CHANCE

Installation, Operation and Maintenance Manual

Motor Operator

for Torsional Overhead Distribution Switch

HUBBELL® CHANCE®

POWER SYSTEMS, INC.

IMPORTANT!

For future reference:

- Keep this manual with the motor operator.
- Store it inside the plastic bag and information holder located on the right hand wall of the enclosure.

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Rev. B

Warnings

⚠ DANGER

Electrical equipment contains hazardous voltages and high speed moving parts. Contact with these hazards will cause death, serious personal injury or damage equipment.

Only qualified personnel should perform maintenance. Always properly ground equipment and lock out electric power (de-energize) before maintenance. Using non-specified/ unauthorized parts or components to repair equipment, or tampering with safety devices/systems will result in dangerous conditions which can cause death, severe personal injury or damage to equipment. Take note of and follow all safety instructions contained in this installation, operation and maintenance manual.

IMPORTANT

These installation, operation and maintenance instructions do not claim to cover all details or variations in equipment. Nor do they provide for all possible conditions encountered while installing, operating or maintaining this equipment. If further information is desired or needed to address any particular installation, operation or maintenance problem not covered in this document, contact your authorized factory representative.

The information in this document does not relieve the user from exercising good judgment in selecting equipment for suitability of application. Nor does it relieve the user from using sound practices in installation, operation and maintenance of the equipment purchased.

Note: Because A.B. Chance Company has a policy of continuous product improvement, we reserve the right to change design and specifications without notice. Should a conflict arise between the general information in this document and the contents of drawings or supplementary material, or both, the latter shall take precedence.

QUALIFIED PERSON

For the purpose of this manual, a qualified person is:

(a) **familiar with the installation, construction or operation** of the subject equipment and the hazards involved with its installation, operation and maintenance.

(b) **trained and authorized** to de-energize, clear, ground, and tag circuits and equipment in accordance with established safety practices.

(c) **trained** in the proper care and use of protective equipment such as rubber gloves, hard hat, safety glasses or face shields, flash clothing, etc., in accordance with established utility safety practices.

(d) **trained** to render first aid.

SUMMARY

The information in this document does not claim to cover all details or variations in equipment, nor to provide for every possible contingency encountered with installation, operation, or maintenance. Should further information be needed or problems arise that are not covered sufficiently, contact your factory representative.

The contents of this document are not part of, nor do they modify, any prior or existing agreement, commitment or relationship. The A.B. Chance Company terms and conditions of sale constitute the entire obligation of A.B. Chance Company. The warranty in the terms and conditions of sale is the sole warranty of A.B. Chance Company. Any statements in this document do not create new warranties or modify any existing warranty.

Contents

IMPORTANT!

For future reference:

- Keep this manual with the motor operator.
- Store it inside the plastic bag and information holder located on the right hand wall of the enclosure.

Tables, Figures & Photographs **Page Number**

1—Overview

Introduction

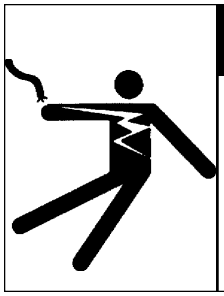
This manual is to guide you through the installation of the motor operator for a torsional overhead distribution switch. This manual does not claim to cover all situations that may arise during installation. If additional information is needed, contract your factory representative. Nor does this manual supersede your utility's established guidelines and practices for similar equipment. Take note of and heed all danger, warning and cautions contained in this document.

Qualified Person

Only qualified trained and competent personnel that understand proper safety procedures must select, install and service this equipment.

Read and understand these instructions before installing, operating or maintaining this equipment.

This guide is not a substitute for adequate training and experience in safety procedures for this type of equipment.



⚠ DANGER

Hazardous voltage.

Will cause severe personal injury, death, or property damage.

Only qualified personnel should work on or around this equipment after becoming thoroughly familiar with this document and other publications regarding this equipment.

⚠ WARNING

Fast moving parts can be hazardous.

Contact can result in death, severe personal injury and/or substantial property damage.

The motor operator cycles in less than ½ second. Exercise extreme caution when operating this device. Be sure you and others are clear of any moving parts. Do not attempt to defeat any interlocking safety devices.

Signal Words

The signal words "DANGER," "WARNING" and "CAUTION" (along with their assigned symbol) throughout this manual indicate the degree of hazard the user may encounter. These symbols and words are defined as:

⚠ DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

CAUTION

Used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

Product

The product covered by this installation, operations and maintenance manual is the motor operator for a torsional overhead distribution switch.

Thsi product is designed for an overhead torsional distribution switch only. It cannot be field modified for reciprocal overhead distribution switch. If the overhead distribution switch is reciprocal, do not attempt to install this product. Contact your supervisor or factory representative to secure the appropriate motor operator.

Function

This product converts a manually-operated torsional overhead distribution switch to motor-operated. The motor operator uses an electric motor and drive mechaninism to open and close the overhead distribution switch.

1—Overview

Application/Mounting

The motor operator for a torsional overhead distribution switch is designed for mounting on wooden utility poles. If the utility pole is steel or concrete, mounting may be accomplished if holes can made in the pole or by using brackets. Contact your factory representative for details on mounting the motor operator on steel or concrete utility poles.

NOTE: In areas accessible to the general public, this motor operator should be installed with a minimum vertical height of 8 feet (2.4 meters) from the ground to the bottom of the enclosure. If this minimum height cannot be achieved, use shields, guards, enclosures or fencing to isolate the motor operator from the general public.

Operating Environment

The motor operator for a torsional overhead switch is designed for outdoor installation and can be mounted in direct sunlight in ambient temperatures between -40°C and +60°C.

Specifications

Electrical

- Input: 115VAC-5 amp, or 230VAC-4 amp
- Output: 12VDC-3 amp or 27.8VDC-1 amp, continuous

Mechanical

- Torque: 6000 in·lbs (678 N·m)
- 90° rotation speed: 0.3 second min., 0.5 second max.
- Life: a minimum of 1000 open/close operations
- Couples with 1 inch to 1.9 inch (25 - 48 mm) OD control pipe

Physical

Weight:	260 lbs (118 kg)
Dimensions:	Height 38-½ inches (980 mm)
	Width 24 inches (610 mm)
	Depth 19 inches (485 mm)
Enclosure:	NEMA 4/12

2—Installation Notes

For future reference, use this space to make notes specific to this unit's installation, operation and maintenance.

Date Installed:
Model Number:
Serial Number:
RTU:
Protocol
Radio
Sensors

3—Customer Supplied Requirements

The following is required for installation. Be sure to have these items on hand before beginning installation.

Safety Equipment

- Hard hat
- Steel-toe work boots
- Appropriate eye protection per your utility's policy
- Other safety equipment as required by your utility's policies

Hardware

- Two ⅝ inch diameter galvanized bolts long enough to pass through the center of the utility pole, plus 3 inches (75 mm)
- Four galvanized ⅝ inch ID/1-¾ inch OD washers
- Two ⅝ inch inside diameter galvanized nuts to go with the bolts
- Two ⅜ inch diameter by three inch galvanized lag screws
- A spacer or adjustable lock segment assembly, if required (see Step 1 under Installation)

Electrical

- Color-coded conductors for power hook-up per your utility's specifications
- 1-½ inch NPT male conduit fitting
- Service/weather head for conduit
- Sufficient conduit to reach from service/weather head to the conduit fitting the on bottom of the enclosure
- #6 ring or spade terminals
- Suitable grounding source

Electronic

- Correct communications equipment applicable for this installation
- Current/voltage sensors with cables if applicable for this installation
- IBM compatible lap-top computer with appropriate software and cables for this installation

Power Supply

- 115VAC-5 amp or 230VAC-4 amp service
- Appropriate fuse/circuit breaker protection and power disconnect switch with lockout provision
- Other conduit, boxes, fittings, etc. as normally used in similar installations

4—Receiving & Handling

Inspect Packaging

- Upon receipt, immediately inspect packaging for signs of damage
- Start inspection with the packaging material and proceed to the equipment within
- Look for concealed damage
- If damage is found, note damage on “Bill of Lading” prior to accepting delivery, if possible

Note: Documentation of visible shipping damage can determine the outcome of any damage claim. Notifying the carrier of concealed damage within 15 days is essential to resolving or minimizing unsettled claims. Immediately file your claim and notify your factory representative.

