

R Y T E C

Powerhouse Model SD®

Installation Manual



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INTRODUCTION

The information contained in this manual will allow you to install your Rytec Powerhouse SD® Door in a manner that will ensure maximum life and trouble-free operation.

Any unauthorized changes to these procedures, or failure to follow the steps as outlined, will automatically void the warranty. Any changes to the working parts, assemblies, or specifications as written, that are not authorized by Rytec Corporation, will also cancel the warranty. The responsibility for the successful operation and performance of this door lies with the owner.

DO NOT INSTALL, OPERATE, OR PERFORM MAINTENANCE ON THIS DOOR UNTIL YOU READ AND UNDERSTAND ALL THE INSTRUCTIONS IN THIS MANUAL.

If you have any questions, contact your Rytec representative or call the Rytec Technical Support Department at 1-800-628-1909. Always refer to the serial number of the door when calling your representative or Technical Support. The location of the serial number is on the left side of the head assembly.

The wiring connections and schematics in this manual are for general information purposes only. The actual schematic for your custom installation is located in the crate when the door is delivered.

HOW TO USE MANUAL

Throughout this manual, the following key words are used to alert the reader to potentially hazardous situations, or situations where additional information to successfully perform the procedure is presented:



WARNING is used to indicate the potential for personal injury, if the procedure is not performed as described.



CAUTION is used to indicate the potential for damage to the product or property damage, if the procedure is not followed as described.

IMPORTANT: *IMPORTANT* is used to relay information that is **CRITICAL** to the successful completion of the procedure.

NOTE: *NOTE* is used to provide additional information to aid in the performance of the procedure or operation of the door, but not necessarily safety related.

DOOR SERIAL NUMBER

The door serial number is located halfway up the left side column.

IMPORTANT: *When installing multiple doors of the same model but in different sizes, verify the serial number in the head assembly matches the number in the control panel.*

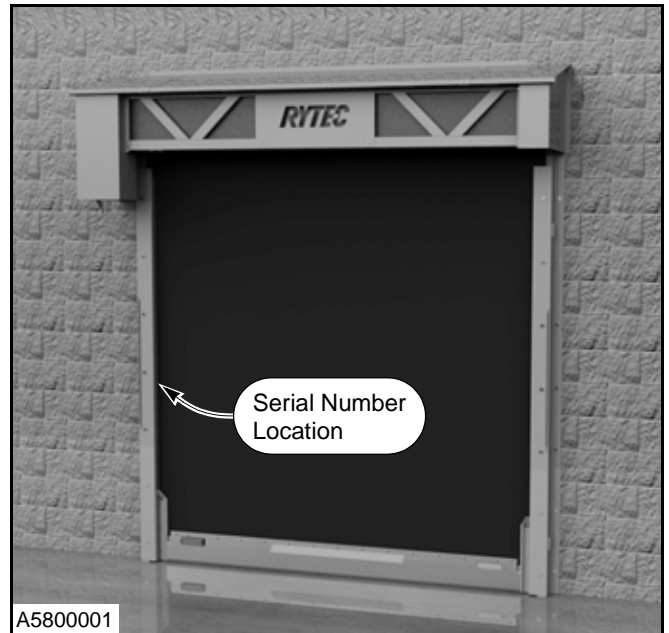


Figure 1

ITEMS IN SHIPPING CRATE

- Header Assembly
- Left and Right Side Columns
- Spreader Bar
- Control Panel
- Installation Manual
- Owner's Manual
- Electrical Schematic (door specific)
- Small Parts Carton

IMPORTANT: *Some door assemblies are shipped in multiple crates. Every Powerhouse door comes with a door-specific electrical schematic. Since the doors come in different sizes and configurations, always use the electrical schematic that came with that door to install and/or troubleshoot problems.*

INSTALLATION—ELECTRICAL

ELECTRICAL

- When working with electrical or electronic controls, make sure that the power source has been locked out and tagged according to OSHA regulations and approved local electrical codes.
- Qualified electricians must do all electrical wiring. Wiring must meet all local, state, and federal codes.
- Please check the documentation to determine the specified voltage. Confirm that the power supply meets the voltage required: 208V, 230/240V, or 460/480/575V. Voltage and fuses or breakers should be checked before connecting to the main power supply.

INSTALLATION

MATERIAL, TOOLS, AND EQUIPMENT

1. Threaded rod (½-in. diameter) and other various wall anchor hardware and material. Concrete anchor bolts (½-in. diameter). (See "ANCHORING METHODS" on page 3.)
2. Assorted shim stock.
3. Steel fish tape.
4. Double-sided tape (for attaching shims to wall).
5. Carpenter's level (4-ft. minimum length).
6. Carpenter's square.
7. Hammer drill.
8. Masonry drill bits (for ½-in. diameter anchors).
9. Hammer or mallet, and block of wood.
10. Crowbar or pry bar.
11. Assorted hand tools (pliers, tape measure, etc.).
12. Socket and wrench sets.
13. Water level, line level, laser level or transit.
14. Two ladders (taller than height of door opening).
15. Forklift (see "Forklift or Crane Requirements").

GENERAL ARRANGEMENT OF DOOR COMPONENTS

Figure 2 shows the location of the major components of the door and the general placement of the associated sub-assemblies for a typical installation.

NOTE: These illustrations are for informational purposes only. They should not be relied upon solely during the installation of your door and its sub-assemblies.

IMPORTANT: The surface of the wall on which the door is to be installed must be free of any obstructions. Also, any existing door framing on the wall should be removed or the side panels will require shimming before installing.

NOTE: Figure 2 shows the front of the door. Left and right are determined when viewing the front of the door.

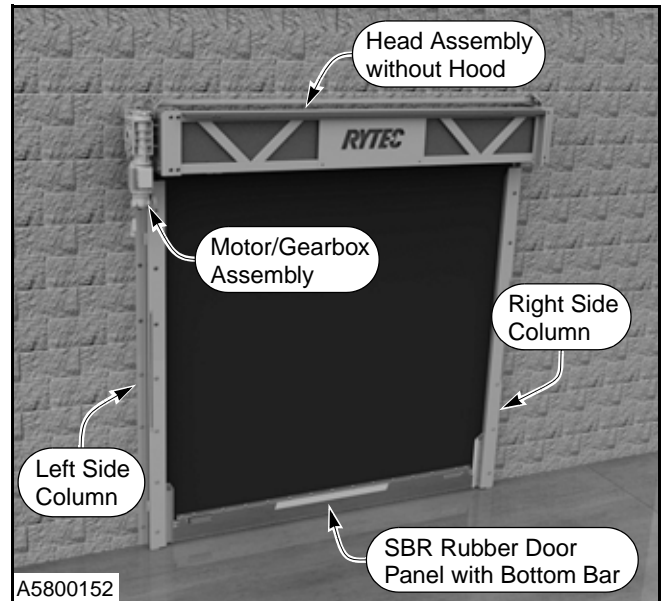


Figure 2

ADDITIONAL REQUIREMENTS

Labor and Site Requirements

1. Two installers.
2. An electrician is required for making all electrical connections.
3. Unlimited accessibility to the door opening during the entire installation process. No traffic should be allowed to pass through the opening while the door is being installed.

Forklift or Crane Requirements

A forklift or crane supplied by the customer, dealer, or installer is mandatory for the safe and proper installation of this door. The forklift or crane should have:

- sufficient lifting capacity.
- minimum height ability — door height plus 12 in.
- side-shift capability (desired).

Electrician's Responsibilities

For complete details on the responsibilities of the electrician, refer to the wiring diagram and manual that were shipped with the control drive.

ANCHORING METHODS

Correct anchoring of the side columns and head assembly to the wall is important for the smooth and safe operation of the door. The wall material should be strong enough to support the weight to lateral load of the door assembly and all wall anchors.

Figure 3 show an anchoring method for various types of walls. Use the method that is best suited for your particular installation site.

All necessary anchoring hardware and material required for the installation of this door are the responsibility of the door owner. If you have any questions, call your Rytec representative or the Rytec Technical Support Department at 1-800-628-1909.

NOTE: Use ½-in. diameter threaded through bolts or threaded rods to anchor the door to all wall applications. Rytec does not recommend mounting door to wood or insulated wall without additional structural reinforcements. Consult with structural engineer or architect

Block or Brick

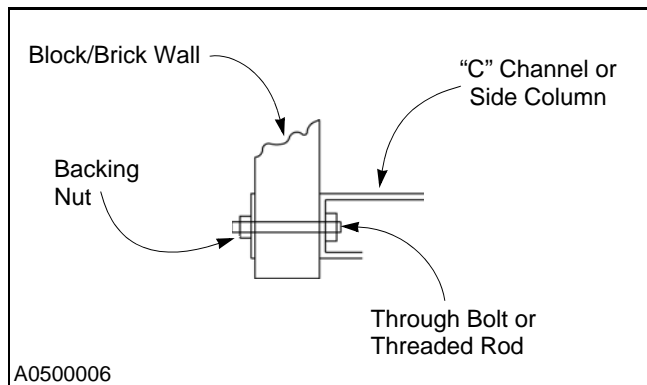


Figure 3

Metal Walls

When installing the Powerhouse SD door to a metal structure, use 4-in. welds every 16 inches on both sides of the side columns. A certified welding professional should perform this type of installation.

NOTE: The door assembly, walls, and building structure **MUST BE** properly grounded.

Use bar clamps and simply use small tack welds to hold side column in position. DO NOT weld permanently into place until you've verified that the door is plumb square and level.

