



# INDUSTRIAL GAS VALVES & REGULATORS

REPUTATION BUILT ON  
QUALITY, DEPENDABILITY, SERVICE.



[www.cashco.com](http://www.cashco.com)  
Innovative Solutions



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## Get Consistent Quality

By involving every employee in our ISO 9001:2000 Quality Assurance Program, you can count on the quality we provide you. We have coordinated our business systems, invested in state-of-the-art machine tools, and built an extensive component inventory so we can consistently provide cost-effective solutions and on-time delivery to meet your replacement or project requirements — regardless of size or complexity.

## Make the Right Choice

"We simply make it right" by putting your needs first. The next time you specify control valves, regulators or you need a replacement fast, call the supplier that makes it right. Rely on Cashco for your single-source convenience. Great service, field-proven quality, and timely delivery makes Cashco the right choice.

## Select Control Valves & Regulators

### FOR SPECIALIZED OR UTILITY SERVICE

We manufacture a broad line of throttling rotary and linear control valves, pressure reducing regulators, and back pressure regulators in line sizes from 1/4 inch to 10 inches and Cv ranges from .002 to 4,406. Models are available to handle slurries, cryogenic service, and corrosive fluids; to withstand low temperatures and pressures; and to maximize the reduction of fugitive emissions. Contact Cashco for complete product information.

**"WE BUILD OUR REPUTATION ON DEPENDABILITY."**



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### Pressure Reducing

At Cashco® we have been creating innovative pressure control solutions to meet the needs of the industrial gas industry since 1920. Today you'll find the Cashco name on an extensive line of self-contained regulators, control valves, and related components.

Cashco regulators and control valves are in use worldwide, covering a wide range of applications. We believe our quality is surpassed only by the service we provide to ensure you get the product you need — when you need it.

When you contact Cashco or our representatives, you will discover the care we take to help you specify the best valve for your application and in the speed with which we handle your order — large or small.

If you don't find what you're looking for in the following pages, we will be glad to provide you with personal assistance and technical literature. Just call (785) 472-4461 or fax (785) 472-3539 with your request. You can also email us at: sales@cashco.com.



# "PRESSURE REDUCING REGULATORS"

**Body sizes:**  
1/2", 3/4", 1", 1-1/4", 1-1/2", 2"

**Maximum Cv:**  
1.35 to 22

**Materials:**

Body	DI, BRZ, CS, 316 SST
Spring chamber	DI, BRZ, CS, 316 SST
Trim	BR, 416 SST, 316 SST
Seat	Metal – SST
	Composition – Buna-N, EPR, TFE, F.C. Elastomer
Diaphragm	Phos. BRZ, 302 SST, Neoprene, F.C. Elastomer, EPDM

**End connections:**  
NPT, BSP, flanged, extended pipe ends

**Temperature range:**  
-325° F to +600° F (special construction to -425° F)

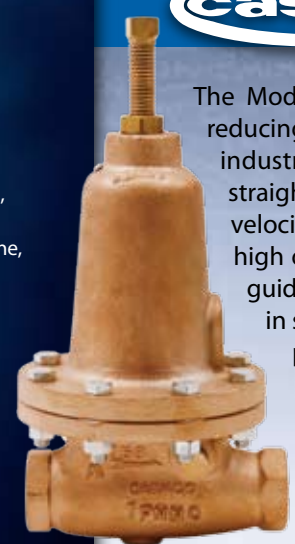
**Pressures:**  
Inlet: up to 740 psig standard  
Outlet: 10 to 300 psig

**Pressure drop:**  
Up to 650 psid

**Options:**  
Differential construction (single and double diaphragm), pharmaceutical/food industry and cryogenic construction, numerous industry-specific options



### MODEL 1000HP



The Model 1000 HP is used in the gas and liquid pressure reducing as well as the pressure build applications of the industrial gas industry. Its unique internal design and straight-through flow path isolate the diaphragm from fluid velocity effects and increase capacity and stability at both high or low-flow rates. Flow-to-open design and extended guiding allow pressure drops to 650 psid. It can be used in severe service and cryogenic applications that normal pressure reducing regulators cannot handle.



### MODEL D/DL

The Model D Pressure Reducing Regulator is a time-proven product. For over 80 years, this inexpensive, ruggedly built regulator with piston-type, valve plug has been serving in medium-capacity, pressure build applications. Optional construction extends Model D capabilities to cryogenic, pharmaceutical and food.



