

Spiral® LH® (Low Headroom) SSN and STN Installation Manual

Rytec installation safety information

The meaning of signal words



Technical content produced by Rytec includes safety information which must be read, understood and obeyed to reduce the risk of death, personal injury or equipment damage. This information is boxed to set it apart from other text. The boxed text identifies the nature of the hazard and appropriate steps to avoid it.

The safety alert symbol identifies a situation that can result in personal injury. The accompanying signal word indicates the likelihood and potential severity of the injury. The meaning of the signal words is as follows:

	⚠ WARNING Warning indicates a hazardous situation that, if not avoided, could result in death or serious injury.
	⚠ CAUTION Caution indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

Safety icons used in this manual



Shock hazard



Fall hazard



Crush hazard



Cut hazard



Forklift

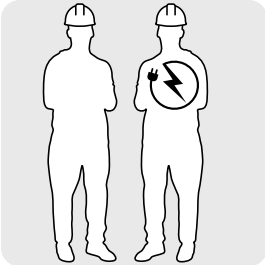
Installation safety

- **Do not install any Rytec product until** you have read and understood the safety information and instructions. Make sure all applicable regulations are observed and obeyed at all times.
- **Observe these precautions** while installing the door:
 - Only trained, qualified and authorized individuals are to install the door and the control system.
 - The installation site comprises the physical area required to safely uncrate, stage and install the door.
 - Make sure all personnel at the installation site have been informed of the date, time and location of the installation.
 - Make sure there is no pedestrian or vehicular traffic within the installation site for the duration of the installation.
 - Make sure you have and use all required Personal Protective Equipment.
 - Make sure you have adequate personnel and equipment to safely perform all lifts.
 - Make sure you have been informed of any hazardous conditions that exist within the installation site.
 - Make sure the installation site is kept clear of obstructions and debris and that the floor is dry.
 - Make sure you are aware of the location of all power lines, piping and HVAC systems within the installation site.
 - Make sure all accessories installed with the door are approved by the manufacturer.

Other icons used in this manual

	Indicates instructions which, if not followed, could result in damage to the door or voiding of the warranty .		Indicates best practice . This is how Rytec Technical Support does the job.
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Requirements – Staffing



- Two installers – three are recommended when the door panel is lifted.
- A licensed electrician is recommended for making all electrical connections

Electrician’s responsibilities

Refer to the Rytec System 4® Drive & Control Installation & Owner’s Manual for a complete list of the electrician’s responsibilities.

	⚠ WARNING Electrical work must meet all applicable local, state and national codes. Failure to wire the door correctly can cause shock, burns or death to the people who install, use or service the door. Failure to comply also voids the warranty for the door.
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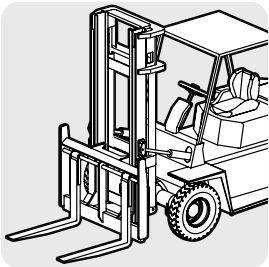
Requirements – Site Conditions

- Installers must have unrestricted access to the door opening at all times during the installation.
- Make sure there is no pedestrian or vehicular traffic within the installation site for the duration of the installation.

Requirements – Lifts

	⚠ WARNING A forklift is mandatory for the safe and proper installation of this door.
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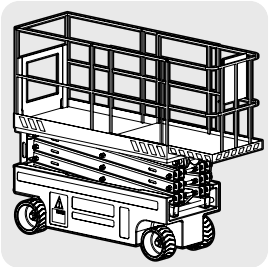
- **Forklift** that meets the following specifications:



- Minimum 4,000-pound lift capacity
- Minimum height ability: door height + 12"
- 48"-wide fork
- Side shift capability

	⚠ WARNING Follow all safety instructions on all lifts and ladders used for this installation.
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- **Scissor lift** that meets the following specifications:



- Can hold both installers
- Minimum height ability: door height

- **Alternatively, two ladders** of sufficient height to safely access the door head assembly

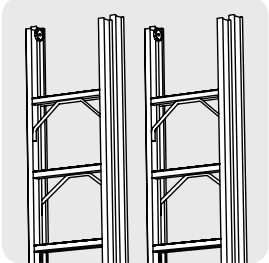


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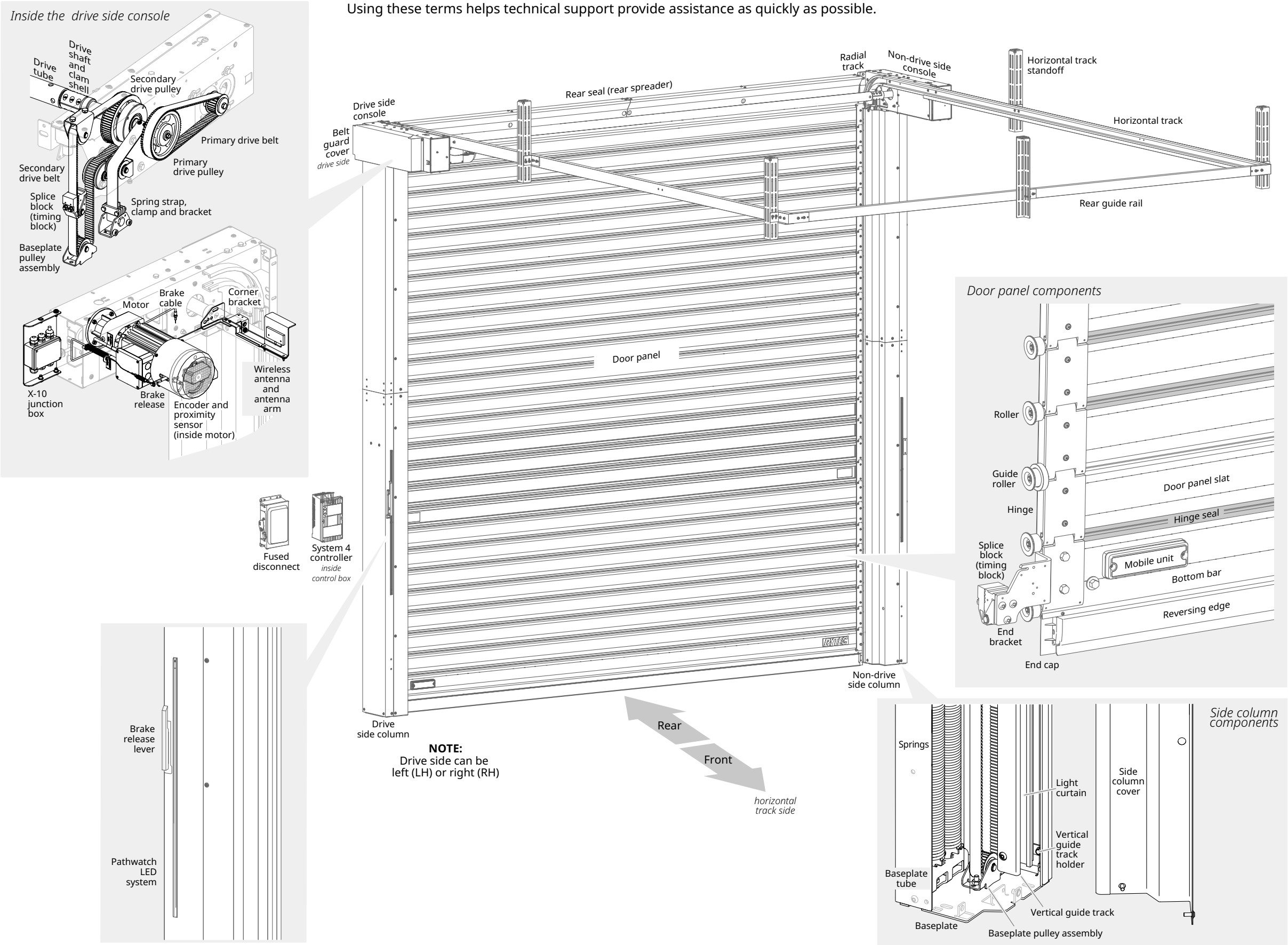
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Terms used by Rytec to describe the parts of the door

This illustration shows the terms used by Rytec technical support to refer to the major components of your door. Using these terms helps technical support provide assistance as quickly as possible.



Spiral® LH® (Low Headroom) Installation Manual for SSN (Solid Panel) and STN (Full Vision Panel) Models

Call **800-628-1909**

or email **helpdesk@rytecdoors.com**

if you have any questions during this installation. See previous page for list of Rytec terms for the parts of the door.

How to uncrate the door and inspect the installation site

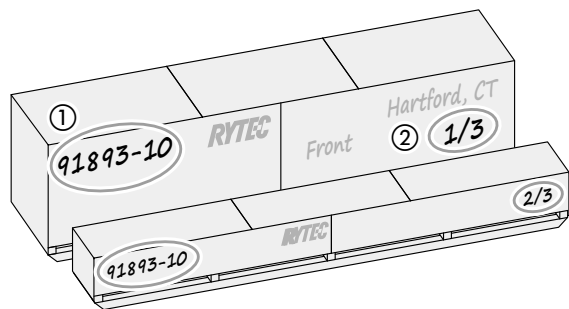
Spirals ship in **two crates**.

IMPORTANT

Each set of crates is marked with the unique serial number for the door ① and the number of crates used for the door ②.

All parts for the door are in these crates.

If more than one door is to be installed, **treat each set of crates as a separate installation.**



Mixing parts from different doors voids the warranty for all doors in the installation.

1

Remove all top panels.

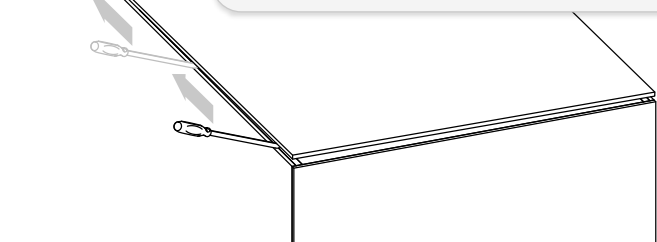


Pry bar

INSIDER'S TIP

Panels are made of fiberboard that shreds easily, and are secured with many nails.

Slide the pry bar along the edge, prying gently every six inches, to remove the panel in one piece.



2

Check the crates. Make sure all serial numbers match the number on the crate and all visible parts have no shipping damage.

Small parts box(es): check the serial number on side of box. There may be two boxes.

IMPORTANT

Open box, remove the red documents envelope, then open the envelope and get the object list (also called the cut sheet). Check serial numbers on both.

SMALL PARTS

Parts and hardware that you find in the box(es) will be called out in this manual as they are needed.

Drive and non-drive consoles: shrink-wrapped and on separate pallet. **Requires forklift to remove.**

Indicate drive side: left (LH) or right (RH). LH is used for this manual.

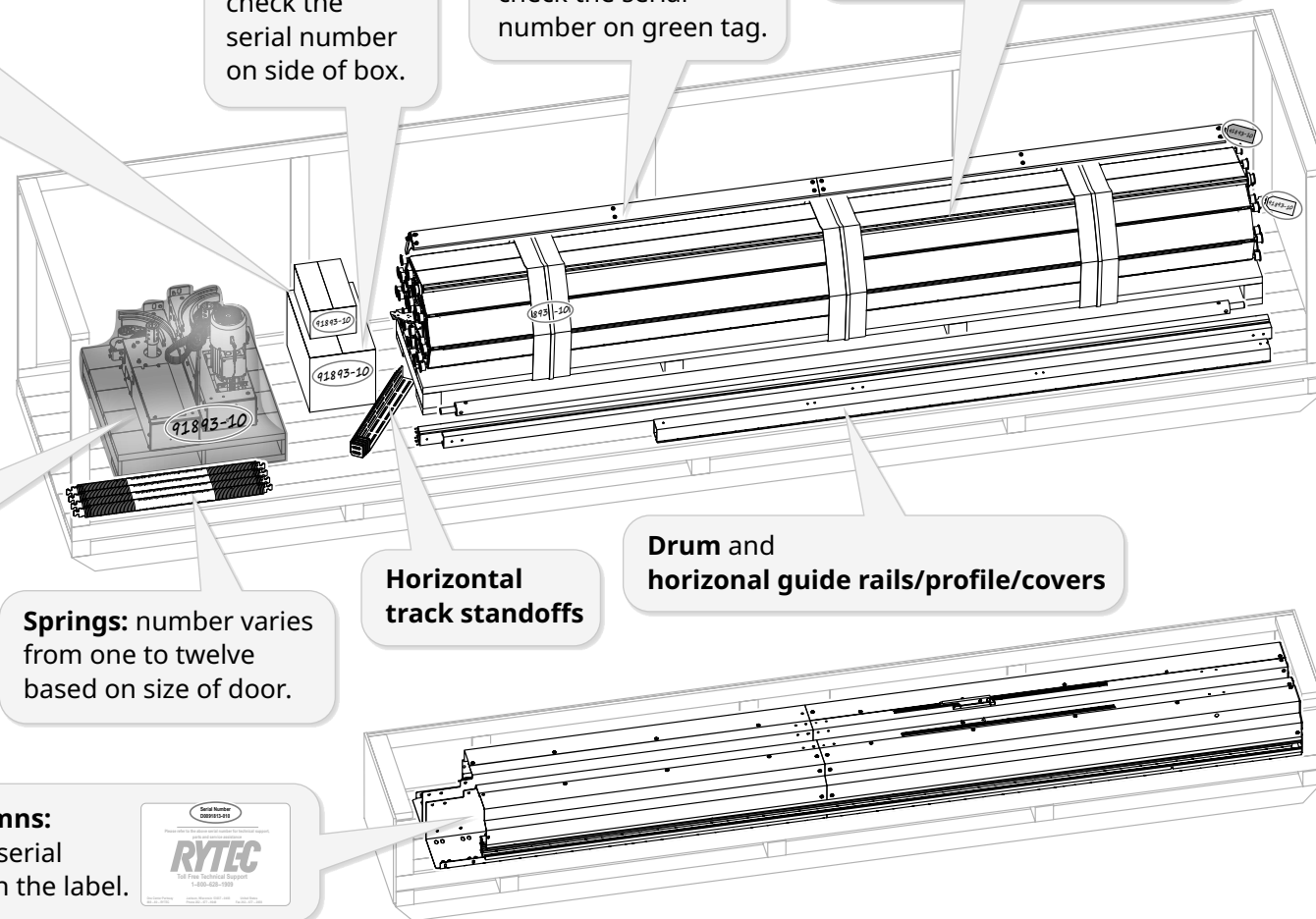
Check the serial number written on shrink wrap.

System 4 controller box: check the serial number on side of box.

Rear seal (rear spreader): check the serial number on green tag.

Door panel: on separate pallet. **Requires forklift to remove.**

Check the serial number on foam padding and manila tag.



Springs: number varies from one to twelve based on size of door.

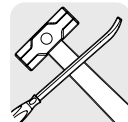
Side columns: check the serial number on the label.



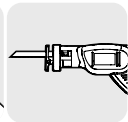
3

Check your tools. Make sure you have all tools and supplies for the installation.

Tools you need



Pry bar and mallet or reciprocating saw



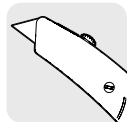
Crowbar



Cutting pliers



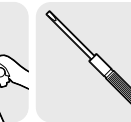
Utility knife



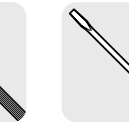
Wire stripper



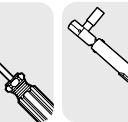
Precision screwdriver



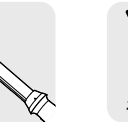
Flat screwdriver



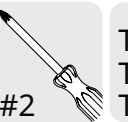
Torque wrench



#2 Phillips screwdriver



T20 T30 T40 Torx screwdriver



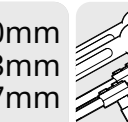
10mm 13mm 17mm Socket or open wrench



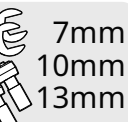
(2) Sockets or wrenches needed



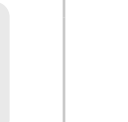
7mm 10mm 13mm Socket or open wrench



Laser level



(2) Bar clamps



Measuring tape



Spirit level



Carpenter's square



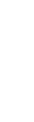
Anchoring tools



Snap ring pliers



(2) Ratchet straps

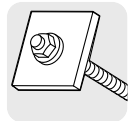


(2) Vise grips

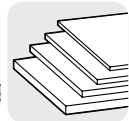


Power drill

You also provide



Anchoring hardware



Shims



Caulk

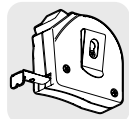


Cable ties




Electrical tape and wire nuts

4 Check the measurements. Make sure the door will fit in the installation site.



Tape measure

		Object list Duplicate		Description lists if door is small (-L, -L/R) or large (-S, -S/R).	
Material description		SPIRAL STN-S			
MRP controller	500 B5 ZMAT	Production scheduler	T6 Tier 6	Order type	ZP02 RYTEC MTO Order
Status	REL MSPT PRT PRC SETC		Plant	2000 Rytec Corporation -	Reservation number 0002596972
					Creation Date 10/22/2019
Serial number D0099760-010					
Configuration					
DOOR MODEL NAME Spiral Low Headroom EV "S"					
Door Width (Inches)		216.142		216-3/16	
Door Height (Inches)		101.969		102	
Production Width in mm		5,490			
Production Height in mm		2,590			

Write on object list:
① and ② as rounded fractions
Width to center = 1/2 ①
Total height = ③ + 2"

IMPORTANT

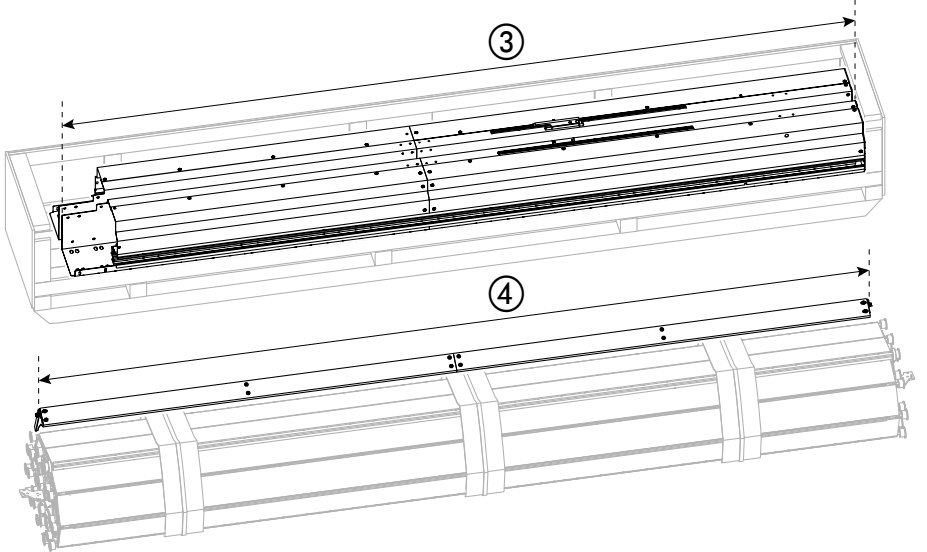
Spirals are built to metric specifications to a very tight spec. Round the Door Width and the Door Height to nearest 1/16 inch.

Decimal	.063	.125	.188	.250	.313	.375	.438	.500
Fraction	1/16	1/8	3/16	1/4	5/16	3/8	7/16	1/2

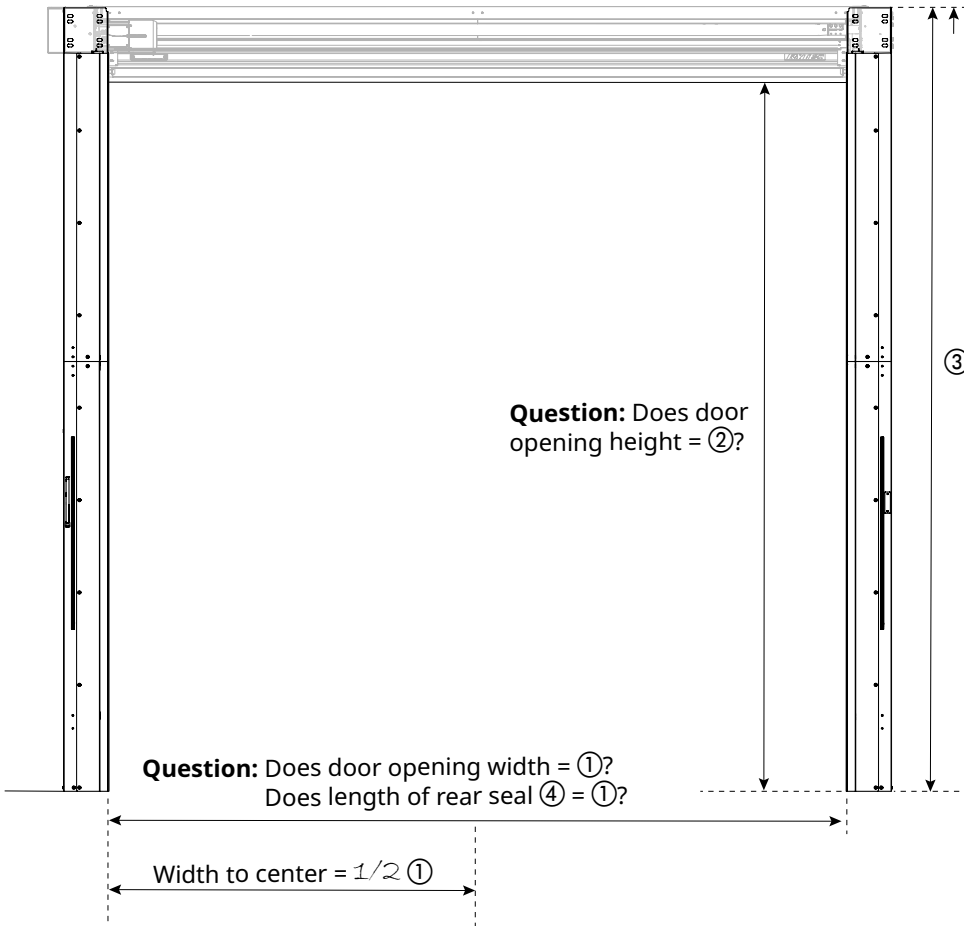
Decimal	.563	.625	.688	.750	.813	.875	.938
Fraction	9/16	5/8	11/16	3/4	13/16	7/8	15/16

1. Locate the Door Width ① and Door Height ② on the object list.
Round the numbers to the nearest 1/16 inch.
Write these numbers on the object list.
2. Measure the door opening to make sure:
 - The opening width equals the number on the object list ①.
 - The opening height equals the number on the object list ②.
3. Measure the rear seal (rear spreader) ④:
 - The length should equal the Door Width ① in the object list..
4. Calculate the total height needed for the installation:
 - Measure the height of a side column ③ in the crate.
 - Add two inches (2") to account for the side consoles and at least one inch (1") of clearance.Write this number on the object list.
5. Make sure there is enough space to install the door:
make sure the site has space total height you calculated.
6. Calculate the width to center: divide the Door Width ① by 2.
Write this number on the object list. Use it when you center the door.

Call Rytec technical support at 800-628-1909
or email helpdesk@rytecdoors.com
if you have any questions about the measurements at the site.



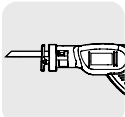
Question: Is height of installation site > ③ + 2" ?
Is there enough height to install the door ?
Add at least 2" for console, clearance



- 5 If all checks are good, finish uncrating the door. Starting at the center, remove the crossbars, then remove the front panel.



Mallet and pry bar or



Reciprocating saw



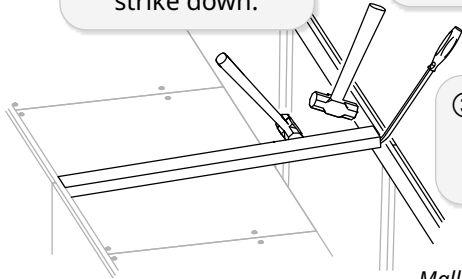
CAUTION

Flatten exposed nails as you go.
Keep hands clear while striking or cutting.

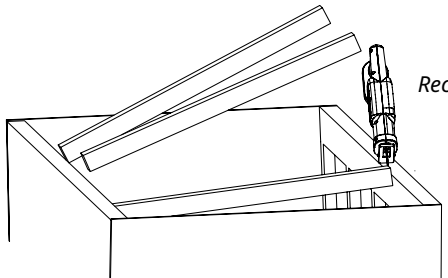
- ① Strike across the crossbar to loosen nails.
Do not strike down.

- ② Strike the side panel to expose nails.

- ③ Pry up to remove crossbar.

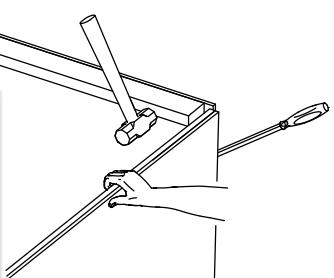


Mallet and pry bar

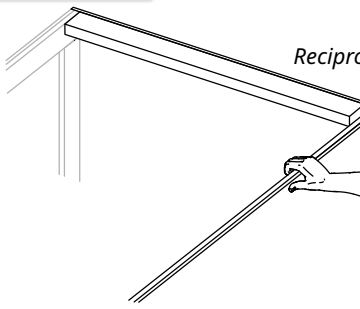


Reciprocating saw

End panels are nailed into the side panel.
Strike crossbar and pry end panel to loosen nails.
Pull side panel free from sides, then pull down to remove.



Mallet and pry bar



Reciprocating saw

How to prep the consoles

- Cut ties** so you can move the springs, and any other parts that block clear access to the console pallet.

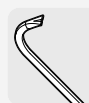
Use a forklift to move the consoles to an open space.

INSIDER'S TIP

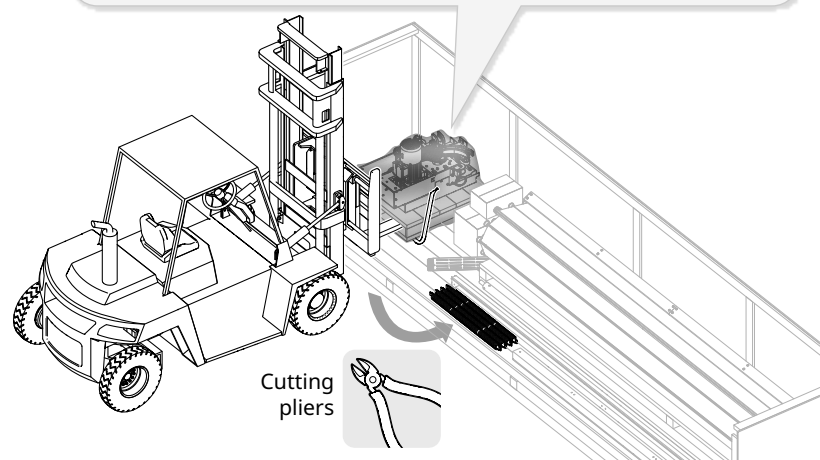
After the consoles are removed, **use the crate** to stage parts until they are needed.



IMPORTANT

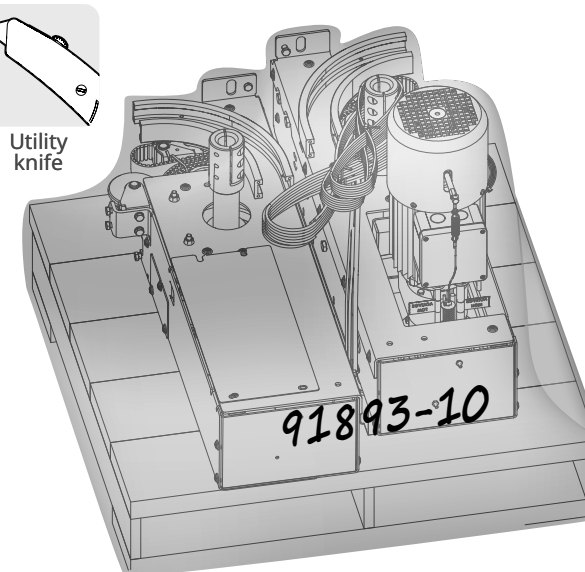


Pallet is nailed to crate.
Use a crowbar to loosen the nails before lifting.

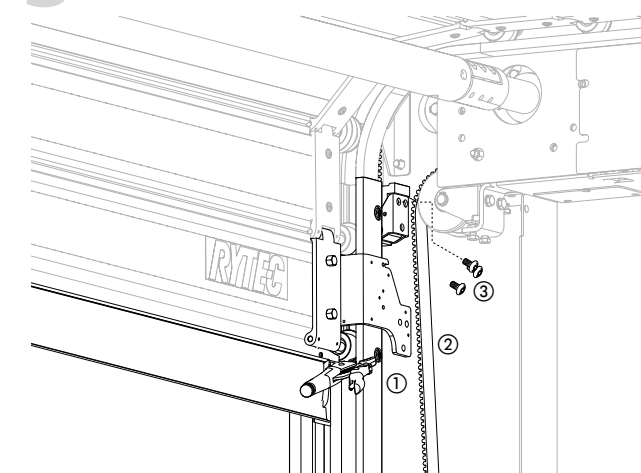


Cutting pliers

- Carefully cut** the shrink wrap and remove the drive side and non-drive side consoles.



- Drive side console: remove the belt guard.**



Things to know before you prep the drive side console

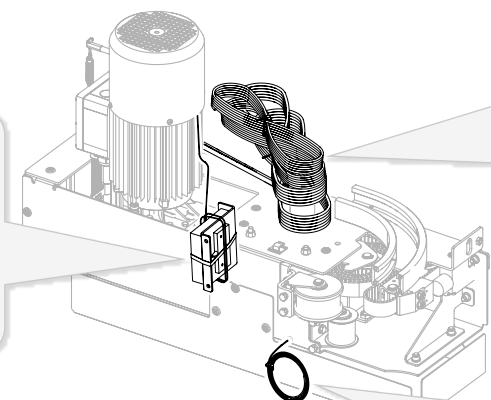
IMPORTANT

- The cables that are preinstalled in the drive side console **should not be repositioned, removed, or have the ties cut** until you are instructed to do so in these instructions.
- Make sure** all preinstalled cables, belts and straps are clear of the side columns when you lift the console into place, so that they are not crushed or crimped.

Drive side console

Wireless antenna: this is prewired to the encoder (inside the motor) and crated next to the motor.

Leave in place until it is time to install it.



Power cables: these are preinstalled, cable tied and placed on the drive shaft when the door is crated.

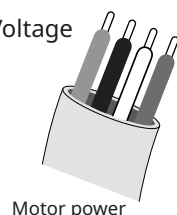
Wire colors are shown below ①.

Leave the coils in place until the console is installed.

Brake release cable: make sure this stays clear of the side column when the console is lifted into place.

① High Voltage

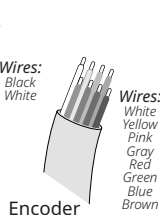
Low Voltage



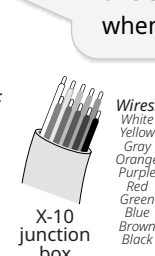
Wires:
Red
Black
White
Green



Wires:
Black
White

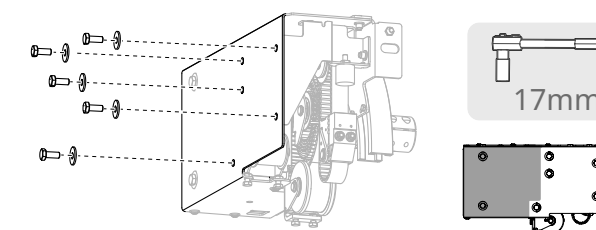


Wires:
White
Yellow
Pink
Gray
Red
Green
Blue
Brown

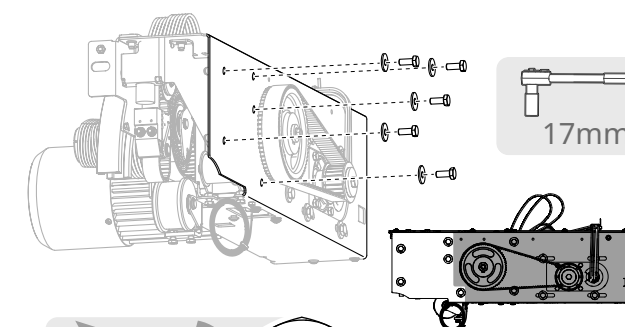


Wires:
White
Yellow
Gray
Orange
Purple
Red
Green
Blue
Brown
Black

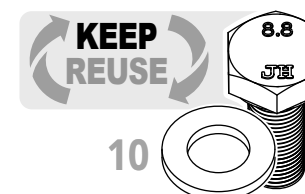
- Remove** the five preinstalled side column bolts and washers (located in the non-shaded area).
Do this on both consoles.



17mm



17mm



KEEP REUSE

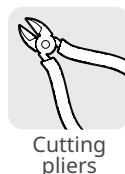
10

8.8
JH

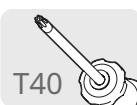
How to prep the side columns

- 1 Remove** the covers on both side columns.
Screws for side column covers run in a vertical line. There is also one screw at the base of the column.

Check all surfaces on side columns and head assembly for protective film. **Remove film.**



Cutting pliers



T40

number of screws varies based on height of door



Covers may have one, two or three panels depending on height.

Keep covers intact – **DO NOT** remove screws that run horizontally (shaded area).

Remove red tags from cables.
You can release the coiled cables now or leave them tied to columns until the columns are raised into place.

- 2 Make sure** the vertical guide tracks for the door panels are in the fully lowered position.

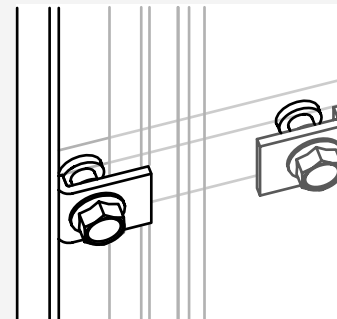
Door ships with each track set below the lip of its side column. **This protects the locating pins** while the console is being raised into place.

After the consoles are in place, **raise the track** to meet the curved track in the console. The locating pins align the two tracks.

Before

After

- 3 Loosen** the holders on the vertical guide track.
If necessary, lower the track.
Do this for both columns.



