

Pojistné ventily II. – model 194, 195 a 196



Bezpečnostní ventil funguje jako automatický regulátor pro vypouštění přetlaku, který je aktivován statickým tlakem na vstupu do ventilu a vyznačuje se schopností otevírat se úměrně nárůstu tlaku. Konstrukce odpovídá mezinárodní normě ISO 4126-1 „Bezpečnostní ventily“.

Specifikace:

Materiál

- Litina
- Tvárná litina
- Ocelolitina
- Nerezová ocel

Teplotní rozsah

-60 °C až 450 °C

Maximální tlak

do 0,2 bar

Použití

plyny, pára, kapaliny

Rozměry:

model: 194 DN-25 x 25 to DN-200 x 200 viz. katalogový list od str. 2
model: 195 3/4" x 1 1/4" to 1" x 1 1/2" viz. katalogový list od str. 9
model: 196 DN-20 x 32 to DN-200 x 300 viz. katalogový list od str. 14

- Úhlové provedení s průtokem 90°
- Všechny modely AP s otevřeným krytem a ovládáním
- Aktivace pomocí systému závaží
- Jednoduchá konstrukce s minimálními nároky na údržbu
- Materiály s vysokou odolností proti korozi
- Optimalizovaný vnitřní průtočný profil
- Upravené a vyvážené těsnicí plochy zajišťující mimořádnou těsnost, která překračuje požadavky API 527
- Vysoká průtoková kapacita
- Vypouštěcí šrouby pro odvod kondenzátu
- Samostředicí kuželka

Progressive opening safety relief valve. (AP)

Mod. 194 | EN



Operation

The valve works as an automatic pressure relief regulator acting by the static pressure at the valve inlet.

Specifications

Size

- DN-25 x 25 to DN-200 x 200

Temperature range

- -60 °C to +450 °C

Applications

- Gas, Steam and liquids

Materials

- Cast iron
- Nodular iron
- Carbon steel
- Stainless steel

Maximum pressure

- Up to 0,2 bar

Regulation

- UNE-EN ISO 4126-1
- UNE-EN ISO 4126-7
- UNE-EN 12516-2
- UNE-EN 12516-4
- UNE-EN 1092-1
- UNE-EN 1092-2
- UNE-EN 12266-1

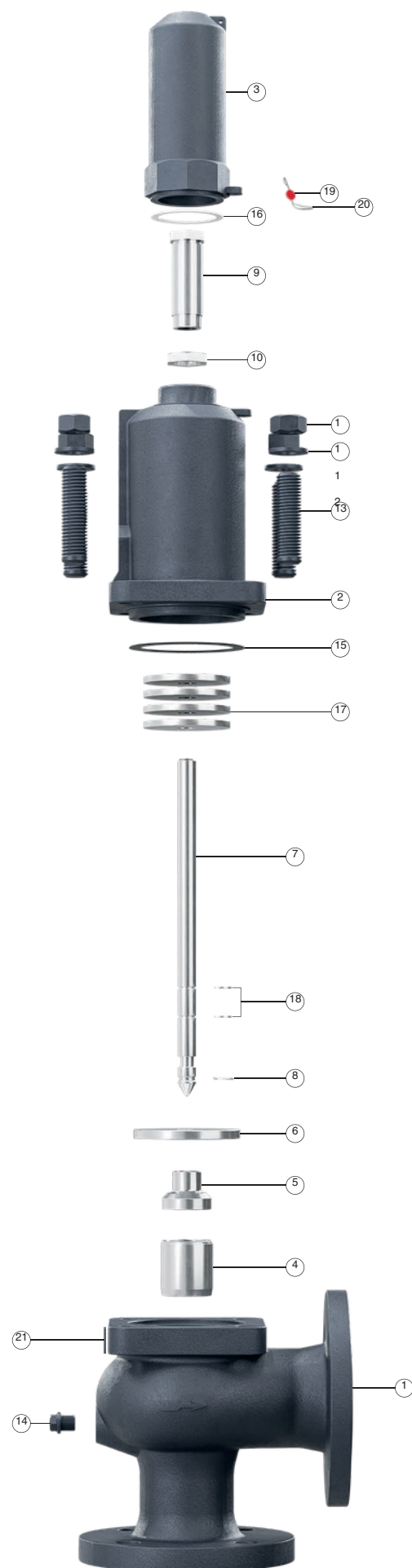
Certification



N°. PIECE	PIECE	MATERIAL			
		CAST IRON	NODULAR IRON	CARBON STEEL	STAINLESS STEEL
1	Body	Cast iron (EN-5.1301)	Nodular iron (EN-5.3106)	Carbon steel (EN-1.0619+N)	Stainless steel (EN-1.4408)
2	Closed bell	Cast iron (EN-5.1301)	Nodular iron (EN-5.3106)	Nodular iron (EN-5.3106)	Stainless steel (EN-1.4408)
3	Hood	Nodular iron (EN-5.3106)	Nodular iron (EN-5.3106)	Nodular iron (EN-5.3106)	Stainless steel (EN-1.4408)
4	Seating	Stainless steel (EN-1.4028)	Stainless steel (EN-1.4028)	Stainless steel (EN-1.4028)	Stainless steel (EN-1.4542)
5	Plug	Stainless steel (EN-1.4028)	Stainless steel (EN-1.4028)	Stainless steel (EN-1.4028)	Stainless steel (EN-1.4542)
6	Guide	Stainless steel (EN-1.4301)	Stainless steel (EN-1.4301)	Stainless steel (EN-1.4301)	Stainless steel (EN-1.4301)
7	Rod	Stainless steel (EN-1.4028)	Stainless steel (EN-1.4028)	Stainless steel (EN-1.4028)	Stainless steel (EN-1.4401)
8	Safety ring	Stainless steel (EN-1.4310)	Stainless steel (EN-1.4310)	Stainless steel (EN-1.4310)	Stainless steel (EN-1.4310)
9	Hollow screw	Stainless steel (EN-1.4305)	Stainless steel (EN-1.4305)	Stainless steel (EN-1.4305)	Stainless steel (EN-1.4305)
10	Hollow screw nut	Stainless steel (EN-1.4305)	Stainless steel (EN-1.4305)	Stainless steel (EN-1.4305)	Stainless steel (EN-1.4305)
11	Nut	Carbon steel (EN-1.1141)	Carbon steel (EN-1.1141)	Carbon steel (EN-1.1141)	Carbon steel (EN-1.4401)
12	Washer	Carbon steel (EN-1.1141)	Carbon steel (EN-1.1141)	Carbon steel (EN-1.1141)	Carbon steel (EN-1.4401)
13	Stud	Carbon steel (EN-1.1181)	Carbon steel (EN-1.1181)	Carbon steel (EN-1.1181)	Carbon steel (EN-1.4401)
14	Cap	Carbon steel (EN-1.1181)	Carbon steel (EN-1.1181)	Carbon steel (EN-1.1181)	Carbon steel (EN-1.4401)
15	Body coupling	Graphite	Graphite	Graphite	PTFE (Teflon)
16	Hood coupling	PTFE (Teflon)	PTFE (Teflon)	PTFE (Teflon)	PTFE (Teflon)
17	Calibration disc	Stainless steel (EN-1.4301)	Stainless steel (EN-1.4301)	Stainless steel (EN-1.4301)	Stainless steel (EN-1.4301)
18	Clip	Stainless steel (EN-1.4568)	Stainless steel (EN-1.4568)	Stainless steel (EN-1.4568)	Stainless steel (EN-1.4568)
19	Seal	Plastic	Plastic	Plastic	Plastic
20	Sealing whire	Sealing whire	Sealing whire	Sealing whire	Sealing whire
21	Characteristic plate	Stainless steel (EN-1.4301)	Stainless steel (EN-1.4301)	Stainless steel (EN-1.4301)	Stainless steel (EN-1.4301)
DN1 x DN2		20 x 25 to 200 x 200			
PN		16	40	40	40
OPERATING CONDITIONS	PRESSURE [bar]	0,2			
	MAX. TEMP. [°C]	300	350	450	400
	MIN. TEMP. [°C]	-10	-10	-10	-60

