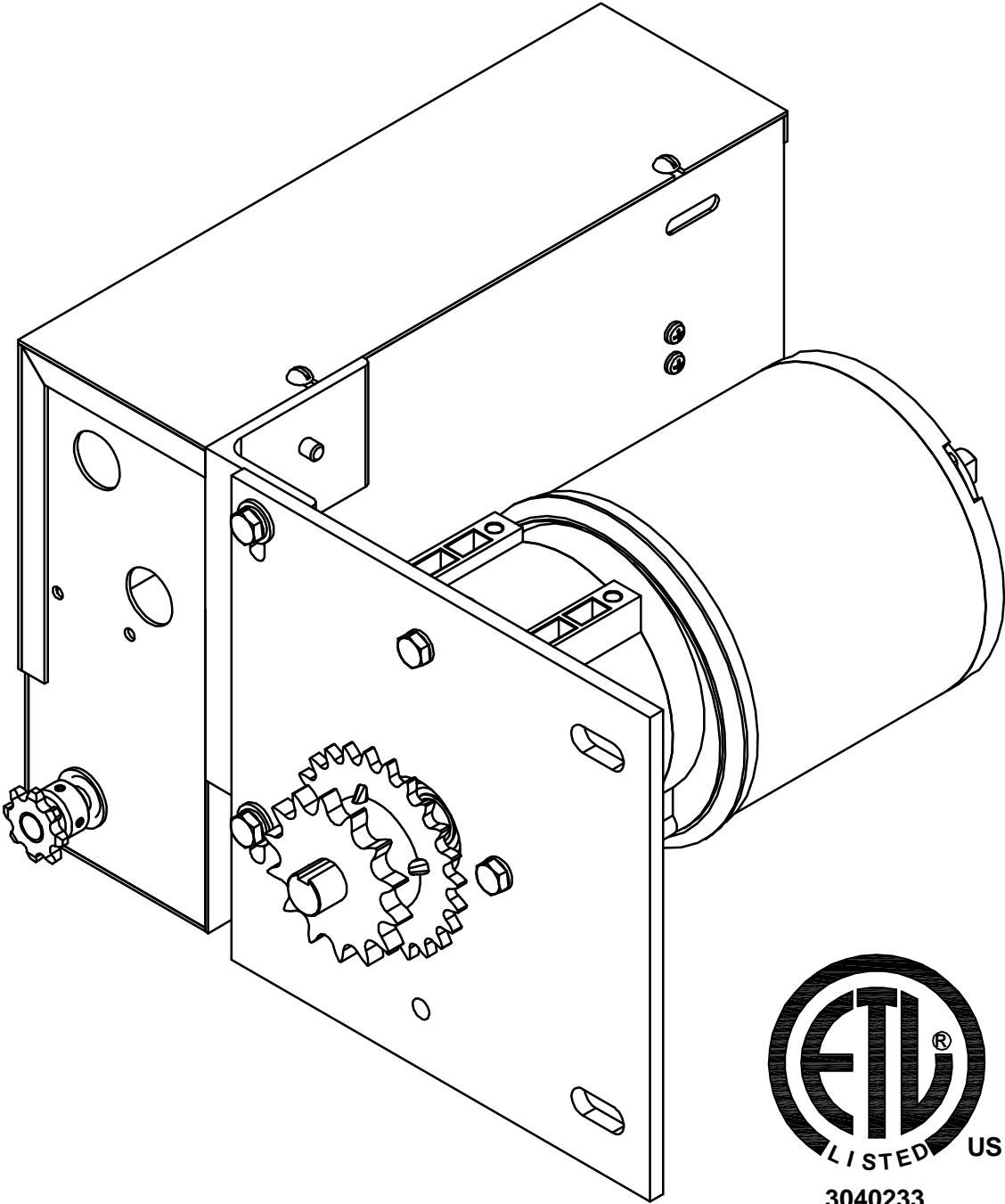


# COOKSON OWNER'S MANUAL

## FDO-A10

### INDUSTRIAL DUTY FIRE DOOR OPERATOR



CONTROL PANEL  
SERIAL#

OPERATOR  
SERIAL#

# SPECIFICATIONS

## MOTOR

TYPE:.....INTERMITTENT  
HORSEPOWER:.....1/8 H.P.  
VOLTAGE:.....115 SINGLE PHASE  
CURRENT:.....2.5 AMP

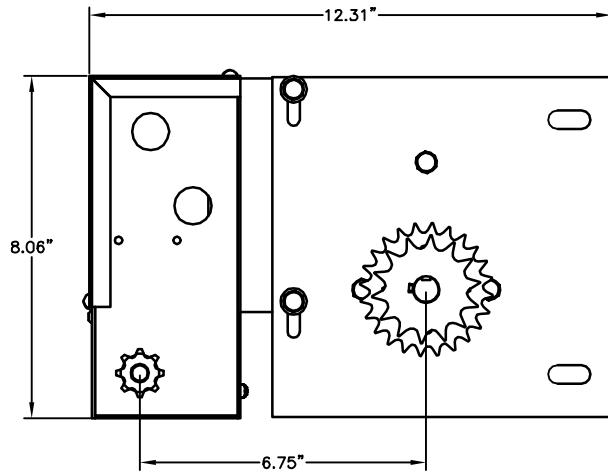
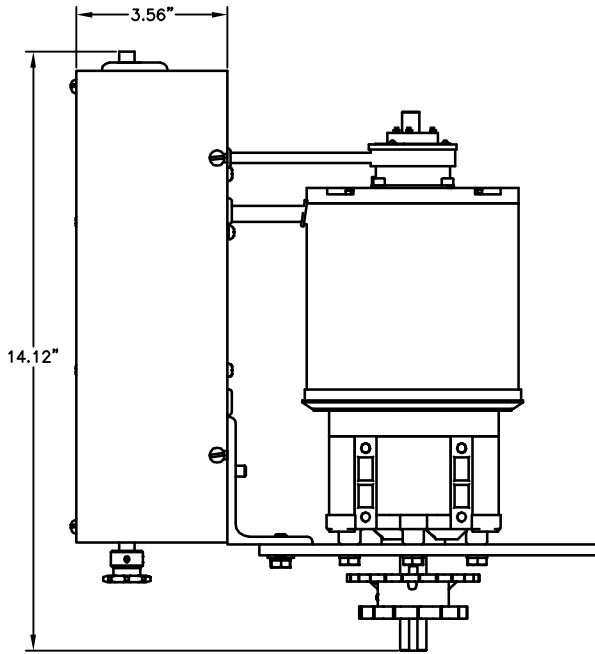
## ELECTRICAL

