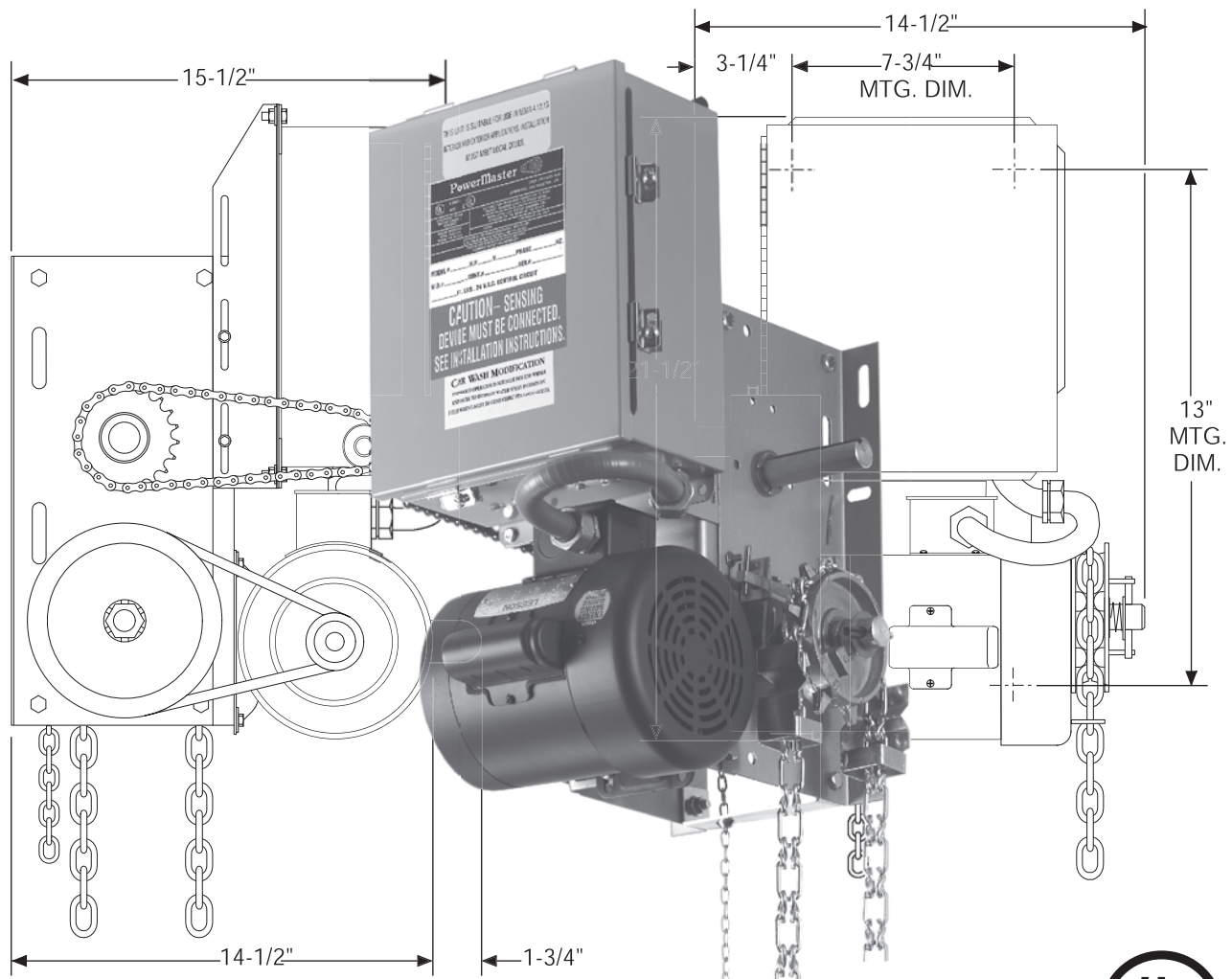


INSTALLATION AND OWNER'S MANUAL

MODEL "CH" & "CJ" Carwash Operators

PowerMaster



Serial #:
Date Installed:
Your Dealer:

READ THIS MANUAL CAREFULLY
BEFORE INSTALLATION OR USE.
SAVE THESE INSTRUCTIONS




LISTED

As of date of manufacture,
meets all ANSI/UL 325
Safety Requirements for
Vehicular door operators.

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READ THESE STATEMENTS CAREFULLY AND FOLLOW THE INSTRUCTIONS CLOSELY!

The Warning and Caution boxes throughout this manual are there to protect you and your equipment. Pay close attention to these boxes as you follow the manual.




WARNING

Indicates a MECHANICAL hazard of INJURY OR DEATH. Gives instructions to avoid the hazard.




CAUTION

Indicates a MECHANICAL hazard of DAMAGE to your operator or equipment. Gives instructions to avoid the hazard.



WARNING

Indicates an ELECTRICAL hazard of INJURY OR DEATH. Gives instructions to avoid the hazard.



CAUTION

Indicates an ELECTRICAL hazard of DAMAGE to your operator or equipment. Gives instructions to avoid the hazard.

The purpose of this booklet is to provide assembly, installation and operation information concerning PowerMaster Model CH/CJ Commercial Vehicular Garage Door Operators and related Accessory Products.

NOTE: IT IS IMPORTANT THAT THIS INSTRUCTION MANUAL BE READ AND UNDERSTOOD COMPLETELY BEFORE INSTALLATION OR OPERATION IS ATTEMPTED. IT IS INTENDED THAT THE INSTALLATION OF THIS UNIT WILL BE DONE ONLY BY PERSONS TRAINED AND QUALIFIED IN THE INSTALLATION, ADJUSTMENT AND SERVICE OF COMMERCIAL OVERHEAD DOORS AND DOOR OPERATORS AND BY QUALIFIED ELECTRICIANS.

NOTE: THE IMPORTANT SAFEGUARDS AND INSTRUCTIONS IN THIS MANUAL CANNOT COVER ALL POSSIBLE CONDITIONS AND SITUATIONS WHICH MAY OCCUR DURING ITS USE. IT MUST BE UNDERSTOOD THAT COMMON SENSE AND CAUTION MUST BE EXERCISED BY THE PERSON(S) INSTALLING, MAINTAINING AND OPERATING THE EQUIPMENT DESCRIBED HEREIN. DO NOT USE THIS EQUIPMENT FOR ANY OTHER THAN ITS INTENDED PURPOSE - OPERATING OVERHEAD COMMERCIAL VEHICULAR GARAGE DOORS.

STANDARD FEATURES:

Limit Switches: Rotary limit switches, easily adjusted over a wide range. The motor may be removed without affecting the limit switch adjustments.

Manual Release: Permits manual operation of the door in the event of a power failure. The Model H is equipped with a chain hoist to aid in manual operation. Use of this feature will not affect the limit switch adjustment.

Control Circuit: Standard three button open, close and stop. 24 Volts AC.

Connections For Auxiliary Entrapment Protection Devices: Use with foam or pneumatic reversing door edge components or a photoelectric beam (across the opening) device.

Constant Contact To Close: Standard operation.

Momentary Contact To Close: Feature can be activated by simply moving a wire on the terminal

strip.

MODEL CH & CJ OPERATOR APPLICATIONS

Jackshaft operators are intended for commercial and industrial use to raise or lower sectional overhead doors by chain coupling or direct coupling to the door shaft. Jackshaft operators are suitable where all or part of the door remains in a vertical position when fully open such as doors with at least 18 inches of lift clearance or full vertical lift doors. Jackshaft operators may also be used with roll up service doors and grilles when appropriately modified at the factory to obtain the correct speeds.

A jackshaft operator **DOES NOT LOCK THE DOOR IN ITS CLOSED POSITION.** However, because the cross-header shaft is prevented by the operator from turning, the torsion springs provide no assistance in lifting the door should an attempt be made to raise it manually.

CH & CJ jackshaft operators are used in the following applications:

- Continuous Duty, Indoor Commercial installations only
- Up to 24 foot high doors with a maximum area of 480 square feet for 3/4 HP, 280 square feet for 1/2 HP and 200 square feet for 1/3 HP - maximum area slightly higher for lighter doors - consult factory
- Use with foam/pneumatic reversing door edge or photoelectric device - REQUIRED where the 3-button station is out of sight of the door, or any other automatic, remote or manual control is used to activate the door

OPTIONAL FEATURES:

Digital Radio Controls: Open, Close and Stop operation. Radio units are available to control up to 27 doors from one transmitter

Digital Timer to Close: Adjustable from 0 to 17 minutes in one second intervals.

Keyless Entry System: Connection terminals provided for hard wired or wireless keyless entry systems.



WARNING

ELECTRIC DOOR OPENERS ARE DESIGNED FOR DOORS IN GOOD WORKING CONDITION, PROPERLY COUNTERBALANCED AND PROPERLY ADJUSTED IN ACCORDANCE WITH THE DOOR MANUFACTURER'S INSTALLATION INSTRUCTIONS.

Before starting the installation of the operator, the door must be in good working condition and properly counterbalanced. Inspect the door and door guides for loose or missing hardware. Test the door manually for balance and ease of operation. Lubricate door hinges and rollers. If necessary, employ a qualified technician to adjust the springs for proper counterbalance of the door.

Stops should be installed at the top end of each track to prevent the possibility of the door rollers moving beyond the ends of the track.

If the cross header shaft is made from hollow tubing rather than solid rod, it is recommended that it be plugged with a short length of solid bar for a more secure installation of the shaft sprocket or flange coupler.

Before removing the operator powerhead from the shipping carton, inspect the nameplate on the cover of the operator control box to verify that it is the correct model for the

intended application and that the voltage and phase are in accordance with electrical power provided at the job site.



WARNING

Warning: ROPE OFF THE AREA TO KEEP PERSONNEL AND VEHICLES CLEAR OF THE DOOR AND FLOOR SPACE IN THE VICINITY OF THE OPERATOR DURING THE INSTALLATION.



WARNING

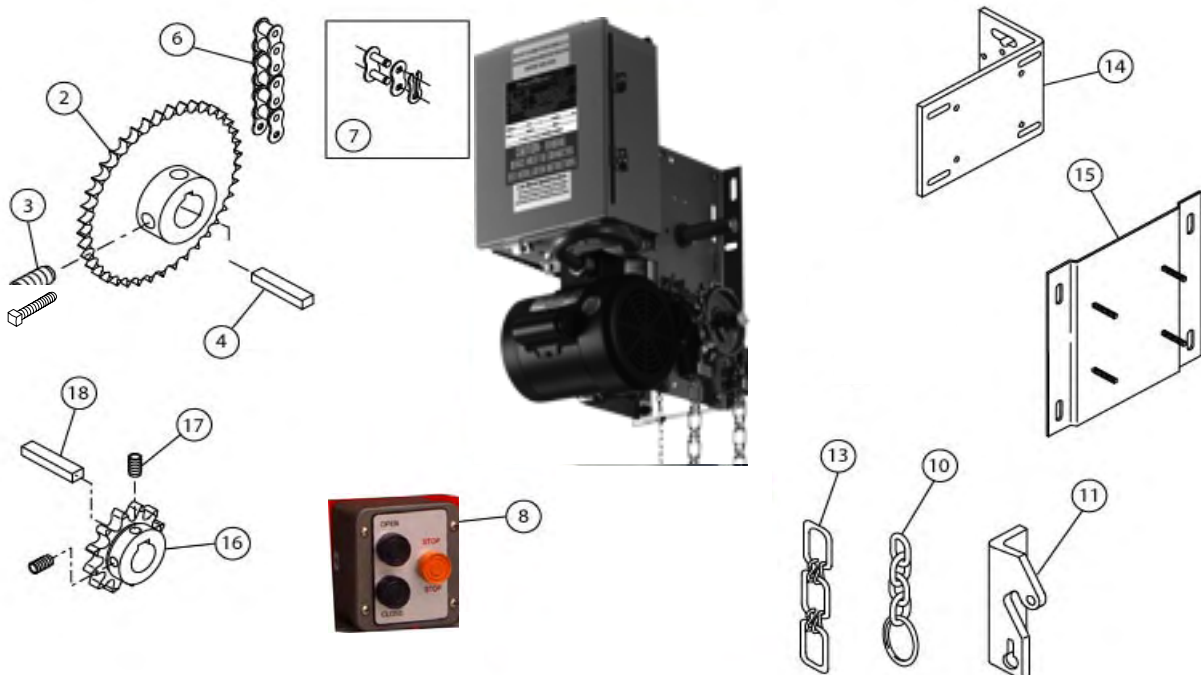
SPRINGS ARE SUBJECT TO VERY HIGH FORCES AT ALL TIMES AND ADJUSTMENTS MUST BE MADE ONLY BY A QUALIFIED PROFESSIONAL DOOR INSTALLER.



