

R Y T E C

Spiral VPTM Spring Balanced (SVP-B)

Installation Manual



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INTRODUCTION

The information contained in this manual will allow you to install your Rytec Spiral™ VP Balanced Drive Door in a manner which will ensure maximum life and trouble-free operation.

Any unauthorized changes in procedure, or failure to follow the steps as outlined in this manual, will automatically void the warranty. Any changes in the working parts, assemblies, or specifications as written that are not authorized by Rytec Corporation will also cancel the warranty. The responsibility for the successful operation and performance of this door lies with the owner of the door.

DO NOT OPERATE OR PERFORM MAINTENANCE ON THIS DOOR UNTIL YOU READ AND UNDERSTAND THE INSTRUCTIONS CONTAINED IN THIS MANUAL.

If you have any questions contact your Rytec representative or call the Rytec Technical Support Department at 800-628-1909. Always refer to the serial number of the door when calling the representative or Technical Support.

The wiring connections and schematics in this manual are for general information purposes only. A wiring schematic is provided with each individual door specifically covering the control panel and electrical components of that door. That schematic was shipped inside the cover of the System 4 control panel.

HOW TO USE MANUAL

Throughout this manual, the following key words are used to alert the reader of potentially hazardous situations, or situations where additional information to successfully perform the procedure is presented:

⚠ WARNING

WARNING is used to indicate the potential for personal injury, if the procedure is not performed as described.

⚠ CAUTION

CAUTION is used to indicate the potential for damage to the product or property damage, if the procedure is not followed as described.

IMPORTANT: *IMPORTANT* is used to relay information **CRITICAL** to the successful completion of the procedure.

NOTE: NOTE is used to provide additional information to aid in the performance of the procedure or operation of the door, but not necessarily safety related.

DOOR SERIAL NUMBER(S)

To obtain your DOOR SERIAL NUMBER, there are two universal locations that this information can be attained. These are on the left side and right side lower track assembly (at approximately eye level). (See Figure 1)

⚠ CAUTION

When installing multiple doors of the same model, verify & match the serial numbers of all the components for each door (i.e. control panel, side columns, drive assembly, etc.).

NOTE: The following illustration shows the front side of the door. Left and right sides are determined when viewing the front side of the door.

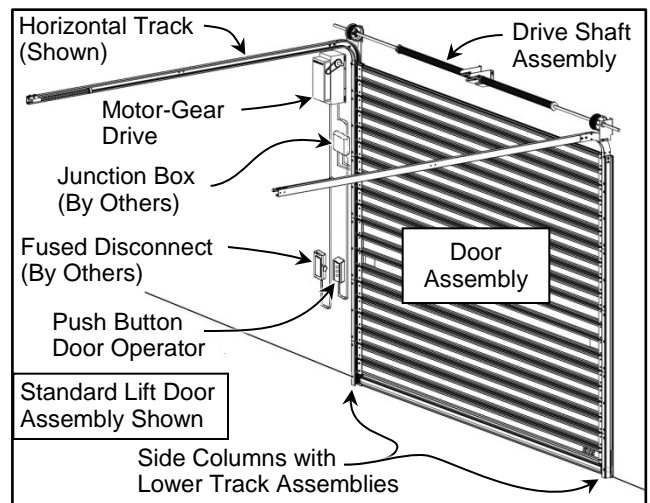


Figure 1

INSTALLATION-MATERIAL, TOOLS, AND EQUIPMENT

INSTALLATION

MATERIAL, TOOLS, AND EQUIPMENT

1. Threaded rod ($\text{Ø}5/16$ -inch) and other various wall anchor hardware and material. Concrete. Anchor bolts ($\text{Ø}5/16$ -inch). (See "ANCHORING METHODS" on page 3)
2. Assorted shim stock.
3. Double-sided tape.
4. Carpenters or spirit level (4-ft. minimum length).
5. Carpenter's square.
6. Fish tape.
7. Hammer drill.
8. Masonry drill bit (for $\text{Ø}5/16$ inch anchors).
9. Three or four bar clamps (18-in. or longer).
10. Hammer or mallet and blocks of wood (2x4, etc.).
11. Crowbar or pry bar.
12. Assorted hand tools (pliers, tape measure, adjustable wrench, etc.).
13. Plumb bob with line.
14. Metric and U.S. socket and wrench sets.
15. T-25, T-30, and T-40 Torx drivers.
16. Water level, line level, transit, or laser level.
17. Scissors lift (see "Scissors Lift Requirements" on page 2). (Recommended)
18. Chisel-dull or equal. (See Figure 2)



Figure 2

19. 5" and 3.5" block-shim material. (Wood or other)

20. White paint marker or equal.
21. Vise grips: (2) 10" minimum standard, and (2) 11" or bigger C-clamps.
22. (2) Each $\text{Ø}1\frac{1}{2}$ " x 18" ($\leq \text{Ø}2\text{-}\frac{5}{8}$ spring) or $\text{Ø}\frac{5}{8}$ " x 24" ($\geq \text{Ø}3\text{-}\frac{3}{4}$ spring) winding bars that properly fit the winding cone of the torsion springs. Edges must be sharp cut @ 90° as shown (See Figure 3).



Figure 3

23. Lubricating oil (Bar and chain oil and/or SAE 40 Weight will do).
24. Wire crimping tool ($\text{Ø}5/32$ " Wire).
25. Chalk
26. $\text{Ø}2.00$ " Convex-Rounded Hand Roller (Supplied).
27. Two ladders (taller than install height of door).

ADDITIONAL REQUIREMENTS

Labor and Site Requirements

1. Two installers.
2. A licensed electrician is required for making all electrical connections. (See "Electrician's Responsibilities".)
NOTE: All electrical work must be performed in accordance with local, state, and all applicable building codes.
3. 100% accessibility to the door opening during the entire installation process. No traffic should be allowed to pass through the opening while the door is being installed.

Scissors Lift Requirements

A scissors lift supplied by the customer, dealer, or installer is mandatory for the safe and proper installation of this door. The scissors lift should have:

- Minimum height ability: 2X door height for high and vertical lift, door height for standard lift.
- 2-person capacity platform
- Side-shift platform extension capability (desired).

INSTALLATION-GENERAL ARRANGEMENT OF DOOR COMPONENTS

Electrician's Responsibilities

For complete details on the responsibilities of the electrician, refer to the LiftMaster Commercial Door Operators Installation Manual and User's Guide and the door's electrical schematic.

1. Install fused disconnect and LiftMaster Door Operator. (See Figure 4 for typical installation.)
2. Install all necessary conduit tubing.

NOTE: Separate conduit must be run for high and low voltage wiring.

3. Run electrical power lines to disconnect.
4. Run power lines from disconnect to LiftMaster Door Operator.
5. Run power lines from LiftMaster Door Operator to pushbutton control operator.
6. Run power lines from LiftMaster Door Operator to upper junction box.
7. Mount front photo eyes.
8. Wire low-voltage safety devices and activators (if used).

Run high and low voltage wires/cables in separate metal conduit to the bottom of the System 4 control panel.

Wires/cables must be cut to length. **DO NOT** leave excess wire/cable loops on the door or in the control panel. Excess wires/cables can cause problems.

GENERAL ARRANGEMENT OF DOOR COMPONENTS

Figure 4 shows the location of the major components of your Spiral VP Balanced Drive door. This illustration should be used as reference only and should not be considered as part of the installation instructions.

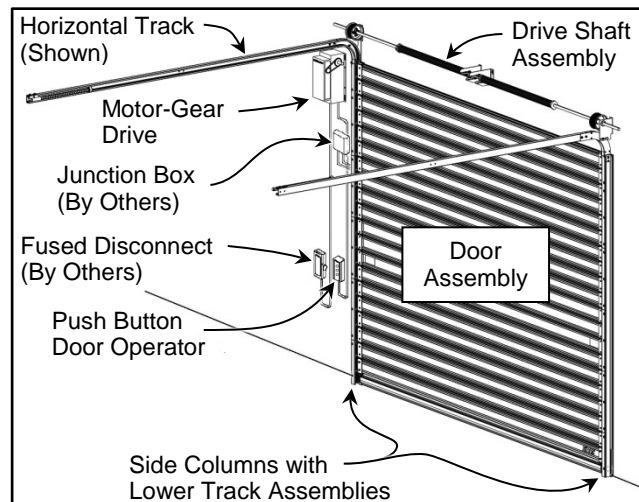


Figure 4

NOTE: The above illustration shows the front side of the door. Left and right are determined when viewing the front side of the door.

ANCHORING METHOD

Correct anchoring of the side columns to the wall and floor is important for the smooth and safe operation of the door. The wall material should be strong enough to support the weight of the door and all wall anchors.



The wall material should be strong enough to safely support the weight of the door and all wall anchors. Door wall anchors must have an individual ultimate rated Pull Out strength of #1500 minimum.

Figure 5 details the wall load requirement for supporting the Rytec Spiral VP door. Figure 5 through Figure 8 show anchoring methods for various types of walls. Use the method best suited for your particular installation site.

All necessary anchoring hardware and material for the installation of this door is the responsibility of the door owner. If you have any questions, call your Rytec representative or the Rytec Technical Support Department at 800-628-1909.

NOTE: Use Ø5/16-in. threaded through bolts or Ø5/16-in. threaded rods to anchor the door to all wall applications. Use Ø5/16-in. concrete anchor bolts to anchor the door to a concrete floor.



Before operating, confirm that anchors DO NOT interfere with moving parts.

Concrete, Block, or Brick Walls

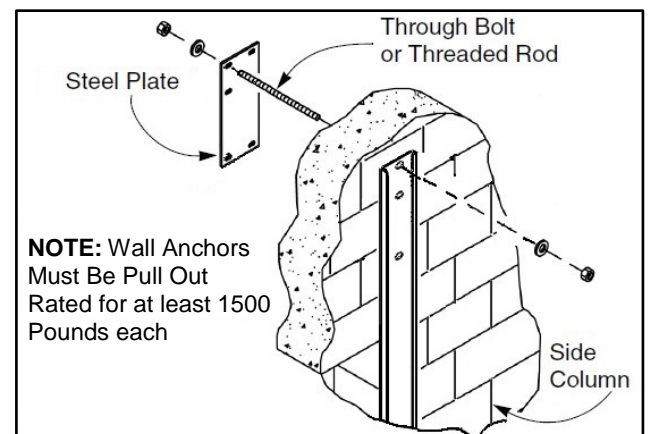


Figure 5

INSTALLATION-UNCRATING

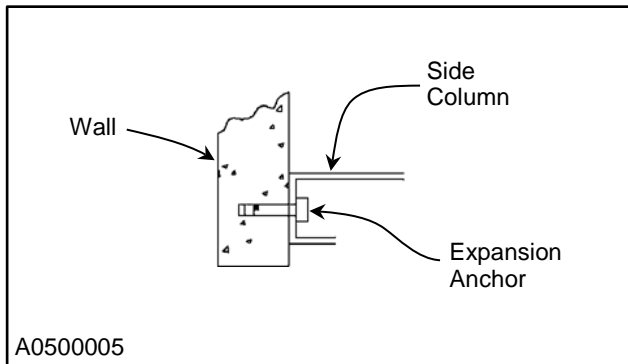


Figure 6

Concrete, Block, Brick or Wood Wall

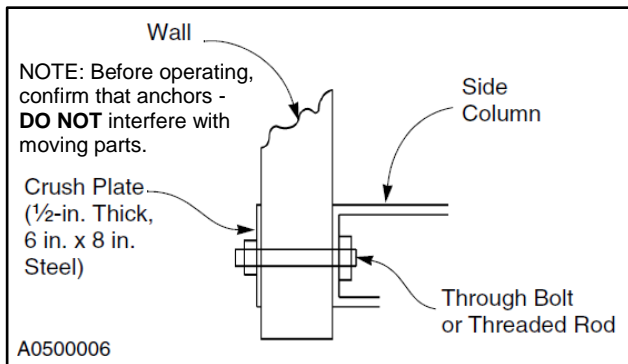


Figure 7

Insulated Wall

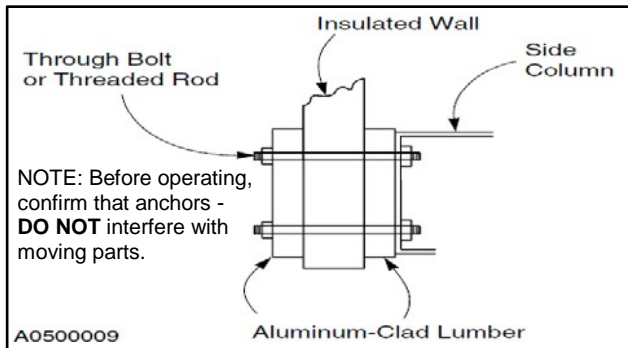


Figure 8

UNCRATING

Your door assembly is packaged at our factory and shipped to you in our custom made crate. The crate is constructed in 2 layers, the bottom layer containing the panel and motor drive assembly/components and the top layer containing the drive shaft, track, small parts, & side column assembly/components.

If it appears any damage may have occurred contact our Customer Service Dept. Some of the door sub-assemblies and parts contain protective covering and will need to be removed during or after installation.

CAUTION

Side columns, door panels, torsion springs, & other various components may be heavy; use proper lifting and support equipment when removing from crate & handling. Personal injury & damage may result from using improper handling procedures.

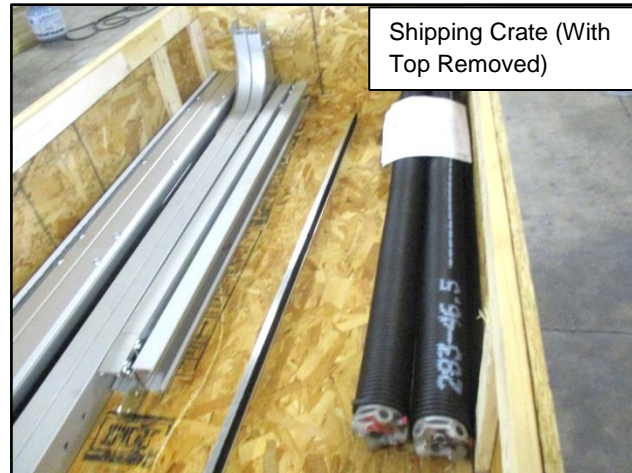


Figure 9

1. Carefully open up the crate by taking off the crate's top panel(s) and cross member supports. Remove the side column, track, drive shaft, rear seal assemblies, and the small parts carton, etc. from the top half as they are needed. (See Figure 9)



Figure 10

NOTE: Remove parts and sub-assemblies from the shipping crate in the order directed throughout this manual.

2. Remove any remaining components/assemblies from the top layer. Carefully remove the top layer panel and cross member supports. Then carefully remove the crate front to access the bottom layer. (See Figure 10)

DETAILS-SIDE COLUMN MOUNTING HOLES

The side column and assembly have anchor holes for anchor mounting to the wall. The anchor holes are slotted to allow for adjustment. Use all of these for anchoring the Side Column Assembly to the wall. (See Figure 11)

⚠ WARNING

Before drilling any holes, ensure there are no electrical wires, water pipes, or gas lines, etc., buried in the floor or hidden in the wall.

⚠ CAUTION

The position and alignment of the side column assemblies is crucial to the door function and must be positioned accordingly.

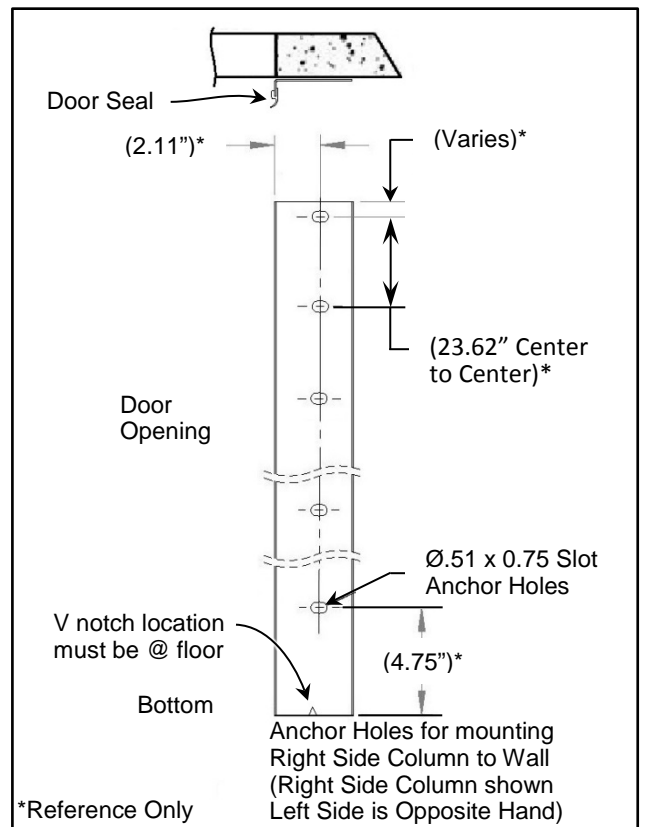


Figure 11

NOTE: The V notch is to be positioned @ the bottom of the side column when mounted.

INSTALLATION-SAMPLE OBJECT LIST

SAMPLE OBJECT LIST

Included with every door shipped is an Object List as shown in Figure 12 which is a sample version. This list contains key information specific to the door such as the model, serial number, door Production Size specifications, etc. Locate this document (it will be

with the small parts for the door) as you will need information on it which will be crucial for proper installation, operation, and maintenance. Keep this document along with the manuals in a safe place for future reference.


		Object list		Material number	
		Duplicate		712	
		Material description		Order number	Order quantity
		SPIRAL VPB-FV		OXXXXXX	1 EA
URP controller	Production scheduler	Order type	Start	Finish	
500 B5 ZMAT	T8 Tier 8	ZP02 RYTEC MTO	07/14/2016	07/15/2016	
Status		Plant	Reservation number	Creation Date	
REL MSPT PRT PRC SETC		1000 Rytec Corporation	000XXXXXXXX	06/22/2016	
Serial number					
D00XXXXX-XXX					
Configuration					
<pre> Door Serial Number D00XXXXX-XXX DOOR MODEL NAME Spiral VP Balanced -FV Door Width (Inches) 125.984 Door Height (Inches) 108.268 Head Lift TypeHigh Lift High Lift Dimension (inches) 54.000 motor mount side Right Hand Motor Spiral VPB Logic Liftmaster MJ Jackshaft Bantam Voltage115V operator Number of Slats 13 Number of solid slats 0 Number of windows 11 Number of vent slats 0 Track to Track dimension (in) 128.504 Top Seal Height from floor -in 110.669 Shaft centerline from floor 167.898 Cable Length (in) 174.000 Spring I.D. (Diameter) 2.625 Drum List DRUM, D525-54 Spring Turns (pretension) 9.800 Spring Wire 0.2830 Spring Cut Length (in) 46.500 </pre>					
Information on routing					
DOOR ASSEMBLY, SPIRAL VPB-FV					

Figure 12

INSTALLATION-DOOR OPENING CENTERLINE LOCATION

DOOR OPENING CENTERLINE LOCATION

NOTE: Accurate measurements are critical for the proper installation and operation of your Rytec door. Verify all measurements.

1. Measure the width of the door opening. Then divide the measurement in half to locate the centerline. Mark the centerline along the floor. (See Figure 13)

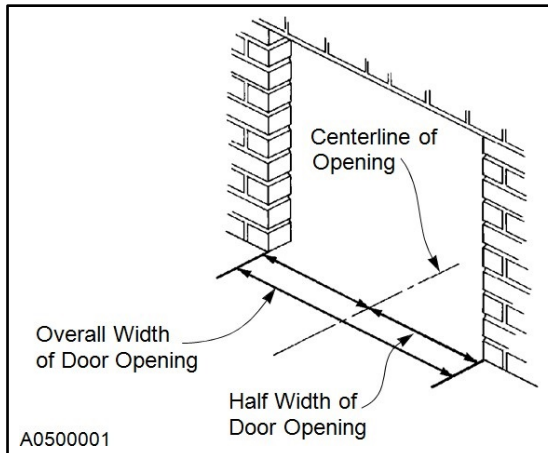


Figure 13

LOCATING SIDE COLUMNS

1. Locate the Object List for the door. It is included with the small parts carton. This list contains the production width of your door (listed as "door width") and numerous other key information. (see "SAMPLE OBJECT LIST" section on page 6).
2. Using the centerline as a reference point, mark the door layout lines by laying out and marking half of the door's production width (listed as "door width" in the "SAMPLE OBJECT LIST") along the floor. (See Figure 14)

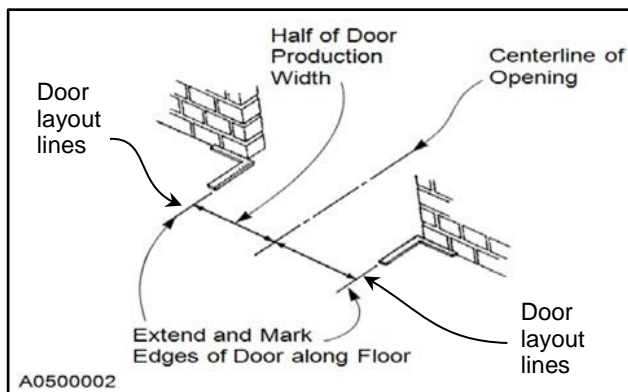


Figure 14

3. With a carpenter's square placed against the wall, mark both sides of the door along the floor. Extend the line along each edge.

