

Type 437



Type 437
Packed knob H4
Conventional design



Type 437
Packed knob H4
Flanged connection



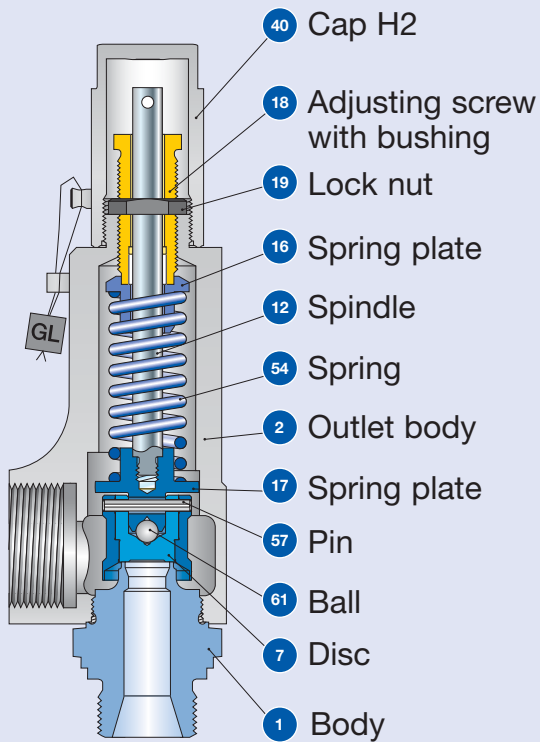
Type 437
Cap H2
Long version

Safety Relief Valves – spring loaded

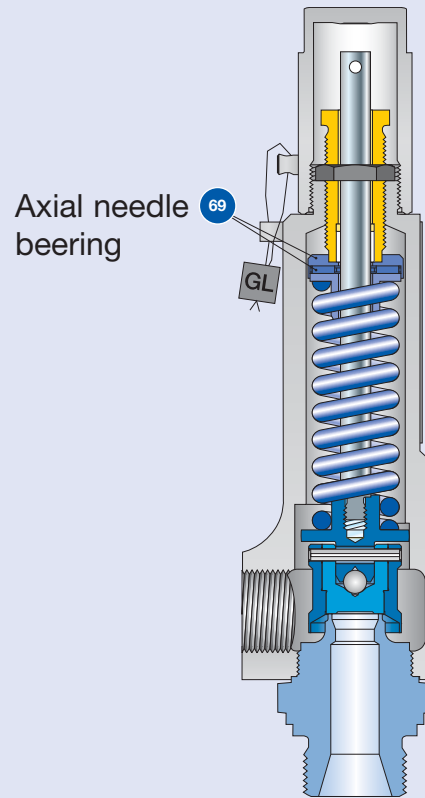
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Available designs

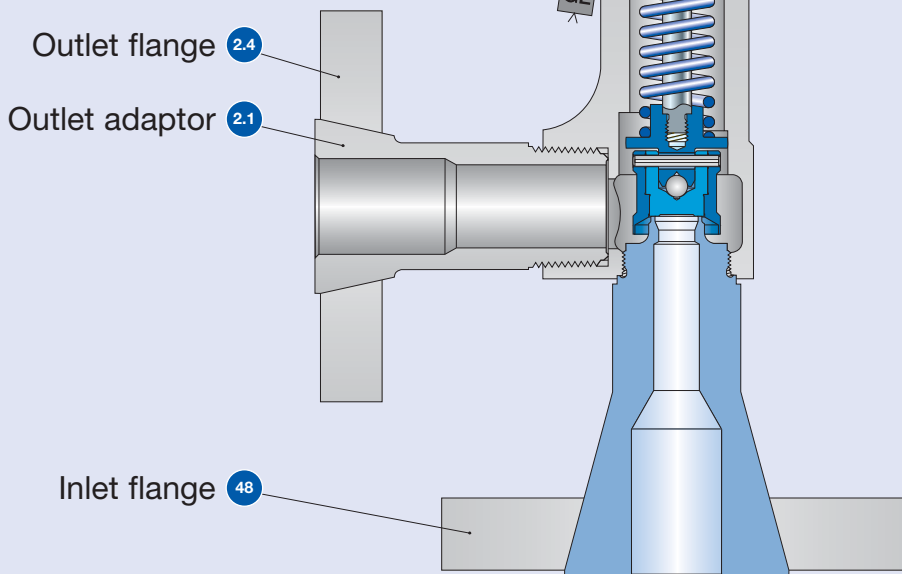
Type 437



Conventional design
Threaded connection



Long version
Threaded connection



Conventional design
Flange connection

Available designs – materials

Materials			Type 4373	Type 4374
Item	Component	Remarks	Type 4373	Type 4374
1	Base / Inlet body	Threaded connection	1.4104 SA 479 430	1.4404 SA 479 316L
		Flange connection	1.4404 SA 479 316L	1.4404 SA 479 316L
		Long version	1.4404 Stellite SA 479 316L Stellite	1.4404 Stellite SA 479 316L Stellite
2	Outlet body		1.4104 SA 479 430	1.4404 SA 479 316L
2.1	Outlet adaptor	Flange connection	1.4404 316L	1.4404 316L
2.4	Outlet flange	Flange connection	1.4404 316L	1.4404 316L
7	Disc		1.4122 Hardened stainless steel	1.4404 SA 316L
		Long version	1.4404 Stellite 316L Stellite	1.4404 Stellite 316L Stellite
12	Spindle ¹⁾		1.4021 420	1.4404 316L
16/17	Spring plate ¹⁾		1.4104 Chrome steel	1.4404 316L
18	Adjusting screw with bushing		1.4104 / PTFE Chrome steel / PTFE	1.4104 / PTFE 316L / PTFE
19	Lock nut		1.0718 Steel	1.4404 316L
40	Cap H2		1.0718 Steel	1.4404 316L
48	Inlet flange	Flange connection	1.4404 316L	1.4404 316L
54	Spring		1.4310 Stainless steel	1.4310 Stainless steel
57	Pin		1.4310 Stainless steel	1.4310 Stainless steel
61	Ball		1.3541 Hardened stainless steel	1.4401 316
69	Axial needle bearing	Long version	1.4404 316L	1.4404 316L

¹⁾ The items 12 and 17 are combined to one unit.

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 – Series 437 – Example for numbering system

Type 437

1

Article Number

4374.3142

2

Set Pressure

10 barg

3

Connections

V62

V71

1	2	3	4
437	4	314	2

1 Valve Type 437
Types of sealing

Metal seat	
Metal-to-metal	
Metal-to-metal stellite	
Soft seal (Sealing plate)	
SP	Vespel-SP1
PCTFE	Kel-F
PTFE-FDA	Teflon

2 Material code

Code	Body material
3	1.4104 (430)
4	1.4404 (316L)

3 Valve code
Identifies valve size, body material and orifice, refer to page 01/07 and following.

4 Code for lifting device

Code	Lifting device	
2	Screwed cap	H2
3	Pull button	H3
4	Packed knob	H4

Please state unit (in gauge)!