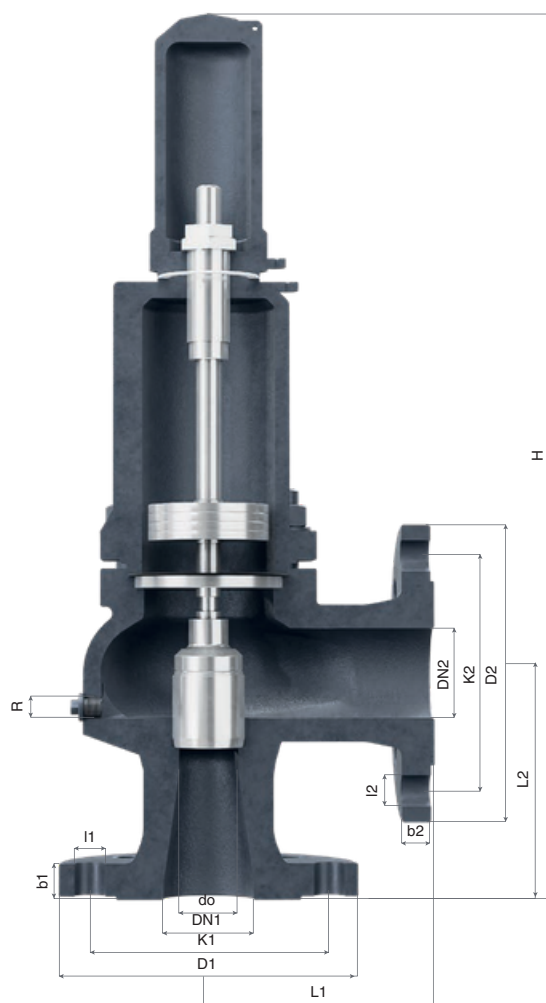


Isometric view



Exploded view

DN1 x DN2		25 x 25	32 x 32	40 x 40	50 x 50	65 x 65	80 x 80	100 x 100	125 x 125	150 x 150	200 x 200	
do		16	20	25	32	40	50	63	77	93	110	
Ao = $\frac{\pi \cdot do^2}{4}$ [mm ²]		201	314	491	804	1257	1964	3117	4657	6793	9503	
H [mm]		350	390	420	495	550	655	705	810	850	990	
L1 [mm]		100	105	115	125	145	155	175	200	225	250	
L2 [mm]		100	105	115	125	145	155	175	200	225	250	
R [mm]		1/4"	1/4"	1/4"	1/4"	3/8"	3/8"	3/8"	1/2"	1/2"	1/2"	
Whitworth gas-tight cylindrical female thread ISO 228/1 (DIN-259)												
INLET FLANGE	PN-10/16 EN-1092-2 (1) PN-25/40 EN-1092-2 (3) PN-25/40 EN-1092-1	D1 [mm]	115	140	150	165	185	200	220	250	285	340
		K1 [mm]	85	100	110	125	145	160	180	210	240	295
		I1 [mm]	14	19	19	19	19	19	19	19	23	23
		b1 [mm]	16	18	18	20	20	22	24	26	26	26
		SCREWS N°	4	4	4	4	4	8	8	8	8	8
OUTLET FLANGE	PN-10/16 EN-1092-2 (1) PN-25/40 EN-1092-2 (3) PN-25/40 EN-1092-1	D1 [mm]	115	140	150	165	185	200	235	270	300	360
		K1 [mm]	85	100	110	125	145	160	190	220	250	310
		I1 [mm]	14	19(18)*	19(18)*	19(18)*	19(18)*	19(18)*	23(22)*	28(26)*	28(26)*	28(26)*
		b1 [mm]	18(16)•	18	18(20)•	20	22	24	24	26	28	30
		SCREWS N°	4	4	4	4	8	8	8	8	8	12
		D2 [mm]	115	140	150	165	185	200	220	250	285	340
		K2 [mm]	85	100	110	125	145	160	180	210	240	295
		I2 [mm]	14	19	19	19	19	19	19	19	23	23
		b2 [mm]	16	18	18	20	20	22	24	26	26	26
SCREWS N°	4	4	4	4	4	8	8	8	8	8		
CODE	WEIGHT	MODEL		ES								
		CAST IRON	6,8	8,7	11,5	16,9	22,3	33,1	41,4	69,8	80,5	122,7
		NODULAR IRON	6,8	8,6	11,4	16,8	22,1	32,9	41,7	70,3	81,0	123,2
		CARBON STEEL	7,4	9,4	12,5	18,3	24,2	35,3	45,6	76,3	87,7	134,5
		STAINLESS STEEL	7,5	9,5	12,7	18,6	24,5	35,6	46,1	77,2	88,7	136,0
		CAST IRON 2002-194.	51062	51462	51262	52062	52262	53062	54062	55062	56062	58062
		NODULAR IRON 2002-194.	81062	81462	81262	82062	82262	83062	84062	85062	86062	88062
		CARBON STEEL 2002-194.	81042	81442	81242	82042	82242	83042	84042	85042	86042	88042
STAINLESS STEEL 2002-194.	81022	81422	81222	82022	82222	83022	84022	85022	86022	88022		



* Carbon steel (EN-1.0619) and Stainless steel (EN-1.4408).
 • Nodular iron (EN-5.3106).
 (3) DN-200x300 PN-25.
 (1) From DN-125x200 PN-10.
 (2) DN-200x300 PN-10.

