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## M6281, M6284, M6294 Modutrol IV™ Motors

SPECIFICATION DATA



### APPLICATION

These Modutrol® Motors are 3-wire floating control motors with an internal, electrically isolated feedback potentiometer. These motors are used with controllers that provide floating or spdt output to operate dampers or valves.

### FEATURES

- Replace M944B,E,G,S Motors.
- 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.
- Die-cast aluminum housing.
- Integral auxiliary switches are available factory mounted or can be field added to TRADELINE® models.
- Electrically isolated feedback potentiometer provides indication of shaft position and can be used to slave Series 90 Motors or rebalance an external control circuit.



## SPECIFICATIONS

### TRADELINE® Models

TRADELINE models (M6284D1000, M6294D1008) 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 specified otherwise. TRADELINE models have auxiliary switch cams.

### Standard Models

M6281A,F  
M6284A,B,C,D,F  
M6294A,B,C,D

<p><b>Control Type</b> 62 is Series 60 with internal feedback potentiometer</p> <p><b>Torque Rating</b> 8 is high torque: 150 lb-in. at standard timing (60 sec. for 160°) 9 is extra high torque: 300 lb-in. at 2 or 4 minute timing</p>	<p><b>Suffix Letter</b> 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 F: Adjustable stroke (90° to 160°), 2 auxiliary switches</p>
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**Output Drive**  
4 is dual-ended shaft, non-spring return  
1 is single-ended shaft, non-spring return

NOTE: Some motors furnished to HVAC equipment manufacturers have a single-ended shaft, and no wiring box.

### Electrical Ratings:

	Voltage (V at 50/60 Hz)	Current Draw (A)	Power Consumption (W)
M6281, M6284, M6294			
Without Transformer <sup>a</sup>	24	0.69	15
With Internal Transformer	120	0.21	20
	208	0.12	20
	240	0.11	20

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

### Maximum Damper Rating:

Motor Torque lb-in.	B dim	
	in.	mm
75	100	2540
150	202	5131
300	258	6553

### Dead Weight Load on Shaft:

Power or Auxiliary End: 200 lb (90.8 kg) maximum.  
Maximum Combined Load: 300 lb (136 kg).

### Dimensions:

See Fig. 1.

### 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.

M6284, M6294 have dual-ended shaft.  
M6281, M6291 have single-ended shaft.

### Feedback Potentiometer:

115 ohms. TRADELINE® models are 600 ohms linear, configurable for W902 Control or for slaving Series 90 motor.

### Controller Type:

3-wire floating (Series 60)—drive open, hold, drive closed.  
Internal, electrically isolated feedback potentiometer provides indication of motor position.

### Stroke:

Fixed stroke models available with 90° or 160° stroke. Other models available with stroke field adjustable from 90° to 160°. Start position of shaft changes with adjustment of stroke. (Midpoint of stroke remains fixed as stroke is adjusted. Stroke is adjusted by using cams located in wiring compartment.)

### Auxiliary Switch Ratings (Amperes):

One Contact Rating <sup>a</sup> Amps	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.

### Underwriters Laboratories Inc. Listed:

File No. E4436, Guide No. XAPX.

### Canadian Standards Association Certified:

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

Timing		Torque in lb.-in (N•m)	
90° Stroke Motors	160° Stroke Motors	Normal Running	Breakaway <sup>a</sup>
15 sec	30 sec	75 (8.5)	150 (17.0)
30 sec	1 min	150 (17.0)	300 (34.0)
1, 2 min <sup>b</sup>	2, 4 min <sup>b</sup>	300 (34.0)	600 (68.0)

<sup>a</sup> Breakaway torque is the maximum torque available to overcome occasional large loads such as a seized damper or valve. *Motor must not be used continuously at this rating.*

<sup>b</sup> Stalling of 2 or 4 minute motor may damage drive shaft.

**Accessories:**

ES650117 Explosion-proof Housing: encloses motor for use in explosive atmospheres. Not for use with Q601, Q618, and Q455 Linkages. To order, contact Nelson Electric Co., Order Services Dept., P.O. Box 726, Tulsa, OK, 74101, (918) 627-5530, for name of nearest local representative. 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.