Unpacking

- Place shipping crate up-right on stable, level ground near the utility pole
- Remove the top and all sides from the shipping crate
- Leave motor operator on its pallet until ready to install

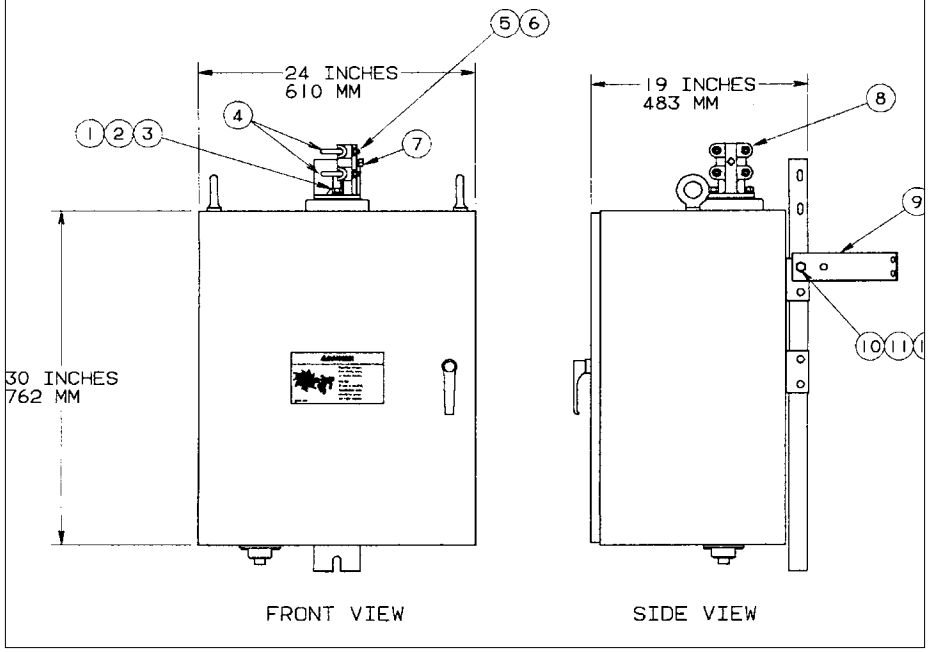
Parts List

- Compare motor operator with the illustration in Figure 1 and the parts list in Table 1 to be sure all items have been included
- Contact your factory representative if any parts are missing

Table 1 – Parts List

Item	Quantity	Description
1	2	½" split lock washer (stainless steel)
2	2	½" - 13 X 1-¼" long bolt (stainless steel)
3	2	½" flat washer
4	2	U-bolt
5	4	⅜" split lock washer
6	4	⅜" Hex nut
7	1	Piercing bolt
8	1	Drive casting
9	2	Pole strap
10	2	½" - 13 galvanized nut
11	2	½" galvanized lock washer
12	2	½" 13 X 1-½" galvanized bolt

Figure 1 – Parts List

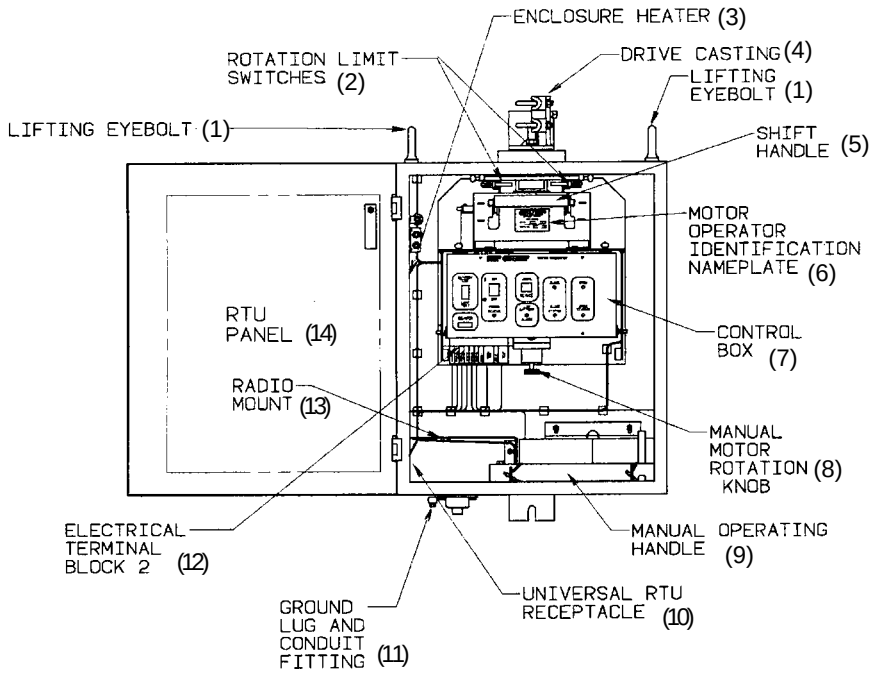


4—Receiving & Handling

Components

- Become familiar with the component names and locations shown in Figure 2
- Open the motor operator door and identify all the items shown in Figure 2
- Match the components in the following list with those on the motor operator:
  1. Lifting eyebolts
  2. Rotation limit switches
  3. Enclosure heater
  4. Drive casting
  5. Shift handle
  6. Motor operator identification nameplate
  7. Control box
  8. Manual motor rotation knob
  9. Manual operating handle
  10. Universal RTU receptacle
  11. Ground lug and conduit fitting
  12. Electrical terminal block 2
  13. Radio Mount (if applicable)
  14. RTU Panel (if applicable)

Figure 2 – Component Location



5—Installation

Preparation

Step 1. — Modify Existing Switch Handle

- Refer to Figures 3a and 3b
- Loosen and reposition ground strap clamp so it is out of the way
- Establish how high the bottom of the enclosure will be above the ground
- Cut off the control pipe a minimum of 34 inches (864 mm) higher than where the enclosure's bottom will be
- Remove the existing manual switch handle/lock assembly (see Figure 3a) and remount it upside down (see Figure 3b)

NOTE: Drill the mounting hole for the lock segment through the centerline of both the control rod and the pole. This hole must be perpendicular to both the centerline of the control rod and the pole to prevent binding between the control pipe and the lock segment when the motor operator is attached.

- Adjust the end of the control pipe so its center axis is 6-½ inches (165 mm) from the face of the utility pole (see Figure 3b). Use a spacer or adjustable lock segment assembly if required.

⚠ WARNING

External rods can move suddenly and unexpectedly.

This can pose a danger to the general public.

In areas accessible to the general public, this motor operator should be installed with a minimum vertical height of 8 feet from the ground to the bottom of the enclosure. If this minimum height cannot be achieved, use shields, guards, enclosures or fencing to isolate the motor operator from the general public.

Figure 3a – Switch Handle *Before* Modification

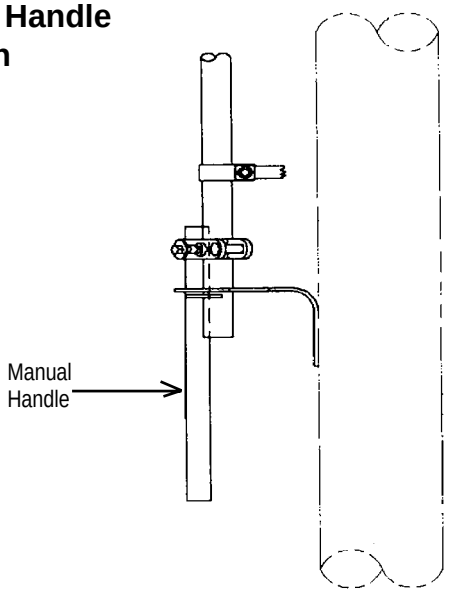
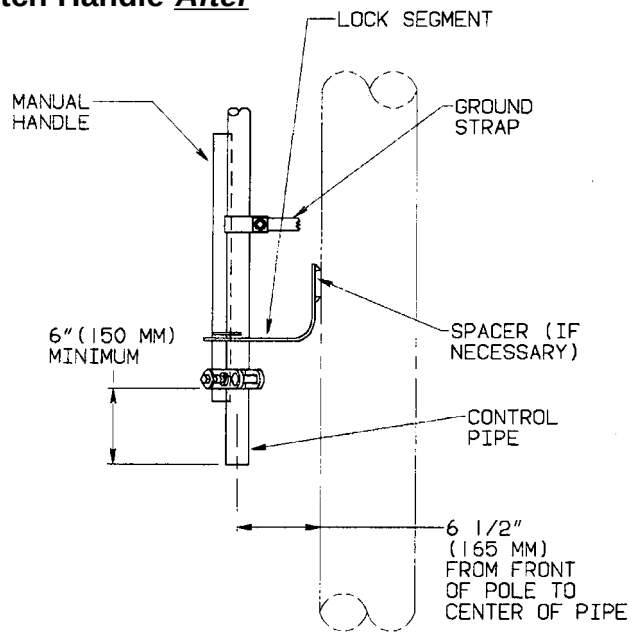


