



Type 481  
Cap H2  
Inlet: Clamp connection  
Outlet: Threaded connection

# Type 481

Type 481

## Safety Relief Valves - spring loaded

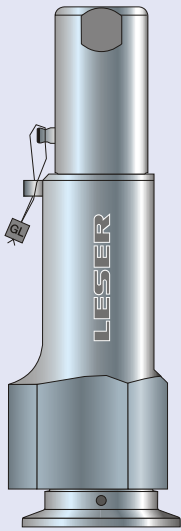


Type 481  
Packed knob H4  
Inlet: Aseptic clamp  
and nut  
Outlet: Threaded  
connection

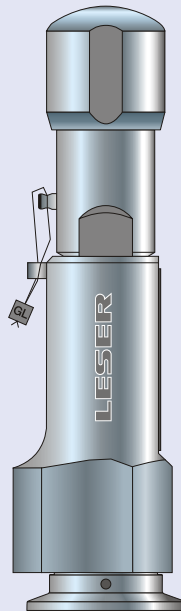
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## How to order – Article numbers

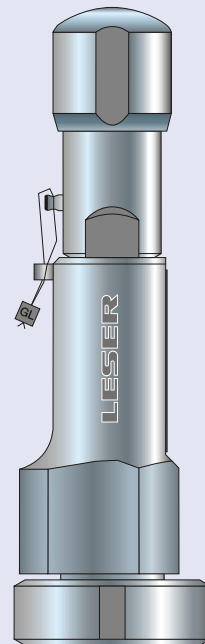
Type 481



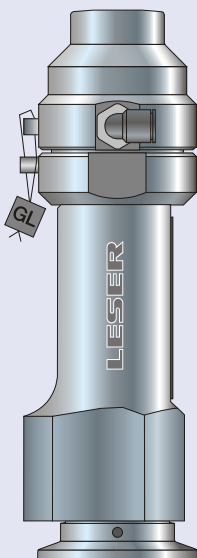
**Type 481**  
Cap H2  
Inlet: Clamp connection  
Outlet: Threaded connection



**Type 481**  
Packed knob H4  
Inlet: Clamp connection  
Outlet: Threaded connection

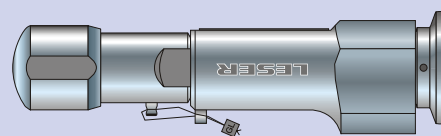


**Type 481**  
Packed knob H4  
Inlet: Aseptic clamp and nut  
Outlet: Threaded connection



**Type 481**  
Pneumatic lifting device H8  
Inlet: Clamp connection  
Outlet: Threaded connection

Certified for horizontal fitting.



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

## How to order – Article numbers

### Article numbers

			Vulcanized soft seal	O-ring disc
Actual Orifice diameter $d_0$ [mm]			10	10
Actual Orifice area $A_0$ [mm <sup>2</sup> ]			78,5	78,5
Actual Orifice diameter $d_0$ [inch]			0,394	0,394
Actual Orifice area $A_0$ [inch <sup>2</sup> ]			0,122	0,122
<b>Soft seal material</b>			EPDM "D" J22	EPDM "D" J22
			CR "K" J21	CR "K" J21
			FKM "L" J23	FKM "L" J23
			NBR "N" J30	NBR "N" J30
			FFKM "C" J20	FFKM "C" J20
<b>Base / Inlet body material: 1.4404 (316L)</b>				
<b>Bonnet</b>	<b>H2</b>	Art.-No. <b>4814.</b>	<b>7692</b>	<b>7682</b>
closed	<b>H4</b>	Art.-No. <b>4814.</b>	<b>7694</b>	<b>7684</b>
	<b>H8</b>	Art.-No. <b>4814.</b>	<b>7698</b>	<b>7688</b>
		p [bar] S/G/L	<b>0,1 – 16</b>	<b>16 – 68</b>
		p [psig] S/G/L	<b>1,5 – 232</b>	<b>233 – 986</b>

## Pressure temperature ratings

### Metric Units

			Vulcanized soft seal	O-ring disc
Actual Orifice diameter $d_0$ [mm]			10	10
Actual Orifice area $A_0$ [mm <sup>2</sup> ]			78,5	78,5
<b>Body material: 1.4404 (316L)</b>				
<b>Inlet / Outlet body</b>	Pressure rating	For pressure ratings please refer to chapter dimensions and weights (page 01/09)		
<b>Minimum set pressure</b>	p [bar] S/G/L	0,1		16
<b>Maximum set pressure</b>	p [bar] S/G/L	16		68
<b>Temperature range<sup>1)</sup></b>		Minimum	Maximum	Minimum
EPDM	[°C]	-45	+150	-45
CR	[°C]	-40	+100	-40
FKM	[°C]	-20	+180	-20
NBR	[°C]	-25	+110	-25
FFKM	[°C]	0	+250	0