Please do not exceed pressure range mentioned in the spring charts.

Please refer to table "Available Connections" on pages 04/04 and 04/05.

Please state one option code for each, inlet **and** outlet.

4 Options

J44

Type 437	Option code
• Base / Inlet body stellite (Type 437 Standard only)	L20
• Disc stellite	J25
• Plastic seal material	
PTFE	"A" J44
PCTFE	"G" J48
VESPEL SP	"T" J49
• INCONEL X-750 spring	X08

5 Documentation

H01 L30

Please select requested documentation:

Inspections, tests:	Option code
DIN EN 10204-3.2: TÜV-Nord Certificate for test pressure	M33
LESER CGA (Certificate for Global Application)	H03
- Inspection certificate 3.1 acc. to DIN EN 10204	
- Declaration of conformity acc. to PED 97/23/EC	
Material test certificate:	
DIN EN 10204-3.1	
Part	Option code
Base / Inlet body	H01
Outlet body	L34
Cap / lever cover	L31
Disc	L23

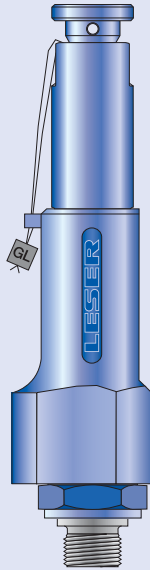
6 Code and Medium

2.0

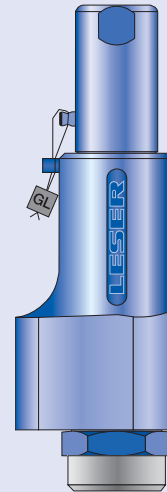
1	2
2	0
1 Code	
1. ASME Section VIII	
2. CE / VdTUEV	
3. ASME Section VIII + CE / VdTUEV	
2 Medium	
.1 Gases	
.2 Liquids	
.3 Steam	
.0 Steam / Gases / Liquids (valid only for CE / VdTUEV)	

How to order – Article numbers

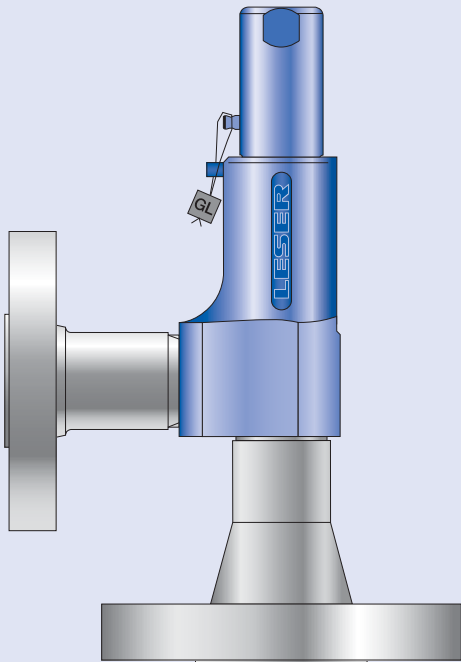
Type 437



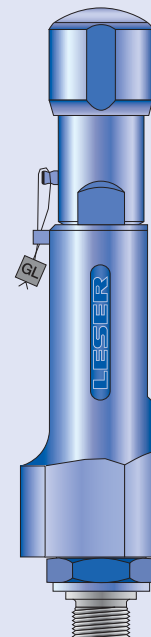
Type 437 Male
Outlet body 1/2"
Pull button H3
Conventional design



Type 437 Female
Outlet body 1"
Cap H2
Conventional design



Type 437 Flanged connection
Outlet body 1"
Cap H2
Conventional design



Type 437 Male
Outlet body 1/2"
Packed knob H4
Long version

How to order – Article numbers

Article numbers

	Conventional design		Long version	
Actual Orifice diameter d_0 [mm]	10	6	10	
Actual Orifice area A_0 [mm ²]	78.5	28.3	78.5	
Actual Orifice diameter d_0 [inch]	0.394	0.236	0.394	
Actual Orifice area A_0 [inch ²]	0.122	0.044	0.122	
Base / Inlet body material: 1.4104 (430)				
H2 Art.-No. 4373.	2602	2622	2612	
H3 Art.-No. 4373. $p_{max.} = 16 \text{ bar}_g$	2603	-	-	
H4 Art.-No. 4373.	2604	2624	2614	
p [bar _g]	S/G/L 0.1 – 93	S/G 180 – 365	S/G/L 93 – 180	
p [psig]	S/G/L 1.5 – 1349	S/G 2611 – 5294	S/G/L 1349 – 2611	
Base / Inlet body material: 1.4404 (316L)				
H2 Art.-No. 4374.	3142	3122	3152	
H4 Art.-No. 4374.	3144	3124	3154	
p [bar _g]	S/G/L 0.1 – 68	S/G 180 – 365	S/G/L 68 – 180	
p [psig]	S/G/L 1.5 – 986	S/G 2611 – 5294	S/G/L 986 – 2611	

Dimensions and weights – Metric Units

Threaded connections

	Size Outlet body	Conventional design			Long version					
		1/2"	3/4"	1"	1/2"	3/4"	1"	1/2"	3/4"	1"
Actual Orifice diameter d_0 [mm]		10	10	10	6	6	6	10	10	10
Actual Orifice area A_0 [mm ²]		78.5	78.5	78.5	28.3	28.3	28.3	78.5	78.5	78.5
Weight [kg]		1.2	1.6	1.6	1.4	2.1	2.1	1.4	2.1	2.1
Required installation diameter [mm]		65	80	80	65	80	80	65	80	80

Inlet thread "Female"

	Size outlet body	Conventional design			Long version						
		1/2"	3/4"	1"	1/2"	3/4"	1"	1/2"	3/4"	1"	
Center to face [mm]											
DIN ISO 228-1	G	Inlet 1/2" a	46	46	49	46	46	49	46	46	49
			ISO 7-1/BS 21	Rc	Inlet 3/4", 1" a	56	56	59	56	56	59
ASME B1.20.1	NPT	Outlet b				30	37	37	30	37	37
			Height [mm]								
		Inlet 1/2" H max.	209	209	212	230	230	233	230	230	233
		Inlet 3/4", 1" H max.	219	219	222	240	240	243	240	240	243

