

***Installation Instructions,
Fire Shutter
Tube Mtr – Electric Clutch***

Section 1 – Table of Contents





Section 2 – Safety Check List	2
Section 3 – Freight Receiving	3
Section 4 – Pre-installation	4
Section 5 – Torque Specifications	5
Section 6 – Maintenance Schedule	6
Section 7 - Introduction	9
Section 8 - Specifications	10
Section 9 - Tube Motor and Clutch Installation	12
Section 10 - Wiring Instruction and Diagrams	15
Section 11 - Operating Instruction	27
Section 12 - Initial Start-Up	28
Section 13 - Drop Testing	29
Section 14 - Maintenance Instruction and Schedule	30
Section 15 - Trouble Shooting Guide	32

Section 2 – Safety Check List

Rolling doors are large, movable objects. They move with the help of electric motors or manual operators (chain, crank, push up, etc), and most have springs under high tension. 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 2.1 - Potential Hazards and Preventative Measures

Potential Hazard	Preventative Measure	
	<p style="text-align: center;">⚠ DANGER</p> <p>Pinned or crushed by closing door.</p>	<ul style="list-style-type: none"> • Keep yourself and others clear of opening while door is in motion. • Do not allow children to play near or operate door. • Do not operate if door becomes jammed or broken.
	<p style="text-align: center;">⚠ WARNING</p> <p>Struck by adjusting wheel bar while applying spring turns.</p>	<ul style="list-style-type: none"> • Be sure bar is adequate in strength and long enough to allow installer to apply the necessary torque. • Make sure bar is fully seated into the adjusting wheel slot before applying pressure. • Use two bars while applying turns to the adjusting wheel.
	<p style="text-align: center;">⚠ WARNING</p> <p>Electrical shock.</p>	<ul style="list-style-type: none"> • Make sure electrical operator is properly grounded. • Turn off source power completely prior to servicing the motor. • Make sure wires are clear of any moving or potentially moving parts. • Avoid pinching wires when installing the motor cover.
	<p style="text-align: center;">⚠ WARNING</p> <p>Pinched by moving components.</p>	<ul style="list-style-type: none"> • Make sure the motor is turned off and unplugged before working with moving parts such as roller chain and sprockets, drop-out mechanisms, adjusting wheels, etc. • 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.

- **Check the following during installation and before leaving the job site:**
 - a. If the unit has tension springs, be sure the proper amount of tension is applied to the torsion springs, in order to properly counterbalance the weight of the curtain.
 - b. Securely fasten the tension adjusting wheel in place with the appropriate hardware provided.
 - c. Check that the keys and/or cotter pins have been set in place and fit properly at all sprockets or gears.
 - d. Check that the setscrews in each sprocket or gear (one over the key and one offset from the key) have been tightened properly.
 - e. Check all fasteners holding the unit to the building structures.
 - f. Check all fasteners used to assemble the components of the unit together.
 - g. Instruct owner or representative in the proper method of operating the door.

Section 3 – Freight Receiving

- **Upon delivery, check condition of components for damage.**
- **If damage occurred in transit, the installation should not proceed without authorization.**

NOTICE

If the installation proceeds, neither the carrier nor the manufacturer will assume responsibility for replacing the damaged material.

- **If the installation is stopped due to damage, do the following:**
 1. Take pictures of the damage.
 2. Do not move material from point of delivery to other premises once the damaged components are discovered.
 3. Do not unpack, if the damage is visible prior to removing packaging, until an inspection is made.
 4. If the damage is found while removing contents from packaging, the packaging material must be saved until inspection is made.
 5. Container and packaging should be retained by consignee until inspection is made.
 6. Have components inspected by carrier's representative within 15 days from date of delivery.
 7. Consignee must obtain a copy of the Inspection Report.
- **Returning damaged components:**
 1. Obtain permission from carrier to return.
 2. Route the return shipment via the identical carrier(s) involved in the original shipment.
 3. Notify the manufacturer when shipment is returned to manufacture plant.
- **Verify that all components have arrived. Look for the following:**
 1. Job construction drawings featuring different views (elevation, section, plan, etc.)
 2. (2) Guide assemblies; check for guide weathering if included in order
 3. Barrel assembly
 4. Curtain assembly with bottom bar attached
 5. (2) Bracket assemblies
 6. Operator; if not attached to bracket
 7. Operator cover; may not be included in order
 8. Adjusting wheel; if the barrel assembly contains springs
 9. Inertia brake; typically on units with springless barrel assemblies
 10. Hood and hood supports; may not be included in order
 11. Hardware
 12. Misc. items (Reelite, lintel seal, hood baffle, etc.)
 13. Verify material/finish/color of components matches what is listed on the job construction drawings and/or what was ordered.
- **If the delivery is incomplete:**
 1. Make note on delivery receipt.
 2. Note should be verified by driver's signature.
 3. Notify carrier and manufacturer.

Section 4 - Pre-installation

- **Read entire instruction manual thoroughly. The manufacturer will not be held responsible for any charges incurred due to improperly installed components.**
 - 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.

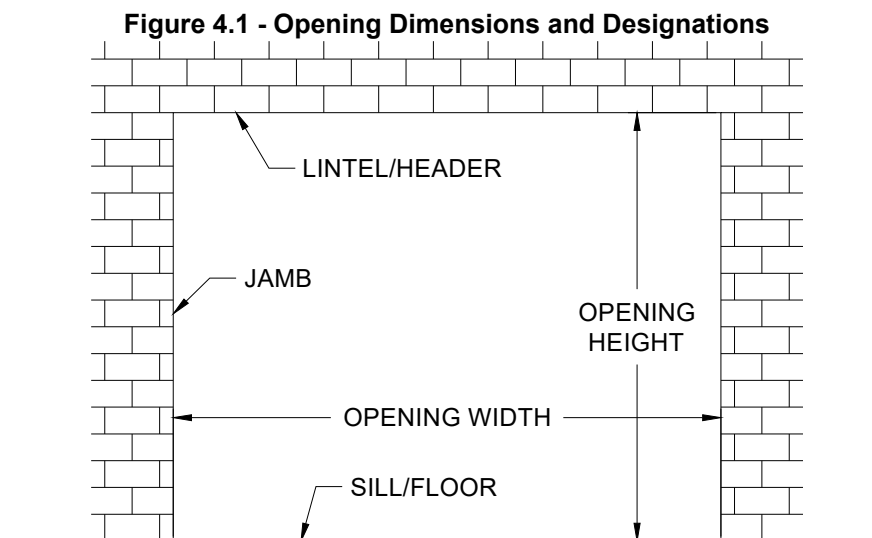
⚠ WARNING

Do not interchange parts from one door to another.

- c. Find the job construction drawings for the unit being installed and check the dimensions of the opening against those on the drawings. See **Figure 4.1** below.
- d. If the opening dimensions differ from those on the drawings, **do not proceed**, check with distributor/manufacturer to be sure the correct door is being installed.
- e. Check the jambs of the opening for plumb. Check the head/lintel and floor for level. If the unit is to be free standing, for example mounted to tubes, check the floor and ceiling for level and for adequate mounting areas at the top and bottom.

