KUNKLE BAILEY 776 CRYOGENIC SAFETY VALVE

The 776 safety relief valve is designed for cryogenic duty down to -321°F (-196°C)

FEATURES

- Full lift design, top guided construction and an unobstructed seat bore provide maximum discharge capacity.
- Positive sealing through a freely pivoted disc with Kel F (PCTFE) soft seat technology.
- Designed to conform to ISO4126, AD Merkblatt A2, ASME VIII and BS6759 Parts 2 and 3.
- Production assembly and tests carried out in accordance with both BOC and Air Products specifications.
- Pressure tight dome fitted as standard.

GENERAL APPLICATION

The 776 is suitable for the protection of pipework, tanks and equipment containing cryogenic, cold and fine gases.

TECHNICAL DATA

Material:	Bronze, stainless steel
Sizes:	½" to 2" (DN 15 to 50)
Connections:	Threaded
Pressure range:	15 to 599 psig (1 to 41.3 barg)
Temperature range:	-321°F to 140°F (-196°C to 60°C)

SPECIFICATIONS

Materials

Body - Bronze from -321°F to 140°F (-196°C to 60°C)
- Stainless steel from -450°F to 140°F (-268°C to 60°C)

Trim - Kel F PCTFE from -450°F to 140°F (-268°C to 60°C)

SIZE RANGE

Size, in (DN)	Orifice code	Orifice, mm²	Min pressure, barg	Max pressure, barg
½ (15)	1, 2M	109	1	41.3
¾ (20)	2R	109	1	41.3
¾ (20)	2, 2M1	109	1	41.3
¾ (20)	3	314	1	38.6
1 (25)	4	314	1	38.6
1¼ (32)	5	415	1	34.5
1½ (40)	6	660	1	34.5
2 (50)	7	1075	1	31.0

COEFFICIENT OF DISCHARGE - AIR

(TUV alpha W)	Above				
Orifice codes	3 barg	2.5 barg	2 barg	1.5 barg	1 barg
1, 2, 4, 5, 6, 7	0.69	0.69	0.69	0.67	0.63
3	0.67	0.65	0.63	0.62	0.58
1R, 2R	0.40	0.40	0.40	0.39	0.36
(ASME Kdr)	0.737				

Performance

Over pressure: 10%
Blowdown: 10%

Maximum back pressure

Barg 5.5
Constant 80%
Built-up 10%
Variable 0%
(Total % must not exceed barg shown)

Connections

Screwed in x screwed out

Cap options

Pressure tight dome fitted as standard

Approvals

AD Merkblatt A2
ASME VIII
BS6759 Pt 2 and 3
PED certified category IV

Assembly and test specifications

BOC: 1819660 and 399856.
Air products: 4WPI-EW80010 and 4WPI-SW70003.

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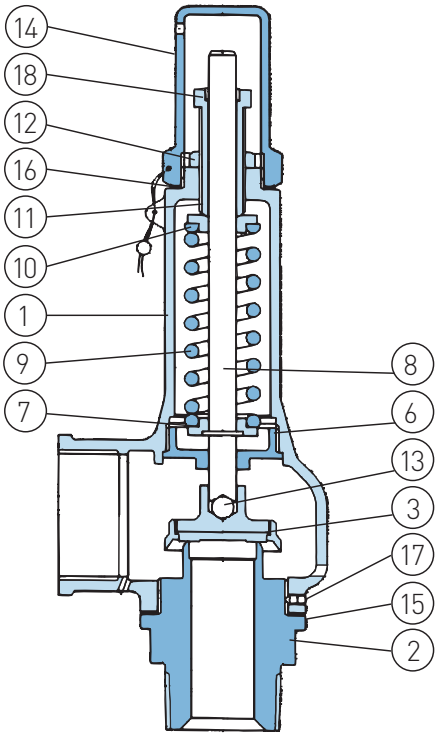
PARTS AND MATERIALS / DIMENSIONS

