

# Type 437



Type 437  
Packed knob H4  
Conventional design

Type 437  
Packed knob H4  
Flanged connection



Type 437  
Cap H2  
Long version

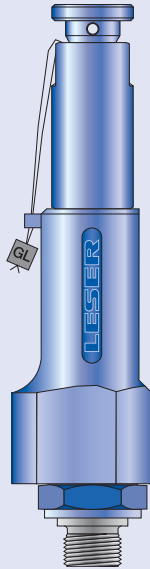
## Safety Relief Valves – spring loaded

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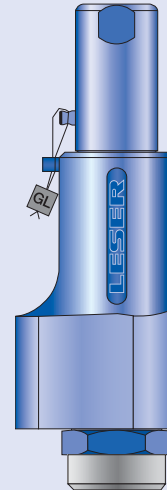
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## How to order - Article numbers

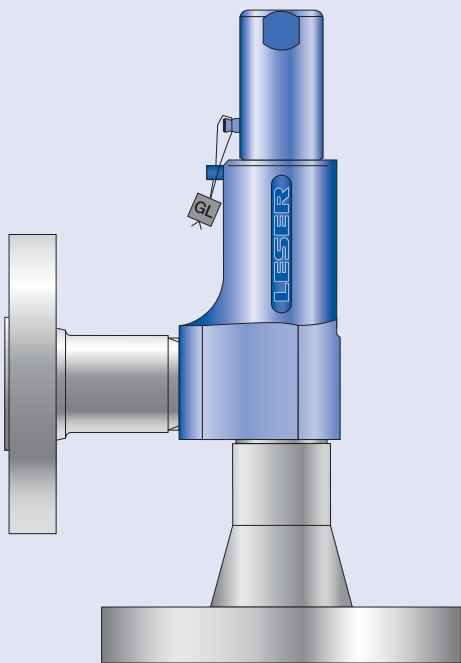
Type 437



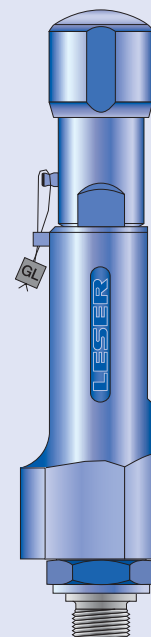
**Type 437 Male**  
Outlet body 1/2"  
Pull button H3  
Conventional design



**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	
Actual Orifice diameter $d_0$ [mm]		10	
Actual Orifice area $A_0$ [mm <sup>2</sup> ]		78,5	
Actual Orifice diameter $d_0$ [inch]		0,394	
Actual Orifice area $A_0$ [inch <sup>2</sup> ]		0,122	
<b>Base / Inlet body material: 1.4104 (430)</b>			
H2	Art.-No. 4373.	2602	
H3	Art.-No. 4373.	2603	
<b><math>p_{max} = 10 \text{ bar}_g</math></b>			
H4	Art.-No. 4373.	2604	
$p$ [bar <sub>g</sub> ]	S/G/L	0,1 – 93	
$p$ [psig]	S/G/L	1,5 – 1349	
<b>Base / Inlet body material: 1.4404 (316L)</b>			
H2	Art.-No. 4374.	3142	
H4	Art.-No. 4374.	3144	
$p$ [bar <sub>g</sub> ]	S/G/L	0,1 – 68	
$p$ [psig]	S/G/L	1,5 – 986	

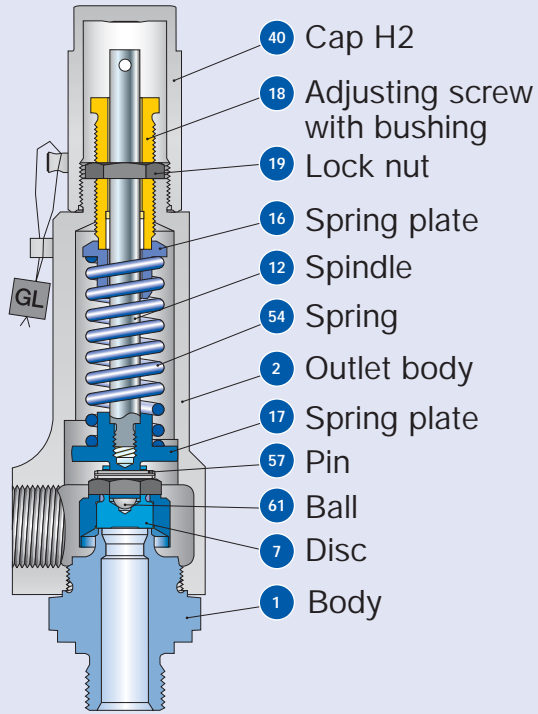
### Article numbers

		Long version		
Actual Orifice diameter $d_0$ [mm]		6	6	10
Actual Orifice area $A_0$ [mm <sup>2</sup> ]		28,3	28,3	78,5
Actual Orifice diameter $d_0$ [inch]		0,236	0,236	0,394
Actual Orifice area $A_0$ [inch <sup>2</sup> ]		0,044	0,044	0,122
<b>Base / Inlet body material: 1.4104 (430)</b>				
H2	Art.-No. 4373.	2622	–	2612
H4	Art.-No. 4373.	2624	–	2614
$p$ [bar <sub>g</sub> ]	S/G/L	180 – 365	–	93 – 180
$p$ [psig]	S/G/L	2611 – 5294	–	1349 – 2611
<b>Base / Inlet body material: 1.4404 (316L)</b>				
H2	Art.-No. 4374.	3122	3132	3153
H4	Art.-No. 4374.	3124	3134	3154
$p$ [bar <sub>g</sub> ]		S/G 180 – 365	L 180 – 380 <sup>1)</sup>	S/G/L 68 – 180
$p$ [psig]		S/G 2611 – 4786	L 2611 – 5511	S/G/L 986 – 2611