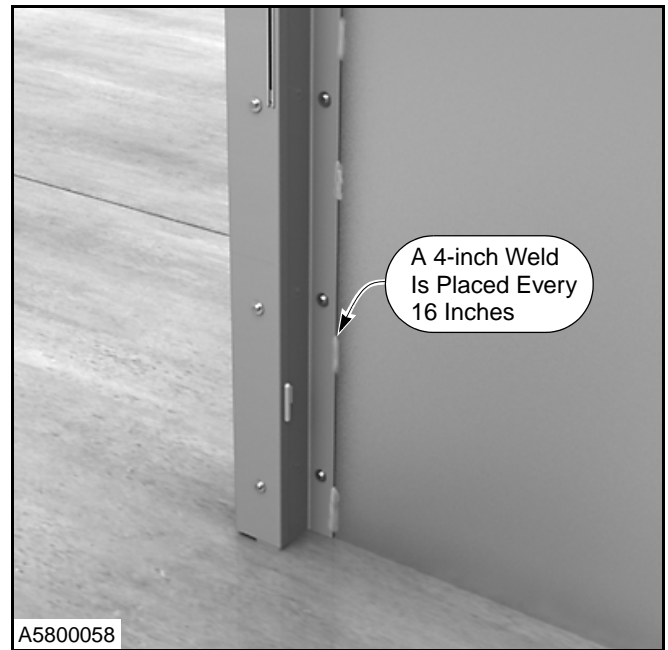


Figure 4



Figure 5

LOCATING SIDE COLUMNS

1. Locate the layout drawing of the door. It should be attached to the small parts carton. This drawing identifies the production width of your door.
2. Using the centerline as a reference point, lay out and mark half of the door's production width along the floor. (See Figure 6.)

INSTALLATION—LOCATING SIDE COLUMNS

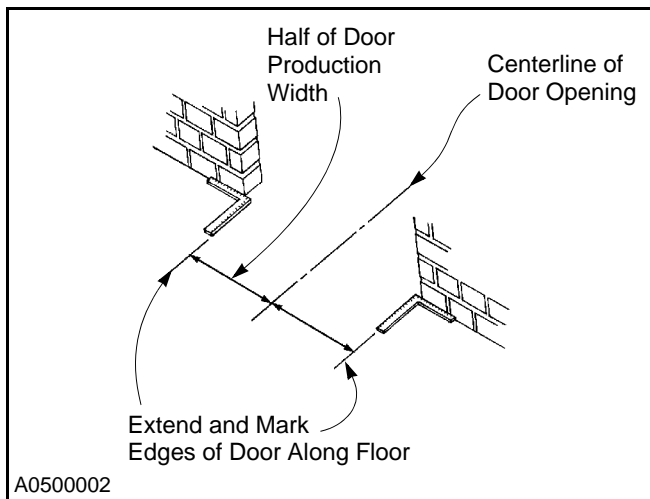


Figure 6

3. With a carpenter's square placed against the wall, mark both sides of the door along the floor. Extend the line along each edge.
4. Check that the floor is level across the door opening. The floor must be level within 0.12 in. (3 mm) from side to side. If one side of the opening is higher than the other, a shim under the side column will be required.

Figure 7 and Figure 8 show two recommended methods that can be used to ensure a level side column installation.

NOTE: Contact the Rytec Technical Support Department if the floor is more than 1 in. out of level.

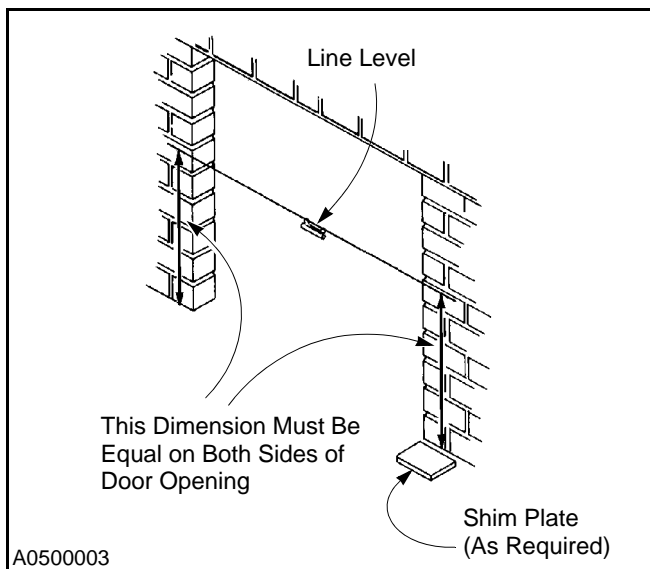


Figure 7

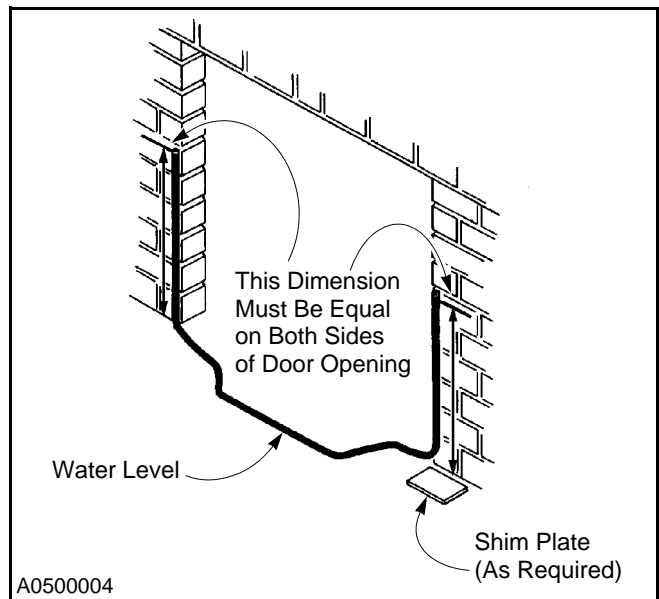


Figure 8

5. Use a plumb bob or carpenter's level to check the wall for plumb in the areas where the side columns are to be mounted. Also, inspect the wall for any obstructions.

If the wall is not plumb, use shims. If you find an obstruction, remove it or shim the column to avoid the obstruction. (See Figure 9.)

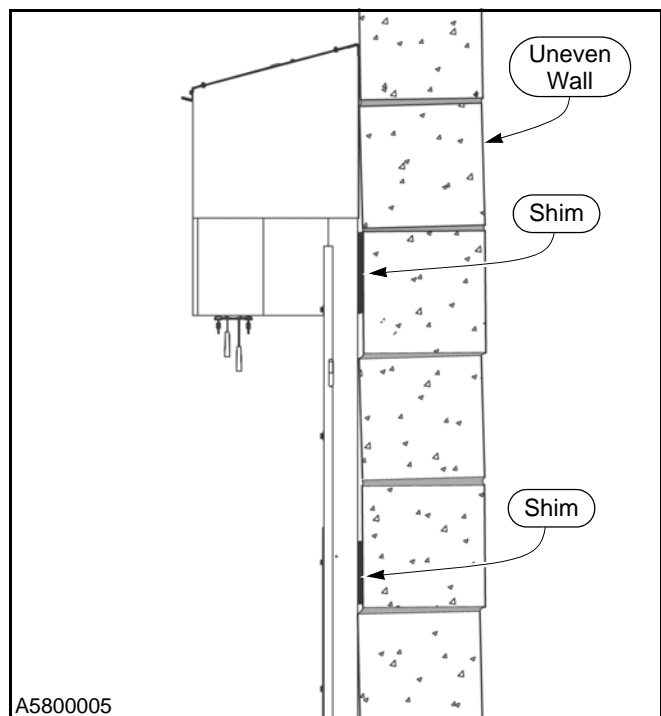


Figure 9

NOTE: If the door requires more than 1/2 in. to shim around the wall obstruction, longer anchors will be required.

SIDE COLUMNS AND HEAD ASSEMBLY

The side columns come completely assembled. They are installed with LED and light curtain assemblies at the factory to make the routing and connecting of cables and wires more efficient.

NOTE: The side columns come with preset anchor points for your custom door height. **DO NOT** add additional anchor points as this will void the door warranty. Contact the Rytec Technical Support Department at 1-800-628-1909 for engineering support.

Production width is measured from the inner side columns. The door must be installed centered on the opening and in most instances, flush with the wall jamb.

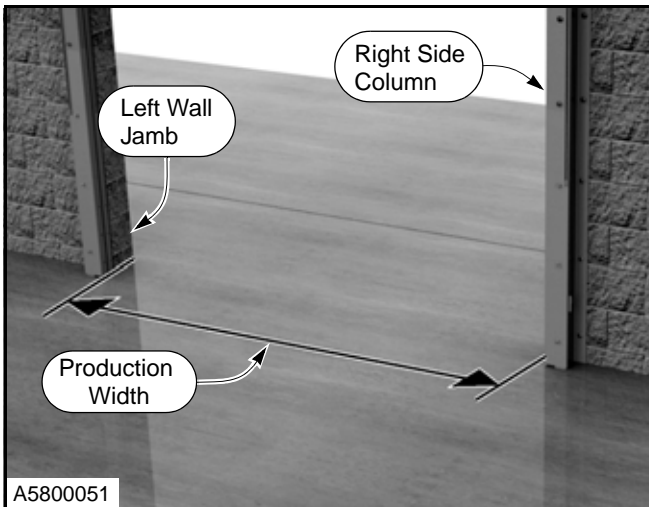


Figure 10

1. Remove the right side column from the shipping crate.

IMPORTANT: It is critical that the side columns are mounted square and plumb with the wall, and level across the door opening. Using a 4-ft. level and carpenter's square will help ensure the columns are correctly set. Place shims where necessary.

In addition, the use of bar clamps will allow you to temporarily secure the columns to the wall, while allowing you to make slight adjustments during the installation process.

