Fire Shutter,
Tube Mtr - Electric Clutch
Install and Operation Manual
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Rolling doors are movable objects and operate with the help of electric motors or manual operators. These items and their components can cause injury. In order to avoid injury to yourself and others, please follow the instructions in this manual.

- **Review the potential hazards and preventative measures listed below:**

<table>
<thead>
<tr>
<th>Potential Hazard</th>
<th>Preventative Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="danger" alt="Pinned or crushed by closing door." /></td>
<td>• Keep yourself and others clear of opening while door is in motion.</td>
</tr>
<tr>
<td></td>
<td>• Do not allow children to play near or operate door.</td>
</tr>
<tr>
<td></td>
<td>• Do not operate if door becomes jammed or broken.</td>
</tr>
<tr>
<td><img src="warning" alt="Electric shock." /></td>
<td>• Make sure electrical operator is properly grounded.</td>
</tr>
<tr>
<td></td>
<td>• Turn off source power completely prior to servicing the motor.</td>
</tr>
<tr>
<td></td>
<td>• Make sure wires are clear of any moving or potentially moving parts.</td>
</tr>
<tr>
<td></td>
<td>• Avoid pinching wires when installing the covers.</td>
</tr>
<tr>
<td><img src="warning" alt="Pinched by moving components." /></td>
<td>• Make sure the motor is turned off and unplugged before working with moving parts such as roller chain and sprockets.</td>
</tr>
<tr>
<td></td>
<td>• Locate the possible pinch-points of the unit (Drive chain, coil area, bottom bar, etc.) Do not operate the door while someone is near these areas.</td>
</tr>
</tbody>
</table>

*Table 2.1 - Potential hazards and Preventative Measures*

- **Check the following during installation and before leaving the job site:**
  a. Check that the keys have been set in place and fit properly at all sprockets.
  b. Check that the setscrews in each sprocket (one over the key and one offset from the key) have been tightened properly.
  c. Check all fasteners holding the unit to the building structures.
  d. Check all fasteners used to assemble the components of the unit together.
  e. Instruct owner or representative in the proper method of operating the door.
• Read entire instruction manual thoroughly. The manufacturer will not be held responsible for any charges incurred due to improperly installed components. Save all instructions for reference.
  a. Only trained door systems technicians should perform installation, maintenance, etc.
  b. Each unit comes with an individual item number. If the job contains multiple units, be sure to locate all the components for each item and separate each.

**WARNING**

Do not interchange parts from one door to another.

• Tube Motor Operator (Safety Instruction)
  1. Do not connect the door operator to the power source until instructed to do so.
  2. Locate the switch/control station:
     a. within sight of the door
     b. at a minimum height of 5 feet from the floor so small children cannot reach it
     c. away from all moving parts of the door.
  3. Make sure the available power supply to be connected to the operator is of the same voltage, frequency, phase, and wattage as indicated for the operator.
  4. Read and understand the wiring diagrams of the operator and the switch/control station, and any other equipment to be connected to the operator.
  5. To avoid damage to the door and operator, make all door locks inoperative. Secure locks in the unlocked position, or install external electrical interlocks to prevent operation with the locks engaged. (NOTE: external electrical interlocks should be provided only with a Smart Motor Control (SMC).
  6. Always disconnect power when installing or servicing the door operator or the door itself.
  7. All wiring is to comply with National Electric Code (NEC) and local code requirements.
  8. Consult factory for any changes as they may affect the operation of the door and result in damage or injuries.
• Tube Motor Description

Tubular motor mounts inside the door’s barrel. A sleeve adapter mounted inside the barrel is used to compensate for the difference between the outside diameter of the motor and the inside diameter of the pipe. Once operator installation is complete the tube motor will operate the unit.

• Clutch/Idler Mechanism Description

The electric clutch release for tubular motor operator possesses a feature which, in the event of a power failure or power loss or, when an alarm condition is sensed from a fire alarm and/or smoke detector, the clutch disengages and the door will close without delay. Once the power/alarm is restored the unit engages and the door is ready for normal operation. Power to the unit (24VAC/DC or 115VAC) maintains brake engagement via the electric clutch. The alarm system and/or smoke detector are wired such that an alarm condition will interrupt the power to the clutch, allowing the door to close under normal fire drop operation.

NOTE: Refer to Fire Shutter Installation Instructions provided by Manufacturer for door installation and operation.

NOTICE

THIS OPERATOR IS NOT A FIRE ALARM SYSTEM! IT CANNOT DETECT A FIRE CONDITION!

