



716
Bronze
Safety Relief Valve
High Capacity Full Lift
For Steam, Water, Oil, Air & Gasses*
BSP & NPT Threaded**
PN16/25, ANSI 150 & BS10 E/F/H Flanged**
Bailey Birkett



The 716 range of safety relief valves offer protection against overpressure on boilers, compressors, pressure vessels, process pipelines and pressurised equipment.

They have a top guided construction with an unobstructed seat bore providing full protection with maximum discharge capacity.

Approvals, Features & Benefits

- BS6759 Part 1, 2 & 3
- Lock & lever or dome top
- Full lift for maximum capacity
- Suitable for a wide range of duties
- Set, tested and certified prior to despatch

Pressure & Temperature

Pressure range:-

0.35 up to 32 bar

Dependent on duty & size, see table below

Body temperature range:-

-29°C to 220°C

See table below for disc temperature ranges

DN	15	20	25	32	40	50
A	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
B	3/4"	1 1/4"	1 1/2"	2"	2 1/2"	3"
C	-	265	284	365	418	464
C1	-	241	261	332	379	422
D♦	158 (173)	209 (229)	235 (257)	295 (318.5)	340 (366.5)	382 (414.5)
D1♦	178 (192.5)	232 (252)	258 (280)	328 (351)	380 (405.5)	424 (456.5)
E	40	55	60	70	81	96
F	-	75	75	95	105	120
G♦	40 (58)	44 (63)	48 (70)	58 (80)	67 (91)	80 (110)
H	Dependent on flange drilling - Contact sales for further details					
Orifice (mm ²)	109	314	415	660	1075	1662
Weight Kg♦♦	1	1.6 (2.5)	2.1 (3.2)	4 (5.7)	7 (9)	10 (12.5)

♦ Figures in brackets for male x female version ♦♦ Figures in brackets for flanged version

Pressure Range (bar)

DN	Min	Gas & Liquids	Steam & Hot Water
15	0.35	32	22
20	0.35	24.5	22
25	0.35	20.5	20
32	0.35	18	18
40	0.35	18	18
50	0.35	18	18

Disc Options

Material	Temperature Range	Application*
EPDM	-29°C to 150°C	Water
Aflas	-29°C to 200°C	Air, Gases & Steam
St. St.	-29°C to 220°C	Steam & Process Liquids

Performance

Media	Kdr	Over Pressure	Blowdown
Steam	0.7	5%	15% or 0.3 bar min
Hot Water (>100°C)	0.7	5%	15% or 0.3 bar min
Air/Gases	0.7	10%	10% or 0.3 bar min
Liquid	0.46	10%	20% or 0.6 bar min

Materials

Body	Bronze
Inlet & Seat	Bronze (EPDM & Aflas Disc) • Stainless Steel (SS Disc)
Spindle	Brass
Disc	EPDM • Aflas • Stainless Steel
Spring	Chrome Vanadium
Dome, Lever & Padlock	Brass
Lever Dome	Nylon

* Dependent on materials, please check compatibility ** Specify connections when enquiring

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Capacity Charts/Sizing

Maximum pressure per size based on Bronze valves (max pressure for Stainless Steel valves is 12.5 bar)

AIR CAPACITY (l/s) @ 0.3 bar or 10% overpressure* and 15°C BS6759 Part 2						
Set Pressure (bar)	DN15	DN20	DN25	DN32	DN40	DN50
0.35	18.3	52.6	69.6	111	180	279
1.0	31.2	89.9	119	189	308	476
2.0	48.8	140	186	295	481	744
3.0	63.5	183	242	384	626	968
4.0	79.7	230	303	482	786	1215
5.0	95.9	276	365	580	945	1462
6.0	112	323	427	678	1105	1708
7.0	128	369	488	776	1265	1955
8.0	144	416	550	874	1424	2202
9.0	161	463	611	972	1584	2449
10.0	177	509	673	1070	1744	2696
12.0	209	603	796	1267	2063	3189
12.5	217	626	827	1316	2143	3313
14.0	242	696	920	1463	2382	3683
16.0	274	789	1043	1659	2701	4177
18.0	306	882	1166	1855	3021	4670
20.0	339	976	1289			
22.0	371	1069				
24.0	403	1162				
26.0	436					
28.0	468					
30.0	501					
32.0	533					

* Minimum overpressure = 0.7 bar at set pressure less the 1.0 bar

Other Gases
If you wish to use the valve on other compatible gases, the sizing details above can be used. The valve capacity will however change depending on the specific gravity of the flowing gas. Multiply the valve air capacity by 1/ SG to give the gas capacity.
SG = specific gravity (relative to air = 1)

