

# Cartridge Cage Valves

## VCZA; VCZB Two-way Cartridge Cage Valves



Sweat Connection



Sweat Connection



Sweat Connection



NPT Connection



NPT Connection

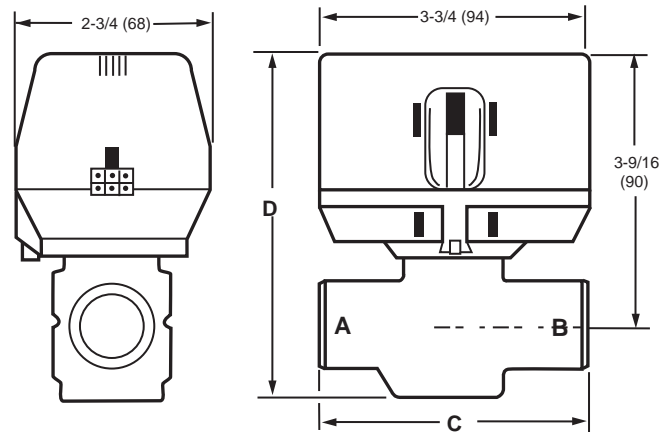


NPT Connection

Two-way Cartridge Cage Valves are intended for hydronic applications in a normal indoor environment to control the flow of hot water or chilled water glycol solution to 60% concentration. These valves are designed for zone control of heating/cooling systems, or to control individual fan coil, baseboard radiator or convector applications. Depending on the model selected they can be controlled by SPST or SPDT two position controller, tristate (floating), or modulating proportional controller. For best control, outdoor temperature compensation of supply water temperature is recommended. For trouble-free operation of the product, good installation practice must include initial system flushing, chemical water treatment, and the use of a 50 micron (or finer) system side stream filter(s). Remove all filters before flushing.

- Quick open, linear, and equal percentage flow characteristics available
- Bi-directional installation
- 3000-series valves for floating and modulating non-fail safe applications
- 1000-series valves for two-position control
- High close-off rating independent of Cv
- Available with a variety of North American and international pipe fittings
- No tools required for actuator installation or removal
- Actuator removal does not require draining system
- Service is by replacement of cartridge, not valve body
- Cartridge replacement rebuilds valve to factory-new condition

### Dimensions in inches (millimeters)



PIPE FITTING SIZES	C		D	
	IN.	MM	IN.	MM
3/8" FLARE <sup>1</sup>	3-7/8	98	4-3/8	111
1/2" SWEAT	3-1/2	89		
1/2" FLARE <sup>1</sup>	3-7/8	98		
1/2" INVERTED FLARE <sup>1</sup>				
1/2" NPT (int.)				
3/4" NPT (int.)	3-11/16	94	4-7/16	113
3/4" SWEAT				
1" NPT (int.)				
1" SWEAT				
1-1/4" SWEAT	4-5/16	110	4-5/8	118
1-1/4" NPT (int.)				

<sup>1</sup> NO ADAPTERS

M16839

# Cartridge Cage Valves

**Valve Type:** Cartridge Cage Valve  
**Valve Action:** Stem up to close A port  
**Body Pattern:** Two-way, Straight-through  
**Controlled Medium:** Chilled or hot water with up to 60% Glycol  
**Maximum Safe Operating Pressure:** 300 psi (2068 kPa (20 Bar))  
**Maximum Differential Pressure Ratings (Close-off):** (414 kPa; 60 psi (4 bar))  
**Fluid Temperature Range:** 34 F to 203 F (1 C to 95 C)  
**Ambient Temperature Range:** 32 F to 150 F (0 C to 65 C)  
**Stem Travel:** 0.4 in. (10 mm)

**Materials**  
**(Body):** Bronze  
**(Stem):** Stainless Steel  
**(Seat):** EPDM O-ring seals on Noryl piston  
**(Cartridge):** Ryton™, Noryl™ engineering plastic  
**(Packing):** EPDM rubber  
**Includes:** Cartridge installation wrench  
**Approvals**  
**Canadian Standards Association:** CSA Certified

**Accessories:**  
**40007029-002-Wrench** for cartridge (included with sweat valves and all replacement cartridges)

## Valves with Linear Flow Characteristic

**Comments:** Characterized cartridge; Can be controlled by either a low or a line voltage SPDT or SPST or floating controller

