Spiral® SST and STT Prewire Installation Manual

Rytec. installation safety information

The meaning of signal words

Summary

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

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

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

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

Safety icons used in this manual

Shock hazard   Fall hazard   Crush hazard   Cut hazard   Forklift
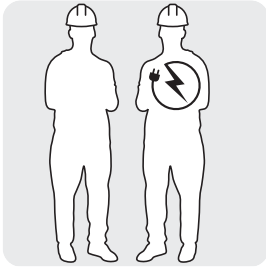
Installation safety

- **Do not install any Rytec product until** you have read and understood the safety information and instructions. Make sure all applicable regulations are observed and obeyed at all times.

- **Observe these precautions** while installing the door:
  - Only trained, qualified and authorized individuals are to install the door and the control system.
  - The installation site comprises the physical area required to safely uncrate, stage and install the door.
  - Make sure all personnel at the installation site have been informed of the date, time and location of the installation.
  - Make sure there is no pedestrian or vehicular traffic within the installation site for the duration of the installation.
  - Make sure you have and use all required Personal Protective Equipment.
  - Make sure you have adequate personnel and equipment to safely perform all lifts.
  - Make sure you have been informed of any hazardous conditions that exist within the installation site.
  - Make sure the installation site is kept clear of obstructions and debris and that the floor is dry.
  - Make sure you are aware of the location of all power lines, piping and HVAC systems within the installation site.
  - Make sure all accessories installed with the door are approved by the manufacturer.

Other icons used in this manual

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.

Requirements – Staffing

- Two installers
- 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.

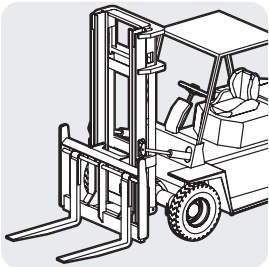| ⚠ WARNING |
|---|
| **Electrical work must meet all applicable local, state and national codes.** |
| Failure to wire the door correctly can cause shock, burns or death to the people who install, use or service the door. |
| Failure to comply also voids the warranty for the door. |

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

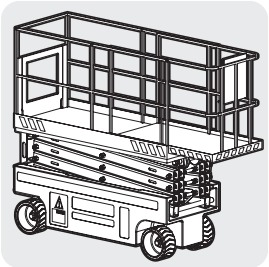| ⚠ WARNING |
|---|
| **A forklift is mandatory** for the safe and proper installation of this door. |

- **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

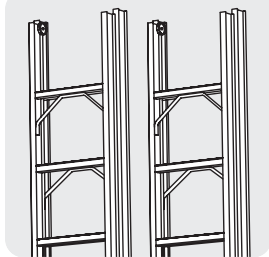- **Alternatively, two ladders** of sufficient height to safely access the door head assembly
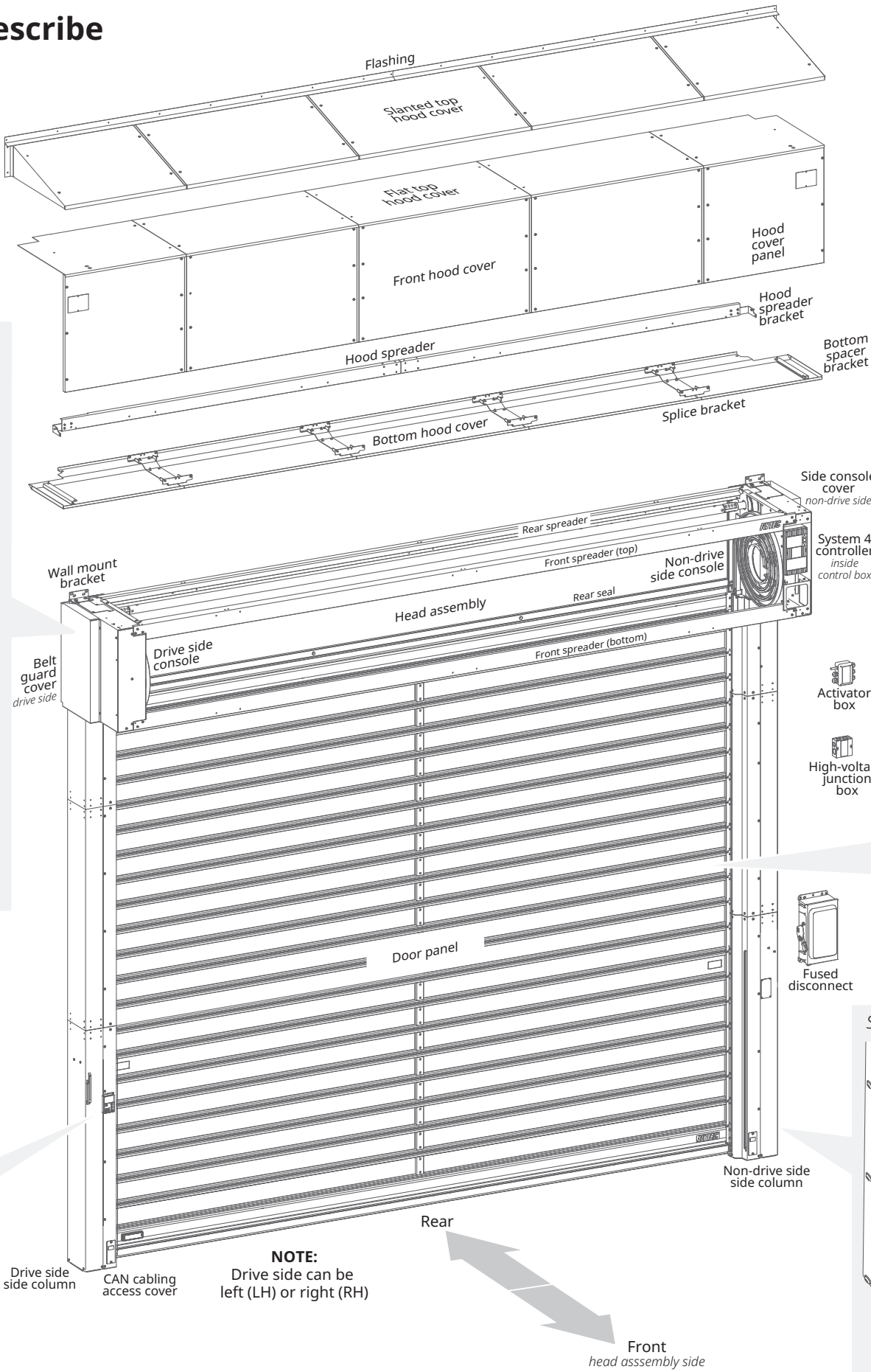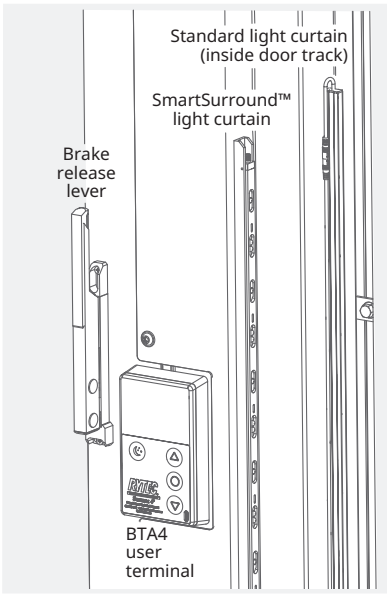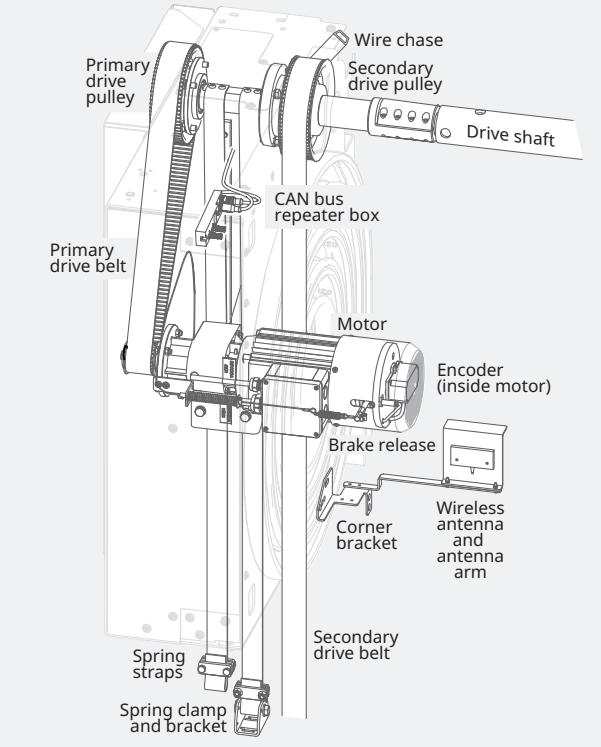
Terms used by Rytec to describe the parts of the door

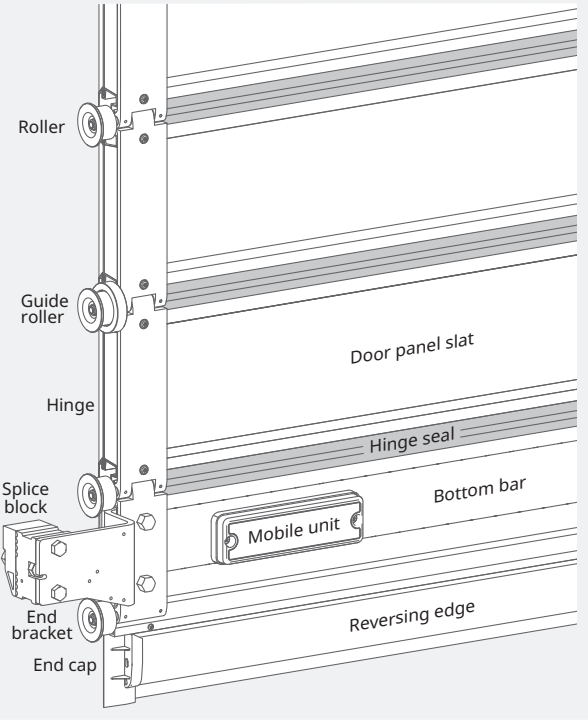This illustration shows the terms used by Rytec technical support to refer to the major components of your door.

Using these terms helps technical support provide assistance as quickly as possible.

Table of Contents

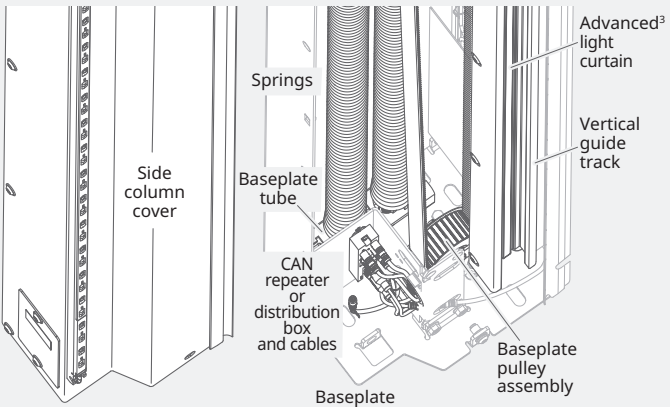*Inside the drive side console*

Wire chase
Primary drive pulley
Secondary drive pulley
Drive shaft
CAN bus repeater box
Primary drive belt
Motor
Encoder (inside motor)
Brake release
Corner bracket
Wireless antenna and antenna arm
Secondary drive belt
Spring straps
Spring clamp and bracket

Flashing
Slanted top hood cover
Flat top hood cover
Front hood cover
Hood cover panel
Hood spreader bracket
Bottom spacer bracket
Hood spreader
Bottom hood cover
Splice bracket

Side console cover *non-drive side*
Rear spreader
Front spreader (top)
Non-drive side console
System 4 controller *inside control box*
Wall mount bracket
Head assembly
Rear seal
Belt guard cover *drive side*
Drive side console
Front spreader (bottom)
Activator box
High-voltage junction box
Door panel
Fused disconnect
Non-drive side side column

Door panel components
Roller
Guide roller
Hinge
Hinge seal
Splice block
Bottom bar
Mobile unit
End bracket
End cap
Reversing edge

Standard light curtain (inside door track)
SmartSurround™ light curtain
Brake release lever
BTA4 user terminal
Drive side side column
CAN cabling access cover

Side column components
Advanced³ light curtain
Springs
Vertical guide track
Side column cover
Baseplate tube
CAN repeater or distribution box and cables
Baseplate pulley assembly
Baseplate

Rear

Front
head assembly side

NOTE:
Drive side can be
left (LH) or right (RH)

2

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.
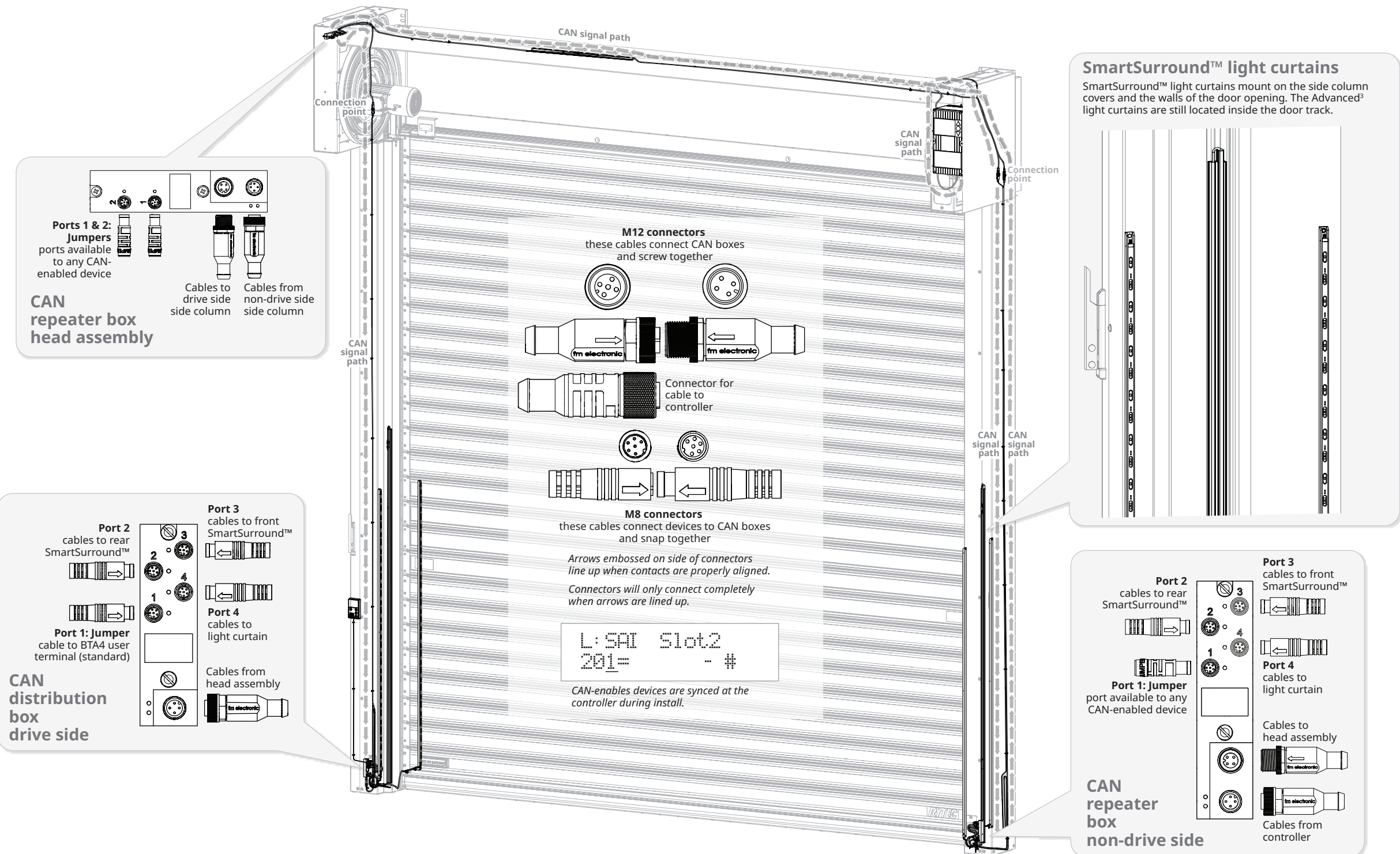
CAN bus cabling

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 at the base of the non-drive side side column, then across the rear spreader to the CAN repeater box in the head assembly, then **terminates at the CAN distribution box** at the base of the drive side side colum.

- CAN-enabled Rytec devices **can plug into any available port in any CAN box**. For example, the CAN-enabled BTA4 user terminal plugs into a baseplate port when preintalled on the side column, or a head assembly port if it is field installed remotely from the door.

- **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 light curtain detection planes**. The front SmartSurrounds™ are mounted on the side column covers. The rear units are field installed on the walls of the door opening.

- 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.

CAN repeater box head assembly

Ports 1 & 2: Jumpers ports available to any CAN-enabled device

Cables to drive side side column

Cables from non-drive side side column

CAN distribution box drive side

Port 2 cables to rear SmartSurround™

Port 3 cables to front SmartSurround™

Port 4 cables to light curtain

Port 1: Jumper cable to BTA4 user terminal (standard)

Cables from head assembly

M12 connectors these cables connect CAN boxes and screw together

Connector for cable to controller

M8 connectors these cables connect devices to CAN boxes and snap together

Arrows embossed on side of connectors line up when contacts are properly aligned.

Connectors will only connect completely when arrows are lined up.

```
L:SAI   Slot2
201=        - #
```

CAN-enables devices are synced at the controller during install.

CAN signal path

Connection point

SmartSurround™ light curtains

SmartSurround™ light curtains mount on the side column covers and the walls of the door opening. The Advanced[3] light curtains are still located inside the door track.

CAN repeater box non-drive side

Port 2 cables to rear SmartSurround™

Port 3 cables to front SmartSurround™

Port 4 cables to light curtain

Port 1: Jumper port available to any CAN-enabled device

Cables to head assembly

Cables from controller

Spiral® Installation Manual for SST (Solid Panel) and STT (Full Vision Panel) Prewire Models

Call 800-628-1909

or email helpdesk@rytecdoors.com

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

## How to uncrate the door and inspect the installation site

IMPORTANT

Spirals ship in two crates (three if there is a slanted hood cover).

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

All parts for the door are in these crates.

If more than one door is to be installed, **treat each set of crates as a separate installation.**
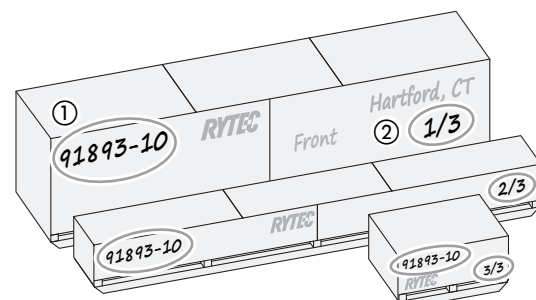
Mixing parts from different doors voids the warranty for all doors in the installation.

1 **Remove** all top panels.

Pry bar

INSIDER'S TIP

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

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

---

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

Flat top hood cover (optional): preinstalled. Must be removed to access the head assembly components, then reinstalled.

Front hood cover (optional): preinstalled. Some panels must be removed, then reinstalled.

Head assembly: check the serial number on the label (inside top, non-drive side).

Drive belt guard cover: indicates drive side. May be left (LH) or right (RH). LH is used for this manual.

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.

Bottom hood cover (optional): panels are crated in front of head assembly, and brackets are crated under the lifting cradle.

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

SmartSurround™ light curtains: packed in tube

Side columns: check the serial number on the label.

Slanted top hood cover (optional): third crate holds panels and brackets. Number varies based on size of door.

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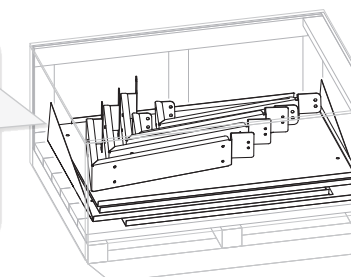
3 **Check your tools.** **Make sure** you have all tools and supplies for the installation.

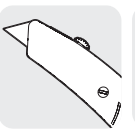**Tools you need**
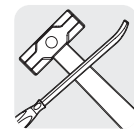
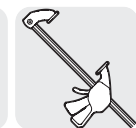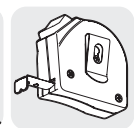| Pry bar and mallet or reciprocating saw | Crowbar | Cutting pliers | Utility knife | Precision screwdriver | Flat screwdriver |

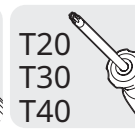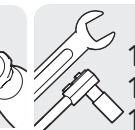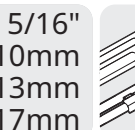| Laser level | (2) Bar clamps | Measuring tape | Spirit level | Carpenter's square | Anchoring tools |
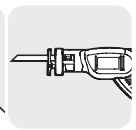
Hardware tools and sizes (manual or powered)

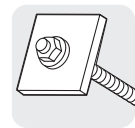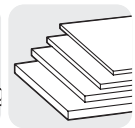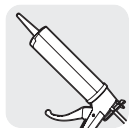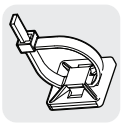| #2 Phillips screwdriver | T20 T30 T40 Torx screwdriver | 5/16" 10mm 13mm 17mm Socket or open wrench | 7mm 10mm 13mm (2) Sockets or wrenches needed |

You also provide

| Anchoring hardware | Shims | Caulk | Cable ties and anchors |

4

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

Tape measure

Object list
Original

Material number
724

Material description
SPIRAL STT-L-

MRP controller
500
B5 ZMAT

Production scheduler
T7
Tier 7

Order type
ZP02
RYTEC MTO Order

Status
REL MSPT PRT PRC SETC

Plant
2000
Rytec Corporation -

Serial number
D0091893-010

Configuration
DOOR MODEL NAME   Spiral Full Vision "L"   ①
Door Width (Inches)   144.094 *144-1/16*   ②
Door Height (Inches)   128.346 *128-3/8*
Production Width in mm 3,660
Production Height in mm 3,260
Door head sizeB
Line Voltage 460V
motor mount side   Right Hand Moto
Motor Duty   Standard Duty Motor
Horsepower   2.0
Number of solid slats   0
Number of vent slats   0
Brake Release Location Release le
Hood style   No spiral hood type
Number of Springs 4
Spring Tension (in)   4.724

> **Description lists**
> if door is small (-L, -L/R), large (-S, -S/R) or extra large (-US, -US/R).

Write on object list:
Width to center = 1/2 ①
Total width = ③
Total height = ② + ④

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 nearest 1/16 inch.

2. **Measure the door opening** to make sure the width and height match the numbers on the object list.

3. **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.

4. **Find the total width of the door:** measure the width of the head assembly ③ in the crate. **Write this number** on the object list.

5. **Calculate the total height of the door:**
   - Start with the Door Height ②.
   - Measure the height of the head assembly ④ in the crate. Add this to ②.
   - Add 13 inches (13") to account for the height of the forklift backrest or an optional slanted hood. **Write this number** on the object list.

6. **Make sure there is enough space to lift the door:** make sure the site has space for the total width and the total height you calculated.

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

③

④

Height of forklift backrest or slanted hood

13"

Total width ③

④

Total height ⑤

①

②

1/2 ①
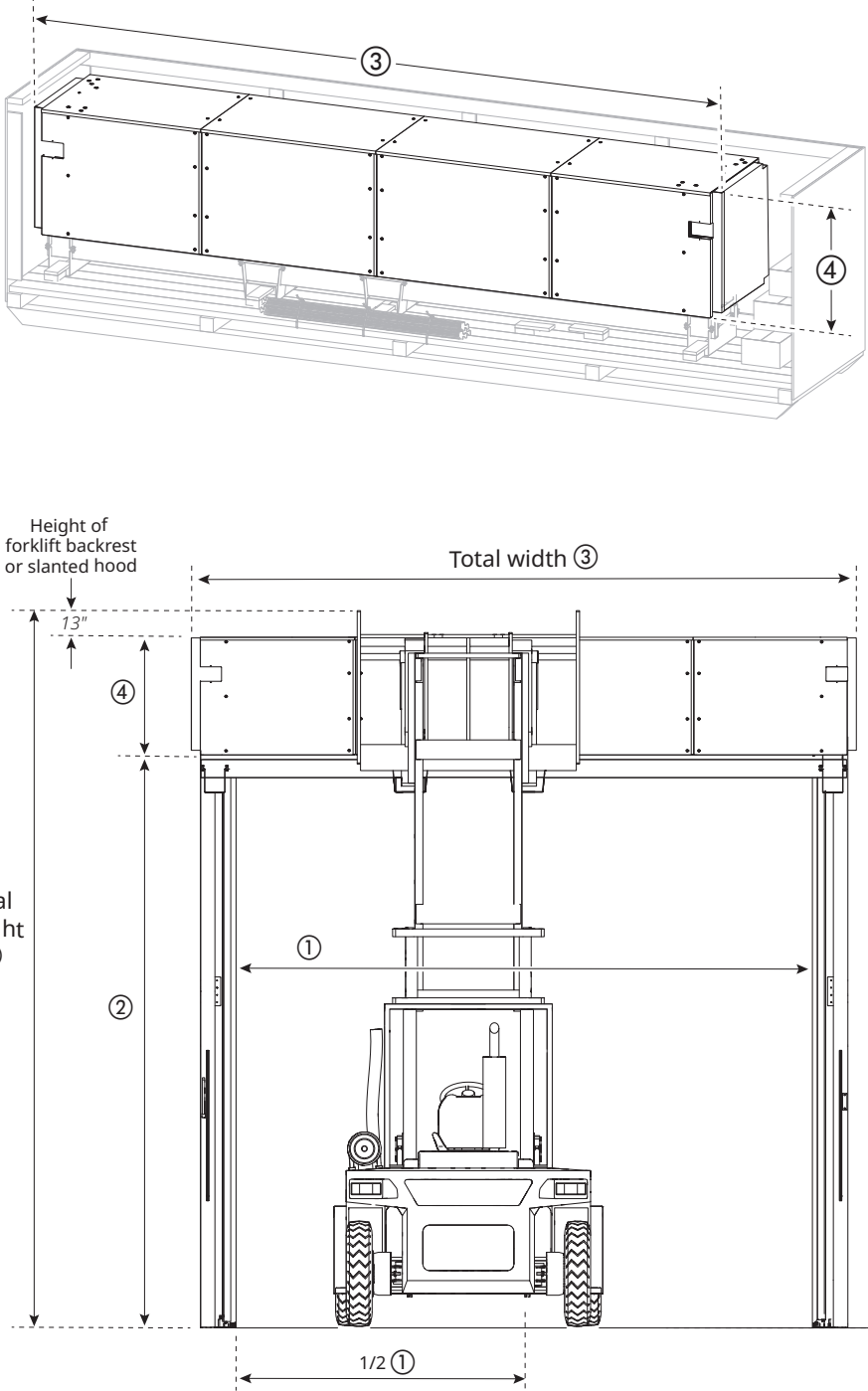
5 If all checks are good, **finish uncrating** the door. Starting at the center, remove the crossbars, then remove the front panel.
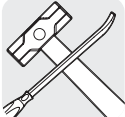
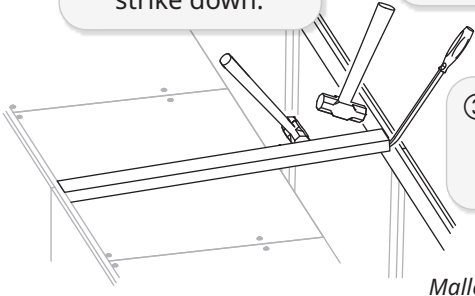Mallet and pry bar

or
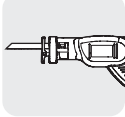
Reciprocating saw

⚠ **CAUTION**

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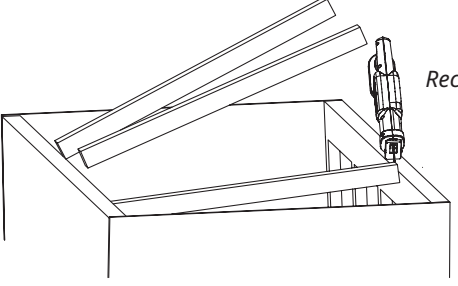
Keep hands clear while striking or cutting.

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

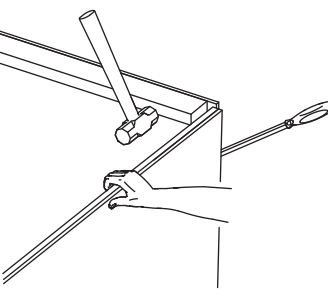> ② **Strike** the side panel to expose nails.

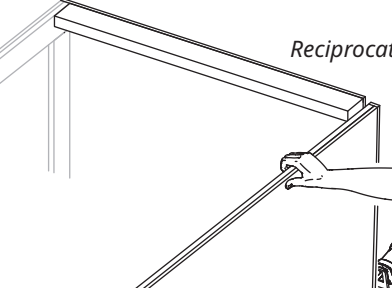> ③ **Pry up** to remove crossbar.

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
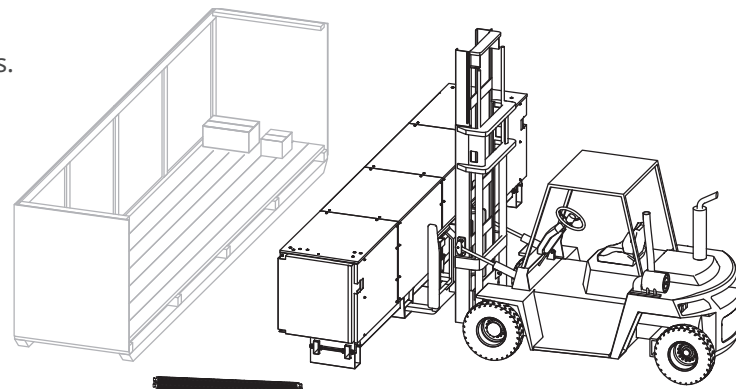
Reciprocating saw

5

How to prep the head assembly

1 **Remove** springs, blocks and (optional) hood cover panels for clear access.

