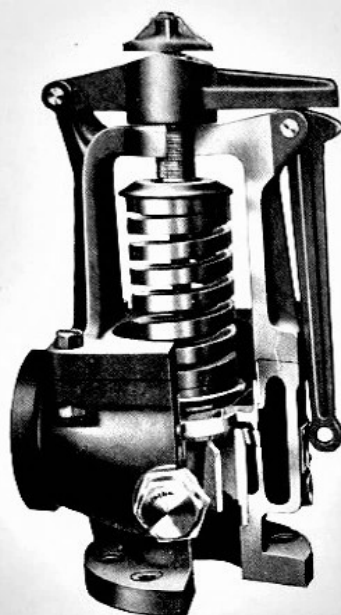


High Capacity Pop Safety Valves



C. I. Style, Cast Iron



C. S. Style, Cast Steel

SPECIFICATIONS

Valve Parts	C. I. Style (cast iron) For Saturated Steam Maximum Pressure, 300 lbs.	C. S. Style (cast steel) for Saturated or Superheated Steam Maximum Pressure 400 lbs.
Body and Head	Cast Iron	Cast Steel
Seat Bushing	Bronze or Nickel	Nickel
Wing Valve	Bronze	Nickel
Pop Regulators	Bronze	Nickel or Bronze
Spring	Crucible Steel	Crucible Steel
Spindle	Steel	Steel
Fork and Lever	Malleable Iron	Malleable Iron

These valves fully conform to the requirements of the American Society of Mechanical Engineers' Boiler Code and with all State and City Regulations, and have been approved by the United States Board of Supervising Inspectors of Steam Vessels. They are likewise registered in the Dominion of Canada. The C. I. Style Valve is regularly constructed with A. S. M. E. extra heavy standard inlet flanges (drilled only when specified) with female threaded outlets. The C. S. Style Valve is regularly made with A. S. M. E. 400-pound standard inlet flange. Relieving capacities charted on page 7; dimensions on page 11; and part list on page 12.

We are prepared to furnish valves of cast steel for pressures exceeding 400 pounds. See page 19.

Size Valve, inches	2	2½	3	3½	4	4½
Diameter of Inlet Flange, inches	6½	7½	8¼	9	10	10½
Outlet (Standard Pipe Size), inches	3	3½	4	4½	5	6
Weight, pounds (C. I. Style)	85	95	130	148	196	242

Orders should always specify style number of valve, size and maximum working pressure and whenever possible the total heating surface and maximum rating of boiler. If to be used on superheated steam, specify maximum temperature.

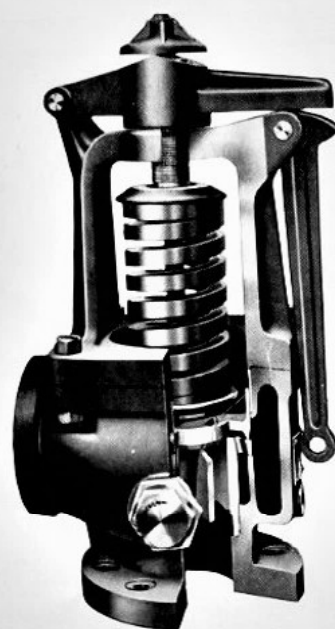
PRICES ON APPLICATION

Discharge Capacities of Ashton C. I. and C. S. Style Pop Safety Valves in pounds of steam per hour

Lbs. Pressure per Square Inch Gage	Valve Sizes					
	2 Inches	2½ Inches	3 Inches	3½ Inches	4 Inches	4½ Inches
10	1,370	1,900	2,500	3,100	3,900	4,600
15	1,600	2,300	3,000	3,700	4,700	5,400
20	1,880	2,600	3,500	4,300	5,400	6,300
25	2,140	3,000	4,000	4,800	6,100	7,200
30	2,400	3,400	4,500	5,400	6,900	8,000
35	2,630	3,700	4,900	6,000	7,600	8,600
40	2,870	4,000	5,400	6,500	8,300	9,700
45	3,100	4,400	5,800	7,000	9,000	10,500
50	3,340	4,700	6,200	7,500	9,600	11,200
55	3,560	5,000	6,700	8,000	10,300	12,000
60	3,780	5,300	7,100	8,500	10,900	12,800
65	4,000	5,700	7,500	9,000	11,500	13,600
70	4,200	6,000	7,900	9,500	12,100	14,300
75	4,400	6,200	8,300	10,000	12,700	15,100
80	4,600	6,600	8,700	10,500	13,300	15,800
85	4,800	6,900	9,100	10,900	13,900	16,500
90	4,900	7,100	9,500	11,400	14,400	17,200
95	5,100	7,400	9,900	11,800	15,000	17,800
100	5,300	7,700	10,300	12,200	15,500	18,500
105	5,500	8,000	10,600	12,600	16,100	19,200
110	5,700	8,200	11,000	13,000	16,500	19,900
115	5,900	8,500	11,300	13,400	17,000	20,400
120	6,000	8,700	11,600	13,700	17,500	21,000
125	6,200	9,000	11,900	14,100	18,000	21,700
130	6,400	9,200	12,200	14,500	18,500	22,400
135	6,500	9,400	12,600	14,900	18,900	22,900
140	6,600	9,600	12,900	15,200	19,400	23,500
145	6,800	9,900	13,200	15,500	19,800	24,100
150	6,900	10,100	13,400	15,900	20,200	24,600
155	7,100	10,300	13,700	16,200	20,600	25,200
160	7,200	10,500	14,000	16,500	21,000	25,700
165	7,300	10,700	14,200	16,800	21,300	26,300
170	7,400	10,900	14,500	17,000	21,700	26,700
175	7,500	11,000	14,800	17,300	22,000	27,300
180	7,700	11,200	15,000	17,600	22,300	27,800
185	7,800	11,400	15,200	17,900	22,600	28,200
190	7,900	11,600	15,500	18,200	23,000	28,700
195	7,900	11,800	15,600	18,400	23,200	29,200
200	8,000	11,900	15,900	18,700	23,500	29,600
210	8,200	12,200	16,300	19,000	24,000	30,400
220	8,400	12,500	16,700	19,500	24,500	31,200
230	8,500	12,700	17,000	19,800	25,000	32,000
240	8,600	12,900	17,200	20,100	25,300	32,600
250	8,700	13,100	17,500	20,400	25,600	33,300
260	8,900	13,300	17,600	20,800	26,300	33,900
270	8,900	13,500	17,700	21,000	26,800	34,400
280	9,100	13,700	17,700	21,400	27,400	35,000
290	9,200	13,800	17,700	21,600	27,900	35,500
300	9,200	13,900	17,700	21,800	28,400	35,900
310	9,300	14,000	17,900	22,100	28,900	36,600
320	9,300	14,200	18,100	22,400	29,200	37,200
330	9,300	14,400	18,300	22,700	29,600	37,800
340	9,400	14,500	18,500	22,900	29,800	38,400
350	9,400	14,600	18,600	23,200	30,200	38,900
360	9,400	14,700	18,800	23,300	30,400	39,400
370	9,400	14,800	18,900	23,600	30,600	39,900
380	9,400	14,800	19,000	23,700	30,800	40,300
390	9,400	14,900	19,200	23,800	31,000	40,700
400	9,400	14,900	19,200	24,000	31,000	41,100