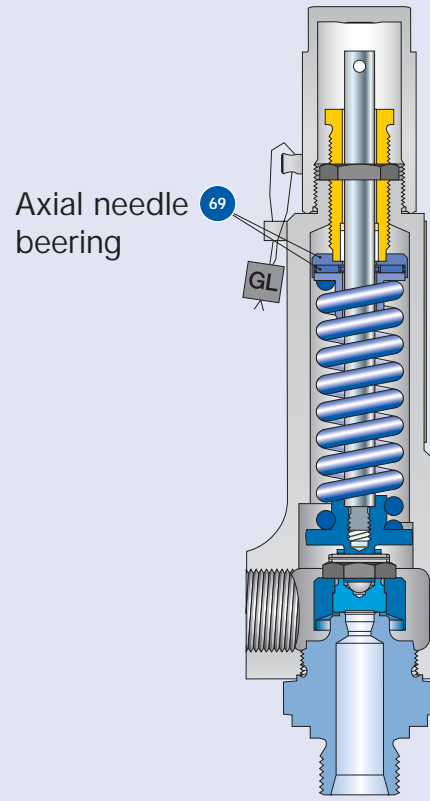
<sup>1)</sup> At the moment no TÜV approval, useable for thermal expansion.  
 Use "Long version" only for set pressure exceeding set pressure range of "Standard" model.  
 For selection of inlet and outlet connection please refer to page 04/04 – 04/05.

## Available designs

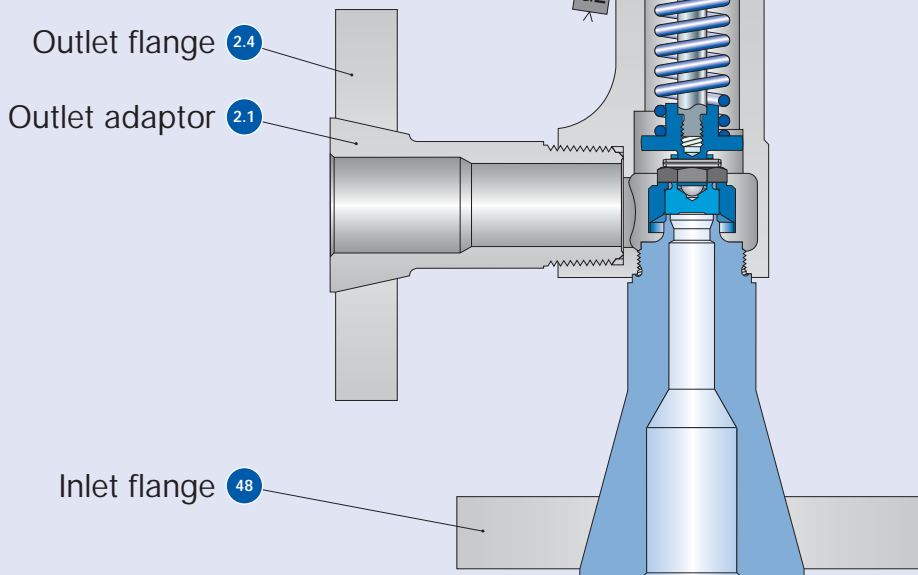
Type 437



**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		1.4021 420	1.4404 316L
16/17	Spring plate		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

**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

Type 437

### Threaded connections

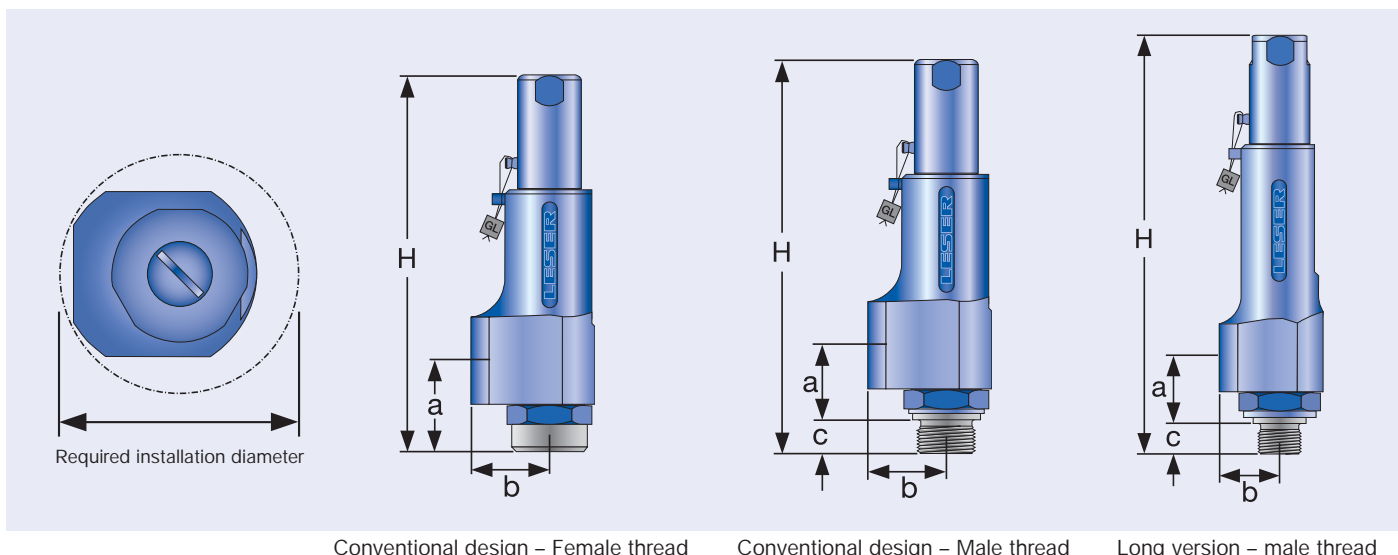
		Conventional design			Long version						
Size Outlet body		1/2"	3/4"	1"	1/2"	3/4"	1"	1/2"	3/4"	1"	
Actual Orifice diameter $d_0$ [mm]		10	10	10	6	6	6	10	10	10	
Actual Orifice area $A_0$ [mm <sup>2</sup> ]		78,5	78,5	78,5	28,3	28,3	28,3	78,5	78,5	78,5	
Weight [kg]		1,2	1,6	1,6	1,4	2,1	2,1	1,4	2,1	2,1	
Required installation diameter [mm]		65	80	80	65	80	80	65	80	80	
<b>Inlet thread "Female"</b>											
<b>DIN ISO 228-1</b>	<b>G</b>	Inlet a	45	55	55	45	55	55	45	55	55
		Center to face [mm]	Outlet b	30	37	37	30	37	37	30	37
Height [mm]		H max.	210	220	220	230	240	240	230	240	240
<b>ISO 7-1/BS 21</b>	<b>Rc</b>	Inlet a	45	55	55	45	55	55	45	55	55
		Center to face [mm]	Outlet b	30	37	37	30	37	37	30	37
Height [mm]		H max.	210	220	220	230	240	240	230	240	240
<b>ANSI/ASME B1.20.1</b>	<b>NPT</b>	Inlet a	45	55	55	45	55	55	45	55	55
		Center to face [mm]	Outlet b	30	37	37	30	37	37	30	37
Height [mm]		H max.	210	220	220	230	240	240	230	240	240
<b>Inlet thread "Male"</b>											
<b>DIN ISO 228-1</b>	<b>G</b>	Inlet a	33	33	36	33	33	36	33	33	36
		Center to face [mm]	Outlet b	30	37	37	30	37	37	30	37
<b>ISO 7-1/BS 21</b>	<b>R</b>	Inlet a	31	31	34	31	31	34	31	31	34
		Center to face [mm]	Outlet b	30	37	37	30	37	37	30	37
<b>ANSI/ASME B1.20.1</b>	<b>NPT</b>	Inlet a	31	31	34	31	31	34	31	31	34
		Center to face [mm]	Outlet b	30	37	37	30	37	37	30	37