Useful Conversions
Nm³/h = 1/sec x 3.60
SCFM = 1/sec x 2.12

WATER CAPACITY (l/min) @ 10% overpressure* and 20°C BS6759 Part 3						
Set Pressure (bar)	DN15	DN20	DN25	DN32	DN40	DN50
0.35	27.6	79.4	105	167	272	420
1.0	44.6	129	170	270	440	680
2.0	63.1	182	240	382	622	962
3.0	77.3	223	294	468	762	1178
4.0	89.3	257	340	540	880	1361
5.0	99.8	287	380	604	984	1521
6.0	109	315	416	662	1078	1667
7.0	118	340	449	715	1164	1800
8.0	126	364	481	764	1245	1924
9.0	134	386	510	811	1320	2041
10.0	141	406	537	854	1392	2152
12.0	155	445	589	936	1525	2357
12.5	158	454	601	955	1556	2406
14.0	167	481	636	1011	1647	2546
16.0	179	514	680	1081	1760	2722
18.0	189	545	721	1146	1867	2887
20.0	200	575	760			
22.0	209	603				
24.0	219	639				
26.0	227					
28.0	236					
30.0	244					
32.0	252					

* Minimum overpressure = 0.7 bar at set pressure less the 0.7 bar

Other Liquids
If you wish to use the valve on other compatible liquids, the sizing details above can be used. The valve capacity will however change depending on the specific gravity of the flowing liquid. Multiply the valve water capacity by 1/ √SG to give the liquid capacity.
SG = specific gravity (relative to water = 1)

Useful Conversions
l/gpm = 1/min x 0.22
m³/min = 1/min x 0.001

SATURATED STEAM CAPACITY (kg/h) BS6759 Part 1 @ 5% Overpressure						
Set Pressure (bar)	DN15	DN20	DN25	DN32	DN40	DN50
0.35	35.6	103	136	216	351	543
1.0	70.5	203	269	427	696	1075
2.0	125	359	475	755	1230	1902
3.0	167	480	635	1010	1645	2543
4.0	209	602	795	1265	2060	3185
5.0	251	723	955	1519	2475	3826
6.0	293	844	1115	1774	2889	4467
7.0	335	965	1276	2029	3304	5108
8.0	377	1086	1436	2283	3719	5750
9.0	419	1207	1596	2538	4134	6391
10.0	461	1329	1756	2793	4549	7032
12.0	545	1571	2076	3302	5378	8315
12.5	566	1632	2156	3429	5586	8636
14.0	629	1831	2397	3811	6208	9598
16.0	714	2056	2717	4321	7038	10880
18.0	798	2298	3037	4830	7867	12163
20.0	882	2540	3357			
22.0	966	2783				

* Minimum overpressure = 0.7 bar at set pressure less the 1.0 bar

Other Temperatures
For steam systems operating at higher temperatures, the above capacities will need to be de-rated by using the super heat correction factor table below.

Useful Conversions
lbs/h = kg/h x 2.2046

SUPERHEAT STEAM CORRECTION TABLE							
Set Pressure (bar)	Saturated Steam Temperature °C	Total Steam Temperature in °C					
		150	200	260	310	370	430
1.0	120	1.00	0.98	0.93	0.88	0.84	0.80
4.0	150	1.00	0.99	0.93	0.88	0.84	0.81
7.0	170	1.00	0.99	0.94	0.89	0.84	0.81
10.0	184	1.00	0.99	0.94	0.89	0.85	0.81
14.0	198	1.00	0.99	0.95	0.89	0.85	0.81
18.0	210	-	1.00	0.95	0.90	0.85	0.81
24.0	220	-	1.00	0.96	0.90	0.86	0.82

HOT WATER CAPACITY (kW) @ 5% overpressure* Pressurised (un-vented) Systems BS6759 Part 1						
Set Pressure (bar)	DN15	DN20	DN25	DN32	DN40	DN50
0.35	54.5	157	208	330	538	832
1.0	61.9	178	236	374	611	944
2.0	78.2	225	298	473	771	1192
3.0	105	301	398	633	1031	1594
4.0	131	377	498	792	1291	1996
5.0	157	453	599	952	1551	2398
6.0	184	529	699	1112	1811	2799
7.0	210	605	799	1271	2071	3201
8.0	236	681	900	1431	2331	3603
9.0	263	757	1000	1590	2591	4005
10.0	289	833	1100	1750	2851	4407
12.0	342	984	1301	2069	3370	5211
12.5	355	1022	1351	2149	3500	5412
14.0	394	1136	1501	2388	3890	6015
16.0	447	1288	1703	2708	4410	6818
18.0	500	1440	1903	3027	4930	7622
20.0	553	1592	2104			
22.0	605	1744				

* Minimum overpressure = 0.7 bar at set pressure less the 1 bar

Note
Pressurised (un-vented) hot water systems have the entire discharge capacity handled solely by the valve.
Open vented systems take into account the discharge capacities of the vent. Hence the equivalent discharge of the valve/system is considered to be double the above chart capacities.