

# 8000 Series Cryogenic Option

## Fractional Flow Control Valves

CRN Registration Number Available

### FRACTIONAL FLOW CONTROL VALVES

The cryogenic option offers an 8" bonnet extension that provides protection for the packing and actuator by preventing the formation and build-up of ice, which can interfere with movement of the valve stem and affect valve performance and control. This model is for use on cryogenic services with temperatures as low as  $-425^{\circ}\text{F}$  ( $-254^{\circ}\text{C}$ ).

The Mark 8000 Series is a heavy-duty pneumatic control valve developed for cryogenic services. It is recommended for use with process below  $-40^{\circ}\text{F}$  ( $-40^{\circ}\text{C}$ ).

#### Features:

- Extended bonnet protects the packing and actuator by preventing ice build-up, which can interfere with stem movement and/or damage packing
- For services as low as  $-425^{\circ}\text{F}$  ( $-254^{\circ}\text{C}$ )
- Barstock construction eliminate possible porosity concerns
- For industrial process applications requiring precision low flow control and durable construction

#### SPECIFICATIONS

Sizes: 1/2" – 2" (DN15 – DN50)

#### End Connections

- Threaded – NPT, BSPT
- Raised-face flanges (300#, 600#, 900#)
- Ring-type joint flanges (150#, 300#, 600#)
- Socket weld (schedule 40, 80, or 160)
- Special connections upon request

#### Actuator (*Positioner required with all actuators*)

- Standard – 35M ( $35\text{in}^2$ ) multi-spring
- Optional – 55M ( $55\text{in}^2$ ) or 85M ( $85\text{in}^2$ ). See Maximum Allowable  $\Delta\text{P}$  Ratings Chart



**MK8000 SERIES CRYOGENIC OPTION SPECIFICATIONS**

**Body Material:** 316 Stainless Steel

**Trim Material**

- 316 SST
- Monel

**Bonnet Material:** 316 SST

**Actuator Material:** Steel

**Diaphragm Material:** Buna-N

**Stem Packing Material**

- Standard – Teflon V-Rings
- Optional – braided

**Service:** gas or liquid

**Shutoff**

- Standard – ANSI Class III (Cv's < 3.5/3,01 Kv); ANSI Class IV (Cv's 3.5/3,01 Kv and higher)
- Optional – ANSI Class VI with soft RPTFE seat (consult factory for other soft seat material options)

**Ranges:** 3-15 (0,2-1,0); 3-9 (0,2-0,6); 9-15 (0,6-1,0); 6-30 (0,4-2,1) psi (bar). Note: valves using 55M or 85M are not available with 9-15 psi (0,6-1,0 bar) range

**Valve Action**

- Direct (ATC)
- Reverse (ATO)