WARNING

REMOVE OR DISABLE ANY LOCKING DEVICES FROM DOOR AND REMOVE ALL ROPES.

FIGURE 1 - COMPONENT IDENTIFICATION





WARNING

TO REDUCE THE RISK OF SEVERE INJURY OR DEATH: READ AND FOLLOW ALL INSTALLATION INSTRUCTIONS!

- Install only on a properly balanced garage door. An improperly balanced door could cause severe injury. Have a qualified service person make repairs to cables, spring assemblies and other hardware before installing the opener.
- Remove all ropes and remove or make inoperative all locks (unless mechanically and/or electrically interlocked to the power unit) that are connected to the garage door before installing the opener.
- Lightweight doors (fiberglass, aluminum etc.) must be reinforced to avoid door damage. Check the door manufacturer’s instruction manual for a bracing procedure or the availability of a Reinforcement Kit.
- PowerMaster Models H and J are Commercial Vehicular Door Operators and as such are NOT recommended for pedestrian traffic. In installations where it is known that pedestrians will be nearby ensure a pedestrian door is available for entrance and exit to the building. In addition YOU MUST install an auxiliary entrapment protection device (reversing door edge or photoelectric beam device) as part of the complete operator system.
- Connect an auxiliary entrapment protection device (reversing edge or photoelectric device across the door opening). A device of this type is **STRONGLY ADVISED FOR ALL** commercial

operator installations. An auxiliary entrapment protection device is **REQUIRED** when the three button control station is out of sight of the door or any other automatic or manual control is used.

- Install the opener at least 8 feet or more above the floor.
- Do not connect the opener to the source of power until instructed to do so.
- Locate the control station:
 - a) within sight of the door and;
 - b) at a minimum height of five feet above the floor and;
 - c) away from all moving parts of the door.
- Do not overtighten the clutch adjustment to compensate for a poorly working door.
- Securely attach any WARNING signs or placards to either the door or above the control station as directed (see page 11).
- After installing the opener, all safety features must be tested for proper operation (see page 16).

TABLE 1 - COMPONENT IDENTIFICATION LISTING

tem #	Description	Qty.	Item #	Description	Qty.
1	Operator Power Head	1	10	Sash Chain, Precut	1
2	Driven Sprocket on Door Shaft	1	11	Chain lock Bracket	1
3	Set Screw, 5/16-18 x 1, Square Head	2	13	Hand Chain, Precut	1
4	Steel Square Key	1	14	Mounting Bracket	Optional
6	Drive Chain	1	15	Wall Mounting Plate w/Studs	Optional
7	Master Link	1	16	Drive Sprocket	1
8	3 Button Station	1	17	Set Screw, 5/16-18 x 5/16 socket head set screw	2
			18	Key, 1/4 x 1/4 x 1	1



WARNING

SPRINGS, PULLEYS, CABLES AND MOUNTING HARDWARE USED TO BALANCE YOUR GARAGE DOOR ARE UNDER EXTREME TENSION AT ALL TIMES AND CAN CAUSE SEVERE INJURY OR DEATH IF DISTURBED. DO NOT ATTEMPT ADJUSTMENT.

Page 8 illustrates several positions suitable for mounting the operator; right hand or left hand, either wall mount or ceiling mount.

CHAIN COUPLING MOUNTING

Refer to **Figure 2** (at right), **Figure 1**, page 4 and **Table 1**, page 5 for component identification and the operator mounting slot locations. Place the sprockets [**2**] and [**16**] on the chosen side of the torsion shaft of the door and on the corresponding end of the output shaft of the operator, see **Figure 3**, page 7. The sprockets should be kept as close as possible to the bearings. Fasten the connecting link to each end of the door chain and loop the chain over the sprocket [**2**] on the torsion shaft. Temporarily suspend the operator in its mounting position using the chain over the sprocket [**16**] at one end of the jackshaft and a rope or chain at the mid point (to support the operator weight). With the chain tight and straight and the jackshaft **parallel** with the torsion shaft, trace the mounting slot on the mounting surface then lower the operator to the floor.

IT IS ESSENTIAL THAT THE SURFACE SUPPORTING THE OPERATOR BE RIGID AND SECURE. FAILURE TO PROVIDE A FIRM MOUNTING SURFACE WILL RESULT IN DAMAGE TO THE DOOR TORSION SHAFT AND THE PREMATURE FAILURE OF THE OPERATOR.

If the construction permits, the operator should be mounted with 3/8 inch diameter bolts through the wall. If it is not feasible to go through the wall, then use lag bolts to fasten the operator to the mounting surface. Locate the four holes within the tracings of the slots made in the previous step at the positions which will allow for adjustment of the chain tension. After drilling the mounting holes and installing lag shields if necessary, bolt the operator to the mounting surface but do not completely tighten the bolts at this time. Check the alignment of the sprockets, adjust their

positions on the shafts if necessary and tighten the set screws securely on both sprockets. pulling downward on the operator to remove slack from the chain, tighten the four mounting bolts.

Inspect the installation. There should be no slack in the chain but neither should it be under severe tension which might shorten the life of the bearings. If there is any flexibility in the system due to construction of the surface supporting the operator or noticeable deflection of the door shaft, it is advisable to install a shaft support between the operator jackshaft and the door shaft to prevent the loss of limit settings due to the possibility of the chain jumping over the sprocket teeth. Shaft supports are available from the factory.

If no keyway exists in the door shaft, drill a 3/8" diameter hole through the door sprocket and door shaft with the sprocket in its aligned position. Insert a 3/8" diameter bolt (not provided) through the sprocket hub and shaft. Secure with a lock washer and hex nut. See **Figure 4**.

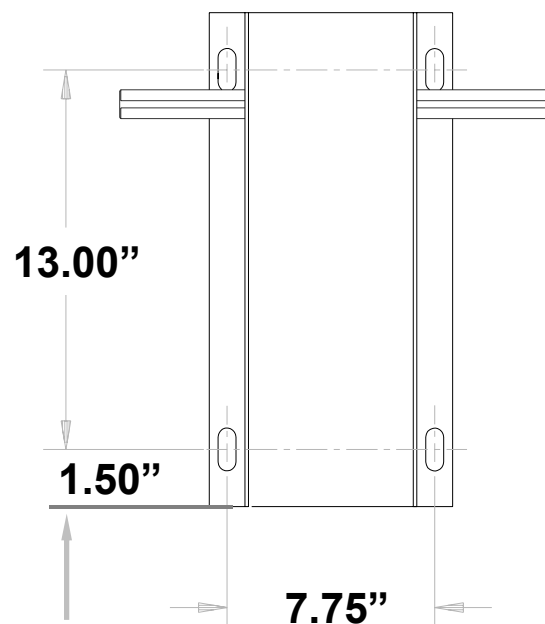


Figure 2

CHAIN HOIST INSTALLATION

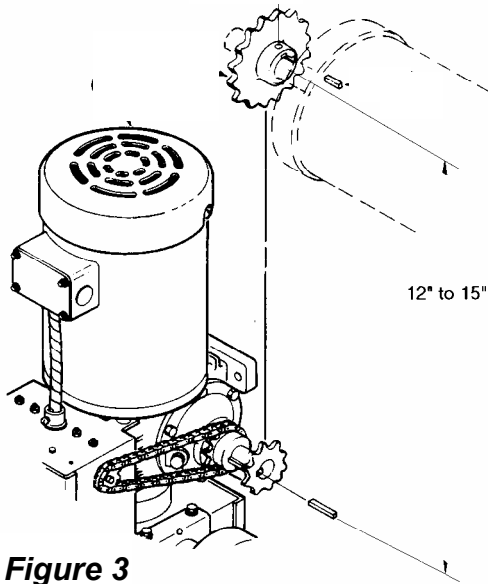


Figure 3

1. If the operator is furnished with a chain Hoist (Model H) Refer to **Figure 5** to install the chain hoist. Pass the hand chain, item 13 over the chain pocket wheel and through the guide holes in the chain guard. Fasten the ends of the chain together (to make one continuous loop) by opening and re-closing one link using two pairs of pliers. If the chain is too long, shorten it to the desired length by removing links.

2. Remove the sash chain from the shipping bag and let hang from the disconnect lever. Pull the sash chain to engage the hand chain. **This will de-energize the interlock switch and remove power to the operator.**

3. Use lag screws to fasten the chain hoist holding bracket furnished with the operator to the wall vertically in line with the sash chain about four feet off the floor. See **Figure 5**. This bracket is also used to hold the release chain in place for both the chain hoist equipped units (H) and floor disconnect models (J).

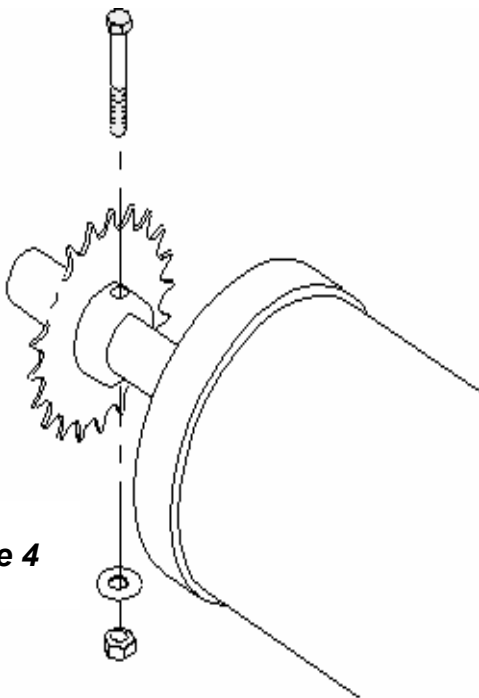


Figure 4

BEFORE PROCEEDING WITH THE OPERATOR INSTALLATION AND SETTINGS, MAKE A FINAL CHECK FOR TIGHTNESS OF ALL MOUNTING HARDWARE AND SET SCREWS.