C. I. Style Valves are recommended for pressures up to and including 300 pounds; the C. S. Style (cast steel) for pressures 300 to 400 pounds inclusive, and for high temperatures or superheated steam. To figure the discharge of FREE AIR in cubic feet per minute multiply charted values by .24.

The Ashton Moderate Capacity Pop Safety Valves



C. I. M. Style (Cast Iron)
For Saturated Steam
Maximum Pressure 300 Pounds



C. S. M. Style (Cast Steel)
For Saturated or Superheated Steam
Maximum Pressure 400 Pounds

The Ashton Moderate Capacity Pop Safety Valves are of the same general construction as the C. I. and C. S. Style Valves, but have a more moderate relieving capacity. Complete specifications and points of mechanical superiority are given in detail on preceding pages 2 to 6 inclusive. These moderate capacity valves are designed more particularly for replacements of safety valves on old boiler installations, where large relieving capacity is not required.

The C. I. M. Style Valve is regularly constructed with A. S. M. E. extra heavy standard inlet flanges (drilled only when so specified) with female threaded outlet. The C. S. M. Style Valve is regularly made with A. S. M. E. 400-pound standard inlet flanges.

We are prepared to furnish valves of cast steel for pressures exceeding 400 pounds, per page 19.

Relieving capacities of these moderate capacity valves are charted on page 9; dimensions, page 11; and part list, page 12.

Size Valve, inches	2	2½	3	3½	4	4½
Diameter of Inlet Flange, inches	6½	7½	8¼	9	10	10½
Outlet (Standard Pipe Size), inches	3	3½	4	4½	5	6
Weight, Pounds (C. I. Style)	85	95	130	148	196	242

Orders should always specify style number of valve, size and maximum working pressure and, wherever possible, the total heating surface and maximum rating of boiler. If to be used on superheated steam specify maximum temperature.

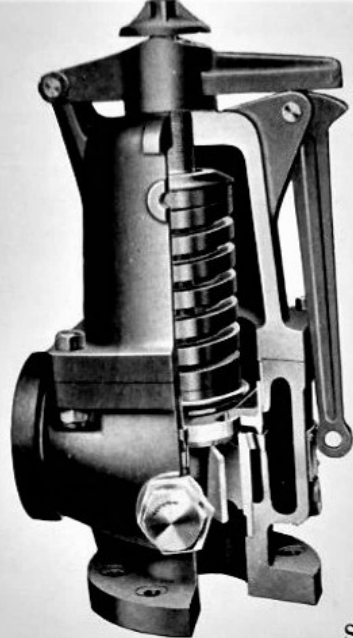
PRICES ON APPLICATION

Discharge Capacities of Ashton C. I. M. and C. S. M. Style (Moderate Capacity) Pop Safety Valves in pounds of steam per hour

Lbs. Pressure per Square Inch Gage	Valve Sizes					
	2 Inches	2½ Inches	3 Inches	3½ Inches	4 Inches	4½ Inches
10	685	950	1,250	1,550	1,950	2,300
15	800	1,150	1,500	1,850	2,350	2,700
20	940	1,300	1,750	2,150	2,700	3,150
25	1,070	1,500	2,000	2,400	3,050	3,600
30	1,200	1,700	2,250	2,700	3,450	4,000
35	1,315	1,850	2,450	3,000	3,800	4,300
40	1,435	2,000	2,700	3,250	4,150	4,850
45	1,550	2,200	2,900	3,500	4,500	5,250
50	1,670	2,350	3,100	3,750	4,800	5,600
55	1,780	2,500	3,350	4,000	5,150	6,000
60	1,890	2,650	3,550	4,250	5,450	6,400
65	2,000	2,850	3,750	4,500	5,750	6,800
70	2,100	3,000	3,950	4,750	6,050	7,150
75	2,200	3,100	4,150	5,000	6,350	7,550
80	2,300	3,300	4,350	5,250	6,650	7,900
85	2,400	3,450	4,550	5,450	6,950	8,250
90	2,450	3,550	4,750	5,700	7,200	8,600
95	2,550	3,700	4,950	5,900	7,500	8,900
100	2,650	3,850	5,150	6,100	7,750	9,250
105	2,750	4,000	5,300	6,300	8,050	9,600
110	2,850	4,100	5,500	6,500	8,250	9,950
115	2,950	4,250	5,650	6,700	8,500	10,200
120	3,000	4,350	5,800	6,850	8,750	10,500
125	3,100	4,500	5,950	7,050	9,000	10,850
130	3,200	4,600	6,100	7,250	9,250	11,200
135	3,250	4,700	6,300	7,450	9,450	11,450
140	3,300	4,800	6,450	7,600	9,700	11,750
145	3,400	4,950	6,600	7,750	9,900	12,050
150	3,450	5,050	6,700	7,950	10,100	12,300
155	3,550	5,150	6,850	8,100	10,300	12,600
160	3,600	5,250	7,000	8,250	10,500	12,850
165	3,650	5,350	7,100	8,400	10,850	13,150
170	3,700	5,450	7,250	8,500	10,850	13,350
175	3,750	5,500	7,400	8,650	11,000	13,650
180	3,850	5,600	7,500	8,800	11,150	13,900
185	3,900	5,700	7,600	8,950	11,300	14,100
190	3,950	5,800	7,750	9,100	11,500	14,350
195	3,950	5,900	7,800	9,200	11,600	14,600
200	4,000	5,950	7,950	9,350	11,750	14,800
210	4,100	6,100	8,150	9,500	12,000	15,200
220	4,200	6,250	8,350	9,750	12,250	15,600
230	4,250	6,350	8,500	9,900	12,500	16,000
240	4,300	6,450	8,600	10,050	12,650	16,300
250	4,350	6,550	8,750	10,200	12,800	16,650
260	4,450	6,650	8,800	10,400	13,150	16,950
270	4,450	6,750	8,850	10,500	13,400	17,200
280	4,550	6,850	8,850	10,700	13,700	17,500
290	4,600	6,900	8,850	10,800	13,950	17,750
300	4,600	6,950	8,850	10,900	14,200	17,950
310	4,650	7,000	8,950	11,050	14,450	18,300
320	4,650	7,100	9,050	11,200	14,600	18,600
330	4,650	7,200	9,150	11,350	14,800	18,900
340	4,700	7,250	9,250	11,450	14,900	19,200
350	4,700	7,300	9,300	11,600	15,100	19,450
360	4,700	7,350	9,400	11,650	15,200	19,700
370	4,700	7,400	9,450	11,800	15,300	19,950
380	4,700	7,400	9,500	11,850	15,400	20,150
390	4,700	7,450	9,600	11,900	15,500	20,350
400	4,700	7,450	9,600	12,000	15,500	20,550