**Flow Characteristics:**

- Linear
- Equal Percentage
- Quick Opening

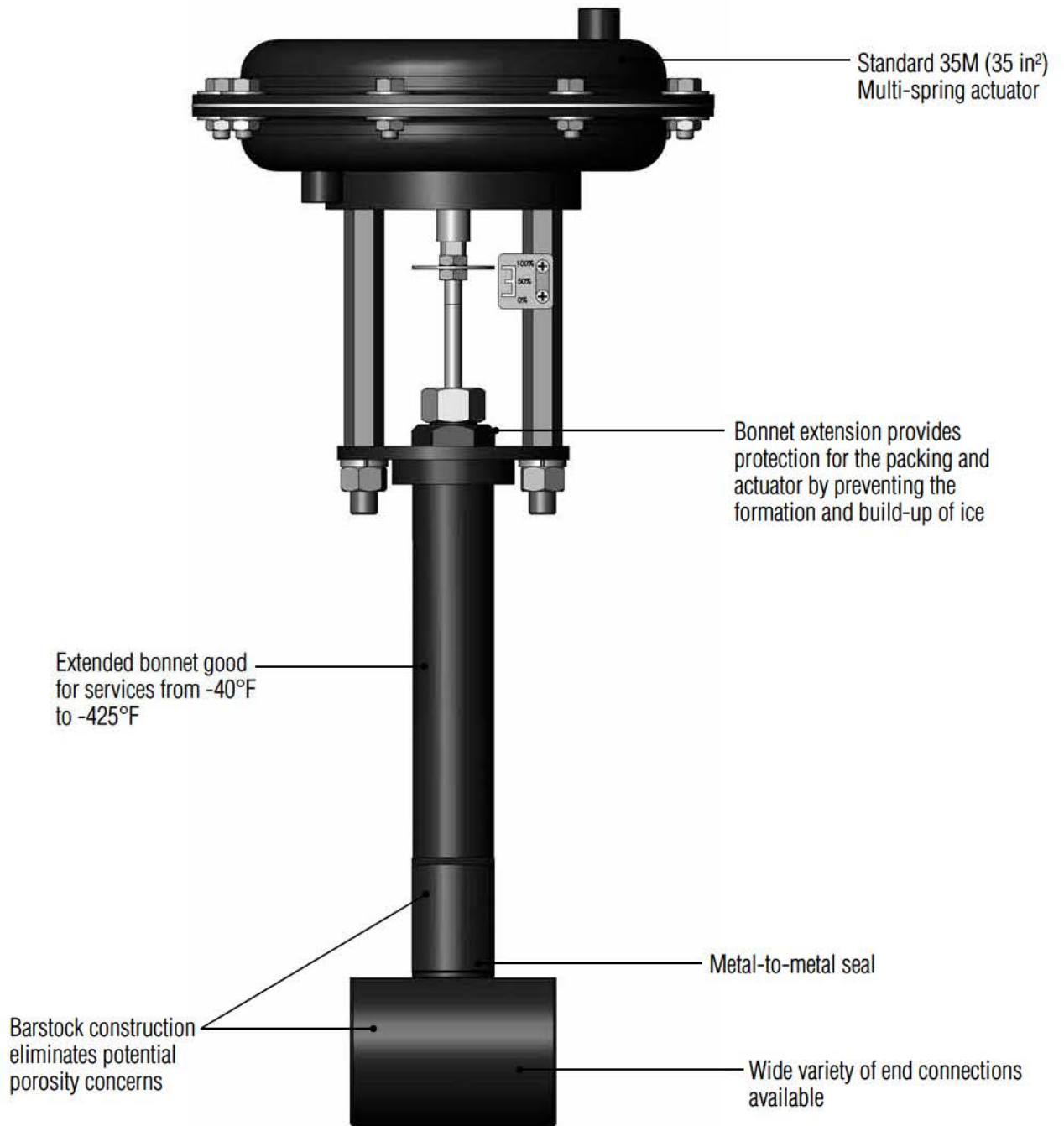
**Cv (Kv) Selection**

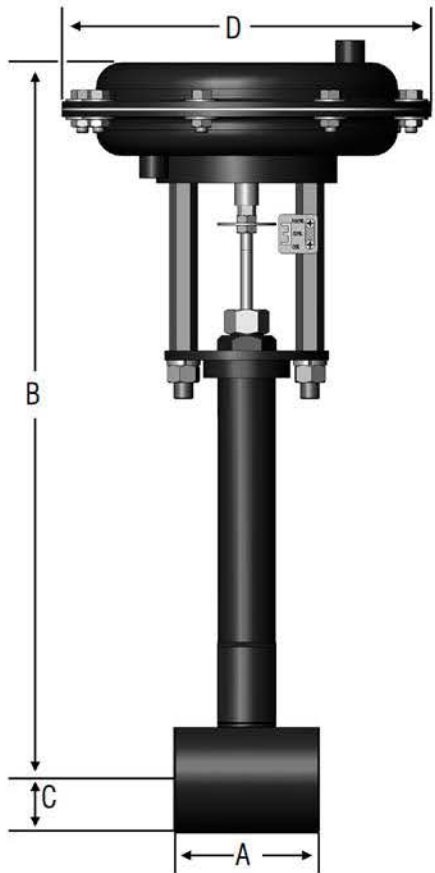
Valve Size	Standard Cv (Kv)
1/2"/DN15	0.05; 0.1; 0.2; 0.5; 1.0; 1.8 (0,04; 0,09; 0,17; 0,43; 0,86; 1,6)
3/4"/DN20	1.0; 2.0; 3.0 (0,86; 1,7; 2,6)
1"/DN25	2.0; 4.0; 4.3 (1,7; 3,4; 3,7)
1-1/4"/DN32	4.0; 6.5; 7.1 (3,4; 5,6; 6,1)
1-1/2"/DN40	6.5; 9.0; 17.0 (5,6; 7,7; 10,8)
2"/DN50	9.0; 16.0; 17.0 (7,7; 13,8; 14,6)

