

SERIES T200 / T300
TIE ROD DOOR
INSTALLATION INSTRUCTIONS



Part NO. Y009

February 2013

WHERE WINDOWS ARE JUST THE BEGINNING®



TABLE OF CONTENTS

SECTION

I	GENERAL NOTES AND GUIDELINES	PAGE 2
II	DOOR PACKAGE IDENTIFICATION	PAGE 3-4
III	PARTS IDENTIFICATION	PAGE 5-7
IV	OFFSET JACK SCREW ASSEMBLY	PAGE 8
V	TIE ROD CUT LENGTH	PAGE 8
VI	TIE ROD ASSEMBLY	PAGE 9
VII	GLAZING AND REGLAZING DOORS	PAGE 10
VIII	PUSH/PULL ASSEMBLY	PAGE 11
IX	OFFSET PIVOT APPLICATION	PAGE 12-14
X	BUTT HINGE APPLICATION	PAGE 14
XI	HEADER PREPARATION FOR C.O.C.	PAGE 15
XII	CLOSER ADJUSTMENTS	PAGE 15
XIII	CLEARANCE ADJUSTMENTS	PAGE 16
XIV	TIE ROD DOOR CUT LENGTH ALTERATIONS	PAGE 17

Minimizing Condensation

NOTE: Please reference EFCO's "Understanding Condensation" brochure which can be obtained through your EFCO representative.

Condensation will form on any surface when unfavorable conditions (interior temperature and relative humidity and exterior temperature) are present. When the formation of excessive condensation is a concern, it is highly recommended that a design professional is utilized to perform an analysis of the shop drawings to recommend the best installation methods. Please contact EFCO representative for information on EFCO's Thermal Analysis Services.

Many current installation practices lead to an increase in the possibility of the formation of condensation. Though not all inclusive, the list of examples below illustrates conditions under which condensation is likely to occur:

1. Bridging system thermal break with non-thermally broken metal flashing or lintels that are exposed to the exterior.
2. System exposure to cold air cavities.
3. Interior relative humidity levels not maintained at recommended levels, see EFCO's "Understanding Condensation" brochure.
4. Inadequate separation between system and surrounding condition at perimeter.
5. Product combinations during the shop drawing stage that result in bridging thermal breaks of one or all products involved.

NOTE: THESE INSTALLATION INSTRUCTIONS ARE A SUPPLEMENT TO THE APPROVED SHOP DRAWINGS AND MUST BE USED IN CONJUNCTION WITH THOSE DRAWINGS.

SECTION I: GENERAL NOTES AND GUIDELINES

I. HANDLING-STORING-PROTECTING ALUMINUM -

Tie rod doors and components are finished products that must be protected while in the packing boxes and after assembly. The following procedures and precautions are recommended.

A. PROTECTION AND STORAGE OF PACKAGED, UNASSEMBLED DOORS

1. Handle the boxes carefully, do not shake or drop.
2. Store the boxes off the ground.
3. If the boxes become wet, remove the contents, repack and move to a dry location.
4. Do not over stack boxes. Recommended capacity is four (4) boxes high.

B. PROTECTION AND STORAGE OF ASSEMBLED DOORS

1. If stored outside, protect the doors against the elements and other construction trades by using a well ventilated covering, as required.
2. Do not drop or drag the doors. This may cause racking or damage to the corner joinery.
3. If the doors are stacked together, be sure to allow adequate separation to protect the finish.

C. CHECK MATERIAL

Check all of the door material upon arrival for quantity and damage. Any visibly damaged material must be noted on the freight bill at the time of receipt. If a claim is required, the receiving party must process a claim with the freight carrier. If the delivery is by an EFCO truck, any damage or variance in the quantity of door units or boxes must be reported to the EFCO driver during the unloading process.

D. CLEANING THE DOOR UNITS

Cement, plaster, terrazzo, alkaline, and acid based materials used to clean masonry are very harmful to finishes and must be removed with water and mild soap immediately. Otherwise, permanent staining will occur. A spot test is recommended before any cleaning agent is used.

TOOLS NEEDED:

- 1.) 9/16" COMBINATION WRENCH for tie rod lock nuts
- 2.) 7/16" SOCKET WITH RATCHET for adjustable jack screw
- 3.) #3 TIPPED PHILLIPS SCREWDRIVER for butt hinge installation
- 4.) FLAT TIPPED SCREWDRIVER for offset pivot adjustment
- 5.) SOFT FACED MALLET for door glazing
- 6.) PUTTY KNIFE for glass adjustment
- 7.) LEVEL

SECTION II: DOOR PACKAGE IDENTIFICATION

AVAILABLE DOOR SIZES, COLORS, AND HARDWARE PACKAGES

BLANK T200 DOORS: INCLUDES 1/4" GLASS STOPS (NO HARDWARE OR HARDWARE PREPARATION)

SINGLE DOORS:

3'0" X 7'0" CLEAR, BRONZE, OR BLACK
 3'6" X 7'0" CLEAR, BRONZE, OR BLACK
 4'0" X 7'0" CLEAR, BRONZE, OR BLACK
 3'0" X 8'0" CLEAR, BRONZE, OR BLACK
 3'6" X 8'0" CLEAR, BRONZE, OR BLACK
 4'0" X 8'0" CLEAR, BRONZE, OR BLACK

PAIR DOORS:

6'0" X 7'0" CLEAR, BRONZE, OR BLACK
 7'0" X 7'0" CLEAR, BRONZE, OR BLACK
 8'0" X 7'0" CLEAR, BRONZE, OR BLACK
 6'0" X 8'0" CLEAR, BRONZE, OR BLACK
 7'0" X 8'0" CLEAR, BRONZE, OR BLACK
 8'0" X 8'0" CLEAR, BRONZE, OR BLACK

T200 DOORS WITH BUTT HINGES FOR SURFACE CLOSER:

INCLUDES MAXIMUM SECURITY DEAD LOCK, INTERIOR THUMB TURN CYLINDER, EXTERIOR CYLINDER, BUTT HINGES, EFCO EXTRUDED PUSH/PULLS, AND 1/4" GLASS STOPS. (INACTIVE LEAF OF PAIR DOORS INCLUDE FLUSH BOLTS)

SINGLE DOORS:

3'0" X 7'0" CLEAR, BRONZE, OR BLACK
 3'6" X 7'0" CLEAR, BRONZE, OR BLACK
 4'0" X 7'0" CLEAR, BRONZE, OR BLACK
 3'0" X 8'0" CLEAR, BRONZE, OR BLACK
 3'6" X 8'0" CLEAR, BRONZE, OR BLACK
 4'0" X 8'0" CLEAR, BRONZE, OR BLACK

PAIR DOORS:

6'0" X 7'0" CLEAR, BRONZE, OR BLACK
 7'0" X 7'0" CLEAR, BRONZE, OR BLACK
 8'0" X 7'0" CLEAR, BRONZE, OR BLACK
 6'0" X 8'0" CLEAR, BRONZE, OR BLACK
 7'0" X 8'0" CLEAR, BRONZE, OR BLACK
 8'0" X 8'0" CLEAR, BRONZE, OR BLACK

