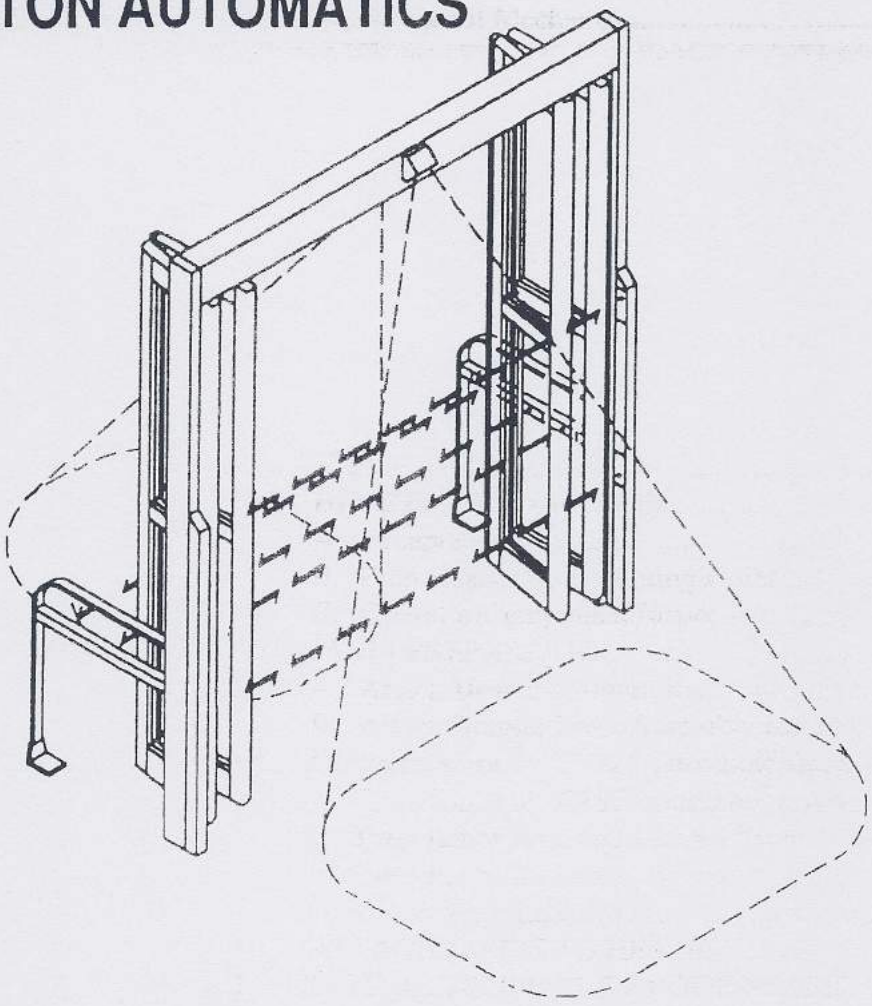
INSTALLATION INSTRUCTIONS and OWNER'S MANUAL for the

BIFOLD

AUTOFOLD DOOR SYSTEM, SERIES 4-7200

FROM HORTON AUTOMATICS



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Barrier Free

G4-7200
MAR95

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Horton
AUTOMATICS
G4-7200.3
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INSTALLATION INSTRUCTIONS FOR THE BIFOLD AUTOFOLD DOOR SYSTEM SERIES 4-7200

1. OWNER'S INFORMATION

We are pleased that you have chosen the BiFold Autofold Door System from Horton Automatics. This door system will provide many years of safe automatic operation while conserving energy provided the unit is properly installed and maintained.

This Manual is Intended to Serve Two Purposes:

A. To assist the Horton Distributor (Installer) with the installation and adjustment of a BiFold Door.
B. To serve as a guide for the Owner to become familiar with the operation and daily safety of his BiFold Door Unit.

Regular inspections are required to keep each door in safe and proper working order. Please acquaint yourself with and follow all instructions in this manual.

Horton Automatics' BiFold Doors are offered with many options. Consequently, it is possible that this manual may not address all of the possibilities. This Manual, Wiring Diagrams, and Individual Shop Drawings should be kept in your files. Also, Wiring Diagrams should be kept in the Header pouch which is adhered to the inside of the Faceplate.

2. SERVICE AVAILABILITY

Horton Automatics' products are manufactured at the company's plant facilities in Corpus Christi, Texas and Telford, England. A network of authorized independent distributors— in the United States, Canada, Mexico and parts of Europe offer both installation and a maintenance program. For the local Horton Automatics distributor in your area call 1-800-531-3111, or consult the Yellow Pages of your Telephone Book under "Door-Operating Devices." In Europe, call the Horton Plant in Telford, England at 011-44-952-670169.

3. LIMITED WARRANTY

Horton Automatics (the "Seller") warrants to the Buyer all products manufactured by the Seller to be free from defects in material or workmanship under normal use and service. The Seller's obligation under this warranty is limited to repairing or replacing, at its factory, any parts which are returned to Seller within twelve months, freight charges prepaid, and which upon examination prove to be defective. Said warranty shall not apply to products which have been installed, altered, or repaired by any persons not expressly authorized by Seller in writing to do so, or which have been subjected to misuse, negligence or accident.

There is no warranty of merchantability of fitness for any particular purpose or any other warranty express or implied except as specifically stated herein.

Seller shall in no event be liable for special or consequential damages of Buyer or claims of any third party against Buyer.

Generally, the installing distributor provides a one-year warranty covering the labor and transportation charges for defective parts replacement. Please ask your installing distributor for any warranty concerning these items. Any such warranty is only from and on behalf of such distributor, as Seller does not authorize any other party to provide any other warranty on behalf of Seller.

4. INSTRUCTIONS TO INSTALLER

Horton Automatics is pleased that our BiFold Door System has been chosen for this installation. We have carefully designed, tested, and built this door system for high quality and years of service. This door must now be installed and adjusted properly to ensure a high standard of operation and safe use.

To install and adjust the door for proper and safe operation, the installer must carefully read this Instruction Manual before proceeding, then follow the instructions exactly.

This door is designed to be installed only by trained and knowledgeable installers. One should be experienced in the installation of automatic entrances. You should know all your local code requirements, and be familiar with the requirements of ANSI A156.10 Standards for Power Operated Doors.

After Installation the door must be adjusted to conform with Horton's recommendations and all code requirements. Be sure to carefully study these requirements in these instructions.

After installation and adjustment, the installer's final responsibility is to properly instruct the owner in the safe use of the door. You must also present the owner with this Installation/Owner's Manual G4-7200 and carefully explain how to perform the Daily Safety Check Test it contains. Each step of the installation and adjustment instructions are important for proper and safe use of the door. If you have any questions about any item contained in these instructions, call Horton's Customer Service Department for assistance.

5. INFORMATION PROVIDED BY DISTRIBUTOR TO OWNER

A. Location of "Automatic/Off/Hold-Open" Rocker Switch.
B. Locations and use of Circuit Breakers if power operated.
C. Necessary warnings not covered in these general instructions.
D. Local phone number to call regarding problems or request for service. If a potentially hazardous situation is suspected, lock the doors until a professional inspection is made and the problem is corrected.

Additional Information Provided to The Owner:

Date Equipment Shipped From Horton Automatics: _____

Date Equipment Placed Into Service: _____

Horton Automatics Invoice Number For Warranty Reference: _____

Equipment Type: _____

Accessories Included: _____

_____

_____

_____

6. GENERAL INFORMATION

Horton Automatics Series 4-7200 BiFold Door System is a folding (swing type) automatic door that works well in tight confining entrances or corridors typically using standard automatic sliding or swinging doors. Refer to Architectural Detail Sheets Figures 1 and 2, page G4-7200.6 and G4-7200.7 respectfully.

A. Operator/Controls

The BiFold Door's standard package utilizes Horton's Series 7000 low-energy, electro-mechanical, swing door operator and C4160-1 control housed in a 4 x 6 inch aluminum header to drive hinged folding panels in an overhead concealed configuration. The door unit can be manually operated with power 'on' or 'off' without damage to the operator.

B. Door Panels

BiFold Doors are provided in single or pair unit configuration. The single unit consists of an Active panel hinged to an Inactive panel that fold to one side or the other depending on it's handing. The pair unit on-the-other-hand, has two sets of Active/Inactive panels with one set folding to one side while the other set simultaneously folds to the other side. Refer to Section 8, Page G4-7200.9 for available BiFold configurations.

Active Panel: A Top Pivot Assembly secured to the operator's spindle also attaches and is concealed in the top web of the Active panel. A Bottom Pivot Assembly consisting of a Door Portion (concealed in the bottom web) and a Floor Portion (secured to the jamb and floor) secures and pivots the Active panel approximately 95° to full-open.

Inactive Panel: A Top Roller Guide Assembly attached and concealed in the top web of the Inactive panel slides in the breakout mechanism's extruded track. There is no bottom pivot on the Inactive panel and no bottom track is required.

The Inactive panel is secured to the Active panel with two extruded aluminum bearing/pin type hinge assemblies at the top and bottom of the panels. The arrangement of the hinges allows the Active panel to carry the weight of the Inactive panel. Finger safety and weatherstripping between the two panels is accomplished with an extruded *Santoprene™* Fingerguard which attaches to the vertical rail of the Inactive panel running full-length between the two hinges.

C. Breakout Mechanism

A two part breakout mechanism secured to the underside of the header allows for emergency egress at any time during the door's operating cycle. When the door panels are manually 'Broken-Out' during an emergency egress situation, power to the operator(s) is cut-off. After the doors are released, the breakout mechanism and door panels spring back into the closed position and normal door operation automatically resumes. *After an emergency egress situation occurs, the door panels and breakout system should be checked to be sure the system is properly engaged.*

Figure 1, Architectural Detail Sheet for BIFold Pair Units

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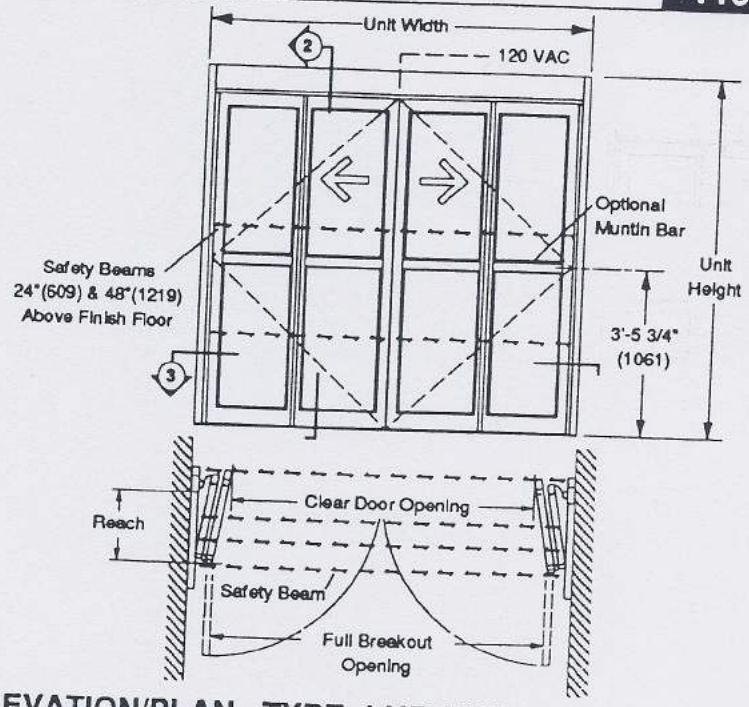
SWING DOORS AND OPERATORS

BIFold Automatic Door
SERIES: 4-7200, OVERHEAD CONCEALED
TYPE: PAIR LHR-RHR

B80.0
9-92
Rev. 12-93

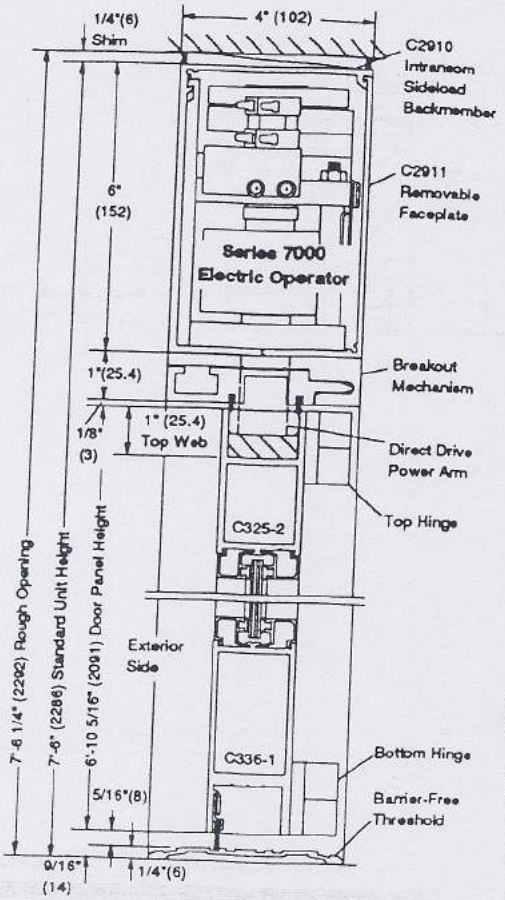


ELEVATION/PLAN TYPE: LHR-RHR

SCALE: 1/4"=1'-0" (6 mm = 305 mm) — 1

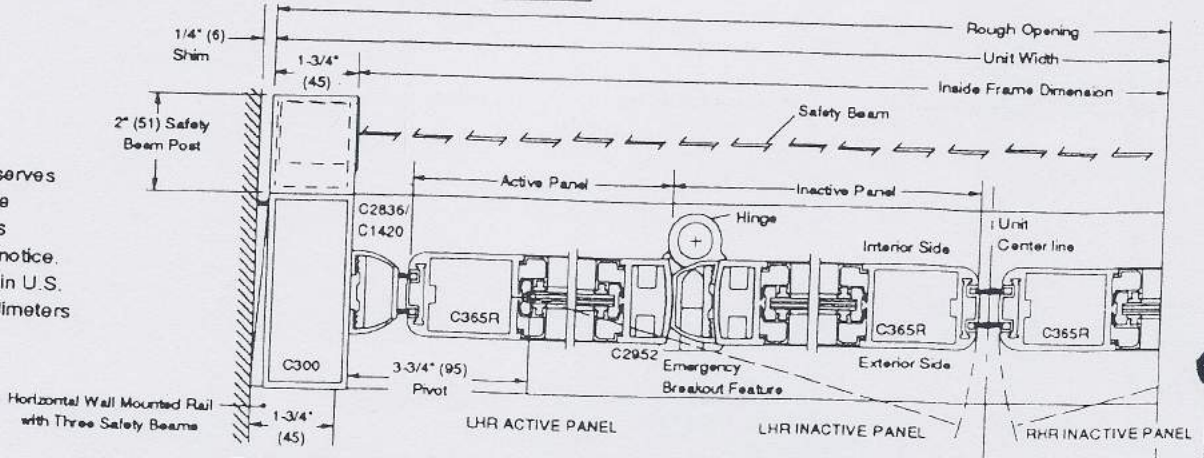
Standard Package Sizes for Pair Units

Standard Unit Size Width	Height	Clear Door Opening	Full Breakout Opening	Reach	Rough Opening Width	Height
6'-0" X	7'-6"	4'-4 7/8"	4'-11 1/4"	1'-0 5/8"	6'-0 1/2" X	7'-6 1/4"
72" X	90"	52.875"	59.25"	12.625"	72.5" X	90.25"
(1829) X	(2286)	(1343)	(1505)	(320)	(1842) X	(2292)
6'-5 1/2" X	7'-6"	4'-10-3/8"	5'-4 3/4"	1'-2 1/32"	6'-6" X	7'-6 1/4"
77 1/2" X	90"	58.375"	64.75"	14.031"	78" X	90.25"
(1968) X	(2286)	(1482)	(1645)	(356)	(1981) X	(2292)
7'-0" X	7'-6"	5'-4 7/8"	5'-11 1/4"	1'-3 5/8"	7'-0 1/2" X	7'-6 1/4"
84" X	90"	64.875"	71.25"	15.625"	84.5" X	90.25"
(2134) X	(2286)	(1648)	(1810)	(397)	(2146) X	(2292)
8'-0" X	7'-6"	6'-4 7/8"	6'-11 1/4"	1'-6 5/8"	8'-0 1/2" X	7'-6 1/4"
96" X	90"	76.875"	83.25"	18.625"	96.5" X	90.25"
(2438) X	(2286)	(1953)	(2115)	(473)	(2451) X	(2292)



VERT. SECTION

SCALE: 3"=1'-0" (76 mm = 305 mm) — 2
Door Shown In Closed Position



PARTIAL HORIZONTAL SECTION TYPE : LHR-RHR

SCALE: 3"=1'-0" (76 mm = 305 mm) — 3

Horton Automatics reserves the right to improve the product and change its specifications without notice. Dimensions given are in U.S. Inches followed by Millimeters in parenthesis.

Figure 2, Architectural Detail Sheet for BiFold Single Units

G4-7200.7
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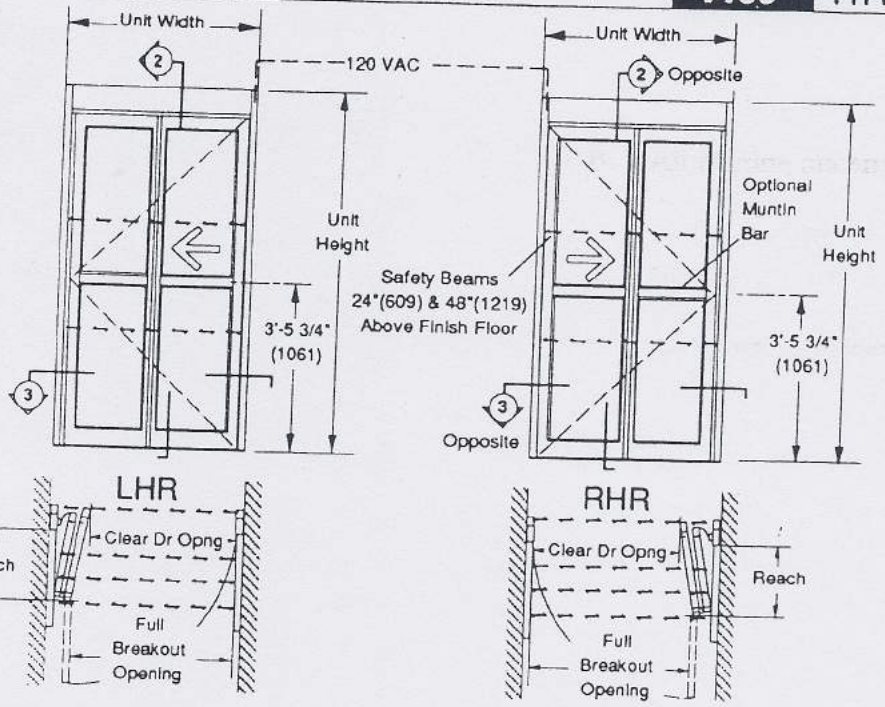
SWING DOORS AND OPERATORS

BiFold Automatic Door

SERIES: 4-7200, OVERHEAD CONCEALED
TYPE: SINGLE LHR or RHR

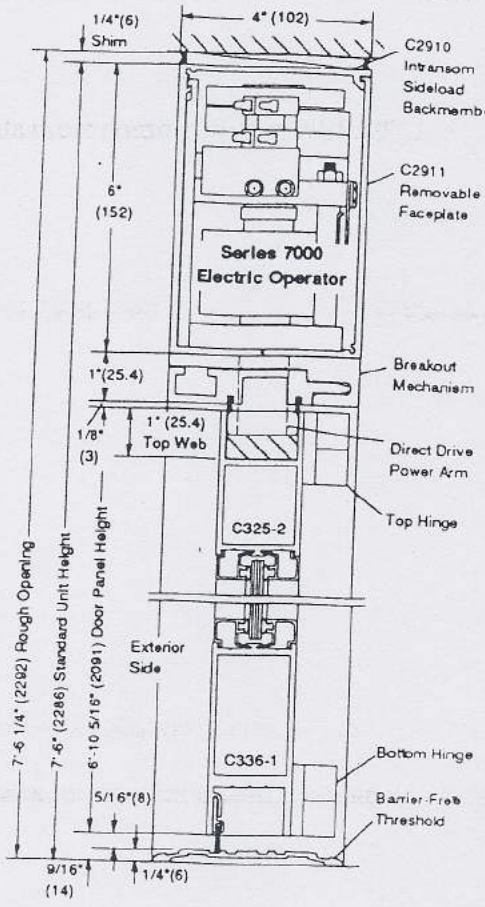
B80.1
9-92
Rev. 12-93



ELEVATION/PLAN TYPE: LHR and RHR

SCALE: 1/4"=1'-0" (6 mm = 305 mm)

1



VERT. SECTION

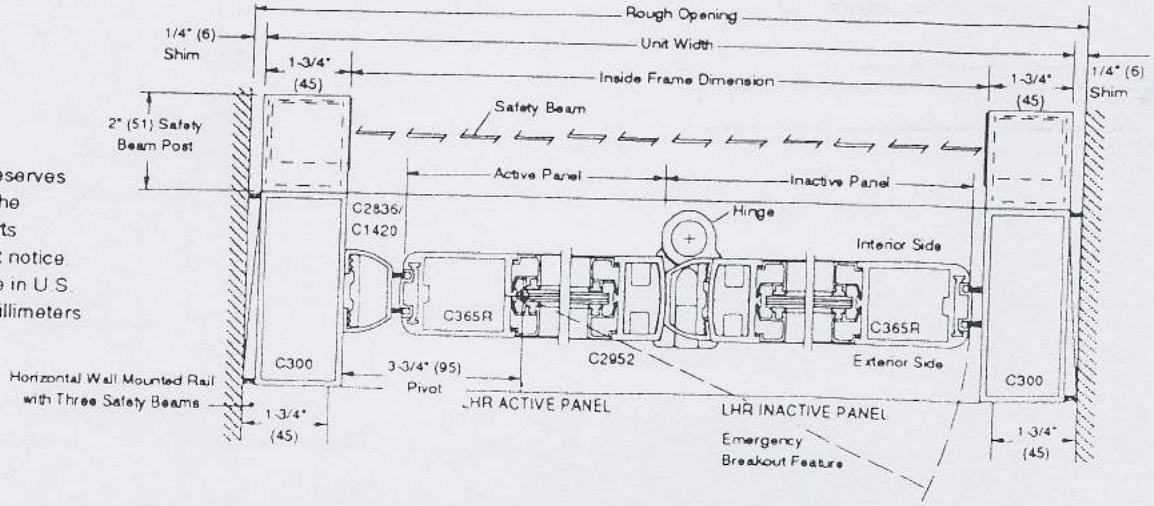
SCALE: 3"=1'-0"
(76 mm = 305 mm)
Door Shown In Closed Position

2

Standard Package Sizes for Single Units

Standard Unit Size Width	Height	Clear Door Opening	Full Breakout Opening	Reach	Rough Opening Width	Height
3'-8"	7'-6"	2'-8 11/16"	2'-11 7/8"	1'-3 13/16"	3'-8 1/2"	7'-6 1/4"
44"	90"	32.6875"	35.875"	15.8125"	44.5"	90.25"
(1118)	(2286)	(830)	(911)	(401)	(1130)	(2292)
4'-0"	7'-6"	3'-0 11/16"	3'-3 7/8"	1'-5 13/16"	4'-0 1/2"	7'-6 1/4"
48"	90"	36.6875"	39.875"	17.8125"	48.5"	90.25"
(1219)	(2286)	(932)	(1013)	(452)	(1232)	(2292)

Horton Automatics reserves the right to improve the product and change its specifications without notice. Dimensions given are in U.S. Inches followed by Millimeters in parenthesis.



