



5-year warranty

## Type overview

Type	DN
G780-250	80

## Technical data

Functional data	Valve size [mm]	3" [80]
Fluid	chilled or hot water, up to 60% glycol	
Fluid Temp Range (water)	32...350°F [0...176°C]	
Body Pressure Rating	ANSI Class 250, up to 280 psi below 350°F	
Flow characteristic	linear	
Servicing	repack/rebuild kits available	
Rangeability Sv	50:1	
Flow Pattern	3-way Mixing	
Leakage rate	ANSI Class III	
Controllable flow range	stem up - open B – AB	
Cv	85	
Materials	Valve body	Cast iron - ASTM A126 Class B
	Valve plug	bronze
	Spindle	stainless steel
	Spindle seal	NLP EPDM (no lip packing)
	Seat	Stainless steel AISI 316
	Pipe connection	250 lb flanged
Suitable actuators	Non-Spring	EVB(X) RVB(X)
	Spring	AF (2*AFB(X))
	Electrical fail-safe	AVKB(X) (2*GKB(X))

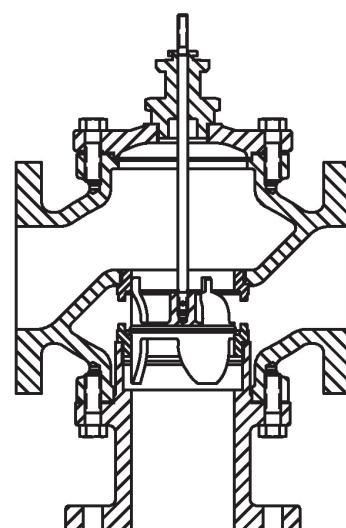
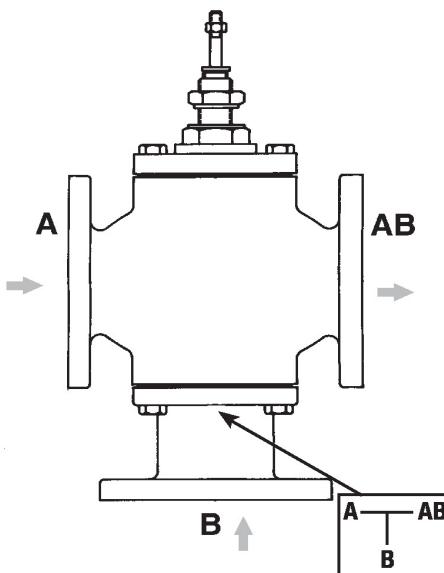
## Safety notes



- **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)
- The valve has been designed for use in stationary heating, ventilation and air-conditioning systems and must not be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- Only authorized specialists may carry out installation. All applicable legal or institutional installation regulations must be complied during installation.
- The valve does not contain any parts that can be replaced or repaired by the user.
- When determining the flow rate characteristic of controlled devices, the recognised directives must be observed.

## Product features

## Flow/Mounting details

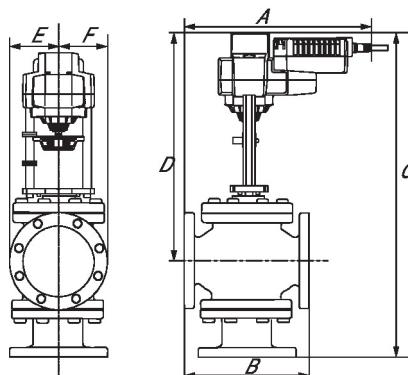


## Dimensions

Type	DN
G780-250	80

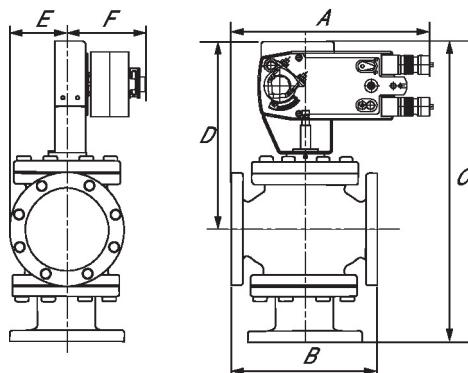
A	B	C	D	E	F	Number of Bolt Holes
12.6" [320]	10.7" [273]	27.3" [693]	19.0" [483]	4.1" [105]	4.1" [105]	8

A	B	C	D	E	F	Number of Bolt Holes
12.7" [323]	10.7" [273]	30.5" [775]	22.5" [572]	4.1" [105]	5.3" [135]	8



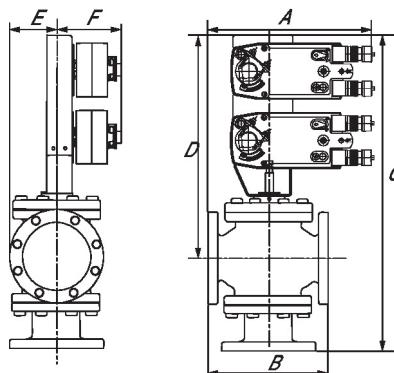
AVKB, AVKX

A	B	C	D	E	F	Number of Bolt Holes
12.6" [320]	10.7" [273]	27.3" [693]	19.0" [483]	4.1" [105]	4.1" [105]	8



