

CM Detention Products, Inc.

2000/2500 DEVICE & OPERATOR

INSTALLATION MANUAL

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Quick List

Quick Reference for Installation Sequence *(See Manual for Detailed Information)*

1. INSTALL HOUSING – LEVEL PER ERECTION DRAWINGS
2. INSTALL VERTICAL LOCK COLUMN - PLUMB (1/4" FROM FRAME)
3. WELD HANGER, HANGER BAR, AND DOOR GUIDE ANGLE TO DOOR PER HANGER WELDMENT DETAIL
4. FOR RETROFIT UNITS, INSTALL MECHANISM ASSEMBLY INSIDE HOUSING
5. SET TRAVELBAR ASSEMBLY ON TRACK IN HOUSING
6. INSTALL DOOR PARALLEL TO VERTICAL LOCK COLUMN
7. INSTALL RELEASE COLUMN OR RECEIVER PARALLEL TO DOOR
8. INSTALL CABLE RELEASE PER JOB REQUIREMENT
9. INSTALL GUIDES WHERE APPLICABLE
10. INSTALL MOTOR, SWITCHES, AND ALL REMAINING INTERIOR COMPONENTS AS DESCRIBED IN INSTALLATION MANUAL
11. ADJUST SWITCHES AND TEST WITH PROPER VOLTAGE TESTER

DEVICE INSTALLATION

Refer to Elevation and Erection Drawings for Specific Details

1. The **Housing** is to be hung level at the specified height (Figure 1). Housings can be welded and/or bolted in place depending on conditions. When mounted at a frame opening, the edge of the vertical lock column hole (small rectangular hole in the rear, near the center of housing) must be located $3/8''$ away from the opening edge of the frame. Always use 6' or longer level.