Note: *The floor may not be level if a pitched bottom bar is specified.*

- **Work Area:**
 - a. The key to a smooth installation is a clean and well-prepared work environment. Once the components have been inspected and the job construction drawings have been reviewed; lay out the components in the order of installation.
 - b. The opening for the door should be cleaned and inspected for rough surfaces and construction debris.
 - c. Lastly the mounting hardware supplied with the door should correspond with the surface and construction features of the opening.
 - d. The basic assembly sequence is as follows: guides, barrel w/ rings or tapped holes, brackets, motor operator (if applicable), curtain, bellmouth, stoppers, weather stripping, hood, and operator/adjustor/idler covers.



Section 5 – Torque Specifications

Table 5.1 – Torque Recommendations for Guide Assembly and Wall Fasteners

Bolt size/type	Torque (ft lbs) ^a
1/4-20 Grade 2 steel bolt	6
5/16-18 Black Oxide Socket Cap	25
3/8-16 18-8 stainless steel bolt	20
3/8-16 Grade 2 steel bolt	20
3/8-16 Grade 5 steel bolt	31
3/8-16 Grade 8 steel bolt	45
1/2-13 Grade 5 steel bolt	75
1/2-13 Grade 8 steel bolt	107
5/8-11 Grade 8 steel bolt	212
3/4-10 Grade 8 steel bolt	376
^a The recommended torque for steel bolts is based on a plated bolt that has not been lubricated.	

Table 5.2 - Torque Recommendations for Solid Masonry Wall Anchors

Anchor Size (nominal)	Manufacturer/Torque (ft lbs) ^a	
	Simpson Wedge-All	Hilti-Kwik Bolt 3
3/8	30	20
1/2	60	40
5/8	90	85
3/4	150	150
^a Torque values for grout filled block are different, reference bolt manufacturer for these values.		

Section 6 – Maintenance Schedule

▪ **Maintenance Schedule:**

Note: If any of the following problems exist, **do not** operate the door until repaired.

Component	What to look for and how often the components must be inspected:	Weekly	Monthly	Quarterly	What to do if problem exists:
Curtain & Bottom Bar	Are any curtain components damaged (slats, endlocks, etc.)?	X			Contact Service about replacing damaged parts.
	Is bottom bar damaged?	X			Contact Service about replacing damaged parts.
	Are bottom bar fasteners in place and properly tightened?		X		Fasteners must be inspected/replaced and properly tightened.
	Are fasteners attaching curtain to the barrel in place and properly tightened?		X		Fasteners must be inspected/replaced and properly tightened.
	Do you notice any hang-ups, jamming or other problems preventing the door from moving smoothly throughout the opening?	X			Check for external issues, if none exist, contact Service.
	Do you notice any odd or excessive noise when the door is operated?	X			Check for external issues, if none exist, contact Service.
	If there is a bottom seal, is it damaged?		X		Contact Service about replacing damaged parts.
	If there is locking, does it function properly?	X			Check for external issues, if none exist, contact Service.
Brackets	Are brackets plumb and perpendicular with wall?			X	Contact Service.
	Are bracket fasteners in place and properly tightened?			X	Fasteners must be inspected/replaced and properly tightened.
	Do you notice signs of excessive wear on the bearings (i.e. binding, excessive noise, etc.)?		X		If there is a grease fitting, apply grease, if not, contact Service.
	Is adjusting wheel & pin secure?			X	Contact Service.
	Is drive chain sufficiently lubricated?			X	Apply chain lube.
	Is drive chain in need of tightening?			X	Contact Service for instructions on how to tension the chain.
	Is drive or driven sprocket damaged?		X		Contact Service about replacing damaged parts.
Guides	Are wall fasteners in place and properly tightened?		X		Fasteners must be inspected/replaced and properly tightened.
	Are guide assembly fasteners in place and properly tightened?		X		Fasteners must be inspected/replaced and properly tightened.
	Is guide gap dimension correct?		X		Check job construction drawings and adjust gap as required. If job construction drawings are not available, contact Service.
	Are any of the guide parts bent or damaged?		X		Contact Service.
	Are stoppers loose, damaged, or missing?		X		Stoppers must be inspected/replaced and properly tightened.
Hood and Fascia	Is hood/fascia dented or damaged?			X	Remove hood/fascia. Repair if possible. If not leave hood/fascia off and contact Service.
	Is curtain rubbing against the hood/fascia?	X			Hood/fascia may have been damaged. Contact Service.
	Is hood/fascia level?			X	Check fasteners, they may be loose or missing. Replace as soon as possible.

Section 6 – Maintenance Schedule

	Are guide assembly fasteners in place and properly tightened?		X		Fasteners must be inspected/replaced and properly tightened.
	Is hood support level?			X	Check fasteners, they may be loose or missing. Replace as soon as possible.
Door operation	Does the door require excessive force to open?		X		Check for hang-ups or obstructions. Ensure spring tension is set correctly. Contact Service.
	If the door contains locking, does the locking mechanism function properly and securely hold the door in the closed position?		X		Check for damage and other external issues. Contact Service.
	If there is a sensing edge, does it function properly?	X			Cut power and check for loose wires. Contact Service for further instruction.
Motor Operator	Are the fasteners attaching the motor-to-the mounting bracket, and mounting bracket-to-the door bracket secure?			X	Fasteners must be inspected/replaced and properly tightened. Contact Service for replacement hardware.
	Are the sprockets properly aligned?			X	Realign the sprockets as secure using the set screws. Recheck chain tension.
	Are the sprocket keys properly aligned with sprockets and securely fastened with the set screws?			X	Reposition the keys so they fully engage the keyway in the sprocket. Tighten the set screws.
	Is the door stopping correctly at the open (before bottom bar contacts the stoppers) and closed (as soon as the bottom bar contacts the floor) positions?		X		Limits may have to be adjusted in the motor operator. Refer to the operator owner's manual or contact Service.
	Is the operator functioning normally?		X		Refer to the <i>Operator Troubleshooting Table</i> on the following page to diagnose the problem.

Section 6 – Maintenance Schedule

▪ **Operator Troubleshooting:**

Note: If you suspect you are having an issue with your operator, use the following table to determine the potential causes. If the provided solution does not eliminate the issue, or the table does not address your particular problem, contact the Service Department.

