BELIMO

Minimum 90 in-lb torque

- For damper areas up to 22 sq-ft*

All Actuators have BDCM

NM Series - At A Glance

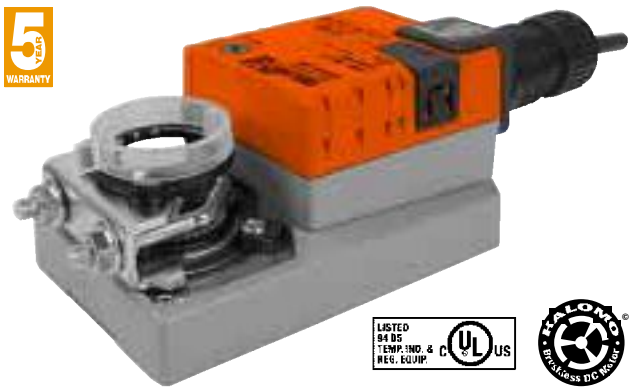
		NMB24-3	NMCB24-3	NMX24-3	NMX24-3-T	NMX120-3	NMB24-SR	NMCB24-SR	NMX24-SR	NMX24-SR-T	NMX120-SR	NMB(X)24-MFT	NMX24-MFT95	NMX24-PC	NMQ24-MFT US
Pages		174	176	178	178	180	182	184	186	186	188	190	192	194	196
Basic Product		●	●				●	●				●			
Flexible Product				●	●	●			●	●	●	●	●	●	●
Torque	90 in-lb [10 Nm]	●	●	●	●	●	●	●	●	●	●	●	●	●	
	35 to 58 in-lb**														●
Angle of Rotation	95 degrees	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Power Supply	24 VAC/DC	●	●	●	●		●	●	●	●		●	●	●	●
	100 to 240 VAC					●					●				
Control Input	On/Off, Floating Point	●	●	●	●	●									
	2 to 10 VDC (4 to 20mA)						●	●	●	●	●				
	Multi-Function Technology											●			●
	0 to 135 Ohm												●		
	0 to 20V Phasecut													●	
Feedback	None	●	●	●	●	●	●			●					
	2 to 10 VDC							●	●		●			●	
	Variable (0 to 10 VDC)											●	●		
Running Time	95 seconds	●					●							●	
	45 seconds		●					●							
	Adj. 45 to 170 seconds			●	●	●			●	●	●	●	●		
	Adj. 5 to 60 seconds														●
Wiring	Plenum Rated Cable	●	●	●			●	●	●			●	●	●	●
	Appliance Rated Cable					●					●				
	Terminal Strip				●					●					
	Conduit Fitting	●	●	●		●	●	●	●		●	●	●	●	●
Auxiliary Switch	Add-On	●	●	●	●	●	●	●	●	●	●	●	●	●	

Installation and Operation… (page 265).

*Based on 4 in-lb/ft^2 damper torque loading. Parallel blade. No edge seals.
**Torque variable based on running time.

NMB24-3

On/Off-Floating Point Control, Non-Spring Return, Direct Coupled, 24 V



Torque min. 90 in-lb for control of damper surfaces up to 22 sq ft.

Application

For on/off and floating point control of dampers in HVAC systems. Actuator sizing should be done in accordance with the damper manufacturer's specifications.

The actuator is mounted directly to a damper shaft up to 1.05" in diameter by means of its universal clamp, 1/2" self-centered default. A crankarm and several mounting brackets are available for applications where the actuator cannot be direct coupled to the damper shaft.

Operation

The actuator is not provided with and does not require any limit switches, but is electronically protected against overload. The anti-rotation strap supplied with the actuator will prevent lateral movement.

The NMB series provides 95° of rotation and a visual indicator indicates position of the actuator. When reaching the damper or actuator end position, the actuator automatically stops. The gears can be manually disengaged with a button on the actuator cover.