**Model D body size:**  
3/8", 1/2", 3/4", 1"

**Model DL body size:**  
1-1/2", 2"

**Model D maximum Cv:**  
1.8 to 4

**Model DL maximum Cv:**  
7.0 to 10

**Materials:**

Body	DI, BRZ, CS, 316 SST
Spring chamber	DI, BRZ, CS, 316 SST
Trim	BRZ, 416 SST, 316 SST
Seat	Metal – BR, SST
	Composition – Buna-N, TFE, EPDM
Diaphragm	Phos. BRZ, 302 SST, Neoprene, F.C. Elastomer, EPDM

**End connections:**  
NPT, BSP, flanged, extended nipples

**Temperature range:**  
-325° F to +400° F

**Pressures:**  
Model D Inlet: up to 400 psig  
Model DL Inlet: up to 300 psig  
Model D Outlet: up to 250 psig  
Model DL Outlet: up to 150 psig

**Pressure drop:**  
Up to 350 psid

**Options:**  
Handwheel and locking lever, dome loaded and cryogenic

# "PRESSURE REDUCING REGULATORS"



## MODEL 1000LP



This 1000-Series Regulator has a larger diaphragm area than its 1000HP counterpart to handle lower operating pressures. But the 1000LP's basic construction, specifications, and superior rangeability mirrors the 1000HP regulator. The internal design isolates the diaphragm from fluid velocity effects and eliminates flow-induced instability at high and low-flow rates.

**Body sizes:**  
1/2", 3/4", 1"  
**Maximum Cv:**  
3 to 8  
**Materials:**  
Body CI, BRZ, CS, 316 SST  
Spring chamber CI, BRZ, CS, 316 SST  
Trim BR, 416 SST, 316 SST  
Seat Metal - SST  
Composition - Buna-N, EPR, TFE, F.C. Elastomer  
Diaphragm Phos. BRZ, 302 SST, Neoprene, F.C. Elastomer, EPDM  
**End connections:**  
NPT, BSP, flanged, extended pipe ends  
**Temperature range:**  
-20° F to +600° F  
**Pressures:**  
Inlet: up to 450 psig standard  
Outlet: 1 to 30 psig  
**Options:**  
Similar to options for 1000 HP

**Body sizes:**  
1/4", 3/8"  
**Maximum Cv:**  
0.5  
**Materials:**  
Body BRZ  
Spring chamber BRZ  
Trim BR  
Seat Metal - BR  
Composition - Buna-N, TFE, BRZ, Neoprene  
Diaphragm  
**End connections:**  
NPT, flanged  
**Temperature range:**  
-325° F to +400° F  
**Pressures:**  
Inlet: up to 800 psig  
Outlet: 5 to 300 psig  
**Options:**  
Cryogenic construction, dome loading, panel mounting, outlet pressure gauge



## MODEL 3381



The Model 3381 is designed to handle low to moderate flows. It is suitable for controlling a wide range of fluids, including industrial gases and air. High-mass plug provides stability.

The Model 3381 is a bronze regulator for low-flow service.

**Body sizes:**  
1/4", 3/8", 1/2"  
**Maximum Cv:**  
0.5  
**Materials:**  
Body SST  
Spring chamber BRZ, 316L SST  
Trim SST  
Seat Metal - 316 SST  
Composition - TFE, EPDM  
Diaphragm 302 SST, TFE-coated SST, Neoprene, EPDM  
**End connections:**  
NPT  
**Temperature range:**  
-325° F to +400° F  
**Pressures:**  
Inlet: up to 1500 psig  
Outlet: 5 to 500 psig  
**Options:**  
Cryogenic construction, panel mounting, pharmaceutical/food industry construction, outlet pressure gauge



## MODEL 4381



The Model 4381 duplicates the strengths of the 3381 in SST. Its high-mass plug contributes to stability and it can handle industrial gases and air.

The Model 4381 is a SST-bodied regulator for low-flow service.



## MODELS 345



The Model 345 utilizes a piston design to handle high pressures. With optional nylon or TFE seats, it can control downstream pressures between 50 and 3000 psig with inlet pressures as high as 4000 psig. A metal-seated version with an unbalanced trim design is also available. The Model 345 is used primarily as a first-stage letdown valve on high-pressure applications.

**Body sizes:**  
1/2", 3/4", 1"  
**Maximum Cv:**  
Up to 1.8  
**Materials:**  
Body Alum. BRZ, SST  
Spring chamber BRZ  
Trim 316 SST  
Seat Metal - 316 SST, Stellite  
Composition - TFE, Nylon  
**End connections:**  
NPT, 300#, 600#, 900#, 1500# flanges with SST body  
**Temperature range:**  
Up to +400° F  
**Pressures:**  
Inlet: up to 4000 psig  
Outlet: 50 to 3000 psig  
**Pressure drop:**  
Up to 3000 psid  
**Options:**  
Weld-on flanges



## MODEL HP



The HP is a heavy-duty high-pressure regulator designed to control downstream pressure between 10 and 750 psig with inlet pressure as high as 3000 psig. Composition seat provides bubble-tight shutoff. Metal seating is available and metal seating surfaces can be stellite.

