

Clean Service

Safety Relief Valves
Series 48X

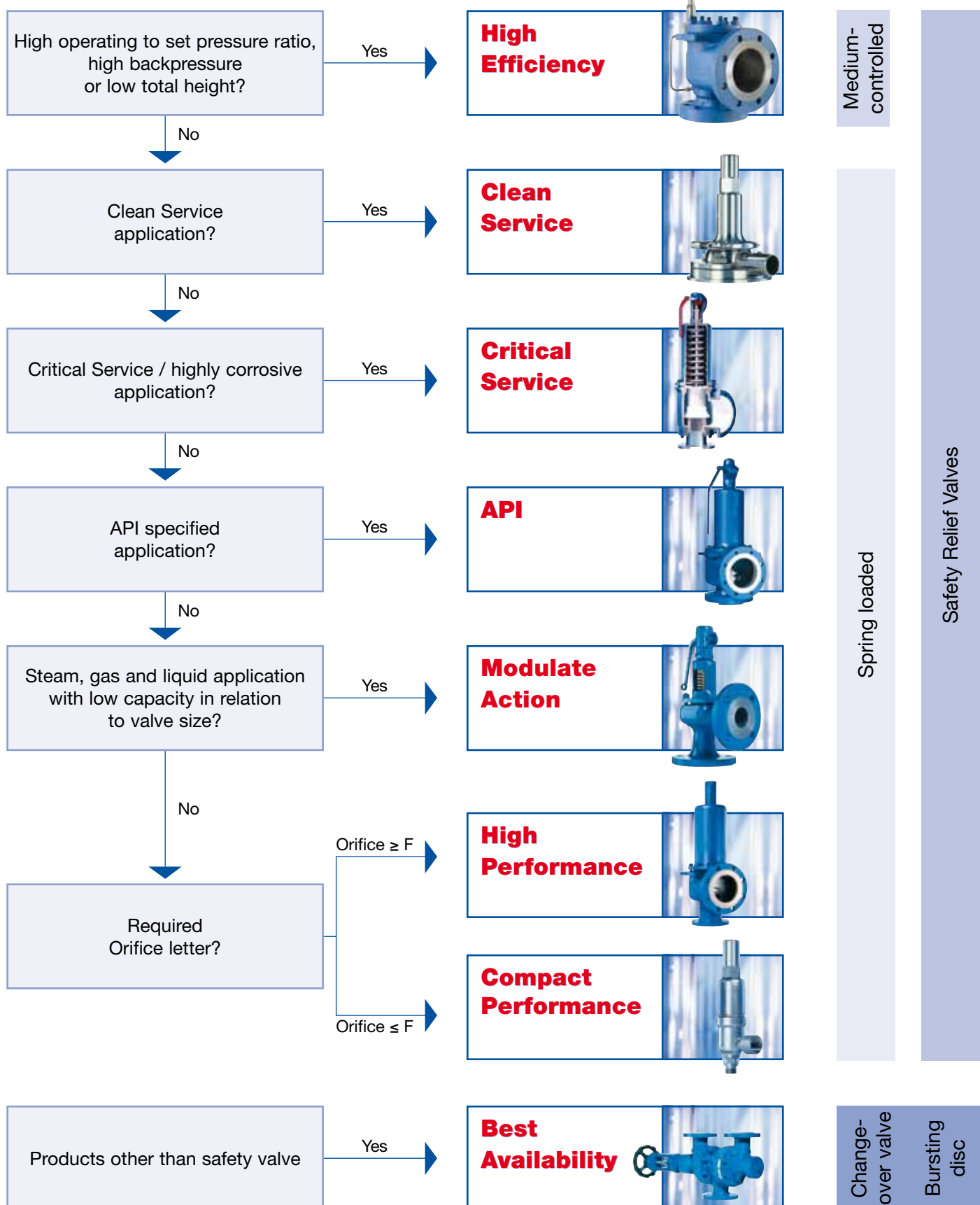


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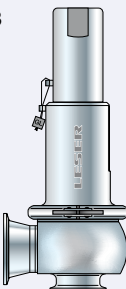
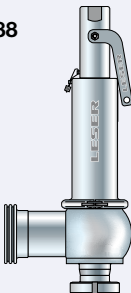
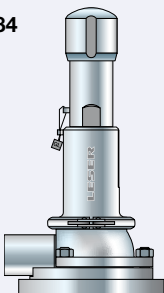
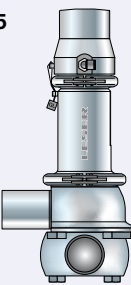
LESER

The-Safety-Valve.com

Product group



How to select the right Clean Service Safety Valve

Standard	Type	Orifice	Features	Valve dead space ratio ¹⁾	Description
	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 18

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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)
 - EN 1672-2
 - DIN ISO 14159
 - 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
 - Eurasian Custom Union: Approval acc. to Eurasian Custom Union (EAC - Eurasian Conformity)

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



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, 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.

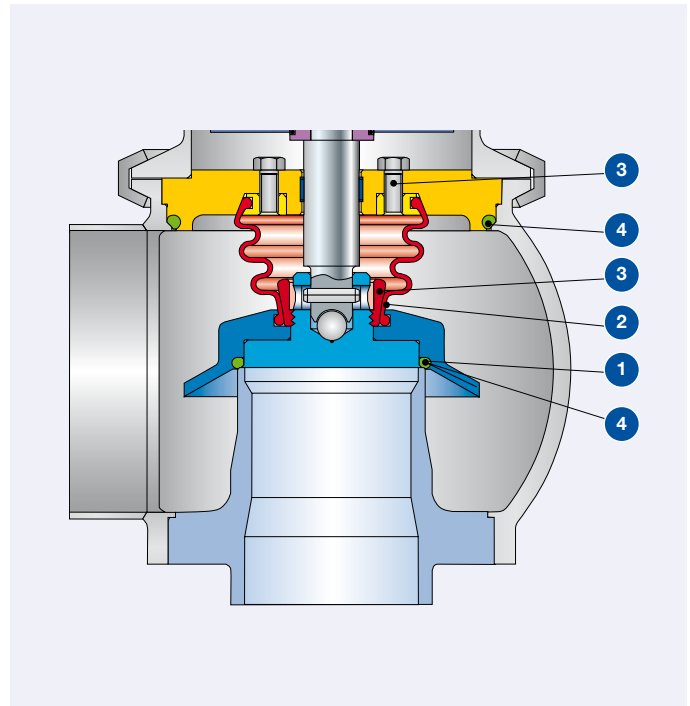
HyTight Assembly

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 Pipes Standard DIN 11866 as well as the ASME BPE provide guidances 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 (Bioprocessing Equipment) states for cleanability:

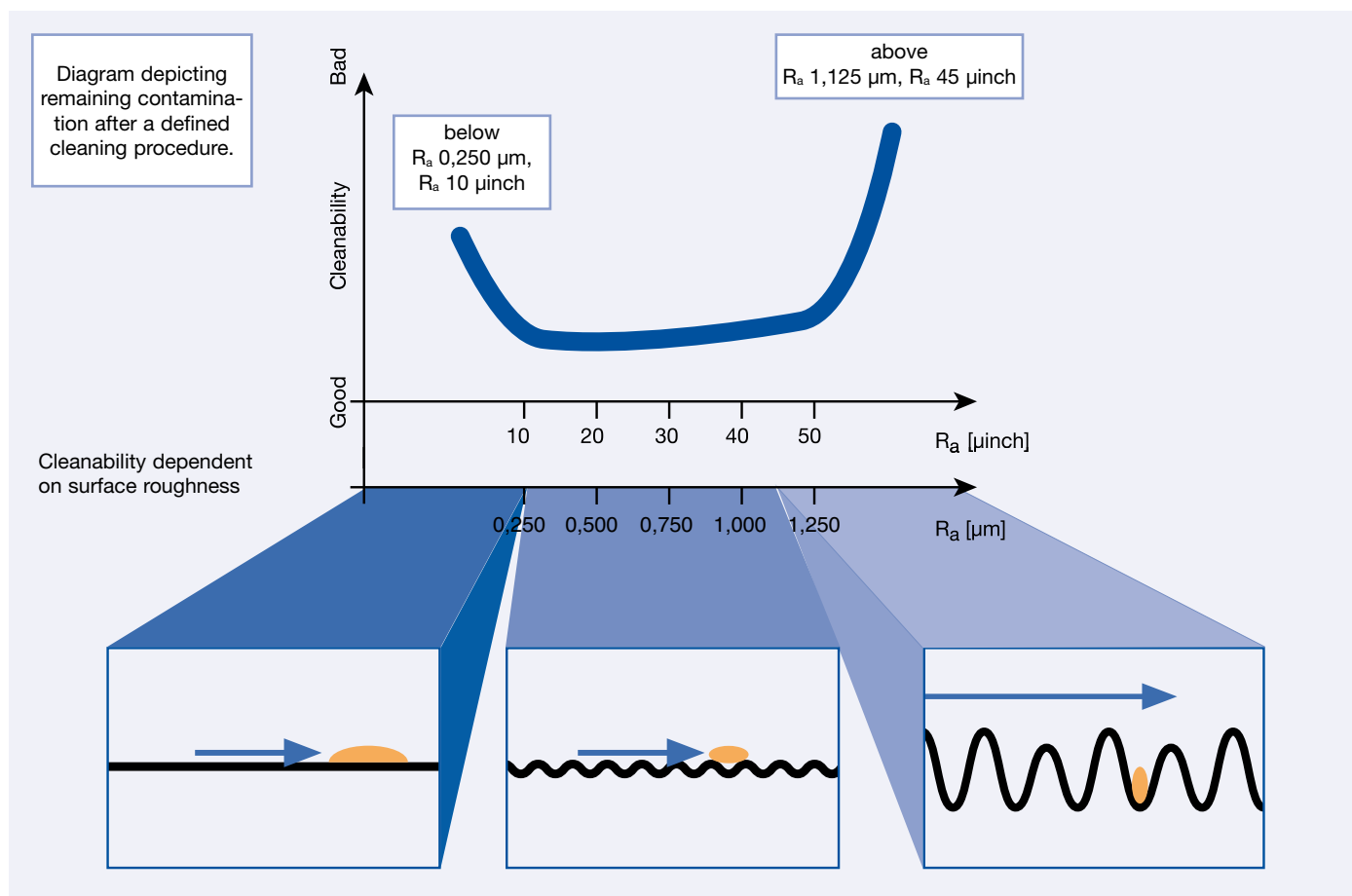
SD-3.1.1:

- 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

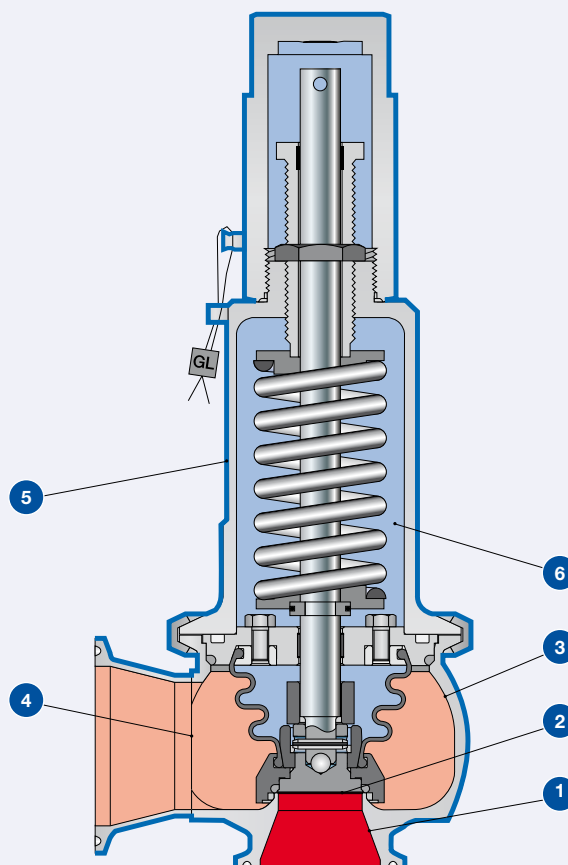


Below $R_a 0,250 \mu\text{m}$ / $10 \mu\text{inch}$ bacteria or particles "stick" to the surface due to adhesive effects.

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
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

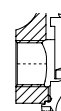
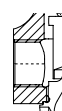
LESER is able to deliver a wide range of connections required for clean service applications. For ordering the right connection please specify inlet and outlet by LESER option code. If the option code is not stated in this table please refer to connection pages of each Type.

Overview							
	Connection	Clamp connection	Clamp connection	Clamp connection	Clamp connection	Clamp connection	
	Code	BO	SO	CO	DO		
	According to	ASME BPE	DIN 32676	ISO 2852	ISO 2852		
	Pipe standard	BS 4825-1	DIN 11850	ISO 2037	DIN EN ISO 1127		
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	¹⁾	L86	L97	I74	
	d ₀ 74	Inlet	I75	L79	L96	I73	
		Outlet	¹⁾	L86	L97	I74	
	d ₀ 92	Inlet	¹⁾	L79	L96	I73	
		Outlet	¹⁾	L86	L97	I74	
	Type 484	d ₀ 13	Inlet	For inlet please select vessel connection Type 5034 as shown on page 62.			
			Outlet	I76A80	L86A16	L97A80	I74A16
d ₀ 25		Inlet	For inlet please select vessel connection Type 5034 as shown on page 62.				
		Outlet	I76A81	L86A17	L97A81	I74A17	
Type 485	d ₀ 13	Inlet	For inlet please select integrated pipework connection Type 5034 as shown on page 74.				
		Outlet	I76A80	L86A16	L97A80	I74A16	
	d ₀ 25	Inlet	For inlet please select integrated pipework connection Type 5034 as shown on page 74.				
		Outlet	I76A81	L86A17	L97A81	I74A17	

1) Please select CO-Clamp

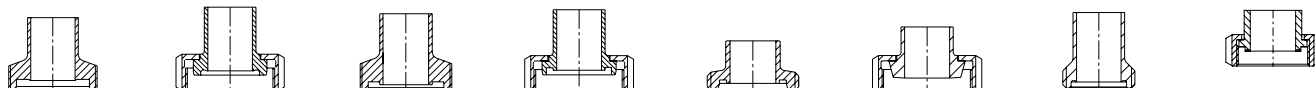
For better selection of the different clamp connecting dimensions please refer to page 16 and 17

Type	Other connections page
481	23
483	35
488	47
484	63
485	75



Threaded connection	Threaded connection
XG	XN
DIN ISO 228	ASME B 1.20.1
G 1/2	1/2" NPT
G 3/4	3/4" NPT
G 1	1" NPT

[illegible]



Aseptic thread	Aseptic clamp and nut	Aseptic thread	Aseptic clamp and nut	Aseptic thread	Aseptic clamp and nut	Sterile thread	Sterile clamp and nut
GS	BS	GT	BT	GO	KO	GD	BD
DIN 11864 T1 Range A	DIN 11864 T1 Range A	DIN 11864 T1 Range B	DIN 11864 T1 Range B	DIN 11851	DIN 11851	Neumo ²⁾	Neumo ²⁾
DIN 11850 DIN EN ISO 1127 BS 4825-1	DIN 11850 DIN EN ISO 1127 BS 4825-1	DIN 11850 DIN EN ISO 1127 BS 4825-1	DIN 11850 DIN EN ISO 1127 BS 4825-1	DIN 11850	DIN 11850	DIN 11850 DIN EN ISO 1127	DIN 11850 DIN EN ISO 1127
Option code							
✓	✓	✓	✓	H85L75I16	H85L76I16	✓	✓
✓	✓	✓	✓	A85L81A16	A85L82A16	✓	✓
✓	✓	✓	✓	H85L75I16	H85L76I16	✓	✓
✓	✓	✓	✓	A85L81A16	A85L82A16	✓	✓
✓	✓	✓	✓	H85L75I17	H85L76I17	✓	✓
✓	✓	✓	✓	A85L81A17	A85L82A17	✓	✓
✓	✓	✓	✓	✓	✓	✓	✓
✓	✓	✓	✓	✓	✓	✓	✓
✓	✓	✓	✓	✓	✓	✓	✓
✓	✓	✓	✓	✓	✓	✓	✓
✓	✓	✓	✓	✓	✓	✓	✓
✓	✓	✓	✓	✓	✓	✓	✓
✓ ¹⁾	✓ ¹⁾	✓ ¹⁾	✓ ¹⁾	✓	✓	✓	✓
✓	✓	✓	✓	✓	✓	✓	✓
-	-	-	-	✓	✓	-	-
✓ ¹⁾	✓ ¹⁾	✓ ¹⁾	✓ ¹⁾	✓	✓	✓	✓
-	-	-	-	✓	✓	-	-
-	-	-	-	-	-	-	-
✓	✓	✓	✓	A85L81A16	A85L82A16	✓	✓
-	-	-	-	-	-	-	-
✓	✓	✓	✓	A85L81A17	A85L82A17	✓	✓
-	-	-	-	-	-	-	-
✓	✓	✓	✓	A85L81A16	A85L82A16	✓	✓
-	-	-	-	-	-	-	-
✓	✓	✓	✓	A85L81A17	A85L82A17	✓	✓

¹⁾ Available for pipe standard DIN 11850 only

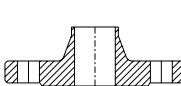
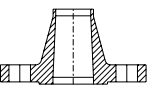
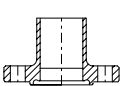
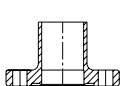
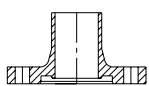
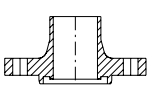
²⁾ BioConnect® is registered wordmark of NEUMO GmbH & Co. KG, D – 75438 Knittlingen

Welded end and flange connections

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.

Type	Other connections page
481	23
483	35
488	47
484	63
485	75

Overview								
Connection		Welded end	Flange PN 16 Range B1	Flange ASME Class 150RF	Aseptic flange groove	Aseptic flange tongue	Aseptic flange groove	Aseptic flange tongue
Code		00	FD	FA	NF	BF	NG	BG
According to		DIN 11850	DIN EN 1092	ASME B 16.5	DIN 11864 T2 Range A	DIN 11864 T2 Range A	DIN 11864 T2 Range B	DIN 11864 T2 Range B
Pipe standard		DIN 11850	–	–	DIN 11850 DIN EN ISO 1127 BS 4825-1	DIN 11850 DIN EN ISO 1127 BS 4825-1	DIN 11850 DIN EN ISO 1127 BS 4825-1	DIN 11850 DIN EN ISO 1127 BS 4825-1
Option code								
Type 481	d ₀ 10	Inlet	–	–	–	–	–	–
		Outlet	–	–	–	–	–	–
Type 483	d ₀ 13	Inlet	–	–	✓	✓	✓	✓
		Outlet	A85L83A16	–	✓	✓	✓	✓
	d ₀ 25	Inlet	–	–	✓	✓	✓	✓
		Outlet	A85L83A17	–	✓	✓	✓	✓
Type 488	d ₀ 23	Inlet	H85L77	I71	L94	✓	✓	✓
		Outlet	A85L83	I72	L95	✓	✓	✓
	d ₀ 37	Inlet	H85L77	I71	L94	✓	✓	✓
		Outlet	A85L83	I72	L95	✓	✓	✓
	d ₀ 46	Inlet	H85L77	I71	L94	✓	✓	✓
		Outlet	A85L83	I72	L95	✓	✓	✓
	d ₀ 60	Inlet	H85L77	I71	L94	✓	✓	✓
		Outlet	A85L83	I72	L95	✓ ¹⁾	✓ ¹⁾	✓ ¹⁾
	d ₀ 74	Inlet	H85L77	I71	L94	✓	✓	✓
		Outlet	A85L83	I72	L95	✓ ²⁾	✓ ²⁾	✓ ²⁾
	d ₀ 92	Inlet	H85L77	I71	L94	✓ ¹⁾	✓ ¹⁾	✓ ¹⁾
		Outlet	–	I72	L95	✓ ²⁾	✓ ²⁾	✓ ²⁾
Type 484	d ₀ 13	Inlet	–	–	–	–	–	–
		Outlet	✓	–	✓	✓	✓	✓
	d ₀ 25	Inlet	–	–	–	–	–	–
		Outlet	✓	–	✓	✓	✓	✓
Type 485	d ₀ 13	Inlet	–	–	–	–	–	–
		Outlet	✓	–	✓	✓	✓	✓
	d ₀ 25	Inlet	–	–	–	–	–	–
		Outlet	✓	–	✓	✓	✓	✓

¹⁾ Not available for pipe standard BS 4825-1

²⁾ Available for pipe standard DIN 11850 only

³⁾ XX = nominal pipe size of the safety valve.



Varivent flange groove	APV-FG1 Flange flat face PN 10	APV-FG1 Flange groove PN 10	DN 32/XX ³⁾ Varivent connection	DN 50/XX ³⁾ Varivent connection	DN 80/XX ³⁾ Varivent connection	DN 100/XX ³⁾ Varivent connection
TN	AF	AN	VG	VH	VC	VE
Tuchenhagen	APV	APV	Tuchenhagen	Tuchenhagen	Tuchenhagen	Tuchenhagen
DIN 11850	DIN 11850	DIN 11850	–	–	–	–
Option code						
–	–	–	–	–	–	–
–	–	–	–	–	–	–
H85H78I16	H85L90I16	H85L92I16	H85I82I16	H85I83I16	–	–
A85L84A16	A85L91A16	A85L93A16	–	–	–	–
H85H78I17	H85L90I17	H85L92I17	–	H85I83I17	–	–
A85L84A17	A85L91A17	A85L93A17	–	–	–	–
H85L78	L90	L92	I82	–	L70	L80
A85L84	L91	L93	–	–	–	–
H85L78	L90	L92	–	I83	L70	L80
A85L84	L91	L93	–	–	–	–
H85L78	L90	L92	–	–	L70	L80
A85L84	L91	L93	–	–	–	–
H85L78	L90	L92	–	–	L70	L80
A85L84	L91	L93	–	–	–	–
H85L78	L90	L92	–	–	L70	L80
A85L84	L91	L93	–	–	–	–
H85L78	L90	L92	–	–	–	L80
A85L84	L91	L93	–	–	–	–
–	–	–	–	–	–	–
A85L84A16	A85L91A16	A85L93A16	–	–	–	–
–	–	–	–	–	–	–
A85L84A17	A85L91A17	A85L93A17	–	–	–	–
–	–	–	–	–	–	–
A85L84A16	A85L91A16	A85L93A16	–	–	–	–
–	–	–	–	–	–	–
A85L84A17	A85L91A17	A85L93A17	–	–	–	–

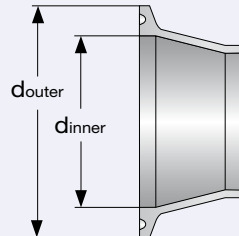
Connecting dimensions

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

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" ¹⁾	15,7	25,0	I75I78	–	–	–	–
			1" ¹⁾	22,1	50,5	I75I79	1" ¹⁾	22,1	50,5	I76A79
4834.	770	13	1" 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	4"	97,4	119,0	I76
	887	60	3"	72,9	91,0	I75	Please select CO-Clamp			
	888	74	4"	97,4	119,0	I75	Please select CO-Clamp			
	889	92	Please select CO-Clamp				Please select CO-Clamp			
CO – Clamp: ISO 2852			Pipe: ISO 2037							
Art.-No.		d ₀ [mm]	Size ²⁾	d _{inner} [mm]	d _{outer} [mm]	Option code	Size ²⁾	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	4"	97,6	119,0	L97
	887	60	3"	72,9	91,0	L96	4 1/2"	110,3	130,0	L97
	888	74	4"	97,6	119,0	L96	5 1/2"	135,7	155,0	L97
	889	92	4 1/2"	110,3	130,0	L96	6,625"	163,1	183,0	L97

¹⁾ Type B

²⁾ No designation in ISO 2852 available. Please check compatibility of dimensions.

