Type 488

Safety Relief Valves – spring loaded

Metric Units + US Units

Facts

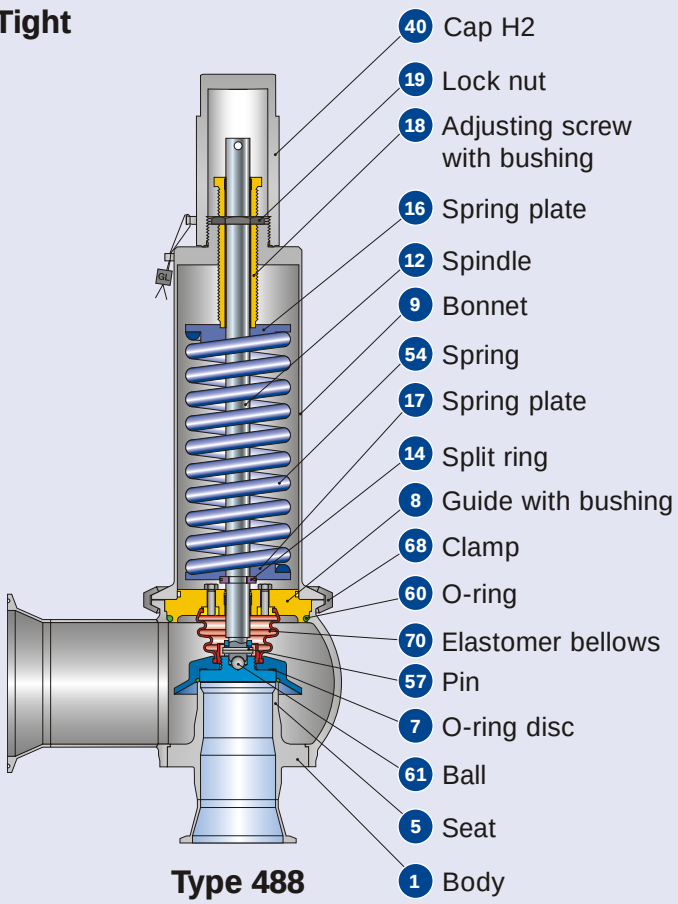
LESER

The-Safety-Valve.com

LWN 463.05-E

HyTight Assembly

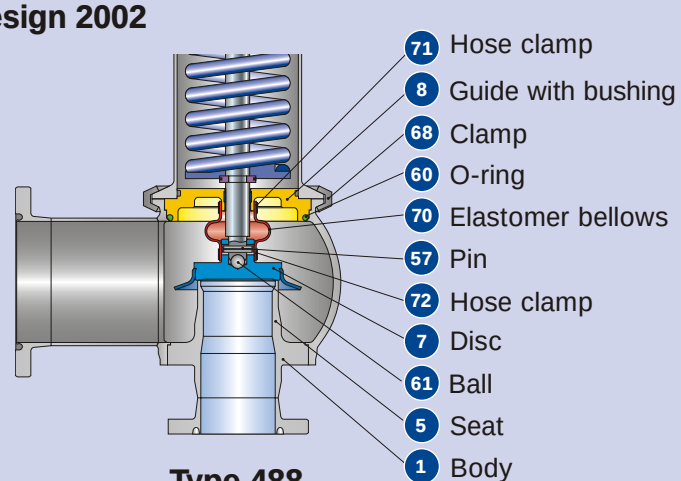
HyTight



Type 488
Cap H2
Inlet and outlet: Clamp connection

For features and benefits of HyTight Assembly please refer to page 00/23.

Design 2002



Type 488
Cap H2
Inlet and outlet: Flange connection

HyTight Assembly

The new standard design of the Type 488 is equipped with HyTight Assembly.

The Design 2002 is just available on customer requirement, e. g. for applications with old customer specification which can not be changed into HyTight.
(For Article number see “Prices 2007”).

Materials

Item	Component	Remarks	Type 4884 HyTight
1	Body		1.4404 SA 479 316L
5	Seat		1.4404 316L
7	Disc	Metal seat Design 2002	– –
7	O-ring disc	HyTight Assembly	1.4404 316L
7.1	Soft seal O-ring	“D” FDA USP VI	EPDM
		“K”	CR
		“L” FDA	FKM
		“C” FDA USP VI	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	FDA	EPDM
71	Hose clamp	Design 2002	– –
72	Hose clamp	Design 2002	– –

Please notice:

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

How to order – Article numbers

Article numbers

Actual Orifice diameter d_0 [mm]		23	37	46	60	74	92
Actual Orifice area A_0 [mm²]		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 [inch²]		0,644	1,667	2,576	4,383	6,666	10,304
O-ring material		EPDM "D" J22	EPDM "D" J22	EPDM "D" J22	EPDM "D" J22	EPDM "D" J22	EPDM "D" J22
		CR "K" J21	CR "K" J21	CR "K" J21	CR "K" J21	CR "K" J21	CR "K" J21
		FKM "L" J23	FKM "L" J23	FKM "L" J23	FKM "L" J23	FKM "L" J23	FKM "L" J23
		FFKM "C" J20	FFKM "C" J20	FFKM "C" J20	FFKM "C" J20	FFKM "C" J20	FFKM "C" J20
Body material: 1.4404 (316L)		**HyTight**					
Bonnet closed	**H2** Art.-No. **4884.**	**8842**	**8852**	**8862**	**8872**	**8882**	**8892**
	H4 Art.-No. **4884.**	**8844**	**8854**	**8864**	**8874**	**8884**	**8894**
	H8 Art.-No. **4884.**	**8848**	**8858**	**8868**	**8878**	**8888**	**8898**
	p [bar] S/G/L	**0,1 – 16**	**0,1 – 16**	**0,2 – 15**	**0,1 – 10,34**	**0,1 – 10,34**	**0,1 – 8,2**
	p [psig] S/G/L	**1,5 – 232**	**1,5 – 232**	**3 – 217,56**	**1,5 – 150**	**1,5 – 150**	**1,5 – 118,9**

Pressure temperature ratings

Metric Units

Actual Orifice diameter d_0 [mm]		23		37		46		60		74		92	
Actual Orifice area A_0 [mm²]		416		1075		1662		2827		4301		6648	
Body material: 1.4404 (316L)													
Inlet / Outlet	Pressure rating	For pressure ratings and connection size please refer to chapter dimensions and weights (page 03/09)											
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 [inch²]		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 03/09)											
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. Refer to table "Soft seal selection" on page 99/11.

Dimensions – Bestseller

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

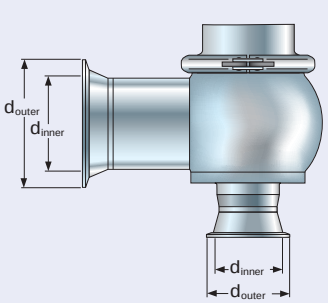
For further available connections please refer to page 03/10.

Metric Units

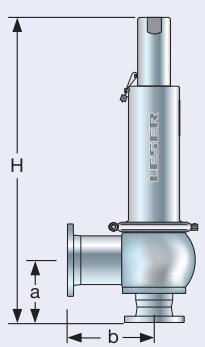
Actual Orifice diameter d_0 [mm]			23		37		46		60		74		92	
Actual Orifice area A_0 [mm²]			416		1075		1662		2827		4301		6648	
Clamp connections			**Inlet a**	**Outlet b**	**Inlet a**	**Outlet b**	**Inlet a**	**Outlet b**	**Inlet a**	**Outlet b**	**Inlet a**	**Outlet b**	**Inlet a**	**Outlet b**
COCO			**1 1/2"**	**2"**	**2"**	**3"**	**2 1/2"**	**4"**	**3"**	**4 1/2"**	**4"**	**5"**	**4 1/2"**	**6"**
Option code			L96L97											
Center to face		[mm]	75	112	92	147	99	147	109	153	124	178	149	181
Clamp diameter	d_{inner}	[mm]	36	49	49	73	60	98	73	110	98	136	110	163
	d_{outer}	[mm]	51	64	64	91	78	119	91	130	119	155	130	183
Height – H4	H max.	[mm]	332		518		534		552		640		684	
Threaded connections			**Inlet a**	**Outlet b**	**Inlet a**	**Outlet b**	**Inlet a**	**Outlet b**	**Inlet a**	**Outlet b**	**Inlet a**	**Outlet b**	**Inlet a**	**Outlet b**
KOGO			**25**	**40**	**40**	**65**	**50**	**80**	**65**	**100**	**80**	**125**	**100**	**150**
Option code			H85L76A85L81											
Center to face		[mm]	93	130	110	155	106	155	117	155	133	185	151	188
Height – H4	H max.	[mm]	350		536		540		561		649		686	
Flanged connections			**Inlet a**	**Outlet b**	**Inlet a**	**Outlet b**	**Inlet a**	**Outlet b**	**Inlet a**	**Outlet b**	**Inlet a**	**Outlet b**	**Inlet a**	**Outlet b**
TNTN			**25**	**40**	**40**	**65**	**50**	**80**	**65**	**100**	**80**	**125**	**100**	**150**
Option code			H85L78A85L84											
Center to face		[mm]	78	115	95	150	103	150	112	150	128	175	146	183
Height – H4	H max.	[mm]	335		521		537		556		644		681	

