

Spiral® LP (Parking Structure) Installation Manual

Rytec installation safety information

ThRytec 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



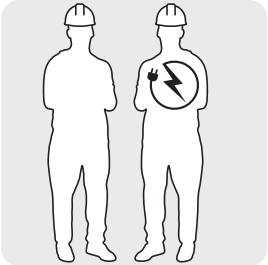
Installation safety

- **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

IMPORTANT	Indicates instructions which, if not followed, could result in damage to the door or voiding of the warranty .	INSIDER'S TIP	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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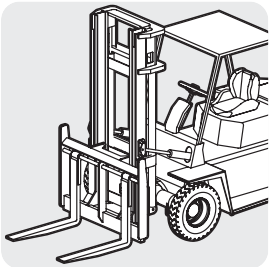
Requirements – Site Conditions

- 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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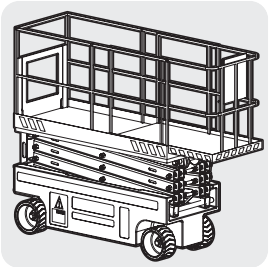
- **Forklift** that meets the following specifications:



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

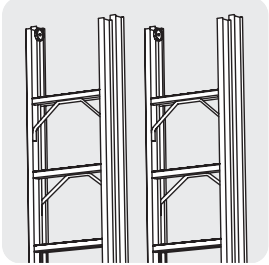
	⚠ WARNING Follow all safety instructions on all lifts and ladders used for this installation.
--	--

- **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



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.

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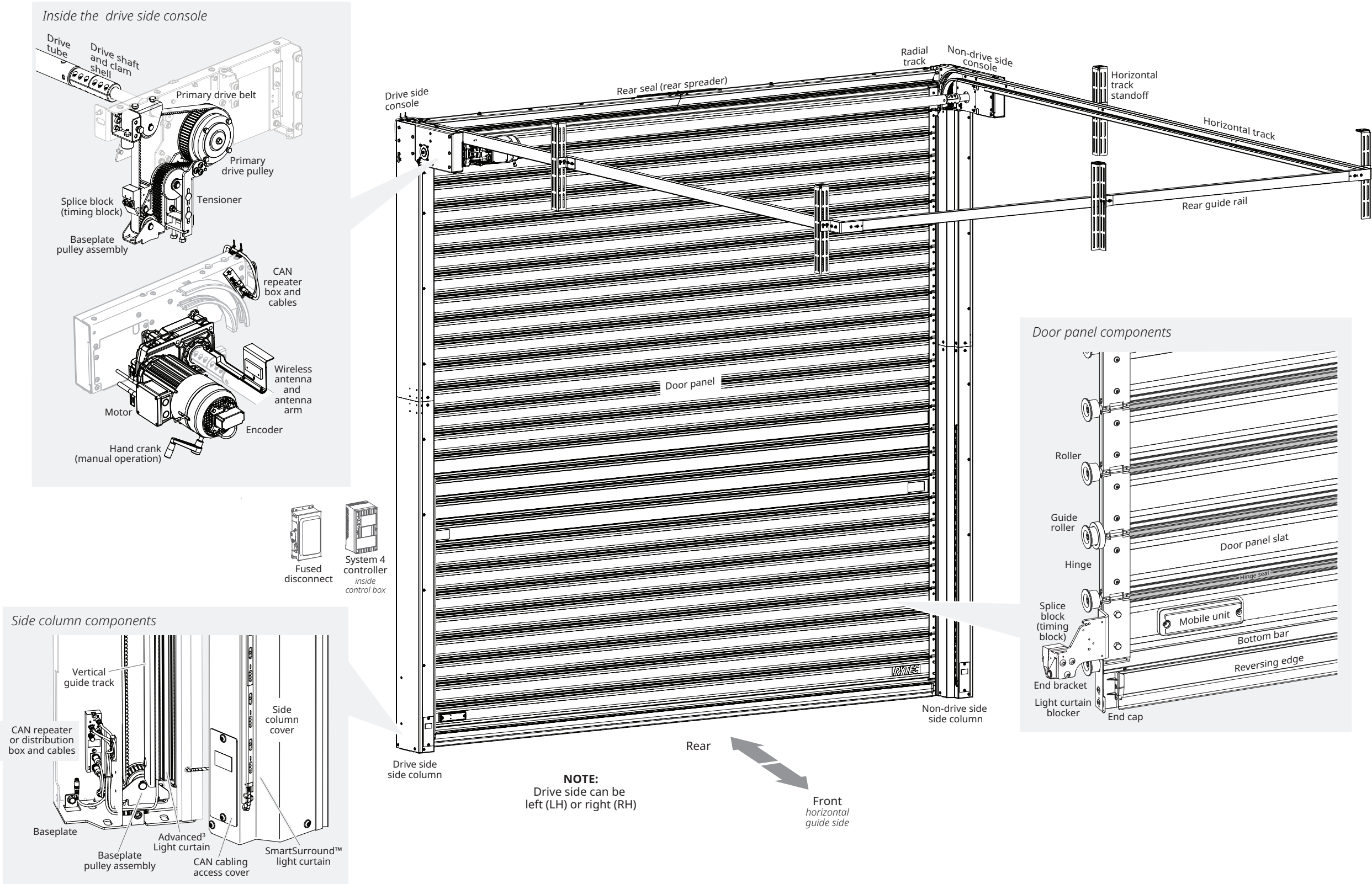
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NEW in 2022 Spirals: Smartsurround™ light curtains and CAN bus cabling

Two new features have been added to Spirals in 2022, both of which change the installation process.

CAN bus cabling

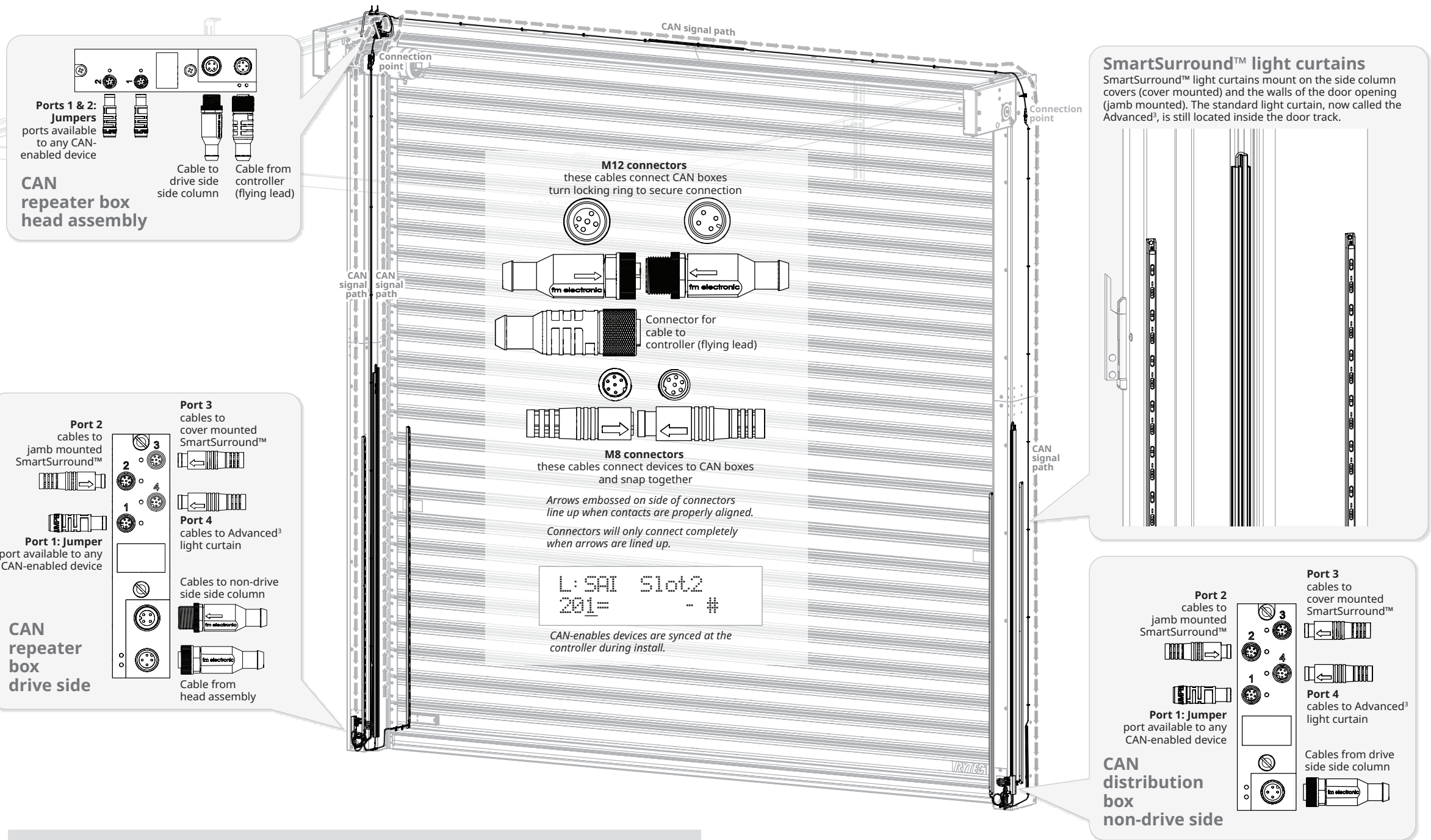
The CAN bus system simplifies cabling and minimizes internal field wiring during installation. the system works this way:

- CAN bus cabling is a **single chain (series) of cables** that connect ALL CAN-enabled devices to the controller.
- The cabling starts at the controller and runs through the CAN repeater box in the head assembly, then the CAN repeater box at the base of the drive side side column, then across the rear spreader to **terminate at the CAN distribution box** at the base of the non-drive side side column.
- CAN-enabled Rytec devices **can plug into any available port in any CAN box**. For example the BTA4 can plug into a baseplate port if it is mounted to a side column, or a head assembly port if it is remotely mounted.
- Ports must be jumpered if they are not connected to a device so that the signal path remains unbroken until it terminates at the distribution box.

SmartSurround™ light curtains

The SmartSurround™ light curtains replace the Pathwatch LED strips, and combine the function of a light curtain and an alert system.

- Spiral doors now have **three sets of light curtains**:
 - ▶ The standard light curtains, now called the Advanced³, in the door track
 - ▶ One set of SmartSurrounds™ mounted on the side column covers (cover mounted)
 - ▶ Another set installed on the walls of the door opening (jamb mounted)
- The LEDs are larger and brighter than the Pathwatch, and display a sequence of lights that move up and down when the door opens. and closes, and that flash repeatedly whenever any of the detection planes are broken.



Spiral® LP (Parking Structure) Installation Manual

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

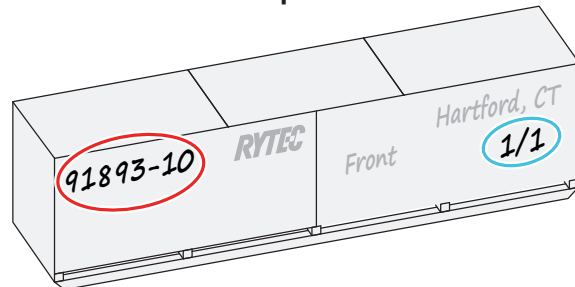
IMPORTANT

Spirals ship in one crate.

The crate is marked with the unique serial number for the door (red circle) and the number of crates used for the door (blue circle).

All parts for the door are in this crate.

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



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

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.**

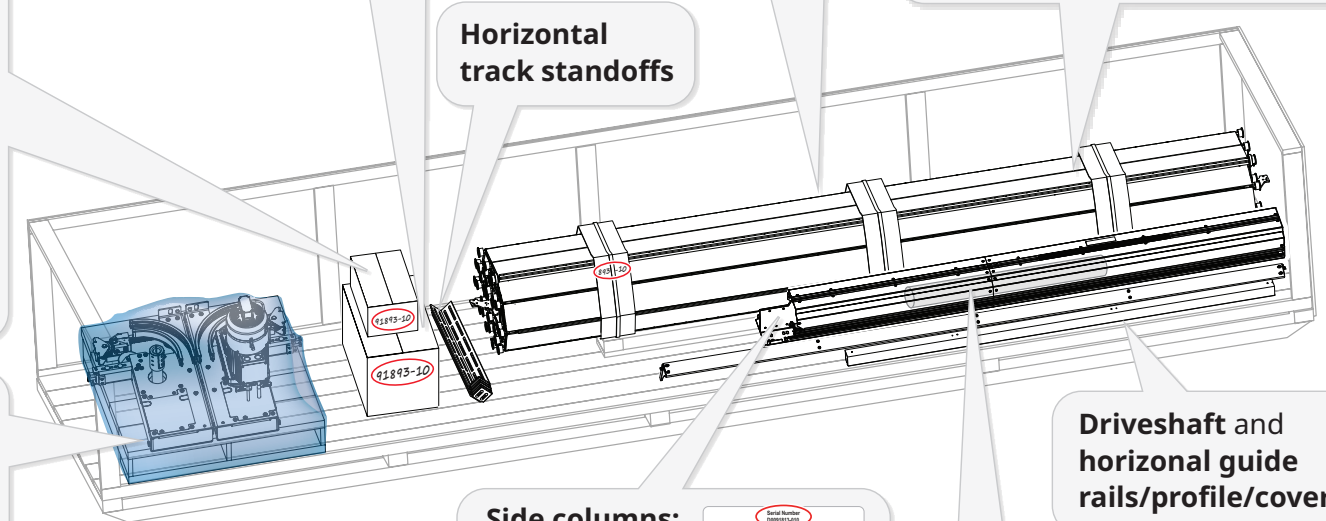
Check the serial number on foam padding and manila tag.

Horizontal track standoffs

Driveshaft and horizontal guide rails/profile/covers

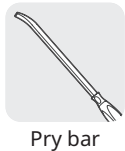
Side columns: check the serial number on the label.

SmartSurround™ light curtains: packed in tube inside side columns



1

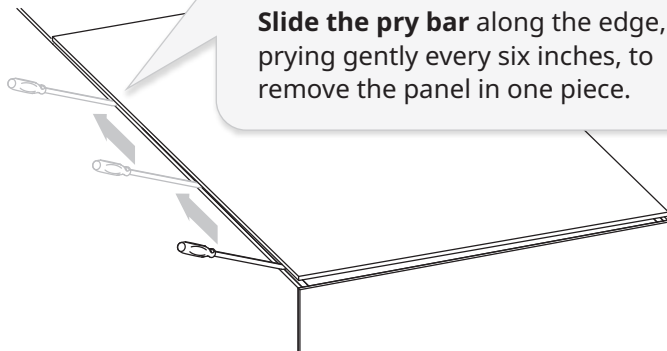
Remove all top panels.



INSIDER'S TIP

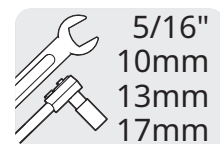
Panels are made of fiberboard that shreds easily, and are secured with many nails.

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

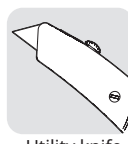


3

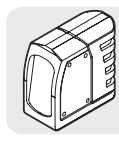
Check your tools. Make sure you have all tools and supplies for the installation.



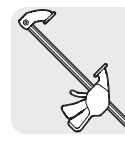
Socket or Open Wrench



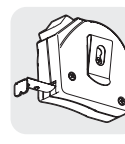
Utility knife



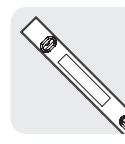
Laser Level



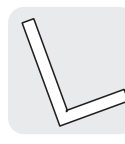
Bar Clamp



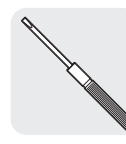
Measuring Tape



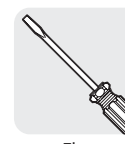
Spirit Level



Carpenter's Square



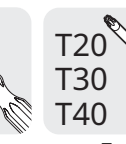
Precision Screwdriver



Flat Screwdriver



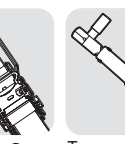
#2 Phillips Screwdriver



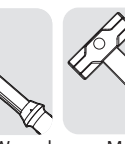
T20 T30 T40 Torx Screwdriver



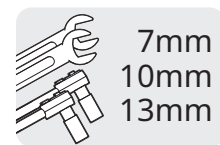
Ratchet Strap



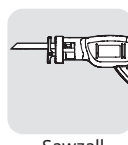
Torque Wrench



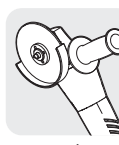
Mallet



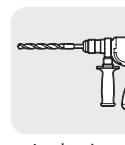
Two Wrenches Needed



Sawzall



Angle Grinder



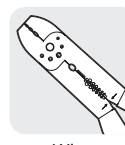
Anchoring Tools



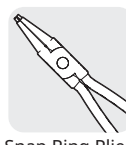
Cutting Pliers



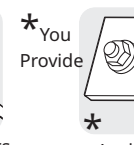
Pry Bar



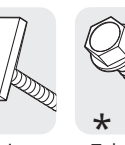
Wire Strippers



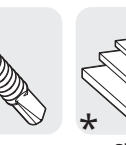
Snap Ring Pliers



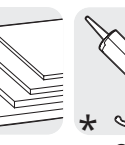
* You Provide Anchoring Hardware



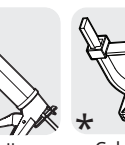
* Tek Screws



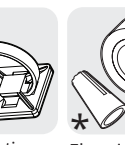
* Shims



* Caulk

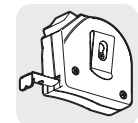


* Cable ties and anchors




* Electrical Tape and Wire Nuts

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



Tape measure

		Object list Duplicate		Material number	
Material description		SPIRAL STN-S		<div>①</div> <div>②</div> Description lists if door is small (-L, -L/R) or large (-S, -S/R).	
MRP controller 500 BS ZMAT	Production scheduler T6 Tier 6	Order type ZP02 RYTEC MTO Order			
Status	REL MSPT PRT PRC SETC		Plant 2000 Ryttec 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					

Description lists if drive side is left hand (LH) or right hand (RH).

Write on object list:

① and ② as rounded fractions

Width to center = $1/2$ ①

Total height = ③ + 2"

IMPORTANT

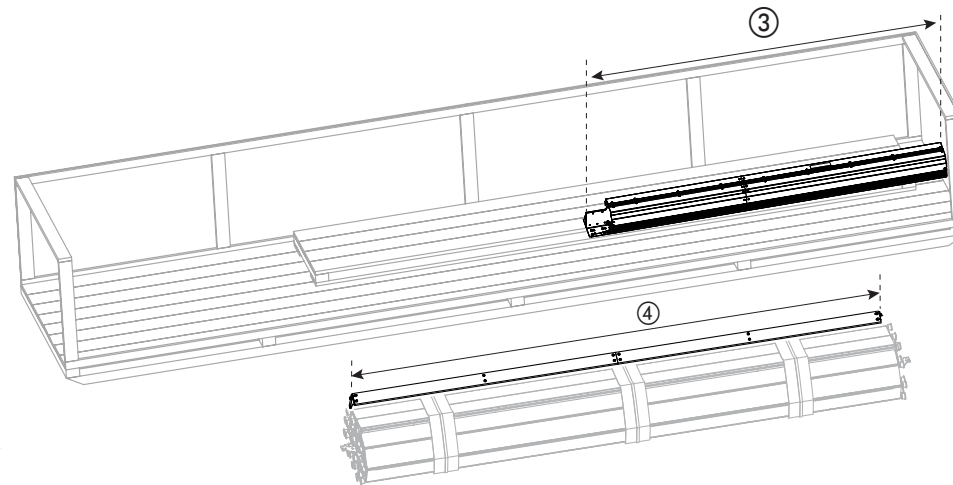
Spirals are built to metric specifications to a very tight spec. Round the **Door Width** and the **Door Height** to nearest 1/16 inch.

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

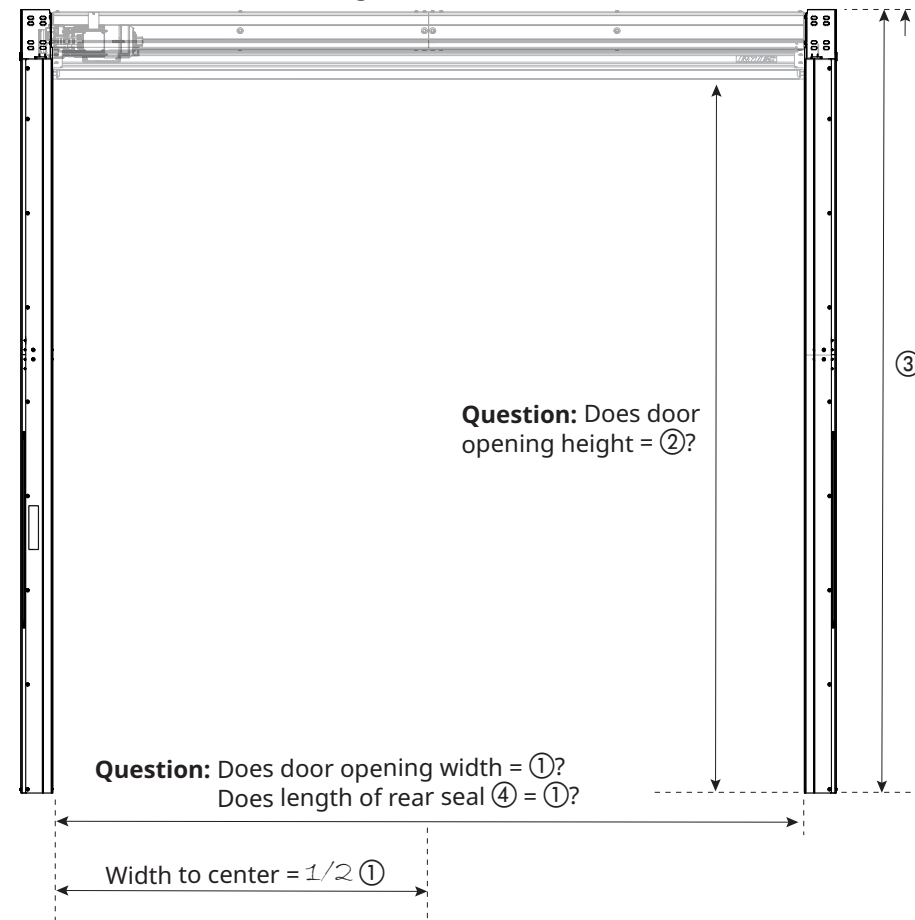
1. **Locate the Door Width ① and Door Height ② on the object list.**
Round the numbers to the nearest 1/16 inch.
Write these numbers on the object list.
2. **Measure the door opening to make sure:**
 - The opening width equals the number on the object list ①.
 - The opening height equals the number on 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 ?

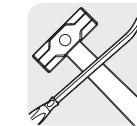
Add at least 2" for console, clearance



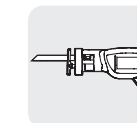
Question: Does door opening width = ①?
Does length of rear seal ④ = ①?

Width to center = $1/2$ ①

- 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



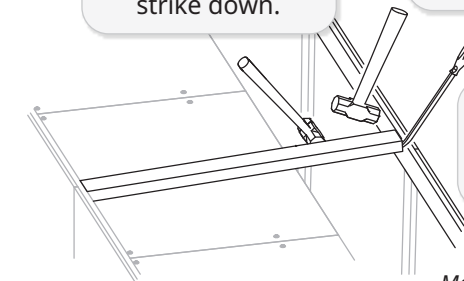
CAUTION

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

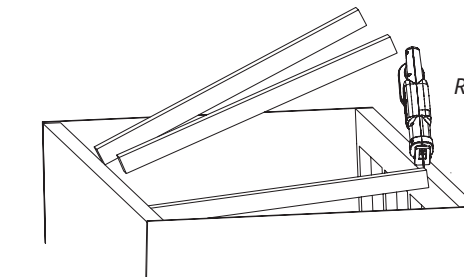
① **Strike across** the crossbar to loosen nails.
Do not strike down.

② **Strike the** side panel to expose nails.

③ **Pry up to** remove crossbar.

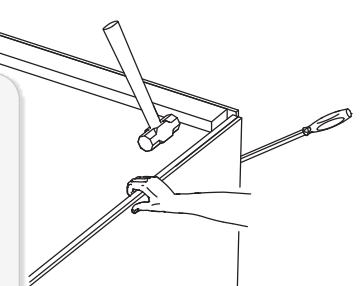


Mallet and pry bar

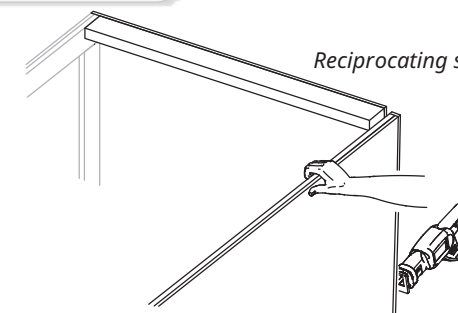


Reciprocating saw

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

- 1 **Cut ties** so you can move any parts that block clear access to the console pallet.

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

INSIDER'S TIP

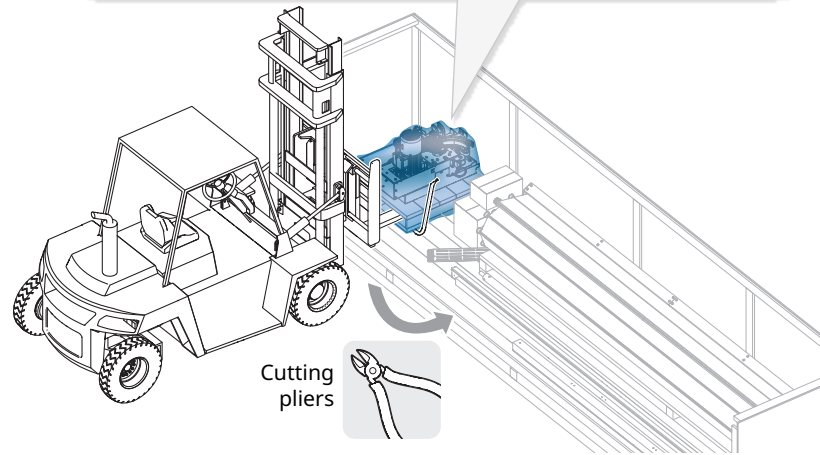
After the consoles are removed, **use the crate** to stage parts until they are needed.



IMPORTANT



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



Cutting pliers

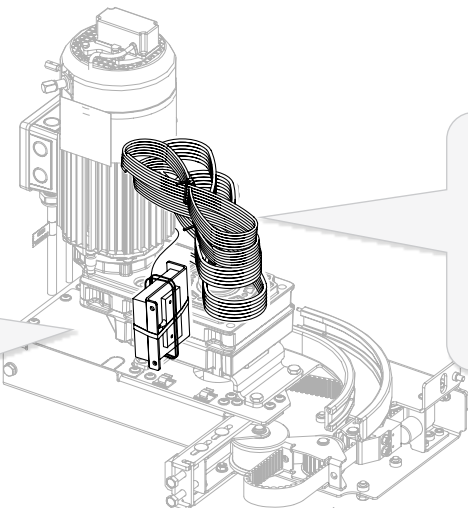
Things to know before you prep the drive side console

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.



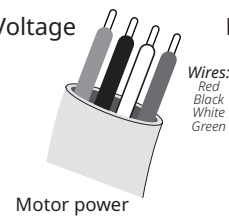
Power cables: these are preinstalled, cable tied and placed on the drive shaft when the door is crated.

Wire colors are shown below ①.

Leave the coils in place until the console is installed.