### Height inlet thread "Male"

		Conventional design				Long version			
Inlet thread	Size	3/8"	1/2"	3/4"	1"	3/8"	1/2"	3/4"	1"
DIN ISO 228-1 [mm]	<b>G</b> H max.	210	212	214	216	230	232	234	236
ISO 7-1/BS 21 [mm]	<b>R</b> H max.	–	215	216	219	–	235	236	239
ASME B1.20.1 [mm]	<b>NPT</b> H max.	–	218	218	223	–	238	238	243

### Length of screwed end "c" inlet thread "Male"

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



Conventional design – Female thread

Conventional design – Male thread

Long version – male thread

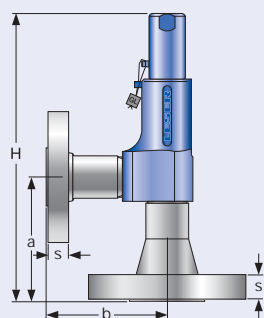
## Dimensions and weights – Metric Units

### Flanged connection

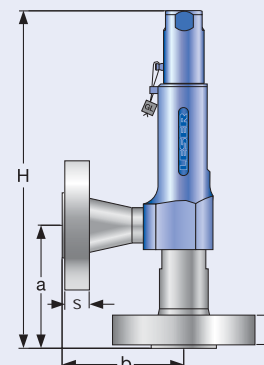
		Conventional design			Long version		
Actual Orifice diameter $d_0$ [mm]		6	10	6	10		
Actual Orifice area $A_0$ [mm <sup>2</sup> ]		28,3	78,5	28,3	78,5		
DIN ISO 1092-1 (Available flange sizes refer to page 04/05)							
Flange rating PN 40							
Center to face	[mm]	Inlet a	100	100	100	100	
		Outlet b	100	100	100	100	
Height [H4]	[mm]	H max.	263	263	284	284	
Flange rating $\geq$ PN 160							
Center to face	[mm]	Inlet a	103	103	103	103	
		Outlet b	100	100	100	100	
Height [H4]	[mm]	H max.	266	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	100	
		Outlet b	100	100	100	100	
Height [H4]	[mm]	H max.	263	263	284	284	
Flange rating class $\geq$ 300							
Center to face	[mm]	Inlet a	103	103	103	103	
		Outlet b	100	100	100	100	
Height [H4]	[mm]	H max.	266	266	287	287	
Weight							
For the calculation of the total weight please use the Formular: $W_T = W_N + W_F$ (Inlet) + $W_F$ (Outlet)							
Weight net	[kg]	$W_N$	2,4	2,4	2,8	2,8	
(without inlet and outlet flange)							

### Flange dimensions and availability

		DIN ISO 1092-1 / Flange rating PN					ASME B16.5 / Flange rating class						
Size		40	160	250	320	400	Size	150	300	600	900	1500	2500
DN 15							NPS 1/2"						
Flange thickness	[mm] s	18	22	26	26	30		14	18		26	30,2	
Weight slip on flange	[kg] $W_F$	0,8	1,2	2,5	2,5	3,6		0,6	0,9		2,1	3	
Available at Inlet		✓	✓	✓	✓	✓		✓	✓		✓	✓	
Available at Outlet		✓	✓	✓				✓	✓		✓		
DN 20							NPS 3/4"						
Flange thickness	[mm] s	20	22					15	18		25,4	32	
Weight slip on flange	[kg] $W_F$	1,1	1,3					0,8	1,4		2,3	3,5	
Available at Inlet		✓	✓					✓	✓		✓	✓	
Available at Outlet		✓	✓					✓	✓		✓		
DN 25							NPS 1"						
Flange thickness	[mm] s	22	26	30	36	40		17	21,5		32,5	40	
Weight slip on flange	[kg] $W_F$	1,3	2,6	3,5	5	7,5		1	2,1		4,1	5,1	
Available at Inlet		✓	✓	✓	✓	✓		✓	✓		✓	✓	
Available at Outlet		✓	✓	✓	✓	✓		✓	✓		✓		



Conventional design



Long version

## Pressure temperature ratings

### Metric Units

Actual Orifice diameter $d_0$ [mm]		6				10			
Actual Orifice Area $A_0$ [mm <sup>2</sup> ]		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 250			
Outlet body	Pressure rating	PN 160				PN 160			
Minimum set pressure	p [bar <sub>g</sub> ] S/G/L	180 [S/G only]				0,1			
Maximum set pressure	p [bar <sub>g</sub> ] S/G/L	365 [S/G only]				10 only H3 180			
Temperature acc. to DIN EN	min [°C]	-10				-10			
	max [°C]	+220				+220			
Temperature acc. to ASME	min [°C]	-29				-29			
	max [°C]	+220				+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 250			
Outlet body	Pressure rating	PN 160				PN 160			
Minimum set pressure	p [bar <sub>g</sub> ] S/G/L	180 [S/G only]				0,1			
Maximum set pressure	p [bar <sub>g</sub> ] S/G/L	365 [S/G only]				10 only H3 180			
Temperature acc. to DIN EN	min [°C]	-270				-270			
	max [°C]	+280				+280			
Temperature acc. to ASME	min [°C]	-268				-268			
	max [°C]	+280				+280			