AFB, AFX

A	B	C	D	E	F	Number of Bolt Holes
12.7" [323]	10.7" [273]	25.6" [650]	17.5" [445]	4.1" [105]	5.3" [135]	8



2\*AFB, 2\*AFX

A	B	C	D	E	F	Number of Bolt Holes
12.7" [323]	10.7" [273]	30.5" [775]	22.5" [572]	4.1" [105]	5.3" [135]	8



5-year warranty

**Technical data**

Electrical data	Nominal voltage	AC/DC 24 V
	Nominal voltage frequency	50/60 Hz
	Nominal voltage range	AC 19.2...28.8 V / DC 21.6...28.8 V
	Power consumption in operation	7.5 W
	Power consumption in rest position	3 W
	Transformer sizing	20 VA
	Auxiliary switch	2 x SPDT, 3 A resistive (0.5 A inductive) @ AC 250 V, one set at 10°, one adjustable 10...90°
	Switching capacity auxiliary switch	3 A resistive (0.5 A inductive) @ AC 250 V
	Electrical Connection	(2) 18 GA appliance cables, 1 m, 3 m or 5 m, with or without 1/2" conduit connectors
	Overload Protection	electronic throughout 0...95° rotation
Functional data	Operating range Y	2...10 V
	Operating range Y note	4...20 mA w/ ZG-R01 (500 Ω, 1/4 W resistor)
	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
	Operating range Y variable	Start point 0.5...30 V End point 2.5...32 V
	Operating modes optional	variable (VDC, PWM, on/off, floating point)
	Position feedback U	2...10 V
	Position feedback U note	Max. 0.5 mA
	Position feedback U variable	VDC variable
	Direction of motion motor	selectable with switch 0/1
	Direction of motion fail-safe	reversible with cw/ccw mounting
	Manual override	5 mm hex crank (3/16" Allen), supplied
	Angle of rotation	95°
	Angle of rotation note	adjustable with mechanical end stop, 35...95°
	Running Time (Motor)	150 s / 90°
	Running time motor variable	70...220 s
	Running time fail-safe	<20 s
	Override control	MIN (minimum position) = 0% MID (intermediate position) = 50% MAX (maximum position) = 100%
	Noise level, motor	40 dB(A)
	Noise level, fail-safe	62 dB(A)
	Position indication	Mechanical
Safety data	Power source UL	Class 2 Supply
	Degree of protection IEC/EN	IP54
	Degree of protection NEMA/UL	NEMA 2
	Enclosure	UL Enclosure Type 2

<b>Safety data</b>	Agency Listing	cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2014/30/EU
Quality Standard	ISO 9001	
UL 2043 Compliant	Suitable for use in air plenums per Section 300.22(C) of the NEC and Section 602 of the IMC	
Ambient humidity	Max. 95% RH, non-condensing	
Ambient temperature	-22...122°F [-30...50°C]	
Storage temperature	-40...176°F [-40...80°C]	
Servicing	maintenance-free	
<b>Weight</b>	Weight	9.26 lb [4.2 kg]
<b>Materials</b>	Housing material	Galvanized steel and plastic housing

**Footnotes** \*Variable when configured with MFT options.

## Accessories

	<b>Gateways</b>	<b>Description</b>	<b>Type</b>
	Gateway MP to BACnet MS/TP		UK24BAC
	Gateway MP to Modbus RTU		UK24MOD
	Gateway MP to LonWorks		UK24LON
	<b>Electrical accessories</b>	<b>Description</b>	<b>Type</b>
	Service Tool, with ZIP-USB function, for programmable and communicative Belimo actuators, VAV controller and HVAC performance devices		ZTH US
	<b>Tools</b>	<b>Description</b>	<b>Type</b>
	Connection cable 10 ft [3 m], A: RJ11 6/4 ZTH EU, B: 3-pin Weidmüller and supply connection		ZK4-GEN
	Service Tool, with ZIP-USB function, for programmable and communicative Belimo actuators, VAV controller and HVAC performance devices		ZTH US

## Electrical installation



### 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.



Meets cULus requirements without the need of an electrical ground connection.



Actuators with appliance cables are numbered.



Apply only AC line voltage or only UL-Class 2 voltage to the terminals of auxiliary switches. Mixed or combined operation of line voltage/safety extra low voltage is not allowed.



Provide overload protection and disconnect as required.



Actuators may also be powered by DC 24 V.



Two built-in auxiliary switches (2x SPDT), for end position indication, interlock control, fan startup, etc.



Only connect common to negative (-) leg of control circuits.