T200 DOORS WITH OFFSET PIVOTS FOR SURFACE CLOSER:

INCLUDES MAXIMUM SECURITY DEAD LOCK, INTERIOR THUMB TURN CYLINDER, EXTERIOR CYLINDER, OFFSET PIVOTS, EFCO EXTRUDED PUSH/PULLS, AND 1/4" GLASS STOPS. (INACTIVE LEAF OF PAIR DOORS INCLUDE FLUSH BOLTS)

SINGLE DOORS:

3'0" X 7'0" CLEAR, BRONZE, OR BLACK
 3'6" X 7'0" CLEAR, BRONZE, OR BLACK
 4'0" X 7'0" CLEAR, BRONZE, OR BLACK
 3'0" X 8'0" CLEAR, BRONZE, OR BLACK
 3'6" X 8'0" CLEAR, BRONZE, OR BLACK
 4'0" X 8'0" CLEAR, BRONZE, OR BLACK

PAIR DOORS:

6'0" X 7'0" CLEAR, BRONZE, OR BLACK
 7'0" X 7'0" CLEAR, BRONZE, OR BLACK
 8'0" X 7'0" CLEAR, BRONZE, OR BLACK
 6'0" X 8'0" CLEAR, BRONZE, OR BLACK
 7'0" X 8'0" CLEAR, BRONZE, OR BLACK
 8'0" X 8'0" CLEAR, BRONZE, OR BLACK

SECTION II: DOOR PACKAGE IDENTIFICATION (CONTINUED)

T200 DOORS WITH BUTT HINGES FOR CONCEALED OVERHEAD CLOSER:
INCLUDES MAXIMUM SECURITY DEAD LOCK, INTERIOR THUMB TURN CYLINDER, EXTERIOR
CYLINDER, BUTT HINGES, EFCO EXTRUDED PUSH/PULLS, AND 1/4" GLASS STOPS. (INACTIVE
LEAF OF PAIR DOORS INCLUDE FLUSH BOLTS)

SINGLE DOORS:

3'0" X 7'0" CLEAR, BRONZE, OR BLACK
 3'6" X 7'0" CLEAR, BRONZE, OR BLACK
 4'0" X 7'0" CLEAR, BRONZE, OR BLACK
 3'0" X 8'0" CLEAR, BRONZE, OR BLACK
 3'6" X 8'0" CLEAR, BRONZE, OR BLACK
 4'0" X 8'0" CLEAR, BRONZE, OR BLACK

PAIR DOORS:

6'0" X 7'0" CLEAR, BRONZE, OR BLACK
 7'0" X 7'0" CLEAR, BRONZE, OR BLACK
 8'0" X 7'0" CLEAR, BRONZE, OR BLACK
 6'0" X 8'0" CLEAR, BRONZE, OR BLACK
 7'0" X 8'0" CLEAR, BRONZE, OR BLACK
 8'0" X 8'0" CLEAR, BRONZE, OR BLACK

T200 DOORS WITH OFFSET PIVOTS FOR CONCEALED OVERHEAD CLOSER:
INCLUDES MAXIMUM SECURITY DEAD LOCK, INTERIOR THUMB TURN CYLINDER, EXTERIOR
CYLINDER, OFFSET PIVOTS, EFCO EXTRUDED PUSH/PULLS, AND 1/4" GLASS STOPS. (INACTIVE
LEAF OF PAIR DOORS INCLUDE FLUSH BOLTS)

SINGLE DOORS:

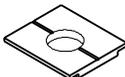
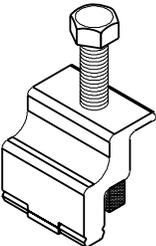
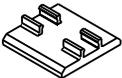
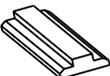
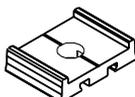
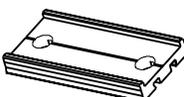
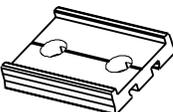
3'0" X 7'0" CLEAR, BRONZE, OR BLACK
 3'6" X 7'0" CLEAR, BRONZE, OR BLACK
 4'0" X 7'0" CLEAR, BRONZE, OR BLACK
 3'0" X 8'0" CLEAR, BRONZE, OR BLACK
 3'6" X 8'0" CLEAR, BRONZE, OR BLACK
 4'0" X 8'0" CLEAR, BRONZE, OR BLACK

PAIR DOORS:

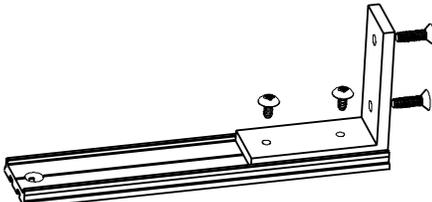
6'0" X 7'0" CLEAR, BRONZE, OR BLACK
 7'0" X 7'0" CLEAR, BRONZE, OR BLACK
 8'0" X 7'0" CLEAR, BRONZE, OR BLACK
 6'0" X 8'0" CLEAR, BRONZE, OR BLACK
 7'0" X 8'0" CLEAR, BRONZE, OR BLACK
 8'0" X 8'0" CLEAR, BRONZE, OR BLACK

NOTE: SINGLE DOORS ARE AVAILABLE AS HINGED RIGHT SWING OUT, HINGED LEFT SWING
OUT, HINGED RIGHT SWING IN, AND HINGED LEFT SWING IN WHEN HARDWARE
PREPARATIONS ARE SPECIFIED.

SECTION III: PARTS IDENTIFICATION

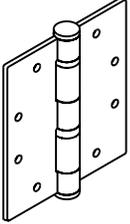
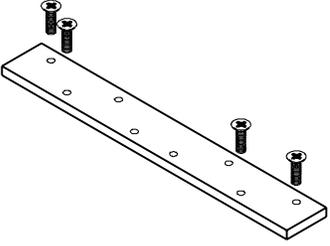
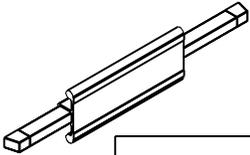
DETAIL	PART #	DESCRIPTION/ PARTS IN PACKAGE				
	M120 M151	36" TIE ROD 48" TIE ROD				
	IQT1	3/8"-16 SERRATED LOCK NUT				
	FS75	TIE ROD WASHER (TR200 ONLY)				
	OFFSET JACK SCREW ASSEMBLY					
	PART #	STILE	# / DESCRIPTION			
	K421	T200	HB17 - OFFSET JACK SCREW BLOCK WM62 - FOAM SPRING BLOCK IHP2 - OFFSET JACK SCREW 1/4"-20 X 3/4" HX-MS			
	K432	T300	HB17 - OFFSET JACK SCREW BLOCK WM62 - FOAM SPRING BLOCK M103 - OFFSET JACK SCREW 1/4"-20 X 2" HX-MS			
	HB18	1/4" OFFSET JACK SCREW CAP				
	H159	1/4" SETTING BLOCK				
	HB19	1" OFFSET JACK SCREW CAP				
	H348	1" SETTING BLOCK				
		PART #	STILE		PART #	STILE
TOP RAIL ADAPTORS		FS76	T200 (2 3/8" TOP RAIL)		FT13	T300 (3 1/2" TOP RAIL)
BOTTOM RAIL ADAPTORS		FS77	T200 (4" BOTTOM RAIL)		FT03	T200/T300 (7 1/2" BOTTOM RAIL)

