Honeywell

N20 Series Non-Spring Return Direct Coupled Actuators

MN6120, MN7220

MN6120, MN7220 Non-Spring Return Direct Coupled Actuators (DCA) are used within heating, ventilating, and air-conditioning (HVAC) systems. They can drive a variety of quarter-turn, final control elements.

Applications include:
- *Volume control dampers, mounted directly to the drive shaft or remotely (with the use of accessory hardware).*
- *Quarter-turn rotary valves, such as ball or butterfly valves mounted directly to the drive shaft.*
- *Linear stroke globe or cage valves mounted with linkages to provide linear actuation.*

SPECIFICATION DATA

FEATURES

- **New self-centering shaft adapter.**
- **Access cover to facilitate connectivity.**
- **Declutch for manual adjustment.**
- **Mechanical end limits.**
- **Field-installable auxiliary switches.**
- **Pre-wired (European models).**
- **Rotation direction selectable by switch.**
- **Mountable in any orientation (no IP54 if upside down).**
- **Mechanical position indicator.**
- **UL-approved (U.S. models only).**

SPECIFICATIONS

Torque Ratings:
- ❑ Typical Holding, Driving: 177 lb-in. (20 N•m).
- ❑ Stall Maximum (fully open at 75°F):
  - ❑ Floating: 221 lb-in. (25 N•m).
  - ❑ Modulating: 256 lb-in. (29 N•m).

Electrical Ratings:
- ❑ See Table 1.

Electrical Connections:
- ❑ Field wiring 14 to 22 AWG (2.0 to 0.344 mm sq) to screw terminals, located under the removable access cover.

Stroke:
- ❑ 95° ±3°.

Controller Type:
- ❑ See Models.
- ❑ Input Impedance: 95K ohms minimum.
- ❑ Feedback Signal: 0 or 2-10 Vdc.
- ❑ Driving Current: 3 mA minimum.

Timing (At Rated Torque and Voltage):
- ❑ Drive Open (typical): 90 seconds.

Temperature Ratings:
- ❑ Ambient: -4°F to 140°F (-20°C to 60°C).
- ❑ Shipping and Storage: -40°F to 176°F (-40°C to 80°C).

Humidity Ratings:
- ❑ 5% to 95% RH noncondensing.

Design Life (at Rated Voltage):
- ❑ 60,000 full stroke cycles; 1,500,000 repositions.

End Switches (Two SPDT):
- ❑ Settings (fixed): 7° nominal stroke, 85° nominal stroke.
- ❑ Ratings (maximum load): 250 Vac, 5A resistive, 3A inductive.

Dimensions:
- ❑ See Fig. 1.

Device Weight:
- ❑ 3.2 lb (1.45 kg).

Mounting:
- ❑ Self-centering shaft adapter (shaft coupling).
  - ❑ Round Damper Shafts: 3/8 to 1-1/16 in. (10 to 27 mm).
  - ❑ Square Damper Shafts: 1/2 to 3/4 in. (13 to 19 mm).
  - ❑ Actuator can be mounted with shaft in any position.

Minimum Damper Shaft Length:
- ❑ 7/8 in. (22 mm); 3 in. (76 mm) recommended.

Noise Rating at 1m (Maximum):
- ❑ Holding: 20 dBA (no audible noise).
- ❑ Driving: 40 dBA.

Environmental Protection Ratings:
- ❑ NEMA2 (US Models) or IP54 (European Models) when mounted on horizontal shaft with access cover below the shaft.

Models:

N	Non-Spring Return Fail Safe Mode
20	175 lb-in. (20 N•m)
24	24 Vac Floating (Series 60) Control
010	24 Vac Modulating Control
	Fixed Zero/Span, No End Switches
-SW2	Internal End Switches

N 20 010 -SW2

Approvals:
- ❑ UL/cUL.
- ❑ UL873 Plenum Rating, File No. E4436; Guide No. XAPX.
- ❑ CE.
- ❑ C-TICK.