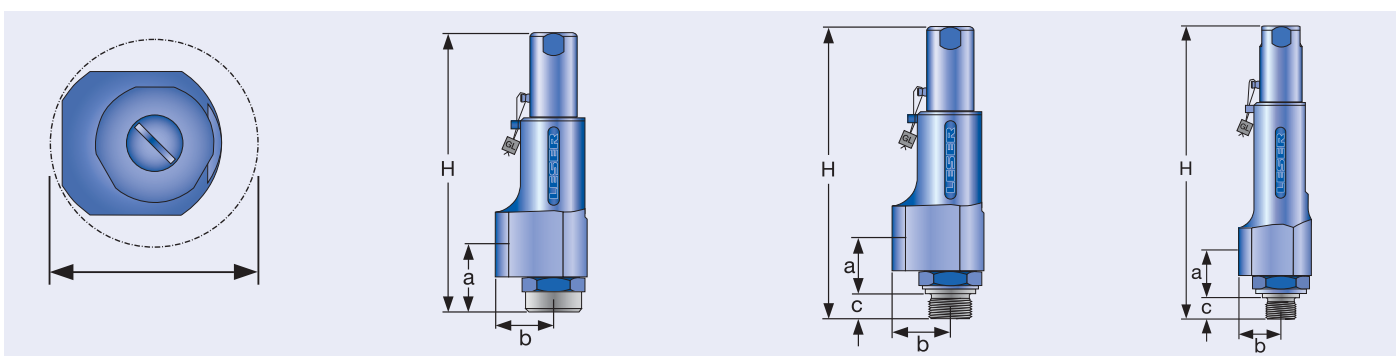
Inlet thread "Male"

	Size outlet body	Conventional design				Long version					
		1/2"	3/4"	1"	1/2"	3/4"	1"	1/2"	3/4"	1"	
Center to face [mm]											
DIN ISO 228-1	G	Inlet a	33	33	36	33	33	36	33	33	36
			ISO 7-1/BS 21	R	Outlet b	30	37	37	30	37	37
ASME B1.20.1	NPT	Inlet a				31	31	34	31	31	34
			Outlet b	30	37	37	30	37	37	30	37
Height [mm]											
		Size inlet thread	3/8"	1/2"	3/4"	1"	3/8"	1/2"	3/4"	1"	
DIN ISO 228-1	G	H max.	208	210	212	217	229	231	233	238	
ISO 7-1/BS 21	R	H max.	–	213	214	220	–	234	235	241	
ASME B1.20.1	NPT	H max.	–	216	216	224	–	237	237	245	

Length of screwed end "c" [mm]

	Size inlet thread	3/8"	1/2"	3/4"	1"
DIN ISO 228-1	G	12	14	16	18
ISO 7-1/BS 21	R	–	19	20	23
ASME B1.20.1	NPT	–	22	22	27

Available threaded connections refer to page 04/04.



Required installation diameter

Conventional design – Female thread

Conventional design – Male thread

Long version – male thread

Dimensions and weights – Metric Units

Flanged connection

		Conventional design		Long version	
Actual Orifice diameter d_0 [mm]		10		6	
Actual Orifice area A_0 [mm ²]		78.5		28.3	
DIN EN 1092-1 (Available flange sizes refer to page 04/05)					
Flange rating class PN 40					
Center to face	[mm]	Inlet a	100	100	100
		Outlet b	100	100	100
Height	[mm]	H max.	263	284	284
Flange rating class \geq PN 160					
Center to face	[mm]	Inlet a	103	103	103
		Outlet b	100	100	100
Height	[mm]	H max.	266	287	287
ASME B 16.5 (Available flange sizes refer to page 04/05)					
Flange rating class 150					
Center to face	[mm]	Inlet a	100	100	100
		Outlet b	100	100	100
Height	[mm]	H max.	263	284	284
Flange rating class \leq 300					
Center to face	[mm]	Inlet a	103	103	103
		Outlet b	100	100	100
Height	[mm]	H max.	266	287	287

Note The outlet dimension b can differ at special combinations of nominal diameter and pressure range if flanged connections are used at the inlet and outlet. Special dimensions are possible. More information at sales@leser.com

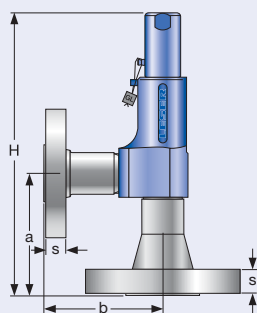
Weight

To calculate the total weight use the formula: $m_T = m_N + m_F(\text{Inlet}) + m_F(\text{Outlet})$

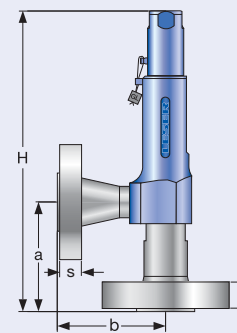
Weight net [kg] (without inlet and outlet flange)	m_N	2.4	2.8	2.8
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Flange dimensions

		DIN EN 1092-1 / Flange rating PN						ASME B16.5 / Flange rating						
		Size						Size						
		40	100	160	250	320	400	150	300	600	900	1500	2500	
DN 15								NPS 1/2"						
Flange thickness [mm]	s	18	–	22	28	28	30	14	18	18	26	26	30.2	
Weight slip on flange [kg]	m_F	0.8	–	1.2	2.5	2.5	3.6	0.6	0.9	0.9	2.1	2.1	3	
DN 20								NPS 3/4"						
Flange thickness [mm]	s	20	22	–	–	–	–	15	18	18	25.4	25.4	32	
Weight slip on flange [kg]	m_F	1.1	1.3	–	–	–	–	0.8	1.4	1.4	2.3	2.3	3.5	
DN 25								NPS 1"						
Flange thickness [mm]	s	22	–	26	30	36	40	17	21.5	21.5	32.5	32.5	40	
Weight slip on flange [kg]	m_F	1.3	–	2.6	3.5	5	7.5	1	2.1	2.1	4.1	4.1	5.1	



Conventional design



Long version

Dimensions and weights – US Units

Type 437

Threaded connections

Size Outlet body	Conventional design			Long version					
	1/2" $\frac{1}{2}$ "	3/4" $\frac{3}{4}$ "	1" 1 "	1/2" $\frac{1}{2}$ "	3/4" $\frac{3}{4}$ "	1" 1 "	1/2" $\frac{1}{2}$ "	3/4" $\frac{3}{4}$ "	1" 1 "
Actual Orifice diameter d_0 [inch]	0.394	0.394	0.394	0.236	0.236	0.236	0.394	0.394	0.394
Actual Orifice area A_0 [inch ²]	0.122	0.122	0.122	0.044	0.044	0.044	0.122	0.122	0.122
Weight [lbs]	2.6	3.5	3.5	3.1	4.6	4.6	3.1	4.6	4.6
Required installation diameter [inch]	2 ⁹ / ₁₆	3 ⁵ / ₃₂	3 ⁵ / ₃₂	2 ⁹ / ₁₆	3 ⁵ / ₃₂	3 ⁵ / ₃₂	2 ⁹ / ₁₆	3 ⁵ / ₃₂	3 ⁵ / ₃₂