10" BOTTOM RAIL ADAPTOR PACKAGE

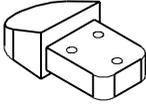
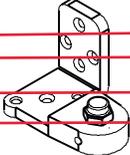
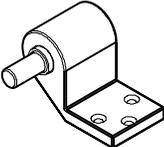
	PART #	STILE	# / DESCRIPTION
	K459	T200 T300	

NOTE: SEE PAGE 9 FOR APPROPRIATE APPLICATION.

SECTION III: PARTS IDENTIFICATION (CONT.)

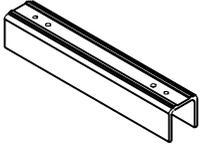
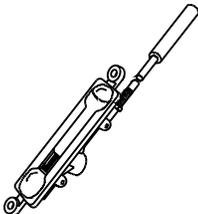
BUTT HINGE PACKAGES			
PART #		FINISH	DESCRIPTION
		HY90	CLR.
		HY92	BRZ.
			4" X 4 1/2" BUTT HINGES
BUTT HINGE BACKER PACKAGES			
PART #		FINISH	# / QUANTITY / DESCRIPTION
		K900	CLR. F528 - 1 - 4" X 4 1/2" BUTT HINGE BACKER PLATE M100 - 4 - #12-24 X 3/4" PH-FH-MS 18-8
		K901	BRZ. F528 - 1 - 4" X 4 1/2" BUTT HINGE BACKER PLATE M108 - 4 - #12-24 X 3/4" PL-FH-MS 18-8 OX
PUSH/PULL PACKAGES			
PART #		FINISH	DESCRIPTION
		K415	IHP2 - 1/4" - 20 X 3/4" HX-MS 18-8 PULL HANDLE ATTACHMENT
		K416	M104 - 1/4" - 20 X 2 1/4" PL-TH-MS 18-8 BOLT FOR PUSH BAR
		K417	M105 - 1/4" - 20 X 2 1/2" HX-MS 18-8 THRU BOLT FOR PUSH BAR ATTACH.
		K418	IHP2 - 1/4" - 20 X 3/4" HX-MS 18-8 PULL HANDLE ATTACHMENT
		K419	M104 - 1/4" - 20 X 2 1/4" PL-TH-MS 18-8 BOLT FOR PUSH BAR
		K420	M105 - 1/4" - 20 X 2 1/2" HX-MS 18-8 THRU BOLT FOR PUSH BAR ATTACH.

TOP, BOTTOM, AND INTERMEDIATE OFFSET PIVOT FRAME PORTIONS

PART #		FINISH/HANDED	DESCRIPTION
		H25C	CLR.
		HZ1N	BRZ.
			REGENT TOP PIVOT (TOP PIVOTS ARE NOT HANDED)
		HZ1L	CLR.-LH
		HZ1M	CLR.-RH
		HZ1Q	BRZ.-LH
		HZ1R	BRZ.-RH
			REGENT BOTTOM PIVOT
		HZ1J	CLR.-LH
		HZ1K	CLR.-RH
		HZ1O	BRZ.-LH
		HZ1P	BRZ.-RH

SECTION III: PARTS IDENTIFICATION (CONTINUED)

LOCKING HARDWARE COMPONENTS

DETAIL	PART #	FINISH	DESCRIPTION
	K110	MILL	LOCK SUPPORT CHANNEL FOR REGENT 2333 1 1/8" BACKSET DEAD LOCK (T300 BEVELED STILE ONLY)
	LOCK FACE PLATES		
	PART #	FINISH	DESCRIPTION
	HZ80	CLR.	RH
	HZ82	CLR.	LH
	HZ81	BRZ.	RH
	HZ83	BRZ.	LH
	HZ78	CLR.	RADIUS
HZ79	BRZ.	RADIUS	
	PART #	DESCRIPTION	
	HZ77	REGENT 2333 1 1/8" BACKSET DEAD LOCK	
	PART #	FINISH	DESCRIPTION
	HZ0N HZ0P	CLR. BRZ.	THUMB TURN CYLINDER
	PART #	FINISH	DESCRIPTION
	HZ0L HZ0M	CLR. BRZ.	KEYED DIFFERENT OR KEYED ALIKE (AS SPECIFIED ON FACTORY ORDER)
	PART #	FINISH	DESCRIPTION
	HZ1F HZ1G	CLR. BRZ.	EFCO STANDARD TOP & BOTTOM FLUSH BOLTS (USE AT INACTIVE DOOR LEAF @ PAIR DOORS)

SECTION IV: OFFSET JACK SCREW ASSEMBLY

STEP #1 OFFSET JACK SCREW BLOCK INSERTION

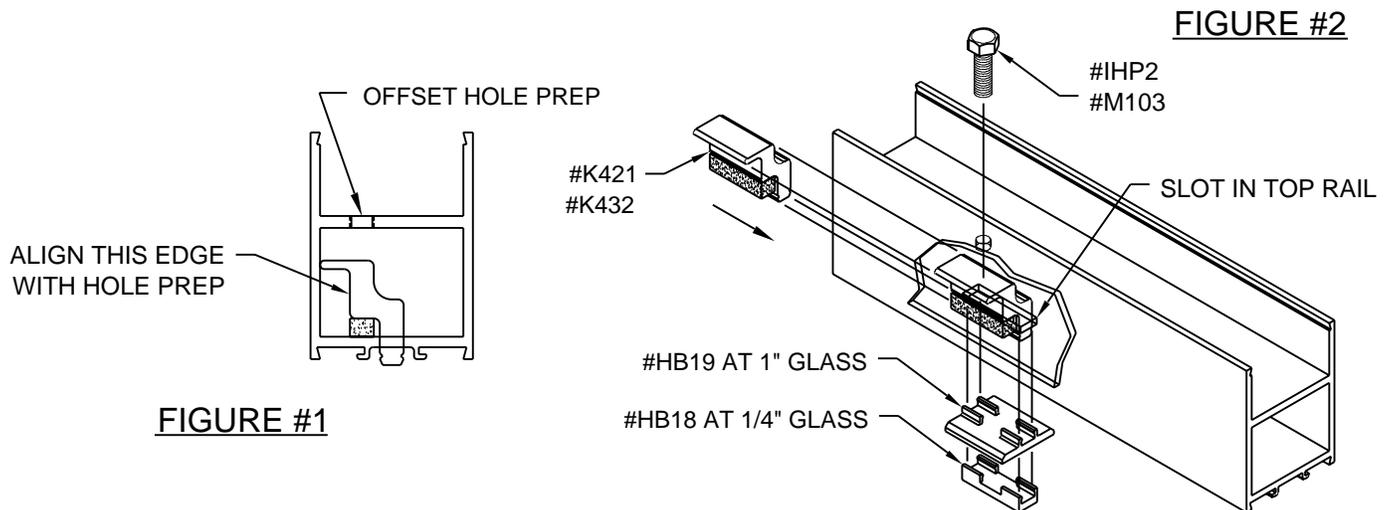
Insert the offset jack screw block assembly (#K421/K432) through the end of the top rail and down into the slot cut in the glazing side of the rail. Position the edge of the jack screw assembly toward the side of the top rail with the hole prep for the jack screw. See Figure #1.

