

Safety valve, angle type, article 181-VA diameter DN 15 up to DN 100

TÜV/CE angle type safety valve in compact design. Acc. to the version and sealing the valve can be used for a varied range of applications. As an optional extra, these valves are also available with gastight spring bonnet or lifting lever.

Connections:

inlet: Flange acc. to DIN 1092-1, Form B PN 16 / PN 40 & PN 63

outlet: Flange acc. to DIN 1092-1, Form B PN 16 / PN 40

Optionally also available with flange connections acc. to ASME B 16.5, class 150 or class 300.

For the protection of:

- Pressure-vessels /-systems for neutral / non-neutral fluids
- Stationary silos and bulk transport vehicles for liquid and granular goods¹

The appropriate valve design and sealing must be used acc. to the application.



possible versions of valves heads



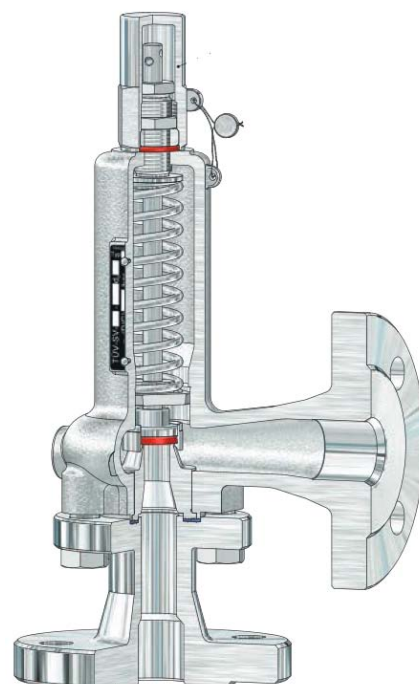
lifting lever
head A



gastight cap
head C



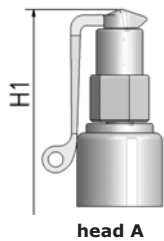
	TÜV-approval:	
	VdTÜV-data sheet AD 2000 data sheet A2	
TÜV-type approval:		
BG I : TÜV•SV•XX-713•do•D/G/F•α _w •p		
BG II : TÜV•SV•XX-820•do•D/G/F•α _w •p		
BG III: TÜV•SV•XX-896•do•D/G/F•α _w •p		
BG IV : TÜV•SV•XX-902•do•D/G/F•α _w •p		
	ambient	-10°C ... +80°C
	medium	DN 15 - DN 25 -10°C ... +280°C DN 32 - DN 100 -10°C ... +350°C



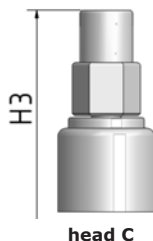
Safety valve, angle type, article 181-VA diameter DN 15 up to DN 100

Article 181-VA

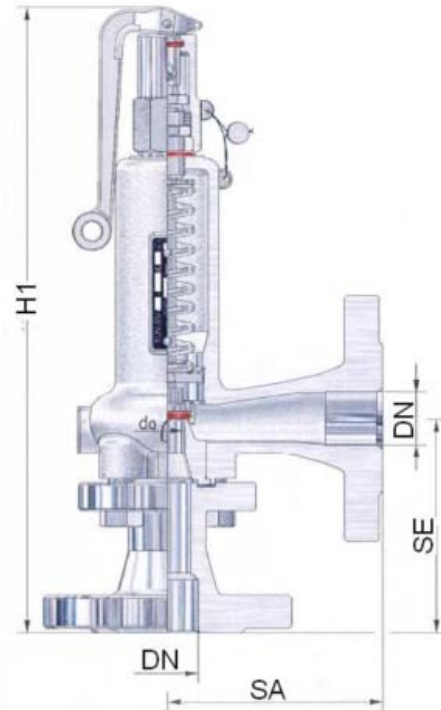
description	material
inlet body	
DN 15 - DN 25	stainless steel 1.4571
DN 32 - DN 100	stainless steel 1.4571, 1.4581
outlet body	
DN 15 - DN 25	stainless steel 1.4581
DN 32 - DN 100	stainless steel 1.4581
spring	stainless steel 1.4310
disc	stainless steel 1.4571