### US Units

Actual Orifice diameter $d_0$ [inch]		0,236				0,394			
Actual Orifice area $A_0$ [inch <sup>2</sup> ]		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 [bar <sub>g</sub> ] S/G/L	2610				1,			
Maximum set pressure	p [bar <sub>g</sub> ] S/G/L	5294				145 only H3 2610			
Temperature acc. to DIN EN	min [°F]	+14				+14			
	max [°F]	+428				+428			
Temperature acc. to ASME	min [°F]	-20				-20			
	max [°F]	+428				+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 [bar <sub>g</sub> ] S/G/L	2610				1,5			
Maximum set pressure	p [bar <sub>g</sub> ] S/G/L	5294				145 only H3 2610			
Temperature acc. to DIN EN	min [°F]	-450				-450			
	max [°F]	+536				+536			
Temperature acc. to ASME	min [°F]	-450				-450			
	max [°F]	+536				+536			



## Approvals

Approvals			
Actual Orifice diameter $d_0$ [mm]		6	10
Actual Orifice area $A_0$ [mm <sup>2</sup> ]		28,3	78,5
Actual Orifice diameter $d_0$ [inch]		0,236	0,394
Actual Orifice area $A_0$ [inch <sup>2</sup> ]		0,044	0,122
<b>Europe</b>		<b>Coefficient of discharge <math>K_{dr}</math></b>	
DIN EN ISO 4126-1	Approval No.	0720201110008/0/21-1	
	S/G	0,72	0,50
	L	-	0,35
<b>Germany</b>		<b>Coefficient of discharge <math>\alpha_w</math></b>	
AD 2000-Merkblatt A2	Approval No.	TÜV SV 980	
	S/G	0,72	0,50
	L	-	0,35
<b>United States</b>		<b>Coefficient of discharge K</b>	
ASME Sec. VIII	Approval No.	-	M 37213
	S/G	-	0,509
	Approval No.	-	M 37189
	L	-	0,370
<b>Canada</b>		<b>Coefficient of discharge K</b>	
CRN	Approval No.	OG0772.9C	
	S/G	-	0,509
	L	-	0,370
<b>China</b>		<b>Coefficient of discharge <math>\alpha_w</math></b>	
CSBQTS	Approval No.		
	S/G	0,72	0,50
	L	-	0,35
<b>Russia</b>		<b>Coefficient of discharge <math>\alpha_w</math></b>	
GGTN /	Approval No.	PPC 00-18458	
GOSGOTECHNADZOR	S/G	0,72	0,50
GOST R	L	-	0,35
<b>Classification societies</b>		<b>Homepage</b>	
Bureau Veritas	BV	<a href="http://www.bureauveritas.com">www.bureauveritas.com</a>	The valid certification number is changed with every renewal.  A sample certificate including the valid certification number can be taken from the homepage of the classification societies.
Det Norske Veritas	DNV	<a href="http://www.dnv.com">www.dnv.com</a>	
Germanischer Lloyd	GL	<a href="http://www.gl-group.com">www.gl-group.com</a>	
Lloyd' s Register EMEA	LREMEA	<a href="http://www.lr.org">www.lr.org</a>	
Registo Italiano Navale	RINA	<a href="http://www.rina.org">www.rina.org</a>	

## 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 <sup>2</sup> ]		28,3	78,5
LEO <sub>S/G</sub> <sup>*)</sup> [inch <sup>2</sup> ]		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 <sup>2</sup> ]		0,044	0,122
LEO <sub>S/G</sub> <sup>*)</sup> [inch <sup>2</sup> ]		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

<sup>\*)</sup> LEO<sub>S/G</sub> = 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.

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.

Metric Units		AD 2000-Merkblatt A2 [m <sub>n</sub> <sup>3</sup> /h]	
Act. Orifice dia. d <sub>0</sub> [mm]		6	10
Act. Orifice area A <sub>0</sub> [mm <sup>2</sup> ]		28,3	78,5
LEO <sub>S/G</sub> <sup>*)</sup> [inch <sup>2</sup> ]		0,021	0,057
Set pressure [bar]	Capacities [m <sub>n</sub> <sup>3</sup> /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	

US Units		ASME Section VIII [S.C.F.M.]	
Act. Orifice dia. d <sub>0</sub> [inch]		0,236	0,394
Act. Orifice area A <sub>0</sub> [inch <sup>2</sup> ]		0,044	0,122
LEO <sub>S/G</sub> <sup>*)</sup> [inch <sup>2</sup> ]		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			579
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<sub>S/G</sub> = 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 <sup>2</sup> ]		28,3	78,5
LEO <sub>L</sub> <sup>*)</sup> [inch <sup>2</sup> ]		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 <sup>2</sup> ]		0,044	0,122
LEO <sub>L</sub> <sup>*)</sup> [inch <sup>2</sup> ]		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


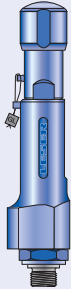
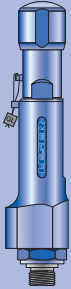
No TÜV approval, useable for thermal expansion

<sup>\*)</sup> LEO<sub>L</sub> = LESER Effective Orifice liquids please refer to page 00/11  
How to use capacity-sheets refer to page 00/09



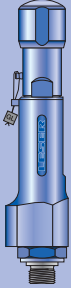
## Application range of conventional design and long version

Type 437

### Application range

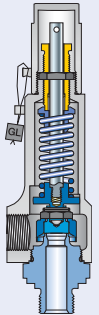
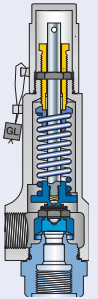
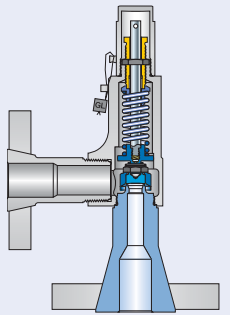
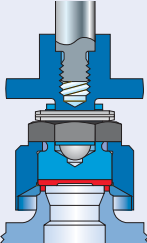
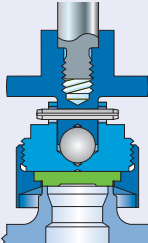
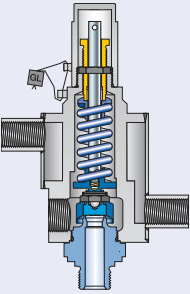
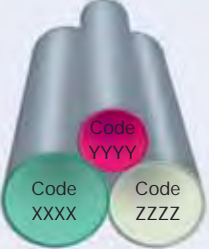
Type 4373	Conventional design		Long version				Set pressure p [psig]																																																																									
	S/G/L	S/G	S/G/L	S/G																																																																												
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0	68	93	180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