[illegible]

RECOMMENDED RANGES OF APPLICATION			
MODEL		ES	
FLUID		SATURATED STEAM	
		GASES	*
		LIQUIDS	*
PERMISSIBLE BACK PRESSURE IN % OF SET PRESSURE	INTERNAL OR GENERATED	SATURATED STEAM	15
		GASES	
		LIQUIDS	—
	EXTERNAL CONSTANT (2) (3)	SATURATED STEAM	50
		GASES	
		LIQUIDS	90

OPENING, OVERPRESSURE AND RESET PRESSURES			
FLUID	OPENING PRESSURE	OVERPRESSURE	RESET PRESSURE
SATURATED STEAM AND GASES	The higher of $\pm 3\%$ or $\pm 0,1$ bar	The higher of $+10\%$ o $+0,1$ bar	The higher of -15% o $-0,3$ bar
LIQUIDS	The higher of $\pm 3\%$ o $\pm 0,1$ bar	The higher of $+10\%$ o $+0,1$ bar	The higher of -20% o $-0,6$ bar

(1) With external constant backpressure, the spring is adjusted deducting the backpressure from the set pressure.

(2) If the set pressure < 3 bar we must consider the total atmospheric pressure (1 bar) as external constant backpressure being freely released.

If $p_b > 0,25 p_o$ we must limit plug speed with the consequent reduction of the ad coefficient of discharge K_{dr} .

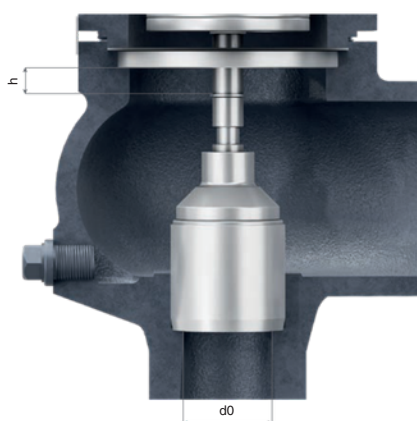
With the new reduced coefficient we determine the d_o , in order to remove the necessary volume.

p_a = Backpressure permitted (bar) absolute.

p_o = Set pressure (bar) absolute.

K_{dr} = Discharge coefficients.

DISCHARGE COEFFICIENTS											
DN1 x DN2	25 x 25	32 x 32	40 x 40	50 x 50	65 x 65	80 x 80	100 x 100	125 x 125	150 x 150	200 x 200	
d_o [mm]	16	20	25	32	40	50	63	77	93	110	
h [mm]	2	2	2,5	3,5	5,3	5	6,5	8	9,5	11	
h/d_o [mm]	0,13	0,10	0,10	0,11	0,13	0,10	0,10	0,10	0,10	0,10	
DISCHARGE COEFFICIENT [kdr]	SATURATED STEAM	0,30									
	GASES										
	LIQUIDS	0,30									



DN1 x DN2	25 x 25			32 x 32		
d_o [mm]	16			20		
$A_0 = \frac{\pi d_o^2}{4}$ [mm ²]	201			314		
p [bar g]	I	II	III	I	II	III
0,05	32	29	992	50	45	1550
0,06	32	30	1025	50	46	1601
0,07	32	31	1056	50	48	1650
0,08	32	31	1087	50	49	1698
0,09	32	32	1117	51	50	1745
0,10	32	33	1146	51	52	1790
0,11	33	34	1174	51	53	1834
0,12	33	35	1202	51	54	1877
0,13	33	35	1229	51	55	1920
0,14	33	36	1255	52	57	1961
0,15	33	37	1281	52	58	2001
0,16	33	38	1306	52	59	2041
0,17	33	38	1331	52	60	2080
0,18	34	39	1356	52	61	2118
0,19	34	40	1380	53	62	2156
0,20	37	40	1403	57	63	2192

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.

ATTENTION: Flow rates according to UNE EN ISO 4126-7 with 10% overpressure.

DISCHARGE CAPACITY

DN1 x DN2	40 x 40			50 x 50			65 x 65			80 x 80			100 x 100			125 x 125			150 x 150			200 x 200		
d0 [mm]	25			32			40			50			63			77			93			110		
$A_0 = \frac{\pi \cdot d_0^2}{4}$ [mm ²]	491			804			1257			1963			3117			4657			6793			9503		
p [bar g]	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III
0,05	78	70	2422	127	115	3969	199	179	6201	310	280	9689	493	445	15382	736	665	22978	1074	970	33520	1502	1356	46894
0,06	78	72	2502	128	119	4099	199	185	6404	312	289	10007	495	459	15887	739	686	23732	1078	1001	34619	1509	1400	48432
0,07	78	75	2579	128	122	4225	200	191	6601	313	298	10315	497	473	16376	742	707	24462	1083	1031	35685	1515	1443	49923
0,08	79	77	2653	129	126	4347	201	196	6793	314	307	10614	499	487	16850	746	727	25171	1088	1061	36719	1521	1484	51370
0,09	79	79	2726	129	129	4466	202	202	6979	316	315	10905	501	500	17312	749	747	25861	1092	1090	37725	1528	1524	52778
0,10	79	81	2797	130	132	4583	203	207	7160	317	323	11188	503	513	17762	752	766	26533	1097	1118	38705	1534	1563	54149
0,11	80	83	2866	130	136	4696	204	212	7337	318	331	11464	505	525	18200	755	785	27188	1101	1145	39661	1541	1602	55486
0,12	80	85	2933	131	139	4806	205	217	7510	320	339	11734	507	537	18629	758	803	27828	1106	1171	40595	1547	1639	56792
0,13	80	87	2999	131	142	4914	205	221	7678	321	346	11998	510	549	19047	761	821	28454	1110	1197	41507	1553	1675	58068
0,14	81	88	3064	132	145	5020	206	226	7844	322	353	12256	512	561	19457	764	838	29065	1115	1222	42400	1560	1710	59317
0,15	81	90	3127	133	148	5123	207	231	8005	324	361	12508	514	572	19858	767	855	29665	1119	1247	43274	1566	1745	60540
0,16	81	92	3189	133	151	5225	208	235	8164	325	368	12756	516	583	20252	770	872	30252	1124	1272	44131	1572	1779	61739
0,17	82	94	3250	134	153	5324	209	240	8319	326	374	12999	518	594	20637	773	888	30829	1128	1295	44972	1578	1812	62916
0,18	82	95	3309	134	156	5422	210	244	8472	327	381	13238	520	605	21016	776	904	31394	1133	1319	45797	1585	1845	64070
0,19	82	97	3368	135	159	5518	210	248	8622	329	388	13472	522	616	21388	779	920	31950	1137	1341	46607	1591	1877	65204
0,20	90	99	3426	147	161	5612	230	252	8769	359	394	13702	570	626	21754	851	935	32496	1241	1364	47404	1737	1908	66319