PARTIAL HORIZONTAL SECTION TYPE: LHR

SCALE: 3"=1'-0" (76 mm = 305 mm)

3

7. AUTOMATIC BIFOLD DOOR SYSTEM LIMITATIONS

A. All wiring must be in accordance with the National Electrical Code (U.S. installations) or with the Canadian Electrical Code (Canadian installations), and any local authority having jurisdiction.

B. All glazing materials must comply with ANSI Z97.1.

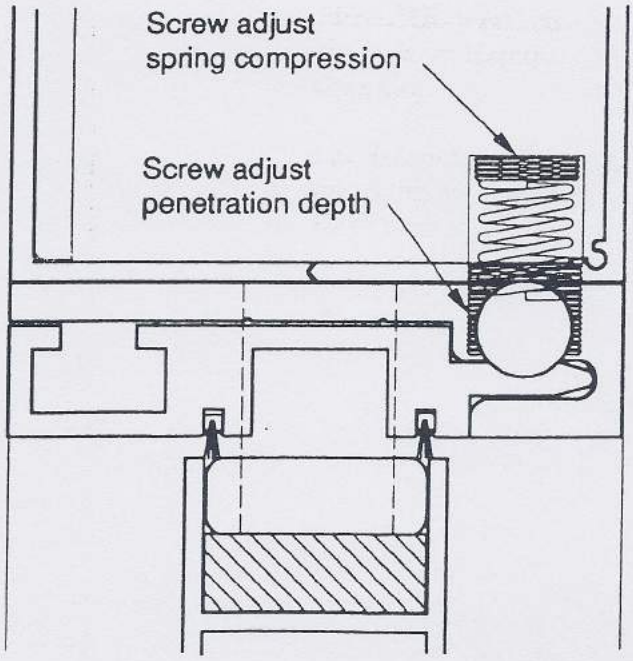
C. Maximum allowable panel weight is 65 lbs. (30 kg); or a maximum of 130 lbs. (60 kg) per operator.

D. Closing Speed must be adjusted to less than 1 foot per second (0.3 meters per second), measured at the lead rail of the folding panel. This is adjustable at the black knob located between the motor and the closing spring, just below the two conductor terminal strip.

E. For proper installation in conformance with ANSI A156.10, presence sensors must be installed to protect the threshold area of the door.

F. The force required to "break-out" the emergency breakaway of the door must be less than 50 lbs. (23 kg). This is adjusted with the ball detent located in the operator compartment above the lead rail of the door when it is fully closed. Two adjustments are possible - the depth of ball penetration into the aluminum extrusion; and the pre-compression of the detent spring with the threaded washer in the top of the ball detent (Refer to Figure 3, This Page).

Figure 3, Section Thru Breakout System Showing Ballcatch Assembly



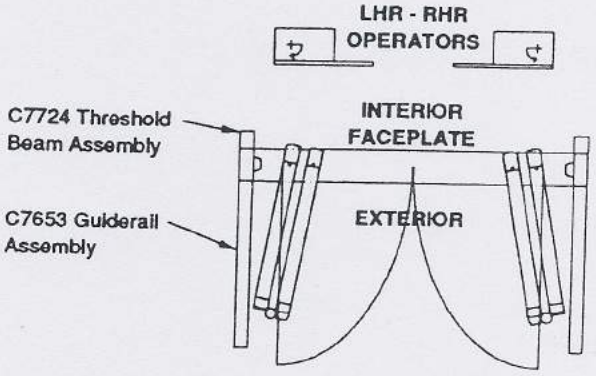
8. AVAILABLE BIFOLD CONFIGURATIONS

Horton's BiFold door system is available in four different configurations based on standard swing door handing. For Pair units, there is a LHR-RHR which is the standard configuration, a LH-RH version, a LHR-RHR Reverse Header configuration, and a LH-RH Reverse Header version. Single unit configurations are simply half of the Pair unit configurations shown below.

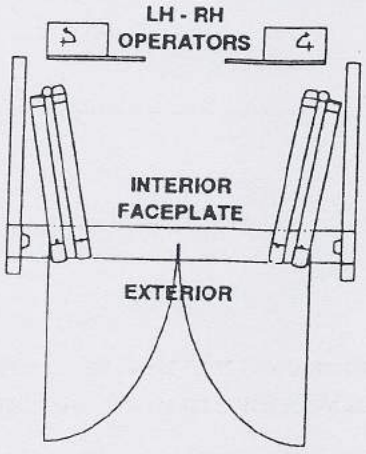
Figure 4, Plan Views- BIFold Configurations

A. The **LHR-RHR** version folds and breaks-out to the Exterior side. This version utilizes a LHR and RHR Series 7000 Swing Door Operator.

B. The **LH-RH** version folds to the Interior side and breaks-out to the Exterior side. This version utilizes a LH and RH Series 7000 Swing Door Operator.



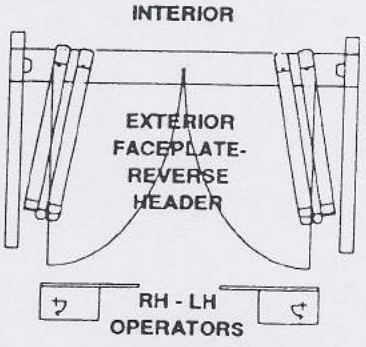
(A) LHR-RHR CONFIGURATION (STANDARD)



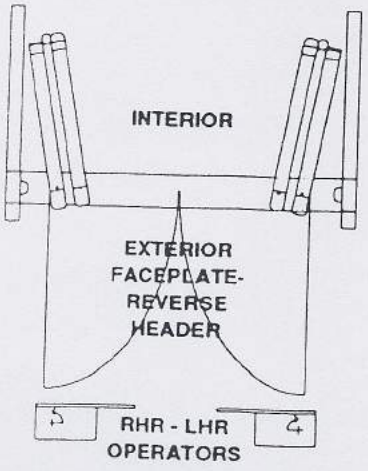
(B) LH-RH CONFIGURATION

C. The **LHR-RHR (Reverse Header)** version folds and breaks-out to the Exterior side. This version also has an Exterior Faceplate. This version utilizes a RH and LH Series 7000 Swing Door Operator.

D. The **LH-RH (Reverse Header)** version folds to the Interior side and breaks-out to the Exterior side. This version also has an Exterior Faceplate. This version utilizes a RHR and LHR Series 7000 Swing Door Operator.



(C) LHR-RHR REVERSE HEADER CONFIGURATION



(D) LH-RH REVERSE HEADER CONFIGURATION

9. BIFOLD'S ACTIVATION AND SAFETY SYSTEM

A. Activation System

C1188-1 Enhanced Motion Detector is the preferred activation device for BiFold doors. This detector mounts to the header on each side of the door unit for sensing two-way traffic. One of the C1188-1 detectors is provided with a Narrow pattern feedhorn for mounting on the fold-side of the door unit and the other detector has a Wide pattern feedhorn for mounting on the side opposite the door fold.

C1260-4 is a push-to-open Momentary Contact Switch used for trained traffic. It is a 6" (152 mm) diameter stainless steel wall switch engraved with a Handicap Logo and the words "Push to Open" on the cover plate.

C523 is an 'On-Off' Keyswitch Assembly which is normally installed on the exterior side.

C4320 is an 'On/Off/Hold-Open' Rocker Switch which is included in the standard package and is mounted on the interior side of the door unit.

B. Safety System

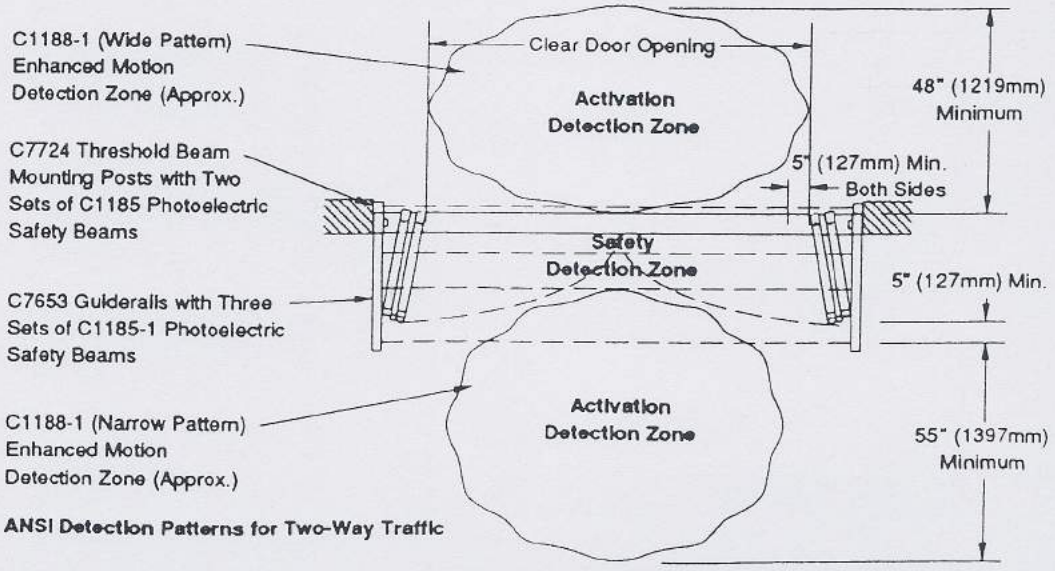
C7724 is a 54" (1372 mm) tall Threshold Beam Mounting Post Assembly which is secured to the jambs opposite the fold-side of the BiFold door unit and is equipped with two sets of C1185 Photoelectric Safety Beams mounted at 24" (610 mm) and 48" (1219 mm) above finish floor.

C7653 is a 30"ht. x 24"w (762 x 610 mm) Guiderail System (with no mesh) equipped with three sets of C1185-1 Photoelectric Safety Beams. Guiderails should be mounted on the fold-side of the door.

Guiderails are required on all applications which are for general public use where cross-traffic occurs. Also, for the C1185-1 Safety Beams to work properly on the Guiderails and Horizontal Wall Mounted Rails, BiFold units must be glazed with 1/4" (6 mm) Clear Tempered Glass.

C7729 is a 26" (660 mm) long Horizontal Wall Mounted Rail Assembly also equipped with three sets of C1185-1 Photoelectric Safety Beams. These rails are used in tight corridor applications and are mounted on the fold-side of the door.

Figure 5, Plan View of BIFold Pair Unit Showing Activation/Safety System

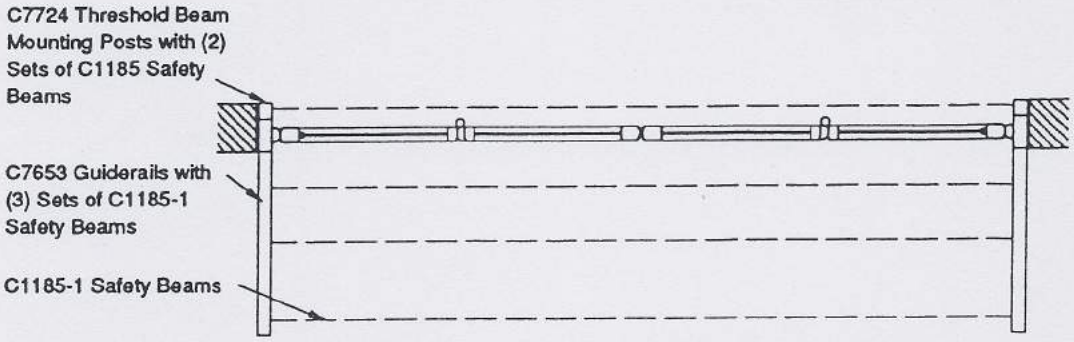


C. How The Safety System Works

The C1185-1 Safety Beams installed in the C7653 Guiderail System or C7729 Horizontal Wall Mounted Rails (first two sets closest to the door on the fold-side) are connected to the Safety Input of the C4260-1 Control through the extra N.O. relay contact of the C8166 Motor Relay, and through the Close Monitor Switch.

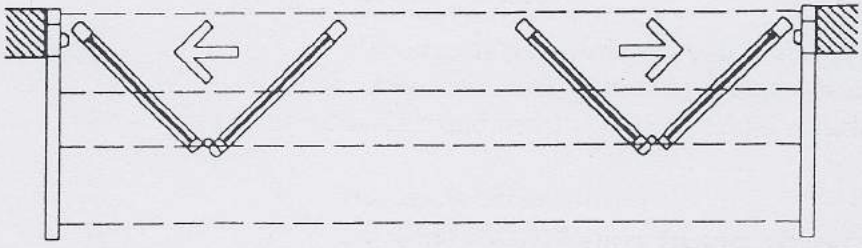
When the door is closed, the C1185-1 Safety Beam output, routed through the Close Monitor Switch, will prevent the door from opening when detecting presence (Figure 6, This Page).

Figure 6, Plan View of Door in Closed Position- All Safety Beams Active



When the door starts opening, the output of the C1185-1 will be routed through the extra N.O. relay contact of the C8166 Motor Relay, and serves as a Hold-Open (Figure 7, This Page).

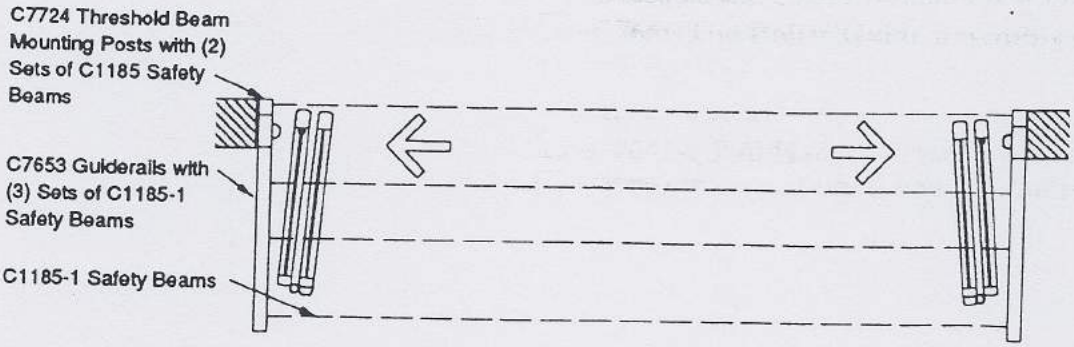
Figure 7, Plan View of Door Opening- First Two Guiderail Safety Beams Detect Door, Initiate Hold-Open Function



HOW THE SYSTEM WORKS CONT.

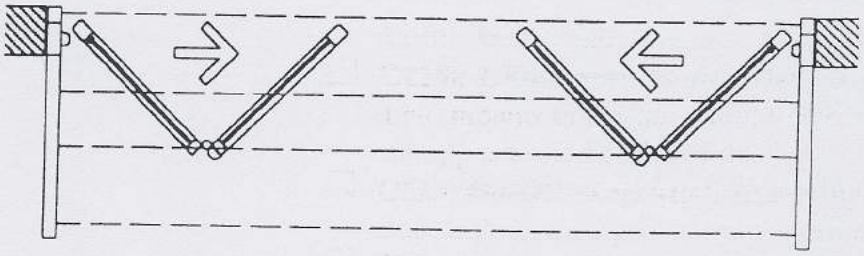
While the door is open, the output of the C1185-1 will be routed through the extra N.O. relay contact of the C8166 Motor Relay, and serves as a Hold-Open (Figure 8, This Page).

Figure 8, Plan View of Door in Open Position- First Two Guiderail Safety Beams Detect Door, Maintain Hold-Open Function



When the door starts closing, the C1185-1 will be disconnected from the operator when the motor relay drops allowing the door to close, and will be reconnected by the Close Monitor Switch when the door reaches fully closed (Figure 9, This Page).

Figure 9, Plan View of Door Closing- First Two Guiderail Safety Beams Disconnected



10. PRODUCT INVENTORY

Upon receipt of your BiFold unit, take an inventory to be sure all items have been received and are undamaged. Special jobs usually require special accessories but, for the most part the following items are standard and should be included with each shipment.

A. Standard Equipment

- ☐ **C2911/C2910 Door Header** (Backmember/Faceplate) with **Series 7000 Operator(s)** and **C4160-1 Control(s)** installed inside aluminum housing and a complete **Breakout Assembly** secured to the bottom of the header. Other Header components include **C7675-1 Transformer/Terminal Strip Assembly, C7671 4 x 4 Junction Box, C7651 Circuit Breaker(s), C7656-1 Breakout Cutoff Switch(s)**, and **C7656-2 Close Monitor Switch(s)**. All Header components are prewired, labeled, and tested and also include laces for wiring both activation and safety equipment.
- ☐ **Door Panels** (Active panel hinged to Inactive panel- two sets on Pair unit, one on Single unit) complete with **C7676 Top Pivot Assembly** and **C7609 Bottom Pivot Door Portion Subassembly** secured to Active panel, and **C5544 Fingerguard, 'Adams Rite' Lock, Cylinder, and Drop Bolt** attached to Inactive panel.

- ☐ **C7611 Bottom Pivot Floor Portion Subassembly** field installed to Pivot Jamb.
- ☐ **C7698 'Pemko' 1/4"x 4" (6 x102 mm) Barrier-Free Threshold** field installed to Finish Floor.
- ☐ **Two C300 Jambs** complete with C5544 Fingerguard and Prepped for C9525 Header-to-Jamb Brackets and C7611 Bottom Pivot Floor Portion Subassembly.
- ☐ **C7685 Top Roller Guide** Assembly (sent loose) field installed in Top Web of Inactive panel.
- ☐ **C7684 Close Monitor Magnet/Shim Assembly** (sent loose) field installed inside Top Web of Inactive panel.
- ☐ **C7641-1 Pull Handle Assembly** (sent loose) field installed on fold-side of Active panel.
- ☐ **C7724 Threshold Beam Mounting Post Assembly** with **two sets of C1185 Photoelectric Safety Beams** field installed to the jambs on side opposite the door fold.
- ☐ **C4320 Three-Way 'On/Off/Hold-Open' Rocker Switch Assembly** (sent loose) field installed on Interior side of door on the Threshold Beam Mounting Post, Jamb, or Header (must be accessible without removing Faceplate).
- ☐ **C9570 Door Accessory Package**.

B. **Optional Equipment**

- ☐ **C7653 Guiderail Assembly** prewired with **three sets of C1185-1 Photoelectric Safety Beams** field installed to the jambs/floor on the fold-side of door.
- ☐ **C7729 Horizontal Wall Mounted Rail Assembly** prewired with **three sets of C1185-1 Photoelectric Safety Beams** field installed to adjacent walls on the fold-side of door.
- ☐ **C1188-1 Enhanced Motion Detector**. For Two-Way Traffic, one narrow pattern detector field mounts to Header on fold-side of door and one wide pattern detector mounts to Header on opposite side of door fold.
- ☐ **C523 'On-Off' Keyswitch Assembly** (sent loose) field installed usually on Exterior side of door unit on the right side jamb viewed from the exterior side.
- ☐ **C7720 Electric Ballscrew Lock Assembly** for Pair units or **C7710** for Single units. Ballscrew Lock Package comes complete with **C7711 Lock Assembly** (installed and prewired in Header), **C7718 Lock Monitor Assembly** (installed in Top Web of Inactive panel), **C7719 'On-Off-Locked' Keyswitch Assembly** with **C7723 Wiring Harness** (prewired in Header), a **C2258-1 Charger/ Power Fail Relay Assembly** (installed and wired in Header), and a **C2257 Power Fail Open/Power Fail Close Battery Backup Assembly**.

11. GENERAL CONDITIONS

Verify with the General Contractor the exact installation location of the BiFold door unit. The rough door opening must be plumb and level. A straight edge should be positioned on the floor sill in the door frame opening to assure it is level and square with the frame jambs. The door unit header works well as a straight edge. **To assure a proper installation of the BiFold door, it is critical that the entire door opening sill and floor area below fold of door is level and smooth.**

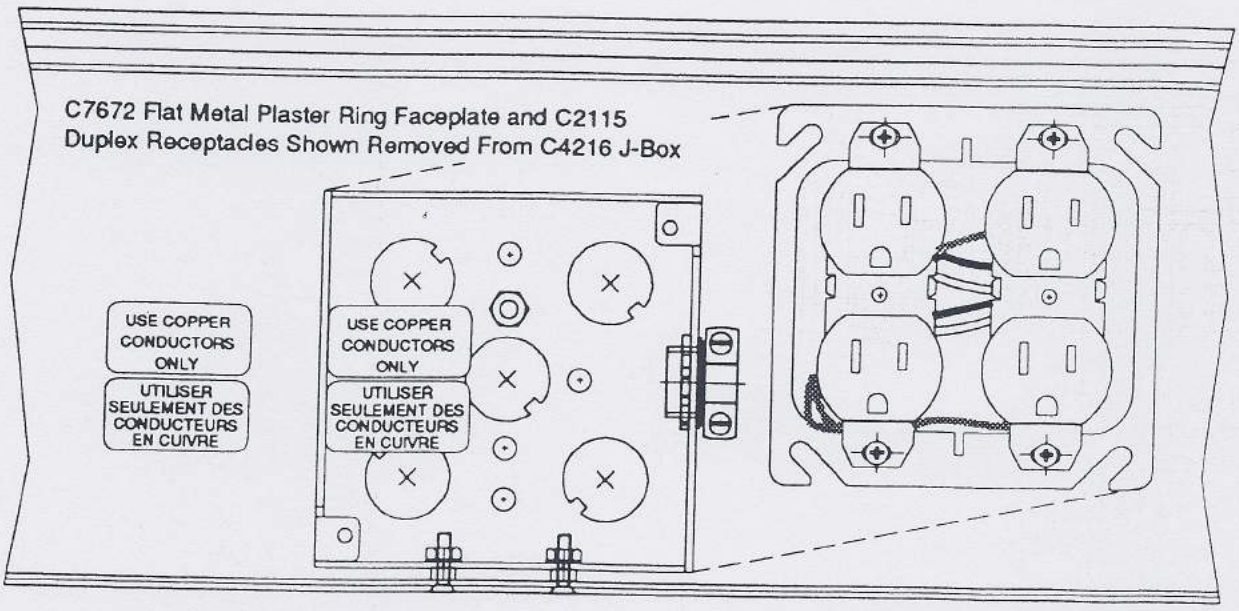
12. ELECTRICAL INFORMATION

Each BiFold door unit requires a separate 120 VAC, 60 Cycle, 15 Amp dedicated electrical supply routed through the door unit header to the Quadplex Junction Box (Figure 10, This Page). A 120VAC/ 24VAC Transformer/Terminal Strip Assembly is also provided inside the unit header for wiring both actuating and safety systems. Verify the location and completion of this dedicated 120 VAC circuit before installation of the door unit. Power to the door unit must be complete before the door panels can be installed.

A 0.8 Amp thermal circuit breaker assembly (C7651) is installed in the header for each operator. This circuit breaker is always accessible from a clearance hole drilled through the breakout mechanism located underneath the header. In the event of an electrical overload on one of the controls, the circuit breaker will automatically release and turn the operator off. The plunger may be reset after the problem is corrected.