Use a forklift to move the head assembly to an open space.

INSIDER'S TIP

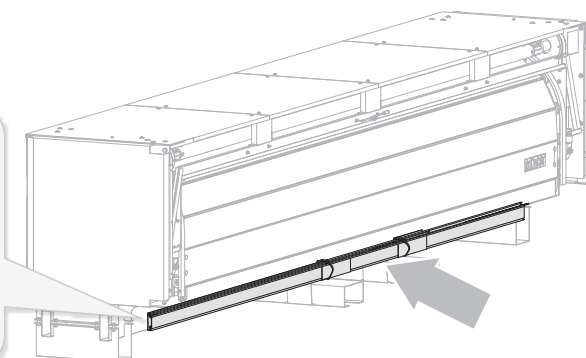After the head assembly is removed, **use the crate** to stage parts until they are needed.

2 **Locate and remove** the rear seal (rear spreader). It is tied to the **back of the lifting cradle.**

Cutting pliers

If the door has a **slanted top hood cover,** the flashing will also be tied to the cradle.

If the door has a **bottom hood cover,** the bottom hood spreader will also be tied to the cradle.

How to remove the side console covers and side column screws

1 **Smaller (-L and -L/R) doors: remove the front console cover** ④ to access the top screw for the belt cover.

- **If the door has a preinstalled flat top** hood cover ①, remove this end panels first.
- **If the door has a preinstalled front** hood cover ②, remove this end panels next. The end spacer bracket ③ is removed with the console cover.

number of torx screws varies based on size of door

KEEP REUSE T40
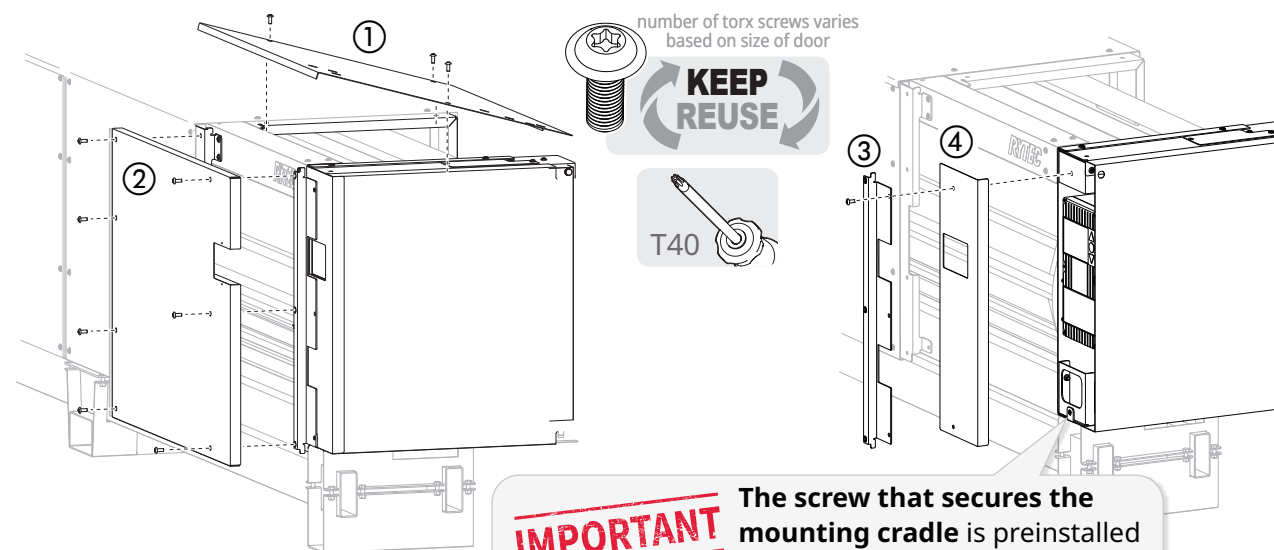
Do this on both sides of the head assembly.

IMPORTANT The screw that secures the **mounting cradle** is preinstalled behind the cover and bracket.

Do not remove it until the head assembly has been lifted into place.

2 **-L and -L/R doors: remove** the side console covers.

NOTE: this is called the **belt guard cover** on the drive side.

Do this on both sides of the head assembly.

T40

2 **1** **KEEP REUSE**

13mm
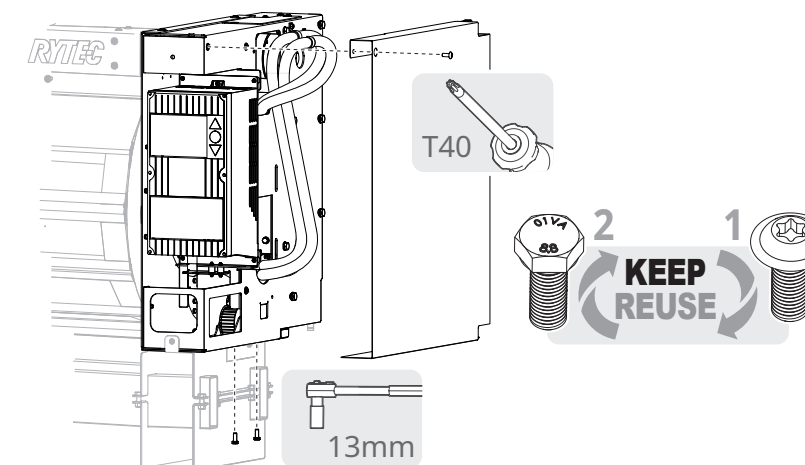
3 **-S and -S/R doors: remove** the side console covers.

Do this on both sides of the head assembly.

INSIDER'S TIP **You do not need to remove the front cover.** Removing the non-drive (controller) side front cover may make the installation easier.

- **To do this,** follow Step 1 for smaller (-L,-L/R) doors.

T40

4 **KEEP REUSE**

6
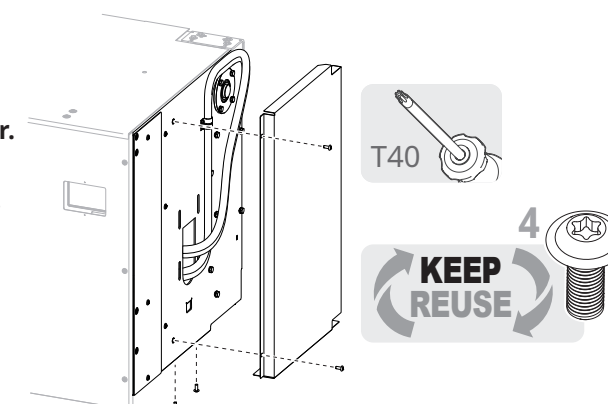
4 -S and -S/R doors: **look for** the wall mount brackets at the top rear corners of the head assembly.
Remove the screws and washers and **flip** each bracket so the flange points up.
Line up bracket with the rear of the head assembly, then **reinstall** the screws and washers.

Brackets are labeled with yellow tags.
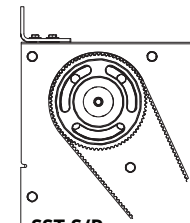**Remove tags** before flipping brackets.

If the door has a slanted top hood cover, **do not reinstall** the outer screws and washers until the cover is installed.

13mm

Cutting pliers
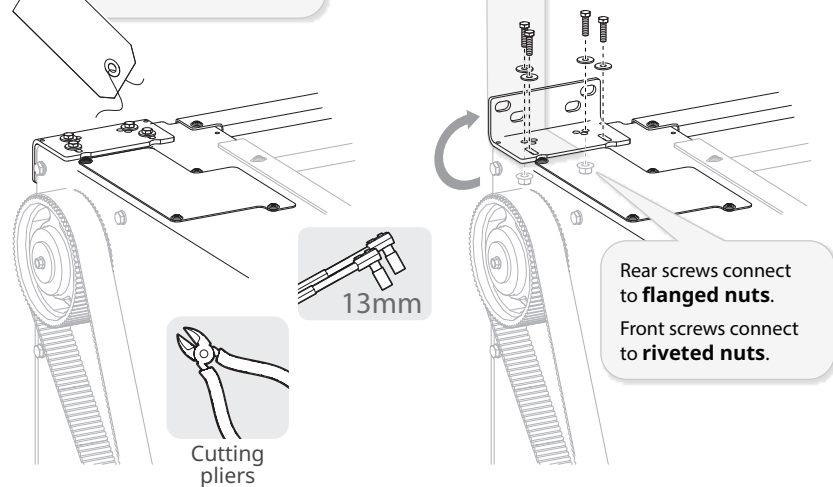
Rear screws connect to **flanged nuts**.
Front screws connect to **riveted nuts**.
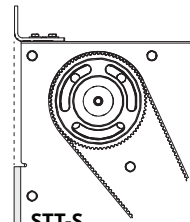
STT-S
Full vision doors have a spacer at the rear of the head assembly.
***Line up bracket** with spacer.*

SST-S/R
Solid panel doors have no spacer.

5 **IMPORTANT** **Protect your cables!**
Make sure all cables preinstalled in the head assembly are clear of the side columns and won't get pinched or crushed when the head assembly is installed.

On the non-drive (controller) side, **reach** into the console and place the two cables with junction boxes on top of the head assembly.

Make sure as much of the cables as possible are clear of the side columns (non-shaded area).

Leave the pulley, spring strap and other cabling in place.

In both consoles, look for the preinstalled CAN connector(s) (unattached cable with M12 connector descending from wire chase).

If the cable hangs below the bottom of the head assembly (dotted line), **use a cable tie** to keep it clear of the bottom.

Cable ties
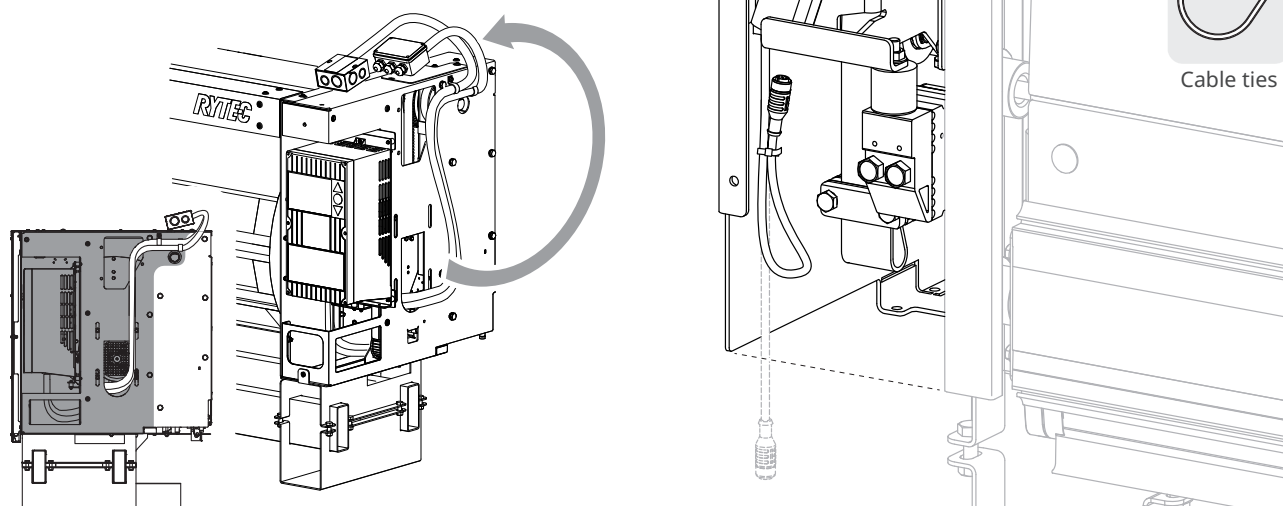
6 **IMPORTANT** **Protect the brake release cable!**
The cable is preinstalled, and can be damaged when the head assembly is raised onto the side columns. This extra step puts it out of harm's way.

Unscrew the retaining nut, cut the cable tie and slide the cable through the hole in the console.

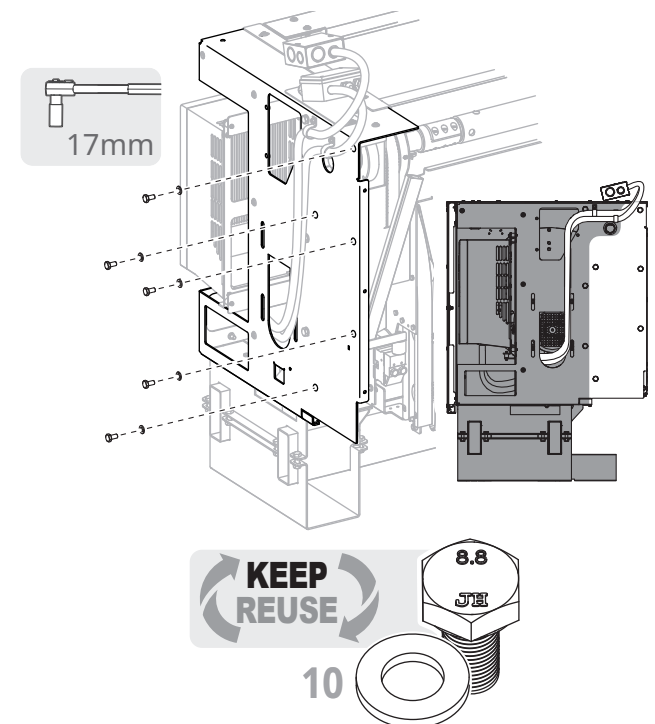**Slide the nut** up the cable and reattach.

Coil the cable inside the console.

10mm
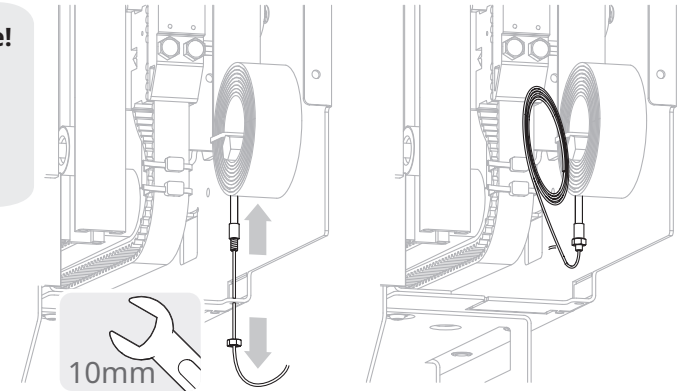
7 **Remove** the five preinstalled side column screws (located in the non-shaded area).

Do this on both sides of the head assembly.

17mm

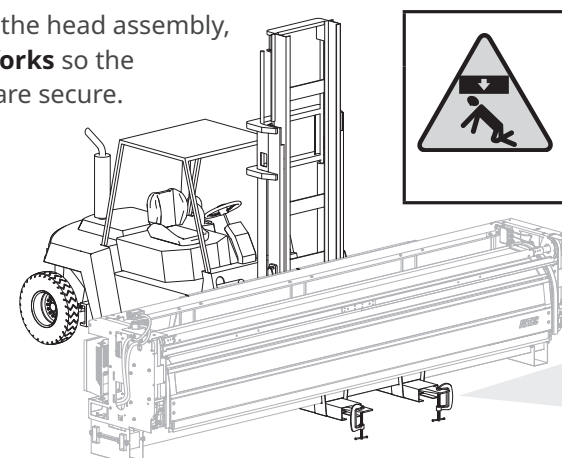**KEEP REUSE** 8.8

10

8 Before lifting the head assembly, **clamp both forks** so the fork pockets are secure.
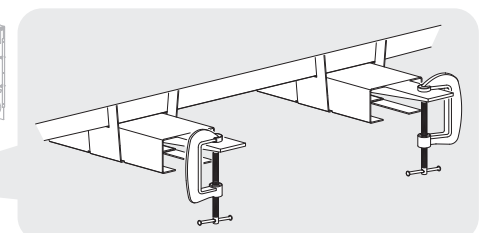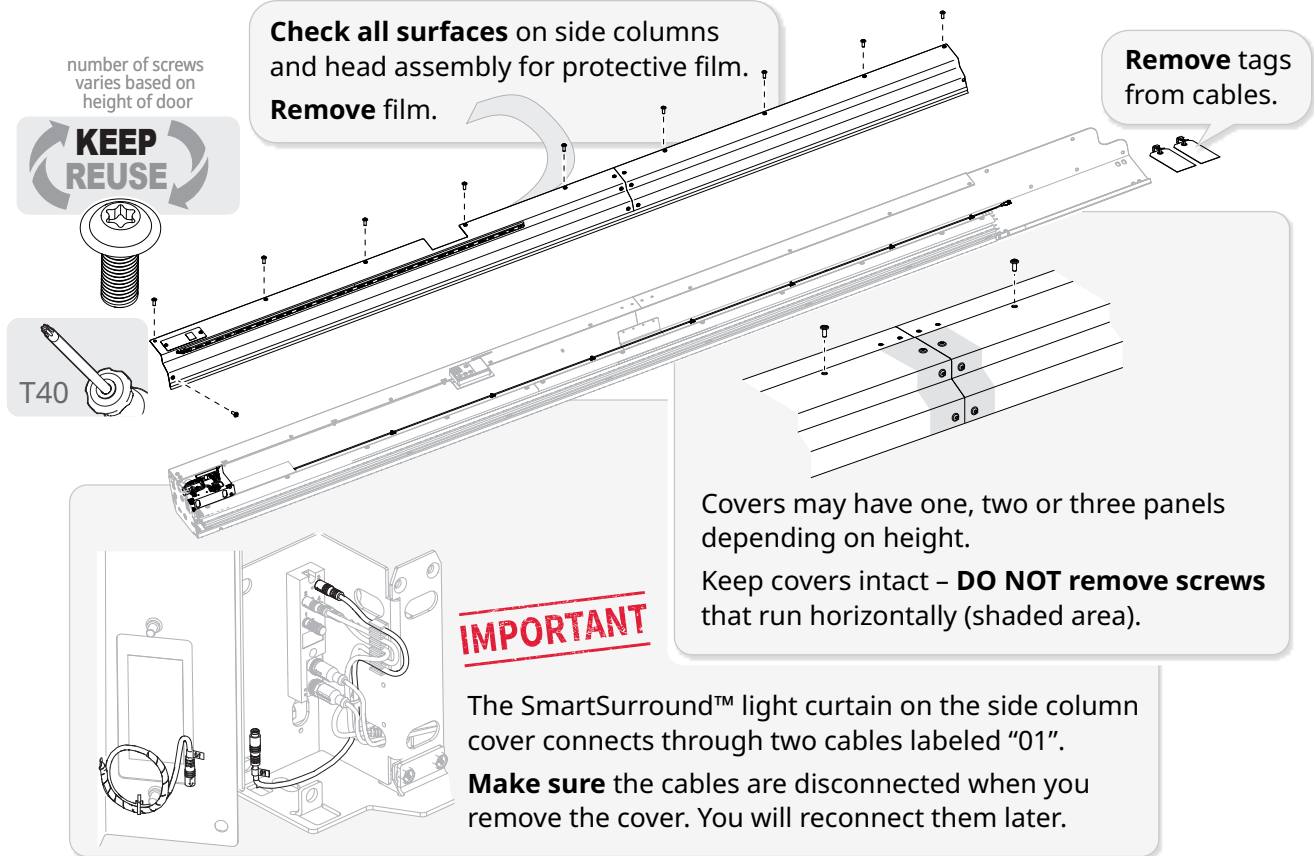
C-clamp (2)

⚠ WARNING

Do not lift the head assembly unless it has been clamped or secured to both forks of the forklift.
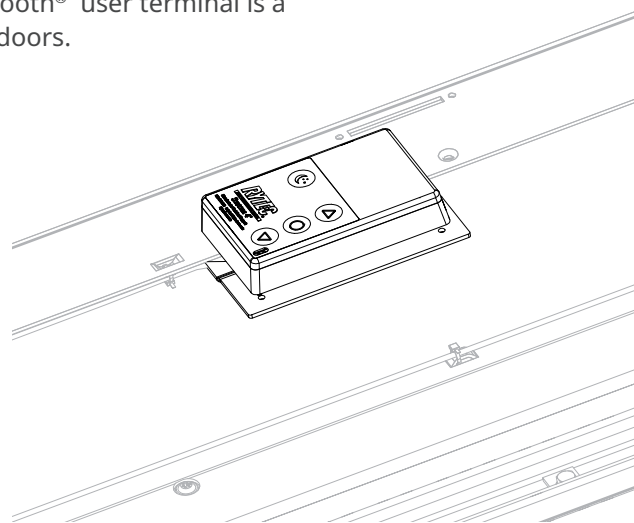
7

How to prep the side columns

1 **Remove** the covers on both side columns.

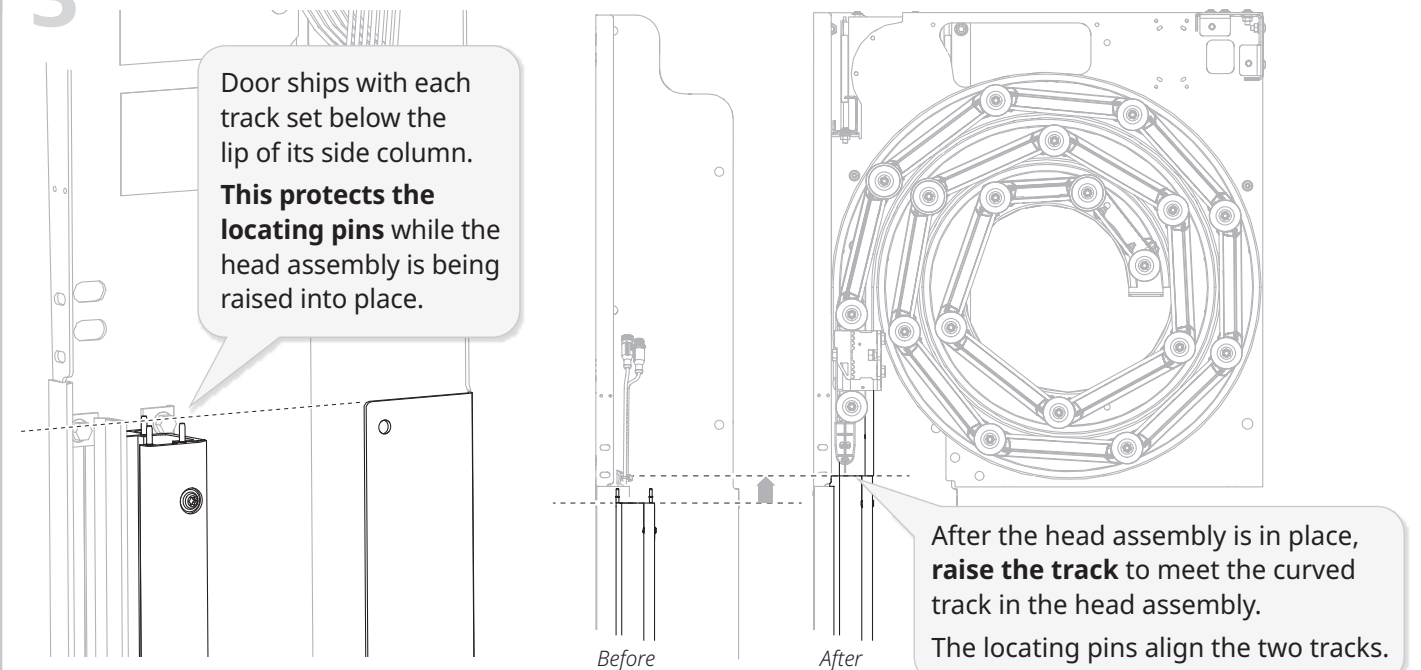Screws for side column covers run in a vertical line. There is also one screw at the base of the column.

number of screws varies based on height of door

KEEP REUSE

T40

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

Remove tags from cables.

Covers may have one, two or three panels depending on height.
Keep covers intact – **DO NOT remove screws** that run horizontally (shaded area).

IMPORTANT

The SmartSurround™ light curtain on the side column cover connects through two cables labeled "01".
Make sure the cables are disconnected when you remove the cover. You will reconnect them later.

2 **IMPORTANT** **Beginning in 2022,** the BTA4 Bluetooth® user terminal is a standard feature of Spiral prewire doors.

- The BTA4 can be **preinstalled** in a side column, or **field installed** at a location remote from the door.

- **If you do not see** a BTA4 terminal preinstalled in either side column, check with the door owner for where they want the terminal installed, and read *(Optional) How to install the BTA4 user terminal in a remote location* on page 22.

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

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

Before   *After*

After the head assembly is in place, **raise the track** to meet the curved track in the head assembly.
The locating pins align the two tracks.

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

13mm

Loosen, but do not remove, each pair of track holders.
The number of holders varies based on the height of the column.
The track should slide freely when you are done.
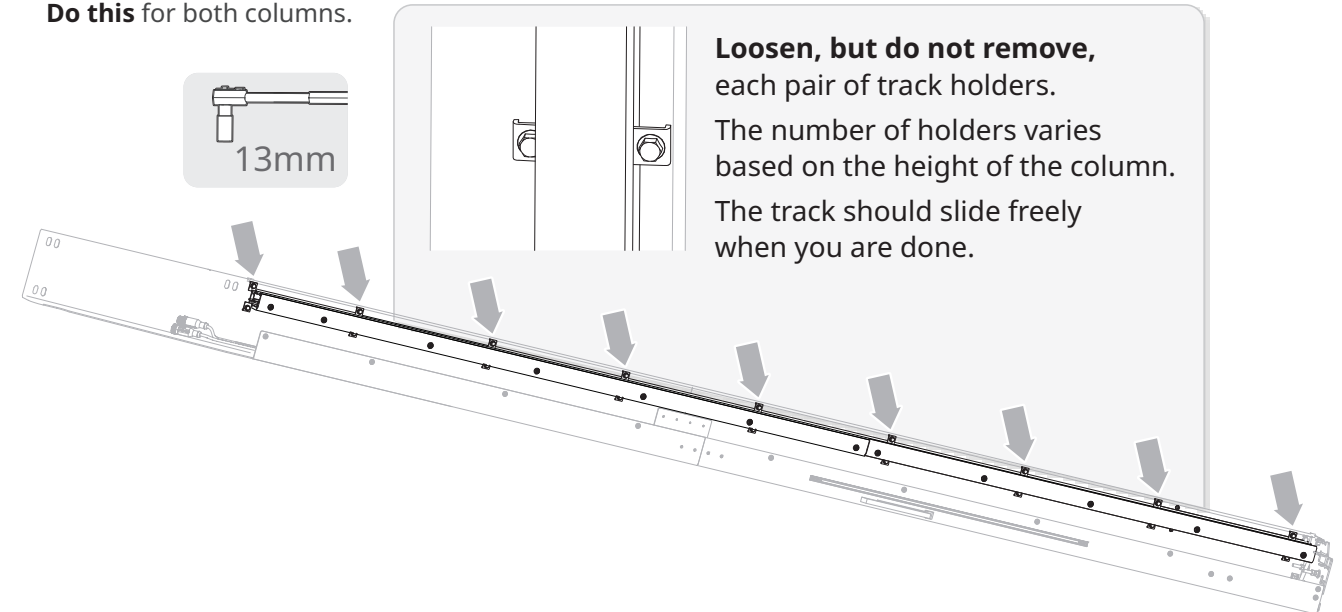
5 13mm Select one holder at the halfway point of the side column and **hand tighten the screws** to secure the guide track in place. **Do this** for both columns.

The tracks can now be repositioned easily after the side columns are installed, but will not slide while the columns are being lifted into place and leveled.
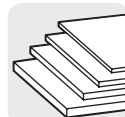
8

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			
Original			724

1: Measure the width of the door opening (w) and find the halfway point ($\frac{1}{2}w$).

Mark the centerline there.

Width to center = 1/2 ①

w

$\frac{1}{2}w$

90°

1/2 ①

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: where to find the anchor points on the Spiral side columns

1

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

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

- Position anchors at the **horizontal center** of the anchor holes.

How to anchor the door:

- **Use** 1/2" diameter through bolts, 1/2" diameter threaded rods or equivalent to anchor the side columns.

- Anchoring hardware and materials must be provided by the door owner or installer.

- **Make sure** the anchors do not interfere with the moving parts of the door.

2

INSIDER'S TIP

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

3

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

You must use at least two baseplate anchors.

To access all three anchor holes:

- **Remove** the bolts and **move** the bracket and CAN terminal out of the way. **Make sure** you do not disconnect any cables when moving the bracket.

2 5550300

W.T 90

KEEP REUSE

13mm

9

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

Shim

Shim

Shim

Shim

Wall not plumb   Surface obstructions

2 **Level** the floor.

Laser level

Measuring tape

Measure distance from floor to laser line on both sides of door opening.

If measurements are the same, the floor is level.

26"

26"   27"   ✓   ✗

26"

If measurements are not the same, shim the side with the larger number. Use the difference for the height of the shim.

Measurements should match when you measure with the shims in place.

