



a Siebe company

General Instructions

AV-632 Adaptor Kit For Honeywell & Johnson Valve Linkage & Honeywell Auxiliary Switch Kit

APPLICATION

For mounting MM-400/500 Modular Motors to Honeywell Q618A and Johnson Y20EBD valve linkages.

The kit is also used to mount Honeywell Q607 auxiliary switch and Q181A auxiliary potentiometer kits to MM-400/500 Modular Motors.

Each Av-632 package contains:

- One (1) Mounting bracket for mounting MM to Honeywell Q618A valve linkage, Johnson Y20EBD valve linkage, and mounting Honeywell shaft mounted auxiliary switches or potentiometer
- Three (3) #8-32 x 7/16" pan head screws with integral lock washers.
- Four (4) 1/4"-20 x 7/8" hexhead bolts with lock washers and nuts.
- One (1) Spacer collar for use with Honeywell Q618A valve linkage.
- One (1) Shaft extension kit for mounting auxiliary kits to "Load" shaft of MM-400 or "Normally Closed -CCW" shaft of MM-500. Kit contains shaft extension, washer, and screw.
- One (1) General instruction Sheet

Other Barber-Colman Components Required:

MM or MM Modular Motor, MMC Control Module, and other required accessories.

Other Barber-Colman Components That May Be Required:

None.

INDEX

PRE-INSTALLATION

- Inspection
- Required Installation Items

INSTALLATION

REPLACEMENT OF HONEYWELL

- Mounting Q607 Auxiliary switch Kit
- Mounting Q181A Potentiometer Kit
- Mounting to Q618A Valve Linkage

REPLACEMENT OF JOHNSON

- Mounting to Y20EBD Valve Linkage

CHECKOUT

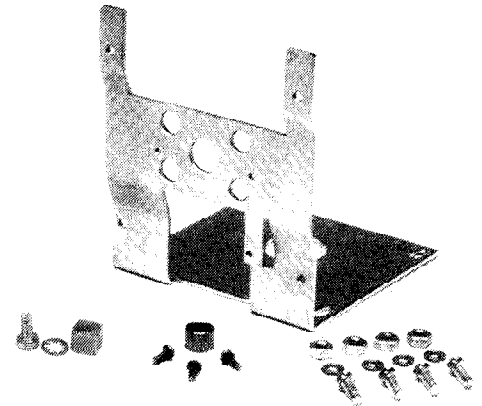
MAINTENANCE

FIELD REPAIR

PRE-INSTALLATION

Inspection

Visually inspect the carton for damage. If damaged, notify the appropriate carrier immediately. If undamaged, open the carton and visually inspect the device for obvious defects. Return damaged or defective products.



Required Installation Items

- Wiring diagram.
- Tools (not provided):
 - Volt-ohm meter.
 - Appropriate screwdriver or wrench for mounting screws or bolts.
- Mounting screws or bolts (not provided).

INSTALLATION

CAUTION

- 1 AV-632 Adaptor Kit is intended for mounting of MM-400 and MM-500 series motors to Honeywell and Johnson products - ONLY.
- 2 Read General Instruction sheets for Modular Motor and Accessories for additional specific information on modular motor installations.
- 3 Installer must be a qualified, experienced technician.
- 4 Disconnect power supply before installation to prevent electrical shock and equipment damage.
- 5 Make all connections in accordance with the wiring diagram, and in accordance with national and local electrical codes. *Use copper conductors only that are suitable for 85°C. Use Class 1 wiring only.*
- 6 Do not exceed ratings of the devices.
- 7 Avoid locations where excessive moisture, corrosive fumes or vibrations are present. NEMA Type 1 housings are intended for indoor use primarily to provide a degree of protection against contact with the enclosed equipment. NEMA Type 3R housings (with factory installed weather resistant gaskets in place and motor mounted vertically - top up) are intended for outdoor use primarily to provide a degree of protection against windblown dust, rain, sleet and external ice formation.

REPLACEMENT OF A HONEYWELL MOTOR

Use the following table to confirm that the proper MM or MMR motor, MMC control module, and other required accessories have been selected

TABLE 1. HONEYWELL MOTOR COMPETITIVE CROSS REFERENCE

| Part Number | Descriptive Data of Motor (Actuator) Being Replaced | | | | Required Replacement Items | | Wiring Termination Conversion MMR Motor (Actuator) and MMC Control Module Versus the Motor (Actuator) Being Replaced | | | | | | | | | | | | Replacement Comments | | | | | | | | | |
|-------------|---|-------------------------|---------------|----------------|----------------------------|--------------------|--|------------------|------------------------|---------------------|----------------------|-------|-------|-----|-----|------|---|----|----------------------|----|-----|------|-----|----------------|--------|------------|---------|---------|
| | Torque Lb.-in. | Voltage (Hertz) | Spring Return | Stroke Degrees | Timing Sec. | Auxiliary Switches | Input Signals | Motor (Actuator) | Plug In Control Module | AM-231 Cover Trans. | AM-233 W-29 Mfg. Kit | TR1 | TR2 | 3 | 4 | 5 | 9 | 16 | | 17 | C1 | NO1 | C2 | NO2 | NC2 | | | |
| M204A1068 | 1.08 | 24 (50/60) | None | 180 | 60 | 0 | SPDT | MMR-400 | MMC-468 | Not Req. | Not Req. | T | T | R | W | B | | | | | | | | | Direct | 5 | | |
| M405B1011 | 27 | 208 (60) | None | 160 | 60 | 0 | SPST | MMR-500 | MMC-468 | Req. | Not Req. | * | * | | | | | | | | | | | | | Direct | 3, 4 | |
| M105B1028 | 27 | 240 (60) | NO | 160 | 60 | 0 | SPST | MMR-500 | MMC-468 | Req. | Not Req. | * | * | | | | | | | | | | | | | Direct | 3, 4 | |
| M405B1109 | 27 | 120 (60) | NO | 160 | 60 | 0 | SPST | MMR-500 | MMC-468 | Req. | Not Req. | * | * | | | | | | | | | | | | | Direct | 3, 4 | |
| M405C1002 | 50 | 120 (50/60) | NC | 160 | 60 | 0 | SPST | MMR-500 | MMC-468 | Req. | Not Req. | * | * | | | | | | | | | | | | | Direct | 3 | |
| M405C1010 | 50 | 208 (50/60) | NC | 160 | 60 | 0 | SPST | MMR-500 | MMC-468 | Req. | Not Req. | * | * | | | | | | | | | | | | | Direct | 3 | |
| M405C1029 | 50 | 240 (50/60) | NC | 160 | 60 | 0 | SPST | MMR-500 | MMC-468 | Req. | Not Req. | * | * | | | | | | | | | | | | | Direct | 3 | |
| M405D1001 | 50 | 120 (50/60) | NO | 160 | 60 | 0 | SPST | MMR-500 | MMC-468 | Req. | Not Req. | * | * | | | | | | | | | | | | | Direct | 3 | |
| M405D1027 | 50 | 240 (50/60) | NO | 160 | 60 | 0 | SPST | MMR-500 | MMC-468 | Req. | Not Req. | * | * | | | | | | | | | | | | | Direct | 3, 4 | |
| M445A1000 | 50 | 120 (50/60) | NC | 160 | 60 | 1 SPDT | SPST | MMR-500-002 | MMC-468 | Req. | Not Req. | * | * | | | | | | | | Red | Blue | Yel | | | Direct | 3, 4 | |
| M445A1018 | 50 | 120 (50/60) | NC | 160 | 60 | 1 SPDT | SPST | MMR-500-002 | MMC-468 | Req. | Not Req. | * | * | | | | | | | | Red | Blue | Yel | | | Direct | 3, 4 | |
| M445A1026 | 50 | 208 (50/60) | NC | 160 | 60 | 1 SPDT | SPST | MMR-500-002 | MMC-468 | Req. | Not Req. | * | * | | | | | | | | Red | Blue | Yel | | | Direct | 2, 3 | |
| M445A1117 | 50 | 208 (240) | NC | 160 | 60 | 1 SPDT | SPST | MMR-500-002 | MMC-468 | Req. | Not Req. | * | * | | | | | | | | Red | Blue | Yel | | | Direct | 2, 3 | |
| M445A1117 | 50 | 120 (50/60) | NC | 90 | 30 | 1 SPDT | SPST | MMR-500-002 | MMC-468 | Req. | Not Req. | * | * | | | | | | | | Red | Blue | Yel | | | Direct | 2, 3 | |
| M445C1008 | 50 | 120 (50/60) | NC | 160 | 60 | 1 SPDT | SPST | MMR-500-002 | MMC-468 | Req. | Not Req. | * | * | | | | | | | | Red | Blue | Yel | | | Direct | 1, 2, 3 | |
| M445D1007 | 50 | 120 (50/60) | NC | 160 | 60 | 0 | SPST | MMR-500 | MMC-468 | Req. | Not Req. | * | * | | | | | | | | Red | Blue | Yel | | | Direct | 2, 3 | |
| M643B1007 | 25 | 240 (50/60) | NC | 90 | 23 | 2 SPDT | SPST | MMR-500-002 | MMC-468 | Req. | Not Req. | * | * | | | | | | | | Red | Blue | Yel | | | Functional | 2, 3, 6 | |
| M804C1039 | 108 | 24 (60) | None | 160 | 60 | 0 | SPDT | MMR-400 | MMC-468 | Not Req. | Not Req. | T1 | T2 | R | W | B | | | | | | | | | | Direct | | |
| M634A1009 | 35 | 240 (50/60) | None | 160 | 60 | 0 | SPDT | MMR-400 | MMC-468 | Not Req. | Not Req. | Black | Black | Red | Yel | Blue | | | | | | | | | | Direct | 6 | |
| M634B1008 | 35 | 120 (50/60) | None | 160 | 60 | 0 | SPDT | MMR-400 | MMC-468 | Req. | Not Req. | * | * | | | | | | | | | | | | | Direct | 6 | |
| M634B1016 | 35 | 240 (50/60) | None | 160 | 60 | 0 | SPDT | MMR-400 | MMC-468 | Req. | Not Req. | * | * | | | | | | | | | | | | | Direct | 6 | |
| M634C1049 | 35 | 120 (50/60) | None | 160 | 60 | 2 SPDT | SPST | MMR-400-002 | MMC-468 | Req. | Not Req. | * | * | | | | | | | | Red | Blue | Yel | | | Direct | 2, 6 | |
| M644A1008 | 150 | 24 (50/60) | None | 160 | 60 | 0 | SPDT | MMR-400 | MMC-468 | Not Req. | Not Req. | T1 | T2 | R | W | B | | | | | | | | | | Direct | | |
| M644A1016 | 150 | 24 (50/60) | None | 160 | 60 | 0 | SPDT | MMR-400 | MMC-468 | Not Req. | Not Req. | T1 | T2 | R | W | B | | | | | | | | | | Direct | | |
| M644A1122 | 150 | 24 (50/60) | None | 90 | 30 | 0 | SPDT | MMR-400 | MMC-468 | Not Req. | Not Req. | T1 | T2 | R | W | B | | | | | | | | | | Direct | 1 | |
| M644D1005 | 150 | 24 (50/60) | None | 90 or 160 | 30 or 60 | 2 SPDT | SPST | MMR-400-002 | MMC-468 | Not Req. | Not Req. | T1 | T2 | R | W | B | | | | | Red | Blue | Yel | Bl/Red/Bl/Blue | Bl/Yel | Direct | 1, 2 | |
| M644D1013 | 150 | 24 (50/60) | None | 90 or 160 | 30 or 60 | 2 SPDT | SPST | MMR-400-002 | MMC-468 | Not Req. | Not Req. | T1 | T2 | R | W | B | | | | | Red | Blue | Yel | Bl/Red/Bl/Blue | Bl/Yel | Direct | 1, 2 | |
| M644L1014 | 150 | 120 (50/60) | None | 90 | 30 | 1 SPDT | SPST | MMR-400-002 | MMC-468 | Req. | Not Req. | T1 | T2 | R | W | B | | | | | Red | Blue | Yel | Bl/Red/Bl/Blue | Bl/Yel | Direct | 1, 2 | |
| M805B1004 | 27 | 24 (60) | NO | 160 | 60 | 0 | SPST | MMR-500 | MMC-468 | Req. | Not Req. | * | * | | | | | | | | Red | Blue | Yel | | | Direct | 3, 4 | |
| M805C1003 | 27 | 24 (50/60) | NC | 160 | 60 | 0 | SPST | MMR-500 | MMC-468 | Not Req. | Not Req. | T1 | T2 | R | W | B | | | | | | | | | | Direct | 3 | |
| M805D1002 | 27 | 24 (60) | NO | 160 | 60 | 0 | SPST | MMR-500 | MMC-468 | Not Req. | Not Req. | T1 | T2 | R | W | B | | | | | | | | | | Direct | 3, 4 | |
| M845A1001 | 50 | 120 / 208 / 240 (50/60) | NC | 160 | 60 | 1 SPDT | SPST | MMR-500-002 | MMC-468 | Req. | Not Req. | * | * | | | | | | | | Red | Blue | Yel | | | Direct | 2, 3 | |
| M845A1027 | 50 | 120 / 208 / 240 (50/60) | NC | 160 | 60 | 1 SPDT | SPST | MMR-500-002 | MMC-468 | Req. | Not Req. | * | * | | | | | | | | Red | Blue | Yel | | | Direct | 2, 3 | |
| M845A1035 | 50 | 120 / 208 / 240 (50/60) | NC | 90 | 30 | 1 SPDT | SPST | MMR-500-002 | MMC-468 | Req. | Not Req. | * | * | | | | | | | | Red | Blue | Yel | | | Direct | 1, 2, 3 | |
| M845B1000 | 50 | 24 (50/60) | NC | 160 | 60 | 1 SPDT | SPST | MMR-500-002 | MMC-468 | Not Req. | Not Req. | T1 | T2 | R | W | B | | | | | Red | Blue | Yel | | | Direct | 2, 3 | |
| M845B1018 | 50 | 120 (50/60) | NC | 160 | 60 | 1 SPDT | SPST | MMR-500-002 | MMC-468 | Req. | Not Req. | * | * | | | | | | | | Red | Blue | Yel | | | Direct | 2, 3 | |
| M845C1009 | 50 | 24 (50/60) | NC | 160 | 60 | 0 | SPST | MMR-500 | MMC-468 | Not Req. | Not Req. | T1 | T2 | R | W | B | | | | | Red | Blue | Yel | | | Direct | 2, 3, 4 | |
| M845E1007 | 50 | 120 (50/60) | NO | 160 | 60 | 1 SPDT | SPST | MMR-500-002 | MMC-468 | Req. | Not Req. | * | * | | | | | | | | Red | Blue | Yel | Blue | | | Direct | 2, 3, 4 |
| M865B1008 | 25 | 24 (50/60) | NC | 90 | 23 | 1 SPDT | SPST | MMR-500-002 | MMC-468 | Not Req. | Not Req. | * | * | | | | | | | | Red | Blue | Yel | | | Direct | 2, 3, 6 | |