**Maximum Allowable ΔP Ratings**

Act. Size	Cv (Kv)	Air to Open		Air to Close		Pos. @ 40 psi
		3-15 @ 20 psi	6-30 @ 40 psi*	3-15 @ 20 psi	6-30 @ 40 psi	
35M	0.05-0.2 (0,4-0,2)	5000 (345)	5000 (345)	5000 (345)	5000 (345)	N/A
	0.5-1.0 (0,4-0,9)	3030 (209)	5000 (345)	5000 (345)	5000 (345)	N/A
	1.25-2.0 (1,1-1,7)	950 (66)	1900 (131)	1580 (109)	3160 (218)	N/A
	3.0-4.0 (2,6-3,4)	600 (41)	1300 (90)	1000 (69)	2200 (152)	N/A
	4.3-6.5 (3,7-5,6)	400 (28)	800 (55)	650 (45)	1400 (97)	3500 (241)
	7.1-9.0 (6,1-7,7)	270 (19)	550 (38)	450 (31)	950 (66)	2400 (165)
	12.5-16.0 (10,8-13,8)	150 (10)	300 (21)	250 (17)	500 (34)	1300 (90)
	55M	4.3-6.5 (3,7-5,6)	550 (38)	1100 (76)	900 (62)	1900 (131)
7.1-9.0 (6,1-7,7)		370 (26)	750 (52)	600 (41)	1250 (86)	N/A
12.5-16.0 (10,8-13,8)		200 (14)	400 (28)	350 (24)	700 (48)	N/A
17.0 (14,6)		130 (9)	250 (17)	225 (16)	448 (31)	N/A
85M	4.3-6.5 (3,7-5,6)	850 (59)	1700 (117)	1400 (97)	2930 (202)	N/A
	7.1-9.0 (6,1-7,7)	570 (39)	1150 (79)	920 (63)	1930 (133)	N/A
	12.5-16.0 (10,8-13,8)	300 (21)	610 (42)	540 (37)	1080 (74)	N/A
	17.0 (14,6)	200 (14)	380 (26)	350 (24)	690 (48)	N/A

## MK8000 SERIES CRYOGENIC OPTION FEATURES & BENEFITS



**MK8000 SERIES CRYOGENIC OPTION DIMENSIONS**

**Mark 8000CRY Series, Flanged End**

VALVE SIZE	ANSI FLANGE	DIMENSIONS				WEIGHT <sup>1</sup> LBS
		A <sup>1</sup>	B <sup>1</sup>	C	D <sup>1</sup>	
1/2"	150#	7.00	11.62	1.25	9.5	21
	300#	7.50	11.62	1.25	9.5	24
	600#	8.00	11.62	1.25	9.5	26
3/4"	150#	7.00	11.62	1.25	9.5	23
	300#	7.63	11.62	1.25	9.5	26
	600#	8.12	11.62	1.25	9.5	28
1"	150#	7.25	11.62	1.50	9.5	24
	300#	7.75	11.62	1.50	9.5	27
	600#	8.25	11.62	1.50	9.5	29
1-1/4"	150#	8.75	12.00	1.65	9.5	28
	300#	9.25	12.00	1.65	9.5	31
	600#	9.50	12.00	1.65	9.5	33
1-1/2"	150#	8.75	13.62	2.00	9.5	32
	300#	9.25	13.62	2.00	9.5	35
	600#	9.88	13.62	2.00	9.5	37
2"	150#	10.00	13.87	2.25	9.5	35
	300#	10.50	13.87	2.25	9.5	38
	600#	11.25	13.87	2.25	9.5	40

<sup>1</sup> Dimensions shown are for 35M. For 55M, add 1.12" to 'B', 3" to 'D', and 11# to weight. For 85M, add 2.12" to 'B', 5.5" to 'D', and 16# to weight

Dimensions shown with 8" bonnet. Contact factory for optional 14" dimensions.

**Mark 8000CRY Series**

VALVE SIZE	DIMENSIONS, INCHES				WEIGHT <sup>1</sup> LBS
	A	B <sup>1</sup>	C	D <sup>1</sup>	
1/2"	3.00	19.62	1.25	9.50	18
3/4"	3.00	19.62	1.25	9.50	19
1"	3.75	19.62	1.50	9.50	21
1-1/4"	5.00	20.00	1.65	9.50	25
1-1/2"	4.75	21.62	2.00	9.50	29
2"	5.75	21.87	2.25	9.50	29

<sup>1</sup> Dimensions shown are for 35M. For 55M, add 1.12" to 'B', 3" to 'D', and 11# to weight. For 85M, add 2.12" to 'B', 5.5" to 'D', and 16# to weight

**Mark 8000CRY Series, Metric**

VALVE SIZE	DIMENSIONS, MM				WEIGHT <sup>1</sup> KGS
	A	B <sup>1</sup>	C	D <sup>1</sup>	
DN15	76	673	32	241	8
DN20	76	702	32	241	9
DN25	95	702	38	241	10
DN32	127	702	42	241	11
DN40	121	705	51	241	13
DN50	146	727	57	241	13

<sup>1</sup> Dimensions shown are for 35M. For 55M, add 28,4mm to 'B', 76,2mm to 'D', and 5kgs to weight. For 85M, add 54mm to 'B', 140mm to 'D', and 7kgs# to weight