

Mark 78 Series

Globe Style Control Valve

The Mark 78 pneumatic control valve is designed for accurate performance and simplified maintenance. This versatile product can be used on a variety of applications, including viscous/corrosive liquids, process gases or utility steam in process or utility service.

FUNCTION

The Mark 78 globe style control valve utilizes a cage retained seat design with unbalanced plug. The top entry cage design allows maintenance while the valve is in the line. The trim comes with stainless steel standard, or can easily accommodate special materials for maximum corrosion resistance. Threaded, welded, or flanged ends complete a truly versatile valve that covers a wide variety of applications from utility steam to process gases, to corrosive/viscous liquids.

FEATURES

- Top entry cage design – allows easy, in-line maintenance
- Optional soft seats – enables bubble-tight ANSI Class VI shutoff
- Characterized flow options – including linear, equal percentage, quick opening, or an equal-linear combination
- High capacity service – Cv's up to 60 (Kv's up to 51,6) in 2" (DN50) valves
- Lift out seats – seats are not screwed in, and lift out of the valve body for easy access and quick maintenance.
- Versatile use – can be used on a variety of applications including liquids, gases or steam



SPECIFICATIONS

Sizes: 1/2" through 2" (DN15 through DN50)

End Connections

- Threaded – NPT, BSPT, BSPP
- ANSI Flanges – 150#, 300#
- DIN Flanges – PN 10/16, PN25/40
- Companion Flanges – PN10/16, PN25/40
- Integral Flanges – ANSI 150#, 300#

Body Materials

- Bronze
- Carbon Steel
- Stainless Steel

Trim Materials

- 316 Stainless Steel

Service: air or gas

Seats

- Teflon/Stainless Steel
- Metal

O-Ring/Gasket

- Viton, EPDM

Shutoff

- ANSI Class VI with soft seat
- ANSI Class IV with hard seat

O-Ring/Gasket

- Viton, EPDM

Shutoff

- ANSI Class VI with soft seat
- ANSI Class IV with hard seat

Actuator

- Sizes: 35M, 55M, 85M
- Signal Range: 3-15 psi (0,2-1,0 bar) standard
- Maximum Actuator Pressure: 45 psi (3,1 bar)
- Available with side or top mounted positioners.

Flow Characteristics

- Equal Percentage
- Linear
- Quick Opening
- Equal-linear combination

Rangeability

- Equal percentage or equal-linear: 60:1
- Linear: 30:1

Recovery Factor, F_L : 0.9

Valve Capacity, Cv (Kv)

Plug Style	Cv (Kv) per Valve Seat Size				
	1/2" DN15	3/4" DN20	1" DN25	1-1/2" DN40	2" DN50
Equal Percentage	4.4 (3,8)	8.0 (6,9)	11.5 (9,9)	30 (26)	45 (39)
Linear	4.4 (3,8)	8.0 (6,9)	12.2 (10,5)	30 (26)	45 (39)
Equal-Linear	4.4 (3,8)	8.0 (6,9)	12.0 (10,3)	35 (30)	50 (43)
Quick Opening	4.6 (4,0)	9.0 (7,7)	12.7 (10,9)	40 (34)	60 (52)

Maximum Allowable ΔP , PSI (BAR)

(Flow-to-open with 3-15 spring)

Actuator Size	Body Alloy	Cv (Kv) per Valve Seat Size				
		1/2"	3/4"	1"	1-1/2"	2"
35M	BRZ	400 (28)	224 (16)	125 (9)	N/A	N/A
ATO	CS/SS	400 (28)	225 (16)	125 (9)	N/A	N/A
35M	BRZ	500 (34)	375 (26)	225 (16)	N/A	N/A
ATC	CS/SS	650 (45)	375 (26)	225 (16)	N/A	N/A
55M	BRZ	500 (34)	350 (24)	225 (16)	80 (6)	40 (3)
ATO	CS/SS	600 (41)	350 (24)	225 (16)	80 (6)	40 (3)
55M	BRZ	500 (34)	500 (34)	350 (24)	120 (8)	60 (4)
ATC	CS/SS	950 (66)	600 (41)	350 (24)	120 (8)	60 (4)
85M	ATO	ALL	N/A	N/A	100 (7)	75 (5)
85M	ATC	ALL	N/A	N/A	200 (14)	115 (8)
35M*	BRZ	500 (34)	450 (31)	250 (17)	N/A	N/A
ATO	CS/SS	800 (55)	450 (31)	250 (17)	N/A	N/A
35M*	BRZ	500 (34)	500 (34)	450 (31)	N/A	N/A
ATC	CS/SS	1000 (69)	750 (48)	450 (31)	N/A	N/A
55M*	BRZ	500 (34)	500 (34)	450 (31)	160 (11)	80 (6)
ATO	CS/SS	1000 (69)	700 (52)	450 (31)	160 (11)	80 (6)
55M*	BRZ	500 (34)	500 (34)	500 (34)	240 (17)	125 (9)
ATC	CS/SS	1000 (69)	1000 (69)	675 (47)	240 (17)	125 (9)
85M*	ATO	ALL	N/A	N/A	200 (14)	150 (10)
85M*	ATC	ALL	N/A	N/A	400 (28)	230 (16)

