

Clean Service

Safety Relief Valves
Series 48X

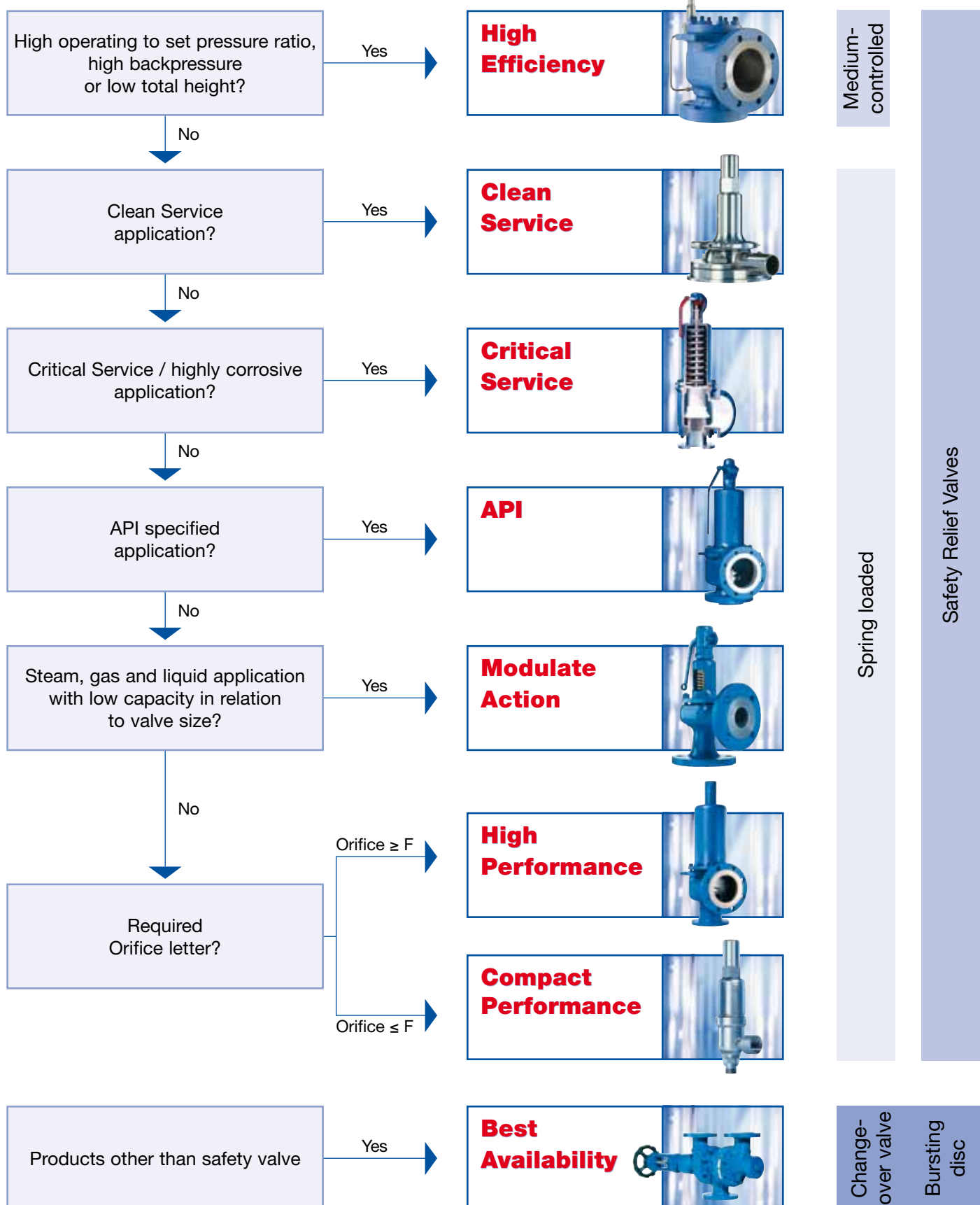


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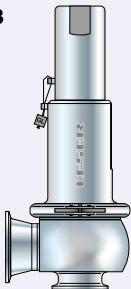
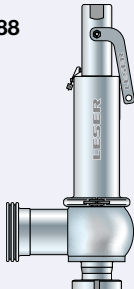
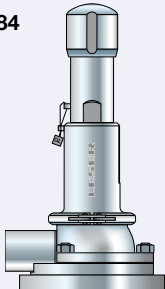
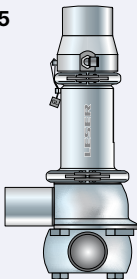
LESER

The-Safety-Valve.com

Product group



How to select the right Clean Service Safety Valve

	Type	Orifice	Features	Valve dead space ratio ¹⁾	Description
Standard	481 	0,5 x D	Cleanability Inlet Cleanability Outlet Capacity 	L/D < 1,5	Designed for small capacity; Type 481 offers protection for installations in which Clean Service properties are required only at the valve inlet, e. g. protection of gas systems for the bottling of beverages.
	483 	D – F	Cleanability Inlet Cleanability Outlet Capacity 	L/D < 1,5	Designed for small to medium capacity; Type 483 has optimized Clean Service properties for applications requiring clamp connections. Type 483 is applicable in all Clean Service areas (e. g. bottle filling machines, fermenters).
	488 	G – P	Cleanability Inlet Cleanability Outlet Capacity 	L/D < 1,5 – 3,0	Designed for high capacity; Type 488 provides Clean Service properties for applications requiring larger capacities. Type 488 is applicable in large plants, breweries and the beverage industry.
Superior	484 	D – F	Cleanability Inlet Cleanability Outlet Capacity 	L/D < 0,33	Designed for small to medium capacity; Type 484 meets the highest sanitary requirements for high purity applications, e. g. fermentors. The design incorporates a dead space free vessel connection, which is directly welded into the vessel wall and allows maximum cleanability of the valve inlet.
	485 	D – F	Cleanability Inlet Cleanability Outlet Capacity 	L/D < 0,95	Designed for small to medium capacity; Type 485 meets the highest sanitary requirements for high purity applications, e. g. fermentors. The design incorporates a dead space free pipe connection, which is directly welded into the pipework and allows maximum cleanability of the valve inlet. Type 485 can be used in applications where a direct vessel connection used by the Type 484 is not possible, e. g. glass vessels.

¹⁾ Explanation of dead space ratio see page 14

Overview

Page

General	5
Applications and References, General design features	6
HyTight Assembly	7
Surface Quality	8
Surface Definition	9
LESER Surface Packages	10
Clamp and threaded connections – Overview	11
Clamp connections – Dimensions	12
Low dead space	14

LESER Type

Page

Type 481	15
Materials	
• Conventional design	16
How to order	
• Article numbers	18
Pressure temperature ratings	
• Metric Units + US Units	19
Dimensions and weights	
• Metric Units	20
• US Units	21
Available options	22
Selection chart H8	23
Surface quality	24

Type 483

25

Materials	
• HyTight Assembly	26
How to order	
• Article numbers	28
Pressure temperature ratings	
• Metric Units + US Units	29
Dimensions and weights	
• Metric Units	30
• US Units	31
Available options	32
Selection chart H8	33
Surface quality	34

LESER Type

Page

Type 488	35
Materials	
• HyTight Assembly	36
How to order	
• Article numbers	38
Pressure temperature ratings	
• Metric Units + US Units	39
Dimensions and weights	
• Metric Units	40
• US Units	41
Available options	42
Selection chart H8	43
Surface quality	46

Type 484

47

Materials	
• HyTight Assembly	48
How to order	
• Article numbers	50
Pressure temperature ratings	
• Metric Units + US Units	51
Dimensions and weights	
• Metric Units	52
• US Units	53
Available options	54
Selection chart H8	55
Surface quality	56

Type 485

57

Materials	
• HyTight Assembly	58
How to order	
• Article numbers	60
Pressure temperature ratings	
• Metric Units + US Units	61
Dimensions and weights	
• Metric Units	62
• US Units	63
Available options	64
Selection chart H8	65
Surface quality	66

LESER – Clean Service Safety Valves

The Clean Service product group represents:

- ✓ High aseptic properties
- ✓ Low dead space
- ✓ Best Cleanability (CIP, SIP or COP)

LESER's Clean Service Safety Valves

- are designed and manufactured to highest standards and fulfil hygienic and sanitary requirements acc. to
 - DIN 11866 (European Hygienic Pipes Standard)
 - ASME BPE (Bioprocessing Equipment – 2002, a-2003, a-2004)
 - EN 1672-2
 - DIN ISO 14159
 - EHEDG and 3-A Sanitary standard
 - USP class VI and FDA 21 CFR
- serve for protection of processes and equipment in the foodstuff and pharmaceutical industry.
- have a dead space ratio $L/D < 0,33$ (Type 484) up to < 3 (Type 488)
- have a multiple choice of sanitary connections
- are developed in a close cooperation with plant engineers and service specialists.
- are approved by all important approval organisations worldwide which ensures the worldwide applicability e. g.:
 - European Community: CE-marking acc. to Pressure Equipment Directive (PED) 97/23/EC and EN ISO 4126-1
 - USA: UV-stamp acc. to ASME Section VIII Division 1, National Board certified capacities
 - Germany: VdTÜV approval acc. to PED, EN ISO 4126-1, TÜV SV 100 and AD 2000-Merkblatt A2
 - Canada: Canadian Registration Number acc. to the requirements of particular provinces
 - China: AQSIQ based on the approval acc. to ASME Section VIII Division 1 and AD 2000-Merkblatt A2

Furthermore, all LESER Clean Service safety valves are designed, marked, produced and approved acc. to the requirements of the following regulations (directives, codes, rules and standards).

EN ISO 4126-7, EN 12266-1/-2, ASME PTC 25, ASME-Code Sec. II, ASME B 16.34, API Std. 527, API RP 576, AD 2000-Merkblatt A4, AD 2000-Merkblatt HP0, TRD 110, TRD 421



Applications and References

LESER's Clean Service Safety Valves

represent the ultimate solution for all critical clean service areas of

- Food industry
- Breweries and beverage
- Pharmaceutical industry
- Cosmetic industry
- Chemical industry
- Special processes

LESER's Clean Service Safety Valves are in use at well-known companies worldwide. Subsequently an extract of our references



General Design Features

LESER's Clean Service Safety Valves

offer a large variety of types, materials and options to suit any application:

Scope of design

- Valve sizes d_0 10 mm / 0,394 inch through d_0 92 mm / 3,622 inch
- Nine orifice sizes from 0,5 x D through P
- Materials: 1.4404 / 316L, 1.4435 / 316L stainless steel as a standard
- Standard soft seat for superior tightness
- Packed knob, packed lifting lever, gastight cap or pneumatic lifting device

No bacteria traps or contamination due to

- Minimum dead space design and flushmounting capability
- Wetted-part surfaces in compliance with European Hygienic Pipes Standard DIN 11866 and ASME BPE 2002, part SD table SF-5 and SF-6
- Gap and crevice-free design of internals
- Standard elastomer bellows for protection of the hard to clean parts
- Self-draining body design, avoids residues and reduces corrosion
- Use of  and  compliant elastomer

Automatic plant operation during production and cleaning

- Optional pneumatic lifting device for cleaning in place (CIP) or sterilizing in place (SIP)
- Optional proximity switch to indicate the operating condition of the valve
- Self-draining body design and aseptic O-ring disc with bellows (HyTight Assembly) assure a cleanable outlet of the valve

Ease of plant design, installation and operation

- Variety of capacities and versions to fit any application
- Multiple choice of sanitary connections
- Single trim for steam, gas and liquid for less spare parts and easier maintenance
- Outlet chamber sealed from bonnet by EPDM bellows
- Crevice-free fastening of all elastomer parts
- Exposed, rinsed o-rings
- No bacteria traps or contamination

LESER's Clean Service Safety Valves

can be customized with a great variety of options, e. g.

- Special connections specified by the customer for optimised adaptation to the plant
- HyTight Assembly for superior tightness
- Every part can be replaced by other material acc. customer specification

Cleanability first

Cleanability first – this is the guideline for the design of the LESER Clean Service Safety Valves. Series 48X provides an optimum of cleanability. The following design features represent the ultimate solution for all critical clean service applications. HyTight stands for Hygienic and Tightness.

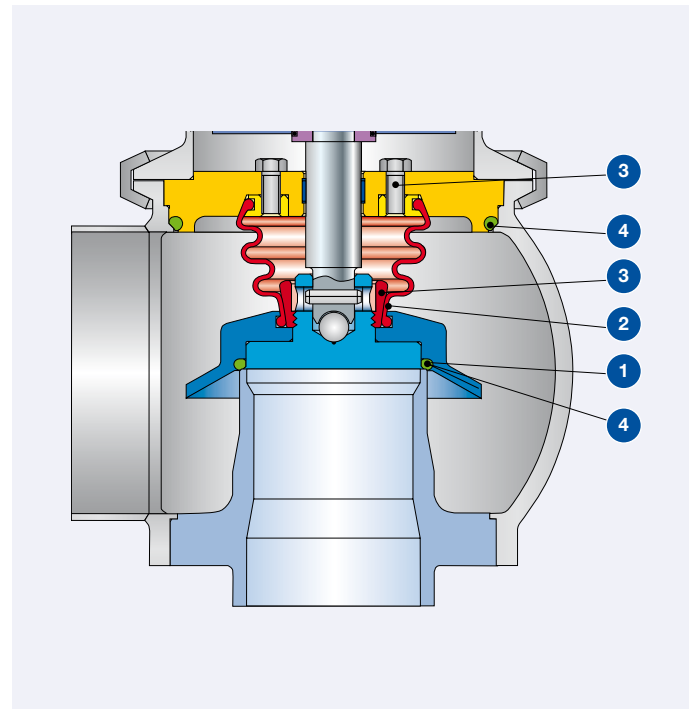
HyTight Assembly

The aseptic O-ring disc is the “heart” of the series 48X. This unique design provides for the first time a really cleanable in- and outlet of a safety valve:

- 1 The O-ring sealing provides superior tightness.
- 2 The elastomer bellows protects the hard-to-clean parts in the guiding and bonnet area against contamination. Please note: An elastomer bellows is not back pressure compensating like a stainless steel bellows.
- 3 All fixing elements like screws and nuts are placed inside of the bellows.
- 4 Crevice free internals, rinsed O-rings and FDA compliant elastomers insure there are no bacteria traps.

Availability

- Standard for Types 483, 484, 485, 488
- not available for Type 481



The European Hygienic Engineering & Design Group (EHEDG) and the European Hygienic Pipes Standard DIN 11866 as well as the ASME BPE 2002, -a- 2003, -a- 2004 provide guidelines on the hygienic engineering aspects of manufacturing of safe and wholesome food.

The surface quality, especially area in contact with product, greatly influences the cleanability of the safety valve.

For instance the ASME BPE 2002, -a- 2003, -a- 2004 (Bioprocessing Equipment) states for cleanability:

SD-3.1.1:

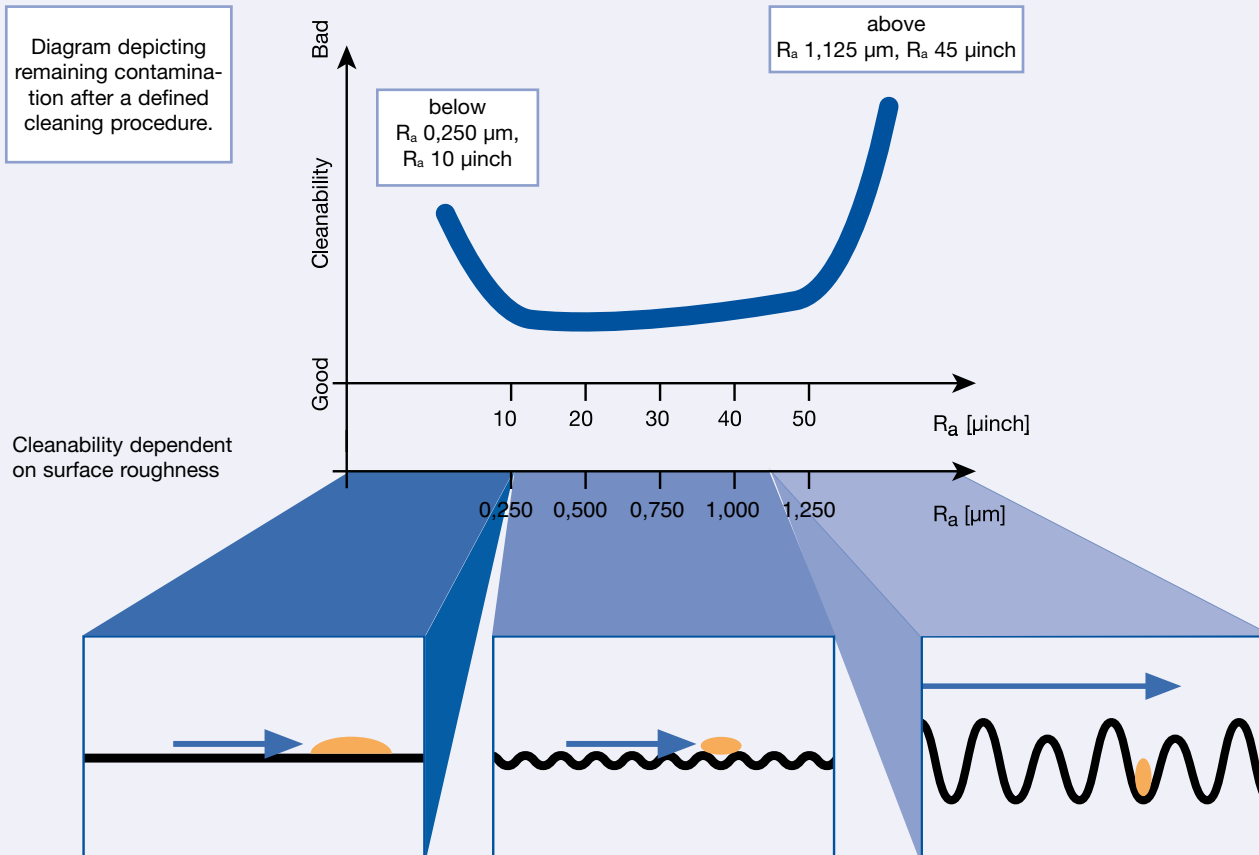
- All surfaces shall be cleanable.
- Surface imperfections (e.g., crevices, gouges, obvious pits, etc.) shall be eliminated when ever feasible.

To ensure that the European as well as the ASME BPE requirements are fulfilled, no castings are used in the LESER Clean Service series. High surface quality is achieved by machining most valve bodies and all internal parts from high quality bar material.

Surface qualities

Type	Standard surface qualities product contact inlet	Surface qualities of
481, 483, 488	$R_a < 0,750 \mu\text{m}$ $R_a < 30 \mu\text{inch}$ SFV3	$R_a < 0,500 \mu\text{m}$ $R_a < 20 \mu\text{inch}$
484, 485	$R_a < 0,750 \mu\text{m}$ electropolished $R_a < 30 \mu\text{inch}$ electropolished	for the product contact inlet are available on request, as well as electropolishing of the inside and outside of the valves

Diagram depicting remaining contamination after a defined cleaning procedure.

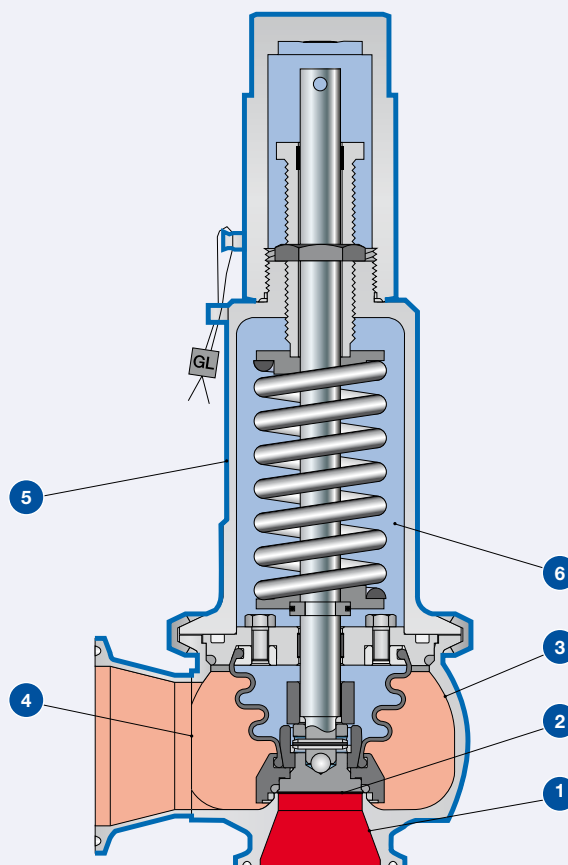


Below $R_a 0,250 \mu\text{m}$ / $10 \mu\text{inch}$ bacteria or particles "stick" to the surface due to adhesive effects.

An optimized cleanability is reached with a surface roughness between $R_a 0,250 \mu\text{m}$ / $10 \mu\text{inch}$ and $R_a 1,125 \mu\text{m}$ / $45 \mu\text{inch}$.

Above $1,125 \mu\text{m}$ / $45 \mu\text{inch}$ the bacteria and particles can "hide" in the corrugations or niches.