Figure 3b – Switch Handle *After* Modification



5—Installation

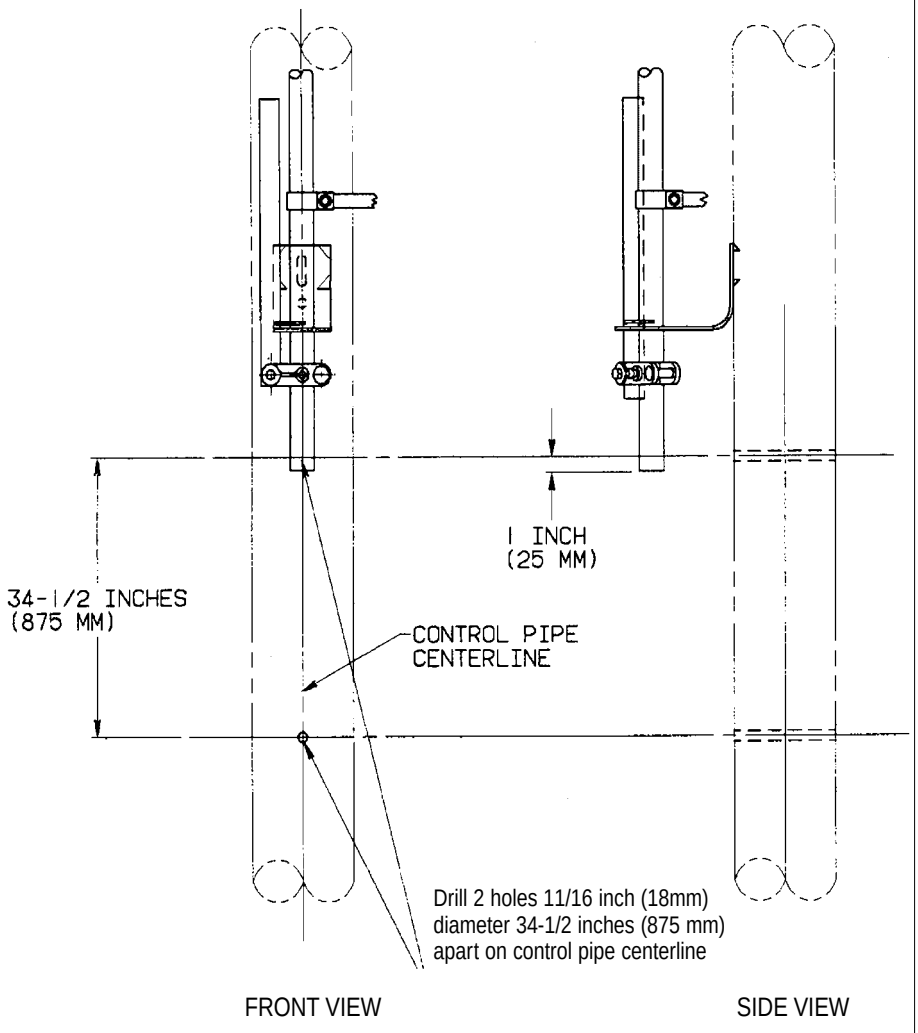
Step 2. — Drill Mounting Holes

- Refer to Figure 4
- Mark upper hole location on the utility pole by measuring 1 inch (25 mm) up from the bottom of the control pipe.
  Be sure this mark is on the control pipe centerline (see front view, Figure 4).
- Mark the lower hole location on the utility pole 34-½ inches (875 mm) below the first mark. This second mark must also be on the same centerline as the switch control pipe.
- Detach (unbolt) lock segment from the utility pole and swing it out of the way to make room for drilling the utility pole

NOTE: Binding will occur if the motor operator mounting holes and the switch control pipe are not in alignment.

- Drill two 11⁄16 inch (18 mm) diameter holes through the utility pole where marked as shown in Figure 4
- Drill holes from switch control pipe side to minimize alignment problems
- Assemble customer supplied ⅝ inch diameter bolts, washers and nuts to the utility pole
- Leave bolts sticking out of the control pipe side of the utility pole to receive the motor operator

Figure 4 – Mounting Holes In Utility Pole



5—Installation

Mounting

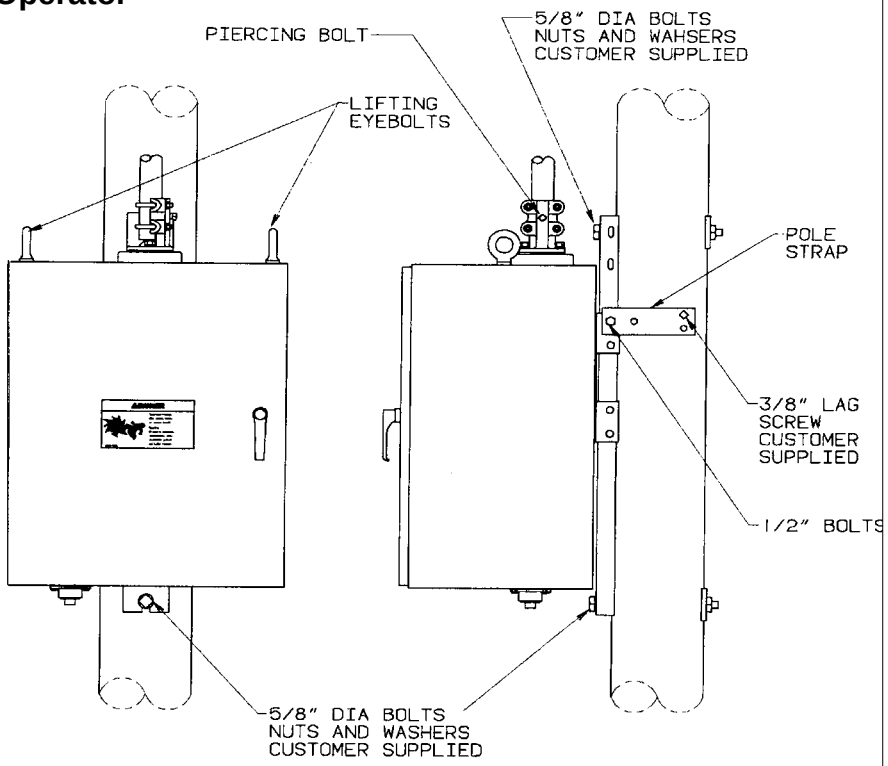
Step 1 — Mounting The Motor Operator

- Refer to Figure 5
- Ready lifting equipment to hoist motor operator

NOTE: Lift motor operator by lifting eyebolts only.

- Attach lifting strap, chain or cable safety hooks/shackles to lifting eyebolts only. Strap, chain or cable and hooks must be able to support 260 lbs (118 kg)
- Use spreader on lifting strap, chain or cable so the motor operator is lifted straight upward on the lifting eyebolts
- Hoist motor operator into position on utility pole. Slip ⅝ inch bolt heads and washers through the upper tear-drop shaped hole and the lower slot in the mounting channel
- Lower motor operator until it is supported by both bolts
- Torque nuts on mounting bolts to 25 - 28 ft·lbs (34 - 38 N·m)
- Assemble pole straps to each side of the motor operator mounting channel where shown in Figure 5 using supplied ½ inch bolts, lock washers and nuts
- Form the pole straps around the utility pole (horizontally or diagonally) and tighten the ½ inch bolts
- Secure pole straps to the utility pole by driving in ⅜ inch diameter lag screws (customer supplied)
- Remove the lifting strap, chain or cable and lifting eyebolts from the motor operator
- Place filler caps or $^3/_4$" bolt & rubber washer (supplied) into threaded eyebolt holes on enclosure
- Reattach/tighten lock segment and control pipe to the utility pole

Figure 5 – Mounting Motor Operator



Step 2. — Setting Overhead Switch Position

- Close the overhead switch completely
- Include the switch manufacturer's specified torsional wrap-up
- Lock the manual switch handle in the closed position
- Reposition ground strap clamp, tighten and reconnect ground wire

Step 3. — Attaching The Switch Control Pipe

NOTE: Do not stand on motor operator enclosure or use it as a step.