### US Units

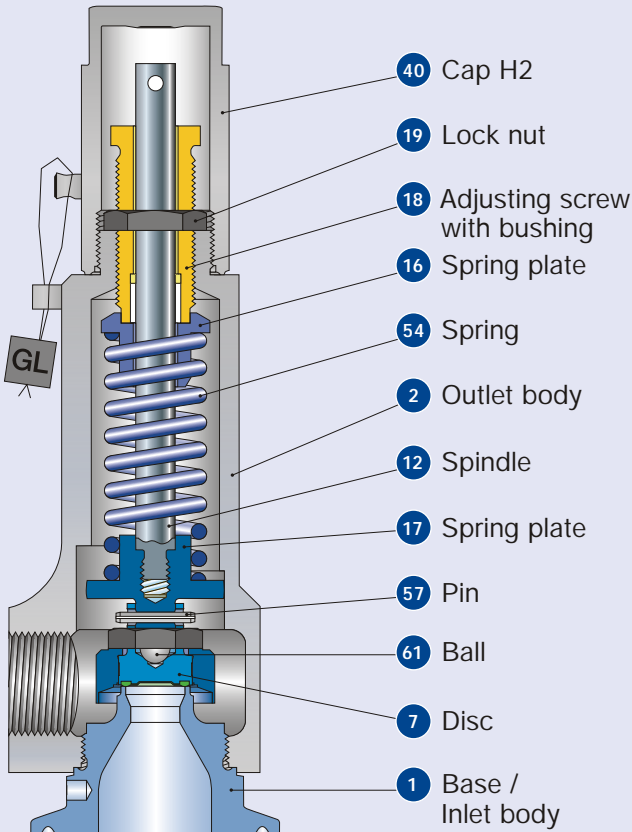
			Vulcanized soft seal	O-ring disc
Actual Orifice diameter $d_0$ [inch]			0,394	0,394
Actual Orifice area $A_0$ [inch <sup>2</sup> ]			0,122	0,122
<b>Body material: 1.4404 (316L)</b>				
<b>Inlet / Outlet body</b>	Pressure rating	For pressure ratings please refer to chapter dimensions and weights (page 01/09)		
<b>Minimum set pressure</b>	p [psig] S/G/L	1,5		233
<b>Maximum set pressure</b>	p [psig] S/G/L	232		986
<b>Temperature range<sup>1)</sup></b>		Minimum	Maximum	Minimum
EPDM	[°F]	-49	+302	-49
CR	[°F]	-40	+212	-40
FKM	[°F]	-4	+356	-4
NBR	[°F]	-13	+230	-13
FFKM	[°F]	+32	+482	+32

<sup>1)</sup> The temperature is limited by the soft seal material. Refer to table "Soft seal selection" on page 99/11.

## Conventional design

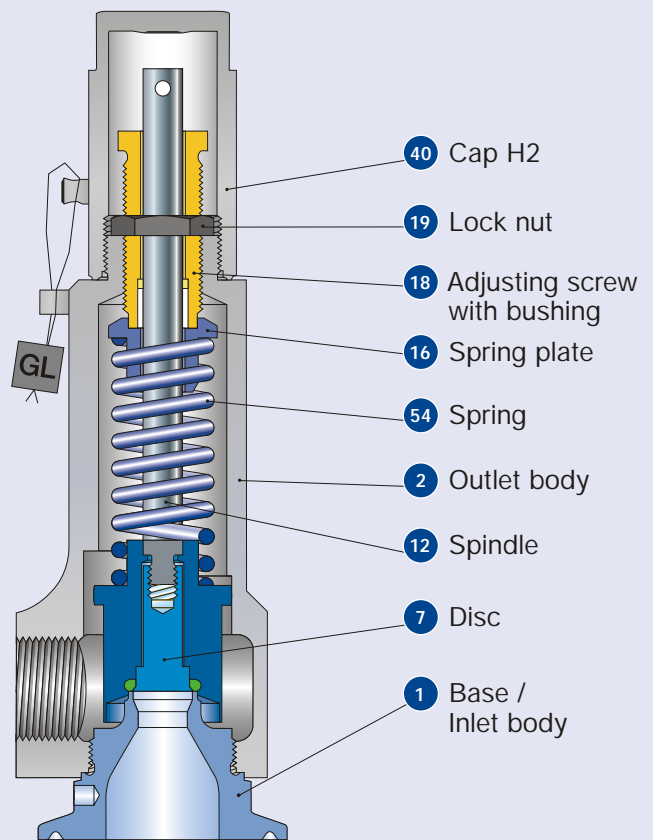
Type 481

### Low set pressure








**Type 481**  
**with vulcanized soft seal**  
 Cap H2  
 Set pressure: 0,1 – 16 bar  
 1,5 – 232 psig  
 Inlet: Clamp connection  
 Outlet: Threaded connection

