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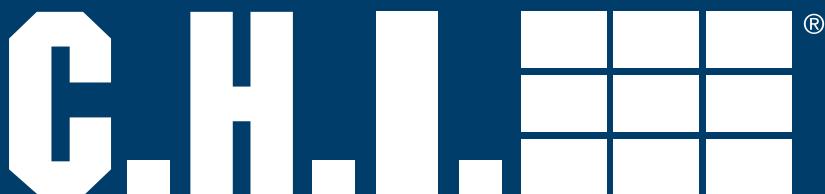
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08-1000 Doors O&M

INSTALLATION INSTRUCTIONS

Commercial Sectional Doors



a **NUCOR**[®] company

C.H.I. COMMERCIAL OVERHEAD DOOR INSTALLATION INSTRUCTIONS

These instructions will show you how to install a C.H.I. Commercial door. They are for the mechanically experienced person who has proper tools to perform the job. They are not meant to infringe upon or supersede any State or County building codes or safety regulations.

Included in this booklet are instructions for installing Standard Lift, High Lift, Vertical Lift and Low Headroom doors mounted on Wood or Steel Jambs.

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Before You Begin...

Read and be sure that you completely understand all of the steps and warnings as outlined prior to beginning installation!

Safety First. Safety warnings are clearly marked with a **Warning!** symbol. Observe all guidelines and warnings given in the instructions during installation and then review and post Maintenance and Warnings at back of booklet near the door for future reference.

If you plan to use an existing door opener, check it for current safety features. This is the time to update your operator to assure yourself of the safest door system possible.

Warning! If you are removing an existing door, only an experienced person should release the spring tension. The spring is the most dangerous part of your door. It is charged with force at all times and this force must be properly and safely released before removing any part of your existing door. Serious injury or death may result if you attempt to loosen or remove any part of the spring system whether it is attached to the door or to the wall before releasing all of this spring force.

Warning! Wear protective gloves and eye wear when working on your door.

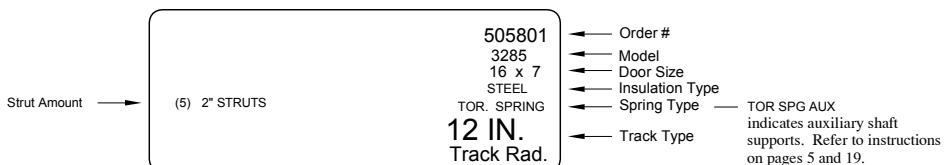
Warning! Strong winds or gusts can cause a partially installed door to fall.

Opening Preparation

Check opening size and door size.

Door size and type are marked on the hardware carton label and spring tag. Check this information and compare it with the actual opening size. Also check side room, headroom and back depth dimensions.

SAMPLE HARDWARE CARTON LABEL

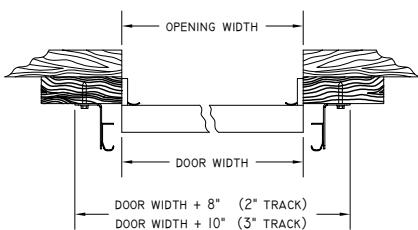


OPENING REQUIREMENTS

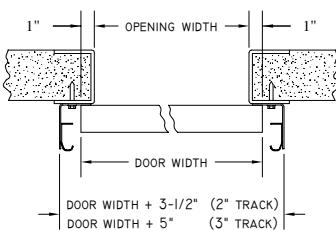
TRACK MOUNTING	OPENING WIDTH	OPENING HEIGHT
BRACKET MOUNT	SAME AS DOOR WIDTH	SAME AS DOOR HEIGHT
ANGLE MOUNT	SAME AS DOOR WIDTH	SAME AS DOOR HEIGHT
REVERSE ANGLE	DOOR WIDTH MINUS 2"	SAME AS DOOR HEIGHT

SIDE ROOM REQUIREMENTS

(FOR LOW HEADROOM SEE PAGE 25)



BRACKET MOUNTED TRACK
ANGLE MOUNTED TRACK: LEG OUT
(WOOD JAMBS SHOWN)



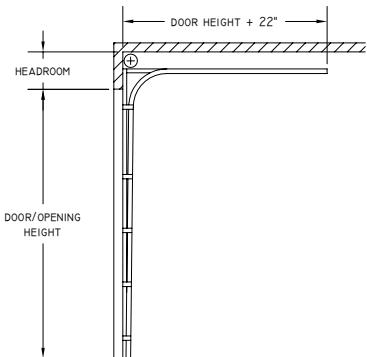
REVERSE ANGLE TRACK: LEG IN
(STEEL JAMBS SHOWN)

WHENEVER POSSIBLE ALLOW MORE SIDE ROOM FOR EASE OF INSTALLATION.

HEADROOM AND BACK DEPTH REQUIREMENTS FOR STANDARD LIFT DOORS

(for low headroom see page 25)

drum	spring id	12" radius		15" radius	
		shaft center	headroom	shaft center	headroom
4-8	1-3/4" 2-5/8" 3-3/4"	9-1/2" 9-1/2" 11"	12" 12" 14"	12-1/2" 12-1/2" 12-1/2"	15" 15" 15"
4-12	1-3/4" 2-5/8" 3-3/4"	9-1/2" 9-1/2" 11"	12" 12" 14"	12-1/2" 12-1/2" 12-1/2"	15" 15" 15"
5-18	1-3/4" 2-5/8" 3-3/4" 6"	11-1/2" 11-1/2" 11-1/2" 13-1/2"	15" 15" 15" 17"	12-1/2" 12-1/2" 12-1/2" 14-1/2"	16" 16" 16" 18"
8-32	all	n/a	n/a	16-1/2"	21"

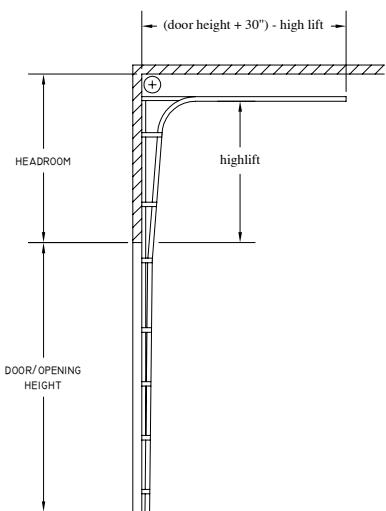


MINIMUM VALUES SHOWN. WHENEVER POSSIBLE ALLOW MORE HEADROOM FOR EASE OF INSTALLATION.
ADD 2-1/2" TO HEADROOM IF YOU ARE USING A DOOR OPENER.

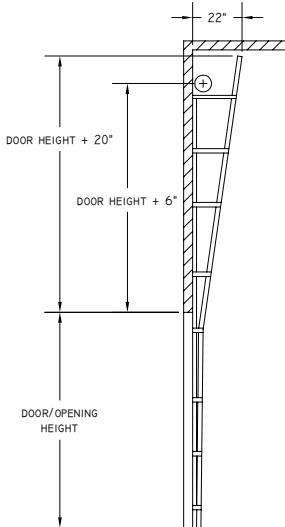
HEADROOM AND BACK DEPTH REQUIREMENTS FOR HIGH LIFT DOORS

drum	shaft center	headroom
hl-54	hl + 6"	hl + 10"
hl-120	hl + 8"	hl + 13"
hl-164	hl + 10"	hl + 16"

add 1" to shaft center and headroom for 3" track.

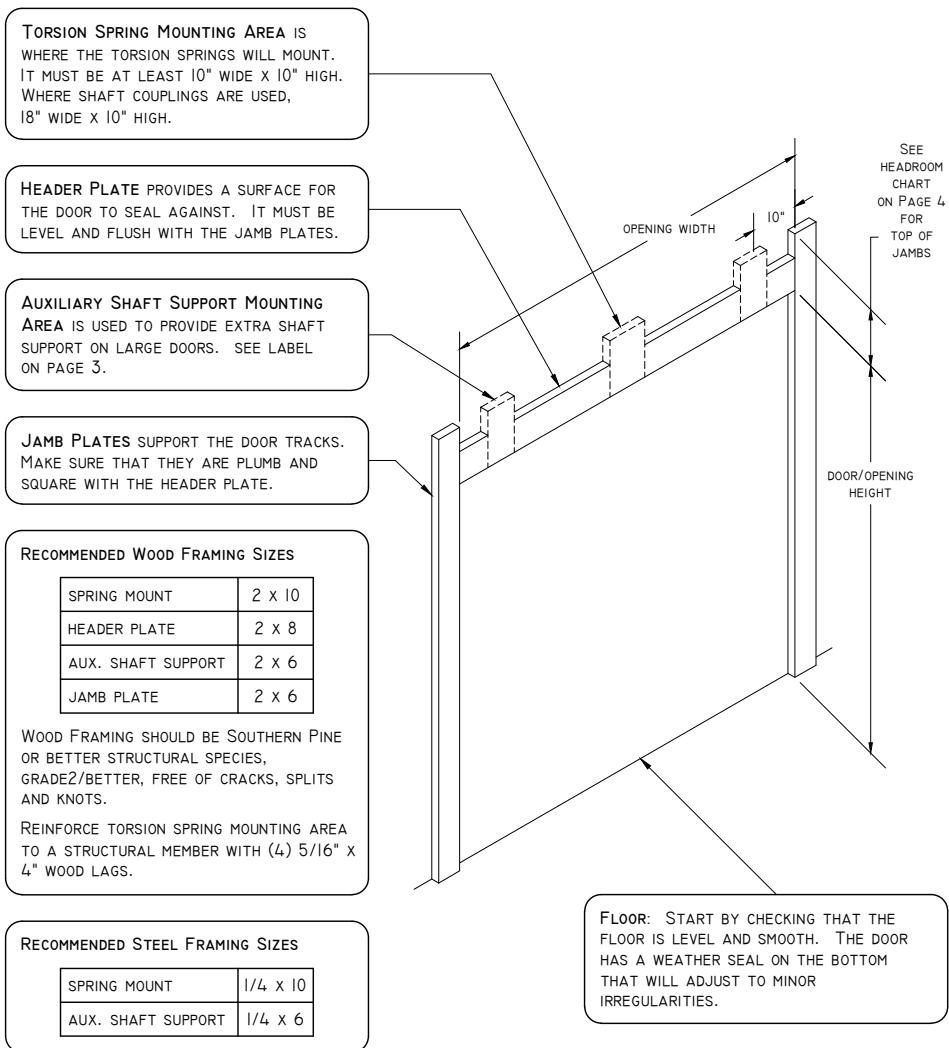


HEADROOM AND BACK DEPTH REQUIREMENTS FOR VERTICAL LIFT DOORS



After you have checked that the door will fit, prepare the opening.

It is very important that the opening is correctly prepared before installing tracks and springs. All mounting surfaces must be structural components and not covered with drywall, paneling or any other building material. The materials listed here are not supplied with the door.



✓ Warning! Attachment of the jamb plates, header plate and torsion spring mounting area to building framework must provide adequate support to sustain the weight of the door, track and spring assemblies as well as resistance to wind load forces and vibration caused by door operation. Load information may be obtained by contacting C.H.I. Overhead Doors, LLC.

Sections and Hardware

Attach hardware to bottom section.

The bottom section has weather seal attached to it. Set it on saw horses face down (the face is the outside of the door). Apply hardware as shown below. Refer to tag on the hardware carton to see if this door will have struts. If so, review pages 8 and 9.

STEP 1

SECTIONS ARE ATTACHED TO EACH OTHER WITH HINGES. FASTEN HINGES MARKED #1 TO TOP OF BOTTOM SECTION AT EACH STILE USING (2) 1/4" SHEET METAL SCREWS PER HINGE. MAKE SURE THAT THE TWO SLOTS ARE AT TOP OF HINGE. THIS ALLOWS FOR ADJUSTMENT WHEN STACKING SECTIONS. ATTACH EACH BOTTOM FIXTURE WITH (4) RED 1/4" SHEET METAL SCREWS.

STEP 2

INSTALL INSIDE STEP PLATE ON AN INTERMEDIATE STILE USING 1/4" SHEET METAL SCREWS.

STEP 3

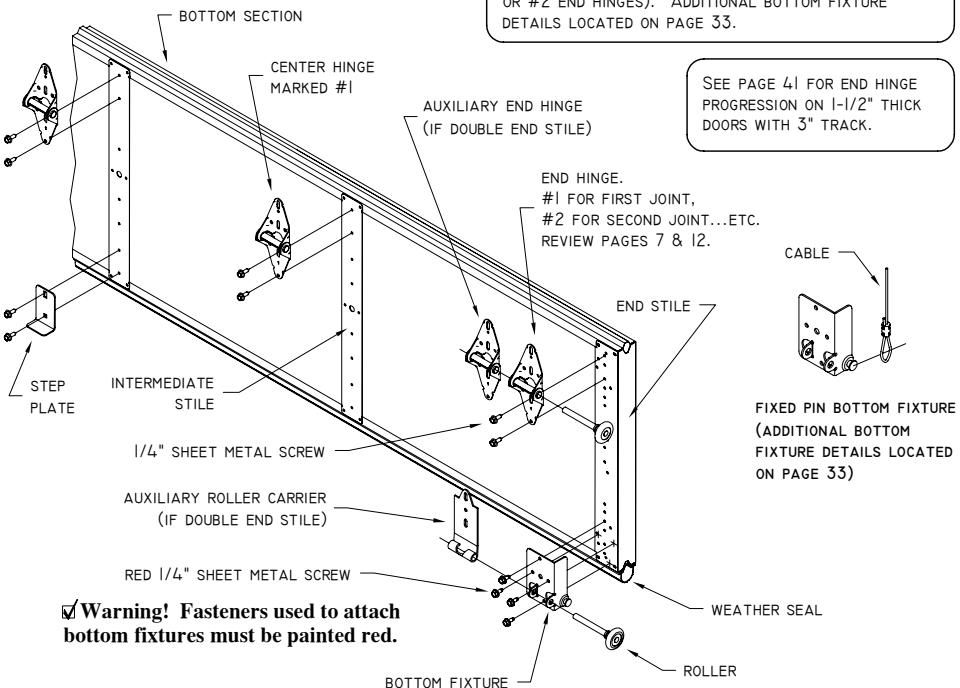
THE DOOR IS HELD IN THE TRACK WITH ROLLERS. INSERT ROLLERS INTO BOTTOM FIXTURES AND END HINGES.

STEP 4

THE DOOR IS RAISED AND LOWERED BY LIFT CABLES. ATTACH CABLES TO BOTTOM FIXTURES (ONE MOUNTED ON EACH SIDE OF THE BOTTOM SECTION). ADDITIONAL BOTTOM FIXTURE DETAILS LOCATED ON PAGE 33.

SPECIAL NOTE FOR 3" TRACK

THE END HINGES ON 3" TRACK START WITH THE #3 HINGES ON THE BOTTOM SECTION (THERE WILL NOT BE #1 OR #2 END HINGES). ADDITIONAL BOTTOM FIXTURE DETAILS LOCATED ON PAGE 33.



For low headroom doors see differences in bottom fixture design on page 26.

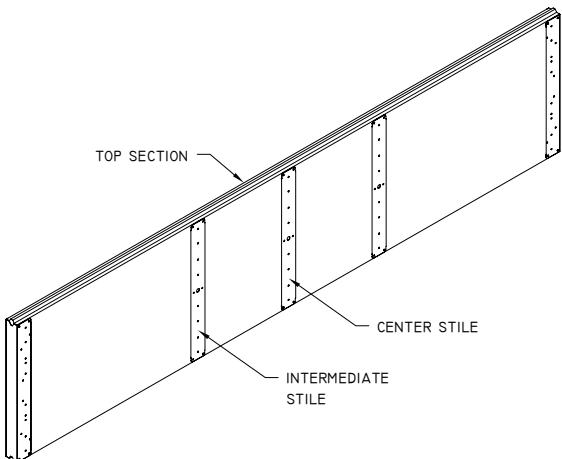
Selecting a top section.

Use a 24" high section when available.

If the door will be electrically operated, the operator must attach to a structural part of the section. Use the center stile for this purpose. When there is an odd number of panels a center stile is factory attached to the top section.

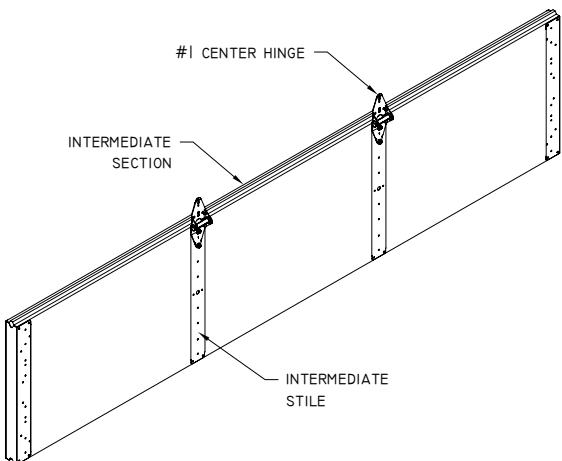
Sandwich type doors with an odd number of panels will not have a center stile; an operator mounting plate must be used. This mounting plate is not supplied with the door. Contact your C.H.I. door supplier.

If a strut is required on this section, install it now (see pages 8 and 9).



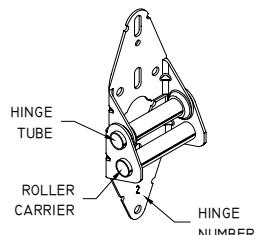
Prepare remaining sections for stacking.

Apply #1 center hinges to intermediate stiles. If a strut is required, install it now (see pages 8 and 9).



End Hinge progression.

To allow door to 'breakaway' from jambs, the vertical tracks are angled out from the wall. Review page 12 for end hinge placement. End hinges are designed to match the angle of the track. As hinge numbers increase so will the distance from hinge tube to roller carrier.



Struts. (refer to page 9 for model 329X)

Struts provide reinforcement of larger commercial doors. Not all doors will have struts. However, the top section of a trolley operated door must include one. Struts are fastened at the same time as hinges.

Warning! **Installing a trolley operator without a top section reinforcing strut will void warranty.**

One strut per door: use on top section.

Locate edge of strut approximately 1" down from section shoulder. Use 1/4" self drilling screws to attach strut to stiles. Top fixtures will be attached after horizontal tracks are in place.

Two struts.

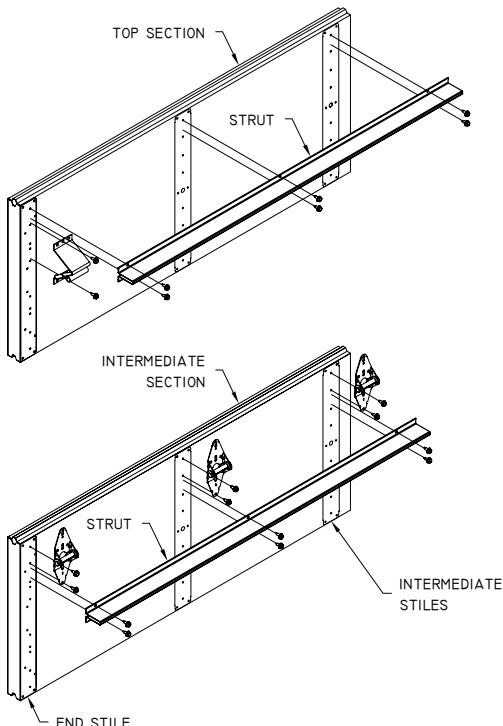
Install one strut on top section. Install the second strut on an intermediate section approximately half way up door.

Three struts.

Install one strut on top section. Install the second strut on an intermediate section approximately half way up door. Install third strut on hinge line at top of bottom section.

More than three struts.

Install one strut on the top and bottom sections. Space remaining struts as evenly as possible.

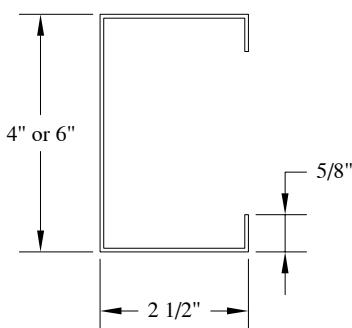
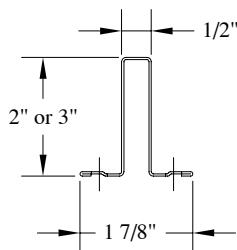


* Stiles not visible on sandwich door sections.

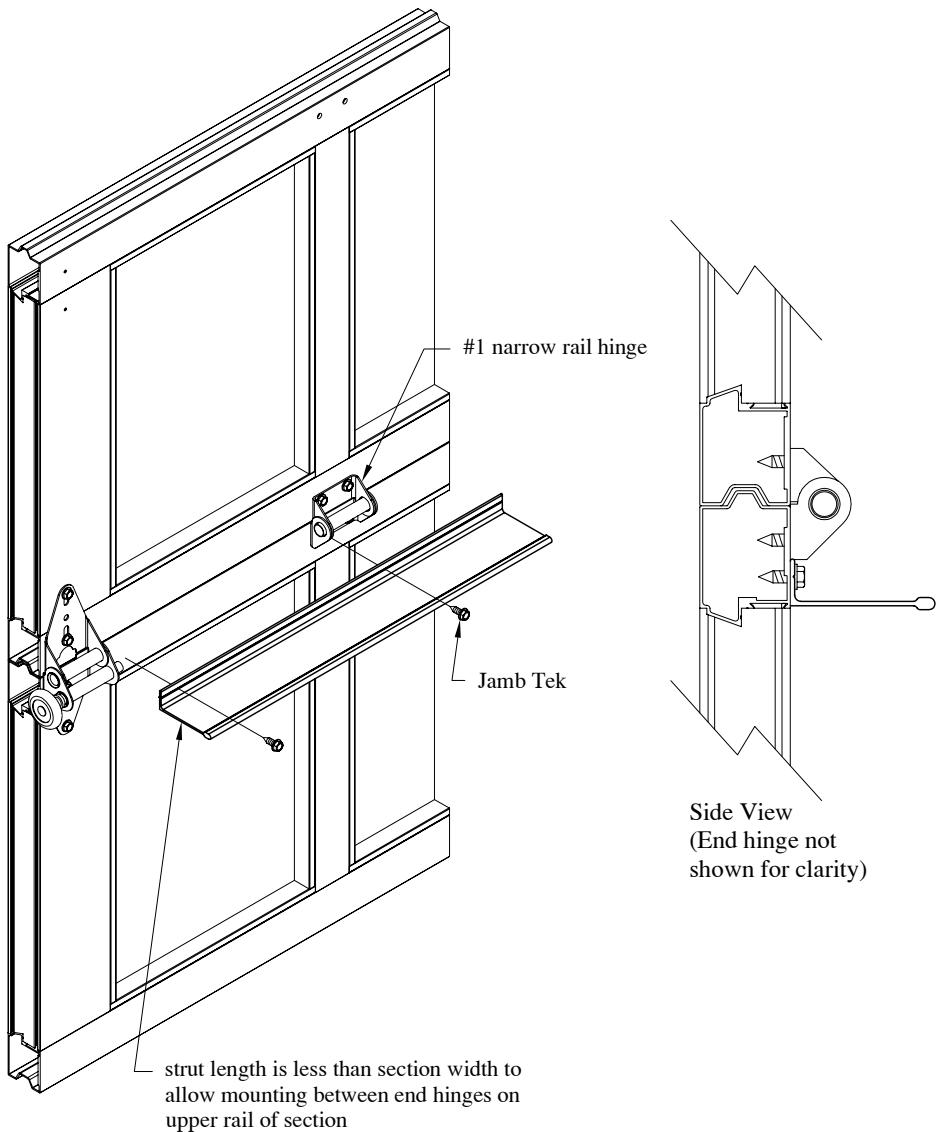
Stile location and strut attachment is the same as shown.

4" Cee-Strut

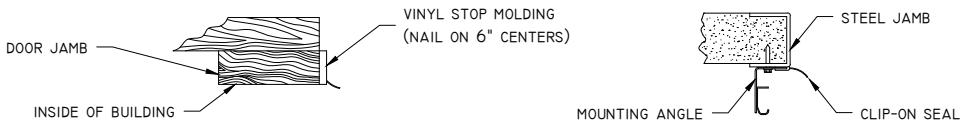
2" Narrow Strut



Model 329X Full View aluminum extruded strut



If you have stop molding or clip-on seal, attach it to the jambs or track as shown.



Place bottom section in the opening and mark reference lines for tracks.

STEP 5

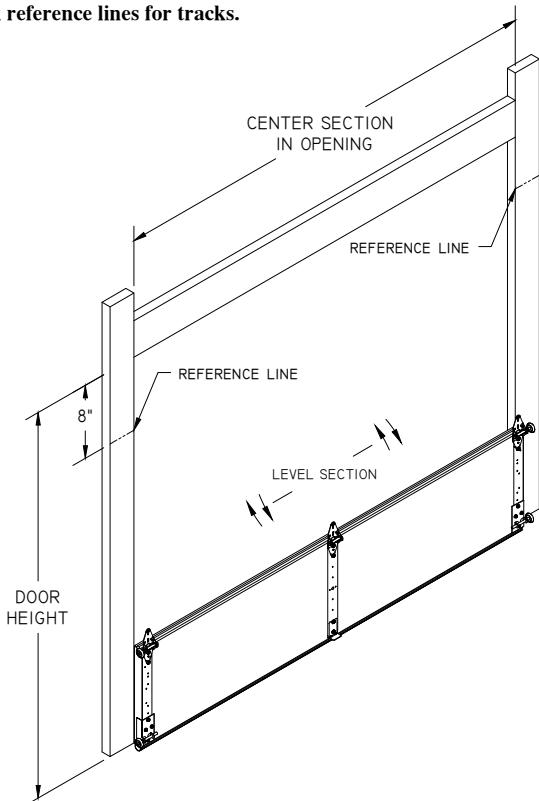
CENTER AND LEVEL BOTTOM SECTION IN OPENING. IF THERE IS A GAP ON ONE END AT THE FLOOR THEN THE TRACK WILL NOT REST ON THE FLOOR BY THE SAME AMOUNT. CHECK THIS WHEN VERTICAL TRACKS ARE IN PLACE.

STEP 6

AFTER SECTION IS LEVELED, MEASURE UP FROM BOTTOM RAIL (DO NOT MEASURE FROM THE VINYL WEATHER SEAL) SAME DISTANCE AS DOOR HEIGHT AND MARK A LINE ON THE JAMB.

STEP 7

MEASURE DOWN FROM THE REFERENCE LINE 8" (14" FOR LOW HEAD ROOM) AND MARK A LEVEL REFERENCE LINE ACROSS BOTH JAMBS. THIS IS WHERE THE LOWER VERTICAL AND UPPER HORIZONTAL TRACKS WILL MEET.



Track Installation

Prepare the field bolted vertical tracks.

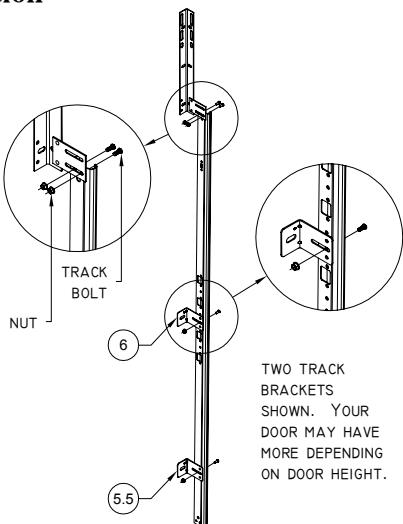
STEP 1

THE TOP OF THE VERTICAL TRACK MUST PITCH BACK FROM THE JAMB FOR THE DOOR TO SEAL PROPERLY. THIS SPACING IS SET BY USE OF GRADUATED TRACK BRACKETS. ATTACH BUT DO NOT FULLY TIGHTEN BRACKETS TO TRACK WITH 1/4" X 5/8" TRACK BOLTS AND NUTS.

Always place heads of bolts to inside of the track. This will prevent rollers from striking bolts.

STEP 2

THE FLAG ANGLE MOUNTS TO THE TOP OF THE TRACK WITH (2) 1/4" X 5/8" TRACK BOLTS AND NUTS. THIS BRACKET JOINS THE VERTICAL AND HORIZONTAL TRACKS AS WELL AS THE ANGLE ATTACHED TO THE HORIZONTAL TRACK. LEAVE BOLTS LOOSE AT THIS TIME. YOU WILL ADJUST THE TRACK AFTER IT IS INSTALLED TO THE JAMBS.



Install vertical tracks.

Bring cables up behind roller shafts. This will save you from having to thread them after the track is installed. Wood jambs shown. Use 1/4" jamb teks for steel jambs.

STEP 1

SLIP LEFT HAND VERTICAL TRACK OVER ROLLERS WITH A TWISTING MOTION.

STEP 2

POSITION TOP OF VERTICAL TRACK EVEN WITH THE REFERENCE LINE THAT YOU MARKED ON THE JAMBS. TEMPORARILY FASTEN TRACK TO JAMB TO KEEP IT AT CORRECT HEIGHT. YOU WILL NEED TO BE ABLE TO PLUMB THE TRACK ONCE THE SPACING AT THE BOTTOM IS SET.

STEP 3

SPACE BOTTOM OF TRACK LEAVING 1/2" TO 3/4" OPENING BETWEEN TRACK AND BOTTOM SECTION. FASTEN BOTTOM TRACK BRACKET TO JAMB WITH 5/16" X 1-5/8" WOOD LAG (ALWAYS DRILL 3/16" PILOT HOLES FOR WOOD LAGS).

STEP 4

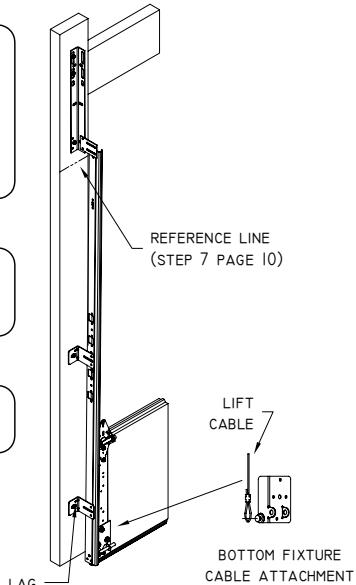
NOW LOOSEN TOP OF TRACK AND PLUMB IT WITH THE BOTTOM. CHECK TO MAKE SURE THAT THE SPACING AT THE BOTTOM DID NOT CHANGE. ATTACH FLAG ANGLE TO THE JAMB WITH (3) 5/16" X 1-5/8" WOOD LAGS.

STEP 5

CONTINUE TO FASTEN TRACK ASSEMBLY TO JAMB WITH WOOD LAGS.

STEP 6

INSTALL RIGHT HAND TRACK SAME WAY AS LEFT HAND TRACK.



Stack the sections in the opening.

STEP 1

STACK AN INTERMEDIATE SECTION ON TOP OF THE BOTTOM (#1) SECTION. THIS IS SHOWN AS THE #2 SECTION.

STEP 6

CONTINUE TO STACK SECTIONS IN OPENING UNTIL YOU COME TO THE TOP SECTION. SECURE TOP SECTION IN OPENING WITH LOCKING PLIERS CLAMPED TO THE TRACK. FLIP UP HINGES FROM SECTION BELOW AND ATTACH THEM TO THE TOP SECTION.

STEP 2

BRING UP LIFT CABLES SO THEY ARE BETWEEN EDGE OF DOOR AND TRACK.

STEP 3

SLIP ROLLER STEM INTO #2 END HINGE USING HINGE TUBE THAT WILL BE FARDEST FROM DOOR (SEE DETAIL BELOW). INSERT ROLLER INTO TRACK. ATTACH END HINGE (MAKE SURE THE TWO SLOTS ARE AT THE TOP OF THE HINGE) TO TOP OF #2 SECTION WITH 1/4" SHEET METAL SCREWS. REPEAT AT OTHER END OF SECTION.

STEP 4

WITH #2 SECTION HELD IN PLACE BY ROLLERS AND END HINGES, FLIP UP HINGES FROM BOTTOM SECTION AND ATTACH THEM TO THE #2 SECTION WITH 1/4" SHEET METAL SCREWS.

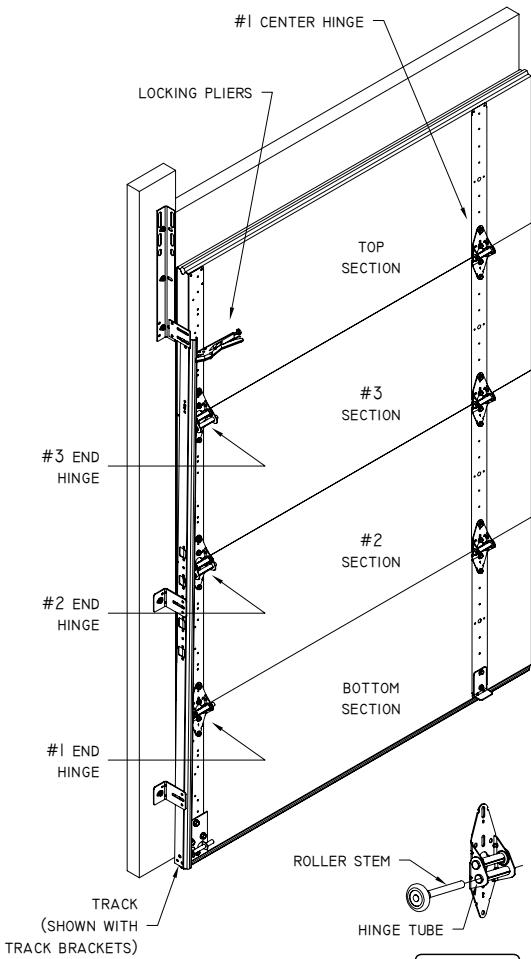
STEP 5

FOR EACH SECTION ADDED YOU WILL USE DIFFERENT END HINGES. THE #3 SECTION WILL USE #3 END HINGES, THE #4 SECTION WILL USE #4 HINGES AND SO ON.

*SPECIAL NOTE FOR 3" TRACK

THE END HINGES ON 3" TRACK START WITH #3 END HINGES ON THE BOTTOM SECTION (THERE WILL NOT BE #1 OR #2 END HINGES). THE #2 SECTION WILL HAVE #4 END HINGES, THE #3 SECTION WILL HAVE #5 END HINGES AND SO ON.

SEE PAGE 41 FOR END HINGE PROGRESSION ON 1-1/2" THICK DOORS WITH 3" TRACK.



STEP 3

Identify the type of upper track to be used.

The first step is to look at what type of upper track attaches to your vertical tracks. Review the illustrations on page 4 to see what installation instructions you need to follow.

Standard Lift: shown below

High Lift: page 14

Vertical Lift: page 15

Low Headroom: page 26

Standard lift track installation.

Standard lift doors will have a pair of horizontal curve tracks that will mount to the vertical track assembly.

STEP 1

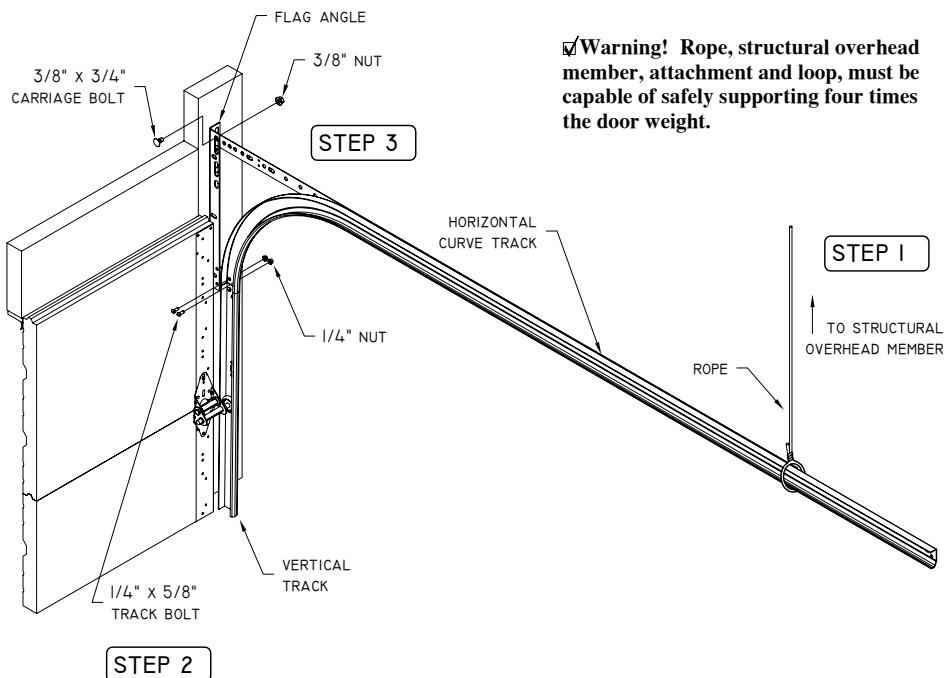
USE ROPE AS A TEMPORARY SUPPORT FOR THE BACK OF THE HORIZONTAL CURVE TRACK. ALIGN ROPE WITH VERTICAL TRACK. ATTACH IT TO A STRUCTURAL OVERHEAD MEMBER.

STEP 2

FASTEN HORIZONTAL CURVE TRACK TO FLAG ANGLE WITH (2) $1/4" \times 5/8"$ TRACK BOLTS AND NUTS. ALWAYS PLACE HEADS OF BOLTS TO INSIDE OF THE TRACK. THIS WILL PREVENT ROLLERS FROM STRIKING BOLTS.

STEP 3

FASTEN ANGLE (ATTACHED TO HORIZONTAL CURVE TRACK) TO FLAG ANGLE WITH $3/8" \times 3/4"$ CARRIAGE BOLT AND NUT. ALWAYS PLACE HEADS OF BOLTS ON SAME SIDE AS THE DOOR SECTIONS. THIS WILL PREVENT DOOR FROM STRIKING BOLTS.



High lift track installation.

High lift doors with 24" or more of lift have an additional straight piece of track (see detail below). High lift doors with less than 24" of lift have an extended vertical track and will install the same as standard lift track. Review page 13.

Warning! Rope, structural overhead member, attachment and loop, must be capable of safely supporting four times the door weight.

STEP 1

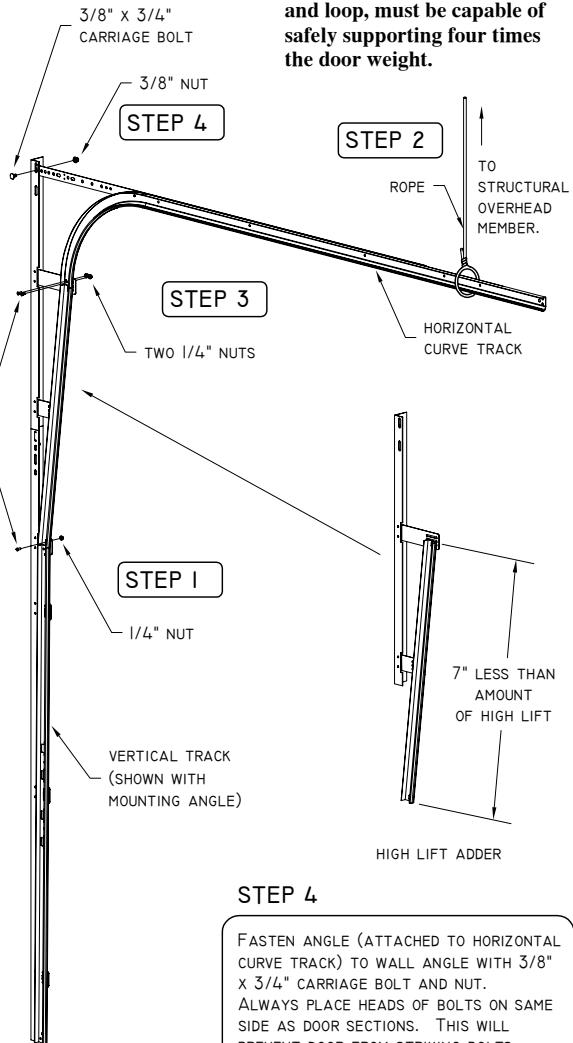
FASTEN BOTTOM OF ADDER TO FLAG BRACKET OR MOUNTING ANGLE WITH (1) 1/4" x 5/8" TRACK BOLT AND NUT. PLACE BOLT HEAD ON SAME SIDE AS DOOR. THIS WILL PREVENT ROLLERS FROM STRIKING AGAINST THE BOLT. ATTACH ADDER TO WALL WITH 5/16" x 1-5/8" WOOD LAGS OR METAL SCREWS (ALWAYS DRILL 3/16" PILOT HOLES FOR WOOD LAGS).

STEP 2

USE ROPE AS A TEMPORARY SUPPORT FOR BACK OF HORIZONTAL CURVE TRACK. ALIGN ROPE WITH VERTICAL TRACK. ATTACH IT TO A STRUCTURAL OVERHEAD MEMBER.