- Verify the motor operator and the overhead switch open the same direction refer to Section "Reversing Motor Rotation" if necessary.
- Verify the motor operator is in the closed position before connecting to the closed overhead switch refer to section "Energizing, Exercising and Inspecting" if necessary.
- Loosen drive casting U-bolts and insert the switch control pipe in the drive casting as shown in Figure 5. Tighten U-bolt nuts until switch control pipe is firmly held.
- Tighten drive casting piercing bolt completely into the drive casting so that it is completely seated, with no threads showing

NOTE: Piercing bolt must be tightened completely to assure alignment between switch control pipe and motor operator.

5—Installation

Checking Installation

Step 1. — Checking Installation

NOTE: The motor operator mechanism must not cause the switch control pipe to bind or interfere with the lock segment assembly

- Refer to Figure 6
- Disengage the motor operator's mechanism from the drive casting by pulling the shift handle out and then down into the DECOUPLED position (see Photograph A)
- Rotate switch control pipe using the existing manual switch handle and check for binding
- If binding occurs, look for source of binding and realign motor operator and/or lock segment assembly until manual operation shows no signs of binding
- Place switch control pipe back into closed position with the manual switch handle
- Re-couple the motor operator mechanism by lifting the shift handle up and pushing it in so that the handle tabs are engaged (see Photograph B)
- Remove and discard the old manual switch handle and hardware from the control pipe lock segment assembly (a new manual switch handle is provided with the motor operator)

Figure 6 – Key Components

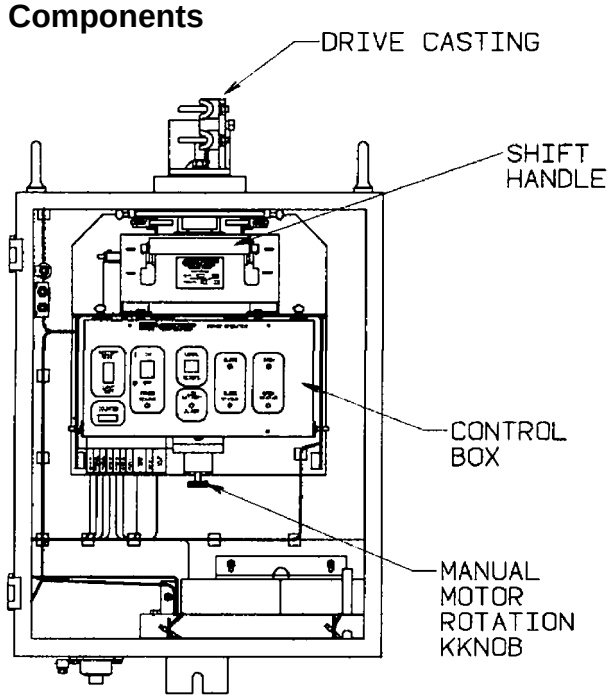


Photo A

Shift handle in DECOUPLED position

Photo B

Shift handle in COUPLED position

6—Wiring

Wiring Guidelines

1. If low voltage and high voltage wires cross paths, make sure the intersection is made at a right angle.

2. To minimize noise coupling, use twisted pair sensor wires.

3. To avoid ground loops, each motor operator must be grounded at a single ground point. The grounding path to earth must:

- Be permanent
- Be continuous
- Safely conduct ground fault currents that may occur in the system to ground through minimum impedance
- Carry no current under normal conditions

Grounding & Surge Suppression

Step 1. — Install Safety Ground

- Use wire gauge and type, and pole ground in accordance with your utility's instructions or specifications
- Ground motor operator by attaching safety ground lead between ground lug (next to the conduit fitting) and pole ground

Step 3. — Install Surge Suppression Devices

- Apply surge suppression devices according to your utility's practices
- Motor operators with the radio option have surge suppression for the radio antenna factory installed
- For other communication devices, surge suppression will be required as applicable.

⚠ WARNING

Hazardous Voltage.

Contact with an energized and/or ungrounded motor operator component will result in death, severe personal injury, erratic operation of equipment or substantial property damage.

Make sure the motor operator is properly grounded. Turn "OFF" and lock out all incoming power sources before attempting to internally wire or work on the motor operator.

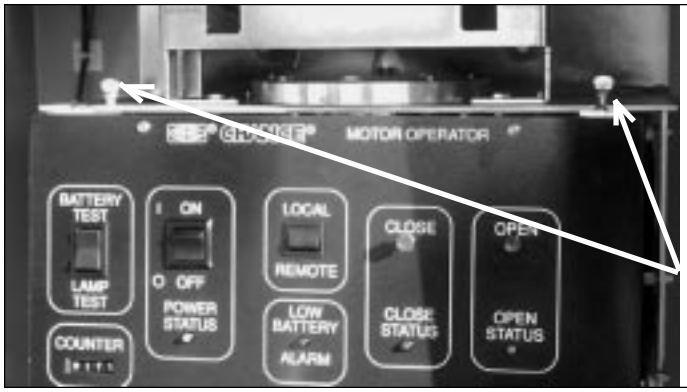


Photo C

Control box thumbscrews

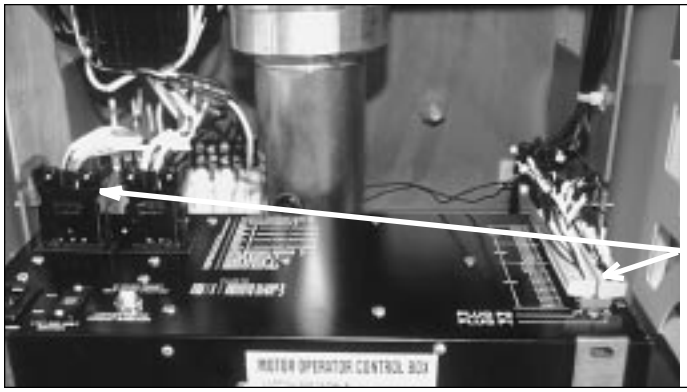


Photo D

Quick disconnect plugs

Power Wiring

Step 1. — Accessing Terminal Block 2

- Open enclosure door and firmly engage door stop mechanism
- Locate and loosen control box thumbscrews (see Photograph C)
- Rotate top of control box downward until it rests on its stops (see Photograph D)
- Note number, size, orientation and location of quick-disconnect plugs for reinstallation
- Unplug quick-disconnect plugs
- Remove control box by lifting and pulling forward until control box clears its mounting slots

6—Wiring

- Set control box in a clean, dry area where it will not fall or be subject to damage
- Locate and loosen terminal block cover retaining screw (see Photograph E)
- Remove terminal block cover and set it aside with the control box

• Step 2. — Preparing Power Wiring.

- Remove the plug from the conduit fitting
- Assemble conduit per your utility's instructions and specifications

NOTE: Enclosure conduit threads are female 1-½ inch NPT

- Run appropriate sized power wiring through the conduit and into the enclosure to terminal block 2

Step 3. — Wiring 115VAC Power Supply

- Refer to Figure 7
- The motor operator is factory-wired for 115VAC power
- Connect 115VAC incoming power with ring or spade terminals as shown in Figure 7
- Replace the terminal cover on terminal block #2 and tighten the screw

Step 3a. — Wiring 230VAC Power Supply

- Refer to Figure 8

NOTE: Move red lead on top of terminal block 2 as shown in Figure 8.