Inlet thread "Female"

Size outlet body	Conventional design			Long version							
	1/2" $\frac{1}{2}$ "	3/4" $\frac{3}{4}$ "	1" 1 "	1/2" $\frac{1}{2}$ "	3/4" $\frac{3}{4}$ "	1" 1 "	1/2" $\frac{1}{2}$ "	3/4" $\frac{3}{4}$ "	1" 1 "		
Center to face [inch]											
DIN ISO 228-1 ISO 7-1/BS 21 ASME B1.20.1	G Rc NPT	Inlet 1/2" a	1 ¹³ / ₁₆	1 ¹³ / ₁₆	1 ¹⁵ / ₁₆	1 ¹³ / ₁₆	1 ¹³ / ₁₆	1 ¹⁵ / ₁₆	1 ¹³ / ₁₆	1 ¹³ / ₁₆	1 ¹⁵ / ₁₆
		Inlet 3/4", 1" a	2 ⁷ / ₃₂	2 ⁷ / ₃₂	2 ⁵ / ₁₆	2 ⁷ / ₃₂	2 ⁷ / ₃₂	2 ⁵ / ₁₆	2 ⁷ / ₃₂	2 ⁷ / ₃₂	2 ⁵ / ₁₆
		Outlet b	1 ³ / ₁₆	1 ¹⁵ / ₃₂	1 ¹⁵ / ₃₂	1 ³ / ₁₆	1 ¹⁵ / ₃₂	1 ¹⁵ / ₃₂	1 ³ / ₁₆	1 ¹⁵ / ₃₂	1 ¹⁵ / ₃₂
Height [inch]											
		Inlet 1/2" H max.	8 ⁷ / ₃₂	8 ⁷ / ₃₂	8 ¹¹ / ₃₂	8 ⁷ / ₃₂	8 ⁷ / ₃₂	8 ¹¹ / ₃₂	8 ⁷ / ₃₂	8 ⁷ / ₃₂	8 ¹¹ / ₃₂
		Inlet 3/4", 1" H max.	8 ⁵ / ₈	8 ⁵ / ₈	8 ³ / ₄	9 ⁷ / ₁₆	9 ⁷ / ₁₆	9 ⁹ / ₁₆	9 ⁷ / ₁₆	9 ⁷ / ₁₆	9 ⁹ / ₁₆

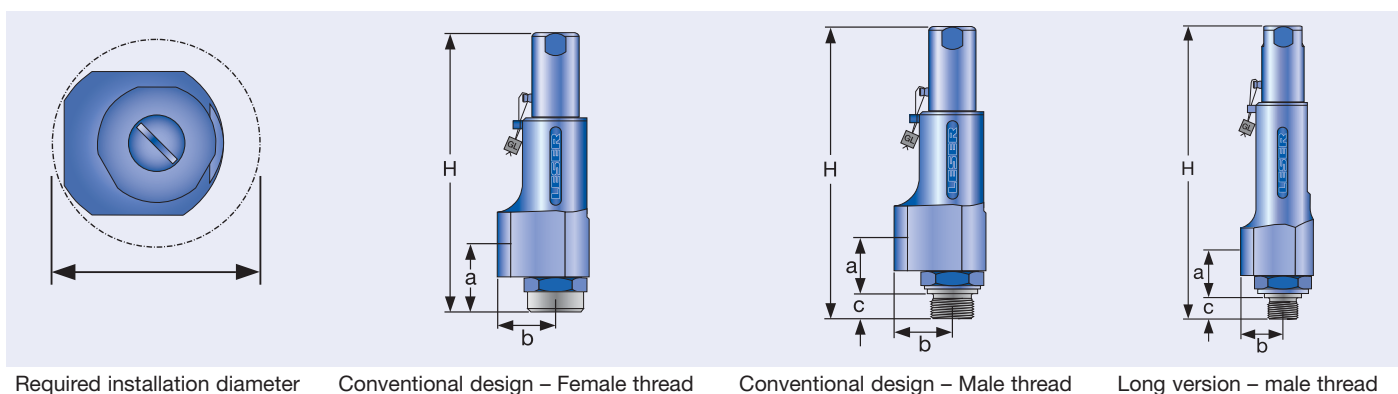
Inlet thread "Male"

Size outlet body	Conventional design			Long version							
	1/2" $\frac{1}{2}$ "	3/4" $\frac{3}{4}$ "	1" 1 "	1/2" $\frac{1}{2}$ "	3/4" $\frac{3}{4}$ "	1" 1 "	1/2" $\frac{1}{2}$ "	3/4" $\frac{3}{4}$ "	1" 1 "		
Center to face [inch]											
DIN ISO 228-1 ISO 7-1/BS 21 ASME B1.20.1	G R NPT	Inlet a	1 ⁵ / ₁₆	1 ⁵ / ₁₆	1 ¹³ / ₃₂	1 ⁵ / ₁₆	1 ⁵ / ₁₆	1 ¹³ / ₃₂	1 ⁵ / ₁₆	1 ⁵ / ₁₆	1 ¹³ / ₃₂
		Outlet b	1 ³ / ₁₆	1 ¹⁵ / ₃₂	1 ¹⁵ / ₃₂	1 ³ / ₁₆	1 ¹⁵ / ₃₂	1 ¹⁵ / ₃₂	1 ³ / ₁₆	1 ¹⁵ / ₃₂	1 ¹⁵ / ₃₂
		Inlet a	1 ⁷ / ₃₂	1 ⁷ / ₃₂	1 ¹¹ / ₃₂	1 ⁷ / ₃₂	1 ⁷ / ₃₂	1 ¹¹ / ₃₂	1 ⁷ / ₃₂	1 ⁷ / ₃₂	1 ¹¹ / ₃₂
		Outlet b	1 ³ / ₁₆	1 ¹⁵ / ₃₂	1 ¹⁵ / ₃₂	1 ³ / ₁₆	1 ¹⁵ / ₃₂	1 ¹⁵ / ₃₂	1 ³ / ₁₆	1 ¹⁵ / ₃₂	1 ¹⁵ / ₃₂
Height [inch]											
		H max.	8 ³ / ₁₆	8 ¹ / ₄	8 ¹¹ / ₃₂	8 ¹⁷ / ₃₂	9	9 ³ / ₃₂	9 ⁵ / ₃₂	9 ³ / ₈	
		H max.	–	8 ³ / ₈	8 ¹³ / ₃₂	8 ²¹ / ₃₂	–	9 ⁷ / ₃₂	9 ¹ / ₄	9 ¹⁵ / ₃₂	
		H max.	–	8 ¹ / ₂	8 ¹ / ₂	8 ¹³ / ₁₆	–	9 ⁵ / ₁₆	9 ⁵ / ₁₆	9 ²¹ / ₃₂	