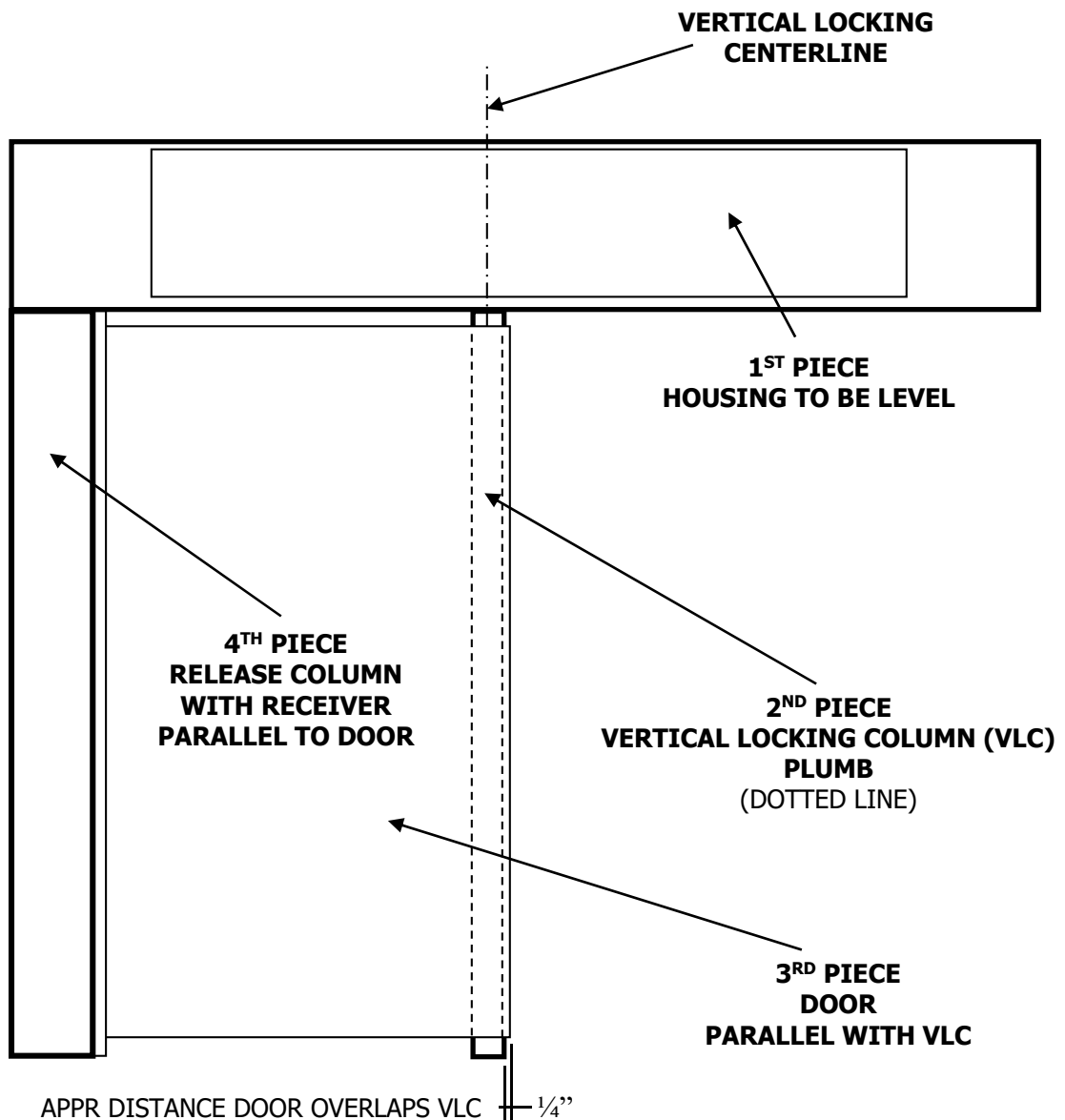


FIGURE 1

2. The **Vertical Lock Column (VLC)** with the **Vertical Lock Rod Assembly (VLC rod)** must be placed under housing with the vertical lock rod protruding through the small rectangular hole in the rear, near the center of the housing. The VLC must be square to the wall and plumb, as well as perpendicular to the housing (Figure 1). The VLC must be fully welded around the top and fillet welded per specifications down each side. When mounted at a frame opening, The VLC must be $\frac{1}{4}$ " from the frame edge opening.
3. If shipped separately, the **Mechanism Assembly** must be installed behind the VLC rod in the housing approximately $\frac{3}{16}$ " above the interior housing bottom and attached with (3) 5/16-18 HHCS, (3) 5/16 flat and (3) 5/16" lock washers (**Hardware Bags - #1, #2, #3**) at the two left tapped holes and the upper right tapped hole near the center of the housing. (Red Ovals Figure 2) The **Deadlock Switch** is then attached to the bottom right tapped hole with the (1@) 5/16-18 HHCS, 5/16 flat and 5/16" lock washer of the same mounting hardware (Blue circle Figure 3). The deadlock switch is adjusted by lifting it in its slot and allowing the deadlock switch arm to trip against the pin on the deadlock lever. The deadlock lever must be fully set into the deadlock position. Wires from the deadlock switch should be attached by tie wrap to the right side of the motor bracket, close to the inside.

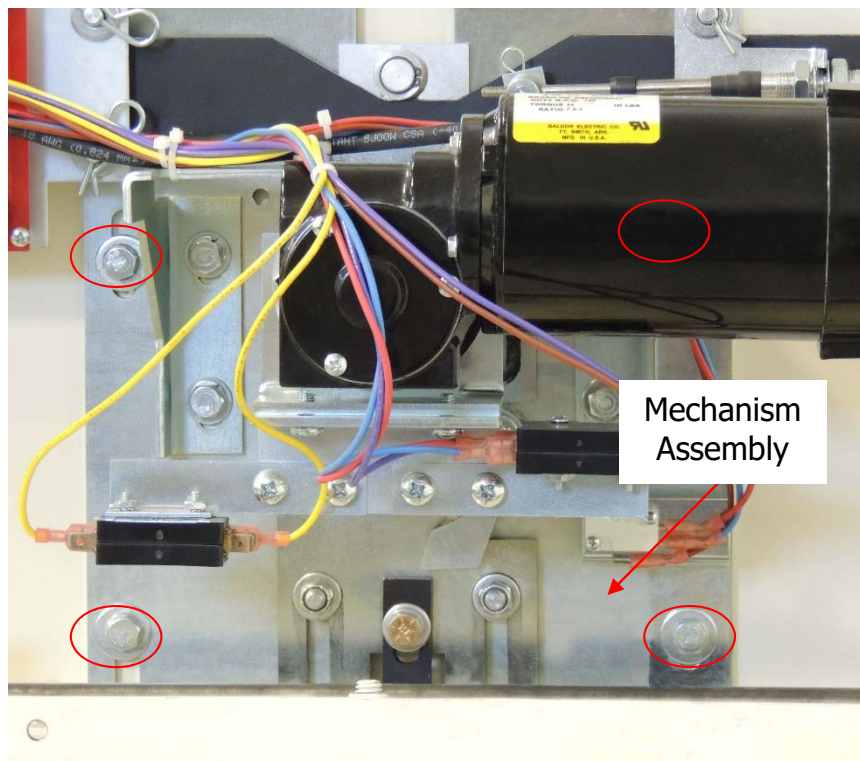
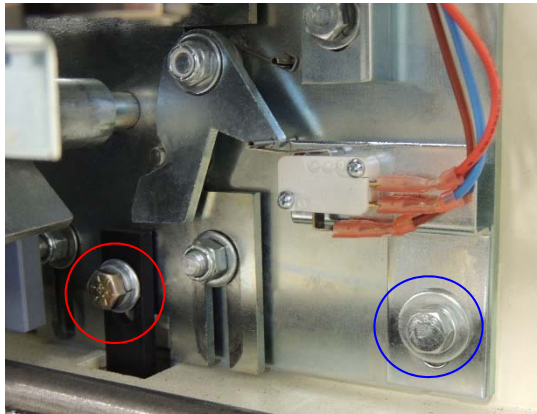


FIGURE 2

4. The VLC rod is then attached to the tapped hole under the **Lockhead Roller** on the **Lockhead Assembly** with (1) grade 8 - 5/16-18 x 1" HHCS, (1) Mounting Collar, (1) 1/4" flat and (1) 5/16" lock washer (**Hardware Bags - #4, #5, #6, #7**) (Red circle Figure 3) (Assy Figure 4). Tighten bolt to allow lock washer to set, but do not over tighten, which may collapse the mounting collar.



Z

FIGURE 3



VLC BOLT, LOCK WASHER, FLAT WASHER, COLLAR

FIGURE 4

5. The **Travelbar Assembly** must be set on the track located inside the housing (Figure 5). The door must be inserted into the long slot on the bottom of the housing and slid into place underneath the VLC bottom lock. The VLC rod must be raised to allow the door to slide into position. Lifting the lockhead roller lifts the VLC rod. Once the door is positioned it can be lifted and attached to the travelbar assembly with (2) 1/2-13 x 1 1/4" HHCS, 1/2" lock washer, and Eccentric (**Hardware Bags - #8, #9, #11**). Leave bolts snug, but do not fully tighten.