STEP 3

FASTEN HORIZONTAL CURVE TRACK WITH (2) 1/4" x 5/8" TRACK BOLTS AND NUTS. ALWAYS PLACE HEADS OF BOLTS TO INSIDE OF TRACK. THIS WILL PREVENT ROLLERS FROM STRIKING BOLTS.



Vertical lift track installation.

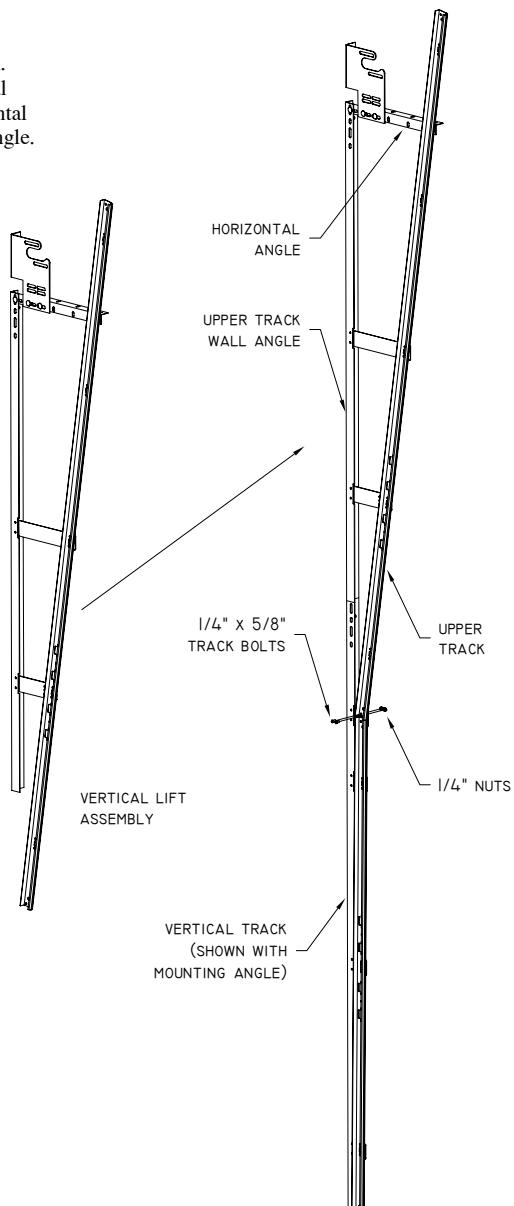
Vertical lift doors do not have a horizontal track. The upper track is straight, similar to the vertical track, and is mounted to a wall angle. A horizontal angle connects the track to the top of the wall angle.

STEP 1

FASTEN UPPER TRACK TO FLAG BRACKET OR MOUNTING ANGLE WITH (2) $1/4" \times 5/8"$ TRACK BOLTS AND NUTS. ALWAYS PLACE HEADS OF BOLTS ON SAME SIDE AS DOOR. THIS WILL HELP PREVENT ROLLERS FROM STRIKING AGAINST THE BOLTS.

STEP 2

PLUMB UPPER TRACKS WITH VERTICAL TRACKS AND ATTACH TO WALL WITH $5/16" \times 1-5/8"$ WOOD LAGS OR METAL SCREWS (ALWAYS DRILL $3/16"$ PILOT HOLES FOR WOOD LAGS).



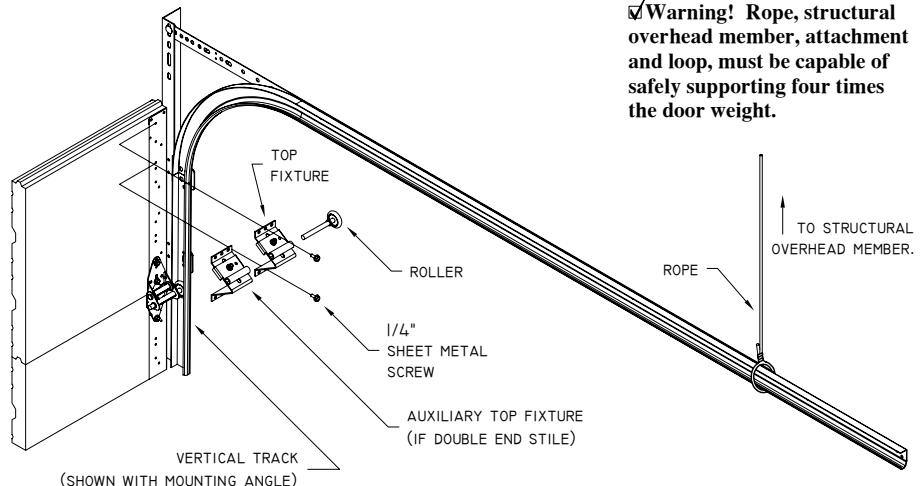
Attach top fixtures and rollers.

(for low headroom doors see page 27)

Finish applying door hardware by attaching top fixtures and rollers to the top section.

Review pages 8 and 9 if your door includes a top strut.

LOOSEN ADJUSTMENT BOLT IN TOP FIXTURE.
SLIP ROLLER STEM INTO ROLLER CARRIER.
INSERT A ROLLER INTO THE TRACK. POSITION
TOP FIXTURE ABOUT 1" FROM SECTION TOP.
HOLES IN FIXTURE WILL LINE UP WITH HOLES IN
END STILES. ATTACH TOP FIXTURE WITH
1/4" SHEET METAL SCREWS. ADJUST TOP
FIXTURE ROLLER CARRIER SO DOOR SEALS
FIRMLY AGAINST STOP MOLDING.



Warning! Rope, structural overhead member, attachment and loop, must be capable of safely supporting four times the door weight.

Attach the pull rope.

Warning! If this door is to be electrically operated, do not install the pull rope. The use of a pull rope on a non-manually operated door can cause serious injury.

For manually operated doors attach an eye screw to the jamb at about 50" from the floor. Tie one end of pull rope to roller stem on bottom fixture between the two tabs that hold the roller. Tie other end of the rope to eye screw.

Inspect the work which you have done for missing parts or loose fasteners.

Before moving on, check that all of the fasteners used in the track system are in place and tight. Also check that applied hardware is in place and securely fastened.

Torsion Spring Assembly Details

Spring systems will vary according to the door model, size and options. While you are assembling the spring line, take time to study the parts and identify them.

Torsion Springs: Torsion springs supply the force to raise the weight of the door. Torsion springs are under tension and rotate about a shaft as they operate. Initial tension is loaded into springs using spring winding bars (not supplied). Torsion springs come in different coil diameters, wire sizes and lengths. Each torsion spring has a retainer and a winding plug mounted on the ends. The retainer holds one end of the spring stationary and is mounted to a spring bracket. The winding plug at the other end of the spring is fastened to the shaft with set screws and transfers spring force to the spring shaft. See illustration on page 19.

Spring Shaft: The spring shaft transfers force from the springs to the cable drums. The shaft may come in one or two pieces. The one piece will span the entire door width while the two piece will be coupled together at the center.

Cable Drums: Cable drums transfer spring force to the door by use of lift cables. Cable drums will differ in design according to the upper track system and door weight.

Spring Bracket: Holds spring system to wall.

End Bearing Plates: End bearing plates support the spring shaft and allow it to rotate freely while door is moving.

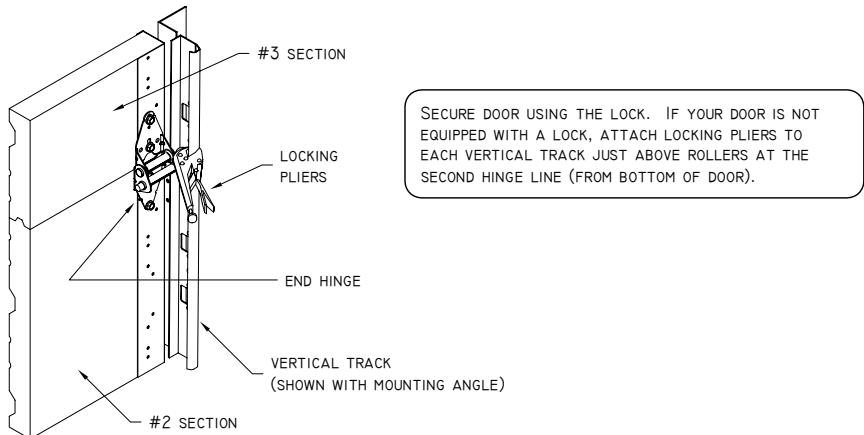
Check all spring assembly instructions and parts.

Warning! If there appears to be any parts missing stop here and contact your C.H.I. door supplier immediately. Do not substitute parts.

Warning! Do not remove any factory applied spring tag or warning label! If any tags or labels are missing or unreadable, contact your C.H.I. door supplier immediately.

Secure door in fully closed position.

Warning! Securing door in the fully closed position will prevent any unexpected door movement while you are working on the spring system. Failure to do so could result in serious injury or death.

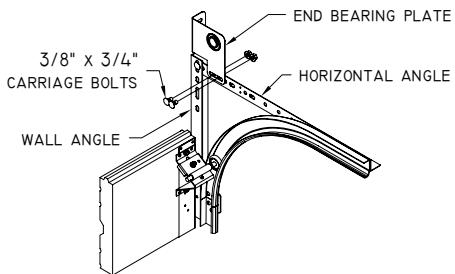


Install end bearing plates.

(for low headroom doors note different end bearing plates as shown on page 27)

(supplemental end bearing instructions are on page 30)

ATTACH END BEARING PLATES TO HORIZONTAL ANGLE USING (2) 3/8" x 3/4" CARRIAGE BOLTS AND NUTS. ALWAYS PLACE HEADS OF BOLTS ON SAME SIDE AS DOOR SECTIONS.



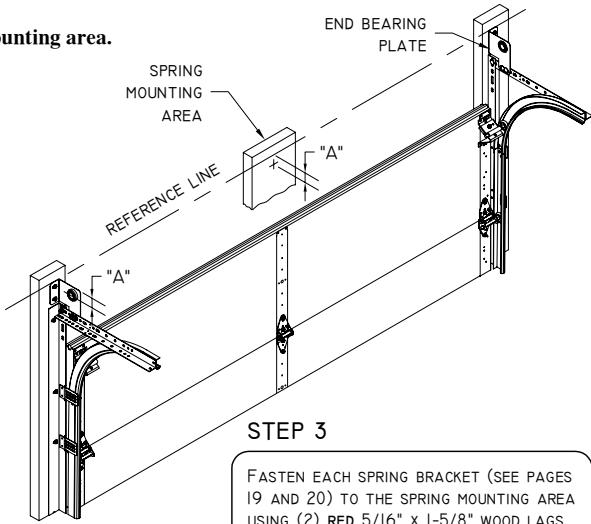
Attach spring supports to the spring mounting area.

STEP 1

SNAP A CHALK REFERENCE LINE ACROSS THE TOP OF THE END BEARING PLATES ONTO THE SPRING MOUNTING AREA.

STEP 2

USE THE ILLUSTRATIONS ON PAGES 5, 19 AND 20 TO HELP YOU DETERMINE WHERE THE SPRING BRACKETS WILL BE PLACED. MARK THESE LOCATIONS ON THE REFERENCE LINE (ALLOW 10" BETWEEN BRACKETS WHEN SHAFT COUPLINGS ARE USED). MEASURE FROM THE TOP OF ONE END BEARING PLATE TO THE CENTER OF THE BEARING ("A"). MARK THIS SAME DISTANCE "A" DOWN FROM THE REFERENCE LINE WHERE THE SPRING BRACKETS WILL BE LOCATED. THIS WILL INDICATE THE CENTER OF THE SPRING SHAFT.

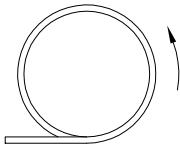


STEP 3

FASTEN EACH SPRING BRACKET (SEE PAGES 19 AND 20) TO THE SPRING MOUNTING AREA USING (2) RED 5/16" x 1-5/8" WOOD LAGS OR METAL SCREWS. IF AUXILIARY SHAFT SUPPORTS WERE PROVIDED, LOCATE THEM 10" IN FROM EACH JAMB. POSITION AND ATTACH IN THE SAME MANNER AS THE SPRING BRACKETS.

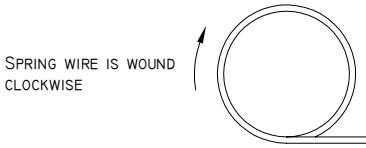
Identify torsion springs. (for low headroom doors note differences in spring placement as shown on page 28)

Springs are single or in pairs based on door design and track system. It is important to determine the 'wind' of a spring before installation. A 'right hand wound spring' will have a red winding plug. A 'left hand wound spring' will have a black winding plug. Cable drums are also color coded. The red drum will be on the left side of the spring assembly and the black drum on the right side. **Match color of winding plug on spring with drum.**



SPRING WIRE IS WOUND
COUNTERCLOCKWISE

LEFT HAND WOUND
(BLACK WINDING PLUG)



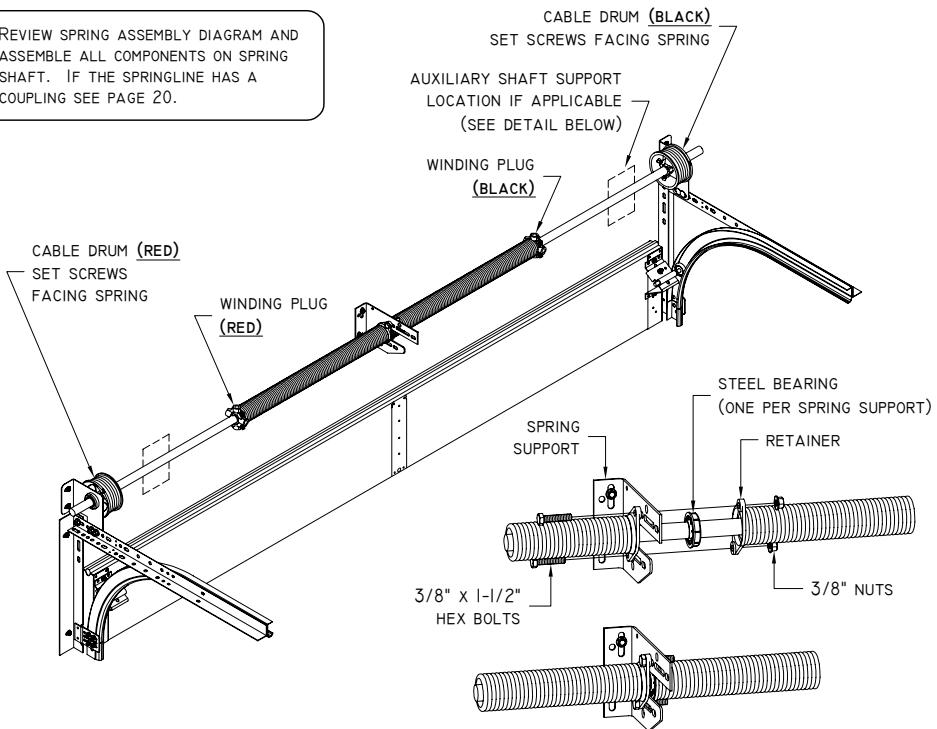
SPRING WIRE IS WOUND
CLOCKWISE

RIGHT HAND WOUND
(RED WINDING PLUG)

Pre-assemble spring line and mount it to spring support.

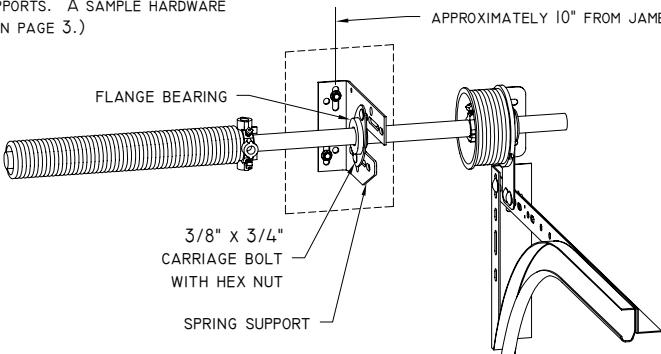
(for low headroom doors note differences in spring system layout as shown on pages 28 and 29)
For illustrative purposes, two springs are shown. Your door may have a single spring. If so, follow the details for that color of spring.

REVIEW SPRING ASSEMBLY DIAGRAM AND ASSEMBLE ALL COMPONENTS ON SPRING SHAFT. IF THE SPRINGLINE HAS A COUPLING SEE PAGE 20.



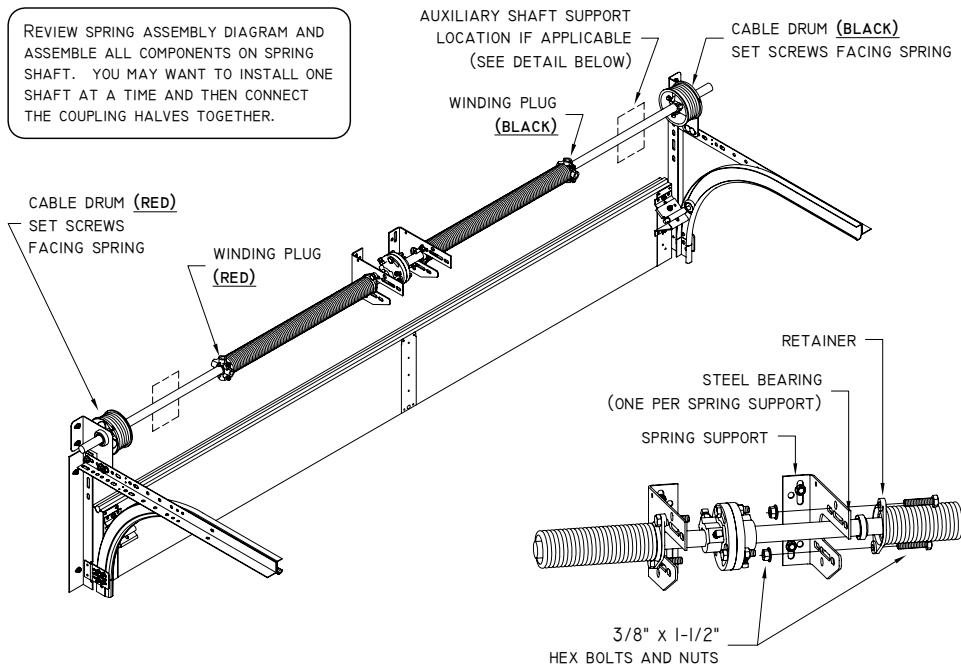
AUXILIARY SHAFT SUPPORT DETAIL.

(SEE HARDWARE CARTON TO DETERMINE IF YOUR DOOR HAS AUXILIARY SHAFT SUPPORTS. A SAMPLE HARDWARE CARTON TAG IS LOCATED ON PAGE 3.)



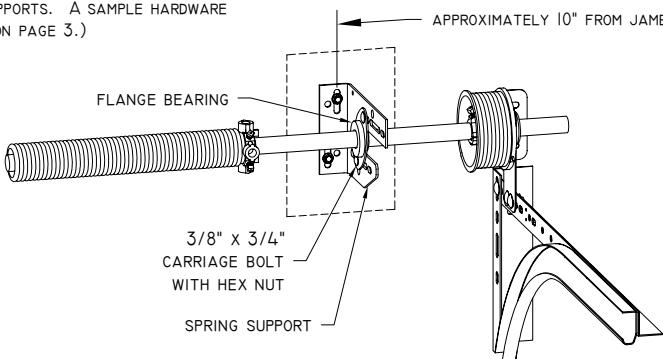
Pre-assemble spring line with shaft coupling.

(for low headroom doors note differences in spring system layout as shown on pages 28 and 29)



AUXILIARY SHAFT SUPPORT DETAIL.

(SEE HARDWARE CARTON TO DETERMINE IF YOUR DOOR HAS AUXILIARY SHAFT SUPPORTS. A SAMPLE HARDWARE CARTON TAG IS LOCATED ON PAGE 3.)



Secure spring shaft and fasten cables to drums.

(for low headroom doors note differences in spring system layout as shown on pages 28 and 29)

STEP 1

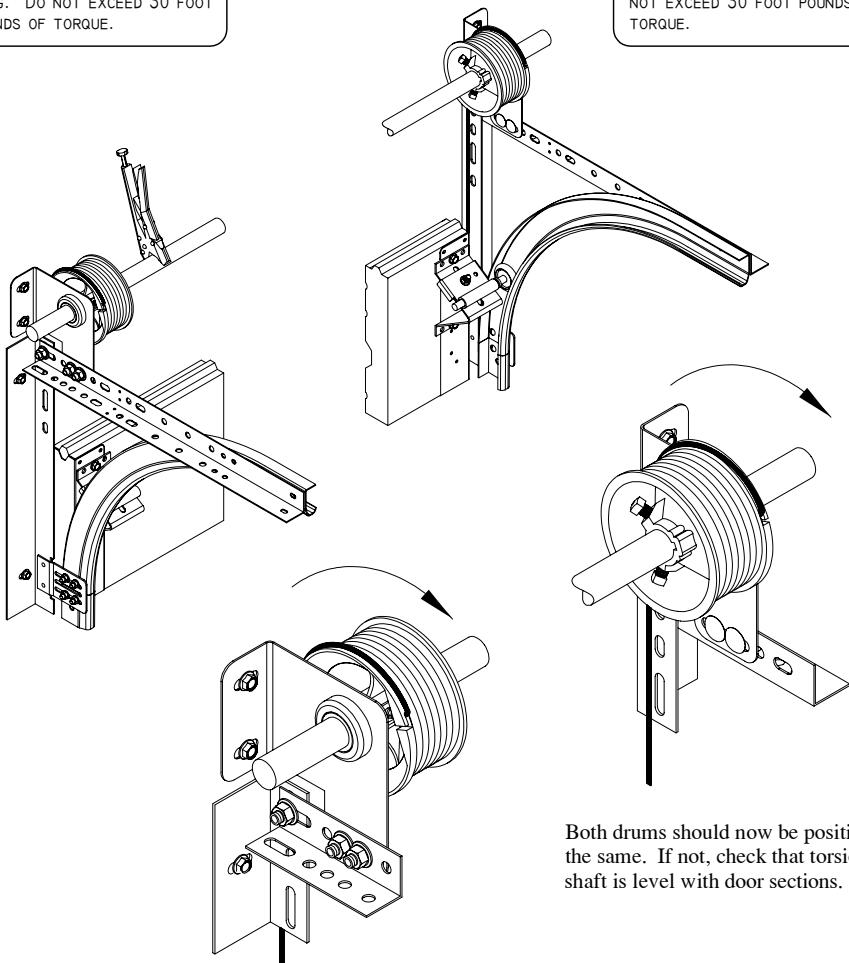
POSITION LEFT HAND CABLE DRUM (RED) AGAINST END BEARING PLATE. INSERT CABLE INTO SLOT ON DRUM EDGE. FIRMLY SEAT THE CABLE LUG IN THE DRUM. ROTATE DRUM TO WIND UP CABLE UNTIL IT IS TAUGHT. TIGHTEN SET SCREWS SNUG. DO NOT EXCEED 30 FOOT POUNDS OF TORQUE.

STEP 2

RESTRAIN SPRING SHAFT WITH LOCKING PLIERS TO KEEP SHAFT FROM TURNING. USE WALL TO HOLD LOCKING PLIERS IN PLACE. MOVEMENT OF SHAFT MAY CAUSE SLACK IN CABLE.

STEP 3

POSITION RIGHT HAND CABLE DRUM (BLACK) AGAINST END BEARING PLATE. INSERT CABLE INTO SLOT ON DRUM EDGE. FIRMLY SEAT CABLE LUG IN DRUM. ROTATE DRUM TO WIND UP CABLE UNTIL IT IS TAUGHT. TIGHTEN SET SCREWS SNUG. DO NOT EXCEED 30 FOOT POUNDS OF TORQUE.



Both drums should now be positioned the same. If not, check that torsion shaft is level with door sections.

Wind torsion springs.

(for low headroom doors see differences in spring winding as shown on pages 28 and 29)

STEP 1

MARK A CHALK LINE ALONG LENGTH OF SPRING TO COUNT NUMBER OF TURNS WHILE WINDING. THE APPROXIMATE NUMBER OF TURNS TO WIND EACH SPRING IS ON TAG ATTACHED TO SPRING ASSEMBLY. LEAVE TAG ATTACHED TO SPRING ASSEMBLY FOR FUTURE REFERENCE.

Warning! Never exceed number of turns shown on spring tag by more than one-half turn.

Warning! Use solid steel winding bars 1/2" in diameter and at least 18" long (not supplied). Be sure that the bar is inserted fully into the winding plug. Use of improper or undersized bars may result in component failure and cause serious personal injury or death. Never use screwdrivers or tubing.

Warning! Keep your head and body out of line with the winding bars. Always maintain a secure footing and balance. Firmly grasp the winding bars and be braced to resist strong forces whenever winding springs.

Warning! From this point onward, the spring is under tension and extremely dangerous.

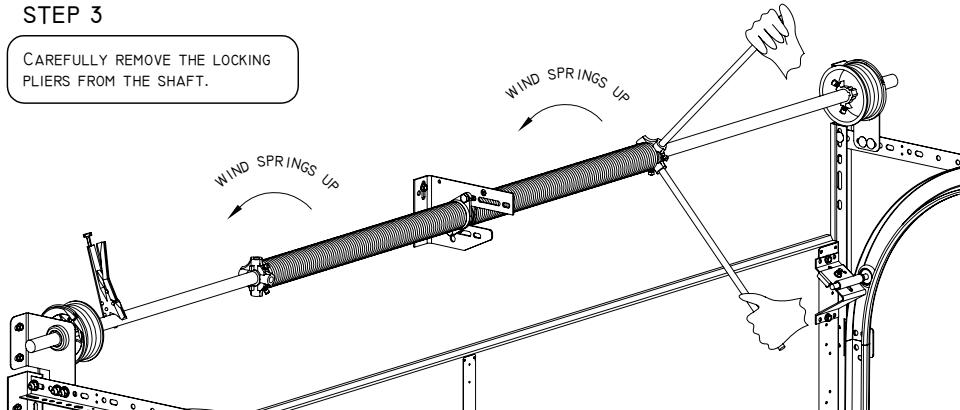
STEP 2

USING TWO WINDING BARS, INSERT ONE FULLY INTO WINDING PLUG AND WIND SPRING BY PUSHING IN AN UPWARD DIRECTION. WIND SPRING ONE QUARTER OF A TURN UNTIL SECOND WINDING BAR CAN BE PROPERLY INSERTED. NOW, INSERT SECOND WINDING BAR AND PUSH UP WHILE CAUTIOUSLY REMOVING FIRST WINDING BAR. REPEAT THIS PROCEDURE UNTIL THE CORRECT NUMBER OF TURNS HAVE BEEN WOUND INTO SPRING. STRETCH THE SPRING THE DISTANCE OF TWO WIRE COILS. TIGHTEN SET SCREWS SNUG. DO NOT EXCEED 30 FOOT POUNDS OF TORQUE. REMOVE WINDING BARS.

Warning! When winding torsion springs, spring diameter will decrease and spring length will increase. If this is not observed, stop immediately and check for proper spring placement.

STEP 3

CAREFULLY REMOVE THE LOCKING PLIERS FROM THE SHAFT.



Warning! All spring component parts whether part of spring line, attached to door, or attached to wall are now under tension and are extremely dangerous.

Warning! Spring adjustments from this point onward must be performed in accordance with all warnings and directions as previously stated.

Warning! Never place your fingers in or near section joints while the door is moving.

Remove track restraints and test the balance of the door on the floor.

With door still secured, clamp an additional set of locking pliers to each track just below the rollers at the third hingeline (from the bottom of the door). This will allow for testing of the door counterbalance without permitting the door to travel freely. Carefully remove the first set of constraints and slowly raise the door.

If door does not lift off of the floor by itself, or does not roll back to the floor when not supported, it is properly counterbalanced.

If door lifts off of the floor by itself, the springs are too strong and less spring tension may be required (less turns on the spring).

If the door rolls back to the floor, the springs are too weak and more spring tension may be required (more turns on the spring).

After determining the door is adequately balanced to avoid unexpected movement, remove all restraints from the vertical tracks.

Warning! Do not raise the door to the fully opened position. The track backhangs and swaybracing must first be set in place.

Install track hangs. Standard Lift and High Lift Doors.

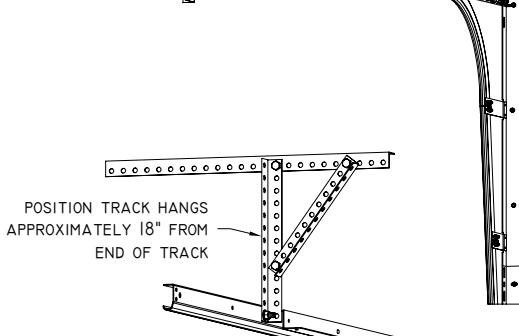
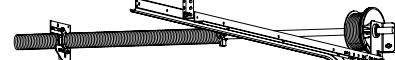
Standard Lift and High Lift track hang assemblies are the same. The high lift door assembly is shown. Materials and fasteners for track hangs and swaybraces are not provided with the door.

DOORS OVER 12' HIGH WILL REQUIRE ADDITIONAL BACKHANGS AT CENTER OF HORIZONTAL TRACKS. HEAVY DOORS, REGARDLESS OF HEIGHT, MAY REQUIRE ADDITIONAL TRACK HANGS.

STEP 1

SLOWLY RAISE DOOR HALF-WAY AND CHECK THAT SPACING BETWEEN DOOR EDGES AND UPPER TRACKS IS APPROXIMATELY 1/2"-3/4" PER SIDE (AVOID CROWDING THE TRACK WITH TOO SMALL OF A SPACING). HORIZONTAL TRACKS SHOULD BE PITCHED SLIGHTLY UPWARD INTO BUILDING (ABOUT 1/8" OF RISE PER 12" OF RUN).

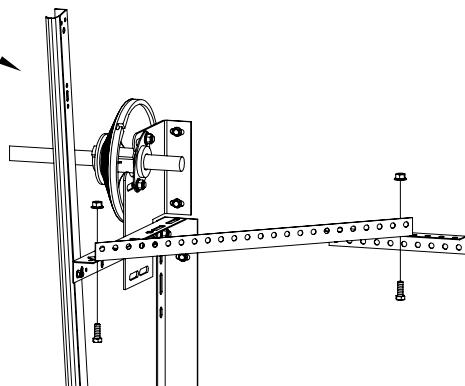
High lift doors use spring bumpers shown on page 32.



STEP 2

ATTACH REAR OF HORIZONTAL TRACKS TO BACKHANGS AND SWAYBRACES WITH 5/16" BOLTS AND NUTS. DO NOT USE BOLTS AS A STOP FOR THE DOOR, THIS WILL DAMAGE THE TOP SECTION. ANCHOR ALL BRACING TO STRUCTURAL CEILING MEMBERS USING 5/16" X 1-5/8" WOOD LAGS OR METAL SCREWS.

Install track hangs. Vertical Lift Doors



UPPER TRACKS MUST BE PLUMB AND IN-LINE WITH VERTICAL TRACKS. ATTACH SWAY BRACING TO TOP OF UPPER TRACKS WITH 5/16" BOLTS AND NUTS. DO NOT USE BOLTS AS A STOP FOR THE DOOR, THIS WILL DAMAGE THE TOP SECTION. ANCHOR ALL BRACING TO STRUCTURAL MEMBERS WITH 5/16" x 1-5/8" WOOD LAGS OR METAL SCREWS.

Finalize the track and spring adjustments.

Warning! Failure to securely support and brace the upper track assembly can cause the door to fall from the overhead position and result in serious personal injury or death.

Complete installation of stop molding on jambs and header where applicable.

Operate the door through one full cycle. Check door stops and top fixtures for proper seal.

If door is not functioning correctly check for binding against the jamb, header or tracks. If no obstructions are observed, attempt to correct the situation by adjusting the spring tension.

Warning! Never add more than one-half turn of tension to any spring.

More than one-half turn added or released from a spring may indicate that the installed door weight is different from the calculated spring weight. Check if all the options and hardware were installed. Consult your C.H.I. door supplier if door remains inoperable.

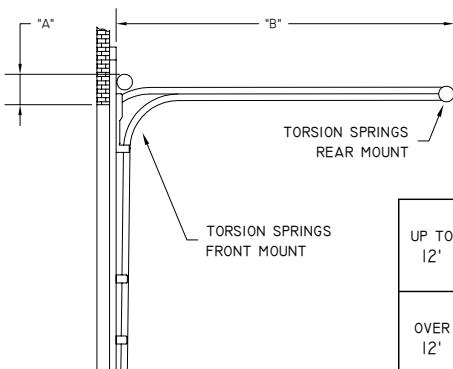
Low Headroom Details

Installation of low headroom doors is basically the same as standard lift doors. Certain differences do however require additional details. All low headroom doors will have a pair of double horizontal curve tracks (see detail below). The upper track is used for the low headroom-top fixture rollers. All other rollers travel in the lower track. This allows the top section to 'turn over' quickly and requires less headroom.

SIDEROOM REQUIREMENTS FOR LOW HEADROOM DOORS

TRACK TYPE	AT BOTTOM OF DOOR	AT TORSION SHAFT
2" TRACK	DOOR WIDTH + 6"	DOOR WIDTH + 12"
3" TRACK	DOOR WIDTH + 9-1/2"	DOOR WIDTH + 14"

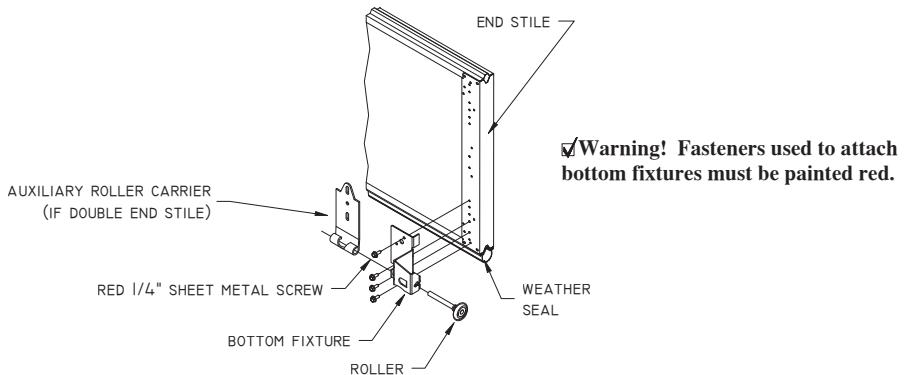
HEADROOM AND BACK DEPTH REQUIREMENTS FOR LOW HEADROOM DOORS



	SPRING MOUNT	2" TRACK		3" TRACK	
		"A" DIMENSION	"B" DIMENSION	"A" DIMENSION	"B" DIMENSION
UP TO 12'	SPRINGS FRONT	9"	DOOR HEIGHT + 22"	11"	DOOR HEIGHT + 22"
	SPRINGS REAR	6"	DOOR HEIGHT + 28"	8"	DOOR HEIGHT + 28"
OVER 12'	SPRINGS FRONT	11"	DOOR HEIGHT + 22"	14"	DOOR HEIGHT + 22"
	SPRINGS REAR	6"	DOOR HEIGHT + 28"	8"	DOOR HEIGHT + 28"

See page 29 for rear torsion spring mounting area.

Bottom fixture attachment for low headroom doors.



Low headroom horizontal curve track installation.

Low Headroom doors have double-horizontal tracks that mount to the vertical track assembly and flag bracket.

STEP 1

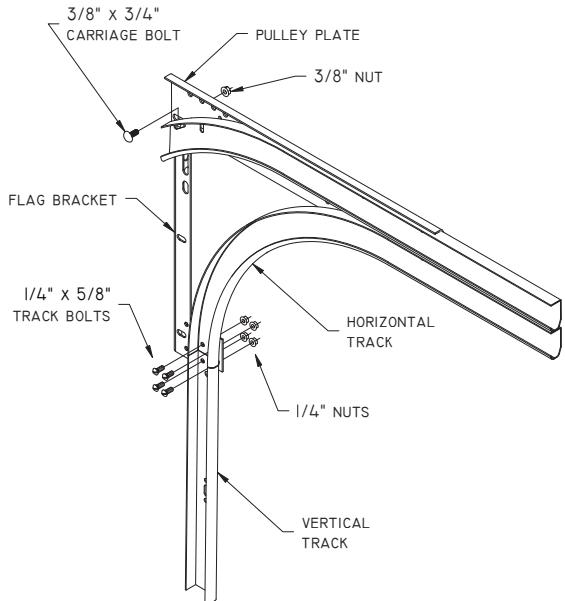
TEMPORARILY SECURE BACK OF HORIZONTAL CURVE TRACKS. SEE PAGE 13 FOR INSTRUCTIONS AND WARNINGS.

STEP 2

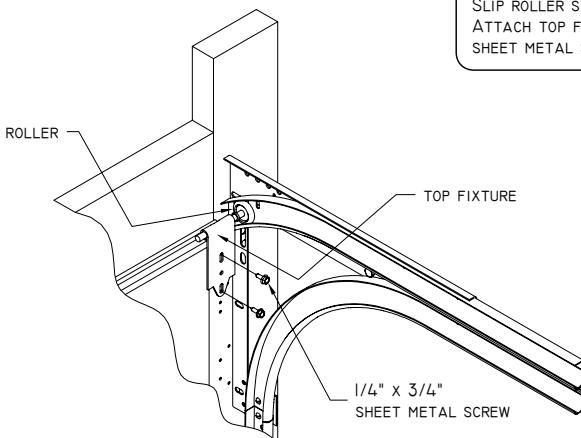
FASTEN HORIZONTAL CURVE TRACK TO FLAG BRACKET WITH (2) 1/4" x 5/8" TRACK BOLTS AND NUTS. ALWAYS PLACE HEADS OF BOLTS TO INSIDE OF TRACK. THIS WILL PREVENT ROLLERS FROM STRIKING BOLTS.

STEP 3

FASTEN PULLEY PLATE TO FLAG BRACKET WITH A 3/8" x 3/4" CARRIAGE BOLT AND NUT.



Top fixture attachment for low headroom doors.

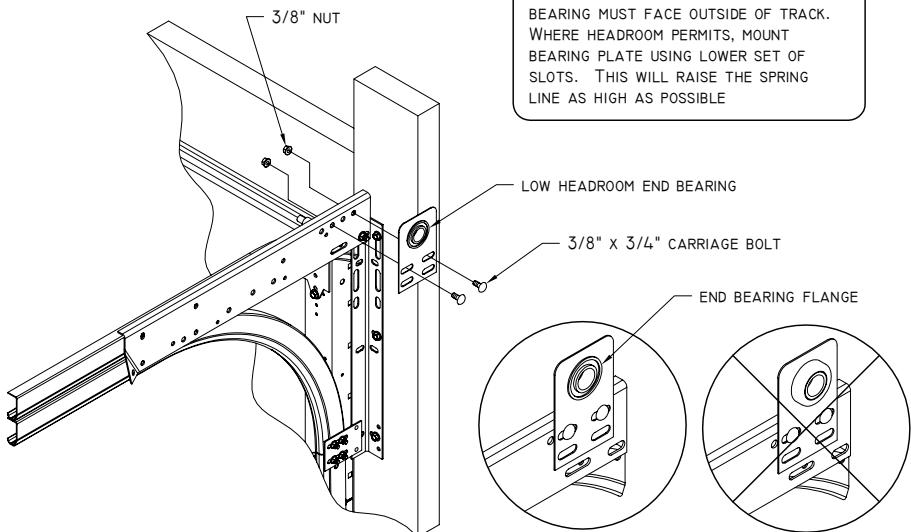


INSERT A ROLLER INTO THE TRACK.
SLIP ROLLER STEM INTO TOP FIXTURE.
ATTACH TOP FIXTURE WITH 1/4" x 3/4"
SHEET METAL SCREWS.

Low Headroom Torsion Spring Assembly Details

End bearing plates for rear mounted springs are factory attached to end of curve track.

End bearing plates for front mounted springs.