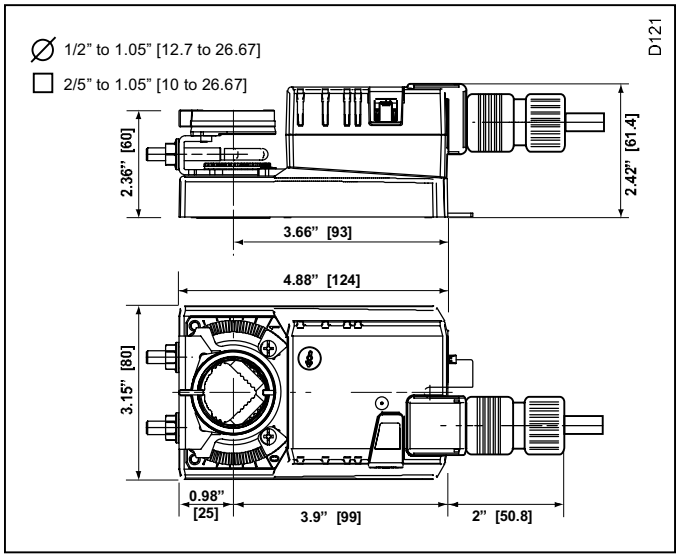
The NMB24-3... actuators use a sensorless Brushless DC motor, which is controlled by an Application Specific Integrated Circuit (ASIC). The ASIC monitors and controls the actuator's rotation and provides a digital rotation sensing (DRS) function to prevent damage to the actuator in a stall condition. Power consumption is reduced in holding mode.

Add on auxiliary switches or feedback potentiometers are easily fastened directly onto the actuator body for signaling and switching functions.

Technical Data	NMB24-3
Power Supply	24 VAC ± 20% 50/60 Hz 24 VDC ± 10%
Power Consumption	2 W (0.2 W)
Transformer Sizing	4 VA (Class 2 power source)
Electrical Connection	3 ft, 18 GA plenum rated cable 1/2" conduit connector
Overload Protection	electronic throughout 0 to 95° rotation
Control	on/off, floating point
Input Impedance	600Ω
Angle of Rotation	max. 95°, adjust. with mechanical stop
Torque	90 in-lb [10 Nm]
Direction of Rotation	reversible with ↷/↶ switch
Position Indication	reflective visual Indicator (snap-on)
Manual Override	external push button
Running Time	95 seconds, constant independent of load
Humidity	5 to 95% RH non condensing (EN 60730-1)
Ambient Temperature	-22°F to +122°F [-30°C to +50°C]
Storage Temperature	-40°F to +176°F [-40°C to +80°C]
Housing	NEMA 2/IP54
Housing Material	UL94-5VA
Agency Listings†	cULus acc. to UL 60730-1A/-2-14, CAN/CSA E60730-1, CSA C22.2 No. 24-93, CE acc. to 89/336/EEC
Noise Level	<45dB(A)
Servicing	maintenance free
Quality Standard	ISO 9001
Weight	1.7 lbs [0.75 Kg]

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

Dimensions (All numbers in brackets are in millimeters.)



Accessories

K-NA	Reversible Clamp
ZG-100	Universal Mounting Bracket
ZG-101	Universal Mounting Bracket
ZG-103	Universal Mounting Bracket
ZG-104	Universal Mounting Bracket
ZG-NMA	Crankarm Adaptor Kit
AV8-25	Universal Shaft Extension
ZG-NMSA-1	Shaft Adaptor
ZS-100	Weather Shield - Steel
ZS-150	Weather Shield - Polycarbonate
Tool-06	8 mm & 10 mm Wrench
S1A, S2A	Auxiliary Switch (es)
P370	Shaft Mount Auxiliary Switch
P…A	Feedback Potentiometers

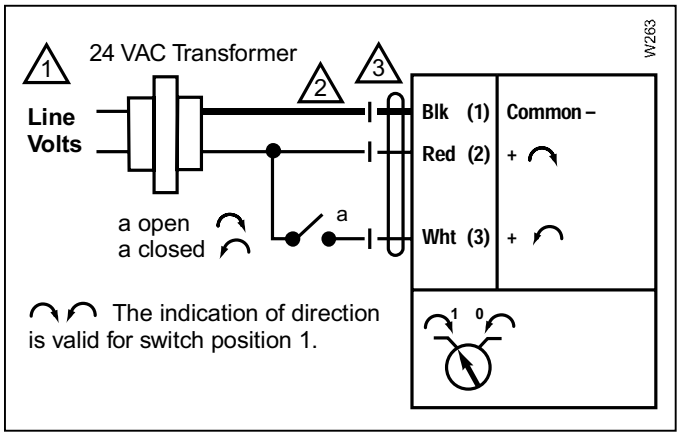
Note: When using NMB24-3… actuators, only use accessories listed on this page.