TRANSFORMER:.....24VAC, 40VA  
CONTROL STATION:.....NEMA 1 3 BUTTON STATION  
OPEN/CLOSE/STOP  
WIRING TYPE:.....B2 (STANDARD)  
LIMIT ADJUST:.....LINEAR DRIVEN, FULLY  
ADJUSTABLE SCREW TYPE CAMS

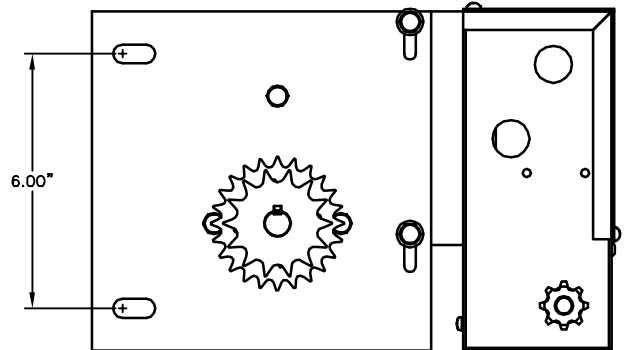
## MECHANICAL

DRIVE REDUCTION:.....43:1 REDUCTION IN LINE  
GEAR REDUCED MOTOR  
OUTPUT SHAFT SPEED:.....29 R.P.M.  
DOOR SPEED:.....12" PER SECOND  
BRAKE:.....SOLENOID ACTUATED  
DISC BRAKE

## DIMENSIONS



## MOUNTING DIMENSIONS



# THEORY OF OPERATION

## GENERAL DESCRIPTION:

The Fire Door Operator, FDO-A10, is an integrated fire door control system. It is designed to interface with a normally closed (NC) alarm system to control the operation of a fire door. The control station is the standard B2 wiring.



## 1. FDO-A10 MODEL:

### 1.1 UNIT HAS AC POWER & NO ALARM CONDITION:

- The B2 control station is used to operate the door electrically.
- Activation of the safety edge while door is closing will cause it to reverse to full open limit.

### 1.2 ALARM CONDITION W/ AC POWER:

- Door begins powered closure (No Delay)
- If obstruction is encountered, door will reverse to open position and attempt closure again. The door will cycle up to 3 attempts before resting on the obstruction. If the obstruction is removed the door will continue to the fully closed position. (At any time the open button will raise the door to the fully open position and begin closing immediately). (The cycle timer will not reset).

### 1.3 UNIT HAS NO AC POWER:

- The unit is not functional and the brake is released. Door will close without delay.

## OPERATOR MOUNTING

Before your operator is installed, be sure the door has been properly aligned and is working smoothly. Refer to the Door Installation Instructions for proper operator installation. This motor operator is an integral part of the door system. The motor operator and governor (if provided) controls door descent speed under power outage conditions.

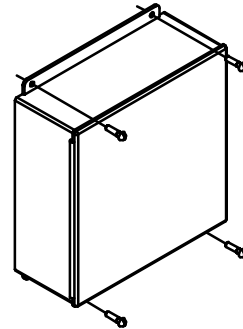


### WARNING

THE FIREDOOR CONTROLLER WILL NOT CLOSE A BALANCED DOOR IN THE ABSENCE OF AC POWER. THE DOOR SYSTEM MUST BE ABLE TO GENERATE A MINIMUM BACKDRIVING TORQUE OF 50 IN/LBS. AT THE OPERATOR OUTPUT SHAFT. STICKING OR BINDING DOORS MUST BE REPAIRED. DOORS, DOOR SPRINGS, BRACKETS AND THEIR HARDWARE MAY BE UNDER EXTREME TENSION AND CAUSE SERIOUS PERSONAL INJURY. CALL A PROFESSIONAL DOOR SERVICEMAN TO MOVE OR ADJUST DOOR SPRINGS OR HARDWARE.

## WALL MOUNTED CONTROLLER MOUNTING

- 1) Find a convenient location within 25' of door to mount controller.
- 2) Mount controller with (4) provided fasteners.



## WALL MOUNTED CONTROLLER WIRING



DO NOT CONNECT POWER TO CONTROLLER AT THIS TIME



OPERATOR AND CONTROLLER MUST BE WIRED IN ACCORDANCE WITH LOCAL ELECTRICAL CODES.

- 1) Wire controller to motor limit switch enclosure per wiring diagram. Use 16 GA copper conductors.

## ALARM INPUTS

- 1) Alarm inputs (Terminal A1 & A2) are used for electronic alarm devices such as smoke detectors or similar alarm systems. The alarm activation circuit must be normally closed (NC) and must open in an alarm condition.



DURING INITIAL SETUP MAKE SURE A CLOSED CIRCUIT IS CONNECTED TO ALARM INPUT. FAILURE TO DO SO MAY CAUSE THE OPERATOR TO ACTIVATE SUDDENLY WITHOUT WARNING.



AN ALARM DEVICE MUST BE CONNECTED TO THE ALARM INPUT BEFORE INSTALLATION IS COMPLETE.

## ENTRAPMENT PROTECTION ACCESSORIES

THE OPERATOR MUST BE USED ON A DOOR WITH A SENSING EDGE

**SENSING EDGES:** All types of sensing edges with a normally open (N.O.) output are compatible with your operator. The operator has been pre-wired to accept connection of a reversing edge device. Connect the normally open contacts to terminals 10 & 11 in the wall mounted controller. The auxiliary limit switch will deactivate the safety device during the last few inches in the door's downward travel. **NOTE:** For wiring connections refer to wiring diagram.

**IMPORTANT NOTES:**

- 1) Proceed with Limit Switch Adjustments before making any sensing edge wiring connections to operator as described below.
- 2) Verify that alarm terminal A1 & A2 are connected to a normally closed circuit before applying power to operator controller.

## INSTALL POWER WIRING & CONTROL STATION



**BEFORE INSTALLING POWER WIRING OR CONTROL STATIONS BE SURE TO FOLLOW ALL SPECIFICATIONS AND WARNINGS DESCRIBED BELOW. FAILURE TO DO SO MAY RESULT IN SEVERE INJURY TO PERSONS AND/OR DAMAGE TO OPERATOR.**



**DO NOT INSTALL ANY WIRING OR ATTEMPT TO RUN THE OPERATOR WITHOUT CONSULTING THE WIRING DIAGRAM. INSTALL THE REVERSING EDGE BEFORE PROCEEDING WITH THE CONTROL STATION INSTALLATION.**

## IMPORTANT SAFETY NOTES



**INSTALL THE CONTROL STATION WHERE THE DOOR IS VISIBLE, BUT AWAY FROM THE DOOR AND IT'S HARDWARE. DO NOT INSTALL CONTROL STATION DIRECTLY BENEATH THE OPERATOR. IF CONTROL STATION CANNOT BE INSTALLED WHERE DOOR IS VISIBLE, OR IF ANY DEVICE OTHER THAN THE CONTROL STATION IS USED TO ACTIVATE THE DOOR, A REVERSING EDGE MUST BE INSTALLED ON THE BOTTOM OF THE DOOR. FAILURE TO INSTALL A REVERSING EDGE UNDER THESE CIRCUMSTANCES MAY RESULT IN SERIOUS INJURY OR DEATH TO PERSONS TRAPPED BENEATH DOOR.**