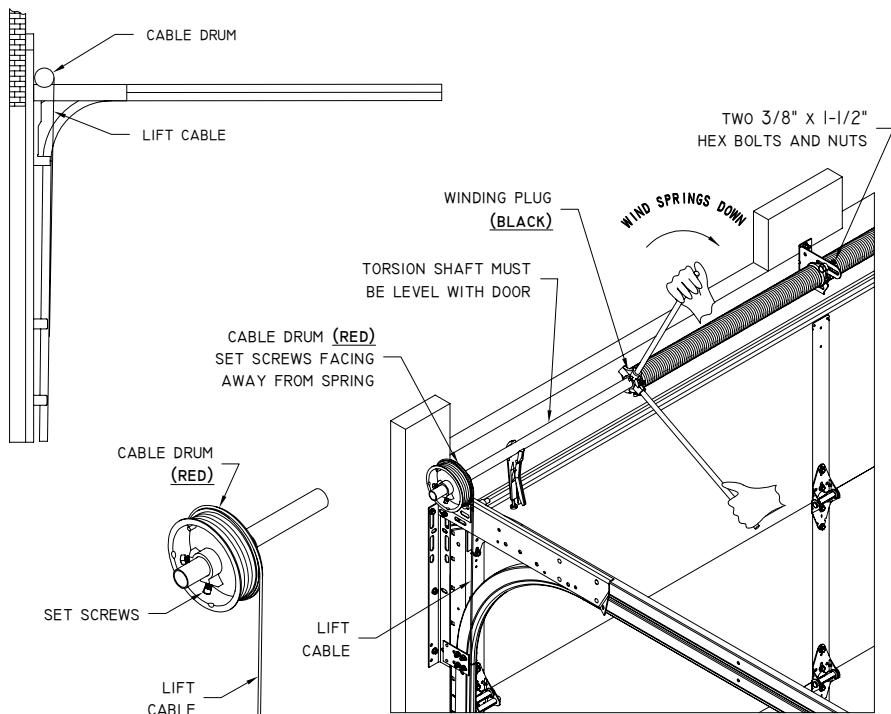
ATTACH LOW HEADROOM END BEARING PLATE TO TRACK WITH (2) 3/8" x 3/4" CARRIAGE BOLTS AND NUTS. FLANGE OF BEARING MUST FACE OUTSIDE OF TRACK. WHERE HEADROOM PERMITS, MOUNT BEARING PLATE USING LOWER SET OF SLOTS. THIS WILL RAISE THE SPRING LINE AS HIGH AS POSSIBLE

Low headroom torsion springs assemblies.

Low headroom spring installations do not follow the standard rules for spring placement and winding. The main differences are:

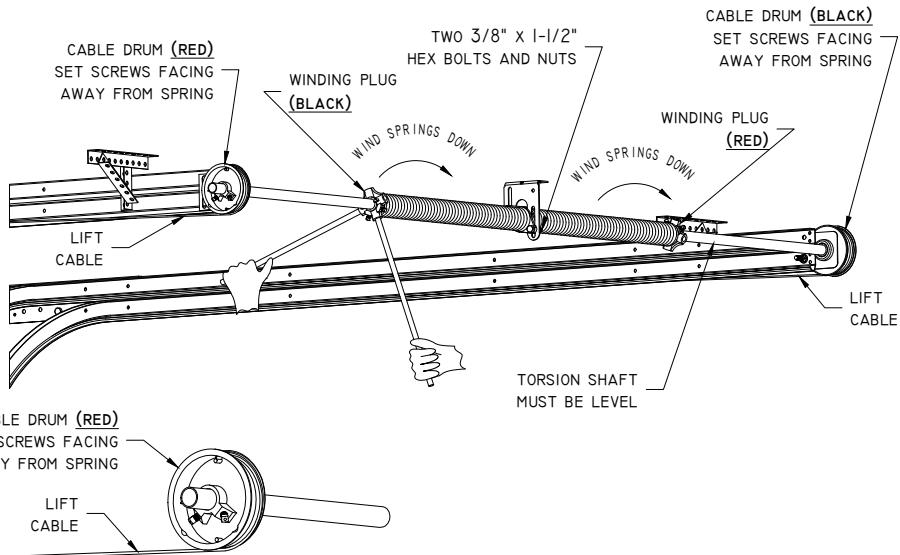
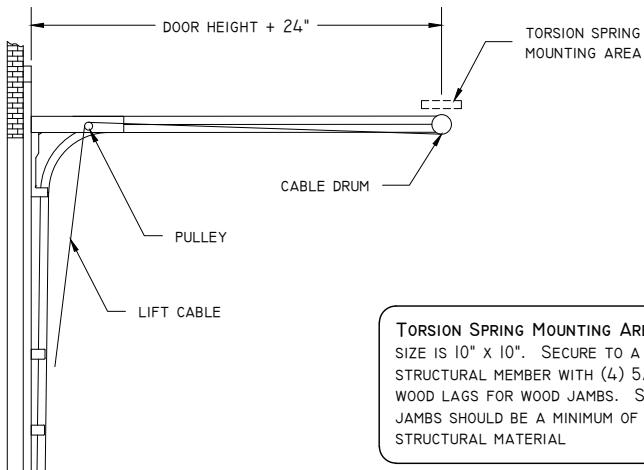
- 1) Cable drums are on the outside of the track.
- 2) The right hand wound spring (painted red) will face the right hand drum (painted black) and the left hand wound spring (painted black) will face the left hand drum (painted red).
- 3) Springs are wound down instead of up.
- 4) Lift cables spool off the back of cable drums.

Front mounted low headroom torsion springs.



Warning! Attachment of the torsion spring mounting area to building framework must provide adequate support to sustain the weight of the spring assembly as well as resistance to vibration caused by door operation.

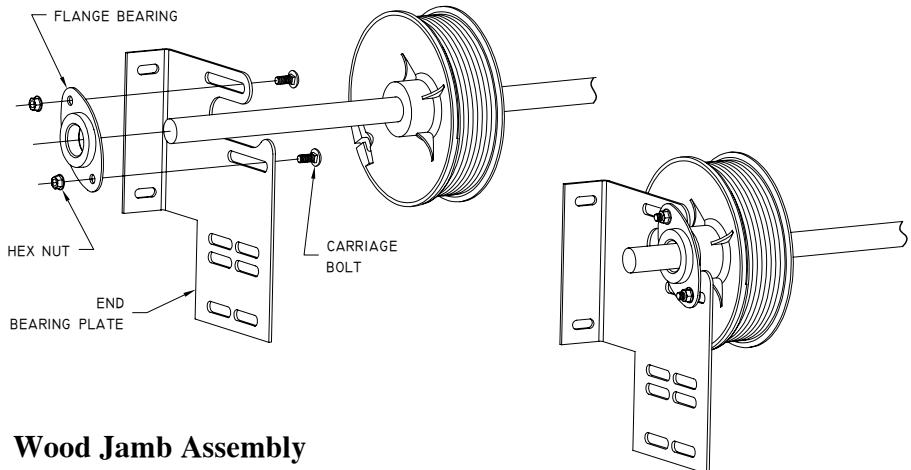
Rear mounted low headroom torsion springs.



✓ **Warning!** Attachment of the torsion spring mounting area to building framework must provide adequate support to sustain the weight of the spring assembly as well as resistance to vibration caused by door operation.

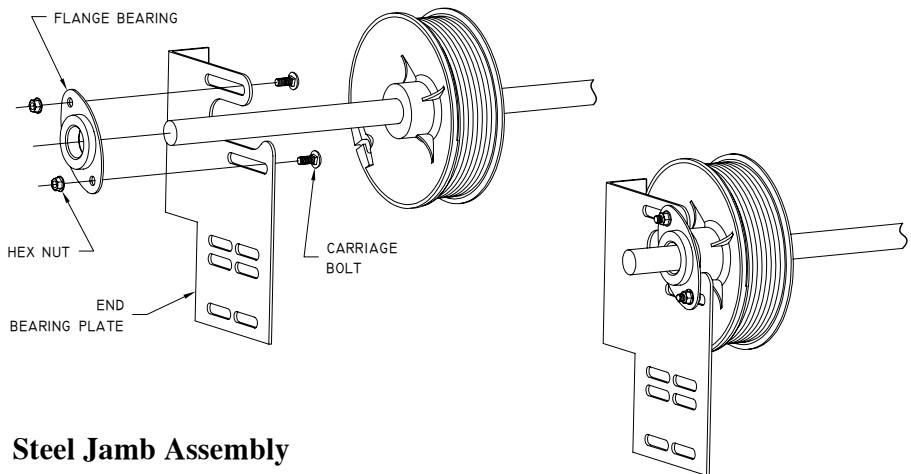
Supplemental Instructions

Adjustable End Bearing Assembly



Wood Jamb Assembly

(LEFT SIDE SHOWN RIGHT SIDE OPPOSITE)

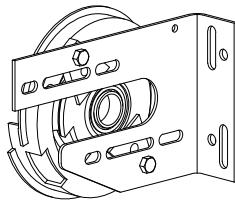
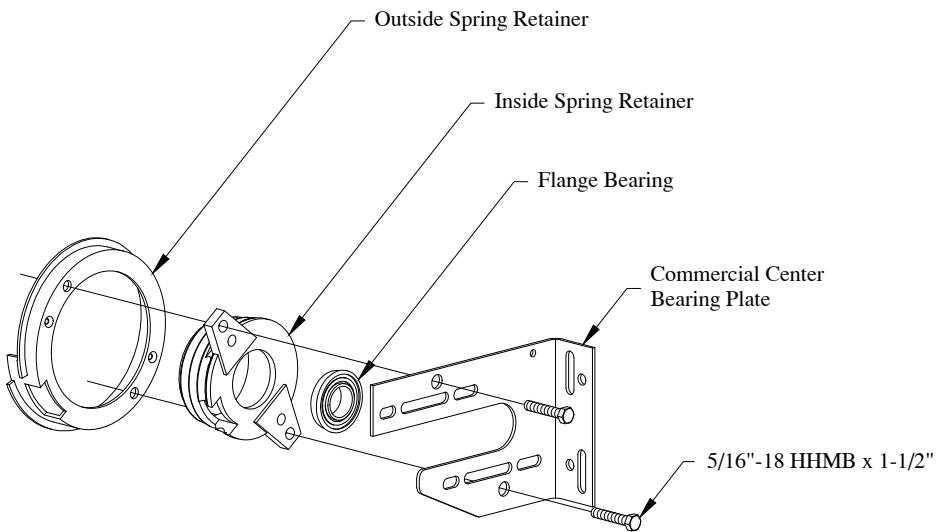


Steel Jamb Assembly

(LEFT SIDE SHOWN RIGHT SIDE OPPOSITE)

Supplemental Instructions

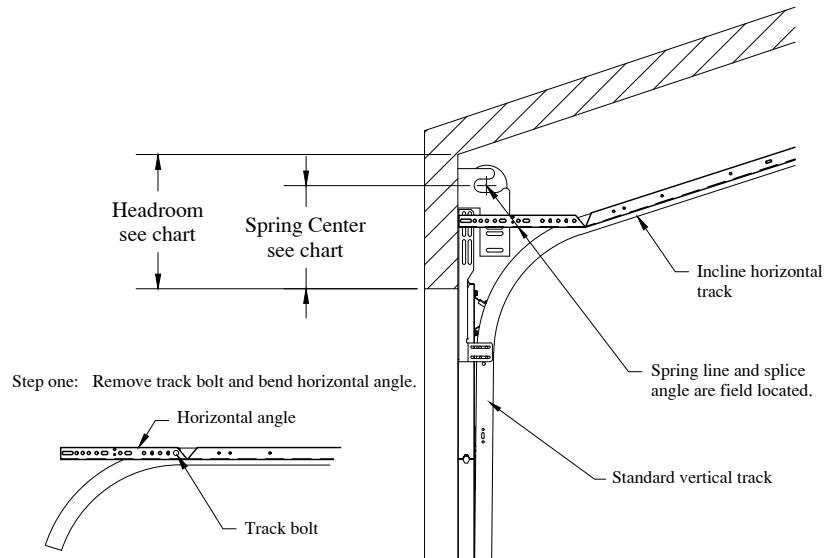
Duplex Spring Retainer Bearing Installation Instructions



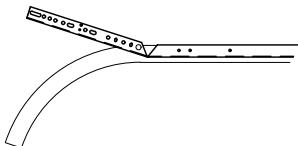
Supplemental Instructions

Incline Track Installation Details

Shown below is a typical standard-lift incline-track layout. A field-located horizontal angle connects the horizontal track to the wall angle / flag angle. Incline track installations will require additional time and material.



Step two: Insert track bolt in predrilled horizontal track.

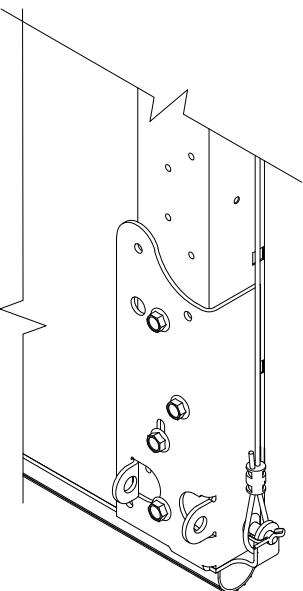
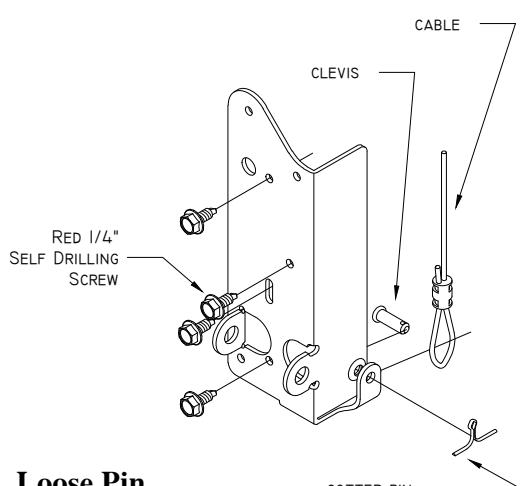


Headroom Chart

Drum Type	2" Track		3" Track	
	Spring Center	Headroom	Spring Center	Headroom
4-8 / 4-12	12"	14-1/2"	13"	15-1/2"
5-18	13"	16"	14"	17"
5-18 w/ 6" springs	15"	18-1/2"	16"	19-1/2"
8-32	N/A	N/A	17-1/2"	22"

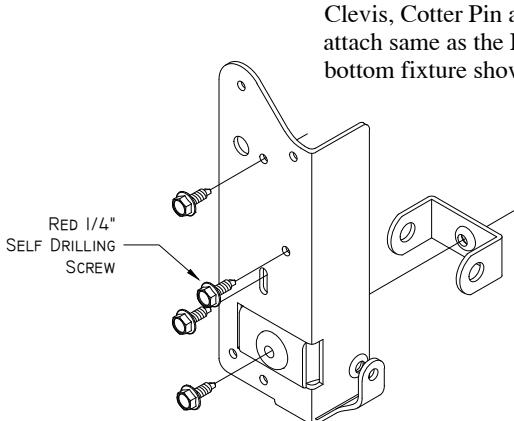
Supplemental Instructions

Additional Bottom Fixture Details

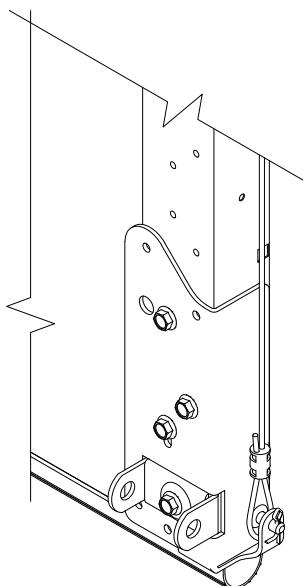


Loose Pin Bottom Fixture

(RIGHT SIDE SHOWN RIGHT SIDE OPPOSITE)



Clevis, Cotter Pin and Cable attach same as the Loose pin bottom fixture shown above.

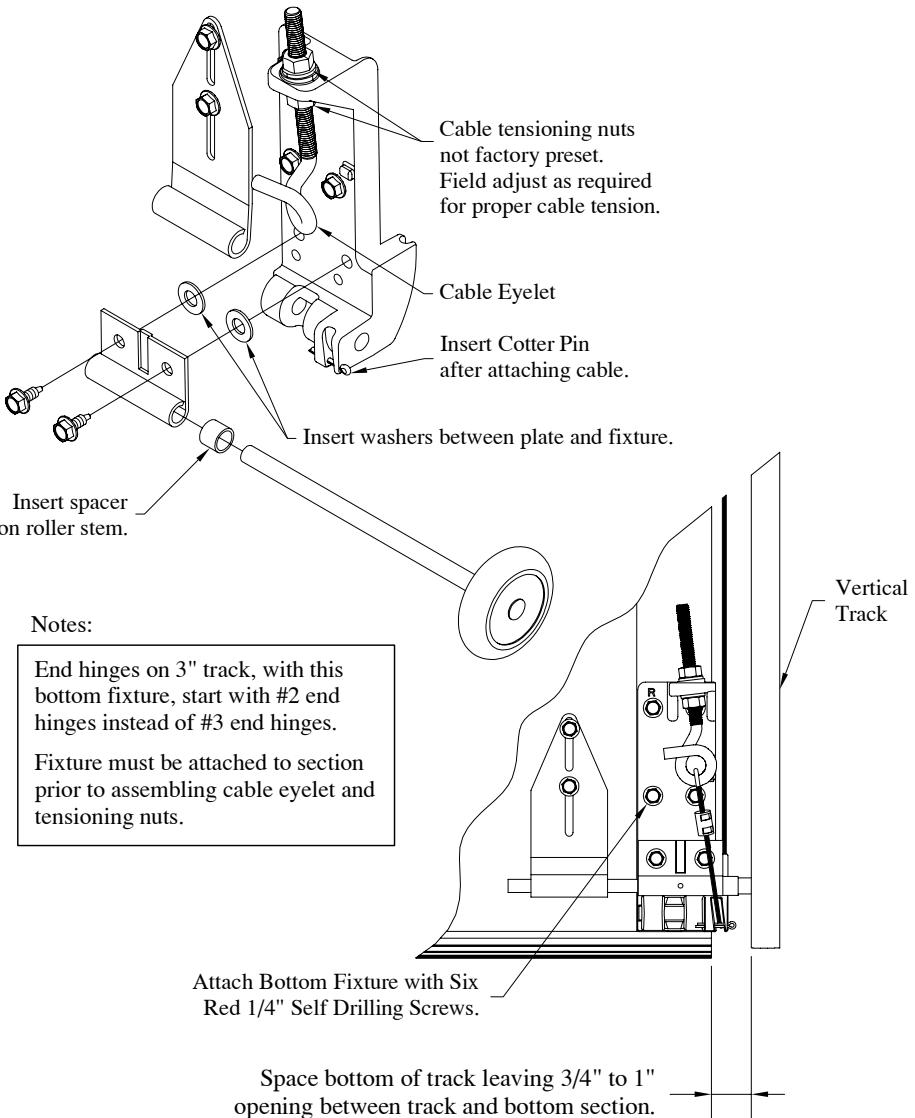


3" Track Bottom Fixture

(RIGHT SIDE SHOWN LEFT SIDE OPPOSITE)

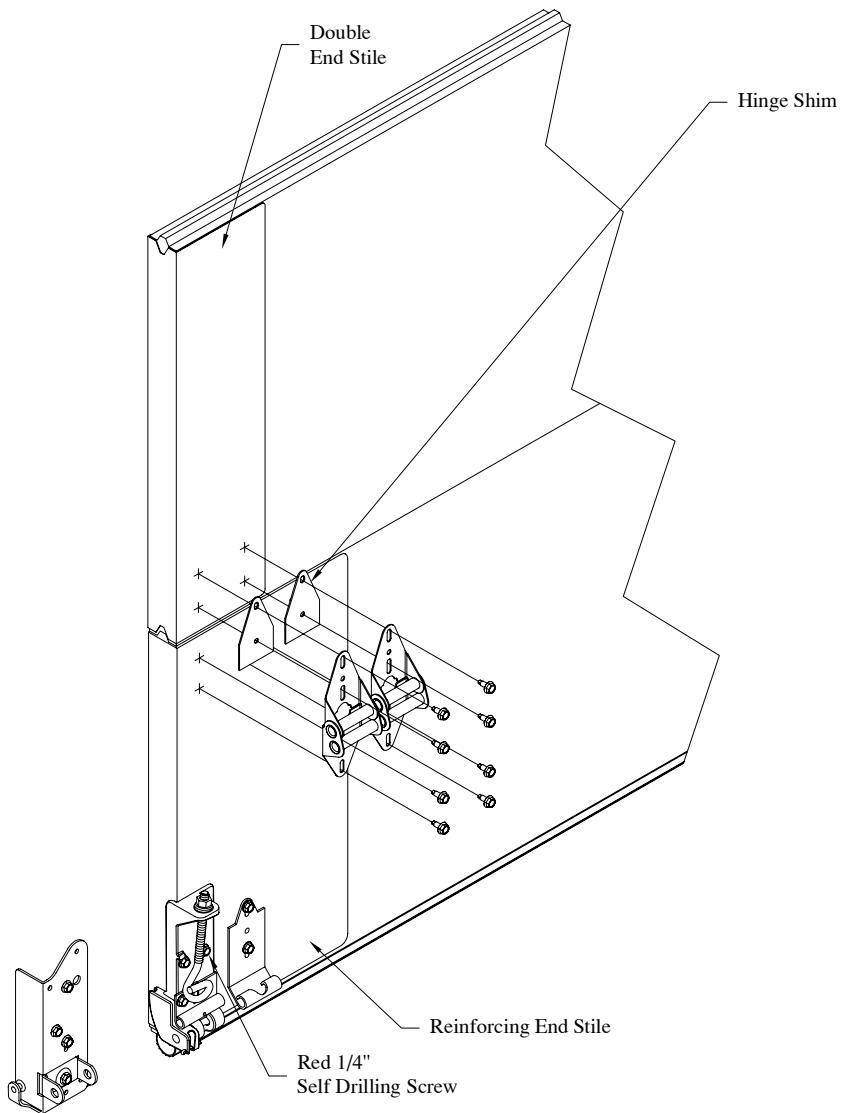
Supplemental Instructions

Heavy Reinforced Bottom Fixture



Supplemental Instructions

Reinforcing End Stile Hinge Shim Details on models 3212/3216/3285

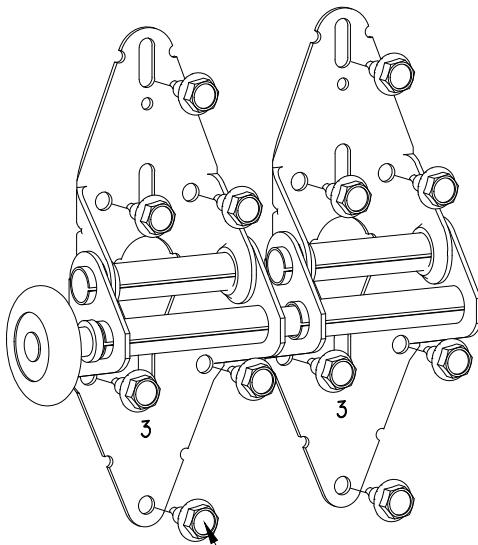


Bottom fixture may change
depending on door weight

Supplemental Instructions

Windbreaker Hinges

Certain door designs require the use of six fasteners to secure the end hinges to a section. A special type of hinge (referred to as the 'Windbreaker Hinge') is easily identified by the additional holes as shown in the illustration.



NOTE! - it is very important that all of the attachment screws are used in the holes as shown.

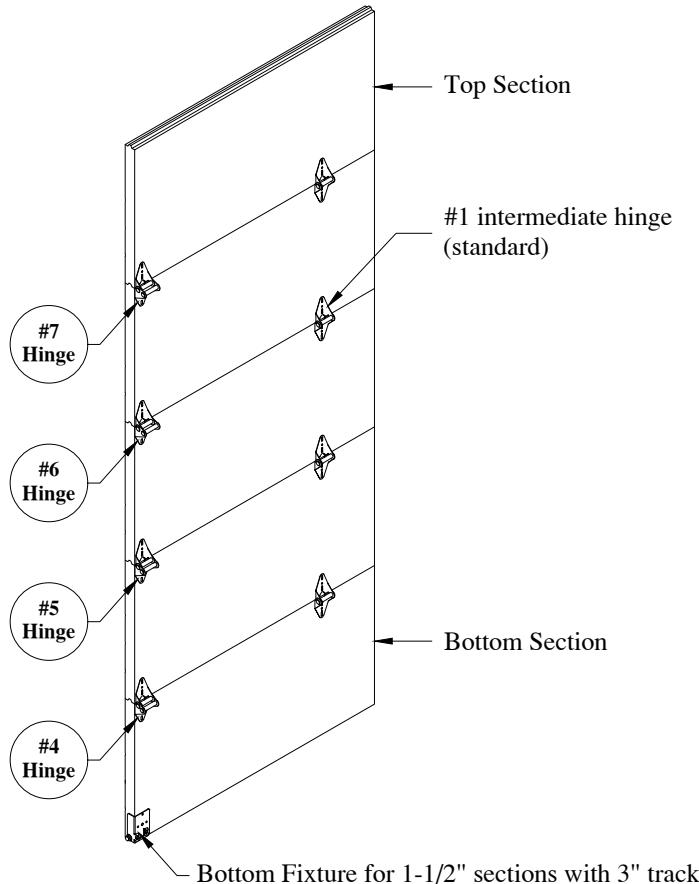
Double end hinges are used in this example, use same fastening pattern for single end hinges.

Supplemental Instructions

1-1/2" Doors with 3" Track

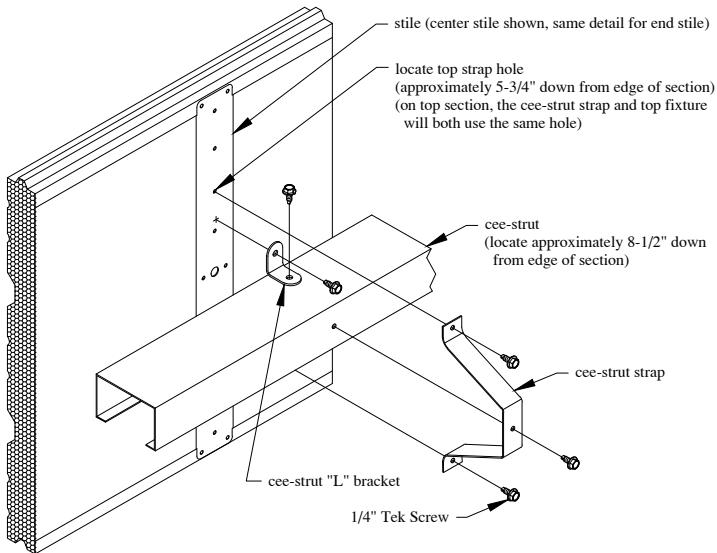
1-1/2" thick sections require a track system located closer to the jamb than 2" thick sections. This requires a different end hinge progression when using 3" track, as shown below. Note that the first set of end hinges start with a #4 hinge rather than a #3 hinge, which is common for 2" sections with 3" track.

The intermediate hinges do not change.

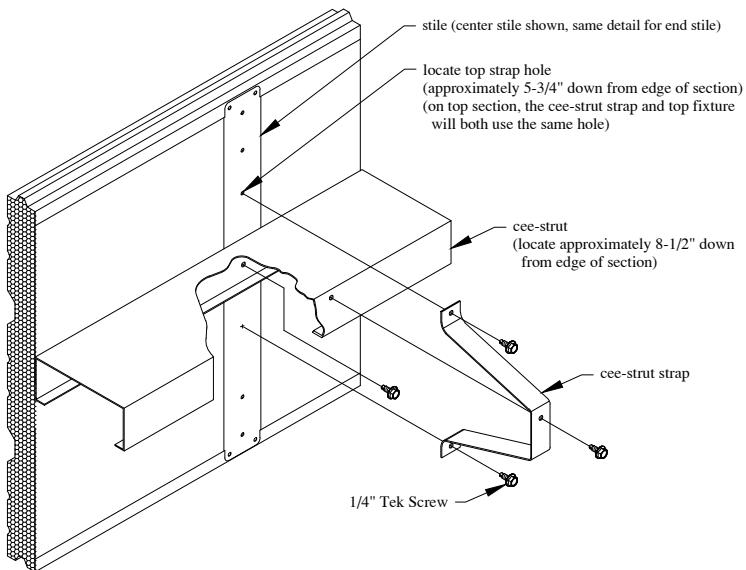


Supplemental Instructions

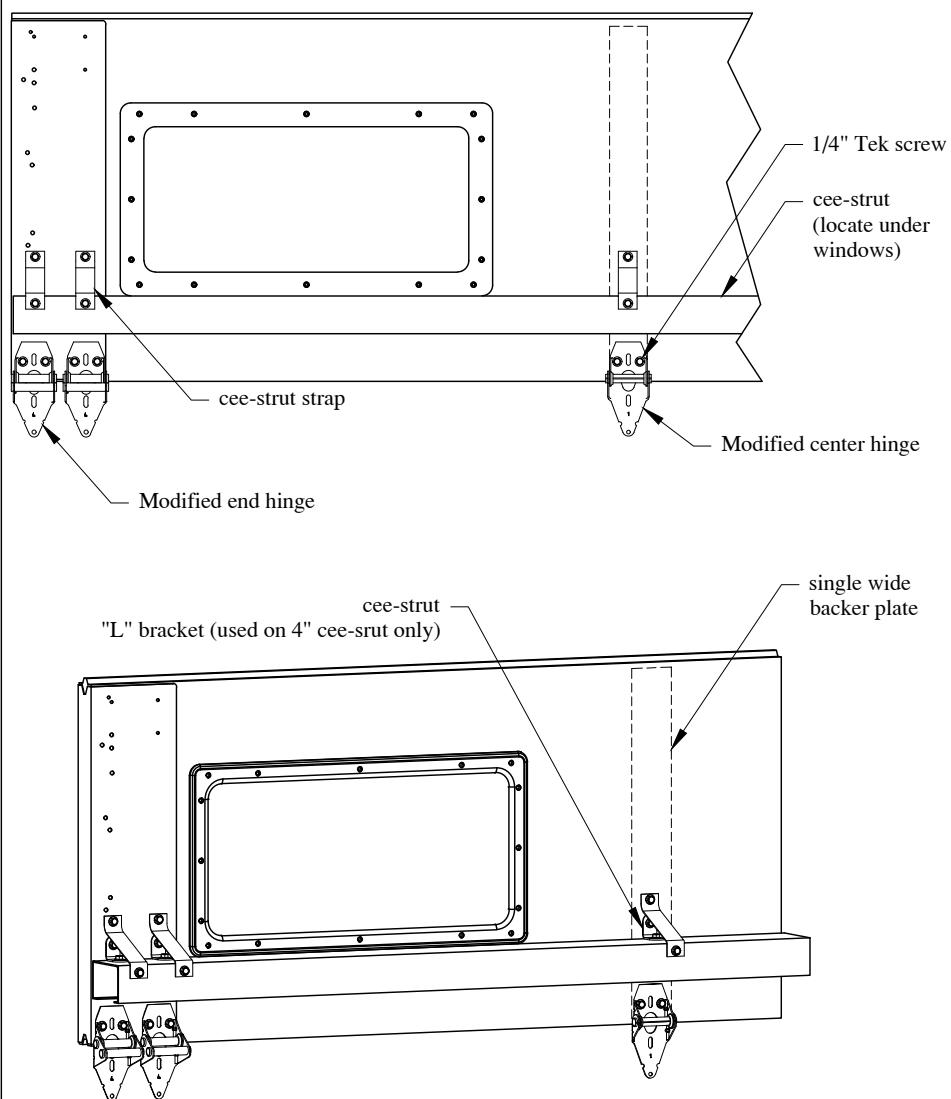
4" Cee-Strut with "L" Bracket Installation Instructions



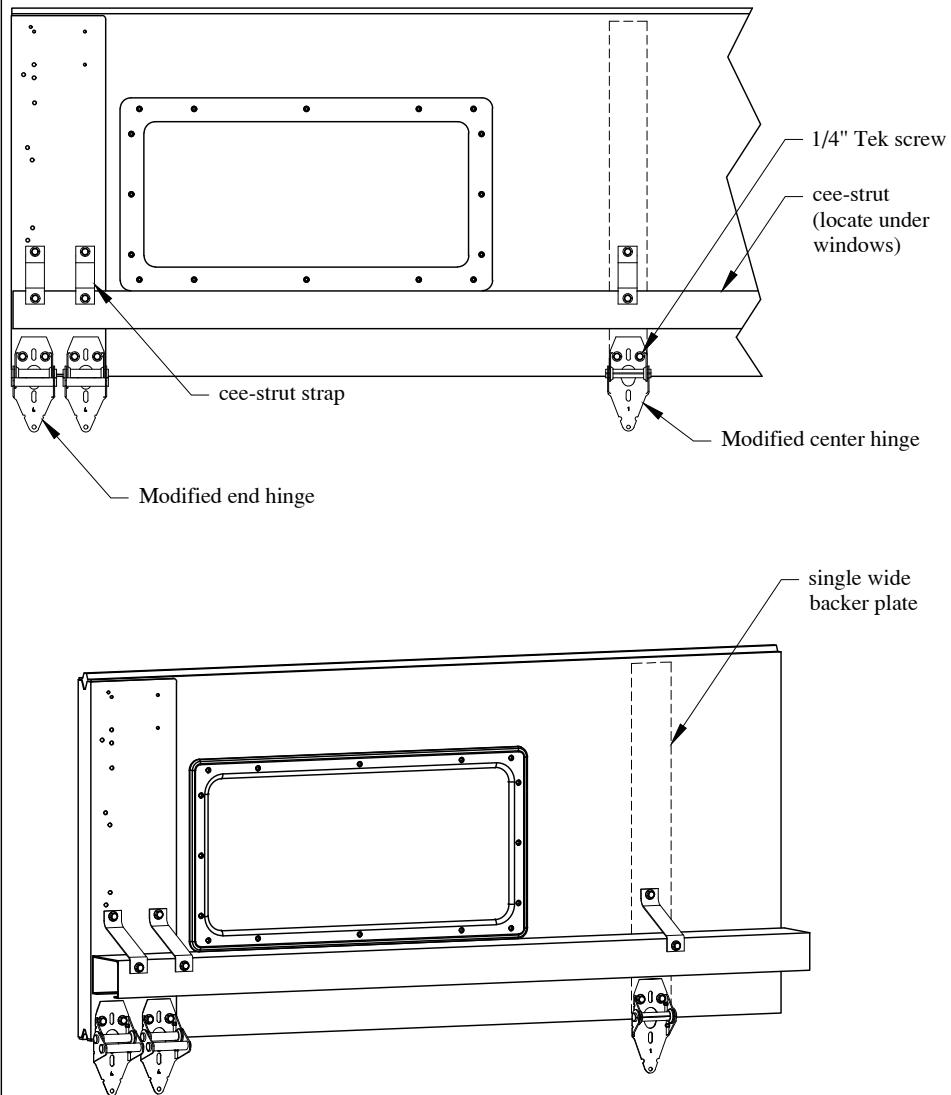
6" Cee-Strut without "L" Bracket Installation Instructions



Supplemental Instructions
4" Cee-Strut with "L" Bracket
Installation Instructions
for Sandwich Door Window Section

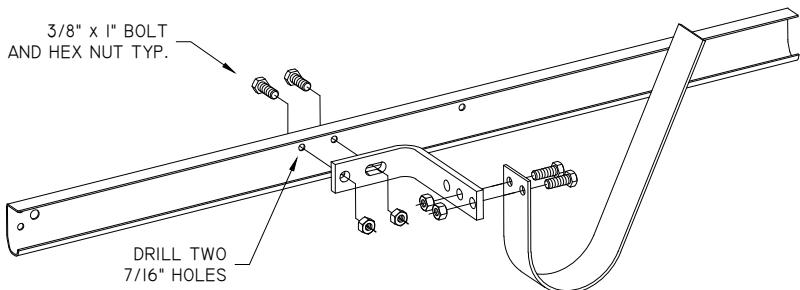


**Supplemental Instructions
6" Cee-Strut
Installation Instructions
for Sandwich Door Window Section**

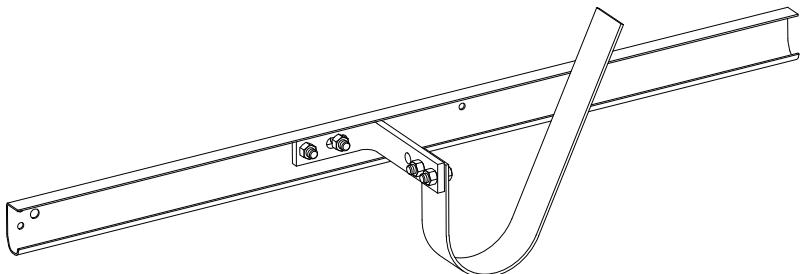


Supplemental Instructions

Spring Bumper Assembly



REAR OF HORIZONTAL CURVE TRACK

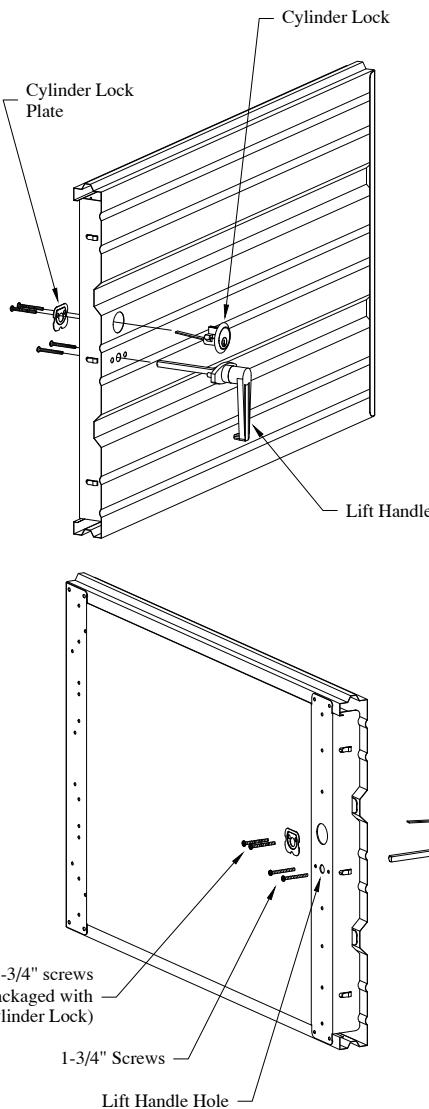


(LEFT SIDE SHOWN RIGHT SIDE OPPOSITE)

Supplemental Instructions

Double Lock Bar Assembly

page 1 of 2

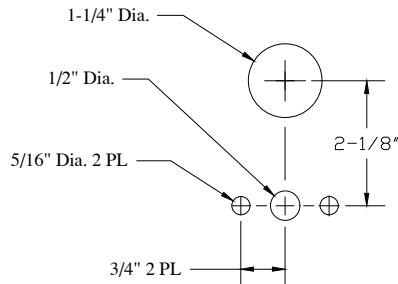


Locate the stile that the lock will be installed in.

Using the Lift Handle holes on the stile drill one 1/2" hole and two 1 1/4" holes thru the outside face of the section.

Flip the section over and drill 5/16" holes thru the 1/4" holes approximately 1" deep. Also drill the 1-1/4" hole dimensioned below.

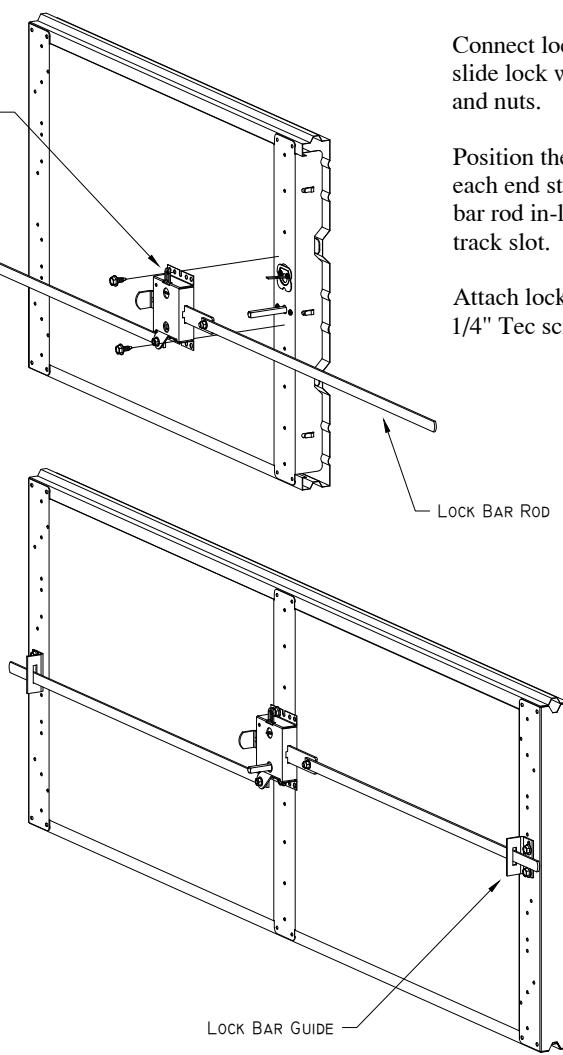
Install the cylinder lock and lift Handle as shown.



Supplemental Instructions

Double Lock Bar Assembly

page 2 of 2



Attach slide lock to stile using two 1/4" Tec screws.

Connect lock bar rods to the slide lock with supplied bolts and nuts.

Position the lock bar guide on each end stile to place the lock bar rod in-line with the vertical track slot.

Attach lock bar guides with two 1/4" Tec screws.

The Quality Garage Door.