US Units

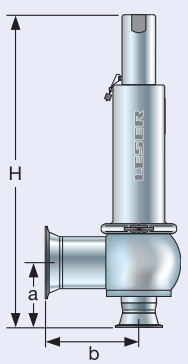
Actual Orifice diameter d_0 [inch]			0,906		1,457		1,811		2,362		2,913		3,622	
Actual Orifice area A_0 [inch²]			0,644		1,67		2,576		4,38		6,666		10,30	
Clamp connections			**Inlet a**	**Outlet b**	**Inlet a**	**Outlet b**	**Inlet a**	**Outlet b**	**Inlet a**	**Outlet b**	**Inlet a**	**Outlet b**	**Inlet a**	**Outlet b**
COCO			**1 1/2"**	**2"**	**2"**	**3"**	**2 1/2"**	**4"**	**3"**	**4 1/2"**	**4"**	**5"**	**4 1/2"**	**6"**
Option code			L96L97											
Center to face		[inch]	2 15/16	4 13/32	3 5/8	5 25/32	3 29/32	5 25/32	4 9/32	6 1/32	4 7/8	7	5 7/8	7 1/8
Clamp diameter	d_{inner}	[inch]	1 13/32	1 15/16	1 15/16	2 7/8	2 3/8	3 27/32	2 7/8	4 11/32	3 27/32	5 11/32	4 11/32	6 7/16
	d_{outer}	[inch]	2	2 17/32	2 17/32	3 19/32	3 1/16	4 11/16	3 19/32	5 1/8	4 11/16	6 3/32	5 1/8	7 7/32
Height – H4	H max.	[inch]	13 1/16		20 13/32		21 13/32		21 3/4		25 3/16		26 29/32	
Threaded connections			**Inlet a**	**Outlet b**	**Inlet a**	**Outlet b**	**Inlet a**	**Outlet b**	**Inlet a**	**Outlet b**	**Inlet a**	**Outlet b**	**Inlet a**	**Outlet b**
KOGO			**25**	**40**	**40**	**65**	**50**	**80**	**65**	**100**	**80**	**125**	**100**	**150**
Option code			H85L76A85L81											
Center to face		[inch]	3 21/32	5 1/8	4 5/16	6 1/8	4 1/8	6 1/8	4 5/8	6 1/8	5 3/16	7 9/32	5 15/16	7 13/32
Height – H4	H max.	[inch]	13 15/32		21 1/8		21 1/4		22 3/32		25 1/2		26 31/32	
Flanged connections			**Inlet a**	**Outlet b**	**Inlet a**	**Outlet b**	**Inlet a**	**Outlet b**	**Inlet a**	**Outlet b**	**Inlet a**	**Outlet b**	**Inlet a**	**Outlet b**
TNTN			**25**	**40**	**40**	**65**	**50**	**80**	**65**	**100**	**80**	**125**	**100**	**150**
Option code			H85L78A85L84											
Center to face		[inch]	3 1/16	4 1/2	3 3/4	5 7/8	4 1/16	5 7/8	4 7/16	5 7/8	5	6 7/8	5 3/4	7 3/16
Height – H4	H max.	[inch]	13 3/16		20 17/32		21 3/16		21 15/16		25 5/16		26 25/32	



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		[mm²]	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**
Center to face		[mm]	53	70	78	87	103	121	90	125	125	125	150	153
Height – H4	H max.	[mm]	332	518	534	552	640	684	332	518	534	552	640	684
Height – H8 double piston design	H max.	[mm]	338	535	550	569	707	750	338	535	550	569	707	750
Clamp connections			**Inlet a**						**Outlet b**					
		PN	**16**	**16**	**16**	**10**	**10**	**10**	**16**	**10**	**10**	**10**	**10**	**10**
Center to face		[mm]	75	92	99	109	124	149	112	147	147	153	178	181
Clamp diameter	d_{inner}	[mm]	For varying clamp diameters please refer to page 00/11						For varying clamp diameters please refer to page 00/11					
	d_{outer}	[mm]												
Height – H4	H max.	[mm]	332	518	534	552	640	684	332	518	534	552	640	684
Height – H8 double piston design	H max.	[mm]	338	535	550	569	707	750	338	535	550	569	707	750
Threaded connections			**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	188
Height – H4	H max.	[mm]	350	536	540	561	649	686	350	536	540	561	649	686
Height – H8 double piston design	H max.	[mm]	356	553	557	577	716	752	356	553	557	577	716	752
Flanged connections			**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	521	537	556	644	681	335	521	537	556	644	681
Height – H8 double piston design	H max.	[mm]	341	538	554	572	711	747	341	538	554	572	711	747
Weight														
Weight	max.	[kg]	9	20	21,7	26,5	47	56						

