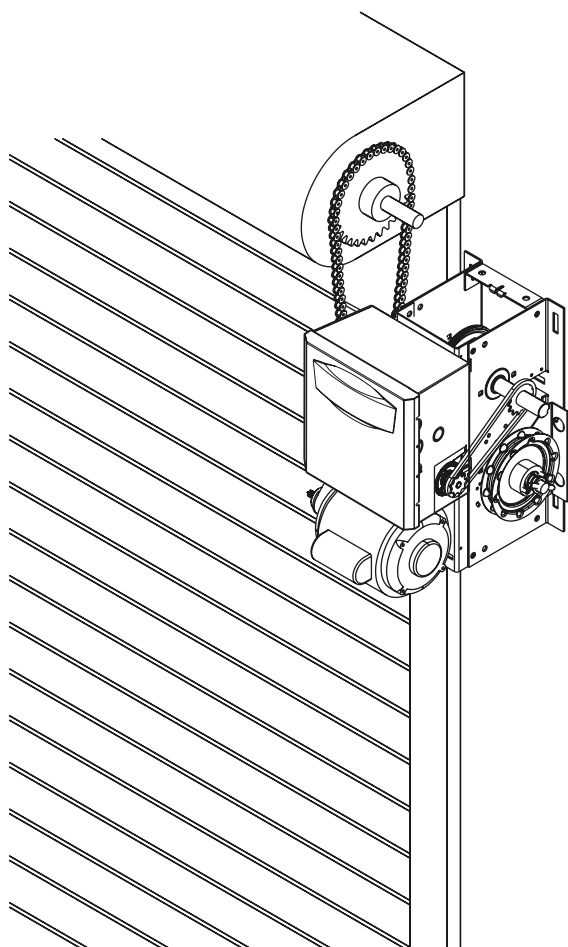


OWNER'S MANUAL

J H HJ

INDUSTRIAL DUTY COMMERCIAL DOOR OPERATOR

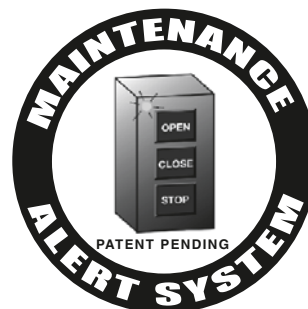


2 YEAR WARRANTY

Serial # Box _____

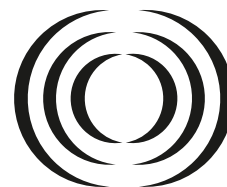
Installation Date _____

**This Operator Features
the Enhanced**



The Maintenance Alert System™ allows the installer to set an internal Maintenance Cycle Counter. The Logic 3 operator incorporates a self-diagnostic feature built into the (MAS) Maintenance Alert System LED. An LED on the 3-button station will signal when the set number of cycles is reached or when the operator requires immediate service.

**Radio Receiver
Built on Board**



NOT FOR RESIDENTIAL USE



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WARNING

Mechanical

WARNING

Electrical

CAUTION

When you see these Safety Symbols and Signal Words on the following pages, they will alert you to the possibility of **serious injury** or **death** if you do not comply with the warnings that accompany them. The hazard may come from something mechanical or from electric shock. Read the warnings carefully.

When you see this Signal Word on the following pages, it will alert you to the possibility of damage to your door and/or the door operator if you do not comply with the cautionary statements that accompany it. Read them carefully.

IMPORTANT NOTES:

- *BEFORE attempting to install, operate or maintain the operator, you must read and fully understand this manual and follow all safety instructions.*
- *DO NOT attempt repair or service of your commercial door and gate operator unless you are an Authorized Service Technician.*

CARTON INVENTORY

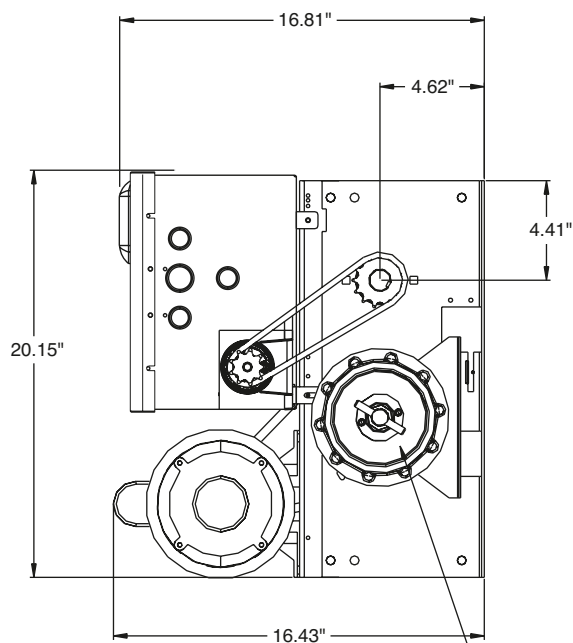
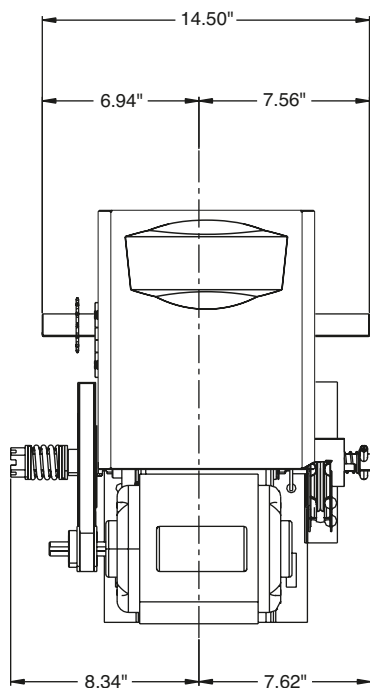
Before beginning your installation check that all components were provided.

K77-31339 - MODEL H			K77-31334 - MODEL J		
PART #	DESCRIPTION	QTY.	PART #	DESCRIPTION	QTY.
19-50106M	#50 CHAIN, 106 PITCH	1	10-10463	KEY HOLE BRACKET	1
40-6000	DOOR OPERATOR LABEL	1	10-10893	CHAIN RETAINING BRACKET	1
77-10897	PARTS BAG	1	02-103L3	PUSH BUTTON STATION	1
10-10893	CHAIN RETAINING BRACKET	1	14-12133	PARTS BOX	1
14-10466	PLASTIC BAG	1			
80-207-19	KEY 1/4 X 1-1/2"LONG	1	19-50106M	#50 CHAIN, 106 PITCH	1
27-10199	CABLE TIE	2	40-6000	DOOR OPERATOR LABEL	1
19-10929-25	HAND CHAIN - 25'	1	77-10704	PARTS BAG	1
14-12133	PARTS BOX	1	10-10463	KEY HOLE BRACKET	1
02-103L3	PUSH BUTTON STATION	1	14-10466	CLEAR PLASTIC BAG	1
40-65	DOOR EDGE CAUTION LABEL	2	27-10199	CABLE TIE	1
			80-207-19	KEY 1/4 X 1-1/2"LONG	1
K77-31326 - MODEL HJ			27-10199	CABLE TIE	2
PART #	DESCRIPTION	QTY.	14-12133	PARTS BOX	1
19-10929-25	HAND CHAIN - 25'	1	02-103L	3-BUTTON STATION	1
19-50106M	#50 CHAIN, 106 PITCH	1	40-65	DOOR EDGE CAUTION LABEL	2

OPERATOR DIMENSIONS

WEIGHTS AND DIMENSIONS

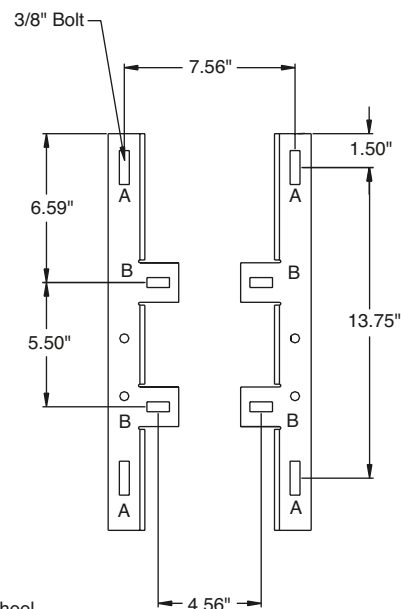
HANGING WEIGHT: 80-110 LBS.



Hand Chain Wheel
Present with Models
H and HJ Only.

MOUNTING DIMENSIONS

A - Wall Mounting
B - Bracket Mounting (rolling door)



OPERATOR SPECIFICATIONS

MOTOR

TYPE: Continuous Duty
HORSEPOWER: 1/3, 1/2, 3/4 and 1 HP
SPEED: 1725 RPM
VOLTAGE: . 115/208/230V 1 Phase, 230/380/460/575V 3 Phase
CURRENT: See Motor Nameplate

ELECTRICAL

TRANSFORMER:24Vac Secondary
CONTROL STATION:NEMA 3-Button Station
 Open/Close/Stop w/LED
WIRING TYPE:C2 (Standard)
 Momentary contact to OPEN & STOP, constant pressure to
 CLOSE, plus wiring for sensing device to reverse and auxiliary
 devices to open and close with open override. See pages 16, 17
 and 18 for optional wiring types and operating modes.
LIMIT ADJUST:Linear driven, fully adjustable screw
 type cams. Adjustable to 24'

MECHANICAL

DRIVE REDUCTION:Primary: Heavy duty (5L) V-Belt
 Secondary: #48 chain/sprocket; Output: #50 chain
OUTPUT SHAFT SPEED:36 RPM
DOOR SPEED:6 - 7" per second depending on door
BRAKE (Optional):Solenoid actuated disc brake
BEARINGS:Output Shaft:Shielded ball bearing;
 Clutch Shaft: IronCopper sintered and oil impregnated
HAND CHAIN WHEEL:Left or right handing
 Models H and HJ ONLY

SAFETY

DISCONNECT:
Model J . . .Floor level disconnect for manual door operation.
Model HFloor level chain hoist with electrical
 interlock for manual door operation.
Model HJIncludes both floor level disconnect
 systems stated above.
SAFETY PHOTO EYES (Optional): .Through beam or retro reflective
 devices used to provide non-contact safety protection.
 Directly interface to LiftMaster CPS-L or CPS-LN4 Commercial
 Protector Systems.
SAFETY EDGE (Optional): Electric or pneumatic sensing device
 attached to the bottom edge of door.

WARNING

To reduce the risk of SEVERE INJURY or DEATH, ALWAYS install
 reversing sensors when the 3-button control station is out of
 sight of door or any other control (automatic or manual) is used.
 Reversing devices are recommended for ALL installations.

PREPARATION

It is imperative that the wall or mounting surface provide adequate support for the operator.

This surface must:

- Be rigid to prevent play between operator and door shaft.
- Provide a level base.
- Permit the operator to be fastened securely and with the drive shaft parallel to the door shaft.

The safety and wear of the operator will be adversely affected if any of the above requirements are not met.

For metal buildings, fasten 2" x 2" x 3/16" (or larger) angle iron frames to the building purlins. Retain 5-1/2" between frames.

Both J and H series operators have dual output shafts and may be mounted on either the right (standard) or left side of door, and in either a vertical (standard) or horizontal mounting position. If you need to move the drive sprocket, loosen BOTH set screws, remove the sprocket and key, and place on the opposite side of the drive shaft. Be sure to tighten BOTH set screws securely.

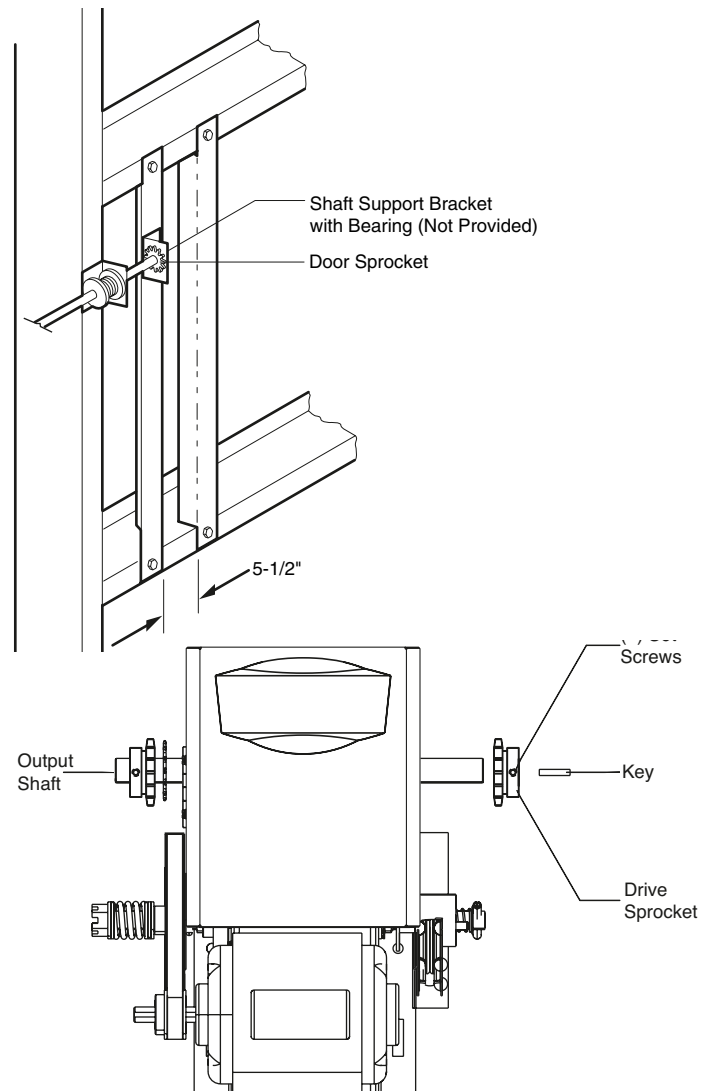
HAND CHAIN HANDING

For models H and HJ with manual hoist hand chain systems, the handing of the operator must be determined at the time of order. The handing is indicated by last letter of the model name (R or L). The hand chain wheel can not be switched on site. If your installation causes the hand chain to hang in the door opening, hook the chain off to the side near the top of the door jamb.