3 **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.
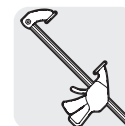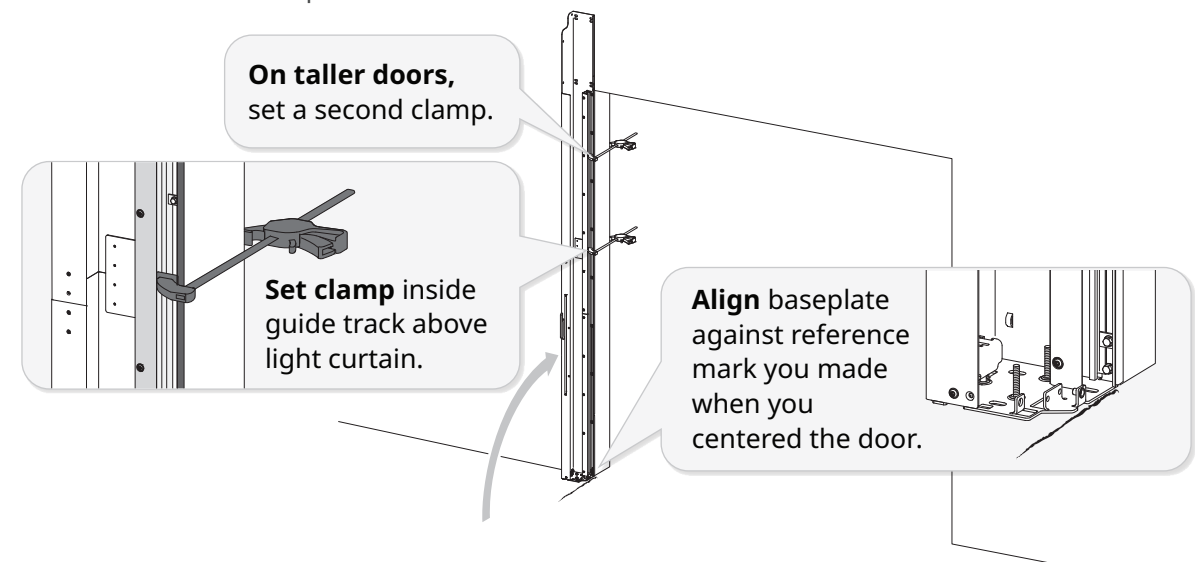
5 **Plumb** the side column.

Laser level

Use the screws on the track holders as your reference.

These give the best reference for plumb.

10
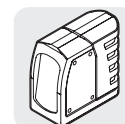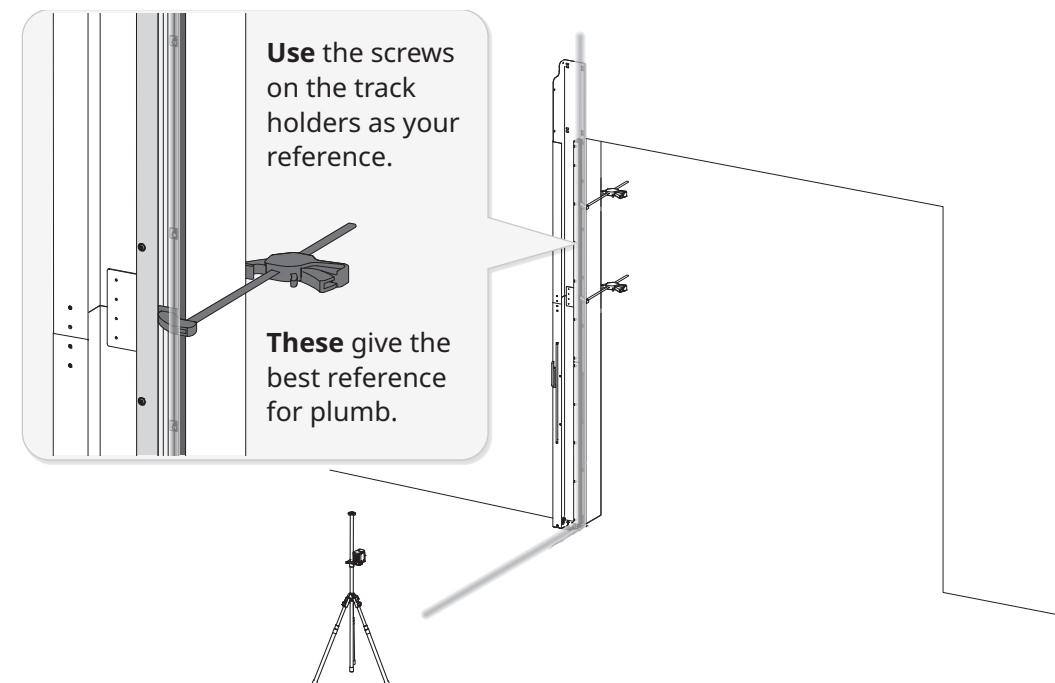
6 **Remove** the bolts and **move** the bracket and CAN terminal to allow access to all anchor holes ①,②,③.

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 21.

2 5550300

W.T 90

KEEP REUSE

13mm

① ② ③
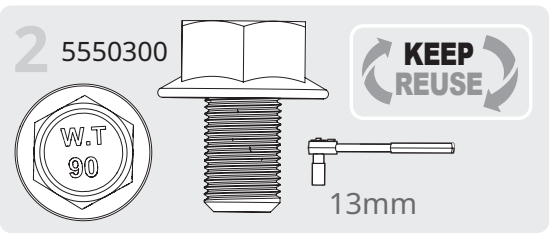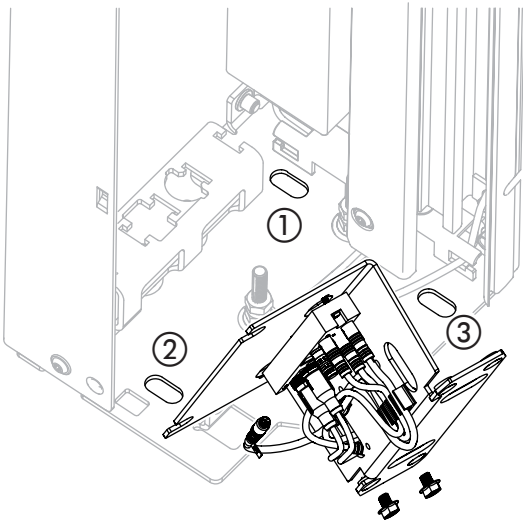
Do this on both side columns before anchoring.

7 Anchoring hardware — **Anchor** the first side column to the wall at the **top of the column** and **baseplate**.
Set anchors tight. **Remove** clamp.

IMPORTANT **Make sure** you have read *Before you begin* on page 9 before you start.

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

Measuring tape

Carpenter's square

Object list
Original

Material number
724

Material description
SPIRAL STT-L

Order number 20000597   Order quantity 1 EA

MRP controller 500   Production scheduler T7   Order type ZP02 RYTEC MTO Order   Start 06/03/2019   Finish 06/05/2019
B5 ZMAT   Tier 7

Status   Plant 2000   Reservation number 0002425475   Creation Date 05/31/2019
REL MSPT PRT PRC SETC   Rytec Corporation -

Serial number
D0091893-010

Configuration
DOOR MODEL NAME   Spiral Full Vision "L"
Door Width (Inches)   144.094 144 1/16   ①
Door Height (Inches)   128.346
Production Width in mm 3,660
Production Height in mm 3,260
Door head sizeB
Line Voltage 460V
motor mount side   Right Hand Motor
Motor Duty   Standard Duty Motor
Horsepower   2.0
Number of solid slats 0
Number of vent slats   0
Brake Release Location Release lever on side column
Hood style   No spiral hood type
Number of Springs 4
Spring Tension (in)   4.724
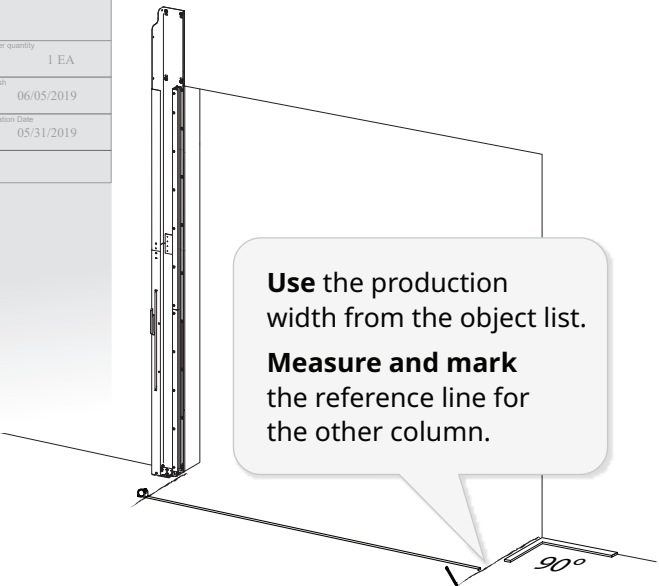
Use the production width from the object list.

Measure and mark the reference line for the other column.

90°

9 Clamp the non-drive side column into place.

Bar clamp

On taller doors, set a second clamp.

Set clamp inside guide track above light curtain.

Align base plate against reference mark.
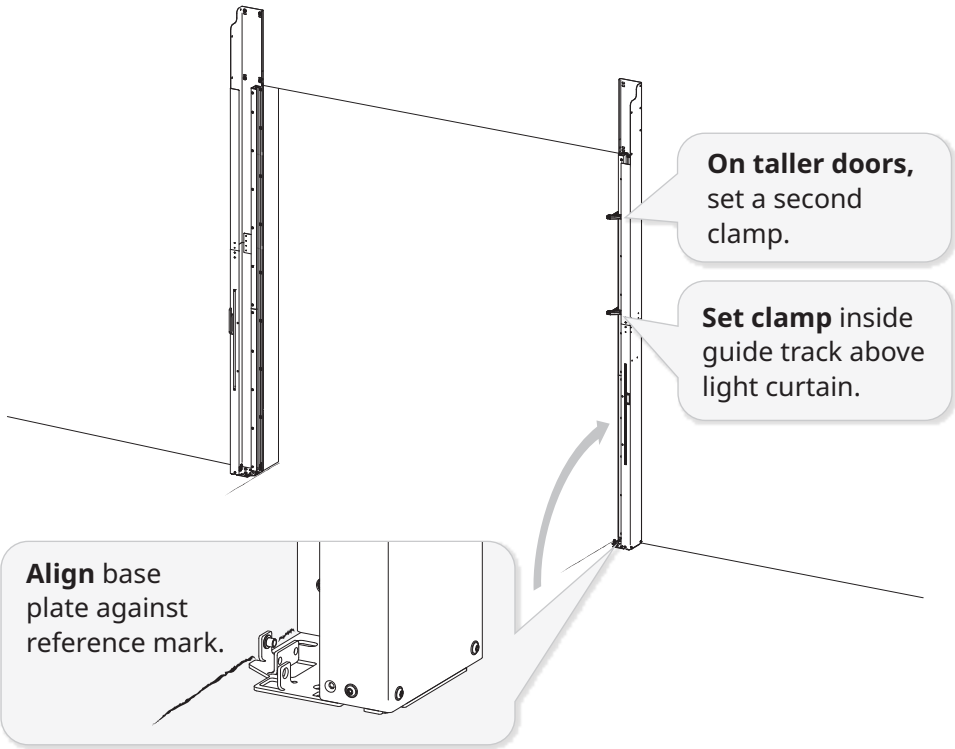
10 Anchoring hardware — **Anchor** the second side column to the wall, but **DO NOT SET ANCHORS TIGHT** until after the head assembly is installed.

IMPORTANT **Make sure** you have read *Before you begin* on page 9.

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

Laser level

Measuring tape

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

Adjust angle of laser level until all measurements match.

11
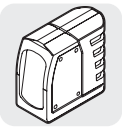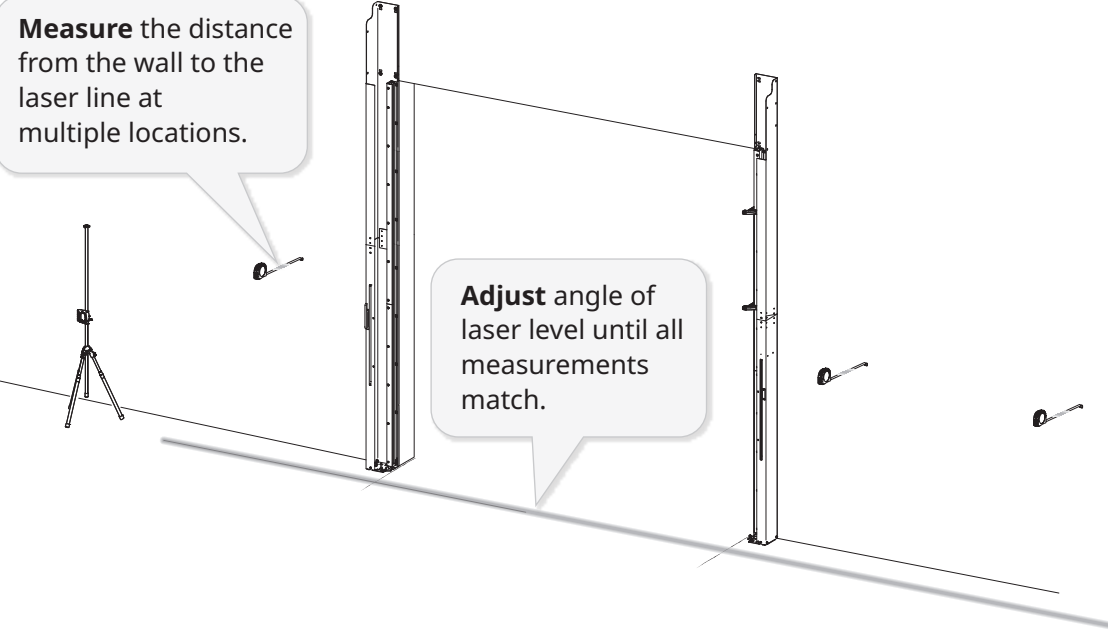
12 **Plumb** the side columns to each other.

Laser level

Measuring tape

Measure distance from front of each column to laser line.

Distances must match.
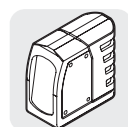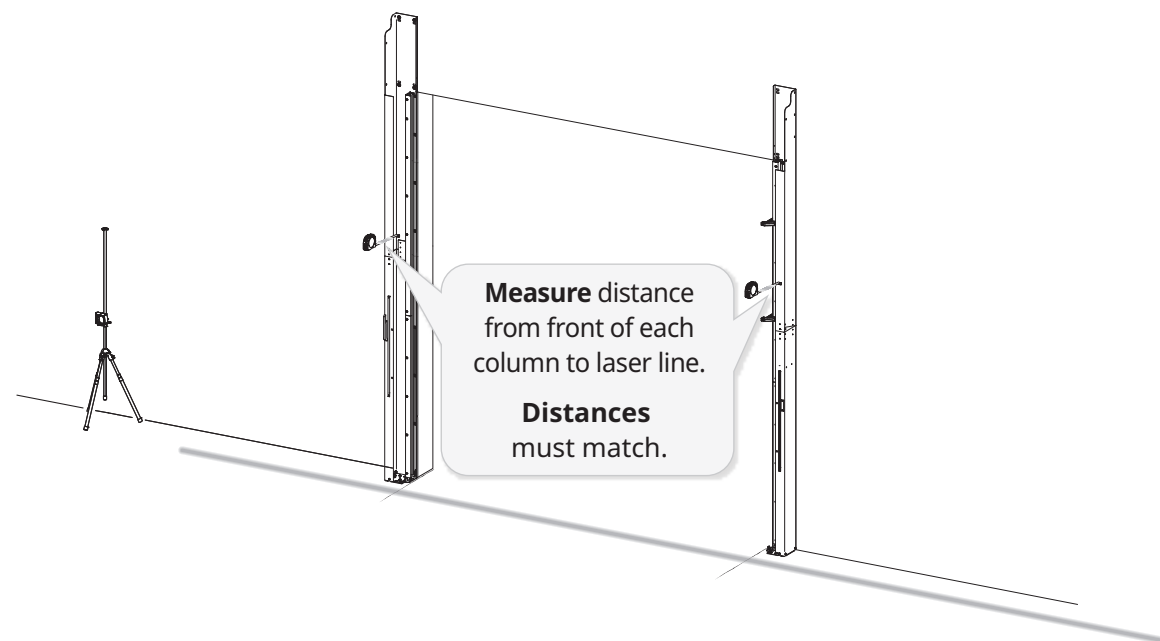
13 **If necessary, shim** the side columns so they are plumb to each other.
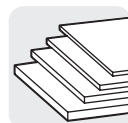
Shims

Step 2: Install the rear seal

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

10mm

Drive side

Hand tight

Non-drive side

SMALL PARTS
0550259-0Z01

CF 8.8

4
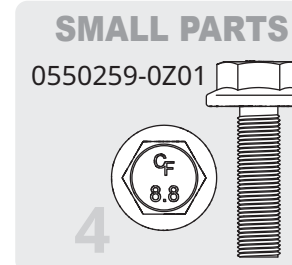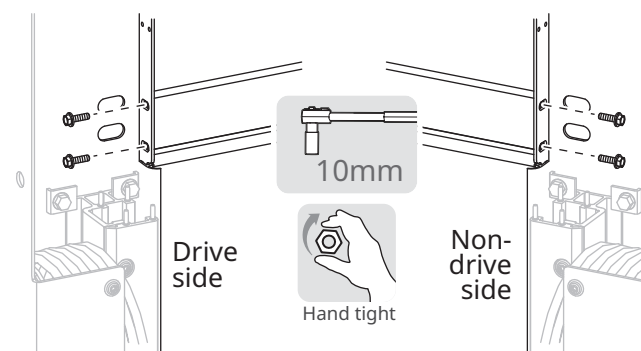
2 **Make sure** the back of the seal is flush with the back of the side column and that there is direct contact with the wall.

- If necessary, **shim the seal** where it meets both side columns and at the anchor point so that both conditions are met.
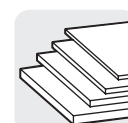
Shims
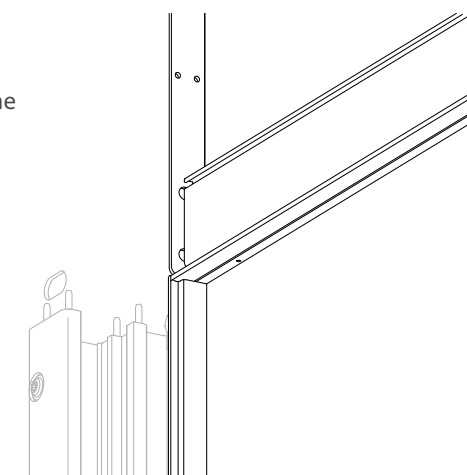
3 **Make sure** the rear seal is level.
Anchor rear seal to wall at all anchor points.

Spirit level

Anchoring hardware

Check level

Anchor point
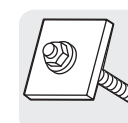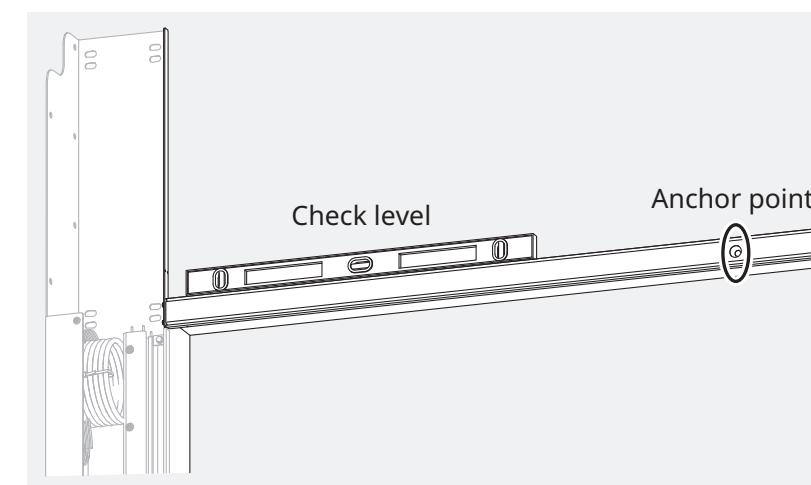
4 **Tighten** the bolts on both sides of the seal.

10mm

12

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

1 **Plumb** both side columns from the front again.
Realign if necessary.

Laser level

Use the screws on the track holders as your reference.
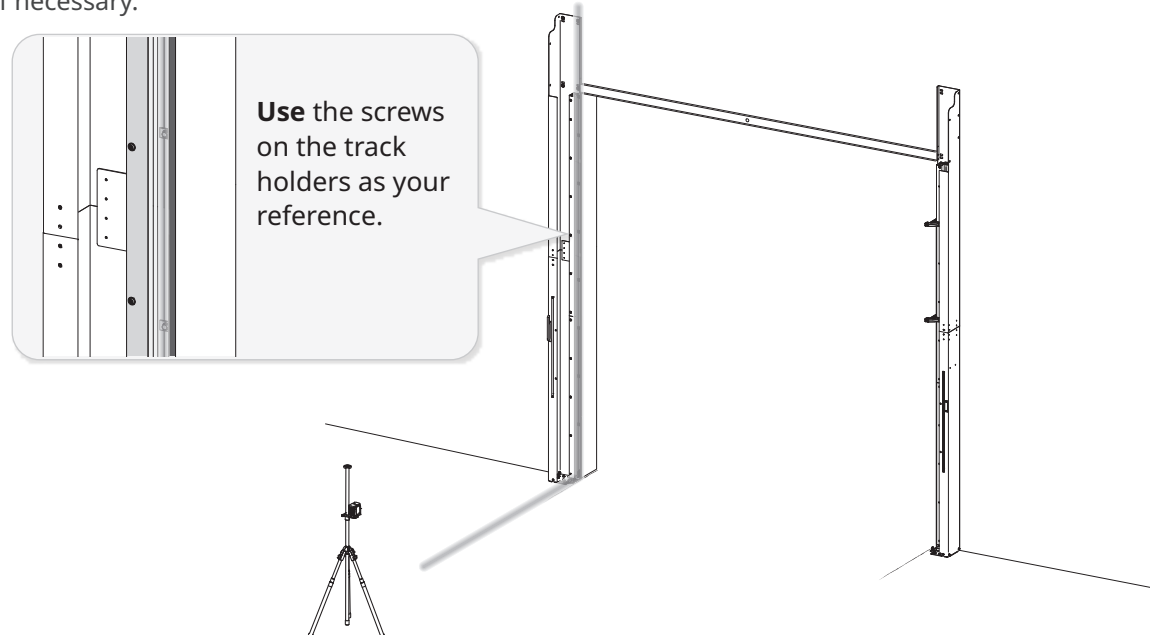
2 **Square** the door:

- **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
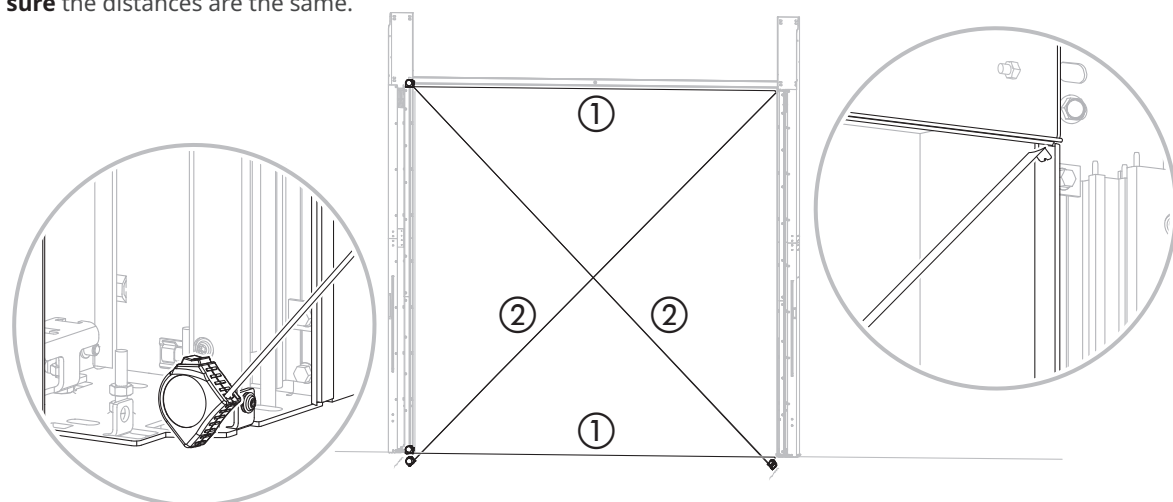
3 **Tighten** all anchors.

Anchoring hardware

How to install the head assembly

1 **INSIDER'S TIP** **Line up** the head assembly with the side columns before lifting.

6"

2

3"

Make sure the area between the head assembly and side column is clear on both sides.

3 **Line up** holes.
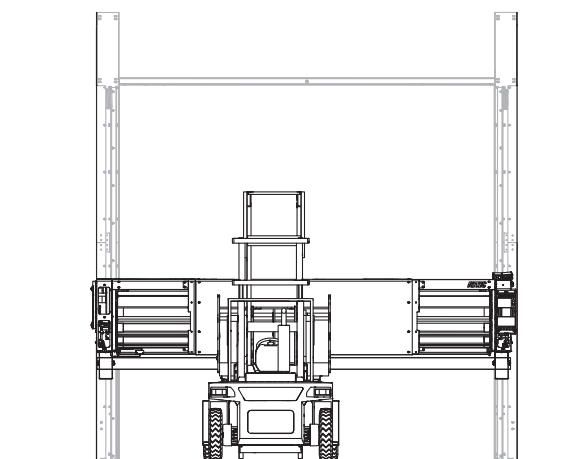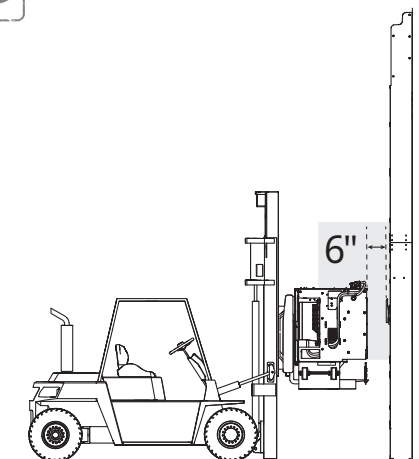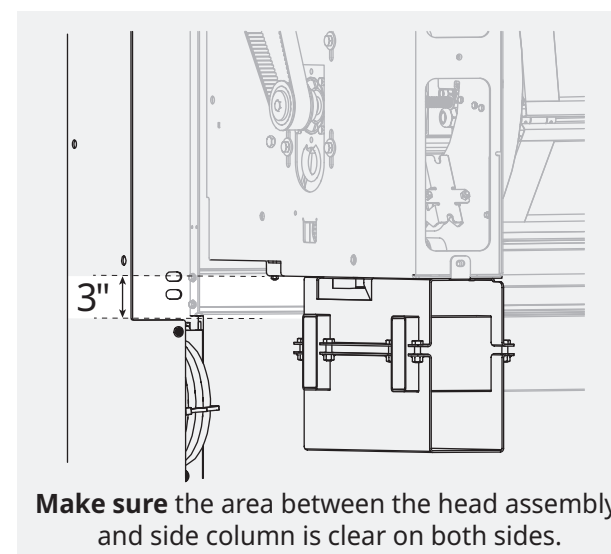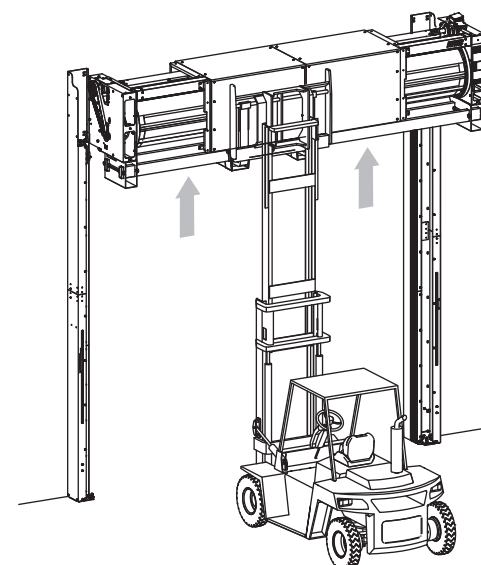
13
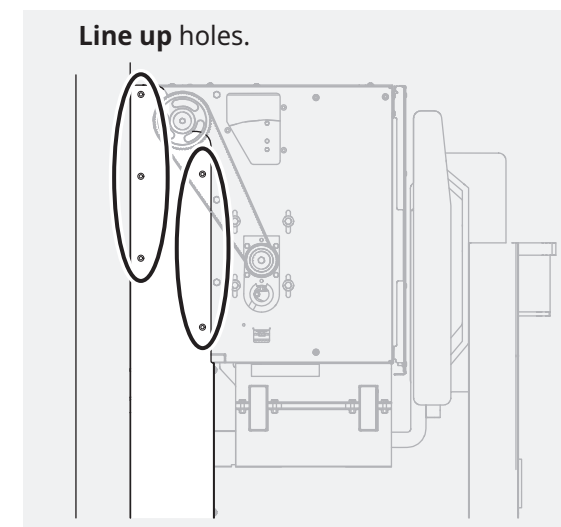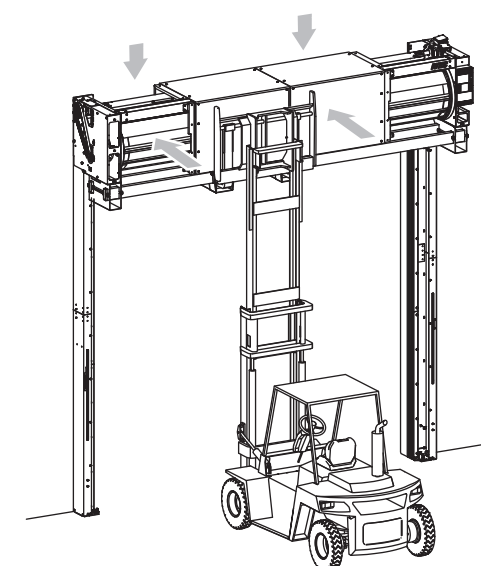
4 **Secure** the head assembly to the side columns.

Do this on both sides of the head assembly.

Start at the top and work around the screw holes.

Install screws and washers and **hand tighten.**

When all screws are seated, **tighten** screws.