C. I. M. Style Valves are recommended for pressures up to and including 300 pounds; the C. S. M. Style (cast steel) for pressures 300 to 400 pounds inclusive, and for high temperatures of superheated steam. To figure the discharge of FREE AIR in cubic feet per minute, multiply charted values by .24.

The Ashton Pop Safety Valves WITH ENCLOSED SPRING HEAD



C.S.-10 Style
(High Capacity) Cast Steel

C.S.M.-10 Style
(Moderate Capacity) Cast Steel

C.I.-10 Style
(High Capacity) Cast Iron

C.I.M.-10 Style
(Moderate Capacity) Cast Iron

The above valve with enclosed spring head construction is particularly desirable for marine service

SPECIFICATIONS

Valve Parts	C. I.-10 Style (cast iron) C. I. M.-10 Style (cast iron) For Saturated Steam Maximum Pressure 300 lbs.	C. S.-10 Style (cast steel) C. S. M.-10 Style (cast steel) For Saturated or Superheated Steam. Max. Pressure 400 lbs.
	Cast Iron Bronze or Nickel Bronze Bronze Crucible Steel Steel Malleable Iron	Cast Steel Nickel Nickel Bronze or Nickel Crucible Steel Steel Malleable Iron

The enclosed head prevents the escape of steam into the fire room and protects the interior parts from dirt or other foreign matter. It is made in the C. I.-10 Style (cast iron); C. S.-10 Style (cast steel); high relieving capacity, as charted on page 7, also C. I. M.-10 Style (cast iron); C. S. M.-10 Style (cast steel); moderate relieving capacity, as charted on page 9. Ashton Valves have been approved by the United States Board of Supervising Inspectors of Steam Vessels, Bureau of Steam Engineering United States Navy Department, and fully conform to the requirements of the American Society of Mechanical Engineers' Boiler Code, and with all State and City Regulations, and are also registered in the Dominion of Canada. They are regularly constructed with A. S. M. E. extra heavy standard inlet flanges (drilled only when specified) and with female threaded outlets.

For marine service we recommend valves with moderate relieving capacity as charted on page 9 and when so specified valves will be furnished with flanged outlets. For dimensions see page 11; part list, page 12.

Excessive length, or reduced outlet piping should be avoided, to eliminate possible back pressure on the valve, which will interfere with the pop control.

Size Valve, inches	2	2½	3	3½	4	4½
Diameter of Inlet Flange, inches	6½	7½	8¼	9	10	10½
Outlet (Standard Pipe Size), inches	3	3½	4	4½	5	6
Weight, pounds	95	105	140	160	210	260

PRICES ON APPLICATION

The Ashton Pop Safety Valves

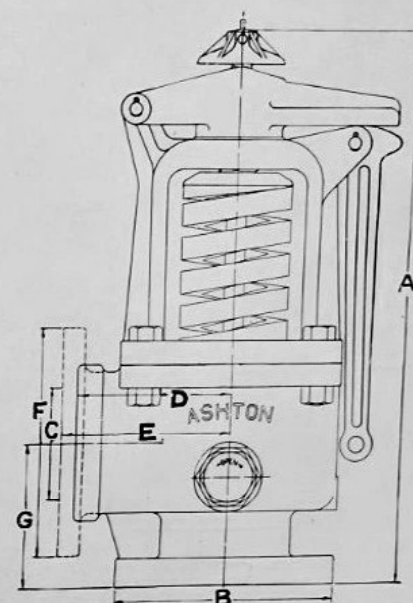
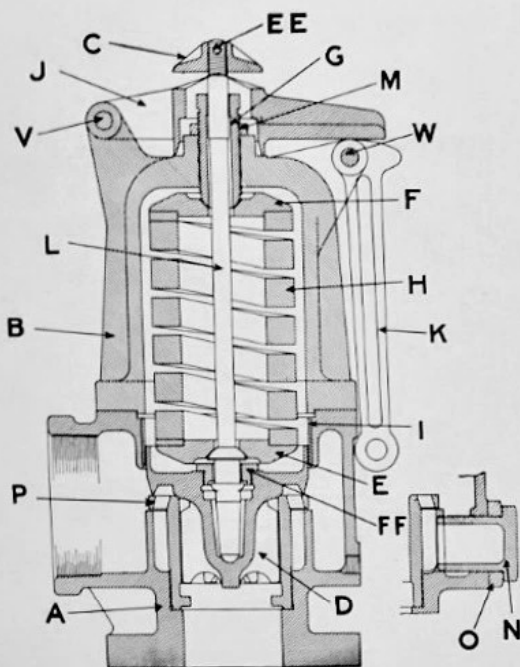