WARNING

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

- **DO NOT** connect electric power until instructed to do so.
- If the door lock needs to remain functional, install an interlock switch.
- **ALWAYS** call a trained professional door serviceman if door binds, sticks or is out of balance. An unbalanced door may not reverse when required.
- **NEVER** try to loosen, move or adjust doors, door springs, cables, pulleys, brackets or their hardware, all of which are under **EXTREME** tension and can cause **SERIOUS** personal injury.
- Disable **ALL** locks and remove **ALL** ropes connected to door **BEFORE** installing and operating door operator to avoid entanglement.
- To prevent possible **SERIOUS INJURY** or **DEATH** from a falling garage door, **ALL** doors intended to be motor operated should be manufactured with solid door shafts.



INSTALLATION

Before your operator is installed, be sure the door has been properly aligned and is working smoothly. The operator may be wall mounted or mounted on a bracket or shelf. If necessary, refer to the preparation on page 5. Refer to the illustration and instructions below that suits your application.

OPERATOR MOUNTING

1. **Wall Mount:** The operator should generally be installed below the door shaft, and as close to the door as possible (Figure 1).

Bracket Shelf Mounting: The operator may be mounted either above or below the door shaft (Figure 2).

IMPORTANT: The shelf or bracket must provide adequate support, prevent play between operator and door shaft, and permit operator to be fastened securely and with the drive shaft parallel to the door shaft.

NOTE: The optimum distance between the door shaft and operator drive shaft is between 12" - 15".

2. Place door sprocket on the door shaft. Do not insert the key at this time.
3. Place drive sprocket on the appropriate side of the operator. Do not insert the key at this time.
4. Wrap drive chain around door sprocket and join roller chain ends together with master link.
5. Raise operator to approximate mounting position and position chain over operator sprocket.
6. Raise or lower operator until the chain is taut (not tight). Make sure the operator output shaft is parallel to door shaft and sprockets are aligned. When in position, secure the operator to wall or mounting bracket.
7. Align sprockets and secure (Figure 3).
8. **Install Hand Chain (Models H and HJ only)**
Place hand chain around hand chain wheel. Be sure to pass it through both openings in the chain guide. Remove enough links so chain hangs approximately 2 feet above the floor.
9. **Mount Chain Keeper / Keyhole Bracket**
Using suitable hardware mount the chain keeper approximately 4 feet above the floor, near the free hanging chain. Remove disconnect sash chain from bag and place the end through the keyhole in the chain keeper. Remove excess links if necessary.

Figure 1

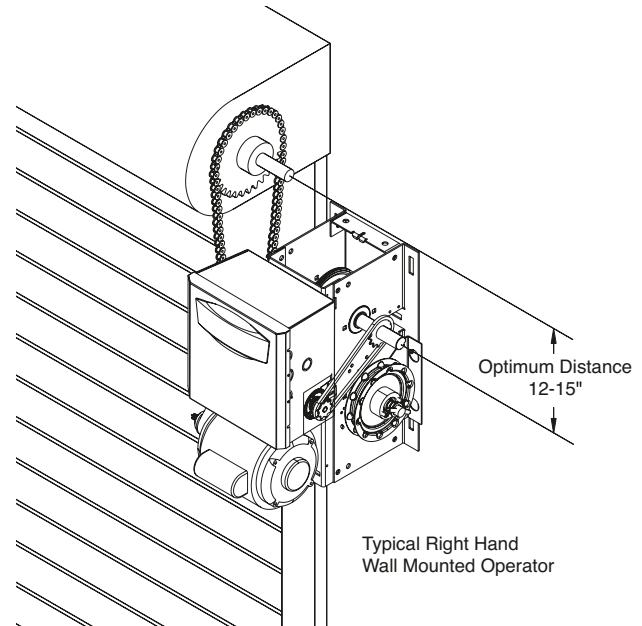


Figure 2

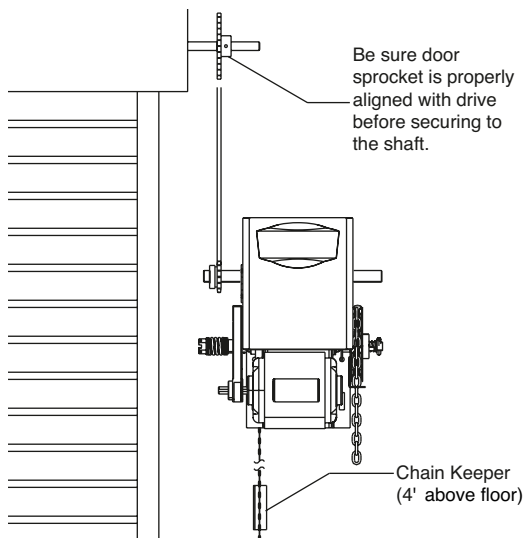
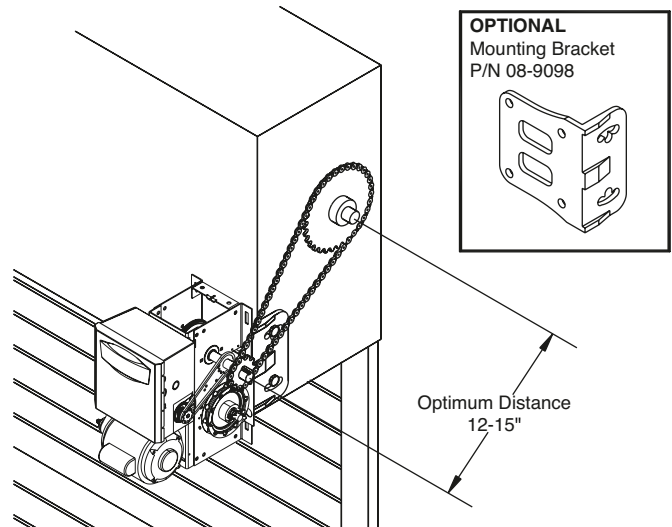


Figure 3

INSTALLATION

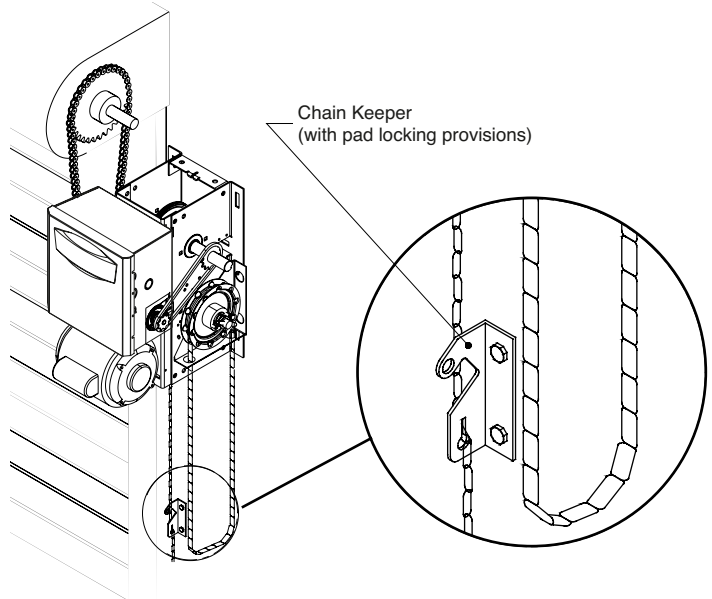
MANUAL OPERATION

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

MODEL H

These operators are equipped with a manual hoist. An electrical interlock will disable the electrical controls when the hoist is used. To operate the hoist:

1. Pull the disconnect chain (small chain) to engage the interlock to disable the controls. The disconnect chain may be locked in position by slipping the end through the keyhole of the chain keeper mounted on the wall.
2. Operate the door in the desired direction by pulling on one side or the other of the continuous loop hoist chain (large chain).
3. The disconnect chain must be released from the chain keeper before the door will operate again electrically.

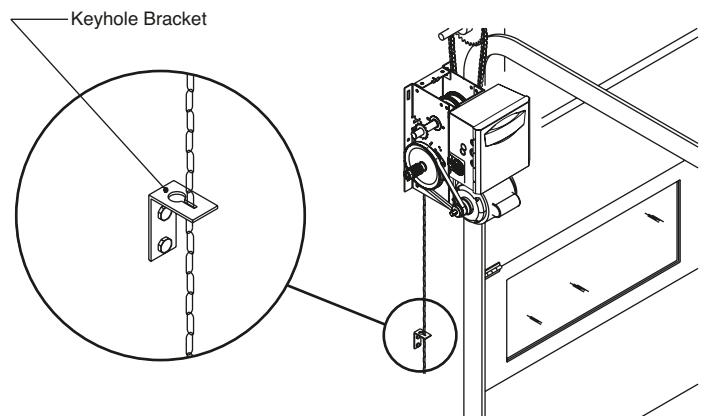


Electrical Interlock with Hoist for Models H and HJ

MODEL J

This operator has a floor level disconnect chain to disconnect the door from the door operator.

1. To disengage, pull the chain and secure in the disengaged position by slipping the end through the keyhole bracket mounted on the wall. Or if emergency egress device is used, pull handle to disengage operator from door.
2. The door may now be pushed up or pulled down manually. Release the disconnect chain to operate the door again electrically.



Manual Disconnect for Models J and HJ

MODEL HJ

This operator includes both a floor level disconnect chain to disconnect the door from the door operator and a disconnect chain with manual hoist to electrically disable the operator controls.

1. Refer to Model H instructions for hoist operation.
2. Refer to Model J instructions for manual operation.

INSTALLATION

ENTRAPMENT PROTECTION ACCESSORIES (OPTIONAL)

PHOTO EYES & SENSING EDGES

Sensing devices provided for door industry type operators with an isolated normally open (N.O.) dry contact output are compatible with your operator. This includes pneumatic and electric edges, and through beam and retro reflective photo eyes. If you would like to order or receive more information on safety devices, please contact your local LiftMaster Authorized Dealer.

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

Important Notes:

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

WARNING

To reduce the risk of SEVERE INJURY or DEATH, ALWAYS install reversing sensors when the 3-button control station is out of sight of door or any other control (automatic or manual) is used. Reversing devices are recommended for ALL installations.

WIRING

For wiring of your sensing device to the operator, refer to the wiring diagrams provided on pages 13 and 14. See field connection terminals identified as Reversing Device.

TAKE-UP REEL

Take-up reel should be installed 12" above the top of the door.

COIL CORD

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

ADJUSTMENT

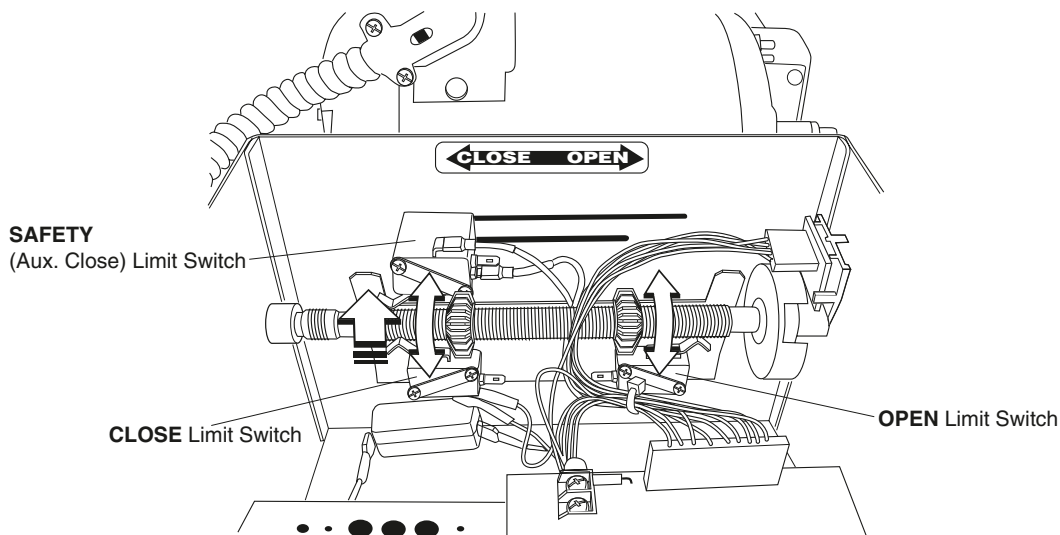
LIMIT SWITCH ADJUSTMENT

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

- Depress retaining plate to allow nut to spin freely. After adjustment, release plate and move nut back and forth to ensure it is fully seated in slot.
- To **increase** door travel, spin nut **away** from actuator. To **decrease** door travel, spin limit nut **toward** actuator.
- Adjust open limit nut so that door will stop in open position with the bottom of the door even with top of door opening.
- Repeat Steps 1 and 2 for close cycle. Adjust close limit nut so that actuator is engaged as door fully seats at the floor.

WARNING

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



ADJUSTMENT

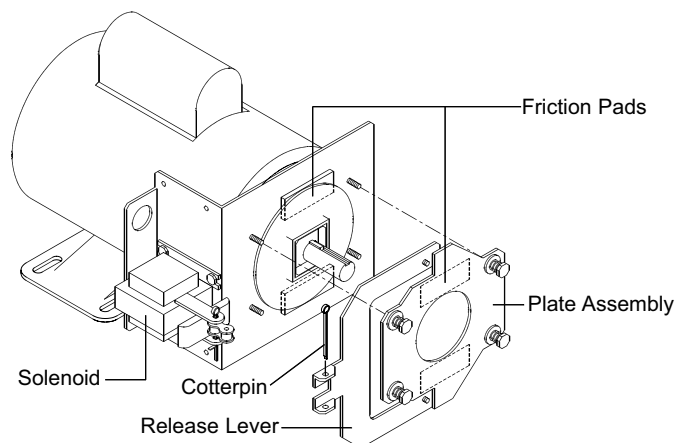
BRAKE ADJUSTMENT

A solenoid is standard on 3/4 and 1 horsepower models, and is optional on 1/3 and 1/2 horsepower models. The brake is adjusted at the factory and should not need additional adjustment for the life of the friction pad.

Replace friction pads when necessary. Refer to the illustration for identification of components for the solenoid type brake system.

WARNING

To avoid **SERIOUS PERSONAL INJURY** or **DEATH** from electrocution, disconnect electric power to operator before adjusting slip clutch.