STEP #2 JACK SCREW INSERTION

Insert one (1) jack screw (#IHP2/M103) per top rail. Tighten the screw enough to allow the jack screw cap (#HB18 or #HB19) to be snapped to the jack screw block (#K421/K432). See Figure #2.

STEP #3 JACK SCREW CAPS

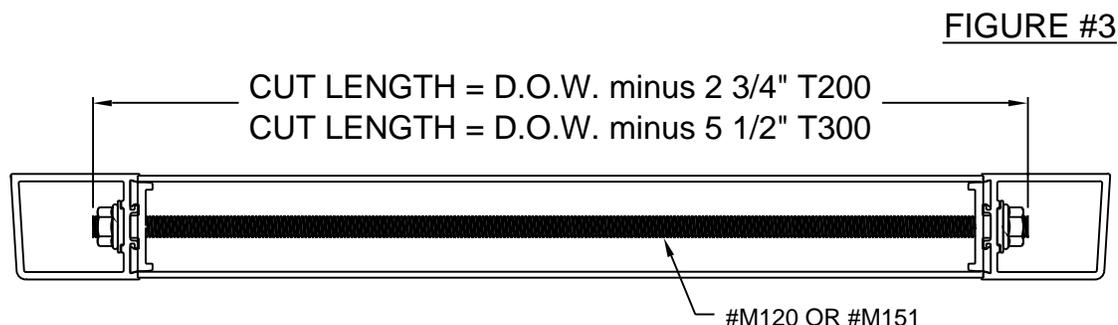
Determine which door glazing is used. For 1/4" glass, use the 1/4" jack screw cap (#HB18). For 1" glass, use the 1" jack screw cap (#HB19). Snap the correct jack screw cap to the jack screw block. Use one cap per top rail. See Figure #2 below.



SECTION V: TIE ROD CUT LENGTH

STEP #4 TIE ROD CUT LENGTH

Measure the tie rod (#M120 or #M151) as shown in Figure #3 and cut, if required, to the formulas below.



SECTION VI: TIE ROD ASSEMBLY

STEP #5 TOP AND BOTTOM RAIL ADAPTOR INSERTION

Slide the top rail adaptors (#FS76) into the vertical stiles and center the hole in the adaptors over the top hole in the door stiles, as shown in Figure #4.

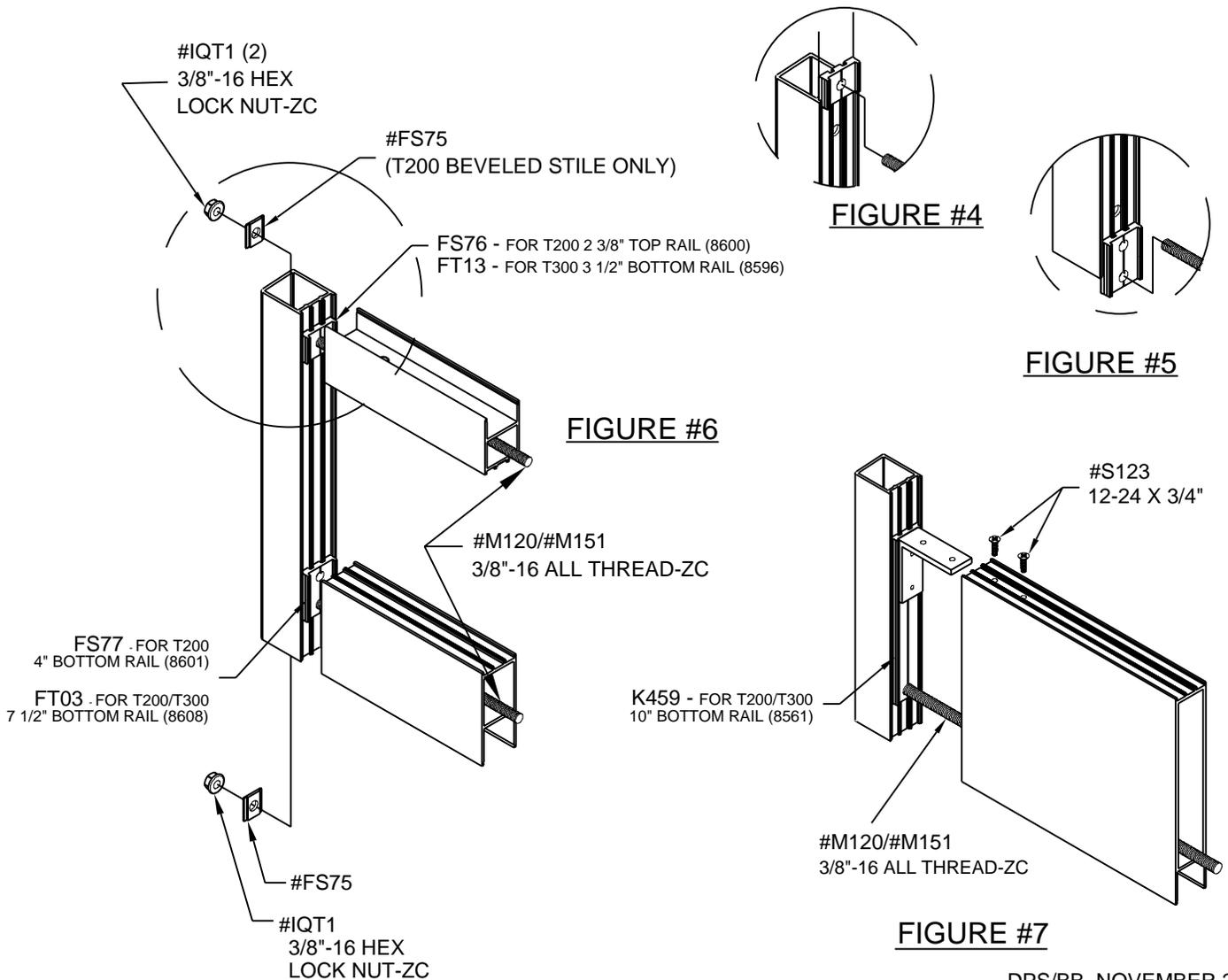
Note: Position the bottom rail adaptors by aligning the bottom hole of the adaptor with the hole in the bottom of the stile, as shown in figure #5.