Verify the exact location of any actuation or safety systems mounted to the building structure requiring an additional circuit and or conduit installation. **All wiring must be in accordance with the National Electrical Code (U.S. installations) and with the Canadian Electrical Code (Canadian installations) and any local authority having jurisdiction.**

Figure 10, Front View of C7671 Quadplex Junction Box Assembly



13. WIRING INFORMATION

Wiring Schematics are available for BiFold door units in both 120 VAC and 230 VAC versions and for One or Two-Way Traffic applications. A variety of activation and safety systems are also included in these wiring schematics. All standard wiring schematics along with special wiring diagrams for unique applications are provided inside the door header in a plastic pocket adhered to the inside face of the header faceplate. Refer to Figures 11, 12, 13, 14 and 15 on pages G4-7200.15, .16, .17, .18 and .19 respectfully for Wiring Schematics.

Figure 11, BIFold Wiring Schematic for 120VAC, Two-Way Traffic

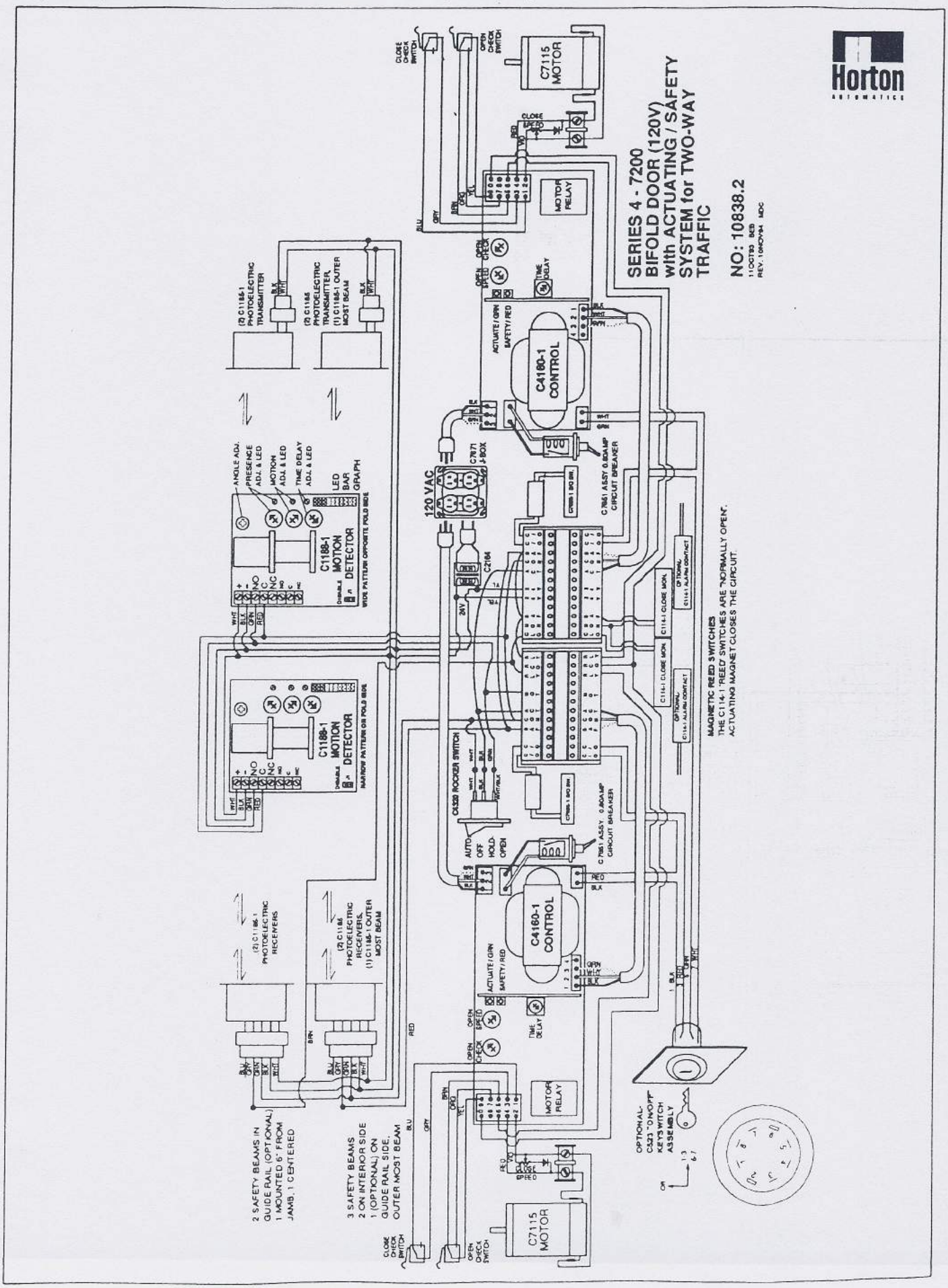


Figure 12, BiFold Wiring Schematic for 120VAC, One-Way Traffic

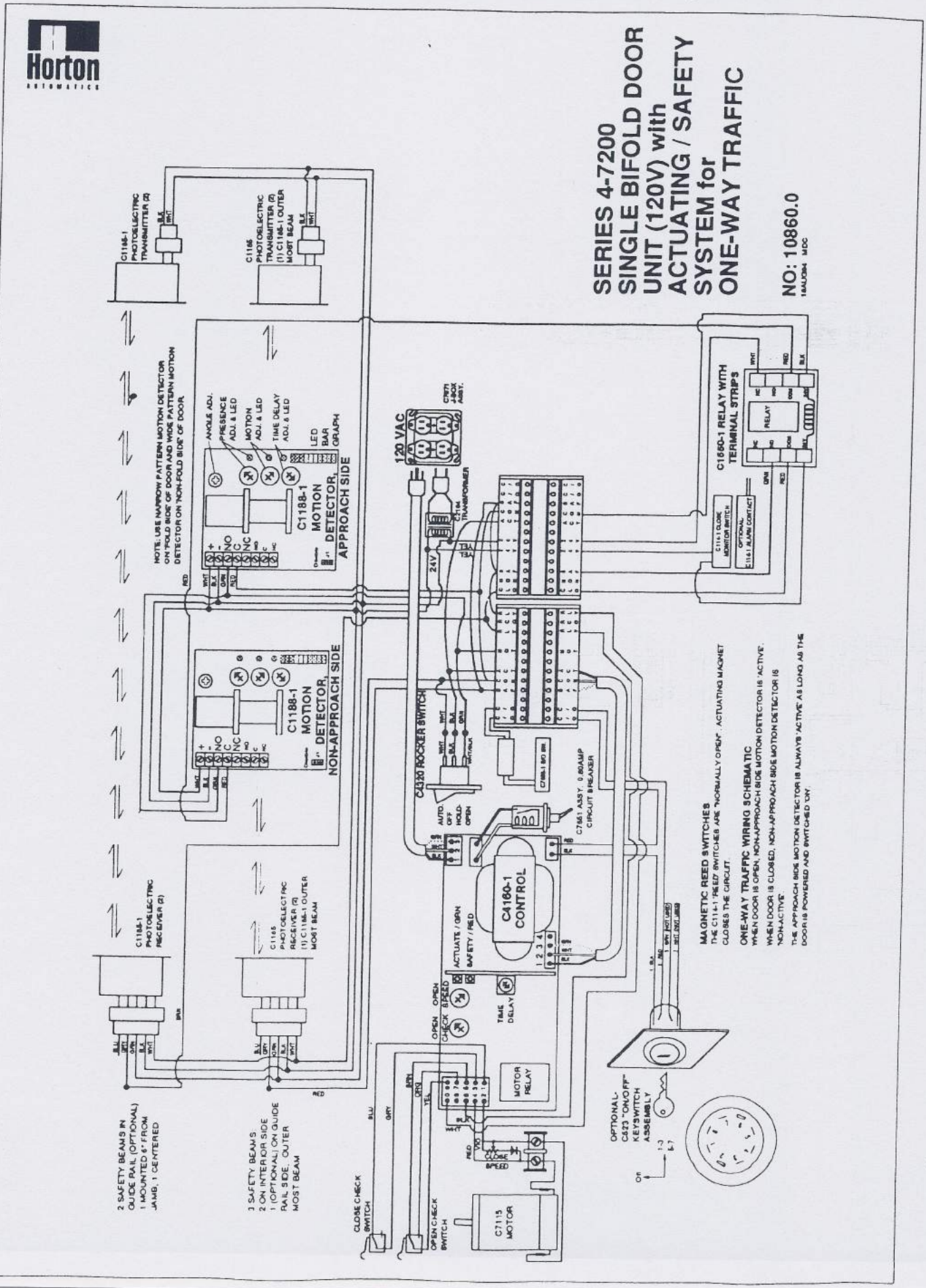


Figure 13, BiFold Wiring Schematic for 230VAC, Two-Way Traffic

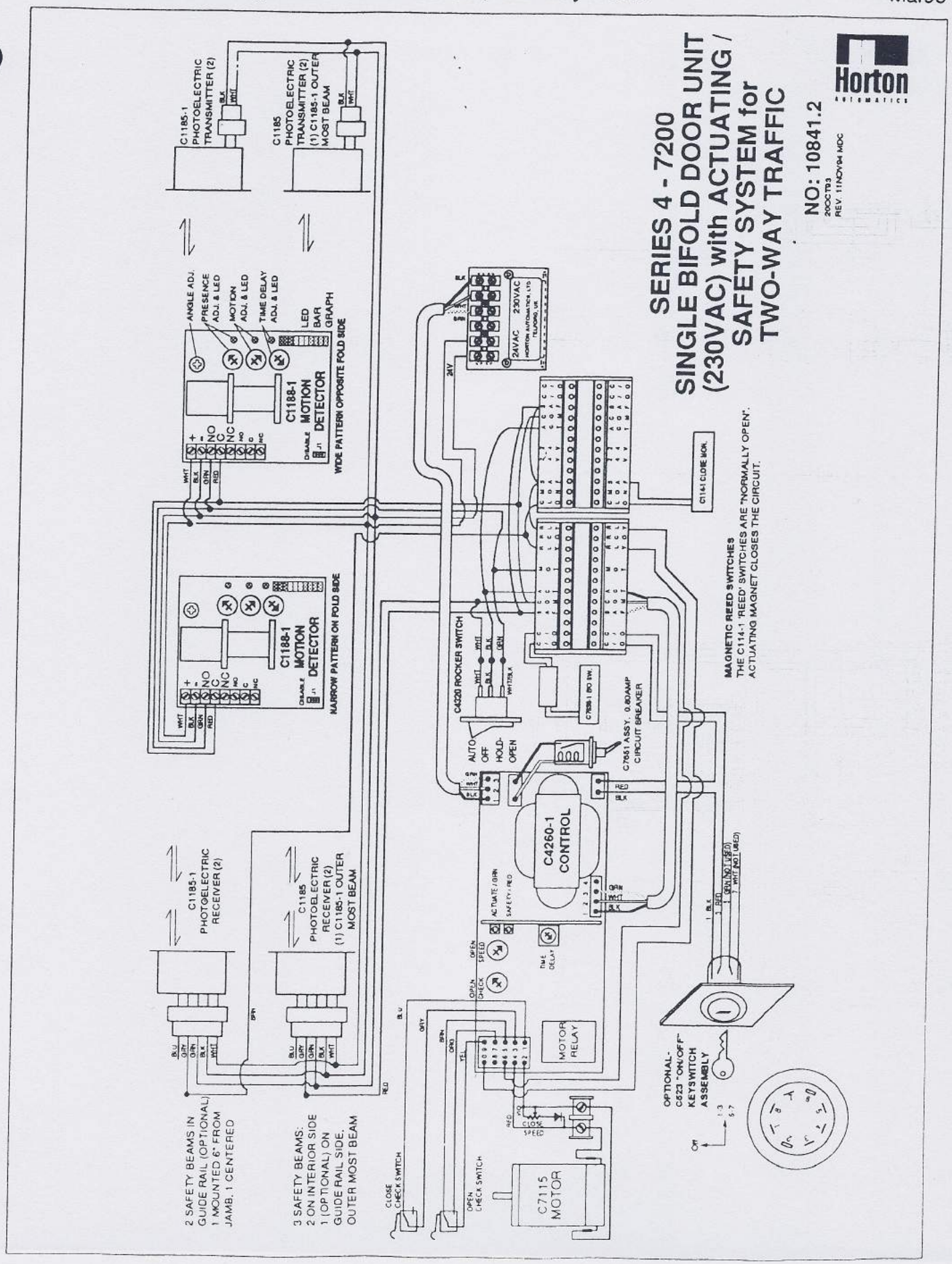
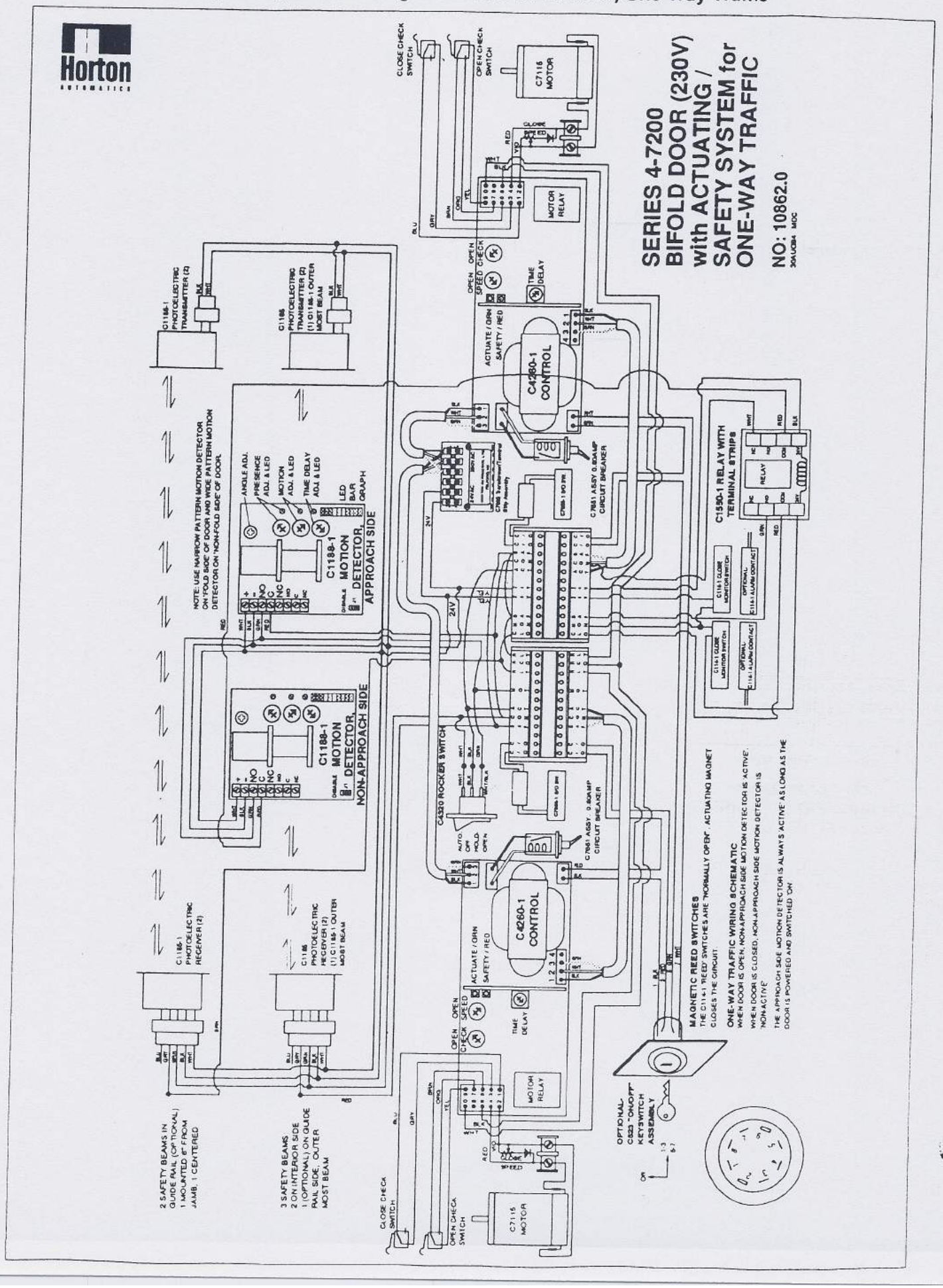
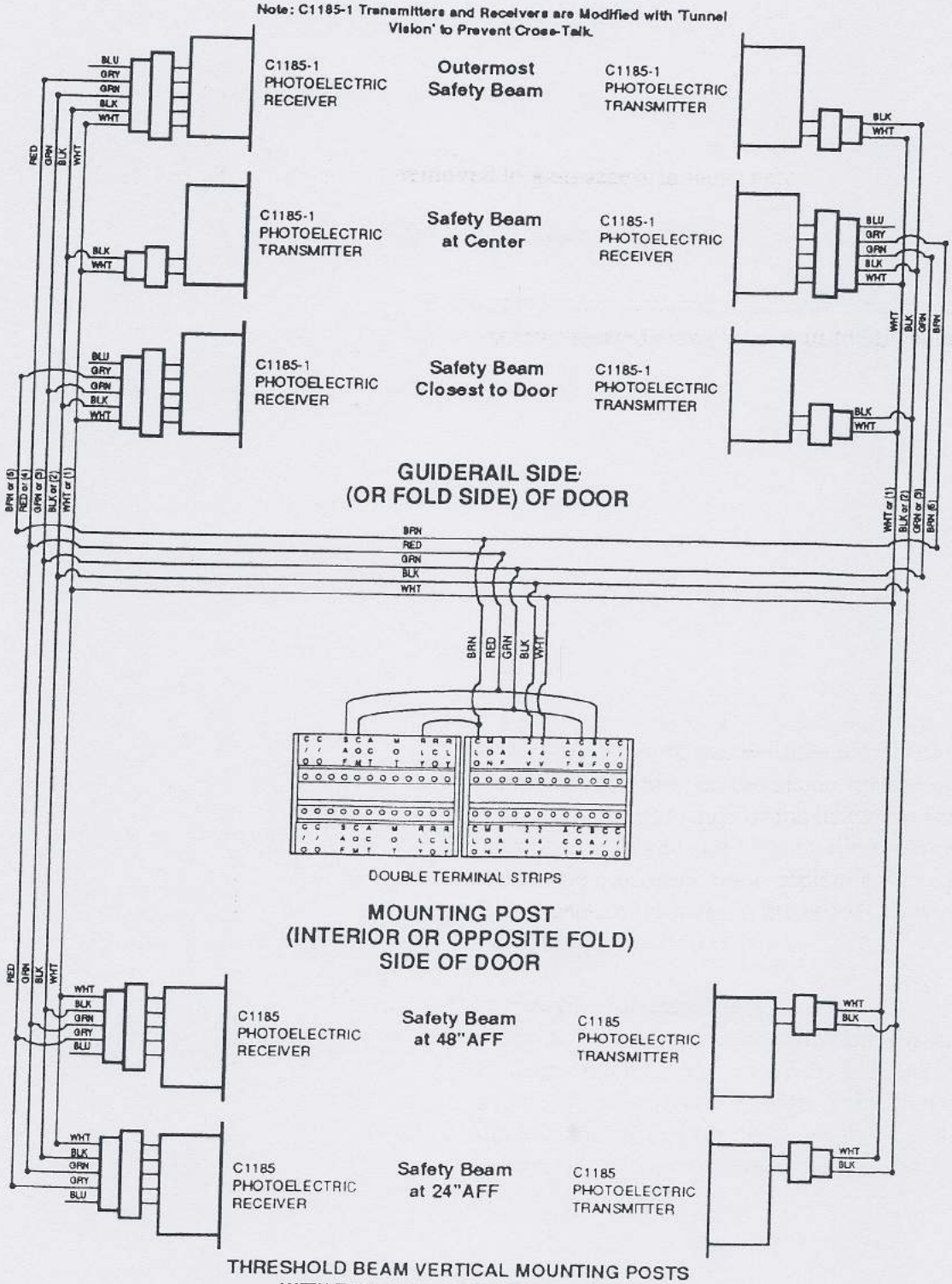


Figure 14, BiFold Wiring Schematic for 230VAC, One-Way Traffic



THREE SETS OF PHOTOELECTRIC
SAFETY BEAMS MOUNTED IN THE GUIDERAILS OR
WALL MOUNTED HORIZONTAL POSTS

Note: C1185-1 Transmitters and Receivers are Modified with 'Tunnel Vision' to Prevent Cross-Talk.



THRESHOLD BEAM VERTICAL MOUNTING POSTS
WITH TWO SETS OF PHOTOELECTRIC
SAFETY BEAMS

Horton
AUTOMATICS
A Division of Overhead Door Corporation

4242 Baldwin Blvd.
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SAFETY SYSTEM WIRING SCHEMATIC for BIFOLD DOORS SERIES 4 - 7200

NO: 10843.1

MDC 20SEPT93
REV 6MAR94

14. HEADER PREPARATION

The BiFold header for pair or single units is shipped prewired, tested, and assembled with the breakout mechanism secured to its underside. Wiring instructions, laces for the various activating, safety, and miscellaneous devices are enclosed inside the header. The header faceplate needs to be removed to gain access to these items.

A. Faceplate Removal

1. Place the header on a flat surface with the faceplate facing up. On standard BiFold units, the faceplate is installed on the interior side of the door. Remove the #6 flat-head, sheet-metal screws located along the top of the faceplate.
2. Flip the header upside-down and with a small screwdriver, remove the plastic hole plugs located on the cover plates (two hole plugs per cover plate). The hole plugs conceal C437 fasteners (#10-24x 1/2" self-tapping, flat-head, machine screws) which secure the faceplate and backmember to the C9525 header-to-jamb brackets.
3. Remove the C7633/4 cover plates held in-place with one #6-32 x 3/8" at the weatherstrip side and three #6-32 x 1/4" flat-head, machine screws at the bottom side.
4. Swing the track portion of the breakout open and remove the C437 faceplate fasteners located 14-1/4" (362mm) from the end of the header (operator side only). Remove also the C449, #10-24 x 3/4" self-tapping, flat-head, machine screws located 1" (25.4mm) opposite the operator end on the breakout support.
5. At this point, all fasteners securing the faceplate to the header have been removed. With the breakout track in the open position, insert an 8" to 12" (203 to 305mm) long standard screwdriver into the access hole located in Figure 16, page G4-7200.21. With the point of the screwdriver resting on the inside surface of the faceplate, apply pressure on the screwdriver toward the exterior side of the header to force the faceplate out on the interior side.
6. At this time, lay the unit flat on the backmember with the faceplate facing up. Insert a small screwdriver between the faceplate and the jambs and pry the faceplate away from the header. The faceplate fits snug in the header so work both ends until you can slide your hands under the faceplate to lift it off.

B. Prep Header for Mounting Holes

1. In most situations, the door's header/housing is secured to the building's framed opening. Consider prepping holes in the header before installing the door frame. The header should be secured in at least two locations evenly spaced. Drill top of header with 'F' (0.257" or 7mm dia.) clearance hole for preferred #14 x 2" hex washer-head, sheet-metal screw. Alternate fasteners and preps may be necessary for different applications. Take care to keep metal shavings or other debris away from operator/gears.
2. Locate placement of electrical conduit in building's framed door opening and prep header accordingly. The standard clearance hole for 1/2" (13mm) diameter conduit is 7/8" (22mm) diameter, but verify this with the electrical contractor first.

C. Operator/Component Inspection

1. Remove the wiring laces for the various activating and safety devices from inside the header.
2. Unwrap C4360 daughterboard and plug into C4160-1 control board (applies to Series 4000 control only). One C4360 daughterboard is supplied loose with each C4160-1 control.

HEADER PREPARATION- PART (C) CONT.