4. Check the floor for level across the door opening. The floor must be level within 0.12 inch (3 mm) from side to side. If one side of the opening is higher than the other, a shim(s) will be required under the side column.

Figure 15 and Figure 16 show two recommended methods that can be used to ensure a level side column installation.

NOTE: Contact the Rytec Technical Support Department if the floor is more than 1 inch out of level.

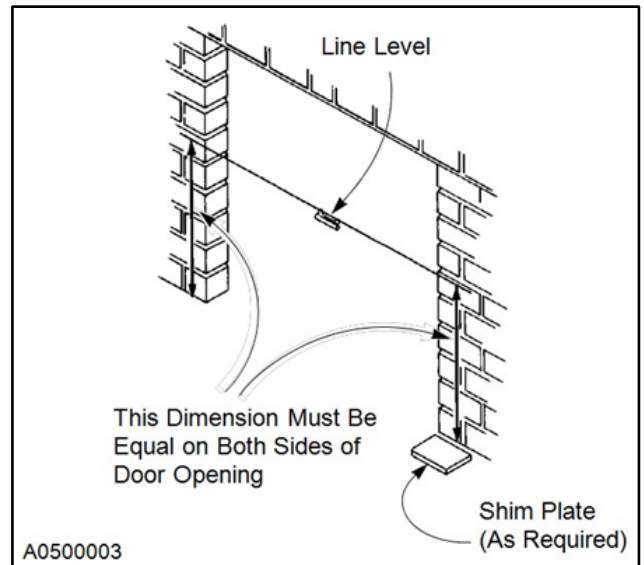


Figure 15

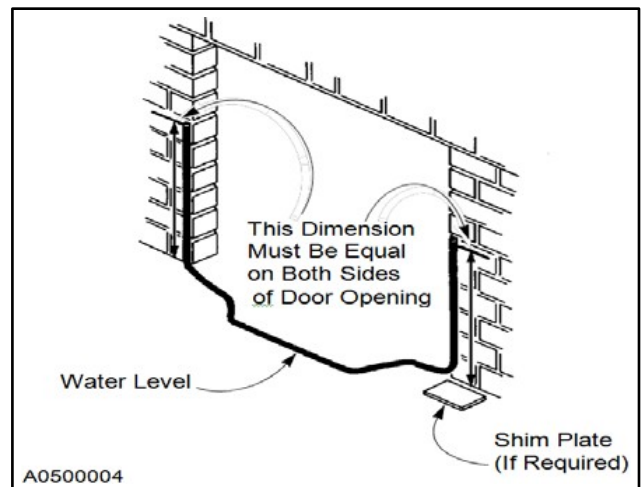


Figure 16

5. Use a plumb bob, laser level, or carpenter's level to check the wall for plumb in the areas where the side columns are to be mounted. Also, inspect the wall for any obstructions or inconsistencies.

If the wall is not plumb, use shims. If you find an obstruction, remove it, or shim the column to avoid the obstruction. (See Figure 17)

INSTALLATION-SIDE COLUMNS

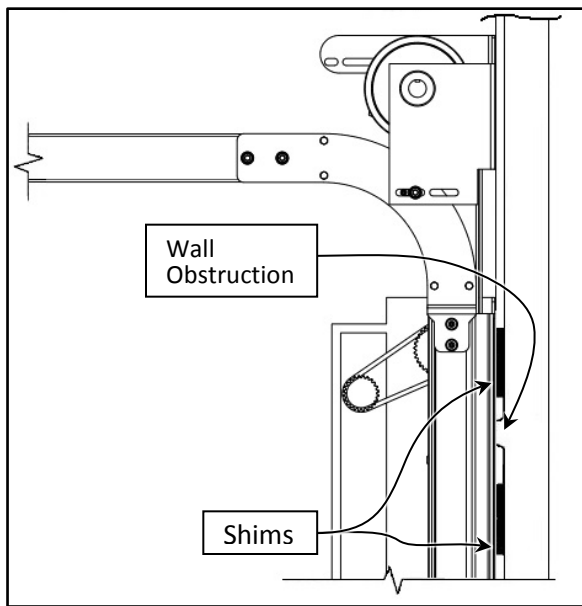


Figure 17

SIDE COLUMNS

The Side Columns and Lower Track Assemblies come pre-assembled. The Lower Track Assemblies will need to be disassembled for the install process. It is up to the installer to keep track of where all parts were originally installed. We suggest match marking the disassembled items to where they were originally installed. This will aid in reassembly and ensure the items are replaced correctly.



Side columns may be heavy; use proper lifting and support equipment when removing from crate & handling. Personal injury may result from using improper handling procedures.

1. To install the first side column, first locate & identify and match the specific side column required for the door side you want to install. (See Figure 11)
2. Stand the side column assembly on the floor, with the back of the column firmly against the mounting wall. (See Figure 18)

NOTE: Set the inside edge of the column flush with the door layout line.

3. Position the side column assembly so that it is plumb to the wall and vertical on the floor.

A plumb bob or carpenter's level are recommended for setting the column plumb and square. The use of bar clamps to temporarily secure the column to the wall during installation is also recommended. When required, shim behind the side column if the wall is

out of plumb. Double-sided tape can be used to hold the shims in place on the wall or side column(s) until the side column(s) is/are secured to the wall. (See Figure 18)

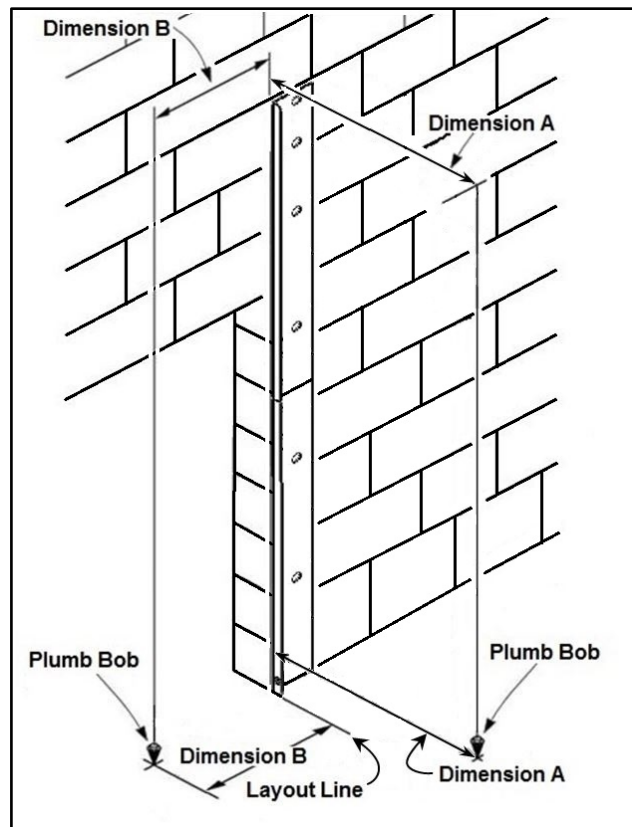


Figure 18

Using A Plumb Bob

To check for plumb measure a few inches away from the face of the side column near the top (Dimension A) and lower the plumb bob as shown. (See Figure 18)

Mark the floor where the plumb bob touches. Compare the upper measurement to the lower measurement. Shim the column toward or away from the wall, as required, until the two measurements are equal and the column is plumb to the wall.

Also, measure a few inches away from the side of the column near the top (Dimension B) and lower the plumb bob. (See Figure 18)) Mark the floor where the plumb bob touches. Compare the upper measurement to the lower measurement. Lean the column to the left or the right until the two measurements are equal and the column is plumb with the floor (or shim plate).

Using A Carpenter's Level

Hold the level firmly against the face and side of the column. Make the necessary adjustments to set the side column level. (See Figure 19)

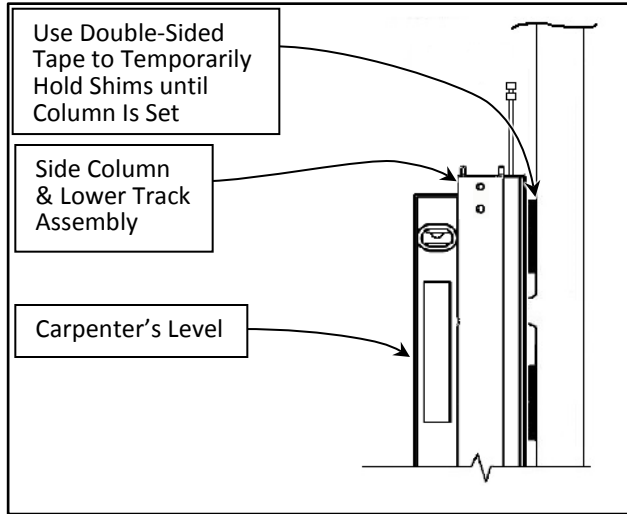


Figure 19



Figure 20

4. Temporarily clamp the side column to the wall once the column is properly positioned. (See Figure 20)
5. Using the predrilled anchor points in the back of the column as a reference, mark their location on the wall. (See Figure 21)

IMPORTANT: Locate and drill the holes in the center of each slot and hole.

WARNING

Before drilling any holes, ensure there are no electrical wires, water pipes, or gas lines, etc., buried in the floor or hidden in the wall.

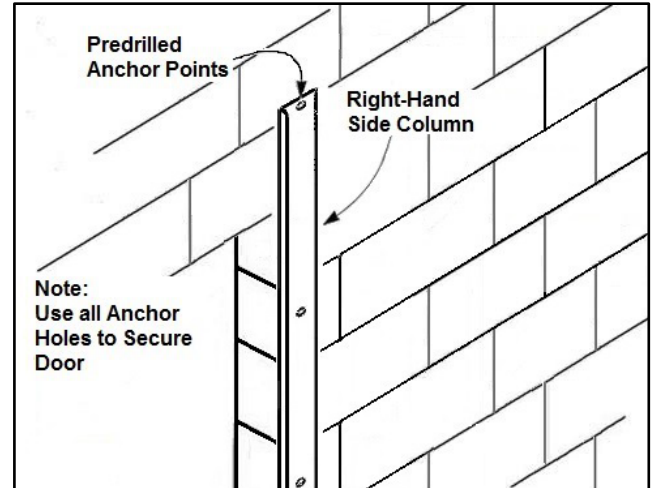


Figure 21

6. Drill holes into the wall for all anchors.
7. Anchor the side column to the wall with the top and bottom side column holes with the appropriate anchors. Use the anchors suggested and/or appropriate for the construction. (see "ANCHORING METHOD" on page 3)
8. Check for plumb and level. Reposition the side column to the wall if needed. Do not fully tighten the anchors at this time.

Lower Track & Cover Assembly

The Lower Track Assemblies are right hand and left hand specific and they are not interchangeable. The Lower Track Assemblies come pre-assembled. They will need to be disassembled for the install process. It is up to the installer to keep track of where all parts were originally installed.

CAUTION

The position and alignment of the track assemblies is most crucial to the door function and must be positioned accordingly. Also the track assemblies may be adjusted independently of the side column.

9. Identify each Lower Track Assembly as shown. The track opening must face the door's center as shown. Select the assembly for mounting in the side column currently being installed. (See Figure 22)

INSTALLATION-SIDE COLUMNS

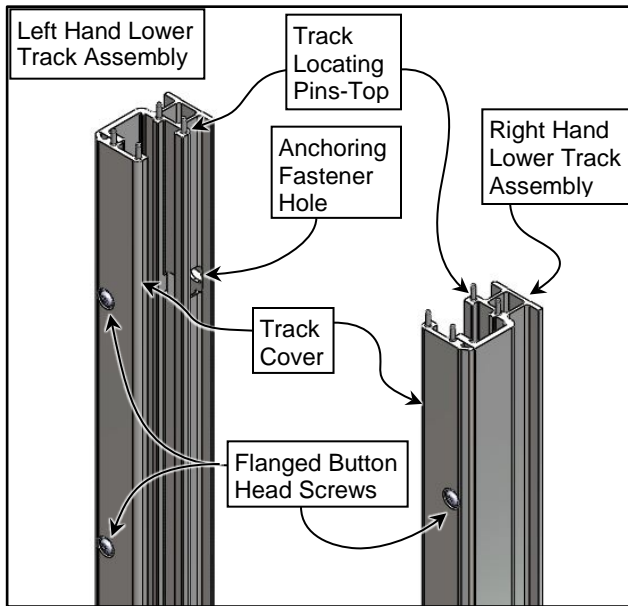


Figure 22

NOTE: Take note of the top and the bottom of the assemblies to be installed. The track locating pins are only at the top of the lower track assembly.

10. Confirm the fit within each side column as shown. Confirm that the anchor fastener holes align w/ the holes in the lower track assemblies and the notch outs are at the bottom. (See Figure 23 and Figure 24)

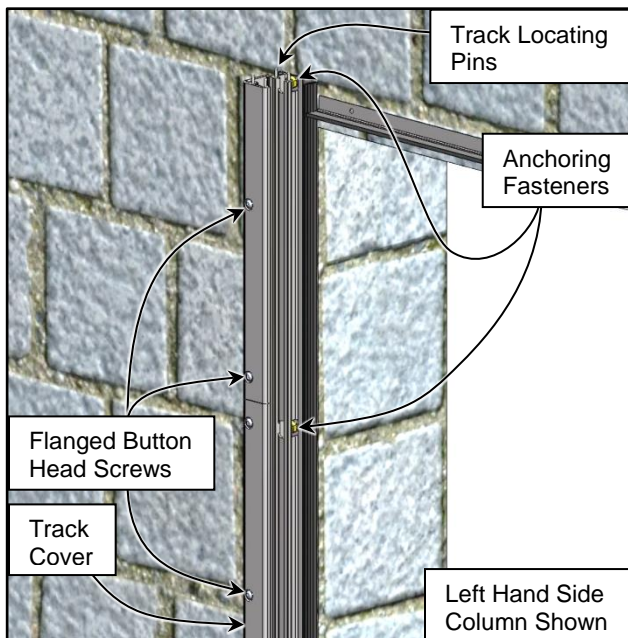


Figure 23

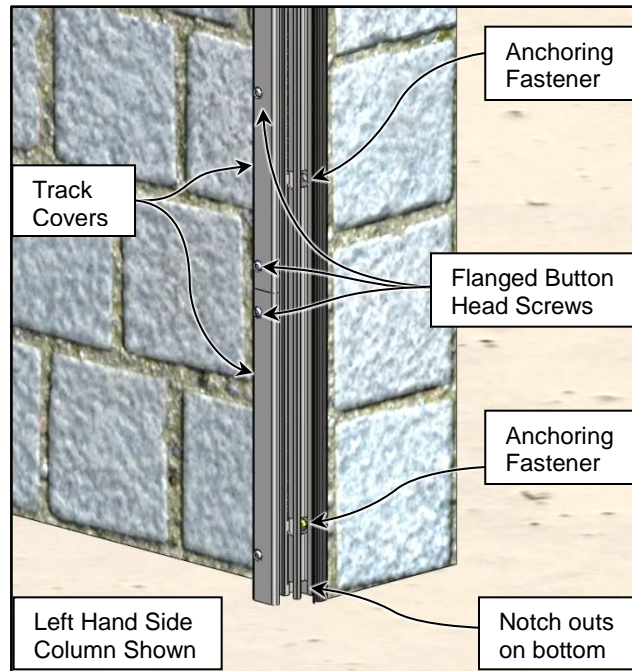


Figure 24

11. Remove the Track Covers from the Lower Track Assembly by taking off the Button Screws. We suggest match marking the Track Covers to where they were originally installed on the Lower Track Assembly. This will aid in reassembly and ensure the covers are replaced properly. (See Figure 25)

⚠ WARNING

When installing fastening hardware to the Lower Track Assembly, make sure the fasteners do not encroach the wheel track or interference may cause damage to the door or personal harm when the door is operated.

INSTALLATION-SIDE COLUMNS

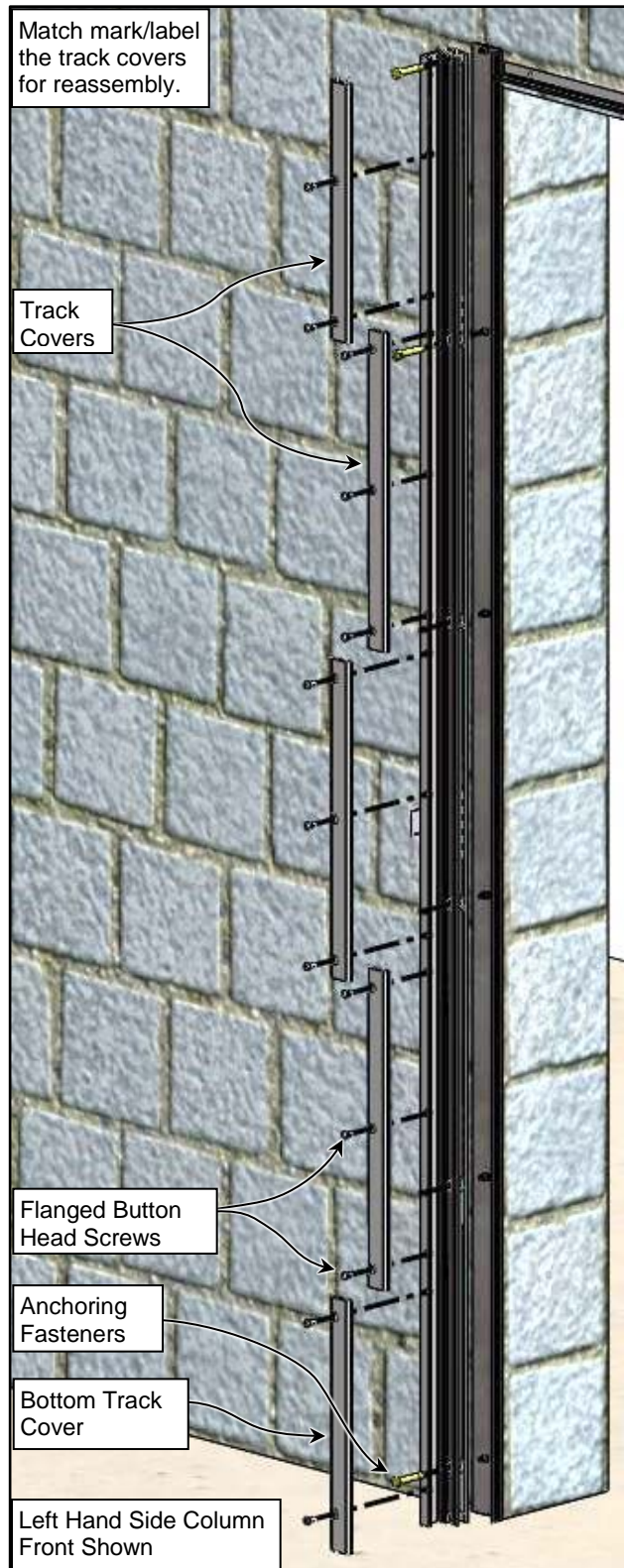


Figure 25

12. Mount the Lower Track to the Side Column and wall with the anchoring fasteners & snugly tighten them up. Use the anchors suggested. (see "ANCHORING METHOD" on page 3) Do not fully tighten the anchors at this time. They should just be snug.

13. Check the Lower Track for plumb, vertical, & square. Adjust as necessary.
14. Make sure the side column and lower track assembly are anchored to the wall using the anchors suggested (see "ANCHORING METHOD" on page 3) and in all anchor points. Do not fully tighten the anchors at this time. They should just be snug.

NOTE: Allow approximately $\frac{3}{4}$ "-1.00" of threaded rod fastener extension from the wall/ mounting surface for the wall anchors of each side column (add for shim thickness).

15. Mount the remaining side column and lower track assembly to the wall and floor in the same manner as outlined for the previous side column.

IMPORTANT: Lower Track Assembly spacing is critical and they must be spaced as in Figure 26.

NOTE: To insure the side columns are positioned identically, take measurements for each column from similar points of reference.