Comments: * Attach AM-231 transformer leads as follows: Brown leads to TR1 and TR2 of actuator and appropriate two leads to power source, Black = common, White = 120 VAC, Red/Yellow = 208 VAC and Orange = 240 VAC.
 1. Set actuator stroke to match the actuator being replaced. Check the closed position of the actuator shaft. Adjust damper linkage as required.
 2. Adjust the auxiliary switch(es) to match the differential and switch point of the actuator being replaced.
 3. Install jumper between terminals 3 and 5.
 4. The MM or MMR-500 series of spring return actuators can be used for normally open or closed applications depending on which end of the actuator the damper or valve linkage is attached. Attach linkage to the normally open end for these applications.
 5. Set travel for 160° and adjust the linkage.
 6. Replacement actuator mounts the same but is larger. For models with an auxiliary switch the actuator being replaced had a Full Load Amp rating of 8.0 @ 120 VAC and 4.0 @ 240 VAC while the replacement is 7.2 @ 120 VAC and 3.6 @ 240 VAC.
 7. Replacement actuator's auxiliary switches have 2° or 10° differential. If adjustable differential is required order AM-242 separately.
 8. Replacement actuator is slower than actuator being replaced. Check application to determine if speed is critical.
 9. The replacement actuators cannot replace slave actuators in mechanical mousetrap master-slave actuator systems (systems in which one master actuator drives the other actuators with 068 auxiliary potentiometer). They can replace master actuator.

TABLE 1. HONEYWELL MOTOR COMPETITIVE CROSS REFERENCE (CONTINUED)

| Part Number | Descriptive Data of Motor (Actuator) Being Replaced | | | Motor (Actuator) | Required Replacement Items | | Wiring Termination Conversion MMR Motor (Actuator) and MMC Control Module Versus the Motor (Actuator) Being Replaced | | | | | | | | | | Replacement | Comments | | | | | | | |
|-------------|---|-------------------------------|------------------|------------------|----------------------------|--------------------|--|--|----------|-----------|-------|-------|-----|---|------|-----|-------------|----------|----|----|-----|-----|------------|------------|-----|
| | Torque Lb.-In. | Voltage Spring Return (Hertz) | Stroke (Degrees) | | Timing Sec. | Auxiliary Switches | Input Signals | Plug-In AM-231 Control Cover Trans. Mig. Kit | AM-233 | TR1 | TR2 | 3 | 4 | 5 | 9 | 16 | | | 17 | C1 | NO1 | NC1 | C2 | NO2 | NC2 |
| M904E1358 | 108 | 24 (50/60) | None | 160 | 60 | 0 | 135Ω | MMR-400 | Not Req. | Not Req. | T | T | R | | B | W | | | | | | | Direct | 9 | |
| M905E1118 | 27 | 24 (60) | N.C. | 160 | 60 | 0 | 135Ω | MMR-500 | Not Req. | Not Req. | T | T | R | | B | W | | | | | | | | Direct | 4,9 |
| M905F1003 | 37 | 24 (60) | N.C. | 160 | 60 | 0 | 135Ω | MMR-500 | Not Req. | Not Req. | T | T | R | | B | W | | | | | | | | Direct | 9 |
| M934A1029 | 35 | 24 (50/60) | None | 160 | 60 | 0 | 135 Ω | MMR-400 | Req. | Not Req. | * | * | * | | Blue | Yel | | | | | | | Functional | 6,9 | |
| M934A1043 | 35 | 24 (50/60) | None | 160 | 60 | 2 SPDT | 135 Ω | MMR-400-002 | Not Req. | Not Req. | Black | Black | Red | | Blue | Yel | | | | | | | Functional | 6,9 | |
| M934A1060 | 35 | 24 (50/60) | None | 160 | 60 | 2 SPDT | 135 Ω | MMR-400-002 | Req. | Not Req. | * | * | * | | Blue | Yel | | | | | | | Functional | 2, 6, 9 | |
| M934A1086 | 35 | 120 (50/60) | None | 160 | 60 | 2 SPDT | 135 Ω | MMR-400-002 | Req. | Not Req. | * | * | * | | Blue | Yel | | | | | | | Functional | 2, 6, 9 | |
| M934A1094 | 35 | 120 (50/60) | None | 160 | 60 | 2 SPDT | 135 Ω | MMR-400-002 | Req. | Not Req. | * | * | * | | Blue | Yel | | | | | | | Functional | 2, 6, 9 | |
| M934A1201 | 35 | 24 (50/60) | None | 160 | 60 | 0 | 135 Ω | MMR-400 | Req. | Not Req. | * | * | * | | Blue | Yel | | | | | | | Functional | 2, 6, 9 | |
| M934A1219 | 35 | 120 (50/60) | None | 160 | 60 | 0 | 135 Ω | MMR-400 | Req. | Not Req. | * | * | * | | Blue | Yel | | | | | | | Functional | 6,9 | |
| M934A1227 | 35 | 24 (50/60) | None | 160 | 60 | 0 | 135 Ω | MMR-400 | Req. | Not Req. | Black | Black | Red | | Blue | Yel | | | | | | | Functional | 6,9 | |
| M934A1243 | 35 | 24 (50/60) | None | 160 | 60 | 2 SPDT | 135 Ω | MMR-400-002 | Not Req. | Not Req. | Black | Black | Red | | Blue | Yel | | | | | | | Functional | 2, 6, 9 | |
| M934A1250 | 35 | 120 (50/60) | None | 160 | 60 | 2 SPDT | 135 Ω | MMR-400-002 | Req. | Not Req. | * | * | * | | Blue | Yel | | | | | | | Functional | 2, 6, 9 | |
| M934A1268 | 35 | 24 (50/60) | None | 160 | 60 | 2 SPDT | 135 Ω | MMR-400-002 | Req. | Not Req. | * | * | * | | Blue | Yel | | | | | | | Functional | 2, 6, 9 | |
| M934A1284 | 35 | 120 (50/60) | None | 160 | 60 | 0 | 135 Ω | MMR-400 | Req. | Not Req. | * | * | * | | Blue | Yel | | | | | | | Functional | 6,9 | |
| M934A1292 | 35 | 120 (50/60) | None | 160 | 60 | 2 SPDT | 135 Ω | MMR-400-002 | Req. | Not Req. | * | * | * | | Blue | Yel | | | | | | | Functional | 2, 6, 9 | |
| M934A1318 | 35 | 120 (50/60) | None | 90 | 35 | 2 SPDT | 135 Ω | MMR-400-002 | Req. | Not Req. | * | * | * | | Blue | Yel | | | | | | | Functional | 1, 2, 6, 9 | |
| M934A1326 | 35 | 24 (50/60) | None | 90 | 35 | 0 | 135 Ω | MMR-400 | Req. | Not Req. | * | * | * | | Blue | Yel | | | | | | | Functional | 1, 6, 9 | |
| M934A1334 | 35 | 24 (50/60) | None | 90 | 35 | 0 | 135 Ω | MMR-400 | Req. | Not Req. | Black | Black | Red | | Blue | Yel | | | | | | | Functional | 1, 6, 9 | |
| M934A1342 | 35 | 24 (50/60) | None | 160 | 60 | 0 | 135 Ω | MMR-400 | Req. | Not Req. | Black | Black | Red | | Blue | Yel | | | | | | | Functional | 6,9 | |
| M934D1000 | 75 | 120 (50/60) | None | 160 | 60 | 1 SPDT | 135 Ω | MMR-400-002 | Req. | Not Req. | * | * | * | | Blue | Yel | | | | | | | Functional | 2, 6, 9 | |
| M934D1018 | 75 | 120 (50/60) | None | 160 | 60 | 2 SPDT | 135 Ω | MMR-400-002 | Req. | Not Req. | * | * | * | | Blue | Yel | | | | | | | Functional | 2, 6, 9 | |
| M934D1026 | 75 | 120 (50/60) | None | 90 | 35 | 1 SPDT | 135 Ω | MMR-400-002 | Req. | Not Req. | * | * | * | | Blue | Yel | | | | | | | Functional | 1, 2, 6, 9 | |
| M934D1034 | 75 | 120 (50/60) | None | 90 | 35 | 2 SPDT | 135 Ω | MMR-400-002 | Req. | Not Req. | * | * | * | | Blue | Yel | | | | | | | Functional | 1, 2, 6, 9 | |
| M934D1042 | 75 | 120 (50/60) | None | 90 | 35 | 2 SPDT | 135 Ω | MMR-400-002 | Req. | Not Req. | * | * | * | | Blue | Yel | | | | | | | Functional | 1, 2, 6, 9 | |
| M934D1059 | 75 | 120 (50/60) | None | 90 | 35 | 2 SPDT | 135 Ω | MMR-400-002 | Req. | Not Req. | * | * | * | | Blue | Yel | | | | | | | Functional | 1, 2, 6, 9 | |
| M944A1002 | 150 | 24 (50/60) | None | 160 | 60 | 0 | 135Ω | MMR-400 | Not Req. | Req. W859 | T1 | T2 | R1 | | B1 | W1 | | | | | | | Direct | 9 | |
| M944A1010 | 150 | 24 (50/60) | None | 160 | 60 | 0 | 135Ω | MMR-400 | Not Req. | Req. W859 | T1 | T2 | R1 | | B1 | W1 | | | | | | | Direct | 9 | |
| M944A1028 | 150 | 24 (50/60) | None | 90 | 30 | 0 | 135Ω | MMR-400 | Not Req. | Req. W859 | T1 | T2 | R1 | | B1 | W1 | | | | | | | Direct | 1,9 | |
| M944A1076 | 150 | 24 (50/60) | None | 160 | 60 | 0 | 135Ω | MMR-400 | Not Req. | Req. W859 | T1 | T2 | R1 | | B1 | W1 | | | | | | | Direct | 9 | |
| M944A1192 | 150 | 24 (50/60) | None | 90 | 30 | 0 | 135Ω | MMR-400 | Not Req. | Req. W859 | T1 | T2 | R1 | | B1 | W1 | | | | | | | Direct | 1,9 | |
| M944A1218 | 150 | 24 (50/60) | None | 160 | 60 | 0 | 135Ω | MMR-400 | Not Req. | Req. W859 | T1 | T2 | R1 | | B1 | W1 | | | | | | | Direct | 9 | |
| M944C1042 | 150 | 24 (50/60) | None | 90 or 160 | 30 or 60 | 0 | 135Ω | MMR-400 | Not Req. | Req. W859 | T1 | T2 | R1 | | B1 | W1 | | | | | | | Direct | 1,9 | |
| M944D1009 | 150 | 24 (50/60) | None | 90 or 160 | 30 or 60 | 2 SPDT | 135Ω | MMR-400-002 | Not Req. | Req. W859 | T1 | T2 | R1 | | B1 | W1 | | | | | | | Direct | 1, 2, 7, 9 | |
| M944D1017 | 150 | 24 (50/60) | N.C. | 90 or 160 | 30 or 60 | 2 SPDT | 135Ω | MMR-400-002 | Not Req. | Req. W859 | T1 | T2 | R1 | | B1 | W1 | | | | | | | Direct | 1, 2, 7, 9 | |
| M945A1009 | 50 | 24 (50/60) | N.C. | 160 | 60 | 0 | 135Ω | MMR-500 | Not Req. | Req. W859 | T1 | T2 | R | | B | W | | | | | | | Direct | 9 | |
| M945A1017 | 50 | 24 (50/60) | N.C. | 160 | 60 | 0 | 135Ω | MMR-500 | Not Req. | Req. W859 | T1 | T2 | R | | B | W | | | | | | | Direct | 9 | |
| M945A1033 | 50 | 120 (50/60) | N.C. | 160 | 60 | 0 | 135Ω | MMR-500 | Req. | --- | * | * | * | | B | W | | | | | | | Direct | 9,10 | |
| M945A1066 | 50 | 24 (50/60) | N.C. | 160 | 60 | 0 | 135Ω | MMR-500 | Not Req. | Req. W859 | T1 | T2 | R | | B | W | | | | | | | Direct | 9 | |
| M945A1074 | 50 | 24 (50/60) | N.C. | 90 | 30 | 0 | 135Ω | MMR-500 | Not Req. | Req. W859 | T1 | T2 | R | | B | W | | | | | | | Direct | 1,9 | |
| M945A1082 | 50 | 24 (50/60) | N.C. | 90 | 30 | 0 | 135Ω | MMR-500 | Not Req. | Req. W859 | T1 | T2 | R | | B | W | | | | | | | Direct | 1,9 | |
| M945A1124 | 50 | 24 (50/60) | N.C. | 90 | 30 | 0 | 135Ω | MMR-500 | Not Req. | Req. W859 | T1 | T2 | R | | B | W | | | | | | | Direct | 1,9 | |