### High set pressure



**Type 481 with O-ring**  
 Set pressure: 16 – 68 bar  
 233 – 986 psig  
 Inlet: Clamp connection  
 Outlet: Threaded connection

## Conventional design

Materials			Type 4814	
Item	Component	Remarks	Set pressure	
			0,1 – 16 bar 1,5 – 232 psig	16 – 68 bar 233 – 986 psig
1	Base / Inlet body		1.4404	1.4404
			SA 479 316L	SA 479 316L
2	Outlet body		1.4404	1.4404
			SA 479 316L	SA 479 316L
7	Disc		1.4404	1.4404
			SA 479 316L	SA 479 316L
			Vulcanized soft seal	O-ring soft seal
7.1	Soft seal vucanized or O-ring	“D”  	EPDM	EPDM
		“K”	CR	CR
		“L” 	FKM	FKM
		“N”	NBR	NBR
		“C”  	FFKM	FFKM
12	Spindle		1.4404	1.4404
			316L	316L
16	Spring plate		1.4404	1.4404
			316L	316L
17	Spring plate		1.4404	–
			316L	–
18	Adjusting screw with bushing	PTFE + 15 % glass	1.4404 / PTFE	1.4404 / PTFE
			316L / PTFE	316L / PTFE
19	Lock nut		1.4404	1.4404
			316L	316L
40	Cap H2		1.4404	1.4404
			316L	316L
54	Spring		1.4310	1.4310
			Stainless steel	Stainless steel
57	Pin		1.4310	–
			Stainless steel	–
61	Ball		1.4401	–
			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 – Bestseller

For shortest delivery time please select bestsellers. The specified bestsellers can vary depending on different market requirements

For further available connections please refer to page 01/10.

### Metric Units

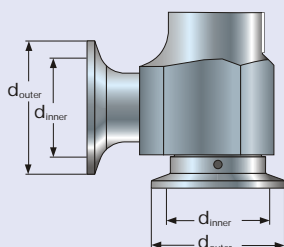
Actual Orifice diameter $d_0$ [mm]		10	
Actual Orifice area $A_0$ [mm <sup>2</sup> ]		78,5	
<b>Clamp connections</b>		<b>Inlet a</b>	<b>Outlet b</b>
<b>COCO</b>		<b>1"</b>	<b>1"</b>
Option code L96I79L97A79			
<b>Center to face</b>	[mm]	30	65
<b>Clamp diameter</b>	$d_{inner}$ [mm]	23	23
	$d_{outer}$ [mm]	51	51
<b>Height – H4</b>	H max. [mm]	193	
<b>Clamp / Threaded connections</b>		<b>Inlet a</b>	<b>Outlet b</b>
<b>SOXG</b>		<b>15</b>	<b>G 1/2"</b>
Option code L79I14V65			
<b>Center to face</b>	[mm]	30	30
<b>Clamp diameter</b>	$d_{inner}$ [mm]	16	–
	$d_{outer}$ [mm]	34	–
<b>Height – H4</b>	H max. [mm]	193	
<b>COXG</b>		<b>1"</b>	<b>G 1/2"</b>
Option code L96I79V65			
<b>Center to face</b>	[mm]	33	37
<b>Clamp diameter</b>	$d_{inner}$ [mm]	23	–
	$d_{outer}$ [mm]	51	–
<b>Height – H4</b>	H max. [mm]	193	

