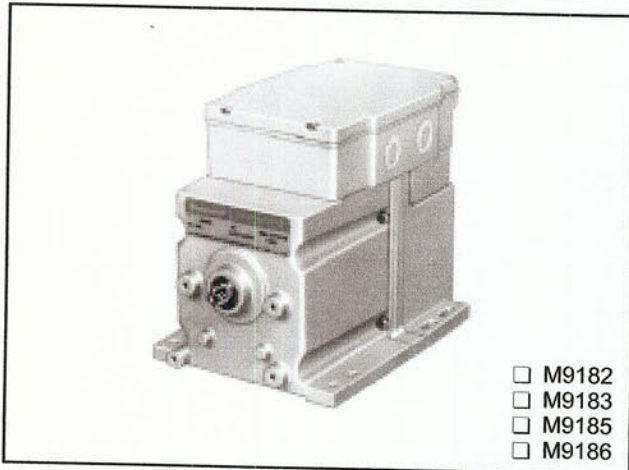


## M9182, M9183, M9185, M9186 Modutrol IV™ Motors

### SPECIFICATION DATA



### APPLICATION

M9182, M9183, M9185 and M9186 are proportioning spring return motors used to operate dampers and valves.

### FEATURES

- Replaces M945A,D,F and M955 Motors.
- Rated for 60 lb-in. torque.
- Oil immersed motor and gear train for reliable performance and long life.
- Wiring box provides NEMA 3 weather protection.
- Quick-connect terminals standard—screw terminal adapter available.
- Adapter bracket for matching shaft height of older motors is standard with replacement motors.
- Integral auxiliary switches are available factory mounted, or can be field added to TRADELINE® models.
- Field addable interface modules can be mounted in wiring box to upgrade actuator to Series 70 (electronic) control.
- Auxiliary end shaft on TRADELINE® model can operate valve linkage. For use in normally open valve applications.
- Die-cast aluminum housing.

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# SPECIFICATIONS

## TRADELINE® Models

TRADELINE® models are selected and packaged to provide ease of stocking, ease of handling, and maximum replacement value. TRADELINE® model specifications are the same as those of standard models, unless otherwise specified. TRADELINE® model is M9185D1004. TRADELINE® model has auxiliary switch cams.

## Standard Models

M9182A,C,D,W  
M9183G  
M9185A,B,C,D,E  
M9186G

**Control Type**  
91 is Series 90

**Power Rating**  
8 is high torque: 60 lb-in.

**Output Drive**  
5 is spring return normally closed, dual-ended shaft  
6 is spring return normally open, dual-ended shaft  
2 is spring return normally closed, single-ended shaft  
3 is spring return normally open, single-ended shaft

### Suffix Letter

- A:** Fixed stroke (90° or 160°), No auxiliary switches
- B:** Fixed stroke (90° or 160°), 1 auxiliary switch
- C:** Fixed stroke (90° or 160°), 2 auxiliary switches
- D:** Adjustable stroke (90° to 160°), No auxiliary switches
- E:** Adjustable stroke (90° to 160°), 1 auxiliary switch
- G:** Fixed stroke (90° or 160°), No auxiliary switches, Electrically normally open (motor drives open, clockwise, when powered and control wiring not connected)
- W:** Fixed stroke (90° or 160°), 1 auxiliary switch

## Electrical Ratings:

M9182, M9183, M9185, M9186	Voltage (V at 50/60 Hz)	Current Draw (A)	Power Consumption (W)
Without Transformer <sup>a</sup>	24	1.0	23
With Internal Transformer	120	0.28	28
	208	0.16	28
	240	0.14	28

<sup>a</sup> Internal transformer can be field added.

## Controller Type:

Series 90 Control Circuit: 135 ohm, Series 90 proportioning controller. Series 90 high or low limit controller with manual minimum position potentiometer (with a combined total resistance of up to 500 ohms) can also be used in the control circuit.

## Motor Rotation:

M9182, M9185 Motors spring counterclockwise (as viewed from power end) to a closed position on power interruption. M9183, M9186 Motors spring clockwise to an open position on power interruption.

## Stroke:

Fixed Stroke Models: 90° or 160°.  
Adjustable Stroke Models: Can be set between 90° and 160°.

## Timing:

Nominal 30 seconds for 90° stroke and 60 seconds for 160° stroke.

