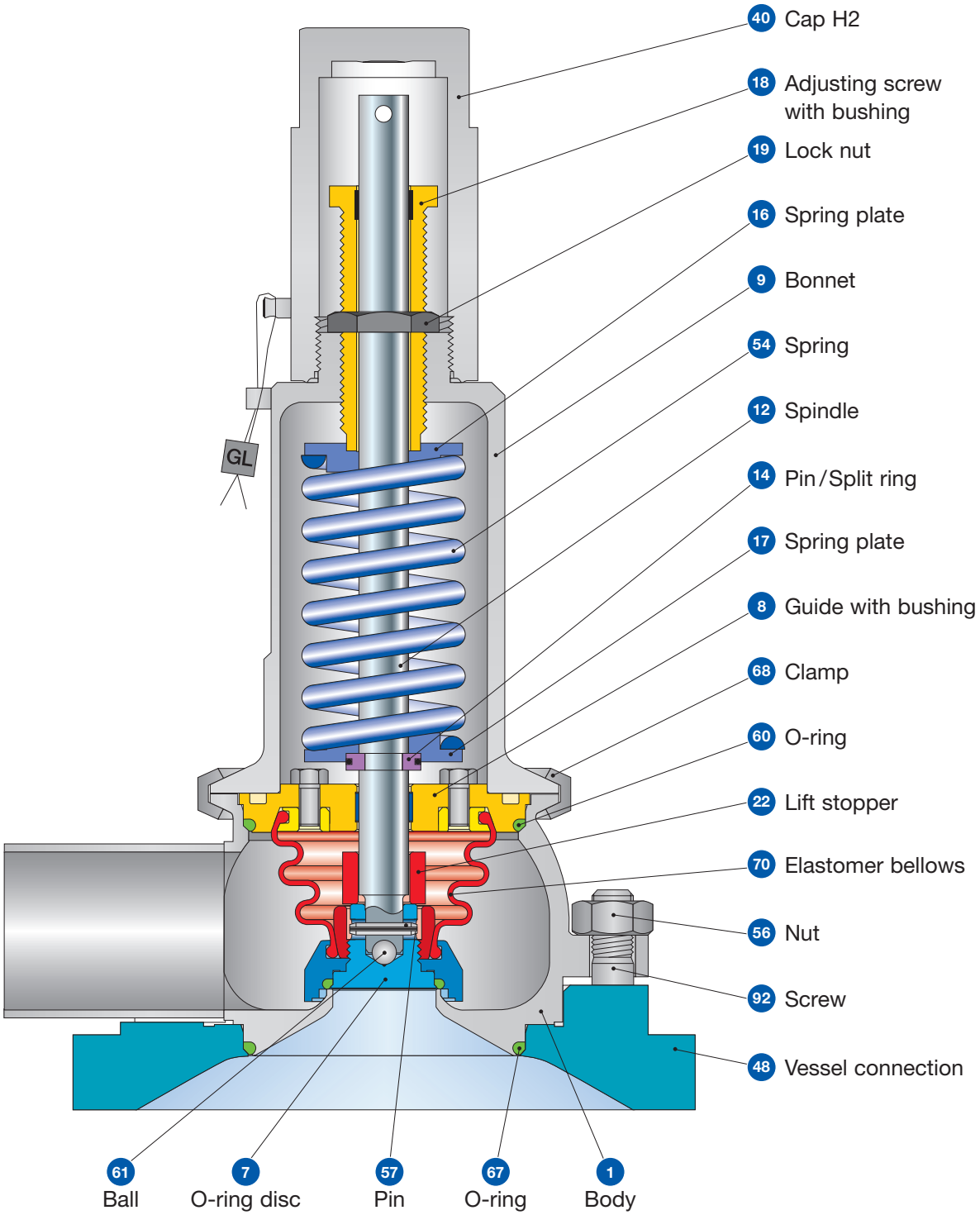
Type 484
Safety Relief Valves – spring loaded

Type 484
Cap H2
Inlet: Vessel connection Type 5034
Outlet: Welded end connection

Type 484
Packed knob H4
Inlet: Vessel connection Type 5034
Outlet: Welded end connection