WARNING

TO REDUCE THE RISK OF INJURY TO PERSONS, USE THIS OPERATOR ONLY WITH ROLLING DOORS

USE ONLY WITH APPROVED TYPE OF DOOR

SCENARIOS

1.1 Unit has AC power and no alarm condition present

Tubular motor normally operates the door. Electric clutch is engaged and maintains door position.

1.2 Unit has no power or alarm condition present

Electric clutch disengages and the door will close without delay. Motor cannot operate the door. Once the power is restored or alarm is cleared motor will operate the door normally (resetting of door is not required).
Specifications

- **Operator Specifications:**
  - **Tubular Motor Type 550 DMI**
    - Voltage: 115 / 1 phase / 60 Hz
    - Watts: 210
    - Amps: 2.1
    - Protection index: IP44
    - Torque: 440 in.lb.
    - Speed: 12 rpm
    - Limit adjustment: Progressive
    - Limit switch (max. turns): 28
    - Run time: 5 min.
    - Override: manual
    - DMI reduction ratio: 27:1
    - Cable length: 8 ft

- **Tubular Motor Type 6100 DMI**
  - Voltage: 115 / 1 phase / 60 Hz
  - Watts: 430
  - Amps: 3.8
  - Protection index: IP44
  - Torque: 880 in.lb.
  - Speed: 14 rpm
  - Limit adjustment: Progressive
  - Limit switch (max. turns): 28
  - Run time: 5 min.
  - Override: manual
  - DMI reduction ratio: 55:1
  - Cable length: 8 ft
Specifications

- Idler Specifications:
  - Control Panel:

<table>
<thead>
<tr>
<th>INPUT VOLTAGE</th>
<th>CURRENT (mA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>24VAC +/- 5%</td>
<td>500</td>
</tr>
<tr>
<td>24VDC +/- 5%</td>
<td>500</td>
</tr>
<tr>
<td>120VAC +/- 5%</td>
<td>275</td>
</tr>
</tbody>
</table>

*ONLY USE CLASS II 24V SUPPLY.*

- Clutch:

<table>
<thead>
<tr>
<th>EXCITING VOLTAGE</th>
<th>24VDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAPACITY (at 20 degrees Celsius):</td>
<td>22W</td>
</tr>
</tbody>
</table>

- Electro-magnetic clutch:

<table>
<thead>
<tr>
<th>BORE (ROTOR):</th>
<th>0.625”</th>
</tr>
</thead>
<tbody>
<tr>
<td>STATIC TORQUE:</td>
<td>217 IN-LBS</td>
</tr>
<tr>
<td>MAX REVOLUTION:</td>
<td>4500 RPM</td>
</tr>
<tr>
<td>AIR GAP:</td>
<td>0.2MM</td>
</tr>
<tr>
<td>WEIGHT:</td>
<td>4.0 LBS</td>
</tr>
</tbody>
</table>

CONTROL PANEL

ELECTRO-MAGNETIC CLUTCH
**Tube Motor Installation**

1. Install operator into barrel:
   Insert the motor into the barrel; make sure that the motor is parallel with the pipe and that the motor slides completely into the barrel. Align the plastic tab on the motor and the slot on the sleeve adapter and slide the tubular motor all the way into the sleeve adapter. See **Figure 6.1**. The crown at the opposite end of the motor will fit inside a differential inside the sleeve/shaft. This is accomplished by gently rotating the tubular motor while pushing it in to allow for the crown to engage with the differential.

   ![Figure 6.1 - Installing Operator, Type 5 DMI or 6 DMI](image)

2. Install operator bracket:
   a. For 4” Shaft Assemblies (Type 5 & 6 Tube Motors):
      Position the angle bracket kit onto the outside face on the operator bracket as shown in **Figure 6.2**. Fasten using the (4) 1/4-20 x 3/4 button head screws, and nuts.

   ![Figure 6.2 - Angle Bracket Kit, Type 5 DMI and 6 DMI](image)
**Note:** The metric sized flat head screws, nuts & external tooth lock washer provided with the angle bracket kit will not be used.

Slide the operator bracket over motor head. Position bracket so that crank shaft is vertical & opposite the wall side. Align the (4) holes in the angle bracket kit with the corresponding holes in the tube motor and fasten using the provided hardware. See **Figure 6.3**.

![Figure 6.3 – 4” Shaft Assembly](image)

3. Install crank eye kit so that the crank eye is towards the floor. Fasten using the provided hardware.

- **Clutch/Idler Installation**

4. Install governor/idler bracket:
   Slide the 5/8” shaft extending from the barrel through the bearing on inside of bracket and then through the electromagnetic clutch. The distance to the inside of the bracket from the edge of the barrel will be approximately 13/16”. Once bracket is located correctly on shaft; secure sprocket with the key stock provided.