NOTE: M9182D1023 timing is 2 min. for 90° stroke, or 4 min. for 160° stroke. It contains on-off pulsing circuitry to achieve timing. Intermittent operation is normal.

## Torque:

60 lb-in. (6.8 N•m).

## Maximum Damper Rating:

B dim = 68 in. (1727 mm).

## Dead Weight Load on Shaft:

Power or Auxiliary End: 200 lb (90.8 kg) maximum.  
Maximum Combined Load: 300 lb (136 kg).  
Auxiliary shaft not included on M9182, M9183 Motors.

## Ambient Temperature Ratings:

Maximum: 150°F (66°C) at 25% duty cycle.  
Minimum: minus 40°F (-40°C)

## Crankshaft: 3/8 in. (9.5 mm) Square.

M9185, M9186 have double-ended shafts.  
M9182, M9183 have single-ended shafts.

## Dimensions:

See Fig. 1.

## Underwriters Laboratories Inc. Listed:

File No. E4436, Guide No. XAPX.

## Canadian Standards Association Certified:

General Listing File No. LR1620, Guide No. 400-E.

## Auxiliary Switch Ratings (Amperes):

One Contact <sup>a</sup>	120V	240V
Full Load	7.2	3.6
Locked Rotor	43.2	21.6

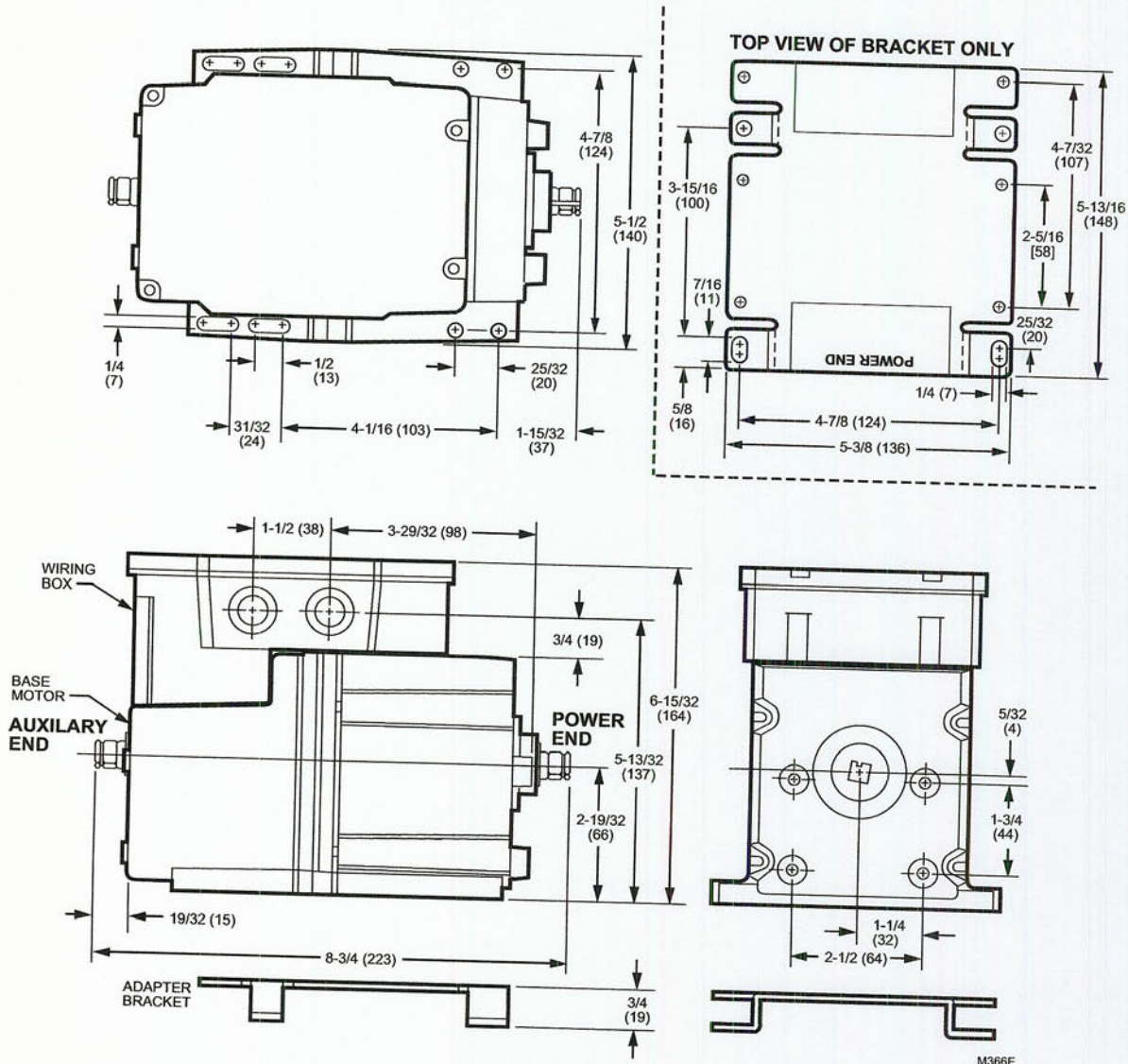
<sup>a</sup> 40 VA pilot duty, 120/240 Vac on opposite contact.