Type 5034
Vessel connection

Type 484
HyTight Assembly



Type 484 HyTight
Cap H2
Inlet: Vessel connection Type 5034
Outlet: Welded end connection

Type 484
HyTight Assembly
Materials

Item	Component	Remarks	Type 4844 HyTight
1	Body		1.4435 (BN 2)[1] SA 479 316L
7	O-ring disc	HyTight Assembly	1.4435 316L
7.4	Soft seal O-ring	"D" FDA USP VI	EPDM
		"L" FDA	FKM[2]
		"C" FDA USP VI	FFKM
8	Guide with bushing	PTFE + 15 % glass	1.4435 316L
9	Bonnet		1.4404 316L
12	Spindle		1.4404 316L
14	Pin / Split ring		1.4310 / 1.4404 Stainless steel / 316L
16 / 17	Spring plate		1.4404 316L
18	Adjusting screw with bushing	PTFE + 15 % glass	1.4404 / PTFE 316L / PTFE
19	Lock nut		1.4404 316L
22	Lift stopper		1.4310 Stainless steel
40	Cap H2		1.4404 316L
54	Spring		1.4310 Stainless steel
57	Pin		1.4310 Stainless steel
60	O-ring	FDA USP VI	EPDM
61	Ball		1.4401 316
68	Clamp		1.4401 316
70	Elastomer bellows	FDA	EPDM
Vessel connection Type 5034			
48	Vessel connection		1.4435 (BN 2)[1] SA 479 316L
56	Nut		1.4401 316
67	O-ring	FDA	EPDM
92	Screw		1.4404 316L
–	Blind flange for pressure test		1.4404 316L

[1] The material 1.4435/SA 479 316L fulfils the requirements of the Swiss chemical and pharmaceutical industry Basler Norm (BN 2).
[2] For design with lifting device H8 a max. operating temperature of 50°C is allowed.

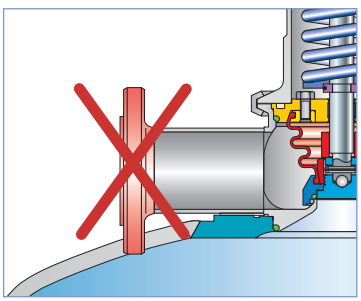
Please notice: – Modifications reserved by LESER.
– LESER can upgrade materials without notice.
– Every part can be replaced by other material acc. to customer specification.