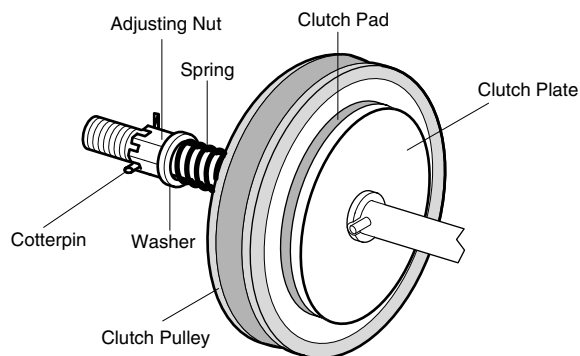
CLUTCH ADJUSTMENT AND AUXILIARY REVERSAL SYSTEM

The **Auxiliary Reversal System** is designed to protect the door and motorized operator. It is NOT a substitute for a safety sensing device, nor will it work for sectional doors when a jackshaft operator is used. The Auxiliary Reversal System works in tandem with the adjustable clutch to detect if a closing door runs into or comes across an obstruction. If an obstruction is met and causes the clutch to slip, the Auxiliary Reversal System will return the door to the full open position.

1. Remove cotterpin from nut on the clutch shaft.
2. Back off clutch nut until there is very little tension on the clutch spring.
3. Tighten clutch nut gradually until there is just enough tension to permit the operator to move the door smoothly but to allow the clutch to slip if the door is obstructed. When the clutch is properly adjusted, it should generally be possible to stop the door by hand during travel.
4. Reinstall cotterpin.

WARNING

To prevent possible **SERIOUS INJURY** or **DEATH**, install reversing sensors when the 3-button control station is out of sight of the door or any other control (automatic or manual) is used. Reversing devices are recommended for **ALL** installations.



POWER WIRING & GROUND WIRING

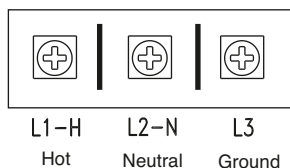
WARNING

To reduce the risk of SEVERE INJURY or DEATH:

- ANY maintenance to the operator or in the area near the operator MUST not be performed until disconnecting the electrical power and locking-out the power via the operator power switch. Upon completion of maintenance the area MUST be cleared and secured, at that time the unit may be returned to service.
- Disconnect power at the fuse box BEFORE proceeding. Operator MUST be properly grounded and connected in accordance with local electrical codes. The operator should be on a separate fused line of adequate capacity.
- ALL electrical connections MUST be made by a qualified individual.
- DO NOT install ANY wiring or attempt to run the operator without consulting the wiring diagram. We recommend that you install an optional reversing edge before proceeding with the control station installation.
- ALL power wiring should be on a dedicated circuit and well protected. The location of the power disconnect should be visible and clearly labeled.
- ALL power and control wiring MUST be run in separate conduit.

POWER WIRING CONNECTIONS

1. Connect power wires coming from the main to the captive terminal block in the electrical box enclosure marked with the label shown below. See page 12.



2. Be sure to run all power wires through the conduit hole in the electrical box enclosure marked with the label shown below.

NOTE: Must use #14 AWG or thicker wire for power wiring.

POWER WIRING

USE COPPER WIRE ONLY

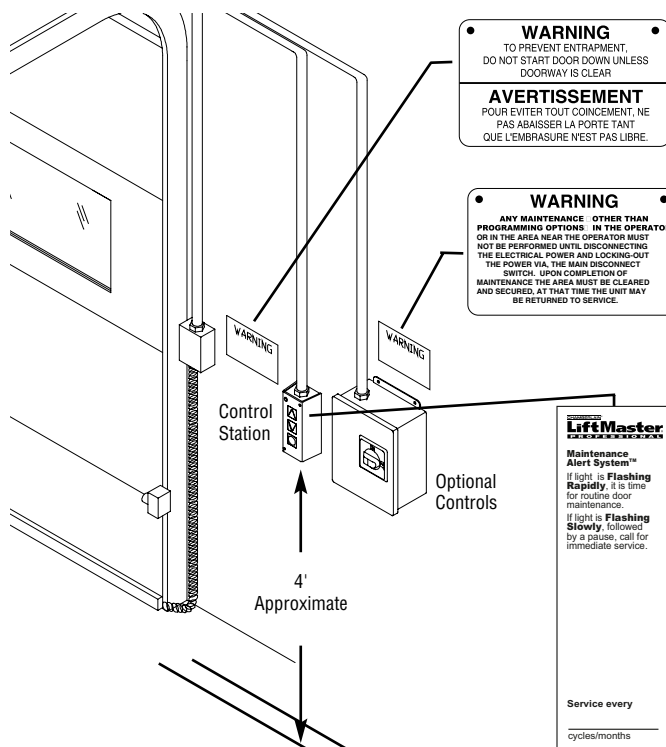
40-10031B

ON THREE PHASE MACHINES ONLY: Incorrect phasing of the power supply will cause the motor to rotate in the wrong direction.

GROUND WIRING CONNECTIONS

1. Connect earth ground to the chassis ground screw in the electrical box enclosure.
2. Use same conduit entry into the electrical box as the power wiring.

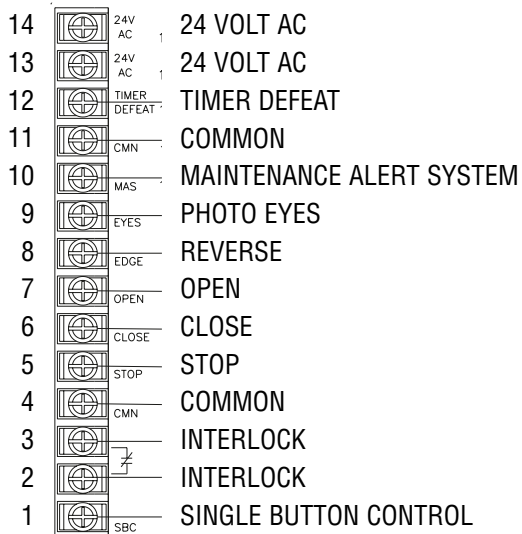
IMPORTANT NOTE: This unit must be properly grounded. Failure to properly ground this unit could result in electric shock and serious injury.



CONTROL STATION WIRING AND INSTALLATION

CONTROL WIRING CONNECTIONS

1. Connect control wires to the P1 terminal block located on the Control Board (shown below).



EXTERNAL RADIO WIRING CONNECTIONS

On all models with B2 control wiring, a terminal bracket marked R1 R2 R3 is located on the outside of the electrical enclosure. Any commercial type LiftMaster brand receiver may be mounted to this bracket. The operator will then open a fully closed door, close a fully open door, stop an opening door, and reverse a closing door from the radio transmitter. In TS control wiring the operator will only open the door or reset the timer to close. However, for additional door control from a 3-button remote, a commercial three-channel radio receiver (with connections for OPEN/CLOSE/STOP) is recommended.

2. Be sure to run all control wires through the conduit hole in the electrical box enclosure marked with the label shown below.



3. Apply power to the operator. Press OPEN push button and observe direction of door travel and then **Press the STOP button.**

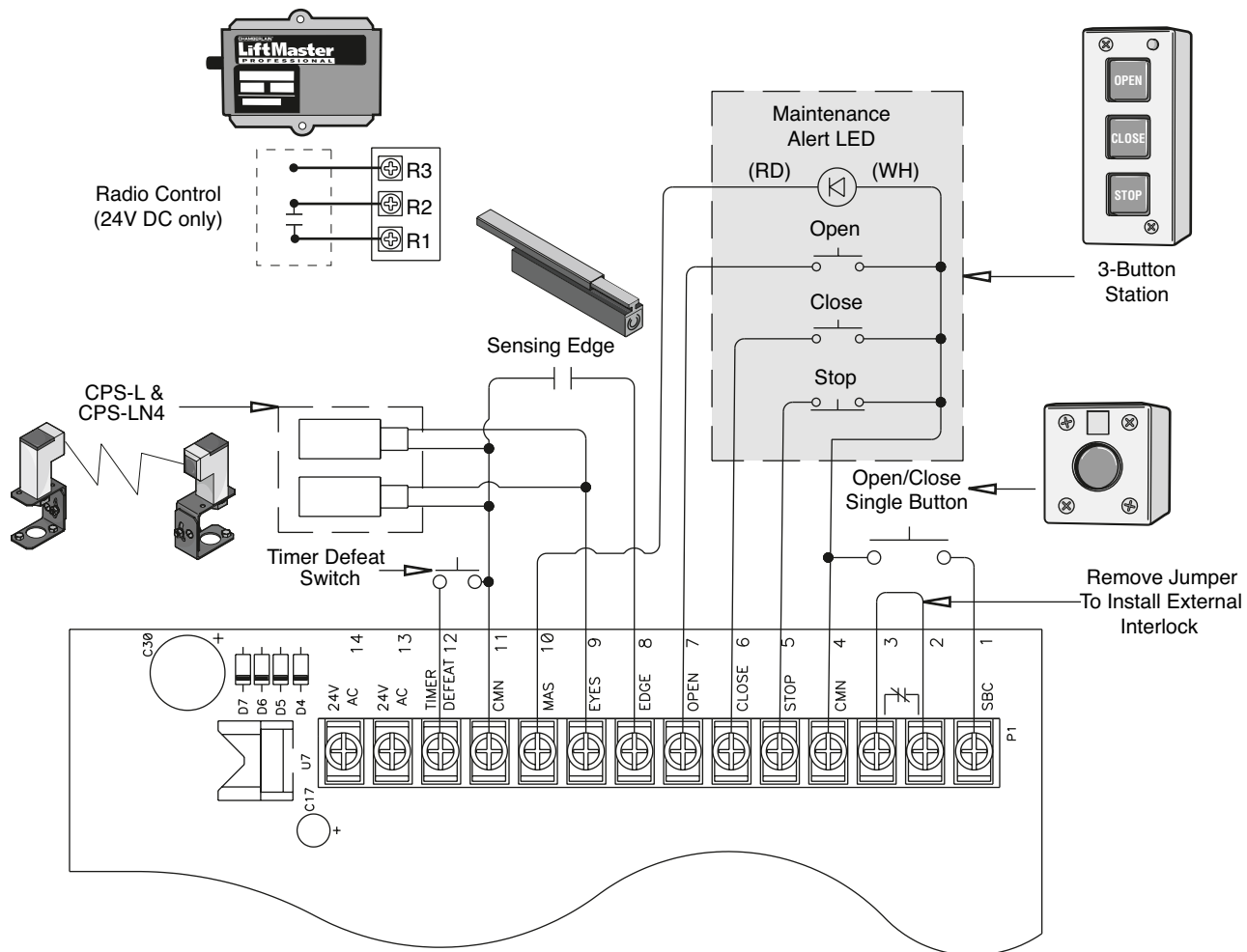
If door did not move in the correct direction, check for improper wiring at the control station or between operator and control station. **NOTE:** In "Diag" mode the 3-button control station can be tested to verify correct wiring of Open, Close and Stop buttons without moving the door.

If the door moves in the wrong direction and or the limits move in the wrong direction, turn dial to programming mode. Remove the Motor Direction Jumper. Press and release the MRT button to set the jumper to switch the motor direction and the limits (Default). Or press and release the MID button to set the jumper to switch the motor ONLY. Reinstall the Motor Direction Jumper to save the settings. In run mode, use the jumper to change direction as programmed above.

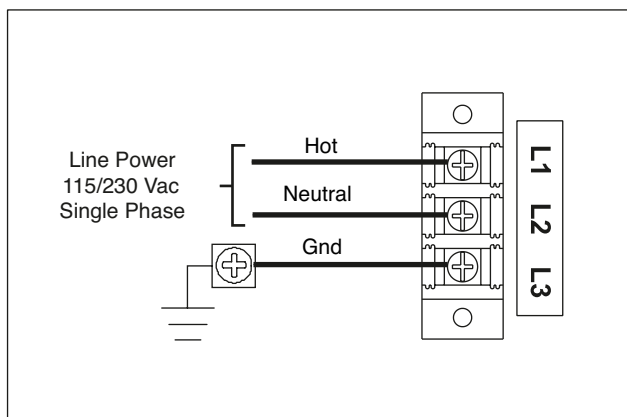
MOUNTING INSTRUCTIONS

1. Mount Control Stations no further than (12") from each other.
2. Mount Control Stations (12") from the door enclosure.
3. Mount WARNING NOTICE beside or below the Control Station.
4. Mount MAINTENANCE ALERT label to either side of control station.

