

Type 442 ANSI
Plain lever H3
Open bonnet
Conventional design

Type 441, 442 ANSI Flanged Safety Relief Valves

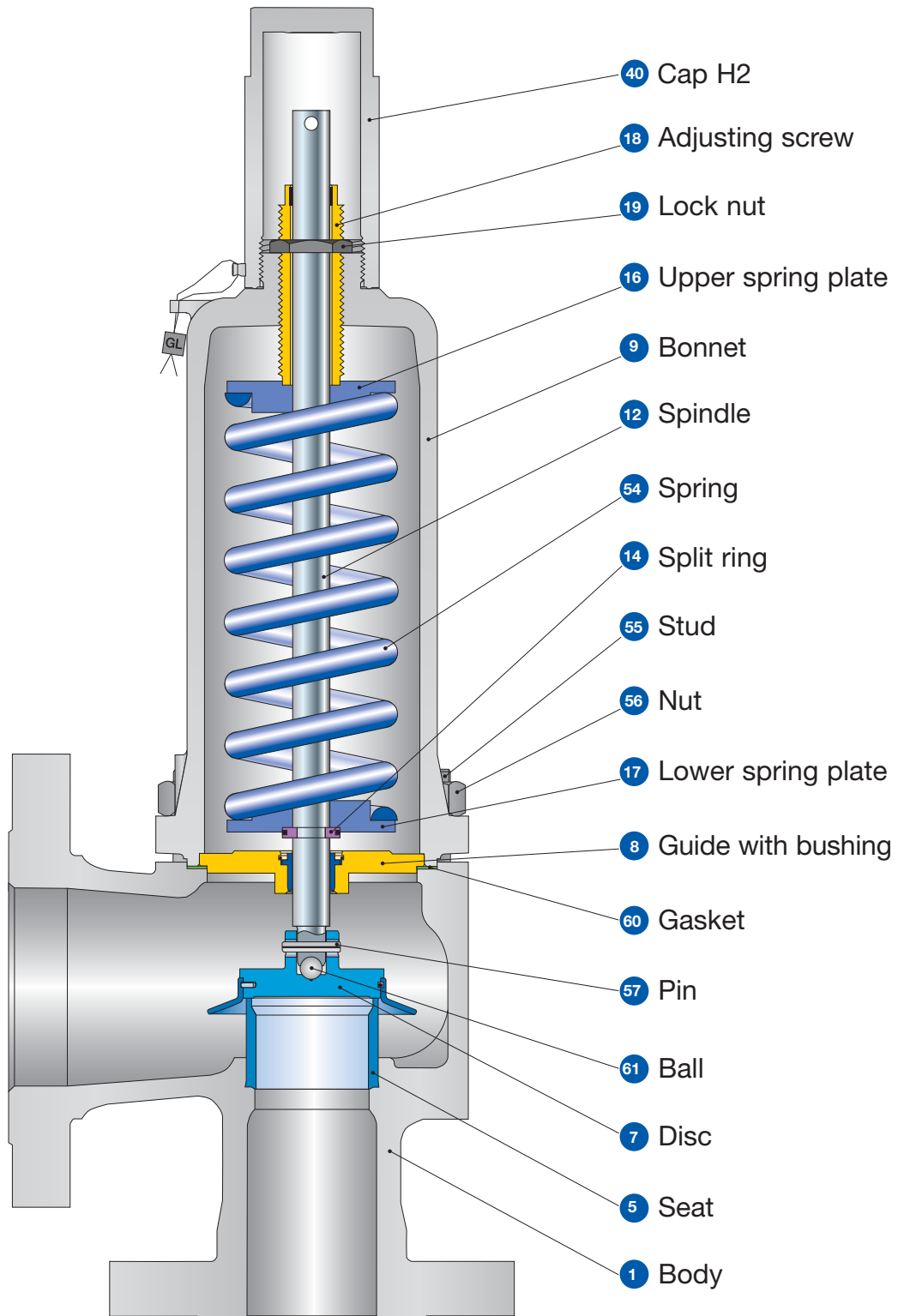
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Type 441 ANSI
Packed lever H4
Closed bonnet
Conventional design

