

## **CASH VALVE**

Pressure regulating and back pressure valves overview.



## **Global Performance**

Cash Valve is a leading manufacturer of Pressure Regulating and Back Pressure Valves offering products for Steam, Air/Gas, Liquid, and Cryogenic applications.

Our products range in size from 1/8" to 2" for threaded NPTF\* connections and up through 6 inches for flanged configurations.

Cash Valve offers a wide selection of pressure reductions with a max inlet pressure of 2400 psi and a max out of 750 psi.

Temperatures range between cryogenic up through -320°F to 800°F.

Materials of construction are offered with Bronze, Brass, Stainless Steel, Carbon Steel and Iron depending on your application and diaphragms of various elastomers and metal configurations.

\* NPTF, also referred to as "Dryseal" thread, is designed to provide a more leak-free seal without the use of Teflon tape or other sealant compound. NPTF are interchangeable with NPT and are standard on all Cash Valve products.





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A-31, A-31S



A-360, A-361, A-365

### Small Pressure Regulating Valves For Water, Air, Light Oil

Model: A-31 and A-31S

Features: Reduces high pressure to lower outlet pressure within

close limits. Good for inlet pressures up to 300 psi.

Maximum temperature 180°F (82°C).

Applications: Drinking fountains, bubblers, water coolers,

humidifiers, beverage dispensers, spray paint rigs, air

tools, etc. For water, air, light oil.

Sizes: 1/8", 1/4", 3/8"

Options: Forged brass body. Reduced pressure ranges from 2

to 180 psi. Available with composition seat, BUNA-N, in two or three way valve bodies, side inlet and outlet, and side gauge connection (A-31S). Fillister or hex head adjusting screw standard; also available with wing lock nut or T-handle. Can be furnished with

balanced Piston design.

Request data sheet: VCTDS-00508.

### Small Commercial Pressure Regulating Valves

Model: A-360, A-361, A-365

Features: Recommended for regulating the flow of air, oils, gases

and all non-corrosive fluids. Not for use on steam.

Sizes: 1/4", 3/8", 1/2" (A-365 1/4" and 3/8" only)

Features: The A-360 and A-361 incorporate an aspirating action

to give exceptionally good regulation at high flow rates. Maximum initial pressure, 400 psi. Maximum delivery

pressure, 175 psi.

Maximum temperature, 180°F (82°C).

Type A-360 has one inlet and one outlet; furnished with

forged brass body.

Type A-361 is designed for 3-way or 4-way use. One inlet, three outlets. Gauge tappings 1/4" NPTF; cast

bronze body.

Type A-365 is a special modification of the A-360 for pressures up to 1,100 psi inlet, to 250 psi outlet. Sizes

1/4" and 3/8" only.

Options: Can be furnished with T-handle adjusting screw or

handwheel, or tamper-proof seal cap. Request data sheet: VCTDS-00508.







B-95

### Pressure Regulating Valve

Model:

Features: Automatically maintains, within close limits, the

desired reduced pressure in the service line. Threaded

connections.

Iron body valves are for initial pressures up to 200 psi on water, air, oil, or other liquids and gases, and for initial pressures up to 150 psi on steam. Maximum delivery pressure in all cases is 125 psi. Bronze body valves are for initial pressures up to 400 psi on water, air, oil, etc. and for pressures up to 250 psi on steam. Maximum delivery pressure 150 psi. Teflon® Seat available for temperatures to 350° maximum on

steam.

Applications: Water, air, light oil: spray equipment, dishwashers, air

tanks, food, chemical and industrial process lines. Steam: unit heater, pressing irons, steam cookers,

degreasers, sterilizers, vulcanizers.

Sizes: 1/4", 3/8", 1/2", 3/4", 1", 11/4", 11/2", 2" on NPTF and BSPT

Options: Self-contained, easily cleaned strainer; large area

> diaphragm, renewable and readily accessible working parts; self-cleaning seat. Available with T-handle or handwheel. Can be modified to be used as a cryogenic control valve for liquid or gas service. See CAVMC-0514. Can be furnished with tapped spring chamber for differential and dome loaded

applications.

Request data sheet: VCTDS-00509.