16. With both columns and lower track assemblies set and snugly bolted in place, check the overall plumb and square of the mounted columns and most importantly, the lower track assemblies. (See Figure 27)

Compare the diagonal measurements and the upper and lower horizontal measurements across the columns. The columns are square and parallel when the diagonal measurements are equal and the horizontal measurements are equal.

If either column requires slight repositioning (when the difference of either comparison is greater than $\frac{1}{4}$ in.), use a block of wood and a mallet to move the column into position.

17. Check the alignment between both track assemblies and Track to Track width as given in the Object List. Adjust as necessary. (See Figure 12, Figure 26, and Figure 27)

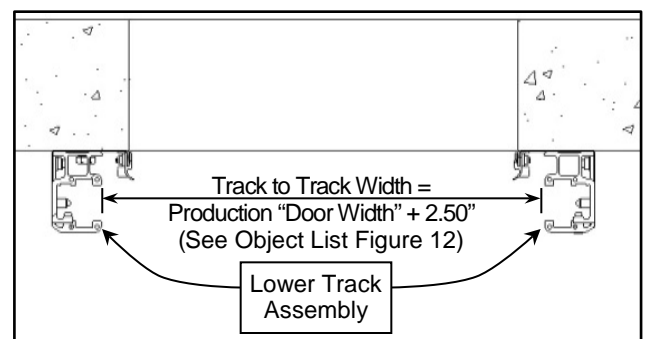


Figure 26

INSTALLATION-REAR TOP SEAL

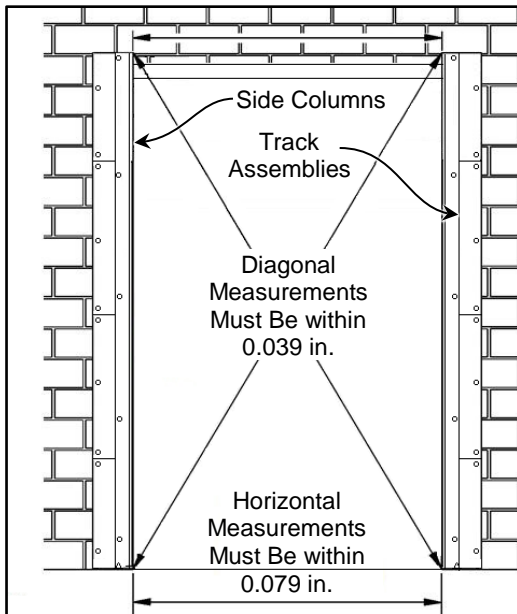


Figure 27

18. Double-check all measurements. Then firmly tighten all wall anchors.

REAR TOP SEAL

The Rear Top Seal provides a seal at the top of the door between the mounting wall and the door panel. It consists of a brush securely mounted in a track.

1. Locate the Rear Top Seal. This will consist of 1 or more brush-track assemblies depending on the door width.
2. Evenly space the seal assembly in between the side columns. Leave any space on the ends between the side columns & the seal so it is centered. There should be a gap between the door's lintel and the bottom of the brush. The "Top Seal Height from floor" will be listed in the door's Object List. (See Figure 12 and Figure 28)
3. Drill anchor holes in the brush seal flange and wall @ approximately 12"-18" c/c apart as shown. (See Figure 28)
4. With the top seal assembly oriented as shown, securely attach it to the wall with appropriate fasteners. The rear top seal must be secured to the wall at all anchor points. (See Figure 28)

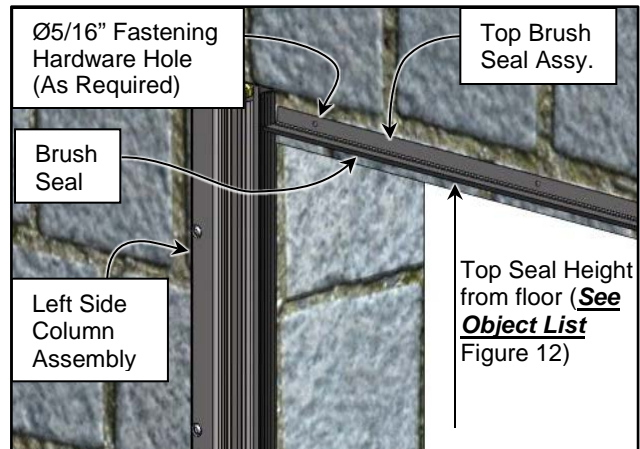


Figure 28

NOTE: When securing the top seal assembly to the wall, it will be necessary for you to mark the location of the wall anchors using the holes in the top seal as reference. After drilling the required holes and installing the anchors, permanently secure the spreader bar to the wall.

IMPORTANT: Also, if shims or spacers were installed behind the side columns, it will be necessary for you to shim and seal behind the spreader as well.

5. Check the alignment of the side columns and rear top seal with a level. Adjust as necessary.

CABLE ASSEMBLY

The door panel counterbalance-lift cables that come with the door are designed to be customized in the field for each door application.

1. Locate and identify the Counterbalance-Lift cables for the door. They are located in the small parts container and appear as shown. (See Figure 29)



Figure 29

2. Crimp the floating stop on the Counterbalance-Lift cable assembly to the specified "Cable Length" dimension listed in the Object List. Do this for both cable assemblies. (See Figure 12 and Figure 30)
3. Cut off the excess cable after the Floating Stop if necessary. Do this for both cable assemblies. (See Figure 30)

IMPORTANT: Cable Assembly length-Floating Stop spacing is critical as they MUST be SPACED IDENTICALLY as in Figure 30.

CAUTION

Unequal Counterbalance-Lift cable lengths will cause uneven wear and the door will cock. This is a critical step. Failure to correctly set the cable lengths may lead to door failure & possible damage and injury.

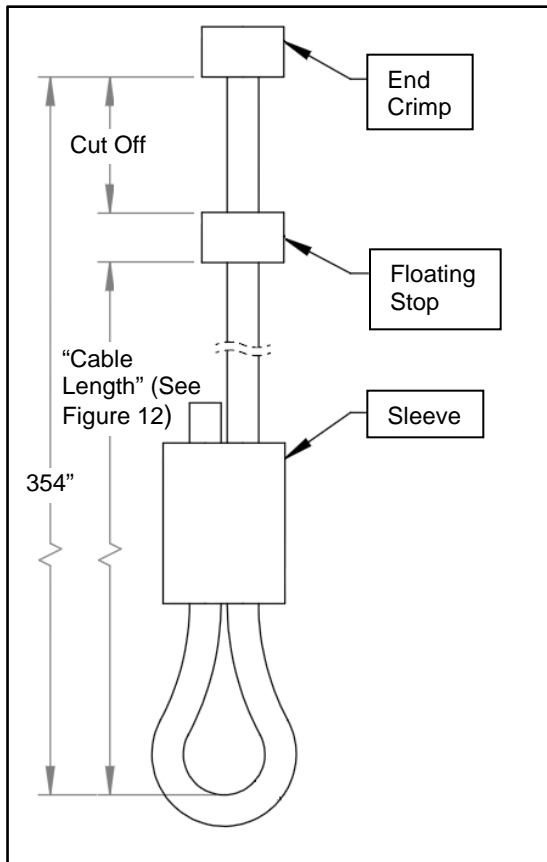


Figure 30

DOOR PANEL ASSEMBLY

The door panel comes in pre-assembled sections which will need to be finish assembled. This should be performed by 2 people. It is critical to assemble the door panels in the correct order and orientation. The panel sections are number identified for reference to aid in the order of assembly. The 1st panel to be assembled is number 1, and so on.

NOTE: It is crucial that the panel sections are installed in the correct order. Install them starting with the

1. Prior to installation, confirm that the side columns, rear door seal, and lower track assemblies are properly aligned, plumb, vertical, and square, secure, and hardware is tightened.
2. Install the bottom Lower Track Assembly Covers on the Lower Track Assemblies as shown. (See Figure 31)
3. Locate and identify the bottom bar section for the panel assembly and the drive cables. Install and orient the drive cables onto the door panel section as shown. The cables must always be between the door panel and the roller wheels and on the rear side of the door panel assembly. (See Figure 31)

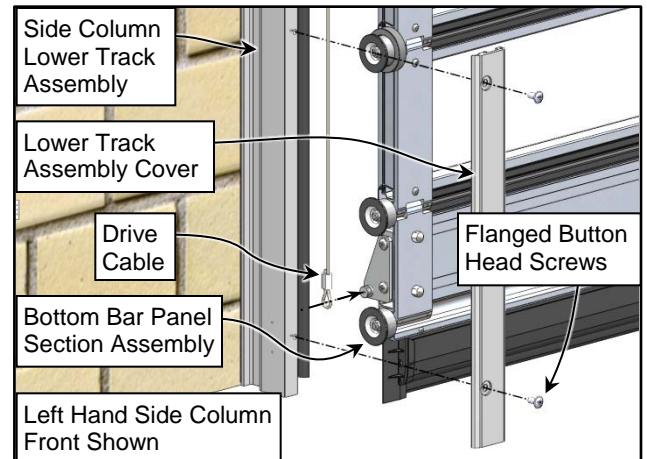


Figure 31

4. Orient and place the bottom bar panel section into the bottom section of the lower track assembly as shown. This panel section must be labeled 1 for the 1st panel section. (See Figure 31 and Figure 32)

INSTALLATION-DOOR PANEL ASSEMBLY

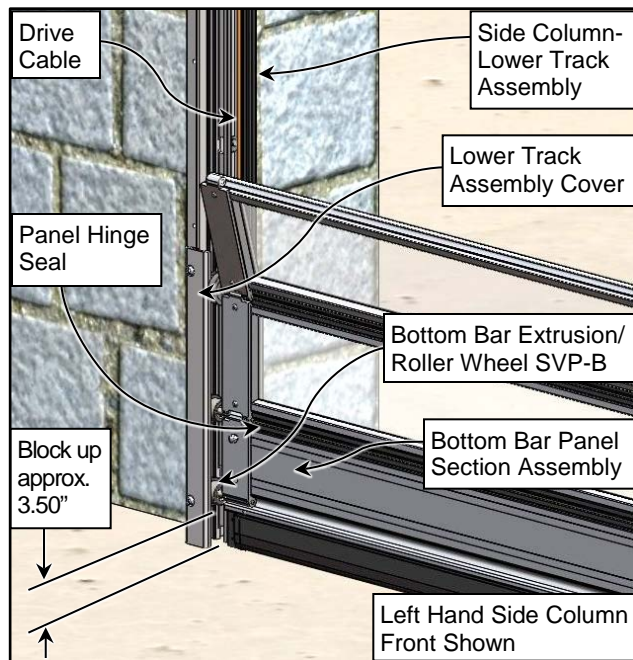


Figure 32

5. Inside the track block up the bottom bar approximately 3.50" as shown on both sides. Blocks should contact only the flat surface of the roller wheel, not the flange portion or the panel bottom. The bottom seal should just be touching the floor enough to create an adequate seal. The methods shown are ways we would suggest. (See Figure 32, and Figure 33)

CAUTION

The bottom bar must be raised and blocked up during panel installation/assembly. Failure to securely raise and block the bottom bar assembly off the floor may result in damage to the bottom bar seal.

IMPORTANT: It is crucial that the panel sections are installed in the correct order.

6. Allow the top panel section to lean back away from the door opening 90° from the panel assembly. (See Figure 34)

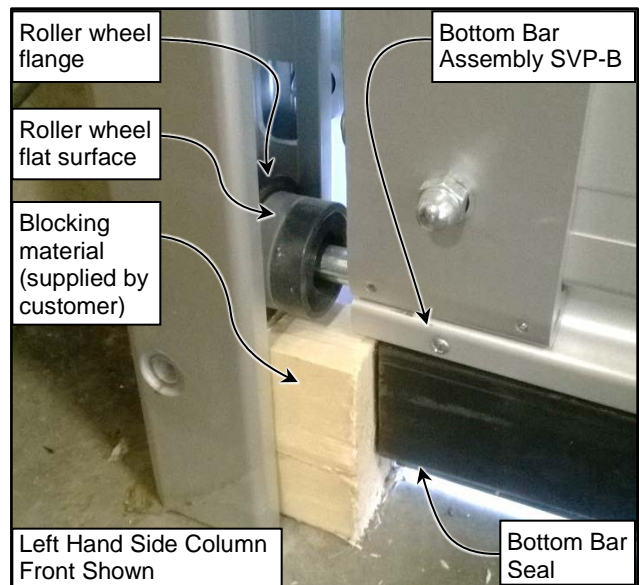


Figure 33

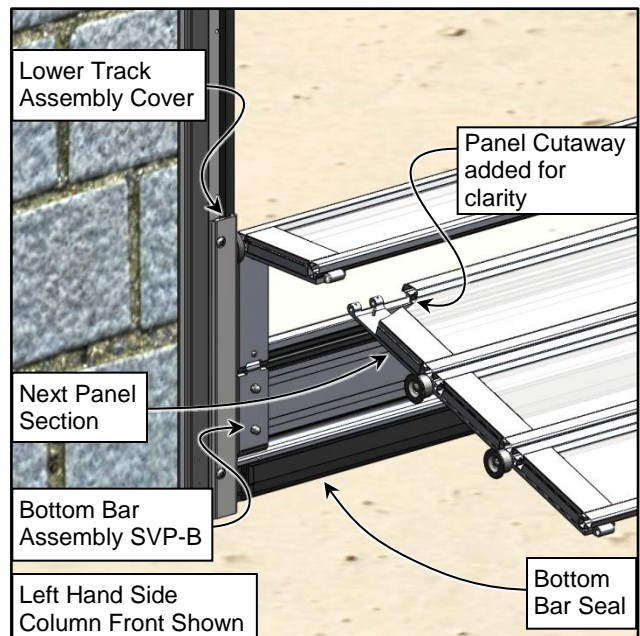


Figure 34

CAUTION

It is crucial that the panel sections fit together correctly. If for any reason they do not, slight adjustments may be necessary. They are assembled specifically to be square. Contact RYTEC Technical Support if they do not fit together for how to adjust.

7. Locate and identify the next panel section assembly for the door panel assembly. It must be correctly marked with the next sequential number to the last installed panel section. Orient and mate the next panel section with the last installed panel section so the hinge assembly bracket holes are aligned as shown. (See Figure 34 & Figure 35)

INSTALLATION-HINGE SEAL ASSEMBLY

- Once the hinges of the panel sections are aligned insert the hinge axles as shown. The threaded end must be on the outside of the panel and the through hole on the panel inside. You may want to pre-assemble the Axle, Spacer, Roller, & M8 Nut as shown. (See Figure 35)
- Align the small $\text{Ø}\frac{1}{8}$ hole in the hinge axle with the small holes through the inside ear of the hinge as shown. (See Figure 35 & Figure 36)

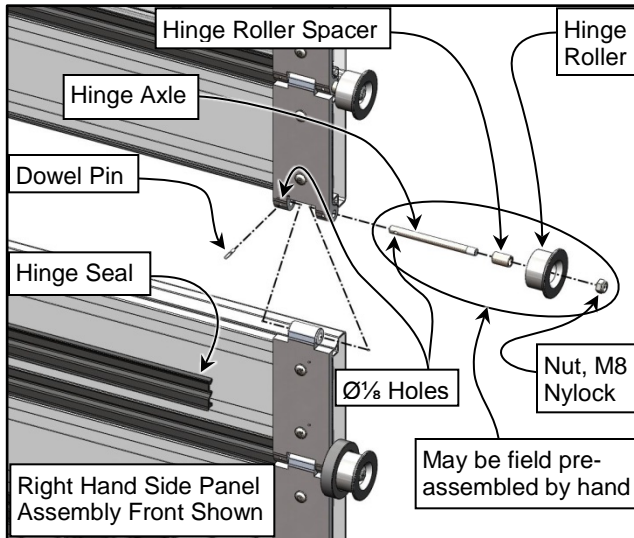


Figure 35

- Insert the dowel pin into the hole of the panel hinge, all the way through the hinge axle and hinge until the pin is flush on the near side. (See Figure 36)

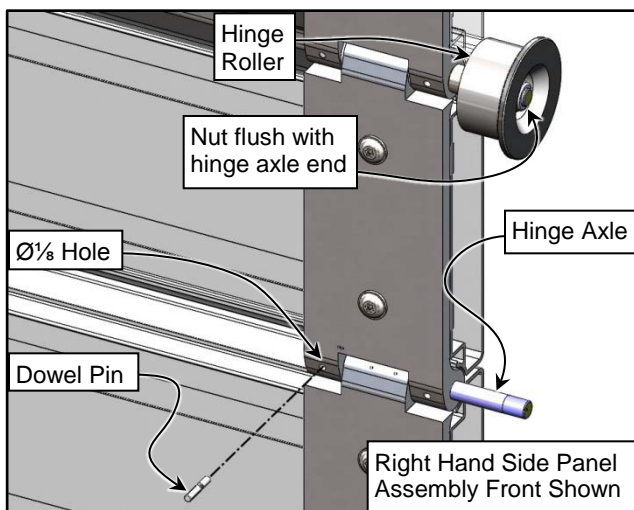


Figure 36

- Install the Hinge Roller Spacer onto the Hinge Axle. (See Figure 35)
- Install the Hinge Roller onto the Hinge Axle as shown. (See Figure 35 and Figure 36)

- Install the Nut onto the Hinge Axle as shown. Turn the nut on until the axle end is flush with the end of the nut. It should be tight enough to hold the axle in place. (See Figure 35 & Figure 36)
- Hold up the newly installed panel section assembly and install the next lower track assembly cover to keep the panel in place.
- Repeat steps 7-14 until the sequentially numbered panel sections are all properly installed in the lower track assembly. The upper panel section assembly should be the last section installed with the top panel oriented accordingly.

HINGE SEAL ASSEMBLY

The hinge seals are designed to prevent air infiltration and form a seal between panel sections and the two sides of the door. They also allow for panel expansion & contraction and maintain the seal.

- Locate the Hinge Seals in the shipping crate. They are cut specifically for each door.

NOTE: It is crucial when installing multiple doors that the correct matching parts are installed on each specific door. The seals are factory pre-cut and must not be cut during installation.

- Install the Hinge Seals between all the door panel section assemblies that were field installed. Start by making sure the gap/channel where the seal is to be installed is clean and free of debris.
- Insert each end of the seal into the channel by butting the end up to the hinges as shown. Use the dull chisel to firmly press approximately 3" of the edges of the seal into the channel for proper seating. (See Figure 37)

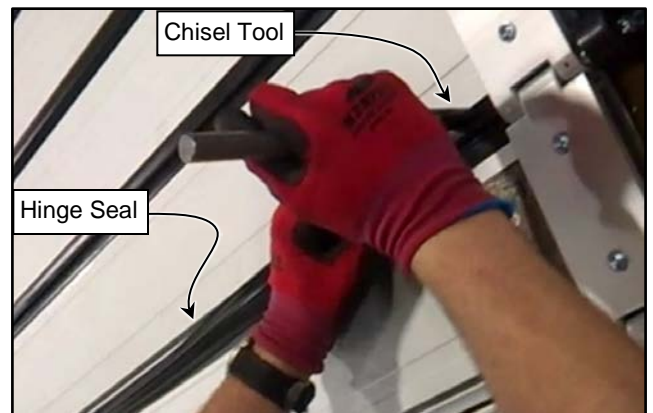


Figure 37

- Using the Convex-Rounded hand Roller tool (Supplied in Small Parts) firmly press the edges of the outer 2-3 feet of the seal into the channel as shown. (See Figure 38)

INSTALLATION-UPPER TRACK ASSEMBLY

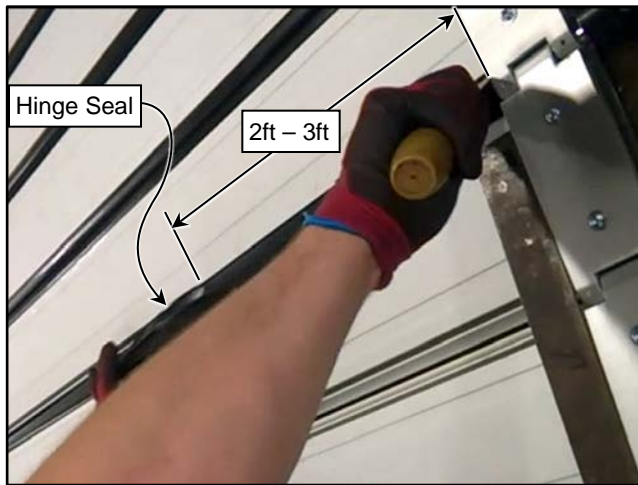


Figure 38

5. Locate the center of the hinge seal and door panel. Insert the seal into the gap matching up the centers and firmly press the seal edges into the channel with the hand roller as shown. Press the center 2ft – 3ft into place. Repeat this process on both sides until the seal is completely inserted into the channel just as the pre-installed seals. (See Figure 39)

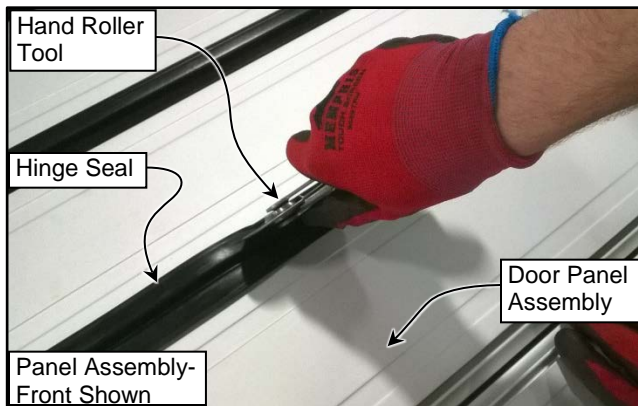


Figure 39

UPPER TRACK ASSEMBLY

The upper track assembly consists of the track guide rails which allow the door to open. There are three types that can be utilized. See the appropriate type section which your door was designed and manufactured with.