Type 441, 442 ANSI
Conventional design

Type 441, 442
 ANSI



Type 441, 442 ANSI

Conventional design

Materials

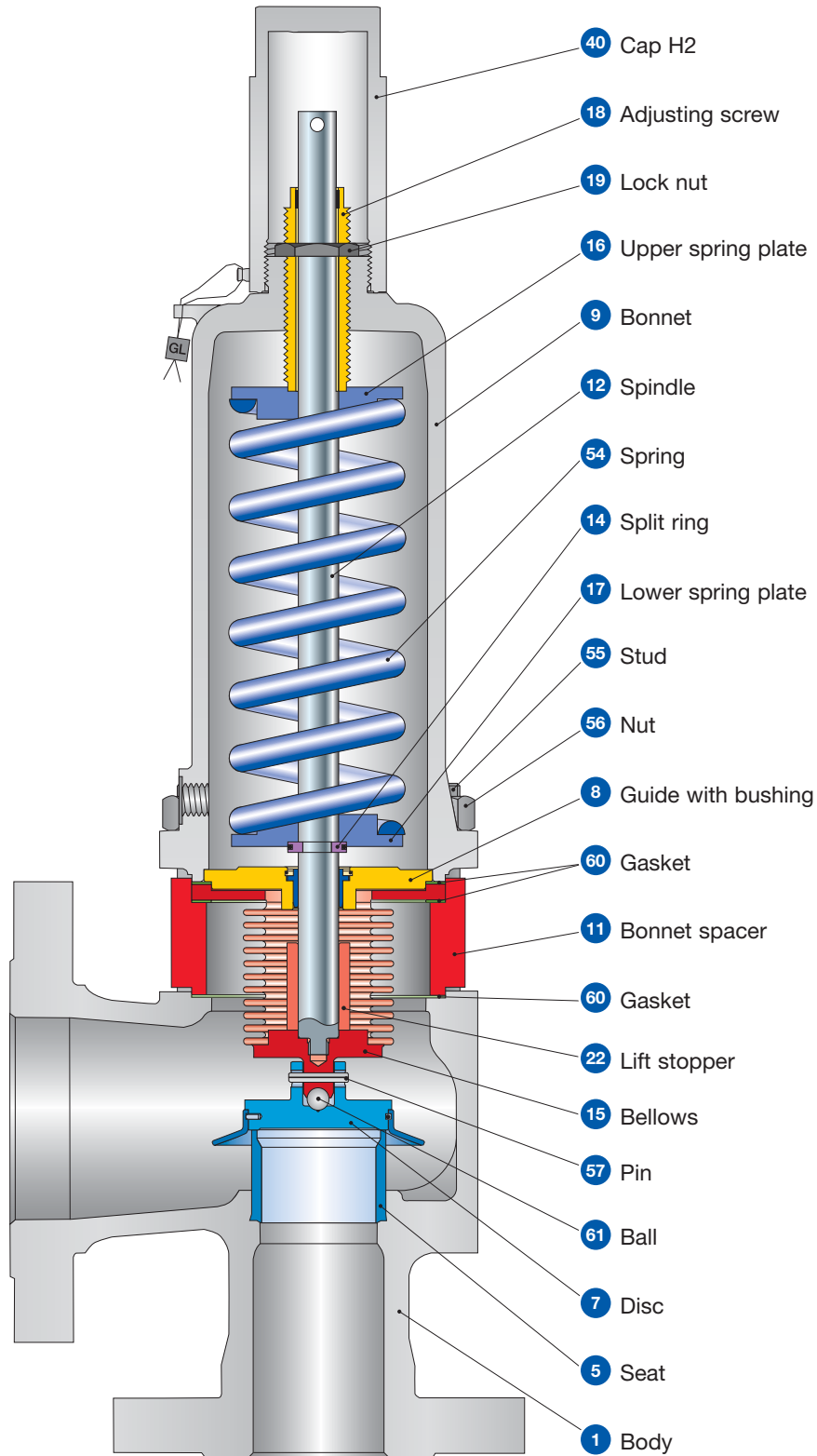
Item	Component	Type 4412 / 4422 ANSI	Type 4414 ANSI
1	Body	1.0619	1.4408
		SA 216 WCB	SA 351 CF8M
5	Seat	1.4404	1.4404
		316L	316L
7	Disc	1.4122	1.4404
		Hardened stainless steel	316L
8	Guide with bushing	1.4104, 1.0501, 0.7040	1.4404
		Chrome or carbon steel	316L
		1.4104 tenifer	-
		Chrome steel tenifer	-
9	Bonnet	0.7040, 0.7043, 1.0619	1.4408, 1.4404, 1.4571
		Ductile Gr. 60-40-18, SA 216 WCB	SA 351 CF8M, SA 479 316L, SA 479 316Ti
12	Spindle	1.4021	1.4404
		420	316L
14	Split ring	1.4104	1.4404
		Chrome steel	316L
16 / 17	Spring plate	1.0718	1.4404
		Steel	316L
18	Adjusting screw with bushing	1.4104 PTFE	1.4404 PTFE
		Chrome steel PTFE	316L PTFE
19	Lock nut	1.0718	1.4404
		Steel	316L
40	Cap H2	1.0460 or 0.7043	1.4404
		SA 105 or Gr. 60-40-18	316L
54	Spring standard	1.1200, 1.8159, 1.7102	1.4310
		Carbon steel	Stainless steel
54	Spring optional	1.4310	-
		Stainless steel	-
55	Stud	1.1181	1.4401
		Steel	B8M
56	Nut	1.0501	1.4401
		2H	8M
57	Pin	1.4310	1.4310
		Stainless steel	Stainless steel
60	Gasket	Graphite / 1.4401	Graphite / 1.4401
		Graphite / 316	Graphite / 316
61	Ball	1.3541	1.4401
		Hardened stainless steel	316