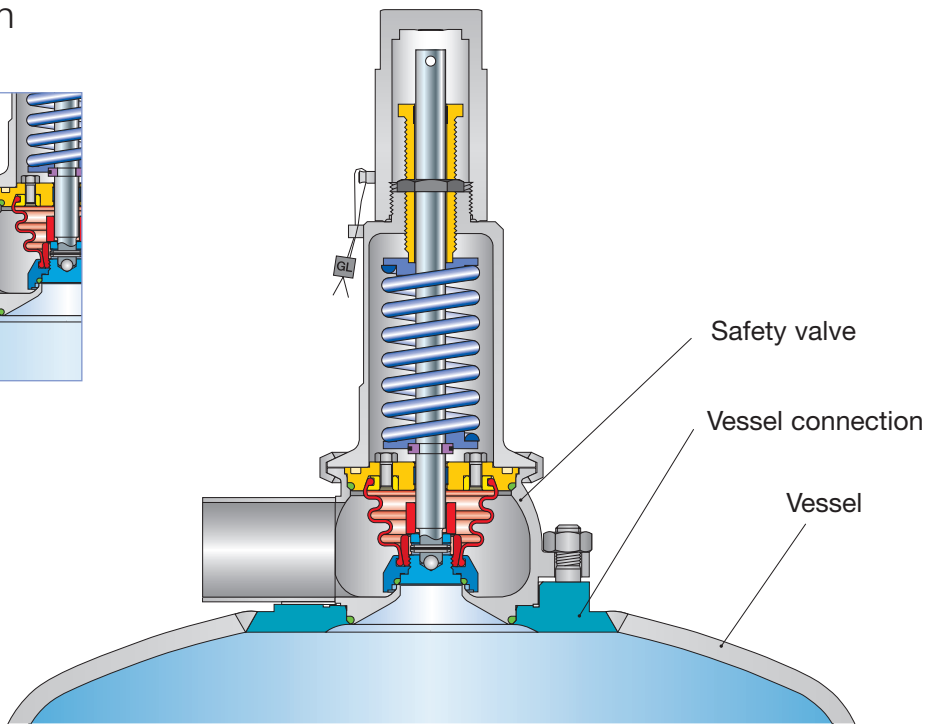
Type 484
Article numbers

Actual Orifice diameter d_0 [mm]			13		25	
Actual Orifice area A_0 [mm²]			133		491	
Actual Orifice diameter d_0 [inch]			0,512		0,984	
Actual Orifice area A_0 [inch²]			0,206		0,761	
O-ring material			EPDM "D" J22		EPDM "D" J22	
			FKM "L" J23		FKM[1] "L" J23	
			FFKM "C" J20		FFKM "C" J20	
Body material: 1.4435 (316L)						
Bonnet	**H2**	Art. No. **4844.**	**7722**		**7732**	
closed	**H4**	Art. No. **4844.**	**7724**		**7734**	
	H8	Art. No. **4844.**	**7728**		**7738**	
		p [bar] S/G/L	**0,3 – 16**		**0,1 – 16**	
		p [psig] S/G/L	**4,4 – 232**		**1,5 – 232**	
Vessel connection material: 1.4435 (316L)			**Please order separately**			
Vessel wall thickness [mm]			≤ 5	> 5≤	≤ 5	> 5
Vessel wall thickness [inch]			≤ 13/64	> 13/64	≤ 13/64	> 13/64
Art. No. **5034.**			**0980**	**0981**	**0982**	**0983**
Blind flange for pressure test: 1.4404 (316L)			**Please order separately**			
Art. No.			**138.8849.9000**		**138.8649.9000**	

[1] For design with lifting device H8 a max. operating temperature of 50°C is allowed.

Fitting information





Due to the dead space free vessel connection, which is directly welded into the vessel wall, please note the required space between outlet connection of the valve (e. g. clamps or flanges) and vessel wall. If required please order a longer outlet connection with your specifications.

Type 484
Available connections

d_0 [mm]		13	25
A_0 [mm²]		133	491

Clamps		Option code outlet	
	DN	25	40
	SO	L86A16	L86A17
	DO	I74A16	I71A17
	NPS	1 1/2"	2"
	BO	I76A80	I76A81
	CO	L97A80	L97A81

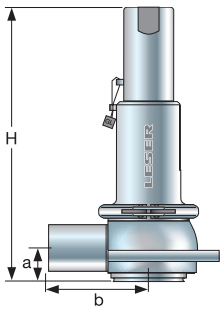
For inlet please select vessel connection Type 5034 as shown on page 62. For connections directly machined into vessel wall please ask for drawing.

Aseptic screwed connection		Option code outlet	
Pipe standard	DN	25	40
DIN 11850 / DIN 11866 Range A	00	A85L83A16	A85L83A17
	GS	A85H35A16	A85H35A17
	BS	A85H37A16	A85H37A17
	GT	A85H55A16	A85H55A17
	BT	A85H57A16	A85H57A17
	GO	A85L81A16	A85L81A17
	KO	A85L82A16	A85L82A17
	GD	A85H61A16	A85H61A17
	BD	A85H59A16	A85H59A17
Pipe standard	DN	25	40
DIN EN ISO 1127 / DIN 11866 Range B	GS	A86H35A16	A86H35A17
	BS	A86H37A16	A86H37A17
	GT	A86H55A16	A86H55A17
	BT	A86H57A16	A86H57A17
	GD	A86H61A16	A86H61A17
	BD	A86H59A16	A86H59A17
Pipe standard	NPS	1 1/2"	2"
BS 4825-1 DIN 11866 Range C	GS	A84H35A80	A84H35A81
	BS	A84H37A80	A84H37A81
	GT	A84H55A80	A84H55A81
	BT	A84H57A80	A84H57A81