TABLE OF DIMENSIONS

Ashton C. I.; C. I.-10; C. S.; C. S.-10; C. I. M., C. I. M.-10, C. S. M. and C. S. M.-10 Valves

Size	A	B	C	D	E	F	G
2	18 7/8	6 1/2	3	5	5 3/4	7 1/2	4 5/8
2½	19 3/8	7 1/2	3 1/2	5 1/2	6 3/8	8 1/2	5 1/4
3	21 7/8	8 1/4	4	5 5/8	6 7/8	9	5 5/8
3½	21 7/8	9	4 1/2	6 1/8	6 3/4	9 1/4	5 3/4
4	24 1/8	10	5	7	7 5/8	10	6 1/8
4½	25 3/4	10 1/2	6	7 1/2	8 1/2	11	6 1/2

The Ashton Pop Safety Valves



LIST OF PARTS

Ashton C. I., C. I.-10, C. I. M., C. I. M.-10; C. S., C. S.-10, C. S. M. and C. S. M.-10 Valves

Name of Part	Letter
Body	A
Head	B
Cap	C
Cap Lock Nut	
Wing Valve { Bronze	D
Nickel	
Wing Valve Lock Nut	FF
Bottom Disc	E
Top Disc	F
Pressure Screw	G
Spring	H
Head Ring	I
Fork	J
Lever	K
Spindle	L
Spindle Key	EE
Spindle (For Lock Attachment)	
Pressure Screw Check Nut	M
Regulator { Bronze	N
Nickel	
Regulator Check Nut	O
Seat Bushing { Bronze	P
Nickel	
Fork Pin	V
Lever Pin	W
Body Bolts and Nuts	
Data Plate	

In ordering new parts, it is necessary to specify size of valve, style number, name of part and letter, also serial number of valve, and if new springs are ordered, the working pressure.

The Ashton Safety Valve Yokes



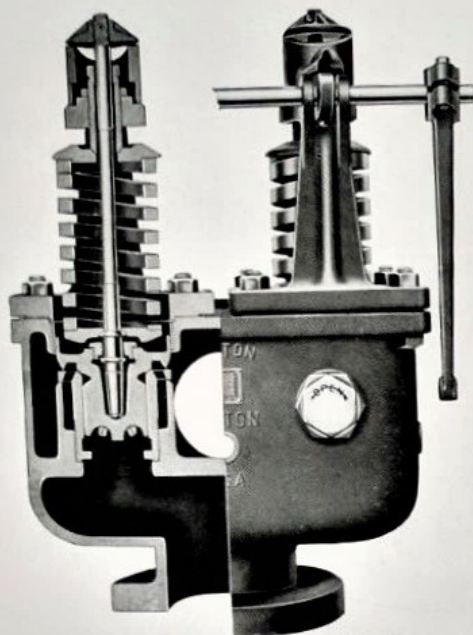
11A Style

These Yokes are of the same grade of cast iron as the Ashton Cast Iron Valves, are of extra heavy construction and designed for 300 pounds. The flanges are faced, and when specified on order, are drilled A. S. M. E. extra heavy standard (without extra charge).

We are prepared to furnish yokes of cast steel, for use with the Ashton Cast Steel Valves suitable for higher pressures. When so ordered valves will be mounted on yokes, at an extra charge.

Size, inches	2	2½	3	3½	4	4½
Diameter Top Flanges, inches	6½	7½	8¼	9	10	10½
Diameter Bottom Flange, inches	8¼	9	10½	11	12½	14
Diameter Inlet Hole, inches	3	3½	4¼	5	6	6¾
Distance between centers of Top Flanges, inches	10	11¼	12¾	13¼	14½	16½
Distance between face of Top and Bottom Flanges, inches	6½	7½	8½	9¾	10	10½
Weight, pounds, Cast Iron	52	70	105	127	178	199

PRICES ON APPLICATION



D.I.-11 Style (Cast Iron)
For Saturated Steam
Maximum Pressure, 300 pounds

The Ashton Duplex Pop Safety Valves

WITH EXPOSED SPRINGS

D.I.-Style
(Without Rocker Shaft)

D.I.-11 Style
(With Rocker Shaft)

For Saturated Steam

Stationary and Marine Boilers

SPECIFICATIONS

Body and Heads	Cast Iron
Seat Bushings	Bronze or Nickel
Wing Valves	Bronze
Pop Regulators	Bronze
Springs	Crucible Steel
Spindles	Steel
Forks and Levers	Malleable Iron

The Ashton Duplex Valve body is a one-piece casting, requiring only one connection to the boiler, and has a single outlet connection, thus minimizing the possible leakage at boiler connection joints. It is considered good engineering practice to use duplex valves on boilers, especially of the water tube type, for the single boiler connection economizes space.

The Ashton Valves are especially adapted for marine service, and have been approved by the United States Board of Supervising Inspectors of Steam Vessels, Bureau of Steam Engineering United States Navy Department, and when so specified are made to conform to Lloyd's Register. When specially ordered they (D. I.-11 Style) are fitted with rocker shaft single lever for lifting the valves from their seats in succession, as illustrated above, for which there is an extra charge.

These valves are of the moderate capacity type with the inlet and outlet openings both of the same size and are regularly constructed with A. S. M. E. extra heavy standard inlet and 125-pound standard outlet flanges, drilled only when so specified. For pressures in excess of 150 pounds we recommend nickel seat bushings.

Excessive length, or reduced outlet piping should especially be avoided, to eliminate possible back pressure which will interfere with the pop control.

Relieving capacity of these valves is charted on page 16; dimensions on page 17; and part list on page 18.

Size Valve, inches	2	2½	3	3½	4	4½
Diameter of Inlet Flange, inches	8¼	9	10½	11	12½	14
Diameter of Outlet Flange, inches	7½	8½	9¼	10	11	12½
Weight, pounds (approximate)	250	330	410	420	460	580

Orders should always specify style number of valve, size and maximum working pressure, also rocker shaft if required, and, wherever possible, the total heating surface and maximum rating of boiler. When rocker shaft is desired order should specify on which end lever is to be placed when facing outlet.