**Body sizes:**  
1/2", 3/4", 1", 1 1/2"  
**Maximum Cv:**  
4.39  
**Materials:**  
Body CS, SST, MN, BRZ  
Spring chamber CS, SST, MN, BRZ  
Trim 316 SST  
Seat Metal - 316 SST  
Composition TFE or Nylon  
Diaphragm TFE coated SST, SST or Neoprene  
**End connections:**  
NPT, flanged  
**Temperature range:**  
-20° F to 600° F  
**Pressures:**  
Inlet: up to 3000 psig Outlet: 10 to 750 psig  
**Options:**  
Oxygen cleaned, Differential Construction

# "PRESSURE REDUCING REGULATORS"



## Pressure Reducing

Kaye MacDonald™ has been a technological pioneer in the regulator industry since 1870. KM regulators are designed to perform and built to last with the highest Cv and regulation accuracy available per valve size. They also offer the highest rangeability of any regulator in the industry.

In addition, we manufacture a comprehensive line of control valves and regulators for all your process requirements. Our sales consultants can help you solve design and specification concerns with valves tailored to your applications at: [sales@cashco.com](mailto:sales@cashco.com).



## MODEL DA1



The DA1 is an excellent pressure reducing regulator for all fluid types. The regulator features a high flow design with balanced trim as a standard. The balanced trim allows rangeability up to 1000:1 for varying flows with very little change in set pressure. Due to the high capacities these regulators provide, it is now possible to install regulators where control valves were once needed. This allows additional savings since controllers, positioners, and auxiliary air supply are no longer needed. The Models DA2 & DA7 are similar to this regulator except they provide either positive or negative bias differential construction respectively.

**Body sizes:**  
1/2", 3/4", 1", 1-1/4", 1-1/2", 2", 2-1/2", 3", 4"

**Maximum Cv:**  
198

**Materials:**  
Body BRZ, CI, CS, HC, 316 SST  
Spring chamber BRZ, CI, CS, 316 SST  
Trim 17-PH SST, 316L SST, Monel, HC  
Seat PolyAll, V-TFE, GF-TFE, C+TFE  
Diaphragm Composition – BC, EPR, HK, FK, NBR, HK + TFE, Elast. TFE  
Metal – 17-7 PH SST, Be-Cu, 302 SST, HC

**End connections:**  
NPT, 125#-250#, 150#-1500# Integral Flanged, PN16, PN25, PN40 DIN Flanged, Extended Pipe Nipples or Tube End Construction

**Temperature range:**  
-65° to +425° F

**Inlet Pressure:**  
10 - 3000 psig

**Outlet Pressure:**  
1- 500 psig

**Options:**  
Cleaned for O2 Service

**Body sizes:**  
1/2", 3/4", 1", 1-1/4", 1-1/2", 2", 2-1/2", 3", 4"

**Maximum Cv:**  
198

**Materials:**  
Body BRZ, CI, CS, HC, 316 SST  
Spring chamber BRZ, CI, CS, 316 SST  
Trim 17-PH SST, 316L SST, Monel, HC  
Seat PolyAll, V-TFE, GF-TFE, C+TFE  
Diaphragm Composition – BC, EPR, HK, FK, NBR, HK + TFE, Elast. TFE  
Metal – 17-7 PH SST, Be-Cu, 302 SST, HC

**End connections:**  
NPT, 125#-250#, 150#-1500# Integral Flanged, PN16, PN25, PN40 DIN Flanged, Extended Pipe Nipples or Tube End Construction

**Temperature range:**  
-65° to +425° F

**Inlet Pressure:**  
10 - 3000 psig

**Options:**  
Cleaned for O2 Service



## MODEL DA2



The DA2 is a positive bias differential pressure reducing regulator for all fluid types. Much like the DA1, the ability to allow varying flows with little change in set pressure makes this an ideal regulator for high accuracy applications.



## MODEL DA3



The DA3 is a pressure loaded pressure reducing regulator for all fluid types. Much like the DA1, the ability to allow varying flows with little change in set pressure makes this an ideal regulator for high accuracy applications. When the precision of automated controls cannot be sacrificed, the dome-loaded series is ideal. The ability to load the regulator with a wide variety of pilots, airsets, and I/P transducers allows for accuracy and automation in a small inexpensive package.

