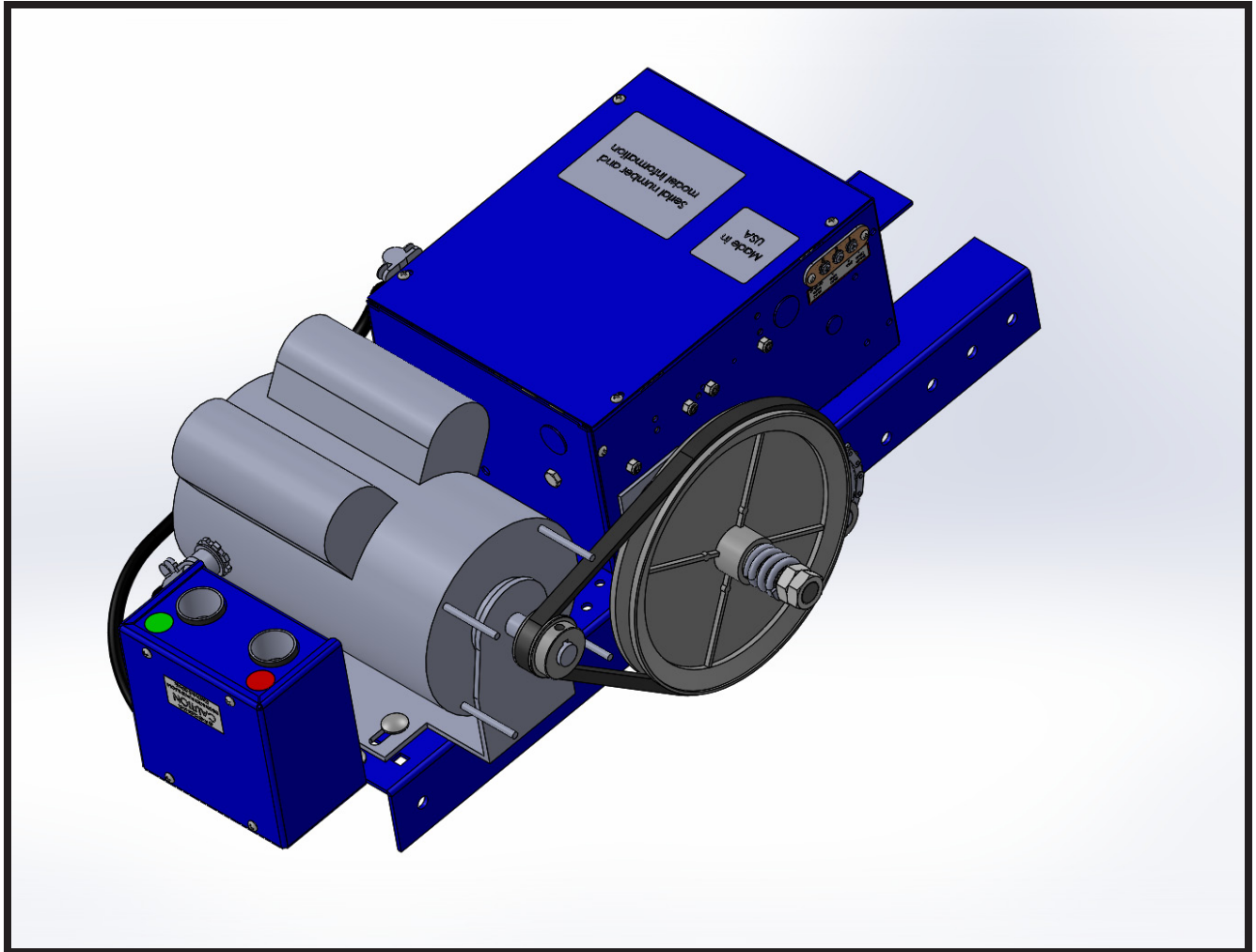


OWNER'S MANUAL

COMMERCIAL APARTMENT/HOUSE TROLLEY OPERATOR

| | |
|------------------|------|
| MODEL NO. | MRAT |
|------------------|------|



Napoleon/Lynx™

**READ AND FOLLOW ALL INSTALLATION INSTRUCTIONS
SAVE THESE INSTRUCTIONS**

NOT FOR RESIDENTIAL USE

A01P10-02-MRAT MANUAL

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SPECIFICATIONS

MOTOR

| | |
|-----------------|---------------------|
| TYPE: | Continuous duty |
| HP: | 1/2 and 3/4 HP |
| SPEED: | 1650 RPM |
| VOLTAGE: | 115V 1 phase |
| CURRENT: | See motor nameplate |

ELECTRICAL

| | |
|-------------------------|---|
| TRANSFORMER: | 24VAC |
| CONTROL STATION: | 1-button station |
| WIRING TYPE: | Choose from main menu. |
| LIMIT ADJUST: | Linear driven, fully adjustable screw type cams. Adjustable to 16 feet. |

MECHANICAL

| | |
|----------------------------|-----------------------------------|
| DRIVE REDUCTION: | Primary: Heavy duty (4L) V-Belt |
| | Secondary: #65 chain/sprocket |
| | Output: #65 chain |
| OUTPUT SHAFT SPEED: | 140 RPM |
| DOOR SPEED: | Approx. 10" per sec. |
| BRAKE (Optional): | Solenoid actuated drum brake |
| BEARINGS: | Ball bearing with hardened races. |

SAFETY

| | |
|------------------------|---|
| DISCONNECT: | Quick disconnect door arm for emergency manual door operation. |
| PHOTO EYES: | Included with Operator. |
| REVERSING EDGE: | (Optional) Electric or pneumatic sensing device attached to the bottom edge of door. A REVERSING EDGE IS STRONGLY RECOMMENDED FOR ALL COMMERCIAL OPERATOR INSTALLATIONS. REQUIRED WHEN THE 3 BUTTON CONTROL STATION IS OUT OF SIGHT OF DOOR OR ANY OTHER CONTROL (AUTOMATIC OR MANUAL) IS USED. |

DIMENSIONS & WEIGHT

| | |
|---------------------------------|-----------|
| OPERATOR HANGING WEIGHT: | 50-60 LBS |
| DIMENSIONS: | Page 15 |

WARNING

Improperly operating or an unbalanced door could cause **SERIOUS INJURY or **DEATH**.** See Door Manufacturer's Owner's Manual. Have trained door systems technicians make repairs to cables, spring assemblies, and other hardware.