10 8.8

KEEP REUSE

17mm
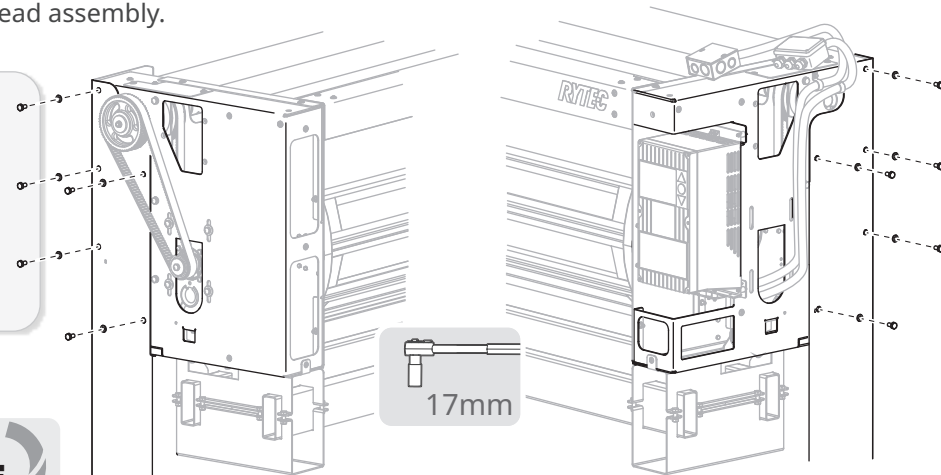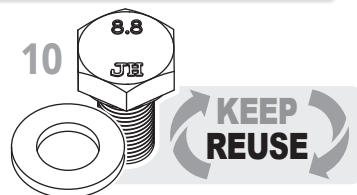
5 **-S and -S/R doors only:** loosen the screws on the wall mount brackets.

Place the brackets flush to the wall and **anchor** the brackets

Anchoring hardware

Use at least one anchor on each side of the bracket.

If the door has a slanted top hood cover, **do not install the outer anchors** until the cover is installed.

Make sure the outer screws, washers and nut are not installed.

Rear screw connects to **flanged nut**.

Front screw connects to **riveted nut**.
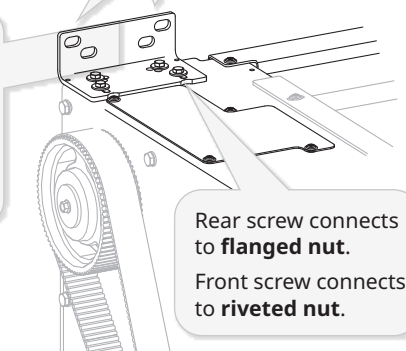
How to remove the cradle

1 **Remove** the two screws that attach the cradle to the head assembly.

Do this on both sides of the head assembly.

Remove the cradle by backing up, then lowering.

① ②

T40

2 KEEP REUSE
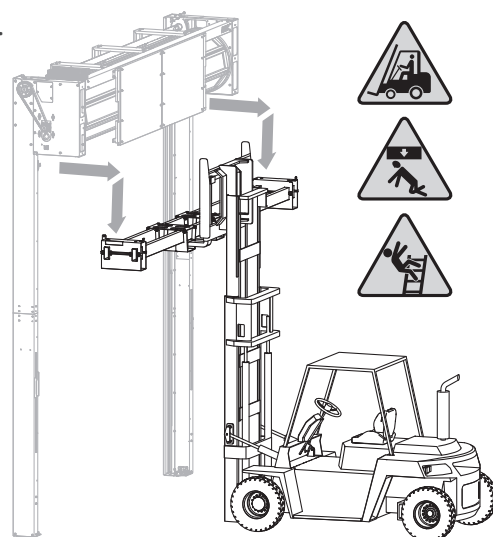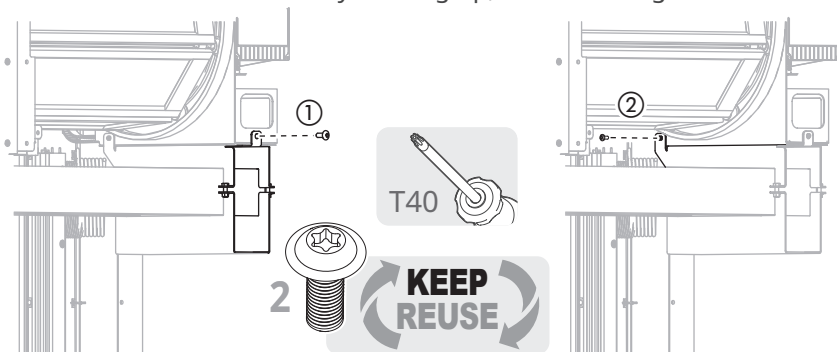
How to raise the vertical guide tracks into place

1 **Make sure** that all of the vertical guide track holders are loose enough to allow the track to move freely.

DO NOT remove any of the holders.

13mm
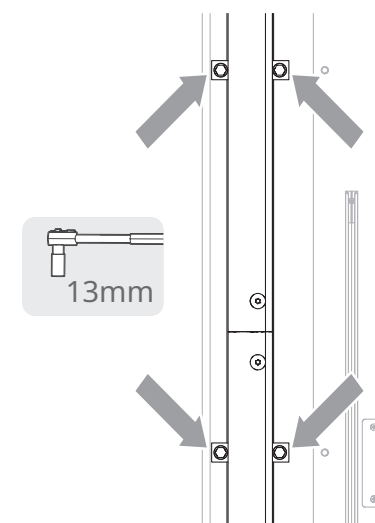
2 **Make sure** the pins at the top of the vertical guide track ① align with the holes in the head assembly track ②.

INSIDER'S TIP **Use a pry bar** to lift and hold the vertical guide track in place.

Pry bar

② ①
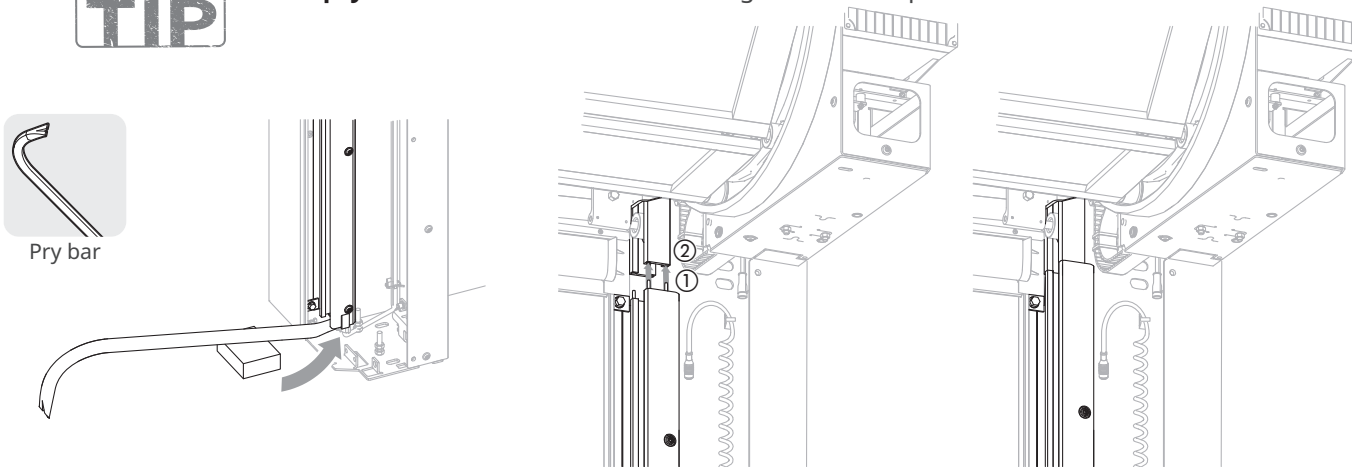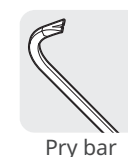
3 **Tighten** the bolts on the track holders.

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

⚠ **CAUTION**

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

13mm

14
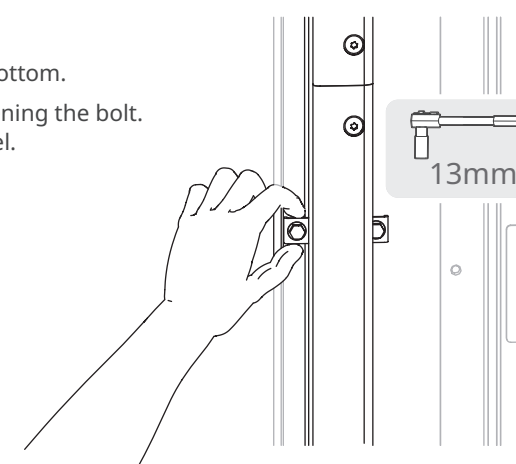
How to install the springs

1

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

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

Object list — Material number 724
Spiral STT-L, Order number 20000597, Order quantity 1 EA

DOOR MODEL NAME   Spiral Full Vision "L"
Door Width (Inches)   144.094
Door Height (Inches)   128.346
Production Width in mm 3,660
Production Height in mm 3,260
Door head size8
Line Voltage 460V
motor mount side   Right Hand Motor
Motor Duty   Standard Duty Motor
Horsepower   2.0
Number of solid slats 0
Number of vent slats   0
Brake Release Location Release lever on side column
Hood style   No spiral hood type
Number of Springs 4
Spring Tension (in)   4.724
LH Inner Spring Pack Qty   0
LH Outer Spring Pack Qty   2
RH Outer Spring Pack Qty   2
RH Inner Spring Pack Qty   0

Locate the parts and hardwa... the spring assemblies in bot...

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

Baseplate tube
preassembled to baseplate

1-spring assembly
uses this slot

STT-L doors only

2-spring assembly
uses these slots

1-spring assembly
uses this slot

All other doors

3-spring assembly
uses these slots

Parts of the spring assembly

Spring strap and clamp
preinstalled in head assembly

Strap bracket
in small parts box

Spring
in crate

Guide bracket
in small parts box

Guide tube
in small parts box

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

Hardware (in small parts box)

Hardware to attach outer guide brackets to side column wall
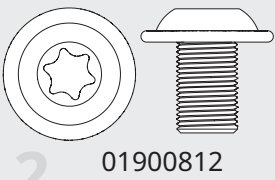
2   01900812

IMPORTANT

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

✓   ✗
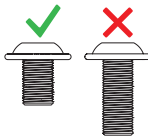
Hardware to attach inner guide bracket to outer guide bracket

01901506

2   01260110

15
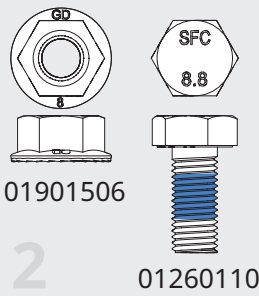
NOTE: a four-spring, two-assembly configuration is shown for these steps.
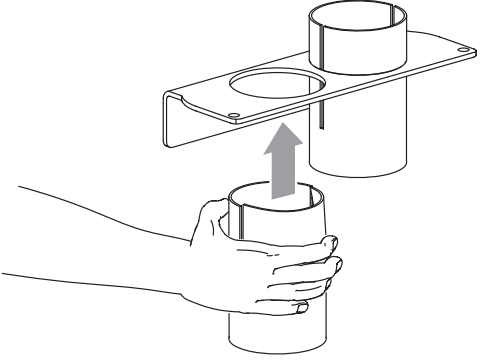
It is recommended that you **do not use power tools** for these steps. Overtorquing screws can damage parts.
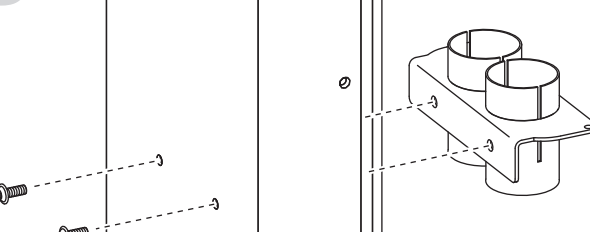
2   **Install** the guide tubes into the guide bracket.

Squeeze the top of the tube, then slide the tube into a guide hole until it clicks into place.

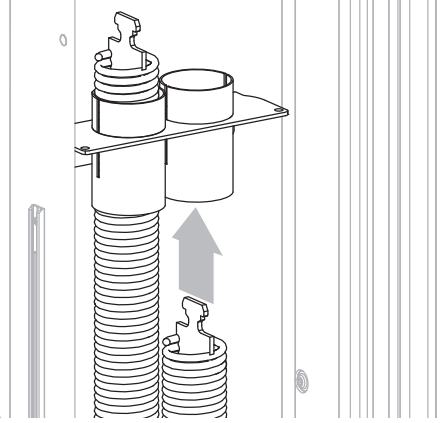**3**   **Install** the bracket into the side column.
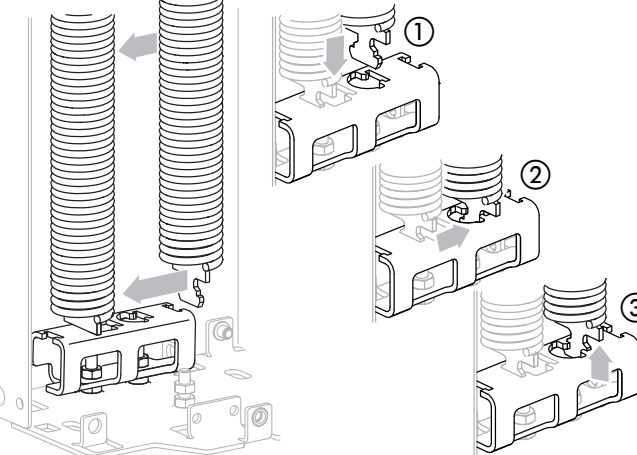
SMALL PARTS

T40

2   01900812

4   **Slide** the top of the springs into the bracket.
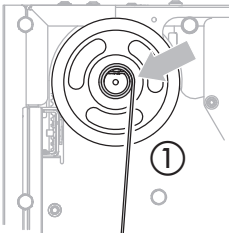
5   **Slide** the bottom spring tabs into the wide slot ①, through the narrow ②, then **pull up** into the retaining slot ③. The spring should remain upright.
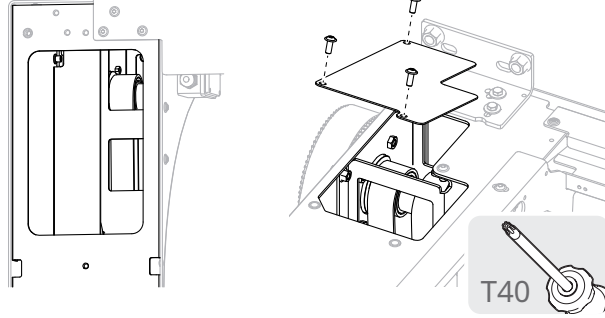
6   **Make sure** the number of wraps for the spring strap matches the object list ①.

Look through the front of the console or temporarily **remove** the top access cover.

```
                    Production Width in mm  3,660
                    Production Height in mm 3,260
                    Door head size      B
                    Line Voltag         460V
                    motor mount side    Right 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
                    Hood style    No spiral hood type
                    Number of Springs       4
                    Spring Tension (in)     4.724
                    LH Inner Spring Pack Qty    0
                    LH Outer Spring Pack Qty    2
                    RH Outer Spring Pack Qty    2
                    RH Inner Spring Pack Qty    0
                    Spring Tension in mm    ...
Number of pre-wraps    2.250   ①
```
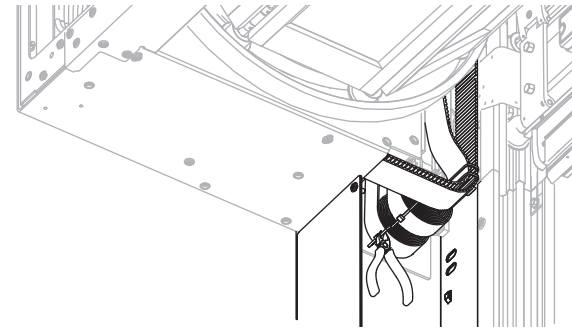
T40

IMPORTANT **DO NOT unspool the strap or change the number of wraps** unless you are in contact with Rytec technical support at **800-628-1909.**

The wraps are required for the door to operate correctly.
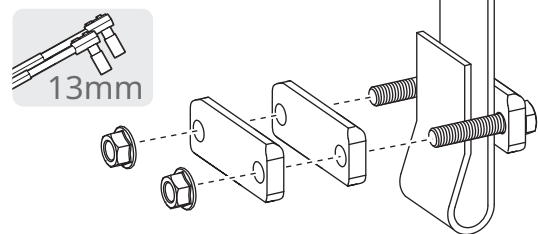
7   **Cut the cable tie** on the outer spring strap and let it drop.
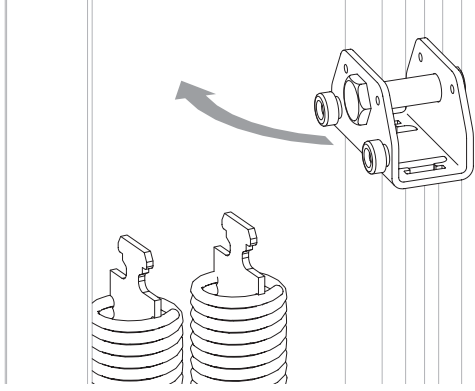
8   **Loosen** the clamp on the spring strap.

13mm

9   **Position** the spring bracket so that the bumpers and locking tab face the side wall.
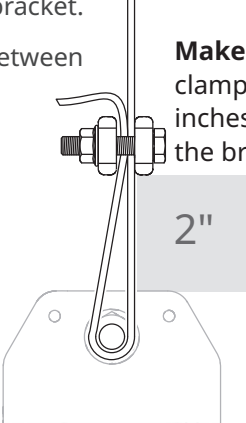
10   **Loop the spring strap** around the bolt in the spring bracket.

Thread the strap between two plates of the clamp.

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

Hand tighten the clamp nuts.

2"

IMPORTANT
DO NOT trim the strap.

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

Measuring tape

Locate the spring tension ① on the object list. **Round** to the nearest 1/16 inch.

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

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

```
Configuration
DOOR MODEL NAME    Spiral Full Vision "L"
Door Width (Inches)   144.094
Door Height (Inches)  128.346
Production Width in mm 3,660
Production Height in mm 3,260
Door head sizeB
Line Voltage  460V
motor mount side   Right 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 Springs4
Spring Tension (in)     4.724  4-3/4  ①
    LH Inner Spring Pack Qty   0
```
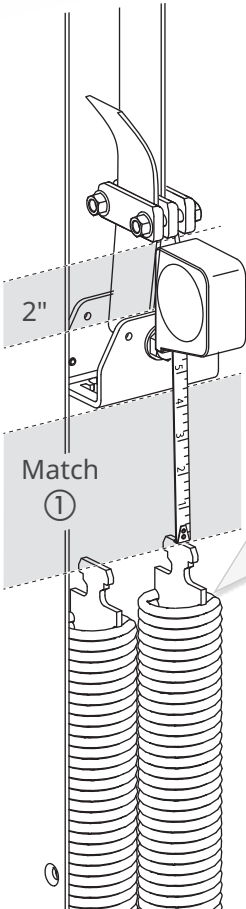
2"

Match ①

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

16

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

13 **Remove** the nuts and **retrieve** the third clamp plate.

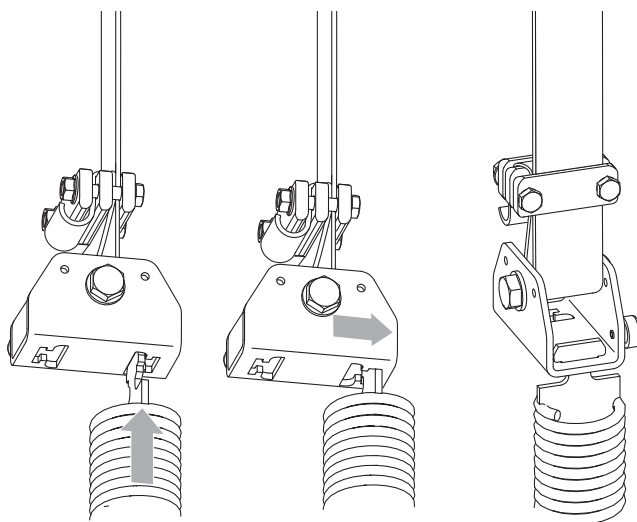**Loop** the spring strap down between the second and third clamp plate.

Tighten the nuts to secure the strap.
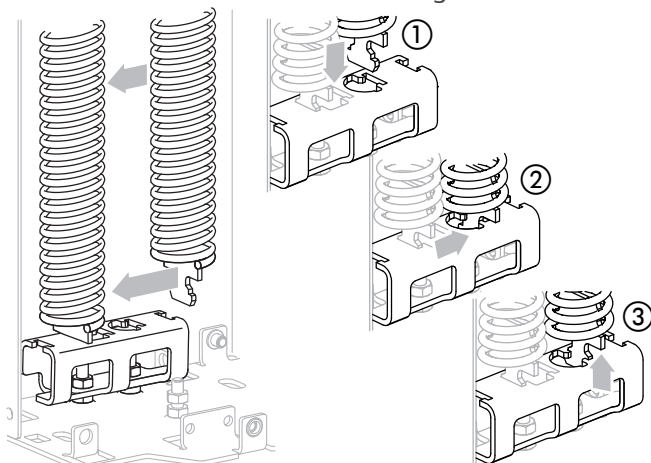
If necessary, **trim** excess strap length.

13mm

2"
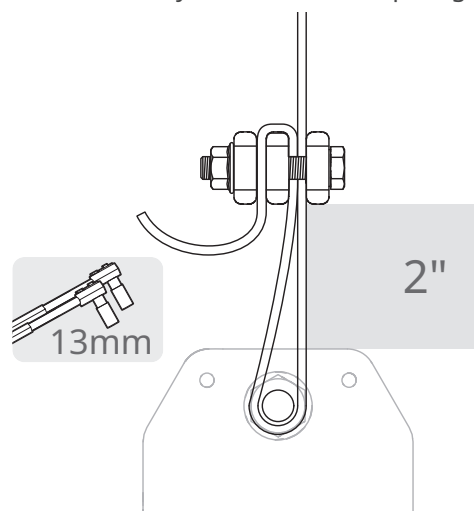
14 **Release** each spring from the baseplate tube.

Lift each spring and **slide** the spring tab into the slot in the spring bracket.

15 **Stretch** the springs downward.

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

How to install a second assembly in the side column

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

SMALL PARTS

01901506

10mm

2

01260110
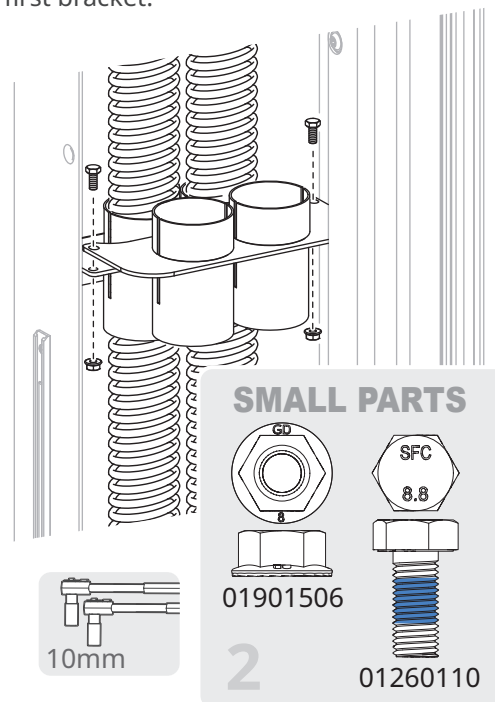
2 **Follow** steps 4-15 for installing the springs.

Make sure the spring bracket bumpers face out, toward the first spring assembly.

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

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

SMALL PARTS

1071781

2 per spring
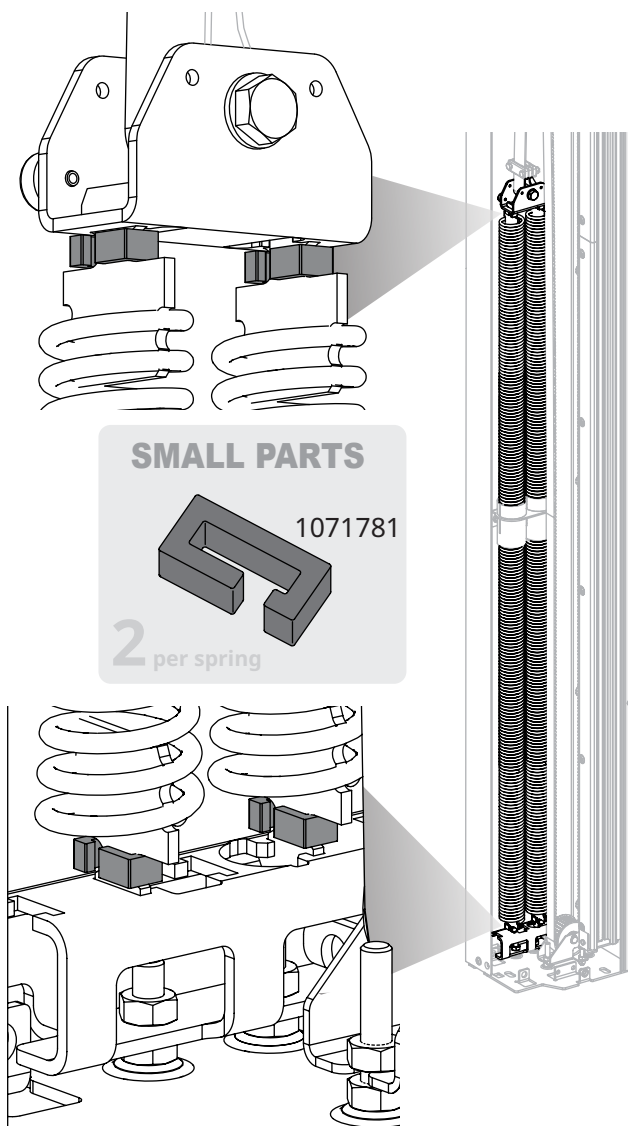
1 **Install** collar into the top tab:

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

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

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

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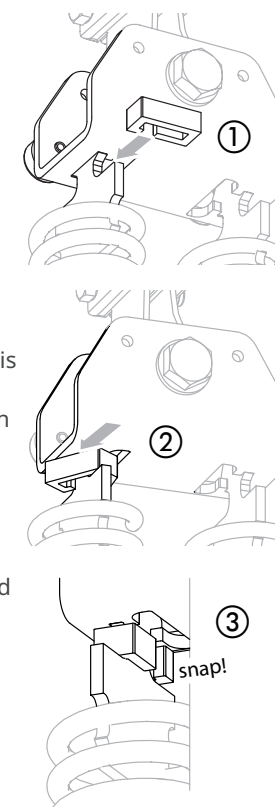
2 **Follow the same steps** for the tab at the baseplate pulley assembly.

snap!

17
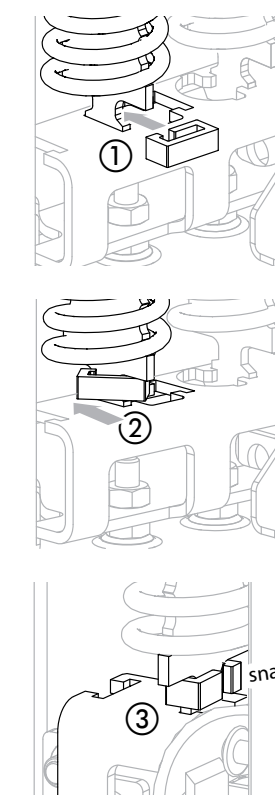
How to install the secondary drive belt

1 **IMPORTANT** **Make sure the secondary drive belt is kept taut throughout these steps.**

- The belt is preinstalled around the **pulley** ①.
- The **door panel end bracket** ② is connected at the precise height to keep the door panel level.
- The belt is kept taut to the pulley and end bracket during crating by **two cable ties** ③.
- **If the belt becomes loose** before it is secured to the baseplate, it can skip a tooth in the pulley. **This will cause the door panel to run crooked and damage the door.**

Keep downward pressure on the secondary drive belt until the baseplate pulley assembly ④ is installed and the belt has been properly tensioned.
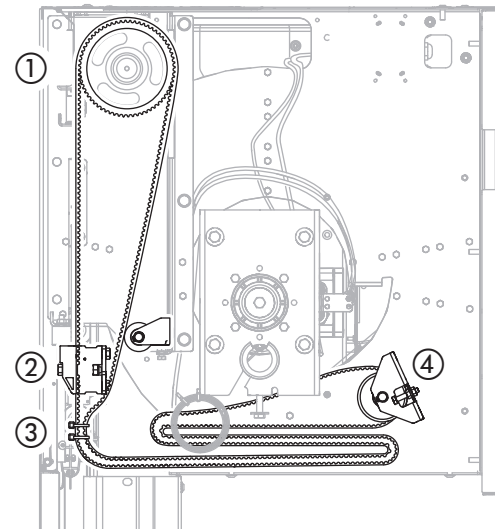
2 **Pull** the secondary drive belt and baseplate pulley assembly out of the console.

Lower them down the side column.
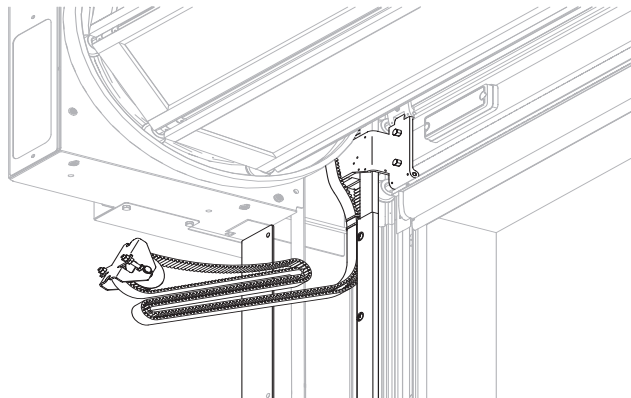
3 **Grab** the belt below the cable ties and pull gently downward to keep the belt tight.

Cut the two cable ties to release the belt.