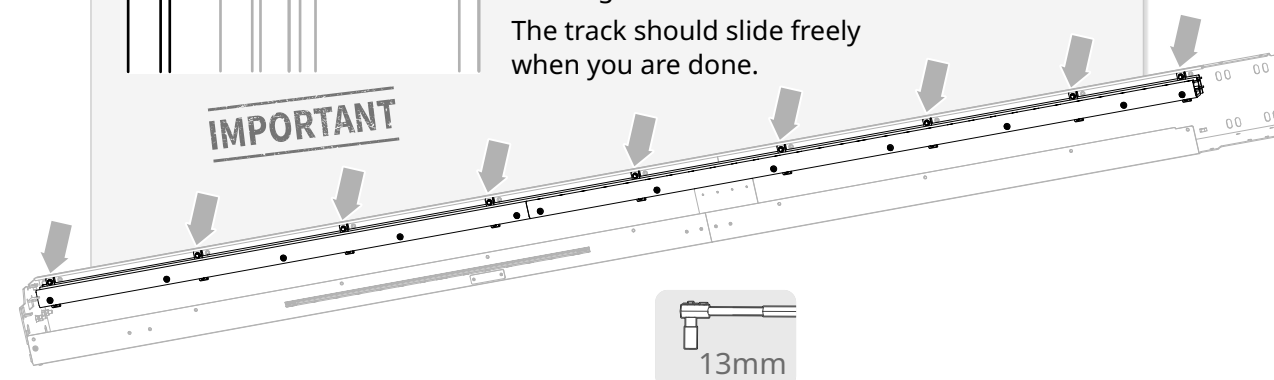
Loosen, but do not remove, each pair of track holders. The screws pass through a spacer and into holes in the wall of the column.

Do not loosen them so far that they come loose from their hole.

The number of holders varies based on the height of the column.

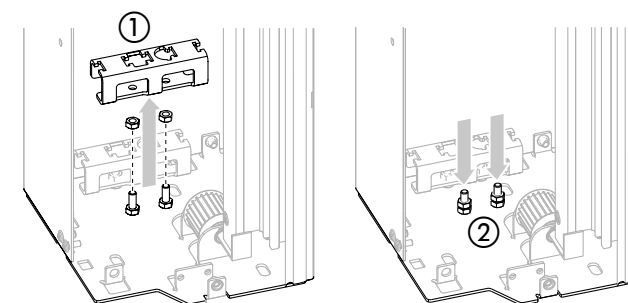
The track should slide freely when you are done.

IMPORTANT



13mm

- 4 -S and -S/R doors only:** if there are two baseplate tubes for the springs attached to the side column baseplates (see page 19 for spring configurations), **remove** the front tube ①, then **reinstall** the two retaining nuts to their posts ②.



17mm



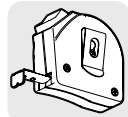
- 5** Select one holder at the halfway point of the side column and **hand tighten the screws** to secure the guide track in place.
Do this for both columns.
The tracks can now be repositioned easily after the side columns are installed, but will not slide while the columns are being lifted into place and leveled.

How to center the door in the door opening

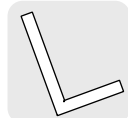
IMPORTANT

Rytec doors are engineered to be centered in the door opening, so follow these steps even if the width of the opening and the production width match exactly.


1



Measuring tape



Carpenter's square

<div><div>Object list</div><div>Duplicate</div></div>				Material number		716	
Material description				Order number		Order quantity	
SPIRAL STN-S				20076896		1 EA	
MPP controller		Production scheduler		Order type		Start	
B500		T6		ZP02		11/04/2019	
75ZMAT		Tier 6		RYTEC MTO Order		Finish	
Status		REL MSPT PRT PRC SETC		Plant		Reservation number	
				2000		0002596972	
				Rytec Corporation -		Creation Date	
						10/22/2019	
Serial number							
D0099760-010							
Configuration							
DOOR MODEL NAME Spiral Low Headroom FV "S" ①							
Door Width (Inches) 216-142 216-3/16							
Door Height (Inches) 144-100 144-100							
Production Width in mm 5,490							
Production Height in mm 2,590							
Door head sizeA							
Line Voltage 230V							
motor mount side Left Hand Motor							
Motor Duty Standard Duty Motor							
Horsepower 2.0							
Number of solid slats 0							
Number of vent slats 0							
Brake Release Location Release lever on side column							
Hood style No spiral hood type							
Number of spacers 0							

width to center = 1/2 ①

Width to center = 1/2 ①

1: Measure the width of the door opening (w) and find the halfway point ($1/2 w$). Mark the centerline there.

2: Use the width to center from the object list ($1/2$ ①). Starting at the centerline, measure and mark the reference line for the first column.

Plumb, level, square: how to position the door correctly as you install the side columns

IMPORTANT

Call Rytec technical support at 800-628-1909 immediately and stop the installation if you are not able to correctly position the door.

Before you begin: things to know before you anchor the side columns

IMPORTANT

Do not anchor the top anchor hole on the inside of the side column (above the guide track) until after the consoles have been installed and leveled. This anchor passes through both the console and the side column.

There are four sets of anchor holes (①,②,③,④) at the top of each side column, with two holes in each set.

- Use at least one anchor in each set of anchor holes: ①, ②, ③ and ④. Anchor both holes unless conditions at the installation site prevent this.
- Position anchors at the horizontal center of the anchor holes.

INSIDER'S TIP

For doors over 12' (twelve feet) in height, drill an extra anchor hole near the halfway point of the side column for added stability when the column is installed.

How to anchor the door:

- Use 1/2" diameter through bolts, 1/2" diameter threaded rods or equivalent to anchor side columns.
- Anchoring hardware and materials must be provided by the door owner or installer.
- Make sure anchors do not interfere with moving parts of the door.

There are three anchor holes (①,②,③) in the baseplate of each side column.

You must use at least two anchors in the baseplate.

For -S and -S/R doors:

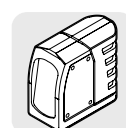
- The front baseplate spring tube must be removed to access the third hole.
- The baseplate pulley assembly is preinstalled into the baseplate.

Step 1: Plumb and level the site, then install and plumb the side columns

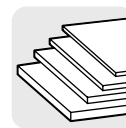
- 1** **Plumb** the door opening.
If the wall is not plumb, or there is bowing or an obstruction in the wall, **shim** the columns.

IMPORTANT

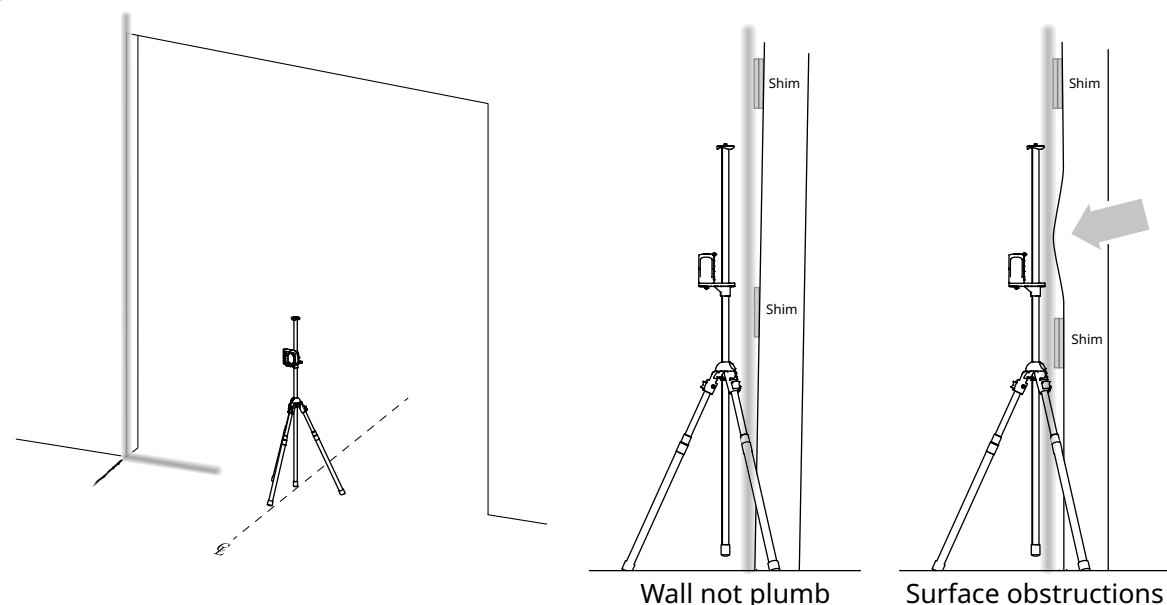
To prevent column from bowing, shim as needed **at each anchor point**.



Laser level



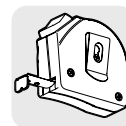
Shims



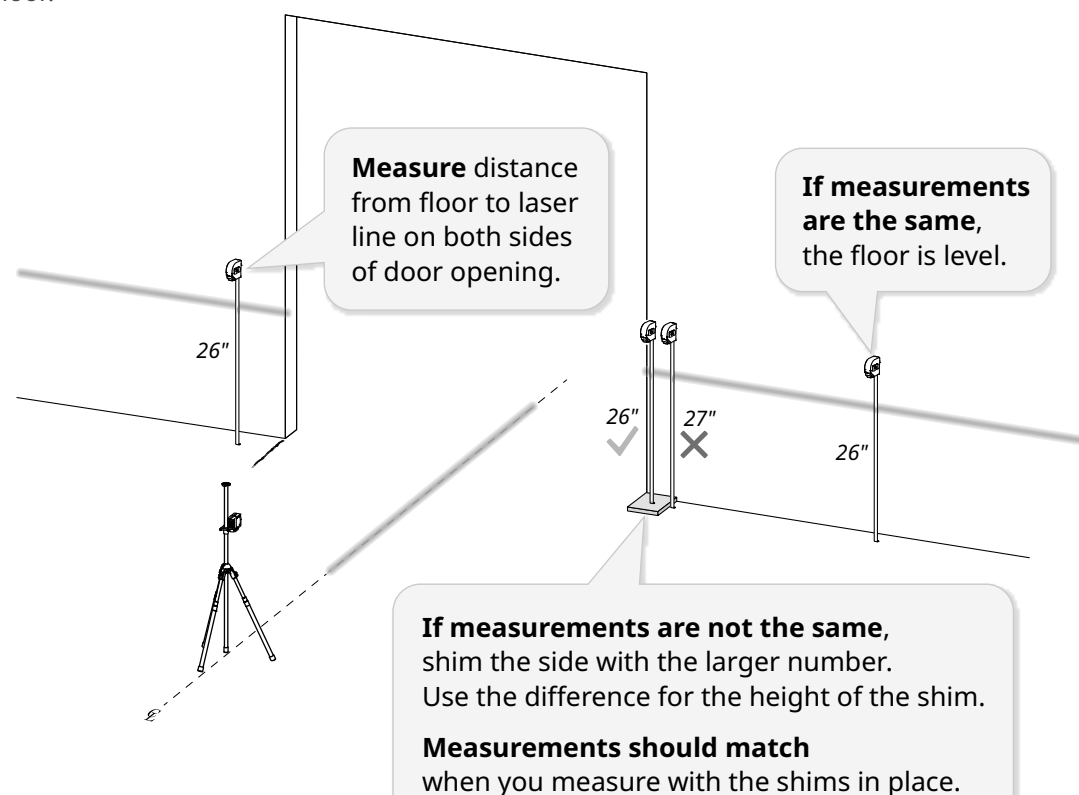
- 2** **Level** the floor.



Laser level



Measuring tape



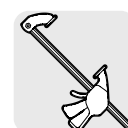
3 **IMPORTANT**

If the floor is level, install the drive side column first.

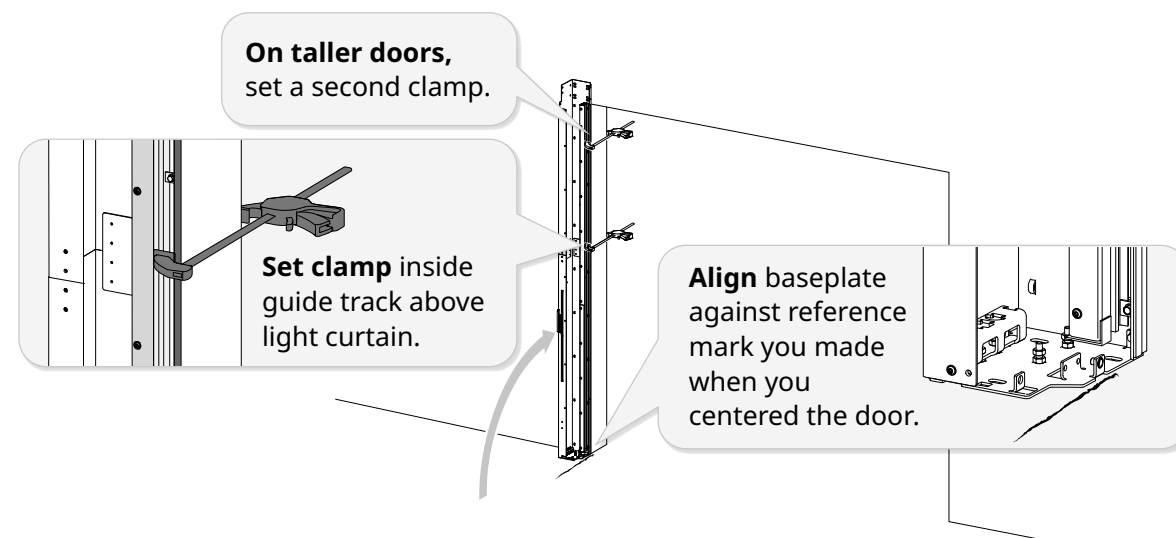
If the floor is not level, install the side column that is not shimmed first.

4

Clamp the first side column into place.



Bar clamp

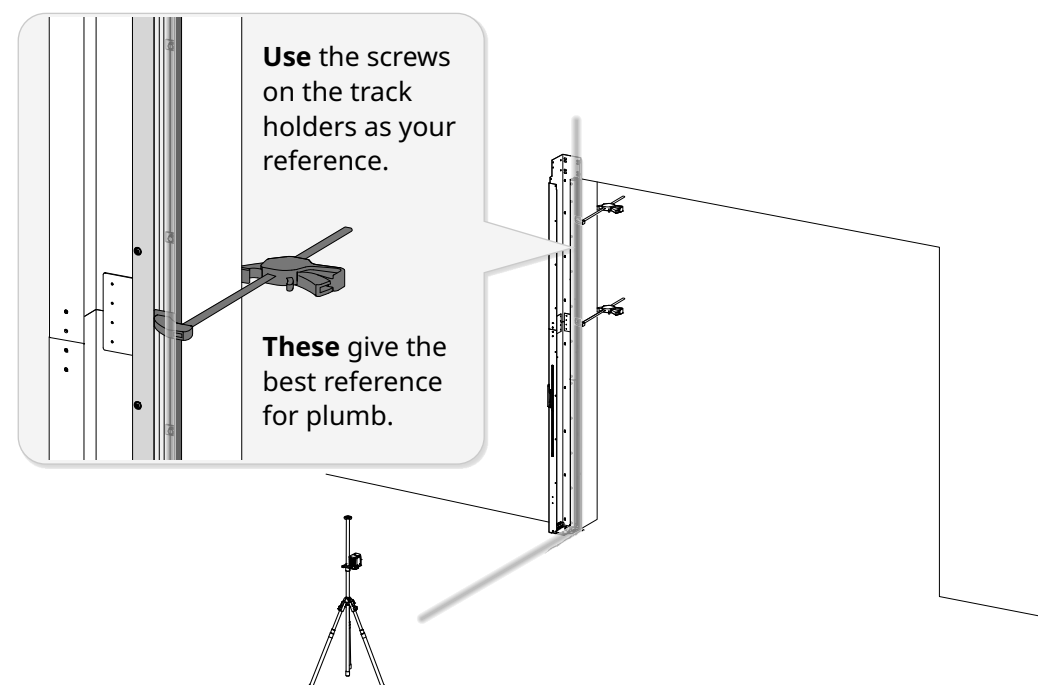


5

Plumb the side column.



Laser level



6



Anchoring hardware

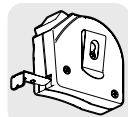
Anchor the first side column to the wall at the **top of the column** and **baseplate**.
Set anchors tight. **Remove** clamp(s).

IMPORTANT

Make sure you have read *Before you begin* on the previous page before you start.

DO NOT ANCHOR the top anchor hole nearest to the door opening until the consoles have been installed and leveled.

7 Measure and mark the reference mark for the second side column.

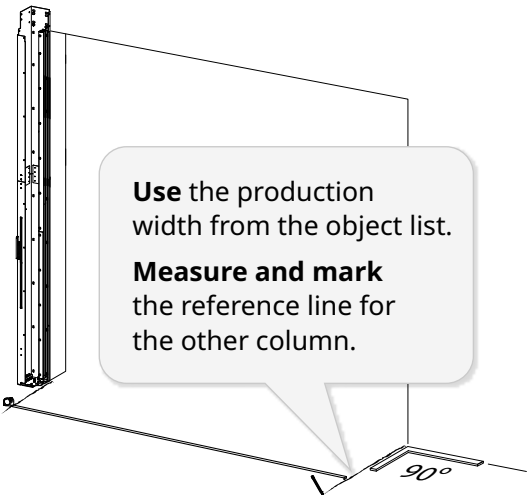


Measuring tape



Carpenter's square

		Object list		Material number	
		Duplicate		716	
Material description				Order number	Order quantity
SPIRAL STN-S				20076896	1 EA
MFP controller	Production scheduler	Order type	Start	Finish	
500	T6	ZP02	11/04/2019	11/06/2019	
BS ZMAT	Tier 6	RYTEC MTO Order	Reservation number	Creation Date	
Status		Plant	0002596972	10/22/2019	
REL MSPT PRT PRC SETC		2000			
		Rytec Corporation -			
Serial number					
D0099760-010					
Configuration					
DOOR MODEL NAME Spiral Low Headroom EV "S"					
Door Width (Inches) 216-142 216-3/16 ①					
Door Height (Inches) 104-969 102					
Production Width in mm 5,490					
Production Height in mm 2,590					
Door head sizeA					
Line Voltage 230V					
motor mount side Left Hand Motor					
Motor duty Standard Duty Motor					
Horsepower 2.0					
Number of solid slats 0					
Number of vent slats 0					
Brake Release Location Release lever on side column					
Hood style No spiral hood type					
Number of Springs 0					

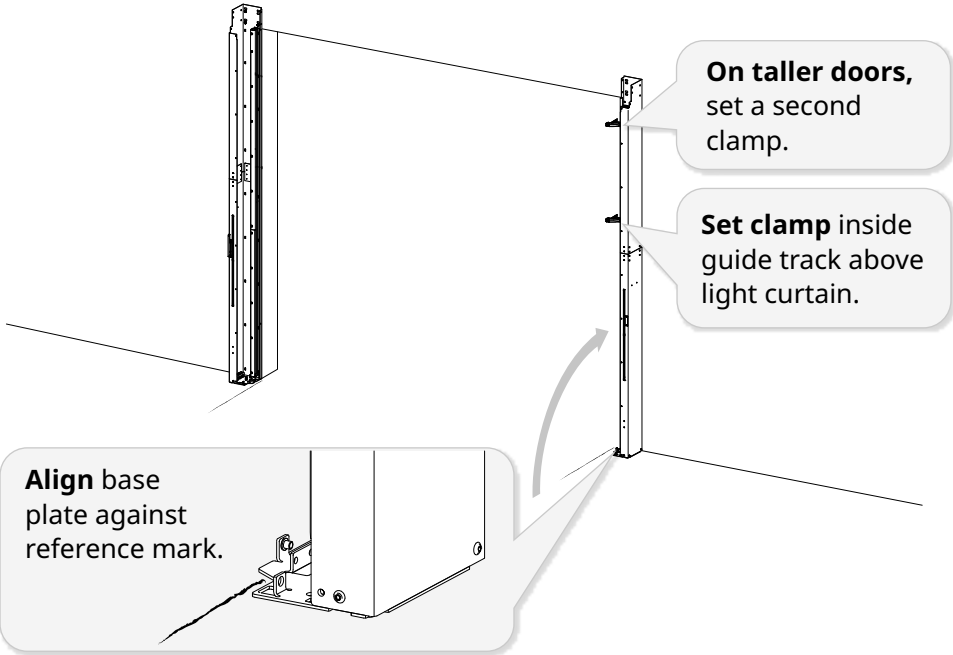


Use the production width from the object list.
Measure and mark the reference line for the other column.

8 Clamp the non-drive side column into place.



Bar clamp

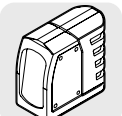


Align base plate against reference mark.

On taller doors, set a second clamp.

Set clamp inside guide track above light curtain.

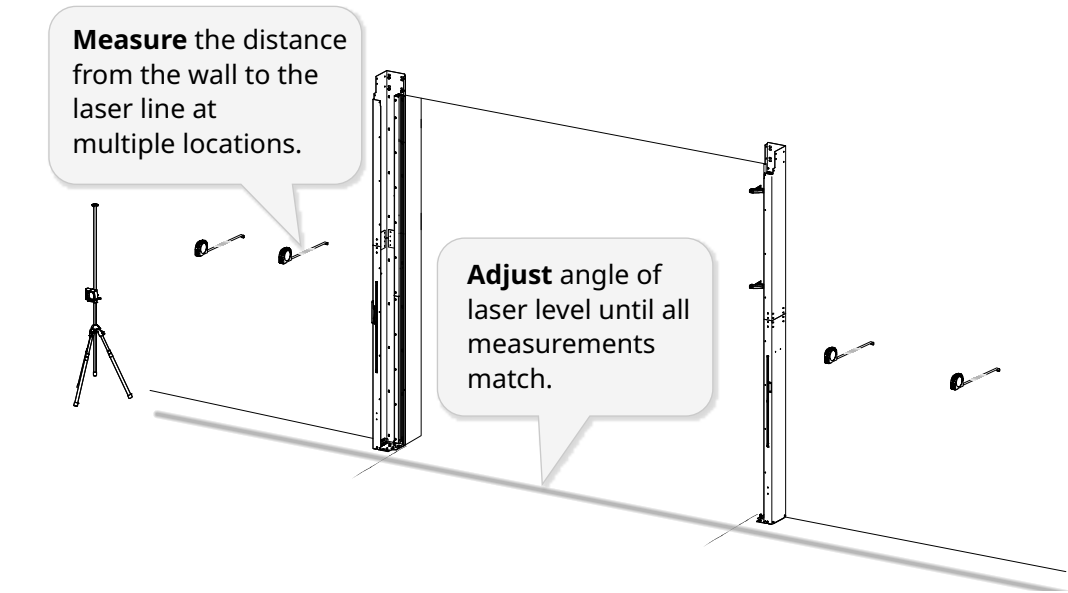
9 Set a laser line parallel to the wall 1" (one inch) in front of columns.
Make sure the line is parallel to the wall.



Laser level



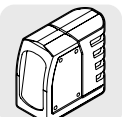
Measuring tape



Measure the distance from the wall to the laser line at multiple locations.

Adjust angle of laser level until all measurements match.

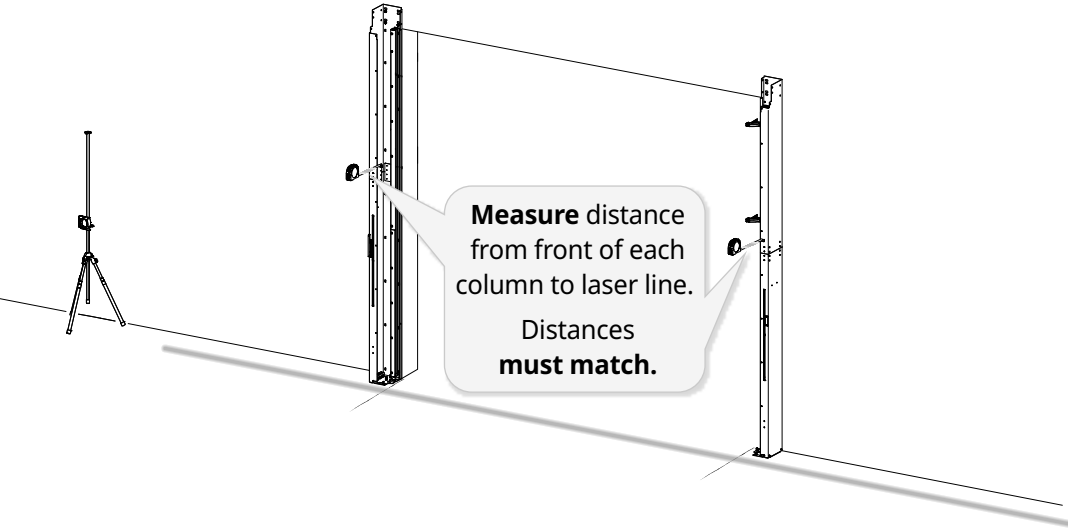
10 Plumb the side columns to each other.



Laser level



Measuring tape



Measure distance from front of each column to laser line.
Distances must match.

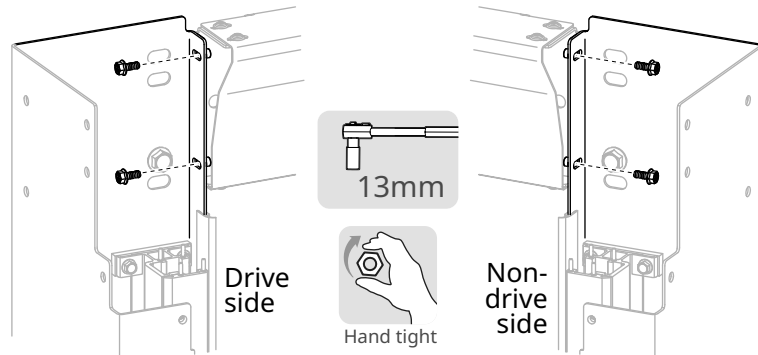


Shims

If necessary, shim the side columns so they are plumb to each other.

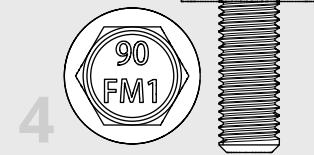
Step 2: Install the rear seal (rear spreader)

1 Install bolts on both sides of the seal and **hand tighten**.



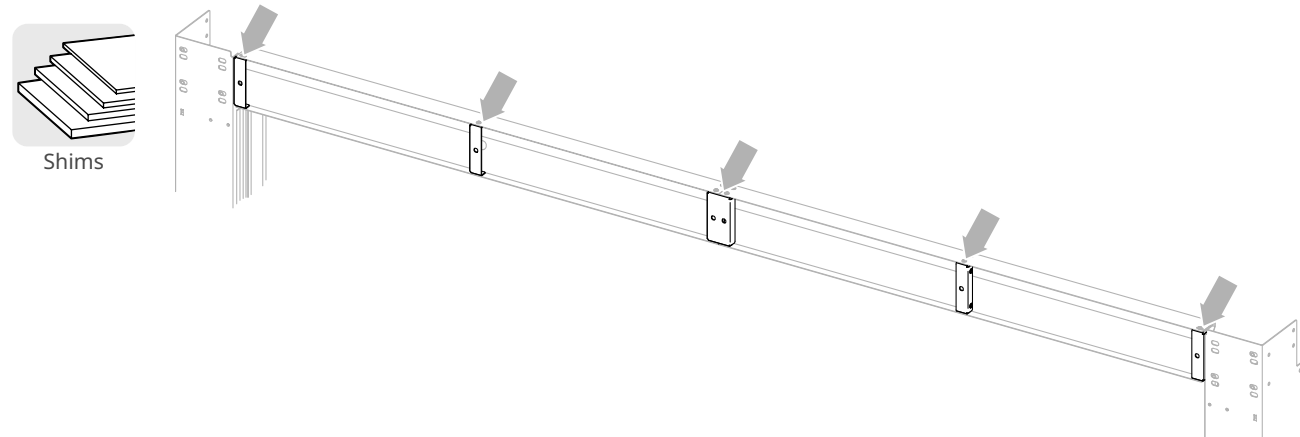
SMALL PARTS

0550278-0Z01

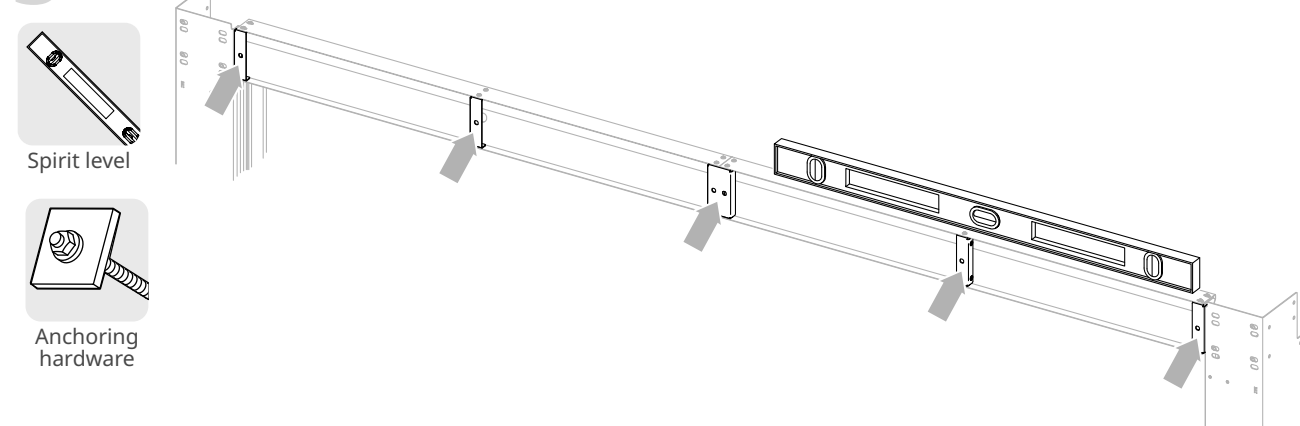


2 Make sure all of the anchor points of the seal are making direct contact with the wall.

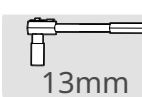
- If necessary, **shim the seal** at all anchor points that are not flush.



3 Make sure the rear seal is level, then **anchor** the rear seal to the wall at all anchor points.

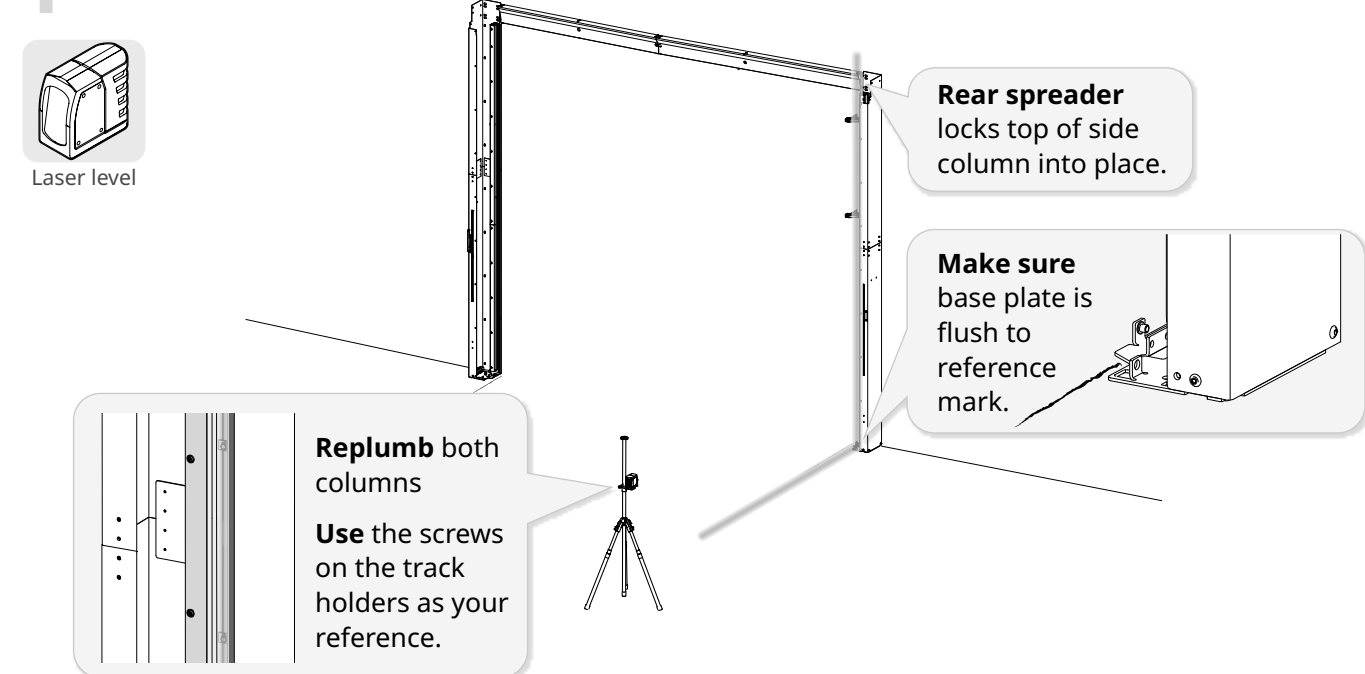


4 Tighten the bolts on both sides of the seal.



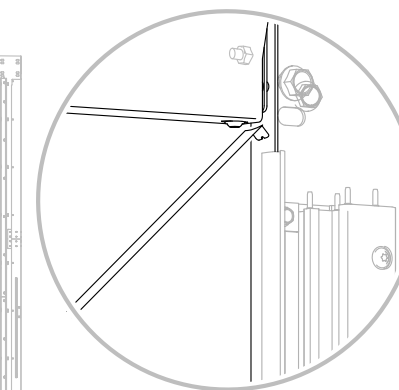
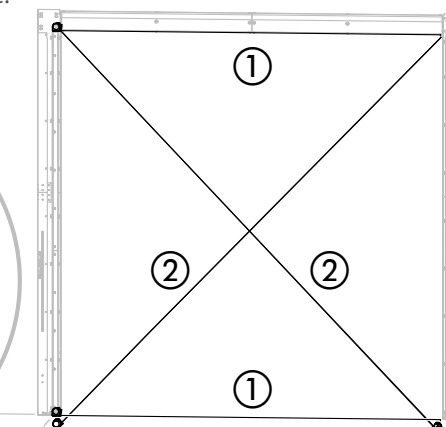
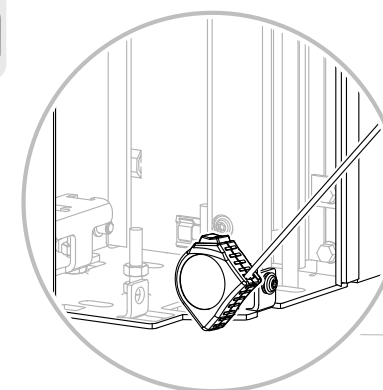
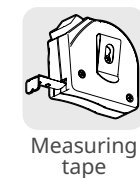
Step 3: Replumb and square the door and finish anchoring the side columns

1 Make sure the second side column is properly lined up, then **replumb** both side columns from the front.



2 Square the door:

- **Measure** distance between side columns at top and bottom of columns ①.
- **Make sure** the distances are the same.
- **Measure** distance from bottom corner of drive side to top corner of non-drive side, then from bottom corner of non-drive side to top corner of drive side ②.
- **Make sure** the distances are the same.



