

# B277 Technical Data Sheet

## Stainless Steel Ball and Stem



Technical Data	
Fluid	chilled, hot water, up to 60% glycol
Flow characteristic	equal percentage
Controllable flow range	75°
Valve Size [mm]	3" [80]
Pipe connection	NPT female ends
Housing	Nickel-plated brass body
Ball	stainless steel
Stem	stainless steel
Stem seal	EPDM (lubricated)
Seat	PTFE
O-ring	EPDM (lubricated)
Characterized disc	TEFZEL®
Body Pressure Rating	400 psi
Close-off pressure $\Delta$ ps	100 psi
Cv	70
Weight	9.03 lb [4.1 kg]
Fluid Temp Range (water)	0...212°F [-18...100°C]
Leakage rate	0% for A – AB
Servicing	maintenance-free



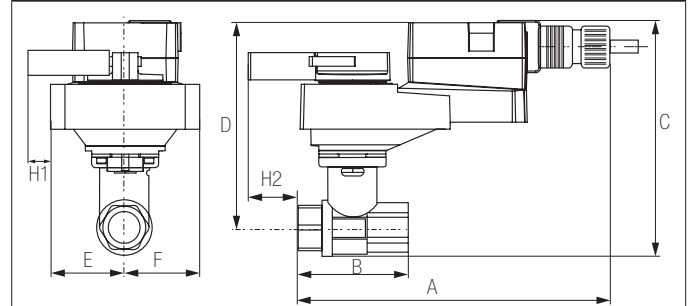
### Application

This valve is typically used in air handling units on heating or cooling coils, and fan coil unit heating or cooling coils. Some other common applications include Unit Ventilators, VAV box re-heat coils and bypass loops. This valve is suitable for use in a hydronic system with variable flow.

### Suitable Actuators

	Non-Spring	Spring
B277	ARB(X)	AFRB(X)

### Dimensions (Inches [mm])



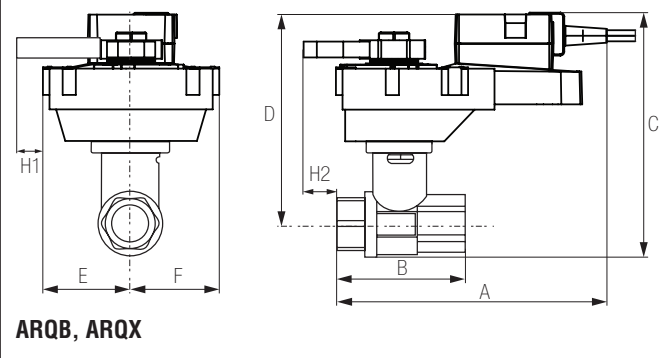
ARB, ARX

A	B	C	D	E	F	H1
10.1" [257]	5.8" [148]	8.5" [217]	6.0" [152]	2.8" [71]		2.1" [53]

### Safety Notes

**WARNING:** This product can expose you to lead which is known to the State of California to cause cancer and reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

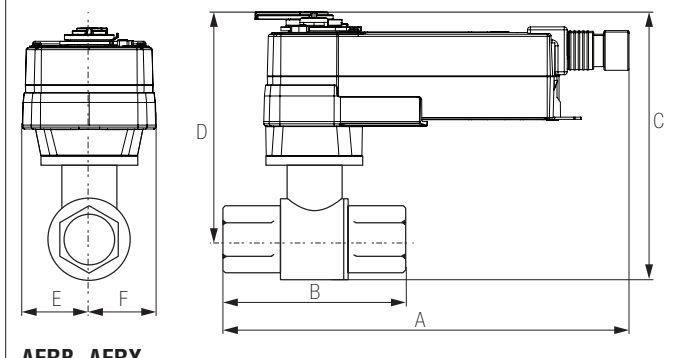
### Dimensions (Inches [mm])



**ARQB, ARQX**

A	B	C	D	E	F	H1	H2
9.9" [251]	4.2" [107]	8.6" [219]	6.1" [155]	2.3" [58]		0.8" [20]	0.6" [15]

