OWNER’S MANUAL

MODEL T

INDUSTRIAL DUTY DOOR OPERATOR

2 YEAR WARRANTY

Serial # ____________________________
(located on electrical box cover)
Installation Date ________________
Wiring Type ______________

WARNING: This product can expose you to chemicals including lead, which are known to the State of California to cause cancer or birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov

NOT FOR RESIDENTIAL USE
MOTOR

**TYPE:** Continuous duty

**HORSEPOWER:** 1/3, 1/2, 3/4 & 1 Hp

*Single or Three phase*

**SPEED:** 1725 RPM

**VOLTAGE:** 115, 220, 230 Single phase
320, 460, 575 Three phase

**CURRENT:** See motor nameplate

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ELECTRICAL

**TRANSFORMER:** 24VAC

**CONTROL STATION:** NEMA 1 three button station.

OPEN/CLOSE/STOP

**WIRING TYPE:** C2 (Factory Shipped)

*Momentary contact to OPEN & STOP, constant pressure to CLOSE, open override plus wiring for sensing device to reverse. See page 8 for optional control settings.

**LIMIT ADJUST:** Linear driven, fully adjustable screw type cams. Adjustable to 24 feet.

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MECHANICAL

**DRIVE REDUCTION:** Primary: Heavy duty (5L) V-Belt. Secondary: #41 chain/sprocket.

Output: #48 chain (1/3 & 1/2Hp) or #41 chain (3/4 & 1Hp)

**OUTPUT SHAFT SPEED:** 140 R.P.M.

**DOOR SPEED:** 11" - 12" per sec.

*depending on door*

**BRAKE:** Solenoid actuated disc brake on 3/4 & 1Hp

**BEARINGS:** Output Shaft: Shielded Ball Bearing. Clutch Shaft: IronCopper sintered and oil impregnated.

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SAFETY

**DISCONNECT:** Quick disconnect door arm for emergency manual door operation.

**REVERSING EDGE:** Optional Electric or pneumatic sensing device attached to the bottom edge of door.

*A REVERSING EDGE IS STRONGLY RECOMMENDED FOR ALL COMMERCIAL OPERATOR INSTALLATIONS. REQUIRED WHEN THE 3 BUTTON CONTROL STATION IS OUT OF SIGHT OF DOOR OR ANY OTHER CONTROL (AUTOMATIC OR MANUAL) IS USED.*

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WEIGHTS AND DIMENSIONS

**HANGING WEIGHT:** 80-110 LBS.

*For Units with Brake add 3-1/2"*

(Standard on 3/4 & 1HP models Optional on 1/3 & 1/2HP)
**WARNING**

KEEP DOOR BALANCED. STICKING OR BINDING DOORS MUST BE REPAIRED. DOORS, DOOR SPRINGS, CABLES, PULLEYS, BRACKETS AND THEIR HARDWARE MAY BE UNDER EXTREME TENSION AND CAN CAUSE SERIOUS PERSONAL INJURY OR DEATH. CALL A PROFESSIONAL DOOR SERVICEMAN TO MOVE OR ADJUST DOOR SPRINGS OR HARDWARE.

**TRACK ASSEMBLY**

1. Using the 3/8"-16 x 3/4" bolts and flange hex nuts supplied, assemble the operator track by installing and tightening the track spacer brackets. Position the spacers evenly over the length of the track. **NOTE:** The nylon pad on the spacer bracket should face up.

2. Using (2) 3/8"-16 x 1" bolts and lock washers, install the front idler assembly to the second set of holes of one end of the track. Refer to the illustration below.

3. Slide the trolley carriage onto the track so that the take-up bolt will be toward the operator.

**POWERHEAD ATTACHMENT**

1. Position the track assembly on the frame of the powerhead so that the motor side of operator is in back (away from door).

2. Loosely install two 3/8"-16 x 3/4" bolts and nuts in third hole from the end of the track.

3. Align the track so that the bolts inserted in step 2 line up with the L-Slots in the frame.

4. Connect the track to the powerhead by fastening two 3/8"-16 x 3/4" bolts and nuts through the frame and the end holes in track. Tighten all four bolts to secure the track to the powerhead.

**TROLLEY CARRIAGE / CHAIN ATTACHMENT**

1. Attach the take-up bolt to the trolley carriage using 3/8-16 hex nuts and lock washer, as shown below.

2. Using one of the master links, attach the chain to the other end of the trolley carriage. Reel the chain around the front idler shaft, over the spacer brackets, back to the drive shaft sprocket, and then to the take-up bolt on the carriage.

3. Using the other master link, attach the chain to the take-up bolt and tighten to the desired chain tension.

**Chain Tension:** With trolley positioned at either end of the track, a properly adjusted chain will sag about 3" at the mid-point. If necessary, remove links from the chain to achieve proper adjustment.
IMPORTANT NOTE: Before the operator is installed, be sure the door has been properly aligned and is working smoothly. Although each installation will vary due to particular building characteristics, refer to the following general procedures to install the operator.

MOUNT HEADER BRACKET
The trolley operator is generally mounted over the center of the door. However, off center mounting may be required due to interfering structures or location of door stile / top section support. In such cases, the operator may be mounted up to 24” off center on torsion spring doors. Extension springs require center mounting.

1. Locate the center of the door and mark a line on the wall directly above the door. Extend this line up the wall.

2. Determine the highest point of door travel. Slowly raise the door and observe the action of the top section. When the top section reaches its highest point, use a level and project a line from this point to the center line of the door.