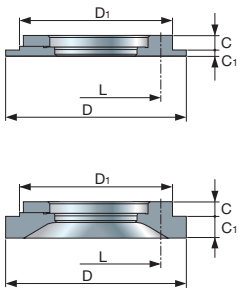
Aseptic flanged connection		Option code outlet	
Pipe standard	DN	25	40
DIN 11850 / DIN 11866 Range A	NF	A85H72A16	A85H72A17
	BF	A85H74A16	A85H74A17
	NG	A85H76A16	A85H76A17
	BG	A85H78A16	A85H78A17
	TN	A85L84A16	A85L84A17
	AF	A85L91A16	A85L91A17
	AN	A85L93A16	A85L93A17
Pipe standard	DN	25	40
DIN EN ISO 1127 / DIN 11866 Range B	NF	A86H72A16	A86H72A17
	BF	A86H74A16	A86H74A17
	NG	A86H76A16	A86H76A17
	BG	A86H78A16	A86H78A17
Pipe standard	DN	1 1/2"	2"
BS 4825-1 DIN 11866 Range C	NF	A84H72A80	A84H72A81
	BF	A84H74A80	A84H74A81
	NG	A84H76A80	A84H76A81
	BG	A84H78A80	A84H78A81

For definitions of connection codes please refer to pages 12 up to 15.

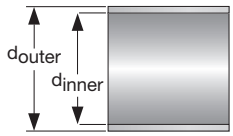
Type 484
Dimensions and weights
Metric Units



Type 484 – Cap H2



Type 5034 – Vessel connection

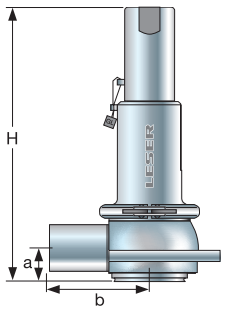


Tube end

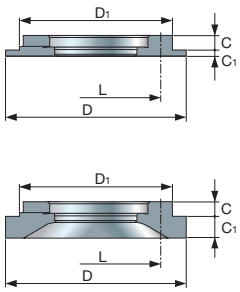
Actual Orifice diameter d_0 [mm]			13		25	
Actual Orifice area A_0 [mm²]			133		491	
Vessel connections						
			Vessel wall thickness		Vessel wall thickness	
			≤ 5 mm	> 5 mm	≤ 5 mm	> 5 mm
		PN	**16**	**16**	**16**	**16**
Flange thickness	C	[mm]	12,0	12,0	12,0	12,0
	C_1	[mm]	5,0	18,0	5,0	18,0
Diameter	D	[mm]	130,0	130,0	150,0	150,0
	D_1	[mm]	110,0	110,0	127,0	127,0
Bolt circle	L	[mm]	90,0	90,0	110,0	110,0
Welded connections			**Inlet a[1)]**	**Outlet b**	**Inlet a[1)]**	**Outlet b**
		PN	**16**	**16**	**16**	**16**
Center to face		[mm]	24	80	30	90
Height – H4	H max.	[mm]	201		289	
Height – H8 double piston design	H max.	[mm]	229		296	
Clamp connections			**Inlet a[1)]**	**Outlet b**	**Inlet a[1)]**	**Outlet b**
		PN	**16**	**16**	**16**	**16**
Center to face		[mm]	24	102	30	112
Clamp diameter	d_{inner}	[mm]	For varying clamp diameters please refer to page 16 and 17		For varying clamp diameters please refer to page 16 and 17	
	d_{outer}	[mm]				
Height – H4	H max.	[mm]	201		289	
Height – H8 double piston design	H max.	[mm]	229		296	
Threaded connections			**Inlet a[1)]**	**Outlet b**	**Inlet a[1)]**	**Outlet b**
		PN	**16**	**16**	**16**	**16**
Center to face		[mm]	24	120	30	130
Height – H4	H max.	[mm]	201		289	
Height – H8 double piston design	H max.	[mm]	229		296	
Flanged connections			**Inlet a[1)]**	**Outlet b**	**Inlet a[1)]**	**Outlet b**
		PN	**16**	**16**	**16**	**16**
Center to face		[mm]	24	126	30	134
Height – H4	H max.	[mm]	201		289	
Height – H8 double piston design	H max.	[mm]	229		296	
Weight						
Weight	max.	[kg]	3,0		4,0	

[1)] without vessel connection

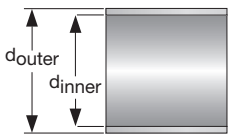
Type 484
Dimensions and weights
US Units