NMB24-3 - Typical Specification:

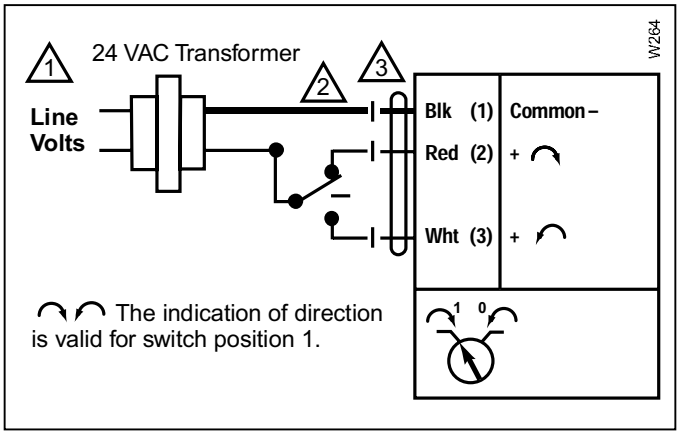
Floating point, on/off control damper actuators shall be electronic direct-coupled type, which require no crankarm and linkage and be capable of direct mounting to a shaft up to 1.05” diameter. Actuators shall have Brushless DC motor technology and be protected from overload at all angles of rotation. Actuators shall have reversing switch and manual override on the cover. Run time shall be constant and independent of torque. Actuators shall be cULus listed, have a 5-year warranty, and be manufactured under ISO 9001 International Quality Control Standards. Actuators shall be as manufactured by Belimo.

NM

Wiring Diagrams



On/Off



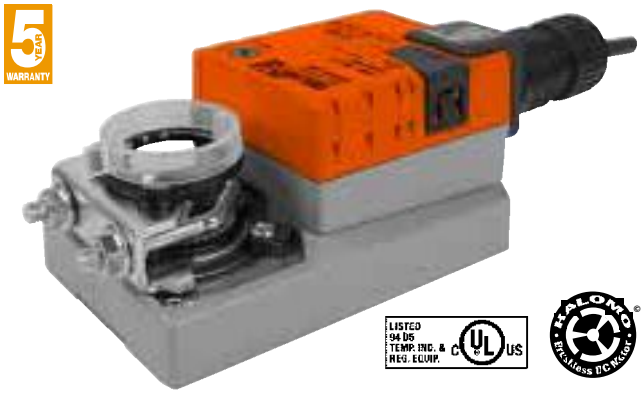
Floating Point or On/Off control

Notes:

1. Provide overload protection and disconnect as required.
2. Actuators may also be powered by 24 VDC.
3. Meets cULus requirements without the need of an electrical ground connection.

NMB24-SR

Proportional Control, Non-Spring Return, Direct Coupled, 24V, for 2 to 10 VDC and 4 to 20 mA



Torque min. 90 in-lb for control of damper surfaces up to 22 sq ft.

Technical Data	NMB24-SR
Power Supply	24 VAC ± 20% 50/60 Hz 24 VDC ± 10%
Power Consumption	2.5 W (0.4 W)
Transformer Sizing	5 VA (Class 2 power source)
Electrical Connection	3 ft, 18 GA plenum rated cable 1/2" conduit connector
Overload Protection	electronic throughout 0 to 95° rotation
Operating Range Y	2 to 10 VDC, 4 to 20 mA
Input Impedance	100 k (0.1 mA), 500Ω
Feedback Output U	2 to 10 VDC (max 0.5 mA)
Angle of Rotation	max. 95°, adjust. with mechanical stop
Torque	90 in-lb [10 Nm]
Direction of Rotation	reversible with ↷/↶ switch. Actuator will move: ↶ =CCW with decreasing control signal (10→2V) ↷ =CW with decreasing control signal (10→2V)
Position Indication	reflective visual Indicator (snap-on)
Manual Override	external push button
Running Time	95 seconds, constant independent of load
Humidity	5 to 95% RH non condensing (EN 60730-1)
Ambient Temperature	-22°F to +122°F [-30°C to +50°C]
Storage Temperature	-40°F to +176°F [-40°C to +80°C]
Housing	NEMA 2/IP54
Housing Material	UL94-5VA
Agency Listings†	cULus acc. to UL 60730-1A/-2-14, CAN/CSA E60730-1, CSA C22.2 No. 24-93, CE acc. to 89/336/EEC
Noise Level	<45dB(A)
Servicing	maintenance free
Quality Standard	ISO 9001
Weight	1.7 lbs [0.75 Kg]

