

Oldcastle BuildingEnvelope™

**MS-375TC , WS-500TC
THERMAL COMPOSITE ENTRANCE
INSTALLATION MANUAL**

TABLE OF CONTENTS

General Information.....	Sheet
Product Use.....	1
Protection and Storage.....	1
Preparation of Opening.....	1
Check Material.....	2
Field Conditions.....	2
Cleaning Materials.....	2
Suggestions for Improving System Thermal Performance.....	2
Door Size Warranty Guidelines.....	2
Door & Frame Checklist.....	3
Glass Sizing.....	4
Standard Hardware Locations.....	5
Floor Slab Slope Guidelines.....	5
Door Handing.....	6
Door Frame Assembly.....	7-10
Door Frame Installation.....	11-14
Glazing Door.....	15
Installation of Hinges & Pivots.....	16
Final Adjustments to Door.....	17
Adjustments to Pair of Doors (Astragal Adjustment).....	18
Parts List.....	19

GENERAL INFORMATION

PRODUCT USE

The MS-375TC and WS-500TC Thermal Composite Doors are intended for installation by glazing professionals with appropriate experience. Subcontractors without experience should employ a qualified person to provide field instruction and project management.

Oldcastle BuildingEnvelope® does not control the application or selection of its product configurations, sealant or glazing material and assumes no responsibility thereof. It is the responsibility of the owner, architect and installer to make these selections in strict compliance with applicable laws and building codes. Consult sealant manufacturer for review and recommendation of sealant application. Follow sealant manufacturer's recommendations and literature for proper installation.

The air and water performance of the Thermal Composite Door system is directly related to the completeness and integrity of the installation process of both the seal installed at the horizontal to vertical connections the glazing gasket installed at the interior side of the glass. To insure top performance of this system, particular attention should be given to the following procedures:

1. Surfaces to be sealed should be cleaned with isopropyl alcohol or solvent and dried as recommended by sealant manufacturer to remove dirt and cutting oils. Sealant at horizontal to vertical connections should be a minimum 3/16" diameter bead on surfaces where horizontal abuts vertical per glazing instructions herein. No gaps should be visible in the sealant. Exposed surfaces should be cleaned after installing the horizontal. Inspect joint for complete sealant contact, especially where the horizontal meets the face of the vertical member. Repair joint as required.
2. The glazing gasket should be installed so as to avoid stretching, buckles or tears. Corners must be cut to form a tight joint. To avoid damage to gasket and corner joints during glazing, glass should be level and straight during installation.

Variations on the details shown are inevitable and are not the responsibility of Oldcastle BuildingEnvelope® when drawn by others. Oldcastle BuildingEnvelope® strongly encourages its customers to use its Engineering department for calculations and shop drawings.

Consult glass manufacturer for correct setting block location and length for glass sizes in excess of 40 sq.ft.

PROTECTION AND STORAGE

Handle all material carefully. Do not drop from the truck. Stack with adequate separation so the material will not rub together. Store material off the ground, protecting against the elements and other construction hazards by using a well ventilated covering. Remove material from package if wet or located in a damp area. For further guidelines consult AAMA publication "Care and Handling of Architectural Aluminum From Shop to Site."

PREPARATION OF OPENING

Prior to installation of a door and frame, it is important to consider your surrounding construction.

Is the opening large enough to handle the door and frame that was ordered?

Allow for at least 1/4" shim space all around the frame.

Are there any obstructions present within the opening?

Is there sufficient structure to anchor the frame?

Is the support in the proper location?

What is the sill condition?

Is there a ledge?

Is there enough space to get anchorage into the floor slab?

Is the floor slab sloping away from the door so that it may operate properly?

Be sure the slab is level from side to side at door area.

Threshold will be a thermal composite 4 1/2" wide, 1/2" tall sloped from back to front.

If there is a problem with location of opening or slab level, please contact your general contractor, in writing requesting a correction. DO NOT begin installation until conditions are resolved.

GENERAL INFORMATION

CHECK MATERIAL

Check glass dimensions for overall size as well as thickness. Oldcastle BuildingEnvelope® cannot be held responsible for gaskets that are not water tight due to extreme glass tolerances. The Thermal Door wall system is designed to accommodate glass or panels measuring 1" in thickness (+/- 1/32").

Check all material upon arrival at job site for quality and to determine any shipping damage.

Check doors upon arrival to insure top and bottom seals are in place and not damaged in shipping. (ref.pg.3)

Using the contract documents, completely check the surrounding conditions that will receive your materials.

Notify the general contractor by letter of any discrepancies before proceeding with the work. Failure to do so constitutes acceptance of work by other trades.

Check shop drawings, installation instructions, architectural drawings and shipping lists to become familiar with the project. The shop drawings take precedence and include specific details for the project. The installation instructions are of a general nature and cover the most common conditions. Due to varying job conditions all sealant must be approved by the sealant manufacturer to insure it will perform per the conditions shown on the instructions and shop drawings. The sealant must be compatible with all surfaces in which adhesion is required, including other sealant surfaces. Use primers where directed by sealant manufacturer. Properly store sealant at the recommended temperatures and check sealant for remainder of shelf life before using.

FIELD CONDITIONS

All material to be installed must be plumb, level and true. Aluminum to be placed in direct contact with masonry or incompatible material should be isolated with a heavy coat of zinc chromate, bituminous paint or non-metallic material.

After sealant is set and a representative amount of the wall has been glazed (250 sq.ft. or more), perform a water hose test in accordance with AAMA 501.2 specifications to check installation. On large projects the hose test should be repeated during the glazing operation.

CLEANING MATERIALS

Cement, plaster terrazzo, alkaline and acid based materials used to clean masonry are very harmful to finishes. Any residue should be removed with water and mild soap immediately or permanent staining will occur. A spot test is recommended before any cleaning agent is used. Refer to the Architectural Finish Guide in the Detail Catalog.

SUGGESTIONS FOR IMPROVING SYSTEM THERMAL PERFORMANCE

To maintain or improve your wall installation the following items should be considered.

- A. Blinds or drapes prevent warm air from adequately flowing over the window surface.
- B. Warm air ventilators too far from the window will not adequately wash the window with air to prevent condensation.
- C. In extreme conditions the fan of the heating system should not cycle on and off, but should run continuously.
- D. Some heating systems have a water injection feature that can raise humidity levels. The higher the humidity levels the more likely condensation or frost will form. Raising the temperatures and reducing humidity will usually solve the problem.
- E. On rare occasions an extremely cold storm may cause frost to appear on the glass framing. A space heater and electric fan blowing along the plane of the window wall can reduce or eliminate this temporary condition.

DOOR SIZE WARRANTY GUIDELINES

The following are Oldcastle BuildingEnvelope® standard warranty guidelines and recommendations for special size doors (all sizes are maximums):

1. Doors with 1" glass = 4'-0" x 9'-0" / Minimum 1 1/2 pair of butt hinges

DOOR & FRAME CHECKLIST

Inspect door to make sure no damage occurred in shipping. The door should have a seal installed in the top rail. SEE FIGURE 1. GP-157 door seals will be shipped loose in package, install in TD-100 gasket retainers. SEE FIGURE 2. TD-102 sweeps will be shipped loose and sent long for cutting to size. See instructions below for cutting and installation. If these are not in place or have been damaged, install as shown below or contact your dealer for replacement. Additional length will need to be cut from TD-102 to clear offset pivots and gear hinges. The door package should also contain the door glass stops hooked in place, a roll of FG-1133 gasket, hinge hardware and your push pull or panic hardware as required for your project.

Remove door frame from package and inspect for damage. The door package should contain a package of shear blocks and fasteners for frame assembly. There will also be a threshold, threshold clip package and various fasteners for attachment of threshold to frame. A standard package of anchor screws and inserts may also be in the frame packaging, but project requirements may require use of other fasteners at this area. Packaging does not contain any fasteners for securing your door frame to the opening of your wall system or building.