Clean Service Safety Valves



Surface definition

Area	Description	Surface definition acc. to ASME BPE 2002
Product contact surface · No. 1 Inlet area · No. 2 Bottom side of disc	· Surface permanently in contact with the product	· Design acc. to Part SD · Surface finish in compliance table SF-5 · Different surface designation level acc. to table SF-6 is available
Blow off surface · No. 3 Inside surface of outlet area · No. 4 Welding seam	· Surface not permanently in contact with the product · During blow off surface is wetted with the product · This product cannot flow back to the process, if the outlet is not connected with the production process	· Surface finish preponderant in compliance table SF-5 · Weldings are not grinded · Surface designation level acc. to LESER specification
Outer surface · No. 5 Outside surface of body and bonnet	· This surface has no contact to the product, but a shiny surface is expected	· ASME BPE is not applicable · Design acc. to Part SD · Surface finish preponderant in compliance table SF-5 · Weldings are not grinded
Shielded surface · No. 6	· Surface never in contact with the product because it is shielded by the bellows	· ASME BPE is not applicable

In order to cover international surface requirements like DIN 11866 as well as ASME BPE, LESER defines surface packages (Clean finish, HyClean finish, Sterile finish) and surface grades (M1 – M6 mechanically polished, ME1 – ME6 mechanically polished and electropolished).

LESER surface grade

Depending on the manufacturing technology the LESER surface grade differentiates between mechanically polished and mechanically polished and electropolished. Following tables show the comparison of LESER surface grade, hygiene class according to DIN 11866 and surface designation according to ASME BPE.

LESER surface packages are:

- Clean finish LESER standard package mainly used in breweries
- HyClean finish Increased surface quality for e. g. dairys, cosmetics applications
- Sterile finish Increased surface quality for e. g. pharmaceutical applications

Option codes for available surface packages

Mechanically polished

LESER surface grade	Surface condition				DIN 11866	ASME BPE
	R _a max.		≅ R _z		Hygiene class	Surface designation
	[μm]	[μinch]	[μm]	[μinch]		
M1	0,375	15	2,5	64	H4	–
M2	0,500	20				SF1
M3	0,625	25				SF2
M4	0,750	30	4	102	H3	SF3
M5	1,500	60	10	254	H1	–
M6	3,000	120	16	406		–

Mechanically polished and electropolished

LESER surface grade	Surface condition				DIN 11866	ASME BPE
	R _a max.		≅ R _z		Hygiene class	Surface designation
	[μm]	[μinch]	[μm]	[μinch]		
ME1	0,375	15	2,5	64	HE4c	SF4
ME2	0,500	20				SF5
ME3	0,625	25				SF6
ME4	0,750	30	4	102	HE3c	–
ME5	1,500	60	10	254	HE1c	–
ME6	3,000	120	16	406		–

Overview option codes

Type	LESER Surface packages		
	Clean finish	HyClean finish	Sterile finish
481	B50	B51	B52
483	B53	B54	B55
488	B68	B69	B70
484	B56	B57	B58
5034 Vessel connection	B59	B60	B61
485	B62	B63	B64
5034 Integrated pipework connection	B65	B66	B67

Overview

LESER is able to deliver a wide range of connections required for clean service applications. For ordering the right connection please specify inlet and outlet by LESER option code. If the option code is not stated in this table please refer to connection pages of each Type.

Overview							
							
							
Connection		Clamp connection	Clamp connection	Clamp connection	Clamp connection	Threaded connection	Threaded connection
Code		BO	SO	CO	DO	XG	XN
According to		ASME BPE	DIN 32676	ISO 2852	ISO 2852	DIN ISO 228	ASME B 1.20.1
Pipe standard		BS 4825-1	DIN 11850	ISO 2037	DIN EN ISO 1127	G 1/2 G 3/4 G 1	1/2" NPT 3/4" NPT 1" NPT
Option code							
Type 481	d ₀ 10	Inlet	✓	✓	L96I79	✓	
		Outlet	I76A79	L86A16	L97A79	I74A16	
Type 483	d ₀ 13	Inlet	✓	✓	✓	✓	
		Outlet	✓	✓	✓	✓	
	d ₀ 25	Inlet	✓	✓	✓	✓	
		Outlet	✓	✓	✓	✓	
Type 488	d ₀ 23	Inlet	I75	L79	L96	I73	
		Outlet	I76	L86	L97	I74	
	d ₀ 37	Inlet	I75	L79	L96	I73	
		Outlet	I76	L86	L97	I74	
	d ₀ 46	Inlet	I75	L79	L96	I73	
		Outlet	I76	L86	L97	I74	
	d ₀ 60	Inlet	I75	L79	L96	I73	
		Outlet	I76	L86	L97	I74	
	d ₀ 74	Inlet	I75	L79	L96	I73	
		Outlet	I76	L86	L97	I74	
	d ₀ 92	Inlet	I75	L79	L96	I73	
		Outlet	I76	L86	L97	I74	
Type 484	d ₀ 13	Inlet	For inlet please select vessel connection Type 5034 as shown on page 56				
		Outlet	I76A80	L86A16	L97A80	I74A16	
	d ₀ 25	Inlet	For inlet please select vessel connection Type 5034 as shown on page 56				
		Outlet	I76A81	L86A17	L97A81	I74A17	
Type 485	d ₀ 13	Inlet	For inlet please select integrated pipework connection Type 5034 as shown on page 68				
		Outlet	I76A80	L86A16	L97A80	I74A16	
	d ₀ 25	Inlet	For inlet please select integrated pipework connection Type 5034 as shown on page 68				
		Outlet	I76A81	L86A17	L97A81	I74A17	

For better selection of the different clamp connecting dimensions please refer to page 12 and 13

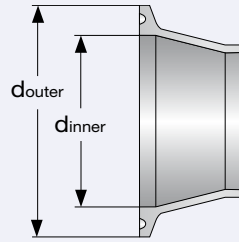
Connecting dimensions

Most clamp connections can be delivered for different pipe standards, such as DIN 11850, ISO 2037, DIN EN ISO 1127 or special customer specifications e.g. NEUMO ...

The outer diameters generally the same so that there are no visual determinations between the clamps. Therefore the clamps are defined by inner and outer diameter (d_{inner} and d_{outer}). Additional indication of the pipe standard is not necessary.

For Type 481, 483 and 488 the clamps can be selected in different nominal diameters. Please state option code for clamp and for nominal diameter as shown on the connection pages of each Type.

SO – Clamp: DIN 32676			Pipe: DIN 11850 and DIN 11866 Range A							
Type			Inlet				Outlet			
Art.-No.		d_0 [mm]	DN	d_{inner} [mm]	d_{outer} [mm]	Option code	DN	d_{inner} [mm]	d_{outer} [mm]	Option code
4814.	768/769	10	15	16,0	34,0	L79I14	–	–	–	–
			25	26,0	50,5	L79I16	25	26,0	50,5	L86A16
4834.	770	13	25	26,0	50,5	L79I16	25	26,0	50,5	L86A16
	771	25	40	38,0	50,5	L79I17	40	38,0	50,5	L86A17
4884.	884	23	25	26,0	50,5	L79	40	38,0	50,5	L86
	885	37	40	38,0	50,5	L79	65	66,0	91,0	L86
	886	46	50	50,0	64,0	L79	80	81,0	106,0	L86
	887	60	65	66,0	91,0	L79	100	100,0	119,0	L86
	888	74	80	81,0	106,0	L79	125	125,0	155,0	–
	889	92	100	100,0	119,0	L79	150	150,0	183,0	–
DO – Clamp: ISO 2852			Pipe: DIN EN ISO 1127 and DIN 11866 Range B							
Art.-No.		d_0 [mm]	DN	d_{inner} [mm]	d_{outer} [mm]	Option code	DN	d_{inner} [mm]	d_{outer} [mm]	Option code
4814.	768/769	10	15	18,1	34,0	I73I14	–	–	–	–
			25	29,7	50,5	I73I16	25	29,7	50,5	I74A16
4834.	770	13	25	29,7	50,5	I73I16	25	29,7	50,5	I74A16
	771	25	40	44,3	64,0	I73I17	40	44,3	64,0	I74A17
4884.	884	23	25	29,7	50,5	I73	40	44,3	64,0	I74
	885	37	40	44,3	64,0	I73	65	72,1	91,0	I74
	886	46	50	56,3	77,5	I73	80	84,9	106,0	I74
	887	60	65	72,1	91,0	I73	100	110,3	130,0	I74
	888	74	80	84,9	106,0	I73	125	135,7	155,0	I74
	889	92	100	110,3	130,0	I73	150	163,1	183,0	I74



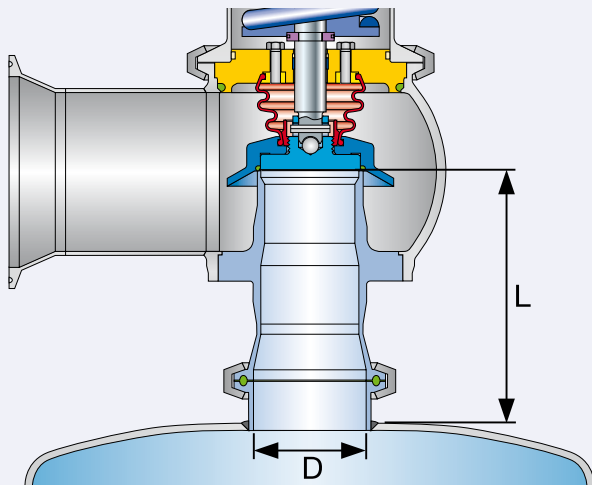
BO – Clamp: ASME BPE			Pipe: BS 4825-1 and DIN 11866 Range C							
Type			Inlet				Outlet			
Art.-No.		d_0 [mm]	Size	d_{inner} [mm]	d_{outer} [mm]	Option code	Size	d_{inner} [mm]	d_{outer} [mm]	Option code
4814.	768/769	10	3/4"	15,7	25,0	I75I78	–	–	–	–
			1"	22,1	50,5	I75I79	–	–	–	–
4834.	770	13	1"	22,1	50,5	I75I79	1 1/2"	34,8	50,5	I76A80
			1 1/2"	34,8	50,5	I75I80	1 1/2"	34,8	50,5	I76A80
	771	25	1 1/2"	34,8	50,5	I75I80	2"	47,5	64,0	I76A81
			2"	47,5	64,0	I75I81	2"	47,5	64,0	I76A81
4884.	884	23	1 1/2"	34,8	50,5	I75	2"	47,5	64,0	I76
	885	37	2"	47,5	64,0	I75	3"	72,9	91,0	I76
	886	46	2 1/2"	60,2	77,5	I75	3 1/2"	97,4	119,0	I76
	887	60	3"	72,9	91,0	I75	4"	110,1	130,0	I76
	888	74	3 1/2"	97,4	119,0	I75	5"	135,7	155,0	I76
	889	92	4"	110,1	130,0	I75	6"	163,1	183,0	I76
CO – Clamp: ISO 2852			Pipe: ISO 2037							
Art.-No.		d_0 [mm]	Size	d_{inner} [mm]	d_{outer} [mm]	Option code	Size	d_{inner} [mm]	d_{outer} [mm]	Option code
4814.	768/769	10	1"	22,6	50,5	L96I79	1"	22,6	50,5	L97A79
4834.	770	13	1"	22,6	50,5	L96I79	1 1/2"	35,6	50,5	L97A80
			1 1/2"	35,6	50,5	L96I80	1 1/2"	35,6	50,5	L97A80
	771	25	1 1/2"	35,6	50,5	L96I80	2"	48,6	64,0	L97A81
			2"	48,6	64,0	L96I81	2"	48,6	64,0	L97A81
4884.	884	23	1 1/2"	35,6	50,5	L96	2"	48,6	64,0	L97
	885	37	2"	48,6	64,0	L96	3"	72,9	91,0	L97
	886	46	2 1/2"	60,3	77,5	L96	3 1/2"	97,6	119,0	L97
	887	60	3"	72,9	91,0	L96	4"	110,3	130,0	L97
	888	74	3 1/2"	97,6	119,0	L96	5"	135,7	155,0	L97
	889	92	4"	110,3	130,0	L96	6"	163,1	183,0	L97

The dead space ratio is defined by ratio of the length of the inlet (L) to the diameter of the inlet pipe (D). The cleanability is improved as this ratio is reduced.

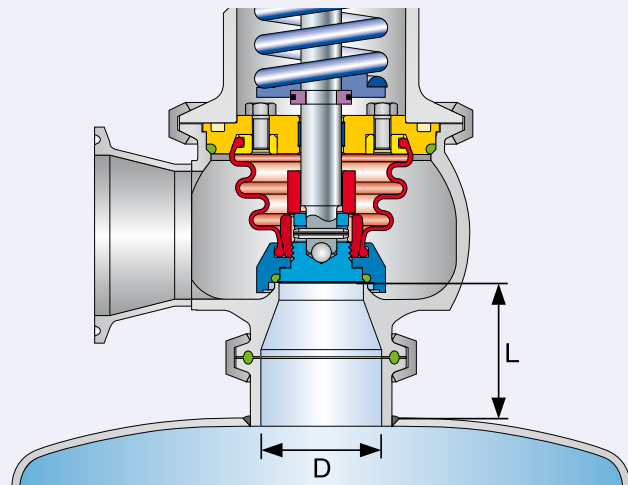
Types 481, 483 and 488 are improved solutions for safety valves with clamp connections, and have L/D ratios less than 1,5 and 2,0 (Type 488). The requirements of ASME BPE 2002 Part SD – 3.11.1 ($L/D < 2,0$) and FDA 21 CFR Part 177.2600 ($L/D < 1,5$) are fulfilled with these designs.

For some applications especially in the pharmaceutical industry the requirements are even higher. The solution for these particularly high purity requirements is Type 484 or Type 485 with special connections to the vessel or the piping, providing L/D ratios as low as 0,3 for Type 484 and $< 0,95$ for Type 485.

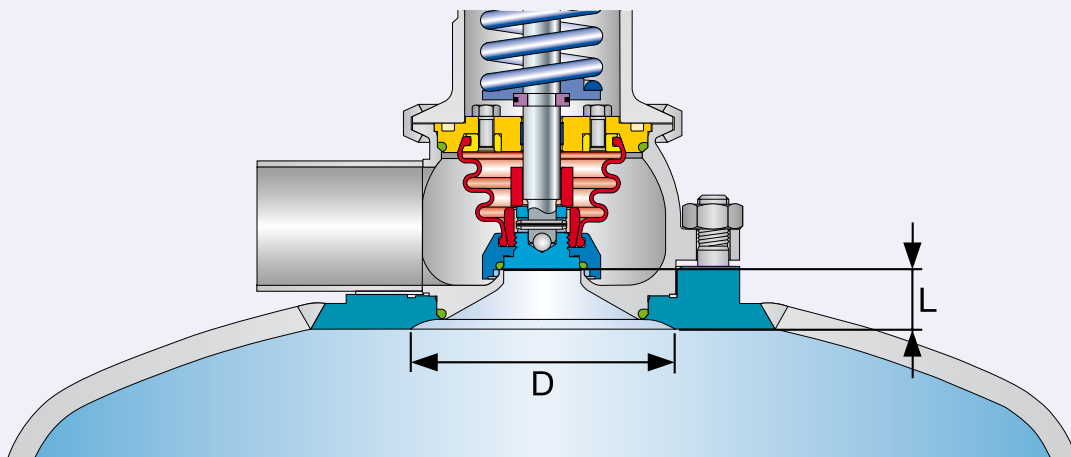
Dead space



Type 488
 $L/D \sim 2,0$



Type 483
 $L/D \sim 1,5$



$L/D \sim 0,3$



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

Contents

Page

Materials

- Conventional design 16

How to order

- Article numbers 18

Pressure temperature ratings

- Metric Units + US Units 19

Dimensions and weights

- Metric Units 20

- US Units 21

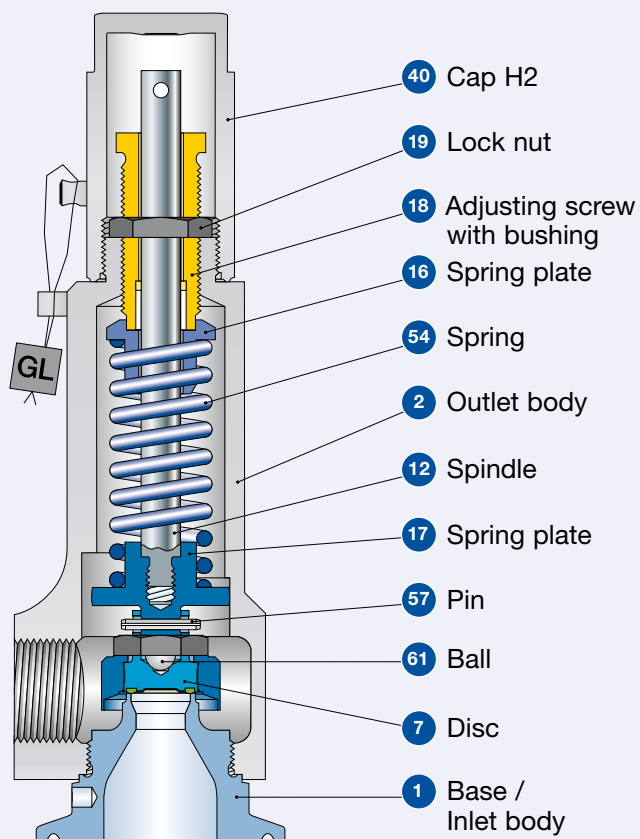
Available options 22

Selection chart H8 23

Surface quality 24

Conventional design

Low set pressure



Type 481

with vulcanized soft seal

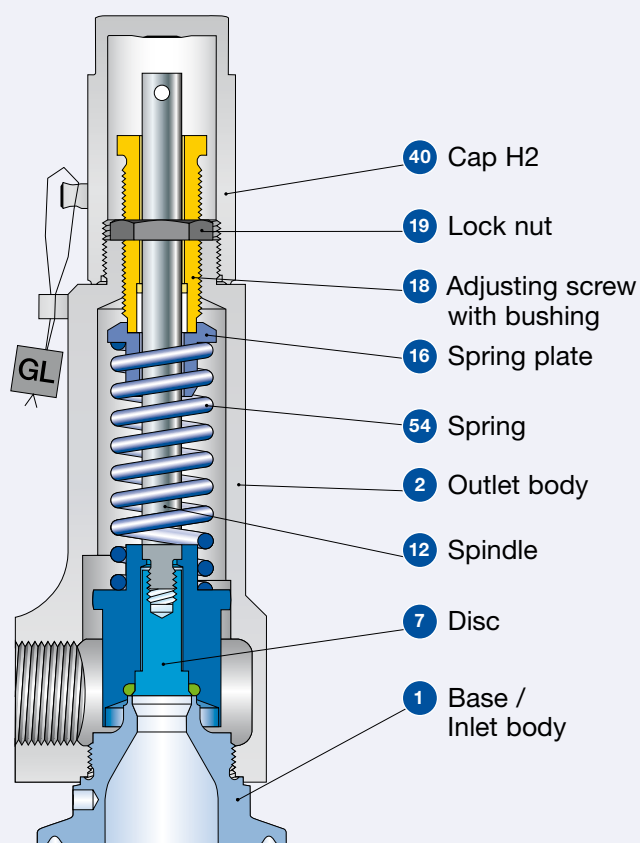
Cap H2

Set pressure: 0,1 – 16 bar
1,5 – 232 psig

Inlet: Clamp connection

Outlet: Threaded connection

High set pressure



Type 481 with O-ring

Materials		Conventional design		
Item	Component	Remarks	Type 4814	
			0,1 – 16 bar 1,5 – 232 psig	Set pressure 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
7.4	Soft seal vucanized or O-ring	"D" 	EPDM	EPDM
		"K"	CR	CR
		"L" 	FKM	FKM
		"N"	NBR	NBR
		"C" 	FFKM	FFKM
12	Spindle		1.4571	1.4571
			316Ti	316Ti
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 316L / PTFE	1.4404 / 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.

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 ²]		78,5	78,5
Actual Orifice diameter d_0 [inch]		0,394	0,394
Actual Orifice area A_0 [inch ²]		0,122	0,122
Soft seal material		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
Base / Inlet body material: 1.4404 (316L)			
Bonnet closed	H2	Art.-No. 4814.	7692
	H4	Art.-No. 4814.	7694
	H8	Art.-No. 4814.	7698
	p [bar] S/G/L	0,1 – 16	16 – 68
	p [psig] S/G/L	1,5 – 232	233 – 986

Pressure temperature ratings

Metric Units

		Vulcanized soft seal		O-ring disc	
Actual Orifice diameter d ₀ [mm]		10		10	
Actual Orifice area A ₀ [mm²]		78,5		78,5	
Body material: 1.4404 (316L)					
Inlet / Outlet body		Pressure rating			
		For pressure ratings please refer to chapter dimensions and weights (page 20)			
Minimum set pressure	p [bar] S/G/L	0,1		16	
Maximum set pressure	p [bar] S/G/L	16		68	
Temperature range ¹⁾		Minimum	Maximum	Minimum	Maximum
EPDM	[°C]	-45	+150	-45	+150
CR	[°C]	-40	+100	-40	+100
FKM	[°C]	-20	+180	-20	+180
NBR	[°C]	-25	+110	-25	+110
FFKM	[°C]	0	+250	0	+250

US Units

		Vulcanized soft seal		O-ring disc	
Actual Orifice diameter d ₀ [inch]		0,394		0,394	
Actual Orifice area A ₀ [inch²]		0,122		0,122	
Body material: 1.4404 (316L)					
Inlet / Outlet body		Pressure rating			
		For pressure ratings please refer to chapter dimensions and weights (page 21)			
Minimum set pressure	p [psig] S/G/L	1,5		233	
Maximum set pressure	p [psig] S/G/L	232		986	
Temperature range ¹⁾		Minimum	Maximum	Minimum	Maximum
EPDM	[°F]	-49	+302	-49	+302
CR	[°F]	-40	+212	-40	+212
FKM	[°F]	-4	+356	-4	+356
NBR	[°F]	-13	+230	-13	+230
FFKM	[°F]	+32	+482	+32	+482

¹⁾ The temperature is limited by the soft seal material.