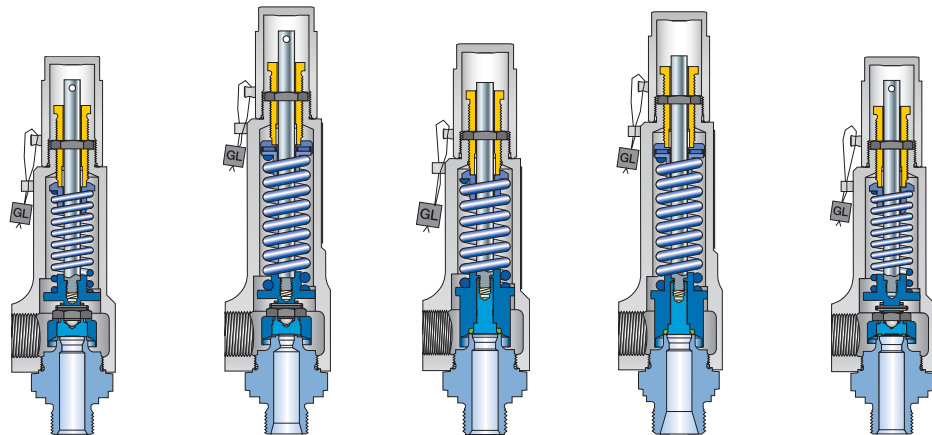
Type 4374	Conventional design		Long version				Set pressure p [bar]																																																																						
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	S/G/L																																																																												
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## Available Options

Type 437

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

## Overview



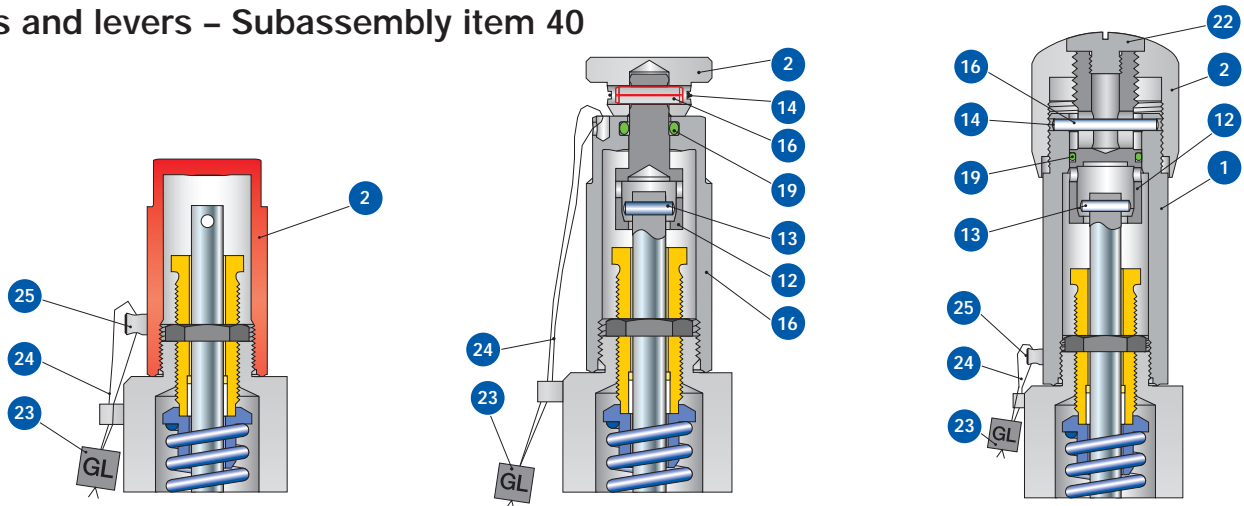
### Options

Type	437	437 Long version	438	438 Long version	439
<b>Base / Inlet body</b>					
Male thread	✓	✓	✓	✓	✓
Female thread	✓	✓	✓	✓	✓
<b>Flanged version – DIN ISO 1092-1</b>					
Size DN 15	✓	✓	✓	✓	✓
Inlet	Flange rating PN 40 – 400				
Outlet	Flange rating PN 40 – 250				
Size DN 20	✓	✓	✓	✓	✓
Inlet	Flange rating PN 40 + PN 160				
Outlet	Flange rating PN 40 + PN 160				
Size DN 25	✓	✓	✓	✓	✓
Inlet	Flange rating PN 40 – 400				
Outlet	Flange rating PN 40 – 250				
<b>Flanged version – ASME B16.5</b>					
Size NPS 1/2"	✓	✓	✓	✓	✓
Inlet	Flange rating class 150 – 2500				
Outlet	Flange rating class 150 – 900				
Size NPS 3/4"	✓	✓	✓	✓	✓
Inlet	Flange rating class 150 – 2500				
Outlet	Flange rating class 150 – 900				
Size NPS 1"	✓	✓	✓	✓	✓
Inlet	Flange rating class 150 – 2500				
Outlet	Flange rating class 150 – 900				
<b>Type of sealing</b>					
Metal seat	Metal to metal	✓	✓	-	-
	Metal to metal stellite	-	✓	-	-
Soft seal	Sealing plate	✓	✓	-	-
	O-ring	-	-	✓	✓
	Vulcanized soft seal	-	-	-	-
<b>Caps and levers</b>					
H2	✓	✓	✓	✓	✓
H3	✓	✓	✓	✓	✓
H4	✓	✓	✓	✓	✓
<b>Heating jacket</b>					
	✓	✓	✓	✓	✓