* with a positioner supplying 40 psi (2,8 bar) to the actuator

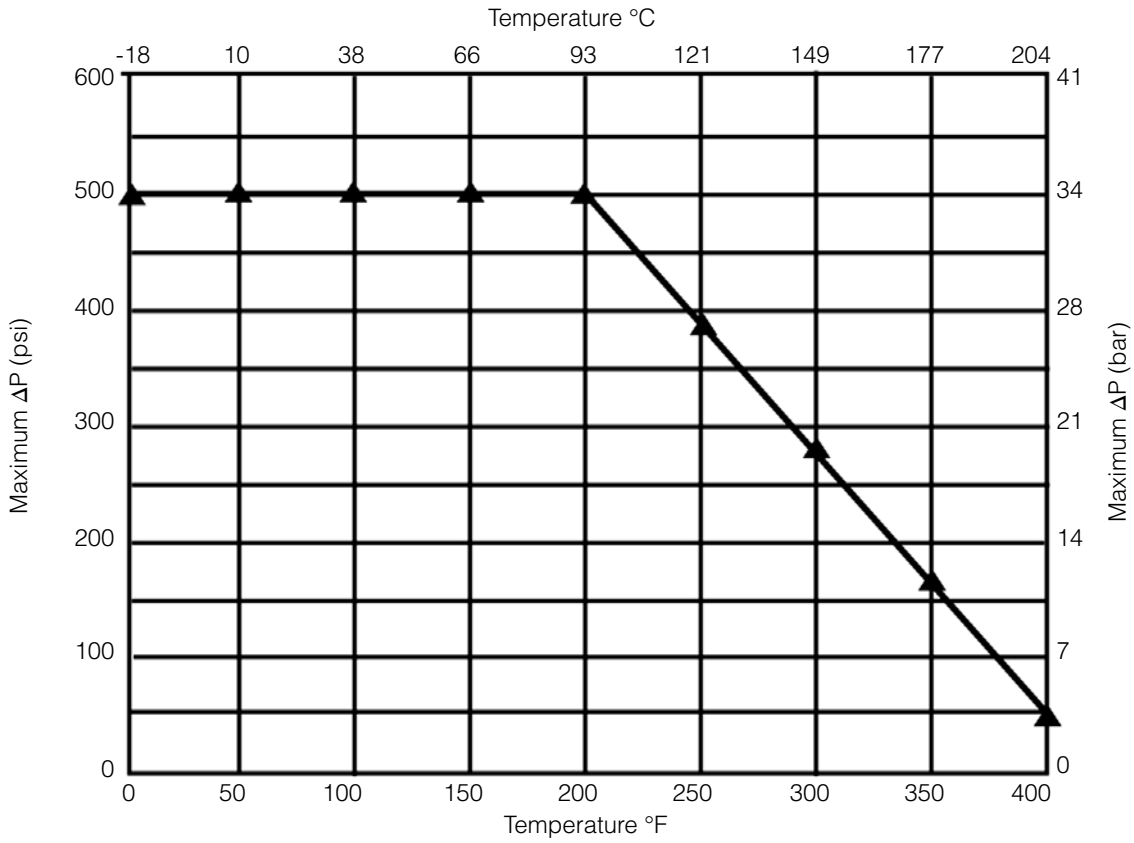
Pressure Temperature Limits

- Viton: -20°F to 400°F (-29°C to 204°C)
- EPDM: -40°F to 350°F (-40°C to 177°C)