Residential Sectional | Commercial Sectional | Rolling Doors | High-Performance Doors



1485 Sunrise Drive | Arthur, Illinois 61911 | USA
chiohd.com



LiftMaster®

MAXUM

Installation Manual

Industrial DC Operators

Models JDC, JHDC, and
TDC

DC Jackshaft, Hoist, and Trolley
Doors up to 700, 1200, and 2200 lbs

NOT FOR RESIDENTIAL USE

- Please read this manual and the enclosed safety materials completely, prior to installation and use.
- This product is to be installed and serviced by a trained door systems technician ONLY.
- These operators are compatible with myQ®, myQ® Smart Facility Access™, and Security+ 2.0® accessories.
- These operators are Wi-Fi® compatible.

Serial # _____

Installation Date _____

Scan here for
LiftMaster support
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INSTITUTE OF DOOR DEALER



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LiftMaster
300 Windsor Drive
Oak Brook, IL 60523

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MYQ® CONNECTIVITY

- myQ® Smart Facility Access Technology enables secure monitoring and control of door operators and other myQ® Smart Facility Access devices with a smartphone, tablet or computer.
- Alerts can be received as email notifications, ensuring the status of a commercial door.

SAFETY AND SECURITY

Security+ 2.0® – with every press of the button, a new code is sent to the commercial door operator, ensuring a door will only open for the remote control programmed.

UL 325 requires all commercial door operators to be either constant pressure to close or be equipped with a primary external monitored entrapment protection device.

LiftMaster® is the leading brand of professionally installed commercial door operators and access control products for businesses worldwide. We are committed to quality products, innovative designs and comprehensive services which exceed our Customers' expectations.

Safety Information

Safety Symbols and Signal Word Review



WARNING

Mechanical



WARNING

Electrical

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.



CAUTION

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.



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.



WARNING

To reduce the risk of SEVERE INJURY or DEATH:

1. READ AND FOLLOW ALL INSTALLATION WARNINGS AND INSTRUCTIONS.
2. Install door operator ONLY on properly balanced and lubricated door. An improperly balanced door may NOT reverse when required and could result in SEVERE INJURY or DEATH.
3. ALL repairs to cables, spring assemblies and other hardware MUST be made by a trained door systems technician BEFORE installing operator.
4. Disable ALL locks and remove ALL ropes connected to door BEFORE installing operator to avoid entanglement.
5. Install an operator, a minimum of 8 feet (2.44 m) from the floor.
6. NEVER connect a door operator to a power source until instructed to do so.
7. NEVER wear watches, rings or loose clothing while installing or servicing an operator. They could be caught in the door or operator mechanisms.
8. Install a wall controller:
 - within sight of the door.
 - out of reach of small children and at a minimum height of 5 feet (1.5 m) above floors, landings, steps, or any other adjacent walking surface.
 - away from ALL moving parts of the door.
9. Install the wall controller far enough from the door to prevent the user from coming in contact with the door while operating the controls.
10. Install the entrapment warning placard on the wall next to the wall controller in a prominent location, visible from the door.
11. Place the manual release/ safety reverse test label in plain view on the inside of door.
12. Upon completion of installation, test the entrapment protection device(s).
13. This door operator is not intended to replace door locks. With enough force, a door without a door lock can be opened. LiftMaster always recommends the use of door locks to properly secure a door.
14. SAVE THESE INSTRUCTIONS.

Door Sprockets (JDC/JHDC Operators)

NOTE: The latest Installation Manual can be found at liftmaster.com.

SECTIONAL DOORS

Recommended Sprocket by Drum Diameter and Desired Door Speed

Drum Diameter (Large end of Conical Drum)	Sprocket for Desired Speed					
	For 12 in/sec			For 9 in/sec		
	Tooth Count	1 in. Bore, 1/4 in. Keyway	1.25 in. Bore, 1/4 in. Keyway	Tooth Count	1 in. Bore, 1/4 in. Keyway	1.25 in. Bore, 1/4 in. Keyway
4"	16-Tooth	71-1550B16LGH	71-1550B16QGH	22-Tooth	71-1550B22LGH	71-1550B22QGH
5.25"	22-Tooth	71-1550B22LGH	71-1550B22QGH	32-Tooth	71-1550B32LGH	71-1550B32QGH
5.75"	24-Tooth	71-1550B24LGH	71-1550B24QGH	34-Tooth	71-1550B34LGH	71-1550B34QGH
6.375"	32-Tooth	71-1550B32LGH	71-1550B32QGH	42-Tooth	71-1550B42LGH	71-1550B42QGH
8"			71-1550B32QGH			
8.5"	24-Tooth	71-1550B24LGH	71-1550B24QGH	34-Tooth	71-1550B34LGH	71-1550B34QGH
11"	32-Tooth	71-1550B32LGH	71-1550B32QGH	42-Tooth	71-1550B42LGH	71-1550B42QGH
13.5"	42-Tooth	71-1550B42LGH	71-1550B42QGH	56-Tooth	71-1550B56LGH	71-1550B56QGH

UNINSULATED ROLLING DOORS 20'

INSULATED ROLLING DOORS 20'

Operator	Sprocket Tooth Count	Door Weight	Operator	Sprocket Tooth Count	Door Weight
700	50	Up to 450 lbs	2200	700	60
	72	450 up to 700 lbs		1200	72
1200		700 up to 1200 lbs		2200	82
2200		1200 up to 1800 lbs			90
82	1800 up to 2200 lbs	* Sprockets will no longer be included in the box.			

IF YOU ARE UNSURE ON THE DRUM DIAMETER, THE BELOW TABLE HELPS IDENTIFY THE BEST RECOMMENDATION BY OPERATOR.

Operator Series	Drum Diameter	Desired Door Speed	Sprocket Tooth Count	1 in. Bore, 1/4 in. Keyway	1.25 in. Bore, 1/4 in. Keyway
700	Not Sure	12"/sec	22	71-1550B22LGH	71-1550B22QGH
700	Not Sure	9"/sec	32	71-1550B32LGH	71-1550B32QGH
1200	Not Sure	12"/sec	22	71-1550B22LGH	71-1550B22QGH
1200	Not Sure	9"/sec	32	71-1550B32LGH	71-1550B32QGH
2200	Not Sure	12"/sec	32	71-1550B32LGH	71-1550B32QGH
2200	Not Sure	9"/sec	42	71-1550B42LGH	71-1550B42QGH

Introduction

Voltage Selection

Voltage Selection	
120/240V single and 3 phase	Dedicated SKU
480V 3 phase	Dedicated SKU
600V 3 phase	Via accessory step down transformer

Model Electrical Ratings

Model	Operator Type	Electrical Rating	Cycle	Max. Door Weight
JDC7S1BMC	Jackshaft non-hoisted Operators	120Vac, 5A, 1PH; 240Vac, 2.5A, 1PH/3PH**	Standard Cycle	700 lbs.
JDC7S4BMC		480Vac, 1.25A, 1PH/3PH**		
JHDC7S1BMC		120Vac, 5A, 1PH; 240Vac, 2.5A, 1PH/3PH*	Standard Cycle	700 lbs.
JHDC7S4BMC		480Vac, 1.25A, 1PH/3PH*		
JHDC12S1BMC		120Vac, 9A, 1PH; 240Vac, 4.5A, 1PH/3PH*		
JHDC12S4BMC		480Vac, 3A, 1PH/3PH*	Extended Cycle	1200 lbs
JHDC12X1BMC		120Vac, 10A, 1PH; 240Vac, 5A, 1PH/3PH*		
JHDC12X4BMC		480Vac, 3.5A, 1PH/3PH*		
JHDC22X1BMC		120/240 single, 3 phase*		
JHDC22X4BMC		480V 3 phase*		2200 lbs
TDC7S1BMC	Trolley Operators	120Vac, 5A, 1PH; 240Vac, 2.5A, 1PH/3PH*	Standard Cycle	700 lbs.
TDC7S4BMC		480Vac, 1.25A, 1PH/3PH*		
TDC12S1BMC		120Vac, 9A, 1PH; 240Vac, 4.5A, 1PH/3PH*		
TDC12S4BMC		480Vac, 3A, 1PH/3PH*	Extended Cycle	1200 lbs
TDC12X1BMC		120Vac, 10A, 1PH; 240Vac, 5A, 1PH/3PH*		
TDC12X4BMC		480Vac, 3.5A, 1PH/3PH*		
TDC22X1BMC		120/240 single, 3 phase*		
TDC22X4BMC		480V 3 phase*		2200 lbs
JHDC12X1N4XMC	Hoist Nema4X Operators	120/240 single, 3 phase N4X	Extended Cycle	1200 lbs
JHDC12X4N4XMC		480V 3 phase N4X		
JHDC22X1N4XMC		120/240 single, 3 phase	Extended Cycle	2200 lbs
JHDC22X4N4XMC		480V 3 phase		
TDC12X1N4XMC	Trolley Nema4X Operators	120/240 single, 3 phase N4X	Extended Cycle	1200 lbs
TDC12X4N4XMC		480V 3 phase N4X		
TDC22X1N4XMC		120/240 single, 3 phase N4X	Extended Cycle	2200 lbs
TDC22X4N4XMC		480V 3 phase N4X		

* BBU capable

** BBU included

Operator Specifications

Duty Cycles:

- Standard: 20 cycles per hour / 90 cycles per day
- Extended: 30 cycles per hour / 150 cycles per day
- BBU: 20 cycles, when fully charged.

Wall Controller: NEMA 1 General Purpose 3-Button Wall Controller Open/Close/Stop, LCD Display, and floor level commissioning through intuitive user menu.

Operation Mode: C2 (Factory default), B2, B2/T, B2/TS, D1, E2 and FSTS.

Brake: Standard Dynamic braking on 700, 1200, 2200; only 2200 has the standard Solenoid powered-off brake.

Disconnect:

- Jackshaft: No disconnect. Jackshaft operators come standard with battery backup for automatic opening or closing in case of emergency.
- Hoist: Operator includes an Engage rope (green) and a disengage rope (red) with manual hoist to electronically disable the operator controls.
- Trolley: Quick disconnect door arm for emergency manual door operation.

Mechanical Drive Reduction:

- Model JDC: 65:1 gearbox with #50 chain output.

- Model JHDC: 65:1 gearbox with #50 chain output.
- Model TDC: 65:1 gearbox with #48 chain output on 700 units and #41 chain output on 1200 and larger units.

Door Speed:

Fine adjustments are made via Wall Controller menu; if you want to slow down the operator, please adjust via sprocket choice:

- Model JDC: 12" per second for sectional and 8-9" per second for rolling steel doors.
- Model JHDC: 12" per second for sectional and 8-9" per second for rolling steel doors.
- Model TDC: 12" per second for sectional doors.

Limit Adjust:

Temperature Ratings:

- -20°C (14°F) to +65°C (149°F)
- ENVIRONMENT: For indoor use only.

Max. Door Weight: See Operator Charts which include Door Weight and Height information.

Door Dim: See Operator Charts which include Door Weight and Height information.

Important Safety Instructions

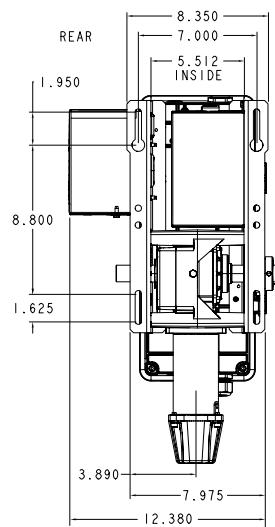
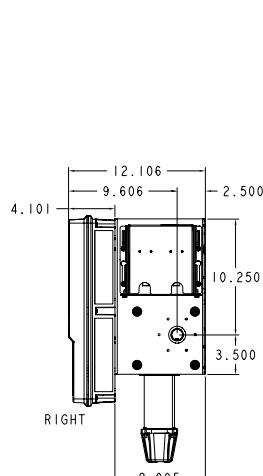
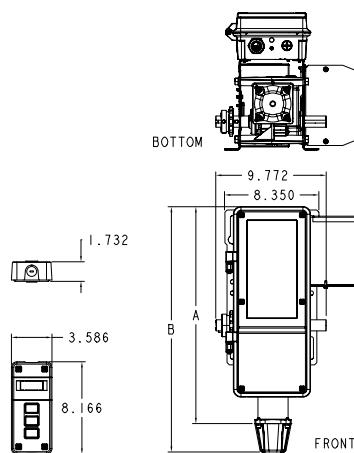
WARNING

To reduce the risk of SEVERE INJURY or DEATH:

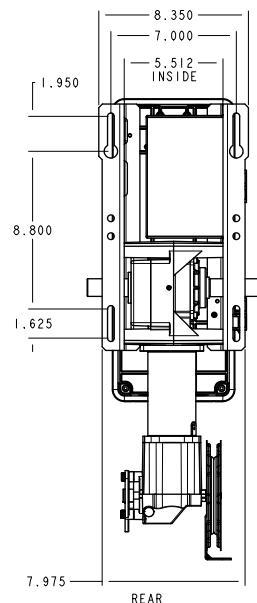
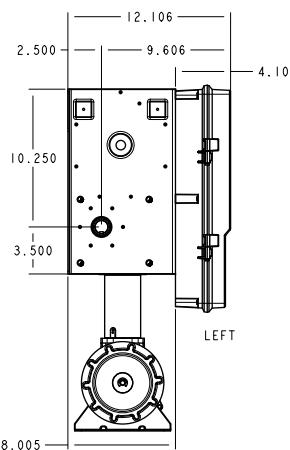
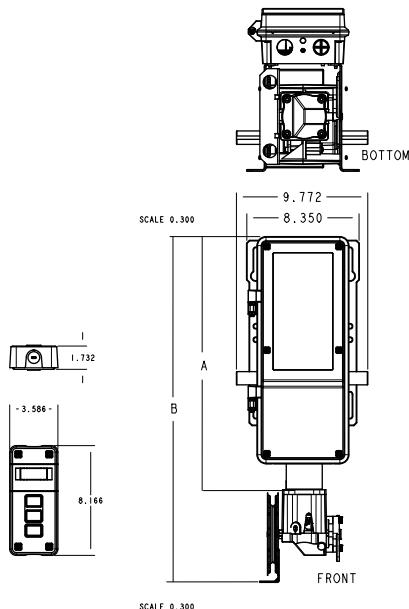
1. READ AND FOLLOW ALL WARNINGS AND INSTRUCTIONS.
2. ALWAYS keep remote controls out of reach of children. NEVER permit children to operate or play with door control push buttons or remote controls.
3. ONLY activate a door when it can be seen clearly, it is properly adjusted and no obstructions exist in the path the door will travel.
4. Personnel should keep away from a door in motion and ALWAYS keep a door in sight until completely closed. NO ONE SHOULD CROSS THE PATH OF A MOVING DOOR.
5. NO ONE SHOULD GO UNDER A STOPPED OR PARTIALLY OPENED DOOR.
6. If possible, use the manual release handle to disengage a door ONLY when a door is CLOSED. Weak or broken springs or an unbalanced door could result in an open door falling rapidly and/or unexpectedly causing SEVERE INJURY or DEATH.
7. NEVER use manual release handle unless the doorway is clear of persons and obstructions.
8. After ANY adjustments are made, the entrapment protection device(s) MUST be tested. Failure to adjust the operator properly may cause SEVERE INJURY and DEATH.
9. Entrapment protection device(s) MUST be tested every month. Failure to adjust the operator properly may cause SEVERE INJURY and DEATH.
10. ALWAYS KEEP DOOR PROPERLY BALANCED. An improperly balanced door may NOT reverse when required and could result in SEVERE INJURY or DEATH. See the door manufacturer's owners manual.
11. ALL repairs to cables, spring assemblies and other hardware, ALL of which are under EXTREME tension, MUST be made by an Authorized Service Technician.
12. ALWAYS disconnect electric power to the door operator BEFORE making ANY repairs or removing covers.
13. NEVER try to loosen or remove an obstruction that has impeded the movement of the door. Both the obstruction and door are under EXTREME tension and loosening or removing an obstacle, impeding the movement of the door, can cause SERIOUS PERSONNAL INJURY.
14. NEVER stand under a door that has been impeded by an obstruction. KEEP CLEAR. Door could move freely at any time and can cause SERIOUS PERSONNAL INJURY.
15. If the door should be obstructed or impeded in its movement, ALWAYS call an Authorized Trained Service Technician to clear that obstruction.
16. SAVE THESE INSTRUCTIONS.

Operator Dimensions

Jackshaft (JDC) and Hoist (JHDC)



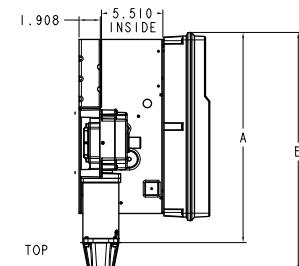
OPERATOR DIMENSIONS TABLE		
	DIMENSIONS	
	A	B
700LB STD	19.187"	21.701"
1200LB STD	19.502"	22.016"



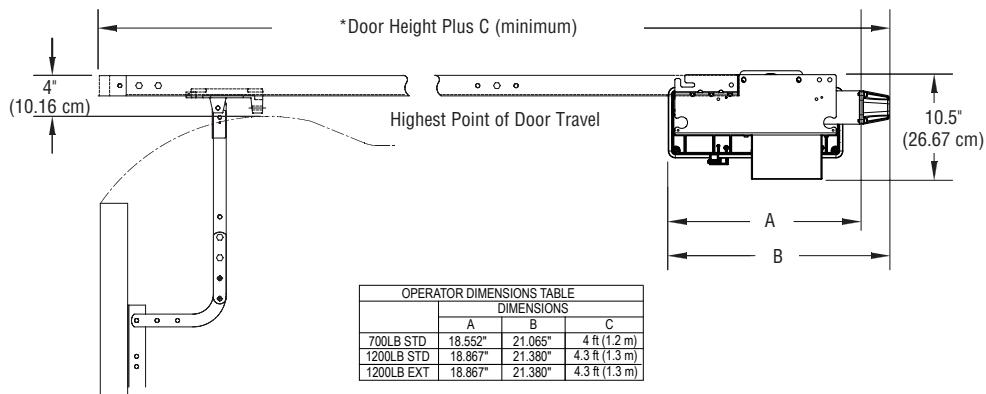
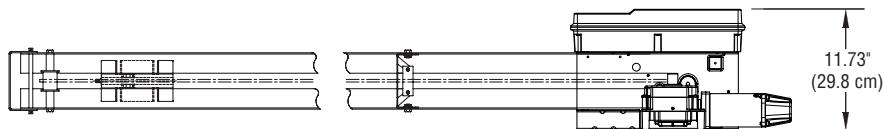
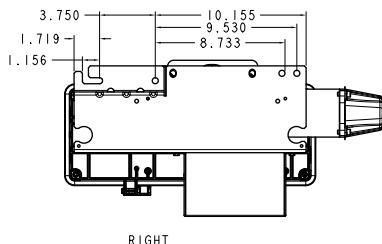
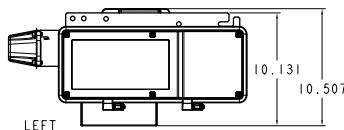
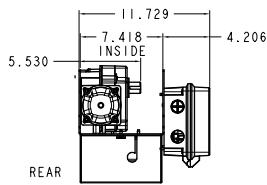
OPERATOR DIMENSIONS TABLE		
	DIMENSIONS	
	A	B
700LB STD	19.1867"	25.7279"
1200LB STD	19.5017"	26.0428"

Operator Dimensions (continued)

TDC Trolley

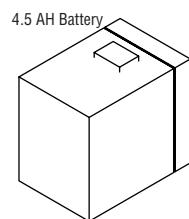
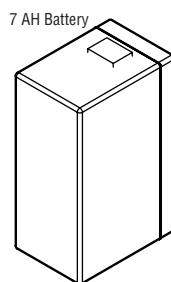
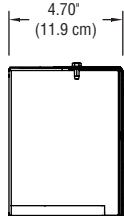
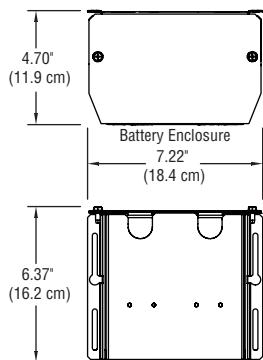


	OPERATOR DIMENSIONS TABLE	
	DIMENSIONS	
700LB STD	18.552"	21.065"
1200LB STD	18.867"	21.380"



Operator Dimensions (continued)

Battery Backup



TDC Trolley Operators



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 an Authorized Service Technician 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, cable, 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.
- Fasten the operator SECURELY to structural supports of the building.
- Concrete anchors MUST be used in installing ANY brackets.

Carton Inventory

Your door operator is packaged in one carton which contains the motor unit and the items below. If anything is missing, carefully check the packing material.

Description

- Operator assembly
- Installation manual and warning placards
- Hardware box
- Wall Controller
- LiftMaster Monitored Entrapment Protection, CPS-U Photoelectric Sensors
- Trolley drive chain

NOTE: Trolley tracks and drive chain are shipped separately from operator packaging.

Hardware

- Fasteners
- Track spacers
- Trolley
- Door arm assembly
- Front idler
- Header mounting bracket

TDC Trolley Assembly

Assemble the Operator

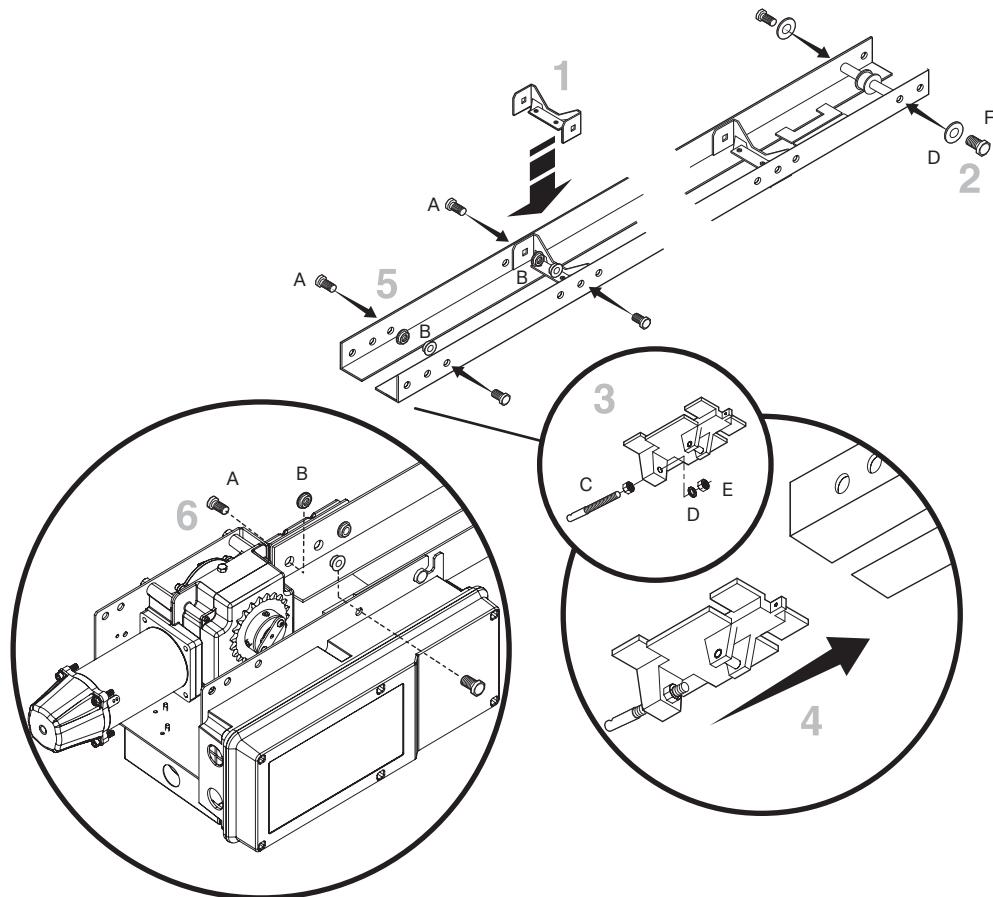
1. Install the track spacers evenly over the length of the track. Fasten the spacers to the track with bolt (A) and flange hex nuts (B).

Spacers Provided	Track Length
2	8-14 foot
3	16-20 foot
4	22-24 foot

2. Install the front idler to the track with bolts (F) and washers (D).
3. Assemble the trolley with the take up bolt (C), hex nuts (E), and lock washer (D).
4. Slide the trolley onto the track.
5. Insert bolts (A) into the end of the track and loosely thread the nuts (B) onto the ends of the bolts.
6. Slide bolts (A) on the end of the track assembly into the "L" slot in the operator and tighten nuts (B). Insert bolts (A) into the holes on the end of the track and the operator. Secure the track with nuts (B).

HARDWARE

A	Bolt 3/8"-16 x 3/4"	
B	Flange Hex Nut 3/8"-16	
C	Take Up Bolt	
D	Lock Washer 3/8"	
E	Hex Nut 3/8"-16	
F	Bolt 3/8"-16 x 1"	

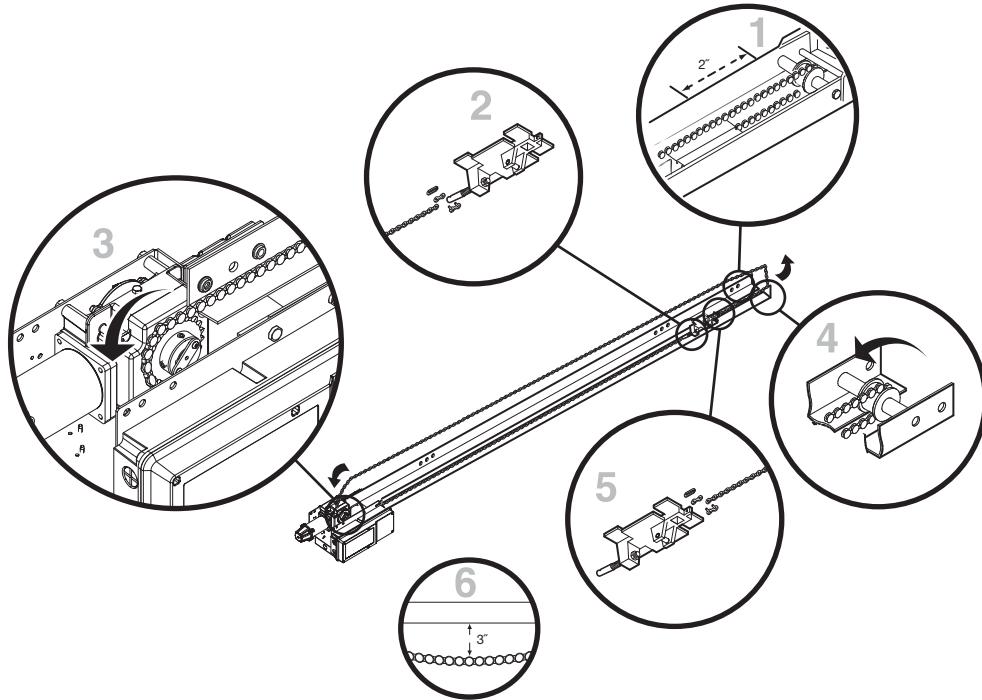


TDC Trolley Assembly (continued)

Install the Chain

The chain is packed separately from the operator. Please ensure you have your chain before starting installation.

1. Position the trolley 2 inches (5.1 cm) away from the front idler.
2. Attach the chain to the trolley threaded shaft using the master link.
3. Run the chain along the track to the operator. Wrap the chain around the operator drive sprocket.
4. Run the chain along the track to the front idler. Wrap the chain around the front idler.
5. Attach the chain to the front of the trolley using the master link.
6. Tighten the chain until the chain sags about 3 inches (7.6 cm) at the mid point of the track.
7. For retrofit trolley installations, use an additional 16" of chain for the installation.

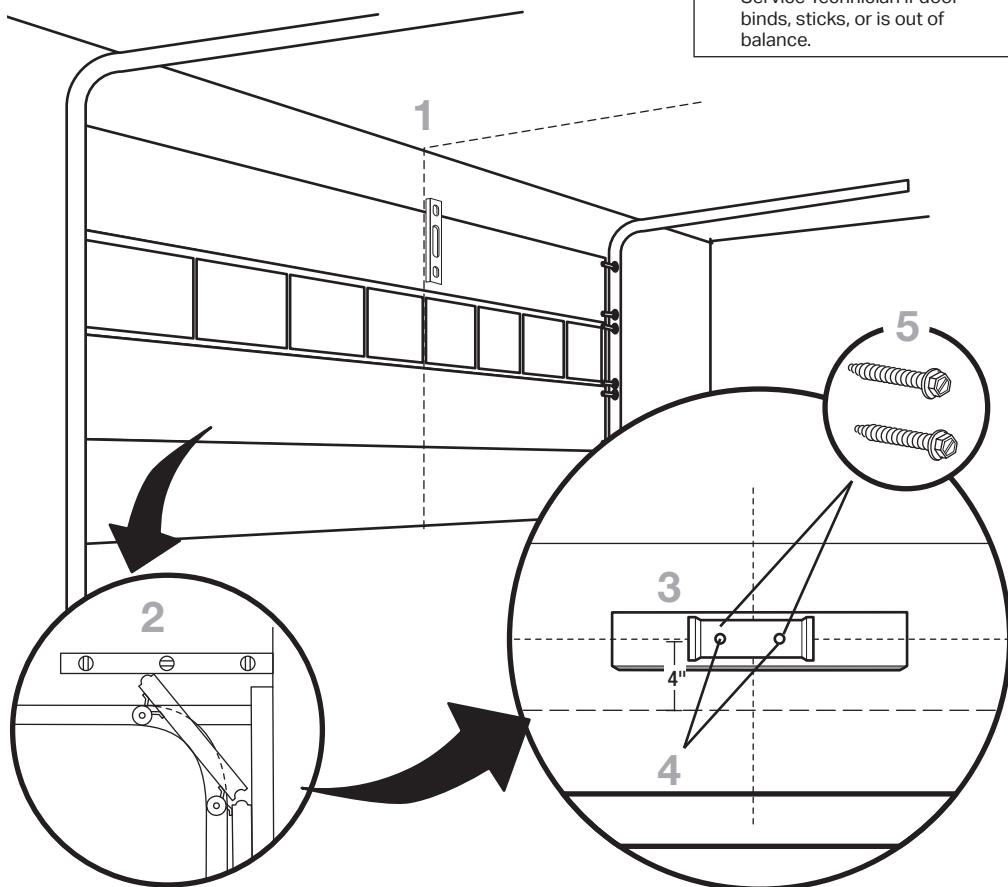


TDC Trolley Installation

Install the 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 the door stile / top section support. Typically, the operator may be mounted up to 24 inches (60.1 cm) off center on torsion spring doors. Extension springs require center mounting.

1. Close the door. Mark the center of the door with a vertical line, extend the line onto the ceiling.
2. Open the door to the highest point of travel mark 4 inches (10.1 cm) above the highest point of travel.
3. Center the header bracket on the vertical center line and the horizontal line.
4. Drill the pilot holes for the header bracket.
5. Fasten the header bracket with appropriate hardware (not provided).



WARNING

To prevent possible SERIOUS INJURY or DEATH:

- Header bracket MUST be RIGIDLY fastened to the structural support on the header wall or ceiling, otherwise the door might NOT reverse when required. DO NOT install the header bracket over drywall.
- Concrete anchors MUST be used if mounting the header bracket or 2x4 into masonry.
- NEVER try to loosen, move or adjust door, springs, cables, pulleys, brackets, or their hardware, ALL of which are under EXTREME tension.
- ALWAYS call an Authorized Service Technician if door binds, sticks, or is out of balance.

TDC Trolley Installation (continued)

Attach the Track to the Header Bracket and Hang the Operator

1. Align the track with the header bracket.
2. Insert the clevis pin through the track and header bracket holes. Secure with the fasteners.
3. Swing the operator up and ensure the operator is level.
4. Secure the operator using the appropriate fasteners and locking hardware to support the weight of the operator.



WARNING

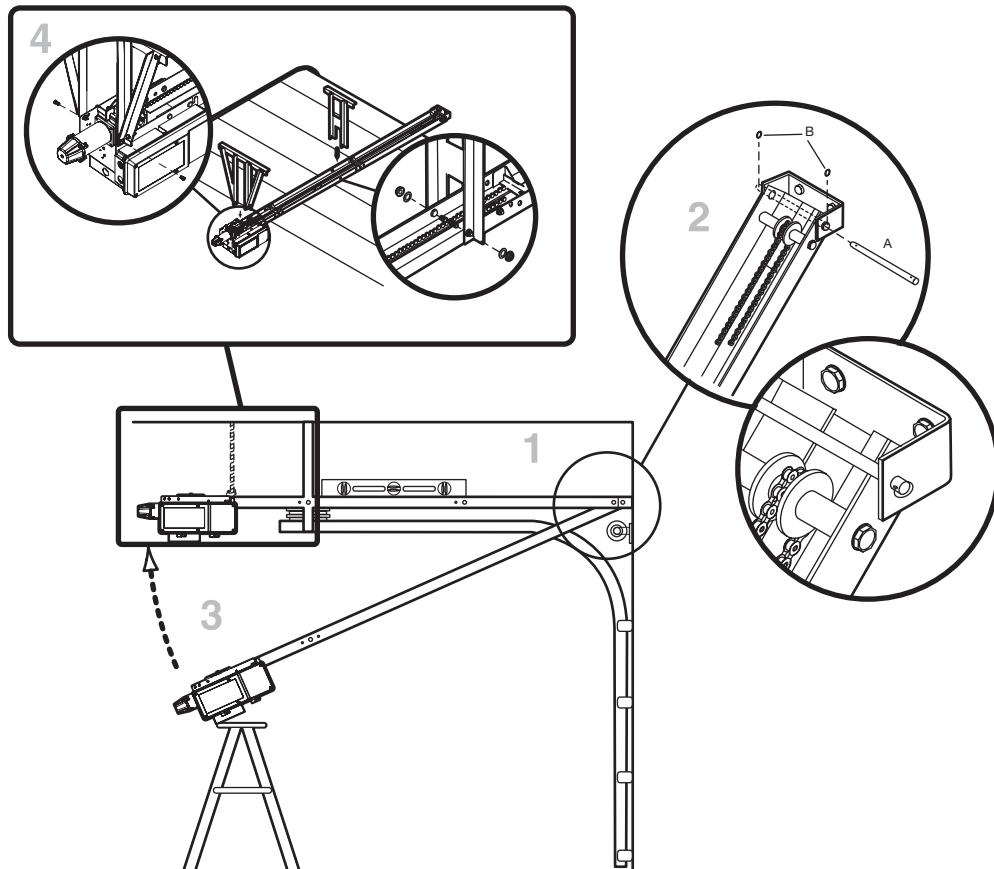
To avoid possible SERIOUS INJURY from a falling operator:

- Fasten the operator SECURELY to structural supports of the building.
- Concrete anchors MUST be used if installing ANY brackets into masonry.

HARDWARE

Clevis Pin (1)  A

Keeper Rings (2)  B



TDC Trolley Installation (continued)

Attach the Door Arm and Bracket

1. Latch the door arm to the trolley. Make sure the open side of the notch on the door arm faces the door.
2. Position the door bracket to the center line of the door and attach the door bracket to the door using appropriate hardware (not included).

NOTE: When properly installed and adjusted the door arm should be leaning back toward the operator slightly. Refer to door manufacturer's instructions for recommended installation guidelines.



WARNING

To prevent possible SERIOUS INJURY from a moving chain:

- DISCONNECT electric power to the operator BEFORE manually operating your door.
- If possible, use emergency disconnect ONLY when door is CLOSED. Weak or broken springs or unbalanced door could result in an open door falling rapidly and/or unexpectedly.
- NEVER use emergency disconnect unless doorway is clear of persons and obstructions.

HARDWARE

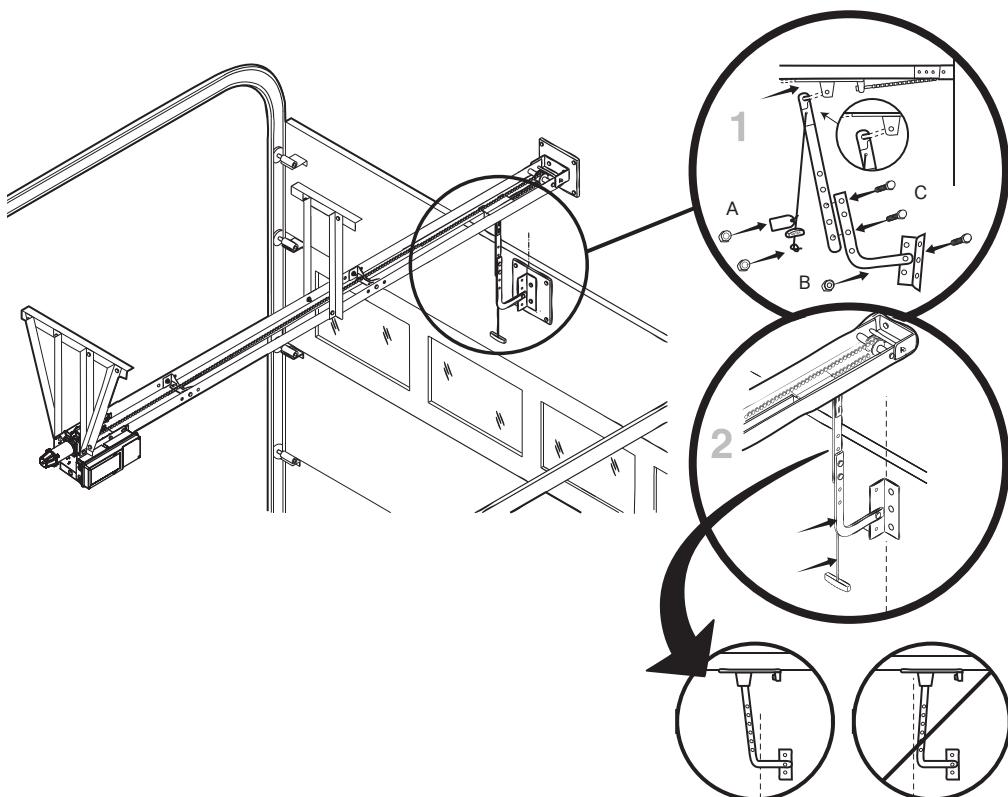
A Flanged Hex Nut 3/8"-16 (2)



B Nylok Nut 3/8"-16 (1)



C Bolt 3/8"-16 x 1" (3)



Jackshaft (JDC) and Hoist (JHDC) Operators

Carton Inventory

Your door operator is packaged in one carton which contains the motor unit and items below. If anything is missing, carefully check the packing material.

Description

- Powerhead assembly
- Installation manual and warning placards
- Hardware box (includes fasteners)
- Floor level Wall Controller with LCD display to program and setup the door and operator system
- LiftMaster Monitored Entrapment Protection, CPS-U Photoelectric Sensors
- Hoist hand chain (JHDC models only)
- Engagement/Disengagement Ropes (JHDC models only)
- Door/operator drive chain

JDC Operators also include:

- 700 operators - (2) 4.5 AH batteries and battery mounting tray

NOTE: The new DC logic board includes inputs for CTM (Cable Tension Monitor). Although, not required to operate the unit, it is highly recommended to include Cable Tension Monitors (part #'s: K41-0157-000 and K41-0156-000) on standard, vertical and high lift installations. The Cable Tension Monitor detects cable slack and will stop and reverse the door.

NOTE: Pusher springs should be used with the door system to help get the door moving in the Close direction. For certain types of doors, such as standard lift, angled track may also be recommended. Please check with the door manufacturer for details.

Door Sprockets

Door sprocket kits (including keyway and setscrew) are sold and shipped separately from operator. Reference the tables in the "Door Sprockets (For JDC/JHDC Operators Only)" section to determine appropriate sprocket tooth count for your application.

WARNING

To prevent possible SERIOUS INJURY, DEATH, or uncontrolled descent of the door:

- When installing a jackshaft-style operator on a sectional door, additional precautions MUST be taken to assure that proper door cable tension is present throughout the ENTIRE travel of the door.

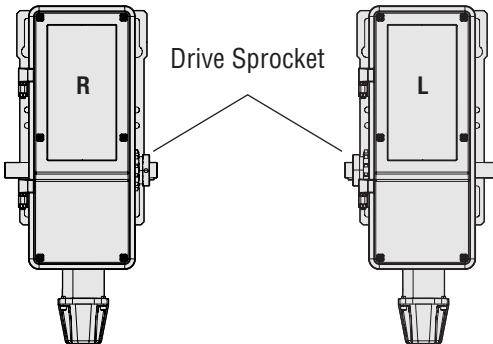
JDC/JHDC Assembly

Configure the Operator

Units are now dual handed and can be used in either the right or left side.

1. Select right (R) or left (L) handing for the sprocket and hoist as needed.

- For JDC models, the drive sprocket can be mounted on either the right or left side.