Comments:

- 1. Attach AM-231 transformer leads as follows: Brown leads to TR1 and TR2 of actuator and appropriate two leads to power source, Black = common, White = 120 VAC, Red/Yellow = 208 VAC and Orange = 240 VAC.
- 2. Set actuator stroke to match the actuator being replaced. Check the closed position of the actuator shaft. Adjust damper linkage as required.
- 3. Adjust the auxiliary switch(es) to match the differential and switch point of the actuator being replaced.
- 4. Install jumper between terminals 3 and 5.
- 5. The MMR or MMR-500 series of spring return actuators can be used for normally open or closed applications depending on which end of the actuator the damper or valve linkage is attached. Attach linkage to the normally open end for these applications.
- 6. Set travel for 160° and adjust the linkage.
- 7. Replacement actuator mounts the same but is larger. For models with an auxiliary switch the actuator being replaced had a Full Load Amp rating of 8.0 @ 120 VAC and 4.0 @ 240 VAC while the replacement is 7.2 @ 120 VAC and 3.6 @ 240 VAC.
- 8. Replacement actuator's auxiliary switches have 2° or 10° differential. If adjustable differential is required order AM-242 separately.
- 9. Replacement actuator is slower than actuator being replaced. Check application to determine if speed is critical.
- 10. The replacement actuators cannot replace slave actuators in mechanical mouse-trap master-slave actuator systems (systems in which one master actuator drives the other actuators with C68 auxiliary potentiometer). They can replace master actuator.
- 11. If used with W859, AM-233 is required and AE-201 remote mounted transformer is required instead of AM-231.

TABLE 1. HONEYWELL MOTOR COMPETITIVE CROSS REFERENCE (CONTINUED)

| Part Number | Descriptive Data of Motor (Actuator) | | Being Replaced | | Motor (Actuator) | Required Replacement Items | | Wiring Termination Conversion MMR Motor (Actuator) and MMC Control Module Versus the Motor (Actuator) Being Replaced | | | | | | | | | | Replacement | Comments | | | | | |
|-------------|--------------------------------------|-------------------------|----------------|-------------|------------------|----------------------------|---------|--|------------|----------|-----------|-----|----|---|---|---|-----|-------------|----------|---------|---------|---------|------------|---------------|
| | Torque Lb.-In. | Voltage (Spring Return) | Stroke Degrees | Timing Sec. | | Auxiliary Switches | Signals | Plug-In Control Module | Trans. Kit | TR1 | TR2 | TR3 | 3 | 4 | 5 | 9 | 16 | | | 17 | C1 | NO1 | NO2 | C2 |
| M945A1137 | 50 | 24 (50/60) | N.C. | 90 or 180 | 30 or 60 | 0 | 135Ω | MMR-500 | MMC-90 | Not Req. | Req. W859 | T1 | T2 | R | B | W | Red | Blue | Yel | Blu/Red | Bu/Blue | Blu/Yel | Direct | 1, 9 |
| M945D1006 | 50 | 24 (50/60) | N.C. | 180 | 60 | 2 SPDT | 135Ω | MMR-500-002 | MMC-90 | Not Req. | Req. W859 | T1 | T2 | R | B | W | Red | Blue | Yel | Blu/Red | Bu/Blue | Blu/Yel | Direct | 2, 9 |
| M943F1004 | 50 | 24 (50/60) | N.C. | 160 | 60 | 0 | 135Ω | MMR-500 | MMC-90 | Not Req. | Req. W859 | T1 | T2 | R | B | W | Red | Blue | Yel | Blu/Red | Bu/Blue | Blu/Yel | Direct | 4, 9 |
| M945H1002 | 50 | 24 (50/60) | N.C. | 160 | 60 | 2 SPDT | 135Ω | MMR-500-002 | MMC-90 | Not Req. | Req. W859 | T1 | T2 | R | B | W | Red | Blue | Yel | Blu/Red | Bu/Blue | Blu/Yel | Direct | 2, 9 |
| M945M1006 | 50 | 24 (50/60) | N.C. | 160 | 60 | 0 | 135Ω | MMR-500 | MMC-90 | Not Req. | Req. W859 | T1 | T2 | R | B | W | Red | Blue | Yel | Blu/Red | Bu/Blue | Blu/Yel | Direct | 9 |
| M954A1036 | 150 | 24 (50/60) | None | 90 or 180 | 30 or 60 | 0 | 135Ω | MMR-400 | MMC-90 | Not Req. | Req. W859 | T1 | T2 | R | B | W | Red | Blue | Yel | Blu/Red | Bu/Blue | Blu/Yel | Direct | 1 |
| M954B1034 | 150 | 24 (50/60) | None | 90 | 30 | 2 SPDT | 135Ω | MMR-400-002 | MMC-90 | Not Req. | Req. W859 | T1 | T2 | R | B | W | Red | Blue | Yel | Blu/Red | Bu/Blue | Blu/Yel | Direct | 1, 2 |
| M954B1042 | 150 | 24 (50/60) | None | 90 | 30 | 2 SPDT | 135Ω | MMR-400-002 | MMC-90 | Not Req. | Req. W859 | T1 | T2 | R | B | W | Red | Blue | Yel | Blu/Red | Bu/Blue | Blu/Yel | Direct | 1, 2 |
| M954B1059 | 150 | 120 (50/60) | None | 90 | 30 | 2 SPDT | 135Ω | MMR-400-002 | MMC-90 | Not Req. | Req. W859 | T1 | T2 | R | B | W | Red | Blue | Yel | Blu/Red | Bu/Blue | Blu/Yel | Direct | 1, 2, 10 |
| M954B1067 | 150 | 24 (50/60) | None | 100 | 60 | 2 SPDT | 135Ω | MMR-400-002 | MMC-90 | Not Req. | Req. W859 | T1 | T2 | R | B | W | Red | Blue | Yel | Blu/Red | Bu/Blue | Blu/Yel | Direct | 2 |
| M954C1058 | 150 | 24 (50/60) | None | 90 | 30 | 1 SPDT | 135Ω | MMR-400-002 | MMC-90 | Not Req. | Req. W859 | T1 | T2 | R | B | W | Red | Blue | Yel | Blu/Red | Bu/Blue | Blu/Yel | Direct | 1, 2 |
| M954C1066 | 150 | 24 (50/60) | None | 90 | 30 | 1 SPDT | 135Ω | MMR-400-002 | MMC-90 | Not Req. | Req. W859 | T1 | T2 | R | B | W | Red | Blue | Yel | Blu/Red | Bu/Blue | Blu/Yel | Direct | 1, 2 |
| M954C1074 | 150 | 24 (50/60) | None | 160 | 60 | 1 SPDT | 135Ω | MMR-400-002 | MMC-90 | Not Req. | Req. W859 | T1 | T2 | R | B | W | Red | Blue | Yel | Blu/Red | Bu/Blue | Blu/Yel | Direct | 2 |
| M954D1016 | 150 | 24 (50/60) | None | 90 or 180 | 30 or 60 | 2 SPDT | 135Ω | MMR-400-002 | MMC-90 | Not Req. | Req. W859 | T1 | T2 | R | B | W | Red | Blue | Yel | Blu/Red | Bu/Blue | Blu/Yel | Direct | 1, 2 |
| M954D1024 | 150 | 24 (50/60) | None | 90 or 180 | 30 or 60 | 2 SPDT | 135Ω | MMR-400-002 | MMC-90 | Not Req. | Req. W859 | T1 | T2 | R | B | W | Red | Blue | Yel | Blu/Red | Bu/Blue | Blu/Yel | Direct | 1, 2 |
| M955A1024 | 50 | 24 (50/60) | N.C. | 90 to 180 | 30 to 60 | 0 | 135Ω | MMR-500 | MMC-90 | Not Req. | Req. W859 | T1 | T2 | R | B | W | Red | Blue | Yel | Blu/Red | Bu/Blue | Blu/Yel | Direct | 1 |
| M955C1014 | 50 | 24 (50/60) | N.C. | 90 to 180 | 30 to 60 | 1 SPDT | 135Ω | MMR-500-002 | MMC-90 | Not Req. | Req. W859 | T1 | T2 | R | B | W | Red | Blue | Yel | Blu/Red | Bu/Blue | Blu/Yel | Direct | 1, 2 |
| M955D1005 | 50 | 24 (50/60) | N.C. | 180 | 60 | 0 | 135Ω | MMR-500 | MMC-90 | Not Req. | Req. W859 | T1 | T2 | R | B | W | Red | Blue | Yel | Blu/Red | Bu/Blue | Blu/Yel | Direct | 1, 2 |
| M955D1039 | 50 | 120 (50/60) | N.C. | 90 | 30 | 0 | 135Ω | MMR-500 | MMC-90 | Not Req. | Req. W859 | T1 | T2 | R | B | W | Red | Blue | Yel | Blu/Red | Bu/Blue | Blu/Yel | Direct | 1, 10 |
| M965A1007 | 25 | 24 (50/60) | N.C. | 180 | 40 | 0 | 135Ω | MMR-500 | MMC-90 | Not Req. | Req. W859 | T1 | T2 | R | B | W | Red | Blue | Yel | Blu/Red | Bu/Blue | Blu/Yel | Functional | 6, 8, 9 |
| M965A1023 | 25 | 120 (50/60) | N.C. | 160 | 40 | 0 | 135Ω | MMR-500 | MMC-90 | Not Req. | Req. W859 | T1 | T2 | R | B | W | Red | Blue | Yel | Blu/Red | Bu/Blue | Blu/Yel | Functional | 6, 8, 9 |
| M965B1048 | 25 | 120 (50/60) | N.C. | 90 | 23 | 0 | 135Ω | MMR-500 | MMC-90 | Not Req. | Req. W859 | T1 | T2 | R | B | W | Red | Blue | Yel | Blu/Red | Bu/Blue | Blu/Yel | Functional | 1, 6, 8, 9 |
| M965B1006 | 25 | 24 (50/60) | N.C. | 160 | 40 | 2 SPDT | 135Ω | MMR-500-002 | MMC-90 | Not Req. | Req. W859 | T1 | T2 | R | B | W | Red | Blue | Yel | Blu/Red | Bu/Blue | Blu/Yel | Functional | 2, 6, 8, 9 |
| M965B1022 | 25 | 24 (50/60) | N.C. | 90 | 23 | 1 SPDT | 135Ω | MMR-500-002 | MMC-90 | Not Req. | Req. W859 | T1 | T2 | R | B | W | Red | Blue | Yel | Blu/Red | Bu/Blue | Blu/Yel | Functional | 1, 2, 6, 8, 9 |
| M975A1006 | 25 | 24 (50/60) | N.C. | 160 | 40 | 0 | 135Ω | MMR-500 | MMC-90 | Not Req. | Req. W859 | T1 | T2 | R | B | W | Red | Blue | Yel | Blu/Red | Bu/Blue | Blu/Yel | Functional | 6, 8 |
| M975A1014 | 25 | 24 (50/60) | N.C. | 90 | 23 | 0 | 135Ω | MMR-500 | MMC-90 | Not Req. | Req. W859 | T1 | T2 | R | B | W | Red | Blue | Yel | Blu/Red | Bu/Blue | Blu/Yel | Functional | 6, 8 |
| M975B1005 | 25 | 24 (50/60) | N.C. | 160 | 40 | 2 SPDT | 135Ω | MMR-500-002 | MMC-90 | Not Req. | Req. W859 | T1 | T2 | R | B | W | Red | Blue | Yel | Blu/Red | Bu/Blue | Blu/Yel | Functional | 2, 6, 8 |