PRICES ON APPLICATION

The Ashton Duplex Pop Safety Valves

WITH ENCLOSED SPRING HEADS

D.I.-10 Style

Cast Iron (Moderate Capacity)

For Saturated Steam,

Marine and Stationary Boilers

SPECIFICATIONS

Valve Parts	C. I. Style (cast iron) For Saturated Steam Maximum Pressure, 300 lbs.
Body and Heads	Cast Iron
Seat Bushings	Bronze or Nickel
Wing Valves	Bronze
Pop Regulators	Bronze
Springs	Crucible Steel
Spindles	Steel
Forks and Levers	Malleable Iron



D.I.-10 Style (Cast Iron)
With Enclosed Spring Heads
For Saturated Steam
Maximum Pressure 300 Pounds

The Ashton D.I.-10 Style Duplex Valve above illustrated is made with enclosed spring head, and is particularly desirable for marine service.

The enclosed head prevents the escape of steam into the fire room and protects the interior parts from dirt or other foreign matter; otherwise the construction is the same as the D. I. Style Duplex Valve, as described on page 14. Ashton Valves have been approved by the United States Board of Supervising Inspectors of Steam Vessels, Bureau of Steam Engineering United States Navy Department. When so specified these valves are made to conform to Lloyd's Register; when specially ordered are fitted with rocker shaft single lever for lifting the valves from their seats in succession, for which there is an extra charge, and should be ordered as D. I.-12 Style.

The Ashton D. I.-10 and D. I.-12 Style Valves are of the moderate capacity type with inlet and outlet openings both of the same size, and are regularly constructed with A. S. M. E. 250-pound standard inlet and 125-pound standard outlet flanges, drilled only when so specified. For pressures in excess of 150 pounds we recommend nickel seat bushings.

Excessive length, or reduced outlet piping, should especially be avoided to eliminate possible back pressure which will interfere with the pop control. Relieving capacity is charted on page 16; dimensions on page 17; and part list on page 18.

Size Valve, inches	2	2½	3	3½	4	4½
Diameter of Inlet Flange, inches	8¼	9	10½	11	12½	14
Diameter of Outlet Flange, inches	7½	8½	9¼	10	11	12½
Weight, pounds (approximate)	260	345	430	450	480	510

Orders should always specify style number of valve, size and maximum working pressure, also rocker shaft if required, and whenever possible the total heating surface and maximum rating of boiler. When rocker shaft is desired order should specify on which end lever is to be placed when facing outlet.

PRICES ON APPLICATION

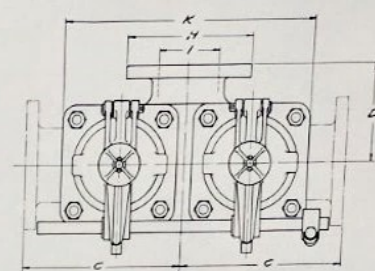
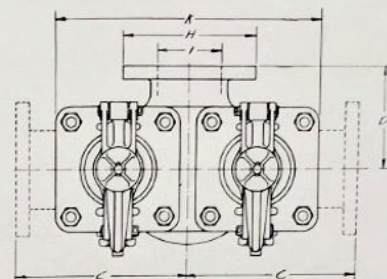
The Ashton Duplex Pop Safety Valves

Discharge Capacities of Ashton D. I., D. I.-10, D. I.-11
and D. I.-12 Style Pop Safety Valves in pounds
of steam per hour

Lbs. Pressure per Square Inch Gage	Size					
	2 Inches	2½ Inches	3 Inches	3½ Inches	4 Inches	4½ Inches
15	2,200	2,900	4,000	5,100	6,100	6,800
20	2,600	3,400	4,600	5,900	7,100	8,000
25	3,000	3,900	5,300	6,800	8,100	9,100
30	3,300	4,400	6,000	7,600	9,100	10,200
35	3,700	4,900	6,600	8,500	10,100	11,400
40	4,100	5,400	7,300	9,300	11,100	12,500
45	4,400	5,900	7,900	10,200	12,100	13,600
50	4,800	6,400	8,600	11,000	13,100	14,800
55	5,200	6,900	9,300	11,900	14,100	15,900
60	5,600	7,400	9,900	12,700	15,200	17,000
65	5,900	7,800	10,600	13,400	16,200	18,200
70	6,300	8,000	11,200	14,100	17,200	19,300
75	6,500	8,300	11,900	14,900	18,000	20,600
80	6,700	8,700	12,400	15,600	18,800	21,400
85	6,800	9,000	12,900	16,100	19,600	22,200
90	7,000	9,300	13,300	16,500	20,400	22,900
95	7,200	9,600	13,700	16,900	21,000	23,600
100	7,400	10,000	14,000	17,400	21,000	24,300
105	7,600	10,000	14,200	17,900	21,300	25,300
110	7,800	10,400	14,800	18,400	22,000	26,100
115	8,000	10,700	15,300	19,000	22,800	27,000
120	8,300	11,200	16,000	19,800	23,800	28,000
125	8,600	11,500	16,600	20,500	24,600	29,000
130	8,900	11,900	17,200	21,200	25,500	30,100
135	9,200	12,300	17,800	21,900	26,400	31,200
140	9,500	12,700	18,400	22,600	27,300	32,100
145	10,000	13,200	18,900	23,400	28,100	33,200
150	10,200	13,600	19,500	24,100	29,000	34,400
155	10,500	14,000	20,000	24,800	29,900	35,300
160	10,800	14,400	20,700	25,500	30,700	36,300
165	11,000	14,800	21,300	26,300	31,600	37,400
170	11,400	15,300	21,900	27,000	32,500	38,400
175	11,700	15,600	22,500	27,900	33,400	39,400
180	12,000	16,000	23,100	28,500	34,300	40,500
185	12,300	16,500	23,700	29,300	35,200	41,500
190	12,600	16,900	24,300	29,900	36,000	42,600
195	13,000	17,300	24,900	30,600	37,000	43,600
200	13,300	17,900	25,500	31,400	37,900	44,700
205	13,500	17,900	25,800	31,700	38,300	45,200
210	13,500	18,000	26,000	32,100	38,700	45,700
215	13,600	18,200	26,300	32,500	39,100	46,300
220	13,600	18,400	26,600	32,900	39,600	46,900
225	13,800	18,600	26,900	33,300	40,000	47,500
230	14,000	18,800	27,500	33,900	40,900	48,400
235	14,200	19,200	28,000	34,600	41,700	49,400
240	14,500	19,700	28,000	35,300	42,600	50,300
245	14,800	20,000	29,100	36,000	43,400	51,400
250	15,000	20,200	29,700	36,500	44,000	52,400