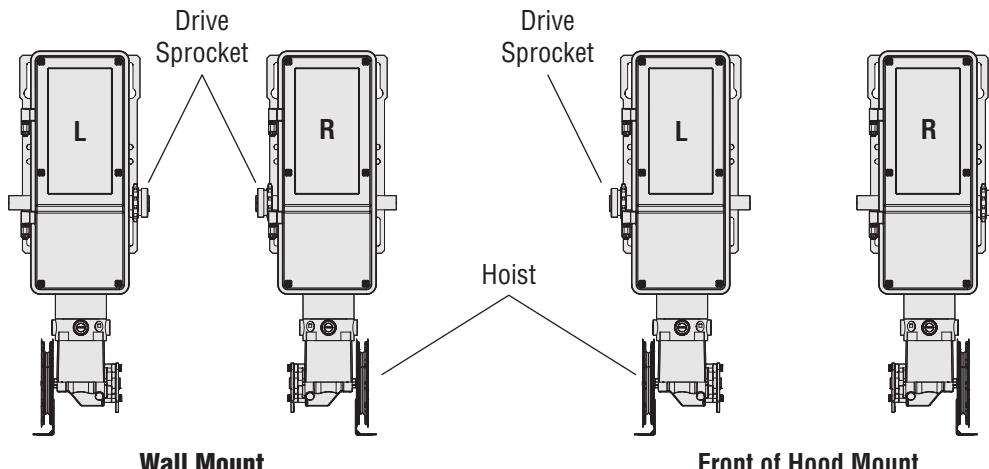
- For JHDC models with manual hand chain systems, the drive sprocket can be installed as a right (R) hand or left (L) hand.

NOTE: The hoist will need to change location depending on the wall mount or front of hood application shown in the images below.

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 an Authorized Service Technician 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, cable, 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.
- Fasten the operator SECURELY to structural supports of the building.
- Concrete anchors MUST be used if installing ANY brackets.



- To reposition the hoist:
 - a. Remove the four allen bolts.
 - b. Pull the housing down and away from the motor, then rotate the housing 180 degrees.
 - c. Place the housing back up to the motor and tighten back in place using the allen bolts.

2. Place the operator drive sprocket on the appropriate side of the operator for your installation type. To avoid potential damage caused by an overhung load, position the sprocket as close to the center of the exposed drive shaft.

Battery Backup Wiring

NOTE: It's recommended to install battery backup unit at ground level, prior to mounting operator on fixed location.

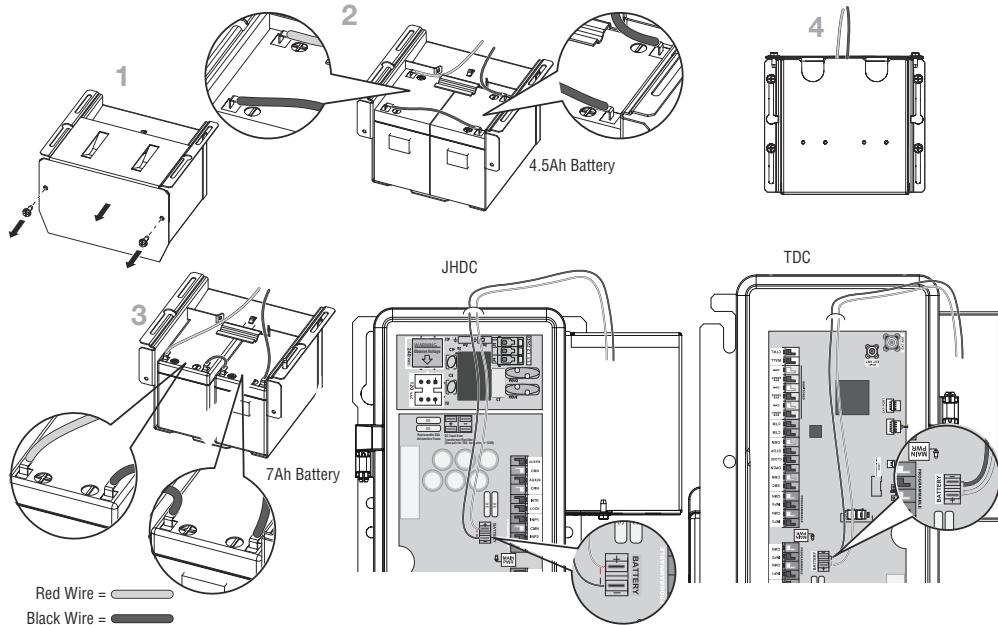
1. Remove the battery cover from the battery enclosure (see image 1).
2. Ensure jumper and battery harness are properly routed and connected (see images 2 and 3).
3. Using supplied screws, reinstall and secure battery box cover and ensure screws are tightened firmly (see image 1).
4. Using supplied screws, mount battery enclosure to operator (OR) in an appropriate alternate location and ensure screws are tightened firmly. (Reference the Recommended mounting location.)
5. Route wires around backside of battery enclosure, through knock out and into electrical box. (Reference the Knock out location.)
6. Place snap in cord gland over top of wires and snap into place.

Recommended mounting location:

- JHDC/JDC: Side of operator; opposite from drive shaft and sprocket location.
- TDC: Mount to the bottom of the operator. Open electrical box and knock out appropriate backside $\frac{1}{2}$ conduit location.

Knock out location:

- JHDC/JDC: Bottom of the electrical box, adjacent to the EMI filter board.
- TDC: Bottom of the electrical box, adjacent to the antenna AUX connection.



JDC/JHDC Installation

Determine Mounting Location

1. The operator may be mounted on the wall, shelf, or bracket (not provided, see "Accessories" section. The optimum distance between the door shaft and operator drive shaft is 12-15 inches (30.5-38 cm).

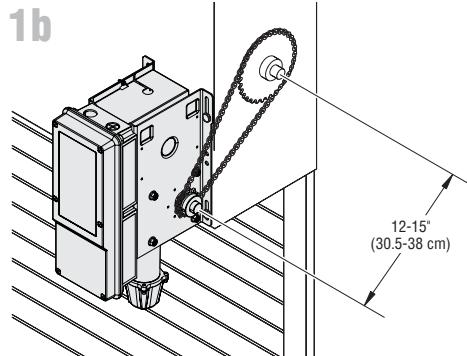
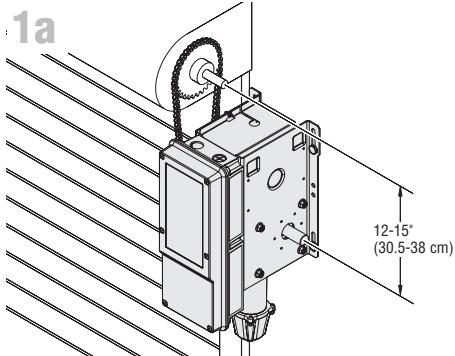
In the image, 1a shows the wall mount, and 1b shows the shelf or bracket mount.

WARNING

TO REDUCE THE RISK OF SEVERE INJURY:

- Install the operator, a minimum of 8 feet (2.44m) from the floor.

NOTE: If the operator sprocket is below the minimum 8 foot requirement, please purchase and install the operator Chain/Sprocket Guard Kit PN# CHNGUARD travel of the door.



JDC/JHDC Installation (continued)

Mount the Operator

The wall or mounting surface MUST provide adequate support for the operator.

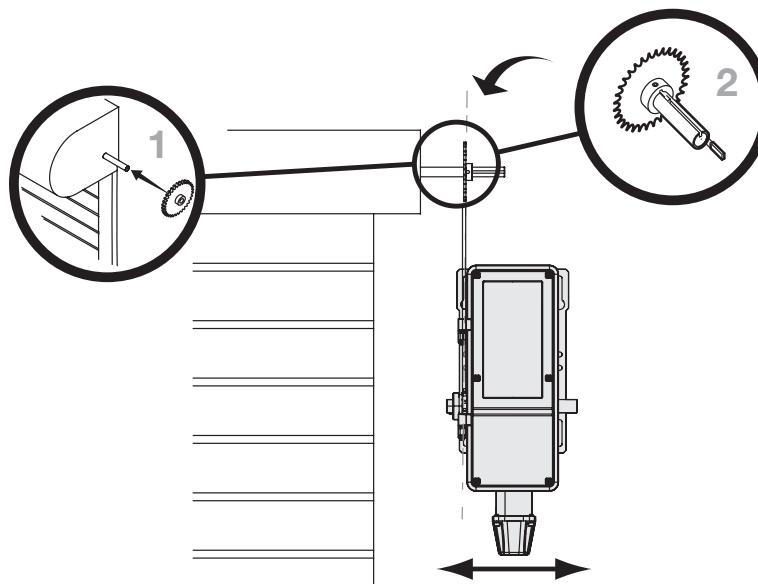
The surface must:

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

1. Place the door sprocket on the door shaft so it can be moved to align vertically with the operator drive shaft.
2. Insert the keys and fasten the sprockets with the set screws (recommended torque for the set screws is 34-45 in/lb).
3. Hold the operator in the desired mounting position so the door sprocket and the drive sprockets are vertically aligned.
4. Mount the operator to the wall or mounting plate where the operator can be moved to aligned with the appropriate hardware (not supplied).
5. Wrap the drive chain around the door sprocket and the drive sprocket, then secure with the master link.

NOTE: Chain links may need to be removed to achieve appropriate chain length.

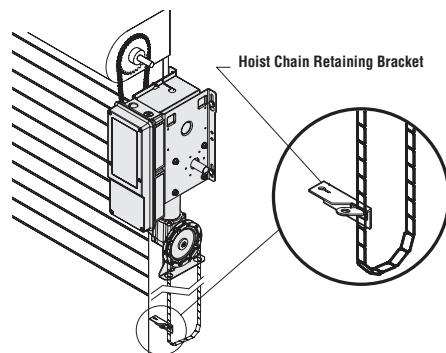
NOTE: It is highly recommended to add a thread adhesive to secure the set screws in place.



Secure the Chain Hoist

1. Fasten the Hoist Chain Retaining Bracket 4 feet (1.2 m) above the floor.

NOTE: If the position of the operator causes the hand chain to hang in the door opening, hook the chain to the side near the top of the door jamb.



Manual Release

Emergency Disconnect System Model TDC

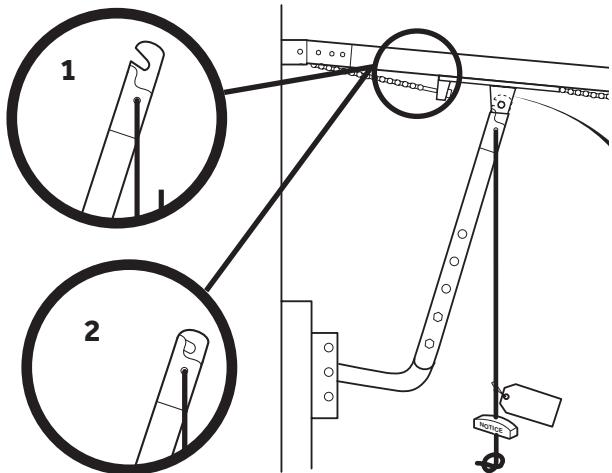
TO DISCONNECT DOOR FROM OPERATOR

The door should be in the fully closed position if possible.

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

TO RECONNECT DOOR ARM TO TROLLEY

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



WARNING

To prevent possible SERIOUS INJURY or DEATH from a falling door or arm:

- DISCONNECT electric power to the operator BEFORE manually operating your door.
- DO NOT stand under the door arm when pulling the emergency release.
- If possible, use emergency disconnect ONLY when door is CLOSED. Weak or broken springs or unbalanced door could result in an open door falling rapidly and/or unexpectedly.
- NEVER use emergency release handle unless doorway is clear of persons and obstructions.

Emergency Disconnect System Model JHDC

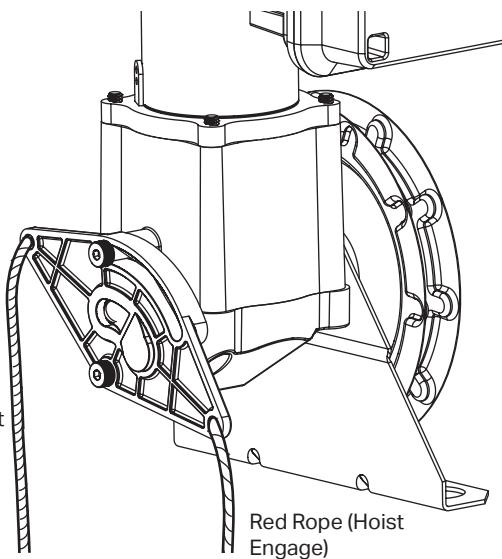
These operators have provisions for manually operating the door in case of emergency or power failure. These operators are equipped with a manual hoist. An electrical interlock will disable the electrical controls when the hoist is used.

This operator includes Engage rope (green) and a disengage rope (red) with manual hoist to electrically disable the operator controls.

MANUAL HOIST USAGE

1. To engage the hoist, pull the red disconnect rope. Simultaneously, this will electrically disable the operator controls. NOTE: F96 INTERLOCK will be displayed.
2. Manually operate the door in the desired direction by pulling on one side or the other of the continuous loop hoist chain.
3. To disengage hoist, pull the green rope, which will also enable electrical control of the operator.

Green Rope (Hoist Dis-Engage)



Wiring



WARNING

To prevent possible SERIOUS INJURY or DEATH:

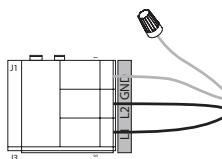
- ANY maintenance to the operator or in the area near the operator MUST NOT be performed until disconnecting the electrical power and locking-out the power. Upon completion of maintenance the area MUST be cleared and secured, at that time the unit may be returned to service.
- Disconnect power at the fuse box BEFORE proceeding. Operator MUST be properly grounded and connected in accordance with national and 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.
- 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 separately.

Power and Ground

Power and control wiring must be run in separate conduit to comply with national and local electrical codes. For power wiring, use the appropriate wire gauge. Use conduit knockouts, conduit fittings, and appropriate conduit fittings for wiring as indicated on the electrical box label.

1. Open the electrical box cover.
2. Run power wires to electrical box according to national and local electrical codes.

NOTE: For **THREE PHASE POWER**, only connect two of the incoming power legs to L1 and L2. Cap off the third leg. Connect Ground to GND.



3. Attach power and ground wires to appropriate terminals. Incoming power leads go to L1 and L2. Connect Ground wire to GND.

NOTE: The operator must be properly grounded.
Failure to properly ground the operator could result in electric shock and serious injury.

* Maximum wire gauge that can be connected to the operator's terminal is 12 AWG. When a larger wire gauge is required, the wire must be gauged down to 12 AWG. USE COPPER WIRE ONLY.

Image A

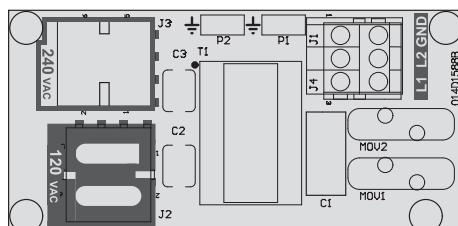
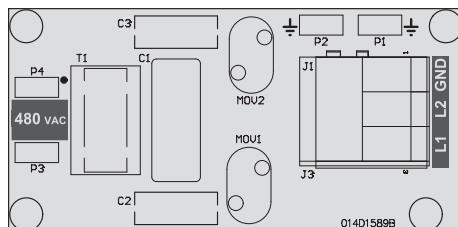


Image B



Voltage Selection

NOTE: LiftMaster offers two types of EMI filter boards. However, each operator will ONLY house a single type of board, dependent on operator voltage specification ordered. Reference Image A for 120/240Vac and Image B for 480Vac.

1. Locate EMI filter board inside of the electrical box.
2. Remove the orange voltage sticker covering the voltage connector/s and stick it to the inside of the electrical box.
3. On units with type A EMI filter boards (see Image A), verify incoming voltage and phase type.
4. Plug the connector to the appropriate plugin labeled 120Vac OR 240Vac.

Applying AC Power

1. Power the operator by turning the circuit breaker on supplying AC power to the operator.

NOTE: If using an electric driver to secure screws, set clutch to lowest setting.

Wall Controller Installation

WARNING

To prevent possible SERIOUS INJURY or DEATH from electrocution:

- Be sure power is NOT connected BEFORE installing the door control.

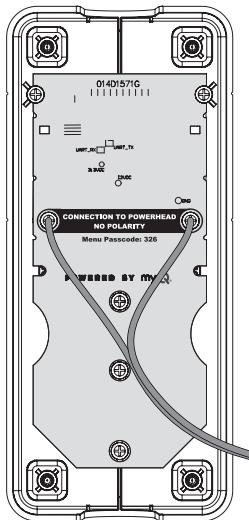
To prevent possible SERIOUS INJURY or DEATH from a closing door:

- Install the door control within sight of the door, out of reach of small children, at a minimum height of 5 feet (1.5 m) above landings, steps, or any other adjacent walking surface, and away from ALL moving parts of the door.
- Install the control station far enough from the door to prevent the user from coming in contact with the door while operating the controls.
- Install the entrapment warning placard on the wall next to the control station in a prominent location visible from the door.
- NEVER permit children to operate or play with door control push buttons or remote controls.
- Activate a door ONLY when it can be seen clearly, is properly adjusted and no obstructions exists in the path the door will travel.
- ALWAYS keep the door in sight until completely closed. NEVER permit anyone to cross path of a closing door.

NOTE: The field wiring terminals are rated for 14-24 AWG wire Stranded and 12-24 AWG Solid (300ft of 24AWG twisted pair wire is the recommended run / distance of wire).

1. Remove wall control cover from mounting bracket by loosening the four Philips screws at each corner of the housing.
2. Using appropriate mounting hardware (not supplied), fasten the mounting bracket to the wall near the operator and at least 5 feet (1.5m) above floors, landings, steps, or any other adjacent walking surface.
3. Select the appropriate knockout and run the wires to the operator (in accordance with national and local electrical codes).
4. Connect wires to the wall controller (wall controller wires are NOT polarity sensitive) and reinstall the wall controller cover.
5. Fasten the entrapment warning placard next to the wall control.

4



Entrapment Protection

Monitored Entrapment Protection

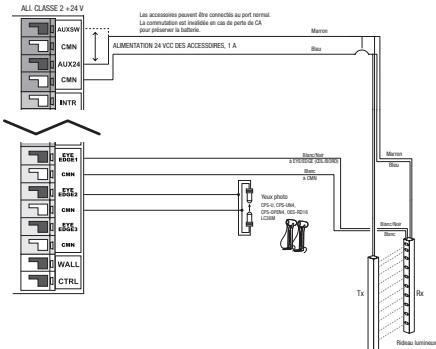
IMPORTANT INFORMATION ABOUT THE MONITORED ENTRAPMENT PROTECTION DEVICES

Eyes/ Edge inputs will not be functional until the system is commissioned / programmed. LED on Eyes/ Edge will be off until fully commissioned/ programmed.

A monitored entrapment protection device is required for most operation modes (see "Monitored Eyes/Edge Configuration" section). If a monitored entrapment protection device is not installed, constant pressure to close will be required from the wall controller.

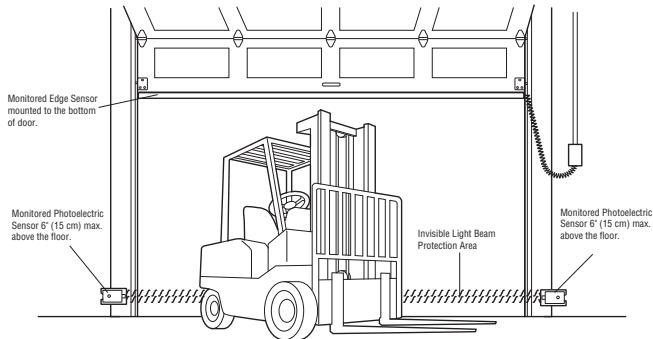
See "Accessories" section for a complete list of monitored entrapment protection devices.

Three EYE/EDGE terminals are provided. Each terminal can accept ONE device. For easy identification during installation, the correct terminals are yellow.



NOTE: A set of photoelectric sensors (photo eyes) are included and must be installed, except for constant pressure to close. Depending on your installation and usage needs, please consult with your installation specialist to see if the addition of a contact edge sensor on the leading edge of the door, a cable tension monitor and/or a light curtain is also required.

Typical Entrapment Protection Device(s) Overview



WARNING

To prevent possible SERIOUS INJURY or DEATH from a closing door:

- Be sure power is NOT connected to the door operator BEFORE installing the photoelectric sensor(s).
- The door MUST be in the fully opened or closed position BEFORE installing the LiftMaster Monitored Entrapment Protection Device(s).

To prevent SERIOUS INJURY, DEATH, ENTRAPMENT, or PROPERTY DAMAGE:

- Correctly connect and align the photoelectric sensor.
- Install the primary monitored photoelectric sensor beam NO HIGHER than 6" (15 cm) above the floor.
- This is a required LMEP Device for B2, TS, T, and FSTS wiring types and MUST NOT be disabled. For D1, C2, and E2 wiring the installation of an entrapment protection device is recommended.
- LiftMaster Monitored Entrapment Protection Devices are for use with LiftMaster Commercial Door Operators ONLY. Use with ANY other product voids the warranty.
- If an edge sensor is being used on a horizontal slide door, place one or more edge sensors on both the leading and trailing edge.
- If an edge sensor is being used on a vertical moving door, place edge sensors on the bottom edge of the door.
- NEVER try to loosen or remove an obstruction that has impeded the movement of the door. Both the obstruction and door are under EXTREME tension and loosening or removing an obstacle, impeding the movement of the door, can cause SERIOUS PERSONAL INJURY.
- NEVER stand under a door that has been impeded by an obstruction. KEEP CLEAR. Door could move freely at any time and can cause SERIOUS PERSONAL INJURY.
- If the door should be obstructed or impeded in its movement, ALWAYS call an Authorized Trained Service Technician to clear that obstruction.

Entrapment Protection (continued)

Install the Monitored Light Curtain (Optional)

This step includes directions to install one set of monitored light curtains as a standalone primary entrapment protection device.

The mounting brackets must be securely fastened to a solid surface such as a wall framing. If installing the mounting brackets in masonry construction, add a piece of wood at each location to avoid drilling extra holes in the masonry.

NOTE: If the Monitored Light Curtain is installed with coil cord, the coil cord needs to be secured so it will not interrupt the light beams.

1. Fasten the mounting brackets loosely to both Monitored Light Curtain with the screws provided.
2. Measure a maximum of 6 inches above the floor. Mark this location. The lowest optical sensor of the Monitored Light Curtain must be installed at or below this point. In this application, in order to assure that the lowest optical sensor is mounted no higher than 6" above the ground, the light curtain wires must be oriented at the top of the light curtain in this application.
3. Hold the Monitored Light Curtain up to the desired mounting location with the cable end pointing upward. Secure the bottom mounting bracket to the mounting surface.
4. Make sure the Monitored Light Curtain is level and secure the upper mounting bracket to the mounting surface.
5. Tighten the screws to secure the Monitored Light Curtain to the mounting bracket.
6. Secure the other Monitored Light Curtain to the opposite side of the door following steps 2-5, making sure they are aligned.
7. Run wires to the operator.
8. Twist like colored wires together, brown to brown and blue to blue.

POWER WIRING

Do not run wiring in the same conduit with AC power.

1. Disconnect power to the operator.
2. Connect the wires from the Monitored Light Curtain LC36M to the following.
 - a. Brown wire to + Aux24 power
 - b. Blue wired to – Aux24 CMN
 - c. White wire to eye/edge input –
 - d. Black wired to eye/edge input +



To prevent possible product damage and incorrect operation:

- NEVER scratch or paint the optical sensors.
- DO NOT drill ANY additional holes into the Monitored Light Curtain.
- Correctly connect and align the Monitored Light Curtain transmitter and receiver.
- DO NOT bend or twist the Monitored Light Curtain.
- Oil may damage the Monitored Light Curtain cable so contamination MUST be avoided at ALL times.
- DO NOT mount the Monitored Light Curtain where sunlight or other external infrared light sources will shine directly into the optical sensors of the Monitored Light Curtain receiver. If necessary, switch the mounting side of the Monitored Light Curtain transmitter and receiver.

ALIGNMENT

The Monitored Light Curtain transmitter and receiver must be aligned. When properly wired and aligned the amber and green LEDs will be ON. The amber LED is located on the Monitored Light Curtain Transmitter and the green LED is located on the Monitored Light Curtain Receiver. If the amber and green LEDs are not on, see the table below.

1. Open and close the door for one complete cycle to let the operator register the Monitored Light Curtain.

Amber LED	Green LED	Status	Solution
OFF	OFF	No power	Check wiring.
ON	Blinks	<ul style="list-style-type: none">• Monitored Light Curtain receiver and transmitter are not aligned• Obstructed light beam• Defective Monitored Light Curtain Receiver	<ul style="list-style-type: none">• Adjust the Monitored Light Curtains to correct alignment• Remove the obstruction• Replace Monitored Light Curtain receiver and transmitter (Model LC36M)

NOTE: For more detailed information, please refer to Monitored Light Curtain manual 114-5541.

Cable Tension Monitors

Install the Cable Tension Monitor(s) (Optional)

TWO CABLE TENSION MONITORS MAY BE CONNECTED TO THIS OPERATOR.

THE CABLE TENSION MONITORS DETECT ANY SLACK THAT MAY OCCUR IN THE CABLES AND WILL RESPOND ACCORDINGLY.

NOTE: ONLY USE THE LIFTMASTER CABLE TENSION MONITORS, AS THEY HAVE BEEN TESTED AND APPROVED FOR THIS SYSTEM. See "Accessories" section.

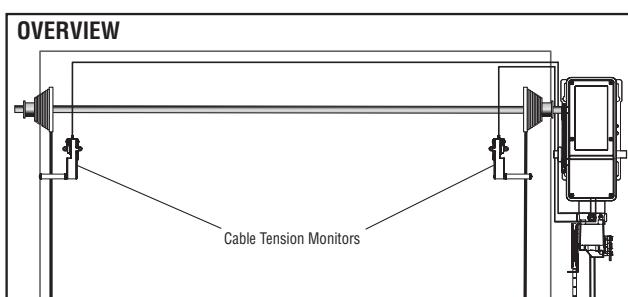
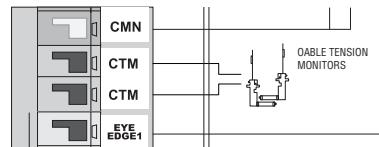
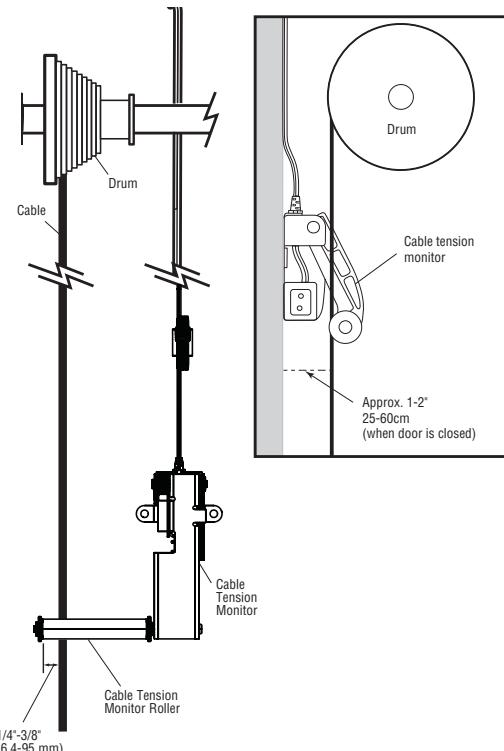
1. Make sure the door cable is approximately 1"-2" (25-50 mm) from the mounting surface. Door adjustments or shimming may be required to achieve proper depth for the door cable. The bracket must be flush with the mounting surface.
2. Position the cable tension monitor as close to the drum as possible. The optimal distance of the cable from the wall surface is no more than 2.5" (6.35 cm), and be sure the roller extends 1/8"-1/4" past the cable. Make sure the cable tension monitor and roller is free from any obstructions in all positions of operation.

NOTE: There must be no obstructions in the installation area that prevent the cable tension monitor from closing completely when slack is detected.

NOTE: Cable tension monitors must either be anchored to concrete, or a wood stud with appropriate fasteners. If neither are available, toggle bolt style drywall anchors with at least a 50 lbs rating are acceptable.

3. Run bell wire to the door operator junction box, and down to the control box through conduit as shown on the right.
4. Once the controller is installed, connect the bell wires parallel to the CTM and CMN terminals on the terminals on the controller (polarity is not important). See "Wall Controller Installation" section for installation information. Once installed, follow these steps to connect the wiring.
5. Connect the bell wires in parallel to the CTM and CMN terminals on the controller (polarity is not important). To simplify installation, the cable tension monitors can be wired together in the operator junction box, with only one pair of bell wires running down to the controller.
6. Repeat steps 1-5 for the opposite side of the door. Both cable tension monitors must be installed for proper operation.

NOTE: Cable must have tension through entire door travel. Make sure there is no slack in cable on opposite side of door during normal operation. If slack occurs during door travel, adjust cables as required.



Testing

Apply power to the operator. When power is applied to the operator, the LCD display will illuminate, relay A, relay B, and the Timer Defeat.

Test all Entrapment Protection Devices

It is the responsibility of the specifier, purchaser, installer, and property owner to ensure that, on completion, the installation of the entrapment protection devices comply with all relevant federal, state, and local codes and regulations.

TEST THE MONITORED LIGHT CURTAIN (IF APPLICABLE)

1. With the door in the full open position, press the close button.
2. While the door is closing, obstruct any of the light beams on the Monitored Light Curtain (the green LED on the Monitored Light Curtain Receiver will blink when the light beam is obstructed). The door should stop and reverse.



WARNING

To avoid SERIOUS personal INJURY or DEATH:

- Disconnect electric power BEFORE performing ANY adjustments or maintenance.
- ALL maintenance MUST be performed by an Authorized Service Technician.

TEST THE PHOTOELECTRIC SENSORS (IF APPLICABLE)

1. Open the door.
2. Place an obstruction in the path of the photoelectric sensors. The LMEP LED will blink on the logic board.
3. Press and hold the CLOSE button. The door should not close.
4. Remove the obstruction.
5. Press and hold the CLOSE button. Door should close. If the LMEP is activated while closing, the door should reverse.

TEST THE EDGE SENSORS (IF APPLICABLE)

1. Open the door
2. Place an obstruction in the path of the door.
3. Press and release the CLOSE button. The door should stop and/or reverse.
4. Remove the obstruction. Press and release the CLOSE button. The door should fully close.

Test Wall Controller Menu Access

1. Press OPEN button. (The door should move in the open direction.)
2. Press STOP button. (The door should stop.)
3. Press and hold the CLOSE button. (The door should move in the close direction.)
4. Release CLOSE button. Door should stop if in C2 or D1 mode. Door will reverse to full open position in E2 mode. The door should continue closing in all other modes.
5. Press STOP button. (The door should stop.)

Test Limit Adjustment

1. Press OPEN button. (The door should open.)
2. Allow the door to fully open.
3. Press and hold the CLOSE button. (The door should close.)
4. Allow the door to fully close.
5. If the limits are not set properly, remove power and adjust limits (see "Set Limits" section).

NOTE: Door travel should stop when the OPEN or CLOSE limits are reached. If door drifting is occurring, spring tension on the door.

Wiring Diagram



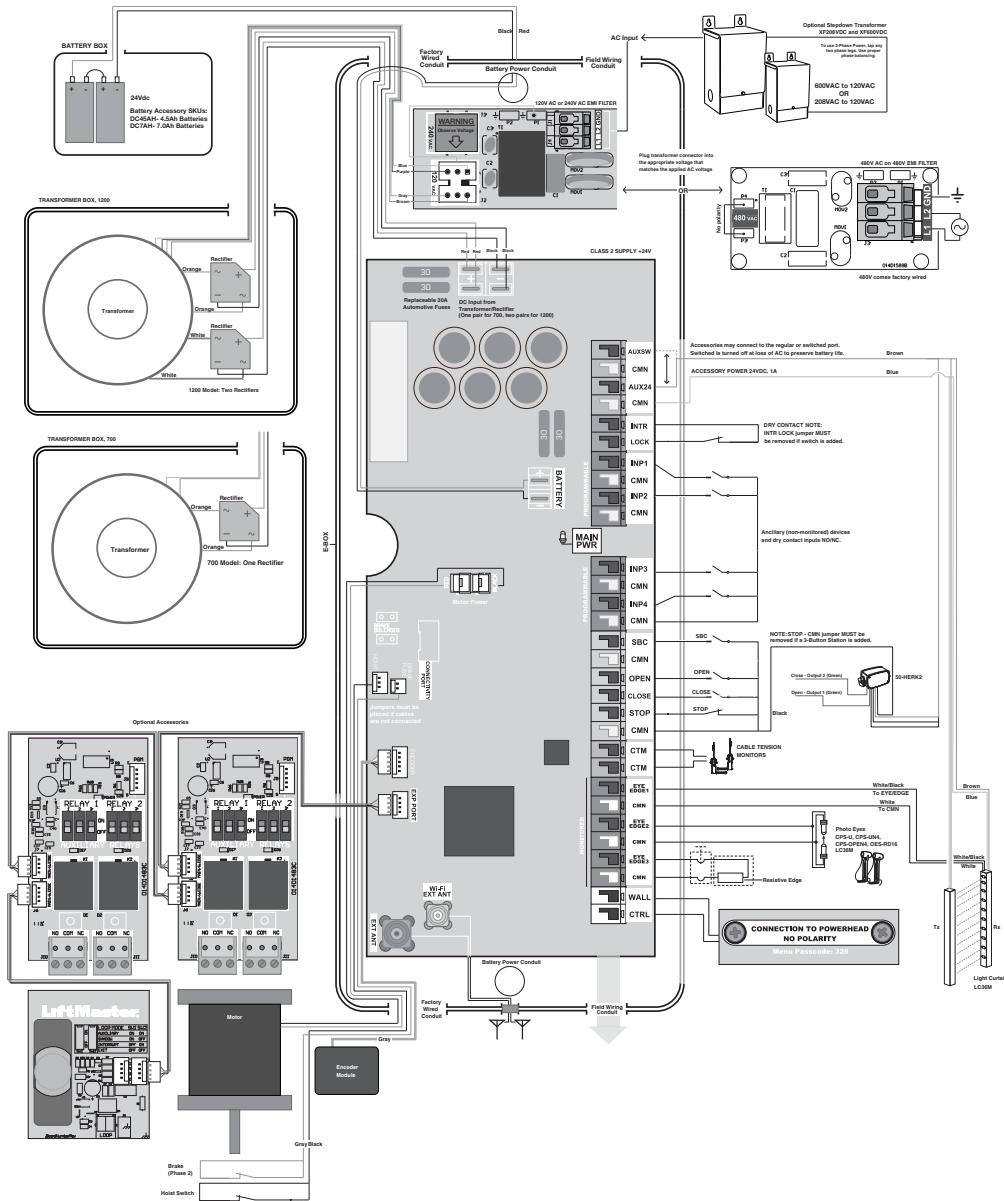
WARNING

To prevent possible SERIOUS INJURY or DEATH:

- Disconnect electric power and/or battery BEFORE installing, performing ANY adjustments, or maintenance. Installation and ALL maintenance MUST be performed by a trained door systems technician.

For continued protection against fire:

- Replace ONLY with fuse of same type and rating.



Programming

LCD Icons and States

Icon locations on display	  
Connected to Wi-Fi	
Not connected to Wi-Fi	
1. Solid if connected to myQ server 2. Blinks if NOT connected to myQ server	
No battery	
Battery charging	
Battery fully charged	

Quick Start Commissioning

Follow the below instructions to provision the TDC operator out-of-the-box or after factory reset:

Follow device menu prompt to set OPEN LIMIT

Follow device menu prompt to set CLOSE LIMIT

Follow device menu prompt to LEARN WIFI

The operator will be in WiFi Learn Mode for 10 minutes if "YES" is selected.



WARNING

To prevent possible SERIOUS INJURY or DEATH:

- Disconnect electric power BEFORE performing ANY adjustments or maintenance.
- ALL maintenance MUST be performed by a trained door systems technician.
- Please wait several seconds for capacitors to discharge and for display to go out.

Quick Start Commissioning

Follow the below instructions to provision the JDC/JHDC operator out-of-the-box or after factory reset:

Quick Start Commissioning Menu

Follow device menu prompt to select DOOR HANGING

Follow device menu prompt to select DOOR DRUM

Follow device menu prompt to select DOOR SPROCKET (J/H ONLY)

Follow device menu prompt to set OPEN LIMIT

Follow device menu prompt to set CLOSE LIMIT

Follow device menu prompt to LEARN WIFI

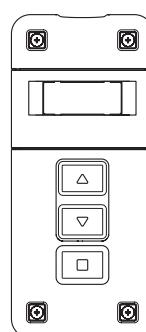
The operator will be in WiFi Learn Mode for 10 minutes if "YES" is selected.

Quick Exit of Menu

Simultaneously, press & hold the "UP" and red "Stop/Enter buttons for 3 seconds until the screen goes blank and it will exit you out of the menu you are in.

Quick Enter into the Menu

Simultaneously, press & hold the "Down" and red "Stop/Enter buttons for 3 seconds until the screen goes blank and it will take you to the main menu.



Manual Commissioning Program Flow

IMPORTANT: All entrapment protection devices will be disabled during the manual commissioning steps.

All menu options under "System Settings" are password protected

ENTER PROGRAMMING

1. Simultaneously, press & hold the "Stop/Enter" and "Down" buttons for 3+ seconds to enter the operator menu. If the controller is closed, press the "Stop" then "Close" then "Open" until the unit goes into program mode.
2. Scroll down to "SYSTEMS SETTINGS" with the "UP" and "DOWN" buttons and press "Stop/Enter." You will be prompted to enter the password for the operator.
3. Enter 326 as the password.



Programming (continued)

NOTE: Please obtain the latest Installation Manual by search the model number at liftmaster.com.

SELECT DOOR SETTINGS

SECTIONAL DOORS

STANDARD, HIGH LIFT AND VERTICAL

1. To select Door Hanging, Cable Drum (and Sprocket JHDC/ JDC) settings, navigate to the SYSTEM SETTINGS > DOOR SETTINGS submenu.
2. Select The Drum Type. Correct Drum Types are required for the correct door profile to run the system.
 - a. Standard Lift choices: D400-96, D400-144, D5250-18, D525-216, D800-384**
 - b. Full Vertical choices: D850-132, D1100-216, D1350-336
 - c. High Lift choices: 48° HL, D400-54, D525-54, 60° HL: D575-120, 144° HL: D6375-164
3. Sprocket FOR JHDC / JDC (ONLY) If you have a different sprocket size, use Custom option to add your tooth sprocket.

700lb operators - Standard Lift, High Lift and Full Vertical **22** tooth sprocket recommended
1200lb operators – Standard Lift, High Lift and Full Vertical **22** tooth sprocket recommended
2200lb operators – Standard Lift, High Lift and Full Vertical **32** tooth sprocket recommended (Vertical with D1350-336 – **42** tooth sprocket recommended)
Any other tooth configuration, please use Custom Option and enter your sprocket info.

ROLLING DOOR

1. Select Rolling Door
2. Select Insulated or Non-Insulated Door Type
3. Select Height (increment of 2')
 - a. 8', 10', 12', 14', 16', 18', up to 28'
4. Select Width (increment of 2')
 - a. 8', 10', 12', 14', 16', 18', up to 28'
5. Select Sprocket (SKU dependent, please reference page 4)
 - a. Sprocket choices: 50, 60, 72, 82, Custom

IMPORTANT: Once you choose your drum, allow inverter parameter to update. Once the inverter is updated, you can re-enter the menu to set limits and learn force.

SET LIMITS

IMPORTANT: When setting limit positions, it is important that the door runs in the direction of the intended limit.

Example: When setting the close limit, only use the CLOSE button. When setting the open limit, only use the OPEN button. Using the opposite direction button will cause the limit positions to drift over time.

To set limits, navigate to the SYSTEM SETTING > DOOR POSITIONS submenu.



MID-STOP

This operator allows for the programming of a single mid-stop door position.

6. To set the open mid-stop position:
7. In Programming Mode, go to Door Position => Open Mid-Stop or Close Mid-Stop.
8. Use the Up/Down buttons to move the door to the desired position.
9. Select Save = Enter
10. To erase the mid-stop, select Erase Open Mid-Stop or Erase Close-Mid Stop option, then select Save=Enter.

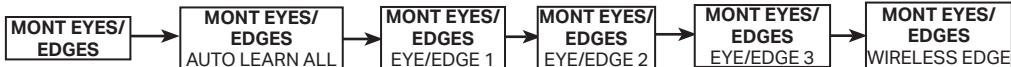
NOTE: Restoring defaults or resetting limits will erase the mid-stop position.

Programming (continued)

MONITORED EYES/EDGE CONFIGURATION

If monitored entrapment protection devices are wired to the system during the initial power-up, they will be learned to the system, and the operating mode will automatically switch to B2.

If no monitored sensor is attached, the system will default to C2 mode. To manually program an entrapment protection device, navigate to the SYSTEM SETTINGS > MONITORED EYES/EDGES submenu, otherwise it will Auto-Learn the monitored device.