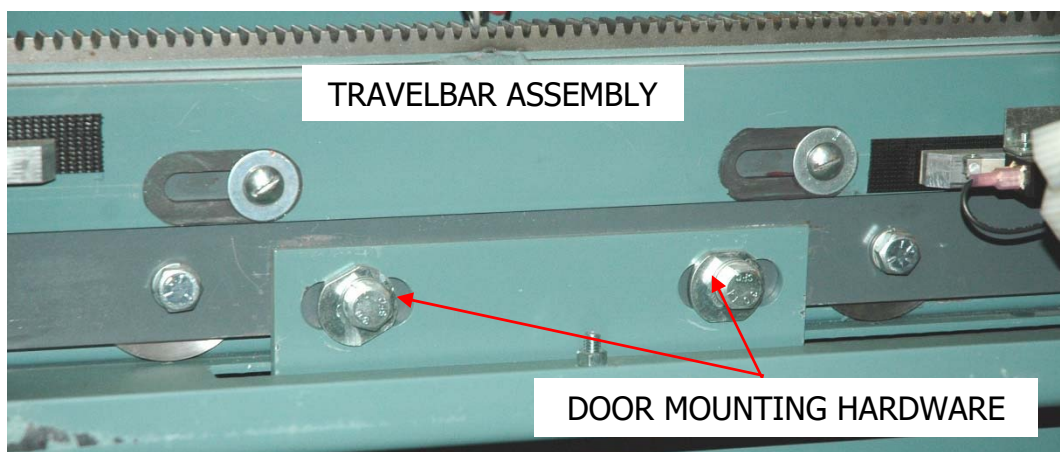


FIGURE 5

6. The door requires a **Hanger, Hanger Bar** and a **Door Guide Angle** welded in place (Figure 6). The door guide angle is place 7/8" from skin of door to the inside of the door guide angle and the ends flush. It is then welded into position (Red Oval Figure 6). The door hanger and hanger bar are welded to the door with the flat mounting side of the hanger parallel to the doors surface (Blue Oval Figure 6). See Erection drawings for details.

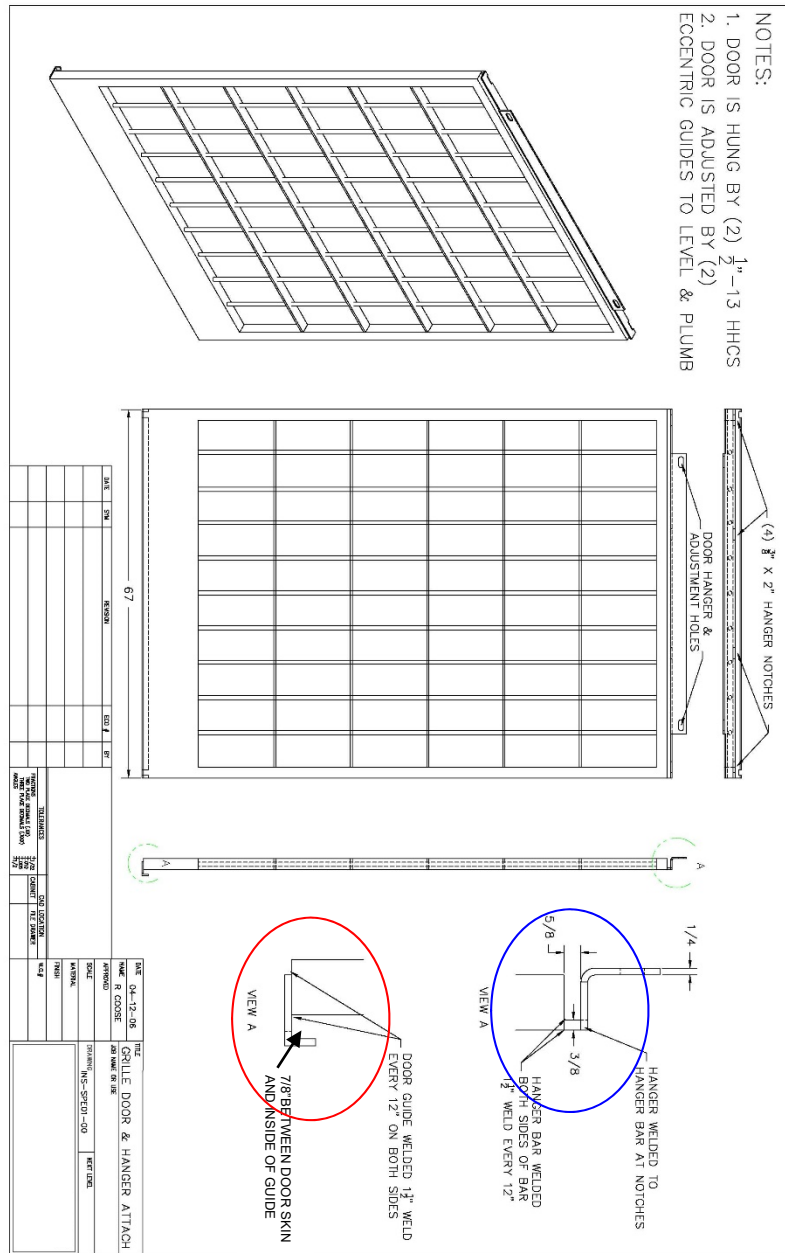


FIGURE 6

7. The door is adjusted by moving the door and travelbar assembly into the closed position and allowing the lockhead roller to drop behind the rear bar of the travelbar assembly. By turning the eccentrics on the door mounting hardware, the door can be moved up, down and diagonally to locate a parallel position with the VLC. The door must be raised into the bottom lock to provide maximum locking condition (Figure 7).