US Units

Actual Orifice diameter d_0		[inch]	0,906	1,457	1,811	2,362	2,913	3,622	0,906	1,457	1,811	2,362	2,913	3,622
Actual Orifice area A_0		[inch²]	0,644	1,67	2,576	4,38	6,666	10,30	0,644	1,67	2,576	4,38	6,666	10,30
Welded connections			**Inlet a**						**Outlet b**					
		PN	**16**	**16**	**16**	**16**	**16**	**16**	**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	3 17/32	4 15/16	4 15/16	4 15/16	5 14/16	6
Height – H4	H max.	[inch]	13 1/16	20 13/32	21 1/32	21 3/4	25 3/16	26 15/16	13 1/16	20 13/32	21 1/32	21 3/4	25 3/16	26 15/16
Height – H8 double piston design	H max.	[inch]	13 5/16	21 1/16	21 21/32	22 13/32	27 27/32	29 17/32	13 5/16	21 1/16	21 21/32	22 13/32	27 27/32	29 17/32
Clamp connections			**Inlet a**						**Outlet b**					
		PN	**16**	**16**	**16**	**10**	**10**	**10**	**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	4 3/8	5 25/32	5 25/32	6	7	7 1/8
Clamp diameter	d_{inner}	[inch]	For varying clamp diameters please refer to page 00/11						For varying clamp diameters please refer to page 00/11					
	d_{outer}	[inch]												
Height – H4	H max.	[inch]	13 1/16	20 13/32	21 1/32	21 3/4	25 3/16	26 15/16	13 1/16	20 13/32	21 1/32	21 3/4	25 3/16	26 15/16
Height – H8 double piston design	H max.	[inch]	13 5/16	21 1/16	21 21/32	22 13/32	27 27/32	29 17/32	13 5/16	21 1/16	21 21/32	22 13/32	27 27/32	29 17/32
Threaded connections			**Inlet a**						**Outlet b**					
		PN	**40**	**40**	**25**	**25**	**25**	**25**	**40**	**25**	**25**	**25**	**16**	**16**
Center to face		[inch]	3 21/32	4 5/16	4 1/8	4 5/8	5 3/16	5 15/16	5 1/8	6 1/8	6 1/8	6 1/8	7 9/32	7 3/8
Height – H4	H max.	[inch]	13 25/32	21 1/8	21 1/4	22 3/32	25 1/2	26 31/32	13 25/32	21 1/8	21 1/4	22 3/32	25 1/2	26 31/32
Height – H8 double piston design	H max.	[inch]	14 1/32	21 25/32	21 7/8	22 3/4	28 5/32	29 19/32	14 1/32	21 25/32	21 7/8	22 3/4	28 5/32	29 19/32
Flanged connections			**Inlet a**						**Outlet b**					
		PN	**25**	**25**	**16**	**16**	**16**	**16**	**25**	**16**	**16**	**16**	**10**	**10**
Center to face		[inch]	3 1/16	3 3/4	4 1/16	4 7/16	5	5 3/4	4 1/2	5 7/8	5 7/8	5 7/8	6 7/8	7 3/16
Height – H4	H max.	[inch]	13 3/16	20 17/32	21 3/16	21 15/16	25 5/16	26 25/32	13 3/16	20 17/32	21 3/16	21 15/16	25 5/16	26 25/32
Height – H8 double piston design	H max.	[inch]	13 25/32	21 7/32	21 27/32	22 9/16	27 31/32	29 7/16	13 25/32	21 7/32	21 27/32	22 9/16	27 31/32	29 7/16
Weight														
Weight	max.	[lb]	19,8	44,1	47,8	58,4	103,6	123,5						

Option codes for available connections

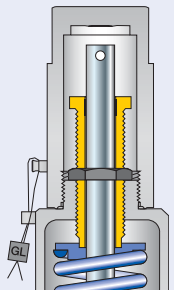
For detailed information about the available connections
please refer to “How to use” on page 00/07

Connections

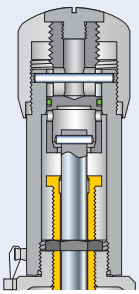
	d_0 [mm]	23	37	46	60	74	92	d_0 [mm]	23	37	46	60	74	92
	d_0 [inch]	0,906	1,457	1,811	2,362	2,913	3,622	d_0 [inch]	0,906	1,457	1,811	2,362	2,913	3,622
Clamps		**Option code inlet**							**Option code outlet**						
	DN	25	40	50	65	80	100	DN	40	65	80	100	125	150
	SO	L79						SO	L86					
For dimensions refer to page 00/07	DO	I73						DO	I74					
	NPS	1 1/2"	2"	2 1/2"	3"	3 1/2"	4"	NPS	2"	3"	3 1/2"	4"	5"	6"
	BO	I75						BO	I76					
	CO	L96						CO	L97					
	Clamp connections suitable for NA-connect available													
Threaded connections		**Option code inlet**							**Option code outlet**					
Pipe standard	**DN**	25	40	50	65	80	100	DN	40	65	80	100	125	150
	00	H85L77						00	A85L83					–
	GS	H85H34						GS	A85H35				–	–
	BS	H85H36						BS	A85H37				–	–
DIN 11850/ DIN 11866 Range A	GT	H85H54						GT	A85H55				–	–
	BT	H85H56						BT	A85H57				–	–
	GO	H85L75						GO	A85L81					
	KO	H85L76						KO	A85L82					
	GD	H85H60						GD	A85H61				–	–
	BD	H85H58						BD	A85H59				–	–
Pipe standard	**DN**	25	40	50	65	80	100	DN	40	65	80	100	125	150
	GS	H86H34					–	GS	A86H35			–	–	–
	BS	H86H36					–	BS	A86H37			–	–	–
DIN EN ISO 1127/ DIN 11866 Range B	GT	H86H54					–	GT	A86H55			–	–	–
	BT	H86H56					–	BT	A86H57			–	–	–
	GD	H86H60						GD	A86H61				–	–
	BD	H86H58						BD	A86H59				–	–
Pipe standard	NPS	1 1/2"	2"	2 1/2"	3"	4"	4 1/2"	NPS	2"	3"	4"	4 1/2"	5"	6"
	GS	H66H34					–	GS	A84H35			–	–	–
BS 4825-1 DIN 11866 Range C	BS	H66H36					–	BS	A84H37			–	–	–
	GT	H66H54					–	GT	A84H55			–	–	–
	BT	H66H56					–	BT	A84H57			–	–	–
Flanged connections		**Option code inlet**							**Option code outlet**					
	DN	25	40	50	65	80	100	DN	40	65	80	100	125	150
	FD	I71						FD	I72					
	NPS	1"	1 1/2"	2"	2 1/2"	3"	4"	NPS	1 1/2"	2 1/2"	3"	4"	5"	6"
	FA	L94						FA	L95					
Pipe standard	**DN**	25	40	50	65	80	100	DN	40	6 5	80	100	125	150
	NF	H85H71						NF	A85H72					
	BF	H85H73						BF	A85H74					
	NG	H85H75						NG	A85H76					
	BG	H85H77						BG	A85H78					
DIN 11850/ DIN 11866 Range A	TN	H85L78						TN	A85L84					
	AF	L90						AF	L91					
	AN	L92						AN	L93					
	VC	L70					–	VC	–					
	VG	I82	–					VG	–					
	VH	–	I83	–				VH	–					
	VE	L80						VE	–					
Pipe standard	**DN**	25	40	50	65	80	100	DN	40	65	80	100	125	150
	NF	H86H71						NF	A86H72				–	–
	BF	H86H73						BF	A86H74				–	–
DIN EN ISO 1127/ DIN 11866 Range B	NG	H86H75						NG	A86H76				–	–
	BG	H86H77						BG	A86H78				–	–
Pipe standard	NPS	1 1/2"	2"	2 1/2"	3"	4"	4 1/2"	NPS	2"	3"	4"	4 1/2"	5"	6"
	NF	H66H71					–	NF	A84H72			–	–	–
	BF	H66H73					–	BF	A84H74			–	–	–
BS 4825-1 DIN 11866 Range C	NG	H66H75					–	NG	A84H76			–	–	–
	BG	H66H77					–	BG	A84H78			–	–	–