IMPORTANT: If shims or spacers were installed behind the side columns, it will be necessary to shim the upper track wall mounting brackets as well.

Standard Lift Upper Track Assembly

The standard lift upper track assembly is designed for installation in low overhead ceiling conditions. All vertical support for the horizontal track assembly section is the responsibility of the installer and/or customer.

NOTE: The door comes from the factory without any support mounting brackets designed for horizontal guide rail (track) installation support. The installer/customer will be responsible for providing support(s) based on the requirements of the installation.

IMPORTANT: When installing hardware, make sure the head of the bolt is inside the guide rail (track) where shown, or interference may cause damage to the rollers when the door operates.

NOTE: Support the opposite end of the track assembly while performing this installation.

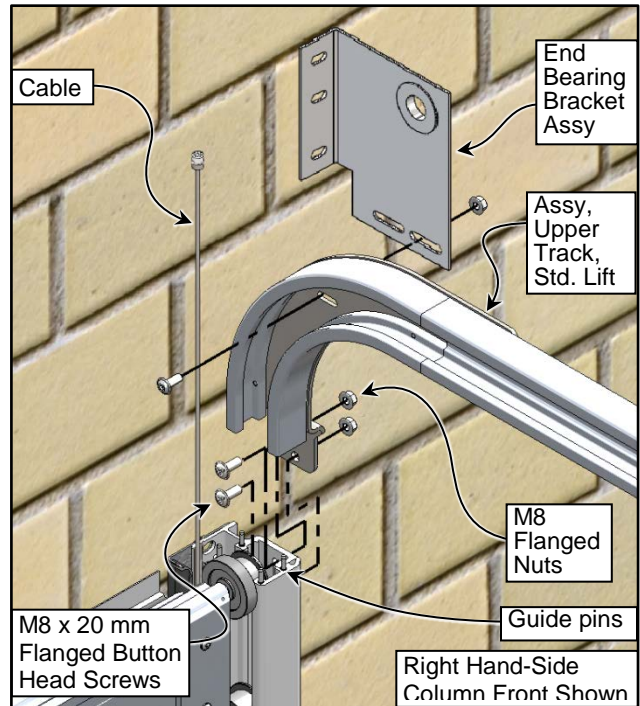


Figure 40

1. Locate, orient, and mount the Drive Shaft End Bearing Bracket Assemblies and Spring Anchor Brackets according to the applicable sketch as shown. (See Figure 64, Figure 65, and Figure 67)
2. Confirm that guide pins are installed in the guide rails (tracks). (See Figure 40)
3. Identify, locate, and orient the Standard Lift Upper Track Horizontal Assembly for each side which includes the upper track transition bracket sub-assembly, 90° upper inner and outer transition tracks, horizontal track section, locating pins, and fasteners. (See Figure 40 & Figure 41)
4. Install on both lower track-side column assemblies as shown. The assembly must be aligned & fully inserted onto the locating pins of the lower track assembly. (See Figure 40 & Figure 41)

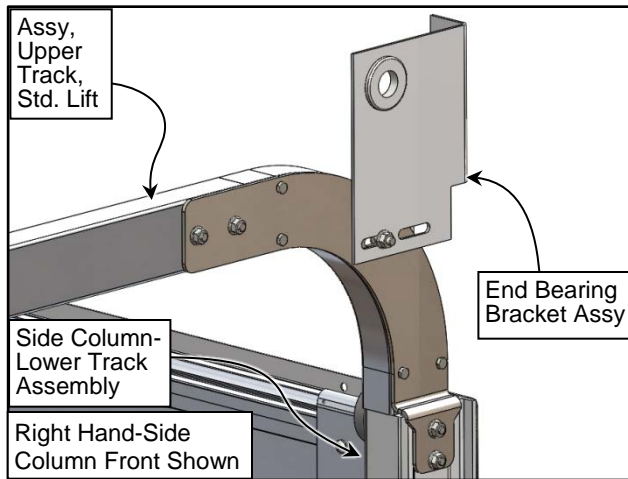


Figure 41

5. Adjust & fasten the track assembly to the End Bearing Brackets with the fasteners as shown. (See Figure 40)
6. Support the Upper Track Assembly ends with rope or a mechanical device. Place a carpenter's level on top of the guide rail and secure the guide rail in a level position. (See Figure 42)

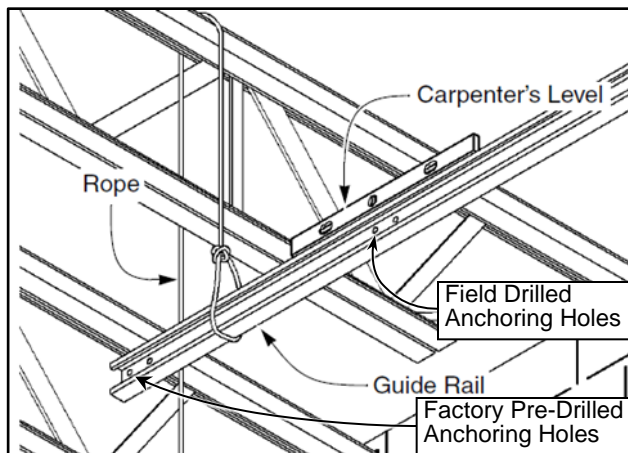


Figure 42

NOTE: The horizontal guide rail (track) has factory pre-drilled holes for mounting the ceiling brackets, two for each side. Custom fabrication of the brackets and drilling of extra mounting holes may be required to facilitate installation.

7. Install adequate ceiling mounting brackets to the horizontal guide rail (track) assembly. Must be provided by others. The tracks must be level & true with the rest of the track assembly. (See Figure 43)

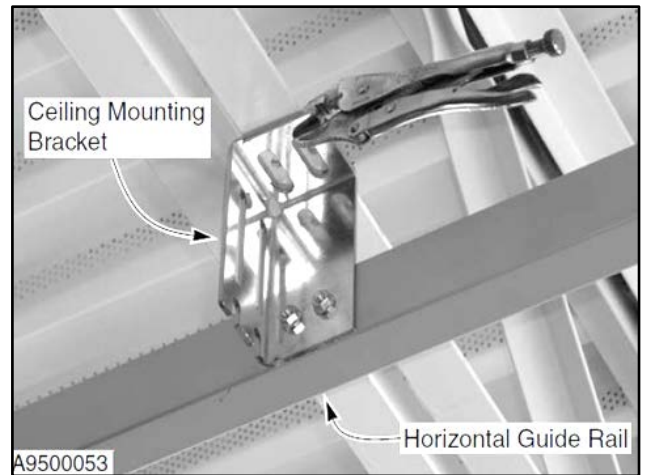


Figure 43

8. Check & confirm the alignment between the Upper & Lower track assemblies are plum, level, square, and true. Also check the Track to Track width as given in the Object List. The width between the guide rail track assemblies must be maintained at all points. Adjust as necessary. (See Figure 12, Figure 44, and Figure 47)

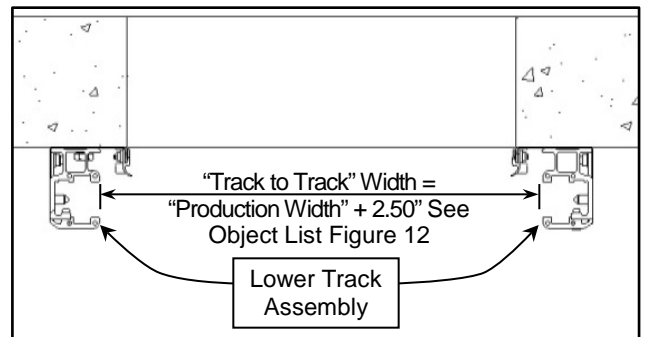


Figure 44

CAUTION

The position and alignment of the track assemblies is most crucial to the door function and must be positioned accordingly.

9. Identify, locate, and orient the Push Bumper Assemblies for each side. This includes the Push Bumper Assembly and fasteners. Install the Push Bumpers on the Standard Lift Upper Horizontal Track Assemblies as shown. (See Figure 45 and Figure 46)

INSTALLATION-UPPER TRACK ASSEMBLY

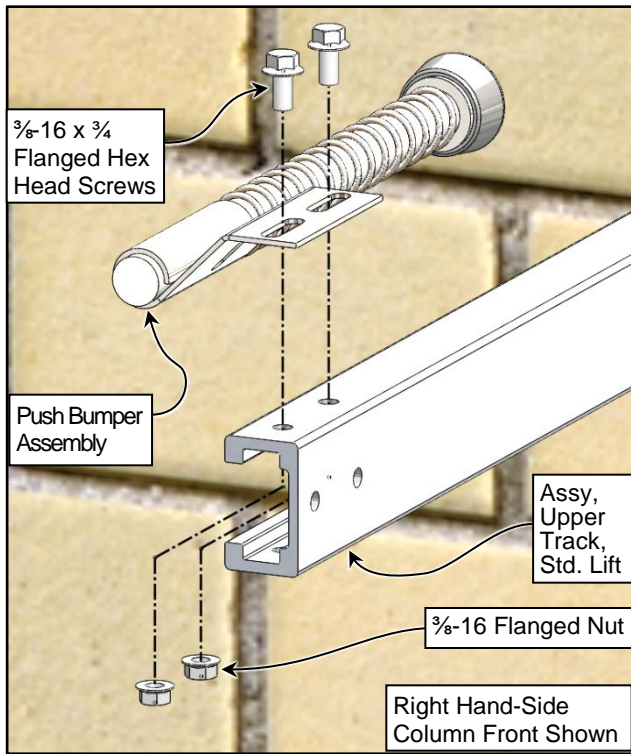


Figure 45

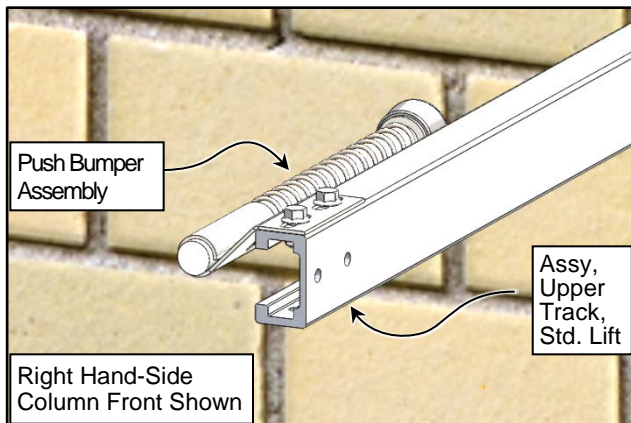


Figure 46

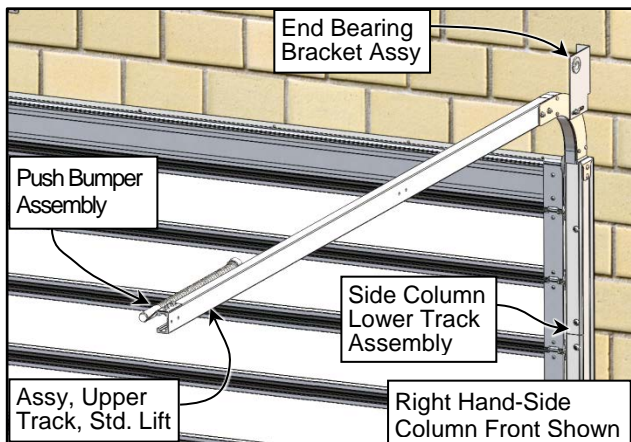


Figure 47

High Lift Upper Track Assembly

The high lift upper track assembly is designed for installation in overhead ceiling conditions which will not allow using the vertical lift option. All vertical support for the horizontal track assembly section is the responsibility of the installer and/or customer.

NOTE: The door comes from the factory without any support mounting brackets designed for horizontal guide rail (track) installation support. The installer/customer will be responsible for providing support(s) based on the requirements of the installation.

IMPORTANT: When installing hardware, make sure the head of the bolt is inside the guide rail (track) where shown, or interference may cause damage to the rollers when the door operates.

NOTE: Support the opposite end of the track assembly while performing this installation.

1. Locate, orient, and mount the Drive Shaft End Bearing Bracket Assemblies and Spring Anchor Brackets according to the applicable sketch as shown. (See Figure 64, Figure 65, and Figure 67)
2. Confirm that guide pins are installed in the guide rails (tracks). (See Figure 48)
3. Identify, locate, and orient the High Lift Upper Track Vertical Assembly for each side. This includes the upper track transition bracket sub-assembly, vertical track section, locating pins, and fasteners. (See Figure 48 Figure 49, & Figure 50)

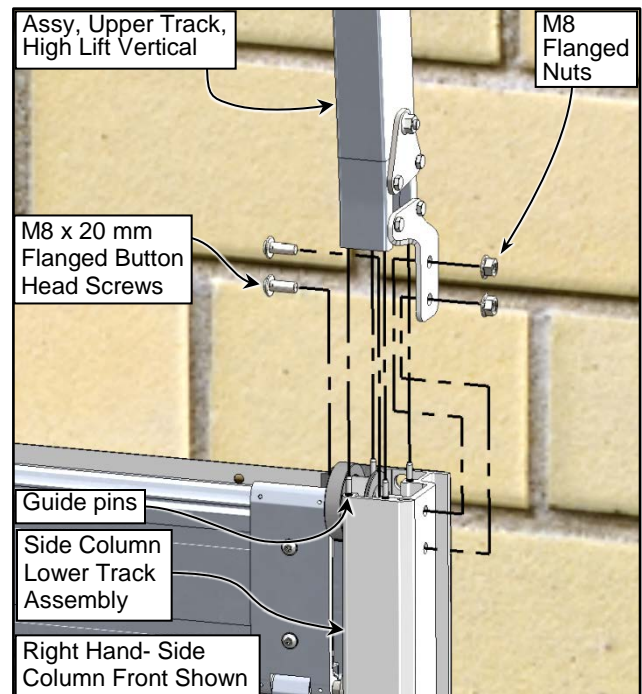


Figure 48

INSTALLATION-UPPER TRACK ASSEMBLY

4. Install on both lower track-side column assemblies as shown and make sure the assembly is fully aligned & inserted onto the locating pins of the lower track assembly. Secure the vertical track section to the wall as necessary. (See Figure 48 Figure 49, & Figure 50)

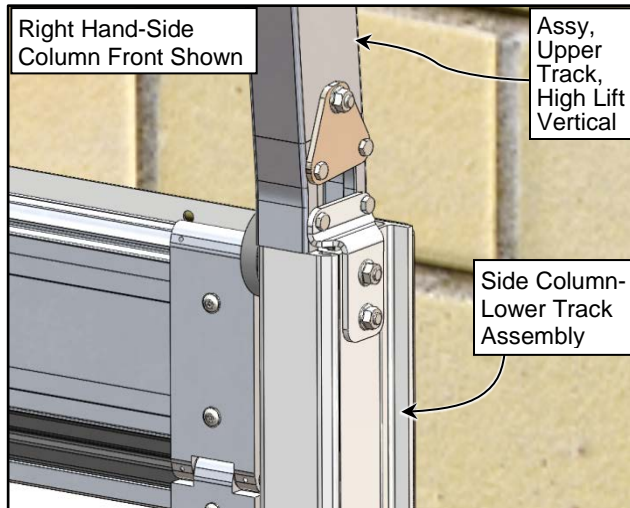


Figure 49

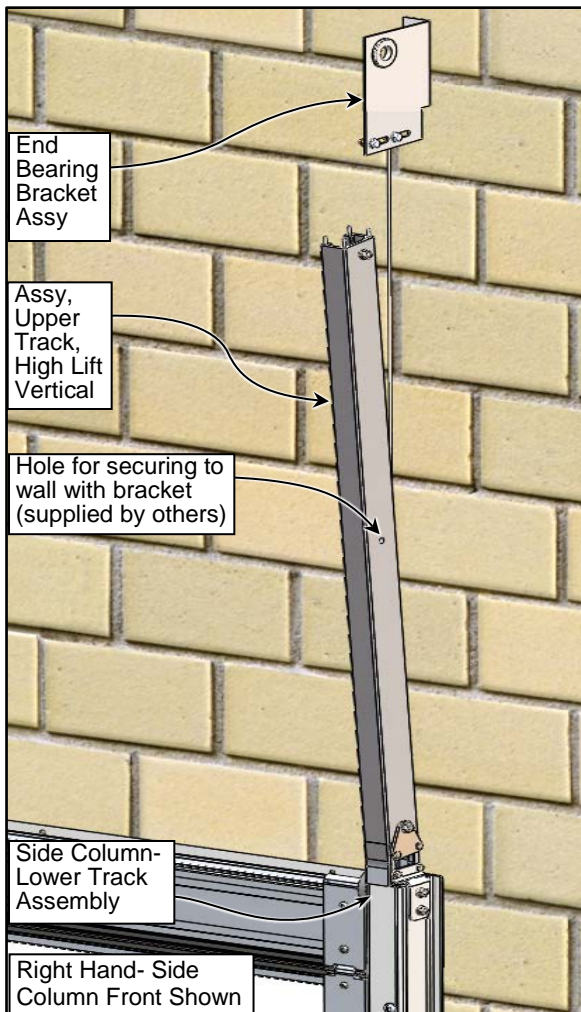


Figure 50

5. Identify, locate, and orient the High Lift Upper Horizontal Track Assembly for each side. This includes the upper track transition plate sub-assembly, horizontal section track, locating pins, and fasteners. (See Figure 51 & Figure 52)
6. Install the High Lift Upper Horizontal Track Assemblies on both Upper Track High Lift Vertical Assemblies as shown. (See Figure 51 & Figure 52)

NOTE: Support the opposite end of the track assembly while performing this installation.

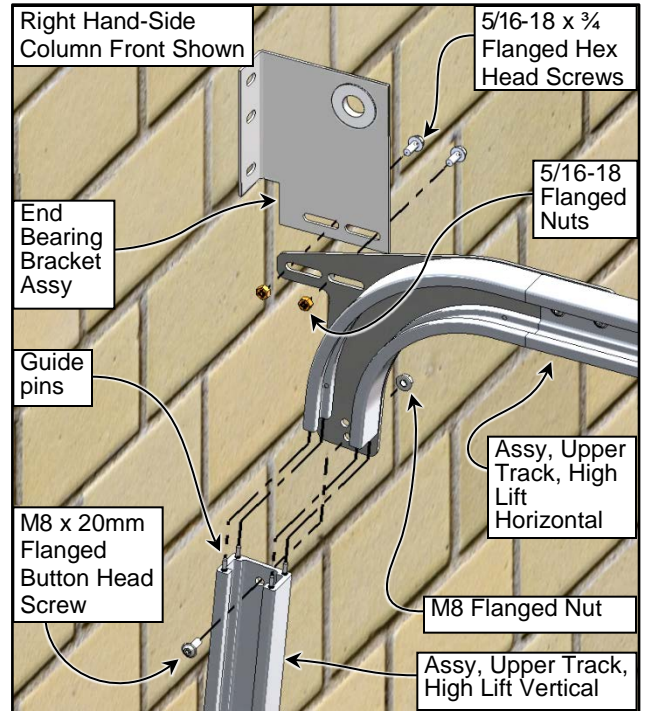


Figure 51

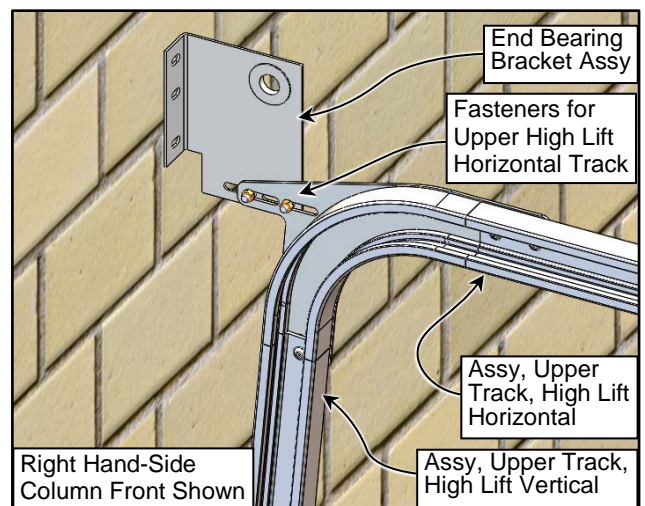


Figure 52

INSTALLATION-UPPER TRACK ASSEMBLY

7. Support the end of the guide rail (track) with rope or a mechanical device. Place a carpenter's level on top of the guide rail and secure the guide rail in a level position. Must be provided by others. (See Figure 53)

NOTE: The horizontal and vertical guide rail has factory pre-drilled holes for mounting to ceiling and wall brackets, two for each side. Custom fabrication of the brackets and drilling of extra mounting holes may be required to facilitate installation.

