

# NMX24-MFT95

Modulating, Non-Spring Return, 24 V, 0 to 135  $\Omega$  Input



## Technical Data

Power Supply	24 VAC, $\pm 20\%$ , 50/60 Hz, 24 VDC, $\pm 10\%$
Power Consumption Running	3.5 W
Power Consumption Holding	1.3 W
Transformer Sizing	6 VA (class 2 power source)
Shaft Diameter	1/2" to 1.05" round, centers on 1/2" and 3/4" with insert, 1.05" without insert
Electrical Connection	18 GA plenum rated cable with 1/2" conduit connector protected NEMA 2 (IP54) 3ft [1m] 10ft [3m] and 16ft [5m]
Overload Protection	electronic throughout 0° to 95° rotation
Operating Range Y	0 to 135 $\Omega$ Honeywell Electronic Series 90, 0 to 135 $\Omega$ input
Feedback Output U	2 to 10 VDC, 0.5 mA max, VDC variable
Angle of Rotation	Max. 95°, adjustable with mechanical stop
Torque motor	Min. 90 in-lbs [10 Nm]
Direction of Rotation (Motor)	reversible with built-in switch
Position Indication	reflective visual indicator (snap on)
Manual Override	external push button
Running Time (Motor)	150 sec
Ambient Humidity	5 to 95% RH non condensing (EN 60730-1)
Ambient Temperature Range	-22°F to 122°F [-30°C to 50°C]
Storage Temperature Range	-40°F to 176°F [-40°C to 80°C]
Housing	NEMA 2, IP54, UL Enclosure Type 2
Housing Material	UL94-5VA
Agency Listings†	cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2004/108/EC and 2006/95/EC
Noise Level (Motor)	<45 dB (A)
Servicing	maintenance free
Quality Standard	ISO 9001
Weight	2.2 lb [1 kg]

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

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

## 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. A crank arm and several mounting brackets are available for applications where the actuator cannot be direct coupled to the damper shaft.

The default parameters for 0 to 135 $\Omega$  input applications of the ...MFT95 actuator are assigned during manufacturing. If necessary, custom versions of the actuators can be ordered. The parameters can be changed by two means: pre-set and custom configurations from Belimo or on-site configurations using the Belimo PC-Tool software.

## 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 actuator 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.

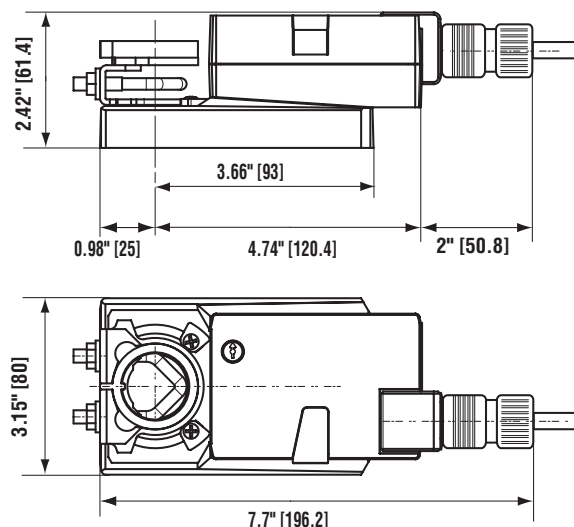
The actuators use a brushless DC motor, which is controlled by an Application Specific Integrated Circuit (ASIC). The ASIC monitors and controls the actuator's rotation and provides a digital rotation sensing (DRS) function to prevent damage to the actuator in a stall condition. Power consumption is 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 (Inches[mm])

Ø 1/2" to 1.05" [12.7 to 26.67]

□ 2/5" to 1.05" [10 to 26.67]