### US Units

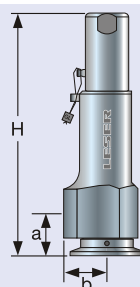
Actual Orifice diameter $d_0$ [inch]		0,394	
Actual Orifice area $A_0$ [inch <sup>2</sup> ]		0,122	
<b>Clamp connections</b>		<b>Inlet a</b>	<b>Outlet b</b>
<b>COCO</b>		<b>1"</b>	<b>1"</b>
Option code L96I79L97A79			
<b>Center to face</b>	[inch]	1 <sup>3</sup> / <sub>16</sub>	2 <sup>9</sup> / <sub>16</sub>
<b>Clamp diameter</b>	$d_{inner}$ [inch]	<sup>7</sup> / <sub>8</sub>	<sup>7</sup> / <sub>8</sub>
	$d_{outer}$ [inch]	2	2
<b>Height – H4</b>	H max. [inch]	7 <sup>19</sup> / <sub>32</sub>	
<b>Clamp / Threaded connections</b>		<b>Inlet a</b>	<b>Outlet b</b>
<b>SOXG</b>		<b>15</b>	<b>G 1/2"</b>
Option code L79I14V65			
<b>Center to face</b>	[inch]	1 <sup>3</sup> / <sub>16</sub>	1 <sup>3</sup> / <sub>16</sub>
<b>Clamp diameter</b>	$d_{inner}$ [inch]	<sup>5</sup> / <sub>8</sub>	–
	$d_{outer}$ [inch]	1 <sup>11</sup> / <sub>32</sub>	–
<b>Height – H4</b>	H max. [inch]	7 <sup>19</sup> / <sub>32</sub>	
<b>COXG</b>		<b>1"</b>	<b>G 1/2"</b>
Option code L96I79V65			
<b>Center to face</b>	[inch]	1 <sup>5</sup> / <sub>16</sub>	1 <sup>15</sup> / <sub>32</sub>
<b>Clamp diameter</b>	$d_{inner}$ [inch]	<sup>29</sup> / <sub>32</sub>	–
	$d_{outer}$ [inch]	2	–
<b>Height – H4</b>	H max. [inch]	7 <sup>19</sup> / <sub>32</sub>	

10	
78,5	
<b>Inlet a</b>	<b>Outlet b</b>
–	–
–	–
–	–
<b>Inlet a</b>	<b>Outlet b</b>
<b>25</b>	<b>G 1/2"</b>
L79I16V65	
33	37
26	–
51	–
193	
–	–
–	–
–	–
–	–

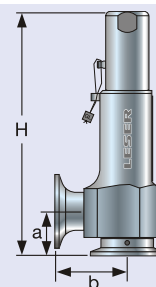
0,394	
0,122	
<b>Inlet a</b>	<b>Outlet b</b>
–	–
–	–
–	–
<b>Inlet a</b>	<b>Outlet b</b>
<b>25</b>	<b>G 1/2"</b>
L79I16V65	
1 <sup>5</sup> / <sub>16</sub>	1 <sup>15</sup> / <sub>32</sub>
1 <sup>1</sup> / <sub>32</sub>	–
2	–
7 <sup>19</sup> / <sub>32</sub>	
–	–
–	–
–	–
–	–



Type 481 – Clamp diameters



Type 481 – Outlet: Threaded connection



Type 481 – Outlet: Clamp connection

## Dimensions and weights

Metric Units			
Actual Orifice diameter $d_0$ [mm]		10	10
Actual Orifice area $A_0$ [mm <sup>2</sup> ]		78,5	78,5
DN		15	25
Clamp connections		Inlet a	
PN		16	16
Center to face	Outlet G 1/2 [mm]	40	30
	Outlet G 3/4 [mm]	40	30
	Outlet G 1 [mm]	43	33
Clamp diameter	$d_{inner}$ [mm]	For varying clamp diameters please refer to page 00/11	
	$d_{outer}$ [mm]		
Height – H4	H max. [mm]	203	193
Height – H8 double piston design	H max. [mm]	231	221
Threaded connections		Inlet a	
PN		16	16
Center to face (female thread)	Outlet G 1/2 [mm]	–	39
	Outlet G 3/4 [mm]	–	39
	Outlet G 1 [mm]	–	42
Center to face	Outlet G 1/2 [mm]	–	39
	Outlet G 3/4 [mm]	–	39
	Outlet G 1 [mm]	–	42
Height – H4	H max. [mm]	–	202
Height – H8 double piston design	H max. [mm]	–	230
Weight			
Weight	max. [kg]	1,4	1,4

US Units			
Actual Orifice diameter $d_0$ [inch]		0,394	0,394
Actual Orifice area $A_0$ [inch <sup>2</sup> ]		0,122	0,122
Clamp connections		Inlet a	
PN		16	16
Center to face	Outlet G 1/2 [inch]	1 9/16	1 3/16
	Outlet G 3/4 [inch]	1 9/16	1 3/16
	Outlet G 1 [inch]	1 11/16	1 5/16
Clamp diameter	$d_{inner}$ [inch]	For varying clamp diameters please refer to page 00/11	
	$d_{outer}$ [inch]		
Height – H4	H max. [inch]	8	7 19/32
Height – H8 double piston design	H max. [inch]	9 3/32	8 11/16
Threaded connections		Inlet a	
PN		16	16
Center to face (female thread)	Outlet G 1/2 [inch]	–	1 17/32
	Outlet G 3/4 [inch]	–	1 9/16
	Outlet G 1 [inch]	–	1 21/32
Center to face	Outlet G 1/2 [inch]	–	1 17/32
	Outlet G 3/4 [inch]	–	1 9/16
	Outlet G 1 [inch]	–	1 21/32
Height – H4	H max. [inch]	–	7 15/16
Height – H8 double piston design	H max. [inch]	–	9 1/16
Weight			
Weight	max. [lb]	3,086	3,086