- Move the red wire on top of terminal block 2 from the neutral terminal to the open 115VAC terminal
- Connect 230VAC incoming power with ring or spade terminals as shown in Figure 8
- Replace the terminal cover on terminal block #2 and tighten the cover retaining screw

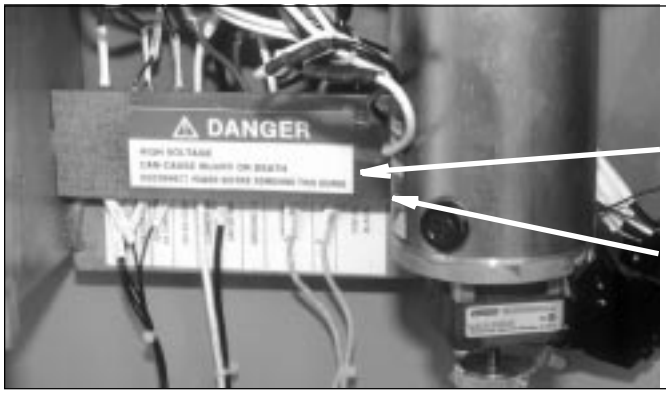


Photo E

Terminal block 2 cover

Terminal block cover retaining screw

Figure 7 – 115VAC Power Connection

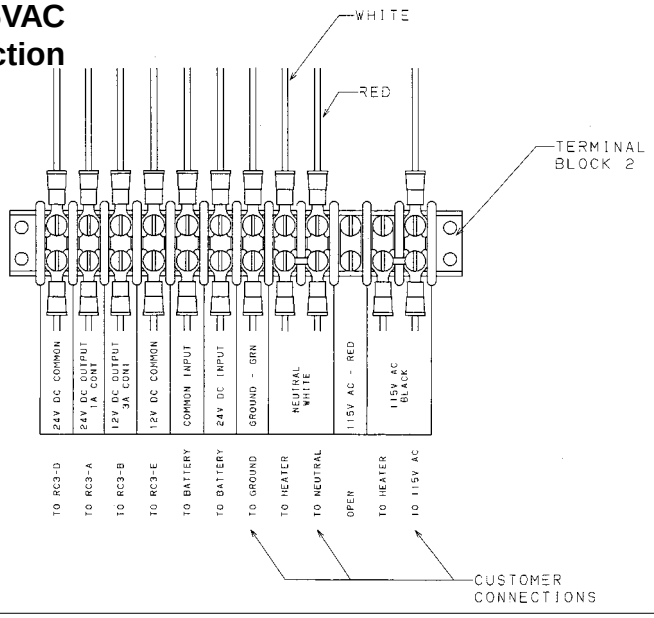
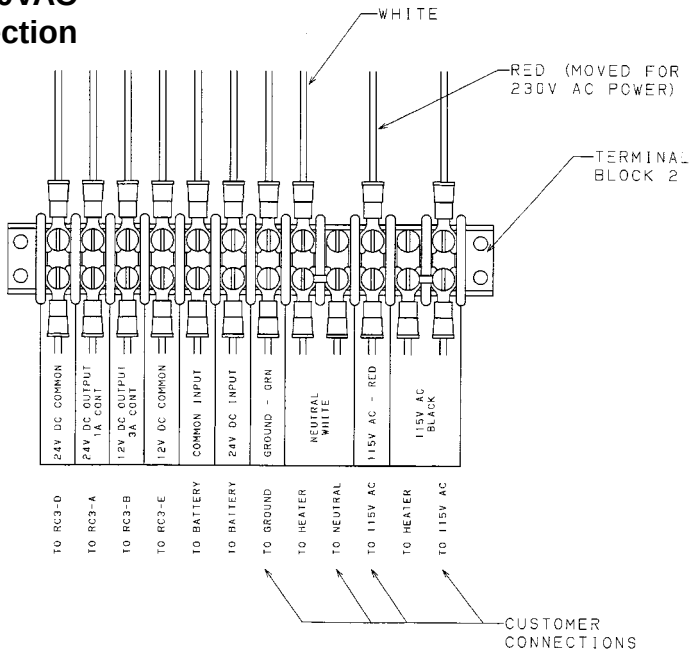


Figure 8 – 230VAC Power Connection



7—Pre-Operation Checks

Energizing

Step 1. — Reassembly Prior To Energizing

- Refer to Photograph F
- Place control box into mounting slots
- Reconnect all of the plugs to the control box

NOTE: Plugs P2A and P2B can be interchanged. See next step for location of these plugs and how to reverse direction of the motor operator.

- Set control box voltage selector switch to match incoming power supply voltage (see Photograph F)
- Turn the circuit breaker on the back of the control box to "ON" position (see Photograph F)
- Rotate control box to the upright position and tighten thumbscrews (see Photograph G)

Reversing Motor Rotation

Step 1. — Reversing Motor Operator Rotation

Note: The motor operator is factory set to open the overhead distribution switch with a clockwise rotation (as viewed from above), and counterclockwise to close. Proceed only if the overhead switch rotates counterclockwise-to-open.

- Skip this procedure if the overhead switch rotates "clockwise-to-open," as viewed from above.
- Refer to Photograph H
- Factory set "clockwise-to-open" has plugs P2A at the back, P2B in the middle and P2C at the front (see Photograph H)
- To reverse the motor operator for "counterclockwise-to-open" operation:

  1) reverse plugs P2A and P2B

  2) Pull apart the two quick disconnect motor lead terminals and reverse the connections (see Photograph I)

- The motor operator will now operate counterclockwise to open and clockwise to close the overhead switch
- Status lights in "counterclockwise-to-open" mode will now indicate proper operation

⚠ CAUTION

Voltage selector switch must be set properly.

Misapplied voltage will result in mis-operation and/or damage equipment

Set voltage selector switch on the back of the control box back to match incoming power voltage.

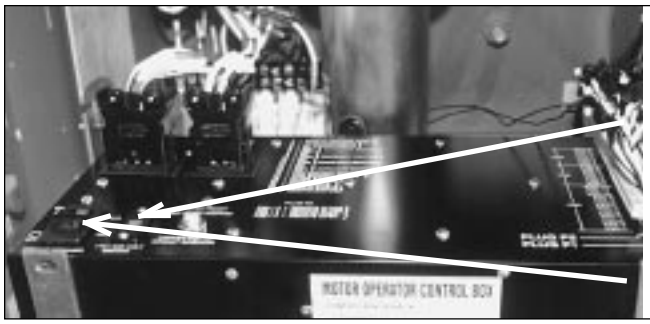


Photo F

Voltage selector switch

Circuit breaker

Photo G

Control box thumbscrews

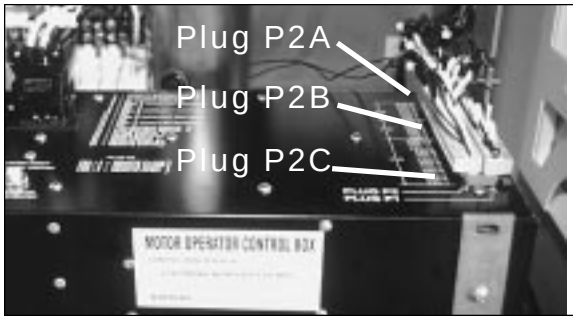


Photo H

To reverse motor operator, switch plugs P2A and P2B

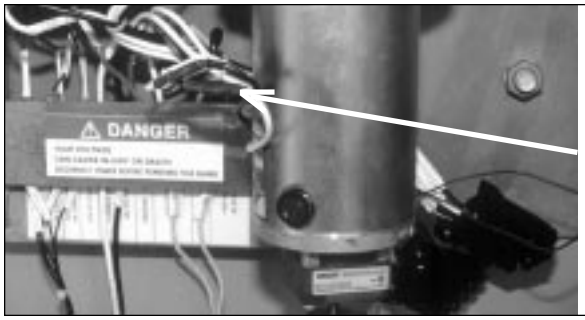


Photo I

Motor lead terminals

8—Operation

Energizing, Exercising & Inspecting

Step 1. — Turn On Power

- Turn the power supply "ON" at the fuse/breaker box if applicable
- Refer to Figure 9
- Turn control box main power switch "ON"
- Status lights for "POWER" and switch "CLOSE" will illuminate

Step 2. — Exercising Overhead Switch

- Place local/remote switch in local position
- Open overhead switch by pressing the "OPEN" push-button
- Close overhead switch by pressing the "CLOSE" push-button
- Observe status light functions:
  - "OPEN" illuminated when overhead switch is open
  - "CLOSE" illuminated when overhead switch is closed
- If status light indication is opposite overhead switch position, review "Reversing Motor Operator Rotation" in the Pre-Operation Checks section and correct as necessary

Step 3. — Inspecting Overhead Switch

- Cycle the overhead switch 8 to 10 times
- Thoroughly inspect overhead switch for proper opening and closing
- If overhead switch does not fully/adequately open or close, proceed to the section on Adjustment, and return to Step 4 below

Step 4. — Set Local/Remote Operating Mode

- Place local/remote switch in desired position

⚠ DANGER

Hazardous voltage.