**Body sizes:**  
1/2", 3/4", 1", 1-1/4", 1-1/2", 2", 2-1/2", 3", 4"

**Maximum Cv:**  
198

**Materials:**  
Body BRZ, CI, CS, HC, 316 SST  
Spring chamber BRZ, CI, CS, 316 SST  
Trim 17-PH SST, 316L SST, Monel, HC  
Seat PolyAll, V-TFE, GF-TFE, C+TFE  
Diaphragm Composition – BC, EPR, HK, FK, NBR, HK + TFE, Elast. TFE Metal – 17-7 PH SST, Be-Cu, 302 SST, HC

**End connections:**  
NPT, 125#-250#, 150#-1500# Integral Flanged, PN16, PN25, PN40 DIN Flanged, Extended Pipe Nipples or TubeEnd Construction

**Temperature range:**  
-65° to +425° F

**Inlet Pressure:**  
10 - 3000 psig

**Outlet Pressure:**  
2.0" w.c. - 1500 psig

**Options:**  
Cleaned for O2 Service



## MODEL DA4



The DA4 is a pressure loaded pressure reducing regulator for all fluid types. Much like the DA3, the ability to allow varying flows with little change in set pressure makes this an ideal regulator for high accuracy applications. The difference is the DA4 has a lower spring to help close the valve in low set pressure applications. (The DA3, DA4 and the DA6 are ideal solutions for automating your pressure control systems.)

**Body sizes:**  
1/2", 3/4", 1", 1-1/4", 1-1/2", 2", 2-1/2", 3", 4"

**Maximum Cv:**  
198

**Materials:**  
Body BRZ, CI, CS, HC, 316 SST  
Spring chamber BRZ, CI, CS, 316 SST  
Trim 17-PH SST, 316L SST, Monel, HC  
Seat PolyAll, V-TFE, GF-TFE, C+TFE  
Diaphragm Composition – BC, EPR, HK, FK, NBR, HK + TFE, Elast. TFE  
Metal – 17-7 PH SST, Be-Cu, 302 SST, HC

**End connections:**  
NPT, 125#-250#, 150#-1500# Integral Flanged, PN16, PN25, PN40 DIN Flanged, Extended Pipe Nipples or Tube End Construction

**Temperature range:**  
-65° to +425° F

**Inlet Pressure:**  
10 - 3000 psig

**Outlet Pressure:**  
2.0" w.c. - 1500 psig

**Options:**  
Cleaned for O2 Service

**Body sizes:**  
1/2", 3/4", 1", 1-1/4", 1-1/2", 2"

**Maximum Cv:**  
50

**Materials:**  
Body BRZ, CS  
Spring chamber SST  
Trim 17-PH SST, 316L SST  
Seat V-TFE, GF-TFE

**End connections:**  
NPT, 125#-250#, 150#-300#, Integral Flanged, PN16, PN25, PN40 DIN, Flanged, Extended Pipe Nipples

**Temperature range:**  
-50° to +425° F

**Inlet Pressure:**  
250 psig

**Outlet Pressure:**  
215 psig



## MODEL DAP



The DAP is a pressure loaded pressure reducing regulator for all fluid types. Much like the DAO, the ability to allow varying flows with little change in set pressure makes this an ideal regulator for high accuracy applications. The difference is the larger piston design, which allows for higher outlet pressures with lower pressure drops across the valve.

**Body sizes:**  
1/2", 3/4", 1", 1-1/4", 1-1/2", 2"

**Maximum Cv:**  
54

**Materials:**  
Body BRZ, CI, CS, HC, 316 SST  
Spring chamber BRZ, CI, CS, 316 SST  
Trim 17-PH SST, 316L SST, Monel, HC  
Seat PolyAll, V-TFE, GF-TFE, C+TFE  
Diaphragm Composition – BC, EPR, HK, FK, NBR, HK + TFE, Elast. TFE  
Metal – 17-7 PH SST, Be-Cu, 302 SST, HC

**End connections:**  
NPT, 125#-250#, 150#-1500# Integral Flanged, PN16, PN25, PN40 DIN Flanged, Extended Pipe Nipples or Tube End Construction

**Temperature range:**  
-65° to +425° F

**Inlet Pressure:**  
10 - 3600 psig

**Options:**  
Cleaned for O2 Service



## MODEL DA7



The DA7 is a negative bias differential pressure reducing regulator for all fluid types. Much like the DA1, the ability to allow varying flows with little change in set pressure makes this an ideal regulator for high accuracy applications.