PREPARATION

Track Assembly

1. Using the center idlers and the front idler, assemble the operator rail by installing the idlers between the rails. Use the hex nuts on the outside and fasten them tight. The front idler should be installed in the second hole. The center idlers should be spaced evenly over the length of the track. (Figure 1)
2. Slide the trolley carriage onto the rail so that the emergency disconnect bracket will be toward the operator.

Operator Attachment

1. Position the track assembly on the frame of the operator so that the motor side is in the back (away from the door).
2. Align the holes in the rail with the holes in the operator and install four 5/16 bolts (two per side).
3. Install hex nuts on the bolts and tighten to secure the operator to the rail.

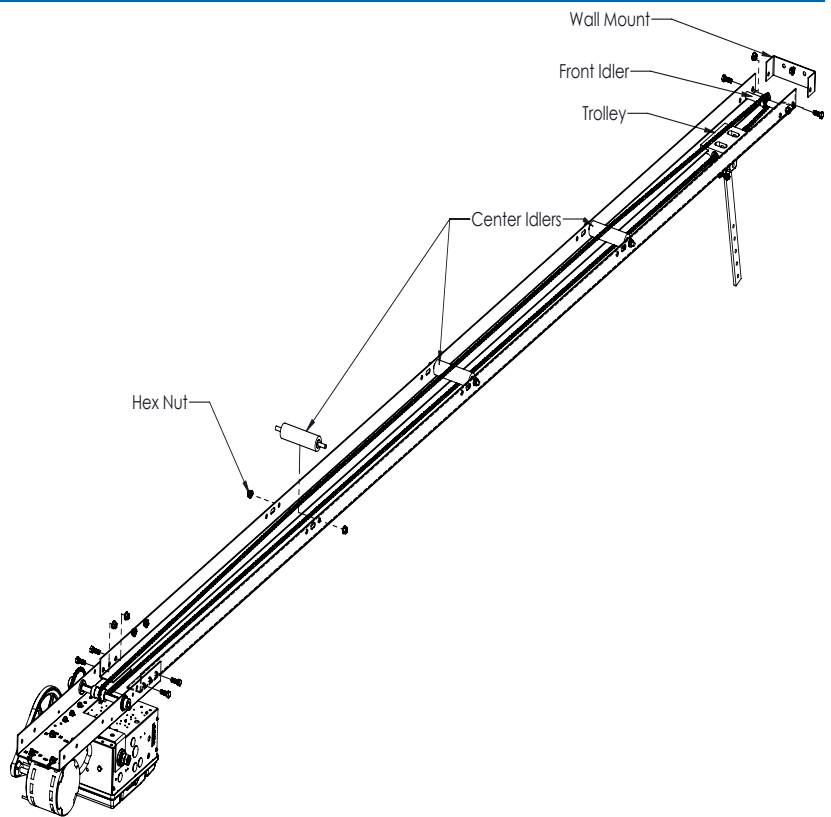


FIGURE 1

Chain Installation

1. With the trolley engaged in the chain tensioner, use a master link to attach one end of the chain to the chain tensioner.
2. Route the chain around the front idler sprocket and the drive sprocket on the operator and back to the other side of the chain tensioner. (Ensure the chain rides across the top of all center idlers present)
3. Connect the free end of the chain to the chain tensioner using another master link.
4. Disengage the chain tensioner from the trolley using the emergency disconnect and slide the trolley out of the way (Figure 2).
5. With the lock nut loose, tighten the chain by turning the main body of the chain tensioner. When desired tension is reached, tighten the lock nut. (If necessary, remove links from the chain to achieve proper adjustment.)

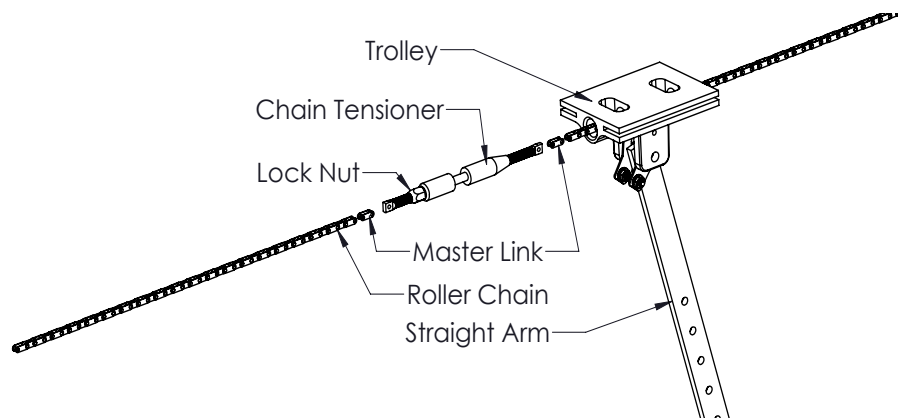


FIGURE 2

INSTALLATION

WARNING



Moving parts on the operator could cause possible **SERIOUS INJURY.** Install the operator at least 8 feet above the floor to keep people away from the moving parts.

IMPORTANT NOTE: Before your operator is installed, be sure the door has been properly aligned, balanced, and is working smoothly.

Mounting Wall Mount

The trolley operator is generally mounted over the center of the door. Some instances require the operator to be off center. If mounting off center refer to the door manufacturing for proper lifting point. (Torsion spring doors may allow off center lifting but Extension spring doors require center lifting.)

1. Mark a vertical line on the header above the door that is centered on the door.
2. Determine the highest point of door travel. Slowly raise the door until the top section reaches its highest point. Use a level to project this line to the header where you marked the center of the door. (Figure 3)
3. Ensure the header is suitable to mount the wall mount to. If necessary, reinforce the wall/header with a mounting pad or suitable mounting brackets.
4. Install the wall mount using suitable hardware. The wall mount should be centered on the vertical line that was drawn and 1"-2" above the line that was drawn from the highest point of door travel.