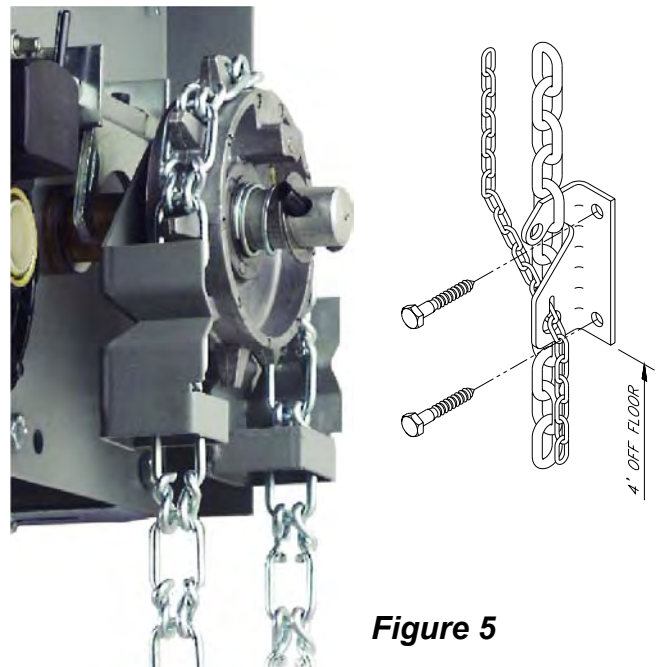


Figure 5

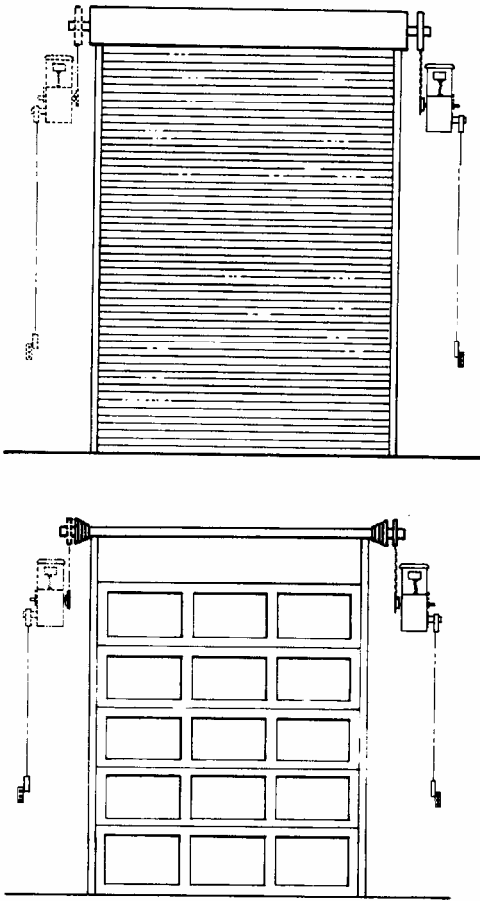
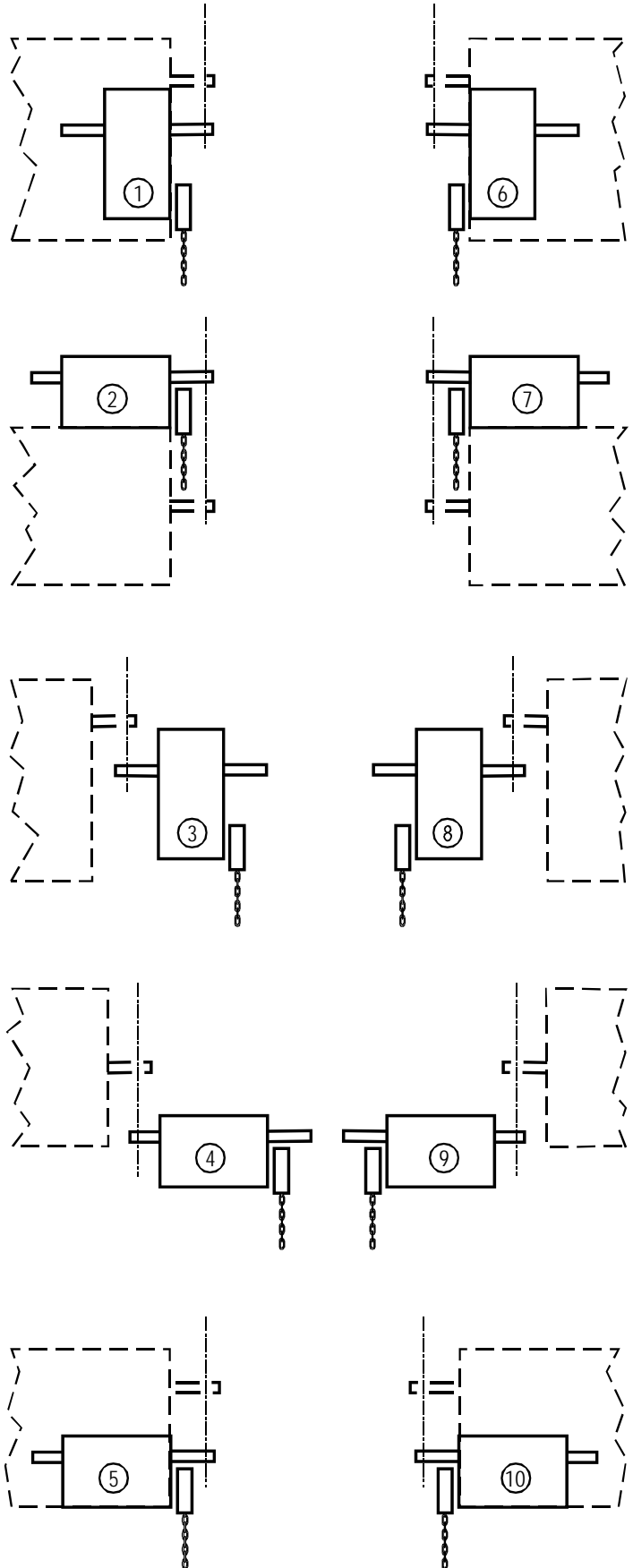
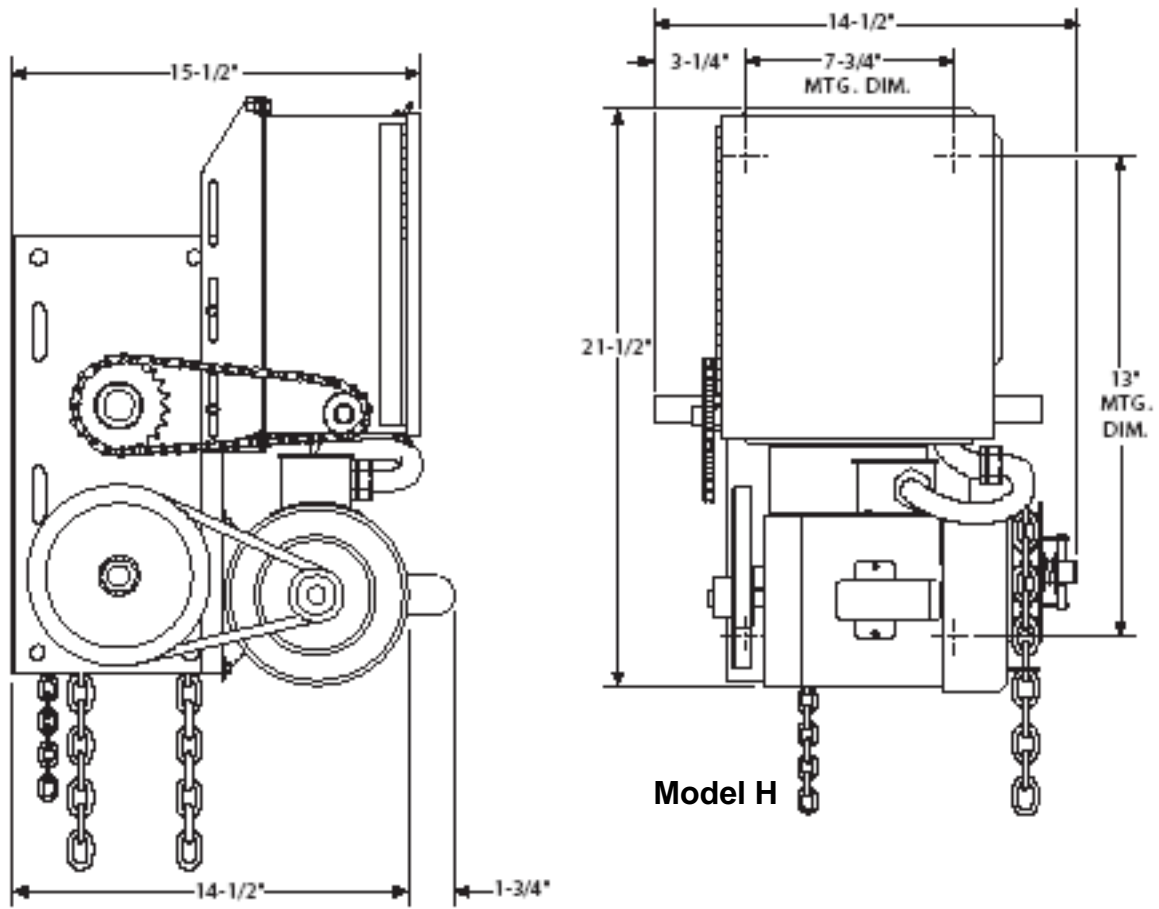


Figure 6

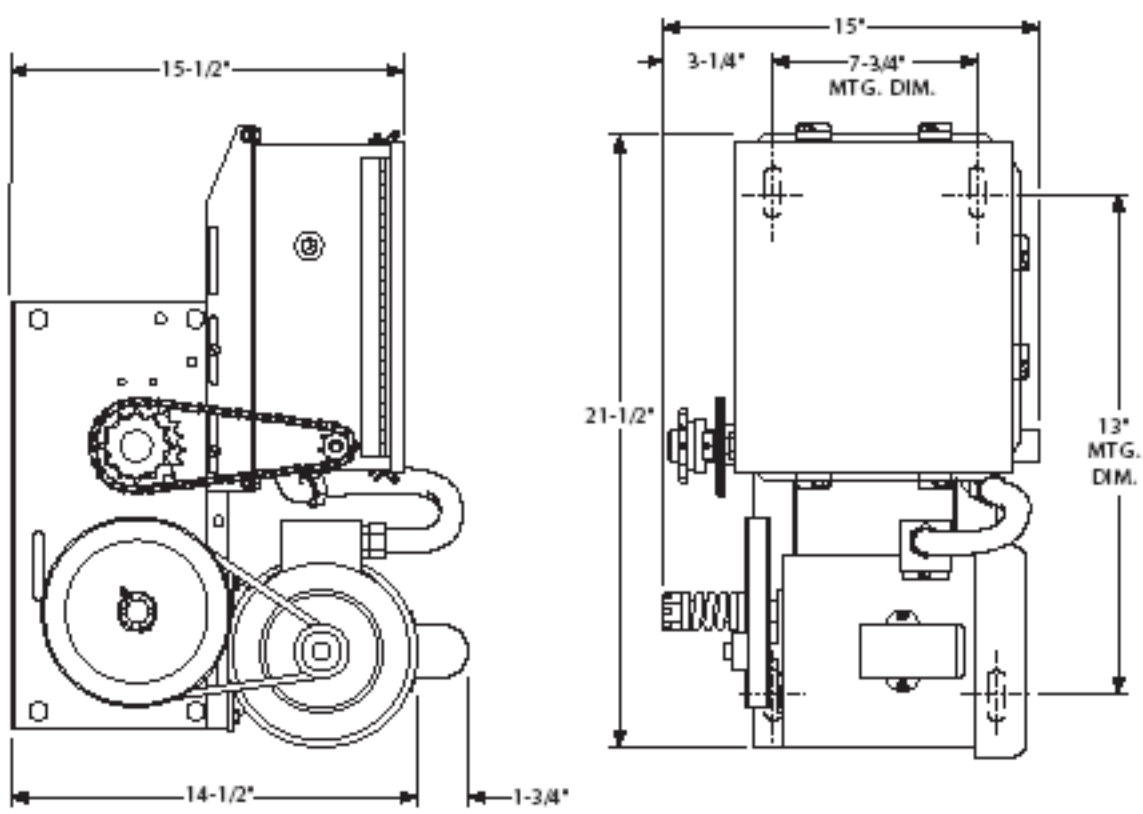
- #1 Vertical Front of Coil, Right Hand
- #2 Horizontal Top Of Coil, Right Hand
- #3 Vertical Wall Mount, Right Hand
- #4 Horizontal Side of Coil, Right Hand
- #5 Horizontal Front of Coil, Right Hand
- #6 Vertical Front of Coil, Left Hand
- #7 Horizontal Top Of Coil, Left Hand
- #8 Vertical Wall Mount, Left Hand
- #9 Horizontal Side of Coil, Left Hand
- #10 Horizontal Front of Coil, Left Hand