For other, not so dense liquids, other than water at 20 °C apply:

$$V_L = \sqrt{\frac{\rho_A}{\rho_L}} \cdot V_A \quad \text{ó} \quad V_A = V_L \cdot \sqrt{\frac{\rho_L}{\rho_A}}$$

V_A = Water flow according to table.

V_L = Liquid flow

ρ_A = Water density at 20 °C.
(ρ_A = 998 kg/m³)

ρ_L = Liquid density

Progressive opening safety relief valve. (AP)

Mod. 195 | EN



Operation

The valve works as an automatic pressure relief regulator acting by the static pressure at the valve inlet.

Regulation

- UNE-EN ISO 4126-1
- UNE-EN ISO 4126-7
- UNE-EN 12516-2
- UNE-EN 12516-4
- UNE-EN 12266-1

Specifications

Size

- 3/4" x 1 1/4" to 1" x 1 1/2"

Temperature range

- -60 °C to +450 °C

Applications

- Gas, steam and liquids

Materials

- Cast iron
- Nodular iron
- Cast steel
- Stainless steel

Maximum pressure

- Up to 0,2 bar

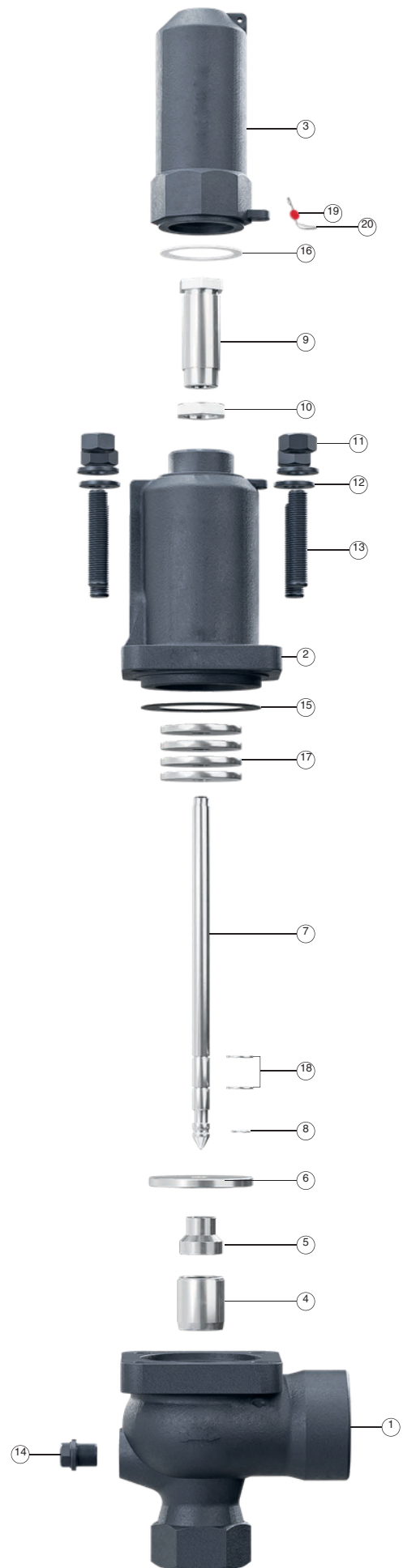
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		CAST IRON	NODULAR IRON	CAST STEEL	STAINLESS STEEL
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3	Hood	Nodular iron (EN-5.3106)	Nodular iron (EN-5.3106)	Nodular iron (EN-5.3106)	Stainless steel (EN-1.4408)
4	Seating	Stainless steel (EN-1.4028)	Stainless steel (EN-1.4028)	Stainless steel (EN-1.4028)	Stainless steel (EN-1.4542)
5	Plug	Stainless steel (EN-1.4028)	Stainless steel (EN-1.4028)	Stainless steel (EN-1.4028)	Stainless steel (EN-1.4542)
6	Guide	Stainless steel (EN-1.4301)	Stainless steel (EN-1.4301)	Stainless steel (EN-1.4301)	Stainless steel (EN-1.4301)
7	Rod	Stainless steel (EN-1.4028)	Stainless steel (EN-1.4028)	Stainless steel (EN-1.4028)	Stainless steel (EN-1.4401)
8	Safety ring	Stainless steel (EN-1.4310)	Stainless steel (EN-1.4310)	Stainless steel (EN-1.4310)	Stainless steel (EN-1.4310)
9	Hollow screw	Stainless steel (EN-1.4305)	Stainless steel (EN-1.4305)	Stainless steel (EN-1.4305)	Stainless steel (EN-1.4305)
10	Hollow screw nut	Stainless steel (EN-1.4305)	Stainless steel (EN-1.4305)	Stainless steel (EN-1.4305)	Stainless steel (EN-1.4305)
11	Nut	Carbon steel (EN-1.1141)	Carbon steel (EN-1.1141)	Carbon steel (EN-1.1141)	Carbon steel (EN-1.4401)
12	Washer	Carbon steel (EN-1.1141)	Carbon steel (EN-1.1141)	Carbon steel (EN-1.1141)	Carbon steel (EN-1.4401)
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15	Body coupling	Graphite	Graphite	Graphite	PTFE (Teflon)
16	Hood coupling	PTFE (Teflon)	PTFE (Teflon)	PTFE (Teflon)	PTFE (Teflon)
17	Calibration disc	Stainless steel (EN-1.4301)	Stainless steel (EN-1.4301)	Stainless steel (EN-1.4301)	Stainless steel (EN-1.4301)
18	Clip	Stainless steel (EN-1.4568)	Stainless steel (EN-1.4568)	Stainless steel (EN-1.4568)	Stainless steel (EN-1.4568)
19	Seal	Plastic	Plastic	Plastic	Plastic
20	Sealing whire	Sealing whire	Sealing whire	Sealing whire	Sealing whire
21	Characteristic plate	Stainless steel (EN-1.4301)	Stainless steel (EN-1.4301)	Stainless steel (EN-1.4301)	Stainless steel (EN-1.4301)
R1 x R2		3/4" x 1 1/4" to 1" x 1 1/2"			
PN		16	40	40	40
OPERATING CONDITIONS	PS [bar]	0,2	0,2	0,2	0,2
	MAX. TEMP. [°C]	300	350	450	400
	MIN. TEMP. [°C]	-10	-10	-10	-60

