

# CASH VALVES CRYOGENIC VALVES AND CONTROLS

## COMBINATION PRESSURE BUILDER-ECONOMIZER

PBE Series regulators combine the pressure building and economizer functions into one unit. The economizer phase starts at the point at which the pressure build level is reached, assuring a smooth transition between the two functions. For sizing information, please request engineering data sheets 1074 (PBE-1A) and 1077 (PBE-2).

### PBE-1A COMBINATION PRESSURE BUILDER-ECONOMIZER

#### Construction

Forged brass body and spring chamber; brass and stainless steel trim; PTFE/Armalon or bronze diaphragm; stainless steel pressure spring. All parts are commercially cleaned for oxygen service.

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

#### PRESSURE RANGES

Max. working pressure	
psi	(kg/sq cm)
50-175	(3.52-12.32)
150-350	(10.55-24.61)

#### DIMENSIONS

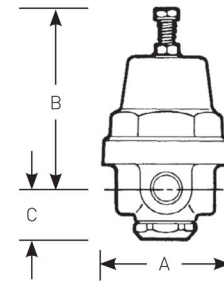
Size	Dimensions						Shipping weight		
	inches	(mm)	inches	(mm)	inches	(mm)	inches	(mm)	lbs
¼	(8)	2¼	(57.15)	3½	(79.38)	7/8	(22.29)	1.4	(0.65)

Low pressure - ranges to 175 psig

High pressure - ranges 150-350 psig

#### CAPACITY INFORMATION

Inlet - psig	Outlet - psig	Air (SCFM)	
		10% Droop	20% Droop
25	15	4.1	5.8
	20	4.3	7.0
45	30	4.6	7.6
	50	7.0	11.1
75	65	8.0	12.0
	50	8.3	14.7
125	75	9.4	17.4
	50	9.6	19.4
175	75	11.2	21.6
	100	11.9	22.8
	150	39.3	56.7
225	200	31.1	48.0
	150	42.4	66.7
275	225	40.2	64.5
	150	46.1	75.5
325	275	44.0	75.3
	275	47.8	79.2
475	400	47.8	73.9
	275	55.2	96.0
575	500	54.6	89.6



# CASH VALVES CRYOGENIC VALVES AND CONTROLS

## PBE-2 COMBINATION PRESSURE BUILDER-ECONOMIZER

### Construction

Bronze body, spring chamber, trim and diaphragms; PTFE seat and diaphragm gasket; stainless steel economizer seat; stainless steel spring, nuts and bolts. All parts are commercially cleaned for oxygen service.

Temperature rating: +150°F to -320°F  
(339K to 78K)

Maximum initial pressure: 400 psi  
(28.12 kg/cm<sup>2</sup>)

### PRESSURE RANGES

Max. working pressure	
psi	(kg/sq cm)
10-30	(0.70-2.11)
20-75	(1.41-5.27)
25-125	(1.76-8.79)
100-200	(7.03-14.06)
150-250	(10.55-17.58)
200-400*	(14.06-28.12)

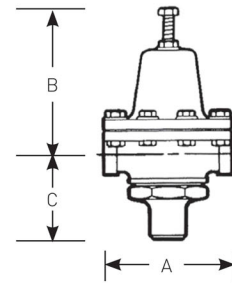
\*Only for stainless steel body

### DIMENSIONS

Size		Dimensions						Shipping weight	
		A		B		C			
inches	(mm)	inches	(mm)	inches	(mm)	inches	(mm)	lbs	(kgs)
1/2	(15)	4 1/2	(114.30)	5 1/4	(133.35)	3	(76.20)	9	(4.08)

### CAPACITY INFORMATION

Inlet - psig	Outlet - psig	Air (SCFM)	
		10% Droop	20% Droop
15	10	8.7	11.0
30	10	9.7	14.9
	20	12.4	22.3
	25	13.7	21.3
55	25	25.8	38.4
	50	25.5	41.9
75	25	27.3	41.2
	65	37.6	55.5
100	50	41.7	64.3
	75	48.5	77.1
125	50	42.5	66.0
	75	54.9	87.2
	100	61.5	95.1
150	125	77.5	114.5
200	125	90.8	140.2
	150	96.4	149.5
250	175	103.1	176.1
	225	119.3	197.0



# CASH VALVES CRYOGENIC VALVES AND CONTROLS

## PBE-5 COMBINATION PRESSURE BUILDER-ECONOMIZER

### Construction

Forged brass body, bronze spring chamber; brass and stainless steel trim; bronze diaphragms; stainless steel pressure spring; graduated adjustment screw. All parts are commercially cleaned for oxygen service.