Model H

Model CH



Model CJ



WARNING

TO AVOID RISK OF ENTRAPMENT AND POSSIBLE DAMAGE TO THE DOOR AND OPERATOR THE LIMITS MUST BE ADJUSTED BEFORE APPLYING POWER TO THE OPERATOR.

SETTING THE LIMIT SWITCHES

1. Open the cover on the electrical enclosure. There are two limit nuts on the threaded shaft that move laterally along the shaft as the operator opens and closes the door. When a limit nut nears the end of the shaft it activates a (set of) switch(es). The OPEN limit switch is on the LEFT and the CLOSE limit switch is on the RIGHT. Auxiliary switches may also be present, they are used to control other functions. These are mounted to a separate bracket and should not be confused with the the OPEN and CLOSE Limit Switches which are mounted to the back of the electrical enclosure box and are somewhat hidden from view.
2. Manually raise the door to a nearly open position.
3. Depress the limit nut retaining bracket away from the slots in the limit nuts. Turn the OPEN limit nut on the shaft until it engages the Open Limit Switch, the switch will sound an audible "click" when engaged. If the Open Limit is a DPDT switch (a total of 6 (six) connecting terminals protruding from the switch body, a SPDT switch has only three (3) terminals), you will need to listen for two audible clicks. Release the retaining bracket and be sure that it engages in slots of both limit nuts.
4. Manually lower the door to a nearly closed position and repeat Step #3 with the Close limit nut and switch.
5. If auxiliary switches are present, the limit nut will actuate them just prior to activating the open or close limit switch. (This is preset at the factory.)
6. Manually move the door to a half open position to avoid door damage due to incorrect power supply phasing. On three phase units the door may initially run in the wrong direction when power is first applied. With the door in a mid position there will be time to stop the door before damage can happen if incorrect phasing occurs.
7. A final limit adjustment will be necessary after the connection of the power supply in order to ensure the door stops at the proper Open and Close positions.

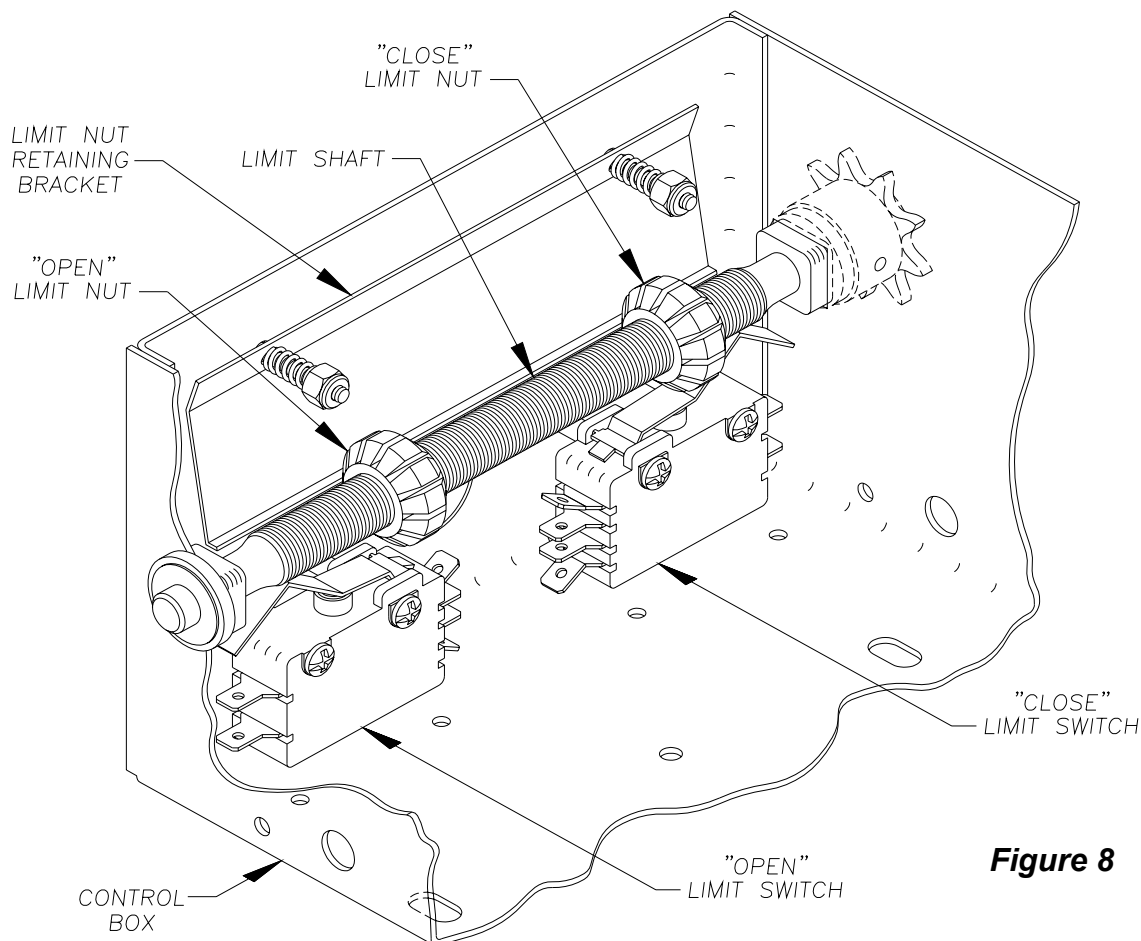


Figure 8

**WARNING**

TO PREVENT THE RISK OF PERSONAL INJURY OR DEATH:

- DISCONNECT POWER AT THE FUSE BOX BEFORE PROCEEDING.
- ELECTRICAL CONNECTIONS MUST BE MADE BY A QUALIFIED INDIVIDUAL.
- OBSERVE LOCAL ELECTRICAL CODES WHEN WIRING THE OPERATOR.

**WARNING**

RISK OF ENTRAPMENT THAT MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH. DISCONNECT POWER TO THE OPENER BEFORE AND DURING INSTALLATION OF AN ACCESSORY REVERSING DOOR EDGE OR PHOTOELECTRIC DEVICE. DO NOT RECONNECT POWER TO OPENER UNTIL INSTRUCTED TO DO SO. ENSURE DOORWAY IS CLEAR BEFORE STARTING TESTING OF UNIT.

NOTE: PowerMaster H & J operators have been designed and constructed for use with voltages from 115 Volts AC to 480 Volts AC, in single or three phase. Check the operator nameplate label on the control box cover for the proper voltage and phase. The application of an improper input voltage or phase will result in catastrophic failure to the internal electrical components. Observe local electrical codes when wiring the operator.

When hard wiring, observe state and local electrical codes. A wiring diagram is attached to the inside of the control box cover. Connect the appropriate voltage and phase power leads to the appropriate terminals as per the wiring diagram and connect a ground wire to the grounding screw. On three phase units, incorrect phasing of the power supply will cause the motor to rotate in the wrong direction (open when CLOSE button is pushed and vice versa). To correct this, interchange any two of the incoming three phase conductors.

The wiring diagram attached inside the cover of the control box details all of the field wiring terminal connections for the operator. Always connect the wires to the push-button controls and auxiliary devices exactly as shown.

Warning: Control voltage of the operator is 24 volts AC, Class 2. Do not run the power leads and control circuit wiring in the same electrical conduit.

Note: Most H & J operators are pre-wired to accept reversing edge components. To comply with UL requirements, one of these systems must be installed and wired to the operator. Refer to **Figures 9 and 10** for Edge component wiring and installation.

For operator models not installed with reversing edge components or photoelectric device, **ONLY ONE THREE BUTTON STATION OR A CONTROL WIRED FOR CONSTANT PRESSURE TO CLOSE MAY BE USED TO CONTROL THE OPERATOR. THIS IS TO COMPLY WITH UL SAFETY REQUIREMENTS. IN THIS CASE THE CONTROL STATION MUST BE LOCATED WITHIN CLEAR SIGHT OF THE DOOR ADJACENT TO A PLACARD (SUPPLIED WITH THE OPERATOR) WITH THIS WORDING:**

WARNING TO PREVENT ENTRAPMENT DO NOT START DOOR DOWNWARD UNLESS DOOR WAY IS CLEAR

Operators which are equipped with a reversing edge circuit may have one or more additional means of control which should be wired in accordance with the diagram supplied in the operator. Refer to **Figure 10**.

**WARNING**

TO PREVENT THE RISK OF PERSONAL INJURY AND/OR DAMAGE TO DOOR OR PROPERTY, ONLY OPERATE DOOR CONTROL WHEN DOOR IS IN CLEAR VIEW. IF CONTROL STATION CANNOT BE LOCATED WHERE THE DOOR IS VISIBLE OR IF ANY OTHER DEVICE IS USED TO CONTROL THE DOOR AN AUXILIARY ENTRAPMENT DEVICE (DOOR EDGE OR PHOTOELECTRIC) MUST BE CONNECTED.

**CAUTION**

TO AVOID DAMAGE TO DOOR AND OPERATOR ENSURE ALL DOOR LOCKS ARE DISABLED. USE AN INTERLOCK SWITCH IF A LOCK IS REQUIRED TO RETAIN FUNCTIONALTY.