⚠ WARNING

Before drilling any holes, ensure there are no electrical wires, water pipes, gas lines, etc., buried in the floor or hidden in the wall.

2. Place the right side column against the wall and align with the marks on the floor.

NOTE: In many instances the jamb may not be plumb, square or level.

3. Once the side column is set plumb and square, bar clamp it to the wall. (See Figure 11.)

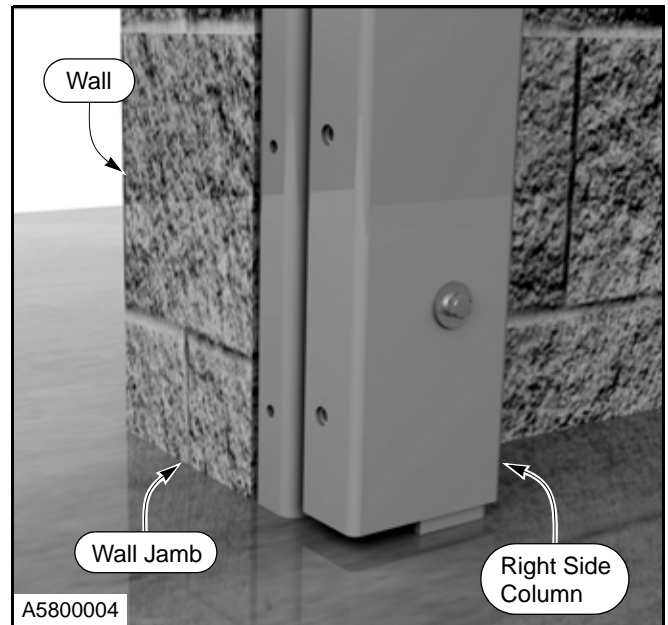


Figure 11

4. Anchor the side column (See "ANCHORING METHODS" on page 3). **DO NOT** tighten the anchors completely at this time — they will be tightened later on, after the head assembly is installed. (See Figure 12.)

INSTALLATION—SIDE COLUMNS AND HEAD ASSEMBLY

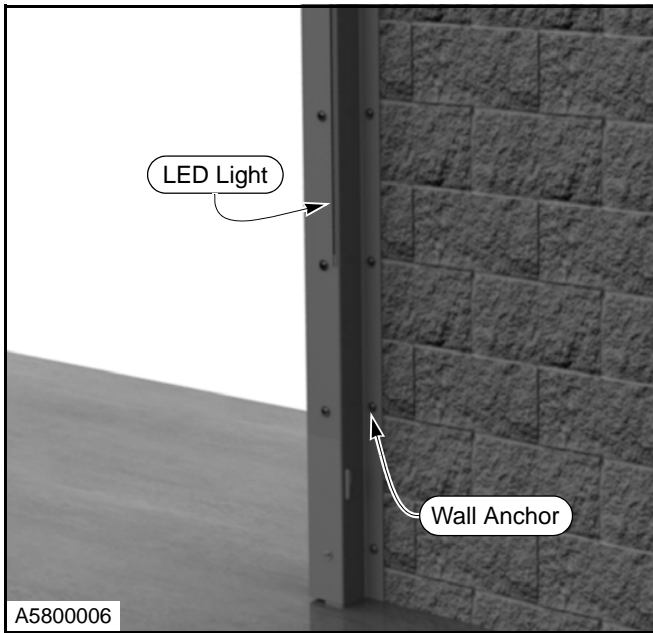


Figure 12

NOTE: Use all anchor holes to anchor the side columns to the wall.

IMPORTANT: Use 1/2-in. epoxy-filled and/or vibration resistant anchors for concrete walls. Use through bolts or threaded rods for brick walls.

5. Install left side column in the same manner as the right.
6. Install rear spreader assembly between the two side columns using four 1/2 x 1-in. hex head cap screws and 1/2-in. lock washers. (See Figure 13.)

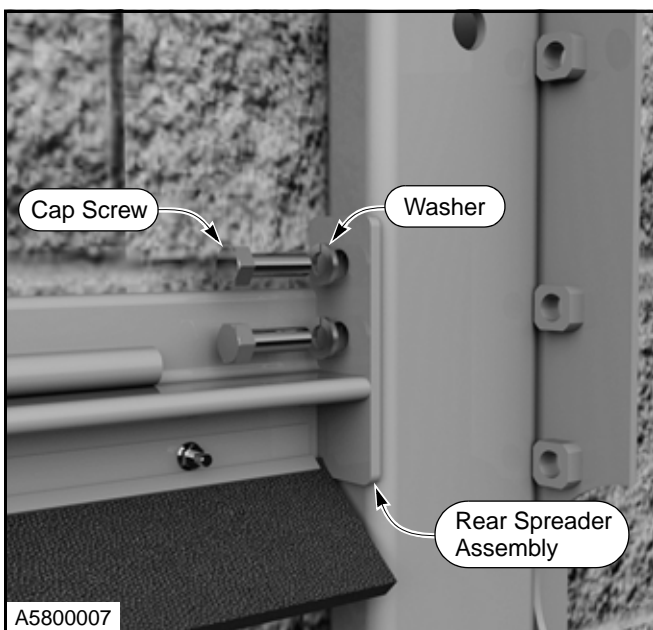


Figure 13

7. With both columns set, clamped down, and snugly anchored in place, check the overall squareness of each column.

Compare the diagonal measurements and the upper and lower horizontal measurements across the columns. The columns are square and parallel when the diagonal measurements are equal and the horizontal measurements are equal. (See Figure 14.)

NOTE: If either column requires slight repositioning (when the difference of either comparison is greater than 1/4 in.), use a block of wood and a mallet to nudge the column into position.

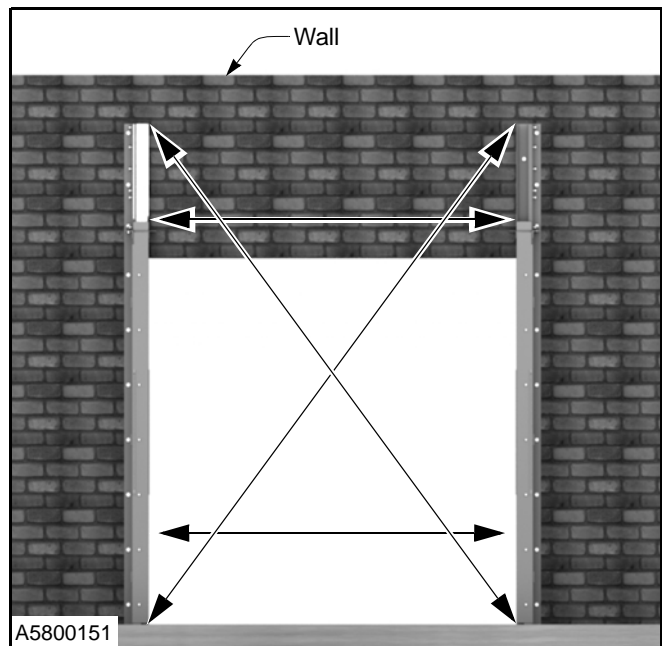


Figure 14

8. Install anchor into rear spreader assembly. (See Figure 15.)

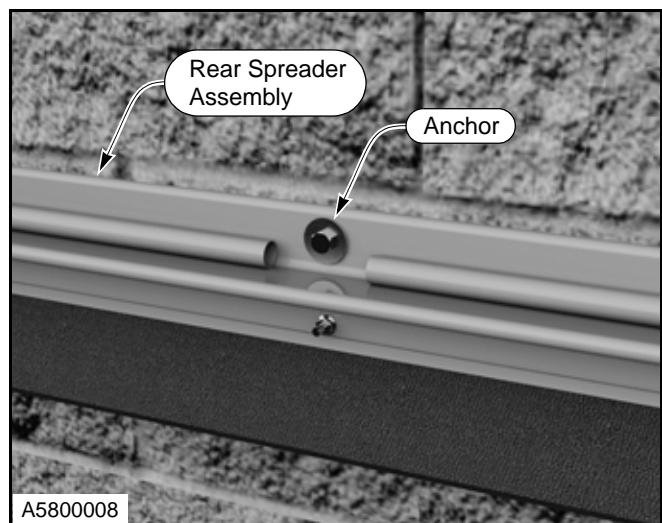


Figure 15

9. Attach head assembly to the lifting device:
 - a. Attach an appropriate rated strap or chain to the lifting lugs of the head assembly. (See Figure 16.)

NOTE: The lifting lugs are manufactured at a 45° angle and should not be modified. When using chains or straps to lift the head assembly into place, the angle cannot be less than 45°. Anything less than that will cause the assembly to bow, and improper alignment and fit will result.

Before fully lifting head assembly into position, test affect the strap angle on the head assembly. If end plates begin to bow inward, increase the strap angle.

NOTE: Maintain 45° or more on chains or straps.

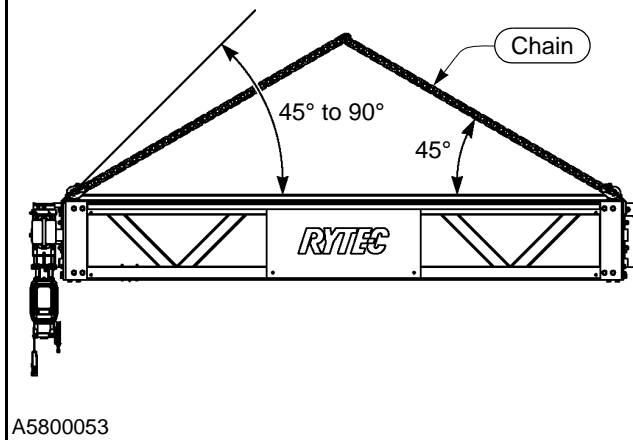


Figure 16

- b. Secure the head assembly to a forklift or other suitable lifting device. (See Figure 17.)

