FlexTec T™ 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.

- **NOTICE**
  - Notice is used to address practices not related to physical injury but which, if not followed, could result in damage to the door or other property.

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 that all personnel at the installation site have been informed of the date, time and location of the installation.
  - Make sure that 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 that you have been informed of any hazardous conditions that exist within the installation site.
  - Make sure that the installation site is kept clear of obstructions and debris and that the floor is dry.
  - Make sure that 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.

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.

Requirements – Lifts

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-inch wide fork
  - Side shift capability

- **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

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.

Safety icons used in this manual

- **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.

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

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

- ** Shock hazard**

- ** Fall hazard**

- ** Crush hazard**

- ** Cut hazard**

- ** Forklift**
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.
FlexTec T™ Installation Manual

How to uncrate the door and inspect the installation site

NOTICE
If more than one door is to be installed, treat each crate as a separate installation. Each door is shipped in a separate crate, and all parts for the door are in the same crate. Each door has a unique serial number.

Using parts from different crates in the same door voids the warranty for all doors in the installation.

1. Remove the top panel.

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

Motor: check the serial number on the attached tag.
Head assembly: drive side may be left (LH) or right (RH). LH is used for this manual.
Retainer brush: crated on top of side columns.
Side Columns: check the serial number taped to top of columns.
Head assembly end guards: Non-drive side guard has wider flanges than drive side guard.
Top cover (optional): may be 1-piece or 2-piece and is crated on top of head assembly.
Counterweight: crated separately along back of crate.
Small parts box: check the serial number on side of box.

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

Tools you need:
- Laser level
- Bar clamp
- Measuring tape
- Spirit level
- Carpenter's square
- Hardware tools and sizes (manual or powered)

You also provide:
- Ancehting tools
- Anchoring hardware
- Shims
- Caulk
- Wood block
- 5/16" 3/8" 1/2" 17mm Socket wrench
- 7/16" 1/2" 15mm Two socket wrenches needed
- 5/32" 1.5mm Hex wrench
- 12-point socket wrench

Pry bar

IMPORTANT
Check serial numbers on both. Open box, remove the red documents envelope, then open the envelope and get the object list. Check serial numbers on both.

Motor: check the serial number on side of box.

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

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

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

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.

IMPORTANT: Use parts from different crates in the same door voids the warranty for all doors in the installation.
Check the measurements. Make sure the door will fit in the installation site.

1. Locate the production width and the production height on the object list.
2. Measure the door opening to make sure the height and width match the production width and production height on the object list.
3. Calculate the width to center: divide the production width by 2. Write the result on the object list. Use it when you center the door.
4. Find the total width of the door: measure the width of the front spreader. Write the result on the object list.
5. Calculate the total height of the door: measure the height of the front spreader and add this to the production height. Write the result on the object list.
6. Inspect the site around the door opening: make sure the total width and height of the door will fit in the space, and that there are no obstructions.
7. Make sure there is enough space to lift the door: the head assembly is lifted from the top. Make sure the site has space for the total height of the door plus the height of the forklift backrest.

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

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

2. Use the width to center from the object list (w = 0). Starting at the centerline, measure and mark the reference line for the first column.

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

2: Use the width to center from the object list (w = 0). Starting at the centerline, measure and mark the reference line for the first column.

How to center the door in the door opening

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

2. Use the width to center from the object list (w = 0). 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 and head assembly

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

1 Remove the top and bottom front covers from both side columns.

Don’t run anchors through the top two anchor points on the side columns until after the head assembly is installed. These points anchor both the side column and the head assembly.

Washers must fit within the raised area around the anchor hole (dotted lines). Washers that extend beyond this will block the side column covers.

Make sure you remove the protective film from both light curtains before setting limits. Also, make sure the light curtains are level after the side columns are installed. The light curtains must be vertically aligned to work properly.

Step 1: 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.

2 Level the floor.

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

If measurements are the same, the floor is level. Measurements should match when you measure with the shims in place.

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

Wall not plumb
Surface obstructions
3. Clamp the drive side column into place.

- **Bar clamp**

4. Plumb the drive side column.

- **Laser level**

5. Anchor the drive side column to the wall. Set anchors tight. Remove clamp.

   - Make sure you use only the bottom four anchor points, and the washers are the correct size.
   - Use 1/2” diameter through bolts, 1/2” diameter threaded rods or equivalent to anchor side columns.
   - Anchoring hardware and materials must be provided by the door owner or installer.
   - Make sure anchors will not interfere with moving parts of the door.