A 500 Ω resistor (ZG-R01) converts the 4...20 mA control signal to 2...10 V.



Control signal may be pulsed from either the Hot (Source) or Common (Sink) 24 V line.



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.



IN4004 or IN4007 diode. (IN4007 supplied, Belimo part number 40155).



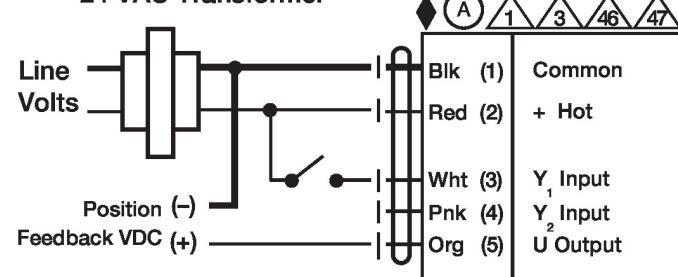
Actuators may be controlled in parallel. Current draw and input impedance must be observed.

 Master-Slave wiring required for piggy-back applications. Feedback from Master to control input(s) of Slave(s).

### Wiring diagrams

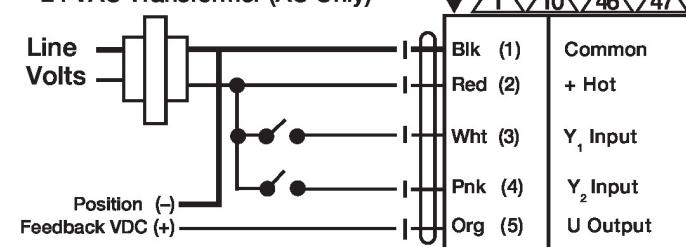
On/Off

#### 24 VAC Transformer

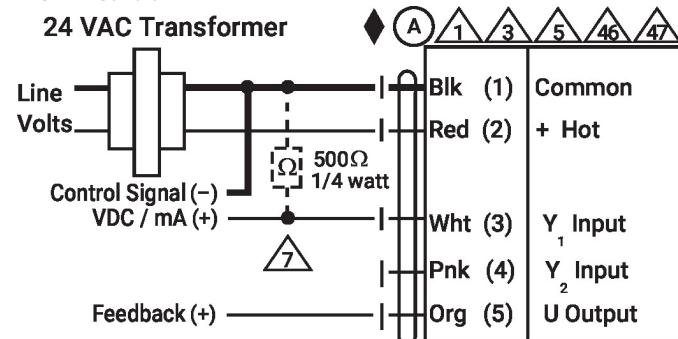


Floating Point

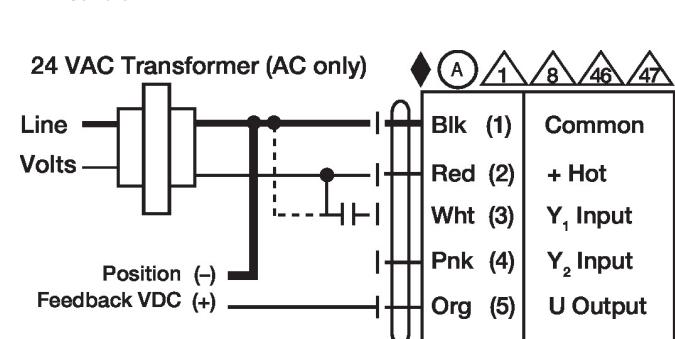
#### 24 VAC Transformer (AC Only)



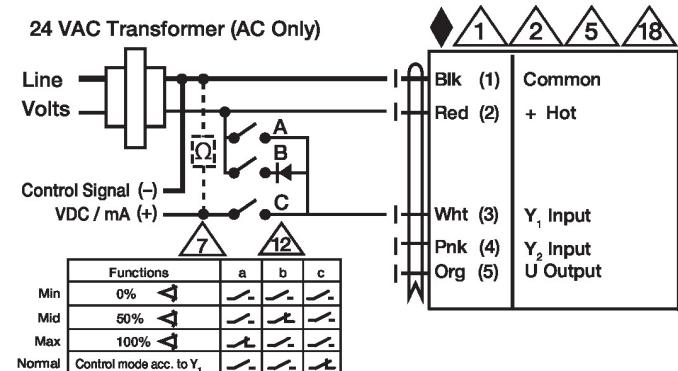
VDC/mA Control



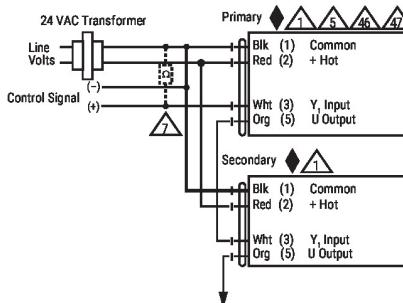
PWM Control



Override Control



Primary - Secondary



Auxiliary Switches