Cutting pliers
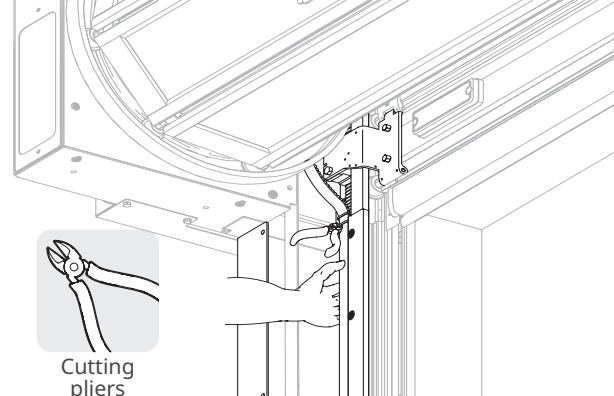
4 **Remove** the top nut on the front baseplate mounting post.

Keep the nut.

Loosen the top nut on the rear mounting post.

IMPORTANT **DO NOT loosen** the bottom nuts.

17mm

KEEP REUSE
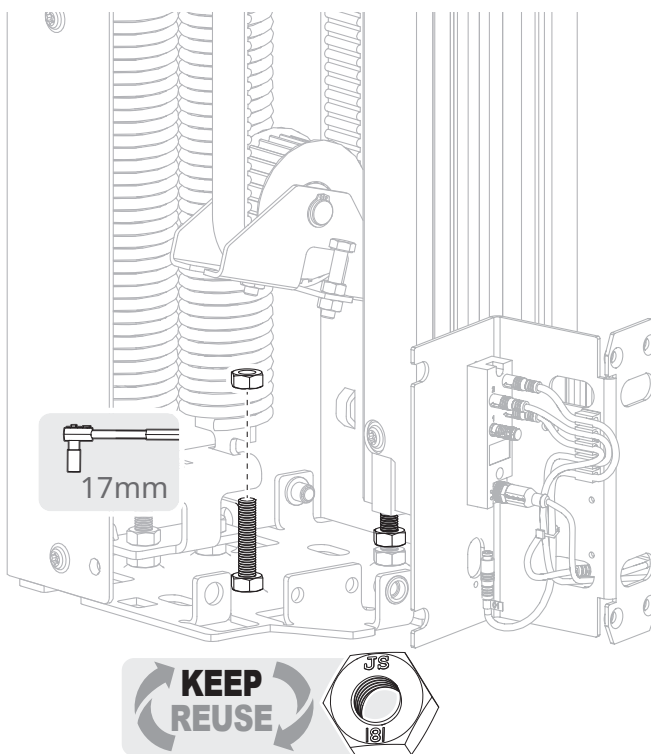
5 **Set the height** of the top nut on the rear baseplate mounting post ①.

1: **Slide** the rear flange of the baseplate pulley assembly ② **under the top nut** until it touches the post.

2: **Press down** on the front of the pulley assembly as hard as you can ③.

- The top nut is at the correct height when **three (3) threads of the front mounting post clear the front flange.**

3: **Adjust** the height of the nut as needed to reach the correct height.

17mm
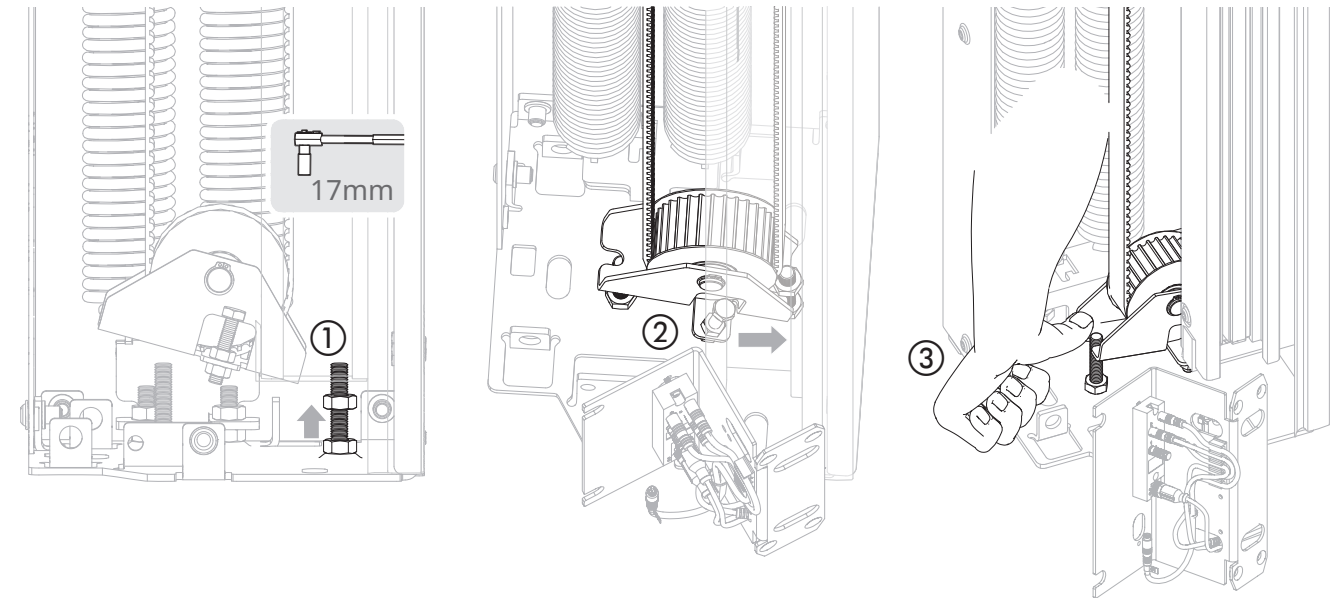
6 **Set the tension** of the belt.

1: **Replace** the top nut on the front mounting post. **Tighten** the nut to increase the tension on the belt.

2: **Grab** the belt as close as possible to the midpoint with one hand.
Press the front and rear legs of the belt together between your fingers and thumb.

- The tension is correct when it requires **considerable effort to bring the legs together.**

3: **Adjust** the height of the top nut as needed to reach the correct tension.

KEEP REUSE

17mm

18

RYTEC
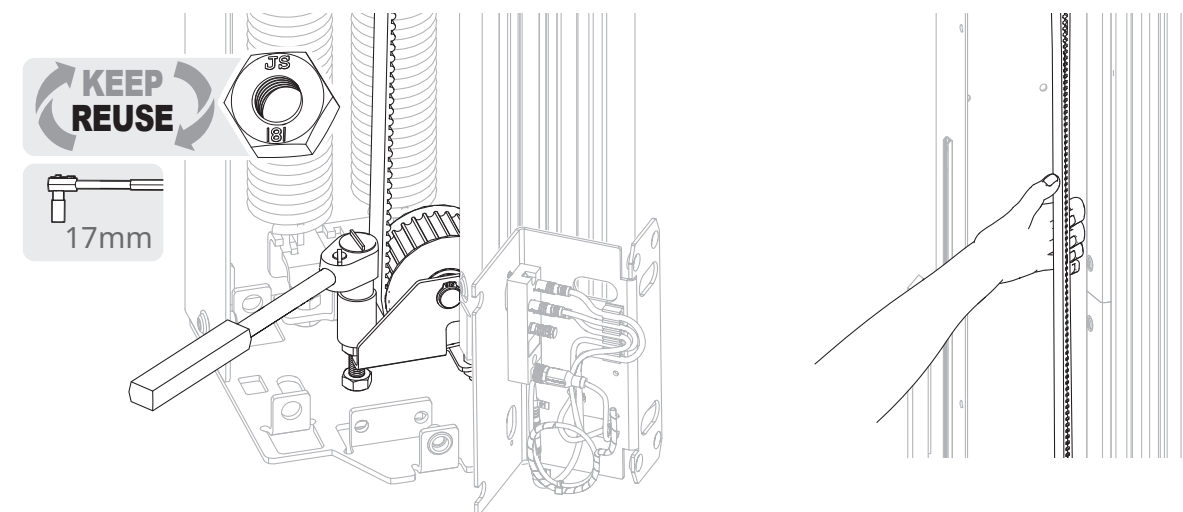
How to install the corner brackets, wireless antenna and (optional) bottom hood spreader

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

Install a corner bracket on each side column.

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

- **The non-drive side bracket** has an extra screw hole to secure the side panel cover.

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

Drive side

SMALL PARTS

Corner bracket

2 01900820

Wireless antenna arm

Non-drive side

SMALL PARTS

Corner bracket

2 01900820
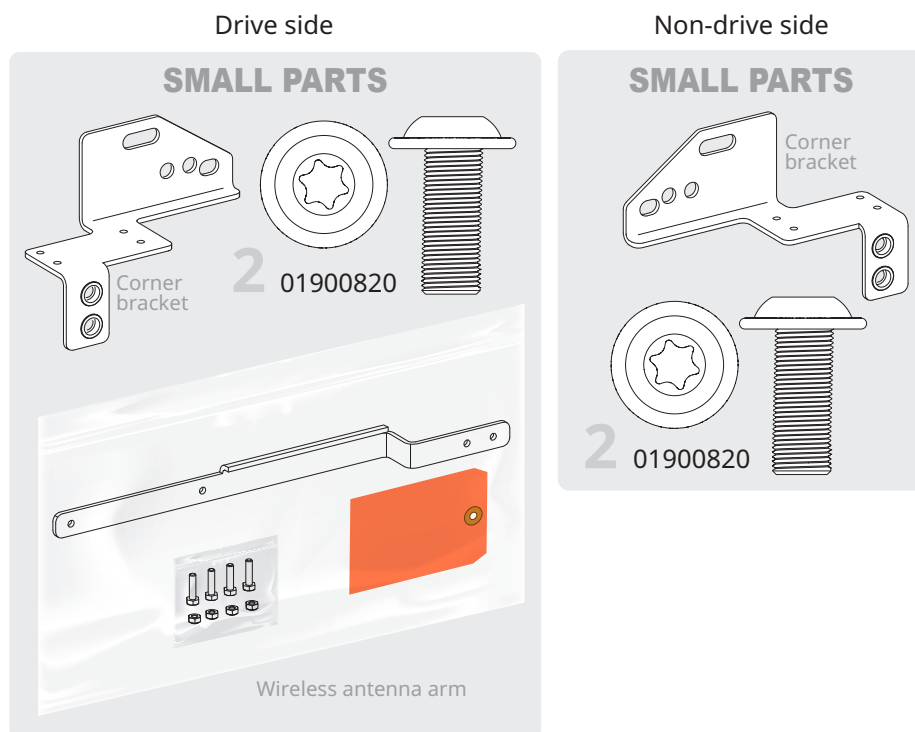
2 **If the door has a bottom hood cover:**

- **Locate** the two spreader brackets and hardware for the bottom hood spreader in the small parts box
- **Locate** the bottom hood spreader.

SMALL PARTS

01900820

Spreader brackets

-L and -L/R doors:
4 screws and nuts

01901508

GD 8

Spreader brackets

-S and -S/R doors:
8 screws and nuts

-L and -L/R doors:
bottom hood spreader

-S and -S/R doors:
bottom hood spreader
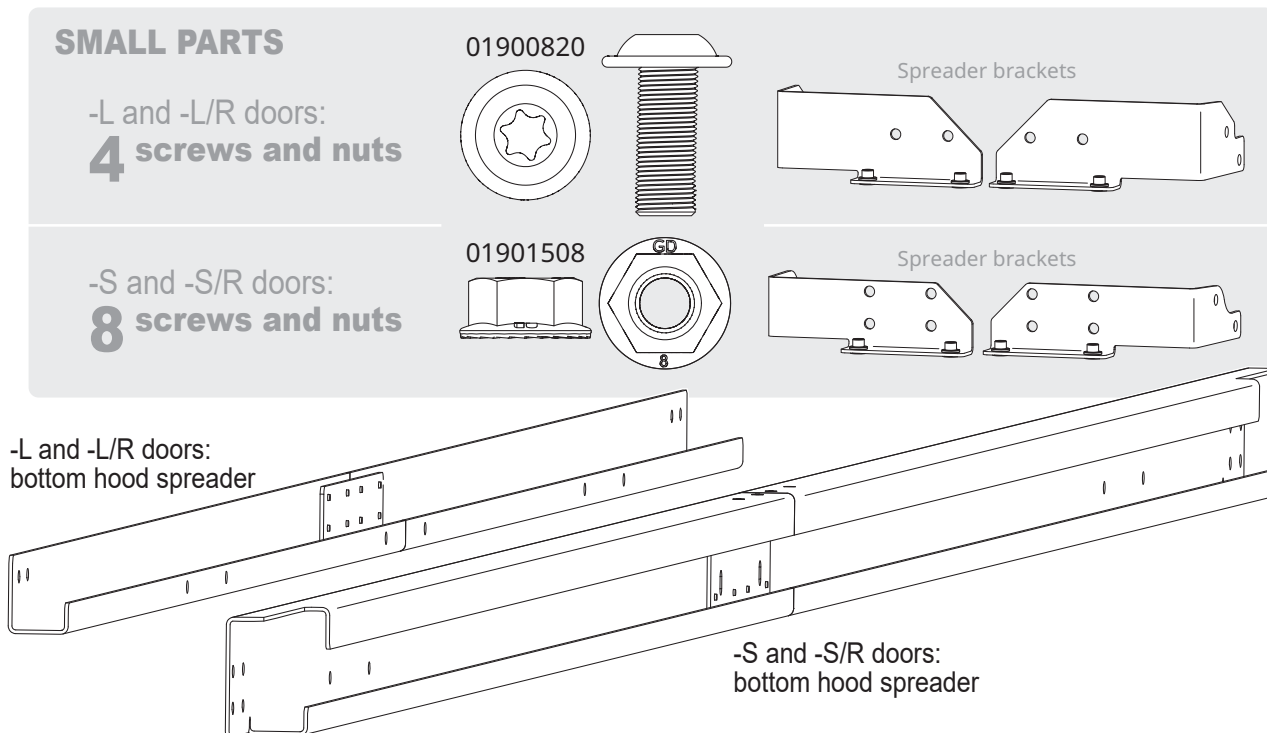
3 **If the door has a bottom hood cover, attach** the spreader brackets to the bottom hood spreader.

13mm

T40

-L, -L/R bottom hood spreader

-S, -S/R bottom hood spreader
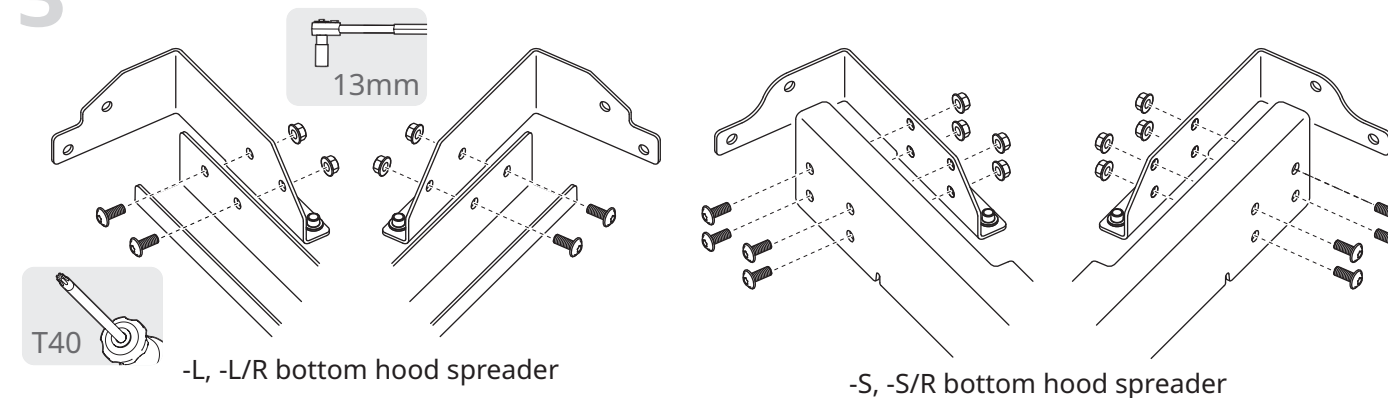
4 **Install** the corner brackets.

If the door has a bottom hood cover, install the bottom hood spreader inside the corner bracket, using the same screws.

Do this on both sides of the head assembly.

No bottom hood cover

T40

SMALL PARTS

01900820

2

-L, -L/R bottom hood cover

-S, -S/R bottom hood cover
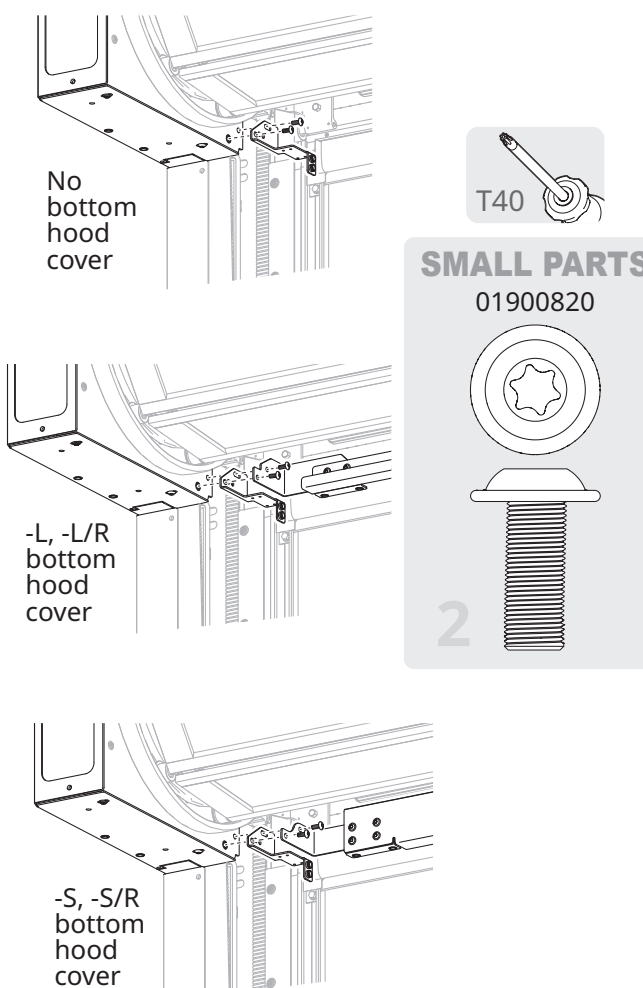
5 **Install** the wireless antenna arm onto the drive side corner bracket.

Use the hardware included with the wireless antenna arm.

7mm

19
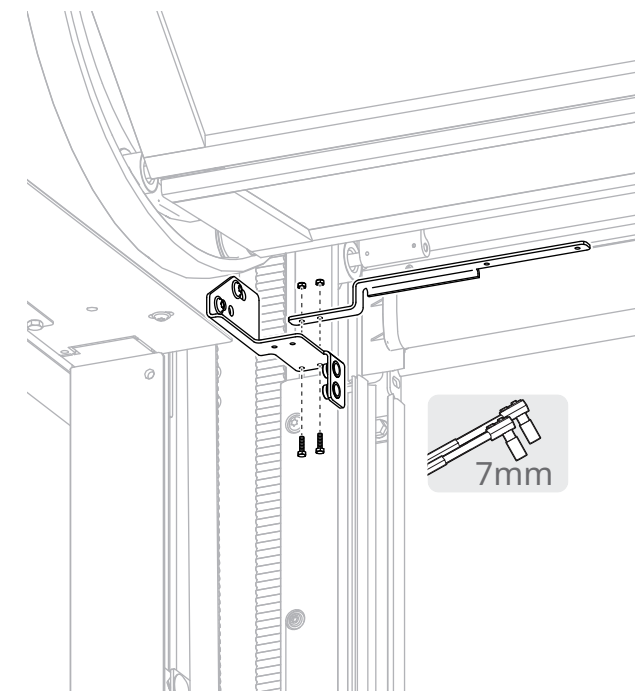
6 **Reach** into the drive side compartment and **remove** the wireless antenna and antenna bracket from the top of the motor.

Unwrap the antenna cable.
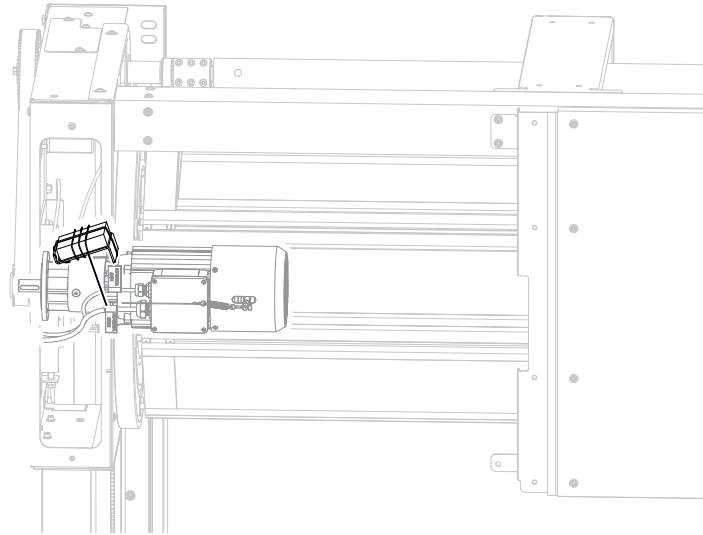
7 **Install** the wireless antenna bracket onto the arm.

Use the hardware included with the wireless antenna arm.

Secure the cable to the wireless antenna arm with cable ties.

Cable ties

7mm
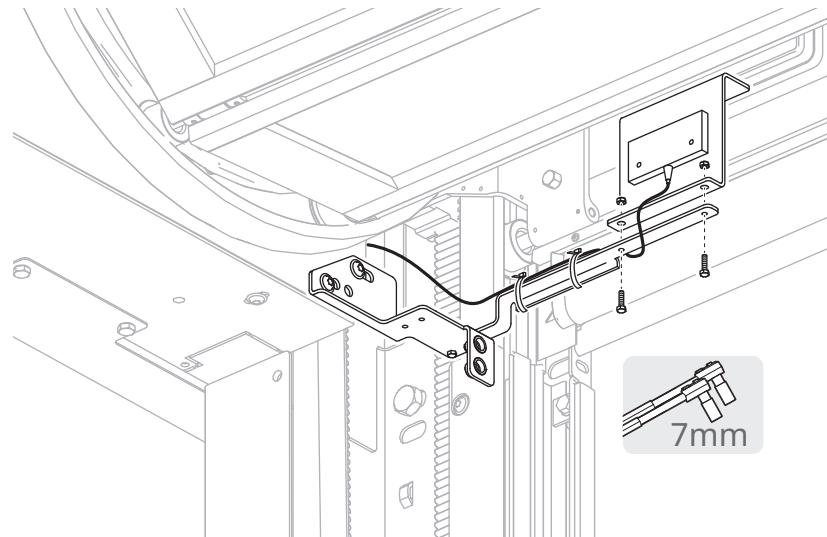
How to connect the CAN bus cables

1 Inside the **non-drive side console**, **connect** the M12 CAN connectors:

- The male M12 for the cable from the CAN port in the side column to the female M12 connector for the cable to the controller.
- The female M12 for the cable from the CAN port in the side column to the male M12 connector for the cable that crosses the rear spreader.

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.
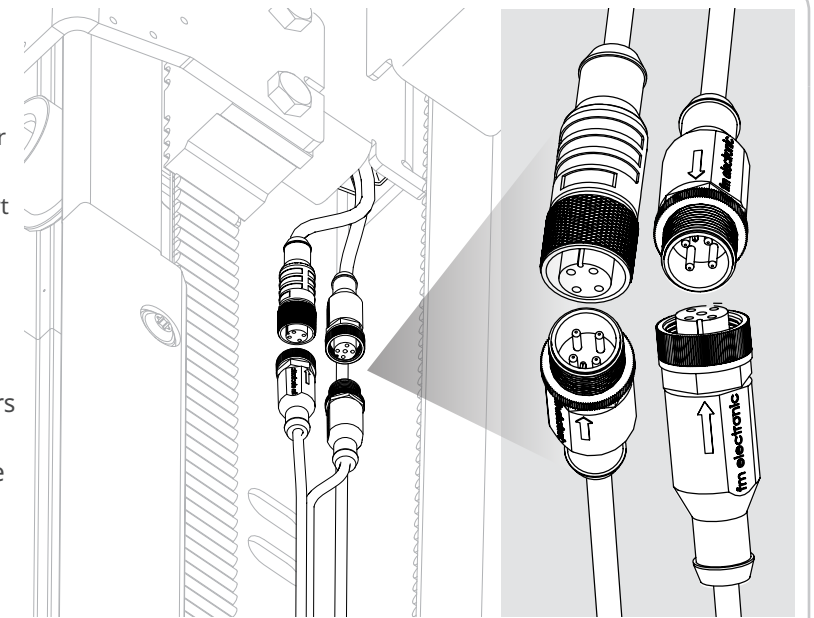
1 Inside the **non-drive side console**, **connect** the M12 CAN connectors:

- The male M12 for the cable from the CAN port in the side column to the female M12 connector for the cable that crosses the spreader.

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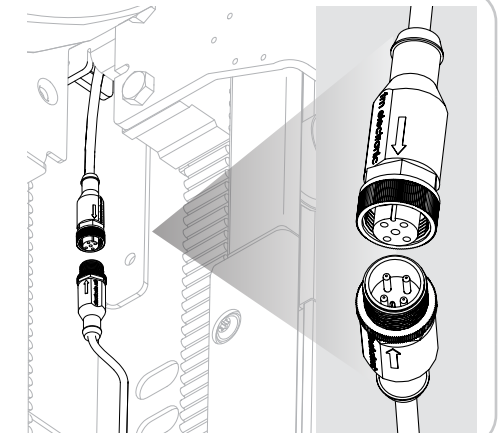
2 **Find the schematics** for the door in the red document envelope.

IMPORTANT

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.

20
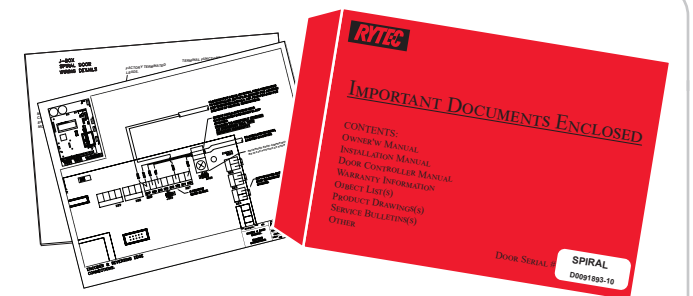
How to install the wall mounted (rear) SmartSurround™ light curtains

1 **Get** the rear SmartSurround™ transmitter and receiver from the crate and **install** them onto the drive side and non-drive side walls of the door opening.

IMPORTANT

Make sure the transmitter and receiver of the wall mounted SmartSurround™ light curtains are **on the same side of the door** as the cover mounted light curtains.

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

Transmitter *drive side*   Receiver *non-drive side*

*Distance between **wall-mounted SmartSurround™** and door track should match distance between **cover-mounted SmartSurround™** and door track*

9" from door track *(approx.)*

Use suppled P-clips to secure cable tightly to wall.
Use supplied anchored or self-tapping screws.

#2

5/16"

0550150   5550350 5550353   1210877

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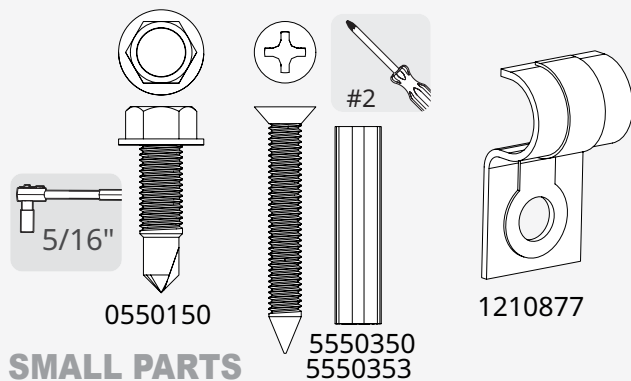
If the floor is level, use the cover-mounted SmartSurrond™ and a laser level to set the mounting height of the wall mounted light curtain.

The **bottom** of the aluminum retaining bracket should be **4" above floor level**.

4" from floor

2 **Connect** the two cables that connect the wall 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.

IMPORTANT

Route cables through hole in the side column, through the first opening in the baseplate bracket, and through both openings in the CAN bracket.
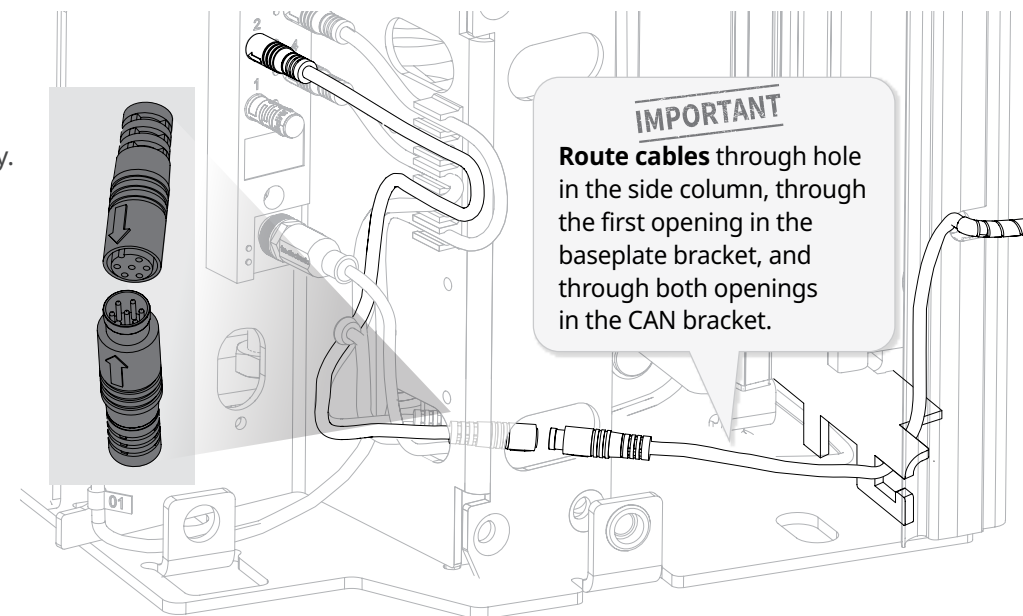
3 **Reinstall** the CAN bus brackets in both side columns.