Electrical contact with system voltage will cause severe injury or death.

Do not exercise overhead switch while it is energized.

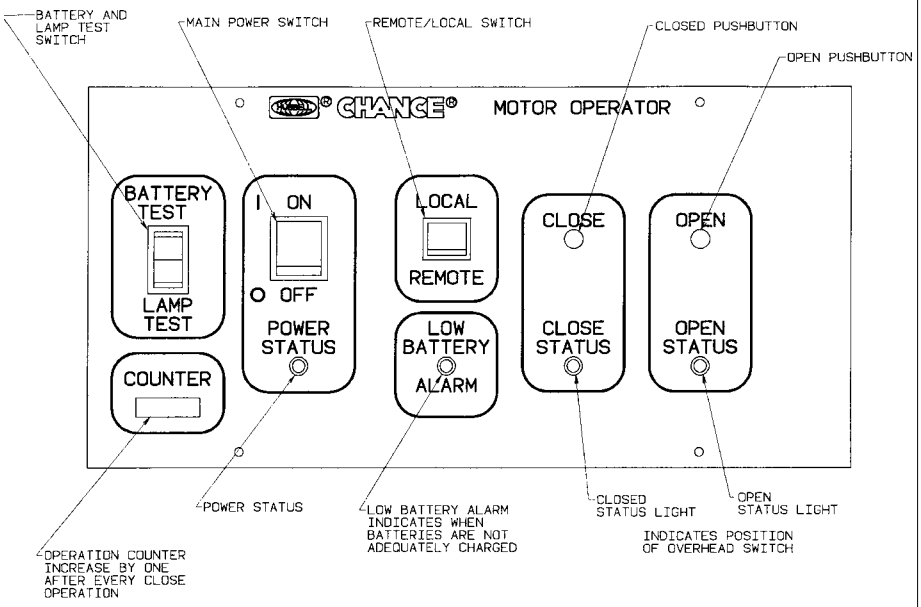
⚠ WARNING

Moving parts.

Can cause severe injury.

Do not operate motor operator until hands and clothing are clear of all moving parts.

Figure 9 – Control Box Switches



Additional Functions

Battery Test

Press and hold the "Battery Test" switch for 10 seconds. The "Low Battery Alarm" will illuminate if there is a battery problem.

Lamp Test

Press and hold the "Lamp Test" switch.

All control box lights will illuminate.

8—Operation

Decoupling & Coupling Motor Operator

Step 1. — Decoupling Motor From Drive Casting

- Refer to Photograph J
- Decouple the motor operator by pulling out and down on the shift handle (see Photograph J)
- It may be necessary to release tension in the coupling assembly by turning the manual motor rotation knob (see Photograph K)
- Lower and release the shift handle into the "DECOUPLED" position
- Place the shift handle tabs into the "DECOUPLED" slot to ensure that the motor is fully "DECOUPLED"

Step 2. — Coupling Motor With Drive Casting

- Refer to Photograph L
- Couple the motor operator by pulling out and up on the shift handle (see Photograph L)
- It may be necessary to align the coupling assembly by turning the manual motor rotation knob (see Photograph K)
- Raise and press the shift handle into the "COUPLED" position
- Place the shift handle tabs into the "COUPLED" slot to ensure that the motor is fully coupled

Step 3. — Exercising The Motor While Decoupled

- Decouple motor operator as detailed in Step 1 above
- Exercise the motor by pushing either the "OPEN" or "CLOSE" push-button switches
- The motor will run until power is turned "OFF"
- Stop the motor by flipping the control box main power switch to "OFF"
- Turn the control box main power switch to "ON"
- Couple motor operator as detailed in Step 2 above

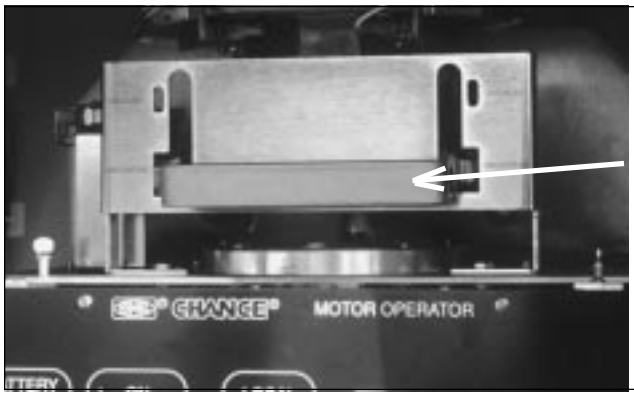


Photo J

Shift handle in DECOUPLED position

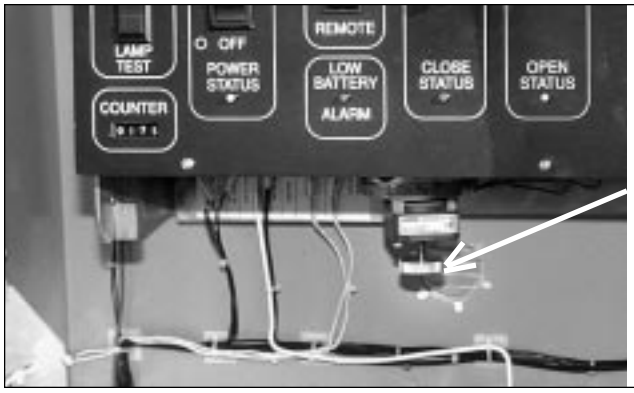


Photo K

Manual motor rotation knob

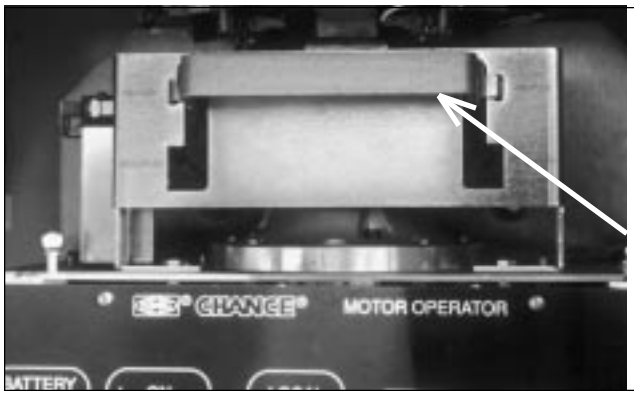


Photo L

Shift handle in COUPLED position

8—Operation

Manual Operation

Step 1. — Manual Switch Operation

- Decouple the motor as outlined in the Decoupling & Coupling Motor Operator section
- Refer to Figure 10

NOTE: Removing the manual operating handle from the enclosure activates a safety device that makes the motor operator inoperable until the drive mechanism has been decoupled, or the manual operating handle is returned to its storage position. Do not attempt to defeat this safety device.

- Remove the manual operating handle from its cradle in the bottom of the enclosure (see Photograph M)
- Attach the manual operating handle to the overhead switch control pipe by using the bent arm pin and cotter pin as shown in Figure 10
- Manually operate the overhead switch as directed by the switch manufacturer

⚠ WARNING

Hazardous voltages and high speed moving parts.

These can cause death, serious personal injury or damage equipment.

Lock out power at circuit breaker/fuse box and turn control box main power switch “OFF” before attempting to manually operate this unit.