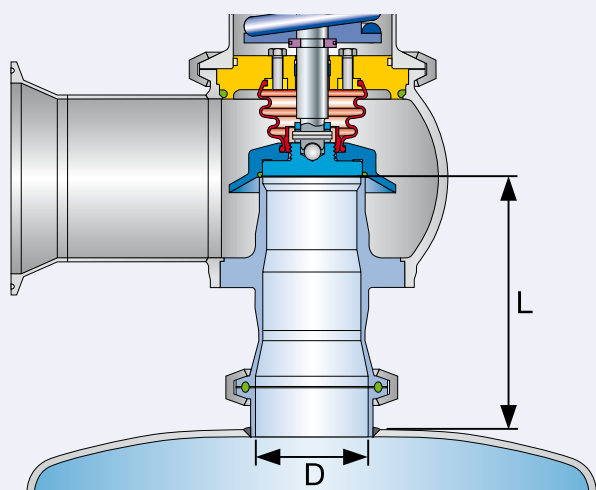
Low dead space

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.

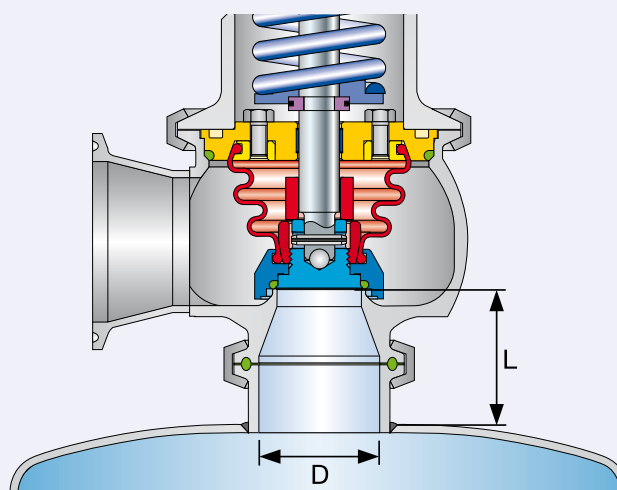
Types 481, 483 and 488 are improved solutions for safety valves with clamp connections, and have L/D ratios less than 1,5 and 2,0 (Type 488). The requirements of ASME BPE Part SD – 3.11.1 ($L/D < 2,0$) and FDA 21 CFR Part 177.2600 ($L/D < 1,5$) are fulfilled with these designs.

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.

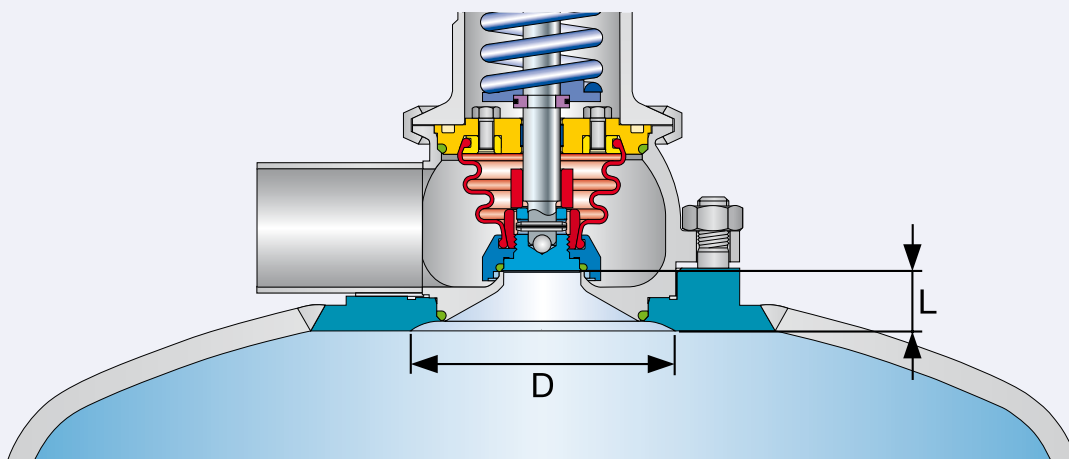
Dead space



Type 488
L/D ~ 2,0



Type 483
L/D ~ 1,5



Type 484
L/D ~ 0,3



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

Type 481

Type 481

Safety Relief Valves – spring loaded

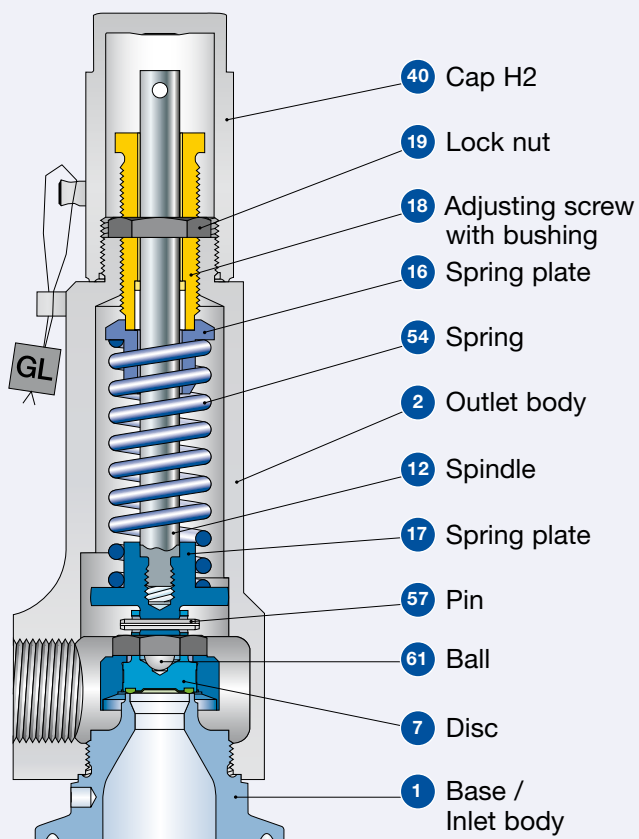


Type 481
Packed knob H4
 Inlet: Aseptic clamp and nut
 Outlet: Threaded connection

Contents	Page
Materials	
• Conventional design	20
How to order	
• Article numbers	22
• Available connections	23
Dimensions and weights	
• Metric Units	24
• US Units	25
Pressure temperature ratings	
• Metric Units + US Units	26
Selection chart H8	27
Surface quality	28
Approvals	29
Available options	30

Conventional design

Low set pressure



Type 481

with vulcanized soft seal

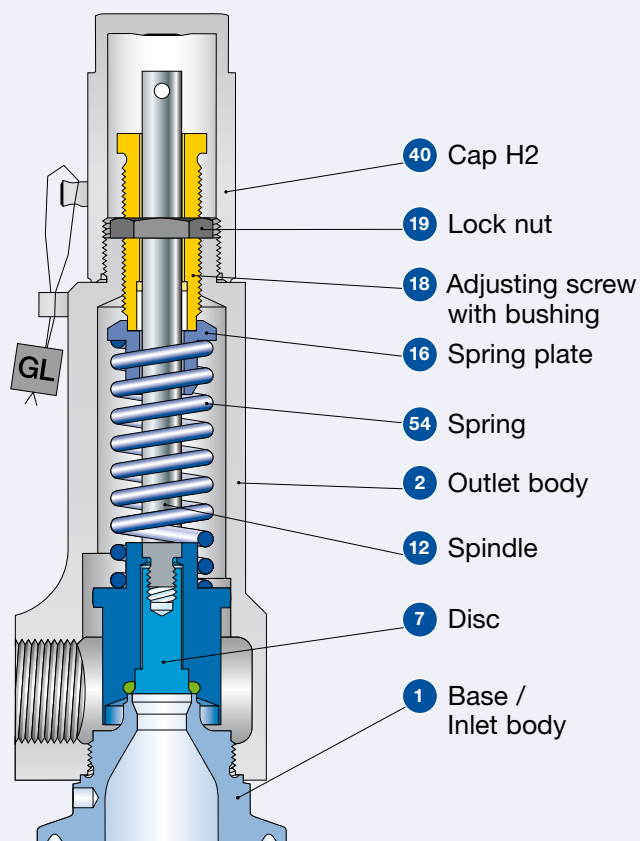
Cap H2

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	
			Set pressure	
			0,1 – 16 bar 1,5 – 232 psig	16 – 68 bar 233 – 986 psig
			Vulcanized soft seal	O-ring disc
1	Base / Inlet body		1.4404	1.4404
			SA 479 316L	SA 479 316L
2	Outlet body		1.4404	1.4404
			SA 479 316L	SA 479 316L
7	Disc		1.4404	1.4404
			SA 479 316L	SA 479 316L
			Vulcanized soft seal	O-ring soft seal
7.1 or 7.4	Soft seal vulcanized 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.

Article numbers

Article numbers

		Vulcanized soft seal	O-ring disc	
Actual Orifice diameter d ₀ [mm]		10	10	
Actual Orifice area A ₀ [mm²]		78,5	78,5	
Actual Orifice diameter d ₀ [inch]		0,394	0,394	
Actual Orifice area A ₀ [inch²]		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	7682
	H4	Art.-No. 4814.	7694	7684
	H8	Art.-No. 4814.	7698	7688
	p [bar] S/G/L		0,1 – 16	16 – 68
	p [psig] S/G/L		1,5 – 232	233 – 986

Available connections

Available connections			
Actual Orifice diameter d_0 [mm]		10	
Actual Orifice area A_0 [mm ²]		78,5	
Clamps		Option code inlet	
	DN	15	25
	SO	L79I14	L79I16
	DO	I73I14	I73I16
	NPS	3/4"	1"
	BO	I75I78	I75I79
	CO	–	L96I79
Aseptic screwed connection		Option code inlet	
	DN	–	
	XG	–	
	XN	–	
Pipe standard		DN 25	
DIN 11850 / DIN 11866 Range A	GS	H85H34I16	
	BS	H85H36I16	
	GT	H85H54I16	
	BT	H85H56I16	
	GO	H85L75I16	
	KO	H85L76I16	
	GD	H85H60I16	
	BD	H85H58I16	
Pipe standard		DN 25	
DIN EN ISO 1127 / DIN 11866 Range B	GS	H86H34I16	
	BS	H86H36I16	
	GT	H86H54I16	
	BT	H86H56I16	
	GD	H86H60I16	
	BD	H86H58I16	
Pipe standard		NPS 1"	
BS 4825-1 DIN 11866 Range C	GS	H66H34I79	
	BS	H66H36I79	
	GT	H66H54I79	
	BT	H66H56I79	

d_0 [mm]		10	
A_0 [mm ²]		78,5	
Clamps		Option code outlet	
	DN	–	25
	SO	–	L86A16
	DO	–	I74A16
	NPS	–	1"
	BO	–	I76A79
	CO	–	L97A79
Aseptic screwed connection		Option code outlet	
DN	G ¹ / ₂	G ³ / ₄	G1
XG	V65	V76	V66
XN	–	–	–
		V70	V77 V71
Pipe standard		DN 25	
	GS	A85H35A16	
	BS	A85H37A16	
	GT	A85H55A16	
	BT	A85H57A16	
	GO	A85L81A16	
	KO	A85L82A16	
	GD	A85H61A16	
	BD	A85H59A16	
Pipe standard		DN 25	
	GS	A86H35A16	
	BS	A86H37A16	
	GT	A86H55A16	
	BT	A86H57A16	
	GD	A86H61A16	
	BD	A86H59A16	
Pipe standard		NPS 1"	
	GS	A84H35A79	
	BS	A84H37A79	
	GT	A84H55A79	
	BT	A84H57A79	

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

Dimensions and weights

Metric Units

Inlet clamp connections / Outlet clamp connections

	d ₀ [mm]	10			
	A ₀ [mm²]	78,5			
Center to face	Inlet a [mm]		Outlet b [mm]		
	DN	15	25	DN	25
	SO	40	30	SO	65
	DO	40	30	DO	65
	NPS	¾"	1"	NPS	1"
	BO	40	30	BO	65
	CO	–	30	CO	65
	Clamp diameter		For varying clamp diameters		For varying clamp diameters
d _{inner} [mm] and d _{outer} [mm]		see page 16 and 17		see page 16 and 17	
Height - H4 H max. [mm]		203		193	
Height - H8 H max. [mm] double piston design		231		221	
Weight max. [kg]		1,4		1,4	

Inlet clamp connections / Outlet threaded connections

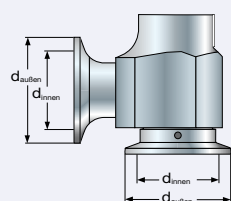
	d_o [mm]	10			
	A_o [mm ²]	78,5			
Outlet threaded connections		XG	$G\frac{1}{2}$	$G\frac{3}{4}$	G1
		XN	NPT $\frac{1}{2}$ "	NPT $\frac{3}{4}$ "	NPT1"
Inlet clamp diameters	SO	Center to face b [mm]	30	37	37
		Center to face a [mm]	40	40	43
	DO	Center to face a [mm]	30	30	33
		Center to face a [mm]	40	40	43
	BO	Center to face a [mm]	30	30	33
		Center to face a [mm]	40	40	43
	CO	Center to face a [mm]	30	30	33
		Center to face a [mm]	30	30	33
	DO	Center to face a [mm]	40	40	43
		Center to face a [mm]	30	30	33

Clamp diameter
 d_{inner} [mm] and d_{outer} [mm] For varying clamp diameters see page 16 and 17

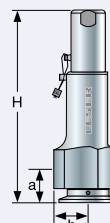
Height - H4 H max. [mm]	203	203	193
Height - H8 H max. [mm] double piston design	231	231	221
Weight max. [kg]	1,4	1,4	1,4

Inlet Aseptic screwed connections / Outlet Aseptic screwed connections

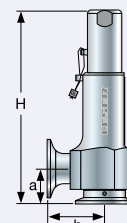
d_0 [mm]		10				
A_0 [mm ²]		78,5				
Center to face	Inlet a [mm]		Outlet b [mm]			
	GS	DN25, NPS 1"	45	GS	DN25, NPS 1"	72
	BS	DN25, NPS 1"	39	BS	DN25, NPS 1"	72
	GT	DN25, NPS 1"	43	GT	DN25, NPS 1"	72
	BT	DN25, NPS 1"	39	BT	DN25, NPS 1"	72
	GO	DN25	46	GO	DN25	72
	KO	DN25	39	KO	DN25	72
	GD	DN25	39	GD	DN25	72
	BD	DN25	42	BD	DN25	72
	Height - H4 H max. [mm]		196			
Height - H8 H max. [mm] double piston design		224				
Weight max. [kg]		1,4				



Type 481
Clamp diameters



Type 481
Outlet: Threaded connections



Type 481
Outlet: Clamp connection

Dimensions and weights

US Units

Inlet clamp connections / Outlet clamp connections

	d_0 [inch]	10	
	A_0 [inch ²]	78,5	
Center to face	Inlet a [inch]		Outlet b [inch]
	DN	15	25
	SO	1 ⁹ / ₁₆	2 ⁹ / ₁₆
	DO	1 ⁹ / ₁₆	2 ⁹ / ₁₆
	NPS	³ / ₄ "	1 "
	BO	1 ⁹ / ₁₆	2 ⁹ / ₁₆
	CO	–	2 ⁹ / ₁₆
Clamp diameter d_{inner} [inch] and d_{outer} [inch]		For varying clamp diameters see page 16 and 17	For varying clamp diameters see page 16 and 17
Height - H4 H max. [inch]		8	7 ¹⁹ / ₃₂
Height - H8 H max. [inch] double piston design		9 ³ / ₃₂	8 ¹¹ / ₁₆
Weight max. [lb]		3,086	3,086

Inlet clamp connections / Outlet threaded connections

	d_0 [inch]	0,394			
	A_0 [inch ²]	0,122			
Outlet threaded connections		XG	G ¹ / ₂	G ³ / ₄	G1
		XN	NPT ¹ / ₂ "	NPT ³ / ₄ "	NPT1 "
Inlet clamp diameters	SO	DN 15	Center to face b [inch]	1 ³ / ₁₆	1 ⁷ / ₁₆
		DN 25	Center to face a [inch]	1 ⁹ / ₁₆	1 ⁹ / ₁₆
	DO	DN 15	Center to face a [inch]	1 ³ / ₁₆	1 ³ / ₁₆
		DN 25	Center to face a [inch]	1 ⁹ / ₁₆	1 ⁹ / ₁₆
	BO	NPS ³ / ₄ "	Center to face a [inch]	1 ⁹ / ₁₆	1 ⁹ / ₁₆
		NPS 1 "	Center to face a [inch]	1 ³ / ₁₆	1 ³ / ₁₆
	CO	NPS 1 "	Center to face a [inch]	1 ³ / ₁₆	1 ³ / ₁₆
			Center to face a [inch]	1 ³ / ₁₆	1 ³ / ₁₆

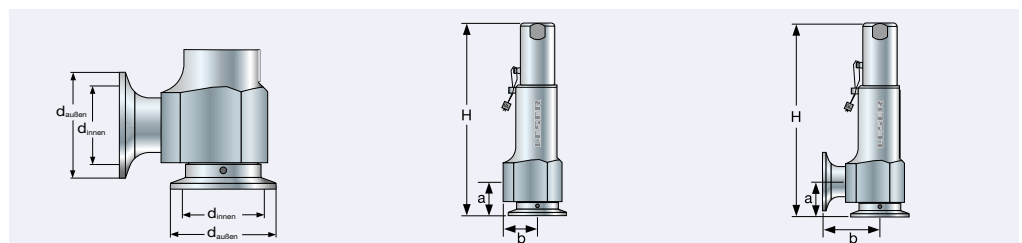
Clamp diameter
 d_{inner} [inch] and d_{outer} [inch]

For varying clamp diameters see page 16 and 17

Height - H4 H max. [inch]	8	8	7 ⁵ / ₈
Height - H8 H max. [inch] double piston design	9 ¹ / ₈	9 ¹ / ₈	8 ¹¹ / ₁₆
Weight max. [lb]	3,086	3,086	3,086

Inlet Aseptic screwed connections / Outlet Aseptic screwed connections

	d_0 [inch]	10	
	A_0 [inch ²]	78,5	
Center to face	Inlet a [inch]		Outlet b [inch]
	GS	DN25, NPS 1 "	2 ¹³ / ₁₆
	BS	DN25, NPS 1 "	2 ¹³ / ₁₆
	GT	DN25, NPS 1 "	2 ¹³ / ₁₆
	BT	DN25, NPS 1 "	2 ¹³ / ₁₆
	GO	DN25	2 ¹³ / ₁₆
	KO	DN25	2 ¹³ / ₁₆
	GD	DN25	2 ¹³ / ₁₆
	BD	DN25	2 ¹³ / ₁₆
Height - H4 H max. [inch]		7 ¹¹ / ₁₆	
Height - H8 H max. [inch] double piston design		8 ¹³ / ₁₆	
Weight max. [lb]		3,086	



Type 481
Clamp diameters

Type 481
Outlet: Threaded connections

Type 481
Outlet: Clamp connection

Pressure temperature ratings

Metric Units

	Vulcanized soft seal	O-ring disc
Actual Orifice diameter d_0 [mm]	10	10
Actual Orifice area A_0 [mm ²]	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 24)

Minimum set pressure	p [bar] S/G/L	0,1		16	
Maximum set pressure	p [bar] S/G/L	16		68	
Temperature range¹⁾		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 [inch ²]	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 25)