MOUNT OPERATOR
1. Allowing the motor to rest on the floor, raise the front end of the track assembly to the front header bracket and fasten using the 3/8” dia. x 6.40” long pivot shaft and cotterpins supplied.

2. Swing the operator to a horizontal position above the guide rails and temporarily secure with a suitable rope, chain, or support from the floor. Now open garage door slowly, being careful not to dislodge the temporary support. Using the door as a support, place a level against the rail and shim the operator until it is horizontal. Make sure that the operator is aligned with the center line of the door.
OPERATOR SUPPORT
1. The illustration below shows a typical method of hanging the operator from the ceiling. Each installation may vary, but in all cases side braces should be used for additional strength.

2. For mounting of the support brace(s) to the powerhead, Four holes (clearance up to 3/8" bolts) are located on each side of frame.

NOTE: If the operator is longer than 15 feet, use of a mid-span support is recommended.

STRAIGHT ARM ATTACHMENT
1. Fully close the door and move the trolley slider to within (2") two inches of the front idler.

2. Latch the straight door arm to the fixed roll pin in the trolley carriage. Make sure the open side of notch on the arm faces the doorway.

3. Attach the door bracket to the door arm using the 3/8"-16 x 1" bolt and nylon locking nut provided. Leave the nut and bolt loose enough to allow the two pieces to pivot freely.

4. Using 3/8" hardware provided, bolt the curved door arm to the straight arm, aligning the mounting holes in such a way that the door bracket pivot bolt will be in line with the top rollers on the door.

5. Position the door bracket to the center line on the door. Using suitable hardware, attach the door bracket to the door. Many installations, except solid wood doors, will require additional support for the door. Refer to the illustration below.

IMPORTANT NOTE: At this time, ensure all bolts and lag screws are properly secured.

WARNING
FAILURE TO SUSPEND THE OPERATOR SECURELY MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH, AND/OR PROPERTY DAMAGE.
TO AVOID SERIOUS PERSONAL INJURY OR DEATH FROM ELECTROCUTION, DISCONNECT ELECTRIC POWER BEFORE MANUALLY MOVING LIMIT NUTS.

**Warning**

**Limit Switch Adjustment**

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

1. To adjust limit nuts depress retaining plate to allow nut to spin freely. After adjustment, release plate and ensure it seats fully in slots of both nuts.
2. To increase door travel, spin nut away from actuator. To decrease door travel, spin limit nut toward actuator.
3. Adjust open limit nut so that door will stop in open position with the bottom of the door even with top of door opening.
4. Repeat Steps 1 and 2 for close cycle. Adjust close limit nut so that actuator is engaged as door fully seats at the floor.

**Notice**

It is strongly recommended that a safety photo eye or sensing edge be used in conjunction with the operator.

**Wiring**

For wiring of your sensing device to the operator, refer to the wiring diagram supplied with your operator. See field connection terminals identified as Sensing Device or Safety Edge.

**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.

**Sensing Edges & Photo Eyes**

Sensing devices supplied for door industry type operators with an isolated normally open (N.O.) output are compatible with your operator. This includes pneumatic and electric edges, and through beam and retro reflective photo eyes. If your door does not have a bottom sensing edge or safety photo eyes and you wish to add a safety device to your application, 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. Refer to the steps below.

**Important Notes:**

a) Proceed with Limit Switch Adjustments before making any sensing edge wiring connections to operator as described below.

b) Electrician must hardwire the junction box to the operator electrical box in accordance with local codes.

**Entrapment Protection Accessories (Optional)**

Wiring: For wiring of your sensing device to the operator, refer to the wiring diagram supplied with your operator. See field connection terminals identified as Sensing Device or Safety Edge.

Important Notes:

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

If other problems persist, call our toll-free number for assistance: 1-800-528-2806.
POWER WIRING CONNECTIONS

Remove the cover from the electrical enclosure. Inside this enclosure you will find the wiring diagram(s) for your unit. Refer to the diagram (glued on the inside of the cover) for all connections described below. If this diagram is missing, call the number on the back of this manual. **DO NOT INSTALL ANY WIRING OR ATTEMPT TO RUN THIS OPERATOR WITHOUT CONSULTING THE WIRING DIAGRAM.**

**WARNING**

**DISCONNECT POWER AT THE FUSE BOX BEFORE PROCEEDING.**

OPERATOR MUST BE PROPERLY GROUNDED AND PERMANENTLY WIRED IN ACCORDANCE WITH LOCAL ELECTRICAL CODES. NOTE: THE OPERATOR SHOULD BE ON A SEparate FUSED LINE OF ADEQUATE CAPACITY.

ALL ELECTRICAL CONNECTIONS MUST BE MADE BY A QUALIFIED INDIVIDUAL.

**WARNING**

TO AVOID DAMAGE TO DOOR AND OPERATOR, MAKE ALL DOOR LOCKS INOPERATIVE. SECURE LOCK(S) IN “OPEN” POSITION. IF THE DOOR LOCK NEEDS TO REMAIN FUNCTIONAL, INSTALL AN INTERLOCK SWITCH.

**POWER WIRING**

1. Be sure that the power supply is of the correct voltage, phase, frequency, and amperage to supply the operator. Refer to the operator nameplate on the cover.

2. Using the 1-1/16” dia conduit access knockout as shown below, bring supply lines to the operator and connect wires to the terminals indicated on the WIRING CONNECTIONS DIAGRAM.