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

Application

For proportional modulation of dampers in HVAC systems. Actuator sizing should be done in accordance with the damper manufacturer's specifications.

The actuator is mounted directly to a damper shaft up to 1.05" in diameter by means of its universal clamp, 1/2" self centered default. A crankarm and several mounting brackets are available for applications where the actuator cannot be direct coupled to the damper shaft.

The actuator operates in response to a 2 to 10 VDC, or with the addition of a 500Ω resistor, a 4 to 20 mA control input from an electronic controller or positioner. A 2 to 10 VDC feedback signal is provided for position indication or master-slave applications.

Operation

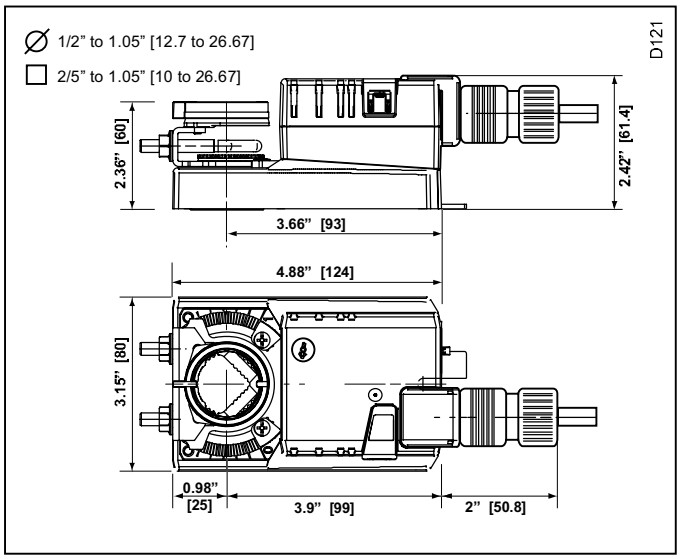
The actuator is not provided with and does not require any limit switches, but is electronically protected against overload. The anti-rotation strap supplied with the actuator will prevent lateral movement.

The NM series provides 95° of rotation and a visual indicator indicates position of the actuator. When reaching the damper or actuator end position, the actuator automatically stops. The gears can be manually disengaged with a button on the actuator cover.

The NMB24-SR… actuators use a sensorless Brushless DC motor, which is controlled by an Application Specific Integrated Circuit (ASIC). The ASIC monitors and controls the actuator's rotation and provides a digital rotation sensing (DRS) function to prevent damage to the actuator in a stall condition.Power consumption is reduced in holding mode.

Add on auxiliary switches or feedback potentiometers are easily fastened directly onto the actuator body for signaling and switching functions

Dimensions (All numbers in brackets are in millimeters.)