## Accessories

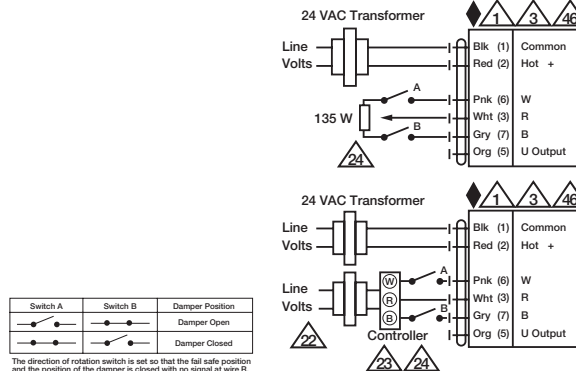
K-NA	Reversible NMB(X) Clamp (1/2" to 3/4").
ZG-100	Univ. right angle bracket (17" H x 11-1/8" W x 6" base).
ZG-101	Univ. right angle bracket (13" H x 11" W x 7-7/16" base).
ZG-103	Univ. right angle bracket (7-1/2" H x 11" W x 2-3/4" base).
ZG-104	Univ. right angle bracket (13-5/8" H x 7-1/2" W x 4" base).
ZG-NMA	AMB(X), NMB(X), NKQB(X) crankarm adaptor kit.
AV8-25	9.8" shaft extension for 5/16" to 1" diameter shafts.
ZG-NMSA-1	Shaft extension for 1/2" diameter shafts (3.8" L).
ZS-100	Weather shield - galvaneal (13" L x 8" W x 6" D).
ZS-150	Weather shield - PC w/ foam seal (16" L x 8-3/8" W x 4" D).
TOOL-06	8 mm and 10 mm wrench.
S1A	Auxiliary switch, 1x SPDT, 3A (0.5A inductive) @250 VAC max.
S2A	Auxiliary switch, 2x SPDT, 3A (0.5A inductive) @250 VAC max.
P370	Shaft mount auxiliary switch, 1/2" shaft.
P10000A GR	Feedback potentiometer 10000Ω.
P1000A GR	Feedback potentiometer 1000Ω.
P140A GR	Feedback potentiometer 140Ω.
P2800A GR	Feedback potentiometer 2800Ω.
P5000A GR	Feedback potentiometer 5000Ω.
P500A GR	Feedback potentiometer 500Ω.
NSV24 US	Battery back-up module for non-spring return actuators.
ZG-X40	120 to 24 VAC, 40 VA transformer.

## Typical Specification

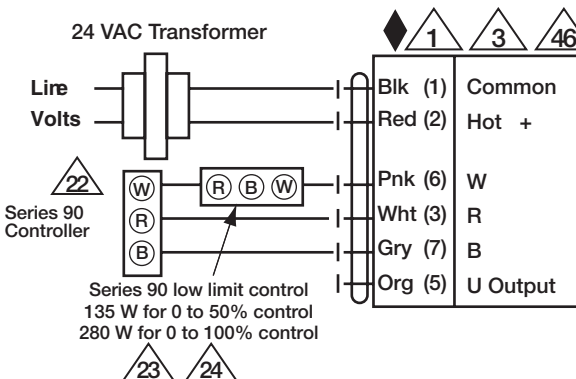
Proportional control damper actuators shall be electronic type, with integrated linear stroking arm. Actuators must provide proportional damper control in response to a 2 to 10 VDC or, with the addition of a 500Ω resistor, a 4 to 20 mA control input from an electronic controller or positioner. Actuators 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 Diagrams

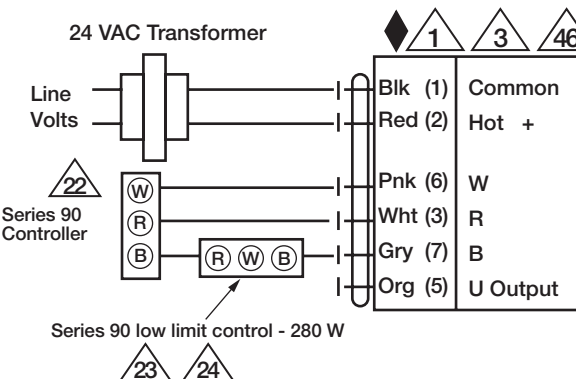
- 1 Provide overload protection and disconnect as required.
- 3 Actuators may also be powered by 24 VDC.
- 22 Actuators and controller must have separate transformers.
- 23 Consult controller instruction data for more detailed information.
- 24 Resistor value depends on the type of controller and the number of actuators. No resistor is used for one actuator. Honeywell® resistor kits may also be used.
- 25 To reverse control rotation, use the reversing switch.
- 46 Actuators may be controlled in parallel. Current draw and input impedance must be observed.