![Figure 6.4 – 4” Idler Bracket Assembly](image)
5. Verify correct operation of the electric clutch release:
   • The centrifugal governor is properly installed and the set screw on its support is tightened.
   • The centrifugal governor’s brake shoes assembly rotates freely inside the drum.
   • The sprockets on the 5/8" release shaft and on the centrifugal governor are aligned.
   • The keys for the electro-magnetic clutch and main sprockets are in place and the set screw is tightened.
   • A gap of +/- 1/16” exists at the electro-magnetic clutch mounting tab and mounting screw washers. This is factory preset and allows the electro-magnetic clutch to engage or disengage. DO NOT TIGHTEN THE ELECTRO-MAGNETIC CLUTCH MOUNTING TAB AGAINST THE MOUNTING POST.

6. Position the assembly on the ground in the opening so that the mounting holes in the brackets are facing the wall. Use this time to ensure that the Tube Motor is oriented as ordered (LH or RH) and that the hand crank is located away from the wall.

7. Lift the entire assembly so that the top of the bracket is flush with the top of the guides. The center of balance for the assembly will be marked as the ‘Lifting Point’ on the shaft for reference.

   **NOTICE**
   - The assembly weight will be biased towards the **operator side**, Use caution when lifting.

8. Move the assembly into position by aligning the mounting holes in the brackets with the holes in the Bracket Mounting Flats at the top of the guides. The brackets should mount on the inside of the mounting members.

9. Verify that the shaft is level and tighten the mounting hardware and set screws in the idler bracket bearing.

   **Note:** The operator wiring and limit adjustment information is provided with the operator.

   **Tip:** The limit adjustment process for the tube motor can be a time-consuming process, as the reduction throughout the motor sometimes necessitates a large number turns on each limit screw to adjust the position of the limit range. It may prove beneficial to familiarize yourself with the process, or prep the limits in-house, in order to minimize installation time spent in the field.

   ▪ Return to **“Curtain Installation”** in ES 10-340 once operator and clutch installation is completed.
Warning

1. Do not install any wiring or attempt to run the operator without checking the wiring diagrams first.
2. Disconnect power before proceeding with any wiring.
3. Do not turn on power until you have finished making all power and control wiring connections.
4. The operator must be properly grounded. Failure to properly ground the operator could result in electric shock and serious injury or death.
5. To avoid damage to the door and operator, make all door locks inoperative. Secure locks in the unlocked position, or install external electrical interlocks to prevent operation with the locks engaged. (NOTE: external electrical interlocks should be provided only with a Smart Motor Control (SMC).
6. Do not change closing control from constant pressure to momentary pressure without installing a sensing edge. This could result in serious injury or death to person(s) trapped beneath the door.
7. After installation, ensure that the operator, lock sensor, controls, and sensing edge or other entrapment protection devices have been tested and function properly.

*All wiring must conform to the National Electrical Code and local codes*

- [1] The motor must be installed with a drip loop to prevent water intrusion
- [2] Connect the motor to power using a listed junction box with appropriate cable strain reliefs.
- It is recommended a method of power disconnect for each motor be placed within sight of the motor to cut power during servicing.
- Do not use the motor cable to penetrate building walls. Connect the motor to power in a listed junction box and from the listed junction box run power in the manner prescribed by NEC and local codes.
Tubular Motor Wiring Diagrams:

**NOTICE:** For installation by a qualified electrician in accordance with national and local electrical codes, and the following instructions.

**CAUTION:** RISK OF ELECTRICAL SHOCK. Disconnect power before installing. Never wire energized electrical components.

Select conductors having 90°C or higher rated insulation having sufficient ampacity in accordance with the 60°C column of National Electrical Code® Table 310-16 or Canadian Electrical Code Table 2.

DO NOT USE TIN CONDUCTORS.

**Warning**

DO NOT wire more than one operator to a single pole switch. A second operator can be wired to the second pole of a double pole switch.

DO NOT connect two switches to an operator without a relay.

---

Power from wall:

- **BLACK** (120v - 60hz)
- **WHITE** (neutral)
- **GREEN** (ground)

---

**Power in**

- **Hot**
  - Black
- **Neutral**
  - White
- **Ground**
  - Green

**Motor Leads**

- **Direction 1**
  - Red
- **Direction 2**
  - Black
- **Neutral**
  - White
- **Ground**
  - Green

---

Wiring for one motor and one rocker switch.
**Wiring for one motor and one designer switch**

**NOTICE:** For installation by a qualified electrician in accordance with national and local electrical codes, and the following instructions.