Component	Problem	Potential Cause	Solution
Motor Operator	Motor Operator does not run when OPEN or CLOSE button is pushed	The circuit breaker may be flipped or fuse blown.	Reset breaker or replace fuse. Contact Service if replacement fuse is needed.
		The thermal overload may be tripped.	Reset thermal overload.
		Manual interlock switch is open (on units with emergency operator).	Close manual interlocks.
		External interlock may be opened.	Close external interlock.
	Motor operator runs but the door does not move	Sprocket key may be missing or drive chain may be broken.	Contact Service for repair parts. Install key or replace chain.
		Clutch may be slipping.	Adjust if possible. Contact Service otherwise.
	Motor hums but does not run	Door or drive chain may be jamming.	Check for hang-ups or obstructions. Try to operate manually. If issue persists, contact Service.
		Dead phase in 3 phase system.	Check power supply.
		Brake does not release.	Check power to brake solenoid.
		Open motor winding.	Check that all connections are secure.
	Motor operator runs in wrong direction and limits do not function	3 phase operator power supply is out of phase.	Interchange any 2 power leads to unit.
	Door drifts when motor shuts off	Brake may be improperly adjusted or broken.	Check brake components. Contact Service for replacement parts or adjust instructions.
	Motor operator does not shut off at full OPEN or at full CLOSE position	Limits may need adjustment.	Refer to the operator owner's manual to readjust limits.
		Sprocket on limit shaft may be slipping or limit drive chain may be broken.	Ensure sprocket key is correctly installed and set screws are tightened. Contact Service for replacement chain if broken.
Limit switch may be defective.		Contact Service.	
Limit Switches	Limit switch does not hold setting	Drive chain may be too loose, allowing the chain to jump sprocket teeth.	Adjust chain to proper tension. Contact Service for additional information.
		Limit nut retainer not engaging slots in limit nuts.	Be sure retainer is securely engaged in slots of both limit nuts.
		Limit nuts binding on screw threads, allowing them to jump position on retainer.	Lube screw thread. Check that limit nuts turn freely.

Section 7 – Introduction

▪ 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).

Section 8 – 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

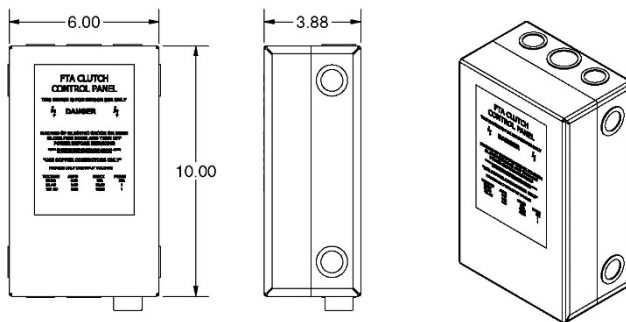
Voltage.....	115 / 1 phase / 60 Hz
Watts.....	430
Amps.....	3.8
Protection index.....	IP44
Torque.....	880 in.lb.
Speed.....	14 rpm
Limit adjustment.....	Progressive
Limit switch (max. turns).....	28
Run time.....	5 min.
Override.....	manual
DMI reduction ratio.....	55:1
Cable length.....	8 ft

Section 8 – Specifications

- **Idler Specifications:**

- **Control Panel:**

INPUT VOLTAGE	CURRENT (mA)
^a 24VAC +/- 5%	500
^a 24VDC +/- 5%	500
120VAC +/- 5%	275
^a ONLY USE CLASS II 24V SUPPLY.	



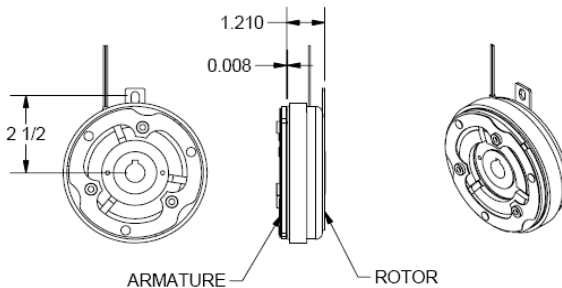
CONTROL PANEL

- **Clutch:**

EXCITING VOLTAGE:	24VDC
CAPACITY (at 20 degrees Celsius):	22W

- **Electro-magnetic Clutch**

BORE (ROTOR):	0.625"
STATIC TORQUE:	217 IN-LBS
MAX REVOLUTION:	4500 RPM
AIR GAP:	0.2MM
WEIGHT:	4.0 LBS



ELECTRO-MAGNETIC CLUTCH

Section 9 – Tube Motor and Clutch Installation

▪ 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.

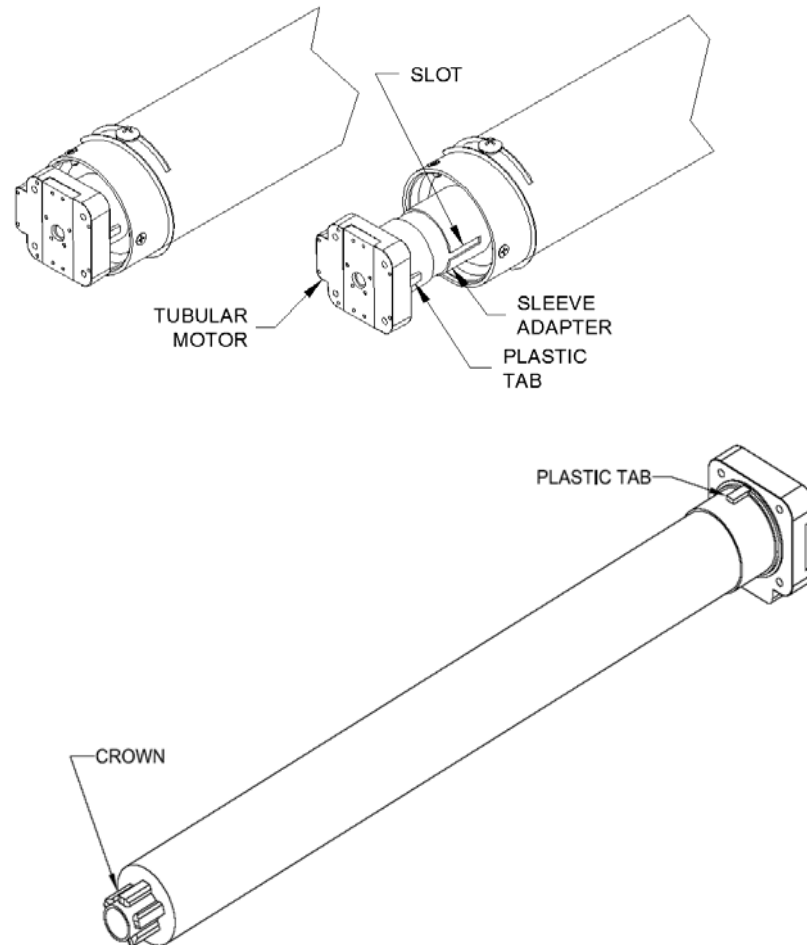


Figure 6.1 – Installing Operator, Type 5 DMI or 6 DMI

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.

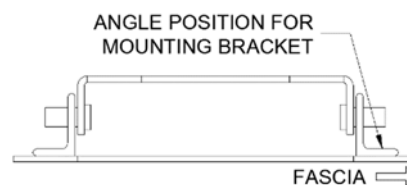


Figure 6.2 – Angle Bracket Kit, Type 5 DMI and 6 DMI

Section 9 – Tube Motor and Clutch Installation

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**.

