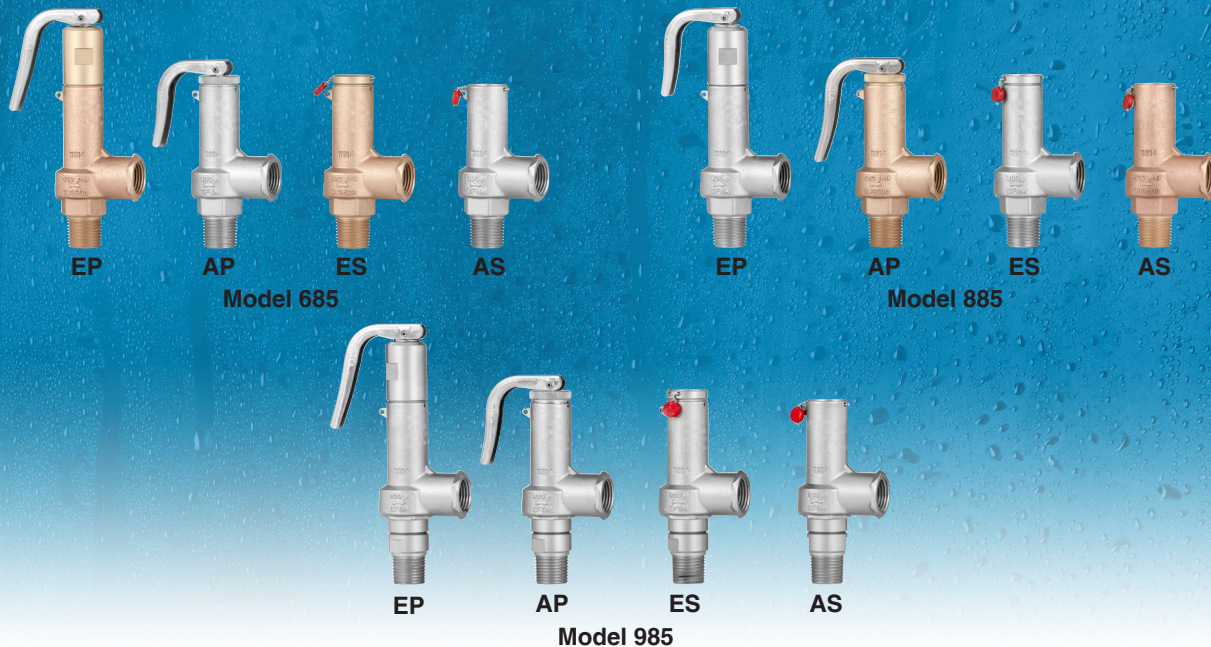


Full lift safety valve with spring loading. (AIT)



ASME
SI Units

Model 685 Model 885 Model 985



The valve works as an automatic pressure releasing regulator activated by the static pressure existing at the entrance to the valve and is characterized by its ability to open instantly and totally.

Design in accordance with "ASME code section VIII". Materials according ASME code section II and ASTM.

Connections according ASME B1.20.1 standard..

In accordance with the requirements of the pressure equipment directive 2014/68/EU.

EC valve verification certified by: TÜV Rheinland Industrie Service GmbH, Notified Body for Pressure Equipment ID-No. 0035. Type (Module B) EC examination report nº 33530455 certified by: TÜV Rheinland Ibérica ICT, S.A.

In compliance with the ATEX 2014/34/EU directive "Protective equipment and systems for use in potentially explosive atmospheres".

Other authorisations: ISCIR, ITI, NASTHOL, EAC,...etc.

Specifications

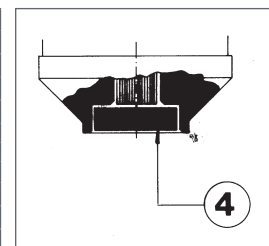
- 90° angular flow.
- Activated by direct action helicoid spring.
- Simplicity of construction ensuring minimum maintenance.
- Materials carefully selected for their resistance to corrosion.
- Internal body designed to offer favourable flow profile.
- Sealing surfaces balanced and making them extremely tightness, even exceeding API-527 requirements.
- Great discharge capacity. For liquids typically used with openings similar to proportional safety valves.
- Auto-centering plug.
- Totally precise open and close.
- All the valves are supplied sealed at the set pressure requested, simulating operational conditions, and are vigorously tested.
- All components are numbered, registered and checked. If requested in advance, material, casting, test and efficiency certificates will be enclosed with the valve, and the instruction manual, in accordance with P.E.D. 2014/68/EU.