		Inlet a		Outlet b	
		10		10	
		78,5		78,5	
		25		25	
		16		16	
		–		–	
		30		65	
		–		–	
		For varying clamp diameters please refer to page 00/11		For varying clamp diameters please refer to page 00/11	
		193		193	
		221		221	
		16		16	
		39		30	
		39		37	
		42		37	
		–		–	
		39		70	
		–		–	
		202		202	
		230		230	

## Option codes for available connections

For detailed information about the available connections please refer to "How to use" on page 00/07.

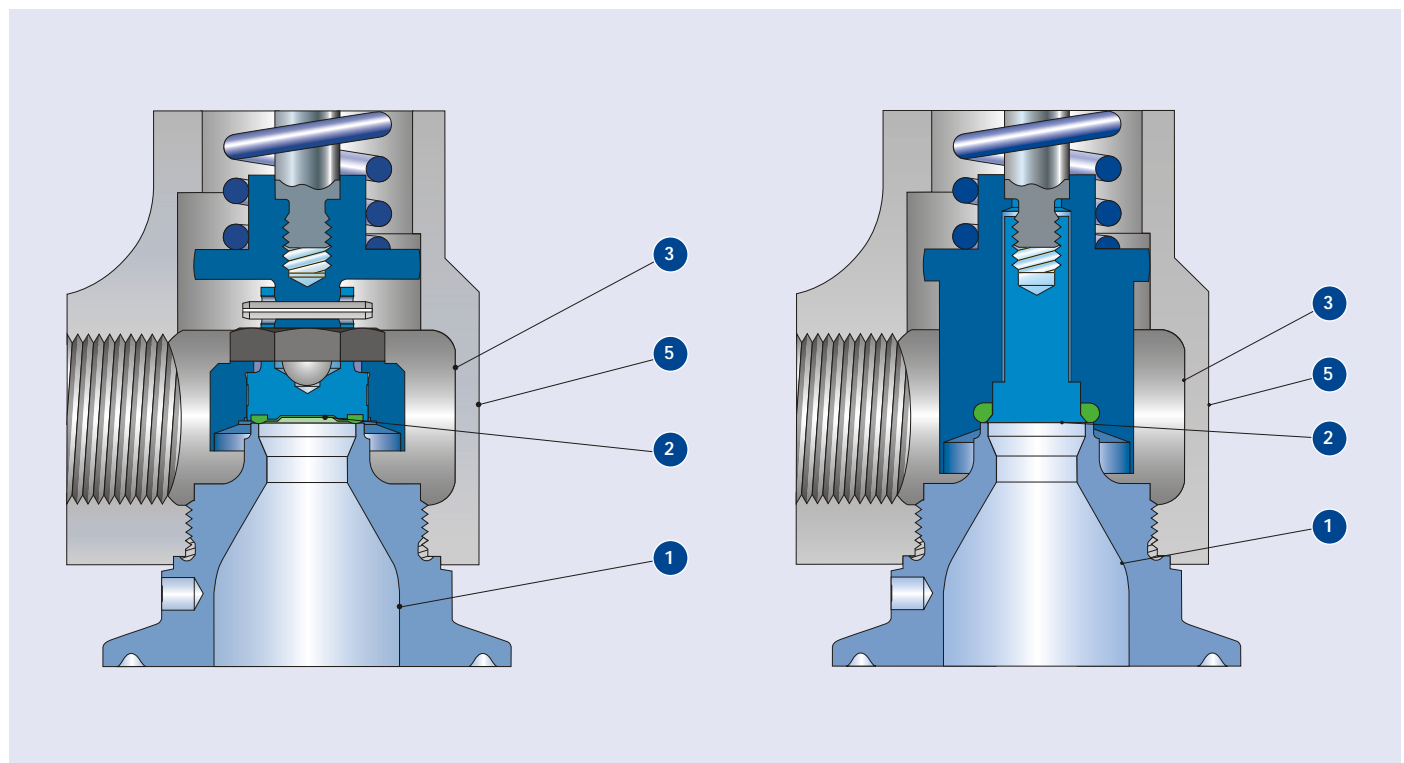
Connections							
	d <sub>0</sub> [mm]	10					
	d <sub>0</sub> [inch]	0,394					
Clamps		Option code inlet					
	DN	15	25				
For dimensions refer to page 00/07	SO	L79I14	L79I16				
	DO	I73I14	I73I16				
	NPS	3/4"	1"				
	BO	I75I78	I75I79				
	CO	-	L96I79				
Clamp connections suitable for NA-Connect available							
Threaded connections		Option code inlet					
	DN	-					
	XG	-					
	XN	-					
Pipe standard		Option code inlet					
	DN	25					
DIN 11850 / DIN 11866 Range A	GS	H85H34I16					
	BS	H85H36I16					
	GT	H85H54I16					
	BT	H85H56I16					
	GO	H85L75I16					
	KO	H85L76I16					
	GD	H85H60I16					
	BD	H85H58I16					
Pipe standard		Option code inlet					
	DN	25					
DIN EN ISO 1127 / DIN 11866 Range B	GS	H86H34I16					
	BS	H86H36I16					