Mount Operator

1. Raise the front end of the rail assembly to the wall mount and loosely install two 5/16 bolts and nuts to act as pivot points.(Figure 4)
2. Swing the operator to a horizontal position and temporarily secure it with suitable rope, chain, or support from the floor.
3. Tighten the pivot bolts/nuts.
4. Slowly open the door being careful not to disrupt the temporary support.
5. With the door fully open, place a level on top of the rail and use shims across the top section of the door to support the track assembly in a horizontal position.(Figure 5)

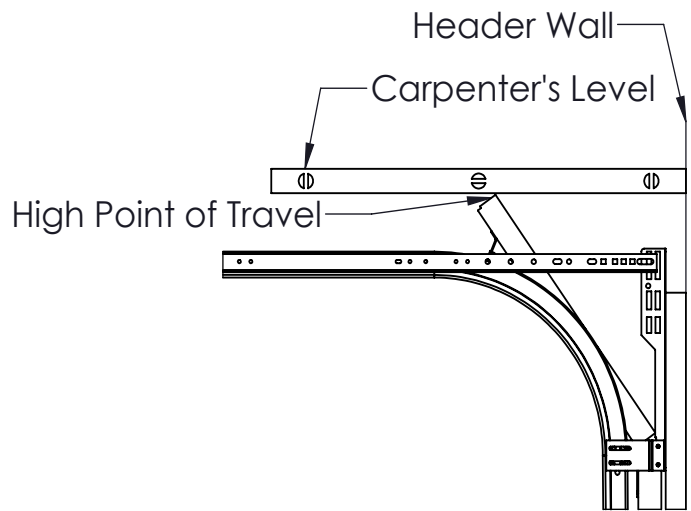


FIGURE 3

IMPORTANT NOTE: To aid installation, see page 24 (Shop Drawing) for mounting consideration.

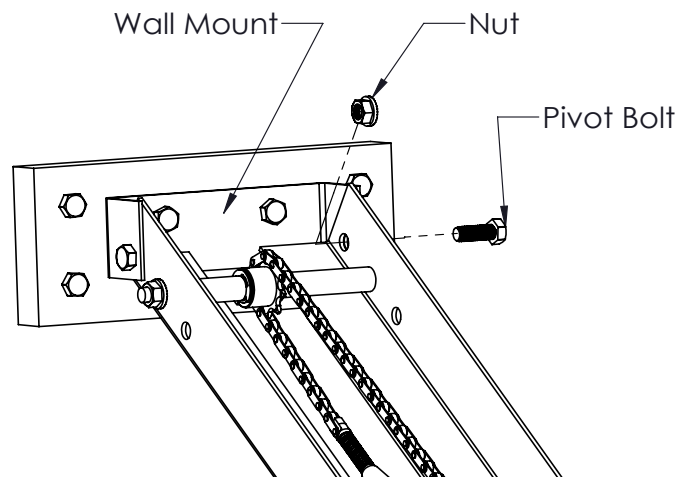


FIGURE 4

INSTALLATION

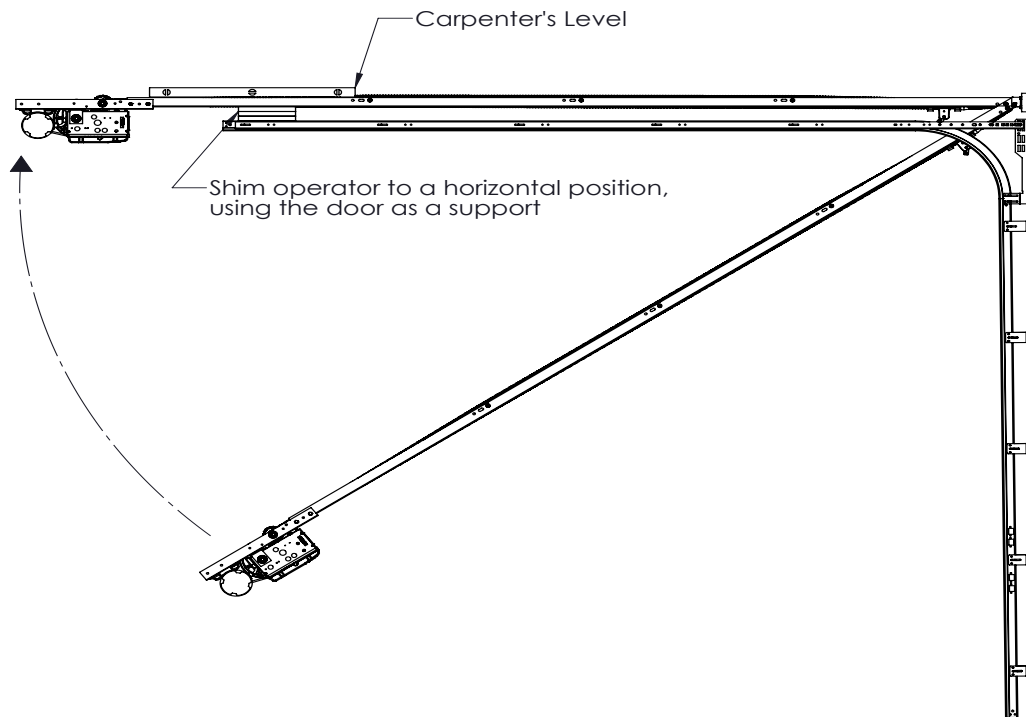


FIGURE 5

Hang the Operator

1. The illustration shows a typical method of hanging the operator from the ceiling. Each installation may vary, but in all cases side braces should be used for additional strength.
2. Clearance holes are provided on both sides of the operator for mounting the support braces.
3. With the rail in line with the wall mount, install the appropriate support bracing. (If the track is longer than 15' a middle support brace is recommended). (Figure 6)

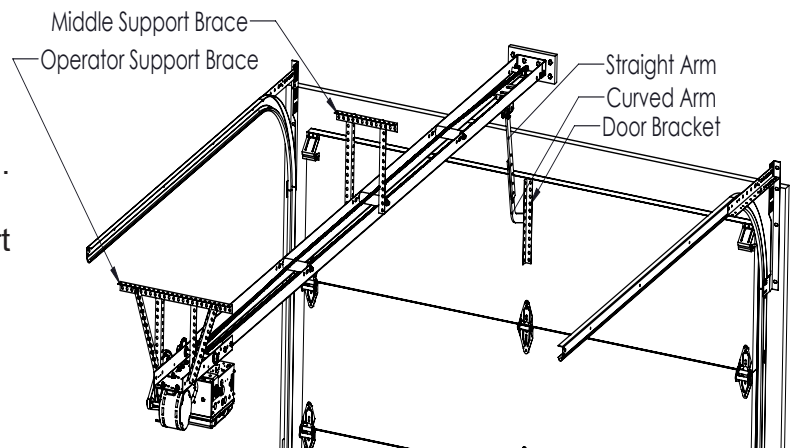


FIGURE 6

NOTE: At this time, ensure all bolts and lags are properly secured.

