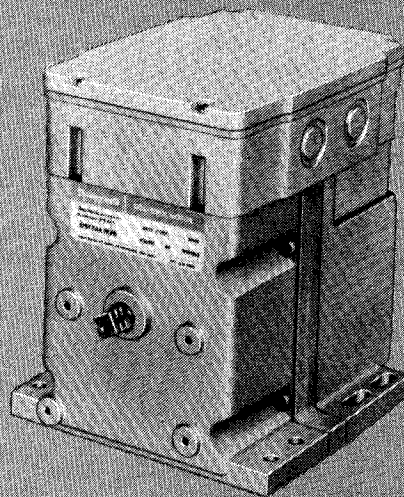


# Honeywell

M6284 AND M6294 MODUTROL MOTORS ARE FLOATING CONTROL MOTORS WITH AN INTERNAL, ELECTRICALLY ISOLATED FEEDBACK POTENTIOMETER. THESE MOTORS ARE USED WITH CONTROLLERS THAT PROVIDE A SWITCHED SPDT OR FLOATING OUTPUT TO OPERATE DAMPERS OR VALVES. THE FEEDBACK POTENTIOMETER PROVIDES INDICATION OF THE MOTOR'S SHAFT POSITION AND CAN BE USED FOR SLAVING SERIES 90 MOTORS OR RE-BALANCING AN EXTERNAL CONTROL CIRCUIT.

- M6284, M6294 replace M944B,E,G,S motors.
- Electrically isolated feedback potentiometer provides indication of shaft position.
- TRADELINE models have linear feedback, also configurable for W902 control or for slaving Series 90 motors.
- Oil immersed motor and gear train for reliable performance and long life.
- Wiring box provides NEMA 3 weather protection.
- Actuator motor and circuitry operate from 24 volts AC. Models available with factory installed transformer, or an internal transformer can be field added.
- Quick-connect terminals standard—screw terminal adapter available.
- Adapter bracket for matching shaft height of older motors is standard with replacement motors.
- Field adjustable stroke (90° to 160°) models available.
- Die-cast magnesium housing.
- Available accessories include valve and damper linkages, explosion proof housing, and auxiliary switches.
- Integral auxiliary switches are available factory mounted, or can be field added to TRADELINE models.
- Nominal timing of 30 seconds for 90° and 60 seconds for 160° stroke is standard. Other timings are available.
- M6281, M6284 rated for 150 lb.-in. torque for standard timing.
- M6291, M6294 rated for 300 lb.-in. torque for 2 or 4 minute timing.

## MODUTROL IV MOTORS



**M6284, M6281  
M6294, M6291**

# 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 specified otherwise. M6284D1000 and M6294D1008 are TRADELINE models.

## STANDARD MODELS

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

### Control Type

62 is Series 60 with internal feedback pot

### Power Rating

8 is high power - 150 lb.-in. torque at standard timing (60 sec. for 160°)  
9 is extra high power 300 lb-in torque at 2 or 4 min timing for 160°

### Output Drive

4 is dual-ended shaft, non-spring return  
1 is single-ended shaft, non-spring return

### 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  
**F:** Adjustable stroke (90° to 160°)  
2 auxiliary switches

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

### 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] @ 25% duty cycle.  
Minimum—minus 40° F [-40° C].

CRANKSHAFT: 3/8 inch [9.5 mm] square.

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

### CONTROLLER TYPE:

Floating 3-wire - drive open, hold, drive closed.  
Internal, electrically isolated feedback potentiometer provides indication of shaft position.

### ELECTRICAL RATINGS:

	VOLTAGE (V @ 50/ 60 Hz)	CURRENT DRAW (A)	POWER CONSUMP- TION (W)
Without Transformer	24	0.69	15
With Internal Transformer	120	0.21	20
	208	0.12	20
	240	0.11	20

### FEEDBACK POTENTIOMETER:

TRADELINE models—600 ohms linear for 160° stroke, 337 ohms for 90° stroke. Can be shunted for W902 control or for slaving Series 90 motor.  
All other models—115 ohms.

STROKE: Fixed stroke models available with 90° or 160° stroke. Other models available are field adjustable from 90° to 160°. Start position of shaft changes with adjustment of stroke. (Midpoint of stroke remains fixed as stroke is adjusted, as shown in Fig. 2.) Stroke is adjusted by means of cams located in wiring compartment. (See Stroke Setting Procedure.)

### AUXILIARY SWITCH RATINGS (amperes):

ONE CONTACT RATING * AMPS	120 V	240 V
Full Load	7.2	3.6
Locked Rotor	43.2	21.6

\* 40 VA pilot duty, 120/240 Vac on opposite contact.

*(continued on page 3)*

## ORDERING INFORMATION

WHEN PURCHASING REPLACEMENT AND MODERNIZATION PRODUCTS FROM YOUR AUTHORIZED DISTRIBUTOR, REFER TO THE TRADELINE CATALOG OR PRICE SHEETS FOR COMPLETE ORDERING NUMBER.

IF YOU HAVE ADDITIONAL QUESTIONS, NEED FURTHER INFORMATION, OR WOULD LIKE TO COMMENT ON OUR PRODUCTS OR SERVICES, PLEASE WRITE OR PHONE:

1. YOUR LOCAL HONEYWELL RESIDENTIAL AND BUILDING CONTROLS SALES OFFICE (CHECK WHITE PAGES OF YOUR PHONE DIRECTORY).
2. RESIDENTIAL AND BUILDING CONTROLS CUSTOMER SERVICE  
HONEYWELL INC., 1885 DOUGLAS DRIVE NORTH  
MINNEAPOLIS, MINNESOTA 55422-4386 (612) 542-7500

(IN CANADA—HONEYWELL LIMITED/HONEYWELL LIMITEE, 740 ELLESMERE ROAD, SCARBOROUGH, ONTARIO M1P 2V9) INTERNATIONAL SALES AND SERVICE OFFICES IN ALL PRINCIPAL CITIES OF THE WORLD.

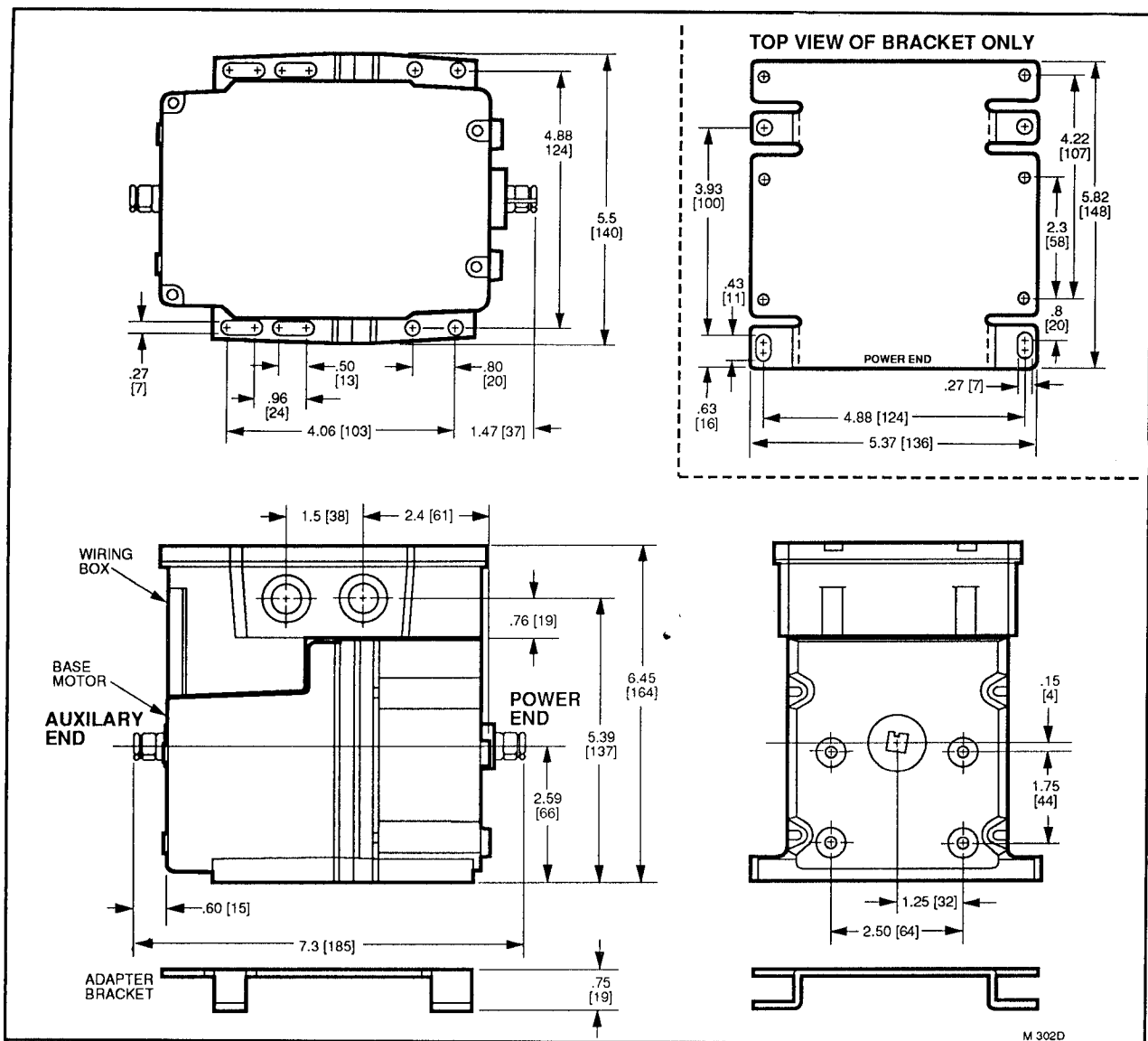


FIG. 1—M6284, M6294 MOUNTING DIMENSIONS IN in. [mm].