	GT	H86H54I16					
	BT	H86H56I16					
	GD	H86H60I16					
	BD	H86H58I16					
Pipe standard		Option code inlet					
	NPS	1"					
BS 4825-1 DIN 11866 Range C	GS	H87H34I79					
	BS	H87H36I79					
	GT	H87H54I79					
	BT	H87H56I79					
	d <sub>0</sub> [mm]	10					
	d <sub>0</sub> [inch]	0,394					
		Option code outlet					
	DN	-		25			
	SO	-		L86A16			
	DO	-		I74A16			
	NPS	-		1"			
	BO	-		-			
	CO	-		L97A79			
		Option code outlet					
	DN	G 1/2	G 3/4	G 1	1/2" NPT	3/4" NPT	1" NPT
	XG	V65	V76	V66	-		
	XN	-		V70	V77	V71	
Pipe standard		Option code outlet		Option code outlet			
	DN	25		25			
	GS	H85H34I16		A85H35A16			
	BS	H85H36I16		A85H37A16			
	GT	H85H54I16		A85H55A16			
	BT	H85H56I16		A85H57A16			
	GO	H85L75I16		A85L81A16			
	KO	H85L76I16		A85L82A16			
	GD	H85H60I16		A85H61A16			
	BD	H85H58I16		A85H59A16			
Pipe standard		Option code outlet		Option code outlet			
	DN	25		25			
	GS	H86H34I16		A86H35A16			
	BS	H86H36I16		A86H37A16			
	GT	H86H54I16		A86H55A16			
	BT	H86H56I16		A86H57A16			
	GD	H86H60I16		A86H61A16			
	BD	H86H58I16		A86H59A16			
Pipe standard		Option code outlet		Option code outlet			
	NPS	1"		1"			
	GS	H87H34I79		A87H35A79			
	BS	H87H36I79		A87H37A79			
	GT	H87H54I79		A87H55A79			
	BT	H87H56I79		A87H57A79			