**Body sizes:**  
1/4", 3/8"

**Maximum Cv:**  
.02, .06 and .20

**Materials:**  
Body/Spring chamber 316L SST/302 SST  
Chrome Brass/6061 AL

**End connections:**  
FNPT, Tube End, and CGA Connections

**Temperature range:**  
-45° to 575° F (-42.7° to 301° C)

**Pressures:**  
Max Inlet: 3,600 psig (248.2 Barg)  
Max Outlet: 1-750 psig (.07-51.7 Barg)

**Options:**  
Relief Valve



## MODEL P2



The Model P2 is designed for gases with inlet pressures up to 3600 psig (248 Barg). Standard adjustable outlet ranges from 1-10 psig (.07-.69 Barg) thru 10-750 psig (.69-51.7 Barg). Flow coefficient of 0.02, 0.06, and 0.20 available. This versatile cylinder gas regulator can be ordered with a variety of options to meet your system demands. Standard construction includes a 40 micron integral filter, adjustment knob, and diffusion resistant stainless steel diaphragm. Gauges and CGA fittings are optional.

**Body sizes:**  
1/4"

**Maximum Cv:**  
.02, .06 and .20

**Materials:**  
Body/Spring chamber 316L SST/302 SST  
Chrome Brass/6061 AL

**End connections:**  
FNPT  
CGA End Connection

**Temperature range:**  
-45° to 575° F (-42.7° to 301° C)

**Pressures:**  
Max Inlet: 3,600 psig (248.2 Barg)  
Max Outlet: 1-500 psig (.07-34.5 Barg)

**Options:**  
Packed Valve, Diaphragm Valve



## MODEL P3

The Model P3 is a 2 staged regulator designed for gases with inlet pressures up to 3600 psig (248 Barg). Standard adjustable outlet ranges from 1-10 (.07-.69 Barg) thru 10-750 psig (.69-51.7 Barg). Flow coefficient of 0.02, 0.06, and 0.20 available. This versatile cylinder gas regulator can be ordered with a variety of options to meet your system demands. Standard construction includes a 40 micron integral filter, adjustment knob, and diffusion resistant stainless steel diaphragm. Gauges and CGA fitting are optional.

# "PRESSURE REDUCING REGULATORS"



## MODEL P1



The Model P1 is designed for gases and liquids with inlet pressures up to 3600 psig (248 Barg). Standard adjustable outlet ranges from 1-10 psig (.07-.69 Barg) thru 10-750 psig (.69-51.7 Barg). Flow coefficient of 0.02, 0.06, and 0.20 available. This versatile point of use regulator can be ordered with a variety of options to meet your system demands. Standard construction includes a 40 micron integral filter, adjustment knob, and diffusion resistant stainless steel diaphragm.

**Body sizes:**  
1/4"

**Maximum Cv:**  
.02, .06 and .20

**Materials:**  
Body/Spring chamber 316L SST/302 SST  
Chrome Brass/6061 AL

**End connections:**  
FNPT  
CGA End Connection

**Temperature range:**  
-45° to 575° F (-42.7° to 301° C)

**Pressures:**  
Max Inlet: 3,600 psig (248.2 Barg)  
Max Outlet: 1-750 psig (.07-51.7 Barg)

**Options:**  
Packed Valve, Diaphragm Valve

# Sensiflo

## MODEL P4



**Body sizes:**  
3/8", 1/2"

**Maximum Cv:**  
.6

**Materials:**  
Body/Spring chamber 316L SST/302 SST  
Chrome Brass/6061 AL

**End connections:**  
FNPT, Tube End, and CGA Connections

**Temperature range:**  
-45° to 575° F (-42.7° to 301° C)

**Pressures:**  
Max Inlet: 3,600 psig (248.2 Barg)  
Max Outlet: 10-500 psig (.69-34.4 Barg)

**Options:**  
Relief Valve

The Model P4 is designed for gases with inlet pressures up to 3600 psig (248 Barg). Standard adjustable outlet ranges from 1-10 psig (.07-.69 Barg) thru 10-500 psig (69-34.4 Barg). Flow coefficient of .6 Cv available. This versatile point of use regulator can be ordered with a variety of options to meet your system demands. Standard construction includes a 40 micron integral filter, adjustment knob, and diffusion resistant stainless steel diaphragm.

**Body size:**  
1/4"

**Maximum Cv:**  
.06

**Materials:**  
Body/Spring chamber 316L SST/302 SST

**End connections:**  
NPT

**Temperature range:**  
-15° to 175° F (-26° to 79.44° C)

**Pressures:**  
Max Inlet: 3,600 psig (248.2 Barg)  
Max Outlet: 50-1,500 psig (3.4-103 Barg)

**Options:**  
Mounting Bracket, Panel Mount

# Sensiflo

## MODEL P5



The Model P5 is a piston designed regulator for gases and liquids with inlet pressures up to 3600 psig (248 Barg). Flow coefficient of 0.06. This general purpose use regulator can be ordered with a variety of options to meet your system demands. Standard construction includes a 40 micron integral filter, adjustment knob, and diffusion resistant stainless steel diaphragm.