STEP #6 TIE ROD AND RAIL ASSEMBLY

Insert the tie rod (#M120 or #M150) through the adaptor and door stile. Apply two (2) washers (#FS75) and two (2) (#IQT1) lock nuts per rail to the tie rod. Note: The washer is required at the beveled stile T200 ONLY. Align the top and bottom rails over the tie rods and rail adaptors and install the lock nuts and washers to the opposing stile, as shown in Figure #6. Use a 9/16" combination wrench and tighten the lock nuts at each corner.

CAUTION: Over tightening the lock nuts may cause the door rails to bow.

Note: Follow the instructions above for 10" bottom rail assembly, and fasten the 10" bottom rail to the K459 10" bottom rail adaptor clip with the supplied S123 #12-24 x 3/4" fasteners (Figure 7). Attachment of the 10" bottom rail is through the top of the rail in prefabricated countersink holes that provide the correct location for the S123 fasteners.



SECTION VII: GLAZING AND REGLAZING DOORS

STEP #7 SETTING BLOCKS APPLICATION

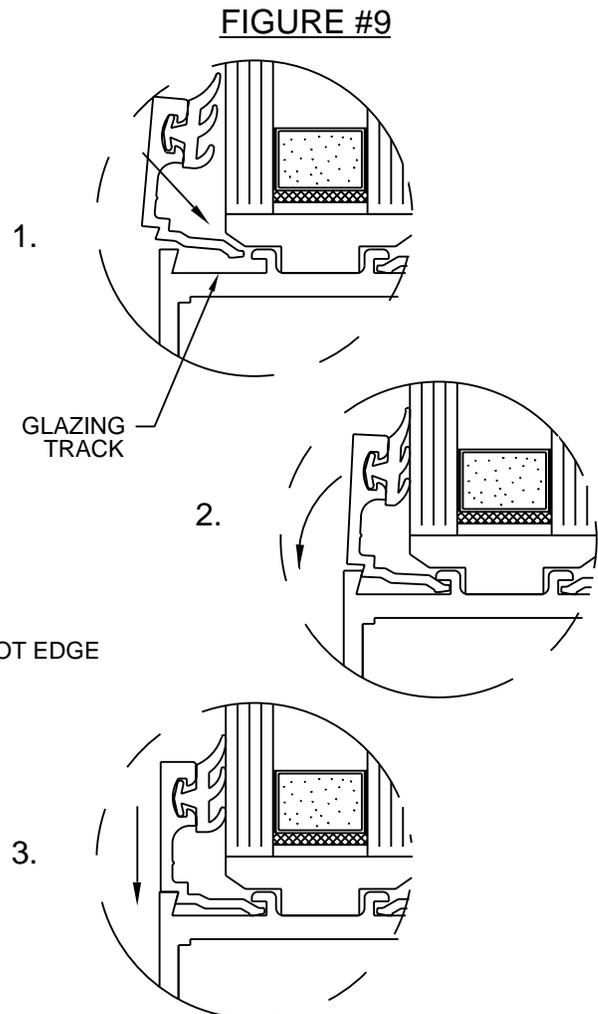
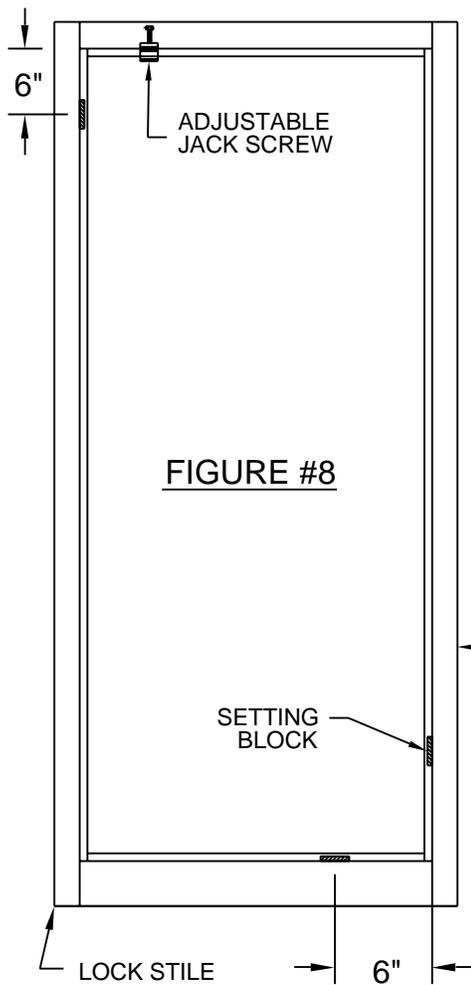
Insert three (3) setting blocks (#H348 or #H159) at approximately 6" from the inside corners. Setting blocks are used at the door stiles and the bottom rail only. An adjustable jack screw will be used at the top rail. Refer to Figure #1 on page 8. If required, apply silicone to the back of the setting blocks to keep them in the correct position until the glass is installed. See Figure #8.

STEP #8 CLEANING THE GLAZING TRACK

Check to ensure that the glazing surface of the door and glazing bead are free from metal shavings. Metal shavings may be blown out with air or brushed out. See Figure #9.

STEP #9 INSTALLING GLASS STOPS

The glass stops are designed to be inserted into the glazing tabs in the door rails and then rotated down to lock into place. See Figure #9. Use a soft faced mallet, if needed. Hit on the corner of the glass stop, making sure not to distort the metal. Start at one end and work toward the other end of the glass stop.



SECTION VIII: PUSH/PULL ASSEMBLY

STEP #10 PUSH BAR END CAPS

If required, cut the push bar to length. The push bar must be cut from the hinge end. Consult the chart below for the correct cut length formula. Insert the push bar end caps into the ends of the push bar as shown in Figure #10. **Note:** To ensure a tight fit, EFCO recommends applying a thin coat of two part epoxy to the legs of the end caps prior to being inserted into the push bar. See Figure #10.

STEP #11 PULL HANDLE BOLTS

Start one (1) 1/4"-20 x 3/4" (#IHP2) hex head bolt into the factory installed riv nut located in the lock stile. Insert one (1) 1/4"-20 x 2 1/2" (#M105) hex head bolt into the predrilled hole in the lock stile.