**WARNING**

**DISCONNECT POWER AT THE FUSE BOX BEFORE PROCEEDING.**

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OPERATOR MUST BE PROPERLY GROUNDED AND PERMANENTLY WIRED IN ACCORDANCE WITH LOCAL ELECTRICAL CODES. NOTE: THE OPERATOR SHOULD BE ON A SEparate FUSED LINE OF ADEQUATE CAPACITY.

ALL ELECTRICAL CONNECTIONS MUST BE MADE BY A QUALIFIED INDIVIDUAL.

**ON THREE PHASE MACHINES ONLY!**

Incorrect phasing of the power supply will cause the motor to rotate in the wrong direction (open when CLOSE button is pressed and vice-versa). To correct this, interchange any two of the incoming three phase power lines.

**CONDUIT ACCESS**

- 7/8" Dia Knockouts for control wiring conduit access (1 on end panel)
- 1-1/16" Dia Knockouts for power wiring conduit access (1 on end panel)

**WARNING**

**Do Not Run Power & Control Wiring in the Same Conduit**
**CONTROL WIRING**

**DETERMINE WIRING TYPE**
Refer to the wiring diagram located on the inside cover the electrical box to determine the type of control wiring.

**Standard C2 or B2 Wiring**
Standard operators are shipped from the factory with jumper set for C2 wiring, which requires constant pressure on button to close the door. If momentary contact on close direction is desired (B2 wiring) you must include an entrapment protection device. See close control jumper setting below.

- **Constant pressure on close (C2 wiring)**
  Red jumper wire was placed on terminal #2 in electrical enclosure. The operator will require constant pressure on close control in order to keep door moving in the close direction.

- **Momentary contact on close (B2 wiring)**
  Move red jumper wire from terminal #2 to terminal #3. The operator will require only momentary contact to close the door.

**SPECIAL CONTROL WIRING**

If your operator was shipped from the factory with non-standard control wiring or with optional accessories that require addition instructions, refer to the wiring diagram(s) indicated in the special control wiring data box. When a replacement wiring diagram is present, wiring diagrams in this manual will not apply. Refer only to the replacement wiring diagram for all connections.

**LOCATING THE CONTROL STATION**
All operators are supplied with some type of control station. Generally a three button station (OPEN/CLOSE/STOP) is provided. A two-position key switch or control station (OPEN/CLOSE) may be added or substituted when requested at the time of order. Mount the control station near the door.

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

**MOUNT WARNING NOTICE**
IMPORTANT: Mount WARNING NOTICE beside or below the push button station.
Radio Controls
On all models with type B2 control wiring, a terminal bracket marked R1 R2 R3 is located on the outside of the electrical enclosure. All standard radio control receivers (single channel residential type) may be mounted to this bracket. The operator will then open a fully closed door, close a fully open door, and reverse a closing door from the radio transmitter. However, for complete door control from a transmitter, a commercial three-channel radio set (with connections for OPEN/CLOSE/STOP) is recommended.

WARNING
DO NOT USE RADIO CONTROLS WITH YOUR OPERATOR UNLESS YOU HAVE INSTALLED SOME TYPE OF ENTRAPMENT PROTECTION DEVICE. THE USE OF RADIO CONTROLS PRESENTS POTENTIAL HAZARDS DUE TO THE USER’S ABILITY TO OPEN OR CLOSE THE DOOR WHEN OUT OF SIGHT OF THE DOOR. IN ADDITION, IF A SINGLE CHANNEL CONTROL IS USED, THE USER WILL NOT BE ABLE TO STOP THE DOOR FROM THE TRANSMITTER.

Additional Access Control Equipment
Locate any additional access control equipment as desired (but so that the door will be in clear sight of the person operating the equipment), and connect to the terminal block in the electrical enclosure as shown on the FIELD WIRING CONNECTIONS diagram. Any control with a normally (N.O.) isolated output contact may be connected in parallel with the OPEN button. More than one device may be connected in this manner. Use 16 gauge wire or larger for all controls. DO NOT USE THE CONTROL CIRCUIT TRANSFORMER (24VAC) IN THE OPERATOR TO POWER ANY ACCESS CONTROL EQUIPMENT OTHER THAN A STANDARD RESIDENTIAL TYPE RADIO RECEIVER.

External Interlock Switch
The operator has a terminal connection for an external interlock switch. This switch must be a normally closed (N.C.) two-wire device with a contact rating of at least 3 amps at 24VAC. When such a switch is connected as shown on the FIELD WIRING CONNECTIONS diagram, the control circuit will be disabled when the switch is actuated, thereby preventing electrical operation of the door from the control devices.

CLUTCH ADJUSTMENT

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.

CAUTION: The adjustable friction clutch is NOT an automatic reversing device. An electric or pneumatic reversing edge can be added to bottom edge of door if desired.
**WARNING**

DOOR ARM IS RELEASED FROM TROLLEY WHEN EMERGENCY DISCONNECT OPENS.
TO AVOID BEING STRUCK BY DOOR ARM, DO NOT STAND UNDER THE ROPE OR DOOR ARM WHEN PULLING THE EMERGENCY RELEASE.

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**TO DISCONNECT DOOR FROM OPENER**

Pull emergency release handle straight down. Emergency disconnect will open.

**TO RECONNECT DOOR ARM TO TROLLEY**

Lift free end of door arm to trolley. Pull emergency handle to allow arm to engage roll pin. Release handle. Emergency disconnect will close.

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**TEST THE SYSTEM**

Turn on power. Test all controls and safety devices to make sure they are working properly. It will be necessary to refer back to page 6 for fine adjustment of the limit switches.