The Ashton D. I., D. I.-10, D. I.-11 and D. I.-12 Style (cast iron) Valves are recommended for pressures up to and including 300 pounds and relieving capacities for pressures above 250 pounds will be furnished on application. To figure the discharge of FREE AIR in cubic feet per minute multiply charted values by .24.

The Ashton Duplex Pop Safety Valves



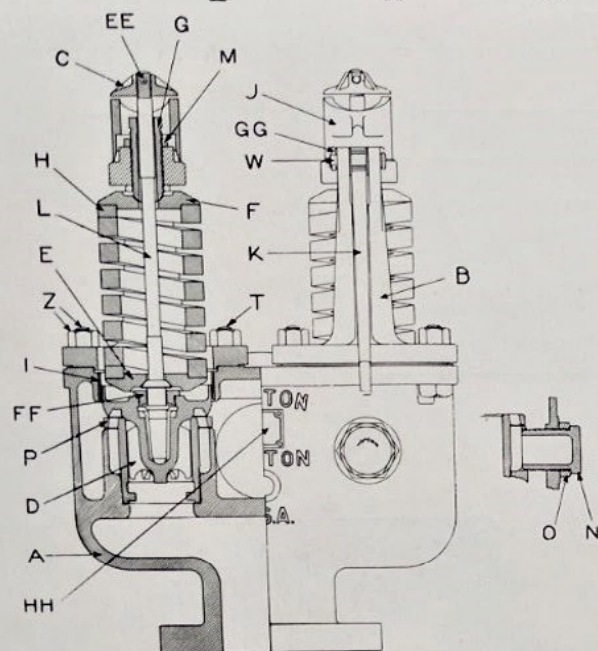
D. I. Style (Duplex)
With Exposed Springs
With Double Cam Levers

D. I.-12 Style (Duplex)
With Enclosed Springs
With Rocker Shaft Single Lever

TABLE OF DIMENSIONS
Ashton D. I., D. I.-10, D. I.-11 and D. I.-12 Valves

Size	A	B	C	D	E	F	G	H	I	K
2	21¼	6 ⅜	9¼	5 11/16	4¼	8¼	27/8	7½	27/8	14
2½	23½	7 1/16	10 1/16	6 3/8	5 1/16	9	3 9/16	8½	3 9/16	15 3/4
3	27½	9½	11 1/16	7 1/16	6 1/4	10½	4½	9¼	4½	18 3/8
3½	26¾	8 7/8	12 1/16	7½	6 5/8	11	5	10	5	20
4	29¼	9½	14 1/8	8	7 1/16	12½	5 1/16	11	5 1/16	22 3/8
4½	31	10½	14 3/8	8 1/16	8¼	14	6 3/8	12½	6 3/8	22 3/4

The Ashton Duplex Pop Safety Valves



LIST OF PARTS

Ashton D. I., D. I.-10, D. I.-11 and D. I.-12 Valves

Name of Part	Letter
Body	A
Head	B
Cap	C
Cap Lock Nut	
Wing Valve { Bronze	D
Nickel	
Wing Valve Lock Nut	FF
Bottom Disc	E
Top Disc	F
Pressure Screw	
Spring	H
Head Ring	I
Fork	J
Lever	K
Spindle	L
Spindle Key	EE
Spindle (For Lock Attachment)	
Pressure Screw Check Nut	M
Regulator	N
Regulator Check Nut	O
Seat Bushing { Bronze	P
Nickel	
Fork Pin	W
Lever Pin	Z
Body Bolts and Nuts	HH
Data Plate	T
Studs	GG
Cotter Pins	
Rocker Shaft	
Cam	
Key	
Rocker Shaft Bushing	

In ordering new parts, it is necessary to specify size of valve, style number, name of part and letter, also serial number of valve, and if new springs are ordered, the working pressure.

The Ashton High Capacity Pop Safety Valves

(FOR HIGH PRESSURES)



C. S. H. Style with Outside Spring

SPECIFICATIONS

Valve Parts	For Saturated or Superheated Steam Maximum Pressure, 600 lbs.
Body and Head	Cast Steel
Seat Bushing	Nickel
Wing Valve	Nickel
Pop Regulators	Nickel
Spring	Crucible Steel
Spindle	Steel
Fork and Lever	Malleable Iron

The Ashton C. S. H. Style Valve is specially designed and constructed for extreme high temperature and pressures. The spring is constructed of a special alloy steel to withstand high temperatures, and being wholly outside the valve is not exposed to the steam.

This valve fully conforms to the requirements of the American Society of Mechanical Engineers' Boiler Code and with all State and City Regulations. It is constructed with inlet and outlet flanges to individual requirements and specifications. This valve is made only in the 4-inch size, and has a relieving capacity of 35,000 pounds of steam per hour at pressure of 400 to 600 pounds per square inch.