3. Visually inspect wire laces for exposed wire and loose connections. All screws on terminal strip assembly should be tightened snug.
4. Inspect each BiFold unit header for the following standard components (Figure 17, This Page):
   - ☐ Series 7000 Operator ..... 2/Pair Unit, 1/Single Unit
   - ☐ C4160-1 Controls (C7160-3 Optional)..... 2/Pair Unit, 1/Single Unit
   - ☐ C4360 Daughterboard (S4000 Control Only) ..... 2/Pair Unit, 1/Single Unit
   - ☐ C7651 Circuit Breaker Assembly..... 2/Pair Unit, 1/Single Unit
   - ☐ C7656-1 Breakout Cutoff Switch/Triac Assembly ..... 2/Pair Unit, 1/Single Unit
   - ☐ C7656-2 Close Monitor 'Reed' Switch Assembly ..... 2/Pair Unit, 1/Single Unit
   - ☐ C7662/3 Power Cord Assembly ..... 2/Pair Unit, 1/Single Unit
   - ☐ C7671 Quadplex Junction Box Assembly..... 1/Unit
   - ☐ C7675-1 120/24VAC Transformer/Terminal Strip Assembly ..... 1/Unit, 120VAC Version
   - ☐ C7630 Terminal Strip Assembly ..... 1/Unit, 230VAC Version
   - ☐ C7665 230/24VAC Transformer/Terminal Strip Assembly ..... 1/Unit, 230VAC Version

Figure 16, Underside of Breakout Illustrating Faceplate Removal Procedure

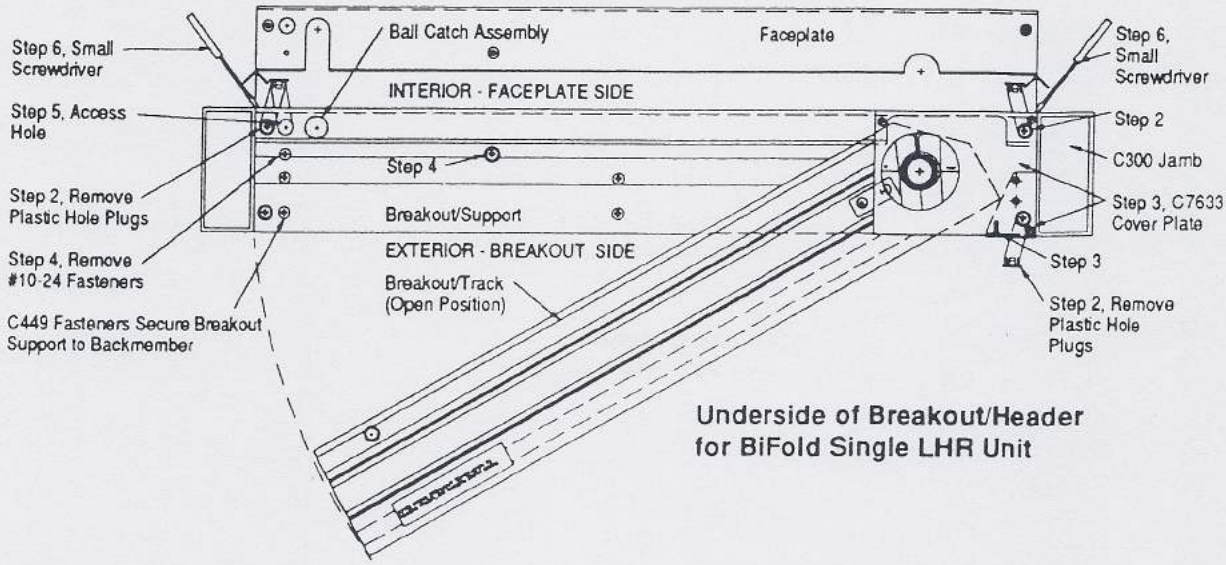
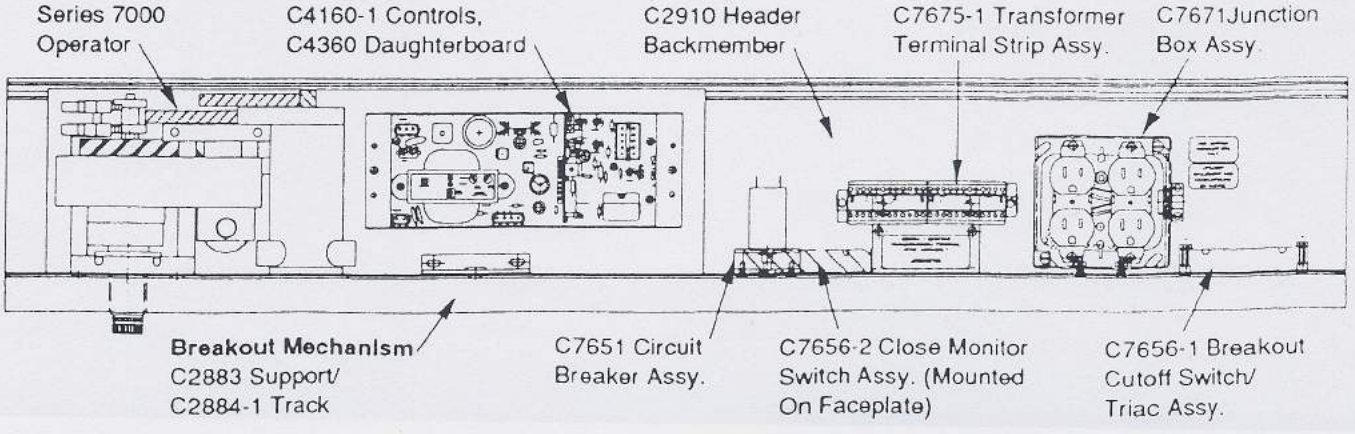


Figure 17, Elevation of BIFold Operator/Components for a Single Unit

WIRE LACES & POWER CORDS NOT SHOWN FOR CLARITY



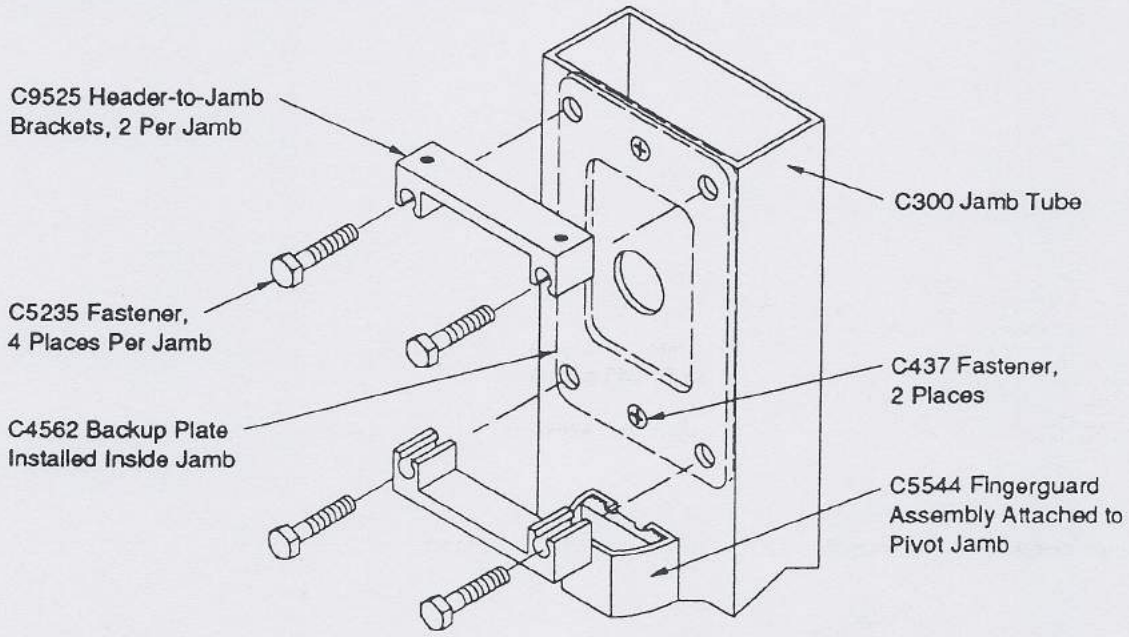
15. JAMB PREPARATION

The BiFold door utilizes the C300 anodized aluminum 1-3/4" x 4" (44 x 102mm) tube for standard jambs. Different size jambs are also available as options. BiFold jambs are predrilled for the header and bottom pivot attachment. Additional drilling for threshold mounting posts, guiderails, and switch installations are prepped in-shop or on the job.

A. Attach Header-to-Jamb Brackets

1. Remove the C9525 header-to-jamb brackets and C5235, #5/16-18 x 1-1/4" hex-head, machine screws from the C9570 accessory package supplied with each BiFold unit. Each door will require four header-to-jamb brackets and eight hex-head, machine screws.
2. Secure two C9525 brackets to each jamb with the C5235 machine screws and tighten snug (Figure 18, Below).

Figure 18, Attaching C9525 Brackets to C300 Jamb



B. Attach Bottom Pivot Assembly to Jambs

There are three different bottom pivot assemblies available for BiFold doors depending on the type of jamb and threshold used. The standard BiFold bottom pivot (floor portion) assembly C7611 is used for 1-3/4" (44mm) jambs and 1/4" (6mm) threshold or no-threshold conditions. A C7612 bottom pivot (floor portion) assembly is available for 1-3/4" (44mm) jambs and 1/2" (13mm) threshold applications. For a 1/4" (6mm) jamb and 1/2" (13mm) threshold application, the C7610 bottom pivot (floor portion) assembly is used.

On a pair unit, one bottom pivot assembly is provided for each jamb. For BiFold single units though, one pivot assembly is provided for the pivot jamb only.

1. For the standard **C7611 bottom pivot assembly**, the C300 1-3/4" (44mm) jamb rests flush on the 1/4" (6mm) plate on top of the C631 mounting clip. Secure the pivot assembly with two C437, #10-24 x 1/2" flat-head, machine screws provided. The bottom pivot faces in as shown in Figure 19, on page G4-7200.23.

2. For the **C7612 bottom pivot assembly**, the C300 1-3/4" (44mm) jamb rests flush on the 1/2" (13mm) plate on top of the C631 mounting clip. Secure the pivot assembly with two C437, #10-24 x 1/2" (13mm) flat-head, machine screws provided. This bottom pivot also faces in as shown in Figure 20, this page.
3. For the **C7610 bottom pivot assembly**, the 1/2" (13mm) plate rests on the floor adjacent to the C253 1/4" (6mm) jamb. Secure this pivot assembly to the backside of the jamb with two C4070, #10-24 x 5/8" flat-head, socket-cap screws provided. This bottom pivot also faces in as shown in Figure 21, on page G4-7200.24.

Figure 19, Attaching C7611 Bottom Pivot Assembly to C300 Jamb

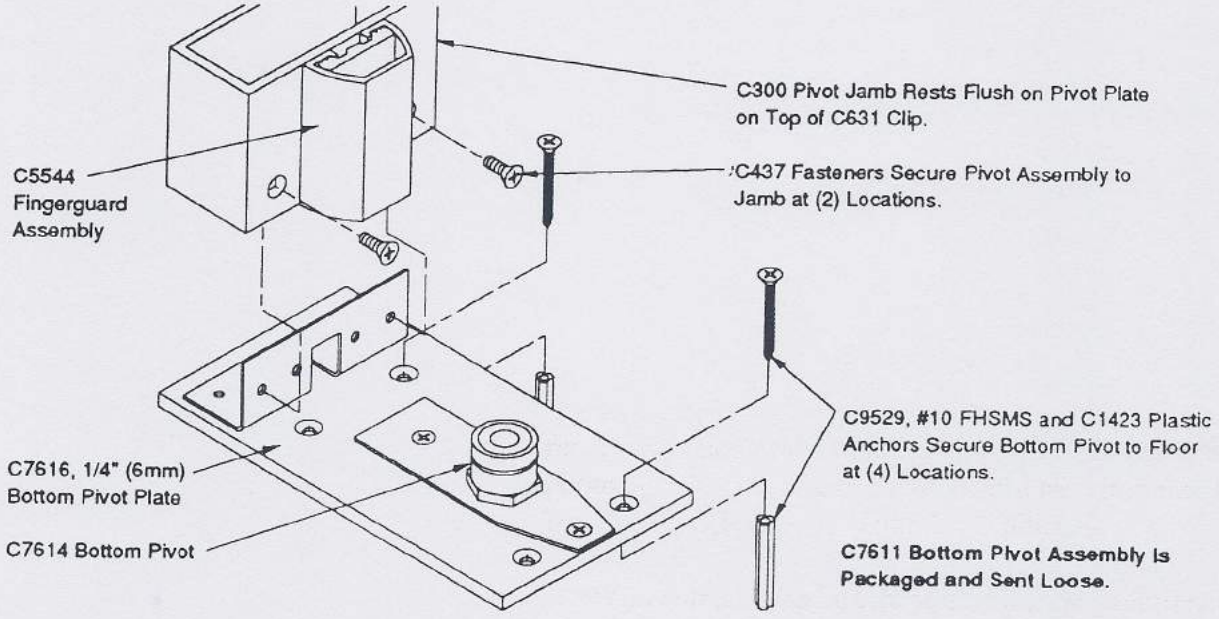


Figure 20, Attaching C7612 Bottom Pivot Assembly to C300 Jamb

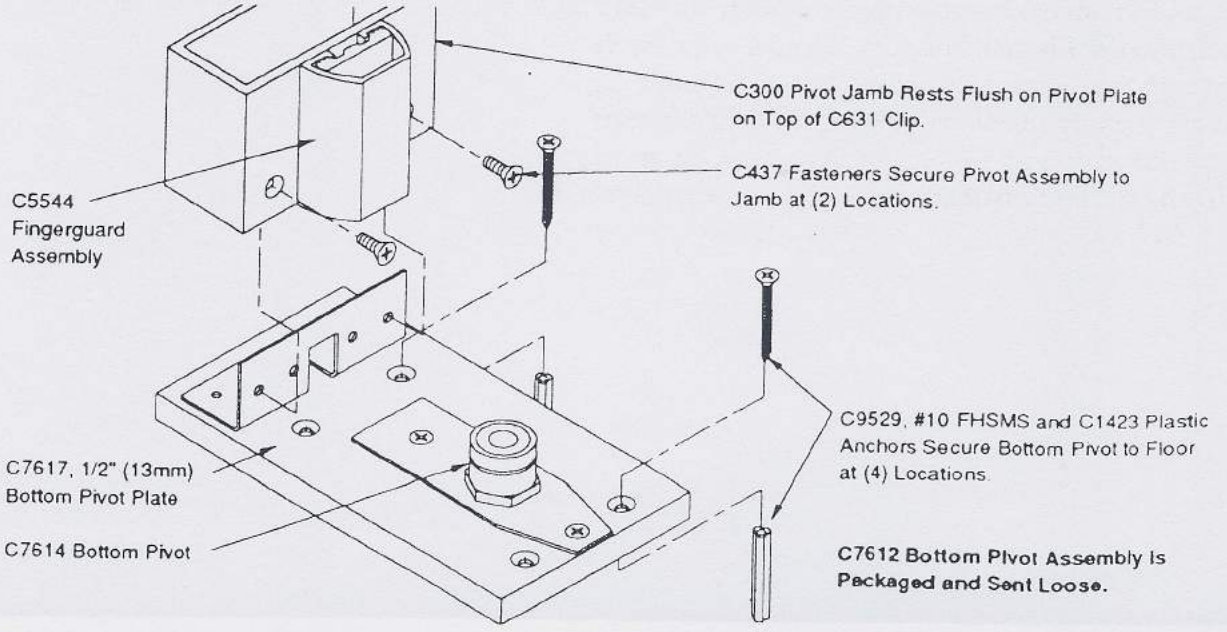
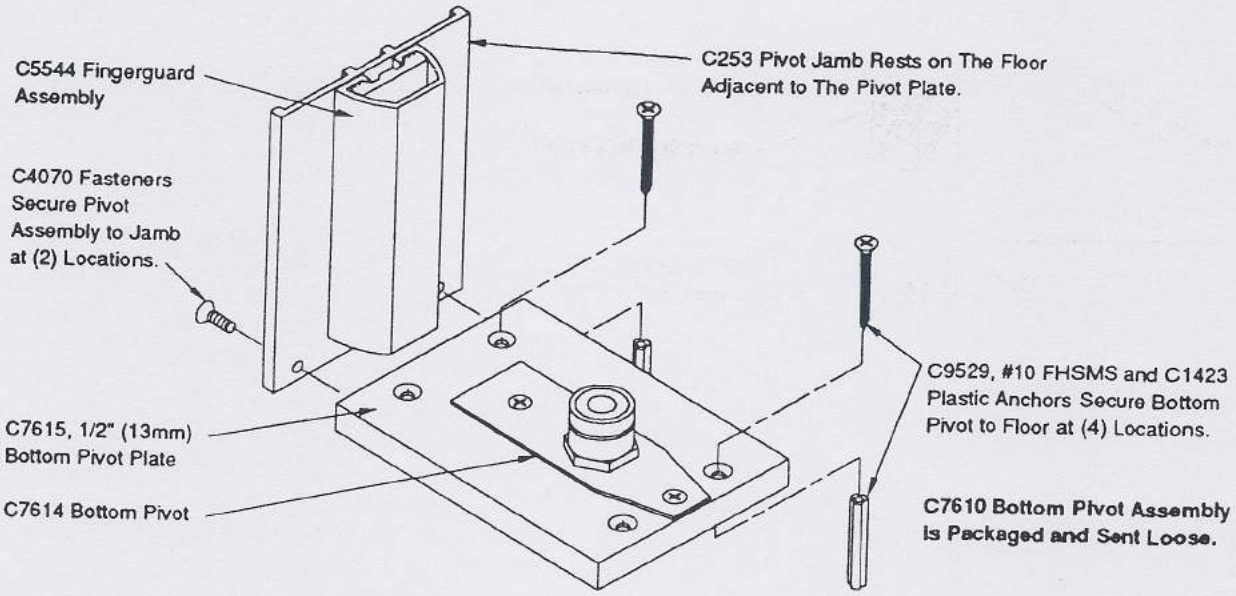


Figure 21, Attaching C7610 Bottom Pivot Assembly to C253 Jamb

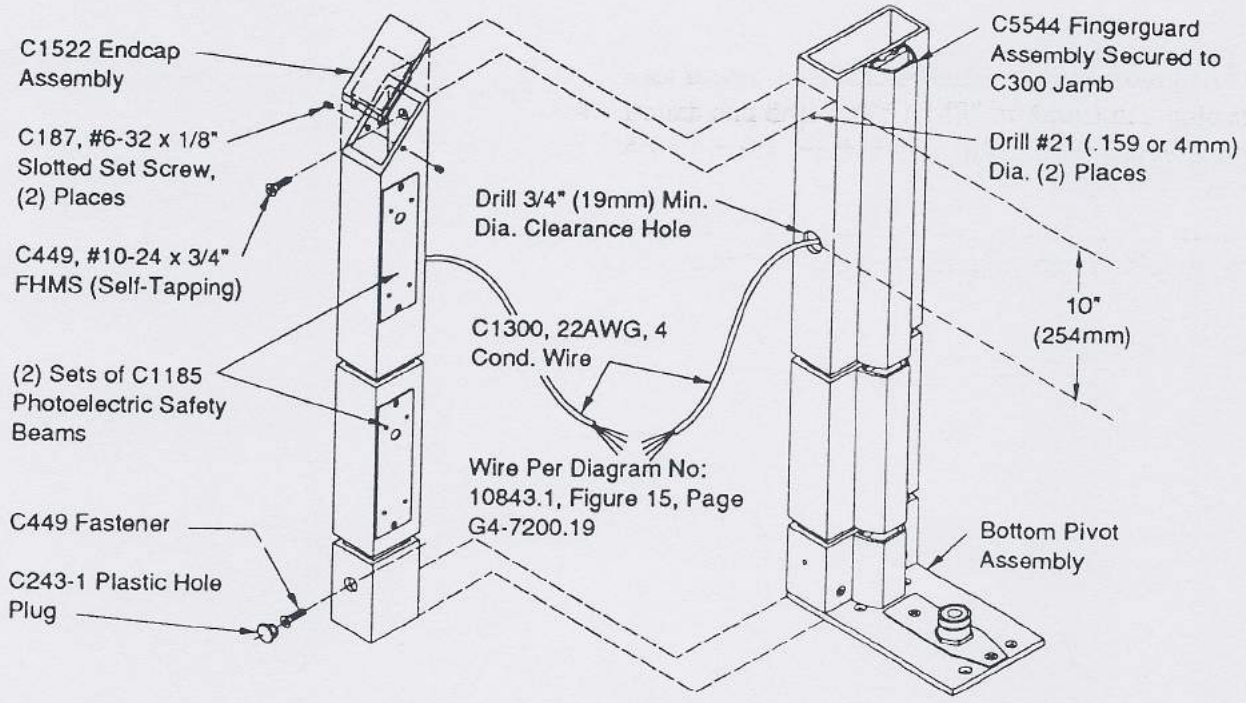


C. Prep Jambs for C7724 Threshold Beam Mounting Post Assembly

One pair of C7724 threshold beam mounting posts are supplied with each BiFold door unit. These mounting posts should be installed on the side opposite the fold of the door which is usually the interior side of the building or office. These mounting posts are prewired with two C1185 photoelectric safety beams and should be wired into the safety circuit as shown in Wiring Diagram No: 10843.1 (Figure 15, Page G4-7200.19).

1. With a small standard-head screwdriver, remove the C1522 endcap assemblies from the tops of each beam mounting post by carefully unscrewing the two #6-32 x 1/8" socket-set screws located on the sides of each post.
2. Place the left-hand beam post on the interior side of the left-hand jamb (opposite the fold-side) flush with the inside face and with the bottom flat-side of the post resting on the floor (Figure 22, Page G4-7200.25). The endcap prep at the top of the mounting post should slope away from the jamb with the safety beams aimed across the door opening. Mark the two drill hole mounting locations through the clearance holes provided.
3. Punch the center of the marked drill hole on the jamb and drill #21 (.159", 4mm dia.) at both locations. The mounting posts will be secured to the jambs at these two locations with C449, #10-24 x 3/4" self-tapping, flat-head, machine screws. On special applications where the mounting posts are attached to adjacent walls, C450, #10 x 1-1/2" flat-head, sheet metal screws are also provided in the C9570 accessory package.
4. Also on the jamb, approximately 10" (254mm) down from the top of the mounting post, mark the location for a wire lace clearance hole. This should line-up with the wire lace clearance hole predrilled on the mounting post. Punch and drill at least a 3/4" (19mm) dia. hole centered on the jamb. It is advisable to deburr all drilled clearance holes.
5. Hold-off installing the safety beam mounting post until the door frame is installed and all wire laces are secured inside the jamb. Repeat steps 2 thru 4 for prepping the right-hand mounting post.

Figure 22, Attaching C7724 Threshold Beam Mounting Post Assembly to C300 Jamb



D. Prep Jambs for C7653 Guiderail Assembly

One pair of C7653 Guiderails should be sold with each BiFold door unit installed in a public area where cross-traffic occurs. Also, for the C1185-1 safety beams to work properly on the guiderails, BiFold units must be glazed with 1/4" (6mm) clear tempered glass. Guiderails are installed on the fold-side of the door which is usually the exterior side of the building or office. This guiderail assembly is prewired with three sets of C1185-1 photoelectric safety beams and should be wired into the safety circuit as shown in Wiring Diagram No: 10843.1 (Figure 15, Page G4-7200.19). Note: Consider prepping the jamb for the guiderails after the door unit frame is installed in the building door opening.