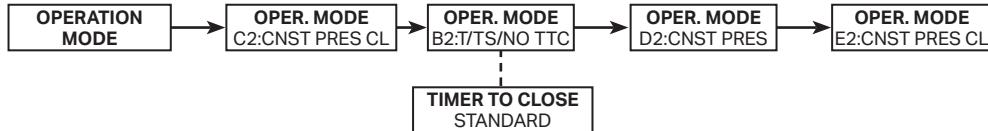
CABLE TENSION MONITOR

To view, or auto learn Cable Tension Monitor navigate to SYSTEM SETTINGS > CABLE TNS MONT



OPERATION MODE (RECOMMENDED)

To change the operating mode from the defaults B2 or C2, navigate to the SYSTEM SETTINGS > OPERATION MODE submenu.



BATTERY OPTIONS

To change the operator behavior with battery options, navigate to SYSTEM SETTINGS > BATTERY OPTIONS



CONNECTIVITY (RECOMMENDED)

To connect the operator to a network, navigate to SYSTEM SETTINGS > CONNECTIVITY > LEARN > LEARN WIFI submenu. See the "myQ® Smart Facility Access" section to connect your devices to myQ® Business Facility.

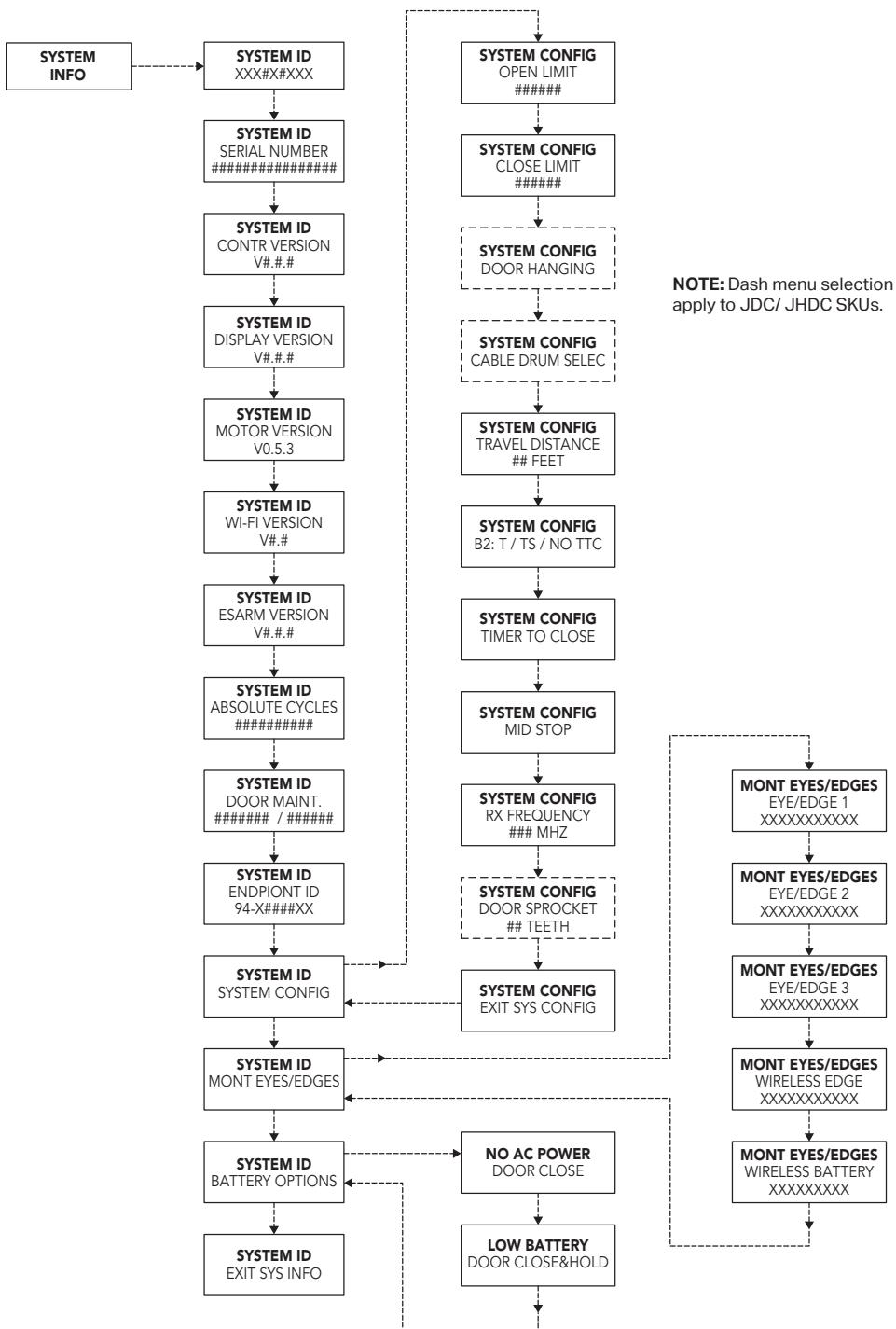


Hold ENTER and DOWN for three seconds to open the System Information Menu.

To learn remotes/transmitters navigate to SYSTEM SETTINGS > CONNECTIVITY > LEARN > SUBMENU. Once in learning mode, press and release the desired button on the remote/transmitter to learn.



Programming (continued)



Programming (continued)

Operating Modes

This operator is programmed to function in one of four different operating modes. See the rest of this section for more detailed information.

B2 MODE

- Works with buttons on wall controller, myQ Facility®, wired 3-Button Wall Controller, and 3-Button Transmitter; momentary to open, stop, and close.
- Works with Single Button Control and Single Button Transmitter; momentary to open, stop, close, and stop & reverse.
- A Monitored Entrapment Protection device is required to be connected for downward movement. Monitored Entrapment Protection devices are Auto-Learned or manually configured through the wall control menu..
- A Monitored Entrapment Protection device activation will reverse the door to its Open limit. An activated Monitored Entrapment Protection device can be overridden with 5 seconds of constant pressure on the Wall Control Close button.

Timer To Close is available in B2 Mode with two settings. The user can select a desired Timer to Close (TTC) timer under the Timers menu.

In B2 the Car Dealer feature is available. The Car Dealer input (typically a treadle switch, loop detector, or motion sensor) will open the door to mid-stop, and TTC will be enabled. Repeated Car Dealer Input will not open the door beyond the mid-stop and will reset the TTC timer. TTC can be set either to one time close or timer secure

In B2 the All Fly feature is available. (FSTS Mode)

- The All Fly input (typically a mushroom button) will open the door to its Open limit, bypassing a mid-stop, and TTC will be enabled.
- The CLOSE button immediately closes the door.
- The STOP button resets the TTC timer (held button will pause, releasing the button will reset).
- The OPEN button resets the TTC timer.
- The controller will make infinite attempts to close the door until the obstruction is cleared.
- TTC will be enabled after Monitored Entrapment Protection activation reverses the door to its Open limit.
- Timer Defeat Input will stop TTC timer

B2 / T ONE TIME CLOSE)

- After the TTC timer elapses operator will close the door.
- TTC Timer will be active at the Open Limit or at a defined mid-stop.
- The CLOSE button immediately closes the door.
- The STOP button cancels the TTC for that cycle (no automatic motion).
- The OPEN button resets the TTC timer.
- TTC will be disabled if the door reverses from an obstruction.
- Timer Defeat Input will stop the TTC timer

B2 / TS (TIMER SECURE)

- After TTC timer elapses operator will close door.
- TTC Timer will be active anywhere above close limit. The CLOSE button immediately closes the door.
- The STOP button resets the TTC timer (held button will pause, release resets)
- The OPEN button resets the TTC timer.
- LMEP activation resets the timer
- TTC will be enabled after Monitored Entrapment Protection device activation reverses the door to its Open limit. The controller will make infinite attempts to close the door until it reaches close limit.
- Timer Defeat Input will stop the TTC timer

C2 MODE (DEFAULT)

- Works with buttons on wall controller, wired 3-Button Wall Controller, and 3-Button Transmitter*; momentary to open, stop, and constant pressure to close.
- Works with Single Button Control and Single Button Transmitter*; momentary to open, stop, and stop & reverse.
- Works without a Monitored Entrapment Protection device learned, but can operate if a Monitored Entrapment Protection device is learned and connected for downward movement.
- Monitored Entrapment Protection device activation will reverse the door to its Open limit. An activated Monitored Entrapment Protection device can be overridden with 5 seconds of constant pressure on the Wall Control Close button.

*Constant Pressure to Close is not available from a remote control device (transmitter or myQ® Business™).

Programming (continued)

Determine Operating Mode

Read the descriptions of the different wiring types to determine which setting will be correct for each application. Once the wiring type is determined, set the selector dial accordingly.

LIFTMASTER MONITORED ENTRAPMENT PROTECTION (LMEP) DEVICE IS REQUIRED

A LiftMaster Monitored Entrapment Protection Device is required for the following wiring types.

B2

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. Compatible with 3-Button Station, 1-Button Station, 1 and 3-Button Remote Control.

B2 / T

Momentary contact to open, close, and stop, with open override and Timer-To-Close. Every device that causes the door to open, except any sensing edge input 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. Compatible with 3-Button Station, 1-Button Station and 1 and 3-Button Remote Control.

NOTE: Programmable "Car Dealer Mode" available.

B2 / TS

This mode will attempt to close the door from any position except when fully closed, or when a Entrapment Protection input is present. The stop button will not disable the Timer-To-Close at any position. To disable the Timer-To-Close in this mode, installation of a defeat switch is required (see "Wiring Diagram" section).

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 Timer-To-Close will function from the programmable mid stop with this wiring type. Compatible with 3-Button Station, 1-Button Station and 1 and 3-Button Remote Control.

NOTE: A Programmable "Car Dealer Mode" available.

FSTS

Momentary button contact for open, close and stop programming. 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 B2/TS mode until the door reaches the down limit, or is stopped in travel. At which time the operator enters the B2 mode. Compatible with 3-Button Station, 1-Button Station, 1 and 3-Button Remote Control. A 1-Button remote control in FSTS mode will open only with the Timer-To-Close, bypassing a programmed mid stop. The Timer-To-Close will reset and reverse when closing.

LIFTMASTER MONITORED ENTRAPMENT PROTECTION DEVICE IS RECOMMENDED.

A LiftMaster Entrapment Protection Device is recommended for the following wiring types.

C2

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. Compatible with 3-Button Station and 1-Button Station.

E2

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. Compatible with 3-Button Station.

D1

Constant pressure to open and close with wiring for sensing device to stop. Compatible with 2 or 3-Button Station.

IMPORTANT NOTES:

1. *External interlocks may be used with all functional modes.*
2. *Auxiliary devices are any devices that have only dry contacts. Examples: 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.*
4. *When the door is in a stopped position other than fully closed, and an LMEP or EDGE input is activated, the Restricted Close(RC) feature will allow a close command when the close button is pressed and held. The operator will begin closing after 5seconds. If the close button is released the door will stop. When in E2 mode, the door will move to the fully open position.*

Programming (continued)

Determine and Set Operating Mode

Select the operating mode for your application from the menu in the Wall Controller.

WIRING TYPE	DEVICE	ACTION	STATE	RESPONSE
B2 - 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-Stops available with this wiring type. Close Mid Stop available but not shown in table. Compatible with 3-Button Station, 1-Button Station, 1 and 3-Button Remote Control. Monitored Entrapment Protection (LMEP) Device required.	Front panel buttons (membrane) and 3-Button Wall Controller	OPEN button is pressed momentarily	Operator at OPEN limit	No change in state
			Operator at CLOSE limit	Door opens to the OPEN limit or Mid-Stop
			Door opening	No change in state
			Door closing	Door will auto reverse to OPEN limit or Mid-Stop
			Door at Open Mid-Stop	Door opens to the OPEN limit
		CLOSE button is pressed momentarily	Door stopped during open or close cycle	Door opens to the OPEN limit or Mid-Stop
			Operator at OPEN limit	Door closes to the CLOSE limit
			Operator at CLOSE limit	No change in state
			Door opening	No change in state
			Door closing	No change in state
		STOP button is pressed momentarily	Door at Open Mid-Stop	Door closes to the CLOSE limit
			Door stopped during open or close cycle	Door closes to the CLOSE limit
			Operator at OPEN limit	No change in state
			Operator at CLOSE limit	No change in state
			Door opening	Door stops
		OPEN button is held (constant pressure)	Door closing	Door stops
			Door at Open Mid-Stop	No change in state
			Door stopped during open or close cycle	No change in state
			Operator at OPEN limit	No change in state
			Operator at CLOSE limit	Door opens to the OPEN limit (bypasses Mid-Stop)
		CLOSE button is held (constant pressure)	Door opening	No change in state (bypasses Mid-Stop)
			Door closing	Door will auto reverse to OPEN limit (bypasses Mid-Stop)
			Door at Open Mid-Stop	Door opens to the OPEN limit
			Door stopped during open or close cycle	Door opens to the OPEN limit (bypasses Mid-Stop)
			Operator at OPEN limit	Door closes to the CLOSE limit
		3-Button Remote Control Programmed as OPEN/CLOSE/STOP	Operator at CLOSE limit	No change in state
			Door opening	No change in state
			Door closing	Door will auto reverse to OPEN limit or Mid-Stop
			Door at Open Mid-Stop	Door opens to the OPEN limit
			Door stopped during open or close cycle	Door opens to the OPEN limit
			Operator at OPEN limit	Door closes to the CLOSE limit
		STOP button is pressed momentarily	Operator at CLOSE limit	No change in state
			Door opening	No change in state
			Door closing	No change in state
			Door at Open Mid-Stop	Door closes to the CLOSE limit
			Door stopped during open or close cycle	Door closes to the CLOSE limit
			Operator at OPEN limit	No change in state
		Single Button Remote Control Programmed as SBC	Operator at CLOSE limit	No change in state
			Door opening	Door stops
			Door closing	Door will auto reverse to OPEN limit or Mid-Stop
			Door at Open Mid-Stop	Door opens to the OPEN limit
			Door stopped during the open cycle	Door closes to the CLOSE limit
			Door stopped during the close cycle	Door opens to the OPEN limit or Mid-Stop

Programming (continued)

WIRING TYPE	DEVICE	ACTION	STATE	RESPONSE
B2 (continued)	Single Button Wall Controller (Wired)	Button is pressed	Operator at OPEN limit	Door closes to the CLOSE limit
			Operator at CLOSE limit	Door opens to the OPEN limit or Mid-Stop
			Door opening	Door stops
			Door closing	Door will auto reverse to OPEN limit or Mid-Stop
			Door at Open Mid-Stop	Door opens to the OPEN limit
			Door stopped during the open cycle	Door closes to the CLOSE limit
			Door stopped during the close cycle	Door opens to the OPEN limit or Mid-Stop
		Button is held (constant pressure)	Door Opening	No change in state (bypasses Mid-Stop)
	myQ® Smart Facility Access	Open is pressed	Operator at OPEN limit	No change in state
			Operator at CLOSE limit	Door opens to the OPEN limit or Mid-Stop
			Door opening	No change in state
			Door closing	Door will auto reverse to OPEN limit or Mid-Stop
			Door at Open Mid-Stop	Door opens to the OPEN limit
		Close is pressed:	Door stopped during open or close cycle	Door opens to the OPEN limit or Mid-Stop
			Operator at OPEN limit	Door closes to the CLOSE limit
			Operator at CLOSE limit	No change in state
			Door opening	No change in state
			Door closing	No change in state
			Door at Open Mid-Stop	Door closes to the CLOSE limit
			Door stopped during open or close cycle	Door closes to the CLOSE limit

WIRING TYPE	DEVICE	ACTION	STATE	RESPONSE
C2 Momentary contact to open and stop with constant pressure to close (wired devices ONLY), open override plus wiring for sensing device to reverse. Open Mid-Stop available with this mode type. Compatible with 3-Button Station and Single-Button Station	Front panel buttons (membrane) and 3-Button Wall Controller	OPEN button is pressed momentarily	Operator at OPEN limit	No change in state
			Operator at CLOSE limit	Door opens to the OPEN limit or Mid-Stop
			Door opening	No change in state
			Door closing	Door will auto reverse to OPEN limit or Mid-Stop
			Door at Open Mid-Stop	Door opens to the OPEN limit
			Door stopped during open or close cycle	Door opens to the OPEN limit or Mid-Stop
		CLOSE button is pressed momentarily	Operator at OPEN limit	Door closes and stops when button is released
			Operator at CLOSE limit	No change in state
			Door opening	No change in state
			Door closing	No change in state
			Door at Open Mid-Stop	Door closes and stops when button is released
			Door stopped during open or close cycle	Door closes and stops when button is released
		STOP button is pressed momentarily	Operator at OPEN limit	No change in state
			Operator at CLOSE limit	No change in state
			Door opening	Door stops
			Door closing	Door stops
			Door at Open Mid-Stop	No change in state
			Door stopped during open or close cycle	No change in state
		OPEN button is held (constant pressure)	Operator at OPEN limit	No change in state
			Operator at CLOSE limit	Door opens to OPEN limit (bypasses Mid-Stop)
			Door opening	No change in state (bypasses Mid-Stop)
			Door closing	Door will auto reverse to OPEN limit (bypasses Mid-Stop)
			Door at Open Mid-Stop	Door opens to the OPEN limit
			Door stopped during open or close cycle	Door opens to the OPEN limit (bypasses Mid-Stop)
		CLOSE button is held (constant pressure)	Operator at OPEN limit	Door closes to the CLOSE limit
			Operator at CLOSE limit	No change in state
			Door opening	No change in state
			Door closing	No change in state
			Door at Open Mid-Stop	Door closes to the CLOSE limit
			Door stopped during open or close cycle	Door closes to the CLOSE limit

Programming (continued)

WIRING TYPE	DEVICE	ACTION	STATE	RESPONSE
C2 (continued)	3-Button Remote Control Programmed as OPEN/CLOSE/STOP	OPEN button is pressed momentarily	Operator at OPEN limit	No change in state
			Operator at CLOSE limit	Door opens to the OPEN limit or Mid-Stop
			Door opening	No change in state
			Door closing	Door will auto reverse to OPEN limit or Mid-Stop
			Door at Open Mid-Stop	Door opens to the OPEN limit
			Door stopped during open or close cycle	Door opens to the OPEN limit or Mid-Stop
		CLOSE button is pressed momentarily	Operator at OPEN limit	No change in state
			Operator at CLOSE limit	No change in state
			Door opening	No change in state
			Door closing	No change in state
			Door at Open Mid-Stop	No change in state
			Door stopped during open or close cycle	No change in state
		STOP button is pressed momentarily	Operator at OPEN limit	No change in state
			Operator at CLOSE limit	No change in state
			Door opening	Door stops
			Door closing	Door stops
			Door at Open Mid-Stop	No change in state
			Door stopped during open or close cycle	No change in state
	Single Button Remote Control Programmed as SBC	Button is pressed	Operator at OPEN limit	No change in state
			Operator at CLOSE limit	Door opens to the OPEN limit or Mid-Stop
			Door opening	Door stops
			Door closing	Door will auto reverse to OPEN limit or Mid-Stop
			Door at Open Mid-Stop	Door opens to the OPEN limit
			Door stopped during open cycle	No change in state
	Single Button Wall Controller (Wired)	Button is pressed	Door stopped during close cycle	Door opens to the OPEN limit or Mid-Stop
			Operator at OPEN limit	Door closes and stops when button is released
			Operator at CLOSE limit	Door opens to the OPEN limit or Mid-Stop
			Door opening	Door stops
			Door closing	Door will auto reverse to OPEN limit or Mid-Stop
			Door at Open Mid-Stop	Door opens to the OPEN limit
	myQ® Smart Facility Access	Open is pressed	Door stopped during open cycle	Door closes and stops when button is released
			Door stopped during close cycle	Door opens to the OPEN limit or Mid-Stop
			Door opening	No change in state or Mid-Stop
			Door closing	No change in state
			Door at Open Mid-Stop	No change in state
			Door stopped during open or close cycle	No change in state
	Close is pressed	Close is pressed	Door opening	No change in state
			Door closing	No change in state
			Door at Open Mid-Stop	No change in state
			Door stopped during open or close cycle	No change in state
			Door opening	No change in state
			Door closing	No change in state

Programming (continued)

WIRING TYPE	DEVICE	ACTION	STATE	RESPONSE
E2 - 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. Compatible with 3-Button Station.	3-Button Wall Controller	OPEN button is pressed momentarily	Operator at OPEN limit	No change in state
			Operator at CLOSE limit	Door opens to the OPEN limit or Mid-Stop
			Door opening	No change in state
			Door closing	Door will auto reverse to OPEN limit or Mid-Stop
			Door at Open Mid-Stop	Door opens to the OPEN limit
			Door stopped during open or close cycle	Door opens to the OPEN limit or Mid-Stop
		CLOSE button is pressed momentarily	Operator at OPEN limit	Door closes and auto reverses when button is released
			Operator at CLOSE limit	No change in state
			Door opening	No change in state
			Door closing	No change in state
			Door at Open Mid-Stop	Door closes and auto reverses when button is released
			Door stopped during open or close cycle	Door closes and auto reverses when button is released
		STOP button is pressed momentarily	Operator at OPEN limit	No change in state
			Operator at CLOSE limit	No change in state
			Door opening	Door stops
			Door closing	Door stops
			Door at Open Mid-Stop	No change in state
			Door stopped during open or close cycle	No change in state
		OPEN button is held (constant pressure)	Operator at OPEN limit	No change in state
			Operator at CLOSE limit	Door opens to the OPEN limit (bypasses Mid-Stop)
			Door opening	No change in state (bypasses Mid-Stop)
			Door closing	Door will auto reverse to OPEN limit (bypasses Mid-Stop)
			Door at Open Mid-Stop	Door opens to the OPEN limit
			Door stopped during open or close cycle	Door opens to the OPEN limit (bypasses Mid-Stop)
		CLOSE button is held (constant pressure)	Operator at OPEN limit	Door closes to the CLOSE limit
			Operator at CLOSE limit	No change in state
			Door opening	No change in state
			Door closing	No change in state
			Door at Open Mid-Stop	Door closes and auto reverses when button is released
			Door stopped during open or close cycle	Door closes and auto reverses when button is released
Single Button Remote Control Programmed as OPEN/ CLOSE/ STOP	3-Button Remote Control	OPEN button is pressed momentarily	Operator at OPEN limit	No change in state
			Operator at CLOSE limit	Door opens to the OPEN limit or Mid-Stop
			Door opening	No change in state
			Door closing	Door will auto reverse to OPEN limit or Mid-Stop
			Door at Open Mid-Stop	Door opens to the OPEN limit
			Door stopped during open or close cycle	Door opens to the OPEN limit or Mid-Stop
		CLOSE button is pressed momentarily	Operator at OPEN limit	No change in state
			Operator at CLOSE limit	No change in state
			Door opening	No change in state
			Door closing	No change in state
			Door at Open Mid-Stop	No change in state
			Door stopped during open or close cycle	No change in state
		STOP button is pressed momentarily	Operator at OPEN limit	No change in state
			Operator at CLOSE limit	No change in state
			Door opening	Door stops
			Door closing	Door stops
			Door at Open Mid-Stop	No change in state
			Door stopped during open or close cycle	No change in state
Single Button Remote Control	Single Button Remote Control	Button is pressed	Operator at OPEN limit	No change in state
			Operator at CLOSE limit	No change in state
			Door opening	No change in state
			Door closing	No change in state
			Door at Open Mid-Stop	No change in state
			Door stopped during open or close cycle	No change in state
Single Button Wall Controller (Wired)	Single Button Wall Controller (Wired)	Button is pressed:	Operator at OPEN limit	No change in state
			Operator at CLOSE limit	No change in state
			Door opening	No change in state
			Door closing	No change in state
			Door at Open Mid-Stop	No change in state
			Door stopped during the open cycle	No change in state
myQ	myQ	Door image is pressed:	Door stopped during the close cycle	No change in state
			Operator at OPEN limit	No change in state
			Operator at CLOSE limit	Door opens to the OPEN limit
			Door opening	No change in state
			Door closing	No change in state
			Door at Open Mid-Stop	No change in state
			Door stopped during open or close cycle	No change in state

Programming (continued)

WIRING TYPE	DEVICE	ACTION	STATE	RESPONSE
D1 - Constant pressure to open and close with wiring for sensing device to stop. Compatible with 2 or 3-Button Station	3-Button Wall Controller	OPEN button is pressed momentarily	Operator at OPEN limit	No change in state
			Operator at CLOSE limit	Door opens and stops when button is released
			Door opening	No change in state
			Door closing	Door stops
			Door at Open Mid-Stop	Door opens and stops when button is released
			Door stopped during open or close cycle	Door opens and stops when button is released
		CLOSE button is pressed momentarily	Operator at OPEN limit	Door closes and stops when button is released
			Operator at CLOSE limit	No change in state
			Door opening	Door stops
			Door closing	No change in state
			Door at Open Mid-Stop	Door closes and stops when button is released
			Door stopped during open or close cycle	Door closes and stops when button is released
		STOP button is pressed momentarily	Operator at OPEN limit	No change in state
			Operator at CLOSE limit	No change in state
			Door opening	Door stops
			Door closing	Door stops
			Door at Open Mid-Stop	No change in state
			Door stopped during open or close cycle	Door stops only in the closed position
		OPEN button is held (constant pressure)	Operator at OPEN limit	No change in state
			Operator at CLOSE limit	Door opens to the OPEN limit
			Door opening	No change in state
			Door closing	Door stops
			Door at Open Mid-Stop	Door opens to the OPEN limit
			Door stopped during open or close cycle	Door stops only in the closed position
		CLOSE button is held (constant pressure)	Operator at OPEN limit	Door closes to the CLOSE limit
			Operator at CLOSE limit	No change in state
			Door opening	No change in state
			Door closing	No change in state
			Door at Open Mid-Stop	Door closes to the CLOSE limit
			Door stopped during open or close cycle	Door stops only in the open position
D2 - Constant pressure to open and close with wiring for sensing device to stop. Compatible with 2 or 3-Button Station	3-Button Remote Control Programmed as OPEN / CLOSE / STOP	OPEN button is pressed momentarily	Operator at OPEN limit	No change in state
			Operator at CLOSE limit	No change in state
			Door opening	No change in state
			Door closing	No change in state
			Door at Open Mid-Stop	No change in state
			Door stopped during open or close cycle	No change in state
		CLOSE button is pressed momentarily	Operator at OPEN limit	No change in state
			Operator at CLOSE limit	No change in state
			Door opening	No change in state
			Door closing	No change in state
			Door at Open Mid-Stop	No change in state
			Door stopped during open or close cycle	No change in state
		STOP button is pressed momentarily	Operator at OPEN limit	No change in state
			Operator at CLOSE limit	No change in state
			Door opening	No change in state
			Door closing	No change in state
			Door at Open Mid-Stop	No change in state
			Door stopped during open or close cycle	No change in state
		Single Button Remote Control	Operator at OPEN limit	No change in state
			Operator at CLOSE limit	No change in state
			Door opening	No change in state
			Door closing	No change in state
			Door at Open Mid-Stop	No change in state
			Door stopped during open or close cycle	No change in state
		Single Button Wall Controller (Wired)	Operator at OPEN limit	No change in state
			Operator at CLOSE limit	No change in state
			Door opening	No change in state
			Door closing	No change in state
			Door at Open Mid-Stop	No change in state
			Door stopped during the open cycle	No change in state
		myQ	Door stopped during the close cycle	No change in state
			Operator at OPEN limit	No change in state
			Operator at CLOSE limit	No change in state
			Door opening	No change in state
			Door closing	No change in state
			Door at Open Mid-Stop	No change in state
			Door stopped during open or close cycle	No change in state

Programming (continued)

WIRING TYPE	DEVICE	ACTION	STATE	RESPONSE
T - Momentary contact to open, close, and stop, with open override and Timer-To-Close (TTC). Every device that causes the door to open, except any sensing edge input device, activates the TTC. Auxiliary controls can be connected to open input to activate the TTC. If the TTC 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 TTC will function from the Open limit stop and Open Mid-Stop available with this mode type. Compatible with 3-Button Station, 1-Button Station and 1 and 3-Button Remote Control. Close Mid-Stop is available but not shown in table. Monitored Entrapment Protection (LMEP) Device required.	Front panel buttons (membrane) and 3-Button Wall Controller	OPEN button is pressed momentarily	Operator at OPEN limit	No change in state (Recycle timer)
			Operator at CLOSE limit	Door opens to the OPEN limit or Mid-Stop (and activates TTC)
			Door opening	No change in state
			Door closing	Door will auto reverse to OPEN limit or Mid-Stop (and activates TTC)
			Door at Open Mid-Stop	Door opens to the OPEN limit (and activates TTC)
			Door stopped during open or close cycle	Door opens to the OPEN limit or Mid-Stop (and activates TTC)
		CLOSE button is pressed momentarily	Operator at OPEN limit	Door closes to the CLOSE limit
			Operator at CLOSE limit	No change in state
			Door opening	No change in state
			Door closing	No change in state
			Door at Open Mid-Stop	Door closes to the CLOSE limit
			Door stopped during open or close cycle	Door closes to the CLOSE limit
		STOP button is pressed momentarily	Operator at OPEN limit	No change in state (Deactivate timer)
			Operator at CLOSE limit	No change in state
			Door opening	Door stops
			Door closing	Door stops
			Door at Open Mid-Stop	No change in state (Deactivate timer)
			Door stopped during open or close cycle	No change in state
		OPEN button is held (constant pressure)	Operator at OPEN limit	No change in state (Recycle & hold timer)
			Operator at CLOSE limit	Door opens to the OPEN limit (bypasses Mid-Stop) and activates TTC
			Door opening	No change in state (bypasses Mid-Stop)
			Door closing	Door will auto reverse to OPEN limit (bypasses Mid-Stop) and activates TTC
			Door at Open Mid-Stop	Door opens to the OPEN limit and activates TTC
			Door stopped during open or close cycle	Door opens to the OPEN limit (bypasses Mid-Stop) and activates TTC
		CLOSE button is held (constant pressure)	Operator at OPEN limit	Door closes to the CLOSE limit
			Operator at CLOSE limit	No change in state
			Door opening	No change in state
			Door closing	No change in state
			Door at Open Mid-Stop	Door closes to the CLOSE limit
			Door stopped during open or close cycle	Door closes to the CLOSE limit
3-Button Remote Control Programmed as OPEN/CLOSE/STOP	OPEN button is pressed momentarily	Operator at OPEN limit	No change in state (Recycle timer)	
		Operator at CLOSE limit	Door opens to the OPEN limit or Mid-Stop and activates TTC	
		Door opening	No change in state	
		Door closing	Door will auto reverse to OPEN limit or Mid-Stop and activates TTC	
		Door at Open Mid-Stop	Door opens to the OPEN limit and activates TTC	
		Door stopped during open or close cycle	Door opens to the OPEN limit or Mid-Stop and activates TTC	
	CLOSE button is pressed momentarily	Operator at OPEN limit	Door closes to the CLOSE limit	
		Operator at CLOSE limit	No change in state	
		Door opening	No change in state	
		Door closing	No change in state	
		Door at Open Mid-Stop	Door closes to the CLOSE limit	
		Door stopped during open or close cycle	Door closes to the CLOSE limit	
	STOP button is pressed momentarily	Operator at OPEN limit	No change in state (Deactivate timer)	
		Operator at CLOSE limit	No change in state	
		Door opening	Door stops	
		Door closing	Door stops	
		Door at Open Mid-Stop	No change in state (Deactivate timer)	
		Door stopped during open or close cycle	No change in state	
	Single Button Remote Control Programmed as SBC	Operator at OPEN limit	Door closes to the CLOSE limit	
		Operator at CLOSE limit	Door opens to the OPEN limit or Mid-Stop and activates TTC	
		Door opening	Door stops	
		Door closing	Door will auto reverse to OPEN limit or Mid-Stop and activates TTC	
		Door at Open Mid-Stop	Door opens to the OPEN limit and activates TTC	
		Door stopped during the open cycle	Door closes to the CLOSE limit	
		Door stopped during the close cycle	Door opens to the OPEN limit or Mid-Stop and activates TTC	

Programming (continued)

WIRING TYPE	DEVICE	ACTION	STATE	RESPONSE
T (continued)	Single Button Wall Controller (Wired)	Button is pressed	Operator at OPEN limit	Door closes to the CLOSE limit
			Operator at CLOSE limit	Door opens to the OPEN limit or Mid-Stop
			Door opening	Door stops
			Door closing	Door will auto reverse to OPEN limit or Mid-Stop and activates TTC
			Door at Open Mid-Stop	Door opens to the OPEN limit and activates TTC
			Door stopped during the open cycle	Door closes to the CLOSE limit
			Door stopped during the close cycle	Door opens to the OPEN limit or Mid-Stop and activates TTC
		Button is held (constant pressure)	Door opening	No change in state
	myQ® Smart Facility Access	Open is pressed	Operator at OPEN limit	No change in state (Recycle timer)
			Operator at CLOSE limit	Door opens to the OPEN limit or Mid-Stop and activates TTC
			Door opening	No change in state
			Door closing	Door will auto reverse to OPEN limit or Mid-Stop and activates TTC
			Door at Open Mid-Stop	Door opens to the OPEN limit and activates TTC
			Door stopped during open or close cycle	Door opens to the OPEN limit or Mid-Stop and activates TTC
			Operator at OPEN limit	Door closes to the CLOSE limit
		Close is pressed	Operator at CLOSE limit	No change in state
			Door opening	No change in state
			Door closing	No change in state
			Door at Open Mid-Stop	Door closes to the CLOSE limit
			Door stopped during open or close cycle	Door closes to the CLOSE limit

Programming (continued)

WIRING TYPE	DEVICE	ACTION	STATE	RESPONSE
TS - This mode will attempt to close the door from any position except when fully closed, or when a Entrapment Protection input is present. The stop button will recycle the Timer-To-Close (TTC) at any position. To disable the TTC in this mode, installation of a defeat switch is required (see wiring diagram). Momentary contact to open, close, and stop with open override and TTC. Every device that causes door to open, including a reversing device, activates the TTC. Auxiliary controls can be connected to open input to activate the TTC. If the timer has been activated, the open button and radio control can recycle the timer. The TTC will function from the Open limit and Open mid stop with this operating mode type. Close Mid Stop available but not shown in table. Compatible with 3-Button Station, 1-Button Station and 1 and 3-Button Remote Control. Monitored Entrapment Protection (LMEP) Device required.	Front panel buttons (membrane) and 3-Button Wall Controller	OPEN button is pressed momentarily	Operator at OPEN limit	No change in state (Recycle TTC)
Operator at CLOSE limit			Door opens to the OPEN limit or Mid-Stop and activates TTC	
Door opening			No change in state	
Door closing			Door will auto reverse to OPEN limit or Mid-Stop and activates TTC	
Door at Open Mid-Stop			Door opens to the OPEN limit and activates TTC	
Door stopped during open or close cycle			Door opens to the OPEN limit or Mid-Stop and activates TTC	
CLOSE button is pressed momentarily		Operator at OPEN limit	Door closes to the CLOSE limit	
		Operator at CLOSE limit	No change in state	
		Door opening	No change in state	
		Door closing	No change in state	
		Door at Open Mid-Stop	Door closes to the CLOSE limit	
		Door stopped during open or close cycle	Door closes to the CLOSE limit	
STOP button is pressed momentarily		Operator at OPEN limit	No change in state (Recycle TTC)	
		Operator at CLOSE limit	No change in state	
		Door opening	Door stops and activates TTC	
		Door closing	Door stops and activates TTC	
OPEN button is held (constant pressure)		Door at Open Mid-Stop	No change in state (Recycle TTC)	
		Door stopped during open or close cycle	No change in state (Recycle TTC)	
		Operator at OPEN limit	No change in state (Recycle & hold TTC)	
		Operator at CLOSE limit	Door opens to the OPEN limit (bypasses Mid-Stop) and activates TTC	
CLOSE button is held (constant pressure)		Door opening	No change in state (bypasses Mid-Stop) and activates TTC	
		Door closing	Door will auto reverse to OPEN limit (bypasses Mid-Stop) and activates TTC	
		Door at Open Mid-Stop	Door opens to the OPEN limit and activates TTC	
		Door stopped during open or close cycle	Door opens to the OPEN limit (bypasses Mid-Stop) and activates TTC	
		Operator at OPEN limit	Door closes to the CLOSE limit	
		Operator at CLOSE limit	No change in state	
		Door opening	No change in state	
		Door closing	No change in state	
		Door at Open Mid-Stop	Door closes to the CLOSE limit	
		Door stopped during open or close cycle	Door closes to the CLOSE limit	

Programming (continued)

WIRING TYPE	DEVICE	ACTION	STATE	RESPONSE
TS (continued)	3-Button Remote Control Programmed as OPEN/CLOSE/STOP	OPEN button is pressed momentarily	Operator at OPEN limit	No change in state (Recycle TTC)
			Operator at CLOSE limit	Door opens to the OPEN limit or Mid-Stop and activates TTC
			Door opening	No change in state
			Door closing	Door will auto reverse to OPEN limit or Mid-Stop and activates TTC
			Door at Open Mid-Stop	Door opens to the OPEN limit and activates TTC
			Door stopped during open or close cycle	Door opens to the OPEN limit or Mid-Stop and activates TTC
		CLOSE button is pressed momentarily	Operator at OPEN limit	Door closes to the CLOSE limit
			Operator at CLOSE limit	No change in state
			Door opening	No change in state
			Door closing	No change in state
			Door at Open Mid-Stop	Door closes to the CLOSE limit
			Door stopped during open or close cycle	Door closes to the CLOSE limit
		STOP button is pressed momentarily	Operator at OPEN limit	No change in state (Recycle TTC)
			Operator at CLOSE limit	No change in state
			Door opening	Door stops and activates TTC
			Door closing	Door stops and activates TTC
			Door at Open Mid-Stop	No change in state (Recycle TTC)
			Door stopped during open or close cycle	No change in state (Recycle TTC)
	Single Button Remote Control Programmed as SBC	Button is pressed	Operator at OPEN limit	Door closes to the CLOSE limit
			Operator at CLOSE limit	Door opens to the OPEN limit or Mid-Stop and activates TTC
			Door opening	Door stops and activates TTC
			Door closing	Door will auto reverse to OPEN limit or Mid-Stop and activates TTC
			Door at Open Mid-Stop	Door opens to the OPEN limit and activates TTC
			Door stopped during the open cycle	Door closes to the CLOSE limit
			Door stopped during the close cycle	Door opens to the OPEN limit or Mid-Stop and activates TTC
	Single Button Wall Controller (Wired)	Button is pressed	Operator at OPEN limit	Door closes to the CLOSE limit
			Operator at CLOSE limit	Door opens to the OPEN limit or Mid-Stop and activates TTC
			Door opening	Door stops and activates TTC
			Door closing	Door will auto reverse to OPEN limit or Mid-Stop and activates TTC
			Door at Open Mid-Stop	Door opens to the OPEN limit
			Door stopped during the open cycle	Door closes to the CLOSE limit
			Door stopped during the close cycle	Door opens to the OPEN limit or Mid-Stop and activates TTC
		Button is held (constant pressure)	Door opening	No change in state or Mid-Stop and activates TTC
	myQ® Smart Facility Access	Open is pressed	Operator at OPEN limit	No change in state (Recycle TTC)
			Operator at CLOSE limit	Door opens to the OPEN limit or Mid-Stop (activates TTC)
			Door opening	No change in state
			Door closing	Door will auto reverse to OPEN limit or Mid-Stop and activates TTC
			Door at Open Mid-Stop	Door opens to the OPEN limit and activates TTC
			Door stopped during open or close cycle	Door opens to the OPEN limit or Mid-Stop and activates TTC
		Close is pressed	Operator at OPEN limit	Door closes to the CLOSE limit
			Operator at CLOSE limit	No change in state
			Door opening	No change in state
			Door closing	Door closes to the CLOSE limit
			Door at Open Mid-Stop	Door closes to the CLOSE limit
			Door stopped during open or close cycle	Door closes to the CLOSE limit

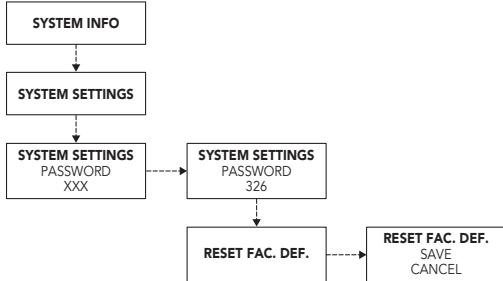
Programming (continued)

RESET TO FACTORY DEFAULT

1. Press & Hold the ENTER/STOP and DOWN buttons for four seconds to access the system menu.
- NOTE:** Release buttons once screen goes blank.
2. Scroll to "SYSTEM SETTINGS" and press the ENTER/STOP button.
3. In the password screen, press UP or DOWN button and Enter to enter password 326.
4. Scroll to "RESET FAC. DEF" and press ENTER, and then ENTER to save.

