

## MAN Series Actuators - Electric Flow Regulating (FRC)

There is an increasing need for remote control of many valves, including Needle multi-turn style valves. Until recently, this required a combination of both pneumatic and electric systems working in tandem, which is cumbersome and expensive to operate.

Parker Autoclave Engineers has developed an All-Electric Regulating/Full Closure actuator for use with the MPI™ (Medium Pressure Inverted (Gland)) connection style needle valves.

Available in Weather-Proof or Explosion-Proof versions, these actuators allow for remote control and feedback to digital control systems with just a 4-20mA signal.

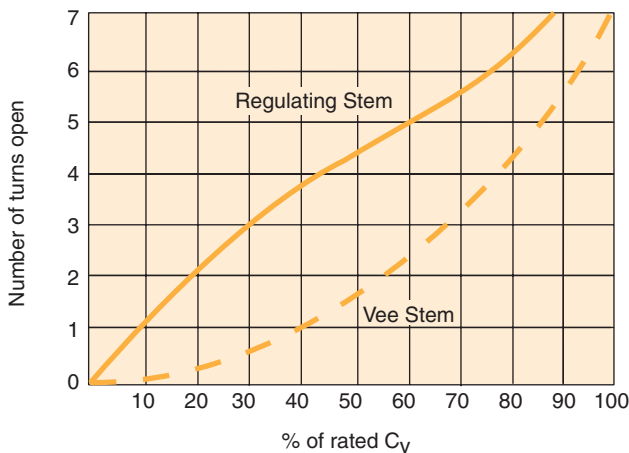
### Features and Benefits

- 24 VDC, 72 Watt Max Operation (5 wire)
- 4-20mA Remotely Powered Input Signal
- Internally Powered 4-20mA Output of Exact Position
- Oiled-For-Life Bearings (Bronze) and Gears (Sintered)
- Weather-Proof Aluminum Housing
- Explosion-Proof Cast Aluminum Anodized Nema 8/IP67 CSA Approved, Class 1 Div 1 Groups B, C, D
- Life Expectancy - 250,000 Cycles MTF



Electric Actuated Shut-Off/Flow Regulating

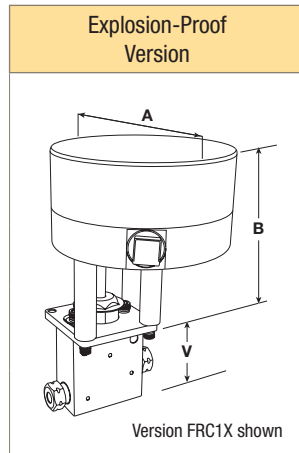
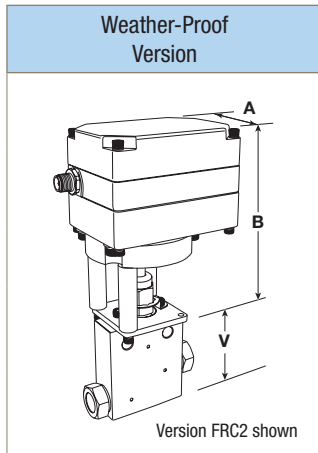
### Generalized Flow Coefficient Curves (C<sub>v</sub>)



Explosion Proof Electric Actuated Shut-Off/Flow Regulating

MPI™ Medium Pressure Valves

## Dimensions:



Version	A	B	V
Weather-Proof <b>FRC1</b>	3.0" (76.2 mm)	3.67" (93.2 mm)	See Valve Dimension of Body Style on Pages 38-40
Weather-Proof <b>FRC2</b> High Torque	3.0" (76.2 mm)	5.57" (141.4 mm)	
Explosion-Proof <b>FRC1X</b>	4.25" (107.9 mm)	4.35" (110.4 mm)	
Explosion-Proof <b>FRC2X</b> High Torque	4.25" (107.9 mm)	5.86" (148.8 mm)	

## Electrical Specifications:

- Electrical Input: 24VDC only, 72 Watt maximum
- Control Input: 4-20mA
- Position Feedback: Independent 4-20mA
- Position Detection: Hall Sensors
- Motor: BLDC brushless DC motor

## Position on Powerloss:

- Remembers Last Position
- Reseats Valve if Signal is Between 3.0 and 4.16mA

## Mechanical Specifications:

- Standard Enclosure - EPD Coated NEMA 4/IP65 Equivalent
- Optional Anodized Aluminum Explosion-Proof Enclosure, Nema 8/IP67, CSA Approved for Class 1, Groups B, C, D /T6 Areas
- 500+ Positions per turn (+/- 0.25° Position Accuracy), 3243 Actuator Positions over Full Span
- Speed Range: 3 to 15 seconds/turn
- Operational Temperature -40°(-40°C) to 160°F(70°C), Valve Temperature not to exceed 600°F
- Actuator Life Expectancy: 250,000 cycles
- Gears and Bearings are Lifetime Lubricated
- 20 ft. cable included with 6 pin/5 wire connector (FRC1 and FRC2 only)

MPI™ Medium Pressure Valves

## Ordering Guide:

Example Part Number:	9MP7	—	MAN	—	ARR	—	T	—	SS	—	LBT	—	FRC1
Ordering Parameters/Options:	Valve Size Connection Type		Valve Series		Valve Body/Stem Type		Valve Packing (-100 to 600°F Options)		Valve Material		Valve Options		Electric Flow Regulating Actuator
Table Reference: (see below)	A		B		C		D		E		F		G

Example: **9MP7-MANARR-T-SS-LBT-FRC1** = 9/16" MPI, MAN Series Needle Valve, 2 Way Angle/Regulating Stem/Replaceable Seat, 316 Stainless Steel, Cryogenic, Indoor Weather-Proof Electric Actuator

A - Valve Size / Connection Type	
4MP7	1/4" MPI
6MP7	3/8" MPI
8MP7	1/2" MPI
9MP7	9/16" MPI

B - Valve Series	
MAN	MAN Series Needle Valves

C - Valve Body / Stem Type	
LR	2 Way Straight/Regulating Stem
AR	2 Way Angle/Regulating Stem
ARR	2 Way Angle/Regulating Stem/Replaceable Seat
XRD <sup>1</sup>	3 Way/Regulating/1 Inlet - 2 Stem Outlet

D - Valve Packing (-100 to 600°F Options)	
T	PTFE Packing: -100°F (-73°C) to 450°F (232°C)
TG <sup>2</sup>	PTFE/Glass (25%) Packing to 600°F (316°C)

E - Valve Material	
SS	316 Stainless Steel (Cold Worked)
2507	Super Duplex (Annealed)

F - Valve Options	
LBT	Cryogenic Applications to -100°F (-73°C)
HYG	Hydrogen/Helium Applications
XF	Extra Strength Ferrule Set for sizes 12 & 16 (2507 Super Duplex Tubing Only)

G - Electric Flow Regulating Actuator	
FRC1	Indoor/Weather-Proof
FRC2	Indoor/Weather-Proof (for 8MP7 or 9MP7 Only)
FRC1X	Explosion-Proof - Class 1, Div. 1, Groups B, C, and D
FRC2X	Explosion-Proof - Class 1, Div. 1, Groups B, C, and D (for 8MP7 or 9MP7 Only)
FRC1Xc	Explosion-Proof with Div 2 Explosion Proof Cable Option
FRC2Xc	Explosion-Proof with Div 2 Explosion Proof Cable Option (for 8MP7 or 9MP7 Only)

1- XRD option would require two actuators unless otherwise specified

2- Good ventilation is required when using Valve/Actuator at extended temperatures. Actuator internal temperature cannot exceed -40° to 160°F.