Dimensions and weights

Metric Units

Actual Orifice diameter d_0 [mm]	10	10
Actual Orifice area A_0 [mm ²]	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 12 and 13	
	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

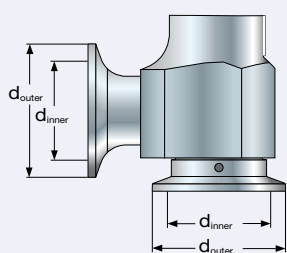
10
78,5
25

Outlet b
16
–
65
–

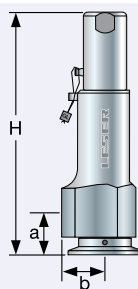
For varying clamp diameters please refer to page 12 and 13

193
221

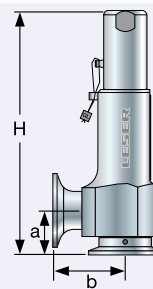
Outlet b
16
30
37
37
–
70
–
202
230



Type 481 – Clamp diameters



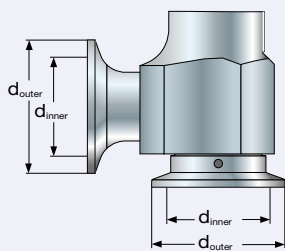
Type 481 – Outlet: Threaded connection



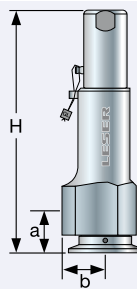
Type 481 – Outlet: Clamp connection

Dimensions and weights

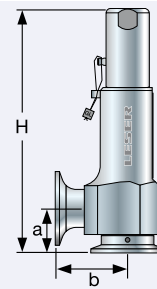
US Units					
Actual Orifice diameter d_0 [inch]		0,394	0,394	0,394	
Actual Orifice area A_0 [inch ²]		0,122	0,122	0,122	
Clamp connections		Inlet a		Outlet b	
	PN	16	16	16	
Center to face	Outlet G 1/2 [inch]	1 9/16	1 3/16	–	
	Outlet G 3/4 [inch]	1 9/16	1 3/16	2 9/16	
	Outlet G 1 [inch]	1 11/16	1 5/16	–	
Clamp diameter	d_{inner} [inch]	For varying clamp diameters please refer to page 12 and 13		For varying clamp diameters please refer to page 12 and 13	
	d_{outer} [inch]				
Height – H4	H max. [inch]	8	7 19/32	7 19/32	
Height – H8 double piston design	H max. [inch]	9 3/32	8 11/16	8 11/16	
Threaded connections		Inlet a		Outlet b	
	PN	16	16	16	
Center to face (female thread)	Outlet G 1/2 [inch]	–	1 17/32	1 3/16	
	Outlet G 3/4 [inch]	–	1 9/16	1 15/32	
	Outlet G 1 [inch]	–	1 21/32	1 15/32	
Center to face	Outlet G 1/2 [inch]	–	1 17/32	–	
	Outlet G 3/4 [inch]	–	1 9/16	2 3/4	
	Outlet G 1 [inch]	–	1 21/32	–	
Height – H4	H max. [inch]	–	7 15/16	7 15/16	
Height – H8 double piston design	H max. [inch]	–	9 1/16	9 1/16	
Weight					
Weight	max. [lb]	3,086	3,086		



Type 481 – Clamp diameters



Type 481 – Outlet: Threaded connection

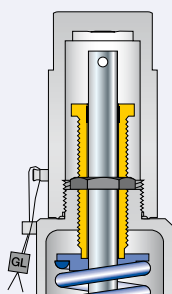


– Outlet: Clamp connection

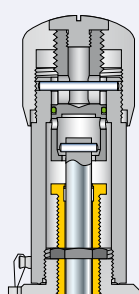
Available options

Type 481

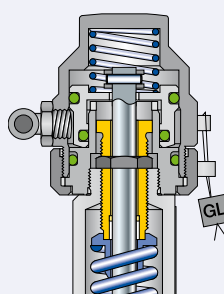
Gastight cap H2
H2



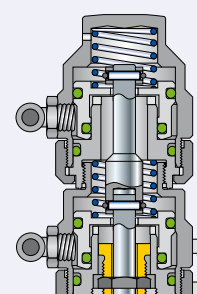
Gastight lifting device H4
Packed knob H4



Pneumatic lifting device H8
H8 single piston design

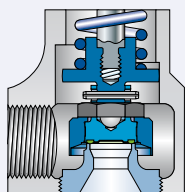


Pneumatic lifting device H8
J41: H8 double piston design



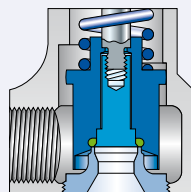
Vulcanized soft seal

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

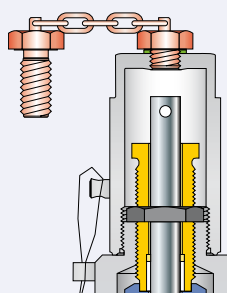


O-ring disc

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

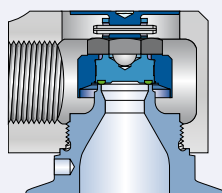


Test gag
J70: H2

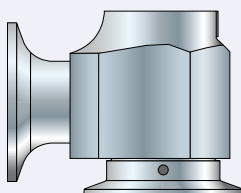


Female NPT outlet

V70: 1/2"
V77: 3/4"
V71: 1"

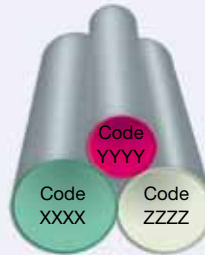


Clamp connection outlet
Clamp: 1"



Special material

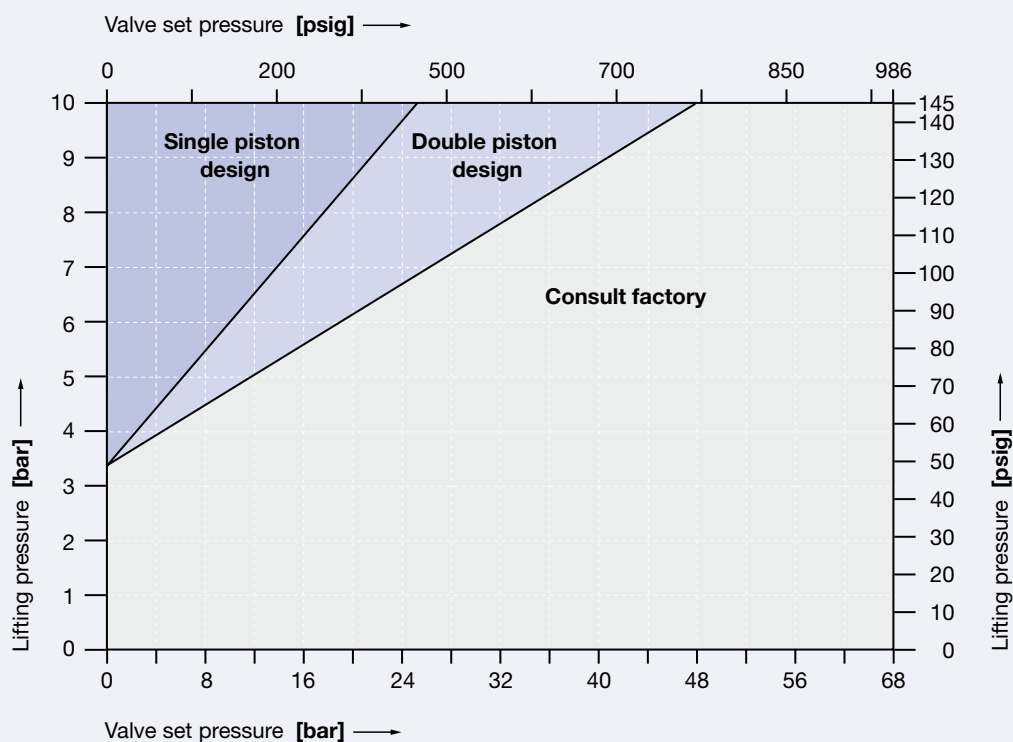
2.4610 HASTELLOY C4
2.4360 MONEL 400
1.4462 DUPLEX



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 10 mm / 0,394 inch

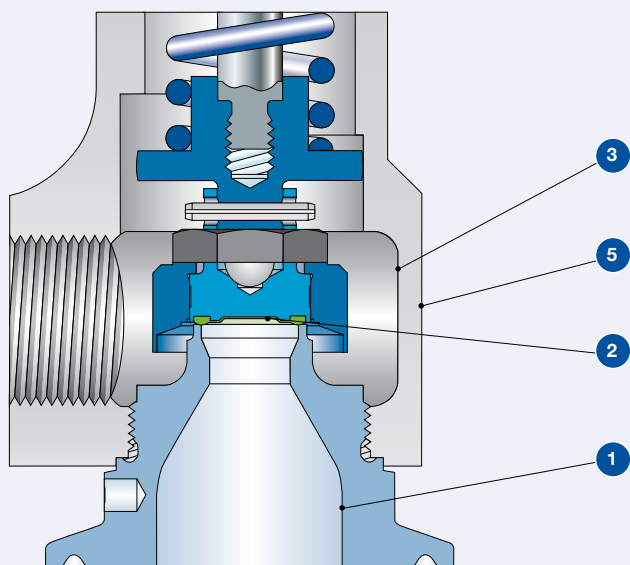


Surface quality

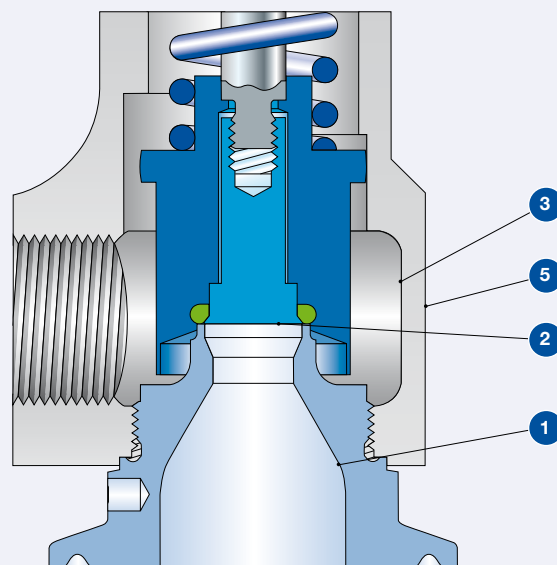
Surface quality						
			LESER Surface package			
Type of surface	Area		Option code	Clean finish	HyClean finish	Sterile finish
				B50	B51	B52
	Description	No.		R _a max.	R _a max.	R _a max.
LESER Surface grade						
Product contact surface	Inlet	1		M4	ME4	ME2
			[μm]	0,750	0,750	0,500
			[μinch]	30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





Type 483
Pneumatic
lifting device H8
Inlet and outlet:
Clamp connection

Type 483

Safety Relief Valves – spring loaded



Type 483
Packed knob H4
Inlet and outlet:
Flange connection

Contents

Page

Materials

- HyTight Assembly 26

How to order

- Article numbers 28

Pressure temperature ratings

- Metric Units + US Units 29

Dimensions and weights

- Metric Units 30

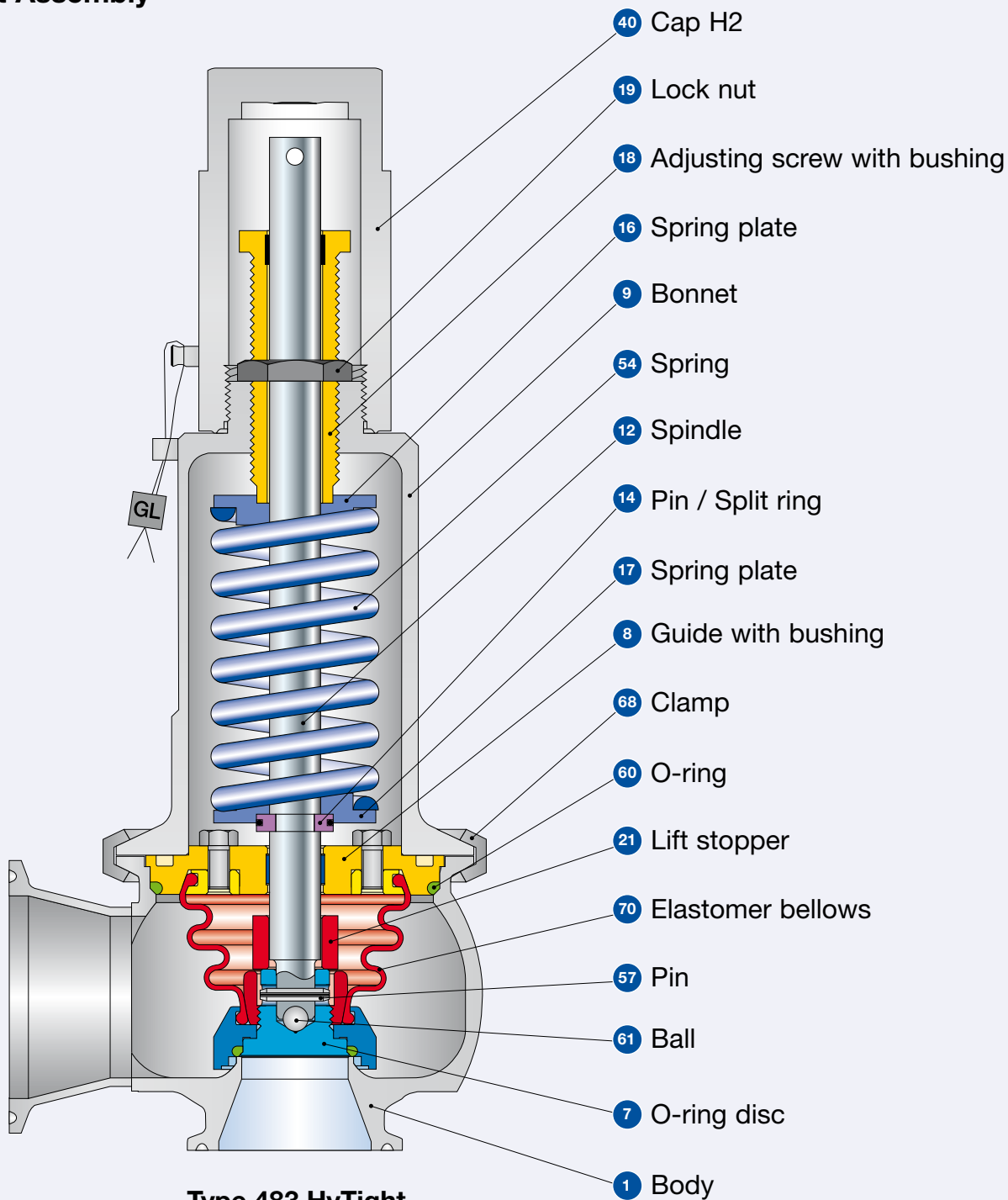
- US Units 31

- Available options 32

- Selection chart H8 33

- Surface quality 34

HyTight Assembly



Type 483 HyTight

Cap H2

Inlet and outlet:

Clamp connection

Materials		HyTight Assembly	
Item	Component	Remarks	Type 4834 HyTight
1	Body		1.4435 (BN 2) ^{*)} SA 479 316L
7	O-ring disc	HyTight Assembly	1.4435 316L
7.4	Soft seal O-ring	"D"  	EPDM
		"K"	CR
		"L" 	FKM
		"N"	NBR
		"C"  	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
21	Lift stopper		1.4404 316L
40	Cap H2		1.4404 316L
54	Spring		1.4310 Stainless steel
57	Pin		1.4310 Stainless steel
60	O-ring	 	EPDM
61	Ball		1.4401 316
68	Clamp		1.4401 316
70	Elastomer bellows		EPDM

^{*)} The material 1.4435/SA 479 316L fulfils the requirements of the Swiss chemical and pharmaceutical industry Basler Norm (BN 2).

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 – Article numbers

Article numbers				
Actual Orifice diameter d_0 [mm]		13		25
Actual Orifice area A_0 [mm ²]		133		491
Actual Orifice diameter d_0 [inch]		0,512		0,984
Actual Orifice area A_0 [inch ²]		0,206		0,761
O-ring material		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
Body material: 1.4435 (316L)				
Bonnet closed	H2	Art.-No. 4834.	7702	7712
	H4	Art.-No. 4834.	7704	7714
	H8	Art.-No. 4834.	7708	7718
	p [bar]	S/G/L	0,3 – 16	0,1 – 16
	p [psig]	S/G/L	4,4 – 232	1,5 – 232

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)					
Inlet body	Pressure rating	For pressure ratings and connection size please refer to chapter dimensions and weights (page 30)			
Outlet body	Pressure rating				
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
CR	[° C]	-40	+100	-40	+100
FKM	[° C]	-20	+180	-20	+180
NBR	[° C]	-25	+110	-25	+110
FFKM	[° C]	0	+250	0	+250

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)					
Inlet body	Pressure rating	For pressure ratings and connection size please refer to chapter dimensions and weights (page 31)			
Outlet body	Pressure rating				
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
CR	[° F]	-40	+212	-40	+212
FKM	[° F]	-4	+356	-4	+356
NBR	[° F]	-13	+230	-13	+230
FFKM	[° F]	+32	+482	+32	+482

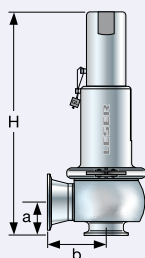
¹⁾ The temperature is limited by the soft seal material.