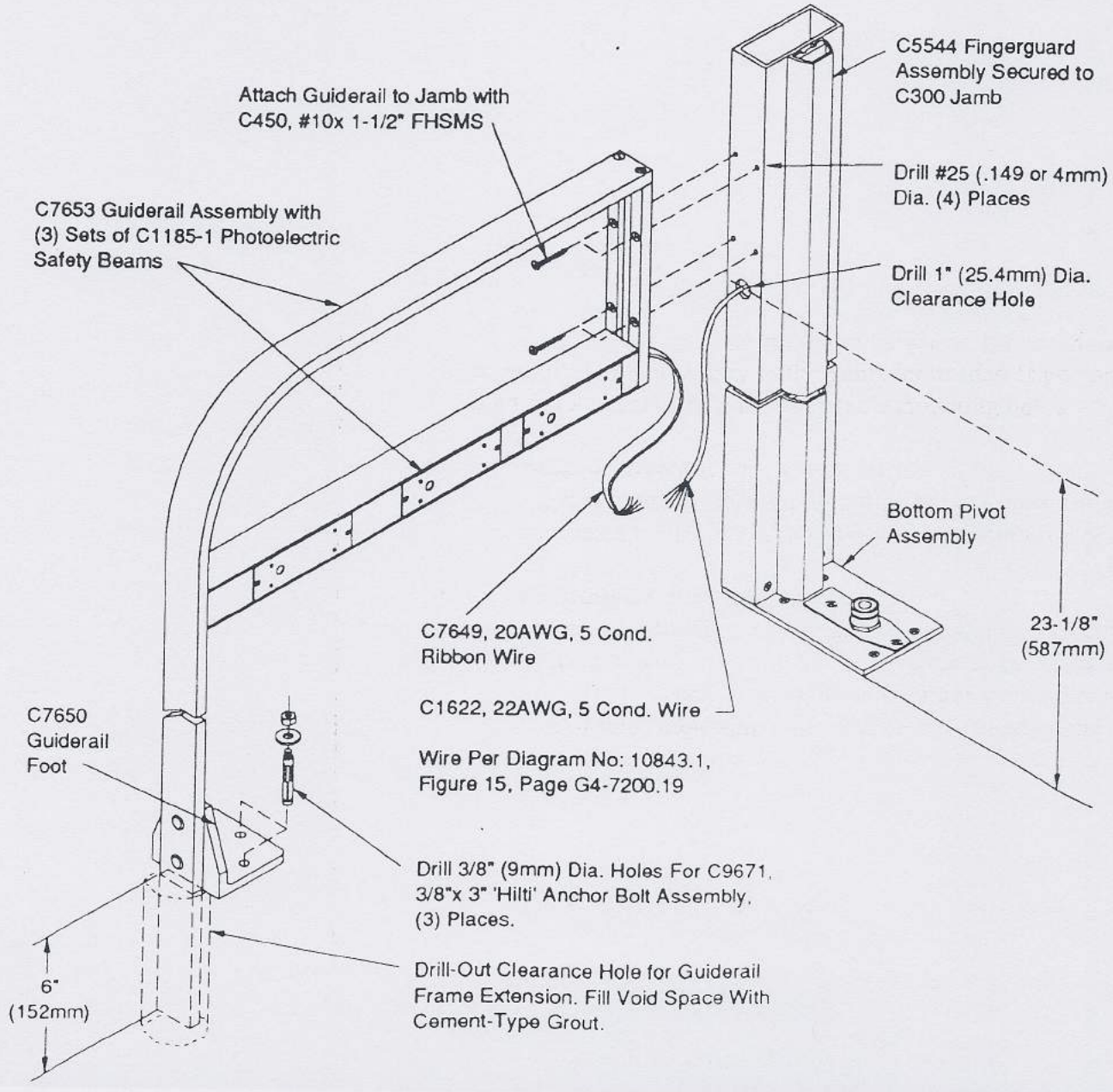
Note also that the guiderail frame extends 6" (152mm) beyond the bottom of the guiderail foot. It is preferred that the installer drill into the finish floor approximately 3" to 7" (76 to 178mm) deep and wide enough for the frame to fit into so that the guiderail foot rests on the floor. This floor prep can be achieved with a core drill or drilled and chiseled-out depending on floor conditions. The guiderail feet would also be secured with three ®*Hilti* anchor bolts per foot provided with each assembly. The other alternative is to cut the frame flush with the bottom of the guiderail foot and secure each leg with the three anchor bolts provided (Figure 23, Page G4-7200.26).

1. Rest the left-hand guiderail next to the left-hand reverse (LHR) jamb to determine location of prep for wire lace clearance hole on jamb. The height of the jamb clearance hole measured from finish floor or the bottom of the bottom pivot assembly for the C7611 and C7612 assembly should be approximately 23-1/8" (587mm). Mark this hole location centered on the jamb.

JAMB PREPARATION- PART (D) CONT.

2. Punch and drill a 1" (25.4mm) dia. clearance hole at the marked center point on the jamb.
3. Use the guiderail as a template for locating the four mounting holes for the jamb. Place the guiderail in position on the jamb at the correct height. Be sure that the bottom of the guiderail foot is level with the bottom of the bottom pivot assembly mounted on the jamb.
4. Punch and drill a #25 (.149" or 4mm) dia. hole at each marked mounting location. Deburr all drilled holes. Each guiderail will be attached to the jamb with four C450, #10 x 1-1/2" flat-head, sheet metal screws provided with the assembly.
5. Hold-off installing the guiderail assembly until the door frame is installed and all wire laces are secured inside the jamb. Repeat steps 1 thru 4 for prepping the right-hand guiderail.

Figure 23, Attaching C7653 Guiderail Assembly to C300 Jamb



E. Prep Jambs for C4320 Rocker Switch Assembly

One C4320 "Auto/Off/Hold-Open" rocker switch assembly is supplied and shipped in a separate package with each BiFold door unit. A labeled wire lace which installs inside the (LHR) jamb is included inside the header. The operators are prewired for this rocker switch. Mount the switch on the interior side of the door and preferably on the jamb at a height of at least 72" (1829mm). This switch should not be readily accessible to the general public. Also, for jamb mounted applications, use the C4322 mounting label plate provided. For mounting applications where the back of the rocker switch is accessible, use the C5120 adhesive-back metal label also provided in the switch package.

1. Determine the location of the rocker switch on the jamb (1-3/4" side, 44mm) and mark a center point at the predetermined height.
2. Punch and drill a 3/4" (19mm) dia. clearance hole at the marked center point on the jamb.
3. Use the C4322 label plate as a template for locating the mounting holes. Place the plate centered over the clearance hole and mark the two mounting holes. These drill holes should be 1-1/2" (38mm) apart from each other and 3/4" (19mm) from the center clearance hole.
4. Punch and drill a #31 (.120" or 3mm) dia. hole at the marked mounting locations. Deburr all drilled holes. The C4320 rocker switch will be mounted with the two C838, #6 x 1/2" flat-head, sheet metal screws provided in the package.
5. Hold-off on mounting the C4320 rocker switch to the jamb until the door frame is installed and all wire laces are secured inside the jamb.

At this time, consider prepping the jambs for additional keyswitches, optional equipment, or other accessories mounted in or to the jambs or header. If you are familiar with the building's door opening, it is advisable to also prep for the jamb's mounting holes.

F. Prep Jambs for Mounting Holes

It is preferred that the mounting holes for securing the jambs to the building's door opening be concealed behind the C5544 fingerguard assembly or placed in an inconspicuous location.

On BiFold Pair Units:

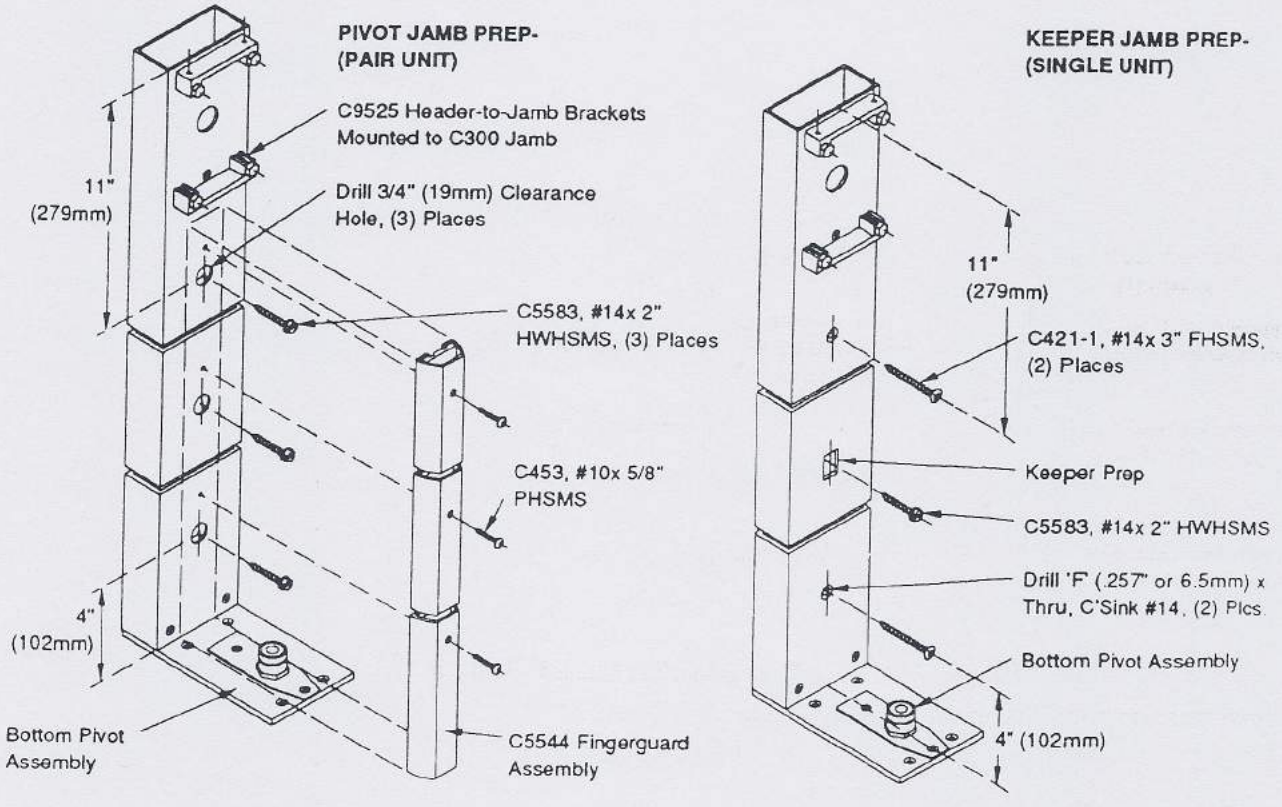
1. Remove the fingerguard assembly from the (LHR) jamb. Carefully label the ends of the fingerguard so that it can be replaced after the frame is installed (Figure 24, Page G4-7200.28).
2. Mark the jamb for three mounting holes evenly spaced and centered on the 4" (102mm) side. All three mounting holes will be concealed behind the fingerguard. The top mounting hole should be marked 11" (279mm) centered below the top of the jamb. Next, mark the bottom mounting hole centered 4" (102mm) from the bottom of the jamb. And finally, mark the middle hole centered between the top and bottom mounting hole.
3. For all three mounting holes, first drill a 3/4" (19mm) dia. clearance hole through the front face of the jamb. Then, drill an 'F' (.257" or 7mm) dia. hole through the back face of the jamb. The 3/4" clearance hole through the front face of the jamb will allow clearance for a C5583, #14 x 2" hex-washer head, sheet metal fastener.
4. Deburr all drill holes. Repeat steps 1 thru 3 for prepping the (RHR) side jamb.

On BiFold Single Units:

On single BiFold door units, the keeper jamb has no fingerguard to conceal the mounting hole fasteners. Consequently, the jamb is secured at the top and bottom with exposed fasteners. The middle mounting hole is similar to the preps on the pair unit because it is drilled through the existing lock keeper prep.

5. On a Single unit keeper jamb, mark the top mounting hole 11" (279mm) centered below the top of the jamb and bottom mounting hole 4" (102mm) centered from the bottom of the jamb. Punch and drill both holes with an 'F' (.257" or 7mm) dia. drill bit through the front and back face of the jamb. Then, countersink the front face drill hole for a C421-1, #14 x 3" flat-head, sheet metal screw.
6. On the middle mounting hole, center the mark on the existing lock keeper clearance prep. Punch and drill an 'F' (.257" or 7mm) dia. hole through the back face of the jamb. A C5583 fastener will secure the jamb at this location.

Figure 24, Prepping C300 Jamb for Mounting Holes



G. Install Wire Laces in Jamb

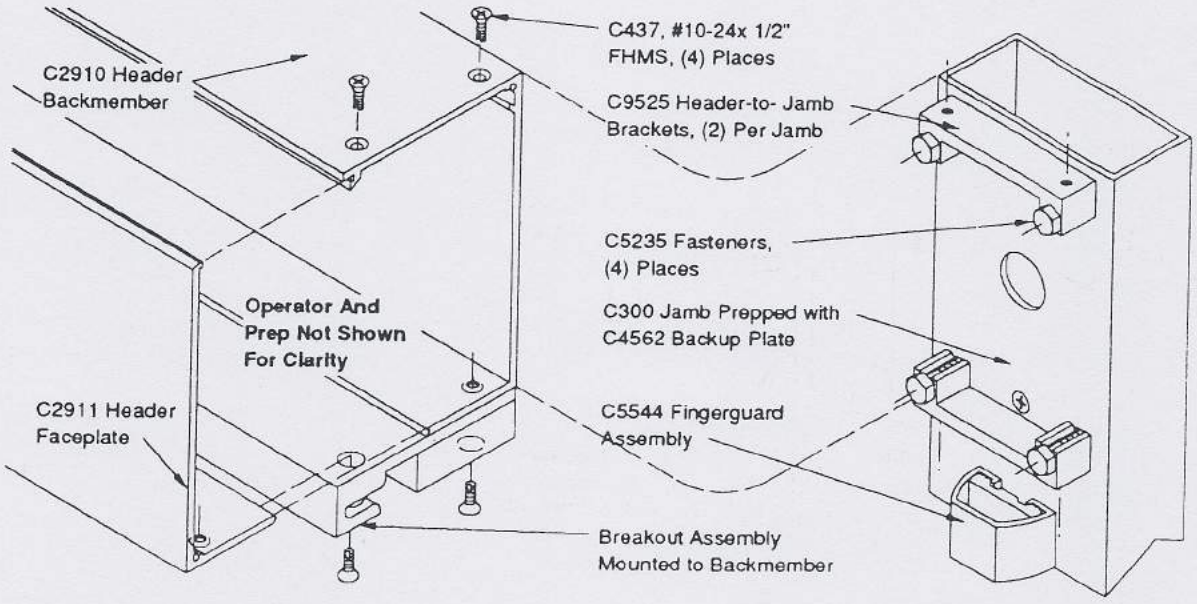
1. Remove the various jamb laces (labeled) found in the header and run them inside the jambs.
2. On the (RHR) jamb, place a safety beam lace and a keyswitch lace (optional) inside the jamb with the quick disconnects hanging-out of the header prep clearance hole at the top. On the (LHR) jamb, place a safety beam lace and a rocker switch lace inside the jamb with the quick disconnects hanging-out of the header prep clearance hole at the top.
3. Fish the opposite ends of each lace through the appropriate clearance hole at the component mounting.

16. ATTACH JAMBS TO HEADER

The BiFold door frame consists of the jambs/bottom pivots joined to the header.

A. Lay the header with the faceplate (still removed) facing up on wood blocks or cardboard in front of the door opening.
B. Place the (LHR) jamb and (RHR) jamb in position next to the header on the appropriate sides. Slide the header over the C9525 header-to-jamb brackets attached to the jambs and secure on the top side on each end with two C437, #10-24 x 1/2" self-tapping, flat-head, machine screws (Figure 25, This Page).
C. To attach a fastener to the bottom of the header, flip the door frame upside-down with the bottom pivots up in the air. Secure the backmember part of the header to the C9525 brackets on each jamb with one C437 fastener accessible through a clearance hole in the breakout support.
D. Connect the jamb laces to the appropriate operator laces at each end of the header.

Figure 25, Attaching Header to Jambs



17. INSTALL ASSEMBLED DOOR FRAME

At this point, the conditions of the rough door opening and floor area mentioned in Step 11, page G4-7200.13 are satisfactory. The door frame should now be installed. Take care that the frame is not racked and that wire laces are out of the way to eliminate any damage to them. It is suggested that wood shingles be used to shim the BiFold door unit in place. **It is imperative that the door frame be set plumb and level in the opening and that the floor area also be level and smooth for proper installation and operation of the BiFold door unit.**

A. Set the door frame into the prepared opening. Be sure the door unit faces the correct side. The faceplate is usually on the interior side. Use the wood shingles as wedges to shim and secure the door frame in place. Also, provisions for getting power to the header's junction box should have been made (Figure 26, Page G4-7200.30).

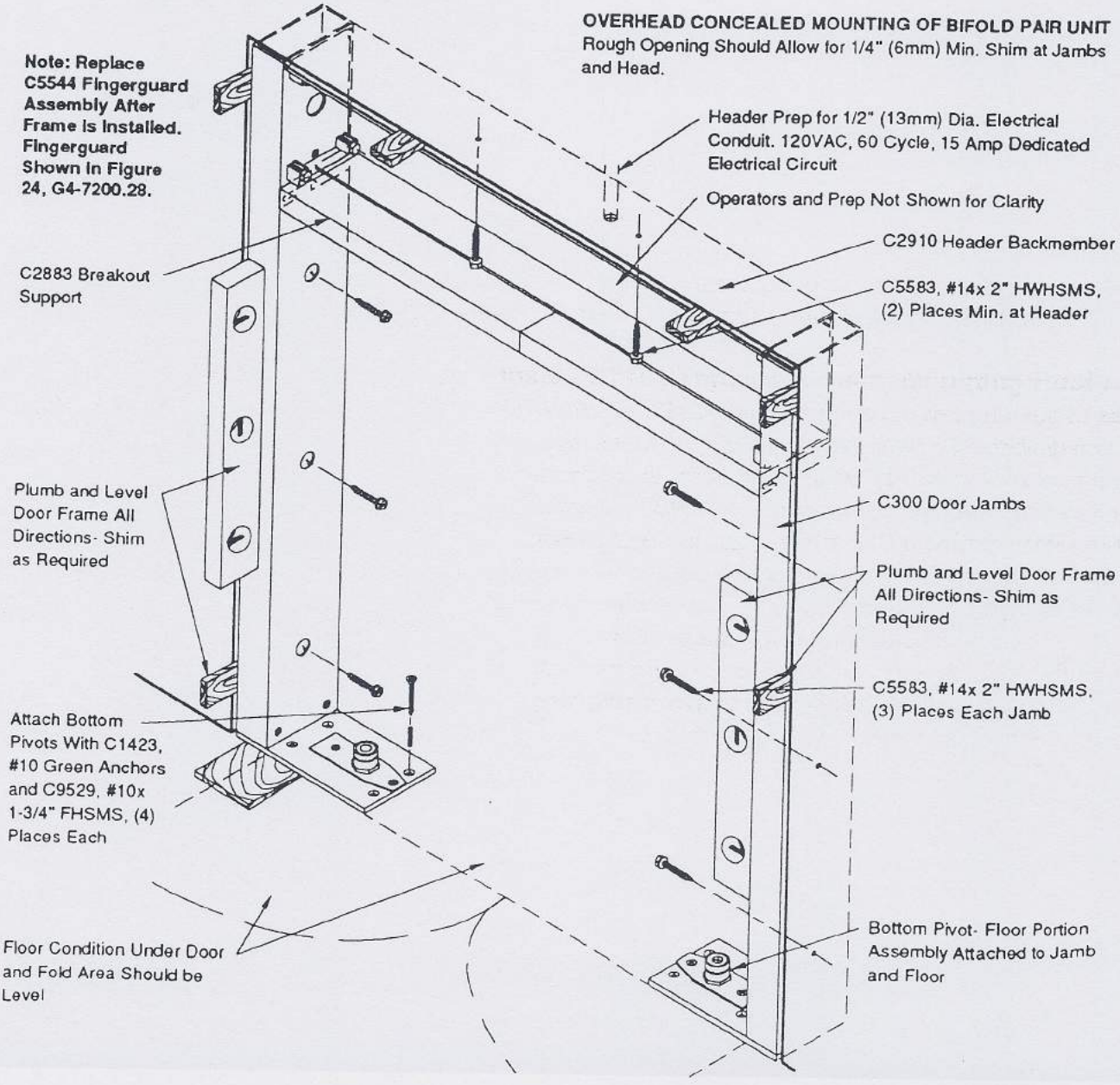
INSTALL ASSEMBLED DOOR FRAME CONT.

B. The floor condition under the opening and fold area should have been checked for levelness. If not and there are high points in the floor area, the door frame should be set with the bottom of the bottom pivot assembly level with the highest point of the door.

C. Use a four-foot level to plumb and level the door frame. Drill a 3/16" (.187" or 5mm) dia. hole at the top mounting hole of each jamb and secure with a C5583, #14 x 2" hex-washer head, sheet metal screw. Continue leveling the door frame as you secure the jambs in place through the existing mounting holes.

D. Secure the header in place through the existing mounting holes by first drilling 3/16" (.187" or 5mm) dia. holes in the opening structure. Attach with preferred C5583, #14 x 2" hex-washer head, sheet metal fasteners supplied with each unit. When tightening these fasteners, take care not to shift the header out of alignment.

Figure 26, Installing Assembled Door Frame



INSTALL ASSEMBLED DOOR FRAME CONT.

E. Finally, secure the bottom pivot assembly to the floor by drilling a 1/4" (6mm) dia. hole through the four clearance holes provided. Attach bottom pivot with C1423, #10 green plastic anchors and C9529, #10 x 1-3/4" flat-head, sheet metal screws provided.

All the fasteners needed to install a BiFold door are provided with each unit. However, alternate fasteners and preps may be necessary for different installation applications. Refer to Chart #1 below for a list of fasteners and their prescribed preps.

Chart 1, Fastener Size and Prep

FASTENER SIZE/TYPE	CLEARANCE DRILL/C'SINK	SHEET METAL FASTENER DRILL HOLE	TAP DRILL	TAP SIZE	MASONRY APPLICATIONS
#6 Sheet Metal Screw and #6-32 Machine Screw	#25 (.149) and #6 C'Sink	#31 (.120)	#36 (.106)	#6-32	
#10 Sheet Metal Screw and #10-24 Machine Screw	#7 (.201) and #10 C'Sink	#21 (.159)	#25 (.149)	#10-24	Drill 1/4" (.25) and use C1423 Green Plastic Anchor
#14 Sheet Metal Screw and #1/4-20 Machine Screw	#F (.257) and #14 C'Sink	3/16" (.187)	#7(.201)	#1/4-20	Drill 5/16" (.312) and use C1424 Blue Plastic Anchor

18. INSTALL PERIPHERAL COMPONENTS TO JAMBS

All safety components and switches which mount to the jambs and were prepped as instructed in section 15, steps C, D, and E should now be installed.