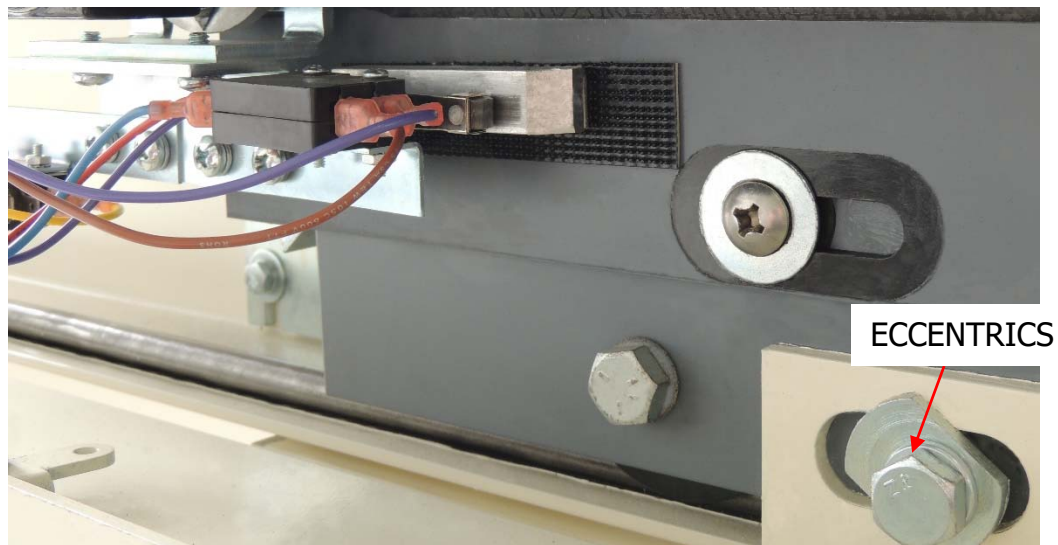


FIGURE 7

8. There must be a 1/8" gap between the lockhead roller and the travelbar assembly (Figure 8). The mounting bolts can then be fully tightened. **When properly adjusted, the door will hang past the VLC by approximately 1/4" and the VLC rod will slip into the notch in the door guide angle attached to the bottom of the door.** It is recommended that once the door is appropriately adjusted, the door hanger may be tacked to the travelbar, which prevents the door from being moved out of adjustment from abuse or being blocked.

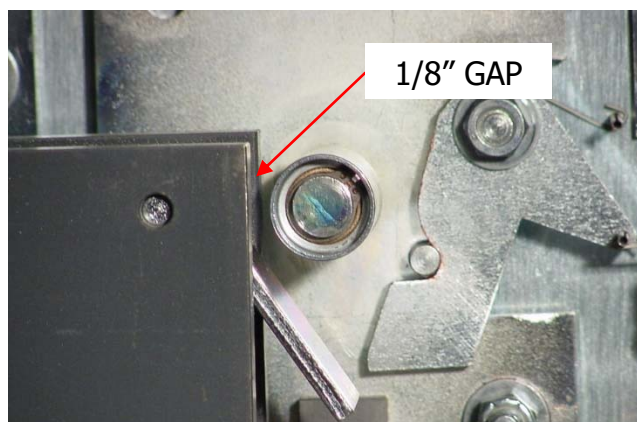


FIGURE 8

9. The **Release Column** with the attached **Receiver** must be placed against and parallel to the Door, while maintaining the 1/8" gap between the lockhead roller and the travelbar assembly. The receiver must be aligned to provide even spacing on each side of the door and then the release column can be welded to the bottom of the housing. An angle should be welded to the release column to provide necessary mounting to the wall, whether welded to an imbed or bolted with appropriate anchors. See erection drawings for specific details.
10. Lifting the lockhead roller allows the door to be moved to the open position (Figure 9 & Figure 10).

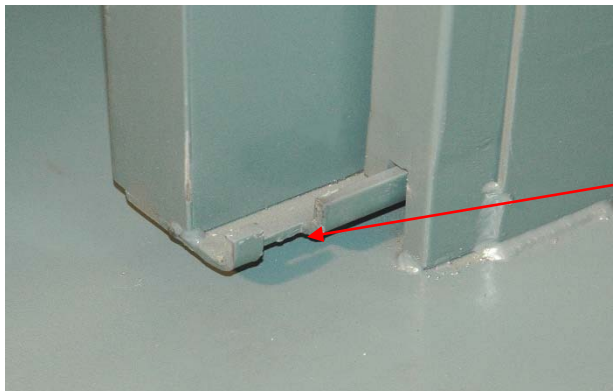


FIGURE 9



FIGURE 10

11. The VLC rod is the locking mechanism for the device in both the open and closed positions. It locks the door at the rear by dropping into the notch at the rear of the door or at the front of the door when the door is in the open position (Figure 11). The door will be approximately 1/4" from the VLC in either position (Figure 1).



NOTCH ON EACH END OF DOOR
ALLOWS DOOR TO LOCK IN CLOSED
OR OPEN POSITION

FIGURE 11

12. In the open position, the **Stop Assembly** must be placed 1/8" away with the bumper centered directly on the front bar at the rear of the travelbar assembly. The stop assembly can then be welded into position. Make certain to tighten stop assembly nuts into position. Future adjustments can be made by loosening the nuts and sliding the stop assembly forward or backward (Figure 12).

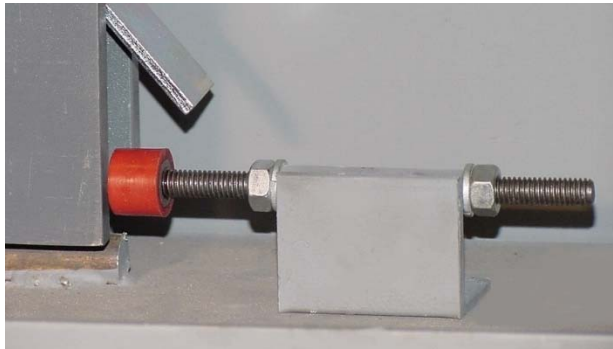


FIGURE 12

13. The **Logic Board** must be attached on the upper two pins located on the left hand side of the mechanism assembly. It is secured with the two hairpins located in the pin holes (Figure 13). The feet have **Dual Lock** attached and the protective covering must be removed and the feet can be pressed against the housing to secure the board. The dual lock should be allowed to fasten to the housing for twenty-four hours for maximum holding power (Figure 14). Once attached, the board can be removed by pulling the two pins and pulling the dual lock apart. To re-apply, set the board over the pins and push the dual lock together until it snaps. Re-apply the pins.

