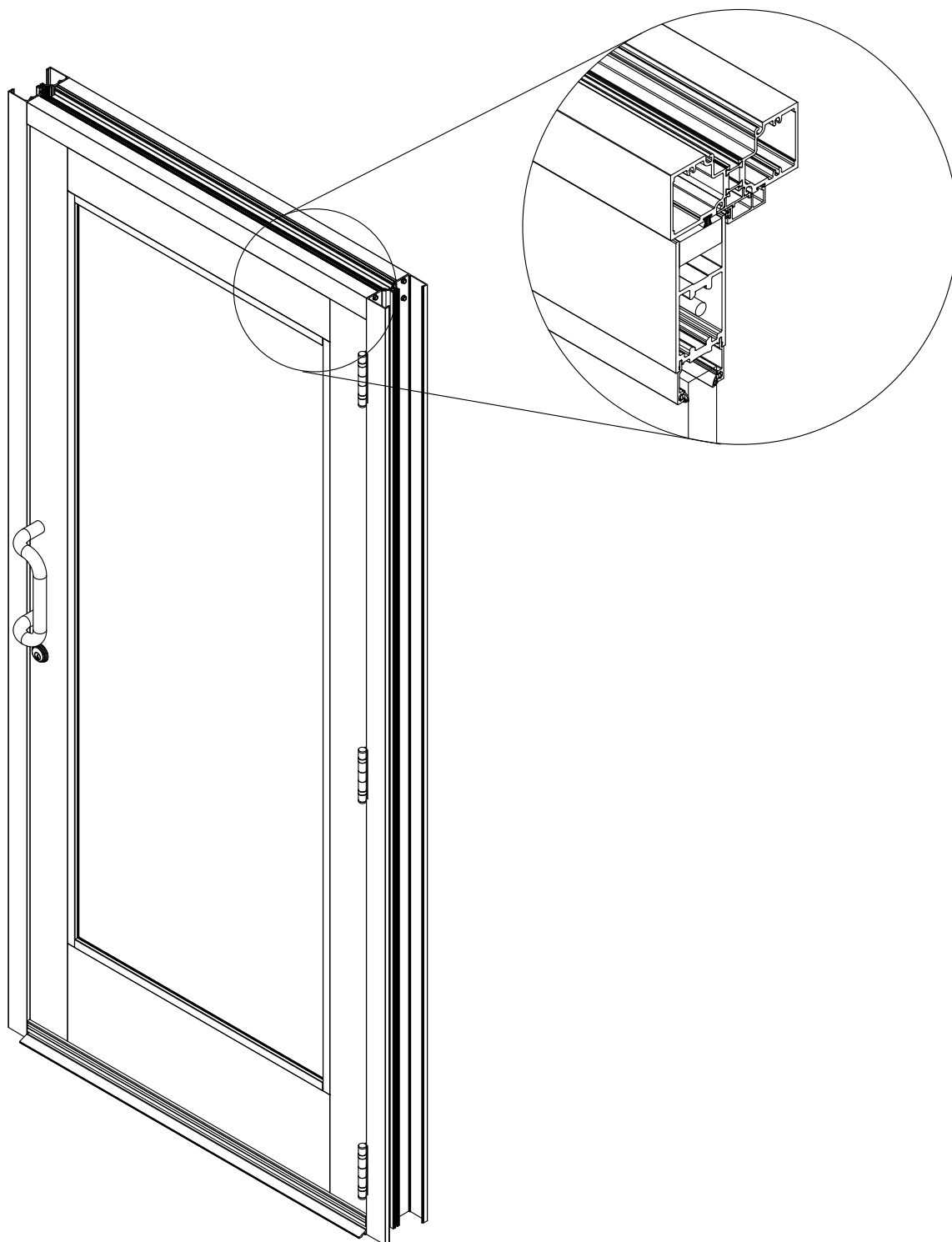




ULTRA THERMAL ENTRANCES

INSTALLATION INSTRUCTIONS

7800 International Drive, Wausau, WI 54401 877-678-2983

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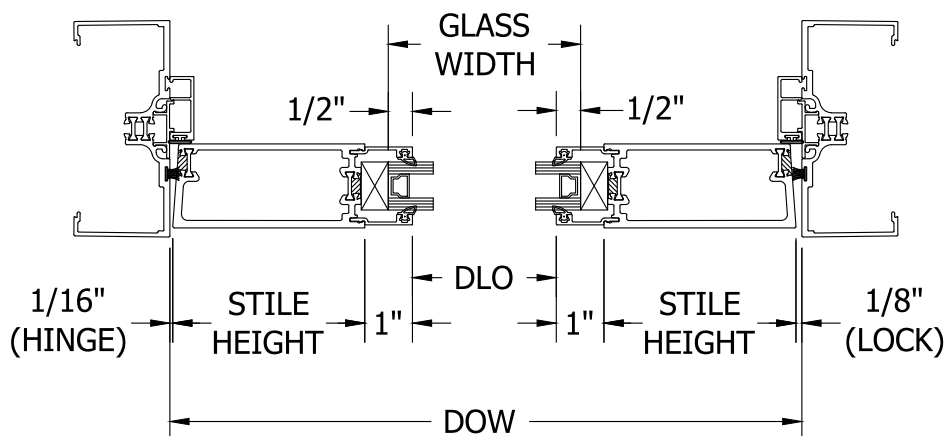
GENERAL CONSTRUCTION NOTES

1. These instructions cover typical product application, fabrication, installation and standard conditions and are general in nature. They provide useful guidelines, but the final shop drawings may include additional details specific to the project. Any conflicts or discrepancies must be clarified prior to execution.
2. Materials stored at the job site must be kept in a safe place protected from possibly damage from other trades. Stack with adequate separation so materials will not rub together and store off the ground. Cardboard or paper wrapped materials must be kept dry. Check arriving materials for quantity and keep record of where various materials are stored.
3. For cold weather installations, glazing materials (including but not limited to glazing gaskets, isolators and gaskets for air seals and expansion mullions) can become more rigid and thus more difficult to install. These materials should be installed at temperatures above 40°F for proper system performance and ease of installation. A hot box may be required to warm the glazing materials prior to installation. Allow glazing materials to lay flat at 50°F minimum temperature prior to installing.
4. All field welding must be done in accordance with AISC guidelines. All aluminum and glass should be shielded from field welding to avoid damage from weld splatter. Results will be unsightly and may be structurally unsound. Advise general contractor and other trades accordingly.
5. Coordinate protection of installed work with general contractor and/or other trades.
6. Coordinate sequence of other trades which affect framing installation with the general contractor (e.g. fire proofing, back up walls, partitions, ceilings, mechanical ducts, HVAC, etc.).
7. General contractor should furnish and guarantee bench marks, offset lines and opening dimensions. These items should be checked for accuracy before proceeding with erection. Make certain that all adjacent substrate construction is in accordance with the contract documents and/or approved shop drawings. If not, notify the general contractor in writing before proceeding with installation because this could constitute acceptance of adjacent substrate construction by others.