Door Attachment

1. Fully close the door.
2. Install the door bracket to the top section of the door and in-line with the rail using suitable hardware. Many installations, except solid wood doors, will require additional support for the door. Refer to illustration. (Figure 6)
3. Install the bottom hole of the curved arm to the door bracket using a 3/8-16 bolt, 3/8 lock nut, and two 3/8 washers (tighten only enough to still allow arm to pivot.) The pivot bolt should be closely in-line with the top rollers.
4. Slide the trolley so that the straight arm and curved arms holes line up. Use 5/16 bolts and nuts to fasten the two arms tightly together. (The straight arm should angle away from the door 15-45 degrees)

MANUAL OPERATION

⚠ WARNING

⚡ Moving chain could cause possible **SERIOUS INJURY**. DISCONNECT electric power to the operator **BEFORE** manually operating your door

⚠

⚠ WARNING

⚠ Broken Spring(s) may cause the door to fall rapidly, causing **SEVERE INJURY** or **DEATH**. If possible only use the manual release when the door is closed, otherwise use caution when using the release while the door is open.

This operator has provisions for manually operating the door in case of emergency or power failure.

Emergency Disconnect System

1. To Disconnect Door From Operator : The door should be fully closed if possible. Pull down and away from the door on the emergency release knob. (Figure 7) Make sure the disconnect snaps back in the released position to prevent the trolley from reconnection automatically. The trolley will release from the chain tensioner. The door can now be raised and lowered manually.

2. To Reconnect Door to Operator : Pull the emergency release knob toward the door so that the disconnect snaps to the engaged position. The next time the chain tensioner slides through the trolley, the trolley will reconnect with it.

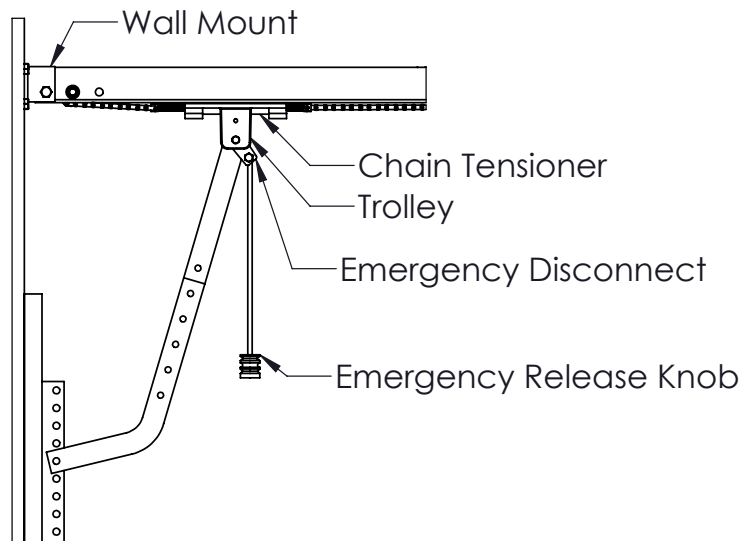


FIGURE 7

⚠ WARNING

⚡ **To prevent SERIOUS INJURY or DEATH:**

- DO NOT connect electric power until instructed to do so.
- ALWAYS call a trained professional door serviceman if door binds, sticks or is out of balance. An unbalanced door may not reverse when required.
- NEVER try to loosen, move or adjust doors, door springs, cables, pulleys, brackets or their hardware, ALL of which are under **EXTREME** tension and can cause **SERIOUS PERSONAL INJURY**.
- DISABLE ALL locks and remove ALL ropes connected to door **BEFORE** installing and operating door operator to avoid entanglement.

ENTRAPMENT PROTECTION ACCESSORIES (OPTIONAL)

SENSING EDGES

All types of sensing edges with an isolated normally open (N.O.) output are compatible with your operator. This includes pneumatic and electric edges. If your door does not have a bottom sensing edge and you wish to purchase one, contact the supplier of your operator.

If not pre-installed by the door manufacturer, mount the sensing edge on the door according to the instructions provided with the edge. The sensing edge may be electrically connected by either coiled cord or take-up reel.

IMPORTANT NOTES:

- Proceed with Limit Switch adjustments before making any sensing edge wiring connections to operator as described below.
- Electrician must hardwire the junction box to the operator electrical box in accordance with local codes.

⚠ WARNING



To reduce risk of **SEVERE INJURY or DEATH**, ALWAYS install reversing sensors when the 1-button control station is out of sight of door or ANY other control (automatic or manual) is used. Reversing devices are recommended for all installations.

WIRING: For wiring of your sensing device to the operator, refer to the wiring diagram supplied with your operator. See field connection terminals identified as Safety Device.

TAKE-UP REEL: Take-up reel should be installed 12" above the top of the door.

COIL CORD: Connect operator end of coil cord to junction box (not supplied) fastened to the wall approximately halfway up the door opening.

LIMIT SWITCH ADJUSTMENT

⚠ WARNING



To avoid **SERIOUS PERSONAL INJURY or DEATH from electrocution**, disconnect electric power **BEFORE** manually moving limit nuts.

IMPORTANT NOTE: Make sure the limit nuts are positioned between the limit switch actuators before proceeding with adjustments.