NOTE: M6281, M6291 do not have auxiliary shaft. All other dimensions are the same.

UNDERWRITERS LABORATORIES INC. LISTED:  
File No. E4436, Guide No. XAPX.  
CANADIAN STANDARDS ASSOCIATION CERTIFIED:  
General listing File No. LR1620, Guide 400-E.

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. Requires adapter bracket packed with replacement motor.

TIMING		TORQUE 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 or 2 min	2 or 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 min. motor may damage drive shaft.

- Q68 Dual Control Potentiometer—Controls 1 to 9 additional motors.
- Q181 Auxiliary Potentiometer—Controls 1 or 2 additional motors.
- 221455A Motor Crank Arm—Infinitely adjustable crank arm. Approximately 0.75 inches shorter than the 4074ELY crank arm, can rotate through downward position and clear base of motor without requiring use of adapter bracket.
- 7617ADW Motor Crank Arm—Approximately 0.75 inches shorter than the 7616BR 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 screws 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.

## INSTALLATION

### WHEN INSTALLING THIS PRODUCT...

1. Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.
2. Check the ratings given in the instructions and on the product to make sure the product is suitable for your application.
3. Installer must be a trained, experienced service technician.
4. After installation is complete, check out product operation as provided in these instructions.

### CAUTION

1. Disconnect power supply before beginning installation to prevent electrical shock and equipment damage.
2. Never turn the motor shaft by hand or with a wrench—this will damage the motor.
3. Always conduct a thorough checkout when installation is complete.

### LOCATION

Install the Modutrol motor in any location except where acid fumes or other deteriorating vapors might attack the metal parts, or in atmospheres of escaping gas or the explosive vapors. In excessive salt environments, mounting base and screws should be zinc or cadmium plated, not stainless steel or brass: Use the 220738A adapter bracket for mounting on these surfaces. Motors are rated for ambient temperatures between -40° F and 150° F [-40° C and 66° C].

Allow enough clearance for installing accessories and servicing the motor when selecting a location (see Fig. 1). If located outdoors, use liquid-tight conduit connectors and wiring box to provide NEMA 3 weather protection when motor is mounted upright.

### MOUNTING

Always install motors with the crankshaft horizontal. Mounting flanges extending from the bottom of the motor housing are drilled for 1/4 inch [6.4 mm] zinc plated-machine screws or bolts.

All M6284, M6294 motors are shipped from the factory in closed position (at the limit of counterclockwise rotation as viewed from the power end of the motor, as shown in Fig. 2).

### ADAPTER BRACKET

The 220738A Adapter Bracket, positioned between the motor and the equipment, raises the shaft height of the M6284, M6294 motor by .75 inch to match that of the M944 motor. This is required on all valve linkage applications, Q607 External Auxiliary Switch applications, and on some damper linkage applications (either to provide clearance for the crank arm to rotate through the downward position, or to allow the damper linkage to reach the shaft).

To mount the motor with the bracket:

1. Mount the bracket to the equipment with existing or standard bolts.
2. Mount the motor to the bracket using the bolts provided to the threaded holes in the bracket. See Fig. 3.

For valve linkage applications, the bracket should first be mounted to the linkage. The bracket provides a convenient base on which the motor can be positioned. This makes it easier to align the motor and cam to the valve linkage. After the motor shaft is aligned to the Q618, it can then be attached to the bracket with the 4 bolts provided. These bolts go through the inner set of holes of the motor flange and into the threaded holes of the bracket.

### DAMPER LINKAGES

A 220738A Adapter Bracket is packed with replacement motors. Use of this bracket is optional for many damper applications. The bracket is needed in damper applications requiring a long crank arm to rotate through the bottom plane of the actuator. If the bracket is not used in a replacement application, the damper linkage will have to be adjusted to the new shaft location.

The motor comes without a crank arm. The crank arm is included in the Q605 linkage or may be ordered separately (see Accessories).

For detailed instructions on the assembly of specific linkages, refer to the instruction sheet packed with each linkage. In general, however, check the following points of operation when installing a motor and linkage.

1. Linkages for valves and louver type dampers should be adjusted so that the damper or valve moves through only the maximum required distance when the motor moves through its full stroke.
2. With modulating control, maximum damper opening should be no more than 60°. Little additional airflow is provided beyond this point.
3. The motor must be stopped at the end of its stroke by the limit switch and must not be stalled by the damper or valve. The motor will be damaged if it is not permitted to complete its full stroke.
4. Do not exceed the motor ratings in any installation.

5. Do not turn motor shaft manually or with a wrench—this will damage the motor.

### VALVE LINKAGES

The 220738A Adapter Bracket must be used with the Q100, Q601 and Q618 linkages in all valve applications. See Fig. 4.

### WIRING

Disconnect power supply before wiring to prevent electrical shock or equipment damage. All wiring must agree with applicable codes, ordinances, and regulations.

Make sure that the voltage and frequency stamped on the motor correspond to the characteristics of the power supply.

Figs. 5-8 show internal schematics, Fig. 9 shows auxiliary switch schematic, and Figs. 10 - 12 show typical system connections.

The motor terminals are quick-connects located on top of the printed circuit board as shown in Fig. 5. Access to the wiring compartment is gained by removing the 4 screws in the top of the wiring box and lifting off the cover.

If motor includes auxiliary switches or integral transformer either field or factory installed, all wiring must be NEC Class 1 or CEC Class 1.

### WIRING BOX

When used with liquid-tight conduit connectors, the wiring box provides NEMA 3 weather protection for the motor. The box also provides knockouts for wiring conduits and encloses terminals. The wiring box, standard with replacement motors, is required for housing an internal transformer or internal auxiliary switches.

### IMPORTANT

If a motor operates in a direction opposite to the rotation desired, the rotation can be reversed by switching wires at either the motor or the panel. Reversing rotation on the M6284 is done by reversing the wires at terminals 1 and 2 and reversing the wires at terminals Y and G.

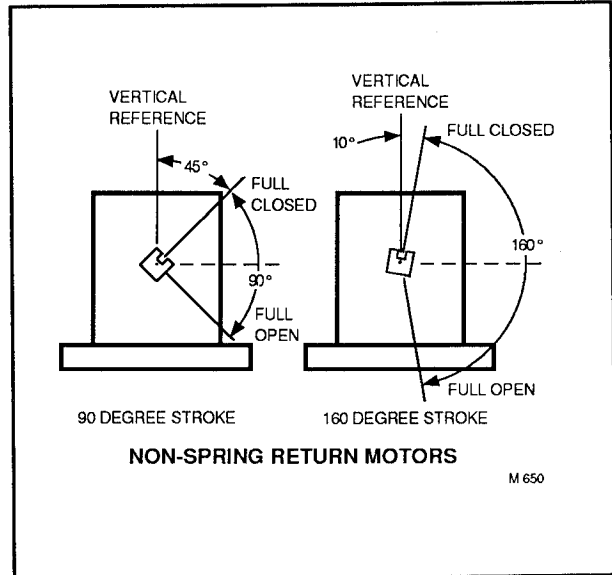


FIG. 2—MOTOR SHAFT POSITIONS AT LIMITS OF STROKE—VIEWED FROM POWER END.