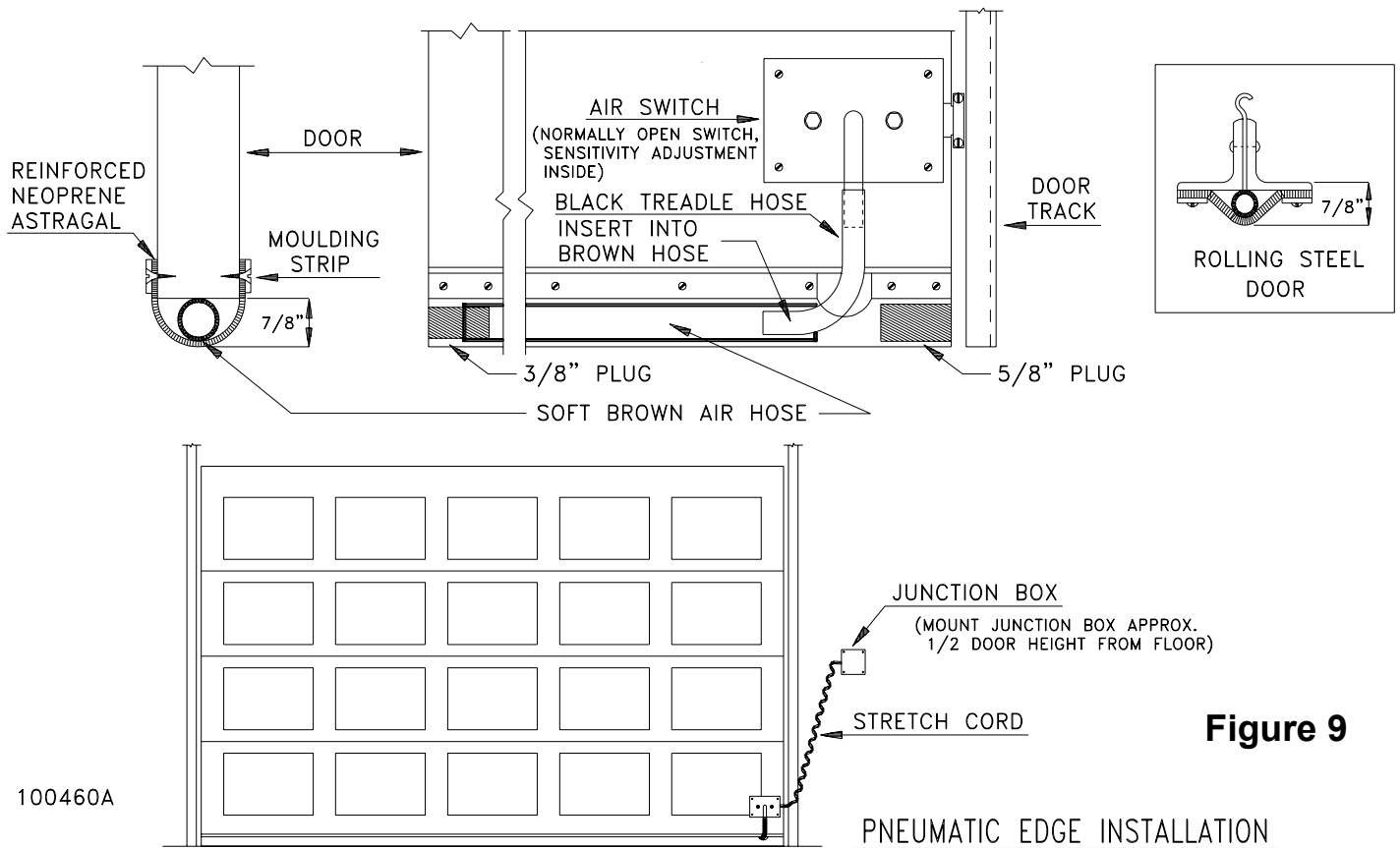


Figure 9

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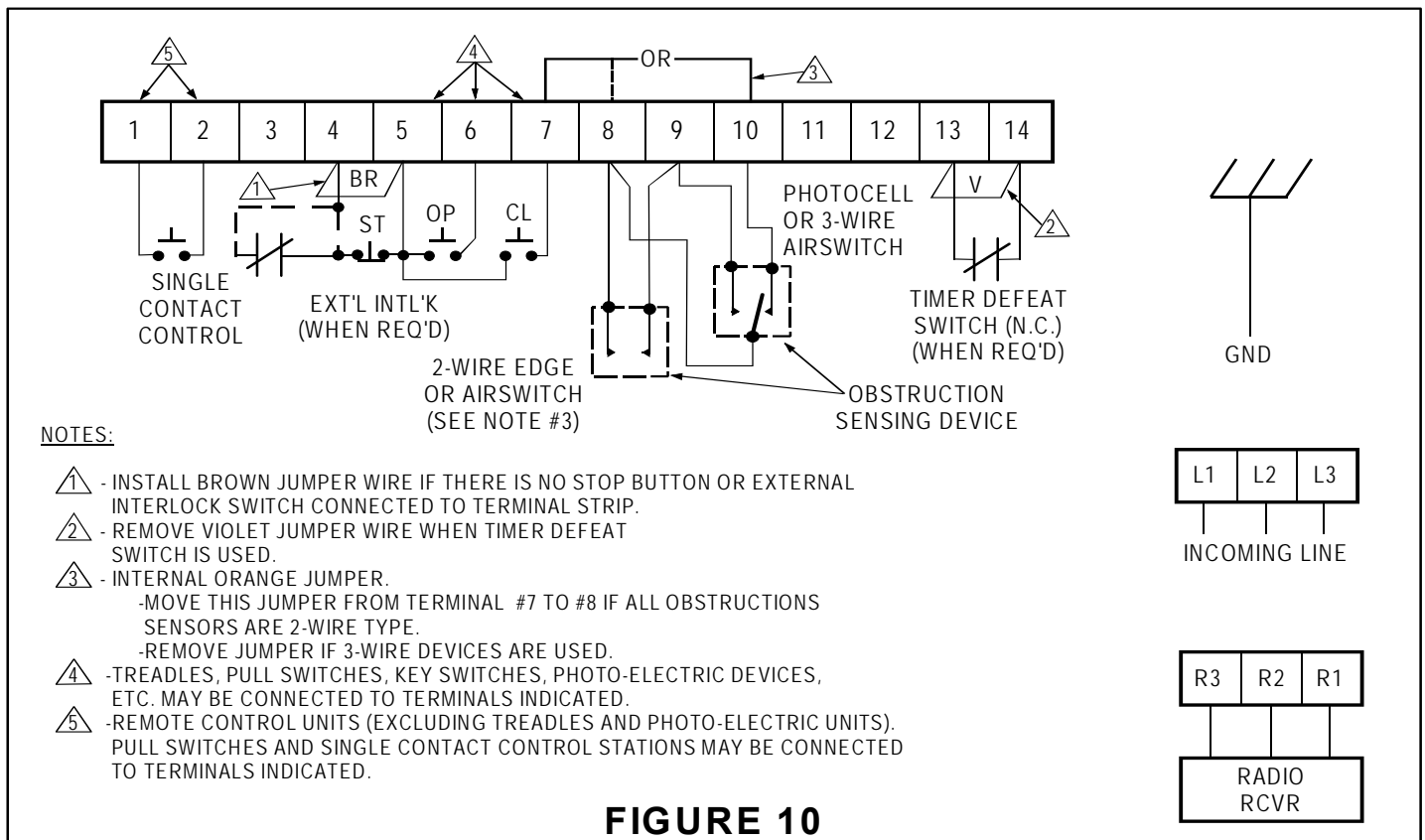


FIGURE 10

IMPORTANT SAFETY INSTRUCTIONS FOR OWNER



WARNING

TO REDUCE THE RISK OF SEVERE INJURY OR DEATH: READ AND FOLLOW ALL INSTRUCTIONS!

- **NEVER** let children operate or play with door controls. Keep the Remote Control away from children.
- **ALWAYS** keep a moving door in sight and keep people and objects away from the door area until the door is completely closed. **NO ONE SHOULD CROSS THE PATH OF A MOVING DOOR.**
- **TEST THE DOOR OPENER'S REVERSING FEATURE** (where applicable) **MONTHLY**. The door **MUST** reverse upon contact with a 4" high object on the floor.
- After adjusting the force setting, if equipped with a clutch, or the limit of travel, **ALWAYS RETEST** the Opener. **Failure to ADJUST THE OPENER PROPERLY may result in SERIOUS INJURY OR DEATH.**
- **DO NOT** over adjust the force setting (clutch) to compensate for a poorly working door. See page 14 & 15 for procedure to check the door operation and for proper clutch adjustment.
- **KEEP THE GARAGE DOOR PROPERLY BALANCED.** (See the door owner's manual.)
- **AN IMPROPERLY BALANCED DOOR MAY CAUSE SEVERE INJURY OR DEATH.**
- Have a **QUALIFIED SERVICE PERSON MAKE REPAIRS TO CABLES, SPRING ASSEMBLIES AND OTHER HARDWARE.**
- **SAVE THIS INSTRUCTION MANUAL AND GIVE TO THE END USER.**

NOTE: It is now necessary to turn on the power in order to run the Opener to check for proper operation and limit settings. Before doing so, ensure that all mounting hardware are installed and properly tightened, that all electrical connections are per local code requirements, and that proper wiring practices have been followed. **Also, double-check that all ropes have been removed from the door and that the doorway is clear.**

WIRING TERMS



WARNING

FAILURE TO TEST REVERSING SYSTEM COULD RESULT IN DEATH OR SERIOUS INJURY. TEST THIS SYSTEM ONCE A MONTH.

MOMENTARY CONTACT: Button can be pushed and then released and door will keep moving or stop without maintaining pressure on the button.

CONSTANT PRESSURE: Constant pressure is required on the button in order for continued door movement. When the button is released the door will stop and possibly reverse to full open depending on wiring type.



WARNING

AVOID ELECTROCUTION: DO NOT ROUTE LOW VOLTAGE WIRES IN SAME CONDUIT AS HIGH VOLTAGE WIRES. FOLLOW ALL LOCAL ELECTRICAL CODES or THE NATIONAL ELECTRICAL CODE (NEC).

DOOR EDGE/PHOTOELECTRIC INPUT: The operator wiring provides for input from an optional pneumatic or electric door bottom edge or photoelectric device that will cause a closing door to stop and may reverse it to open depending on the wiring type.

CLUTCH ADJUSTMENT



WARNING

RISK OF ENTRAPMENT THAT MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH. DISCONNECT POWER TO THE OPENER BEFORE SERVICING OR MAKING ADJUSTMENTS. ENSURE DOORWAY IS CLEAR BEFORE STARTING TESTING OF UNIT.



CAUTION

ALWAYS DISCONNECT POWER TO OPERATOR BEFORE SERVICING OR MAKING ADJUSTMENTS.

The clutch serves to protect the door, the electric operator and other equipment from undue stress or damage caused by starting forces and/or an obstruction to the door. It should be set no tighter than is necessary to smoothly and consistently move the door throughout its full range of travel. When properly set, it will slip freely if the door should encounter an obstruction, and it should be possible to stop the travel of the door by hand.

WARNING: Before adjustment remove power to the operator.

1. Remove cotter pin from slotted hex nut and clutch shaft.
2. Back off slotted hex nut until there is insufficient tension on clutch spring to permit clutch to drive door.
3. Tighten slotted hex nut gradually until there is just enough tension on spring to permit operator to move door smoothly, but to allow clutch to slip if door is obstructed.
4. Be sure cotter pin is reinstalled each time operator is tested for clutch adjustment and that it is locked in place on completion of adjustment.

CAUTION NEVER COMPRESS CLUTCH SPRING BEYOND POINT LIMITED BY THE DESIGN OF THE OPERATOR OR REPLACE IT WITH A HEAVIER SPRING.

Due to changing conditions of the door and normal wear, it may be necessary to occasionally readjust the clutch to obtain dependable operation.