Available options

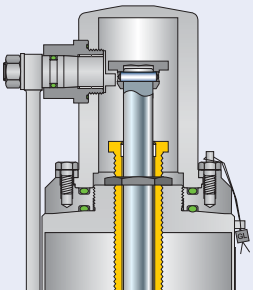
Gastight cap H2
H2



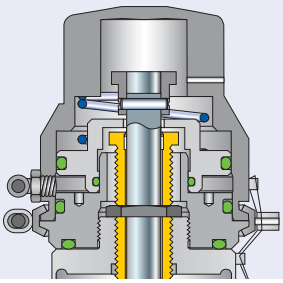
Gastight lifting device H4
Packed knob H4 (d_0 23 only)



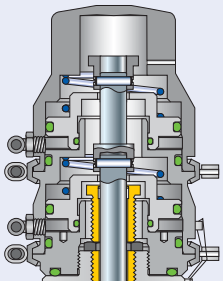
Packed lever H4
(for d_0 > 23)



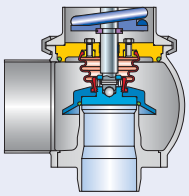
Pneumatic lifting device H8
H8 single piston design



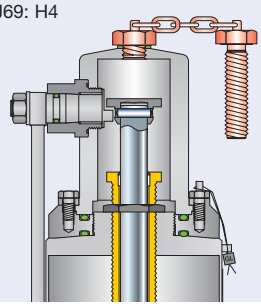
Pneumatic lifting device H8
J41: H8 double piston design



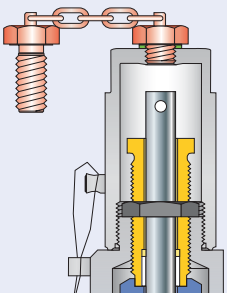
HyTight Assembly
J22: EPDM "D"
J21: CR "K"
J23: FKM "L"
J30: NBR "N"
J20: FFKM "C"



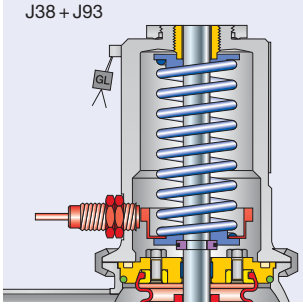
Test gag
(for d_0 > 23)
J69: H4



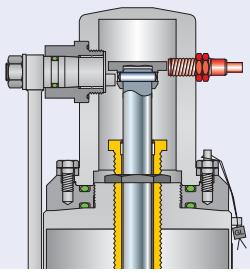
Test gag
J70: H2



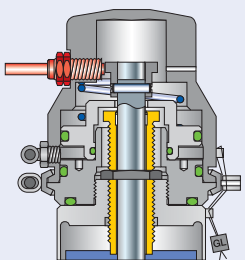
Lift indicator bonnet
(d_0 23 only)
J38 + J93



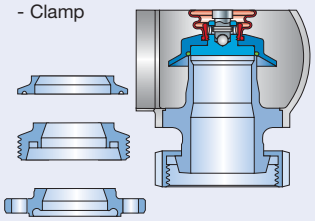
Lift indicator H4
(d_0 > 23)
J39 + J93



Lift indicator H8
(d_0 > 23)
J40 + J93



Multiple possibilities of aseptic connections
- Diary industry coupling
- Sterile screw coupling
- Small flange
- Clamp

