



Emech® Three-Way Temperature Control Valve

Water to Water Mixing - E20W, E25W, E40W, E50WR, and E80WR



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Emech® Three-Way Temperature Control Valve provides precise temperature control accuracy. E20W, E25W, E40W, and E50WR are capable of blending to $\pm 1^\circ\text{F}$ (0.5°C), and E80WR is capable of blending to $\pm 2^\circ\text{F}$ (1°C). Emech® Water-to-Water systems feature a $32^\circ\text{F} - 212^\circ\text{F}$ ($0^\circ\text{C} - 100^\circ\text{C}$) control range and are capable of blending from 0% to 100% of either inlet temperature. The electronic actuator and temperature sensor deliver high-performance, standalone, closed-loop control. Emech® utilizes shear action disc technology to provide high-pressure differential capability, and long life expectancy. Even with sudden changes to inlet pressures and temperatures, the actuator aggressively responds to minimize outlet temperature variations, making the system ideal for use in a variety of applications as a simple standalone mixing valve, or as an integrated mixing solution.

General Features

- Top entry to valve allows inline access to internal parts
- 90° stroke time as low as 1.5 seconds for fast control action
- Precise positioning achieving 0.03° valve seat placement
- Keypad display for full actuator configuration without external devices required
- Local closed-loop temperature control
- Failsafe position feedback (non-contact absolute encoder)
- Manual override with electrical safety interlock
- 100% duty cycle rated for continuous control
- Electronic stroke setting (up to 355° rotation)



E25W



E50WR



E80WR

Material and Design Specifications	
Valve Body	Stainless Steel CF8M
Bonnet	(Type 316)
Disc	Ceramic - E20W, E25W, E40W Zirconia - E50WR Stainless Steel - E80WR
Seal Material	Elastomer
Actuator Mounting	ISO 5211, 5210
End Connection	NPT - E20W, E25W, E40W (Flange available on request) Class 150 Flange - E50WR, E80WR
Enclosure	NEMA 4X

Technical Specifications	
Operating Temperature	$-13^\circ - 257^\circ\text{F}$ ($-25^\circ\text{C} - 125^\circ\text{C}$)
Operating Pressure	E20W, E25W, E40W, E50WR 145 psi (10 bar)
	E80WR 232 psi (16 bar)
Leakage Class	E20W, E25W, E40W, and E50WR: Class VI (Exceeds ASME 16.104 and FCI 70.2) E80WR: Class IV (<0.01% capacity)
Design	ASME B16.34
Operating Mode	<ul style="list-style-type: none"> • Standalone control via onboard keypad • Analog (4-20mA input and output) • Modbus (RS-485 port)

Flow Capacity - gpm (lpm)													
Model	Port Connection Sizes Inlets x Outlets	Pressure Drop - psi (bar)										Nominal Min. Flow* gpm (lpm)	C_v (K_v)
		5 (0.3)	10 (0.7)	15 (1.0)	20 (1.4)	25 (1.7)	30 (2.1)	35 (2.4)	40 (2.8)	45 (3.1)	50 (3.4)		
E20W	3/4" x 1" NPT Connections	18 (69)	26 (97)	31 (119)	36 (137)	41 (153)	44 (168)	48 (181)	51 (194)	54 (206)	57 (217)	0.9 (3.4)	8.1 (7.0)
E25W	1" x 1-1/4" NPT Connections	28 (106)	40 (150)	48 (183)	56 (212)	63 (237)	68 (259)	74 (280)	79 (299)	84 (317)	88 (335)	4.7 (17.8)	12.5 (10.8)
E40W	1-1/2" x 1-1/2" NPT Connections	44 (166)	62 (235)	76 (287)	88 (332)	98 (371)	107 (406)	116 (439)	124 (469)	131 (498)	139 (525)	6.9 (26.1)	19.6 (16.9)
E50WR	2" x 2-1/2" ASME B16.5 Class 150 Flanges	106 (402)	150 (569)	184 (696)	212 (804)	238 (899)	260 (985)	281 (1,064)	300 (1,137)	319 (1,206)	336 (1,271)	19.0 (71.9)	47.5 (41.0)
E80WR	3" x 3" ASME B16.5 Class 150 Flanges	322 (1,219)	455 (1,724)	558 (2,111)	644 (2,438)	720 (2,725)	789 (2,986)	852 (3,225)	911 (3,448)	966 (3,657)	1,018 (3,854)	53.0 (200.6)	144.0 (124.4)