A. Install C7724 Threshold Beam Mounting Post Assembly

1. With the C1522 endcaps removed from the top of each mounting post, place the left-hand post in position next to the (LHR) jamb. The endcap prep at the top of the mounting post should slope away from the jamb and the safety beams aimed across the door opening (Figure 22, Page G4-7200.25). Connect the mounting post lace to the appropriate safety beam lace with the use of C60-1 insulated wire nuts provided. Refer to Wiring Diagram No: 10843.1, Figure 15 on page G4-7200.19. Feed any excess wire lace back inside the jamb.
2. Secure the mounting post to the jamb at the top and bottom mounting holes with C449, #10-24 x 3/4" self-tapping, flat-head, machine screws.
3. At the bottom mounting hole, cover the 1/2" (13mm) dia. clearance hole with a C243-1 plastic hole plug provided with the assembly.
4. Replace the C1522 endcap assembly at the top of the mounting post and secure by tightening the socket-set screws located on the side of the post.
5. Repeat steps 1 thru 4 for the right-hand threshold beam mounting post.

B. Install C7653 Guiderail Assembly

1. Position right-hand guiderail on (RHR) jamb and mark location of frame extension on concrete floor. With a core drill or masonry bit, drill-out a whole deep and wide enough for the frame to fit into so that the guiderail foot rests on the finish floor (Figure 23, Page G4-7200.26).
2. Remove debris from drilled hole and set guiderail back in place. Using the guiderail foot as a template, mark the three mounting locations.

3. With a hammer drill and 3/8" (9mm) dia. masonry bit, drill 2" (51mm) deep at the three marked locations. Place the guiderail in position, insert anchor bolts through the feet and drive into concrete. Be careful not to damage the threads when driving anchors.
4. Wire the guiderail lace to the appropriate safety beam lace installed inside the jamb using C60-1 wire nuts provided. Refer to Wiring Diagram No: 10843.1, Figure 15 on page G4-7200.19. Note that the brown colored wire on the ribbon lace is considered wire #1 on the diagram. Feed excess wire lace back inside the jamb.
5. Secure the guiderail to the jamb with four C450, #10 x 1-1/2" flat-head, sheet metal screws provided with the assembly.
6. Tighten the anchor bolts on the guiderail feet with a 1/2" socket/ratchet.
7. Repeat steps 1 thru 6 for the left-hand side guiderail.
8. Fill in void spaces around the recessed frame/foot with a cement type grout.

C. Install C4320 Rocker Switch Assembly

1. Attach the rocker switch to the C4322 mounting plate with the washer and nut provided in the assembly package. Connect the switch lace to the appropriate lace previously installed in the jamb with the C60-1 insulated wire nuts provided. Refer to Wiring Diagram No: 10838.2, Figure 11 on page G4-7200.15. Feed any excess wire lace back inside the jamb.
2. Secure the rocker switch assembly to the jamb with two C838, #6 x 1/2" flat-head, sheet metal screws provided in the package.

19. DOOR PANEL PREPARATION

There are two active and two inactive door panels on a BiFold Pair unit. Each inactive panel is hinged to an active or pivot panel. One set of active/inactive panels folds to one side while the other set simultaneously folds to the other side (Figure 28, Page G4-7200.34).

A. Remove Power Arm From Active Panel

On each active panel concealed in the top horizontal rail is a power arm secured to a tapping plate. Remove the three C5236-1, 5/16-18 x 7/8" flat-head, socket-cap screws which hold the arm in place and set aside for now.

B. Install Top Roller Guide Assembly

Two C7685 top roller guide assemblies are provided loose with each BiFold Pair unit (one per operator). This roller guide assembly mounts partially concealed in the top horizontal rail of each inactive panel. Refer to the F4057 instruction sheet provided in each assembly package for placement. Secure the roller guide in place with two C9529, #10 x 1-3/4" flat-head, sheet metal screws provided.

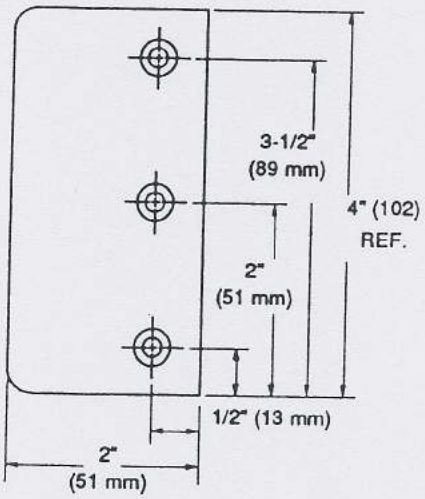
C. Install C7641-1 Pull Handle Assembly

Pull handles are supplied with each BiFold door unit but are sent packaged loose for field installation. Two assemblies are provided on pair units, one assembly on single units. This door hardware mounts to the C2952 vertical rail on the active panel and serve as handles to manually pull the door open from the fold side (Figure 27, Page G4-7200.33).

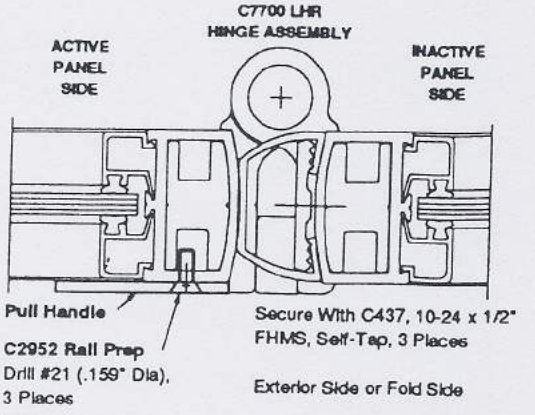
DOOR PANEL PREPARATION- PART (D) CONT.

1. Locate the top of the C7641 pull handle at 40-5/8" (1032mm) above finish floor or flush with the bottom of the C337R muntin bar if centrally located on the door panel. Using the pull handle as a template, mark the three mounting holes on the vertical rail.
2. Punch then drill #21 (.159" or 4mm) dia. hole at each location. Secure the pull handle with three C437, #10-24 x 1/2" flat-head, self-tapping machine screws.

Figure 27, Installing C7641-1 Pull Handle Assembly

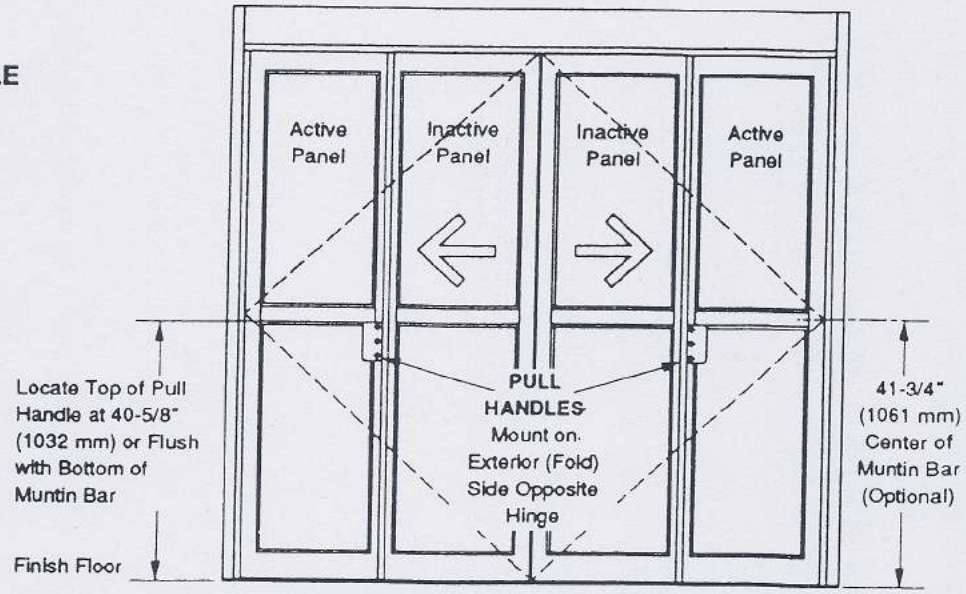


C7641 A/B PULL HANDLE DRILL HOLE PREP
Use Pull Handle as Template to Prep C2952 Vertical Rail



HORIZONTAL SECTION at PULL HANDLE

HARDWARE MOUNTING HEIGHT
Most Barrier-Free Codes require Door Hardware mounting to be no higher than 48 inches (1220 mm) nor lower than 35 inches (890 mm) above finished floor.

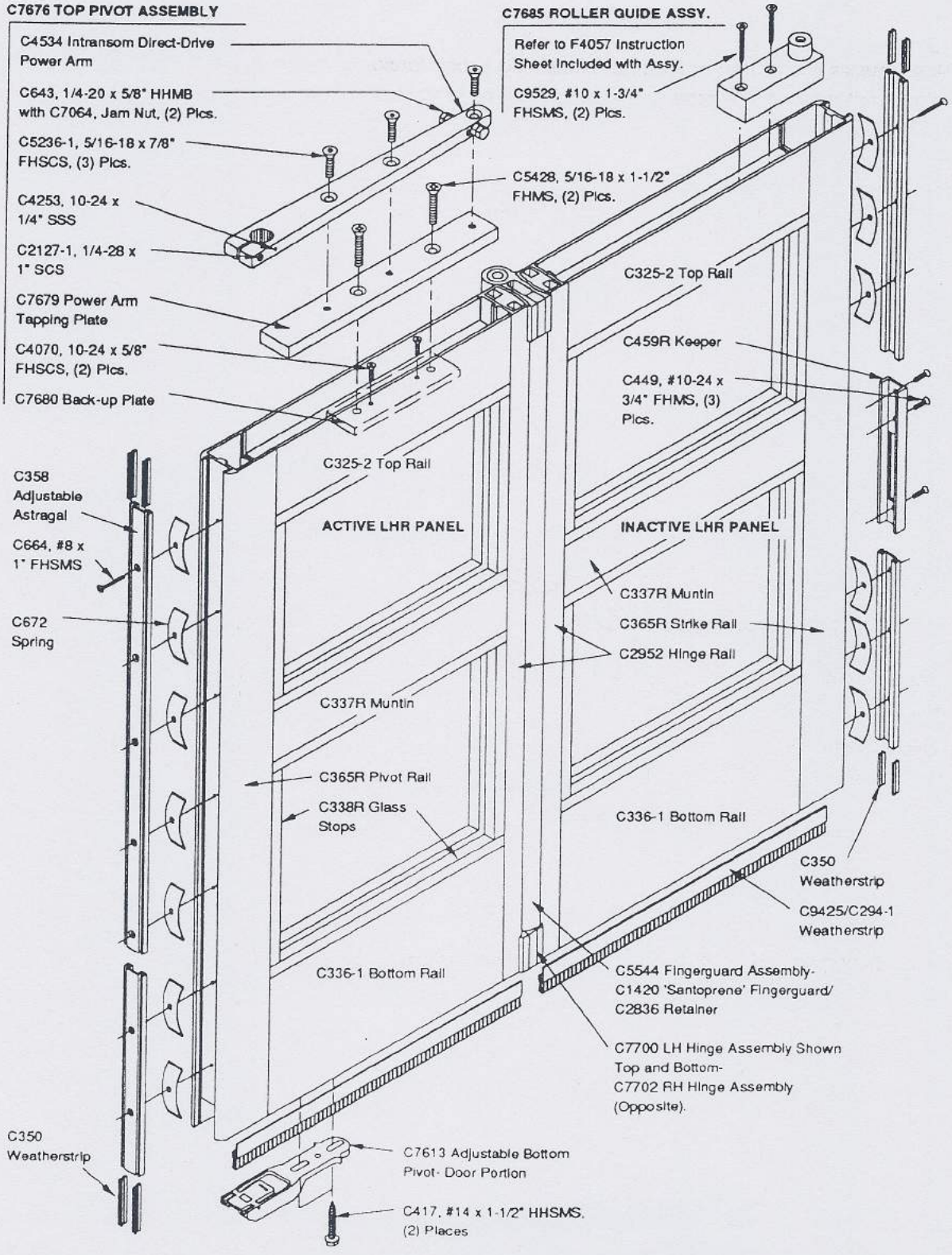


EXTERIOR VIEW ELEVATION
BIFOLD DOOR TYPE: LHR-RHR PAIR

D. Remove Astragal at Bottom Pivot Assembly

A C7613 door portion bottom pivot is secured to and concealed in the bottom horizontal rail at the pivot end of the active panel. On the bottom pivot assembly, loosen the two C417, #14 x 1-1/2" hex-head, sheet metal screws and position the bottom pivot centered within the notches. These notches allow for approximately 1/2" (13mm) total bottom pivot adjustment. Remove the 6-1/2" (165mm) tall C358 astragal piece which conceals the C7613 bottom pivot and set it aside (Figure 28, Page G4-7200.34).

Figure 28, Exploded View of Active/Inactive Panels



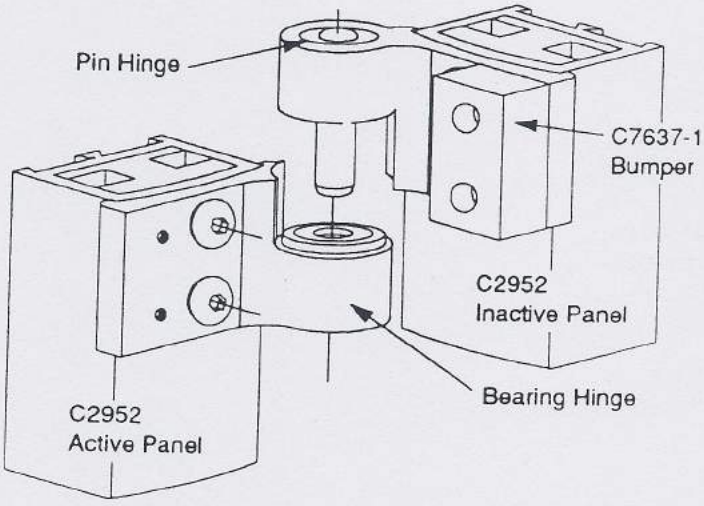
20. HINGE INFORMATION

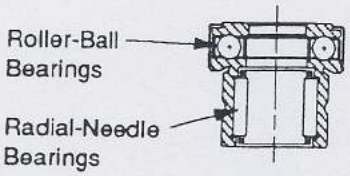
On BiFold door units, two bearing/pin type hinge assemblies connect the active panel to the inactive panel. The bearing portion of the hinge is attached to the active panel and is positioned on the bottom half of the assembly. The pin portion of the hinge, on the other hand, is attached to the inactive panel and is positioned on the top half of the assembly. Consequently, these two panels can be separated from each other by simply lifting up the inactive panel until both pins clear the bearings (Figure 29, This Page).

If the two panels separate from each other at the hinge assembly, Do Not try to reattach the panels by forcing the pin hinge into the bearing hinge.

To reconnect the panels without damaging the hinge bearings, follow the procedure outlined below.

Figure 29, Inactive Panel Shown Separated From Active Panel at Hinge Assembly





SECTION THRU C7704 RADIAL NEEDLE - THRUST BALL BEARING with DUST SHIELD for a 10mm NOM. SHAFT DIA.

A. Remove the two C3222, 1/4-20 x 3/4" button-head, socket-cap screws which hold the active panel hinge assembly to the C2952 vertical rail at top and bottom (Figure 30, Page G4-7200.36).

B. Remove the C7637-1 bumper which is secured with two C861-1, #10-24 x 3/8" button-head, socket-cap screws. Next remove the two C3222 screws on the inactive panel hinge assembly at top and bottom (Figure 30, Page G4-7200.36).

C. Carefully insert the hinge pin into the hinge bearing (Figure 31, Page G4-7200.36). Forcing the pin into the bearing may cause damage to the internal radial-needle bearings (Figure 29, This Page).

D. Place the hinge assembly on the C2952 vertical rails as shown in Figure 32, Page G4-7200.36. Secure the hinge with the same C3222 fasteners (two per hinge).

E. Attach the C7637-1 bumper to the inactive panel hinge with the same C861-1 fasteners. The bumper always mounts to the inactive panel as does the fingerguard which is not shown for reasons of clarity and simplicity of these drawings (Figure 32, Page G4-7200.36).

Figure 30, Exploded View of LHR Hinge Assembly

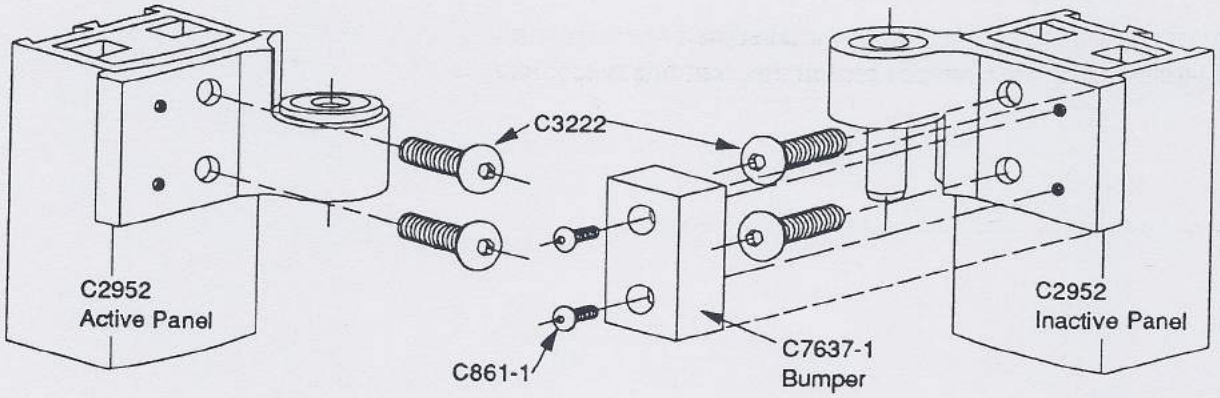


Figure 31, Assembled View of LHR Hinge Assembly

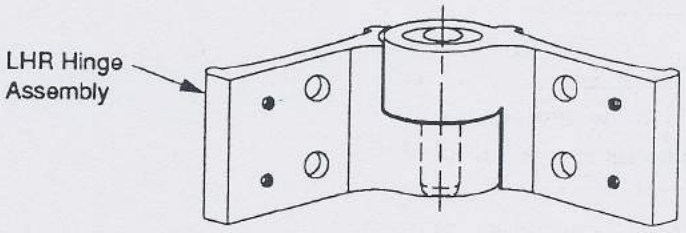
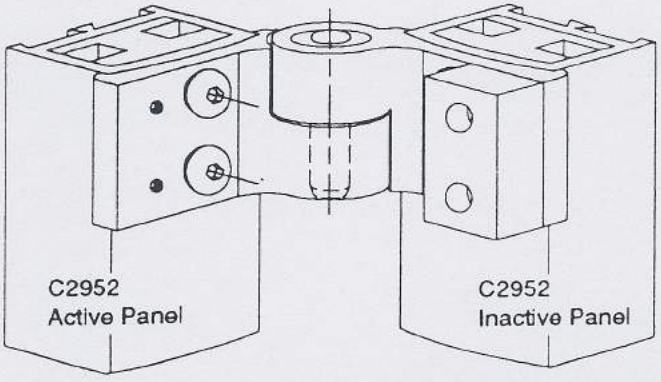


Figure 32, Assembled View of LHR Hinge Assembly Mounted to Vertical Rails



21. INSTALL DOOR PANELS

Installing BiFold door panels is similar to installing swing door panels like Horton's Series 7500 overhead concealed pair swing door package. The main difference is the BiFold door is made up of an active and inactive panel that folds/swings open and close instead of just one panel that swings open/close. When installing the door panels, it is preferred that the active and inactive panel stay connected and that you unfold the inactive panel so that both panels resemble one large swing door (Figure 33, Page G4-7200.38).

A. Replace the C7633/4 left and right hand aluminum cover plates at the operator spindle which were removed in Step 14A-3. Secure each cover plate at the underside with three C525, #6-32 x 1/4" flat-head, machine screws and one C2187, #6-32 x 3/8" flat-head, machine screw at the weatherstrip side. A white label adhered to each cover plate underside locates the open position of the C4534 power arm.

B. Power the door unit by toggling the rocker switch to the "Hold-Open" position. Hold the power arm (previously removed in Step 19A) in place on the operator spindle and swing the arm in the open direction to the full-open position. Remove the arm and reposition on the spindle at 95 degrees full-open as shown on the white label.

Take note that the notches on the operator spindle and power arm are not calibrated exactly. The label will help locate the arm at approximately 95° plus or minus 7 degrees. It is preferred to set the arm at 95° or less.

The bottom of the spindle should be flush with the bottom of the arm. Also, the countersinks on the clearance holes on the power arm should be positioned on the top side. While holding the arm in place, tighten the #10-24 x 1/4" socket set screw on the power arm with a 3/32" (2mm) 'Allen' wrench. To clamp the arm onto the spindle, tighten the #1/4-28 x 1" socket cap screw with a 3/16" (5mm) 'Allen' wrench. On a BiFold pair unit, repeat this step for the other operator.

C. With the active and inactive LHR panels still connected and in the open position, this combined panel will be side-loaded onto the top and bottom pivot assemblies. Place the top of the panel next to the power arm with the bottom of the panel angled toward the center of the door unit. The C365R pivot rail of the active panel should be next to and parallel to the power arm (Figure 33, Page G4-7200.38). Side-load the top of the panel onto the arm so that the power arm is in place concealed in the top web of the C325-2 top horizontal rail. Simultaneously swing the bottom pivot end of the panel up and toward the bottom pivot assembly. Slide the panel onto the bottom pivot floor portion until you here it lock in position.

D. Secure the power arm to the tapping plate which is mounted to the top rail of the active panel with three C5236-1, #5/16-18 x 7/8" flat-head, socket-cap screws previously removed in Step 19A. Use a 3/16" (5mm) 'Allen' wrench to tighten the fasteners after all three are in place.

E. On the power arm, loosen the two C643, #1/4-20 x 5/8" hex-head, machine bolts until the heads rest against the inside walls of the top horizontal rail. Next tighten the C7064, #1/4-20 jam nut to lock the C643 bolts in position.