6. Measure and mark the reference mark for the non-drive side column.

- **Measure tape**
- **Carpenter’s square**

7. Clamp the non-drive side column into place.

- **Bar clamp**

8. Make sure clamp is above Pathwatch LED strips and light curtain.

9. Align inside edge of side column against reference mark you made when you centered the door.

10. Use the point where the column meets the wall as your reference.
8 Plumb the non-drive side column.

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

10 Plumb the columns to each other: make sure distances from front of columns to laser line match.

11 Loosely anchor the non-drive side column to the wall. Remove clamp. Make sure you use only the bottom four anchor points, and the washers are the correct size.

12 Before installing the head assembly, make sure the preinstalled cables for the light curtain (gray) and front and rear Pathwatch (black) are below the third anchor point (dotted line) so they are not pinched or crushed when the head assembly is installed.
Step 2: Install the retainer brush

1. **Install** the retainer brush against the top of the door opening so that the brush points forward and up.
   - The brush can be installed vertically or horizontally.
     - To install vertically, align the bottom of the brush flush with the top of the door opening.
     - To install horizontally, offset the brush 5/8” from the edge of the door opening.

Step 3: Install the head assembly

1. **Forks flush with edge of pockets**
2. **Back of end plates flush with columns**
3. **Lower until bottom of door panel is just above track**

**NOTE:** Head assembly is **NOT** resting on columns

3. **Manually pull** the door panel into the drive tracks in both side columns. Then **finish lowering** the head assembly.
4. Make sure the head assembly is aligned correctly.

5. Anchor head assembly to columns.

6. Anchor both side columns to the wall using anchor points a and b. Set anchors tight.

7. Remove lift pockets.

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**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.

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

3. Tighten all anchors.
How to run the wires from the non-drive side column

1. On the non-drive side: cut ties, run cables through hole to rear spreader.

2. Thread cables through the rear spreader.

   CAUTION: Self-drilling screws that secure rear seal to rear spreader are exposed along spreader.

3. Thread cables through hole in drive side column. Run cables together with drive side cables.

4. On the drive side, remove the motor tag and install the drive side end guard. This end guard has shorter flanges.

How to install the counterweight

NOTICE

Do not unspool or trim the counterweight strap. The strap is pre-cut and pre-spool to match the door height.

NOTICE

Make sure door is in fully open position before setting counterweight.

1. Cut tie to release strap. Roll strap down side column.

2. On the drive side, remove the motor tag and install the drive side end guard.

   SMALL PARTS

   3/8"

   0550016

3. Loosen and remove bolts, nuts and retainers. Thread strap through top bracket from front to back and pull strap tight. Replace retainers, bolts and nuts and tighten to secure strap in place.

   Place counterweight on 8-inch block of wood until strap is tightened.

   Fold and tape extra strap. Do not cut.
How to finish the installation

1. **Install** the non-drive side end guard. This end guard has wider flanges.

2. **Insert** a 12-point 15mm socket into the bottom of the motor and engage the manual axle.
   - Pull down on the brake release lever to release the brake.
   - Turn the wrench counterclockwise to lower the door panel two feet below head assembly, then release the brake release lever.

3. **Caulk** head assembly and side columns.
   - **Install** dome plugs from small parts box.

4. Both side columns

   5/32" KEEP REUSE

   0550088

   0550016

   3/8" SMALL PARTS

   2"
How to install the top cover and motor cover (optional)

NOTE: The configuration of the front spreader and cover change based on the width of the door.
- The front spreader is 1-piece up to a production width of 121”.
  It is 3-piece when the production width is greater than 121”.
- The cover is 1-piece up to a production width of 97”.
  It is 2-piece when the production width is greater than 97”.
- The motor cover/cap are a separate option from the cover and may or may not be included. Check the object list.

How to install the top cover

1. If front spreader is 3-piece: remove the top bolt and nut from both overlap points so the top cover will lie flat.

2. Line up the cover panel(s) so that the front lip overlaps the front spreader.
   Install self-tapping screws through all holes in cover.
   Anchor flange on top cover to wall.

How to install the motor cover

1.
How to install the System 4 controller and wire the door

**WARNING**

All electrical work must meet all applicable local, state and national codes. It is recommended that all electrical work be done by a certified electrician. Failure to wire the door correctly could result in shock, burns or death to the people who install, use or service the door.

