

R Y T E C

Spiral[®] VP[™] Spring Balanced (SVP-B)

Owner's Manual



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[Revision: AA, 2016, R1071267-0, © Rytec Corporation 2016]

Spiral® VP™ Door Series LIMITED WARRANTY

Rytec Corporation ("Seller"), an Illinois corporation with its principal place of business at One Cedar Parkway, PO Box 403, Jackson, WI 53037, warrants to the original registered end-user commercial purchaser ("Buyer") that the **Spiral® VP Door Series** ("Product") sold to the Buyer will be free of defects in materials and workmanship (ordinary wear and tear excepted) for the time periods set forth below:

Mechanical components for a period of **Five (5) Years** from the date of shipment of the Product from the Seller's plant ("Shipment"). Note: **Motor assembly** is considered a mechanical component.

Electrical components for a period of **Two (2) Years** from Shipment.

Hinge rollers, hinges and door track for a period of **Twenty (20) Years** from Shipment.

Standard door panel slats for a period of **Two (2) Years** from Shipment.

Drive pulleys, side column brush/vinyl seals, spring straps, lower tooth pulley assembly, drive & timing belts, energy chain and cable, wireless mobile unit battery, are considered wear items and are not covered under this Limited Warranty.

Aftermarket parts, accessories and assemblies for a period of ninety (90) days from the date of Shipment.

Remedies. Seller's obligation under this Limited Warranty is limited to repairing or replacing, at Seller's option, any part which is determined by Seller to be defective during the applicable warranty period. Such repair or replacement shall be the Seller's sole obligation and the Buyer's exclusive remedy under this Limited Warranty.

Labor. Except in the case of aftermarket parts, accessories and assemblies, labor is warranted for one year. This means that Seller will provide warranty service without charge for labor in the first year of the warranty period. Thereafter, a charge will apply in to any repair or replacement under this Limited Warranty. In the case of aftermarket parts, accessories and assemblies, Seller will provide replacement parts only.

Claims. Claims under this Limited Warranty must be made (i) within 30 (thirty) days after discovery and (ii) prior to expiration of the applicable warranty period. Claims shall be made in writing delivered to the Seller at the address provided in the first paragraph of this warranty. Buyer must allow Seller and Dealer, or their agents, a reasonable opportunity to inspect any Product claimed to be defective and shall, at Seller's option, either (x) grant Seller and Dealer or their agents access to Buyer's premises for the purpose of repairing or replacing the Product or (y) return of the Product to the Seller, f.o.b. Seller's factory.

Original Buyer. This Limited Warranty is made to the original Buyer of the Product and is not assignable or transferable. This Limited Warranty shall not be altered or amended except in a written instrument signed by Buyer and Seller.

Not Warranted. Seller does not warrant against and is not responsible for, and no implied warranty shall be deemed to cover, damages that result directly or indirectly from: (i) the unauthorized modification or repair of the Product, (ii) damage due to misuse, neglect, accident, failure to provide necessary maintenance, or normal wear and tear of the Product, (iii) failure to follow Seller's instructions for installation, operation or maintenance of the Product, (iv) use of the Product in a manner that is inconsistent with Seller's guidelines or local building codes, (v) movement, settling, distortion, or collapse of the ground, or of improvements to which the Products are affixed, (vi) fire, flood, earthquake, elements of nature or acts of God, riots, civil disorder, war, or any other cause beyond the reasonable control of Seller, (vii) improper handling, storage, abuse, or neglect of the Product by Buyer or by any third party.

DISCLAIMERS. THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER REPRESENTATIONS AND WARRANTIES, EXPRESS OR IMPLIED, AND THE SELLER EXPRESSLY DISCLAIMS AND EXCLUDES ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR PURPOSE. SELLER SHALL NOT BE SUBJECT TO ANY OTHER OBLIGATIONS OR LIABILITIES, WHETHER ARISING OUT OF BREACH OF CONTRACT, WARRANTY, TORT (INCLUDING NEGLIGENCE AND STRICT LIABILITY) OR OTHER THEORIES OF LAW, WITH RESPECT TO THE PRODUCTS SOLD OR SERVICES RENDERED BY THE SELLER, OR ANY UNDERTAKINGS, ACTS, OR OMISSIONS RELATING THERETO.

LIMITATION OF LIABILITY. IN NO EVENT WILL SELLER BE RESPONSIBLE FOR, OR LIABLE TO ANYONE FOR, SPECIAL, INDIRECT, COLLATERAL, PUNITIVE, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, EVEN IF SELLER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. Such excluded damages include, but are not limited to, personal injury, damage to property, loss of goodwill, loss of profits, loss of use, cost of cover with any substitute product, interruption of business, or other similar indirect financial loss.

Product Descriptions. Any description of the Products, whether in writing or made orally by the Seller or the Seller's agents, including specifications, samples, models, bulletins, drawings, diagrams, engineering or similar materials used in connection with the Buyer's order, are for the sole purpose of identifying the Product and shall not be construed as an express warranty. Any suggestions by the Seller or the Seller's agents regarding the use, application, or suitability of the Product shall not be construed as an express warranty unless confirmed to be such in writing by the Seller.

Limited Warranty Void. This Limited Warranty shall be void in its entirety if:
(a) The Product is modified in a manner not approved in writing by Seller; or
(b) Buyer fails to maintain the Product in accordance with instructions contained in the Owner's Manual for the Product.

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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 this information can be obtained. 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.

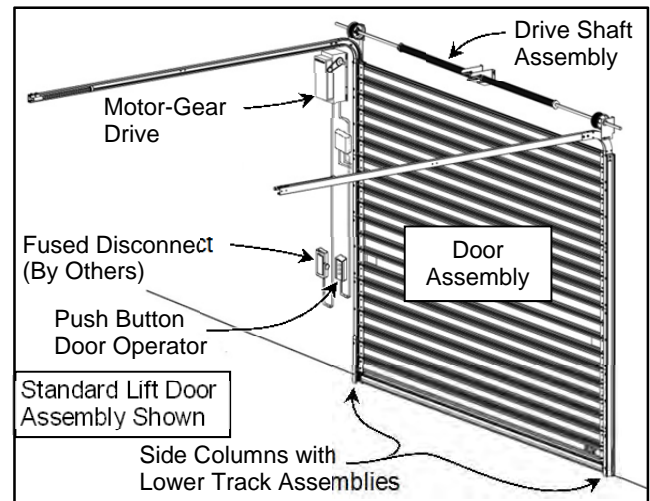


Figure 1

GENERAL ARRANGEMENT OF DOOR COMPONENTS

Figure 2 shows the location of the major components of your Spiral VP Direct Drive door. This illustration also shows the general placement of the associated control sub-assemblies for a typical installation.

The illustration is provided to you for informational purposes only. It should not be relied upon solely for the operation and maintenance of your door and its sub-assemblies.

OPERATION-OPERATING CONTROL SYSTEM

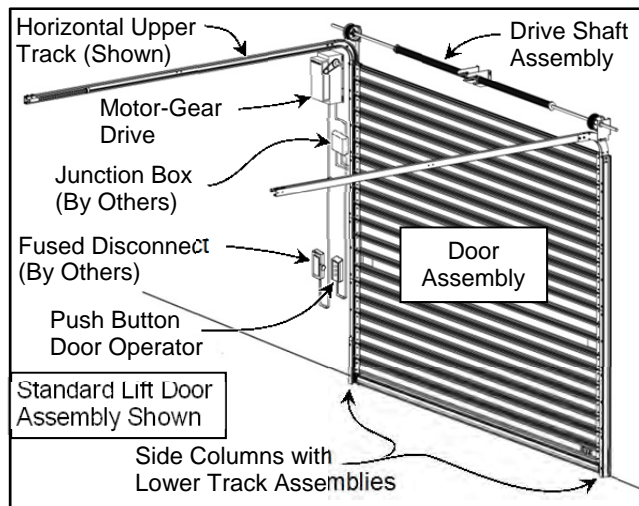


Figure 2

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

OPERATION

OPERATING CONTROL SYSTEM

The Spiral VP Balanced Drive Door offers low-speed & simple design/operation with the advantage of providing a secure barrier. All operator inputs and control functions are carried out by the integral Control Panel-Motor Drive & control system. Refer to the Door Operator's Installation Manual, User's Guide, & the Door's Electrical Schematic for information on the motor-control system, electrical connections, & other information. (See Figure 3)

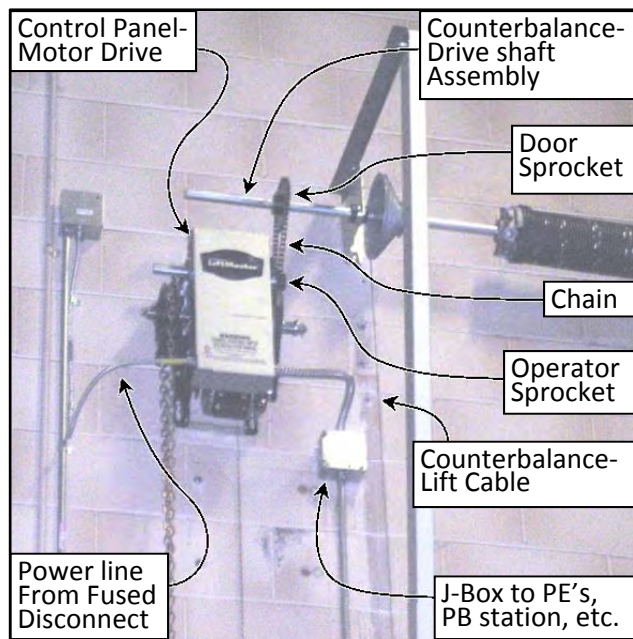


Figure 3

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 if not the same one, 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 Control Panel-Motor Drive has separate inputs programmed without the use of timers. Any input utilizing a timer is turned OFF as a standard but is optional. (See the Door Operator's Installation Manual & User's Guide)

OPEN AND CLOSE DOOR LIMIT POSITIONS

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.

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.

Close Limit Position

Use the Close arrow button (v) on the 3-button control station to position the door in the closed position. The "close" limit position should be adjusted so that the door travel allows the rubber bottom edge, which is located at the door panel bottom, to gently seal against the floor. (See Figure 4)

CAUTION

Premature wear or damage to the reversing edge or other bottom bar parts can occur if the door seal is allowed to seal too tightly against the floor.



Figure 4

Open Limit Position

Use the Open arrow button (Λ) on the 3-button control station to position the door in the open position. The “open” limit position should be adjusted so that the door travel allows the bottom bar assembly to stop at the position as shown in Figure 5.

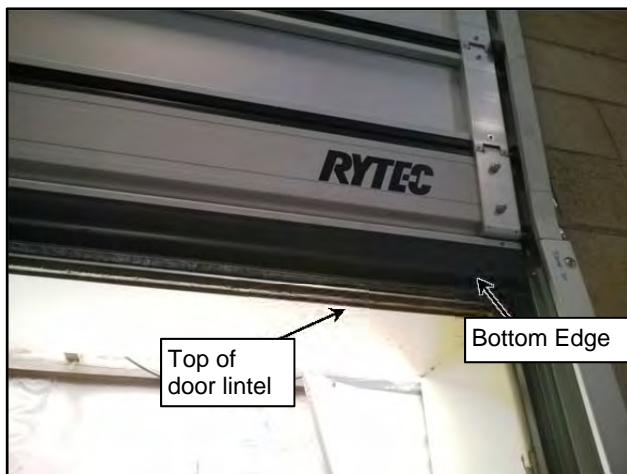


Figure 5

GENERAL

For more operating instructions, including Control Panel System Inputs, Modes of Operation, Accessing Parameters and Miscellaneous Inputs, see the Door Operator’s Installation Manual & Owner’s Manual.

PHOTO EYES

Your Rytec Spiral Door is equipped with one set of photo eyes that monitor the opening of the door. The purpose of these photo eyes is to hold the door open or, if the door is closing, reverse the direction of the door if a person or object crosses the path of the photo eye beam. After the obstruction breaking the photo eye beam is removed:

- If the door was originally opened by an automatic activator, the door will not close automatically & the door will remain open until it is closed by a non-automatic activator. This is the standard setup from the factory.
- If the door was originally opened by a non-automatic activator, the door will remain open until it is closed by the non-automatic activator.

One photo eye set is included with the Spiral VP Balanced Drive Door as a standard. The photo eyes serve as a safety device. They prevent the door from closing if an object is in the path of the photo eye set light beam. The photo eyes are not meant to be used as activators to open or close the door.

The set of photo eyes consists of an emitter module and a receiver module. The set of customer field-installed eyes are mounted on the side columns. (See Figure 6)

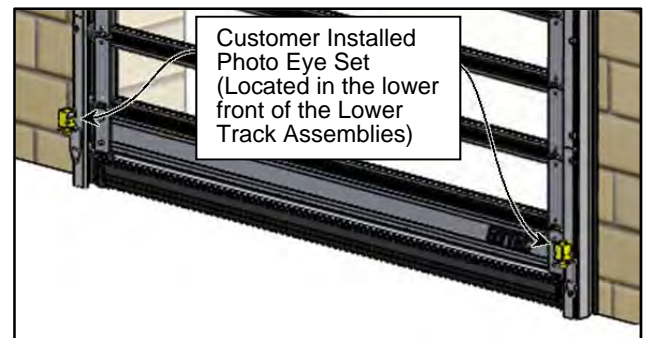


Figure 6

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.

The Transmitter/Emitter and Receiver can be identified in two ways. The Transmitter/Emitter is designated/labeled as “Emitter” on its side. On the top of it is a single *yellow* light that lights up as shown. (See Figure 7)

OPERATION-3-BUTTON CONTROL STATION

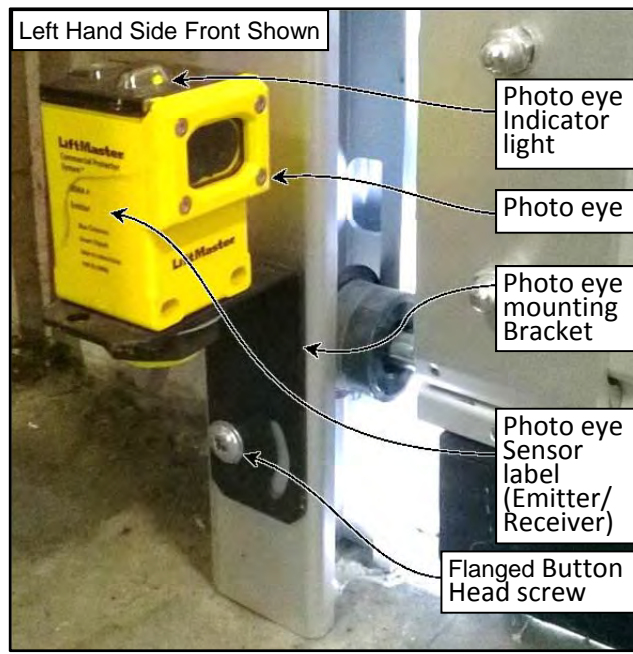


Figure 7

The Receiver is designated/labeled as “Receiver” on its side. On the top of it is a single *green* light that lights up as shown. (See Figure 7)

The Receiver must be installed in a location where the sun cannot shine directly into the eye lens.

Both the Receiver & Transmitter/Emitter indicator lights will be flashing when not aligned. When they are aligned they will stay lit continuously.

NOTE: Direct sunlight to the receiver sensor may prevent the module from operating properly even when both the emitter and receiver indicator lights are illuminated. Swapping the position of the emitter & receiver modules will likely resolve this issue.

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.

3-BUTTON CONTROL STATION

The pushbutton control station is part of the door's Control Panel/Motor-Gear Drive Assembly and is provided to serve as the main method of operating the door. It is field-installed on the front of the door installation as shown in the general layout. (See Figure 2) Refer to the Door Operator's Installation

Manual, User's Guide, & the Door's Electrical Schematic for information & procedure on the 3-Button Control Station & electrical connections. (See Figure 8)

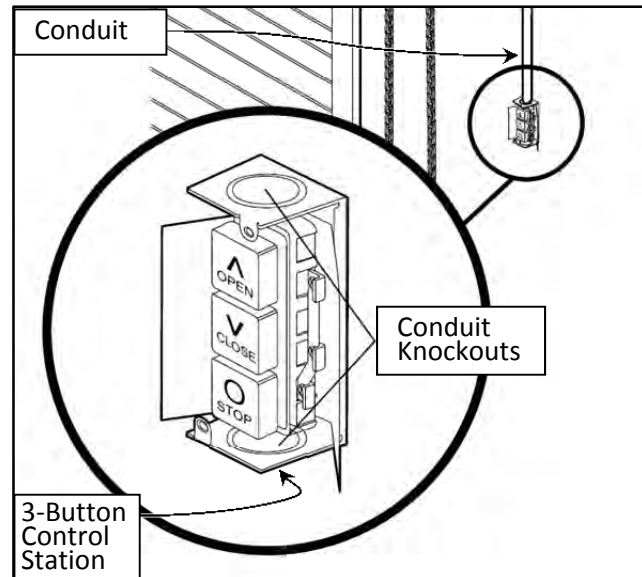


Figure 8

DOOR PANEL BOTTOM EDGE

A door panel bottom edge is mounted along the bottom of the door panel. It is designed to provide a seal between the door panel and the floor. (See Figure 9)

WARNING

The door panel's bottom edge is not a functioning reversing edge! Anything it comes in contact with will not stop it unless the door's photo eye beam is interrupted. Failure to stay clear of it may cause damage or personal injury!



Figure 9

POWER DRIVE SYSTEM

The Spiral VP Balanced Drive Door power drive system consists of a motor-gear drive assembly which directly mounts to the door wall and utilizes a chain and gears to power the drive shaft & door assembly. It also contains the photo eyes, the chain and gears to power the door, the break release-hand chain operator, and the 3-button operator control station. It can be mounted on either the right or left side of the door. (See Figure 10)

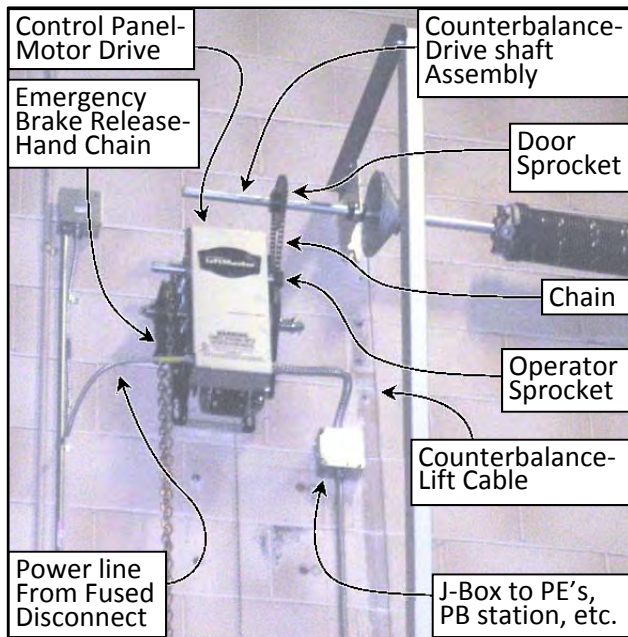


Figure 10

The power drive incorporates an electric brake used as a parking brake to prevent door movement when electrical power to the door is shut off. A manual brake release is provided for manual opening or closing of the door should there be a power failure, or when routine maintenance needs to be performed with the power disconnected.

A pair of mechanical limit switches, mounted internally in the motor-gear drive assembly, generates signals as the door panel moves. These signals are used by the control system to monitor the position of the door. Once the door and control system are synchronized, they will remain synchronized.

See the Door Operator's Installation Manual, User's Guide, & the Door's Electrical Schematic for information on motor-controls, electrical connections, door limit settings, initial door start-up procedures, and other information.