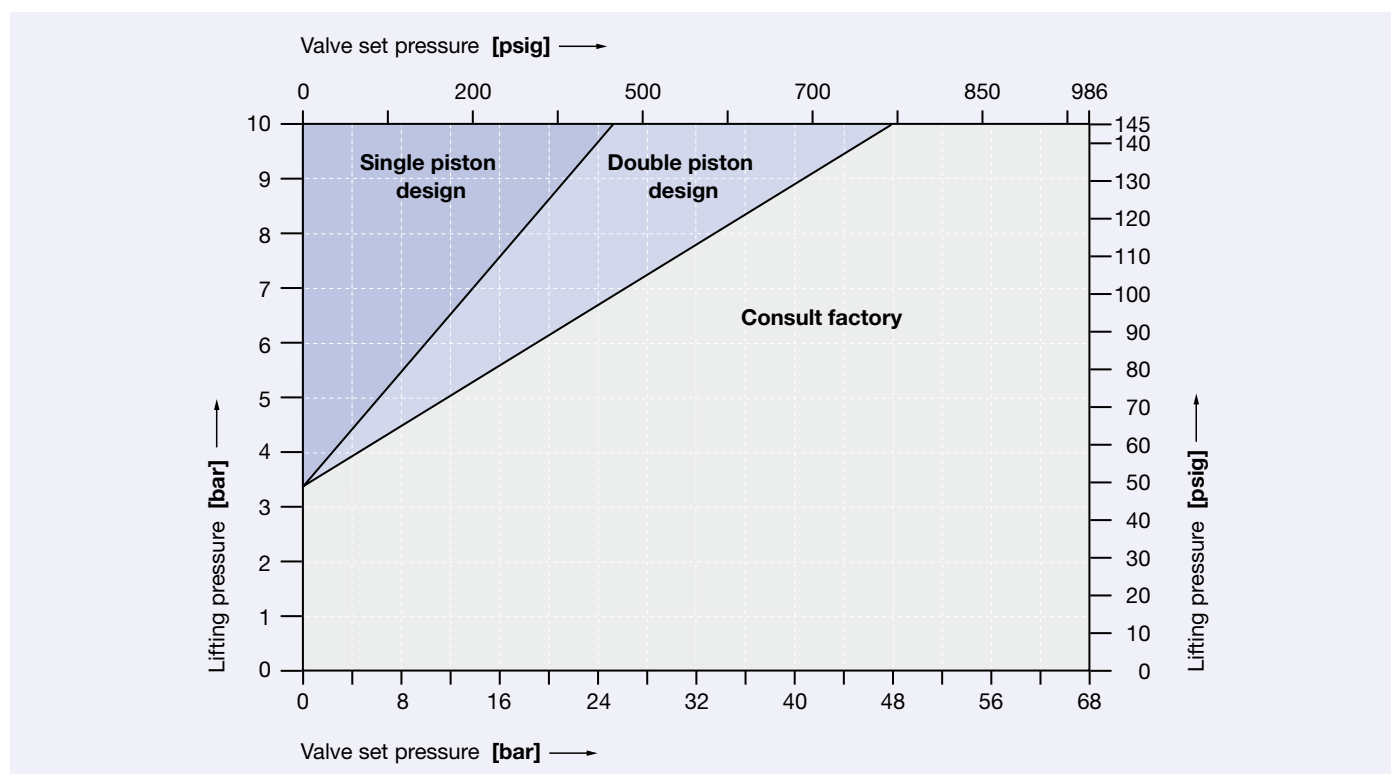
Minimum set pressure	p [psig] S/G/L	1,5		233	
Maximum set pressure	p [psig] S/G/L	232		986	
Temperature range¹⁾		Minimum	Maximum	Minimum	Maximum
EPDM	[°F]	-49	+302	-49	+302
CR	[°F]	-40	+212	-40	+212
FKM	[°F]	-4	+356	-4	+356
NBR	[°F]	-13	+230	-13	+230
FFKM	[°F]	+32	+482	+32	+482

¹⁾ The temperature is limited by the soft seal material

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

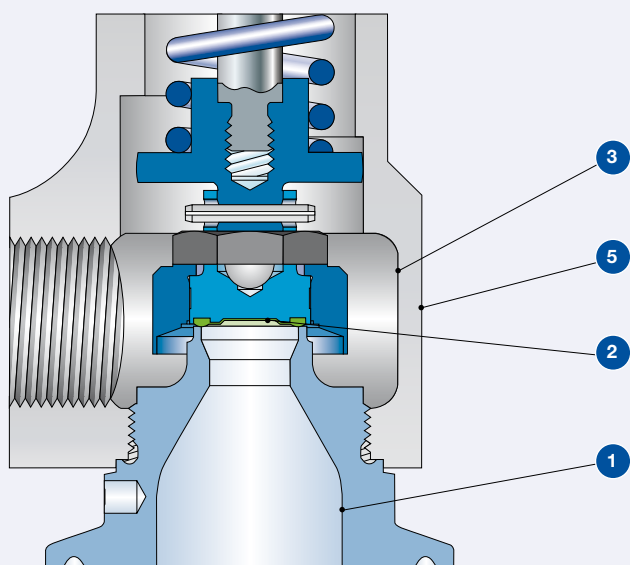


Surface quality

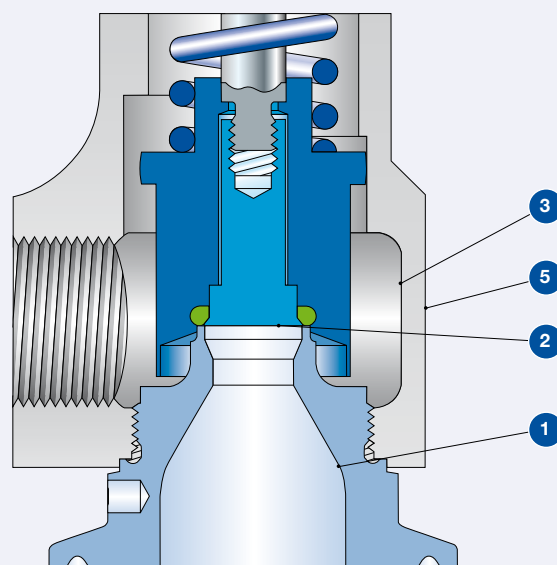
Surface quality						
			LESER Surface package			
Type of surface	Area		Option code	Clean finish	HyClean finish	Sterile finish
				B50	B51	B52
	Description	No.		R _a max.	R _a max.	R _a max.
LESER Surface grade						
Product contact surface	Inlet	1		M4	ME4	ME2
			[μm]	0,750	0,750	0,500
			[μinch]	30	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	
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



Approvals

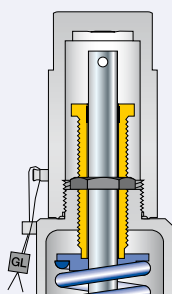
Approvals			
Actual Orifice diameter d_0 [mm]		10	
Actual Orifice area A_0 [mm ²]		78,5	
Actual Orifice diameter d_0 [inch]		0,394	
Actual Orifice area A_0 [inch ²]		0,122	
Europe		Coefficient of discharge K_{dr}	
DIN EN ISO 4126-1	Approval No.	07 202 0111 Z 0008/0/21-2	
	S/G	0,45 ($\leq$ 16 bar)	0,4 (> 16 bar)
	L	0,37 ($\leq$ 16 bar)	0,33 (> 16 bar)
Germany		Coefficient of discharge α_w	
AD 2000-Merkblatt A2	Approval No.	TÜV SV 980	
	S/G	0,45 ($\leq$ 16 bar)	0,4 (> 16 bar)
	L	0,37 ($\leq$ 16 bar)	0,33 (> 16 bar)
United States		Coefficient of discharge K	
ASME Sec. VIII	Approval No.	M 37190	
	S/G	Rated slope acc. to ASME VIII, Div. 1 UG-131 (d) (2) S: 2,55 lb / hr / psia $\triangle K \approx 0,406$ G: 0,904 SCFM / psia 8 $\triangle K \approx 0,406$	
	Approval No.	M 37202	
	L	Rated slope acc. to ASME VIII, Div. 1 UG-131 (d) (2) L: 1,49 GPM $\sqrt{\text{psid}^*} \triangle K \approx 0,322$	
Canada		Coefficient of discharge K	
CRN	Approval No.	OG0772.9C	
	S/G	Rated slope acc. to ASME VIII, Div. 1 UG-131 (d) (2) S: 2,55 lb / hr / psia $\triangle K \approx 0,406$ G: 0,904 SCFM / psia $\triangle K \approx 0,406$	
	L	Rated slope acc. to ASME VIII, Div. 1 UG-131 (d) (2) L: 1,49 GPM $\sqrt{\text{psid}^*} \triangle K \approx 0,322$	
China		Coefficient of discharge α_w	
AQSIQ	Approval No.	02301T	
	S/G	0,45 ($\leq$ 16 bar)	0,4 (> 16 bar)
	L	0,37 ($\leq$ 16 bar)	0,33 (> 16 bar)
Eurasian Custom Union		Coefficient of discharge α_w	
EAC	Approval No.	For current approval no. see www.leser.com	
	S/G	0,45 ($\leq$ 16 bar)	0,4 (> 16 bar)
	L	0,37 ($\leq$ 16 bar)	0,33 (> 16 bar)
Classification societies			
on request			

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

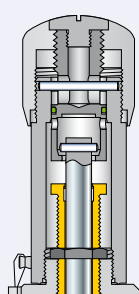
Available options

Type 481

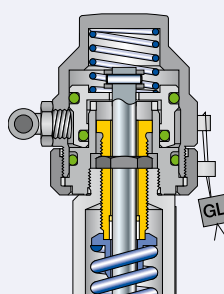
Gastight cap H2
H2



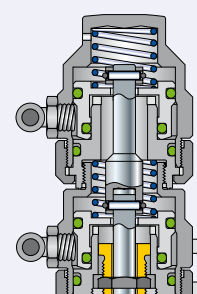
Gastight lifting device H4
Packed knob H4



Pneumatic lifting device H8
H8 single piston design

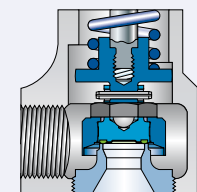


Pneumatic lifting device H8
J41: H8 double piston design



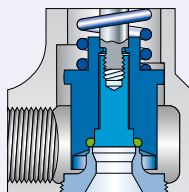
Vulcanized soft seal

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

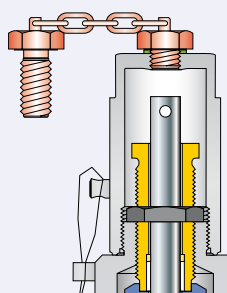


O-ring disc

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

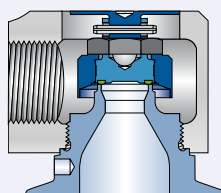


Test gag
J70: H2



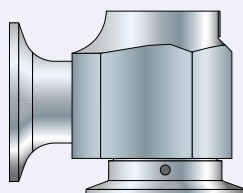
Female NPT outlet

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



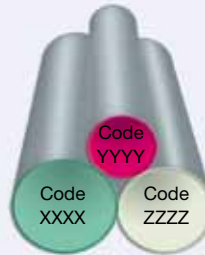
Clamp connection outlet

I76A79: Clamp BO 1"
L97A79: Clamp CO 1"



Special material

2.4610 HASTELLOY C4
2.4360 MONEL 400
1.4462 DUPLEX





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

Type 483

Safety Relief Valves – spring loaded

Type 483



Type 483
Packed knob H4
Inlet and outlet:
Flange connection

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- Article numbers 34
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- Metric Units 36
- US Units 37

Pressure temperature ratings

- Metric Units + US Units 38

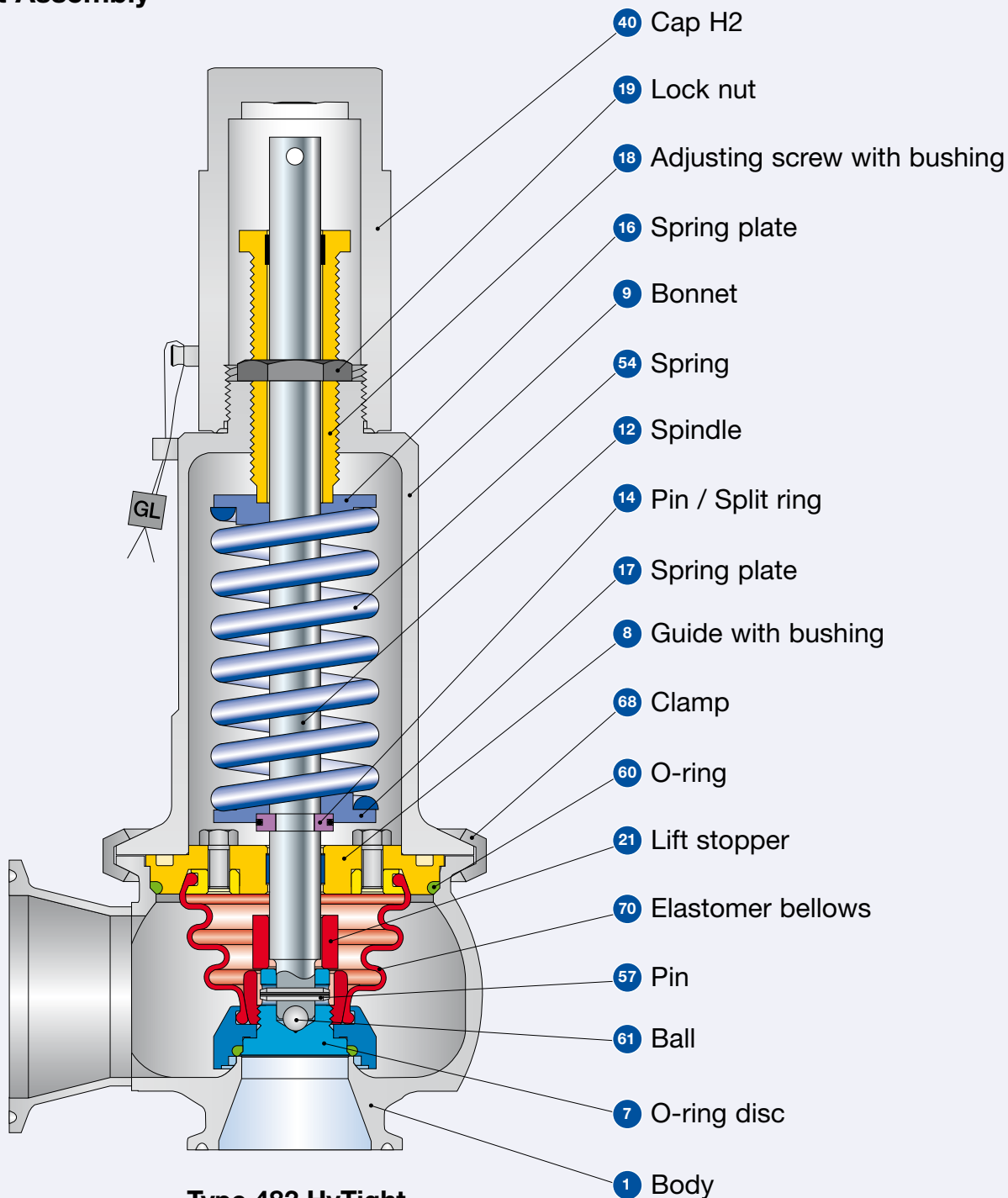
Selection chart H8 39

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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
		"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.

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
		FFKM "C" J20	FFKM "C" J20
Body material: 1.4435 (316L)			
Bonnet closed	H2	Art.-No. 4834.	7702
	H4	Art.-No. 4834.	7704
	H8	Art.-No. 4834.	7708
	p [bar] S/G/L		0,3 – 16
	p [psig] S/G/L		4,4 – 232
			7712
			7714
			7718
			1,5 – 232

Available connections

Available connections

Actual Orifice diameter d ₀ [mm]		13	25
Actual Orifice area A ₀ [mm ²]		133	491
Clamps			
		Option code inlet	
DN		25	40
SO		L79I16	L79I17
DO		I73I16	I73I17
NPS		1"	1 1/2"
BO		I75I79	I75I80
CO		L96I79	L96I80
Aseptic screwed connection			
		Option code inlet	
Pipe standard		DN	25
DIN 11850 / DIN 11866 Range A	00	–	
	GS	H85H34I16	H85H34I17
	BS	H85H36I16	H85H36I17
	GT	H85H54I16	H85H54I17
	BT	H85H56I16	H85H56I17
	GO	H85L75I16	H85L75I17
	KO	H85L76I16	H85L76I17
	GD	H85H60I16	H85H60I17
	BD	H85H58I16	H85H58I17
Pipe standard		DN	25
DIN EN ISO 1127 / DIN 11866 Range B	GS	H86H34I16	H86H34I17
	BS	H86H36I16	H86H36I17
	GT	H86H54I16	H86H54I17
	BT	H86H56I16	H86H56I17
	GD	H86H60I16	H86H60I17
	BD	H86H58I16	H86H58I17
Pipe standard		NPS	1"
BS 4825-1 DIN 11866 Range C	GS	H66H34I79	H66H34I80
	BS	H66H36I79	H66H36I80
	GT	H66H54I79	H66H54I80
	BT	H66H56I79	H66H56I80
Aseptic flanged connection			
		Option code inlet	
Pipe standard		DN	25
DIN 11850 / DIN 11866 Range A	NF	H85H71I16	H85H71I17
	BF	H85H73I16	H85H73I17
	NG	H85H75I16	H85H75I17
	BG	H85H77I16	H85H77I17
	TN	H85L78I16	H85L78I17
	AF	H85L90I16	H85L90I17
	AN	H85L92I16	H85L92I17
	VG	H85I82I16	–
	VH	H85I83I16	H85I83I17
Pipe standard		DN	25
DIN EN ISO 1127 / DIN 11866 Range B	NF	H86H71I16	
	BF	H86H73I16	
	NG	H86H75I16	
	BG	H86H77I16	
Pipe standard		NPS	1"
BS 4825-1 DIN 11866 Range C	NF	H66H71I79	H66H71I80
	BF	H66H73I79	H66H73I80
	NG	H66H75I79	H66H75I80
	BG	H66H77I79	H66H77I80

d ₀ [mm]		13	25
A ₀ [mm ²]		133	491
Clamps			
		Option code outlet	
DN		25	40
SO		L86A16	L86A17
DO		I74A16	I74A17
NPS		1 1/2"	2"
BO		I76A80	I76A81
CO		L97A80	L97A81
Aseptic screwed connection			
		Option code outlet	
DN		25	40
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
DN		25	40
GS		A86H35A16	A86H35A17
BS		A86H37A16	A86H37A17
GT		A86H55A16	A86H55A17
BT		A86H57A16	A86H57A17
GD		A86H61A16	A86H61A17
BD		A86H59A16	A86H59A17
NPS		1 1/2"	2"
GS		A84H35A80	A84H35A81
BS		A84H37A80	A84H37A81
GT		A84H55A80	A84H55A81
BT		A84H57A80	A84H57A81
Aseptic flanged connection			
		Option code outlet	
DN		25	40
NF		A85H72A16	A85H72A17
BF		A85H74A16	A85H74A17
NG		A85H76A16	A85H76A17
BG		A85H78A16	A85H78A17
TN		A85L84A16	A85L84A17
AF		A85L91A16	A85L91A17
AN		A85L93A16	A85L93A17
VG		–	–
VH		–	–
DN		25	40
NF		A86H72A16	A86H72A17
BF		A86H74A16	A86H74A17
NG		A86H76A16	A86H76A17
BG		A86H78A16	A86H78A17
DN		1 1/2"	2"
NF		A84H72A80	A84H72A81
BF		A84H74A80	A84H74A81
NG		A84H76A80	A84H76A81
BG		A84H78A80	A84H78A81

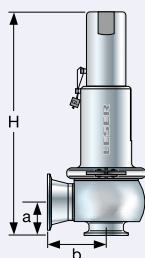
For definitions of connection codes please refer to pages 12 up to 15.

Dimensions and weights

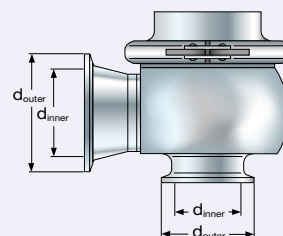
Metric Units

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] d_{outer} [mm]	For varying clamp diameters please refer to page 16 and 17	
Height – H4	H max. [mm]	206	303
Height – H8 double piston design	H max. [mm]	234	311
Aseptic screwed 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
Aseptic flange connections		Inlet a	
PN		16	16
Center to face	[mm]	45 (AN: 40 mm)	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 16 and 17	
–	–
–	–
Outlet b	
16	16
70	78
–	–
–	–
Outlet b	
16	16
76 (AN: 60 mm)	82
–	–
–	–



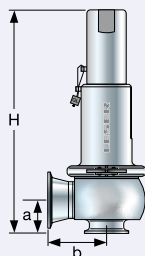
Type 483 – Cap H2



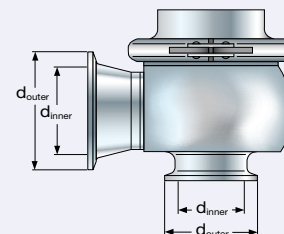
Type 483 – Clamp diameters

Dimensions and weights

US Units									
Actual Orifice diameter d_o [inch]			0,512		0,984			0,512	0,984
Actual Orifice area A_o [inch ²]			0,206		0,761			0,206	0,761
Welded connections			Inlet a			Outlet b			
	PN		16		16	16		16	
Center to face	[inch]		–		–	$3 \frac{7}{32}$		$3 \frac{19}{32}$	
Height – H4	H max. [inch]		–		–	–		–	
Height – H8 double piston design	H max. [inch]		–		–	–		–	
Clamp connections			Inlet a			Outlet b			
	PN		16		16	16		16	
Center to face	[inch]		$1 \frac{5}{32}$		$1 \frac{23}{32}$	$2 \frac{1}{16}$		$2 \frac{3}{8}$	
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]		$1 \frac{5}{32}$		$1 \frac{23}{32}$	–		–	
Height – H8 double piston design	H max. [inch]		$8 \frac{1}{8}$		$11 \frac{15}{16}$	–		–	
Aseptic screwed connections			Inlet a			Outlet b			
	PN		16		16	16		16	
Center to face	[inch]		$1 \frac{9}{16}$		$1 \frac{7}{8}$	$2 \frac{3}{4}$		$3 \frac{1}{16}$	
Height – H4	H max. [inch]		$8 \frac{17}{32}$		$11 \frac{31}{32}$	–		–	
Height – H8 double piston design	H max. [inch]		$9 \frac{27}{32}$		$12 \frac{17}{32}$	–		–	
Aseptic flange connections			Inlet a			Outlet b			
	PN		16		16	16		16	
Center to face	[inch]		$1 \frac{25}{32}$ (AN: $1 \frac{5}{8}$)		2	3 (AN: $2 \frac{3}{8}$)		$3 \frac{7}{32}$	
Height – H4	H max. [inch]		$8 \frac{3}{4}$		$12 \frac{7}{32}$	–		–	
Height – H8 double piston design	H max. [inch]		$9 \frac{27}{32}$		$12 \frac{17}{32}$	–		–	
Weight									
Weight	max.	[lb]	3,527		8,157				



Type 483 – Cap H2



Type 483 – Clamp diameters

Pressure temperature ratings

Metric Units

Actual Orifice diameter d_0 [mm]		13	25
Actual Orifice area A_0 [mm ²]		133	491
Body material: 1.4435 (316L)			
Inlet	Pressure rating	For pressure ratings and connection size please refer to chapter dimensions and weights (page 36)	
Outlet	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
EPDM	[°C]	-45	+150
FFKM	[°C]	0	+250