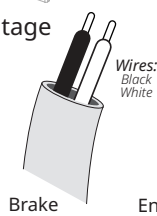
① High Voltage

Low Voltage



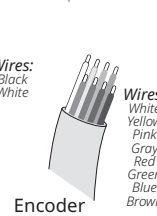
Wires:
Red
Black
White
Green

Motor power



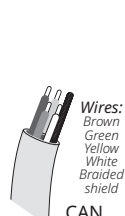
Wires:
Black
White

Brake



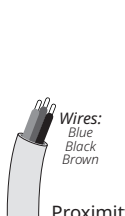
Wires:
White
Yellow
Pink
Gray
Red
Green
Blue
Brown

Encoder



Wires:
Brown
Green
Yellow
White
Braided shield

CAN bus

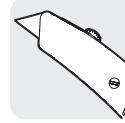


Wires:
Blue
Black
Brown

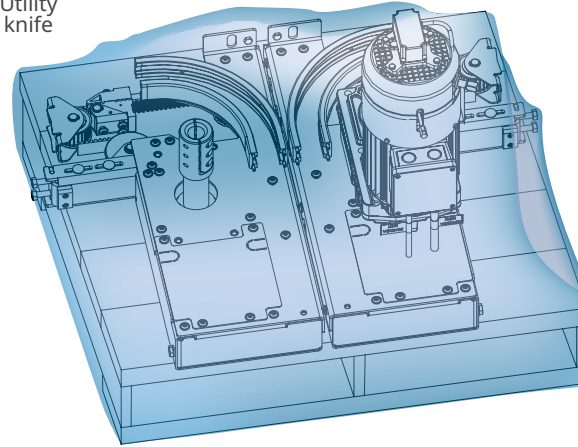
Proximity sensor

2

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



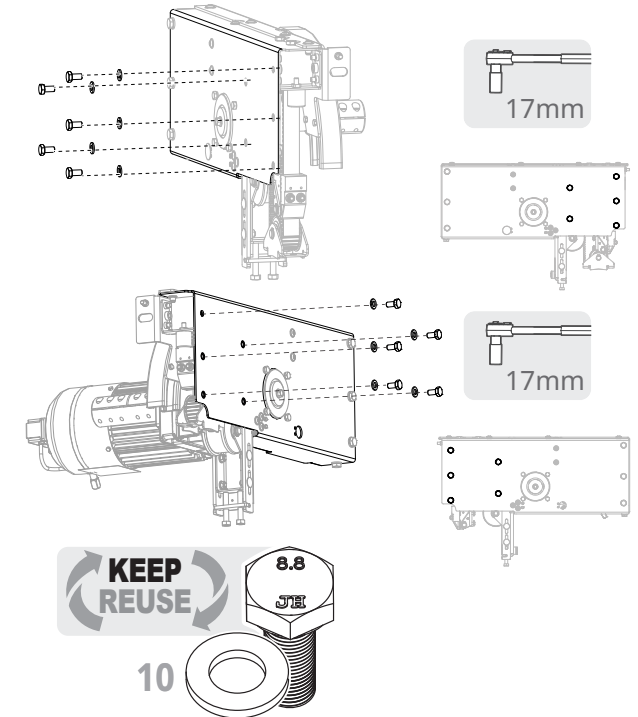
Utility knife



3

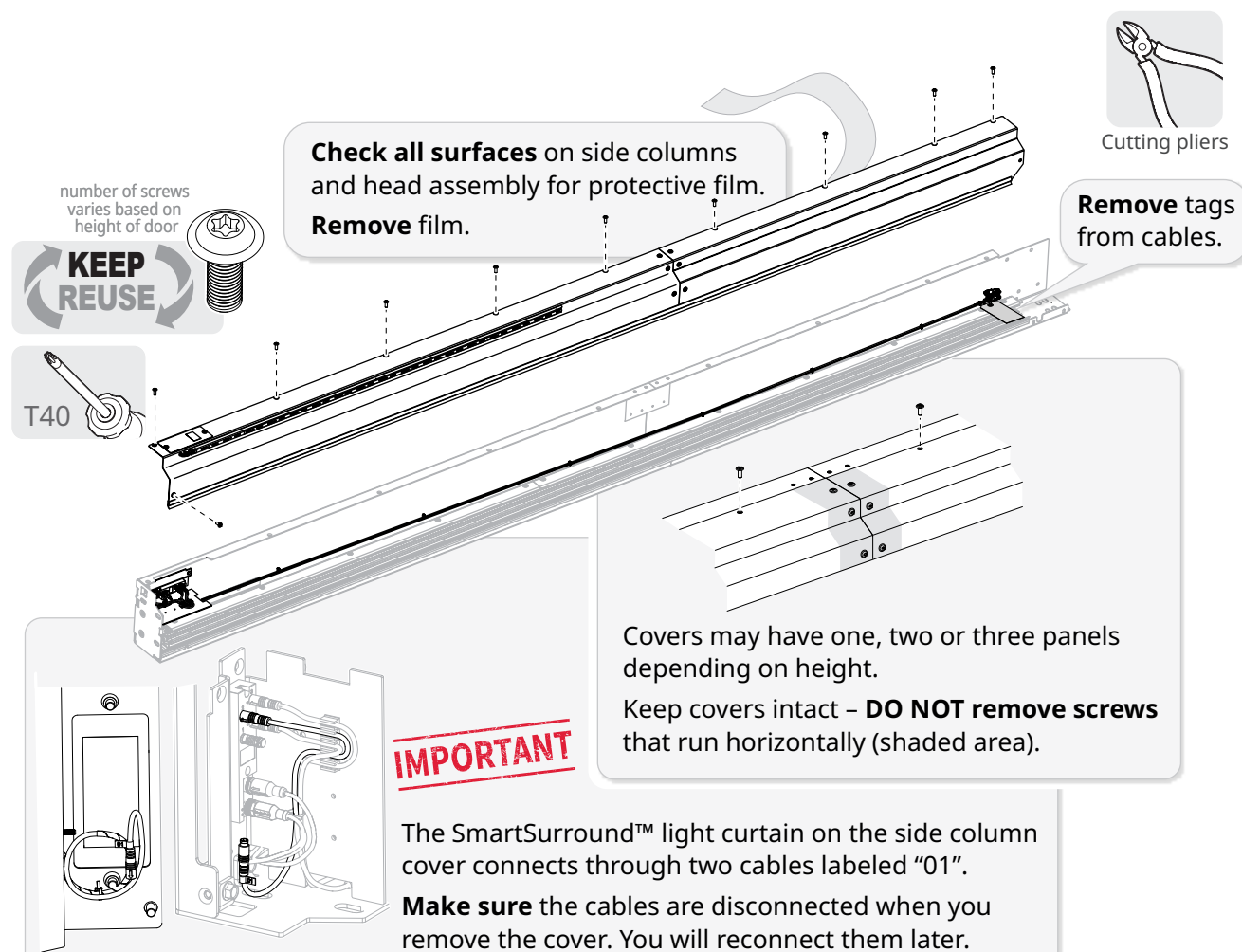
Remove the five preinstalled side column screws (located in the non-shaded area).

Do this on both consoles.

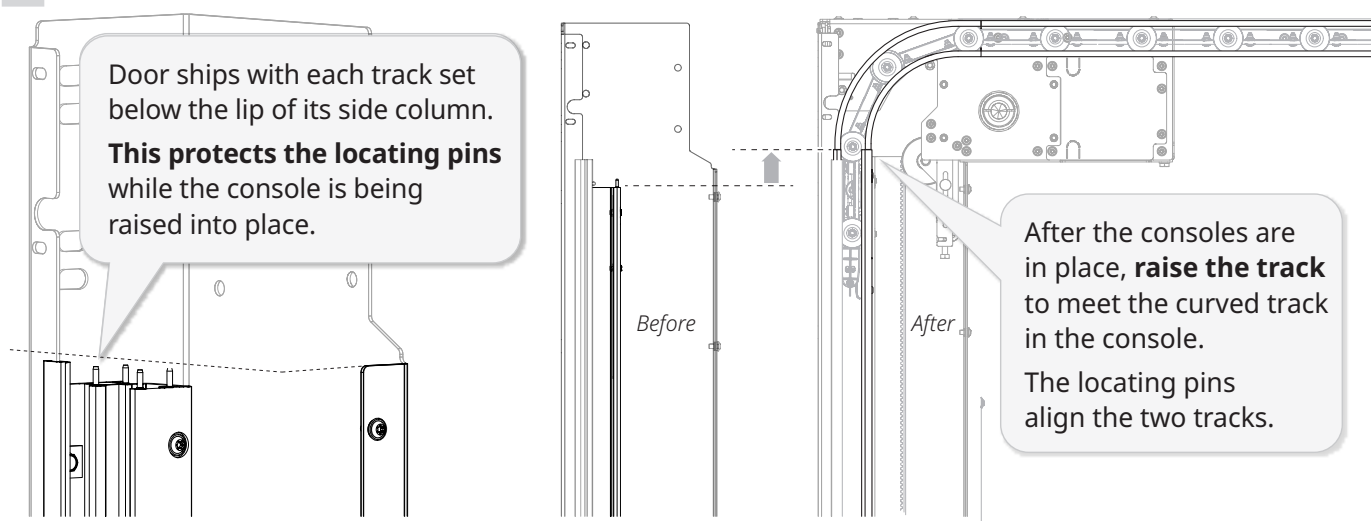


How to prep the side columns

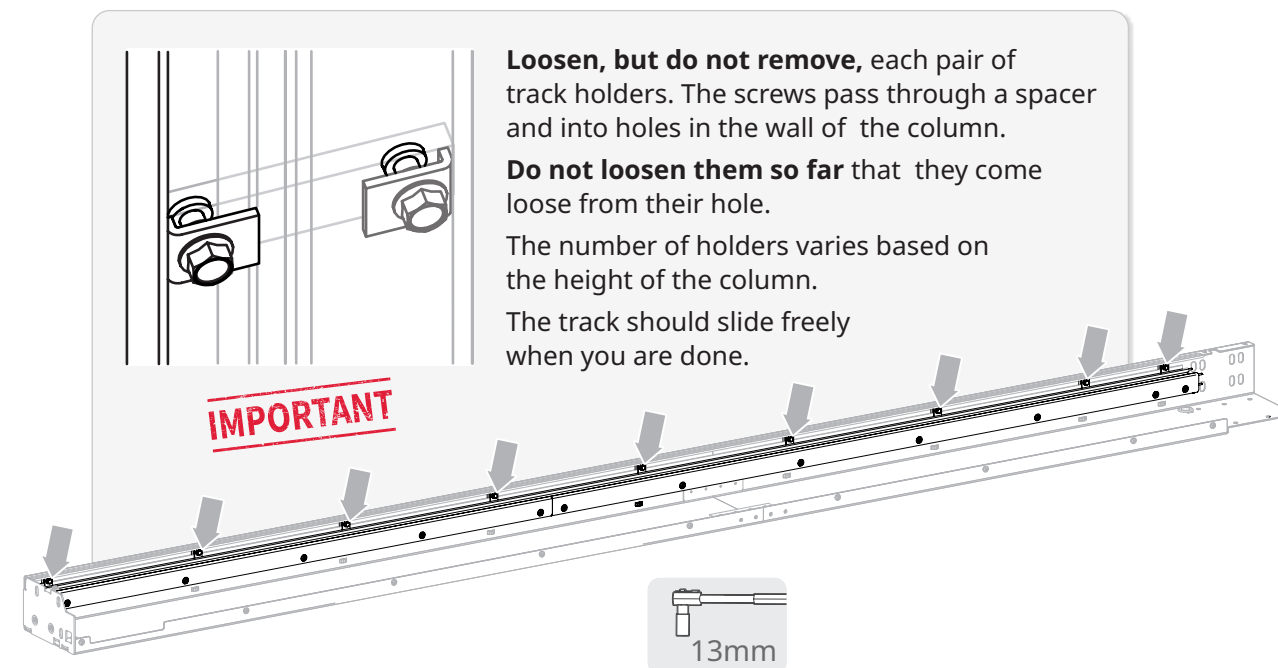
- 1 Remove** the covers on both side columns.
Screws for side column covers run in a vertical line. There is also one screw at the base of the column.



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



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

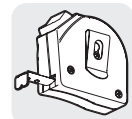


How to center the door in the door opening

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



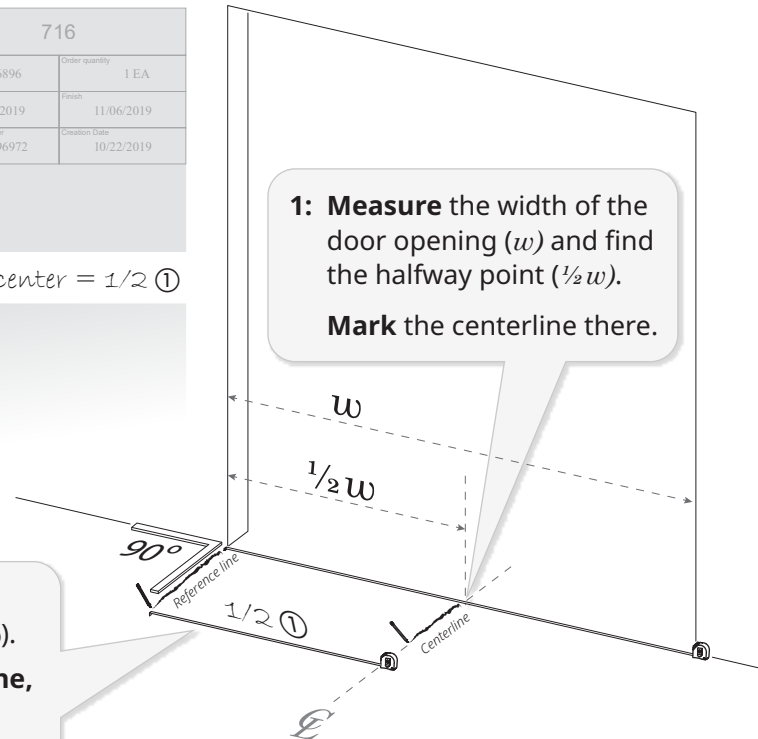
Carpenter's square

		Object list Duplicate		Material number	
Material description		SPIRAL STN-S		716	
Order number		20076896		Order quantity	
1 EA					
Production schedule		Order type		Start	
T6		ZP02		11/04/2019	
RYTEC MTO Order		First		Finish	
Status		2000		11/06/2019	
REL MSPT PRT PRC SETC		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 ①					
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 springs 0					

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.

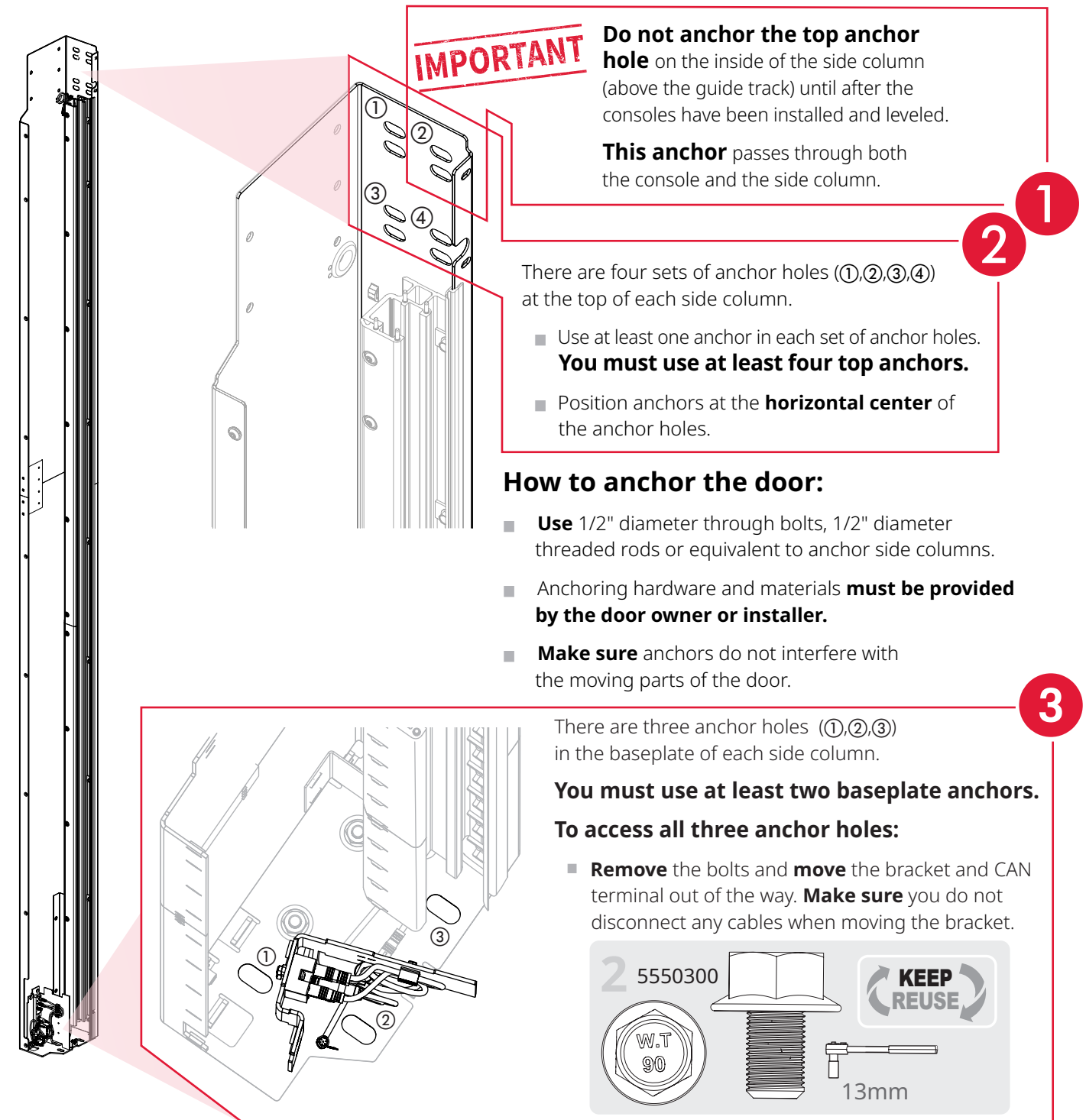


Plumb, level, square: how to position the door correctly as you install the side columns

IMPORTANT

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

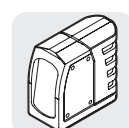
Before you begin: things to know before you anchor the side columns



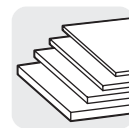
Step 1: Plumb and level the site, then install and plumb the side columns

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

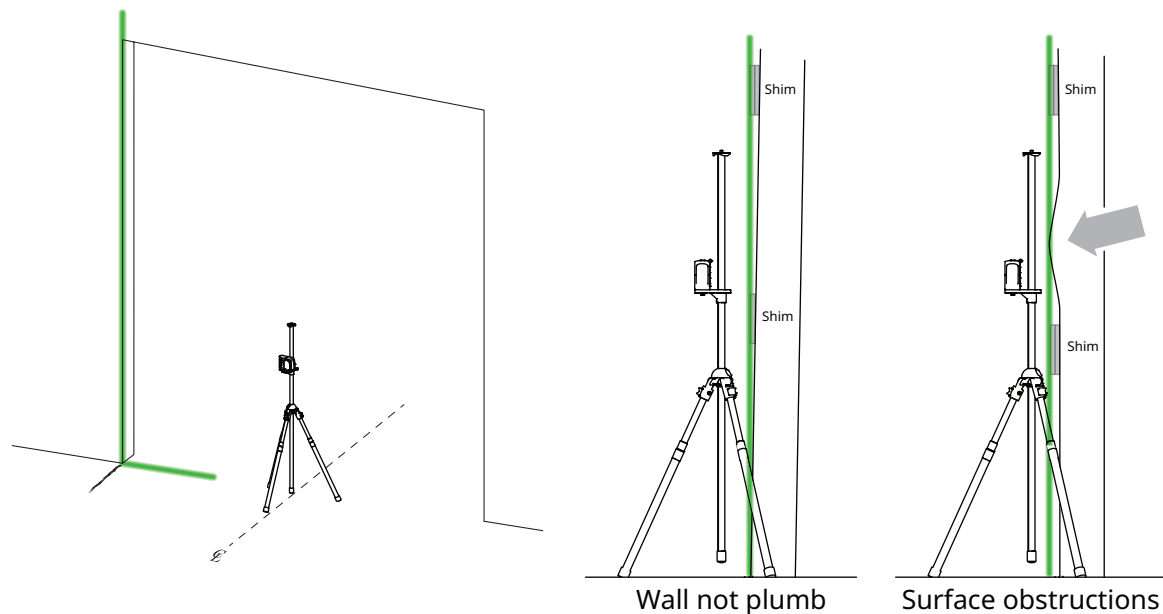
IMPORTANT To prevent column from bowing, shim as needed **at each anchor point**.



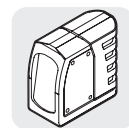
Laser level



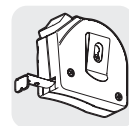
Shims



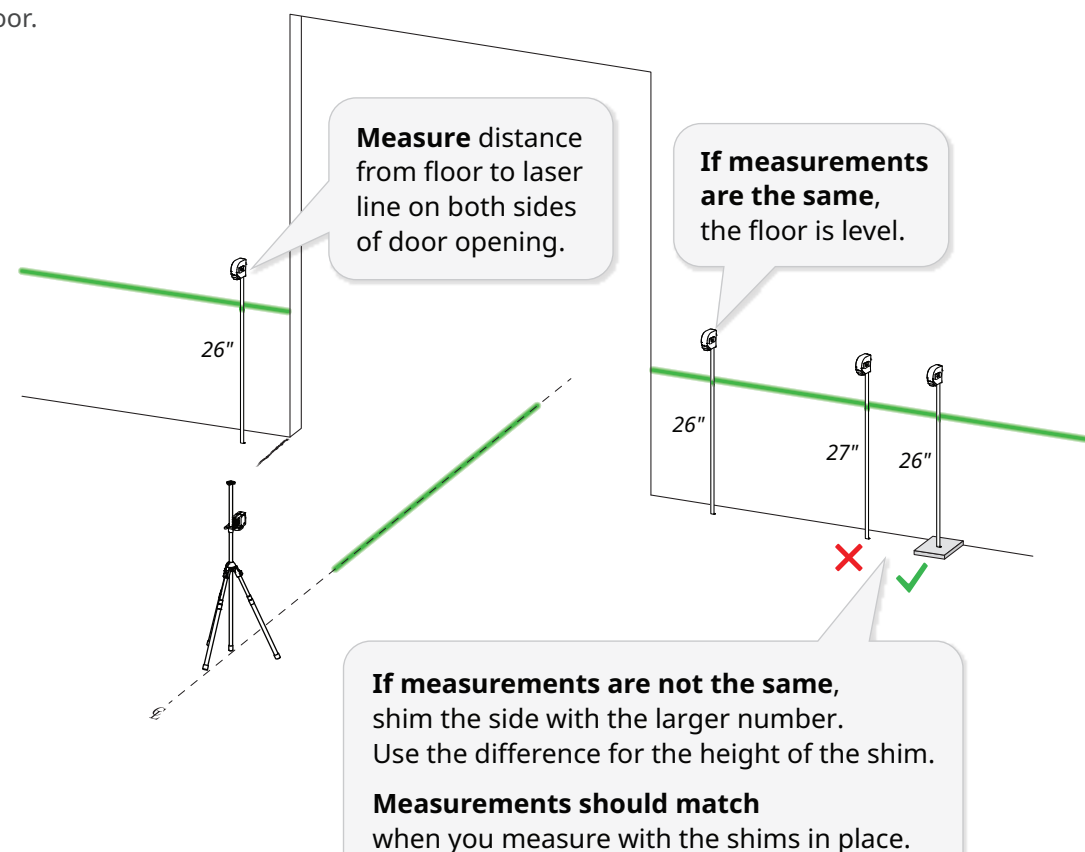
- 2 Level the floor.**



Laser level



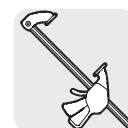
Measuring tape



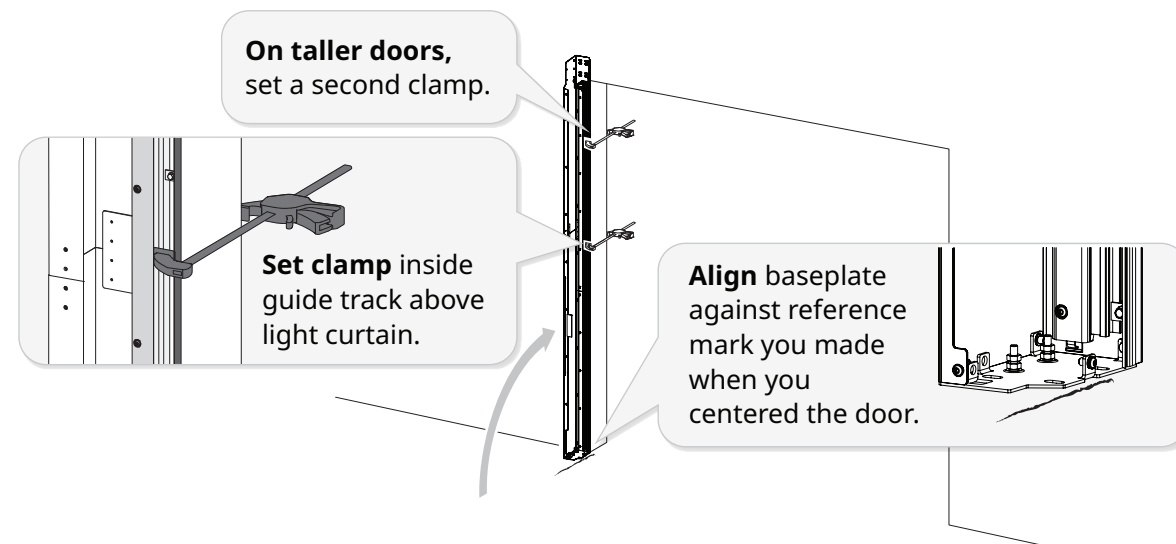
3 **IMPORTANT**

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

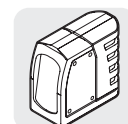


On taller doors,
set a second clamp.

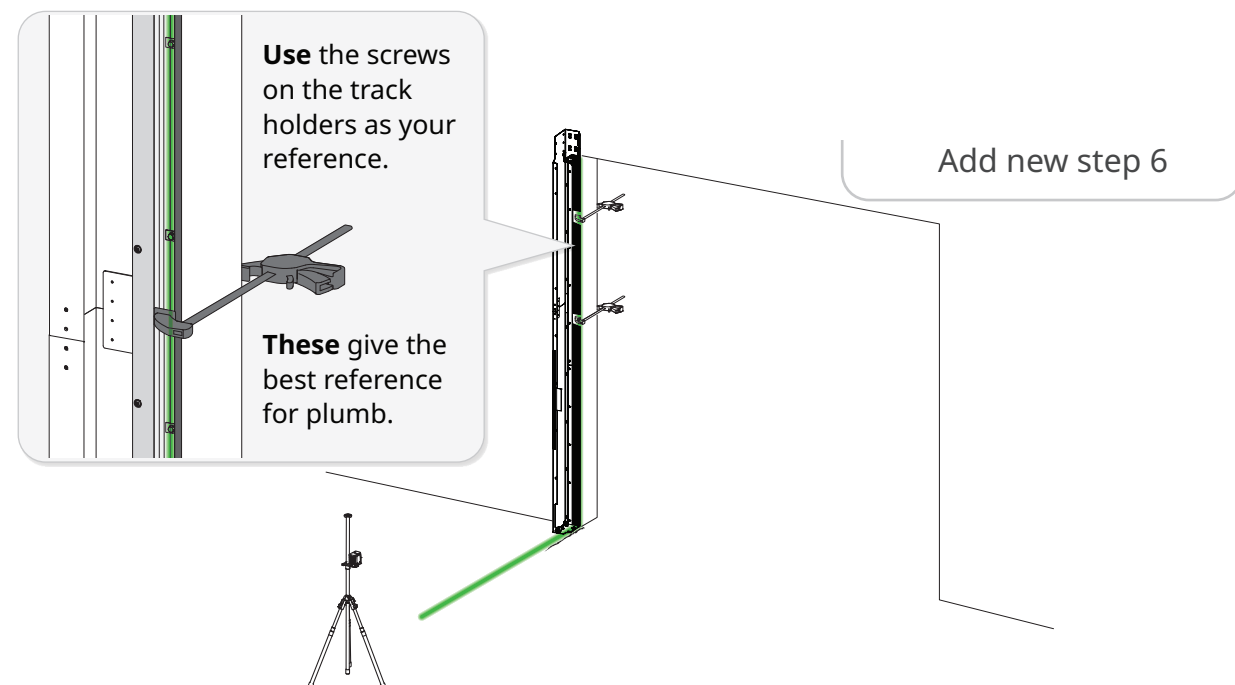
Set clamp inside
guide track above
light curtain.

Align baseplate
against reference
mark you made
when you
centered the door.

- 5 Plumb the side column.**



Laser level



Use the screws
on the track
holders as your
reference.

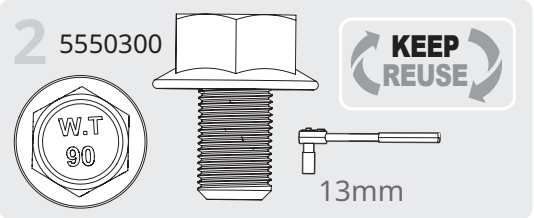
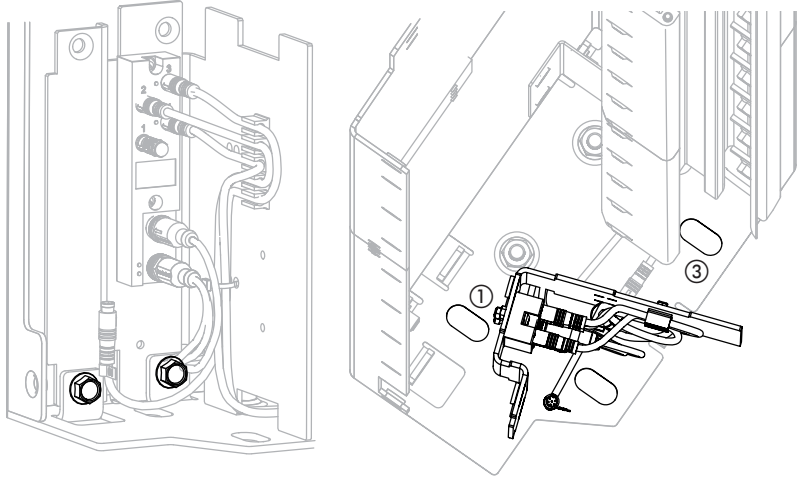
These give the
best reference
for plumb.

Add new step 6

6 Remove the bolts and **move** the bracket and CAN terminal to allow access to all anchor holes ①,②,③.

IMPORTANT

Make sure you do not disconnect any cables when moving the bracket.
Leave the brackets loose until the installation is complete.
See *How to install the wall mounted (rear) SmartSurround™ light curtains* on page 24.



Do this on both side columns before anchoring.

7



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 page 8 before you start.
DO NOT ANCHOR the top anchor hole nearest to the door opening until the consoles have been installed and leveled.

8

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

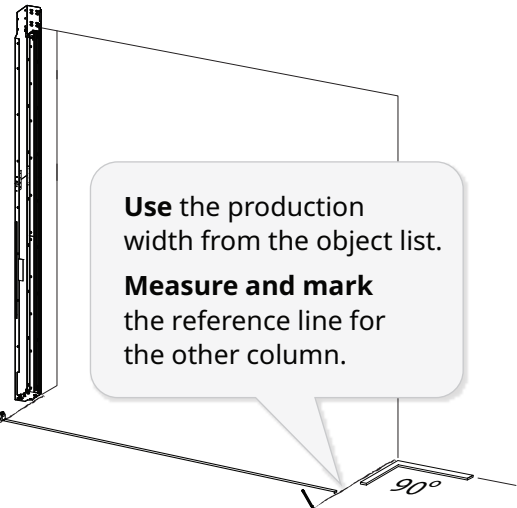


Measuring tape



Carpenter's square

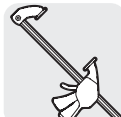
Object list		Material number	
Duplicate		716	
Material description		Order number	Order quantity
SPIRAL STN-S		20076896	1 EA
WIP controller	500	Production schedule	T6
BS ZMAT	Tier 6	Order type	ZP02
REL MSPT PRT PRC SETC		RYTEC MTO Order	11/04/2019
		Plant	2000
		Reservation number	0002596972
		Creation 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 ①	
Door Height (Inches)		144-569 102	
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		6	



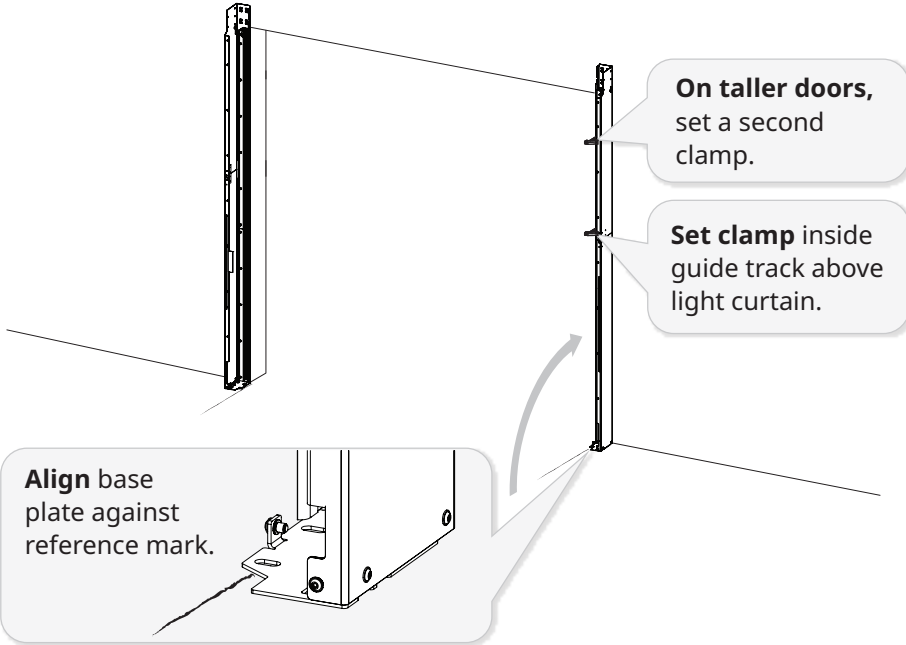
Use the production width from the object list.
Measure and mark the reference line for the other column.