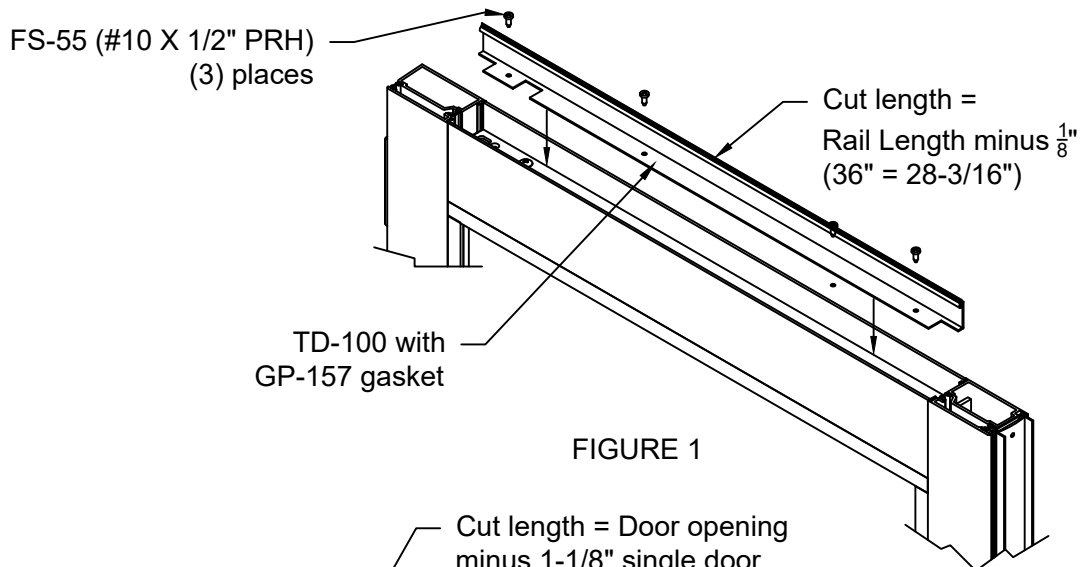


FIGURE 1

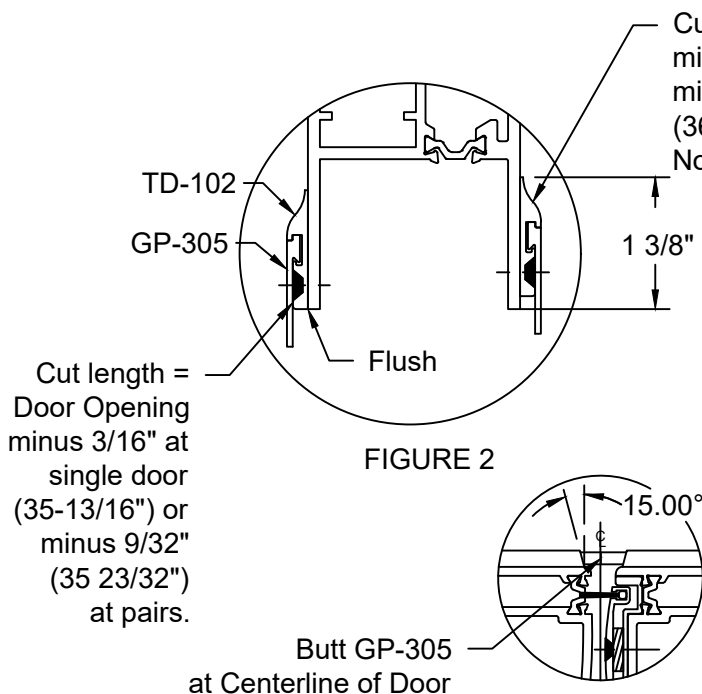


FIGURE 2

Note:
 TD-102 will be centered on single door and GP-305 sweep cut D.O minus 1".
 TD-102 will be located at 3/8" from hinge side of door and GP-305 sweep will be cut so it touches at center of pair of doors.
 Bed TD-102 in sealant at interior and exterior of door.

GLASS SIZING

Thermal doors are available as a single, pair or sets of single doors that are separated by a 2" common lock or 5 1/2" hinge jamb. Two optional bottom rails are available; 8" or 10". There are 4" and 8" muntins available for the Thermal Door. Size glass as listed below.

Calculate glass size based on Door Opening as shown below.

Standard Size of Medium Stile Door:		Standard Size of Wide Stile Door:	
8" Bottom Rail	10" Bottom Rail	8" Bottom Rail	10" Bottom Rail
36 x 84 = 27 7/8" x 70 3/4"	27 7/8" x 68 3/4"	25 3/8" x 70 3/4"	25 3/8" x 68 3/4"
36 x 96 = 27 7/8" x 82 3/4"	27 7/8" x 80 3/4"	25 3/8" x 82 3/4"	25 3/8" x 80 3/4"
42 x 84 = 33 7/8" x 70 3/4"	33 7/8" x 68 3/4"	31 3/8" x 70 3/4"	31 3/8" x 68 3/4"
42 x 96 = 33 7/8" x 82 3/4"	33 7/8" x 80 3/4"	31 3/8" x 82 3/4"	31 3/8" x 80 3/4"

Non-Standard Sizes:

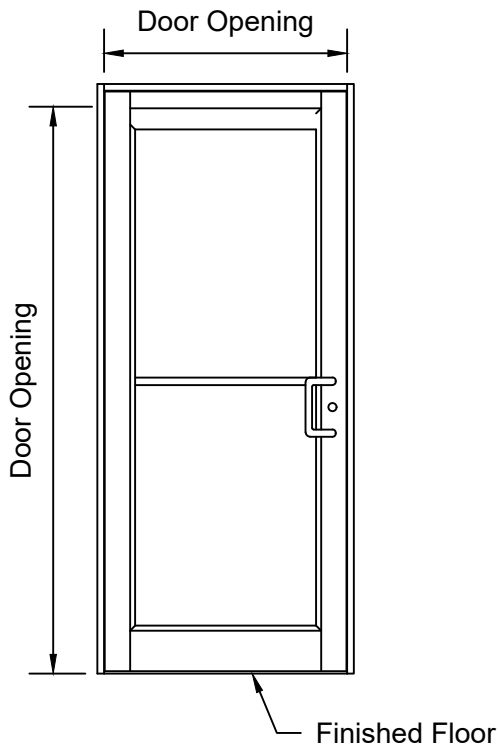
Horizontally: Door Opening minus 8 1/8" (MS) or 10 5/8" (WS)

Vertically: 8" bottom rail = Door Opening minus 13 1/4"
 10" bottom rail = Door Opening minus 15 1/4"

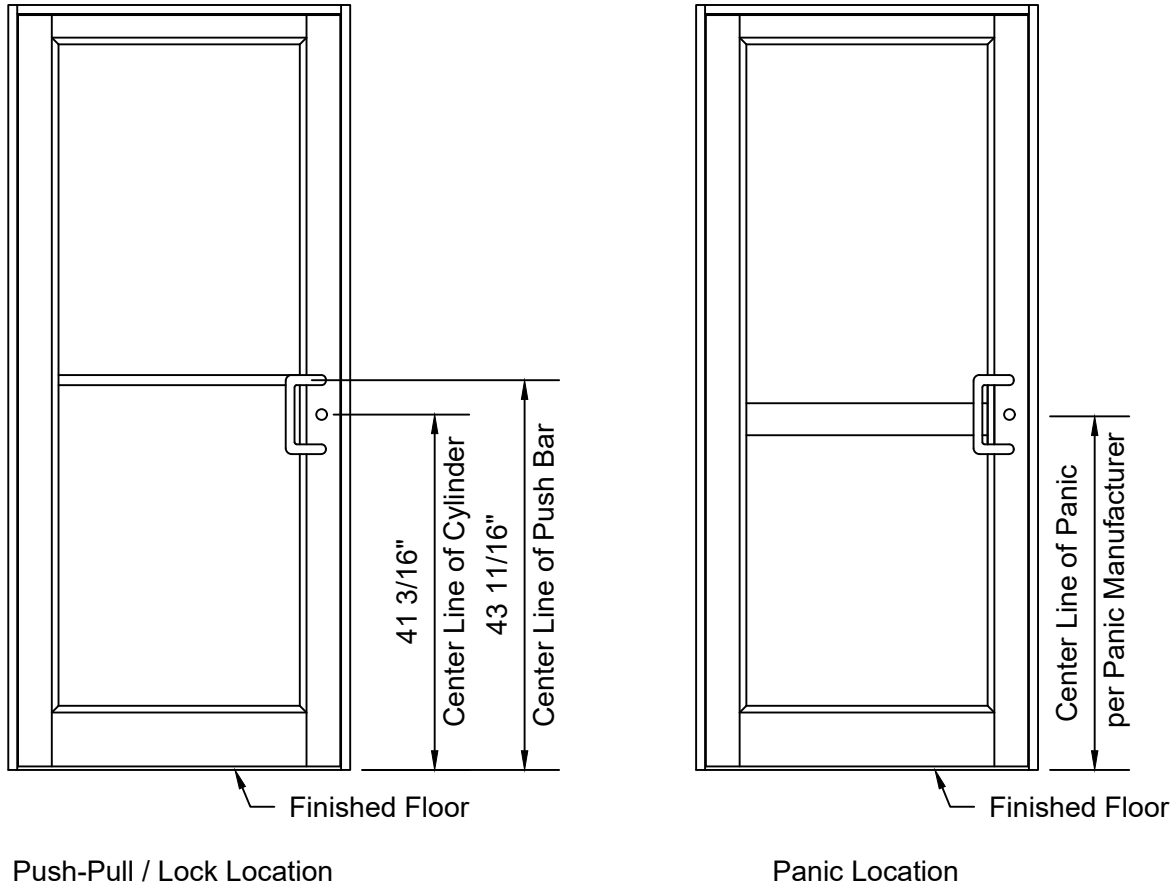
Pairs use formula above by dividing width/2 for equal pairs.