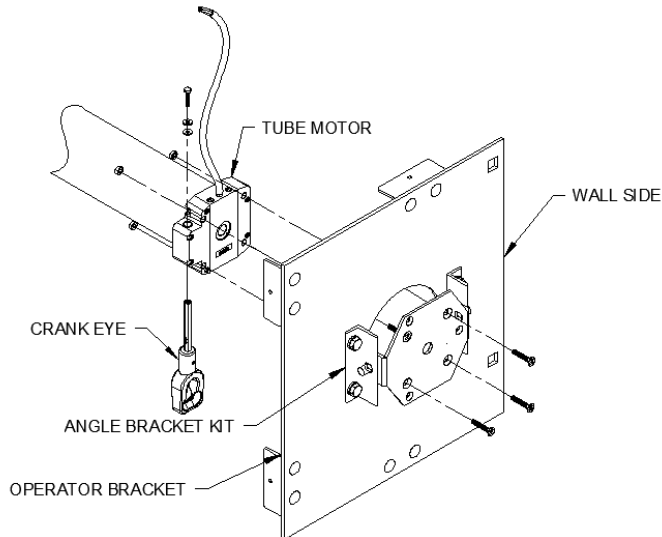


Figure 6.3 – 4" Shaft Assembly

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.

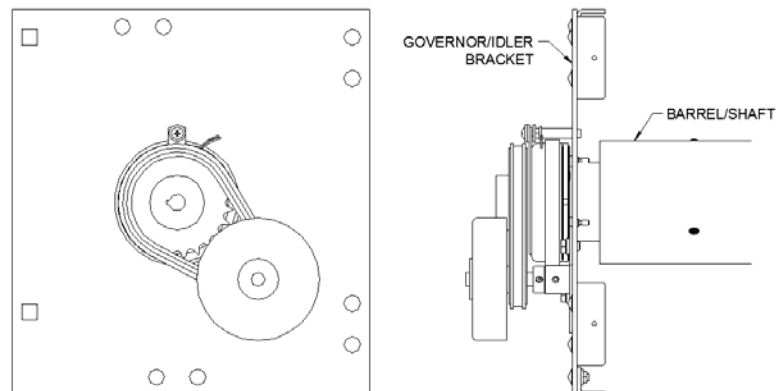


Figure 6.4 – 4" Idler Bracket Assembly

Section 9 – Tube Motor and Clutch Installation

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.**

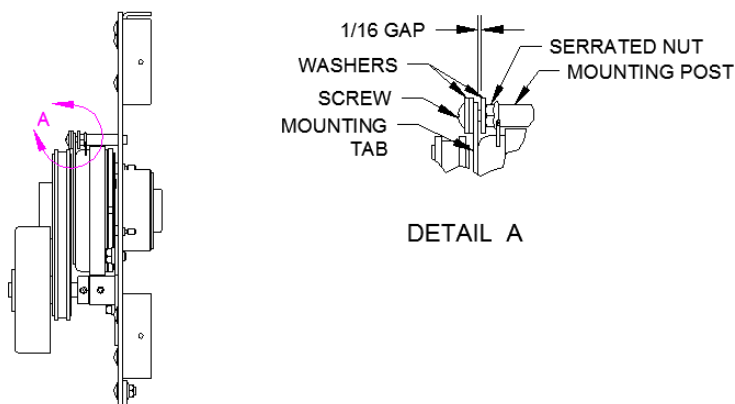


Figure 6.4 – 4” Idler Bracket Assembly

- Abnormal friction is not detected at the release assembly when rotating the door barrel.
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.

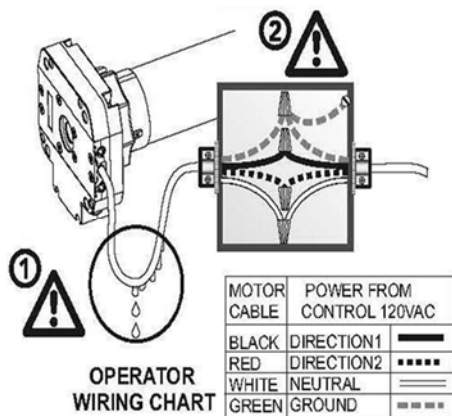
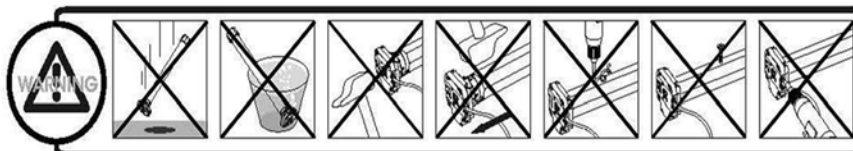
Tip: The limit adjustment process for the tube motor can be a time-consuming process, as the reduction throughout the motor sometimes necessitates a large number of turns on each limit screw to adjust the position of the limit range. It may prove beneficial to familiarize yourself with the process, or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

Section 10 – Wiring Instruction and Diagrams

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 proscribed by NEC and local codes.

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 (NEC) Table 310-16 or Canadian Electrical Code Table 2