head A



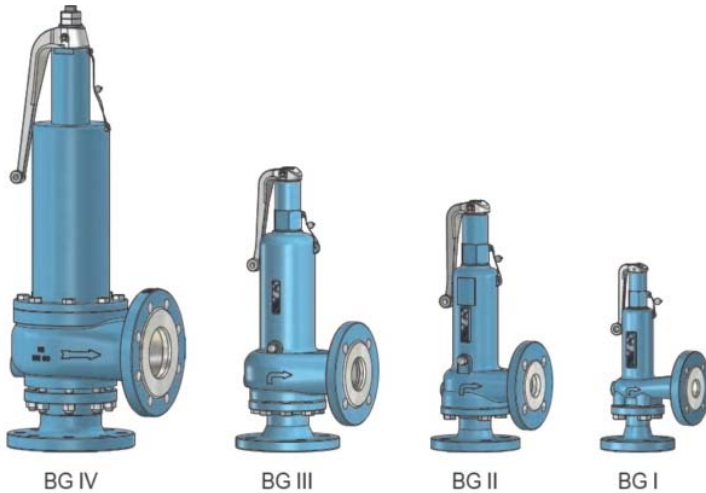
head C



Size	inlet				outlet			dimensions		coefficient		set pressure		weight
	DN	PN _E	d _o	S _E	DN	PN _A	S _A	H1	H3	D/G	F	p min.	p max.	
BG	(mm)	(bar)	(mm)	(mm)	(mm)	(bar)	(mm)	(mm)	(mm)	αw max.	αw	[bar(g)]	[bar(g)]	(kg)
I	15	16-63	12,5	90	15	16-40	90	282	268	0,45	0,32	0,20	40	4,3
	20		12,5	95	20		95	287	273	0,45	0,32	0,20	40	4,5
	25		16	100	25		100	292	278	0,38	0,29	0,15	40	5,2
	25		18	100	25		100	292	278	0,38	0,22	0,10	20	4,6
II	32	16-63	20	105	32	16-40	105	395	375	0,43	0,34	0,10	40	10,0
	32		25	105	32		105	395	375	0,31	0,24	0,10	8	10,2
	40		25	115	40		115	405	385	0,41	0,32	0,10	40	10,7
	40		32	115	40		115	405	385	0,29	0,23	0,10	6	10,6
III	50	16-63	32	125	50	16-40	125	450	430	0,39	0,28	0,05	40	17,0
	50		40	125	50		125	450	430	0,31	0,23	0,05	36	15,5
	65		40	145	65		145	470	450	0,31	0,23	0,05	36	20,3
	65		50	145	65		145	470	450	0,28	0,21	0,05	16	20,3
IV	80	16-63	50	155	80	16-40	155	700	620	0,46	0,33	0,08	25	38,0
	80		58	155	80		155	700	620	0,41	0,29	0,08	6	38,2
	100		60	175	100		175	730	650	0,44	0,30	0,05	18	40,5
	100		70	175	100		175	730	650	0,40	0,28	0,05	6	40,5