**WARNING**

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

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

**NOTICE**

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

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

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

**Before you begin**

1. Make sure you have all supplies and tools.
   - Supplies that you provide:
     - Conduit for high-voltage wiring
     - Conduit for low-voltage wiring
     - Mounting hardware for controller (3 anchors)
   - Tools you will need:
     - Power drill
     - Step drill bit
     - #2 Phillips
     - #20 Torx
     - Precision screwdriver
     - Wire tool
     - Cement drill (if needed to mount controller)

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

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

1 Open the System 4 controller box and get the controller and ferrite filters. 

2 Loosen screws on the control box and open the cover panel.

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

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

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

NOTICE

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

How to install the high-voltage wiring

1 Connect the supply voltage wiring from the disconnect.

12 AWG

WARNING

Set the disconnect switch to the OFF position and perform a lockout/tagout of the high-voltage disconnect before installing wiring to the controller. Do not set the disconnect switch to the ON position until the wiring installation is complete and the controller is fully earth grounded per instructions. Failure to comply could result in shock, burns or death.

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

Maximum torque for all screws is 2.5 in-lbs.

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

Wire colors shown are for 460V power source.

Wire colors for 230V power are L1=red, L2=black, L3=blue.
2. Connect the high-voltage wiring from the motor.
   Shielding: braided copper mesh and drain wire

   **NOTICE**
   - Low-voltage wires can be run in the same conduit.
   - All low-voltage wiring must be 24 VDC+ only, installed per NEC to Class II power supply requirements.
   - Maximum torque for all System 4 controller screws is 2.5 in-lb.

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

Maximum torque for all screws is 2.5 in-lbs.

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

To ensure a tight contact:
1. Loosen the P-clip.
2. Strip high-voltage cable jacket to expose braided shield, then pull back shield and wrap drain wire around it.
3. Run wires, shield and wrapped drain wire under clip.
4. Tighten clip.

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

Place one large ferrite filter around all three wires.

How to install the low-voltage wiring

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

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

16 AWG

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

   ![Encoder Wiring Diagram]

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

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

4. **Connect** the wiring from the light curtain.
   - **Shielding:** metal foil and drain wire

   ![Light Curtain Wiring Diagram]

   ![Receiver Wiring Diagram]

   Receiver: 24 AWG
   Transmitter: 22 AWG

   **Mark controller end of receiver cable** (8-wire, yellow connector) as “Light curtain receiver”
   **Mark controller end of transmitter cable** (4-wire, black connector) as “Light curtain transmitter”
How to set the open and close limits on 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.

**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. So 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**

**The Controller Display**

- Operator level access
- Service level access
- Service level accesses
- more parameters

**Parameter name**

- P: Password
- 007= 1979 Cyc

**Parameter value**

- All three digits are hexadecimal
- ? = value being changed
- ✓ = change saved

**Blinking cursor**

- On left side of display: press arrows to change parameter number
- On right side of display: press arrows to change parameter value

**The Controller Controls**

- **Stop/Reset Button**
  - Press to toggle the flashing cursor between left and right
  - Press and hold arrows to cycle quickly

- **UP Arrow**
  - Press to increase a value or a parameter number

- **DOWN Arrow**
  - Press to decrease a value or a parameter number

**Do This** | **Result**
--- | ---
1 | ! Synchron. ! _0 Press Reset
2 | Hold Reset button if position OK
3 | ! To Open Pos. _0 Hold Reset
4 | ! To Open Pos. _0 Hold Reset
5 | ! Auto Calibrate! Press Open butto
6 | ! Auto Calibrate! Press Open butto

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

- **NOTE:** The door may not close completely during automatic calibration. This is normal. When calibration is complete, the door closes correctly.
How to manually adjust the close limit (optional)

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

Do This Result

1. You are in Parameter mode. Go to parameter 999.

2. You can now change the value of parameter 999.

3. Set the value to 10 (Service level password).

4. The Service level password is saved. You must press and hold the Stop/Reset button for five (5) seconds to save the change.

Next: navigate to Parameter 275 and change the value

Do This Result

1. The default value is -12.

2. You can now change the value.

3. The new value is saved. You must press and hold the Stop/Reset button for five (5) seconds to save the change.

4. You return to run mode.

How to test the door and the safety features

1. Run the door through at least forty cycles of opening and closing.
   - 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 levels set by the open and close limits.
   - Make sure the loop seal is level when the door is fully closed.

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

3. Activate the door using each activating system at least three times per system.

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

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

6. Test the self repair system by striking the door panel with your hand while the door opens and closes.
   - Strike hard enough to push both sides of the door panel out of the drive tracks.
   - When the door panel is lowering, the panel should stop, then reverse direction and self repair while it rises.
   - When the door panel is rising, the door should pause, then continue to rise and self repair while it rises.
   - Make sure the door panel has reinserted itself into both drive tracks by the time the door has closed.