**IMPORTANT NOTES:**

Do not leave operator power on unless all safety and entrapment protection devices have been tested and are working properly.

Be sure you have read and understand all Safety Instructions included in this manual.

Be sure the owner or person(s) responsible for operation of the door have read and understand the Safety Instructions, know how to electrically operate the door in a safe manner, and know how to use the manual disconnect operation of the door operating system.

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**WARNING**

DO NOT PLACE HANDS OR TOOLS IN OR NEAR THE OPERATOR WHEN THE POWER IS ON OR WHEN TESTING CONTROL OR SAFETY DEVICES. ALWAYS DISCONNECT POWER BEFORE SERVICING OR ADJUSTING THE OPERATOR.
BRAKE ADJUSTMENT

A solenoid brake 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.

Solenoid Brake System

MAINTENANCE SCHEDULE

Check at the intervals listed in the following chart.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>PROCEDURE</th>
<th>EVERY 3 MONTHS</th>
<th>EVERY 6 MONTHS</th>
<th>EVERY 12 MONTHS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive Chain</td>
<td>Check for excessive slack.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Check &amp; adjust as required.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lubricate.*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sprockets</td>
<td>Check set screw tightness</td>
<td>●</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clutch</td>
<td>Check &amp; adjust as required</td>
<td></td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>Belt</td>
<td>Check condition &amp; tension</td>
<td></td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>Fasteners</td>
<td>Check &amp; tighten as required</td>
<td></td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>Manual Disconnect</td>
<td>Check &amp; Operate</td>
<td></td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>Bearings &amp; Shafts</td>
<td>Check for wear &amp; lubricate</td>
<td>●</td>
<td>●</td>
<td></td>
</tr>
</tbody>
</table>

♦ 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.
■ CAUTION: BEFORE SERVICING, ALWAYS DISCONNECT OPERATOR FROM POWER SUPPLY.

HOW TO ORDER REPAIR PARTS

OUR LARGE SERVICE ORGANIZATION SPANS AMERICA
INSTALLATION AND SERVICE INFORMATION IS AS NEAR AS YOUR TELEPHONE SIX DAYS A WEEK. SIMPLY DIAL OUR TOLL FREE NUMBER:

1-800-528-2806

HOURS: (Central Standard Time)
6:00 A.M. TO 7:00 P.M. - Monday through Friday
8:00 A.M. TO 4:30 P.M. - Saturday
www.liftmaster.com

WHEN ORDERING REPAIR PARTS, ALWAYS GIVE THE FOLLOWING INFORMATION:
• PART NUMBER
• PART NAME
• MODEL NUMBER

ADDRESS ORDERS TO:
THE CHAMBERLAIN GROUP, INC.
Technical Support Group
6020 S. Country Club Road
Tucson, Arizona 85706
WARNING
Always Disconnect Power Whenever Installing or Servicing the Door Operator.

Internal Motor Wiring
1 - BLUE
2 - WHITE
3 - ORANGE
4 - YELLOW
5 - BLACK
8 - RED
O/L - BROWN

115V. Connection
1 - BLK
2 - BLK
3 - BLK
4 - BLK
5 - BLK
8 - BLK

230V. Connection
1 - BLK
2 - BLK
3 - BLK
4 - BLK
5 - BLK
8 - BLK

1 PHASE POWER IN
1 - L1
2 - L2
3 - L3
4 - L1
5 - L2
6 - L3

NOTES:
1) TO REVERSE MOTOR DIRECTION: INTERCHANGE PURPLE & GRAY MOTOR LEADS AT CONTACTOR 1 & 3.
2) WIRE MUST BE REMOVED FOR 230V 1PH OPERATION.
3) TRANSFORMER PRIMARY & RELAY VOLTAGE SAME AS LINE VOLTAGE.
4) SINGLE PHASE UNITS ARE EQUIPPED WITH AN EXTERNAL LINE BREAK DEVICE, AND MAY BE EQUIPPED WITH AN ADDITIONAL INTERNAL PILOT DUTY THERMAL O/L DEVICE.

Close Control Wiring Options
- C2 Wiring: Constant Pressure to Close.
- B2 Wiring: Momentary Contact to Close.

1 - SHIPPED FROM FACTORY

Ground
SINGLE PHASE WIRING DIAGRAM

WARNING
Always Disconnect Power Whenever Installing or Servicing the Door Operator.

NOTES:
1) TO REVERSE MOTOR DIRECTION: INTERCHANGE PURPLE & GRAY MOTOR LEADS AT CONTACTOR 1 & 3.
2) WIRE MUST BE REMOVED FOR 230V 1PH OPERATION.
3) TRANSFORMER PRIMARY & RELAY VOLTAGE SAME AS LINE VOLTAGE.
4) SINGLE PHASE UNITS ARE EQUIPPED WITH AN EXTERNAL LINE BREAK DEVICE, AND MAY BE EQUIPPED WITH AN ADDITIONAL INTERNAL PILOT DUTY THERMAL O/L DEVICE.