**CAUTION:** RISK OF ELECTRICAL SHOCK. Disconnect power before installing. Never wire energized electrical components.

Select conductors having 90°C or higher rated insulation having sufficient ampacity in accordance with the 60°C column of National Electrical Code Table 310-16 or Canadian Electrical Code Table 2.

Terminal capacity: #14 AWG to #10 AWG

Strip conductors using strip gage on switch body. DO NOT USE TIN CONDUCTORS.

**Warning**

**DO NOT** wire more than one operator to a single pole switch. A second operator can be wired to the second pole of a double pole switch.

**DO NOT** connect two switches to an operator without a relay.

---

**Power from wall**

- GREEN (ground)
- BLACK (120v - 240v)
- WHITE (neutral)
- RED (direction 1)
- BLACK (direction 2)

**Power in**

- Hot: Black
- Neutral: White
- Ground: Green

**Motor Leads**

- Direction 1: Red
- Direction 2: Black
- Neutral: White
- Ground: Green

---

**Diagram Details**

- GREEN (ground)
- BLACK (120v - 240v)
- WHITE (neutral)
- RED (direction 1)
- BLACK (direction 2)
Wiring for one motor and one toggle switch

NOTICE: For installation by a qualified electrician in accordance with national and local electrical codes, and the following instructions.

CAUTION: RISK OF ELECTRICAL SHOCK. Disconnect power before installing. Never wire energized electrical components.

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DO NOT connect two switches to an operator without a relay.

---

Power from wall

<table>
<thead>
<tr>
<th>Power in</th>
<th>Hot</th>
<th>Black</th>
<th>Neutral</th>
<th>White</th>
<th>Ground</th>
<th>Green</th>
</tr>
</thead>
</table>

Motor Leads

<table>
<thead>
<tr>
<th>Direction 1</th>
<th>Red</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direction 2</td>
<td>Black</td>
</tr>
<tr>
<td>Neutral</td>
<td>White</td>
</tr>
<tr>
<td>Ground</td>
<td>Green</td>
</tr>
</tbody>
</table>
Key Switch

* One Motor
* One Key Switch

Reference Numbers
601201 - Momentary key switch, surface mount
601203 - Momentary key switch, recessed mount

NOTICE: For installation by a qualified electrician in accordance with national and local electrical codes, and the following instructions.

CAUTION: RISK OF ELECTRICAL SHOCK. Disconnect power before installing. Never wire energized electrical components.

Select conductors having 90°C or higher rated insulation having sufficient ampacity in accordance with the 60°C column of National Electrical Code Table 310-16 or Canadian Electrical Code Table 2.

DO NOT USE TIN CONDUCTORS.

Warning

DO NOT wire more than one operator to a single pole switch. A second operator can be wired to the second pole of a double pole switch.

DO NOT connect two switches to an operator without a relay.
NEW SMC
SMART MOTOR CONTROL

The “Smart Motor Control” (SMC) is an ideal general purpose intelligent control system for commercial or industrial applications. The SMC allows control of a 120VAC tube motor by most standard commercial controls and safety detectors.

FEATURES

- Mounts in standard 3 gang electrical box
- 250 mA 12 volt supply for accessories
- Diagnostic LEDs for quick, easy trouble shooting
- Supports normally open and close inputs from reversing detectors
- Supports 2 and 4 wire safety edges
- The stop button is selectable - normally open or normally close
- Control is selectable - timed run or continuous pressure
- Sequencing input supports single contact devices such as: Radio Controls, Key Switches, Card Readers
HIGH VOLTAGE CONNECTIONS

**POWER INPUTS:**
- G - Ground
- N - 120 VAC Neutral
- L - 120 VAC Hot

**MOTOR INPUTS:**
- G - Motor Ground (Green)
- N - Motor Neutral (White)
- U - Motor Up (Black*)
- D - Motor Down (Red*)

*IF MOTOR RUNS IN WRONG DIRECTION, REVERSE THE RED AND BLACK MOTOR WIRES

JUMPERS

**RUN TIME JUMPER JP1 (TOP)**

**JUMPER ON (MOM)**


NOTES:
1) THE REVERSING DETECTOR CONTROLS ARE DEACTIVATED IN THIS MODE.
2) THE SEQUENCING CONTROL IS DEACTIVATED IN THIS MODE.
3) THIS MODE CAN BE USED TO CLOSE THE DOOR IF THERE IS A MALFUNCTION IN THE REVERSING DETECTORS. THIS MUST ONLY BE DONE IF THE UP/DOWN SWITCH IS IN DIRECT VIEW OF THE DOOR. THE REVERSING DETECTORS MUST BE SERVICED AS SOON AS POSSIBLE AND THE DOOR RETURNED TO ITS NORMAL OPERATING MODE.