NOTE: The wooden cradle supports the head assembly during shipping. The wooden cradle can be used to lift the head assembly into position when overhead clearance is unavailable. If the wooden cradle is used to lift the head assembly into position caution must be taken in lifting the assembly safely. The preferred method of lifting the head is from the top utilizing the lifting lugs.

IMPORTANT: When lifting from the bottom, the load is heavy and out in front away from the fork truck. Use caution when lifting.

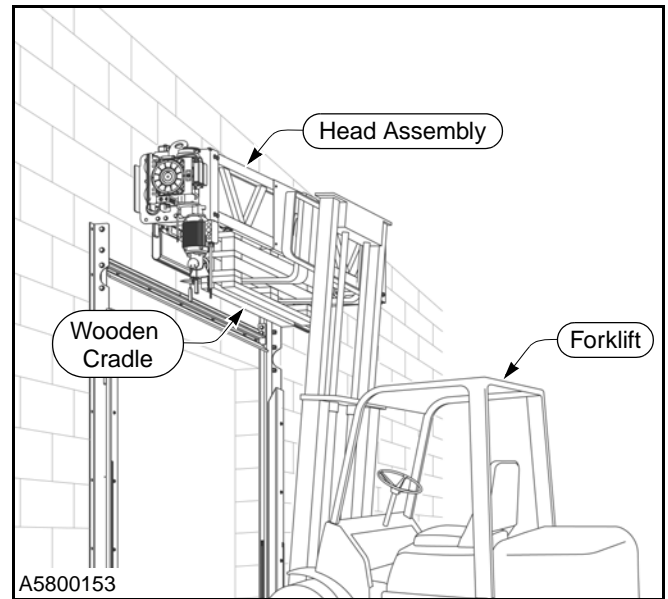


Figure 17

10. Lift into position and align head assembly with the side columns. Install washers, lock washers, and cap screws. (See Figure 18 and Figure 19.)

IMPORTANT: There are three sizes of head assemblies for the Powerhouse SD door.

- A-Size (13.00 in.) Head
- B-Size (18.50 in.) Head
- C-Size (22.50 in.) Head

The A-Size requires six washers, lock washers, and cap screws to attach the head assembly to the side columns. The B-Size and C-Size require eight.

NOTE: The motor/gearbox is factory installed to the head assembly. Take extreme care when lifting and attaching the head assembly to the side columns.

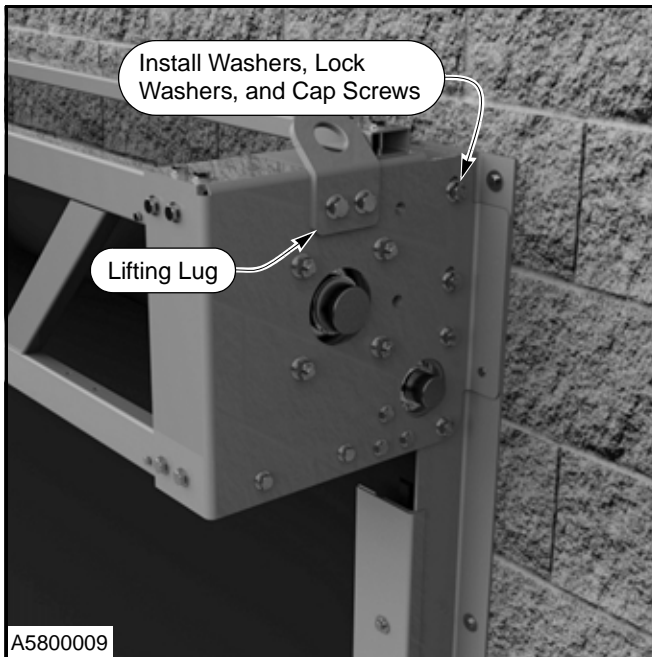


Figure 18

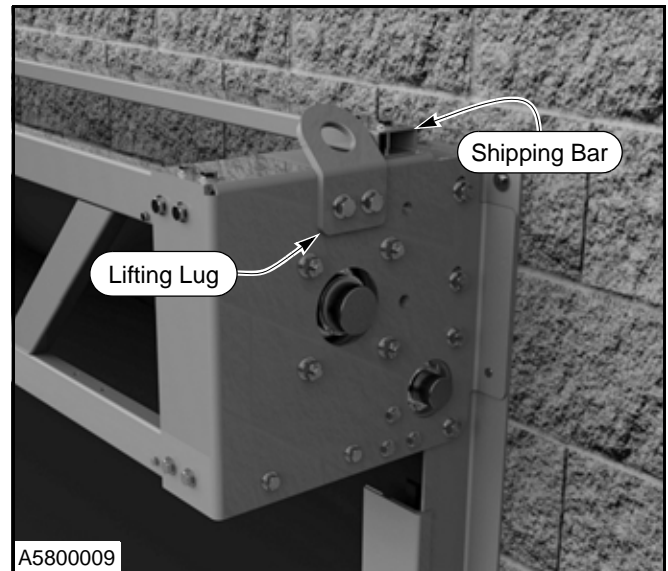


Figure 20

14. Check and adjust the routing of the bottom bar and door panel over the idler roller. (See Figure 21.)

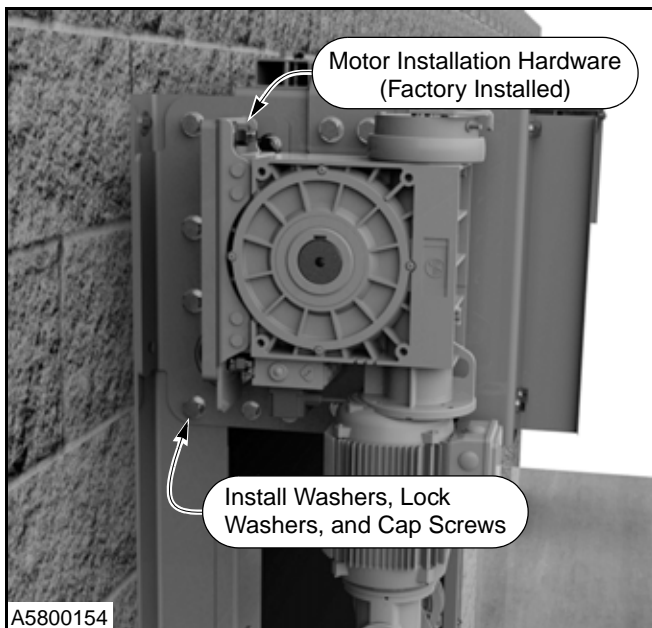


Figure 19

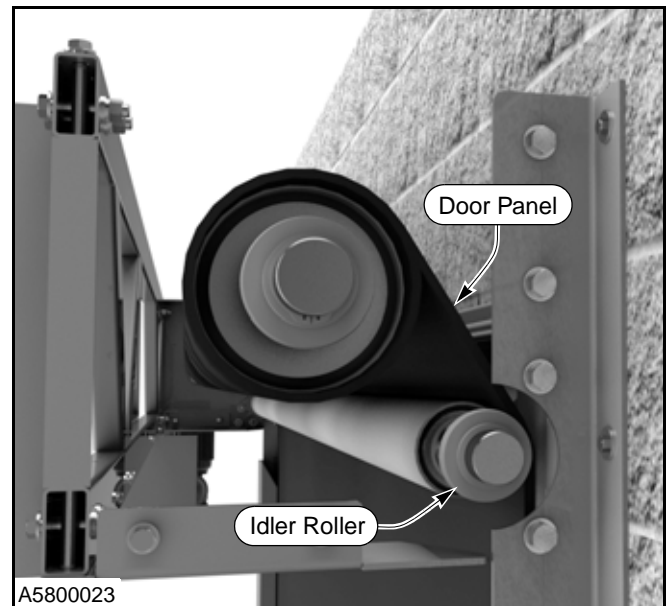


Figure 21

IMPORTANT: Prior to installing the hood assembly or switching power on for the first time, make sure all wires and cables are properly routed and secure. Wires and cables should not interfere with any moving parts.

11. Using a carpenter's level (4-ft. minimum length), check that the head assembly is level and tighten all hardware and anchors.
12. Tighten all anchors and associated hardware.
13. **OPTIONAL:** The lifting lug and shipping bar are used to install the door. These pieces can be removed if there is a interference problem. (See Figure 20.)

NOTE: See "HOOD (OPTIONAL)" on page 13 regarding lifting lug and shipping bar.

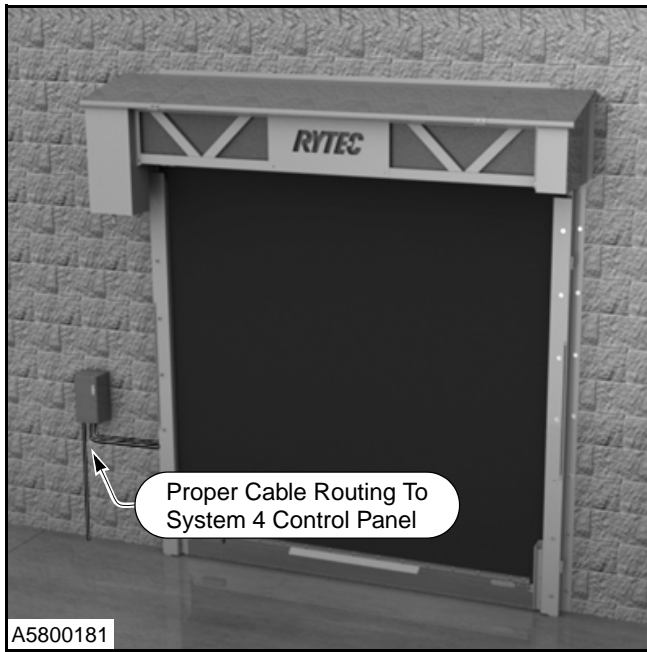


Figure 22

LIGHT CURTAIN

IMPORTANT: *Light curtains are standard on the Powerhouse SD model doors. Standard photo eyes are optional. (See “PHOTO EYES (optional)” on page 10.)*

The Powerhouse SD door is equipped with a set of light curtains. One side column will contain the transmitter module and the other contains the receiver module. The transmitter and receiver have both been factory installed and cabled in the side columns. The cables exit the side columns at the top. The purpose of the light curtains is to hold the door open if a vehicle, person, or any object is in the path of the light curtain beam.