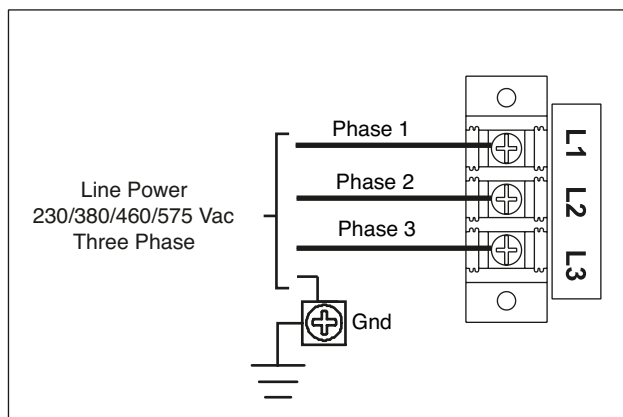
STANDARD POWER & CONTROL CONNECTION DIAGRAMS



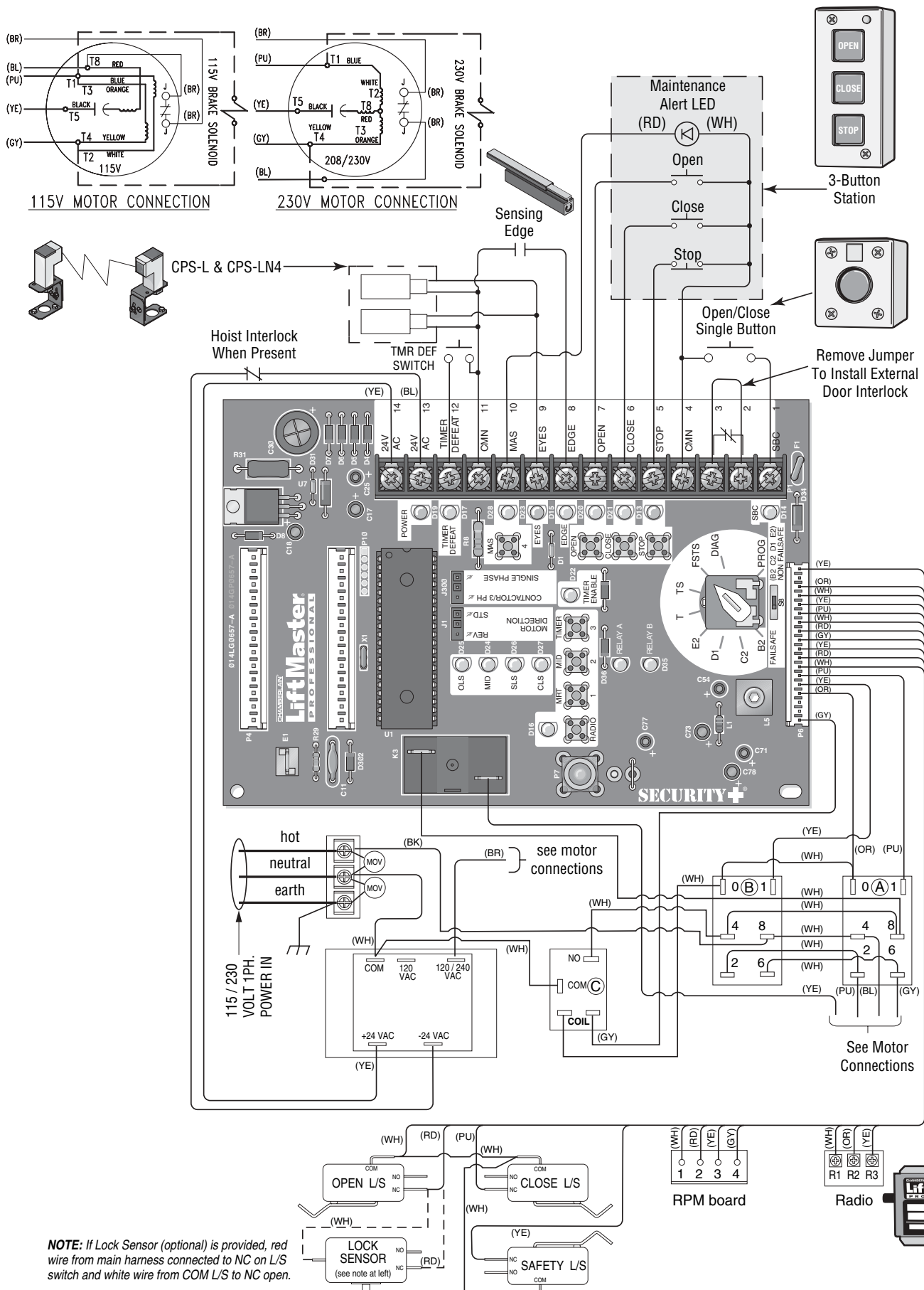
Single Phase Power Wiring



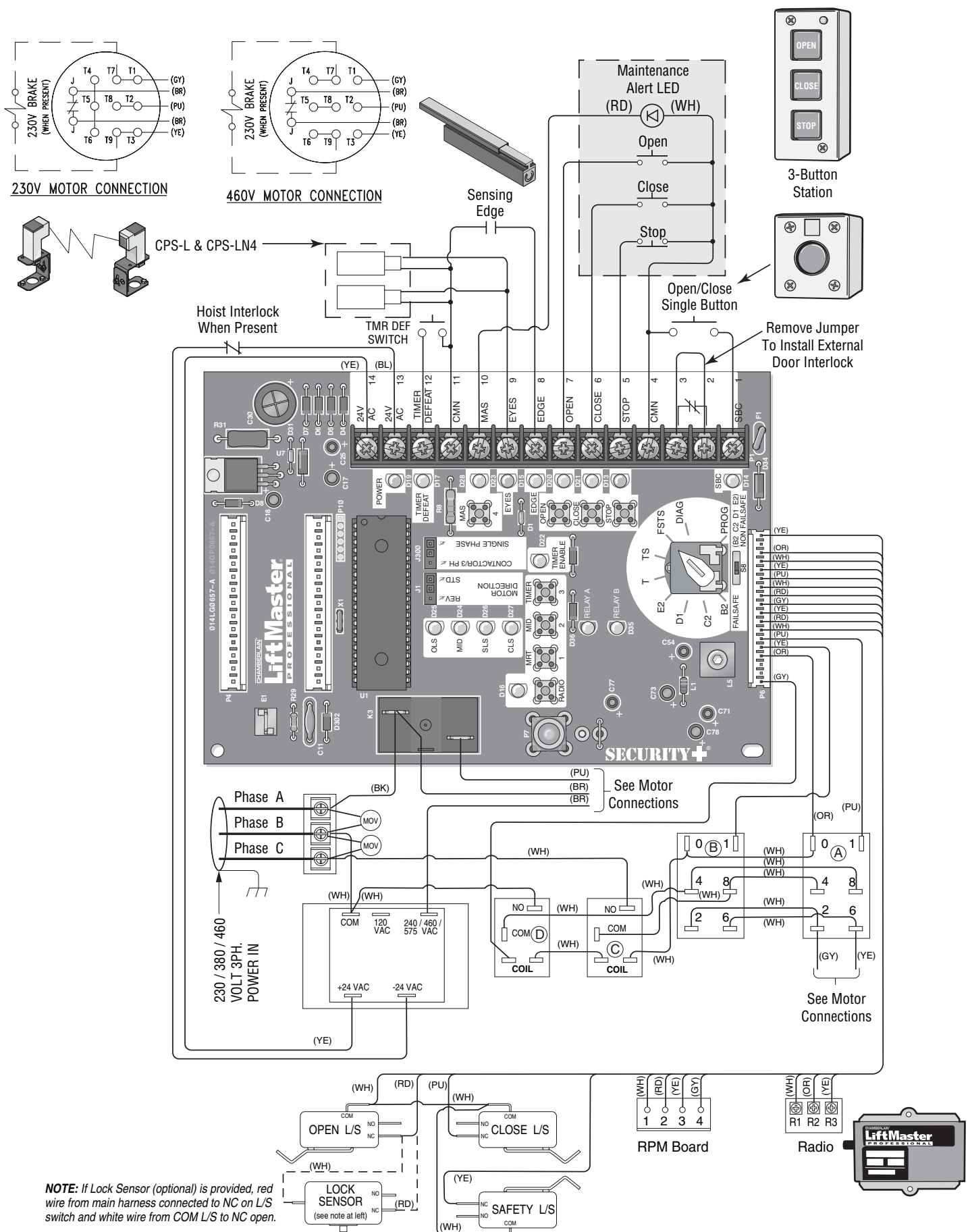
Three Phase Power Wiring



LOGIC (VER. 3.0) 1 PHASE WIRING DIAGRAM

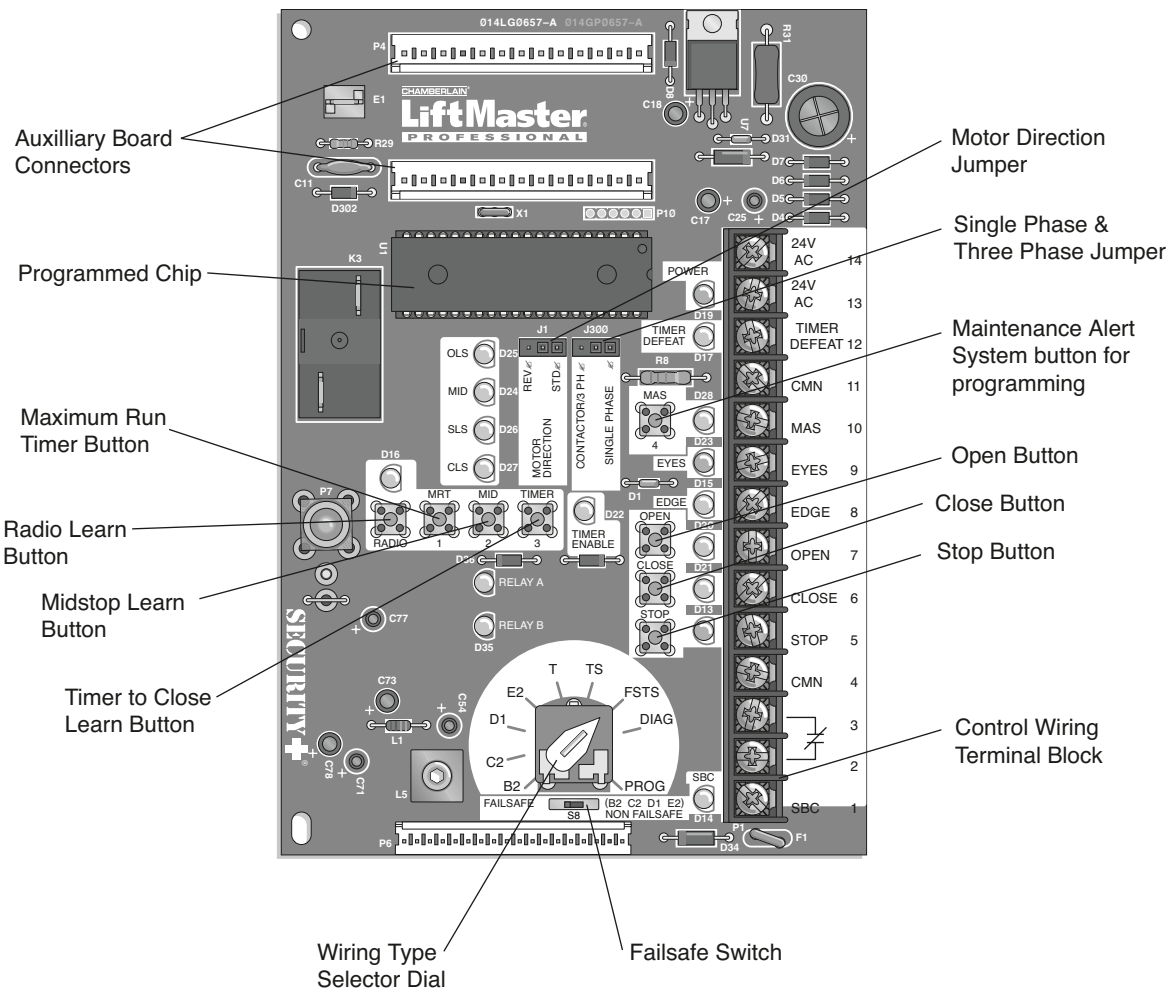


LOGIC (VER. 3.0) 3 PHASE WIRING DIAGRAM



CONTROL BOARD

CONTROL BOARD ILLUSTRATION



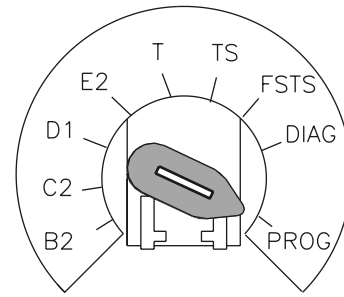
PROGRAMMING

LOGIC CONTROL PUSHBUTTONS OPEN, CLOSE, STOP

Open, Close and Stop buttons are mounted directly on the Logic Control board. Thus, making it easy to program as well as have door control at the electrical box. Either the stop control or a jumper must be wired between terminals 4 and 5 for the on board push buttons to function.

NOTE: Refer to control board illustration on page 15 for all component locations. Before programming the logic board, set the operators open and close limits. LEDs on the logic board are provided to assist setting the limits. As each limit is activated the corresponding LED will light up. The abbreviations are Open Limit Switch (OLS), Close Limit Switch (CLS) and Sensing Limit Switch (SLS). Refer to page 8 for limit switch adjustment instructions.

SELECTOR DIAL



FAILSAFE SWITCH



DETERMINE AND SET WIRING TYPE

Read the descriptions of the different wiring types to determine which setting will be correct for each application.

SET THE SELECTOR DIAL TO THE DESIRED WIRING MODE:

NOTE: For failsafe wiring you must also set failsafe switch to FAILSAFE.

TYPE

- C2 3-Button Station, 1-Button Station, 1 & 3 Button Radio Control**
Momentary contact to open and stop with constant pressure to close, open override plus wiring for sensing device to reverse. Programmable mid stop available with this wiring type.
- B2 3-Button Station, 1-Button Station, 1 & 3 Button Radio Control**
Momentary contact to open, close and stop, plus wiring for sensing device to reverse and auxiliary devices to open and close with open override. Programmable mid stop available with this wiring type.
- D1 2-Button**
Constant pressure to open and close with wiring for sensing device to stop.
- E2 3-Button Station**
Momentary contact to open with override and constant pressure to close. Release of close button will cause door to reverse (roll-back feature) plus wiring for sensing device to reverse.

TYPE

- TS 3-Button Station, 1-Button Station, 1 & 3 Button Radio Control**
Momentary contact to open, close, and stop with open override and Timer To Close. Every device that causes door to open, including a reversing device, activates the Timer To Close. Auxiliary controls can be connected to open input to activate the Timer To Close. If the timer has been activated, the open button and radio control can recycle the timer. The stop button will deactivate the Timer To Close until the next command input. The Timer To Close will function from the programmable mid stop with this wiring type. **(NOTE: Requires Optional self monitoring photo eyes to operate.)**
- T 3-Button Station, 1-Button Station, 1 & 3 Button Radio Control**
Momentary contact to open, close, and stop, with open override and Timer To Close. Every device that causes the door to open, except a reversing device, activates the Timer To Close. Auxiliary controls can be connected to open input to activate the Timer To Close. If the Timer To Close has been activated, the open button and radio control can recycle the timer. The stop button will deactivate the timer until the next command input. The Timer to Close will function from the programmable mid stop with this wiring type. **(NOTE: Requires Optional self monitoring photo eyes to operate.)**

PROGRAMMING

FAILSAFE WIRING TYPES

TYPE

FSTS	3-Button Station, 1-Button Station, 1 & 3 Button Radio Control Momentary button contact for open, close and stop programming. Radio controls allowing open, close and stop. User set mid stop. User set Timer To Close. The single button station opens the door to the full open limit bypassing the mid stop and activates the Timer To Close, putting the operator in TS mode until the door reaches the down limit, or is stopped in travel. At which time the operator enters the B2 mode. <i>(NOTE: Requires Optional self monitoring photo eyes to operate this feature/wire type.)</i>
C2 Failsafe	3-Button Station, 1-Button Station, 1 & 3 Button Radio Control Same functions as C2. Self Monitoring safety device must be installed to operate door for each of the following failsafe wiring types. See Self Monitoring Safety Device Options.
B2 Failsafe	3-Button Station, 1-Button Station, 1 & 3 Button Radio Control Same functions as B2. Self Monitoring safety device must be installed to operate door for each of the following failsafe wiring types. See Self Monitoring Safety Device Options.
D1 Failsafe	2-Button Station Same functions as D1. Self Monitoring safety device must be installed to operate door for each of the following failsafe wiring types. See Self Monitoring Safety Device Options.
E2 Failsafe	3-Button Station Same functions as E2. Self Monitoring safety device must be installed to operate door for each of the following failsafe wiring types. See Self Monitoring Safety Device Options.