## Pressure Regulating Valve

Model: B-95

Features: Automatically maintains, within close limits, the

desired reduced pressure in the service line. Threaded

connections

Investment cast carbon steel and stainless steel bodies, chambers and bottom plug, with stainless steel trim and a choice of Teflon® or BUNA-N-seating. Initial pressure up to 720 psig, reduced pressures up to 400 psig and the operating temperature range is -320°F to +450°F depending on the trim options.

Applications: Suitable for almost any service. Water, air, light oil, steam: suitable for chemical, food, pulp and paper industry, utility lines, and specialist OEM applications. Cryogenic: suitable for liquid or gas phase in the pressure build circuit of cryogenic storage tanks.

½", ¾", 1" in NPTF and BSPT Threads. Sizes:

Options: Self contained, easily cleaned strainer, large area

> diaphragm, renewable and readily accessible working parts; self cleaning seat; stainless laminated diaphragms and can be furnished for differential and dome loaded use with a tapped spring chamber and a sealed closing cap over the adjusting screw.

Request data sheet: VCTDS-00509.



**BBC** 



E-55

### Pressure Regulating Valve For Heavy Oil

Model: BBC

Features: Direct acting, single seat, spring loaded diaphragm.

Maintains lower pressure within reasonably close

limits.

Iron or bronze bodies, threaded connections, Monel® or BUNA-N diaphragm. Stain less steel piston and seat, both of which are renewable. Standard valve equipped with square head adjusting screw. Maximum initial pressure in iron, 200 psi; maximum reduced pressure, 125 psi. In bronze, maximum initial pressure, 400 psi; maximum reduced pressure,

200 psi.

Applications: Intended for Heavy Oil Service (Bunker C and other

grades), dirty liquids, high viscosity fluids.

Sizes: 3/8", 1/2", 3/4", 1", 11/4", 11/2"

Options: T-handle or handwheel also available.

Request data sheet: VCTDS-00509.

## High Capacity Pressure Regulating Valve

Model: E-55

Features: Aspirated design for close pressure control.

Handles high and variable flow rates well beyond the limitations of ordinary regulators. Bronze body with stainless steel body seat. Brass built in strainer is easily removed for cleaning. Maximum initial pressure, 400 psi. Delivery pressure: maximum 300 psi; minimum 25 psi. Maximum temperature

180°F (82°C).

Applications: All types of water systems; various pneumatic,

cryogenic and hydraulic systems, etc.

Sizes: ½", ¾", 1", 1¼", 1½", 2" in NPTF and BSPT threads.

Options: Can be modified to be used as a cryogenic control

valve for liquid or gas service.

Request data sheet: VCTDS-00510.



G-4

# **Pilot Operated Pressure Reducing**

## Pilot Operated Pressure Reducing Valve

Model: G-4

Features: Self actuated pilot operated pressure reducing valve

providing very high capacity with less <1 psi fall-off. It is very compact in design, offers positive shut off and is available in iron, bronze, cast and stainless steel for pressures up to 600 psi inlet, between 1 and 300 psi outlet and temperatures up to 800°F. Stainless steel seats are used for steam and where a tighter shut off is required for air and gases BUNA-N and TFE® seats are used. Also may be modified for

oxygen gas service.

Applications: Steam heating lines, dryers, ovens, sterilizers, oil

heaters, steam jacketed equipment etc. and any other steam, air and gaseous application.

Sizes: ½", ¾", 1",1¼",1½", 2" threaded 2½", 3", 4", 5", 6"

CL125 flange ½", ¾", 1",1¼",1½", 2", 2½", 3", 4", 5", 6"

CL150 and CL300 flanges.

## MINIMUM PRESSURE DIFFERENTIAL

The pressure differential is the difference between the inlet pressure and outlet (reduced) pressure. The minimum allowable pressure differential varies depending upon both the inlet pressure and the size of the valves

Valve Size	Inlet Pressure Range (psig)	Minimum Pressure Differential (psig)
1/2" - 2"	10-50	5
	50-120	10
	120 plus	15
21/2" - 4"	10-50	10
	50 plus	15
5" - 6"	Refer to sales office	Refer to sales office