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

2 5550300   **KEEP REUSE**   W.T 90   13mm
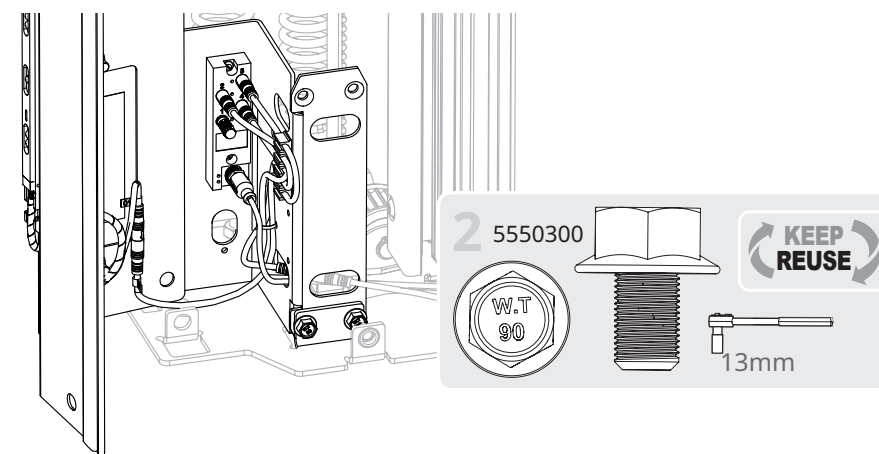
4 **Reinstall** the side column covers.

- **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.

If necessary, open the panel in the side column to access the connectors.   T40

21
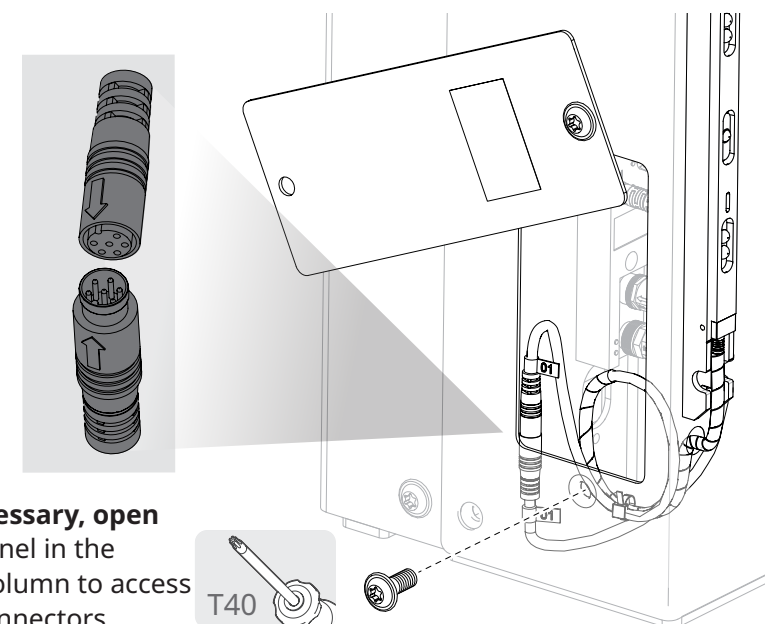
(Optional) How to install BTA4 user terminal in a remote location

1 **Locate** the BTA4 kit and cable in the small parts box.

SMALL PARTS
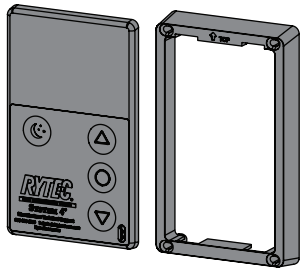
ID	Part No.	Description	Qty.
①	1210765-0	BTA4 unit	1
②	1210766-0	BTA4 frame	1
③	5550351-0A01 5550057-0Z01	Mounting hardware, side column	5
④	1210756-0 5550353-0	Mounting hardware, wall	5
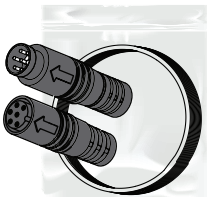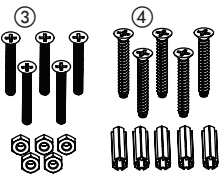
1210800

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.
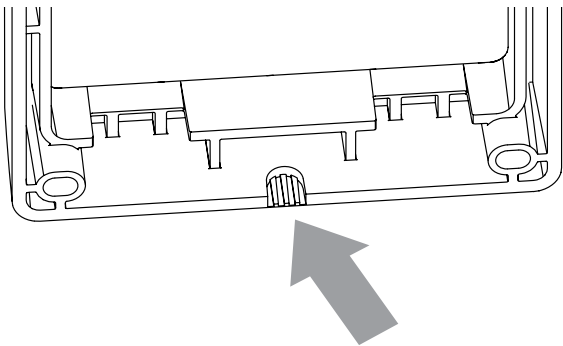
3 **Install** the BTA4 frame using the supplied hardware or your own.

#2
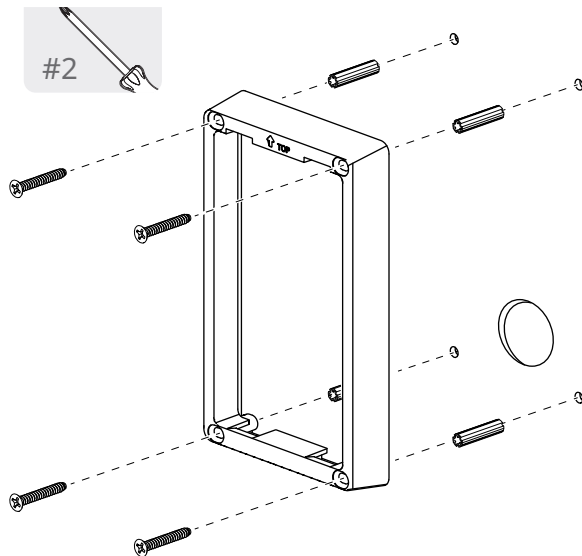
4 **Plug** the female quick connector on the cable into the back of the BTA4 unit.
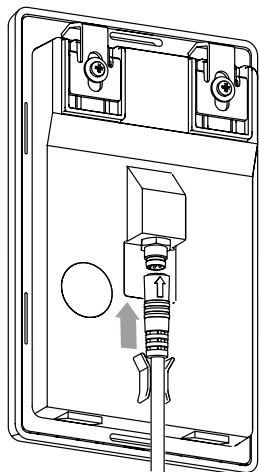
5 **Line up** the two bottom tabs on the BTA4 unit with the bottom tabs in the frame ①.

Then **snap** the two top tabs into place ②.
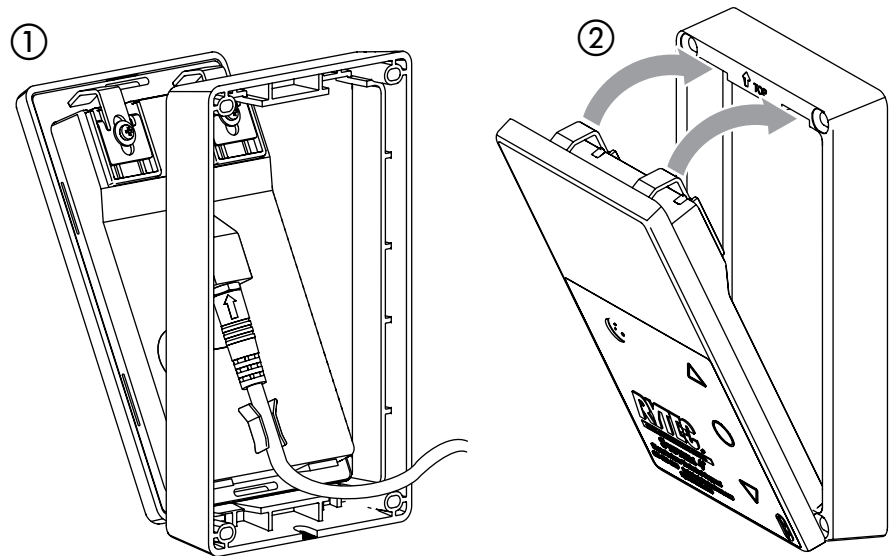
6 In the head assembly, on the drive side, **remove** the jumper from port 1 on the CAN repeater ① and **plug in** the cable from the BTA4 terminal ②.

- This port requires the least amount of cable routing to connect the remote BTA4 to the CAN bus.
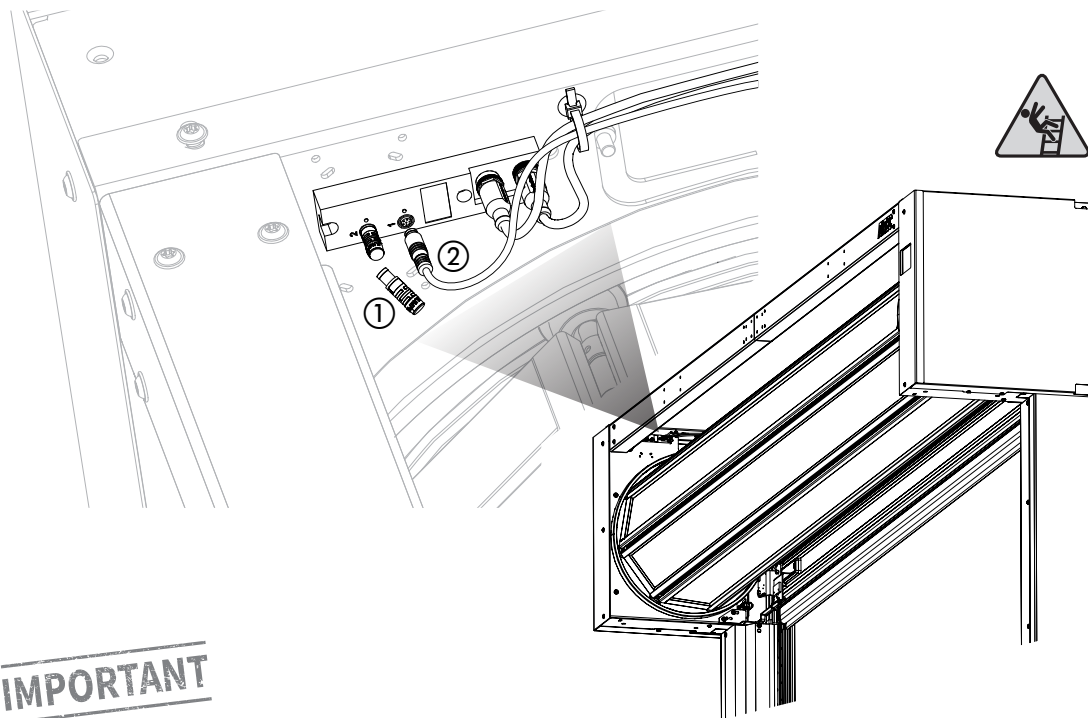
IMPORTANT

The BTA4 user terminal will **automatically sync with the controller** when you manually sync the light curtains. See *How to sync the SmartSurround™ system to the controller, set limits, and test the door* beginning on page 28.

22

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

1 **Locate** the brake release cable in the console.

Loosen the retaining nut and slide it down the length of the brake release cable.

10mm
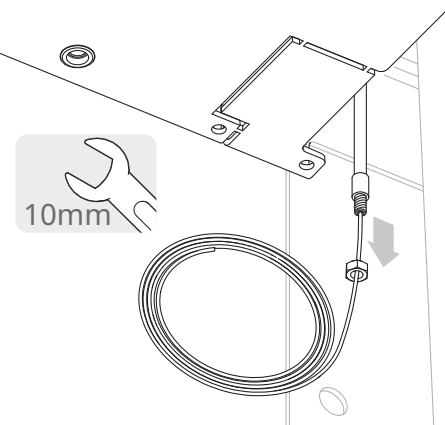
2 **Thread** the cable through the hole in the bottom of the console ①.

Thread the retaining nut ② up the cable and install into the bottom of the console.

Run the cable ③ down the side column to the brake release lever.

10mm

①
②
③
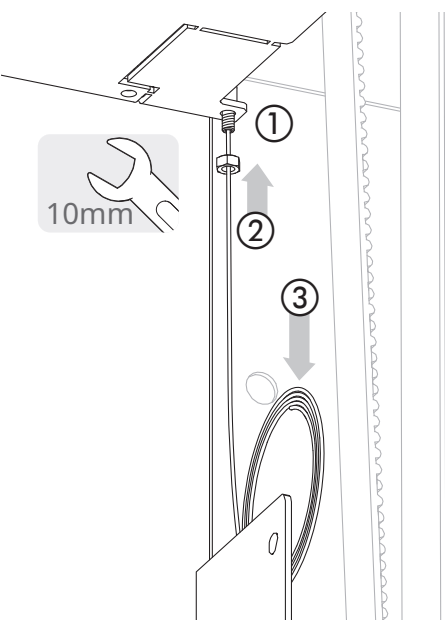
3 **Pull** the cable ① straight.
Allow some slack.

Pull down the brake release lever ② to 90°.

Run the cable through the large hole in the brake release tab ③.

①
②
③
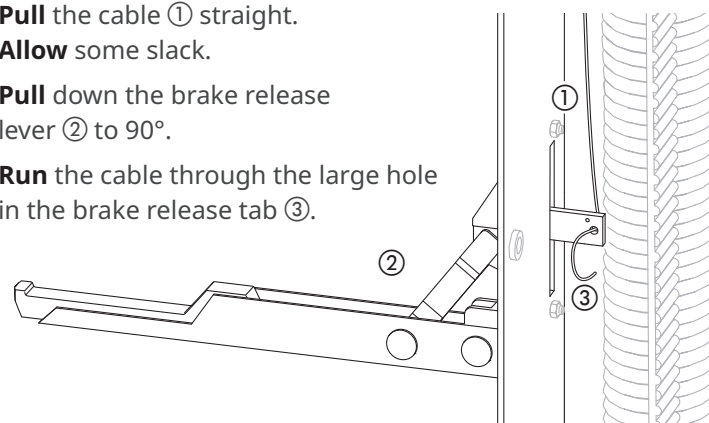
4 **Loosen** the screw on the cable stop clamp ④ until you can thread the cable through the clamp.

Slide the clamp against the lever tab and **tighten**.

Flat screwdriver

SMALL PARTS

Cable stop clamp
(actual size)

④
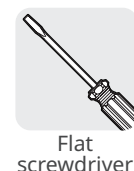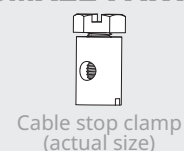
IMPORTANT

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

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

IMPORTANT

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

If you feel too much resistance, loosen the tension on the cable.
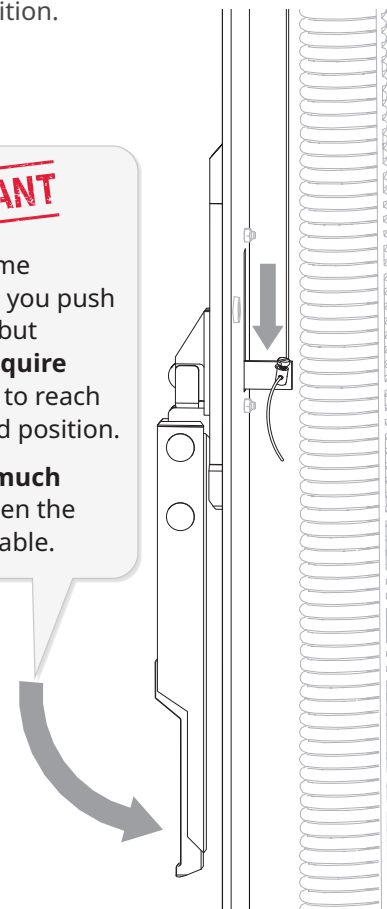
6 The door panel should **release** under its own weight and **drop** approximately 1/3 of the door height.

If it does not drop, **manually pull** the door panel down to that height.
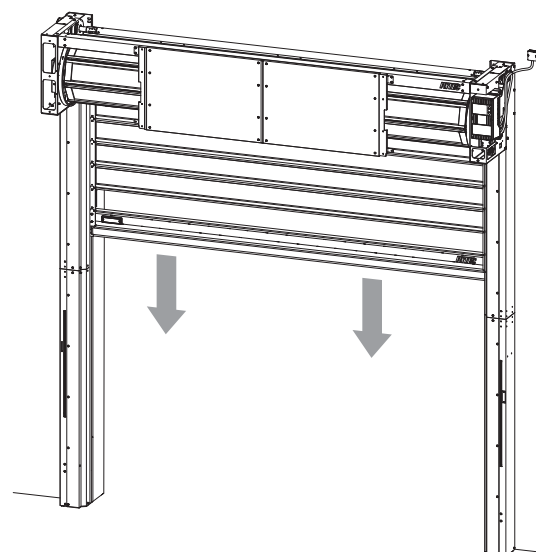
7 **Pull up** the brake release lever 180° to the fully engaged position.
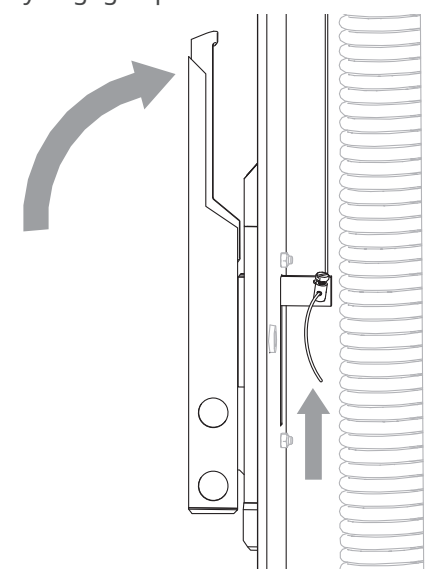
8 Try to **manually move** the door panel up and down.

You should **NOT** be able to move the panel.

RYTEC
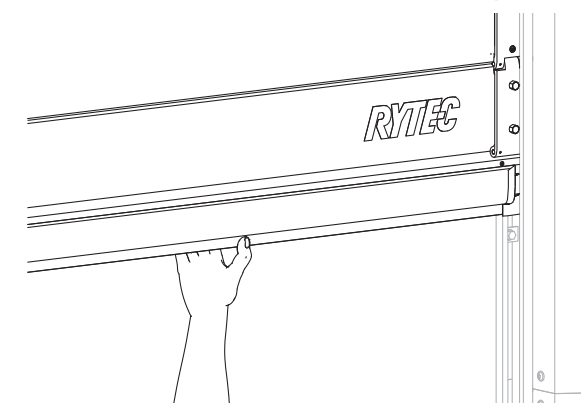
9 If necessary, **adjust the tension** on the cable until both conditions are met:

- The door moves freely when the brake release level is in the fully released position.
- The door does not move when the lever is in the fully engaged position.

10 **Release, then reengage,** the brake several times. **Test** after each time.

Make sure the cable does not loosen after multiple uses.

- If necessary, **adjust the tension** on the cable.
- When all tests are complete, you can **trim** the cable (minimum trim length = 4").

23

How to wire the door
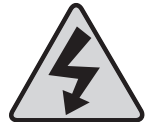
⚠️ **WARNING**

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.
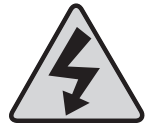
⚠️ **WARNING**

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.
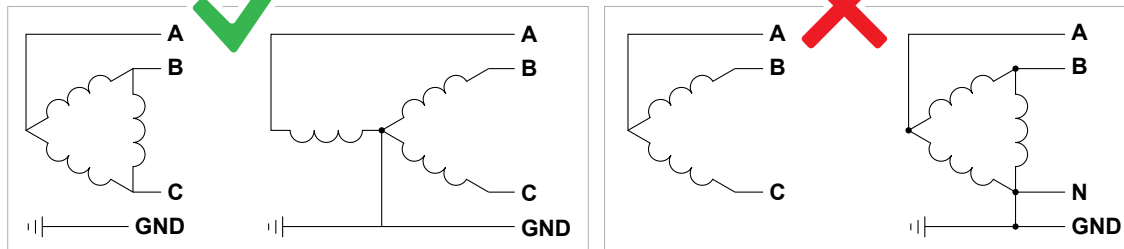
- **If the service is floating, ungrounded or open delta type** power, an isolation transformer must be installed.

- 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.

1 **Remove** the high-voltage power whip/junction box and, if necessary, the activation whip/junction box from the non-drive side console.

The high-voltage power whip and junction box are required to bring power to the door.

When the non-drive side cover is reinstalled, whips may be run through the rear of the cover at the top or the bottom.

The activation whip and activator box are used to wire optional, additional activators for the door.

If the junction box is not needed, tuck it back into the console.

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

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

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

24

RYTEC

(optional) How to install the bottom hood cover

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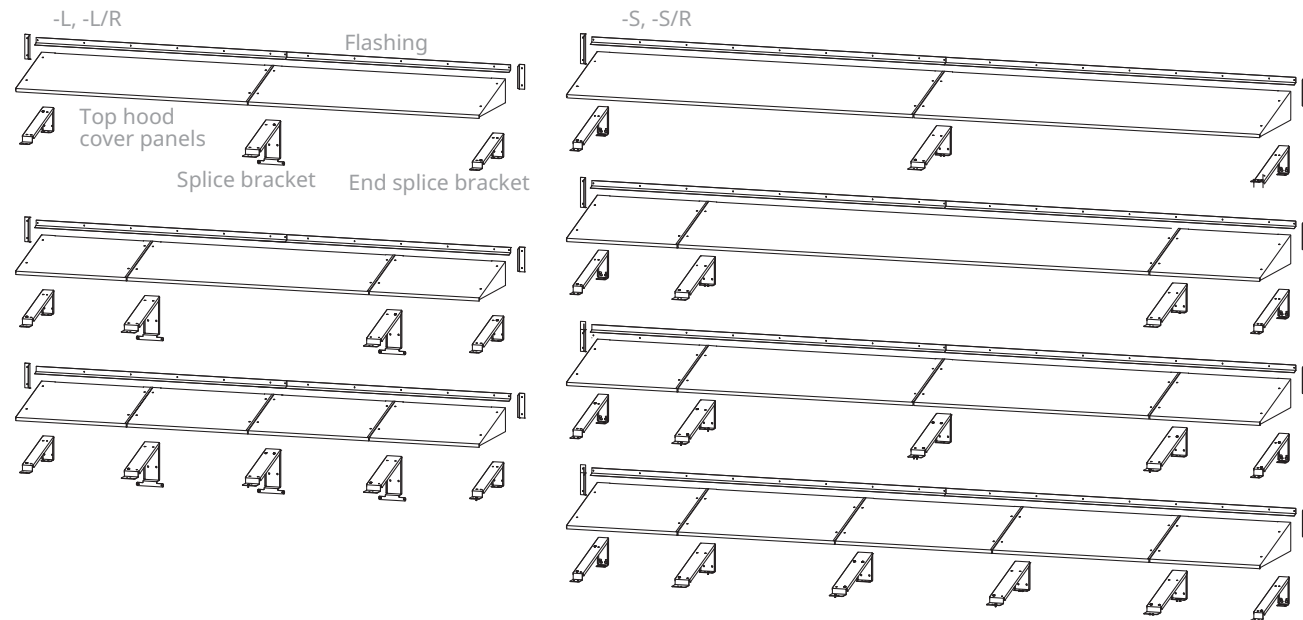Overtorquing screws can damage the riveted nuts that secure them.

1 **Locate** the spacer brackets and hardware in the small parts box.

Locate the bottom hood cover panels and bottom splice brackets (mounting brackets) in the crate.

- -L and -L/R doors may have 2, 3 or 4 panels, -S and -S/R doors may have 2, 3, 4 or 5 panels.

-L, -L/R

Splice bracket   Bottom hood cover panels

-S, -S/R

SMALL PARTS

01900820

Number of screws varies based on height of door
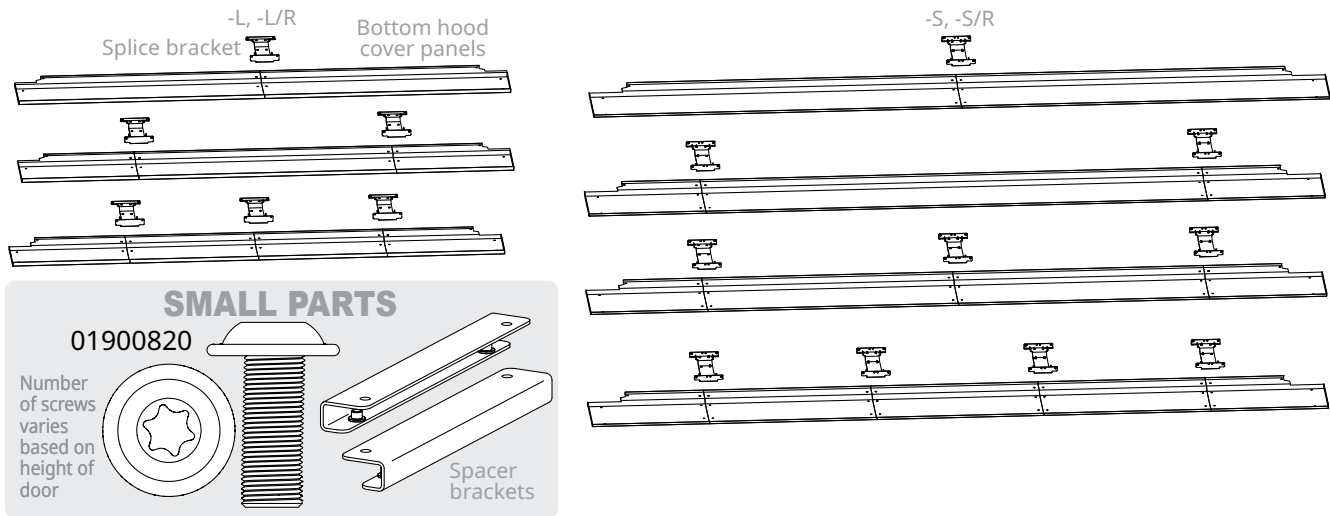
Spacer brackets

2 **-L and -L/R doors only:** if necessary, remove all front cover panels to access the front splice brackets.

number of torx screws varies based on size of door

T40

KEEP REUSE
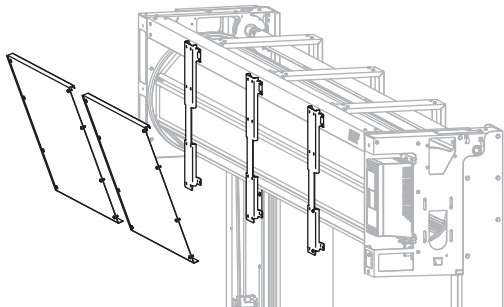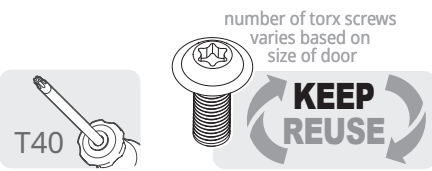
3 **Install** the spacer bracket from the small parts box onto the side console.

Do this on both sides of the head assembly.

T40

SMALL PARTS

01900820

2
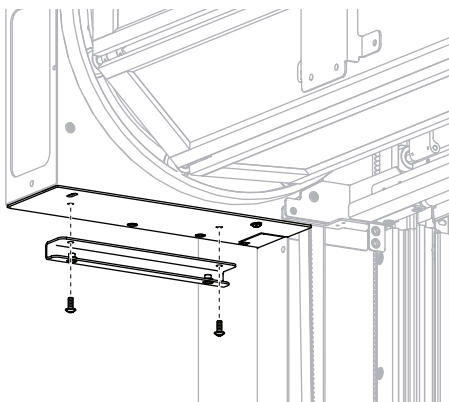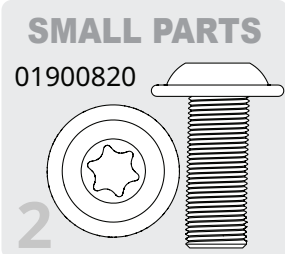
4 **Install** the splice brackets for the bottom hood cover panels.

- On -L and -L/R doors, the brackets attach to the front splice brackets and the bottom hood spreader.
- On -S and -S/R doors, the brackets attach to the bottom front spreader and the bottom hood spreader.

SMALL PARTS

01900820

4

01901508

2

-L, -L/R door

13mm

T40   T40

-S, -S/R door

5 **Install** the bottom hood cover panels.

