KUNKLE BAILEY 716H SAFETY RELIEF VALVE

A high pressure safety relief valve that combines a top guided, unobstructed seat bore with full lift capability to provide maximum discharge

FEATURES

- Positive reseating achieved via freely pivoting EPDM discs for gas and liquid duties up to 150°C.
- Optional Aflas soft seats increase the range to 200°C.
- Precision lapped stainless steel trim gives positive re-seating for steam duty at higher temperatures.
- Choice of threaded or flanged connections.
- Optional open or packed test lever for inline safety checking.
- Alternative sealed dome for service conditions requiring a pressure tight seal on the discharge side (eg. liquid service).

GENERAL APPLICATION

The 716H is certified to ASME VIII and is suitable for the protection of vessels, pipelines and equipment using cold water; air; process or corrosive liquids; cold and fine gases and for clean steam and gases in hygienic environments.

TECHNICAL DATA

Material:	Carbon steel, stainless steel
Sizes:	½" to 1" (DN 15 to 25)
Connections:	Threaded or flanged
Pressure range:	5 to 1480 psig (0.35 to 102 barg)
Temperature range:	-51°F to 500°F (-46°C to 260°C)

KUNKLE BAILEY 716H SAFETY RELIEF VALVE

SPECIFICATIONS/DIMENSIONS

SPECIFICATIONS

Materials

Body
- Carbon steel A216-WCB from -20° to 500°F (-29° to 260°C)
- Stainless steel A351-CF8M from -51° to 500°F (-46° to 260°C)

Trim
- Aflas from -20° to 392°F (-29° to 200°C (No. 7 only))
- Stainless steel from -51° to 500°F (-46° to 260°C)
- EPDM from -20° to 302°F (-29° to 150°C)

SIZE RANGE

Size, in (DN)	Orifice mm^2	Min pressure (barg)	Max pressure (barg)
½ (15)	*109	0.35	51
¾ (20)	*109	0.35	51
1 (25)	*109	0.35	51
½ (15)	**45	51.00	102
¾ (20)	**45	51.00	102

* No 7

** No 6

PERFORMANCE

	6-Kdr	7-Kdr	Over pressure	Blow down
Steam	0.811	0.824	10%*	15%
Air/gas	0.811	0.824	10%*	15%
Liquid	0.670	0.505	10%*	20%

* or 0.2 barg min

Maximum back pressure

Barg	19.65
Constant	80%
Built-up	10%
Variable	0%

(Total % must not exceed barg shown)

Connections

Screwed in x screwed out

Flanged in x flanged out (except ½" (DN15))

Cap options

Open lever

Pressure tight dome

Packed lever

Approvals

ASME VIII

PED certified category IV

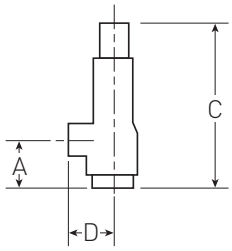
DIMENSIONS

Sizes (ins) inlet and outlet	Inlet and outlet connection	Orifice No.	A	B	C❖	D	Max pressure up to 100°F (psig) Inlet	Outlet	Weight (kg)
½", ¾" x ¾"	Screwed male x female	6	64	21	257	55	1480	285	4.0
½", ¾", 1" x 1"	Screwed female x female	7	44	-	189	55	740	285	4.0
½", ¾", 1" x 1"	Screwed male x female	7	43	19	209	55	740	285	4.0
¾" x 1"	ANSI 150# x 150#	7	117	31	262	95	740	285	6.5
	ANSI 300# x 150#			41					
1" x 1"	ANSI 150# x 150#	7	117	33	262	95	740	285	6.5
	ANSI 300# x 150#			45					

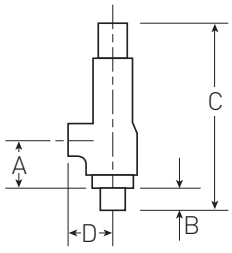
❖ When a lever or test gag is fitted dimension C will increase.