181-VA_ENG_2021_Rev. 0

Safety valve, angle type, article 181-VA diameter DN 15 up to DN 100



BG IV

BG III

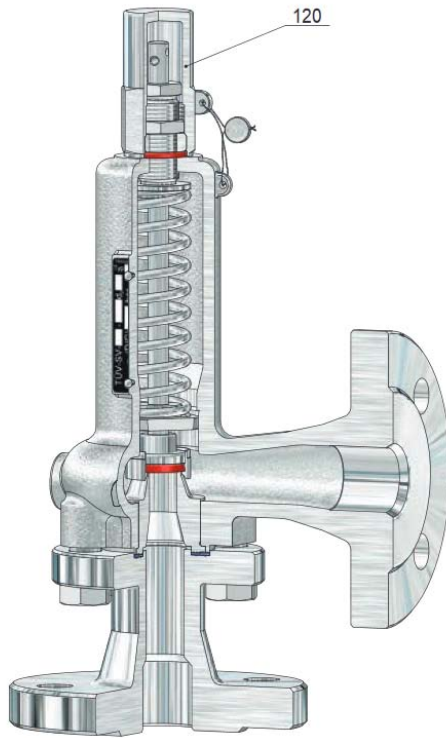
BG II

BG I

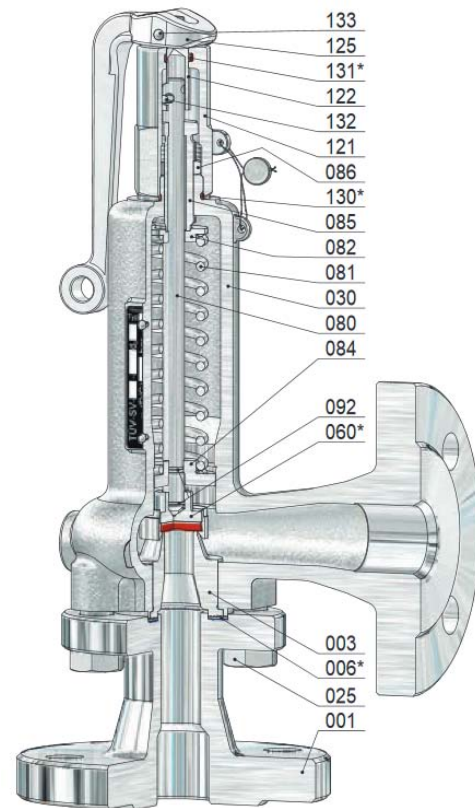


diameter	article number			
	pressure range PN 16 / PN 40		pressure range PN 63	
	head A lifting lever	head C cap	head A lifting lever	head C cap
DN 15	33.1639.6.11-A	33.1640.6.11-C	33.1641.6.11-A	33.1642.6.11-C
DN 20	33.1639.6.13-A	33.1640.6.13-C	33.1641.6.15-A	33.1642.6.15-C
DN 25	33.1639.6.15-A	33.1640.6.15-C	33.1641.6.18-A	33.1642.6.18-C
DN 32	33.1639.6.18-A	33.1640.6.18-C	33.1641.6.19-A	33.1642.6.19-C
DN 40	33.1639.6.19-A	33.1640.6.19-C	33.1641.6.21-A	33.1642.6.21-C
DN 50	33.1639.6.21-A	33.1640.6.21-C	33.1641.6.24-A	33.1642.6.24-C
DN 65	33.1639.6.24-A	33.1640.6.24-C	33.1641.6.25-A	33.1642.6.25-C
DN 80	33.1639.6.25-A	33.1640.6.25-C	33.1641.6.27-A	33.1642.6.27-C
DN 100	33.1639.6.27-A	33.1640.6.27-C	33.1641.6.27-A	33.1642.6.27-C

Safety valve, angle type, article 181-VA
diameter DN 15 up to DN 25



Size I DN 15 up to DN 25
head C



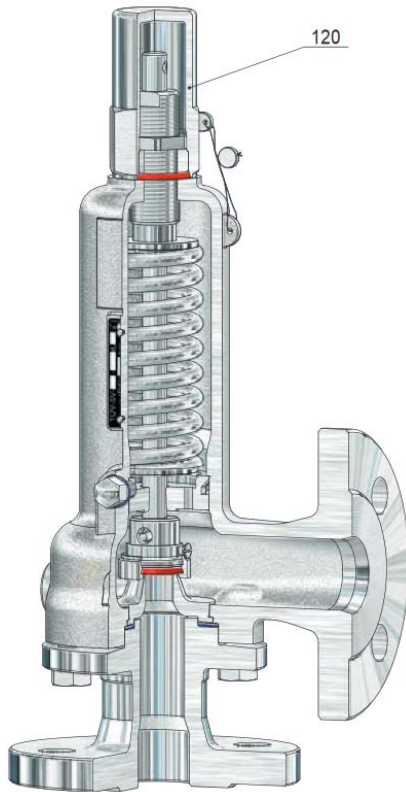
Size I DN 15 up to DN 25
head A

Pos.	piece	description	Pos.	piece	description
001	1	inlet body	086	1	lock nut
003	1	seat	092	2	lock ring
006*	1	packing ring	120	1	cap
025	4	screw	121	1	lifting cap
030	1	spring bonnet	122	1	coupling
060*	1	disc, complete	125	1	lifting lever
560	1	disc	130*	1	o-ring
062	1	soft sealing	131*	1	o-ring
080	1	spindle	132	1	groove pin
081	1	spring	133	1	groove pin
082	1	springplate, upper			
084	1	springplate, lower			
085	1	adjusting screw			