PRESSURE TEMPERATURE RATINGS									
Material End Connection			Pressure (psig)						
Description	ASTM Spec.	ANSI Class	0 to 150F	250F	300F	400F	450F	500F	750F
Cast Iron	A126 Class B	CL125 (Iron)	200	175	160	135	125	-	-
Bronze	B62 Alloy 836	CL150 (Bronze)	225	195	180	150	-	-	-
		CL300 (Bronze)	500	425	390	300	-	-	-
		CL250 (Bronze Threaded)	400	365	300	250	-	-	-
Carbon and	A216 GR WCB	CL150 (Steel)	285	245	230	195	185	170	*
Stainless Steel	A351 CF* (304)	CL300 (Steel)	740	660	655	630	615	590	500
		CL250 (Steel Threaded)	600	530	525	500	490	470	460

<sup>\* 570</sup>F for 150 psig







## High Capacity Pressure Regulating Valve

Model: G-60

Features: Self-contained, self actuated, threaded connections.

> Produces exceptional control with high capacity. Its design offers a wide range of adjustment and

exceptional sensitivity of control.

Applications: Dryers, steam atomizing oil burners, plastic molding,

cookers, degreasers, sterilizers. Also, liquid or gas

cryogenic service.

1/4", 3/8", 1/2", 3/4", 1", 11/4", 11/2" Sizes:

Options: Can be furnished with internal trim suitable for

> regulating steam, air, water, oils, gases, chemicals, and other fluids. A slightly modified G-60 is offered as a constant differential control valve or dome loaded valve. Available in Iron. Bronze. Carbon Steel or Stainless Steel. Can be modified to be used as a cryogenic control valve for liquid or gas service.

Request data sheet: VCTDS-00511.

PRESSURE TEMPERATURE RATINGS						
	Maximum					
	Inlet Temperature					
Body	Pressure	°F (°C)				
Iron	400	180° (82°)				
	250	410° (210°)				
Bronze	400	180° (82°)				
	300	500° (260°)				
Carbon Steel or	450	750° (399°)				
Stainless Steel	720	180° (82°)				

### High Pressure Regulating Valve

Model: LS

Features: Single seated, spring loaded, direct acting

> diaphragm type regulator. Maintains reduced pressure within reasonably close limits regardless of inlet fluctuations. Maximum initial pressure up to 2,400 psi. Delivery pressure: maximum, 500 psi; minimum, 40 psi. Bronze body, spring chamber and bottom plug; stainless steel piston/piston assemblies, cylinders, seat ring and strainer screens; BUNA-N diaphragm and O-rings. Self-renewable seat ring may be flipped over and reinstalled rather than replaced.

Applications: Designed for use on air, water, light oil, oxygen,

carbon dioxide and other gases and fluids.

Sizes: 3/8", 1/2", 3/4"

Options: Up to 750 psi maximum delivery pressure with

internal modification. Three versions of the valve are

LS-1 is furnished with a metal seat piston and cylinder particularly designed for high or low temperature and

high pressure drop applications.

LS-2 is furnished with a Teflon® seat and balanced piston design for applications requiring higher capacities and/or tight shut-off. The balanced design assures close control regardless of inlet pressure fluctuations.

LS-3 is furnished with a modified cylinder and no strainer screen for applications involving heavy or

high viscosity fluids.

LS-4 is furnished with construction for cryogenic

service on liquid or gas.

Request data sheet: VCTDS-00513.

# **Cryogenic Valves and Controls**

Cryogenics – the science of materials at extremely low temperatures – has become more and more important to industry.

One important aspect of this field is the liquification of normally gaseous elements, including the following, which are widely used through out industry:

**Oxygen** - Used extensively in BOF furnaces in the steel industry, for metal cutting, as a rocket fuel and in medicine.

**Acetylene** -Widely used in welding. **Nitrogen** -Used in refrigeration systems,

for metal degassing, in aero sol packaging and in cryogenic surgery.

**Hydrogen** - Used as a rocket propellant and in the production of several metals.

**Argon** - Widely used in incandescent lamps and fluorescent tubes.

**Helium** - Used for arc welding, in the manufacture of electron tubes and in cryogenic research.

**Carbon Dioxide** - Used in refrigeration, to make aero sol tanks and in fire fighting.

Other cryogenic fluids include liquefied natural gas, fluorine, krypton, neon, methane and ethane.