Photo M

Manual operating handle

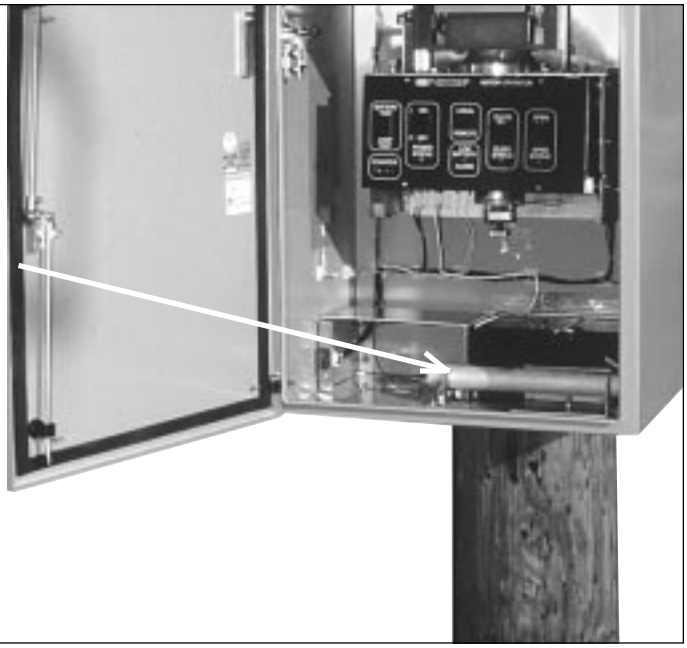
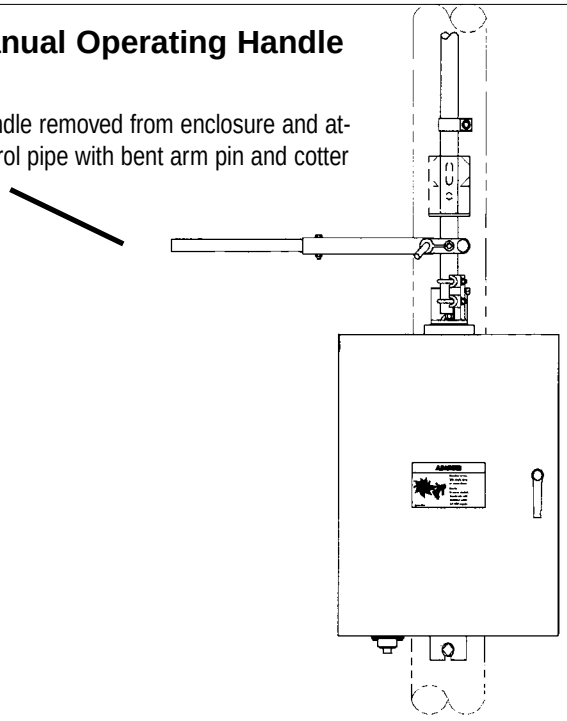


Figure 10 – Manual Operating Handle

Manual operating handle removed from enclosure and attached to switch control pipe with bent arm pin and cotter pin



8—Operation

Remote Operation

The switch can be operated from central control via a communication link to the RTU, allowing for remote configuration, diagnostics, and operaton. Refer to the SCADA system instruction manual for specific instructions. Regardless of the type or make of the SCADA system, the user must place the Remote/Local switch in the "Remote" position to allow remote operation. Photo N shows typical Motor Operator with RTU installed.

The Universal RTU Receptacle shown in Photo O allows modular connection to an RTU and communication back to central control. Refer to supplemental drawing SD817-1149 for signal pin outs and remote operation relay specifications. The following controls and diagnostics are provided.

Remote Status

• Remote/Local switch position indicator.

Open Status

• Overhead switch position indicator.

Close Status

• Overhead switch position indicator.

Low Battery Alarm

• Low battery indicator.

Battery Charger Status

• Battery charger present indicator. Also indicates AC supply is present.

Battery Test

• Remote battery test control.

Remote Open

• Remote open control.

Remote Close

• Remote close control.

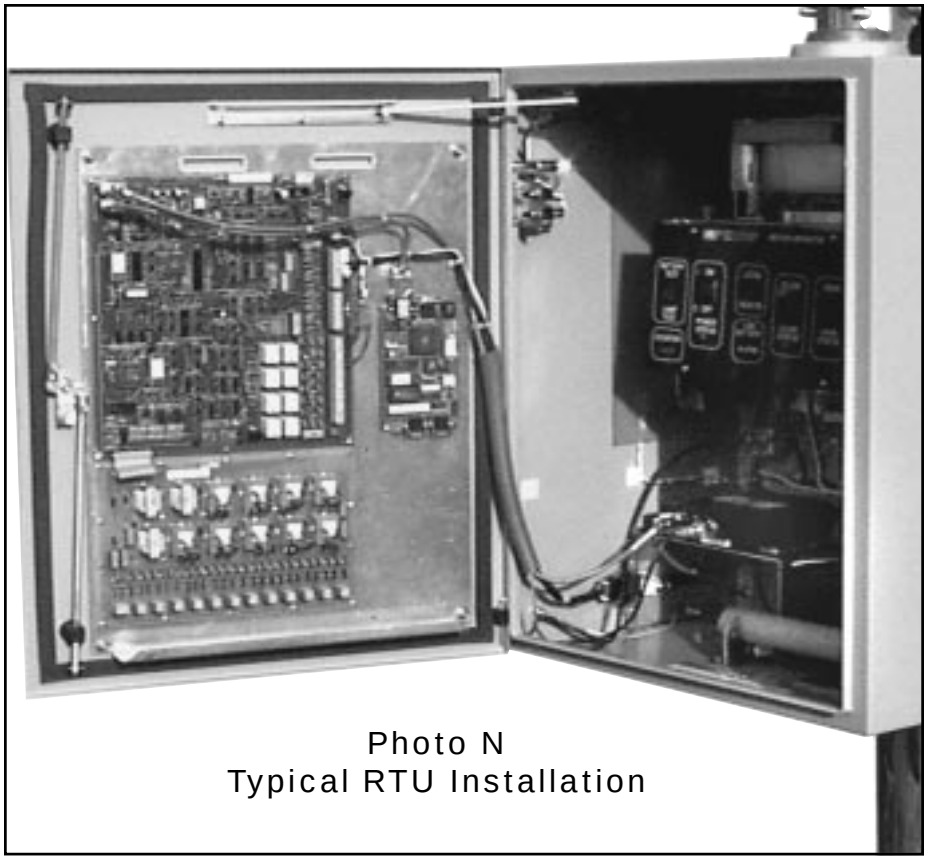


Photo N
Typical RTU Installation

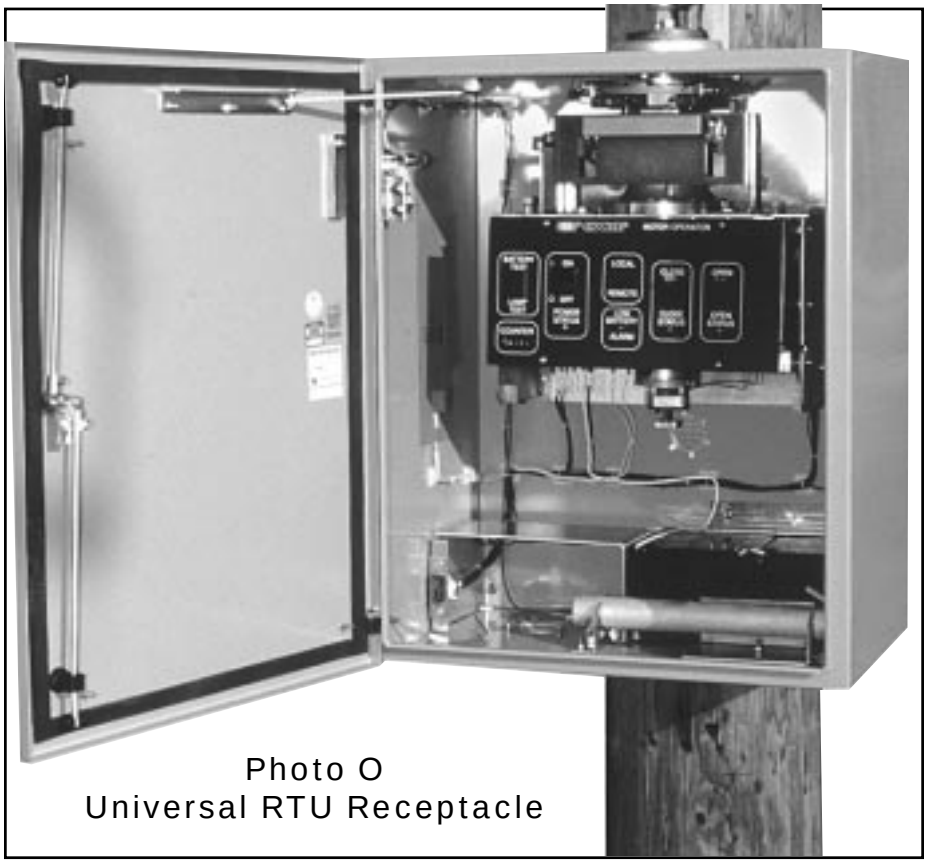


Photo O
Universal RTU Receptacle

9—Adjustment

IMPORTANT NOTICE

The limit switches adjust the motor operator for normal opening and closing. Limit switches will not compensate for an improperly adjusted overhead switch.