Comments:

- * Attach AM-231 transformer leads as follows: Brown leads to TR1 and TR2 of actuator and appropriate two leads to power source, Black = common, White = 120 VAC, Red/Yellow = 208 VAC and Orange = 240 VAC.
- 1. Set actuator stroke to match the actuator being replaced. Check the closed position of the actuator shaft. Adjust damper linkage as required.
- 2. Adjust the auxiliary switch(es) to match the differential and switch point of the actuator being replaced.
- 3. Install jumper between terminals 3 and 5.
- 4. The MM or MMR-500 series of spring return actuators can be used for normally open or closed applications depending on which end of the actuator the damper or valve linkage is attached. Attach linkage to the normally open end for these applications.
- 5. Set travel for 160° and adjust the linkage
- 6. Replacement actuator mounts the same but is larger. For models with an auxiliary switch the actuator being replaced had a Full Load Amp rating of 8.0 @ 120 VAC and 4.0 @ 240 VAC while the replacement is 7.2 @ 120 VAC and 3.6 @ 240 VAC.
- 7. Replacement actuators auxiliary switches have 2° or 10° differential. If adjustable differential is required order AM-242 separately.
- 8. Replacement actuator is slower than actuator being replaced. Check application to determine if speed is critical.
- 9. The replacement actuators cannot replace slave actuators in mechanical mouse/rap master-slave actuator systems (systems in which one master actuator drives the other actuators with Q66 auxiliary potentiometer). They can replace master actuator.
- 10. If used with W859, AM-233 is required and AE-201 remote mounted transformer is required instead of AM-231.

MOUNTING HONEYWELL Q607 AUXILIARY SWITCH KIT TO MM MODULAR MOTOR.

If a Honeywell motor is replaced that has an Q607) auxiliary switch kit that will continue to be used, use the following instructions to mount device to MM motor.

REMOVING AUXILIARY SWITCH KIT FROM HONEYWELL MOTOR

1. Remove cover of auxiliary kit by prying off cover housing.
2. Remove auxiliary kit housing from mounting bracket by removing the two (2) screws from inside the housing.
3. With slotted screwdriver, depress wire spring on the bottom of the housing and slip housing out of the mounting bracket tab.
4. Remove screws and auxiliary kit mounting bracket from Honeywell motor.

INSTALLING AUXILIARY SWITCH KIT ON MM FOR DAMPER APPLICATIONS:

1. Slide the formed side of the bracket onto the motor shaft and secure the motor base to the straight side of the bracket with the 1/4"-20 X 7/8" hexhead bolts provided. (Refer to Figure 1)

NOTE

The square shaft extender with #8-32 X 5/8" screw and washer must be mounted to motor shaft if the kits are to be mounted to the "Load" or "Normally Closed CCW" end of the MM motor.

2. Mount the Honeywell mounting bracket onto the Barber-Colman mounting bracket by using the three (3) #8-32 screws provided.
3. Mount the Honeywell switch kit (Q607) to the mounting bracket using the two (2) existing Honeywell screws.
4. Reconnect electrical wires and re-assemble Q607 cover after the modular motor has been securely mounted.
5. Reset, if necessary, switch cams to original specifications.

INSTALLING AUXILIARY SWITCH KIT ON MM FOR VALVE APPLICATIONS:

WHEN MOUNTING MM MOTOR TO HONEYWELL Q601E LINKAGE (See Figure 1).

1. Slide the formed side of the bracket onto the motor shaft and secure the motor base to the straight side of the bracket with the 1/4"-20 X 7/8" hexhead bolts provided. (Refer to Figure 1)

NOTE

The square shaft extender with #8-32 X 5/8" screw and washer must be mounted to motor shaft if the kits are to be mounted to the "Load" or "Normally Closed CCW" end of the MM motor.

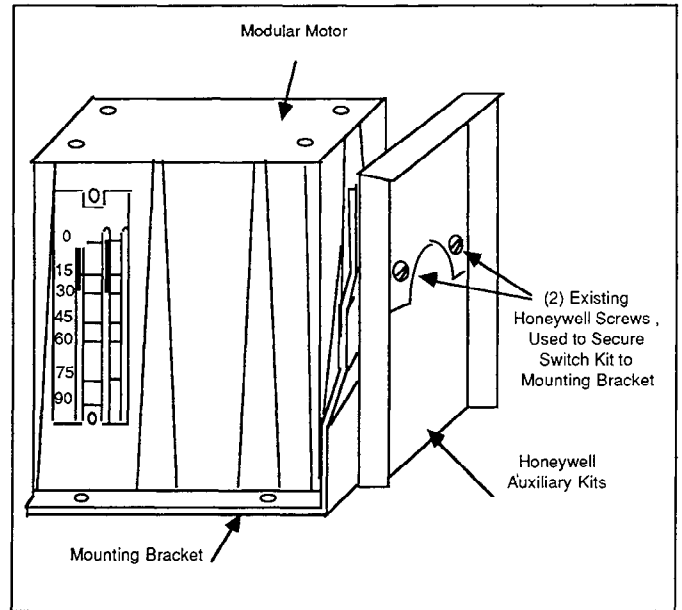


Figure 1. Mounting Auxiliary Kits to Modular Motor

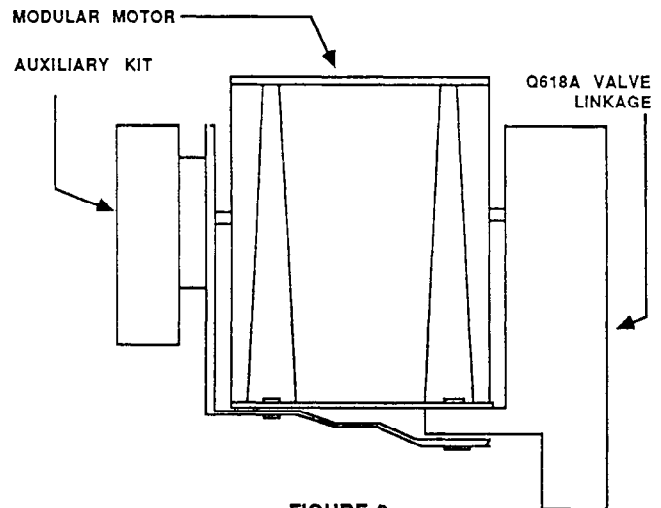


FIGURE 2. INSTALLATION OF MODULAR MOTOR AND AUXILIARY KITS ON HONEYWELL Q618A VALVE LINKAGE

2. Mount the Honeywell mounting bracket onto the Barber-Colman mounting bracket by using the three (3) #8-32 screws provided.
3. Mount the Honeywell switch kit (Q607) to the mounting bracket using the two (2) existing Honeywell screws.
4. Reconnect electrical wires and re-assemble Q607 cover after the modular motor has been securely mounted.
5. Reset, if necessary, switch cams to original specifications.

WHEN MOUNTING MM MOTOR TO HONEYWELL Q618A LINKAGE (See Figure 2).

1. Mount the formed side of the Barber-Colman mounting bracket to the MM and the Q618A linkage (the Q618A is mounting previous to the auxiliary kit installation).

NOTE

The square shaft extender with #8-32 X 5/8" screw and washer must be mounted to motor shaft if the kits are to be mounted to the "Load" or "Normally Closed-CCW" end of the MM motor.

2. Mount the Honeywell mounting bracket onto the straight side Barber-Colman mounting bracket by using three (3) #8-32 X 7/16" screws provided. The formed side of the bracket is used to mount the MM to the Q618A linkage.
3. Mount the Honeywell switch kit (Q607) to the mounting bracket using the two (2) existing Honeywell screws.
4. Reconnect electrical wires and re-assemble Q607 cover after the modular motor has been securely mounted.
5. Reset, if necessary, switch cams to original specifications.

MOUNTING HONEYWELL Q181A AUXILIARY POTENTIOMETER KIT TO MM MODULAR MOTOR.

If a Honeywell motor is replaced that has an Q181A auxiliary potentiometer kit that will continue to be used, use the following instructions to mount device to MM motor.

REMOVING Q181A AUXILIARY POTENTIOMETER KIT FROM HONEYWELL MOTOR

1. Loosen cover screws and remove cover of Q181A potentiometer kit.
2. Remove potentiometer kit from the motor by loosening the two (2) #8-32 screws in the back of the mounting case.

NOTE

Be careful not to lose the drive pin coupling that rests against the drive pin.

3. Loosen the two (2) Allen head screws with an appropriate Allen head wrench and remove the shaft coupling from the Honeywell motor output shaft.

INSTALLING Q181A AUXILIARY POTENTIOMETER KIT ON MM FOR DAMPER APPLICATIONS:

1. Slide the formed side of the bracket onto the motor shaft and secure the motor base to the straight side of the bracket with the 1/4"-20 X 7/8" hexhead bolts provided. (Refer to Figure 1)

NOTE

The square shaft extender with #8-32 X 5/8" screw and washer (from the MM) must be mounted to motor shaft if the potentiometer kit is to be mounted to the "Load" or "Normally Closed-CCW" end of the MM motor.

2. Install the shaft coupling on the motor shaft so the slots are on the top and bottom when the motor is in the fully CCW position. Tighten both set screws.
3. Make certain that the cam follower is on the low side of the cam. Fit the drive pin coupling over the drive pin and put the

Q181A in place on the mounting bracket. The drive pin shaft should engage the shaft coupling.

4. Mount the Q181A on the mounting bracket with the two (2) #8-32 screws provided with the kit.
5. Run the modular motor over its entire travel to make certain the potentiometer wiper arm is not driven beyond the windings.
6. Replace the cover of the kit.

INSTALLING AUXILIARY POTENTIOMETER KIT ON MM FOR VALVE APPLICATIONS:

WHEN MOUNTING MM MOTOR TO HONEYWELL Q601E LINKAGE

1. Slide the formed side of the bracket onto the motor shaft and secure the motor base to the straight side of the bracket with the 1/4"-20 X 7/8" hexhead bolts provided. (Refer to Figure 1)

NOTE

The square shaft extender with #8-32 X 5/8" screw and washer (from the MM) must be mounted to motor shaft if the potentiometer kit is to be mounted to the "Load" or "Normally Closed-CCW" end of the MM motor.

2. Install the shaft coupling on the motor shaft so the slots are on the top and bottom when the motor is in the fully CCW position. Tighten both set screws.
3. Make certain that the cam follower is on the low side of the cam. Fit the drive pin coupling over the drive pin and put the Q181A in place on the mounting bracket. The drive pin shaft should engage the shaft coupling.
4. Mount the Q181A on the mounting bracket with the two (2) #8-32 screws provided with the kit.
5. Run the modular motor over its entire travel to make certain the potentiometer wiper arm is not driven beyond the windings.
6. Replace the cover of the kit.

WHEN MOUNTING MM MOTOR TO HONEYWELL Q618A LINKAGE

1. Mount the formed side of the Barber-Colman mounting bracket to the MM and the Q618A linkage (the Q618A is mounting previous to the auxiliary kit installation).

NOTE

The square shaft extender with #8-32 X 5/8" screw and washer (from the MM) must be mounted to motor shaft if the potentiometer kit is to be mounted to the "Load" or "Normally Closed-CCW" end of the MM motor.