Type 484 – Cap H2



Type 5034 – Vessel connection



Tube end

Actual Orifice diameter d_0 [inch]			0,512		0,984	
Actual Orifice area A_0 [inch²]			0,206		0,761	
Vessel connections						
			Vessel wall thickness		Vessel wall thickness	
			≤ 13/64 inch	> 13/64 inch	≤ 13/64 inch	> 13/64 inch
		PN	**16**	**16**	**16**	**16**
Flange thickness	C	[inch]	15/32	15/32	15/32	15/32
	C_1	[inch]	11/16	23/32	11/16	23/32
Diameter	D	[inch]	5 1/8	5 1/8	5 29/32	5 29/32
	D_1	[inch]	4 11/32	4 11/32	5	5
Bolt circle	L	[inch]	3 17/32	3 17/32	4 11/32	4 11/32
Welded connections			**Inlet a[1)]**	**Outlet b**	**Inlet a[1)]**	**Outlet b**
		PN	**16**	**16**	**16**	**16**
Center to face		[inch]	15/16	3 5/32	1 3/16	3 17/32
Height – H4	H max.	[inch]	7 29/32		11 3/8	
Height – H8 double piston design	H max.	[inch]	9		11 5/32	
Clamp connections			**Inlet a[1)]**	**Outlet b**	**Inlet a[1)]**	**Outlet b**
		PN	**16**	**16**	**16**	**16**
Center to face		[inch]	15/16	4	1 3/16	4 3/8
Clamp diameter	d_{inner}	[inch]	For varying clamp diameters please refer to page 16 and 17		For varying clamp diameters please refer to page 16 and 17	
	d_{outer}	[inch]				
Height – H4	H max.	[inch]	7 29/32		11 3/8	
Height – H8 double piston design	H max.	[inch]	9		11 5/32	
Threaded connections			**Inlet a[1)]**	**Outlet b**	**Inlet a[1)]**	**Outlet b**
		PN	**16**	**16**	**16**	**16**
Center to face		[inch]	15/16	4 23/32	1 3/16	5 3/32
Height – H4	H max.	[inch]	7 29/32		11 3/8	
Height – H8 double piston design	H max.	[inch]	9		11 5/32	
Flanged connections			**Inlet a[1)]**	**Outlet b**	**Inlet a[1)]**	**Outlet b**
		PN	**16**	**16**	**16**	**16**
Center to face		[inch]	15/16	4 15/16	1 3/16	5 1/4
Height – H4	H max.	[inch]	7 29/32		11 3/8	
Height – H8 double piston design	H max.	[inch]	9		11 5/32	
Weight						
Weight	max.	[lb]	6,6		8,8	

[1)] without vessel connection

Type 484
Pressure temperature ratings

Metric Units

Actual Orifice diameter d_0 [mm]		13		25	
Actual Orifice area A_0 [mm²]		133		491	
Body material: 1.4435 (316L)					
Minimum set pressure	p [bar] S/G/L	0,3		0,1	
Maximum set pressure	p [bar] S/G/L	16		16	
Temperature range[1]		Minimum	Maximum	Minimum	Maximum
EPDM	[°C]	-45	+150	-45	+150
FKM	[°C]	-18	+150	-18	+150
FFKM	[°C]	0	+150	0	+150