The light curtain is not active when the door is closed.

This system consists of one pair of non-adjustable emitter and receiver module. There are no gain or sensitivity settings.

1. Gain access to light curtain(s) by removing all cap screws, lock washers, and washers on the front of the side column door.

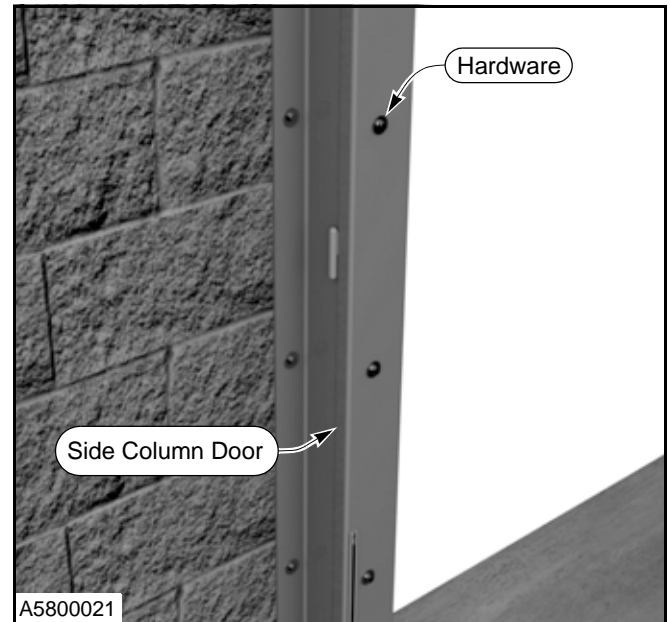


Figure 23

2. Connect cable to light curtain(s).

NOTE: *Light curtain assemblies are factory installed. Cables are routed through the tube steel to the top of each side column.*

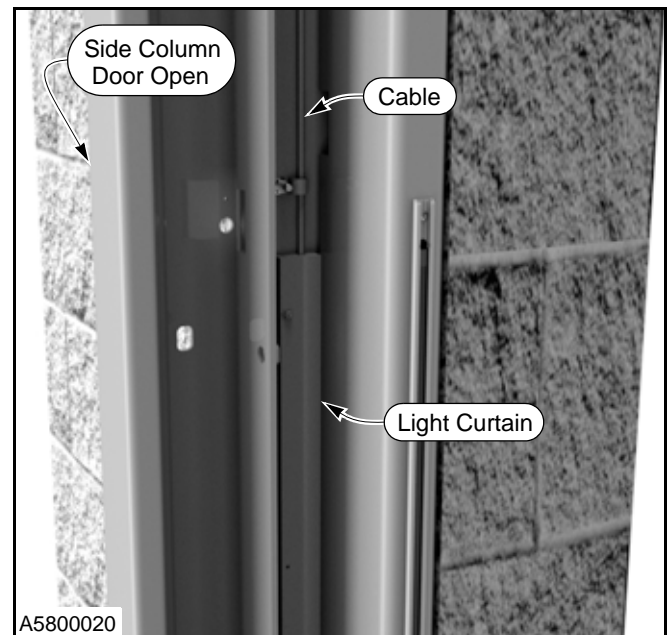


Figure 24

3. Route light curtain cables toward System 4 control panel. Use tubes on the rear spreader for routing all cables and wires to the control panel. Secure cables as neatly and cleanly as possible with an exposed head assembly.

NOTE: *A fish tape may be required to route cables and wires.*

INSTALLATION—PHOTO EYES (OPTIONAL)

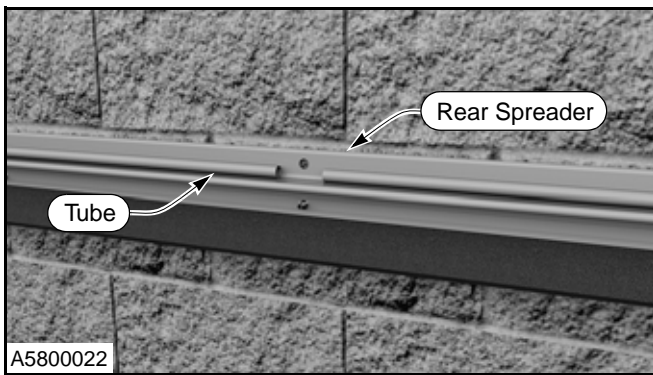


Figure 25

4. If the optional hood assembly is installed, route all cables and wires through prefabricated access holes. (See Figure 26.)

NOTE: End of the hood assembly is removed for clarity.

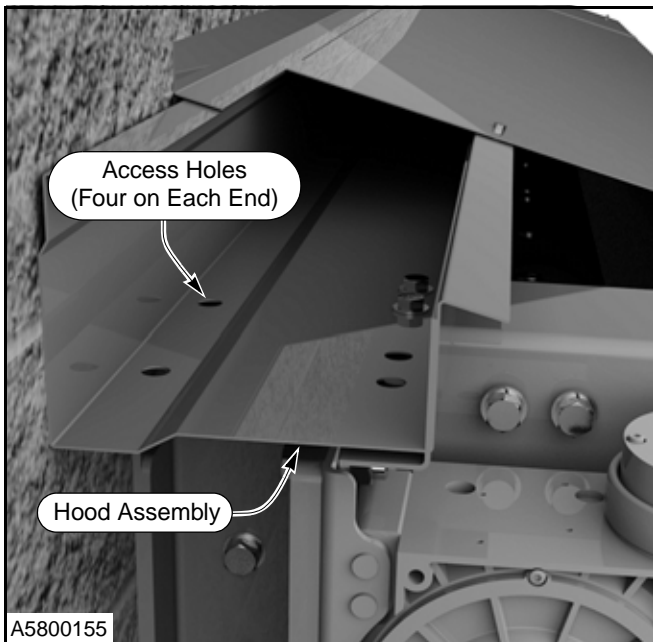


Figure 26

PHOTO EYES (OPTIONAL)



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

The photo eyes are provided as a safety feature. If the photo eyes are installed correctly, any object in the path of the photo eye beam while the door is closing will cause the door to reverse direction and remain in the fully open position until the obstruction is removed.

The transmitter and receiver can be identified in two ways. The transmitter is designated SMT 3000 on the white label or by a single green light that comes on at the clear end of the transmitter. (See Figure 27.) The receiver is designated SMR 3215 on the white label or by a yellow light that illuminates only when it is in proper alignment with the transmitter. (See Figure 28.)

NOTE: When the cable is connected to the photo eye, there is only a 1/4-inch window to see the green or yellow LED light.

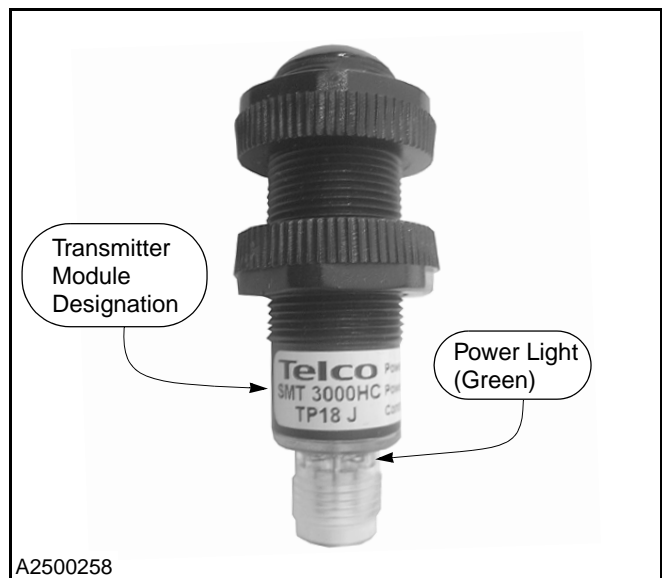


Figure 27

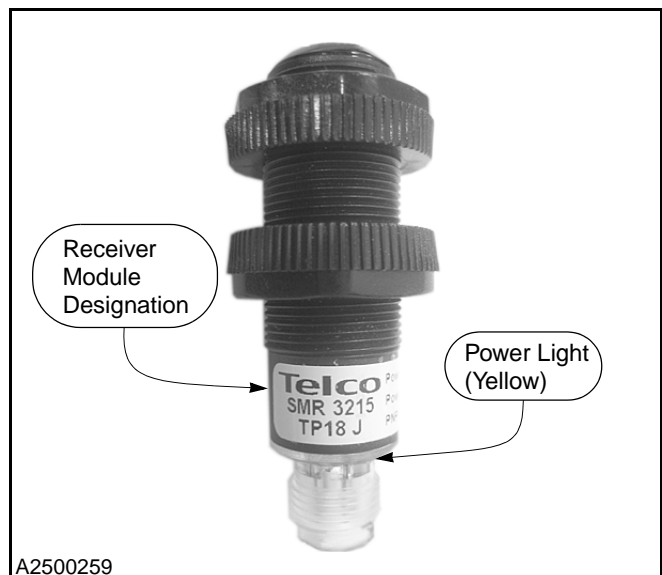


Figure 28

The front and rear photo eyes, their required wire cables, and mounting brackets are located in the small parts carton. You must provide the hardware to install the brackets on your particular wall.