9

Clamp the non-drive side column into place.

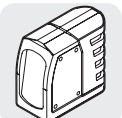


Bar clamp



10

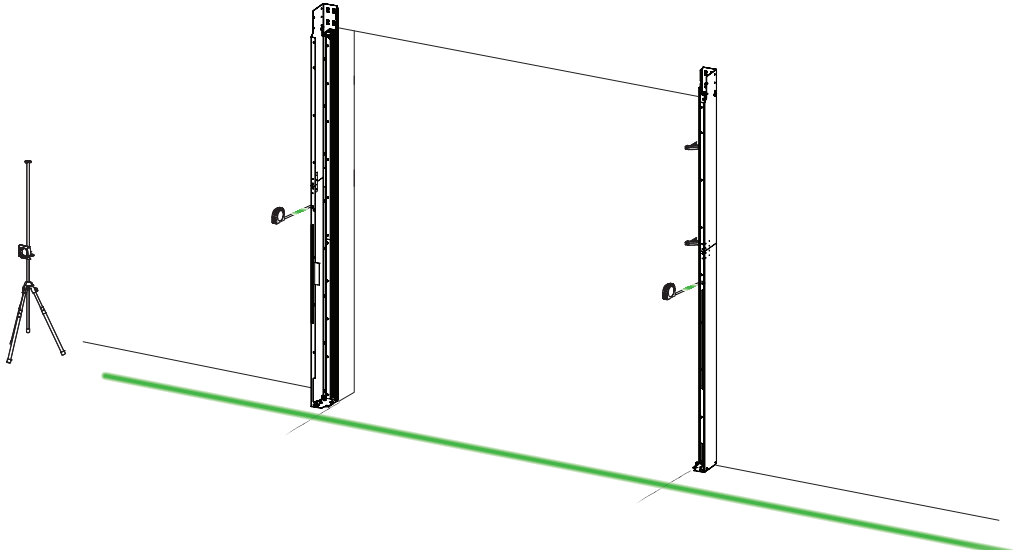
Set a laser line parallel to the wall 1" (one inch) in front of columns.
Make sure the line is parallel to the wall.



Laser level

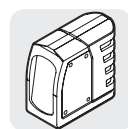


Measuring tape



11

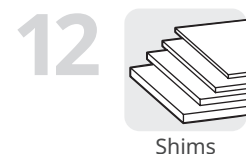
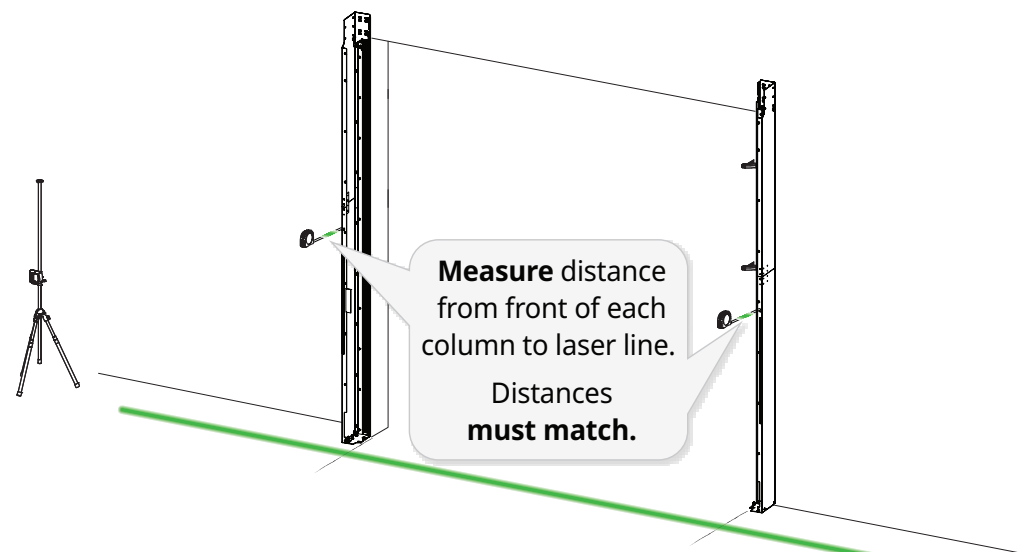
Plumb the side columns to each other.



Laser level



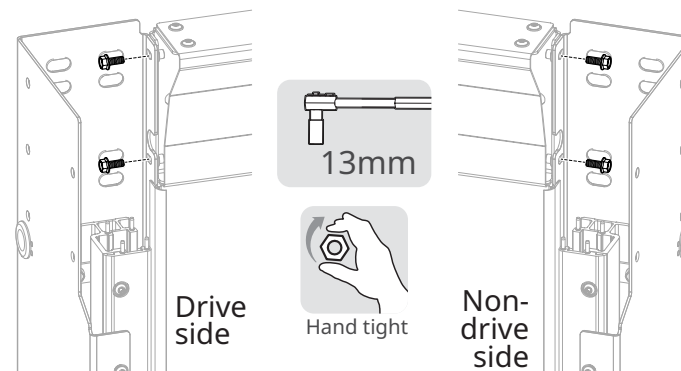
Measuring tape



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

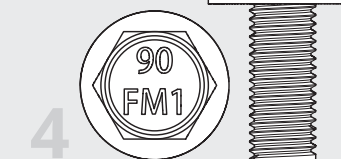
Step 2: Install the rear seal (rear spreader)

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



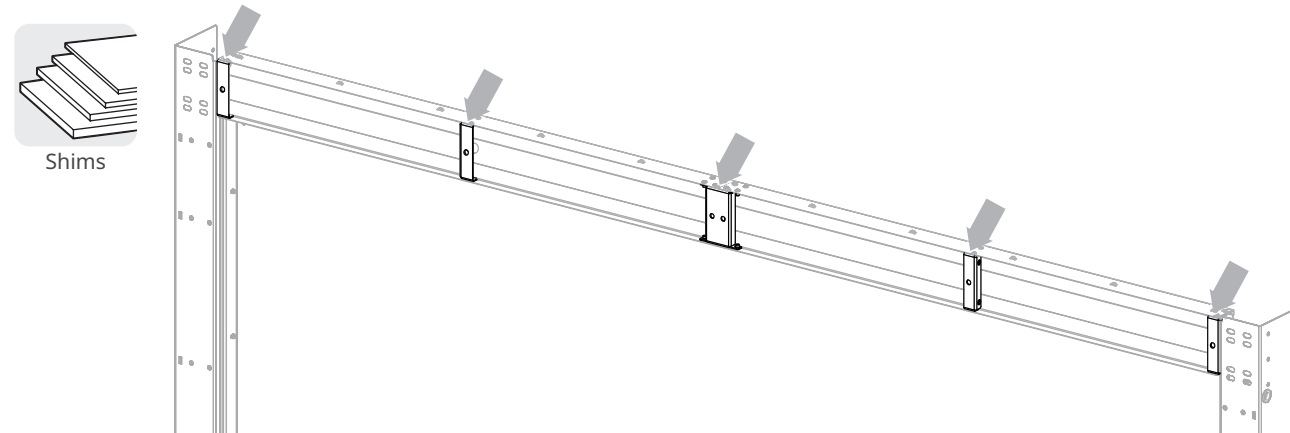
SMALL PARTS

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.



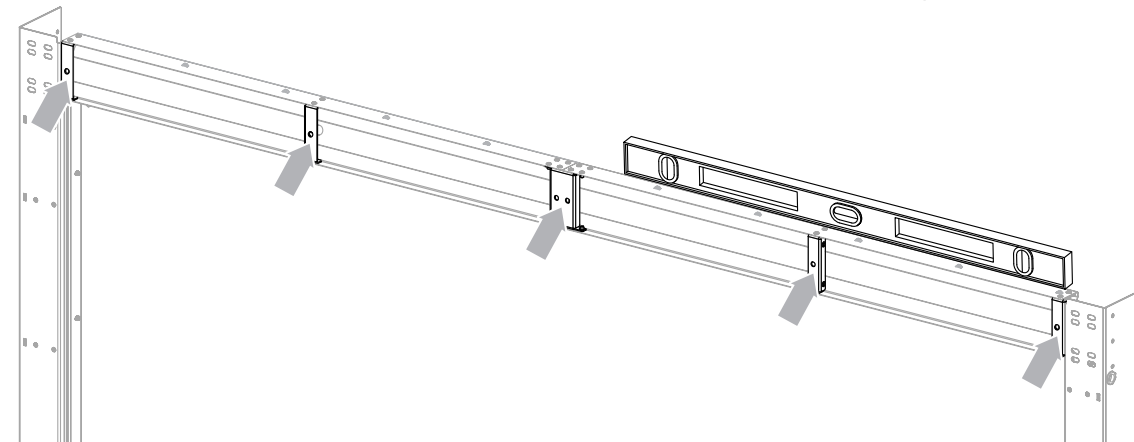
3 Make sure the rear seal is level, then **anchor** the rear seal to the wall at all anchor points.



Spirit level



Anchoring hardware



4 Tighten the bolts on both sides of the seal.



13mm

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.



Laser level

Replumb both columns
Use the screws on the track holders as your reference.

Rear spreader locks top of side column into place.

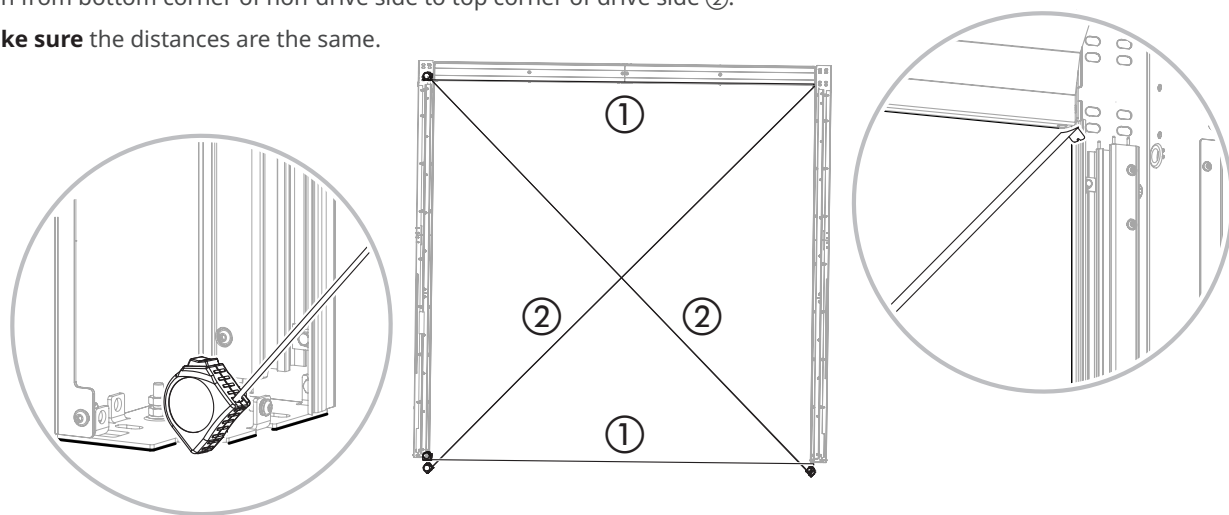
Make sure base plate is flush to reference mark.

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.



Measuring tape



3



Anchoring hardware

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 8.

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

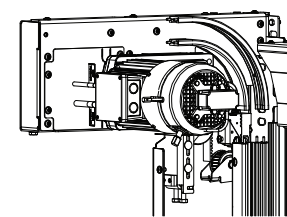
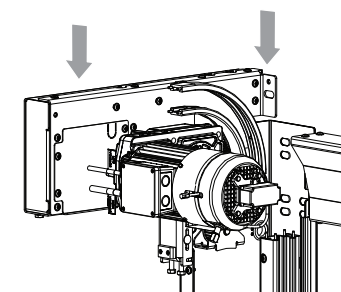
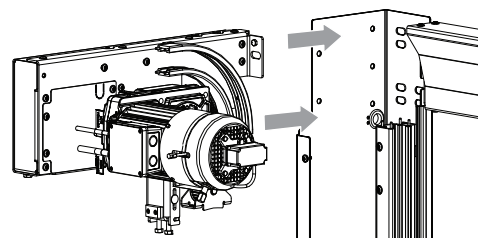
The drive side console weighs up to 200 pounds.



- 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.

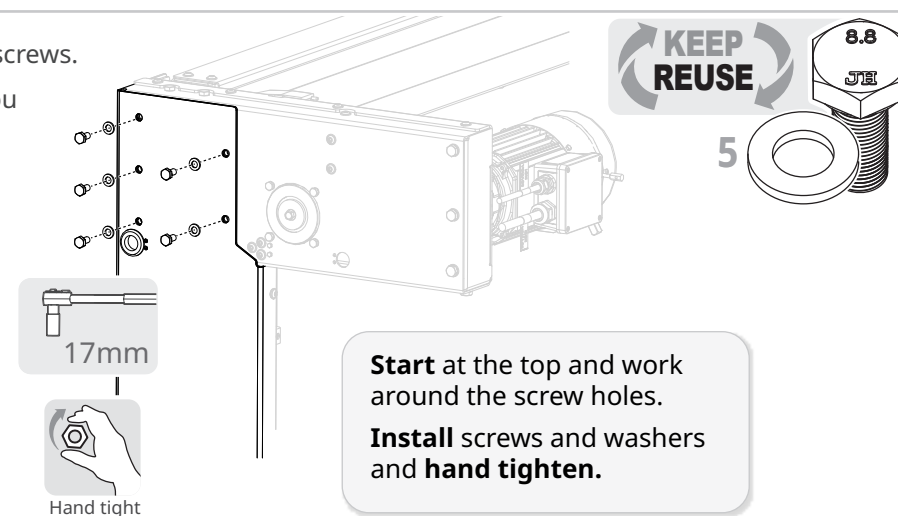


Make sure all belts are tucked into console.
Lift console high enough that the idler roller clears lip of side column.

If space is tight, swing console around lip of side column, then swing back into place.

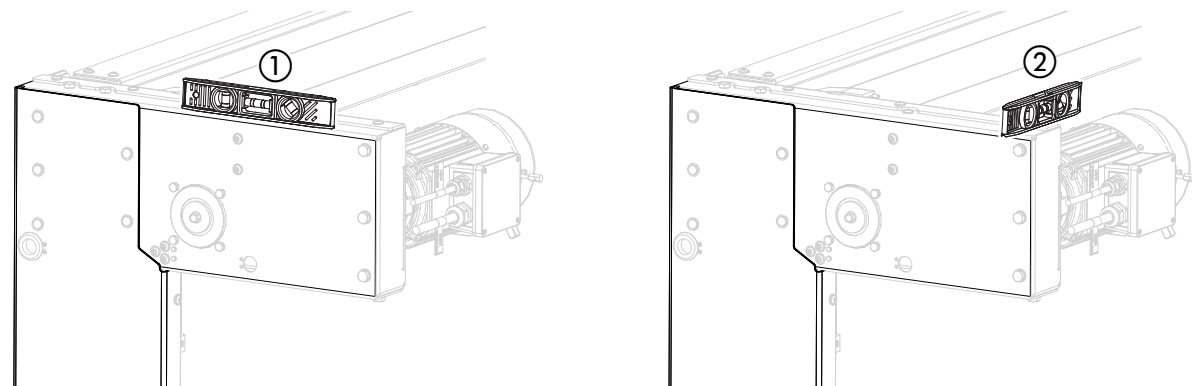
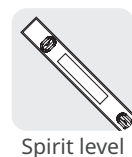
2 Reinstall the side column screws.

Hand tighten only until you have leveled the console.



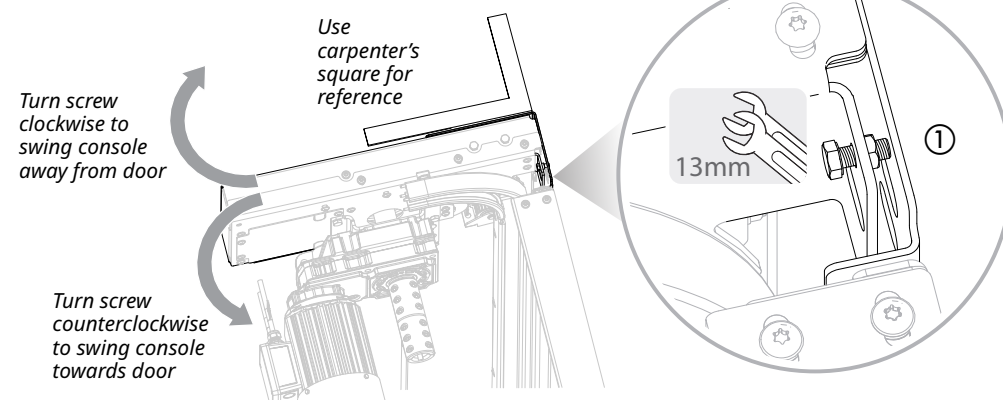
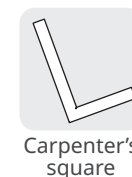
Start at the top and work around the screw holes.
Install screws and washers and hand tighten.

- 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.

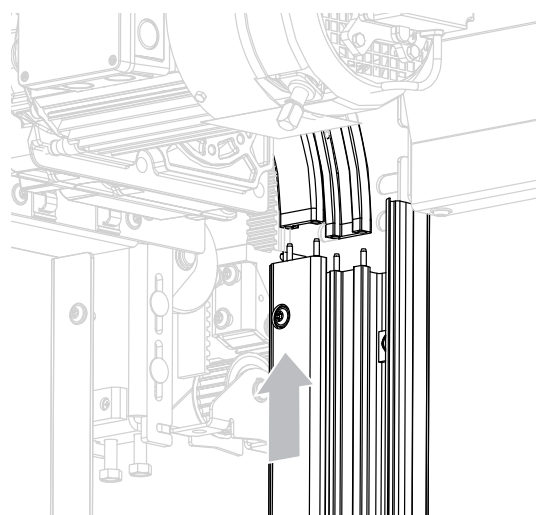


- 4** **Tighten** the side column bolts.

- 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.

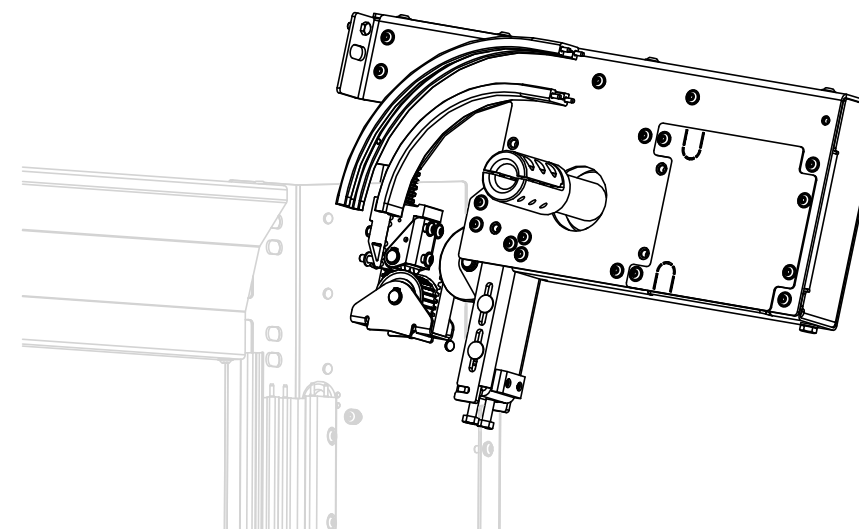


- 6** To verify that that console is correctly aligned, **loosen** the screw on the vertical drive track and **raise** the track into place.
- The track pins should slide easily into their holes.



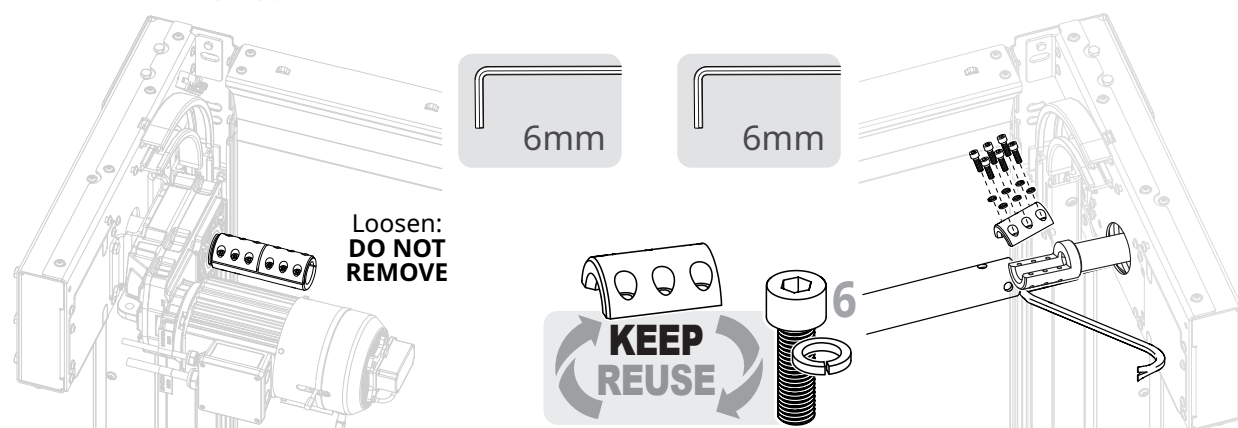
- 7** **Anchor** the side column to the wall in the hole below the adjustment screw.
- IMPORTANT** **DO NOT torque** the anchoring hardware so much that it bends the rear tab of the console.
- Anchoring hardware

- 8 Repeat steps 1-7** for the non-drive side console.

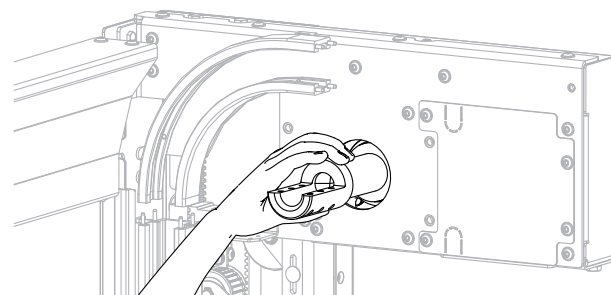


How to install the drive tube

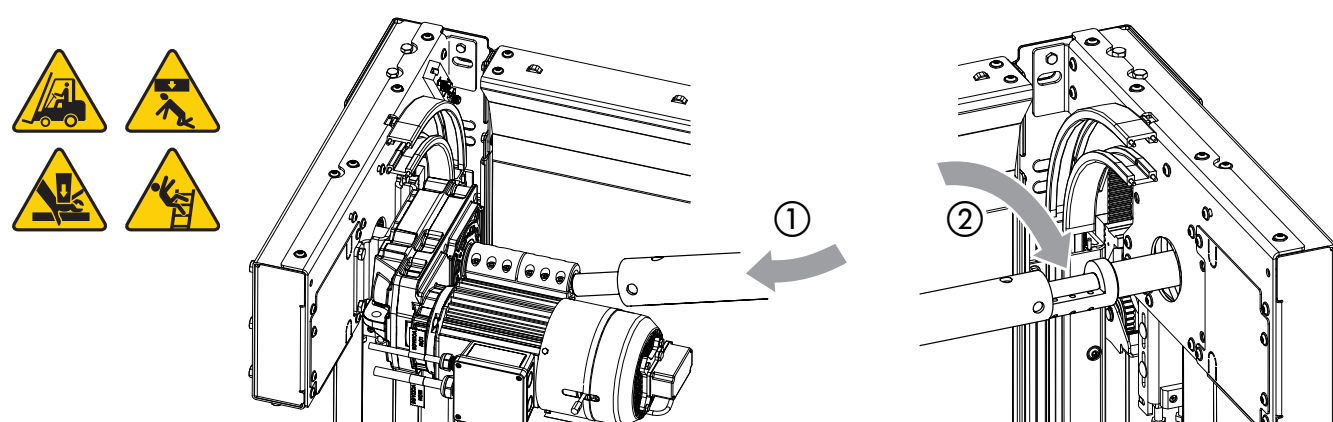
- 1** Remove the clamping jaw from the non-drive side shaft. **Loosen** the screws on the drive side shaft.



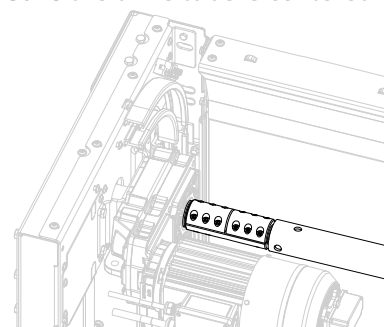
- 2** Make sure the non-drive side drive shaft is turned to face upward.
- The drive side shaft is held in place by the motor and may be at an angle. **DO NOT try to turn it.**
- Push it in** until it is seated tightly against the pulley wheel.



- 3** Lift the drive tube. **Insert** the drive side of the tube ① into the drive side drive shaft. Place the non-drive side of the tube ② onto the non-drive side drive shaft.

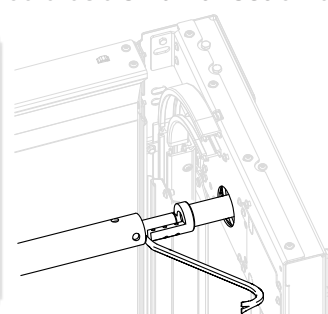


- 4** Make sure the drive tube is centered between the two shafts. There should be a **small offset** on both sides.



INSIDER'S TIP

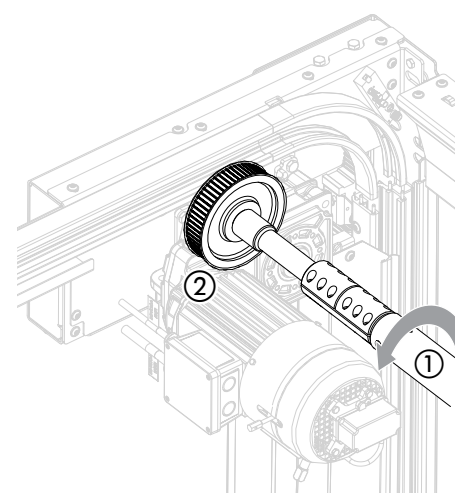
Before centering the drive tube, use a crowbar to **tighten** the non-drive side shaft against the pulley.



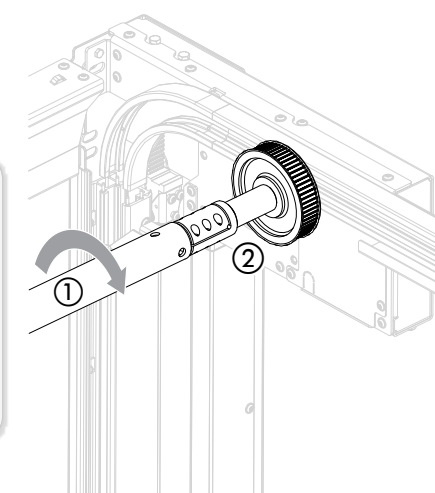
- 5** **Tighten** the screws on the drive side shaft. **Reinstall** the non-drive side clamping jaw. Set the screws **loose enough to turn the shaft freely.**



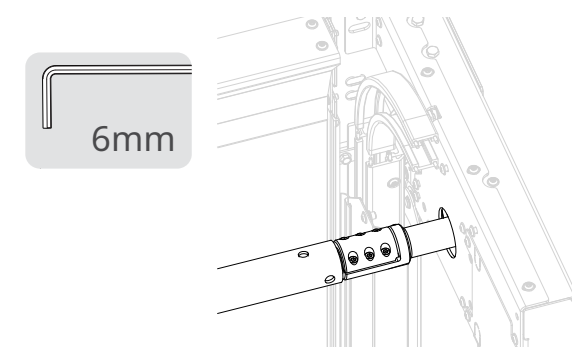
- 6** Make sure the angles of the drive side and non-drive side shafts mirror each other.
- This aligns the two secondary drive belts as closely as possible and makes it easier to level the door panel.



When the angle of the **drive shafts ①** match, the **drive pulleys ②** are fully aligned. This also aligns the teeth on the **secondary drive belts**.

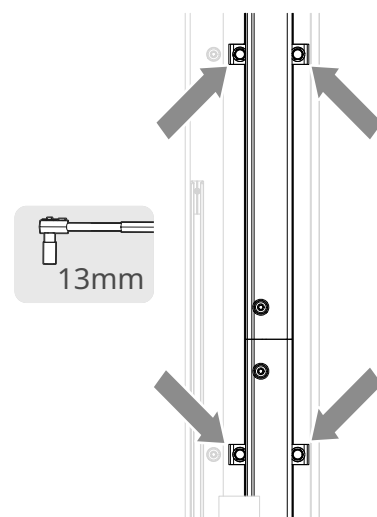


- 7** **Tighten** the screws in the drive shaft to lock the shaft in place.
- Angle of shaft may not match illustration, but should **mirror angle** of drive-side shaft.