## Surface quality

Surface quality			LESER Surface package			
Type of surface	Area		Option code	Clean finish	HyClean finish	Sterile finish
	Description	No.		B50	B51	B52
				R <sub>a</sub> max.	R <sub>a</sub> max.	R <sub>a</sub> max.
			LESER Surface grade			
Product contact surface	Inlet	1		M4	ME4	ME2
			[ $\mu\text{m}$ ]	0,750	0,750	0,500
			[ $\mu\text{inch}$ ]	30	30	20
	Bottom side of disc					
	Soft seal design: Vulcanized	2		Elastomer surface		
Soft seal design: O-ring	3		M4	ME4	ME2	
		[ $\mu\text{m}$ ]	0,750	0,750	0,500	
		[ $\mu\text{inch}$ ]	30	30	20	
Blow off surface	Inside surface of outlet area	3		M6	ME6	ME6
			[ $\mu\text{m}$ ]	3,000	3,000	3,000
Outer surface	Outside surface of inlet and outlet body, cap/lifting device	5		M6	ME6	ME6
			[ $\mu\text{m}$ ]	3,000	3,000	3,000
			[ $\mu\text{inch}$ ]	120	120	120

If required surface deviates from standard specify No. and required LESER Surface Grade.



Type 481 – Vulcanized soft seal

Type 481 – O-ring disc

## Approvals

Approvals			
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	
Europe		Coefficient of discharge $K_{dr}$	
DIN EN ISO 4126-1	Approval No.	07 202 0111 Z 0008/0/21-2	
	S/G	0,45 ( $\leq$ 16 bar)	0,4 (> 16 bar)
	L	0,37 ( $\leq$ 16 bar)	0,33 (> 16 bar)
Germany		Coefficient of discharge $\alpha_w$	
AD 2000-Merkblatt A2	Approval No.	TÜV SV 980	
	S/G	0,45 ( $\leq$ 16 bar)	0,4 (> 16 bar)
	L	0,37 ( $\leq$ 16 bar)	0,33 (> 16 bar)
United States		Coefficient of discharge K	
ASME Sec. VIII	Approval No.	M 37190	
	S/G	Rated slope acc. to ASME VIII, Div. 1 UG-131 (d) (2) S: 2,55 lb / hr / psia $\Delta$ K $\approx$ 0,406 G: 0,904 SCFM / psia 8 $\Delta$ K $\approx$ 0,406	
	Approval No.	M 37202	
	L	Rated slope acc. to ASME VIII, Div. 1 UG-131 (d) (2) L: 1,49 GPM $\sqrt{\text{psid}^*}$ $\Delta$ K $\approx$ 0,322	
Canada		Coefficient of discharge K	
CRN	Approval No.	OG0772.9C	
	S/G	Rated slope acc. to ASME VIII, Div. 1 UG-131 (d) (2) S: 2,55 lb / hr / psia $\Delta$ K $\approx$ 0,406 G: 0,904 SCFM / psia $\Delta$ K $\approx$ 0,406	
	L	Rated slope acc. to ASME VIII, Div. 1 UG-131 (d) (2) L: 1,49 GPM $\sqrt{\text{psid}^*}$ $\Delta$ K $\approx$ 0,322	
China		Coefficient of discharge $\alpha_w$	
AQSIQ	Approval No.	02301T	
	S/G	0,45 ( $\leq$ 16 bar)	0,4 (> 16 bar)
	L	0,37 ( $\leq$ 16 bar)	0,33 (> 16 bar)
Russia		Coefficient of discharge $\alpha_w$	
GGTN/ GOSGORTECHNADZOR	Approval No.	PPC 00-18458	
GOST R	Approval No.	1989-06	
	S/G	0,45 ( $\leq$ 16 bar)	0,4 (> 16 bar)
	L	0,37 ( $\leq$ 16 bar)	0,33 (> 16 bar)
Belarus		Coefficient of discharge $\alpha_w$	
PROMATOMNADZOR	Approval No.	15-171-2006	
	S/G	0,45 ( $\leq$ 16 bar)	0,4 (> 16 bar)
	L	0,37 ( $\leq$ 16 bar)	0,33 (> 16 bar)
Classification societies			
on request			

\*) psid = Differential pressure P-P<sub>d</sub>  
 P = absolute flow pressure [psia]  
 P<sub>d</sub> = pressure at discharge from valve [psia]