MANUAL DRIVE SYSTEM

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 may be operated manually to be opened or closed in the event of an emergency or power outage.

Emergency Brake Release-Hand Chain Operator

See the Door Operator's Installation Manual, User's Guide, & the Door's Electrical Schematic for information on the doors Emergency Brake Release & Hand Chain Operator system. This Rytec doors manual operator system 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. (See Figure 10 & Figure 11)

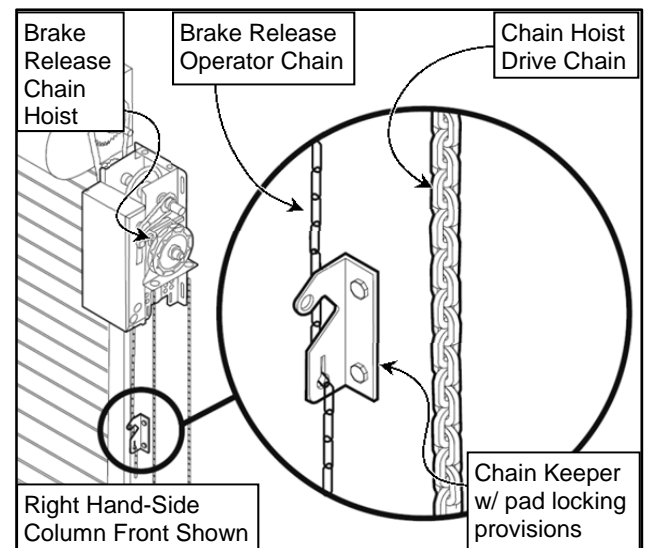


Figure 11



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

Electrical power can be shut off anytime to operate the electric motor in manual mode. Control panel limit settings will not be affected when switching the power off and back on. The door will return to a normal operating mode.



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

OPERATION-DOOR LIFT SYSTEM

⚠ WARNING

Never use the emergency release unless the doorway is clear of persons & obstructions. Failure to stay clear of it may cause damage or personal injury!

⚠ WARNING

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

DOOR LIFT SYSTEM

The Spiral VP Balanced Drive Door Lift system consists of a spring assisted (balanced) driveshaft powered by a wall mounted motor-gear drive assembly which via a cable/drum assembly raises & lowers the door panel assembly. It may also be manually opened or closed when the power to the door is off. The springs are mounted on both the right & left side of the doors drive shaft and are pre-tensioned so the system is evenly balanced. (See Figure 2 & Figure 12)

⚠ WARNING

Installed door torsion springs are dangerous! When the springs are under tension, you must use the right tools & follow safe procedures. Failure to do so could result in property damage, or serious to fatal injury!

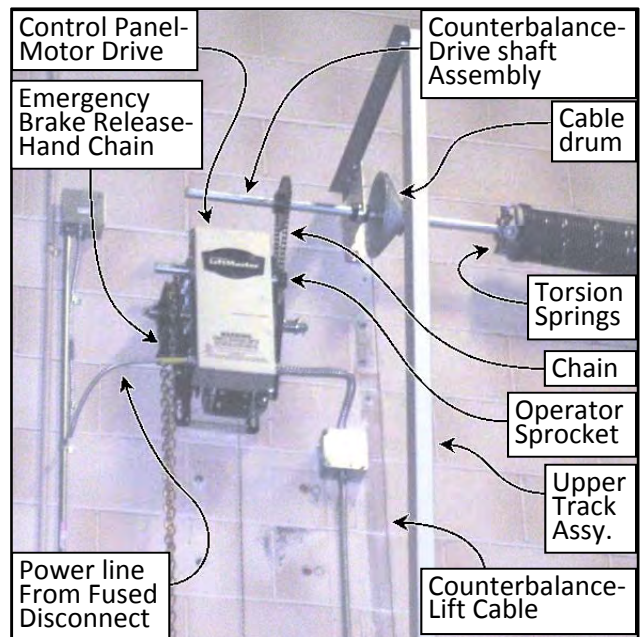


Figure 12

Each drive cable runs from the drum on the drive shaft down along its respective lower track assembly/side column to the bracket mounted on each side of the door panel assembly. Each drive cable drum is aligned with the door panel cable bracket and locked in place along the drive shaft with set screws. (See Figure 12 & Figure 13)

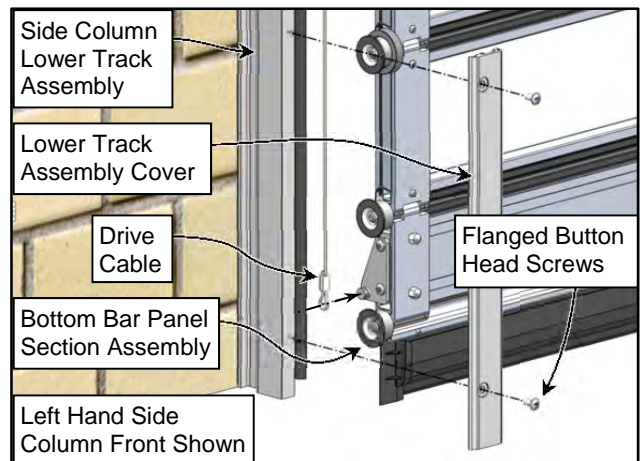


Figure 13

SAMPLE OBJECT LIST

Included with every door shipped is an Object List as shown in Figure 14 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					
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					
Information on routing					
DOOR ASSEMBLY, SPIRAL VPB-FV					

Figure 14

GENERAL CLEANING

Household cleaners are sufficient for general cleaning of the door panel. Isopropyl alcohol can be used on more difficult areas but avoid using bleach and industrial grade cleaners or solvents. Contact the RYTEC Technical support if you have any questions.

Planned Maintenance-RECOMMENDED INSPECTION SCHEDULE

PLANNED MAINTENANCE

RECOMMENDED INSPECTION SCHEDULE

Action Items	Daily	Quarterly
Visual Damage Inspection		
Door Operation Inspection		
Bottom Bar Edge Seal Inspection		
Photo Eye Inspection		
Cleaning Photo Eyes		
Electrical/Control Panel Inspection		
Electrical Connection Inspection		
Hardware Inspection		
Door Panel Inspection		
Bottom Bar Inspection		
Mounting Anchor Inspection		
Weather Seal Inspection		
Door Limit Inspection		
Drive Cable Inspection		
Torsion Spring Inspection		
Counterbalance-Drive Shaft Inspection		
Motor Brake Inspection		
Lubrication		
Track Inspection		
Cleaning Vision Panels		

IMPORTANT: The design of this door is such that it does not require lubrication.

DO NOT lubricate any parts, components, or assemblies of this door. This includes the door panel rollers, guides, & track. Lubricants will attract dust & dirt, which can cause the door panel to bind.

DAILY INSPECTION

Visual Damage Inspection

Visually inspect the door for damaged components such as a dented door panel(s), dented side column(s), torn or damaged reversing edge, damaged or broken photo eyes, etc. (See Figure 15)

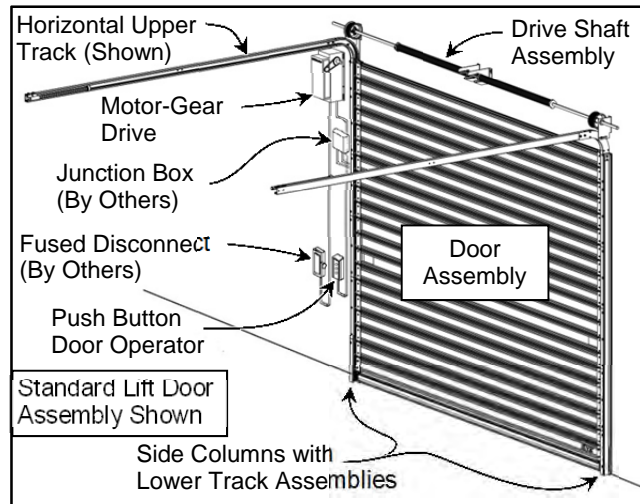


Figure 15

Head & Upper Track Assembly: Inspect for dents or damage that may prevent the door from opening or closing properly. Check & inspect the drive & spring-counterbalance system for damaged, loose, or worn parts, brackets, and/or assemblies.

Door Panel Assembly: Inspect for dents, holes, and worn areas. If equipped with windows, inspect them for damage or dirt that may impair vision — clean or replace as required.

Bottom Bar: Inspect the bottom bar for damaged, missing, or loose hardware. Inspect the bottom edge seal along the lower edge of the bottom bar for tears and holes.

Side Columns and Covers: Inspect for damage that may prevent the door from operating properly.

Wiring, Chords, and Drive Chains: Inspect for damage & wear that may prevent the door from operating properly.

Door Operation Inspection

Run the door through four or five complete cycles to make sure it is operating smoothly and efficiently. Also make sure there is no binding or unusual noise.

DO NOT continue to operate the door if it is not working properly as this could further complicate the problem.

Bottom Edge Seal Inspection

Inspect the entire length of the bottom edge seal for damage such as tears and holes, and for missing or loose hardware. Inspect the edge itself.



The door panel's bottom edge is not a functioning reversing edge! Anything it comes in contact with will not stop it unless the door's photo eye beam is interrupted or an operator button is pushed.

DO NOT stand under the door when performing this test! Failure to stay clear of it may cause damage or personal injury!

Photo Eye Inspection

Inspect the lens of each photo eye for damage or dirt that may prevent the photo eyes from working properly — clean or replace as required.

The transmitter/emitter and receiver modules are mounted in the lower center of the doors lower track assemblies. They are mounted in the field during the door's installation. (See Figure 16 & Figure 17)

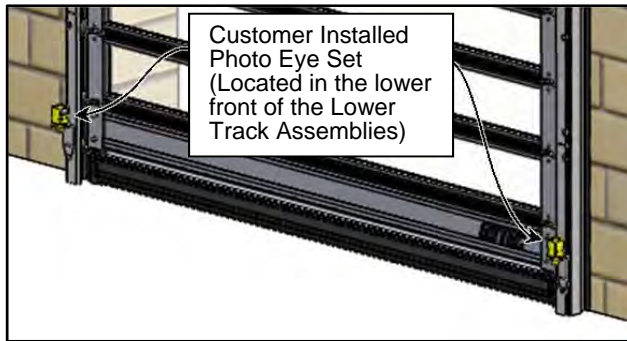


Figure 16

NOTE: Photo eyes act as a safety device to prevent the door from closing if an object or person is within the photo eye beam. The photo eyes are not to be used as door activators.

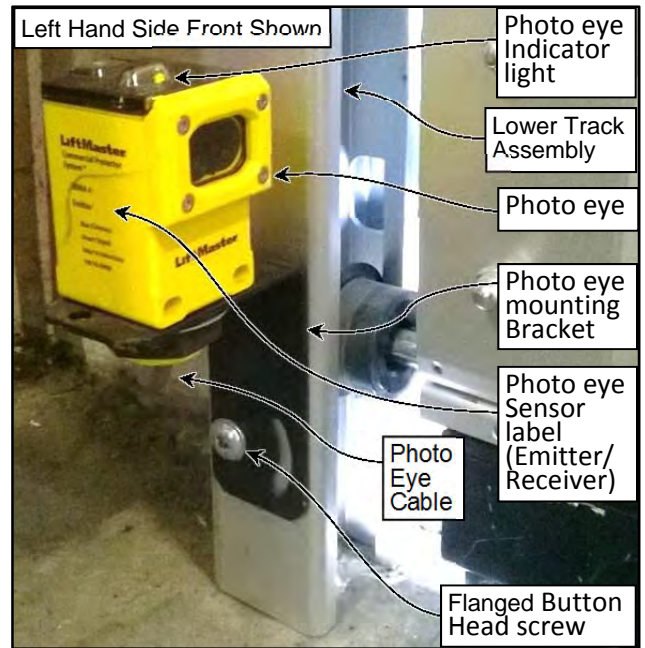


Figure 17

When the door is open and an object breaks the beam of light, the door will remain open until the beam is restored (object removed). If the door is closing at the time the beam is broken, the door will immediately reverse direction and move back to the fully open position, where it will remain parked until the beam of light is restored (object removed) and the door close (V) button is pushed on the 3-button control station (in that order).

The photo eye modules that make up the set of photo eyes each have one indicator light as shown. The photo eyes are receiving power & are aligned when the indicator lights are lit up & show a steady light. The emitter/transmitter module indicator light is green & the receiver module indicator light is yellow. If both module indicators are not lit up or are flashing, the eyes are either not aligned, broken, dirty/obstructed, or wired improperly. (See Figure 16 & Figure 17)

When the photo eyes are aligned & operating properly, and the beam of light between them is interrupted, the module indicator lights will switch from a steady to flashing light. Restoring the beam of light will cause the indicator to switch back to a steady light.

Test the door's photo eyes by doing the following:

1. Move the door to the fully open position by pressing the door open (Λ) button located on the 3-button control station.

Planned Maintenance-QUARTERLY INSPECTION

2. Place an object between the set of photo eyes to interrupt the beam of light between the photo eyes. Make sure the photo eye's indicator lights are blinking confirming that the beam has been interrupted. (See Figure 16 & Figure 17)
3. Press the door close (V) button on the 3-button control station. The door should not operate. (See Figure 8)
4. If the photo eyes do not operate properly, the lens may be dirty. Clean as required per the "Cleaning Photo Eyes" section. Check that each photo eye is properly lit up & aligned.
5. Retest the set of photo eyes. If cleaning does not resolve the problem, realign or replace the photo eyes as required.

To align the photo eyes, see "PHOTO EYE ADJUSTMENT" on page 18 for adjustment procedures. To replace the eyes, see "PHOTO EYE REPLACEMENT" on page 28.

Cleaning Photo Eyes



The disconnect must be in the OFF position and properly locked and tagged before performing the following procedures.

A dirty photo eye lens can cause a photo eye module to fail or operate intermittently. After any work is performed on either set of photo eyes, it is recommended that the lens on each photo eye be cleaned using a clean, soft cloth and household window cleaner.

QUARTERLY INSPECTION

Electrical/Control Panel Inspection

CONTROL PANEL



The disconnect must be in the OFF position and properly locked and tagged before performing the following procedures.

1. Remove power to the control panel by placing the fused disconnect in the OFF position.
2. Open the door to the control panel/motor drive. (See Figure 18)

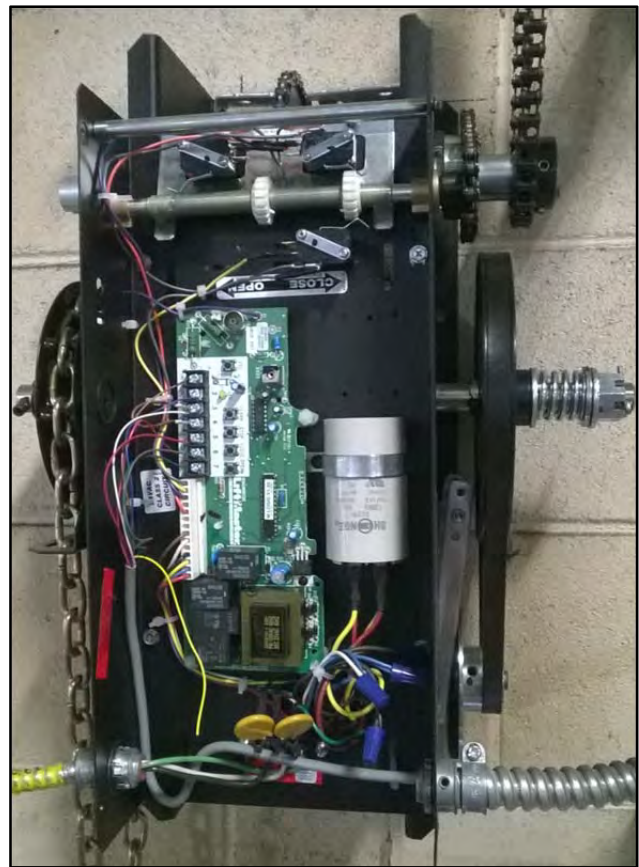


Figure 18

3. Inspect all electrical lines leading to the control panel. Check all electrical connections inside the control panel. All connections must be tightly secured. (See Figure 18)
4. Check for pinched, cracked, or damaged wires and insulation. Repair or replace wires & connections as needed. (See Figure 18)
5. Refer to the Door Operator's Installation Manual, User's Guide, & the Door's Electrical Schematic for specific information on the motor-control system, electrical connections, & settings.

Electrical Connection Inspection

1. Turn off power to the door.



The disconnect must be in the OFF position and properly locked and tagged before performing the following procedures.

2. Inspect all electrical connections to the power drive system. All connections must be secure and tight.
3. Inspect the electrical connections in the junction boxes located in the head assembly. All connections must be secure and tight.

4. For the control panel electrical connections & inspection procedure, refer to the Door Operator's Installation Manual, User's Guide, & the Door's Electrical Schematic for information on the motor-control system, electrical connections & settings.

Hardware Inspection

Make sure all nuts, bolts, set screws, and anchors are tight throughout the door. Example: motor mounting bolts, wall mounting hardware, floor anchors, counterbalance-drive shaft set screws, etc.

NOTE: To access the wall anchors, you must first remove the track cover from each side column lower track assembly.

Door Panel Inspection

1. Move the door to the fully closed position by pressing the door close (V) button located on the 3-button control station.
2. Remove power to the control panel by placing the fused disconnect in the OFF position.



The disconnect must be in the OFF position and properly locked and tagged before performing the following procedures.

3. Inspect the entire door panel assembly. Check for damaged or missing hardware. Replace as needed. Also check for loose hardware. Tighten as required.
4. Check for any damaged door panels. Replace as necessary. To replace a door panel, see "DOOR PANEL REPLACEMENT" section on page 25.

ROLLER & GUIDE WHEEL INSPECTION

5. Position clamps along both edges of the door above and below the Lower Track Assembly track cover to be removed to prevent unexpected door movement as shown. (See Figure 20)
6. Individually remove the Lower Track Assembly track covers 1 at a time to inspect the roller & guide wheels. Reinstall each cover before inspecting the next set of rollers/guides. The covers are held in place with TORX® button head screws.