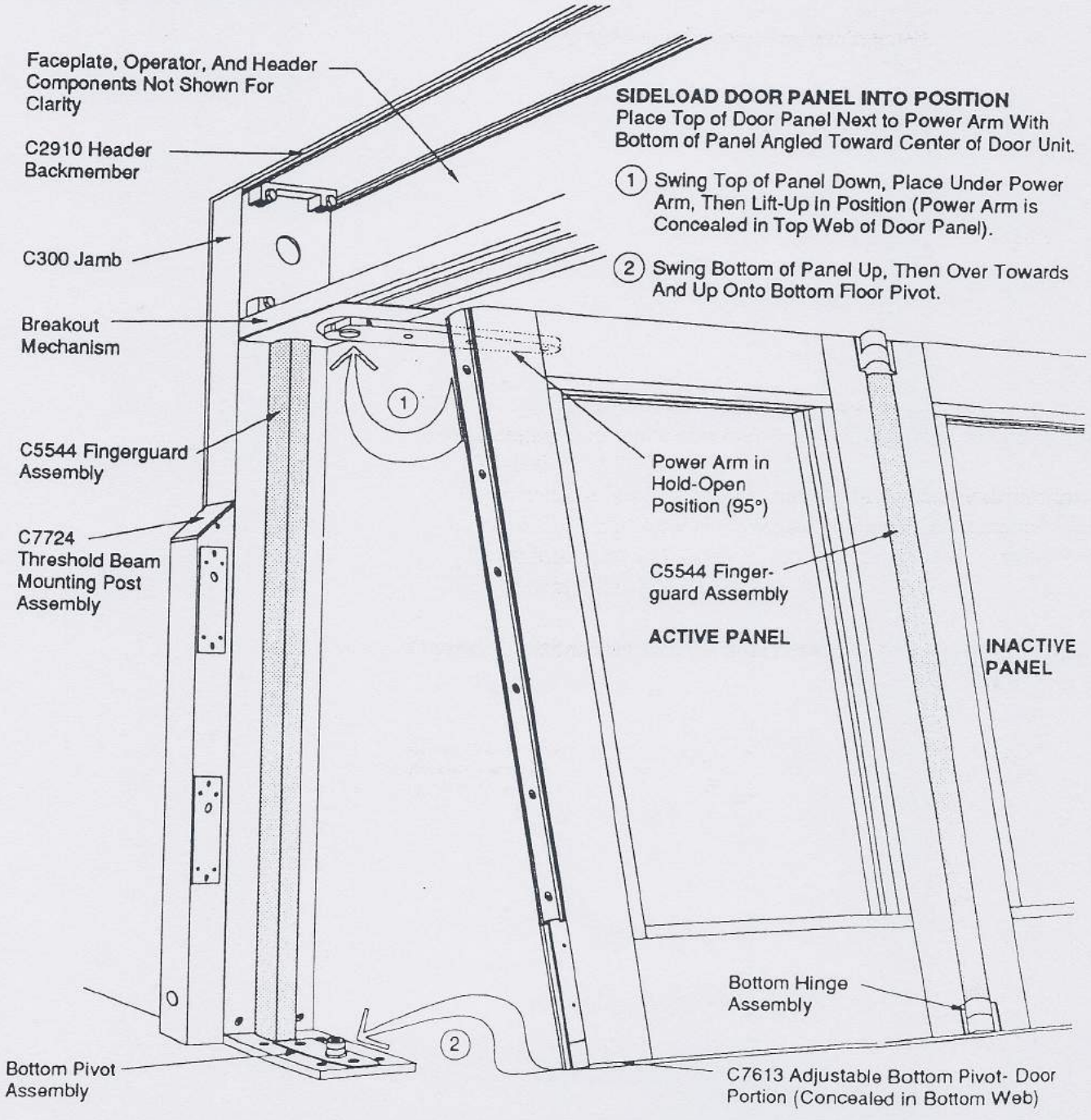
F. Toggle the rocker switch to the "Off" position. This will initiate the door panel to swing closed. Swing-out the track portion of the breakout mechanism to meet the top roller guide assembly mounted on the top rail of the inactive panel. Lift the cantilevered end of the breakout track up and over the 'delrin' roller of the roller guide so that it is positioned inside the track. Swing closed the combined panel completely so that the breakout track snaps back into the normally closed position.

INSTALL DOOR PANELS- PART (F) CONT.

Take care when swinging the breakout track open with the rocker switch still in the "Hold-Open" position because this will cut power to the operators and initiate the door to swing closed. On the other hand, swinging the panel and breakout track to the closed position will power the operator and initiate the door to fold open.

G. Repeat steps C thru F for RHR door panel.

Figure 33, Installing BIFold Door Panels



22. ADJUSTING DOOR PANELS

With the door panels installed, consider glazing them now before making any adjustments to the doors. The added weight of the glazing material will probably influence adjustments to the door panels.

A. Adjusting Astragal/Mohair

1. Gaps between the jamb fingerguard and C365R vertical pivot rail and also between the C365R strike and keeper vertical rails should be closed by adjusting the C358 astragal/mohair. First, toggle the rocker switch to the "Hold-Open" position.
2. With a Phillips-head screwdriver, loosen or tighten the C664, #8 x 1" flat-head, sheet metal screws at each location or where needed.

B. Bottom Pivot Door Portion Adjustment

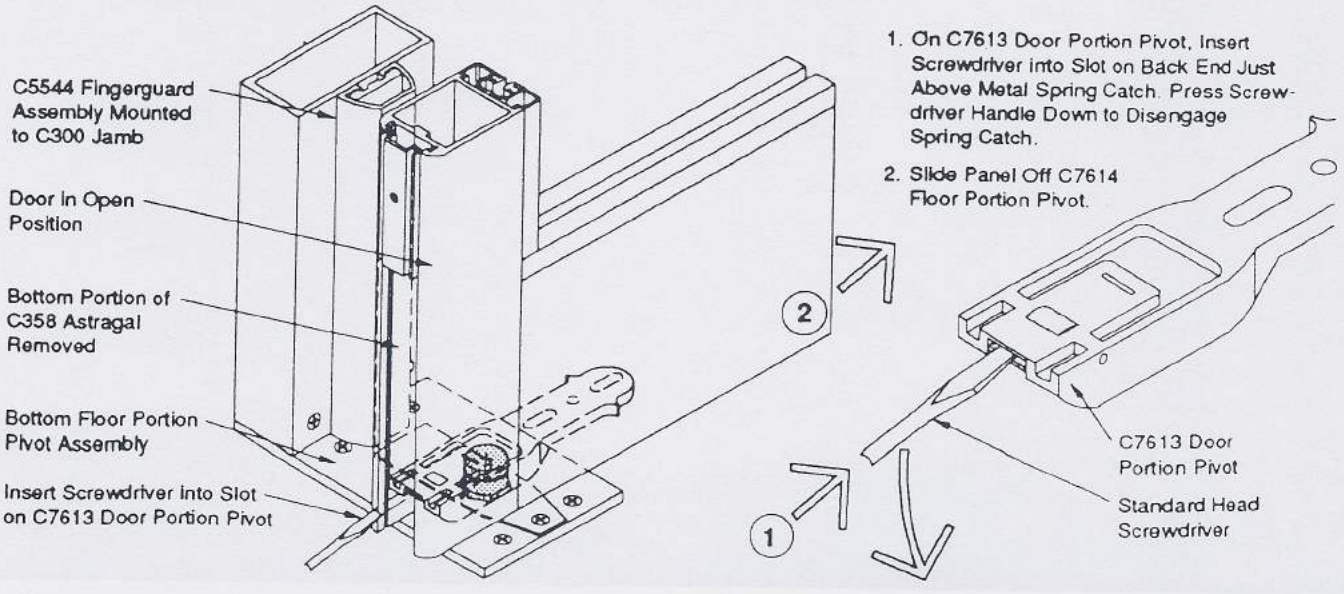
Before the door portion bottom pivot can be adjusted, the door panel must be unloaded (removed) from the top and bottom pivot.

1. With the rocker switch in the "Hold-Open" position, tighten the two C643, #1/4-20 x 5/8" hex-head, machine bolts to relieve pressure on the arm against the inside walls of the top horizontal rails.
2. Remove the three C5236-1, #5/16-18 x 7/8" flat-head, socket-cap screws which secure the power arm to the active panel. The door panel is now detached from the top pivot arm assembly.

The C7613 door portion bottom pivot (*Jackson* #20-647) has a spring catch that has to be disengaged to release the door panel from the C7614 floor portion bottom pivot bearing (*Jackson* #20-1062).

3. Insert the head of a small standard-head screwdriver into the slot on the back-horseshoe end of the C7613 pivot just above the metal spring catch and press down. This will disengage the spring catch and allow the door panel to slide off the C7614 floor portion bottom pivot (Figure 34, Page G4-7200.39).

Figure 34, Disengaging Door Panels From Bottom Pivot Assembly



4. Adjust the C7613 bottom pivot by loosening the two C417 hex-head, sheet metal screws. Move the pivot left or right depending on the direction you want the door panel to go and re-tighten these same fasteners.

C. Bottom Pivot Floor Portion Adjustment

The C7614 floor portion bottom pivot bearing can also be adjusted to meet the height of the C7613 door portion bottom pivot.

1. Adjust the height of the C7614 bearing by loosening or tightening the hex-head bearing base with a 1" open-end wrench. There is approximately 1/4" (6mm) total height adjustment available with the C7614 bottom pivot.

D. Replacing Astragal Covers at Bottom Pivot Assembly

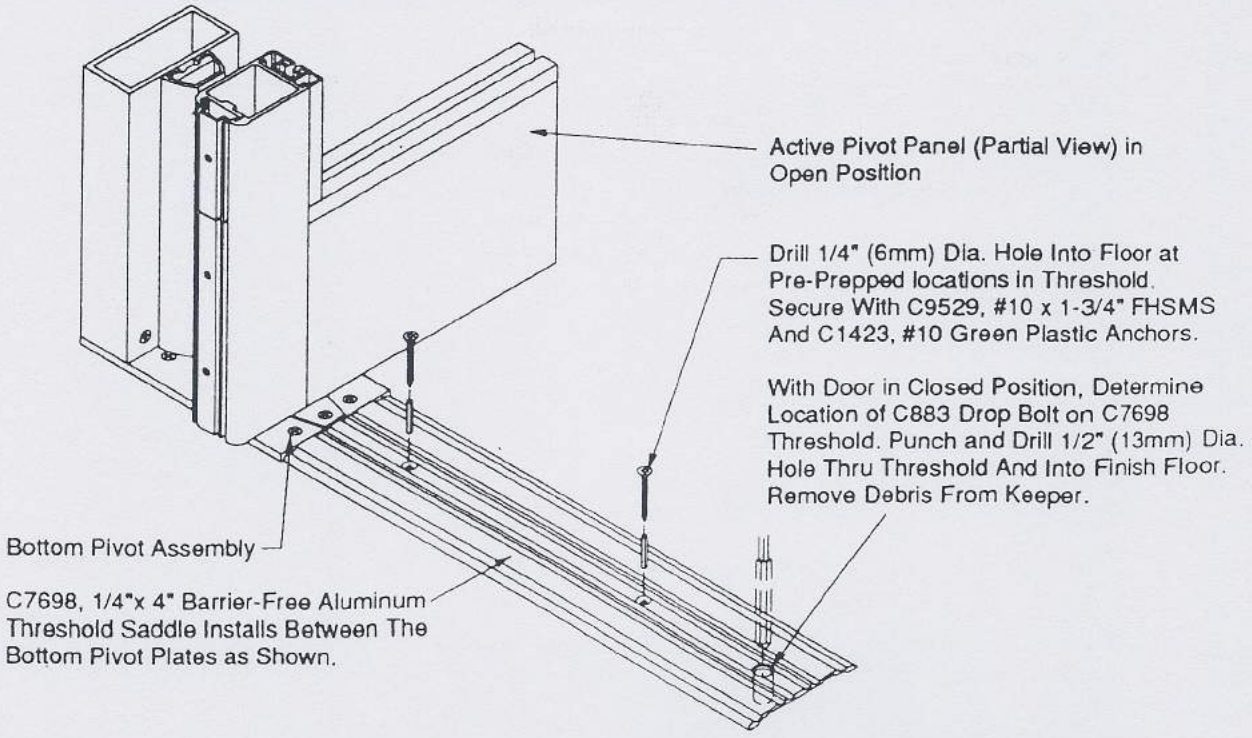
1. Replace the 6-1/2" (165mm) long C358 astragal cover on the C365R vertical pivot rail at the bottom pivot door portion. Insert and tighten the two C664, #8 x 1" flat-head, sheet metal screws with the C672 spring clips in place behind the astragal.

The threshold will need to be installed and prepped for the C883 drop bolt mechanism before the ®*Adams Rite* #MS1850 deadlock will engage.

23. INSTALLING THRESHOLD

The standard threshold for the BiFold door is a ®*Pemko* Barrier-Free 1/4" high x 4" wide (6 x 102mm) aluminum threshold saddle. Thresholds are precut and prepped for #10 flat-head, sheet metal screws (Figure 35, This Page).

Figure 35, Installing Threshold and Prepping For Drop Bolt Assembly



A. Install C7688 Threshold

1. Use the threshold as a template to mark mounting holes in finish floor. For concrete floor conditions, drill a 1/4" (6mm) dia. hole at the marked locations and insert a C1423, #10 green plastic anchor. Clean threshold floor area of all debris.
2. Run a bead of sealant around the underside of the threshold saddle to seal it from moisture.
3. Replace threshold and secure with C9529, #10 x 1-3/4" flat-head, sheet metal screws provided in the accessory package.

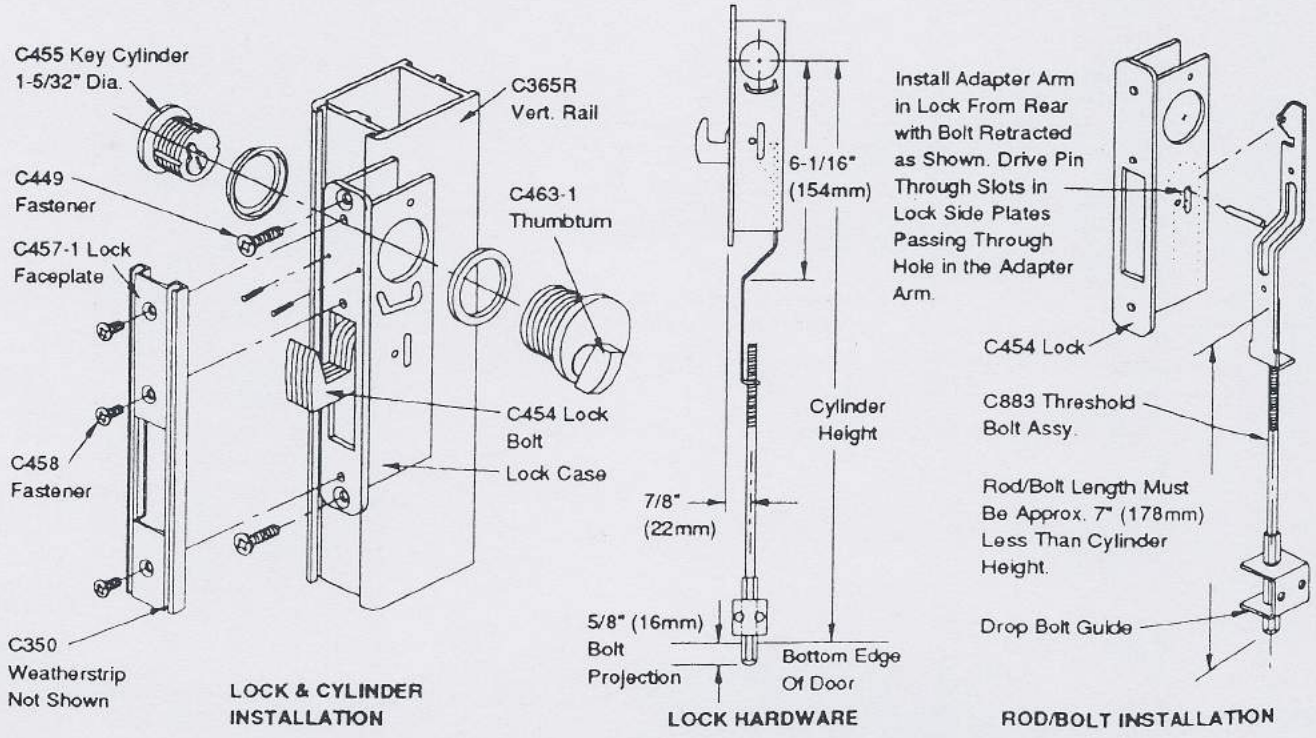
B. Prep Threshold for C883 Drop Bolt

1. With the door in the closed position, turn the thumbturn on the deadlock toward the locked position so that the dropbolt touches the threshold. Mark this location on the threshold and toggle the rocker switch on the door to the "Hold-Open" position.
2. Punch and drill a 1/2" (13mm) dia. hole through the threshold and into the finish floor. Countersink and remove debris from this drilled keeper hole.

24. DOOR LOCKS

BiFold door units are equipped with ®*Adams Rite* #MS1850 deadlock (Horton No: C454), C455 cylinder, C463-1 thumbturn, C459 keeper, and C883 dropbolt. Single unit doors lock into the jamb which are predrilled with a keeper prep. UL requires that the inside cylinder lock be equipped with a thumbturn. If the thumbturn is removed, the UL listing will be voided. Also, if the cylinder is replaced, the new version must be 1-5/32" diameter and should have ®*Adams Rite* compatible maximum security cam (Figure 36, This Page).

Figure 36, Exploded View of Deadlock Assembly

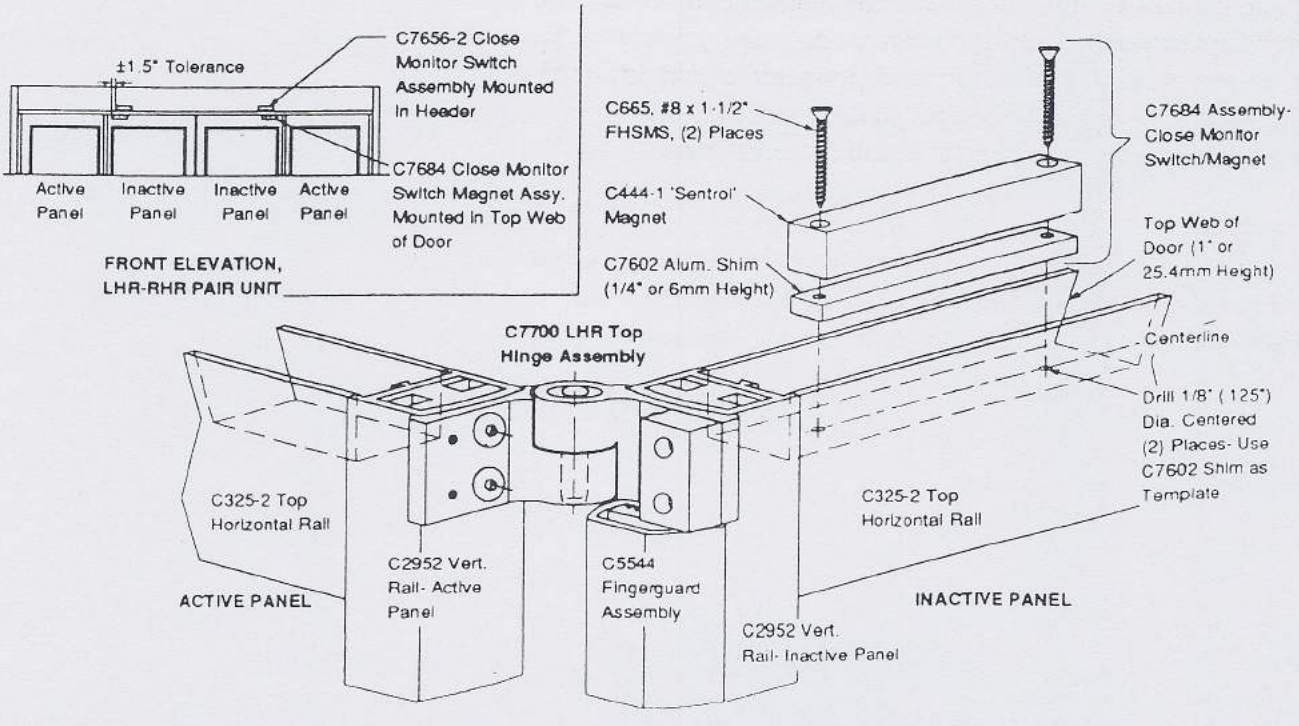


25. INSTALL C7684 CLOSE MONITOR SWITCH MAGNET

This close monitor switch magnet assembly should only be installed if the BiFold door unit is equipped with a C7653 guiderail or C7729 horizontal wall-mounted rail safety system. Two C7684 assemblies are packaged and sent loose with each pair unit, one assembly for single units. The C7656-2 *Reed* switch for this close monitor magnet is mounted in the header and located approximately half-way between the operator spindle and the center of the unit (positioned over the hinge of the door) (Figure 17, Page G4-7200.21). Do not confuse this *Reed* switch with the C7656-1 breakout cutoff switch mounted in the center of the header. Note that the magnets for the Breakout cutoff switch are preinstalled in the breakout track.

A. With the door panels in the 'closed' position, locate the close monitor switch in the header (positioned over the door hinges). With a pencil, mark the switch location on the side of the C325-2 top horizontal rail to within ± 1.5" or 38mm (Figure 37, This Page).
B. Now with the door panels in the 'Hold-Open' position, place the C7602 shim centered in the top web of the door (usually inactive panel) aligned with your marks from Step (A) above. Use this shim as a template to mark the two drill holes.
C. Drill 1/8" (.125" or 3mm) dia. holes through the top web of the C325-2 horizontal rail at the two locations previously marked.
D. Place the C444-1 magnet on top of the C7602 aluminum shim and secure with two C665, #8 x 1-1/2" flat-head, sheet metal screws. For a pair unit, repeat Steps (A) thru (D).
E. Return the door to the 'closed' position and make sure you are getting a RED LED signal on the C4160-1 control when blocking the first or middle C1185-1 photoelectric beam on the guiderails or horizontal wall-mounted rails.

Figure 37, Installing The C7684 Close Monitor Switch Magnet



26. INSTALLATION OF MOTION SENSORS

Motion sensors for automatic doors should be installed where door operation may be observed by the person actuating it. A variety of motion sensors are available for automatic BiFold door units. At present, Horton Automatics recommends using the C1188-1 enhanced motion sensor (*C&K Systems, Inc.* Model No: 7201N and 7201W).

A. Motion Sensor Installation and Wiring

For maximum protection, motion detectors should be placed on both sides of the door. The C1188-1 narrow pattern version mounts on the fold side while the wide pattern version mounts to the side opposite the fold of the door. Mount sensors on or above the door header, centered over the opening and at a height of between seven and eight feet above finish floor. If the detector is installed higher than eight feet, the sensitivity and detection area may not comply with ANSI Standards. *As a safety precaution on one-way traffic, the ANSI Standard requires that a motion detector be installed on each side of the door and be active while the door is open (except the last 6" or 152mm of closing). The Standard does permit the detector on the controlled side to be reduced to 24" (610mm) in depth.*

For wiring instruction, refer to manufacturer's wiring diagrams and Horton's wiring diagrams supplied inside the header with each door unit. Refer also to general wiring diagrams Figures 11 thru 14 on pages G4-7200.15 thru .18 in this manual. Motion detector laces with a four-conductor disconnect are prewired to the transformer/ terminal strip and included inside the header. As an option, door units can be ordered with a split faceplate to mount motion detectors. Take care that excess wire not come in contact with any moving parts inside the header.

B. Motion Sensor Adjustments

Detection patterns for motion sensors can vary greatly. ANSI A156.10 Standard requires that motion detection patterns be sized to fit the door opening width and have a detection range of 54" (1372mm) on the approach side of the door. *The detection pattern width must be as wide as the door opening*. Also, the inside edge of the detection pattern should not be more than 5" (127mm) from the face of the door, but not so close that the motion of the door causes it to recycle.

Motion sensor time delays should be set to a minimum of two seconds cumulative with the C4160-1 control before the door begins to close. Three seconds is strongly recommended by Horton Automatics because of improved safety.

C. Walk Test Detection Zones

After motion sensor adjustments have been made, walk test the detection patterns approaching from various angles and at different speeds. Move fast to ensure the pattern is large enough, then move slow to verify that the door will remain open for slow moving traffic. The door must remain open even when traffic moves as slow as 6" (152mm) per second. *Never decrease the sensor's detection pattern sensitivity so it will not detect slow moving traffic.*

27. FINAL OPERATING ADJUSTMENTS

For safe operation after installing or servicing a BiFold automatic door unit, adhere to the recommended operator and control component adjustments listed below and shown in Figure 38, Page G4-7200.45. On a pair unit, make the following adjustments to one operator/control before adjusting the other side operator/control. The ultimate goal is to have both sets of folding panels operate safely and synchronized in the opening and closing cycles.

A. Preliminary Setup

CAUTION- Be sure the C4360 Daughter Board is plugged into the C4160-1 Master Control before operating the door.