US Units

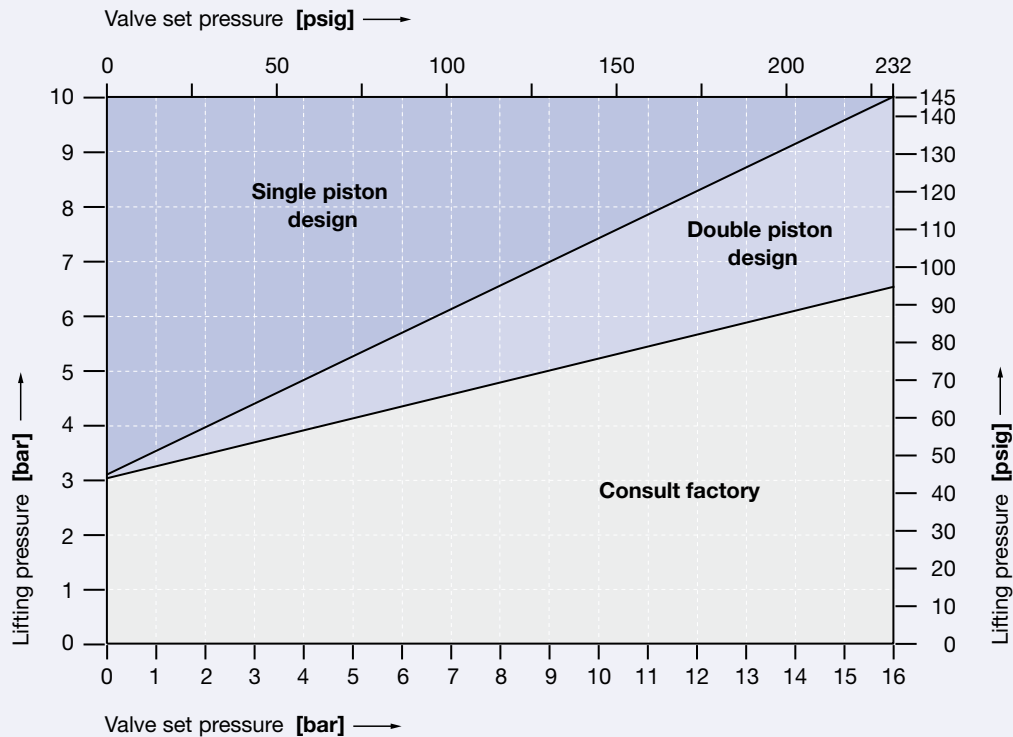
Actual Orifice diameter d_0 [inch]		0,512	0,984
Actual Orifice area A_0 [inch ²]		0,206	0,761
Body material: 1.4435 (316L)			
Inlet	Pressure rating	For pressure ratings and connection size please refer to chapter dimensions and weights (page 37)	
Outlet	Pressure rating		
Minimum set pressure	p [psig] S/G/L	4,4	1,5
Maximum set pressure	p [psig] S/G/L	232	232
Temperature range ¹⁾		Minimum	Maximum
EPDM	[°F]	-49	+302
FFKM	[°F]	+32	+482

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

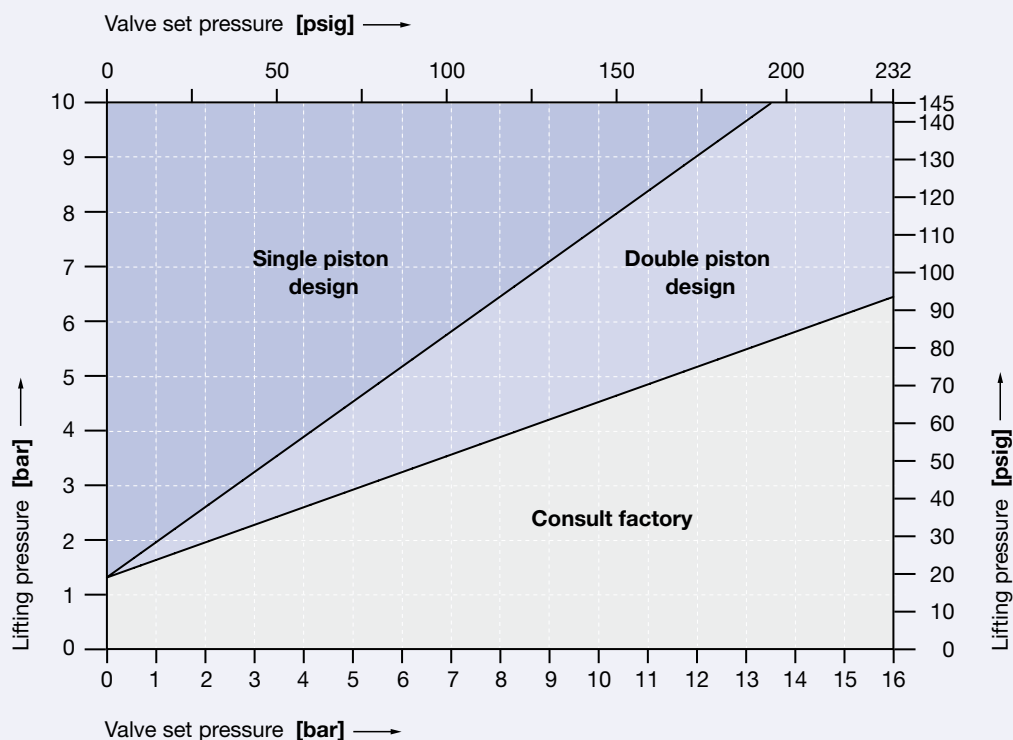
Selection chart H8

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



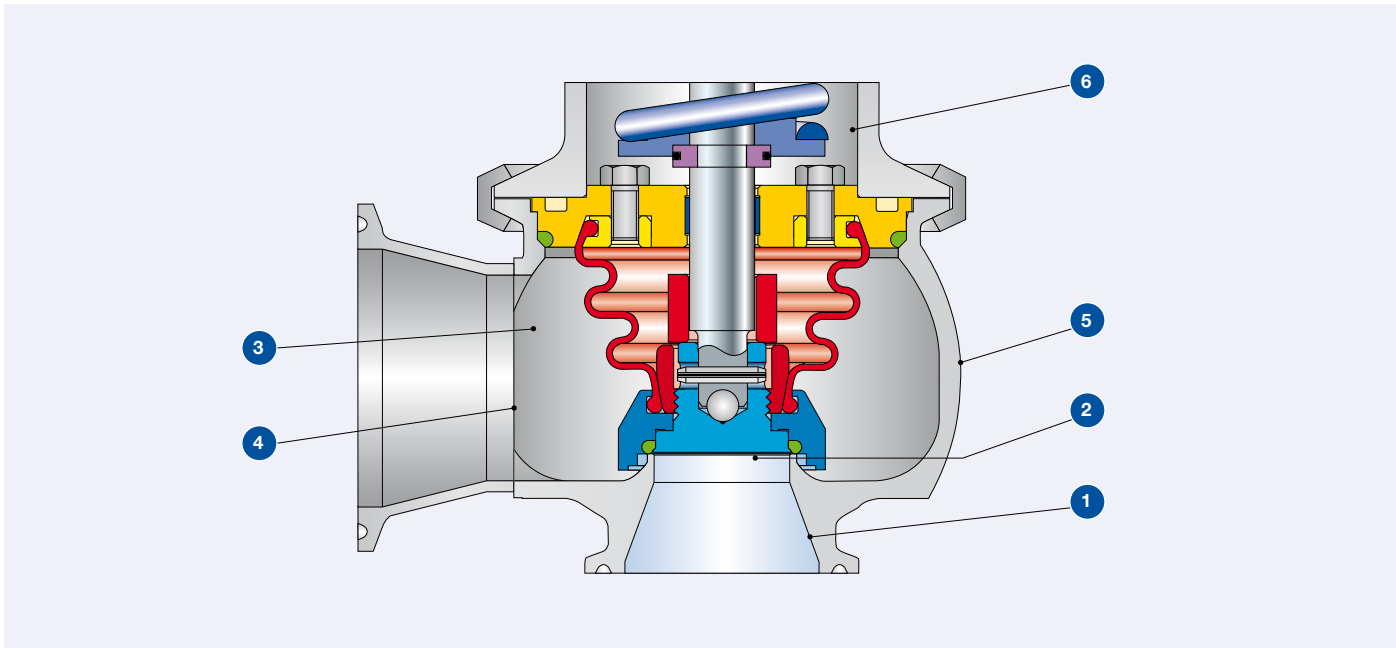
Selection chart lifting device H8, size I. d_0 25 mm / 0,984 inch



Surface quality

Surface quality						
				LESER Surface package		
Type of surface	Area			Clean finish	HyClean finish	Sterile finish
			Option code	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.



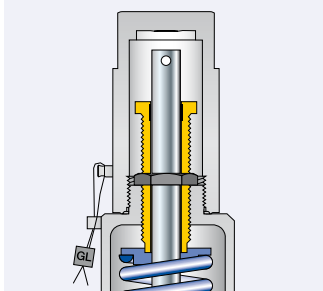
Approvals

Approvals			
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
Europe		Coefficient of discharge K_{dr}	
DIN EN ISO 4126-1	Approval No.	07 202 0111 Z 0008/0/20	
	S/G	0,6	0,38
	L	0,4	0,26
Germany		Coefficient of discharge α_w	
AD 2000-Merkblatt A2	Approval No.	TÜV SV 1047	
	S/G	0,6	0,38
	L	0,4	0,26
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 $\triangle K \approx 0,521$ G: 1,96 SCFM / psia $\triangle K \approx 0,521$	Rated slope acc. to ASME VIII, Div. 1 UG-131 (d) (2) S: 13,97 lb / hr / psia $\triangle K \approx 0,357$ G: 4,96 SCFM / psia $\triangle K \approx 0,357$
	Approval No.	M37156	M37178
	L	Rated slope acc. to ASME VIII, Div. 1 UG-131 (d) (2) L: 2,96 GPM $\sqrt{\text{psid}^*)} \triangle K \approx 0,379$	Rated slope acc. to ASME VIII, Div. 1 UG-131 (d) (2) L: 7,46 GPM $\sqrt{\text{psid}^*)} \triangle K \approx 0,258$
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 $\triangle K \approx 0,521$ G: 1,96 SCFM / psia $\triangle K \approx 0,521$	Rated slope acc. to ASME VIII, Div. 1 UG-131 (d) (2) S: 13,97 lb / hr / psia $\triangle K \approx 0,357$ G: 4,96 SCFM / psia $\triangle K \approx 0,357$
	L	Rated slope acc. to ASME VIII, Div. 1 UG-131 (d) (2) L: 2,96 GPM $\sqrt{\text{psid}^*)} \triangle K \approx 0,379$	Rated slope acc. to ASME VIII, Div. 1 UG-131 (d) (2) L: 7,46 GPM $\sqrt{\text{psid}^*)} \triangle K \approx 0,258$
China		Coefficient of discharge α_w	
AQSIQ	Approval No.	02301T	
	S/G	0,6	0,38
	L	0,4	0,26
Eurasian Custom Union		Coefficient of discharge α_w	
EAC	Approval No.	For current approval no. see www.leser.com	
	S/G	0,6	0,38
	L	0,4	0,26
Classification societies			
on request			

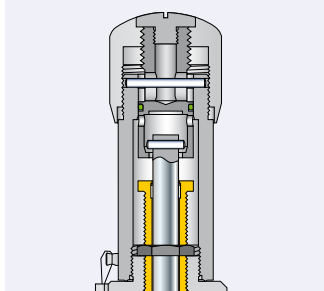
*) psid = Differential pressure P-P_d
P = absolute flow pressure [psia]
P_d = pressure at discharge from valve [psia]

Available options

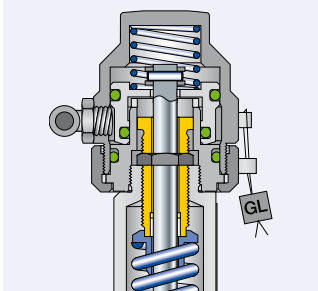
Gastight cap H2
H2



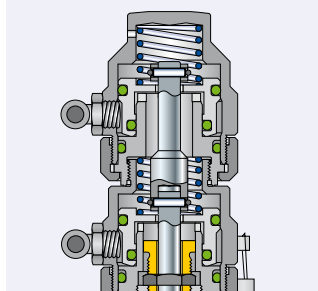
Gastight lifting device H4
Packed knob H4



Pneumatic lifting device H8
H8 single piston design

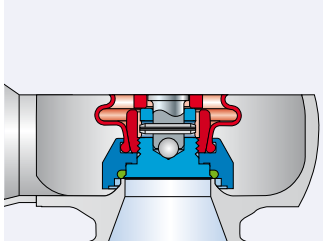


Pneumatic lifting device H8
J41: H8 double piston design

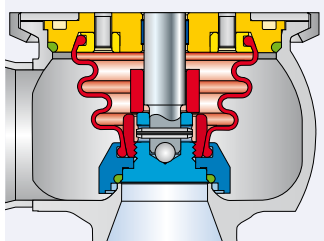


O-ring-disc

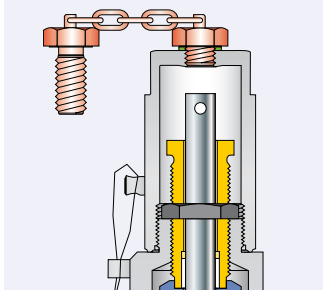
J22: EPDM "D"  
J20: FFKM "C"  



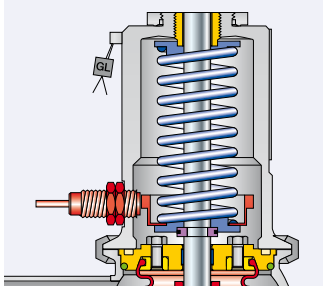
Bellows FFKM "C" 
S70 – only for d₀13



Test gag
J70: H2

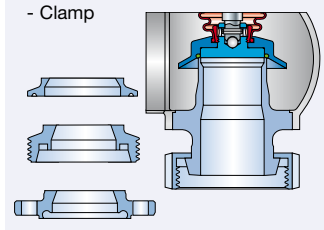


Lift indicator placed in bonnet
J38 + J93



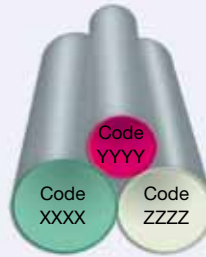
Multiple possibilities of aseptic connections

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



Special material

2.4610 HASTELLOY C4
2.4360 MONEL 400
1.4462 DUPLEX





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

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- Metric Units
- US Units

48/50

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- Metric Units + US Units

52

Selection chart H8

53

Surface quality

56

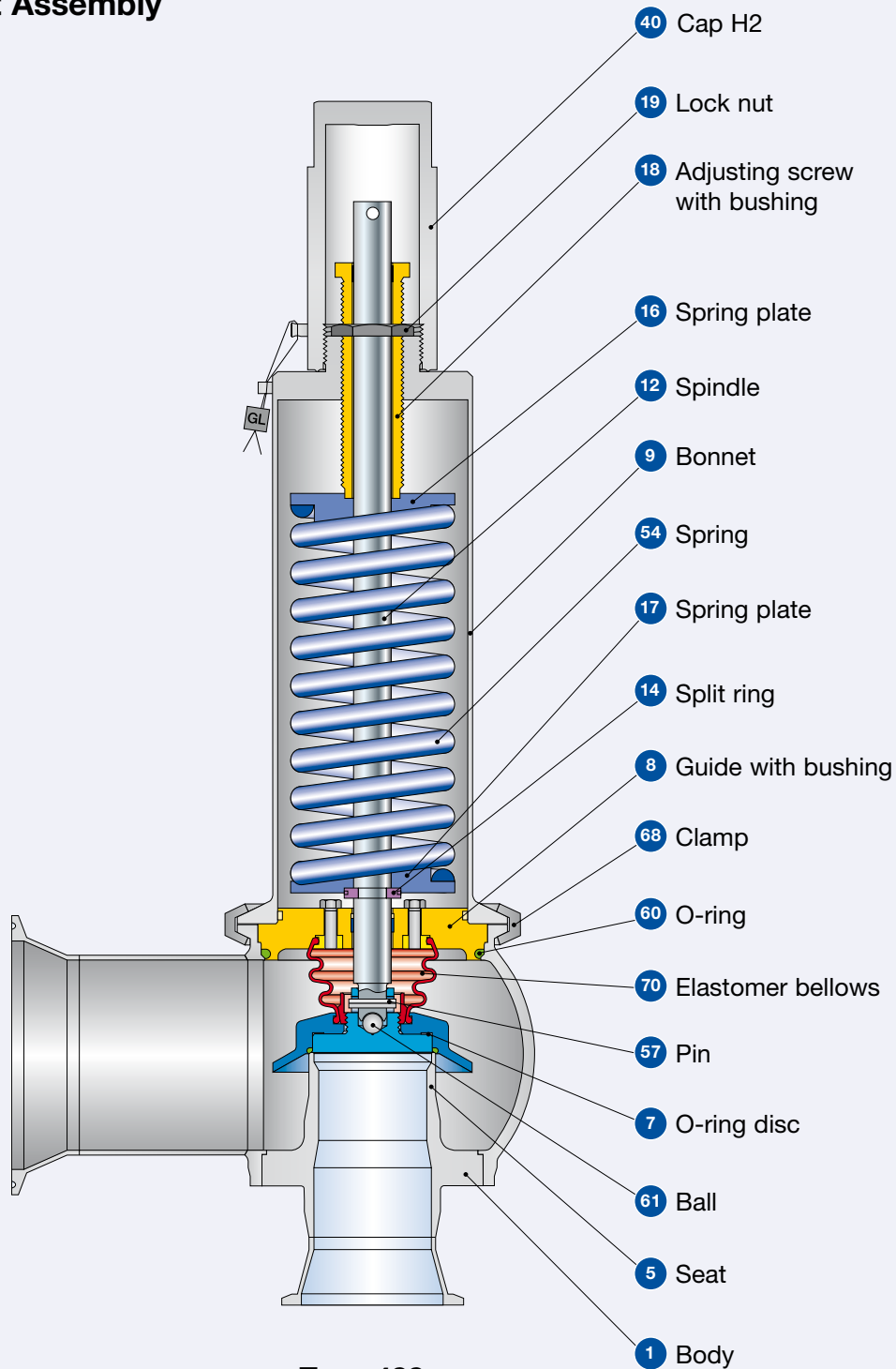
Approvals

57

Available options

58

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	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.

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

Available connections

	d ₀ [mm]	23	37	46	60	74	92
	A ₀ [mm ²]	416	1057	1662	2827	4301	6648
Clamps		Option code inlet					
	DN	25	40	50	65	80	100
	SO	L79					
	DO	I73					
	NPS	1½"	2"	2½"	3"	4"	1)
	BO	I75					
	NPS	1½"	2"	2½"	3"	4"	4½"
	CO	L96					
Aseptic screwed connection		Option code inlet					
Pipe standard	DN	25	40	50	65	80	100
DIN 11850 / DIN 11866 Range A	00	H85L77					
	GS	H85H34					
	BS	H85H36					
	GT	H85H54					
	BT	H85H56					
	GO	H85L75					
	KO	H85L76					
	GD	H85H60					
	BD	H85H58					
Pipe standard	DN	25	40	50	65	80	100
DIN EN ISO 1127 / DIN 11866 Range B	GS	H86H34					–
	BS	H86H36					–
	GT	H86H54					–
	BT	H86H56					–
	GD	H86H60					–
	BD	H86H58					–
Pipe standard	NPS	1½"	2"	2½"	3"	4"	4½"
BS 4825-1 DIN 11866 Range C	GS	H66H34					–
	BS	H66H36					–
	GT	H66H54					–
	BT	H66H56					–
Flanged connection		Option code inlet					
	DN	25	40	50	65	80	100
	FD	I71					
	NPS	1"	1½"	2"	2½"	3"	4"
	FA	L94					
Aseptic flanged connection		Option code inlet					
Pipe standard	DN	25	40	50	65	80	100
DIN 11850 / DIN 11866 Range A	NF	H85H71					
	BF	H85H73					
	NG	H85H75					
	BG	H85H77					
	TN	H85L78					
	AF	L90					
	AN	L92					
	VC	L70					–
	VG	I82	–				
	VH	I83			–		
	VE	L80					
Pipe standard	DN	25	40	50	65	80	100
DIN EN ISO 1127 / DIN 11866 Range B	NF	H86H71					
	BF	H86H73					
	NG	H86H75					
	BG	H86H77					
Pipe standard	NPS	1½"	2"	2½"	3"	4"	4½"
BS 4825-1 DIN 11866 Range C	NF	H66H71					
	BF	H66H73					
	NG	H66H75					
	BG	H66H77					

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

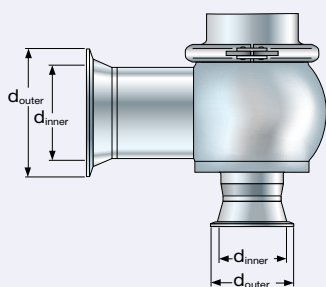
d ₀ [mm]	23	37	46	60	74	92
A ₀ [mm ²]	416	1057	1662	2827	4301	6648
Clamps			Option code outlet			
DN	40	65	80	100	125	150
SO	L86					—
DO	I74					
NPS	2"	3"	4"	1)	1)	1)
BO	I76					
NPS	2"	3"	3 1/2"	4 1/2"	5 1/2"	6,625"
CO	L97					
Aseptic screwed connection			Option code outlet			
DN	40	65	80	100	125	150
00	A85L83					—
GS	A85H35				—	—
BS	A85H37				—	—
GT	A85H55					—
BT	A85H57					—
GO	A85L81					—
KO	A85L82					—
GD	A85H61					—
BD	A85H59					—
DN	40	65	80	100	125	150
GS	A86H35			—	—	—
BS	A86H37			—	—	—
GT	A86H55			—	—	—
BT	A86H57			—	—	—
GD	A86H61				—	—
BD	A86H59				—	—
NPS	2"	3"	4"	4 1/2"	5"	6"
GS	A84H35			—	—	—
BS	A84H37			—	—	—
GT	A84H55			—	—	—
BT	A84H57			—	—	—
Flanged connection			Option code outlet			
DN	40	65	80	100	125	150
FD	I72					
NPS	1 1/2"	2 1/2"	3"	4"	5"	6"
FA	L95					
Aseptic flanged connection			Option code outlet			
DN	40	65	80	100	125	150
NF	A85H72					
BF	A85H74					
NG	A85H76					
BG	A85H78					
TN	A85L84					
AF	L91					
AN	L93					
VC	—					
VG	—					
VH	—					
VE	—					
DN	40	65	80	100	125	150
NF	A86H72				—	—
BF	A86H74				—	—
NG	A86H76				—	—
BG	A86H78				—	—
NPS	2"	3"	4"	4 1/2"	5"	6"
NF	A84H72			—	—	—
BF	A84H74			—	—	—
NG	A84H76			—	—	—
BG	A84H78			—	—	—