Inspect the rollers and guides for damage or wear. Replace as needed. To replace a roller or guide, see "DOOR ROLLER REPLACEMENT" section on page 27. (See Figure 20)

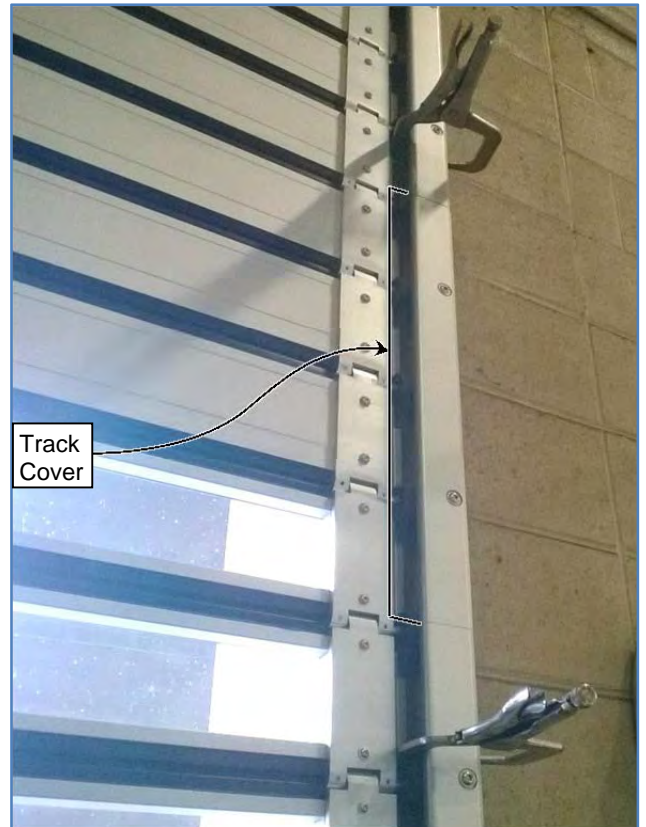


Figure 19

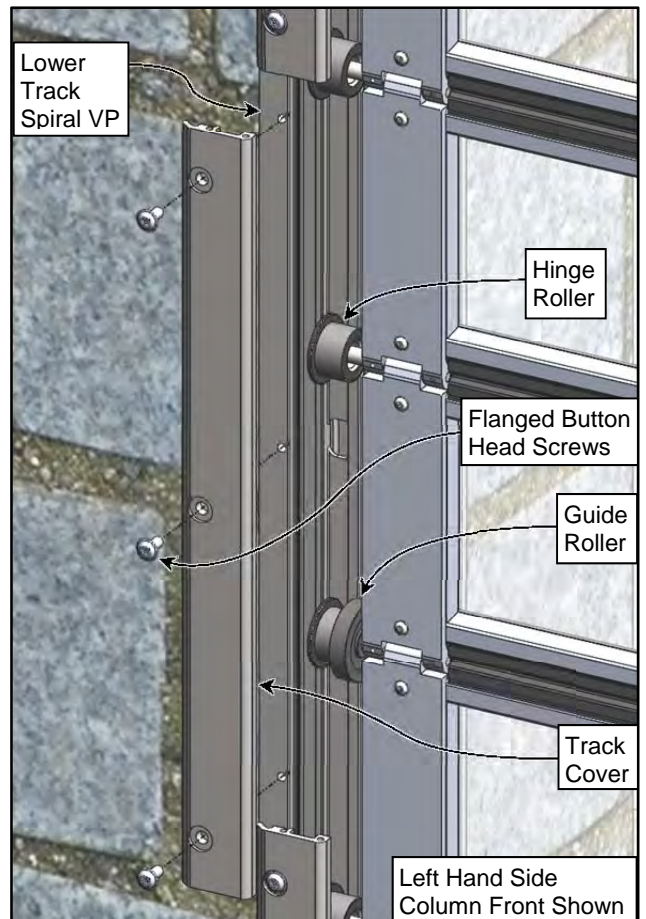


Figure 20

Planned Maintenance-QUARTERLY INSPECTION

7. Check that the door panel is level along the bottom edge of the panel.

IMPORTANT: DO NOT check the door for level by how it rests on the floor. With the side columns plumb, square, and level, the door will be level when the bottom edge of the panel is perpendicular to the side columns.

A door panel up to 16 feet in width is considered level when the ends of the bottom edge are within $\frac{1}{4}$ inch of each other. A door panel 16 to 28 feet in width is considered level when the ends are within $\frac{3}{8}$ inch of each other.

8. After all inspections are complete, reattach all panels and covers.

Bottom Bar Inspection

Inspect the bottom seal along the bottom bar assembly for wear, tears, and/or abrasion. Replace any worn or damaged parts as required. (See Figure 21)

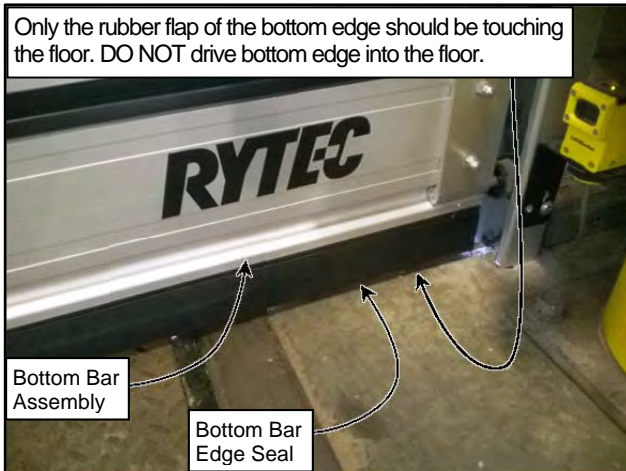


Figure 21

Mounting Anchor Inspection

1. Move the door to the fully open position by pressing the door open (A) button located on the 3-button control station.
2. Turn off power to the door.

WARNING

The disconnect must be in the OFF position and properly locked and tagged before performing the following procedures.

3. Gain access to the door's mounting anchors by removing the Track Covers. To remove the Track Covers, see "Door Panel Inspection" section, step 6 on page 11. (See Figure 22)
4. Inspect for loose or worn mounting anchors.
5. Tighten, repair, or replace the mounting anchor(s) as needed.
6. Remove the door from service if any repairs are needed. All repairs must be done in accordance with building codes.
7. After all inspections/repairs are complete, reattach all covers. Take care to mount them back in the exact place they were taken off.
8. Turn on power to the door.
9. Move the door to the fully closed position by pressing the door close (V) button located on the 3-button control station.
10. Turn off power to the door.

WARNING

The disconnect must be in the OFF position and properly locked and tagged before performing the following procedures.

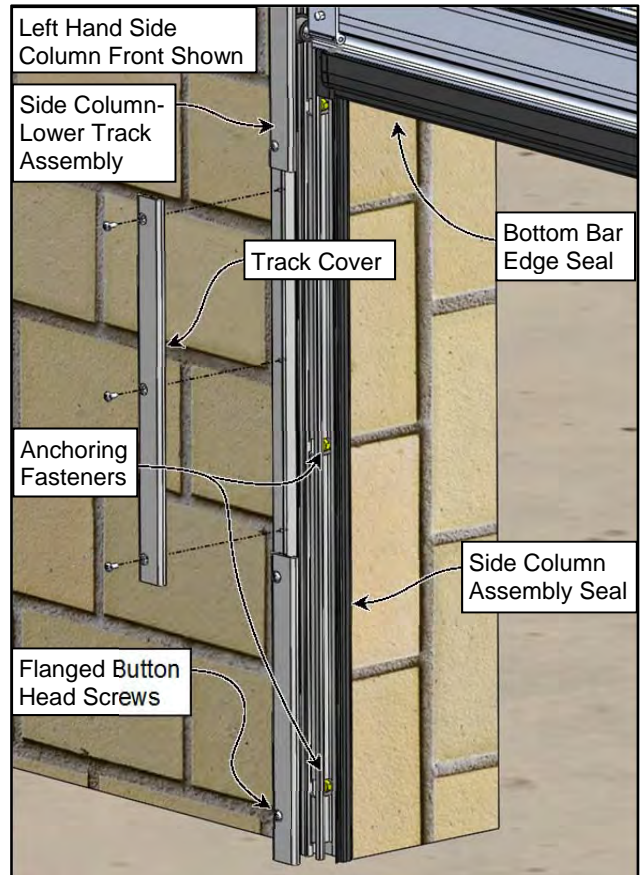


Figure 22

11. Inspect for loose or worn mounting anchors in the Head Assembly/Upper section of the Lower Track Assembly. (See Figure 23)
12. Tighten, repair, or replace the mounting anchor(s) as needed. Remove the track cover & fold door panel away from the wall as required to gain access to the mounting anchor(s). See "Door Panel Inspection" section, step 6 on page 11. (See Figure 24)
13. Remove the door from service if any repairs are needed. All repairs must be done in accordance with building codes.

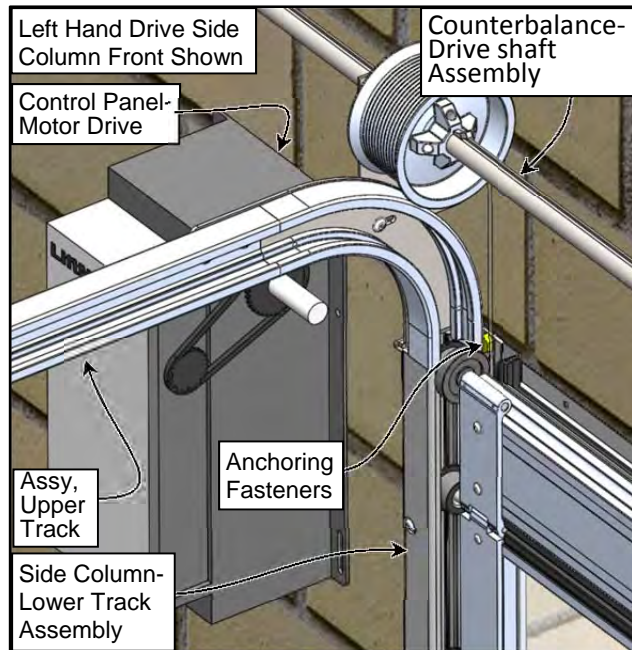


Figure 23

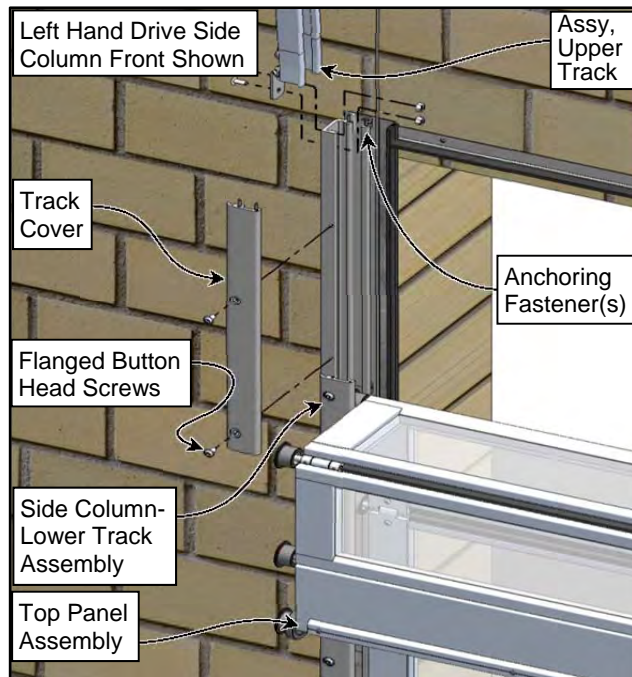


Figure 24

14. After all inspections/repairs are complete, turn on power to the door.
15. Operate the door several times to verify that the door functions normally. Adjust & repeat this procedure as necessary.

Weather Seal Inspection

There are weather seals on the front & rear side of the door panel in the side columns as well as a brush seal between the door and the wall along the door's top lintel. (See Figure 25 & Figure 27)

1. Move the door to the fully closed position by pressing the door close (V) button located on the 3-button control station.
2. Remove power to the control panel by placing the fused disconnect in the OFF position.

⚠ WARNING

The disconnect must be in the OFF position and properly locked and tagged before performing the following procedures.

3. Inspect the entire length of the brush weather seal along the door's top lintel for wear and damage. The Rear Top Brush Seal Assembly should seal up against the door's Top Panel Seal as shown. (See Figure 25 & Figure 26)

To replace the brush seal, see "BRUSH SEAL REPLACEMENT" section on page 26.

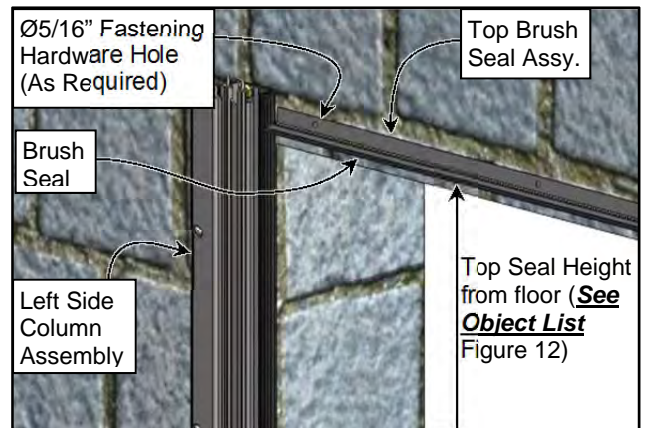


Figure 25

Planned Maintenance-QUARTERLY INSPECTION

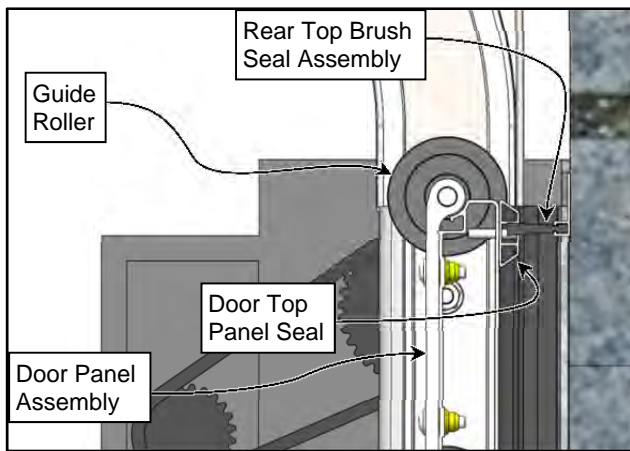


Figure 26

4. Inspect the weather seals in both side columns. Check for wear and tear, and check for a good, tight fit between the door panel and the seal. (See Figure 27)

To replace the weather seal, see "WEATHER SEAL REPLACEMENT" section on page 26.

Inspect all weather/brush seals to confirm they are properly positioned.

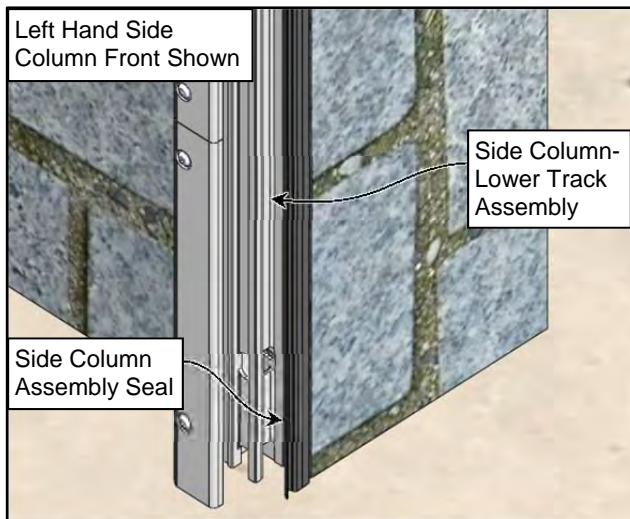


Figure 27

Door Limit Inspection

Refer to the Door Operator's Installation Manual & Owner's Manual for the proper procedure for setting the open and close door limits. The open- and close-limit door positions are detailed in the "ADJUSTMENT – DOOR LIMITS" section of this manual, page 17.

Drive Cable Inspection

1. Move the door to the fully open position by pressing the door open (Λ) button located on the 3-button control station.
2. Turn off power to the door.

⚠ WARNING

The disconnect must be in the OFF position and properly locked and tagged before performing the following procedures.

3. Inspect the drive cables. The cables should not be worn, cracked, or frayed. Also check for any rust or corrosion on the cables. Replace the drive cable(s) if necessary.
4. Check that the top/drive shaft cable drums are properly aligned/positioned with the door panel assembly. Confirm that the cables are properly locked in place on both ends. Adjust if necessary. (See Figure 28)

To replace the cable, see "DRIVE CABLE REPLACEMENT" section on page 22.

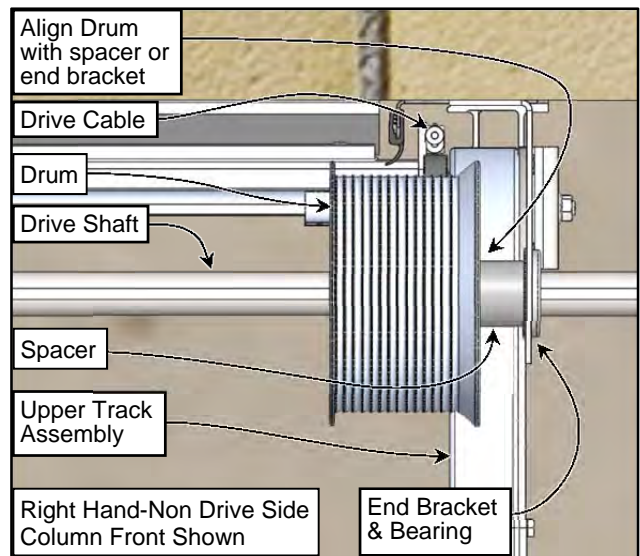


Figure 28

5. Check the tension of the drive cable. A properly tensioned cable should maintain constant tension & contact between the drums and door panel assembly & not come off.

To adjust the drive cable see "COUNTERBALANCE-DRIVE CABLE ADJUSTMENT" section on page 18.

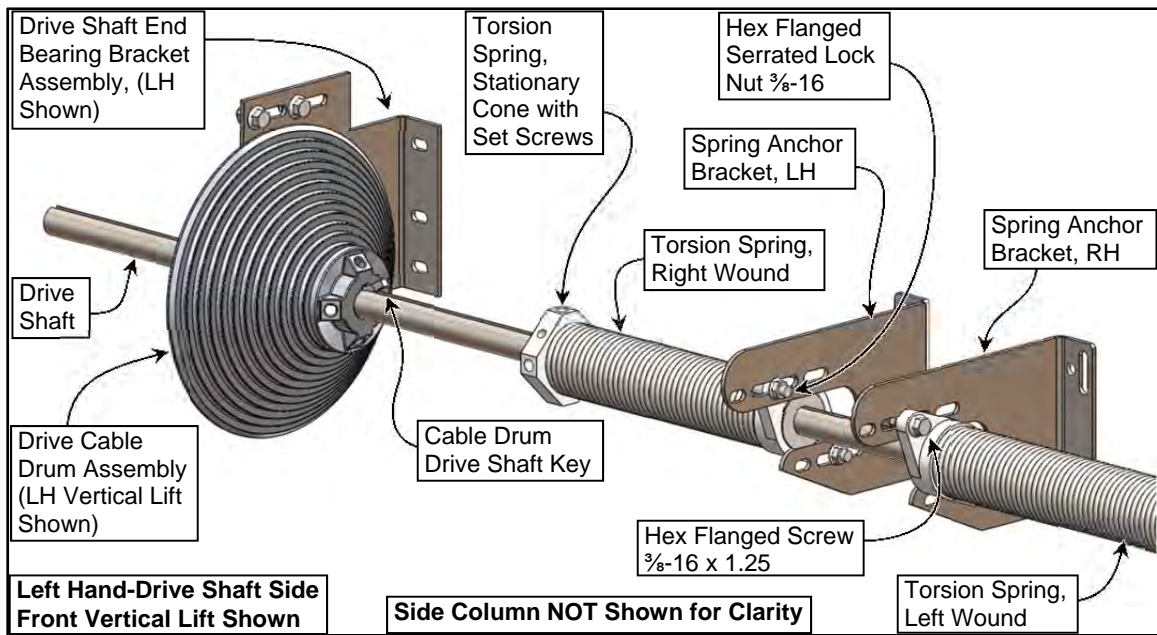


Figure 29

Torsion Spring Inspection



Working with torsion springs is extremely dangerous. The springs, counterbalance lift cables, brackets, & other hardware attached to the springs are under extreme tension. If handled improperly, damage & serious or fatal injury may occur!

1. Move the door to the fully closed position by pressing the door close (V) button located on the 3-button control station.
2. Turn off power to the door.



The disconnect must be in the OFF position and properly locked and tagged before performing the following procedures.

3. Check that the torsion spring assembly is not cracked or broken.
4. Check that the torsion spring assembly set screws are properly locked down to the drive shaft and anchor brackets to hold it in place. (See Figure 29)
5. Check that all keys are in place, the spring is positioned properly, and all fasteners securely tightened. (See Figure 29)

To adjust the torsion spring, see "TORSION SPRING ADJUSTMENT" section on page 18.

To replace the torsion spring, see "TORSION SPRING REPLACEMENT" section on page 26.

Counterbalance-Drive Shaft Inspection



Working with torsion springs is extremely dangerous. If not handled properly, damage & serious or fatal injury may occur!