3




Anchor the second side column to the wall at the **top of the column** and **baseplate**. Set anchors tight. **Remove** clamp(s).

IMPORTANT

Make sure you have read *Before you begin* on the page 7.


DO NOT ANCHOR the top anchor hole nearest to the door opening until the consoles have been installed and leveled.

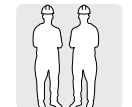
How to install the consoles







WARNING

The drive side console weighs up to 200 pounds.

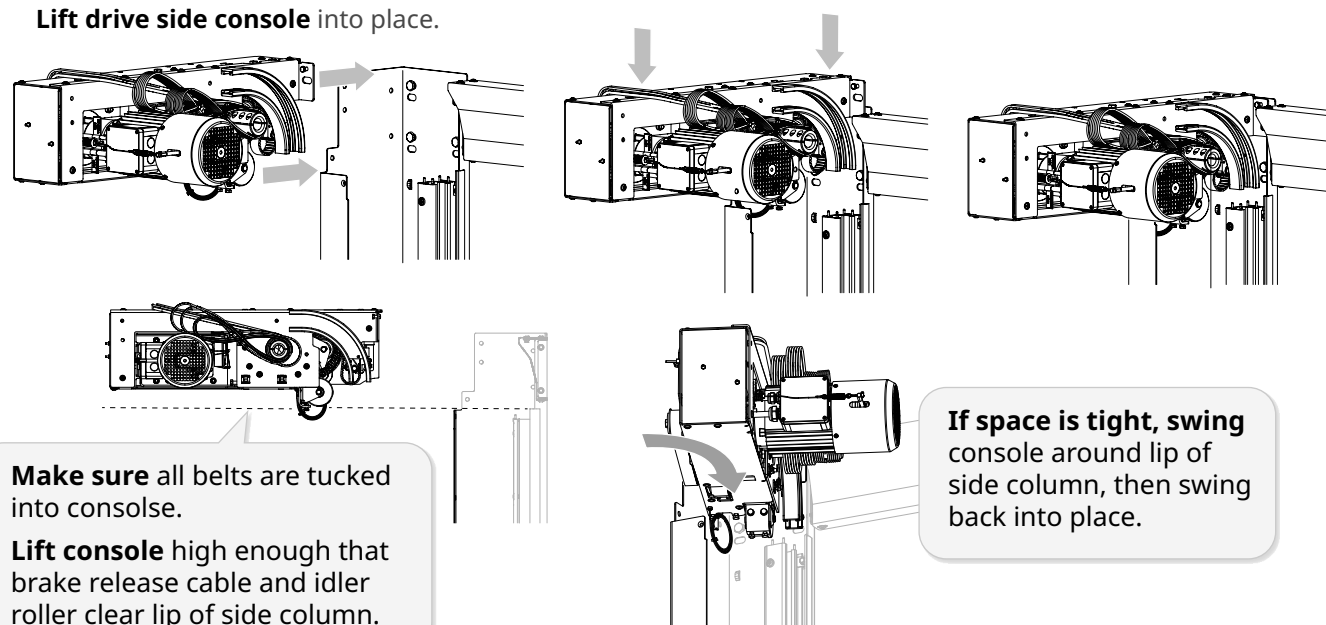
 **Make sure** you use a forklift or mechanical lift that meets all requirements listed on page 1 of this manual.

 **Make sure** the console is secured to the lifting equipment.

Two-person lift when console is placed on the side column.

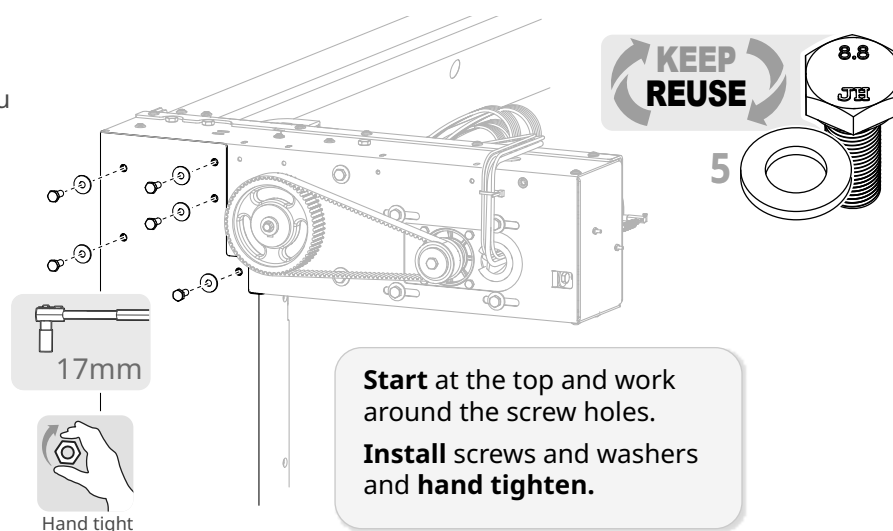





1 Lift drive side console into place.



2 Reinstall the side column screws and washers.

Hand tighten only until you have leveled the console.

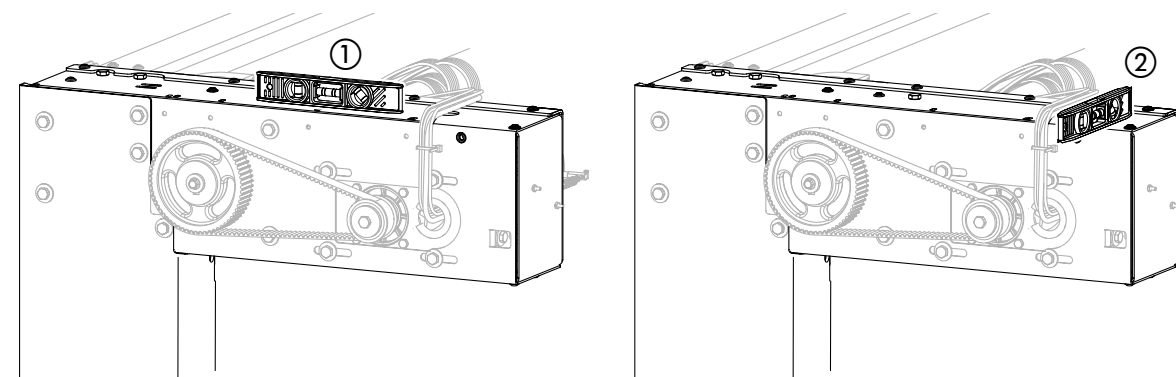


3 Level the console laterally ①.

- If necessary, **loosen** the side column screws, **manually adjust** the position of the console, and **tighten** the screws.

Level the console horizontally ②.

- If necessary, **loosen** the side column screws, **manually adjust** the position of the console, and **tighten** the screws.

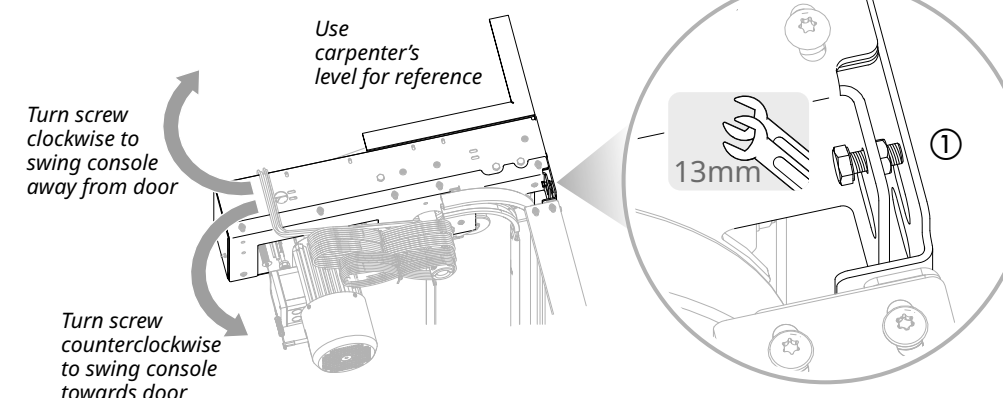
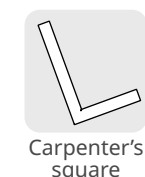


4 Tighten the side column bolts.



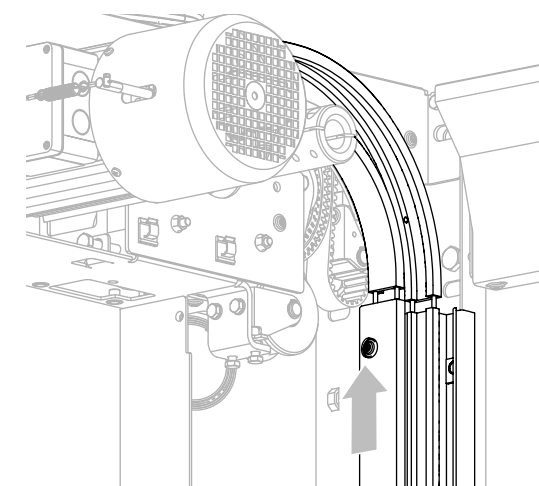
5 Square up the console so it is perpendicular to the wall.

Use a carpenter's square and **turn** the rear hex adjustment screw ①.



6 To verify that the console is correctly aligned, loosen the screw on the vertical drive track and raise the track into place.

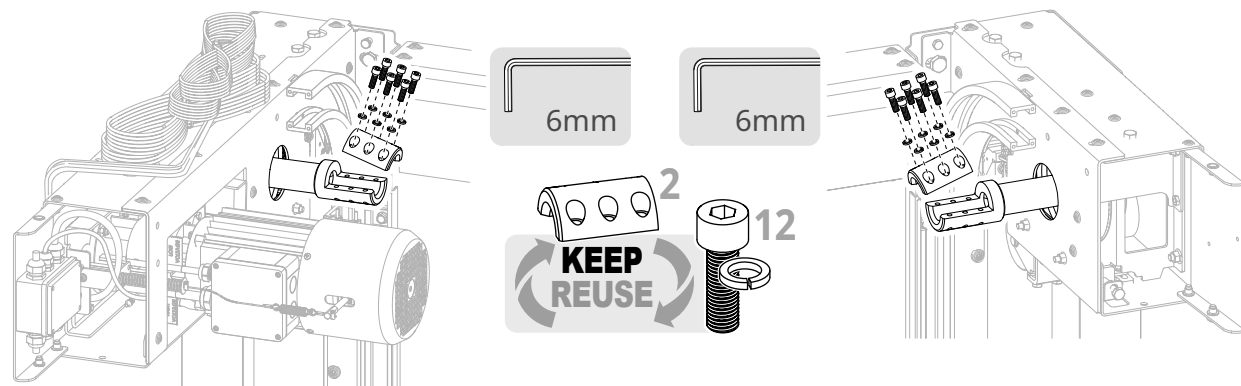
- The track pins should slide easily into their holes.



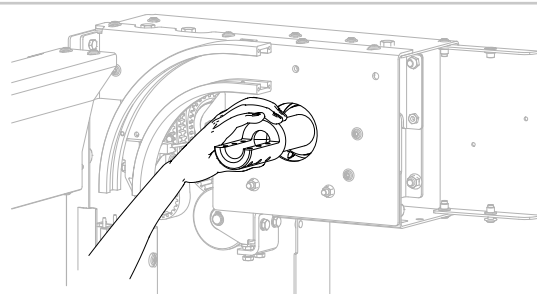
How to install the drive tube

1 Remove the clam shell, bolts and washers from both side shafts.

- Based on the partial wraps from previous steps, shafts may be at an angle which makes the clam shell difficult to remove.

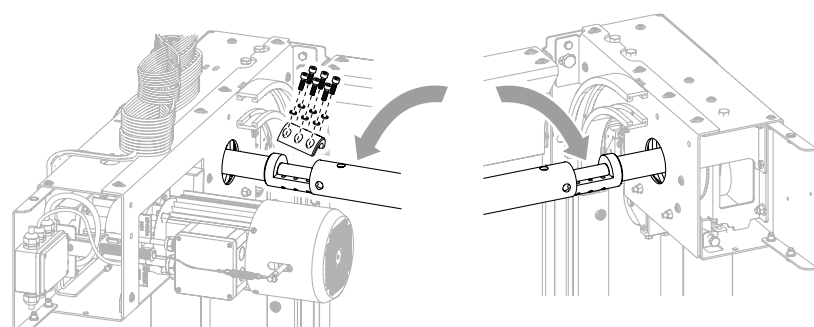
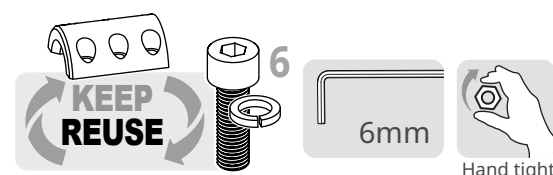


2 Push in the non-drive side shaft until it is tightly seated against the pulley wheel.

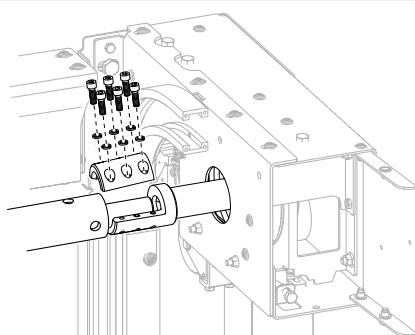
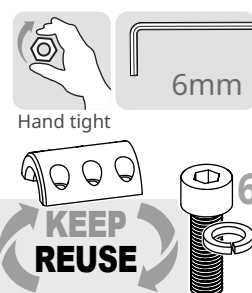


3 Lift the drive tube and place both ends into the drive shafts.

- Immediately reinstall the drive side clam shell, bolts and washers and set hand tight to hold the tube in place.

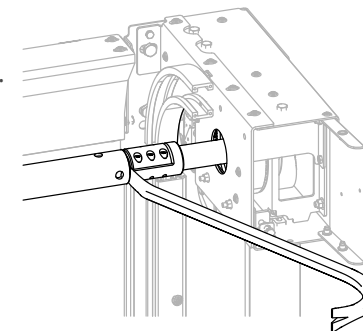
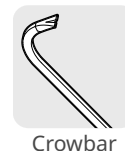


4 Reinstall the non-drive side clam shell, bolts and washers and set hand tight.

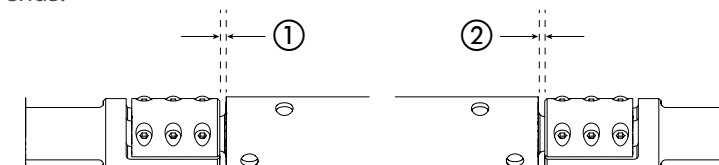
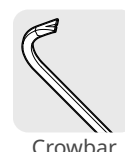


How to center the drive tube

1 Set a crowbar between the drum and the non-drive side shaft. Use it to tighten the drive shafts against the pulleys in both consoles.



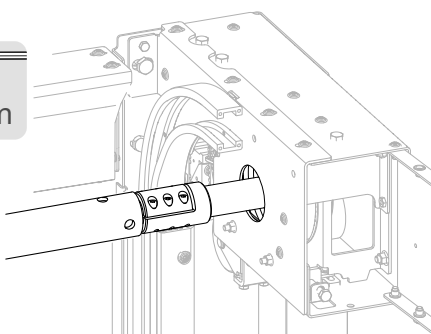
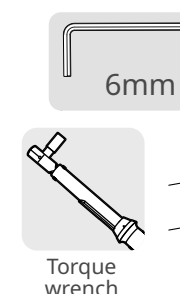
2 Check the gap between the drum and the drive shaft on both ends of the tube. Adjust the tube until the gap is even on both ends.



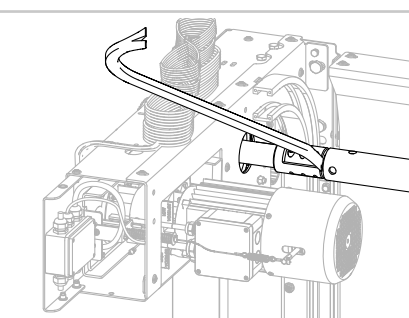
3 Tighten the screws on the non-drive side shaft.

IMPORTANT

- Make sure the wraps have not shifted before tightening.
- Make sure the angles of the shafts and the gaps match on both sides of the drum
- Torque bolts to 31 ft-lbs.



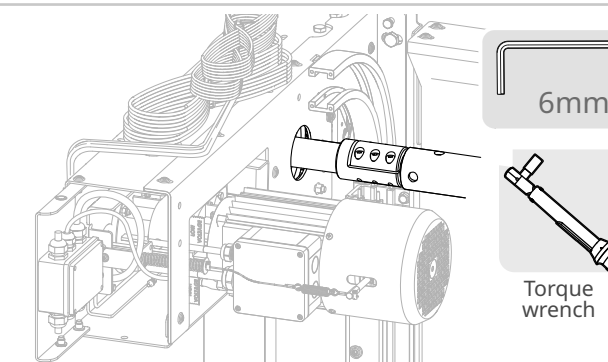
4 Set the crowbar between the drum and the drive side shaft. Use it to re-tighten the drive shaft against the pulley..



5 Tighten the screws on the drive side shaft.

IMPORTANT

- Make sure the wraps have not shifted before tightening.
- Make sure the angles of the shafts and the gaps match on both sides of the drum
- Torque bolts to 31 ft-lbs.



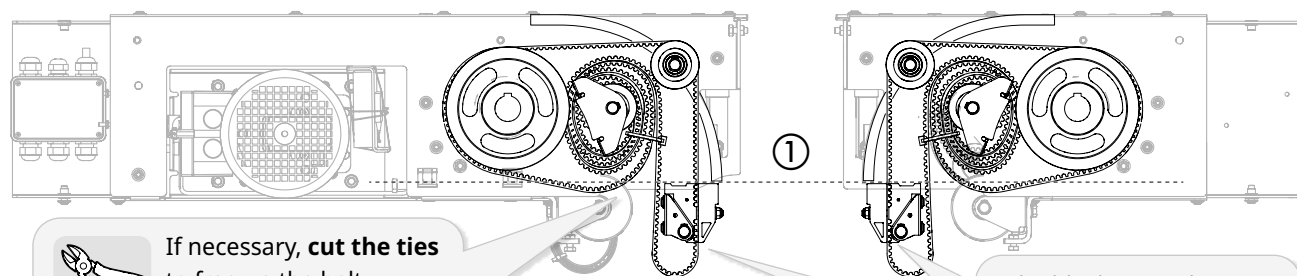
How to set the secondary drive belts so the door will be level

Things to know before you realign the belts

- The **splice blocks (timing blocks)** ① on the secondary drive belts connect to the door panel and are the points where the belts raise and lower the door.
- With the spring straps correctly wrapped and the drive pulleys locked in place by the motor and the drive shaft, **realign the secondary drive belts** on the drive pulleys to **level** the splice blocks..

IMPORTANT

1 Check the position of each splice block and, if necessary, **realign** the belts.



If necessary, **cut the ties** to free up the belt. Leave the belt rolled up in the console.

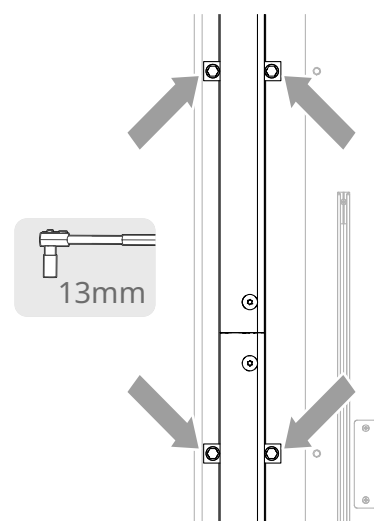
The blocks must line up **EXACTLY** or the door will not operate correctly.

To move the block, **loosen** the belt around the drive pulley, then **"jump" one tooth at a time** until the block is at the correct height.

Jump the belt until the **top of the block** lines up with the **bottom of the radial track**.

How to raise the vertical guide tracks into place

1 **Make sure** that all of the vertical guide track holders are loose enough to allow the track to move freely. **DO NOT remove** any of the holders.

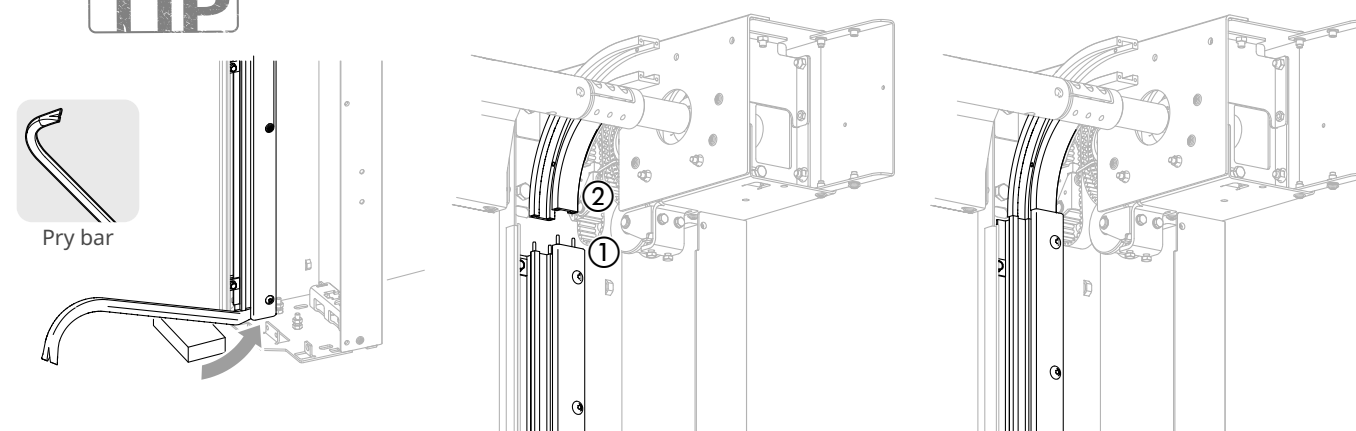


13mm

2 **Make sure** the pins at the top of the vertical guide track ① align with the holes in the radial track ② of the console.

INSIDER'S TIP

Use a pry bar to lift and hold the vertical guide track in place.



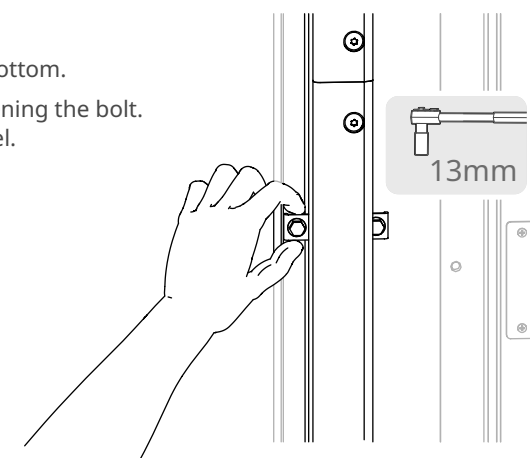
3 **Tighten** the bolts on the track holders.

- Start at the **middle of the track** and work toward the top and bottom.
- **Make sure** the holder is at a 90° angle to the track before tightening the bolt. **You will need to hold it in place** while tightening to keep it level.
- **Make two full passes** from top to bottom: tighten bolts to snug on the first pass, then fully tighten on the second pass.



CAUTION

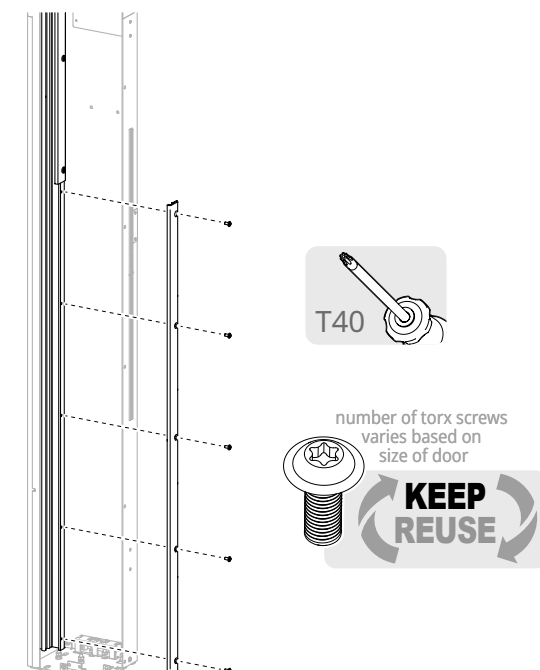
Make sure your fingers are clear of the bolt when tightening. Power tools are not recommended.



13mm

4 **Remove** the bottom section of the vertical guide track cover.

Do this in both side columns.



T40

number of torx screws varies based on size of door

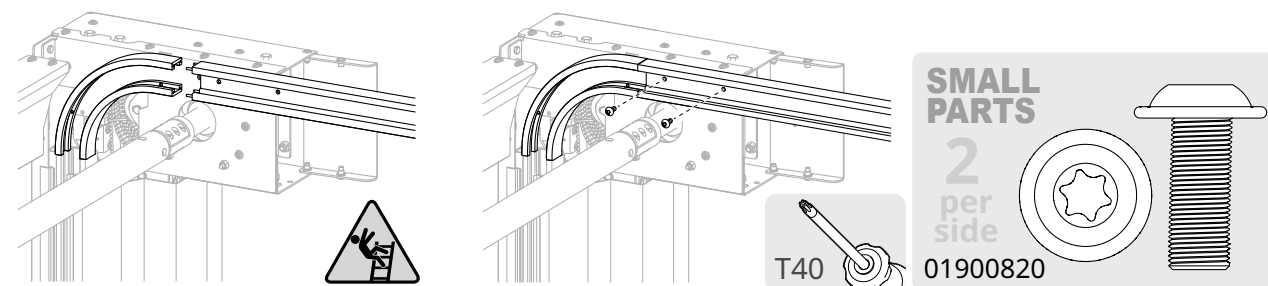
KEEP REUSE

How to install the horizontal tracks

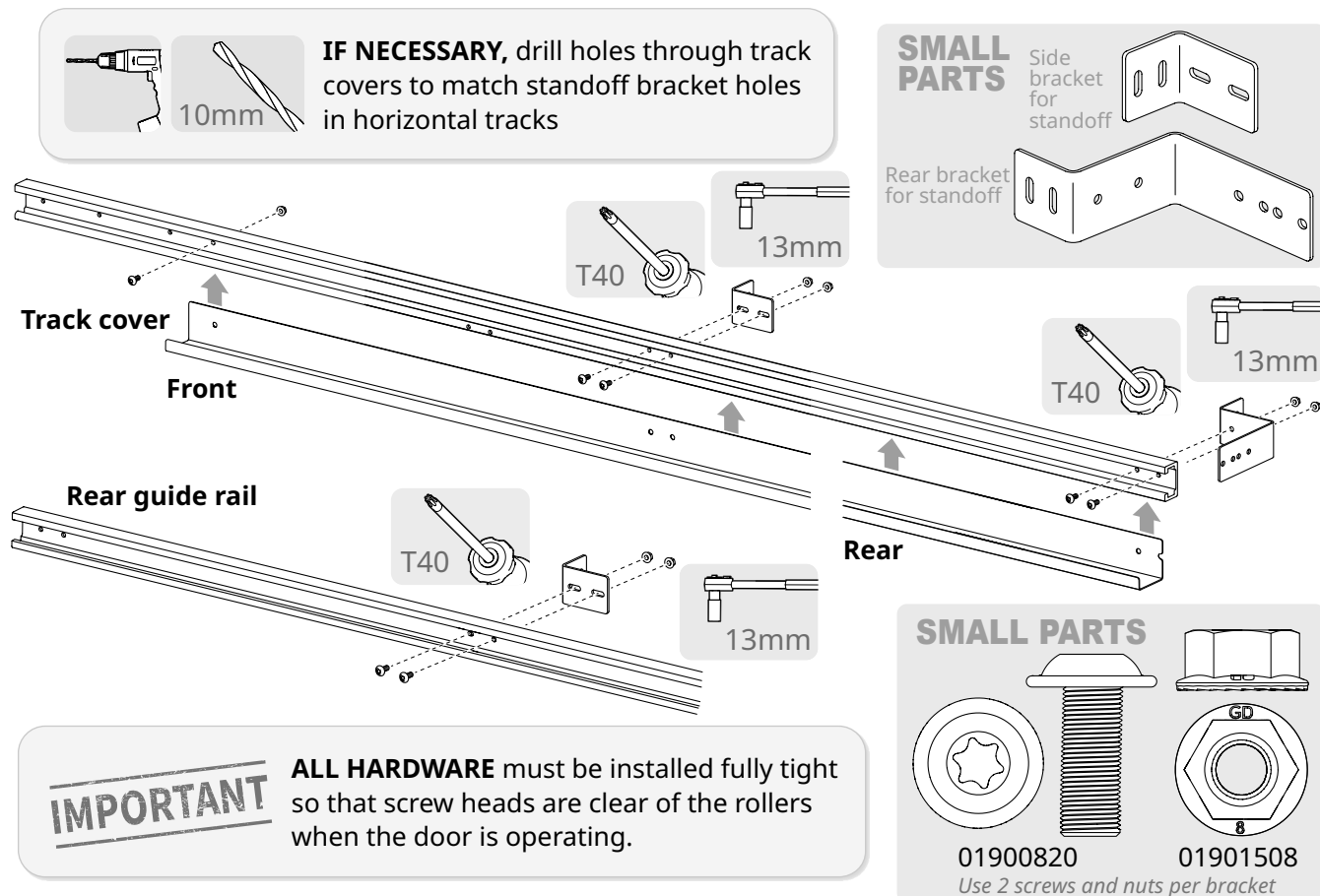
1 **Locate** the two horizontal tracks and track covers, and the rear guide rail, in the crate.



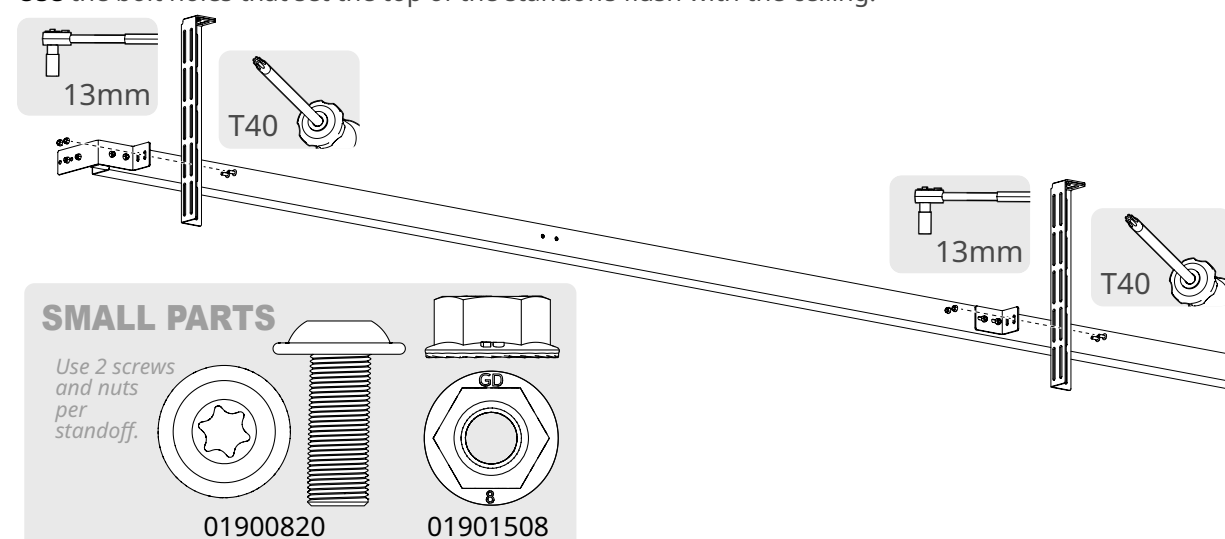
2 **Line up** the guide pins in the horizontal track with the holes in the radial track of the console and **install** the track. **Do this** on both consoles



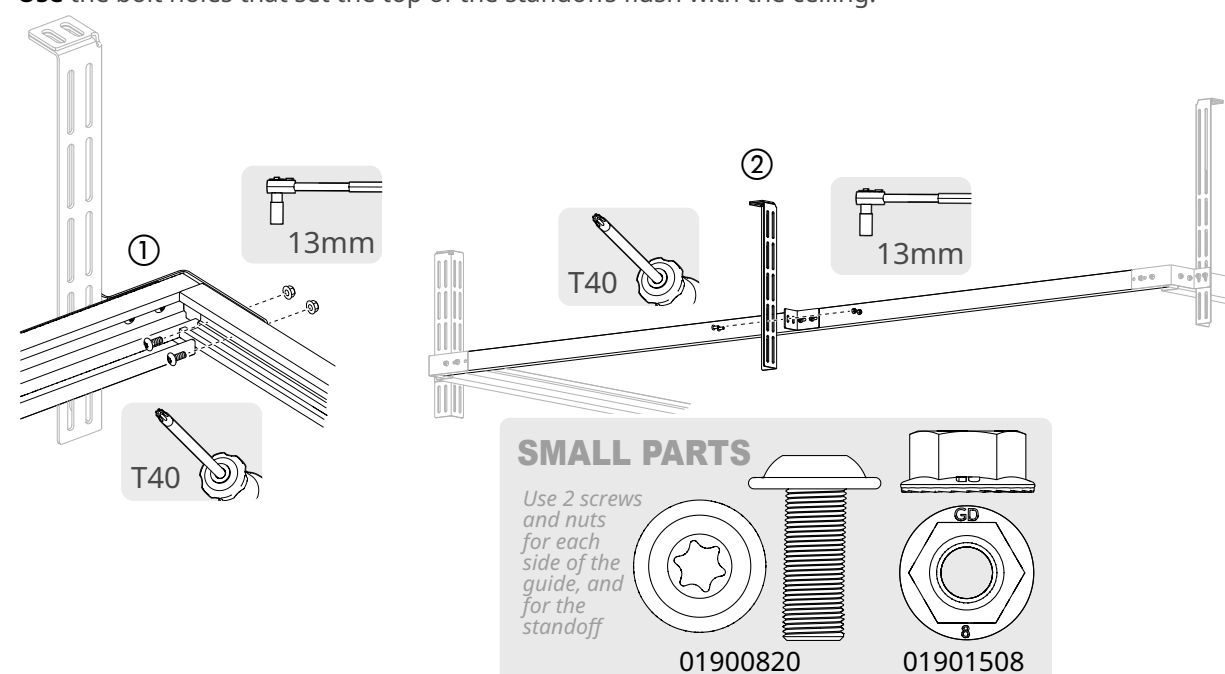
3 **Locate** the standoff brackets (side and rear), screws and nuts in the small parts box. **Install** the covers and brackets onto the tracks. **Install** the bracket onto the guide rail.