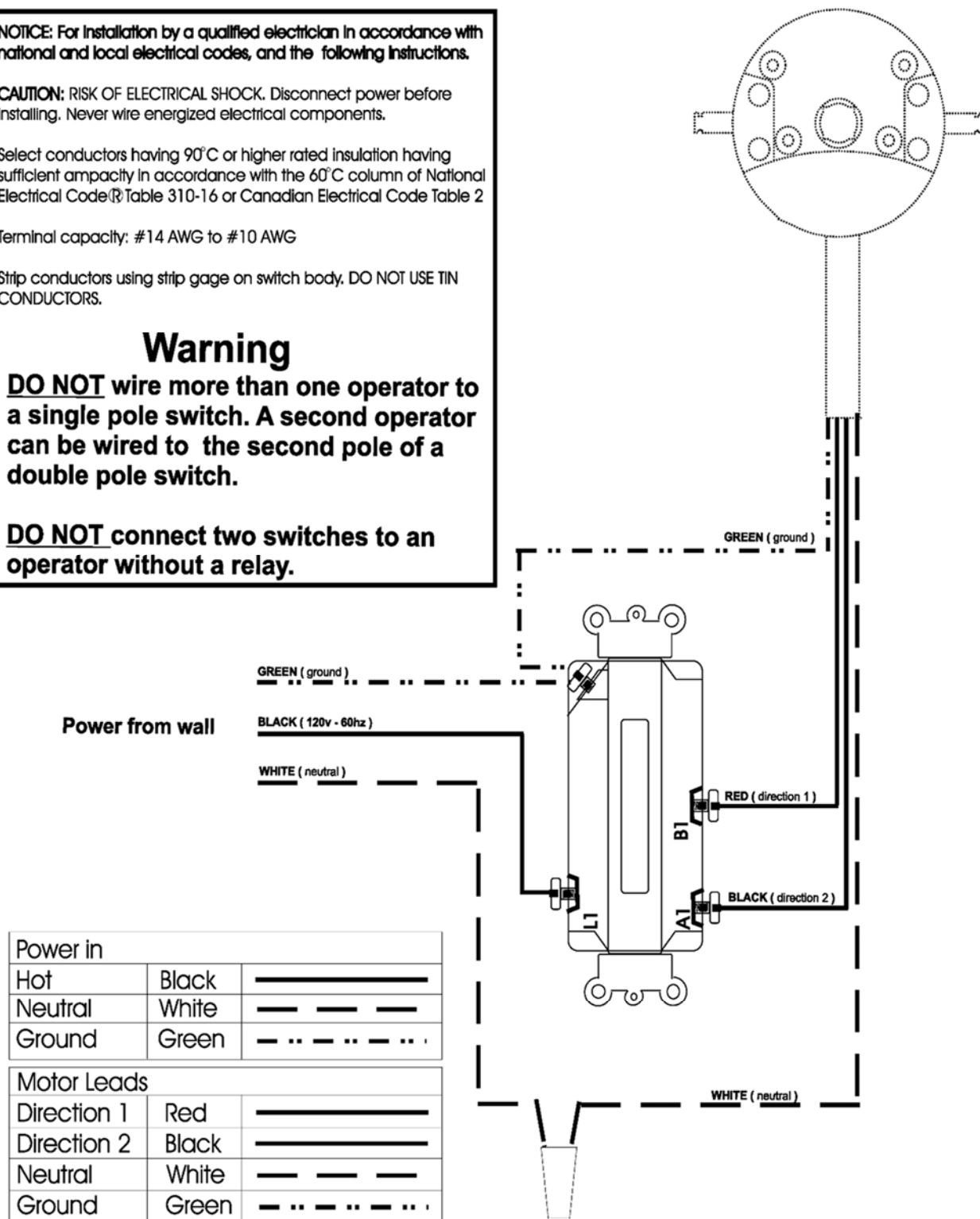
Terminal capacity: #14 AWG to #10 AWG

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.

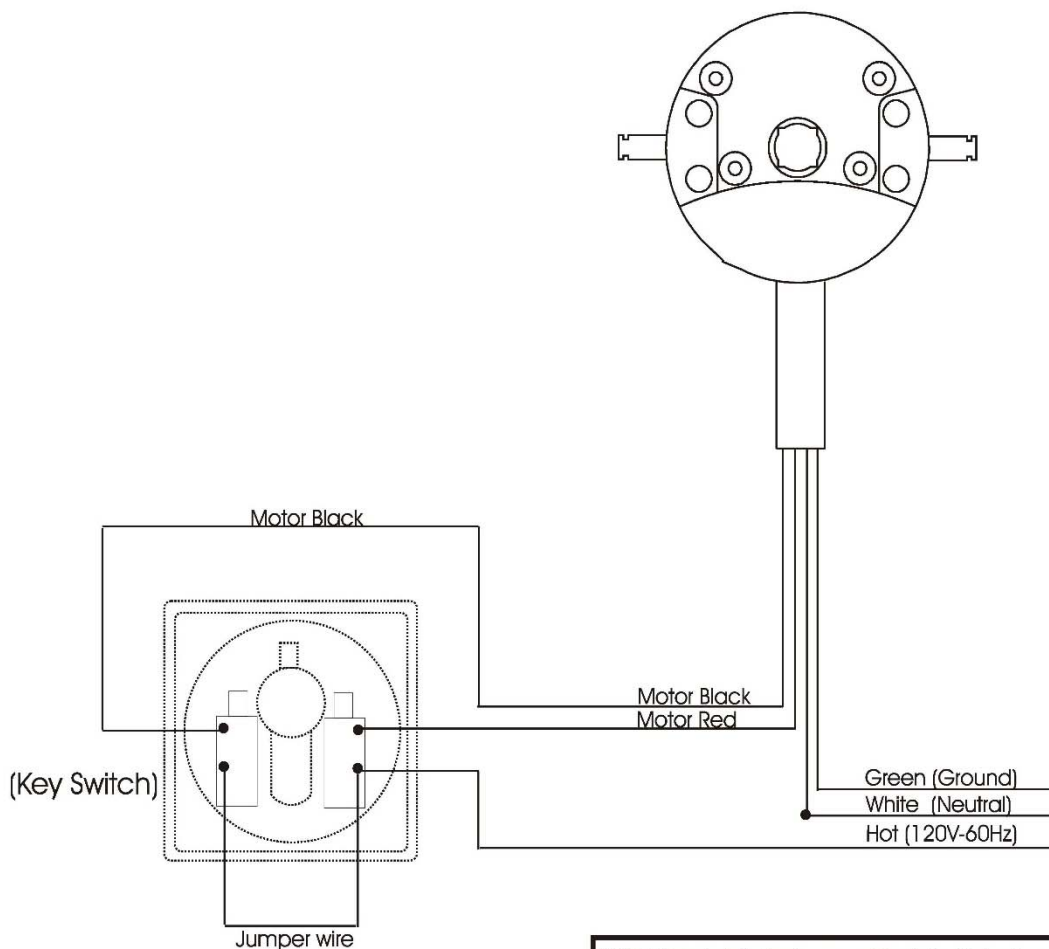
DO NOT connect two switches to an operator without a relay.



Power in		
Hot	Black	
Neutral	White	
Ground	Green	

Motor Leads		
Direction 1	Red	
Direction 2	Black	
Neutral	White	
Ground	Green	

Section 10 – Wiring Instruction and Diagrams



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.

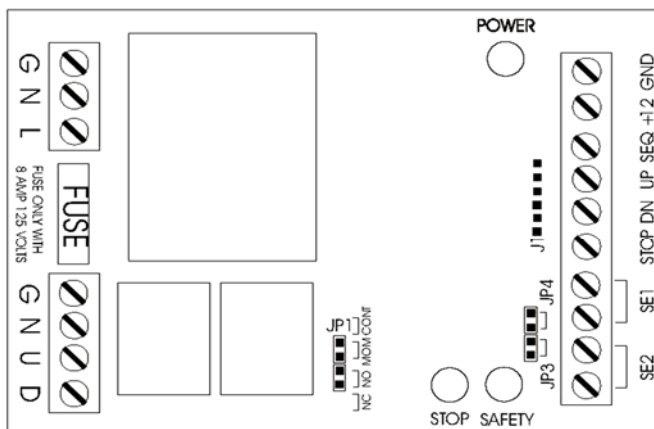
Warning

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

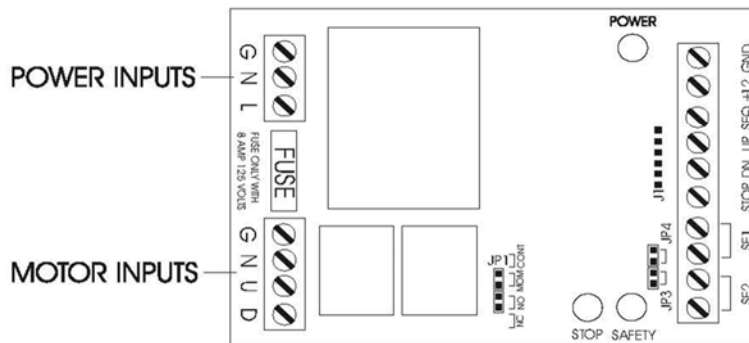
- Mounts in standard 3 gang electrical box
- 250 mA 12 volt supply for accessories
- Diagnostic LEDs for quick, easy trouble shooting
- Supports normally open and close inputs from reversing detectors
- Supports 2 and 4 wire safety edges
- The stop button is selectable - normally open or normally close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