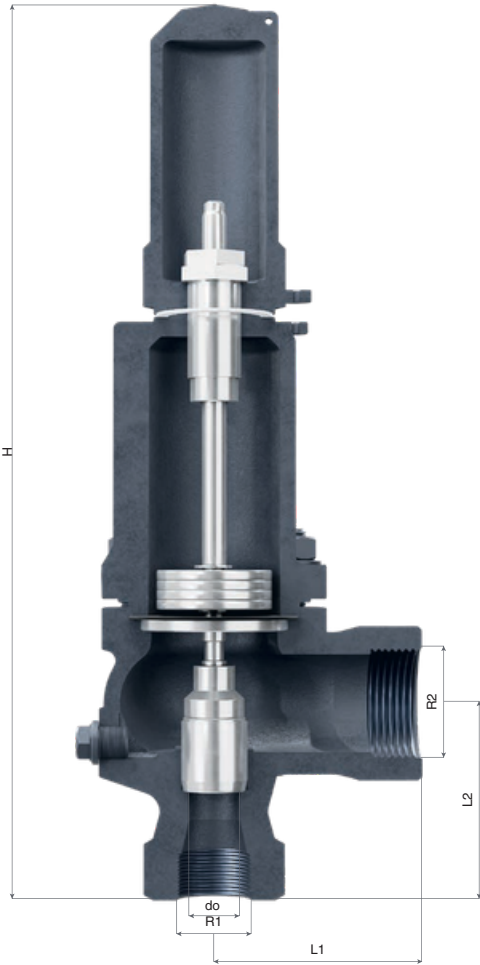


Isometric view



Exploded view

R1 x R2		3/4" x 1 1/4"	1" x 1 1/2"
CONNECTIONS		Whitworth gas-tight cylindrical female thread ISO 228/1 (DIN-259)	
do [mm]		16	20
$A_o = \frac{\pi \cdot d_o^2}{4} \text{ [mm}^2\text{]}$		201	314
H [mm]		320	370
L1 [mm]		80	85
L2 [mm]		65	80
R [mm]		1/4"	1/4"
WEIGHT [kg]	CAST IRON	4,4	5,4
	NODULAR IRON	4,4	5,4
	CAST STEEL	4,8	5,9
	STAINLESS STEEL	4,9	5,9
CODE	CAST IRON 2002-195.	53462	51062
	NODULAR IRON 2002-195.	83462	81062
	CAST STEEL 2002-195.	83442	81042
	STAINLESS STEEL 2002-195.	83422	81022



SET PRESSURE				
R1 x R2			3/4" x 1 1/4"	1" x 1 1/2"
SET PRESSURE [barg]	MAXIMUM (LIQUIDS AND GASES)	300 lbs.	0,2	0,2
	MAXIMUM (SATURATED STEAM)	300 lbs.	0,2	0,2
	MINIMUM	STEAM AND GASES	0,05	0,05
		LIQUIDS	0,05	0,05

RECOMMENDED RANGES OF APPLICATION			
MODEL		ES	
FLUID		SATURATED STEAM	
		GASES	*
		LIQUIDS	*
PERMISSIBLE BACK PRESSURE IN % OF SET PRESSURE	INTERNAL OR GENERATED	SATURATED STEAM	15
		GASES	
		LIQUIDS	
	EXTERNAL CONSTANT (1) (2)	SATURATED STEAM	50
		GASES	
		LIQUIDS	

OPENING, OVERPRESSURE AND RESET PRESSURES			
FLUID	OPENING PRESSURE	OVERPRESSURE	RESET PRESSURE
SATURATED STEAM AND GASES	The higher of ± 3% or ± 0,1 bar	The higher of ± 10% or 0,1 bar	The higher of ± 15% or 0,3 bar
LIQUIDS	The higher of ± 3% or ± 0,1 bar	The higher of ± 10% or 0,1 bar	The higher of ± 20% or 0,6 bar

(1) With constant external back pressure the weights are adjusted by deducting the back pressure from the set pressure.

(2) If the set pressure <3 bar, the absolute atmospheric pressure (1 bar) must be taken as the constant external back pressure in free unloading.
(1 bar) as constant external back pressure in free discharge.

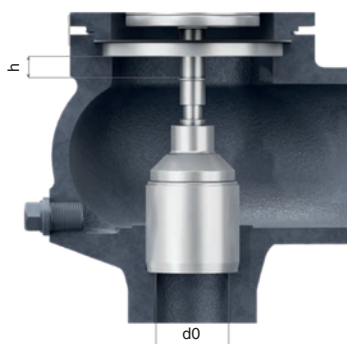
If $p_b > 3.6 p_o$, the plug stroke must be limited and the discharge coefficient K_{dr} reduced accordingly. With the new reduced coefficient we determine the d_o , in order to evacuate the required flow.

p_a = Permissible back pressure (psi) absolute.

p_o = Set pressure (psi) absolute.

K_{dr} = Discharge coefficient.