Length of screwed end "c" [inch]

Size inlet thread	Conventional design			Long version		
	3/8" $\frac{3}{8}$ "	1/2" $\frac{1}{2}$ "	3/4" $\frac{3}{4}$ "	3/8" $\frac{3}{8}$ "	1/2" $\frac{1}{2}$ "	3/4" $\frac{3}{4}$ "
DIN ISO 228-1 ISO 7-1/BS 21 ASME B1.20.1	G R NPT	1 ⁵ / ₃₂	9 ⁹ / ₁₆	3 ¹ / ₄	5 ⁵ / ₈	2 ³ / ₃₂
		–	3 ³ / ₄	7 ⁷ / ₈	2 ⁵ / ₃₂	2 ⁹ / ₃₂
		–	–	–	7 ⁷ / ₈	1 ¹ / ₁₆

Available threaded connections refer to page 04/04.



Dimensions and weights – US Units

Flanged connection

	Conventional design	Long version
Actual Orifice diameter d_0 [inch]	0.394	0.236
Actual Orifice area A_0 [inch ²]	0.122	0.044

DIN EN 1092-1 (Available flange sizes refer to page 04/05)

Flange rating PN 40			
Center to face	[inch]	Inlet a	$3^{15}/_{16}$
		Outlet b	$3^{15}/_{16}$
Height	[inch]	H max.	$10^{11}/_{32}$

Flange rating \geq PN 160			
Center to face	[inch]	Inlet a	$4^{1}/_{16}$
		Outlet b	$3^{15}/_{16}$
Height	[inch]	H max.	$10^{15}/_{32}$

ASME B 16.5 (Available flange sizes refer to page 04/05)

Flange rating class 150			
Center to face	[inch]	Inlet a	$3^{15}/_{16}$
		Outlet b	$3^{15}/_{16}$
Height	[inch]	H max.	$10^{11}/_{32}$

Flange rating class \leq 300			
Center to face	[inch]	Inlet a	$4^{1}/_{16}$
		Outlet b	$3^{15}/_{16}$
Height	[inch]	H max.	$10^{15}/_{32}$

Note The outlet dimension b can differ at special combinations of nominal diameter and pressure range if flanged connections are used at the inlet and outlet. Special dimensions are possible. More information at sales@leser.com

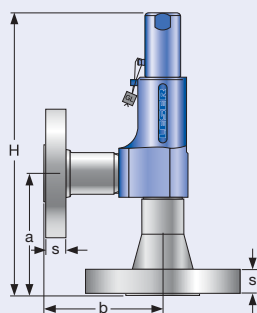
Weight

To calculate the total weight use the formula: $m_T = m_N + m_F (\text{Inlet}) + m_F (\text{Outlet})$

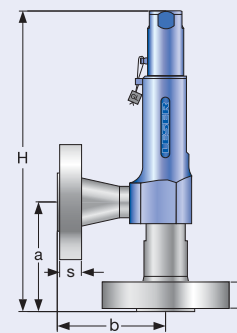
Weight net [lbs] (without inlet and outlet flange)	m_N	5.3	6.2	6.2
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Flange dimensions

	Size	DIN EN 1092-1 / Flange rating PN						ASME B16.5 / Flange rating						
		40	100	160	250	320	400	Größe	150	300	600	900	1500	2500
DN 15		NPS 1/2"												
Flange thickness [inch]	s	$2^3/_{32}$	–	$7/8$	$2^3/_{32}$	$1^3/_{32}$	$1^3/_{16}$		$9/_{16}$	$2^3/_{32}$	$2^3/_{32}$	$1^3/_{32}$	$1^3/_{32}$	$1^3/_{16}$
Weight slip on flange [lbs]	m_F	1.8	–	2.6	5.5	5.5	7.9		1.3	2.0	2.0	4.6	4.6	6.6
DN 20		NPS 3/4"												
Flange thickness [inch]	s	$2^5/_{32}$	$7/8$	–	–	–	–		$1^9/_{32}$	$2^3/_{32}$	$2^3/_{32}$	1	1	$1^1/4$
Weight slip on flange [lbs]	m_F	2.4	2.9	–	–	–	–		1.8	3.1	3.1	5.0	5.0	7.7
DN 25		NPS 1"												
Flange thickness [inch]	s	$7/8$	–	$1^1/_{32}$	$1^3/_{16}$	$1^13/_{32}$	$1^9/_{16}$		$2^1/_{32}$	$2^7/_{32}$	$2^7/_{32}$	$1^9/_{32}$	$1^9/_{32}$	$1^9/_{16}$
Weight slip on flange [lbs]	m_F	2.9	–	5.7	7.7	11.0	16.5		2.2	4.6	4.6	9.0	9.0	11.2



Conventional design



Long version

Pressure temperature ratings

Metric Units

Actual Orifice diameter d_0 [mm]		6				10			
Actual Orifice area A_0 [mm ²]		28.3				78.5			
Body material: 1.4104 (430)									
Base / Inlet Body	Connection size	3/8"	1/2"	3/4"	1"	3/8"	1/2"	3/4"	1"
	Pressure rating	PN 400				PN 320			
Outlet body	Pressure rating	PN 160				PN 160			
Minimum set pressure	p [bar _g] S/G/L	180 [S/G only]				0.1			
Maximum set pressure	p [bar _g] S/G/L	365 [S/G only]				16 [only H3] 180			
Temperature acc. to DIN EN	min [°C]					-10			
	max [°C]					+220			
Temperature acc. to ASME	min [°C]					-29			
	max [°C]					+220			
Body material: 1.4404 (316L)									
Base / Inlet Body	Connection size	3/8"	1/2"	3/4"	1"	3/8"	1/2"	3/4"	1"
	Pressure rating	PN 400				PN 320			
Outlet body	Pressure rating	PN 160				PN 160			
Minimum set pressure	p [bar _g] S/G/L	180 [S/G only]				0.1			
Maximum set pressure	p [bar _g] S/G/L	365 [S/G only]				180			
Temperature acc. to DIN EN	min [°C]					-270			
	max [°C]					+280			
Temperature acc. to ASME	min [°C]					-268			
	max [°C]					+280			