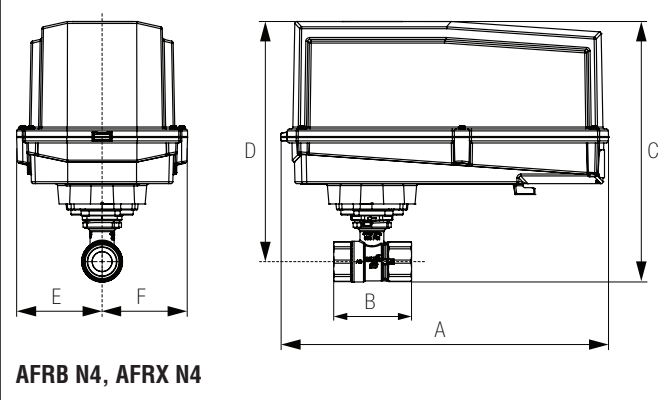
### Dimensions (Inches [mm])



**AFRB, AFRX**

A	B	C	D	E	F
11.8" [299]	5.8" [148]	9.1" [231]	6.6" [168]	2.0" [51]	

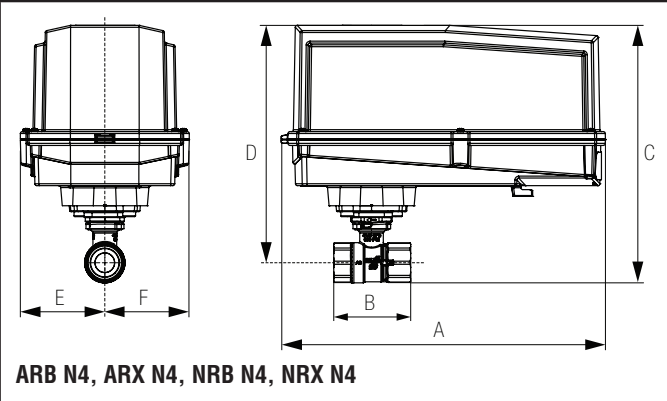
### Dimensions (Inches [mm])



**AFRB N4, AFRX N4**

A	B	C	D	E	F
13.0" [330]	5.8" [148]	10.3" [262]	9.3" [235]	3.4" [86]	

### Dimensions (Inches [mm])



**ARB N4, ARX N4, NRB N4, NRX N4**

A	B	C	D	E	F
11.4" [289]	5.8" [148]	7.276	8.0" [203]	3.1" [80]	

# ARX24-MFT Technical Data Sheet

Modulating, Non-Spring Return, 24 V, Multi-Function Technology®



5-year warranty



Technical Data	
Power Supply	24 VAC, ±20%, 50/60 Hz, 24 VDC, ±10%
Power consumption in operation	3.5 W
Power consumption in rest position	1.3 W
Transformer sizing	6 VA (class 2 power source)
Electrical Connection	18 GA plenum cable with 1/2" conduit connector, degree of protection NEMA 2 / IP54, 3 ft [1 m] 10 ft [3 m] and 16ft [5 m]
Overload Protection	electronic throughout 0...90° rotation
Operating Range	2...10 V (default), 4...20 mA w/ ZG-R01 (500 Ω, 1/4 W resistor), variable (VDC, on/off, floating point)
Operating range Y variable	Start point 0.5...30 V End point 2.5...32 V
Input Impedance	100 kΩ for 2...10 V (0.1 mA), 500 Ω for 4...20 mA, 1500 Ω for PWM, On/Off and Floating point
Position Feedback	2...10 V, Max. 0.5 mA, VDC variable
Angle of rotation	90°
Direction of rotation motor	reversible with built-in switch
Position indication	Mechanically, pluggable
Manual override	external push button
Running Time (Motor)	default 150 s, variable 90...150 s
Ambient humidity	max. 95% r.H., non-condensing
Ambient temperature	-22...122°F [-30...50°C]
Storage temperature	-40...176°F [-40...80°C]
Degree of Protection	IP54, NEMA 2, UL Enclosure Type 2
Agency Listing	cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2004/108/EC
Noise level, motor	45 dB(A)
Servicing	maintenance-free
Quality Standard	ISO 9001
Weight	2.6 lb [1.2 kg]

†Rated Impulse Voltage 800 V, Type action 1, Control Pollution Degree 3.