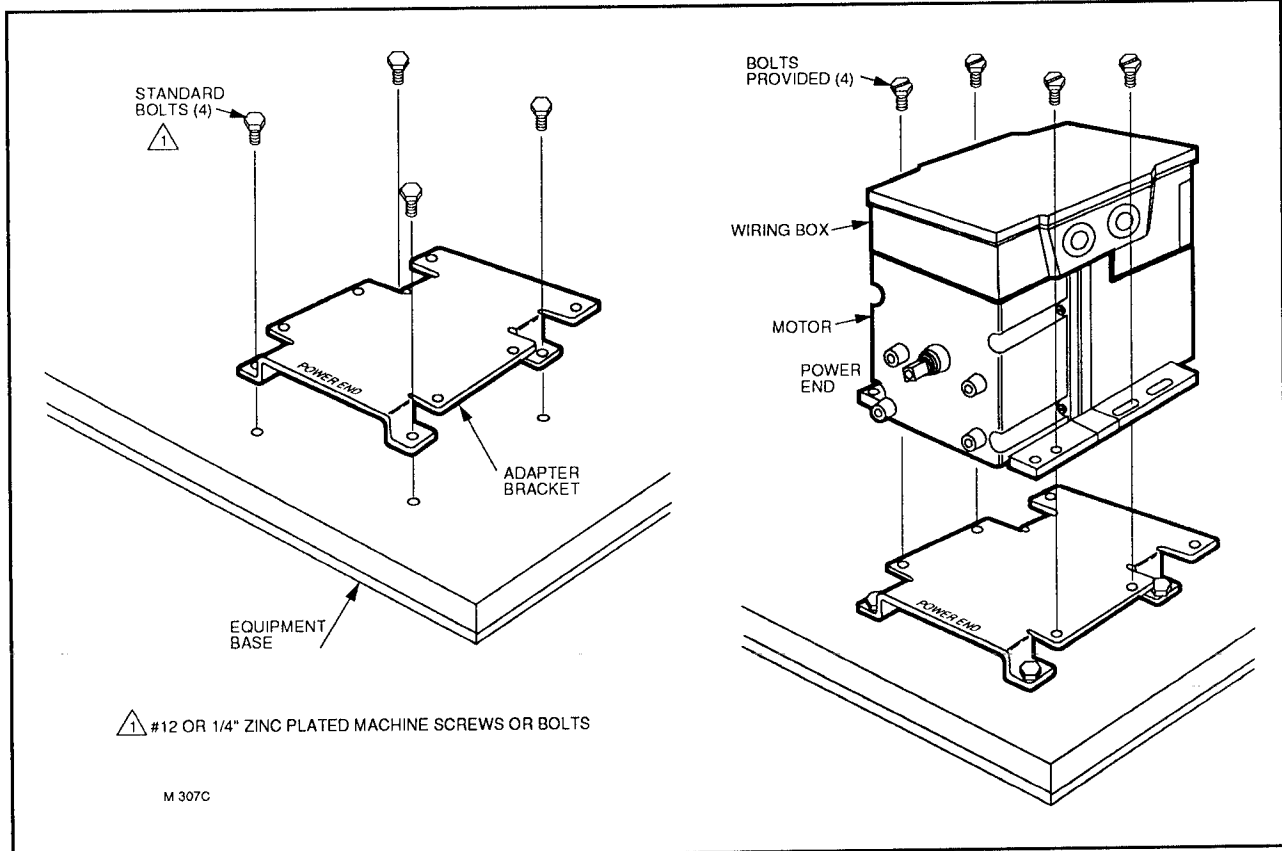


FIG. 3—MOUNTING THE MOTOR WITH A BRACKET. (With this option, the bracket is first mounted to the equipment with standard bolts. The motor is then mounted to the bracket using the bolts provided, which thread into the threaded bracket holes.)

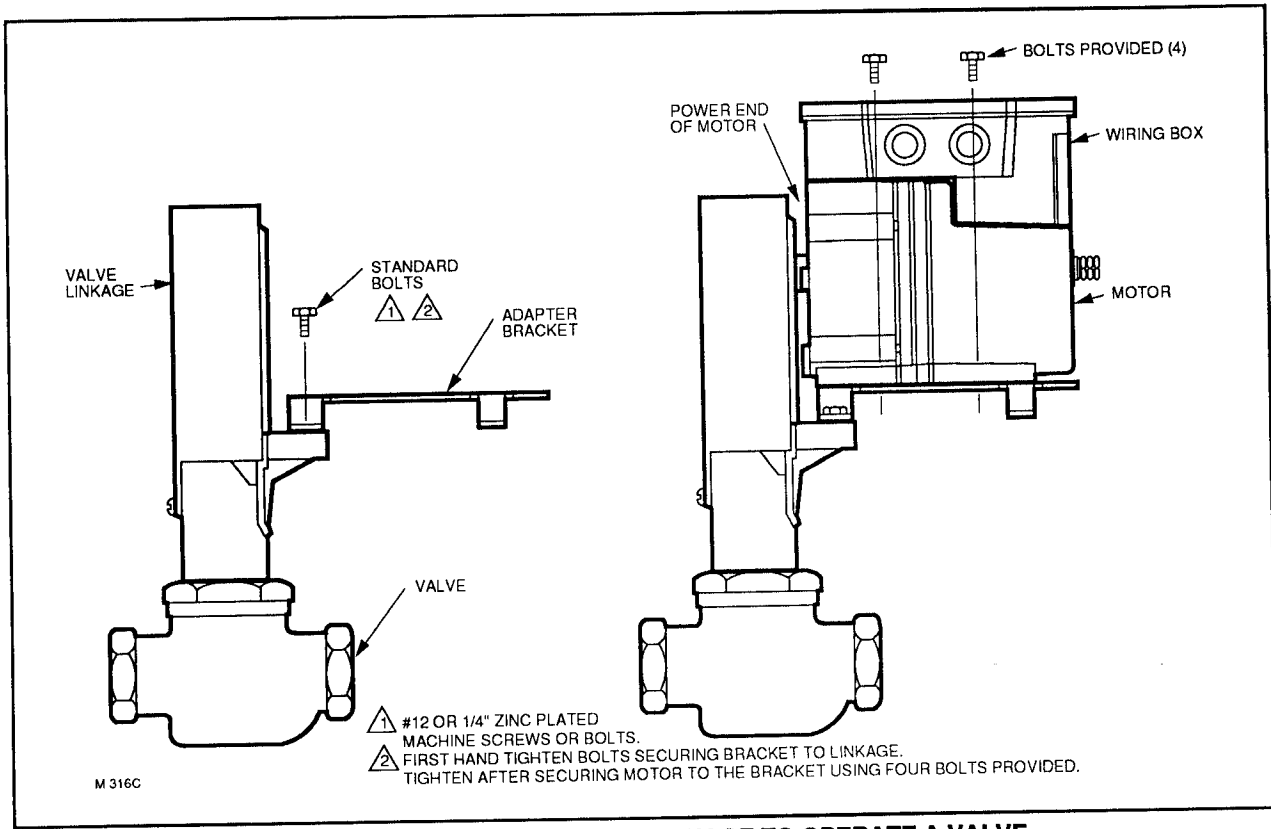


FIG. 4—INSTALLATION ON Q618 LINKAGE TO OPERATE A VALVE.

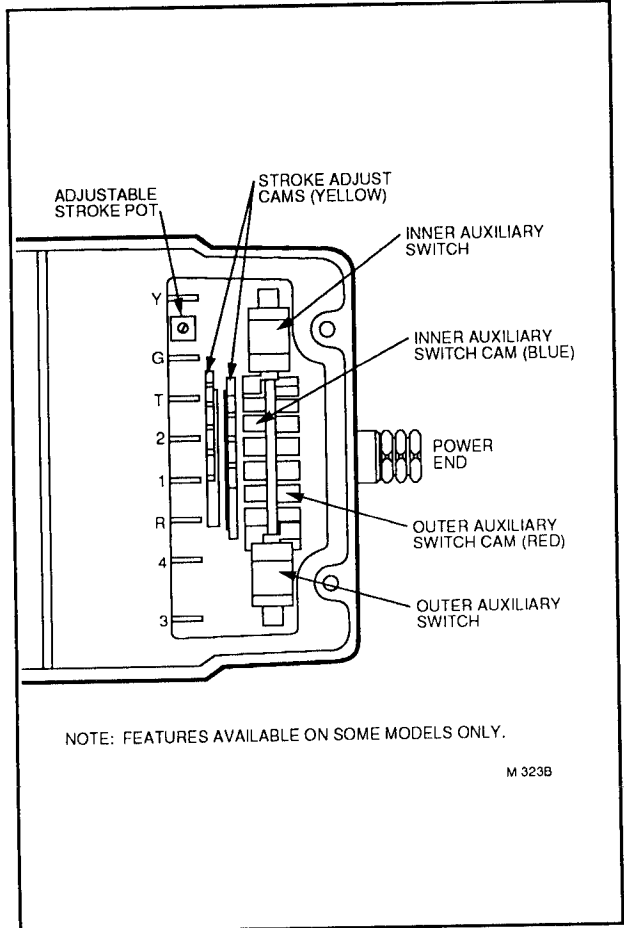


FIG. 5—TERMINALS AND ADJUSTMENTS.