1) Please select CO-Clamp

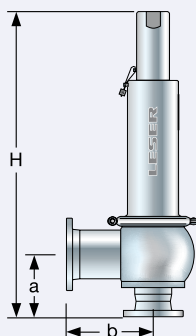
Dimensions and weights

Metric Units

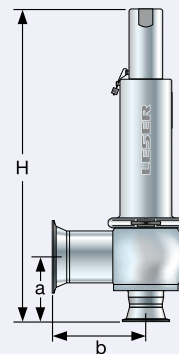
Actual Orifice diameter d ₀ [mm]			23	37	46	60	74	92	23	37	46	60	74	92	
Actual Orifice area A ₀ [mm ²]			416	1075	1662	2827	4301	6648	416	1075	1662	2827	4301	6648	
Welded connections			Inlet a						Outlet b						
	PN	16	16	16	16	16	16	16	16	16	16	16	16	16	
Center to face	[mm]	53	70	78	87	103	121		90	125	125	125	150	–	
Height – H4	H max. [mm]	310	487	502	521	625	662		310	487	502	521	625	662	
Height – H8 double piston design	H max. [mm]	318	514	529	548	687	724		318	514	529	548	687	724	
Clamp connections			Inlet a						Outlet b						
	PN	16	16	16	10	10	10	16	10	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 16 and 17						For varying clamp diameters please refer to page 16 and 17							
	d _{outer} [mm]														
Height – H4	H max. [mm]	331	509	524	543	646	690	331	509	524	543	646	690		
Height – H8 double piston design	H max. [mm]	339	536	551	570	709	752	339	536	551	570	709	752		
Aseptic screwed connections			Inlet a						Outlet b						
	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	–		
Height – H4	H max. [mm]	349	527	530	551	655	692	349	527	530	551	655	692		
Height – H8 double piston design	H max. [mm]	357	554	557	578	717	754	357	554	557	578	717	754		
Aseptic flanged connections acc. to DIN 11684			Inlet a						Outlet b						
	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	512	527	546	650	687	335	512	527	546	650	687		
Height – H8 double piston design	H max. [mm]	343	539	554	573	712	749	343	539	554	573	712	749		
Weight															
Weight	max. [kg]	9	20	21,7	26,5	47	56								



Clamp diameters



Flanged connection



Clamp connection

Dimensions and weights

US Units

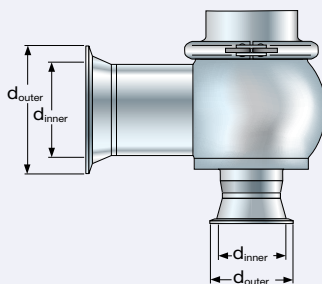
Actual Orifice diameter d_0 [inch]		0,906	1,457	1,811	2,362	2,913	3,622
Actual Orifice area A_0 [inch ²]		0,644	1,67	2,576	4,38	6,666	10,30
Welded connections		Inlet a					
	PN	16	16	16	16	16	16
Center to face	[inch]	2 ³ / ₃₂	2 ³ / ₄	3 ¹ / ₁₆	3 ⁷ / ₁₆	4 ¹ / ₃₂	4 ³ / ₄
Height – H4	H max. [inch]	12 ³ / ₁₆	19 ³ / ₁₆	19 ³ / ₄	20 ¹ / ₂	24 ⁵ / ₈	16 ¹ / ₁₆
Height – H8 double piston design	H max. [inch]	12 ¹ / ₂	20 ¹ / ₄	20 ¹³ / ₁₆	21 ⁹ / ₁₆	27 ¹ / ₁₆	28 ¹ / ₂
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 16 and 17					
	d_{outer} [inch]						
Height – H4	H max. [inch]	13 ¹ / ₁₆	20 ¹ / ₁₆	20 ⁵ / ₈	21 ³ / ₈	25 ⁷ / ₁₆	27 ³ / ₁₆
Height – H8 double piston design	H max. [inch]	13 ³ / ₈	21 ¹ / ₈	21 ¹¹ / ₁₆	22 ⁷ / ₁₆	27 ¹⁵ / ₁₆	29 ⁵ / ₈
Aseptic screwed 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 ³ / ₄	20 ³ / ₄	20 ⁷ / ₈	21 ¹¹ / ₁₆	25 ¹³ / ₁₆	27 ¹ / ₄
Height – H8 double piston design	H max. [inch]	14 ¹ / ₁₆	21 ¹³ / ₁₆	21 ¹⁵ / ₁₆	22 ³ / ₄	28 ¹ / ₄	29 ¹¹ / ₁₆
Aseptic flanged connections acc. to DIN 11684		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 ³ / ₁₆	20 ³ / ₄	21 ¹ / ₂	25 ⁹ / ₁₆	27 ¹ / ₁₆
Height – H8 double piston design	H max. [inch]	13 ¹ / ₂	21 ¹ / ₄	21 ¹³ / ₁₆	22 ⁹ / ₁₆	28 ¹ / ₁₆	29 ¹ / ₂
Weight							
Weight	max. [lb]	19,8	44,1	47,8	58,4	103,6	123,5

		Outlet b					
		16	16	16	16	16	16
		3 ¹⁷ / ₃₂	4 ¹⁵ / ₁₆	4 ¹⁵ / ₁₆	4 ¹⁵ / ₁₆	5 ¹⁴ / ₁₆	–
		12 ³ / ₁₆	19 ³ / ₁₆	19 ³ / ₄	20 ¹ / ₂	24 ⁵ / ₈	16 ¹ / ₁₆
		12 ¹ / ₂	20 ¹ / ₄	20 ¹³ / ₁₆	21 ⁹ / ₁₆	27 ¹ / ₁₆	28 ¹ / ₂

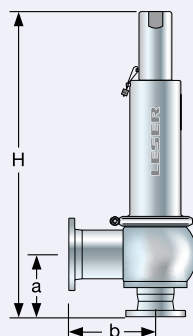
		Outlet b					
		16	16	16	10	10	10
		4 ³ / ₈	5 ²⁵ / ₃₂	5 ²⁵ / ₃₂	6	7	7 ¹ / ₈
		For varying clamp diameters please refer to page 16 and 17					
		13 ¹ / ₁₆	20 ¹ / ₁₆	20 ⁵ / ₈	21 ³ / ₈	25 ⁷ / ₁₆	27 ³ / ₁₆
		13 ³ / ₈	21 ¹ / ₈	21 ¹¹ / ₁₆	22 ⁷ / ₁₆	27 ¹⁵ / ₁₆	29 ⁵ / ₈

		Outlet b					
		40	25	25	25	16	16
		5 ¹ / ₈	6 ¹ / ₈	6 ¹ / ₈	6 ¹ / ₈	7 ⁹ / ₃₂	–
		13 ³ / ₄	20 ³ / ₄	20 ⁷ / ₈	21 ¹¹ / ₁₆	25 ¹³ / ₁₆	27 ¹ / ₄
		14 ¹ / ₁₆	21 ¹³ / ₁₆	21 ¹⁵ / ₁₆	22 ³ / ₄	28 ¹ / ₄	29 ¹¹ / ₁₆

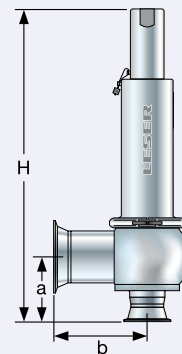
		Outlet b					
		25	16	16	16	10	10
		4 ¹ / ₂	5 ⁷ / ₈	5 ⁷ / ₈	5 ⁷ / ₈	6 ⁷ / ₈	7 ³ / ₁₆
		13 ³ / ₁₆	20 ³ / ₁₆	20 ³ / ₄	21 ¹ / ₂	25 ⁹ / ₁₆	27 ¹ / ₁₆
		13 ¹ / ₂	21 ¹ / ₄	21 ¹³ / ₁₆	22 ⁹ / ₁₆	28 ¹ / ₁₆	29 ¹ / ₂



Clamp diameters



Flanged connection

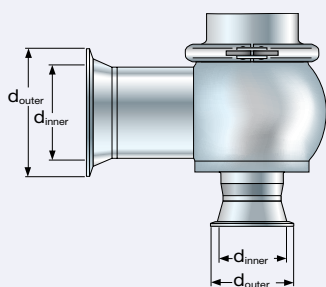


Clamp connection

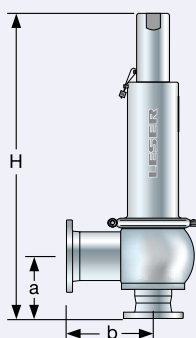
Dimensions and weights

Metric Units

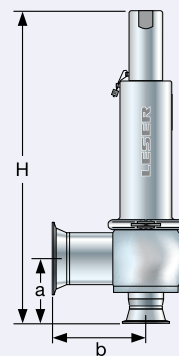
Actual Orifice diameter d_0 [mm]		23	37	46	60	74	92	23	37	46	60	74	92
Actual Orifice area A_0 [mm ²]		416	1075	1662	2827	4301	6648	416	1075	1662	2827	4301	6648
DIN / ASME Flange		Inlet a						Outlet b					
	PN	16	16	16	16	16	16	16	16	16	16	16	16
Center to face	[mm]	91	112	123	132	153	173	132	170	175	177	179	184
Height – H4	H max. [mm]	348	529	547	566	675	714	348	529	547	566	675	714
Height – H8 double piston design	H max. [mm]	356	556	574	593	737	776	356	556	574	593	737	776
APV Flange		Inlet a						Outlet b					
	PN	10	10	10	10	10	10	10	10	10	10	10	10
Center to face	[mm]	77	94	102	111	127	145	114	149	149	149	177	–
Height – H4	H max. [mm]	334	511	526	545	649	686	334	511	526	545	649	686
Height – H8 double piston design	H max. [mm]	342	538	553	572	711	748	342	538	553	572	711	748
Tuchenhagen Varivent Connections		Inlet a						Outlet b					
	PN	10	10	10	10	10	10	–	–	–	–	–	–
Center to face	[mm]	90	107	115	124	140	158	–	–	–	–	–	–
Height – H4	H max. [mm]	347	524	539	558	662	699	347	524	539	558	662	699
Height – H8 double piston design	H max. [mm]	355	551	566	585	724	761	355	551	566	585	724	761
Weight													
Weight	max. [kg]	9	20	21,7	26,5	47	56						



Clamp diameters



Flanged connection

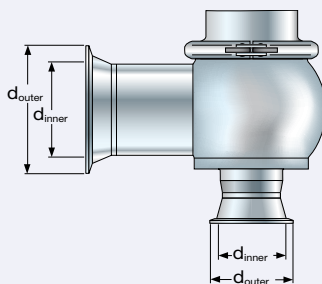


Clamp connection

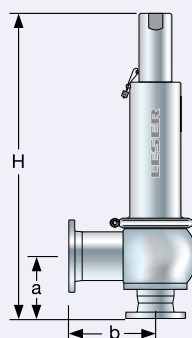
Dimensions and weights

US Units							
Actual Orifice diameter d_0 [inch]		23	37	46	60	74	92
Actual Orifice area A_0 [inch ²]		416	1075	1662	2827	4301	6648
DIN / ASME Flange							
		Inlet a					
		PN	16	16	16	16	16
Center to face	[inch]		3 ⁹ / ₁₆	4 ⁷ / ₁₆	4 ¹³ / ₁₆	5 ³ / ₁₆	6 ¹³ / ₁₆
Height – H4	H max. [inch]		13 ¹¹ / ₁₆	20 ¹³ / ₁₆	21 ⁹ / ₁₆	22 ⁵ / ₁₆	26 ⁹ / ₁₆
Height – H8 double piston design	H max. [inch]		14	21 ⁷ / ₈	22 ⁵ / ₈	23 ³ / ₈	29
APV Flange							
		Inlet a					
		PN	10	10	10	10	10
Center to face	[inch]		13 ¹ / ₁₆	13 ¹¹ / ₁₆	4	4 ³ / ₈	5
Height – H4	H max. [inch]		13 ¹ / ₈	20 ¹ / ₈	20 ¹¹ / ₁₆	21 ⁷ / ₁₆	25 ⁹ / ₁₆
Height – H8 double piston design	H max. [inch]		13 ⁷ / ₈	21 ³ / ₁₆	21 ³ / ₄	22 ¹ / ₂	28
Tuchenhausen Varivent Connections							
		Inlet a					
		PN	10	10	10	10	10
Center to face	[inch]		3 ⁹ / ₁₆	4 ³ / ₁₆	4 ¹ / ₂	4 ⁷ / ₈	5 ¹ / ₂
Height – H4	H max. [inch]		13 ¹¹ / ₁₆	20 ⁵ / ₈	21 ¹ / ₄	21 ¹⁵ / ₁₆	26 ¹ / ₁₆
Height – H8 double piston design	H max. [inch]		14	21 ¹¹ / ₁₆	22 ⁵ / ₁₆	23 ¹ / ₁₆	28 ¹⁵ / ₁₆
Weight							
Weight	max. [lb]		19,8	44,1	47,8	58,4	103,6

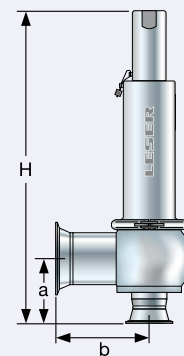
23	37	46	60	74	92
416	1075	1662	2827	4301	6648
Outlet b					
16	16	16	16	16	16
5 ³ / ₁₆	6 ¹¹ / ₁₆	6 ⁷ / ₈	6 ¹⁵ / ₁₆	7 ¹ / ₁₆	7 ¹ / ₄
13 ¹¹ / ₁₆	20 ¹³ / ₁₆	21 ⁹ / ₁₆	22 ⁵ / ₁₆	26 ⁹ / ₁₆	28 ¹ / ₈
14	21 ⁷ / ₈	22 ⁵ / ₈	23 ³ / ₈	29	30 ⁹ / ₁₆
Outlet b					
10	10	10	10	10	10
4 ¹ / ₂	5 ⁷ / ₈	5 ⁷ / ₈	5 ⁷ / ₈	6 ¹⁵ / ₁₆	–
13 ¹ / ₈	20 ¹ / ₈	20 ¹¹ / ₁₆	21 ⁷ / ₁₆	25 ⁹ / ₁₆	27
13 ⁷ / ₈	21 ³ / ₁₆	21 ³ / ₄	22 ¹ / ₂	28	29 ⁷ / ₁₆
Outlet b					
–	–	–	–	–	–
13 ¹¹ / ₁₆	20 ⁵ / ₈	21 ¹ / ₄	21 ¹⁵ / ₁₆	26 ¹ / ₁₆	27 ¹ / ₂
14	21 ¹¹ / ₁₆	22 ⁵ / ₁₆	23 ¹ / ₁₆	28 ¹ / ₂	29 ¹⁵ / ₁₆



Clamp diameters



Flanged connection



Clamp connection

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 48/50)											
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 49/51)											
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.

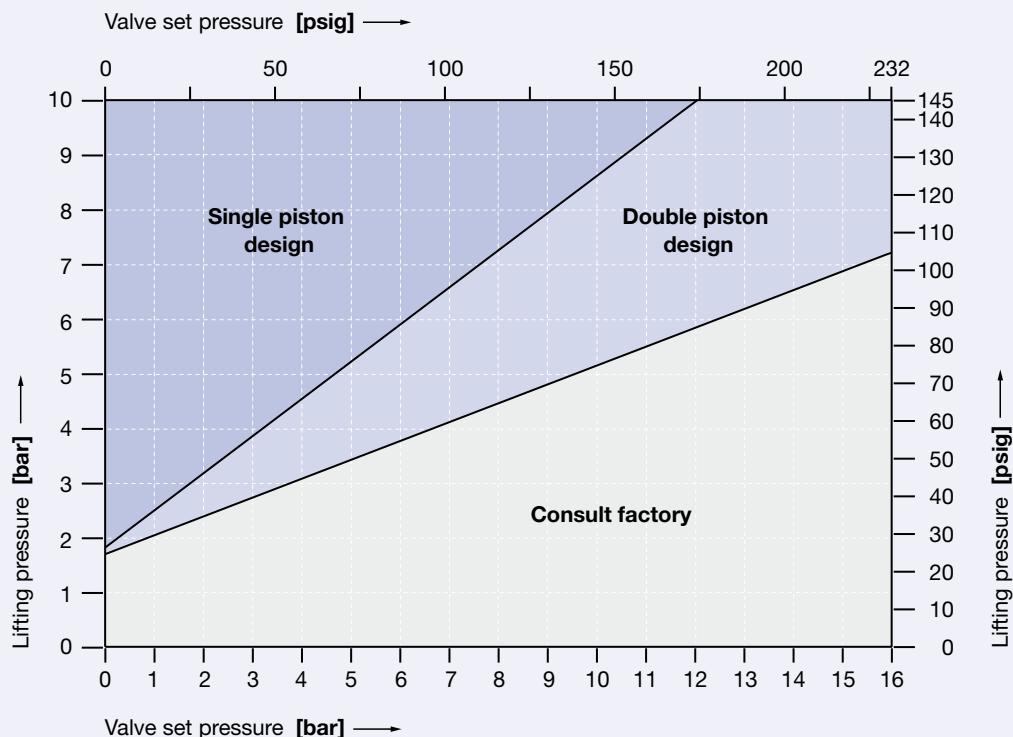
For liquides starting from 1 bar (15 psig) the safety valve is certified acc. to ASME Code Sec. VIII, Div. 1.