NOTE: The front set of eyes is to be located on the wall, adjacent to the front side of the door. Each eye must be located 8–12 in. above the floor and as close to the door as possible. They must also be mounted directly across from each other. (See Figure 29.)

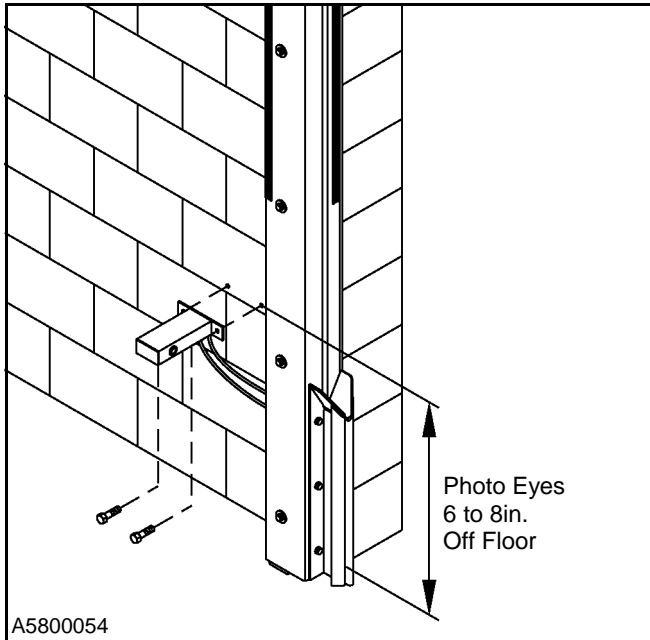


Figure 29

1. After the mounting brackets are in place, install the transmitter module in the left bracket and the receiver module in the right bracket.

IMPORTANT: If installing two sets of photo eyes, the photo eyes **MUST** be installed as shown in Figure 30.

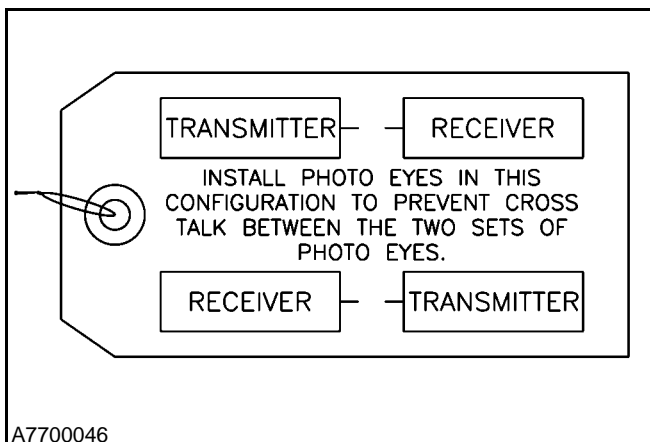


Figure 30

2. Thread the connector found on the terminated end of each wire cable onto the end of the photo eyes.

NOTE: Be sure the path through which the wire cables are routed hides and protects them from damage. If necessary, run conduit to each mounting bracket to protect the cables.

3. Route the wire cables from the field-installed photo eyes to the control panel in a manner conforming to all applicable codes and regulations. Shielded cable is recommended for all photo eye wires.

IMPORTANT: Remove excess cable before terminating the connections. **DO NOT** leave excess coils of cable in the control panel or junction box.

4. Connect cable to junction box per schematic.
5. After all work is complete, clean the lens of each photo eye using window cleaner and a soft, clean cloth.

Testing Photo Eyes

With the power on, the green light on the transmitter indicates that the photo eye module is powered up. When the yellow light on the receiver module is also lit, the transmitter and receiver modules are properly aligned.

Placing your hand in front of the receiver breaks the light path and causes the yellow light to go out. Removing your hand causes the yellow light to go back on.

LED (LIGHT EMITTING DIODE)

Your door is equipped with four LED lights, two mounted in each side column. The purpose of these LEDs is to warn an approaching person or vehicle that the door door panel is closing or getting ready to close.

Three yellow flashes the factory default warn that the door is preparing to close. A solid red light means that the door panel is on the way down. The LED lights can be custom set; see the System 4 Drive & Control RY-WI System Installation and Owner's Manual for settings. (See Figure 31.)

INSTALLATION—LED (LIGHT EMITTING DIODE)

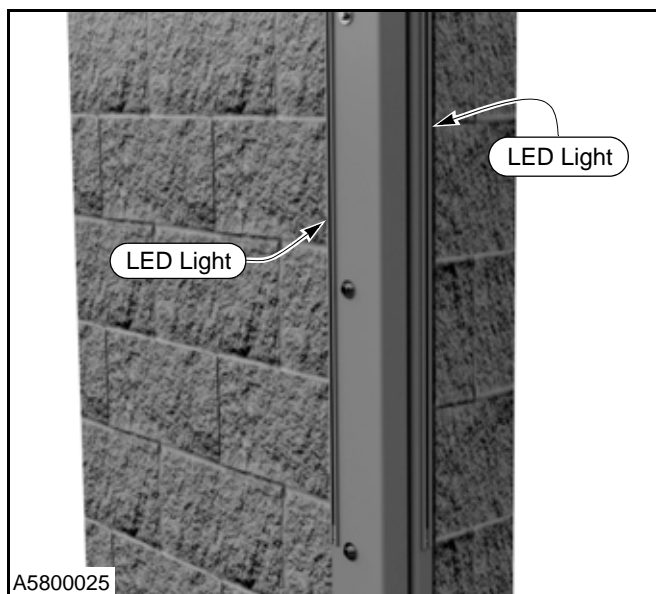


Figure 31

1. Connect cables to LED connectors.
(See Figure 32.)

NOTE: Cables are routed at the factory. The tops of the side columns have cables zipped tied to the top of the side columns.

Cut all zip ties and route cables to control panel. Make sure to remove any excess cable, loops or coils left in the cable routing.

*Head assembly has been removed to show clarity of the LED connectors.
(See Figure 32.)*

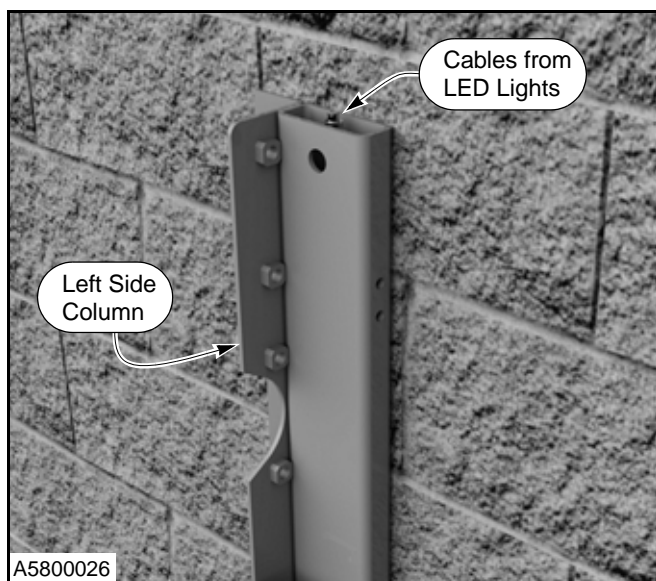


Figure 32

2. Route LED light cables toward the System 4 control panel. Use tubes on the rear spreader for routing all cables and wires to the control panel.

NOTE: Secure cables as needed.

NOTE: A fish tape may be required to route cables and wires.

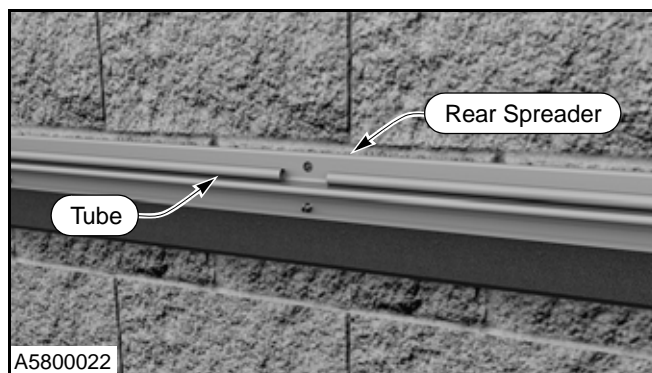


Figure 33

3. If the optional hood assembly is installed, route all cables and wires through prefabricated access holes. (See Figure 34.)

NOTE: End of the hood assembly is removed for clarity.