Options

# Accessories and Options

## Caps and levers – Subassembly item 40

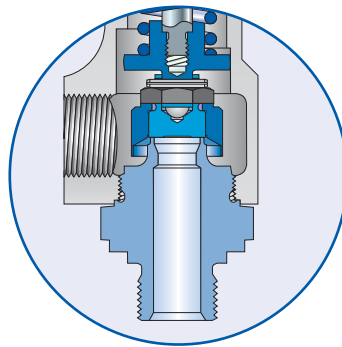


Materials		Steel			Stainless steel	
Item	Component	Cap H2	Pull button H3	Packed knob H4	Cap H2	Packed knob H4
1	Lever cover	-	1.0718 Steel	1.4104 430	-	1.4404 316L
2	Cap	1.0718 Steel	-	1.0718 Steel	1.4404 316L	1.4404 316L
	Knob	-	1.0718 Steel	-	-	-
12	Spindle cap	-	1.4021 420	1.4021 420	-	1.4404 31 6L
		-	-	-	-	-
13	Pin	-	A4 Stainless steel	A4 Stainless steel	-	A4 Stainless steel
		-	-	-	-	-
14	Retaining clip	-	1.4571 316Ti	1.4571 316Ti	-	1.4571 316Ti
		-	-	-	-	-
16	Pin	-	1.4310 Stainless steel	1.4310 Stainless steel	-	1.4310 Stainless steel
		-	-	-	-	-
19	O-ring	-	FKM Fluorocarbon	FKM Fluorocarbon	-	FKM Fluorocarbon
		-	-	-	-	-
22	Stop unit	-	-	1.4104 430	-	1.4404 316L
		-	-	-	-	-
23	Seal	Plastic	Plastic	Plastic	Plastic	Plastic
		-"-	-"-	-"-	-"-	-"-
24	Seal wire	1.4541 321	1.4541 321	1.4541 321	1.4541 321	1.4541 321
		-	-	-	-	-
25	Sealing nose	1.4435 316L	-	1.4435 316L	1.4435 316L	1.4435 316L
		-	-	-	-	-

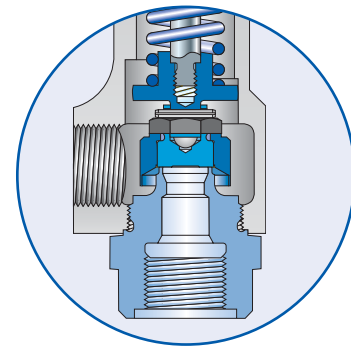


## Available connections

For dimensions and weights refer to:  
 Type 437 – page 01/08 + 01/10  
 Type 438 – page 02/08 + 02/10  
 Type 439 – page 03/08 + 03/10



Male thread



Female thread

### Threaded connections

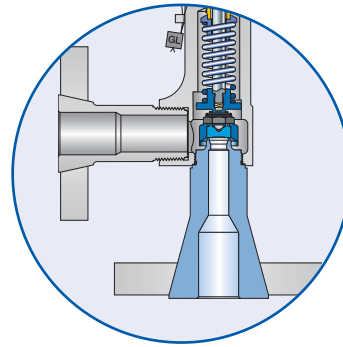
Available for complete 437 series

Valve size		Option code	Inlet	Option code	Outlet
<b>Male thread DIN ISO 228-1</b>					
G	3/8"	V49	✓	-	-
	1/2"	V54	✓	-	-
	3/4"	V55	✓	-	-
	1"	V56	✓	-	-
<b>Female thread DIN ISO 228-1</b>					
G	1/2"	V50	✓	V65	✓
	3/4"	V51	✓	V76	✓
	1"	V52	✓	V66	✓
<b>Male thread DIN ISO 7-1/BS 21</b>					
R/BSPT	1/2"	V30	✓	-	-
	3/4"	V31	✓	-	-
	1"	V32	✓	-	-
<b>Female thread DIN ISO 7-1/BS 21</b>					
Rc/BSPT	1/2"	V38	✓	V34	✓
	3/4"	V39	✓	V35	✓
	1"	V40	✓	V36	✓
<b>Male thread ANSI/ASME B1.20.1</b>					
NPT	1/2"	V61	✓	-	-
	3/4"	V62	✓	-	-
	1"	V63	✓	-	-
<b>Female thread ANSI/ASME B1.20.1</b>					
NPT	1/2"	V58	✓	V70	✓
	3/4"	V59	✓	V71	✓
	1"	V60	✓	V72	✓

Flanged and threaded connections can be combined.  
 Threads according to other standards are available.  
 Please specify in writing (diameter, pressure rating, standard).

## Available connections

For dimensions and weights refer to:  
 Type 437 – page 01/09 + 01/11  
 Type 438 – page 02/09 + 02/11  
 Type 439 – page 03/09 + 03/11



Flanged version

### Flanged connections

Available for complete 437 series

	PN	Option code	Inlet	Option code	Outlet
<b>DIN ISO 1092-1 (PN &gt; 100: DIN 2501)</b>					
DN 15	40	I21	✓	I40	✓
	160	I22	✓	I41	✓
	250	I23	✓	I42	✓
	320	I24	✓	-	-
	400	I25	✓	-	-
DN 20	40	I26	✓	I43	✓
	160	I27	✓	I44	✓
	250	-	-	-	-
DN 25	40	I31	✓	I46	✓
	160	I32	✓	I47	✓
	250	I33	✓	I48	✓
	320	I34	✓	-	-
	400	I35	✓	-	-

	Class	Option code	Inlet	Option code	Outlet
<b>ANSI/ASME B 16.5</b>					
NPS 1/2"	150	V01	✓	V24	✓
	300	V02	✓	V13	✓
	600	V02	✓	V13	✓
	900	V03	✓	V14	✓
	1500	V03	✓	-	-
	2500	V04	-	-	-
NPS 3/4"	150	V05	✓	V15	✓
	300	V06	✓	V16	✓
	600	V06	✓	V16	✓
	900	V07	✓	V17	✓
	1500	V07	✓	-	-
	2500	V08	✓	-	-
NPS 1"	150	V09	✓	V18	✓
	300	V10	✓	V19	✓
	600	V10	✓	V19	✓
	900	V11	✓	V20	✓
	1500	V11	✓	-	-
	2500	V12	✓	-	-

Flanged and threaded connections can be combined.  
 Threads according to other standards are available.  
 Please specify in writing (diameter, pressure rating, standard).