Please notice:

- Modifications reserved by LESER
- If several materials are specified LESER defines the material.
- LESER can upgrade materials without notice.
- Every part can be replaced by other material acc. to customer specification.

Type 441, 442 ANSI
Balanced bellows design

Type 441, 442
 ANSI



Type 441, 442 ANSI

Balanced bellows design

Materials

Item	Component	Type 4412 / 4422 ANSI	Type 4414 ANSI
1	Body	1.0619	1.4408
		SA 216 WCB	SA 351 CF8M
5	Seat	1.4404	1.4404
		316L	316L
7	Disc	1.4122	1.4404
		Hardened stainless steel	316L
8	Guide with bushing	1.4104, 1.0501, 0.7040	1.4404
		Chrome steel or carbon steel	316L
		1.4104 tenifer	-
		Chrome steel tenifer	-
9	Bonnet	0.7040, 0.7043, 1.0619	1.4408, 1.4404, 1.4571
		Ductile Gr. 60-40-18, SA 216 WCB	SA 351 CF8M, SA 479 316L, SA 479 316Ti
11	Bonnet spacer	1.4404	1.4404
		316L	316L
12	Spindle	1.4404	1.4404
		316L	316L
14	Split ring	1.4104	1.4404
		Chrome steel	316L
15	Bellows	1.4571	1.4571
		316Ti	316Ti
16 / 17	Spring plate	1.0718	1.4404
		Steel	316L
18	Adjusting screw with bushing	1.4104 PTFE	1.4404 PTFE
		Chrome steel PTFE	316L PTFE
19	Lock nut	1.0718	1.4404
		Steel	316L
22	Lift stopper	1.4404	1.4404
		316L	316L
40	Cap H2	1.0460 or 0.7043	1.4404
		SA 105 or Gr. 60-40-18	316L
54	Spring standard	1.1200, 1.8159, 1.7102	1.4310
		Carbon steel	Stainless steel
54	Spring optional	1.4310	-
		Stainless steel	-
55	Stud	1.4401	1.4401
		B8M	B8M
56	Nut	1.4401	1.4401
		8M	8M
57	Pin	1.4310	1.4310
		Stainless steel	Stainless steel
60	Gasket	Graphite / 1.4401	Graphite / 1.4401
		Graphite / 316	Graphite / 316
61	Ball	1.3541	1.4401
		Hardened stainless steel	316

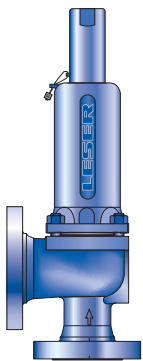
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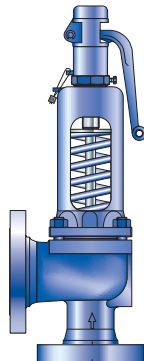
Type 441, 442 ANSI
Article numbers