# Sensiflo

## MODEL P7



**Body sizes:**  
1/2", 3/4"

**Maximum Cv:**  
2.0

**Materials:**  
BRZ/BRZ or 316 SST/316 SST

**End connections:**  
NPT

**Temperature range:**  
-15° to 165° F (-25.0° to 75° C)

**Pressures:**  
Max. Inlet 4500 psig Max. Outlet: 1500 psig

**Options:**  
Dome Loaded, Ratio Loaded, Panel Mount

The Model P7 is a piston designed regulator that safely reduces inlet pressures of up to 4500 psig (310 Barg) and accurately delivers high gas flows throughout the 10-1500 psig (.69-103.4 Barg) range.

# cashco

## MODELS BQ



The Model BQ is designed for lower flow installations to control flow rates not covered by Model 123. It is often used in economizer circuits. It is also a popular cryogenic regulator and widely used in chemical process services.

**Body sizes:**  
1/4", 3/8", 1/2"

**Materials:**

Body	DI, BRZ, CS, SST
Spring chamber	DI, BRZ, CS, SST
Trim	BRZ, 316 SST
Seat	Metal
	Composition – Buna-N, TFE, EPR
Diaphragm	Phos. BRZ, 302 SST, Neoprene, EPDM, Elgiloy

**End connections:**  
NPT

**Temperature range:**  
-325° F to +400° F

**Set pressures:**  
Springs for 5-300 psig

**Pressure drop:**  
Up to 400 psid

**Options:**  
Closing cap, cryogenic construction, differential construction

**Body sizes:**  
1/2", 3/4", 1", 1-1/2", 2"

**Materials:**

Body	CI, BRZ, CS, 316 SST
Spring chamber	CI, BRZ, CS, 316 SST
Trim	Phos. BRZ, BR, 302 SST, 416 SST, 316 SST, Buna-N, Neoprene, TFE, F.C. Elastomer, EPDM
Seat	Metal – BR, 416 SST, 316 SST, Stellite
	Composition – Buna-N, TFE, EPR, F.C. Elastomer
Diaphragm	BRZ, 302 SST, Neoprene, F.C. Elastomer, EDPM

**End connections:**  
NPT, flanged, extended nipples

**Temperature range:**  
-325° F to +450° F

**Set pressures:**  
Springs for 2-350 psig

**Pressure drop:**  
Up to 525 psid

**Options:**  
Closing cap, cryogenic construction, differential construction

# cashco

## MODEL 123



With four body materials and twenty one trim material combinations, the Model 123 is compatible with most fluids. It can handle a wide range of flows and pressure settings to match nearly any back-pressure application up to a 2" line size. The regulator offers four composition seat materials and controlled compression with metal-to-metal back-up for long life and trouble-free operation.

# "BACK PRESSURE REGULATORS"

Just as pressure reducing regulators respond to and control changes in outlet pressure, back pressure regulators respond to and control changes in inlet pressure. These regulators modulate the discharge rate to maintain a constant pressure on the inlet side. However, back pressure regulators are not safety devices and must not be substituted for code-approved pressure safety relief valves or rupture discs.

### CAUTION

These are not code-approved safety devices.

# "BACK PRESSURE REGULATORS"



## MODEL 1171

The Model 1171 is a back pressure/relief regulator suitable for most liquid and gas applications including pump by-pass and modulating back pressure relief services.



**Body sizes:**  
1/4", 3/8"

**Materials:**  
Body BRZ  
Spring chamber BRZ  
Trim BR  
Seat Metal – BR  
Composition – TFE  
Phos. BRZ, Neoprene

Diaphragm

**End connections:**  
NPT

**Temperature range:**  
-325° F to +400° F

**Set pressures:**  
Springs for 5-300 psig

**Pressure drop:**  
Up to 400 psid

**Options:**  
Inlet pressure gauge, panel mounting, cryogenic construction

**Body sizes:**  
3/4", 1", 1-1/2", 2"

**Materials:**  
Body DI, BRZ, CS  
Spring chamber CI, BRZ, CS  
Trim 416 SST, 316 SST  
Seat Metal – 316 SST  
Composition – TFE  
Phos. BRZ, TFE-coated  
302 SST

Diaphragm

**End connections:**  
NPT

**Temperature range:**  
-20° F to +400° F

**Set pressures:**  
Springs for 5-150 psig

**Pressure drop:**  
Up to 225 psid



## MODEL 1164

The Model 1164 is equipped with a variety of body and trim materials that make it compatible with many fluids and chemicals. Its large orifice and diaphragm combine sensitivity with high capacity.