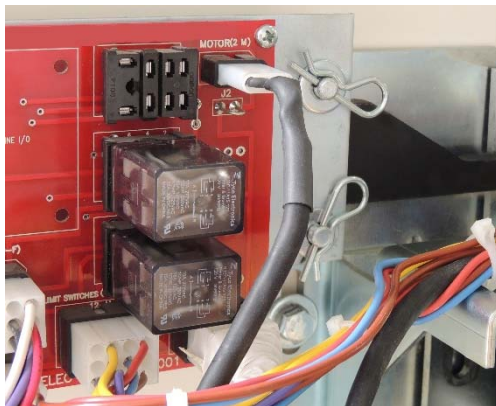


FIGURE 13

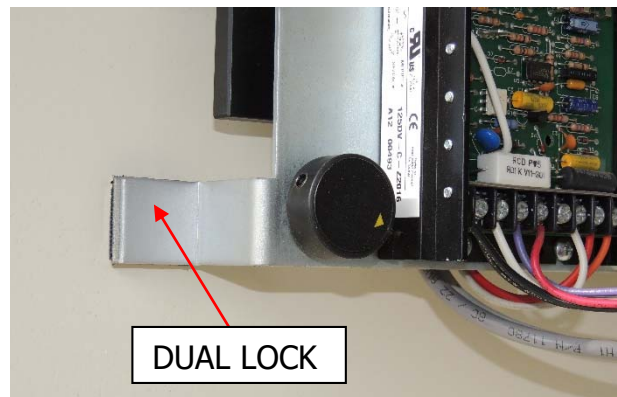


FIGURE 14

14. The **Motor Assembly** is attached to the top of the **Motor Bracket** located on the mechanism assembly. (2) 5/16-18 x 3/4" HHCS, (2) 5/16" flat washers and (2) 5/16" Lock washer (**Hardware Bags #1, #2, #3**) (Figure 15). The motor assembly must be adjusted to set on the rack squarely and the motor bracket may need to be adjusted to allow the spur gear teeth to be set into the rack teeth approximately 2/3rds of the depth (Figure 16).

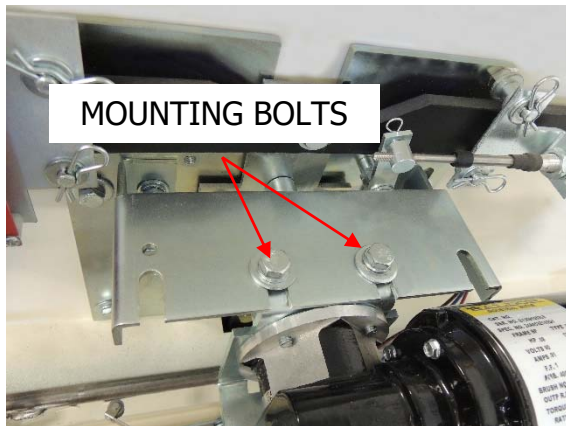


FIGURE 15



FIGURE 16

15. The **Harness** is installed with the **5 Wire Limit Switch** on the side to which the door closes and the **2 Wire Limit Switch** opposite. The limit switches are attached to the **Limit Switch Bracket** with (2) 1/4-20 x 3/8" PHMS and (2) 1/4" lock washers (**Hardware Bag #7, #10**). Wires are run up the left side of the motor and attached to the slot left of the motor mounting slots along with the deadlock switch wires and the motor plug (Figure 17).

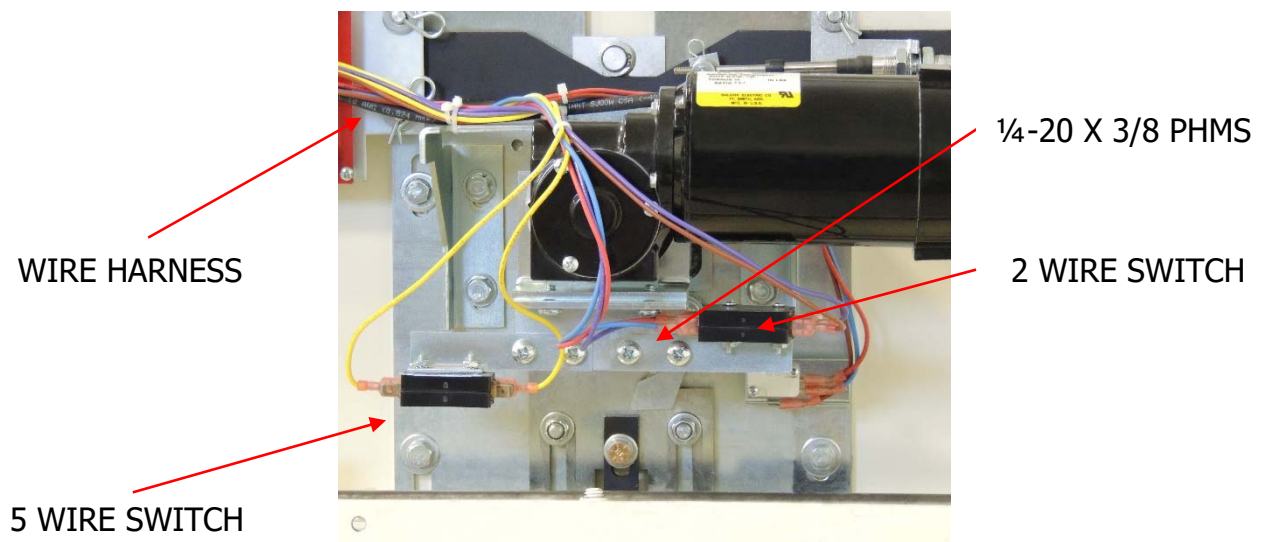


FIGURE 17

16. The wires can then be inserted into their proper locations in the logic board. Each socket and pin are different, so that the wires can't be inserted into the wrong sockets (Figure 18).