1. Move the door to the fully closed position by pressing the door close (V) button located on the 3-button control station.
2. Turn off power to the door.



The disconnect must be in the OFF position and properly locked and tagged before performing the following procedures.

3. Check that the drum assembly set screws are properly locked down to the drive shaft & hold it in place. (See Figure 29)
4. Check that all keys & brackets are securely in place, the drive shaft is positioned properly, and all fasteners securely tightened. (See Figure 29)

PLANNED MAINTENANCE-QUARTERLY INSPECTION

Motor Brake Inspection

The power drive brake assembly is designed to act as a parking brake when electrical power is turned off to the motor. If the limit switches are set properly and the door drifts past the set limits, the brake/clutch should be adjusted or replaced. Refer to the Door Operator's Installation Manual & Owner's Manual for further information about the Motor Brake.

MANUAL DOOR OPERATION

With door power turned off, pull the Brake Release Operator Chain to the control-motor assembly to disengage the electric motor & engage the manual chain hoist. The Brake Release Chain may be locked in position by slipping the end through the keyhole of the chain keeper that should be mounted on the wall. (See Figure 30)

Manually move the door panel up and down by pulling the chain hoist drive chain in the appropriate direction. Unlock the Brake Release Chain to re-engage electrical operation. Restore power to the system and perform an operations check. (See Figure 30)

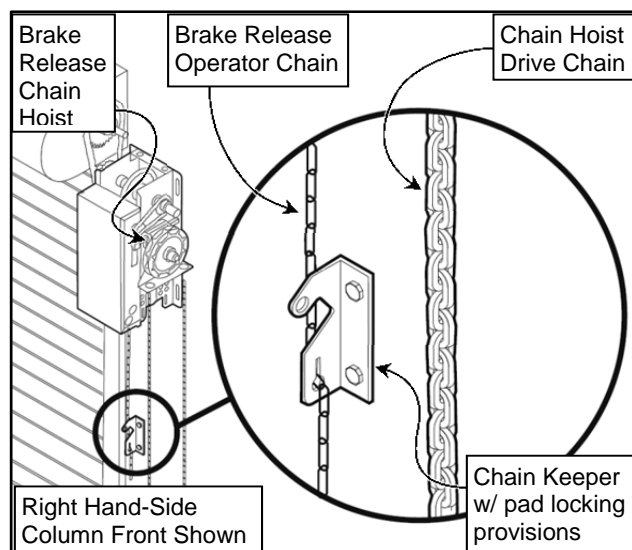


Figure 30

Lubrication

The Rytec Spiral VP Balanced Door is practically maintenance free when it comes to lubrication. A visual inspection however, should be performed to analyze any mechanical problems that have gone unnoticed. Operate the door and observe any unusual noises or erratic operation. If a sealed bearing has gone bad, it will have a tendency to make a grinding or growling noise. This is a good indication that the bearing needs to be replaced.

Depending on temperature and environment, lubrication recommendations for a clean environment and up to 122°F (50°C) grease every 12 months. A

dirty environment would increase frequency intervals to every 6 months. Refer to the Door Operator's Installation Manual & Owner's Manual for further information about lubrication.

1. Move the door to the fully closed position by pressing the door close (V) button located on the 3-button control station.
2. Turn off power to the door.

⚠ WARNING

The disconnect must be in the OFF position and properly locked and tagged before performing the following procedures.

3. **Counterbalance-Drive Shaft & Motor Drive Chain:** The doors' counterbalance-drive shaft & motor drive chain are aligned on either side of the door and will need lubrication & adjustment. Refer to the Door Operator's Installation Manual & Owner's Manual for further information about specific drive chain lubrication. (See Figure 31)

The drive chain should be checked quarterly & greased & adjusted as necessary using a lithium-based grease conforming to NLGI grade 2 standard. It should be a medium-viscosity, low-torque rated grease, with an approved operating temperature range of -30°F to 200°F.

4. **Drive Motor Assembly:** The motor assembly unit should only require minimal lubrication of oil or grease. Mainly this will be for the chain drives. Refer to the Door Operator's Installation Manual & Owner's Manual for further information about specific drive chain lubrication.
5. **Torsion Spring:** Check the torsion springs that they have a light coating of oil to prevent rust.

ADJUSTMENTS-OPEN & CLOSE LIMIT POSITIONS

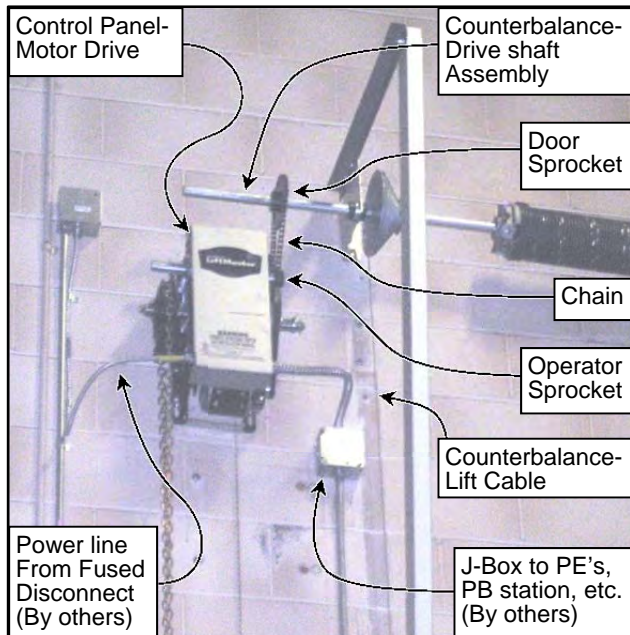


Figure 31

Track Inspection

Confirm that the tracks are securely mounted, all fasteners are in place & tightened, tracks are properly positioned & aligned (check track to track distance @ start, end, & several points between against the object list). Also check that there is no damage, wear, or degradation to any part of the assembly that would indicate any other problems exist or may necessitate replacement. (See Figure 32)

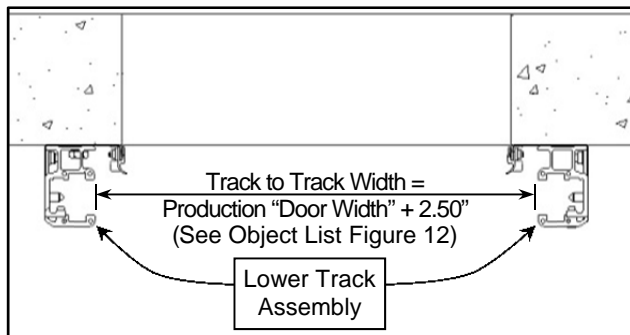


Figure 32

Cleaning Vision Panels

ROUTINE CLEANING

1. Rinse with flowing water.
2. Clean with warm water and small amount of mild non-abrasive soap (dish soap).
3. Lightly rinse vision panels using a water spray.
4. Remove excess water using a clean and dry microfiber or lint free cloth.
5. Use a small squeegee to completely dry all panels.

6. Wipe any additional moisture with dry microfiber or lint free cloth.

OCCASIONAL HEAVY CLEANING AND FINE SCRATCH REMOVAL

1. Remove all surface dirt and dust with warm water spray.
2. Mix a mild non-abrasive soap (dish soap) into a bucket of warm water.
3. Gently wash using a microfiber or lint free cloth keeping the cloth sudsy at all times.
4. Lightly rinse vision panels using a water spray.
5. Remove excess water using a clean and dry microfiber or lint free cloth.
6. Use a small squeegee to completely dry all vision panels.
7. Wipe any additional moisture with a dry microfiber or lint free cloth.
8. Over the counter products can be used to polish the vision panels. Products such as (Novus Polish #2 – www.novuspolish.com) is designed specifically for polycarbonate windows and will help maintain clarity and shine of the vision panels. Follow the instructions on the product for the proper application.

NOTE: Please be sure the product is non-abrasive and designed specifically for polycarbonate windows.

ADJUSTMENTS

OPEN & CLOSE LIMIT POSITIONS

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.

Close Limit Position

Use the door close (V) button located on the 3-button control station to position the door in the closed position. With the door in the closed position, check the black edge seal on the bottom bar. It should be in the position shown in Figure 33.



Damage to the rubber reversing edge or other bottom bar parts can occur if the door seal is allowed to seal too tightly against the floor. (See Figure 33)

ADJUSTMENTS-COUNTERBALANCE-DRIVE CABLE ASSEMBLY

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



Figure 33

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. If the reversing edge does not seal properly against the floor, see the Door Operator's Installation Manual & Owner's Manual for the proper procedure for setting the open and close door limits. Adjust the close limit setting as required.

Open Limit Position

Use the Open arrow (Λ) to position the door in the open position. The open limit should be set so the bottom edge of the bottom bar stops at or slightly below the door's top lintel as shown. (See Figure 34)

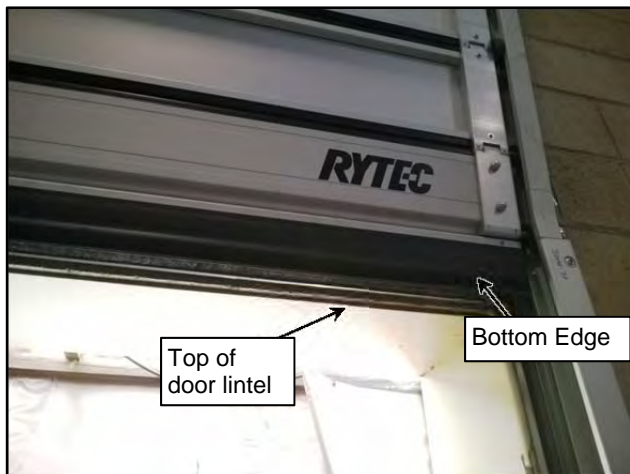


Figure 34

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.

PHOTO EYE ALIGNMENT

Your Spiral VP Balanced door is equipped with one set of photo eyes. The set of photo eyes are front mounted & monitor the front side of the door. They are bracket mounted at approximately 8-1/2" above the floor.

1. Move the door to the fully open position by pressing the door open (Λ) button located on the 3-button control station.
2. To align photo eyes, reposition the photo eye(s) where mounted as required. The LED indicator lights on each module will blink when powered & not aligned. Once the transmitter/emitter & receiver modules are in alignment, their indicator lights will glow steadily.

For more detailed information on the photo eyes, see "Photo Eye Inspection" on page 9. If photo eye replacement is necessary, see "PHOTO EYE REPLACEMENT" section on page 28.

NOTE: Direct sunlight to the receiver sensor may prevent the module from operating properly even when both the emitter and receiver indicator lights are illuminated. Swapping the position of the emitter & receiver modules will likely resolve this issue.

3. After all adjustments are complete, check open & close door limits & door operation. Adjust as necessary.

COUNTERBALANCE-DRIVE CABLE ASSEMBLY

Check and adjust the Counterbalance-Drive Cable Assembly according to the "DRIVE CABLE TO DRUM INSTALLATION" & "DOOR PANEL ASSEMBLY INSTALLATION" procedure in the Spiral VP Balanced Drive (SVP-B) Installation Manual.

IMPORTANT: It is critical that the length & tension in both cables be identical & secured properly to the door panel & drums.

COUNTERBALANCE TORSION SPRING ASSEMBLY

Winding-Tensioning, "pre-loading", or adjusting the Counterbalance torsion springs is extremely dangerous. The following procedure is practically identical to the "Torsion Spring Assembly Tensioning- Adjusting" procedure in the Spiral VP Balanced Drive (SVP-B) Installation Manual.

IMPORTANT: It is critical that the tension in both cables be identical.

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

ADJUSTMENTS-COUNTERBALANCE TORSION SPRING ASSEMBLY

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 35)

⚠️ WARNING

Use the right tools and follow safe procedures!

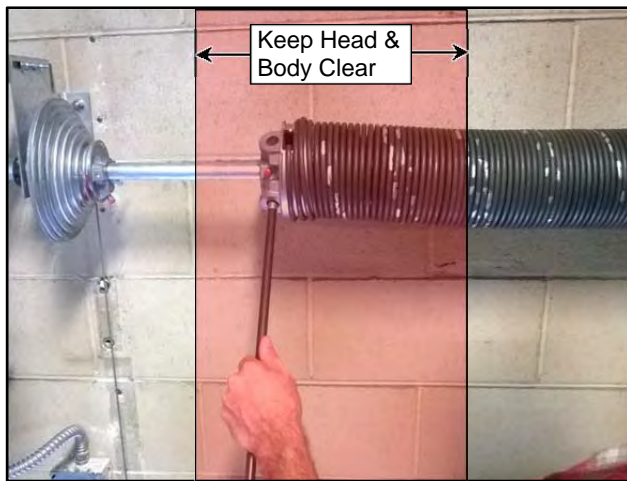


Figure 35

⚠️ 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/adjusting instructions thoroughly & make sure you understand them completely before you start this procedure!
2. Confirm that all the counterbalance-drive shaft & related assembly components are positioned correctly & securely mounted per the "DOOR PANEL ASSEMBLY", "DRIVE SHAFT ASSEMBLY", "DRIVE CABLE TO DRUM INSTALLATION" & "UPPER TRACK ASSEMBLY" sections from the Spiral VP Balanced Drive (SVP-B) Installation Manual. (See Figure 22, Figure 29, Figure 36, Figure 37, and Figure 38)

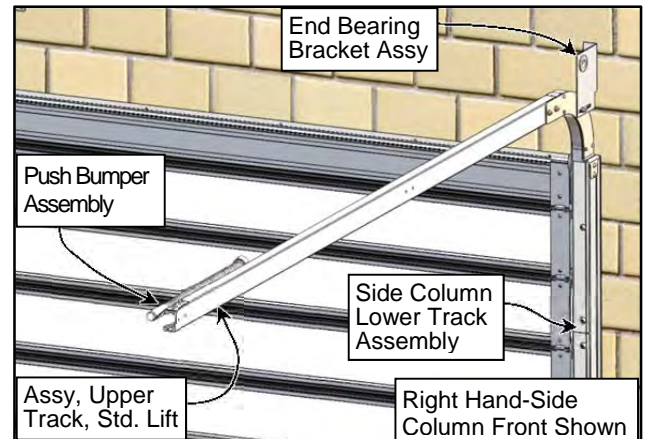


Figure 36

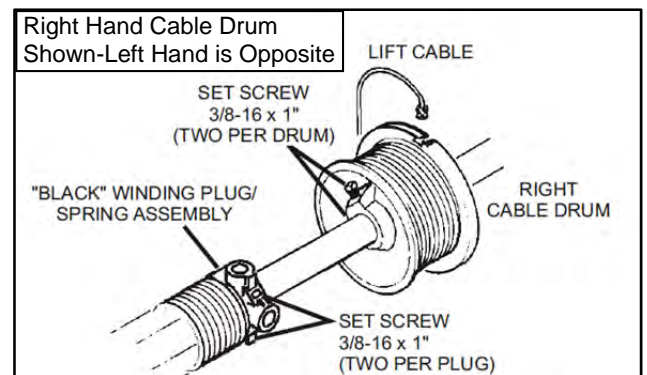


Figure 37

ADJUSTMENTS-COUNTERBALANCE TORSION SPRING ASSEMBLY

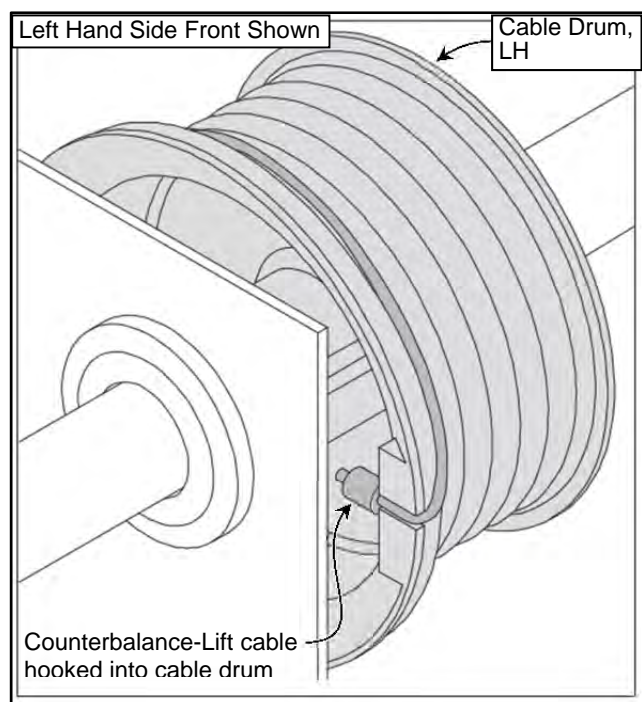


Figure 38

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 14)
3. Move the door to the fully closed position by pressing the door close (V) button located on the 3-button control station. The door MUST be closed & stay closed when winding or making any adjustments to the torsion springs.
 4. Turn off power to the door.

⚠ WARNING

The disconnect must be in the OFF position and properly locked and tagged before performing the following procedures.

5. Vise grip both vertical tracks above one of the rollers on each side as shown. (See Figure 39)

⚠ 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!