US Units

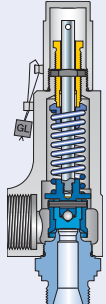
Actual Orifice diameter d_0 [inch]		0,236				0,394			
Actual Orifice area A_0 [inch ²]		0,044				0,122			
Body material: 1.4104 (430)									
Base / Inlet Body	Connection size	3/8"	1/2"	3/4"	1"	3/8"	1/2"	3/4"	1"
	Minimum set pressure	p [psig] S/G/L	2611				1.5		
Maximum set pressure	p [psig] S/G/L	5294				145 [only H3] 2611			
Temperature acc. to DIN EN	min [°F]					+14			
	max [°F]					+428			
Temperature acc. to ASME	min [°F]					-20			
	max [°F]					+428			
Body material: 1.4404 (316L)									
Base / Inlet Body	Connection size	3/8"	1/2"	3/4"	1"	3/8"	1/2"	3/4"	1"
	Minimum set pressure	p [psig] S/G/L	2611				1.5		
Maximum set pressure	p [psig] S/G/L	5294				2611			
Temperature acc. to DIN EN	min [°F]					-450			
	max [°F]					+536			
Temperature acc. to ASME	min [°F]					-450			
	max [°F]					+536			

Order information – Spare parts

Spare parts									
Actual Orifice diameter d_0 [mm]		6				10			
Actual Orifice area A_0 [mm ²]		28.3				78.5			
Actual Orifice diameter d_0 [inch]		0.236				0.394			
Actual Orifice area A_0 [inch ²]		0.044				0.122			
Body (Item 1): Male thread				Material-No. / Art.-No.					
Connection Size		3/8"	1/2"	3/4"	1"	3/8"	1/2"	3/4"	1"
DIN ISO 228-1	G	1.4104	-	-	-	136.5239.9000	136.4439.9000	136.4539.9000	136.5839.9000
		316L	-	-	-	136.5249.9000	136.4449.9000	136.4549.9000	136.4849.9000
	316L stellited	136.5169.9000	136.4369.9000	136.5569.9000	136.6769.9000	-	-	-	-
R	316L	-	-	-	-	-	136.4449.9220	136.4549.9220	136.5849.9220
	316L stellited	-	136.4369.9220	136.5569.9220	136.6769.9220	-	-	-	-
ASME B1.20.1	NPT	316L	-	-	-	-	136.4449.9204	136.4549.9204	136.5849.9204
		316L stellited	-	136.4369.9204	136.5569.9204	136.6769.9204	-	-	-
Body (Item 1): Female thread				Material-No. / Art.-No.					
Connection Size		3/8"	1/2"	3/4"	1"	3/8"	1/2"	3/4"	1"
DIN ISO 228-1	G	316L	-	-	-	-	136.4449.9210	136.4549.9210	136.5849.9210
		316L stellited	-	136.4369.9210	136.5569.9210	136.6769.9210	-	-	-
ISO 7-1/BS 21	Rc	316L	-	-	-	-	136.4449.9222	136.4549.9222	136.5849.9222
		316L stellited	-	136.4369.9222	136.5569.9222	136.6769.9222	-	136.4449.9222	136.4549.9222
ASME B1.20.1	NPT	316L	-	-	-	-	136.4449.9211	136.4549.9211	136.5849.9211
		316L stellited	-	136.4369.9211	136.5569.9211	136.6769.9211	-	-	-
Body (Item 1): Flange design				Material-No. / Art.-No.					
DN 15 / NPS 1/2"	PN 40 – 400	316L	-	-	-	-	-	136.6349.9208	-
	CL150	316L	-	-	-	-	-	136.4449.9202	-
	CL300 – 2500	316L	-	136.4369.9208	-	-	-	136.6349.9208	-
DN 20 / NPS 3/4"	PN 40 – 160	316L	-	136.5569.9208	-	-	-	136.4549.9208	-
	CL150 – 2500	316L	-	136.5569.9208	-	-	-	136.4549.9208	-
DN 25 / NPS 1"	PN 40 – 400	316L	-	136.6769.9208	-	-	-	136.4449.9208	-
	CL150 – 2500	316L	-	136.6769.9208	-	-	-	136.4449.9208	-
Disc (Item 7): Metal to metal				Material-No. / Art.-No.					
Disc	1.4122	420 RM	-	-	-	-	-	205.3339.9000	-
	1.4404	316L	-	-	-	-	-	205.3349.9000	-
		316L stellited	-	205.3169.9000	-	-	-	-	-
Disc with sealing plate (Item 7)				Material-No. / Art.-No.					
Disc	PTFE	"A"	-	200.9249.9005	-	-	-	200.8449.9005	-
	1.4404	PCTFE	"G"	200.9249.9006	-	-	-	200.8449.9006	-
		SP	"T"	200.9249.9007	-	-	-	200.8449.9007	-
Sealing plate (Item 7.3)				Material-No. / Art.-No.					
Sealing plate	PTFE	"A"	-	236.3259.0000	-	-	-	236.2859.0000	-
	PCTFE	"G"	-	236.3269.0000	-	-	-	236.2869.0000	-
	SP	"T"	-	236.3279.0000	-	-	-	236.2879.0000	-
Pin (Item 57)				Material-No. / Art.-No.					
Pin	1.4310	-	480.2405.0000	-	-	-	-	480.2405.0000	-
Ball (Item 61)				Material-No. / Art.-No.					
Ball	Ball \varnothing [mm]	-	6	-	-	-	-	6	-
	1.4401	-	510.0104.0000	-	-	-	-	510.0104.0000	-

Available Options

Type 437

<p>Male thread</p> 	<p>Female thread</p> 	<p>Flanged version</p> 	
<p>Stellited sealing surface J25: Disc stellited L20: Base/inlet body</p> 	<p>Disc with inserted sealing plate J44: PTFE-FDA "A" J48: PCTFE "G" J49: VESPEL-SP1 "T"</p> 		
<p>Heating jacket H29</p> 	<p>Test gag J70: H2</p>	<p>INCONEL X-750 spring X08</p> 	
<p>Special material 2.4610 Hastelloy® C4 2.4360 Monel® 400 1.4462 Duplex</p> 			