**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.**



**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 MAIN DISCONNECT 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 PERMANENTLY WIRED IN ACCORDANCE WITH LOCAL ELECTRICAL CODES. NOTE: THE OPERATOR SHOULD BE ON A SEPERATE FUSED LINE OF ADEQUATE CAPACITY. ALL ELECTRICAL CONNECTIONS MUST BE MADE BY A QUALIFIED INDIVIDUAL.**



**THE UNIT MUST BE PROPERLY GROUNDED. A GROUND SCREW IS SUPPLIED IN THE ELECTRICAL BOX FOR CONNECTION OF THE POWER SUPPLY GROUND WIRE. FAILURE TO PROPERLY GROUND THIS UNIT COULD RESULT IN ELECTRIC SHOCK AND SERIOUS INJURY.**

- 1) Wire power and control stations to motor controller per control connection diagrams.

## LIMIT SWITCH ADJUSTMENT

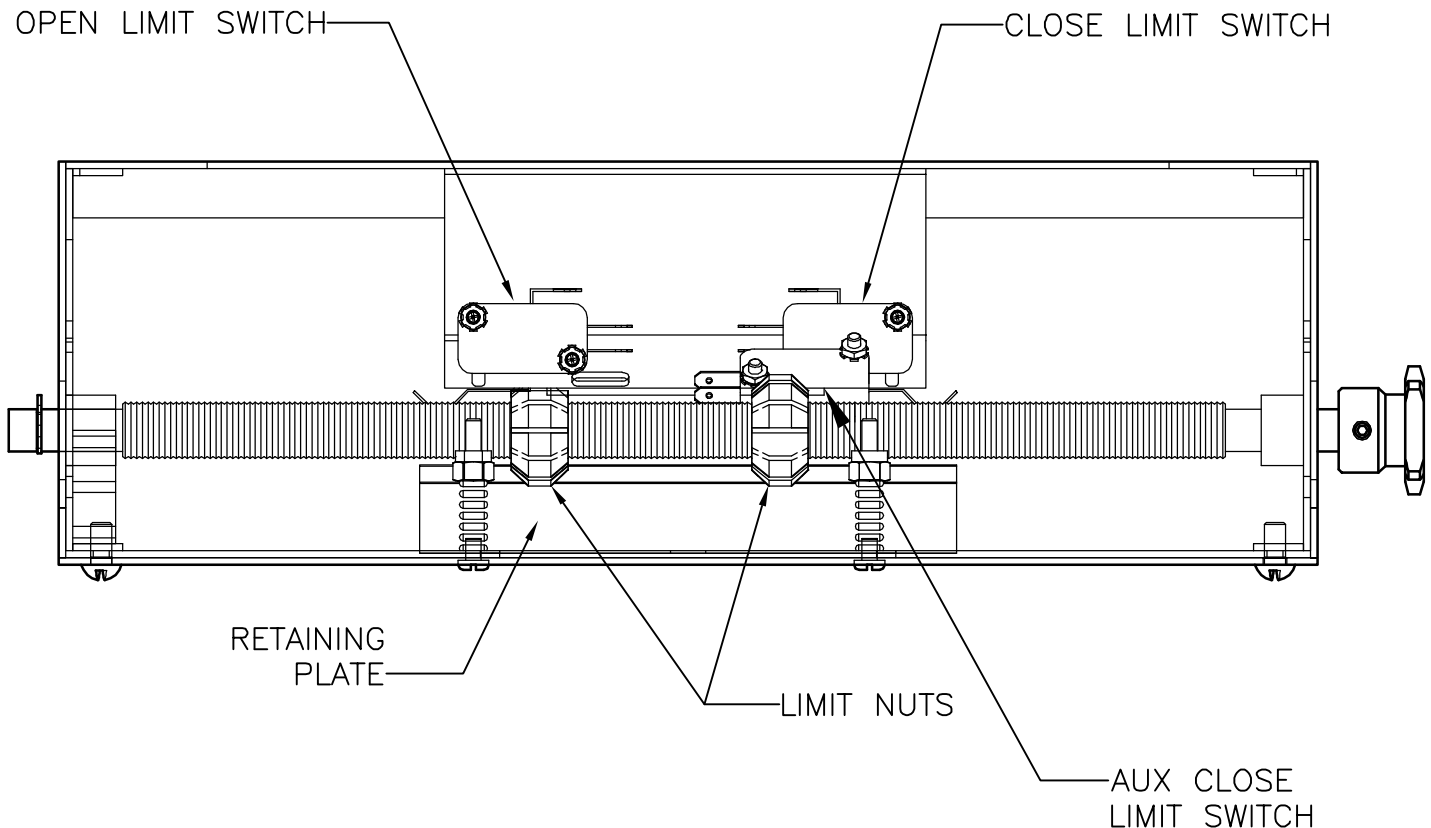
MAKE SURE THE LIMIT NUTS ARE POSITIONED BETWEEN THE LIMIT SWITCH ACTUATORS BEFORE PROCEEDING WITH ADJUSTMENTS. MAKE SURE OPENING AND THE AREA NEAR DOOR/OPERATOR AND MECHANISMS ARE CLEAR OF OBSTRUCTIONS AND PERSONNEL.



### WARNING

TO AVOID SERIOUS PERSONAL INJURY OR DEATH FROM ELECTROCUTION, DISCONNECT ELECTRIC POWER BEFORE MANUALLY MOVING LIMIT NUTS.

- 1) 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.
- 2) To increase door travel, spin nut away from actuator. To decrease door travel, spin limit nut toward actuator.
- 3) Adjust open limit nut so that door will stop in open position with the bottom of the door even with top of door opening.
- 4) Repeat Steps 1 and 2 for close cycle. Adjust close limit nut so that actuator is engaged as door fully seats at the floor.
- 5) Connect sensing edge to controller terminals 10 & 11 and test operation.



## ADJUSTING DOOR SPRING BALANCE

- 1) Tension door as per Door Installation Instructions.
- 2) With the door in the fully open position, remove power from the door controller either by activating the optional keyed test station or by turning the circuit breaker off. The door should close via gravity with the door speed controlled by the motor and governor (if provided). The door should descend at an average rate of at least 6 in/sec not to exceed 24 in/sec.
- 3) If door closes too slowly or not at all, restore power and fully open door. Remove 1/5 turn of tension (See Door Installation Instructions for tensioning procedure). Repeat Step 2 until door descent rate is adequate. NOTE: Never back wind the spring.
- 4) If door closes too rapidly follow Step 3 except ADD 1/5 turn of tension then redo Step 2.