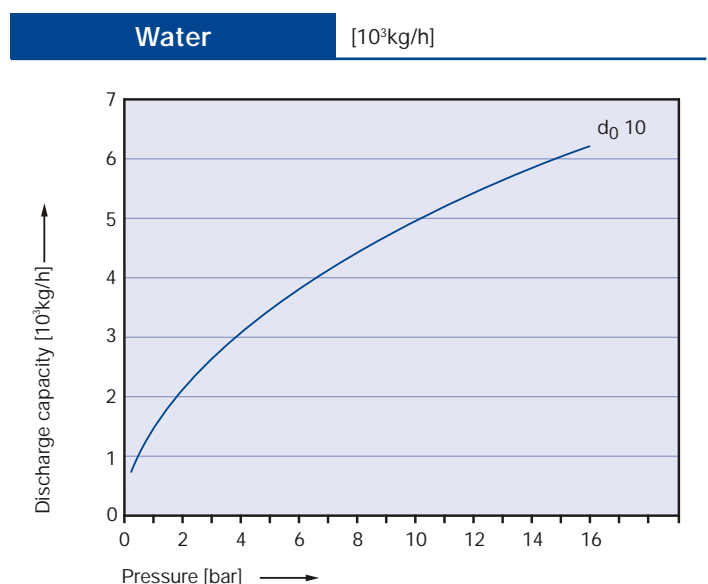
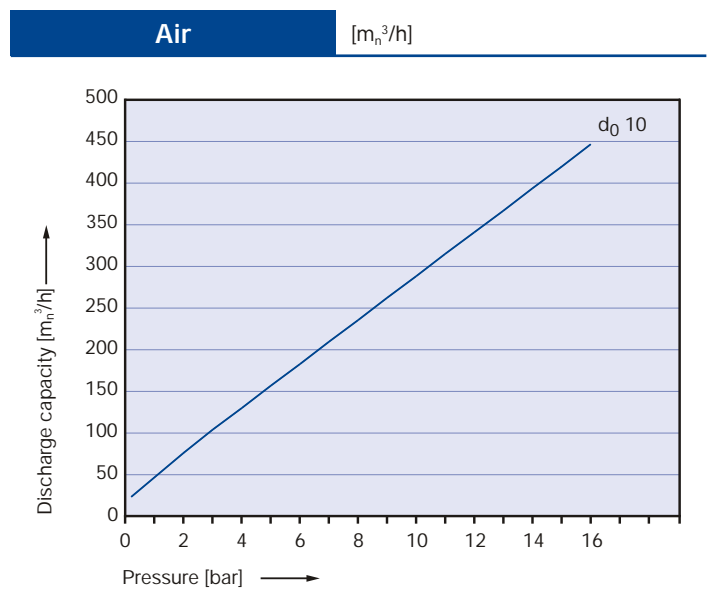
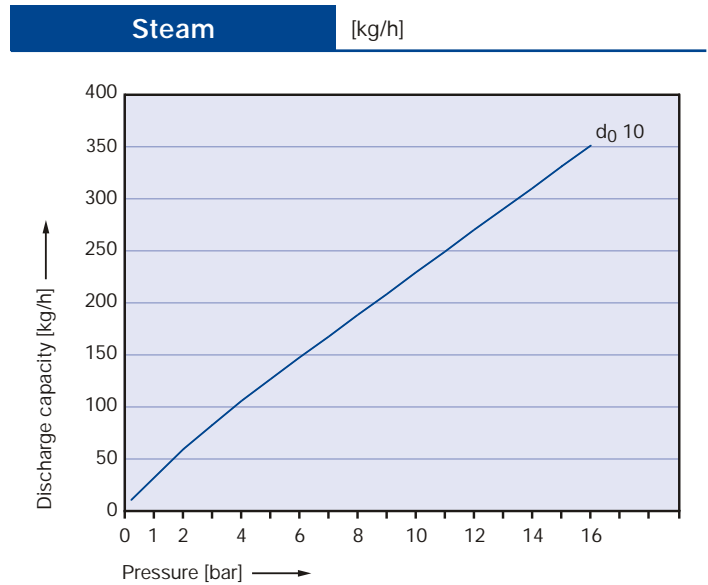
## Capacities – Metric Units

Capacities 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. For pressure range refer to "Pressure temperature ratings" on page 01/07.

Type 481

Metric Units		AD 2000-Merkblatt A2	
Actual Orifice diameter $d_0$ [mm]		10	
Actual Orifice area $A_0$ [mm <sup>2</sup> ]		78,5	
LEO <sup>*)</sup> [inch <sup>2</sup> ]		S/G = 0,051 L = 0,06	
Set pressure		Capacities	
	Steam saturated	Air 0° C and 1013 mbar	Water 20° C
[bar]	[kg/h]	[m <sub>n</sub> <sup>3</sup> /h]	[10 <sup>3</sup> kg/h]
Vulcanized soft seal			
1	41	49	1,55
2	63	76	2,19
3	85	104	2,69
4	106 <small>max. temp. for EPDM soft seal</small>	130	3,1
5	127	157	3,47
6	148	183	3,8
7	168	210	4,1
8	189	236	4,38
9	209	263	4,65
10	230	289	4,9
12	271	342	5,37
14	311	395	5,8
16	352	448	6,2
O-ring soft seal			
18		445	5,87
20		492	6,18
22		539	6,49
24		586	6,77
26		633	7,05
28		681	7,32
30		728	7,75
32		775	7,82
34		822	8,06
36		869	8,3
38		916	8,52
40		963	8,74
50		1198	9,78
60		1434	10,7

<sup>\*)</sup> LEO<sub>S/G/L</sub> = LESER Effective Orifice steam/gas/liquids please refer to page 00/17.  
 How to use capacity-sheets refer to page 00/15.



## Available options

**Gastight cap H2**  
H2

**Gastight lifting device H4**  
Packed knob H4

**Pneumatic lifting device H8**  
H8 single piston design

**Pneumatic lifting device H8**  
J41: H8 double piston design

**Vulcanized soft seal**  
 J22: EPDM "D"   
 J21: CR "K"   
 J23: FKM "L"   
 J30: NBR "N"   
 J20: FFKM "C"

**O-ring disc**  
 J22: EPDM "D"   
 J21: CR "K"   
 J23: FKM "L"   
 J30: NBR "N"   
 J20: FFKM "C"

**Test gag**  
J70: H2

**Female NPT outlet**  
 V70: 1/2"  
 V77: 3/4"  
 V71: 1"

**Clamp connection outlet**  
Clamp: 1"

**Special material**  
 2.4610 HASTELLOY C4  
 2.4360 MONEL 400  
 1.4462 DUPLEX