Approvals

Approvals		
Actual Orifice diameter d_0 [mm]	6	10
Actual Orifice area A_0 [mm ²]	28.3	78.5
Actual Orifice diameter d_0 [inch]	0.236	0.394
Actual Orifice area A_0 [inch ²]	0.044	0.122
Europe		
		Coefficient of discharge K_{dr}
PED / DIN EN ISO 4126-1	Approval No.	0720201110008/0/21-1
	S/G	0.72
	L	–
Germany		
		Coefficient of discharge α_w
PED / AD 2000-Merkblatt A2	Approval No.	TÜV SV 980
	S/G	0.72
	L	–
United States		
		Coefficient of discharge K
ASME Sec. VIII Div. 1	Zulassungs-Nr.	–
	D/G	–
	Zulassungs-Nr.	M 37213
	F	–
		M 37189
		0.333
Canada		
		Coefficient of discharge K
CRN	Approval No.	The current approval no. can be found at www.leser.com
	S/G	–
	L	–
China		
		Coefficient of discharge α_w
AQSIQ	Approval No.	The current approval no. can be found at www.leser.com
	S/G	0.72
	L	–
Russia		
		Coefficient of discharge α_w
GOST R / RTN	Approval No.	The current approval no. can be found at www.leser.com
	S/G	0.72
	L	–
Kazakhstan		
		Coefficient of discharge α_w
GOST-K	Approval No.	The current approval no. can be found at www.leser.com
	S/G	0.45
	L	0.32
Belarus		
		Coefficient of discharge α_w
GOSPROMNAZADOR	Approval No.	The current approval no. can be found at www.leser.com
	S/G	0.45
	L	0.32
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
U.S. Coast Guard	U.S.C.G	www.uscg.org
		The valid certification number is changed with every renewal.
		A sample certificate including the valid certification number can be found at www.leser.com

Rated slope

Within the capacity certification according to ASME Sec. VIII Div. 1 the coefficients of discharge for Series 437 are issued as "rated slope values" instead of K values. Rated slope values can be converted into K values. The table above shows the converted K values. The original rated slope values are listed in the table below.

Fluid	Rated slope Type 437
S	2.86 lb / hr / PSIA
G	1.02 SCFM / PSIA
L	1.54 GPM $\sqrt{\text{PSID}}$

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

Capacities for saturated steam according to ASME Section VIII (UV), based on set pressure plus 10% overpressure. Capacities at 30 psig (2.07 bar) and below are based on 3 psig (0.207 bar) overpressure.

Metric Units		AD 2000-Merkblatt A2 [kg/h]	
Act. Orifice dia. d_0 [mm]		6	10
Act. Orifice area A_0 [mm ²]		28.3	78.5
LEO _{S/G} ^{*)} [inch ²]		0.021	0.057
Set pressure [bar]	Capacities [kg/h]		
0.1			12
0.2			17
0.5			29
1			43
2			70
3			94
4			118
5			141
6			164
7			186
8			209
9			232
10			255
12			301
14			346
16			392
18			437
20			483
22			528
24			573
26			619
28			666
30			712
32			758
34			803
36			849
38			896
40			943
42			990
44			1038
46			1085
48			1133
50			1181
60			1421
70			1670
80			1921
90			2185
100			2451
110			2735
120			3032
130			3345
140			3688
150			4044
160			4445
170			4880
180			5401

No saturated steam application in set pressure range

US Units		ASME Section VIII [lb/h]	
Act. Orifice dia. d_0 [inch]		0.236	0.394
Act. Orifice area A_0 [inch ²]		0.044	0.122
LEO _{S/G} ^{*)} [inch ²]		0.021	0.057
Set pressure [psig]	Capacities [lb/h]		
15			94
20			108
30			137
40			168
50			200
60			232
70			263
80			295
90			326
100			358
120			421
140			484
160			547
180			611
200			674
220			737
240			800
260			863
280			926
300			990
320			1053
340			1116
360			1179
380			1242
400			1306
420			1369
440			1432
460			1495
480			1558
500			1621
600			1937
700			2253
800			2569
900			2885
1000			3201
1100			3516
1200			3832
1300			4148
1400			4458
1500			4803
2000			6641
2500			8788

No saturated steam application in set pressure range

*) 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]	
Act. Orifice dia. d_0 [mm]		6	10
Act. Orifice area A_0 [mm ²]		28.3	78.5
LEO _{S/G} ^{*)} [inch ²]		0.021	0.057
Set pressure [bar]	Capacities [m_n^3/h]		
0.1			14
0.2			19
0.5			34
1			51
2			84
3			115
4			145
5			174
6			204
7			233
8			262
9			292
10			321
12			380
14			439
16			498
18			556
20			615
22			674
24			733
26			792
28			851
30			909
32			968
34			1027
36			1086
38			1145
40			1204
42			1262
44			1321
46			1380
48			1439
50			1498
60			1792
70			2086
80			2380
90			2674
100			2969
110			3263
120			3557
130			3851
140			4145
150			4439
160			4734
170			5028
180			5322
190		2911	
200		3064	
210		3216	
220		3369	
230		3521	
240		3674	
250		3826	
260		3979	
270		4131	
280		4284	
290		4436	
300		4589	
310		4741	
320		4894	
330		5046	
340		5199	
350		5351	
360		5504	
370		5656	
380		5809	

Capacities for air according to ASME Section VIII (UV), based on set pressure plus 10% overpressure at 60 °F (16 °C). Capacities at 30 psig (2.07 bar) and below are based on 3 psig (0.207 bar) overpressure.

US Units		ASME Section VIII [S.C.F.M.]	
Act. Orifice dia. d_0 [mm]		0.236	0.394
Act. Orifice area A_0 [mm ²]		0.044	0.122
LEO _{S/G} ^{*)} [inch ²]		0.021	0.057
Set pressure [psig]	Capacities [S.C.F.M.]		
15			33
20			39
30			49
40			60
50			71
60			83
70			94
80			105
90			117
100			128
120			150
140			173
160			195
180			218
200			241
220			263
240			286
260			308
280			331
300			353
320			376
340			398
360			421
380			443
400			466
420			489
440			511
460			534
480			556
500			479
600			692
700			804
800			917
900			973
1000			1143
1100			1255
1200			1368
1300			1481
1400			1594
1500			1706
2000			2270
2500			2834
3000		1225	
3500		1429	
4000		1632	
4500		1835	
5000		2039	
5500		2242	

*) 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.

Capacities for water according to ASME Section VIII (UV), based on set pressure plus 10 % overpressure at 70 °F (21 °C). Capacities at 30 psig (2.07 bar) and below are based on 3 psig (0.207 bar) overpressure.