Dimensions and weights

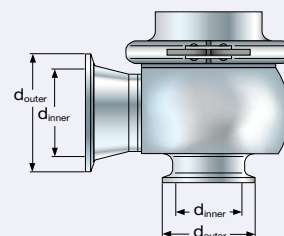
Metric Units

Actual Orifice diameter d_0 [mm]		13	25
Actual Orifice area A_0 [mm ²]		133	491
Welded connections		Inlet a	
PN		16	16
Center to face	[mm]	–	–
Height – H4	H max. [mm]	–	–
Height – H8 double piston design	H max. [mm]	–	–
Clamp connections		Inlet a	
PN		16	16
Center to face	[mm]	29	44
Clamp diameter	d_{inner} [mm]	For varying clamp diameters please refer to page 12 and 13	
	d_{outer} [mm]		
Height – H4	H max. [mm]	206	303
Height – H8 double piston design	H max. [mm]	234	311
Threaded connections		Inlet a	
PN		16	16
Center to face	[mm]	40	48
Height – H4	H max. [mm]	217	304
Height – H8 double piston design	H max. [mm]	245	312
Flanged connections		Inlet a	
PN		16	16
Center to face	[mm]	45	51
Height – H4	H max. [mm]	222	310
Height – H8 double piston design	H max. [mm]	250	318
Weight			
Weight	max. [kg]	1,6	3,7

13	25
133	491
Outlet b	
16	16
81,5	91,5
–	–
–	–
Outlet b	
16	16
52	60
For varying clamp diameters please refer to page 12 and 13	
–	–
–	–
Outlet b	
16	16
70	78
–	–
–	–
Outlet b	
16	16
76	82
–	–
–	–



Type 483 – Cap H2



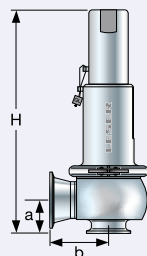
Type 483 – Clamp diameters

Dimensions and weights

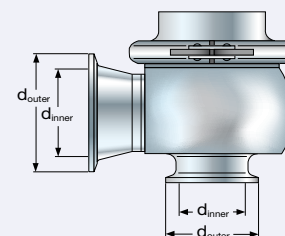
US Units

Actual Orifice diameter d_0 [inch]		0,512	0,984
Actual Orifice area A_0 [inch ²]		0,206	0,761
Welded connections		Inlet a	
	PN	16	16
Center to face	[inch]	–	–
Height – H4	H max. [inch]	–	–
Height – H8 double piston design	H max. [inch]	–	–
Clamp connections		Inlet a	
	PN	16	16
Center to face	[inch]	1 ⁵ / ₃₂	1 ²³ / ₃₂
Clamp diameter	d_{inner} [inch]	For varying clamp diameters please refer to page 12 and 13	
	d_{outer} [inch]		
Height – H4	H max. [inch]	1 ⁵ / ₃₂	1 ²³ / ₃₂
Height – H8 double piston design	H max. [inch]	8 ¹ / ₈	11 ¹⁵ / ₁₆
Threaded connections		Inlet a	
	PN	16	16
Center to face	[inch]	1 ⁹ / ₁₆	1 ⁷ / ₈
Height – H4	H max. [inch]	8 ¹⁷ / ₃₂	11 ³¹ / ₃₂
Height – H8 double piston design	H max. [inch]	9 ²⁷ / ₃₂	12 ¹⁷ / ₃₂
Flanged connections		Inlet a	
	PN	16	16
Center to face	[inch]	1 ²⁵ / ₃₂	2
Height – H4	H max. [inch]	8 ³ / ₄	12 ⁷ / ₃₂
Height – H8 double piston design	H max. [inch]	9 ²⁷ / ₃₂	12 ¹⁷ / ₃₂
Weight			
Weight	max. [lb]	3,527	8,157

0,512	0,984
0,206	0,761
Outlet b	
16	16
3 ⁷ / ₃₂	3 ¹⁹ / ₃₂
–	–
–	–
Outlet b	
16	16
2 ¹ / ₁₆	2 ³ / ₈
For varying clamp diameters please refer to page 12 and 13	
–	–
–	–
Outlet b	
16	16
2 ³ / ₄	3 ¹ / ₁₆
–	–
–	–
Outlet b	
16	16
3	3 ⁷ / ₃₂
–	–
–	–



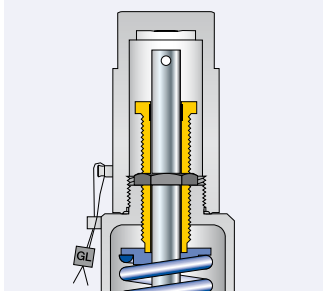
Type 483 – Cap H2



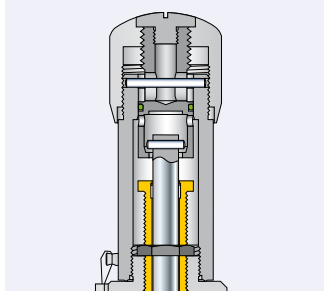
Type 483 – Clamp diameters

Available options

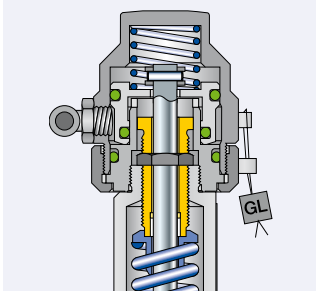
Gastight cap H2
H2



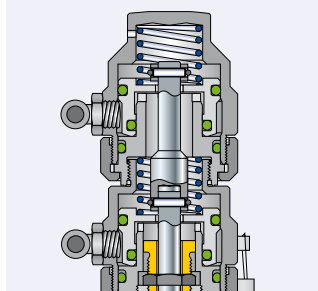
Gastight lifting device H4
Packed knob H4



Pneumatic lifting device H8
H8 single piston design

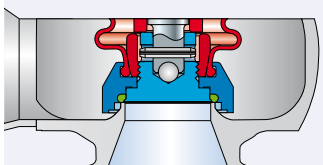


Pneumatic lifting device H8
J41: H8 double piston design

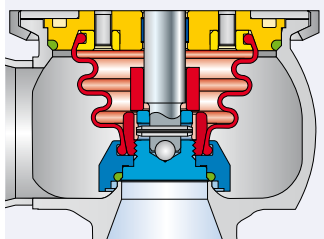


O-ring-disc

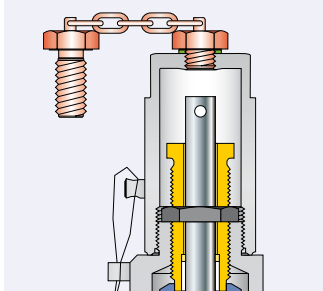
- J22: EPDM "D"  
- J21: CR "K" 
- J23: FKM "L" 
- J30: NBR "N" 
- J20: FFKM "C"  



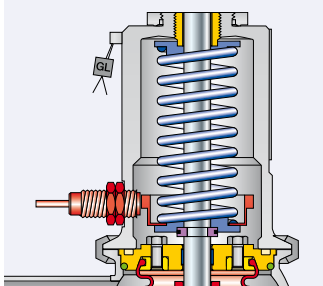
Bellows FFKM "C" 
S70



Test gag
J70: H2

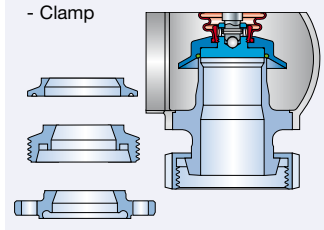


Lift indicator placed in bonnet
J38 + J93



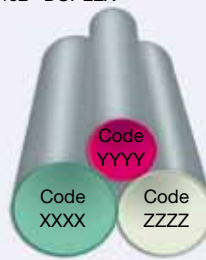
Multiple possibilities of aseptic connections

- Dairy industry coupling
- Sterile screw coupling
- Small flange
- Clamp



Special material

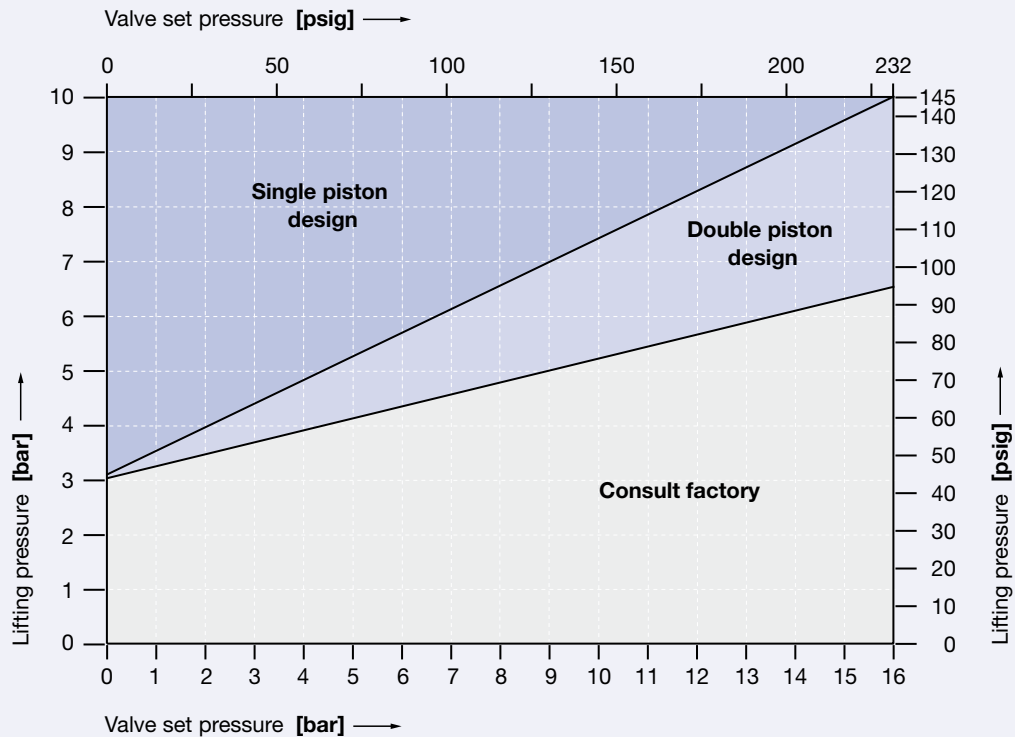
- 2.4610 HASTELLOY C4
- 2.4360 MONEL 400
- 1.4462 DUPLEX



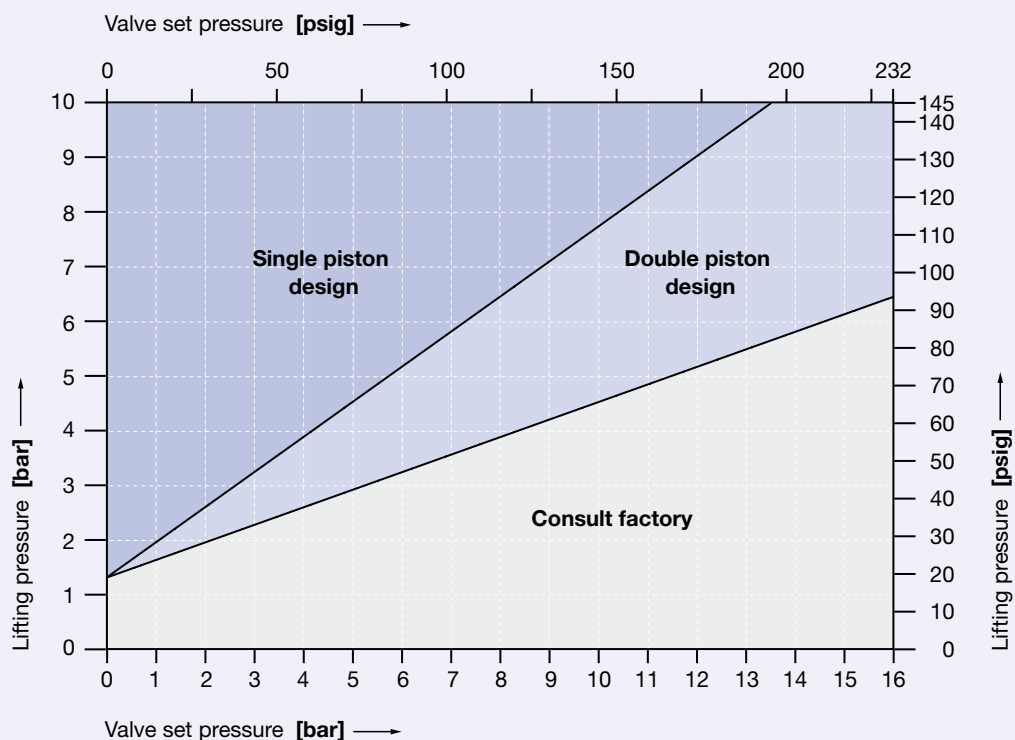
Selection chart H8

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



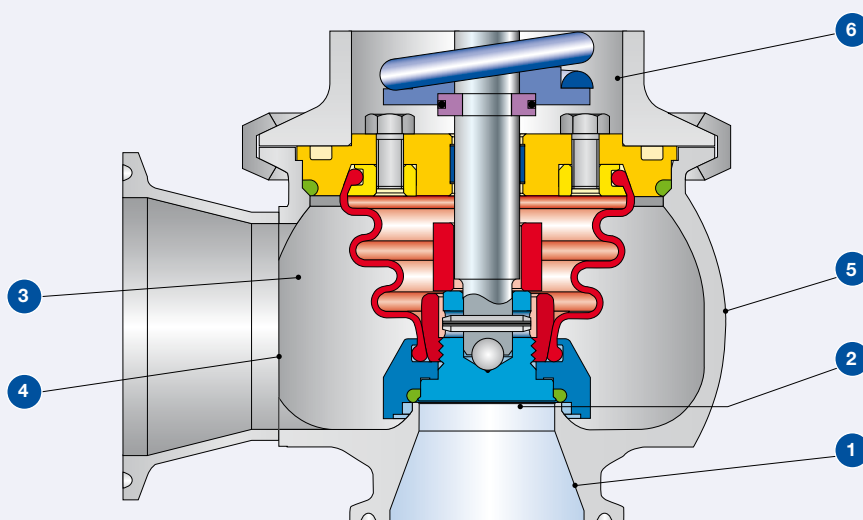
Selection chart lifting device H8, size I. d_0 25 mm / 0,984 inch



Surface quality

				LESER Surface package		
Type of surface	Area		Option code	Clean finish	HyClean finish	Sterile finish
				B53	B54	B55
	Description	No.		R _a max.	R _a max.	R _a max.
LESER Surface grade						
Product contact surface	Inlet	1		M4	ME4	ME1
			[μm]	0,750	0,750	0,375
			[μinch]	30	30	15
	Bottom side of disc	2		M4	ME4	ME1
			[μm]	0,750	0,750	0,375
			[μinch]	30	30	15
Blow off surface	Inside surface of outlet area	3		M5	ME5	ME4
			[μm]	1,500	1,500	0,750
			[μinch]	60	60	30
	Welding seam	4		M6	ME6	ME6
			[μm]	3,000	3,000	3,000
			[μinch]	120	120	120
Outer surface	Outside surface of body, bonnet and cap/lifting device	5		M5	ME5	ME4
			[μm]	1,500	1,500	0,750
			[μinch]	60	60	30
Shielded surface	Surface never in contact with the product because it is shielded by the bellows	6		No definition		

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





Type 488
Cap H2
Inlet and outlet:
Clamp connection

Type 488

Safety Relief Valves – spring loaded



Type 488
Packed knob H4
Inlet and outlet:
Flange connection

Contents

Page

Materials

- HyTight Assembly

36

How to order

- Article numbers

38

Pressure temperature ratings

- Metric Units + US Units

39

Dimensions and weights

- Metric Units

40

- US Units

41

Available options

42

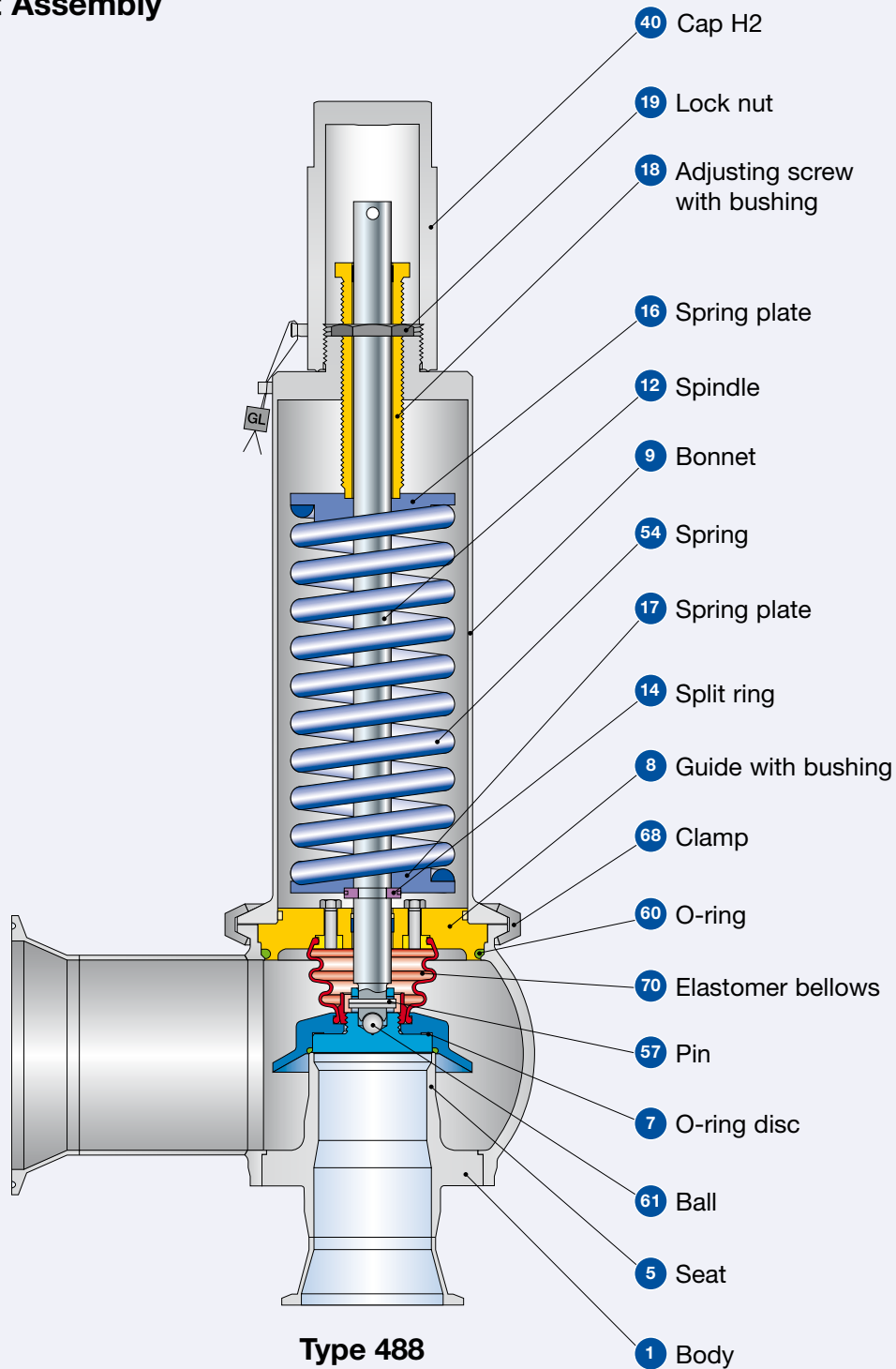
Selection chart H8

43

Surface quality

46

HyTight Assembly



Type 488

Cap H2

Inlet and outlet: Clamp connection

Materials		HyTight Assembly	
Item	Component	Remarks	Type 4884 HyTight
1	Body		1.4404
			SA 479 316L
5	Seat		1.4404
			316L
7	Disc	Metal seat Design 2002	–
			–
7	O-ring disc	HyTight Assembly	1.4404
			316L
7.4	Soft seal O-ring	“D” 	EPDM
		“K”	CR
		“L” 	FKM
		“C” 	FFKM
8	Guide with bushing	PTFE + 15 % glass	1.4404
			316L
9	Bonnet		1.4404
			SA 479 316L
12	Spindle		1.4404
			316L
14	Split ring		1.4404
			316L
16/17	Spring plate		1.4404
			316L
18	Adjusting screw with bushing	PTFE + 15 % glass	1.4104 / PTFE 430 / PTFE
19	Lock nut		1.4404
			316L
40	Cap H2		1.4404
			316L
54	Spring		1.4310
			Stainless steel
57	Pin		1.4310
			Stainless steel
60	O-ring		EPDM
61	Ball		1.4401
			316
68	Clamp		1.4401
			316
70	Elastomer bellows		EPDM

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 – Article numbers

Article numbers								
Actual Orifice diameter d ₀ [mm]		23	37	46	60	74	92	
Actual Orifice area A ₀ [mm ²]		416	1075	1662	2827	4301	6648	
Actual Orifice diameter d ₀ [inch]		0,906	1,457	1,811	2,362	2,913	3,622	
Actual Orifice area A ₀ [inch ²]		0,644	1,667	2,576	4,383	6,666	10,304	
O-ring material		EPDM "D" J22	EPDM "D" J22	EPDM "D" J22	EPDM "D" J22	EPDM "D" J22	EPDM "D" J22	
		CR "K" J21	CR "K" J21	CR "K" J21	CR "K" J21	CR "K" J21	CR "K" J21	
		FKM "L" J23	FKM "L" J23	FKM "L" J23	FKM "L" J23	FKM "L" J23	FKM "L" J23	
		FFKM "C" J20	FFKM "C" J20	FFKM "C" J20	FFKM "C" J20	FFKM "C" J20	FFKM "C" J20	
Body material: 1.4404 (316L)				HyTight				
Bonnet closed	H2	Art.-No. 4884.	8842	8852	8862	8872	8882	8892
	H4	Art.-No. 4884.	8844	8854	8864	8874	8884	8894
	H8	Art.-No. 4884.	8848	8858	8868	8878	8888	8898
	p [bar] S/G/L		0,1 – 16	0,1 – 16	0,2 – 15	0,1 – 10,34	0,1 – 10,34	0,1 – 8,2
	p [psig] S/G/L		1,5 – 232	1,5 – 232	3 – 217,56	1,5 – 150	1,5 – 150	1,5 – 118,9

Pressure temperature ratings

Metric Units													
Actual Orifice diameter d ₀ [mm]		23		37		46		60		74		92	
Actual Orifice area A ₀ [mm²]		416		1075		1662		2827		4301		6648	
Body material: 1.4404 (316L)													
Inlet / Outlet	Pressure rating	For pressure ratings and connection size please refer to chapter dimensions and weights (page 40)											
Minimum set pressure ¹⁾	p [bar] S/G/L	0,1		0,1		0,2		0,1		0,1		0,1	
Maximum set pressure	p [bar] S/G/L	16		16		15		10,34		10,34		8,2	
Temperature range ²⁾		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
EPDM	° C	-45	+150	-45	+150	-45	+150	-45	+150	-45	+150	-45	+150
CR	° C	-40	+100	-40	+100	-40	+100	-40	+100	-40	+100	-40	+100
FKM	° C	-20	+180	-20	+180	-20	+180	-20	+180	-20	+180	-20	+180
FFKM	° C	0	+250	0	+250	0	+250	0	+250	0	+250	0	+250

US Units													
Actual Orifice diameter d ₀ [inch]		0,906		1,457		1,811		2,362		2,913		3,622	
Actual Orifice area A ₀ [inch ²]		0,644		1,667		2,576		4,383		6,666		10,304	
Body material: 1.4404 (316L)													
Inlet / Outlet	Pressure rating	For pressure ratings and connection size please refer to chapter dimensions and weights (page 41)											
Minimum set pressure ¹⁾	p [psig] S/G/L	1,5		1,5		3		1,5		1,5		1,5	
Maximum set pressure	p [psig] S/G/L	232		232		217,56		150		150		118,9	
Temperature range ²⁾		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
EPDM	[° F]	-49	+302	-49	+302	-49	+302	-49	+302	-49	+302	-49	+302
CR	[° F]	-40	+212	-40	+212	-40	+212	-40	+212	-40	+212	-40	+212
FKM	[° F]	-4	+356	-4	+356	-4	+356	-4	+356	-4	+356	-4	+356
FFKM	[° F]	+32	+482	+32	+482	+32	+482	+32	+482	+32	+482	+32	+482

¹⁾ For steam, air/gas starting from 1,38 bar (20 psig) the safety valve is certified acc. to ASME Code Sec. VIII, Div. 1.