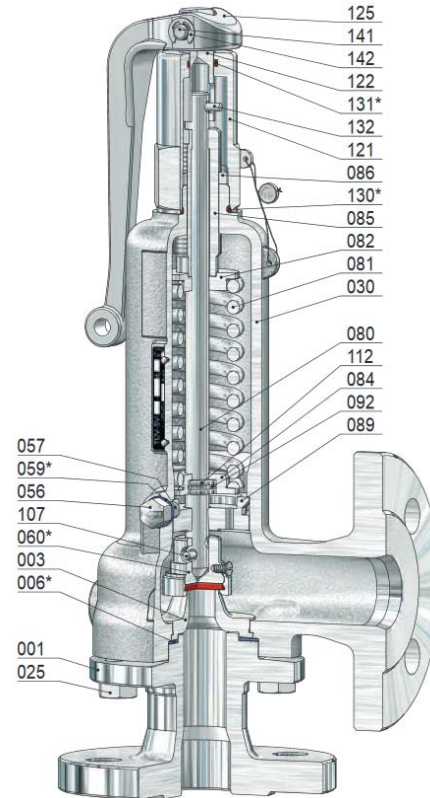
* expendable parts

181-VA_ENG_2021_Rev. 0

Safety valve, angle type, article 181-VA diameter DN 32 up to DN 40



Size II DN 32 up to DN 40
head C

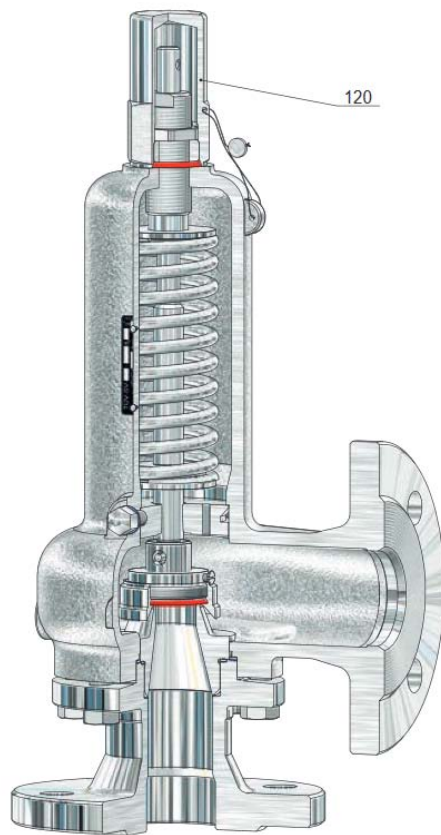


Size II DN 32 up to DN 40
head A

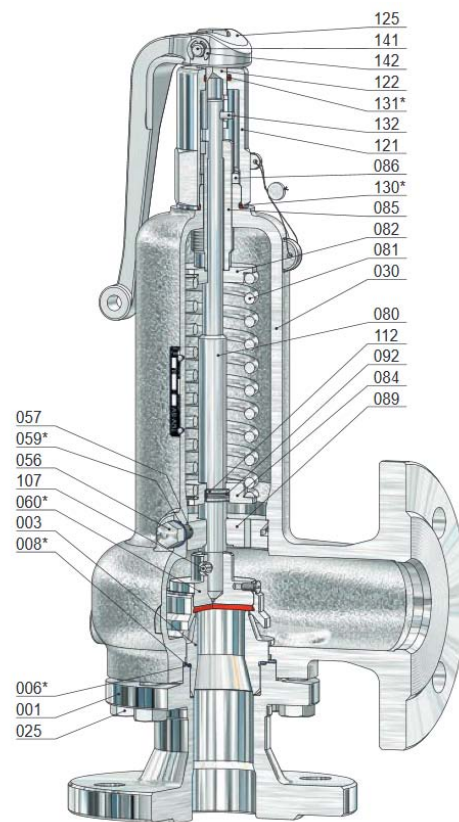
Pos.	piece	description	Pos.	piece	description
001	1	inlet body	085	1	adjusting screw
003	1	seat	086	1	lock nut
006*	1	packing ring	089	1	guide plate
025	4	screw	092	1	lock ring
030	1	spring bonnet	107	1	spring pin
056	2	lock nut	112	1	split ring
057	2	screwed pin	120	1	cap
059*	2	packing ring	121	1	lifting cap
060*	1	disc, complete	122	1	coupling
060	1	disc	125	1	lifting lever
062	1	soft sealing	130*	1	o-ring
063	1	disc ring	131*	1	o-ring
067	1	security screw	132	1	groove pin
080	1	spindle	141	1	bolt
081	1	spring	142	2	stop washer
082	1	springplate, upper			
084	1	springplate, lower			