Once this is complete, cycle power to the unit. After reset, the device will return to the quick start commissioning menu for operator setup.

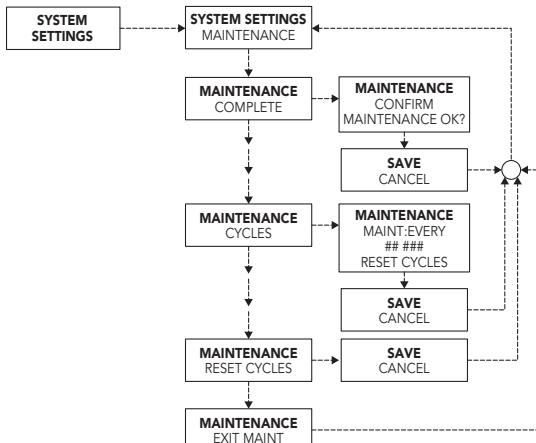
NOTE: myQ, Wi-Fi, and the transmitters will not be erased.



MAINTENANCE RESET / RESET CYCLES

NOTE: ONLY a certified door installer shall perform the RESET CYCLES and MAINTENANCE COMPLETE procedure. After the completion of replacement parts and/or maintenance on the system and sub door system components.

1. Press & Hold the ENTER/STOP and DOWN buttons for four seconds to access the system menu.
- NOTE:** Release buttons once screen goes blank.
2. To enter the MAINTENANCE menu, scroll to "SYSTEM SETTINGS" and press the ENTER/STOP button.
3. In the password window, press UP or DOWN button, enter the pass code 326. Once the pass code has been entered, press the ENTER/STOP button once more.
4. Scroll to the MAINTENANCE menu and press the ENTER/STOP button.
5. To confirm maintenance has been completed, select MAINTENANCE COMPLETE > CONFIRM MAINTENANCE OK? > SAVE.
6. To reset cycles after maintenance complete, select MAINTENANCE RESET CYCLES > SAVE.
7. To modify the target cycles for maintenance, select MAINTENANCE CYCLES and press UP or DOWN button to adjust desired cycle count. Press the ENTER/STOP button to commit the desired cycle count.



NOTE: When configured Maintenance Cycles are reached the system will not inhibit door movement.

Programming (continued)

Programmable Inputs

- The controller contains three programmable inputs that may be configured to accept several different input devices.
- Navigate through the menus to SYSTEM SETTINGS (enter password) to PROG INPUTS. Select INP1, INP2 or INP3.
- Select a Function from the list. Press Enter.
- Select a Polarity from the list. Press Enter.

Function Options:

- Non-monitored Eye/Edge Input
- Car Dealer Input (typically loop detector, treadle hose, card reader)
- Timer Defeat
- All Fly (previously known as FSTS)

Radio

The controller has a built in Security+ 2.0® radio receiver, that can program up to 90 remote control devices and up to 30 keyless entry devices.

Programming Remote Controls and myQ® Devices

- Select SYSTEM SETTINGS from the main menu (enter passcode: 326)
- Select CONNECTIVITY.
- Select one of: Learn myQ Devices or Remotes.
- The operator will indicate the selected accessory is being learned.
- Repeat as needed for any other devices and remotes.

Note: Remotes are disabled from moving the door while accessing the programming menus. Exit the menus before testing the remotes.

Resetting Remote Controls and myQ® Devices

- Enter the menu and navigate to SYSTEM SETTINGS, and enter the password.
- Navigate to CONNECTIVITY.
- Enter the UNLEARN submenu.
 - To unlearn remotes, select REMOTES.
 - To unlearn myQ devices, select MYQ DEVICES.
- Save your changes by selecting SAVE.
- Exit the menu by holding the UP and STOP buttons on the wall control.

Reset Defaults

Parameter	Default Value
Operating Mode	C2
Timer to Close	0 sec.
Mid-Stop	Deactivated
Maintenance Alert System	Deactivated/Enabled
Limits	Reset
Battery Options	Reset (AC fail is reset to door close, and low battery is reset to close and hold)
Programmable Inputs (1-4)	Unlearned
User Adjusted Speed	Maximum speed.
Wi-Fi Credentials	Learned
SKU/Model ID	Learned (Can be changed in the maintenance menu)
LiftMaster Monitored device(s)	Deleted from memory (must be disconnected prior to reset)
Cable Tension Monitor device(s)	
Service Counter Interval	5000 cycles
Absolute Cycle Counter	Not Reset
Alarm	Reset to "ON"

NOTICE: This device complies with part 15 of the FCC rules and Innovation, Science and Economic Development Canada license-exempt RSSs. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device must be installed to ensure a minimum 20 cm (8 in.) distance is maintained between users/bystanders and device.

This device has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules and Industry Canada ICES standard. These limits are designed to provide reasonable protection against harmful interference in a commercial installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Programming (continued)

Provisioning Wi-Fi

Follow the below instructions to pair the operator:

1. Press the "STOP/ENTER" and "DOWN" buttons at the same time for 3+ seconds to enter the operator menu.
2. Scroll down to "SYSTEM SETTINGS" with the "UP" and "DOWN" buttons and press "ENTER". You will be prompted to enter the password for the operator.
3. Enter 326 as the password.
4. Scroll down to "CONNECTIVITY" and press "ENTER".
5. Press "ENTER" again to select "CONNECTIVITY LEARN".
6. Scroll down to "LEARN WIFI" and press "ENTER". The operator will now be in Learn Mode.
7. Using your own device (laptop, tablet, or smart phone) go to your device's Wi-Fi setting and search for the Wi-Fi network called myQ-nnn where the nnn is the last 3 serial numbers of your operator. Select that Wi-Fi network.
8. Once your device (laptop, tablet, or smart phone) is connected to the operator, open a web browser and go to setup.myqdevice.com or the direct IP address which is 192.168.1.1 on your device and follow the instructions.

Resetting Wi-Fi Credentials

1. Enter the menu and navigate to SYSTEM SETTINGS, and enter the password.
2. Navigate to CONNECTIVITY.
3. Enter the UNLEARN submenu.
4. Navigate to WI-FI.
5. Save your changes by selecting SAVE.
6. Exit the menu by holding the up and stop buttons on the wall control.

myQ® Smart Facility Access

One Platform allows you to manage access for unlimited facilities, users and vehicles.

The myQ® Smart Facility Access allows you to control all your access points in the facility from the myQ® website application from anywhere. Monitor and control your vehicular access doors, gated entry locations, and even dock positions from a universal platform. myQ® technology uses a 900Mhz signal or a Wi-Fi connection to communicate securely from your connected devices to myQ® enabled accessories or directly to a Wi-Fi network.

Setup a myQ® Smart Facility Access Account

NOTE: If you have an existing myQ® account, your myQ® Business™ account will have the same password.

We have made the account setup process easier than ever. It's completely self-service. Go to Account.myQ.com and begin the process.

1. Select Country, Name, email, and create password.
2. Verify the email with a 4-digit code.
3. Select property manager or partner.
4. To create a myQ® Facility, select property type, property name, property manager information. You are now ready to access your dashboard and all other myQ® features.
5. Set up the Facility and add users and groups to provide access to the Facility (refer to the available Help in myQ® Business™).
6. You will get a welcome email from LiftMaster. Accept the invitation and register or login to your account.
7. Set up the Facility and add users & groups to provide access to the Facility (refer to the available Help in myQ® Business™).
8. Follow on-screen prompts to get your Variable Speed Door Operator and additional devices connected.

Auxiliary Relays Accessory Kit (AUXREL)

Configure the Relay Adapter

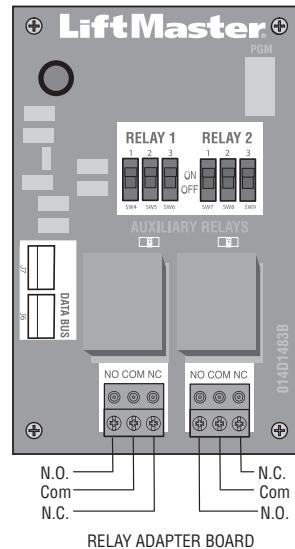
AUXILIARY RELAYS

- Aux Relay Switches:** Set the AUX RELAY switches as needed to obtain the desired function as shown below.
- J6 Input:** Communicator bus connects control board, expansion board, or relay adapter board.
- J7 Input:** Communicator bus connects control board, expansion board, or relay adapter board.
- AUX24:** Supplies +24Vdc up to 1AMP to wired accessories.

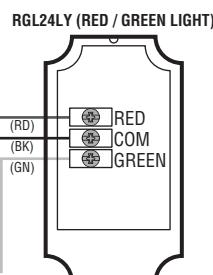
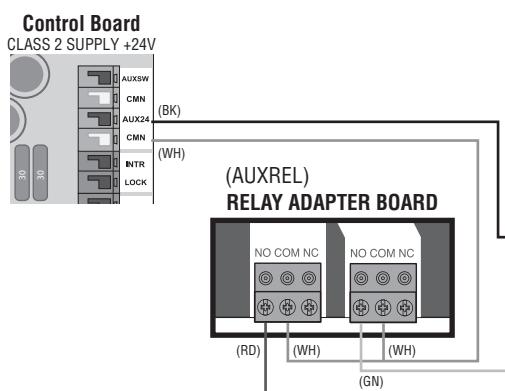
RED/GREEN LIGHT FUNCTIONALITY						
DOOR STATE	AUX RELAY 1 SWITCHES			AUX RELAY 2 SWITCHES		
	1 OFF	2 OFF	3 OFF	1 ON	2 ON	3 ON
Closed	Red light OFF*			Green light OFF		
Opening	Red light ON/Flash			Green light OFF		
Open	Red light OFF			Green light ON		
Closing	Red light ON/Flash			Green light OFF		
Defined Mid Stop	N/A			N/A		
Undefined Mid Stop	Red light ON			Green light OFF		
Timer more than 5 seconds	Red light OFF			Green light ON		
Timer less than 5 seconds	Red light ON/Flash			Green light OFF		

* For red light ON when door is closed, set switch 1 on AUX RELAY 1 to ON.

RELAY ADAPTER BOARD



RELAY ADAPTER BOARD



Auxiliary Relays Accessory Kit (AUXREL) (continued)

AUXILIARY RELAYS FUNCTIONALITY

The expansion board and relay adapter board provide Normally Open (N.O.) and Normally Closed (N.C.) relay contacts to control external devices, for connection of Class 2, low voltage (42 Vdc [34 Vac] max 5 Amps) power sources only. Function of relay contact activation determined by switch settings.

AUX RELAY SETTING	SWITCH SETTINGS			AUX RELAY 1	AUX RELAY 2
	1	2	3		
Off (no feature selected)	OFF	OFF	OFF	Relay always off. Use this Aux Relay setting to conserve battery power.	
Open Limit Switch	OFF	OFF	ON	Energizes at open limit. Use with SAMS (Sequenced Access Management System, jointly with door).	
Closed Limit Switch	OFF	ON	OFF	Energizes when not at close limit. For an additional audible or visual display, connect an external light (low voltage).	
Door Motion	OFF	ON	ON	Energizes when motor is on. For an additional audible or visual display, connect an external buzzer or light (low voltage).	

Wiring iDock Controller to LiftMaster Maxum Operator

WARNING

To prevent possible SERIOUS INJURY or DEATH:

- ALL Maintenance or servicing MUST be performed by a trained door systems technician.
- Disconnect electric power (including battery backup if provided) BEFORE performing ANY adjustments or maintenance.
- Do NOT reconnect electrical power until instructed to do so.

An accessory providing the door state via output relays is required for the commercial door operator. If your machine is not equipped with the relay board accessory, part number AUXREL will be needed. See the instructions supplied with the kit for reference:

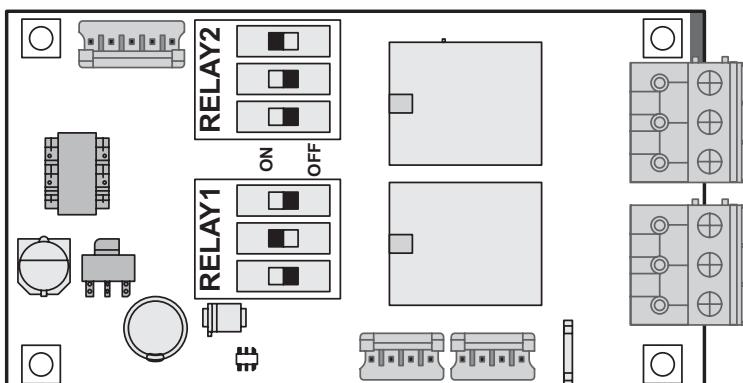
Reference Image #1

Set Relay 2 dip switches to Off, Off, On

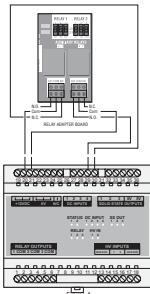
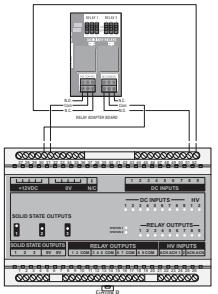
Set Relay 1 dip switches to Off, On, Off

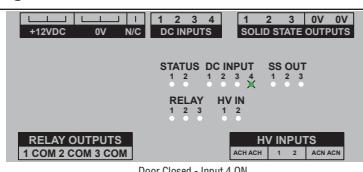
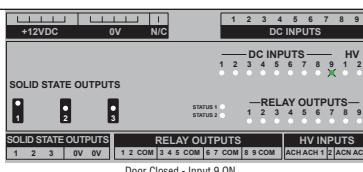
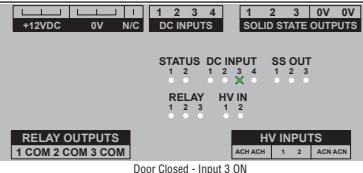
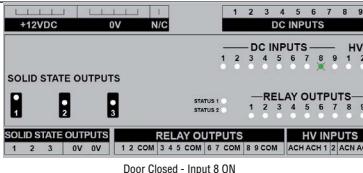
The expansion board and relay adapter board provide Normally Open (N.O.) and Normally Closed (N.C.) relay contacts to control external devices, for connection of Class 2, low voltage (42 Vdc [34 Vac] max 5 Amps) power sources only. Function of relay contact activation determined by switch settings.

AUX RELAY SETTING	SWITCH SETTINGS			AUX RELAY 1	AUX RELAY 2
	1	2	3		
Off (no feature selected)	OFF	OFF	OFF	Relay always off. Use this Aux Relay setting to conserve battery power.	
Open Limit Switch	OFF	OFF	ON	Energizes at open limit. Use with SAMS (Sequenced Access Management System, jointly with barrier gate).	
Closed Limit Switch	OFF	ON	OFF	Energizes when not at close limit. For an additional audible or visual display, connect an external light (low voltage).	
Gate Motion	OFF	ON	ON	Energizes when motor is on (gate in motion). For an additional audible or visual display, connect an external buzzer or light (low voltage).	



Wiring iDock Controller to LiftMaster Maxum Operator (continued)

Electrical Connections	
iDOCK Controllers with Small Terminal	iDOCK Controllers with Large Terminal
1. Remove factory installed yellow jumper, wires in the iDock connected on terminals:	
2. On terminals 20, 21, 29, 30	2. On terminals 30, 31, 51, 52
3. A total of 4 wires (18-22 gauge) will be needed between the AUXREL board and the iDock Controller	
4. Terminate the LiftMaster AUXREL wiring on the iDock controller using Figure A below.	4. Terminate the LiftMaster AUXREL wiring on the iDock controller using Figure B below.
Open Limit a. Terminal 21 = Relay 2, Common b. Terminal 29 = Relay 2, N.O. Close Limit c. Terminal 20 = Relay 1, Common d. Terminal 30 = Relay 1, N.C.	
	
	

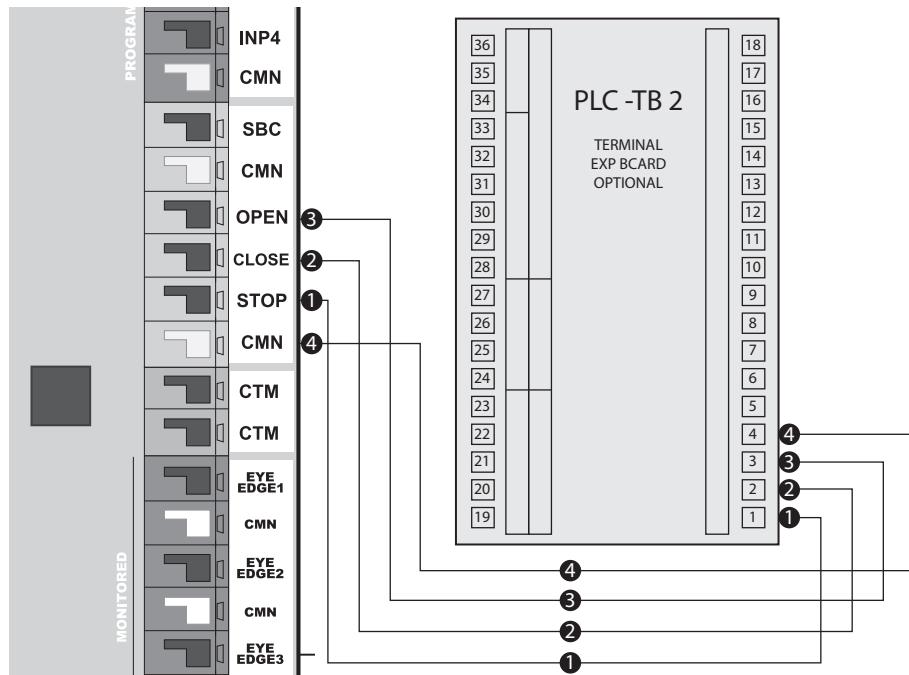
Small Board Testing Operation	
Small Terminal Board – Aux Limit Operation	Large Terminal Controller – Aux Limit Operation
1. After the connections have been made, safely energize the equipment.	
2. With the door in the Closed position	
3. The iDock terminal board DCINPUT #4 LED should be solid green	
	
	
4. With the door in the Open position	
5. The iDock terminal board DCINPUT #3 LED should be solid green	
	
	

Wiring iDock Controller to LiftMaster Maxum Operator (continued)

Wiring Open, Close, Stop Between iDOCK Controller & MAXUM

Run four wires (18-22 gauge) between the iDock and the LiftMaster Maxum operator. Wire them up using the terminal chart and Figure C below:

Command	Terminals	
	MAXUM	iDOCK
Open	Open	3
Close	Close	2
Stop	Stop	1
Common	Common	4



Troubleshooting

Additional Troubleshooting

The table below is a guide for best practice system troubleshooting, containing potential causes and corrective actions.

Symptom	Possible Causes	Diagnosis	Resolution
Powerhead main board is off (no LEDs are lit or blinking) (continued)	Transformer is overheating	<p>Transformer has an internal thermal protection device which disconnects AC power if the transformer overheats.</p> <p>If the transformer is allowed to cool, AC power should reconnect and restore power to the operator.</p>	<p>Transformer should not normally overheat. If overheating occurs:</p> <p>Check door for imbalance and/or resistance</p> <p>Check ambient temperature and ensure it is within the operational ratings of the door operator.</p> <p>Ensure that air can move freely around the door operator, and that dust or other foreign matter is not preventing airflow.</p>
	AC power absent or out of range	<p>Verify input AC voltage: Measure AC voltage between 'L1' and 'L2' terminals at EMI filter board input connector. Verify voltage is within specifications.</p> <p>If voltage is outside specifications, see resolution.</p>	<p>If voltage is absent, restore power to the operator. Check for tripped breakers, blown fuses, faulty AC wiring, open disconnects, etc.</p> <p>If voltage is out of specification, consult an electrician.</p>
	AC input voltage mis-selected (120V/240V models only)	<p>Check whether the transformer connector is plugged in to the connectors on the EMI filter board marked '120V' or '240V.'</p> <p>Verify this matches the input AC voltage supplied to the operator.</p>	<p>If 240V power is applied when 120V is selected, damage to other components of the operator electronics may have occurred.</p> <p>Ensure voltage selection is corrected and verify the operator functions.</p>
	Blown DC input fuses on main board	<p>Check fuses: Measure voltage across DC IN fuses.</p> <p>If voltage is greater than 0.5V, fuses are blown. See resolution.</p> <p>Fuses may also be visually inspected. Fuses should have their internal metallic fuse element intact. If there is a break in the fuse element, fuse is blown.</p>	<p>Replace both DC IN fuses with automotive style ATO or ATC fuses, 30A 32V. Both DC IN fuses must be present and intact for proper operation of the door operator.</p>
	Faulty Powerhead main board	<p>Perform this test only after first checking fuses.</p> <p>Measure DC voltage between 'DC IN' + and - terminals. Voltage should be between 30 and 48 volts DC with motor stopped.</p> <p>If voltage is present and MAIN PWR LED is not lit, see resolution.</p>	<p>Turn off AC power and disconnect batteries (if present) for at least 30 seconds, then reconnect batteries (if present) and turn on AC power.</p> <p>If no LEDs are lit after cycling power, cycle power again as above but disconnect all cabling from mainboard except for main power wiring before restoring batteries/ AC power.</p> <p>If LEDs still do not light, replace main board.</p> <p>If LEDs light after disconnecting other devices, suspect a short or overload from a connected device.</p>

Troubleshooting (continued)

Symptom	Possible Causes	Diagnosis	Resolution
Powerhead main board is off (no LEDs are lit or blinking) (continued)	Faulty EMI filter board	<p>Verify EMI filter board: Perform this test only after first verifying input AC voltage.</p> <p>Measure AC voltage at EMI filter board output. Measure from brown wire to blue wire. [todo: check wire colors for 480V] Verify voltage is within specifications.</p>	If input voltage is within specification but output voltage is outside specifications or is absent, replace the EMI filter board.
	Faulty Transformer	<p>Verify Transformer: Perform this test only after first verifying the EMI filter board.</p> <p>Disconnect transformer output winding from rectifier(s) and measure the AC voltage across transformer output winding.</p> <p>Voltage should be between 22 and 35 volts AC. If voltage is out of range, see resolution.</p>	<p>If voltage is too high or too low, check that 120V/240V input voltage selection is correct.</p> <p>If voltage is absent: transformer has thermal protection to automatically disconnect input voltage if the transformer overheats. Allow transformer to cool if it is hot, and then re-test.</p> <p>If transformer is cool and voltage is still absent, replace the transformer.</p>
	Faulty wiring or connections	Inspect all connections and wiring from EMI filter board, transformer, rectifiers, and DC IN terminals on the main board. Ensure there are no loose connections, cut wires, broken insulation, etc. Verify wiring matches wiring diagram.	Correct any issues found with wiring or connections.
	Faulty Rectifier	<p>Verify Rectifier: If the transformer and all wiring is verified but DC voltage is still not present at the main board DC IN terminals, the rectifiers are most likely faulty.</p> <p>If an electrical meter with a diode test function is available, each of the 4 diodes internal to the bridge rectifiers may be checked using the diode check functionality:</p> <p>1) check each diode in the forward direction and verify they conduct with ~ 1V drop or less</p> <p>2) check each diode in the reverse direction and verify they do not conduct (meter will read the same as disconnected leads)</p>	<p>Replace faulty rectifier(s).</p> <p>Rectifier mounting screws must be tight enough to ensure good thermal contact with the chassis through the thermal interface pad. However, the rectifier screw must not be too tight or it could be damaged. [torque spec here, even?] Interface between the rectifier and the chassis should be clean of any foreign substances before a new rectifier is installed.</p>
	Short or overload in device connected to main board	<p>Turn off power and disconnect batteries from main board.</p> <p>Disconnect all cabling from main board except for main power.</p> <p>Restore power and verify LEDs light.</p> <p>Reconnect wiring to main board one device at a time testing to see if any device causes the main board to fail to light LEDs.</p>	If any device is found to cause an issue, the device may be faulty and should be repaired or replaced as necessary.

Troubleshooting (continued)

Symptom	Possible Causes	Diagnosis	Resolution
LCD wall control is off or not functioning (display shows nothing or is unlit, and wall control is unresponsive) (continued)	Multiple LCD wall controls wired to a single operator.	Only one LCD wall control is supported per operator. Check that only one is connected to the WALL CTRL terminals on the powerhead main board.	Disconnect any additional LCD wall controls and wire just one LCD wall control. If additional control stations are desired, use the SBC or OPEN, CLOSE, and STOP terminals instead.
	Wall control is wired to incorrect terminals on the powerhead main board.	Confirm that wall control wiring is run to the WALL CTRL terminals on the powerhead main board.	Move wall control wiring to the WALL CTRL terminals
	No power to powerhead main board	Verify MAIN PWR LED is lit on the mainboard. If it is unlit, main board may not have power.	Follow troubleshooting for symptom 'Powerhead main board is off'
	Wall control circuit shorted	<p>Test for wall control short circuit: Power cycle the operator.</p> <p>Check WALL CTRL LED on powerhead main board.</p> <p>If LED is unlit, a short circuit is detected on the WALL CTRL terminals by the main board and the wall control is disabled.</p>	<p>Turn off AC power and disconnect batteries (if present). Remove wall control wiring from main board terminals. Restore batteries and AC power.</p> <p>If WALL CTRL LED remains unlit, short circuit may be internal to main board. Replace main board.</p> <p>If WALL CTRL LED is blinking, short is in wall control wiring or wall control. Reconnect wiring to main board. Disconnect wall control from wiring. Repeat test.</p> <p>If WALL CTRL LED is blinking, short is in wall control. Replace wall control.</p> <p>If WALL CTRL LED is off, short is in wiring. Check wiring and correct the issue.</p>
	Bad connection between wiring and wall control	Visually inspect the wiring connections to the wall control screw terminals. Wires should be sandwiched between the screw and the exposed metallic pads on the circuit board. Ensure insulated part of wire is not caught between screw and circuit board.	Correct any issues noted during inspection
	No voltage output from powerhead main board WALL CTRL terminals	<p>Verify main board WALL CTRL terminals:</p> <p>Disconnect wall control wires. Measure DC voltage at WALL CTRL terminals.</p> <p>Voltage should be between 11 and 13V DC.</p>	<p>If voltage is absent or out of range, turn off power to operator and disconnect batteries if present. Wait 30 seconds and then reconnect batteries and reapply AC power.</p> <p>If fault persists, replace main board</p>

Troubleshooting (continued)

Symptom	Possible Causes	Diagnosis	Resolution
LCD wall control is off or not functioning (display shows nothing or is unlit, and wall control is unresponsive) (end)	Faulty wiring	<p>Perform this test only after verifying main board WALL CTRL terminals.</p> <p>Verify wall control wiring: Disconnect wires from wall control and measure the DC voltage on the wiring at the end near the wall control.</p> <p>If voltage is not between 11 and 13 volts DC, wiring is faulty.</p>	<p>If voltage is absent or out of range, turn off power to operator and disconnect batteries if present. Wait 30 seconds and then reconnect batteries and reapply AC power.</p> <p>If fault persists, replace or repair wall control wiring.</p>
	Faulty wall control	<p>Perform this test only after verifying wall control wiring.</p> <p>Check voltage at wall control: With a voltmeter, test for 12VDC at the screw terminals on the rear of the wall control. If 12V is present and wall control is not active, wall control is faulty.</p> <p>If 12V is absent only when the wall control is connected, wall control may have internal short circuit.</p>	Replace faulty wall control.
Main board DC IN fuses blow immediately upon powerup	Stray wiring/metal contacting main board	Visually inspect E-box. Check for any metallic objects or bare wires that may be inadvertently touching the main board.	Prevent metallic objects or bare wires from touching the main board. Turn power off and replace fuses, then re-apply power.
	Internal short on main board	Turn off AC power. Disconnect all wiring from main board except DC IN power wiring. Replace fuses and reapply power. If fuses still blow immediately, fault is in main board.	replace main board
Door moves in wrong direction when pressing up/down buttons	Reverse mounting mode configured wrong (reverse limits)	Check the setting for the reverse mounting mode (reverse limits)	ensure the setting is correct
	Wiring for open and close terminals swapped (does not apply to LCD wall control)	Check that open button is connected to OPEN terminal and close button is connected to CLOSE terminal.	Correct wiring.
(ONLY applies to units with Battery Backup) Unit reports that it is on battery power even when AC power is present	AC power path issues	Disconnect batteries, check if powerhead main board powers off.	If powerhead main board loses power, leave batteries disconnected and follow troubleshooting for 'Powerhead main board is off'
	AC input voltage mis-selected (120V/240V models only)	<p>Check whether the transformer connector is plugged in to the connectors on the EMI filter board marked '120V' or '240V.'</p> <p>Verify this matches the input AC voltage supplied to the operator.</p>	Note that if incorrect voltage is applied to the operator, damage to the operator electronics may have occurred.
	AC power out of range	<p>Verify input AC voltage: Measure AC voltage between 'L1' and 'L2' terminals at EMI filter board input connector. Verify voltage is within specifications.</p> <p>If voltage is outside specifications, see resolution.</p>	<p>Ensure the circuit supplying the operator is the correct voltage class for the operator (e.g. 120V, 240V, or 480V)</p> <p>If voltage is out of specification for the circuit, consult an electrician.</p>

Troubleshooting (continued)

Symptom	Possible Causes	Diagnosis	Resolution
Door runs slowly/at half speed	Wall control disconnected or damaged	If communications to the wall control is absent, system will run at half speed.	<p>LCD Wall control is strongly recommended to be connected.</p> <p>If it is desired to run the system without a wall control, temporarily or permanently, the system can be returned to full speed operation by replacing the wall control wiring with a jumper wire.</p> <p>If the wall control is present but not functioning, see 'LCD wall control is off or not functioning'</p>
Operator turns off despite backup battery being connected	Dead or worn batteries	Low battery voltage	<p>Allow batteries to recharge</p> <p>Replace worn out batteries.</p> <p>Batteries must both be replaced together. Do not mix old and new batteries.</p>
	Blown battery fuses on main board	Visually inspect battery fuses or check continuity	If fuses are blown, replace both fuses together
Operator runs momentarily then stops in limit learn mode	Encoder wiring fault	Inspect encoder cable for disconnection, bad connection, cut cable, etc.	Correct any issues found with encoder wiring
	Encoder fault or encoder interface fault	<p>Go to limit learn process. Number displayed while in door limit learn mode is the encoder position.</p> <p>Jog door several inches in either direction and release button.</p> <p>Number displayed should change.</p> <p>Make sure to cancel changes or set limit again when finished.</p>	<p>If encoder position does not change with door movement, the encoder, encoder wiring, and powerhead main board are suspect. Check all three for any visible damage.</p> <p>Attempt power cycling and restoring factory defaults.</p> <p>Replace or repair suspected faulty components.</p>

Troubleshooting (continued)

If an error occurs, the idle screen is replaced by a screen showing the error code and a description of the error.

Error messages originate in one of three categories:

- Motor drive and power circuitry
- Door control codes related to the motor and encoder
- Option codes related to accessories used with the industrial DC operator.

Consult the Table of Error Codes below to determine the cause and corrective action. Depending on the type of error, user interaction may be required to clear the error. The error window closes when the error has been cleared/corrected.

Code	Display Message	Description	Possible Causes	Diagnosis	Resolution
	MOVE THE DOOR	Displayed in limit learn mode. The position encoder requires some movement before the position can be determined on powerup. Once the position has been successfully determined, the position will be maintained until power is lost.	Door has not been moved since the last power cycle	Upon initial powerup, this message will be displayed in the limit learn menu if no other movement has occurred.	Move the door slightly in either direction using the up or down buttons on the wall control. 'MOVE THE DOOR' message will disappear. If door does not move, or moves and stops, see troubleshooting steps for F04 UNAUTHORIZED STOP. If door moves without issue but 'MOVE THE DOOR' stays on the screen, see troubleshooting steps for F91 ENCODER.
F01	F01 CLOSE LIMIT	Door has moved beyond the lower end position	Operator has been manually hoisted below the lower end position (hoisted jackshaft models only)	Check position of door/operator with manual hoist	Move position back within normal limits. Adjust door position limits if necessary.
			Door is falling or drifting downward when operator is stopped	Check for excessive door imbalance in down direction	Rebalance door replace broken springs ensure correct springs and drums are used
F02	F02 OPEN LIMIT	Door has moved beyond the upper end position	Operator has been manually hoisted above the upper position limit (hoisted jackshaft models only)	Check position of door/operator with manual hoist	Move position back within normal limits. Adjust door position limits if necessary.
			Door is drifting upward when operator is stopped	Check for excessive door imbalance in up direction	Rebalance door Ensure correct springs and drums are used

Troubleshooting (continued)

Code	Display Message	Description	Possible Causes	Diagnosis	Resolution
F04	F04 UNAUTH. STOP (continued)	No motor motion was detected when the operator was attempting to move the motor.	Door encountered obstruction or other mechanical jam	Check doorway for obstruction. Check to ensure the mechanical system moves properly and without hangups or excessive resistance.	Remove obstruction
			Motor cable is disconnected or wiring fault	Check that motor cable is plugged into the powerhead main board completely. Ensure that motor cable is intact and in good condition.	Ensure motor connector is fully seated. Repair any problems with the cabling. If cabling is beyond repair, replace motor.

Troubleshooting (continued)

Code	Display Message	Description	Possible Causes	Diagnosis	Resolution
F04	F04 UNAUTH. STOP (end)	No motor motion was detected when the operator was attempting to move the motor.	Worn motor brushes	Motor DC resistance should be less than 3 ohms. If it is greater than 3 ohms, the brushes may fail to maintain contact with the commutator internal to the motor.	Replace motor Replace motor brushes (extended duty models only)
			Powerhead main board motor drive fault	Measure DC voltage across motor terminals at main board. In idle state, voltage should be 0. Activate door operator with open/close. Voltage may vary over a wide range, from several volts up to about 40 volts DC.	If voltage is absent during activation, check for other fault codes and correct as necessary. If no other fault codes are present, power cycle the operator and try again. If fault persists, reset settings to factory defaults and reconfigure the operators. If fault still persists, replace main board.
			Encoder wiring fault	Inspect encoder cable for disconnection, bad connection, cut cable, etc.	Correct any issues found with encoder wiring
			Encoder fault or encoder interface fault	Go to limit learn process. Number displayed while in door limit learn mode is the encoder position. Jog door several inches in either direction and release button. Number displayed should change. Make sure to cancel changes or set limit again when finished.	If encoder position does not change with door movement, the encoder, encoder wiring, and powerhead main board are suspect. Check all three for any visible damage. Attempt power cycling and restoring factory defaults. Replace or repair suspected faulty components.
			Motor drive fault occurred	Check for other fault codes	Review other fault codes and perform problem resolution as necessary.
F08	F08 NO CONFIG	Configuration was not found or was reset to factory setting	New operator is not configured.	If the operator is new, the configuration is initially unset.	Configure the operator per the normal process.
			Operator was factory reset from the menu	If the operator is factory reset, the configuration will be unset.	Configure the operator per the normal process.
F14	F14 SET LIMITS	End positions are not set or stored	Limits were never set out of box	New product as shipped does not have any limits set	Learn door limits
			Settings were reset or invalidated from the menu	F14 error	Re-learn door limits

Troubleshooting (continued)

Code	Display Message	Description	Possible Causes	Diagnosis	Resolution
F19	F19 SYSTEM ID	System ID is not configured in the system. System ID is needed by the powerhead main board to correctly run the operator. (service kit boards only)	System ID is unset (service board replacement)	F19 error	Configure system ID in the menu by using the LCD wall control. Ensure system ID is chosen properly. Operator may not function properly if the chosen system ID does not match the operator.
F23	F23 OVERTEMP	Motor drive circuitry temperature is too high. Message is displayed until the circuitry cools down.	Door imbalance or excessive resistance	Inspect door for imbalance or excessive resistance	Repair or correct conditions resulting in excessive door imbalance/resistance
			Poor airflow/cooling	Check area around operator for adequate ventilation space on the sides, above, and below the operator. Check the electronics enclosure for dust or other debris near or behind the PCBA that restricts airflow or cooling.	Correct any airflow restrictions around or inside the operator to improve cooling of the electronics.
			Ambient temperature too hot	Measure ambient temperature near the powerhead when the overheating is occurring. Check against the temperature range specification for the product.	Product must be used within the specified operating temperature range or risk of damage to the operator is possible.
			Excessive gear reducer or motor drag	Check that the motor and gearbox rotate freely and smoothly when disconnected from the door	Correct any issues found, or replace any faulty or worn components producing excessive drag
			Faulty powerhead main board	If OVERTEMP fault never clears, even when the electronics have cooled, the main board may be faulty.	Replace main board.
			Faulty motor drawing excessive current	If motor is getting excessively hot or does not spin smoothly when powered, there could be an issue with the motor	Replace motor

Troubleshooting (continued)

Code	Display Message	Description	Possible Causes	Diagnosis	Resolution
F26	F26 OVER VOLT	Motor drive circuitry detected an overvoltage condition	AC input voltage mis-selected (120V/240V models only)	Check whether the transformer connector is plugged in to the connectors on the EMI filter board marked '120V' or '240V.' Verify this matches the input AC voltage supplied to the operator.	If 240V power is applied when 120V is selected, damage to other components of the operator electronics may have occurred. Ensure voltage selection is corrected and verify the operator functions.
			Door imbalance causes motor regeneration	Inspect door for imbalance or broken springs	Repair or correct conditions resulting in excessive door imbalance
			AC power out of range	Verify input AC voltage: Measure AC voltage between 'L1' and 'L2' terminals at EMI filter board input connector. Verify voltage is within specifications. If voltage is outside specifications, see resolution.	Ensure the circuit supplying the operator is the correct voltage class for the operator (e.g. 120V, 240V, or 480V) If voltage is out of specification for the circuit, consult an electrician.
F31 F32 F33 F34	F31 OPEN HELD F32 CLOSE HELD F33 STOP HELD F34 SBC HELD	Wall control buttons held/stuck for at least 1 minute. Open/Close/Stop/SBC inputs triggered for at least 1 minute.	Wall control buttons stuck	Check that all buttons return to the normal state properly when released.	Repair, clean, or replace sticking buttons or controls as necessary.
			Wiring short circuit	Inspect wiring for open/close/stop/SBC terminals for short circuits	Correct any wiring faults found
			Faulty accessory connected to OPEN/CLOSE/STOP/SBC terminals	Disconnect accessories from the terminals.	If problem is resolved by disconnection of other external accessories, suspect a wiring issue, faulty accessory, or incompatible accessory.
			Faulty LCD wall control	Swap wall control with known-good unit	If known-good wall control resolves the issue, fault is with previous wall control
			Faulty powerhead main board	Remove all accessories from OPEN/CLOSE/STOP/SBC terminals. Ensure wall control is replaced with a known-good unit for diagnosis.	Try power cycling the operator and restoring factory defaults. If problems persist, replace powerhead main PCBA

Troubleshooting (continued)

Code	Display Message	Description	Possible Causes	Diagnosis	Resolution
F41	F41 EYE/EDG1 BLK	Monitored eyes/edges 1/2/3 blocked for 3 minutes or more	Obstruction in doorway is blocking eye or contacting edge	Check for obstructions	If obstructions are present, remove the obstruction
F44	F44 EYE/EDG2 BLK		Improperly configured eye/edge input	Check system settings item in the menu to check the device type setting for the input	Ensure the Entrapment Protection device type matches the device that is actually installed
F47	F47 EYE/EDG3 BLK		Unapproved entrapment protection device is being used	Ensure the Entrapment Protection device is approved for use with the operator	Replace the Entrapment Protection device with one that is approved for use with the operator
			Photoeyes misaligned	Check alignment	If eyes are misaligned, correct the alignment
			Wiring fault to photoeye emitter	Check that the photoeye emitter is powered and wired correctly. LED on emitter is lit.	Correct wiring faults
			Resistive type edge shorted or shorted wiring	Check for short circuits in the wiring or in the resistive edge.	Correct any wiring faults
			Sunlight causing photoeye blocking condition	Block sunlight from shining in the receiver and check if photoeye remains blocked	Resolution for this issue may be difficult. Swapping the emitter and receiver can sometimes provide relief from the issue, but other times just causes the issue to surface at another time of day.
			Damaged photo eyes or edge	Swap Entrapment Protection device with known-good device A properly functioning resistive edge should measure 8-14 kOhm in the normal unobstructed state	If a known-good Entrapment Protection device works, replace the faulty Entrapment Protection device
			Damaged powerhead main board	Swap Entrapment Protection device with known-good device connected directly to the powerhead main board	If the main board still won't detect known-good Entrapment Protection devices connected directly to the board, power cycle the operator. If the problem persists, reset to factory defaults and configure again. If problem still persists, replace the powerhead main board.