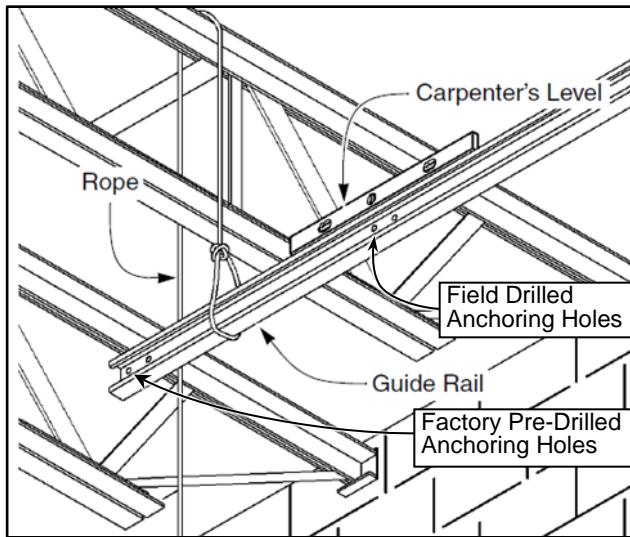


Figure 53

8. Install adequate ceiling mounting brackets to the horizontal track assembly. Must be provided by others. The tracks must be level & true with the rest of the track assembly. (See Figure 54)

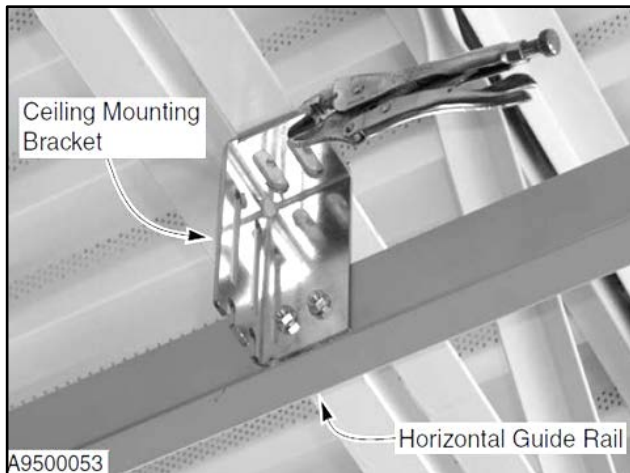


Figure 54

9. Check & confirm the alignment between the Upper & Lower track assemblies are plum, level, square, and true. Also check the Track to Track width as given in the Object List. The width between the track assemblies must be maintained at all points. Adjust as necessary. (See Figure 12 & Figure 55)

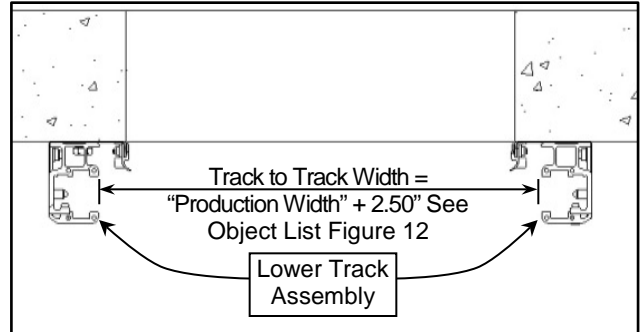


Figure 55

10. Identify, locate, and orient the Push Bumper Assemblies for each side. This includes the Push Bumper Assembly and fasteners. Install the Push Bumpers on the High Lift Upper Horizontal Track Assemblies as shown. (See Figure 56 & Figure 57)

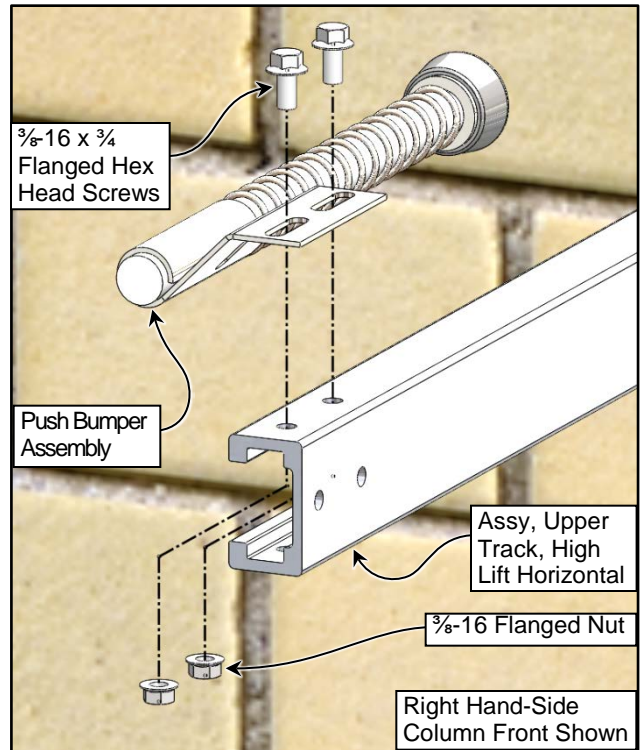


Figure 56

CAUTION

The position and alignment of the track assemblies is most crucial to the door function and must be positioned accordingly.

INSTALLATION-UPPER TRACK ASSEMBLY

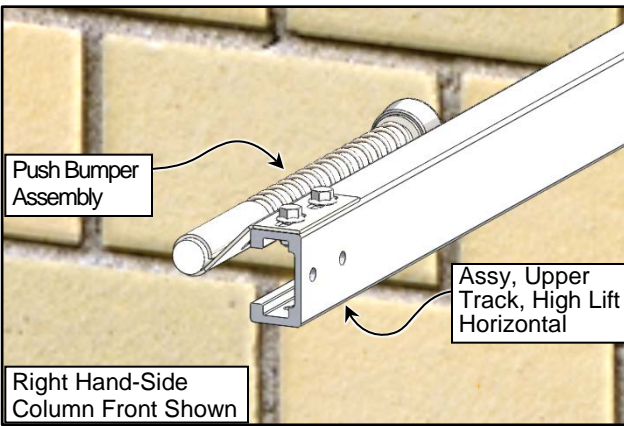


Figure 57

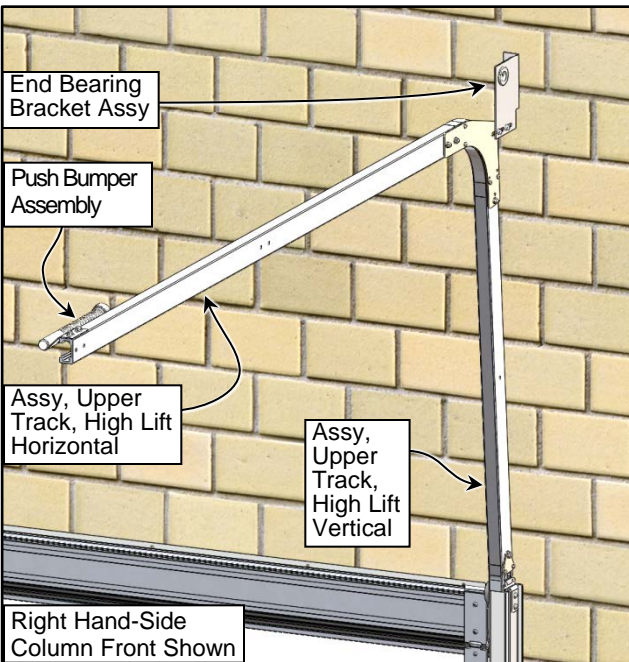


Figure 58

Vertical Lift Upper Track Assembly

The vertical lift upper track assembly is designed for installation in overhead ceiling conditions with ample space for using this option. The door & track assemblies are supported completely by the wall the door is installed on in this configuration.

NOTE: The door comes from the factory with support mounting brackets designed for vertical guide rail installation support. The installer/customer will be responsible for providing support(s) based on the requirements of the installation if these aren't sufficient.

IMPORTANT: When installing hardware, make sure the head of the bolt is inside the guide rail (track) where shown, or interference may cause damage to the rollers when the door operates.

NOTE: Support the opposite end of the track assembly while performing this installation.

1. Locate, orient, and mount the Drive Shaft End Bearing Bracket Assemblies and Spring Anchor Brackets according to the applicable sketch as shown. (See Figure 64, Figure 65, and Figure 67)
2. Confirm that guide pins are installed in the guide rails (tracks). (See Figure 59)
3. Identify, locate, and orient the High Lift Upper Track Vertical Assembly for each side. This includes the upper track transition bracket sub-assembly, vertical track section, wall mounting brackets, mounting brackets, locating pins, and fasteners. (See Figure 59, Figure 60, Figure 61, & Figure 62)
4. Install on both lower track-side column assemblies as shown. Adjust the track mounting bracket to the Drive Shaft End Bearing Bracket Assembly as necessary. (See Figure 59, Figure 60, Figure 61, & Figure 62)

NOTE: The vertical guide rail has factory pre-drilled holes for mounting to wall brackets, two for each side. Custom fabrication of the brackets and drilling of extra mounting holes may be required to facilitate installation.

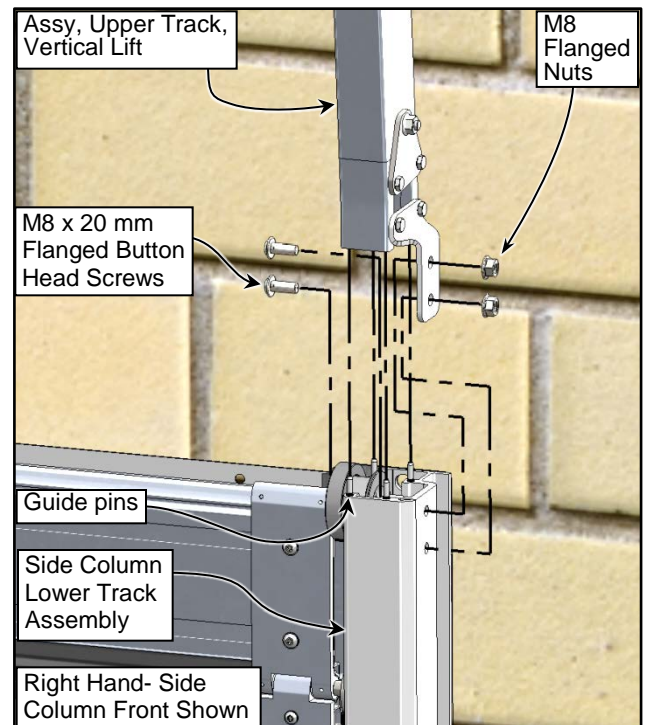


Figure 59

INSTALLATION-UPPER TRACK ASSEMBLY

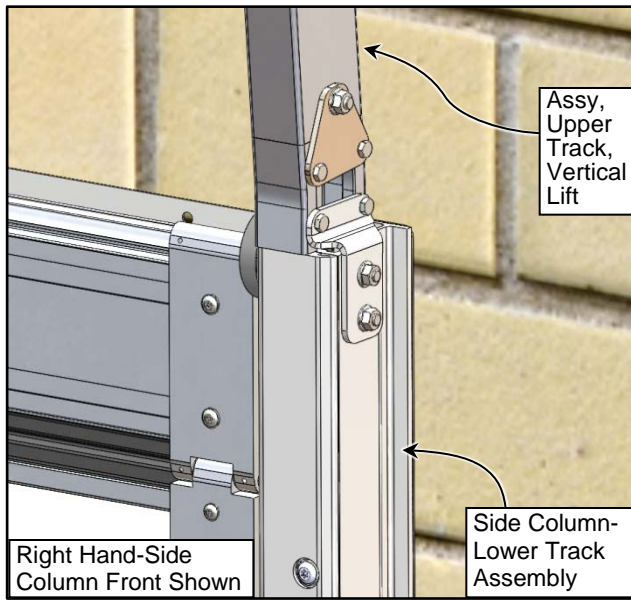


Figure 60

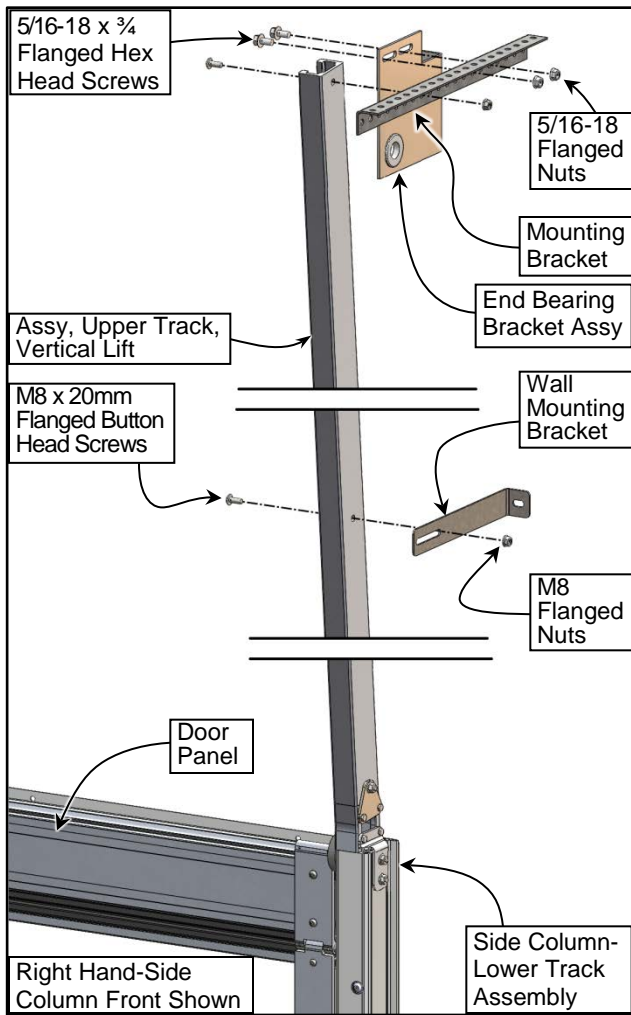


Figure 61

5. Fasten the track assembly to the wall via the wall mounting brackets with anchors per the "ANCHORING METHOD" section. Shim & adjust as required. (See Figure 61, & Figure 62)

6. Check & confirm the alignment between the Upper & Lower track assemblies are plum, level, square, and true. Also check the Track to Track width as given in the Object List. The width between the track assemblies must be maintained at all points. Adjust as necessary. (See Figure 12 and Figure 63)

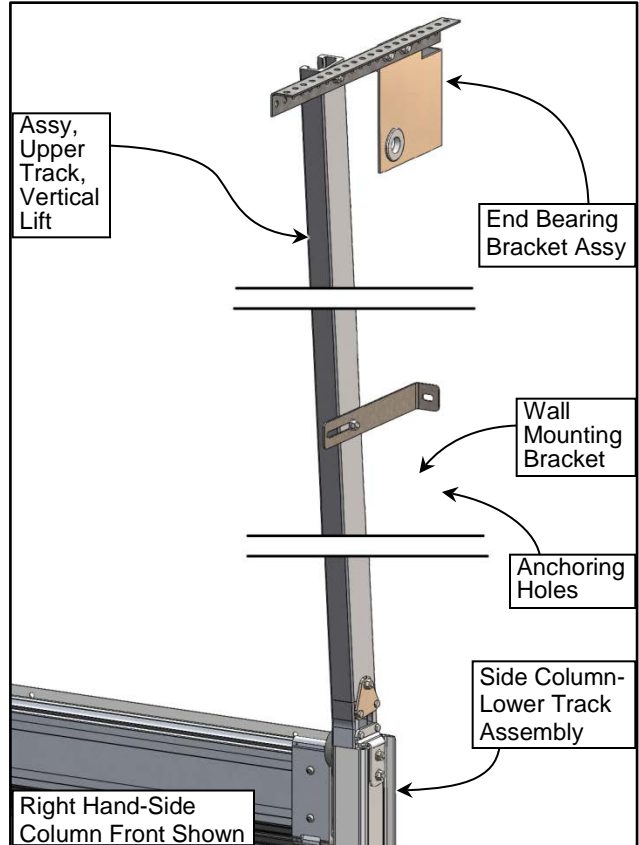


Figure 62

CAUTION

The position and alignment of the track assemblies is most crucial to the door function and must be positioned accordingly.

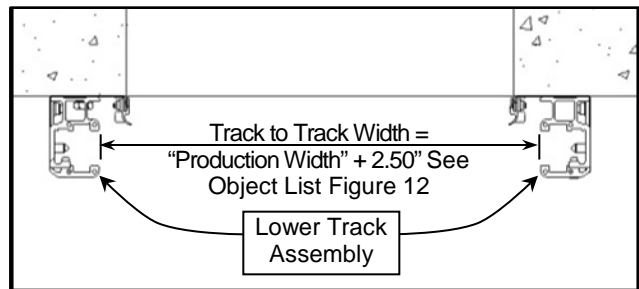


Figure 63

COUNTERBALANCE-DRIVE SHAFT ASSEMBLY

When assembled the drive shaft assembly is integrated with the drive cables & drums, drive shaft torsion springs & brackets, and mounted into bearings in support brackets which are mounted to the wall. This manual shows the typical door assemblies. (See Figure 65 and Figure 67)

WARNING

Installing door torsion springs is dangerous! When the springs are under tension, if you do not use the right tools and follow safe procedures, you could damage property, lose hands, limbs, or even your life!

1. Locate and identify the items which are part of the drive shaft section assembly for your specific door assembly. This includes but is not limited to the following:
 - Drive shaft, Ø1.00"
 - Drive Shaft End Bearing Bracket Assemblies
 - Torsion Spring Anchor Brackets
 - Drive Shaft Torsion Springs & mounting fasteners
 - Torsion Spring bearings
 - Drive Cable Drum Assemblies
 - 30° Drive Cable Drum Keys
 - Other items specific to your custom door
2. Locate and confirm the Drive Shaft End Bearing Bracket Assemblies and Spring Anchor Brackets are oriented & mounted according to the applicable sketch as shown. (See Figure 64, Figure 65, and Figure 67)

WARNING

Drive shaft and Anchor brackets will be under high spring tension and must be securely fastened. *Install brackets to structurally sound members only!* DO NOT install over dry wall or paneling. Failure to install brackets to solid structural members can cause severe or fatal injury.

IMPORTANT: If shims or spacers were installed behind the side columns, it will be necessary for you to shim behind the Counterbalance-Drive Assembly as well.

WARNING

Failure to use properly sized or quantity of fasteners can result in sudden spring tension release, causing severe or fatal injury.