CLOSE CONTROL WIRING OPTIONS
* - Shipped from Factory

* C2 WIRING - Constant Pressure to Close
  RED WIRE ON TERMINAL #2 (Shipped from Factory)
B2 WIRING - Momentary Contact to Close
  MOVE RED WIRE FROM TERMINAL #2 TO TERMINAL #3
THREE PHASE SCHEMATIC DIAGRAM

NOTES:
1. TO REVERSE MOTOR DIRECTION: INTERCHANGE PURPLE & BLACK MOTOR LEADS AT CONTACTOR 1 & 3.
2. TRANSFORMER PRIMARY & RELAY VOLTAGE SAME AS LINE VOLTAGE.
3. THREE PHASE UNITS MAY BE EQUIPPED WITH AN INTERNAL PILOT DUTY THERMAL OVERLOAD DEVICE, OR AN EXTERNAL LINE MONITORING DEVICE.
THREE PHASE WIRING DIAGRAM

WARNING
Always Disconnect Power Whenever Installing or Servicing the Door Operator.

208/230 VOLT - 3 PHASE MOTOR CONNECTION

460 VOLT - 3 PHASE MOTOR CONNECTION

575 VOLT - 3 PHASE MOTOR CONNECTION

* MOTOR O/L LEAD COLOR BROWN

OVERLOAD (SEE NOTE 3)

240V BRAKE (WHEN PRESENT)

3 PHASE POWER IN

L3 (BK)

L2 (BK)

L1 (BK)

OVERLOAD (SEE NOTE 3)

CL

OP

5

TO MOTOR

EXTTERNAL INTERLOCK

STOP

3

4

5 (BRN)

(YEL)

(WHEN PRESENT)

575 VOLT - 3 PHASE MOTOR CONNECTION

* OVERLOAD (SEE NOTE 3)

240V BRAKE (WHEN PRESENT)

R1

R3

RE blood

(RED)

(RED)

CL

(RED)

(WHEN PRESENT)

575 VOLT - 3 PHASE MOTOR CONNECTION

NOTE:
1) TO REVERSE MOTOR DIRECTION: INTERCHANGE PURPLE & GRAY MOTOR LEADS AT CONTACTOR 1 & 3.
2) TRANSFORMER PRIMARY & RELAY VOLTAGE SAME AS LINE VOLTAGE.
3) THREE PHASE UNITS MAY BE EQUIPPED WITH AN INTERNAL PILOT DUTY THERMAL OVERLOAD DEVICE, OR AN EXTERNAL LINE MONITORING DEVICE.

CLOSE CONTROL WIRING OPTIONS

* C2 WIRING - Constant Pressure to Close
  RED WIRE ON TERMINAL #2 (Shipped from Factory)

B2 WIRING - Momentary Contact to Close
  MOVE RED WIRE FROM TERMINAL #2 TO TERMINAL #3

NOTES:
1) TO REVERSE MOTOR DIRECTION: INTERCHANGE PURPLE & GRAY MOTOR LEADS AT CONTACTOR 1 & 3.
2) TRANSFORMER PRIMARY & RELAY VOLTAGE SAME AS LINE VOLTAGE.
3) THREE PHASE UNITS MAY BE EQUIPPED WITH AN INTERNAL PILOT DUTY THERMAL OVERLOAD DEVICE, OR AN EXTERNAL LINE MONITORING DEVICE.
**REPLACEMENT PART KITS - ELECTRICAL BOX**

Complete Electrical Box Replacement Kits
To order a complete electrical box kit, add a K74- prefix to the model number of your operator. For example:
T5011M (Operator) = K74-T5011M (Electrical box replacement kit)

### Electrical Box Sub-Assemblies
- **K72-12510**: Limit Shaft Assembly
- **K72-12511**: Limit Switch Assembly

### Motor Kits
- **K20-1033B2P**: Models T3311M, T3321M
- **K20-3033B4P**: Models T3323M, T3338M, T3343M
- **K20-3033M5P**: Model T3353M
- **K20-51033BP**: Model T3325M
- **K20-1050B2P**: Models T5011M, T5021M
- **K20-3050B4P**: Models T5023M, T5038M, T5043M
- **K20-3050M5P**: Model T5053M
- **K20-51050BP**: Model T5025M
- **K20-1075B2P**: Model T7511M, T7521M
- **K20-3075B4P**: Models T7523M, T7538M, T7543M
- **K20-3075B5P**: Model T7553M
- **K20-51075BP**: Model T7525M
- **K20-1100B2P**: Models T1011M, T1021M
- **K20-3100B4P**: Models T1023M, T1043M
- **K20-3100B5P**: Model T1053M

### Shaft Assemblies
- **K72-12506**: Clutch Shaft Assembly (1/3 & 1/2 HP Models)
- **K72-12507**: Clutch Shaft Assembly (3/4 & 1 HP Models)
- **K72-12508**: Output Shaft Assembly (1/3 & 1/2 HP Models)
- **K72-12509**: Output Shaft Assembly (3/4 & 1 HP Models)

### Hardware, Track, Drive Chain Kits
- **K72-12491**: Hardware Kit
- See pg. 19 Drive Chain
- See pg. 19 Track

### Brake Kits
- **71-B120**: 115 Volt Models
- **71-B240**: 230-460 Volt Models
- **71-B575**: 575 Volt Models

**Notes:** Single Phase units are equipped with an external line break device and may be equipped with an additional internal pilot duty thermal O/L device.
Three phase units may be equipped with an internal pilot duty thermal O/L device or an external line break device.

