



KUNKLE BAILEY 480/485/490 RELIEF VALVE

A spring operated liquid relief valve available in all bronze, bronze with stainless steel trim or all stainless steel constructions



FEATURES

- Cartridge type assembly which can be withdrawn from the body without disturbing the spring setting, and hence relieving pressure, allows the seating surfaces to be cleaned without the need to reset the valve.
- 480 is a bronze relief valve.
- 485 is bronze with a renewable stainless steel seat and disc.
- 490 is all stainless steel.
- Spindle normally fitted with an 'O' ring to protect the spring, particularly on corrosive duties.

GENERAL APPLICATION

Typically, these valves are for use on positive displacement pumps, for relief or bypass duties. The spring cartridge assembly can be supplied separately for use as an integral pump bypass relief valve.

TECHNICAL DATA

Material: Bronze, stainless steel
Sizes: 3/4" to 3" (DN 20 to 80)
Connections: Threaded
Pressure range: 5 to 348 psig (0.35 to 24 barg)
Temperature range: -4°F to 500°F (-20°C to 260°C)

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DESIGN/SPECIFICATIONS

SPECIFICATIONS

Materials

- Body
- Bronze (-20°C to 120°C) with 'O' ring
 - Bronze (-20°C to 224°C) without 'O' ring
 - Stainless steel (-20°C to 200°C) with 'O' ring
 - Stainless steel (-20°C to 260°C) without 'O' ring
- Trim
- Bronze
 - Stainless steel

SIZE RANGE

Size, in (DN)	Orifice, mm ²	Min pressure*, barg	Max pressure, barg
¾ (20)	285	0.35	24
1 (25)	507	0.35	24
1½ (40)	1140	0.35	24
2 (50)	2027	0.35	24
3 (80)	4560	0.35	10

PERFORMANCE

	Kdr	Over pressure	Blow down
Liquid	0.11	10%	20%*

* or 0.6 barg min

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

Approvals

BS6759 Pt 3

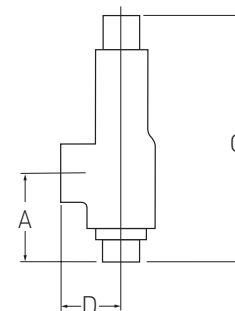
PED certified category IV

DIMENSIONS - MALE x FEMALE

Valve size DN	Inlet and outlet		C			Weight (kg)
	BSP (NPS)	A	Dome	D		
20	¾	49	176	41	1	
25	1	64	198	45	2	
40	1½	73	237	56	3	
50	2	91	270	64	5	
80	3	111	390	86	13	

All dimensions in mm.

Male x Female



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PARTS AND MATERIALS/SPRING SELECTION

MATERIALS

Item	Part	Materials	
		480	490
1	Body	Bronze	St. St.
2	Valve disc	Bronze*	St. St.
3	Guide	Bronze	St. St.
4	'O' ring	Nitrile	FKM
5	Spring plate	Brass	St. St.
6	Spring	C. S.	St. St.
7	Cover	Bronze	St. St.
8	Spindle	Bronze	St. St.
9	Adjusting screw	Brass	St. St.
10	Locknut	Brass	St. St.
11	Dome	Bronze	St. St.
12	Nameplate	Aluminum	Aluminum
13	Renewable seat	Bronze*	St. St.

* Materials for Fig 485 are the same as Fig 480 except items 2 and 13 which are stainless steel.

SPRING RANGE AND SELECTION

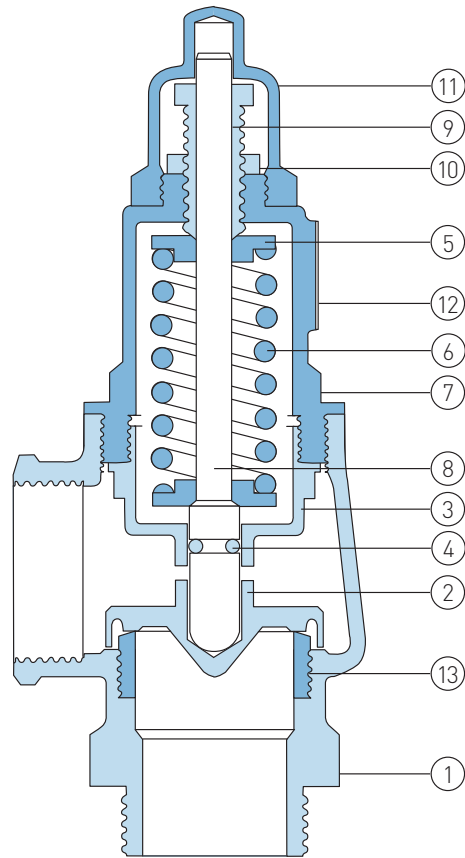
Barg	Psig	Color code
0.3 - 0.7	5 - 10	Yellow
0.7 - 1.0	10 - 15	Blue
1.0 - 1.7	15 - 25	Orange
1.7 - 3.4	25 - 50	Purple
3.4 - 5.2	50 - 75	Green/blue
5.2 - 6.9	75 - 100	Green
6.9 - 10.3	100 - 150	White
10.3 - 13.8	150 - 200	Red/yellow
13.8 - 17.2	200 - 250	Red/green
17.2 - 20.7	250 - 300	Red/orange
20.7 - 24.0	300 - 350	Yellow/blue

NOTE

DN 80 valve max pressure is 10 barg (147 psig).

SPRING SELECTION

The valves are fitted with a suitable spring. Every valve is tested thoroughly for efficient operation before leaving the factory. Ensure the set pressure is within the range of the existing spring. If not, select and fit the correct spring from the table above. All our springs are low stressed and painted to minimize corrosion.



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CAPACITIES/SELECTION

WATER CAPACITY (l/min) at 10% overpressure* at 20°C

Set pressure (barg)	BS6759 part 3				
	DN 20	DN 25	DN 40	DN 50	DN 80
1.0	27.90	49.63	112	198	446
2.0	34.17	60.78	137	243	547
3.0	39.46	70.19	158	281	631
4.0	55.80	99.27	223	397	893
5.0	62.39	111	250	444	998
6.0	48.34	122	273	486	1093
7.0	73.82	131	295	525	1181
8.0	78.91	140	316	561	1263
9.0	83.70	149	334	595	1339
10.0	88.23	157	353	628	1412
12.0	96.65	172	387	687	-
12.5	98.64	176	395	702	-
14.0	104	186	418	742	-
16.0	112	199	446	794	-
18.0	118	211	473	842	-
20.0	125	222	499	887	-
22.0	131	233	523	931	-
24.0	137	243	547	972	-

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

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 $1/\sqrt{SG}$ to give the liquid capacity.

SG = specific gravity (relative to water = 1).

Useful conversions

lgpm = l/min x 0.22

m³/min = l/min x 0.001

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