17. **NOTE:** Left hand devices must use a Motor Adapter between the logic board motor socket and the plug coming from the motor (Figure 19). **Left hand devices close to the left.**

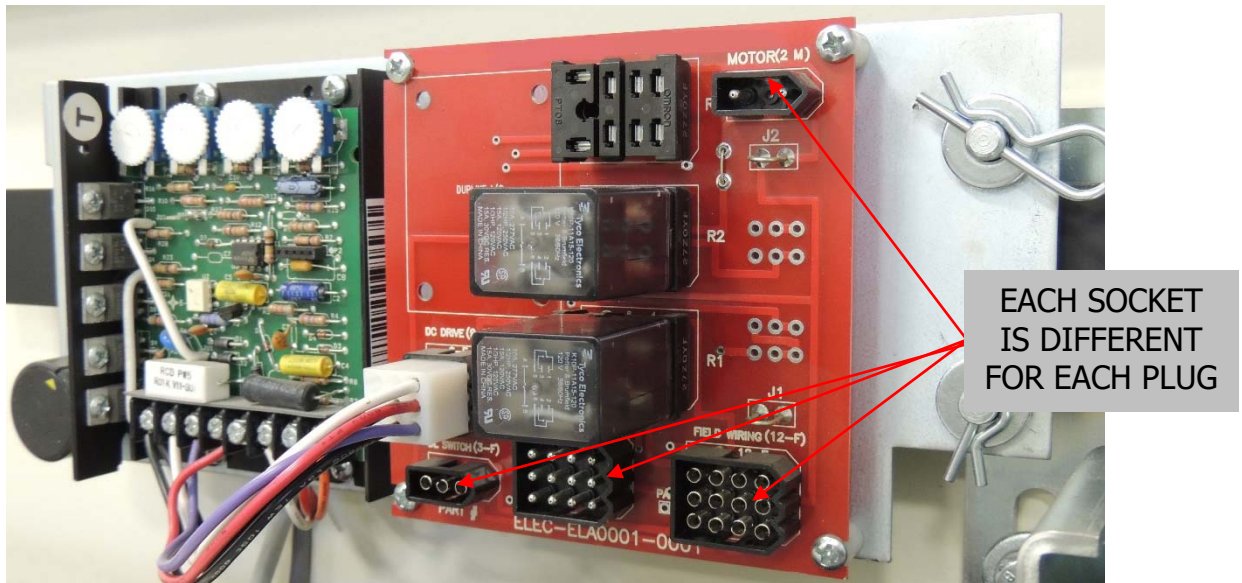


FIGURE 18



FIGURE 19

18. Mount (1) aluminum **Switch Tripper (Bag# 15)** to each dual lock strip located on the travelbar assembly. They should be snapped into place approximately 1/4" to 1/2" from the inside edge of the dual lock strip, with the

bevel pointed toward the center of the device (Figure 20). By moving the door manually, the trippers can be checked for proper alignment with the switches and the switches can be checked for proper tripping. If adjustment is necessary, pull down on the tripper to release it from dual lock strip. When replacing, the tripper needs to be snapped into place. The switch arms can be bent slightly by hand to insure tripping.

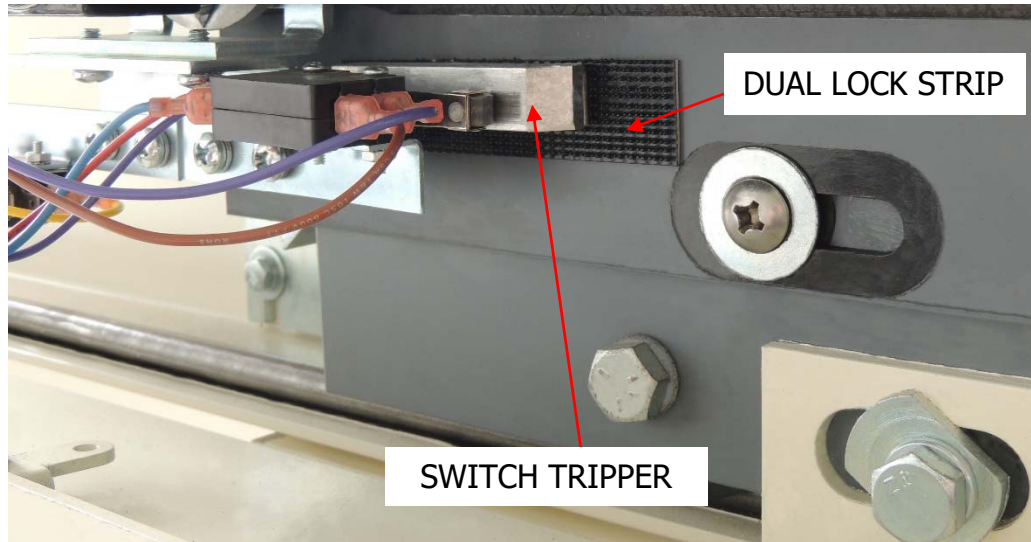


FIGURE 20

19. The mechanical release of the door is typically accomplished with a cable attached at one end, to a **Cable Bracket**, which is attached to a #10 or #80 Series Deadbolt with (2) 1/4-20 x 3/4 HHCS, (2) 1/4 Lock Washer, (2) 1/4 Flat Washer (**Hardware Bag #6, #7, #12**) (Figure 21). The cable is attached by both #10 nuts from the cable and (1) Lock Washer (**Hardware Bag #13**).

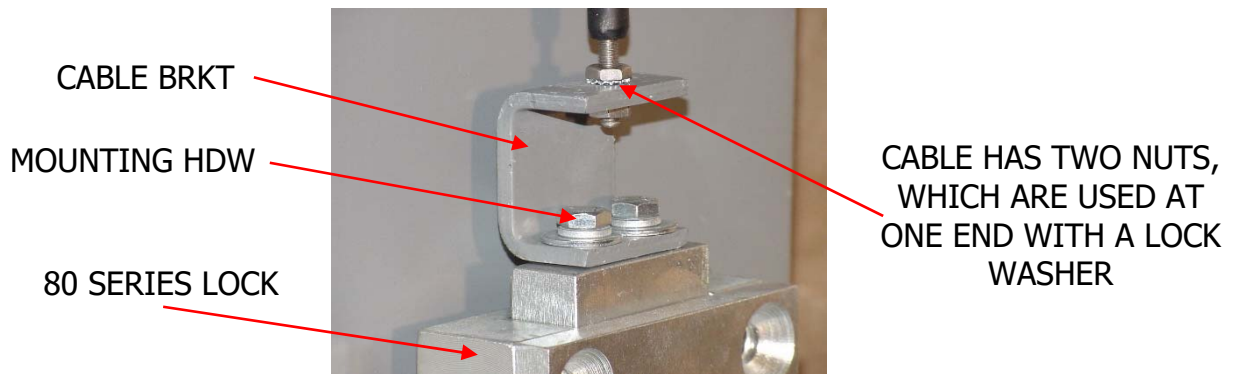


FIGURE 21

20. The other end is attached to a **Cable Connector**, attached to a **Release Lever** on the mechanism assembly with a **Hairpin** (**Hardware Bag #14**) (Figure 22). Make sure that the cable has all the 1" throw adjusted out at the release lever end.