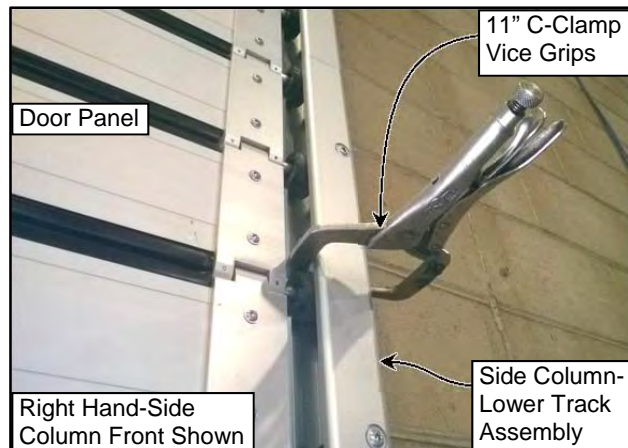


Figure 39

6. 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 40)

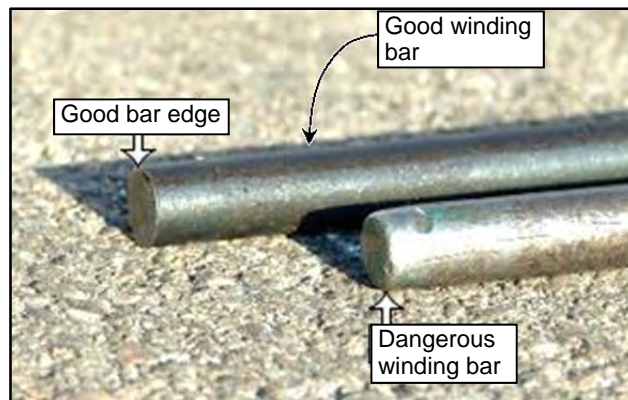


Figure 40

7. 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 40 and Figure 41)

ADJUSTMENTS-COUNTERBALANCE TORSION SPRING ASSEMBLY

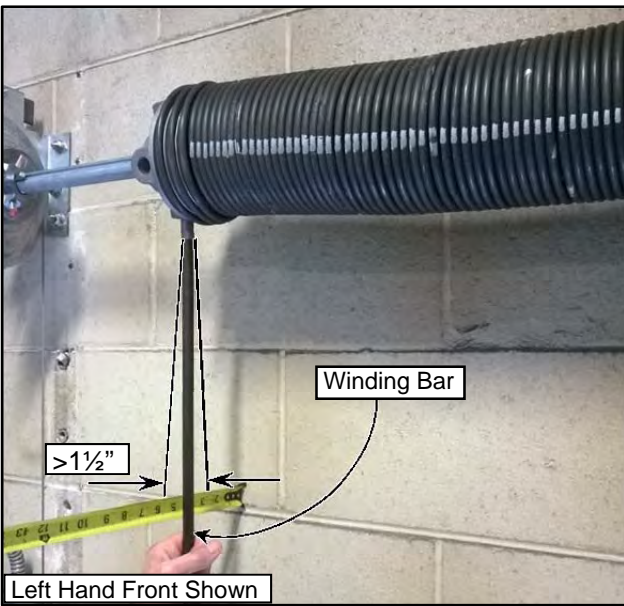


Figure 41

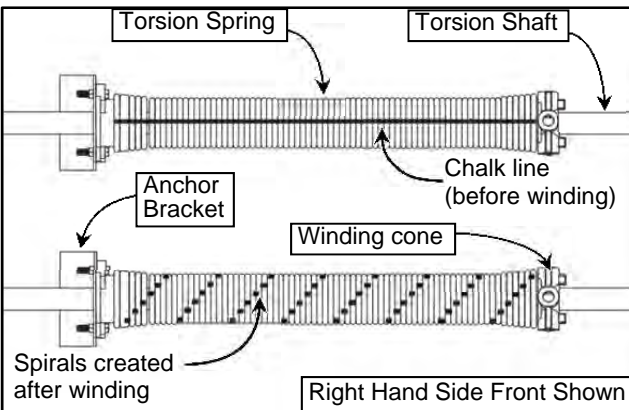


Figure 42

8. 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 42)

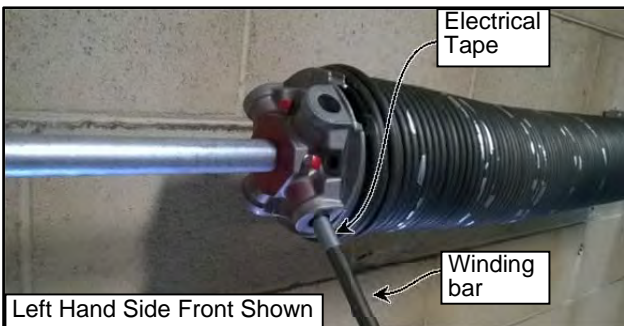


Figure 43

9. 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 43)

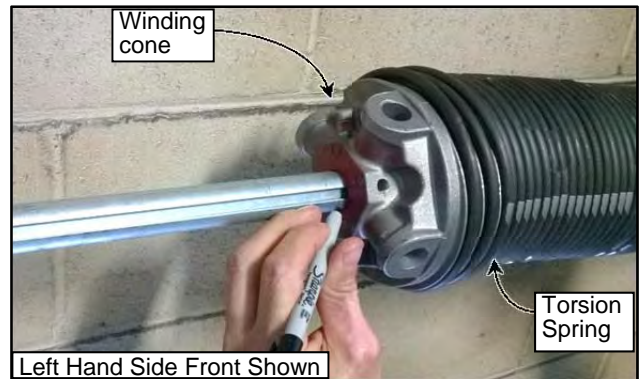


Figure 44

10. Mark the shaft just beyond the winding cone at its edge as shown. (See Figure 44)

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 or adjust 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!

11. Insert winding bar into winding cone and rotate $\frac{1}{4}$ turn upward to increase torque or downward to decrease the springs torque. Insert the second winding bar into the winding cone, take up the torque load, and rotate $\frac{1}{4}$ turn in the same direction as necessary to continue spring adjustment. Remove the first winding bar (See Figure 45)

⚠ 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!

REPLACEMENT PROCEDURES-COUNTERBALANCE-DRIVE SHAFT & MOTOR DRIVE CHAIN

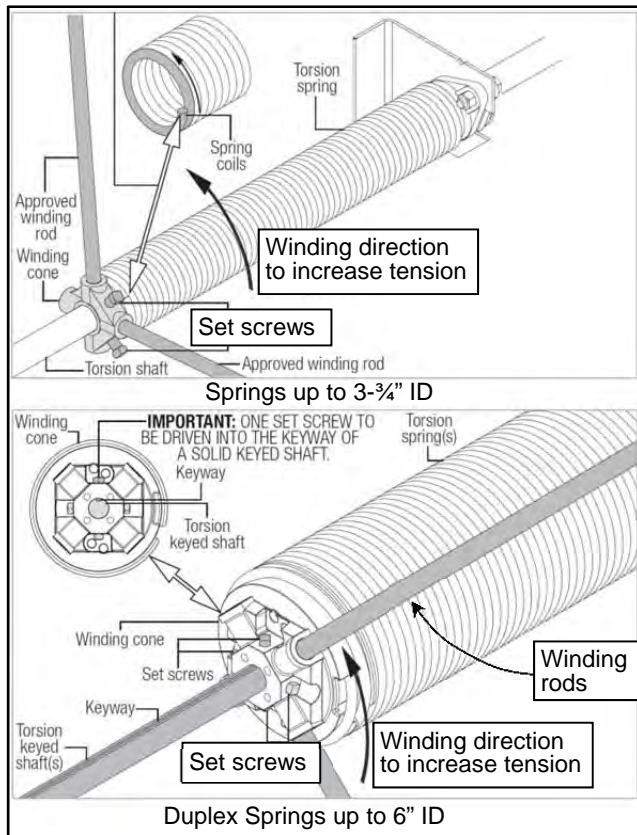


Figure 45

12. Alternately continue to wind/adjust the spring until the required number of Spring Turns for your door as listed in the Object List is achieved and/or the desired preload is achieved. (See Figure 14 & Figure 42)

13. As the last 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 14 & Figure 45)

IMPORTANT: One set screw must be driven into the keyway of the solid keyed shaft as in Figure 45.

14. 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 45)

15. Carefully remove the winding bar from the winding cone. Repeat steps 7 - 14 for the remaining spring as necessary.

16. 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.

17. 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 raise 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.

18. 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.

COUNTERBALANCE-DRIVE SHAFT & MOTOR DRIVE CHAIN

The doors' counterbalance-drive shaft & motor drive chain are aligned on either side of the door and will need lubrication & adjustment. Refer to the Door Operator's Installation Manual & Owner's Manual for further information about specific drive chain adjustment. (See Figure 31)

Align and tighten the drive chain per the door operator's manual(s).

REPLACEMENT PROCEDURES

COUNTERBALANCE-DRIVE CABLE

1. Move the door to the fully closed position by pressing the door close (V) button located on the 3-button control station.
2. Block up the door panel so it is fully supported in the closed position as shown. Block up the door panel approximately 4" - 6" off the floor, or just enough to relieve at least some of the tension from the cable. (See Figure 46)

REPLACEMENT PROCEDURES-COUNTERBALANCE-DRIVE CABLE

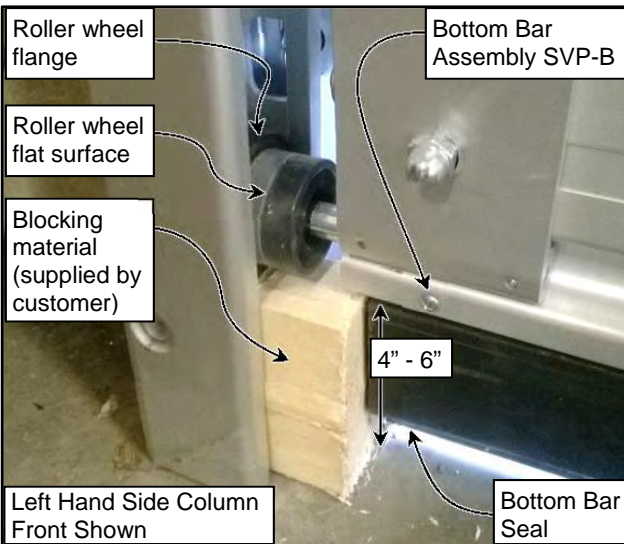


Figure 46

3. Turn off power to the door.

⚠ WARNING

The disconnect must be in the OFF position and properly locked and tagged before performing the following procedures.

4. Position C-clamp vice grip clamps along both edges of the door above the bottom Lower Track Assembly track cover to be removed to prevent unexpected door movement as shown. Use as many clamps as necessary to adequately hold the door panel in place. (See Figure 47)

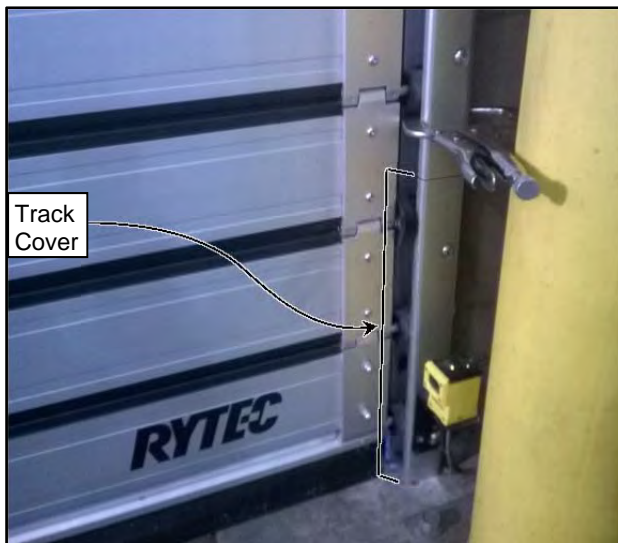


Figure 47

5. Pull & lock the motor brake release operator chain on the control-motor assembly. Disengage the electric motor & allow the counterbalance-drive shaft to be manually rotated via the chain hoist. Refer to the "Motor Brake Inspection" section of this manual.
6. Remove all tension in the torsion springs per the "COUNTERBALANCE TORSION SPRING ASSEMBLY ADJUSTMENT" section of this manual.
7. Using a Vice Grip Pliers, turn the counterbalance-drive shaft just enough to allow for removal of the cable being replaced. If necessary, you may loosen the set screws and take out the key to allow the drum to turn freely on the shaft. (See Figure 48)

IMPORTANT: Care must be taken to not allow the opposite side cable to come off its drum.

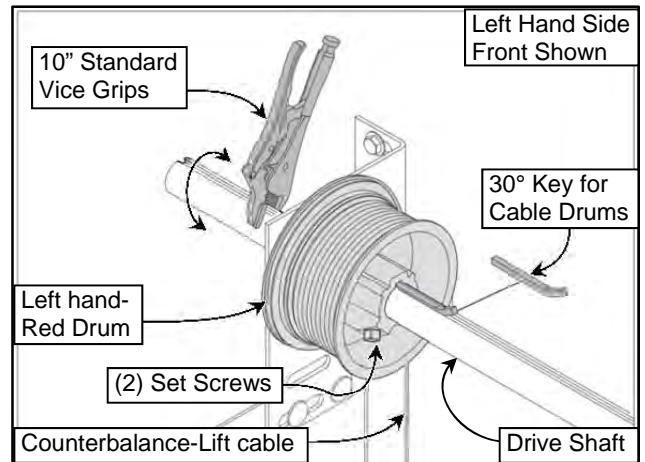


Figure 48

8. Remove the bottom Lower Track Assembly track cover on the side of the drive cable to be replaced. The cover is held in place with TORX® button head screws. (See Figure 49)

REPLACEMENT PROCEDURES-COUNTERBALANCE-DRIVE CABLE

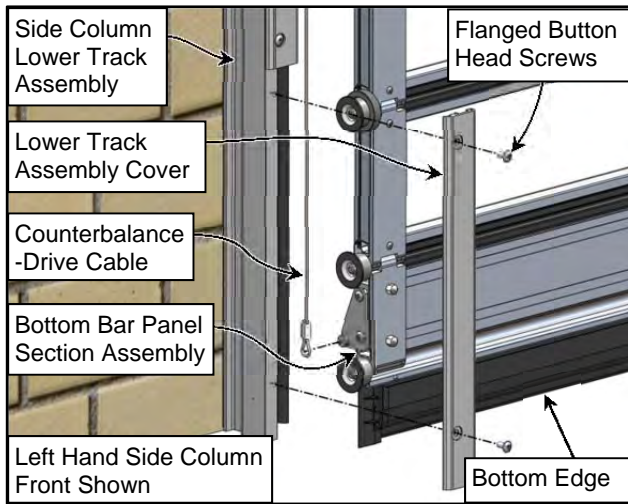


Figure 49

- Remove the cable from the door panel bottom bar as shown. (See Figure 49)

Note how the cable is assembled to the door. You may also use the opposite side cable as a guide for reassembly.

- Remove the cable from the cable drum and the door assembly. (See Figure 50)

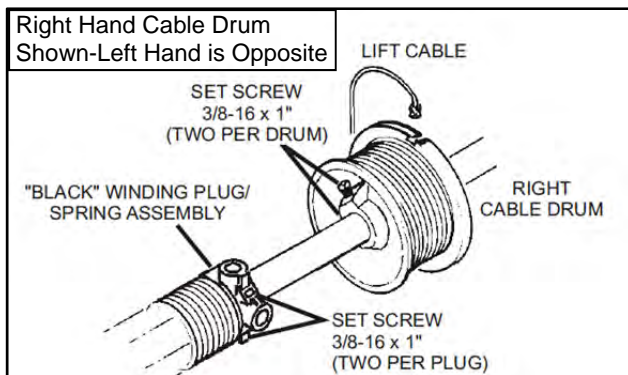


Figure 50

- Confirm that the replacement cable exactly matches the length of the one being removed. Refer to the "CABLE ASSEMBLY INSTALLATION" section of the Spiral VP Balanced Drive (SVP-B) Installation Manual.
- Crimp the floating stop on the Counterbalance-Lift cable assembly to the specified "Cable Length" dimension listed in the Object List. Do this for all cable assemblies. (See Figure 14 & Figure 51)
- Cut off the excess cable after the Floating Stop if necessary. (See Figure 51)

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.

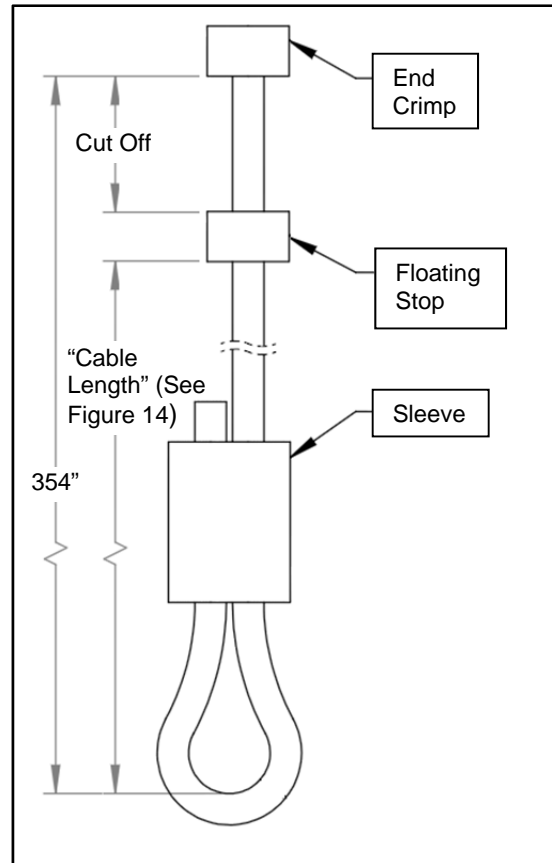


Figure 51

- Assemble the cable identically & in reverse order to the one removed. Refer to the "CABLE ASSEMBLY INSTALLATION" & "DRIVE CABLE TO DRUM INSTALLATION" sections of the Spiral VP Balanced Drive (SVP-B) Installation Manual & follow the same procedures.
- Reattach the cable to the door panel bottom bar.
- Guide the cable up through the door panel & lower track assembly.
- Reattach the cable to the drum following the "DRIVE CABLE TO DRUM INSTALLATION" section of the Spiral VP Balanced Drive (SVP-B) Installation Manual procedure.

REPLACEMENT PROCEDURES-COUNTERBALANCE-DRIVE CABLE

18. Reinstall all keys & set screws following the "DRIVE CABLE TO DRUM INSTALLATION", "COUNTERBALANCE-DRIVE SHAFT ASSEMBLY INSTALLATION", & "MOTOR-GEAR DRIVE ASSEMBLY" sections of the Spiral VP Balanced Drive (SVP- B) Installation Manual procedure.
19. Reinstall the Lower Track Assembly Cover that was removed earlier.
20. Repeat steps 7 - 19 to replace the opposite side cable as necessary.
21. Release the Brake Release Operator Chain to engage the electric motor & brake. Refer to the "Motor Brake Inspection" section of this manual.
22. Reapply all tension in the torsion springs per the "COUNTERBALANCE TORSION SPRING ASSEMBLY ADJUSTMENT" section of this manual.
23. Remove the C-clamp vice grip clamps from the side columns.
24. Restore power to the door.
25. Raise the door up to remove the blocking material from under the door.
26. Cycle the door several times to check its operation & settings. Adjust as necessary.

DOOR PANEL SECTION

1. Jog the door panel up or down using the door controller until the desired height of the panel section to be replaced is reached.
2. Remove power to the door by placing the fused disconnect in the OFF position.

WARNING

The disconnect must be in the OFF position and properly locked and tagged before performing the following procedures.

WARNING

Take precautions to prevent someone else from operating the door as you perform the following procedure. Also, be cautious around the moving parts exposed in the side columns.

3. Position clamps along both edges of the door above and below the panel to be removed to prevent unexpected door movement. (See Figure 52)

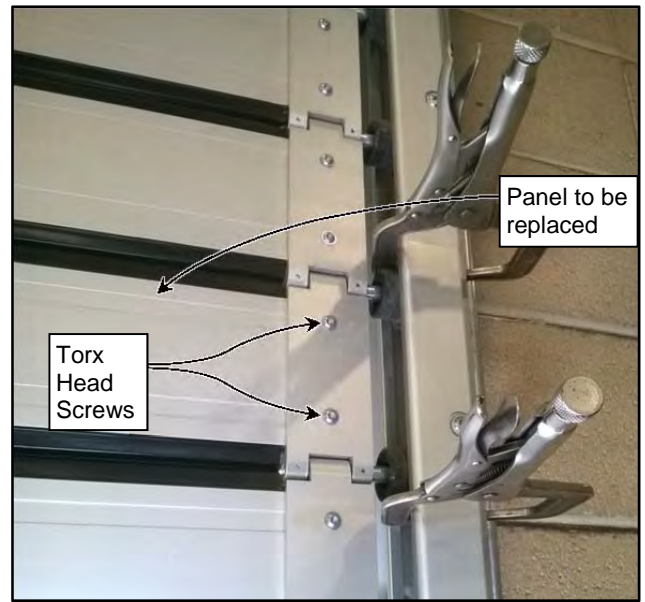


Figure 52

4. At the ends of the door panel to be replaced, remove the two TORX® head screws securing each hinge plate to the panel.
5. Carefully break free the rubber seal from between the adjoining panels.
6. Slip the panel to be removed out through the back side of the door opening. (Sliding the panel to the left or right will allow the panel to clear the track.)
7. Install the new door panel in the reverse order the old panel was removed.
8. After screwing the hinge plates to the new panel, reattach the rubber seals. Place a small amount of Loctite 495 or equal adhesive near the end of the rubber seal to prevent contraction of the seal. A screen roller will assist the installation of the rubber seal.
9. Remove clamps.
10. Restore power to the door.
11. Operate the door several times to verify that the door panel and spring packs function normally. Adjust & repeat this procedure as necessary.

WEATHER SEAL REPLACEMENT

1. Move the door to the fully opened position by pressing the door open (Λ) button located on the 3-button control station.
2. Remove power to the control panel by placing the fused disconnect in the OFF position.

REPLACEMENT PROCEDURES-COUNTERBALANCE-DRIVE CABLE

⚠ WARNING

The disconnect must be in the OFF position and properly locked and tagged before performing the following procedures.