## Sealing surface

### Type 437 – Metal seat

LESER metal seats (disc and nozzle) are lapped to optical flatness to ensure a tight seal. LESER safety relief valves are supplied with standard leak tightness according to API 527. Improved tightness is available on request.

### Stellited sealing surface – Option code L20 (base/inlet body) and J25 (disc)

The sealing surfaces of the stainless steel disc and nozzle can be stellited by build-up welding. Stellite is a cobalt-chromium based, non-ferrous alloy with increased hardness, corrosion resistance and wear resistance at high temperatures.

LESER recommends stellited sealing surfaces for type 4374 (seat and disc 1.4404 / 316L) in the following cases:

- high pressure applications, due to the high stress of the sealing surfaces
- high temperature applications to avoid a permanent deformation of the sealing surfaces, due to the material properties of the seat and disc
- applications with abrasive fluids to increase the wear resistance of the sealing surfaces.

The stellited sealing surfaces of the disc and base/inlet body are standard for type 437 long version.

#### Hardness metal seat

Item	Component	Type	Option code	Material		Hardness of sealing surface		
				EN	ASME	Values from standards or manufacturers specification	Average value LESER stock	
1	Base/ Inlet body	4373	*	EN 10088-3, 1.4104	SA 479 430	≤ 220 HBW	EN 10088-3 Table 8	17 – 20 HRC <sup>1)</sup>
		4374	*	EN 10272, 1.4404	SA 479 316L	≤ 215 HBW	EN 10272 Table 7	16 – 19 HRC <sup>1)</sup>
		4374	L20	EN 10272, 1.4404 stellited	SA 479 316L stellited	≥ 35 HRC	Manufacturers specification	40 HRC
7.1	Disc	4373	*	EN 10088-3, 1.4122 hardened	Hardened stainless steel	≥ 40 HRC	LWN 325.01 Hardening procedure	42 – 46 HRC
		4374	*	EN 10272, 1.4404	SA 479 316L	≤ 215 HBW	EN 10272 Table 7	16 – 19 HRC <sup>1)</sup>
		4374	J25	EN 10272, 1.4404 stellited	SA 479 316L stellited	≥ 35 HRC	Manufacturers specification	40 HRC

Standard material of LESER balanced bellows is stainless steel 1.4571 / 316Ti.

HBW: BRINELL hardness acc. DIN EN ISO 6506-1

HRC: ROCKWELL hardness acc. DIN EN ISO 6508-1

<sup>1)</sup> Rockwell hardness values below 20 HRC are not allowed according to DIN EN ISO 6508-1. Lower, values are shown for better comparison.

## Sealing surface

### Types 437, 438, 439 – Soft seal

LESER soft seal solutions allow for superior tightness.

#### Features and benefits

- 3 different designs for a wide variety application
- large selection of soft seal materials to best adapt to the application
- increased service life of sealing surfaces compared to a metal to metal seat
- simple replacement of the soft seal reduces maintenance costs
- standard ARP O-ring sizes for easy worldwide procurement
- one standard durometer per O-ring material for all set pressures to reduce stocking expenses

Soft seal solutions		Series 437		
Type	437 – sealing plate	438 – O-ring disc	439 – Vulcanized soft seal disc	
Requirements	Improved tightness related to metal seat is required and the temperature is lower than -20°C / -4°F	Superior tightness is required and the set pressure is higher than 5 bar / 75 psig.	Superior tightness is required and the set pressure is below 16 bar / 230 psig.	
Tightness according to LWN 220.01	9,4 x 10 <sup>-2</sup> mbarl/s	9 x 10 <sup>-5</sup> mbarl/s	9 x 10 <sup>-5</sup> mbarl/s	
Example application	Liquefied gases	Gas storage tanks, compressors	Glass systems at laboratories	

Options

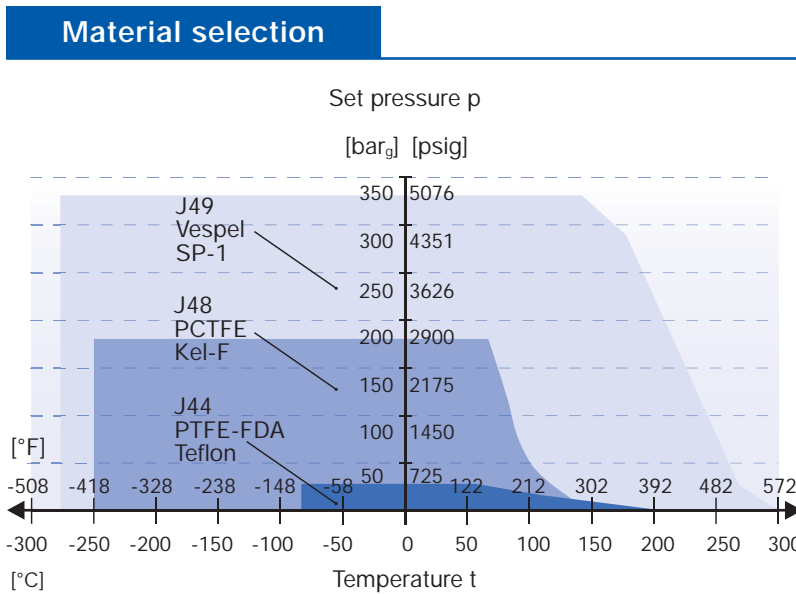
Subassembly of the disc (item 7), bill of materials

Component						
Disc	Item 7.1	1.4404	Item 7.1	1.4404	Item 7.1	1.4404
		SA 479 316L		SA 479 316L		SA 479 316L
Soft seal Materials refer to next page	Item 7.3	sealing plate	Item 7.3	O-ring		vulcanized disc
Lifting aid	Item 7.2	1.4404	Item 7.2	1.4404	Item 7.2	1.4404
		316L		316L		316L
Lock nut		-		-	Item 7.5	1.4404
		-		-		316L

For temperature limits and medium resistance please refer to the soft seal material selection, page 04/08.