**Body sizes:**  
1/2", 3/4"

**Materials:**  
Body CS, SST  
Spring chamber CS, SST  
Trim 316 SST  
Seat Metal – 316 SST, Stellite  
Diaphragm 302 SST

**End connections:**  
Standard – NPT  
Optional – flanged 300# or 600#, plain end pipe nipples

**Temperature range:**  
-20° F to +450° F

**Set pressures:**  
Springs for 50-800 psig

**Pressure drop:**  
Up to 960 psid

**Options:**  
Closing cap, reduced orifice seats



## MODEL 6987

This heavy-duty, angle-bodied regulator can handle high inlet and outlet pressures plus high pressure drops. Six range springs provide wide setpoint selection. Applications include fuel, oil, water, inert gases, air and chemicals.



## MODELS 2171

Model 2171 is similar in design and capacity to its brass-bodied counterpart, but its SST body and trim enable it to handle an even wider range of fluids.



**Body sizes:**  
1/4", 3/8", 1/2"

**Materials:**  
Body 316L SST  
Spring chamber 316 SST, BRZ  
Trim 316 SST  
Seat Metal – BR  
Composition – TFE  
302 SST, Neoprene

Diaphragm

**End connections:**  
NPT

**Temperature range:**  
-325° F to +400° F

**Set pressures:**  
Springs for 5-500 psig

**Pressure drop:**  
Up to 600 psid

**Options:**  
Cryogenic construction, inlet pressure gauge, special pharmaceutical/food industry construction

**Body sizes:**  
1/8", 1/4", 3/8" and 1/2"

**Flow designs:**  
Globe, Angle, Flow-thru

**Materials:**  
Body Forged Bronze  
Spring chamber Bronze  
Trim 316 S/S  
Seat Metal  
Diaphragm 302 S/S, Buna-N

**End connections:**  
NPT

**Temperature range:**  
-325° F to +300° F

**Set pressures:**  
CA1 – springs for 2-360 psig  
CA2 – springs for 3-360 psig

**Options:**  
Closing Caps, Cryogenic, Handwheel and Panel Mounting



## MODEL CA-1 & CA-2

Designed for lower flow applications. It is often used in small pump set applications as well as the cryogenic and compressed gas industry. Metal lapped seats allow for leakage rate to approach levels of composition seats.



MODEL CA-1

MODEL CA-2



# "LIGHT INDUSTRIAL UTILITY"



MODEL 2296



The Model 2296 is a stainless steel bodied control valve with similar features of the Model 2266. The Model 2296 offers Quick-Change Trim, equal or linear trim characteristic, and 316 or 316L SST internals. With cryogenic capabilities the 2296 is one of the most versatile and economical control valves on the market. This is an economical stainless steel control valve with cryogenic capability.

**Body sizes:**  
1/2", 3/4", 1", 1-1/2", 2"  
**Maximum Cv:**  
41  
**Materials:**  
Body — 316 L SST, BRZ  
Trim — SST  
Seat — SST, TFE  
**End connections:**  
NPT female pipe thread, Flanged, and Extended Nipples  
**Temperature range:**  
-20°F to +400°F  
-425°F to +100°F cryogenic  
**Pressure drop:**  
Up to 400  
**Seat leakage:**  
Metal - II & IV  
Soft - VI  
**Options:**  
Cryogenic Construction, Reduced Orifice, and Extension Columns

**Body sizes:**  
1/2", 3/4", 1", 1-1/2", 2"  
**Maximum Cv:**  
From 3.5 to 45  
**Materials:**  
Body – BRZ  
Trim – SST  
Seats – Metal, TFE  
**End connections:**  
NPT female pipe thread  
**Temperature range:**  
-20°F to +400°F  
-325°F to +150°F cryogenic  
**Pressure drop:**  
From 40 to 400 psid  
**Seat leakage:**  
Class II and Class VI  
**Options:**  
Extension columns to protect packing and actuator in cryogenic service



MODEL 2266



The Model 2266 is a brass-bodied low-cost control valve well-suited for utility and process applications. With optional extension columns it becomes an excellent cryogenic valve. The Model 2266 offers a linear trim characteristic. It can be used without a positioner, has quick-change trim, and is field-reversible with fail-safe action. This is an economical utility control valve with standard live loaded packing.