Doors with muntins will be calculated by subtracting muntin width and 7/16" for setting blocks on each side of muntin. Example: 4" muntin plus 7/16" or 4 7/16" total. Actual glass size will depend on location of muntin within opening.

Thermal Doors will use the FG-3534 sub-frame standard. This sub-frame is 1" wide x 4 1/2" deep. Opening in wall should be Door Opening plus 2 1/2" horizontally and door opening plus 1 1/4" vertically minimum. Framing is also available for the Series 3000 Center Set MultiPlane and 3000XT Storefront. Center hung and in-swing doors are not available. All doors shall use a minimum of 1 1/2 pair of butt hinges, 1-1/2 pair of pivots or FM-SLI continuous gear hinge.

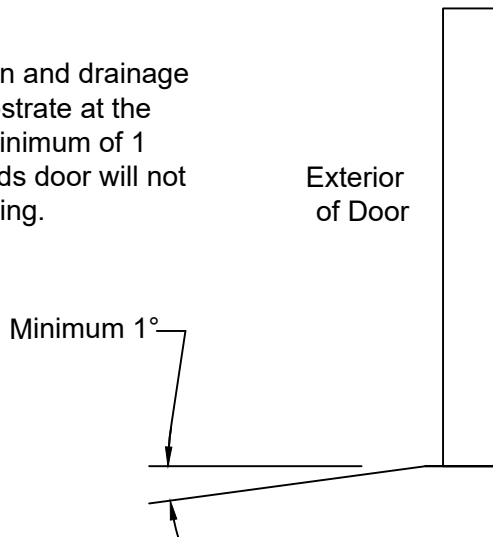


STANDARD HARDWARE LOCATIONS



FLOOR SLAB SLOPE GUIDELINES

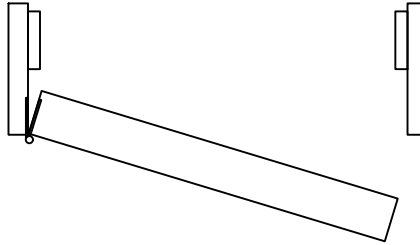
In order to ensure proper operation and drainage of water from face of door the substrate at the exterior of door must slope at a minimum of 1 degree. If substrate slopes upwards door will not open and water will flow into building.



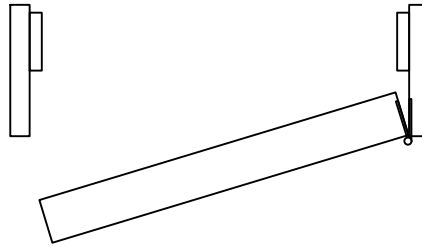
DOOR HANDING

Hand and Details of Doors -- U.S. Standardization Procedure

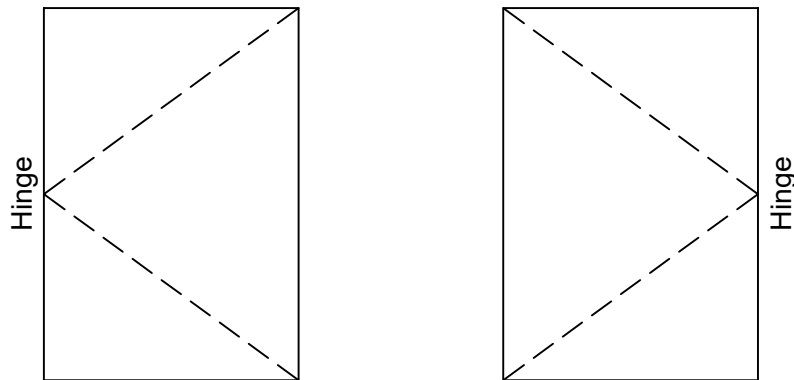
Thermal Doors are available as Out Swing only.



For Hardware: Left Hand, Reverse Bevel (LHR)
Oldcastle BuildingEnvelope® : Hinged Left, Swing Out (HLSO)
Simplified: Right Hand



For Hardware: Right Hand, Reverse Bevel (RHR)
Oldcastle BuildingEnvelope® : Hinged Right, Swing Out (HRSO)
Simplified: Left Hand



Elevation from Exterior of Doors, showing swing.
Arrows point to hinge side.

DHI definition of hardware (door) handing:

The hand of doors is determined from the outside of the door. The outside of a cupboard, bookcase, etc. is room side. The outside of entrance doors is the weather side.

If standard outside of a door (facing the door) and the butt hinges are on your right, it is a Left Hand Door; if on the left it is a Right Hand Door. If the door opens FROM you (is pushed open) it is a Regular Bevel; if it opens TOWARD you (is pulled open) it is a Reverse Bevel door.

DOOR FRAME ASSEMBLY

1. Attach (2) AC-134-01 shear blocks to top end of door jambs using (4) FS-9 #14 x 1 1/2" hex head fasteners. See FIGURE 3.
2. Attach TH64-01 threshold clips to bottom of door jamb using (2) FS256 #8 x 1-1/2" round head screws. See FIGURE 5, pg 8.
3. Apply sealant along exterior and interior faces of shear blocks as shown in FIGURE 4, pg 8.
4. Assemble door header to jambs by sliding header over shear blocks and attaching using (2) FS-42 #12 x 1/2" flat head screws. Clean excess sealant from exposed surfaces after assembly.
5. Attach threshold to clips using (1) FS-42 #12 x 1/2" undercut flat head fasteners, See FIGURE 6, pg. 8. Note; threshold will be removed once frame is installed into opening to seal and drill for anchors.