2. Install the shaft coupling on the motor shaft so the slots are on the top and bottom when the motor is in the fully CCW position. Tighten both set screws.
3. Make certain that the cam follower is on the low side of the cam. Fit the drive pin coupling over the drive pin and put the Q181A in place on the mounting bracket. The drive pin shaft should engage the shaft coupling.
4. Mount the Q181A on the mounting bracket with the two (2) #8-32 screws provided with the kit.
5. Run the modular motor over its entire travel to make certain the potentiometer wiper arm is not driven beyond the windings.
6. Replace the cover of the kit.

TABLE 2 HONEYWELL VALVE AND LINKAGE CROSS REFERENCE

Use the following table to confirm that the MM motor selected can be used on the Honeywell valve in the system.

| Descriptive Data of Valve Body Being Replaced | | | | | Valve Linkage / Required Motor | | |
|--|--------|-------|---------------|---------------|--------------------------------|-----------|-----------|
| Part Number | Size | Cv | Dimension "A" | Dimension "B" | Q618A1032 | Q618A1024 | Q601E1000 |
| | | | | | / All MMR | / MMR-400 | / MMR-400 |
| Maximum Close-Off Pressure (PSIG) | | | | | | | |
| 2-Way; Stem Down to Close, 250 PSIG Static, Equal Percentage Flow Characteristics, Screwed Ends FNPT | | | | | | | |
| V5011F1121 | 1/2" | 2.5 | 3-3/8" | --- | 150 | 150 | --- |
| V5011F1139 | 1/2" | 4.0 | 3-3/8" | --- | 150 | 150 | --- |
| V5011F1147 | 3/4" | 6.3 | 3-1/2" | --- | 122 | 150 | --- |
| V5011F1154 | 1" | 10.0 | 4-3/8" | --- | 106 | 150 | --- |
| V5011F1162 | 1-1/4" | 16.0 | 5" | --- | 60 | 141 | --- |
| V5011F1170 | 1-1/2" | 25.0 | 5-3/4" | --- | 39 | 91 | --- |
| V5011F1188 | 2" | 40.0 | 5-3/4" | --- | 22 | 55 | --- |
| V5011F1196 | 2-1/2" | 83.0 | 7-1/2" | --- | 12 | 32 | --- |
| V5011F1204 | 3" | 100.0 | 8-7/8" | --- | 8 | 20 | --- |
| 2-Way; Stem Down to Close, 125 PSIG Static, Equal Percentage Flow Characteristics, 125 LB. Flanged | | | | | | | |
| V5011A1734 | 2-1/2" | 63.0 | 9-1/2" | --- | 10 | 26 | --- |
| V5011A1767 | 3" | 100.0 | 11" | --- | 7 | 20 | --- |
| V5011A1858 | 4" | 160.0 | 13" | --- | --- | --- | 10 |
| V5011A1882 | 5" | 250.0 | 15" | --- | --- | --- | 6 |
| V5011A1916 | 6" | 360.0 | 16-1/2" | --- | --- | --- | 4 |
| 2-Way; Stem Down to Close, 100 PSIG Static, Stainless Steel Trim, Linear Flow Characteristics, Screwed Ends FNPT | | | | | | | |
| V5011G1137 | 1/2" | 0.4 | 3-3/8" | --- | 150 | 150 | --- |
| V5011G1145 | 1/2" | 0.63 | 3-3/8" | --- | 150 | 150 | --- |
| V5011G1152 | 1/2" | 1.0 | 3-3/8" | --- | 150 | 150 | --- |
| V5011G1160 | 1/2" | 1.6 | 3-3/8" | --- | 150 | 150 | --- |
| V5011G1078 | 1/2" | 2.5 | 3-3/8" | --- | 150 | 150 | --- |
| V5011G1186 | 1/2" | 4.0 | 3-3/8" | --- | 150 | 150 | --- |
| V5011G1194 | 3/4" | 6.3 | 3-1/2" | --- | 122 | 150 | --- |
| V5011G1202 | 1" | 10.0 | 4-3/8" | --- | 106 | 150 | --- |
| V5011G1210 | 1-1/4" | 18.0 | 5" | --- | 60 | 141 | --- |
| V5011G1228 | 1-1/2" | 25.0 | 5-3/4" | --- | 39 | 91 | --- |
| 2-Way; Stem Down to Close, 100 PSIG Static, Stainless Steel Trim with Disc, Linear Flow Characteristics, Screwed Ends FNPT | | | | | | | |
| V5011G1103 | 2" | 40.0 | 5-3/4" | --- | 22 | 55 | --- |
| V5051G1111 | 2-1/2" | 63.0 | 7-1/2" | --- | 12 | 32 | --- |
| V5051G1129 | 3" | 100.0 | 8-7/8" | --- | 8 | 20 | --- |
| 3-Way Mixing; 250 PSIG Static, Screwed Ends FNPT | | | | | | | |
| V5013F1079 | 1/2" | 4 | 3-1/8" | 2-1/2" | 130 | 150 | --- |
| V5013F1087 | 3/4" | 6.3 | 3-3/8" | 2-5/8" | 120 | 150 | --- |
| V5013F1095 | 1" | 10 | 3-7/8" | 2-5/8" | 70 | 150 | --- |
| V5013F1103 | 1-1/4" | 16.0 | 4-1/4" | 2-5/8" | 50 | 146 | --- |
| V5013F1111 | 1-1/2" | 25.0 | 4-3/4" | 2-3/4" | 35 | 98 | --- |
| V5013F1129 | 2" | 40.0 | 5-7/8" | 3-1/8" | 20 | 67 | --- |
| 3-Way Mixing; 125 PSIG Static, 125 Flanged Ends | | | | | | | |
| V5013B1003 | 2-1/2" | 63.0 | 9-1/2" | 6-7/16" | --- | 32 | --- |
| V5013B1011 | 3" | 100.0 | 11" | 6-5/8" | --- | 22 | --- |
| V5013B1029 | 4" | 160.0 | 13" | 8-11/16" | --- | --- | 9 |
| V5013B1037 | 5" | 250.0 | 15" | 9-5/8" | --- | --- | 8 |
| V5013B1045 | 6" | 360.0 | 16-1/2" | 10-11/16" | --- | --- | 5 |
| 3-Way Diverting; 125 PSIG Static, 125 Flanged Ends * | | | | | | | |
| V5013C1001 | 2-1/2" | 63.0 | 9-1/2" | 6-7/16" | --- | 32 | --- |
| V5013C1019 | 3" | 100.0 | 11" | 6-5/8" | --- | 22 | --- |
| V5013C1027 | 4" | 160.0 | 13" | 8-11/16" | --- | --- | 9 |
| V5013C1035 | 5" | 250.0 | 15" | 9-5/8" | --- | --- | 8 |
| V5013C1043 | 6" | 360.0 | 16-1/2" | 10-11/16" | --- | --- | 5 |

*** CAUTION :**

The common port of the Honeywell valve is a side port and the replacement is the bottom port.

Dimension "A" = The face to face dimension on the valve.

Dimension "B" = The dimension from the centerline of the pipe to the bottom of the lower ("B") port.

NOTE:

Ratings per Honeywell valve specification data sheets.

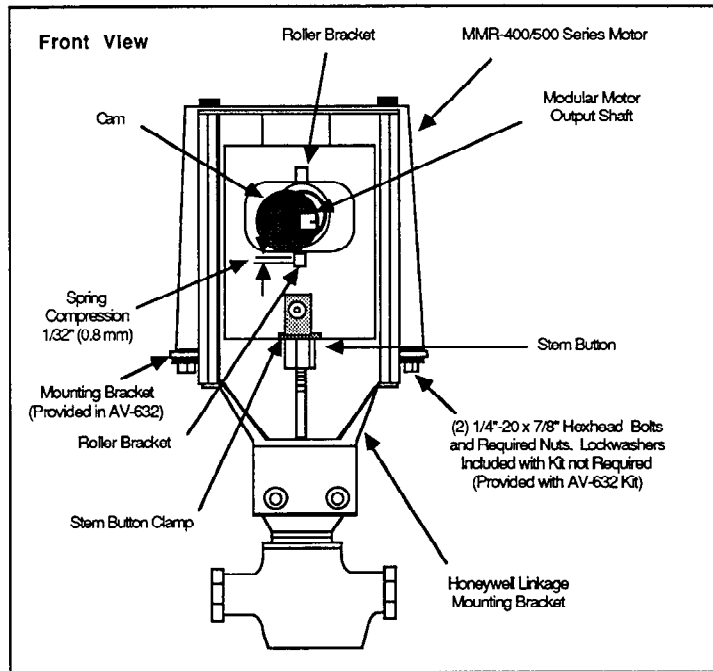


Figure 3. Honeywell Q618A Valve Linkage
(Shown with Cover Removed)

Mounting MM Motor to Honeywell Q618A Valve Linkages: (See Figure 2 thru 4)

The MM modular motor can be mounted to Honeywell Q618A valve linkage by using the mounting bracket, spacer collar, and four (4) 1/4"-20 x 7/8" hexhead screws, lockwashers and nuts provided.

The following step by step instructions define the procedure for removal of Honeywell Modutrol Series motors from Q618A linkage on 2-Way and 3-Way Globe Valves and replacement with the appropriate Barber-Colman Modular Motor .

REMOVING HONEYWELL MOTOR

1. Disconnect power.
2. Remove top cover of motor.
3. Label leads by terminal designation (Eg. R, W, B, TR1, TR2 etc.) and remove wiring from Motor. Be sure and also label wires for auxiliary switches or devices.
4. Remove any auxiliary equipment attached to the auxiliary end or motor housing.
5. Remove conduit connection.
6. Remove linkage cover.
7. Remove Stem Button Clamp screw.
8. Remove Stem Button Clamp.

NOTE

On Spring Return motors insert heavy duty screwdriver at the top or bottom of the linkage slide in the back slot of linkage frame. Pry the linkage slide upward or downward to free Stem Button Clamp.(See Figure 4).

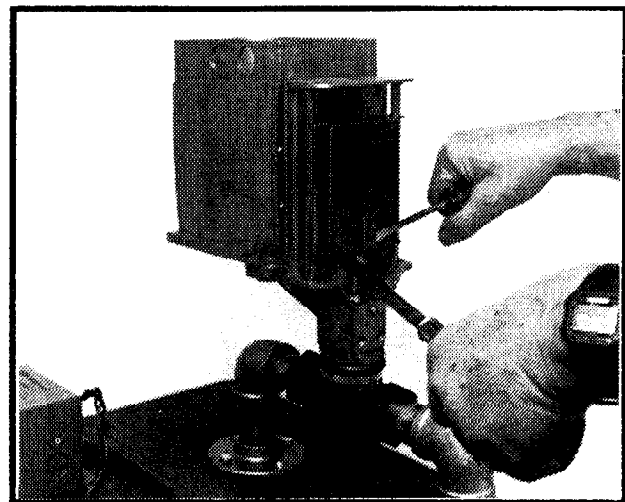


Figure 4. Removal of Stem Button Clamp.

9. Loosen the two (2) setscrews and lift the linkage and motor assembly from the valve bonnet.

NOTE

The two captive screws are located at the back of the cam assembly behind the cam. If the screws are not visible, power the motor until the cam is completely up or down so the screws can be accessed.

10. Loosen the two (2) captive mounting screws and remove from linkage.
11. Remove motor mounting bolts.
12. Separate motor from linkage. Compress slide mechanism slightly to release cam.
13. Loosen Hex Set Screw and remove cam.

INSTALLING BARBER-COLMAN MM MODULAR MOTOR

1. Select the appropriate modular motor, plug-in control module and accessories and install using instructions in Section I - GENERAL INSTRUCTIONS.

2. On non-spring return motors (MM-400) select "Load" end of modular motor. On spring return motors (MM-500) select "Normally Closed-CCW" end when installing to a N.C. Honeywell valve and select "Normally Open-CW" end when installing to a N.O. Honeywell valve. (See Figures 5 & 6).

NOTE

Auxiliary kits should be installed to mounting bracket before MM motor is installed to valve linkage.

3. Place spacer collar (provided with MM motor) on motor shaft.

4. Push cam on shaft.

NOTE

Key on cam must fit into keyway on motor shaft.

5. Snug spacer to cam and secure setscrew.

6. Place MM motor on the formed end of the bracket and insert two (2) 1/4"-20 X 7/8" hexhead bolts in the auxiliary end (See Figure 2) Snug bolts but do not tighten.

7. Insert Q618 mounting foot between motor base and bracket.

8. Depress top roller of slide mechanism (See Figure 3).

9. Slip cam into linkage slide mechanism and loosely secure modular motor and adaptor bracket to motor mounting holes in Q618 linkage assembly with two (2) 1/4"-20 X 7/8" hexhead bolts.