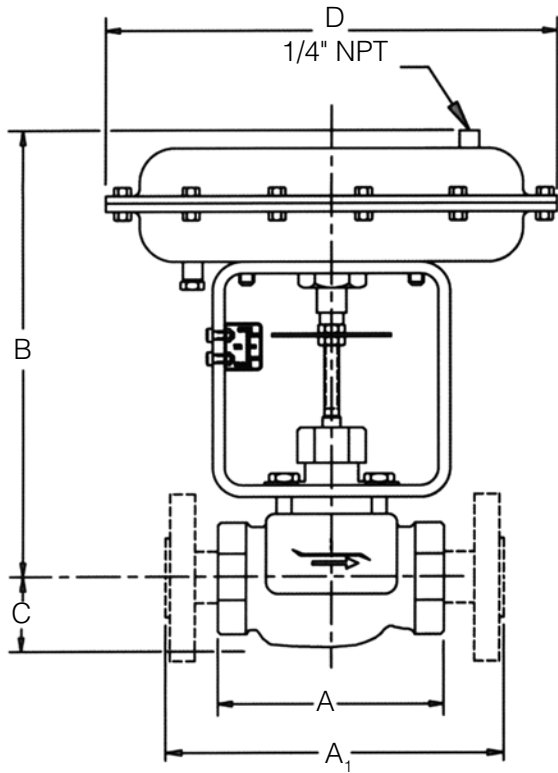
°F (°C)	-20 (-29)	100 (38)	200 (93)	300 (149)	400 (204)
PSI (BAR) BRZ	500 (34)	500 (34)	475 (33)	425 (29)	375 (26)
PSI (BAR) CS/SS	1000 (69)	1000 (69)	1000 (69)	1000 (69)	1000 (69)

PRESSURE TEMPERATURE CHARTS

- Pressure/Temperature Ratings, Soft Seat



DIMENSIONS



• Flanged Ends

Size	Actuator Size	ANSI Flange	Dimensions (inches)				Weight Lbs
			A	B	C	D	
1/2"	35M	150#	7.25	9.62	1.31	9.50	12
	55M		7.25	10.88	1.31	12.50	32
	35M	300#	7.50	9.62	1.31	12.50	34
	55M		7.50	10.88	1.31	12.50	34
3/4"	35M	150#	7.25	9.62	1.31	9.50	14
	55M		7.25	10.88	1.31	12.50	34
	35M	300#	7.62	9.62	1.31	9.50	16
	55M		7.62	10.88	1.31	12.50	36
1"	55M	150#	7.25	10.88	1.31	12.50	14
	85M		7.25	11.75	1.31	15.00	34
	55M	300#	7.75	10.88	1.31	12.50	16
	85M		7.75	11.75	1.31	15.00	36
1-1/2"	55M	150#	8.75*	13.00	2.18	12.50	51
	85M		8.75*	13.88	2.18	15.00	61
	55M	300#	9.25*	13.00	2.18	12.50	57
	85M		9.25*	13.88	2.18	12.50	67
2"	55M	150#	10.00	13.00	2.18	15.00	65
	85M		10.00	13.88	2.18	15.00	65
	55M	300#	10.50	13.00	2.18	12.50	59
	85M		10.50	13.88	2.18	15.00	69

* IFE only for welded and threaded flanges, the face-to-face will be 11.00" and not be ANSI standard

• Threaded Ends

Size	Actuator Size	Dimensions (inches)				Weight Lbs
		A	B	C	D	
1/2" & 3/4"	35M	4.50	9.62	1.31	9.50	10
	55M	4.50	10.88	1.31	12.50	30
1"	35M	4.50	9.62	1.31	9.50	10
	55M	4.50	10.88	1.31	12.50	30
1-1/2"	55M	6.75	13.00	2.18	12.50	45
	85M	6.75	13.88	2.18	15.00	55
2"	55M	6.75	13.00	2.18	12.50	45
	85M	6.75	13.88	2.18	15.00	55

• Flanged Ends, Metric

Size DN	Actuator Size	Flange (PN)	Dimensions (metric)				Weight Kgs
			A ₁ *	B	C	D	
15	35M	10/16	184	244	33	241	5,4
	55M	25/40	184	276	33	317	14,5
20	35M	10/16	184	244	33	241	6,3
	55M	25/40	184	276	33	317	15,4
25	35M	10/16	184	276	33	241	6,3
	55M	25/40	184	298	33	317	15,4
40	55M	10/16	279	330	55	317	23,1
	85M	25/40	279	353	55	381	27,7
50	55M	10/16	279	330	55	317	24,9
	85M	25/40	279	353	55	381	29,5