**JUMPER OFF (CONT)**

WITH THE JUMPER OFF, THE RUN TIMER IS ACTIVE AND THE SMC WILL DRIVE THE MOTOR FOR 1 MINUTE (OR TO THE MOTOR LIMIT) WHEN THE UP OR DOWN BUTTON IS Pressed. PRESSING THE OTHER DIRECTION WHEN THE MOTOR IS RUNNING WILL CAUSE THE MOTOR TO STOP FOR 1/4 SECOND BEFORE REVERSING DIRECTIONS.

NOTES:
1) THE SMC MUST BE IN THIS MODE FOR THE SEQUENCING AND REVERSING DETECTORS TO BE ACTIVE.
### Stop Select Jumper JP1 (Bottom)

<table>
<thead>
<tr>
<th>Jumper ON (N.O.)</th>
<th>Jumper OFF (N.C.)</th>
</tr>
</thead>
</table>

**Notes:**
1) THE JUMPER MUST BE IN THIS POSITION IF A STOP SWITCH IS NOT USED OR IF THE STOP BUTTON IS N.O.

### Reversing Detector Jumpers (JP3 JP4)

<table>
<thead>
<tr>
<th>Jumper OFF (4 Wire Edge)</th>
<th>Jumper ON (2 Wire Edge or N.O. Detector)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOTH JUMPERS JP3 AND JP4 MUST BE OFF TO USE A 4 WIRE SENSING EDGE.</td>
<td>BOTH JUMPERS JP3 AND JP4 SHOULD BE ON IF A NORMALLY OPEN REVERSING SENSOR IS USED OR IF NO REVERSING SENSOR IS USED.</td>
</tr>
</tbody>
</table>

**Notes:**
1) IF EITHER JUMPER IS OFF WITHOUT A 4 WIRE SENSING EDGE ATTACHED, THE RED SAFETY LED WILL LIGHT AND THE DOOR WILL BE LOCKED IN THE UP DIRECTION.

2) JUMPER ON, 1 JUMPER OFF (N.C. Detector)

**Notes:**
1) WITH JP4 OFF A NORMALLY CLOSE CONTACT MUST BE CONNECTED TO SE1 OR THE SMC WILL LOCK THE DOOR OPEN.
LOW VOLTAGE SWITCHING CONNECTIONS

3 BUTTON STATION

2 BUTTON STATION

NOTES:
1) SHOULD BE USED WITH REVERSING SENSORS
2) SHOWN CONFIGURED FOR A N.C. STOP BUTTON

NOTES:
1) SHOWN REQUIRING CONSTANT PRESSURE ON THE SWITCH FOR THE MOTOR TO OPERATE.
2) SWITCH MUST BE IN VIEW OF THE DOOR

SEQUENCING CONTROL

SINGLE CHANNEL RADIO

NOTES:
1) CAN BE USED WITH ANY MOMENTARY, DRY CONTACT SUCH AS KEY SWITCHES, CARD READERS, RADIO CONTROLS, ETC...
2) TWO OR MORE SWITCHES CAN BE WIRIED IN PARALLEL.
3) CONTROL WILL FOLLOW A SEQUENCE WITH EACH PULSE (UP, STOP, DOWN, STOP, UP, ......)

NOTES:
1) WIRING SHOWN IS STANDARD BUT MAY VARY WITH MANUFACTURER. CHECK INSTRUCTIONS WITH RADIO RECEIVER FOR DIFFERENCES BEFORE WIRING.
### 4 Wire Sensing Edge

<table>
<thead>
<tr>
<th>Loop 1</th>
<th>Loop 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>JP1</td>
<td>JP3</td>
</tr>
</tbody>
</table>

**NOTES:**
1. Jumpers JP3 and JP4 must be off when using a 4 wire sensing edge.
2. JP1 top jumper must be off (continue). This sets the SMC run timer on.
3. JP1 lower jumper setting depends on stop button.
4. Check sensing edge function. If the motor reverses upon sensing edge activation when the door is going up instead of down, reverse the red and black motor leads.