Troubleshooting (continued)

Code	Display Message	Description	Possible Causes	Diagnosis	Resolution
F42	F42 EYE/EDG1 MIS	Monitored eyes/edges 1/2/3 learned, but no longer detected as present.	Certain Entrapment Protection devices may show as missing when they are blocked, even if they are present and functioning	See F41/F44/F47 errors: Entrapment Protection device blocked	Ensure only Entrapment Protection devices approved for use with the operator are used.
F45	F45 EYE/EDG2 MIS				Correct blocked Entrapment Protection device condition
F48	F48 EYE/EDG3 MIS				
			Improperly configured photoeye input	Check system settings item in the menu to check the device type setting for the input	Ensure the Entrapment Protection device type matches the device that is actually installed
			Unapproved Entrapment Protection device is being used	Ensure the Entrapment Protection device is approved for use with the operator	Replace the Entrapment Protection device with one that is approved for use with the operator
			Wiring fault to Entrapment Protection device	Check for LED status on photoeye type devices. Check wiring for short or open circuit Ensure wires are wired into correct terminals and that polarity is correct for polarity-sensitive devices	Correct wiring faults
			Damaged photo eyes or edge	Swap Entrapment Protection device with known-good device	If a known-good Entrapment Protection device works, replace the faulty Entrapment Protection device
			Damaged powerhead main board	Swap Entrapment Protection device with known-good device connected directly to the powerhead main board	If the main board still won't detect known-good Entrapment Protection devices connected directly to the board, power cycle the operator. If the problem persists, reset to factory defaults and configure again. If problem still persists, replace the powerhead main board.
F43 F46 F49	F43 EYE/EDG1 BLK F46 EYE/EDG2 BLK F49 EYE/EDG3 BLK	Monitored eyes/edges 1/2/3 were blocked or missing when the door was commanded to move.	See sections for F41/F42/F44/F45/F47/F46 as applicable	-	-

Troubleshooting (continued)

Code	Display Message	Description	Possible Causes	Diagnosis	Resolution
F51 F52	F51 INP1 BLOCK F52 INP1 CMND	Unmonitored eye/edge device triggered for 3 minutes or more on input 1/2/3/4, or blocked when door motion was requested	Obstruction in doorway is blocking unmonitored eye/edge device	Check for obstructions	If obstructions are present, remove the obstruction
F53 F54	F53 INP2 BLOCK F54 INP2 CMND		Improperly configured input	Check system settings item in the menu to check the device type setting for the input	Ensure the device type matches the device that is actually installed
F55 F56	F55 INP3 BLOCK F56 INP3 CMND		Incompatible device is being used	INP1/2/3/4 inputs are compatible with dry-contact type devices. Ensure the device being used is a dry-contact type device.	If the device is incompatible, replace with one that is, or move the device to another input which is compatible with the device
F57 F58	F57 INP4 BLOCK F58 INP4 CMND		Wiring fault to device	Check wiring for short or open circuit Ensure wires are wired into correct terminals	Correct wiring faults
			Damaged device	Swap device with known-good device	If a known-good device works, replace the faulty device
			Damaged powerhead main board	Disconnect unmonitored eye/edge. Open circuit condition is equivalent to an unobstructed unmonitored eye/edge device.	If the main board still detects an obstruction with no device connected, power cycle the operator. If the problem persists, reset to factory defaults and configure again. If problem still persists, replace the powerhead main board.

Troubleshooting (continued)

Code	Display Message	Description	Possible Causes	Diagnosis	Resolution
F61	F61 CTM FAULT	Cable Tension Monitor (CTM) device triggered or missing	Cable tension lost	Check that CTM devices have proper cable tension beneath the roller on the arm, and that the roller is properly riding on the cable. Ensure the cables are properly wrapped on the cable drums.	If cable tension is lost, carefully resolve the issue, check that limits are set properly, and monitor the issue to ensure it is resolved. Ensure no binding occurs in door travel that could produce slack cables.
			Improperly configured input	Check system settings item in the menu to check the the setting for the CTM input.	Ensure the configured number of CTM devices matches the number that are actually installed. Relearn CTM(s) if necessary.
			CTM wiring fault	Check wiring for short or open circuit Ensure wires are wired into the correct terminals	Correct wiring faults
			Damaged CTM device	Swap CTM(s) with known-good device Or verify CTM with multimeter on ohms range. A single CTM with the hinge open should measure 1000 Ohms (1 kOhm). When closed, a CTM should measure open-circuit.	If a known-good CTM works, replace the faulty CTM
			Damaged powerhead main board	Swap CTM(s) with known-good CTM(s) connected directly to the powerhead main board	If the main board still won't detect known-good CTM(s) connected directly to the board, the fault may exist with the main board. Attempt power cycling the unit and, failing that, resetting to factory defaults. If problem still persists, replace the main board.
F62	F62 WLESS BLK	Wireless edge blocked	Obstruction in doorway is blocking eye or contacting edge	Check for obstructions	If obstructions are present, remove the obstruction
			Unapproved Entrapment Protection device is being used	Ensure the Entrapment Protection device is approved for use with the wireless edge kit	Replace the Entrapment Protection device with one that is approved for use with the wireless edge kit
			Wiring fault to Entrapment Protection device	Check wiring for short or open circuit	Correct wiring faults
			Damaged edge	Swap Entrapment Protection device with known-good device	If a known-good Entrapment Protection device works, replace the faulty Entrapment Protection device
			Damaged wireless edge transmitter	Swap Entrapment Protection device with known-good device connected directly to the transmitter	If the wireless edge still shows blocked with known-good Entrapment Protection devices connected directly, power cycle the operator and the wireless edge transmitter. If problem still persists, replace the transmitter.

Troubleshooting (continued)

Code	Display Message	Description	Possible Causes	Diagnosis	Resolution
F63 F64	F63 WE BLE MISS F64 WE BLE MISS	Wireless edge receiver lost BLE (wireless) communications with edge F64 - CLOSE direction edge F63 - OPEN direction edge	Transmitter/receiver pairing issue	WE BLE MISS error	Pair transmitters to the receiver
			Dead battery in transmitter	Check transmitter battery power	Replace batteries
			Interference in 2.4GHz band	Check for other devices using the 2.4GHz band that may be causing interference If other 2.4GHz devices have interference problems (e.g. Bluetooth® headset) there is likely interference.	Reduce 2.4GHz band congestion
			Distance between transmitter and receiver is too far	Intermittent or complete loss of signal	Shorten distance between transmitter and receiver
			Bad transmitter	Swap transmitter(s) with known-good transmitter(s) and pair to the receiver	If a known-good transmitter resolves the issue, replace the bad transmitter
			Bad receiver	Swap receiver with known-good receiver and pair to the transmitters	If known-good receiver resolves the issue, replace the bad receiver
F65 F66	F65 WE I2C MISS F66 WE I2C MISS	Wireless edge is configured, but the main powerhead board cannot communicate with the wireless edge receiver. F66 - CLOSE direction edge F65 - OPEN direction edge	Wireless edge removed	Wireless edge intentionally removed	If the wireless edge is no longer wanted, it can be unlearned from the entrapment protection devices menu by using the LCD wall control.
			Communication cable disconnected or damaged	Check cable between receiver and powerhead main board for disconnection or damage to the cabling.	Correct any issues or replace any faulty parts.
			Firmware glitch or transient condition	Power cycle the operator completely. If the power cycle does not resolve the issue, restore factory defaults settings and reconfigure the operator.	If the steps listed in the diagnosis resolve the issue, there may have been a transient condition that caused and issue that was resolved. If the issue occurs excessively, the problem may lie elsewhere.
			Bad receiver module or bad powerhead main board	Replace the receiver module with a known good unit.	If the problem is resolved, replace the receiver with a new one. If the known good unit still does not work, replace the powerhead main board.
			Other bad accessory on the I2C expansion bus	Temporarily remove other accessories from between the wireless edge receiver and the powerhead main board	If issue is resolved, add accessories back one by one to find the accessory that causes the issue, then troubleshoot that device

Troubleshooting (continued)

Code	Display Message	Description	Possible Causes	Diagnosis	Resolution
F68	F68 WE CRITBATT	Wireless edge transmitter has low battery	The battery in the wireless edge transmitter is low	Check battery condition in wireless edge transmitter	Replace battery in wireless edge transmitter.
F89	F89 WC DISC	Indicates wall control is not detected	Wall control is intentionally disconnected	See resolution	<p>Liftmaster strongly recommends using an LCD wall control with the operator.</p> <p>If the wall control is intentionally disconnected, this error can be cleared by placing a jumper wire between the WALL CTRL terminals on the powerhead main board. If the jumper is removed and a wall control reconnected, the system may require a power cycle to recognize the new wall control.</p>
			Wall control is wired but off or not functional	Check wall control for display backlight, text on the display, and function of open/close/stop buttons	If LCD wall control isn't functioning properly, see diagnosis for fault 'LCD wall control is off or not functioning'

Troubleshooting (continued)

Code	Display Message	Description	Possible Causes	Diagnosis	Resolution
F91	F91 ENCODER	The system has detected irregularities in the signals received from the encoder.	Direction of rotation incorrect	Watch operator output shaft when commanding operator to open. If output shaft rotates in the close direction, then rotation direction is incorrect.	Ensure motor red and black wires match the labeling on the powerhead main board near the motor connector. Ensure reverse mount setting is set properly.
			System ID mismatch between powerhead main board and operator chassis can cause the encoder to not be recognized.	Check that the system ID in the system information menu matches the model of the operator	Main board system ID must match the operator. Replacement service kit main boards allow setting the system ID using the menu on the LCD wall control. Factory installed boards cannot have the System ID set manually.
			Door is drifting up or down due to imbalance when starting	Check for excessive door imbalance	Rebalance door
			Encoder wiring fault	Inspect encoder cable for disconnection, bad connection, cut cable, etc.	Correct any issues found with encoder wiring
			Encoder fault or encoder interface fault	Go to limit learn process. Number displayed while in door limit learn mode is the encoder position. Jog door several inches in either direction and release button. Number displayed should change. Make sure to cancel changes or set limit again when finished.	If encoder position does not change with door movement, ensure system ID in the system information menu matches the operator. If the system ID matches but the problem persists, the encoder, encoder wiring, and powerhead main board are suspect. Check all three for any visible damage. Replace or repair suspected faulty components.

Troubleshooting (continued)

Code	Display Message	Description	Possible Causes	Diagnosis	Resolution
F95	F95 MOTOR COMM	Message with invalid format received from motor MCU.	Powerhead main board firmware glitch or hardware damage.	Fault is internal to the powerhead main board. See resolution.	Power cycle the operator. If the issue persists, reset the settings to factory defaults and reconfigure the operator. If the issue still persists, replace powerhead main PCBA.
F96	F96 INTR LOCK	INTR LOCK circuit was broken Motor drive circuit is disabled when the INTR LOCK circuit is open. INTR LOCK circuit consists of the INTR LOCK wiring terminals and the hoist chain interlock switch. Operators without a hoist include a jumper to bypass the hoist chain interlock switch connections.	Hoist is engaged	Check that the hoist mechanism is disengaged.	Pull the green rope to disengage the hoist.
			INTR LOCK devices disconnected or missing	Check to ensure INTR LOCK devices are properly connected to the INTR LOCK terminals. INTR LOCK terminals should have jumper placed if no devices are connected.	Reconnect INTR LOCK devices. If no INTR LOCK devices are intended to be used, then place a wire jumper between both terminals.
			Hoist switch cable or hoist switch jumper disconnected or missing	Check to ensure hoist switch or jumper are properly connected.	Correct any wiring issues with the hoist switch cable or hoist switch jumper.
			Device connected to INTR LOCK terminals is open or INTR LOCK device is faulty	Check that any devices connected to INTR LOCK terminal are in their normal, closed state to allow the operator to move	Restore INTR LOCK devices to their normal state. If a faulty device is attached, repair or replace the device.
			Wiring fault	Check for open circuit or short circuit wiring faults for the INTR LOCK wiring.	If any wiring fault is found, correct the fault.
			Damaged powerhead main board	Disconnect INTR LOCK devices and replace with jumper. If fault goes away, issue is not with powerhead main board.	If the main board still won't resolve the fault with a jumper connected directly to the board, the fault may exist with the main board. Attempt power cycling the unit and, failing that, resetting to factory defaults. If problem still persists, replace the main board.
F101	F101 BBU LOW	Battery is present but discharged (voltage is low)	Backup battery is discharged due to loss of AC power.	Check to ensure that AC power is present and in normal operating range for the operator	Restore AC power and ensure battery recharges properly
			Battery is worn out or has failed	Batteries can be tested with a suitable battery tester. Older batteries are more likely to be worn out, as are batteries that are used often.	Replace batteries. Always replace both batteries as a set. Do not mix old and new batteries or use mismatched types.

Troubleshooting (continued)

Code	Display Message	Description	Possible Causes	Diagnosis	Resolution
F102	F102 BBU DISCONN	Battery is learned to the system but the battery is not detected	Backup battery is disconnected	Verify all battery wiring is connected securely and properly to the correct terminals and with the correct polarity.	Correct any wiring issues.
			Battery is worn out or has failed	Batteries can be tested with a suitable battery tester. Older batteries are more likely to be worn out, as are batteries that are used often.	Replace batteries. Always replace both batteries as a set. Do not mix old and new batteries or use mismatched types.
			Battery fuses blown	Visually inspect battery fuses or measure the fuses with a multimeter for continuity.	If fuses are blown, replace both together with new fuses.
F105	F105 AC FAIL	AC failure. System is running on battery.	Power outage	Check for proper voltage at the input of the operator	Error code will resolve when power is restored
			Input voltage outside specifications	Check for proper voltage at the input of the operator	Ensure voltage supplied to the operator is within the specified operating range
F106	F106 WC SHORT	Indicates wall control is removed and jumpered out.	Wall control is intentionally disconnected	Error message is informational only.	Liftmaster strongly recommends using the provided LCD wall control with the operator.
			Wiring short circuit	Inspect wiring for short circuits, damage, etc.	Resolve any faults found, then power cycle the operator
			Damaged wall control	Replace wall control with known-good unit, then power cycle the operator	If known good wall control resolves the issue, replace the bad wall control
F120	F120 MAINT DUE	Maintenance counter reached preset limit	Maintenance counter reached preset limit	F120 error code	Reset or extend maintenance counter using the menu through the wall control. Reference section: MAINTENANCE RESET / RESET CYCLES
F121	F121 OVER CYCLED	Standard/extended cycle count reached	Operator has been cycled too many times in a short period of time	Refer to specified cycle ratings for the operator model that is installed	Reduce cycle rate to ensure it is within specifications for the operator

Maintenance

Maintenance Schedule

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

WARNING

To avoid SERIOUS personal INJURY or DEATH:

- Disconnect electric power BEFORE performing ANY adjustments or maintenance.
- ALL maintenance MUST be performed by a trained door systems technician.

Item	Procedure	Every Month	Every 3 Months or 5,000 Cycles	Every 6 Months or 10,000 Cycles
Drive Chain	<ul style="list-style-type: none">• Check for excessive slack.• Check and adjust as required.• Lubricate.		● •	
Sprockets	Check set screw tightness.		●	
Fasteners	Check and tighten as required.			●
Manual Hoist (if applicable)	Check and operate.			●
Shafts	Check for wear and lubricate.		● •	
LiftMaster Monitored Entrapment Protection	Check alignment and functionality.	●		

- Use SAE 30 Oil (Never use grease or silicone spray)
 - Do not lubricate motor. Motor bearings are rated for continuous operation.

- Inspect and service whenever a malfunction is observed or suspected.

How to order repair parts: LiftMaster.com

Accessories

Part #	Description	Image	Part #	Description	Image	
CPS-U	Monitored Dual-Sided Infrared Photoelectric Sensors		65-8202	Not approved as a Monitored Entrapment Protection Device.	Vehicle Detection System	
LMTBUL	Monitored Thru-Beam Photoelectric Sensors		65-5202	Not approved as a Monitored Entrapment Protection Device.	Vehicle Detection System	
LMRRUL	Monitored Retro-Reflective Photoelectric Sensors		100MAPS	Plug-In Power Supply		
CPS-UN4	Monitored Thru-Beam Photoelectric Sensors		811LMX	Programmable DIP Switch Single-Button Remote Control		
CPS-RPEN4	Monitored Retro-Reflective Photoelectric Sensors		891LMMC	Single-Button Remote Control		
CPS-OPEN4	Monitored Dual-Sided Photoelectric Sensors		893LMMC	Programmable DIP Switch Three-Button Remote Control		
LMWEKITU	Monitored Wireless Edge Kit		877LMMC	Wireless Keypad		
LMWETXU	Monitored Wireless Edge Transmitter		STAR1000	Commercial Access Control Receiver		
OES-SD16	Monitored Optical Edge System		850LM	Universal Receiver		

Maintenance

Maintenance Schedule

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

WARNING

To avoid SERIOUS personal INJURY or DEATH:

- Disconnect electric power BEFORE performing ANY adjustments or maintenance.
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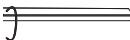
Item	Procedure	Every Month	Every 3 Months or 5,000 Cycles	Every 6 Months or 10,000 Cycles
Drive Chain	<ul style="list-style-type: none">• Check for excessive slack.• Check and adjust as required.• Lubricate.		● •	
Sprockets	Check set screw tightness.		●	
Fasteners	Check and tighten as required.			●
Manual Hoist (if applicable)	Check and operate.			●
Shafts	Check for wear and lubricate.		● •	
LiftMaster Monitored Entrapment Protection	Check alignment and functionality.	●		

- Use SAE 30 Oil (Never use grease or silicone spray)
 - Do not lubricate motor. Motor bearings are rated for continuous operation.

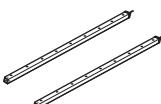
- Inspect and service whenever a malfunction is observed or suspected.

How to order repair parts: LiftMaster.com

Accessories

Part #	Description	Image	Part #	Description	Image	
CPS-U	Monitored Dual-Sided Infrared Photoelectric Sensors		65-8202	Not approved as a Monitored Entrapment Protection Device.	Vehicle Detection System	
LMTBUL	Monitored Thru-Beam Photoelectric Sensors		65-5202	Not approved as a Monitored Entrapment Protection Device.	Vehicle Detection System	
LMRRUL	Monitored Retro-Reflective Photoelectric Sensors		100MAPS	Plug-In Power Supply		
CPS-UN4	Monitored Thru-Beam Photoelectric Sensors		811LMX	Programmable DIP Switch Single-Button Remote Control		
CPS-RPEN4	Monitored Retro-Reflective Photoelectric Sensors		891LMMC	Single-Button Remote Control		
CPS-OPEN4	Monitored Dual-Sided Photoelectric Sensors		893LMMC	Programmable DIP Switch Three-Button Remote Control		
LMWEKITU	Monitored Wireless Edge Kit		877LMMC	Wireless Keypad		
LMWETXU	Monitored Wireless Edge Transmitter		STAR1000	Commercial Access Control Receiver		
OES-SD16	Monitored Optical Edge System		850LM	Universal Receiver		

Accessories (continued)

Part #	Description	Image	Part #	Description	Image
OES-SD24	Monitored Optical Edge System		DCWALLCTL		
OES-RD16	Monitored Optical Edge System		02-101 - 1	Button Wall Controller	
S50	Monitored Edge Sensors		02-102 - 2	Button Wall Controller	
CPS-EI	Edge Interface 4-Wire Monitored		02-103L - 3	Button Wall Controller	
ASO	Monitored 4-Wire, 2-Wire Sentir Series 45.30		02-406 - 3	Button Outdoor Wall Controller	
ASO	Monitored 4-Wire, 2-Wire Sentir Series 35.55		02-403-N4XALD	3-Button Outdoor Controller NEMA N4/4X/12	
LC36M	Monitored Light Curtain		K41-0157-000	HPH1 & HPH2 Cable Tension Monitor (Right)	
K41-0156-000	HPH1 & HPH2 Cable Tension Monitor (Left)		RGL-CTL	Red/Green Traffic Light-Compact	
Pluggable Loop Detector Board (Accessory Kit: LPEXP)					

Accessories (continued)

Part #	Description	Image	Part #	Description	Image
Auxiliary Relay Board (Accessory Kit: AUXREL)			50-HERK2	Motion Detector 24V	
86LM (15' [4.6 m])/86LMT (25' [7.6 m])	Antenna Extension Kit		50450	Switch Sectional Door Interlock	
RGL24LY	Red/Green Traffic Light		50401	Switch Rolling Door Interlock	

FIELD INSTALLABLE ACCESSORY KITS

Part #	Description	Part #	Description
AUXREL	Auxiliary Relay Board	XF600VAC22	600V Transformer kit, For 2200 Operators
DC45AH	4.5AH Battery Backup Kit		
DC7AH	7 AH Battery Backup Kit	FOHMODDC	Front of Hood Mount Bracket Kit
DCWALLCTL	Floor Level Wall Controller with LCD display	HOISTMOUNTMODDC	Mount Bracket Kit to convert L5 GH mount for JDC or JHDC install
LPEXP	Loop detector accessory board	XF208VAC22	208V Transformer kit, For 2200 Operators
CHNGUARD	Chain Guard	XF600VAC7	600V Transformer kit, For 700 Operators
CHAIINTENSDC	Chain Tensioner (Spreader Bar)	XF600VAC12	600V Transformer kit, For 1200 Operators
HTRNB	Heater Kit - 120/240V 1/3PH	XF208VAC7	208V Transformer kit, For 700 Operators
HTR460	Heater Kit - 480V 3PH	XF208VAC12	208V Transformer kit, For 1200 Operators
K41-0156-000	Cable Tension Monitor (CTM) - Left	K41-0157-000	Cable Tension Monitor (CTM) - Right

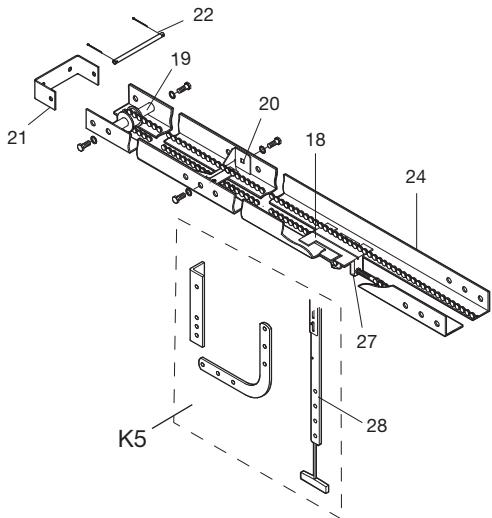
NOTE: For full list of trolley kits and auxiliary, dual auxiliary and dual trolley kits, please reference the Partner Portal and Accessory Price List.

Service Parts

Model TDC

SERVICE KITS

Item	Part #	Description
	K41-0372-000	Drive Sprocket 41 (1200/2200)
	K41-0373-000	Drive Sprocket 48 (700)
	41-0468-000	Frame for TDC 700 and 1200



DOOR DRIVE CHAIN KITS

Part #	Description	Item	Part #	Description
TDC48-08	#48 Chain for TDC 700 Doors to 8'	18	K75-10170	Trolley
TDC48-10	#48 Chain for TDC 700 Doors to 10'	19	K75-10174	Front Idler Assembly
TDC41-10	#41 Chain for TDC 1200 and 2200 Doors to 10'	20	K75-10259	Tracker Spacer
TDC48-12	#48 Chain for TDC 700 Doors to 12'	21	K10-10205	Header Bracket
TDC41-12	#41 Chain for TDC 1200 and 2200 Doors to 12'	22	11-10130	Header Pivot Pin
TDC48-14	#48 Chain for TDC 700 Doors to 14'	K5	K75-12870	Door Arm Kit Complete with: Curved Arm, Straight Arm, Door Bracket and Hardware.
TDC41-14	#41 Chain for TDC 1200 and 2200 Doors to 14'	24		Door Track* (Call for pricing and availability)
TDC48-16	#48 Chain for TDC 700 Doors to 16'	25	10-10011M1	Frame
TDC41-16	#41 Chain for TDC 1200 and 2200 Doors to 16'	27	K11-10197	Take Up Bolt
TDC48-18	#48 Chain for TDC 700 Doors to 18"	28	K75-17034	Heavy Duty Straight Arm
TDC41-18	#41 Chain for TDC 1200 and 2200 Doors to 18'			
TDC48-20	#41 Chain (3/4 & 1 HP) Doors to 20'			
TDC41-20	#41 Chain for TDC 1200 and 2200 Doors to 20'			
TDC41-24	#41 Chain for TDC 1200 and 2200 Doors to 24'			

Service Parts

Model JHDC

SERVICE KITS

Part #	Description
190925FT12	Hoist Chain
K41-0269-000	Disengage Rope (red), Engage Rope (green), two screws
15-50B12LGH	Drive Sprocket
K41-0465-000	Hoist Assembly, JHDC

Model TDC, JDC, and JHDC Common Parts

SERVICE KITS

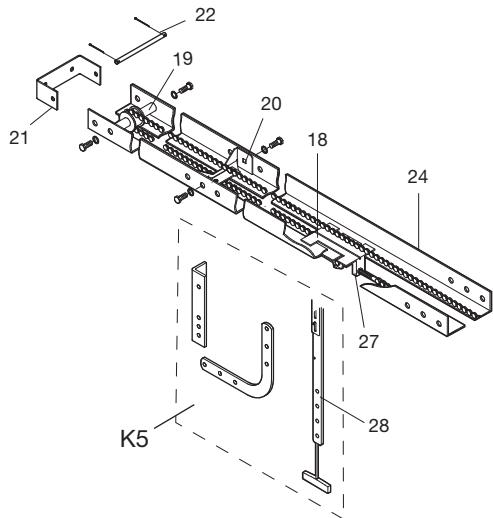
Part #	Description	Part #	Description
K41-0374-000	24 DC Motor, Gear Box & Encoder (Jack Shaft 700)	K41-0380-000	Bridge Rectifier 700/1200
K41-0375-000	24 DC Motor, Gear Box & Encoder (Jack Shaft 1200)	TBD	Bridge Rectifier 2200
K41-0376-000	24 DC Motor, Gear Box & Encoder (Jack Shaft 2200)	K41-0381-000	Toroidal Transformer 700Lb/120Vac-240VAC
K41-0377-000	24 DC Motor, Gear Box & Encoder (Trolley 700)	K41-0382-000	Toroidal Transformer 700Lb/480VAC
K41-0378-000	24 DC Motor, Gear Box & Encoder (Trolley 1200)	K41-0383-000	Toroidal Transformer 1200Lb/120Vac-240VAC
K41-0379-000	24 DC Motor, Gear Box & Encoder (Trolley 2200)	K41-0384-000	Toroidal Transformer 1200Lb/480VAC
K41-0409-000	1200 Extended duty Motor, Gear Box & Encoder Trolley	K41-0385-000	Toroidal Transformer 2200Lb/120Vac-240VAC
K41-0410-000	1200 Extended duty Motor, Gear Box & Encoder Hoist	K41-0386-000	Toroidal Transformer 2200Lb/480VAC
K41-0388-000MC	Main Board, T, J, H, 700, 1200, 2200	K77-36541	Antenna
K41-0390-000	EMI Board 700 & 1200 (480VAC)	K41-0387-000	Encoder (with drive sprocket, snap ring, mounting plate, screws)
K41-0391-000	EMI Board 700 & 1200 (120/240VAC)	K41-0424-000	Motor, J700, T700, STD (For JDC7 & TDC7)
K41-0393-000	EMI Board 2200 (120VAC 240VAC)	K41-0425-000	Motor, H700 STD (For JHDC7)
K41-0394-000	EMI Board 2200 (480 VAC)	K41-0426-000	Motor, H1200 STD (For JHDC12S)
K41-0395-000	Control Box with Cover	K41-0427-000	Motor, H1200 EXT (For JHDC12X)
K41-0469-000	Motor Cap with Screws (For TDC & JDC 700 & 1200)	K41-0428-000	Motor, T1200 STD (For TDC12S)
		K41-0429-000	Motor, T1200 EXT (For TDC12X)

Service Parts

Model TDC

SERVICE KITS

Item	Part #	Description
	K41-0372-000	Drive Sprocket 41 (1200/2200)
	K41-0373-000	Drive Sprocket 48 (700)
	41-0468-000	Frame for TDC 700 and 1200



DOOR DRIVE CHAIN KITS

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TDC48-20	#41 Chain (3/4 & 1 HP) Doors to 20'			
TDC41-20	#41 Chain for TDC 1200 and 2200 Doors to 20'			
TDC41-24	#41 Chain for TDC 1200 and 2200 Doors to 24'			

Service Parts

Model JHDC

SERVICE KITS

Part #	Description
190925FT12	Hoist Chain
K41-0269-000	Disengage Rope (red), Engage Rope (green), two screws
15-50B12LGH	Drive Sprocket
K41-0465-000	Hoist Assembly, JHDC

Model TDC, JDC, and JHDC Common Parts

SERVICE KITS

Part #	Description	Part #	Description
K41-0374-000	24 DC Motor, Gear Box & Encoder (Jack Shaft 700)	K41-0380-000	Bridge Rectifier 700/1200
K41-0375-000	24 DC Motor, Gear Box & Encoder (Jack Shaft 1200)	TBD	Bridge Rectifier 2200
K41-0376-000	24 DC Motor, Gear Box & Encoder (Jack Shaft 2200)	K41-0381-000	Toroidal Transformer 700Lb/120Vac-240VAC
K41-0377-000	24 DC Motor, Gear Box & Encoder (Trolley 700)	K41-0382-000	Toroidal Transformer 700Lb/480VAC
K41-0378-000	24 DC Motor, Gear Box & Encoder (Trolley 1200)	K41-0383-000	Toroidal Transformer 1200Lb/120Vac-240VAC
K41-0379-000	24 DC Motor, Gear Box & Encoder (Trolley 2200)	K41-0384-000	Toroidal Transformer 1200Lb/480VAC
K41-0409-000	1200 Extended duty Motor, Gear Box & Encoder Trolley	K41-0385-000	Toroidal Transformer 2200Lb/120Vac-240VAC
K41-0410-000	1200 Extended duty Motor, Gear Box & Encoder Hoist	K41-0386-000	Toroidal Transformer 2200Lb/480VAC
K41-0388-000MC	Main Board, T, J, H, 700, 1200, 2200	K77-36541	Antenna
K41-0390-000	EMI Board 700 & 1200 (480VAC)	K41-0387-000	Encoder (with drive sprocket, snap ring, mounting plate, screws)
K41-0391-000	EMI Board 700 & 1200 (120/240VAC)	K41-0424-000	Motor, J700, T700, STD (For JDC7 & TDC7)
K41-0393-000	EMI Board 2200 (120VAC 240VAC)	K41-0425-000	Motor, H700 STD (For JHDC7)
K41-0394-000	EMI Board 2200 (480 VAC)	K41-0426-000	Motor, H1200 STD (For JHDC12S)
K41-0395-000	Control Box with Cover	K41-0427-000	Motor, H1200 EXT (For JHDC12X)
K41-0469-000	Motor Cap with Screws (For TDC & JDC 700 & 1200)	K41-0428-000	Motor, T1200 STD (For TDC12S)
		K41-0429-000	Motor, T1200 EXT (For TDC12X)

Warranty

LIFTMASTER® LIMITED WARRANTY

LiftMaster ("Seller") warrants to the first retail purchaser of this product, for the residence in which this product is originally installed, that it is free from defects in materials and/or workmanship for a specific period of time as defined below (the "Warranty Period"). The warranty period commences from the date of purchase.

WARRANTY PERIOD		
Parts	Motor and Controller	Accessories
1 Year	2 years	1 year

The proper operation of this product is dependent on your compliance with the instructions regarding installation, operation, and maintenance and testing. Failure to comply strictly with those instructions will void this limited warranty in its entirety.

If, during the limited warranty period, this product appears to contain a defect covered by this limited warranty, call 1-800-528-9131, toll free, before dismantling this product. You will be advised of disassembly and shipping instructions when you call. Then send the product or component, pre-paid and insured, as directed to our service center for warranty repair. Please include a brief description of the problem and a dated proof-of-purchase receipt with any product returned for warranty repair. Products returned to Seller for warranty repair, which upon receipt by Seller are confirmed to be defective and covered by this limited warranty, will be repaired or replaced (at Seller's sole option) at no cost to you and returned pre-paid. Defective parts will be repaired or replaced with new or factory-rebuilt parts at Seller's sole option. [You are responsible for any costs incurred in removing and/or reinstalling the product or any component].

ALL IMPLIED WARRANTIES FOR THE PRODUCT, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO THE APPLICABLE LIMITED WARRANTY PERIOD SET FORTH ABOVE FOR THE RELATED COMPONENT(S), AND NO IMPLIED WARRANTIES WILL EXIST OR APPLY AFTER SUCH PERIOD. Some States and Provinces do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. **THIS LIMITED WARRANTY DOES NOT COVER NON-DEFECT DAMAGE, DAMAGE CAUSED BY IMPROPER INSTALLATION, OPERATION OR CARE (INCLUDING, BUT NOT LIMITED TO ABUSE, MISUSE, FAILURE TO PROVIDE REASONABLE AND NECESSARY MAINTENANCE, UNAUTHORIZED REPAIRS OR ANY ALTERATIONS TO THIS PRODUCT), LABOR CHARGES FOR REINSTALLING A REPAIRED OR REPLACED UNIT, REPLACEMENT OF CONSUMABLE ITEMS (E.G., BATTERIES IN REMOTE CONTROL TRANSMITTERS AND LIGHT BULBS), OR UNITS INSTALLED FOR NON-RESIDENTIAL USE.** THIS LIMITED WARRANTY DOES NOT COVER ANY PROBLEMS WITH, OR RELATING TO, THE GARAGE DOOR OR GARAGE DOOR HARDWARE, INCLUDING BUT NOT LIMITED TO THE DOOR SPRINGS, DOOR ROLLERS, DOOR ALIGNMENT OR HINGES. THIS LIMITED WARRANTY ALSO DOES NOT COVER ANY PROBLEMS CAUSED BY INTERFERENCE. UNDER NO CIRCUMSTANCES SHALL SELLER BE LIABLE FOR CONSEQUENTIAL, INCIDENTAL OR SPECIAL DAMAGES ARISING IN CONNECTION WITH USE, OR INABILITY TO USE, THIS PRODUCT. IN NO EVENT SHALL SELLER'S LIABILITY FOR BREACH OF WARRANTY, BREACH OF CONTRACT, NEGLIGENCE OR STRICT LIABILITY EXCEED THE COST OF THE PRODUCT COVERED HEREBY. NO PERSON IS AUTHORIZED TO ASSUME FOR US ANY OTHER LIABILITY IN CONNECTION WITH THE SALE OF THIS PRODUCT.

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**Maintenance
of
Steel Door and Frame
Assemblies**

Maintenance of Steel Door and Frame Assemblies

1 Introduction

This document is intended to serve as a general outline of maintenance activities needed for standard steel doors and frames. Maintenance will be, for the most part, associated with the accessories and hardware attached to the door and frame.

Maintenance of any product is important and necessary to obtain the maximum benefits of product service and longevity. Steel door and frame assemblies are not different. In fact, in some cases where the door and frame assembly is used as a "fire rated" barrier or a "leakage rated" smoke barrier, proper maintenance is crucial. Basic maintenance to ensure the proper functioning of the assembly is imperative and well worth the effort to provide for human life safety.

2 Areas to be inspected

The following items should be periodically checked. The frequency with which these checks are performed must be established at the discretion of the building owner, insurance company, labeling authority (as applicable), and maintenance service. Since doors in different areas of a building access service different traffic, the frequency of periodic inspections would occur respectively.

Hinges

Check all hinges for loose attaching screws, hinge pin wear or other notable defects. Service the hinges or remove defective parts and replace per the manufacturer's recommendations. The door should always swing freely and smoothly without obstruction from the opened to latched (when latching device is used) position.

Locksets, panic devices, fire exit hardware

Check all locksets for loose attaching screws, latch wear or other notable defects. Service the lockset or remove defective parts and replace per the manufacturer's recommendations. The door should always latch freely and smoothly without obstruction. Self latching devices should always function freely and smoothly

as the door swings into the closed position. Additional force should not be needed to achieve latching. Silencers (mutes) should be replaced when latch operation is compromised by wear.

Strike plate

The strike plate should be firmly attached to the frame or inactive leaf of a pair of doors. Check for loose screws and/or other notable defects. Service or remove and replace per the manufacturer's instructions.

Closing devices

Check all closing devices for loose attaching screws, linkage arm and pin wear, **fluid leakage** or other notable defects. Service the device or remove defective parts and replace following the manufacturer's recommendations. The primary and secondary closing speed adjustments should also be set and maintained in accordance with the manufacturer's recommendations. The device should allow the door to operate freely and smoothly throughout its entire swing range and positively latch (if so equipped) or remain in the closed position.

Flush bolts

Check all flush bolts for loose attaching screws, rod bolt adjustment and strike plate (on both door and frame if so equipped) attachment. Service the devices or remove defective parts and replace following the manufacturer's recommendations. The rod bolts should retract, extend and engage the strike or keeper hole freely and smoothly for both manual and/or automatic flush bolts.

Glass lights

The glazing material should be checked for cracks and/or missing pieces of glazing. The glazing mounting frame should be checked to assure all attaching screws (if used) are tight and the unit is securely attached to the door. Service the glass light or remove defective parts and replace by following the manufacturer's recommendations. Also be sure to use approved safety

glass in appropriate applications/locations, **or fire rated glass and glazing in fire doors, windows or lights.**

Door and frame finish

A general visual inspection of the door and frame finish should be periodically conducted. Any excessive finish defects should be repaired and repainted. Adequate protection is needed to help prevent the product from rusting prematurely and shortening its service life. Certification labels present shall not be painted over during any repainting.

Fire Door/Smoke Door Assemblies

Fire rated and/or smoke control assemblies are specified and installed to meet "safety to life code requirements." It is imperative that these assemblies receive regularly scheduled maintenance checks for all of the above items. Additionally, for the assembly to serve its purpose of stopping fire and/or smoke propagation it must function freely with the ability to positively latch in the closed position. Therefore, propping or block-

ing these doors in an open position is in violation of intended use and purpose as established in building codes. These doors must not be obstructed in any fashion preventing them from functioning as intended.

Gasketing/weatherstripping

A visual and operational inspection is periodically necessary for gasketed or weatherstripped areas such as perimeter seals, threshold seals, door bottoms, silencers, mutes, etc. Inspect for signs of deterioration such as splitting, cracking or deforming of flexible components. Install replacement components as needed.

To inspect operational integrity, position gasketing to create proper contact along the door's entire perimeter. The test for proper contact is usually done with common paper. The paper should be firmly held in place by inserting it between the door and gasket and then closing the door. If the paper is not firmly held in place, the seal is inadequate. The paper test should be conducted along the entire perimeter.

Related Documents:

- NFPA 80 Standard for Fire Doors and Other Opening Protectives, Chapter 5
- NFPA 105 Standard for Smoke Door Assemblies and Other Protective Openings
- SDI-122 Installation and Troubleshooting Guide for Standard Steel Doors and Frames

AVAILABLE PUBLICATIONS

Specifications

ANSI/SDI A250.6 Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames

ANSI/SDI A250.8 Specifications for Standard Steel Doors and Frames (SDI-100)

ANSI/SDI A250.14 Hardware Preparation in Steel Doors and Steel Frames

SDI-108 Recommended Selection & Usage Guide for Standard Steel Doors

SDI-118 Basic Fire Door, Fire Door Frame, Transom/Sidelight Frame, and Window Frame Requirements

SDI-128 Guidelines for Acoustical Performance of Standard Steel Doors and Frames

SDI-129 Hinge and Strike Spacing

SDI-133 Guideline for Specifying Steel Doors & Frames for Blast Resistance

SDI-136 Guideline for Specifying Windstorm Products

Test Procedures

ANSI/SDI A250.3 Test Procedure & Acceptance Criteria for Factory Applied Finish Coatings for Steel Doors and Frames

ANSI/SDI A250.4 Test Procedure & Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors

ANSI/SDI A250.10 Test Procedure & Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames

ANSI/SDI A250.13 Testing and Rating of Severe Windstorm Resistant Components for Swinging Door Assemblies for Protection of Building Envelopes (Not applicable for FEMA 320/361 or ICC-500 Shelters)

SDI-113 Standard Practice for Determining the Steady-State Thermal Transmittance of Steel Door and Frame Assemblies

SDI-131 Accelerated Physical Endurance Test Procedure for Steel Doors

Construction Details

ANSI/SDI A250.11 Recommended Erection Instructions for Steel Frames

SDI-110 Standard Steel Doors & Frames for Modular Masonry Construction

SDI-111 Recommended Details for Standard Steel Doors, Frames, Accessories and Related Components

SDI-122 Installation Troubleshooting Guide for Standard Steel Doors & Frames

Miscellaneous Documents

SDI-112 Zinc-Coated (Galvanized/Galvannealed) Standard Steel Doors and Frames

SDI-117 Manufacturing Tolerances for Standard Steel Doors and Frames

SDI-124 Maintenance of Standard Steel Doors & Frames

SDI-127 Industry Alert Series (A-L)

SDI-134 Glossary of Terms for Hollow Metal Doors and Frames

SDI-135 Guidelines to Measure for Replacement Doors in Existing Frame Openings

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