STEP #12 PUSH BAR APPLICATION

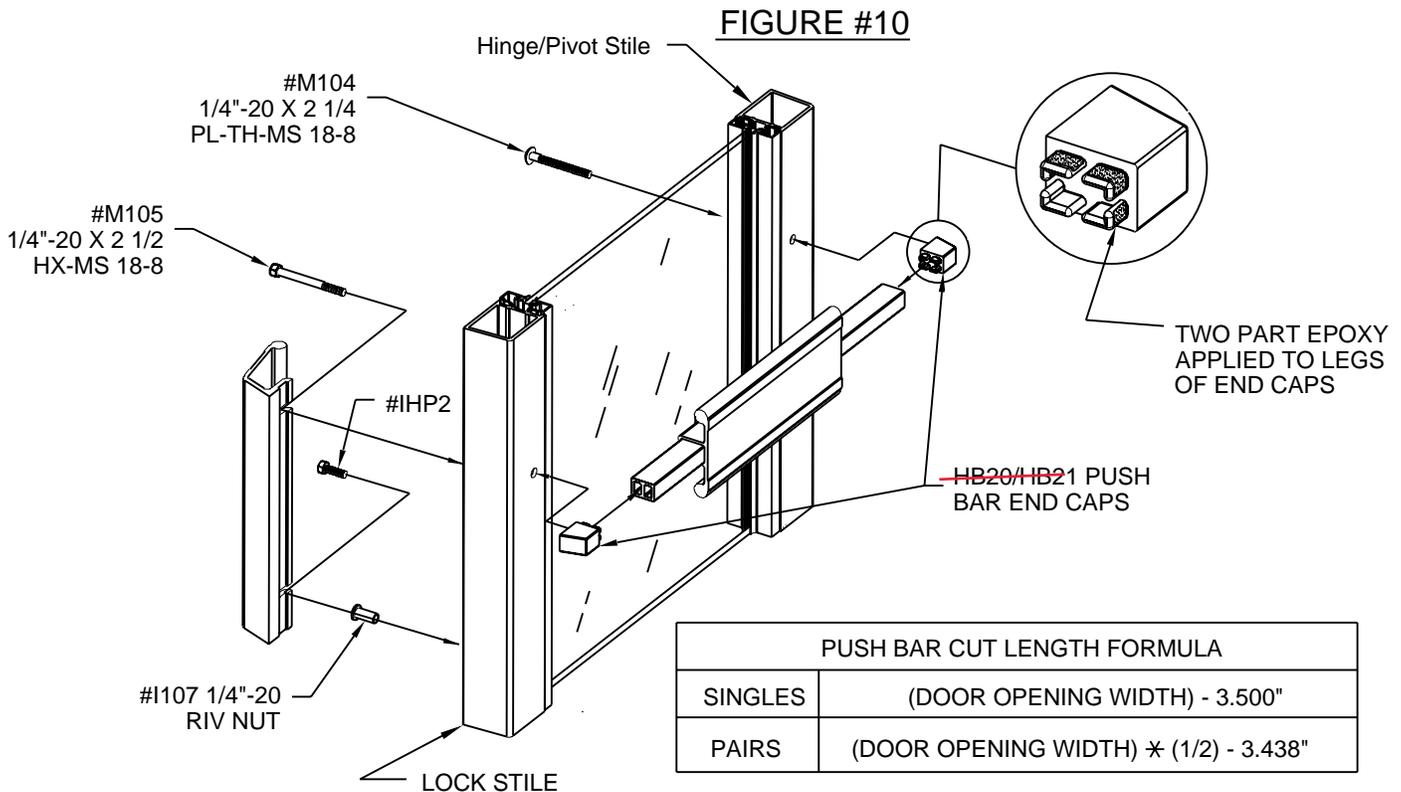
Hold the push bar to the door and start the hex head bolt (#M105) at the lock stile as shown in Figure #10. After installing the hex head bolts (#IHP2 and #M105), leave hex head bolts loose, with a minimum 5/16" gap. This will allow the pull handle to slide under the hex head bolt.

STEP #13 LOCK STILE BOLT

Continue holding the push bar to the door and align the hole on the hinge stile with the hole in the mounting cap. Attach the hinge stile of the push bar with the 1/4"-20 x 2 1/4" PL-TH-MS (M104) dress bolt shown in Figure #10.

STEP #14 PULL HANDLE APPLICATION

Slide the pull handle under the hex head bolts at the lock stile and tighten.



SECTION IX: OFFSET PIVOT APPLICATION

STEP #15 SETTING THE DOOR INTO THE FRAME

The top pivot will be attached to the door stile and requires no adjustment after the door has been set into the frame. All adjustments to the door are by the intermediate offset pivot if used, and the bottom offset pivot. To set the door, depress the top pivot pin and hold down with your index finger. Place the door portion of the bottom pivot onto the frame portion of the bottom pivot. Align the pin in the door portion of the top pivot with the hole in the frame portion of the top pivot and release the pin as shown in Figure #11.

NOTE: If an intermediate offset pivot is used, retract the pin in the frame portion of the intermediate pivot before releasing the pin in the top pivot. Use a flat screwdriver to remove the cap on the bottom of the intermediate pivot and turn the pin counterclockwise to lower. See page 13, Step #16 for details.

DOOR REMOVAL

To remove the door, remove the cap and lower the pin in the intermediate pivot, if used. If the pin will not lower, remove the screws from the frame portion. Open the door to 90° and depress and rotate the pin toward the pivot edge of the door to lock in the retaining pin as shown in Figure #12. After the top pivot pin is clear from the frame portion, the intermediate pivot will slide free from the frame. See Figure #12.

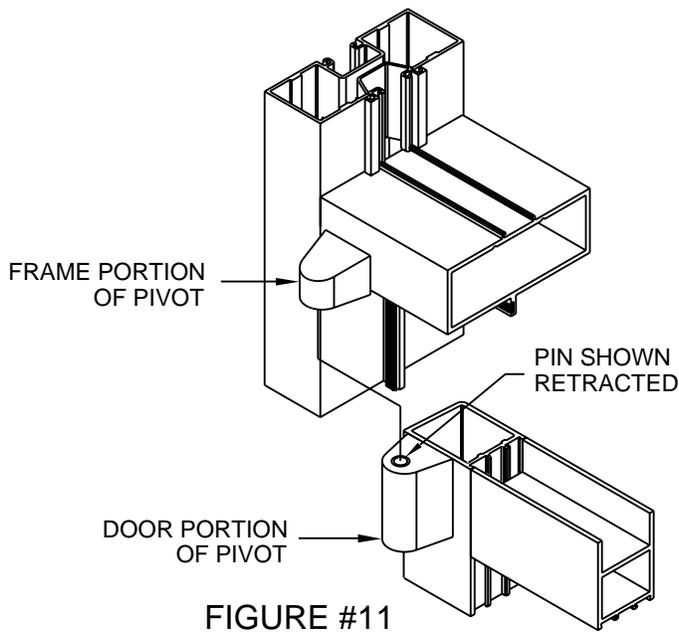


FIGURE #11

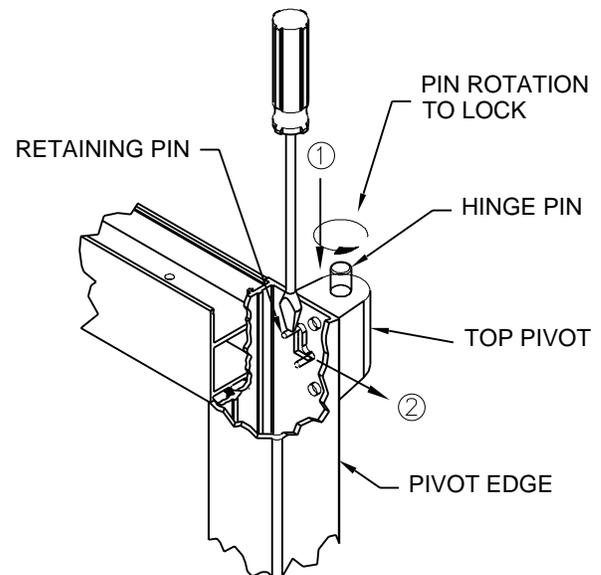


FIGURE #12

SECTION IX: OFFSET PIVOT APPLICATION (CONT.)