- To adjust limit nuts depress retaining plate to allow nut to spin freely. After adjustment, release plate and ensure it seats fully in slots of both nuts.
- To increase door travel, spin nut away from actuator. To decrease door travel, spin limit nut toward actuator.
- Adjust open limit nut so that door will stop in open position with the bottom of the door even with top of door opening.
- Repeat Steps 1 and 2 for close cycle. Adjust close limit nut so that actuator is engaged as door fully seats at the floor. (Figure 8)

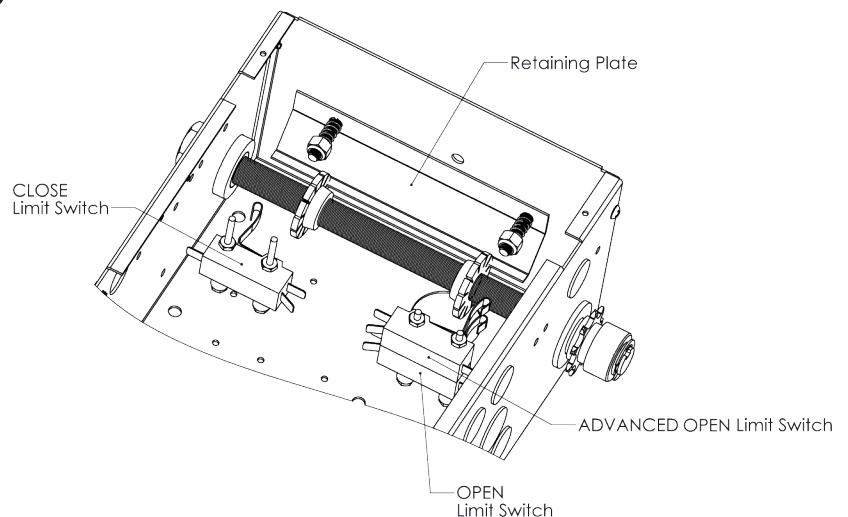


FIGURE 8

POWER WIRING

⚠ WARNING



To reduce the risk of SEVERE INJURY or DEATH:

- ANY maintenance to the operator or in the area near the operator **MUST NOT** be performed until disconnecting the electrical power and locking-out the power via the operator power switch. Upon completion of maintenance the area **MUST** be cleared and secured, at that time the unit may be returned to service.



- **DISCONNECT** power at the fuse box **BEFORE** proceeding. Operator **MUST** be properly grounded and connected in accordance with local electrical codes. The operator should be on a separate fused line of adequate capacity.

- ALL electrical connections **MUST** be made by a qualified individual.

- **DO NOT** install ANY wiring or attempt to run the operator without consulting the wiring diagram. We recommend that you install an optional reversing edge **BEFORE** proceeding with the control station installation.

- ALL power wiring should be on a dedicated circuit and well protected. The location of the power disconnect should be visible and clearly labeled.
- ALL power and control wiring must be run in separate conduit.
- To avoid damage to door and operator, make ALL door locks inoperative. Secure lock(s) in "OPEN" position. If the door lock needs to remain functional, install an interlock switch.

POWER WIRING CONNECTIONS

1. DO NOT INSTALL ANY WIRING WITHOUT CONSULTING THE WIRING DIAGRAM.

The wiring diagram is included in this manual (page 14).

2. Be sure the power being supplied is of the correct voltage, phase, frequency, and amperage in accordance with the operator's serial tag.
3. Using a conduit access hole as shown below, bring supply lines to the operator and connect wires to the terminals indicated on the wiring diagram.
4. Important NOTE: Connect earth ground to the chassis ground screw in the electrical box enclosure. Do not turn power on until you have finished making all power and control wiring connections and have completed the limit switch adjustment procedure.

(2) 1-1/8" & (4) 7/8" Dia.
Knockouts for Power and
Control Wiring access
(Near and Opposite side)

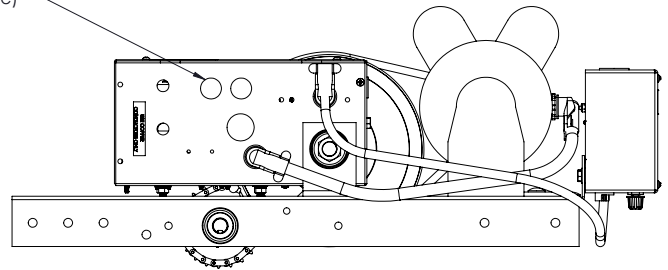


FIGURE 9

PHOTO EYE INSTALLATION

PHOTO EYE INSTALLATION

1. Make sure that power is disconnected to the system prior to installing the photo eyes.
2. Photo eyes need to be mounted inside the building. They should be mounted on either side of the door and as close as possible to the door track to offer maximum safety precaution.
3. Photo eyes should be mounted no more than 6 inches from the floor. Both brackets need to be installed at the same height to allow them to align.
4. Select a mounting location 5 inches above the floor to the centerline of the wall mounting “L” bracket. Mount the bracket to the wall. Repeat this step on the opposite side of the door.
5. Using the wing nuts provided, attach the photo eyes to the “L” brackets with the arrows pointing up. Do not over tighten.

IMPORTANT NOTE:

Identify which side of the garage door is exposed to the most sunlight. Mount the sending unit (TX) on the side that is exposed to the most sun. Sunlight may affect the photo sensors and this orientation will help reduce the effect.

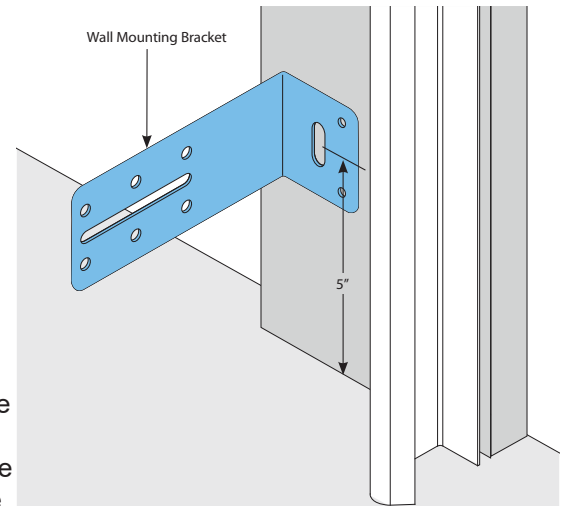


FIGURE 10

6. The transmitter and the receiver both have two 22-gauge wires coming from them. Uncoil the wires from the photo eyes and route them to the controller. Take one wire from the transmitter and one wire from the receiver (these wires have no polarity) and twist the stripped ends together. Repeat on the second wire from each unit. Connect the wires to the photo eye terminals shown in the wiring diagram on page 14. Again, polarity is not important.
7. At this time, you can reconnect the power to the operator. The LEDs on both transmitter and receiver will be lit if installed and aligned properly; the transmitter has a red LED, and the receiver has a green LED.
8. If the photo eyes are not aligned, then the green LED on the receiver will be off. To align the photo eyes, you can adjust the position of the transmitter or the receiver on the slot of the bracket until both LEDs are lit. Tighten the brackets.
9. To test the photo eye system: open the door to the full open position. Close the door and as the door is closing, obstruct the beam. The door should stop and reverse to open.
10. Test the photo eye's function periodically.