SELF-MONITORING SAFETY DEVICE OPTIONS

To use the operator in any of the Failsafe wiring modes, or Timer To Close wiring modes (TS, T, FSTS), a LiftMaster self monitoring safety device must be installed.

RECOMMENDED LIFTMASTER SELF-MONITORING SAFETY DEVICES:

CPS-L	NEMA 1 Direct Connect Eyes
CPS-LN4	NEMA 4 Direct Connect Eyes

IMPORTANT NOTE:

1. External interlocks may be used with all functional modes.
2. Auxiliary devices are any devices that have only dry contacts. Examples: photocell, loop detector, pneumatic or electrical treadles, radio controls, one button stations, pull cords, etc.
3. Open override means that the door may be reversed while closing by activating an opening device without the need to use the stop button first.

PROGRAMMING

PROGRAMMING REMOTES

STANDARD SINGLE BUTTON REMOTE

1. Press and release the RADIO button (LED will light).
2. Press and hold the remote control button until the LED flashes rapidly, then release remote control button. The LED will then remain on solid after releasing the button.
3. Press and release the RADIO button to complete the programming. The programming mode is exited if no activity is performed within 30 seconds.

NOTE: Single button remote is not supported with E2 and E2 failsafe wiring modes.

REMOTE OPEN, CLOSE AND/OR STOP BUTTON (Allows transmitter to operate as a 3- button control system)

A remote may be programmed to function as a Wireless Open, Close or Stop Button.

1. Press and release the RADIO button on the logic board (LED will light).
2. Press and release
 - OPEN button on logic board (remote functions as an OPEN button)
 - OR
 - STOP button on logic board (remote functions as a STOP button)
 - OR
 - CLOSE button on logic board (remote functions as a CLOSE button)
 LED flashes rapidly and then remains on solid.
3. Press and hold the remote button until the LED flashes rapidly. The LED will remain on solid after releasing.

NOTE: To add more remote functions or remotes repeat steps 2 and 3.

4. After learning remote press and release the RADIO button on the logic board (LED flashes rapidly and then turns off).

NOTE: Requires self-monitoring photo eyes when using constant pressure to close (wiring C2, D1 and E2).

SINGLE BUTTON CONTROL (SBC) REMOTE

This function programs a remote as a Wireless Single Button Control. In B2 mode, operation is OPEN/STOP/CLOSE/REVERSE/STOP. In C2 mode, operation is OPEN/STOP/Constant pressure to CLOSE/STOP on release. There is no operation in D1 mode. In E2 mode, operation is OPEN/STOP/Constant pressure to CLOSE/REVERSE on release. In T and TS modes, operation is OPEN/STOP/CLOSE/REVERSE/STOP and Timer to Close start/refresh. In FSTS mode, operation is OPEN with Timer to Close start/refresh only bypassing all up mid stops. Momentary and constant pressure commands are processed in this function.

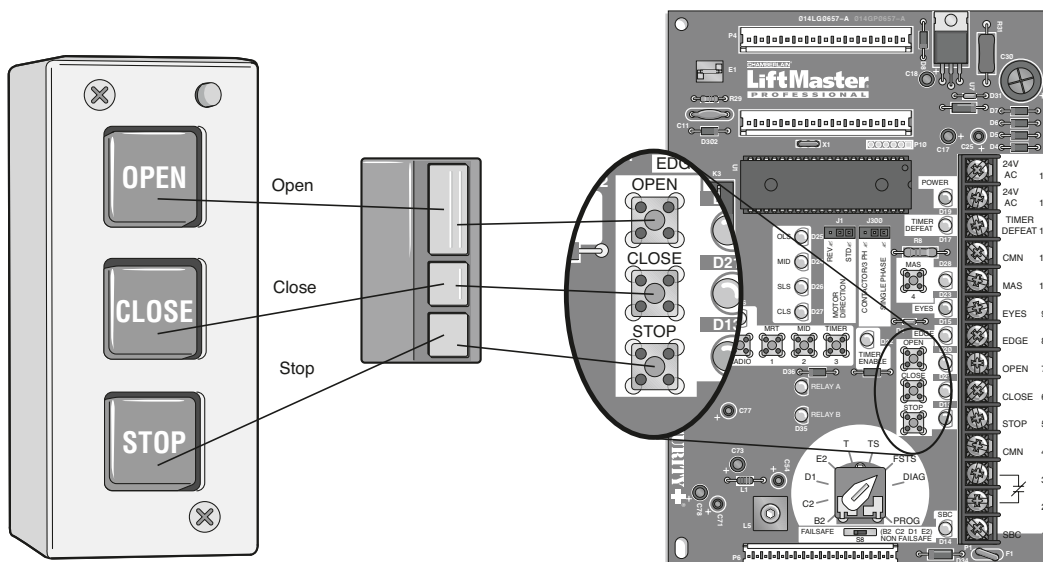
MODE	OPERATION					
	OPEN	STOP	CLOSE	Reverse	Constant Pressure	Timer To Close
B2	✓	✓	✓	✓		
C2	✓	✓			✓	
D1						
E2	✓	✓			✓	
T, TS	✓	✓	✓	✓		✓
FSTS	✓					✓

1. Press and release the RADIO button on the logic board (LED will light).
2. Press and release the SBC externally wired button or TIMER on the logic board (LED flashes rapidly and then remains on solid).
3. Press and hold the remote button until the LED flashes rapidly. The LED will then remain on solid after releasing.
4. Press and release the RADIO button on the logic board (LED flashes rapidly and then turns off). The programming mode is exited if no activity is performed within 30 seconds.

ERASING REMOTES

Press and hold the RADIO button on the logic board until the RADIO LED flashes rapidly (approximately 5 seconds). All remotes will be erased.

NEW ON BOARD PROGRAMMING



PROGRAMMING

MAINTENANCE ALERT SYSTEM (MAS)

Feature: An internal cycle counter will activate a flashing LED on the three button control station when the preset number of cycles or months has elapsed (whichever occurs first). Setting this feature is optional. By default this feature will never activate. LiftMaster Logic 3.0 operators incorporate a self diagnostic feature built into the MAS LED. In addition to indicating when routine maintenance is due, the MAS LED can be used to troubleshoot some problems with the operator.

Benefit: Notifies the end user when scheduled maintenance is due. Assists the installing dealer in setting up a routine maintenance program.

To Program:

1. Start with the door in the closed position
2. Turn the selector dial to PROGRAM
3. Press the MAS button on the logic control board
4. Press the STOP button to zero out the MAS counter
5. Press the OPEN button for every 5,000 cycles the operator should wait before flashing the MAS LED and Press the CLOSE button for every three months the operator should wait before flashing the MAS LED.
6. Press MAS to confirm setting. The OPEN LED will flash once for every 5,000 cycles programmed and the CLOSE LED will flash once for every 3 months programmed.
7. Set selector dial back to desired wiring type.

NOTE: If MAS LED flashes 2 or more flashes in a row followed by a pause, an operator error occurred. Turn to page 27 to diagnose problem.

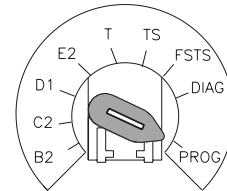
Example: A door is installed with 30,000 cycle springs and has an annual service contract. To set the MAS, turn selector dial to PROGRAM, press MAS button, press the STOP button to clear the memory and then press the OPEN button 6 times (30,000 cycles) and close 4 times (12 months). Press the MAS again to complete the programming. Set the selector dial to desired wiring type.

Special Notes about MAS: A 5th wire must be run to the control station to activate the MAS LED. The MAS LED on the control board is always enabled. When the operator is serviced after the MAS LED has started to flash, repeat the setup procedure to program in the number or cycles desired until the next service visit OR press and hold the MAS button for 5 seconds in the PROGRAM mode to reset the MAS with its current programmed value. To disable the MAS, follow the programming procedure above and press the STOP button to reset the counter to zero. Every time the operator leaves the close limit is counted as one cycle.

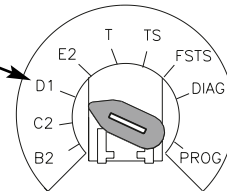
To view how many cycles are programmed into the MAS, set the selector dial to DIAGNOSTIC and press the MAS button. The OPEN button LED will flash once for every 5,000 cycle increment programmed and the CLOSE button LED will flash once for every 3 month increment programmed.

To view how many cycles have elapsed since the last time the MAS was programmed, set the selector dial to "Diagnostic" and press the "MAS" button. Press the OPEN button; the OPEN LED will flash once for every 5,000 cycles that has elapsed. Press the CLOSE button; the CLOSE LED will flash once for every (3) months that has elapsed. Press the MAS button to exit.

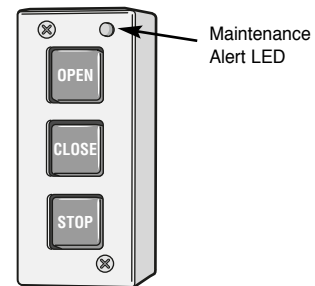
SELECTOR DIAL



Operation will vary depending on wiring type



3-BUTTON STATION



Press This	To Get This
OPEN	Adds 5,000 cycles to Maintenance Alert System Activation Counter.
CLOSE	Adds 3 Months to Maintenance Alert System Activation Timer.
STOP	Clears memory, sets Maintenance Alert System Activation Counter to 0 cycles and 0 months.

PROGRAMMING

OPEN MID STOP

Feature: Door will open to an installer set height that is less than fully open.

Benefit: The door opens to a midpoint between open and close reducing heating and cooling costs. The door will not cycle fully, providing longer door and operator life.

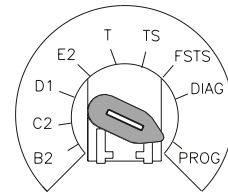
To Program:

1. Close the door.
2. Turn selector dial to "PROGRAM."
3. Press the "MID SET" button on logic control board.
4. Press the OPEN button, wait until the door reaches the desired mid stop height, then press the STOP button.
5. Press the MID SET button to complete programming.
6. Turn selector dial back to desired wiring type.

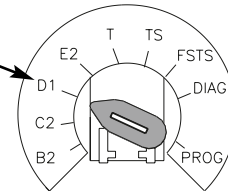
NOTE: A momentary open command will open the door fully from the "Mid Stop" position. Once at the "Mid Stop," Photo eyes and other safety devices will not open the door beyond the mid stop position, except in E2 mode. The Timer to Close will work from the Mid Stop.

To clear the Mid Stop set the selector dial to Program and press and hold the MID SET button for 5 seconds. The MID SET LED will flash rapidly and turn off once the Mid Stop has been cleared.

SELECTOR DIAL



Operation will vary depending on wiring type



CLOSE MID STOP

A new feature is down mid stop which can be enabled with purchase of the red/green light kit. See kit instructions of how to enable this new feature.

TIMER TO CLOSE

Feature: Installer can set a timer to automatically close the door after a preset amount of time. All safety devices must be unobstructed.

Benefit: The door will automatically close after pre set amount of time. Great for Apartment Buildings, Fire Stations and other applications where the end user wants the door to close automatically after a specified amount of time.

Requirements: Must have at least one of the following safety devices attached: CPS-L, CPS-LN4 or CPS-II card with valid safety device. Wiring type must be set to TS, T or FSTS.

To Program Manually (Method 1):

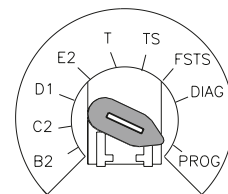
1. Close the door.
2. Turn the selector dial to PROGRAM.
3. Press the TIMER button on the logic control board.
4. Press the STOP button to clear the timer.
5. Press the OPEN button for every 5 seconds the operator should wait before attempting to close the door. Press the CLOSE button for every 60 seconds the operator should wait before closing the door.
6. Press the TIMER button to complete programming. The OPEN/CLOSE button LEDs will flash to confirm the timer setting. The OPEN LED will flash once for every 5 seconds programmed and the CLOSE LED will flash once for every 60 seconds programmed.
7. Turn the selector dial to desired timer wiring type (TS, T or FSTS).

Example: To close the door after 70 seconds. Turn selector dial to Program, press the TIMER button, press the STOP button to clear the timer, Press the CLOSE button once for 60 seconds and press the OPEN button twice for 10 seconds. Press the TIMER button to finish programming the timer. Turn selector dial to desired Timer wiring type. (TS, T, FSTS).

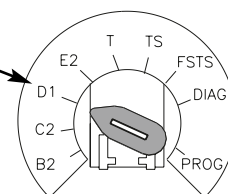
⚠ WARNING

To reduce the risk of SEVERE INJURY or DEATH, ALWAYS install reversing sensors when the 3-button control station is out of sight of door or any other control (automatic or manual) is used. Reversing devices are recommended for ALL installations.

SELECTOR DIAL



Operation will vary depending on wiring type



PROGRAMMING

TIMER TO CLOSE

PROGRAM TIMER TO CLOSE BY EXAMPLE (Method 2):

Additional Benefit: Allows the installer to walk through a real life example to set the Timer to Close.

To Program:

1. Close the door
2. Turn the selector dial to PROGRAM.
3. Press and hold TIMER button for 5 seconds until TIMER LED flashes.
4. Press the OPEN button and wait for the door to reach full open or mid stop position.
5. Wait for desired amount of time to pass. (An internal stop watch starts counting when the door stops moving)
6. Press the TIMER button or CLOSE button to stop the timer. (TIMER SET LED will turn on.)
7. Turn the selector dial to the desired wiring type.

Example: The door should close 15 seconds after a truck enters a garage. To program the Timer to Close, turn the selector dial to PROGRAM, press the TIMER button until the TIMER LED blinks, press the OPEN button and wait until the door reaches the open position, wait for the truck to pass through, count 15 seconds and then press the CLOSE button.

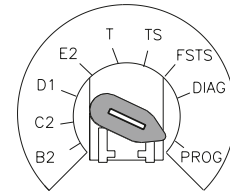
NOTES: To read back the Timer to Close setting, turn the selector dial to Diagnostic and press the TIMER button. The OPEN LED will flash once for every 5 seconds programmed and the CLOSE LED will flash once for every 60 seconds programmed.