Cash Valve has an extensive line of cryogenic valves and controls. Includes pressure reducing valves, pressure build-up regulators, back pressure valves, economizer valves, combination valves, low temperature cut-off valves, safety relief valves, shut-off valves, final line regulators, strainers and high purity valves. Full specifications of construction, dimensions and avail able pressure rang es are contained in sep a rate Data Sheets.

Request data sheet: VCTDS-00514.

Contact Factory For Additional Information on Shutoff and Combination Valves.

## Combination Pressure Builder/ Economizer Valves



C-776 Safety Relief Valve





A.S.M.E. LISTED



PBE-1A Valve

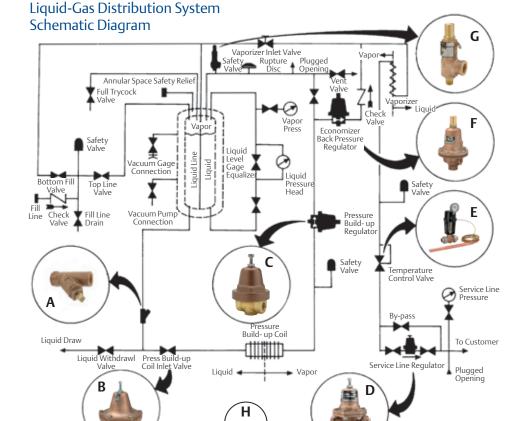


PBE-2 Valve



C600 Thermal relief valve





- A. Cash Valve Type SY-70C
- B. Cash Valve Type B
- C. Cash Valve Type A-32
- D. Cash Valve Type E-55
- E. Cash Valve Type LTC
- F. Cash Valve Type FR
- G. Cash Valve Type C-776
- H. Cash Valve Shut-off Valves (Contact your sales representative for availability)



FR, FR-6, FR-10



FRM, FRM-2

## **Back Pressure Valves**

#### **Back Pressure Valves**

Model: FR, FR-6, FR-10

Features: Protects against periodic high pressures; maintains a

desired inlet pressure by relieving to a lower variable pressure, or to atmosphere. Relieves dependably at adjusted pressures; shuts tight after relieving. Features unique "Floating Ring" seating arrangement that produces perfect seat contact. The FR valves afford unusually close regulation, repeatability of opening pressure and close reseating pressures. The FR-10 is for more economical, lower pressure applications - maximum pressure setting 250 psi. (Provided with iron body and spring housing only). Type FR is available in iron, bronze, steel or stainless steel body; threaded connections; monel, stainless steel or BUNA-N diaphragm. Pressure settings from

Applications: Centrifugal, regenerative turbine, reciprocating or

0 to 400 psi. The FR-6 is available for 200 to 600 psi.

rotary pump bypass valve. Protects pump systems

from over pressure.

Sizes: 1/2", 3/4", 1", 11/4", 11/2", 2"

Options: Can be used with two side inlets, bottom outlet,

or angle type with side inlet, bottom outlet. And can be furnished for differential and dome loaded

applications.

Request data sheet: VCTDS-00516.

#### **Back Pressure Valves**

Model: FRM, FRM-2

Features: Automatically maintains a constant inlet or back

> pressure. Functions as a pressure limiting regulator, not as a safety device. Bronze body, stain less steel

seat ring and disc.

Applications: For service on liquids, air and gases not corrosive to

brass. Recommended for bypass regulation on fuel oil systems, compressor governor pilot control, and many small to medium pumping system bypass jobs. Ideally suited for many applications in the cryogenic

field.

Sizes: 1/8", 1/4", 3/8" FRM

1/4", 3/8", 1/2" FRM-2

Options: Furnished with either neoprene diaphragm

> (max. temp. 180°F (82°C)) or metal diaphragms (max. temp. 500°F (255°C)), in three body styles: side inlet, side outlet; side inlet, bottom outlet; and two side inlets, one bottom outlet. Available with stainless steel wetted parts. FRM maximum control pressure of 175 psi, FRM-2 maximum control pressure of 250 psi (may be modified for higher pressures to 600 psi).

Request data sheet: VCTDS-00516.









K-15

## **Back Pressure Valves**

## Angle Back Pressure Valves

Model: K-5, K-5C

Features: High-capacity valves. For

flow up to 200 gallons per minute in the larger sizes. Bronze body and trim, threaded connections, bottom and side female connections, brass spring chamber, stain less steel adjusting spring, high temperature gas kets. K-5 has a metal seat. K-5C has a soft seat for tight shut-off. Relief

150 psi.