How to raise the vertical guide tracks into place

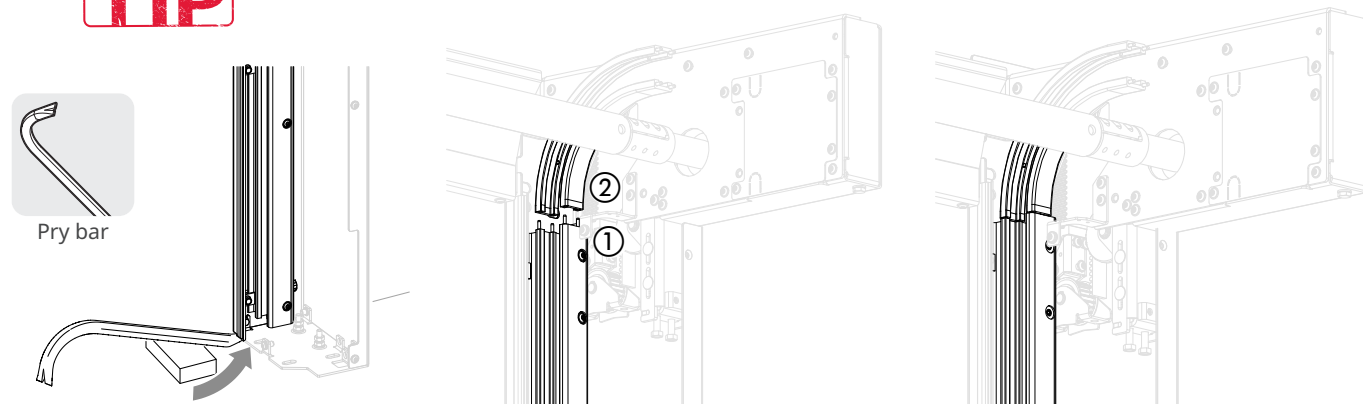
- 1** **Make sure** that all of the vertical guide track holders are loose enough to allow the track to move freely.
DO NOT remove any of the holders.



- 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.

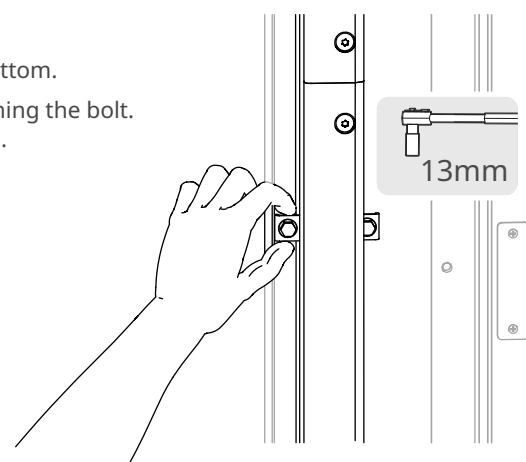


- 3** **Tighten** the bolts on the track holders.
- Start at the **middle of the track** and work toward the top and bottom.
 - Make sure** the holder is at a 90° angle to the track before tightening the bolt. **You will need to hold it in place** while tightening to keep it level.
 - Make two full passes**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



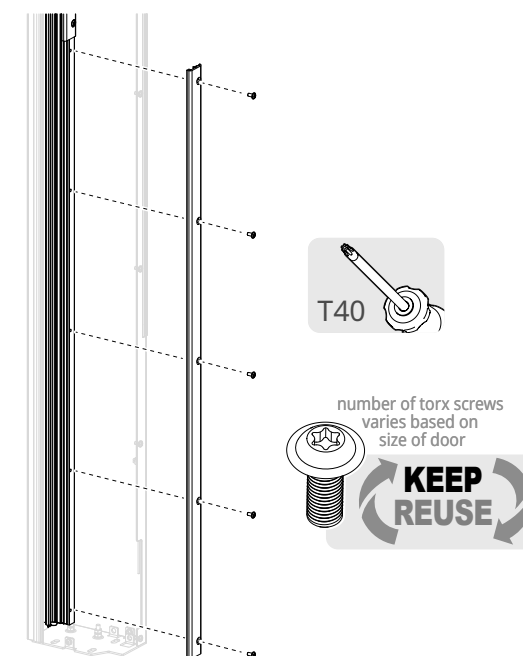
CAUTION

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



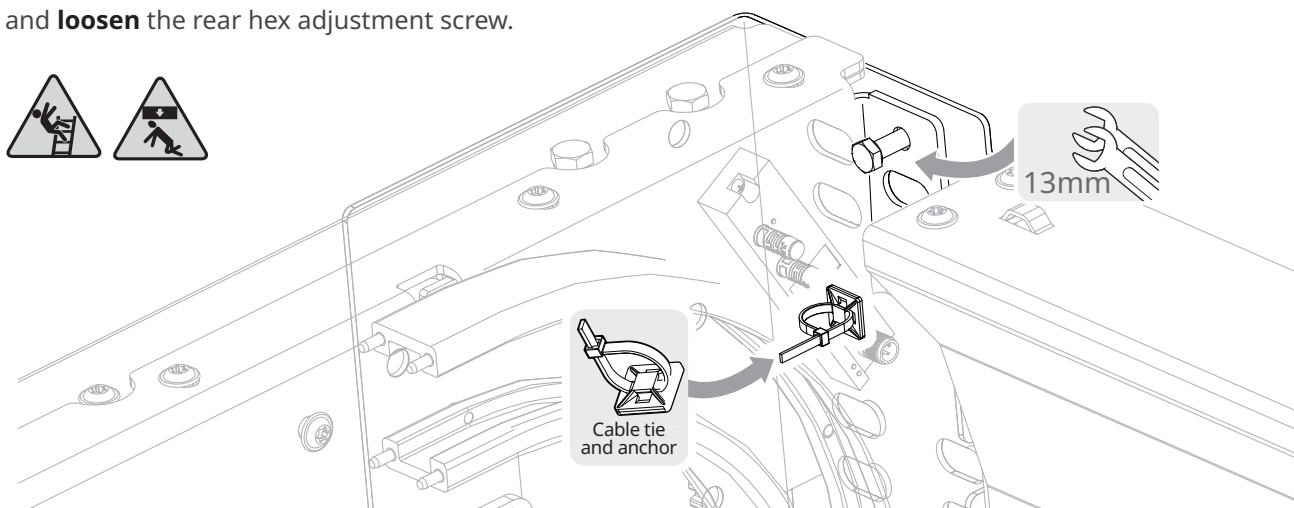
- 4** **Remove** the bottom section of the vertical guide track cover.

Do this in both side columns.

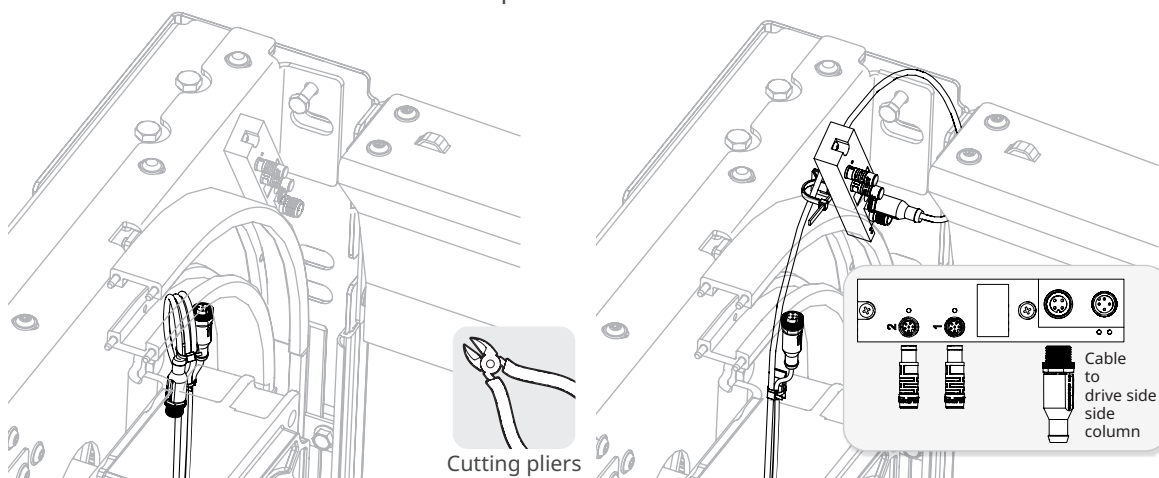


How to connect the CAN bus cables

- 1** Inside **both consoles**, **install** a cable tie and anchor on the rear wall of the console, and **loosen** the rear hex adjustment screw.



- 2** On the drive side, **cut** the cable tie on the looped cable (M12 connector).
Thread the cable through the anchored cable tie and **loop** it over the rear hex adjustment screw.
Screw the M12 connector into the CAN repeater box on the side of the console.



- 3** Get cable 1210855 from the small parts box.
 This cable connects the CAN bus cabling **across the rear spreader**.

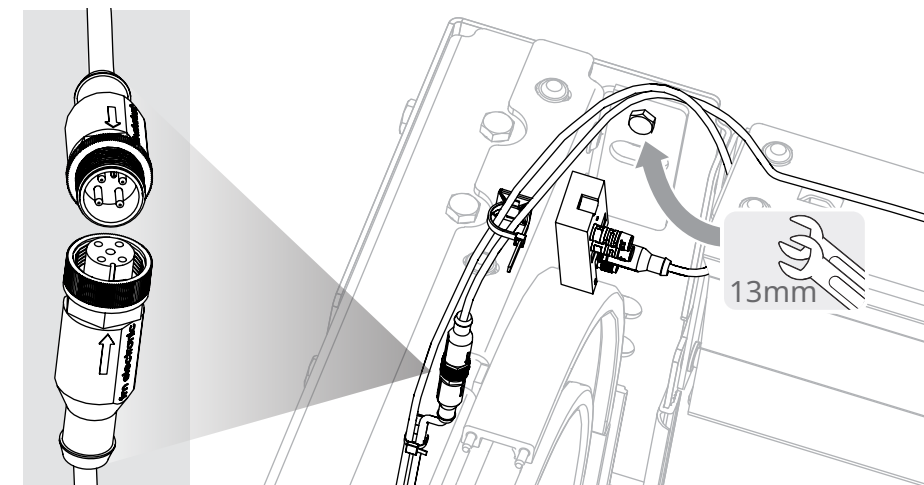


- 4** **Connect** cable 1210855 inside both consoles.

- Inside the drive side console, **push** the cable through the cable tie and **connect** the male M12 connector on the cable to the female M12 connector in the side column.
- Loop** the cable over the rear hex adjustment screw and **re-tighten the screw** to original setting.
- Follow these steps** inside the non-drive side console, connecting the female M12 connector on the cable to the male M12 connector in the side column.

IMPORTANT

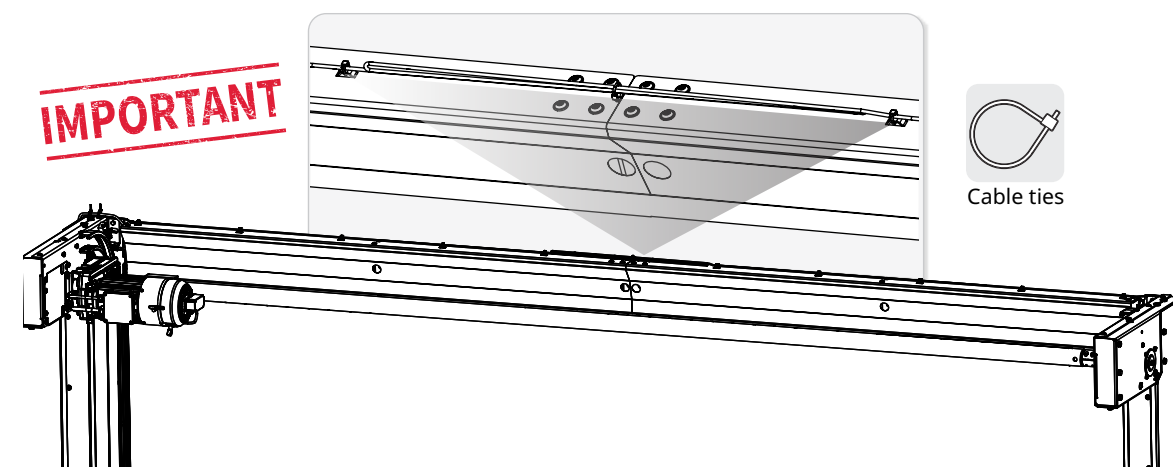
Line up the embossed arrows on the connectors to align the guide notch and contacts correctly. The connectors will only fully connect if they are aligned correctly.



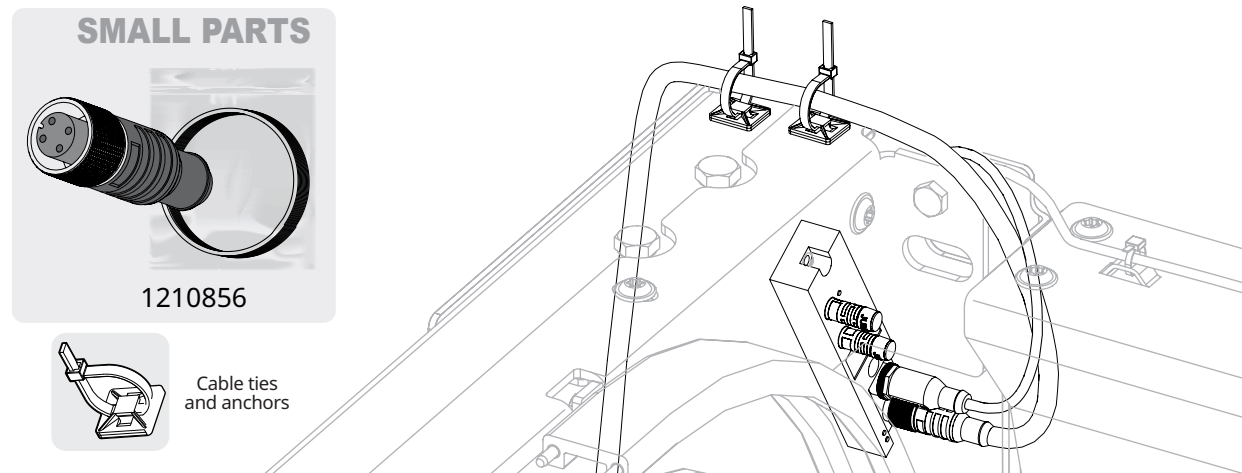
- 5** The 1210855 cable will probably be longer than the rear spreader.

- Leave a small amount of slack** in both console and **loop** the extra length at the center of the rear spreader.
- Secure** the loops with cable ties, then **secure** the cable to the rear spreader at each anchor point on the spreader.

IMPORTANT

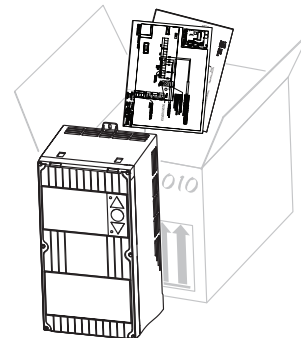


- 6** Get cable 1210856 from the small parts box.
Plug the cable into the CAN port in the drive side console.
Run the cable over the top of the console. **Use** anchored cable ties to secure it.



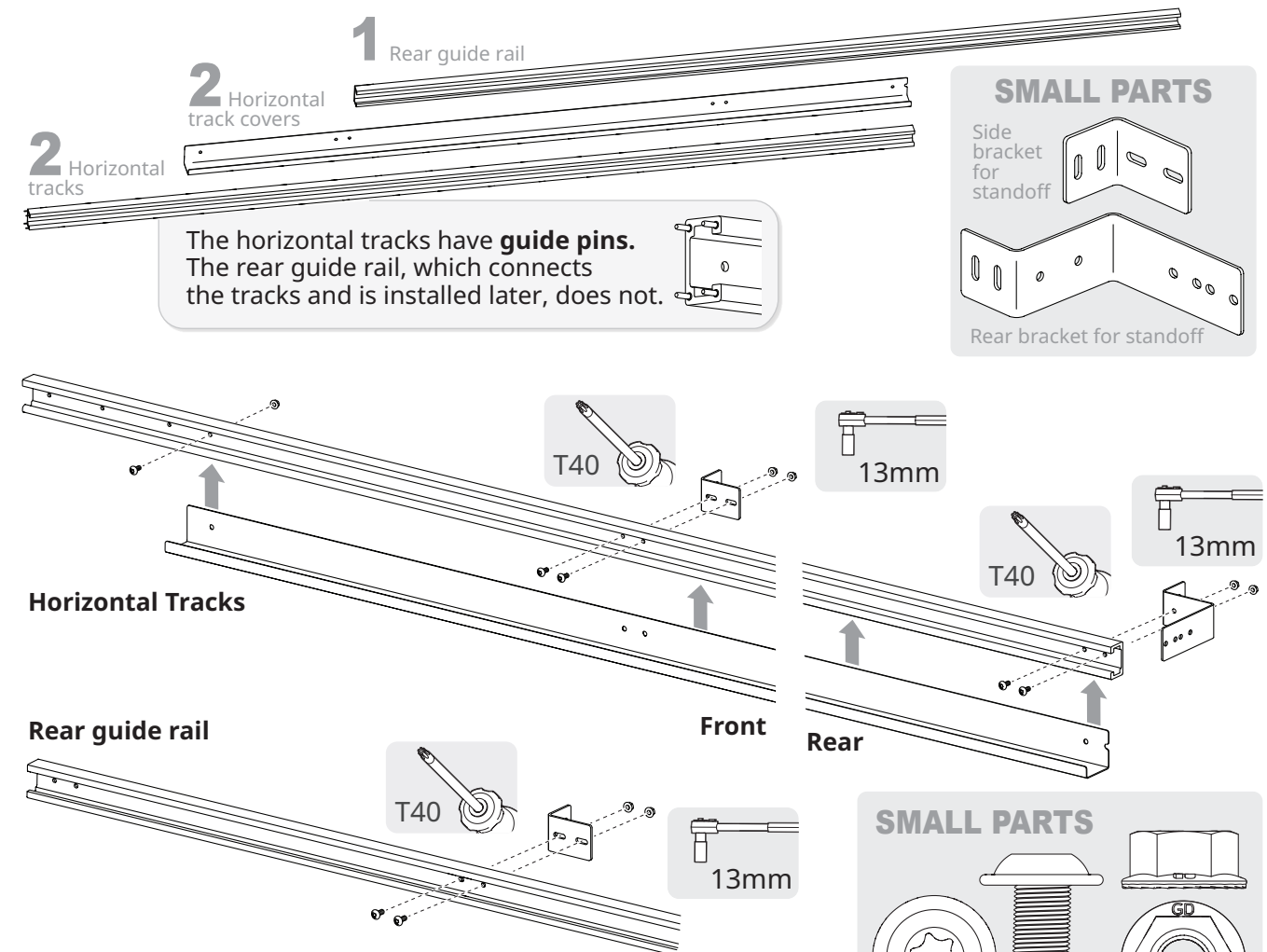
- 7** Find the schematics for the door in same box that holds the System 4® controller.
Check the crate and small parts boxes for accessories such as activators or safety devices and any schematics included with them.
 If the schematics indicate the door has non-standard wiring, **follow the schematics** instead of this manual.

IMPORTANT



How to install the horizontal tracks

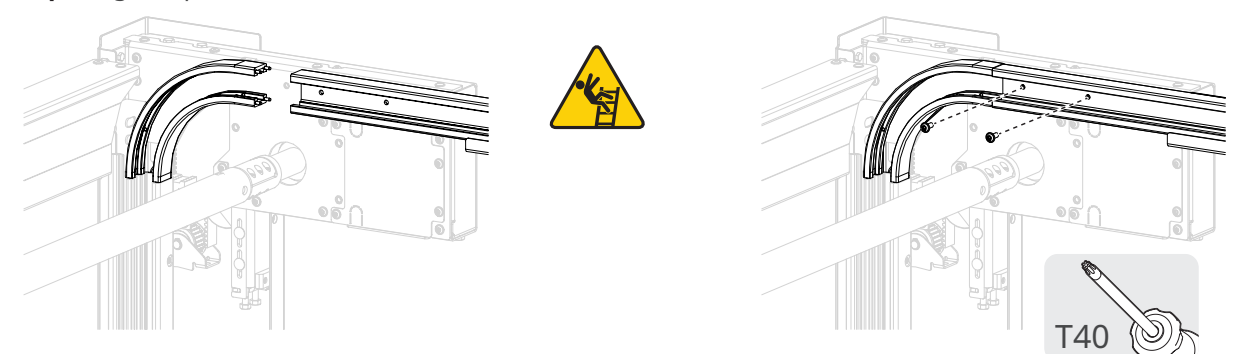
- 1** **Locate** the two horizontal tracks and track covers, and the rear guide rail, in the crate.
Locate the standoff brackets (side and rear), screws and nuts in the small parts box.
Install the covers and brackets onto the tracks. **Install** the bracket onto the guide rail.



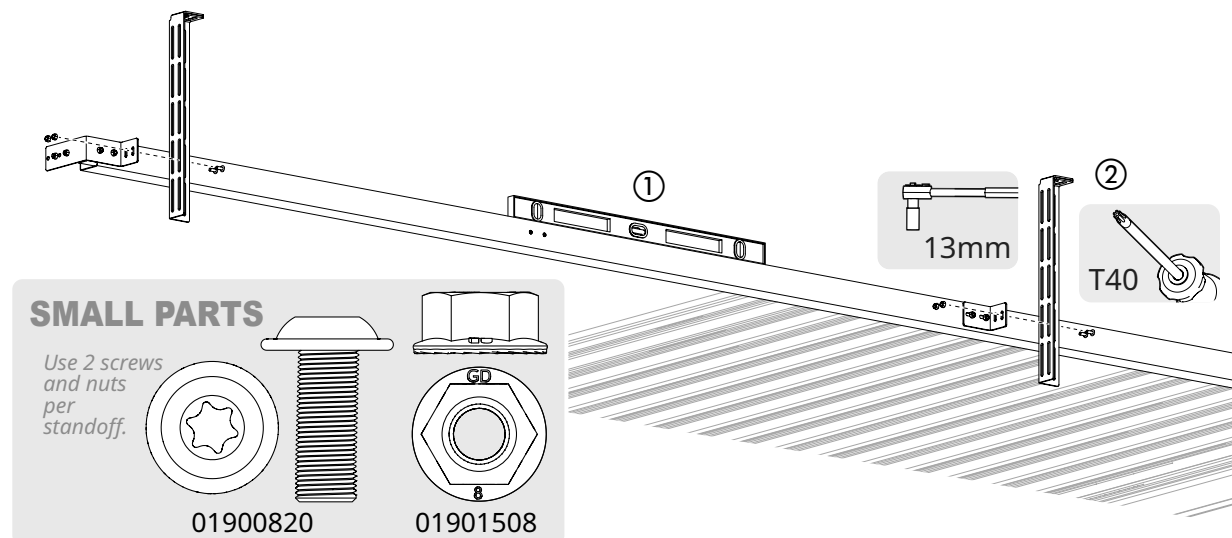
IMPORTANT

ALL HARDWARE must be installed fully tight so that screw heads are clear of the rollers when the door is operating.

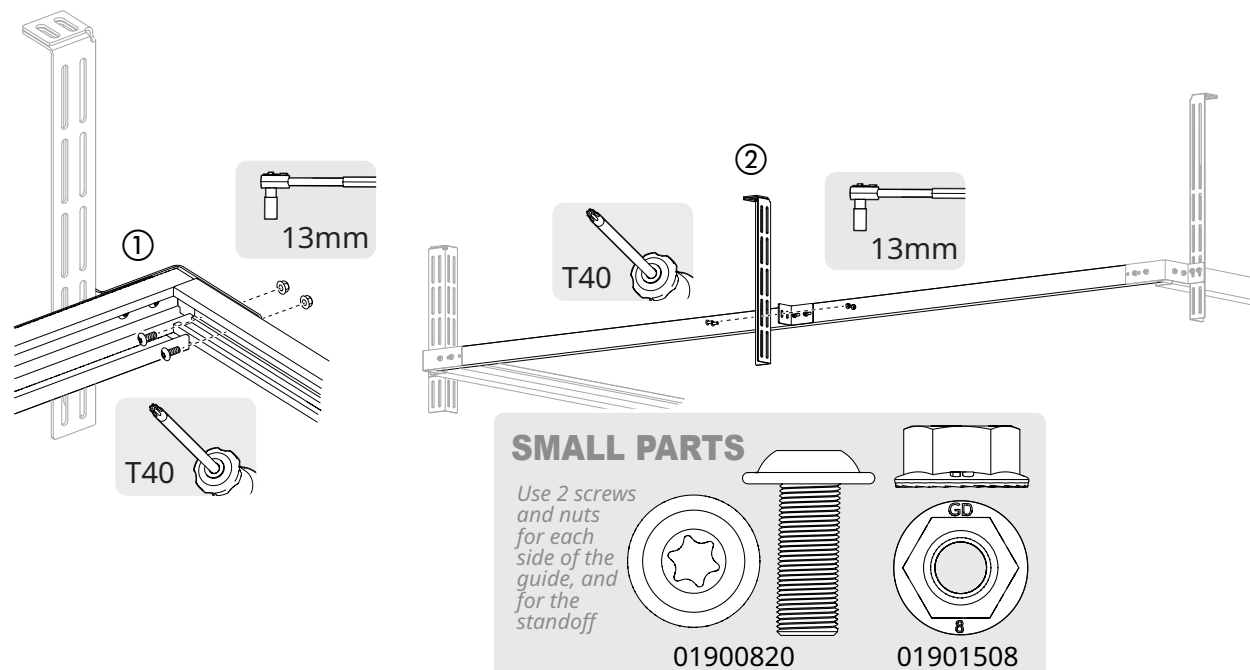
- 2** **Line up** the guide pins in the horizontal track with the holes in the radial track of the console and **install** the track.



3 Level the horizontal tracks ①. Then **locate** and **install** the standoffs so they are flush with their anchor points ②.

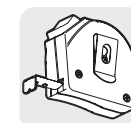


4 Install the rear guide rail and the rear standoff.

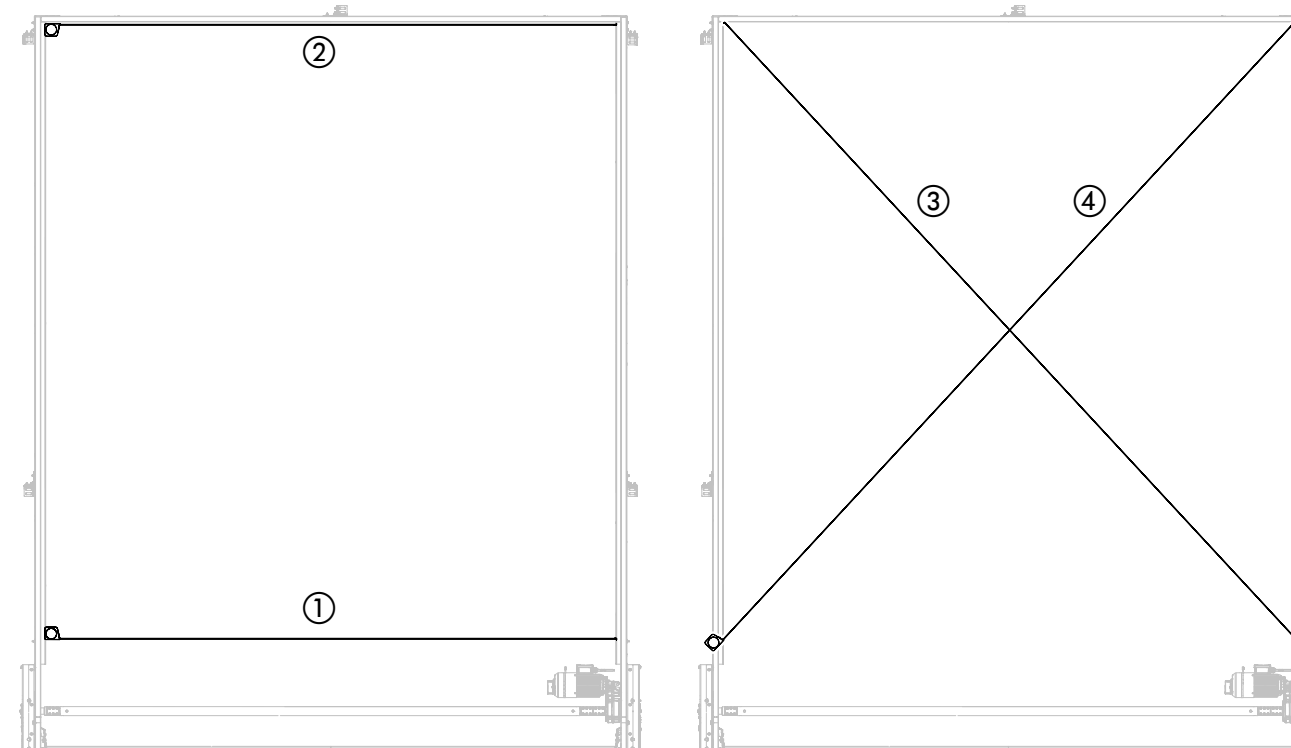


5 Square the horizontal tracks:

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.



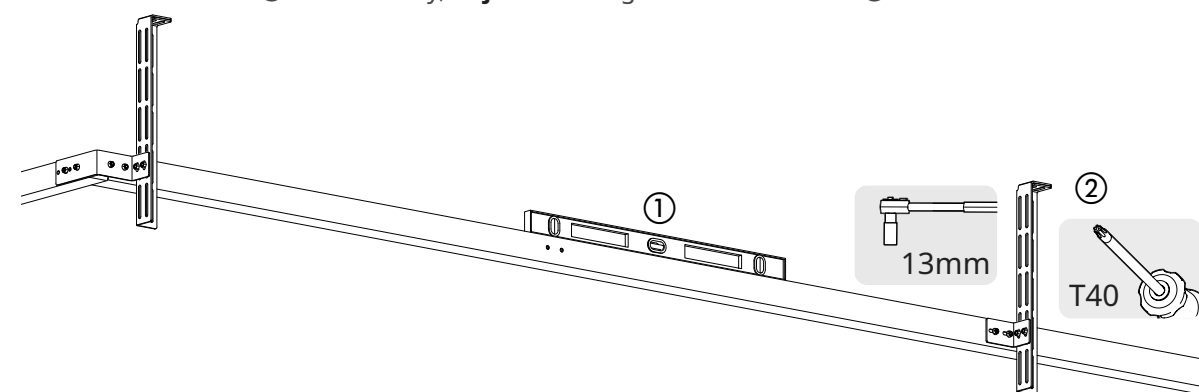
Measuring tape



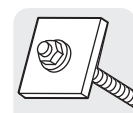
6 Level the horizontal tracks ①. If necessary, **adjust** the height of the standoffs ②.