8. Isolate all aluminum to be placed directly in contact with masonry or other incompatible materials with a heavy coat of zinc chromate or bituminous paint. Fasteners attaching framing to building structure are typically not provided by Tubelite.
9. Sealant selection is the responsibility of the erector, installer and/or glazing contractor and must be approved by the sealant manufacturer with regard to application and compatibility for its intended use. All sealants must be used in strict accordance with the manufacturer's instructions and applied only by trained personnel to surfaces that have been properly prepared.
10. Sealant must be compatible with all materials with which they have contact, including other sealant surfaces. Consult the sealant manufacturer for recommendations relative to shelf life, compatibility, cleaning of substrate, priming, tooling adhesion, environment, temperature and humidity.
Recommend sealant manufacturer perform adhesion "pull test" at "wet" glazing for quality assurance.
11. Drainage gutters and weep holes must be kept clean at all times. Tubelite will not accept responsibility for improper drainage as a result of clogged gutters and weep holes.
12. This product requires clearances at the head, sill and jambs to allow for thermal expansion and contraction as well as construction tolerances. Refer to final distribution drawings for joint sizes.
13. All framing members, entrances and other materials are to be installed plumb, level and true with regard to established bench marks, column center lines or other working points established by the general contractor and checked by the erector, installer and/or glazing contractor.
14. After sealant is set and a representative amount of the wall has been glazed (500 square feet or more), run a water hose test to check installation. On large projects, a hose test should be repeated during glazing operation. This testing should be conducted in accordance with AAMA 501.2 specifications.
15. Cleaning of exposed aluminum surfaces should be done per AAMA recommendations.
16. Care must be taken when assembling aluminum framing components. Over tightening any fastener may cause stripping or fastener failure. Tubelite recommends the use of clutch drivers to provide satisfactory tightening of the screw while preventing over torque. The use of impact drill motors is not recommended due to the absence of a clutch device.
17. Check www.apogeeearchmetals.com for any installation instruction updates.