Limit switch adjustment on this motor operator is normally not necessary. The motor operator is factory set for 90° of rotation. If the overhead switch fails to close and open completely with the factory set 90° rotation travel, follow the steps below.

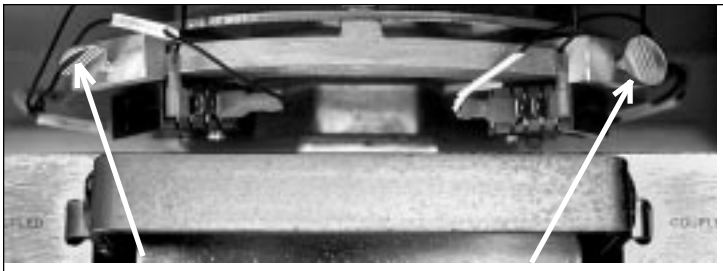


Photo P

Limit Switches

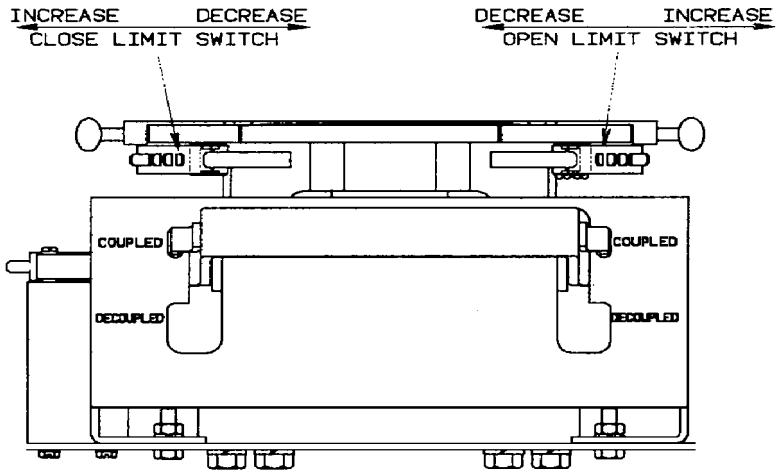
Step 1.— Adjusting Limit Switches

- Refer to Figure 11
- Turn off the control box main power switch before making any limit switch adjustment
- The "OPEN" limit switch controls the "OPEN" adjustment
- The "CLOSE" limit switch controls the "CLOSE" adjustment
- Loosen thumbscrews (see Photograph P) and move the limit switches as shown in Figure 11 to increase or decrease the amount of rotational travel as required for proper overhead switch operation
- Tighten limit switch thumbscrews before testing rotational travel
- When finished adjusting the limit switch(es), make certain the control box main power switch is "ON"

NOTE: If the motor operator's rotation direction has been reversed (as described in — Pre-Operation Checks, Reversing Motor Rotation) limit switch controlling functions are reversed: "CLOSE" is the open limit switch and "OPEN" is the closed limit switch.

Figure 11 – Adjusting Limit Switches

Note: Figure 11 indicates limit switch adjustments for factory set clockwise rotation (non-reversed installation)



10—Maintenance

Enclosure Exterior

The enclosure has been factory painted to deliver years of protection. If the paint finish has been damaged, touch-up affected spots with ANSI 61 gray enamel (Wiegmann Enclosure Company catalog number WAGSE). Be careful not to paint over enclosure door handle, drive casting or other parts that would be adversely affected by painting.

Do not paint over warning and other safety related exterior labeling. If replacement labels are needed, contract your factory representative

Remove tree branches and any other objects that may come in contact with the motor operator and/or the overhead switch control pipe mechanism.

Batteries

The sealed, maintenance-free lead acid gel batteries furnished with the motor operator are rechargeable 26 amp-hour, 12 volt DC. Test these batteries once a month by pressing the battery test button for 10 seconds. The low battery alarm will light if the batteries are not fully charged. This test can be performed and monitored remotely.

If the batteries have a low charge or are 3 years old, replace both with B & B Battery part number BP26-12, with fast-on connectors, or Powersonic Battery part number PS-12260F with fast-on connectors.

Battery Storage Life

Self-discharge characteristics of these batteries make it imperative they be charged after 6 months of storage. Otherwise permanent loss of capacity might occur from sulfation.

Light Bulbs & Control Box Status Lights

Both the enclosure light and control box status lights should come “ON” when the enclosure door is opened. If the enclosure light does not come “ON,” replace it with a Chicago Lamp Part Number 308. If the control box status lights do not come “ON” when the door is open, then perform a lamp test. Lamp test button is on the front of the control box. When pressed, all status lights should come “ON.” If some or all status lights do not come “ON,” contact your factory representative.

Transmission Lubricant

The transmission is sealed, but a small amount of lubricant may seep out to the bottom of the enclosure or onto the batteries. Minor seepage is not a problem. It may be removed with a shop towel and then disposed of at an appropriate waste facility in accordance with your local utility’s regulations.

Non-Functioning Motor Operator

If the motor operator will not function, go to Trouble Shooting Guide and follow the suggested corrective actions. If the motor operator still does not function, contact your factory representative.

11—Trouble Shooting

The following table presents the most common symptoms, their possible cause(s) and likely corrective action(s). These do not cover all possible problems. If you are unable to correct a problem using this trouble shooting guide, contact your factory representative.

Table 2 – Trouble Shooting Guide

Symptom	Possible Cause(s)	Corrective Action(s)
Motor operator will not run.	a) Power status light not on. b) Manual operating handle is not inside enclosure. c) Motor locked rotor breaker is tripped (on back of control box). d) Remote/local switch in remote position. e) Battery charge below 23 volts	a) Turn on power. b) Place manual handle in space provided. c) Turn off power switch; reset locked rotor breaker. Turn on power switch. d) Place remote/local switch to local position. e) Recharge or replace batteries as needed
Motor will run, but overhead switch will not turn.	a) Decoupling handle is down. b) Piercing bolt is not tightened completely.	a) Move decoupling handle to coupled position. b) Tighten piercing bolt until no threads are showing.
The overhead switch is not fully open or fully closed.	a) Limit switch improperly set. b) Loose hardware	a) Adjust limit switch; refer to Section "Adjustment". b) Tighten hardware
Can not decouple drive mechanism.	a) Excessive wrap-up on control pipe. b) Inadequate limit switch setting.	a) Pull out shift handle and turn manual motor rotation knob to release tension. b) Adjust limit switch position
Moisture in enclosure	a) Disconnected power leads to heater b) Faulty heater thermostat c) Burned out heating element	a) Inspect and reconnect if needed b) Contact factory representative c) Contact factory representative
Low Voltage Alarm	a) Charger off b) Charger off c) Batteries discharged	a) Control box rear circuit breaker switched off. b) AC supply not present ; refer to "Power Wiring" Section c) Repair /replace batteries
Motor Operator not responding to remote commands	a) Local/Remote switch b) Control Box/Connection problem. Verify control box remote functions by simulating inputs/ outputs at Universal RTU receptacle refer to supplemental drawing SD817-1149 (located in side pouch). Output can be measured with a DVM. Inputs can be simulated by shorting correspond-ing receptacle pins. c) RTU connection problem. Verify signal connections to RTU by measuring outputs with DVM and simu-lating inputs at the RTU refer to supplemental drawings d) RTU/configurations problem. Verify RTU operation using local pc connection refer to RTU manuals. e) Communications/configuration problem. Verify communications refer to communication manuals	a) Place Local/Remote switch in "Remote" position. b) If the control box/ connections are not functioning contact factory representative. c) If RTU connections problem exists, contact factory representative. d) If RTU is not functioning, contact RTU manufacturer. e) If Communications are not functioning, contact communications representative.