DISCHARGE COEFFICIENTS			
R1 x R2		3/4" x 1 1/4"	1" x 1 1/2"
d_o [mm]		16	20
h [mm]		4,5	5,5
h/d_o [mm]		0,28	0,28
COEFFICIENT OF DISCHARGE [K_{dr}]	SATURATED STEAM	0,78	
	GASES		
	LIQUIDS	0,60	



DISCHARGE CAPACITY						
R1 x R2	3/4" x 1 1/4"			1" x 1 1/2"		
API ORIFICE	D-E			F		
d_o [mm]	16			20		
$A_o = \frac{\pi d_o^2}{4}$ [mm ²]	201			314		
p [barg]	I	II	III	I	II	III
0,050	103	137	3068	161	214	4795
0,055	103	138	3099	161	215	4842
0,060	104	138	3129	162	216	4889
0,065	104	139	3159	163	217	4936
0,070	105	139	3189	163	218	4983
0,075	105	140	3218	164	219	5029
0,080	105	140	3247	165	219	5074
0,085	106	141	3276	165	220	5119
0,090	106	142	3305	166	221	5164
0,095	107	142	3333	167	222	5208
0,100	107	143	3361	167	223	5252
0,105	107	143	3389	168	224	5296
0,110	108	144	3417	169	225	5339
0,115	108	144	3444	169	225	5382
0,120	109	145	3472	170	226	5424
0,125	109	145	3499	170	227	5467
0,130	110	146	3525	171	228	5508
0,135	110	146	3552	172	229	5550
0,140	110	147	3578	172	230	5591
0,145	111	148	3605	173	231	5632
0,150	111	148	3631	174	231	5673
0,155	112	149	3657	174	232	5713
0,160	112	149	3682	175	233	5753
0,165	112	150	3708	176	234	5793
0,170	113	150	3733	176	235	5833
0,175	113	151	3758	177	236	5872
0,180	114	151	3783	178	237	5911
0,185	114	152	3808	178	237	5950
0,190	114	153	3833	179	238	5988
0,195	115	153	3857	179	239	6027
0,200	115	154	3881	180	240	6065

I- Saturated steam [kg/h].

II- Air to 0 °C and 1.013 bar [Nm³/h].

III- Water to 20 °C [l/h].

For other, not so dense liquids, other than water at 20 °C apply:

$$V_L = \sqrt{\frac{\rho_A}{\rho_L}} \cdot V_A \quad \text{ó} \quad V_A = V_L \cdot \sqrt{\frac{\rho_L}{\rho_A}}$$

V_A = Water flow according to table.
 V_L = Liquid flow.

ρ_A = Water density at a 20 °C.
(ρ_A = 998 kg/m³)

ρ_L = Liquid density.

ATTENTION: Flow rates according to UNE EN ISO 4126-7 with 10% overpressure.

Progressive opening safety relief valve. (AP)

Mod. 196 | EN



Operation

The valve works as an automatic pressure relief regulator acting by the static pressure at the valve inlet.

Regulation

- UNE-EN ISO 4126-1
- UNE-EN ISO 4126-7
- UNE-EN 12516-2
- UNE-EN 12516-4
- UNE-EN 1092-1
- UNE-EN 1092-2
- UNE-EN 12266-1