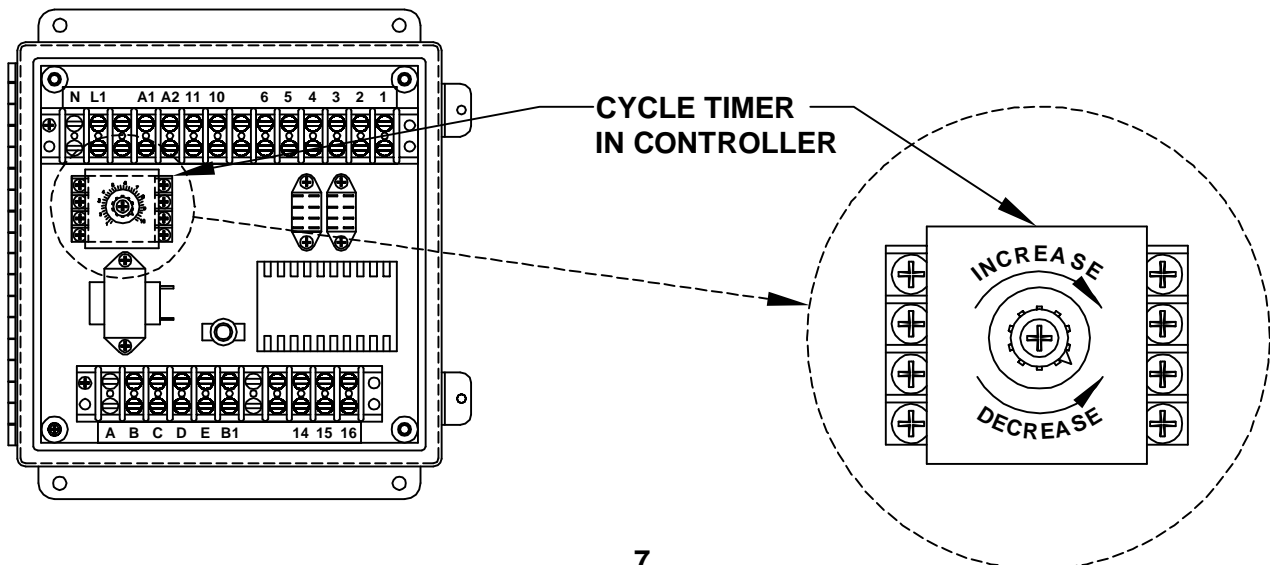


### WARNING

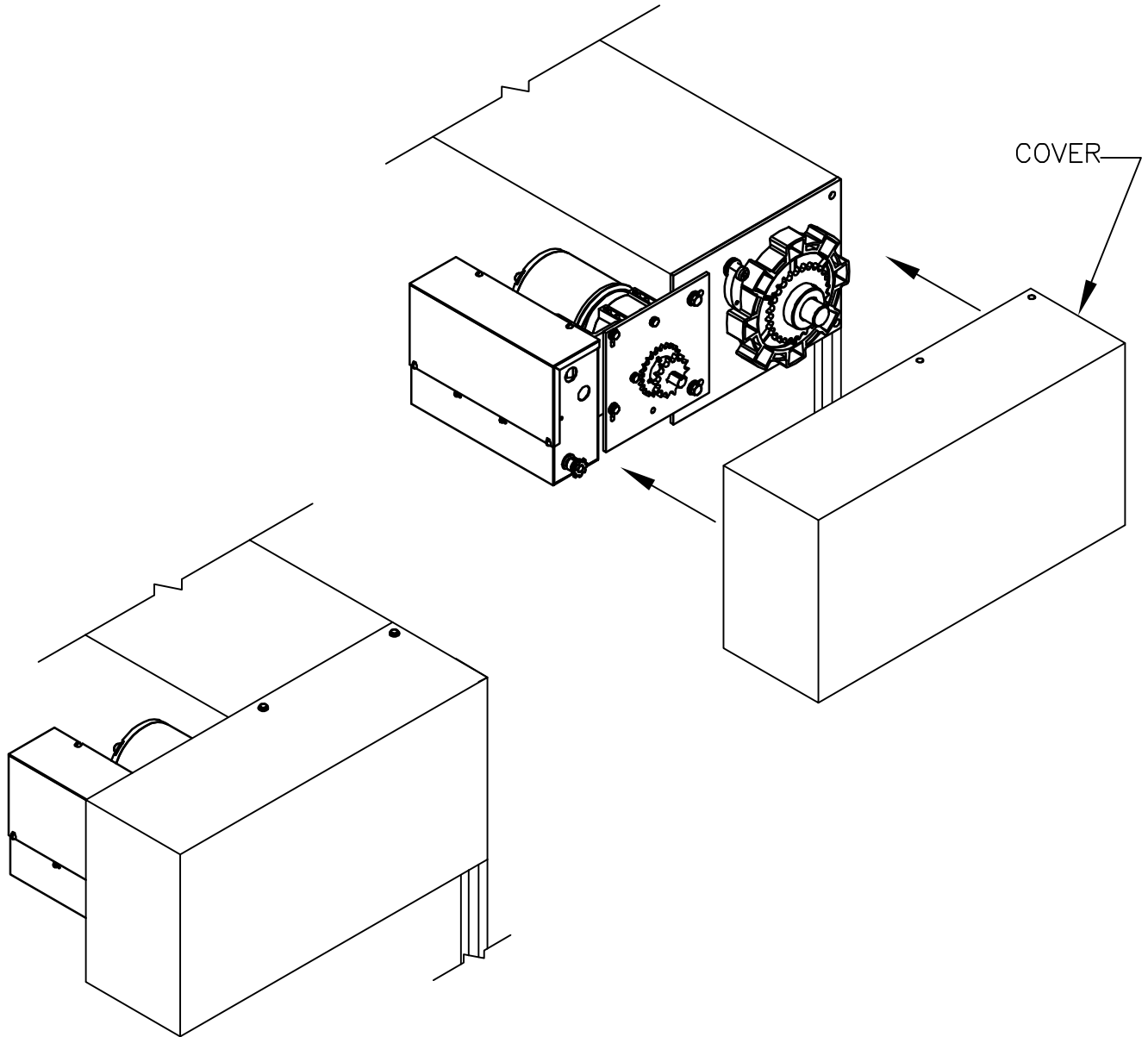
IF PROPER DOOR BALANCE CANNOT BE OBTAINED, STOP IMMEDIATELY AND CALL TECHNICAL SUPPORT.