Applications: Suitable for pump systems of

all kinds. Applicable on water, other fluids and especially

pressures range from 5 to

oils of all grades.

Sizes: 1", 11/4", 11/2", 2"

Request data sheet: VCTDS-00517.

## Piston Type Back Pressure Valve

Model: K-10

Features: Bronze angle body, stainless

K-10

steel trim, threaded connections, single metal-to-metal seat only, bot tom female inlet, side female outlet. Relief pressure ranges from 15 to 600 psi. Maximum temperature is

450°F (232°C).

Applications: For water, other liquids, and

light fuel oils. Not for steam.

Designed to limit a specific pump discharge pressure on machine tool hydraulic systems, oil burning equipment, rams, presses,

lifts, etc.

Sizes: 1/4", 3/8", 1/2", 3/4", 1", 11/4"

Request data sheet: VCTDS-00517.

## High Pressure, Angle By-pass Valve

Model: K-15

Features: Angle type by-pass valve

handles high pressure up to 1500 psi in brass body. Threaded connections. Maximum temperature

450°F (232°C).

Applications: Suited for by-pass

applications on high pressure pumps or any system requiring automatic regulation of pump discharge pressure. Many applications in the chemical and process field (waste treatmentdesalination) and car washes.

Sizes: 1/4", 3/8", 1/2", 3/4"

Options: Employs a replaceable

stainless steel seat and piston for longer valve life at minimal cost. Does not have to be removed from the line

for servicing.

Request data sheet: VCTDS-00517.







MC CP, CP2

## **Back Pressure Valves**

KP

## Pilot Operated Back Pressure Valve

Model: KP

Features: Offers high-capacity,

extremely accurate control. Main valve features brass construction, BUNA-N diaphragm and seat disc, stainless steel spring. Pilot is brass with stainless steel spring, seat disc and seat ring; bronze diaphragms for air service or neoprene diaphragms for water. Pressure setting 15 to

200 psi.

Applications: Suitable for various gases

or water service.

Sizes: 1", 11/4", 11/2", 2"

Options: Available with modifications

for high temperature (to 400°F (204°C)), high pressure (to 400 psi). Request data sheet: VCTDS-00518.

## Small By-pass Valve

Model: MC

Features: Small, economical bypass

valve for pressure control of a less-critical nature. Bronze body, stainless steel ball seat. Metal-to-metal seat - does not close off drip tight. Leakproof cover cap and gasket. Male inlet, female side outlet. Pressure ranges 10 to

250 psi.

Applications: For water, oil, and other

fluids.

Sizes: ½", ¾", 1"

#### Compressor Pilot Valve

Model: CP and CP2

Features: Bronze body, bronze trim,

with stainless steel seat ring and disc. Maximum Controlled pressure of

600 psig.

Applications: Types CP and CP-2 are used

as pilot valves in Rotary
Screw Compressors to
control receiver pressure
or compressor discharge
pressure. The Pilot Valves
provide a regulated output
pressure that increases on a
desired ratio to provide input
pressure to the air intake
valve. Benefits of the Types
CP and CP-2 are savings in
energy, quieter Compressor
operation, and reduced wear.

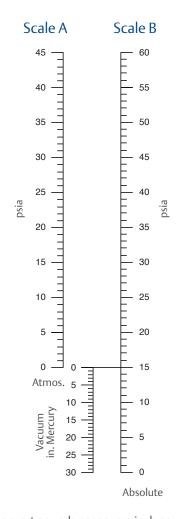
Sizes: 1/4"

## **Vacuum Valves**

Vacuum is simply pressure be low atmospheric pressure, or in a sense a "negative pressure." It is measured in terms of inches of mercury (Abbreviated - Hg, as in 21" Hg), in terms of absolute pressure (psia) or in terms of inches of water column. Below are some simple conversion figures which at times may be useful.