SMALL PARTS

01900820

5-6

T40

25
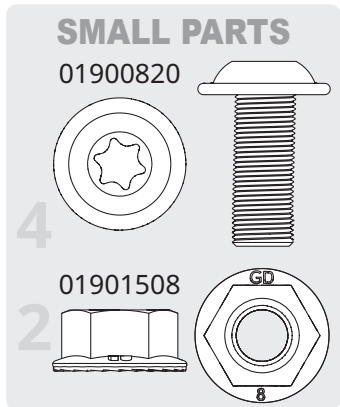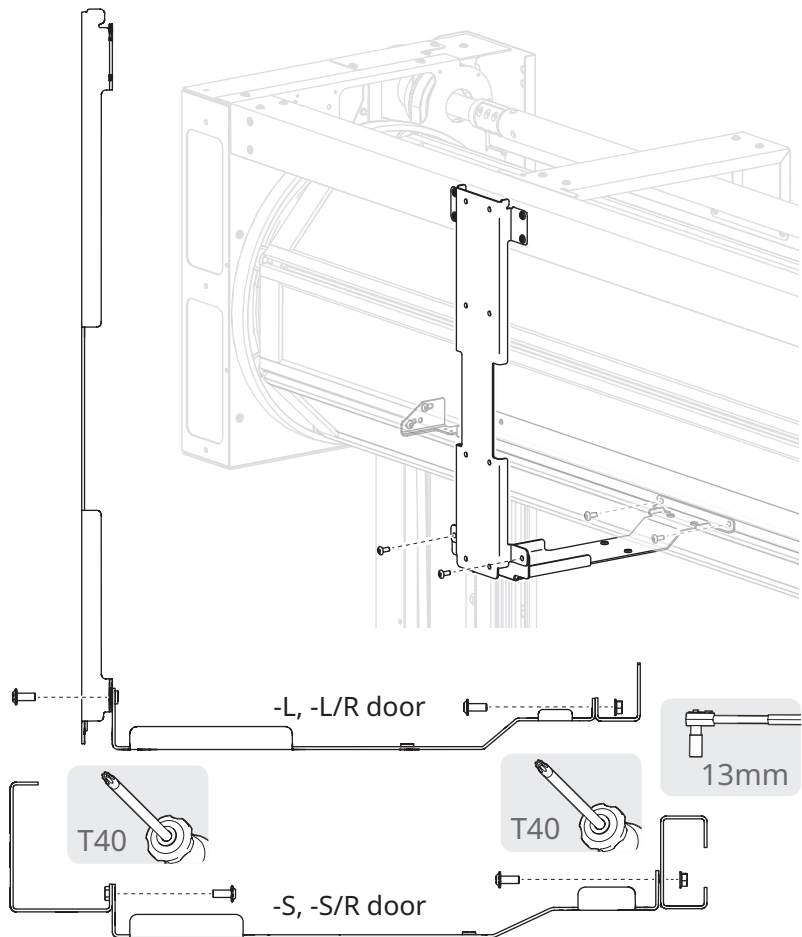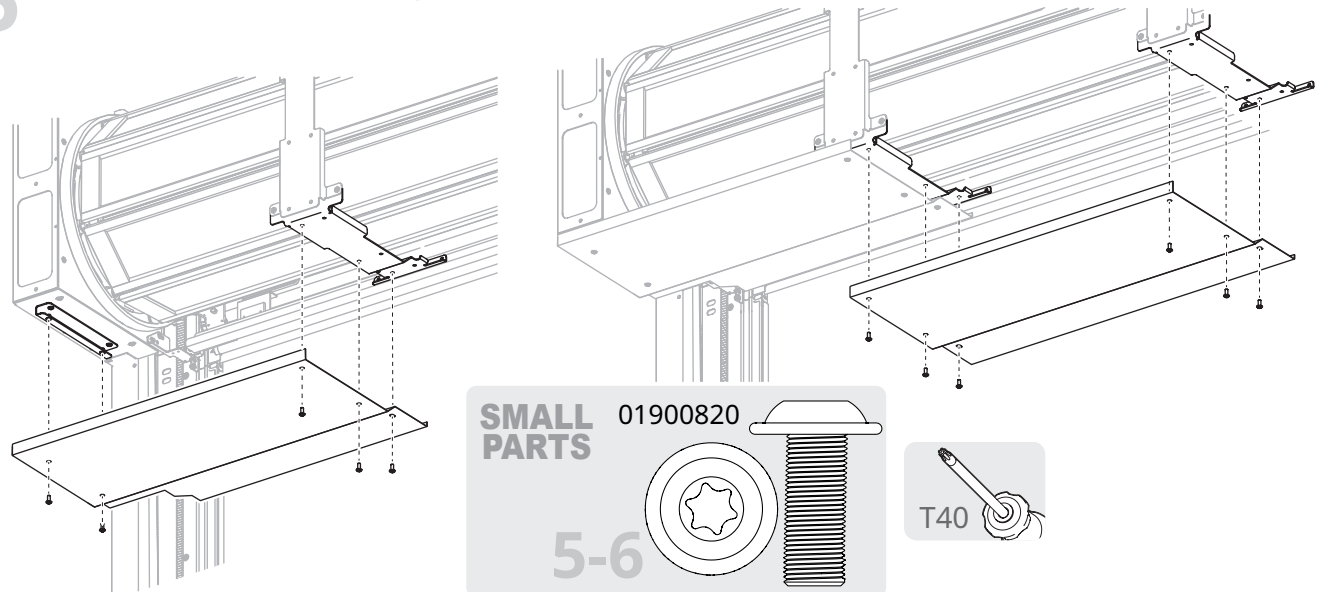
(optional) How to install the slanted top hood cover

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

1 **Locate** the top hood cover panels and splice brackets in their crate.

- -L and -L/R doors may have 2, 3 or 4 panels, -S and -S/R doors may have 2, 3, 4 or 5 panels.

Locate the flashing. There should be two long segments and two short side segments.

Locate the hardware in the small parts box.

-L, -L/R

Flashing

Top hood
cover panels

Splice bracket   End splice bracket

-S, -S/R

2 **-L and -L/R doors:** install the
end splice bracket.

Do this on both sides
of the head assembly.

T40

SMALL PARTS
01900820

2

3 **-L and -L/R doors:** install the rest of the splice brackets.

T40

T40

13mm

SMALL PARTS   01900820   01901508

4   4

13mm
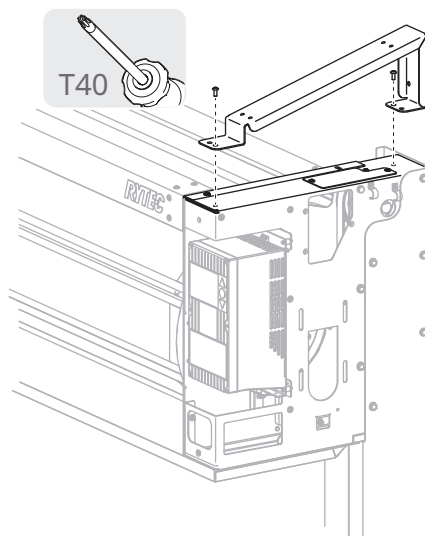
4 **-S and -S/R doors:** install the end splice bracket.
Do this on both sides of the head assembly.

SMALL PARTS
01900820   T40

13mm

1

2

1

KEEP REUSE
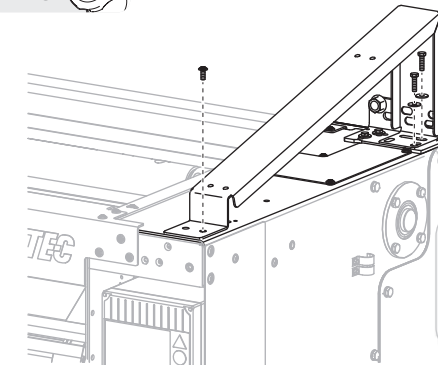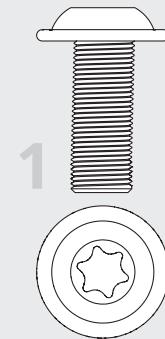
Use hardware saved in Step 10
on page 6.
Rear screw connects to **flanged nut**.
Front screw connects to **riveted nut**.

5 **-S and -S/R doors: finish anchoring**
the wall mount bracket through the splice bracket.
Do this on both sides of the head assembly.

Anchoring
hardware
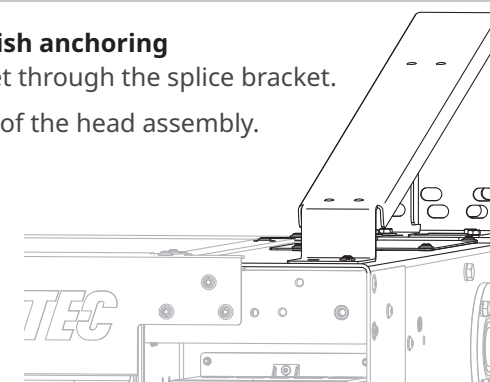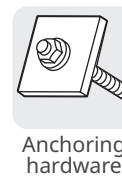
Use at least one
anchor point through
the splice bracket
and the wall
mount bracket.

26

6 **-S and -S/R doors:** install the rest of the splice brackets.

T40

T40

13mm

13mm

01900820   01901508

SMALL
PARTS   4   4
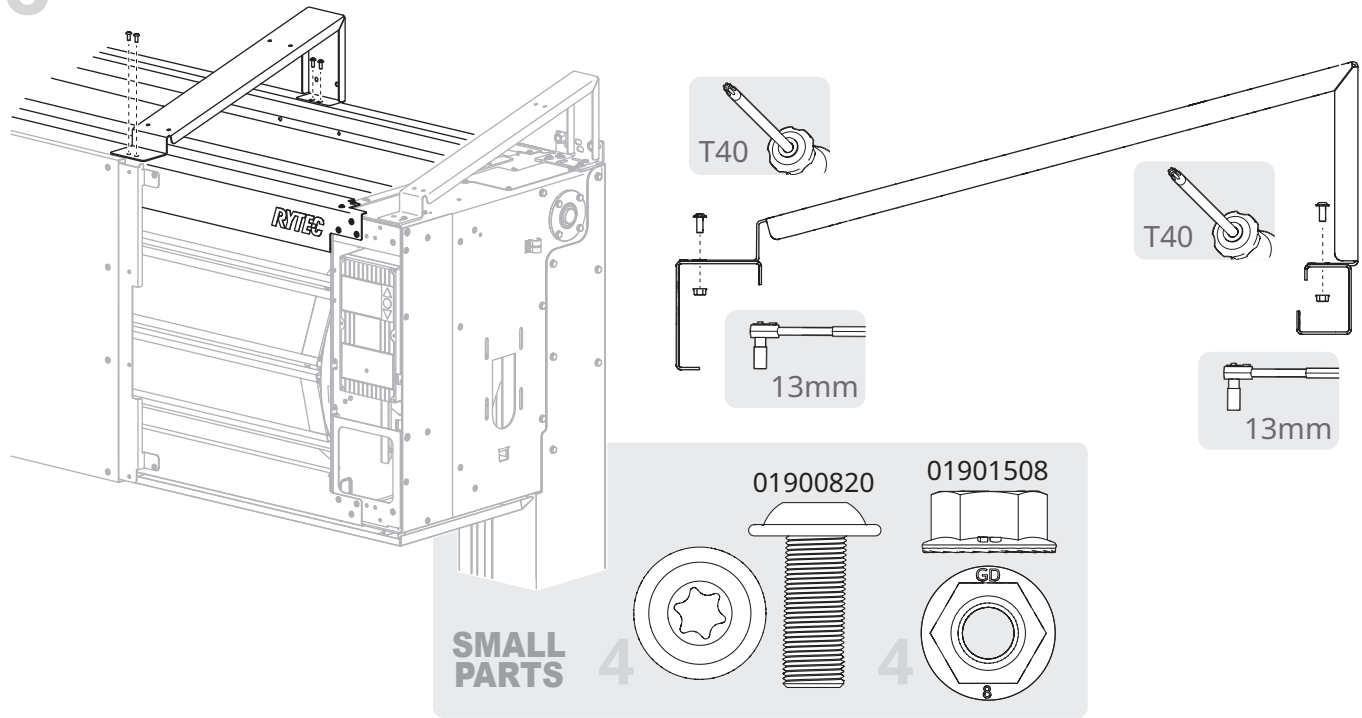
7 **All doors: install** the top hood cover panels.
  ▪ **Install panels left to right:** each panel overlaps the panel to the left.

T40   SMALL PARTS
01900820

4
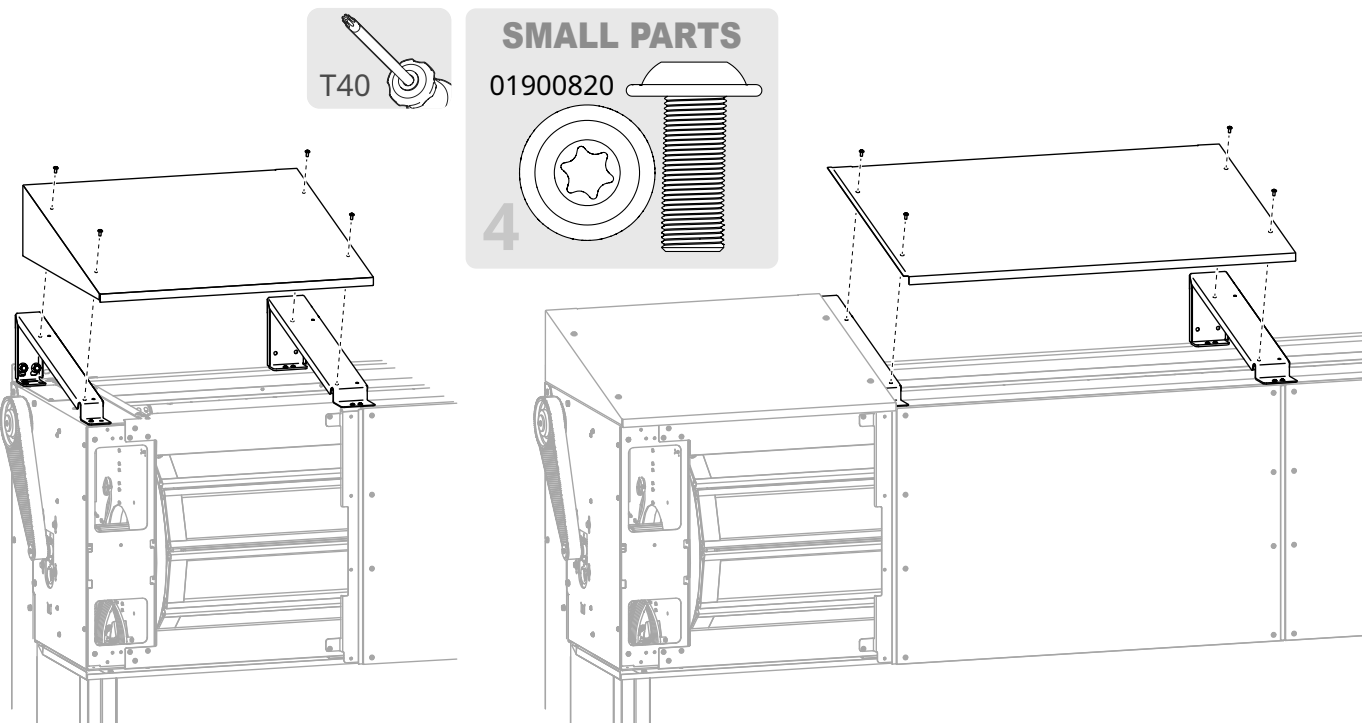
8 Anchoring hardware

Align side flashing with top of hood cover, place flashing tight against the cover and **anchor** in place.

Do this on both sides of the head assembly.
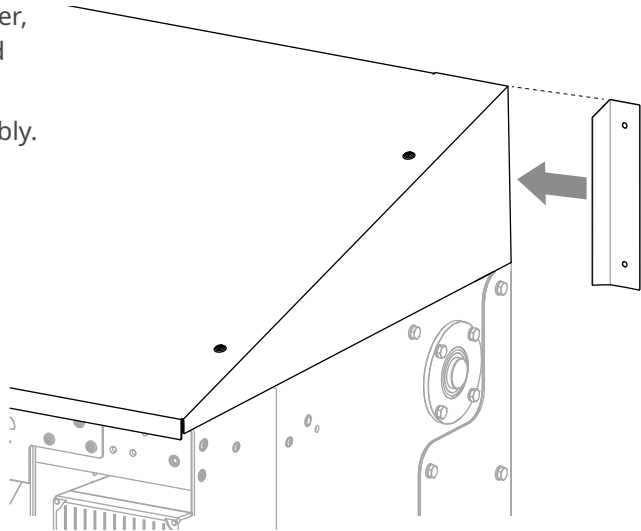
9 Anchoring hardware

Align top flashing with end of side flashing, place flashing tight against the cover and **anchor** in place.
  ▪ The two sections of top flashing overlap by 1-5/8" (40mm).

1-5/8"
(40mm)

27
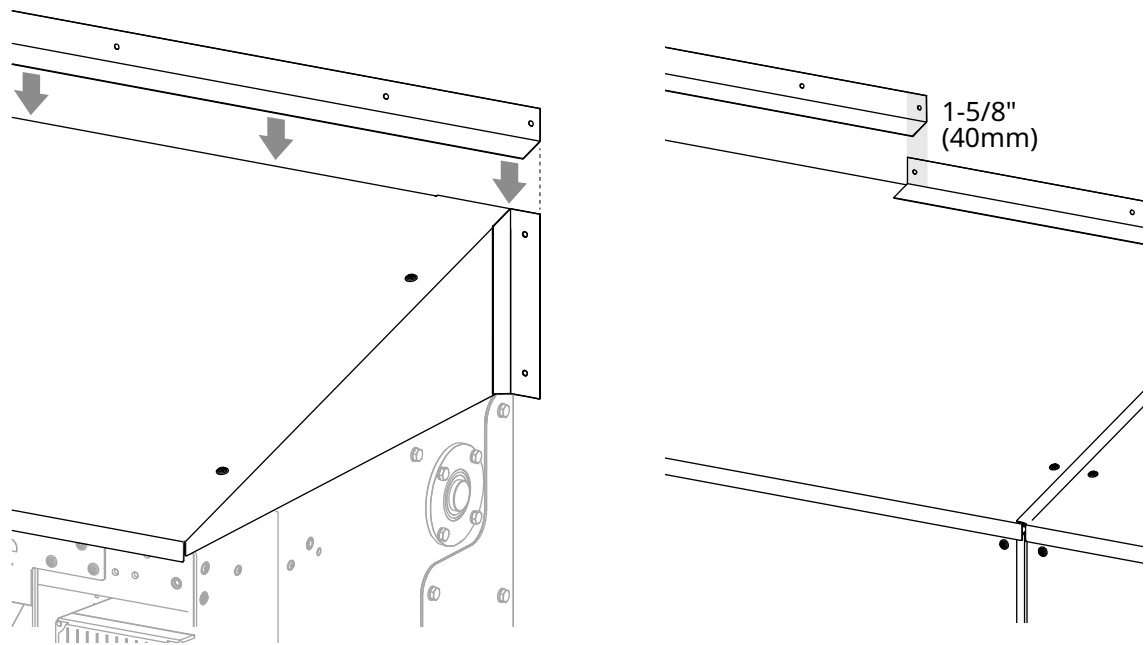
Before powering up the door

⚠ 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.

#2

- **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

- While the control box is open, **locate** the 120Ω resistor for CAN bus testing taped to the bottom of the box

Sample electrical specs shown

POWER SUPPLY: 460v +/- 10% 3 PH, 60Hz@ 7.1 FLA

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

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

Parameter name

P: Password   0
001=   1979 Cyc

Parameter number
All three digits are hexadecimal

Parameter value
? = value being changed
√ = change saved

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

The Controller Controls

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

OPEN

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

RESET

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

CLOSE

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

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

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

Icon key

Press

Press and hold

Press UP or DOWN arrow, as needed

Make sure the protective film has been removed from the Advanced[3] light curtains in both door tracks before turning on power to the door.

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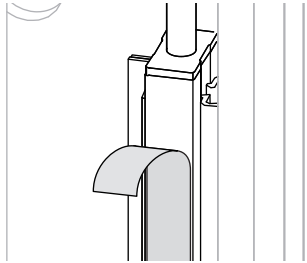
First: set the controller to Parameter mode and access Service level parameters

Do This   *Result*

1   ON
OFF
Turn on power to controller

Spiral
0 Cycles

The door starts in run mode.

2 until the parameter screen displays

P: Password   0
001=   [xxx] Cyc

You are in Parameter mode. Go to parameter 999.

3 2x to reach parameter P:999

P: Password   0
999=   0000 #

The Password parameter P:999 screen displays.

Do This   *Result*

4 1x to move cursor to the right (edit value)

P: Password   0
999=   0000√#

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

5 16x to set value to hexadecimal 10

P: Password   0
999=   0010?#

Set the value to 10 (Service level password).

6 until question mark changes to checkmark (value saved)

P: Password   S
999=   0010√#

The Service level password is saved.

7 The controller automatically moves to parameter L:201.

L: SAI Slot2
201=   - #

28

Next: begin the SmartSurround™ system synchronization

Do This   *Result*

1 △ **1x** to show the first set of light curtains

```
L:SAI Slot2
201= 0932-9156?
```

2 Check the Advanced[3] 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

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.

Do This   *Result*

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

△ until the setting is saved

```
L:SAI Slot2
201= 0948-9147√
```

5 The controller moves to parameter L:401.

```
L:SAI  Slot4
401=      - #
```

6 △ **1x** to show the first set of light curtains

```
L:SAI Slot4
401= 0932-9156?
```

7 Check the SmartSurround™ cover mounted (front) 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*

8 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.

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

△ until the setting is saved

```
L:SAI Slot4
401= 0992-9187√
```

10 The controller moves to parameter L:501.

```
L:SAI  Slot5
501=      - #
```

11 △ **1x** to show the first set of light curtains

```
L:SAI Slot5
501= 0932-9156?
```

Do This   *Result*

12 Check the SmartSurround™ wall mounted (rear) 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

13 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.

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

△ until the setting is saved

```
L:SAI Slot5
501= 0923-9126√
```

15 The controller ends at parameter P:000.

```
P:Door Cycles  S
000#     0000 Cyc
```

29
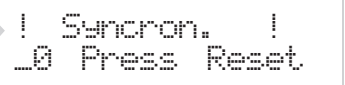
Next: set limits

Do This   *Result*

1 △ until the "Syncron." screen displays
▽

```
! Syncron.   !
_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 the next page.
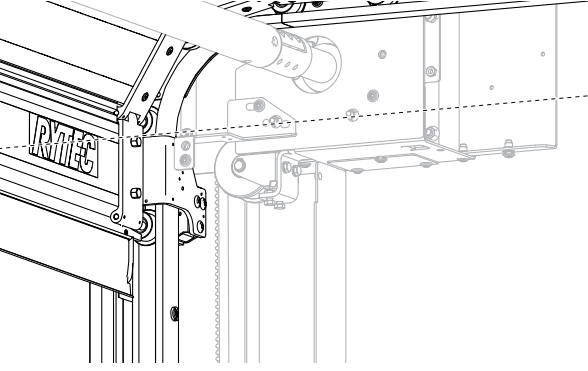
3 **Resume** the sequence and set the open position.

△ until open height is correct
▽

```
>+ To  Open  Pos.
_0 Hold  Reset
```

The top of the end brackets should align with the bottom of the radial guide track.
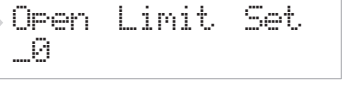
Do This   *Result*
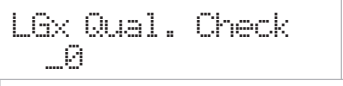
4 △ until "Open Limit Set" screen displays
▽

```
Open  Limit  Set
_0
```

when quality check is complete, you see these screens:

```
LGx Qual. Check
_0
```

```
! Syncron.   !
_0 Press  Close
```

Scrolling message:
```
Press Close button to begin
```

5 △ **1x** to start. The door panel closes.
▽

```
Search Edge
-1330_Auto Close
```

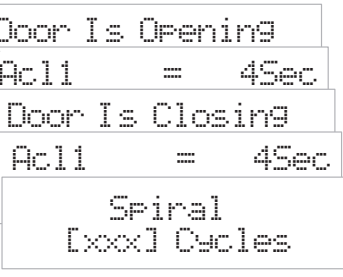the door panel stops when it reaches the bottom of the light curtain, then you see:

```
!Auto Calibrate!
Press Open butto
```

6 △ **1x** to start auto-calibration
▽

```
Door Is Opening
Ac11     =    4Sec
```
```
Door Is Closing
Ac11     =    4Sec
```
```
Spiral
[xxx] Cycles
```

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

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

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

- You can manually adjust the close limit after calibration is complete by changing parameter P:275. *See page 34.*

30

RYTEC

What to test after powering up the door

fully open and close door five times


```
⇳ To Open Pos.
_0 Hold Reset
```
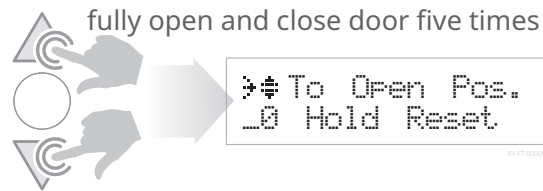
Press and hold the arrows to fully open, then fully close the door five (5) times.

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.

Use the hinge screws as the vertical reference.

Laser level

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**.
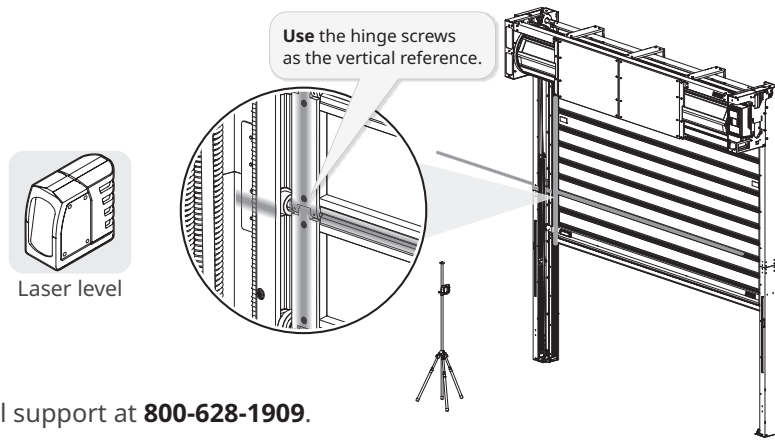
3 Are the drive belt pulley assemblies level?

Test: make sure the secondary drive belts in both side columns are centered in the pulley assemblies after the door has been opened and closed several times.

Yes: no action is needed.

No: follow the steps in *How to level the baseplate pulley assembly*.
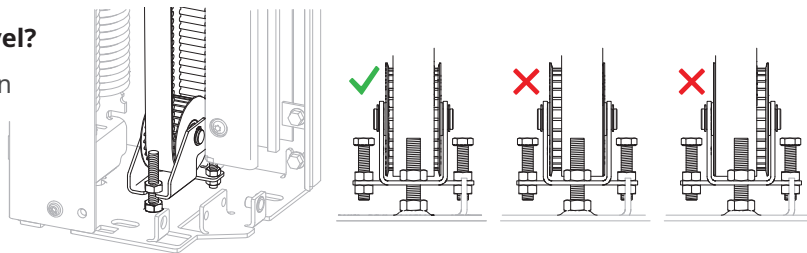
4 Is the manual brake release operating correctly?

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

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

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

5 Is the door operating correctly?

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

Yes: no action is needed.

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

How to reverse the rotation of the motor

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

Do This	Result

1 until the parameter screen displays

```
P: Password      0
001=  [xxx] Cyc
```

You are in Parameter mode. Go to parameter P:999.

2 2x to reach parameter P:999

```
P: Password      0
999=     0000 #
```

The parameter P:999 screen displays.

3 1x to move cursor to the right (edit value)

```
P: Password      0
999=     0000✓#
```

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

4 16x to set value to hexadecimal 10

```
P: Password      0
999=     0010?#
```

Set the value to 10 (Service level password).

5 until question mark changes to checkmark (value saved)

```
P: Password      S
999=     0010✓#
```

The Service level password is saved.

6 1x to move cursor to left (parameters)

```
P: Password      S
999=     0010 #
```

You can now go to parameter P:130.

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

Do This	Result

1 until parameter displays

```
P: Mtr Rotation S
130=       0 #
```

Value is either 0 or 1.

2 1x to move cursor to the right (edit value)

```
P: Mtr Rotation S
130=       0✓#
```

The value is either 1 or 0.

3 press either arrow to change value

```
P: Mtr Rotation S
130=       1?#
```

Chage the 0 to 1, or change the 1 to 0.

4

```
P: Mtr Rotation S
130=       1✓#
```

The new value is saved.

5 until the "To Open Pos." screen displays