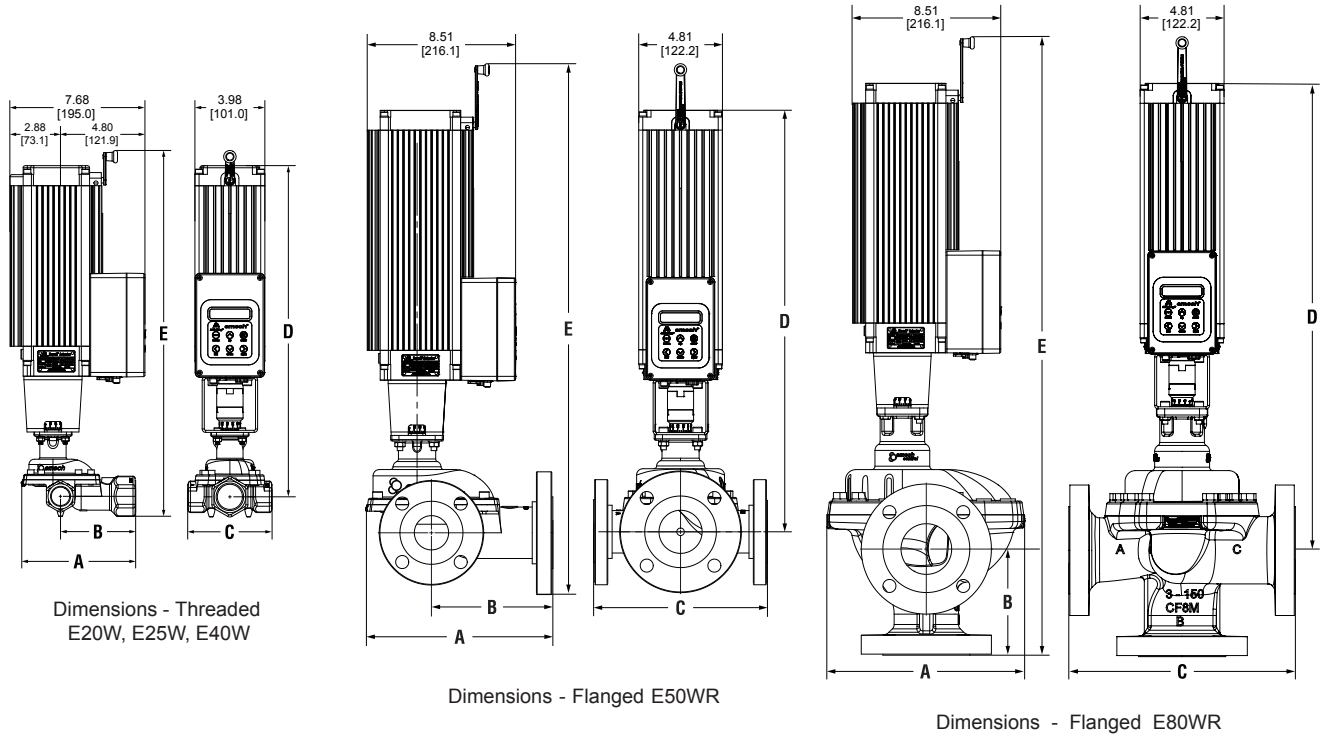
See FLOW CAPACITIES note at the end of this document





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Dimensions					
Model	A	B	C	D	E
	in (mm)	in (mm)	in (mm)	in (mm)	in (mm)
E20W	5.43 (137.9)	3.62 (91.9)	4.72 (119.0)	18.54 (471.0)	19.40 (493.0)
E25W	6.42 (163.0)	4.28 (108.7)	4.72 (119.0)	18.82 (478.0)	19.69 (500.0)
E40W	7.83 (198.9)	5.06 (128.5)	6.77 (172.0)	20.00 (507.9)	20.86 (529.9)
E50WR	10.76 (273.3)	6.91 (175.5)	10.00 (254.0)	24.24 (615.7)	26.93 (684.0)
E80WR	11.42 (290.1)	6.04 (153.4)	12.87 (326.9)	26.77 (680.0)	35.55 (903.0)

Shipping Weights and Shipping Box Size					
Model	Length	Width	Height	Product Weight	Ship Weight
	in (mm)	in (mm)	in (mm)	lbs (kg)	lbs (kg)
E20W	21.50 (546.1)	14.25 (362.0)	9.25 (234.9)	20 (9.1)	43 (19.5)
E25W	21.50 (546.1)	14.25 (362.0)	9.25 (234.9)	22 (9.8)	47 (21.1)
E40W	23.00 (584.2)	14.25 (362.0)	13.25 (336.5)	27 (12.2)	52 (23.6)
E50WR	28.00 (711.2)	16.00 (406.4)	14.50 (368.3)	75 (34.0)	107 (48.5)
E80WR	32.75 (831.9)	16.00 (406.4)	20.00 (508.0)	133 (60.3)	177 (80.3)

IMPORTANT NOTES:

- Check valves MUST be installed on both inlets to the mixing system.
- Contact Armstrong or visit armstronginternational.com for Emech® valve sizing program and application notes.

FLOW CAPACITIES:

- Sensible pipeline velocities are the only limit to the Emech® Water to Water mixing valve flows
- Nominal recommended minimum flow is the minimum flow at which temperature control can be achieved with the actuator using standard configuration settings. Contact factory for applications with lower flows than listed above.

Further information on installation requirements and recommendations are available in the G2 Manual (IOM-458).