### PART NO.
- 21-5115
- 21-5230
- 21-5460
- 21-5575
- 24-115-1
- 24-230-5
- 25-2006
- 25-2008
- 25-2010
- 25-2015
- 25-2020
- 25-4001-8K
- 25-4002-5K
- 25-4004-K

### DESCRIPTION
- Transformer, 115 Volts
- Transformer, 230 Volts
- Transformer, 460 Volts
- Transformer, 575 Volts
- Relay, 115 Volts
- Relay, 230 Volts
- Overload, 6 Amp
- Overload, 8 Amp
- Overload 10 Amp
- Overload 15 Amp
- Overload 20 Amp
- Overload 1.2-1.8 Amp
- Overload 1.6-2.5 Amp
- Overload 2.5-4.0 Amp

### K72-12510 LIMIT SHAFT ASSEMBLY KIT
<table>
<thead>
<tr>
<th>Item</th>
<th>P/N</th>
<th>Description</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>11-10021</td>
<td>Limit Shaft, Standard T</td>
<td>1</td>
</tr>
<tr>
<td>L2</td>
<td>12-10028</td>
<td>Flange Bearing, 3/8&quot; I.D.</td>
<td>2</td>
</tr>
<tr>
<td>L3</td>
<td>13-10024</td>
<td>Limit Nut</td>
<td>2</td>
</tr>
<tr>
<td>L4</td>
<td>15-48B9A</td>
<td>Sprocket 48B9 x 3/8&quot; Bore</td>
<td>1</td>
</tr>
<tr>
<td>L5</td>
<td>80-10025</td>
<td>Washer, Shim 3/8&quot; I.D. x .050 THK.</td>
<td>1</td>
</tr>
<tr>
<td>L6</td>
<td>80-10026</td>
<td>Washer, Shim 3/8&quot; I.D. x .010 THK.</td>
<td>4</td>
</tr>
<tr>
<td>L7</td>
<td>86-C005-108</td>
<td>Roll Pin, 1/8 DIA. x 1 Long</td>
<td>1</td>
</tr>
<tr>
<td>L8</td>
<td>87-E-038</td>
<td>E Ring, 3/8&quot;</td>
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</tr>
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</table>

### K75-12511 LIMIT SWITCH ASSEMBLY KIT
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<th>Description</th>
<th>Qty</th>
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</thead>
<tbody>
<tr>
<td>S1</td>
<td>10-10013</td>
<td>Depress Plate</td>
<td>1</td>
</tr>
<tr>
<td>S2</td>
<td>10-12553</td>
<td>Nut Plate, Switch</td>
<td>4</td>
</tr>
<tr>
<td>S3</td>
<td>10-12806</td>
<td>Backup Plate</td>
<td>2</td>
</tr>
<tr>
<td>S4</td>
<td>18-10036</td>
<td>Spring, Depress Plate</td>
<td>2</td>
</tr>
<tr>
<td>S5</td>
<td>23-10041</td>
<td>Limit Switch</td>
<td>4</td>
</tr>
<tr>
<td>S6</td>
<td>31-12542</td>
<td>Standoff, Limit Switch</td>
<td>4</td>
</tr>
<tr>
<td>S7</td>
<td>82-PX04-20</td>
<td>Screw, #4-40 Pan Head Phillips</td>
<td>8</td>
</tr>
<tr>
<td>S8</td>
<td>82-PX06-16</td>
<td>Screw, #6-32 x 1” Pan Hd Phillips</td>
<td>2</td>
</tr>
<tr>
<td>S9</td>
<td>84-LH-06</td>
<td>Locknut, #6-32 Nylon Hex</td>
<td>2</td>
</tr>
</tbody>
</table>

### VARIABLE COMPONENT KITS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>PART NO.</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>21-5115</td>
<td>Transformer, 115 Volts</td>
</tr>
<tr>
<td>2</td>
<td>21-5230</td>
<td>Transformer, 230 Volts</td>
</tr>
<tr>
<td>5</td>
<td>24-115-1</td>
<td>Relay, 115 Volts</td>
</tr>
<tr>
<td>7</td>
<td>25-2006</td>
<td>Overload, 6 Amp</td>
</tr>
<tr>
<td>8</td>
<td>25-4004-K</td>
<td>Overload 2.5-4.0 Amp</td>
</tr>
</tbody>
</table>
Brake Components
Standard on 3/4 & 1HP units; Optional on 1/3 & 1/2HP units
REPLACEMENT PART KITS - MODEL T

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 11 for all repair part ordering information.

### Brake Assembly Kits

<table>
<thead>
<tr>
<th>ITEM</th>
<th>PART #</th>
<th>Description</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1</td>
<td>07-10179</td>
<td>Brake Hub</td>
<td>1</td>
</tr>
<tr>
<td>B2</td>
<td>10-10187</td>
<td>Brake Solenoid Cover</td>
<td>1</td>
</tr>
<tr>
<td>B3</td>
<td>10-10190</td>
<td>Brake Release Lever</td>
<td>1</td>
</tr>
<tr>
<td>B4</td>
<td>10-10191</td>
<td>Brake Disc, Zinc Plated</td>
<td>1</td>
</tr>
<tr>
<td>B5</td>
<td>11-10192</td>
<td>Spring Cup for Brake Assembly</td>
<td>4</td>
</tr>
<tr>
<td>B6</td>
<td>11-10193</td>
<td>Brake Stud</td>
<td>4</td>
</tr>
<tr>
<td>B7</td>
<td>18-10194</td>
<td>Spring, Compression x .875&quot; Long</td>
<td>4</td>
</tr>
<tr>
<td>B8</td>
<td>19-48001</td>
<td>Chain, #48 x 1 Pitch</td>
<td>1</td>
</tr>
<tr>
<td>B9</td>
<td>22-120</td>
<td>Brake Solenoid, 115V</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>22-240</td>
<td>Brake Solenoid, 230-460V</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>22-575</td>
<td>Brake Solenoid, 575V</td>
<td>1</td>
</tr>
<tr>
<td>B10</td>
<td>31-10186</td>
<td>Spacer, 20 I.D. x .31 Long</td>
<td>2</td>
</tr>
<tr>
<td>B11</td>
<td>75-10180</td>
<td>Brake Mounting Plate Assembly</td>
<td>1</td>
</tr>
<tr>
<td>B12</td>
<td>75-10184</td>
<td>Brake Pressure Plate Assembly</td>
<td>1</td>
</tr>
<tr>
<td>B13</td>
<td>80-9001</td>
<td>Feather Key</td>
<td>1</td>
</tr>
<tr>
<td>B14</td>
<td>82-WX10-08T</td>
<td>Screw, #10-32 x 1/2&quot; Serrated Flange</td>
<td>8</td>
</tr>
<tr>
<td>B15</td>
<td>86-CP04-112</td>
<td>Cotter Pin, 1/8&quot; x 1-3/4&quot; Zinc Plate</td>
<td>2</td>
</tr>
<tr>
<td>B16</td>
<td>87-P-062</td>
<td>Push on Fastener, 5/8&quot; Int. Star</td>
<td>1</td>
</tr>
</tbody>
</table>