US Units

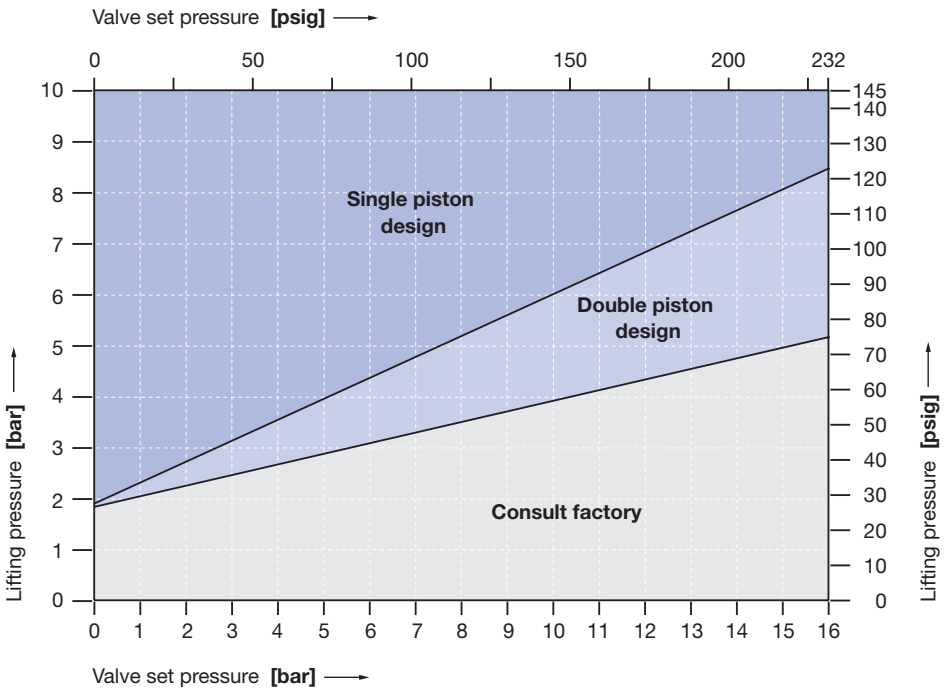
Actual Orifice diameter d_0 [inch]		0,512		0,984	
Actual Orifice area A_0 [inch²]		0,206		0,761	
Body material: 1.4435 (316L)					
Minimum set pressure	p [psig] S/G/L	4,4		1,5	
Maximum set pressure	p [psig] S/G/L	232		232	
Temperature range[1]		Minimum	Maximum	Minimum	Maximum
EPDM	[°F]	-49	+302	-49	+302
FKM	[°F]	-0,4	+302	-0,4	+302
FFKM	[°F]	+32	+302	+32	+302

[1] The temperature is limited by the elastomer bellows up to 150 °C / 302 °F.

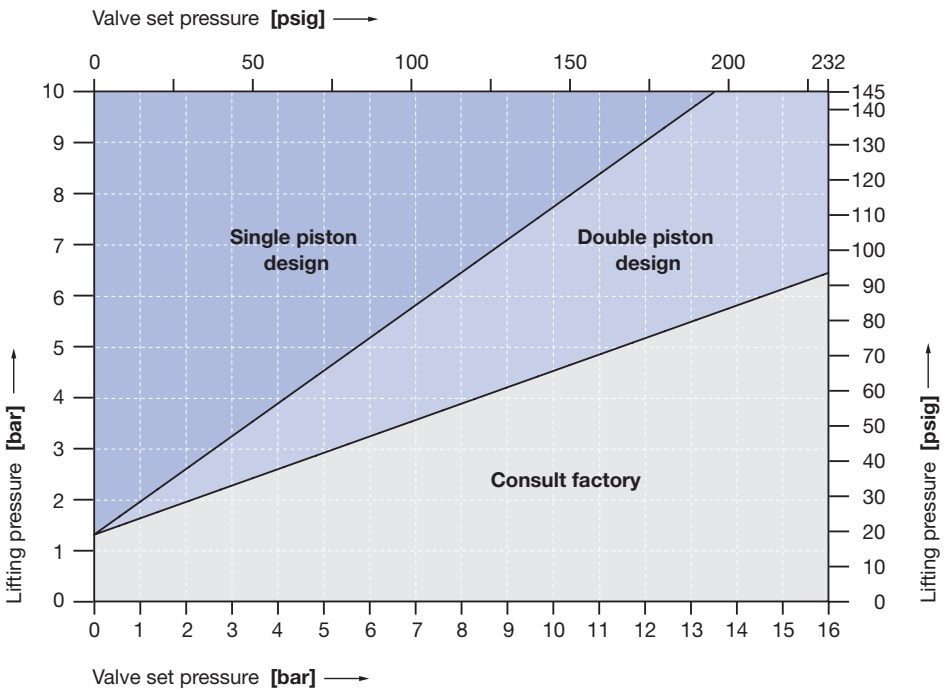
Type 484
Selection chart H8

Depending on the set pressure and lifting pressure (air supply) a double piston lifting device (option code J41) may be required instead of a single piston. The chart below determines the required lifting device.

