

# CASH VALVES CRYOGENIC VALVES AND CONTROLS

## A-36 PRESSURE REDUCING OR PRESSURE BUILD-UP SERVICE

### Construction

Brass forged body and bronze spring chamber; bronze trim and diaphragms; PTFE seat disc and gaskets; stainless steel pressure spring. All parts are commercially cleaned for cryogenic service.

**Note:** Also available in stainless steel and special construction for hi-purity service. Contact your sales representative.

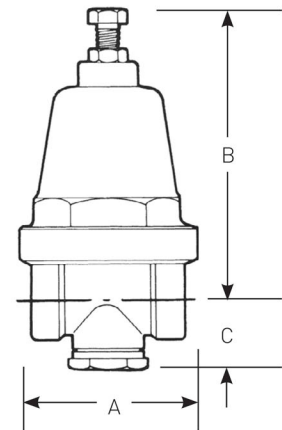
Temperature rating: +150°F to -320°F (339K to 78K)  
 Maximum initial pressure: 600 psi (42.18 kg/cm<sup>2</sup>)

### REDUCED PRESSURE RANGES

Maximum working ranges	
psi	(kg/sq cm)
10-30	(0.70-2.11)
20-50	(1.41-3.52)
40-80	(2.81-5.62)
75-150	(5.27-10.55)
100-250	(7.03-17.58)
High pressure construction only	
200-400	14.06-28.12

### DIMENSIONS

Size	Dimensions				Shipping weight				
	A		B				C		
inches	(mm)	inches	(mm)	inches	(mm)	inches	(mm)	lbs	(kgs)
3/8	(10)	2 7/16	(61.91)	4 1/2	(114.30)	1	(25.40)	2 1/2	(1.13)
3/8	(10)	2 7/16	(61.91)	4 1/2	(114.30)	1	(25.40)	2 1/2	(1.13)



## A-401 PRESSURE REDUCING OR PRESSURE BUILD-UP SERVICE

### Construction

Bronze body and bronze spring chamber; bronze trim and neoprene/nylon diaphragms; FKM seat disc and gaskets; stainless steel pressure spring. All parts are commercially cleaned for cryogenic service.

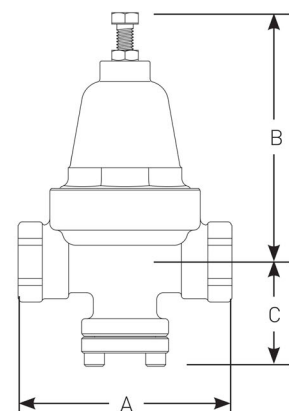
Temperature rating: +150°F to -320°F (339K to 78K)  
 Maximum initial pressure: 600 psi (42.18 kg/cm<sup>2</sup>)

### REDUCED PRESSURE RANGES

Maximum working ranges	
psi	(kg/sq cm)
20 to 60	(1.41 to 4.22)
40 to 80	(2.81 to 5.62)
75 to 125	(5.27 to 8.79)
100 to 250	(7.03 to 17.58)
200 to 400	(14.06 to 28.12)
High pressure construction only	
300 to 600	(21.09 to 42.18)

### DIMENSIONS

Size	Dimensions				Shipping weight				
	A		B				C		
inches	(mm)	inches	(mm)	inches	(mm)	inches	(mm)	lbs	(kgs)
1/2	(15)	4	(101.6)	4.64	(117.80)	1.95	(49.6)	4 1/2	(1.68)



# CASH VALVES CRYOGENIC VALVES AND CONTROLS

## FINAL LINE CIRCUIT (HOUSE LINE)

Liquid is forced into the vaporizer through the liquid line by the action of the vapor pressure in the tank. The liquid in the vaporizer is warmed by ambient air (or sometimes by steam) and changed into gas, which is then distributed through the final-line regulator. As the gas is at or near ambient temperature, the diaphragm and seat in the regulator can be furnished in standard rubber materials.

## A-31 PRESSURE REDUCING VALVE FOR FINAL-LINE GAS SERVICE

### Construction

Brass forged body, brass piston; NBR seat disc and diaphragm; aluminum spring chamber; stainless steel spring. All parts are commercially cleaned for oxygen service. Standard valve has side inlet-side outlet connections. Also available with side gauge connections.

Temperature rating: +150°F to 0°F (339K to 255K)  
 Maximum initial pressure: 400 psi (28.12 kg/cm<sup>2</sup>)

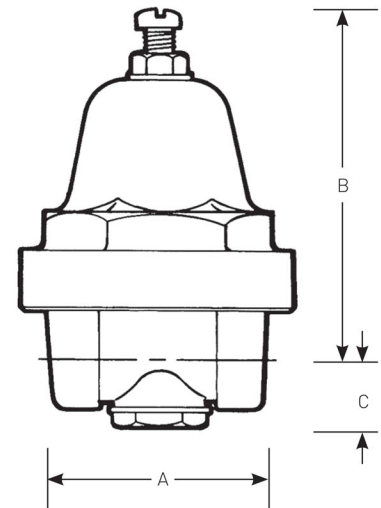


### REDUCED PRESSURE RANGES

Maximum working ranges	
psi	(kg/sq cm)
2-25	(0.14-1.76)
15-65	(1.05-4.57)
40-100	(2.81-7.03)
50-150	(3.52-10.55)
75-175	(5.27-12.30)