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

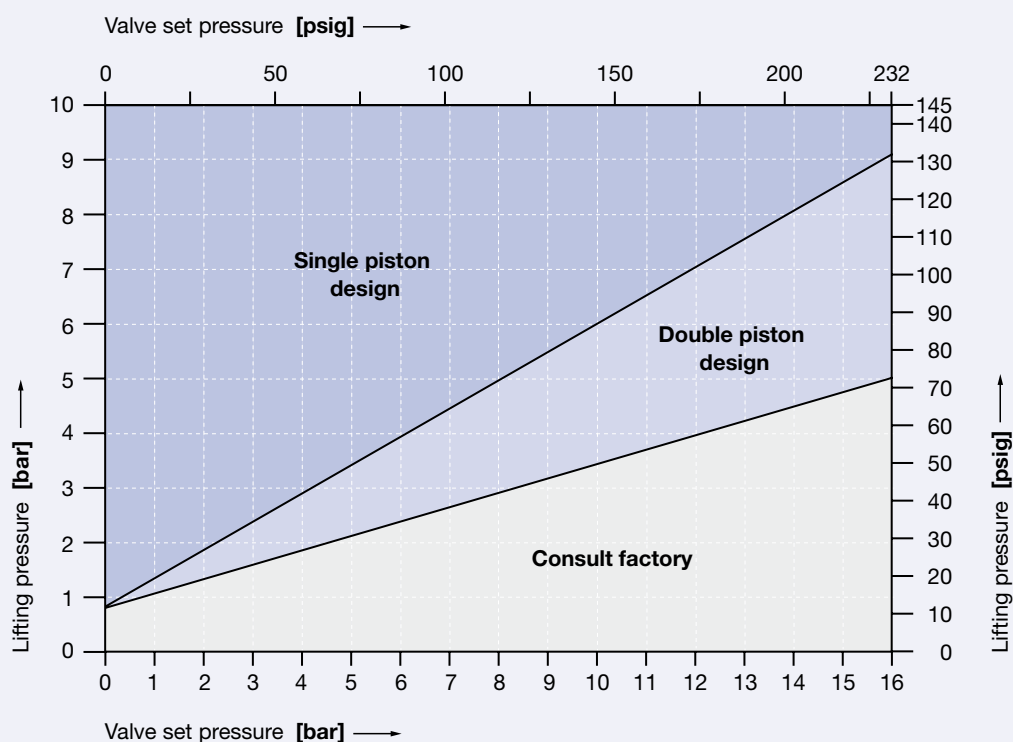
Selection chart H8

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

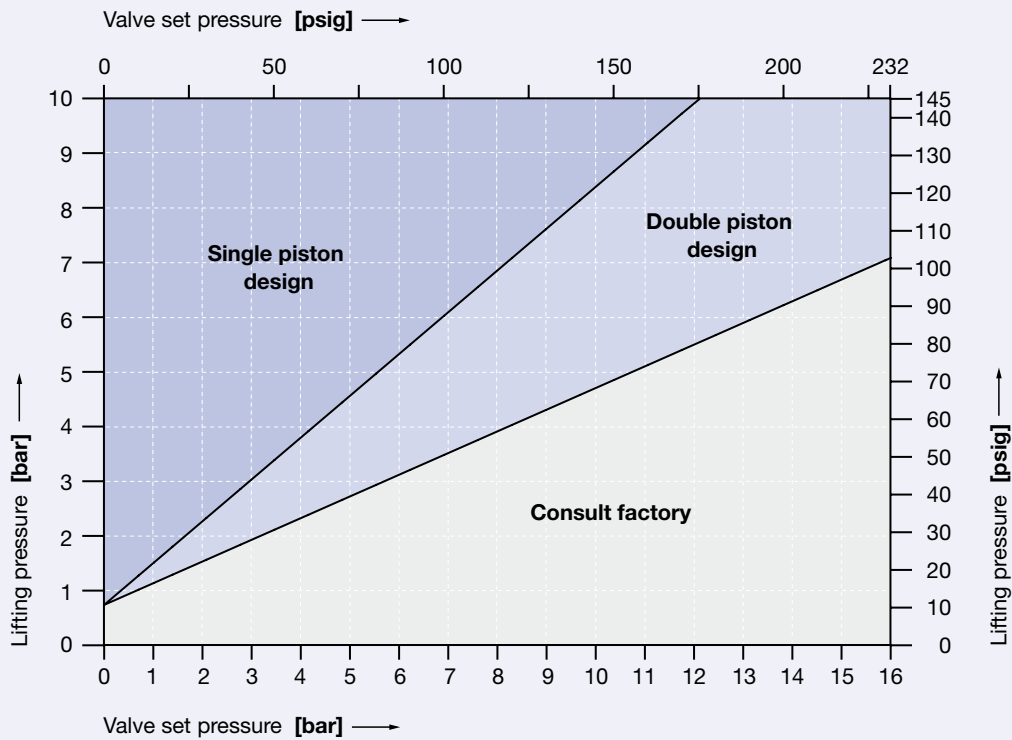


Selection chart lifting device H8, size II. d_0 37 mm / 1,457 inch

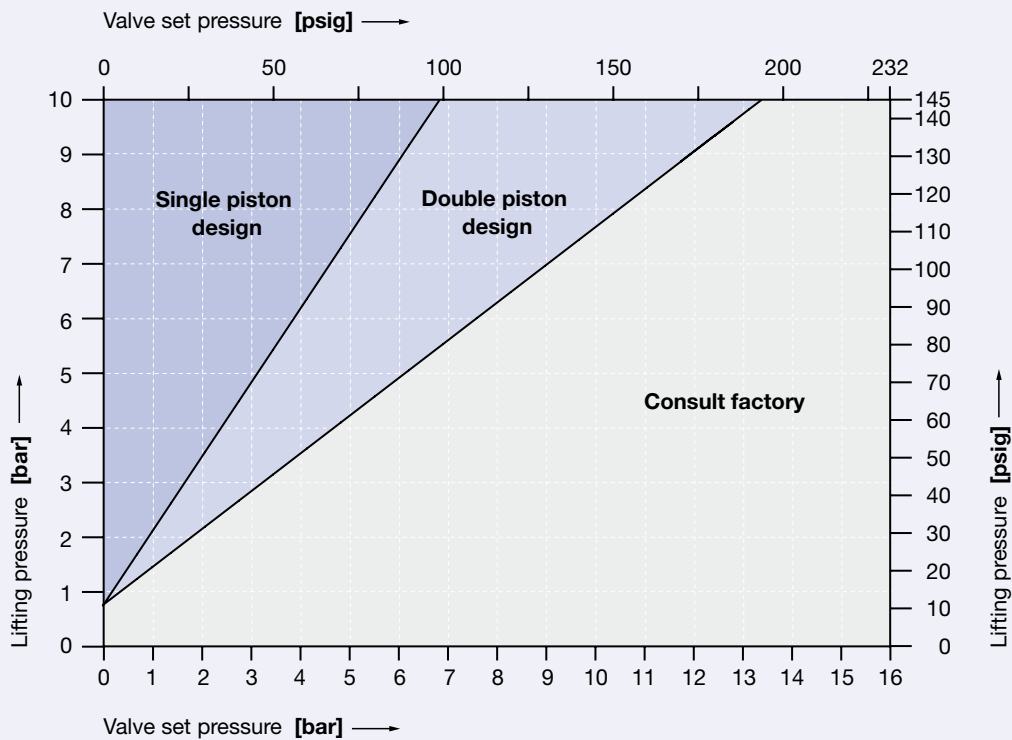


Selection chart H8

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

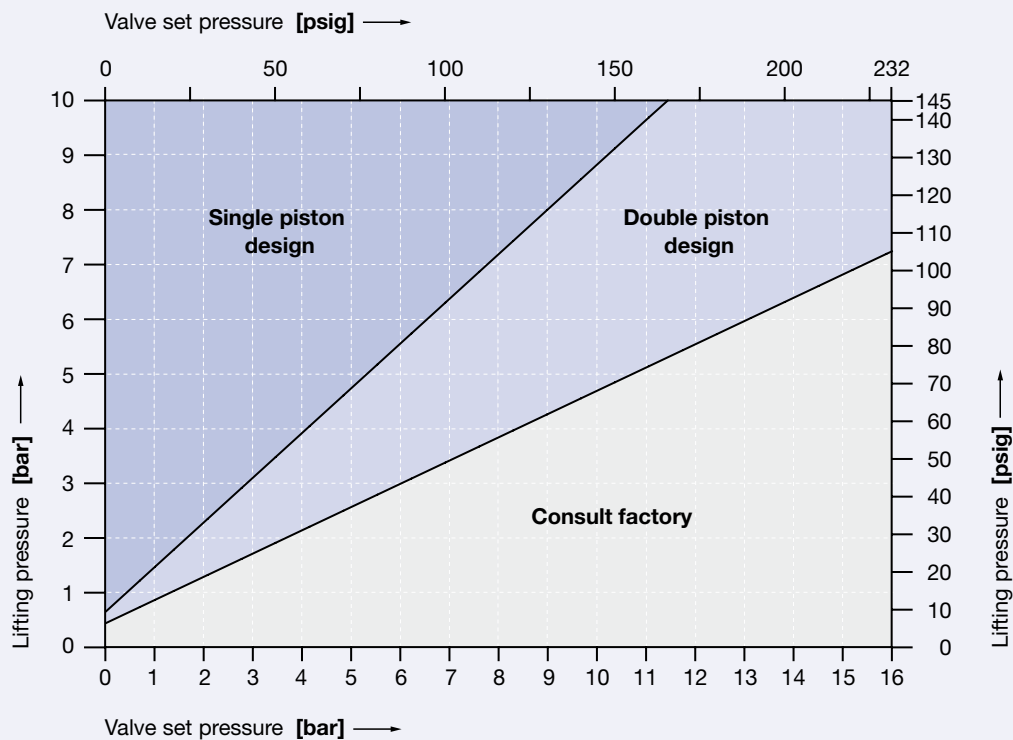


Selection chart lifting device H8, size II. d₀ 60 mm / 2,362 inch

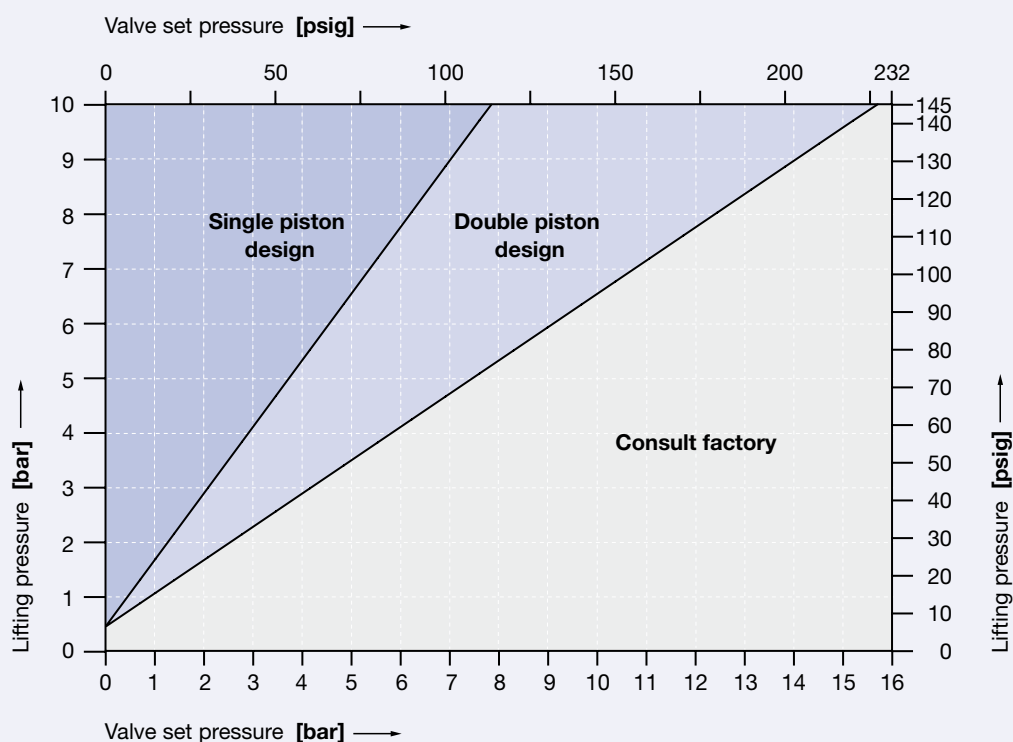


Selection chart H8

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



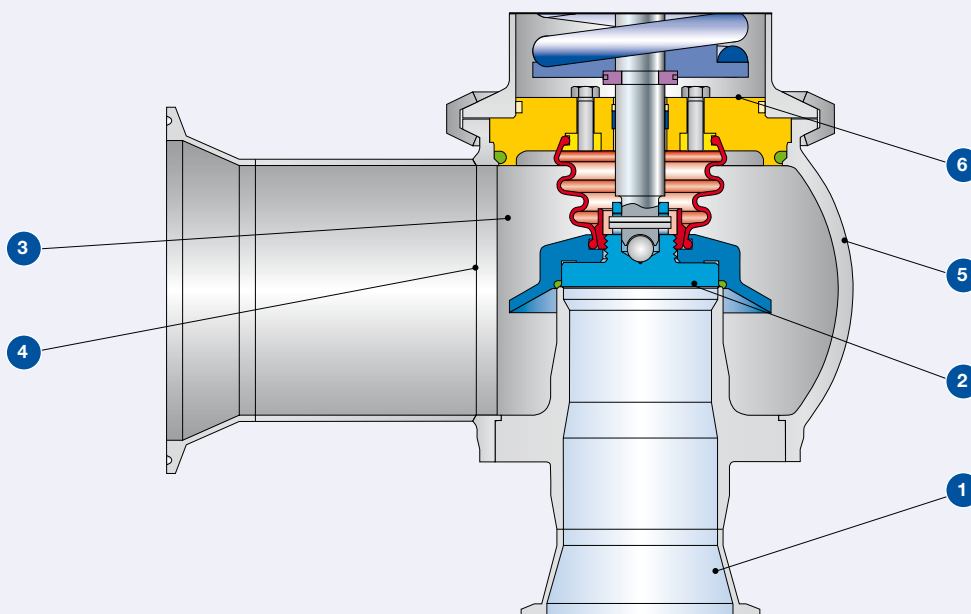
Selection chart lifting device H8, size III. d_0 92 mm / 3,622 inch



Surface quality

Surface quality						
			LESER Surface package			
Type of surface	Area		Option code	Clean finish	HyClean finish	Sterile finish
	Description	No.		B68	B69	B70
				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.

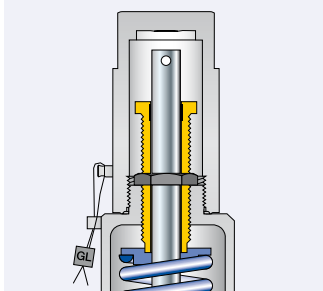


Approvals

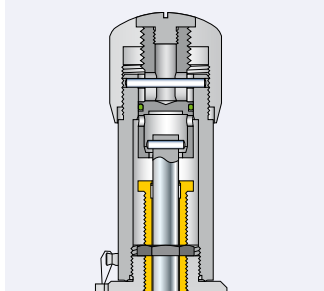
Approvals						
Actual Orifice diameter d_0 [mm]	23	37	46	60	74	92
Actual Orifice area A_0 [mm ²]	416	1075	1662	2827	4301	6648
Actual Orifice diameter d_0 [inch]	0,906	1,457	1,811	2,362	2,913	3,622
Actual Orifice area A_0 [inch ²]	0,644	1,667	2,576	4,383	6,666	10,304
Europe		Coefficient of discharge K_{dr}				
DIN EN ISO 4126-1	Approval No.	07 202 0111 Z 0008/0/25				
	S/G	0,7				
	L	0,45				
Germany		Coefficient of discharge α_w				
AD 2000-Merkblatt A2	Approval No.	TÜV SV 1047				
	S/G	0,7				
	L	0,45				
United States		Coefficient of discharge K				
ASME Sec. VIII	Approval No.	M37022 (1,37 – 16 bar)				
	S/G	0,721				
	Approval No.	M37033 (1 – 16 bar)				
	L	0,472				
Canada		Coefficient of discharge K				
CRN	Approval No.	OG0772.9C				
	S/G	0,721				
	L	0,472				
China		Coefficient of discharge α_w				
AQSIQ	Approval No.	02301T				
	S/G	0,7				
	L	0,45				
Eurasian Custom Union		Coefficient of discharge α_w				
EAC	Approval No.	For current approval no. see www.leser.com				
	S/G	0,7				
	L	0,45				
Classification societies		on request				

Available options

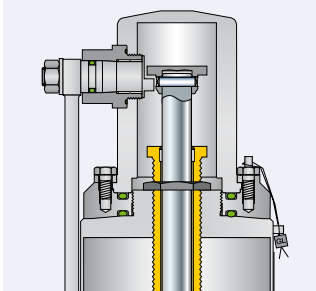
Gastight cap H2
H2



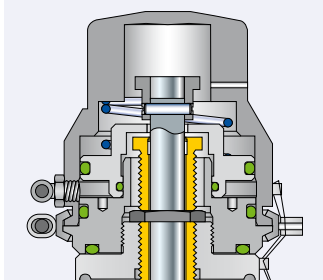
Gastight lifting device H4
Packed knob H4 (d_0 23 only)



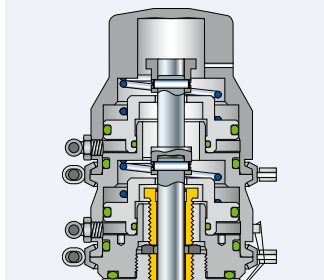
Packed lever H4
(for $d_0 > 23$)



Pneumatic lifting device H8
H8 single piston design

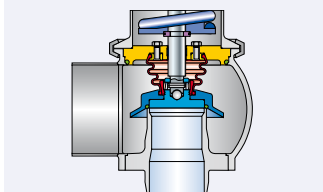


Pneumatic lifting device H8
J41: H8 double piston design

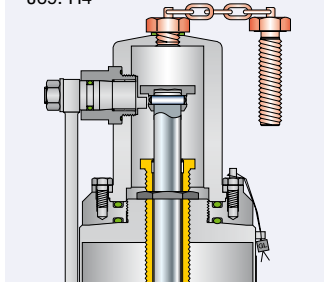


HyTight Assembly

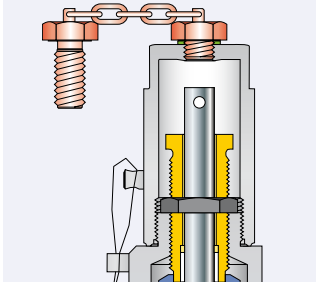
J22: EPDM "D"  
J21: CR "K"  
J23: FKM "L"  
J20: FFKM "C"  



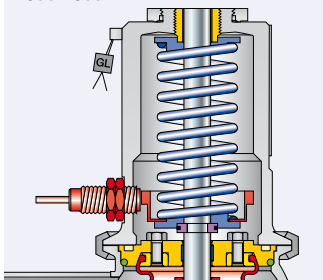
Test gag
(for $d_0 > 23$)
J69: H4



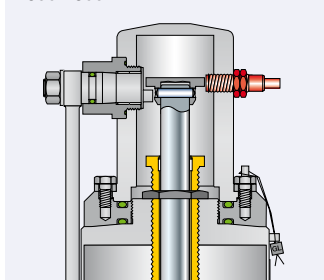
Test gag
J70: H2



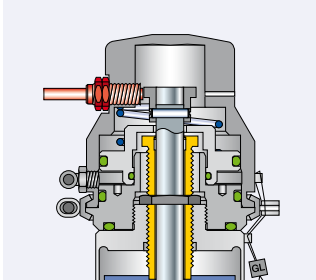
Lift indicator bonnet
(d_0 23 only)
J38 + J93



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

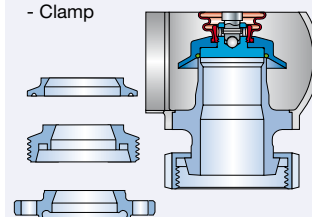


Lift indicator H8
(for $d_0 > 23$)
J40 + J93



Multiple possibilities of aseptic connections

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





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

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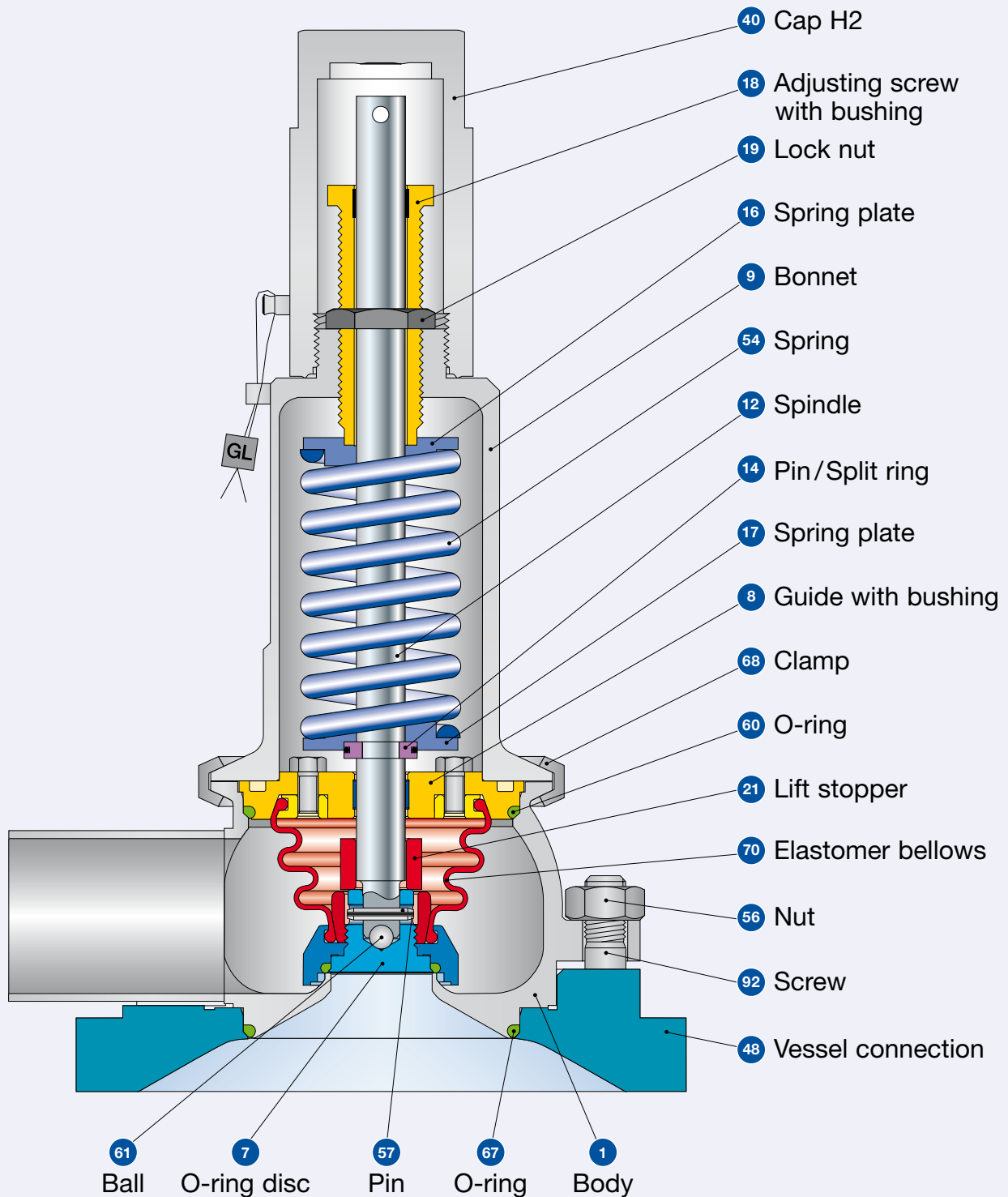
Available options

70



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
		"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

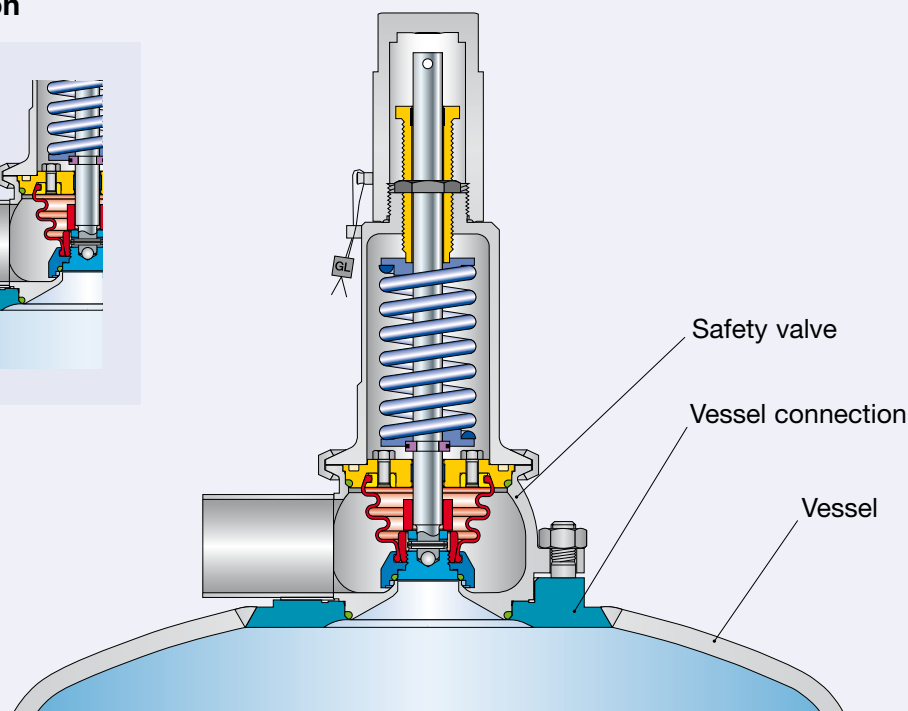
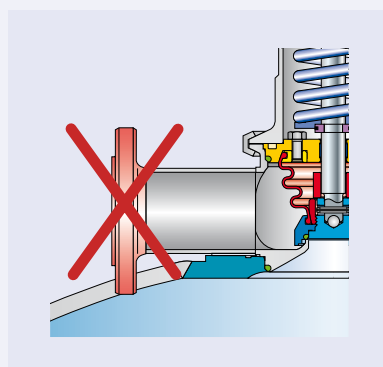
^{*)} The material 1.4435/SA 479 316L fulfils the requirements of the Swiss chemical and pharmaceutical industry Basler Norm (BN 2).

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

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		
		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.

Available connections

Available connections

Clamps

Option code inlet

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 inlet

Aseptic flanged connection

Option code inlet

d _o [mm]	13	25
A _o [mm ²]	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

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.