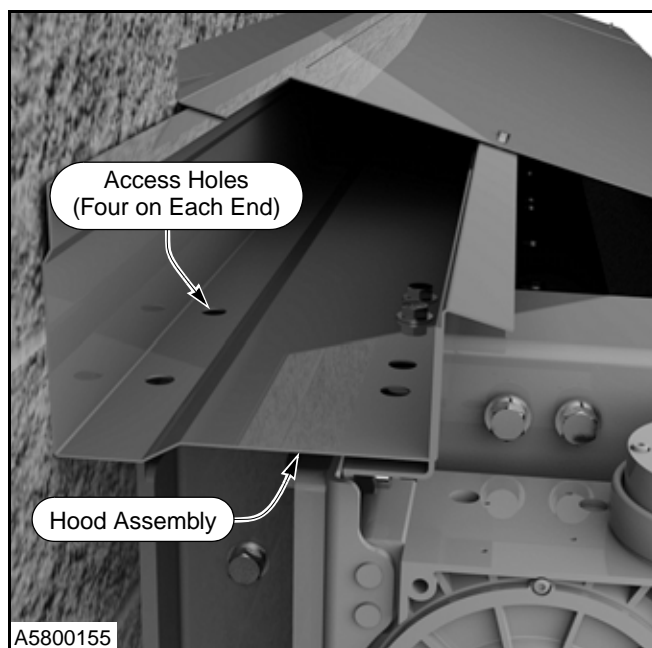


Figure 34

THERMOSTAT CONTROL (OPTIONAL)

An optional thermostat control is available for the Powerhouse SD door. The thermostat controls a trickle charge to the motor to heat the motor windings. Rytec part number 00112019. Contacts close at 32 F (0 C), open at 50 F (10 c). When contacts are closed the trickle charge travels to the motor and keeps the windings warm. If the thermostat has been ordered at installation reference the electrical schematics for connections.

HOOD (OPTIONAL)

The hood is an option for the Powerhouse SD door. It is built at the factory and delivered separately to the door site. The installer will have to assemble and install the hood assembly.



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

1. Remove and discard the shipping bar and both lifting lugs from the head assembly if this hasn't already been done. Save the hardware from the shipping bar. (See Figure 35.)

NOTE: If these items were already discarded, then remove the hardware that attached the shipping bar to the head assembly.

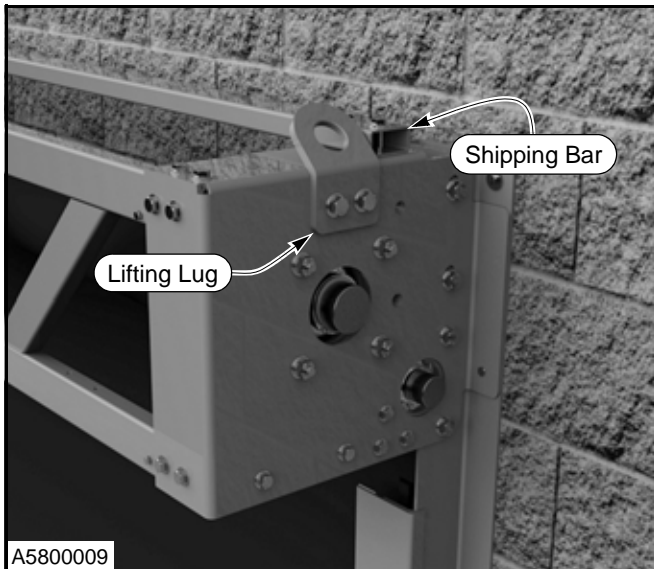


Figure 35

2. Install the hood spreader with the hardware that was removed from the shipping bar. (See Figure 36.)

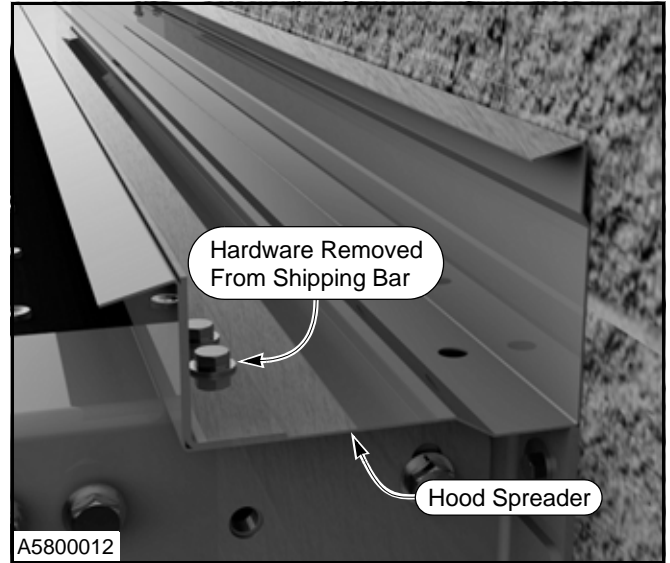


Figure 36

3. Install two front hood pieces onto the front truss assembly. Use 1/4-14 x 3/4-in. hex washer self-drilling screws. (See Figure 37.)

NOTE: The front hood pieces can vary in size, both in length and height. The quantity of hardware to do the assembly will vary, depending on the size of the head.

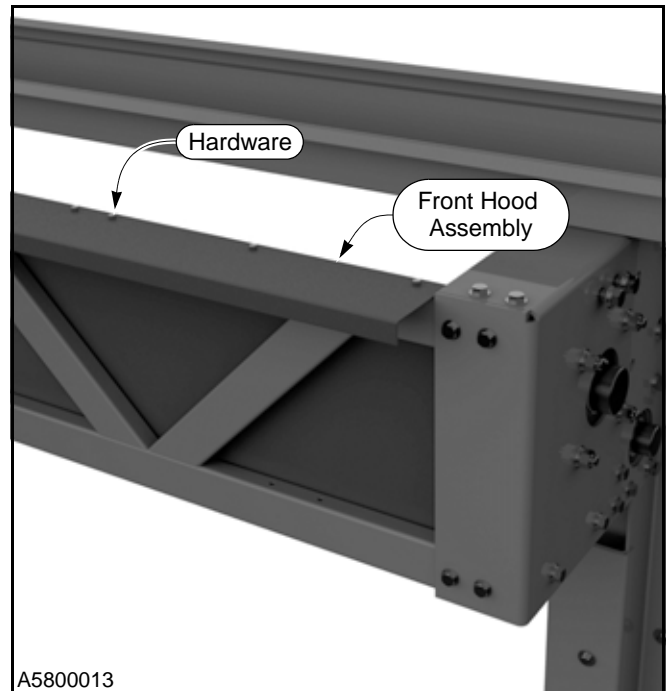


Figure 37

INSTALLATION—HOOD (OPTIONAL)

4. Attach right head assembly end cover onto the front truss assembly. Use $\frac{1}{4}$ -14 x $\frac{3}{4}$ -in. hex washer self-drilling screws. (See Figure 38 and Figure 39.)

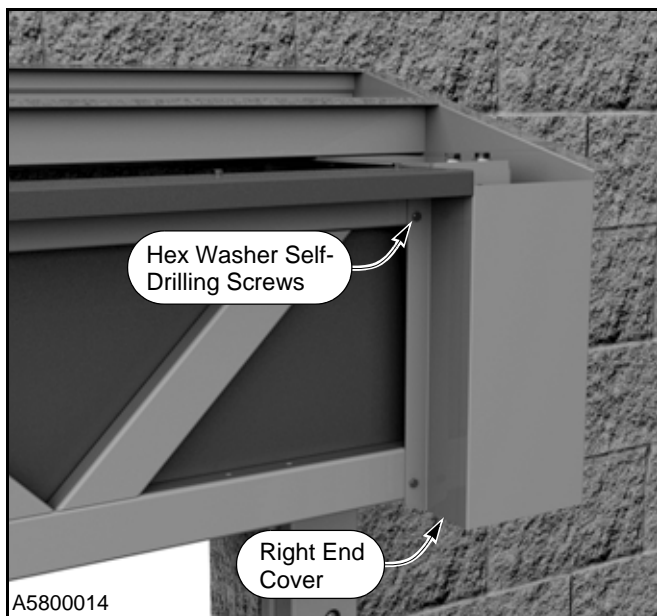


Figure 38

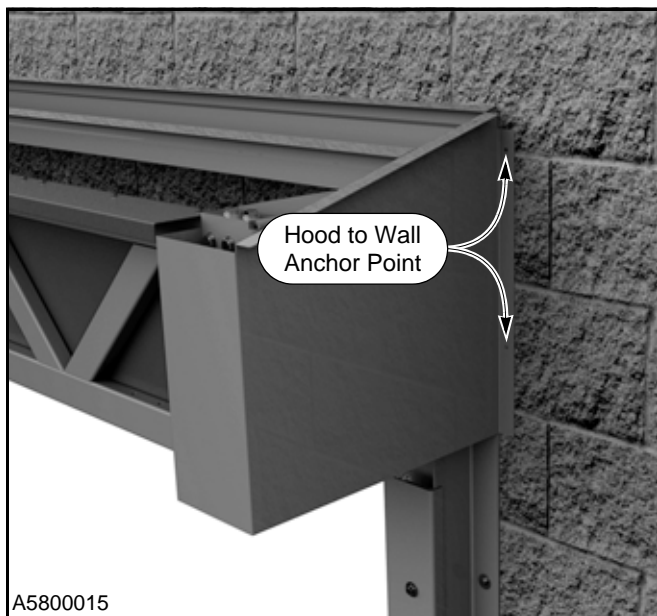


Figure 39

NOTE: Right end cover wall anchor installation.

5. Attach the left head assembly end cover onto the front truss assembly. Use $\frac{1}{4}$ -14 x $\frac{3}{4}$ -in. hex washer self-drilling screws. (See Figure 40 and Figure 41.)