Type 441, 442
 ANSI

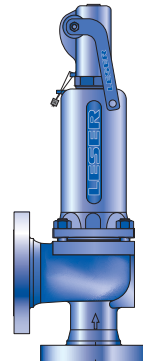
Valve size			1" x 2"	1½" x 2"	1½" x 2½"	2" x 3"	3" x 4"	4" x 6"
Actual Orifice diameter d ₀ [mm]			23	29	37	46	60	92
Actual Orifice area A ₀ [mm ²]			416	661	1075	1662	2827	6648
Body material: 1.0619 (WCB)								
Bonnet closed	H2	Art. No. 4412.	4812	4822	4832	4842	4862	4872
	H3	Art. No. 4412.	4813	4823	4833	4843	4863	4873
	H4	Art. No. 4412.	4814	4824	4834	4844	4864	4874
open	H3	Art. No. 4422.	4815	4825	4835	4845	4865	4875
Body material: 1.4408 (CF8M)								
Bonnet closed	H2	Art. No. 4414.	7912	–	7932	7942	7962	7972
	H4	Art. No. 4414.	7914	–	7934	7944	7964	7974



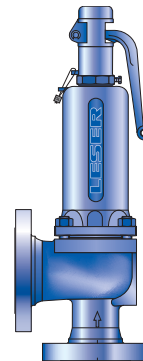
Type 441
 Cap H2
 Closed bonnet
 Conventional design



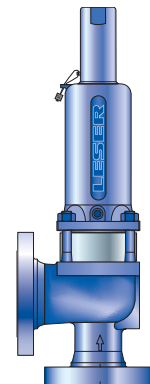
Type 442
 Plain lever H3
 Bonnet open
 Conventional design



Type 441
 Packed lever H4
 Closed bonnet
 Conventional design



Type 441
 Plain lever H3
 Closed bonnet
 Conventional design



Type 441
 Cap H2
 Closed bonnet
 Balanced bellows design

Type 441, 442 ANSI

Dimensions and weights

Metric Units

Valve size	1" x 2"	1½" x 2"	1½" x 2½"	2" x 3"	3" x 4"	4" x 6"
Actual Orifice diameter d_o [mm]	23	29	37	46	60	92
Actual Orifice area A_o [mm ²]	416	661	1075	1662	2827	6648
Weight [kg]	10	13	16	22	33	75
with bellows	11	14	17	24	37	83
Center to face [mm]						
Inlet a	105	124	124	136	156	181
Outlet b	114	121	121	124	165	229
Height (H4) [mm]						
Standard H max.	339	455	496	556	685	844
Bellows H max.	378	497	534	602	741	902
Support brackets [mm]						
A						280
B						160
(drilled only on request, option code H42)						Ø 18
C						250
D						25
E						

Type 441, 442
ANSI

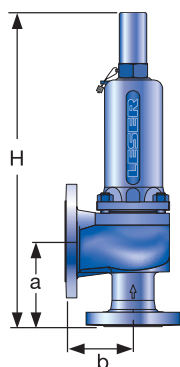
Body material: 1.0619 (WCB)

ANSI Flange Class¹⁾	Inlet	CL150 or CL300
	Outlet	CL150

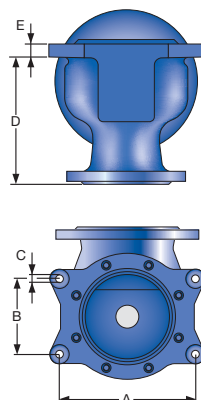
Body material: 1.4408 (CF8M)

ANSI Flange Class¹⁾	Inlet	CL150 or CL300	-	CL150 or CL300
	Outlet	CL150	-	CL150

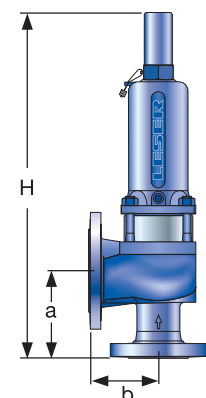
¹⁾Standard flange rating. For other flange drillings and facings please refer to page 31.



Conventional design



Support brackets



Balanced bellows design

Type 441, 442 ANSI

Dimensions and weights

US Units

Type 441, 442
ANSI

Valve size	1" x 2"	1½" x 2"	1½" x 2½"	2 x 3"	3 x 4"	4 x 6"
Actual Orifice diameter d_0 [inch]	0.91	1.14	1.46	1.81	2.36	3.62
Actual Orifice area A_0 [inch ²]	0.644	1.024	1.667	2.576	4.383	10.304
Weight [lbs]	22	29	35	49	73	165
with bellows	23	30	38	52	81	183
Center to face [inch]						
Inlet a	4 1/8	4 7/8	4 7/8	5 3/8	6 1/8	7 1/8
Outlet b	4 1/2	4 3/4	4 3/4	4 7/8	6 1/2	9
Height (H4) [inch]						
Standard H max.	13 11/32	17 29/32	19 17/32	21 1/16	26 31/32	33 7/32
Bellows H max.	14 7/8	19 9/16	21 1/32	23 11/16	29 3/16	35 1/2
Support brackets [inch]						
A						11
B						6 1/4
(drilled only on request, option code H42)						Ø 3/4
D						9 7/8
E						25