QUICK REFERENCE CHECKLIST

1. Make sure the opening is square and the caulk joints are 1/4" maximum around the frame.
2. Ensure surfaces that will be sealed are free of contaminants that can lead to adhesion issues.
3. Check installation against instructions to ensure conformity.
4. Glass bites must be equal on all sides.
5. Double check anchor size and location on state approval documentation or approved shop drawings.

GLASS SIZE CALCULATION

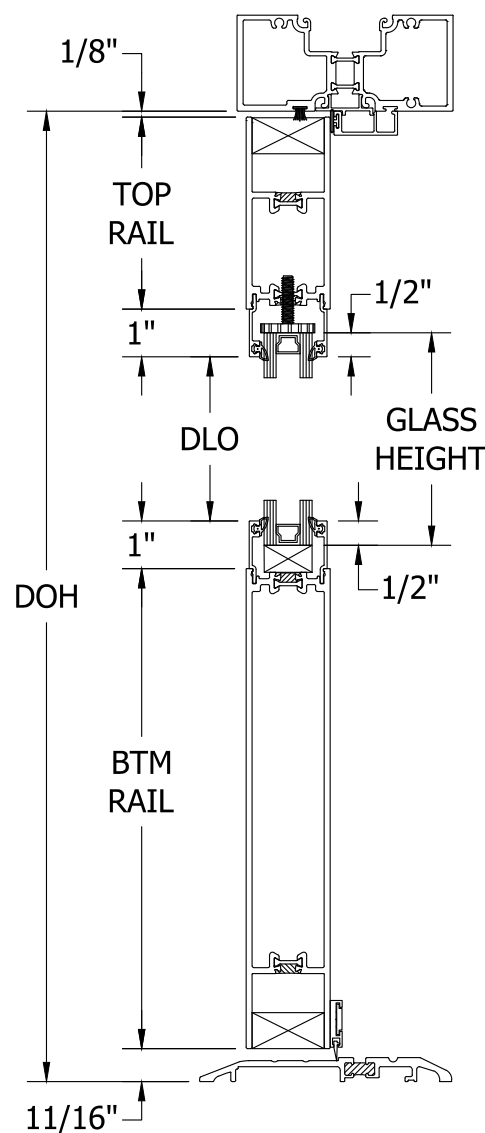


$$\text{Glass Width} = \text{DOW} - \frac{1}{16} - \frac{1}{8} - (2 \times \text{STILE HEIGHT}) - 2" + 1"$$