All dimensions in mm.

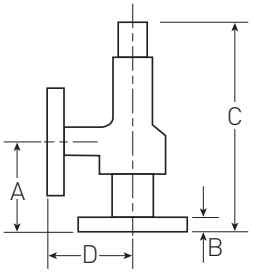
Female screwed



Male screwed



Flanged



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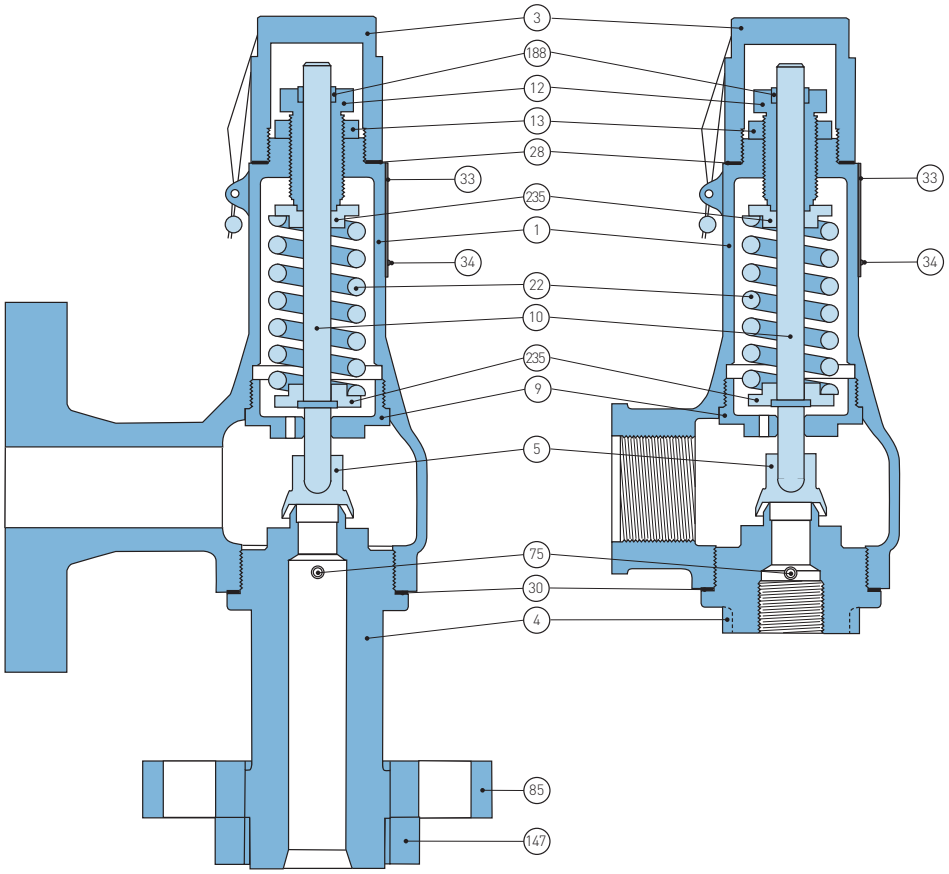
PARTS AND MATERIALS



MATERIALS

Item	Part	Carbon steel	Stainless steel
1	Body	SA 216-WCB CARB ST	SA 351-CF8M ST ST
3	Cap	SA 216-WCB CARB ST	SA 351-CF8M ST ST
4*	Nozzle	ASTM A479-316L	ASTM A479-316L
5*	Disc assy.	Various	Various
9	Guide	17/4	17/4
10	Spindle	316	316
12	Adjusting screw	ASTM A479-410	ASTM A479-410
13	Locking nut	ASTM A479-316L	ASTM A479-316L
22*	Spring	C.S. Aluminum coated	ASTM A313-316
28*	Cap gasket	ST-706 6	ST-706
30	Body gasket	ST-706	ST-706
33	Data plate	321 ST ST	321 ST ST
34	Hammer drive screw	Electro brassed CS.	ASTM A479-316L
75	Grub screw	ASTM A479-316L	ASTM A479-316L
85	Inlet flange	SA 105 CARB ST	SA 182-F316 ST ST
147	Flange nut	SA564 17/4 (33HRC)	SA564 17/4 (33HRC)
188	Adjusting screw bush	Virgin PTFE	Virgin PTFE
235	Spring end plate	ASTM A479-431	ASTM A479-431

NOTES

* Recommended spares.