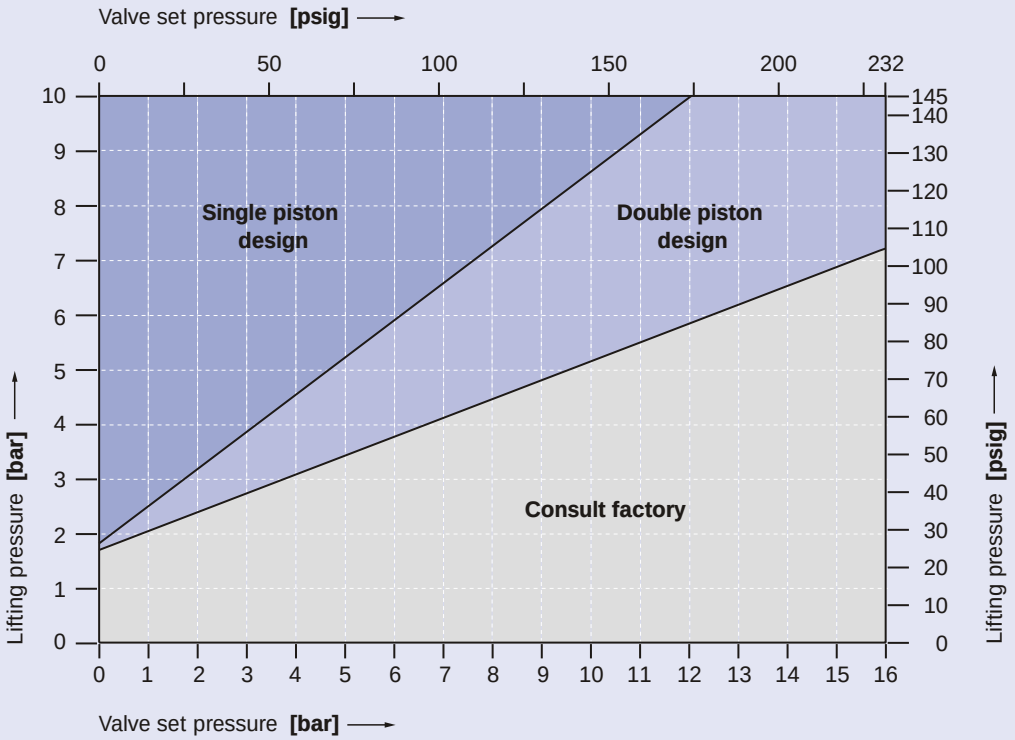


Selection chart H8

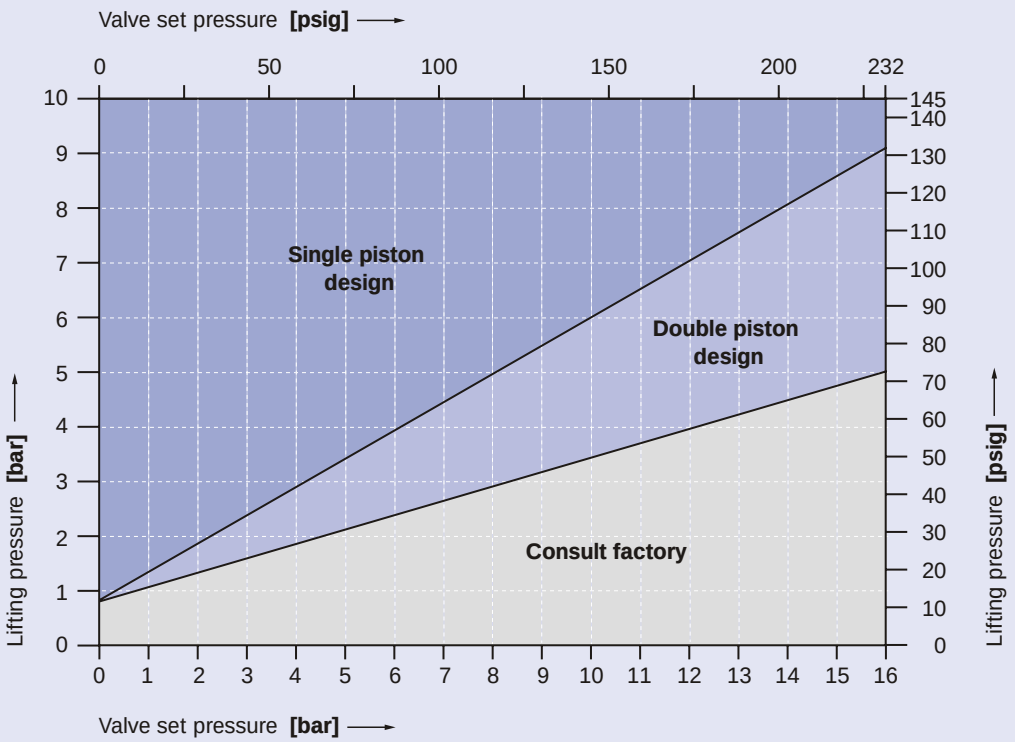
Depending on the set pressure and lifting pressure (air supply) a double piston lifting device (option code J41) may be required instead of a single piston. The chart below determines the required lifting device.

For information about this chart please refere to “How to use” on page 00/12.