IMPORTANT

1.- Fluorelastomer (Vitón) seals, Silicone's rubber, PTFE (Teflón) o Perfluorelastomer (FFKM).

Achieving leakage levels less than: $0,3 \times 10^{-3} \frac{\text{Pa cm}^3}{\text{seg.}}$

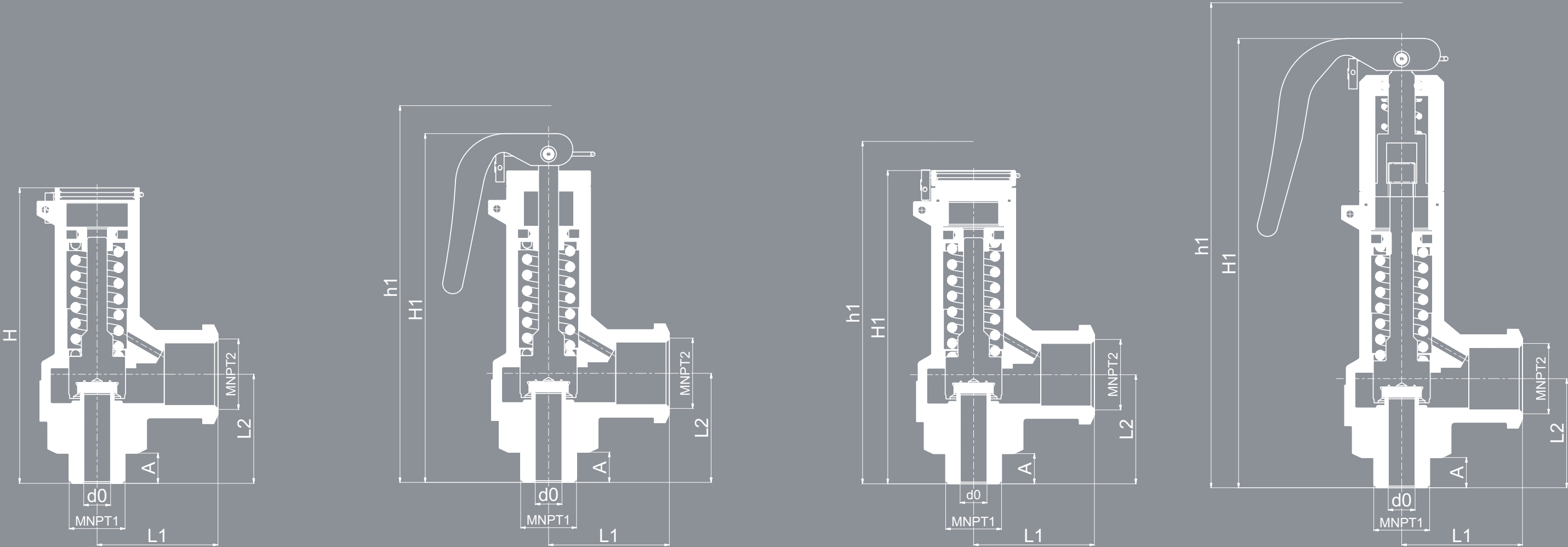
RANGE OF APPLICATION FOR THE SEALS	
FLUID	SET PRESSURE IN bar
	0,20 1,60 4,80 20,00 30,00 36,01 45,00 144,00
Saturated steam	S V K T
Liquids and gases	S V K T
SEALS	TEMPERATURE IN °C
	MINIMUM MAXIMUM
Silicone's rubber	S -50 200
Fluorelastomer (Vitón)	V -20 220
PTFE (Teflon)	T -196 260
Perfluorelastomer (FFKM)	K -10 230



Depending on demand:

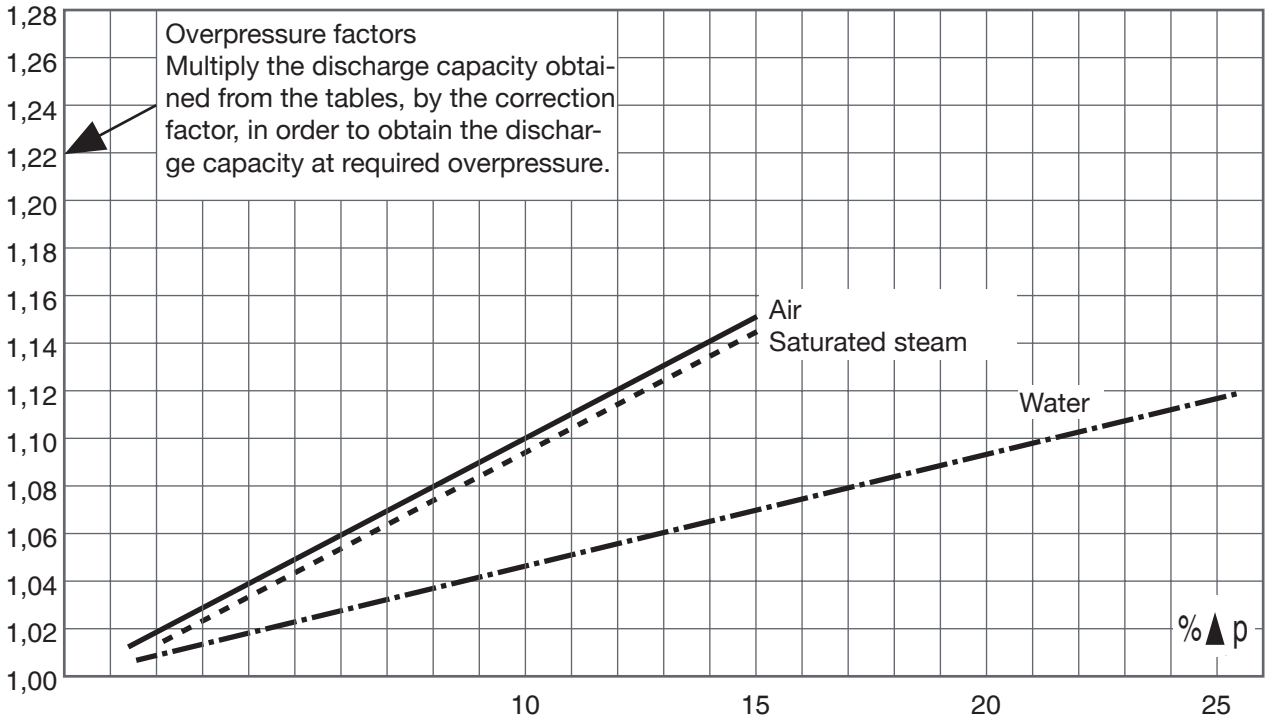
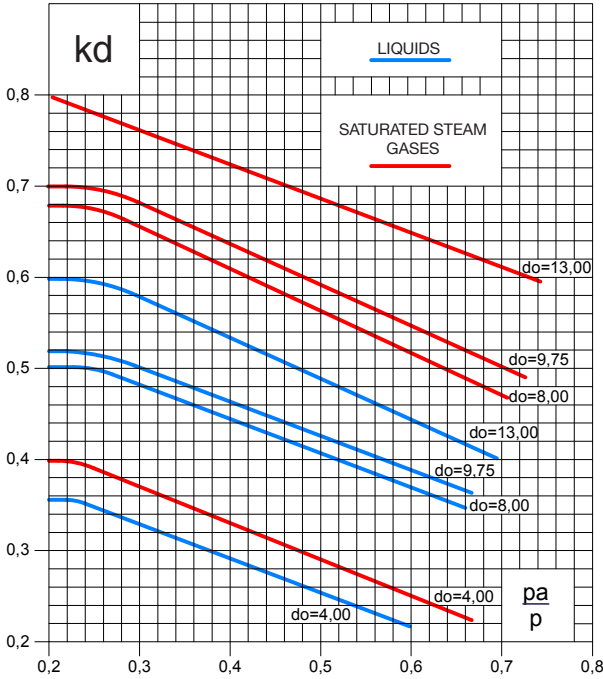
1. Buna-nitrils seals, Butyl, Natural rubber, E.P.D.M., Chlorosulphonate polyethylene (Hypalon), Neoprene, etc.
2. Possibility of manufacture in other types of material, for use in special working conditions (high temperatures, fluids, etc.).

