

## 35 and 70 lb-in. Non-Spring Return Direct Coupled Actuators

ML6161, ML7161  
ML6174, ML7174

ISO 9001



The 35 and 70 lb-in. Non-Spring Return Direct Coupled Actuators (DCA) are control motors that provide floating or proportioning control for valves and dampers. The proportioning motors accept a current or voltage signal from a controller to position the damper or valve at any chosen point between fully open and fully closed.

### SPECIFICATIONS

#### Electrical Ratings:

Power Input: 24 Vac  $\pm$ 20%, 50/60 Hz.

Model	Power Consumption
<input type="checkbox"/> ML6161A,B,C,D	1.8 VA
<input type="checkbox"/> ML7161A	4.8 VA
<input type="checkbox"/> ML6174A,B	2.4 VA
<input type="checkbox"/> ML7174A	5.4 VA

#### Auxiliary Switch Ratings:

- Electrical selective NO or NC, not simultaneous.
- Pilot Duty: 50 VA, 24 Vac.
- Switch Differential: Three angular degree maximum.

#### Torque Ratings (at Rated Voltages):

	35 lb-in. DCA	70 lb-in. DCA
	lb-in. (Nm)	
<input type="checkbox"/> Running	35 (4)	70 (8)
<input type="checkbox"/> Breakaway	35 (4)	70 (8)
<input type="checkbox"/> Stall Minimum	45 (5)	70 (8)
<input type="checkbox"/> Stall Maximum	70 (8)	130 (14)

#### Actuator Stroke:

- Selectable: 45°, 60°, and 90°.
- Rotation: Clockwise (CW) and counter clockwise (CCW).

#### Device Weight:

- 1.3 lb (0.58 kg).

#### Environmental Protection Ratings:

- NEMA1.
- IP54 (ML6161E, ML7161E, ML6174E, ML7174E *only*).

### SPECIFICATION DATA

### FEATURES

- 45°, 60°, and 90° selectable stroke in either clockwise (cw) or counterclockwise (ccw) directions.
- Magnetic coupling eliminates the need for mechanical stops.
- Two field-addable auxiliary switches.
- Auxiliary feedback potentiometer field-addable on select models.
- 0° to 30° minimum position adjustment (cw or ccw direction) on all models.
- Manual declutch on select models.
- W7620 Terminal Unit Controller compatibility.
- Commercial Zone Damper in W7600 Commercial Zone System compatibility.

#### Actuator Timing for 90° Stroke:

	At 50 Hz	At 60 Hz
<input type="checkbox"/> 90 Second Models	108 sec	90 sec
<input type="checkbox"/> Three-Minute Models	216 sec	180 sec
<input type="checkbox"/> Seven-Minute Models	504 sec	420 sec

#### Mounting:

- Mounts directly on 3/8 in. to 1/2 in. (10 to 13 mm) round or square shaft.
- Minimum Shaft Length Required: 1-3/4 in. (45 mm).
- Actuator can be mounted with shaft in any position.
- Secured Using: Two 1/4 in. (6 mm) 28 NF Allen screws.

#### Actuator Minimum Design Life:

	35 lb-in. DCA	70 lb-in. DCA
<input type="checkbox"/> Cycles	50,000	40,000
<input type="checkbox"/> Repositions	1,500,000	1,500,000

#### Temperature Ratings:

- Ambient: 20° to 125°F (-18° to 50°C).
- Derated Timing to: -20°F (-29°C).
- Shipping and Storage: -20° to 130°F (-29° to 54°C).

#### Humidity Ratings:

- 5% to 95% RH noncondensing.

#### Noise Output:

- 45 dBA at 1 meter maximum.