### Clutch Shaft Assembly Kits

**K72-12507 (1/3 & 1/2 HP) or K72-12506 (3/4 & 1 HP)**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>PART #</th>
<th>Description</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>10-10166</td>
<td>Clutch Plate</td>
<td>1</td>
</tr>
<tr>
<td>C2</td>
<td>11-10014</td>
<td>Clutch Shaft</td>
<td>1</td>
</tr>
<tr>
<td>C3</td>
<td>12-10029</td>
<td>Bearing 3/4&quot; I.D.</td>
<td>2</td>
</tr>
<tr>
<td>C4</td>
<td>15-41B10G1</td>
<td>Sprocket, 48B10 x 3/4&quot;</td>
<td>1</td>
</tr>
<tr>
<td>C5</td>
<td>16-5L300</td>
<td>Cogged Belt</td>
<td>1</td>
</tr>
<tr>
<td>C6</td>
<td>17-10165</td>
<td>4L Motor Pulley 7&quot; O.D.</td>
<td>1</td>
</tr>
<tr>
<td>C7</td>
<td>18-10164</td>
<td>Spring, Clutch (1/3 &amp; 1/2 HP)</td>
<td>1</td>
</tr>
<tr>
<td>C8</td>
<td>39-10167</td>
<td>Clutch Disc</td>
<td>1</td>
</tr>
<tr>
<td>C9</td>
<td>80-10022</td>
<td>Shim Washer Thick</td>
<td>2</td>
</tr>
<tr>
<td>C10</td>
<td>80-10023</td>
<td>Shim Washer Thin</td>
<td>3</td>
</tr>
<tr>
<td>C11</td>
<td>84-SH-76</td>
<td>Nut 3/4-16 Castle</td>
<td>1</td>
</tr>
<tr>
<td>C12</td>
<td>85-FW-75</td>
<td>Flatwasher 3/4&quot; I.D.</td>
<td>5</td>
</tr>
<tr>
<td>C13</td>
<td>86-CP05-108</td>
<td>Cotterpin 1/8&quot; x 1-3/4&quot; Long</td>
<td>1</td>
</tr>
<tr>
<td>C14</td>
<td>86-RP08-102</td>
<td>Roll Pin 1/4&quot; x 1-1/8&quot; Long</td>
<td>1</td>
</tr>
<tr>
<td>C15</td>
<td>86-RP08-200</td>
<td>Roll Pin 1/4&quot; x 2&quot; Long</td>
<td>1</td>
</tr>
<tr>
<td>C16</td>
<td>87-P-075</td>
<td>Turac 3/4&quot; Push on Fastener</td>
<td>1</td>
</tr>
</tbody>
</table>

### Output Shaft Assembly Kit

**K72-12509 (1/3 & 1/2 HP) or K72-12506 (3/4 & 1 HP)**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>PART #</th>
<th>Description</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>O1</td>
<td>11-10015</td>
<td>Output Shaft</td>
<td>1</td>
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<tr>
<td>O2</td>
<td>12-10331</td>
<td>Bearing, Flange</td>
<td>2</td>
</tr>
<tr>
<td>O3</td>
<td>15-41B10G1</td>
<td>Sprocket, 41B10 x 3/4&quot; Bore, PM</td>
<td>1</td>
</tr>
<tr>
<td>O4</td>
<td>15-41B10GXX</td>
<td>Sprocket, 48B10 x 3/4&quot; Bore, Steel</td>
<td>1</td>
</tr>
<tr>
<td>O5</td>
<td>15-41B32GXX</td>
<td>Sprocket, 41B32 x 3/4&quot; Bore</td>
<td>1</td>
</tr>
<tr>
<td>O6</td>
<td>19-41047M</td>
<td>Drive Chain, #41 x 47 Pitches</td>
<td>1</td>
</tr>
<tr>
<td>O7</td>
<td>19-48033</td>
<td>Limit Chain, #48 x 33 Pitches</td>
<td>1</td>
</tr>
<tr>
<td>O8</td>
<td>80-10023</td>
<td>Shim Washer, Thim</td>
<td>2</td>
</tr>
<tr>
<td>O9</td>
<td>86-RP08-102</td>
<td>Roll Pin 1/4&quot; x 1-1/8&quot; Long</td>
<td>2</td>
</tr>
<tr>
<td>O10</td>
<td>86-RP08-200</td>
<td>Roll Pin 1/4&quot; x 2&quot; Long</td>
<td>1</td>
</tr>
<tr>
<td>O11</td>
<td>87-P-075</td>
<td>Turac 3/4&quot; Push on Fastener</td>
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</table>