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**Accessories:**

- ES650117 Explosion-proof Housing: Encloses motor for use in explosive atmospheres. Not for use with Q601, Q618, and Q455 Linkages. Order separately from Nelson Electric Co. Requires Honeywell 7617DM Coupling.
- Q607 External Auxiliary Switch: Controls auxiliary equipment as a function of motor position.
- Internal Auxiliary Switch Kits: Can be field-installed on TRADELINE® models.
- 220736A: One-switch Kit.
- 220736B: Two-switch Kit.
- Q605 Damper Linkage: Connects motor to damper. *Includes motor crank arm.*
- Q618 Linkage: Connects Modutrol motor to water or steam valve.
- Q601 Bracket and Linkage Assembly: Connects Modutrol motor to water or steam valve.
- Q100A,B Linkage: Connects Modutrol motor to butterfly valve. Requires adapter bracket packed with motor.
- Q209E,F Potentiometer: Limits minimum position of motor.
- Q68 Dual Control Potentiometer: Controls 1 to 9 additional motors.
- Q181 Auxiliary Potentiometer: Controls 1 or 2 additional motors.
- 221455A Infinitely Adjustable Crank Arm: Approximately 0.75 inch (19 mm) shorter than the 4074ELY Crank Arm. Can rotate through downward position and clear base of motor without requiring use of adapter bracket.
- 220741A Screw Terminal Adapter: Converts the standard quick-connect terminals to screw terminals.
- Transformers: Mounted internally, provide 24 Vac power to motor.
- 198162JA: 24 Vac; 50/60 Hz (for electrical isolation).
- 198162EA: 120 Vac; 50/60 Hz.
- 198162GA: 220 Vac; 50/60 Hz.
- 198162AA: 120/208/240 Vac; 50/60 Hz.
- Q7130A: Interface Module with selectable voltage ranges (4-7 Vdc, 6-9 Vdc, and 10.5-13.5 Vdc). Adapts motor to M71XX function.
- Q7230A: Interface Module, selectable voltage or current control, with adjustable null and span. Adapts motor to M72XX function; 4 to 20 mA or 2 to 10 Vdc.
- Q7330A: Interface Module, for W936 Economizer applications. Adapts motor to M73XX function.
- Q7630A: Interface Module, 14-17 Vdc control with minimum position capability. Adapts motor to M76XX function.
- 7617ADW Adjustable Crank Arm: approximately 0.75 in. (19 mm) shorter than the 7616BR Crank Arm.
- 4074BYK: Controls up to 6 M91XX motors in unison from one Series 90 Controller.
- 4074EAU: Drives 2 or 3 M91XX motors from a W973 Single-zone Logic Panel and W7100 Discharge Air Controller.
- 4074EDC: Drives one M91XX motor from a 4-20 mA controller.
- 4074EED: Drives up to 4 M91XX motors from a 4-20 mA controller.
- 221508A Resistor Board: Plugs onto quick-connects in wiring box of M91XX motor. Can be used in place of 4074BYK, EAU, EDC, or EED resistor kits (functions described above).

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**Fig. 1. Dimensions of M9185 and M9186 in in. (mm).**  
**NOTE: M9182, M9183 do not have auxiliary shafts. All other dimensions are the same.**

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