STEP #16 SETTING THE DOOR INTO THE FRAME

Use a flat tipped screwdriver to remove the cap from the bottom of the intermediate offset pivot. Turn the pivot pin counterclockwise to lower the pin. After the pin has been retracted, rotate the door open to 90° and set the door on the bottom pivot. Then, raise the pivot pin on the intermediate pivot by turning the pivot pin clockwise. See Figure #13.

DOOR REMOVAL

Remove the pivot caps and retract the pivot pins. Open and tilt the door away from the pivot jamb to clear the frame pivots.

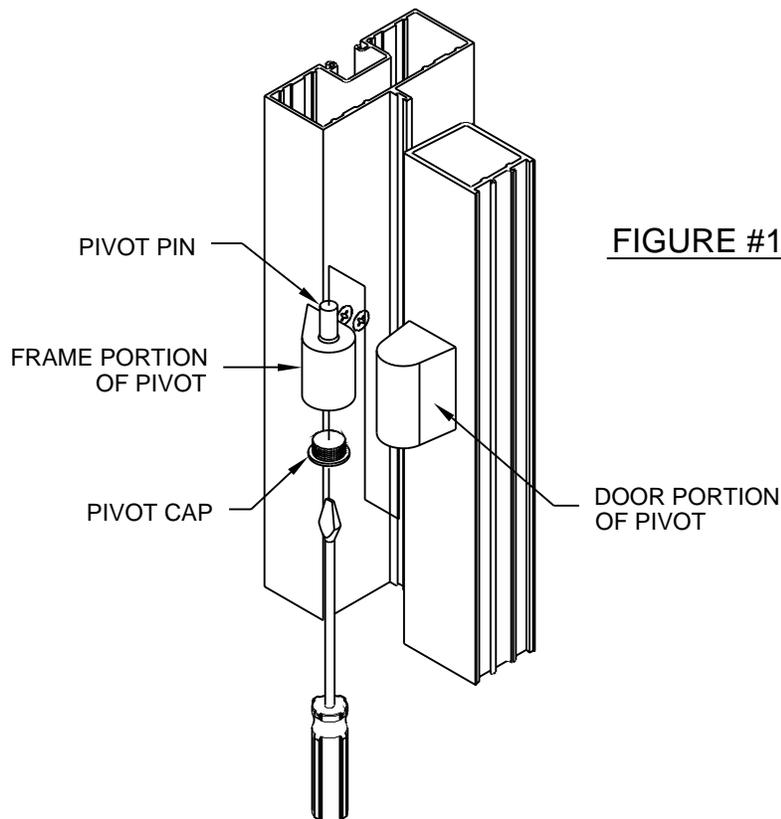
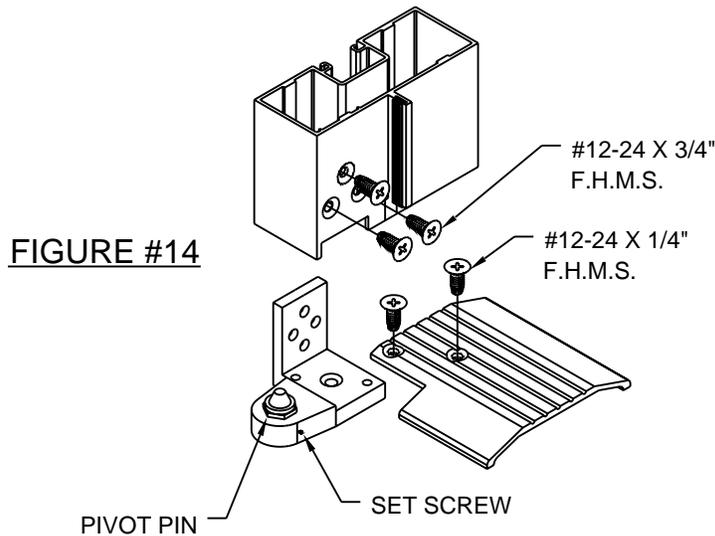


FIGURE #13

SECTION IX: OFFSET PIVOT APPLICATION (CONT.)

STEP #17 BOTTOM OFFSET PIVOT

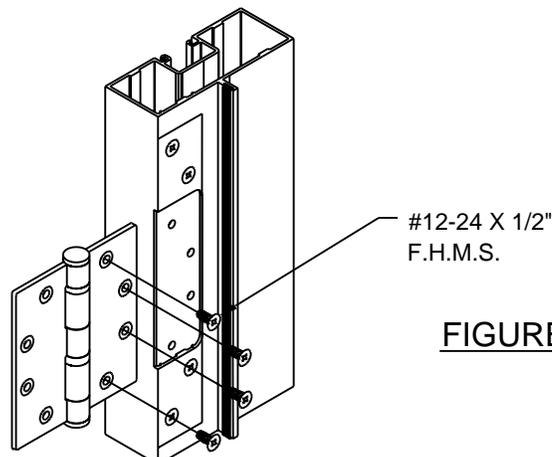
Attach the bottom offset pivot frame portion to the bottom of the jamb using three (3) #12-24-1/4" F.H.M.S., and attach the threshold to the bottom pivot with two (2) #12-24 x 1/4" PL-FH-MS. Adjust the door clearance by turning the pin clockwise to lower the door, and counterclockwise to raise the door. After the proper door clearances are reached, tighten the set screw on the pivot with a 3/32" Allen wrench. See Figure #14.



SECTION X: BUTT HINGE APPLICATION

STEP #18 BUTT HINGE INSTALLATION

Be sure the butt hinge reinforcing plate in the frame is in the correct position. Align the hinged side of the door to the hinge reinforcing plate in the frame. Using a #3 tipped screwdriver, attach the hinges to the frame with four (4) #12-24 x 3/4" F.H.M.S. as shown in Figure #15.



SECTION XI: HEADER PREPARATION FOR C.O.C.