Specifications

Size

- DN-20 x 32 to DN-200 x 300

Temperature range

- -60 °C to +450 °C

Applications

- Gas, steam and liquids

Materials

- Cast iron
- Nodular iron
- Cast steel
- Stainless steel

Maximum pressure

- Up to 0,2 bar

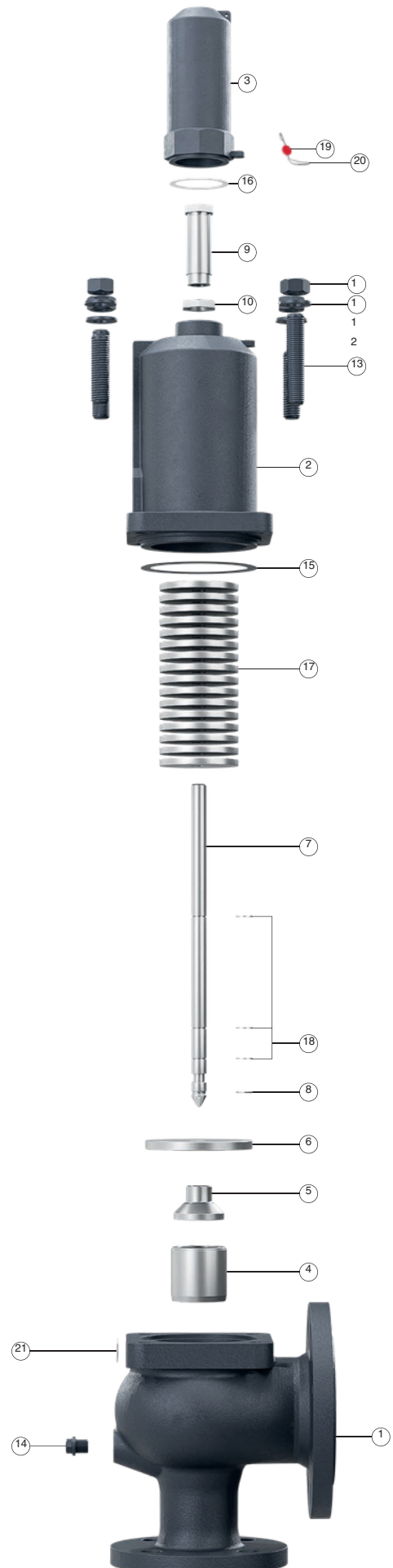
Certification



N°. PIECE	PIECE	MATERIAL			
		CAST IRON	NODULAR IRON	CAST STEEL	STAINLESS STEEL
1	Body	Cast iron (EN-5.1301)	Nodular iron (EN-5.3106)	Carbon steel (EN-1.0619+N)	Stainless steel (EN-1.4408)
2	Closed bell	Cast iron (EN-5.1301)	Nodular iron (EN-5.3106)	Nodular iron (EN-5.3106)	Stainless steel (EN-1.4408)
3	Hood	Nodular iron (EN-5.3106)	Nodular iron (EN-5.3106)	Nodular iron (EN-5.3106)	Stainless steel (EN-1.4408)
4	Seating	Stainless steel (EN-1.4028)	Stainless steel (EN-1.4028)	Stainless steel (EN-1.4028)	Stainless steel (EN-1.4542)
5	Plug	Stainless steel (EN-1.4028)	Stainless steel (EN-1.4028)	Stainless steel (EN-1.4028)	Stainless steel (EN-1.4542)
6	Guide	Stainless steel (EN-1.4301)	Stainless steel (EN-1.4301)	Stainless steel (EN-1.4301)	Stainless steel (EN-1.4301)
7	Rod	Stainless steel (EN-1.4028)	Stainless steel (EN-1.4028)	Stainless steel (EN-1.4028)	Stainless steel (EN-1.4401)
8	Safety ring	Stainless steel (EN-1.4310)	Stainless steel (EN-1.4310)	Stainless steel (EN-1.4310)	Stainless steel (EN-1.4310)
9	Hollow screw	Stainless steel (EN-1.4305)	Stainless steel (EN-1.4305)	Stainless steel (EN-1.4305)	Stainless steel (EN-1.4305)
10	Hollow screw nut	Stainless steel (EN-1.4305)	Stainless steel (EN-1.4305)	Stainless steel (EN-1.4305)	Stainless steel (EN-1.4305)
11	Nut	Carbon steel (EN-1.1141)	Carbon steel (EN-1.1141)	Carbon steel (EN-1.1141)	Carbon steel (EN-1.4401)
12	Washer	Carbon steel (EN-1.1141)	Carbon steel (EN-1.1141)	Carbon steel (EN-1.1141)	Carbon steel (EN-1.4401)
13	Stud	Carbon steel (EN-1.1181)	Carbon steel (EN-1.1181)	Carbon steel (EN-1.1181)	Carbon steel (EN-1.4401)
14	Cap	Carbon steel (EN-1.1181)	Carbon steel (EN-1.1181)	Carbon steel (EN-1.1181)	Carbon steel (EN-1.4401)
15	Body coupling	Graphite	Graphite	Graphite	PTFE (Teflon)
16	Hood coupling	PTFE (Teflon)	PTFE (Teflon)	PTFE (Teflon)	PTFE (Teflon)
17	Calibration disc	Stainless steel (EN-1.4301)	Stainless steel (EN-1.4301)	Stainless steel (EN-1.4301)	Stainless steel (EN-1.4301)
18	Clip	Stainless steel (EN-1.4568)	Stainless steel (EN-1.4568)	Stainless steel (EN-1.4568)	Stainless steel (EN-1.4568)
19	Seal	Plastic	Plastic	Plastic	Plastic
20	Sealing whire	Sealing whire	Sealing whire	Sealing whire	Sealing whire
21	Characteristic plate	Stainless steel (EN-1.4301)	Stainless steel (EN-1.4301)	Stainless steel (EN-1.4301)	Stainless steel (EN-1.4301)
DN1 x DN2		20 x 32 to 200 x 300			
PN		16	40	40	40
OPERATING CONDITIONS	PRESSURE [bar]	0,2	0,2	0,2	0,2
	MAX. TEMP. [°C]	300	350	450	400
	MIN. TEMP. [°C]	-10	-10	-10	-60



Isometric view

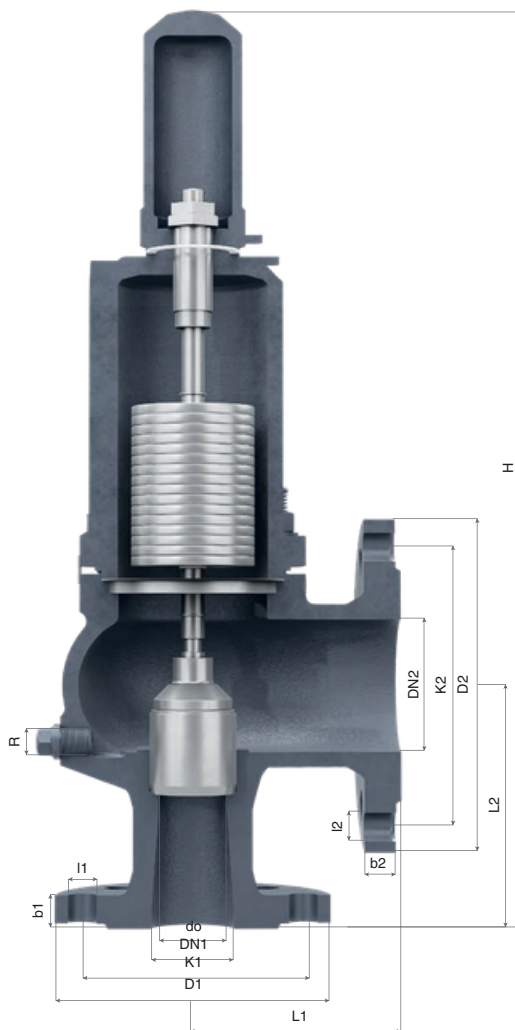


Exploded view

DN1 x DN2		20 x 32	25 x 40	32 x 50	40 x 65	50 x 80	65 x 100	80 x 125	100 x 150	125 x 200	150 x 250	200 x 300	
do		16	20	25	32	40	50	63	77	93	110	155	
A0 = $\frac{\pi \cdot do^2}{4}$ [mm²]		201	314	491	804	1257	1964	3117	4657	6793	9503	18869	
H [mm]		350	395	415	500	555	660	710	810	858	1029	1252	
L1 [mm]		85	95	100	115	125	140	155	175	215	225	265	
L2 [mm]		95	105	110	130	145	150	170	180	220	245	290	
R [mm]		1/4"	1/4"	1/4"	1/4"	1/4"	3/8"	3/8"	3/8"	1/2"	1/2"	1/2"	
		Whitworth gas-tight cylindrical female thread ISO 228/1 (DIN-259)											
INLET FLANGE	PN-10/16 EN-1092-2 (3) PN-25/40 EN-1092-1	D1 [mm]	105	115	140	150	165	185	200	220	250	285	340
		K1 [mm]	75	85	100	110	125	145	160	180	210	240	295
		I1 [mm]	14	14	19	19	19	19	19	19	19	23	23
		b1 [mm]	16	16	18	18	20	20	22	24	26	26	26
		DRILLS N.°	4	4	4	4	4	4	8	8	8	8	8
		D1 [mm]	105	115	140	150	165	185	200	235	270	300	360
		K1 [mm]	75	85	100	110	125	145	160	190	220	250	310
		I1 [mm]	14	14	19(18)*	19(18)*	19(18)*	19(18)*	19(18)*	23(22)*	28(26)*	28(26)*	28(26)*
		b1 [mm]	18(16)*	18(16)*	18	18(20)*	20	22	24	24	26	28	30
		DRILLS N.°	4	4	4	4	4	8	8	8	8	8	12
OUTLET FLANGE	PN-10/16 EN-1092-2 (1) PN-25/40 EN-1092-1	D2 [mm]	140	150	165	185	200	220	250	285	340	395	445
		K2 [mm]	100	110	125	145	160	180	210	240	295	350	400
		I2 [mm]	19 (18)*	19 (18)*	19 (18)*	19 (18)*	19 (18)*	19 (18)*	19 (18)*	23 (22)*	23 (22)*	23 (22)*	23 (22)*
		b2 [mm]	18	18	20	20 (18)*	22 (20)*	24 (22)*(20)*	26 (22)*	26 (24)*(22)*	26 (24)*	28 (26)*	28 (26)*
		DRILLS N.°	4	4	4	4	8	8	8	8	8	12	12
MODEL		ES											
WEIGHT [kgs.]	CAST IRON	6,7	8,1	10,9	15,7	21,3	30,2	42,8	62,1	79,9	112,7	177,1	
	NODULAR IRON	6,6	8,0	10,8	15,8	20,9	29,9	39,7	61,9	79,8	112,7	178,1	
	CAST STEEL	7,4	8,9	11,8	16,8	22,8	32,2	43,3	67,0	87,5	124,2	193,3	
	STAINLESS STEEL	7,5	9,0	12,0	17,0	23,1	32,6	43,8	67,8	88,5	125,6	195,5	
CODE	CAST IRON 2002-196.	53462	51062	51462	51262	52062	52262	53062	54062	55062	56062	58062	
	NODULAR IRON 2002-196.	83462	81062	81462	81262	82062	82262	83062	84062	85062	86062	88062	
	CAST STEEL 2002-196.	83442	81042	81442	81242	82042	82242	83042	84042	85042	86042	88042	
	STAINLESS STEEL 2002-196.	83422	81022	81422	81222	82022	82222	83022	84022	85022	86022	88022	