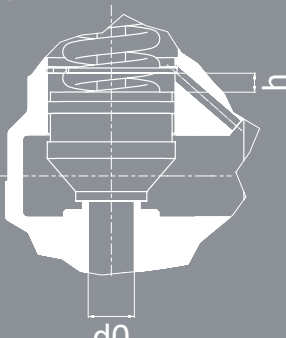
MODEL 685/885/985													MODEL 685/885/985														
MNPT ₁ xFNPT ₂		3/8"x1/2"				1/2"x 1/2"				1/2"x 3/4"			1/2"x 3/4"		3/4"x3/4"				3/4"x1"				1"x1"				
CONNECTIONS		Male thread x Female thread NPT ASME B1.20.1											Male thread x Female thread NPT ASME B1.20.1														
d ₀	685/885	8,00								9,75			9,75						13,00								
	985	4,00																									
$A_0 = \frac{\pi \cdot d_0^2}{4}$	685/885	50,26								74,66			74,66						132,73								
	985	12,57																									
H	685/885	-	-	-	88	-	-	-	91	-	-		-	109	-	-	-	112	-	-	-	138	-	-	-	141	
	985	-	-	-	99	-	-	-	102																		
H'	685/885	136	102	93	-	139	105	96	-	164	127		116	-	167	130	119	-	196	159	147	-	199	162	150	-	
	985	147	113	109,5	-	150	116	114	-																		
h'	685/885	148	119	109	-	151	122	112	-	178	142		134	-	181	145	137	-	210	174	165	-	213	147	168	-	
	985	159	130	120	-	162	133	123	-																		
A	685/885/985	9				12				12			12	15				15				18					
L ₁	685/885/985	36								44			44						60								
L ₂	685/885	32,50				35,50				45,50			45,50	48,50				58,50				61,50					
	985	43,50				46,50																					
WEIGHT IN Kgs.		EP	AP	ES	AS	EP	AP	ES	AS	EP	AP		ES	AS	EP	AP	ES	AS	EP	AP	ES	AS	EP	AP	ES	AS	
685/885/985		BRONZE	0,47	0,38	0,36	0,34	0,47	0,38	0,36	0,34	0,97	0,74		0,72	0,70	0,97	0,74	0,72	0,70	1,67	1,35	1,33	1,31	1,67	1,35	1,33	1,31
		S. STEEL.	0,45	0,36	0,34	0,32	0,45	0,36	0,34	0,32	0,95	0,72		0,70	0,68	0,95	0,72	0,70	0,68	1,65	1,33	1,31	1,29	1,65	1,33	1,31	1,29
CODE	685	BRONZE 2002-685.	83810	838110	838120	838130	80210	802110	802120	802130	80211	802111		802121	802131	83410	834110	834120	834130	83411	834111	834121	834131	81010	810110	810120	810130
		S. STEEL. 2002-685.	83820	838210	838220	838230	80220	802210	802220	802230	80221	802211		802221	802231	83420	834210	834220	834230	83421	834211	834221	834231	81020	810210	810220	810230
	885	BRONZE 2002-885.	83810	838110	838120	838130	80210	802110	802120	802130	80211	802111		802121	802131	83410	834110	834120	834130	83411	834111	834121	834131	81010	810110	810120	810130
		S. STEEL. 2002-885.	83820	838210	838220	838230	80220	802210	802220	802230	80221	802211		802221	802231	83420	834210	834220	834230	83421	834211	834221	834231	81020	810210	810220	810230
	985	S. STEEL. 2002-985.	03820	03821	03822	03823	0022	00221	00222	00223																	