STEP #19 HEADER PREPARATION

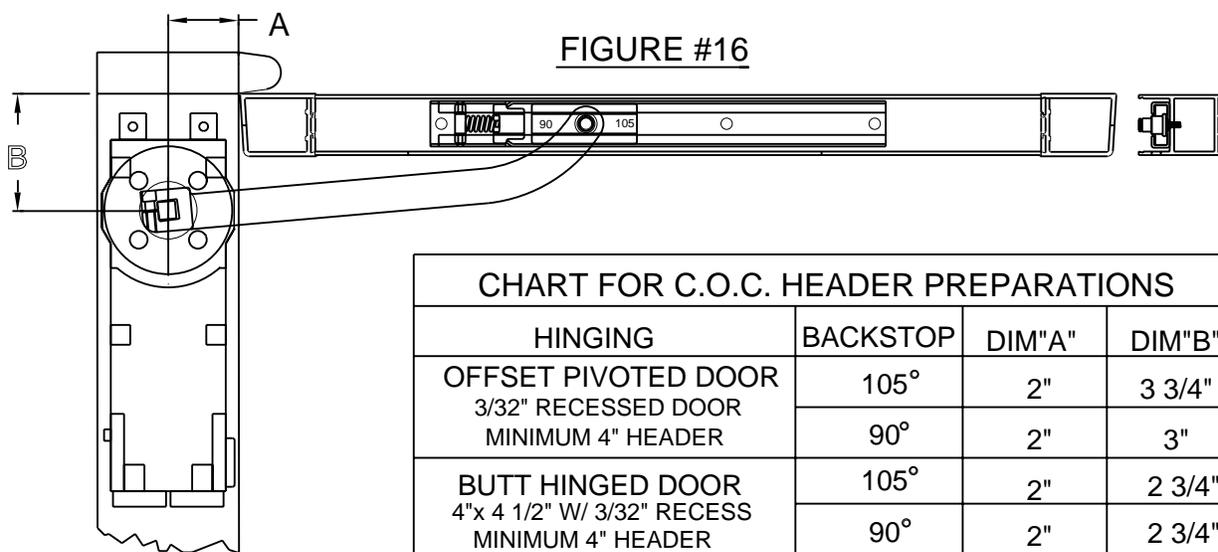
For C.O.C. header preps, see chart below for dimensions based on application.

1. DIMENSION 'A', face of jamb to center line of spindle must be maintained.
2. DIMENSION 'B', pivot or hinge side of header to center line of spindle regardless of header width. See Figure #16.

STEP #20 C.O.C. INSTALLATION

1. Install the closer in the prepared header.
2. Install the slide in the slide channel with the end marked 90° toward the hinge edge of the door, if the 90° backstop closer is used, or with the end marked 105° backstop closer.
3. Place the arm on the closer spindle and tighten the 1/4"-20 socket head screw securely. Rotate the arm from center as if the door was open. Place the hole in the arm over the pin in the slide and secure with the 'C' clip.

NOTE: For other information on C.O.C.'s, contact EFCO's Manufacturing Department.



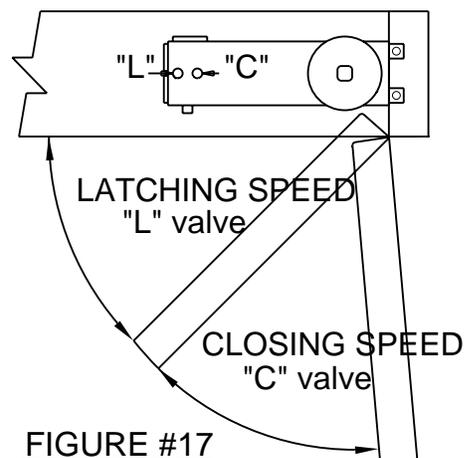
SECTION XII: CLOSER ADJUSTMENTS

STEP #21 LATCHING AND CLOSING SPEEDS

- A. The latch and closing speeds have been preset, but may require further adjustment. See Figure #17.
- B. The closing valve is preset to the minimum speed.
- C. To increase latching and/or closing speed, turn the valves counterclockwise.



- D. To decrease latching and/or closing speed, turn the valves clockwise.



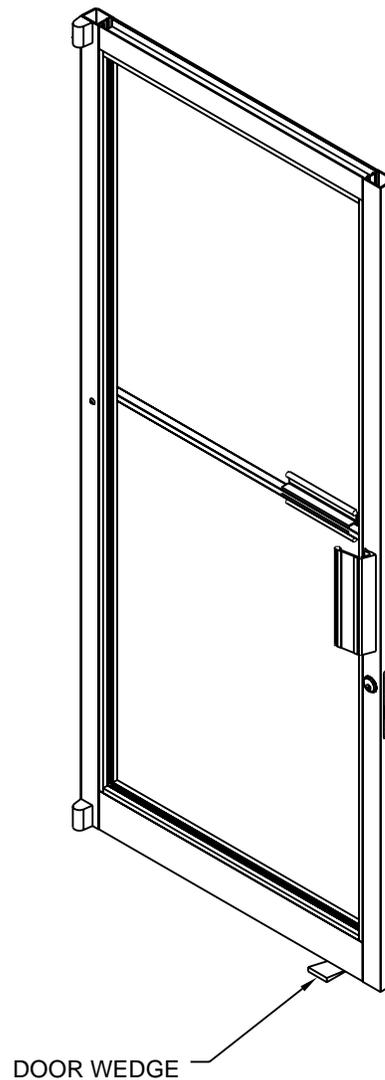
SECTION XIII: CLEARANCE ADJUSTMENTS

STEP #22 MINOR CLEARANCE ADJUSTMENT

Open and support the door with a wedge. Use the wedge to raise the door to the desired position. With a 7/16" socket and ratchet, turn the jack screw clockwise until pressure is applied to the glass. To lower the corner, turn the jack screw counterclockwise. Readjust the wedge and tighten the jack screw until pressure is applied to the glass. The door can be adjusted again, if required. See Figure #18.

Note: Do not attempt to raise the door by the jack screw. Damage may occur to the jack screw or door glass. The jack screw is used to hold the glass and door in position. Use the wedge to raise the door.

FIGURE #18



SECTION XIV: TIE ROD DOOR CUT LENGTH ALTERATIONS

STEP #23 LOCK STILE LENGTH ALTERATIONS

The minimum cutoff for the lock stile is 9/16" as shown in Figure #19. The minimum cutoff needs to be taken from the top of the lock stile only. This will prevent having to relocate the M.S. lock.

STEP #24 HINGED STILE LENGTH ALTERATIONS

The minimum cutoff for the hinged stile is 9/16" as shown in Figure #20. When using a C.O.C., the cutoff must be taken from the bottom of the hinged stile only. This will prevent interference with the preps for the concealed overhead closer at the top of the stile.

STEP #25 TOP RAIL LENGTH ALTERATIONS

The maximum cutoff for the top rail is 1 1/16" as shown in Figure #21. The cutoff must be taken from the offset jack screw end so as not to interfere with the concealed overhead closer prep at the hinged end of the rail.

Note: Fabrication done in the field must bypass the factory drilled holes by 1/2 the diameter of the hole. There is no minimum cutoff length for the bottom rail.