## AUTOMATIC CLOSING TESTING

- 1) LOSS OF LINE POWER
  - a) With door fully open, remove power by activating optional test switch or by circuit breaker. Door should fully close as defined in "Adjusting Door Spring Balance" section.
  - b) Restore power and press the open button to reset.
- 2) ALARM ACTIVATION W/AC POWER PRESENT
  - a) With the door in the fully open position simulate an alarm condition. The door will power down to the fully closed position.
  - b) Clear alarm and press the open button to reset.
  - c) Test-A-Fire cycling function: Repeat Step a) but this time activate the safety edge before the door reaches closed position. The door will reverse to the fully open position and will door reaches immediately begin closing. On the 3rd closing cycle the door will stop and not reverse when the safety edge is activated. The door will continue to close when the safety edge is deactivated. Clear alarm and press the open button to reset. If the door does not cycle 3 times adjust the cycle timer as follows: On the controller panel turn timer knob clockwise to increase the number of cycles and counter-clockwise to decrease the number of cycles. Repeat procedure to verify the correct number of closing cycles.



## FDO-A10 COVER



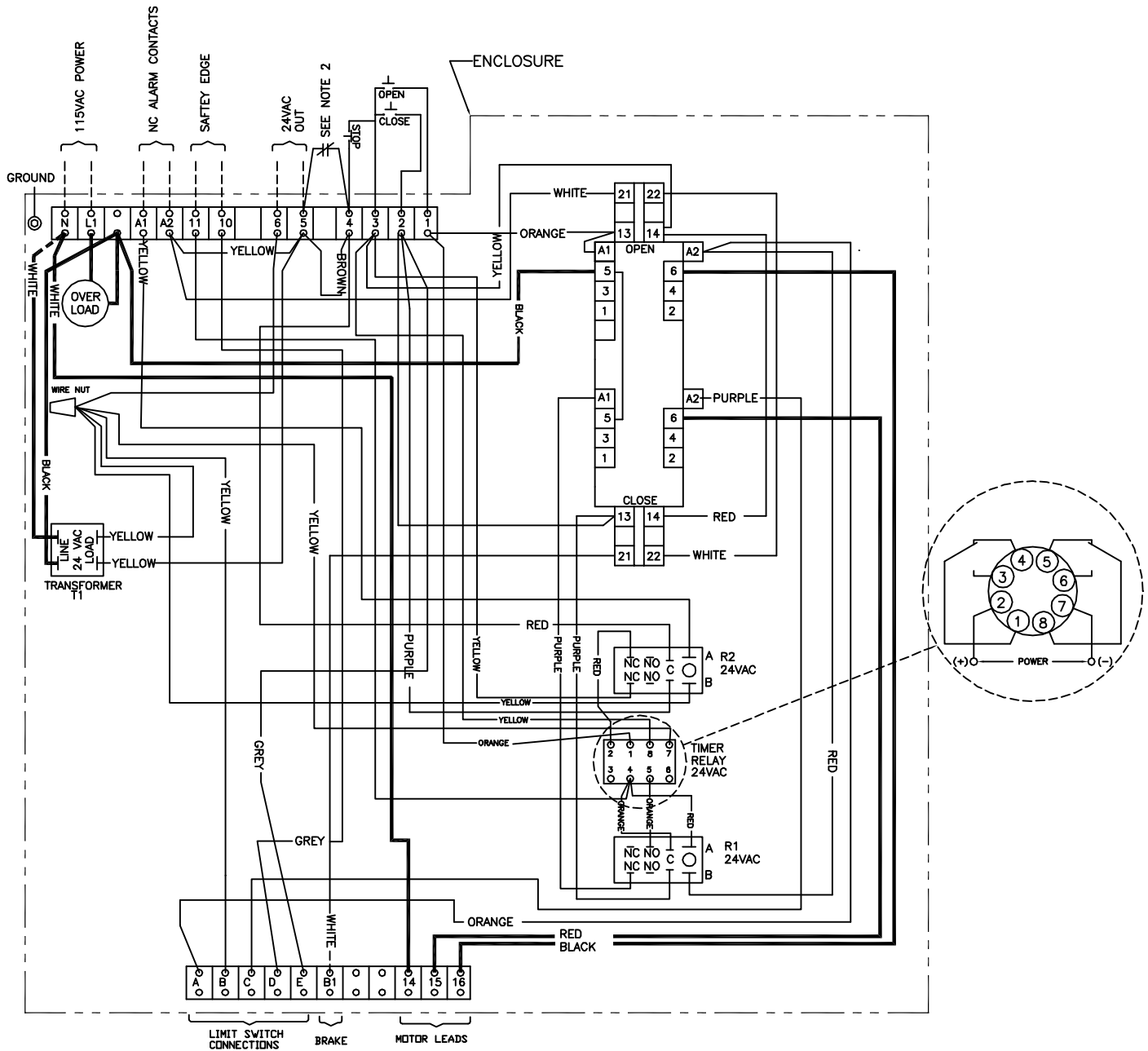
### WARNING

A COVER MUST BE INSTALLED OVER DOOR BRACKET & MOTOR SPROCKETS  
WHEN MOVING PARTS ARE EXPOSED LESS THAN 8 FT FROM THE FLOOR