(3) DN-200x300 PN-25
(1) From DN-125x200 PN-10.
(2) DN-200x300 PN-10.

* Cast steel (EN-1.0619) and Stainless steel (EN-1.4408).
• Nodular iron (EN-5.3106).



SET PRESSURE													
DN1 x DN2			20 x 32	25 x 40	32 x 50	40 x 65	50 x 80	65 x 100	80 x 125	100 x 150	125 x 200	150 x 250	200 x 300
SET PRESSURE [bar g]	MAXIMUM (LIQUIDS AND GASES)	PN-16	0,2										
		PN-40	0,2										
	MAXIMUM (SATURATED STEAM)	PN-16	0,2										
		PN-40	0,2										
	MINIMUM	STEAM AND GASSES	0,05										
		LIQUIDS	0,05										

DISCHARGE CAPACITY

DN1 x DN2	32 x 50			40 x 65			50 x 80			65 x 100			80 x 125			100 x 150			125 x 200			150 x 250			200 x 300		
d0 [mm]	25			32			40			50			63			77			93			110			155		
	491			804			1257			1963			3117			4657			6793			9503			18869		
p [barg]	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III
0,05	242	219	5813	397	358	9525	620	560	14882	968	874	23253	1537	1388	36917	2296	2074	55148	3350	3025	69721	4686	4232	97540	8828	7972	193670
0,06	243	226	6004	398	370	9837	622	578	15370	972	903	24016	1544	1433	38128	2306	2141	56956	3364	3123	72008	4707	4369	100739	8866	8230	200022
0,07	244	233	6189	400	381	10140	625	595	15843	977	930	24755	1550	1477	39301	2316	2206	58709	3379	3218	74224	4727	4502	103840	8904	8481	206178
0,08	245	239	6368	402	392	10434	628	612	16303	981	957	25473	1557	1519	40441	2326	2269	60411	3393	3310	76376	4747	4631	106850	8942	8724	212155
0,09	246	246	6543	403	403	10720	630	629	16749	985	983	26171	1564	1560	41549	2336	2331	62067	3407	3400	78469	4767	4756	109778	8980	8959	217969
0,10	247	252	6713	405	413	10998	633	645	17184	989	1008	26851	1570	1600	42628	2346	2390	63679	3422	3487	80507	4787	4878	112630	9017	9189	223631
0,11	248	258	6878	407	423	11270	636	661	17609	993	1032	27514	1577	1639	43681	2355	2448	65252	3436	3572	82495	4807	4997	115411	9055	9412	229154
0,12	249	264	7040	408	433	11535	638	676	18023	997	1056	28161	1583	1677	44709	2365	2505	66787	3450	3654	84437	4827	5113	118127	9092	9631	234546
0,13	250	270	7199	410	442	11794	641	691	18428	1001	1080	28794	1590	1714	45714	2375	2561	68288	3464	3735	86334	4847	5226	120782	9129	9843	239818
0,14	251	276	7353	412	452	12048	643	706	18825	1005	1102	29414	1596	1750	46697	2384	2615	69757	3478	3814	88191	4866	5336	123380	9166	10052	244976
0,15	252	281	7505	413	461	12296	646	720	19213	1009	1125	30020	1603	1786	47660	2394	2668	71196	3492	3891	90010	4886	5444	125924	9203	10255	250027
0,16	253	287	7654	415	470	12540	649	734	19593	1013	1147	30615	1609	1820	48604	2404	2720	72606	3506	3967	91792	4905	5550	128418	9240	10455	254979
0,17	254	292	7799	417	478	12779	651	748	19967	1017	1168	31198	1615	1855	49530	2413	2770	73989	3520	4041	93541	4925	5654	130864	9277	10650	259836
0,18	255	297	7943	418	487	13013	654	761	20333	1021	1189	31770	1622	1888	50438	2423	2820	75346	3534	4114	95257	4944	5755	133266	9313	10842	264604
0,19	256	302	8083	420	496	13243	656	774	20693	1025	1210	32333	1628	1921	51331	2432	2869	76680	3548	4185	96944	4963	5855	135625	9349	11030	269288
0,20	280	308	8221	459	504	13470	717	787	21047	1120	1230	32885	1777	1953	52209	2655	2917	77991	3873	4255	98601	5419	5953	137943	10208	11214	273891

For other, not so dense liquids, other than water at 20 °C apply:

$$V_L = \sqrt{\frac{\rho_A}{\rho_L}} \cdot V_A \quad \text{ó} \quad V_A = V_L \cdot \sqrt{\frac{\rho_L}{\rho_A}}$$

VA = Water flow according to table.

VL = Liquid flow

ρ_A = Water density at 20 °C.
(ρ_A = 998 kg/m³)

ρ_L = Liquid density