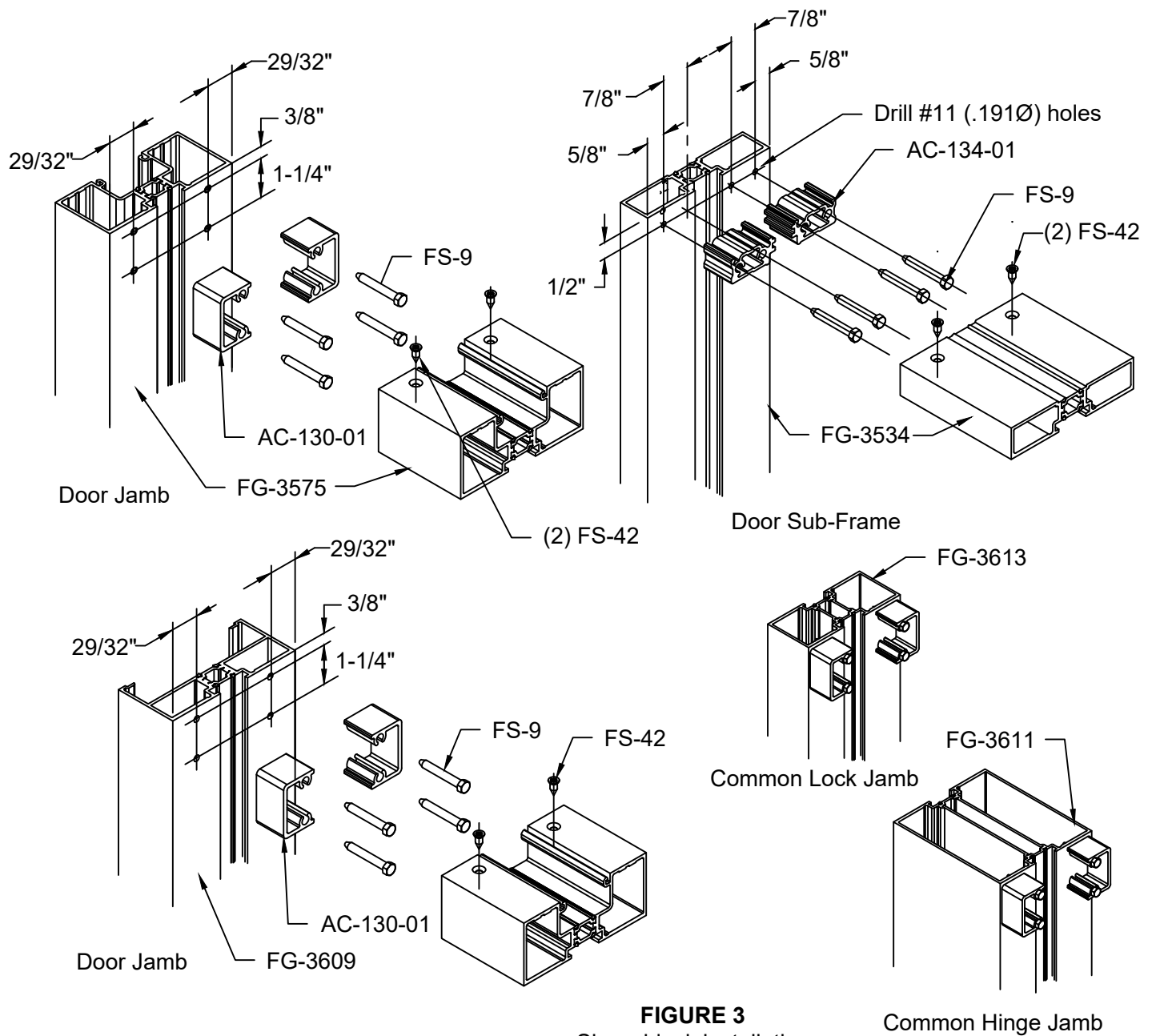


FIGURE 3
Shear block installation

Common Hinge Jamb

DOOR FRAME ASSEMBLY

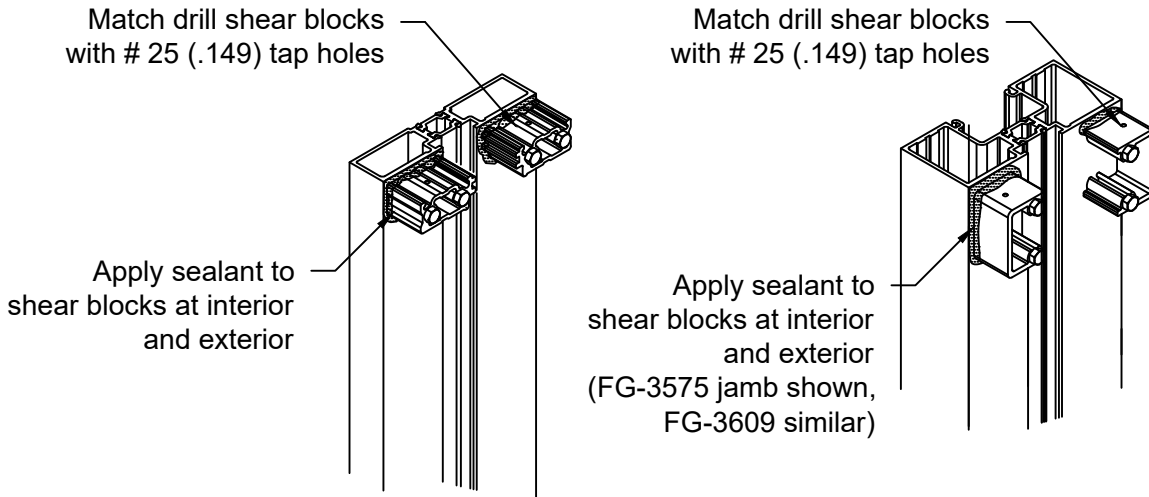


FIGURE 4
Shear block sealant

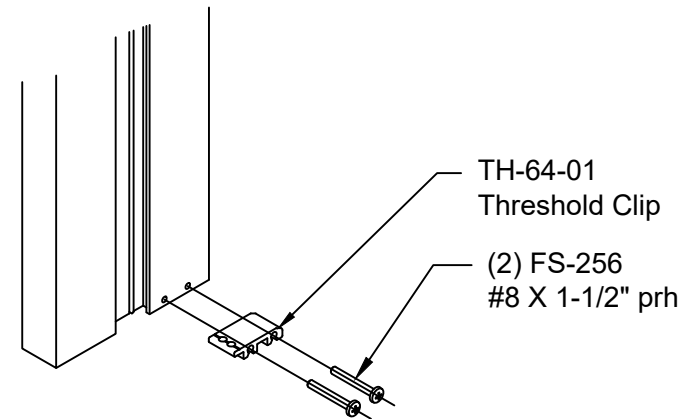


FIGURE 5
Threshold clip install

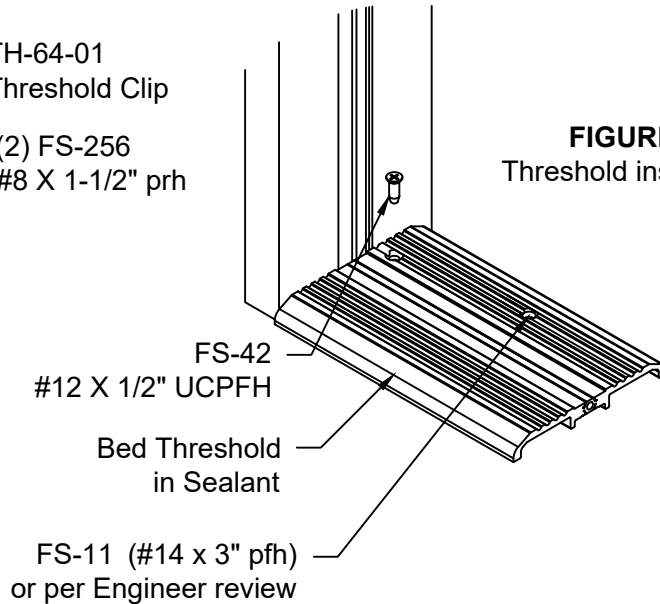


FIGURE 6
Threshold installation

Series 3000 XT DOOR FRAME ASSEMBLY

1. When installing 3000 XT door frame with sidelights use FG-3609 jambs and FG-3575 door header
2. Attach (2) AC-130-01 shear blocks to top end of door jambs using (4) FS-9 #14 x 1 1/2" hex head fasteners. See FIGURE 7 below.
3. Attach TH-64-01 threshold clips to bottom of door jamb using (2) FS-256 #8 x 1-1/2" round head screws. See FIGURE 5, pg 8. Note; threshold will be removed once frame is installed into opening to seal and drill for anchors.
4. Apply sealant along exterior and interior faces of shear blocks as shown in FIGURE 4, pg 8.
5. Assemble door header to jambs by sliding header over shear blocks and attaching using (2) FS-42 #12 x 1/2" flat head screws. Clean excess sealant from exposed surfaces after assembly.

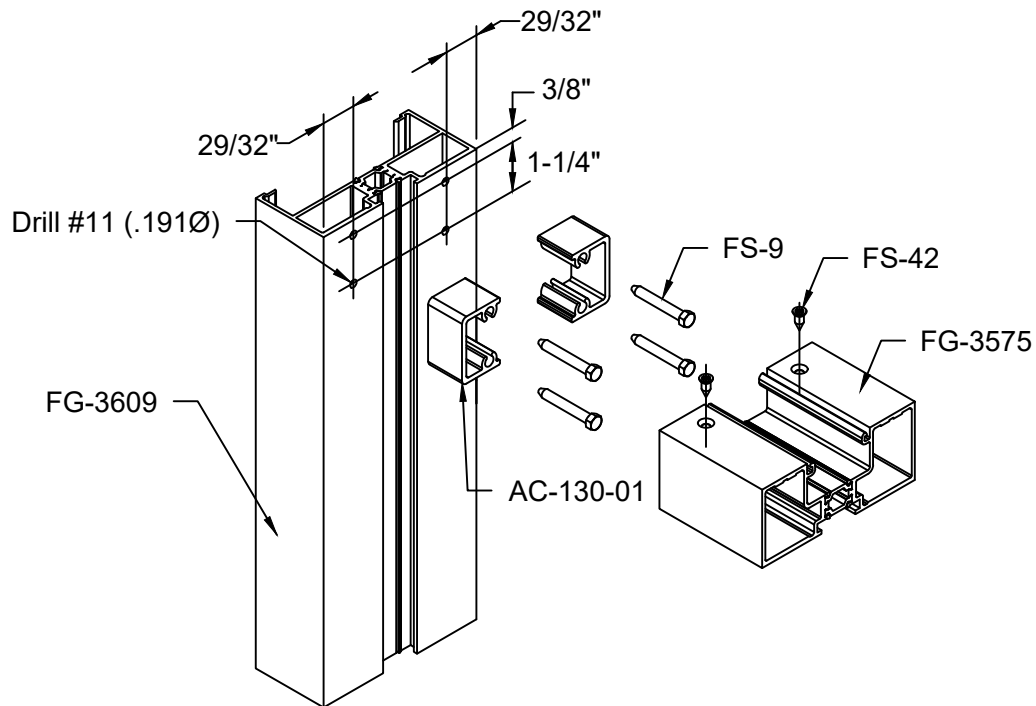


FIGURE 7
Shear block installation

Series 3000 XT DOOR FRAME ASSEMBLY

1. Door frame with transom will use FG-3609 with sidelights or FG-3575 without sidelight for door jambs, FG-3575 door header with S-73 vertical sash and FG-3506 transom head.
2. Attach door header to frame using (2) AC-130-01 shear blocks using (2) FS-9 fasteners per shear block. Door header will attach to shear block with (2) FS-42 #12 x 1/2" pfh fasteners.
3. Transom header will use FG3000-FP-60 shear block attached with (2) FS-9 fasteners. Head will be attached to shear block with a FS-7 fastener. Match drill shear block w/ #29 drill bit per detail 10A.
4. Install FG3000-FP-77 zone plug at each end of door header and drill 1/4" weep holes as shown in detail 10B.
5. Install FG-3220 setting block into top of door header.
6. The interior S-73 sash will be bed in sealant then hooked in place. FG-1133 gasket installed around interior of transom area. Corners of gasket to be sealed and small bead of sealant ran around each end of sash at door header and transom head.
7. The exterior S-73 sash will be hooked in place after glass is installed. FG-1133 gasket will then be installed around exterior of transom.