## Soft seal material selection

### Type 437 – Sealing plate



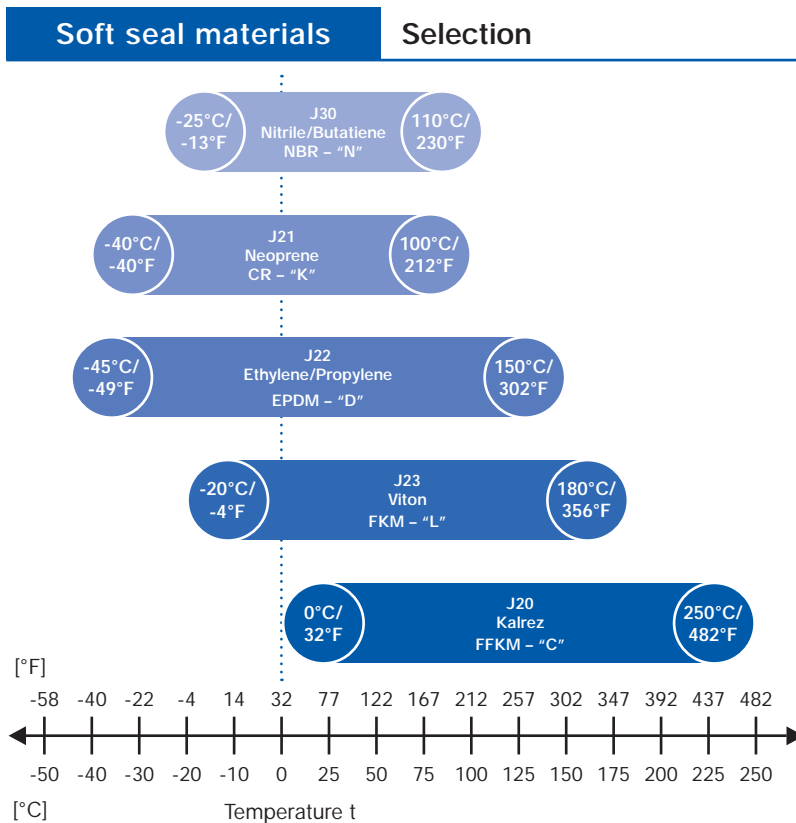
**Option code**

Option code	Code letter <sup>1)</sup>	Application <sup>2)</sup>
J44	PTFE-FDA "A"	Nearly all chemicals
J48	PCTFE "G"	Cryogenic and refrigeration applications, flammable media applications (e.g. gaseous oxygen) up to 50 bar, 725 psig at 60°C, 140°F
J49	VESPEL-SP1 "T"	High temperature and high pressure applications (no steam), for chemical resistance see <a href="http://www.DuPont.com">www.DuPont.com</a>
Other	"X"	For other materials please contact: your local representative or <a href="mailto:sales@leser.com">sales@leser.com</a>

### Type 438 – O-ring disc

### Type 439 – Vulcanized soft seal disc

The LESER compact performance valves with soft seal disc and broad elastomer material selection represents the ultimate solution for critical applications with special tightness requirements.



**Option code**

Option code	Code letter <sup>1)</sup>	Application <sup>2)</sup>
J30	NBR "N"	Hydraulic oil, vegetable and animal grease and oil
J21	CR "K"	Parafin oil, silicone oil and grease, water and water based solvents, refrigerants, ozone
J22	EPDM "D"	Hot water and superheated steam up to 150 °C, 302 °F, some organic and inorganic acids, silicone oil and grease, FDA compliant
J23	FKM "L"	High temperature service (no superheated steam), mineral oil and grease, silicone oil and grease, vegetable and animal grease and oil, ozone, FDA compliant compound available on request
J20	FFKM "C"	Nearly all chemicals, standard O-ring compound for type 438 is Kalrez® 6375 with steam resistance, FDA compliant compound available on request. For type 439 the FDA compliant ISOLAST J9515 is standard
Other then listed	"X"	For other materials contact: your local representative or <a href="mailto:sales@leser.com">sales@leser.com</a>

<sup>1)</sup> The code letters will be stamped on the disc.

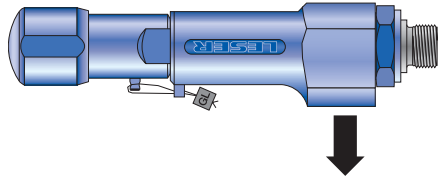
<sup>2)</sup> Pressure and temperature service must be considered in any case.

Chemical resistance information is supplied by the O-ring manufacturer.

## Installing instructions

### Horizontal fitting

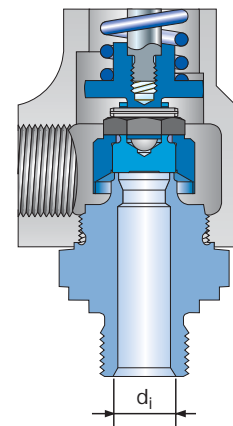
For horizontal fitting certified



**Attention!** Only with outlet in direction downwards.

### Inlet pipe dimension

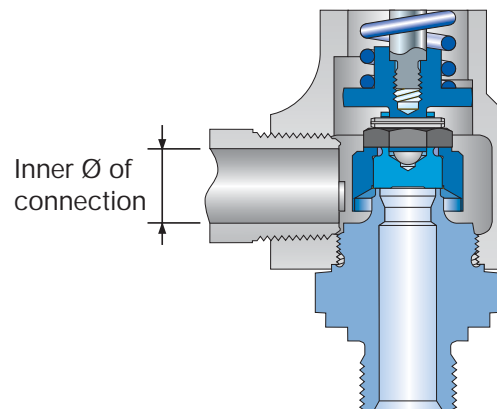
Actual orifice diameter $d_0$	[mm]	6	10
	[inch <sup>2</sup> ]	0,236	0,394
Actual orifice area $A_0$	[mm <sup>2</sup> ]	28,3	78,5
	[inch <sup>2</sup> ]	0,044	0,122
Inner $\varnothing$ of pipe $d_i$	[mm]	10	12,5
	[inch]	3/8"	1/2"



### Outlet connection

#### Caution!

To achieve the certified function and capacity it is important to use an outlet pipe or an outlet connection with an inner diameter  $\geq$  than 16 mm / <sup>5</sup>/<sub>8</sub>" inch.



### Screwed plugs – DIN ISO 228 / G

#### Male

Design of diameter  $d_3$  according to DIN 3852 – Part 2, form A for small gasket.

#### Female

Design of diameter  $d_4$  according to DIN 3852 – Part 2, form Y for small gasket.