Recommended inspection every 12 months.

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AIR AND STEAM CAPACITIES

AIR CAPACITY at 10% overpressure and 15ºC

Set pressure (barg)	No. 6 orifice (l/s)	No. 7 orifice (l/s)
1	-	37
10	-	210
20	-	403
30	-	595
40	-	787
50	-	980
51	407	999
60	478	-
80	635	-
100	791	-
102	807	-

STEAM CAPACITY at 10% overpressure

Set pressure (barg)	No. 6 orifice (kg/h)	No. 7 orifice (kg/h)
1	-	100
10	-	567
20	-	1086
30	-	1605
40	-	2124
50	-	2643
51	1098	2695
60	1289	-
80	1712	-
100	2135	-
102	2177	-

FSH - SUPERHEAT STEAM CORRECTION

Set pressure	Saturated steam	Total steam temperature in degrees centigrade					
(barg)	temp. °C	150	200	260	310	370	430
1	120	1.00	0.98	0.93	0.88	0.84	0.80
4	150	1.00	0.99	0.93	0.88	0.84	0.81
7	170	1.00	0.99	0.94	0.89	0.84	0.81
10	361	1.00	0.99	0.94	0.89	0.85	0.81
14	180	1.00	0.99	0.95	0.89	0.85	0.81
18	210	-	1.00	0.95	0.90	0.85	0.81
24	220	-	1.00	0.96	0.90	0.86	0.82
34	240	-	1.00	0.96	0.92	0.86	0.82
41	250	-	1.00	0.97	0.92	0.87	0.82

Air capacity - 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

Saturated steam capacity - other temperatures

This steam table is based on saturated steam, at the temperatures shown.
For steam systems operating at higher temperatures, the above capacities will need to be derated by using the super heat correction factor.

Useful conversions

lbs/h = kg/h x 2.2046

WATER CAPACITY at 10% overpressure and 20°C

Set pressure (barg)	No. 6 orifice (l/m)	No. 7 orifice (l/m)
1	-	49
10	-	155
20	-	219
30	-	269
40	-	310
50	-	347
51	193	350
60	209	-
80	241	-
100	270	-
102	272	-

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

Igpm = l/min x 0.22
m^3/min = l/min x 0.001

SELECTION GUIDE

Example:		716H	6	3	2	4	M
Model							
716H	716 high pressure valve						
Orifice							
6	45 mm^2 (0.07 in^2)						
7	109 mm^2 (0.169 in^2)						
Size inlet x outlet							
1	DN 15 x 25 (½" x 1") - not available flanged						
2	DN 20 x 25 (¾" x 1")						
3	DN 25 x 25 (1" x 1")						
4	DN 15 x 20 (½" x ¾")						
5	DN 20 x 20 (¾" x ¾")						
Connections inlet x outlet							
1	BSP taper male x female						
2	BSP female x female						
3	PN 16/40 x PN 16 RF						
4	PN 64 x PN 16 RF						
5	ANSI 150 x 150 RF						
6	ANSI 300 x 150 RF						
Materials body/trim							
1	Carbon steel WCB/316L						
2	Carbon steel WCB/EPDM						
3	Carbon steel WCB/Aflas						
4	Stainless steel CF8M/316L						
5	Stainless steel CF8M/EPDM						
6	Stainless steel CF8M/Aflas						
Accessories							
D	Dome cap						
M	Open lever						
P	Packed lever						
F	Government ring						
G	Test gag						

NOTES

1. Carbon Steel valves are only available down to -20°F (-29°C).
2. All valves are fitted with stainless steel springs.

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