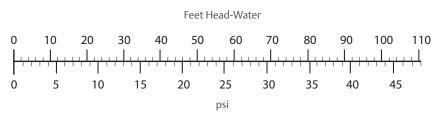
VACUUM CONVERSION FIGURES						
Multiply	Ву	To Obtain				
Pounds Per Square Inch	27.68600	Inches of Water				
Pounds Per Square Inch	2.03600	Inches of Mercury				
Inches of Water	0.07355	Inches of Mercury				
Inches of Mercury	13.59600	Inches of Water				
Inches of Water	0.03613	Pounds Per Square Inch				
Inches of Mercury	0.49120	Pounds Per Square Inch				

PRESSURE CONVERSION FIGURES								
			Columns of I	Mercury at 0°C	Columns of Water at 15°C			
psi	kg/cm²	ATM.	inches	millimeters	inches	feet	meters	
1.00	0.070310	0.068040	2.03600	51.710	27.7000	2.30900	0.70370	
14.22	1.000000	0.967800	28.96000	735.500	394.1000	32.84000	10.01000	
14.70	1.033000	1.000000	29.92000	760.000	407.1000	33.93000	10.34000	
0.4912	0.034530	0.033420	1.00000	25.400	13.6100	1.13400	0.34560	
0.01934	0.001360	0.001316	0.03937	1.000	0.5357	0.04464	0.01361	
0.03609	0.002538	0.002456	0.07349	1.367	1.0000	0.08333	0.02540	
0.4331	0.030450	0.029470	0.88190	22.400	12.0000	1.00000	0.30480	
1.421	0.099010	0.099010	2.89300	73.490	39.3700	3.28100	1.00000	



To convert pounds per square inch gauge (psig) or pressure below atmosphere (vacuum, inches of mercury) to absolute pressure, read horizontally from A to B. Conversely, to convert absolute pressure to psig or inches of mercury, read from B to A.

## Scale C





A-31VR



D-51, D-52

## **Vacuum Valves**

### Small Vacuum Regulating Valve

Model: A-31VR

Features: Furnished in forged brass, with neoprene seat and

diaphragm. Two adjustable ranges of 2" to 16" and 10" to 30" mercury vacuum. All con nec tions are 1/4" IPS. Standard valve is plain brass. Closely controls low capacity vacuum systems. The vacuum source is connected to the bottom of the valve, one side connection is for a gauge, the other side connects to the system in which vacuum is to be controlled. The sensitive top screw automatically adjusts the vacuum source to maintain the de sired vacuum in

the system.

Applications: Suitable for surgical equipment, lab or manu

facturing processes, and other applications requiring accurate and sensitive vacuum regulation at low

flows.

Sizes: 1/4" only

Cut Sheet on A-31VR provided for your reference.

## Vacuum Regulating or Breaker Valves

Model: D-51, D-52

Features: Fully adjustable and furnished with bronze bodies,

threaded connections and internal parts, neoprenenylon diaphragms, stainless steel body seats and composition discs. Two ranges - 2" to 30" mercury.

Applications: Designed for use where a predetermined vacuum

is to be accurately maintained in a closed system (D-51 Vacuum Regulator) or by automatically admitting atmosphere when the vacuum level exceeds the valve setting (D-52 Vacuum Breaker).

Sizes: ½", ¾", 1", 1¼", 1½", 2"

Cut Sheet provided for your reference.



D-53

## **Miscellaneous Control Valve**

#### Two Position Control Valve

Model: D-53

Features: All bronze, with renewable stainless steel valve seat

of full port diameter, renewable composition seat disc, neoprene-nylon diaphragm. Rust-proof steel bolting. Full port diameter means full capacity and low pressure drop through the valve. For maximum hook-up flexibility, diaphragm pressure connection may be indexed to any of four positions: over inlet, over outlet, or either side. Maximum body pressure 250 psi; diaphragm pressure 300 psi. Maximum

temperature 180°F (82°C).

Applications: Cooling water control valve for water cooled air

compressors, air compressor dump valve, explosive atmosphere valve, substitute for expensive electric solenoids. Available normally open or normally

closed.

Sizes: ½", ¾", 1", 1¼", 1½", 2" - threaded connections (top

connection  $^1\!/\!s"$  for  $^1\!/\!s"$  and  $^3\!/\!4"$  body sizes; all other sizes

have 1/4" top connection).

Options Numerous options for OEM applications.

Request data sheet: Write or Call For: VCTDS-00520.

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