To deactivate the timer from the open position press the STOP button. The timer will be reactivated on the next operation command. To deactivate the timer for more than one cycle, attach a switch to 11 & 12 (Common and Timer Defeat).

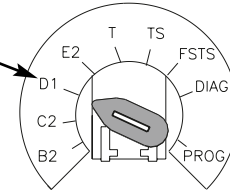
All timer modes require a supervised safety device to be installed.

Reminders: FSTS wiring mode allows the Timer to Close to be activated by the Single Button Control (terminal 1) only. T wiring mode allows the door to attempt to close only one time for safety purposes.

SELECTOR DIAL



Operation will vary depending on wiring type



AUTOMATICALLY LEARNED PROGRAMMING

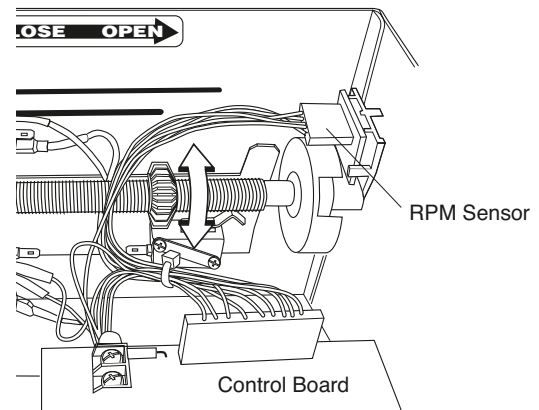
AUXILIARY REVERSAL SYSTEM / RPM SENSOR

Feature: This feature utilizes the RPM sensor connected to the logic control board to detect when the clutch slips and reverses the door (clutch must be properly adjusted). In addition, the RPM eliminates the need for a centrifugal switch on 1/3 and 1/2 horsepower single phase motors.

Benefit: The Auxiliary Reversal System reverses the operator upon hitting an obstruction, preventing excessive door and operator damage. LiftMaster requires the use of safety devices for primary safety protection.

By removing the centrifugal for 1/3 and 1/2 horsepower single phase motors the leading cause of motor failures is eliminated. (Auxiliary Reversal System not applicable on model GH and GT.)

NOTE: This feature is automatically learned and does not require programming.



AUTOMATICALLY LEARNED PROGRAMMING

MAXIMUM RUN TIMER (MRT)

Feature: The operator will learn the distance it takes to open or close the door plus approximately 12 - 14".

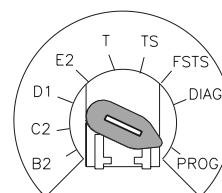
Benefit: If the operator does not meet its open or close limit within the set distance it will stop, limiting damage to the door and operator.

To Program:

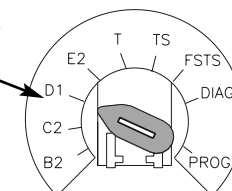
NOTE: The default setting for the MRT is 90 seconds. In the event the application requires the MRT be manually learned for a longer duration follow steps below.

1. Start with the door in the closed position.
2. Set the selector dial to "PROGRAM."
3. Press MRT button on control board
4. Press the OPEN button and wait for the door to reach the full open limit.
5. Once the door has reached the open position, programming is complete.
6. Turn dial to desired wiring type.

SELECTOR DIAL



Operation will vary depending on wiring type



OPTIONAL PROGRAMMING

RED/GREEN WARNING LIGHT CARD

Feature: The Red/Green warning light card flashes a warning light for 10 seconds prior to the Timer to Close activating the door to close.

Benefit: Advanced warning of the door closing helps prevent traffic collisions with the door.

Light Control Module Operation: The green lights on the OPTION BOARD will turn on if the board is seated properly and the power is on. When the door reaches the full open position, the timer circuit and the green lamp holder will be activated. (Green lamp will not be activated if timer setting is less than 10 seconds.) The red lamp holder will receive power as indicated at right.

Requirements: Must have the LiftMaster Red/Green warning light kit #1A6188 and must have at least one of the following safety devices attached: CPS-L, CPS-LN4. See Red/Green warning light instructions for further details.

TIMER SETTING	RED LAMP HOLDER RECEIVES POWER
Timer setting equals zero	Activates when the door closes and until close limit is activated
Greater than 10 seconds	10 seconds before door starts to close and until close limit is activated
Less than or equal to 10 seconds	Activates when the door reaches the open limit
	The red lamp holder receives power when the door opens and remains activated if the door is stopped manually before reaching the mid stop or the open limit

OPTIONAL PROGRAMMING

RESETTING FACTORY DEFAULTS - CLEARING MEMORY

To reset most of the user installed settings back to factory defaults:

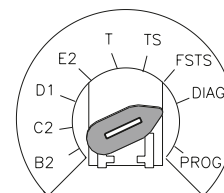
1. Turn the selector dial to DIAGNOSTIC
2. Press and hold the STOP button for 5 seconds. The MAS LED will flash momentarily when the factory defaults have been restored.
3. Return the selector dial to the desired wiring type.

Factory Defaults:

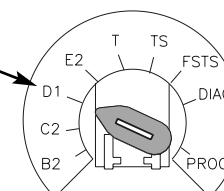
- a. Timer to close = 0 seconds
- b. CPS-L photo eyes = unlearned
- c. The Mid Stop is deactivated
- d. The Maintenance Alert System is deactivated
- e. The Maximum run timer is set to 90 seconds

NOTE: To clear the mid stop only, turn the selector dial to program and press and hold the MID SET button for 5 seconds.

SELECTOR DIAL



Operation will vary depending on wiring type



MAINTENANCE SCHEDULE

For use with Maintenance Alert System.
Check at the intervals listed in the following chart:

ITEM	PROCEDURE	EVERY 3 MONTHS OR 5,000 CYCLES	EVERY 6 MONTHS OR 10,000 CYCLES	EVERY 12 MONTHS OR 20,000 CYCLES
Drive Chain	Check for excessive slack. Check & adjust as required. Lubricate	●		◆
Sprockets	Check set screw tightness	●		◆
Clutch	Check & adjust as required		●	◆
Belt	Check condition & tension		●	◆
Fasteners	Check & tighten as required		●	◆
Manual Disconnect	Check & Operate		●	◆
Bearings & Shafts	Check for wear & Lubricate	●		◆

WARNING

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

- ◆ Use SAE 30 Oil (Never use grease or silicone spray).
- ◆ Repeat ALL procedures.
- Do not lubricate motor. Motor bearings are rated for continuous operation.
- Do not lubricate clutch or V-belt.
- Inspect and service whenever a malfunction is observed or suspected.

HOW TO ORDER REPAIR PARTS

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Call our TOLL FREE number:

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Saturday 7 a.m. to 3:30 p.m. (MST)

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TROUBLESHOOTING

DIAGNOSTIC CHART

The logic control board has several LED's to assist in the installation and troubleshooting of the operator. The following chart should assist in verifying the operator is functioning properly. Turn the selector dial to DIAGNOSTIC to keep the door from moving while troubleshooting.

ORDER	LED	COLOR	DEFINITION
1	Power	Green	Indicates that power is being generated for the logic board.
2	Stop	Green	Indicates a short between common and terminal 5. Pressing stop should turn off this LED.
3	Open	Yellow	Indicates a short between common and terminal 7. Pressing the open button should turn ON this LED.
4	Close	Yellow	Indicates a short between common and terminal 6. Pressing the close button should turn ON this LED.
5	Eyes	Green	Solid on indicates photo eyes learned. Flashing indicates photo eyes need to be connected or obstructed. Solid off indicates no eyes learned.
6	Timer Defeat	Yellow	Solid on indicates a short between common and terminal 12. Timer to close will not close.
7	OLS	Yellow	Pressing the Open Limit Switch should turn ON this LED.
8	CLS	Yellow	Pressing the Close Limit Switch should turn ON this LED.
9	SLS	Yellow	Pressing the Sensing Limit Switch should turn ON this LED.
10	Edge	Yellow	Indicates a short between common and terminal 8. Pressing the edge should turn ON this LED.
11	Mid Stop	Yellow	Solid on indicates door is stopped on up or down mid stop. Flashing indicates MID STOP is being set.
12	Timer Enabled	Green	Solid on indicates TIMER is programmed and will activate from open or mid stop position. Flashing indicates Timer is counting down and door will close after preset time.
13	SBC	Yellow	Indicates a short between common and terminal 1. Pressing the single button control station should turn ON this LED.
14	MAS	Yellow	Indicates the Maintenance Alert System has been activated or an error code has been triggered.
15	Relay A	Yellow	Indicates open or close command has been given to the motor. LED turns on when OPEN/CLOSE button is pressed.
16	Relay B	Yellow	Indicates open or close command has been given to the motor. LED turns on when OPEN/CLOSE button is pressed.

TROUBLESHOOTING GUIDE

FAULT	POSSIBLE CAUSE	FIX
THE OPERATOR WILL NOT RESPOND TO ANY COMMANDS	<ul style="list-style-type: none"> a) Operator control station is wired wrong b) Interlock switch is activated c) Dial still in programming or diagnostic mode d) Motor is malfunctioning e) Failsafe switch is activated requiring photo eyes f) Off Board relay may need to be replaced see wiring diagram 	<ul style="list-style-type: none"> ➤ Use the OPEN, CLOSE and STOP LEDs to help check correct wiring. Verify that the board is accepting commands by using the onboard station. ➤ Check Interlock. ➤ Set dial to desired wiring type. ➤ Verify proper voltage getting to the motor (Check motor name plate). ➤ Move switch to non-failsafe or connect a failsafe sensing device. ➤ When the OPEN or CLOSE button is pressed, Relay A or B LED should turn on and the door should move in the corresponding direction. If Relay A or B lights and the door does not move, off board relay may need to be replaced (see wiring diagram Off Board Relays).
POWER LED IS NOT LIT	<ul style="list-style-type: none"> a) Loose secondary wiring connections or a faulty control transformer b) Control Board failure 	<ul style="list-style-type: none"> ➤ Repair or replace connections or control transformer. ➤ Replace Control Board.
STOP BUTTON LED IS NOT LIT	<ul style="list-style-type: none"> a) Control station not connected or wired correctly b) Electrically open door interlock switch 	<ul style="list-style-type: none"> ➤ Check wiring to control station. ➤ Check door interlock switch for continuity.
THE DOOR WILL MOVE ABOUT A FOOT THEN STOP. AFTER STOPPING, ONLY CONSTANT PRESSURE COMMANDS WILL MOVE THE DOOR	RPM sensor is not connected properly or may need to be replaced	<ul style="list-style-type: none"> ➤ Check the RPM assembly for loose connections. Check that RPM wheel is turning when operator is running. Check for foreign matter blocking optical lens. ➤ Replace RPM sensor.
THE DOOR WILL MOVE MOST OF THE WAY TOWARDS A LIMIT THEN STOP. AFTER STOPPING, ONLY CONSTANT PRESSURE COMMANDS WILL MOVE THE DOOR	The Maximum run timer is not set correctly	<ul style="list-style-type: none"> ➤ Manually reprogram the maximum run timer. OR reset the factory defaults (see page 22).
THE DOOR WILL OPEN SOME BUT NOT COMPLETELY. AN EXTRA OPEN IS ABLE TO GET THE DOOR TO OPEN COMPLETELY	There may be a Mid Stop set	<ul style="list-style-type: none"> ➤ Check to see if the Mid Stop LED is lit. Clear the Mid Stop by turning the selector dial to program. Press and hold the MID STOP button for 5 seconds. Return dial to desired wiring type.
THE DOOR WILL OPEN BUT WILL ONLY CLOSE AFTER A FIVE SECOND DELAY WITH CONSTANT PRESSURE ON THE CLOSE BUTTON	<ul style="list-style-type: none"> a) The photo eyes, edge or other sensing device is obstructed or activated b) The logic board thinks that the direct connect photo eyes are attached and blocked c) Failsafe switch set 	<ul style="list-style-type: none"> ➤ If the on board EYES LED is flashing, the photo eyes are misaligned or not connected. Remove any obstructions, check the safety device wires for continuity and shorts. ➤ Unlearn the photo eyes from the memory by resetting factory defaults. ➤ Slide switch to Non-Failsafe mode.
THE OPERATOR WILL NOT RESPOND TO ANY COMMANDS	<ul style="list-style-type: none"> a) Possible accessory malfunction b) Possible Control Board failure 	<ul style="list-style-type: none"> ➤ Disconnect all devices, reattach them one at a time testing for a failure after each one is replaced. ➤ Replace Control Board.

TROUBLESHOOTING ERROR CODES

LiftMaster Logic 3.0 operators incorporate a self diagnostic feature built into the MAS LED. In addition to indicating when routing maintenance is due, the MAS LED can be used to troubleshoot some problems with the operator.