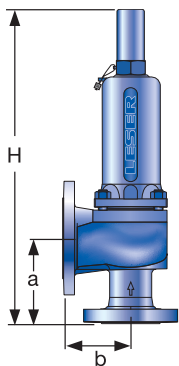
Body material: 1.0619 (WCB)

ANSI Flange Class¹⁾	Inlet	CL150 or CL300
	Outlet	CL150

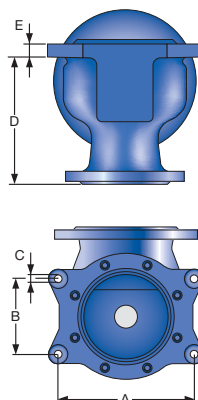
Body material: 1.4408 (CF8M)

ANSI Flange Class¹⁾	Inlet	CL150 or CL300	-	CL150 or CL300
	Outlet	CL150	-	CL150

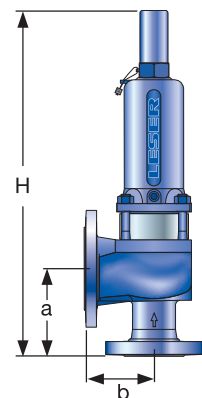
¹⁾Standard flange rating. For other flange drillings and facings please refer to page 31.



Conventional design



Support brackets



Balanced bellows design

Type 441, 442 ANSI

Pressure temperature ratings

Metric Units

Valve size		1" x 2"	1½" x 2"	1½" x 2½"	2 x 3"	3 x 4"	4 x 6"
Actual Orifice diameter d_o [mm]		23	29	37	46	60	92
Actual Orifice area A_o [mm ²]		416	661	1075	1662	2827	6648
Body material: 1.0619 (WCB)							
ANSI Flange Class¹⁾	Inlet	CL150 or CL300					
	Outlet	CL150					
Minimum set pressure	p [bar _g] S/G/L	0.1	0.1	0.1	0.1	0.1	0.1
Min. set pressure²⁾ standard bellows	p [bar _g] S/G/L	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	1.18
Maximum set pressure	p [bar _g] S/G/L	49	48	46	40 ⁴⁾	40	34
Max. set pressure with special spring	p [bar _g] S/G/L	51	48	46	40 ⁴⁾	40	34
Temperature³⁾ acc. to DIN EN	min. [°C]	-85					
	max. [°C]	+450					
Temperature³⁾ acc. to ASME	min. [°C]	-29					
	max. [°C]	+427					

Body material: 1.4408 (CF8M)							
ANSI Flange Class¹⁾	Inlet	CL150 or CL300	-	CL150 or CL300			
	Outlet	CL150	-	CL150			
Minimum set pressure	p [bar _g] S/G/L	0.1	-	0.1	0.1	0.1	0.1
Min. set pressure²⁾ standard bellows	p [bar _g] S/G/L	3	-	3	3	3	3
Min. set pressure low press. bellows	p [bar _g] S/G/L	0.98	-	1.11	1.81	1.50	1.18
Maximum set pressure	p [bar _g] S/G/L	42.5	-	40	32	27	20
Max. set pressure with special spring	p [bar _g] S/G/L	51	-	40	40	27	25
Temperature³⁾ acc. to DIN EN	min. [°C]	-270	-	-270			
	max. [°C]	+400	-	+400			
Temperature³⁾ acc. to ASME	min. [°C]	-268	-	-268			
	max. [°C]	+538	-	+538			

¹⁾ For flange rating class 150 the pressure temperature ratings according to ASME ANSI B 16.34 apply.

²⁾ Min. set pressure standard bellows = Max. set pressure low pressure bellows.

³⁾ Between -10 °C and lowest temperature indicated „AD 2000-Merkblatt“ W10 shall be taken into account.

⁴⁾ For applications with CE marking. Maximum set pressure for ASME application 49 bar.