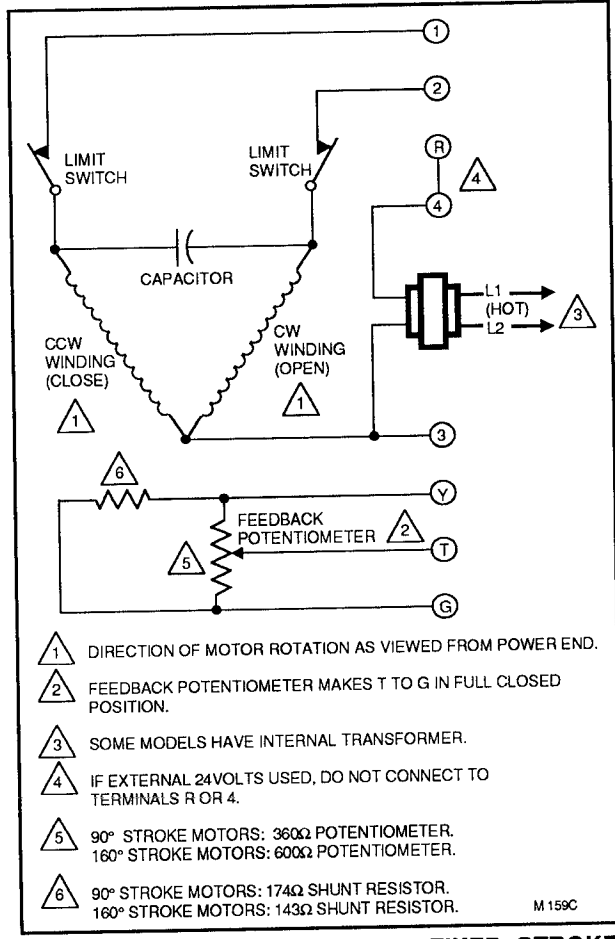
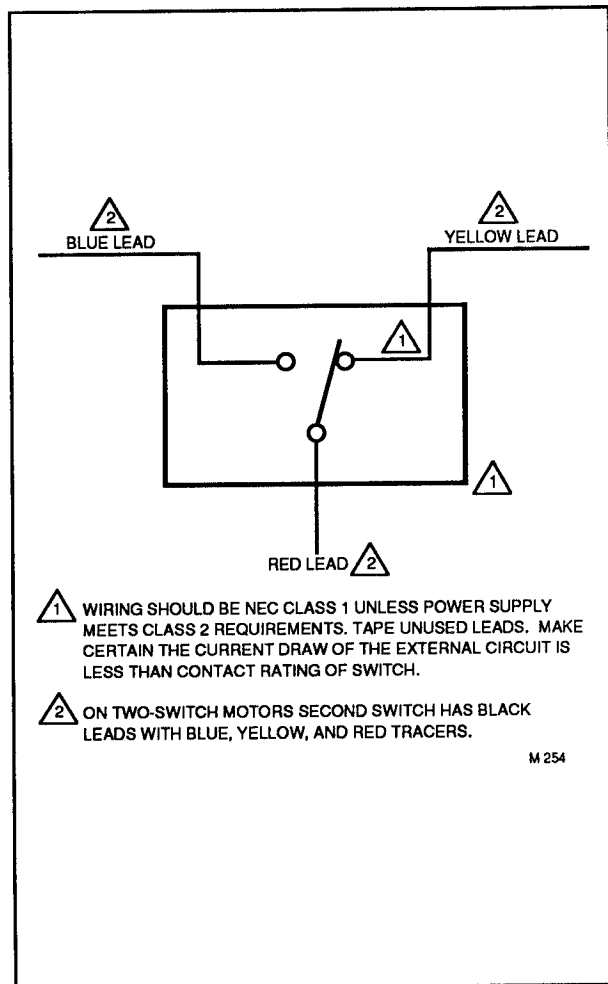
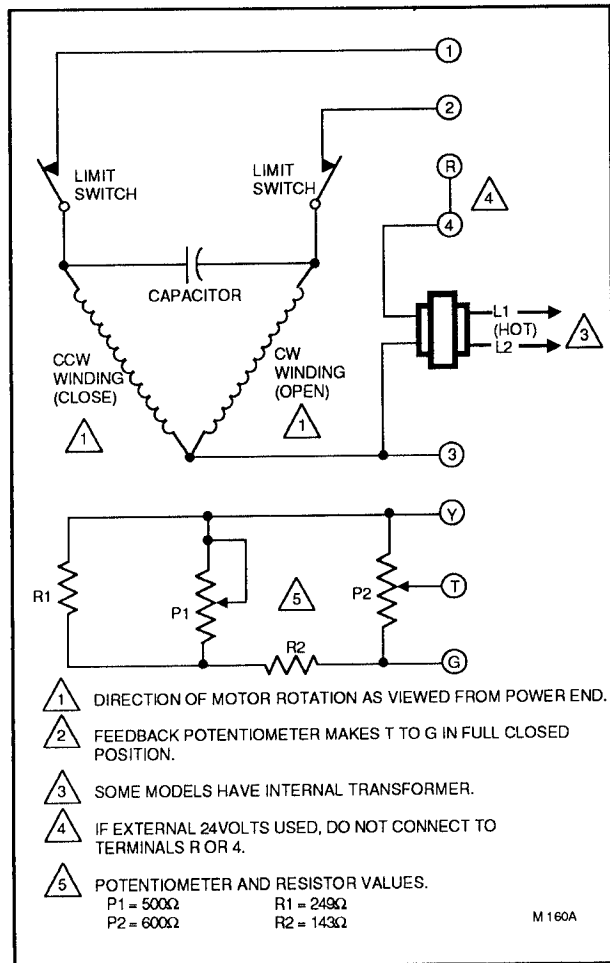
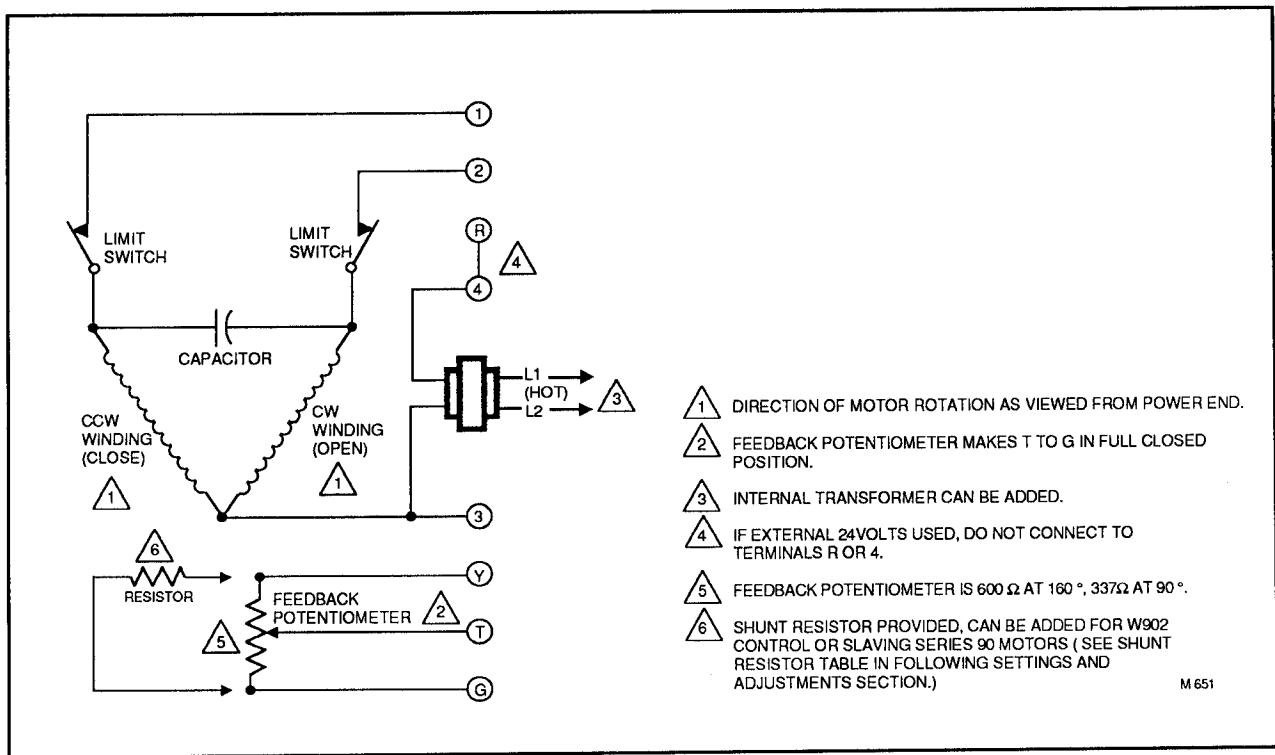
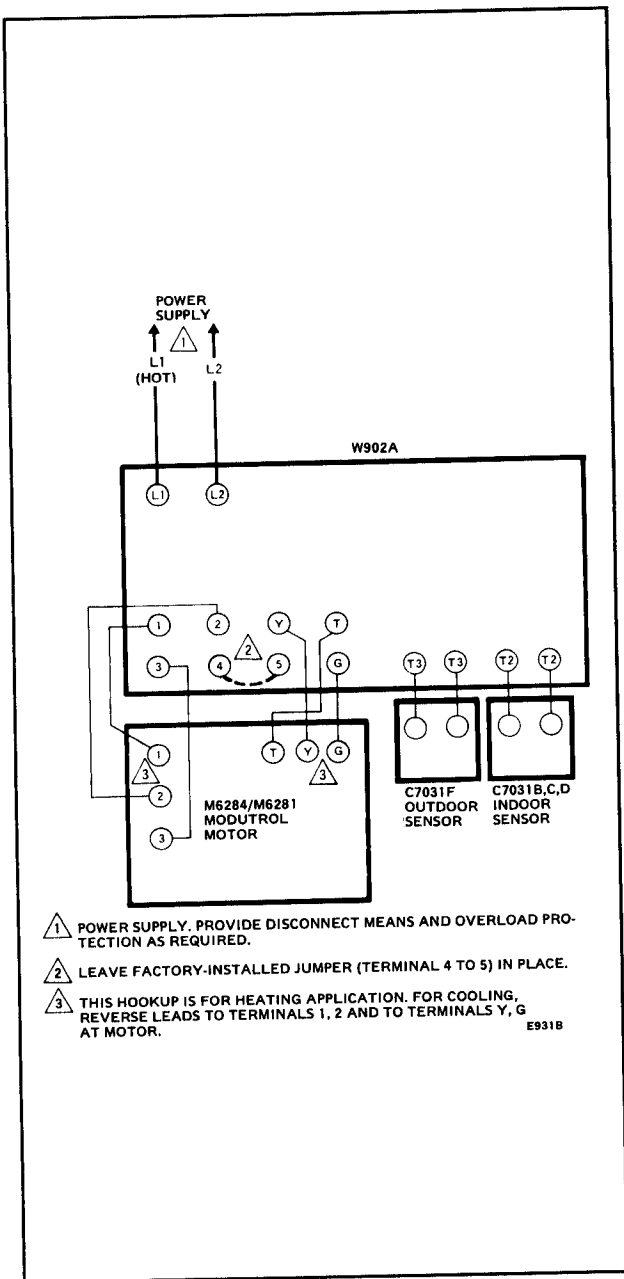