Selection chart lifting device H8, size 0. d_0 13 mm / 0,512 inch



Selection chart lifting device H8, size I. d_0 25 mm / 0,984 inch



Type 484
Surface quality

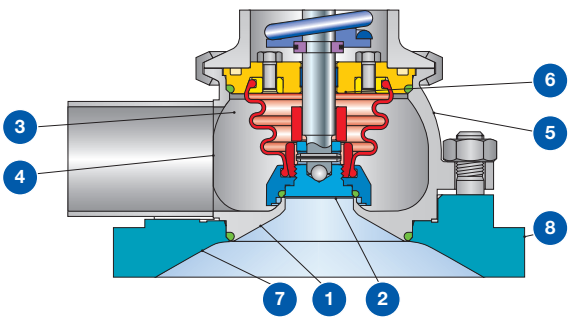
Type of surface	Area			LESER Surface package		
				Clean finish	HyClean finish	Sterile finish
			Option code	B56	B57	B58
	Description	No.		R_a max.	R_a max.	R_a max.
				LESER Surface grade		
Product contact surface	Inlet	1		ME4	ME2	ME1
			[µm]	0,750	0,500	0,375
			[µinch]	30	20	15
	Bottom side of disc	2		ME4	ME2	ME1
			[µm]	0,750	0,500	0,375
			[µinch]	30	20	15
Blow off surface	Inside surface of outlet area	3		ME4	ME3	ME2
			[µm]	0,750	0,625	0,500
			[µinch]	30	25	20
	Welding seam	4		ME6	ME5	ME4
			[µm]	3,000	1,500	0,750
			[µinch]	120	60	30
Outer surface	Outside surface of body, bonnet and cap/ lifting device	5		ME5	ME4	ME4
			[µm]	1,500	0,750	0,750
			[µinch]	60	30	30
Shielded surface	Surface never in contact with the product because it is shielded by the bellows	6		No definition		

Type 5034 Vessel connection

Type of surface	Area			LESER Surface package		
				Clean finish	HyClean finish	Sterile finish
			Option code	B59	B60	B61
	Description	No.		R_a max.	R_a max.	R_a max.
				LESER Surface grade		
Product contact surface	Vessel side	7		M4	M2	M1
			[µm]	0,750	0,500	0,375
			[µinch]	30	20	15
Outer surface	Outside surface	8		M5	M4	M4
			[µm]	1,500	0,750	0,750
			[µinch]	60	30	30

Caution: Electropolishing of the vessel connection is not reasonable before welding.

If required surface deviates from standard clean finish please specify option code and required LESER Surface package.



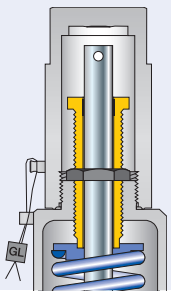
Type 484
Approvals

Actual Orifice diameter d_0 [mm]		13	25
Actual Orifice area A_0 [mm²]		133	491
Actual Orifice diameter d_0 [inch]		0,512	0,984
Actual Orifice area A_0 [inch²]		0,206	0,761
Europe		**Coefficient of discharge K_{dr}**	
DIN EN ISO 4126-1, PED	Approval No.	07 202 0111 Z 0008/0/20	
	S/G	0,60	0,41
	L	0,40	0,28
Germany		**Coefficient of discharge α_w**	
AD 2000-Merkblatt A2, PED	Approval No.	TÜV SV 1047	
	S/G	0,60	0,41
	L	0,40	0,28
United States		**Coefficient of discharge K**	
ASME Sec. VIII	Approval No.	M37145	M37167
	S/G	Rated slope acc. to ASME VIII, Div. 1 UG-131 (d) (2) S: 5,52 lb / hr / psia ≙ K ≈ 0,521 G: 1,96 SCFM / psia ≙ K ≈ 0,521	Rated slope acc. to ASME VIII, Div. 1 UG-131 (d) (2) S: 13,97 lb / hr / psia ≙ K ≈ 0,357 G: 4,96 SCFM / psia ≙ K ≈ 0,357
	Approval No.	M37156	M37178
	L	Rated slope acc. to ASME VIII, Div. 1 UG-131 (d) (2) L: 2,96 GPM $\sqrt{psid}$*) ≙ K ≈ 0,379	Rated slope acc. to ASME VIII, Div. 1 UG-131 (d) (2) L: 7,46 GPM $\sqrt{psid}$*) ≙ K ≈ 0,258
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: 5,52 lb / hr / psia ≙ K ≈ 0,521 G: 1,96 SCFM / psia ≙ K ≈ 0,521	Rated slope acc. to ASME VIII, Div. 1 UG-131 (d) (2) S: 13,97 lb / hr / psia ≙ K ≈ 0,357 G: 4,96 SCFM / psia ≙ K ≈ 0,357
	L	Rated slope acc. to ASME VIII, Div. 1 UG-131 (d) (2) L: 2,96 GPM $\sqrt{psid}$*) ≙ K ≈ 0,379	Rated slope acc. to ASME VIII, Div. 1 UG-131 (d) (2) L: 7,46 GPM $\sqrt{psid}$*) ≙ K ≈ 0,258
China		**Coefficient of discharge α_w**	
AQSIQ	Approval No.	For current approval no. see www.leser.com	
	S/G	0,60	0,41
	L	0,40	0,28
Eurasian Custom Union		**Coefficient of discharge α_w**	
EAC	Approval No.	For current approval no. see www.leser.com	
	S/G	0,60	0,41
	L	0,40	0,28
Classification societies			
		on request	