* expendable parts

Safety valve, angle type, article 181-VA diameter DN 50 up to DN 65



Size III DN 50 up to DN 65
head C

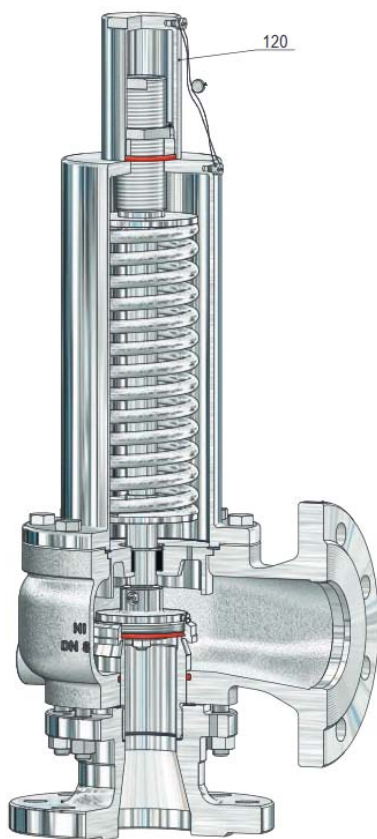


Size III DN 50 up to DN 65
head A

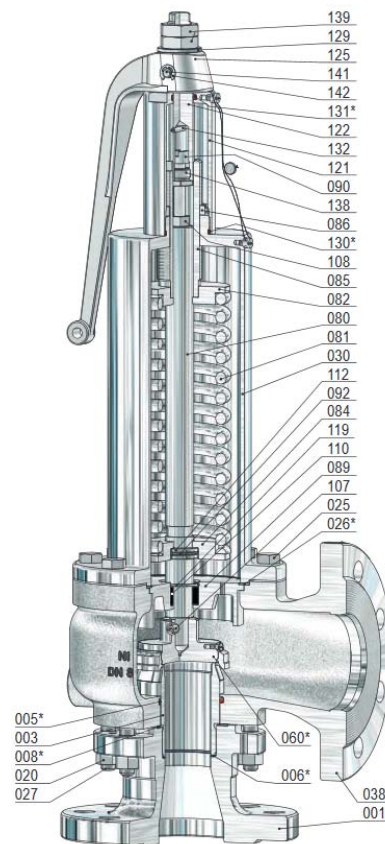
Pos.	piece	description	Pos.	piece	description
001	1	inlet body	084	1	springplate, lower
003	1	seat	085	1	adjusting screw
006*	1	packing ring	086	1	lock nut
008*	1	packing ring	089	1	guide plate
025	8	screw	092	1	lock ring
030	1	spring bonnet	107	1	spring pin
056	2	lock nut	112	1	split ring
057	2	screwed pin	120	1	cap
059*	2	packing ring	121	1	lifting cap
060*	1	disc, complete	122	1	coupling
062	1	disc	125	1	lifting lever
063	1	disc ring	130*	1	o-ring
067	1	security screw	131*	1	o-ring
080	1	spindle	132	1	groove pin
081	1	spring	141	1	bolt
082	1	spring plate, upper	142	2	stop washer

* expendable parts

Safety valve, angle type, article 181-VA diameter DN 80 up to DN 100



Size IV DN 80 up to DN 100
head C



Size IV DN 80 up to DN 100
head A

Pos.	piece	description	Pos.	piece	description	Pos.	piece	description
001	1	inlet body	073	1	o-ring	121	1	lifting cap
003	1	seat	074	1	disc plate	122	1	coupling
005*	1	o-ring	080	1	spindle	125	1	lifting lever
006*	1	packing ring	081	1	spring	129	1	pressure plate
008*	1	packing ring	082	1	springplate, upper	130*	1	o-ring
020	8	nut	084	1	springplate, lower	131*	1	o-ring
025	8	screw	085	1	adjusting screw	132	1	groove pin
026*	1	packing ring	086	1	lock nut	138	1	screw
027	8	stud bolt	089	1	guide plate	139	2	nut
030	1	spring bonnet	090	1	screw	141	1	bolt
038	1	outlet body	092	1	lock ring	142	2	stop washer
060*	1	disc, complete	107	1	spring pin			
560	1	disc	108	1	nut			
062	1	soft sealing	110	1	bush			
063	1	disc ring	112	1	split ring			
065	1	disc bolt	119	1	locking ring			
067	1	security screw	120	1	cap			