Accessories:
- ❑ 27518 Balljoint (5/16 in.).
- ❑ 103598 Balljoint (1/4 in.).
- ❑ 205649 Anti-Rotation Bracket (supplied with actuator).
- ❑ 205860 Electronic Minimum Position Potentiometer.
- ❑ 27520A-E,G,H-L,Q Pushrod (5/16 in. diameter).
- ❑ 32000085-001 Water-tight Cable Gland/Strain-relief Fitting (10 pack).
- ❑ 32003036-001 Weather Enclosure.
- ❑ 32004254-003 Self-Centering Shaft Adapter (supplied with actuator).
- ❑ 50001194-001 Foot Mount Kit.
- ❑ SW2-US Auxiliary Switch Package.
- ❑ See also Form 62-0203.

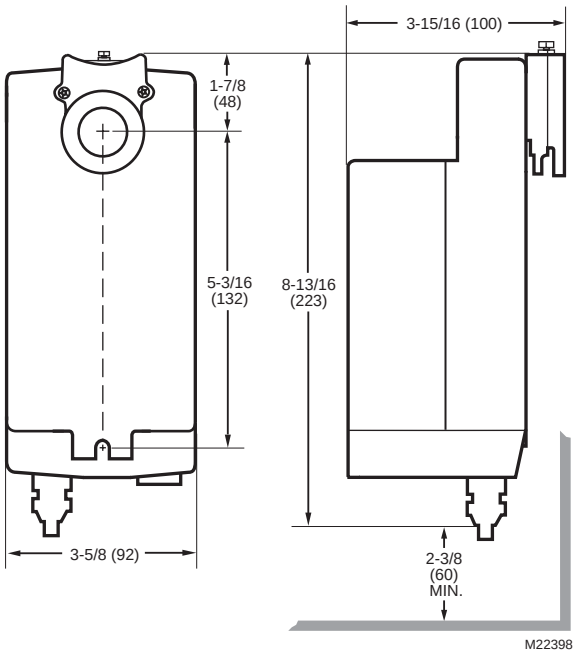

Fig. 1. Dimensional drawing of actuator in in. (mm).

Table 1. Electrical Ratings.

Model(s)	Power Input		Power Consumption (VA)	
	Voltage	Frequency	Driving	Holding
Modulating	24 Vac±20% (Class 2),24 Vdc	50/60 Hz.	16	5
Floating	24 Vac±20% (Class 2),24 Vdc	50/60 Hz.	40	8

TYPICAL SPECIFICATION

Non-spring return actuators shall be direct coupled type requiring neither crankarm nor linkage and be capable of direct mounting to a jackshaft of up to 1.05 in. diameter. The actuator shall connect to the shaft using a removable output hub with a self-centering shaft coupling. This coupling shall provide concentric mounting and include an integral adjustable range-stop mechanism.

The actuator shall provide two-position, floating, or proportional control. Proportional control refers to direct acceptance of 0-10 Vdc, 2-10 Vdc, or 4-20 mA input signal. Proportional control models provide a 2-10 Vdc feedback signal. Actuators shall provide wiring terminals located within an integral access cover with conduit connections. Proportional and floating actuators shall have a rotation direction control switch accessible on the cover. Proportional actuators shall use a brushless DC submotor. Floating actuators shall use an AC synchronous submotor with overload protection at all angles of rotation by a magnetic clutch mechanism that provides an absolute limit to the output torque without a physical link between the motor and the gear train.

Non-spring return actuator design must be for use in either clockwise or counterclockwise operation with minimum performance of 60,000 full-stroke powered cycles at actuator rated torque and temperature, and 1,500,000 repositions as documented in the product literature. Run time shall be constant and independent of: load, temperature, and supply voltage (within specifications). All actuators shall be UL873 and cUL (CSA22.2) listed, have a five year warranty, and be manufactured under ISO 9001 International Quality Control Standards.

Actuators shall be manufactured by Honeywell.

Table 2. O.S. Number Selection

M	Electrical Motor							
	N	Fail Safe Function (Non-Spring Return)						
		61	24 Vac Floating, Two-Position Control; Reversible Mount					
		72	24 Vac Modulating; Reversible Mount					
			20	175 lb-in. (20 N•m)				
				A	Standard U.S. Model			
					1	No Feedback		
					2	Voltage Feedback Signal		
						0	No End Switches	
						2	Two End Switches	
							XX	System Controlled Numbers
M	**N**	**72**	**20**	**A**	**2**	**0**	**XX**	

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