3. There is a length of weather seal on the side column assembly wall plate. The weather seal can be removed by pulling on either end of the seal, while working toward the opposite end. (See Figure 53)

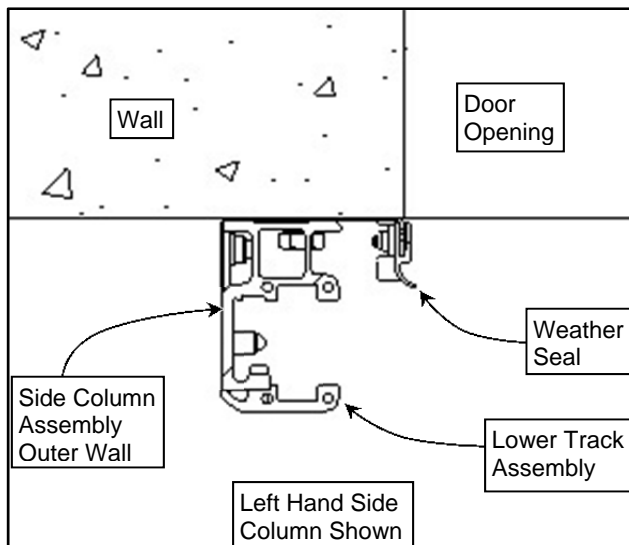


Figure 53

4. Attach the new weather seal in the same manner the old seal was removed & in the same position. Make sure the seal is firmly seated along the edge. (See Figure 53 & Figure 54)
5. Restore power to the door assembly and confirm the new weather seal properly seals against the door panel. Adjust as necessary.

BRUSH SEAL

1. Move the door to the fully closed position by pressing the door close (V) button located on the 3-button control station.
2. Remove power to the control panel by placing the fused disconnect in the OFF position.

⚠ WARNING

The disconnect must be in the OFF position and properly locked and tagged before performing the following procedures.

3. Remove the Top Brush Seal Assembly from the wall. Replace the brush in the mounting track. (See Figure 54)
4. Reinstall the top seal assembly to the wall. (See Figure 54)
5. Restore power to the control panel and confirm the new brush seal properly seals against the door panel. The Rear Top Brush Seal Assembly should seal up against the door's Top Panel Seal as shown. Adjust as necessary. (See Figure 54 & Figure 55)

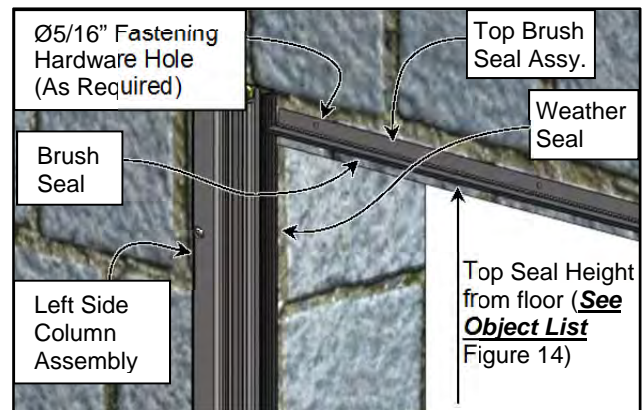


Figure 54

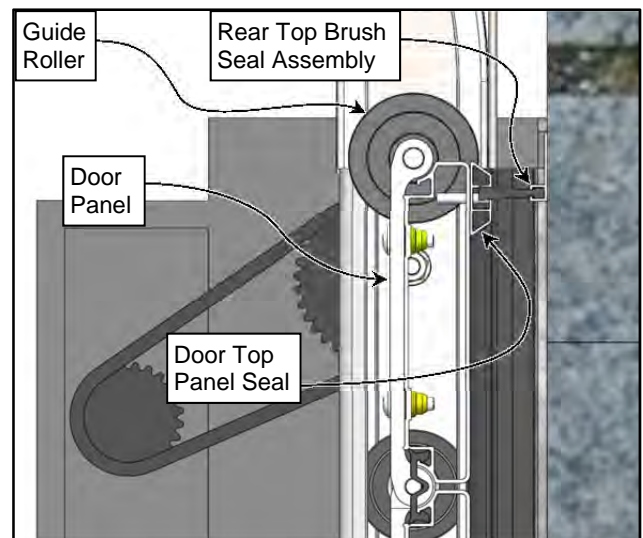


Figure 55

REPLACEMENT PROCEDURES-COUNTERBALANCE TORSION SPRING REPLACEMENT

COUNTERBALANCE TORSION SPRING REPLACEMENT

The torsion springs may be replaced by following this basic procedure. For the following procedure you will need to also reference the Spiral VP Balanced Drive (SVP-B) Installation Manual.

! 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.

1. Measure the currently installed springs and the replacement spring(s) to make sure you have the correct springs. Also note the orientation of the installed spring(s) for reference in replacement.
2. Move the door to the fully closed position by pressing the door close (V) button located on the 3-button control station. The door **MUST** be closed & stay closed when winding or making any adjustments to the torsion springs.
3. Remove power to the control panel by placing the fused disconnect in the OFF position.

! WARNING

The disconnect must be in the OFF position and properly locked and tagged before performing the following procedures.

4. With the cables still tight on the drums & the Torsion Springs still mounted on the shaft, mark the drums and torsion shaft at each end with a file or a marking pen for reference during reassembly. (See Figure 56)

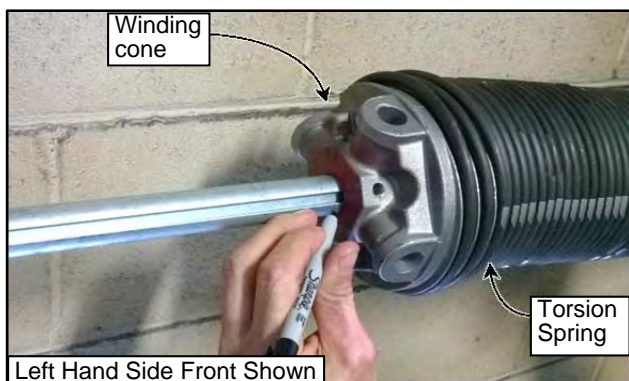


Figure 56

5. Unwind any counterbalance torsion spring(s) which are under tension following the "COUNTERBALANCE TORSION SPRING ASSEMBLY ADJUSTMENT" procedure.
6. Loosen the drive motor-controller chain and counterbalance-drive shaft sprocket & counterbalance-drive cable drums so they may be moved and/or taken off the counterbalance-drive shaft as necessary.
7. Remove the Counterbalance-Drive Cable & loosen the Counterbalance-Drive Cable Drum so it may be moved or taken off the Counterbalance-Drive Shaft as necessary. Reverse the process of the "DRIVE CABLE TO DRUM INSTALLATION" procedure as listed in the Spiral VP Balanced Drive (SVP-B) Installation Manual.
8. Remove the Counterbalance Torsion Spring from the Counterbalance-Drive Shaft to be replaced. Reverse the process of the "Counterbalance-Drive Shaft Assembly Installation" procedure as necessary & listed in the Spiral VP Balanced Drive (SVP-B) Installation Manual.
9. Reinstall all assemblies & components per the Spiral VP Balanced Drive (SVP-B) Installation Manual. Reference the "COUNTERBALANCE-DRIVE SHAFT ASSEMBLY INSTALLATION", "DRIVE CABLE TO DRUM INSTALLATION", "TORSION SPRING ASSEMBLY TENSIONING-ADJUSTING", & "MOTOR-GEAR DRIVE ASSEMBLY INSTALLATION" sections along with any other relevant sections as necessary.

DOOR ROLLER REPLACEMENT

1. Move the door to the fully closed position by pressing the door close (V) button located on the 3-button control station.
2. Remove power to the control panel by placing the fused disconnect in the OFF position.

! WARNING

The disconnect must be in the OFF position and properly locked and tagged before performing the following procedures.

3. Position clamps along both edges of the door above and below the Lower Track Assembly track cover to be removed for roller wheel/guide wheel replacement to prevent unexpected door movement as shown. (See Figure 57)

REPLACEMENT PROCEDURES-PHOTO EYE REPLACEMENT

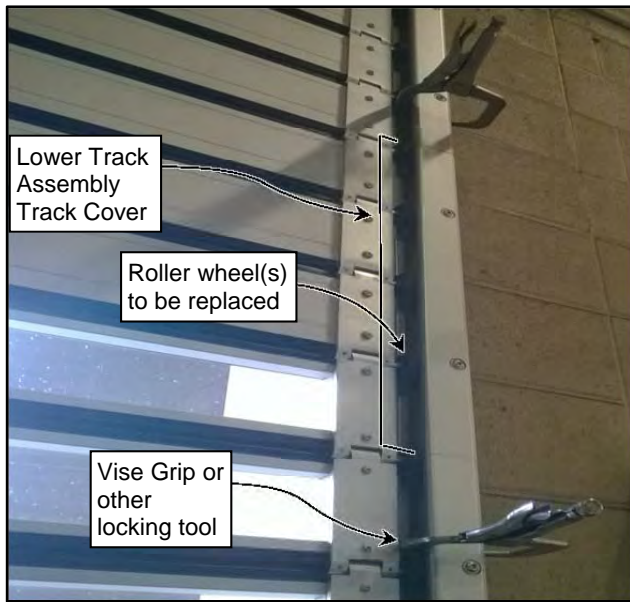


Figure 57

4. Individually remove the Lower Track Assembly track covers 1 at a time to replace the roller and/or guide wheels as necessary. The cover is held in place with TORX® head screws.
5. To remove the roller, loosen and remove the nut on the end of the roller. Then slide the roller off the end of the axle. (See Figure 58)

NOTE: If the axle is bent or damaged, remove it, by punching out the small spring pin that locks the axle in the hinge.



Figure 58

6. Install the new roller, and reassemble the door and the track in the reverse order of disassembly.

CAUTION

Use two clamps on each end to prevent upward or downward movement. Serious injury may result from improper procedure.

7. Release the motor electric brake mechanism by pulling the brake release lever. Manually move the door up and down several times to work the new roller.

WARNING

Take precautions to prevent someone else from operating the door as you perform the following procedure. Also, be cautious around the moving parts exposed in the head assembly.

8. Restore power to the control panel.
9. Cycle the door several times. Verify that the new roller is working correctly.
10. Remove power to the control panel by placing the fused disconnect in the OFF position.

WARNING

The disconnect must be in the OFF position and properly locked and tagged before performing the following procedures.

11. Make adjustments as needed & repeat testing.
12. When the door is operating properly, restore power to the control panel.

PHOTO EYE REPLACEMENT

When replacing the photo eyes, note that the emitter & receiver modules located on the side columns of the door need to be replaced with the same identical modules. So when replacing both modules it is best to replace one module at a time to avoid any errors.

1. Move the door to the fully opened position by pressing the door open (A) button located on the 3-button control station.
2. Remove power to the control panel by placing the fused disconnect in the OFF position.

WARNING

The disconnect must be in the OFF position and properly locked and tagged before performing the following procedures.

3. Remove the photo eye module from the side column assembly that needs to be replaced. Only replace one at a time.
4. Disconnect the module from the yellow wire & replace it with the new module.

REPLACEMENT PROCEDURES-MOTOR BRAKE REPLACEMENT

5. Reinstall the new module onto the side column assembly. Repeat this for the module in the opposite side column assembly as necessary.
6. Align the photo eyes per the “Photo Eye Alignment” section on page 18.
7. Restore power to the control panel.
8. Confirm that the photo eyes are operating properly. See “PHOTO EYE INSPECTION” section for this procedure on page 9. Repeat this process and adjust until the photo eyes are operating correctly.

MOTOR BRAKE REPLACEMENT

The motor brake may be replaced on the door operator–motor controller. Please refer to the Door Operator’s Installation Manual, User’s Guide, & the Door’s Electrical Schematic.

PARTS LIST-PARTS ORDERING INFORMATION

PARTS LIST

PARTS ORDERING INFORMATION

How to Order Parts

1. Identify the parts required by referring to the following pages for part numbers and part descriptions.
2. To place an order, contact your local Rytec representative or the Rytec Technical Support Department at 800-628-1909 or 262-677-2058 (fax). Rytec Corporation also has an on-line store at WWW.Rytecparts.com access to this on-line store requires an invitation from Rytec. The on-line store is open 24/7, 365 days. Some items are available to ship next day. Not all Rytec parts are carried in the on-line store.
3. To ensure the correct parts are shipped, please include the serial number of your door with the order. The serial number is located on the front of both the left and right side column covers @ about eye level, on the drive motor gearbox in the head assembly, on the door of the System 4 Control Panel. All these serial numbers should match. (See Figure 59)

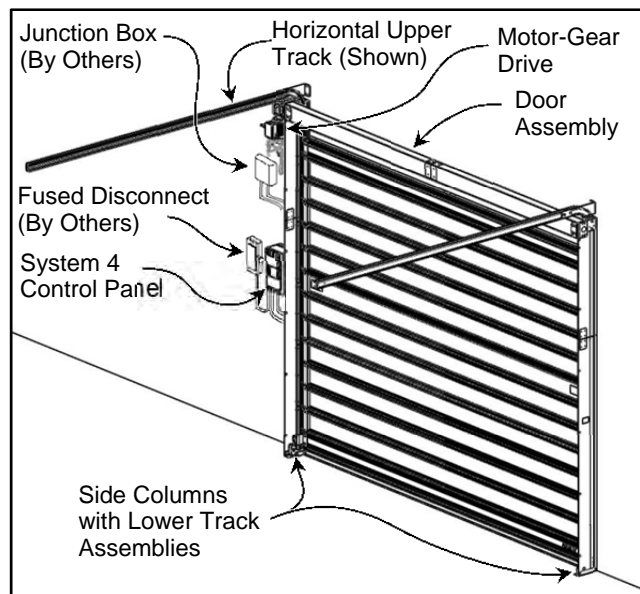


Figure 59

Substitute Parts

Due to special engineering and product enhancement, the actual parts used on your door may be different from those shown in this manual.

Also, if a part has been improved in design and bears a revised part number, the improved part will be substituted for the part ordered.

Return of Parts

Rytec will not accept the return of any parts unless they are accompanied by a Return Merchandise Authorization (RMA) form.

Before returning any parts, you must first contact the Rytec Technical Support Department to obtain authorization and an RMA number.

IMPORTANT: Obtain an incident number from the Rytec Technical Support Technician.

RYTEC TECHNICAL KNOWLEDGE CENTER

At WWW.Rytecdoors.com under the "Contact Us" pull down tab, a link to the Rytec Technical Knowledge Center can be found by selecting the "Customer Support" option. You will be directed to the Customer Support webpage. Within the "Technical Documents and Manuals" section you will find the link "Rytec Technical Knowledge Center". This knowledge center contains on-line manuals, service bulletins, and video presentations of various Rytec models and repair information.

RYTEC ON-LINE WEBSTORE

Rytec Corporation in partnership with Amazon has developed an on-line webstore for purchasing Rytec replacement parts.

Access to the Rytec webstore is by invitation only. Invitations are processed through the following e-mail address, webstore@Rytecdoors.com. Please include name and contact information (account holder). All inquiries will be reviewed however, Rytec maintains the authority to grant or deny access to the webstore at all times. The Rytec webstore is open 24/7/365. Parts available on-line require a credit card for purchase. Items in stock routinely ship the same day. The account is strictly for the account holder. All ship to, bill to and ordering information is the responsibility of the account holder. Currently, over one hundred Rytec parts are available at the on-line store. Shipping rates for the products on line are the lowest rates available.

RETURNS POLICY FOR ON-LINE WEBSTORE

Customer may return new, unopened items within 30 days of delivery for a full refund.

Items should be returned in their original packaging. The buyer will need to pay for the return shipments; return shipping costs will be refunded if the return is a result of merchant or Amazon error.

All refunds go to the original purchaser. A full refund will be due provided the return is received within the return window.

Replacements and exchanges are not supported; customers can return their original order for a refund and create a new order for the replacement.

Items classified as hazardous are not returnable. Please contact merchant; concerning these items.

WEBSTORE ITEM RETURN INSTRUCTIONS:

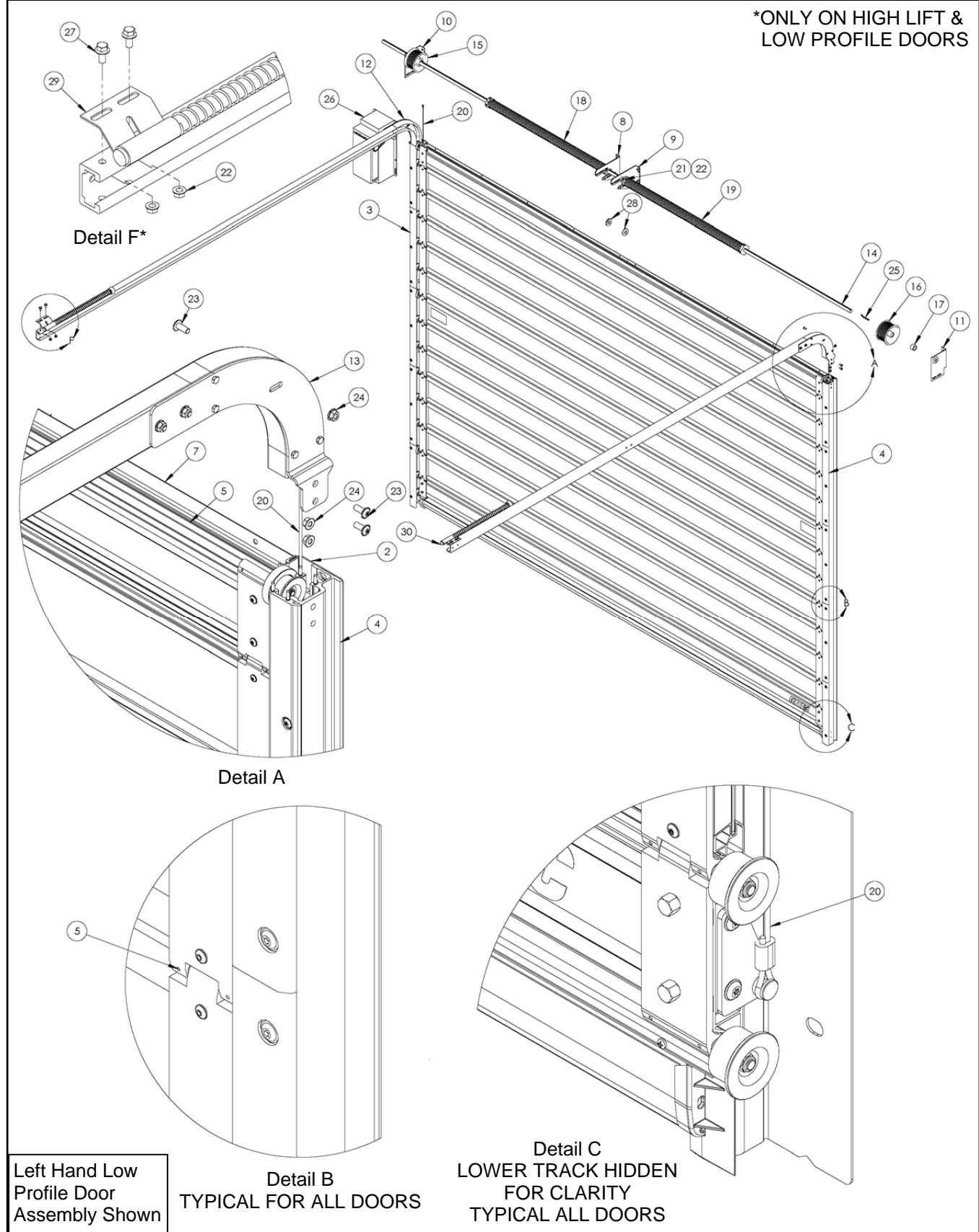
1. Visit return center within your account to create a return merchandise authorization.
2. Print the returns slip and the shipping label.
3. Include the returns slip inside the box and affix the shipping label to the box.
4. Ship package.

Prices are subject to change.