Spirit level



7 **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.

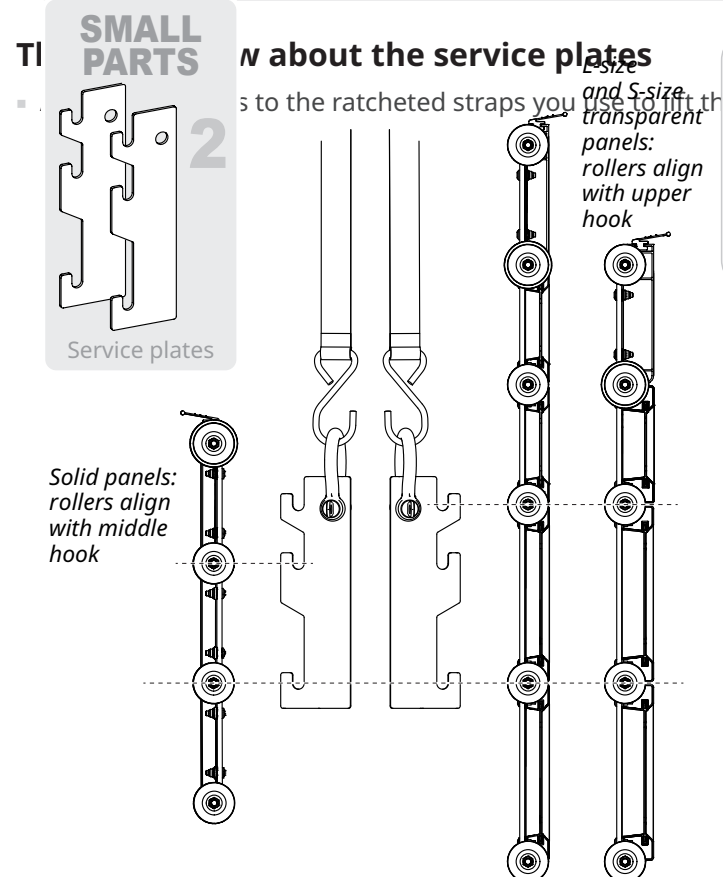
IMPORTANT

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

IMPORTANT

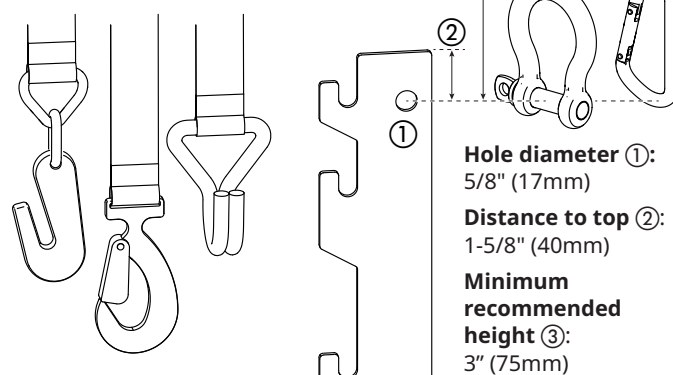
Make sure the door panel is centered before lifting.

- 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.



IMPORTANT

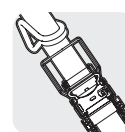
ALL HARDWARE and STRAPS should be rated at a minimum of 1000 lbs.



INSIDER'S TIP

Attach an anchor shackle or caribiner 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.



Ratcheted strap (2)



IMPORTANT

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

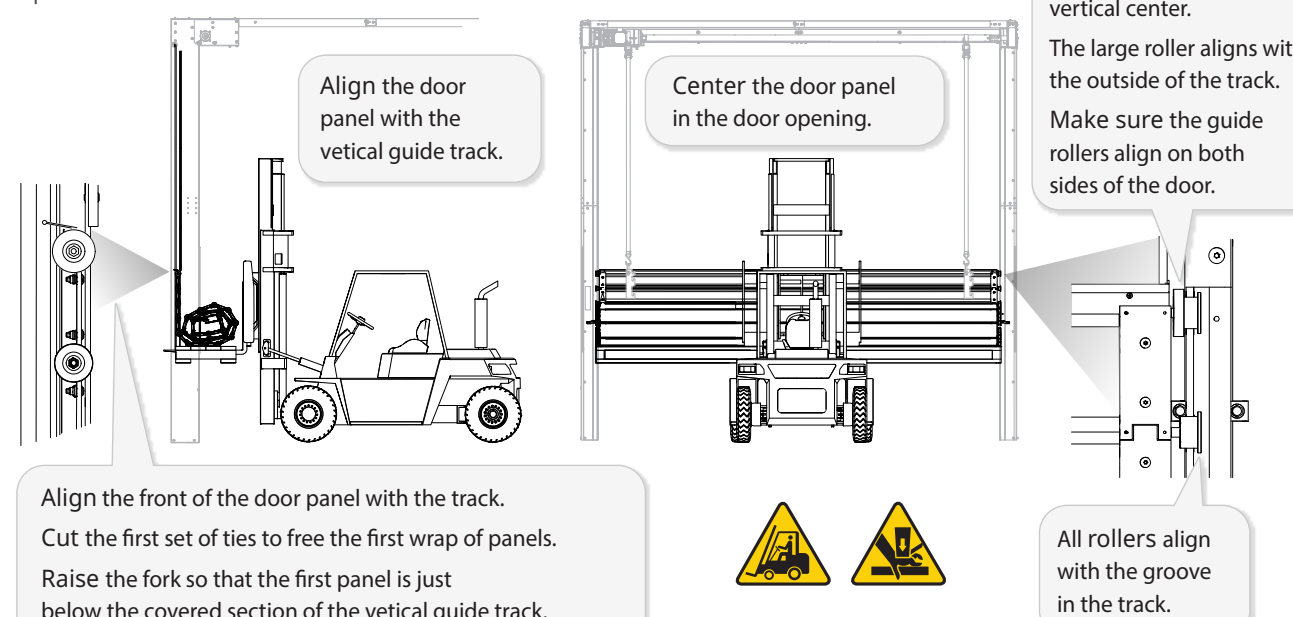
- 3 Use the forklift to position the door panel under the vertical guide track. Cut the first ties to free up the first wrap of panels and line them up under the covered section of the track.



Cutting pliers

IMPORTANT

Constantly check the rollers throughout the lift to make sure they are not crushed, bent or pinched in the track.

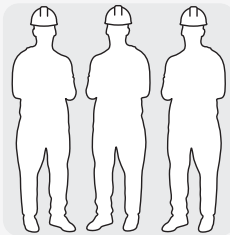


- 4 Hook the service plates under the first two non-guide rollers on both sides of the door.

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:

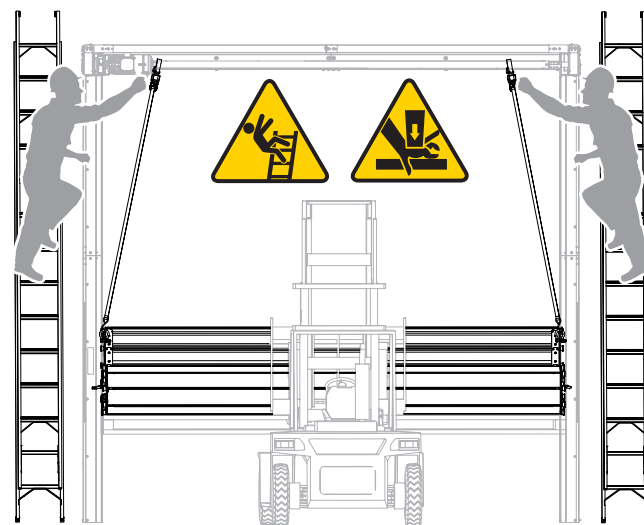
Two (2) to operate the ratcheted straps

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.

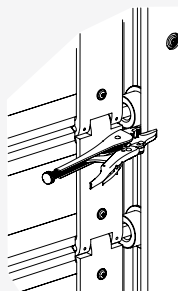
At the drive tube



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.

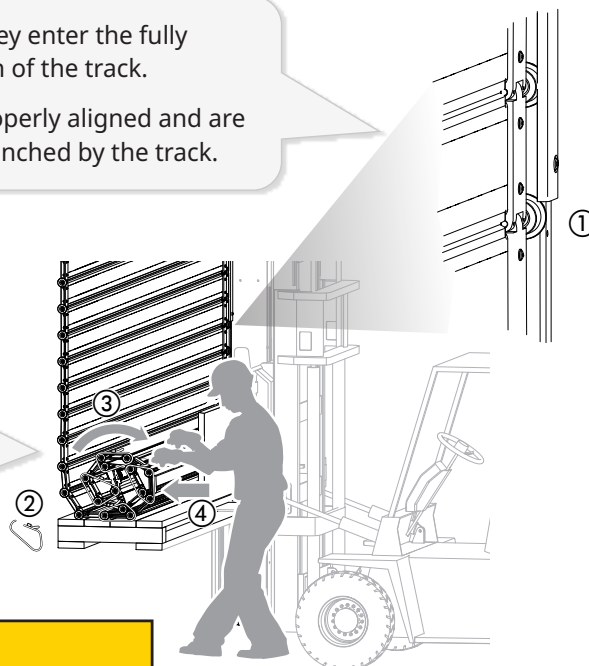
Place the service plates at a lower set of rollers and continue the lift.



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.**

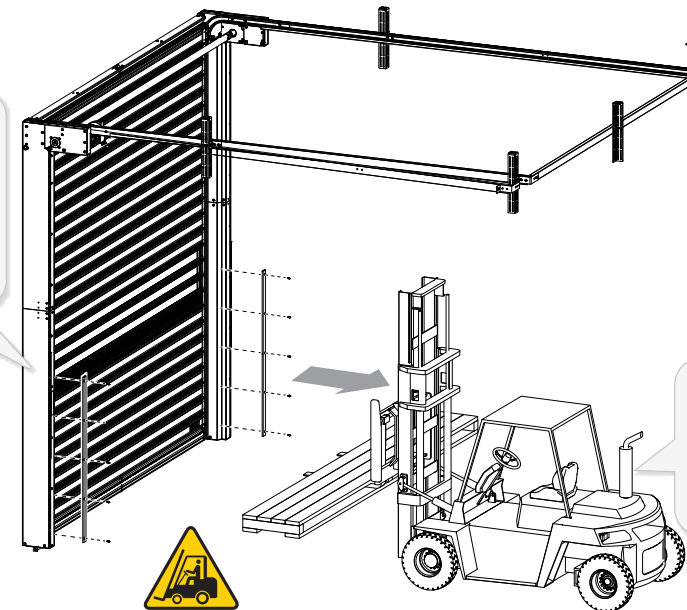


5

Stop the lift when the door panel is approximately one foot off the floor.

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.

How to attach the door panel to the secondary drive belt

Things to know before you attach the belts

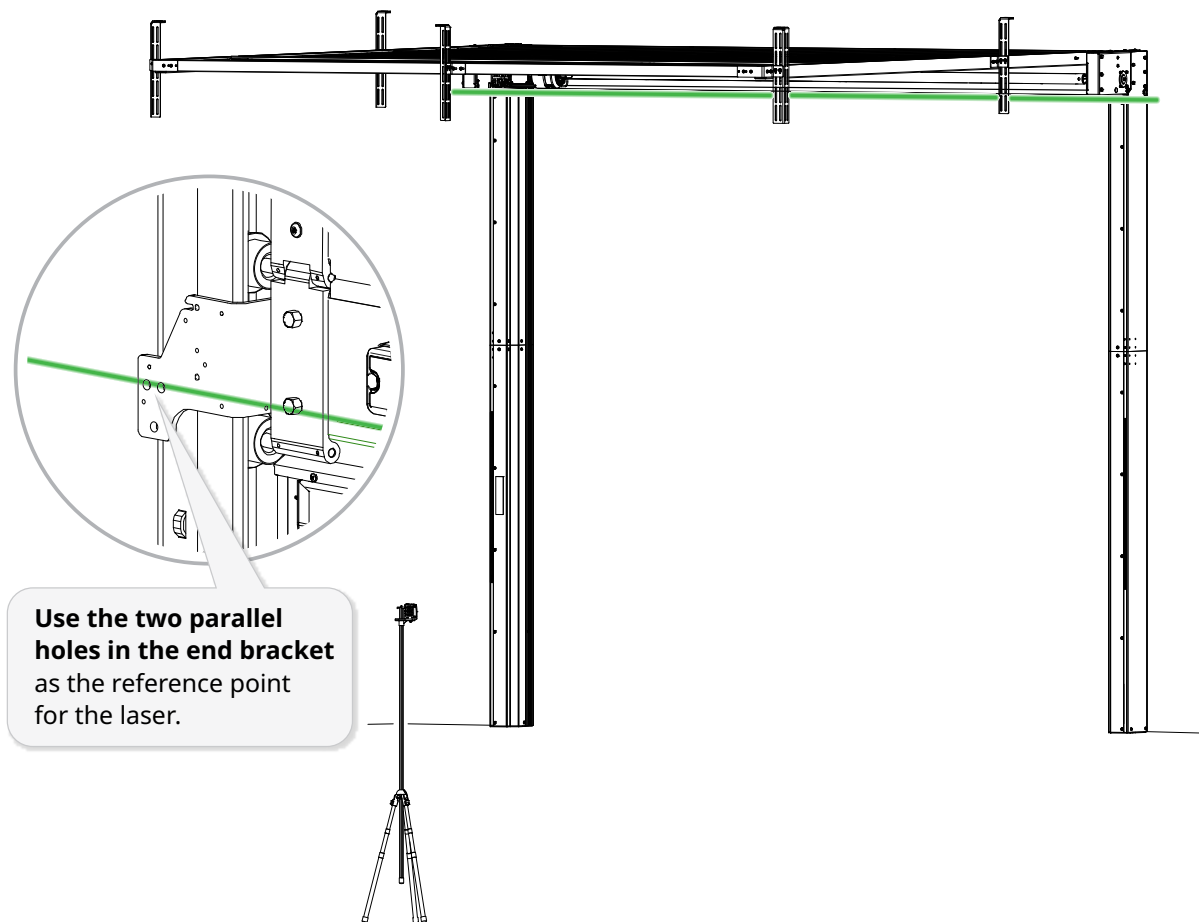
- The **splice blocks (timing blocks)** ① on the secondary drive belts connect to the door panel and are the points where the belts raise and lower the door.
- The blocks must be lined up **EXACTLY** for the door to run level.

IMPORTANT

1 Make sure the bottom bar of the door panel is level.



Laser level

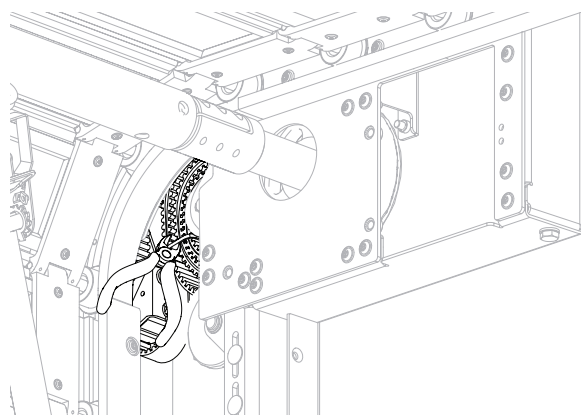


2 If necessary, move the door panel with the ratchet straps until the bottom bar is level.

3 Cut the tie on the secondary drive belt in the console, reach in and pull the belt down into the side column. Do this on both sides of the door.



Cutting pliers



IMPORTANT

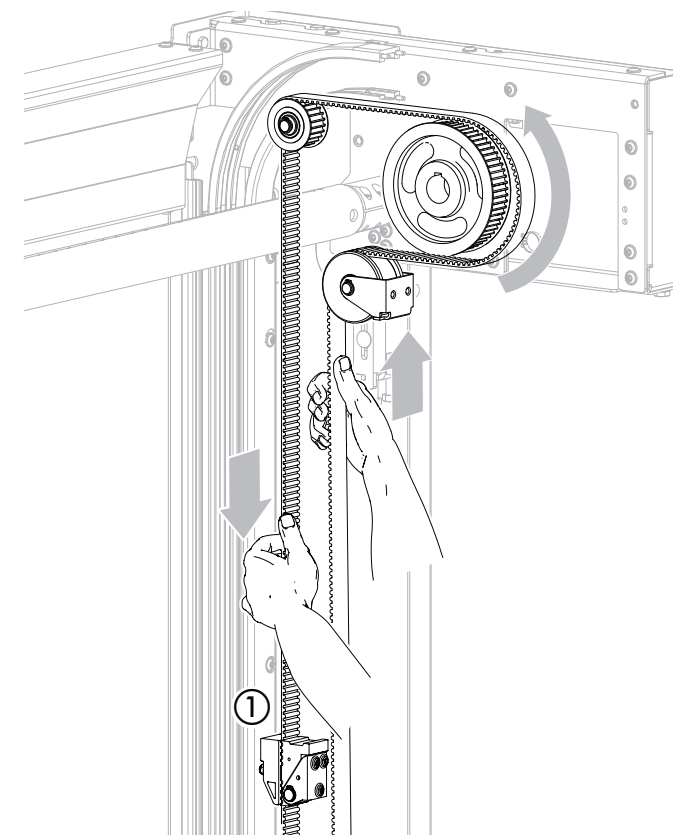
The end tabs of the bottom bar must be level after the splice blocks are installed. If they are not, the door will not operate properly.

- **Check** the door panel for level before you lower the timing block. **Recheck** it after the block is secured.
- If the door panel is not exactly aligned, **use the straps** to reposition the panel, then reset the belts.
- Resetting the belts later, when the door is fully installed, **is both difficult and potentially hazardous.**

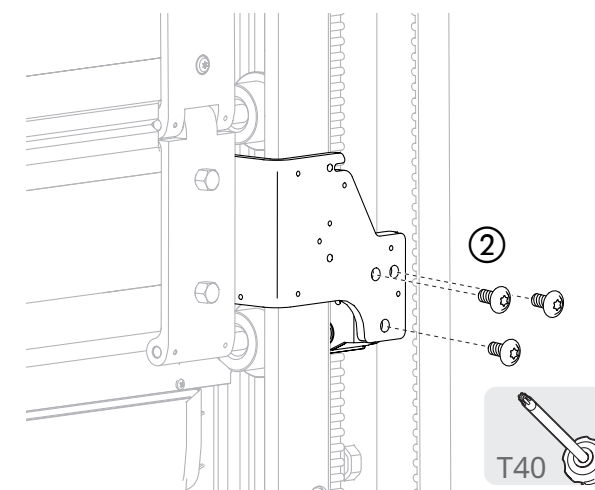
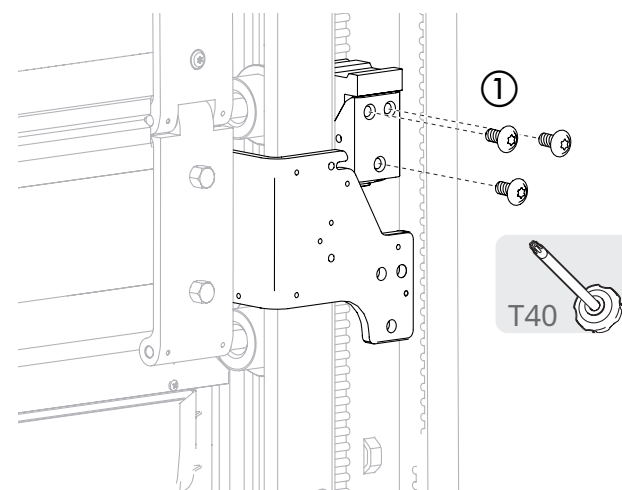
4 Lower the splice block (timing block) ① to line up with the end bracket in the bottom bar of the door panel:

- **Push up** on the secondary drive belt until it is loose enough to move around the pulley.
- **Pull down** on the back leg of the belt to lower the block.

Do this on both sides of the door.



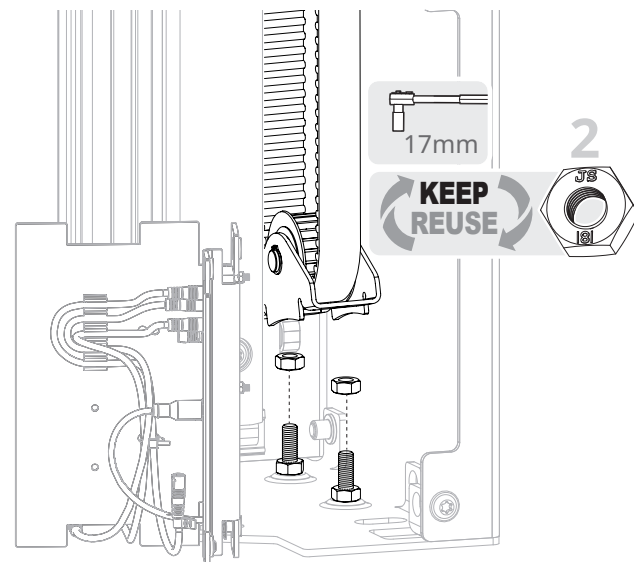
5 Remove the three screws from the splice block ①. Use them to secure the block to the end bracket on the door panel ②. Do this on both sides of the door.



How to install the baseplate pulley assembly

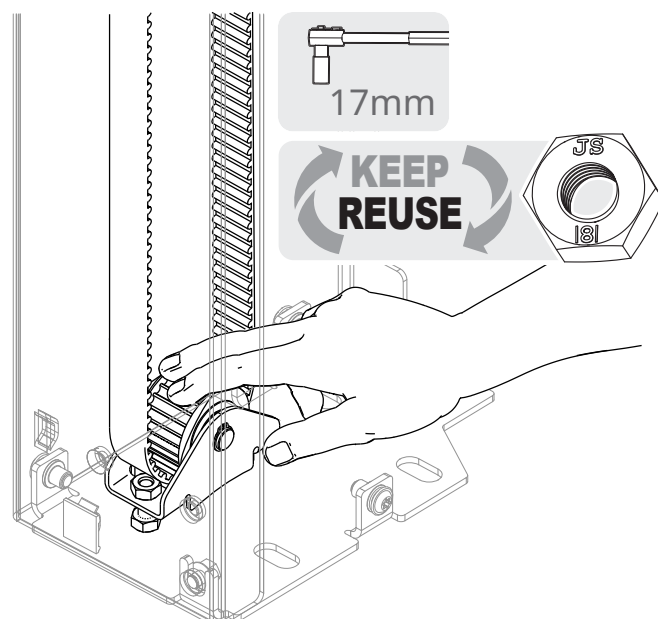
- 1** Remove the top nuts on the two baseplate mounting posts. **Keep** the nuts.

IMPORTANT DO NOT loosen the bottom nuts.



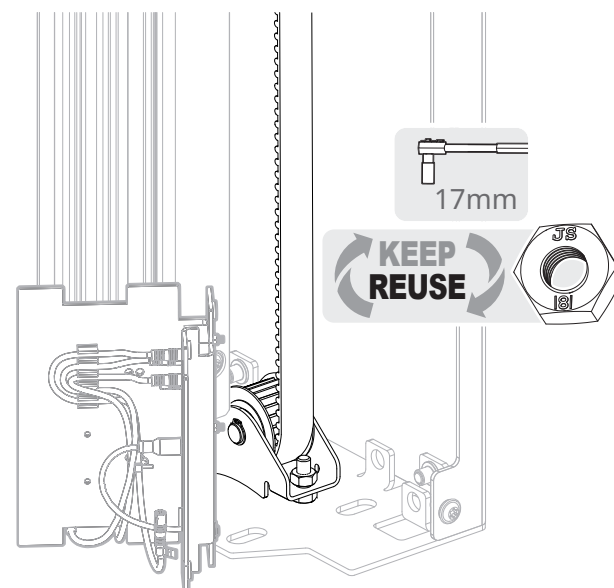
- 2** Install the pulley assembly onto the rear baseplate mounting post.

- 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.

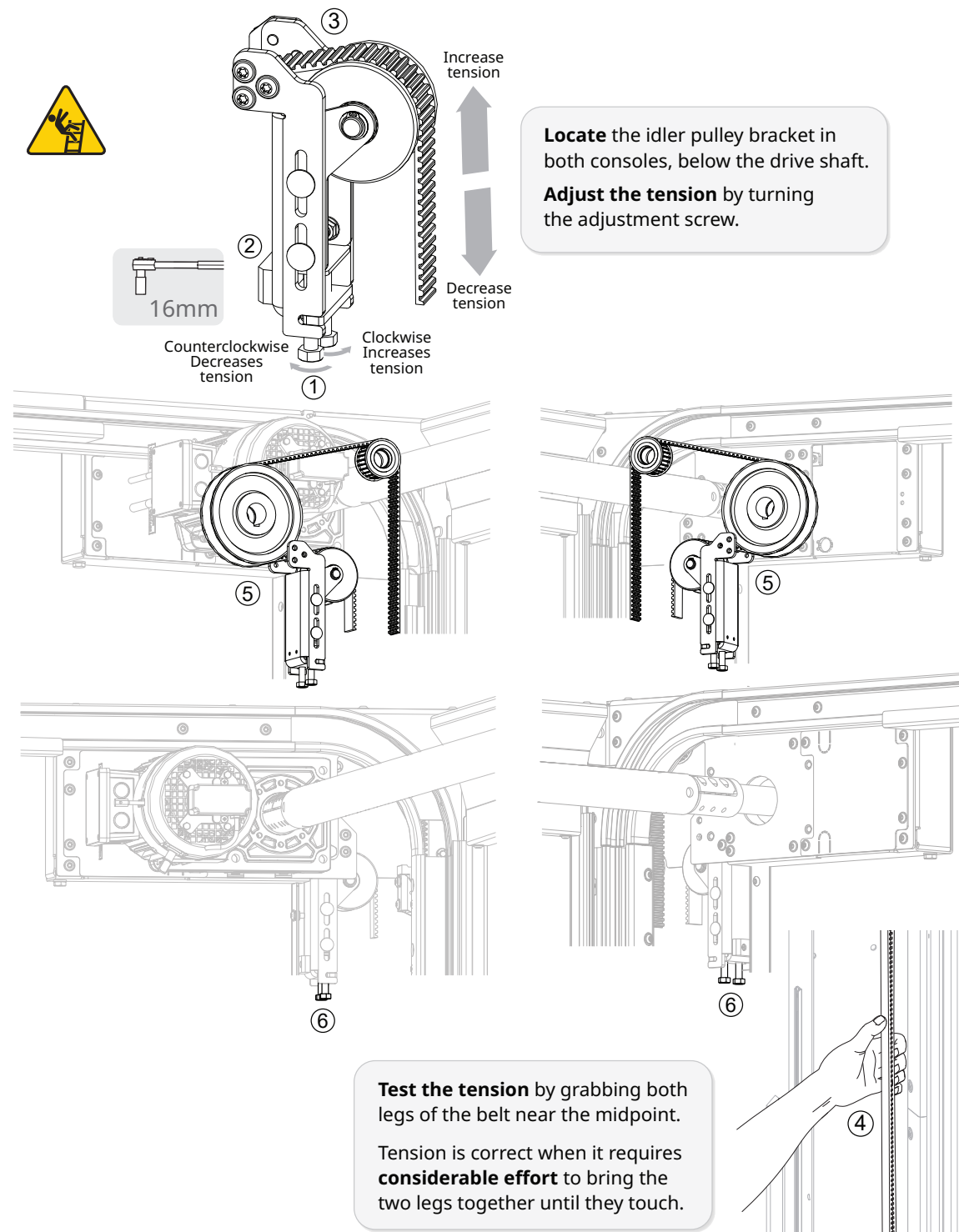


- 4** Do this in both side columns.

How to tension the secondary drive belts

Things to know about tensioning the belt

- Tension each belt** by turning the adjustment screw ① on the bracket ② that holds the idler pulley ③ for the belt.
- Test the tension** by grabbing both legs of the belt near the midpoint ④. Tension is correct when it **requires considerable effort** to bring the two legs together until they touch.
- The adjustment screws are reached through both the **side of the non-drive side console**, and through the **side of the drive side console** ⑤.
- Before adjusting the tension, **loosen** the one nut and two screws ⑥ that secure the bracket so that it moves easily when the adjustment screw is turned. **Tighten** them when tension is set.

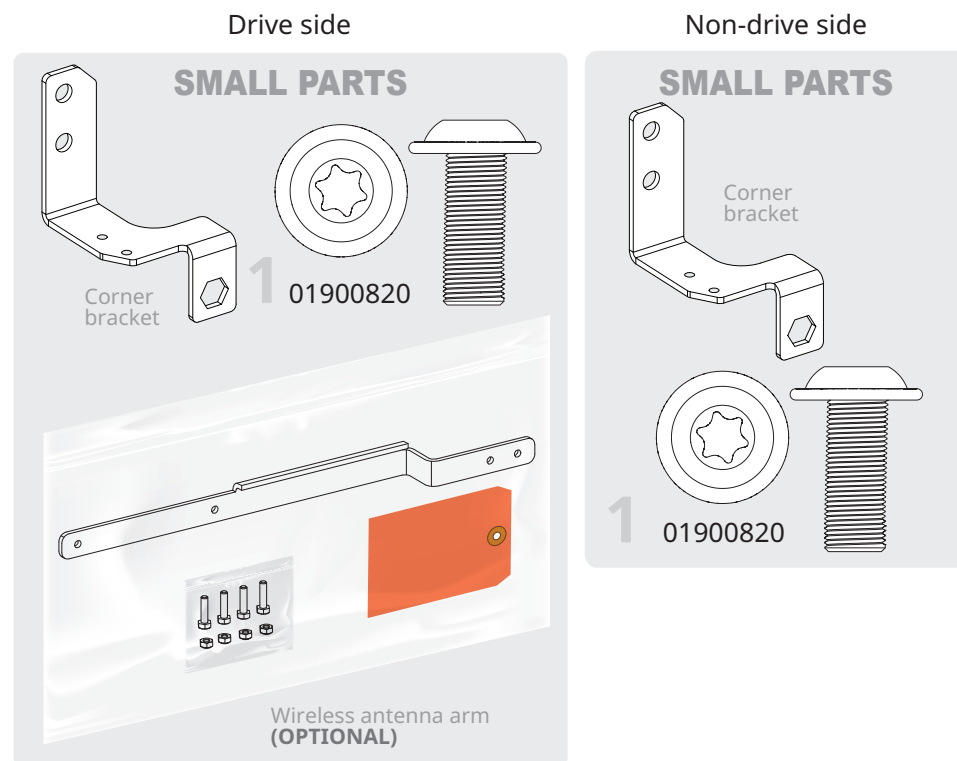


How to install the corner brackets and (optional) wireless antenna

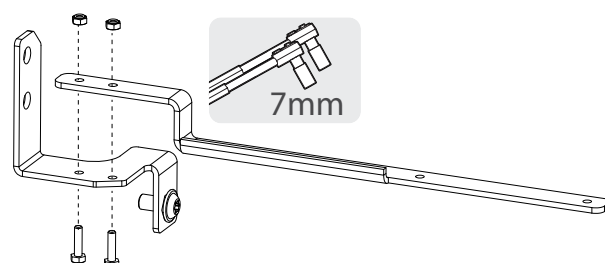
1 **Locate** the corner brackets, wireless antenna arm and hardware in the small parts box.

