



683/6 & 693/6

Cast Steel
Safety Relief Valve
Single High Lift

For Steam, Water, Oil, Air & Gasses

PN16/25/40, ANSI 150/300 & BS10 F/H Inlet Flanged*
PN10/16/25, ANSI 125/150 & BS10 E/F Outlet Flanged*

(*Dependent on series, specify when enquiring)

Bailey Birkett



The 680 and 690 series of single high lift safety valves combine a top guided design, to provide an unobstructed seat bore, with a floating disc that aligns correctly under all working conditions.

The spring is protected from the effects of high temperature steam when discharging, and the adjustable blow down ring ensures good reseating performance.

Various material options enable the valve to be applied to steam, air, gas and liquid duty on boilers, pressure vessels, calorifiers, air compressors or pipeline installations.

Approvals, Features & Benefits

- BS6759 Part 1, 2 & 3
- Top guided design
- Guaranteed pressure tightness
- Drain plug
- Adjustable blow-down ring
- Accurate disc alignment
- Lock & lever or dome top
- Set, tested and certified prior to despatch

Pressure & Temperature

Pressure range:-

683/686 : 0.25 to 13 bar
693/696 : 0.25 to 24 bar

Temperature range:-

-20°C to 230°C

DN	40	50	65	80	100
A** (686 - Lever)	352 (416)	449 (449)	498 (589)	605 (637)	745 (813)
A** (683 - Dome)	316 (379)	413 (413)	448 (538)	554 (586)	687 (756)
A (696 - Lever)	416	449	589	637	813
A (693 - Dome)	379	413	538	586	756
B	105	114	127	143	165
C	117	130	143	163	187
D	38	51	63.5	76	102
E	51	63.5	76	102	127
F	155.6	165.1	190.5	209.6	254
G	20.6	22.2	25.4	28.6	31.8
H	152.4	177.8	190.5	228.6	254
J	15.9	17.5	19.1	23.8	238.8
Orifice (mm ²)	1140	2027	3167	4560	8107
Weight KG	12	17	26	43	72

** Dimensions in brackets when 683/686 valve is set between 10.7 - 13 bar (with the exception of DN50)

Media	Kdr
Steam	0.198
Hot Water (>100°C)	0.198
Air/Gases	0.198
Liquid	0.209

Materials

Body	Cast Steel
Cover	Cast Steel
Valve Disc Holder & Guide	Bronze
Valve Disc & Seat Ring	Stainless Steel
Spindle	HT Brass / Stainless Steel
Spring	Steel
Dome & Lever	Iron

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Capacity Charts/Sizing

COMPRESSED AIR CAPACITY - FREE AIR m ³ /min					
Set Pressure (Bar)	DN40	DN50	DN65	DN80	DN100
0.25*	5.76	10.24	16.00	23.04	40.96
0.5*	7.29	12.96	20.22	29.13	51.80
1.0	10.44	18.56	29.00	41.70	74.30
1.5	13.04	23.20	36.20	52.20	92.70
2	14.49	25.75	40.50	57.90	103.00
3	18.28	32.50	50.79	73.10	130.00
4	19.66	34.95	54.60	78.66	139.90
5	23.59	41.92	65.50	94.30	167.70
6	26.63	47.32	73.90	106.50	189.30
7	30.42	54.00	84.50	121.60	216.30
8	34.20	60.80	95.00	136.90	243.40
9	38.00	67.50	105.60	152.00	270.30
10	41.80	74.30	116.20	167.20	297.40
12	49.40	87.80	137.30	197.60	351.30
14	57.00	101.30	158.30	228.00	405.40
16	64.60	114.80	179.40	258.30	459.30
18	72.20	128.30	200.50	288.70	513.40
20	79.78	141.70	221.60	319.00	567.40
22	87.40	155.20	242.70	349.40	621.40
24	94.90	168.70	263.80	379.80	675.40
*Capacities for 0.25 & 0.5 bar may be multiplied 1.15, providing a pressure rise of 0.07 barg is allowed.					

STEAM CAPACITY - kg/h					
Set Pressure (Bar)	DN40	DN50	DN65	DN80	DN100
0.25	173	307	480	691	1229
0.50	207	368	575	828	1472
1.0	275	489	765	1101	1959
1.5	344	611	955	1375	2445
2	412	732	1145	1649	2932
3	549	979	1525	2196	3905
4	686	1219	1905	2743	4878
5	823	1462	2285	3290	5851
6	959	1705	2665	3837	6824
7	1096	1948	3045	4384	7797
8	1233	2191	3426	4932	8770
9	1370	2435	3806	5479	9743
10	1507	2678	4186	6026	10716
12	1780	3164	4946	7120	12662
14	2054	3650	5706	8215	14608
16	2328	4137	6466	9309	16554
18	2601	4623	7226	10403	18500
20	2875	5109	7987	11498	20446
22	3149	5596	8747	12592	22392
24	3422	6082	9507	13686	24338

WATER CAPACITY - 25% Overpressure l/min					
Set Pressure (Bar)	DN40	DN50	DN65	DN80	DN100
0.25	109	194	304	438	779
0.50	154	275	430	619	1101
1.0	218	389	608	876	1557
1.5	268	476	744	1073	1907
2	309	550	860	1239	2203
3	379	674	1053	1518	2698
4	437	778	1216	1752	3115
5	489	870	1359	1959	3483
6	536	953	1489	2146	3815
7	579	1030	1609	2318	4121
8	618	1101	1720	2478	4405
9	656	1167	1824	2629	4673
10	692	1231	1923	2771	4926
12	757	1348	2106	3035	5396
14	818	1456	2275	3279	5828
16	875	1557	2432	3505	6230
18	928	1651	2579	3718	6608
20	978	1740	2719	3919	6966
22	1026	1826	2852	4110	7306
24	1071	1907	2978	4293	7631

HOT WATER BOILERS - kW**					
Set Pressure (Bar)	DN40	DN50	DN65	DN80	DN100
0.25	25	40	58	100	200
0.50	44	76	130	174	320
1.0	90	158	250	360	640
1.5	139	245	377	542	965
2	181	323	505	720	1280
3	267	485	745	1075	1910
4	355	640	995	1435	2560
5	450	797	1245	1790	3190
6	540	955	1495	2150	3825
7	630	1128	1750	2525	4495
8	721	1287	2005	2890	5125
9	811	1450	2257	3250	5770
10	903	1606	2510	3605	6430
12	1085	1930	3010	4315	7705
14	1261	2250	3500	5040	8970
16	1441	2562	4008	5765	10250
18	1622	2885	4507	6490	11530
20	1801	3203	5000	7210	12815
22	1981	3518	5507	7920	14080
24	2163	3842	6000	8645	15355
**Based on BS 759:1975 for Externally Pressurised Boilers					

Above tables not in accordance with BS 6759.