INSTALLATION-COUNTERBALANCE-DRIVE SHAFT ASSEMBLY

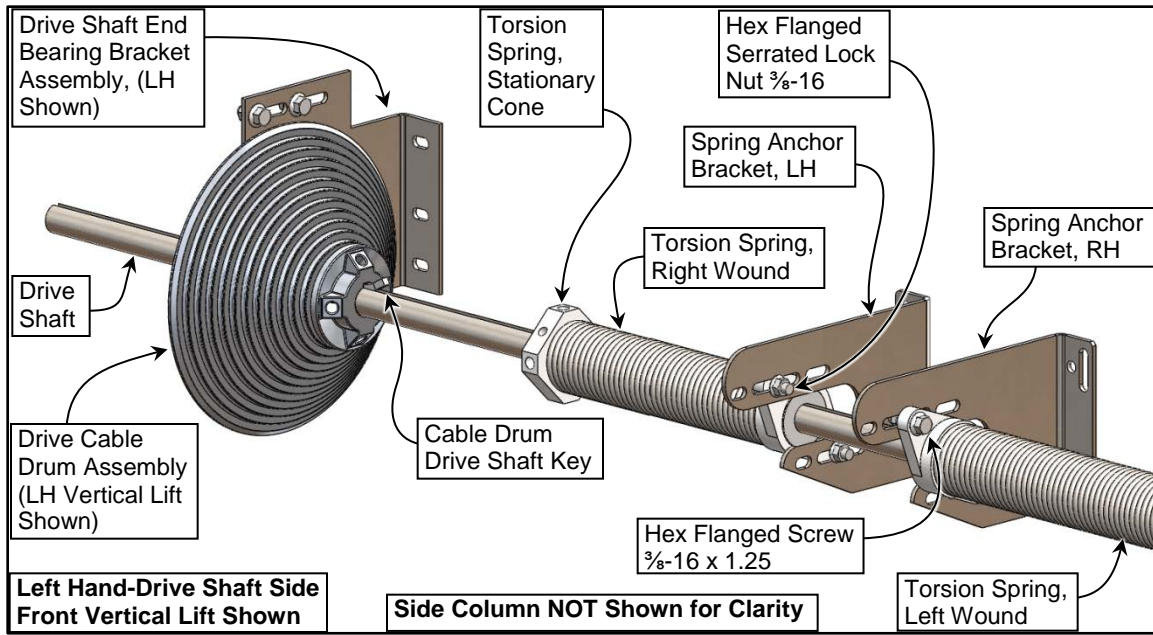


Figure 64

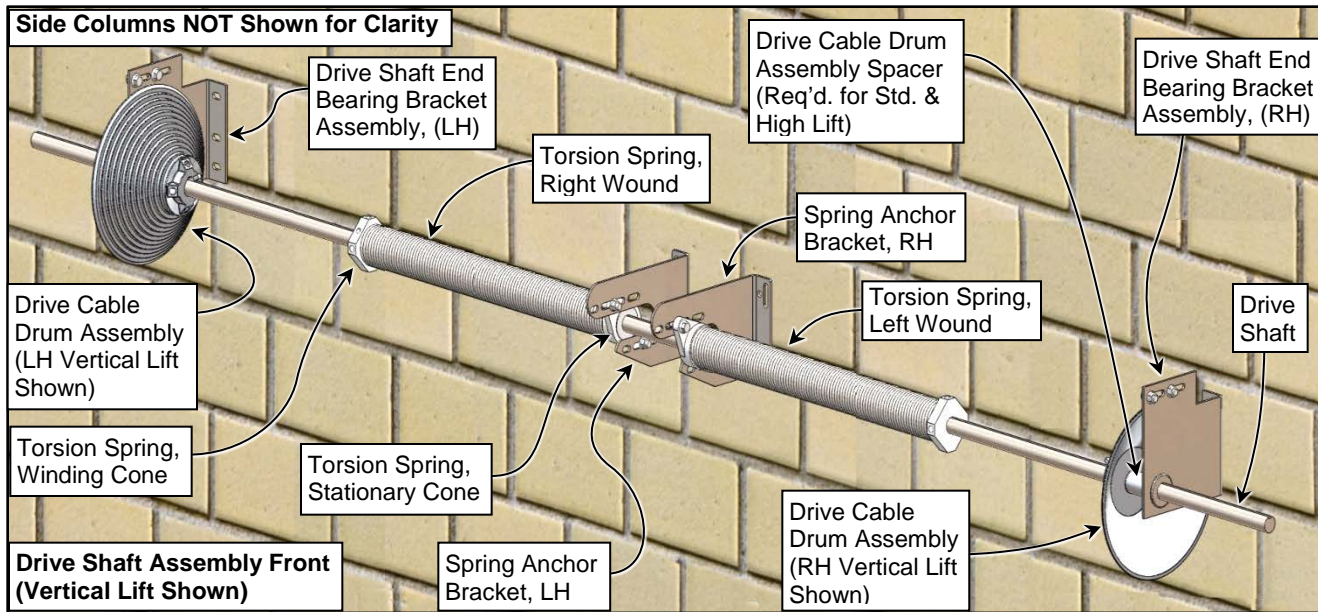


Figure 65

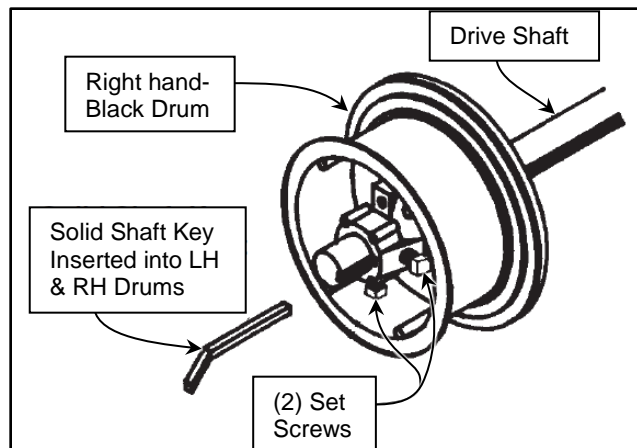
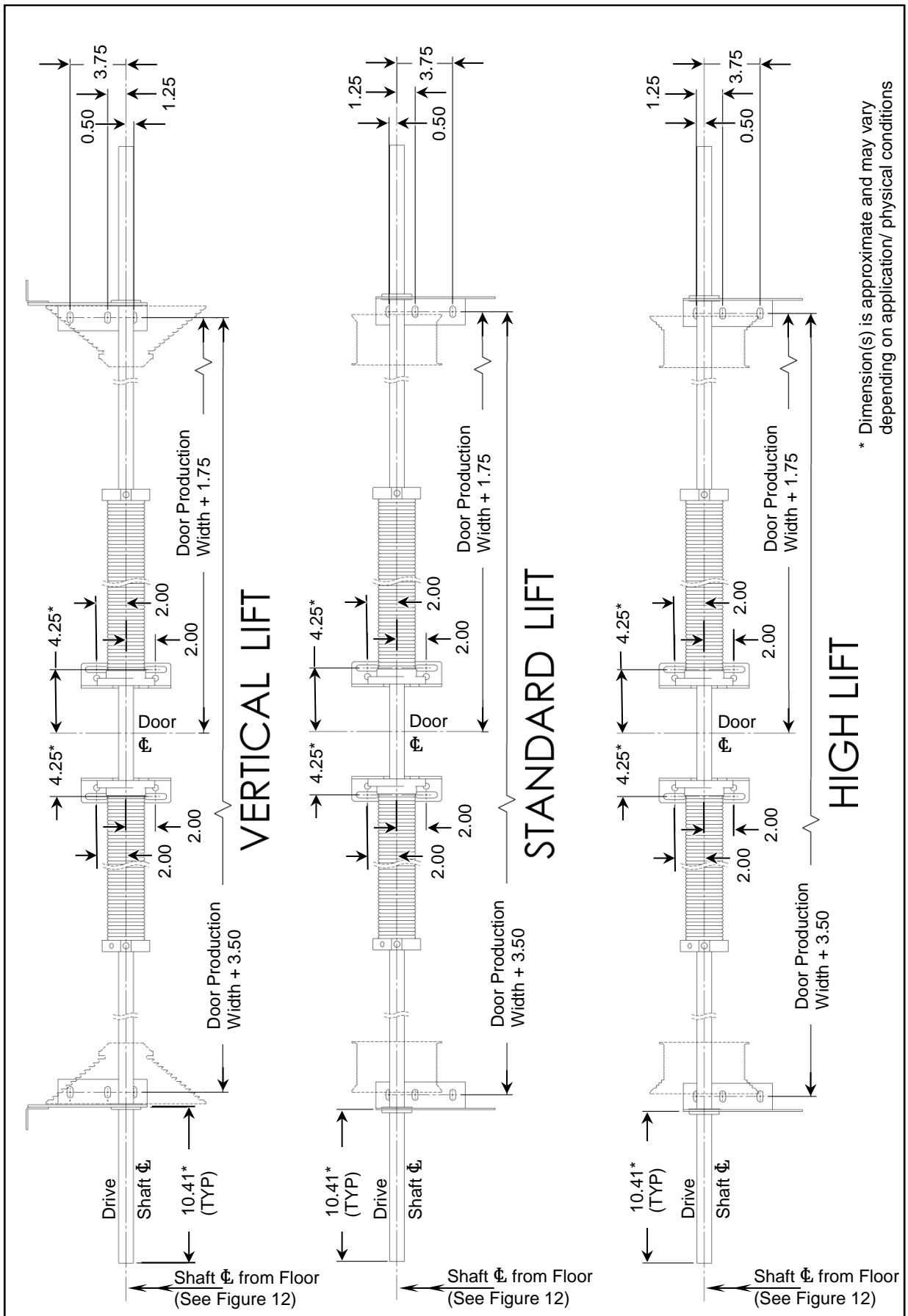


Figure 66



* Dimension(s) is approximate and may vary depending on application/ physical conditions

Figure 67

INSTALLATION-COUNTERBALANCE-DRIVE SHAFT ASSEMBLY

Drive Shaft Pre-mounting subassembly

3. Locate & identify the torsion springs. Stand the springs up against the wall as pictured here with the stationary cone at the top-winding cone on the floor. Take a close look at the ends of the springs. Position and turn them so the ends on the top are facing you and pointing to each other as pictured here. (See Figure 68)

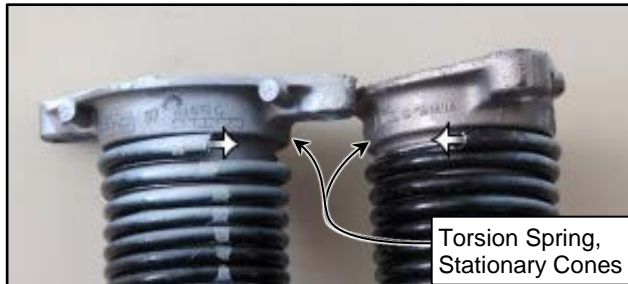


Figure 68

Take the spring on the left and place it at the left side of the door as pictured here. Notice that the end of the wire points to the right toward the center of the door. This is a right wind torsion spring. It will go above the door on the left side of the spring anchor bracket. The winding cone at the other end of this spring is usually painted red.

Take the other spring and place it at the right side of the door. Notice that the end of the wire points to the left toward the center of the door. This is a left wind spring. It will go above the door on the right side of the spring anchor bracket. The winding cone at the other end of this spring is usually painted black.

4. Locate the Flanged Torsion Spring Bearings. Orient each bearing so it seats into the torsion spring stationary cone. Install them into the Torsion Spring's end as shown & onto the drive shaft oriented specifically for each side. The flange will appear as shown when installed. (See Figure 68 & Figure 69)
5. Lubricate. Lubricate the Torsion Spring Bearings, the bearing's inner shoulder, and the drive shaft with 40 weight motor oil. Install the torsion springs onto the drive shaft on their respective sides as shown. The stationary cones-Torsion Spring Bearings must slide on first & be located at the shaft center. The winding cones must be located toward the outside/ends of the drive shaft. If necessary, back out the setscrews in the winding cones and/or remove any burrs/rough areas from the drive shaft/bearing mating surfaces for smooth assembly. (See Figure 69)

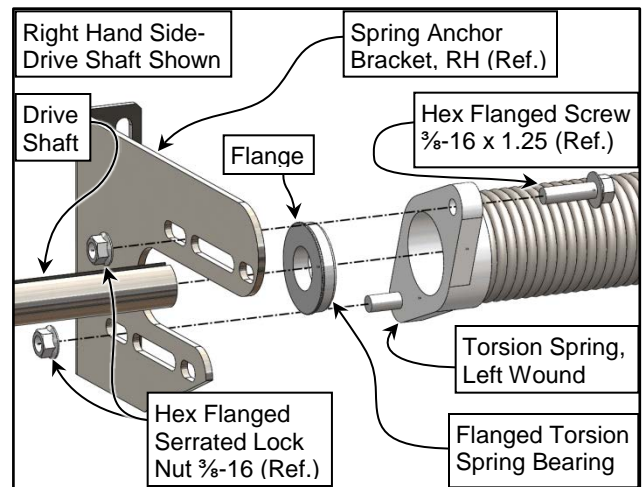


Figure 69

NOTE: Double-check to make sure you have the correct wind on each torsion spring. On the left side next to the winding cone the end of the spring wire should be pointing up if it is facing you. Notice, also, that the cone is usually red which designates right wind. If when tensioning the springs they start to spin on the cones, they were installed on the wrong sides of the torsion spring anchor bracket. (See Figure 70)

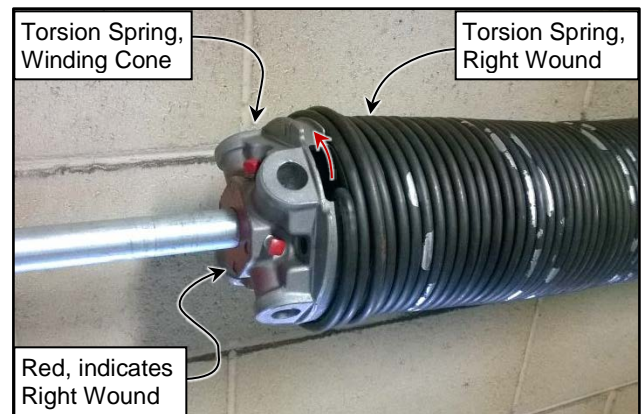


Figure 70

NOTE: Double-check to make sure you have the correct wind on each torsion spring. On the right side next to the winding cone the end of the spring wire should be pointing up if it is facing you. Notice, also, that the cone is usually black which designates left wind. If when tensioning the springs they start to spin on the cones, they were installed on the wrong sides of the torsion spring anchor bracket. (See Figure 71)

INSTALLATION-COUNTERBALANCE-DRIVE SHAFT ASSEMBLY

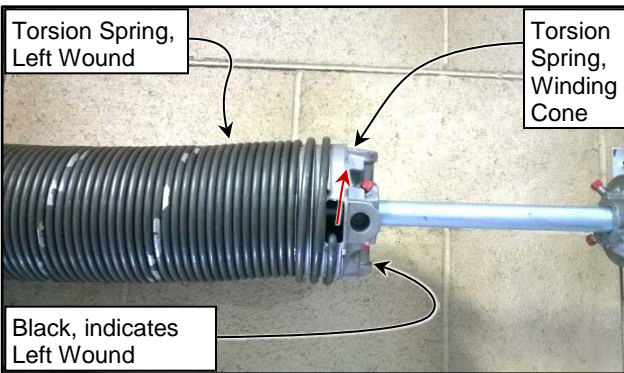


Figure 71

6. Locate and identify the cable drums. The drums are typically marked with an "L" and/or red paint for Left or an "R" and/or black paint for Right to correctly identify them. You can also identify them based on the cable hook features. (See Figure 72)



Figure 72

7. Install the cable spacers (where applicable) & drums onto the respective sides of the drive shaft as shown. Orient and mate the items as shown but slide the cable drums closer toward the center of the drive shaft allowing room to slide the shaft into the end bracket bearings. Leave the items loosely assembled as adjustments will be necessary. (See Figure 64, Figure 65, and Figure 67)

8. Install the drive shaft sub-assembly into the RH mounted end brackets. Lubricate the RH inner bearing's race and the drive shaft ends. Insert and slide the right end of the drive shaft sub-assembly into the right side bearing of the RH Drive Shaft End Bearing Bracket Assembly. Insert it far enough until you can align the shaft sub-assembly with the bearing of the LH Drive Shaft End Bearing Bracket Assembly. (See Figure 64 and Figure 65)
9. Adjust the torsion spring stationary cones so they can be mated up with the torsion spring anchor brackets.
10. Install the drive shaft sub-assembly into the LH mounted end brackets. Lubricate the LH inner bearing's race. Insert and slide the left end of the drive shaft sub-assembly into the left side bearing of the LH Drive Shaft End Bearing Bracket Assembly. Insert it far enough until both ends of the shaft sub-assembly are in the bearings of the Drive Shaft End Bearing Bracket Assemblies. (See Figure 64 and Figure 65)
11. Center the drive shaft and sub-assembly on the door's centerline. (See Figure 67)
12. Confirm the Torsion Spring Anchor Brackets are securely mounted to the wall and tighten if necessary. Align, mate, and fasten the Torsion Spring Stationary Cone to the Spring Anchor plates with the fastening hardware as shown. Check the drive shaft for level and adjust as necessary. (See Figure 64)
13. Confirm the End Bearing Bracket Assemblies are securely mounted to the wall and tighten if necessary. Slide the Cable Drums up against the End Bearing Bracket Assemblies or Tube Spacers as applicable. Align the keyways of the drive shaft and the drums. Confirm that the drums and their cable connections are properly aligned and in sync. Install the 30° keys as shown. (See Figure 72, Figure 64, Figure 65, and Figure 66)

INSTALLATION-DRIVE CABLE TO DRUM INSTALLATION

DRIVE CABLE TO DRUM INSTALLATION

1. Confirm the cable drums are butted up against the spacers/end bearing plate brackets.
2. Route left side lift cable up to cable drum. To get the cable to properly seat, bend the end of the cable 90° as shown with needle nose pliers and insert the cable into the left side Cable Drum. (See Figure 73, Figure 74, Figure 75, and Figure 76)

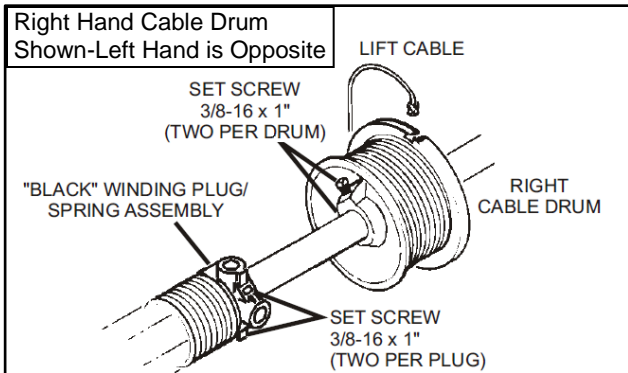


Figure 73

Bending the lift cable will help you avoid problems with the tip at the end of the lift cable catching on the end bearing plate and causing the lift cable to come off and the door to jam, cock, or fall. Check to make sure the lift cable is straight in the slot and properly seated. Also the edge of the lift cable stop should not be pointing to the side as displayed. The lift cable tip should fit completely inside the drum, with the rounded part facing out so the tip can't scrape the end bearing plate.