Install a corner bracket on each side column.

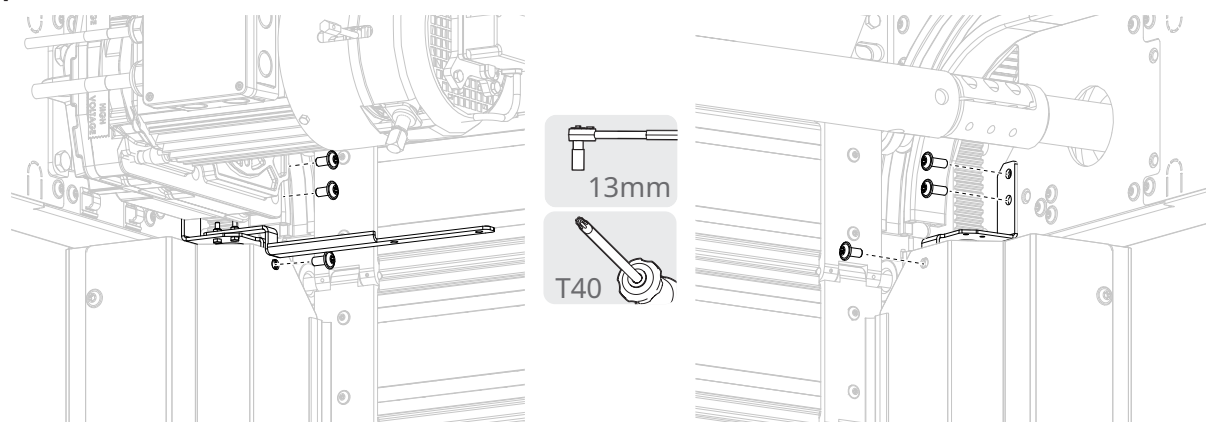
- **The drive side bracket** holds the wireless antenna arm and has an extra screw hole to secure the side panel cover.
- **The non-drive side bracket** has an extra screw hole to secure the side panel cover.



2 **If the door has an optional wireless antenna (reversing edge activate), install** the wireless antenna arm onto the drive side corner bracket using the included hardware before installing the corner bracket onto the console.

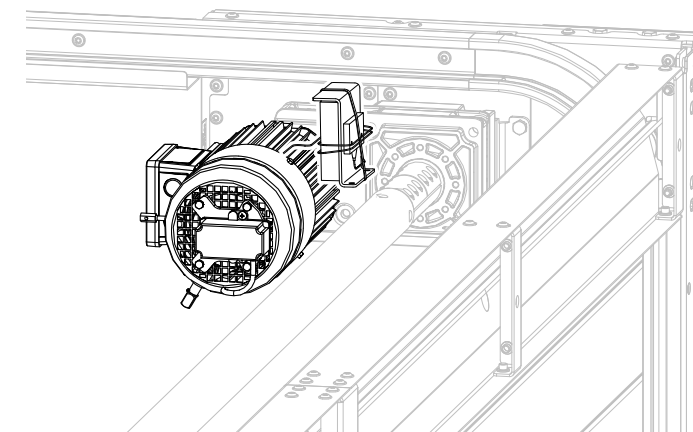


3 **Install** the corner brackets. Each bracket uses one nut from the console. **Optional antenna arm** shown on drive side.

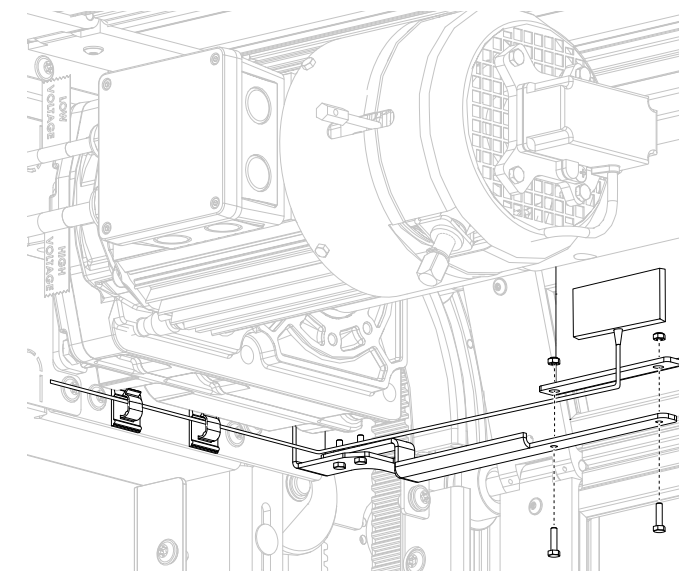


If the door has an optional wireless antenna (reversing edge activated)

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 install the jamb mounted SmartSurround™ light curtains

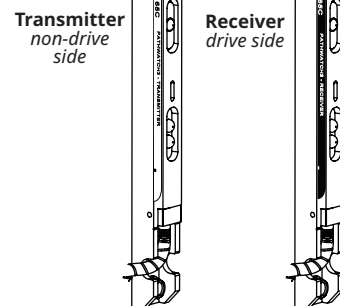
- 1 Get the jamb mounted SmartSurround™ transmitter and receiver from the kit.

IMPORTANT

Make sure the jamb mounted and cover mounted SmartSurround™ transmitters are both on the **non-drive side of the door**.

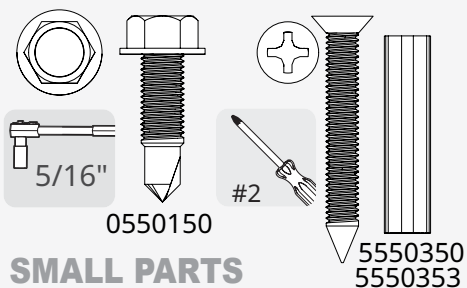
Make sure the jamb mounted and cover mounted SmartSurround™ receivers are both on the **drive side of the door**.

Check the labels at the bottom of the light curtains to match.



- 2 Install the jamb mounted SmartSurround™ light curtains and cables onto the drive side and non-drive side walls of the door opening.

Use supplied anchored or self-tapping screws to secure light curtains and P-clips.



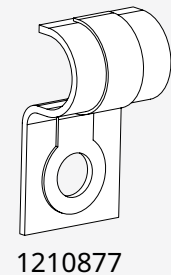
SMALL PARTS

Use two (2) supplied P-clips to secure cable tightly to wall

Place one clip one to two inches (1-2") from SmartSurround™

Place the other clip one to two inches (1-2") from side column

Cable should run **parallel to floor**



8" from Advanced³ light curtain

Distance between **jamb mounted SmartSurround™** and Advanced³ light curtain should approximately match distance between **cover mounted SmartSurround™** and Advanced³ light curtain

If the floor is level, use the cover mounted SmartSurround™ and a laser level to set the mounting height of the wall mounted light curtain.

The **bottom** of the aluminum retaining bracket should be **4" above base plate**.

Laser level

4" from base plate

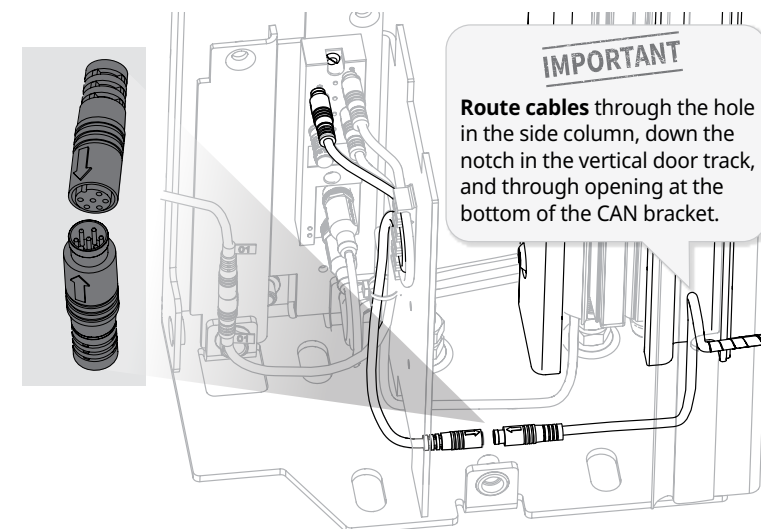
Cover mounted SmartSurround™ light curtain

How to complete the installation of the CAN bus cables

- 1 Connect the two cables that connect the jamb mounted SmartSurround™ light curtain to the CAN port.

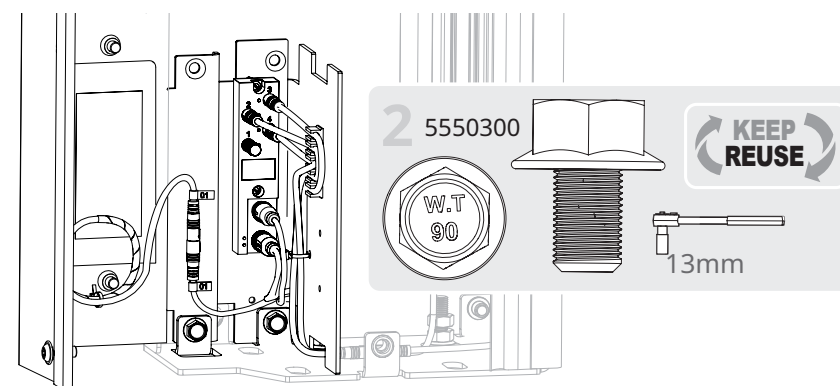
Line up the embossed arrows on the connectors to align the guide notch and contacts correctly.

The connectors will only fully connect if they are aligned correctly.



- 2 Reinstall the CAN bus brackets in both side columns.

- If possible, **reconnect** the cables labeled "01" before reinstalling the side column covers.

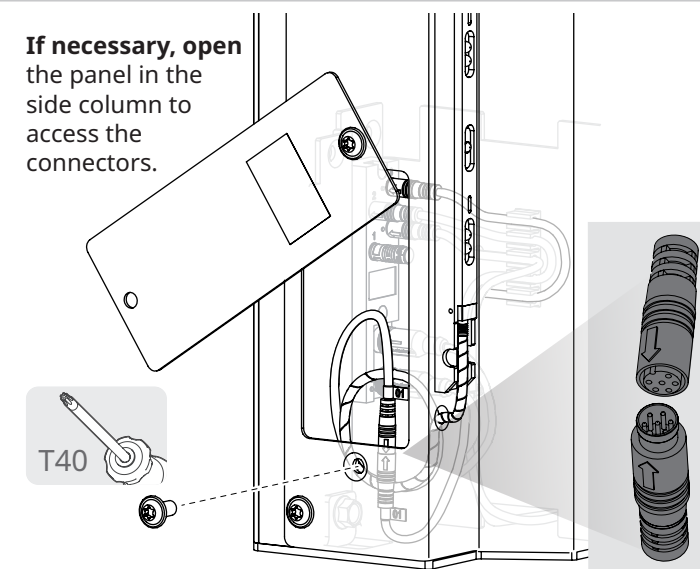


- 3 Reinstall the side column covers.

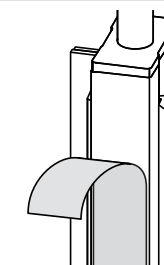
- Use **one screw** each to hold them in place; it may be necessary to open them to make adjustments during testing.
- Do not secure them fully** until all testing is complete.

Reconnect the two cables labeled "01".

- Line up** the embossed arrows on the connectors to align the guide notch and contacts correctly.
- The connectors** will only fully connect if they are aligned correctly.



- 4 Remove the protective flim from the Advanced³ light curtains and the SmartSurround™ light curtains installed on the side column covers.

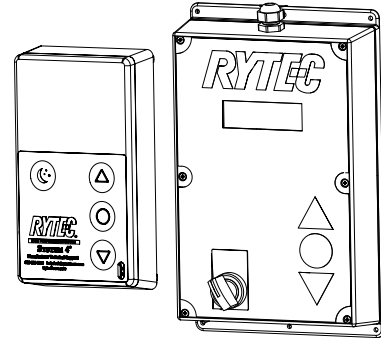


(Optional) Check if the door has an MS4 or BTA4 user terminal

- 1 Check the **small part box** to see if an optional BTA4 (shown at left) or MS4 (shown at right) user terminal is included in this installation.

Both terminals can be **mounted either on a side column or remotely**, and both connect to the CAN bus system.

The frame and cabling for **side column mounted BTA4 terminals** are preinstalled at Rytec.
All other mountings must be field installed.



How to install the BTA4 user terminal frame remotely

IMPORTANT Check with the door owner where they want the BTA4 installed remotely.

- 1 Cut out the drilling template on this page for the BTA4 unit.

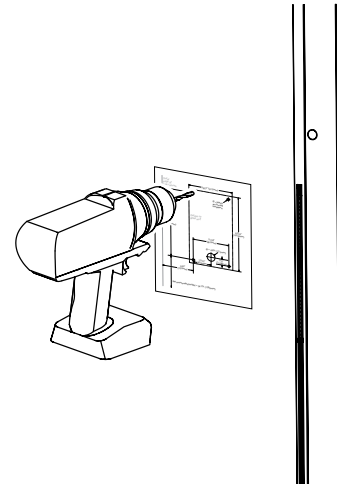
Use the **template** to drill the four screw holes in wall near the door.

Match the drill bit to the supplied hardware or your own.

Match the correct depth for the hardware.

Use a step bit to drill the large hole for the cable.

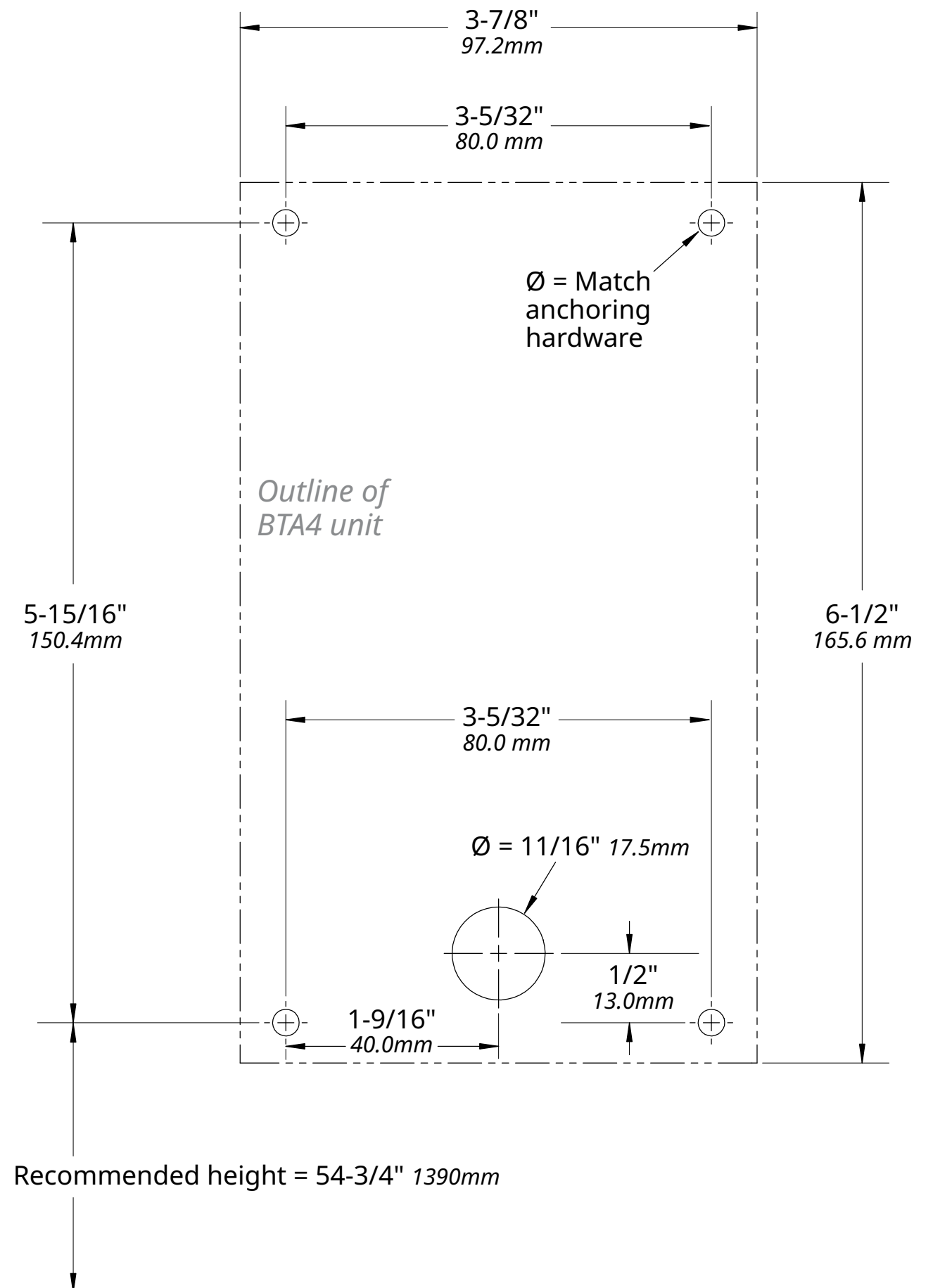
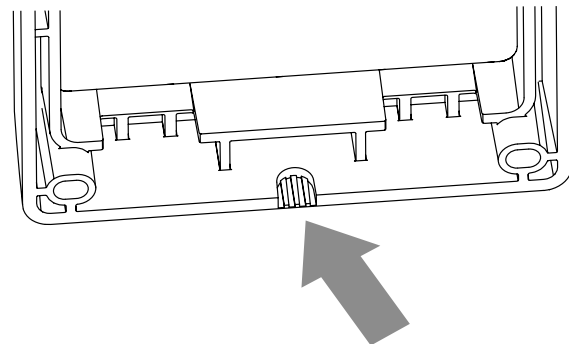
IMPORTANT



IMPORTANT

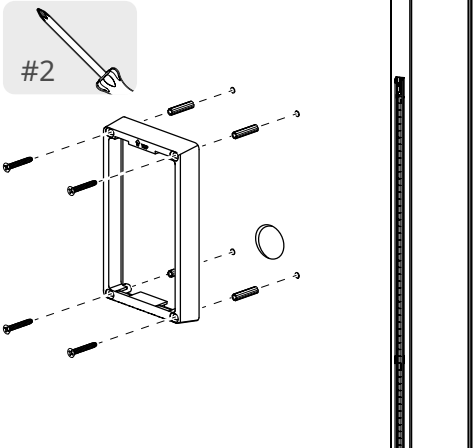
NOTE: if the wall mount does not make it possible to run the cable inside the wall, you can run the cable out of the bottom of the frame.

- 2 If you are mounting the unit to the wall and cannot run cable inside the wall, **snap off** the perforated tab at the bottom of the frame.

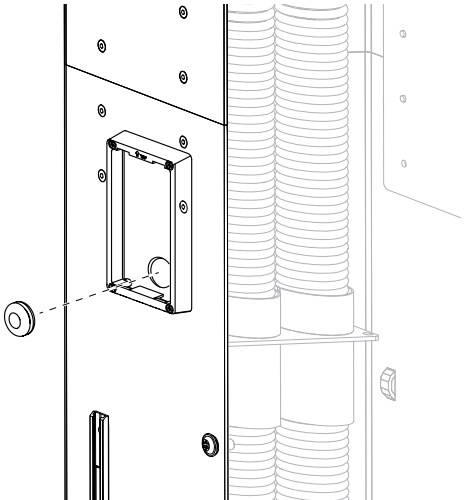


Back of BTA4 template
Intentionally left blank

3 **Install** the BTA4 frame using the supplied hardware for wall mounting, or your own.

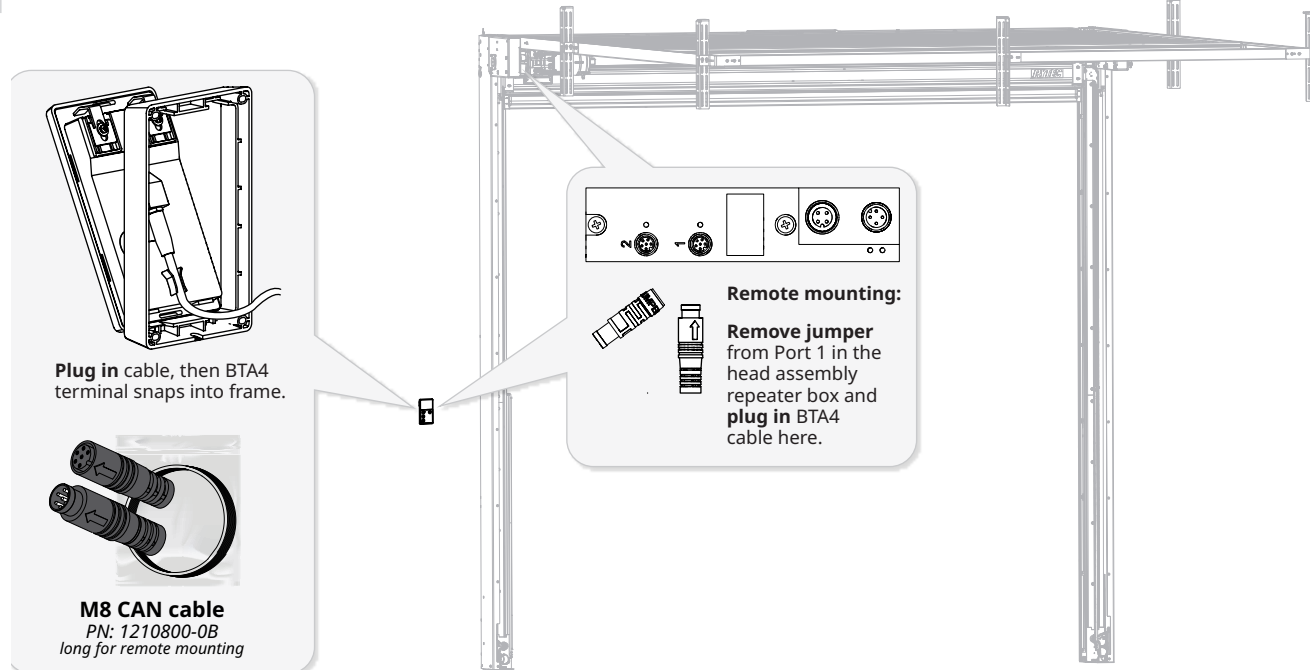


4 For side column mounting, **install** the grommet into the cable access hole.



How to connect the BTA4 user terminal to the CAN bus system

- 1 **Connect** the BTA4 to the CAN bus system.

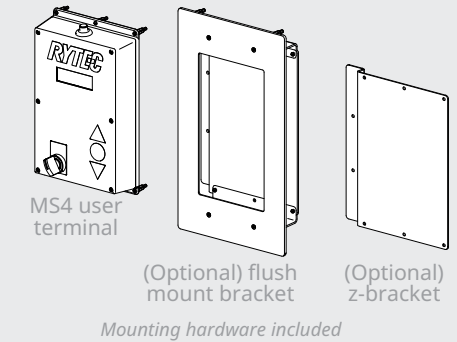


How to install the MS4 user terminal

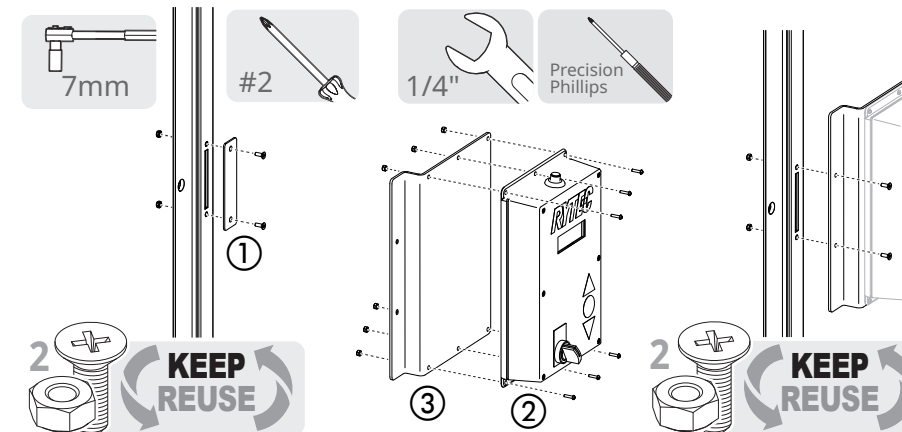
IMPORTANT Check with the door owner whether they want the MS4 installed into the side column or remotely.

- 1 **Locate** the MS4 user terminal, mounting brackets and hardware in the small parts box.

SMALL PARTS

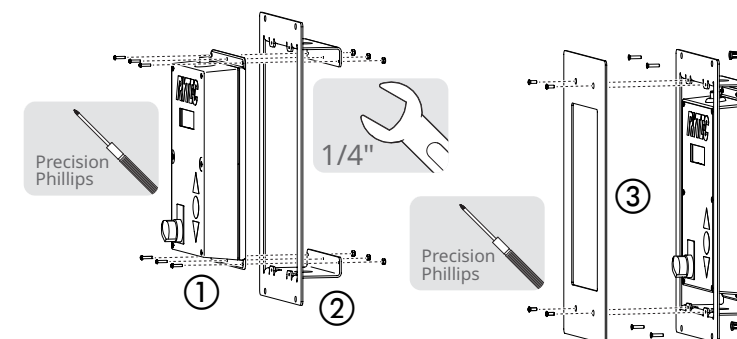


- 2 **Anchor the user terminal** at an easily accessible height using the included hardware.
The user terminal can be mounted onto the wall, flush to the wall using the optional bracket, or onto the side column using the optional z-bracket.



Side column mount

1. **Remove** plate ① from non-drive side column.
2. **Install** the user terminal ② onto the z-bracket ③ using supplied hardware.
3. **Install** bracket onto side column using screw holes from plate.

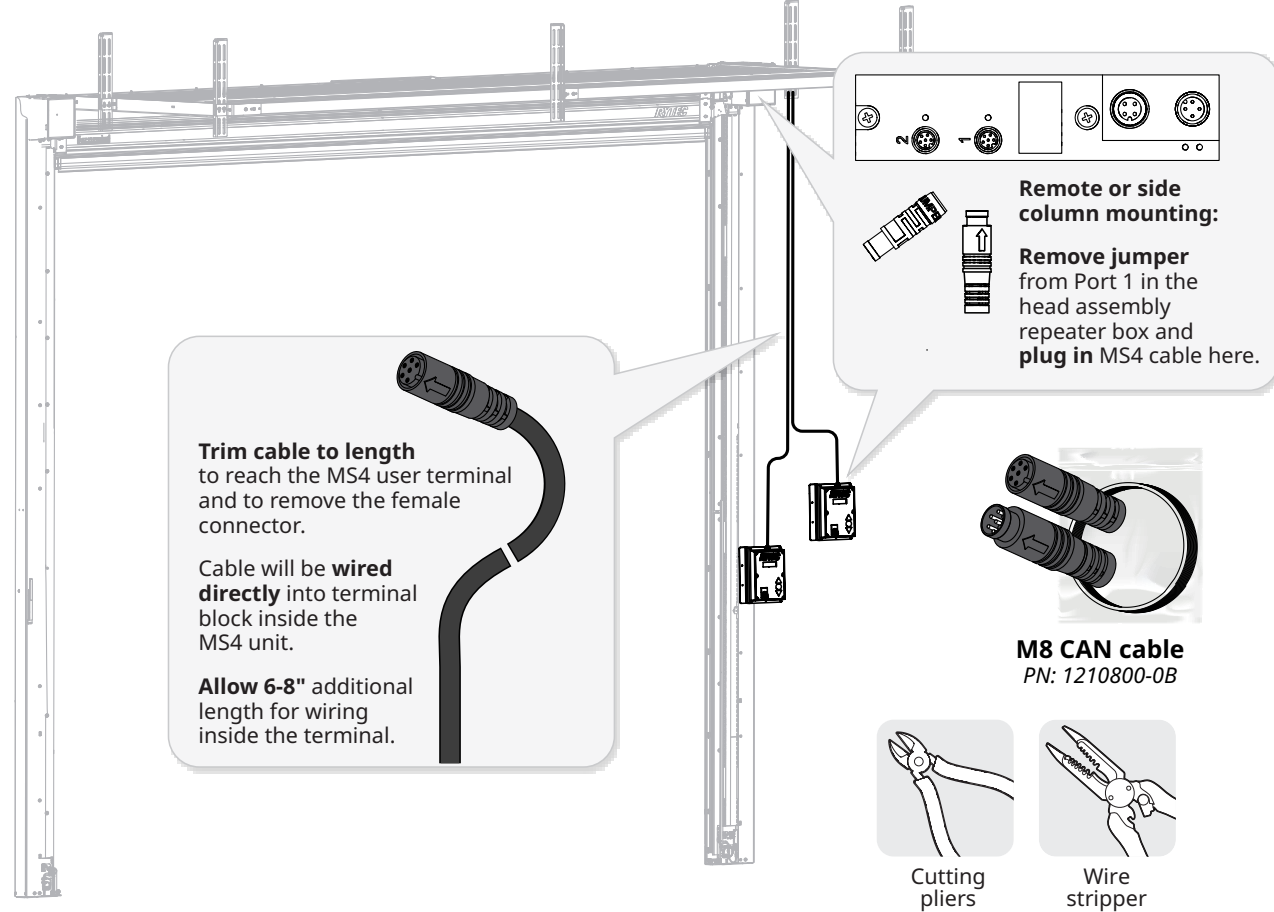


Flush mount (in-wall installation)

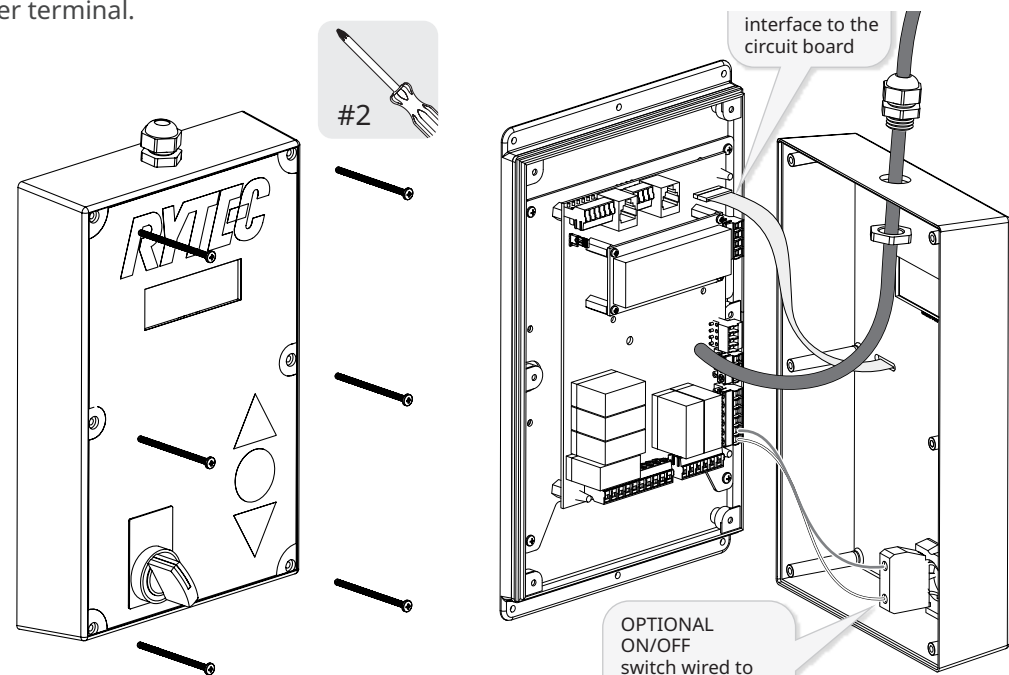
1. **Cut** hole: 6-3/8"W x 11-1/2"H.
2. **Install** the user terminal ① onto the flush mount bracket ② using supplied hardware.
3. **Anchor** bracket to wall using supplied hardware.
4. **Install** the cover plate ③.