**Models:**

ML	Motor Linkage
<input type="checkbox"/> 61	Floating Control
<input type="checkbox"/> 71	4-20 mA/2-10 Vdc Control
<input type="checkbox"/> 61	35 lb-in. (4 Nm), Non-Spring Return
<input type="checkbox"/> 74	70 lb-in. (8 Nm), Non-Spring Return
<input type="checkbox"/> A	Includes output for feedback potentiometer.
<input type="checkbox"/> B	Standard (includes minimum position setscrews)
<input type="checkbox"/> C	Includes output for feedback potentiometer and cover w/ conduit connections.
<input type="checkbox"/> D	Includes cover w/ conduit connections.
<input type="checkbox"/> E	Standard with European ratings.
<input type="checkbox"/> 1	Standard
<input type="checkbox"/> 2	Includes declutch function
ML	XXX Varies by Model

**TYPICAL SPECIFICATION**

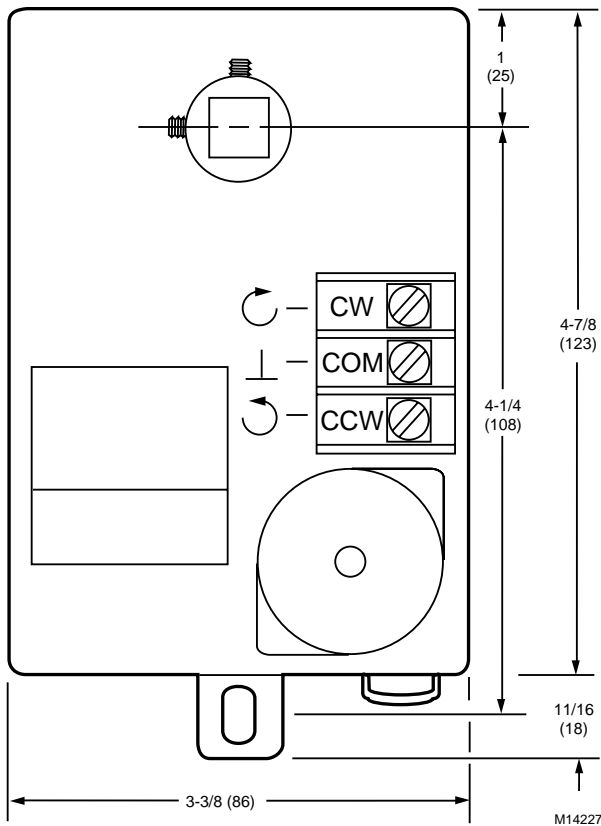
Non-spring return actuator shall be direct coupled type that requires neither crankarm nor linkage and be capable of direct mounting to a 3/8 inch or 1/2 inch diameter jackshaft. The actuator shall connect to the shaft using set screws. The actuator must provide floating or proportional control.

The actuator design must be for use in either clockwise or counterclockwise operation.

Actuators shall use a true synchronous ac stepper motor to drive the output hub. Run time shall be constant and independent of load, temperature and supply voltage (within product-family specifications). Overload protection shall be provided 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.

Actuators shall have a minimum performance of 40,000 full-stroke powered cycles, and 1,500,000 repositions documented in the product data literature. Actuators shall be UL and CSA listed, manufactured under ISO 9001 International Quality Control Standards.

**Dimensions:**



**Feedback Potentiometer Ratings:**

- Electrical Rating (200976A,C Potentiometer): 24 Vac, 50/60 Hz, 2.25W.
- Resistance Output (Resistance Linear as Measured Between Terminals R-B):
  - 0 ohms (at 0°, cw stroke).
  - 250 ohms (at 45°, cw stroke).
  - 333 ohms (at 60°, cw stroke).
  - 500 ohms (at 90°, cw stroke).

**Approvals:**

- Underwriter's Laboratories Inc. Component Recognized: File No. E4436; Guide No. XAPX2.
- Meets UL94-5V plenum requirements.
- Canadian Standards Association Certified (includes auxiliary switch).

**Accessories:**

- 200976A Auxiliary Potentiometer (0 to 500 ohm).
- 200976C Auxiliary Potentiometer (0 to 2000 ohm).
- 201052A Auxiliary Switch (one).
- 201052B Auxiliary Switch (two).
- 4074ENJ Bag Assembly—includes stop pin, shaft adapter, and two minimum position screws.
- 4074ENY Bag Assembly—includes stop pin and shaft adapter.
- 4074EVK Short Shaft Extender.
- 7640QW Metal Enclosure—for attaching conduit to actuator.
- T641 Floating Thermostat—for use with seven-minute models.
- T6984 Floating Thermostat—for use with 90-second and seven-minute models.
- T7984 Modulating Thermostat—for use with ML7174.