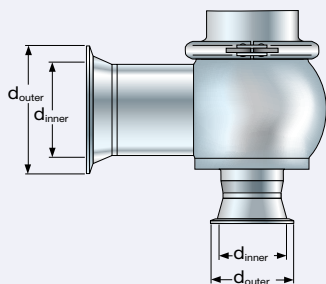
For liquides starting from 1 bar (15 psig) the safety valve is certified acc. to ASME Code Sec. VIII, Div. 1.

²⁾ The temperature is limited by the soft seal material.

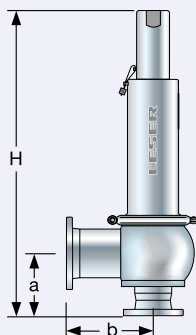
Dimensions and weights

Metric Units

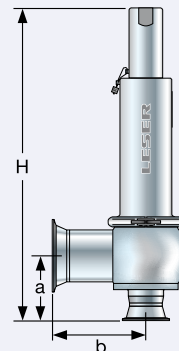
Actual Orifice diameter d_0 [mm]		23	37	46	60	74	92	23	37	46	60	74	92
Actual Orifice area A_0 [mm ²]		416	1075	1662	2827	4301	6648	416	1075	1662	2827	4301	6648
Welded connections								Outlet b					
Inlet a								16					
PN		16	16	16	16	16	16	16	16	16	16	16	16
Center to face	[mm]	53	70	78	87	103	121	90	125	125	125	150	153
Height – H4	H max. [mm]	332	518	534	552	640	684	332	518	534	552	640	684
Height – H8 double piston design	H max. [mm]	338	535	550	569	707	750	338	535	550	569	707	750
Clamp connections								Outlet b					
Inlet a								16					
PN		16	16	16	10	10	10	16	10	10	10	10	10
Center to face	[mm]	75	92	99	109	124	149	112	147	147	153	178	181
Clamp diameter	d_{inner} [mm]	For varying clamp diameters please refer to page 12 and 13						For varying clamp diameters please refer to page 12 and 13					
	d_{outer} [mm]												
Height – H4	H max. [mm]	332	518	534	552	640	684	332	518	534	552	640	684
Height – H8 double piston design	H max. [mm]	338	535	550	569	707	750	338	535	550	569	707	750
Threaded connections								Outlet b					
Inlet a								40					
PN		40	40	25	25	25	25	40	25	25	25	16	16
Center to face	[mm]	93	110	106	117	133	151	130	155	155	155	185	188
Height – H4	H max. [mm]	335	521	537	556	644	681	335	521	537	556	644	681
Height – H8 double piston design	H max. [mm]	341	538	554	572	711	747	341	538	554	572	711	747
Flanged connections								Outlet b					
Inlet a								25					
PN		25	25	16	16	16	16	25	16	16	16	10	10
Center to face	[mm]	78	95	103	112	128	146	115	150	150	150	175	183
Height – H4	H max. [mm]	335	521	537	556	644	681	335	521	537	556	644	681
Height – H8 double piston design	H max. [mm]	341	538	554	572	711	747	341	538	554	572	711	747
Weight													
Weight	max. [kg]	9	20	21,7	26,5	47	56						



Clamp diameters



Flanged connection

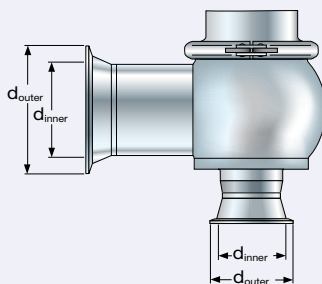


Clamp connection

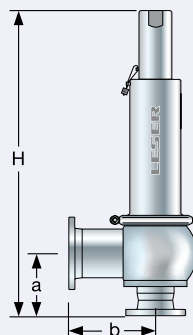
Dimensions and weights

US Units

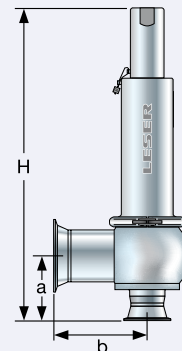
Actual Orifice diameter d_0 [inch]		0,906	1,457	1,811	2,362	2,913	3,622
Actual Orifice area A_0 [inch ²]		0,644	1,67	2,576	4,38	6,666	10,30
Welded connections		Inlet a					
	PN	16	16	16	16	16	16
Center to face	[inch]	2 ³ / ₃₂	2 ³ / ₄	3 ¹ / ₁₆	3 ⁷ / ₁₆	4 ¹ / ₃₂	4 ³ / ₄
Height – H4	H max. [inch]	13 ¹ / ₁₆	20 ¹³ / ₃₂	21 ¹ / ₃₂	21 ³ / ₄	25 ³ / ₁₆	26 ¹⁵ / ₁₆
Height – H8 double piston design	H max. [inch]	13 ⁵ / ₁₆	21 ¹ / ₁₆	21 ²¹ / ₃₂	22 ¹³ / ₃₂	27 ²⁷ / ₃₂	29 ¹⁷ / ₃₂
Clamp connections		Inlet a					
	PN	16	16	16	10	10	10
Center to face	[inch]	2 ¹⁵ / ₁₆	3 ¹⁹ / ₃₂	3 ²⁹ / ₃₂	4 ⁹ / ₃₂	4 ⁷ / ₈	5 ⁷ / ₈
Clamp diameter	d_{inner} [inch]	For varying clamp diameters please refer to page 12 and 13					
	d_{outer} [inch]						
Height – H4	H max. [inch]	13 ¹ / ₁₆	20 ¹³ / ₃₂	21 ¹ / ₃₂	21 ³ / ₄	25 ³ / ₁₆	26 ¹⁵ / ₁₆
Height – H8 double piston design	H max. [inch]	13 ⁵ / ₁₆	21 ¹ / ₁₆	21 ²¹ / ₃₂	22 ¹³ / ₃₂	27 ²⁷ / ₃₂	29 ¹⁷ / ₃₂
Threaded connections		Inlet a					
	PN	40	40	25	25	25	25
Center to face	[inch]	3 ²¹ / ₃₂	4 ⁵ / ₁₆	4 ¹ / ₈	4 ⁵ / ₈	5 ³ / ₁₆	5 ¹⁵ / ₁₆
Height – H4	H max. [inch]	13 ²⁵ / ₃₂	21 ¹ / ₈	21 ¹ / ₄	22 ³ / ₃₂	25 ¹ / ₂	26 ³¹ / ₃₂
Height – H8 double piston design	H max. [inch]	14 ¹ / ₃₂	21 ²⁵ / ₃₂	21 ⁷ / ₈	22 ³ / ₄	28 ⁵ / ₃₂	29 ¹⁹ / ₃₂
Flanged connections		Inlet a					
	PN	25	25	16	16	16	16
Center to face	[inch]	3 ¹ / ₁₆	3 ³ / ₄	4 ¹ / ₁₆	4 ⁷ / ₁₆	5	5 ³ / ₄
Height – H4	H max. [inch]	13 ³ / ₁₆	20 ¹⁷ / ₃₂	21 ³ / ₁₆	21 ¹⁵ / ₁₆	25 ⁵ / ₁₆	26 ²⁵ / ₃₂
Height – H8 double piston design	H max. [inch]	13 ²⁵ / ₃₂	21 ⁷ / ₃₂	21 ²⁷ / ₃₂	22 ⁹ / ₁₆	27 ³¹ / ₃₂	29 ⁷ / ₁₆
Weight		Outlet b					
		40	25	25	25	16	16
		5 ¹ / ₈	6 ¹ / ₈	6 ¹ / ₈	6 ¹ / ₈	7 ⁹ / ₃₂	7 ³ / ₈
		13 ²⁵ / ₃₂	21 ¹ / ₈	21 ¹ / ₄	22 ³ / ₃₂	25 ¹ / ₂	26 ³¹ / ₃₂
		14 ¹ / ₃₂	21 ²⁵ / ₃₂	21 ⁷ / ₈	22 ³ / ₄	28 ⁵ / ₃₂	29 ¹⁹ / ₃₂
		Outlet b					
		25	16	16	16	10	10
		4 ¹ / ₂	5 ⁷ / ₈	5 ⁷ / ₈	5 ⁷ / ₈	6 ⁷ / ₈	7 ³ / ₁₆
		13 ³ / ₁₆	20 ¹⁷ / ₃₂	21 ³ / ₁₆	21 ¹⁵ / ₁₆	25 ⁵ / ₁₆	26 ²⁵ / ₃₂
		13 ²⁵ / ₃₂	21 ⁷ / ₃₂	21 ²⁷ / ₃₂	22 ⁹ / ₁₆	27 ³¹ / ₃₂	29 ⁷ / ₁₆
Weight		max. [lb]					
		19,8	44,1	47,8	58,4	103,6	123,5



Clamp diameters



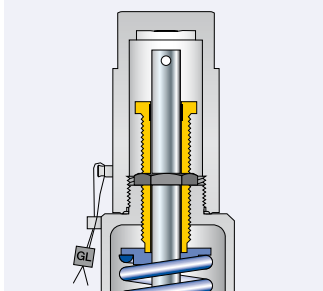
Flanged connection



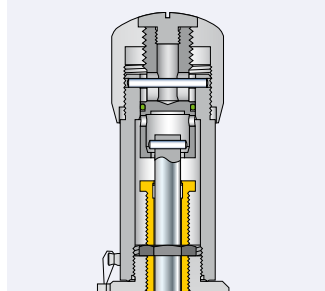
Clamp connection

Available options

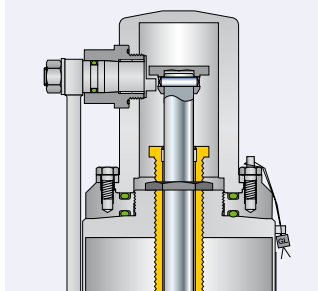
Gastight cap H2
H2



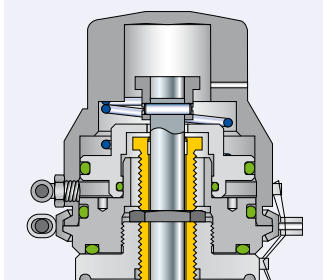
Gastight lifting device H4
Packed knob H4 (d_0 23 only)



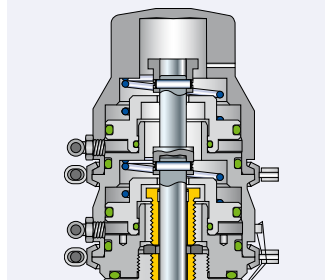
Packed lever H4
(for $d_0 > 23$)



Pneumatic lifting device H8
H8 single piston design

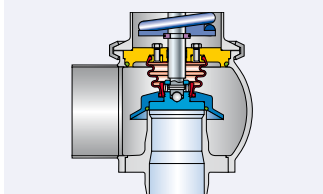


Pneumatic lifting device H8
J41: H8 double piston design

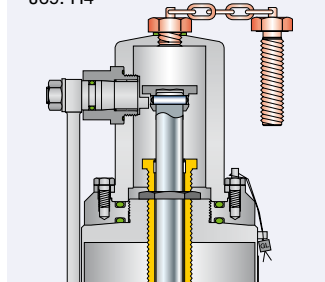


HyTight Assembly

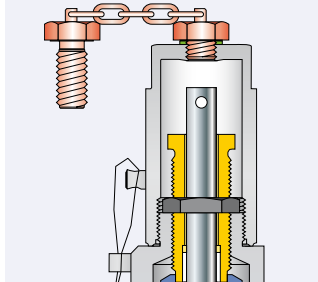
J22: EPDM "D"  
J21: CR "K"  
J23: FKM "L"  
J20: FFKM "C"  



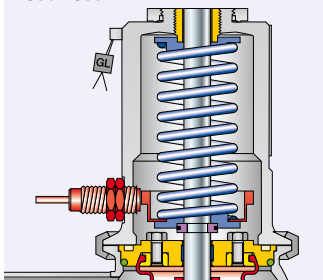
Test gag
(for $d_0 > 23$)
J69: H4



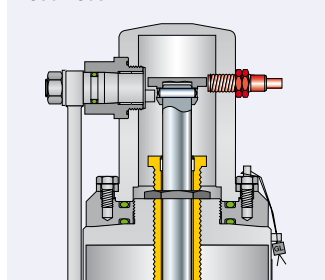
Test gag
J70: H2



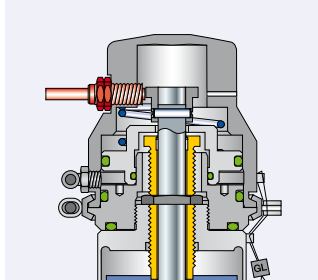
Lift indicator bonnet
(d_0 23 only)
J38 + J93



Lift indicator H4
(for $d_0 > 23$)
J39 + J93

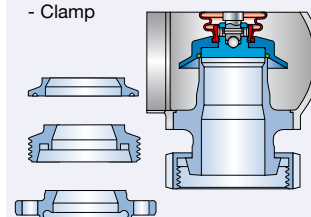


Lift indicator H8
(for $d_0 > 23$)
J40 + J93



Multiple possibilities of aseptic connections

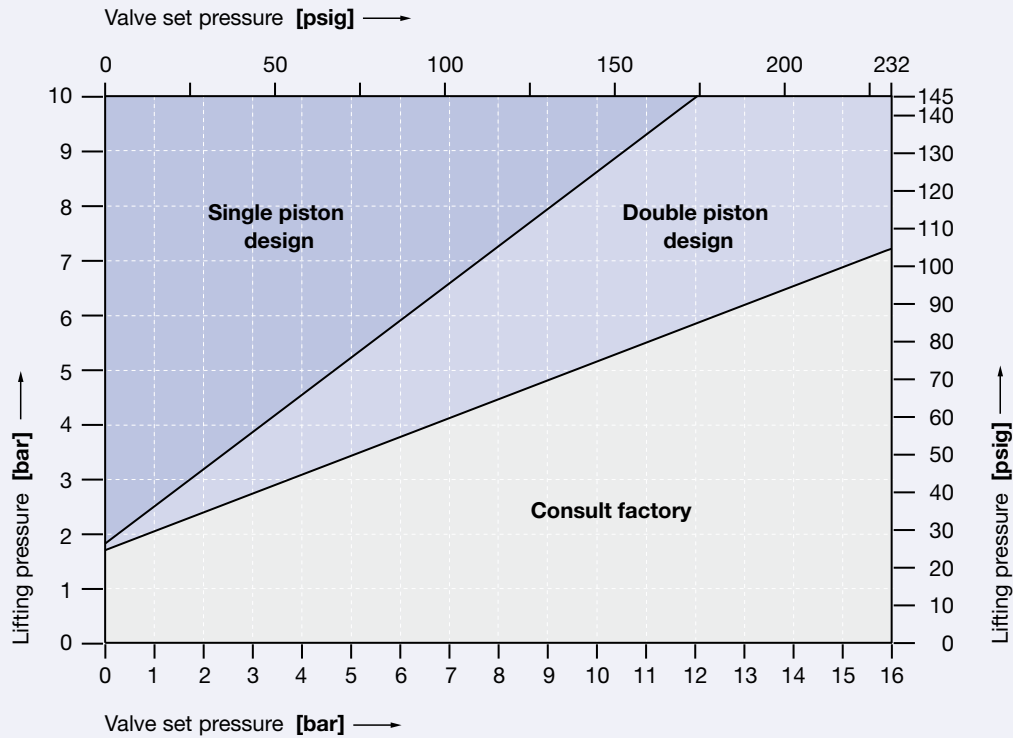
- Dairy industry coupling
- Sterile screw coupling
- Small flange
- Clamp