### NO. Sensing Edge (2 Wire)

**NOTES:**
1. Jumpers JP3 and JP4 must be on when using a normally open sensing (2 wire) edge.
2. JP1 top jumper must be off (continue). This sets the SMC run timer on.
3. JP1 lower jumper setting depends on the stop button.
4. Check sensing edge function. If the motor reverses upon sensing edge activation when the door is going up instead of down, reverse the red and black motor leads.

### N.C. Reversing Sensor

<table>
<thead>
<tr>
<th>JP3</th>
<th>JP4</th>
</tr>
</thead>
<tbody>
<tr>
<td>N.O.</td>
<td>N.O.</td>
</tr>
</tbody>
</table>

**NOTES:**
1. Jumper JP3 must be on and JP4 must be off when using normally close reversing sensor.
2. JP1 top jumper must be off (continue). This sets the SMC run timer on.
3. JP1 lower jumper setting depends on stop button.
4. Check sensing edge function. If the motor reverses upon sensing edge activation when the door is going up instead of down, reverse the red and black motor leads.

### Interlock (Keyed Lock Out)

**NOTES:**
1. A normally closed interlock (keyed lock out) can be connected in series with the N.C. stop button.
2. Should be used with reversing sensors.
3. Shown configured for a N.C. stop button.
ELECTRICAL RATINGS
INPUT POWER: 120V AC 60Hz
MOTOR OUTPUT MAXIMUM: 8AMPS
FUSED: 8AMP 125V
LOW VOLTAGE SUPPLY FOR OFF BOARD CONTROLS: 12VDC @250mA

DIAGNOSTIC LED'S
GREEN POWER LED ON - POWER AND FUSE CONNECTIONS ARE GOOD
YELLOW STOP LED ON - ACTIVE STOP SIGNAL (CONTROL IS LOCKED)
RED SAFETY LED ON - ACTIVE REVERSING DETECTOR SIGNAL (CONTROL WILL LOCK DOOR IN OPEN DIRECTION)

TROUBLE SHOOTING
PROBLEM - NO RESPONSE FROM CONTROL
1) IF THE GREEN POWER LED IS NOT ON: CONFIRM THAT THERE IS 120VAC ON THE POWER INPUT AND THAT THE CONNECTIONS ARE CORRECT.
   CHECK THE FUSE.
2) IF THE GREEN POWER AND YELLOW STOP LEDS ARE ON: CHECK THAT THE STOP JUMPER IS CONFIGURED CORRECTLY.
   CHECK CONNECTIONS TO THE STOP BUTTON.
3) IF THE GREEN POWER LED IS ON AND THE YELLOW STOP AND RED SAFETY LED'S ARE OFF: CHECK THE CONNECTIONS TO THE MOTOR.
   TEST THE MOTOR DIRECTLY WITH A TEST SWITCH.
   CHECK THE MOTOR LIMITS (TURN BOTH LIMITS PLUS 5 REVOLUTIONS).

PROBLEM - MOTOR LOCKED IN ONE DIRECTION
1) IF THE RED SAFETY LED IS ON: CHECK THE CONNECTIONS TO THE REVERSING DETECTORS.
   CONFIRM THAT THE JUMPERS JP3 AND JP4 ARE CONFIGURED CORRECTLY.
2) IF THE RED SAFETY LED IS NOT ON: CHECK THE CONNECTIONS TO THE MOTOR.
   CHECK THE MOTOR LIMIT (TURN IT PLUS 5 REVOLUTIONS).
   TEST THE MOTOR DIRECTLY WITH A TEST SWITCH.

PROBLEM - MOTOR RUNS ONLY AS LONG AS SWITCH IS HELD DOWN
THIS IS CORRECT OPERATION IF REVERSING DETECTORS ARE NOT USED. IF REVERSING DETECTORS ARE USED, CHECK THE POSITION OF THE RUN TIME JUMPER (JP1 TOP).
- Control Box Wiring Diagram:
• Installing Power Wiring Diagram:

  Unit requires one switched power input, 24VDC or 24VAC or 115VAC according to wiring diagram and local codes. Minimum wire size is 20GA copper (use heavier wire for longer runs).

**ELECTRICAL CONNECTIONS FOR FTA CONTROL PANEL TO ALARM SYSTEM/SMOKE DETECTORS**

**WARNING**: DOOR WILL CLOSE UNDER NORMAL FIRE DROP OPERATION WHEN UNIT HAS NO POWER. TO REDUCE RISK OF INJURY, ALWAYS SERVICE WITH THE DOOR IN CLOSED POSITION.