* expendable parts

181-VA_ENG_2021_Rev. 0

Safety valve, angle type, article 181-VA diameter DN 15 up to DN 100

Discharge capacities																
Water at 20°C [10 ³ kg/h]																
	Size I			Size II				Size III				Size IV				
DN inlet	15/20	25	25	32	32	40	40	50	50	65	65	80	80	100	100	100
d _o [mm]	12,5	16	18	20	25	25	32	32	40	40	50	50	58	60	70	70
α _w max.	0,32	0,29	0,22	0,34	0,24	0,32	0,23	0,28	0,23	0,23	0,21	0,33	0,29	0,30	0,28	0,41
pe [bar(g)]																
0,05			1,1					4,4	5,7	5,7	8,1	12,8	15,1	16,7	21,2	31,1
0,1	0,9	1,3	1,3	2,4	2,7	3,6	4,2	5,1	6,6	6,6	9,4	14,7	17,4	19,3	24,5	35,6
0,2	1,1	1,6	1,6	3,0	3,3	4,4	5,2	6,3	8,1	8,1	11,5	18,1	21,3	23,6	30,0	44,0
0,3	1,3	1,9	1,8	3,4	3,8	5,1	6,0	7,2	9,3	9,3	13,3	20,8	24,6	27,3	34,7	50,8
0,4	1,4	2,1	2,0	3,9	4,3	5,7	6,7	8,1	10,4	10,4	14,8	23,3	27,6	30,5	38,8	56,7
0,5	1,5	2,3	2,2	4,2	4,7	6,2	7,3	8,9	11,4	11,4	16,2	25,5	30,2	33,4	42,5	62,2
1,0	2,1	3,1	3,0	5,7	6,3	8,4	9,9	12,0	15,4	15,4	22,0	34,6	40,9	45,2	57,5	84,2
1,5	2,6	3,8	3,7	7,0	7,7	10,3	12,1	14,7	18,9	18,9	26,9	42,3	50,1	55,4	70,4	103,1
2,0	3,0	4,4	4,2	8,1	8,9	11,9	14,0	17,0	21,8	21,8	31,1	48,9	57,8	64,0	81,3	119,0
2,5	3,3	4,9	4,7	9,0	10,0	13,3	15,6	19,0	24,4	24,4	34,8	54,7	64,6	71,5	90,9	133,1
3,0	3,6	5,4	5,2	9,9	10,9	14,5	17,1	20,8	26,7	26,7	38,1	59,9	70,8	78,4	99,6	145,8
3,5	3,9	5,8	5,6	10,7	11,8	15,7	18,5	22,5	28,8	28,8	41,2	64,7	76,5	84,7	107,5	157,5
4,0	4,2	6,2	6,0	11,4	12,6	16,8	19,8	24,0	30,8	30,8	44,0	69,1	81,7	90,5	115,0	168,3
4,5	4,4	6,6	6,3	12,1	13,4	17,8	21,0	25,5	32,7	32,7	46,7	73,3	86,7	96,0	121,9	178,6
5	4,7	7,0	6,7	12,8	14,1	19,8	22,1	26,9	34,5	34,5	49,2	77,3	91,4	101,2	128,5	188,2
6	5,1	7,6	7,3	14,0	15,4	20,6	24,2	29,4	37,8	37,8	53,9	84,7	100,1	110,8	140,8	206,2
7	5,5	8,2	7,9	15,1		22,2		31,8	40,8	40,8	58,2	91,5		119,7		
8	5,9	8,8	8,4	16,1		23,8		34,0	43,6	43,6	62,2	97,8		128,0		
9	6,3	9,3	9,0	17,1		25,2		36,0	46,3	46,3	66,0	103,7		135,7		
10	6,6	9,8	9,4	18,0		26,6		38,0	48,8	48,8	69,6	109,3		143,1		
12	7,3	10,8	10,3	19,8		29,1		41,6	53,4	53,4	76,3	119,7		156,7		
14	7,8	11,6	11,2	21,4		31,4		44,9	57,7	57,7	82,4	129,3		169,3		
16	8,4	12,4	11,9	22,8		33,6		48,1	61,7	61,7	88,4	138,3		181,0		
18	8,9	13,2	12,7	24,2		35,6		51,0	65,5	65,4		146,6		192,0		
20	9,4	13,9	13,4	25,5		37,6		53,7	69,1	69,0		154,6				
25	10,5	15,6		28,6		42,0		60,1	77,2	77,1		172,8				
30	11,5	17,0		31,3		46,0		65,8	84,6	84,4						
35	12,4	18,4		33,8		49,7		71,1	91,4	91,2						
40	13,2	19,7		36,1		53,1		76,0								