Selection chart lifting device H8, size I. d_0 23 mm / 0,906 inch

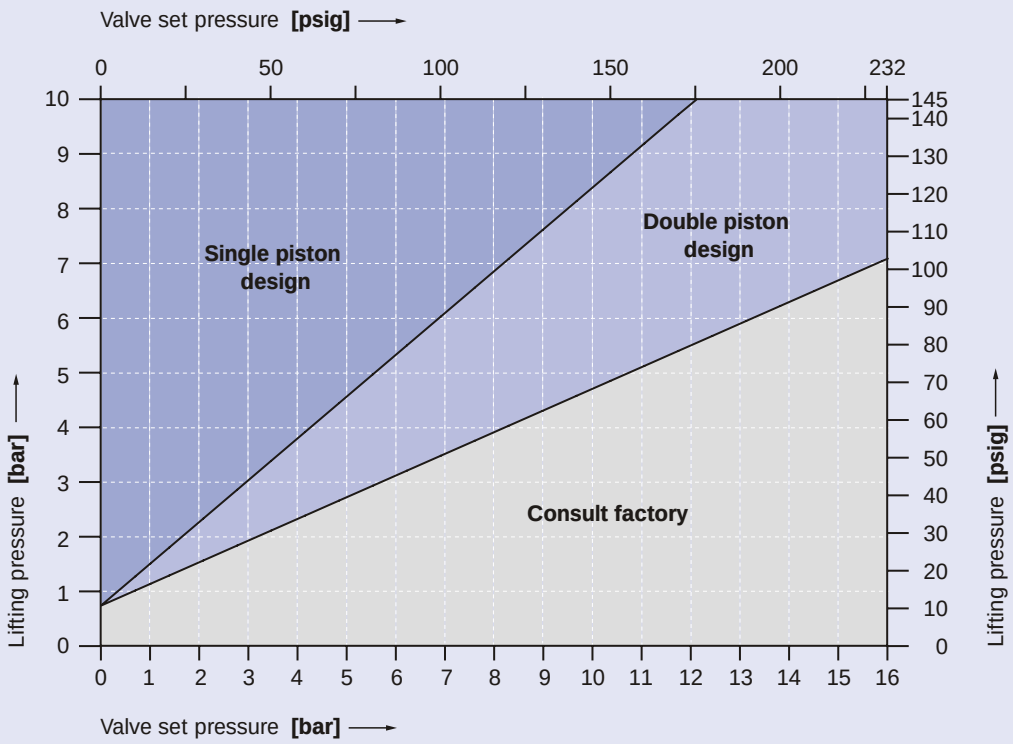


Selection chart lifting device H8, size II. d_0 37 mm / 1,457 inch

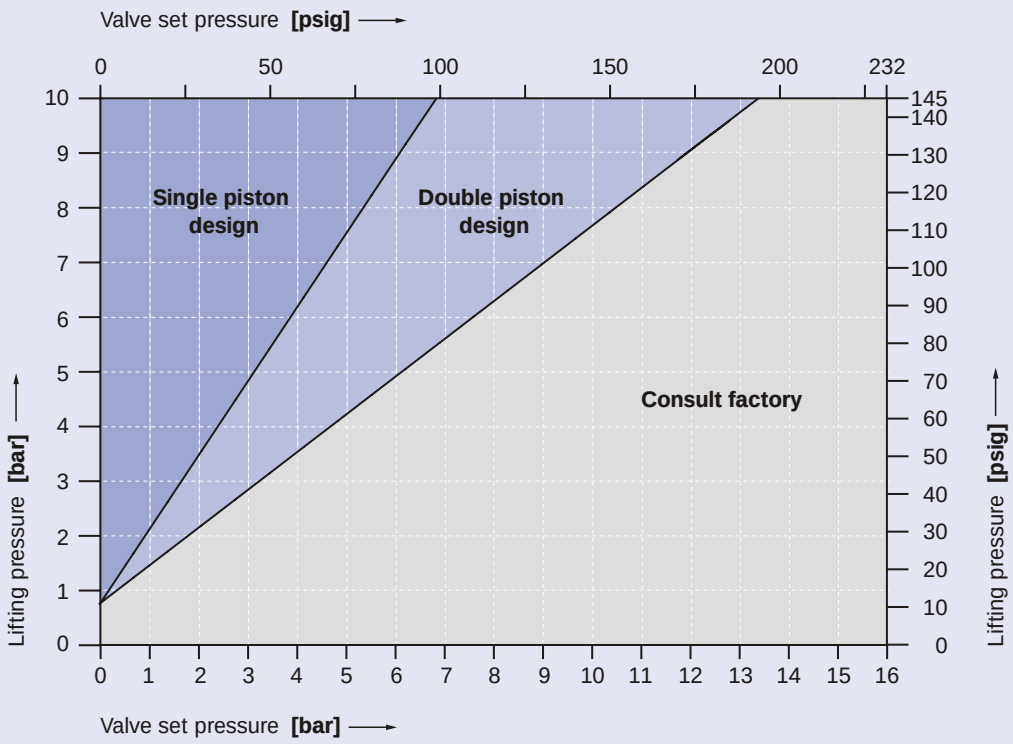


Selection chart H8

Selection chart lifting device H8, size II. d_0 46 mm / 1,811 inch