If the MAS LED is flashing on and off rapidly, the Maintenance Alert System has been triggered and the schedule operator service is due. If the MAS LED flashes 2 or more pulses in a row followed by a pause, an operator error has occurred. To view how many errors currently exist, turn the selector dial to DIAGNOSTIC

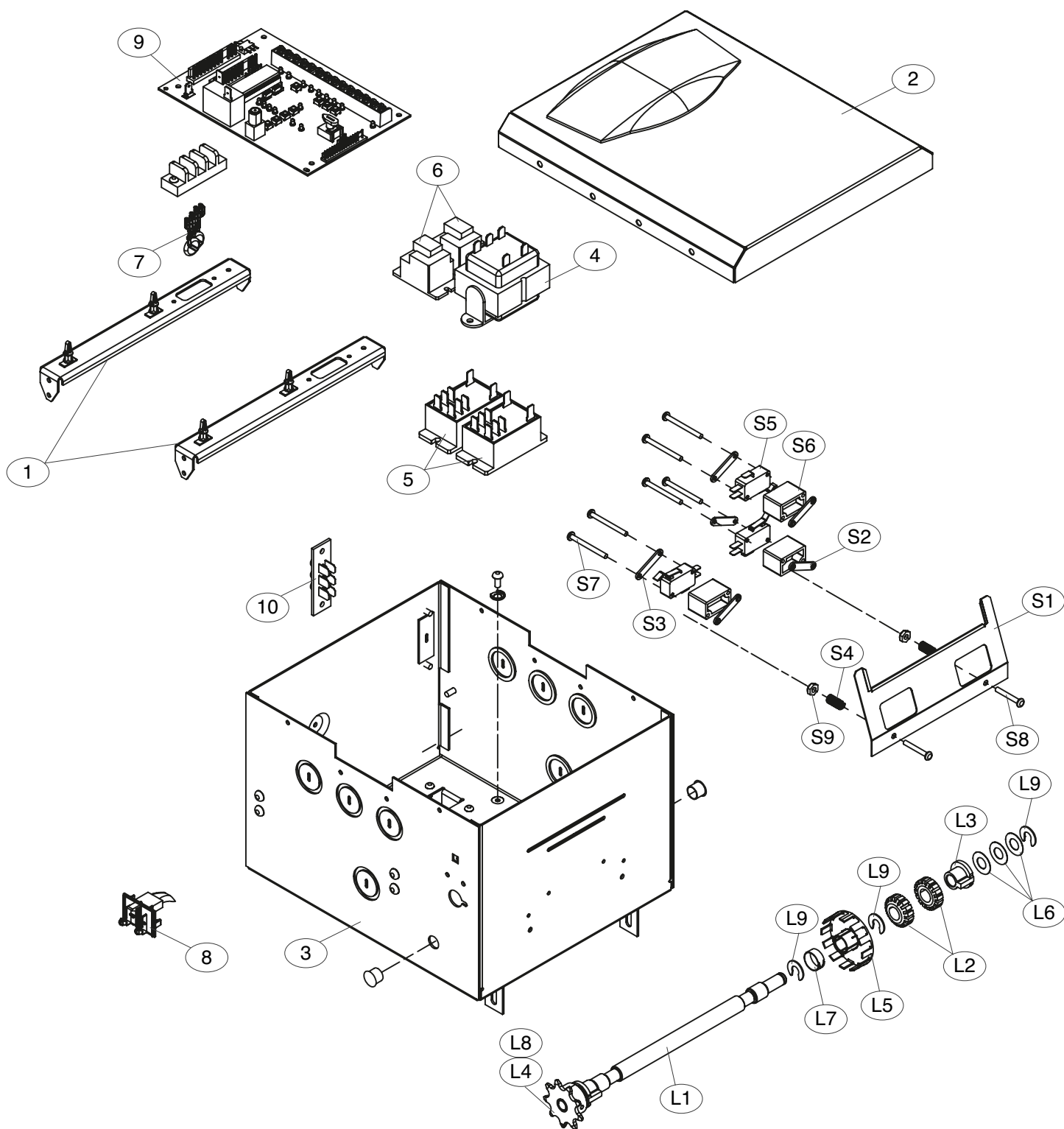
and press the OPEN button. To read out each individual error code (if more than one exists) press CLOSE. It is possible to have more than one error at a time.

The chart below can assist with identifying the flashes on the MAS LED.

NOTE: Error codes take priority over normal MAS LED operation. Error codes will repeat on the MAS every 1.5 seconds until cleared.

ERROR CODE	DESCRIPTION	EFFECT	DISPLAY	CORRECTION
E1	MAS triggered (cycles or months)	None normal operation	1 blink	Reset MAS.
E2	No RPM input during opening or closing	The door only responds to constant pressure commands	2 blinks	Clutch is slipping, adjust clutch, or verify RPM sensor connection or replace RPM sensor. NOTE: To relearn the RPM sensor, move the door with a constant pressure command. The door will stop once relearned and normal operation will resume.
E3	(MRT) Maximum Run Time timed out	The door stops before reaching the desired time	3 blinks	First check Operator for any faults (i.e., Bad Limit switch), manually learn Max Run Timer OR reset factory defaults (see page 22).
E4	Obstruction sensed on closing	Operator will be in the OPEN position	4 blinks	Cleared by removing obstruction or realigning photo eyes and giving a close command.
E5	Stuck key button pressed for greater than 2 min.	Stuck key on 3 button station will not respond	5 blinks	Stuck key must be unstuck before it will be recognized as an input.
E6	Rotary dial in invalid position for greater than 30 sec.	The door will not respond to the 3 button station or any other input	6 blinks	Rotary dial must be set to a valid position.
E7	Failsafe Safety device faulted or not connected for greater than 2 minutes	Normal operation (5 second constant pressure override required to close)	7 blinks	Cleared when safety device is cleared or connected.
E8	Brownout Detected	Operator will run as long as enough power is present	8 blinks	1. Check AC line for voltage. 2. Check transformer secondary for low voltage. To many accessories may be connected to the transformer.

ILLUSTRATED PARTS - ELECTRICAL BOX



REPAIR PARTS KITS - ELECTRICAL BOX LOGIC CONTROL 3

Below are replacement kits available for your operator. For replacement of electrical box, motor or brake components be sure to match model number of your unit to kit number below to ensure proper voltage requirements. Optional modifications and/or accessories included with your operator may add or remove certain components from these lists. Please consult a parts and service representative regarding availability of individual components of kits specified below. Refer to page 23 for all repair part ordering information.

ELECTRICAL BOX SERVICE KITS

To order a complete electrical box kit, add a K- prefix to the model number of your operator. For example:
H5011L3 (Operator) = K-H5011L3 (Electrical box service kit)

MOTOR KITS

20-1033B-LP2	Models H, J, HJ 3311L3, 3321L3
20-3033B-4P	Models H, J, HJ 3323L3, 3343L3
20-3033M-5	Models H, J, HJ 3353L3
20-1050B-2LP	Models H, J, HJ 5011L3, 5021L3
20-3050B-4P	Models H, J, HJ 5023L3, 5043L3
20-3050M-5	Models H, J, HJ 5053L3
20-1075B-2P	Models H, J, HJ 7511L3, 7521L3
20-3075B-4P	Models H, J, HJ 7523L3, 7543L3
20-3075M-5	Models H, J, HJ 7553L3
20-1100B-2LP	Models H, J, HJ 1011L3, 1021L3
20-3100B-4P	Models H, J, HJ 1023L3, 1043L3
20-3100M-5	Models H, J, HJ 1053L3

BRAKE KITS

71-B120H	115 Volt Models
71-B240H	230-460 Volt Models
71-B575H	575 Volt Models

COMPLETE FRAME REPLACEMENT KITS

K73-HFRAME-L	H Frame Kit, Left Hand
K73-HFRAME-R	H Frame Kit, Right Hand
K73-JFRAME	Frame Model J
K73-HJFRAME-L	HJ Frame Kit, Left Hand
K73-HJFRAME-R	HJ Frame Kit, Right Hand

COMPLETE ELECTRICAL BOX KITS

ITEM	PART #	DESCRIPTION	QTY
1	K10-30637	Rail PCB Mount with Standoffs	2
2	K75-32269	Cover	1
3	10-30636	Electrical Box	1
4	21-14182	Transformer, 115/230V	1
	21-5460	Transformer, 460V	
	21-5575	Transformer, 575V	
5	29-31244	Relay 24VAC Dpst 600VAC	1
6	29-31245	Relay 12VDC Spdt 250VAC	1
7	K74-31243	MOV 580V	2
8	K79-15016-1	RPM Sensor Assembly	1
9	K001A5729	Control Board, Logic 3	1
10	42-10040	Terminal Block, Radio	1
		NOT SHOWN	
	23-10916	Interlock Switch	1

NOTE: COMPLETE E-BOX KITS INCLUDE K72-10047 & K72-12514-1

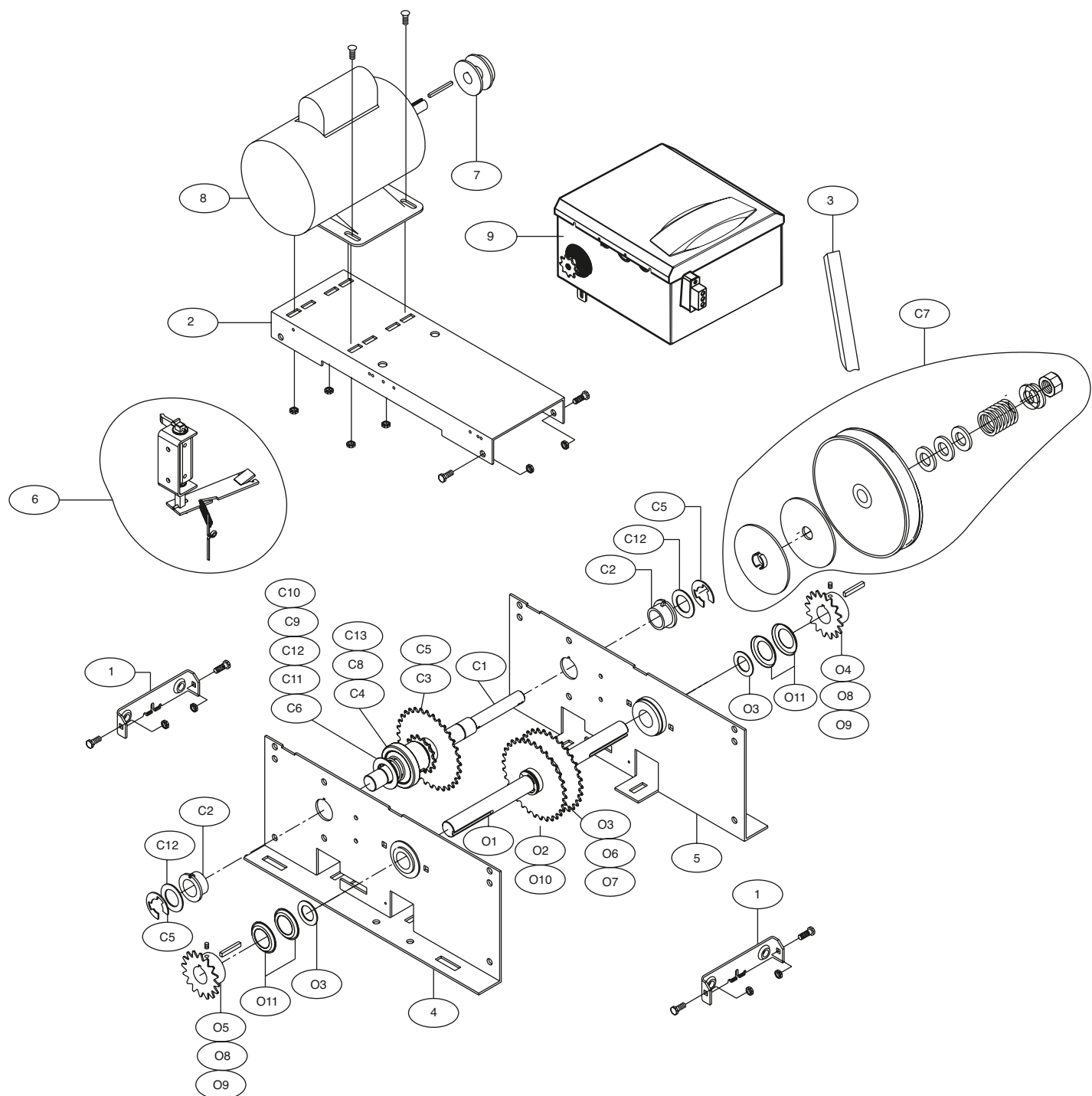
K72-10047 LIMIT SHAFT KIT

ITEM	PART #	DESCRIPTION	QTY
L1	11-10021	Limit Shaft	1
L2	13-10024	Limit Nut	2
L3	12-10028	Limit Bearing	1
L4	15-48B9A1	Limit Sprocket	1
L5	13-32087	Interrupter Cup	1
L6	80-10026	Washer, Shim	2
L7	158A40	Ring Compression	1
L8	86-RP04-012	Roll Pin	1
L9	87-E-038	E-Ring	3

K75-12514-1 LIMIT SWITCH ASSEMBLY KIT

ITEM	PART #	DESCRIPTION	QTY
S1	10-10013	Limit Nut Retainer	1
S2	10-12553	Nut Plate, Switch	3
S3	10-12806	Backup Plate	1
S4	18-10036	Spring, Depress Plate	2
S5	23-10041	Limit Switch	3
S6	31-12542	Standoff, Limit Switch	3
S7	82-PX06-20	Screw, #4-40X1-1/2" Pan Head Phillips	6
S8	82-PX06-16	Screw, #6-32X1" Pan Head Phillips	2
S9	84-LH-06	Locknut, #6-32 Nylon Hex	2

ILLUSTRATED PARTS - MODEL J



REPAIR PARTS KITS - MODEL J LOGIC CONTROL 3

Refer to the parts lists below for replacement kits available for your operator. If optional modifications and/or accessories are included with your operator, certain components may be added or removed from these lists. Individual components of each kit may not be available. Please consult a parts and service representative regarding availability of individual components. Refer to page 23 for all repair part ordering information.