### Hardware Kit

**K77-10201**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>PART #</th>
<th>Description</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>10-10203</td>
<td>Curved Arm</td>
<td>1</td>
</tr>
<tr>
<td>H2</td>
<td>10-10204</td>
<td>Door Bracket</td>
<td>1</td>
</tr>
<tr>
<td>H3</td>
<td>10-10205</td>
<td>Header Bracket</td>
<td>1</td>
</tr>
<tr>
<td>H4</td>
<td>11-10130</td>
<td>Header Pivot Pin</td>
<td>1</td>
</tr>
<tr>
<td>H5</td>
<td>75-10170</td>
<td>Slider Assembly</td>
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</tr>
<tr>
<td>H6</td>
<td>75-10174</td>
<td>Front Idler Assembly</td>
<td>1</td>
</tr>
<tr>
<td>H7</td>
<td>75-10214</td>
<td>Straight Arm Assembly</td>
<td>1</td>
</tr>
<tr>
<td>H8</td>
<td>75-10259</td>
<td>Track Spacer Assembly</td>
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**K75-12870**

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<tbody>
<tr>
<td>H1</td>
<td>10-10203</td>
<td>Curved Arm</td>
<td>1</td>
</tr>
<tr>
<td>H7</td>
<td>75-10214</td>
<td>Straight Arm Assembly</td>
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</table>

### Door Track and Drive Chain Kits

<table>
<thead>
<tr>
<th>DOOR HEIGHT</th>
<th>DOOR TRACK PART #</th>
<th>DESCRIPTION</th>
<th>#48 CHAIN (1/3 &amp; 1/2 HP)</th>
<th>#41 CHAIN (3/4 &amp; 1 HP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doors to 8'</td>
<td>10-5808</td>
<td>Track, 11' Length</td>
<td>19-5810</td>
<td>19-5112</td>
</tr>
<tr>
<td>Doors to 10'</td>
<td>10-5810</td>
<td>Track, 13' Length</td>
<td>19-5810</td>
<td>19-5112</td>
</tr>
<tr>
<td>Doors to 12'</td>
<td>10-5812</td>
<td>Track, 15' Length</td>
<td>19-5810</td>
<td>19-5112</td>
</tr>
<tr>
<td>Doors to 14'</td>
<td>10-5814</td>
<td>Track, 17' Length</td>
<td>19-5814</td>
<td>19-5114</td>
</tr>
<tr>
<td>Doors to 16'</td>
<td>10-5816</td>
<td>Track, 19' Length</td>
<td>19-5816</td>
<td>19-5116</td>
</tr>
<tr>
<td>Doors to 18'</td>
<td>10-5818</td>
<td>Track, 21' Length</td>
<td>19-5818</td>
<td>19-5118</td>
</tr>
<tr>
<td>Doors to 20'</td>
<td>10-5820</td>
<td>Track, 23' Length</td>
<td>19-5820</td>
<td>19-5120</td>
</tr>
<tr>
<td>Doors to 22'</td>
<td>10-5824</td>
<td>Track, 25' Length</td>
<td>19-5824</td>
<td>19-5124</td>
</tr>
<tr>
<td>Doors to 24'</td>
<td>10-5824</td>
<td>Track, 27' Length</td>
<td>19-5824</td>
<td>19-5124</td>
</tr>
</tbody>
</table>
**IMPORTANT NOTES:**
1) The 3-Button Control Station provided must be connected for operation.
2) If a STOP button is not used, a jumper must be placed between terminals 3 and 4.
3) Auxiliary control equipment may be any normally open two wire device such as pullswitch, single button, loop detector, card key or such device.

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

### 3 BUTTON STATION or 3 POSITION KEYSWITCH w/ SPRING RETURN TO CENTER AND STOP BUTTON

<table>
<thead>
<tr>
<th>Standard</th>
<th>2 or More</th>
<th>Key Lockout</th>
</tr>
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<tbody>
<tr>
<td><img src="image1" alt="Diagram" /></td>
<td><img src="image2" alt="Diagram" /></td>
<td><img src="image3" alt="Diagram" /></td>
</tr>
</tbody>
</table>

All Control Wiring Types

### 2 BUTTON STATION or 3 POSITION KEYSWITCH w/ SPRING RETURN TO CENTER

<table>
<thead>
<tr>
<th>Standard</th>
<th>2 or More</th>
<th>Any Auxiliary Device</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image4" alt="Diagram" /></td>
<td><img src="image5" alt="Diagram" /></td>
<td><img src="image6" alt="Diagram" /></td>
</tr>
</tbody>
</table>

All Control Wiring Types

### Sensing Device to Reverse or Stop

| ![Diagram](image7) |

All Control Wiring Types

### Residential Radio Controls

- OPEN TIMER TO CLOSE

### Timer to Close w/ Warning Light

| ![Diagram](image8) |

T1 Control Wiring Only

### External Interlock

| ![Diagram](image9) |

All Control Wiring Types

---

**ATTENTION ELECTRICIAN:**

USE 16 GAUGE OR HEAVIER WIRE FOR ALL CONTROL CIRCUIT WIRING.