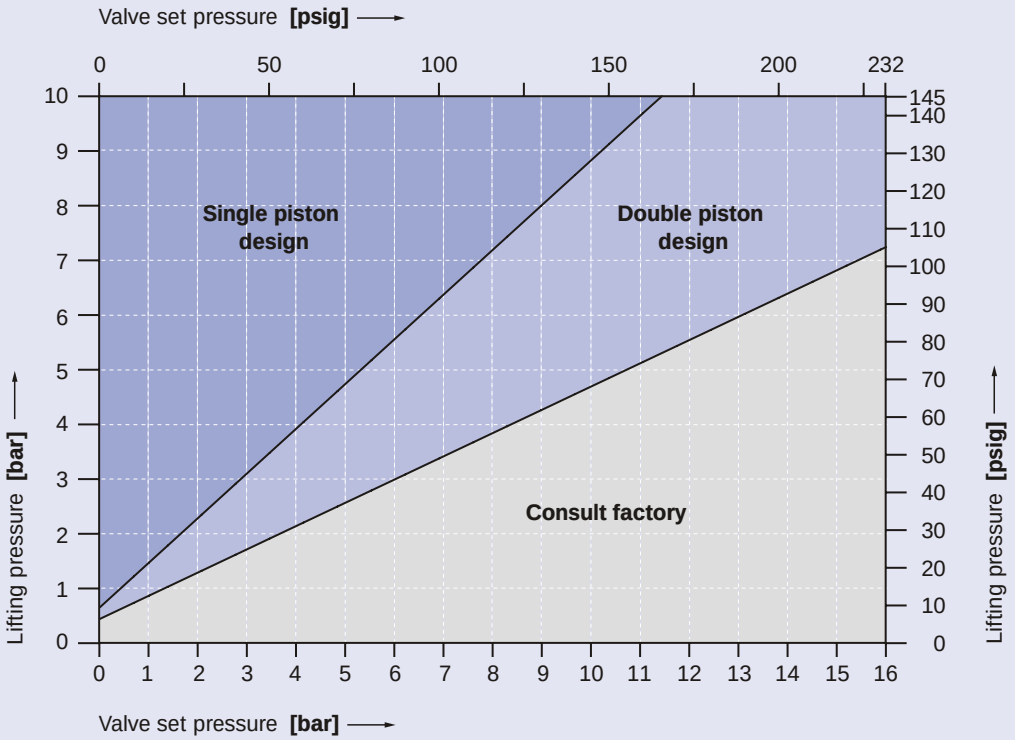


Selection chart lifting device H8, size II. d_0 60 mm / 2,362 inch

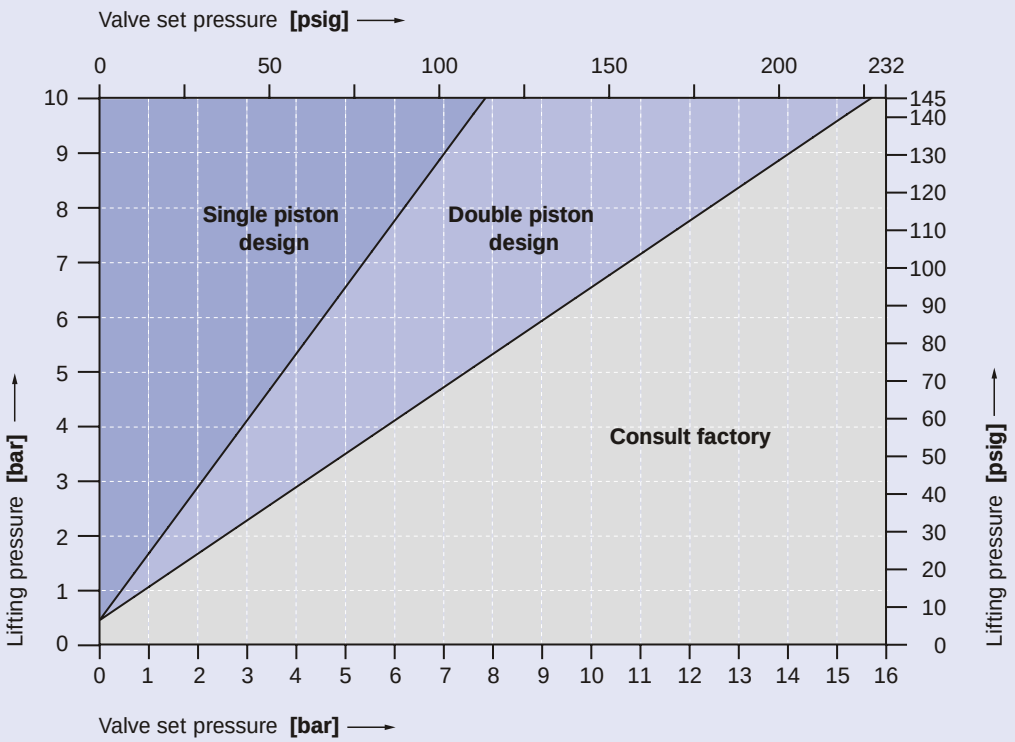


Selection chart H8

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

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

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