Section 10 – Wiring Instruction and Diagrams



SIMU U.S. INC
 6100 BROKEN SOUND PKWY. N.W., #14
 BOCA RATON, FL 33487
 PHONE: 800-822-7468 □ FAX: 561-995-7502

INSTALLERS MANUAL
 PAGE: 1 OF 5



HIGH VOLTAGE CONNECTIONS

POWER INPUTS: G - GROUND
 N - 120 VAC NEUTRAL
 L - 120VAC 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)

WITH THE JUMPER ON, THE RUN TIMER IS OFF AND THE SMC WILL DRIVE THE MOTOR ONLY AS LONG AS THE UP OR DOWN BUTTON IS PRESSED

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)



JUMPER ON (N.O.)

WITH THE JUMPER ON, THE STOP BUTTON IS SELECTED NORMALLY OPEN (N.O.). A CLOSED STOP CONTACT WILL STOP THE MOTOR AND LIGHT THE YELLOW STOP LED.

NOTES:

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



JUMPER OFF (N.C.)

WITH THE JUMPER OFF, THE STOP BUTTON IS SELECTED NORMALLY CLOSE (N.C.). A OPEN STOP CONTACT WILL STOP THE MOTOR AND LIGHT THE YELLOW STOP LED

NOTES:

1) THE JUMPER MUST BE IN THIS POSITION IF A N.C. STOP SWITCH IS USED. LEAVING THE JUMPER ON WITHOUT A N.C. STOP BUTTON ATTACHED WILL CAUSE THE SMC TO NOT OPERATE.

REVERSING DETECTOR JUMPERS (JP3 JP4)



JUMPERS OFF (4 WIRE EDGE)

BOTH JUMPERS JP3 AND JP4 MUST BE OFF TO USE A 4 WIRE SENSING EDGE.

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.



JUMPERS ON
(2 WIRE EDGE OR N.O. DETECTOR)

BOTH JUMPERS JP3 AND JP4 SHOULD BE ON IF A NORMALLY OPEN REVERSING SENSOR IS USED OR IF NO REVERSING SENSOR IS USED.

NOTES:

1) IT IS STRONGLY RECOMMENDED THAT A REVERSING SENSOR BE USED IF THE SMC RUN TIMER IS ON.



1 JUMPER ON, 1 JUMPER OFF
(N.C. DETECTOR)

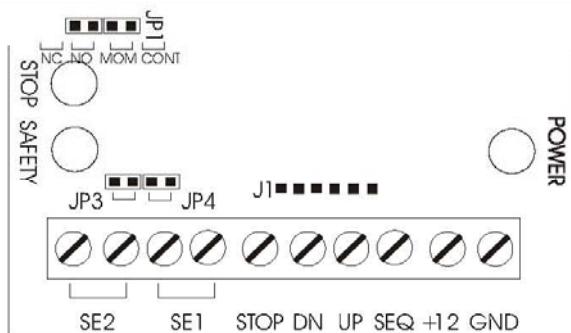
WITH JUMPER JP3 ON AND JP4 OFF A NORMALLY CLOSE REVERSING SENSOR CAN BE CONNECTED TO SE1.

NOTES:

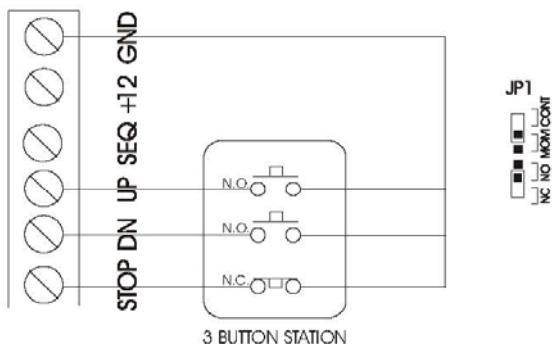
1) WITH JP4 OFF A NORMALLY CLOSE CONTACT MUST BE CONNECTED TO SE1 OR THE SMC WILL LOCK THE DOOR OPEN.



LOW VOLTAGE SWITCHING CONNECTIONS

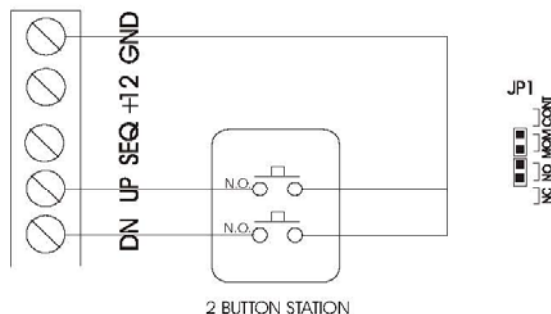


3 BUTTON STATION



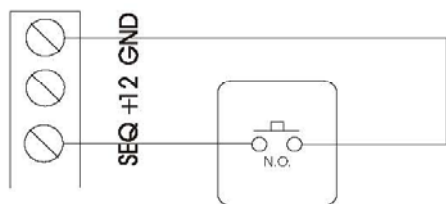
- NOTES:
1) SHOULD BE USED WITH REVERSING SENSORS
2) SHOWN CONFIGURED FOR A N.C. STOP BUTTON

2 BUTTON STATION



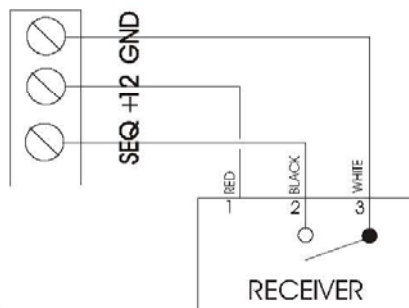
- NOTES:
1) SHOWN REQUIRING CONSTANT PRESSURE ON THE SWITCH FOR THE MOTOR TO OPERATE.
2) SWITCH MUST BE IN VIEW OF THE DOOR

SEQUENCING CONTROL



- 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 WIRED IN PARALLEL.
3) CONTROL WILL FOLLOW A SEQUENCE WITH EACH PULSE (UP, STOP, DOWN, STOP, UP,)

SINGLE CHANNEL RADIO

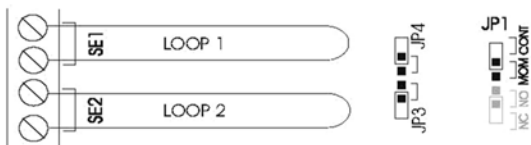


- NOTES:
1) WIRING SHOWN IS STANDARD BUT MAY VARY WITH MANUFACTURER. CHECK INSTRUCTIONS WITH RADIO RECEIVER FOR DIFFERENCES BEFORE WIRING.

