Models 988 and 989 are globe-style control valves with pneumatic spring-return actuator. Originally designed for chemical plants and corrosive service, they have large diameter stems, special finishes on the stem and packing boxes, close-coupled guiding, and live-loaded packing systems. Rugged construction, longevity, and low maintenance make these valves a popular choice in industrial process applications. The main difference between the 988 and 989 are in the face-to-face dimensions.

### MODEL 988-MB

Model 988-MB is a modified version of our Model 988 designed to handle hazardous fluids. To minimize fugitive emissions, it is fitted with a metallic bellows stem seal subassembly and live-loaded secondary stem packing seal. Inlet pressure is from full vacuum to 200 psig. This model protects against fugitive emissions.

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

### Maximum Cv:
From 0.25 to 50

### Materials:
- **Body** – CS, 316L SST, Ni-Mo-Cr, CW-12MW (988 only)
- **Trim** – 316L SST, HC-22

### End connections:
- 988 – NPT, SW, separable flanges for Classes 150#, 300#, and PN40
- 989 – separable flanges forClasses 150# and 300#

### Face-to-face:
- 988 – ISA - 75.08.07 (long)
- 989 – ISA - 75.08.01 (short)

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

### Pressure drop:
200 psid

### Seat leakage:
Class IV and Class VI

### Options:
- High temperature service, NACE service, multiple packing variations, stellited seat surfaces
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 10 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 4 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 fail-safe 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", 1-1/2", 2", 3", 4", 6", 8"

**Maximum Cv:**
1260

**Materials:**
- Body – DI, CS, SST, HC
- Trim – Inconel X-750/625 metal seals, TFE soft seals, Stellite #6, castm17-4 PH, or monel plug
- Remaining parts – SST

**Trim combinations:**
10 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-75.08.02
MODEL // 521

The Model 521 Globe-Style Control Valve with sliding stem, bellows sealed, pneumatically actuated valves designed to achieve the ultimate in long-term corrosive chemical service.

Our exclusive unibody forged-TFE construction is unique in the industry and can handle even absolute vacuum applications. The one-piece body is machined from a solid block of isostatically compacted virgin TFE and encased in a cast 304 SST body shell to prevent distortion.

Construction includes a 100,000-cycle TFE bellows, quick change trim, replaceable plug, and dual stem seal design to minimize emissions. This valve can handle strong acids and bases, most organics and industrial reagents.

MODEL // THE PREMIER

This valve was born to throttle. The Premier EZO (short for easy opening) has superb throttling characteristics and is designed to eliminate “popoff” flow surges. It is available in a lined version or unlined in three body materials and five sizes from 3” to 10”. The Premier uses the same multi-spring return actuator as the Ranger QCT and has a square-shaft stem coupling that’s easy to adapt to your favorite actuator. This valve has a butterfly design for demanding throttling service.

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, 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.
MODEL // 2296/2296HF

The Model 2296/2296HF is a stainless steel or bronze glove-style control valve available with pneumatic or rotork electric actuators. The Model 2296/2296HF offers Quick-Change Trim, equal or linear trim characteristic, and 316 or 316L SST internals. With cryogenic capabilities, the 2296/2296HF is one of the most versatile and economical control valves on the market.

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

**Maximum Cv:**
- 44.5

**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 +400° F cryogenic

**Pressure drop:**
- 1557

**Seat leakage:**
- Metal - Class IV
- Soft - Class VI

**Options:**
- Cryogenic Construction, Reduced Orifice, P/P and I/P smart positioners

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MODEL // 964

The Model 964 is a globe-style pneumatic control valve for general plant utility services. It is field-reversible, without removal from the line. This “workhorse” valve offers equal-percentage quick-change cage-type trim and can handle steam, industrial gases, air, water, and oil applications. This is a versatile, low cost valve available in iron and carbon steel.

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

**Maximum Cv:**
- 83

**Materials:**
- Body — DI, CS
- Trim — SST
- Seat — Metal, TFE

**End connections:**
- 1/2", 3/4", 1", 1-1/2", 2", 3" — NPT
- 1-1/2", 2", 3" — 125#, 250# integral flanges or 150#, 300# separable steel flanges

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

**Pressure drop:**
- Soft seat — up to 400 psid
- Metal seat — up to 740 psid

**Seat leakage:**
- Class IV and Class VI

**Options:**
- Stellited metal seat, P/P and I/P smart positioners
**MODEL // 764P**

The Model 764P is a reliable, versatile, and inexpensive pneumatic proportional pressure controller. It’s available with 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

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**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