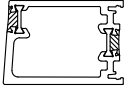
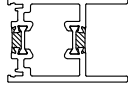
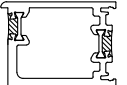
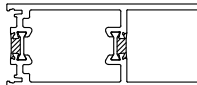
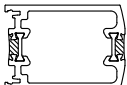
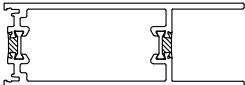
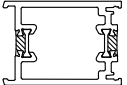
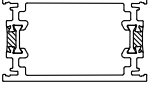
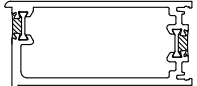
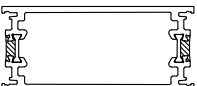
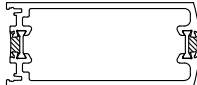
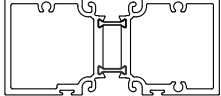
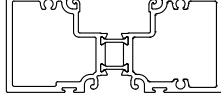
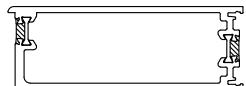
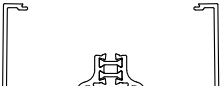
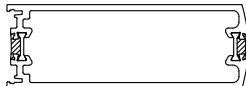
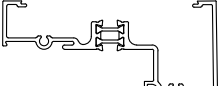
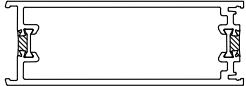
$$\text{Glass Height} = \text{DOH} - \frac{1}{8} - \frac{11}{16} - \text{BTM RAIL} - \text{TOP RAIL} - 2" + 1"$$

$$\text{Glass Width} = \text{DLO} + 1"$$

$$\text{Glass Height} = \text{DLO} + 1"$$

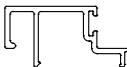
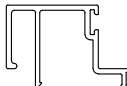
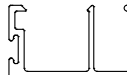
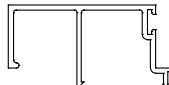
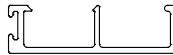
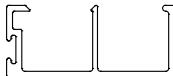
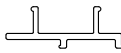
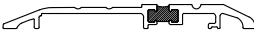
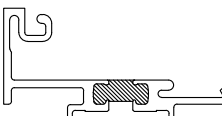


PARTS LIST

DESCRIPTION:	PART NO.	DESCRIPTION:	PART NO.
 NS BEVELED STILE	A648889	 2-1/2" RAIL	A642525
 NS RABBETED STILE	A647475	 4" RAIL	A641414
 NS INACTIVE MEETING STILE	A648787	 5" RAIL	A641515
 NS ACTIVE MEETING STILE	A648686	 10" RAIL	A641010
 MS BEVELED STILE	A647879	 3" MID RAIL	A643030
 MS RABBETED STILE	A647071	 4" MID RAIL	A646464
 MS INACTIVE MEETING STILE	A648282	 ADJUSTABLE ASTRAGAL	E1152
 MS ACTIVE MEETING STILE	A648383	 TYPICAL HEADER	A645859
 WS BEVELED STILE	A647677	 TYPICAL HEADER/SIDELITE	A649192
 WS RABBETED STILE	A647273	 TYPICAL OPEN BACK JAMB	A646060
 WS INACTIVE MEETING STILE	A648181	 OPEN BACK TRANSOM HEADER (OPTIONAL)	A642324
 WS ACTIVE MEETING STILE	A649090	 GLASS STOP FOR TRANSOM HEADER (OPTIONAL)	E15104

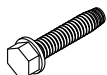
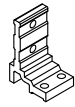
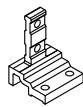
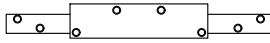
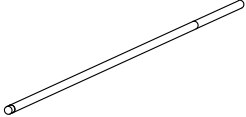
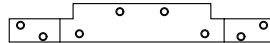
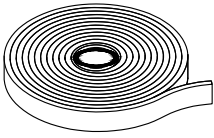
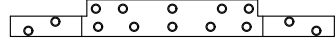
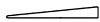
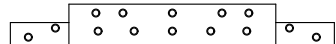
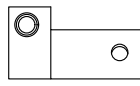
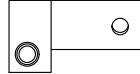
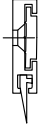
6-1/2" framing is available as an alternative to the 4-1/2" framing shown .