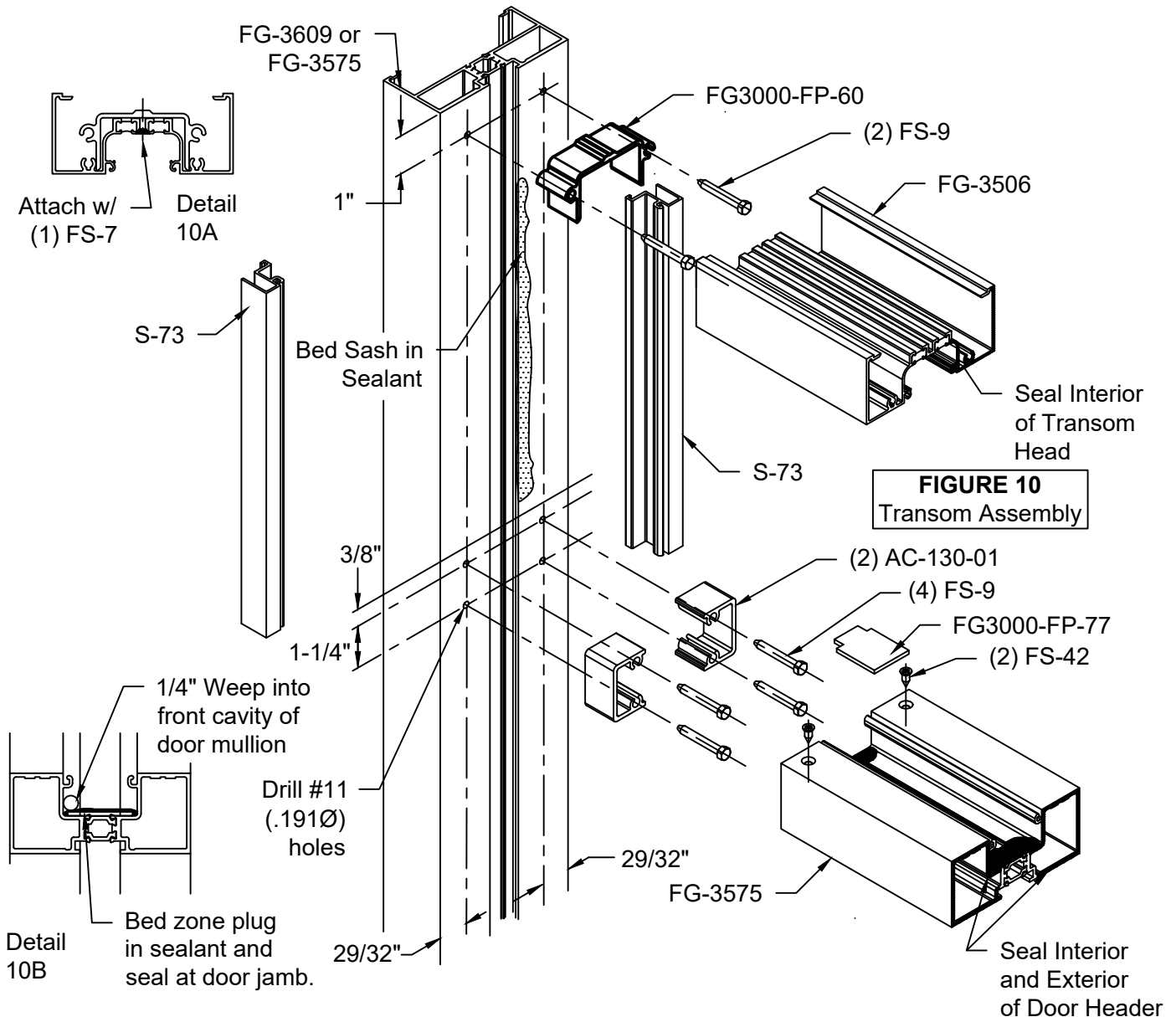


FIGURE 10
Transom Assembly

DOOR FRAME INSTALLATION

1. Door frame shall be completely assembled, including threshold; with all joints neatly aligned and tight. See pages 7 thru 10 for assembly guidelines.
2. Door frame shall be installed square and plumb. FIGURE 9 & 10, below.
3. Level the door frame at the threshold at the highest point in the slab. It is preferable to not have a high point in the slab. The door frame is designed to have the jambs run to the slab.
4. Frame must be securely anchored in place. Solidly shim at all anchor points so as not to bow or distort framing.
5. Mark the concrete through the countersunk holes in the threshold and along front and back edges of threshold. See FIGURE 11, pg 12.
6. Remove threshold from opening. Use masonry bit to drill holes in slab for inserts or anchors.
7. Run bead of sealant along front and back edges beneath threshold using lines marked along front and back. See FIGURE 11, pg 12.
8. Install threshold back into frame attaching to threshold clips at each end. Inject sealant into each anchor hole and then install anchors into inserts or prepared holes. See FIGURE 12, pg 12.