FIG. 6—INTERNAL WIRING FOR FIXED STROKE MODELS.



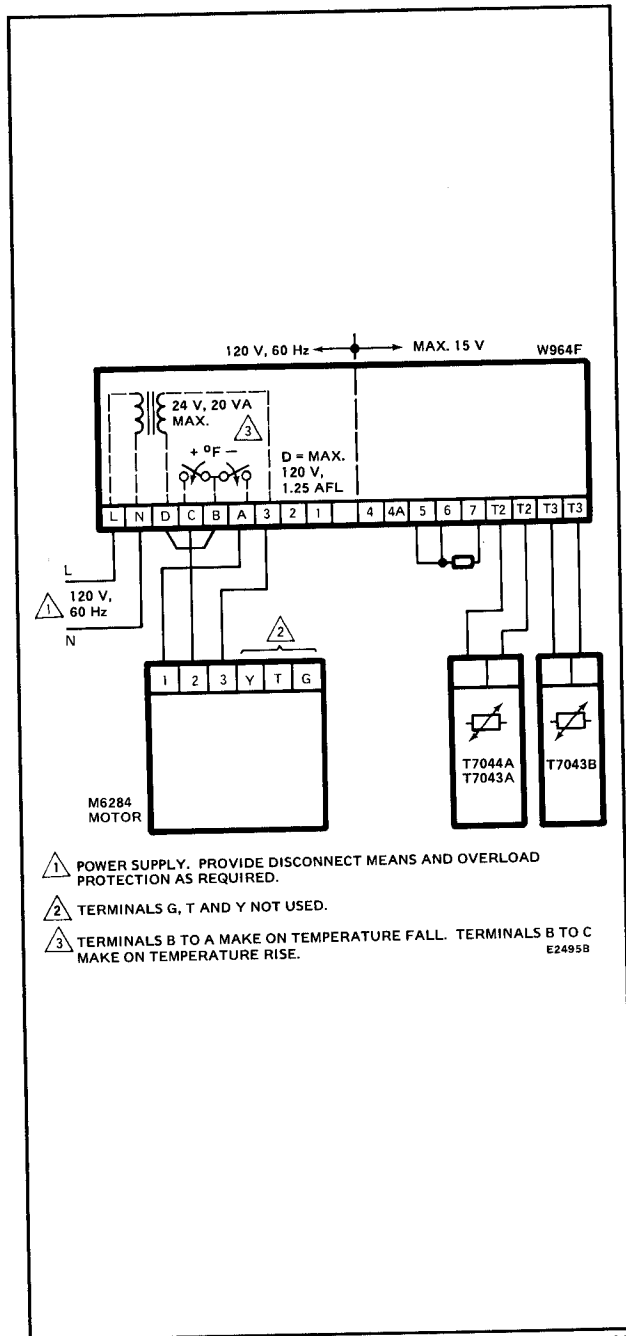
**FIG. 8—INTERNAL WIRING FOR NON-TRADELINE ADJUSTABLE STROKE MODELS.**

**FIG. 9—AUXILIARY SWITCH SCHEMATIC.**



- 1 POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.
- 2 LEAVE FACTORY-INSTALLED JUMPER (TERMINAL 4 TO 5) IN PLACE.
- 3 THIS HOOKUP IS FOR HEATING APPLICATION. FOR COOLING, REVERSE LEADS TO TERMINALS 1, 2 AND TO TERMINALS Y, G AT MOTOR. E931B

FIG. 10—MODELS SHIPPED WITHOUT AN INTERNAL TRANSFORMER USED WITH W902 RESET CONTROL IN HEATING OR COOLING APPLICATIONS.



- 1 POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.
- 2 TERMINALS G, T AND Y NOT USED.
- 3 TERMINALS B TO A MAKE ON TEMPERATURE FALL. TERMINALS B TO C MAKE ON TEMPERATURE RISE. E2495B

FIG. 11—WIRING FOR W964F AND MOTORS WITHOUT INTERNAL TRANSFORMERS.



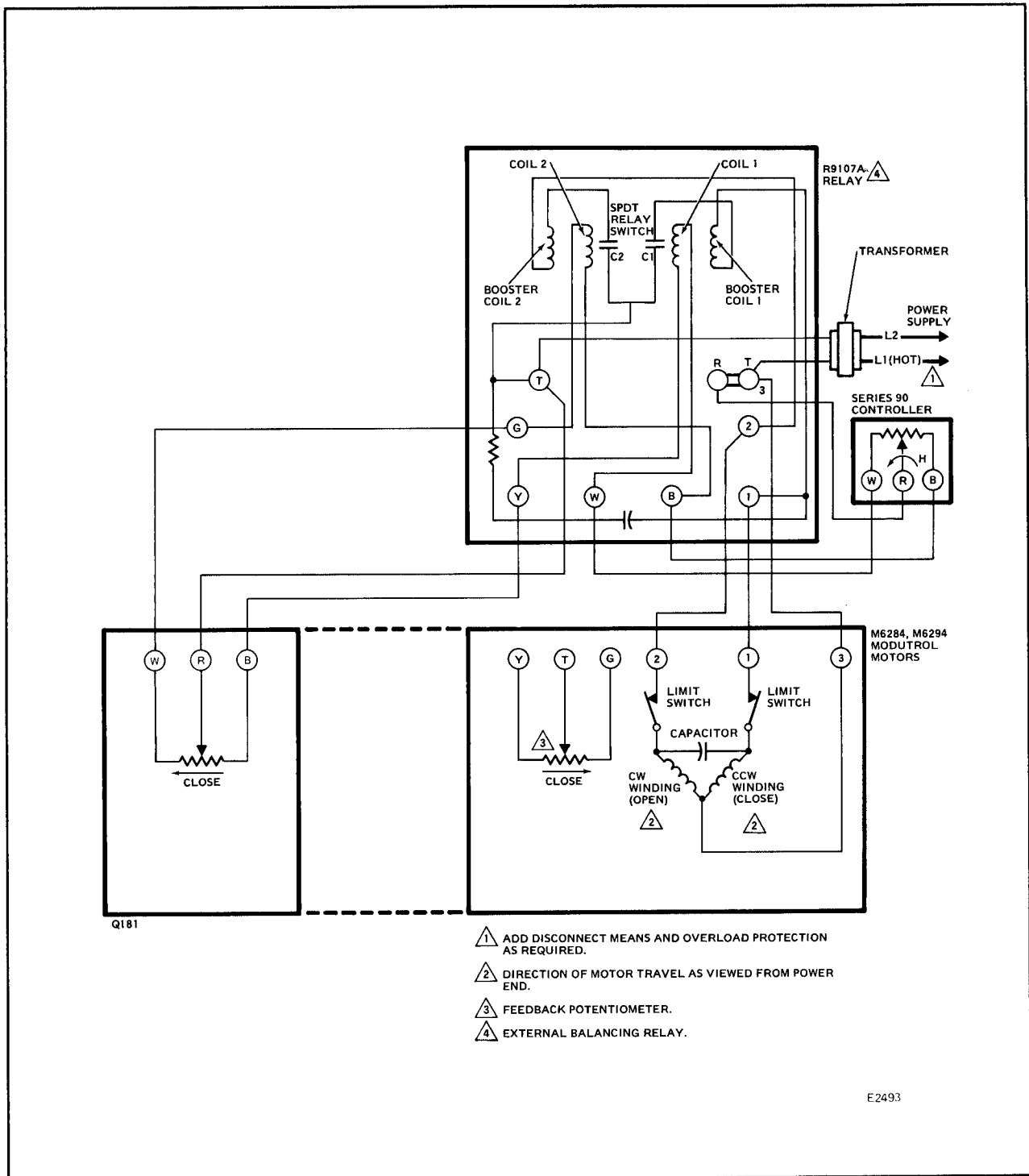


FIG. 12—CONNECTING AN R927C, R9107A TO AN M6284, M6294 MODUTROL MOTOR.