### Safety Notes

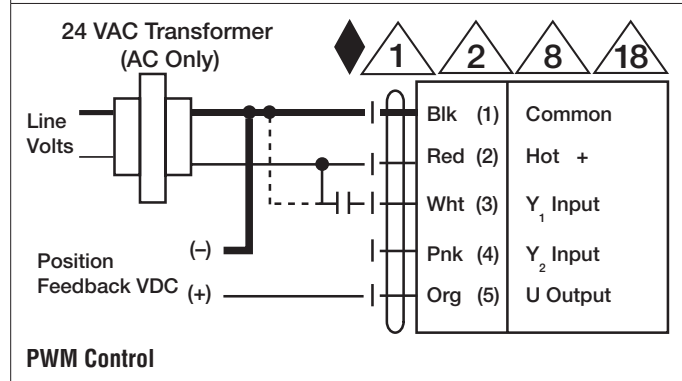
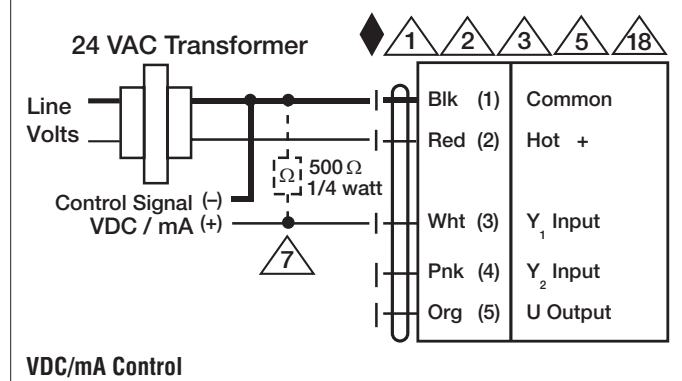
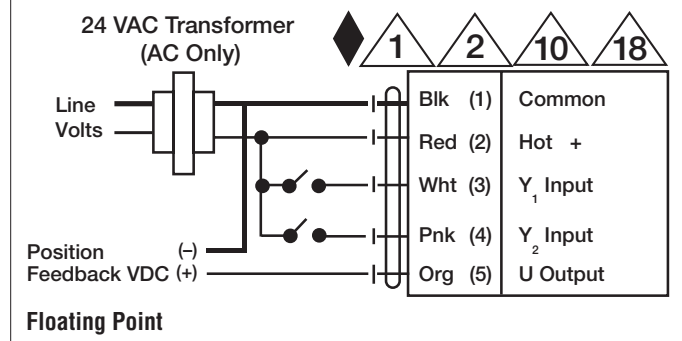
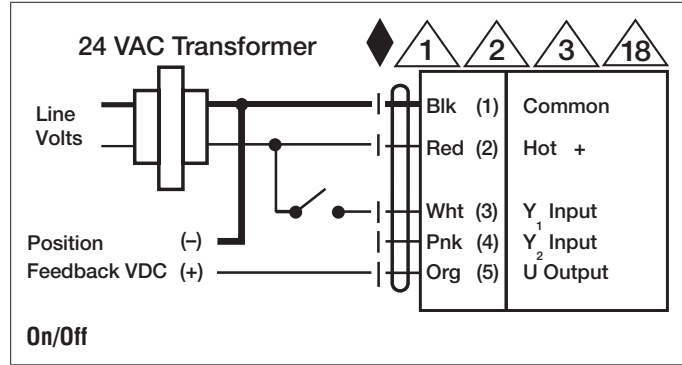
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**Wiring Diagrams**

**✂️ INSTALLATION NOTES**

- ⚠️ 1 Provide overload protection and disconnect as required.
- ⚠️ 2 Actuators may be connected in parallel. Power consumption and input impedance must be observed.
- ⚠️ 3 Actuators may also be powered by 24 VDC.
- ⚠️ 5 Only connect common to negative (-) leg of control circuits.
- ⚠️ 7 A 500 Ω resistor (ZG-R01) converts the 4 to 20 mA control signal to 2 to 10 VDC.
- ⚠️ 8 Control signal may be pulsed from either the Hot (Source) or Common (Sink) 24 VAC line.
- ⚠️ 10 For triac sink the Common connection from the actuator must be connected to the Hot connection of the controller. Position feedback cannot be used with a triac sink controller; the actuator internal common reference is not compatible.
- ⚠️ 12 IN4004 or IN4007 diode. (IN4007 supplied, Belimo part number 40155).
- ⚠️ 18 Actuators with plenum cable do not have numbers; use color codes instead.
- ◆ Meets cULus requirements without the need of an electrical ground connection.

⚠️ **WARNING! LIVE ELECTRICAL COMPONENTS!**  
 During installation, testing, servicing and troubleshooting of this product, it may be necessary to work with live electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components perform these tasks. Failure to follow all electrical safety precautions when exposed to live electrical components could result in death or serious injury.



# ARX24-MFT Technical Data Sheet

Modulating, Non-Spring Return, 24 V, Multi-Function Technology®



Date created, 10/29/2019 - Subject to change. © Belimo Aircontrols (USA), Inc.