10. Push motor forward to engage cam fully on linkage.

11. Tighten the four (4) 1/4" motor mounting bolts securely.

12. Secure linkage to valve bonnet by tightening the two (2) setscrews.

13. Insert stem button clamp and secure with screw.

NOTE

If motor is in full N.O. (clockwise) or N.C. (counterclockwise) insert heavy duty screwdriver at the top or bottom of the linkage slide in the back slot of linkage frame and pry upward or downward to set Stem Button Clamp.

14. Reconnect appropriate control and power wiring. (See Table 1 - Wiring Terminations).

15. Replace top cover on modular motor.

16. Checkout:

- Motor should run freely through complete stroke.
- Linkage should operate without binding.
- Valve must close off tightly at bottom of stroke (both ends of stroke on 3-Way application). Check for 1/32" deflection of the roller bracket in closed position.

17. Replace linkage cover - secure with screw.

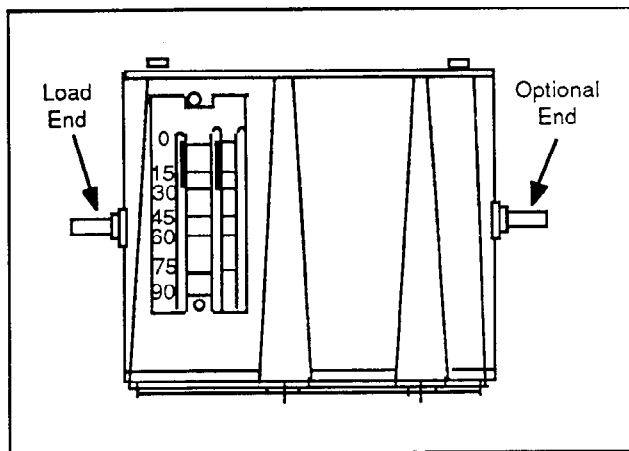


Figure 5. Output Shaft Designation for MM & MMR-400 Series

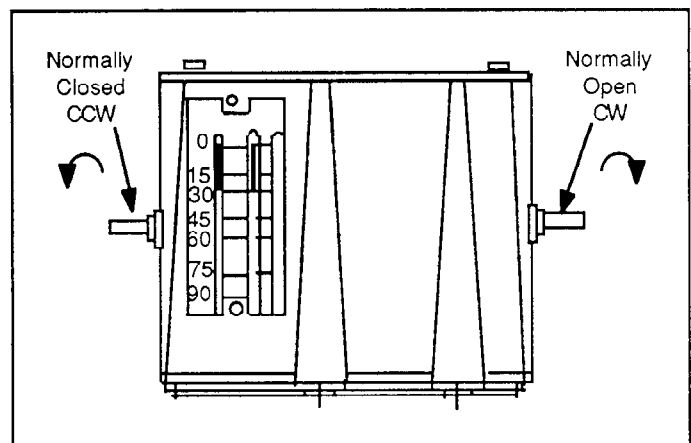


Figure 6. Output Shaft Designation for MM & MMR-500 Series

REPLACEMENT OF A JOHNSON MOTOR

Use the following table to confirm that the proper MM motor, MMC control module, and other required accessories have been selected

TABLE 3. JOHNSON MOTOR CROSS REFERENCE

| Part Number | Descriptive Data of Motor (Actuator) Being Replaced | | | | Input Signals | Motor (Actuator) | Required Replacement Items | | Wiring Termination Conversion MMH Motor (Actuator) and MMC Control Module Versus the Motor (Actuator) Being Replaced | | | | | | | | | | | Replacement | NOTES | | | | |
|-------------|---|-----------------|---------------|----------------|---------------|------------------|------------------------------|--------------------|--|---------------------|----------------------|-----|-----|---|---|---|---|-----|-----|-------------|-------|-------|--------|--------------|------------|
| | Torque (Lb. In.) | Voltage (Hertz) | Spring Return | Stroke Degrees | | | Limiting Sec. | Auxiliary Switches | Plug-In Control Module | AM-231 Cover Trans. | AM-233 W859 Mtg. Kit | TR1 | TR2 | 3 | 4 | 5 | 9 | 16 | 17 | | | C1 | NO1 | NC1 | C2 |
| M40AAA-1 | 35 | 120 (50/60) | None | 90 to 270 | 34 / 90° | 0 | SPDT | MMR-100 | MMC-468 | Req. | Not Req. | @ | 1 | 3 | 2 | | | Red | Yel | Blue | B/Red | B/Yel | B/Blue | Functional | 1, 4 |
| M40AAC-1 | 35 | 120 (50/60) | None | 90 to 270 | 34 / 90° | 2 SPDT | SPDT | MMR-400-002 | MMC-468 | Req. | Not Req. | @ | 1 | 3 | 2 | | | Red | Yel | Blue | B/Red | B/Yel | B/Blue | Functional | 1, 2, 3, 4 |
| M40AAG-1 | 35 | 24 (50/60) | None | 90 to 270 | 34 / 90° | 0 | SPDT | MMR-400 | MMC-468 | Not Req. | Not Req. | @ | 7 | 1 | 3 | 2 | | Red | Yel | Blue | B/Red | B/Yel | B/Blue | Functional | 1, 4 |
| M40AAG-1 | 35 | 24 (50/60) | None | 90 to 270 | 34 / 90° | 2 SPDT | SPDT | MMR-400-002 | MMC-468 | Not Req. | Not Req. | @ | 7 | 1 | 3 | 2 | | Red | Yel | Blue | B/Red | B/Yel | B/Blue | Functional | 1, 2, 3, 4 |
| M40AAA-4 | 35 | 120 (50/60) | None | 90 or 160 | 34 or 60 | 0 | 135 Ω ONLY | MMR-400-002 | MMC-90 | Req. | Not Req. | @ | 1 | 3 | 2 | | | Red | Yel | Blue | B/Red | B/Yel | B/Blue | See Comments | 1, 4 |
| M40BAAC-2 | 35 | 120 (50/60) | None | 90 or 160 | 34 or 60 | 2 SPDT | NOTE 5 | MMR-400 | MMC-90 | Req. | Not Req. | @ | 1 | 3 | 2 | | | Red | Yel | Blue | B/Red | B/Yel | B/Blue | See Comments | 1, 4 |
| M40BAC-2 | 35 | 24 (50/60) | None | 90 or 160 | 34 or 60 | 0 | NOTE 5 | MMR-400 | MMC-90 | Not Req. | Not Req. | @ | 7 | 1 | 3 | 2 | | Red | Yel | Blue | B/Red | B/Yel | B/Blue | See Comments | 1, 4 |
| M40BGC-2 | 35 | 24 (50/60) | None | 90 or 160 | 34 or 60 | 2 SPDT | NOTE 5 | MMR-400-002 | MMC-90 | Not Req. | Not Req. | @ | 7 | 1 | 3 | 2 | | Red | Yel | Blue | B/Red | B/Yel | B/Blue | See Comments | 1, 2, 3, 4 |
| M110AGA-1 | 25 | 24 (50/60) | N.C. | 45 to 270 | 60 / 160° | 0 | SPDT | MMR-500 | MMC-468 | Not Req. | Not Req. | T1 | T2 | 1 | 3 | 2 | | Red | Yel | Blue | | | | Functional | 1, 4 |
| M110AGB-1 | 25 | 24 (50/60) | N.C. | 45 to 270 | 60 / 160° | 1 SPDT | SPDT | MMR-500-002 | MMC-468 | Not Req. | Not Req. | T1 | T2 | 1 | 3 | 2 | | Red | Yel | Blue | | | | Functional | 1, 2, 3, 4 |
| M110AAB-1 | 25 | 120 (50/60) | N.C. | 45 to 270 | 60 / 160° | 1 SPDT | SPDT | MMR-500-002 | MMC-468 | Req. | Not Req. | @ | 1 | 3 | 2 | | | Red | Yel | Blue | | | | Functional | 1, 2, 3, 4 |
| M130AGA-1 | 50 | 24 (50/60) | N.C. | 45 to 270 | 60 / 160° | 0 | SPDT | MMR-500 | MMC-468 | Not Req. | Not Req. | T1 | T2 | 1 | 3 | 2 | | Red | Yel | Blue | | | | Functional | 1, 4 |
| M130AGB-1 | 50 | 24 (50/60) | N.C. | 45 to 270 | 60 / 160° | 1 SPDT | SPDT | MMR-500-002 | MMC-468 | Req. | Not Req. | T1 | T2 | 1 | 3 | 2 | | Red | Yel | Blue | | | | Functional | 1, 2, 3, 4 |
| M130AAB-1 | 50 | 120 (50/60) | N.C. | 45 to 270 | 60 / 160° | 1 SPDT | SPDT | MMR-500-002 | MMC-468 | Req. | Not Req. | @ | 1 | 3 | 2 | | | Red | Yel | Blue | | | | Functional | 1, 2, 3, 4 |
| M120AAA-1 | 35 | 120 (50/60) | None | 45 to 270 | 60 / 160° | 0 | SPDT | MMR-400 | MMC-468 | Req. | Not Req. | @ | 1 | 3 | 2 | | | Red | Yel | Blue | B/Red | B/Yel | B/Blue | Functional | 1, 4 |
| M120AAC-1 | 35 | 120 (50/60) | None | 45 to 270 | 60 / 160° | 2 SPDT | SPDT | MMR-400-002 | MMC-468 | Req. | Not Req. | @ | 1 | 3 | 2 | | | Red | Yel | Blue | B/Red | B/Yel | B/Blue | Functional | 1, 2, 3, 4 |
| M120AAB-1 | 35 | 24 (50/60) | None | 45 to 270 | 60 / 160° | 0 | SPDT | MMR-400 | MMC-468 | Req. | Not Req. | @ | 1 | 3 | 2 | | | Red | Yel | Blue | | | | Functional | 1, 4 |
| M140AAA-1 | 75 | 120 (50/60) | None | 45 to 270 | 60 / 160° | 0 | SPDT | MMR-400 | MMC-468 | Req. | Not Req. | @ | 1 | 3 | 2 | | | Red | Yel | Blue | | | | Functional | 1, 4 |
| M140AAB-1 | 75 | 24 (50/60) | None | 45 to 270 | 60 / 160° | 0 | SPDT | MMR-400 | MMC-468 | Not Req. | Not Req. | T1 | T2 | 1 | 3 | 2 | | Red | Yel | Blue | | | | Functional | 1, 4 |
| M150AGA-1 | 150 | 24 (50/60) | None | 45 to 270 | 60 / 160° | 0 | SPDT | MMR-400 | MMC-468 | Not Req. | Not Req. | T1 | T2 | 1 | 3 | 2 | | Red | Yel | Blue | | | | Functional | 1, 4 |
| M150AGB-1 | 150 | 24 (50/60) | None | 45 to 270 | 60 / 160° | 1 SPDT | SPDT | MMR-400-002 | MMC-468 | Not Req. | Not Req. | T1 | T2 | 1 | 3 | 2 | | Red | Yel | Blue | | | | Functional | 1, 2, 3, 4 |
| M110GA-1 | 25 | 24 (50/60) | N.C. | 65 to 270 | 60 / 160° | 0 | 135 Ω ONLY | MMR-500 | MMC-90 | Not Req. | Not Req. | T1 | T2 | 8 | | | | Red | Yel | Blue | | | | See Comments | 1, 4 |
| M130GA-1 | 50 | 24 (50/60) | N.C. | 65 to 270 | 60 / 160° | 0 | NOTE 5 | MMR-500 | MMC-90 | Not Req. | Not Req. | T1 | T2 | 8 | | | | Red | Yel | Blue | | | | See Comments | 1, 2, 3, 4 |
| M110GB-1 | 25 | 24 (50/60) | N.C. | 65 to 270 | 60 / 160° | 1 SPDT | NOTE 5 | MMR-500-002 | MMC-90 | Not Req. | Not Req. | T1 | T2 | 8 | | | | Red | Yel | Blue | | | | See Comments | 1, 4 |
| M120AA-1 | 35 | 120 (50/60) | None | 65 to 270 | 60 / 160° | 0 | 135 Ω ONLY | MMR-400 | MMC-90 | Req. | Not Req. | @ | 8 | | | | | Red | Yel | Blue | B/Red | B/Yel | B/Blue | See Comments | 1, 2, 3, 4 |
| M120JAC-1 | 35 | 120 (50/60) | None | 65 to 270 | 60 / 160° | 2 SPDT | 135 Ω ONLY | MMR-400-002 | MMC-90 | Req. | Not Req. | @ | 8 | | | | | Red | Yel | Blue | B/Red | B/Yel | B/Blue | See Comments | 1, 2, 3, 4 |
| M120JAB-1 | 35 | 24 (50/60) | None | 65 to 270 | 60 / 160° | 0 | 135 Ω ONLY | MMR-400 | MMC-90 | Not Req. | Not Req. | T1 | T2 | 8 | | | | Red | Yel | Blue | | | | See Comments | 1, 4 |
| M140GA-1 | 75 | 120 (50/60) | None | 65 to 270 | 60 / 160° | 0 | NOTE 5 | MMR-400 | MMC-90 | Not Req. | Not Req. | T1 | T2 | 8 | | | | Red | Yel | Blue | | | | See Comments | 1, 4 |
| M140GB-1 | 75 | 24 (50/60) | None | 65 to 270 | 60 / 160° | 0 | NOTE 5 | MMR-400 | MMC-90 | Not Req. | Not Req. | T1 | T2 | 8 | | | | Red | Yel | Blue | | | | See Comments | 1, 4 |
| M150GA-1 | 150 | 24 (50/60) | None | 65 to 270 | 60 / 160° | 0 | 0 to 24 VDC or mA with Adj. | MMR-400-002 | MMC-90 | Not Req. | Not Req. | T1 | T2 | 8 | | | | Red | Yel | Blue | B/Red | B/Yel | B/Blue | See Comments | 1, 2, 3, 4 |
| M150GB-1 | 150 | 24 (50/60) | None | 65 to 270 | 60 / 160° | 1 SPDT | 0 to 24 VDC or mA with Adj. | MMR-400-002 | MMC-90 | Not Req. | Not Req. | T1 | T2 | 8 | | | | Red | Yel | Blue | B/Red | B/Yel | B/Blue | See Comments | 1, 2, 3, 4 |
| M110GGA-1 | 25 | 24 (50/60) | N.C. | 65 to 270 | 60 / 160° | 0 | 0 to 24 VDC or mA with Adj. | MMR-500 | MMC-8000 | Not Req. | Not Req. | T1 | T2 | 8 | | | | Red | Yel | Blue | | | | See Comments | 1, 4, 6 |
| M130GGA-1 | 50 | 24 (50/60) | N.C. | 65 to 270 | 60 / 160° | 0 | Start 25 to 22 and Adj. Span | MMR-500 | MMC-8000 | Not Req. | Not Req. | T1 | T2 | 8 | | | | Red | Yel | Blue | | | | See Comments | 1, 4, 6 |
| M120GGA-1 | 35 | 24 (50/60) | None | 65 to 270 | 60 / 160° | 0 | Start 25 to 22 and Adj. Span | MMR-400 | MMC-8000 | Not Req. | Not Req. | T1 | T2 | 8 | | | | Red | Yel | Blue | | | | See Comments | 1, 4, 6 |
| M140GGA-1 | 75 | 24 (50/60) | None | 65 to 270 | 60 / 160° | 0 | 2 to 10.18 | MMR-400 | MMC-8000 | Not Req. | Not Req. | T1 | T2 | 8 | | | | Red | Yel | Blue | | | | See Comments | 1, 4, 6 |
| M150GGA-1 | 150 | 24 (50/60) | None | 65 to 270 | 60 / 160° | 0 | 2 to 10.18 | MMR-400 | MMC-8000 | Not Req. | Not Req. | T1 | T2 | 8 | | | | Red | Yel | Blue | | | | See Comments | 1, 4, 6 |