WARNING: BEFORE DOING SO BE CERTAIN THAT THE DOOR IS IN GOOD WORKING CONDITION, PROPERLY COUNTERBALANCED AND THAT THE CLUTCH IS NOT SLIPPING BECAUSE OF LOOSE OR MISSING HARDWARE, BINDING IN THE TRACK, RUBBING AGAINST THE DOOR STOPS OR DEFECTIVE OR MISADJUSTED SPRINGS. ANY SERVICE REQUIRED TO THE DOOR, DOOR SPRINGS OR DOOR OPERATOR MUST BE PREFORMED BY A QUALIFIED PROFESSIONAL DOOR INSTALLER.

The clutch pad will wear during normal operation and should be replaced when it becomes difficult or impossible to sufficiently tighten the clutch to obtain smooth operation of the door when it is in good working condition. To replace the clutch pad, first loosen the motor mounting bolts and remove the V-belt then the clutch adjusting nuts, spring and clutch pulley. Check condition of V-belt before reassembly and replace if required.

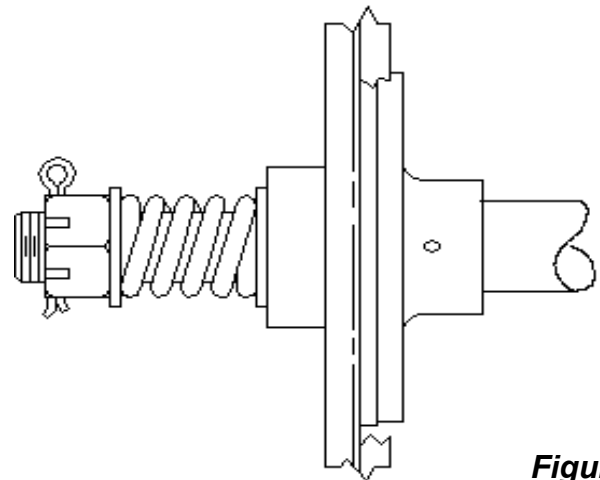


Figure 11



WARNING

IMPROPER ADJUSTMENT OF CLUTCH SETTING COULD CAUSE ENTRAPMENT, INJURY OR DEATH. SET CLUTCH ADJUSTMENT FOR JUST ENOUGH FORCE TO OPERATE THE DOOR RELIABLY, BUT NO STRONGER. Contact a service professional to correct any binding, sticking or other door problems. DO NOT OVER-ADJUST CLUTCH SETTING TO COMPENSATE FOR A POORLY WORKING DOOR.

TESTING**WARNING**

ALWAYS DISCONNECT POWER TO THE OPERATOR BEFORE SERVICING, CONNECTING ACCESSORY DEVICES OR MAKING ADJUSTMENTS.

Following installation, the operator **MUST** be tested and respond correctly to all controls as specified on the wiring diagram. **KEEP** personnel and equipment clear of the area beneath the door when performing the tests. When testing the 3-button wall station, first observe that each button operates the door in the direction indicated and that the STOP button performs that function. With the door stopped at its full open position, the OPEN button should be inoperative. This should be verified and, likewise, the CLOSE button should be inoperative with the door fully closed.

Certain operator control circuits use only a single button or a two button control station and may be designed to function differently than the more common three-button circuit described above. Test the controls in accordance with the proper response for your installation.

Observe the door when traveling in each direction for smoothness of operation. Test the setting of the clutch (if equipped) by restraining the door by hand. The clutch should slip. Re-check the limit settings. The door should close tightly at the floor without excessive impact. Likewise, it should fully clear the door opening without the carrier striking the stops on the rail. Model H & J operators are equipped with a reversing edge circuit for use with pneumatic edge or foam edge door components.

To test it for proper reversal, place an object beneath the leading edge of the door. The door should instantly reverse when it comes into contact with the object provided the height of the object exceeds the cut out point built into the close limit switch (approximately four inches).

If the operator is equipped with other means of

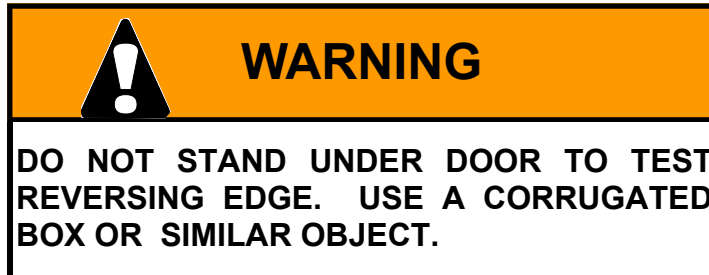
control, such as additional 3 button stations or radio controls, each of these should be tested separately for proper operation.

**WARNING**

DO NOT STAND UNDER DOOR TO TEST REVERSING EDGE. USE A CORRUGATED BOX OR SIMILAR OBJECT.

To test the manual disconnect first move the door to the fully closed position. Then disconnect the power to the operator. Manual door operation mode should engage when the release chain is pulled. The door can then be manually opened or closed by physically moving the door or using the hoist chain. If it is difficult to engage and/or the jackshaft to doorshaft chain appears to be under compression, reset the CLOSE limit slightly to reduce the door travel in the close direction.

Normally, very little maintenance is required. A monthly visual inspection must be made for loose or missing hardware and for excessive slack in the v-belt and jackshaft chain. The clutch must be checked periodically and adjustments made if necessary. (See page 14)



Test the reversing edge circuit or components (where applicable) at least once a month by permitting the door to contact an obstruction while closing.

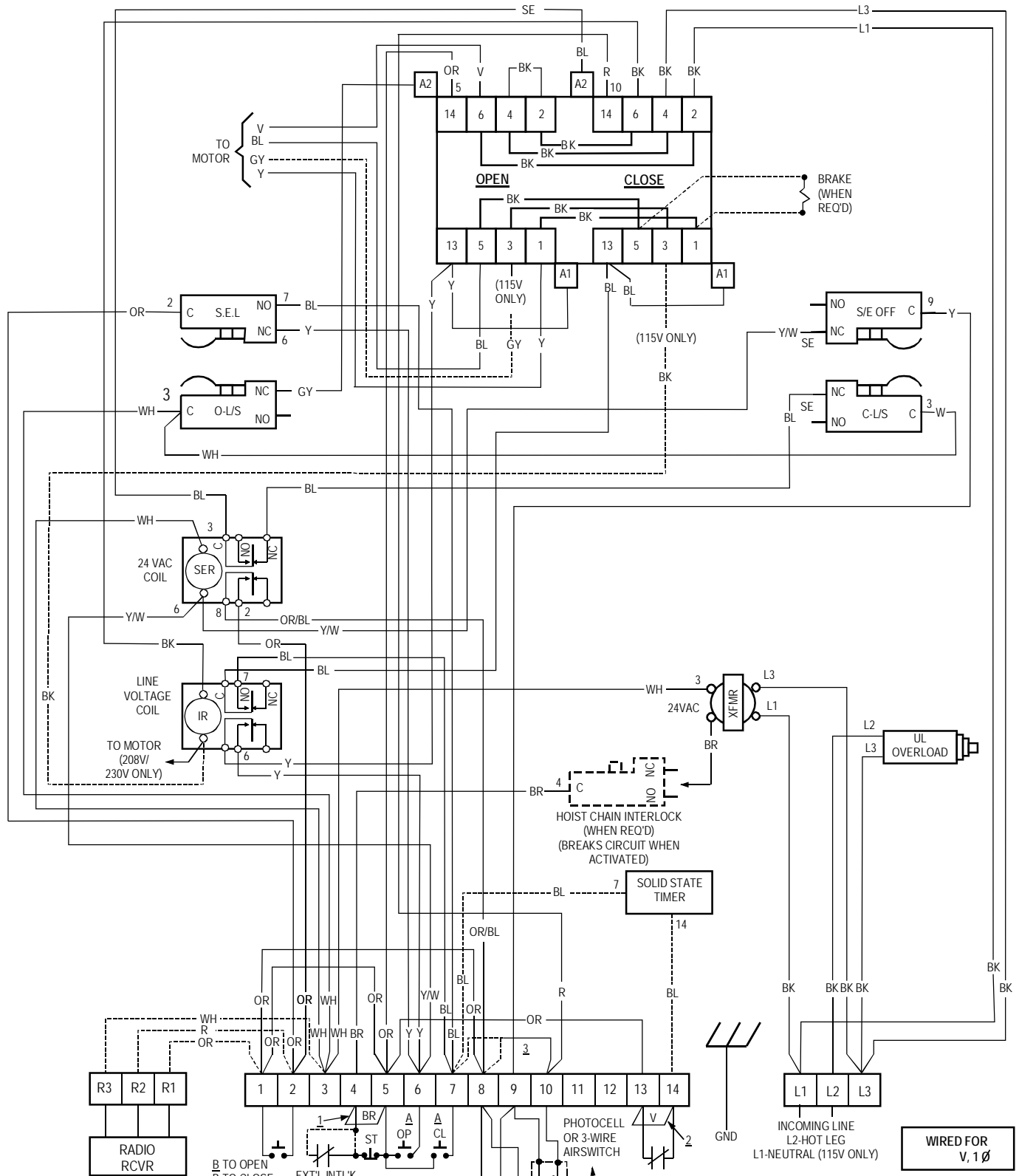
Lubrication of the operator is not required. It is important, for trouble free service from the operator, that the door be kept free from binding, properly counter balanced and periodically lubricated. **An annual inspection of the door by a qualified overhead door professional is recommended.**

* Door must be in good operating condition. An electrical door operator cannot move a garage door that is in poor condition. The door must operate freely in the track, with no binding or obstructions, and must be well balanced. Check the spring balance of your door by bringing the door to a half-open position and leaving it there. If the door stays in that position, it is well balanced. If it moves more than a few inches the springs possibly need adjustment. Call a qualified door service company.

Warning: Repairs and adjustments to the door and operator should be performed only by someone qualified to service commercial overhead doors and operators.