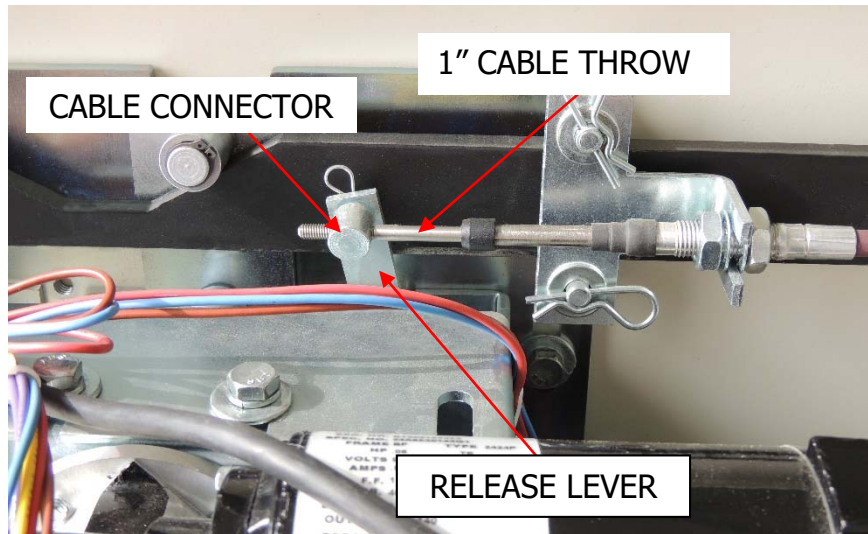


FIGURE 22

21. When the lock is retracted by key, the release lever lifts the **Middle Roller** on the mechanism plate, which allows the **Lockhead Roller** to lift out of the way of the travelbar assembly (FIGURE 23). Make sure the release lever touches, but does not lift the middle roller when tightening.

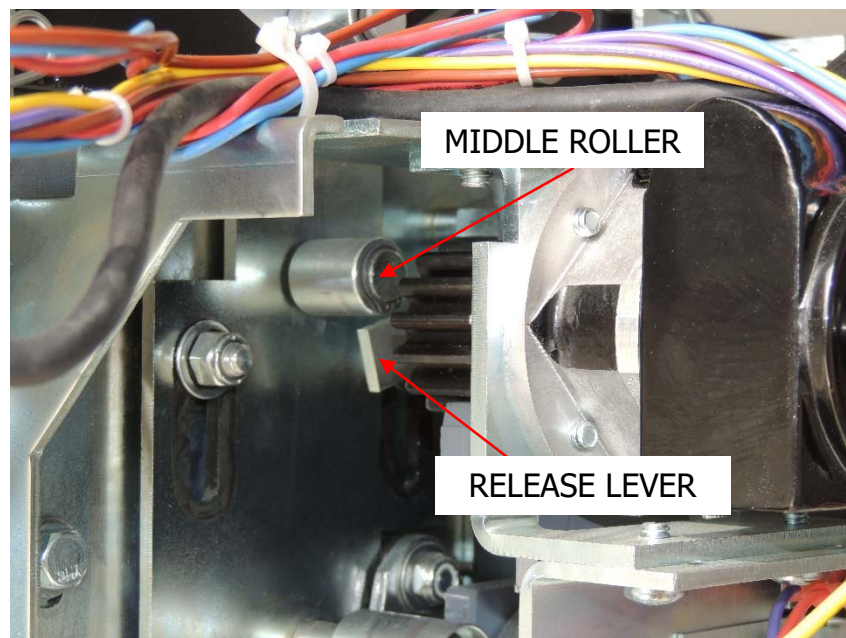


FIGURE 23

WIRING, MOTOR SPEED CONTROL & ADJUSTMENTS

1. The device should be tested with a test box (Available through Detention Product Services before hooking up to permanent controls. This allows the device to be properly tested without concern for damaging controls from improper wiring.

PLEASE READ BEFORE OPERATING

THIS DEVICE CAN BE OPERATED FROM SEVERAL DIFFERENT CONTROL VOLTAGES. ON NEW PROJECTS, THE CONTROL VOLTAGE AND POWER VOLTAGE MUST BE COORDINATED AND SUBMITTED TO DETENTION PRODUCT SERVICES, LLC. TO INSURE THE PROPER RELAY VOLTAGE.

MOST RETROFIT CONTROLS PROVIDE 120 VAC. TO THE DEVICE TO OPERATE, BUT IT SHOULD BE VERIFIED BEFORE INSTALLATION.

USING CONTROL VOLTAGE (6 VDC, 12 VDC, 24 VDC, ETC. PROVIDED BY THE CONTROL CONSOLE), WHICH IS DIFFERENT FROM THE POWER VOLTAGE (120 VAC, 220 VAC, FROM MAIN POWER BREAKER), **THE J2 JUMPER MUST BE CUT AND SEPARATED** TO ISOLATE COIL VOLTAGE FROM POWER VOLTAGE AND THE RELAYS MUST MATCH THE CONTROL VOLTAGE. **SEE FIGURE 6.**

THIS IS TYPICALLY DONE AT FACTORY, BUT SHOULD BE CHECKED IN THE FIELD BEFORE OPERATION.

2. The **Motor Drive** and **Logic board** is a modular assembly that provides a location for all field wiring hook-ups and internal wiring hook-ups. The motor drive provides variable speed to the motor and current limiting for pressure on the door. The logic board allows two relays to accommodate several variable control voltages, a third relay for six wire existing devices (retrofit units), an in travel indicator (where applicable) and sockets for all wire connections.

3. There is one **Speed Control Knob** (Black Knob) located to the far left on the logic board plate. To begin adjustment, turn the speed control knob fully counterclockwise to turn off (FIGURE 1).