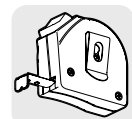
4 **Locate** and **install** the standoffs on both horizontal tracks. **Use** the bolt holes that set the top of the standoffs flush with the ceiling.



5 **Install** the rear guide rail and the rear standoff. **Use** the bolt holes that set the top of the standoffs flush with the ceiling.

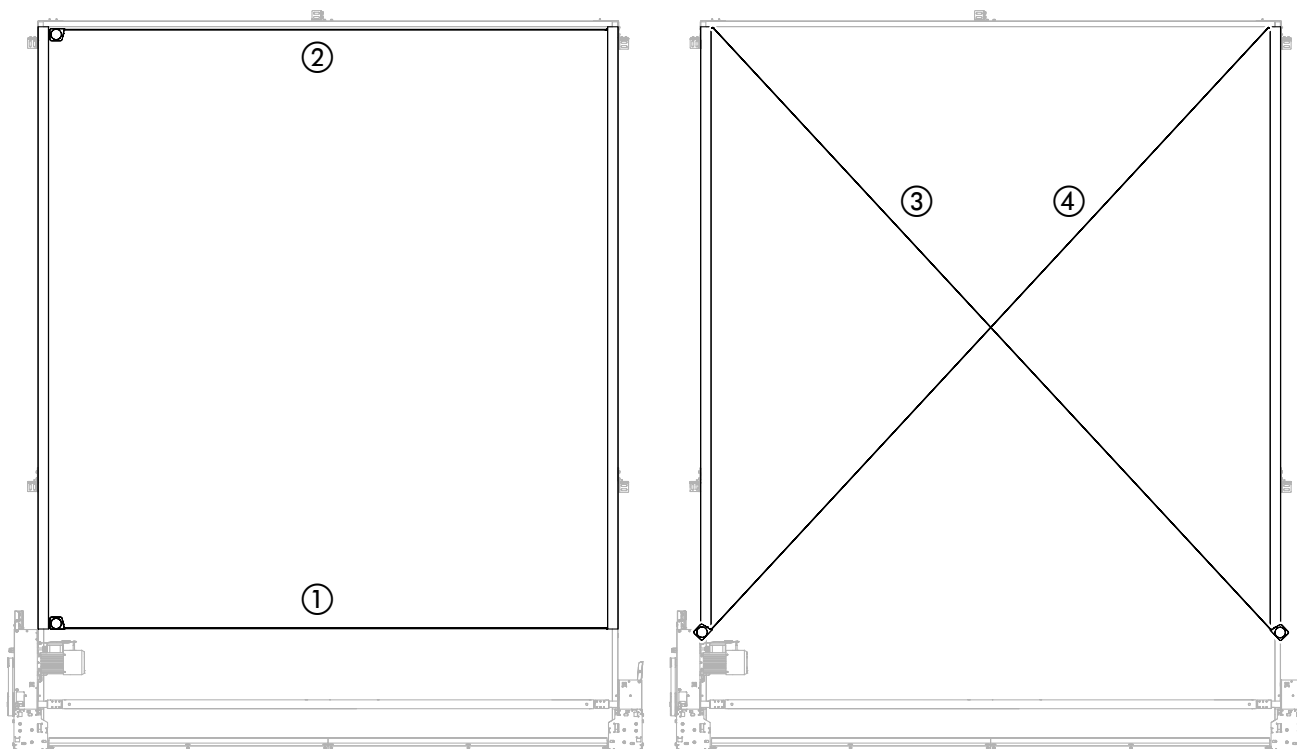


6 Square the horizontal tracks:



Measuring tape

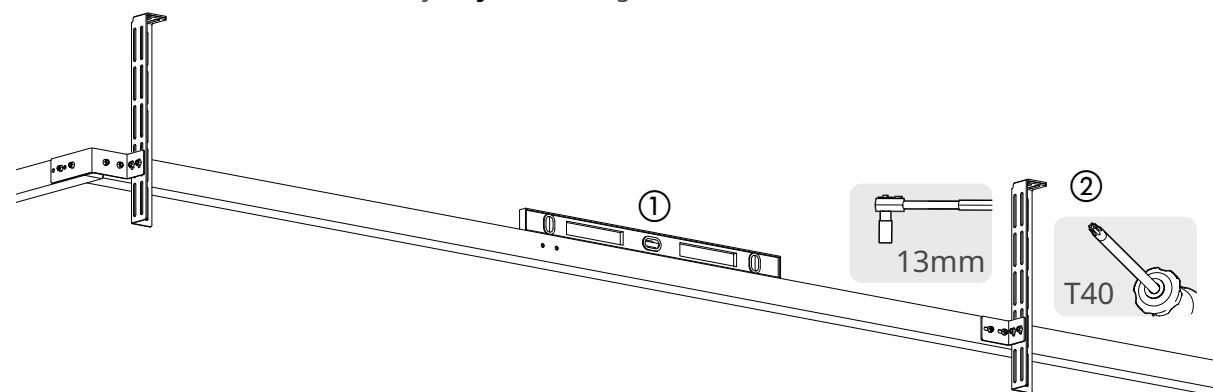
1. **Measure** between the tracks at the start ① and end ② points.
 - If the measurements do not match, adjust the rear guide until they do.
2. **Measure** diagonally across the tracks (③, ④).
 - If the measurements do not match, reposition the tracks until they do.
3. **IMPORTANT** When the tracks are square, **mark the position** of all of the standoffs and the anchoring holes in the ceiling.



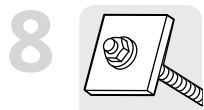
7 Level the horizontal tracks ①. If necessary, **adjust** the height of the standoffs ②.



Spirit level



8 Anchor the standoffs to the ceiling.



Anchoring hardware

How to install the door panel

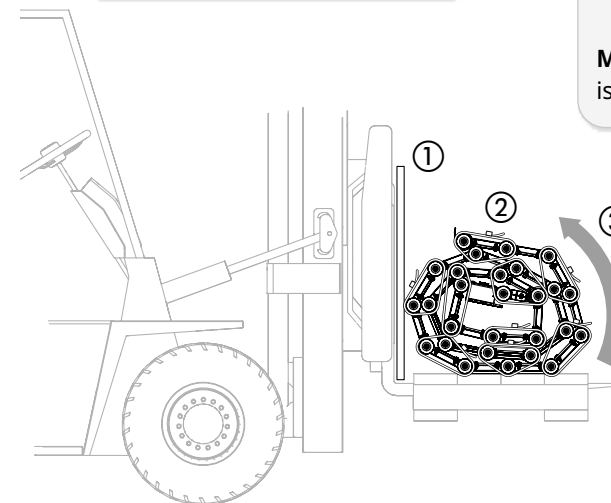
- 1 Use a forklift to remove the door panel, on its pallet, from the crate.

IMPORTANT

Pallet is nailed to crate. Use a crowbar to loosen the nails before lifting.

IMPORTANT

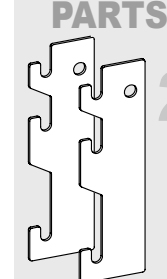
Make sure the door panel is centered before lifting.



- ① Place foam or cardboard against the backstop to protect the door finish.
- ② **DO NOT** clip the ties around the rollers until you are raising the panel. The ties prevent the door panel from unraveling.
- ③ **Make sure** the door panels are wrapped **AWAY FROM** the door opening. If necessary, turn the pallet around.

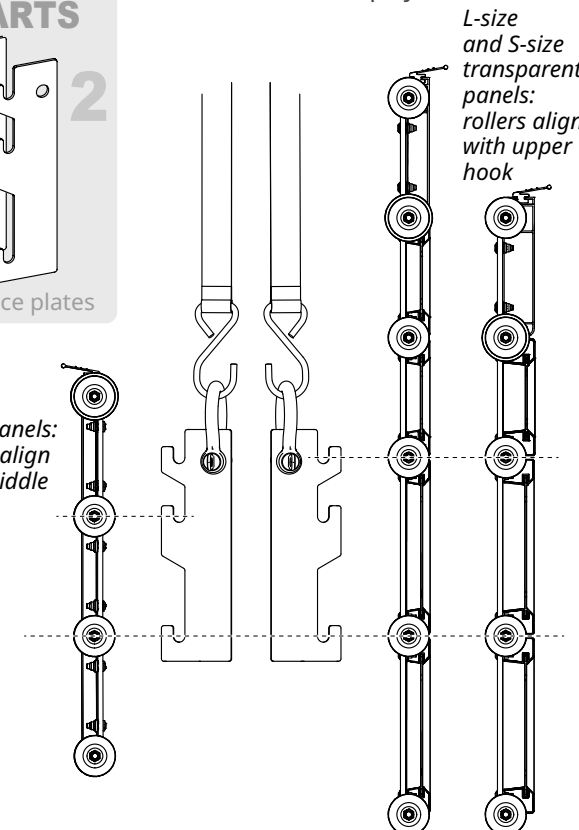
Things to know about the service plates

- **SMALL PARTS** to the ratcheted straps you use to lift the door panel.



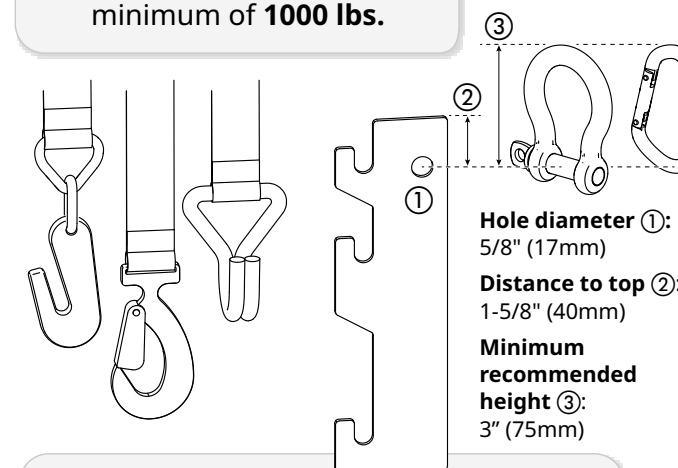
Service plates

Solid panels: rollers align with middle hook



IMPORTANT

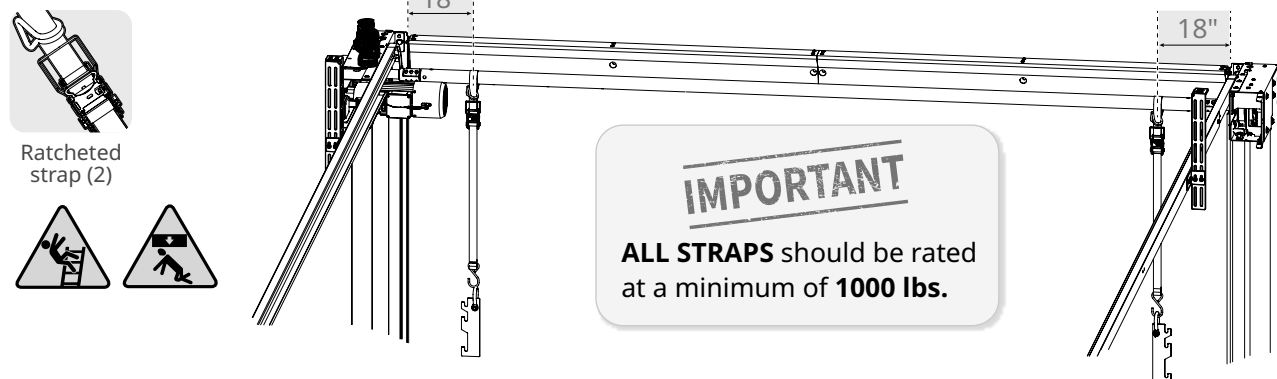
ALL HARDWARE and STRAPS should be rated at a minimum of **1000 lbs.**



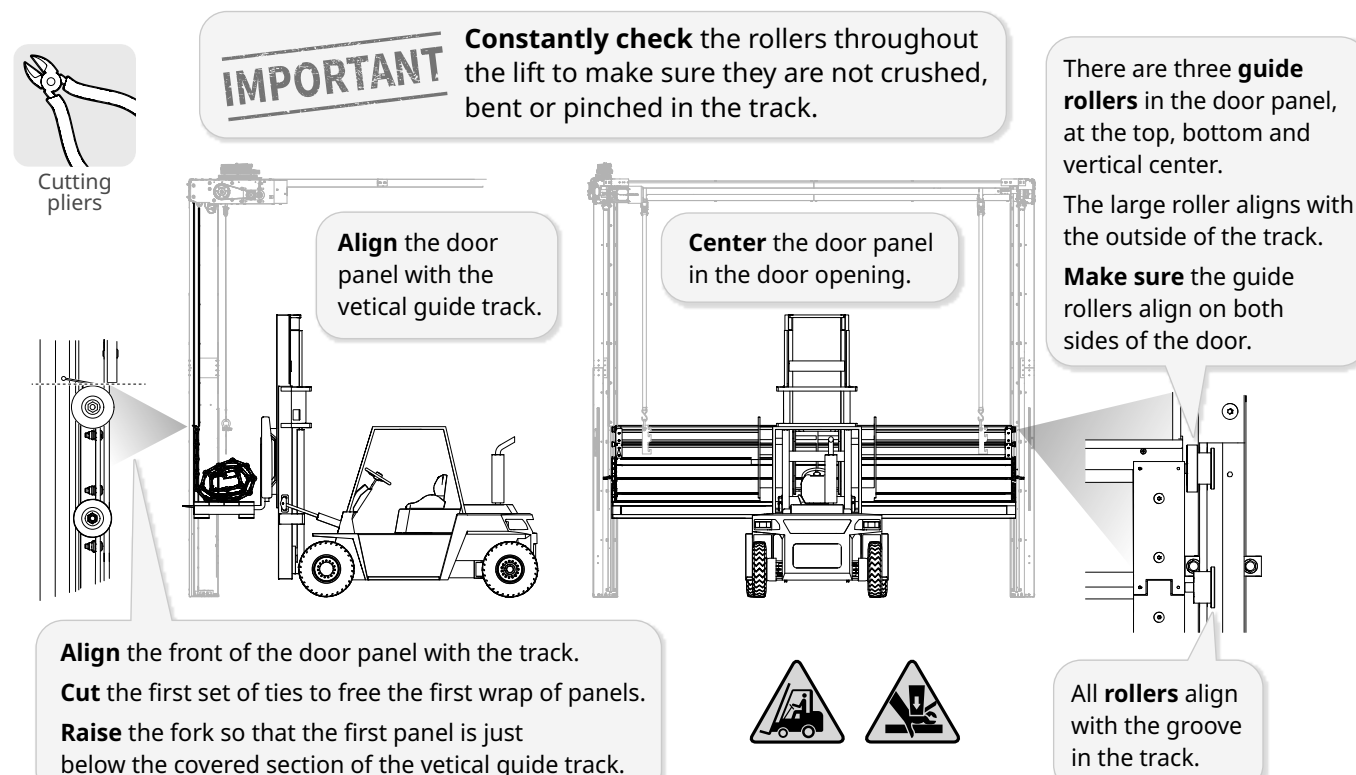
INSIDER'S TIP

Attach an anchor shackle or carabiner to the service plate to accommodate all hook sizes and configurations.

2 Hang a ratcheted strap from the drive tube next to each side column. **Attach** the service plates.



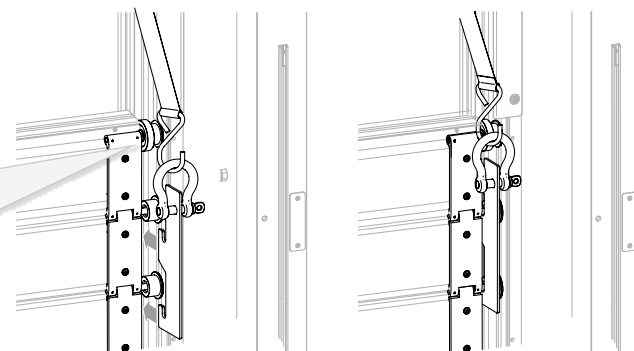
3 Use the forklift to **position** the door panel under the vertical guide track. **Cut** the first ties to **free up** the first wrap of panels and **line them up** under the covered section of the track.



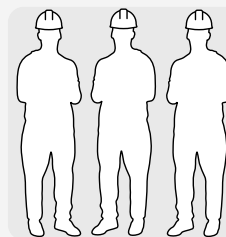
4 Hook the service plates under the first two **non-guide rollers** on both sides of the door.

IMPORTANT

DO NOT USE the guide rollers to lift the door panel.



Things to know about lifting the door panel



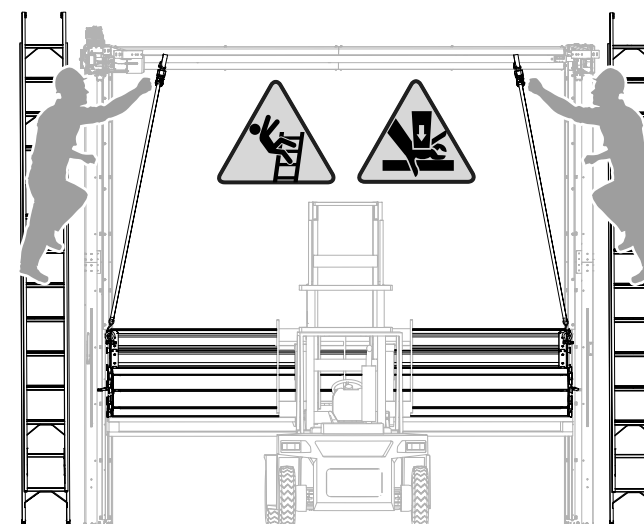
A three-person crew should be used to lift the door panel:

- Two (2) to operate the ratcheted straps
- One (1) to unroll the door panel and check the rollers.

For a two-person crew:

- Lift the door panel together, then unroll the next section together, then continue the lift.

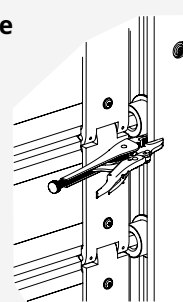
At the drive tube



Coordinate the lift between the two ratcheted straps so that the door panel remains level as it rises.

If you need to reset the straps, place vise grips under a non-guide roller in both tracks to temporarily hold the door panel in place.

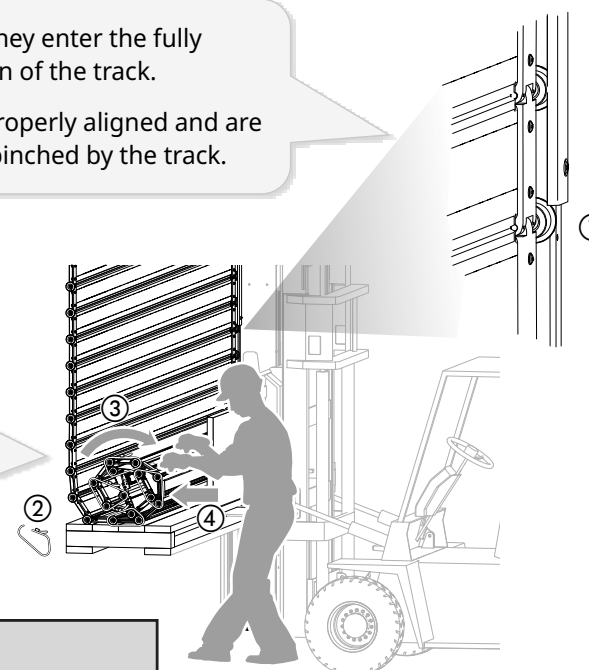
Place the service plates at a lower set of rollers and continue the lift.



On the ground

- 1 Watch** the rollers as they enter the fully enclosed upper section of the track. **Make sure** they are properly aligned and are not crushed, bent or pinched by the track.

- 2 Clip** the next tie around the rollers on both sides of the door panel to free up the next section.
- 3 Unroll** the next section of panel from the bottom of the roll.
- 4 Push** the door panel on the pallet away from the backrest. As the door panel rises, **continue to push** so that the next panel lines up with the panels in the track.



CAUTION

Keep your hands flat on the panel slat and away from the hinge seal as you move the panels. **Panels can shift unexpectedly.**

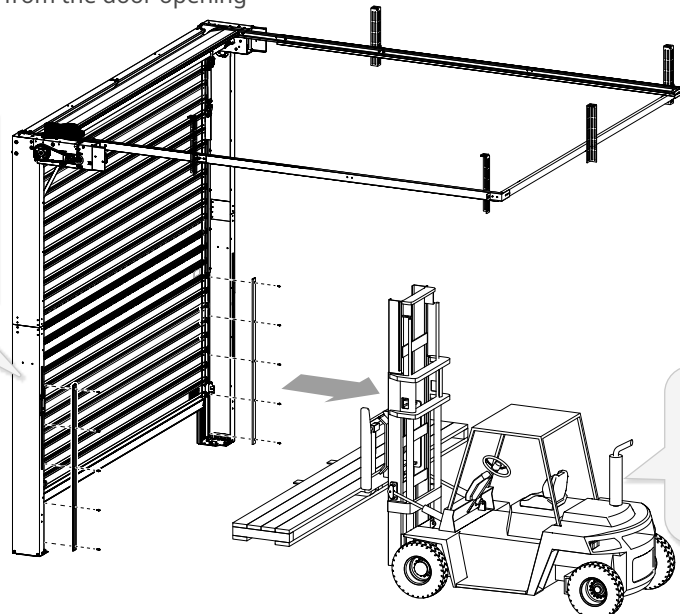


5 When the top of the door panel enters the horizontal track, the bottom bar is clear of the floor.

- **Unroll** the rest of the door panel
- **Move** the forklift and pallet away from the door opening
- **Reinstall** the bottom covers on the vertical tracks.



Reinstall the bottom section of the vertical guide track cover.
Do this on both side columns.



Move the forklift and pallet away from the door opening.

6 **Continue to lift** until the door panel is almost completely raised onto the horizontal track.

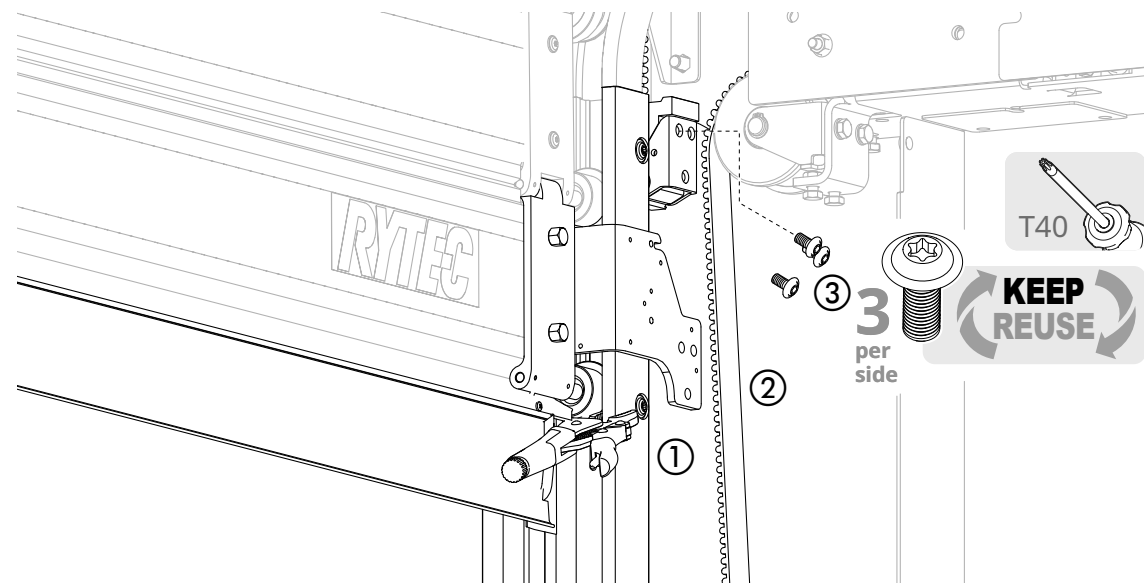


IMPORTANT

Make sure the door panel remains level throughout the lift.
If you need to reposition the ratchet straps, place vise grips under the bottom roller to hold the door panel in place, then reset the straps.

7 When the end tabs are just below the splice blocks:

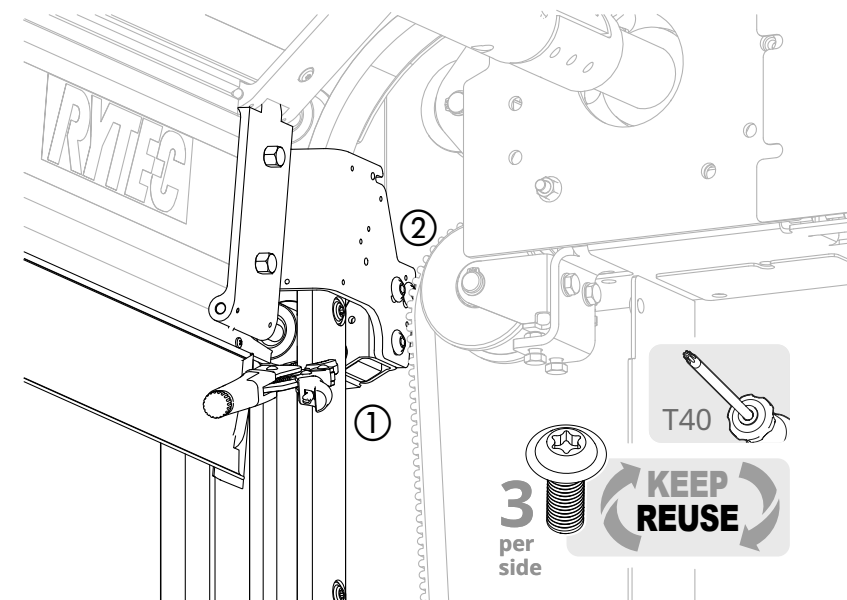
- ① **Place** vise grips under the bottom roller on both sides of the door to hold the door panel in place.
- ② **Pull** the coiled secondary drive belts out of each console and lower them down the side column.
 - On -L and -L/R Spirals, the baseplate pulley assembly is lowered with the belt.
- ③ **Remove** the three screws from each splice block.



8 **Lift** the door panel until the holes in the end tabs are even with the holes in the splice block.

NOTE: if necessary, you should be able to lift the door manually when it is this near the top of the door opening.

- ① **Reposition** the two vise grips to secure the door panel in place.
- ② **Reinstall** the splice block screws to secure the end tabs to the splice blocks

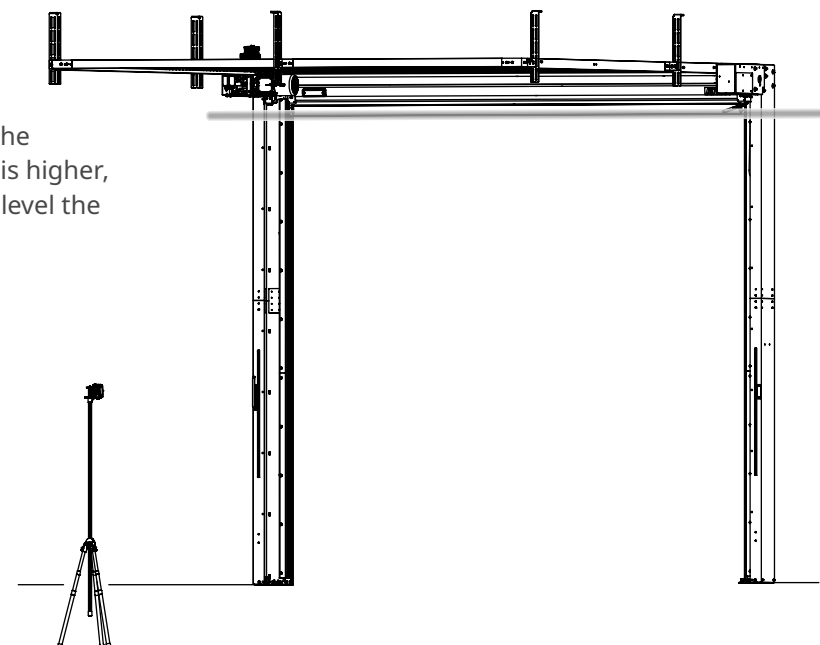


9 **Make sure** that the bottom bar of the door panel is level before moving to the next steps.

If the bar is not level, reposition the vise grip and strap on the side that is higher, then **“jump” a tooth** on the belt to level the door panel.



Laser level



IMPORTANT

Do not remove the ratchet straps or vice grips holding the door in place until after the secondary drive belt has been installed and tensioned.

How to install the springs

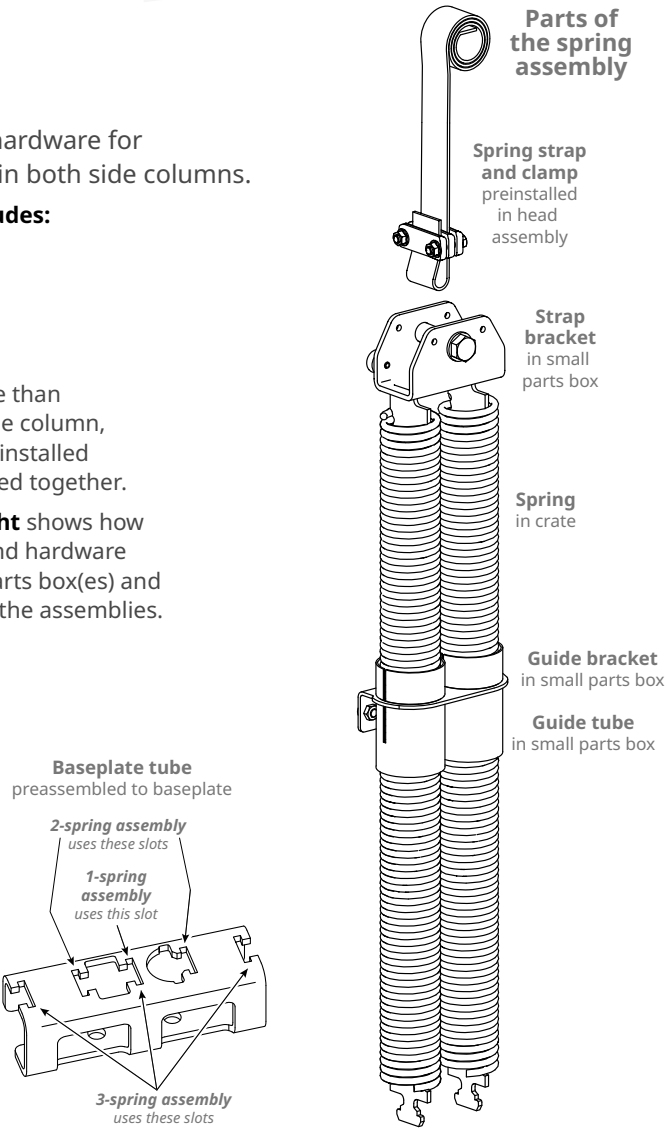
- 1
- Make sure** the total number of springs in the crate matches the number listed in the object list ①. The object list also shows how to divide the springs between the side columns ②.

Make sure the preinstalled spring straps on both sides of the head assembly match the table below ③ for the total number of springs in the door.

Object list		Material number	
Duplicate		716	
SPIRAL STN-S		20076896	1 EA
WSP controller	Production schedule	Order type	Start
500	T6	ZP02	11/04/2019
BS ZMAT	Tier 6	RYTEC MTO Order	11/06/2019
REL MSPT PRT PRC SETC		2000	0002596972
REL MSPT PRT PRC SETC		RYTEC Corporation	10/22/2019
Serial number			
D0099760-010			
Configuration			
DOOR MODEL NAME Spiral Low Headroom FY "S"			
Door Width (Inches) 34-1/2 102			
Door Height (Inches) 102			
Production Width in mm 5,490			
Production Height in mm 2,590			
Door head sizeA			
Line Voltage 230V			
motor mount side Left Hand Motor			
Motor Duty Standard Duty Motor			
Horsepower 2.0			
Number of solid slats 0			
Number of vent slats 0			
Brake Release Location Release lever on side column			
Door style Spiral hood type			
Number of Springs 6 ①			
Spring Tension (in) 3.425			
LH Inner Spring Pack Qty 0			
LH Outer Spring Pack Qty 2 ②			
RH Outer Spring Pack Qty 2			
RH Inner Spring Pack Qty 0			
Spring Tension in mm 87			
Number of prewelds 1,250			

Locate the parts and hardware for the spring assemblies in both side columns.

- Each assembly includes:
 - 1-3 springs
 - guide tubes
 - a guide bracket
 - a strap bracket
- When there are more than three springs in a side column, **two assemblies** are installed side by side and bolted together.
- The table to the right shows how to divide the parts and hardware found in the small parts box(es) and how to put together the assemblies.



Total number of springs	Drive side		Non-drive side	
	Springs	Spring straps	In small parts box: guide tube(s), strap bracket, guide bracket(s)	In small parts box: guide tube(s), strap bracket, guide bracket(s)
1				
2		③		
3	1	1	1	1
4	2	1	2	1
5	2	1	2	1
6	3	1	3	1
7	3	1	3	1
8	4	2	4	2
9	4	2	4	2
10	5	2	5	2
11	5	2	5	2
12	6	2	6	2

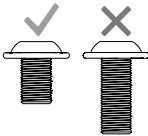
Hardware (in small parts box)

Hardware to attach outer guide brackets to side column wall

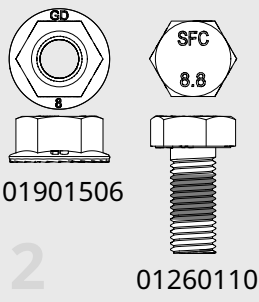


IMPORTANT

Match 01900812 screws to this illustration to make sure length is correct. Other screws used in the Spiral have the same head style, but are too long for the guide bracket nut and will damage the door.