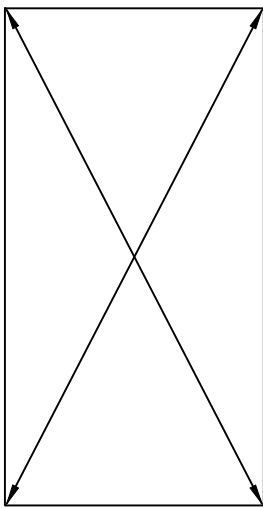


FIGURE 9

Measure diagonals to check squareness

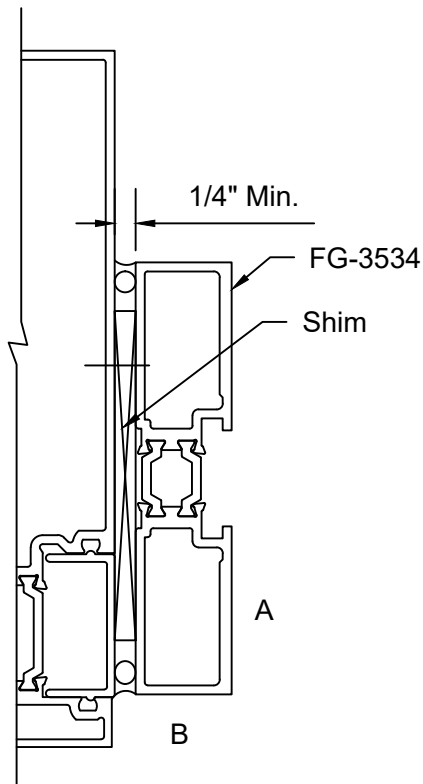
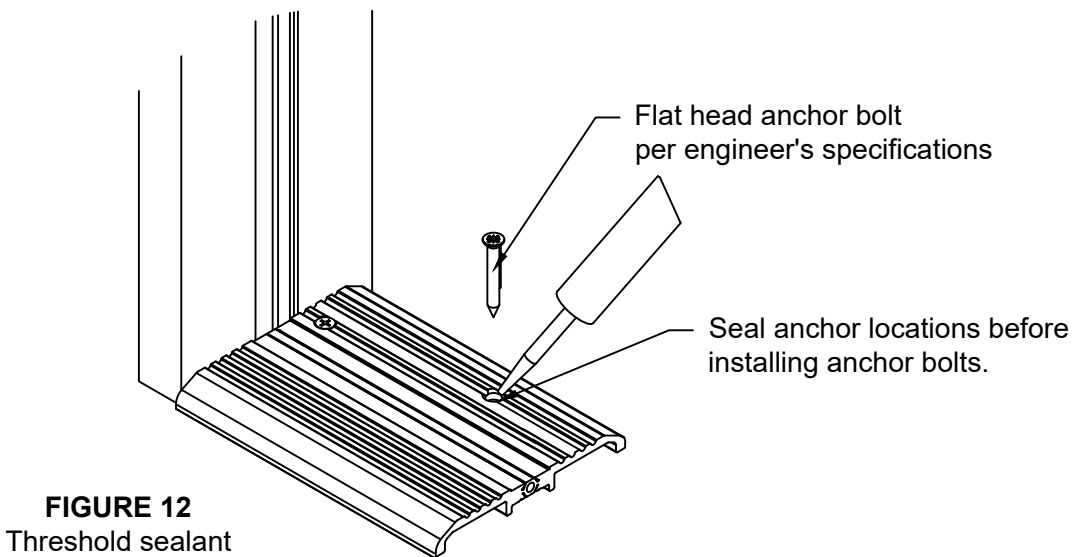
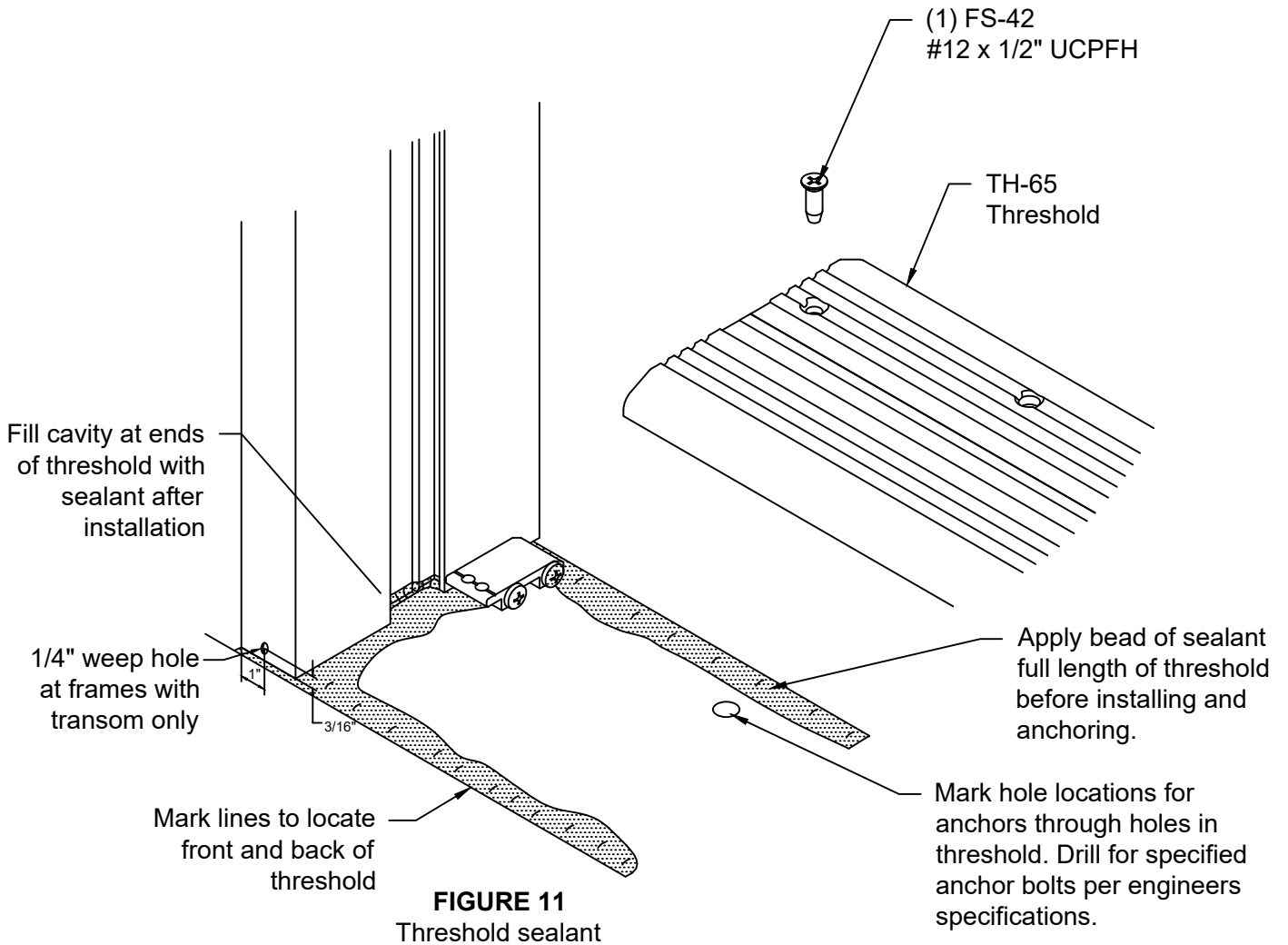


FIGURE 10

Use 4 ft level to check plumb at points A & B.

DOOR FRAME INSTALLATION



DOOR FRAME INSTALLATION

1. TD-105 vertical door stop to be cut to run between threshold and door stop at header. Length to be door opening minus 1-1/16". Install GP-300 insert full length.
2. TD-105 head door stop will be cut door opening minus 1/16". The GP-302 insert should be cut to extend into cavity on either side of door opening for overall length of door opening plus 5/8".
3. D-125 gasket must be installed prior to installation of door stops.
4. Door stops to have small bead of sealant applied at back of stop. This seal should be married into seal at threshold and a small bead also applied between vertical and head stops at corner. See FIGURE 13.
5. Ends of door stop at door header / GP-302 to be sealed as show in FIGURE 14, page 14.
6. Seal door stop at threshold. See FIGURE 15, page 14.