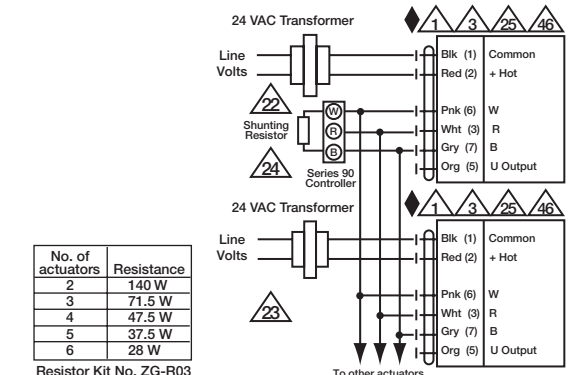
## Typical and Override Control



## Low Limit Control



## High Limit Control

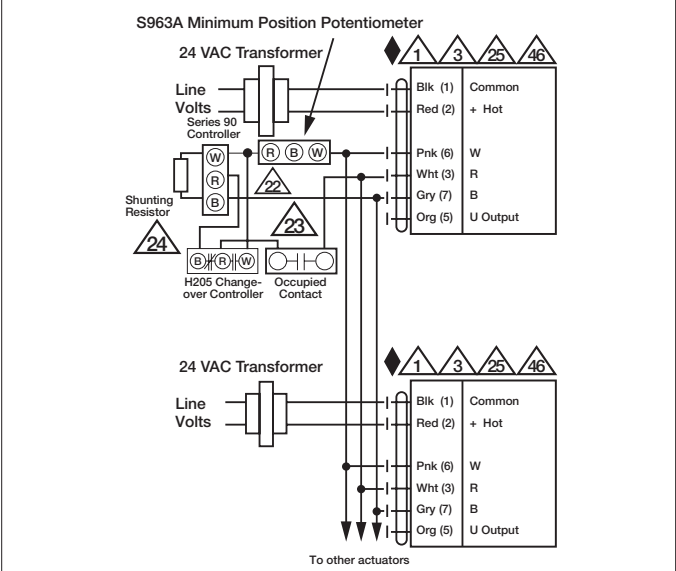


## Multiple Actuators

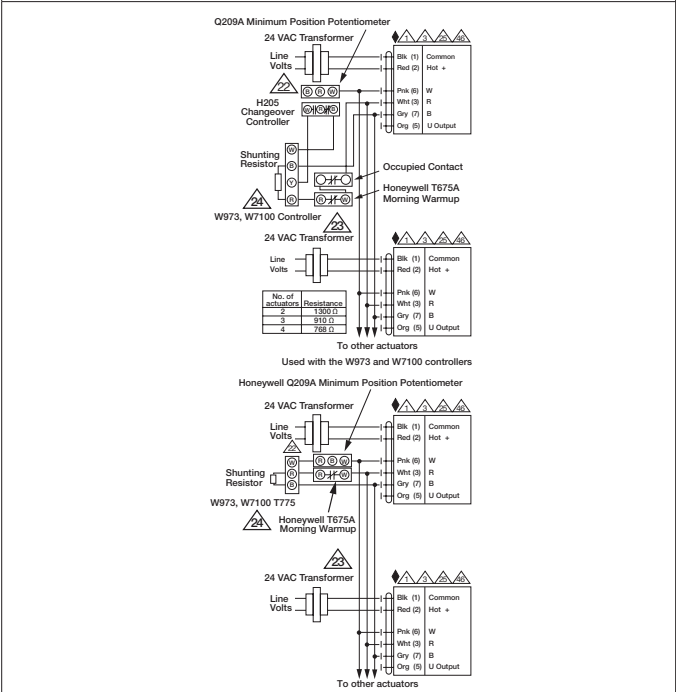
No. of actuators	Resistance
2	140 W
3	71.5 W
4	47.5 W
5	37.5 W
6	28 W

Resistor Kit No. ZG-R03

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Multiple Actuators with Minimum Position Potentiometer



Multiple Actuators Used with W973, W7100 and T775