MATERIALS

Item	Part	Material
1	Body	Bronze
2	Seat	Bronze
3*	Disc assembly	St.St. / Kel F PCTFE
6	Guide	Bronze
7	Lower spring plate	Brass
8	Spindle	Brass
9*	Spring	St.St
10	Upper spring plate	Brass
11	Adjusting screw	Brass
12	Locknut	Brass
13*	Ball	St.St
14	Cap	Brass
15*	Body gasket	Gylon PTFE
16*	Cap gasket	Gylon PTFE
17	Grubscrew	St.St
18	Bush	PTFE



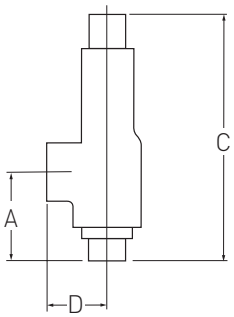
NOTES

* Recommended spares.
Refer to factory for stainless steel version.
Recommended inspection every 12 months.

DIMENSIONS - MALE x FEMALE

Valve size DN	Inlet *BSP	Outlet *BSP	A mm	C Dome	D	Weight (kg)
15 / 1	½"	¾"	52	173	40	1.0
15 / 1R	½"	¾"	52	173	40	1.0
15 / 2M	½"	1"	52	173	45	1.0
20 / 2R	¾"	1"	70	191	45	1.0
20 / 2	¾"	1"	70	191	45	1.0
20 / 3	¾"	1¼"	63	231	55	1.6
25 / 2M1	1"	1"	70	191	45	1.0
25 / 4	1"	1¼"	73	241	55	1.6
32 / 5	1¼"	1½"	78	265	60	2.1
40 / 6	1½"	2"	84	323	70	4.0
50 / 7	2"	2½"	95	371	81	7.0

Male x Female



NOTES

* Other threaded options are also available.
All dimensions in mm.

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AIR CAPACITY

AIR CAPACITY (l/s) at 0.3 barg or 10% overpressure* and 15°C

	AD MERKBLATT A2								
Set pressure (barg)	**1R / DN 20**	**2R / DN 20**	**1/2M / DN 15**	**2/2M1 / DN 20**	**3 / DN 20**	**4 / DN 25**	**5 / DN 32**	**6 / DN 40**	**7 / DN 50**
1.0	15.3	15.3	26.9	26.9	71.3	77.5	103	163	265
2.0	24.9	24.9	40.3	40.3	107	116	153	244	397
3.0	34	34	58.7	58.7	155	169	224	356	579
4.0	42.5	42.5	73.4	73.4	205	211	279	444	723
5.0	51.0	51.0	88.0	88.0	246	253	335	533	868
6.0	59.5	59.5	103	103	287	296	391	621	1012
7.0	67.9	67.9	117	117	328	338	446	710	1156
8.0	76.4	76.4	132	132	369	380	502	798	1301
9.0	84.9	84.9	147	147	410	422	558	887	1445
10.0	93.4	93.4	161	161	451	464	613	976	1589
12.0	110	110	190	190	533	548	725	1153	1878
12.5	115	115	198	198	553	570	752	1197	1950
14.0	128	128	220	220	614	633	836	1330	2166
16.0	144	144	249	249	696	717	948	1507	2455
18.0	161	161	278	278	778	801	1059	1684	2743
20.0	178	178	307	307	860	886	1171	1862	3032
22.0	195	195	337	337	942	970			
24.0	212	212	366	366	1024	1054			
26.0	229	395	395	1106	1139				
28.0	246	424	424	1187	1223				
30.0	263	454	454	1269	1307				

* Minimum overpressure = 0.07 barg at set pressure less than 0.7 barg.

Other gases

If you wish to use the valve on other compatible gases, the sizing details above can be used.
However, the valve capacity will change depending on the specific gravity of the flowing gas.
Multiply the valve air capacity by $1/\sqrt{SG}$ to give the gas capacity.
SG = specific gravity (relative to air = 1).

Useful conversions

Nm^3/h = l/sec x 3.60
SCFM = l/sec x 2.12