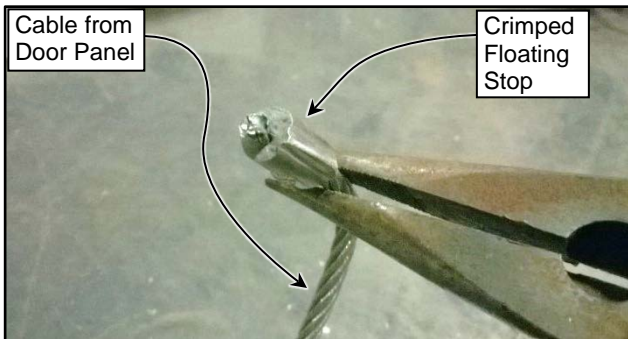


Figure 74

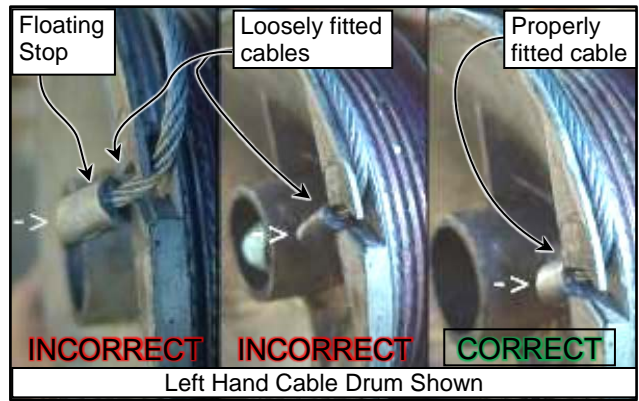


Figure 75

3. Tighten the cable around the outer raised groove of the drum as shown. Rotate the drive shaft and drum until the lift cable remains tight. (See Figure 75 and Figure 76)

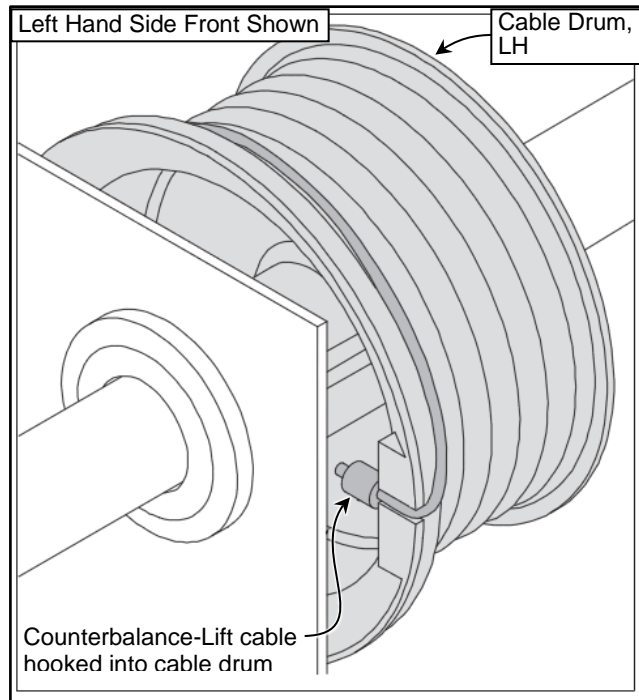


Figure 76

4. Lock the Cable Drum into place with the set screws by finger tightening them. They may need to be loosened and adjusted yet. (See Figure 73)

INSTALLATION-TORSION SPRING ASSEMBLY TENSIONING

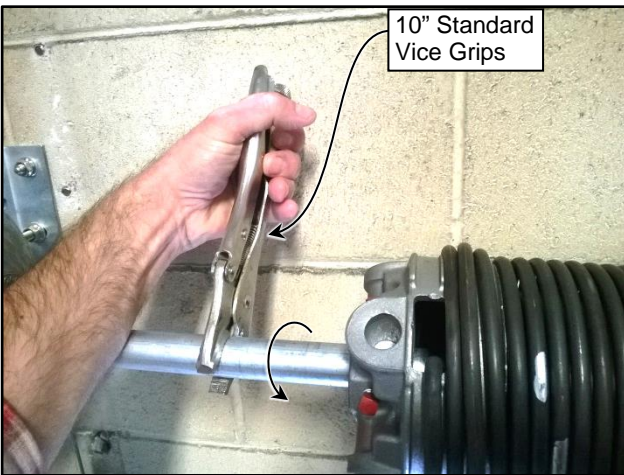


Figure 77

5. Vise grip the shaft as shown to keep the lift cable tight on the drum. The top of the vise grip should be tight against the door wall. This will keep the lift cable snug on the first drum while you install the cable on the other drum and position it in place. It also keeps the shaft from turning and the lift cables from peeling off when you wind the springs. (See Figure 77)

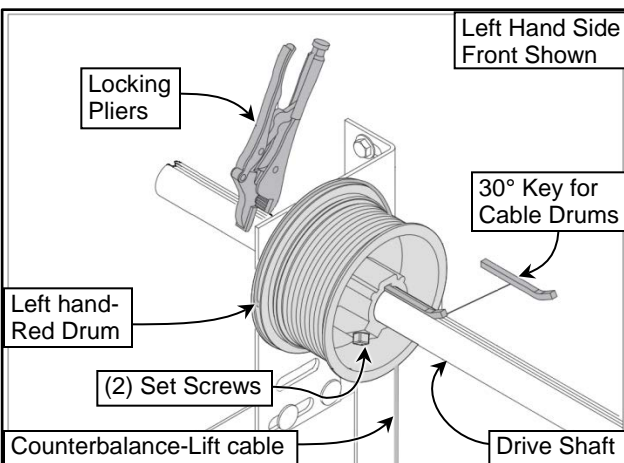


Figure 78

6. Remove the key installed in the right side Cable Drum. Take the right side lift cable & repeat steps 1 - 3 except you will just rotate the drum on the drive shaft.
7. Reinstall the 30° angled key into the Cable Drum & Drive shaft. Some adjustment of the shaft may be necessary. (See Figure 78)
8. Make sure both cables are equally taught. Lock the Cable Drums into place with the set screws by tightening them to 15-20 ft. lbs. of torque (once set screws contact the shaft, tighten set screws approx. ¼ - ½ turn). (See Figure 78)

TORSION SPRING ASSEMBLY TENSIONING

Winding-Tensioning or “pre-loading” the Counterbalance torsion springs is extremely dangerous. Two important assumptions to make so you execute this procedure safely are:

1. Assume the springs are going to break as you unwind or wind them. Clutch the bars firmly on the ends furthest away from the cones and stand securely on a sturdy ladder, scissors lift, etc. Keep clothes and body parts away from the springs at all times! Always wear proper safety equipment such as safety glasses, shoes, no loose fitting clothing, etc.
2. Assume the cone will slip or explode as you wind and unwind the spring. Keep your head & body out of the path of the winding cone. Keep your hands away from the cones so that if and/or when the winding bar slips out of the cone and your hand jerks up, the cone doesn't rip your flesh or wrap your clothes and body parts into the spring. (See Figure 79)

⚠ WARNING

Use the right tools and follow safe procedures!

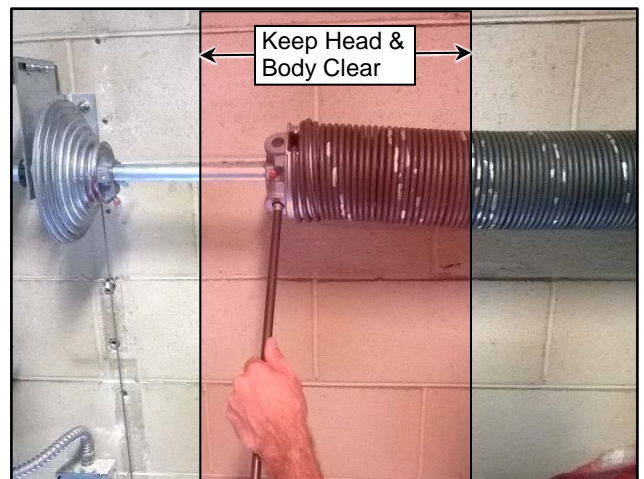


Figure 79

⚠ WARNING

Winding-Tensioning Torsion Spring(s) is an **EXTREMELY DANGEROUS** procedure! Use only specified Winding Bars. **DO NOT** substitute with anything else like screwdrivers, pipe, etc. as they may fail or slip and cause serious or fatal injury.

⚠ WARNING

Under-tightening the winding cone set screws could cause the drum to slip and the door to cock or fall. Over-tightening the setscrews could damage the shaft or winding cone, resulting in the same problems. This is a critical step.

⚠ WARNING

Prior to winding or making adjustments to the springs, confirm you are winding the springs in the correct direction as stated in the installation instructions. Otherwise, the spring fittings may release from the spring if not wound in the proper directions and could result in severe or fatal injury!

1. Read Tensioning instructions thoroughly & make sure you understand them completely before you start this procedure!
2. Confirm that all the counterbalance-drive shaft components are positioned correctly & securely mounted per the "DOOR PANEL ASSEMBLY", "DRIVE SHAFT ASSEMBLY", "DRIVE CABLE TO DRUM INSTALLATION" & "UPPER TRACK ASSEMBLY" sections. (See Figure 32, Figure 65, Figure 47, Figure 58, Figure 62, and Figure 78)

Check the following:

- Fasteners secure on bottom fixtures.
 - Counterbalance-Lift cables secure at bottom fixtures-corner mounting brackets.
 - Counterbalance-Lift cables routed unobstructed to cable drums.
 - Counterbalance-Lift cables correctly installed and wound onto cable drums.
 - Counterbalance-Lift cables are equally taut.
 - Cable drums are against End Bearing Brackets-Spacers and setscrews are tight.
 - You've located & identified the spring winding information (Spring Turns) in the door's Object List. (See Figure 12)
3. The door **MUST** be closed & stay closed when winding or making any adjustments to the torsion springs. Vise grip both vertical tracks above one of the rollers on each side as shown. (See Figure 80)

⚠ WARNING

Failure to ensure door is in a closed position and place vice clamp onto vertical track can allow door to raise and cause severe or fatal injury!

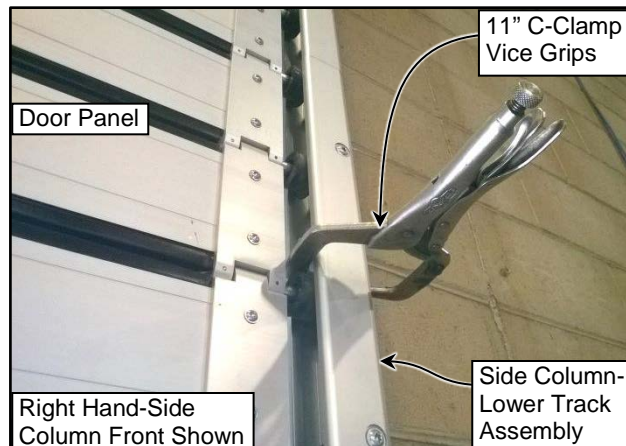


Figure 80

4. Your winding bars must be at least 18" long and fit properly into the winding cone. The edges should be sharp, cut at 90 degrees, not rounded. (See Figure 81)

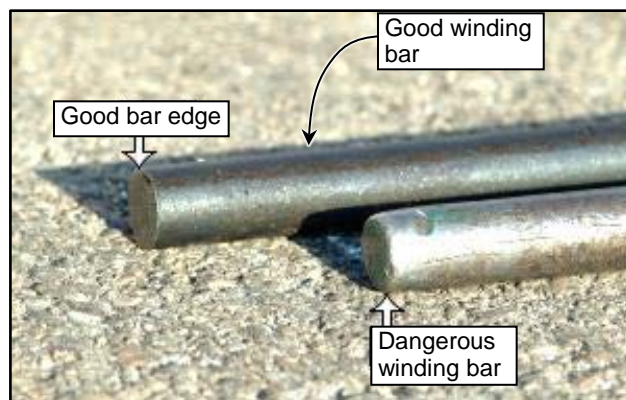


Figure 81

5. Test the fit of the bar in the cone. Insert one end of your winding bar into one of the holes of the winding cone. Pull down on the bar slightly to make sure the set screws are tight. Position your ruler between the bar and the door. Move the bottom of the bar from side to side and measure the play. It should be less than an inch and a half. If it is over 2" get bars that will properly fit the cones. (See Figure 82 and Figure 83)

INSTALLATION-TORSION SPRING ASSEMBLY TENSIONING

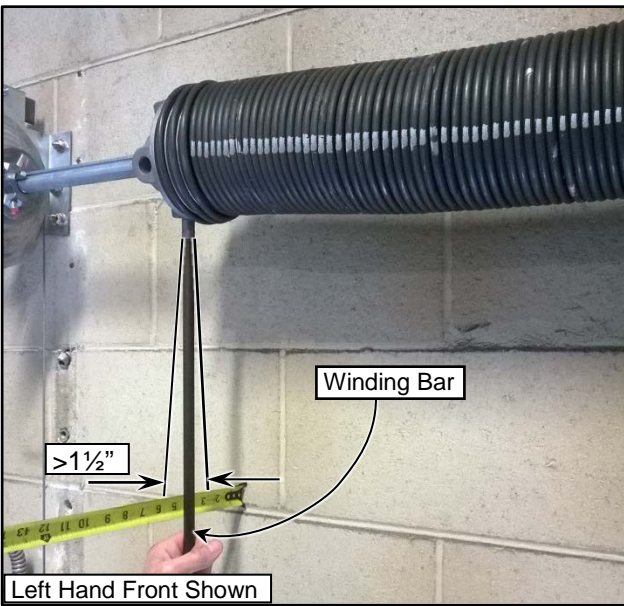


Figure 82

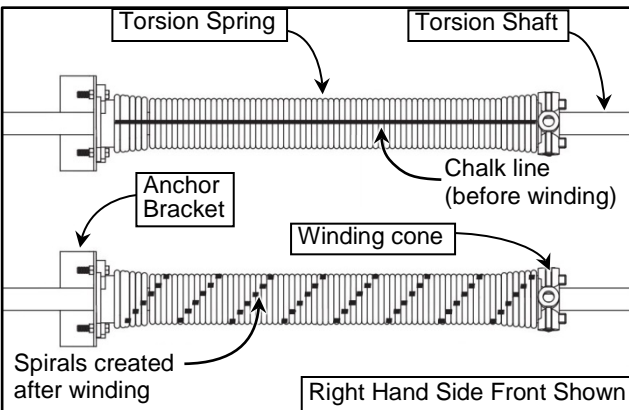


Figure 83

- Draw a straight chalk line horizontally along the center of the torsion spring. The spiral can be used to count and determine the number of turns that are applied in winding the spring. (See Figure 83)

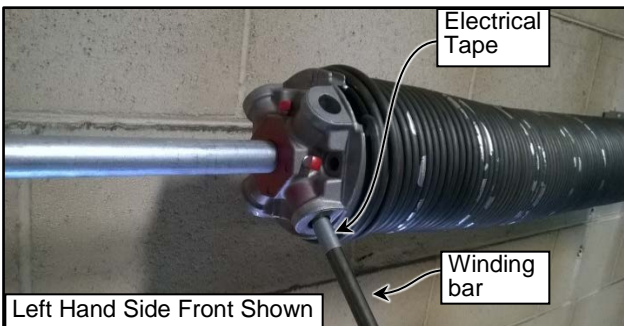


Figure 84

- Tape winding bars as shown. This will help assure you are inserting completely into the cones when winding/unwinding the torsion springs to prevent bars from slipping out of the cone. (See Figure 84)

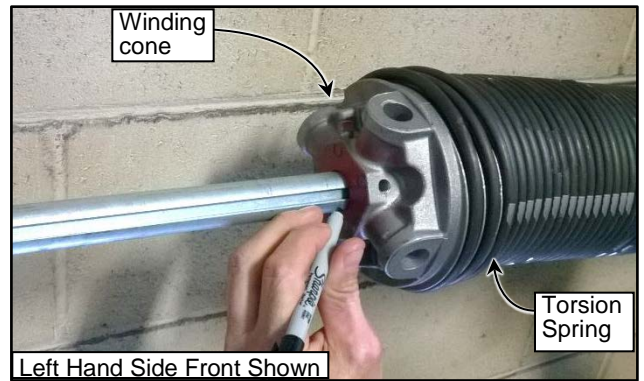


Figure 85

- Mark the shaft just beyond the winding cone at its edge as shown. (See Figure 85)

This is a step taken to assure the springs are installed on the correct sides of the door's center. Torsion springs always grow in length when they are wound in the proper direction. If your spring does not get longer as you wind it, you are likely winding it in the wrong direction or it is improperly installed. If this happens, confirm that you are properly winding the spring & if so, examine the assembly to confirm for proper installation and/or switch the springs.

It is now time to wind the torsion springs.

⚠ WARNING

Prior to winding or making adjustments to the springs, confirm you are winding the springs in the correct direction as stated in the installation instructions. Otherwise, the spring fittings may release from the spring if not wound in the proper directions and could result in severe or fatal injury!

- Insert winding bar into winding cone and rotate upward $\frac{1}{4}$ turn. Insert the second winding bar into the winding cone, take up the torque load, and rotate $\frac{1}{4}$ turn. Remove the first winding bar (See Figure 86)

⚠ WARNING

DO NOT remove a winding bar from a winding plug until a second winding bar has been fully seated in the plug and has assumed the torque load!

INSTALLATION-MOTOR-GEAR DRIVE ASSEMBLY

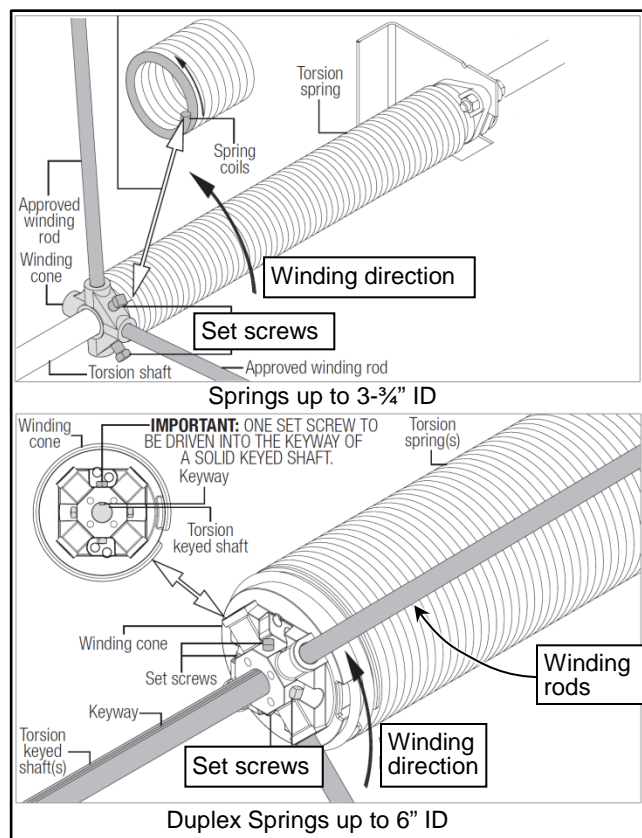


Figure 86

10. Alternately continue to wind the spring until the required number of Spring Turns for your door as listed in the Object List is achieved. (See Figure 12 & Figure 86)

11. As the last $\frac{1}{8}$ – $\frac{1}{4}$ turn is achieved securely hold the winding rod while tightening the set screws in the winding cone. Once the set screws contact the counterbalance-drive shaft tighten the screws an additional $\frac{1}{4}$ to $\frac{1}{2}$ full turn. (See Figure 12 & Figure 86)

IMPORTANT: One set screw must be driven into the keyway of the solid keyed shaft as in Figure 86.

12. After the torsion spring is secure, use the winding bar to apply pressure in the opposite direction to ensure the set screws are securely fixed to the torsion shaft. The winding cone should be tight enough so that when you pull down on the bar, the door should begin to lift. If the bar starts to slip when you pull it down, add $\frac{1}{4}$ turn to each set screw. (See Figure 86)

13. Carefully remove the winding bar from the winding cone. Repeat steps 5 - 12 for the remaining spring, as applicable.

14. While holding the door down to prevent it from raising unexpectedly in the event the spring(s) were over-wound, carefully remove the locking pliers from the torsion shaft & vertical tracks.

15. Adjustments to the number of torsion spring winding turns as stated may be necessary. If the door rises off the floor under spring tension alone, reduce the spring tension until the door rests on the floor. If the door is hard to rise or drifts down on its own, add spring tension. Record this information in your manual.

IMPORTANT: Both springs must be wound to exactly the same tension.

16. Oil the springs. The more viscous the oil the longer it will last. Use 40 weight motor oil, but 10W40 will do if that is all you have. Squirt a stream of oil across the tops of the torsion springs and rub the oil into the coils. Do not oil the last inch of the springs that are wound around the winding cones.

MOTOR-GEAR DRIVE ASSEMBLY

The motor-gear drive directly mounts to the door wall and utilizes a chain and gears to power the drive shaft and door assembly. It also contains the photo eyes, the chain and gears to power the door, the break release-hand chain operator, the 3-button operator control station, and all you'll need to install them. Once the door has been assembled the motor-gear drive can be installed. (See Figure 87)

Once the door has been assembled, see the Door Operator's Installation Manual, User's Guide, & the Door's Electrical Schematic for information on motor-control installation, electrical connections, door limit settings, and initial door start-up procedure.

NOTE: All wiring and conduit must meet all local and state codes and be provided by the door owner/installer or the electrician. Wires provided with the door are labeled with terminal or contact numbers.