### DIMENSIONS

Size		Dimensions						Shipping weight	
		A		B		C			
inches	(mm)	inches	(mm)	inches	(mm)	inches	(mm)	lbs	(kgs)
1/4	(8)	2 1/4	(57.15)	3 3/16	(80.96)	5/8	(15.88)	1 1/8	(0.51)



# CASH VALVES CRYOGENIC VALVES AND CONTROLS

## A16, A31, A31S, A31VR, A32, A32S SELECTION GUIDE

Example:	A16-	A	W	S	A	S	B	B	F	02	-	D	1
<b>Model</b>													
<b>A16-</b>	A16												
<b>A31-</b>	A31												
<b>A31S</b>	A31S												
<b>A31V</b>	A31VR												
<b>Size</b>													
<b>Y</b>	1/8" [A31, A31S]												
<b>A</b>	1/4" [A16, A31, A31S, A31VR, A32, A32S]												
<b>B</b>	3/8" [A16, A31, A31S, A32]												
<b>Service</b>													
<b>W</b>	Water/air												
<b>C</b>	Cryogenic (A32Z, A32E)												
<b>F</b>	Final line gas [A31]												
<b>V</b>	Vacuum service [A32VR]												
<b>Body/connection style</b>													
<b>S</b>	Side inlet/side outlet - straight thru [A16, A31, A32]												
<b>R</b>	Side inlet/side outlet - straight thru w/ right side gauge port [A31S]												
<b>L</b>	Side inlet/side outlet - straight thru w/ left side gauge port [A16, A31S]												
<b>B</b>	Side inlet/bottom outlet w/ straight thru gauge connection [A31VR]												
<b>Spring chamber material</b>													
<b>A</b>	Aluminum spring chamber [A16, A31, A31S, A32, A32S]												
<b>Z</b>	Brass spring chamber [A31, A32, A31VR only]												
<b>C</b>	Brass chrome plate spring chamber [A32 only]												
<b>B</b>	Brass bead blasted spring chamber [A32Z only]												
<b>Spring chamber style</b>													
<b>S</b>	Standard												
<b>N</b>	Non-vented												
<b>P</b>	Panel mount												
<b>Diaphragm material</b>													
<b>B</b>	Buna-N [A16, A31, A31S, A32S]												
<b>L</b>	Buna-N w/ Teflon liner [A31, A31S]												
<b>G</b>	316 SST [A32]												
<b>N</b>	Neoprene [A31, A31S]												
<b>T</b>	Neoprene w/ Teflon liner [A31, A31S]												
<b>Z</b>	Bronze [A32 only]												
<b>R</b>	EPR [A31VR, A32S]												
<b>F</b>	EPR w/ Teflon liner [A31VR]												
<b>Seat material</b>													
<b>B</b>	Buna-N [A16, A31, A31S, A32S]												
<b>T</b>	Teflon [A31, A32, A32S]												
<b>V</b>	Viton [A31, A31S]												
<b>S</b>	Silicone [A31VR]												
<b>K</b>	Kalrez [A31VR]												
<b>Pressure screw style</b>													
<b>F</b>	Fillister [A16, A31, A31S, A32, A32S]												
<b>T</b>	T-handle [A31, A31S]												
<b>H</b>	Hex [A31, A31S, A32]												
<b>K</b>	Knurled [A31VR]												
<b>W</b>	Handwheel plastic [A21]												
<b>Variations</b>													
<b>01</b>	Standard												
<b>11</b>	Standard variation w/ inlet screen [A31, A32]												
<b>02</b>	Balanced piston [A31, A31S]												
<b>12</b>	Balanced piston w/ inlet screen [A31]												
<b>Design revision</b>													
<b>(-)</b>	Original design												
<b>Spring material</b>													
<b>D</b>	Carbon steel (Industrial or final line gas service only)												
<b>E</b>	Stainless steel												
<b>Spring range</b>													
Refer to table below													

### STANDARD SPRING RANGES (psig)

Spring Material	Type	1	2	3	4	5	6	7	8	9
Steel	A16	2 - 30	10 - 50	25 - 90	80 - 120	100 - 180	----	----	----	----
	A31, A31S, A32	2 - 30	10 - 50	30 - 90	80 - 120	100 - 180	----	----	----	----
	A31VR (in/hg)	0 - 15	10 - 30	----	----	----	----	----	----	----
SST	A31	2 - 15	2 - 25	15 - 65	40 - 100	50 - 150	75 - 175	100 - 250	----	----
	A32	2 - 15	2 - 25	15 - 65	40 - 100	50 - 150	75 - 175	100 - 250	200 - 400	300 - 600
	A31S	2 - 15	----	----	----	----	----	----	----	----