PARTS LIST-DOOR ASSEMBLY-LAYOUT

DOOR ASSEMBLY-LAYOUT

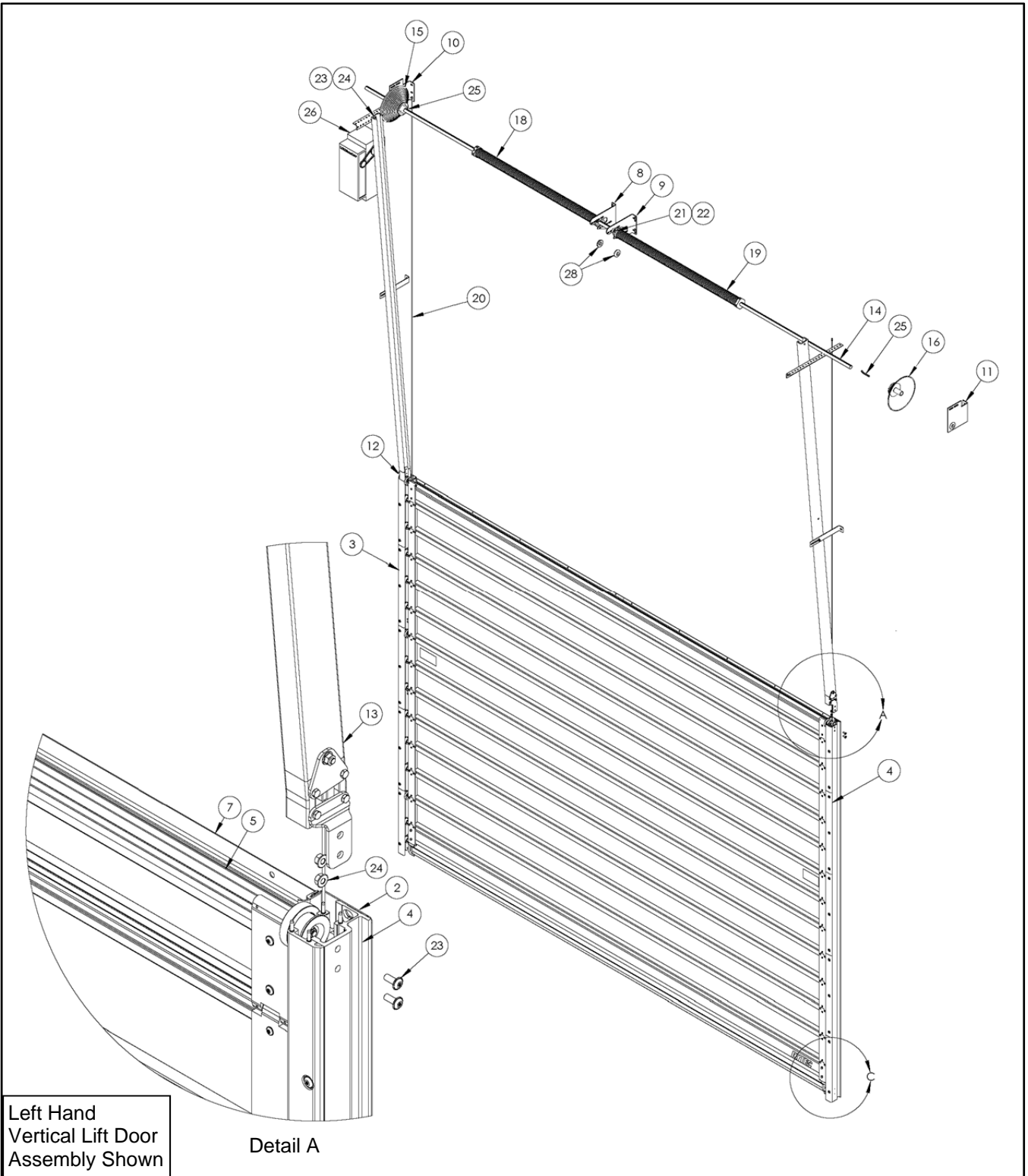
*ONLY ON HIGH LIFT & LOW PROFILE DOORS



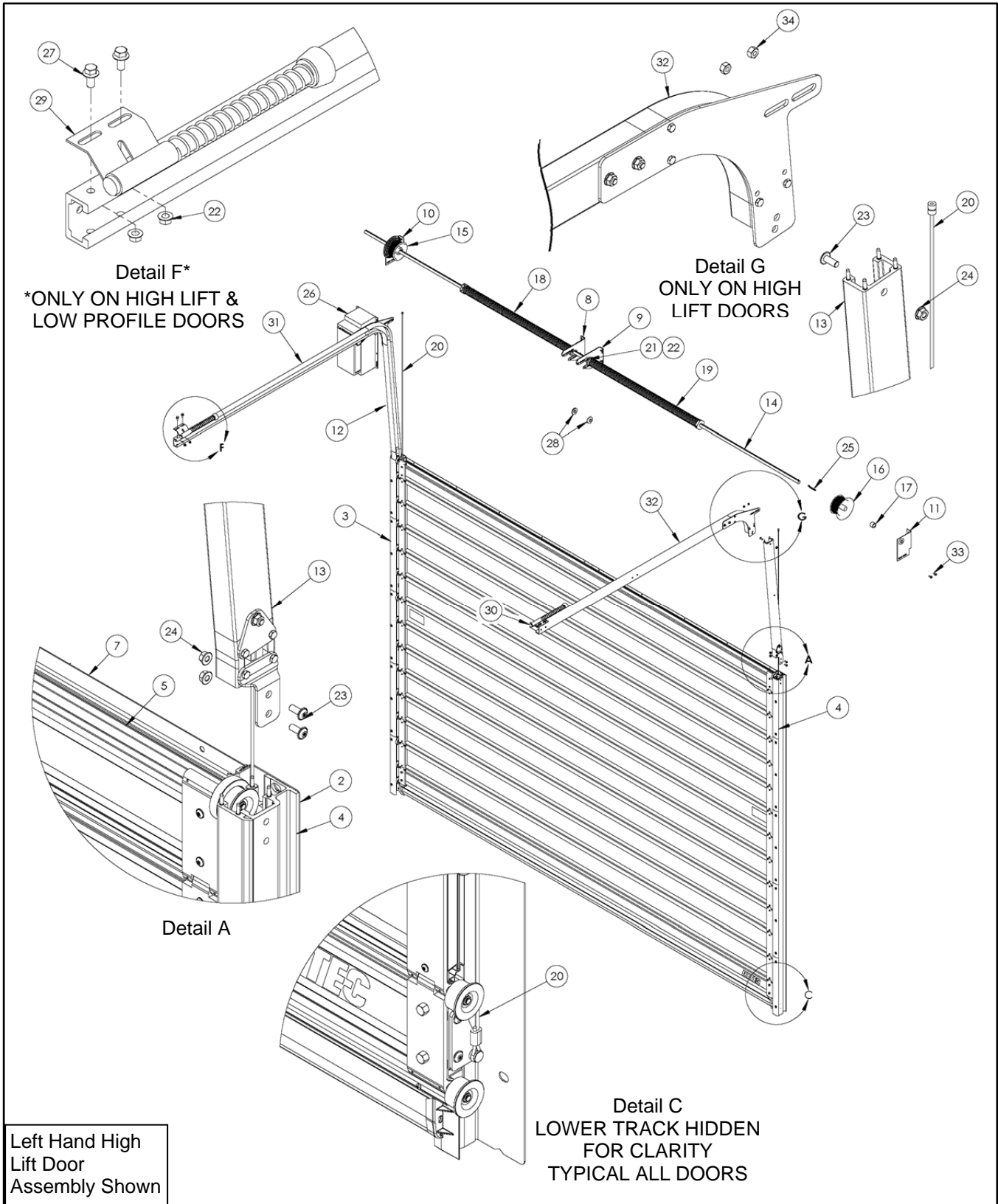
Left Hand Low Profile Door Assembly Shown

Detail B
TYPICAL FOR ALL DOORS

Detail C
LOWER TRACK HIDDEN FOR CLARITY
TYPICAL ALL DOORS



PARTS LIST-



DOOR ASSEMBLY-LAYOUT BOM

ITEM	QTY.	PART #	DESCRIPTION
-	1	R1071202-1A00	Final Assembly, Spiral VP Balanced Drive, STVP Vertical Lift, LH
		R1071202-2A00	Final Assembly, Spiral VP Balanced Drive, STVP Vertical Lift, RH
		R1071202-1B00	Final Assembly, Spiral VP Balanced Drive, STVP Low Profile, LH
		R1071202-2B00	Final Assembly, Spiral VP Balanced Drive, STVP Low Profile, RH
		R1071202-1C00	Final Assembly, Spiral VP Balanced Drive, STVP High Lift, LH
		R1071202-2C00	Final Assembly, Spiral VP Balanced Drive, STVP High Lift, RH
		R1071254-1A00	Final Assembly, Spiral VP Balanced Drive, SSVV Vertical Lift, LH
		R1071254-2A00	Final Assembly, Spiral VP Balanced Drive, SSVV Vertical Lift, RH
		R1071254-1B00	Final Assembly, Spiral VP Balanced Drive, SSVV Low Profile, LH
		R1071254-2B00	Final Assembly, Spiral VP Balanced Drive, SSVV Low Profile, RH
		R1071254-1C00	Final Assembly, Spiral VP Balanced Drive, SSVV High Lift, LH
		R1071254-2C00	Final Assembly, Spiral VP Balanced Drive, SSVV High Lift, RH
1	1	R1071203-1	Assembly, Wall Plate, SVP-B, LH
2	1	R1071203-2	Assembly, Wall Plate, SVP-B, RH
3	1	R1071205-1X	Assembly, Lower Track & Covers, SVP-B, LH
4	1	R1071205-2X	Assembly, Lower Track & Covers, SVP-B, RH
5	1	R1071165-0A	Panel/Hinge Assembly, STVP-L-B, Balanced
		R1071166-0A	Panel/Hinge Assembly, SSVV-L-B, Balanced
6	A/R	R1071222-0	Hinge Roll Pins, SVP
7	1	R1071179-0	Assembly, Top Seal, SVP-D
8	CF	R1210534-1	Bracket, Spring Anchor, Universal, LH (Not used on Vertical Lift)
9	CF	R1210534-2	Bracket, Spring Anchor, Universal, RH (Not used on Vertical Lift)
10	1	R1210568-1	Bracket, End Bearing, 4-3/8" Shaft Offset, LH
		R1210569-1	Bracket, End Bearing, 6" Shaft Offset, LH
11	1	R1210568-2	Bracket, End Bearing, 4-3/8" Shaft Offset, RH
		R1210569-2	Bracket, End Bearing, 6" Shaft Offset, RH
12	CF	R1071245-1A	Sub Assy, Track, Angled 5° Bent Track, SVP_VL, LH
		R1071245-1C	Sub Assy, Track, Angled 7° Bent Track, SVP_VL, LH
		R1071247-1	Sub Assy, Track, Horizontal Bent, SVP /SL, LH
		R1071244-1A	Sub Assy, Track, Angled 5° Bent Track, SVP/HL, LH
		R1071244-1B	Sub Assy, Track, Angled 10° Bent Track, SVP/HL, LH
13	CF	R1071245-2A	Sub Assy, Track, Angled 5° Bent Track, SVP_VL, RH
		R1071245-2C	Sub Assy, Track, Angled 7° Bent Track, SVP_VL, RH
		R1071247-2	Sub Assy, Track, Horizontal Bent, SVP /SL, RH
		R1071244-2A	Sub Assy, Track, Angled 5° Bent Track, SVP/HL, RH
		R1071244-2B	Sub Assy, Track, Angled 10° Bent Track, SVP/HL, RH
14	1	R1210542-0	Drive Shaft, 1.00" OD, Keyed Full

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Parts List-DOOR ASSEMBLY-LAYOUT BOM

DOOR ASSEMBLY-LAYOUT BOM

ITEM	QTY.	PART #	DESCRIPTION
15	CF	R1210573-1	Drum, D850-132, SVP-S/VL, LH
		R1210574-1	Drum, D1100-216, SVP-S/VL, LH
		R1210570-1	Drum, D400-144, SVP-S/SL, LH
		R1210571-1	Drum, D525-216, SVP-S/SL, LH
		R1210572-1	Drum, D525-54, SVP-S/HL, LH
		R1210579-1	Drum, D575-120, SVP-S/HL, LH
16	CF	R1210573-2	Drum, D850-132, SVP-S/VL, RH
		R1210574-2	Drum, D1100-216, SVP-S/VL, RH
		R1210570-2	Drum, D400-144, SVP-S/SL, RH
		R1210571-2	Drum, D525-216, SVP-S/SL, RH
		R1210572-2	Drum, D525-54, SVP-S/HL, RH
		R1210579-2	Drum, D575-120, SVP-S/HL, RH
17	A/R	R1210544-0	Spacer, 1.50" OD X 1.00" ID
18	1	R1210531-1	Assy, Torsion Spring w/ Cones, Wound LH
19	1	R1210531-2	Assy, Torsion Spring w/ Cones, Wound RH
20	2	R1210530-0	Cable, Ø5/32"-7x19, SVPS
21	4	R0550261-0Z01	HFSMS, 3/8-16X1.25 GR5.2 ZN
22	8	R0553229-0Z01	HLNSF, 3/8-16, STL ZN
23	6	R01900820	BSCSF, M8-1.25 x 20, T40, ZN
24	6	R1901508	Nut, M8 Flanged
25	2	R1210541-0Z01	Key, ¼x ¼ x 2.00" w/ 30° Bend, Square Ends
26	1	R1210549-0A	Motor, Liftmaster, Jackshaft Operator, Medium Duty
		R1210549-0B	Motor, Liftmaster, Hoist Operator, Medium Duty
27	4	R0550254	HFSMS, 3/8-16 x ¾ GR5.2 ZN
28	2	R1210559-0	Bearing, Steel Ø2.00 OD
29	1	R1210575-1	Bumper, Push Down Door, 15" Spring, LH
		R1210576-1	Bumper, Push Down Door, 27" Spring, LH
30	1	R1210575-2	Bumper, Push Down Door, 15" Spring, RH
		R1210576-2	Bumper, Push Down Door, 27" Spring, RH

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DOOR ASSEMBLY-LAYOUT BOM

ITEM	QTY.	PART #	DESCRIPTION
31	CF	R1071246-1C	Sub-Assy, Horiz Track, 85° Bent Track, SVP/HL, LH, 85<HL≤120
		R1071246-1B	Sub-Assy, Horiz Track, 85° Bent Track, SVP/HL, LH
		R1071246-1A	Sub-Assy, Horiz Track, 80° Bent Track, SVP/HL, LH
32	CF	R1071246-2C	Sub-Assy, Horiz Track, 85° Bent Track, SVP/HL, RH, 85<HL≤120
		R1071246-2B	Sub-Assy, Horiz Track, 85° Bent Track, SVP/HL, RH
		R1071246-2A	Sub-Assy, Horiz Track, 80° Bent Track, SVP/HL, RH
33	4	R0550301	Screw, 5/16-18 x ¾ HH SERR Flange
34	4	R553090	HN, 5/16-18, STL ZN

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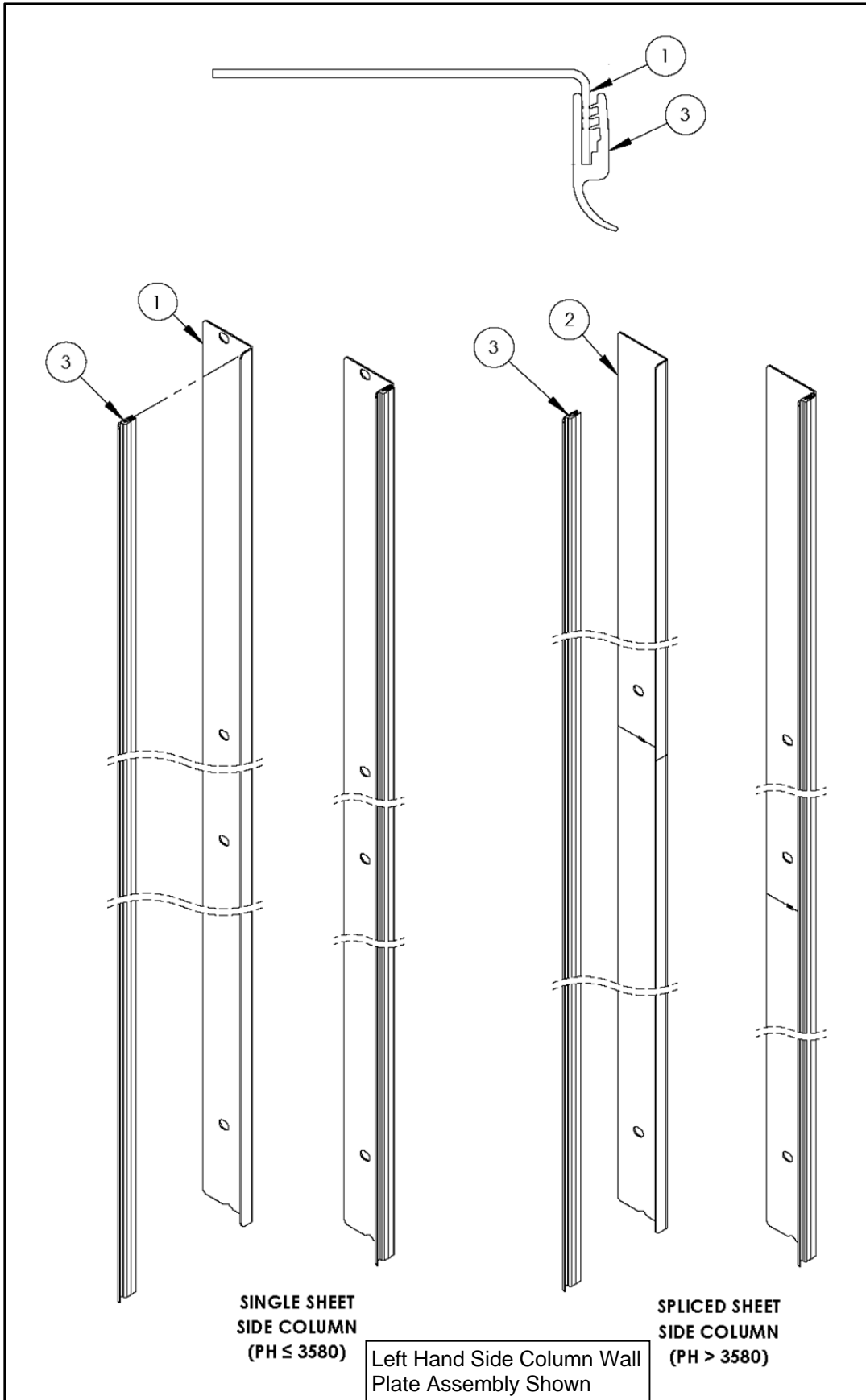
A/R = As Required

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Parts List-SIDE COLUMN WALL PLATE ASSEMBLY

SIDE COLUMN WALL PLATE ASSEMBLY



Parts List-SIDE COLUMN WALL PLATE ASSEMBLY BOM

SIDE COLUMN WALL PLATE ASSEMBLY BOM

ITEM	QTY.	PART #	DESCRIPTION
-	1	R1071203-1	Assembly, Wall Plate, Spring Balanced Drive, SVP-B, LH
		R1071203-2	Assembly, Wall Plate, Spring Balanced Drive, SVP-B, RH
1	1	R1071204-1Z02	Wall Plate, Side Column, Spring Balanced Drive, SVP-B, LH
		R1071204-2Z02	Wall Plate, Side Column, Spring Balanced Drive, SVP-B, RH
2	1	R1071257-1	Assembly, Side Column Wall Plate, Splice, SVP-B, LH
		R1071257-2	Assembly, Side Column Wall Plate,, Splice, SVP-B, RH
3	1	R1071260-0	Seal, Side Column, SVP-B