DIMENSIONS

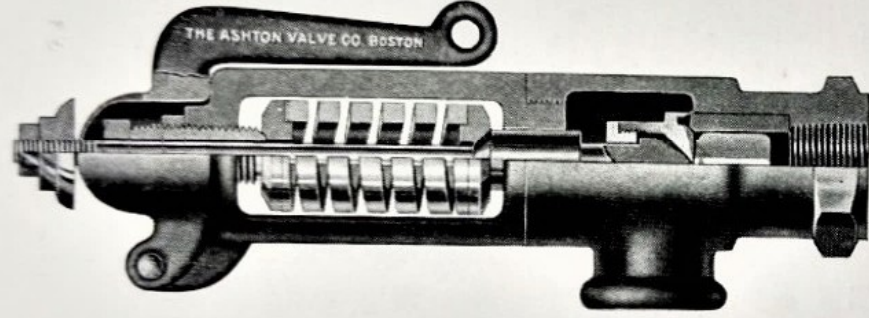
Height over All	31 inches
Distance from Center of Valve to Face of Outlet Flange	7 7/8 inches
Distance from Face of Inlet Flange to Center Line of Outlet	8 1/8 inches
Inlet Diameter	4 inches
Outlet Diameter	5 inches
Weight	225 pounds

PRICES ON APPLICATION

The Ashton Valve Co. Boston

Pop Safety Valves

(STEEL BODY)



No. 17B

The Ashton No. 17B Style Valve is constructed with cast steel body and head with the spring outside the valve body, and is designed particularly for use on superheaters and high-pressure steam boilers for pressures up to 600 pounds per square inch. Both the wing valve and seat bushing are of a nickel alloy.

In sizes above $\frac{3}{4}$ inch this valve is made either with screwed connections, flanged inlet and screwed outlet; or flanged inlet and flanged outlet.

Size Valve, inches.....	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
Diameter Inlet Flange, inches.....	...	...	$\frac{7}{8}$	$\frac{1}{2}$	$\frac{1}{8}$	$6\frac{1}{2}$
Diameter Outlet Flange, inches.....	...	...	4	$\frac{1}{2}$	5	6
Total Height, inches.....	$8\frac{3}{4}$	$8\frac{3}{4}$	$12\frac{1}{2}$	$13\frac{1}{4}$	$13\frac{1}{4}$	$15\frac{1}{4}$

Orders should specify size of valve, style connections, set pressure, and also degrees of superheat.

The

ASHTON

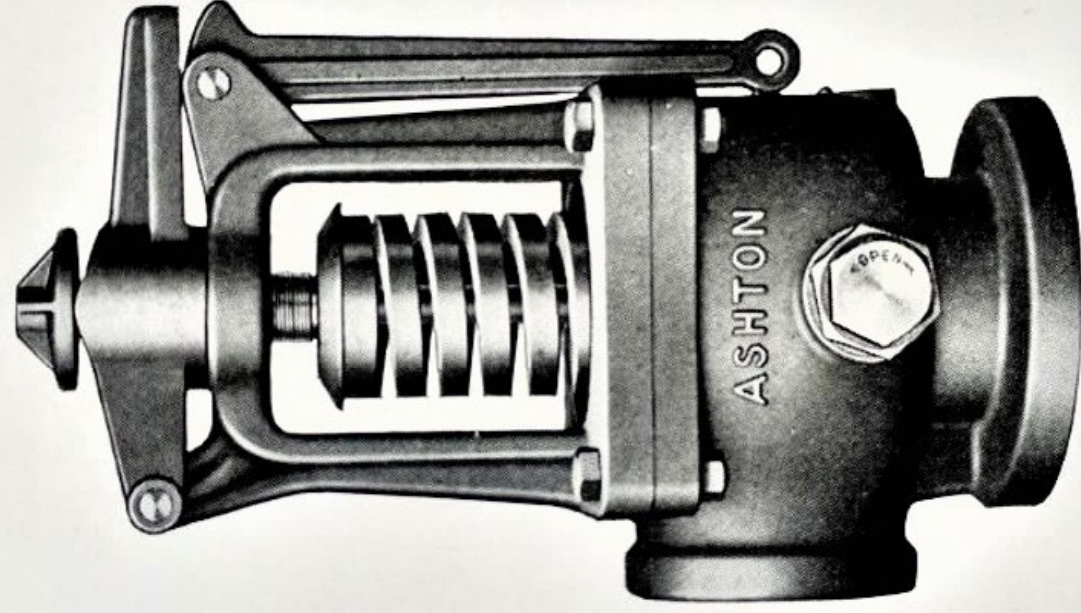
HIGH CAPACITY

"POP"

SAFETY VALVES

CIRCULAR ▼ NUMBER C2

Ashton High Capacity Pop Safety Valves



THE ASHTON VALVE COMPANY

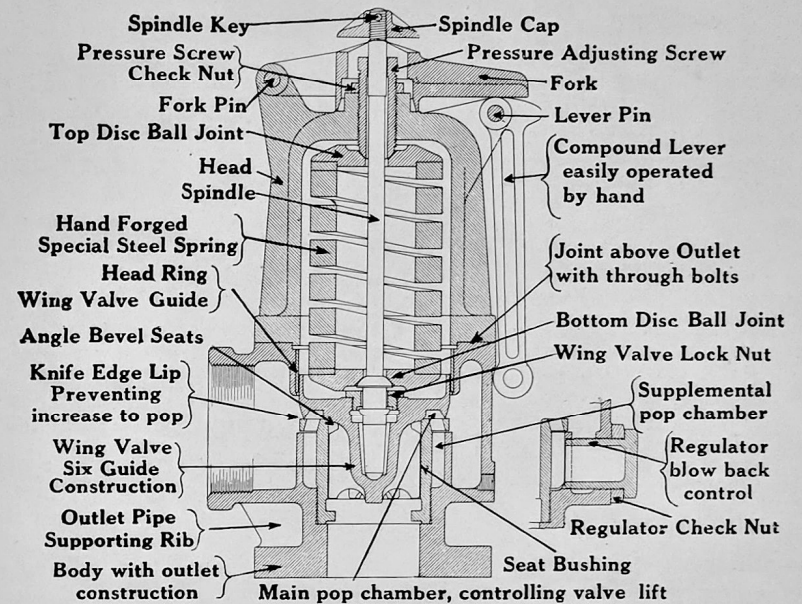
161-179 FIRST STREET, CAMBRIDGE

BOSTON, MASS.