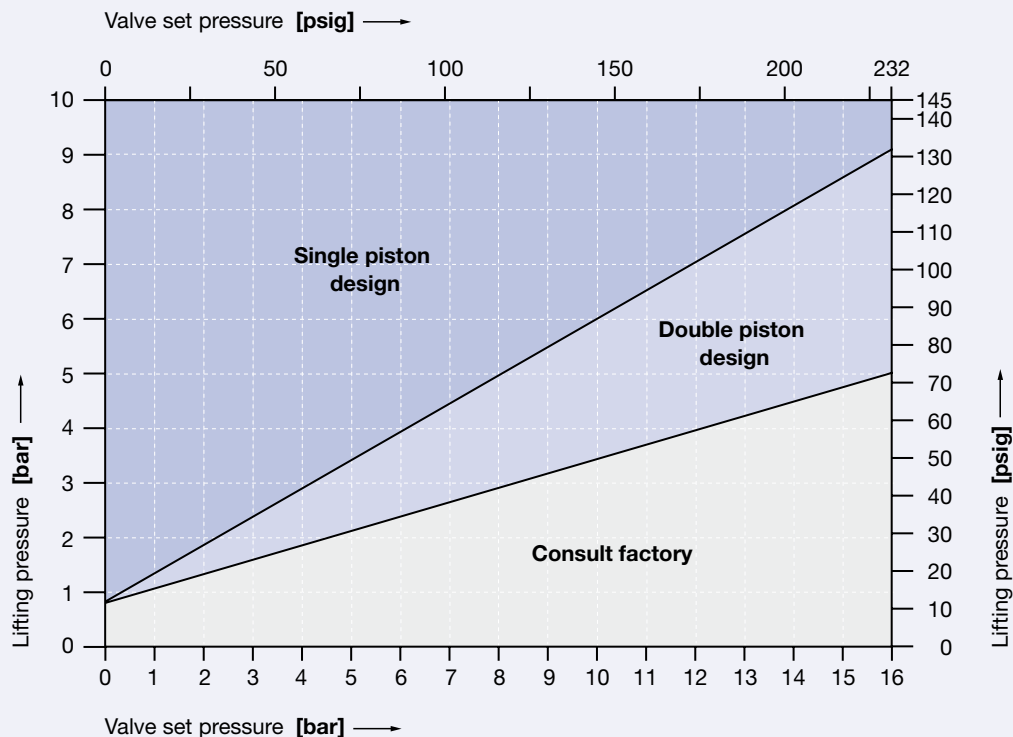
Selection chart H8

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 I. d_0 23 mm / 0,906 inch

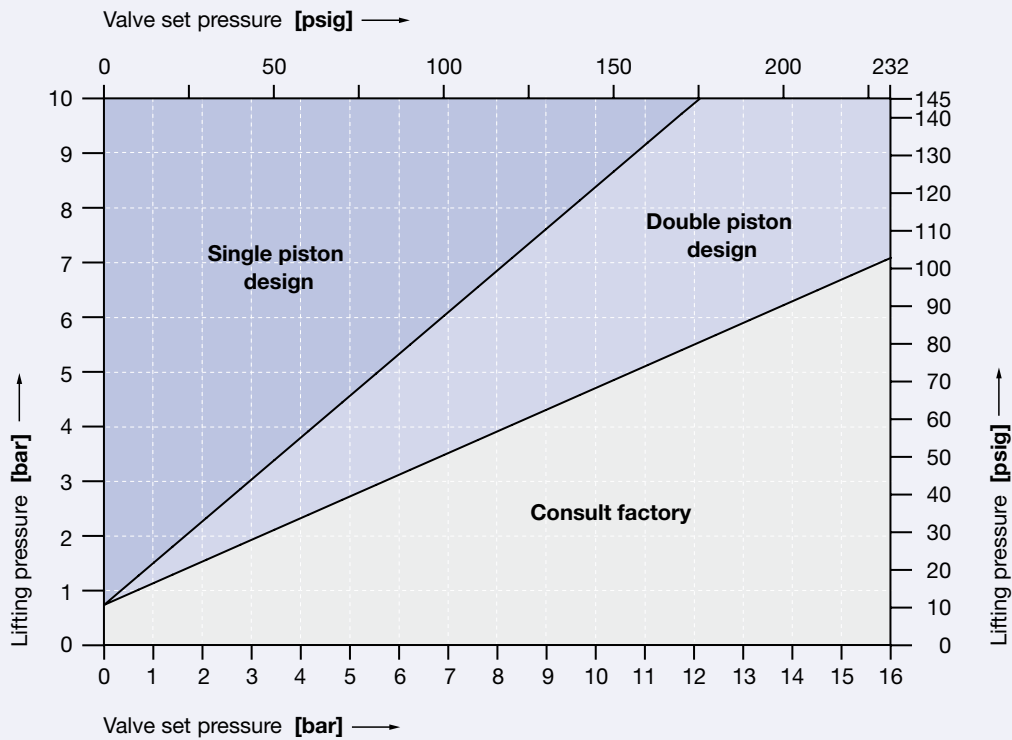


Selection chart lifting device H8, size II. d_0 37 mm / 1,457 inch

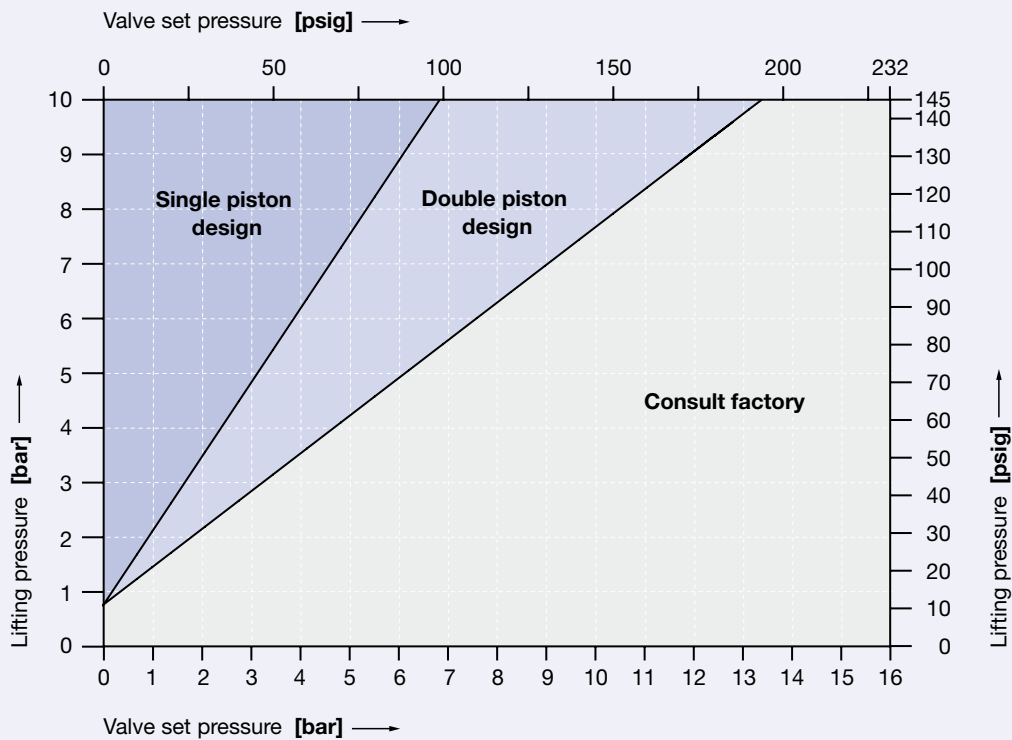


Selection chart H8

Selection chart lifting device H8, size II. d₀ 46 mm / 1,811 inch

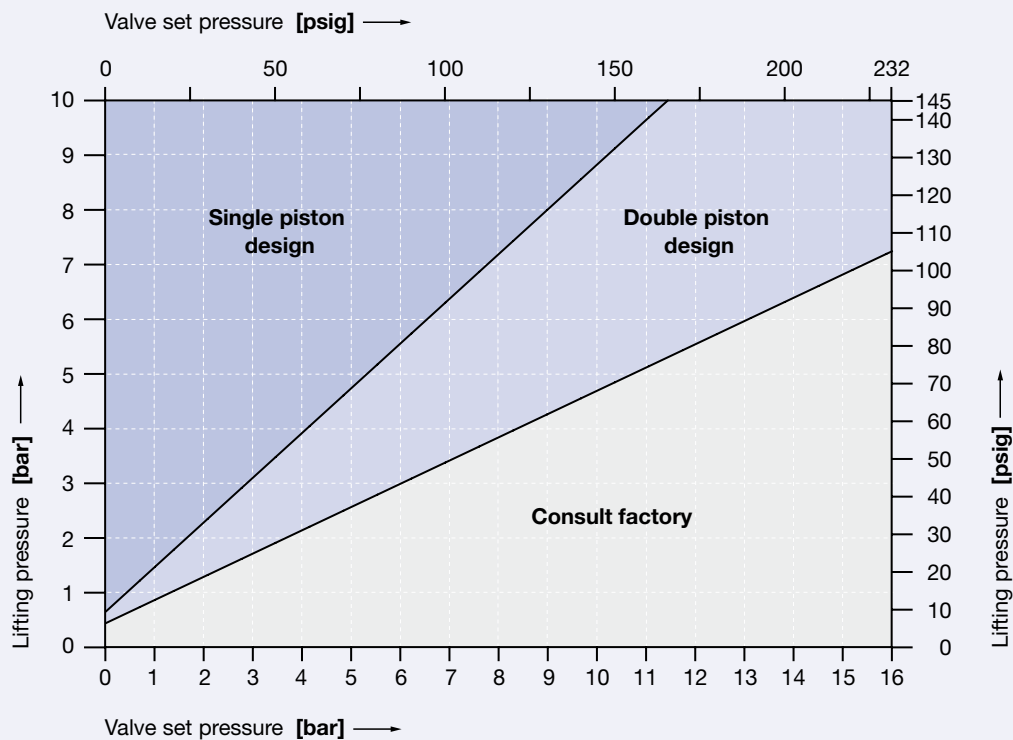


Selection chart lifting device H8, size II. d₀ 60 mm / 2,362 inch

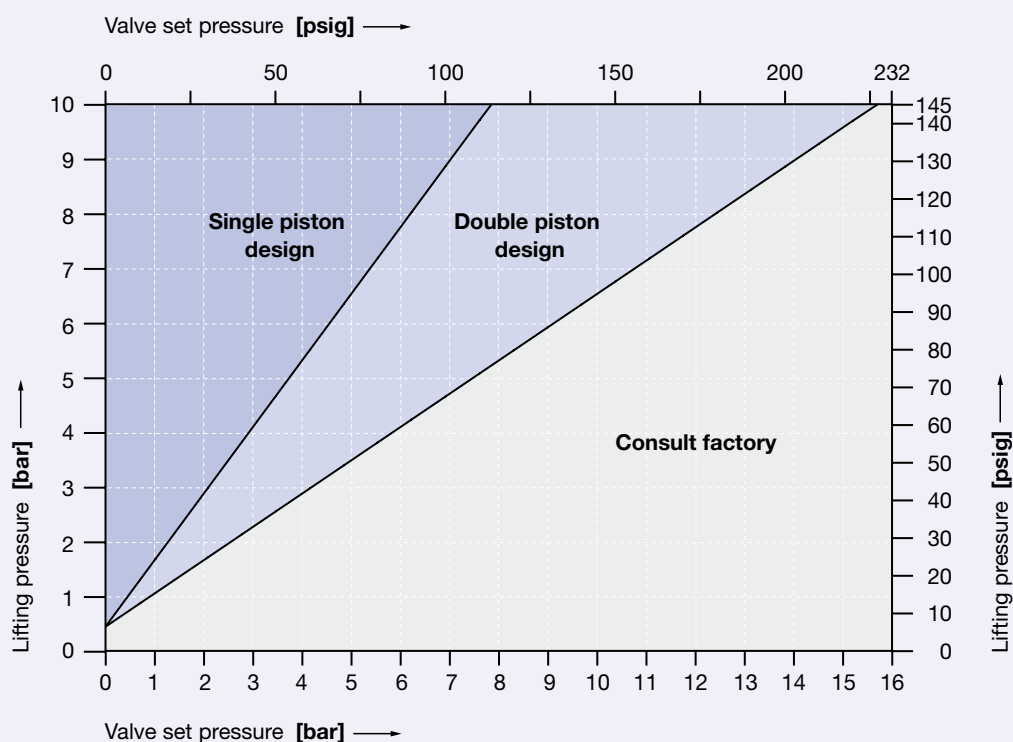


Selection chart H8

Selection chart lifting device H8, size III. d_0 74 mm / 2,913 inch

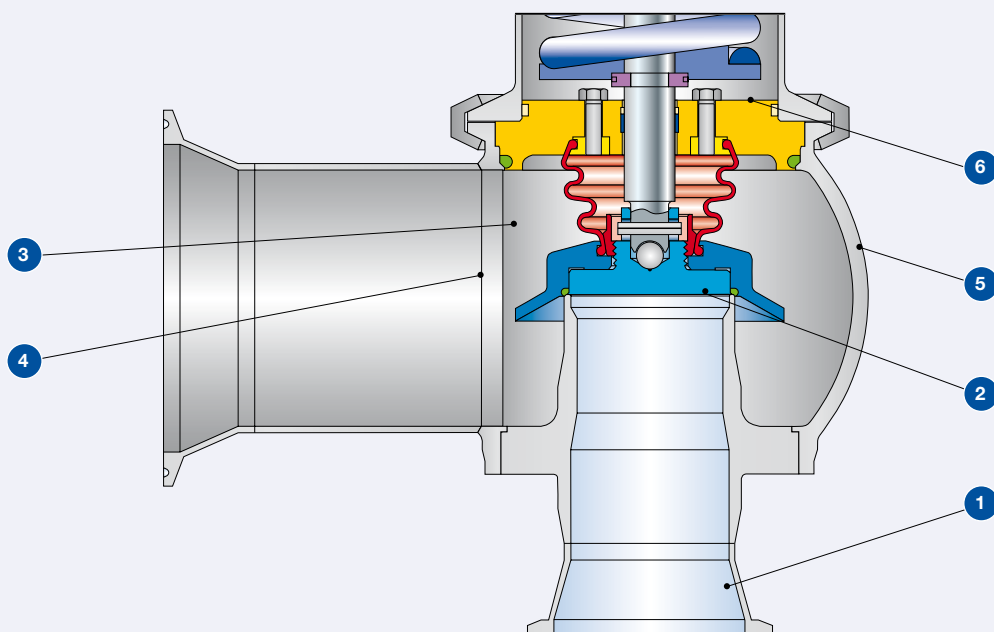


Selection chart lifting device H8, size III. d_0 92 mm / 3,622 inch



Surface quality						
			LESER Surface package			
Type of surface	Area		Option code	Clean finish	HyClean finish	Sterile finish
				B68	B69	B70
	Description	No.		R _a max.	R _a max.	R _a max.
LESER Surface grade						
Product contact surface	Inlet	1		M4	ME4	ME1
			[μm]	0,750	0,750	0,375
			[μinch]	30	30	15
	Bottom side of disc	2		M4	ME4	ME1
			[μm]	0,750	0,750	0,375
			[μinch]	30	30	15
Blow off surface	Inside surface of outlet area	3		M5	ME5	ME4
			[μm]	1,500	1,500	0,750
			[μinch]	60	60	30
	Welding seam	4		M6	ME6	ME6
			[μm]	3,000	3,000	3,000
			[μinch]	120	120	120
Outer surface	Outside surface of body, bonnet and cap/lifting device	5		M5	ME5	ME5
			[μm]	1,500	1,500	1,500
			[μinch]	60	60	60
Shielded surface	Surface never in contact with the product because it is shielded by the bellows	6		No definition		

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





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

Type 484

Safety Relief Valves – spring loaded



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

Contents

Page

Materials

- HyTight Assembly

48

How to order

- Article numbers

50

Pressure temperature ratings

- Metric Units + US Units

51

Dimensions and weights

- Metric Units

52

- US Units

53

Available options

54

Selection chart H8

55

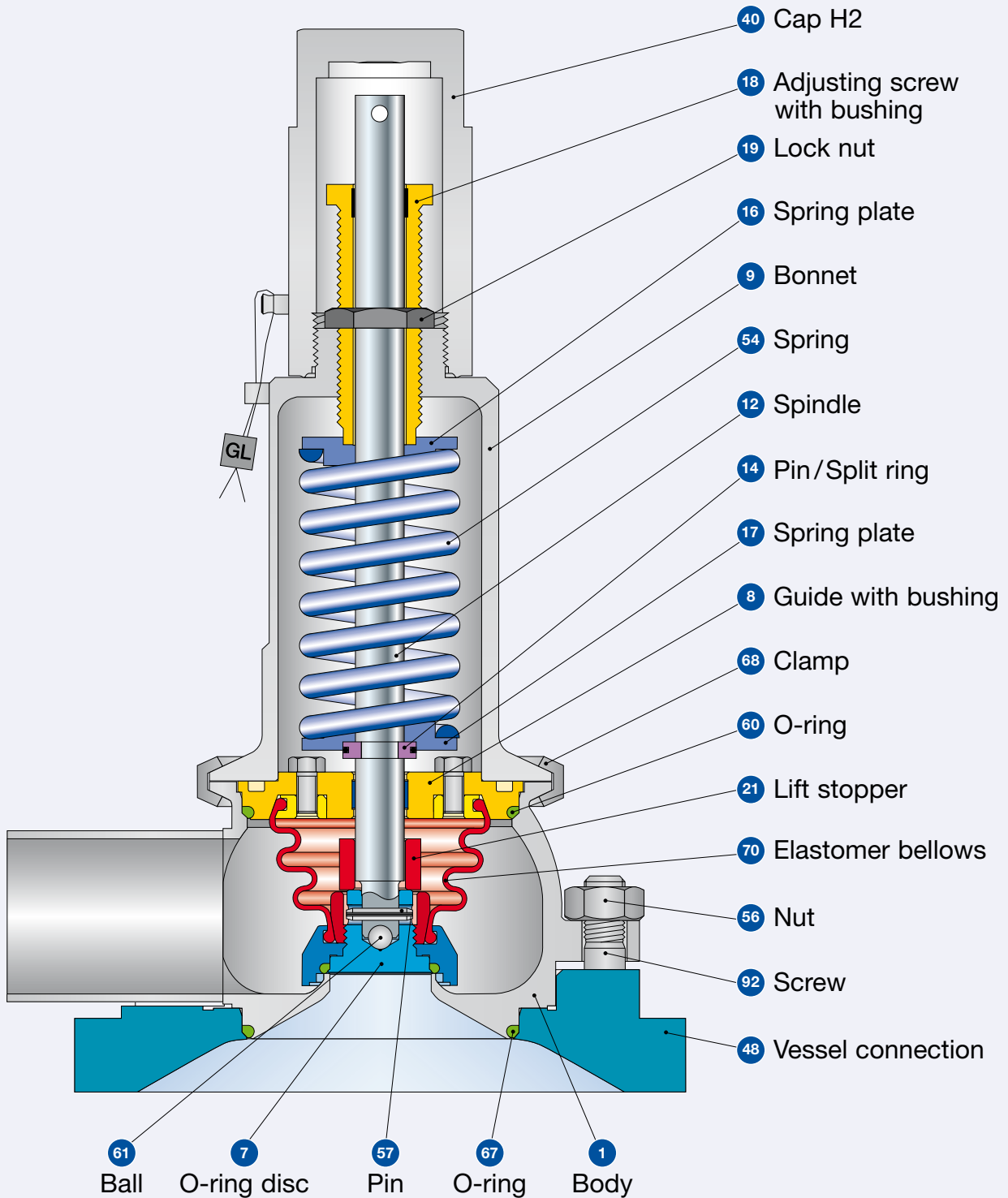
Surface quality

56



Type 5034
Vessel connection

HyTight Assembly



Type 484 HyTight

Cap H2

Inlet: Vessel connection Type 5034

Outlet: Welded end connection

Materials		HyTight Assembly	
Item	Component	Remarks	Type 4844 HyTight
1	Body		1.4435 (BN 2) ^{*)} SA 479 316L
7	O-ring disc	HyTight Assembly	1.4435 316L
7.4	Soft seal O-ring	"D" 	EPDM
		"K"	CR
		"L" 	FKM
		"N"	NBR
		"C" 	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
21	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		EPDM
61	Ball		1.4401 316
68	Clamp		1.4401 316
70	Elastomer bellows		EPDM
Vessel connection Type 5034			
48	Vessel connection		1.4435 (BN 2) ^{*)} SA 479 316L
56	Nut		1.4401 316
67	O-ring		EPDM
92	Screw		1.4404 316L
-	Blind flange for pressure test		1.4404 316L

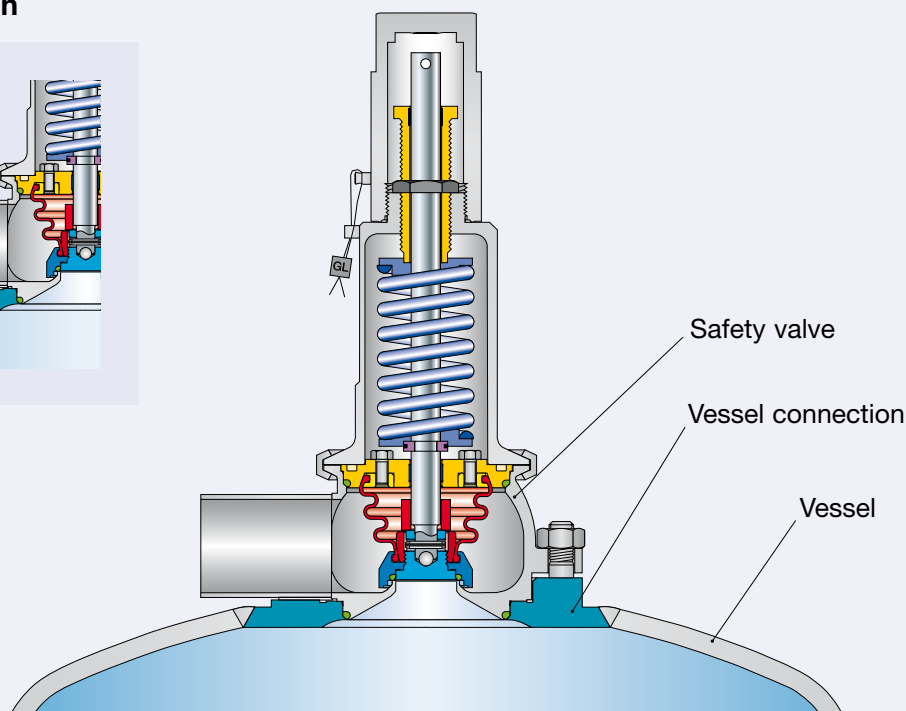
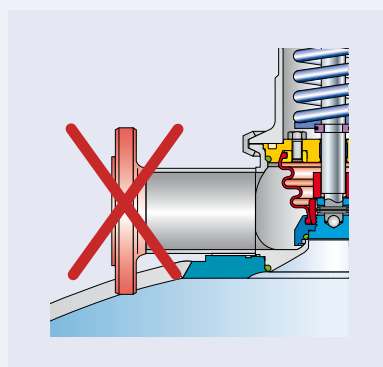
^{*)} The material 1.4435/SA 479 316L fulfils the requirements of the Swiss chemical and pharmaceutical industry Basler Norm (BN 2).

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 – Article numbers

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		
		CR “K” J21	CR “K” J21		
		FKM “L” J23	FKM “L” J23		
		NBR “N” J30	NBR “N” J30		
		FFKM “C” J20	FFKM “C” J20		
Body material: 1.4435 (316L)					
Bonnet closed	H2	Art.-No. 4844.	7722	7732	
	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	

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.

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
CR	[° C]	-40	+100	-40	+100
FKM	[° C]	-20	+180	-20	+180
NBR	[° C]	-25	+110	-25	+110
FFKM	[° C]	0	+250	0	+250

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
CR [° F]		-40	+212	-40	+212
FKM [° F]		-4	+356	-4	+356
NBR [° F]		-13	+230	-13	+230
FFKM [° F]		+32	+482	+32	+482

¹⁾ The temperature is limited by the soft seal material.