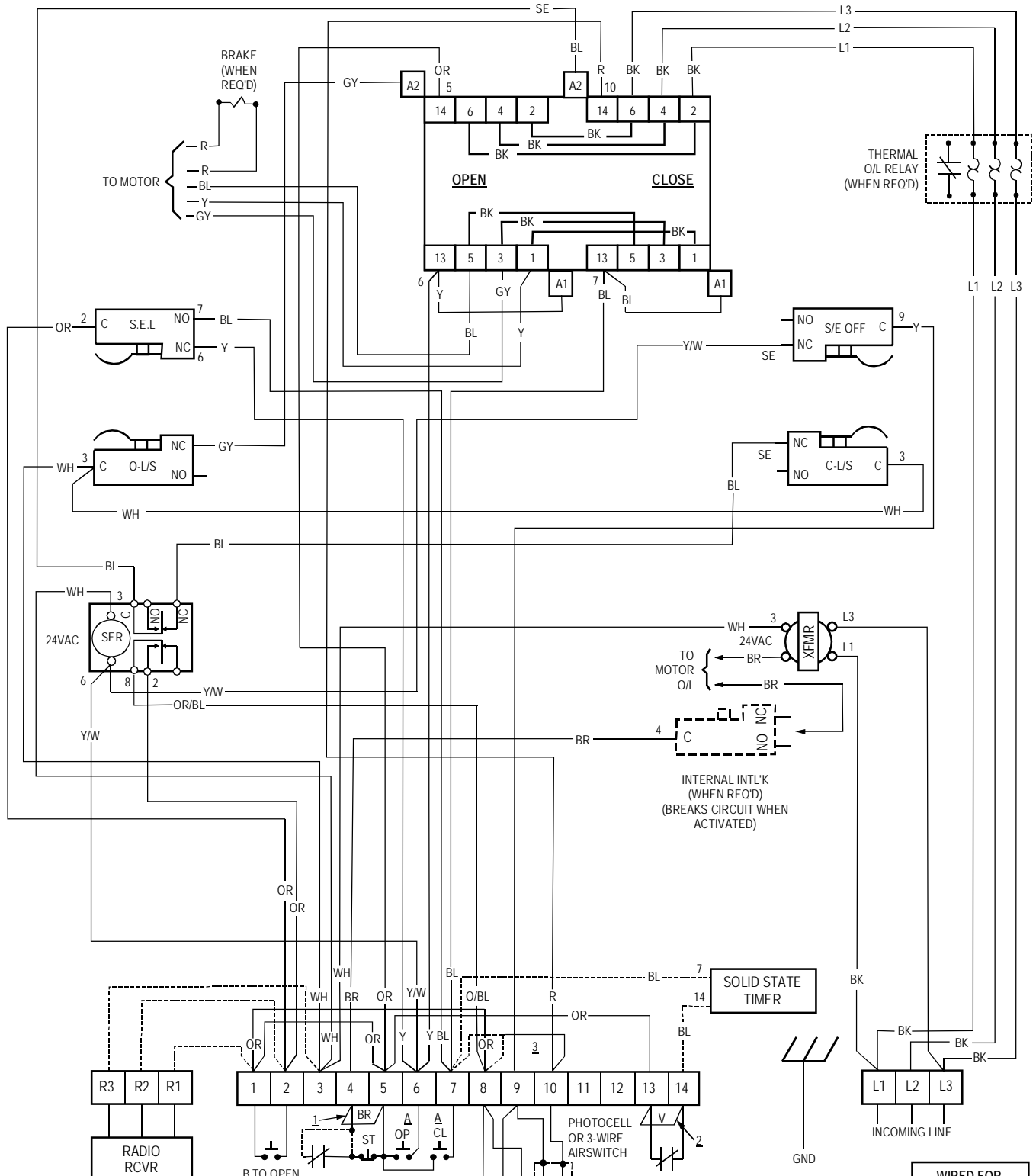
We constantly strive to maintain and improve the quality of our products. Therefore, the components shown in the illustrations were accurate at time of printing but are subject to change without notice as quality improvements are made.

<u>SYMPTOM</u>	<u>POSSIBLE CAUSE</u>	<u>SOLUTION</u>
Motor runs but door does not move	Door jammed or obstructed.	Check manual operation of door.
	Sprocket key missing or drive chain broken.	Check drive chain for operation.
Limit switches do not hold setting	Drive chain too loose; permits chain to jump teeth on	Adjust chain to proper tension.
	Limit nuts binding on screw, causing them to jump position on retaining bracket.	Check for free rotation on limit screw. Lubricate screw or replace nuts if threads are defective.
	Limit nut retaining bracket not engaging notches in nuts.	Set nuts and be sure bracket is in notch on each nut. See Figure 8.
Door drifts when operator shuts off.		
	Door tension incorrect.	Disconnect operator and check operation of door.
Motor hums — does not run.	Dead phase (on 3 phase).	Check power supply.
	Brake does not release.	Check wires to brake solenoid, check adjustment.
	*Door locked or jammed.	Check door. Try manual operation.
Motor does not run when open or close wall button is pressed.	Building fuse blown or circuit breaker tripped.	Check power supply fuses, circuit breakers, disconnect switch, check for cause.
	Overload protector tripped.	Reset and check for cause.
	NOTE: To isolate cause, operate contactor solenoid plunger manually. If motor runs, cause is in push button circuit.	Check pushbutton circuits for voltage against voltage indicated on wiring diagram. Check push button wiring. Check interlock switch wiring.
	Interlock switch broken or inoperative.	Check that disconnect pin is not making contact with interlock switch located inside base frame. Check wiring to switch and switch function. Normally closed for operation electrically and normally open for hand chain operation.
Operator closes door when "Open" button is pressed, and limit switches do not function	On three phase operators power supply is connected out of phase.	Interchange connections of any two power supply leads. (See wiring diagram)
	Operator not installed correctly.	Remount operator so that motor is "down" or away from door wall or contact factory as to wiring changes required.
Operator fails to shut off at fully open closed position.	On three phase operators power supply is connected out of phase.	Check phase as above.
	Limit nuts not adjusted	See limit adjustments page 10.
	Defective limit switch.	Operator limit switch manually while door is moving to determine if switch is operative.
	Single phase operator (without instant reverse motor). Stuck push button or short in control wiring.	If door overrides up limit, check down button and circuit. If door overrides down limit, check open button and circuit.
	Limit drive chain broken or inoperative.	Replace chain, check limit screw for rotating.



- NOTES:
- 1- WIRE-NOT FURNISHED WHEN EXTERNAL INTLK SWITCH IS USED. NOT FURNISHED WHEN STOP BUTTON IS USED.
 - 2- WIRE-NOT FURNISHED WHEN TIMER DEFEAT SWITCH IS USED.
 - 3a- MOVE THIS JUMPER FROM #7 TO #8 IF ALL OBSTRUCTIONS SENSORS ARE 2-WIRE TYPE.
 - 3b- REMOVE JUMPER IF ANY 3-WIRE DEVICES ARE USED.
 - A- TREADLES, PULL SWITCHES, KEY SWITCHES, PHOTO-ELECTRIC DEVICES, ETC. MAY BE CONNECTED TO TERMINALS INDICATED.
 - B- REMOTE CONTROL UNITS (EXCLUDING TREADLES AND PHOTO-ELECTRIC UNITS). PULL SWITCHES AND SINGLE CONTACT CONTROL STATIONS, MAY BE CONNECTED TO TERMINALS INDICATED.

WIRING TYPE: SAFETY EDGE TO REVERSE WITH OPTIONAL TIMER	
MTR/CNTR: 1 Ø	REV: 15
DATE: 10-31-02	BY: F.S.
SPECIAL: OPTIONAL TIMER CIRCUIT IN DASHED LINES	
WIRING DIAGRAM NO. 331-3	
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NOTES:

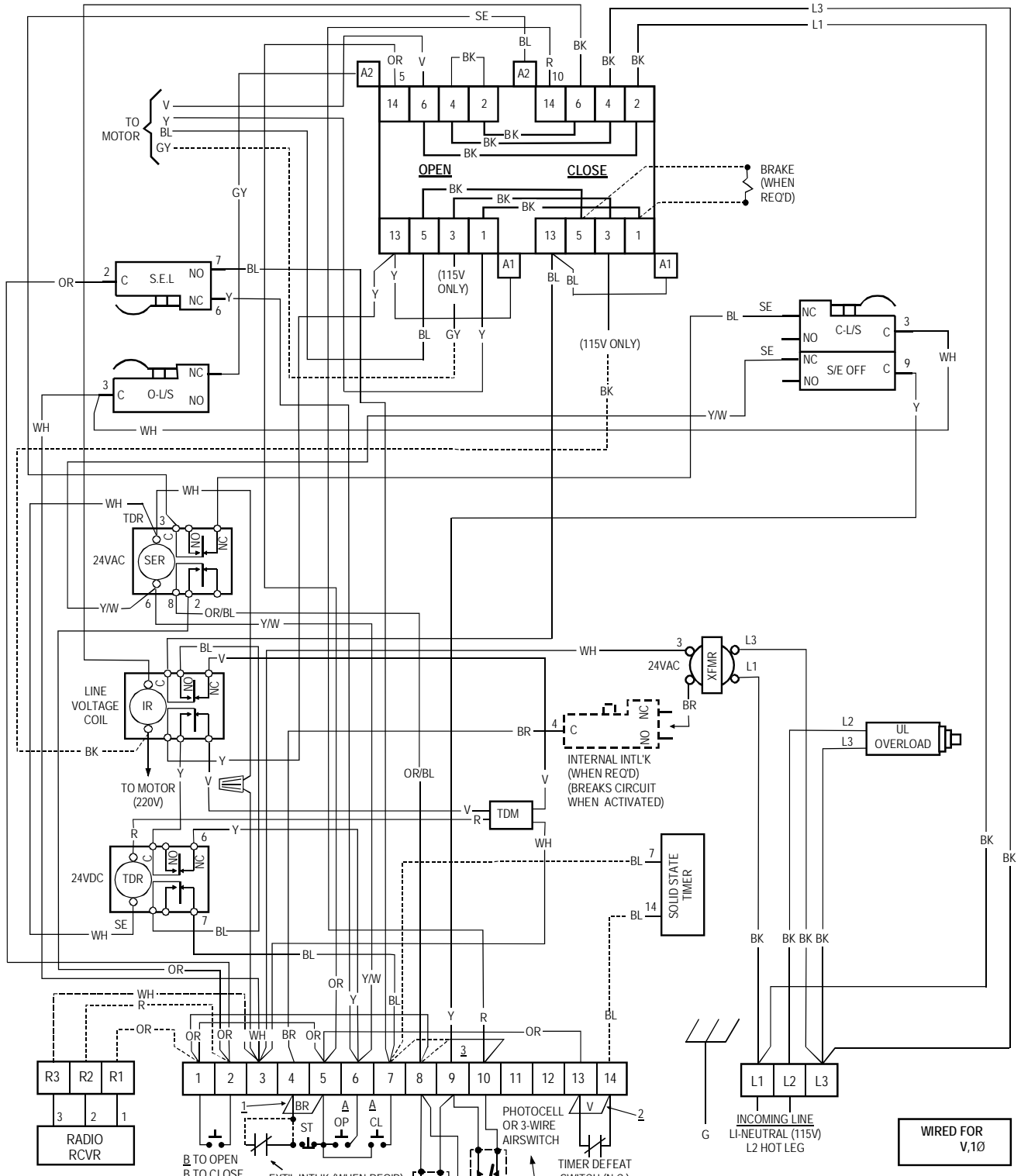
- 1- WIRE-NOT FURNISHED WHEN EXTERNAL INT'L'K SWITCH IS USED.
- NOT FURNISHED WHEN STOP BUTTON IS USED.
- 2- WIRE-NOT FURNISHED WHEN TIMER DEFEAT SWITCH IS USED.
- 3a- MOVE THIS JUMPER FROM #7 TO #8 IF ALL OBSTRUCTIONS SENSORS ARE 2-WIRE TYPE.
- 3b- REMOVE JUMPER IF ANT 3-WIRE DEVICES ARE USED.
- A- TREADLES, PULL SWITCHES, KEY SWITCHES, PHOTO-ELECTRIC DEVICES, ETC. MAY BE CONNECTED TO TERMINALS INDICATED.
- B- REMOTE CONTROL UNITS (EXCLUDING TREADLES AND PHOTO-ELECTRIC UNITS). PULL SWITCHES AND SINGLE CONTACT CONTROL STATIONS, MAY BE CONNECTED TO TERMINALS INDICATED.