**NOTES:**

**INSTALLATION INSTRUCTIONS MUST BE FOLLOWED TO ASSURE PROPER INSTALLATION.**

1) See NFPA 80 and NFPA 72 for proper placement of detector. Note: End of line relay required per UL 864 (By others) if smoke detector power source is separate.

2) All external wiring is by others.

3) Optional keyed test switch **MUST** be located within line of sight of door.

**CAUTION:** DISCONNECT POWER BEFORE WORKING ON CIRCUIT!!
**Operation Instruction:**

Tubular motors have a built-in thermal cut-off. If, after several minutes of use, the motor will not run in either direction, allow the motor to cool for approximately 20 minutes.

A. Constant Pressure Control

1. To open the door press/turn the switch up. Releasing the switch will cause the door to stop. If a key switch is used, turn the key to the “UP” position to open the door. Release the key and the door will stop.

2. To close the door press/turn the switch down. Releasing the switch will cause the door to stop. If a key switch is used, turn the key to the “DOWN” position to close the door. Release the key and the door will stop.

B. Momentary Pressure Control

1. If a 3-button control station is used to operate the door, push the “OPEN” button to open the door, push the “CLOSE” button to close the door, push the “STOP” button to stop movement of the door while opening or closing.

2. If a key switch control station is used to operate the door, turn the key to the “OPEN” position to open the door, turn the key to the “CLOSE” position to close the door, push the “STOP” button to stop movement of the door while opening or closing.

**WARNING:**

- Do not use momentary pressure control without installing a sensing edge. This could result in serious injury or death to person(s) trapped beneath the door.

- If the door is not visible from the control station a sensing edge must be installed on the bottom of the door. Failure to install a sensing edge may result in serious injury or death to person(s) trapped beneath the door.

**Emergency Instruction Operation:**

- Tubular motors are equipped with an integrated manual override. To manually operate the door use the winding shaft provided.

- The manual override is operable only if the electromagnetic clutch of the release mechanism located at the opposite end of the barrel is engaged.
VERIFY THAT THE DOOR IS INSTALLED ACCORDING TO DOOR MANUFACTURER’S INSTALLATION INSTRUCTIONS

- Tubular Motor:
  - Adjust limits: A limit switch adjustment tool is provided with the motor

  LIMIT ADJUSTMENT SCREWS ON OPPOSITE SIDE FROM MOTOR CABLE

  MATERIAL ROLLS DOWN ON SAME SIDE AS LIMITS
  LIMIT ADJUSTMENT SCREWS ON SAME SIDE AS MOTOR CABLE

  1) Identify which limit adjustment screw controls the up limit and which controls the down limit (see above diagrams). It is important to note that the arrows by the limit adjustment screw refer to the tube’s rotation. Thus if the material comes off the tube on the back side and you are adjusting the limits from the side that the motor cable is not on (as per diagram 2), the limit adjustment screw with the arrow facing up controls the down limit and vice versa.

  2) Turning an adjustment screw positive (+) will increase the maximum travel in the direction that it controls, and turning it negative (-) will decrease the maximum travel. For the adjustment screws on the side without the motor cable, turning clockwise is positive (+) and counterclockwise is negative (-). For the adjustment screws on the side with the motor cable, turning clockwise is negative (-) and counterclockwise is positive (+)

  3) To set a limit, run the motor in the selected direction.

  4) If the motor stops on its own before reaching the desired stop, turn the appropriate limit screw positive. Every 2 to 3 turns of the limit adjustment screw will allow the motor to travel about 1 inch further. After every few turns of the limit adjustment screw, use the control switch to move the motor to the new limit position. (If the motor does not stop on its own before reaching the desired limit, go to step 6)

  5) When you are approximately at the desired limit position, use the control switch to run the motor away from the limit 2 to 3 feet, and then back. This will allow you to see precisely where the limit is set. Make small adjustments and repeat.

  6) If the motor does not stop on its own at least 6 inches before the desired limit position, stop the motor with the control switch. Then turn the limit adjustment screw in the negative direction. Confirm that the motor is stopped at the limit and set the limit as per steps 4 and 5. If the motor is not stopped at the limit, continue turning the limit adjustment screw. (up to 120 turns may be required)

NOTE: The motor has a built-in thermal cutoff. If after several minutes of use the motor will not run in either direction, allow the motor to cool for approximately 20 minutes.

