mm ²]	254	254	416	661	1075	1662	2827	4301	6648	7543	12272	21382	
LEO _{S/G} ^{*)} [inch ²]	0,283	0,283	0,462	0,734	1,195	1,847	3,142	4,779	7,387	8,382	13,637	23,761	
Set pressure [bar]	Capacities [kg/h]												
0,1	0	0	0	0	0	0	0	0	0	0	0	0	
0,2	86	86	140	223	363	561	954	1451	2243	2545	4140	7214	
0,5	137	137	224	356	579	895	1523	2316	3580	4062	6609	11516	
1	199	199	326	518	843	1302	2215	3370	5209	5910	9616	16755	
2	318	318	519	825	1343	2075	3531	5371	8302	9420	15326	26704	
3	428	428	699	1111	1808	2794	4754	7232	11178	12683	20635	35954	
4	534	534	871	1385	2254	3485	5928	9018	13938	15816	25731	44834	
5	639	639	1043	1658	2699	4172	7097	10796	16687	18934	30804	53673	
6	744	744	1214	1930	3142	4856	8262	12568	19426	22042	35861	62484	
7	846	846	1381	2196	3574	5525	9399	14297	22098	25074	40794	71080	
8	950	950	1551	2466	4014	6205	10556	16057	24818	28161	45816	79830	
9	1054	1054	1721	2736	4454	6884	11712	17815	27535	31244	50831	88569	
10	1158	1158	1891	3006	4893	7562	12866	19571	30250	34324	55842	97300	
12	1366	1366	2230	3545	5770	8919	15174	23081	35675	40480	65858	114751	
14	1569	1569	2562	4073	6629	10247	17433	26518	40987	46507	75664	131837	
16	1776	1776	2900	4610	7505	11600	19735	30020	46400	52650	85657	149249	
18	1984	1984	3239	5149	8382	12955	22041	33526	51820	58800	95663	166683	
20	2191	2191	3578	5688	9260	14312	24350	37039	57249	64960	105685	184145	
22	2393	2393	3907	6212	10111	15629	26590	40446	62515	70935	115407	201085	
24	2601	2601	4247	6752	10991	16988	28903	43964	67953	77106	125445	218576	
26	2810	2810	4588	7294	11873	18351	31222	47491	73405	83292			
28	3019	3019	4930	7837	12757	19718	33547	51029	78873	89496			
30	3229	3229	5272	8382	13644	21089	35880	54577	84358				
32	3440	3440	5616	8929	14534	22465	38220	58137	89860				
34	3641	3641	5945	9451	15384	23779	40455	61537	95115				
36	3853	3853	6290	10000	16278	25160	42806	65112	100641				
38	4065	4065	6637	10551	17175	26547	45165	68701	106188				
40	4278	4278	6985	11104	18076	27939	47533	72303	111756				

^{*)} 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		20	20	25	32	40	50	65	80	100	125	150	200
DN _O		32	40	40	50	65	80	100	125	150	200	250	300
Actual Orifice diameter d_0 [mm]		18	18	23	29	37	46	60	74	92	98	125	165
Actual Orifice area A_0 [mm ²]		254	254	416	661	1075	1662	2827	4301	6648	7543	12272	21382
LEO _{S/G} ^{*)} [inch ²]		0,283	0,283	0,462	0,734	1,195	1,847	3,142	4,779	7,387	8,382	13,637	23,761
Set pressure [bar]	Capacities [m_n^3/h]												
0,1	0	0	0	0	0	0	0	0	0	0	0	0	0
0,2	99	99	162	258	420	649	1105	1680	2597	2947	4794	8354	
0,5	161	161	263	418	680	1051	1789	2721	4206	4772	7764	13528	
1	238	238	388	617	1004	1552	2641	4017	6209	7045	11461	19970	
2	384	384	627	996	1622	2507	4265	6487	10026	11377	18509	32251	
3	523	523	854	1357	2209	3414	5809	8836	13657	15497	25212	43930	
4	656	656	1071	1703	2773	4286	7291	11091	17143	19452	31647	55142	
5	790	790	1289	2050	3337	5157	8774	13346	20629	23407	38082	66354	
6	923	923	1507	2396	3900	6029	10257	15601	24114	27362	44516	77565	
7	1057	1057	1725	2742	4464	6900	11739	17857	27600	31317	50951	88777	
8	1190	1190	1943	3089	5028	7771	13222	20112	31086	35273	57386	99989	
9	1323	1323	2161	3435	5592	8643	14704	22367	34571	39228	63821	111201	
10	1457	1457	2379	3781	6155	9514	16187	24622	38057	43183	70255	122413	
12	1724	1724	2814	4474	7283	11257	19152	29132	45028	51093	83125	144836	
14	1991	1991	3250	5167	8411	13000	22117	33642	52000	59003	95994	167260	
16	2257	2257	3686	5859	9538	14743	25082	38153	58971	66914	108863	189684	
18	2524	2524	4121	6552	10666	16486	28047	42663	65942	74824	121733	212107	
20	2791	2791	4557	7245	11793	18228	31012	47173	72913	82734	134602	234531	
22	3058	3058	4993	7938	12921	19971	33977	51683	79885	90644	147472	256954	
24	3325	3325	5429	8630	14048	21714	36943	56194	86856	98555	160341	279378	
26	3592	3592	5864	9323	15176	23457	39908	60704	93827	106465			
28	3859	3859	6300	10016	16304	25200	42873	65214	100799	114375			
30	4125	4125	6736	10708	17431	26942	45838	69725	107770				
32	4392	4392	7171	11401	18559	28685	48803	74235	114741				
34	4659	4659	7607	12094	19686	30428	51768	78745	121713				
36	4926	4926	8043	12786	20814	32171	54733	83255	128684				
38	5193	5193	8478	13479	21941	33914	57698	87766	135655				
40	5460	5460	8914	14172	23069	35657	60663	92276	142626				