181-VA_ENG_2021_Rev. 0

Safety valve, angle type, article 181-VA

diameter DN 15 up to DN 100

Discharge capacities															
saturated steam [kg/h]															
	Size I			Size II				Size III				Size IV			
DN inlet	15/20	25	25	32	32	40	40	50	50	65	65	80	80	100	100
d _o [mm]	12,5	16	18	20	25	25	32	32	40	40	50	50	58	60	70
αw max.	0,45	0,38	0,28	0,43	0,31	0,41	0,29	0,39	0,31	0,31	0,28	0,46	0,41	0,44	0,40
pe [bar(g)]															
0,05			25					100	128	128	182	287	339	375	477
0,1	20	29	28	53	59	78	92	116	146	146	208	331	394	436	553
0,2	25	36	34	64	72	94	110	140	178	178	254	401	478	531	669
0,3	30	42	39	73	81	106	126	160	203	203	289	459	546	617	770
0,4	33	46	43	80	88	117	138	177	224	224	317	508	603	686	854
0,5	37	51	47	86	95	127	148	191	241	241	343	550	653	741	929
1,0	64	88	81	150	167	219	256	341	423	423	603	986	1176	1350	1663
1,5	74	102	95	174	194	256	298	406	500	500	708	1176	1409	1617	1990
2,0	95	132	123	229	254	340	395	539	669	669	943	1553	1858	2139	2639
2,5	112	155	144	271	305	402	468	635	788	788	1112	1827	2192	2517	3114
3,0	127	175	164	310	349	462	535	720	894	894	1261	2072	2485	2854	3532
3,5	143	198	184	349	394	521	603	811	1008	1008	1422	2336	2802	3218	3982
4,0	158	219	204	436	436	576	668	898	1116	1116	1575	2587	3103	3563	4409
4,5	174	241	225	480	480	635	736	990	1229	1229	1735	2850	3418	3925	4857
5	189	262	244	522	522	690	799	1075	1335	1335	1885	3096	3713	4265	5277
6	220	305	284	607	607	802	930	1250	1553	1553	2191	3600	4318	4959	6136
7	251	348	324			916		1427	1772	1772	2501	4110		5660	
8	282	391	364			1029		1603	1991	1991	2810	4616		6358	
9	313	433	404			1141		1778	2208	2208	3117	5120		7053	
10	344	476	444			1254		1954	2427	2427	3426	5628		7752	
12	406	562	524			1479		2305	2863	2863	4040	6638		9143	
14	467	646	603			1703		2654	3296	3296	4652	7641		10525	
16	528	731	682			1925		3000	3726	3726	5258	8639		11899	
18	589	815	760			2146		3344	4153	4154		9630		13265	
20	650	899	839			2369		3691	4585	4585		10629			
25	804	1113				2931		4568	5673	5673		13153			
30	958	1325				3491		5440	6757	6757					
35	1112	1538				4051		6314	7841	7841					
40	1265	1750				4610		7185							