- Control Panel:
  - With power applied to the unit (green power LED lit) the unit can be operated. For the first couple door cycles, the clutch may experience some slippage. This is normal and will stop once clutch friction surfaces become burnished and maximum clutch torque is attained. If slipping does not subside see Trouble Shooting section.
Drop Testing:

*Note: Perform door and electrical operator maintenance. It is important to make sure that the door operates properly in the normal mode of operation before testing the automatic closing mechanisms.*

1. With the door in fully open position, remove power (initiate alarm mode or turn off circuit); green LED will turn off.
2. Door should fully close in accordance with Door Manufacturer’s Specifications. If door does not perform correctly consult Door Manufacturer.
3. Restore power / reset alarm (green LED will light); unit is ready for normal operation.

**Warning:**

- *Door way must be clear of objects and personnel prior to testing.*
- *Door will close under normal fire drop operation when unit has no power.*
Operator Maintenance Instructions:

1. Inspect and service whenever a malfunction of either door or operator is observed or suspected.

2. Before servicing, always disconnect power supply to the operator.

3. All replacement parts must be compatible with those originally provided.

4. If an entrapment protection device is used, i.e. sensing edge, please consult the manufacturer for maintenance instruction.

**WARNING:**

- Disconnect power supply to the operator before servicing.
- Do not place hands or tools in or near the operator when the power is connected or when testing control or safety devices. Always disconnect power before servicing the operator.

Operator and Clutch Maintenance Checks:

Units require practically no special maintenance other than periodic checking to see that mechanical parts where necessary are lubricated and the electrical components are free of dirt.

The Service Technician should familiarize with the proper sequence of operation and all related controls. Power to operator must be disconnected when removing or replacing covers on electrical components, making adjustments, or performing maintenance.

1. Check wire connections for tightness and wire insulation for defects or abrasions.
2. Check to see that all conduit connections are secure.
3. Inspect roller chain and sprockets. Check sprockets for alignment and secure the set screws.
4. Generally inspect the motor mounting and tighten the fasteners.
5. Test operation through all controls.
6. Check amperage draw. Compare readings to those listed.
CHECK AT THE LISTED INTERVALS THE ITEMS IN THE FOLLOWING CHART:

<table>
<thead>
<tr>
<th>Item</th>
<th>Procedure</th>
<th>Every 3 Months</th>
<th>Every 6 Months</th>
<th>Every 12 Months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roller Chain</td>
<td>a Check tension and lubricate</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Sprockets</td>
<td>Check sprocket alignment</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tighten set screw if required</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Fasteners</td>
<td>Tighten fasteners as required</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Centrifugal Brake</td>
<td>Clean drum of debris and rust if required</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>a Use SAE 30 Oil.</td>
<td>(Never use grease or silicone spray.)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Electromagnetic Clutch Friction Material – The electromagnetic clutch is factory adjusted and should not require service. The friction surfaces should be kept free of debris, grease, or oil.

- Inspect and service whenever a malfunction is observed or suspected.
- **CAUTION:** BEFORE SERVICING, ALWAYS DISCONNECT OPERATOR FROM POWER SUPPLY.
- **WARNING:** DOOR WILL CLOSE UNDER NORMAL FIRE DROP OPERATION WHEN UNIT HAS NO POWER. TO REDUCE RISK OF INJURY, ALWAYS SERVICE WITH THE DOOR IN CLOSED POSITION

CONTACT YOUR DISTRIBUTOR FOR WARRANTY OR REPAIR PARTS.

WHEN ORDERING PARTS PLEASE SUPPLY THE FOLLOWING INFORMATION:

PART NUMBER - DESCRIPTION - MODEL NUMBER - JOB NUMBER - DOOR MARK
## OPERATOR TROUBLE SHOOTING GUIDE

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Possible Cause</th>
<th>Repair</th>
</tr>
</thead>
</table>
| Unit does not operate  
Green LED not lit | No power or incorrect voltage  
Blown fuse  
Loose connection  
Insufficient power supply | Check for correct power and voltage  
Check fuse  
Verify connections  
Verify power supply and wire size and distance is appropriate for load |
| Unit does not operate  
Green LED lit | Clutch slipping  
Clutch friction surface not burnished  
Clutch friction material worn  
Improper clutch engagement  
Keys not installed | See Initial Start-up Section  
Replace clutch  
Check clutch mounting  
Install keys |
| Door not closing under alarm  
Clutch disengaged | Excessive friction  
Centrifugal brake locked  
Door is binding | Verify installation  
Verify centrifugal brake drum for debris |

**WARNING:**
- **DOOR WILL CLOSE UNDER NORMAL FIRE DROP OPERATION WHEN UNIT HAS NO POWER. TO REDUCE RISK OF INJURY, ALWAYS SERVICE WITH THE DOOR IN CLOSED POSITION**