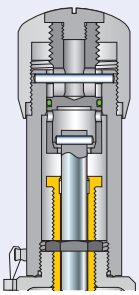
*) psid = Differential pressure P-P_d
P = absolute flow pressure [psia]
P_d = pressure at discharge from valve [psia]

Type 484
Available options

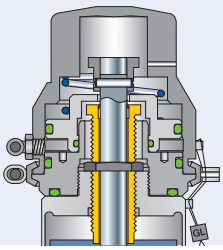
Gastight cap H2
H2



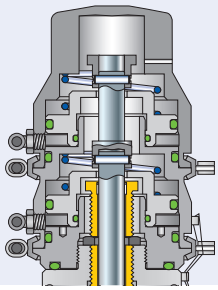
Gastight lifting device H4
Packed knob H4



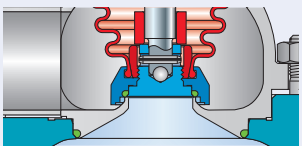
Pneumatic lifting device H8
H8 single piston design



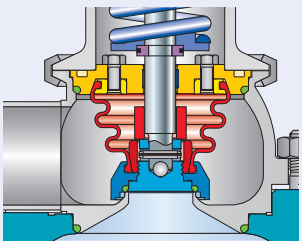
Pneumatic lifting device H8
J41: H8 double piston design



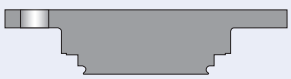
O-ring-disc
J22: EPDM "D"
J23: FKM "L"
J20: FFKM "C"



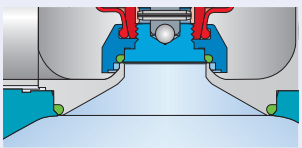
Bellows FFKM "C"
S70 – only for $d_0$13
and liquid application



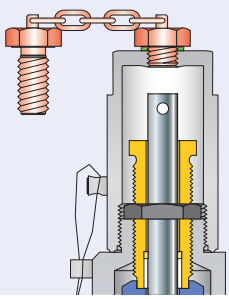
Blind flange for pressure test
Material-No. 138.8849.9000 (d_0 13)
Material-No. 138.8649.9000 (d_0 25)



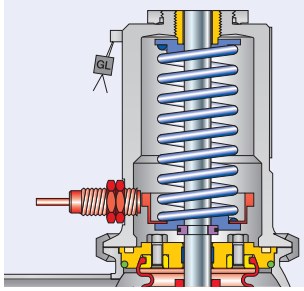
O-ring for vessel connection
EPDM "D"
Material-No. 502.0460.3041 (d_0 13)
Material-No. 502.0600.3041 (d_0 25)



Test gag
J70: H2



Lift indicator placed in bonnet
J38 + J93



Special material
2.4610 HASTELLOY C4
2.4360 MONEL 400
1.4462 DUPLEX