Section 10 – Wiring Instruction and Diagrams



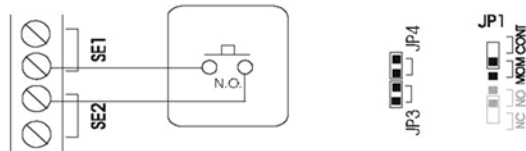
4 WIRE SENSING EDGE



NOTES:

- 1) JUMPERS JP3 AND JP4 MUST BE OFF WHEN USING A 4 WIRE SENSING EDGE.
- 2) JP1 TOP JUMPER MUST BE OFF (CONT). 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.

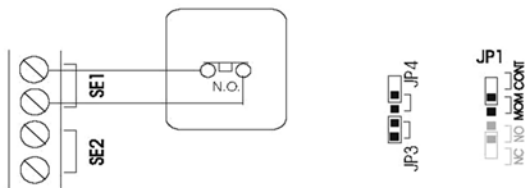
N.O. SENSING EDGE (2 WIRE)



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 (CONT). 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.

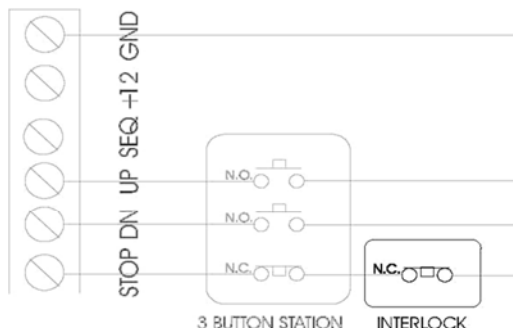
N.C. REVERSING SENSOR



NOTES:

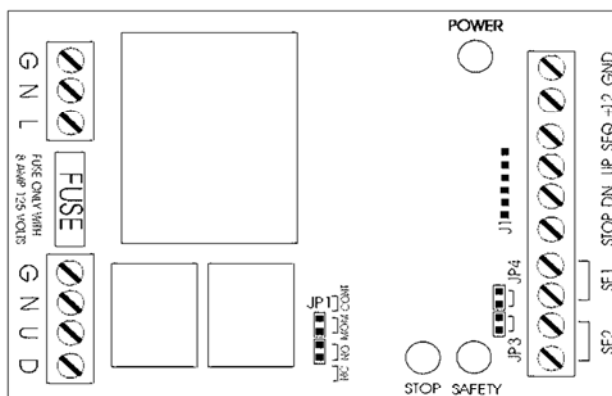
- 1) JUMPER JP3 MUST BE ON AND JP4 MUST BE OFF WHEN USING NORMALLY CLOSE REVERSING SENSOR.
- 2) JP1 TOP JUMPER MUST BE OFF (CONT). THIS SETS THE SMC RUN TIMER ON.
- 3) JP1 LOWER JUMPER SETTING DEPENDS ON STOP BUTTON.
- 4) CHECK SENSING EDGE FUNCTION. IF THE MOTOR REVERSES UPON SENSING EDGE ACTIVATION 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 LED'S 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

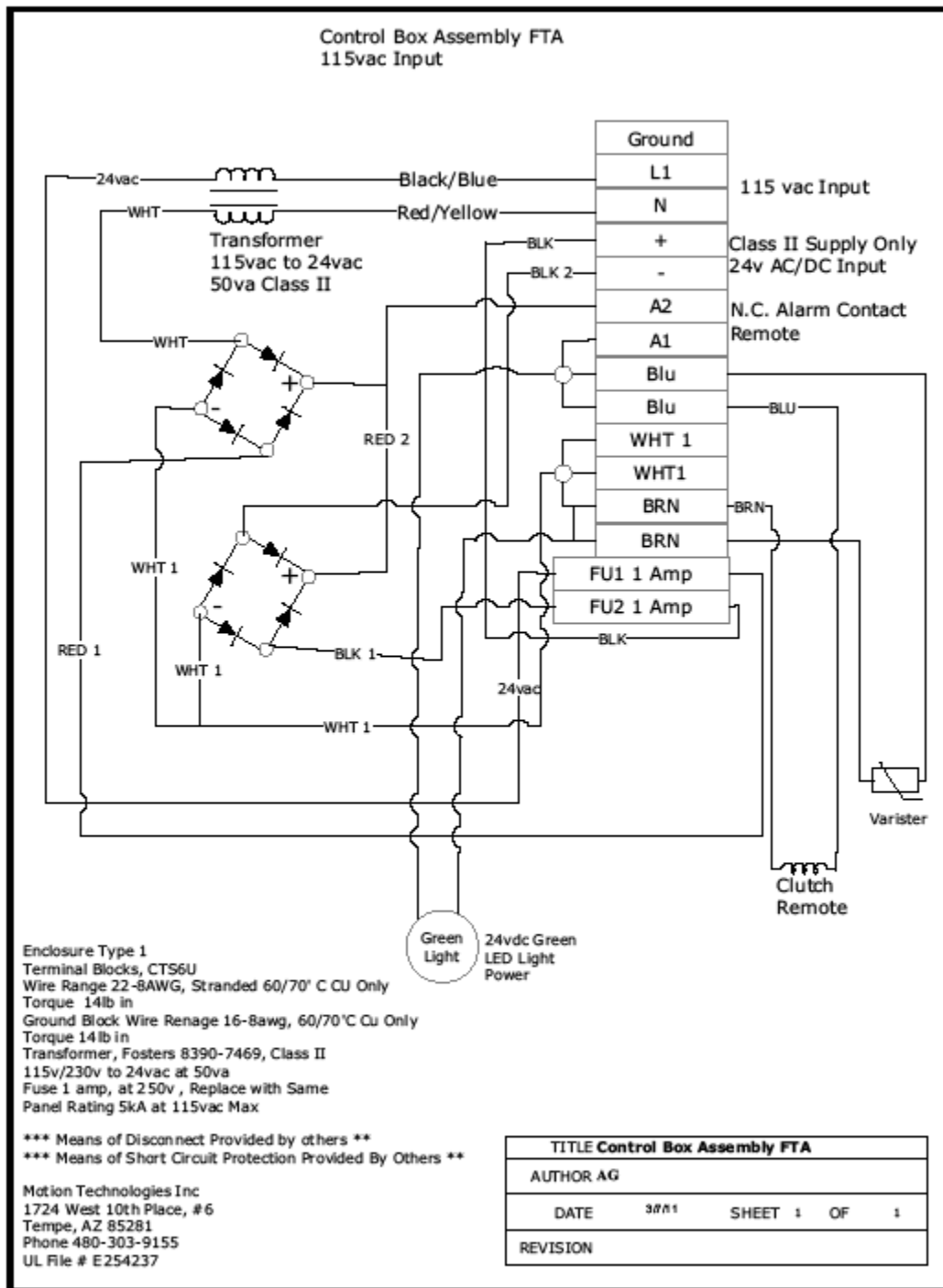
- 1) IF THE RED SAFETY LED IS ON: CHECK THE CONNECTIONS TO THE REVERSING DETECTORS.
CONFIRM THAT THE JUMPERS JP3 AND JP4 ARE CONFIGURED CORRECTLY.
- 2) IF THE RED SAFETY LED IS NOT ON: CHECK THE CONNECTIONS TO THE MOTOR.
CHECK THE MOTOR LIMIT (TURN IT PLUS 5 REVOLUTIONS).
TEST THE MOTOR DIRECTLY WITH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