How to connect the MS4 user terminal to the CAN bus system

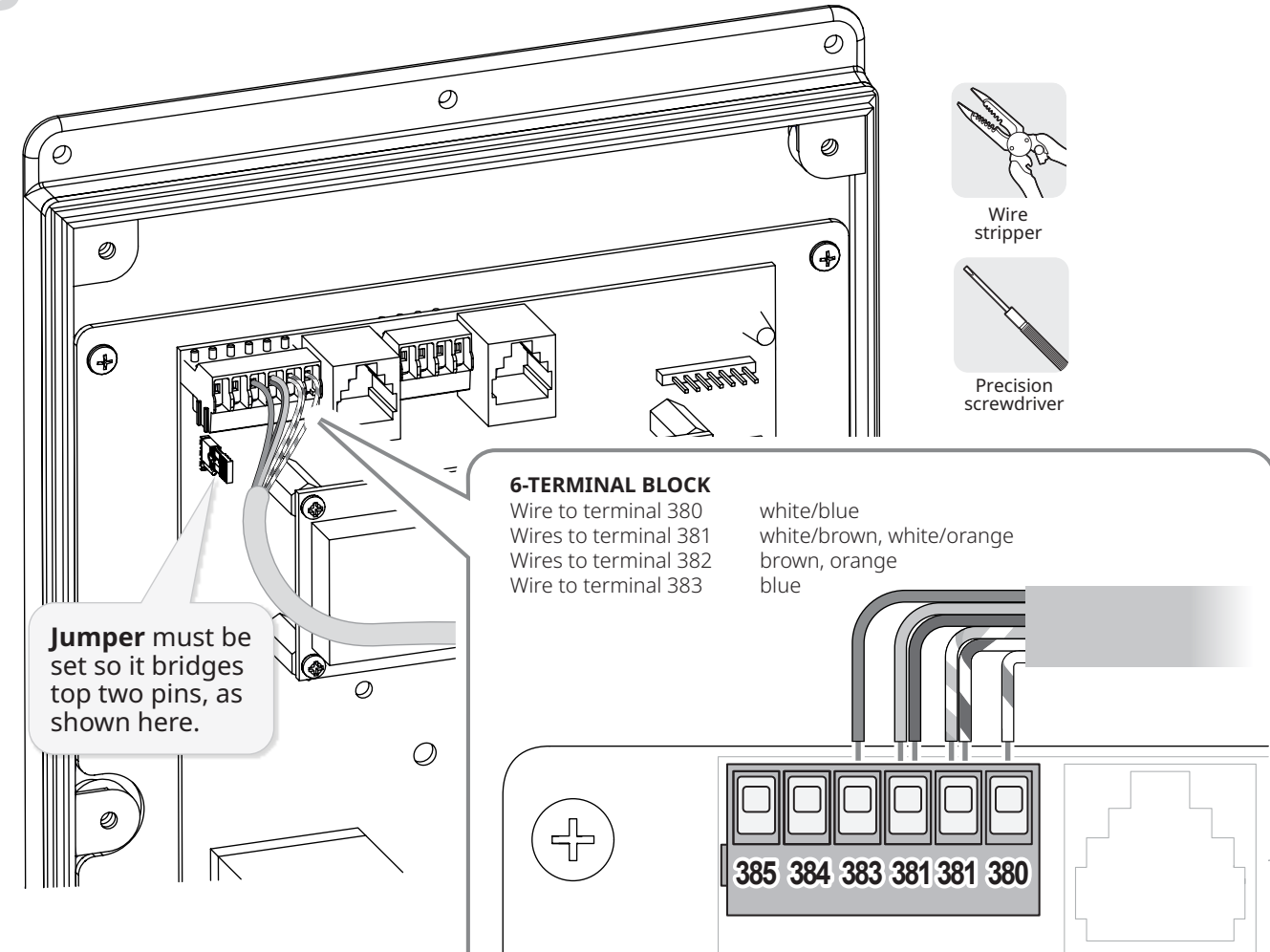
- 1 **Connect** the M8 flying lead cable to the head assembly repeater box and **route** it to the MS4 user terminal.



- 2 **Loosen** the six screws and **remove** the cover plate. **Loosen** the cord grip and **thread** the M8 flying lead into the user terminal.

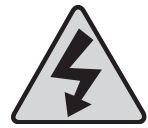


- 3 **Trim jacket** on M8 flying lead to expose wires, and **connect** wires to terminals 380-383.



- 4 **Tighten** the cord grip, **replace** the cover and **reinstall** the six screws.

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.

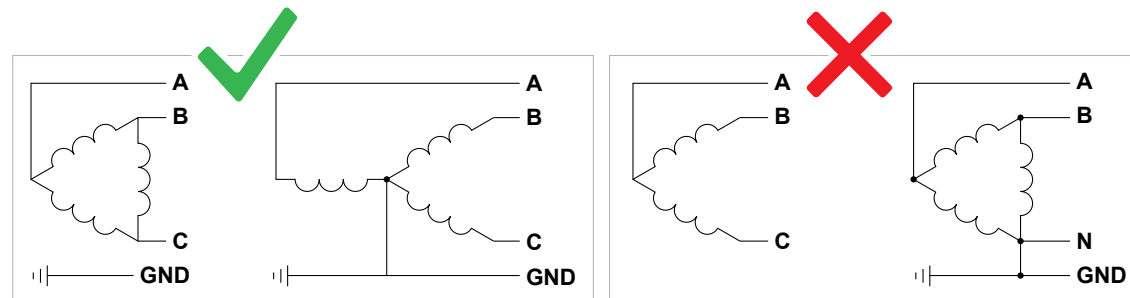
Failure to wire the door correctly could result in shock, burns or death to the people who install, use or service the door.



⚠ 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.

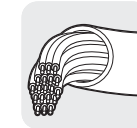
Contact Rytec technical support at 800-628-1909 or email helpdesk@rytecdoors.com

before starting the installation if you cannot meet any of these standards or have questions about how to implement them.

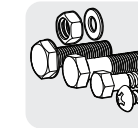
Before you begin

1 Make sure you have all supplies and tools.

Supplies that you provide

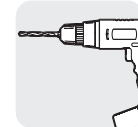


Conduit for high-voltage and low-voltage wiring



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.

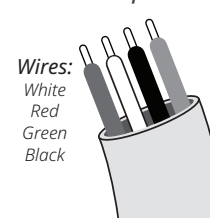
4 Make sure the high-voltage and low-voltage cables from the head assembly of the door are separate. Cables may be routed through the top ① or bottom ② port at the back of the belt guard cover.



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

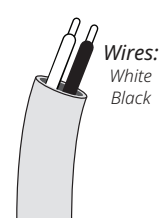
High Voltage

Motor power

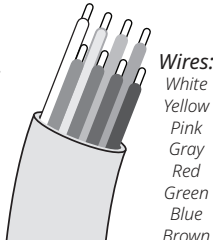


Low Voltage

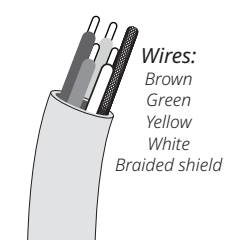
Brake



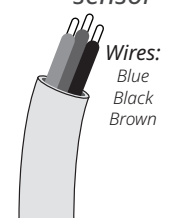
Encoder



CAN bus

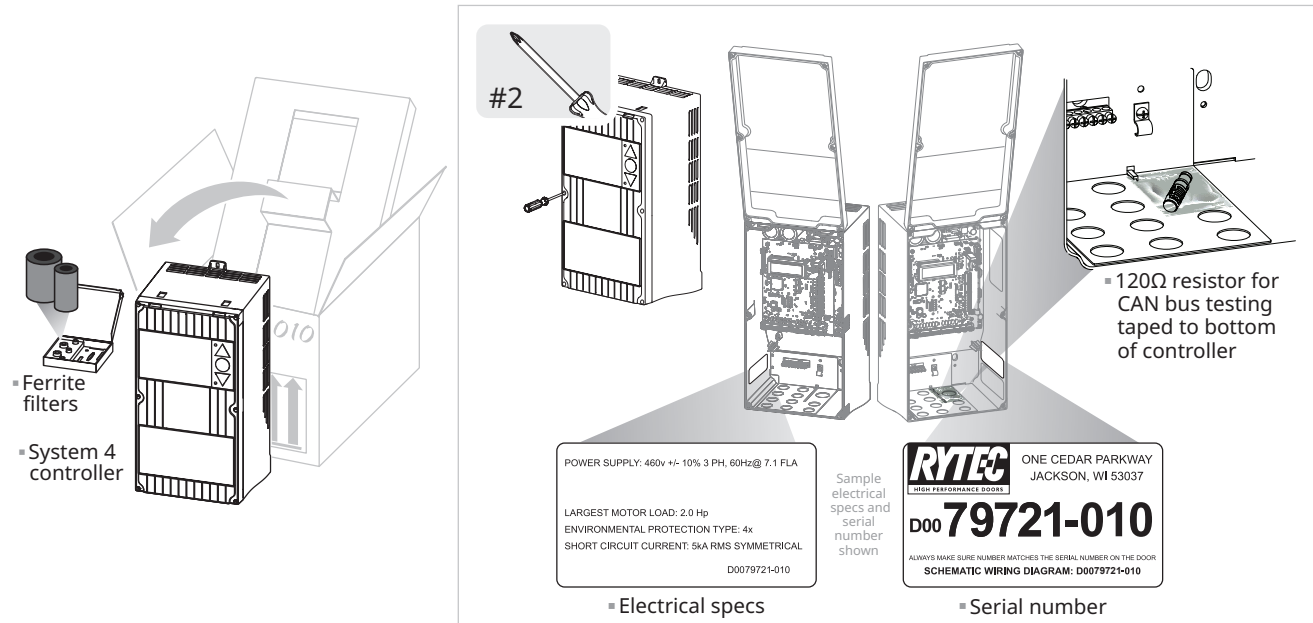


Proximity sensor



How to install the System 4 controller

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



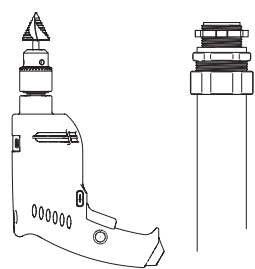
Verify that the serial number and electrical specs for the controller match the door.
Locate the 120Ω resistor for testing the CAN bus.

- 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.

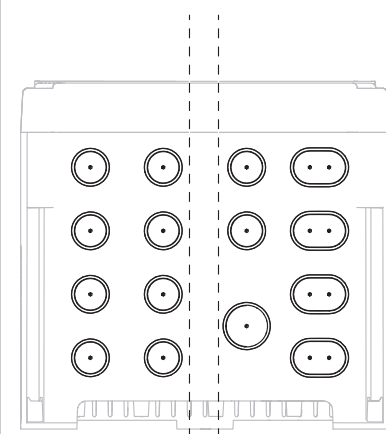
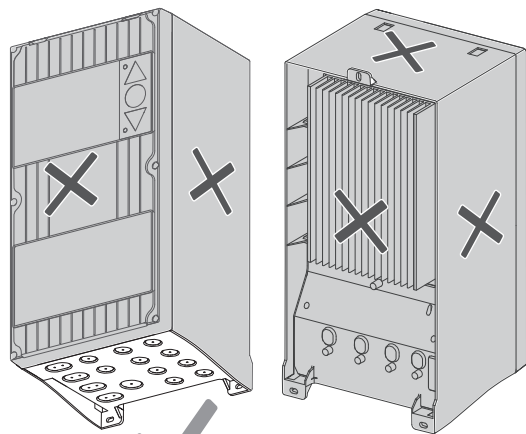
IMPORTANT

- **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.

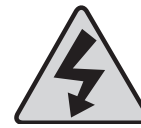
DO NOT drill through the front, back, top or sides of the box.



■ High voltage ■ Low voltage

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.

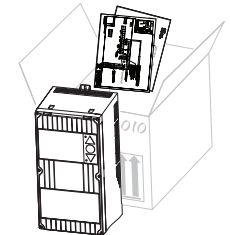


Find the schematics for the door in same box that holds the System 4® controller.

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.

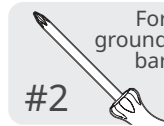
IMPORTANT



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



DO NOT use power tools

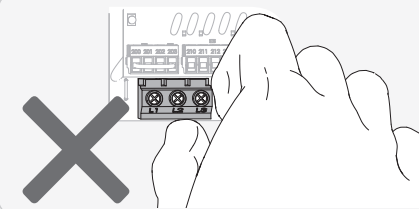


For ground bar



For terminals

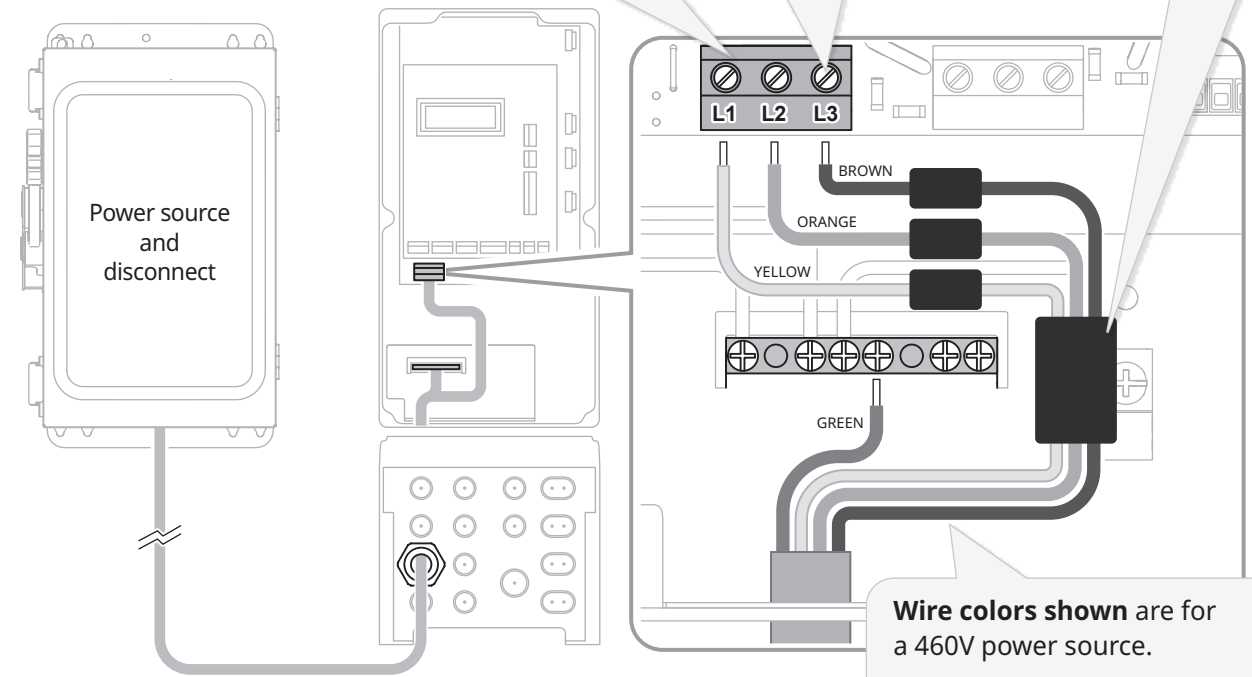
12 AWG



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.

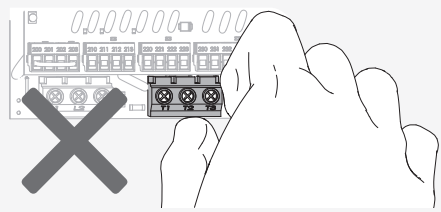
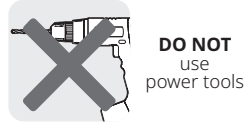
Place one large ferrite filter around all three wires, and **one small filter** around each individual wire.



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

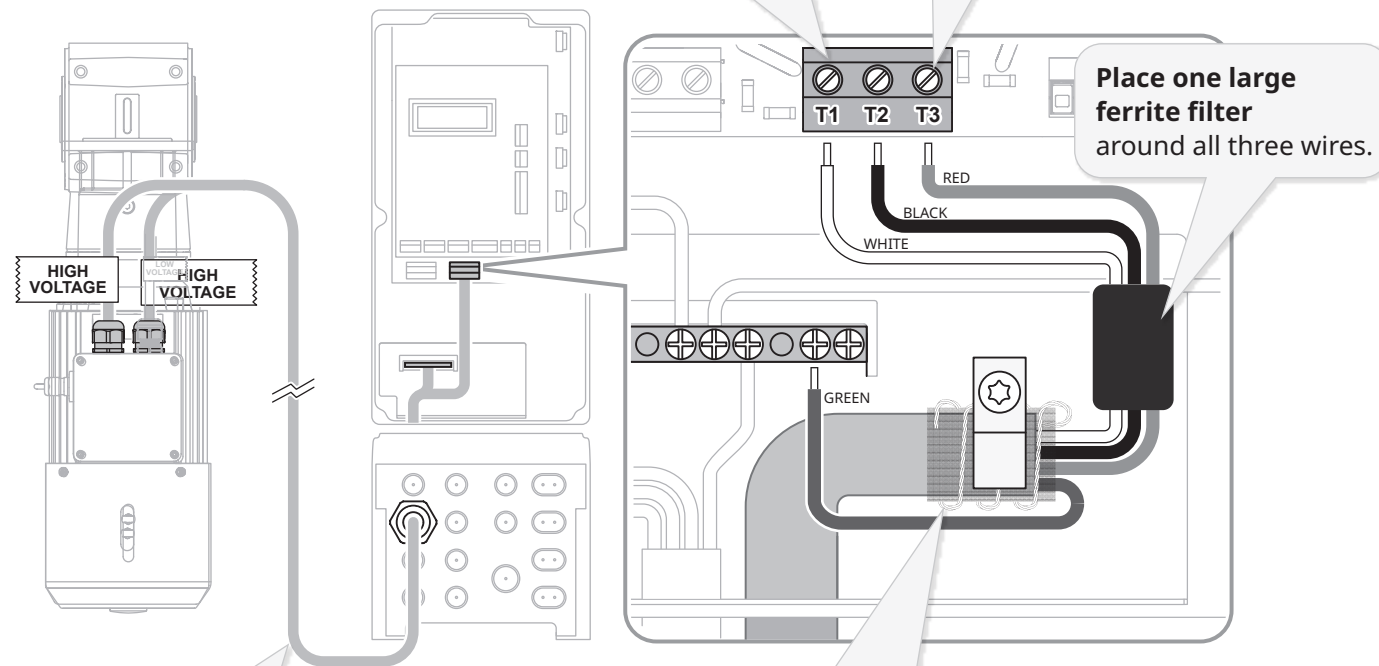


Do not try to remove the green terminal block from the circuit board.

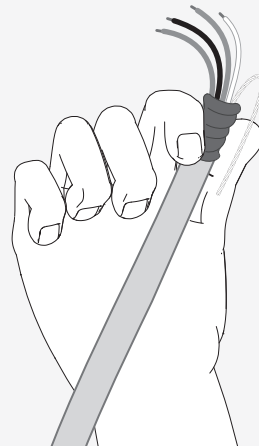
It is fixed in place and will break.

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

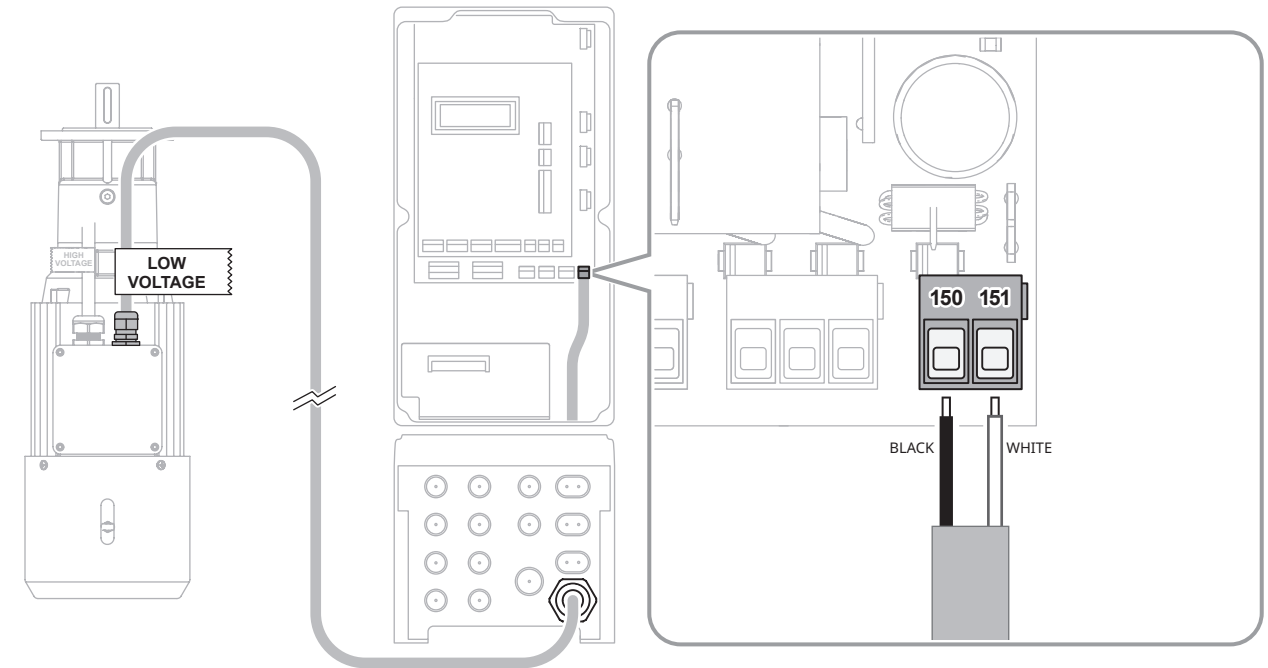
IMPORTANT



- 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.**

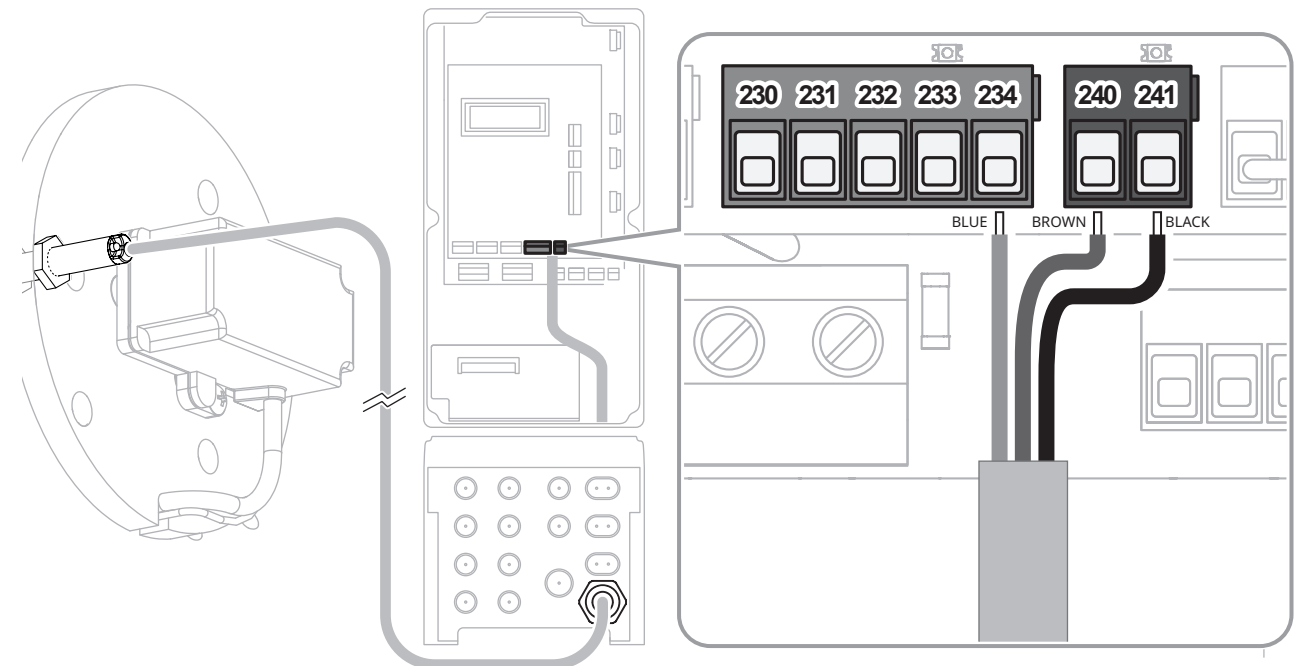
- 1** **Connect** the brake wiring from the motor.
Shielding: unshielded

18 AWG



- 2** **Connect** the wires from the proximity sensor.
Shielding: unshielded

24 AWG

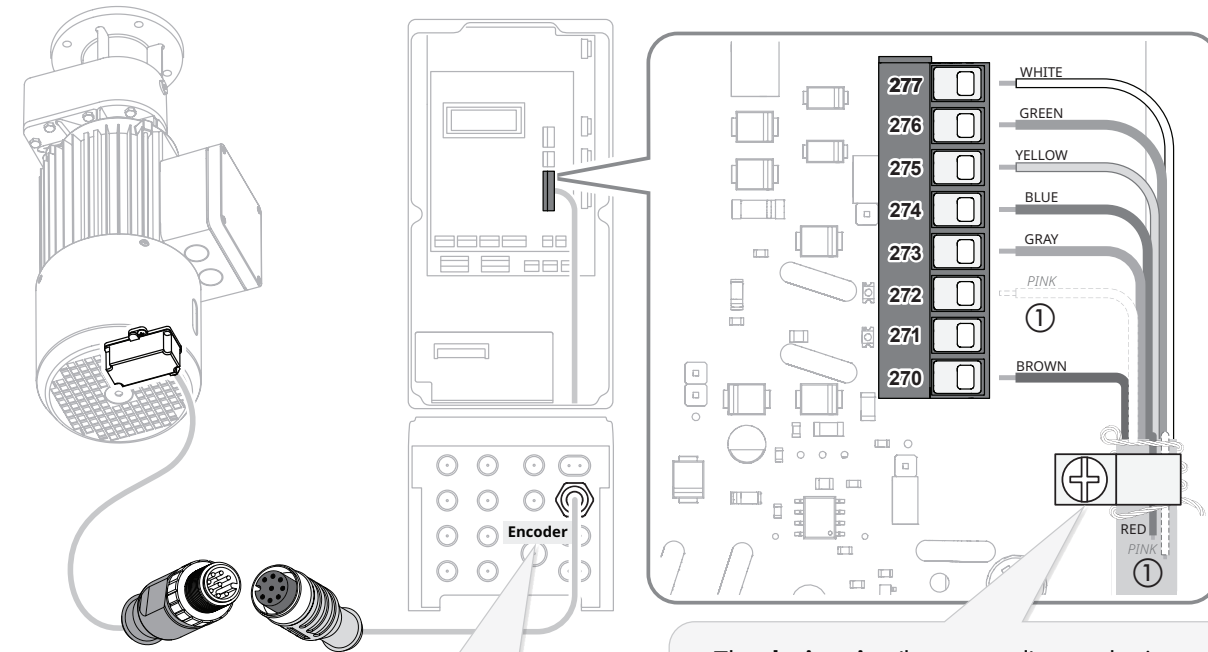


3 Connect the wiring from the encoder. Shielding: metal foil and drain wire

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.