181-VA_ENG_2021_Rev. 0

Safety valve, angle type, article 181-VA diameter DN 15 up to DN 100

Discharge capacities															
air at 0°C and 1013 mbar [m ³ /h]															
	Size I			Size II				Size III				Size IV			
DN inlet	15/20	25	25	32	32	40	40	50	50	65	65	80	80	100	100
d _o [mm]	12,5	16	18	20	25	25	32	32	40	40	50	50	58	60	70
αw max.	0,45	0,38	0,28	0,43	0,31	0,41	0,29	0,39	0,31	0,31	0,28	0,46	0,41	0,44	0,40
pe [bar(g)]															
0,05			31					123	158	158	225	353	418	463	588
0,1	25	37	35	67	74	99	116	146	184	184	262	417	497	549	697
0,2	33	47	45	84	94	124	145	184	234	234	334	527	628	698	880
0,3	41	57	53	100	111	146	172	219	277	277	395	628	746	844	1053
0,4	47	65	61	113	126	167	195	252	318	318	450	720	855	973	1211
0,5	54	75	68	127	140	186	218	281	354	354	504	808	959	1087	1364
1,0	77	106	98	181	201	265	309	412	512	512	729	1193	1426	1632	2010
1,5	100	138	128	237	263	347	404	552	679	679	962	1596	1912	2195	2702
2,0	121	167	156	290	322	430	500	683	847	847	1195	1969	2354	2711	3345
2,5	142	196	183	344	386	510	594	804	999	999	1410	2316	2778	3190	3947
3,0	162	225	209	397	447	592	686	922	1145	1145	1616	2655	3184	3657	4525
3,5	183	253	236	448	504	667	773	1040	1291	1291	1822	2994	3591	4124	5103
4,0	204	282	263	499	562	743	861	1158	1438	1438	2029	3333	3998	4591	5681
4,5	225	311	290	549	619	818	948	1275	1584	1584	2235	3672	4404	5058	6259
5	245	339	317	600	676	894	1036	1393	1730	1730	2442	4012	4811	5526	6837
6	287	397	370	702	790	1045	1211	1629	2023	2023	2855	4691	5626	6461	7995
7	328	454	424	803		1197		1865	2316	2316	3269	5370		7397	
8	370	512	477	905		1348		2101	2609	2610	3682	6050		8334	
9	412	569	531	1007		1500		2337	2902	2903	4097	6731		9271	
10	453	627	585	1109		1651		2574	3196	3197	4511	7412		10209	
12	537	742	692	1312		1955		3047	3784	3785	5341	8775		12086	
14	620	858	800	1517		2259		3521	4373	4373	6171	10139		13966	
16	704	973	908	1721		2564		3996	4962	4963	7003	11506		15848	
18	787	1089	1016	1926		2869		4471	5552	5553		12875		17733	
20	871	1205	1124	2131		3174		4947	6144	6144		14245			
25	1081	1495		2644		3939		6139	7625	7625		17678			
30	1292	1795		3159		4707		7335	9110	9111					
35	1503	2079		3676		5477		8536	10601	10601					
40	1715	2373		4195		6250		9740							

181-VA_ENG_2021_Rev. 0

Safety valve, angle type, article 181-VA diameter DN 15 up to DN 100

Table of soft sealings

BSA - short sign	ISO - short sign	ASTM - short sign	material - type	Range of pressure boundary		Range of application
				flat sealing	o-ring	
Elastomeres						
EPDM ¹⁾	EPDM	EPDM	APTK® Ethylene-Propylene- Diene-Kautschuk	≤ 16 bar -40°C to +120°C	< 120 bar -40°C to +140°C	Good resistance against a lot of chemicals, hot water, steam, alkaline solution, acids, alcohol. Average mechanical characteristics. Ozone resistant, not oil resistant.
FPM ¹⁾	FPM	FKM	Viton® Fluor- Kautschuk	≤ 25 bar -20°C to +200°C	< 200 bar -20° C to +200° C	Good resistance against a lot of chemicals, mineral oil, hot air, acid. Average to good mechanical characteristics.
NBR ¹⁾	NBR	NBR	Acrylnitrile- Butadiene-Kautschuk	-	-20° C to +120° C	Good mechanical properties and higher abrasion resistance compared to other elastomeres.
Thermoplastes						
PTFE ¹⁾	PTFE	PTFE	Teflon® Polytetrafluorethylene	≤ 15/25 bar -200°C to +260°C		Good resistance against chemicals, acid, alkaline solution, solvent, oil. Good thermal and average mechanical characteristics.

¹⁾ standard soft sealing