# FDO-A10 WIRING DIAGRAM

## CONTROL/POWER/ALARM CONNECTIONS



## MOTOR OPERATOR CONNECTIONS

### WIRE SCHEDULE

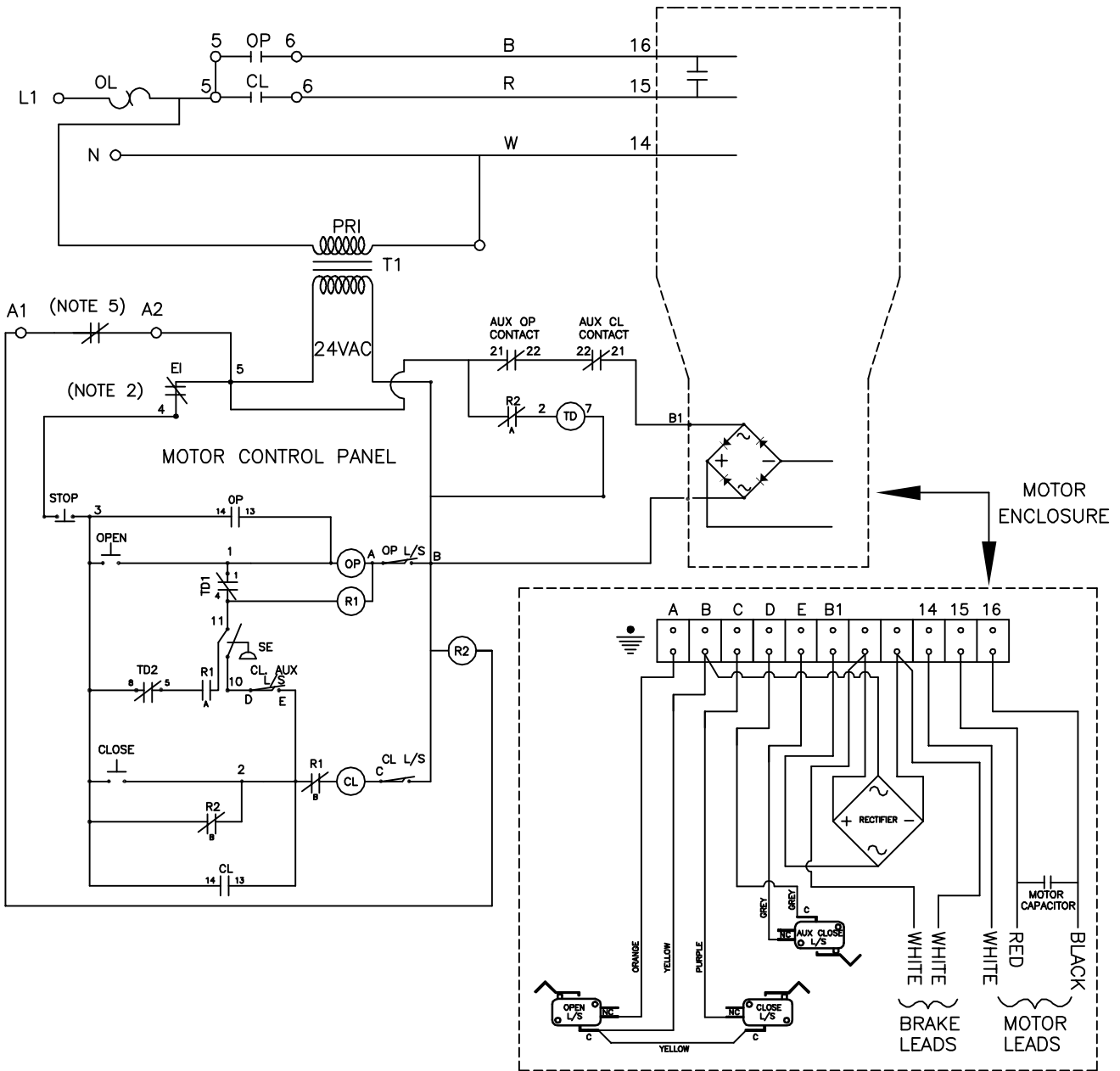
	VOLTAGE	WIRE GAGE
—	24VAC	18GA
—	120VAC	16GA

**CAUTION:** DISCONNECT POWER BEFORE OPENING COVER AND INSTALLATION.

**NOTES:**

1. 3 POSITION CONTROL : MOMENTARY CONTACT ON OPEN, CLOSE AND STOP POSITIONS
2. EXTERNAL INTERLOCK (EI) WHEN SUPPLIED. ONLY FOR LOCKING DOOR IN CLOSED POSITION
3. TO REVERSE MOTOR DIRECTION INTERCHANGE RED AND BLACK MOTOR LEADS (15& 16).
4. SAFETY EDGE – REVERSES DOOR UPON CONTACT.
5. ADJUST TIMER TO INCREASE OR DECREASE ALARM CYCLES
6. CAUTION: USE COPPER WIRE ONLY.

# FDO-A10 WIRING DIAGRAM



CAUTION: DISCONNECT POWER BEFORE OPENING COVER AND INSTALLATION.

**NOTES:**

1. 3 POSITION CONTROL : MOMENTARY CONTACT ON OPEN, CLOSE AND STOP POSITIONS
2. EXTERNAL INTERLOCK (EI) WHEN SUPPLIED.
3. TO REVERSE MOTOR DIRECTION INTERCHANGE RED AND WHITE MOTOR LEADS.
4. SAFETY EDGE – REVERSES DOOR UPON CONTACT.
5. NORMAL CLOSED DRY CONTACT TO BE PROVIDED BY ALARM SYSTEM. CONTACT MUST BE RATED FOR 3 AMPS. CONTACT MUST BE OPEN UPON ALARM SIGNAL OR LOSE OF POWER TO ALARM SYSTEM.