Product Number	Valve Size		Flow Capacity		Timing (sec, min.) when used with VC series Actuator	Connection Type	Actuation	Used With
	(inch)	DN	(Cv)	(Kv)				
VCZAA1100/U	1/2 in.	DN15	3.5 Cv	3.03 kvs	On/Off models with 6 seconds	Sweat	Must be purchased separately	VC actuators, On-Off Type
VCZAE1100/U	1/2 in.	DN15	3.2 Cv	2.74 kvs	On/Off models with 6 seconds	Inverted Flare	Must be purchased separately	VC actuators, On-Off Type
VCZAL1100/U	3/4 in.	DN20	4.7 Cv	4.0 kvs	On/Off models with 6 seconds	Female NPT	Must be purchased separately	VC actuators, On-Off Type
VCZAM1100/U	3/4 in.	DN20	4.6 Cv	3.9 kvs	On/Off models with 6 seconds	Sweat	Must be purchased separately	VC actuators, On-Off Type
VCZAR1100/U	1 in.	DN25	6.6 Cv	5.7 kvs	On/Off models with 6 seconds	Female NPT	Must be purchased separately	VC actuators, On-Off Type
VCZAS1100/U	1 in.	DN25	6.6 Cv	5.7 kvs	On/Off models with 6 seconds	Sweat	Must be purchased separately	VC actuators, On-Off Type
VCZBB1100/U	1/2 in.	DN15	3.5 Cv	3.03 kvs	On/Off models with 6 seconds	Female NPT	Must be purchased separately	VC actuators, On-Off Type
VCZBD1100/U	1 1/4 in.	DN32	7.0 Cv	6.5 kvs	On/Off models with 6 seconds	Female NPT	Must be purchased separately	VC actuators, On-Off Type
VCZBE1100/U	1 1/4 in.	DN32	7.0 Cv	6.5 kvs	On/Off models with 6 seconds	Sweat	Must be purchased separately	VC actuators, On-Off Type

## Valves with Linear Flow Characteristic

**Comments:** Characterized cartridge for use with non-fail safe floating and modulating actuators

Product Number	Valve Size		Flow Capacity		Timing (sec, min.) when used with VC series Actuator	Connection Type	Actuation	Used With
	(inch)	DN	(Cv)	(Kv)				
VCZAA3100/U	1/2 in.	DN15	3.5 Cv	3.03 kvs	2 minutes	Sweat	Proportional non-fail safe, purchase separately	VC6830/VC6831/VC6834; VC6930/VC6931/VC6934; VC7930/VC7931/VC7934
VCZAL3100/U	3/4 in.	DN20	4.7 Cv	4.0 kvs	2 minutes	Female NPT	Proportional non-fail safe, purchase separately	VC6830/VC6831/VC6834; VC6930/VC6931/VC6934; VC7930/VC7931/VC7934
VCZAM3100/U	3/4 in.	DN20	4.7 Cv	4.0 kvs	2 minutes	Sweat	Proportional non-fail safe, purchase separately	VC6830/VC6831/VC6834; VC6930/VC6931/VC6934; VC7930/VC7931/VC7934
VCZAR3100/U	1 in.	DN20	6.6 Cv	5.7 kvs	2 minutes	Female NPT	Proportional non-fail safe, purchase separately	VC6830/VC6831/VC6834; VC6930/VC6931/VC6934; VC7930/VC7931/VC7934
VCZAS3100/U	1 in.	DN20	6.6 Cv	5.7 kvs	2 minutes	Sweat	Proportional non-fail safe, purchase separately	VC6830/VC6831/VC6834; VC6930/VC6931/VC6934; VC7930/VC7931/VC7934
VCZBB3100/U	1/2 in.	DN15	3.5 Cv	3.03 kvs	2 minutes	Female NPT	Proportional non-fail safe, purchase separately	VC6830/VC6831/VC6834; VC6930/VC6931/VC6934; VC7930/VC7931/VC7934
VCZBD3100/U	1 1/4 in.	DN32	7.0 Cv	6.5 kvs	2 minutes	Female NPT	Proportional non-fail safe, purchase separately	VC6830/VC6831/VC6834; VC6930/VC6931/VC6934; VC7930/VC7931/VC7934
VCZBE3100/U	1 1/4 in.	DN32	7.0 Cv	6.5 kvs	2 minutes	Sweat	Proportional non-fail safe, purchase separately	VC6830/VC6831/VC6834; VC6930/VC6931/VC6934; VC7930/VC7931/VC7934