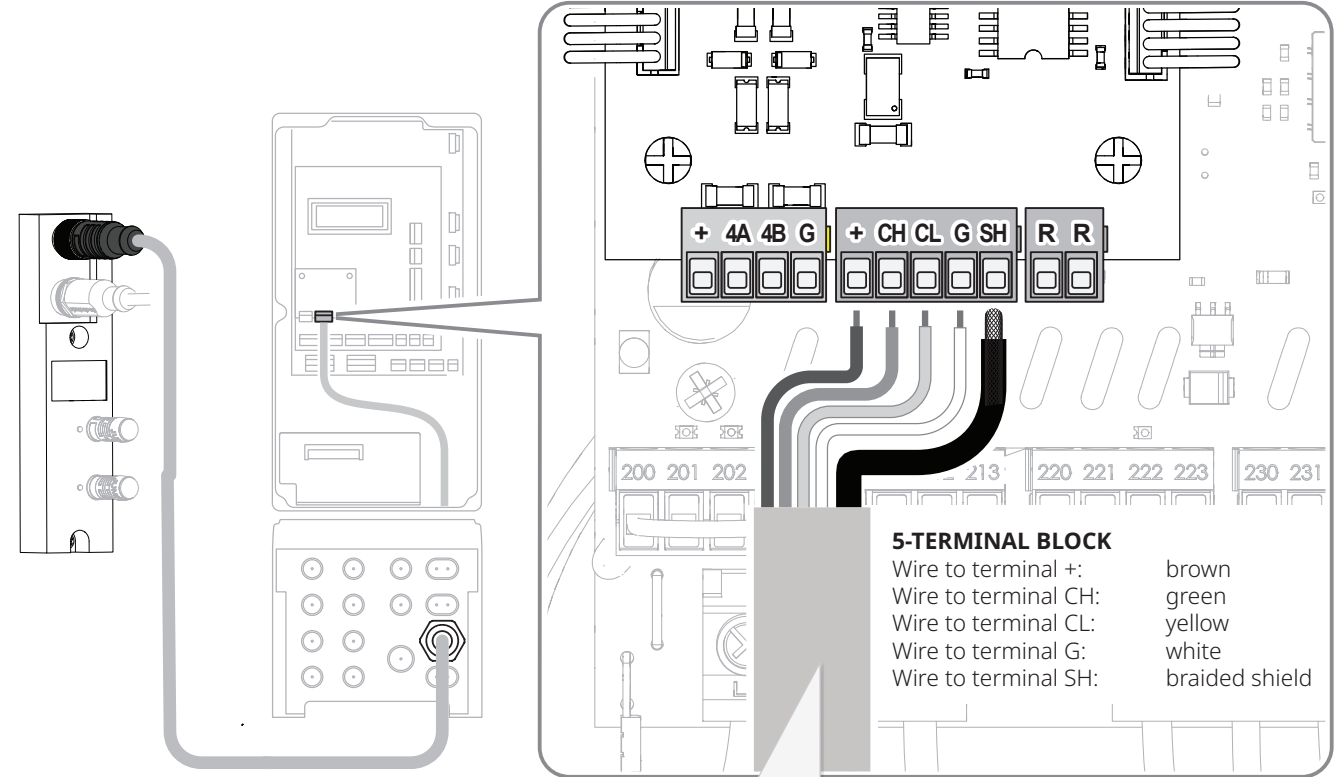
IMPORTANT

- ① **Pink wire in encoder cable** is trimmed and tied off if reversing edge is deactivated (standard installation - no wireless antenna)

Pink wire connects to terminal 272 if reversing edge is activated (optional - wireless antenna included)

4 Connect the CAN bus wiring. Shielding: wire mesh

20 AWG



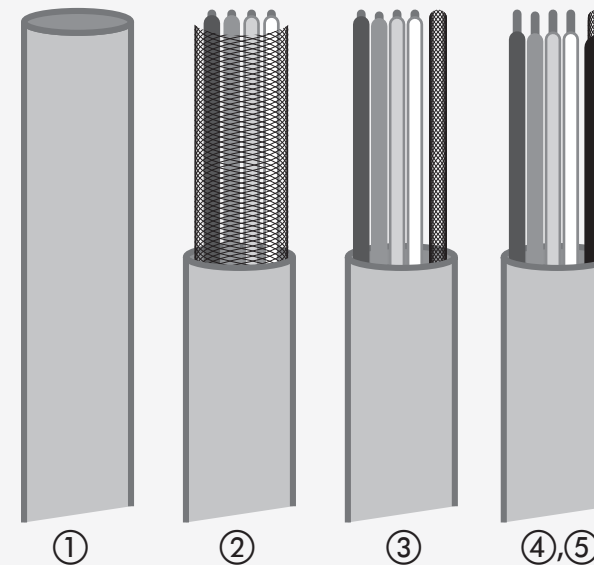
5-TERMINAL BLOCK

Wire to terminal +: brown
Wire to terminal CH: green
Wire to terminal CL: yellow
Wire to terminal G: white
Wire to terminal SH: braided shield

The **shielding** (braided wire mesh) is used as a fifth "wire" and plugs into terminal SH.

To ensure a tight contact:

- ① **Trim** CAN bus cable so it reaches com board, plus six inches (6") additional length.
 - ② **Trim** jacket to expose wire mesh shielding.
 - ③ **Twist** shielding into fifth wire to terminal block.
- IMPORTANT** **DO NOT** cut through shielding.
- IMPORTANT** **Make sure** shielding is twisted tight enough to fit into terminal.



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

How to sync the SmartSurround™ system to the controller, 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
- R = Rytec level

Accesses more parameters

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 parameter 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

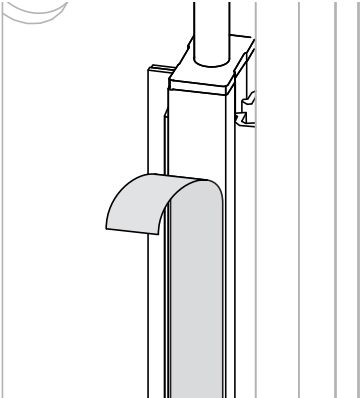
- Press
- Press and hold
- Press UP or DOWN arrow, as needed

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

IMPORTANT

Inform the door owner that Rain-X® 620036 Plastic Treatment applied to the light curtains reduces static and helps keep them clear of dirt and dust. Available at more hardware stores.

INSIDER'S TIP



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

Do This

1 Turn on power to controller

Result

Spiral LP 0 Cycles

The door starts in run mode.

Do This

2 Press UP arrow until the parameter screen displays

Result

P: Password 0 001= [xxx] Cyc

You are in Parameter mode. Go to parameter 999.

Do This

3 Press DOWN arrow 2X to reach parameter P:999

Result

P: Password 0 999= 0000 #

The Password parameter P:999 screen displays.

Do This

4 Press UP arrow 1X to move cursor to the right (edit value)

Result

P: Password 0 999= 0000v#

You can now change the value of parameter P:999.

Do This

5 Press UP arrow 16X to set value to hexadecimal 10

Result

P: Password 0 999= 0010?#

Set the value to 10 (Service level password).

Do This

6 Press UP arrow until question mark changes to checkmark (value saved)

Result

P: Password S 999= 0010v#

The Service level password is saved.

Do This

7 The controller automatically moves to parameter L:201.

Result

L: SAI Slot2 201= - #

Next: to start the CAN bus synchronization, assign the two Advanced3 light curtains to parameter L:201

NOTE: the values you will see at parameters L:201, L:401 and L:501 will be the IDs for the light curtains included in the kit, and will not match the values shown here.

Do This

Result

1

1X to show the first set of light curtains

L: SAI Slot2

201= 0932-9156?

2

Check the Advanced³ light curtains mounted in the door tracks of both side columns.

If all four LEDs are flashing (transmitter: green and yellow, receiver: blue and red), the door track light curtains are synced correctly.

If other light curtains light up, go to the next value.

Drive side

Non-drive side

Do This

Result

3

If the current selection does **NOT** light the LEDs:

1X to show the next set of light curtains

L: SAI Slot2

201= 0948-9147?

Re-check the light curtains.

4

If the current selection **DOES** light the LEDs:

until the setting is saved

L: SAI Slot2

201= 0948-9147✓

5

If the current selection **DOES** light the LEDs:

until the setting is saved

L: SAI Slot2

201= 0948-9147✓

6

The controller moves to parameter L:401.

L: SAI Slot4

401= - #

Next: assign the two inside SmartSurround™ light curtains to parameter L:401

On doors that are mounted to interior walls, the **cover mounted SmartSurrounds™** are considered to be the inside light curtains and are assigned to parameter L:401.

On doors that are mounted to exterior walls, the **jamb mounted SmartSurrounds™** are considered to be the inside light curtains and are assigned to parameter L:401.

Do This

Result

1

1X to show the first set of light curtains

L: SAI Slot4

401= 0932-9156?

2

Check the SmartSurround™ inside light curtains on both side columns.

If all LEDs are flashing, the cover mounted light curtains are synced correctly.

If other light curtains light up, go to the next value.

Drive side

Non-drive side

Do This

Result

3

If the current selection does **NOT** light the LEDs:

1X to show the next set of light curtains

L: SAI Slot4

401= 0992-9187?

Re-check the light curtains.

4

If the current selection **DOES** light the LEDs:

until the setting is saved

L: SAI Slot4

401= 0992-9187✓

5

The controller moves to parameter L:501.

L: SAI Slot5

501= - #

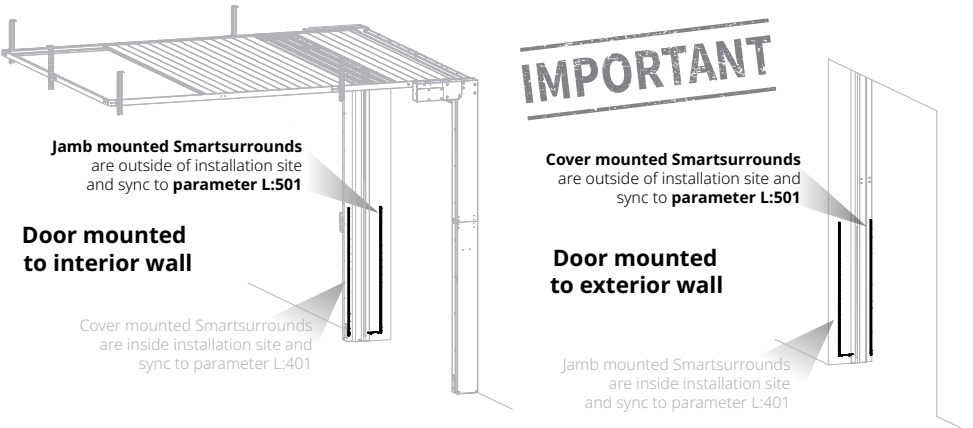
SPiRAL® LP (PARKING STRUCTURE) INSTALLATION MANUAL • 1072127-0 • REV 02 • 04/22

34

Next: assign the two outside SmartSurround™ light curtains to parameter L:501

On doors that are mounted to **interior walls**, the **jamb mounted SmartSurrounds™** are considered to be the outside light curtains and are assigned to parameter L:501.

On doors that are mounted to **exterior walls**, the **cover mounted SmartSurrounds™** are considered to be the outside light curtains and are assigned to parameter L:501.



Do This Result

1 1X to show the first set of light curtains

L: SAI Slot5
501= 0932-9156?

2 Check the SmartSurround™ outside light curtains on both side columns.

- If all LEDs are flashing, the cover mounted light curtains are synced correctly.
- If other light curtains light up, go to the next value.

Drive side Non-drive side

Do This Result

3 If the current selection does **NOT** light the LEDs:

1X to show the next set of light curtains

L: SAI Slot5
501= 0923-9126?

Re-check the light curtains.

4 If the current selection **DOES** light the LEDs:

until the setting is saved

L: SAI Slot5
501= 0923-9126✓

5 The controller ends at parameter P:000.

P: Door Cycles S
000# 0000 Cyc

Next: set limits

Do This Result

1 until the "Synchron." screen displays

! Synchron. !
_0 Press Reset

Scrolling message:
Hold Reset button if position OK

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 this 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 Result

4 until "Open Limit Set" screen displays

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 start. The door panel closes.

Search Edge
-1330_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

Door Is Opening
Act11 = 45Sec
Door Is Closing
Act11 = 45Sec
Spiral LP
[xxx] Cycles

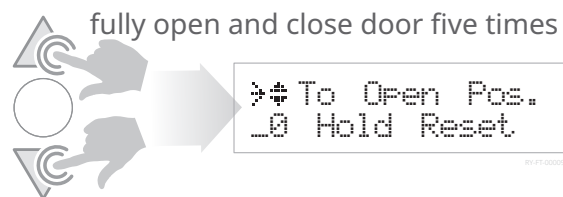
- The door opens and closes automatically **up to 12 times**.
- The controller automatically sets the close limit position while the door calibrates.
- When calibration is complete, the door switches to Run mode.

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 manually adjust the close limit after calibration is complete by changing parameter P:275. See page 33.

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*.

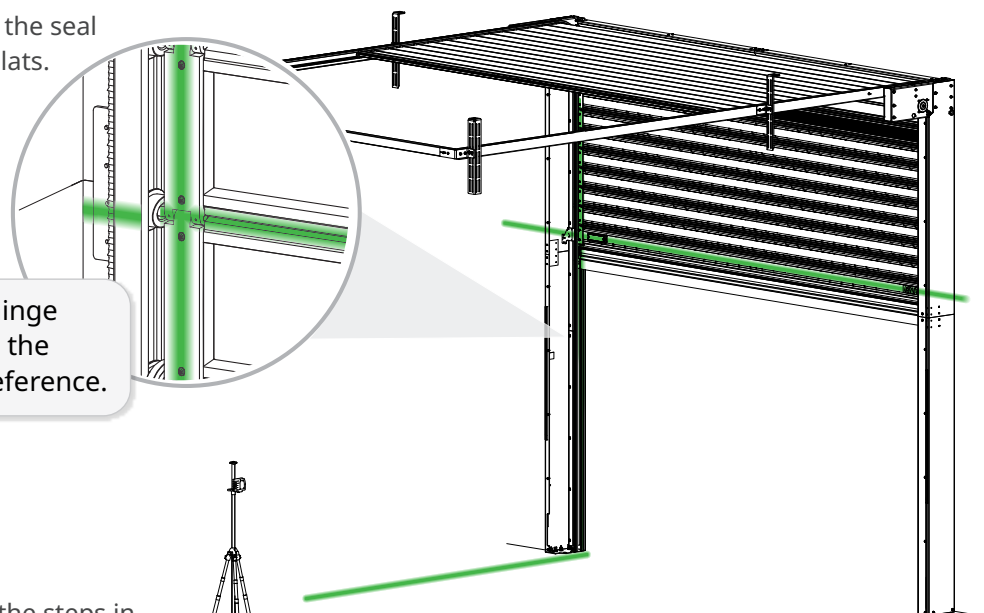
2 Is the door panel level and plumb?

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 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 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.



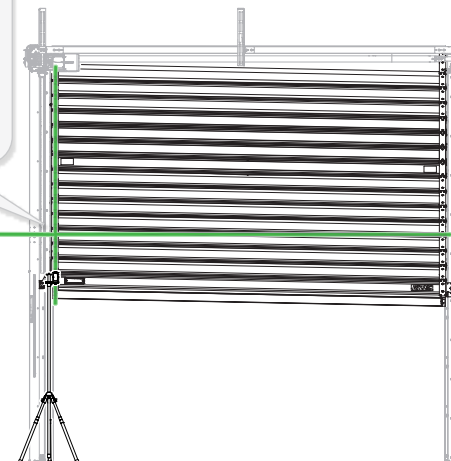
1



Laser level

IMPORTANT

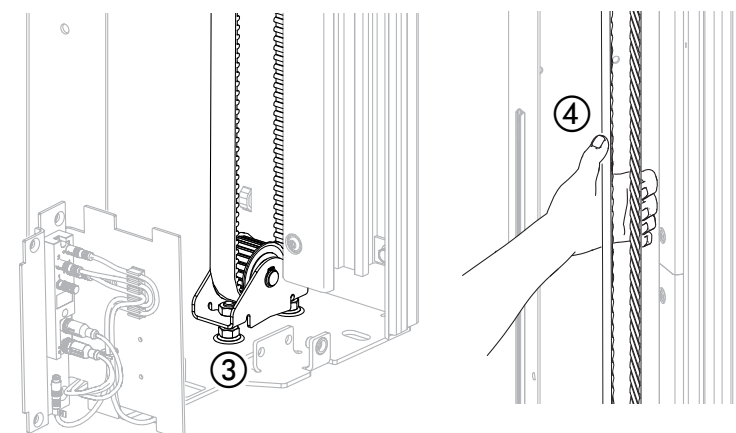
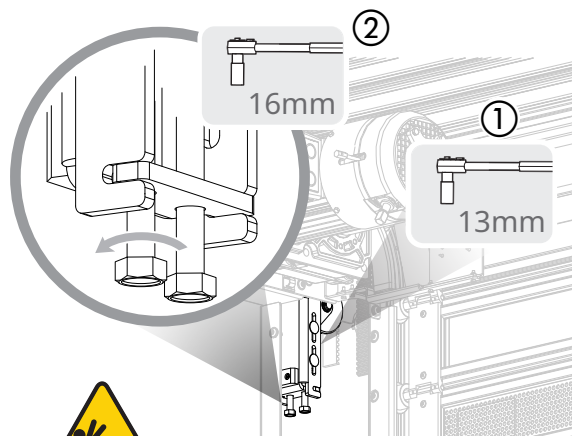
Always adjust the belt to **lower** the side of the door panel that is **higher**.



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.

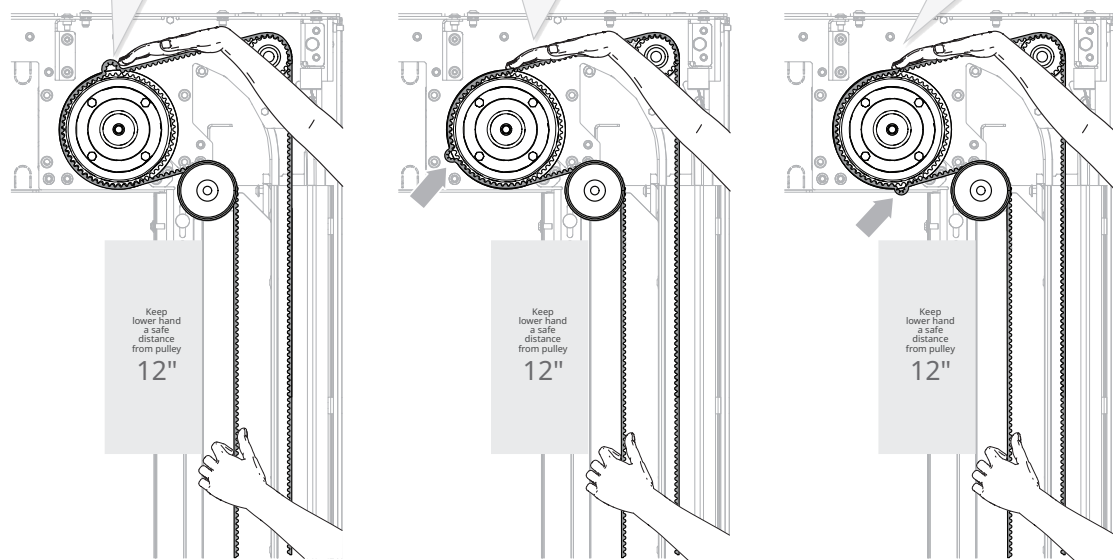
IMPORTANT

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

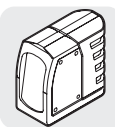
Push slack to create a “wave” in the belt and hold it against the pulley.

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

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



4 **Level** the door panel again.



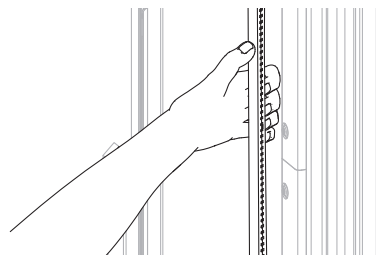
Laser level

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

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

5 **Reset the tension** on the belt as described in *How to tension the secondary drive belts* on page 22.

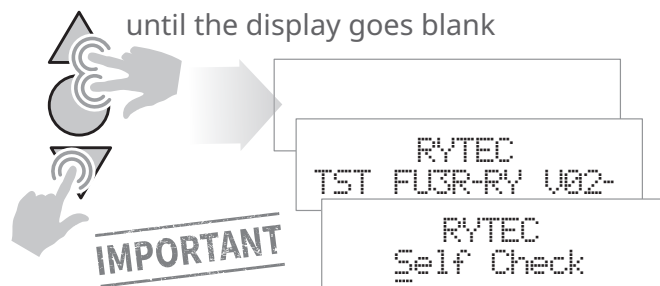
- **Tension is correct** when it requires considerable effort to bring the two legs of the belt, near the midpoint, together until they touch.



6 **Re-tighten** the baseplate pulley assembly and **reinstall** the CAN bracket.

7 Any time a CAN bus cable is disconnected while the power is on, **you MUST do a soft reboot of the controller** to re-sync the CAN bus system when all cables have been reconnected.

- **Press and hold** all three buttons until the display goes blank.
- **Release the buttons.** You see Self-Check or the system software versions number.



How to reverse the rotation of the motor

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

Do This	Result
1 5 sec.	P: Password 0 001= [xxx] Cyc
You are in Parameter mode. Go to parameter 999.	
2	P: Password S 999= 0010 #
until 999 displays The Password parameter (999) screen displays.	
3	P: Password 0 999= 0000v#
You can now change the value of parameter 999.	
4 16x	P: Password 0 999= 0010?#
Set the value to 10 (Service level password).	
5 5 sec.	P: Password S 999= 0010v#
The Service level password is saved. ▪ You must press and hold the Stop/Reset button for five (5) seconds to save the change.	
6	P: Password S 999= 0010 #
You can now go to parameter 130.	

Next: navigate to Parameter 130 and change the value

Do This	Result
1 until parameter displays	P: Mtr Rotation S 130= 0 #
Value is either 0 or 1.	
2	P: Mtr Rotation S 130= 0v#
You can now change the value.	
3	P: Mtr Rotation S 130= 1?#
press either arrow to change value	
4 5 sec.	P: Mtr Rotation S 130= 1v#
The new value is saved. ▪ You must press and hold the Stop/Reset button for five (5) seconds to save the change.	
5 5 sec.	># To Open Pos. _0 Hold Reset
You return to the set limits sequence.	

How to manually reset the close limit (optional)

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

Do This	Result
1 5 sec.	<p>You are in Parameter mode. Go to parameter 999.</p>
2	<p>until 999 displays The Password parameter (999) screen displays.</p>
3	<p>You can now change the value of parameter 999.</p>
4 16x	<p>Set the value to 10 (Service level password).</p>
5 5 sec.	<p>The Service level password is saved. ■ You must press and hold the Stop/Reset button for five (5) seconds to save the change.</p>
6	<p>You can now go to parameter 275.</p>

Next: navigate to Parameter 275 and change the value

Do This	Result
1 until parameter displays	<p>The default value is -12.</p>
2	<p>You can now change the value. ■ 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.</p>
3 until new value displays	
4 5 sec.	<p>The new value is saved. ■ You must press and hold the Stop/Reset button for five (5) seconds to save the change.</p>
5 5 sec.	<p>You return to run mode.</p>

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	<p>The default value is 0.</p>
2 1X to move cursor to the right (edit value)	<p>You can now change the value.</p>
3 4X to change the value to 4	
4 until question mark changes to checkmark (value saved)	<p>The new value is saved.</p>
5 until door returns to run mode	
6 press either arrow to start cycling	

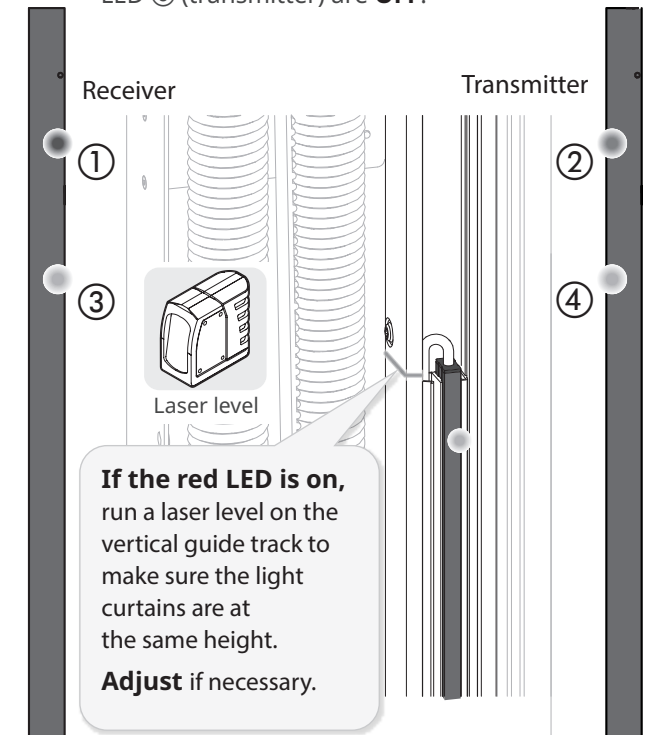
- 1 Watch** the door as it cycles.
 - **Make sure** the door panel rises to the fully open position, remains in place for the standard time, then closes to the fully closed position.
 - **Make sure** the fully open and fully closed positions remain at the set limits.
 - **Make sure** the reversing edge 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 blue LED ① (receiver) and green LED ② (transmitter) on the Advanced³ light curtains are flashing once every two second, and that the red LED ③ (receiver) and yellow LED ④ (transmitter) are **OFF**.

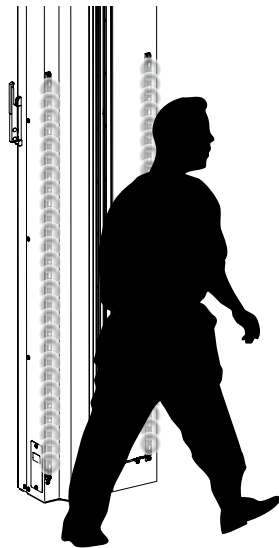


If the red light and yellow lights are on, or if you see a different combination of lights, call Rytec technical support at 800-628-1909.

- 4 Make sure** the SmartSurround™ operates correctly as the door opens and closes:
- **An upward cascade of red lights** while the door opens.
 - **A sequence of blinking yellow lights** matching the delay to close timer before the door starts to close.
 - **A downward cascade of red lights** while the door closes.

5 Test the SmartSurround™ system:

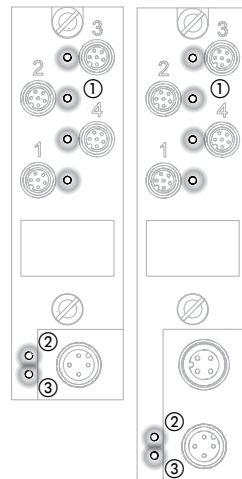
- **Make sure** the light curtains flash rapidly whenever either of the planes are broken.
- **If one plane is broken but the other is not**, the light curtains should reverse/hold the door, then the door should count down and descend at creep speed.
- **If all planes are broken**, the light curtains should reverse/hold the door, then the door should count down and descend at normal speed.



6 LEDs on the CAN repeaters and distributor indicate if the system is working correctly

- ① LEDs next to the ports (blue)** should be ON steadily (no flashing).
- ② The CAN status LED (yellow)** should be flashing one to four times per second.
- ③ The power status LED (green)** should be ON steadily (no flashing).

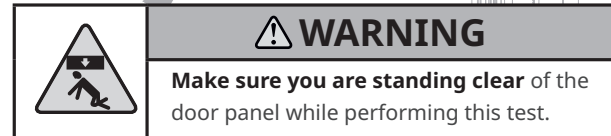
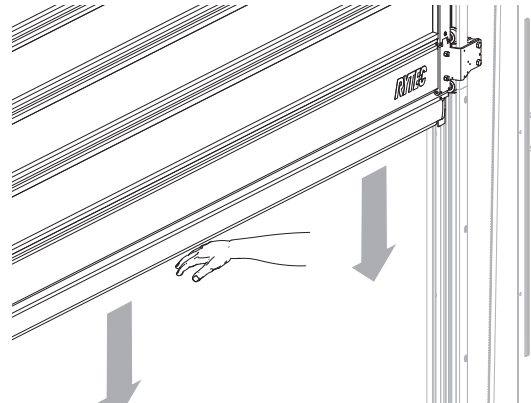
Contact technical support if you do not see this.



- 7 If the door has an active reversing edge (optional), 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.



8 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.

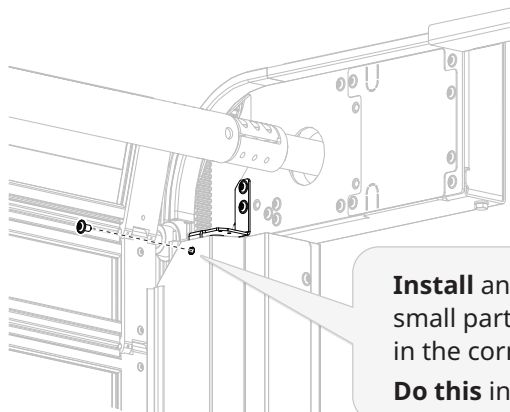
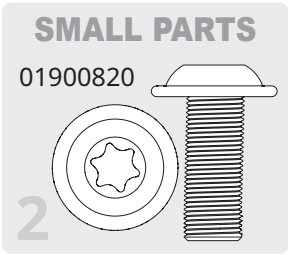
- 9 Activate** the door using each activating system at least three times per system.

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.



Install an additional screw from the small parts box into the screw hole in the corner bracket.
Do this in both side columns.

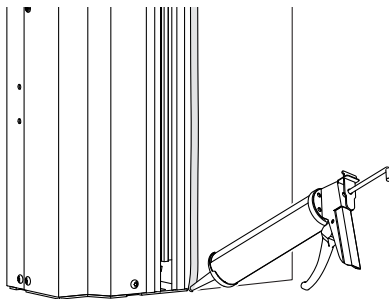
2

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



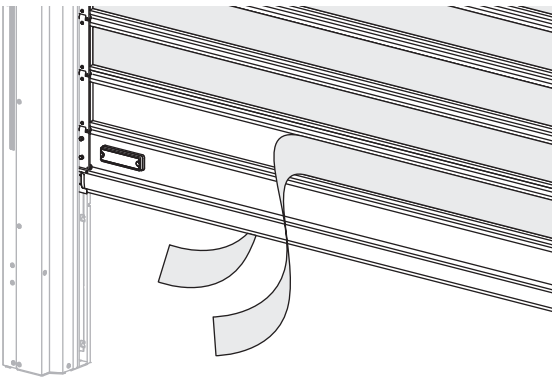
3

Caulk between the door opening and the door.



4

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



	CAUTION
	Film can release a static charge when removed.