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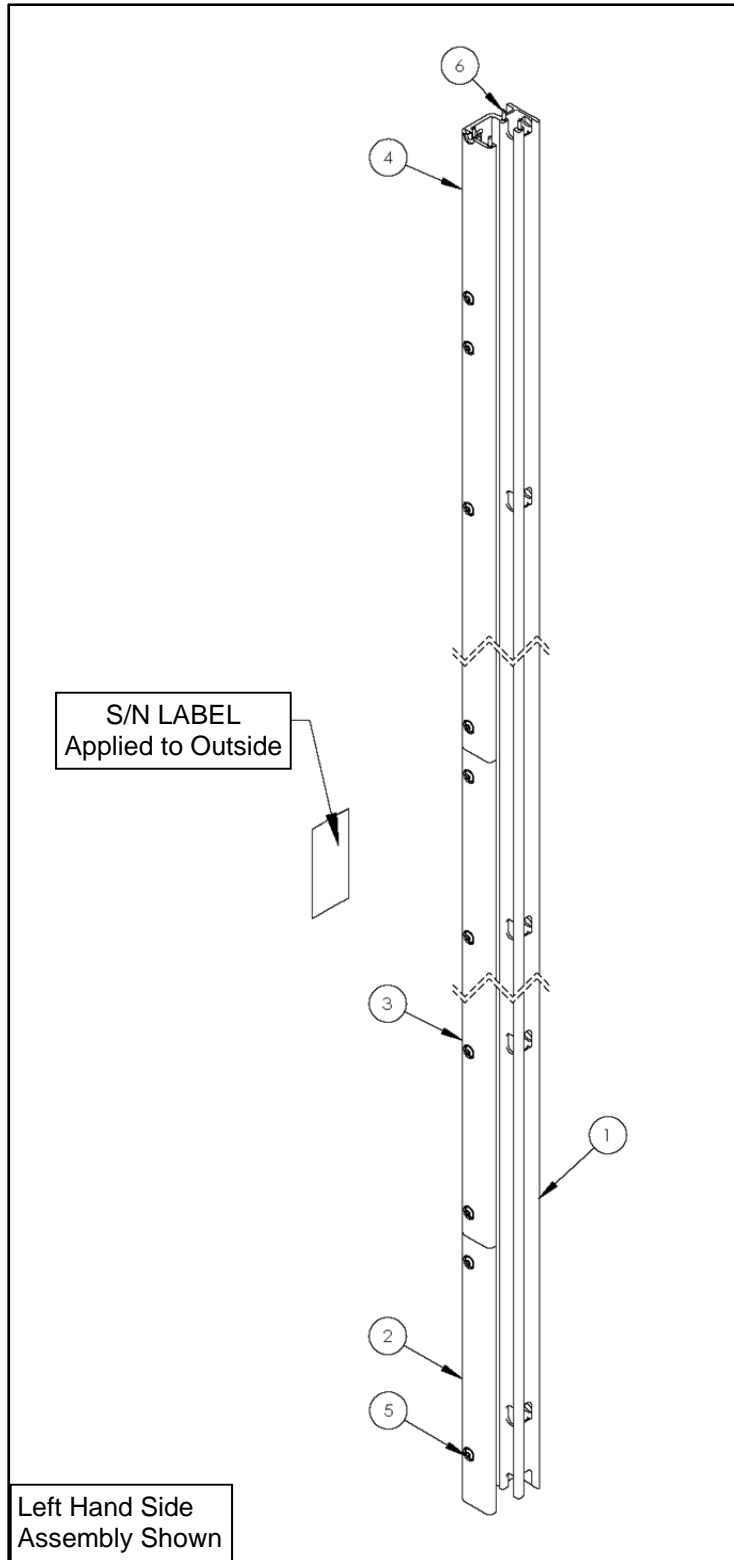
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Parts List-LOWER TRACK & COVER ASSEMBLY

LOWER TRACK & COVER ASSEMBLY



Parts List-LOWER TRACK & COVER ASSEMBLY BOM

LOWER TRACK & COVER ASSEMBLY BOM

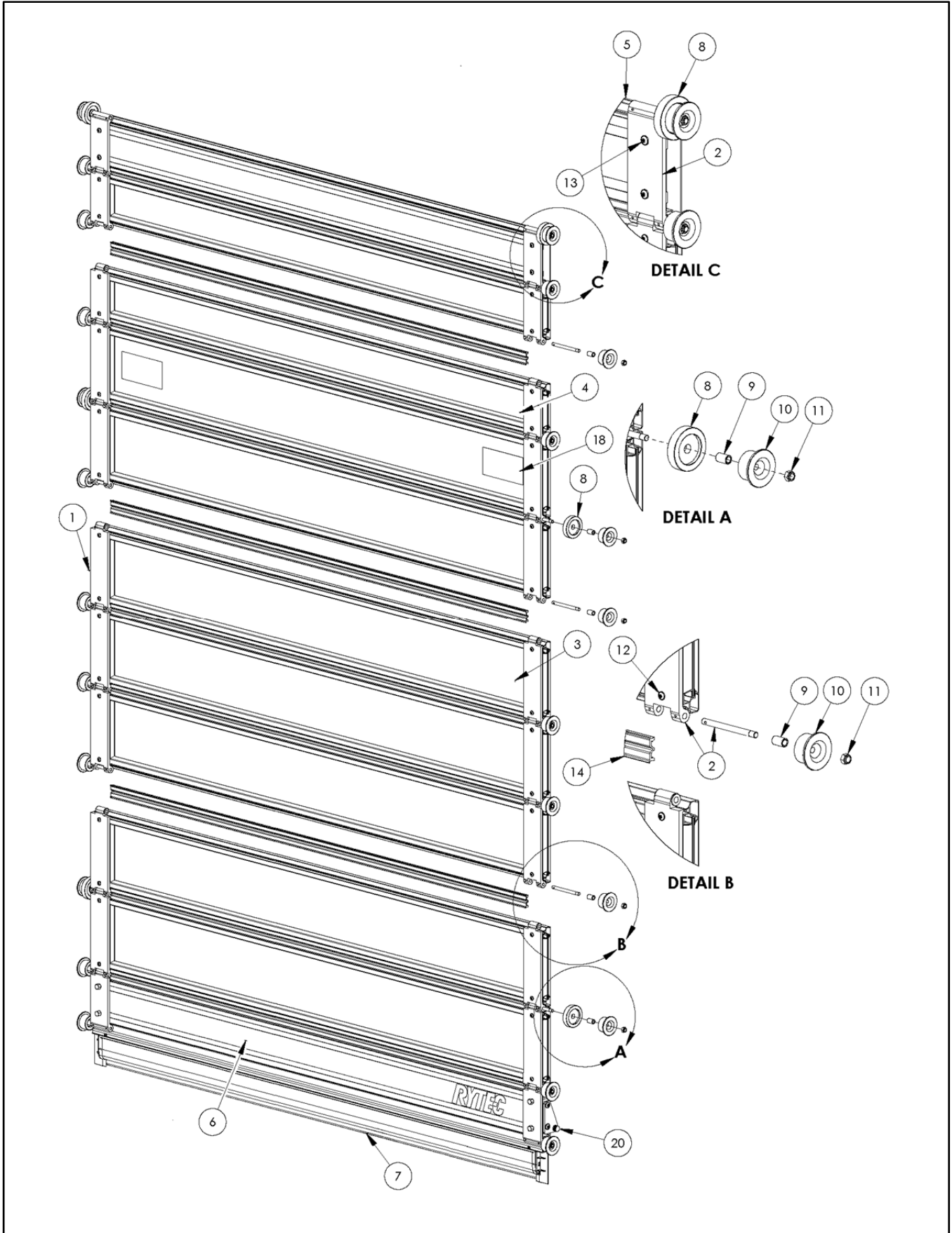
ITEM	QTY.	PART #	DESCRIPTION
-	1	R1071205-1A	Assembly, Lower Track & Covers, 151mm Slats, SVP-B, LH
		R1071205-1B	Assembly, Lower Track & Covers, 225mm Slats, SVP-B, LH
		R1071205-2A	Assembly, Lower Track & Covers, 151mm Slats, SVP-B, RH
		R1071205-2B	Assembly, Lower Track & Covers, 225mm Slats, SVP-B, RH
1	1	R1071187-1X	Lower Track, Stocked, 151mm Slats, SVP-D, LH
		R1071188-1X	Lower Track, Stocked, 225mm Slats, SVP-D, LH
		R1071187-2X	Lower Track, Stocked, 151mm Slats, SVP-D, RH
		R1071188-2X	Lower Track, Stocked, 225mm Slats, SVP-D, RH
2	1	R1071193-1A	Cover, Lower Track, Bottom, 151mm Slats, SVP-D, LH
		R1071193-1B	Cover, Lower Track, Bottom, 225mm Slats, SVP-D, LH
		R1071193-2A	Cover, Lower Track, Bottom, 151mm Slats, SVP-D, RH
		R1071193-2B	Cover, Lower Track, Bottom, 225mm Slats, SVP-D, RH
3	CF	R1071194-0A	Cover, Lower Track, Middle, 151mm Slats, SVP-D
		R1071194-0B	Cover, Lower Track, Middle, 225mm Slats, SVP-D
4	1	R1071195-0A	Cover, Lower Track, Upper, 151mm Slats, SVP-D
		R1071195-0B	Cover, Lower Track, Upper, 225mm Slats, SVP-D
5	A/R	R01900816	BSCSF,M8-1.25 X 16,T40,ZN
6	4	R217507Z1	Pin, Track, Side Column Locating

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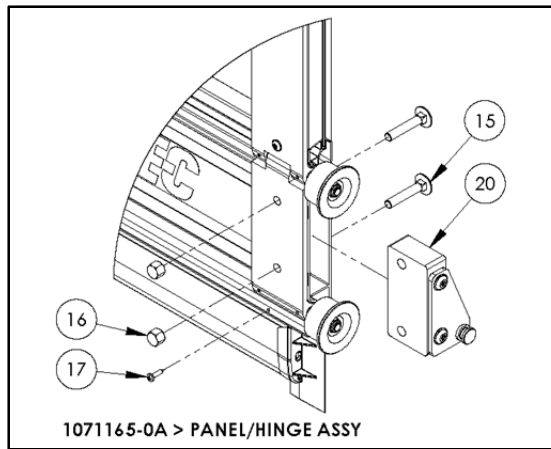
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Parts List-PANEL/HINGE ASSEMBLY, STVP-L-B

PANEL/HINGE ASSEMBLY, STVP-L-B



Parts List-PANEL/HINGE ASSEMBLY, STVP-L-B BOM



PANEL/HINGE ASSEMBLY, STVP-L-B BOM

ITEM	QTY.	PART #	DESCRIPTION
-	1	R1071165-0A	Panel/Hinge Assembly, STVP-L-B, Balanced
1	1	R1071167-1	Hinge Chain Assembly, SVP, 225 x 65, LH
2	1	R1071167-2	Hinge Chain Assembly, SVP, 225 x 65, RH
3	CF	R231848	Window Assembly, 30mm x 225mm
		R1071285-0	Vent Assembly, w/ Spacers, 30mm x 225mm, STT-L
		R1070841-0	Window Assembly, HPG, 30mm x 225mm Complete
		R1070973-0	Window Assembly, 30mm x 225mm, PC-H
		R1070991-0X	Window Assembly, Pressed Lexan, STT-L, 30mm x 225mm
4	CF	R231843	Window Assembly, 30mm x 151mm, STT-L
		R1071283-0	Vent Assembly, w/ Spacers, SVP-D30mm x 151mm, STT-L
		R1071022-0X	Final Assembly, Pressed Window, w/ Seals, 30mm x 151mm, STT-L, Clear-112
5	1	R1071253-0A	Top Panel Assembly, 30mm, SVP, Upper Seal
6	1	R 1070667-0C	Bottom Panel Assembly, 30mm, STT-L
7	1	R 1071263-0	Assembly, Bottom Edge, SVP
8	6	R 237602	Guide Roller
9	CF	R217505Z1	Spacer, Hinge Roller
10	CF	R205625	Roller, Hinge
11	CF	R01335008	Nut, M8, Nylock
12	CF	R01900705	BSCSF,M5X20,T25,ZN,Precote 80-8
13	4	R01900720	BSCSF,M6X20,T25,ZN,Precote 80-8
14	CF	R04010085-04	Seal, Panel Hinge, L=100M
15	4	R01160515	Carriage Bolt, M8 x 45, DIN 603MU
16	4	R01230008	Nut, M8, Hex, Cap, DIN 917 ZN
17	2	R01700100	Tap Screw, 3.9 X 16, DIN 7981HC ZN
18	2	R0915015	Label, Window Wipe Down Caution, Spiral
19	1	R1071211-1	Sub-Assembly, End Block, SVP-B, LH
20	1	R1071211-2	Sub-Assembly, End Block, SVP-B, RH

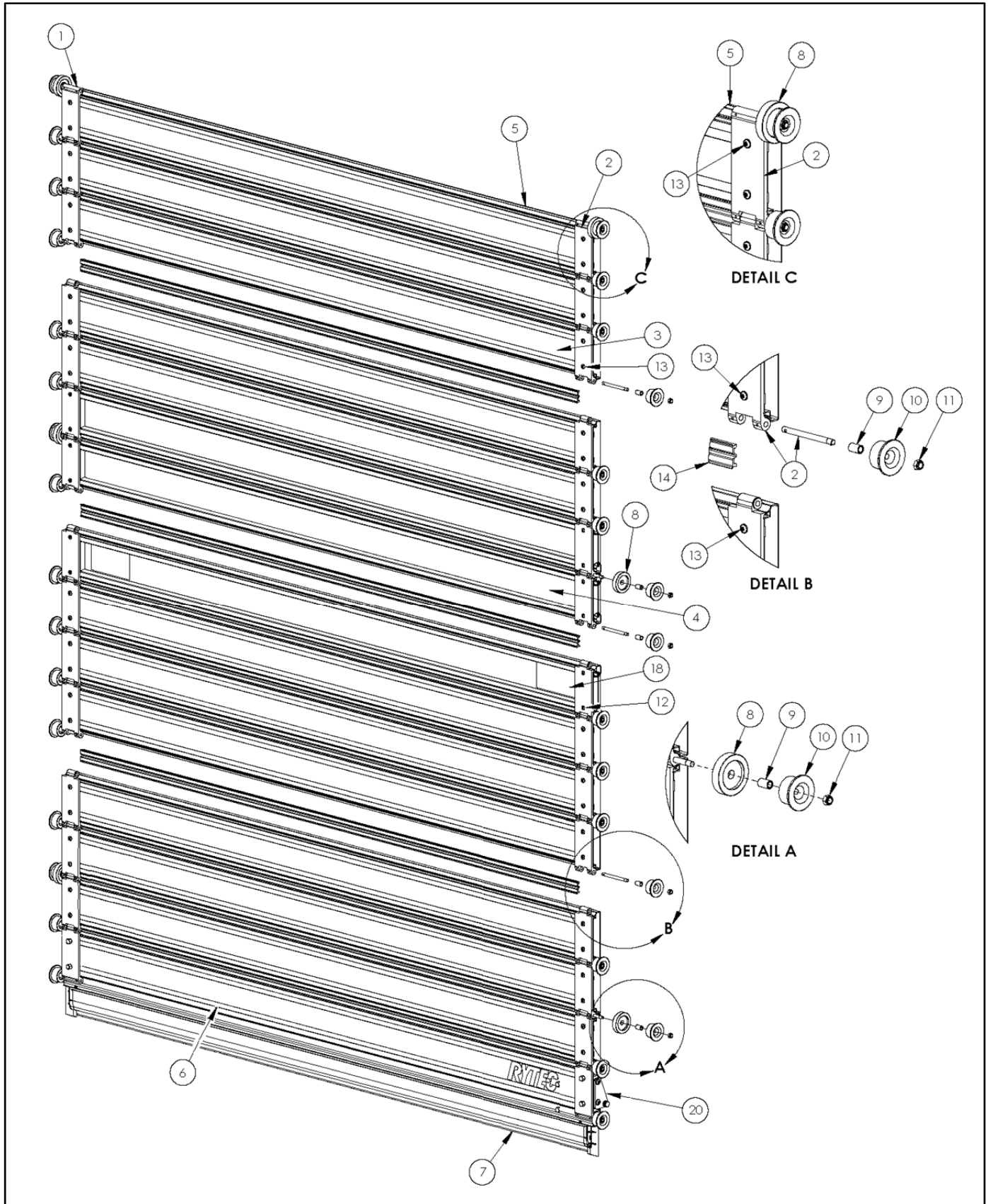
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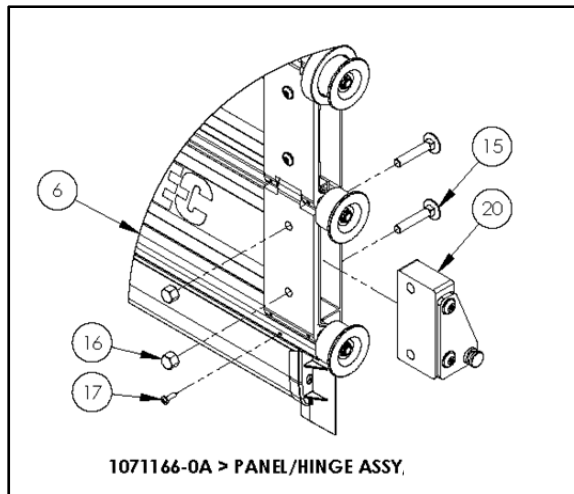
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Parts List-PANEL/HINGE ASSEMBLY, SSVP-L-B

PANEL/HINGE ASSEMBLY, SSVP-L-B



Parts List-PANEL/HINGE ASSEMBLY, SSV-P-L-D BOM



PANEL/HINGE ASSEMBLY, SSV-P-L-D BOM

ITEM	QTY.	PART #	DESCRIPTION
-	1	R1071166-0A	Panel/Hinge Assembly, SSV-P-L-B, Balanced
1	1	R1071168-1	Hinge Chain Assembly, SVP, 151 x 65, LH
2	1	R1071168-2	Hinge Chain Assembly, SVP, 151 x 65, RH
3	CF	R231852	Top Panel Subassembly, 30mm, STT-L
4	CF	R231843	Window Assembly, 30mm x 151mm, STT-L
		R1071283-0	Vent Assembly, w/ Spacers, SVP-D30mm x 151mm, STT-L
		R1071022-0X	Final Assembly, Pressed Window, w/ Seals, 30mm x 151mm, STT-L, Clear-112
5	1	R1071253-0A	Top Panel Assembly, 30mm, SVP, Upper Seal
6	1	R 1070667-0C	Bottom Panel Assembly, 30mm, STT-L
7	1	R 1071263-0	Assembly, Bottom Edge, SVP
8	6	R 237602	Guide Roller
9	CF	R217505Z1	Spacer, Hinge Roller
10	CF	R205625	Roller, Hinge
11	CF	R01335008	Nut, M8, Nylock
12	CF	R01900705	BSCSF, M5X20, T25, ZN, Precote 80-8
13	4	R01900720	BSCSF, M6X20, T25, ZN, Precote 80-8
14	CF	R04010085-04	Seal, Panel Hinge, L=100M
15	4	R01160515	Carriage Bolt, M8 x 45, DIN 603MU
16	4	R01230008	Nut, M8, Hex, Cap, DIN 917 ZN
17	2	R01700100	Tap Screw, 3.9 X 16, DIN 7981HC ZN
18	2	R0915015	Label, Window Wipe Down Caution, Spiral
19	1	R1071211-1	Sub-Assembly, End Block, SVP-B, LH
20	1	R1071211-2	Sub-Assembly, End Block, SVP-B, RH

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