Commercial Components

# Cartridge Cage Valves

## Valves with Modified Equal Percent Flow Characteristic

Comments: Characterized cartridge for use with non-fail safe floating and modulating actuators

Product Number	Valve Size		Flow Capacity		Timing (sec, min.) when used with VC series Actuator	Connection Type	Actuation	Used With
	(inch)	DN	(Cv)	(Kv)				
VCZAA3400/U	1/2 in.	DN15	2.3 Cv	1.98 kvs	2 minutes	Sweat	Proportional non-fail safe, purchase separately	VC6830/VC6831/VC6834; VC6930/VC6931/VC6934; VC7930/VC7931/VC7934
VCZAA3500/U	1/2 in.	DN15	0.7 Cv	0.6 kvs	2 minutes	Sweat	Proportional non-fail safe, purchase separately	VC6830/VC6831/VC6834; VC6930/VC6931/VC6934; VC7930/VC7931/VC7934
VCZAA3600/U	1/2 in.	DN15	1.3 Cv	1.1 kvs	2 minutes	Sweat	Proportional non-fail safe, purchase separately	VC6830/VC6831/VC6834; VC6930/VC6931/VC6934; VC7930/VC7931/VC7934
VCZAA3800/U	1/2 in.	DN15	1.9 Cv	1.64 kvs	2 minutes	Sweat	Proportional non-fail safe, purchase separately	VC6830/VC6831/VC6834; VC6930/VC6931/VC6934; VC7930/VC7931/VC7934
VCZAL3400/U	3/4 in.	DN20	3.9 Cv	3.4 kvs	2 minutes	Female NPT	Proportional non-fail safe, purchase separately	VC6830/VC6831/VC6834; VC6930/VC6931/VC6934; VC7930/VC7931/VC7934
VCZAL3800/U	3/4 in.	DN20	3.1 Cv	2.6 kvs	2 minutes	Female NPT	Proportional non-fail safe, purchase separately	VC6830/VC6831/VC6834; VC6930/VC6931/VC6934; VC7930/VC7931/VC7934
VCZAM3400/U	3/4 in.	DN20	3.9 Cv	3.4 kvs	2 minutes	Sweat	Proportional non-fail safe, purchase separately	VC6830/VC6831/VC6834; VC6930/VC6931/VC6934; VC7930/VC7931/VC7934
VCZAR3400/U	1 in.	DN20	4.2 Cv	3.6 kvs	2 minutes	Female NPT	Proportional non-fail safe, purchase separately	VC6830/VC6831/VC6834; VC6930/VC6931/VC6934; VC7930/VC7931/VC7934
VCZAS3400/U	1 in.	DN20	4.2 Cv	3.6 kvs	2 minutes	Sweat	Proportional non-fail safe, purchase separately	VC6830/VC6831/VC6834; VC6930/VC6931/VC6934; VC7930/VC7931/VC7934
VCZBB3400/U	1/2 in.	DN15	2.3 Cv	1.98 kvs	2 minutes	Female NPT	Proportional non-fail safe, purchase separately	VC6830/VC6831/VC6834; VC6930/VC6931/VC6934; VC7930/VC7931/VC7934
VCZBB3500/U	1/2 in.	DN15	0.7 Cv	0.6 kvs	2 minutes	Female NPT	Proportional non-fail safe, purchase separately	VC6830/VC6831/VC6834; VC6930/VC6931/VC6934; VC7930/VC7931/VC7934
VCZBB3600/U	1/2 in.	DN15	1.3 Cv	1.1 kvs	2 minutes	Female NPT	Proportional non-fail safe, purchase separately	VC6830/VC6831/VC6834; VC6930/VC6931/VC6934; VC7930/VC7931/VC7934
VCZBB3800/U	1/2 in.	DN15	1.9 Cv	1.64 kvs	2 minutes	Female NPT	Proportional non-fail safe, purchase separately	VC6830/VC6831/VC6834; VC6930/VC6931/VC6934; VC7930/VC7931/VC7934