INDIVIDUAL PARTS

ITEM	PART #	DESCRIPTION	QTY
1	10-10874	Connecting Bracket	2
2	10-15569	Motor Plate H, J	1
3	16-5L304	V Belt Cogged 30.4"	1
4	K75-19978-L	Frame Kit (LH)	1
5	K75-19978-R	Frame Kit (RH)	1
6	K75-19977	J Arm Kit	1
7	17-6014	Motor Pulley	1
8	See Page 28	Motor Kits	1
9	See Page 28	Electric Box Kits	1
		NOT SHOWN	
	19-48047M	Chain, #48x47 w/Master	4
	01-19457	Owner's Manual	1

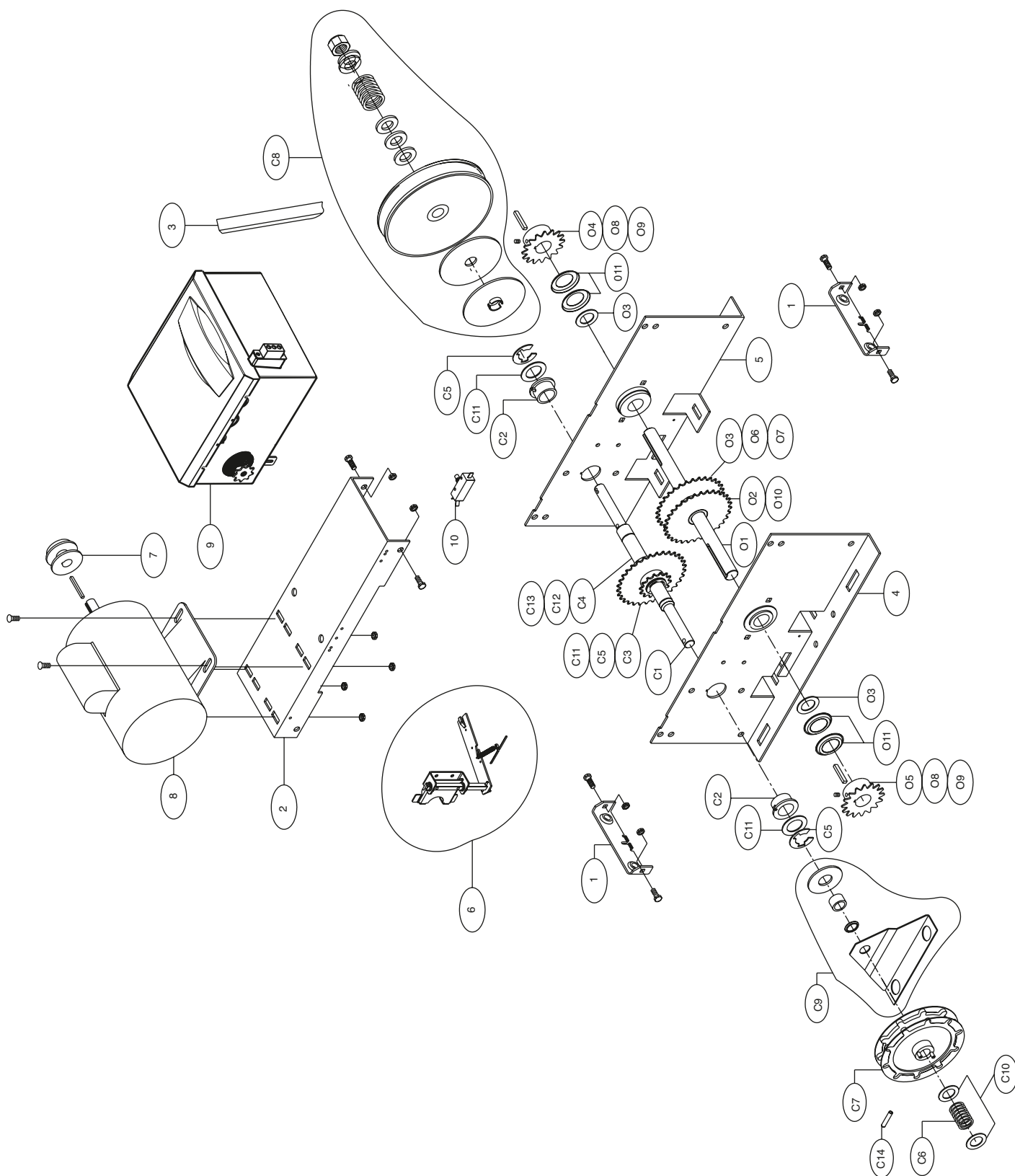
K72-19975 CLUTCH SHAFT ASSEMBLY KIT

ITEM	PART #	DESCRIPTION	QTY
C1	11-19470	Clutch Shaft - J	1
C2	12-19504	1" Keyed Flange Bearing	2
C3	15-19480	Dual Sprocket 32/14	1
C4	15-19484	Splined Core Sprocket	1
C5	158A0056	E-Ring, 1" Plated	4
C6	18-30957	Compression Spring	1
C7	75-19985	Pulley Assembly	1
C8	80-19473	Washer, .048" Thick	1
C9	80-19475	Thrust Bearing, 1.26" ID	1
C10	80-19476	Retaining Ring	1
C11	80-19846	Splined Hub, J Disconnect	1
C12	80-206-11	Washer 1" ID X 1/16" TH	5
C13	86-RP10-112	Roll Pin, 5/16"X1.75"	1

K72-19974 OUTPUT SHAFT ASSEMBLY KIT

ITEM	PART #	DESCRIPTION	QTY
01	11-19485	Output Shaft - H/J	1
02	15-19478	Sprocket Assembly	1
03	15-19480	Dual Sprocket 32/14	1
04	15-48B18LGE	Sprocket 48B18 X 1" Bore	1
05	15-50B12LGH	Sprocket 50B12 X 1" Bore	1
06	158A0056	Ring, 1"	1
07	80-206-11	Washer 1" ID X 1/16" TH	3
08	80-207-19	Key 1/4"X1-1/2" Long	2
09	82-NH31-06	Set Screw, 5/16"-18	4
010	86-RP10-112	Roll Pin, 5/16"X1.75"	1
011	87-P-100S	Thin Walled Receiver	4

ILLUSTRATED PARTS - MODEL H



REPAIR PARTS KITS - MODEL H LOGIC CONTROL 3

Refer to the parts lists below for replacement kits available for your operator. If optional modifications and/or accessories are included with your operator, certain components may be added or removed from these lists. Individual components of each kit may not be available. Please consult a parts and service representative regarding availability of individual components. Refer to page 23 for all repair part ordering information.

INDIVIDUAL PARTS

ITEM	PART #	DESCRIPTION	QTY
1	10-10874	Connecting Bracket	2
2	10-15569	Motor Plate H	1
3	16-5L304	V Belt Cogged 30.4"	1
4	K75-19978-L	Frame Kit, (LH)	1
5	K75-19978-R	Frame Kit, (RH)	1
6	K75-19981	H Arm Kit	1
7	17-6014	Motor Pulley	1
8	See Page 28	Motor Kits	1
9	See Page 28	Electric Box Kits	1
10	K74-19987	Interlock Switch	1
NOT SHOWN			
	19-48047M	Chain, #48x47 w/Master Link	4
	01-19457	Owner's Manual	1

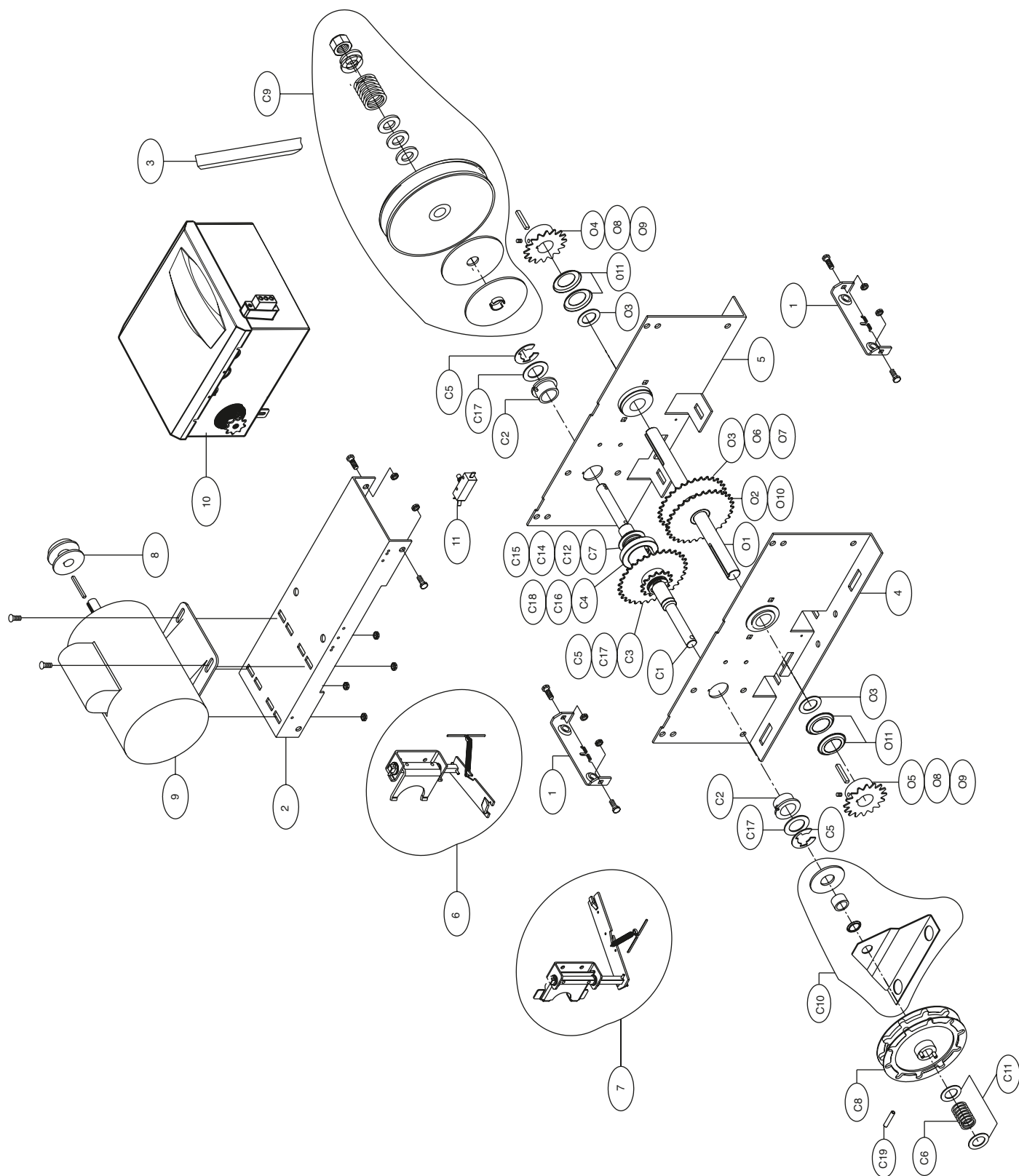
K72-19979 CLUTCH SHAFT ASSEMBLY KIT

ITEM	PART #	DESCRIPTION	QTY
C1	11-19471	Clutch Shaft, H	1
C2	12-19504	1" Keyed Flange Bearing	2
C3	15-19480	Dual Sprocket 32/14	1
C4	15-19481	Sprocket, 14 Tooth	1
C5	158A0056	E-Ring, 1" Plated	3
C6	18-11379	Compression Spring	1
C7	75-10884	Chain Wheel Assembly	1
C8	75-19985	Pulley Assembly	1
C9	75-19986	Chain Guide Assembly	1
C10	80-10022	Shim Washer	2
C11	80-206-11	Washer 1" ID X 1/16" TH	3
C12	80-19418	Thrust Washer 1" ID 1.5" OD	1
C13	86-RP10-112	Roll Pin, 5/16" X 1-3/4"	1
C14	86-RP10-208	Roll Pin, 5/16" X 2-1/2"	1

K72-19974 OUTPUT SHAFT ASSEMBLY KIT

ITEM	PART #	DESCRIPTION	QTY
01	11-19485	Output Shaft, H/J	1
02	15-19478	Sprocket Assembly	1
03	15-19480	Dual Sprocket 32/14	1
04	15-48B18LGE	Sprocket 48B18 X 1" Bore	1
05	15-50B12LGH	Sprocket 50B12 X 1" Bore	1
06	158A0056	Ring, 1" Plated	1
07	80-206-11	Washer 1" ID X 1/16" TH	3
08	80-207-19	Key 1/4" X 1-1/2" Long	2
09	82-NH31-06	Set Screw, 5/16"-18	4
010	86-RP10-112	Roll Pin, 5/16" X 1-3/4"	1
011	87-P-100S	Thin Walled Receiver	4

ILLUSTRATED PARTS - MODEL HJ



REPAIR PARTS KITS - MODEL HJ LOGIC CONTROL 3

Refer to the parts lists below for replacement kits available for your operator. If optional modifications and/or accessories are included with your operator, certain components may be added or removed from these lists. Individual components of each kit may not be available. Please consult a parts and service representative regarding availability of individual components. Refer to page 23 for all repair part ordering information.

INDIVIDUAL PARTS

ITEM	PART #	DESCRIPTION	QTY
1	10-10874	Connecting Bracket	2
2	10-15569	Motor Plate H	1
3	16-5L304	V Belt Cogged 30.4"	1
4	K75-19978-L	Frame Kit, (LH)	1
5	K75-19978-R	Frame Kit, (RH)	1
6	K75-19977	J Arm Svc. Kit	1
7	K75-19981	H Arm Svc. Kit	1
8	17-6014	Motor Pulley	1
9	See Page 28	Motor Kits	1
10	See Page 28	Electric Box Kits	1
11	K74-19987	Interlock Switch	1
NOT SHOWN			
	19-48047M	Chain, #48x47 w/Master Link	4
	01-19457	Owner's Manual	1

K72-19974 OUTPUT SHAFT ASSEMBLY KIT

ITEM	PART #	DESCRIPTION	QTY
01	11-19485	Output Shaft - H/J	1
02	15-19478	Sprocket Assembly	1
03	15-19480	Dual Sprocket 32/14	1
04	15-48B18LGE	Sprocket 48B18 X 1" Bore	1
05	15-50B12LGH	Sprocket 50B12 X 1" Bore	1
06	158A0056	Ring, 1" Plated	1
07	80-206-11	Washer 1" ID X 1/16" TH	3
08	80-207-19	Key 1/4" X 1-1/2" Long	2
09	82-NH31-06	Set Screw, 5/16"-18	4
010	86-RP10-112	Roll Pin, 5/16" X 1-3/4"	1
011	87-P-100S	Thin Walled Receiver	4

K72-19982 CLUTCH SHAFT ASSEMBLY KIT

ITEM	PART #	DESCRIPTION	QTY
C1	11-19473	Clutch Shaft - J	1
C2	12-19504	1" Keyed Flange Bearing	2
C3	15-19480	Dual Sprocket 32/14	1
C4	15-19484	Splined Core Sprocket	1
C5	158A0056	E-Ring, 1" Plated	4
C6	18-11379	Compression Spring	1
C7	18-30957	Compression Spring	1
C8	75-10884	Chain Wheel Assembly	2
C9	75-19985	Pulley Assembly	2
C10	75-19986	Chain Guide Assembly	2
C11	80-10022	Shim Washer, .80 ID	1
C12	80-19473	Washer 1" ID	1
C13	80-19475	Thrust Bearing, 1.26" ID	1
C14	80-19476	Retaining Ring .887" ID	2
C15	80-19846	Splined Hub, J Disconnect	1
C16	80-206-11	Washer 1" ID X 1/16" TH	5
C17	86-RP10-112	Roll Pin, 5/16" X 1-3/4"	1
C18	86-RP10-208	Roll Pin, 5/16" X 2-1/2"	1

OPERATOR NOTES

[illegible]

CONTROL CONNECTION DIAGRAM

IMPORTANT NOTES:

- The 3-Button Control Station provided must be connected for operation.
- If a STOP button is not used, a jumper must be placed between terminals 4 and 5.