Type 441, 442 ANSI

Pressure temperature ratings

US Units

 Type 441, 442
ANSI

Valve size		1" x 2"	1 1/2" x 2"	1 1/2" x 2 1/2"	2 x 3"	3 x 4"	4 x 6"	
Actual Orifice diameter d ₀ [inch]		0.91	1.14	1.46	1.81	2.36	3.62	
Actual Orifice area A ₀ [inch ²]		0.644	1.024	1.667	2.576	4.383	1.304	
Body material: 1.0619 (WCB)								
ANSI Flange Class ¹⁾	Inlet		CL150 or CL300					
	Outlet		CL150					
Minimum set pressure	p [psig] S/G/L	1.5	1.5	1.5	1.5	1.5	1.5	
Min. set pressure²⁾ standard bellows	p [psig] S/G/L	43.5	43.5	43.5	43.5	43.5	43.5	
Min. set pressure low press. bellows	p [psig] S/G/L	14	20	16	26	22	17	
Maximum set pressure	p [psig] S/G/L	711	696	667	580 ⁴⁾	580	493	
Max. set pressure with special spring	p [psig] S/G/L	740	696	667	580 ⁴⁾	580	493	
Temperature³⁾ acc. to DIN EN	min. [°F]						-121	
	max. [°F]						+842	
Temperature³⁾ acc. to ASME	min. [°F]						-20	
	max. [°F]						+800	

Body material: 1.4408 (CF8M)								
ANSI Flange Class ¹⁾	Inlet		CL150 or CL300	-	CL150 or CL300			
	Outlet		CL150	-	CL150			
Minimum set pressure	p [psig] S/G/L	1.5	-	1.5	1.5	1.5	1.5	
Min. set pressure²⁾ standard bellows	p [psig] S/G/L	43.5	-	43.5	43.5	43.5	43.5	
Min. set pressure low press. bellows	p [psig] S/G/L	14	-	16	26	22	17	
Maximum set pressure	p [psig] S/G/L	616	-	580	464	392	290	
Max. set pressure with special spring	p [psig] S/G/L	740	-	580	580	392	363	
Temperature³⁾ acc. to DIN EN	min. [°F]	-454	-					-454
	max. [°F]	+752	-					+752
Temperature³⁾ acc. to ASME	min. [°F]	-450	-					-450
	max. [°F]	+1000	-					+1000

¹⁾ For flange rating class 150 the pressure temperature ratings according to ASME ANSI B 16.34 apply.

²⁾ Min. set pressure standard bellows = Max. set pressure low pressure bellows.

³⁾ Between -10 °C and lowest temperature indicated „AD 2000-Merkblatt“ W10 shall be taken into account.

⁴⁾ For applications with CE marking. Maximum set pressure for ASME application 711 psig.

Type 441, 442 ANSI Flange drillings

Valve size		1" x 2"	1½" x 2"	1½" x 2½"	2" x 3"	3" x 4"	4" x 6"
Actual Orifice diameter d_o [mm]		23	29	37	46	60	92
Actual Orifice area A_o [mm ²]		416	661	1075	1662	2827	6648
Body material: 1.0619 (WCB), 1.4408 (CF8M)							
Inlet	ASME B16.5	CL150	H64	H64	H64	H64	H64
		CL300	*	*	*	*	*
Outlet	ASME B16.5	CL150	*	*	*	*	*
		CL300	-	-	-	-	-

 Type 441, 442
ANSI

Flange facings

Indication	Standard	Inlet	Outlet	Remark						
General										
Flange undrilled	-	H38	H39							
Linde-V-Nut, Type V48	Linde Standard 420-08 LDeS 3313.36	J07	J08	Groove: Rz 16						
Linde-V-Nut, Type V48A		J05	J06	Groove: Rz 4, e.g. with hydrogen						
Lens seal form L (without sealing lens)	DIN 2696 LDeS 3313.35	J11	J12							
Acc. to DIN EN 1092										
Flange facing (see LDeS 3313.40)		PN 10 – PN 40	PN 10 – PN 40	Rz-data according to DIN EN 1092 in μm						
Raised face	Type B1	*	*	Facing: Rz = 12.5 – 50						
	Type B2	L36	L38	Facing: Rz = 3.2 – 12.5						
Tongue face C ¹⁾		H94	H92	Steel flange only						
Groove face D ¹⁾		H93	H91							
Male face E		H96	H98							
Female face F		H97	H99							
O-ring male face G		J01	J02							
O-ring female face H		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, 1.4408	all	all	L52	L53	*	*	CL150	H62	CL150	H63

¹⁾ 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 EN 1092-1 an additional option code is necessary: "S01: soil of the groove drilled".

²⁾ Smooth finish is not defined in the effective standards.

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