**Body sizes:**  
1", 1-1/2", 2", 3", 4", 6", 8"  
**Maximum Cv:**  
From 2.8 to 710  
**Materials:**  
Body – DI, CS, SST  
Trim – Inconel X-750/625 metal seals TFE or Stellite #6 plug  
Remaining parts – SST  
6 trim combinations to select from  
**End connections:**  
Flanged in CS and SST and available in flangeless  
**Temperature range:**  
-325°F to +750°F  
**Pressure drop:**  
From 150 to 1400 psid  
**Seat leakage:**  
ANSI/FCI 70-2, Class VI with TFE  
Class IV above 500°F or without TFE  
**Options:**  
Multiple low noise reduction trim and seal retainers  
0.2, 0.4, 0.6 reduced trims,  
Anti-cavitation trim, abrasion sleeve, P/P or I/P smart positioners, position switch, line bolting, special packing designs  
NACE service  
Cryogenic service  
Pneumatic, electric, or manual actuators  
**Face to face:**  
ISA-S75.04



# "PROCESS VALVES"



MODEL RANGER QCT

The Ranger QCT is the only truly universal control valve you can buy. It is the most versatile, adaptable, and easily maintainable valve ever produced. No other valve is more user friendly.

The Ranger offers over 6 different trim combinations. Trim can easily be changed in less than 5 minutes without disturbing the packing, actuator, or positioner calibration. The service area is a threadless design, which resists corrosion or collection of chemical deposits. No other valve on the market can handle cavitation or noise reduction as easily or as economically!

A selection of 3 body materials with a broad temperature range from -325°F to +750°F makes the Ranger adaptable for use in steam, heat transfer fluids, slurries, gases, liquids, and cryogenic applications. Ranger's unique dual seating design provides both Class VI and backup Class IV seat leakage. And the standard patented live-loaded packing system lets you check and adjust packing without the need for specialized tools or complicated procedures.

A multiple-spring-return actuator that offers failsafe capability and runs on a minimal air supply (35 psig max) is standard. The Ranger has a square shaft stem connection instead of a spline shaft, so that it can be quickly and economically adapted to other types of actuators. In every respect, the Ranger QCT exemplifies the Cashco motto – "Innovative Solutions".

**Body sizes:**  
1/2", 3/4", 1"  
**Maximum Cv:**  
Six sizes for metal seat 0.276 to 6.95  
Three sizes for TFE seat 2.60 to 6.70  
**Materials:**  
Body and trim — 316L SST  
Hastelloy C-22, and similar alloys  
**End connections:**  
NPT, SW, and flangeless  
**Temperature range:**  
-20°F to +450°F  
**Pressure drop:**  
Metal seat – up to 1500 psid  
TFE seat – up to 400 psid  
**Seat leakage:**  
Class IV or Class VI  
**Options:**  
Stellite seating and guide bushing  
Top-mounted handwheel, P/P and I/P positioners, position switches

# "CONTROLLERS"



MODEL 764P



The Model 764P is a highly reliable versatile, inexpensive pneumatic proportional pressure controller. It's available with cast iron or 316 SST sensing heads and can be set for direct or reverse action.

**Signal Output:**  
3-15 psig  
6-30 psig  
**Control Range:**  
30" Vac through 2500 psig  
**Options:**  
Diaphragm Seals  
Tri-clamp Connection



MODEL 764T



The Model 764T is a pneumatic temperature controller. Ideal for bleachers, cookers, heat exchangers and other applications that require durable and accurate temperature control.

**Signal Output:**  
3-15 psig  
**Control Range:**  
-70°F to +580°F  
**Options:**  
Thermal Bulb



MODEL 987

The Model 987 precision globe-style "chemical valve" is the valve of choice to handle hostile fluids and environments – as well as steam and water. Its corrosion-resistant, ductile iron, field-reversible actuator, alloy body and trim materials, high pressure-drop capability, and exceptionally low Cv rangeability make the Model 987 one of the most reliable and versatile valves in the chemical process industry. This valve is for exceptional low Cv rangeability plus high pressure capability.



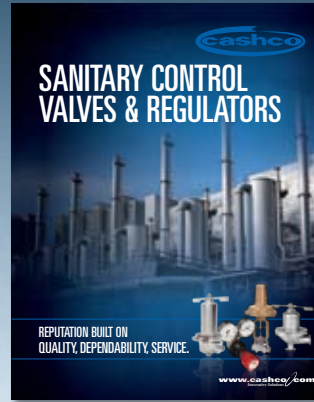
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607 West 15th Street • P.O. Box 6 • Ellsworth, Kansas 67439

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