^{*)} 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 ³ kg/h]											
DN _I		20	20	25	32	40	50	65	80	100	125	150	200
DN _O		32	40	40	50	65	80	100	125	150	200	250	300
Actual Orifice diameter d ₀ [mm]		18	18	23	29	37	46	60	74	92	98	125	165
Actual Orifice area A ₀ [mm ²]		254	254	416	661	1075	1662	2827	4301	6648	7543	12272	21382
LEO _L ^{*)} [inch ²]		0,316	0,316	0,516	0,821	1,336	2,062	3,513	5,343	8,259	9,371	15,246	26,565
Set pressure [bar]	Capacities [10 ³ kg/h]												
0,1	2,60	2,60	4,25	6,76	11,0	17,0	28,9	44,0	68,0	77,2	126	219	
0,2	3,19	3,19	5,21	8,28	13,5	20,8	35,5	53,9	83,3	94,6	154	268	
0,5	4,51	4,51	7,37	11,7	19,1	29,5	50,1	76,3	118	134	218	379	
1	6,11	6,11	9,97	15,9	25,8	39,9	67,9	103	160	181	295	513	
2	8,64	8,64	14,1	22,4	36,5	56,4	96,0	146	226	256	417	726	
3	10,6	10,6	17,3	27,5	44,7	69,1	118	179	276	314	510	889	
4	12,2	12,2	19,9	31,7	51,6	79,8	136	206	319	362	589	1027	
5	13,7	13,7	22,3	35,5	57,7	89,2	152	231	357	405	659	1148	
6	15,0	15,0	24,4	38,8	63,2	97,7	166	253	391	444	722	1257	
7	16,2	16,2	26,4	42,0	68,3	106	180	273	422	479	779	1358	
8	17,3	17,3	28,2	44,8	73,0	113	192	292	451	512	833	1452	
9	18,3	18,3	29,9	47,6	77,4	120	204	310	479	543	884	1540	
10	19,3	19,3	31,5	50,1	81,6	126	215	326	505	573	932	1623	
12	21,2	21,2	34,6	54,9	89,4	138	235	358	553	627	1021	1778	
14	22,9	22,9	37,3	59,3	96,6	149	254	386	597	678	1102	1921	
16	24,4	24,4	39,9	63,4	103	160	272	413	638	724	1178	2053	
18	25,9	25,9	42,3	67,3	110	169	288	438	677	768	1250	2178	
20	27,3	27,3	44,6	70,9	115	178	304	462	714	810	1317	2296	
22	28,7	28,7	46,8	74,4	121	187	318	484	748	849	1382	2408	
24	29,9	29,9	48,9	77,7	126	195	333	506	782	887	1443	2515	
26	31,1	31,1	50,9	80,9	132	203	346	526	814	923			
28	32,3	32,3	52,8	83,9	137	211	359	546	844	958			
30	33,5	33,5	54,6	86,8	141	219	372	565	874				
32	34,6	34,6	56,4	89,7	146	226	384	584	903				
34	35,6	35,6	58,2	92,5	151	233	396	602	931				
36	36,7	36,7	59,8	95,1	155	239	407	619	957				
38	37,7	37,7	61,5	97,7	159	246	418	636	984				
40	38,6	38,6	63,1	100	163	252	429	653	1009				

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

Type 441, 442 DIN

Available Options

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

Type 441, 442 DIN

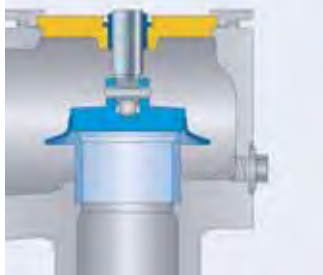
Heating jacket

H29, H30: Couplings G $\frac{3}{8}$, G $\frac{3}{4}$
H31, H32: Flanges DN 15, DN 25



Drain hole

J18: G $\frac{1}{4}$
J19: G $\frac{1}{2}$



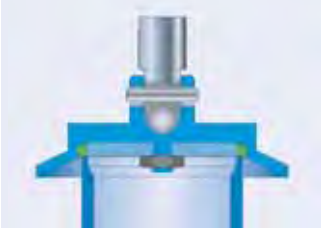
Open bonnet

See Art.-No.



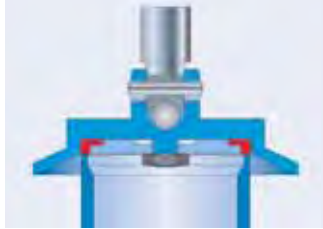
O-ring-disc

J20: FFKM "C"
J21: CR "K"
J22: EPDM "D"
J23: FKM "L"



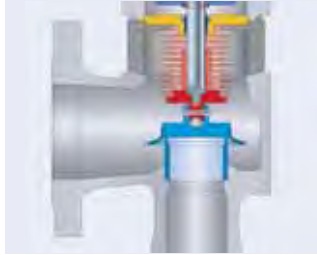
Disc with inserted sealing plate

J44: PTFE-FDA
J48: PCTFE
J49: SP



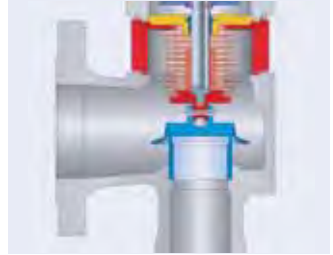
Stainless steel bellows

J68: Open bonnet
J78: Closed bonnet



Conversion kit for stainless steel bellows

See Art.-No. page 06/15



Screwed cap H2



Plain lever H3



Packed lever 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