PARTS LIST / ACCESSORIES

DESCRIPTION:	PART NO.	DESCRIPTION:	PART NO.
 1" HORIZONTAL GLASS CLIP	E6422	 1/2" CONSTRUCTION PHASE DOOR STOP FOR 3/16" INSET 1-3/4" DOOR	E4531
 1/2" THERMAL DOOR STOP FOR 3/16" INSET 1-3/4" DOOR	E5926	 3/4" CONSTRUCTION PHASE DOOR STOP FOR 3/16" INSET 1-3/4" DOOR	E4546
 3/4" THERMAL DOOR STOP FOR 3/16" INSET 1-3/4" DOOR	E5928	 1/2" CONSTRUCTION PHASE DOOR STOP FOR FLUSH 1-3/4" DOOR	E4557
 1/2" THERMAL DOOR STOP FOR FLUSH 1-3/4" DOOR	E5966	 3/4" CONSTRUCTION PHASE DOOR STOP FOR FLUSH 1-3/4" DOOR	E4558
 3/4" THERMAL DOOR STOP FOR FLUSH 1-3/4" DOOR	E5968	 BULB GASKET	P6296
 1/2" THERMAL DOOR STOP FOR 1/16"-1/8" INSET 1-3/4" DOOR	E5946	 TRANSM GASKET	P2728-OR
 3/4" THERMAL DOOR STOP FOR 1/16"-1/8" INSET 1-3/4" DOOR	E5948	 ASTRAGAL PILE WEATHERING	P938-OR
 PVC LOWER DOOR STOP	P5923	 DOOR GLAZING GASKET	P0017-OR
 THRESHOLD	TA2550	 FRAME PILE WEATHERING	P1098A-OR
 TRANSM GLASS STOP	T15224	 2-1/2" DOOR RAIL LUG 4" DOOR RAIL LUG 5" DOOR RAIL LUG 10" DOOR RAIL LUG	P046T25-OR P046T4-OR P046T5-OR P046T10-OR
 TRANSM GLASS STOP	E15225	 3" DOOR MID RAIL LUG 4" DOOR MID RAIL LUG	P0142T3-OR P0142T4-OR

See Perimeter Sheet for more available Components .