SET PRESSURES AND REGULATING RANGES									
MODEL				685/885/985					
ENTRY CONNECTION	685/885/985		MNPT ₁	3/8	1/2"	1/2"	3/4"	3/4"	1"
EXIT CONNECTION	685/885/985		FNPT ₂	1/2"		3/4"		1"	
d _o	685/885			8,00		9,75		13,00	
	985			4,00					
SET PRESSURE IN bar	MAXIMUM	685/885	PS-36 bar	36		36		36	
		985	PS-144 bar	144					
	MINIMUM	685/885	PS-36 bar	0,2		0,2		0,2	
		985	PS-144 bar	36,1					
SPRING REGULATING RANGE IN bar	685/885	985							
	0,20 to 0,70		CODE	56160		56169		56178	
	0,60 to 1,60		CODE	56161		56170		56179	
	1,50 to 3,50		CODE	56162		56171		56180	
	3,40 to 5,50		CODE	56163		56172		56181	
	5,40 to 10,00	36,10 to 40,00	CODE	56164-56334		56173		56182	
	9,80 to 15,00	39,00 to 60,00	CODE	56165-56335		56174		56183	
	14,50 to 20,00	58,00 to 80,00	CODE	56166-56336		56175		56184	
	19,00 to 25,00	76,00 to 100,00	CODE	56167-56337		56176		56185	
	24,00 to 36,00	96,00 to 144,00	CODE	56168-56338		56177		56186	

RECOMMENDED RANGES OF APPLICATION						
MODEL			695/895/995/694			
			AP	AS	EP	ES
FLUID	SATURATED STEAM		*	*	*	*
	GASES	INERT	*	*	*	*
		NON INERT			*	*
	LIQUIDS				*	*
OPENING PRESSURE IN % OF THE SET PRESSURE			+10%			
CLOSURE PRESSURE IN % OF THE SET PRESSURE			-10%			