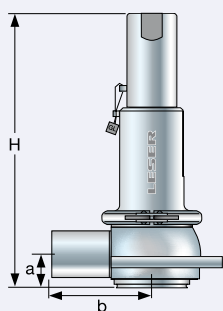
Dimensions and weights

Metric Units

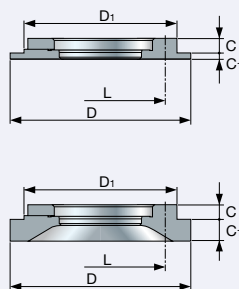
Actual Orifice diameter d_0 [mm]		13
Actual Orifice area A_0 [mm ²]		133
Vessel connections		
Vessel wall thickness		
		≤ 5 mm
		> 5 mm
PN		16
Flange thickness	C [mm]	12,0
	C ₁ [mm]	5,0
Diameter	D [mm]	130,0
	D ₁ [mm]	110,0
Bolt circle	L [mm]	90,0
Welded connections		Inlet a¹⁾
		Outlet b
PN		16
Center to face		24
Height – H4		201
Height – H8		229
double piston design		
Clamp connections		Inlet a¹⁾
		Outlet b
PN		16
Center to face		24
Clamp diameter		For varying clamp diameters please refer to page 16 and 17
d _{inner} [mm]		
d _{outer} [mm]		
Height – H4		201
Height – H8		229
double piston design		
Threaded connections		Inlet a¹⁾
		Outlet b
PN		16
Center to face		24
Height – H4		201
Height – H8		229
double piston design		
Flanged connections		Inlet a¹⁾
		Outlet b
PN		16
Center to face		24
Height – H4		201
Height – H8		229
double piston design		
Weight		
Weight		max. [kg]
		3,0

¹⁾ without vessel connection

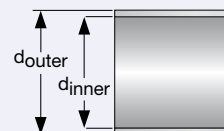
25	
491	
Vessel wall thickness	
Vessel wall thickness	
≤ 5 mm	
> 5 mm	
16	
12,0	
5,0	
150,0	
127,0	
110,0	
Inlet a¹⁾	
Outlet b	
16	
30	
289	
296	
Inlet a¹⁾	
Outlet b	
16	
30	
112	
For varying clamp diameters please refer to page 16 and 17	
289	
296	
Inlet a¹⁾	
Outlet b	
16	
30	
130	
289	
296	
Inlet a¹⁾	
Outlet b	
16	
30	
134	
289	
296	
Weight	
Weight	
4,0	



Type 484 – Cap H2



Type 5034 – Vessel connection



Tube end

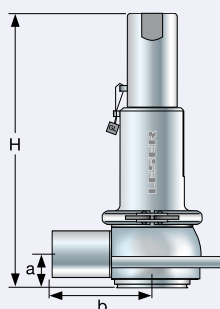
Dimensions and weights

US Units

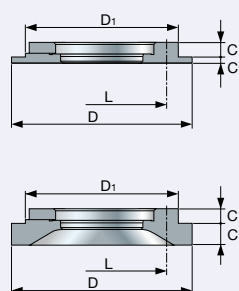
Actual Orifice diameter d_o [inch]			0,512
Actual Orifice area A_o [inch ²]			0,206
Vessel connections			
Vessel wall thickness			
		$\leq 13/64$ inch	$> 13/64$ inch
PN		16	16
Flange thickness	C	[inch]	$15/32$
	C ₁	[inch]	$23/32$
Diameter	D	[inch]	$5 \frac{1}{8}$
	D ₁	[inch]	$4 \frac{11}{32}$
Bolt circle	L	[inch]	$3 \frac{17}{32}$
Welded connections		Inlet a¹⁾	Outlet b
PN		16	16
Center to face		[inch]	$15/16$
Height – H4		H max. [inch]	$7 \frac{29}{32}$
Height – H8		H max. [inch]	9
double piston design			
Clamp connections		Inlet a¹⁾	Outlet b
PN		16	16
Center to face		[inch]	$15/16$
Clamp diameter	d _{inner}	[inch]	For varying clamp diameters please refer to page 16 and 17
	d _{outer}	[inch]	
Height – H4		H max. [inch]	$7 \frac{29}{32}$
Height – H8		H max. [inch]	9
double piston design			
Threaded connections		Inlet a¹⁾	Outlet b
PN		16	16
Center to face		[inch]	$15/16$
Height – H4		H max. [inch]	$7 \frac{29}{32}$
Height – H8		H max. [inch]	9
double piston design			
Flanged connections		Inlet a¹⁾	Outlet b
PN		16	16
Center to face		[inch]	$15/16$
Height – H4		H max. [inch]	$7 \frac{29}{32}$
Height – H8		H max. [inch]	9
double piston design			
Weight			
Weight		max. [lb]	6,6

¹⁾ without vessel connection

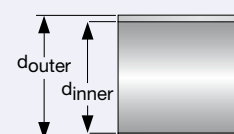
0,984	
0,761	
Vessel wall thickness	
$\leq 13/64$ inch	$> 13/64$ inch
16	16
$15/32$	$15/32$
$11/16$	$23/32$
$5 \frac{29}{32}$	$5 \frac{29}{32}$
5	5
$4 \frac{11}{32}$	$4 \frac{11}{32}$
Inlet a¹⁾	Outlet b
16	16
$1 \frac{3}{16}$	$3 \frac{17}{32}$
$11 \frac{3}{8}$	
$11 \frac{5}{32}$	
Inlet a¹⁾	Outlet b
16	16
$1 \frac{3}{16}$	$4 \frac{3}{8}$
For varying clamp diameters please refer to page 16 and 17	
$11 \frac{3}{8}$	
$11 \frac{5}{32}$	
Inlet a¹⁾	Outlet b
16	16
$1 \frac{3}{16}$	$5 \frac{3}{32}$
$11 \frac{3}{8}$	
$11 \frac{5}{32}$	
Inlet a¹⁾	Outlet b
16	16
$1 \frac{3}{16}$	$5 \frac{1}{4}$
$11 \frac{3}{8}$	
$11 \frac{5}{32}$	
8,8	



Type 484 – Cap H2



Type 5034 – Vessel connection



Tube end

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
FFKM	[° C]	0	+250	0	+250

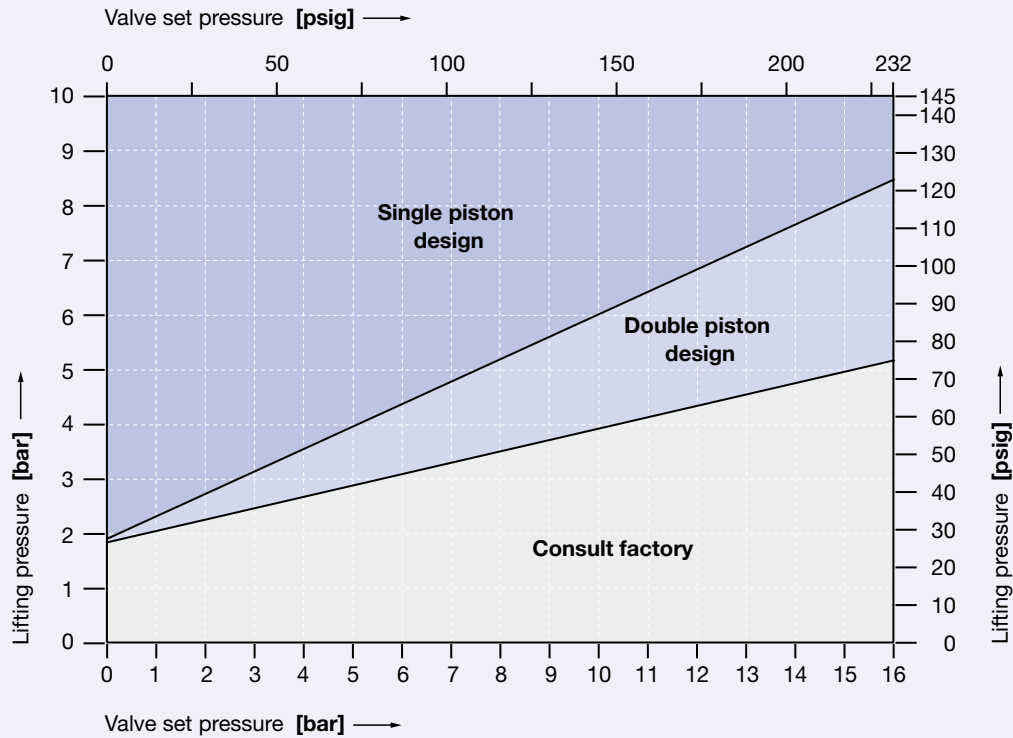
US Units					
Actual Orifice diameter d ₀ [inch]		0,512		0,984	
Actual Orifice area A ₀ [inch²]		0,206		0,761	
Body material: 1.4435 (316L)					
Minimum set pressure	p [psig] S/G/L	4,4		1,5	
Maximum set pressure	p [psig] S/G/L	232		232	
Temperature range ¹⁾		Minimum	Maximum	Minimum	Maximum
EPDM	[° F]	-49	+302	-49	+302
FFKM	[° F]	+32	+482	+32	+482

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

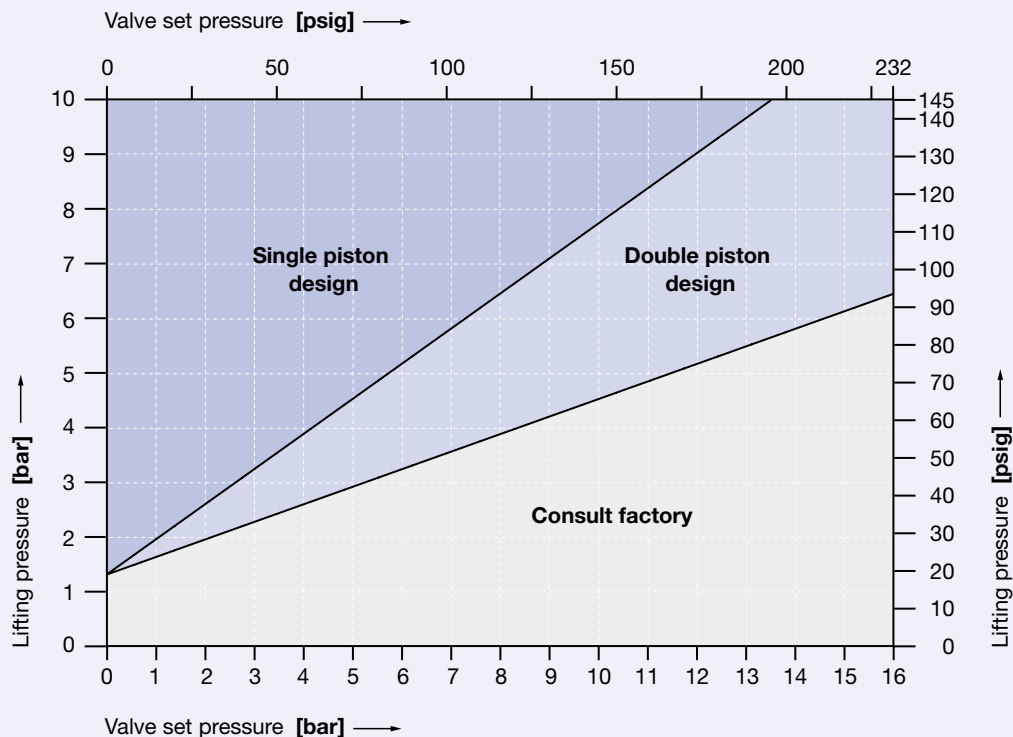
Selection chart H8

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



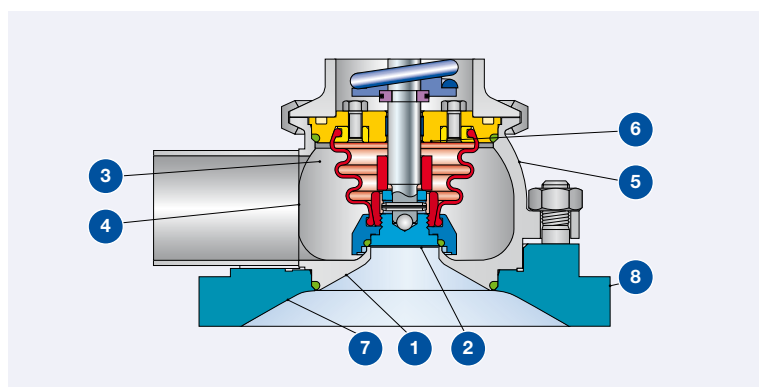
Surface quality

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
	Description	No.		B59	B60	B61
				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.



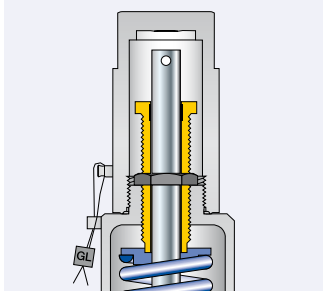
Approvals

Approvals			
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
Europe		Coefficient of discharge K _{dr}	
DIN EN ISO 4126-1	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	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 Δ K ≈ 0,521 G: 1,96 SCFM / psia Δ K ≈ 0,521	Rated slope acc. to ASME VIII, Div. 1 UG-131 (d) (2) S: 13,97 lb / hr / psia Δ K ≈ 0,357 G: 4,96 SCFM / psia Δ K ≈ 0,357
		Approval No.	M37156
	L	Rated slope acc. to ASME VIII, Div. 1 UG-131 (d) (2) L: 2,96 GPM √psid*) Δ K ≈ 0,379	Rated slope acc. to ASME VIII, Div. 1 UG-131 (d) (2) L: 7,46 GPM √psid*) Δ 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 Δ K ≈ 0,521 G: 1,96 SCFM / psia Δ K ≈ 0,521	Rated slope acc. to ASME VIII, Div. 1 UG-131 (d) (2) S: 13,97 lb / hr / psia Δ K ≈ 0,357 G: 4,96 SCFM / psia Δ K ≈ 0,357
		L	Rated slope acc. to ASME VIII, Div. 1 UG-131 (d) (2) L: 2,96 GPM √psid*) Δ K ≈ 0,379
China		Coefficient of discharge α _w	
AQSIQ	Approval No.	02301T	
	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			

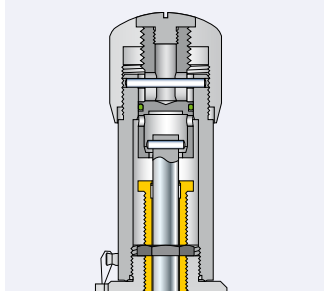
*) psid = Differential pressure $P - P_d$
P = absolute flow pressure [psia]
 P_d = pressure at discharge from valve [psia]

Available options

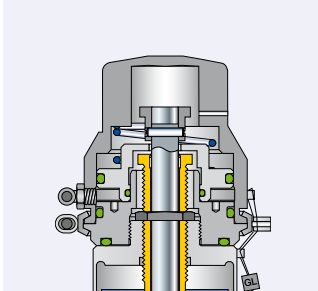
Gastight cap H2
H2



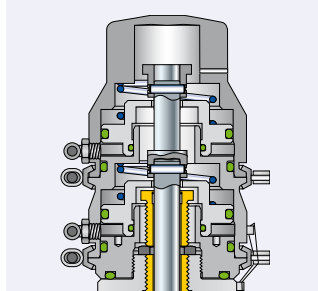
Gastight lifting device H4
Packed knob H4



Pneumatic lifting device H8
H8 single piston design

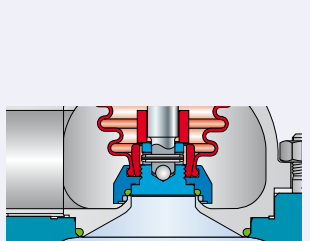


Pneumatic lifting device H8
J41: H8 double piston design

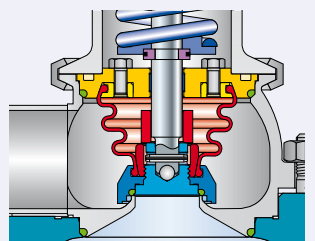


O-ring-disc

J22: EPDM "D"  
J20: FFKM "C"  

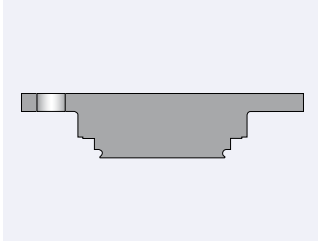


Bellows FFKM "C" 
S70 – only for d₀13



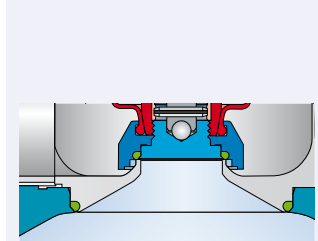
Blind flange for pressure test

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

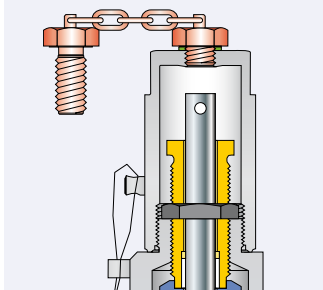


O-ring for vessel connection

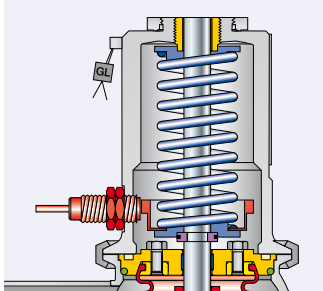
EPDM "D" 
Material-No. 502.0460.3041 (d₀ 13)
Material-No. 502.0600.3041 (d₀ 25)



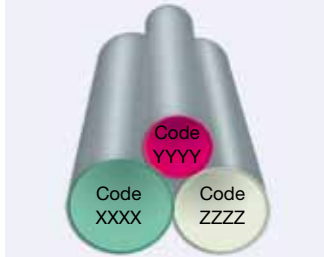
Test gag
J70: H2



Lift indicator placed in bonnet
J38 + J93



Special material
2.4610 HASTELLOY C4
2.4360 MONEL 400
1.4462 DUPLEX





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

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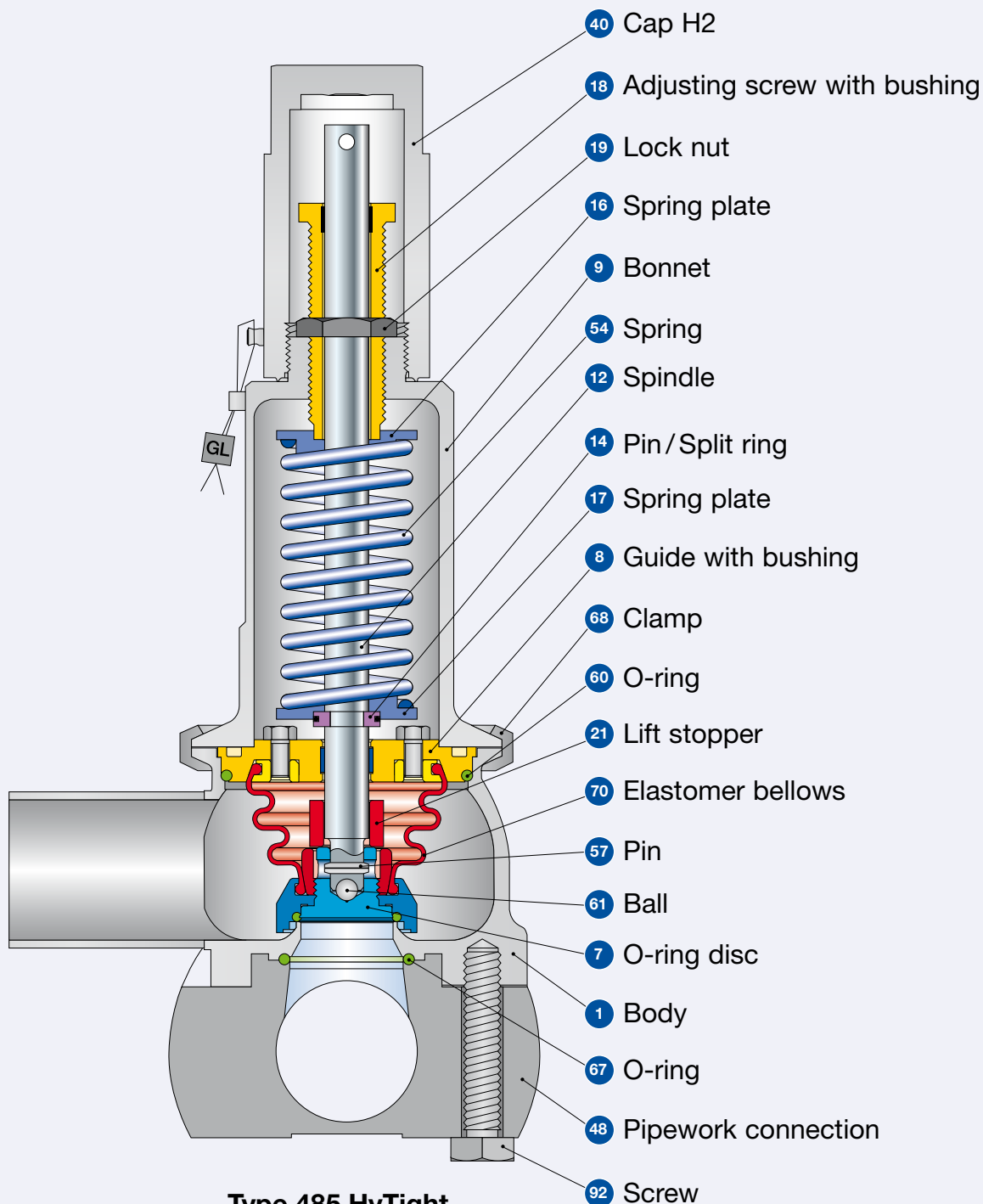
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Type 5034
Integrated pipework connection

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
		"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

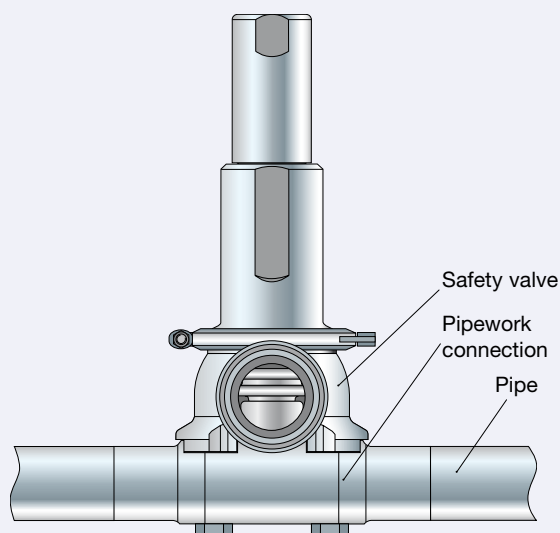
^{*)} The material 1.4435/SA 479 316L fulfils the requirements of the Swiss chemical and pharmaceutical industry Basler Norm (BN 2).