NOTES:
 @ Attach AM-231 transformer leads as follows: Brown leads to TR1 and IR2 of actuator and appropriate two leads to power source, Black = common, White = 120 VAC, Red/Yellow = 208 VAC and Orange = 240 VAC.
 1. Set actuator stroke to match the actuator being replaced. Check the closed position of the actuator shaft. Adjust damper linkage as required.
 2. Adjust the auxiliary switch(es) to match the differential and switch point of the actuator being replaced.
 3. Replacement actuator auxiliary switches have 2" or 10" differential. If adjustable differential is required order AM-242 separately.
 4. The replacement actuator mounts the same but is larger. The stroke of replacement actuator is limited to 160° maximum, which means when used with Johnson Y20EBD linkages and valves that the maximum valve lift is limited to 3/4".
 The replacement actuator can be used with the existing valve linkage and the following valves: V90AA series 1-1/2" to 4"; V90AD series 1-1/2" to 2-1/2"; V90DB series 1-1/2" to 3" and V90DB series 1-1/2" to 2-1/2" (See Page 6)
 5. The replacement actuator can only replace 135Ω slidewire applications.
 6. Can not be used if there is a master and slave arrangement. Can only be used for replacement when a single actuator is being controlled.

Mounting to Johnson Y20EBD Valve Linkages (See Figures 7 thru 10):

A Barber-Colman modular motor can be mounted to Johnson Y20EBD valve linkage by using mounting bracket, two (2) #8-32 x 7/16" panhead screws with integral lock washers and four (4) 1/4"-20 x 7/8" hexhead screws, lockwashers and nuts.

The following step by step instructions define the procedure for removal of Johnson M100 Series Motors from Y20 linkage on 2-Way and 3-Way Globe Valves and replacement with the appropriate Barber-Colman Modular Motor.

TABLE 4. JOHNSON VALVE AND LINKAGE CROSS REFERENCE

Use the following table to confirm that the MM motor selected can be used on the Johnson valve in the system.

| Descriptive Data of Valve Body Being Replaced | | | | | Valve Linkage / Required Actuator | | | |
|---|--------|------|---------------|---------------|--|----------------------|----------------------|----------------------|
| Part Number | Size | Cv | Dimension "A" | Dimension "B" | Y20EBD-1/ All MMR | Y20EBD-2/ MMR-400 | Y20EBD-3/ MMR-400 | Y20EBD-5/ All MMR |
| | | | | | Maximum Close-Off Pressure For Water (PSI) | | | |
| 2-Way; Stem Down to Close, 250 PSIG Static for 1/2" to 1" and 125 PSIG for 1-1/2" & 2", Equal Percentage Characteristics, Screwed Ends FNPT | | | | | | | | |
| V90AD-1 | 1/2" | 1.2 | 3-3/8" | — | 266 | 345 | 345 | 136 |
| V90AD-2 | 1/2" | 2.2 | 3-3/8" | — | 266 | 345 | 345 | 136 |
| V90AD-3 | 1/2" | 4.4 | 3-3/8" | — | 266 | 345 | 345 | 136 |
| V90AD-4 | 3/4" | 8.6 | 3-5/8" | — | 107 | 221 | 345 | 55 |
| V90AD-5 | 1" | 13.9 | 4-7/8" | — | 73 | 151 | 277 | 37 |
| V90AA-25 | 1-1/2" | 20.0 | 4-7/8" | — | 45 | 91 | 165 | 25 |
| V90AA-26 | 2" | 26.0 | 5-1/8" | — | 31 | 63 | 115 | 17 |
| 2-Way; Stem Down to Close, 125 PSIG Static, Equal Percentage Flow Characteristics, 125 LB. Flanged | | | | | | | | |
| V90AA-7 | 2-1/2" | 51.0 | 7-1/4" | — | 20 | — | 74 | Do Not Use |
| 3-Way Mixing; 250 PSIG Static for 1/2" to 1" and 125 PSIG for 1-1/2" & 2", Screwed Ends FNPT | | | | | | | | |
| V90DD-1 | 1/2" | 1.2 | 3-3/8" | 2-3/16" | 25 | 25 | 25 | 25 |
| V90DD-2 | 1/2" | 2.2 | 3-3/8" | 2-3/16" | 25 | 25 | 25 | 25 |
| V90DD-3 | 1/2" | 4.4 | 3-3/8" | 2-3/16" | 25 | 25 | 25 | 25 |
| V90DD-4 | 3/4" | 8.6 | 3-5/8" | 2-3/16" | 25 | 25 | 25 | 25 |
| V90DD-5 | 1" | 13.9 | 4-7/8" | 2-5/8" | 25 | 25 | 25 | 25 |
| V90DB-19 | 1-1/2" | 21.0 | 4-7/8" | 4-1/4" | 25 | 25 | 25 | 25 |
| V90DB-20 | 2" | 30.0 | 5-1/8" | 4-7/16" | 25 | 25 | 25 | 25 |
| 3-Way Mixing; 125 PSIG Static, 125 Flanged Ends | | | | | | | | |
| V90DB-7 | 2-1/2" | 54.0 | 7-1/4" | 6-13/16" | 25 | — | 25 | Do Not Use |
| 3-Way Diverting; 150 PSIG Static, Union End on Side Ports (FNPT) and Screwed (FNPT) on Bottom Port | | | | | | | | |
| V90CA-1 | 1/2" | 5.5 | 4-7/8" | 2" | 50 | 75 | 100 | 27 |
| V90CA-2 | 3/4" | 9.0 | 5-1/4" | 2-3/16" | 50 | 75 | 100 | 27 |
| V90CA-3 | 1" | 18.0 | 5-1/2" | 2-5/16" | 50 | 75 | 100 | 27 |
| V90CA-4 | 1-1/4" | 27.0 | 6-3/4" | 2-5/8" | 50 | 75 | 100 | 27 |
| V90CA-5 | 1-1/2" | 32.0 | 7-7/16" | 3-1/8" | 50 | 75 | 100 | 27 |
| V90CA-6 | 2" | 50.0 | 8-7/16" | 3-3/16" | 50 | 75 | 100 | 27 |
| 3-Way Diverting; 125 PSIG Static, 125 Flanged Ends | | | | | | | | |
| V90CA-7 | 2-1/2" | 75.0 | 9" | 7-1/16" | 50 | 60 | 75 | Do Not Use |
| V90CA-8 | 3" | 95.0 | 10" | 7-15/16" | 50 | 60 | 75 | Do Not Use |

Dimension "A" = The face to face dimension on the valve.

Dimension "B" = The dimension from the centerline of the pipe to the bottom of the lower ("B") port.

REMOVING JOHNSON MOTOR

1. Disconnect power.
2. Remove top cover of motor.
3. Label leads by terminal designation (Eg. R, W, B, TR1, TR2 etc.) and remove wiring from switch. Be sure and include wire for auxiliary switches or devices.
4. Remove any auxiliary equipment attached to the auxiliary end or motor housing.
5. Remove conduit connection.
6. Remove the 4 (four) 1/4" yoke mounting bolts holding motor to mounting yoke.
7. Remove 2 (two) gear housing screws so gear housing can be removed from motor and gear housing then from rack.
8. Remove gear cover by loosening the two gear cover screws, do not remove screws, rotate cover and remove gear.

INSTALLING BARBER-COLMAN MM MODULAR MOTOR

1. Select the appropriate modular motor, plug-in control module and accessories

NOTE

Mechanical travel on motor is factory set at 160° and no field adjustment is required. The MMC-468 requires no adjustment. The MMC-90 and MMC-8000 cards should be set at 160° travel. Connect appropriate colored wire leads to tabs.

2. Select "Load" end of modular motor (See Figures 5 & 6).
3. Take the mounting bracket (See Figure 10) and mount the Johnson gear housing on the formed side of the mounting bracket. Do Not Tighten.

NOTE

Make sure gear housing rack opening is in the same location as on the original installation and rack is inserted into gear housing.

4. Place "Normally Closed-CCW" end of spring return motor or "Load" end of non- spring return motor so shaft goes through gear housing hole.
5. Pull rack attached to valve stem all the way up. Then slowly push rack down with square end of drive gear lined up with motor shaft. Press gear on to shaft.(see Figure 9)

NOTE

This should occur before rack has moved the distance of 1 (one) tooth on the rack; if not, realign the square hole of gear on motor shaft.

6. Bolt the motor down by loosely putting all 4 (four) 1/4" bolts through base of motor and mounting yoke.
7. Tighten the two screws holding the gear housing assembly, replace gear cover plate and tighten the 2 (two) gear cover screws (See Figures 7 or 8).
8. *With a slight force applied to gear housing, make sure motor assembly is back away from rack gear.*
9. Tighten all 4 (four) 1/4" bolts in motor at base yoke.
10. Reconnect appropriate control and power wiring.(See Table 3 - Wiring Termination).

NOTE

On MMC-90 and MMC-8000 cards the travel adjustment should be made according to the GI sheets for these cards.