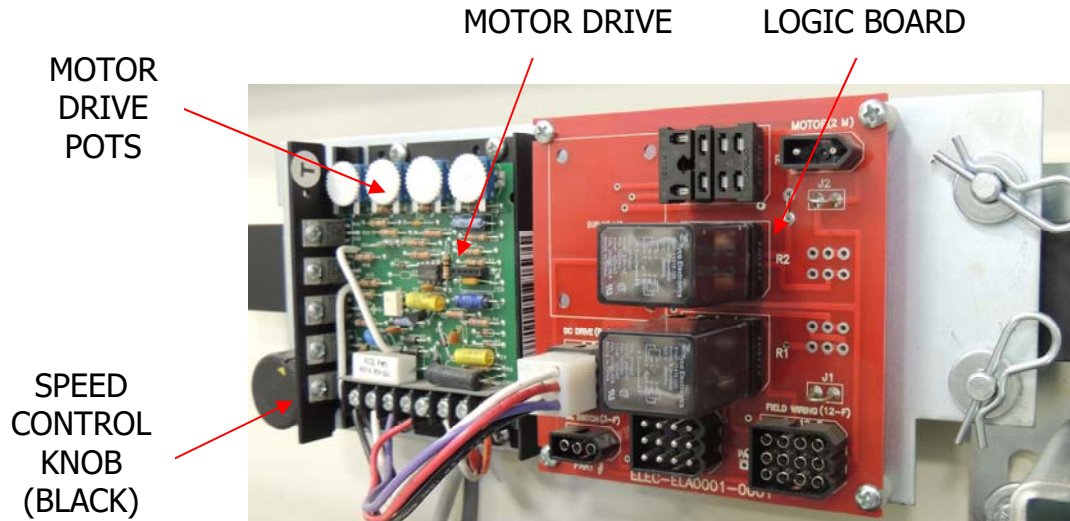


FIGURE 1

4. There are **(4) Control Pots** on the Motor Drive. The pot adjustment varies depending on the motor voltage. See manual for adjustment position for each control pot (Figure 1).

24 VDC POWER
65 E
CLOCK POSITION -

↑	↙	↙	↑	↙
12	7	7	12	7

120 VAC POWER
125 D
CLOCK POSITION -

↙	←	↙	↙
10	9	10	7

220 VAC POWER
125 D
CLOCK POSITION -

↙	↙	→	↙
11	10	3	7

5. Flip the test box switch to on and slowly turn the speed control knob clockwise until motor begins to move at a moderate speed. Allow the door to move fully open and check to make sure the open limit switch trips on the switch tripper and shuts off the motor. If necessary adjust the switch by bending the arm lightly at the bend.

6. The limit switch should cut-off just before the door reaches fully open. The door should be allowed to slightly coast into position. The switch tripper can be adjusted forward or backward to allow this condition. Move forward toward the center of the device to cut-off sooner or move farther away from center to cut-off later.
7. Repeat the operation to the closed position, check the close limit switch and switch tripper. Adjust if necessary (Figure 2).

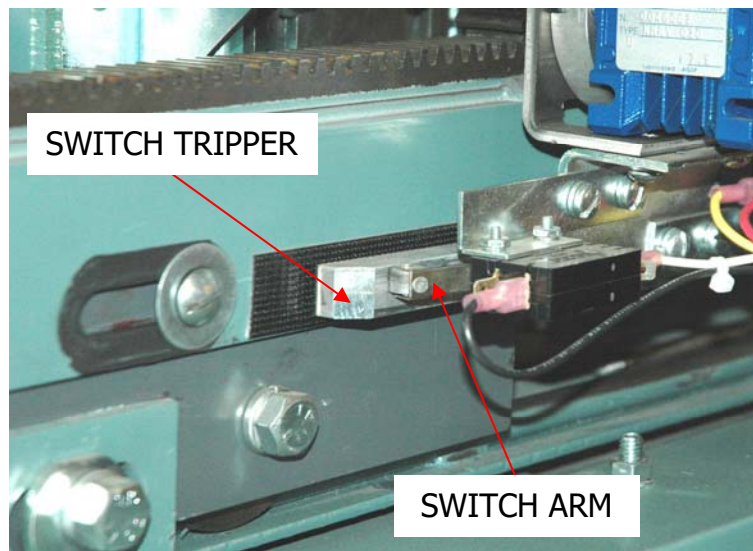


FIGURE 2

8. After confirming the proper limit switch operations and switch tripper locations, set the door movement to the desired speed by turning the speed control knob. Clockwise to increase speed and counterclockwise lessen speed. It may require re-adjustment of the switch trippers to allow the door to close or open without slamming into the frame or stop.
9. After checking and confirming all proper field wiring hook-ups and switch tripper adjustments, attach the field plug to the logic board to check operation with the permanent controls.
10. A **Field Plug** is provided to attach field wiring to the logic board by using wire connectors to attach the appropriate wires to each lead. See specified wiring diagram for proper quantity of wires and field plug hook-ups. Wiring should always meet local codes (Figure 3).

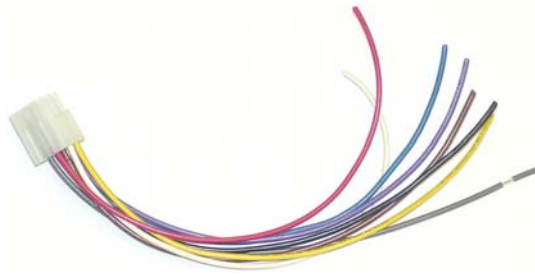


FIGURE 3

NOTES:

1. Push button controls should always have the open and closed buttons interlocked by running the open power through the N/C side of the close.
2. When using a control voltage (12 VDC, 24 VDC, etc.) different from the power voltage (120 VAC, 220 VAC) the **J2 jumper** must be cut and separated (FIGURE 4).
3. All plugs cannot be inserted into the wrong sockets on the logic board.

“See applicable wiring diagram”



J2 JUMPER

FIGURE 4

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