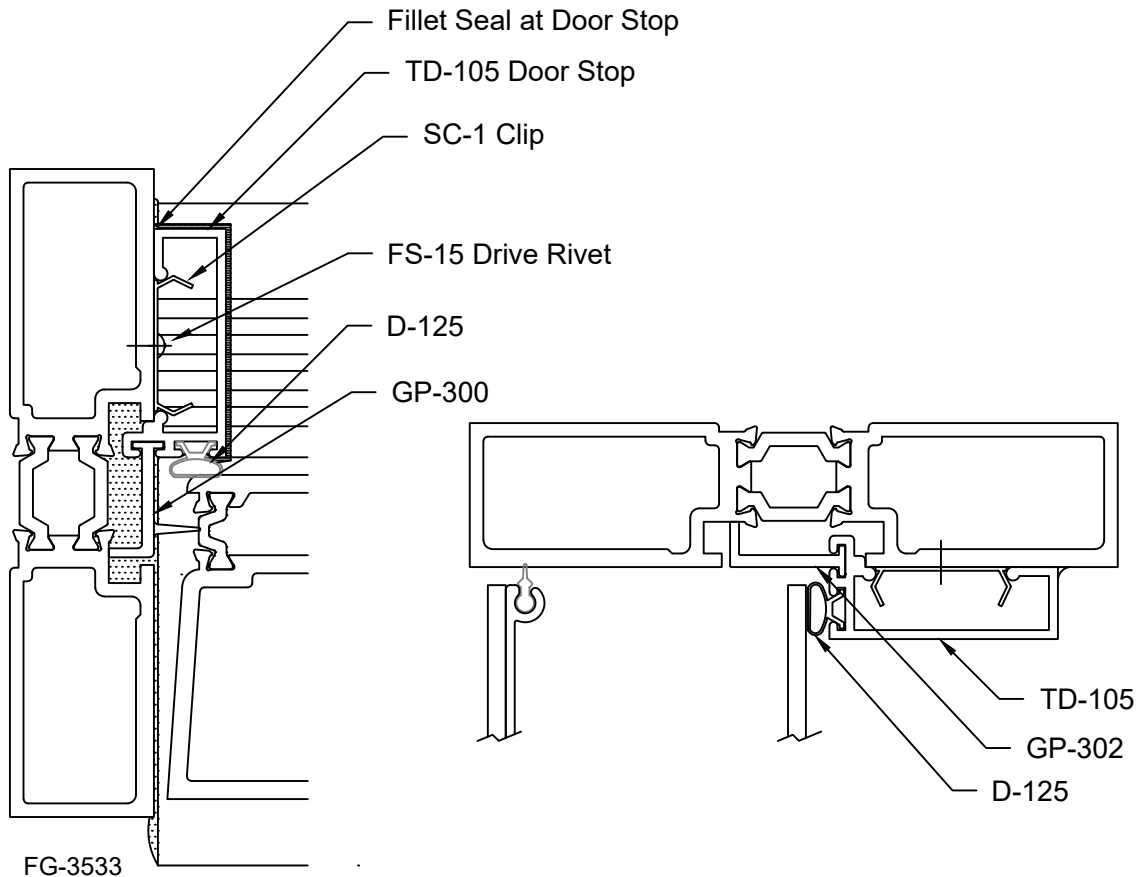


FIGURE 13
Door stop install
& gasket seal

DOOR FRAME INSTALLATION

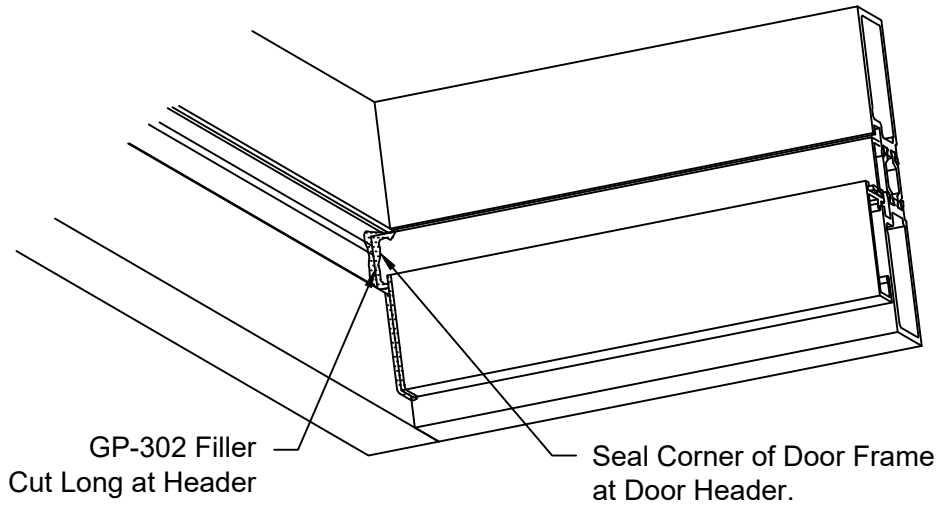


FIGURE 14
TD-305 / GP-302
Seal at Door Head

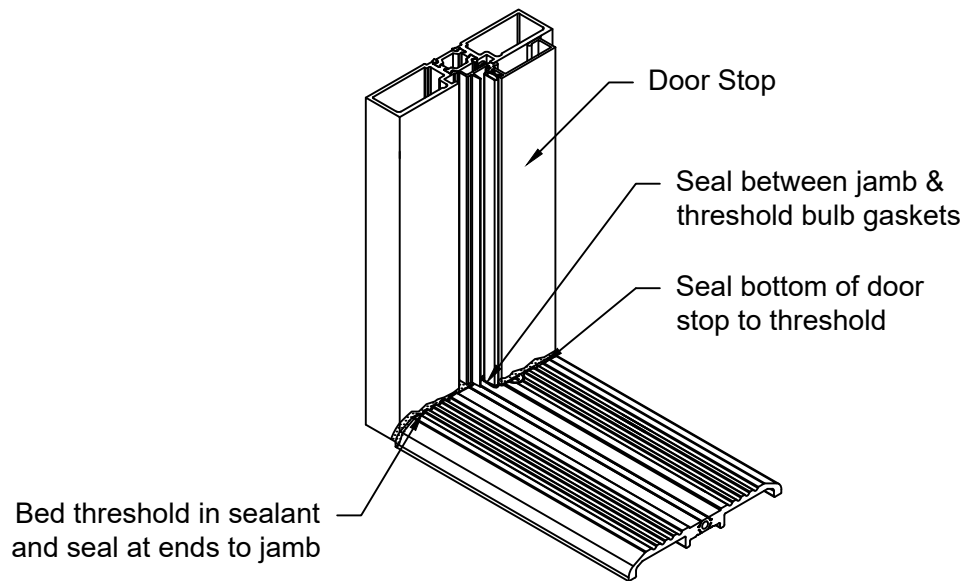


FIGURE 15
Threshold seal

DOOR GLASS INSTALLATION

Glass setting blocks are installed in their proper positions at the factory. Glazing prior to installation is possible (step 1). If the decision is made to glaze after door is installed, skip step 1.

1. Lay door flat across two saw horses (easiest) or on protected floor (care must be taken not to damage finish on door.)
2. If glazing door after it is installed, lock door to prevent swinging.
3. Remove glass stop from exterior of door.
4. Install interior FG-1133 gasket into interior glass stops cutting horizontal gasket ends at angle to form a tight joint in each corner. Gaskets should be cut length of stop plus 1/4" per foot extra to allow for relaxing of gasket.
5. Turn glass jack at top rail counter-clockwise until it is in retracted position.
6. Be sure that interior stops are in securely prior to installing glass.
7. Place glass on the stops and against the setting blocks. If you are glazing the door in the installed position, it is important to push glass firmly against the interior glass stops.
8. Adjust for gaps at stiles.
9. Once the glass is in the correct position, screw down the glass jack to press lightly against the top of the glass.
10. Install the exterior glass stops. Stops will hook into place. Horizontals are installed first, followed by verticals. Horizontal glass stops will fit behind trim leg of vertical stiles. See below.
11. Once exterior stops are in place. Install FG-1133 gasket into opening. Use cut lengths established in step #4 cutting gaskets to form tight corners.

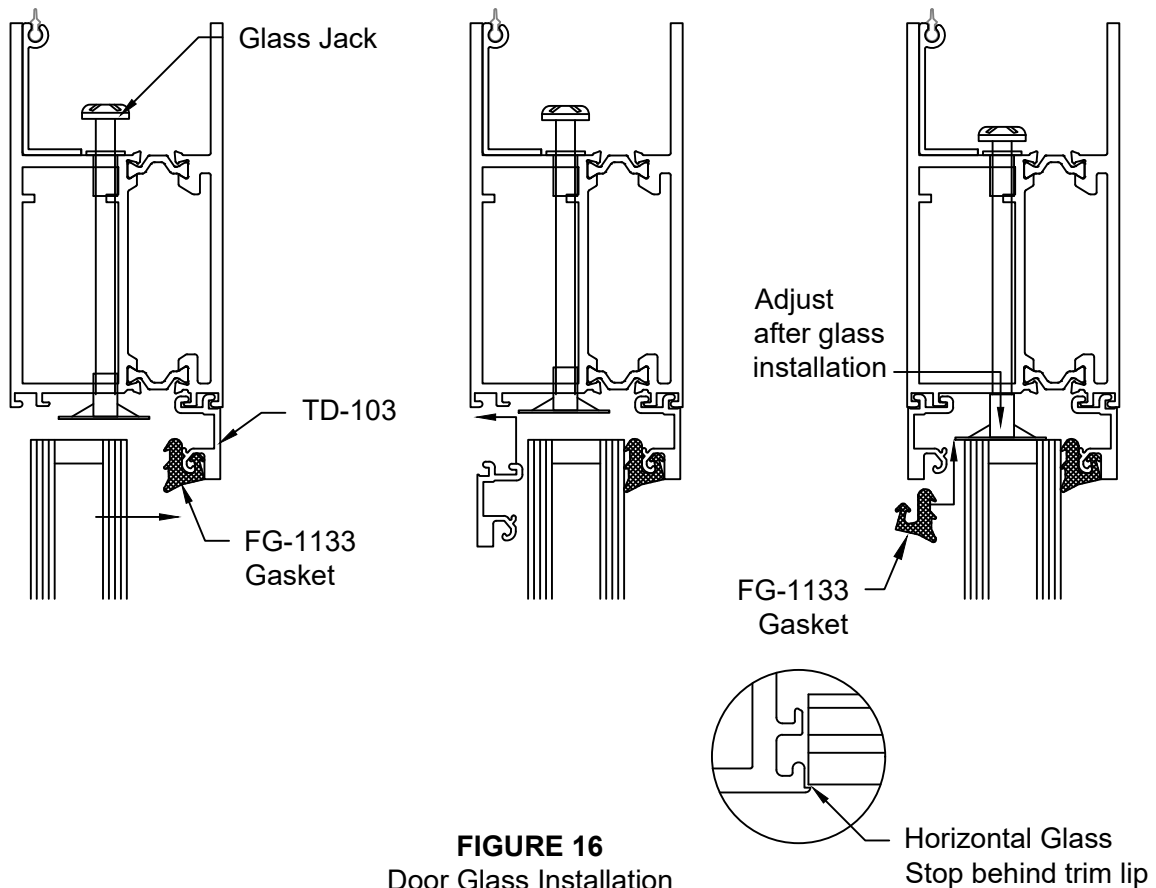


FIGURE 16
Door Glass Installation

INSTALLATION OF OFFSET HUNG DOOR ON BUTT HINGES

Back-up plates are installed in the door and the frame at the factory. Butt hinges should be installed on the door using FS-22 (#12-24 x 1/2" UCPFH) fasteners. The door may or may not be glazed prior to installation of door.

1. Lift door upwards until butt hinges align with hinge cutout in frame.
2. Block under door when hinge and cutout are aligned.
3. Attach hinges to frame back-up plates using FS-22 fasteners (included). There is a slight adjustment available if location of door prep and frame cut out is off slightly. Back off on screws slightly and adjust door to proper position; then, tighten down screws.
4. Now that the door is hung, it is time for final adjustments and attachment of hardware.
Note; if you have not pre-glazed the door; glaze the door before attachment of hardware or further adjustments.

INSTALLATION OF OFFSET HUNG DOOR ON PIVOTS

Back-up plates are installed in the door and the frame at the factory. Frame portion of pivots should be on the frame and door portion of pivots should be installed on the door. The door may or may not be glazed prior to installation of door.

1. Lift door upward and tilt in open position. Place door portion of bottom pivot on frame portion of bottom pivot.
2. Depress the pivot pin in the door portion of the top pivot.
3. Slide door portion of top pivot under the frame top pivot.
4. Jiggle door until the pivot pin slides into the frame top pivot.
Note: To remove door, take the 3 screws out of the top portion of the top pivot and let drop. Then tip the door out of the frame.
5. Now that the door is hung, it is time for final adjustments and attachment of hardware.
Note: If you have not pre-glazed the door, glaze the door before attaching hardware.

INSTALLATION OF OFFSET HUNG DOOR ON GEAR HINGES

Door and frame will be pre-drilled for Pemko FM-SLI gear hinge. Gear hinge should be installed onto door using supplied fasteners. The door may or may not be glazed prior to installation.