Hardware to attach inner guide bracket to outer guide bracket

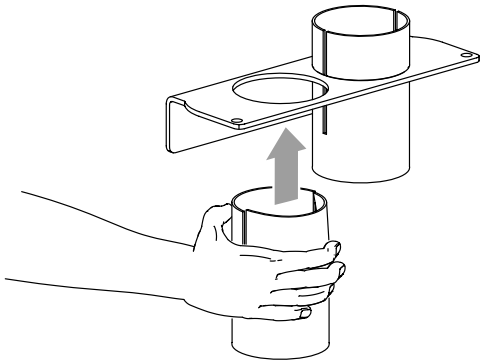


NOTE: a four-spring, two-assembly configuration is shown for these steps.

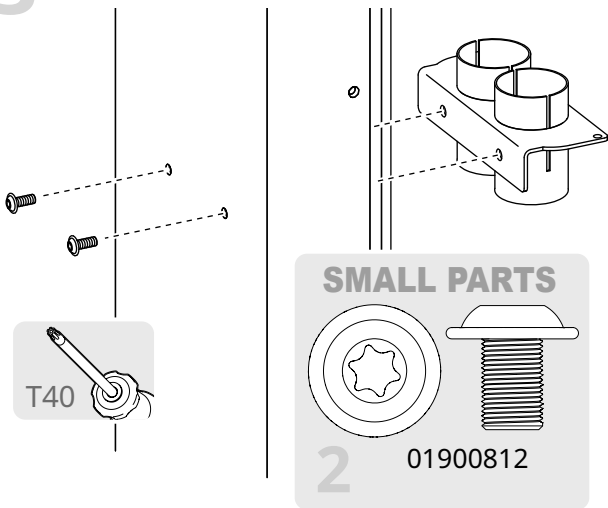


It is recommended that you **do not use power tools** for these steps. Overtorquing screws can damage parts.

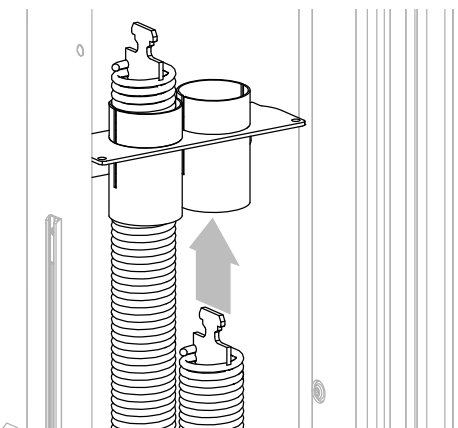
2 **Install** the guide tubes into the guide bracket. **Squeeze** the top of the tube, then slide the tube into a guide hole until it clicks into place.



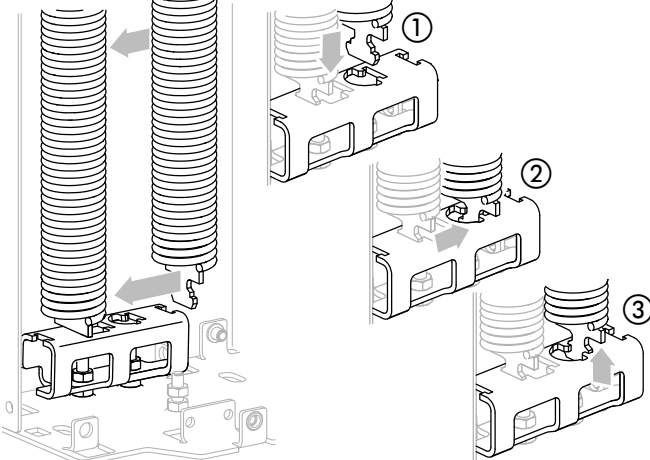
3 **Install** the bracket into the side column.



4 **Slide** the top of the springs into the bracket.

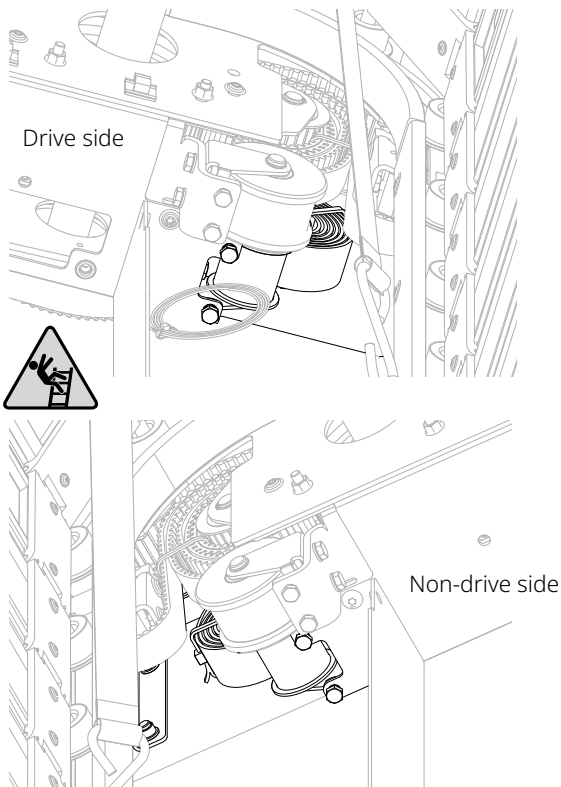


5 **Slide** the bottom spring tabs into the wide slot ①, through the narrow ②, then **pull up to lock** it into the retaining slot ③. The spring should remain upright.

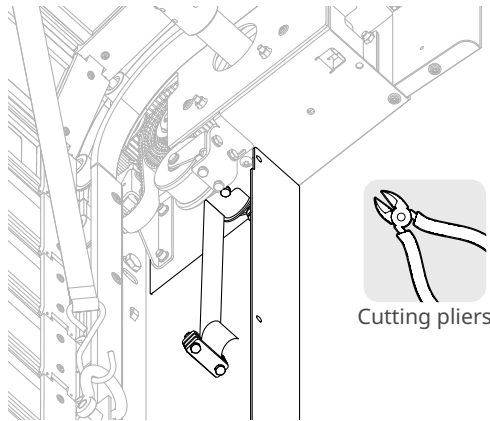


6 **Locate** the outer spring strap in each console. It is above the small white roller closest to the outers side of the console.

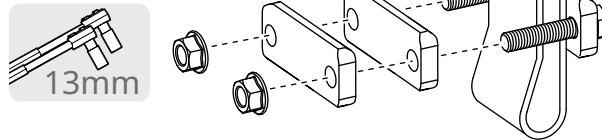
- You may need to push aside the secondary drive belt and reach inside to find it.



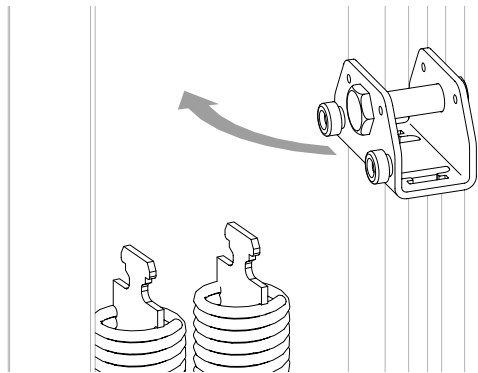
7 **Cut the cable tie** on the outer spring strap, **run** it around the outer roller and **let it drop**.



8 **Loosen** the clamp on the spring strap.



9 **Position** the spring bracket so that the bumpers and locking tab face the side wall.



10 **Loop the spring strap** around the bolt in the spring bracket.

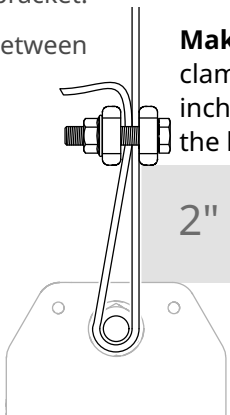
Thread the strap between two plates of the clamp.

Hand tighten the clamp nuts.

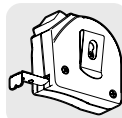
IMPORTANT

DO NOT trim the strap.

Make sure the clamp stays two inches (2") above the bracket.



11 **Set the spring tension.** This is the distance the springs must be stretched to provide the correct tension for the door.



Measuring tape

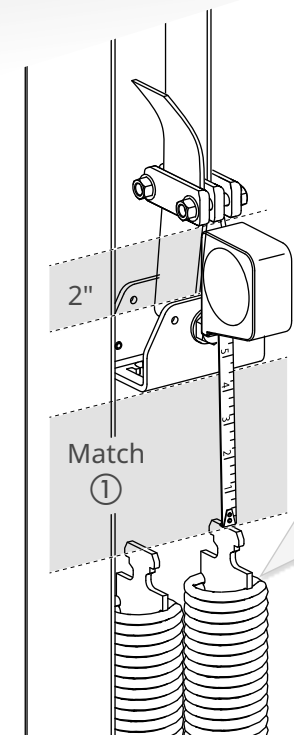
Locate the spring tension ① on the object list.

Round to the nearest 1/16 inch.

Measure the distance between the bottom of the spring bracket and the top of the spring tab (shaded area).

.063	1/16	.313	5/16	.563	9/16	.813	13/16
.125	1/8	.375	3/8	.625	5/8	.875	7/8
.188	3/16	.438	7/16	.688	11/16	.938	15/16
.250	1/4	.500	1/2	.750	3/4		

Serial number
D0099760-010
Configuration
DOOR MODEL NAME Spiral Low Headroom FV "S"
Door Width (Inches) 216-147 216-3/16
Door Height (Inches) 101-069 102
Production Width in mm 5,490
Production Height in mm 2,590
Door head size A
Line Voltage 230V
motor mount side Left Hand Motor
Motor Duty Standard Duty Motor
Horsepower 2.0
Number of solid slats 0
Number of vent slats 0
Brake Release Location Release lever on side column
Hood style No spiral hood type
Number of Springs 4
Spring Tension (in) 4.425 ①
LH Inner Spring Pack Qty 0
LH Outer Spring Pack Qty 2
RH Outer Spring Pack Qty 0
RH Inner Spring Pack Qty 2

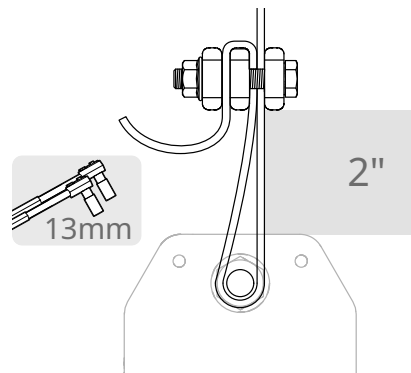


IMPORTANT

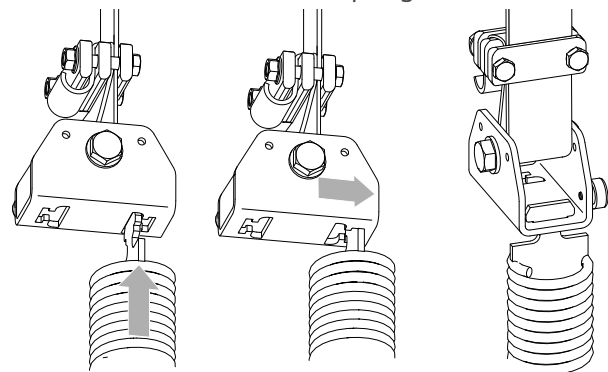
Make sure the spring is standing straight up and does not sag while you measure.

12 **Adjust** the strap until the measured distance matches the object list and the distance from the clamp to the bracket is two inches (2").

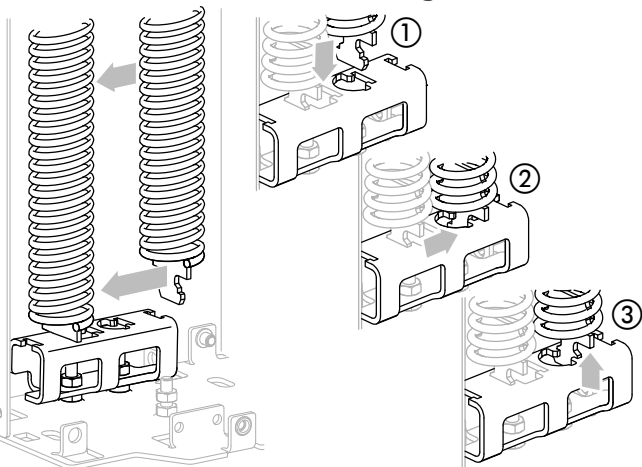
- 13** Remove the nuts and **retrieve** the third clamp plate.
Loop the spring strap down between the second and third clamp plate.
Tighten the nuts to secure the strap.
 If necessary, **trim** excess strap length.



- 14** Release each spring from the baseplate tube.
Lift each spring and **slide** the spring tab into the slot in the spring bracket.

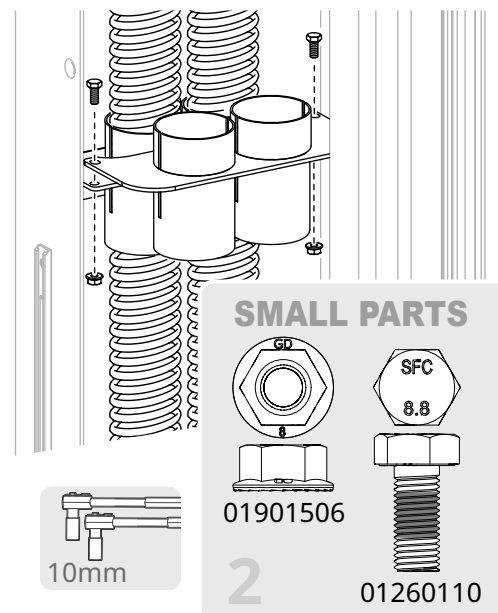


- 15** Stretch the springs downward.
Slide the bottom spring tabs into the wide slot ①, through the narrow ②, then **pull up to lock** it into the retaining slot ③.

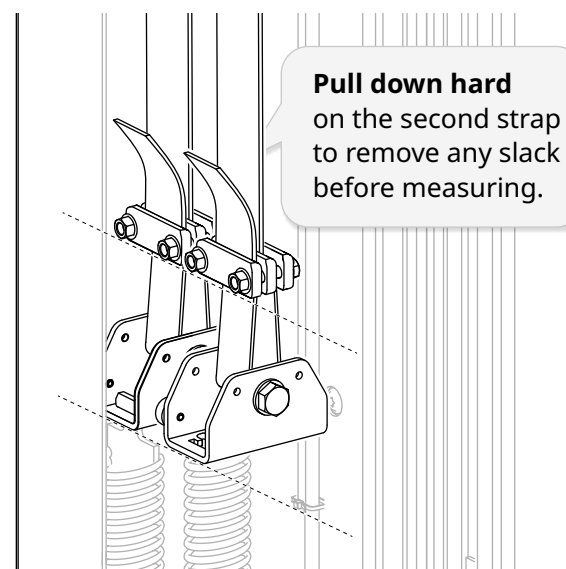


How to install a second spring assembly

- 1** Install the guide tubes into the second bracket.
Install the second bracket above the first.



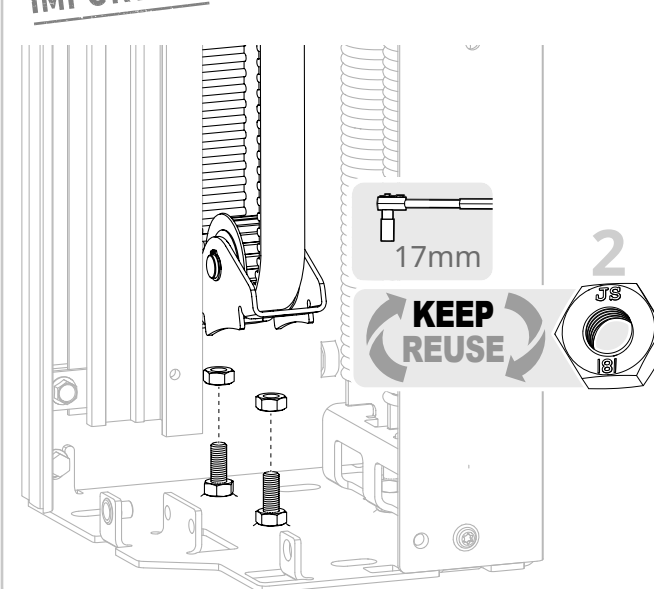
- 2** Follow steps 6-10 for the second spring strap.
Line up the second spring bracket and clamp with the first.
Make sure the spring bracket bumpers face out.



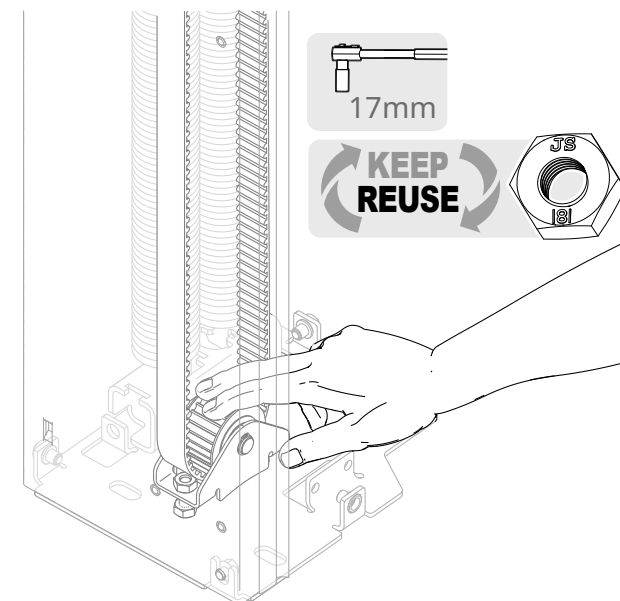
- 3** **L and -L/R doors:** follow steps 14-15 to complete the installation.
S and -S/R doors: follow step 14 to hang the springs. Complete the installation after the secondary drive belt is installed.

How to install the baseplate pulley assembly on -L and -L/R doors

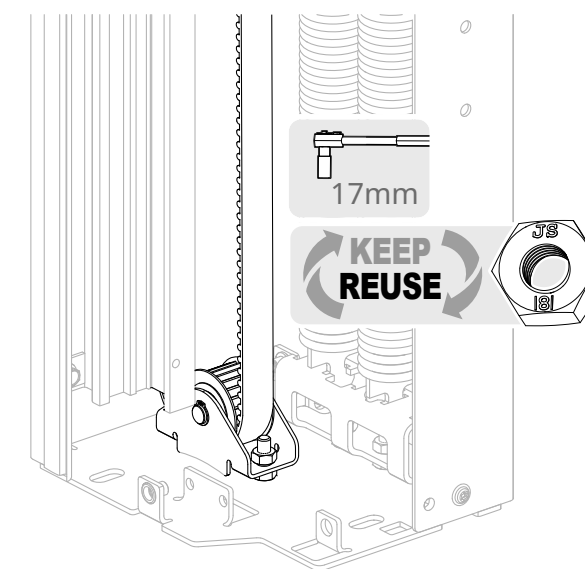
- 1** Remove the top nuts on the two baseplate mounting posts. **Keep** the nuts.
IMPORTANT DO NOT loosen the bottom nuts.



- 2** Install the pulley assembly onto the rear baseplate mounting post.
1: Align the holes in the assembly with the posts.
2: Press down on the pulley assembly as hard as you can.
 You will need to see at least **three (3) threads of the mounting post** clear to reinstall the nut
3: Install the rear mounting nut and tighten it as much as you can.



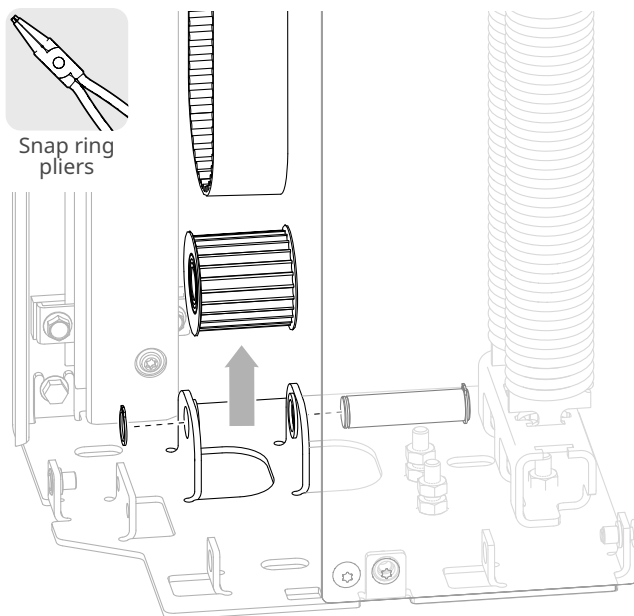
- 3** Reinstall the front mounting nut.
 Tighten the nut until the front of the assembly is tight to the bottom nut.



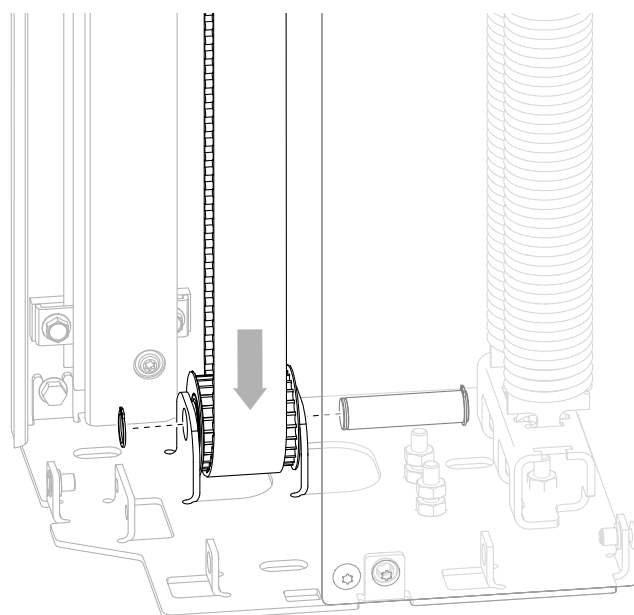
- 4** Do this in both side columns.

How to install the baseplate pulley assembly on -S and -S/R doors

- 1 Remove** the baseplate pulley:
- Remove the outer snap ring to free the retaining pin.
 - Push out the retaining pin and **remove** the pulley.

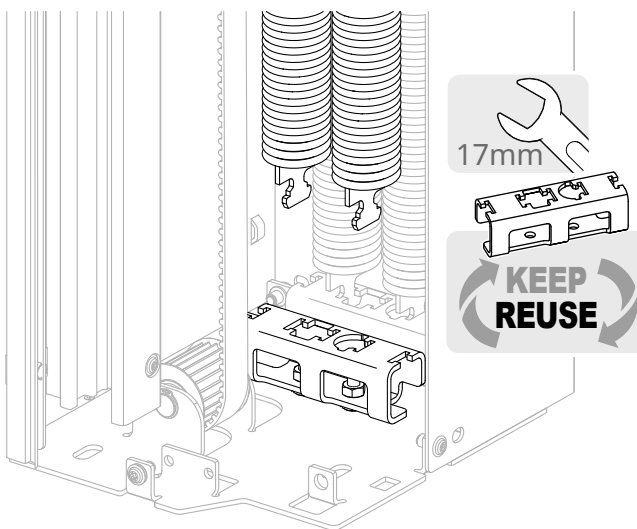


- 2 Place** the pulley inside the secondary drive belt and **reinstall** the pulley assembly.



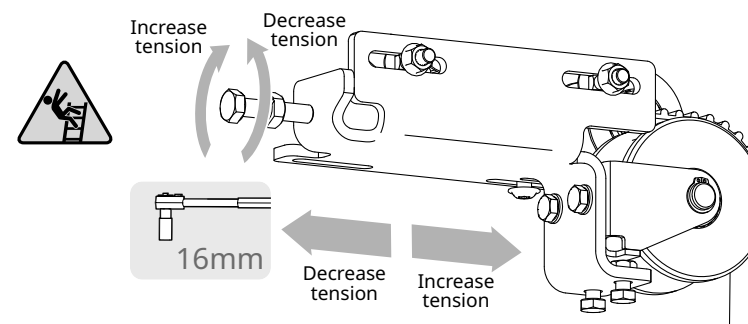
- 3 Do this** in both side columns.

- 4** If the side column has a second spring assembly, **reinstall** the second drive tube and **install** the springs.



How to set the tension on the secondary drive belts

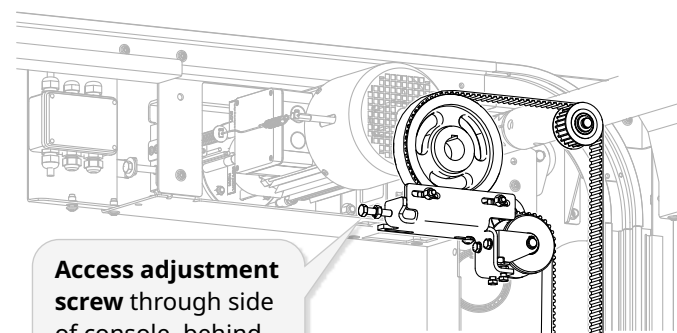
Things to know about tensioning the belt



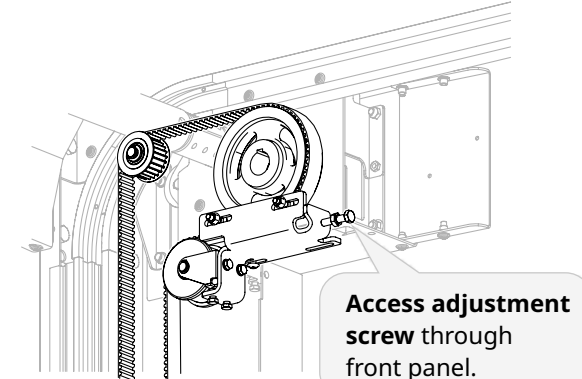
Locate the idler pulley bracket in both consoles, below the drive shaft.

Adjust the tension by turning the adjustment screw.

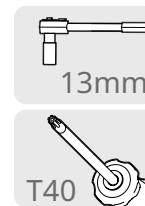
Drive side



Non-drive side

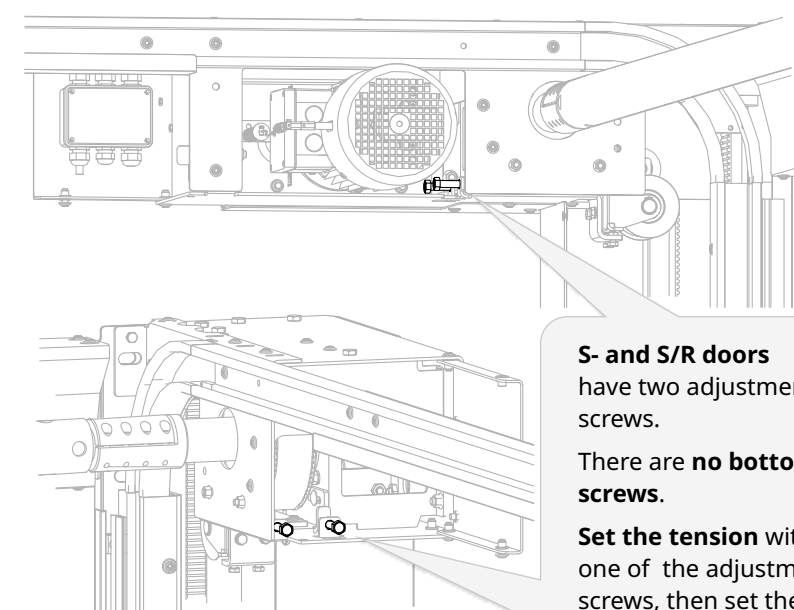


Access adjustment screw through side of console, behind the motor.



Before adjusting, **loosen** the bottom screw and two side nuts to allow bracket to move freely.

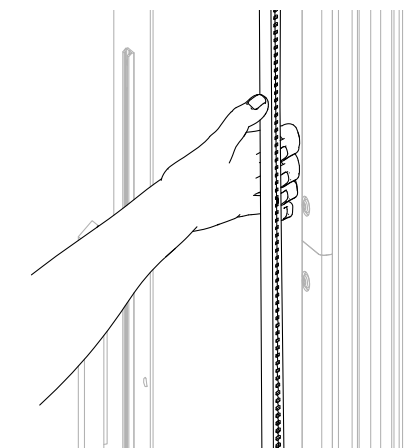
Tighten when the tension is set.



S- and S/R doors have two adjustment screws.

There are **no bottom screws**.

Set the tension with one of the adjustment screws, then set the other to match.

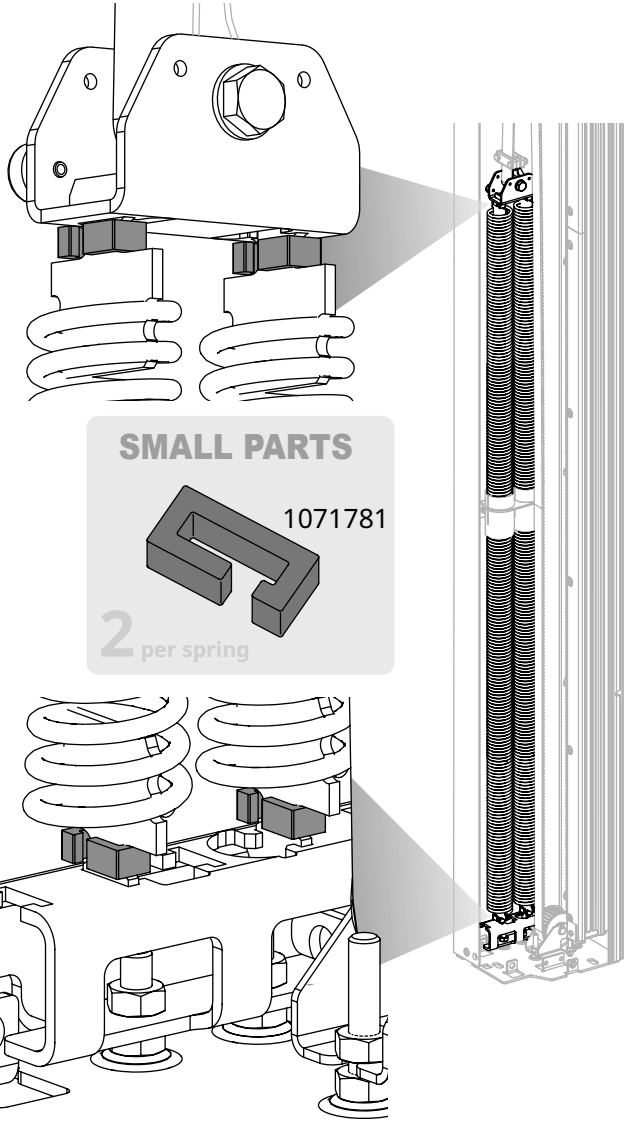


Test the tension by grabbing both legs of the belt near the midpoint.

Tension is correct when it requires **considerable effort** to bring the two legs together until they touch.

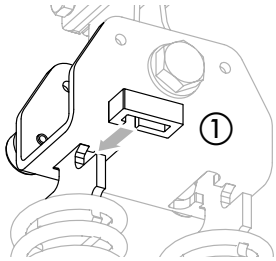
How to install the locking collars at the top and bottom of the springs

Install the locking collars onto the tabs at the top and bottom of each spring after the secondary drive belts have been tensioned.

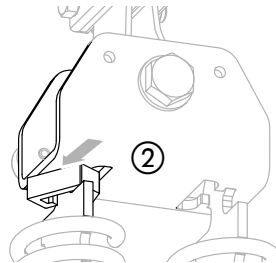


1 Install collar into the top tab:

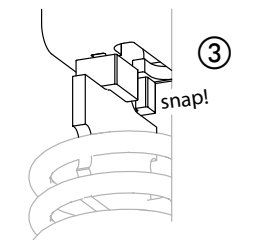
① **Slide** the opening in the collar onto the tab.



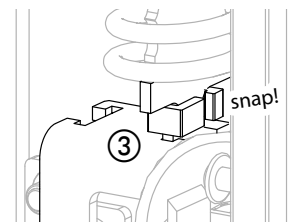
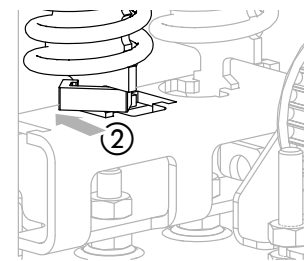
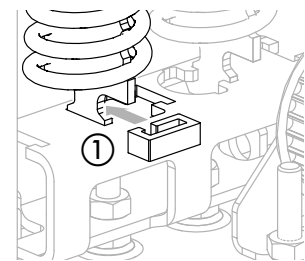
② **Twist, then push** the collar across the tab (the collar is flexible and will bend open enough to fit).



③ **Push** the short end around until it clicks into place.



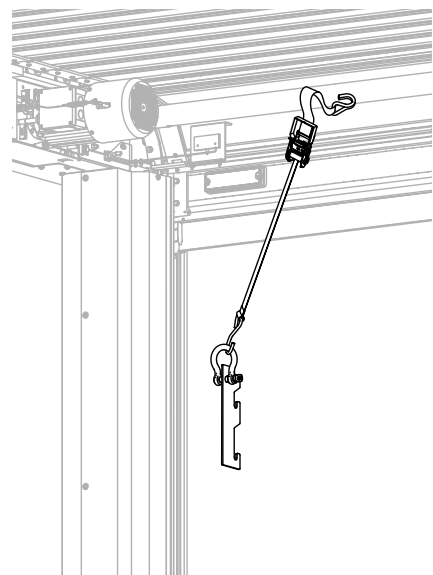
2 Follow the same steps for the tab at the baseplate pulley assembly.



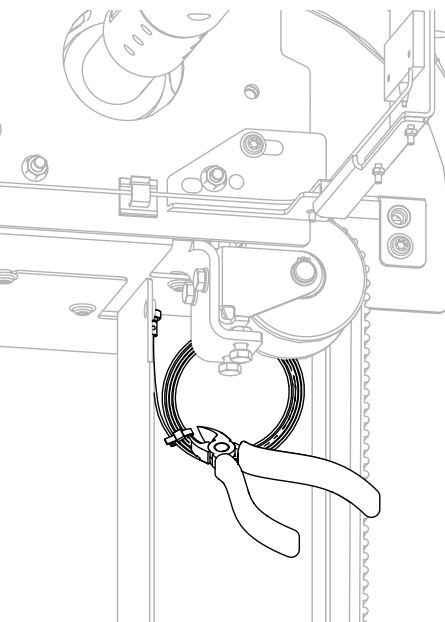
How to connect the brake release cable to the brake release lever

- 1** Remove the ratchet straps and any tools holding the door panel in place.