## SETTINGS AND ADJUSTMENTS

### STROKE SETTING

On some motors, stroke is field adjustable and can be set at 90° or 160°. In order to set stroke, both mechanical and electrical adjustments are required. The mechanical adjustments (cams) establish the full open (clockwise, as viewed from the power end) and full closed (counterclockwise) positions of the motor shaft. The electrical adjustment matches feedback resistance change to motor

stroke. TRADELINE motors are shipped with stroke set at 160°.

STROKE SETTING PROCEDURE—See Figs. 13, 14, 15.

### CAUTION


Detach linkage from motor before adjusting stroke.

#### BEFORE SETTING STROKE:

1. Remove top cover from motor.
2. Disconnect controller from motor.
3. Connect models without an internal transformer as shown in Fig. 13; connect models with an internal transformer as shown in Fig. 14.

#### FOR NON-TRADELINE MOTORS ONLY

##### SETTING 160° STROKE

1. Turn trim pot fully clockwise .
2. Drive motor to mid-position as follows:
  - Models without an internal transformer—Connect 24 Vac to motor terminals 2 and 3 to drive motor open (clockwise as viewed from power end), or to terminals 1 and 3 to drive motor closed (counterclockwise as viewed from power end) until motor reaches mid-position. See Fig 13.
  - Models with an internal transformer—Connect jumper from R to 2 to drive motor open (clockwise as viewed from power end), or from terminals R to 1 to drive motor closed (counterclockwise as viewed from power end) until motor reaches mid-position. See Fig 14.
3. Insert 1/8 in. screwdriver blade into slot on inner yellow cam and MOVE TOP OF SCREWDRIVER as far as possible counterclockwise (viewed from power end). Repeat in successive cam slots until inner cam is against counterclockwise stop.
4. Insert 1/8 in. screwdriver blade into slot on outer yellow cam and MOVE TOP OF SCREWDRIVER as far as possible clockwise. Repeat in successive cam slots until outer cam is against clockwise stop.
5. Check motor stroke before connecting linkage.
6. Reconnect controller, replace motor top cover and attach linkage to motor.

#### IMPORTANT

Set cams by moving top of screwdriver only. Pressing screwdriver against sides of cam slots could cause damage to motor end switches.

#### FOR TRADELINE MOTORS ONLY (M6284D1003, M6294D1008)

TRADELINE motors are shipped with stroke set at 160°.

##### SETTING 160° STROKE




1. Drive motor to mid-position as follows:
  - Models without an internal transformer—Connect 24 Vac to motor terminals 2 and 3 to drive motor open (clockwise as viewed from power end), or to terminals 1 and 3 to drive motor closed (counterclockwise as viewed from power end) until motor reaches mid-position. See Fig 13.
  - Models with an internal transformer—Connect jumper from R to 2 to drive motor open (clockwise as viewed from power end), or from terminals R to 1 to drive motor closed (counterclockwise as viewed from power end) until motor reaches mid-position. See Fig 14. (Trim pot NOT included on TRADELINE models.)
2. Insert 1/8 in. screwdriver blade into slot on inner yellow cam and MOVE TOP OF SCREWDRIVER as far as possible counterclockwise (viewed from power end). Repeat in successive cam slots until inner cam is against counterclockwise stop.
3. Insert 1/8 in. screwdriver blade into slot on outer yellow cam and MOVE TOP OF SCREWDRIVER as far as possible clockwise. Repeat in successive cam slots until outer cam is against clockwise stop.
4. Check motor stroke before connecting linkage.
5. Reconnect controller, replace motor top cover and attach linkage to motor.



#### IMPORTANT

Set cams by moving top of screwdriver only. Pressing screwdriver against sides of cam slots could cause damage to motor end switches.

##### SETTING 90° STROKE:

##### SETTING 90° STROKE:

1. Turn trim pot fully counterclockwise .
2. Drive motor to mid-position as follows:
  - Low Voltage motors—Connect 24 Vac to motor terminals 2 and 3 to drive motor open (clockwise as viewed from power end), or to terminals 1 and 3 to drive motor open (clockwise as viewed from power end) until motor reaches mid-position. See Fig 13.
  - Line Voltage motors—Connect jumper from R to 2 to drive motor open (clockwise as viewed from power end), or from terminals R to 1 to drive motor closed (counterclockwise as viewed from power end) until motor reaches mid-position. See Fig 14.
3. Insert 1/8 in. screwdriver blade into slot on inner yellow cam and MOVE TOP OF SCREWDRIVER as far as possible clockwise  (viewed from power end). Repeat in successive cam slots until inner cam is against clockwise stop.
4. Insert 1/8 in. screwdriver blade into slot on outer yellow cam and MOVE TOP OF SCREWDRIVER as far as possible counterclockwise  (viewed from power end). Repeat in successive cam slots until outer cam is against clockwise stop.
5. Check motor stroke before connecting linkage.
6. Reconnect controller, replace motor top cover and attach linkage to motor.

1. Drive motor to mid-position as follows:
  - Low Voltage motors—Connect 24 Vac to motor terminals 2 and 3 to drive motor open (clockwise as viewed from power end), or to terminals 1 and 3 to drive motor open (clockwise as viewed from power end) until motor reaches mid-position. See Fig 13.
  - Line Voltage motors—Connect jumper from R to 2 to drive motor open (clockwise as viewed from power end), or from terminals R to 1 to drive motor closed (counterclockwise as viewed from power end) until motor reaches mid-position. See Fig 14. (Trim pot NOT included on TRADELINE models.)
2. Insert 1/8 in. screwdriver blade into slot on inner yellow cam and MOVE TOP OF SCREWDRIVER as far as possible clockwise  (viewed from power end). Repeat in successive cam slots until inner cam is against clockwise stop.
3. Insert 1/8 in. screwdriver blade into slot on outer yellow cam and MOVE TOP OF SCREWDRIVER as far as possible counterclockwise  (viewed from power end). Repeat in successive cam slots until outer cam is against clockwise stop.
4. Check motor stroke before connecting linkage.
5. Reconnect controller, replace motor top cover and attach linkage to motor.

### CONFIGURING FEEDBACK POTENTIOMETER (see Fig. 15)

For TRADELINE Motors only; M6284D1000, M6294D1008. One of four shunt resistors can be selected and installed to obtain the appropriate feedback characteristic for various applications.

- For linear feedback, linear indication of shaft position is provided with no shunt resistor. Full stroke feedback resistance is 600 ohms at 160° stroke, and 337 ohms at 90° stroke.
- For W902 control, full stroke feedback resistance is 115 ohms. Select and attach proper shunt resistor between terminals Y and G (see Fig. 15). Use White shunt resistor for 160° stroke; Brown shunt resistor for 90° stroke.
- For slaving a Series 90 motor, full stroke feedback resistance is 142 ohms. Select and attach proper shunt resistor between terminals Y and G (see Fig. 15). Use Red shunt resistor for 160° stroke; Green shunt resistor for 90° stroke.

#### SHUNT RESISTOR FOR DESIRED APPLICATIONS

	LINEAR FEEDBACK	W902 CONTROL	SLAVING A SERIES 90 MOTOR
90° stroke	None	Green/Blue	Purple/Brown
160° stroke	None	White	Red

### AUXILIARY SWITCHES

The auxiliary switches are actuated by adjustable cams. These cams can be set to actuate the switches at any angle within the stroke of the motor. Also, switch differentials of 1° or 10° can be selected.

TRADELINe motors are shipped with auxiliary switch cams which permit acceptance of internal auxiliary switch kits (220736A,B). Refer to installation sheet of 220736A,B to install kit.

Motors set for 160° and with factory added auxiliary switches are shipped in the closed position (counterclockwise as viewed from power end) with auxiliary cams set to

actuate switches 120° from the closed position, and to provide 1° differential. Motors set for 90° stroke have switches set for 60°. With motor in closed (full counterclockwise) position, auxiliary switch breaks R-B (Fig. 9). If differential is changed to 10°, switch action is reversed; thus, in the closed (counterclockwise) position, R-B makes.