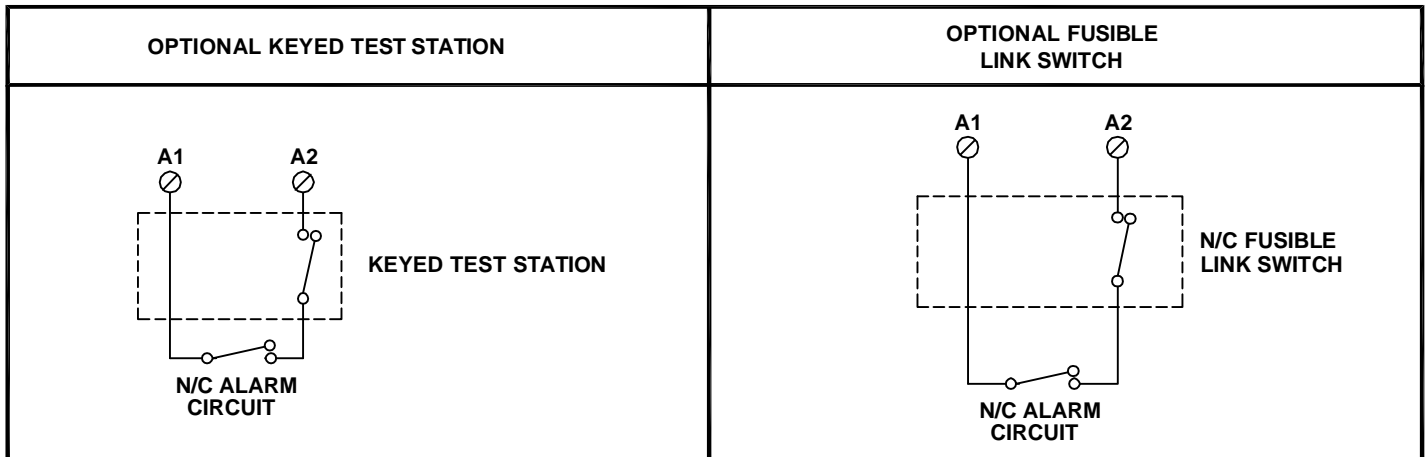
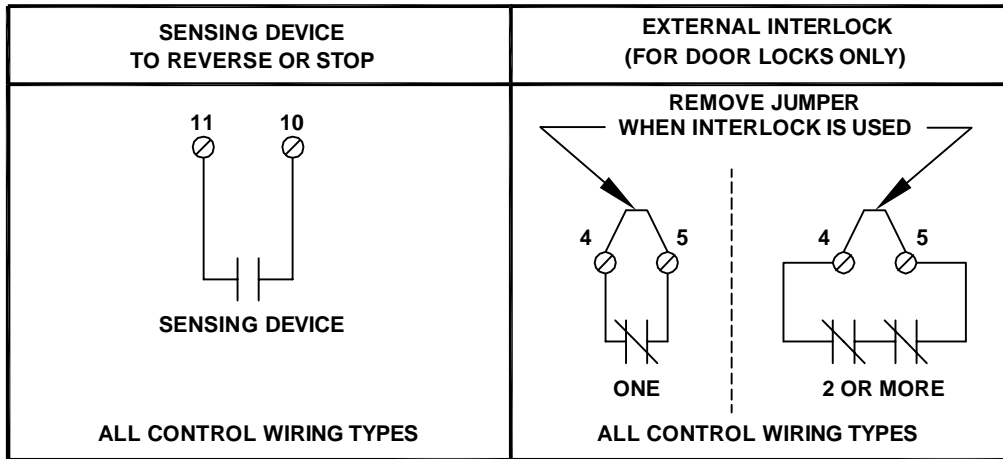
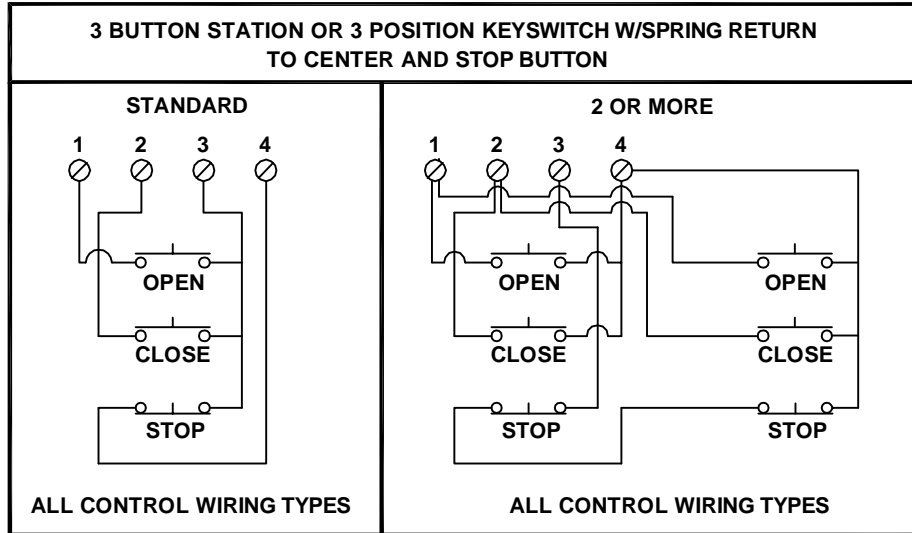
# CONTROL CONNECTION DIAGRAM

## IMPORTANT NOTES:

- 1) The 3-Button Control Station provided must be connected for operation.



**ATTENTION ELECTRICIAN : USE 16 GAUGE OR HEAVIER WIRE FOR ALL CONTROL CIRCUIT WIRING**



## MAINTENANCE SCHEDULE

CHECK AT THE INTERVALS LISTED IN THE FOLLOWING CHART.

ITEM	PROCEDURE	EVERY 3 MONTHS	EVERY 6 MONTHS	EVERY 12 MONTHS
Drive Chain	Check for excessive slack. Check & adjust as required. Lubricate.*	X		X
Sprockets	Check set screw tightness	X		X
Fasteners	Check & tighten as required		X	
Bearings/Shafts	Check for wear & lubricate	X		X

**Gearbox** - The gearbox on the motor operator is factory sealed, and non vented, and should not require service for the life of the operator.

**Brake Friction Material** - The electromagnetic brake on the motor operator is factory adjusted, and should not require service for the life of the operator. Should service be required, the entire unit should be replaced.

\* - Use SAE 30 Oil (Never use grease or silicone spray)

- Do not lubricate motor. Motor bearings are lubricated and sealed at the factory.
- Inspect and service whenever a malfunction is observed or suspected.
- **CAUTION: BEFORE SERVICING, ALWAYS DISCONNECT OPERATOR FROM POWER SUPPLY.**

**WHEN ORDERING REPAIR PARTS PLEASE SUPPLY THE FOLLOWING INFORMATION:**

**PART NUMBER - DESCRIPTION - MODEL NUMBER - JOB NUMBER**

**ADDRESS ORDER TO:**

**COOKSON ROLLING DOORS  
 2417 S. 50TH AVE  
 PHOENIX, AZ. 85043  
 (602) 272-4244  
 ATTN: CUSTOMER SERVICE**

## MOTOR OPERATOR MAINTENANCE

Operators 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 himself/herself 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.