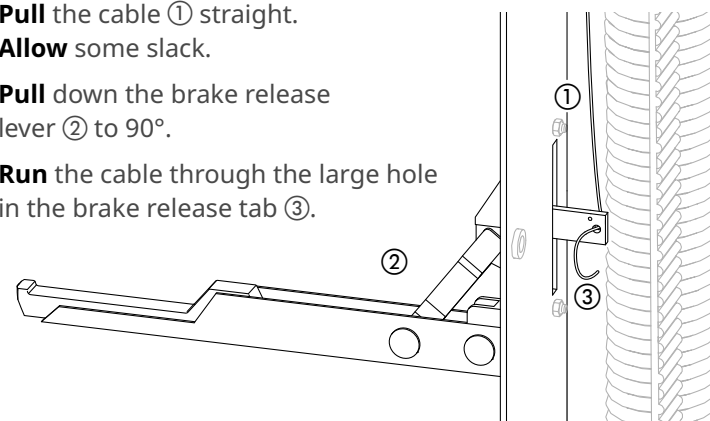
IMPORTANT



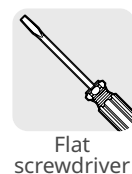
- 2** Cut the cable tie on the brake release cable.
Run the cable down the side column to the brake release lever.



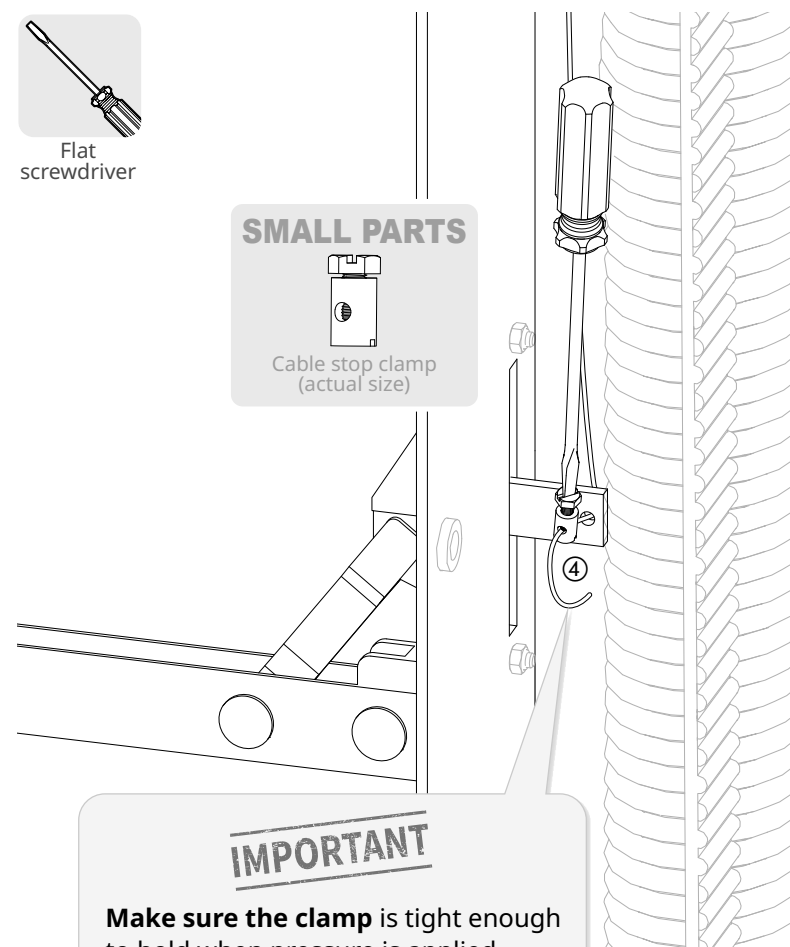
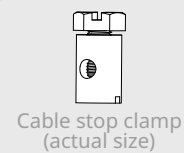
- 3** Pull the cable ① straight. Allow some slack.
Pull down the brake release lever ② to 90°.
Run the cable through the large hole in the brake release tab ③.



- 4** Loosen the screw on the cable stop clamp ④ until you can thread the cable through the clamp.
Slide the clamp against the lever tab and tighten.



SMALL PARTS



IMPORTANT

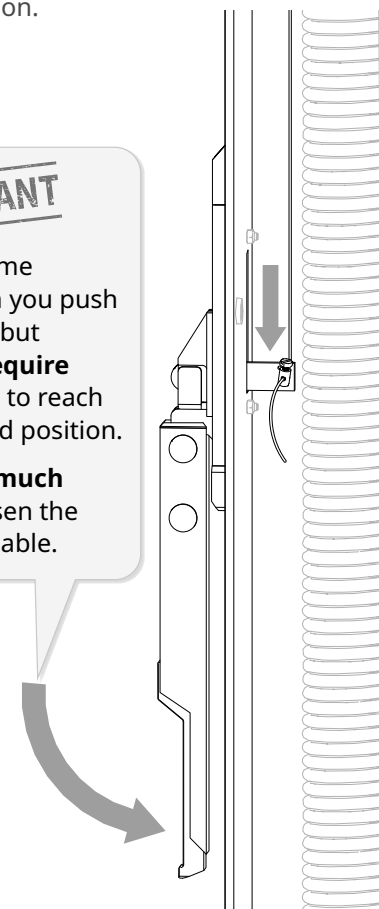
Make sure the clamp is tight enough to hold when pressure is applied.
DO NOT trim the cable until the brake release has been fully tested.

- 5** Pull down the brake release lever to the fully released position.

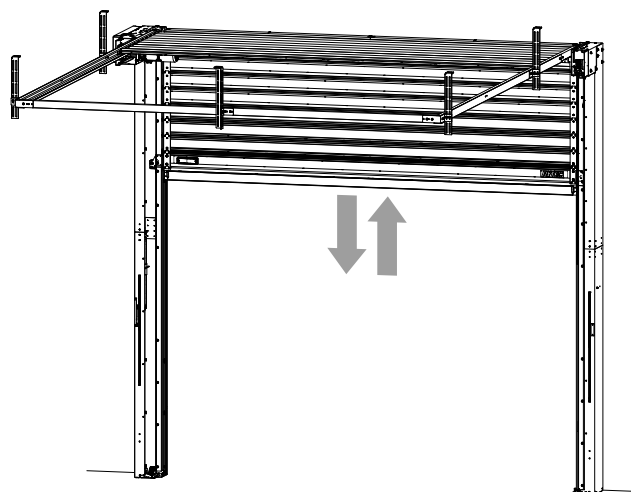
IMPORTANT

There will be some resistance when you push the lever down, but it should not require excessive force to reach the fully released position.

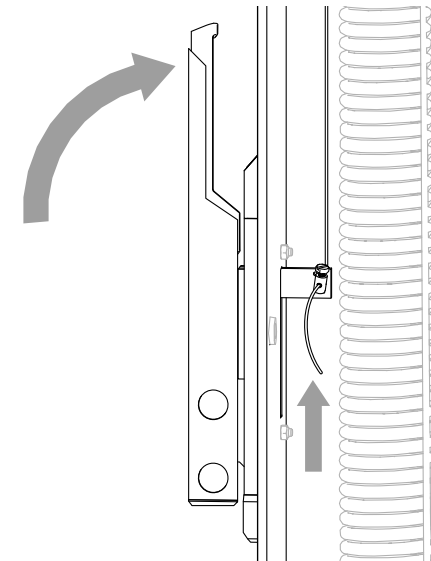
If you feel too much resistance, loosen the tension on the cable.



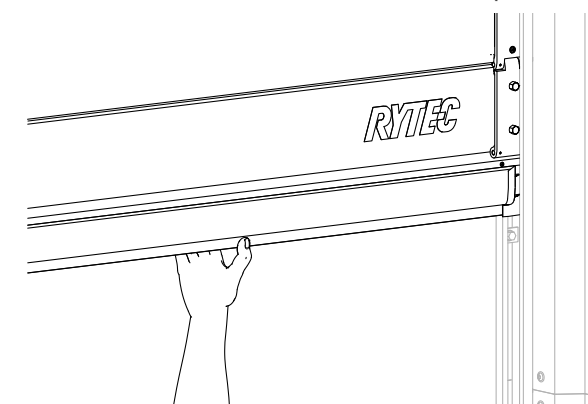
- 6** The door panel should release under its own weight and drop or rise to approximately 1/3 of the door height.
If it does not, manually pull the door panel to that height.



- 7** Pull up the brake release lever 180° to the fully engaged position.



- 8** Try to manually move the door panel up and down.
You should NOT be able to move the panel.



- 9** If necessary, adjust the tension on the cable until both conditions are met:
- The door moves freely when the brake release level is in the fully released position.
 - The door does not move when the lever is in the fully engaged position.

- 10** Release, then reengage, the brake several times. Test after each time.
Make sure the cable does not loosen after multiple uses.
- If necessary, adjust the tension on the cable.
 - When all tests are complete, you can trim the cable (minimum trim length = 4").

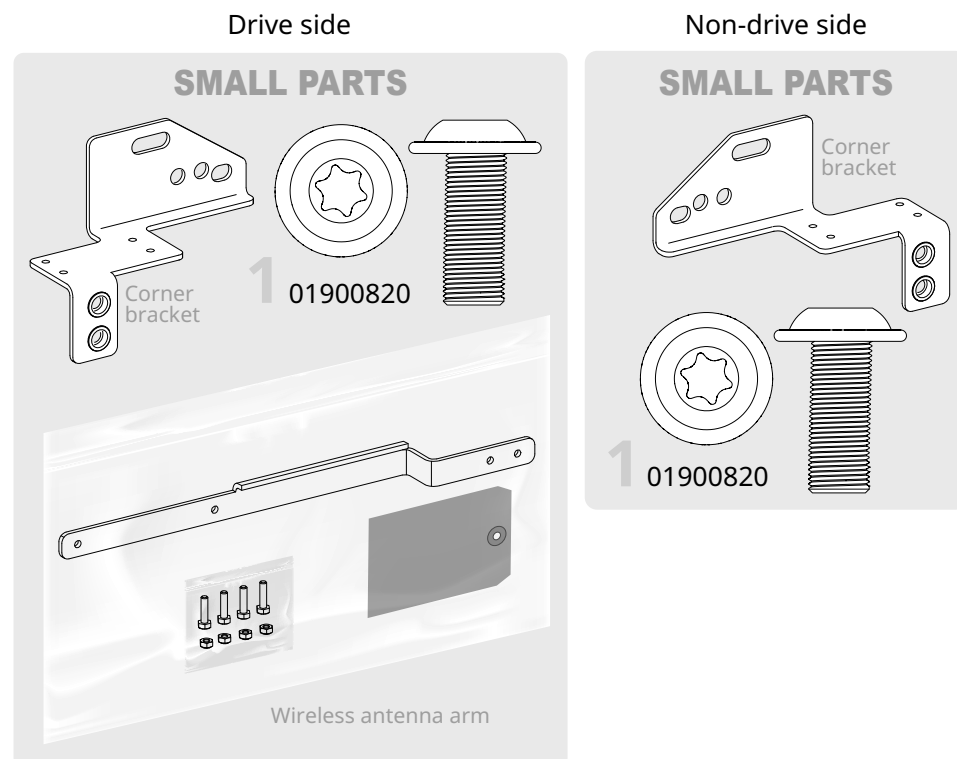
How to install the corner brackets and wireless antenna

1 **Locate** the corner brackets, wireless antenna arm and hardware in the small parts box.

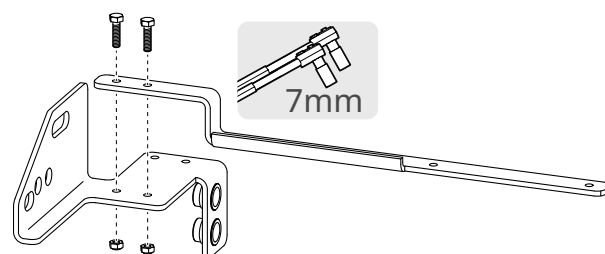
Install a corner bracket on each side column.

- **The drive side bracket** holds the wireless antenna arm and has an extra screw hole to secure the side panel cover.
- **The non-drive side bracket** has an extra screw hole to secure the side panel cover.

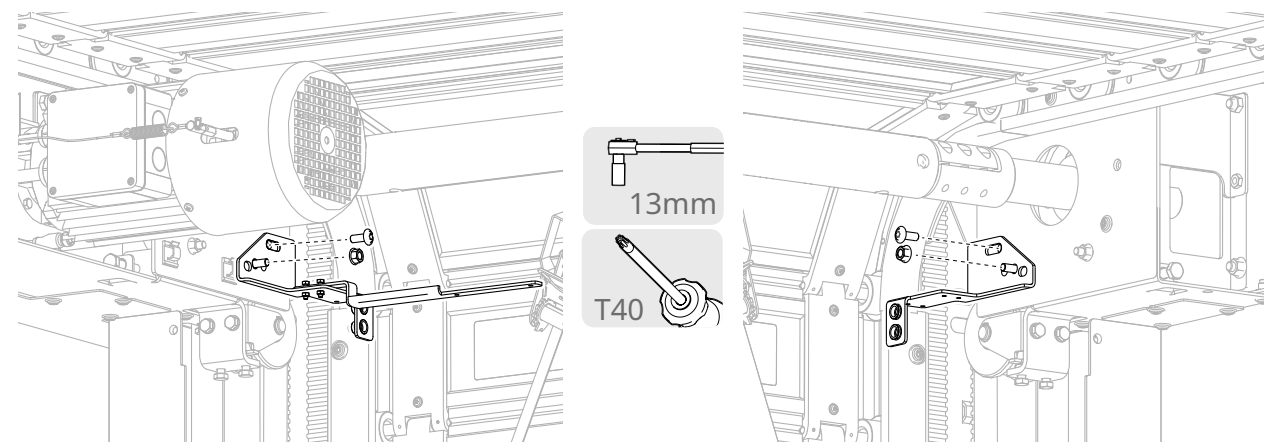
NOTE: depending on the configuration of the door, the drive side may be on the left (LH) or right (RH) side of the door. These steps show a left hand (LH) door.



2 **Install** the wireless antenna arm onto the drive side corner bracket using the included hardware.

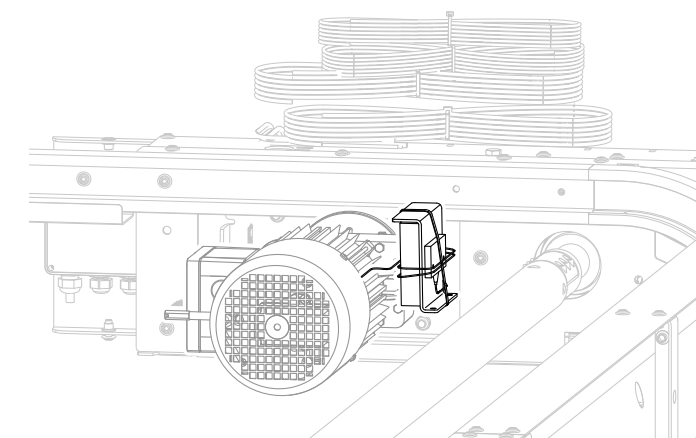


3 **Install** the corner brackets. Each bracket uses one nut from the console.



4 **Reach** into the drive side compartment and **remove** the wireless antenna and antenna bracket from the top of the motor.

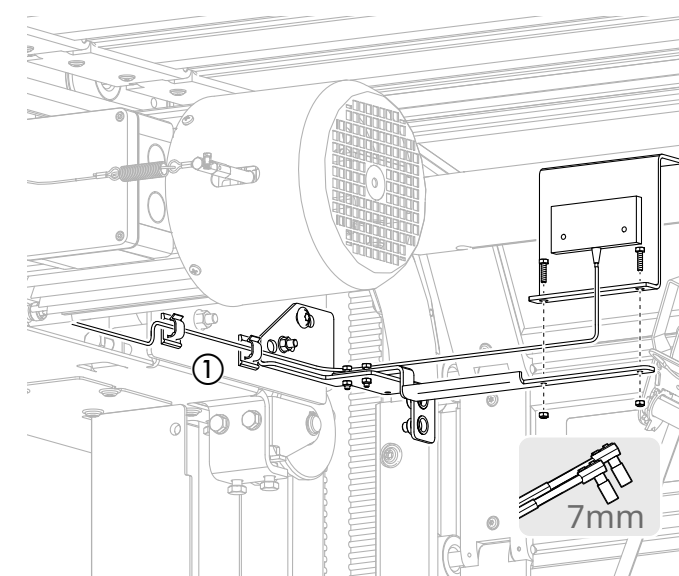
Unwrap the antenna cable.



5 **Install** the wireless antenna bracket onto the wireless antenna arm.

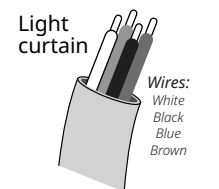
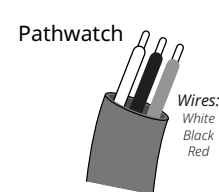
Use the hardware included with the arm.

Run the cable under the clips ① in the console.

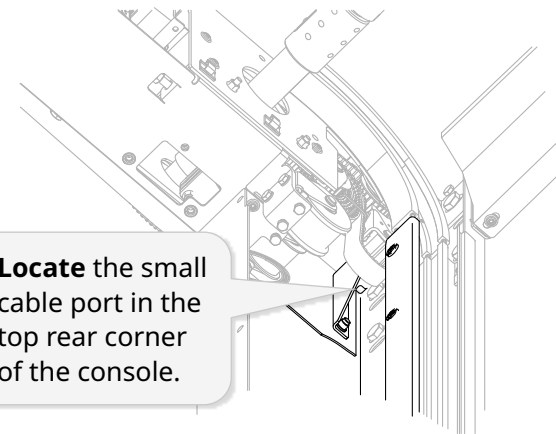


How to run the drive side cables for Pathwatch and light curtain

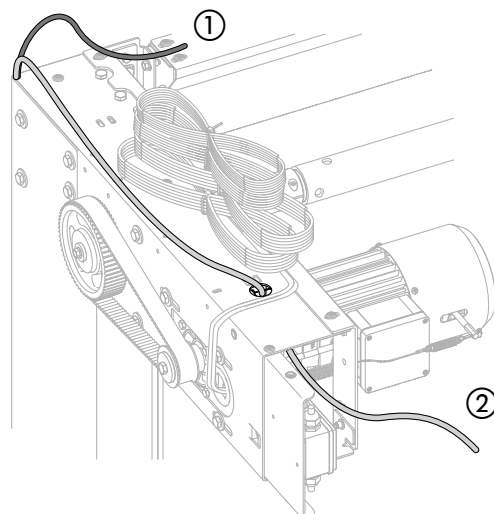
- 1** **Gather** the two cables and **run** them through the rear cable port in the console.



Locate the small cable port in the top rear corner of the console.

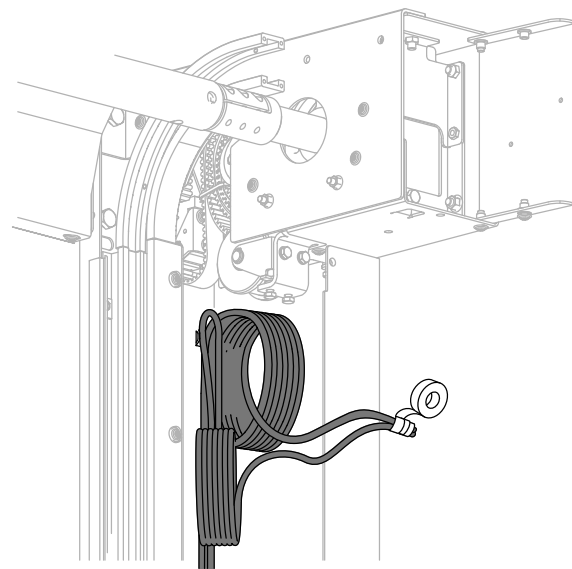
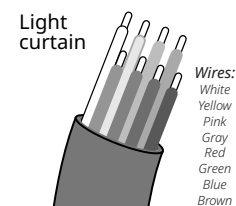


- 2** **Route** the Pathwatch cable ① to the rear seal.
Route the light curtain cable ② through the port on top of the console and through the open front panel.

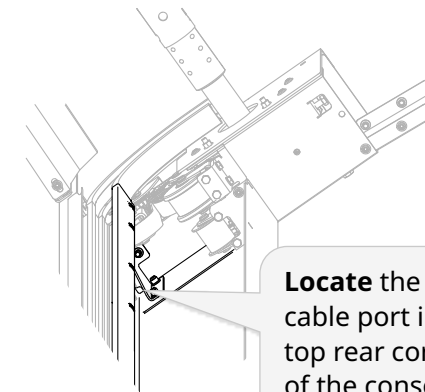


How to run the non-drive side cables for Pathwatch and light curtain

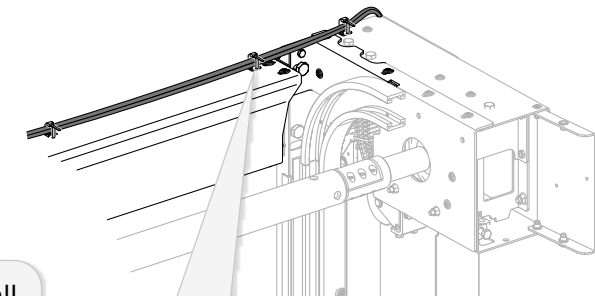
- 1** **Gather** the two cables together.



- 2** **Run** the cables through the rear cable port in the console and across the rear seal (rear spreader).



Locate the small cable port in the top rear corner of the console.



Use self-adhering anchors.
Place first anchor on top of console.
Set anchors at 3-foot intervals.

- 3** **Splice** the Pathwatch cables together above the drive side console. **Run** the splice cable to the controller.

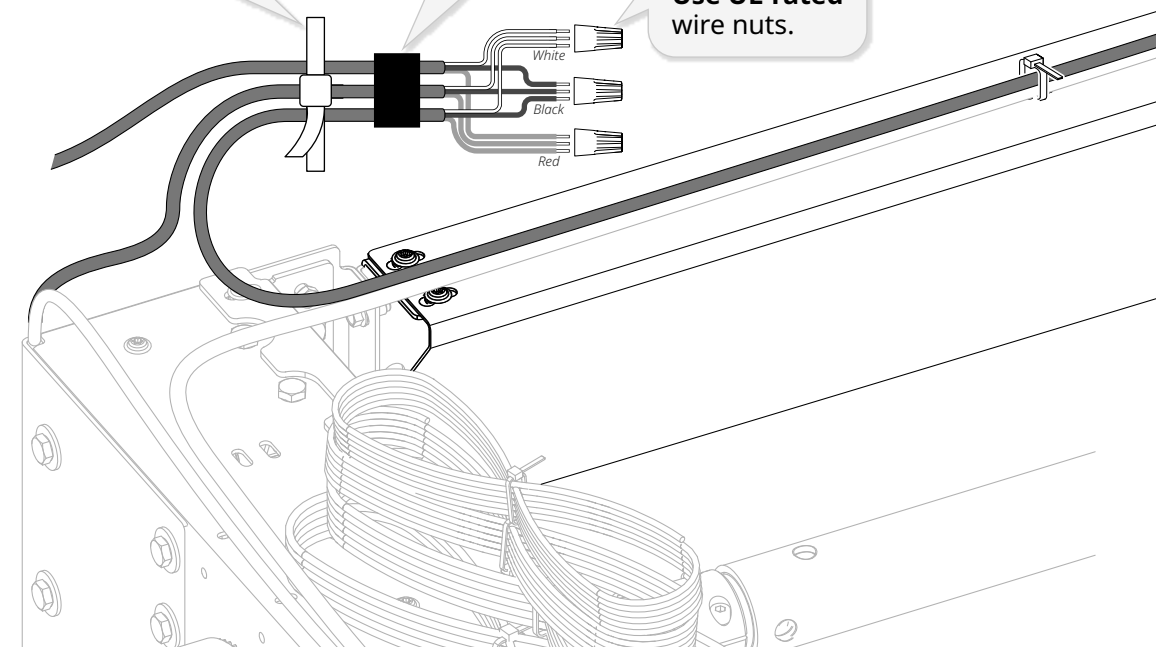


Add cable tie attached to console around cables beyond splice point.

Tape all three cables together for strain relief.

IMPORTANT

Use UL-rated wire nuts.

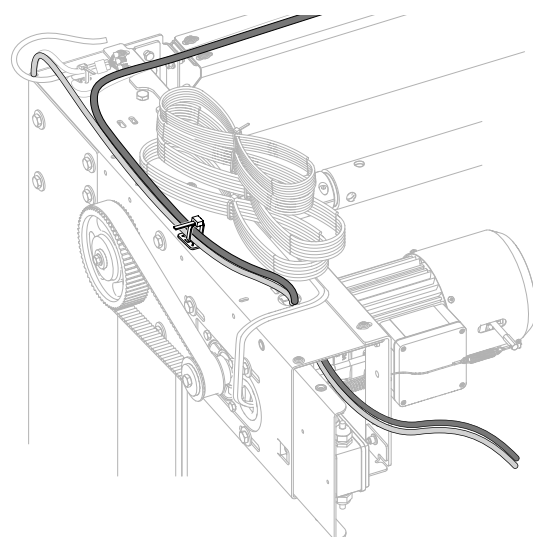


- 4** Run the non-drive side cable together with the drive side cable through port and out front panel.

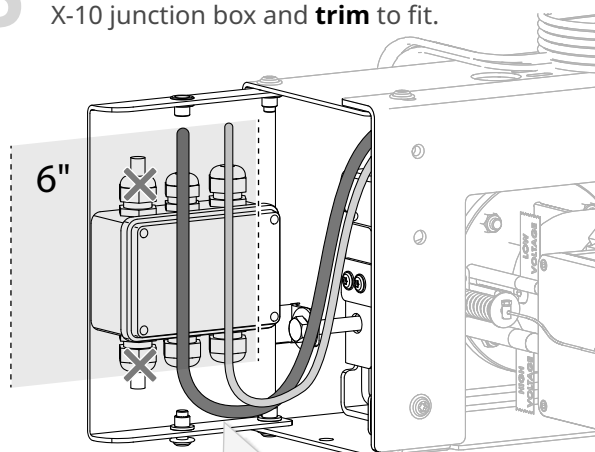
Tie cables down to top of console.



Cable ties and self-adhering anchors

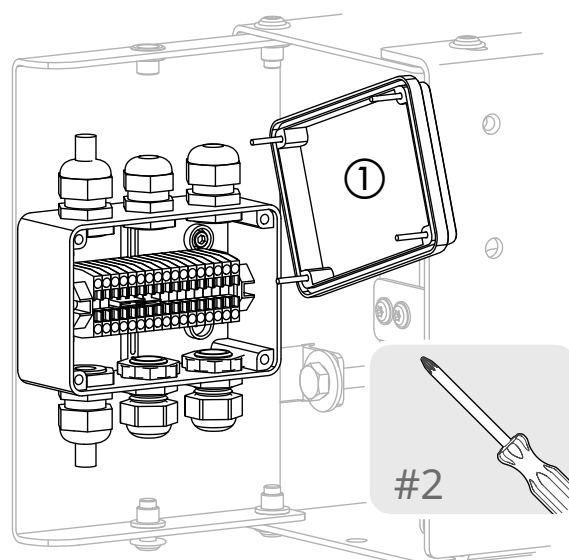


- 5** Line up the light curtain cables with the X-10 junction box and **trim** to fit.



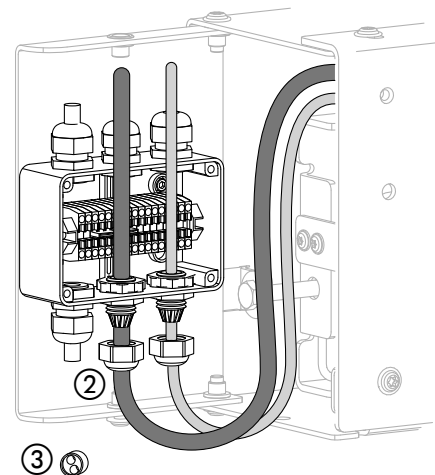
1. Line up cables with bottom cable grips.
 2. Add 6" to length of cable.
 3. Trim cable.
- X = do not use front cable grips.

- 6** Loosen the four capture screws on the X-10 junction box cover ① and pull off the cover.



- 7** Run the light curtain cables through the cord grips.

- 1: Remove the cord grip covers ②.
- 2: Thread the cables through the covers.
- 3: Remove the plug ③ from the middle cord grip and discard.
- 4: Thread the cables through the cord grips.
- 5: Pull cables tight and tighten down the cord grip covers.

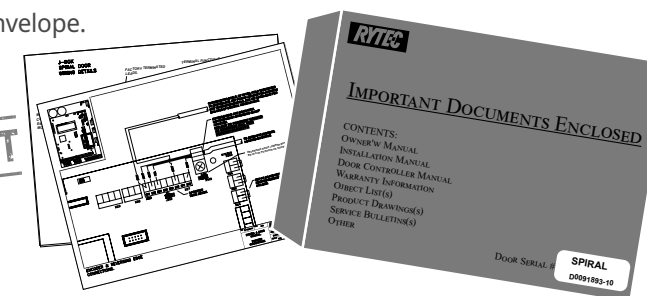


- 8** Find the schematics for the door in the red document envelope.

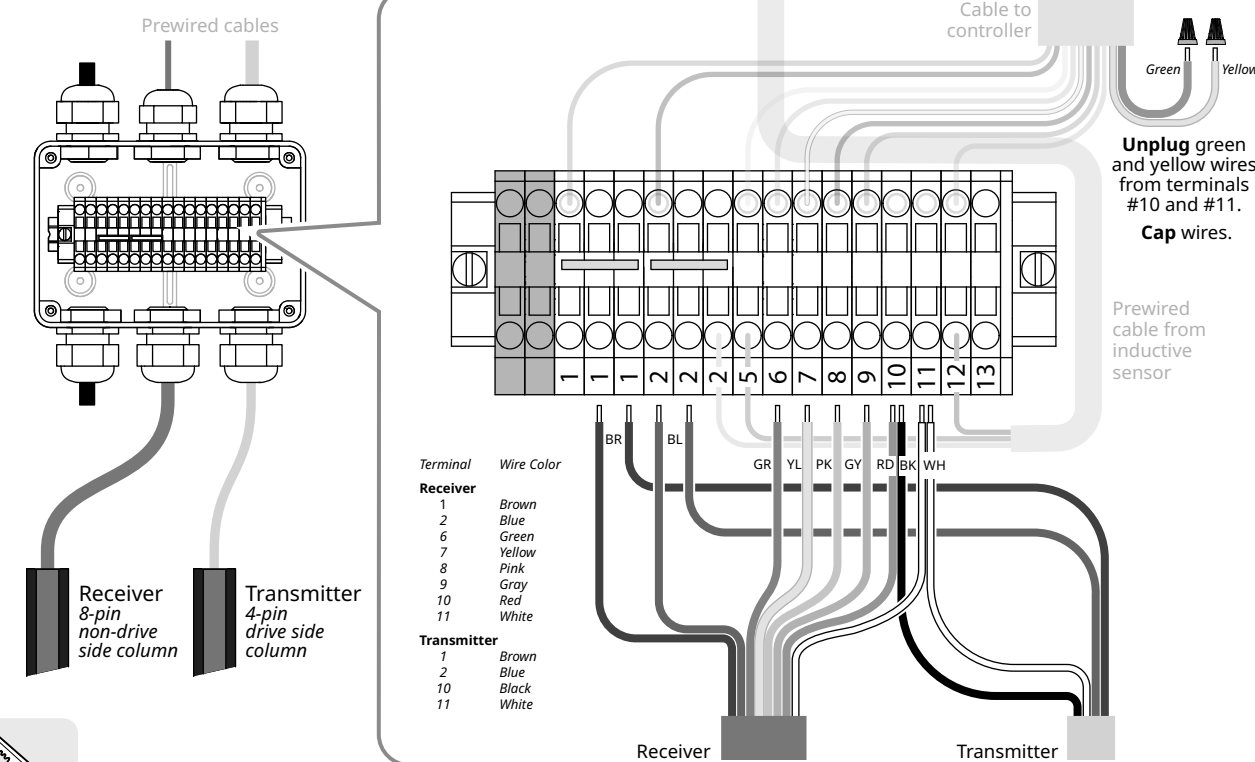
Check the crate and small parts boxes for accessories such as activators or safety devices and any schematics included with them.

If the schematics indicate the door has non-standard wiring, follow the schematics instead of this manual.

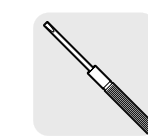
IMPORTANT



- 9** Wire the light curtains to the terminals in the X-10 junction box. Replace the cover.



Wire stripper



Precision screwdriver

How to open a terminal connection

1. Slide the screwdriver into the square opening until the flat blade wedges against the spring inside.
 2. Twist the screwdriver while pushing down to pry the spring open.
 3. Push straight down to lock the spring open.
 4. Push in the wire until it is fully seated, then remove the screwdriver.
- Trim insulation so there is 3/8" of exposed wire to ensure full metal-to-metal contact inside terminal.

How to install the System 4 controller and wire the door

⚠ WARNING

All electrical work must meet all applicable local, state and national codes. It is recommended that all electrical work be done by a certified electrician.

Failure to wire the door correctly could result in shock, burns or death to the people who install, use or service the door.

⚠ WARNING

The high-voltage power to the controller must be properly grounded. Improper grounding could result in shock, burns or death to the people who install, use or service the door, as well as catastrophic motor failure.

- **If the service is floating, ungrounded or open delta type power,** an isolation transformer must be installed.
- Metal conduit entering the bottom left of the control box contacts the metal protection ground plate inside the controller. **If non-metallic conduit is used,** a protection ground conductor must be used.

IMPORTANT

The System 4 installation must meet all of the standards and follow all of the steps shown in these instructions. Failure to do so voids the warranty for the door.

- **The high-voltage and low-voltage conduits must be separated** by a distance that meets all applicable federal, state and local codes and regulations.
- **Wires must be cut to length.** Do not loop wires or leave excess length untrimmed.
- **Use shielded wiring** where indicated in these instructions.
- **If you splice wires:**
 - **You must use** the same gauge wire for the entire length. Gauge is listed in the steps in these instructions.
 - **All spliced field wiring** must maintain the voltage and temperature rating supplied by Rytec.

Contact Rytec technical support at 800-628-1909 or email helpdesk@rytecdoors.com before starting the installation if you cannot meet any of these standards or have questions about how to implement them.