The Ashton High Capacity Pop Safety Valves

OUR LATEST DEVELOPMENT IN POP SAFETY VALVES OF HIGH CAPACITY

Is similar in construction to the spring-actuated valves as manufactured heretofore by this Company. They differ mainly in proportion and weight of materials necessitated by the constant increase in steam pressures and temperatures. The economies obtained in power plants by operating at high pressures are acknowledged by the leading power plant officials, consulting engineers, etc. Water tube boilers of large size with modern furnace design are continuously operated at two and three hundred per cent above normal rating and the safety valves must have sufficient relieving capacity to discharge the great volume of steam. To meet these conditions we have developed the new Ashton High Capacity Pop Safety Valves as illustrated and described on the following pages



Points of Mechanical Superiority

SEAT BUSHING

The lower bushing with 45 degree seat is of extra heavy construction and threaded into the body of the valve. It is of ample length to accommodate the long guides of the wing valve and also forms the inner wall of the supplementary pop chamber, and is not in contact with the valve body above the threaded joint. This construction allows the upper portion of the bushing to expand without interference with or distortion of the seat.

All cast steel valves are fitted with nickel seat bushings which we also recommend for cast iron valves operating at pressures exceeding 150 pounds and for bad water conditions. Bronze seat bushings may be used in the cast iron valves for lower pressures.

WING VALVE, SEAT

The wing valve (or upper seat) is guided in its operation by six wings or guides below the seat and above the seat with top sleeve guide or head ring, assuring perfect alignment.

MAIN POP CHAMBER

The pop or huddling chamber is the annular space formed by the overhanging knife-edge lip over the seat bushing. The wing valve in raising from the lower seat allows a pressure to accumulate in the pop cham-

ber, causing the spring to compress slightly whereby the steam passes out beneath the lip to the atmosphere. This knife-edge pop lip wears down in proportion to the wear on the seat, thereby keeping the outlet of the pop chamber on the same relative proportion to the inlet, giving a steady and unvarying pop which insures long service without adjustment.

SUPPLEMENTAL POP CHAMBER

The supplemental pop chamber is the annular space between the outside of the seat bushing and the valve body and is connected with the pop or huddling chamber by a series of holes around the seat bushing. The proper pressure may be maintained in both chambers when the valve is in operation by the adjustment of the two outside plug pop regulators opposite each other on the sides of the valve.

BACK PRESSURE

Under ordinary conditions these valves are not affected by back pressure; the head of the wing valve makes a telescopic joint in the head ring, assuring a sustained lift and making it possible to guarantee the relieving capacities on pages 7 and 9. The spring is thereby protected from the steam discharge when the valve is operating.

POP OR BLOW-DOWN REGULATION

High steam pressures emphasize the importance of efficient regulation in the operation of a safety valve. An excessive loss of steam, or reduction of the boiler pressure more than necessary to close the valve, is wasteful. Each valve is equipped with two plug pop regulators, located opposite each other on the outside of the valve body casting. They are always accessible and may be adjusted with a wrench, without danger even when the valve is blowing. The regulators may be removed from the body casting and the threads lubricated with graphite while the valve is under pressure and seated.

EXPOSED SPRINGS

The exposed spring type construction has many advantages for either saturated or superheated steam service. High temperatures cannot weaken the spring, it being protected from excessive heat by the head ring, and also exposed to the atmosphere.

The durability and efficiency of a safety valve depends largely upon the spring; therefore, the springs in Ashton Valves are of generous proportions of special steel and are subjected to the most rigid tests for elasticity and endurance.

ALIGNMENT

Proper alignment of all parts is most essential in safety valve construction. The wing valve must have an absolute vertical lift and all undue friction eliminated. This is insured by the six guides on the wing valve; the centering of spindle in bottom of wing valve well below the seat level; and the ball joint contacts of the spring discs with the spindle and pressure screw.

The head ring, forming a top guide for the wing valve and seat bushing, is fitted into the valve body in perfect alignment.

LIFTING DEVICE

It is not always convenient or advisable to increase the boiler pressure to blow a safety valve to ascertain if it is in perfect working order. The

powerful cam lever lifting device, when operated by hand, lifts the wing valve from the bushing seat when the pressure is far below the blowing point of the valve.

We recommend, in testing or lifting a valve by the hand lever, that the valve be held open a sufficient length of time to thoroughly clean the side walls of the boiler nozzle and valve of the scale and other foreign matter that may become lodged between the seats.

ENLARGED OUTLET

High capacity safety valves require a larger area of discharge outlet than inlet, owing to the increased volume of steam at atmospheric pressure. Therefore Ashton High Capacity Valve outlets are two pipe sizes larger than the inlet, i.e., a valve $3\frac{1}{2}$ inches in diameter at the seat has a $4\frac{1}{2}$ -inch outlet.

The discharge, therefore, passes to the atmosphere without creating a back pressure in the valve body, and a far greater relieving capacity is assured.

OUTLET (Reinforcement)

A rib or gusset is cast on the underside of the valve outlet above the inlet flange to provide a support for the weight of the outlet piping, and to protect the valve body from undue strains which might otherwise distort the seat and cause the valve to leak. A short nipple, elbow and four feet of vertical pipe is usually sufficient to pass the requirements of the American Society of Mechanical Engineers' Boiler Code. If exhaust piping of greater length is necessary it should be supported independent of the valve. The discharge pipe to all safety valves should be equal to the full area of the valve outlet, for, if reduced, the proper functioning of the valve is seriously affected, particularly the relieving capacity, which is greatly reduced.

BASE OUTLET CONSTRUCTION

Both inlet and outlet are in the body casting permitting taking the valve apart for regrinding or cleaning without disturbing the outlet piping.

BOLTS AND NUTS

Through bolts and nuts are used for assembling the valve head to the body, eliminating the annoyance frequently encountered in breaking cap bolts or studs.

CAPACITY

Many of the large power plants at the present time are operating their boilers far in excess of the normal rating and it is, therefore, necessary that the safety valve equipment be of sufficient capacity to discharge all of the steam that may be generated. Safety valves of low or moderate relieving capacity are therefore impractical for such installations on account of the number of valves that would be required to give the necessary relief due to the limited number of safety valve nozzles. Charts giving the relieving capacities of Ashton Valves in the several sizes and styles for the various pressures are detailed on pages 7 and 9. These capacities are figured according to the formula authorized by the American Society of Mechanical Engineers' Boiler Code and are from actual boiler tests.