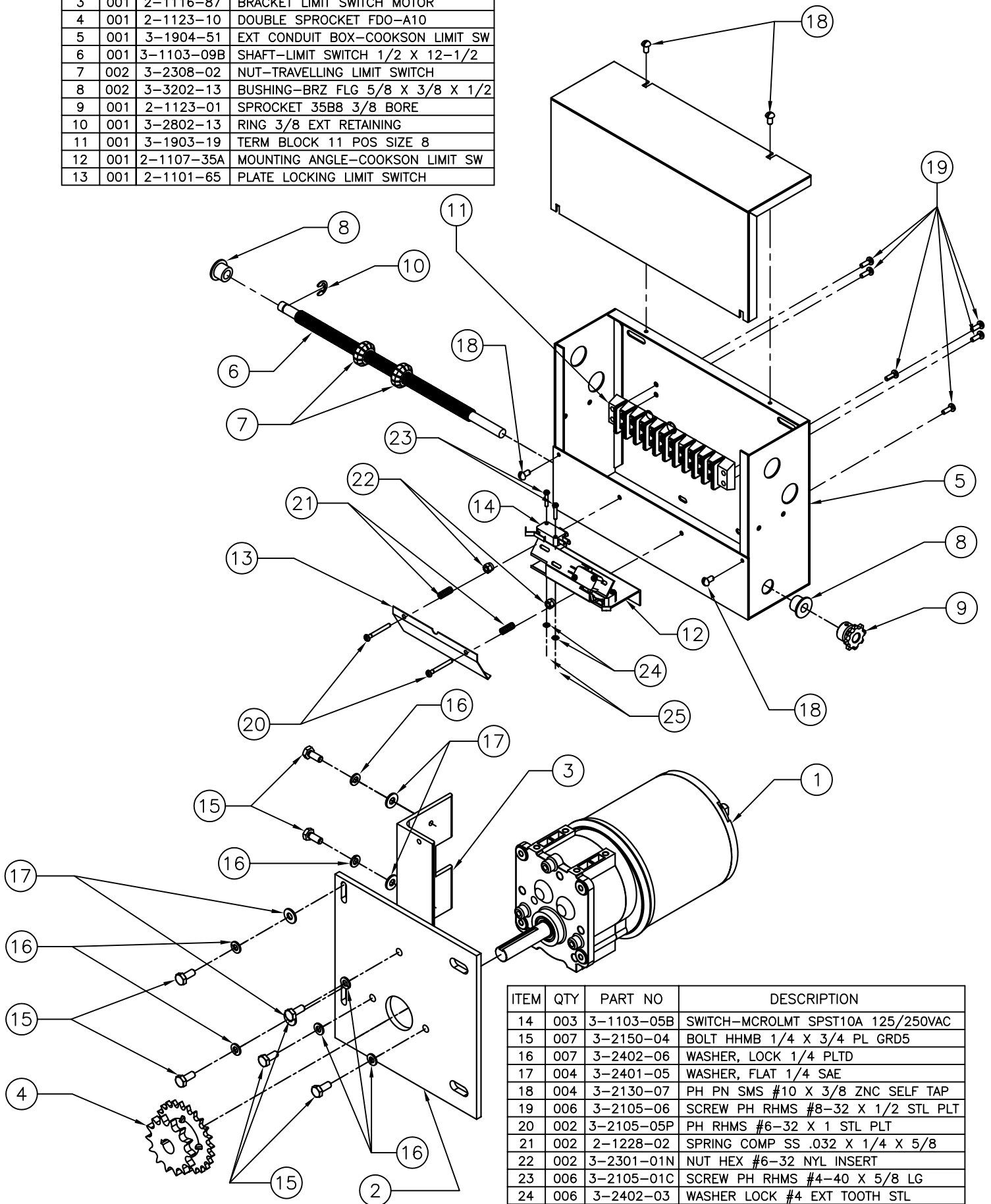
## MOTOR OPERATOR MAINTENANCE

1. Check wire connections for tightness and wire insulation for defects or abrasions.
2. Check to see that all conduit connections are secure.
3. Check wires to safety edge or photo-eyes.
4. Inspect operation of brake.
5. Inspect gearbox for leaks.
6. Inspect roller chain and drive sprockets. Align, lubricate the sprockets, and tighten the set screws.
7. Generally inspect the motor mounting, and tighten the fasteners and bracing.
8. Verify that all conduit connections are tight and have no exposed wires.
9. Inspect the electrical enclosure for debris, arcing and moisture. Check for and tighten loose wiring connections.
10. Test motor operation through all control stations.
11. Check limit switch settings.
12. Examine safety edge, coil cord and take up reel for damage.
13. Test the operation of the safety edge.
14. Check motor amperage draw for a full open and close cycle. Compare readings to those listed on the motor nameplate.

## MOTOR OPERATOR TROUBLE SHOOTING GUIDE

SYMPTOM	POSSIBLE CAUSE	REPAIR
Motor does not run when OPEN or CLOSE button is pushed	Circuit breaker tripped or power fuse blown	Check circuit breaker, power fuses, safety switch, check cause
	Thermal overload tripped	Reset; check cause
	Secondary transformer fuse blown	Check fuse, check cause
	External interlock open. (if supplied)	Close interlocks
Motor runs but door does not move	Sprocket key missing or drive chain broken.	Check drive train for operation
	Intermediate shaft or key damaged.	Close & lock off door, remove motor and inspect; check cause
Motor hums but does not run	Door jammed. Drive train jammed.	Check door. Try to operate manually
	Brake does not release.	Check power to brake coil.
	Open motor winding	Check all motor connections.
Operator runs in wrong direction and limits do not function	Motor leads are reversed	Interchange any 2 power leads to unit.
	Note: All units are checked for proper rotation at factory. Limit switch adjustment instructions in electrical enclosure indicates proper direction of travel for OPEN and CLOSE limit nuts.	
Limit switches do not hold their settings.	Drive chain loose, allows chain to jump sprocket teeth.	Adjust chain to proper tension.
	Limit nut retainer not engaging slots in limit nuts.	Be sure retainer is in slots of BOTH units
	Limit nuts binding on screw threads which allows them to jump position on retainer.	Lubricate screw thread. Limit nuts should turn freely.
Door "drifts" when motor shuts off.	Brake inoperative or worn	Check brake operation.
Operator does not shut off at full OPEN or at full CLOSE position	Limit nuts not adjusted properly.	Adjust (See above)
	Sprocket on limit shaft loose or limit drive chain broken	Inspect limit chain & sprocket. Adjust chain tension, replace sprocket & chain if required.
	Defective limit switch	Operate limit switch manually to determine.

ITEM	QTY	PART NO	DESCRIPTION
1	001	3-1402-71	MOTOR BISON FDO-A10
2	001	2-1115-30	PLATE MTR MTG FDO-A10 MOTOR
3	001	2-1116-87	BRACKET LIMIT SWITCH MOTOR
4	001	2-1123-10	DOUBLE SPROCKET FDO-A10
5	001	3-1904-51	EXT CONDUIT BOX-COOKSON LIMIT SW
6	001	3-1103-09B	SHAFT-LIMIT SWITCH 1/2 X 12-1/2
7	002	3-2308-02	NUT-TRAVELLING LIMIT SWITCH
8	002	3-3202-13	BUSHING-BRZ FLG 5/8 X 3/8 X 1/2
9	001	2-1123-01	SPROCKET 35B8 3/8 BORE
10	001	3-2802-13	RING 3/8 EXT RETAINING
11	001	3-1903-19	TERM BLOCK 11 POS SIZE 8
12	001	2-1107-35A	MOUNTING ANGLE-COOKSON LIMIT SW
13	001	2-1101-65	PLATE LOCKING LIMIT SWITCH



ITEM	QTY	PART NO	DESCRIPTION
14	003	3-1103-05B	SWITCH-MCROLMT SPST10A 125/250VAC
15	007	3-2150-04	BOLT HHMB 1/4 X 3/4 PL GRD5
16	007	3-2402-06	WASHER, LOCK 1/4 PLTD
17	004	3-2401-05	WASHER, FLAT 1/4 SAE
18	004	3-2130-07	PH PN SMS #10 X 3/8 ZNC SELF TAP
19	006	3-2105-06	SCREW PH RHMS #8-32 X 1/2 STL PLT
20	002	3-2105-05P	PH RHMS #6-32 X 1 STL PLT
21	002	2-1228-02	SPRING COMP SS .032 X 1/4 X 5/8
22	002	3-2301-01N	NUT HEX #6-32 NYL INSERT
23	006	3-2105-01C	SCREW PH RHMS #4-40 X 5/8 LG
24	006	3-2402-03	WASHER LOCK #4 EXT TOOTH STL
25	006	3-2301-01A	NUT #4-40