Temperature rating: +150°F to -320°F  
[339K to 78K]

Maximum initial pressure: 650 psi  
[45.7 kg/cm<sup>2</sup>]

### PRESSURE RANGES

Max. working pressure	
psi	(kg/sq cm)
0 - 30	(0.00 - 2.11)
20 - 50	(1.41 - 3.52)
40 - 80	(2.81 - 5.62)
75 - 150	(5.27 - 10.55)
100 - 275	(7.03 - 19.33)
200 - 350	(14.06 - 24.61)
300 - 600	(21.09 - 42.18)



### DIMENSIONS

Size	Dimensions						Shipping weight			
	inches	(mm)	A		B		C			
			inches	(mm)	inches	(mm)	inches	(mm)	lbs	(kg)
<b>NPTF</b>										
1/2	[15]	5.19	[131.8]	5.23	[132.9]	2.76	[70.2]	7	[3.2]	
1/2	[15]	5.19	[131.8]	5.23	[132.9]	2.76	[70.2]	7	[3.2]	

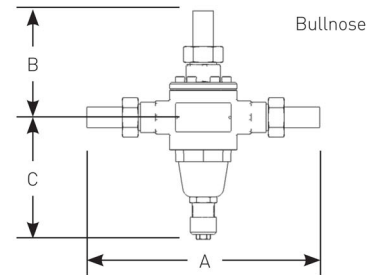
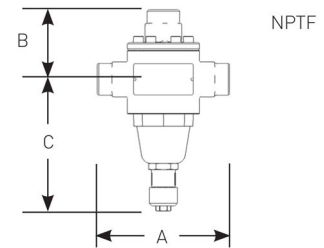
**Note:** 300 to 600 psi range, high pressure  
Ranges to 350 psi, low pressure

<b>Bullnose</b>										
0.839	[21.3]	9.81	[149.2]	5.13	[130.3]	4.48	[113.8]	8	[3.6]	
0.839	[21.3]	9.81	[149.2]	5.13	[130.3]	4.48	[113.8]	8	[3.6]	

**Note:** 300-600 psi range, high pressure  
Ranges to 350 psi, low pressure

### CAPACITY INFORMATION

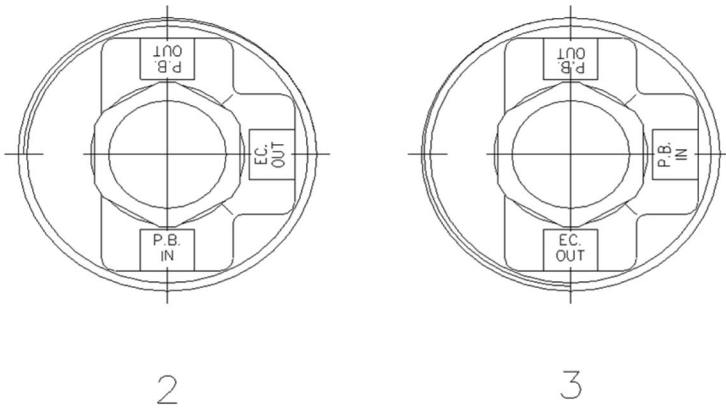
Inlet - psig	Outlet - psig	Air (SCFM)	
		10% Droop	20% Droop
10	2	0.4	0.5
	5	0.4	0.5
30	20	2.7	3.6
	25	3.4	4.8
50	40	8.6	11.5
	40	10.4	13.7
	60	11.3	16.5
100	75	20.9	28.9
	75	29.4	40.9
150	100	39.4	55.6
	125	32.9	48.8
	100	50.5	67.8
200	125	53.3	76.5
	150	55.9	80.4
	125	65.5	90.1
250	150	71.2	99.6
	200	78.5	118.4
	200	94.1	133.3
300	250	94.5	136.8
	300	169.9	258.1
600	500	183.1	298.9



# CASH VALVES CRYOGENIC VALVES AND CONTROLS

## TYPES PBE-1, PBE-2, PBE-5 SELECTION GUIDE

Example:	PBE1	A	Z	3	S	01	-	E	1
<b>Model</b>									
<b>PBE1</b>	PBE-1A valve								
<b>PBE2</b>	PBE-2 valve								
<b>PBE5</b>	PBE-5 valve								
<b>Valve size</b>									
<b>A</b>	1/4" (PBE-1A)								
<b>C</b>	1/2" (PBE-2; PBE-5)								
<b>Body and spring chamber</b>									
<b>Z</b>	Brass/bronze (all)								
<b>G</b>	316 SST (PBE-2)								
<b>Economizer outlet side (see diagram below)</b>									
<b>2</b>	Left hand (PBE-1A)								
<b>3</b>	Right hand; PB out l/h (PBE-1A)								
<b>B</b>	Bottom (PBE-2; PBE-5)								
<b>Option</b>									
<b>S</b>	Standard								
<b>C</b>	with check (PBE-2, PBE-5)								
<b>Variation</b>									
<b>01</b>	Standard								
<b>02</b>	With tube end connections (PBE-5)								
<b>Design revision</b>									
<b>(-)</b>	Indicates original design (PBE-2; PBE-5)								
<b>B</b>	With active economizer (PBE-1A)								
<b>Spring material</b>									
<b>E</b>	Stainless steel								
<b>Spring range</b>	Refer to table below								



## STANDARD SPRING RANGE (psig)

Spring Material	Type	1	2	3	4	5	6	7
SST	PBE-1A	15 - 65	50 - 175	150 - 350	300 - 600	----	----	----
	PBE-2	10 - 30	20 - 75	25 - 125	100 - 200	150 - 250	200 - 400*	----
	PBE-5	0 - 30	20 - 50	40 - 80	75 - 150	100 - 275	200 - 350	300 - 600

\* Only available with PBE-2 SST body