Dimensions and weights

Metric Units

Actual Orifice diameter d_0 [mm]		13
Actual Orifice area A_0 [mm ²]		133
Vessel connections		
Vessel wall thickness		
		≤ 5 mm
		> 5 mm
PN		16
Flange thickness	C	[mm]
	C ₁	[mm]
Diameter	D	[mm]
	D ₁	[mm]
Bolt circle	L	[mm]
Welded connections		
PN		16
Center to face		[mm]
Height – H4		H max. [mm]
Height – H8		H max. [mm]
double piston design		
Clamp connections		
PN		16
Center to face		[mm]
Clamp diameter	d _{inner}	[mm]
	d _{outer}	[mm]
Height – H4		H max. [mm]
Height – H8		H max. [mm]
double piston design		
Threaded connections		
PN		16
Center to face		[mm]
Height – H4		H max. [mm]
Height – H8		H max. [mm]
double piston design		
Flanged connections		
PN		16
Center to face		[mm]
Height – H4		H max. [mm]
Height – H8		H max. [mm]
double piston design		
Weight		
Weight		max. [kg]

¹⁾ without vessel connection

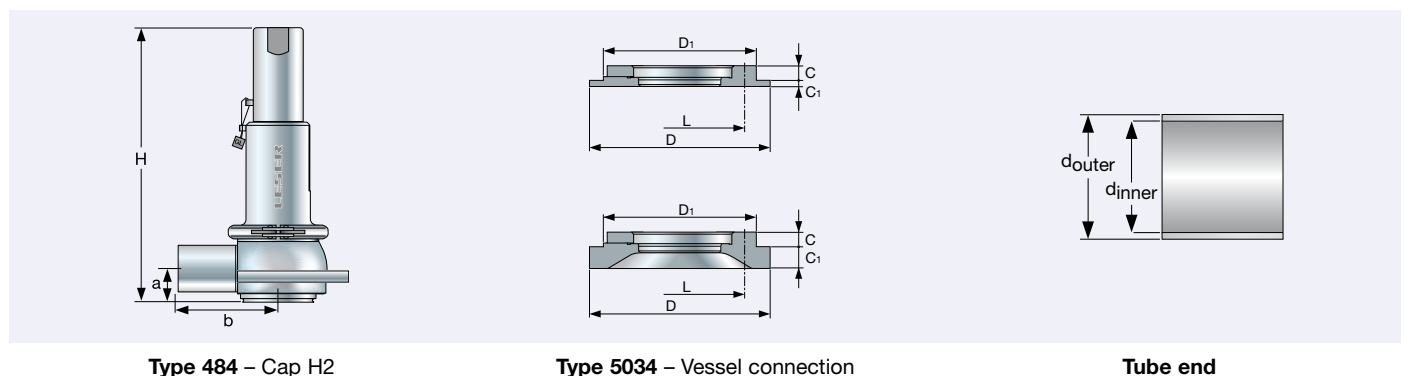
25	
491	
Vessel wall thickness	
≤ 5 mm	> 5 mm
16	16
12,0	12,0
5,0	18,0
150,0	150,0
127,0	127,0
110,0	110,0
Inlet a ¹⁾	Outlet b
16	16
30	90
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	112
For varying clamp diameters please refer to page 12 and 13	
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	130
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet b
16	16
30	134
289	
296	
Inlet a ¹⁾	Outlet

Dimensions and weights

US Units			
Actual Orifice diameter d ₀ [inch]		0,512	
Actual Orifice area A ₀ [inch²]		0,206	
Vessel connections			
Vessel wall thickness			
		≤ 13/64 inch	> 13/64 inch
	PN	16	16
Flange thickness	C	[inch] 15/32	15/32
	C ₁	[inch] 11/16	23/32
Diameter	D	[inch] 5 1/8	5 1/8
	D ₁	[inch] 4 11/32	4 11/32
Bolt circle	L	[inch] 3 17/32	3 17/32
Welded connections		Inlet a ¹⁾	Outlet b
	PN	16	16
Center to face	[inch]	15/16	3 5/32
Height – H4	H max. [inch]	7 29/32	
Height – H8 double piston design	H max. [inch]	9	
Clamp connections		Inlet a ¹⁾	Outlet b
	PN	16	16
Center to face	[inch]	15/16	4
Clamp diameter	d _{inner} [inch]	For varying clamp diameters please refer to page 12 and 13	
	d _{outer} [inch]		
Height – H4	H max. [inch]	7 29/32	
Height – H8 double piston design	H max. [inch]	9	
Threaded connections		Inlet a ¹⁾	Outlet b
	PN	16	16
Center to face	[inch]	15/16	4 23/32
Height – H4	H max. [inch]	7 29/32	
Height – H8 double piston design	H max. [inch]	9	
Flanged connections		Inlet a ¹⁾	Outlet b
	PN	16	16
Center to face	[inch]	15/16	4 15/16
Height – H4	H max. [inch]	7 29/32	
Height – H8 double piston design	H max. [inch]	9	
Weight			
Weight	max. [lb]	6,6	

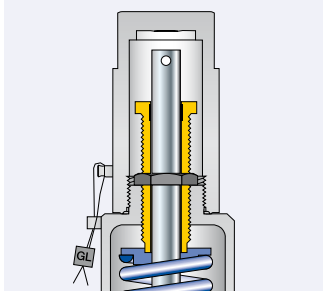
0,984	
0,761	
Vessel wall thickness	
≤ 13/64 inch	> 13/64 inch
16	16
15/32	15/32
11/16	23/32
5 29/32	5 29/32
5	5
4 11/32	4 11/32
Inlet a ¹⁾	Outlet b
16	16
1 3/16	3 17/32
11 3/8	
11 5/32	
Inlet a ¹⁾	Outlet b
16	16
1 3/16	4 3/8
For varying clamp diameters please refer to page 12 and 13	
11 3/8	
11 5/32	
Inlet a ¹⁾	Outlet b
16	16
1 3/16	5 3/32
11 3/8	
11 5/32	
Inlet a ¹⁾	Outlet b
16	16
1 3/16	5 1/4
11 3/8	
11 5/32	
8,8	

¹⁾ without vessel connection

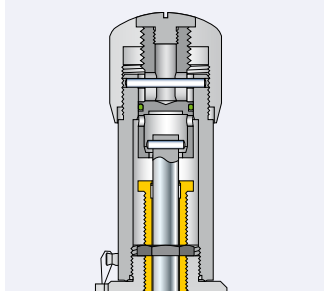


Available options

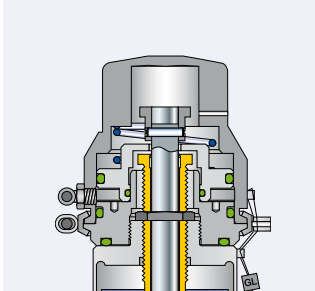
Gastight cap H2
H2



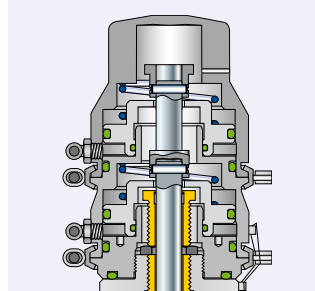
Gastight lifting device H4
Packed knob H4



Pneumatic lifting device H8
H8 single piston design

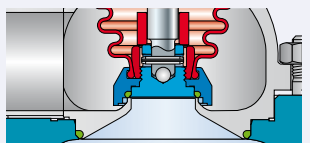


Pneumatic lifting device H8
J41: H8 double piston design

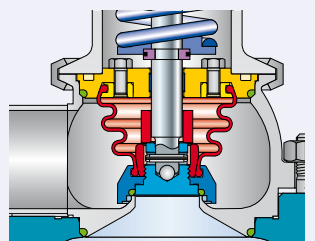


O-ring-disc

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

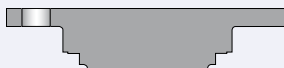


Bellows FFKM "C" 
S70



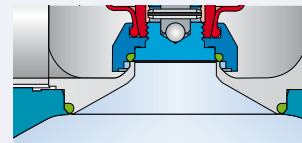
Blind flange for pressure test

Material-No. 138.8849.9000 (d₀ 13)
Material-No. 138.8649.9000 (d₀ 25)

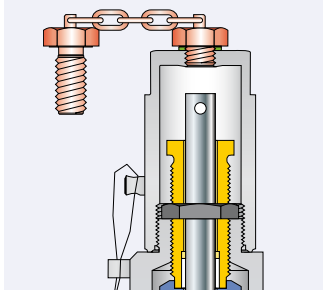


O-ring for vessel connection

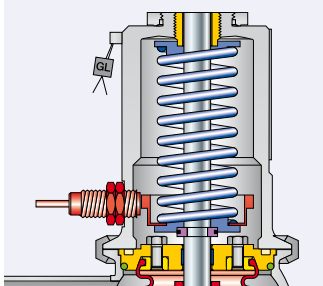
EPDM "D" 
Material-No. 502.0460.3041 (d₀ 13)
Material-No. 502.0600.3041 (d₀ 25)



Test gag
J70: H2

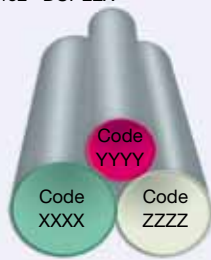


Lift indicator placed in bonnet
J38 + J93



Special material

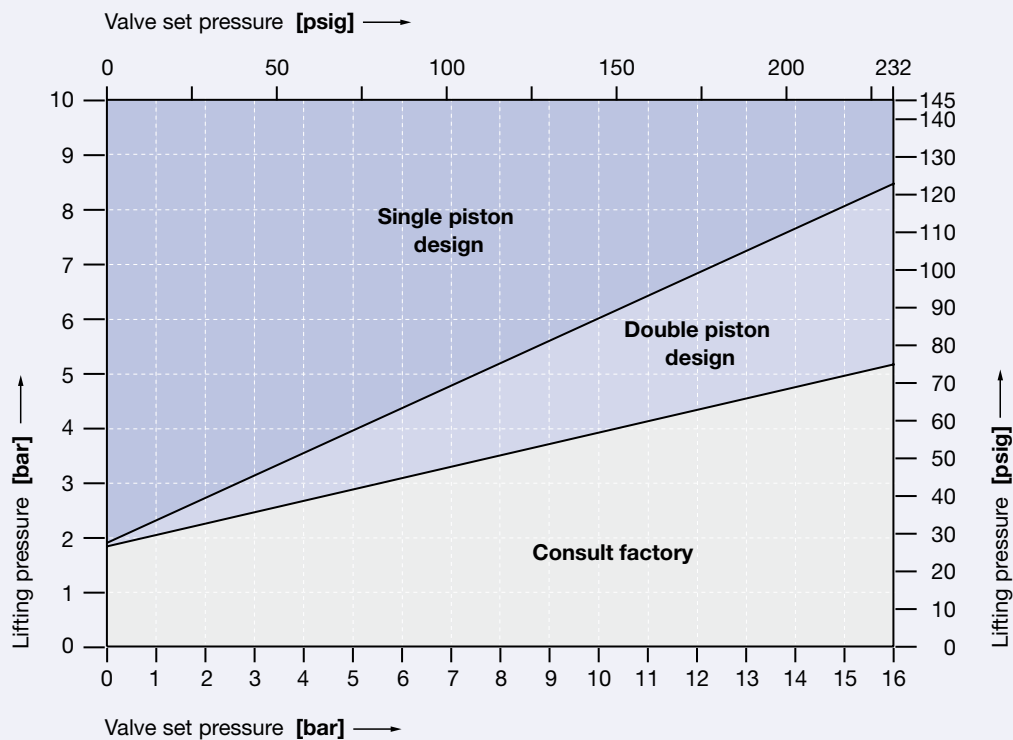
2.4610 HASTELLOY C4
2.4360 MONEL 400
1.4462 DUPLEX



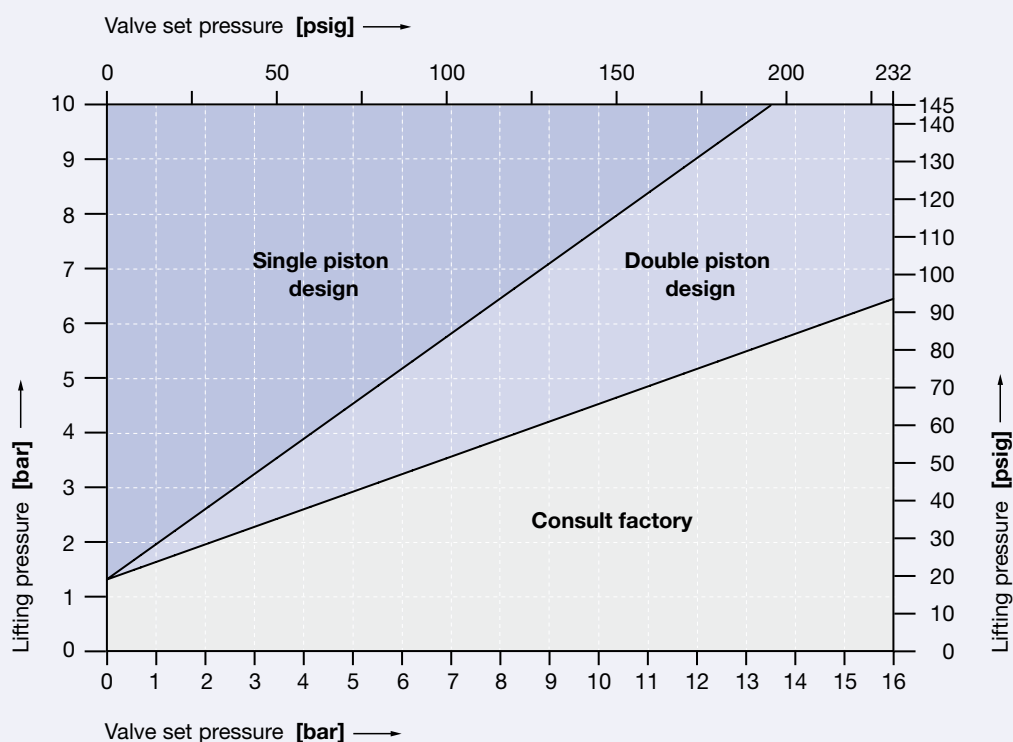
Selection chart H8

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



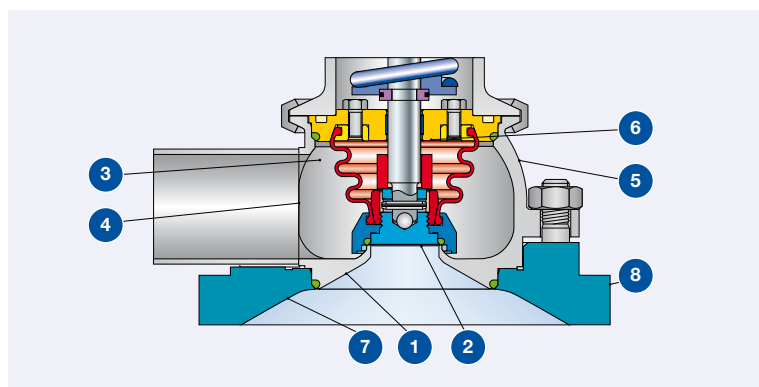
Surface quality

Surface quality						
			LESER Surface package			
Type of surface	Area		Option code	Clean finish	HyClean finish	Sterile finish
	Description	No.		B56	B57	B58
				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		
				LESER Surface package		
Type of surface	Area		Option code	Clean finish	HyClean finish	Sterile finish
				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 485
Pneumatic lifting device H8
Inlet: Integrated pipework connection Type 5034
Outlet: Flange connection

Type 485

Safety Relief Valves – spring loaded



Type 485
Cap H2
Inlet: Integrated pipework connection Type 5034
Outlet: Welded end connection

Contents

Page

Materials

- HyTight Assembly

58

How to order

- Article numbers

60

Pressure temperature ratings

- Metric Units + US Units

61

Dimensions and weights

- Metric Units

62

- US Units

63

Available options

64

Selection chart H8

65

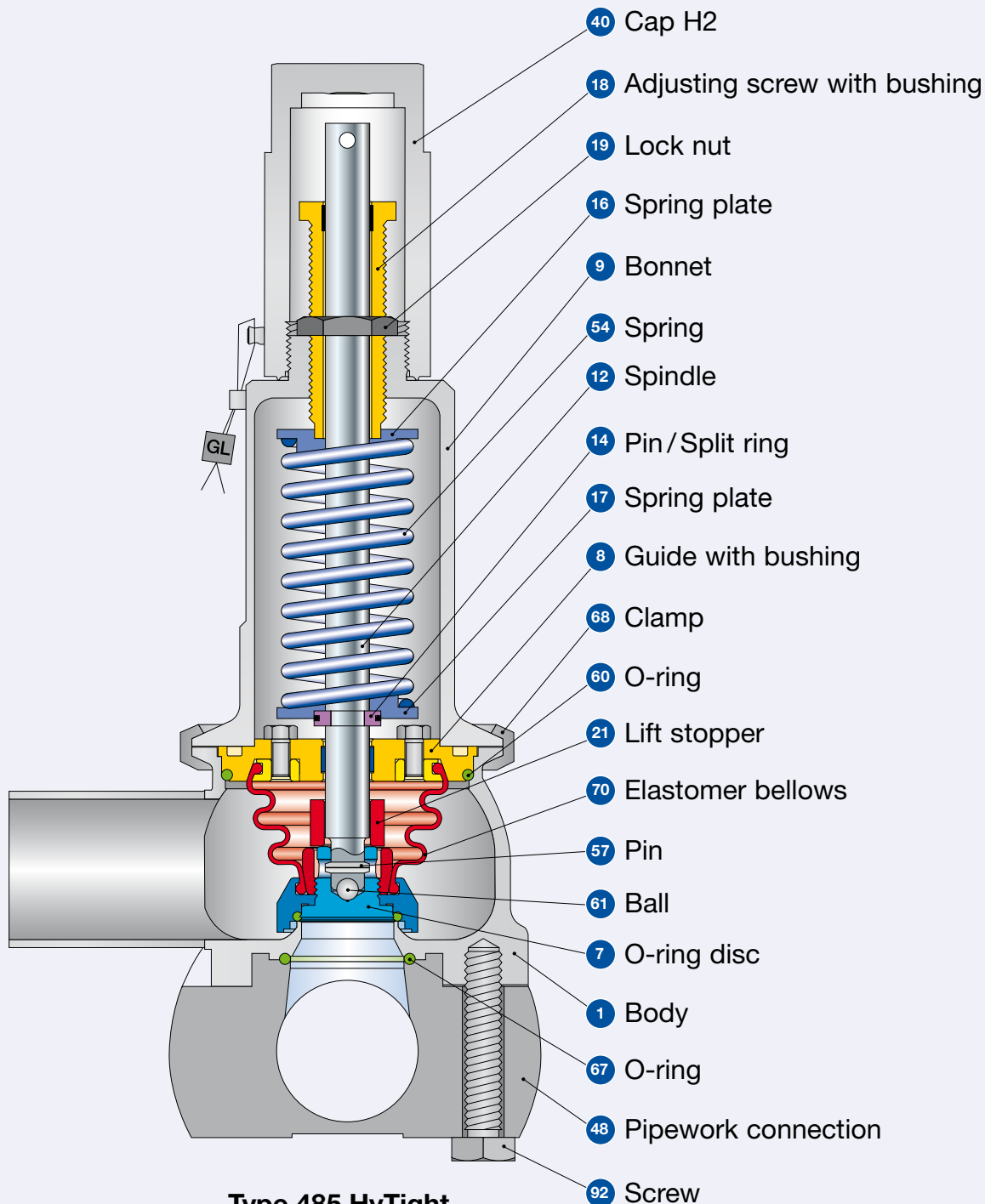
Surface quality

66



Type 5034
Integrated pipework connection

HyTight Assembly



Type 485 HyTight

Cap H2

Inlet: Integrated pipework connection Type 5034

Outlet: Welded end connection

Materials		HyTight Assembly	
Item	Component	Remarks	Type 4854 HyTight
1	Body		1.4435 (BN 2) ^{*)} SA 479 316L
7	Disc	HyTight Assembly	1.4435 316L
7.4	Soft seal O-ring	"D"  	EPDM
		"K"	CR
		"L" 	FKM
		"N"	NBR
		"C"  	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
21	Lift stopper		1.4404 316L
40	Cap H2		1.4404 316L
54	Spring		1.4310 Stainless steel
57	Pin		1.4310 Stainless steel
60	O-ring	 	EPDM
61	Ball		1.4401 316
68	Clamp		1.4401 316
70	Elastomer bellows		EPDM
Integrated pipework connection Type 5034			
48	Pipework connection		1.4435 (BN 2) ^{*)} SA 479 316L
67	O-ring	 	EPDM
92	Screw		1.4401 316
-	Blind flange for pressure test		1.4404 316L

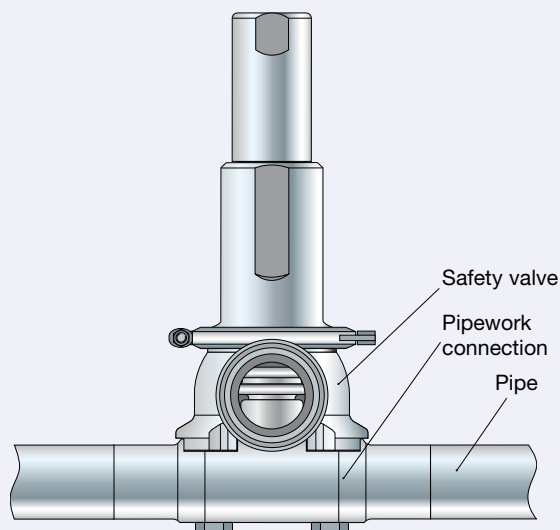
^{*)} The material 1.4435/SA 479 316L fulfils the requirements of the Swiss chemical and pharmaceutical industry Basler Norm (BN 2).

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

Article numbers

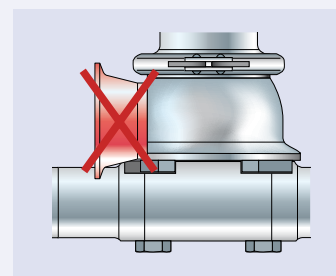
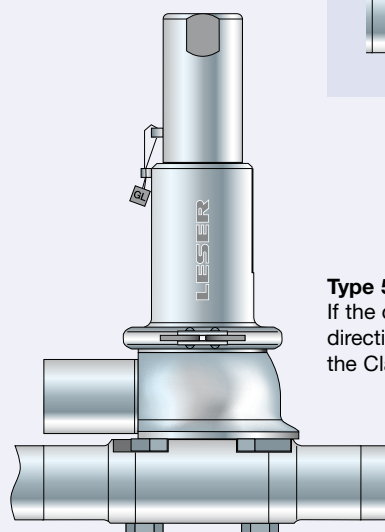
Article numbers				
Actual Orifice diameter d ₀ [mm]		13	25	
Actual Orifice area A ₀ [mm²]		133	491	
Actual Orifice diameter d ₀ [inch]		0,512	0,984	
Actual Orifice area A ₀ [inch²]		0,206	0,761	
O-ring material		EPDM “D” J22	EPDM “D” J22	
		CR “K” J21	CR “K” J21	
		FKM “L” J23	FKM “L” J23	
		NBR “N” J30	NBR “N” J30	
		FFKM “C” J20	FFKM “C” J20	
Body material: 1.4435 (316L)				
Bonnet closed	H2	Art.-No. 4854.	7742	7752
	H4	Art.-No. 4854.	7744	7754
	H8	Art.-No. 4854.	7748	7758
	p [bar]	S/G/L	0,3 – 16	0,1 – 16
	p [psig]	S/G/L	4,4 – 232	1,5 – 232
Integrated pipework connection material: 1.4435 (316L)				
		Please order separately		
DN		25	40	50
DIN 11850	Art.-No. 5034.	0991	0992	0993
ISO 2037	Art.-No. 5034.	0994	0995	0996
DIN EN ISO 1127	Art.-No. 5034.	0998	0999	–
Blind flange for pressure test: 1.4404 (316L)				
		Please order separately		
Art.-No.		138.8949.9000	138.8749.9000	

Fitting information



Type 5034

Installation: Integrated pipework connection, safety valve



Type 5034

If the outlet has the same direction like the pipe, the Clamp is not possible

Pressure temperature ratings

Metric Units					
Actual Orifice diameter d _o [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
CR	[° C]	-40	+100	-40	+100
FKM	[° C]	-20	+180	-20	+180
NBR	[° C]	-25	+110	-25	+110
FFKM	[° C]	0	+250	0	+250

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
CR	[° F]	-40	+212	-40	+212
FKM	[° F]	-4	+356	-4	+356
NBR	[° F]	-13	+230	-13	+230
FFKM	[° F]	+32	+482	+32	+482

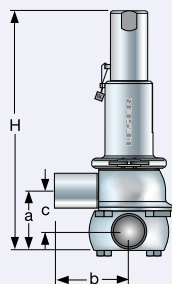
¹⁾ The temperature is limited by the soft seal material.