1. Plug the power cord and transformer cord into the quadplex junction box. If a keyswitch is installed, switch to the 'ON' position and toggle the rocker switch to the 'AUTO' position.
2. Reset the circuit breaker for each operator so that the plunger is depressed with the white band not showing. The circuit breaker is accessible through a clearance hole located on the underside of the breakout mechanism. Use a pencil like object to reach the plunger.
3. To prevent the door from slamming open or closed upon initial actuation, adjust the opening speed to a minimal setting by rotating the 'SPEED' potentiometer counterclockwise (located on the top-right corner of the C4160-1 control). Also, set the closing speed to a minimal setting by rotating the adjustment knob clockwise (located between the motor and operator spindle).
4. Actuate the door to observe initial opening and closing speeds and locations of open and close check settings.

B. Check Switch Cam Adjustments

The Series 7000 operator is equipped with two check switch cams located at the upper most part of the operator and centered on the output spindle.

1. **Open Check Switch Cam** - Adjust so that switch drops onto cam flat when the door is 15° from the full open position.
2. **Close Check Switch Cam** - Adjust so that switch drops onto cam flat when the door is 15° from the full close position.

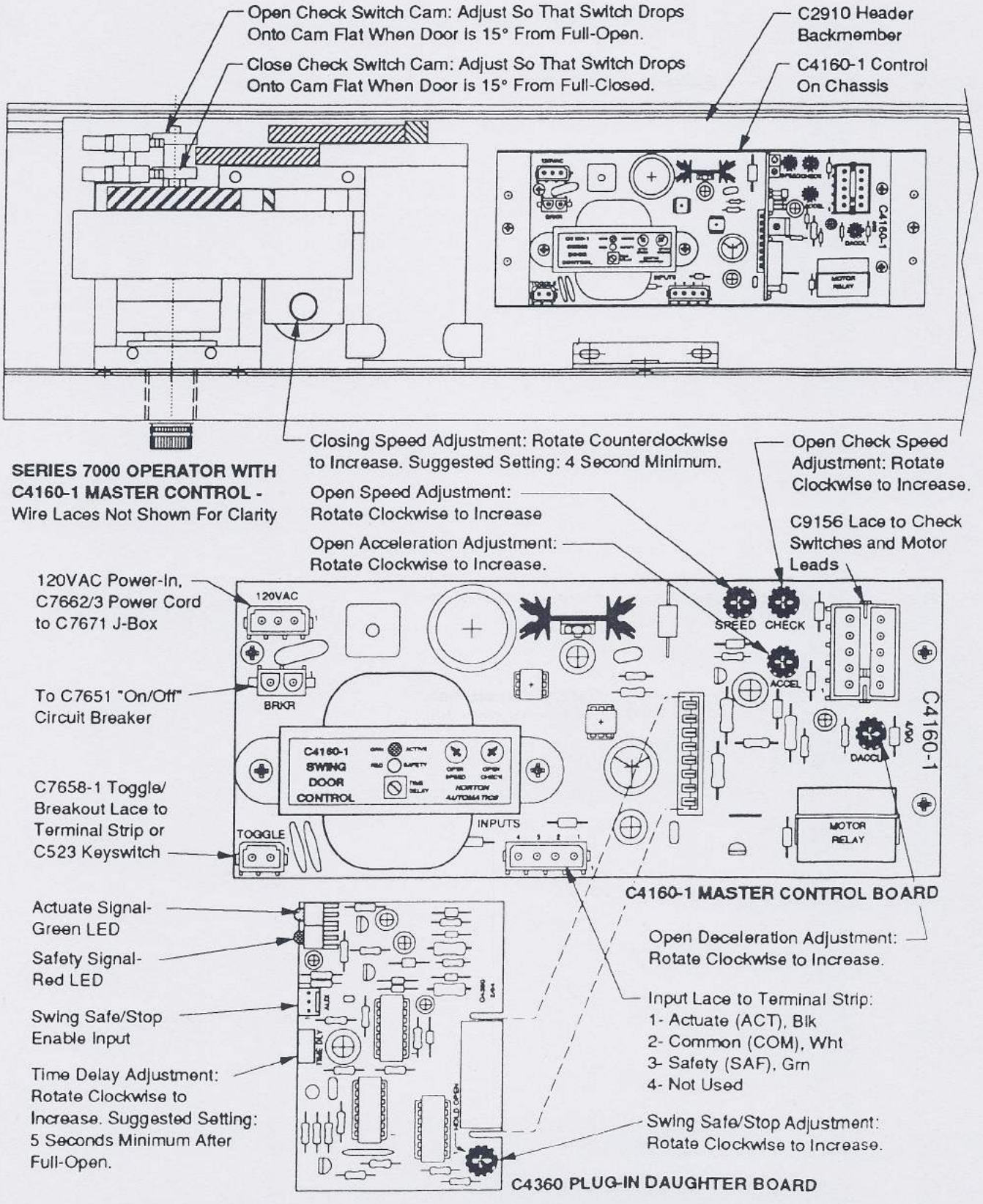
C. Speed Adjustments

The following open speed potentiometers are located on the upper right-hand side of the C4160-1 control.

1. **Open Speed Potentiometer** (SPEED)- ANSI A156.10 states that the opening speed from full close position to open check should not be less than 1.5 seconds. Rotate clockwise to increase.
2. **Open Acceleration Potentiometer** (ACCEL)- Controls rate of acceleration to open speed from full close position to open check. Rotate clockwise to increase.
3. **Open Deceleration Potentiometer** (DACCL)- Controls rate of deceleration of check speed from open check to full open position. Rotate clockwise to increase.
4. **Open Check Speed Potentiometer** (CHECK)- Controls check speed from open check to full open position. Rotate clockwise to increase.
5. **Closing Speed Adjustment Knob** (located between the motor and operator spindle) - Controls closing speed from full open position to close check. Rotate counterclockwise to increase. Closing speed must be adjusted to less than (1) foot per second (0.3 meters per second), measured at the lead rail of the folding panel.

FINAL OPERATING ADJUSTMENTS CONT.

Figure 38, Series 7000 Operator with C4160-1 Control Component Adjustments



D. Additional Adjustments

1. **Time Delay Potentiometer** (TIME DLY, located on the C4360 Plug-in Daughter Board)- Rotate clockwise to increase. The suggested setting for this variable time delay is 5 seconds minimum after door reaches full open position.
2. **Breakout Mechanism** - Refer to Step 7F and Figure 3 on page G4-7200.8 for conformance with ANSI A156.10 requirements on adjusting the breakout mechanism.

Note, the Series 7000 operator conforms with ANSI A156.10 requirements that the spring force required to prevent a door from closing at any point in the closing cycle or opening in the last 10° degrees of travel must not exceed 40lbf (180N) applied 1" (25mm) from the lock edge of the door.

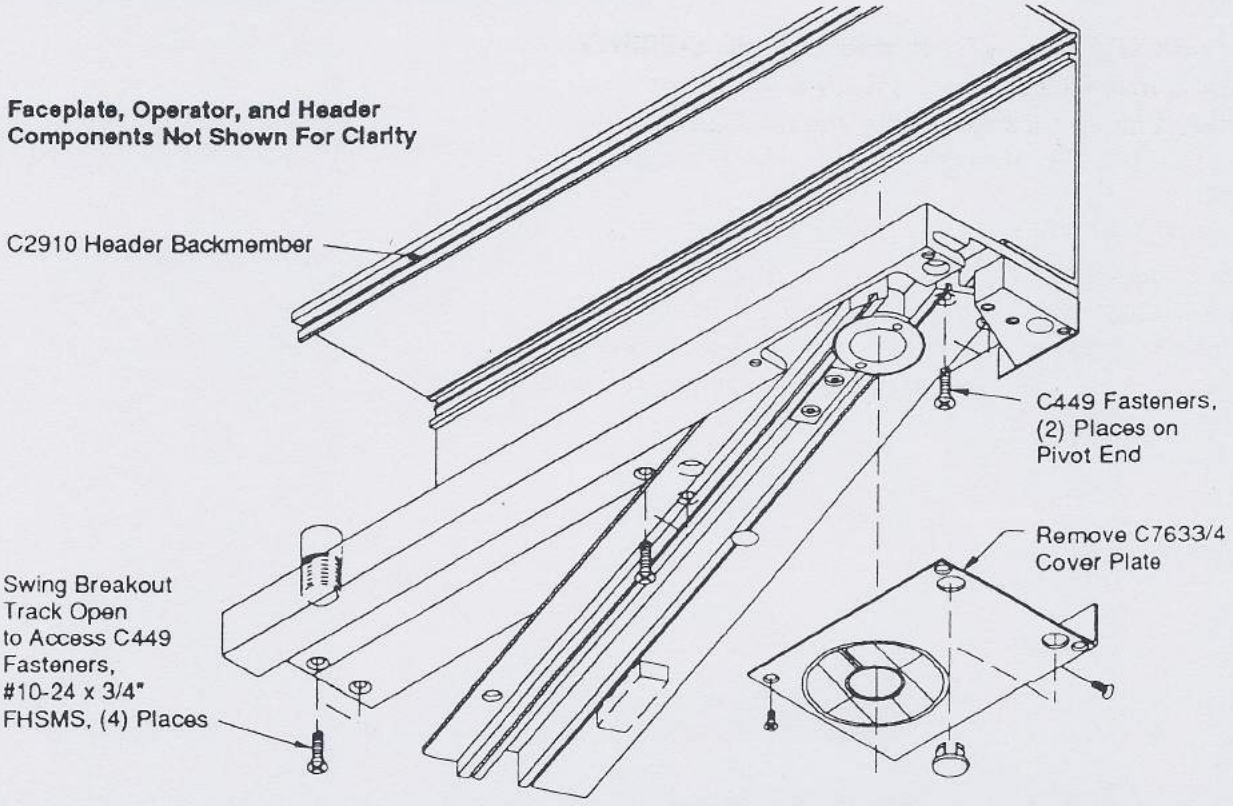
28. CHANGING OPERATOR HAND/SPRING (Refer to H701 Instruction Booklet)

In the event the operator or spring need to be replaced or the operator hand needs to be switched, several components need to be removed first. Remove the door panels, faceplate, breakout assembly, and the operator on the affected side only. Next, refer to the H701 *Changing Operator Hand/Spring* Instruction Booklet for further instructions.

A. Remove Door Panels

Refer to Step 22-B1 thru B3 on page G4-7200.39 for instructions on removing the door panels. Before executing Step 22-B3, remove the 6-1/2" (165mm) astragal piece on the C365R pivot rail that conceals the bottom pivot assembly by unscrewing the two C664, #8 x 1" flat-head, sheet metal screws (Figure 34, Page G4-7200.39).

Figure 39, Removing Breakout Mechanism From Header



B. Remove Header Faceplate

Refer to Step 14-A and Figure 16 on page G4-7200.20 for instructions on removing the header faceplate. Keep in mind that the header in this case is mounted to the frame and secured to the building's framed door opening.

C. Remove Breakout Assembly

1. On the affected side only, remove the two C449, #10-24 x 3/4" flat-head, machine screws on the support portion of the breakout located 1-1/2" (38mm) from the pivot end.
2. Next swing the breakout track open and remove two C449 fasteners centered between the breakout support and two C449 fasteners at the end opposite the pivot. Take care to hold the breakout while removing these fasteners. You should now be able to remove the breakout assembly from the header backmember (Figure 39, Page G4-7200.46).

D. Remove Series 7000 Operator From Header

1. On the affected side only, remove the three C4070 #10-24 x 5/8" flat-head, socket-cap screws which secure the operator to the header backmember. You should now be able to lift the operator assembly out of the header.

29. APPLICATION OF SAFETY DECALS (Per ANSI Specifications)

Safety decals for all automatic doors play an important role in protecting the owner against product liability and providing the user with safety signage as outlined in ANSI/BHMA A156.10- 1991 *American National Standard for Power Operated Pedestrian Doors*. Several safety decals are provided in the Installation Instructions and Owner's Manual envelope with each BiFold door unit. The installer should adhere these decals to the door unit as instructed and illustrated in Figure 40, page G4-7200.48.

A. C1633-2 Safety Decal for Two-Way Traffic

Two C1633-2 yellow decals with the words "Caution- Automatic Door" and Two-Way Traffic" on both sides are provided with each pair unit. Adhere these decals to both Active panels on a centerline of 58" (1473mm) plus or minus 5" (127mm).

B. C1631-2 Safety Decal for One-Way Traffic

Two C1631-2 decals with a black arrow circumscribed with a green border and the words "Automatic Door- Keep Moving" on one side and a red circle and the words "Do Not Enter" and "Stand Clear Automatic Door Can Swing Open At Any Time" on the opposite side are provided with each pair unit. Adhere these decals to both Active panels on a centerline of 58" (1473mm) plus or minus 5" (127mm).

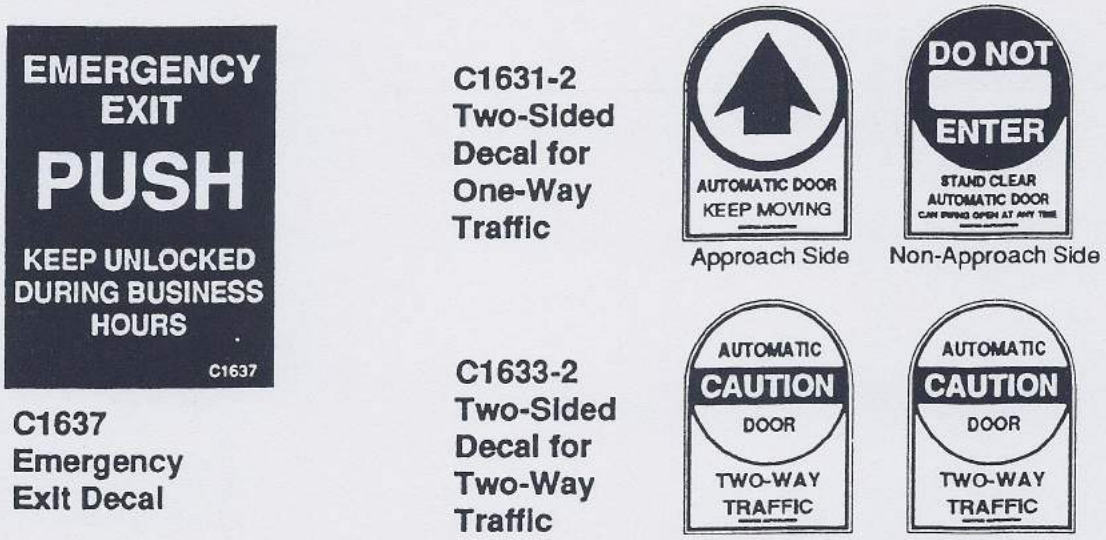
C. C1637 Emergency Exit Decal

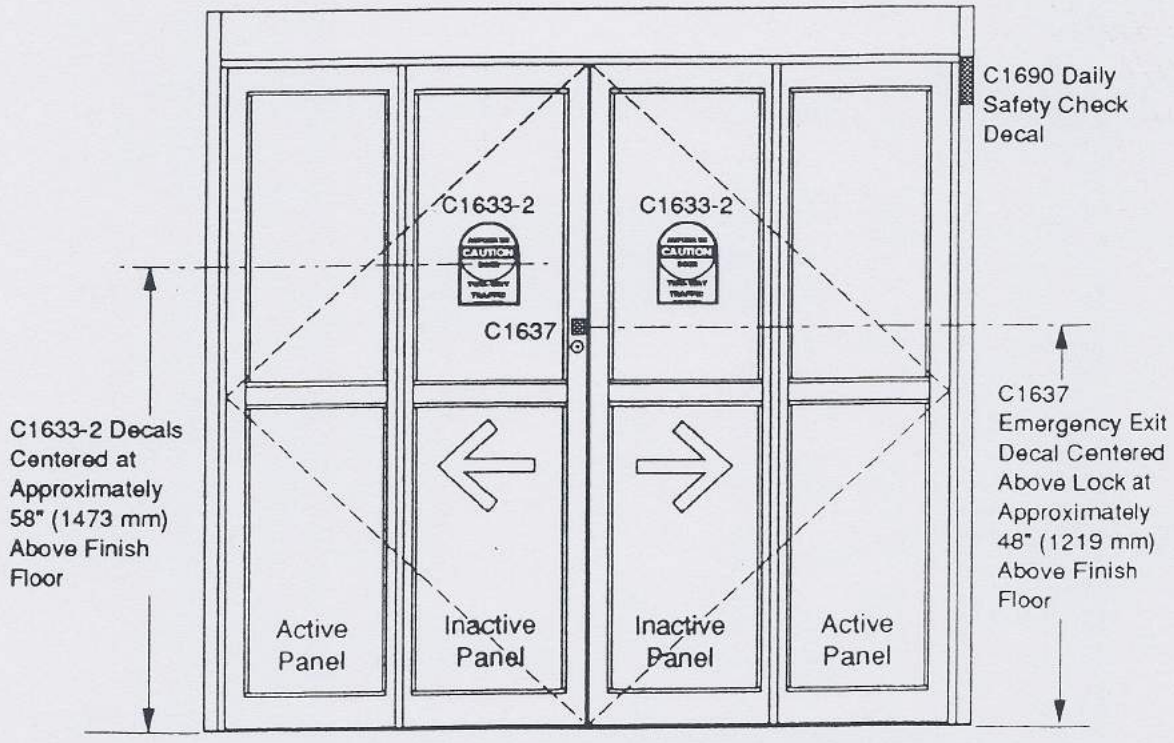
One C1637 red rectangular decal with the words "Emergency Exit- Push- Keep Unlocked During Business Hours" is factory adhered to the interior side of the Inactive panel lock rail just above the thumbturn.

D. C1690 Daily Safety Check Decal

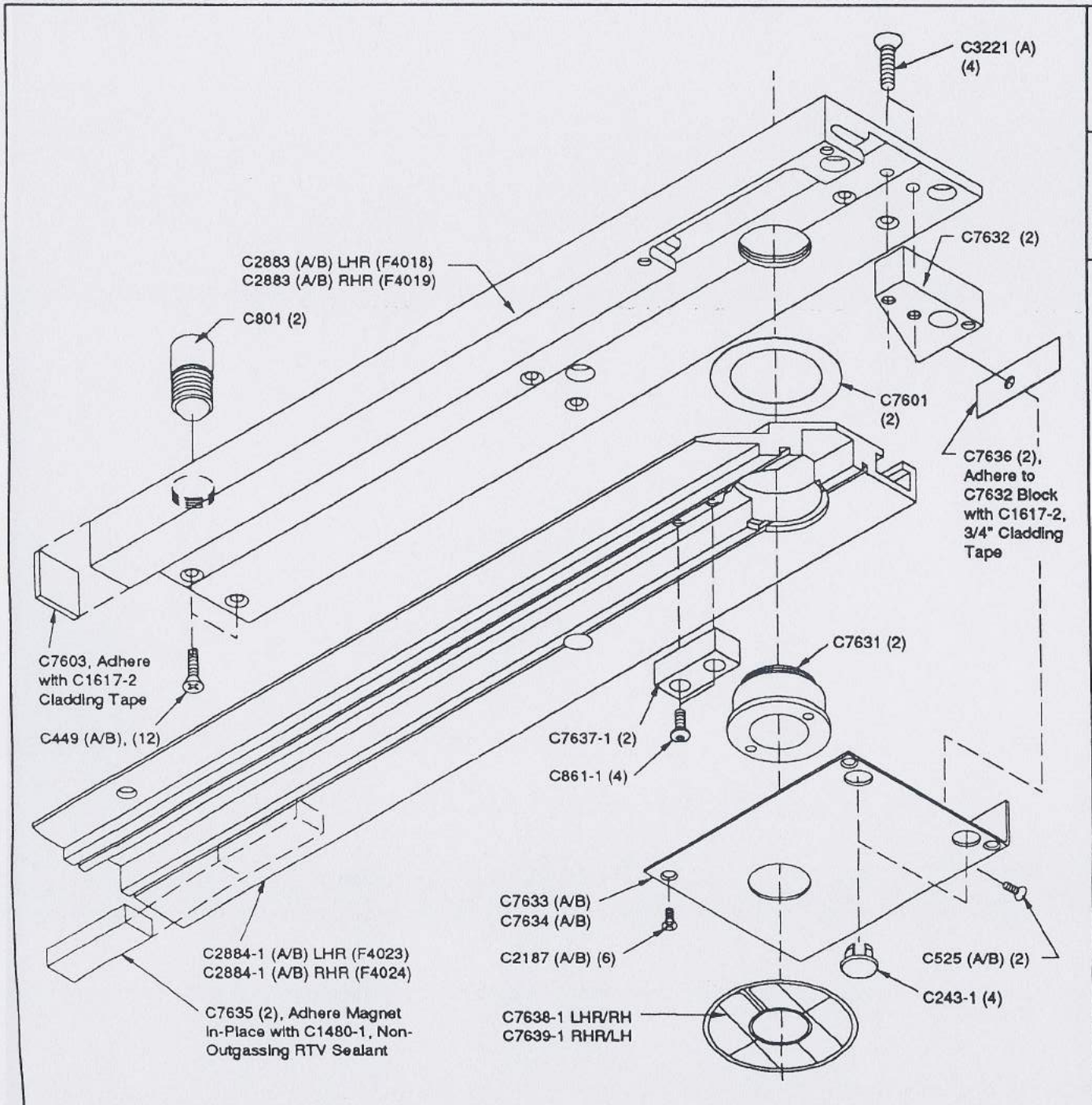
One C1690 rectangular decal is provided to give the owners instructions for checking the operation of their automatic door unit on a daily basis. Adhere this decal to the interior face of the jamb just below the header.

Figure 40, Safety Decal Placement on BIFold Doors





INTERIOR VIEW ELEVATION
BIFOLD DOOR TYPE: LHR-RHR PAIR



C7618 BIFold Breakout Assembly for Pair Units (Exploded View- Half Shown)

DWN BY: SCHNEIDER, MDC
DATE: 2MAR95
SCALE: NTS
CCAD FILE: Fig41.C7618Exploded

C243-1	Plastic Hole Plug, 1/2" Dia.
C449 A/B	Screw- #10-24 x 3/4" FHMS Self-Tap
C525 A/B	Screw- #6-32 x 1/4" FHMS
C801	Ball Catch Assembly
C861-1	Screw- #10-24 x 3/8" BSCS
C2187 A/B	Screw- #6-32 x 3/8" FHMS
C2883 A/B	LHR Breakout Support, F4018
C2883 A/B	RHR Breakout Support, F4019
C2884-1 A/B	LHR Breakout Track, F4023
C2884-1 A/B	RHR Breakout Track, F4024
C3221 A	Screw- #1/4-20 x 3/4" FHSCS
C7601	Teflon Shim, 2.36 OD, 1.64 ID, .015 TH
C7603	Weatherstrip- Black Closed-Cell Foam, 1 x 1 x 1/8 TH
C7631	Breakout Shaft Adapter
C7632	Breakout Filler Block
C7633 A/B	Breakout Cover Plate, LHR
C7634 A/B	Breakout Cover Plate, RHR
C7635	Magnet- Ceramic Permanent, 2 x .667 x .395 TH
C7636	Weatherstrip- Neoprene, .719 x 2.125 x .030 TH
C7637-1	Rubber Stop at Breakout Track
C7638-1	Label- LHR/RH Arm Location
C7639-1	Label- RHR/LH Arm Location

C7618 BIFold Breakout Assembly

Figure 41, Exploded View of Breakout Assembly

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