* Not per DIN 3202

• Threaded Ends, Metric

Size	Actuator Size	Dimensions (metric)				Weight Kgs
		A	B	C	D	
DN15 & DN20	35M	114	244	33	241	4,5
	55M	114	276	33	318	13,6
DN25	35M	114	276	33	241	4,5
	55M	114	298	33	318	13,6
DN40	55M	171	330	55	318	20,4
	85M	171	353	55	381	25,0
DN50	55M	171	330	55	318	20,4
	85M	171	353	55	381	25,0

Integral flange ends available in WCB and CF8M for 1-1/2" & 2"

All bronze ends are threaded

MARK 78 GLOBE STYLE CONTROL VALVE

ORDERING SCHEMATIC

Model No	Size	Body Mat'l	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

Model	
78	Standard
78TP	Top Mounted Positioner
78SP	Side Mounted Positioner

Size	
050	1/2" (DN15)
075	3/4" (DN20)
100	1" (DN25)
150	1-1/2" (DN40)
200	2" (DN200)

Body Material	
BR	Bronze
CS	Carbon Steel (WCB)
S6	Stainless Steel (CF8M)

1 & 2	End Connections
PT	NPT
BT	BSPT
BP	BSPP
SW	FSW
F5	150# FE
F3	300# FE
I5	150# FE
I3	300# FE
F7	PN 10 DIN FE
F6	PN 16 DIN FE
F8	PN 25 DIN FE
F4	PN40 DIN FE
ZZ	Non-Standard

3 & 4	Trim
TS	316SS Teflon Packing
BS	316SS Teflon Braided Packing
ZZ	Non-Standard

5	Seats (Characteristic)
A	Linear Hard
B	Linear Soft
C	Equal Percentage Hard
D	Equal Percentage Soft
E	Quick Open Hard
F	Quick Open Soft
G	Equal Linear Hard
H	Equal Linear Soft
Z	Non-Standard

6	Seats (Cv (Kv))
4	1.8 (1,5)
5	2.5 (2,2)
6	4.4 (3,8)
7	4.6 (4,0)
8	8.0 (6,9)
M	9.0 (7,7)
N	11.5 (9,9)
P	12.0 (10)
Q	12.2 (10,5)
R	12.7 (10,9)
9	15 (25,8)
B	30 (25,8)
V	35 (30,1)
U	40 (34,4)
W	45 (38,7)
C	50 (43,0)
1	60 (51,6)
Z	Non-Standard

MARK 78 GLOBE STYLE CONTROL VALVE

ORDERING SCHEMATIC (CON'T)

Model No	Size	Body Mat'l	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	

7 & 8	Actuator Range		
	Range	Actuator	
	78 & 78TP		
A	3-15 DIR	3	35M
B	3-15 REV	5	55M
C	3-9 DIR	8	85M
D	3-9 REV		
E	9-15 DIR		
F	9-15 REV		
G	6-30 DIR		
H	6-30 REV		
	78SP		
A	DIR		
B	REV		
ZZ	Non-Standard		

13 & 14	Accessories
00	None
AR	Air Regulator

15	Action
D	Air-to-Close
R	Air-to-Open

16	I/P
0	None
3	I/P 35M Actuator 4-20Ma/3-15 psi
5	I/P 55M Actuator 4-20Ma/3-15 psi
8	I/P 85M Actuator 4-20MA/3-15 psi

9 & 10	Diaphragm		
	Material	Size	
B	Buna-N	3	35M
V	Viton	5	55M
N	Neoprene/Nylon	8	85M
ZZ	Non-Standard		

17	O-Ring
E	EPDM
V	Viton
ZZ	Non-Standard

11 & 12	Actuator		
	Type	Size	
	78		
A	Standard	3	35M
		5	55M
		8	85M
	78SP		
S	with MK16IQ		
	78TP		
D	Air-to-Close		
R	Air-to-Open		
ZZ	Non-Standard		

18	SMP
A	SMP DIR/REV 3-15
D	SMP/IP DIR/REV 4-20
G	MK16IQ DIR/REV
H	MK16IQ-B DIR/REV

19	PED Compliance
0	Not Required
F	CE Category 1
ZZ	Non-Standard