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 in. (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

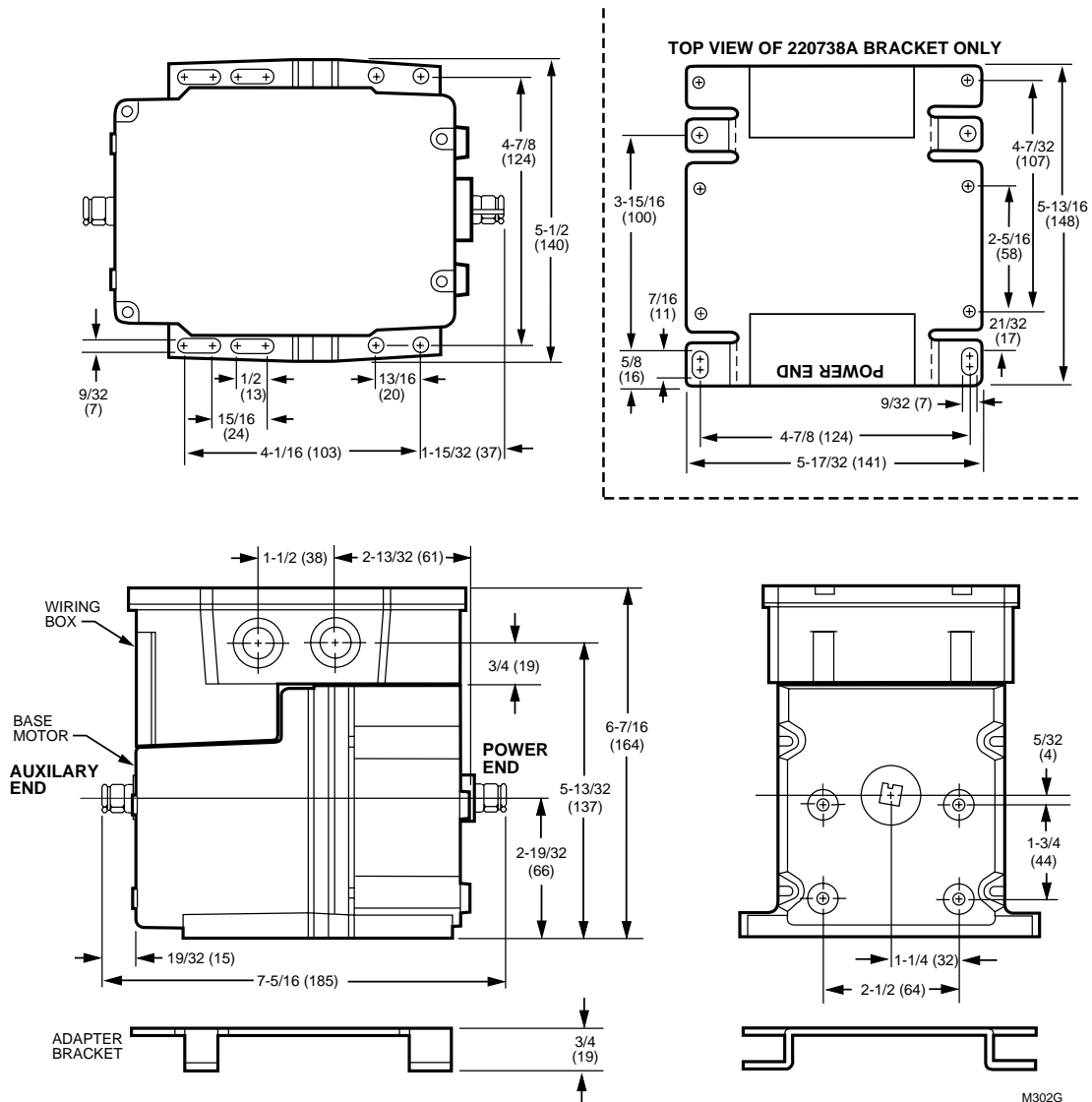
198162JA—24 Vac; 50/60 Hz (for electrical isolation).

198162EA—120 Vac; 50/60 Hz.

198162GA—220 Vac; 50/60 Hz.

198162AA—120/208/240 Vac; 50/60 Hz.

7617ADW Adjustable Crank Arm: Approximately 0.75 in. (19 mm) shorter than the 7616BR Crank Arm. Can rotate through downward position and clear base of motor without requiring use of the adapter bracket.



**Fig. 1. M6284, M6294 mounting dimensions in in. (mm).  
Note: M6281 does not have auxiliary shaft. All other dimensions are the same.**

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