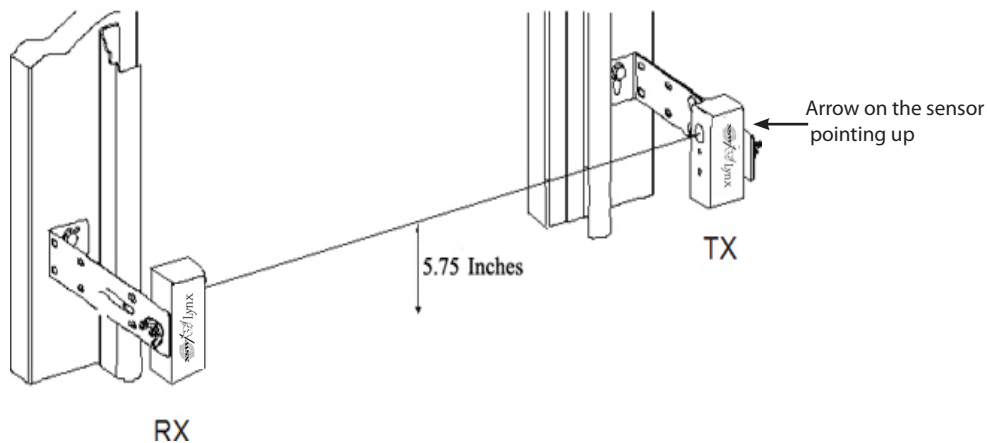


FIGURE 11

CONTROL WIRING

CONTROL STATION LOCATION

All MRAT operators are supplied with a single button control station. Mount the control station within sight of the door, at a minimum of five (5) feet above the floor so small children cannot reach it, and away from all moving parts.

OPERATOR ACTUATION

All MRAT operators have a terminal strip provided on the side of the electrical enclosure. It is labeled as a 24 Volt Class 2 circuit and numbered (1,2,3). This terminal strip provides the means to actuate the operator. To utilize the single button control station, attach the wires from the wall station to terminals 1 and 2. All standard radio receivers may also be wired to this terminal strip.

MRAT TIMER BOX - SEE FIGURE 12

The MRAT Timer Box comes supplied with the purchase of any new MRAT operator. The timer box has two light sockets and two adjustment knobs that serve as a way to give light signals to vehicles entering or exiting through a door controlled by the operator.

The MRAT operator will open but will not close without the timer box plugged into the operator. Once the cable of the timer box is attached to the corresponding cable of the operator, the behavior of the operator will act as follows:

- A single actuation (wall station or external radio) will open the door.
- Once open, the green light will come on to indicate it is safe for vehicle access.
- The green light will remain on the amount of time set by the "Time at Open" adjustment knob.
- The green light will then turn off and the red light will come on to indicate the door is about to close.
- The "Time before Closing" knob will adjust how long the red light is on before the door starts to close.
- Once the door begins to close, the red light will turn off.
- The door will close if the photo eyes are clear from any obstruction and are working properly.
- If the photo eyes encounter an obstruction, the door will return to the open position and will try to close again after the "Time before Closing" time expires.

WARNING



To prevent possible **SERIOUS INJURY** or **DEATH**:

- Install the control station within sight of the door at a minimum of five (5) feet (to prevent operation by children), but away from the door and its hardware.
- Install reversing sensors when the 1-button control station is out of sight of the door or ANY other control (automatic or manual) is used. Reversing devices are recommended for ALL installations
- A reversing edge **MUST** be installed when a receiver is used to activate a commercial door opener.

IMPORTANT NOTE:

Mount warning notice beside or below the push button station.



WARNING



To prevent possible **SERIOUS INJURY** or **DEATH** from a moving garage door:

- **ALWAYS** keep remote controls out of reach of children.
- **NEVER** permit children to operate, or play with remote controls.
- Activate gate or door **ONLY** when it can be seen clearly, is properly adjusted, and there are no obstructions to door travel.
- **ALWAYS** keep gate or garage door in sight until completely closed. **NEVER** permit anyone to cross path of moving gate or door.