Figure 40

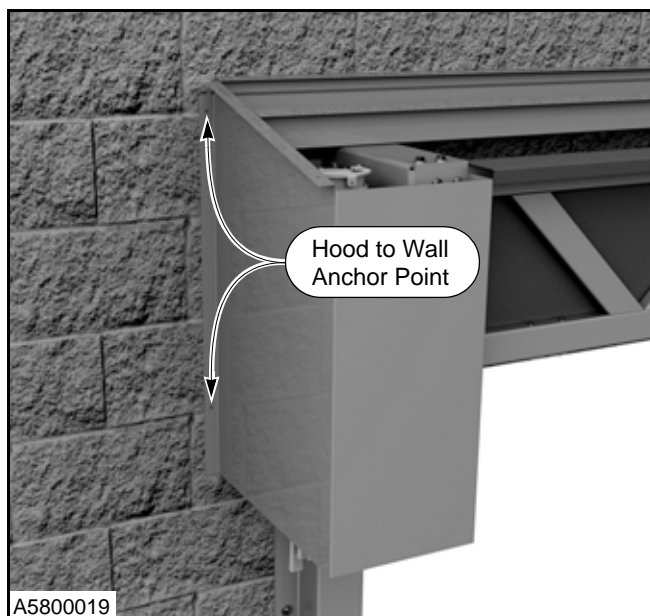


Figure 41

NOTE: Left end cover wall anchor installation.

6. Attach left and right top hood ends onto the head assembly. Use $\frac{1}{4}$ -20 x $\frac{1}{2}$ -in. hex serrated flange machine screws and $\frac{1}{4}$ -20-in. hex serrated flange lock nuts.

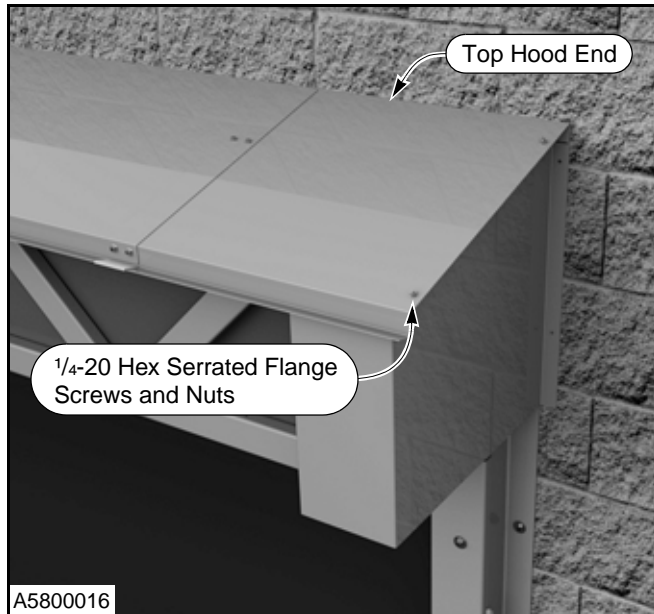


Figure 42

7. Place top hood center onto the head assembly. Secure in place with hood seam caps using eight $\frac{1}{4}$ -14 x $\frac{3}{4}$ -in. hex washer self-drilling screws.

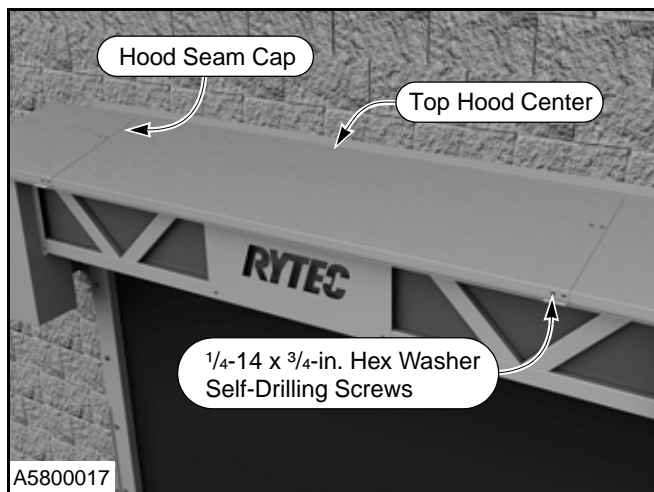


Figure 43

ADJUSTMENT

SETTING DOOR LIMITS

See the System 4 Drive & Control RY-WI System Installation and Owner's Manual for setting door limits.

Set open door limits with the lower edge of the bottom bar even with the lintel of the door opening. (See Figure 44.)

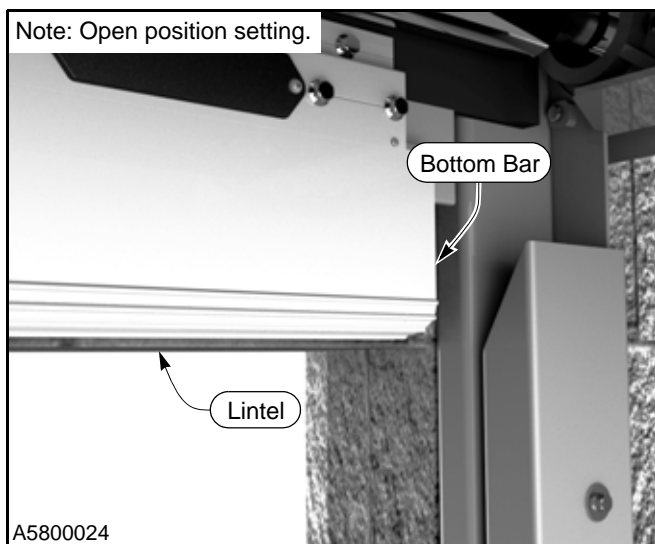


Figure 44

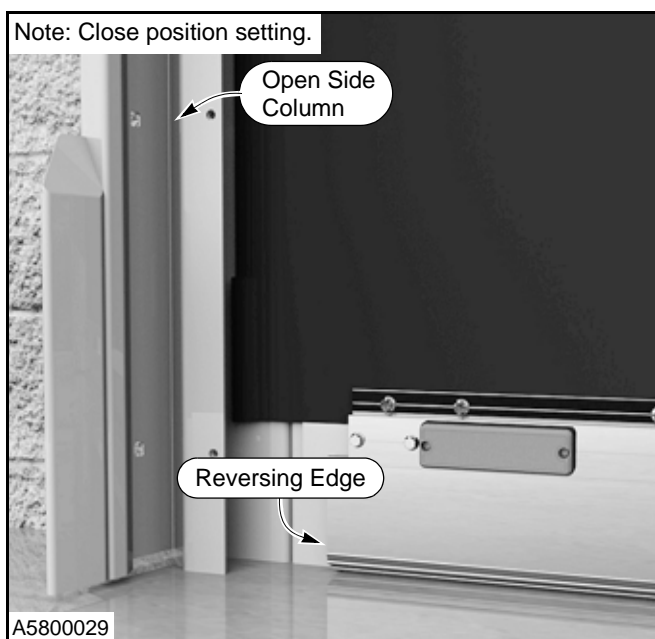


Figure 45

MANUAL DOOR PANEL MOVEMENT

The drive motor has red and green handles hanging from the bottom of the motor. When the green handle is pulled or in the lowest position, the drive motor is engaged to run on electrical power. When the red handle is pulled or in the lowest position, electrical power has been disengaged and manual door operation is required using the chain. Also, when the red handle is pulled, a sensor is engaged and will not allow electrical power to the door.

Electrical power can be shut off anytime to operate the electric motor in manual mode. Control panel limit settings will not be affected when switching the power off and back on. The door will return to a normal operating mode. (See Figure 46.)

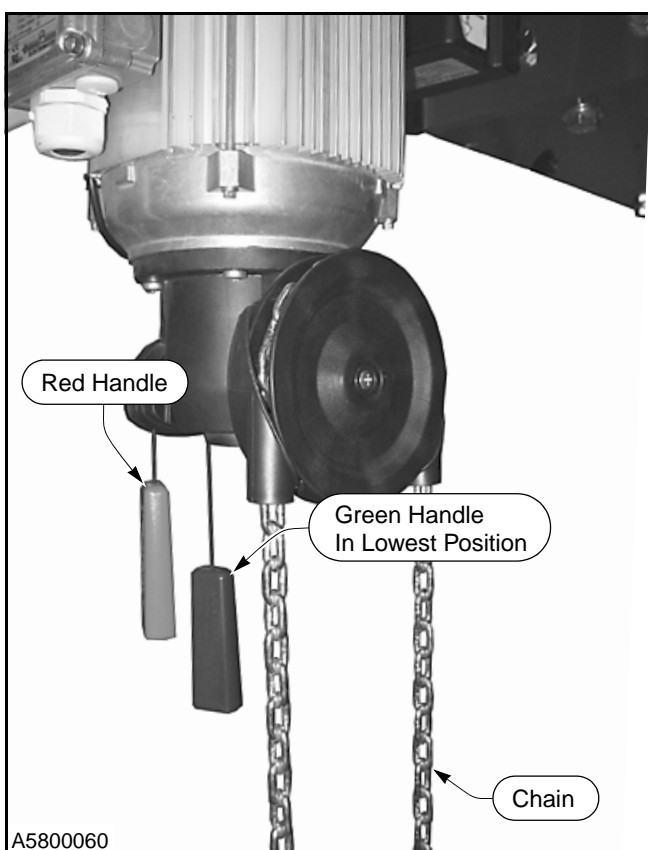


Figure 46

MISCELLANEOUS

FINAL CHECKS

NOTE: Check the following door systems and components after the door panel has been cycled at least 20 times.

Head Assembly: Check that all mounting hardware is in place and tight.

Side Columns: Check that the side columns are plumb and square and that all anchor bolts are tightly secured.

Light Curtain: Check that the light curtains operate as described in the Powerhouse SD Owner's manual.

Activators: Check to see that the activators operate as specified by the manufacturer.

Open and Close Limits: Check open and close limits. See "SETTING DOOR LIMITS" on page 16.

Caulk: Ensure that all edges of the jamb and header frames and pullouts are sealed where they meet the wall of the building. Use a high-quality caulk rated for the environment in which the door is installed, as required.