```
⇳ To Open Pos.
_0 Hold Reset
```

Reset the limits for the door.

31
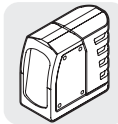
How to adjust the secondary drive belt

⚠️ **WARNING**

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

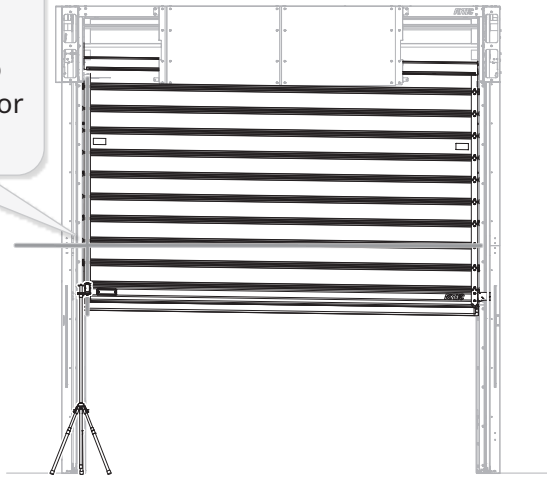**Contact with high-voltage wires, or the door being activated unexpectedly,** can cause death or serious injury.

1

Laser level

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

2 **Loosen** the top front nut on the baseplate pulley assembly until there is noticeable slack in the secondary drive belt.

- You will need to **loosen** the screws and **move** the CAN bracket out of the way to access the pulley assembly.
- It should not be necessary to remove the pulley assembly from the mounting bolt.

17mm

13mm
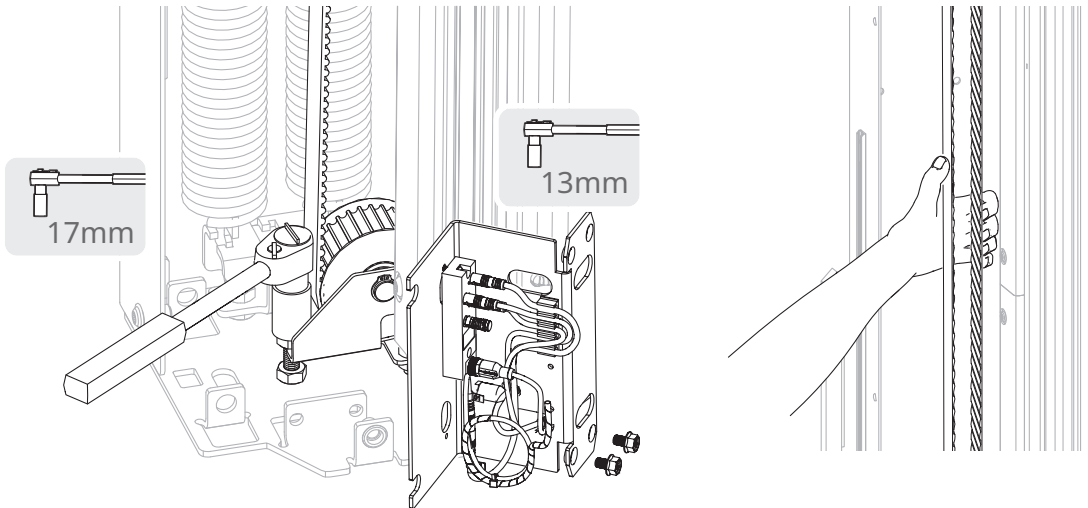
3 In the head assembly, **"jump" the secondary drive belt** one notch in the pulley.

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

Push up slack to create a "wave" in the belt and hold it against the pulley.

Press belt up and in until teeth drop into the next notch on pulley.

Push "wave" around top of pulley and down the other side.

Keep lower hand a safe distance from pulley
12"
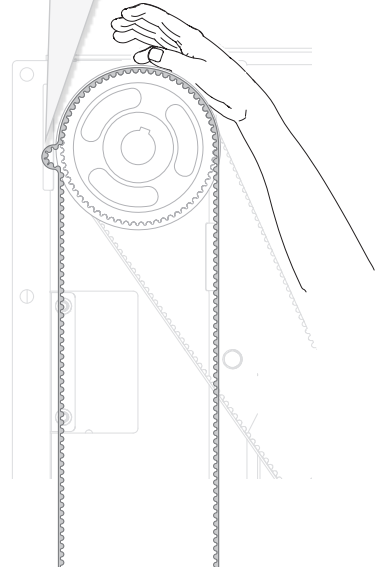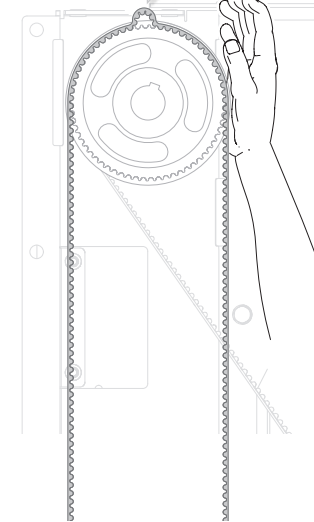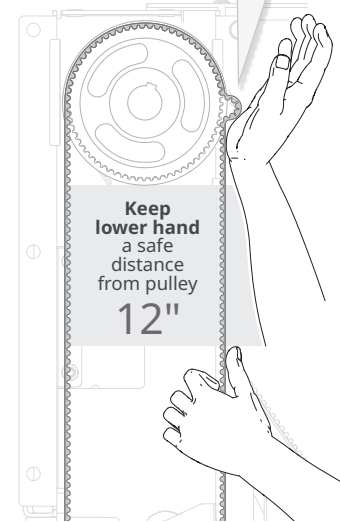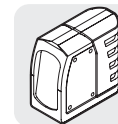
4 Laser level

**Level** the door panel again.

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

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

5 **To reset the tension** on the belt:

1: **Tighten** the top front nut to increase the tension.

2: **Press** the front and rear legs of the belt together to test tension.

3: **Adjust** the height of the top nut as needed to reach the correct tension.

17mm
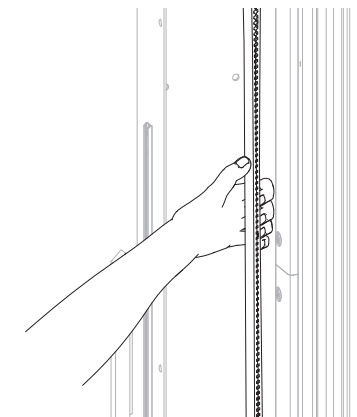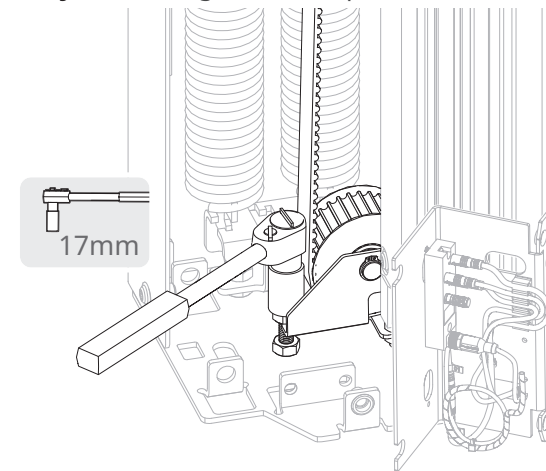
**6** **Reinstall** the CAN bracket.

32

RYTEC.

How to adjust the proximity sensor

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

Lever down: brake released

Lever up: brake reset
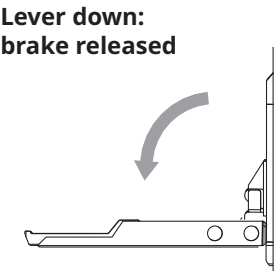
Controller
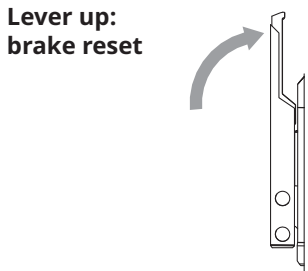
```
Emergency Stop
F211 E-Stop Ext1
```
✓
```
Door is Stopped
```
No action is needed

```
Emergency Stop
F211 E-Stop Ext1
```
✗
Reset the sensor

⚠ WARNING

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

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

1 At the motor, **remove** the brake release lever.

DO NOT remove the cable. The play in the spring allows it to turn with the release lever until it is free of the motor.
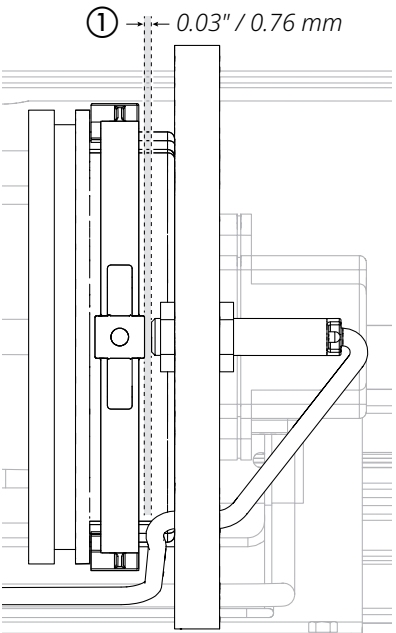
10mm
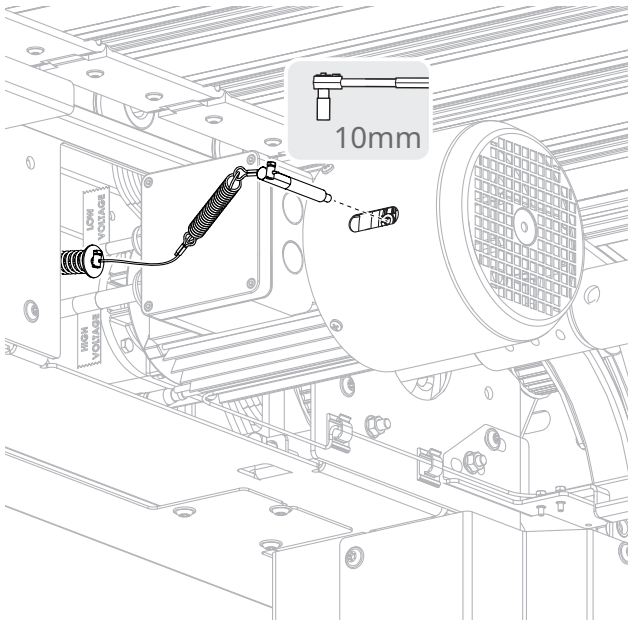
2 **Remove** the four screws and the bottom cover of the motor.

#2

KEEP REUSE
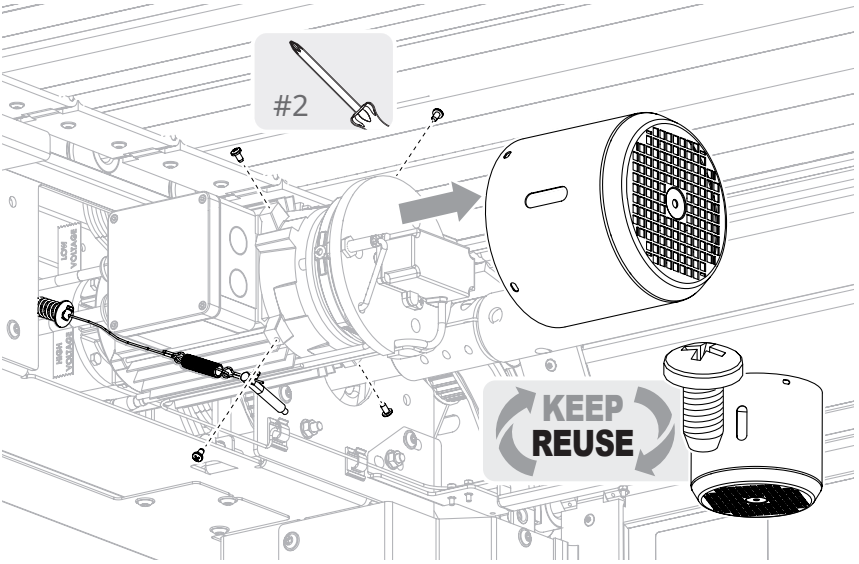
3 **Check** the distance between the sensor and the brake release arm ①.
It should be .03"/.76mm, which is the **thickness of a credit card.**

To adjust the sensor, first **loosen** the outer nut ②, then **tighten** the inner nut ③ to secure it in place.

① → *0.03" / 0.76 mm*

③ ②

17mm
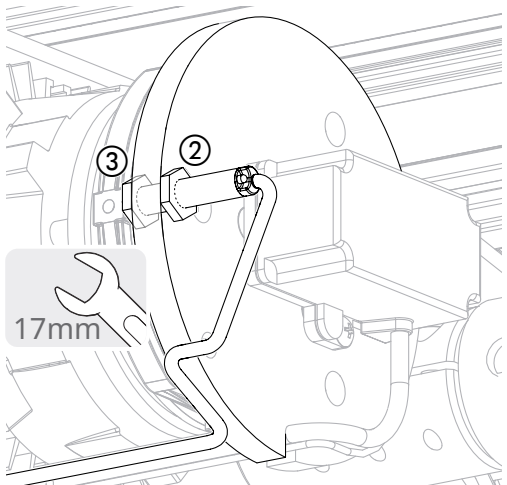
**4** **Test** the manual brake release again.

If the controller displays the F211 error on reset, repeat these steps and retest.

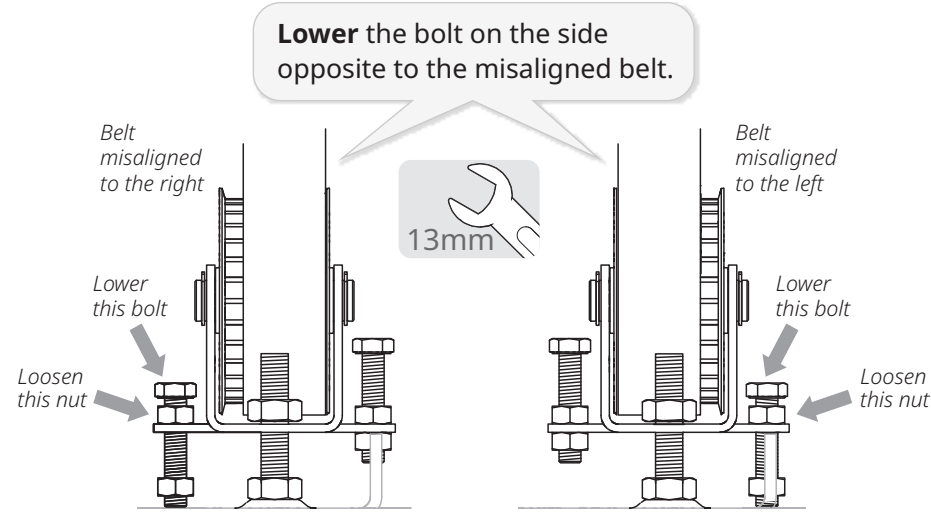**If the controller displays "Door Held Open",** the issue is resolved.
Reinstall the motor cover and the brake release lever.

33

RYTEC

How to level the baseplate pulley assembly

1 **Loosen** the screws and **move** the CAN bracket out of the way to access the pulley assembly.


13mm
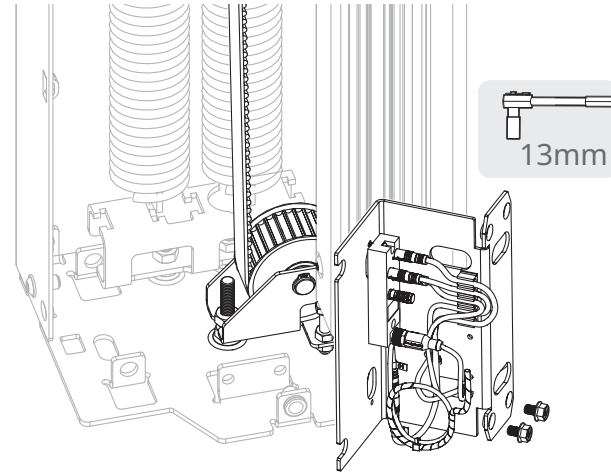
2 **Loosen** the top nut of the bolt on the side opposite to the side the belt favors.

Lower the bolt until it touches the baseplate.

Turn the bolt **one more half-turn** to raise that side of the pulley assembly, then test the door.

Lower the bolt on the side opposite to the misaligned belt.

Belt misaligned to the right

Belt misaligned to the left

13mm

Lower this bolt

Lower this bolt

Loosen this nut

Loosen this nut

3 **Manually raise and lower** the door three (3) times.

4 **If the belt is not centered in the pulley assembly:** repeat these steps and retest.

If the belt is centered: raise the lower nut to lock the assembly in place.

Reinstall the CAN bracket when you are done.

13mm

Raise nut
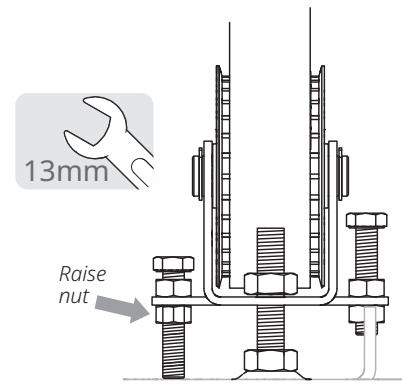
How to manually reset the close limit (optional)

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

Do This *Result*

1 until the parameter screen displays

```
P:Password      0
001=   [xxx] Cyc
```

You are in Parameter mode. Go to parameter 999.

2 2x to reach parameter P:999

```
P:Password      0
999=     0000  #
```

The Password parameter P:999 screen displays.

3 1x to move cursor to the right (edit value)

```
P:Password      0
999=     0000✓#
```

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

Do This *Result*

4 16x to set value to hexadecimal 10

```
P:Password      0
999=     0010?#
```

Set the value to 10 (Service level password).

5 until question mark changes to checkmark (value saved)

```
P:Password      S
999=     0010✓#
```

The Service level password is saved.

6 1x to move cursor to left (parameters)

```
P:Password      S
999=     0010 #
```

You can now go to parameter 275.

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

Do This *Result*

1 until parameter displays

```
P:Incremental  S
275=     -12 Inc
```

The default value is -12 (default at.

2 1x to move cursor to the right (edit value)

```
P:Incremental  S
275=     -12✓Inc
```

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.

Do This *Result*

3 until new value displays

```
P:Incremental  S
275=     [x]?Inc
```

IMPORTANT Do not change the value by more than 10 increments. Then test the door.

4 until question mark changes to checkmark (value saved)

```
P:Incremental  S
275=     [x]✓Inc
```

The new value is saved.

5 until door returns to run mode

```
       Spiral
    [xxx] Cycles
```

34

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:Operat.Mode  S
980=        0 #
```

The default value is 0.

2 △ 1x to move cursor to the right (edit value)

```
P:Operat.Mode  S
980=        0√#
```

You can now change the value.

3 △ 4x to change the value to 4

```
P:Operat.Mode  S
980=        4?#
```

4 △ until question mark changes to checkmark (value saved)

```
P:Operat.Mode  S
980=        4√#
```

The new value is saved.

5 △ until door returns to run mode

```
     Spiral
[xxx] Cycles
```

6 △ press either arrow to start cycling

```
Acl 1      5 Sec
```

---

1 **Watch** the door as it cycles.
- **Make sure** the door panel rises to the fully open position, remains in place for the standard time, then closes to the fully closed position.
- **Make sure** the fully open and fully closed positions remain at the set limits.
- **Make sure** the reversing edge is level when the door is fully closed.

IMPORTANT
- **Let the ACL timer** hold the door open through each cycle. Shortening the timer while the door is cycling can cause the motor to overheat.
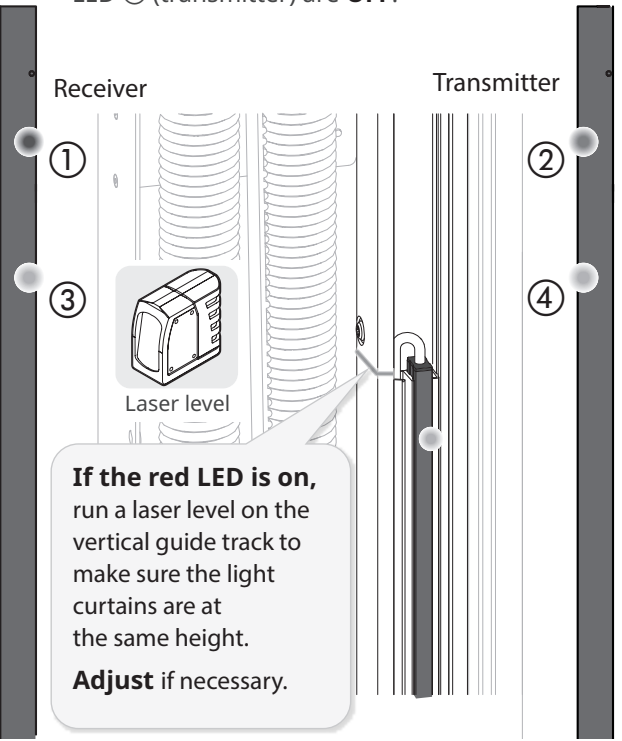
2 While the door cycles, **look and listen** for:
- **Unusual noises** such as grinding, whining or excessive motor noise
- **Excess movement** by the motor, drive or drum.
- **Unexpected delay** in activation or unusually long time period before automatically closing.

3 **Make sure** the blue LED ① (receiver) and green LED ② (transmitter) on the Advanced[3] light curtains are flashing once every two second, and that the red LED ③ (receiver) and yellow LED ③ (transmitter) are **OFF**.
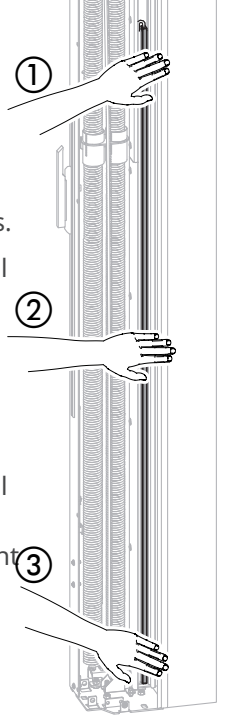
Receiver   Transmitter

①   ②

Laser level

③   ④

If the red LED is on, run a laser level on the vertical guide track to make sure the light curtains are at the same height.
Adjust if necessary.

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 **Test the Advanced[3] light curtains** by placing your hand flat across any of the light curtains at the top ①, middle ② and bottom ③ while the door panel closes.

Make sure the door panel stops quickly if the door panel is close to your hand, more gradually if the panel is farther up the door track.

Make sure the door panel returns to the fully open position each time the light curtain is activated.

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.
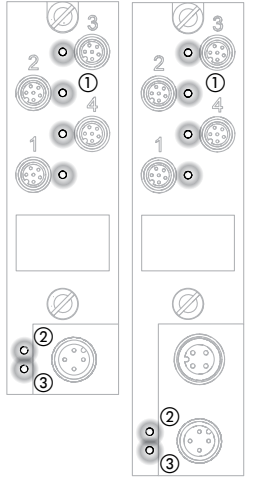
---

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).

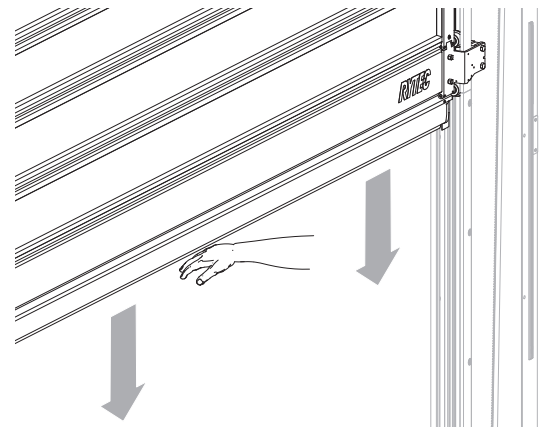**Contact technical support** if you do not see this.

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.

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

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.
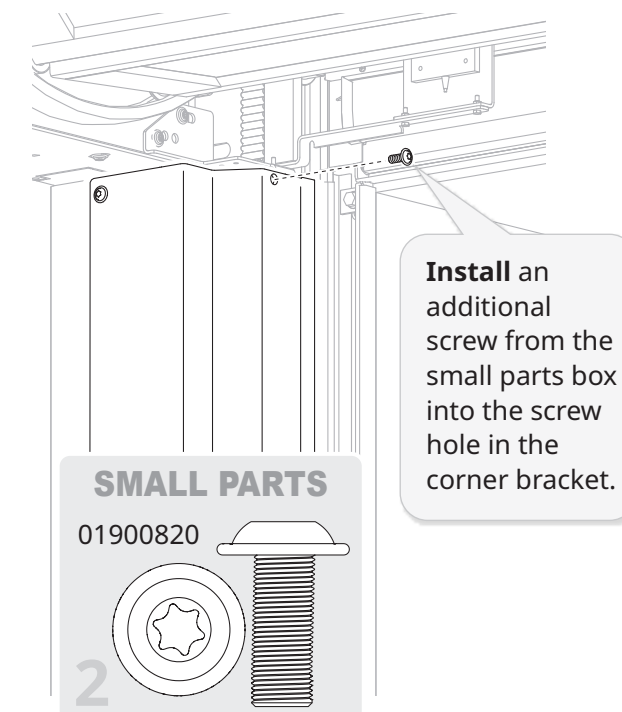
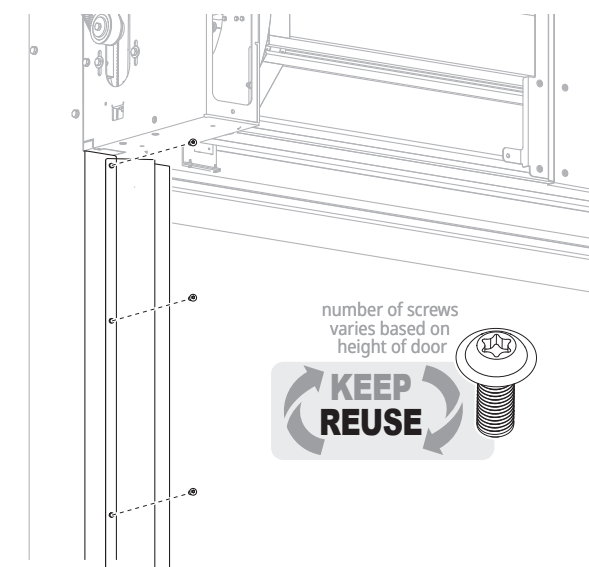**9** **Activate** the door using each activating system at least three times per system.
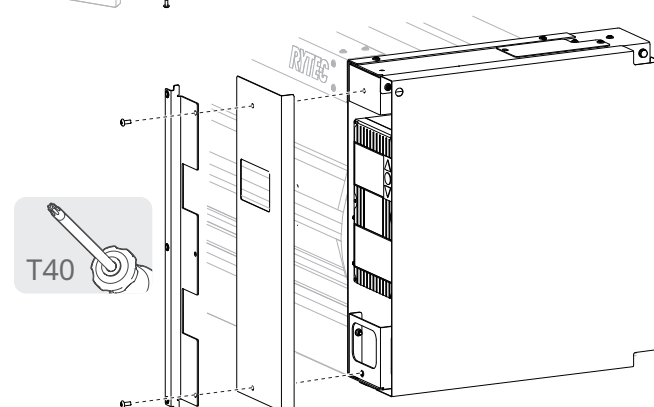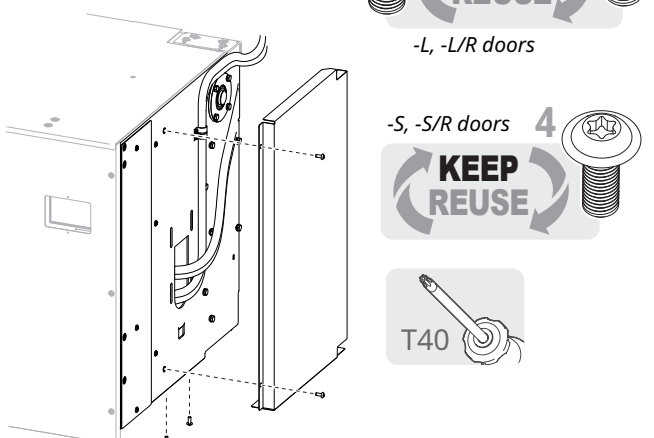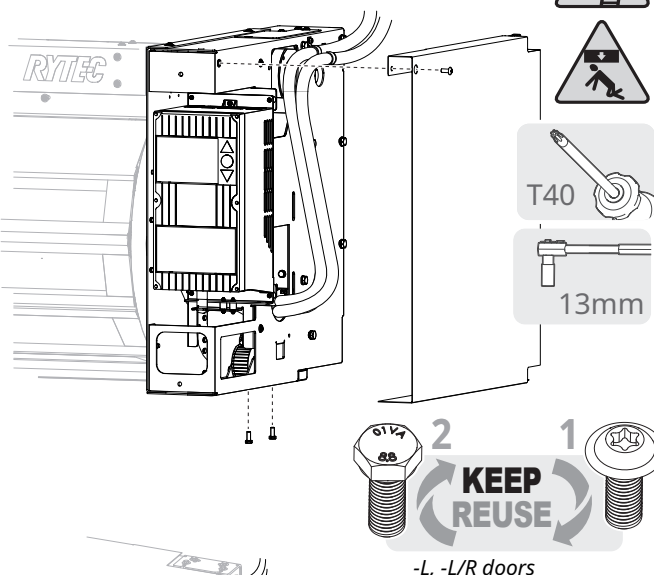
35

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.

number of screws
varies based on
height of door

KEEP REUSE

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

SMALL PARTS
01900820

2

2 **Reinstall the side covers** and any **front covers** that were removed.

T40

13mm

2 **1** KEEP REUSE

-L, -L/R doors

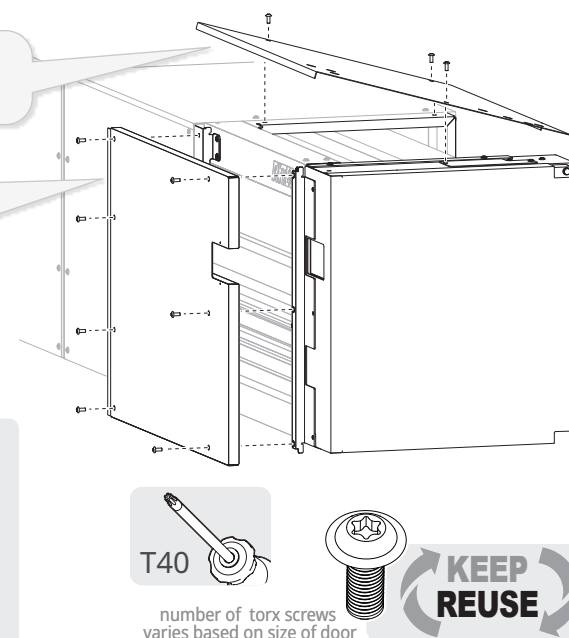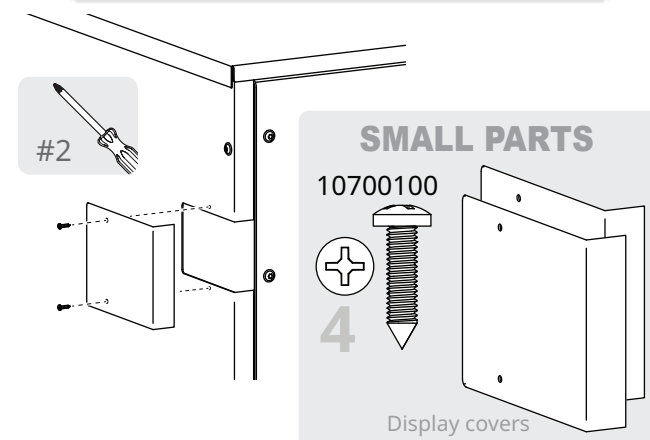*-S, -S/R doors* **4**
KEEP REUSE

T40

T40

If the door has a preinstalled front hood cover, **reinstall** the front spacer brackets in front of the console covers.

3 If the door has a preinstalled flat top hood cover, **reinstall** the top panels.

If the door has a preinstalled front hood cover, **reinstall** the front panels.
Locate the display covers and hardware in the small parts box and **install.**

#2

SMALL PARTS
10700100

4

Display covers

T40

KEEP REUSE

number of torx screws
varies based on size of door

Notes:

-S and -S/R doors have both top and bottom front spreaders.

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

SMALL PARTS

Spray paint

5 **Caulk** between the door opening and the door.

6 **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.

36