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

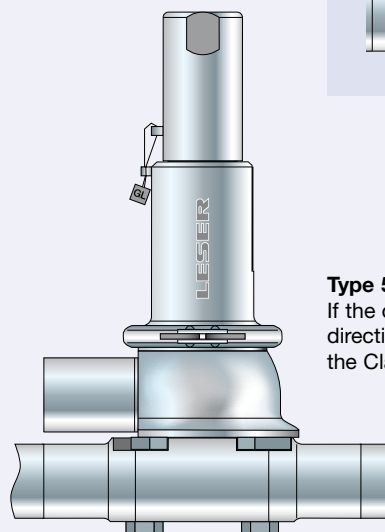
Article numbers

Article numbers			
Actual Orifice diameter d_0 [mm]		13	25
Actual Orifice area A_0 [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
		FFKM "C" J20	FFKM "C" J20
Body material: 1.4435 (316L)			
Bonnet closed	H2	Art.-No. 4854.	7742
	H4	Art.-No. 4854.	7744
	H8	Art.-No. 4854.	7748
	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
DIN 11850		Art.-No. 5034.	0991
ISO 2037		Art.-No. 5034.	0994
DIN EN ISO 1127		Art.-No. 5034.	0998
Blind flange for pressure test: 1.4404 (316L)		Please order separately	
Art.-No.		138.8949.9000	138.8749.9000

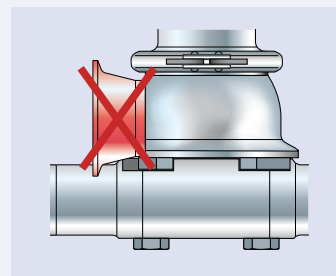
Fitting information



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



Available connections

Available connections

Clamps

Option code inlet

For inlet please select integrated pipework connection Type 5034 as shown on page 74.

Aseptic screwed connection

Option code inlet

Aseptic flanged connection

Option code inlet

d _o [mm]	13	25
A _o [mm ²]	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

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
	BS	A86H37A16
	GT	A86H55A16
	BT	A86H57A16
	GD	A86H61A16
	BD	A86H59A16

Pipe standard

NPS	1 1/2"	2"
BS 4825-1 DIN 11866 Range C	GS	A84H35A80
	BS	A84H37A80
	GT	A84H55A80
	BT	A84H57A80

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
	BF	A86H74A16
	NG	A86H76A16
	BG	A86H78A16

Pipe standard

DN	1 1/2"	2"
BS 4825-1 DIN 11866 Range C	NF	A84H72A80
	BF	A84H74A80
	NG	A84H76A80
	BG	A84H78A80

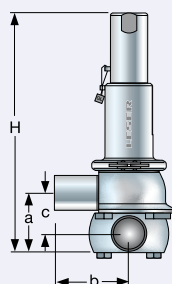
For definitions of connection codes please refer to pages 12 up to 15.

Dimensions and weights

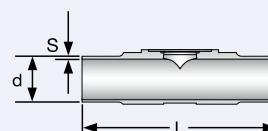
Metric Units				
Actual Orifice diameter d ₀ [mm]				13
Actual Orifice area A ₀ [mm²]				133
Integrated pipework connection				Inlet
PN				16
Nominal pipe size tube				DN
				25
Offset	c	[mm]	38	
Length	L	[mm]	130	
DIN 11850	Diameter	d	[mm]	30
	Wall thickness	s	[mm]	2
ISO 2037	Diameter	d	[mm]	26,5
	Wall thickness	s	[mm]	2
DIN EN ISO 1127	Diameter	d	[mm]	34
	Wall thickness	s	[mm]	2,25
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 16 and 17	
	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	

25			
491			
Inlet			
16			
40		50	
49		55	
180		180	
42,4		54,5	
2		2,25	
39		52	
2		2	
48,3		–	
2,15		–	
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 16 and 17			
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			

¹⁾ without integrated pipework connection



Type 485 – Cap H2



Type 5034 – Integrated pipework connection

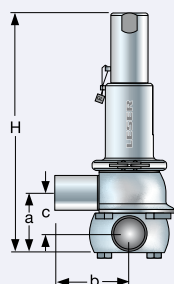
Dimensions and weights

US Units

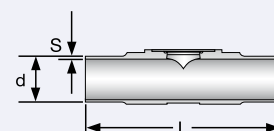
Actual Orifice diameter d_0 [inch]			0,512
Actual Orifice area A_0 [inch ²]			0,206
Integrated pipework connection			Inlet
PN			16
Nominal pipe size tube			NPS 1"
Offset	c	[inch]	1 1/2
Length	L	[inch]	5 1/8
DIN 11850	Diameter	d	[inch] 1 3/16
	Wall thickness	s	[inch] 3/32
ISO 2037	Diameter	d	[inch] 1
	Wall thickness	s	[inch] 1/8
DIN EN ISO 1127	Diameter	d	[inch] 1 3/8
	Wall thickness	s	[inch] 1/8
Welded connections			Inlet a ¹⁾ Outlet b
PN			16
Center to face	[inch]		2 1/4 3 5/32
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 4 1/32
Clamp diameter	d _{inner} [inch]	For varying clamp diameters please refer to page 16 and 17	
	d _{outer} [inch]		
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 4 23/32
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 4 31/32
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 5/8		2 1/8	
1/8		1/8	
1 1/2		2	
1/8		1/8	
1 7/8		—	
1/8		—	
Inlet a ¹⁾	Outlet b	Inlet a ¹⁾	Outlet b
16		16	
2 27/32		3 5/16	
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	
For varying clamp diameters please refer to page 16 and 17			
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		3 5/16	
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	
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	
13 1/32		13 1/2	
13 11/32		13 13/16	
11,0			



Type 485 – Cap H2



Type 5034 – Integrated pipework connection

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
FFKM	[° C]	0	+250	0	+250

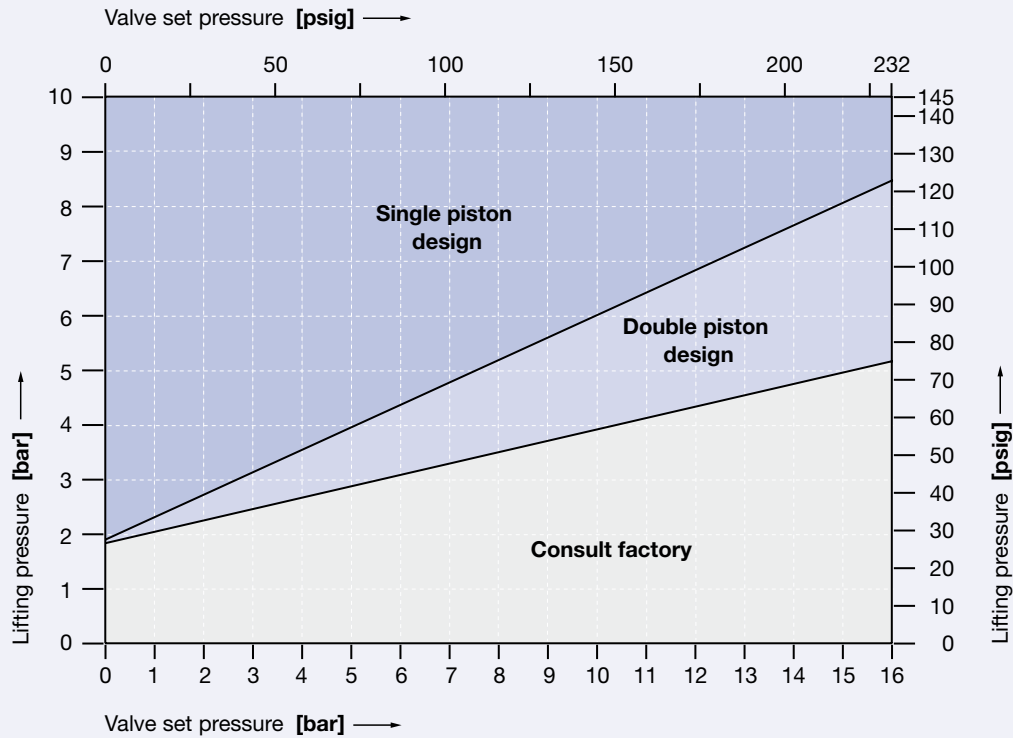
US Units					
Actual Orifice diameter d ₀ [inch]		0,512		0,984	
Actual Orifice area A ₀ [inch²]		0,206		0,761	
Body material: 1.4435 (316L)					
Minimum set pressure	p [psig] S/G/L	4,4		1,5	
Maximum set pressure	p [psig] S/G/L	232		232	
Temperature range ¹⁾		Minimum	Maximum	Minimum	Maximum
EPDM	[° F]	-49	+302	-49	+302
FFKM	[° F]	+32	+482	+32	+482

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

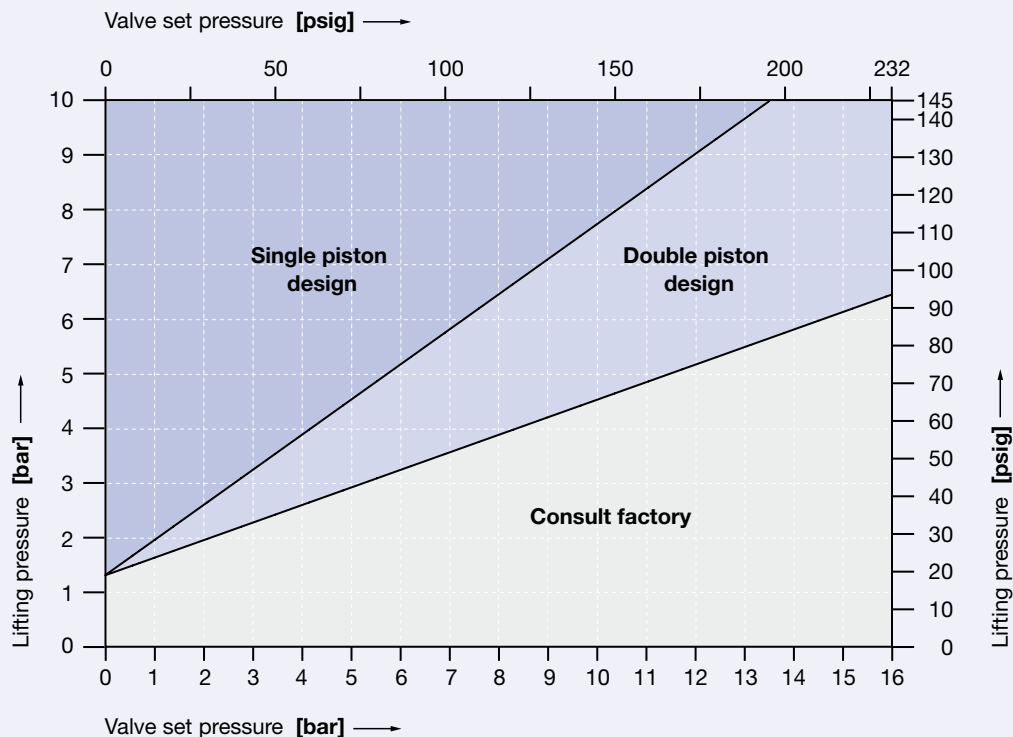
Selection chart H8

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

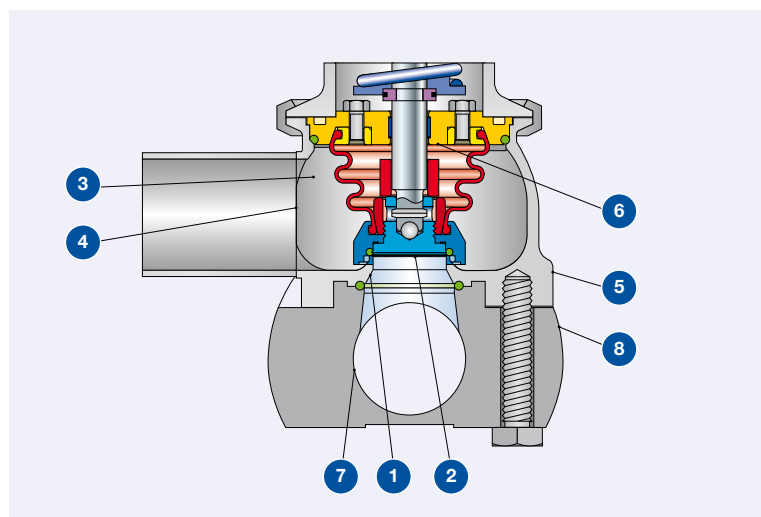


Surface quality

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		

Type 5034			Integrated pipework connection			
			LESER Surface package			
Type of surface	Area			Clean finish	HyClean finish	Sterile finish
			Option code	B65	B66	B67
	Description	No.		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.



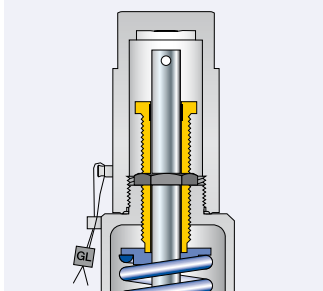
Approvals

Approvals			
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
Europe		Coefficient of discharge K_{dr}	
DIN EN ISO 4126-1	Approval No.	07 202 0111 Z 0008/0/20	
	S/G	0,58	0,4
	L	0,39	0,26
Germany		Coefficient of discharge α_w	
AD 2000-Merkblatt A2	Approval No.	TÜV SV 1047	
	S/G	0,58	0,4
	L	0,39	0,26
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 $\triangle K \approx 0,521$ G: 1,96 SCFM / psia $\triangle K \approx 0,521$	Rated slope acc. to ASME VIII, Div. 1 UG-131 (d) (2) S: 13,97 lb / hr / psia $\triangle K \approx 0,357$ G: 4,96 SCFM / psia $\triangle K \approx 0,357$
	Approval No.	M37156	M37178
	L	Rated slope acc. to ASME VIII, Div. 1 UG-131 (d) (2) L: 2,96 GPM $\sqrt{\text{psid}^*)} \triangle K \approx 0,379$	Rated slope acc. to ASME VIII, Div. 1 UG-131 (d) (2) L: 7,46 GPM $\sqrt{\text{psid}^*)} \triangle K \approx 0,258$
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 $\triangle K \approx 0,521$ G: 1,96 SCFM / psia $\triangle K \approx 0,521$	Rated slope acc. to ASME VIII, Div. 1 UG-131 (d) (2) S: 13,97 lb / hr / psia $\triangle K \approx 0,357$ G: 4,96 SCFM / psia $\triangle K \approx 0,357$
	L	Rated slope acc. to ASME VIII, Div. 1 UG-131 (d) (2) L: 2,96 GPM $\sqrt{\text{psid}^*)} \triangle K \approx 0,379$	Rated slope acc. to ASME VIII, Div. 1 UG-131 (d) (2) L: 7,46 GPM $\sqrt{\text{psid}^*)} \triangle K \approx 0,258$
China		Coefficient of discharge α_w	
AQSIQ	Approval No.	02301T	
	S/G	0,58	0,4
	L	0,39	0,26
Eurasian Custom Union		Coefficient of discharge α_w	
EAC	Approval No.	For current approval no. see www.leser.com	
	S/G	0,58	0,4
	L	0,39	0,26
Classification societies			
on request			

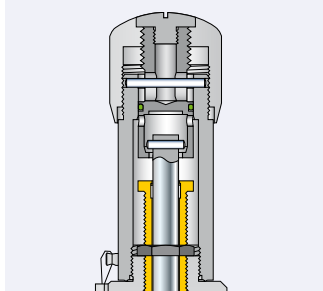
*) psid = Differential pressure P-P_d
P = absolute flow pressure [psia]
P_d = pressure at discharge from valve [psia]

Available options

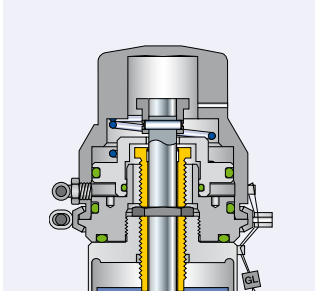
Gastight cap H2
H2



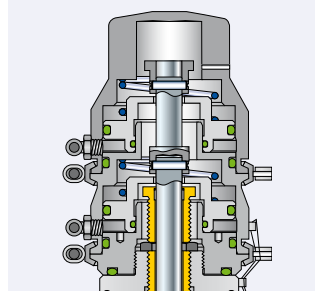
Gastight lifting device H4
Packed knob H4



Pneumatic lifting device H8
H8 single piston design

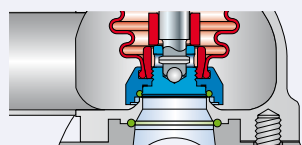


Pneumatic lifting device H8
J41: H8 double piston design

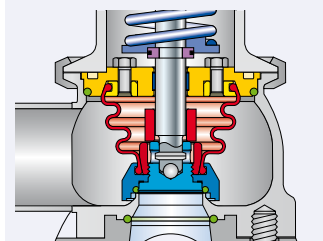


O-ring-disc

J22: EPDM "D"  
J20: FFKM "C"  

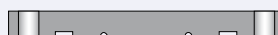


Bellows FFKM "C" 
S70 – only for d₀13



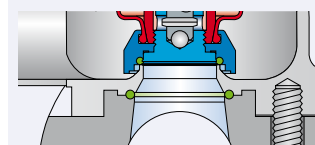
Blind flange for pressure test

Material No. 138.8949.9000 (d₀ 13)
Material No. 138.8749.9000 (d₀ 25)

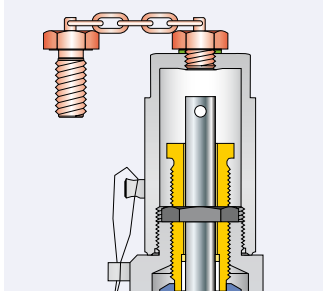


O-ring for integrated pipework connection

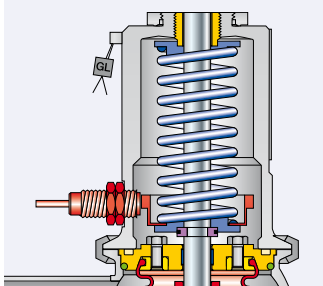
EPDM "D" 
Material No. 502.0180.3041 (d₀ 13)
Material No. 502.0300.3041 (d₀ 25)



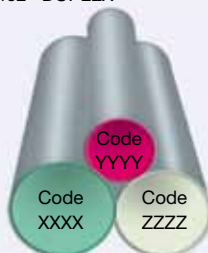
Test gag
J70: H2



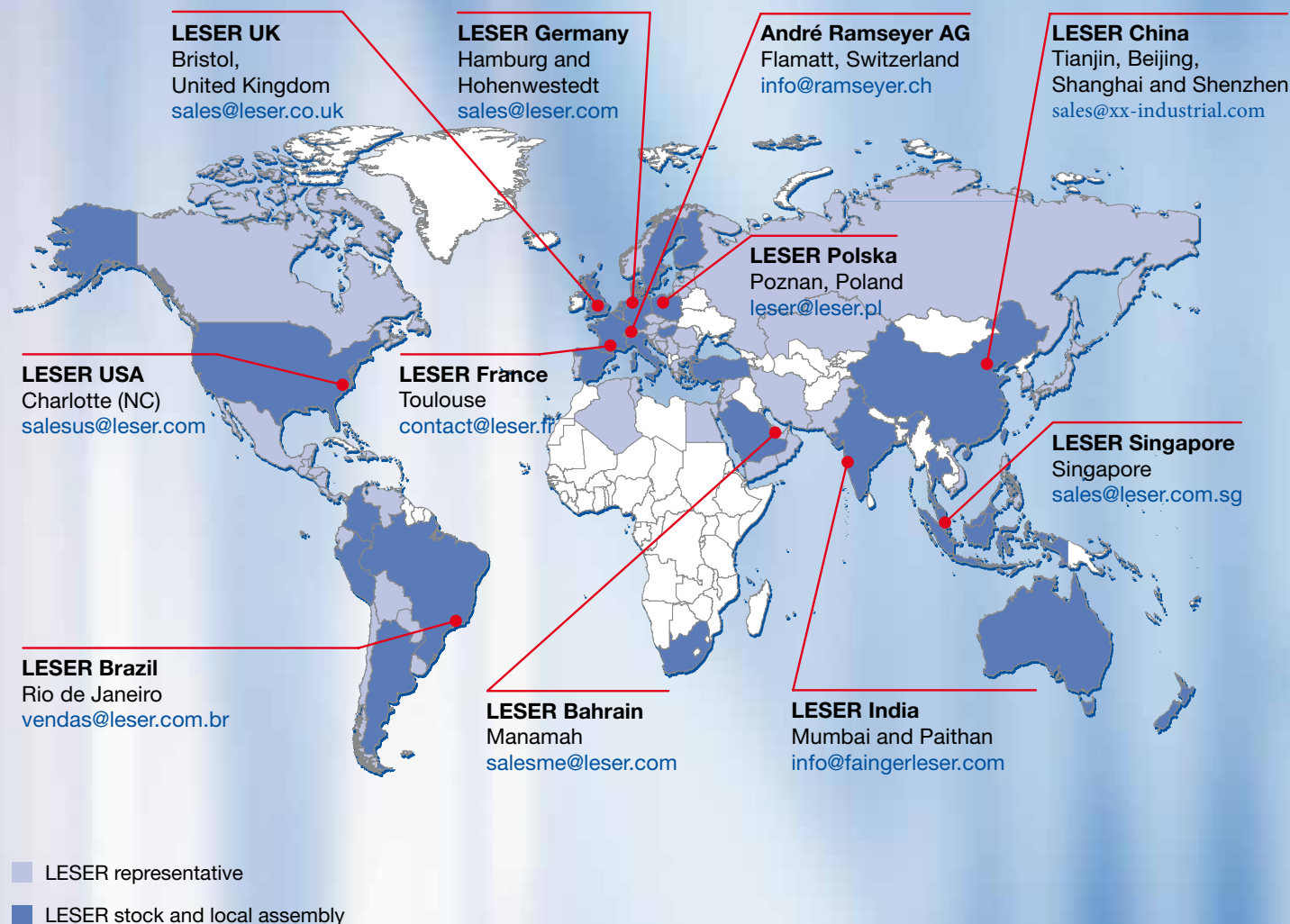
Lift indicator placed in bonnet
J38 + J93



Special material
2.4610 HASTELLOY C4
2.4360 MONEL 400
1.4462 DUPLEX



LESER worldwide



上海兴祥工业设备有限公司

地址：上海市浦东新区金豫路100号3幢720室

电话：021-51602012 传真：021-51685158

Email:sales@xx-industrial.com

LESER

The-Safety-Valve.com