1. Lift door upwards until hinges align with pre-drilled holes in frame.
2. Block under door when holes in hinge and frame align.
3. Attach gear hinges to frame using supplied fasteners.
4. Now that the door is hung, it is time for final adjustments and attachment of hardware.
Note; if you have not pre-glazed the door; glaze the door before attachment of hardware or further adjustments.

FINAL ADJUSTMENTS TO DOOR

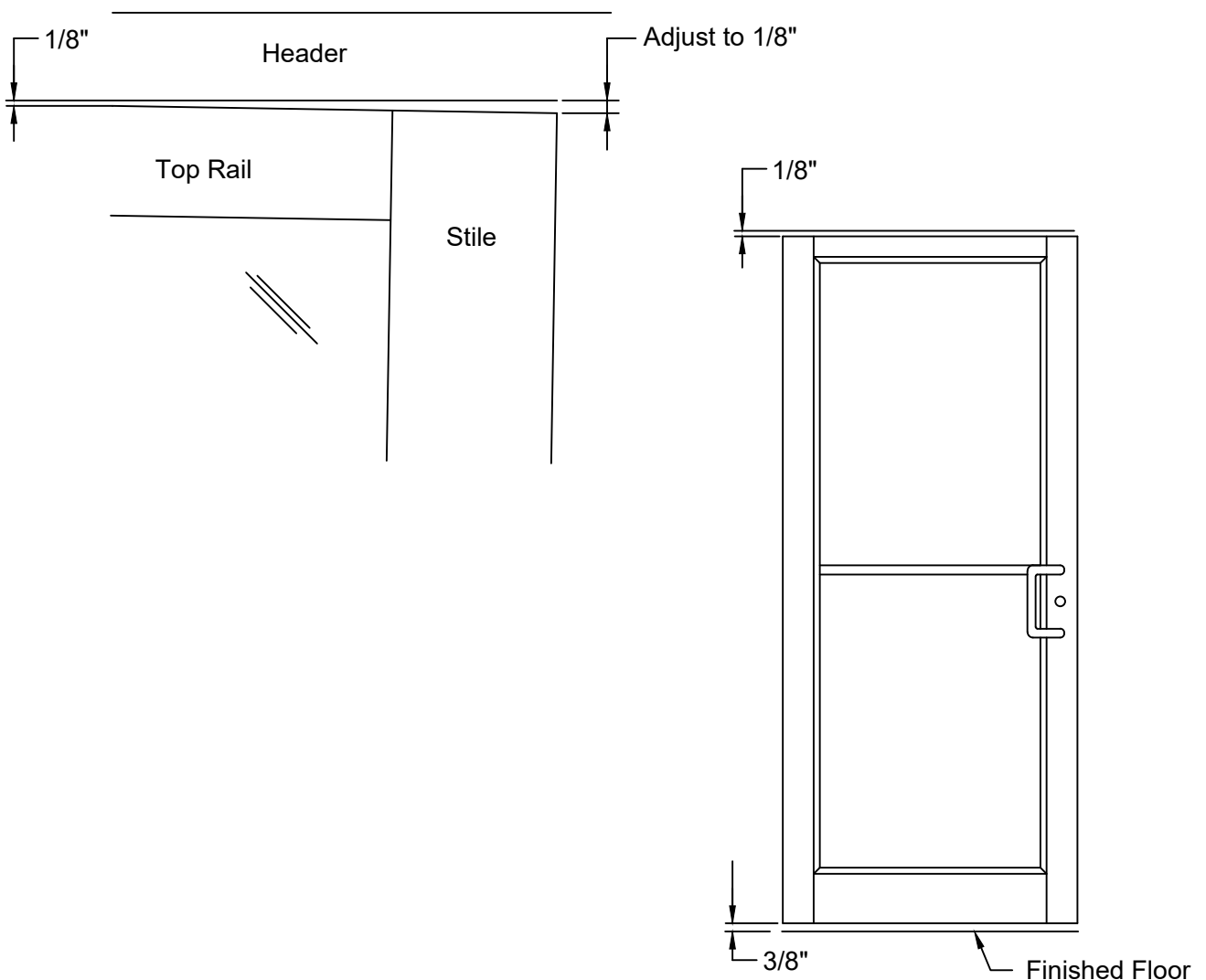
After door is installed, check clearances. The top rail should be a consistent 1/8" below the header. The bottom of door should be a consistent 5/8" above finished floor. The gap between door and jambs should be 3/32" from top to bottom.

If the gap between the top rail and header is too large at the top of the lock stile, loosen glass jack and lift up on the door until gap is corrected. Tighten down the glass jack to the top of glass.

If the gap is too tight at top of lock stile, turn glass jack counter-clockwise (dropping door) until proper gap is attained.

DO NOT raise door by only tightening the glass jack against the glass. Glass breakage could occur.

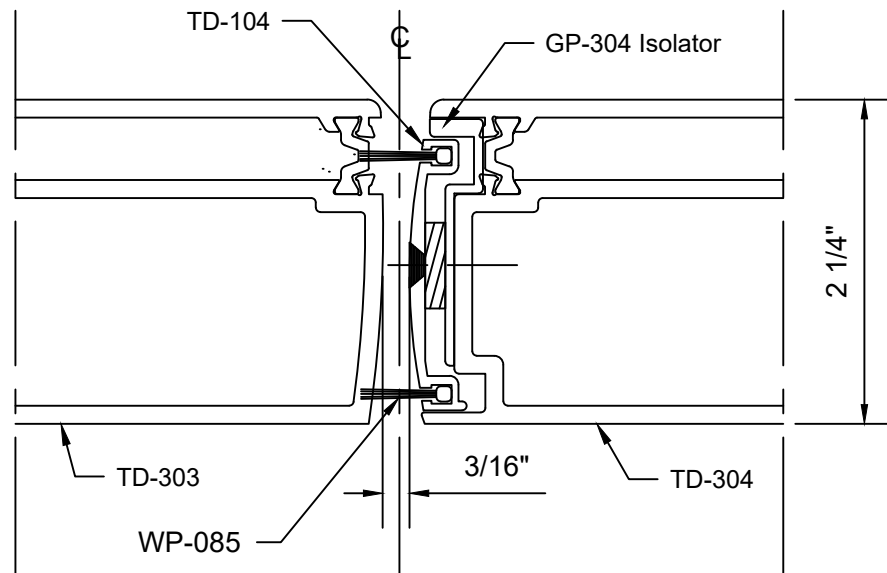
On butt hung doors, butts may be shimmed out to adjust clearance when there is too much gap at the lock stile.



ADJUSTMENTS TO PAIRS OF DOORS


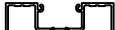
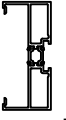
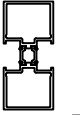
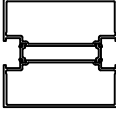




Located at the meeting stile of the pair of the thermal doors is an adjustable astragals. Beneath the astragal is an ABS isolator. Spring clips will be located at 12" on center and astragal attached with a FS-4 (#8 x 1" poh) fasteners. See instructions below for proper adjustment.

1. Adjust astragals so that there is a 3/16" gap between doors. The pile will make contact with inactive door stile at this setting. If pile is not making good contact adjust as needed.
2. Remove string from interior wool pile and re-adjust as needed.













PARTS LIST










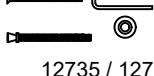
Door Frame Members

 FG-3534	1" Subframe
 FG-3575	2" Door Header
 FG-3609	2" Door Jamb Mullion
 FG-3613	2-1/2" Common Lock Mullion
 FG-3611	5 1/4" Common Hinge Mullion
 FG-3160	COC Header (non-thermal)
 S-73	Transom Sash
 TD-105	Door Stop w/ D-125 Gasket
 TH-65	Thermal Threshold

Standard Accessories

 FG-1133	Door Gasket
 GP-159	1" Door Setting Block
 GP-302	Door Head Stop Isolator
 GP-304	Astragal Isolator
 WP-085	Wool Pile for Meeting Stiles
 AC-130-01	Shear Block FG-3575
 AC-134-01	Shear Block FG-3534
 AC-135-01	Shear Block FG-3575 at Offset Pivots
 TH-64-01	Threshold Clip Kit
 SC-1	Spring Clip for DS-1 Door Stop

Standard Fasteners

 FS-2	#8 x 1/2" Undercut Phillips Flat Head
 FS-56	#10 x 1/2" Undercut Phillips Flat Head
 FS-9	#14 x 1-1/2" Phillips Hex Head - Horizontals to Verticals at Head Anchors
 FS-15	3/16" x 7/16" Drive Rivet Fastens SC-1 Clip
 FS-22	#12-24 x 1/2" Phillips Flat Head
 FS-42	#12 x 1/2" Undercut Phillips Flat Head
 FS-55	#10 x 1/2" PRH
 FS-67	Bolt for Back to Back Pull Handles
 FS-256	#8 x 1-1/2" PRH
 12735 / 12736	Push/Pull Hdwe Kit (Clear / Bronze)