Route power supply cables from the Fused Disconnect to the Motor-Gear Drive. Then wires will need to be routed from the Motor-Gear Drive Assembly to the 3-Button Control Station, & Photoeye cables to their individual mounts along with any other activators as indicated in the electrical schematic. (See Figure 87)

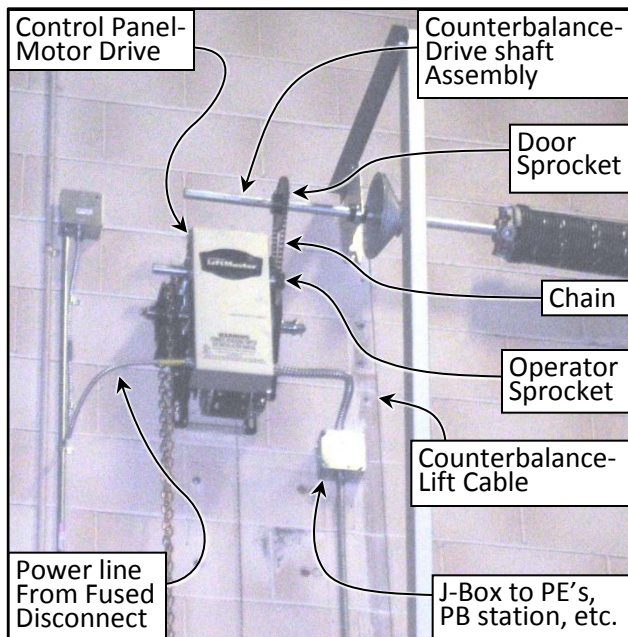


Figure 87

PHOTO EYES

The photo eyes are a safety feature and provided to monitor the center of the door opening. They are to be field-installed in the front left and front right sections of the door's lower track assembly. The set consists of one photo eye transmitter module and one receiver module. If the photo eyes are correctly installed, interrupting the photo eye set as the door is closing will reverse the door's direction and hold it in the fully open position until the interruption is removed and the door close button pushed. (See Figure 88)

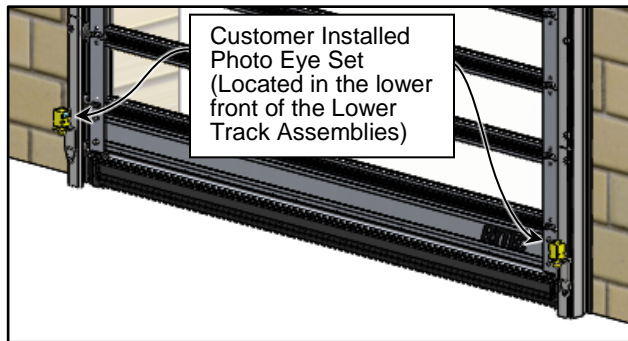


Figure 88

The photo eyes are included w/ the door's Motor-Gear Drive Assembly. Refer to the Door Operator's Installation Manual, User's Guide, & the Door's Electrical Schematic for information on photo eye installation, and electrical connections.

1. Locate the holes for installing each photo eye at the base of each lower track assembly.

2. Drill out the mounting hole in the bracket as necessary. Mount the photo eyes as shown on the front of the lower track assembly with the fasteners already located there. (See Figure 89)



Figure 89

Route each Photo eye cable back to the Motor-Gear Drive via conduit as indicated in the electrical schematic.

NOTE: Route cable away from all chains, gears, drive shaft, and any moving part(s). Separate high – and low - voltage cables to prevent signal interference.

*NOTE: Be sure the path through which the cables are routed hides and protects them from damage. If necessary, run conduit to each mounting bracket to protect the cables. Note the end of the cable intended for the photo eye. **DO NOT** connect the photo eye cables to the control panel at this time.*

3-BUTTON CONTROL STATION

The pushbutton control station is part of the door's Control Panel/Motor-Gear Drive Assembly and provided to serve as 1 method of operating the door. It is to be field-installed on the front of the door installation as shown in the general layout. Refer to the Door Operator's Installation Manual, User's Guide, & the Door's Electrical Schematic for information & procedure on photo eye installation, and electrical connections. Install per these documents. (See Figure 91)

INSTALLATION-CONTROL SYSTEM

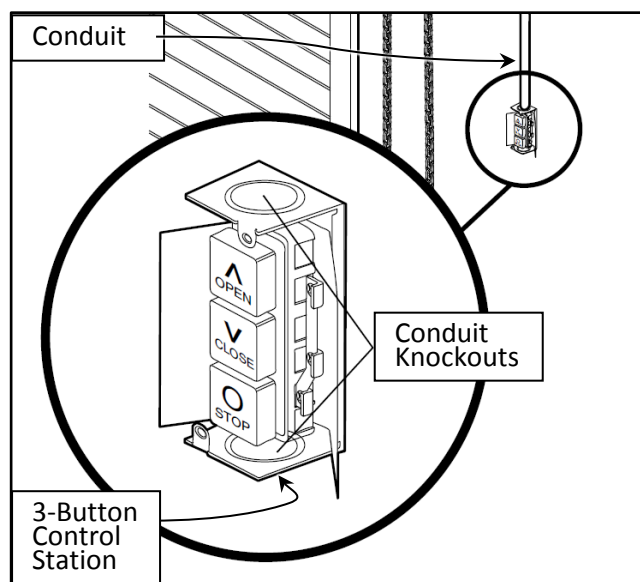


Figure 90

1. After installing per previously listed documents, apply power to the control system.
2. Verify the motor rotation by briefly pushing the Open (△) and Close (▽) keys on the control panel.

The door should open with the Open (△) key, stop with the Stop (○) key, and close with the Close (▽) key. If the door does not operate in this manner, recheck the motor wiring with the Door Operator's Installation Manual.

CONTROL SYSTEM

The door has an integral control system contained within the Motor-Gear Drive Assembly. Once the door has been assembled, refer to the Door Operator's Installation Manual, User's Guide, & the Door's Electrical Schematic for information on the motor-control system installation, electrical connections, and door limit settings.

NOTE: To expedite the installation of this door, it is recommended that the fused electrical disconnect and control panel be installed prior to installing the door. Review the layout diagram shipped with your door to determine exactly where these major electrical components are to be located. The control panel and disconnect are typically mounted adjacent to the side column on the drive mounted side of the door installation.

If you have any questions regarding this installation, contact your Rytec representative or the Rytec Technical Support Department at 800-628-1909.

⚠ WARNING

All electrical work must be performed by a licensed or certified electrician. All electrical work must be performed in accordance with all local and state building codes and requirements.

⚠ WARNING

The disconnect must be in the OFF position and properly locked and tagged before performing electrical work on the door.

IMPORTANT: All high and low voltage cables must be installed in separate conduit, cut to length with no excess or loops.

NOTE: All wiring and required conduit between the electrical disconnect and the control panel/motor-gear drive, between the control panel/motor-gear drive and the small junction box near the drive motor, and between the control panel/motor-gear drive and the floor, must be supplied by the door owner. All wiring and conduit must meet all local and state building codes and requirements. Wires provided with the door have been identified with terminal or contact numbers.

*All conduit entering the control panel/motor-gear drive **MUST** enter according to the LiftMaster manuals.*

Protect the components inside the control panel from metal chips when installing the conduit. Seal the conduit where it enters the control panel – particularly if the conduit is routed from one area to another, where the two areas can have different ambient air temperatures. If the conduit is not sealed properly, condensation can form inside the control panel, which can lead to serious electrical problems.

CONTROL PANEL/MOTOR DRIVE CONNECTIONS

Fused Disconnect to Control Panel/Drive Motor

1. Route the drive motor power cables, leading from the motor junction box, to the control panel/motor drive connections as shown. Refer to the door's electrical schematic diagram shipped with the small parts, Door Operator's Installation Manual, & User's Guide. (See Figure 91)

INSTALLATION-EMERGENCY BRAKE RELEASE-HAND CHAIN OPERATOR

2. Connect the drive motor power supply lines to the control panel/motor drive as indicated on the door's electrical schematic diagram shipped with the small parts & Door Operator's Installation Manual. Refer to the door's electrical schematic diagram, Door Operator's Installation Manual, & User's Guide.

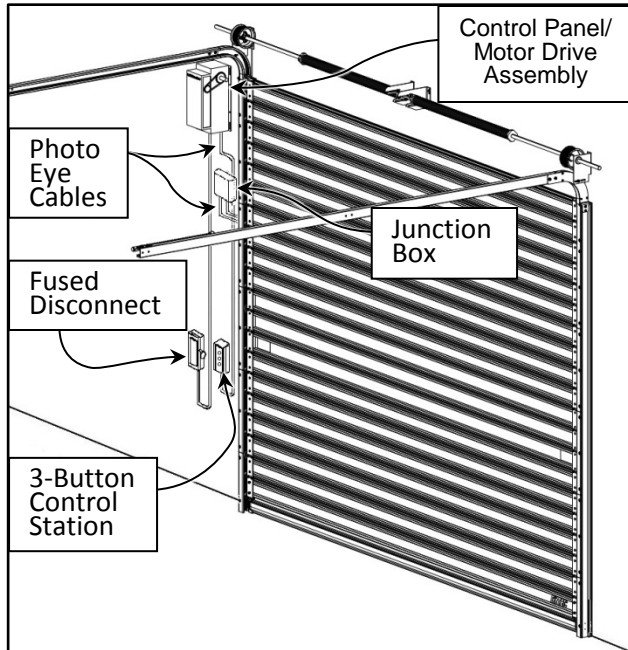


Figure 91

Field-Installed Photo Eyes to Control Panel/Motor Drive

1. The two control cables for the field-installed photo eyes must be routed from each one through conduit to the control panel/motor-drive. (See Figure 91)
2. Connect the control cables to the motor-control panel as indicated on the door's electrical schematic diagram shipped with the small parts, Door Operator's Installation Manual, & User's Guide. Refer to the Door Operator's Installation Manual.

Field-Installed 3-Button Control Station to Control Panel/Motor Drive

1. Route the electrical wires/control cables for the field-installed 3-Button Control Station from the Door Operator's Control Panel/Motor-Drive to the 3-Button Control Station per the door's electrical schematic wiring diagram shipped with the small parts, the Door Operator's Installation Manual, & User's Guide. (See Figure 91)
2. Connect & wire the 3-Button Control Station per the Door Operator's Installation Manual. Refer to the door's electrical schematic diagram, Door Operator's Installation Manual, & User's Guide.

Activators

Rytec recommends setting the limits on the door and operating the door initially without the activators connected. Often activators create problems at initial start-up. When the limits have been established and the door cycled & operated 5 times, then turn OFF the disconnect power and finish the installation of the activators. Establishing the limits and operating the door allows you to isolate any potential operating issues to the door without the activators connected & possibly adding more issues. Connect the activators as shown on the door's electrical schematic, the Door Operator's Installation Manual, & the User's Guide provided with the door.

EMERGENCY BRAKE RELEASE-HAND CHAIN OPERATOR

Refer to the Door Operator's Installation Manual & User's Guide on how to install and operate this feature. This Rytec door is equipped with an electric motor brake system that stops the motor and doesn't allow it to freely travel when not running. It is also equipped with an electric motor brake override system (chain hoist) that allows the door to be manually opened or closed in the event of an emergency or power outage. A release system on the motor assembly controls the operation of the chain hoist, located on the side of the drive motor, which is typically mounted next to the door's side column & below the drive shaft. (See Figure 91)

⚠ WARNING

DISCONNECT the electric power to the door **BEFORE** manually operating the door.

⚠ WARNING

If possible, use the emergency release handle to disengage the drive **ONLY** when the door is **CLOSED**. Weak or broken springs or unbalanced door could result in an open door falling rapidly and/or unexpectedly.

⚠ WARNING

Never use the emergency release unless the doorway is clear of persons & obstructions.

⚠ WARNING

After operating the door manually the open and close settings of the Controls should be checked.

INSTALLATION-OPERATING CONTROL SYSTEM

1. Install the Chain Keeper bracket per the Door Operator's Installation Manual. Refer to the Door Operator's Installation Manual.
2. Pull the Brake Release Operator Chain on the control-motor assembly to disengage the electric motor and engage the chain hoist. The disconnect chain may be locked in position by slipping the end through the keyhole of the chain keeper mounted on the wall. (See Figure 92)

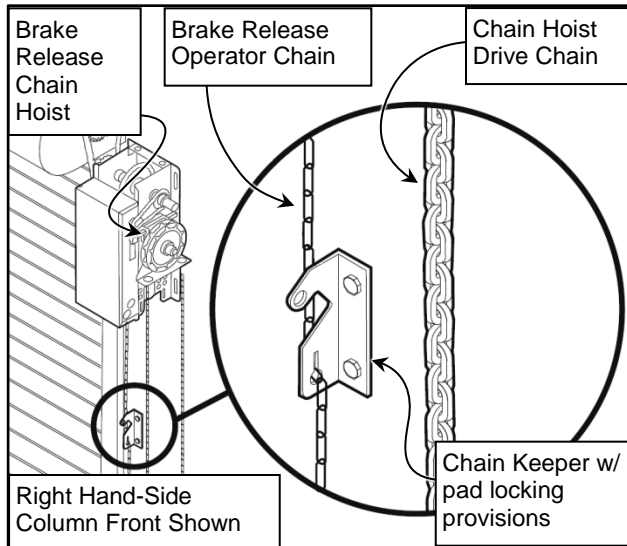


Figure 92

3. With the electric motor brake system disengaged and the chain hoist engaged, pull the chain in the direction required to either raise or lower the door panel. (See Figure 92)
4. The brake release operator chain must be released from the chain keeper and/or the chain simply allowed to rise back up to re-engage the motor/disengage the chain hoist before the door will operate again electrically. (See Figure 92)
5. Check the open and closed limit settings on the door. Confirm that they are correct. Refer to "Control System" section of the manual.
6. Adjust the limits as required. Cycle and test the door several times to confirm proper settings.
7. Resume operating the door.

OPERATING CONTROL SYSTEM

All operator inputs and control functions are carried out by the Door Operator's drive & control system. (See Figure 93)

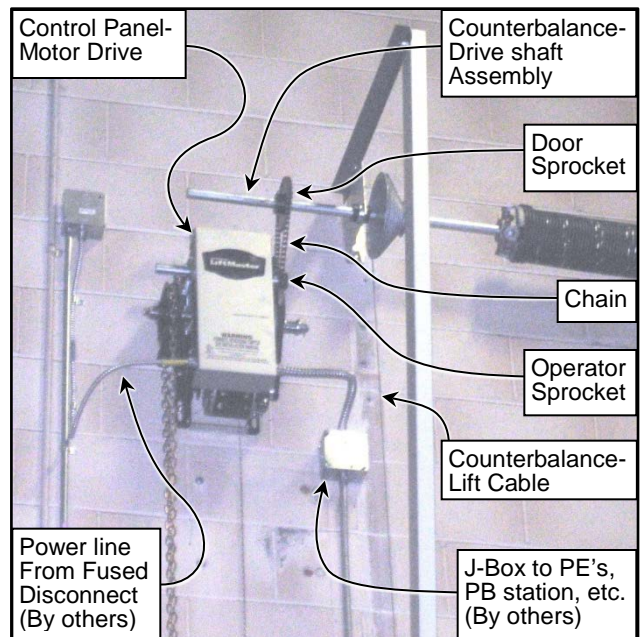


Figure 93

MODES OF OPERATION

The door may be operated in 1 way: Manually.

Manual Mode of Operation

If a momentary contact activator such as a push-button, pull cord, radio control, etc., is used to operate the door:

- The door will open when the device is activated.
- After passing through the door, a similar type of device must be used to close the door.

In summary, in the manual mode, a manually-operated activator is used to open and close the door and must be activated by a person.

NOTE: The door operator's control panel/motor has separate inputs programmed with or without the use of timers. Any input utilizing a timer can be turned OFF by simply programming per the Door Operator's Manuals. (See the Door Operator's Installation Manual & User's Guide)

INITIAL START-UP

NOTE: Once you have set your door limits during this procedure they are stored until mechanically adjusted again.



Setting door limits is only to occur once the door and control panel have been properly installed, wired, and all preliminary door adjustments made. Failure to follow the instructions as outlined in the installation manual that was provided with your door can result in damage to the door upon initial system start-up.

Door Open & Close Limit Positions

The door operating limits need to be set for the door. The Door's Control Panel/Motor Drive limits are set by the operator during the installation process. The settings are determined via mechanical controls. Refer to the Door Operator's Installation Manual & Owner's Manual for the proper procedure for setting the open and close door limits. The close- and open-limit door positions are detailed below.



The door open and close limits are to be set only after verifying that the motor (door) operates in the proper direction when the up (Λ) and down (∇) keys are pressed.



Damage to the reversing edge seal or other bottom bar parts can occur if the door seal is allowed to seal too tightly against the floor. The reversing edge should NOT contact the floor.

Close-Limit Position

The close-limit position should be adjusted so that the door travel allows the edge seal on the bottom bar to gently seal against the floor. (See Figure 94)

Only the rubber flap of the bottom edge should be touching the floor. DO NOT drive bottom edge into the floor.



Figure 94

Open-Limit Position

Use the Open arrow (Λ) to position the door in the open position. The open limit should be set at or slightly below the door's top lintel as shown. (See Figure 95)

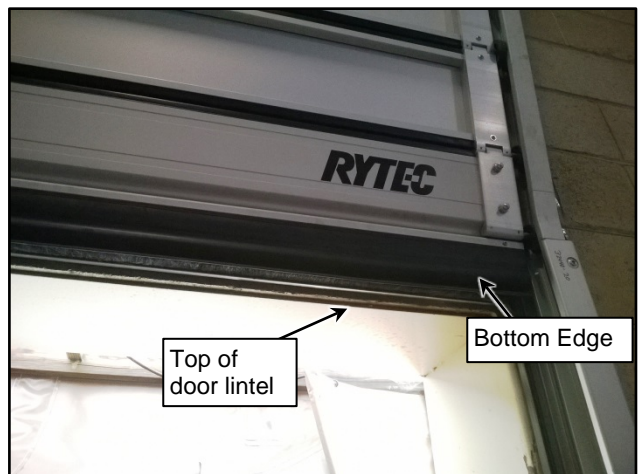


Figure 95

After the limit positions have been set check the door settings for the next several cycles to confirm the settings do not drift or need any further adjustment.

SYSTEM RESET

Photo Eyes

If the set of photo eyes detects that an object has entered the door opening while the door is closing, the door will reverse direction and move to the fully open position. The door will remain parked in this position until the object has been removed from within the opening and the Close button pushed.

After the door is closed the control system will wait for operator input.

FINAL ADJUSTMENTS-PHOTO EYES

FINAL ADJUSTMENTS

PHOTO EYES

Field Mounted Photo Eyes

The two modules that make up the set of photo eyes each have one indicator light. The eyes are receiving power and are aligned when the LED indicator lights on the modules glow steadily. If both indicators are flashing, the eyes are not aligned.

When the eyes are aligned and the beam of light between them is interrupted, the receiver module LED indicator, which is green, & the transmitter module LED indicator, which is yellow, will begin to flash. Restoring the beam of light will cause the indicators to switch back to a steady glow.

TESTING PHOTO EYE SYSTEM



To prevent injury to personnel and damage to equipment, the photo eye circuit must be thoroughly tested to make sure the photo eye system is operating correctly.

1. With power applied to the control panel and the door in the fully-open position, press the door Close (v) button to activate the door.
2. When the door is about halfway closed, break the beam of light between the front set of photo eyes only.

The moment the beam of light is interrupted, the control panel should reverse the direction of the door and park it in the fully-open position. When the beam of light is restored, the door may be closed after once again pressing the Close (v) button.

3. Repeat the above procedure on the set of rear photo eyes if applicable.

FINAL CHECKS

NOTE: Check all the following door components and systems once the door panel has been cycled at least 20 times.

Side Columns/Track Assemblies: Check that side columns and track assemblies are plumb and square and that all anchor bolts are secure and tight.

Drive Assembly: Check that all components and mounting hardware are in place, properly tightened, & moving parts are properly aligned and lubricated.

Door Panel Track: Check the alignment of each door track assembly, particularly where the tracks join up between the upper & lower track assemblies.

Covers and Panels: Check that all covers and panels are in place and securely fastened.

Motor: Check that the door travels in the proper direction when each button is pressed. Check that it is all securely mounted, properly positioned, chain properly lubricated, emergency brake release-hand chain operator is properly positioned & installed, and drive keys installed.

Bottom Edge: Check that it works/seals properly. As the door is closing, if the bottom edge makes contact with & seals against the floor as described in the "INITIAL START UP" section on page 36, it is operating properly. If not the limit settings should be checked and possibly readjusted. If this doesn't resolve the issue check the bottom bar for damage or defects.

Photo Eyes: Check that they work properly. As the door is closing, if the light beam between the set of photo eyes is interrupted, the door should return to the fully open position as described in the "FINAL ADJUSTMENTS-PHOTO EYE SYSTEM" section on page 38.

Counterbalance-Lifting Cable: Check that each Counterbalance-Lifting Cable is free of any wear or fraying, properly tensioned, that the ends of each cable are correctly & securely attached to the bottom bar assembly & cable drums, & correctly wound on the drums. Ensure that the lift cables are routed unobstructed between the bottom bar & cable drums and that the cable runs true.

Counterbalance-Lifting Drums: Make sure each Counterbalance-Lifting Drum is properly oriented & placed against head plates, & secured to the Counterbalance-Drive Shaft with setscrews.

Counterbalance-Drive Shaft: Check that the Drive Shaft is level and properly installed.

Brackets & Fixtures: All brackets & fixtures must be adequately & securely mounted.

Bearings: All bearings must be properly aligned installed, & lubricated.

Torsion springs: Check that the springs are correctly oriented & securely installed. They should both be wound to the same pre-tension. Confirm the springs have a light coating of oil.

Activators: Check that they operate as specified by the manufacturer.

Caulk: Ensure that the side columns and head assembly are caulked where they meet the wall of the building