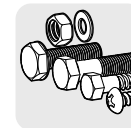
Before you begin

1 Make sure you have all supplies and tools.

Supplies that you provide

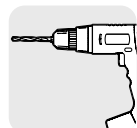


Conduit for high-voltage and low-voltage wiring



Mounting hardware for controller (3 anchors)

Tools you will need



Power drill



Step drill bit



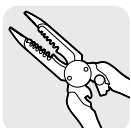
#2 Phillips



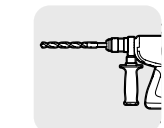
T20 Torx screwdriver



Precision screwdriver



Wire tool



Cement drill (if needed to mount controller)

2 Check the job site.

- **The ambient temperature** must be between **-4°F** and **149°F** at all times.
- **NOTE: for freezer doors,** the controller and fused disconnect must be mounted on the warm side of the door.
- **The mounting surface** for the System 4 controller and fused disconnect must be structurally sound and free of mechanical shock and vibration.

3 Install the high-voltage power supply.

- **Provide a high-voltage power supply** that matches the electrical spec for the System 4 controller.
- **A fused disconnect is recommended.** Fuses must meet NEC code for FLA listed on the electrical spec for the System 4 controller.

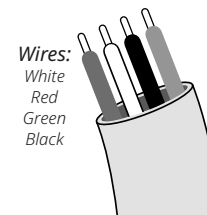
4 Make sure the high-voltage and low-voltage cables from the head assembly of the door are separate. Cables may be routed through the top ① or bottom ② port at the back of the belt guard cover.



Label the controller end of the cables. **Label them again** if you cut or trim them.

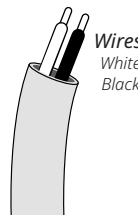
High Voltage

Motor power



Low Voltage

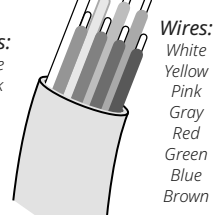
Brake



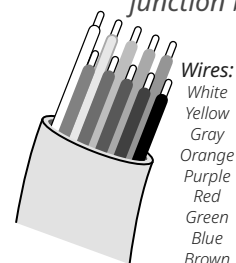
Pathwatch (1 or 2 cables)



Encoder

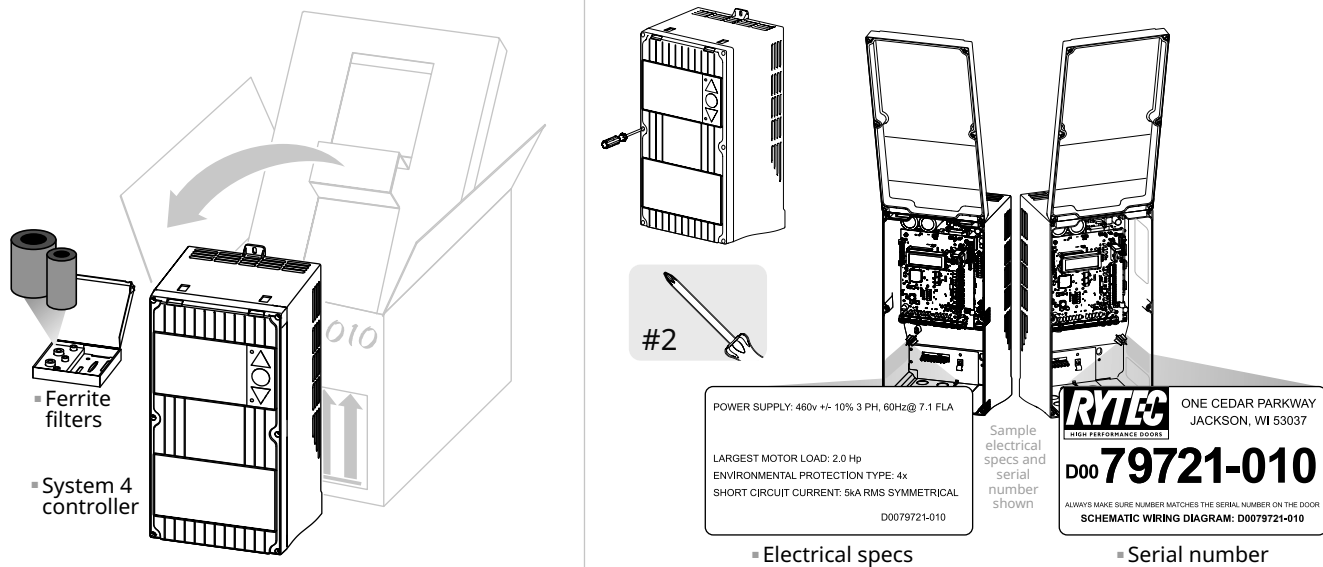


X-10 junction box



How to install the System 4 controller

- 1 **Open** the System 4 controller box and get the controller and ferrite filters. **Loosen** screws on the control box and **open** the cover panel.



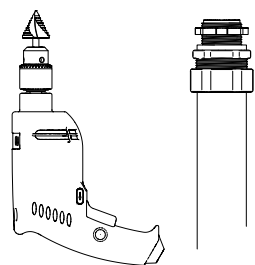
Verify that the serial number and electrical specs for the controller match the door.

- 2 **Install** the control box onto the wall using the hardware you have supplied.

- 3 **Drill** holes through the bottom of the control box for the conduit.

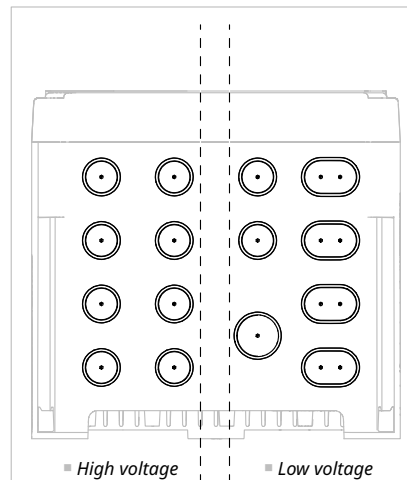
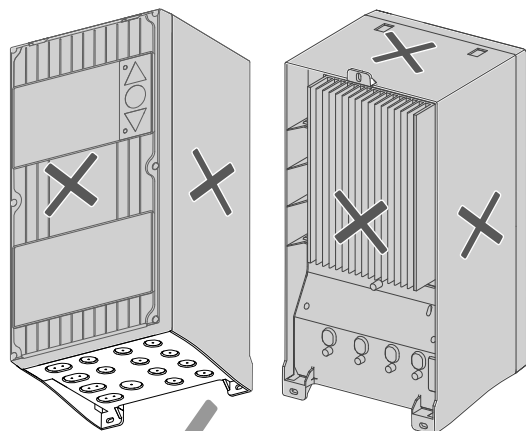
IMPORTANT

- **Conduit must enter through the bottom of the control box.** Drilling holes in the **front, back, top or sides** of the control box voids the warranty.
- **High-voltage wires** must enter through the left side of the box bottom.
- **Low-voltage wires** must enter through the right side of the box bottom.
- **Holes must be drilled.** The indentations in the box bottom are not knockouts.



ONLY drill holes and install conduit through the **bottom** of the control box.

DO NOT drill through the front, back, top or sides of the box.



How to install the high-voltage wiring

WARNING



Set the disconnect switch to the OFF position and perform a lockout/tagout of the high-voltage disconnect before installing wiring to the controller. Do not set the disconnect switch to the ON position until the wiring installation is complete and the controller is fully earth grounded per instructions.

Failure to comply could result in shock, burns or death.

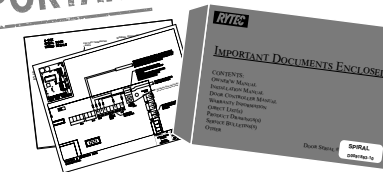


Find the schematics for the door in the red document envelope.

Check the crate and small parts boxes for accessories such as activators or safety devices and any schematics included with them.

If the schematics indicate the door has non-standard wiring, **follow the schematics** instead of this manual.

IMPORTANT



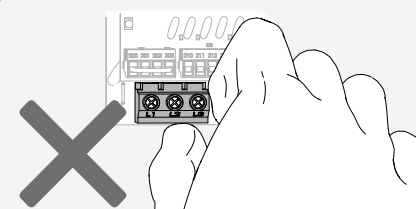
- 1 **Connect** the supply voltage wiring from the disconnect.



DO NOT use power tools



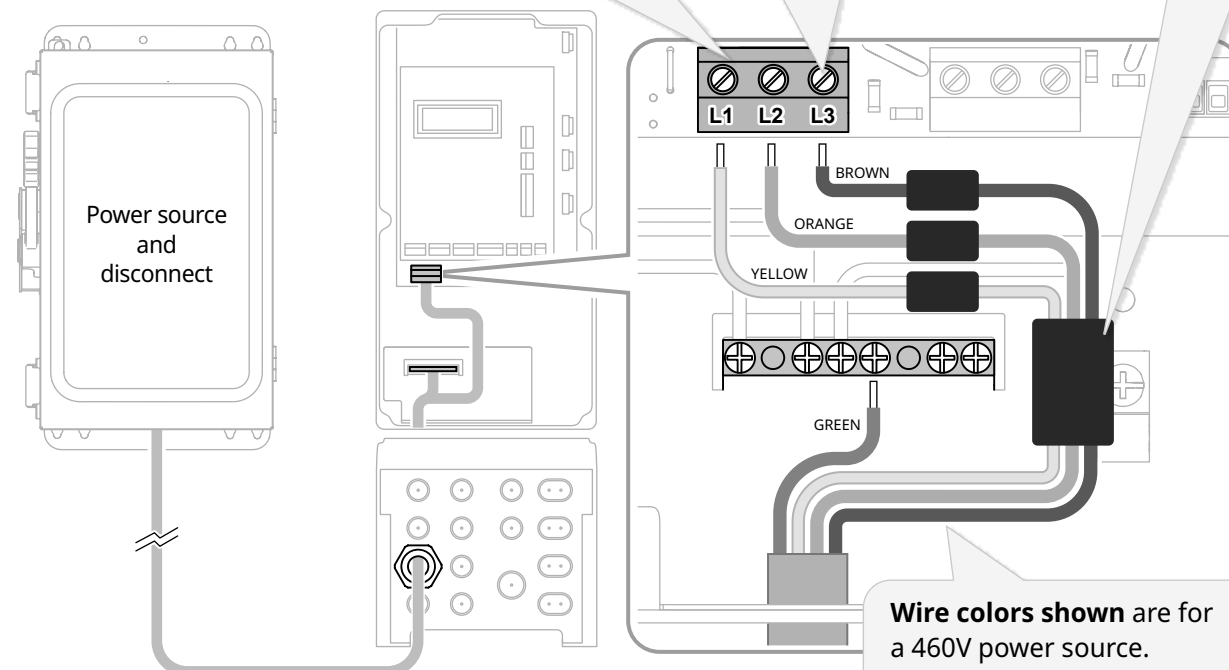
12 AWG



Do not try to remove the green terminal block from the circuit board. **It is fixed in place and will break.**

Maximum torque for all screws is **2.5 in-lbs.**

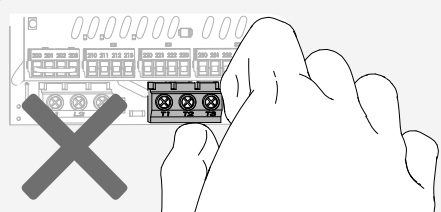
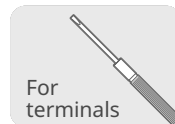
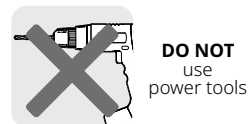
Place one large ferrite filter around all three wires, and **one small filter** around each individual wire.



Wire colors shown are for a 460V power source.
Wire colors for 230V power are L1=red, L2=black, L3=blue.

- 2** **Connect** the high-voltage wiring from the motor.
Shielding: braided copper mesh and drain wire

16 AWG

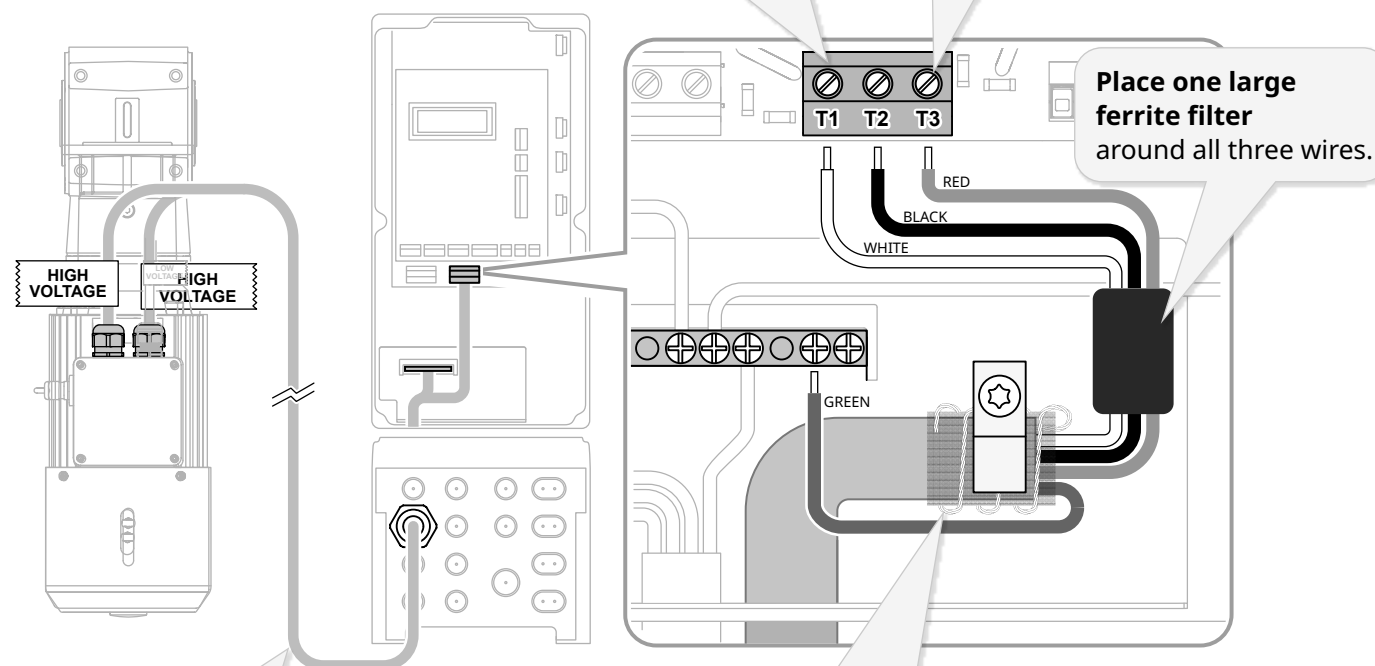


Do not try to remove the green terminal block from the circuit board.

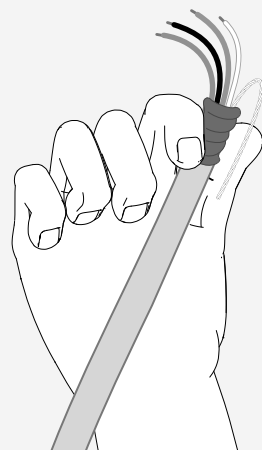
It is fixed in place and will break.

Maximum torque for all screws is **2.5 in-lbs.**

Place one large ferrite filter around all three wires.



Maximum wire length between motor and controller: **100' (one hundred feet).**



The **shield** (braided copper mesh) and **drain wire** (bare metal) must be in contact with the **P-clip**.

To ensure a tight contact:

1. Loosen the P-clip.
2. Strip high-voltage cable jacket to expose braided shield, then pull back shield and wrap drain wire around it.
3. Run wires, shield and wrapped drain wire under clip.
4. Tighten clip.
5. Trim excess drain wire.

How to install the low-voltage wiring

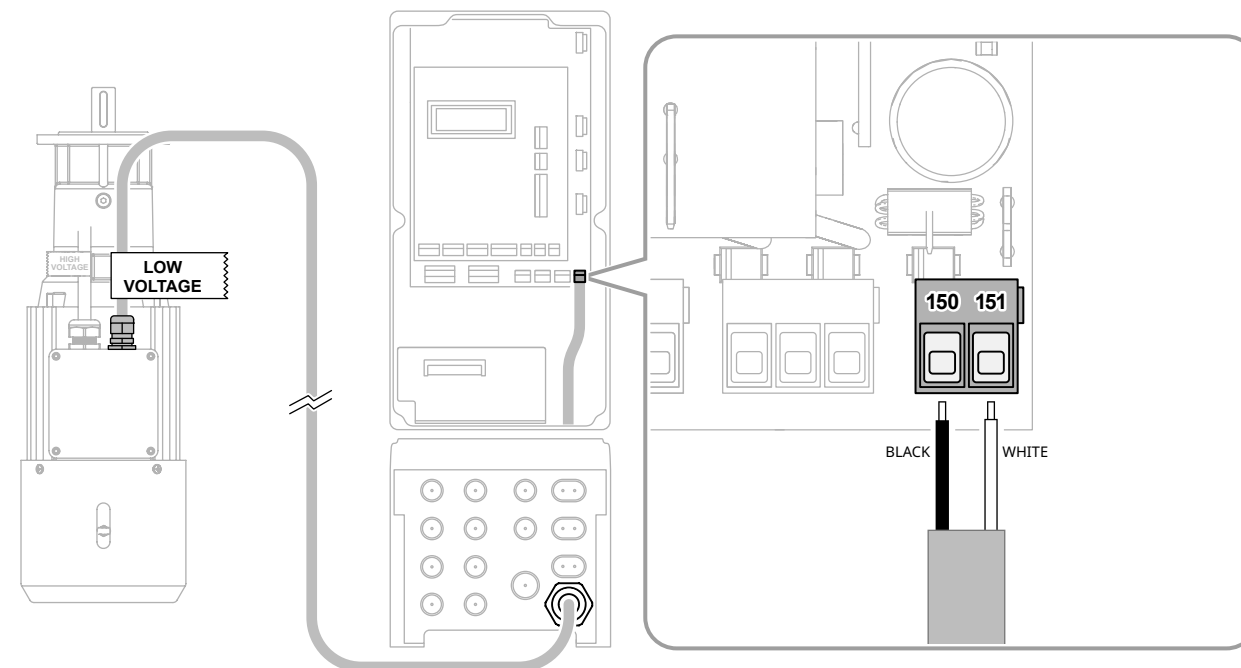
IMPORTANT



- Low-voltage wires can be run in the **same conduit**.
- All low-voltage wiring must be 24 VDC+ only, installed per NEC to Class II power supply requirements.
- Maximum torque for all System 4 controller screws is **2.5 in-lb.** **DO NOT use power tools.**

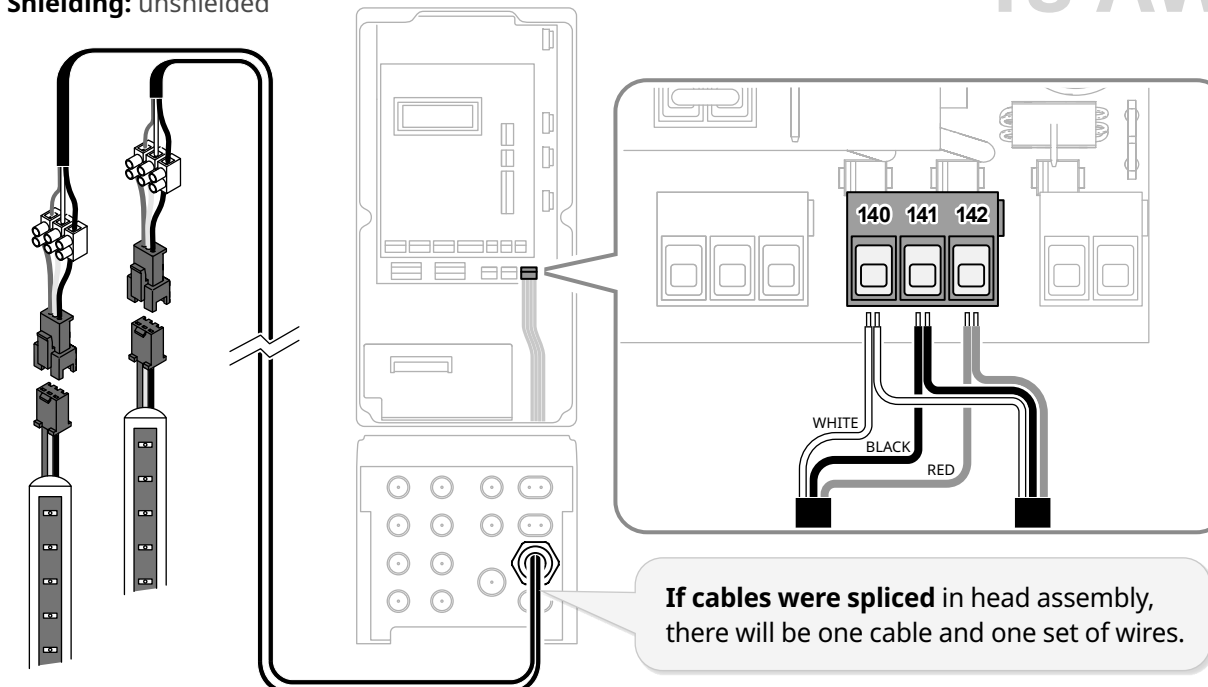
- 1** **Connect** the brake wiring from the motor.
Shielding: unshielded

18 AWG



- 2** **Connect** the wiring from the Pathwatch LED strips.
Shielding: unshielded

18 AWG



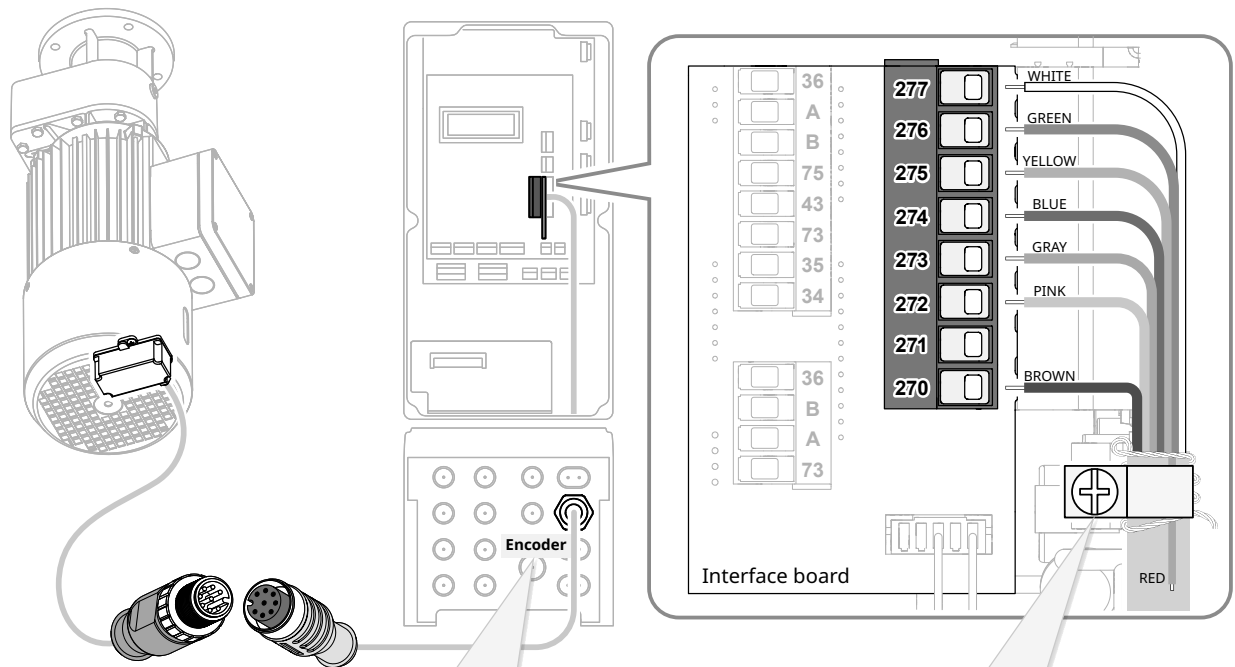
If cables were spliced in head assembly, there will be one cable and one set of wires.

3 **Connect** the wiring from the encoder.
Shielding: metal foil and drain wire

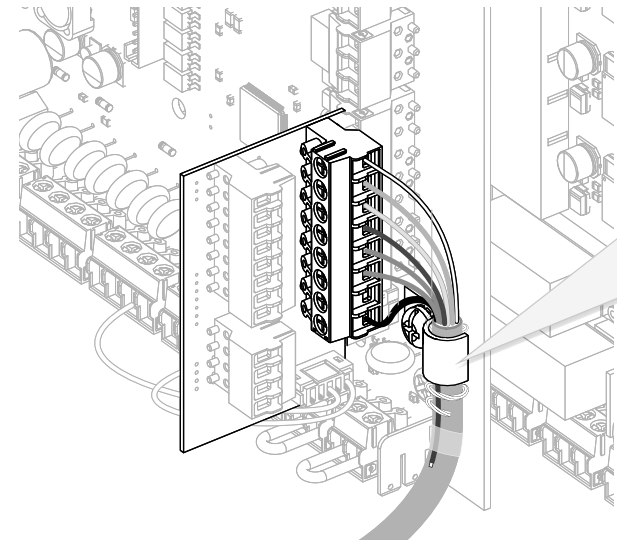
24 AWG

IMPORTANT

Encoder wiring must not be spliced unless you have consulted with Rytec technical support at 800-628-1909.



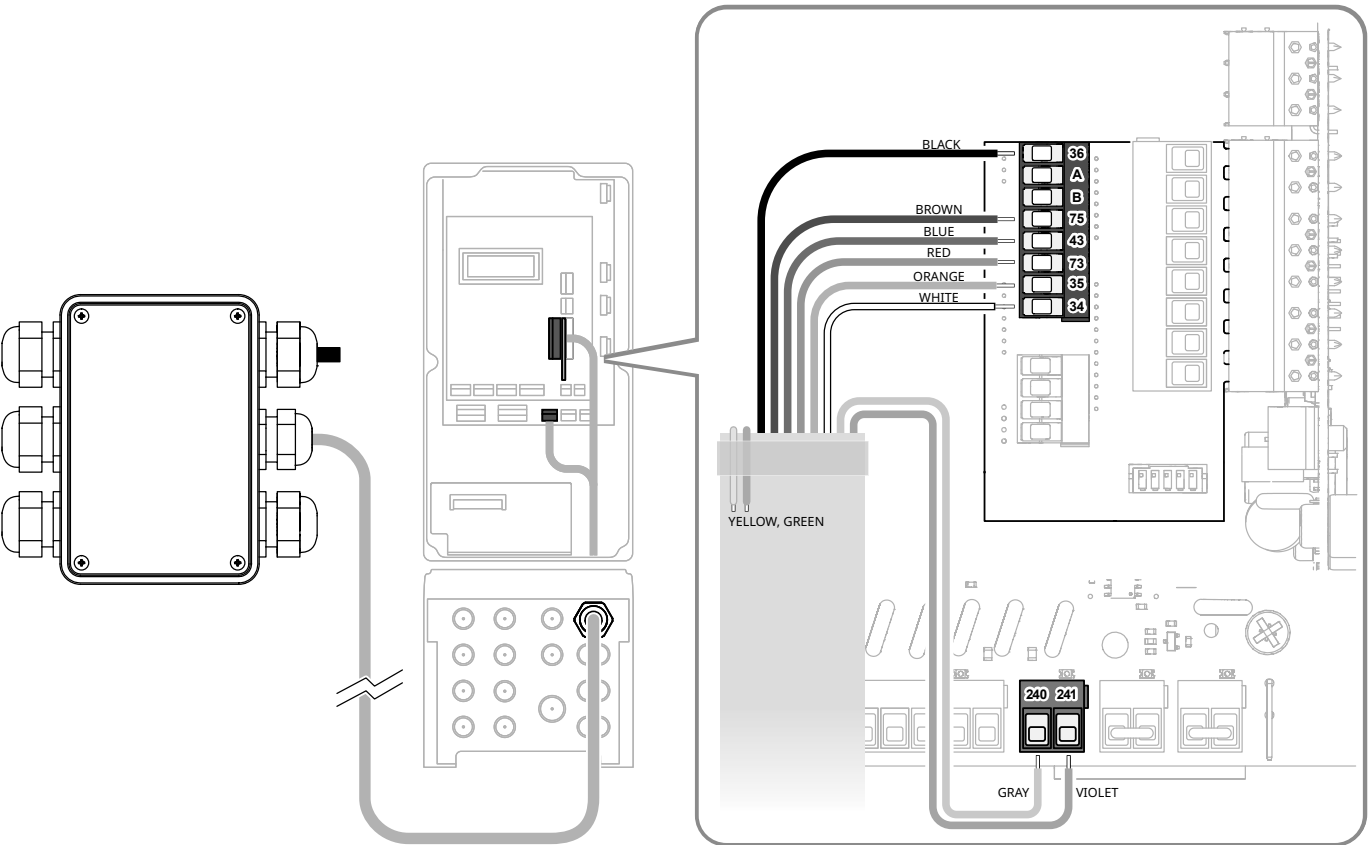
Mark controller end of cable as "Encoder"



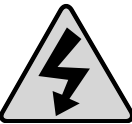
- The **drain wire** (bare metal) must be in contact with the **P-clip**.
- To ensure a tight contact:**
1. Loosen the P-clip.
 2. Strip encoder cable jacket to expose wires.
 3. Trim and bend red, pink, gray and blue wires. Tape to jacket.
 4. Wrap drain wire around jacket and unused wires.
 5. Slide cable under P-clip and tighten.
Make sure there is maximum contact between clip and drain wire.
 6. Trim excess drain wire.

4 **Connect** the wiring from the X-10 junction box.
Shielding: unshielded

24 AWG



Before powering up the door




⚠️ **WARNING**

It is recommended that this pretest be done by a certified electrician.

1

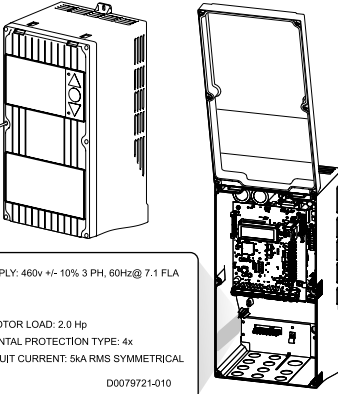

Make sure the power to the door is correct.

- Open** the System 4 control box and check the power supply listed on the label inside.
- Test** the voltages at the disconnect. Test leg to leg and leg to ground.
- If power is correct, **power up** the door and start the set limits sequence.



Multimeter

#2




POWER SUPPLY: 480v +/- 10% 3 PH, 60Hz@ 7.1 FLA

LARGEST MOTOR LOAD: 2.0 Hp
ENVIRONMENTAL PROTECTION TYPE: 4x
SHORT CIRCUIT CURRENT: 5kA RMS SYMMETRICAL
D0079721-010

Sample electrical specs shown

How to set limits and test the door



⚠️ **CAUTION**

Make sure that people and vehicles do not pass through the open doorway until the automatic calibration is complete. The door can open or close unexpectedly, resulting in injury.

The Controller Display

Access level

- 0 = Operator level
- S = Service level
Accesses more parameters
- R = Rytec level
*Accesses all parameters
Requires password from technical support*

Parameter name

P: Password 0

001= 1979 Cyc

Parameter number
All three digits are hexadecimal

Parameter value
? = value being changed
✓ = change saved

Blinking cursor
On left side of display: *press arrows to change parameter number*
On right side of display: *press arrows to change paramter value*

The Controller Controls

UP Arrow

- Press** to increase a value or parameter number
- Press and hold** to increase values or parameter numbers quickly

RESET Button

- Press** to toggle the flashing cursor between parameters and values
- Press and hold** to save changes to a value

DOWN Arrow

- Press** to decrease a value or parameter number
- Press and hold** to decrease values or parameter numbers quickly

Icon key

Press

Press and hold

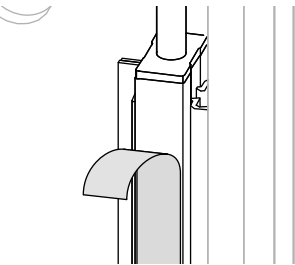
Press UP or DOWN arrow, as needed

NOTE: The System 4 display uses hexadecimal numbers to number parameters and for some values.

The display uses the ten numeric characters (0-9), plus six letters (A-F), which represent the values from 11 through 16.

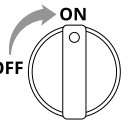
In some cases it will be necessary to press the UP arrow sixteen times to change a value from 0000 to 0010.

Make sure the protective film has been removed from both light curtains before turning on power to the door.



Do This

1



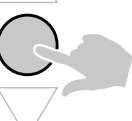
Turn on power to controller

Result

! Synchron. !
_0 Press Reset

The sequence starts. Scrolling message:
Press Reset button to begin

2



1X to start sequence


➡ To Open Pos.
_0 Hold Reset

Scrolling message:
Hold Reset button if position OK

IMPORTANT

Interrupt the set limits sequence and run the tests in *What to test after powering up the door* on the next page.

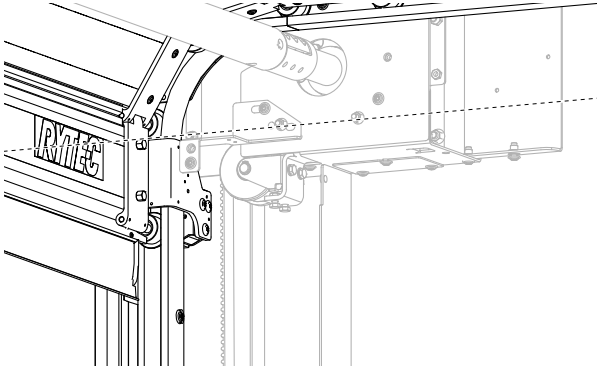
3



Resume the sequence and set the open position. until open height is correct


➡ To Open Pos.
_0 Hold Reset

The top of the end brackets should align with the bottom of the radial guide track.



Do This

4



until "Open Limit Set" screen displays

Result

Open Limit Set
_0 _


when quality check is complete, you see these screens:

LGx Qual. Check
_0

! Synchron. !
_0 Press Close

Scrolling message:
Press Close button to begin

5




1X to lower the door panel

Search Edge
_330_Auto Close

the door panel stops when it reaches the bottom of the light curtain, then you see:

!Auto Calibrate!
Press Open butto

6



1X to start auto-calibration

Act11 = 4Sec
Object 232

Door Is Closing
1515 Limit Corr.