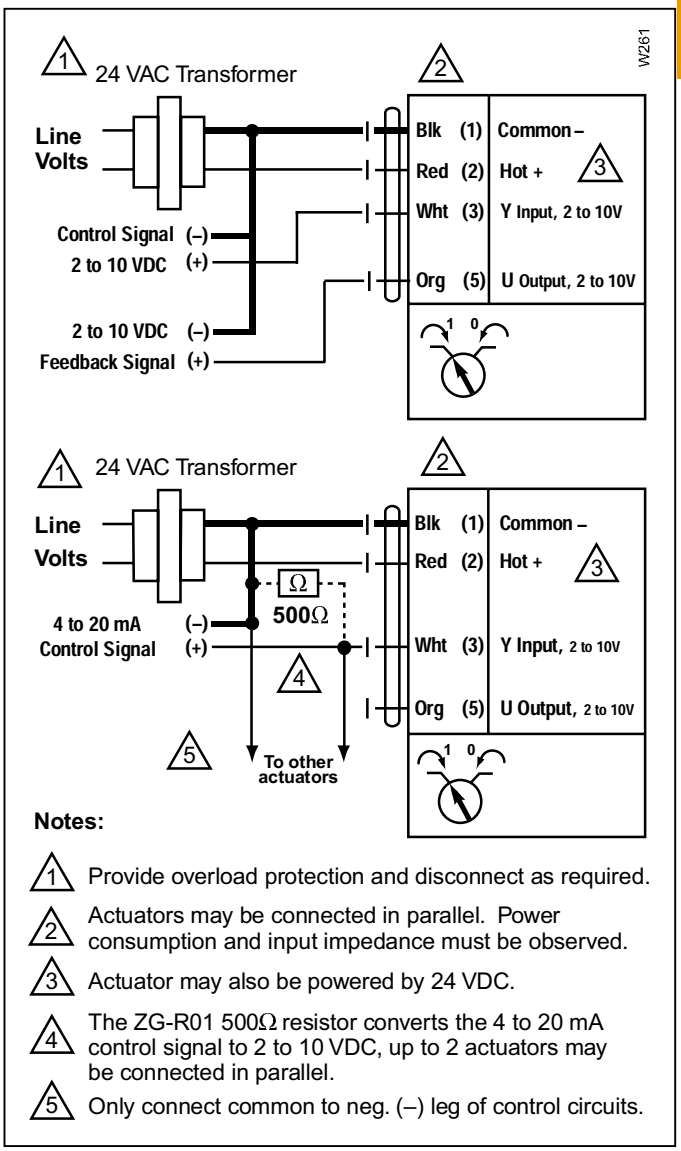
Accessories

K-NA	Reversible Clamp
ZG-100	Universal Mounting Bracket
ZG-101	Universal Mounting Bracket
ZG-103	Universal Mounting Bracket
ZG-104	Universal Mounting Bracket
ZG-NMA	Crankarm Adaptor Kit
AV8-25	Universal Shaft Extension
ZG-NMSA-1	Shaft Adaptor
ZS-100	Weather Shield - Steel
ZS-150	Weather Shield - Polycarbonate
Tool-06	8 mm & 10 mm Wrench
S1A, S2A	Auxiliary Switch (es)
P370	Shaft Mount Auxiliary Switch
P…A	Feedback Potentiometers
SGA24	Min positioners in NEMA 4 housing
SGF24	Min positioners for flush panel mounting
PTA-250	Pulse Width Modulation Interface
IRM-100	Input Rescaling Module
ADS-100	Analog to Digital Switch
ZG-R01	Resistor for 4 to 20 mA Conversion
NSV24 US	Battery Back-Up Module
ZG-X40	Transformer

Note: When using NMB24-SR… actuators, only use accessories listed on this page.

NMB24-SR - Typical Specification:
Proportional control damper actuators shall be electronic direct-coupled type, which require no crankarm and linkage and be capable of direct mounting to a shaft up to 1.05" diameter. Actuators must provide proportional damper control in response to a 2 to 10 VDC or, with the addition of a 500Ω resistor, a 4 to 20 mA control input from an electronic controller or positioner. Actuators shall have Brushless DC motor technology and be protected from overload at all angles of rotation. Actuators shall have reversing switch and manual override on the cover. Run time shall be constant and independent of torque. A 2 to 10 VDC feedback signal shall be provided for position indication. Actuators shall be cULus listed, have a 5-year warranty, and be manufactured under ISO 9001 International Quality Control Standards. Actuators shall be as manufactured by Belimo.

Wiring Diagram



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. Actuator may also be powered by 24 VDC.
4. The ZG-R01 500Ω resistor converts the 4 to 20 mA control signal to 2 to 10 VDC, up to 2 actuators may be connected in parallel.
5. Only connect common to neg. (–) leg of control circuits.

2 to 10 VDC and 4 to 20 mA control of NMB24-SR