### AUXILIARY SWITCH SETTING PROCEDURE—(Fig. 16)

1. Remove top cover from motor to gain access to motor terminals and auxiliary cams.
2. Disconnect controller from motor.
3. Drive motor to the position where auxiliary equipment is to be switched as follows:
  - Models without transformer—Connect 24 Vac to motor terminals 2 and 3 to drive motor open (clockwise as viewed from power end), or to terminals 1 and 3 to drive motor closed (counterclockwise as viewed from power end).
  - Models with transformer—Connect jumper from R to 2 to drive motor open (clockwise as viewed from power end), or from terminals R to 1 to drive motor closed (counterclockwise as viewed from power end).
4. For switch differential of 1°, check continuity of auxiliary switch R-B contacts and rotate cam as follows:
  - If contacts are open, rotate cam clockwise until R-B contacts close.
  - If contacts are closed, rotate cam counterclockwise until R-B contacts open.
5. For switch differential of 10°, check continuity of auxiliary switch R-B contacts and rotate cam as follows:
  - If contacts are open, rotate cam counterclockwise until R-B contacts close.
  - If contacts are closed, rotate cam clockwise until R-B contacts open.
6. Check for proper differential and switching of auxiliary equipment by driving motor through full stroke in both directions.
7. Disconnect jumper, reconnect controller, replace top cover on motor.

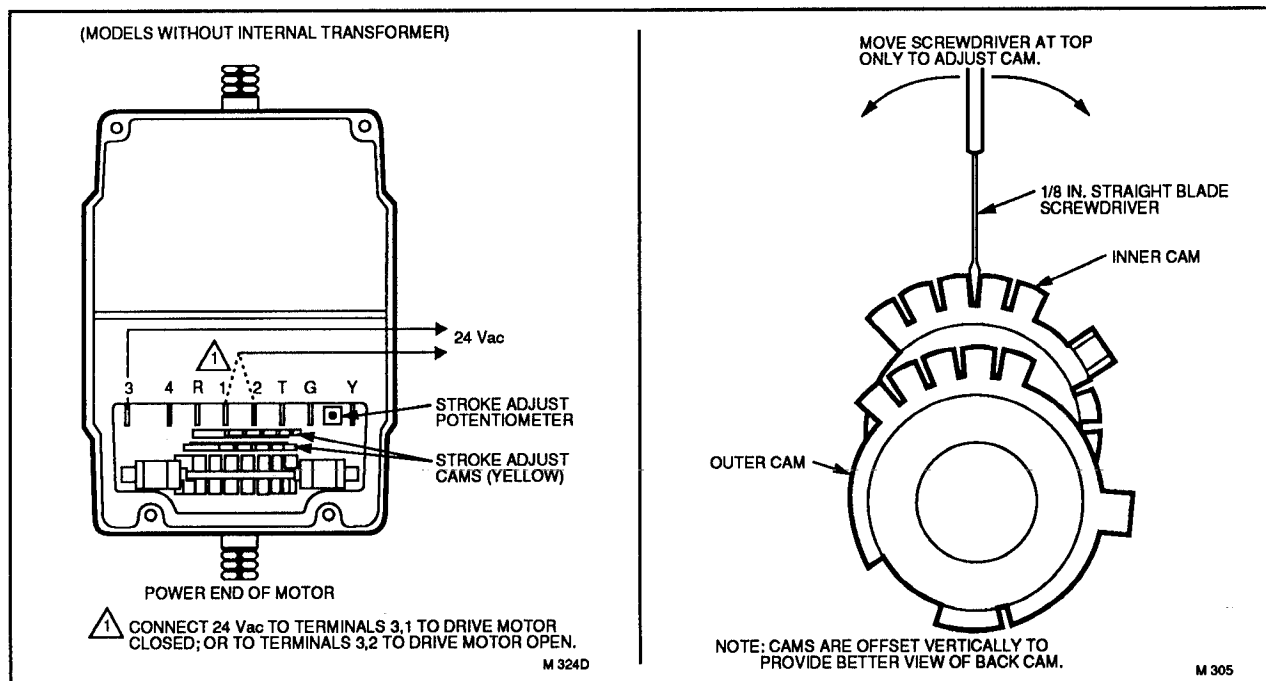


FIG. 13—STROKE ADJUSTMENT SETUP FOR MODELS WITHOUT INTERNAL TRANSFORMERS.

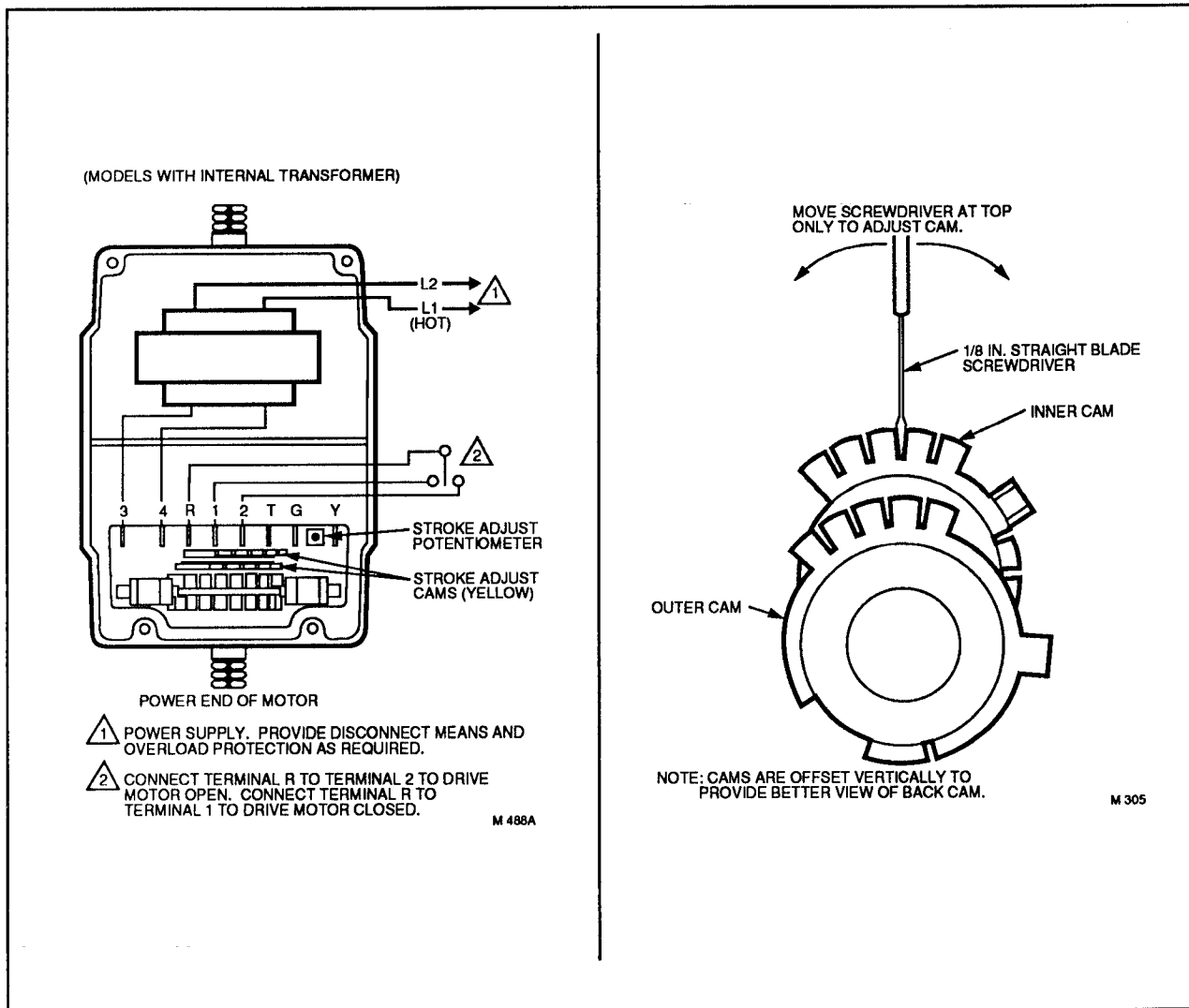


FIG. 14—STROKE ADJUSTMENT SETUP FOR MODELS WITH INTERNAL TRANSFORMERS.