Dimensions and weights

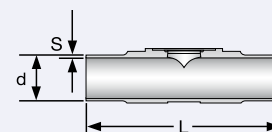
Metric Units				
Actual Orifice diameter d ₀ [mm]			13	
Actual Orifice area A ₀ [mm ²]			133	
Integrated pipework connection			Inlet	
PN			16	
Nominal pipe size tube			DN	
DN			25	
Offset	c	[mm]	38	
Length	L	[mm]	130	
DIN 11850	Diameter	d	[mm]	30
	Wall thickness	s	[mm]	2
ISO 2037	Diameter	d	[mm]	25,4
	Wall thickness	s	[mm]	1,6
DIN EN ISO	Diameter	d	[mm]	33,7
ISO 1127	Wall thickness	s	[mm]	2
Welded connections			Inlet a ¹⁾	Outlet b
PN			16	
Center to face		[mm]	58	80
Height – H4		H max. [mm]	234	
Height – H8 double piston design		H max. [mm]	262,2	
Clamp connections			Inlet a ¹⁾	Outlet b
PN			16	
Center to face		[mm]	58	102
Clamp diameter		d _{inner} [mm]	For varying clamp diameters please refer to page 12 and 13	
		d _{outer} [mm]		
Height – H4		H max. [mm]	234	
Height – H8 double piston design		H max. [mm]	262,2	
Threaded connections			Inlet a ¹⁾	Outlet b
PN			16	
Center to face		[mm]	58	120
Height – H4		H max. [mm]	234	
Height – H8 double piston design		H max. [mm]	262,2	
Flanged connections			Inlet a ¹⁾	Outlet b
PN			16	
Center to face		[mm]	58	126
Height – H4		H max. [mm]	234	
Height – H8 double piston design		H max. [mm]	262,2	
Weight				
Weight		max. [kg]	3,0	

¹⁾ without integrated pipework connection

25			
491			
Inlet			
16			
40		50	
49		55	
180		180	
42		54	
2		2	
38		51	
1,6		1,6	
48,3		–	
2		–	
Inlet a ¹⁾	Outlet b	Inlet a ¹⁾	Outlet b
16		16	
72	90	84	90
331		343	
338,7		350,7	
Inlet a ¹⁾	Outlet b	Inlet a ¹⁾	Outlet b
16		16	
72	112	84	112
For varying clamp diameters please refer to page 12 and 13			
331		343	
338,7		350,7	
Inlet a	Outlet b	Inlet a ¹⁾	Outlet b
16		16	
72	130	84	130
331		334	
338,7		350,7	
Inlet a ¹⁾	Outlet b	Inlet a ¹⁾	Outlet b
16		16	
72	134	84	134
331		343	
338,7		350,7	
5,0			



Type 485 – Cap H2



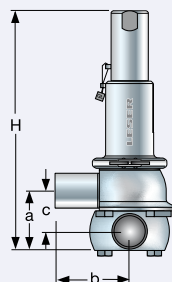
Type 5034 – Integrated pipework connection

Dimensions and weights

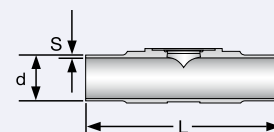
US Units				
Actual Orifice diameter d ₀ [inch]			0,512	
Actual Orifice area A ₀ [inch ²]			0,206	
Integrated pipework connection			Inlet	
PN			16	
Nominal pipe size tube			NPS	
Offset			c	[inch]
Length			L	[inch]
DIN 11850	Diameter	d	[inch]	1 3/16
	Wall thickness	s	[inch]	3/32
ISO 2037	Diameter	d	[inch]	1
	Wall thickness	s	[inch]	1/16
DIN EN ISO	Diameter	d	[inch]	1 5/16
ISO 1127	Wall thickness	s	[inch]	3/32
Welded connections			Inlet a ¹⁾	Outlet b
PN			16	
Center to face			[inch]	2 1/4
Height – H4			H max. [inch]	9 7/32
Height – H8 double piston design			H max. [inch]	10 5/16
Clamp connections			Inlet a ¹⁾	Outlet b
PN			16	
Center to face			[inch]	2 1/4
Clamp diameter			d _{inner} [inch]	4 1/32
			d _{outer} [inch]	For varying clamp diameters please refer to page 12 and 13
Height – H4			H max. [inch]	9 7/32
Height – H8 double piston design			H max. [inch]	10 5/16
Threaded connections			Inlet a ¹⁾	Outlet b
PN			16	
Center to face			[inch]	2 1/4
Height – H4			H max. [inch]	9 7/32
Height – H8 double piston design			H max. [inch]	10 5/16
Flanged connections			Inlet a ¹⁾	Outlet b
PN			16	
Center to face			[inch]	2 1/4
Height – H4			H max. [inch]	9 7/32
Height – H8 double piston design			H max. [inch]	10 5/16
Weight				
Weight			max. [lb]	6,6

¹⁾ without integrated pipework connection

0,984			
0,761			
Inlet			
16			
1 1/2"		2"	
1 15/16		2 5/32	
7 3/32		7 3/32	
1 21/32		2 1/8	
3/32		3/32	
1 1/2		2	
1/16		1/16	
1 29/32		-	
3/32		-	
Inlet a ¹⁾	Outlet b	Inlet a ¹⁾	Outlet b
16		16	
2 27/32	3 17/32	3 5/16	3 17/32
13 1/32		13 1/2	
13 11/32		13 13/16	
Inlet a ¹⁾	Outlet b	Inlet a ¹⁾	Outlet b
16		16	
2 27/32	4 13/32	3 5/16	4 13/32
For varying clamp diameters please refer to page 12 and 13			
13 1/32		13 1/2	
13 11/32		13 13/16	
Inlet a ¹⁾	Outlet b	Inlet a ¹⁾	Outlet b
16		16	
2 27/32	5 1/8	3 5/16	5 1/8
13 1/32		13 1/2	
13 11/32		13 13/16	
Inlet a ¹⁾	Outlet b	Inlet a ¹⁾	Outlet b
16		16	
2 27/32	5 9/32	3 5/16	5 9/32
13 1/32		13 1/2	
13 11/32		13 13/16	
11,0			



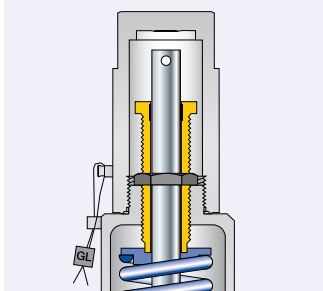
Type 485 – Cap H2



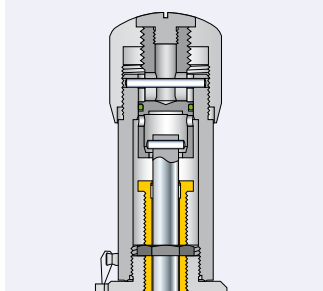
Type 5034 – Integrated pipework connection

Available options

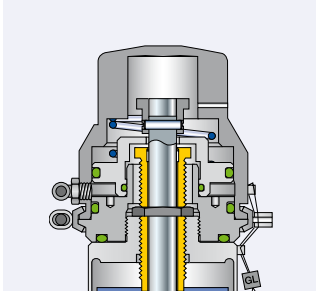
Gastight cap H2
H2



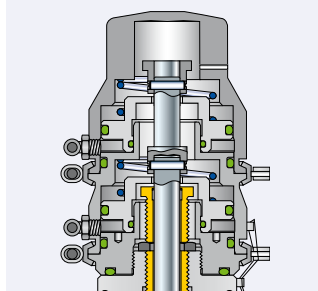
Gastight lifting device H4
Packed knob H4



Pneumatic lifting device H8
H8 single piston design

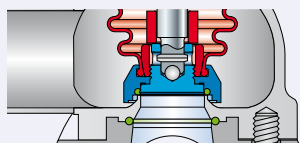


Pneumatic lifting device H8
J41: H8 double piston design

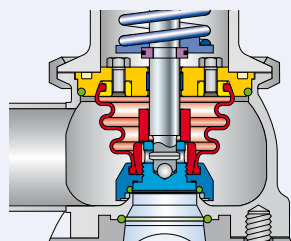


O-ring-disc

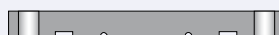
J22: EPDM "D"  
J21: CR "K" 
J23: FKM "L" 
J30: NBR "N" 
J20: FFKM "C"  



Bellows FFKM "C" 
S70

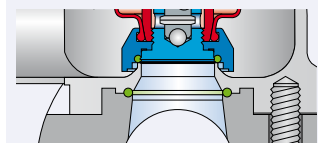


Blind flange for pressure test
Material No. 138.8949.9000 (d₀ 13)
Material No. 138.8749.9000 (d₀ 25)

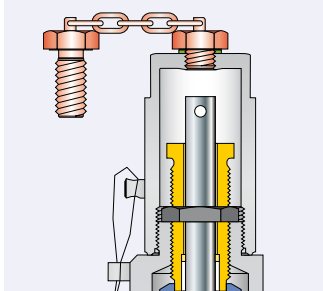


O-ring for integrated pipework connection

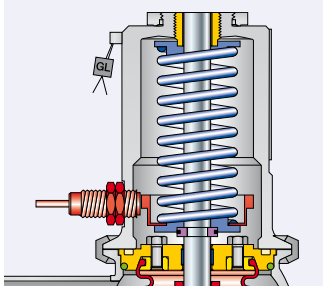
EPDM "D" 
Material No. 502.0180.3041 (d₀ 13)
Material No. 502.0300.3041 (d₀ 25)



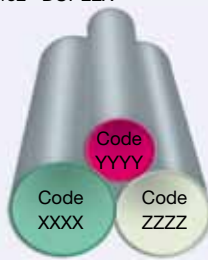
Test gag
J70: H2



Lift indicator placed in bonnet
J38 + J93



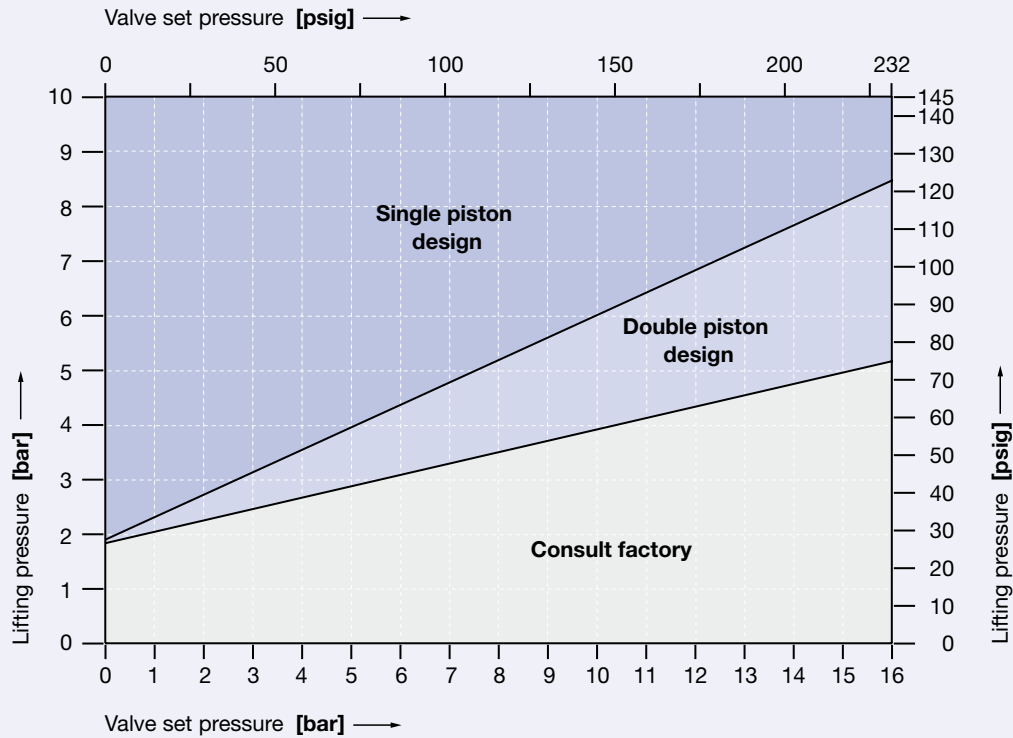
Special material
2.4610 HASTELLOY C4
2.4360 MONEL 400
1.4462 DUPLEX



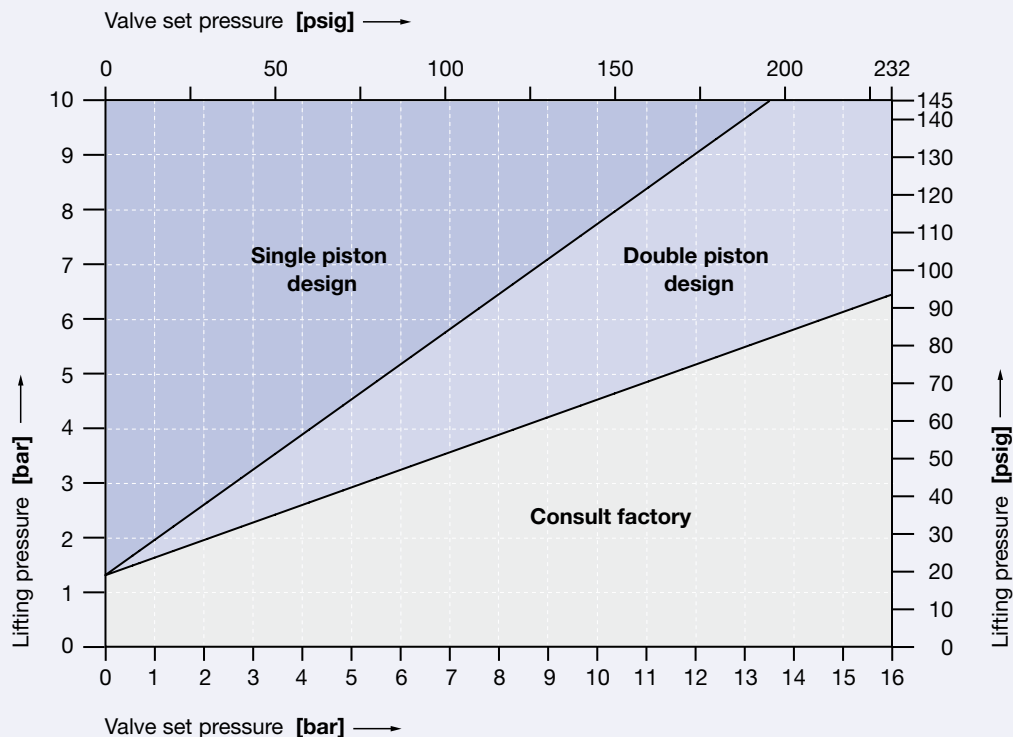
Selection chart H8

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



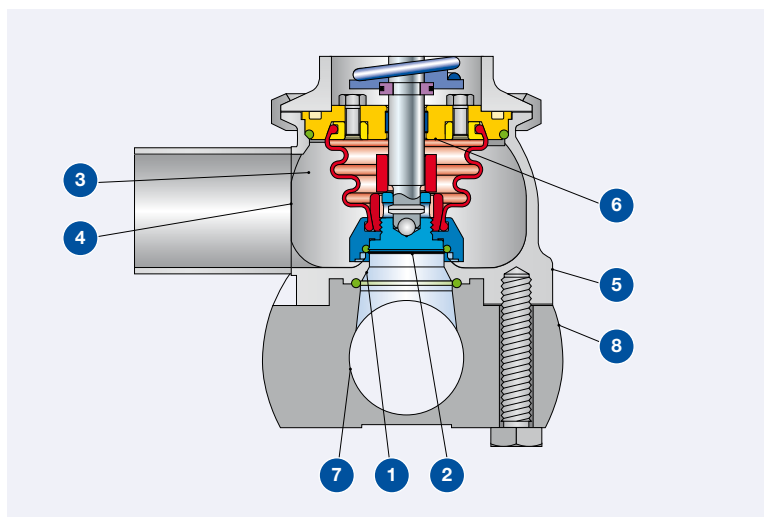
Surface quality

Surface quality						
			LESER Surface package			
Type of surface	Area		Option code	Clean finish	HyClean finish	Sterile finish
				B62	B63	B64
	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		

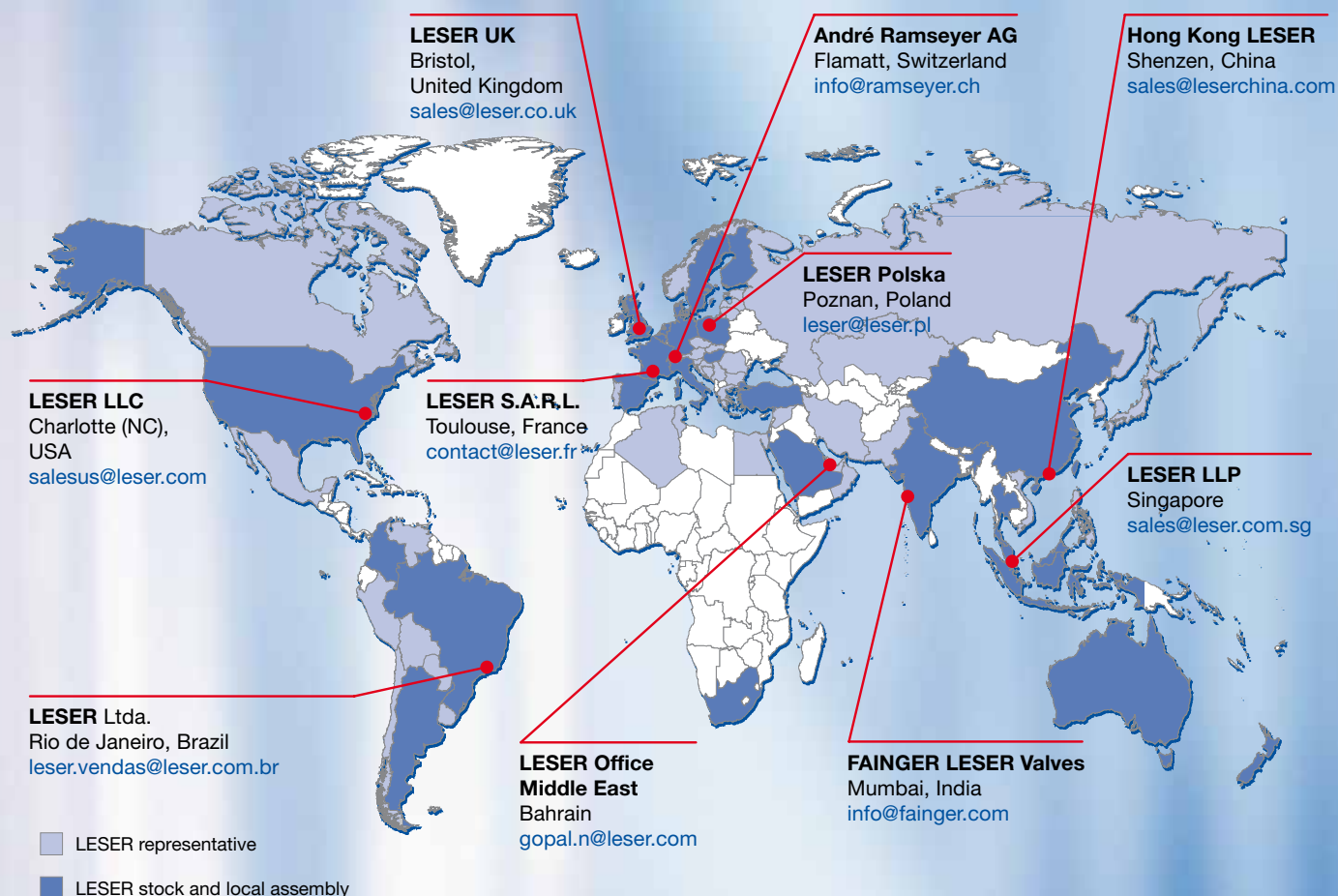
Surface quality

Type 5034			Integrated pipework connection			
Type of surface	Area		LESER Surface package			
			Clean finish	HyClean finish	Sterile finish	
	Description	No.	Option code	B65	B66	B67
				R _a max.	R _a max.	R _a max.
LESER Surface grade						
Product contact surface	Pipework 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

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



LESER worldwide



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