Spiral
[xxx] Cycles

- The door opens and closes automatically **up to 12 times.**
- The controller automatically sets the close limit position while the door calibrates.
- When calibration is complete, the door switches to Run mode.

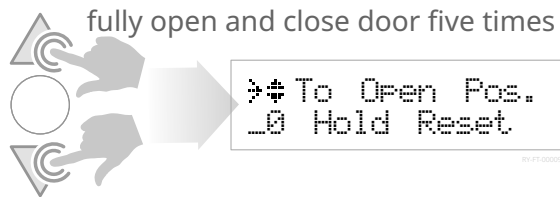
IMPORTANT

The door may not open or close completely during automatic calibration. This is normal.

When calibration is complete, the door will open and close correctly.

You can now **test the door.**

What to test after powering up the door



Press and hold the arrows to fully open, then fully close the door five (5) times.

1 Does the door panel move in the right direction?

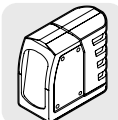
Test: The direction of the door should match the direction of the arrow on the controller.

Yes: no action is needed.

No: follow the steps in *How to reverse the rotation of the motor*.

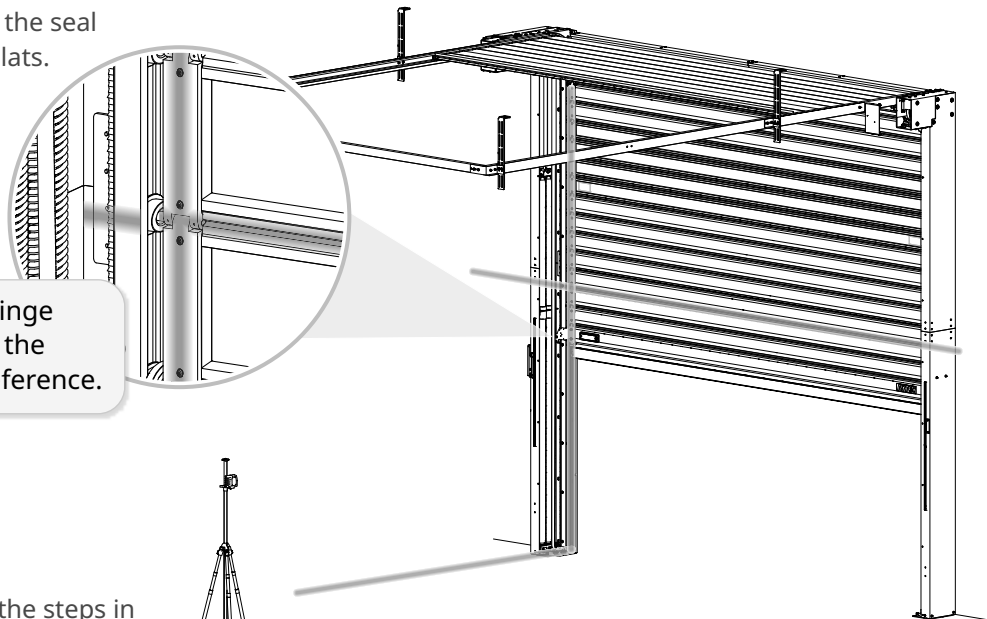
2 Is the door panel level and plumb?

Test: laser the door along the seal between two door panel slats.



Laser level

Use the hinge screws as the vertical reference.



Yes: no action is needed.

Panel is not level: follow the steps in *How to adjust the secondary drive belt*.

Panel is not plumb: contact Rytec technical support at 800-628-1909.

3 Is the manual brake release operating correctly?

Test: pull down the lever to 90° to manually release the brake, then push the lever back up to reset it.

Release operating correctly: when the lever is down, the door panel moves freely and the controller displays an F211 Emergency Stop error. When the handle is reset, the controller displays Door held open and you can close the door by pressing the DOWN arrow. **No action is needed.**

Release NOT operating correctly: the F211 Emergency Stop error stays on when the lever is reset, and the door cannot be closed. **Follow the steps in How to adjust the proximity sensor.**

4 Is the door operating correctly?

Test: listen for grinding, whining or excessive motor noise. Watch for changes in speed or excessive movement of the motor or drum

Yes: no action is needed.

No: contact Rytec technical support at 800-628-1909.

How to reverse the rotation of the motor

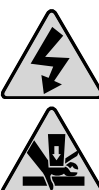
First: set the controller to Parameter mode and access Service level parameters

Do This	Result
1 until the parameter screen displays	 You are in Parameter mode. Go to parameter P:999.
2 2x to reach parameter P:999	 The parameter P:999 screen displays.
3 1x to move cursor to the right (edit value)	 You can now change the value of parameter P:999.
4 16x to set value to hexadecimal 10	 Set the value to 10 (Service level password).
5 until question mark changes to checkmark (value saved)	 The Service level password is saved.
6 1x to move cursor to left (parameters)	 You can now go to parameter P:130.

Next: navigate to parameter P:130 and change the value

Do This	Result
1 until parameter displays	 Value is either 0 or 1.
2 1x to move cursor to the right (edit value)	 The value is either 1 or 0.
3 press either arrow to change value	 Change the 0 to 1, or change the 1 to 0.
4 until question mark changes to checkmark (value saved)	 The new value is saved.
5 until the "To Open Pos." screen displays	 Reset the limits for the door.


How to adjust the secondary drive belt



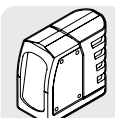
⚠ WARNING

Do not perform this procedure until the power disconnect is in the OFF position and a lockout/tagout is complete.

Contact with high-voltage wires, or the door being activated unexpectedly, can cause death or serious injury.



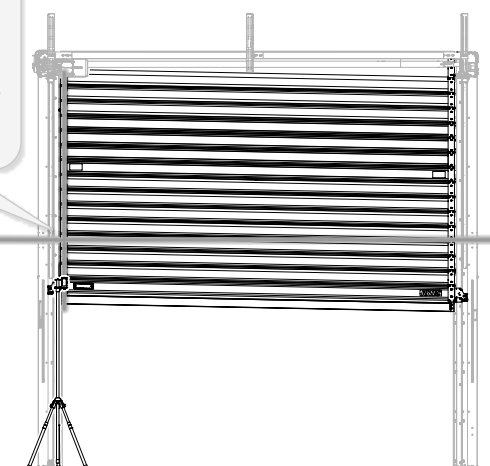
1



Laser level

IMPORTANT

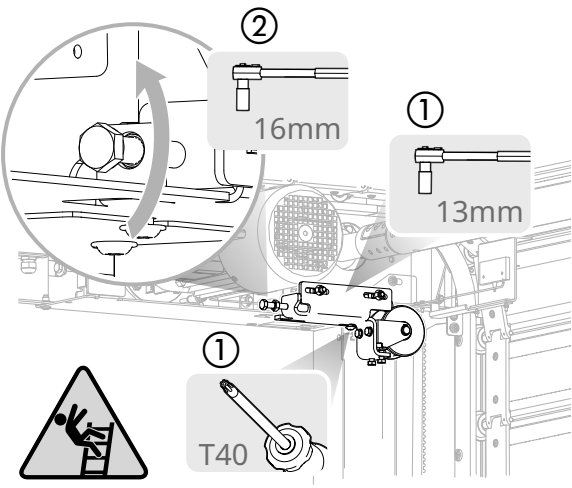
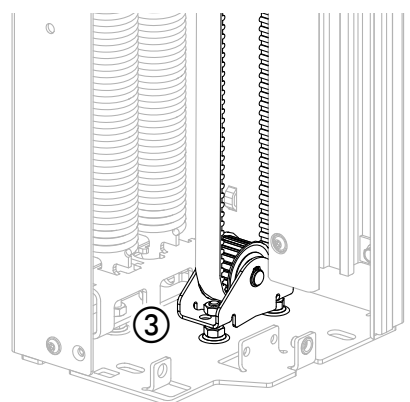
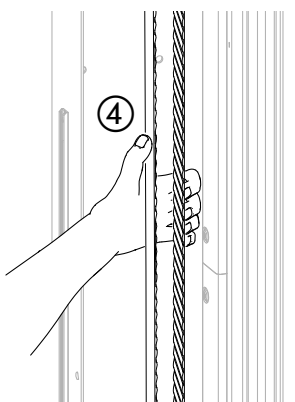
Always adjust the belt to **lower** the side of the door panel that is **higher**.



2

Loosen the secondary drive belt until there is considerable slack.

- 1: Loosen** the restraining bolts on the idler bracket ①, then **turn** the adjustment screw ② **counterclockwise** until the bracket stops moving forward.
- 2: If necessary, loosen** the front nut on the baseplate pulley assembly ③. **DO NOT remove** the nut.
- 3: Check** the belt ④ for slack.

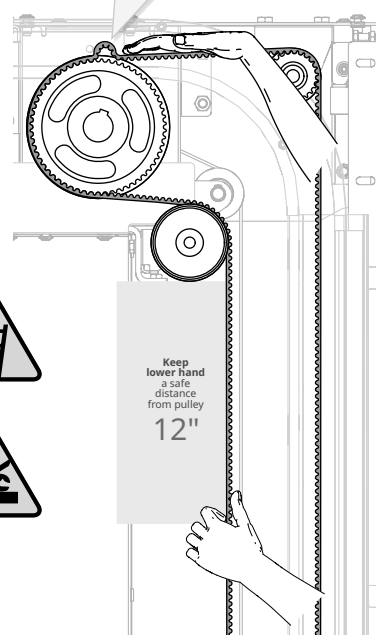




3

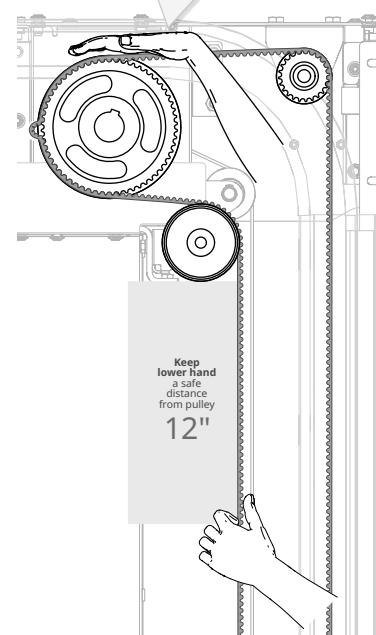
In the console with the higher belt, **“jump” the secondary drive belt** one notch in the pulley.

IMPORTANT Adjust the belt **one tooth at a time**, then recheck level.

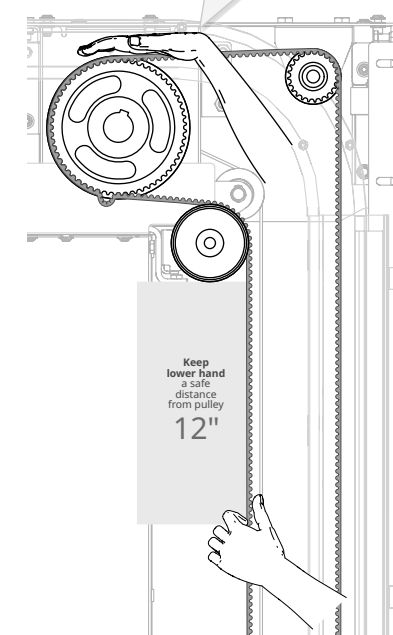
Push slack to create a “wave” in the belt and hold it against the pulley.




Press down on belt until teeth drop into the next notch on pulley.




Push “wave” around pulley and down the other side.






Keep lower hand a safe distance from pulley
12"



Keep lower hand a safe distance from pulley
12"




Keep lower hand a safe distance from pulley
12"

4

Level the door panel again.

If the door panel is not level, repeat these steps and retest.

If the door panel is level, reset the tension on the belt.

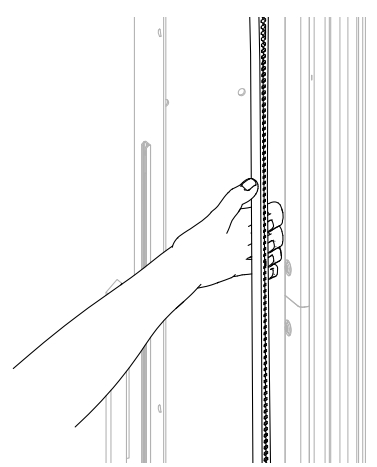


Laser level

5

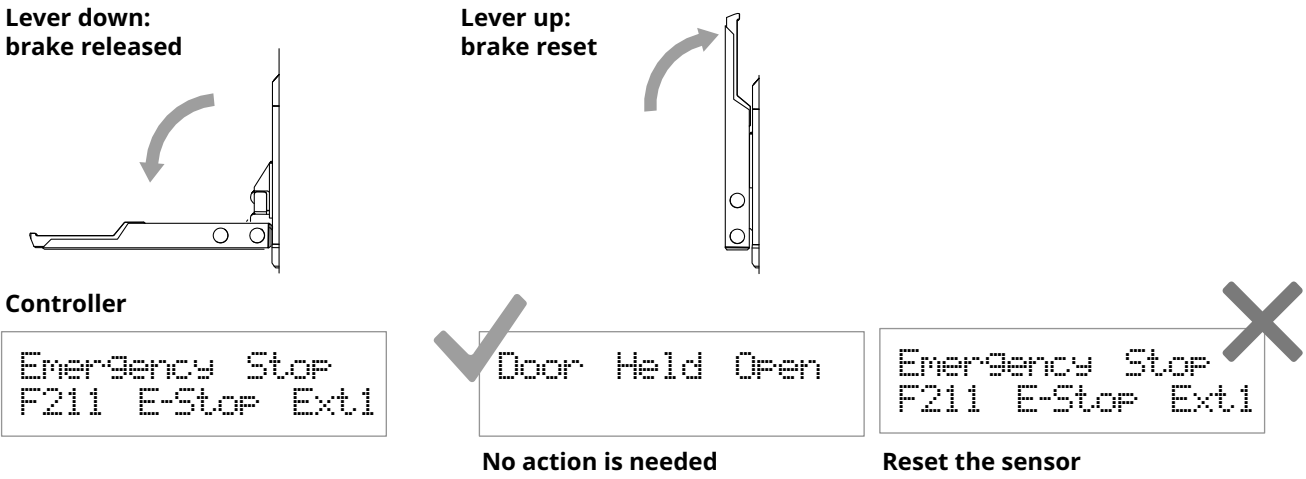
Reset the tension on the belt.

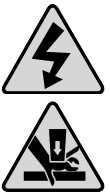
- Tension is correct** when it requires considerable effort to bring the two legs of the belt, near the midpoint, together until they touch.



How to adjust the proximity sensor

What's the problem? The controller tracks the position of the manual break release through a magnetic sensor located in the motor. In some installation environments, the sensor needs to be adjusted from the factory preset to correctly track the brake release.






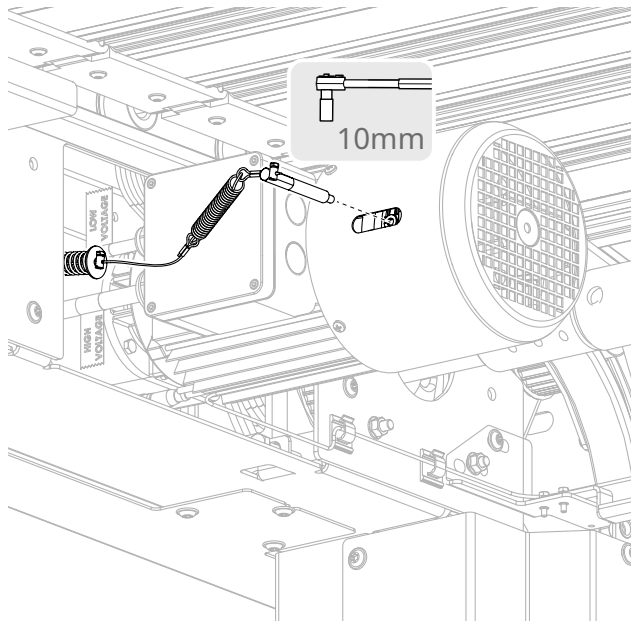
⚠ WARNING

Do not perform this procedure until the power disconnect is in the OFF position and a lockout/tagout is complete.

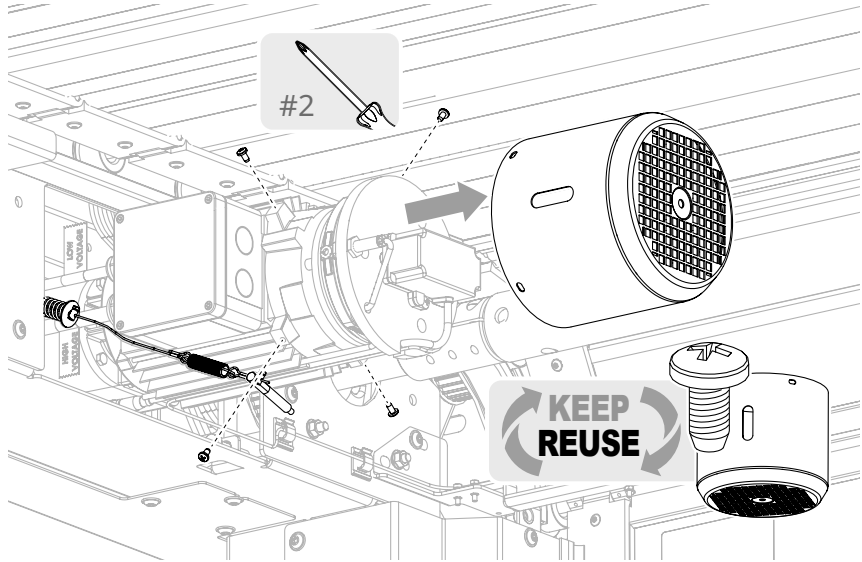
Contact with high-voltage wires, or the door being activated unexpectedly, can cause death or serious injury.



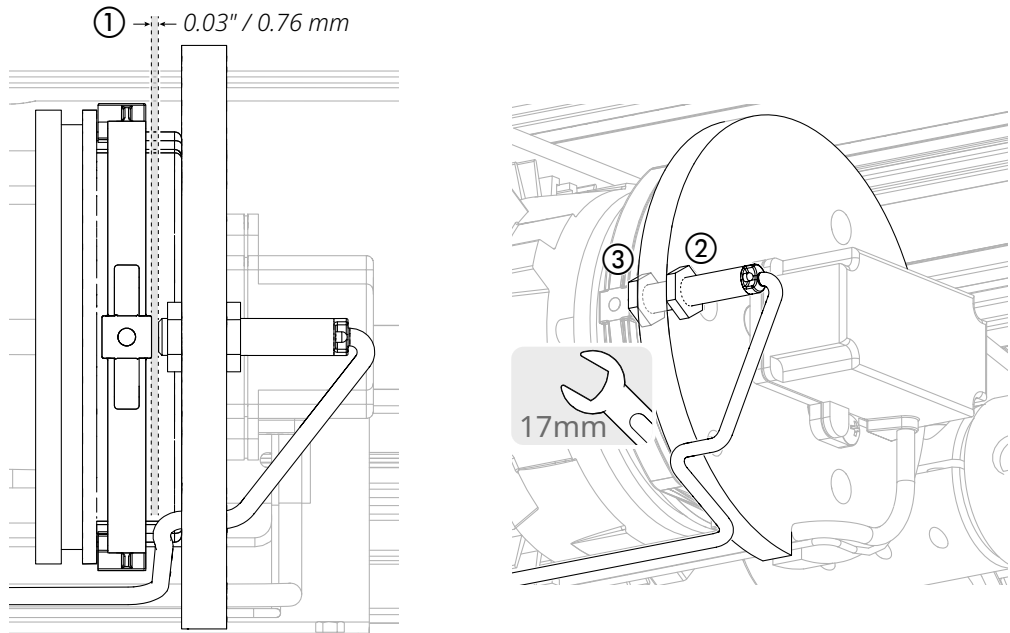
- 1** At the motor, **remove** the brake release lever.
- DO NOT** remove the cable. The play in the spring allows it to turn with the release lever until it is free of the motor.



- 2** **Remove** the four screws and the bottom cover of the motor.











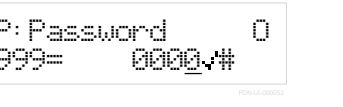









- 3** **Check** the distance between the sensor and the brake release arm ①. It should be .03"/.76mm, which is the **thickness of a credit card**. To adjust the sensor, first **loosen** the outer nut ②, then **tighten** the inner nut ③ to secure it in place.











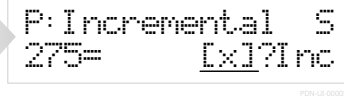


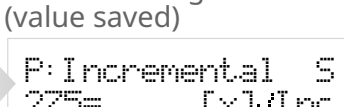



- 4** **Test** the manual brake release again.
- If the controller displays the F211 error on reset,** repeat these steps and retest.
- If the controller displays "Door Held Open",** the issue is resolved.
- Reinstall** the motor cover and the brake release lever.

How to manually reset the close limit (optional)

First: set the controller to Parameter mode and access Service level parameters



















Do This	Result
1  until the parameter screen displays 	 You are in Parameter mode. Go to parameter 999.
2  2X to reach parameter P:999 	 The Password parameter P:999 screen displays.
3  1X to move cursor to the right (edit value) 	 You can now change the value of parameter P:999.
4  16X to set value to hexadecimal 10 	 Set the value to 10 (Service level password).
5  until question mark changes to checkmark (value saved) 	 The Service level password is saved.
6  1X to move cursor to left (parameters) 	 You can now go to parameter 275.

Next: navigate to parameter P:275 (parameter P:221 for doors with photo eyes) and change the value

Do This	Result
1  until parameter displays 	 The default value is -12 (default at.
2  1X to move cursor to the right (edit value) 	 You can now change the value. <ul style="list-style-type: none"> ▪ The UP arrow increases the value and raises the close limit position for the door. ▪ The Down arrow decreases the value and lowers the close limit for the door. ▪ Each press of an arrow changes the limit by a fraction of an inch, which gives you precise control of the value.
3  until new value displays 	 IMPORTANT Do not change the value by more than 10 increments. Then test the door.
4  until question mark changes to checkmark (value saved) 	 The new value is saved.
5  until door returns to run mode 	 Spiral [xxx] Cycles

How to finish testing the door and the safety features

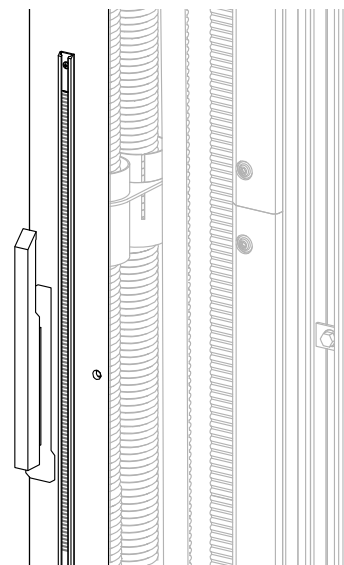
Navigate to parameter P:980 and set the value to 4 so the door will cycle continuously

Do This	Result
1  until parameter displays 	 The default value is 0.
2  1X to move cursor to the right (edit value) 	 You can now change the value.
3  4X to change the value to 4 	
4  until question mark changes to checkmark (value saved) 	 The new value is saved.
5  until door returns to run mode 	 Spiral [xxx] Cycles
6  press either arrow to start cycling 	 Act 1 5 Sec

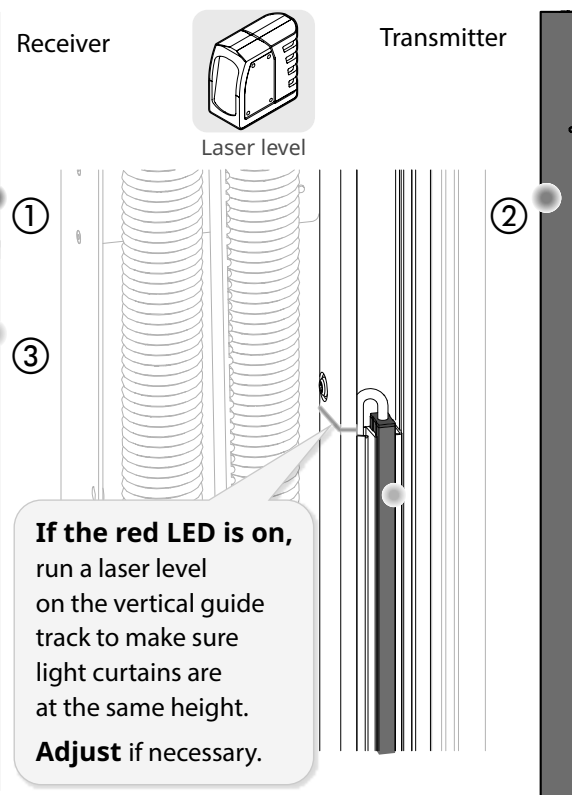
- 1** **Watch** the door as it cycles.
- **Make sure** the door panel rises to the fully open position, remains in place for the standard time, then closes to the fully closed position.
 - **Make sure** the fully open and fully closed positions remain at the set limits.
 - **Make sure** the reversing edge is level when the door is fully closed.
- IMPORTANT** ▪ **Let the ACL timer** hold the door open through each cycle. Shortening the timer while the door is cycling can cause the motor to overheat.

- 2** While the door cycles, **look and listen** for:
- **Unusual noises** such as grinding, whining or excessive motor noise
 - **Excess movement** by the motor, drive or drum.
 - **Unexpected delay** in activation or unusually long time period before automatically closing.

- 3** **Make sure** the Pathwatch LED strips operate correctly as the door opens and closes:
- **Continuous red light** while the door closes.
 - **Three-second sequence** of yellow light before the door closes.
 - **If the door also has a Pathwatch II** warning light at the top of the door:
 - There is also a continuous red light **while the door opens.**
 - The three-second sequence before the door closes is **red instead of yellow.**



- 4** Make sure the blue ① and green ② LEDs are activated in both light curtains, and that the red LED in the receiver ③ is **NOT** activated.



If the red light does not go off, or if you see a different combination of lights, call Rytec technical support at 800-628-1909 and request **Service Bulletin #274**.

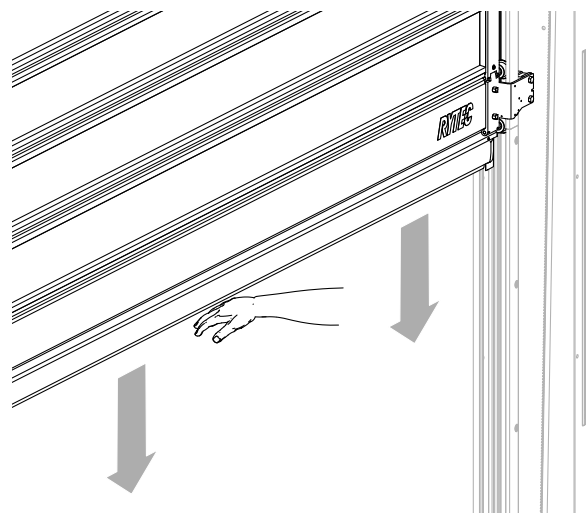
- 5** Test the light curtain by placing your hand flat across the light curtain in the path of the door at the top ①, middle ② and bottom ③ of the light curtain while the door panel closes.
- Make sure the door panel returns to the fully open position each time the light curtain is activated.
- Make sure the door panel stops immediately when you place your hand at the top ① of the light curtain, and gradually when you place your hand in the middle ② or at the bottom ③.

WARNING

Make sure you are standing clear of the door panel while performing this test.

- 6** Test the reversing edge by placing your arm in the path of the door while it is closing.
- IMPORTANT** Make sure you place your arm above the light curtains.

The door panel should stop, then reverse direction and rise to the fully open position.



- 7** **IMPORTANT**

Set the controller to parameter mode.

Set Parameter 980 back to 0 to take the door out of continuous cycle.

Return to run mode.

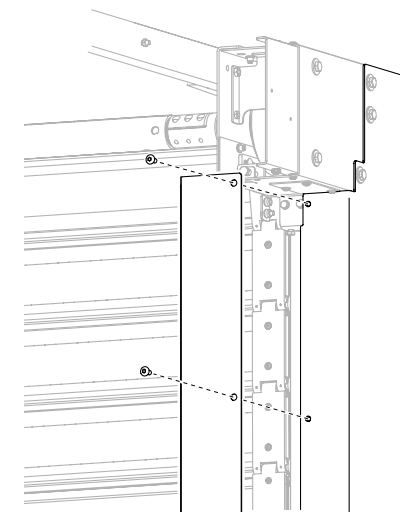
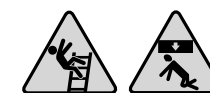
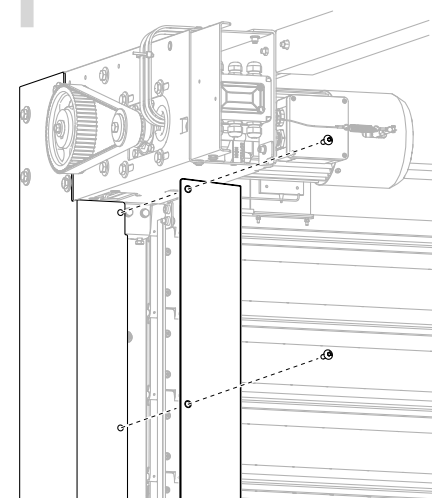
- 8** Activate the door using each activating system at least three times per system.

How to complete the installation



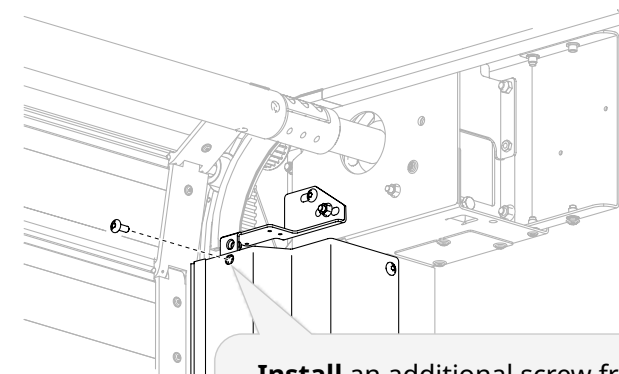
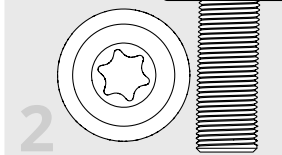
It is recommended that you **do not use power tools** for these steps. Overtorquing screws can damage the riveted nuts that secure them..

- 1** Reinstall both side column covers.



SMALL PARTS

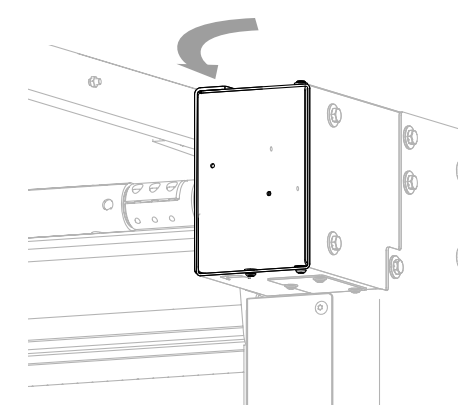
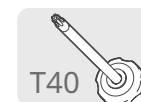
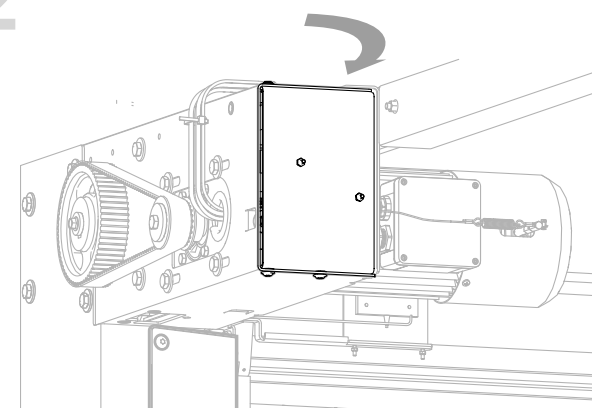
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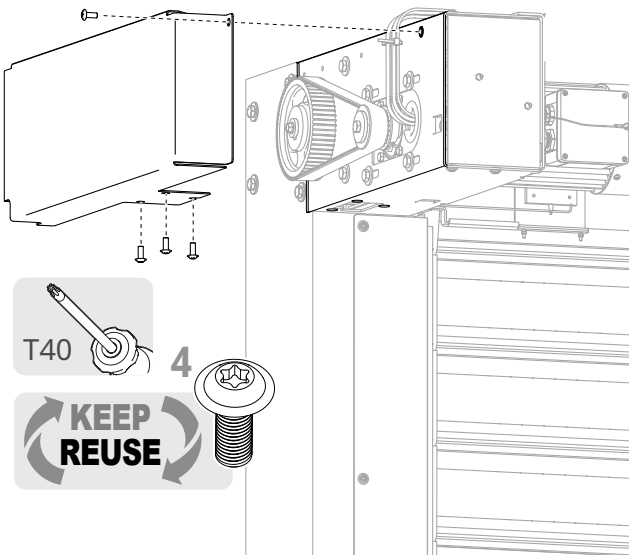
Install an additional screw from the small parts box into the screw hole in the corner bracket.

Do this in both side columns.

- 2** Close and secure the front panels on both consoles.



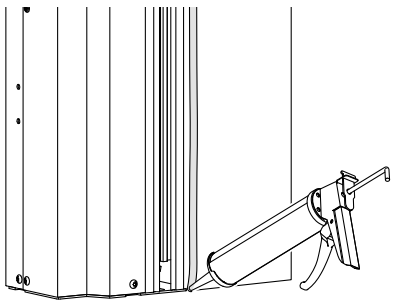
3 Reinstall the belt guard cover.



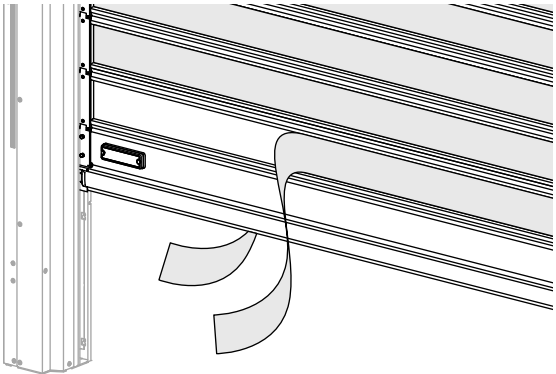
4 If necessary, use the spray paint to correct blemishes in the door finish.



5 Caulk between the door opening and the door.



6 Full vision doors: remove the protective plastic film from both sides of each door slat.



CAUTION
Film can release a static charge when removed.