DISCHARGE CAPACITY																																																																																																																											
MODEL	685-885									985																																																																																																																	
ENTRY CONNECTION	MNPT1	3/8"	1/2"	1/2"	3/4"	3/4"	1"	3/8"	1/2"																																																																																																																		
EXIT CONNECTION	FNPT2	1/2"			3/4"		1"		1/2"																																																																																																																		
do		8,00			9,75		13,00		4,00																																																																																																																		
$A_0 = \frac{\pi \cdot d_0^2}{4}$		50,26			74,66		132,73		12,57																																																																																																																		
p [bar]	For other, not so dense liquids, other than water at 20°C apply:																																																																																																																										
	$V_L = \sqrt{\frac{\rho A}{\rho L}} \cdot V_A \quad V_A = V_L \cdot \sqrt{\frac{\rho A}{\rho L}}$ I- Saturated steam in kg/h. II- Air at 0°C and 1,013 bar in [Nm3/h]. III- Water at 20°C in l/h. V _A = Water flow according to table. V _L = Liquid flow. ρA= Water density at a 20° C. (ρA= 998 kg/m3) ρL= Liquid density.																																																																																																																										
SET PRESSURE IN bar		I	II	III	I	II	III	I	II	III																																																																																																																	
0,5		31	41	1091	46	61	1621	94	125	2881																																																																																																																	
1,0		39	53	1428	60	79	2122	121	162	3772																																																																																																																	
1,5		48	65	1700	73	97	2526	149	198	4490																																																																																																																	
2,0		57	77	1934	87	115	2873	176	235	5108																																																																																																																	
2,5		67	90	2162	101	135	3212	206	275	5711																																																																																																																	
3,0		77	103	2369	116	155	3519	237	316	6256																																																																																																																	
3,5		87	116	2559	131	175	3801	267	356	6757																																																																																																																	
4,0		97	129	2735	146	195	4063	297	397	7223																																																																																																																	
4,5		107	142	2901	161	215	4310	328	437	7662																																																																																																																	
5,0		117	156	3058	176	235	4543	358	478	8076																																																																																																																	
6,0		136	182	3350	206	274	4976	418	558	8847																																																																																																																	
7,0		156	208	3618	235	314	5375	479	639	9556																																																																																																																	
8,0		176	235	3868	265	354	5746	539	720	10215																																																																																																																	
9,0		196	261	4103	295	393	6095	600	801	10835																																																																																																																	
10,0		215	287	4325	325	433	6424	661	882	11421																																																																																																																	
12,0		255	340	4738	384	513	7038	782	1043	12511																																																																																																																	
14,0		294	393	5117	444	592	7601	903	1205	13514																																																																																																																	
16,0		334	445	5470	503	671	8126	1024	1366	14447																																																																																																																	
18,0		373	498	5802	563	751	8619	1145	1528	15323																																																																																																																	
20,0		413	551	6116	622	830	9085	1266	1690	16152																																																																																																																	
22,0		452	603	6415	682	910	9529	1387	1851	16940																																																																																																																	
24,0		492	656	6700	741	989	9953	1508	2013	17694																																																																																																																	
26,0		531	709	6973	801	1068	10359	1629	2175	18416																																																																																																																	
28,0		571	761	7237	860	1148	10750	1751	2336	19111																																																																																																																	
30,0		610	814	7491	920	1227	11127	1872	2498	19782																																																																																																																	
32,0		650	867	7736	979	1307	11492	1993	2659	20431																																																																																																																	
34,0		689	919	7974	1039	1386	11846	2114	2821	21060																																																																																																																	
36,0		728	972	8206	1098	1465	12189	2235	2983	21670																																																																																																																	
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<table><tr><th colspan="10">COEFFICIENT OF DISCHARGE</th></tr><tr><th colspan="2">MODEL</th><th colspan="8">685/885/985</th></tr><tr><th>ENTRY CONNECTION</th><th>R₁</th><th>3/8"</th><th>1/2"</th><th>1/2"</th><th>3/4"</th><th>3/4"</th><th>1"</th><th></th><th></th></tr><tr><th>EXIT CONNECTION</th><th>R₂</th><th>1/2"</th><th></th><th>3/4"</th><th></th><th>1"</th><th></th><th></th><th></th></tr><tr><th rowspan="2">d₀</th><th>685/885</th><td>8,00</td><td></td><td>9,75</td><td></td><td>13,00</td><td></td><td></td><td></td></tr><tr><th>985</th><td>4,00</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><th rowspan="2">h</th><th>685/885</th><td>2,50</td><td></td><td>4,00</td><td></td><td>5,50</td><td></td><td></td><td></td></tr><tr><th>985</th><td>0,31</td><td></td><td>0,41</td><td></td><td>0,42</td><td></td><td></td><td></td></tr><tr><th rowspan="4">COEFFICIENT OF DISCHARGE kd (1)</th><th>685/885</th><th colspan="2">SATURATED STEAM GASES</th><td>0,68</td><td>0,69</td><td>0,79</td><td></td><td></td><td></td></tr><tr><th>985</th><th colspan="2"></th><td>0,40</td><td></td><td></td><td></td><td></td><td></td></tr><tr><th>685/885</th><th colspan="2" rowspan="2">LIQUIDS</th><td>0,51</td><td>0,52</td><td>0,60</td><td></td><td></td><td></td></tr><tr><th>985</th><td>0,35</td><td></td><td></td><td></td><td></td><td></td></tr></table> (1) For set pressures less than 3 bar see graph of discharge coefficient. pa = Backpressure permitted [bar] absolute. p = Set pressure [bar] absolute. kd = Coefficient of discharge. 											COEFFICIENT OF DISCHARGE										MODEL		685/885/985								ENTRY CONNECTION	R ₁	3/8"	1/2"	1/2"	3/4"	3/4"	1"			EXIT CONNECTION	R ₂	1/2"		3/4"		1"				d ₀	685/885	8,00		9,75		13,00				985	4,00								h	685/885	2,50		4,00		5,50				985	0,31		0,41		0,42				COEFFICIENT OF DISCHARGE kd (1)	685/885	SATURATED STEAM GASES		0,68	0,69	0,79				985			0,40						685/885	LIQUIDS		0,51	0,52	0,60				985	0,35					
COEFFICIENT OF DISCHARGE																																																																																																																											
MODEL		685/885/985																																																																																																																									
ENTRY CONNECTION	R ₁	3/8"	1/2"	1/2"	3/4"	3/4"	1"																																																																																																																				
EXIT CONNECTION	R ₂	1/2"		3/4"		1"																																																																																																																					
d ₀	685/885	8,00		9,75		13,00																																																																																																																					
	985	4,00																																																																																																																									
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	985	0,31		0,41		0,42																																																																																																																					
COEFFICIENT OF DISCHARGE kd (1)	685/885	SATURATED STEAM GASES		0,68	0,69	0,79																																																																																																																					
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		282		1990																																																																																																																							
		290		2018																																																																																																																							
		298		2045																																																																																																																							
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		410		2403																																																																																																																							
		429		2460																																																																																																																							
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		507		2674																																																																																																																							
		526		2725																																																																																																																							
		546		2775																																																																																																																							
		565		2824																																																																																																																							

Calculus according to ASME section VIII Div.1