Metric Units	AD 2000-Merkblatt A2 [10 ³ kg/h]	
Act. Orifice dia. d ₀ [mm]	6	10
Act. Orifice area A ₀ [mm ²]	28.3	78.5
LEO _L ^{*)} [inch ²]	0.021	0.062
Set pressure [bar]	Capacities [10 ³ kg/h]	
0.1		0.63
0.2		0.77
0.5		1.08
1		1.5
2		2.1
3		2.5
4		2.9
5		3.3
6		3.6
7		3.9
8		4.1
9		4.4
10		4.6
12		5.1
14		5.5
16		5.9
18		6.2
20		6.6
22		6.9
24		7.2
26		7.5
28		7.8
30		8
32		8.3
34		8.6
36		8.8
38		9
40		9.3
42		9.5
44		9.7
46		9.9
48		10.2
50		10.4
60		11.4
70		12.3
80		13.1
90		13.9
100		14.7
110		15.4
120		16.1
130		16.7
140		17.4
150		18
160		18.5
170		19.1
180		19.7

No TÜV approval, useable for thermal expansion

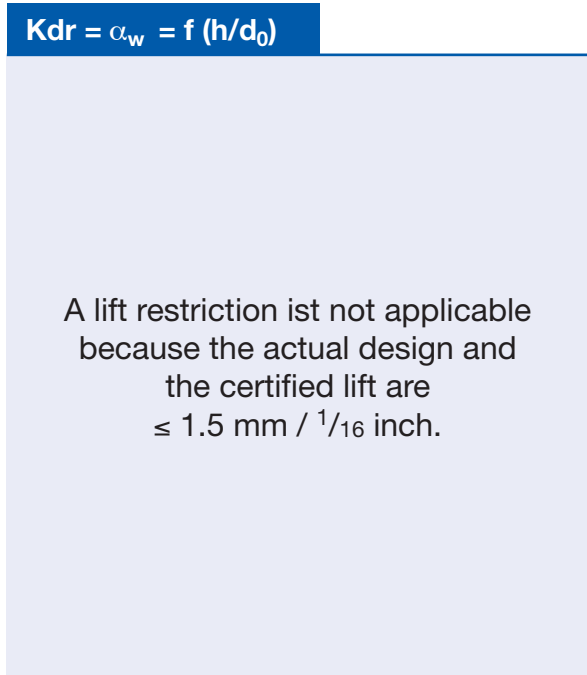
US Units	ASME Section VIII [US-G.P.M.]	
Act. Orifice dia. d ₀ [inch]	0.236	0.394
Act. Orifice area A ₀ [inch ²]	0.044	0.122
LEO _L ^{*)} [inch ²]	0.021	0.062
Set pressure [psig]	Capacities [US-G.P.M.]	
15		6.54
20		7.39
30		8.86
40		10.2
50		11.4
60		12.5
70		13.5
80		14.5
90		15.3
100		16.2
120		17.7
140		19.1
160		20.5
180		21.7
200		22.9
220		24
240		25
260		26.1
280		27.1
300		28
320		28.9
340		29.8
360		30.7
380		31.5
400		32.3
420		33.1
440		33.9
460		34.7
480		35.4
500		36.2
600		39.6
700		42.8
800		45.7
900		48.5
1000		51.5
1100		53.6
1200		56
1300		58.3
1400		60.5
1500		62.6
2000		72.3
2500		80.8

No TÜV approval, useable for thermal expansion

*) LEO_L = LESER Effective Orifice liquids please refer to page 00/11
How to use capacity-sheets refer to page 00/09

Determination of coefficient of discharge in case of lift restriction or back pressure

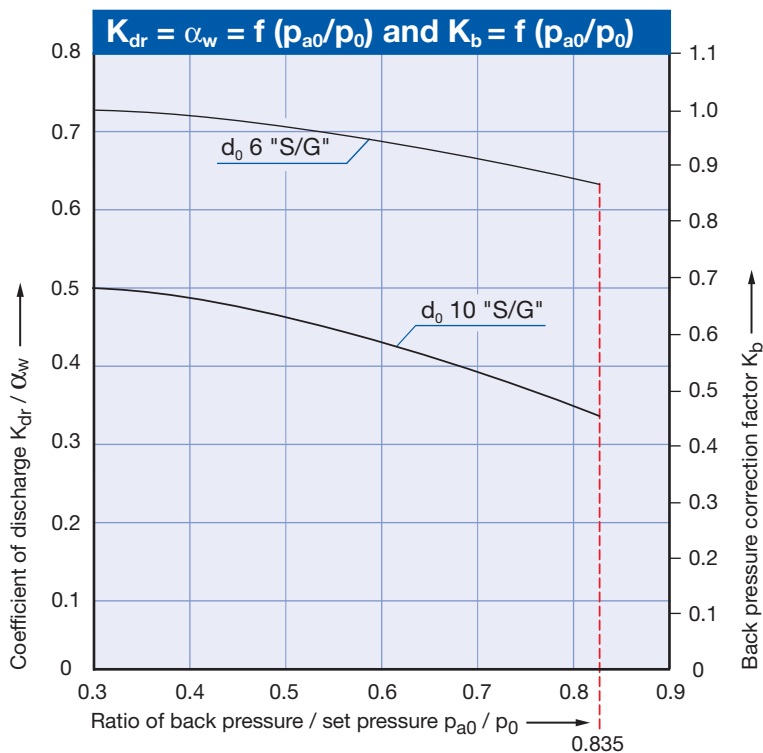
Diagram for evaluation of ratio of lift / flow diameter (h/d_0) in reference to the coefficient of discharge (K_{dr}/α_w)



- h = Lift [mm]
- d_0 = Flow diameter [mm] of selected safety valve, refer to table article numbers
- h/d_0 = Ratio of lift / flow diameter
- p_{a0} = Back pressure [bar_a]
- p_0 = Set pressure [bar_a]
- p_{a0}/p_0 = Ratio of back pressure / set pressure
- K_{dr} = Coefficient of discharge acc. to DIN EN ISO 4126-1
- α_w = Coefficient of discharge acc. to AD 2000-Merkblatt A2
- K_b = Back pressure correction factor acc. to API 520 topic 3.3

How to use please refer to page 00/08


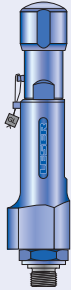
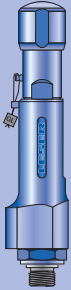

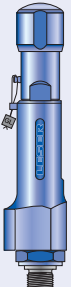
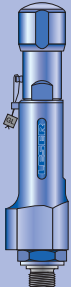
Diagram for evaluation of ratio of the coefficient of discharge (K_{dr}/α_w) in reference to the ratio of back pressure / set pressure (p_{a0}/p_0)



Application range of conventional design and long version

Type 437

Application range

Type 4373	Conventional design		Long version																																																									
	S/G/L	S/G	S/G/L	S/G																																																								
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0	986	1349	2611	4786	5294	5511	Set pressure p [psig]																																																					
0	68	93	180	330	365	380	Set pressure p [bar]																																																					
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