11. On three way valves, the new motor must be rotated 15° from the shipped position (CW on MM-400 or MM-500) for proper spring compression on the valve stem.
12. Checkout:
 - a. Motor should run freely through complete stroke.
 - b. Linkage should operate without binding.
 - c. Valve must close off tightly at bottom of stroke for 2- Way applications (both ends of stroke on 3-Way application). If not achieving full travel or close-off with MMC-90 card recheck travel adjust potentiometer

NOTE

Check plunger compression. The length of the valve stem should be adjusted so that the valve disc seats before the motor reaches the end of the closing stroke. Balance of motor travel is taken up in linkage spring compression and should be approximately 1/10" (2.5 mm). This provides pressure on the disc in closed position and also compensates for disc and seat wear. Three-way valve spring compression must be provided on both upper and lower seats.

13. Replace cover on modular motor.

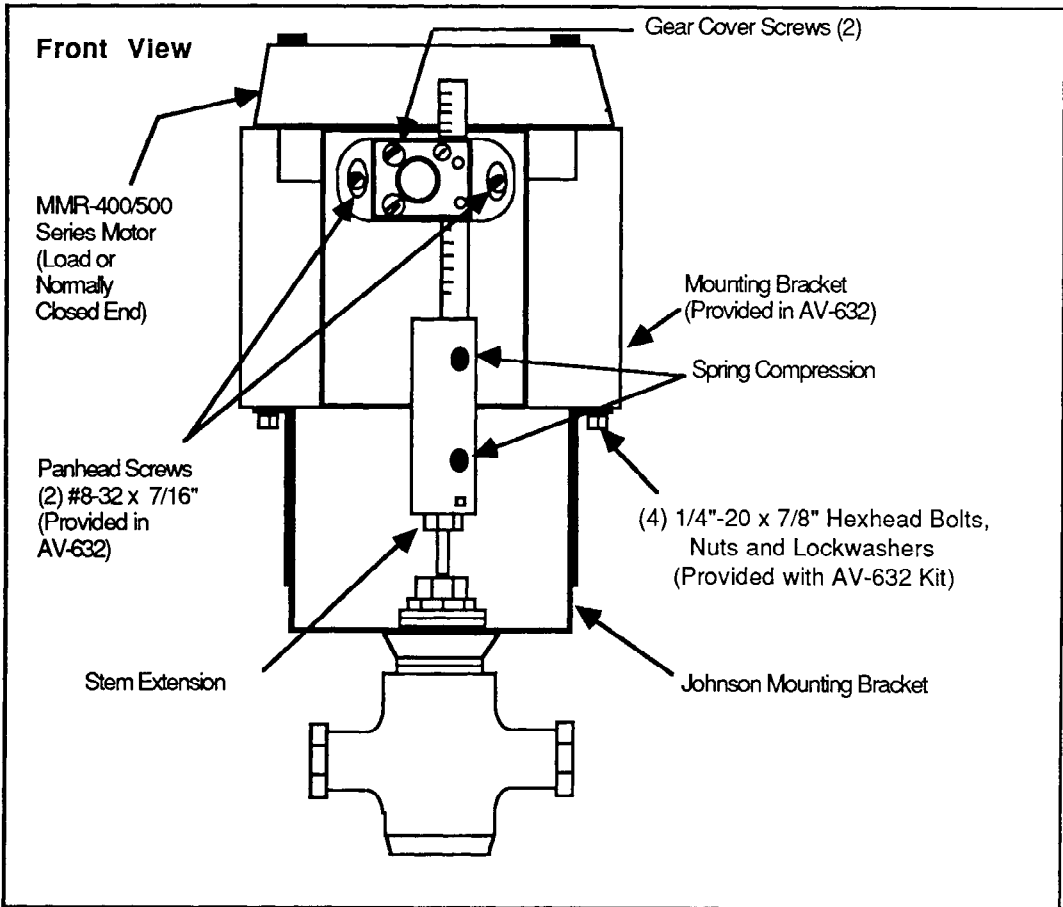


Figure 7. Johnson Valve Linkage CCW Stem Up

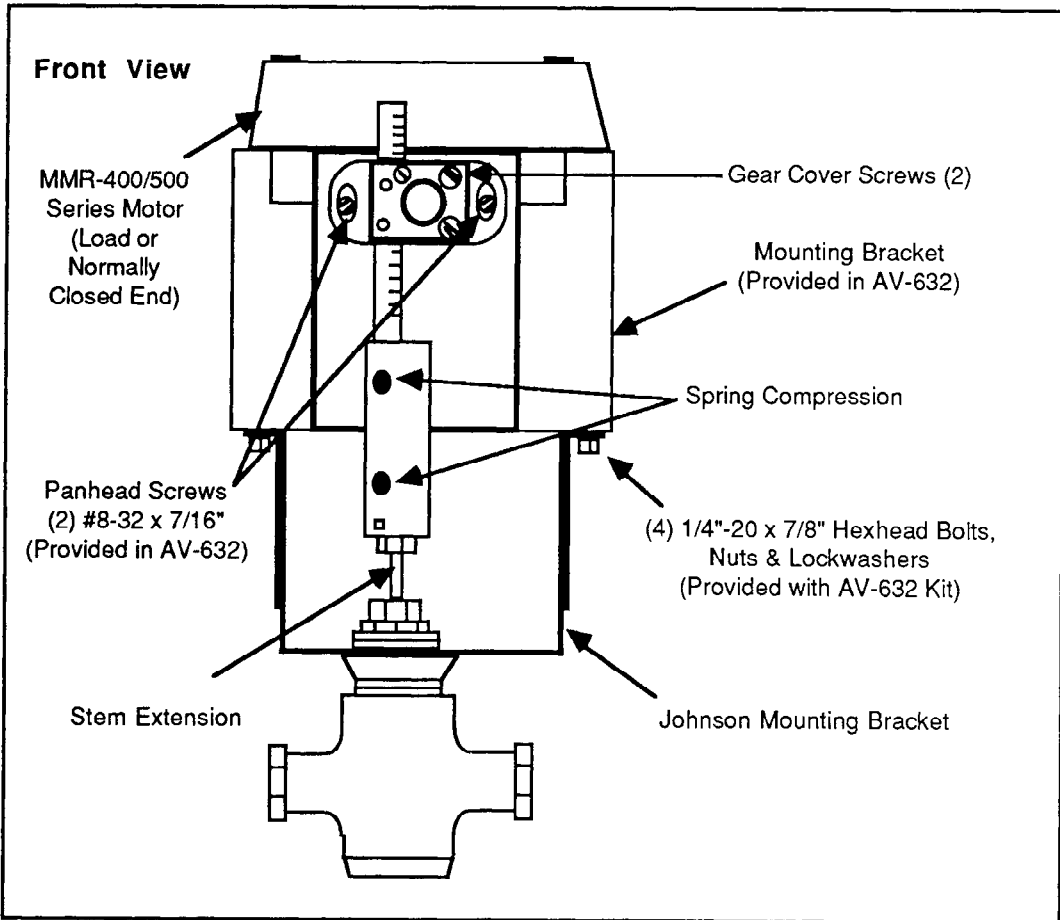


Figure 8. Johnson Valve Linkage CCW Stem Down

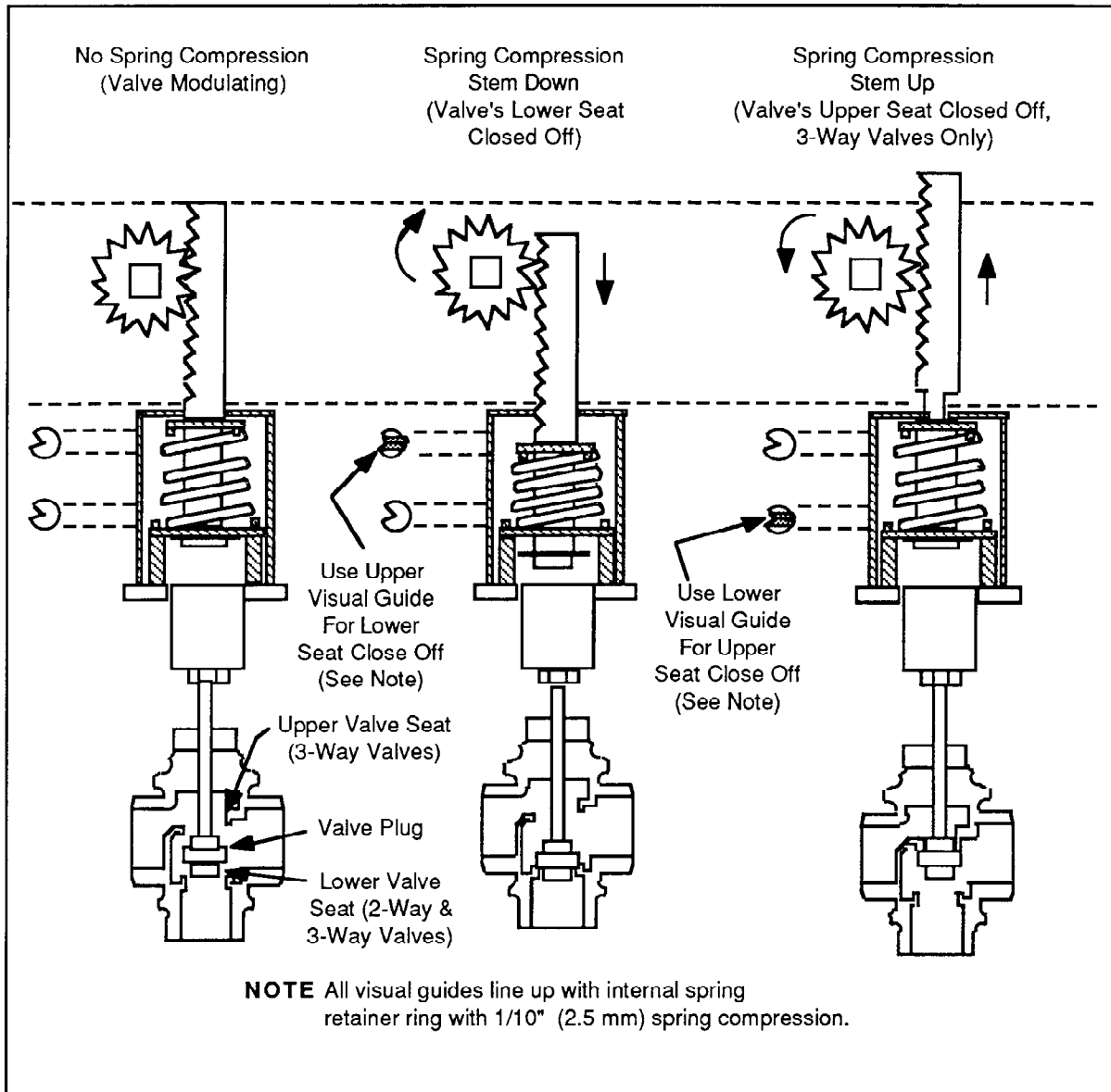


Figure 9. Operation of the Y20EBD Valve Linkage
(CW - Stem Down, CCW - Stem Up)

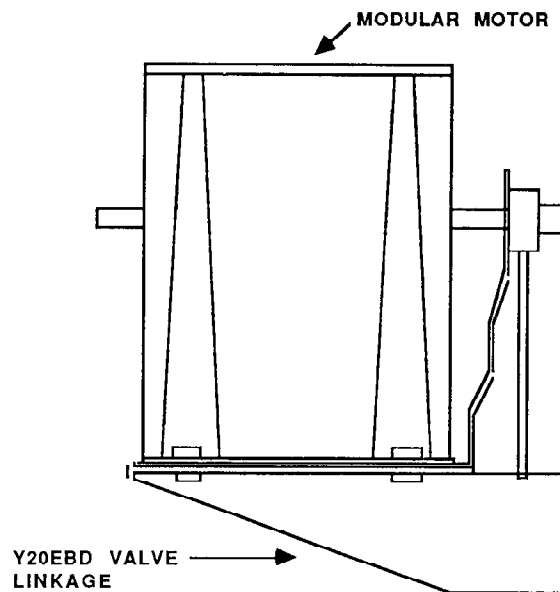


FIGURE 10. MOUNTING MMR TO JOHNSON Y20EBD VALVE LINKAGE

CHECKOUT

After the entire system has been installed, the following check for proper operation can be made:

- 1 Be sure that the system power is connected and ON.
- 2 Be sure control (manual or automatic) is operating the modular motor properly per system requirements.
- 3 Check action of (optional) internal and external auxiliary switches.
- 4 Be sure there is no binding of the linkage at any point in the stroke.
- 5 If the motor fails to run, check the field wiring to insure proper voltage supply.

MAINTENANCE

Regular maintenance of the total system is recommended to assure sustained optimum performance.

FIELD REPAIR

None. Replace with a functional unit.

Barber-Colman Company
ENVIRONMENTAL CONTROLS DIVISION

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