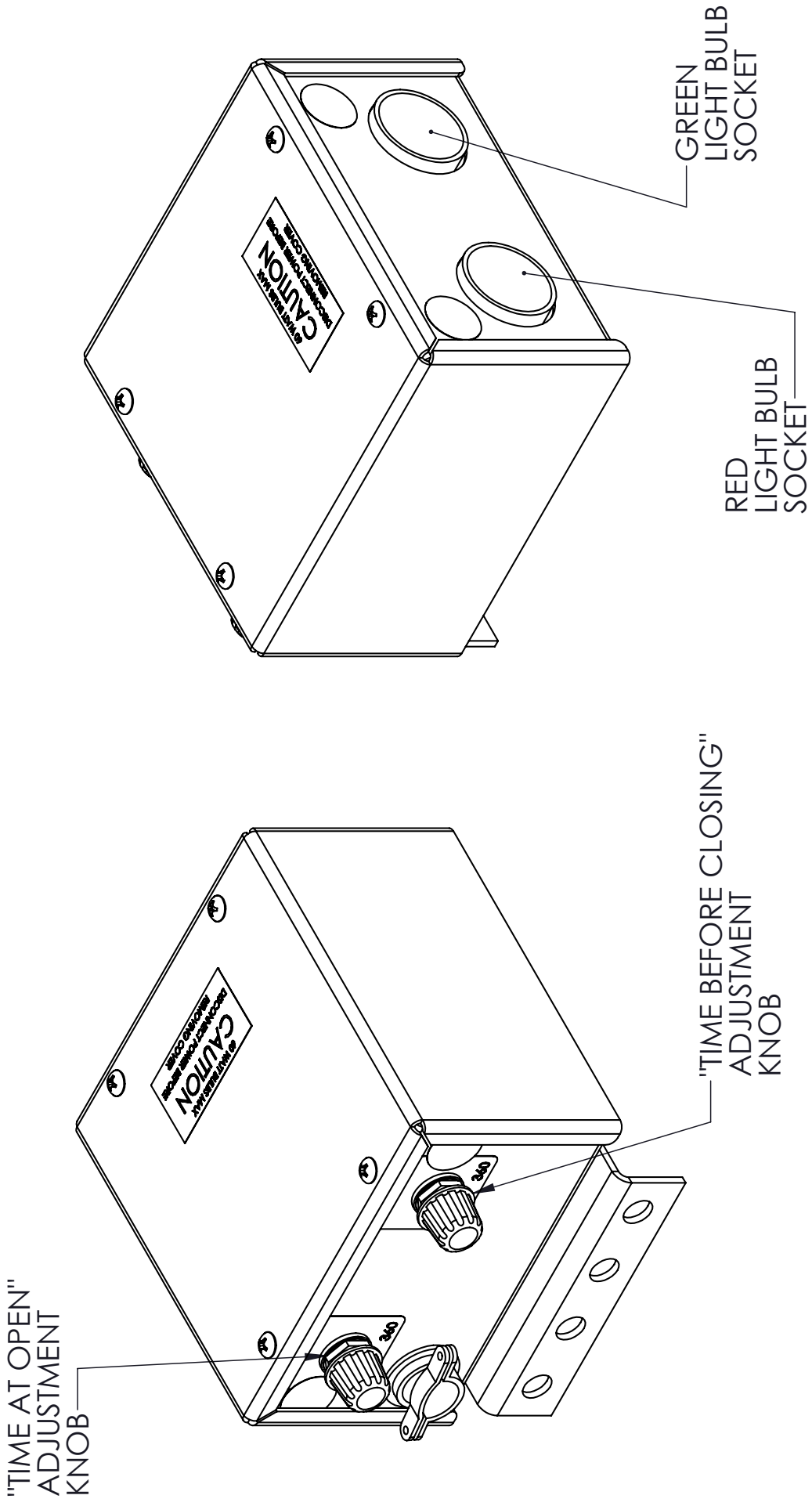


FIGURE 12

CLUTCH ADJUSTMENT

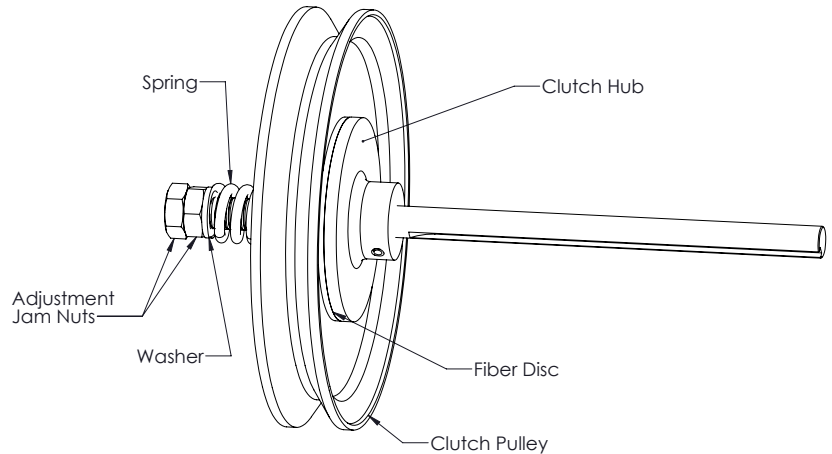
1. Loosen the adjustment jam nuts until there is little tension on the clutch spring.
2. Tighten the inner jam nut gradually until there is just enough tension to permit the operator to move the door smoothly but to allow the clutch to slip if the door is obstructed. When the clutch is properly adjusted, it should generally be possible to stop the door by hand during travel.
3. Tighten the outer jam nut and lock the nuts in place by tightening them against one another.

IMPORTANT NOTE:

The adjustable friction clutch is NOT an automatic reversing device.

⚠ WARNING

To prevent possible SERIOUS INJURY or DEATH, install reversing sensors when the 1-button control station is out of sight of the door or any other control (automatic or manual) is used. Reversing devices are recommended for ALL installations.



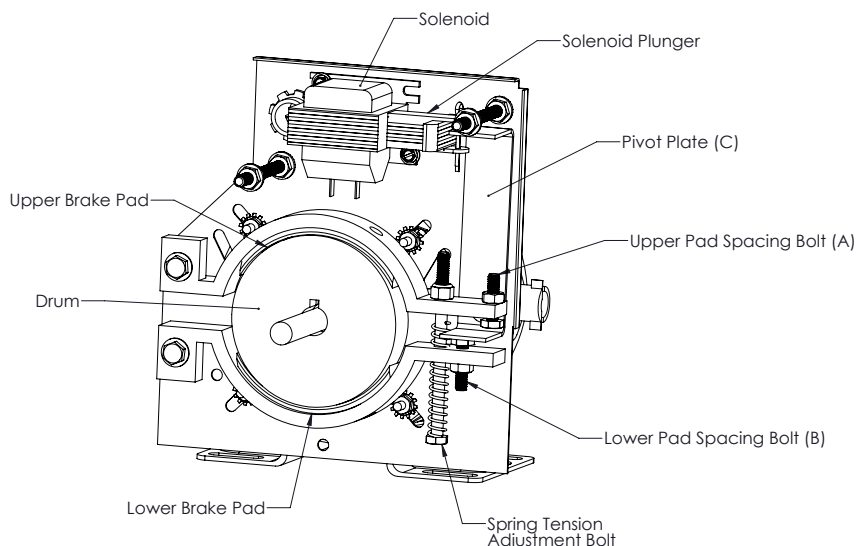
BRAKE ADJUSTMENT

An MRAT may be ordered with a brake supplied from the factory. It is designed to stop and hold the door in position whenever power is removed from the motor.