Section 10 – Wiring Instruction and Diagrams

Control Box Wiring Diagram

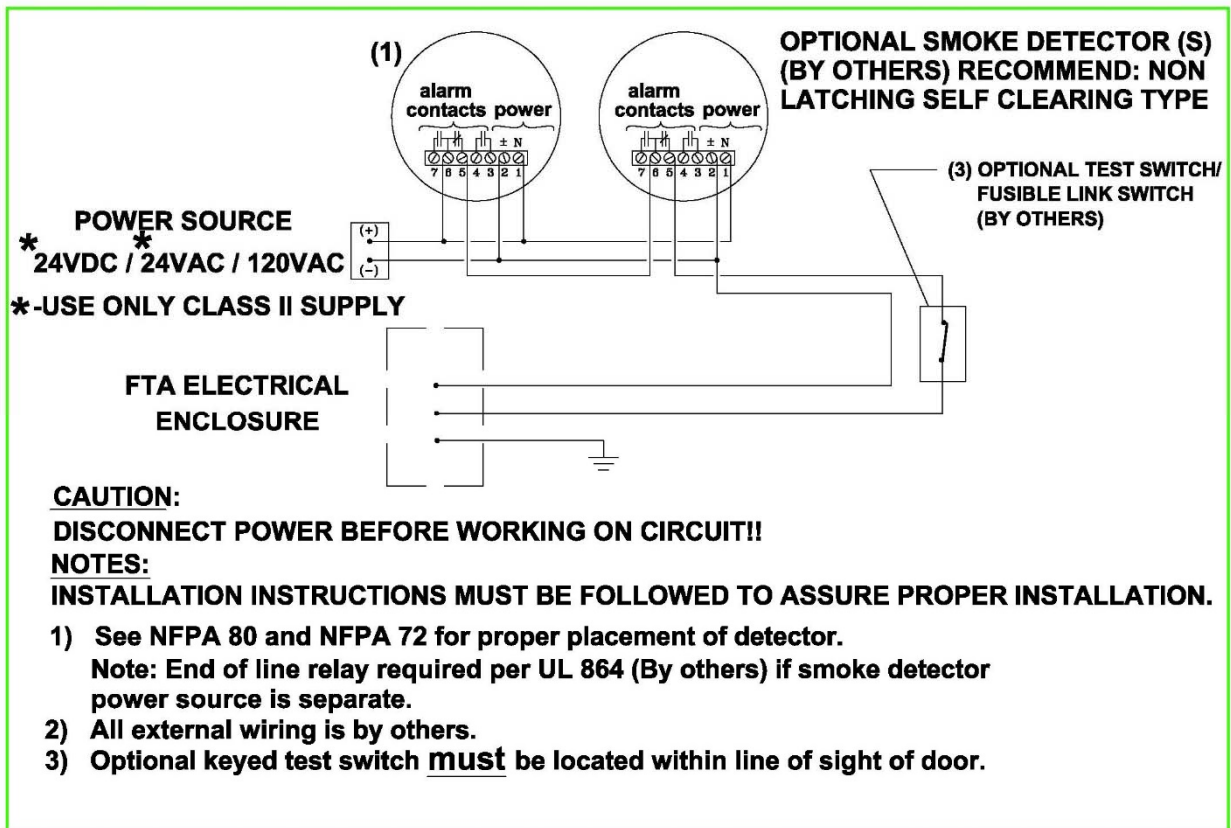


Section 10 – Wiring Instruction and Diagrams

▪ **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.

Section 11 – Operating Instruction

▪ **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:**

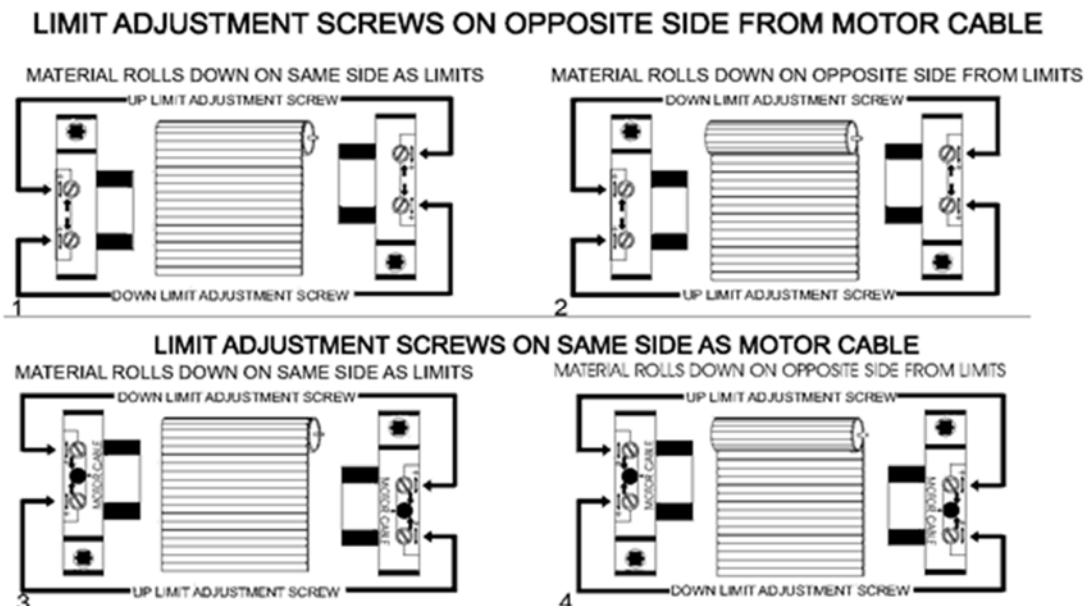
- Tubular motors are equipped with an integrated manual override. To manually operate the door use the winding shaft provided.
- The manual override is operable only if the electromagnetic clutch of the release mechanism located at the opposite end of the barrel is engaged.

Section 12 – Initial Start-up

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



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.

Section 13 – Drop Testing

▪ 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.

Section 14 – Maintenance Instruction and Schedule

▪ 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.

Section 14 – Maintenance Instruction and Schedule

CHECK AT THE LISTED INTERVALS THE ITEMS IN THE FOLLOWING CHART:

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

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

Section 15 – Trouble Shooting Guide

OPERATOR TROUBLE SHOOTING GUIDE

Symptom	Possible Cause	Repair
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**