2-WIRE EDGE OR AIRSWITCH (SEE NOTE #3)

OBSTRUCTION SENSING DEVICE

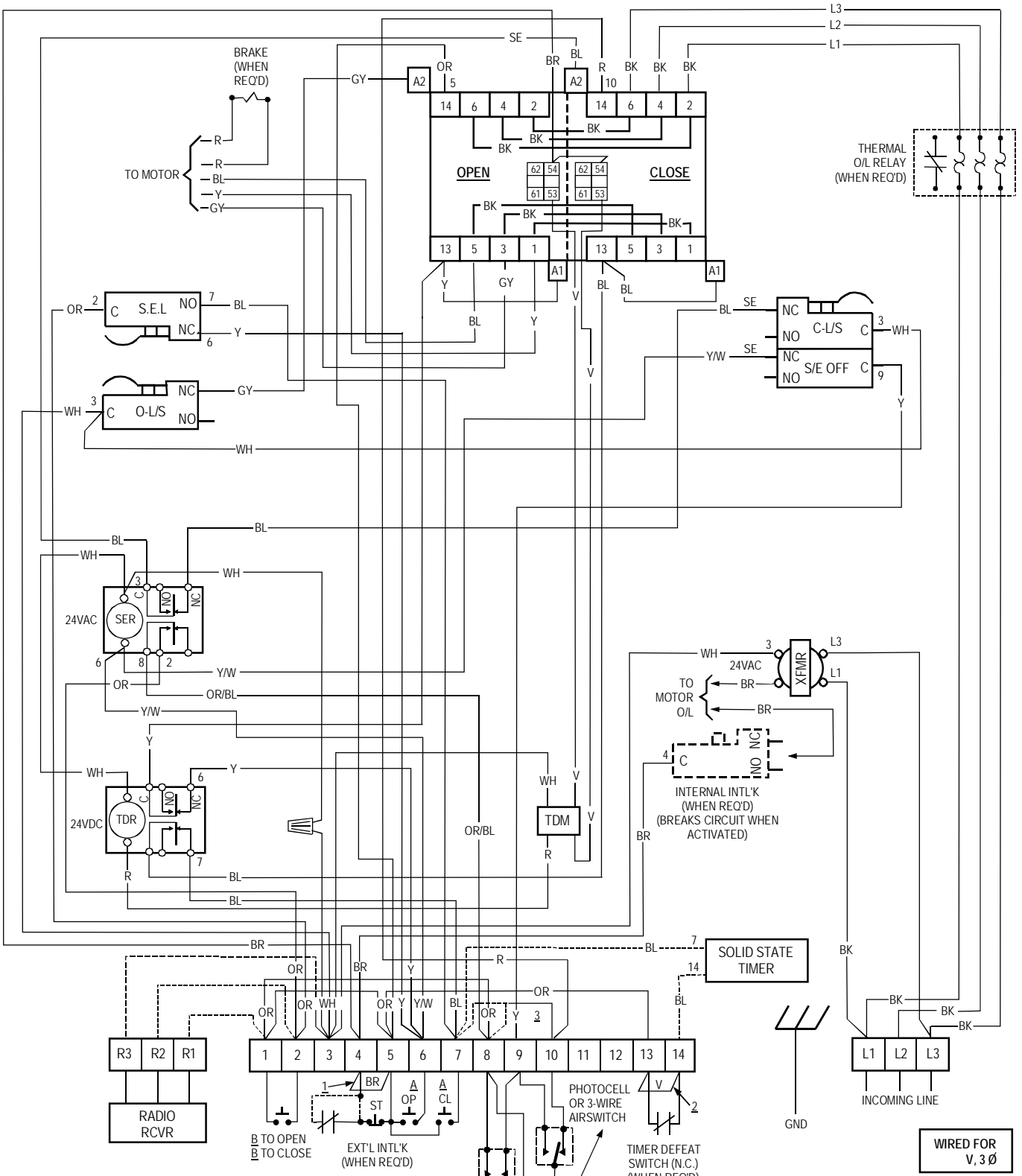
WIRED FOR V, 3 Ø

WIRING TYPE: SAFETY EDGE TO REVERSE WITH OPTIONAL TIMER	
MTR/CNTR: 3 Ø	REV. 11
DATE: 10-31-02	BY: F.S.
SPECIAL: OPTIONAL TIMER CIRCUIT IN DASHED LINES	
WIRING DIAGRAM NO. 333-3	
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- NOTES:
- 1-WIRE-NOT FURNISHED WHEN EXTERNAL INT'LK SWITCH IS USED.
- NOT FURNISHED WHEN STOP BUTTON IS USED.
 - 2-WIRE-NOT FURNISHED WHEN TIMER DEFEAT SWITCH IS USED.
 - 3a-MOVE THIS JUMPER FROM #7 TO #8 IF ALL OBSTRUCTIONS SENSORS ARE 2-WIRE TYPE.
 - 3b-REMOVE JUMPER IF ANY 3-WIRE DEVICES ARE USED.
 - A-TREADLES,PULL SWITCHES, KEY SWITCHES, PHOTO-ELECTRIC DEVICES, ETC. MAY BE CONNECTED TO TERMINALS INDICATED.
 - B-REMOTE CONTROL UNITS (EXCLUDING TREADLES AND PHOTO-ELECTRIC UNITS). PULL SWITCHES AND SINGLE CONTACT CONTROL STATIONS, MAY BE CONNECTED TO TERMINALS INDICATED.

WIRING TYP: SAFETY EDGE 1 Ø TO REVERSE WITH OPTIONAL TIMER	
MTR/CNTR: 1 Ø	
DATE: 10/31/02	REV. 12
BY: F.S.	
SPECIAL: OPTIONAL TIMER CIRCUIT IN DASHED LINES. DELAY ON REVERSE	
WIRING DIAGRAM NO. 1331-3	
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- NOTES:**
- 1- WIRE-NOT FURNISHED WHEN EXTERNAL INT'LK SWITCH IS USED. NOT FURNISHED WHEN STOP BUTTON IS USED.
 - 2- WIRE-NOT FURNISHED WHEN TIMER DEFEAT SWITCH IS USED.
 - 3a- MOVE THIS JUMPER FROM #7 TO #8 IF ALL OBSTRUCTION SENSORS ARE 2-WIRE TYPE.
 - 3b- REMOVE JUMPER IF ANY 3-WIRE DEVICES ARE USED.
 - A- TREADLES, PULL SWITCHES, KEY SWITCHES, PHOTO-ELECTRIC DEVICES, ETC.. MAY BE CONNECTED TO TERMINALS INDICATED.
 - B- REMOTE CONTROL UNITS (EXCLUDING TREADLES AND PHOTO-ELECTRIC UNITS). PULL SWITCHES AND SINGLE CONTACT CONTROL STATIONS, MAY BE CONNECTED TO TERMINALS INDICATED.

2-WIRE EDGE OR AIR SWITCH (SEE NOTE #3)

OBSTRUCTION SENSING DEVICE

TIMER DEFEAT SWITCH (N.C.) (WHEN REQ'D)

WIRING TYPE: SAFETY EDGE TO REVERSE WITH OPTIONAL TIMER	
MTR/CNTR: 3 Ø	
DATE: 10-31-02	REV: 12
BY: F.S.	
SPECIAL: OPTIONAL TIMER CIRCUIT IN DASHED LINES.	
WIRING DIAGRAM 1333-3	
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PowerMaster

Limited 2 Year Warranty

PowerMaster warrants all door operators to be free of defects in materials and workmanship for a period of two (2) years from date of purchase. If any part is found to be defective during this period, new parts will be furnished free of charge. Failure of this product due to misuse, improper installation, alterations, vandalism, or lack of maintenance is not covered under this warranty, and voids any other implied warranties herein.

PowerMaster is not responsible for any labor charges incurred in connection with the installation of warranted parts.

In order to activate this warranty, the registration form on opposite page MUST be completed and returned within THIRTY CALENDER DAYS FROM DATE OF PURCHASE VIA CERTIFIED MAIL, fax (631-951-3934) or via email PMTECH@optonline.net If registration is not activated, a one year warranty will apply.

Model _____

Date Installed _____

Serial # _____

Installer's Information

Company Name _____

Company Address _____

Company Address _____

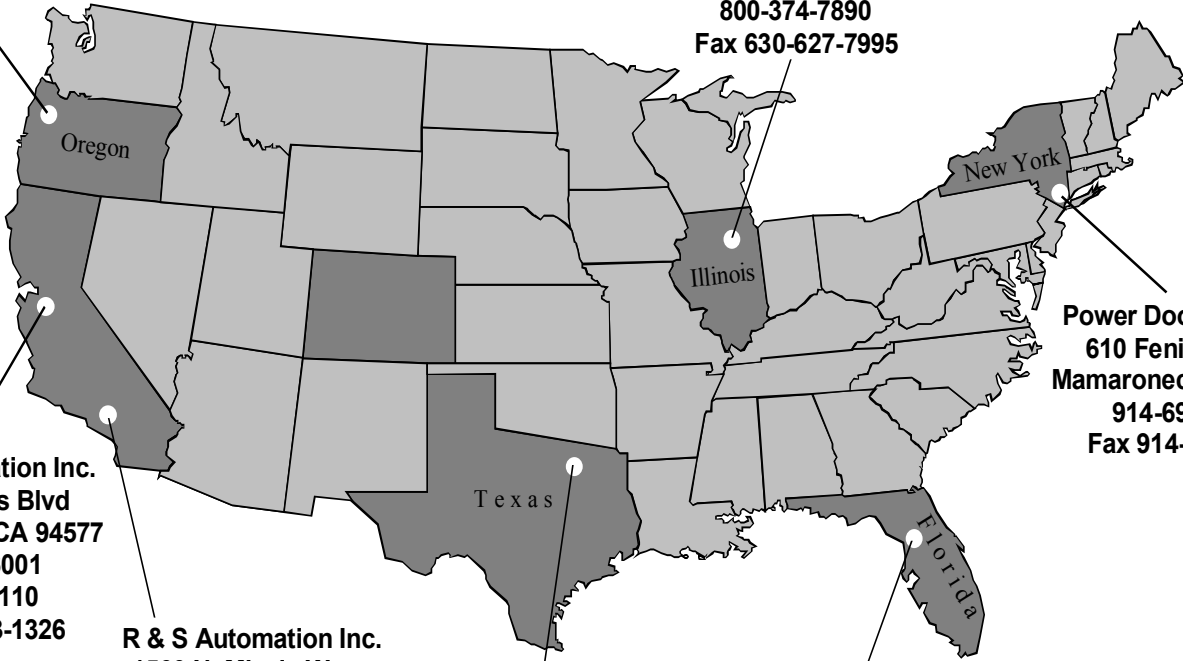
Company Address _____

Company Telephone # _____

Company Contact _____

R&S Automation
7200 E. 92nd Avenue
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Portland, OR 97266
877-388-4001
503-771-4685
Fax 503-774-6708

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2807 Center Circle Drive
Downers Grove, IL 60515
800-374-7890
Fax 630-627-7995



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800-543-6001
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Fax 510-483-1326

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Anaheim, CA 92801
800-963-3111
714-449-1645
Fax 714-449-1679

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Arlington, Tx 76011
800-925-7890
Fax 817-633-5735

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800-323-3674
Fax 352-726-8999

Power Door Products
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Fax 914-698-6866

Toll Free technical support @ 1-800-243-4476
Email to techsupport@power-master.net



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Prompt delivery from stock
**Special operators normally ship
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