On first installation the brake should not need adjustment. The brake operation should be inspected every 3 months. As the brake pads wear, adjustments need to be made to maintain proper operation.

With the power disconnected to the operator, carefully try to rotate the large drive pulley by hand. The brake should be engaged and it should be very difficult to turn.

While pushing the solenoid plunger in by hand, there should now be clearance between the brake pads and the drum (approximately .020") allowing the pulley to rotate freely. To achieve the proper operation, adjust the upper and lower pad spacing bolts (A&B) accordingly.



⚠ WARNING

To avoid SERIOUS PERSONAL INJURY or DEATH from electrocution, DISCONNECT electric power BEFORE performing any maintenance

TESTING THE SYSTEM

Turn on the power to the operator. Test all controls and safety devices to make sure they are working properly. Refer to the previous instructions in this manual to make necessary adjustments.

IMPORTANT NOTE:

Do not leave operator power on unless all safety and entrapment devices have been tested and are working properly. Be sure you have read and understand all Safety Instructions in this manual.

IMPORTANT NOTE:

Be sure the owner or person(s) responsible for the operation of the door have read and understand the Safety Instructions, know how to electrically operate the door in a safe manner, and know how to use the manual disconnect operation of the door system.

MAINTENANCE SCHEDULE

IMPORTANT NOTE:

Do not...

- Use grease or silicone spray
- Lubricate motor
- Lubricate Clutch or V-belt

Do...

- Disconnect ALL electric power BEFORE performing any maintenance.
- Use SAE 30 Oil.
- Inspect and service whenever a malfunction is observed or suspected.



WARNING



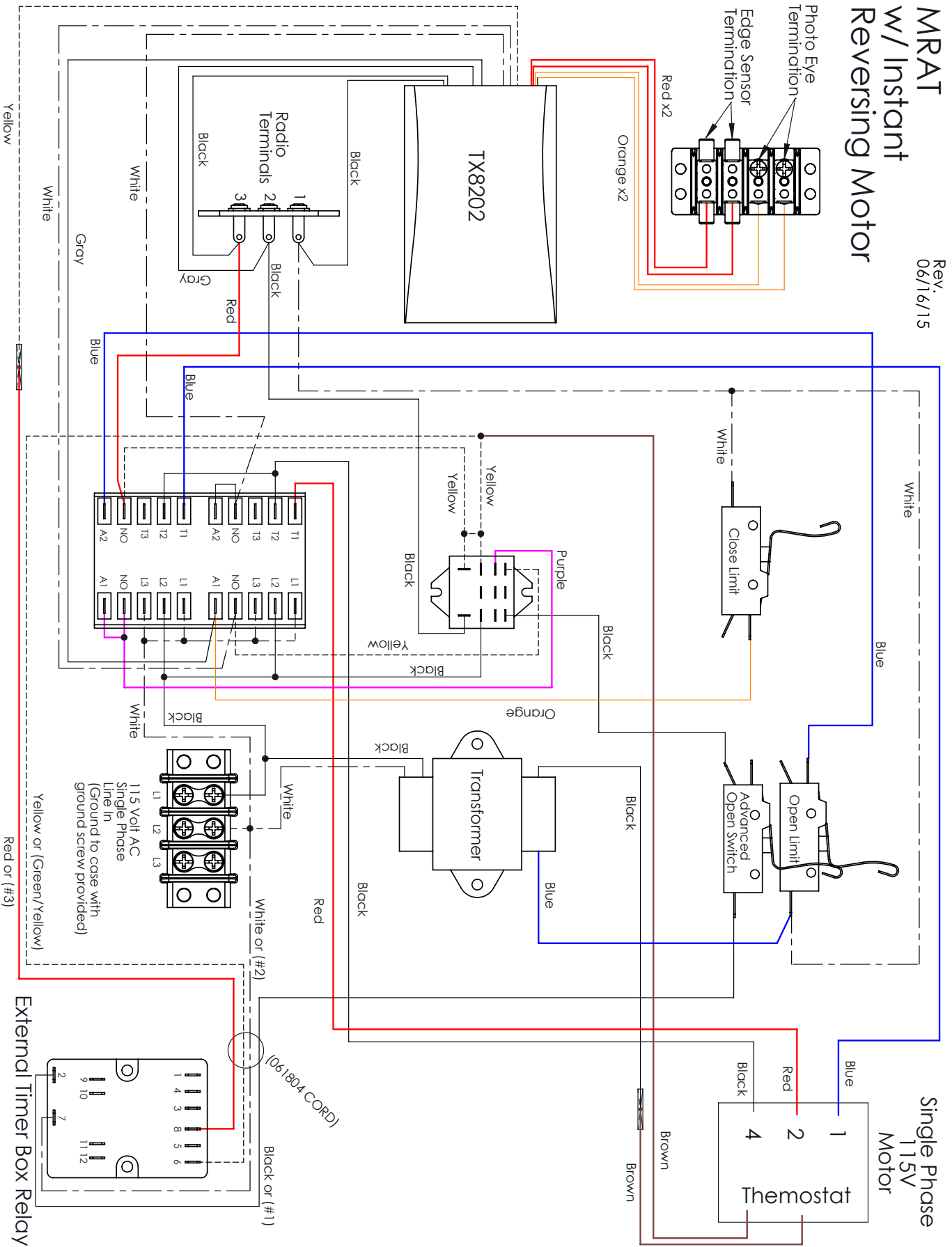
To avoid **SERIOUS PERSONAL INJURY or DEATH** from **electrocution**, disconnect ALL electric power BEFORE performing ANY maintenance.

| ITEM | PROCEDURE | EVERY 3 MONTHS | EVERY 6 MONTHS |
|--------------------|--|----------------------|----------------------|
| Drive Chain | Check for excessive slack, adjust as needed. | ● | |
| | Lubricate. | ● | |
| Sprockets | Check for set screw tightness. | ● | |
| Clutch | Check, adjust as needed. | | ● |
| Belt | Check condition & tightness. | | ● |
| Fasteners | Check, tighten if needed. | | ● |
| Manual Disconnect | Check & operate. | | ● |
| Brake (if present) | Check, adjust as needed. | ● | |

WIRING DIAGRAM

MRAT w/ Instant Reversing Motor

Rev. 06/16/15



SHOP DRAWING