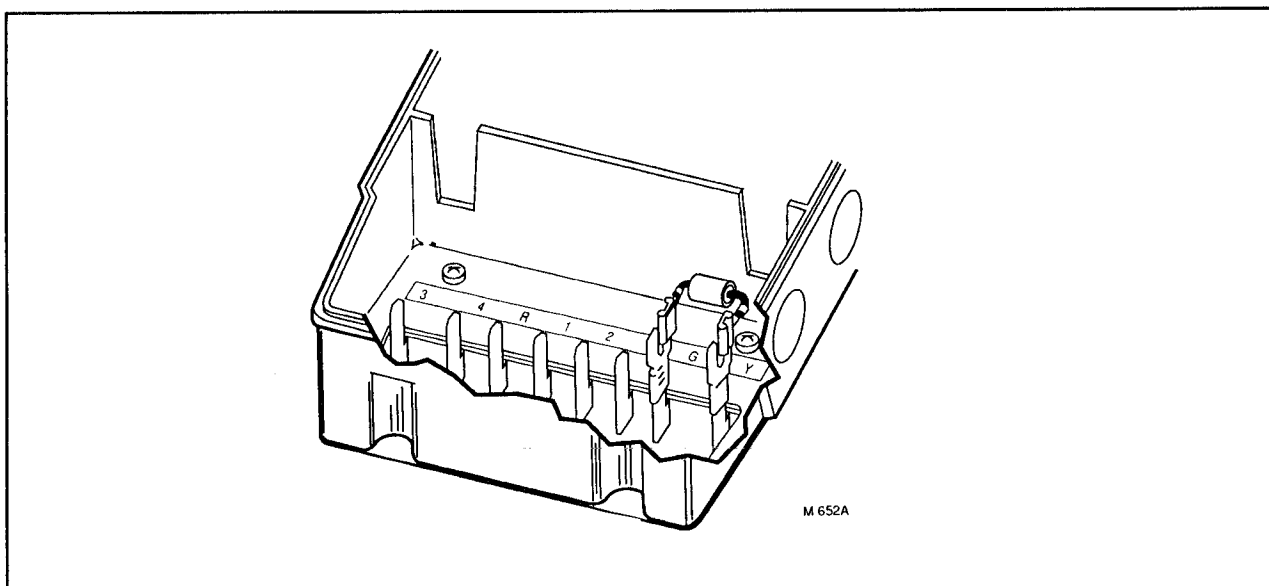
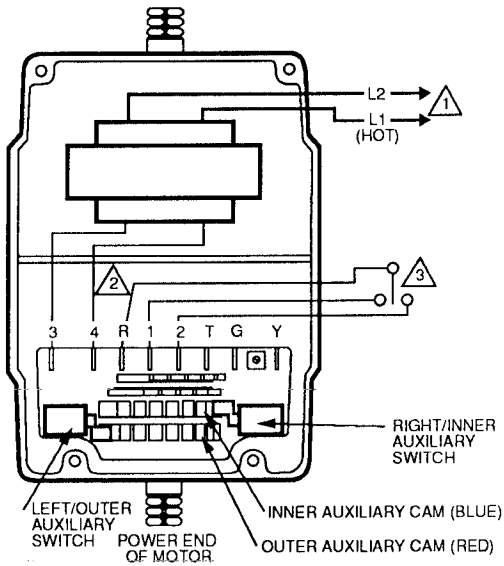


FIG. 15—ATTACHING SHUNT RESISTOR TO TRADLINE MOTORS. PUSH SHUNT RESISTOR TERMINALS DOWN ON MOTOR TERMINALS FOR ENOUGH TO ALLOW CONNECTION OF FIELD WIRING.

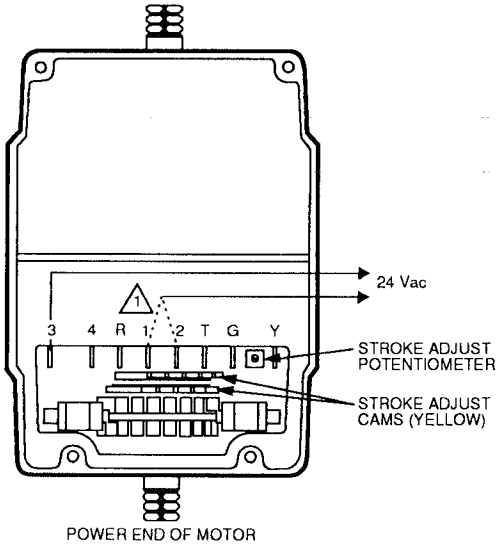
(MODELS WITH INTERNAL TRANSFORMER)



- ⚠️ 1 POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.
- ⚠️ 2 DO NOT CONNECT EXTERNAL VOLTAGE TO TERMINALS R OR 4.
- ⚠️ 3 CONNECT TERMINAL R TO TERMINAL 2 TO DRIVE MOTOR OPEN. CONNECT TERMINAL R TO TERMINAL 1 TO DRIVE MOTOR CLOSED.

M 489B

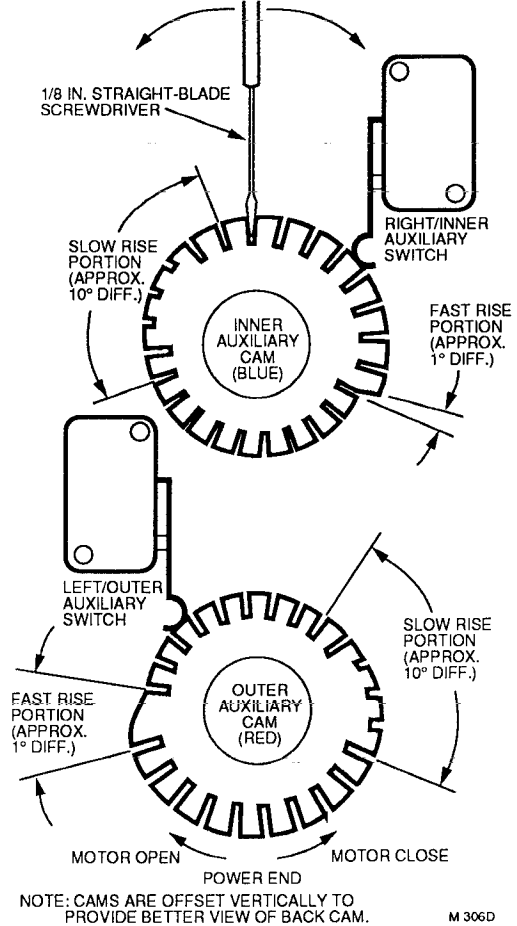
(MODELS WITHOUT INTERNAL TRANSFORMER)



- ⚠️ 1 CONNECT 24 Vac TO TERMINALS 3,1 TO DRIVE MOTOR CLOSED; OR TO TERMINALS 3,2 TO DRIVE MOTOR OPEN.

M 324D

MOVE SCREWDRIVER AT TOP ONLY TO ADJUST CAM.



M 306D

FIG. 16—AUXILIARY SWITCH ADJUSTMENT—M6284, M6294.

# OPERATION AND CHECKOUT

## OPERATION

M6284/M6294 motors are 3-wire floating control motors with an isolated internal feedback potentiometer. These motors can be used for standard series 60 operation (drive open, drive closed, hold) with the feedback potentiometer output available as an input to a controller. These motors can also be used with the feedback potentiometer connected to an external balancing circuit to provide modulating series 90 operation (135 ohm).

To reverse the direction of motor rotation, reverse the wires at terminals 1 and 2 and Y and G. The wires may be reversed at either the motor or at the panel.

## CHECKOUT—Models without an internal transformer.

To check operation, connect 24 Vac to motor terminals 2 and 3 to drive motor open and 1 and 3 to drive motor closed.

## CHECKOUT—Models with an internal transformer.

To check operation, connect jumper from R to 2 to drive motor open and from R to 1 to drive motor closed. If the motor is used with an electronic relay, follow the instructions provided with relay.

# CHANGE-OUT

## DAMPER APPLICATION

1. Turn off power and remove wiring from the old actuator.

2. Remove crank arm from shaft of old actuator and remove the old actuator.

3. Check to see whether or not the adapter bracket is needed. If the linkage can reach the lower shaft position of the new actuator and the crank arm has clearance for the needed rotation, then the bracket is not needed. Use 220738A Adapter Bracket or 221455A crank arm if crank arm must rotate through the bottom plane of the motor (for damper applications).

4a. If the bracket is not needed, mount the new actuator directly to the equipment and refer to the INSTALLATION, SETTINGS & ADJUSTMENTS, and CHECKOUT sections of these instructions as needed.

4b. If the bracket is needed, refer to the Adapter Bracket sections and see Figs. 3 and 4 as well as the INSTALLATION, SETTINGS & ADJUSTMENTS, and CHECKOUT sections of these instructions.

5. Use old mounting bolts to mount the new actuator.

6. Mount the crank arm and linkage to the shaft of the new actuator.

7. Use the CHECKOUT procedures to test the proper adjustment of the crank arm and linkage.

## VALVE APPLICATION

When installing a motor in a valve application which has a Q100, Q455, Q601 or Q618 linkage it will be necessary to use the Adapter Bracket (Part No. 220738A) to raise the motor shaft to the same height as that of the old motor. Ensure motor stroke is set for 160° when operating a V5011 two-way or V5013 three-way valve.

# NOTES

---

**Honeywell Inc.**  
U.S.A.: 1885 Douglas Drive N.  
Golden Valley, MN 55422-4386  
CANADA: 740 Ellesmere Road  
Scarborough, Ontario M1P 2V9

International Sales Offices in all principal cities of the world. Manufacturing in  
Australia, Canada, Finland, France, Germany, Japan, Mexico, Netherlands,  
Spain, Taiwan, United Kingdom, U.S.A.

PRINTED IN U.S.A.