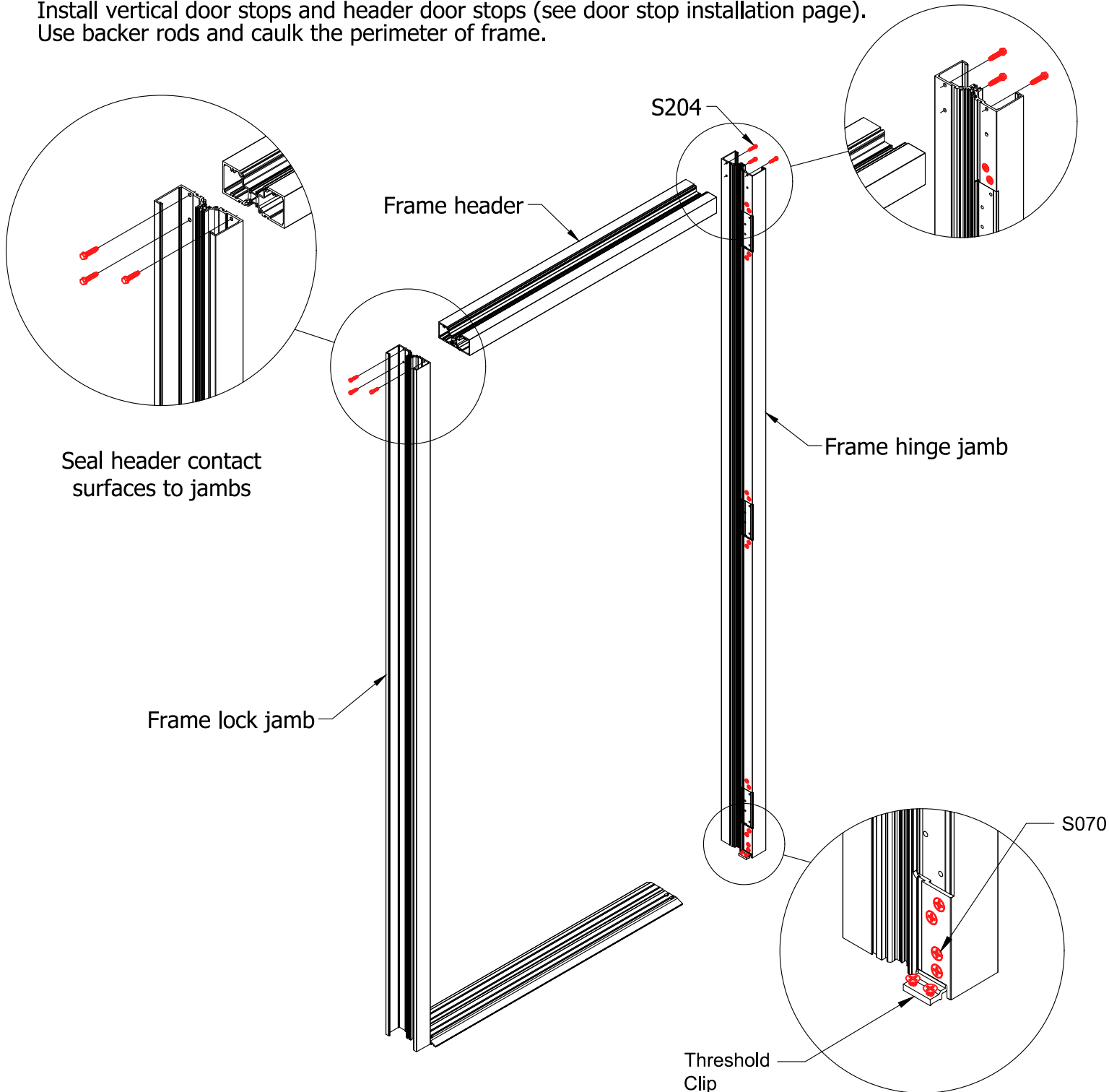
PARTS LIST / ACCESSORIES

DESCRIPTION:	PART NO.	DESCRIPTION:	PART NO.
 #12-24 x 1" HEX HEAD WASHER, SELF-DRILLING (USE FOR FRAME ASSEMBLY)	S204	 THRESHOLD CLIP	P797T
 #12-14 x 1/2" SS UC FL	S070	 THRESHOLD CLIP FOR LOCK JAMB OF PIVOT FRAME	P797T2
 DOOR HINGE REINFORCING	P3092T	 TIE ROD NUT	S081
 DOOR HINGE REINFORCING FOR HEAVY DUTY HINGES	P3093T	 DOOR TIE ROD	P022
 FRAME HINGE REINFORCING	P3092TF	 THERMAL DOOR ELEMENT INHIBITOR	P5911
 FRAME HINGE REINFORCING FOR HEAVY DUTY HINGES	P3093TF	 DOOR GLASS SETTING BLOCK	P1929E-0R
 DOOR INTERMEDIATE PIVOT REINFORCEMENT	P5903	 DOOR GLASS WEDGE BLOCK USED WITH MID RAIL DOORS	P1911-0R
 FRAME INTERMEDIATE PIVOT REINFORCEMENT	P5903TF	 TRANSOM GLASS SETTING BLOCK	P4720-0R
 TAB FOR MOUNTED LOCKS	P5917	 GLASS SCREW JACK	P5920
 TAB FOR MOUNTED LOCKS	P5918	 POCKET FILLER	P503-0R
 DOOR SWEEP	P1275		
 HEADER CLIP FOR TUBULAR JAMB	P1152B-0R		
 TRANSOM CLIP FOR TUBULAR JAMB	P1152C-0R		

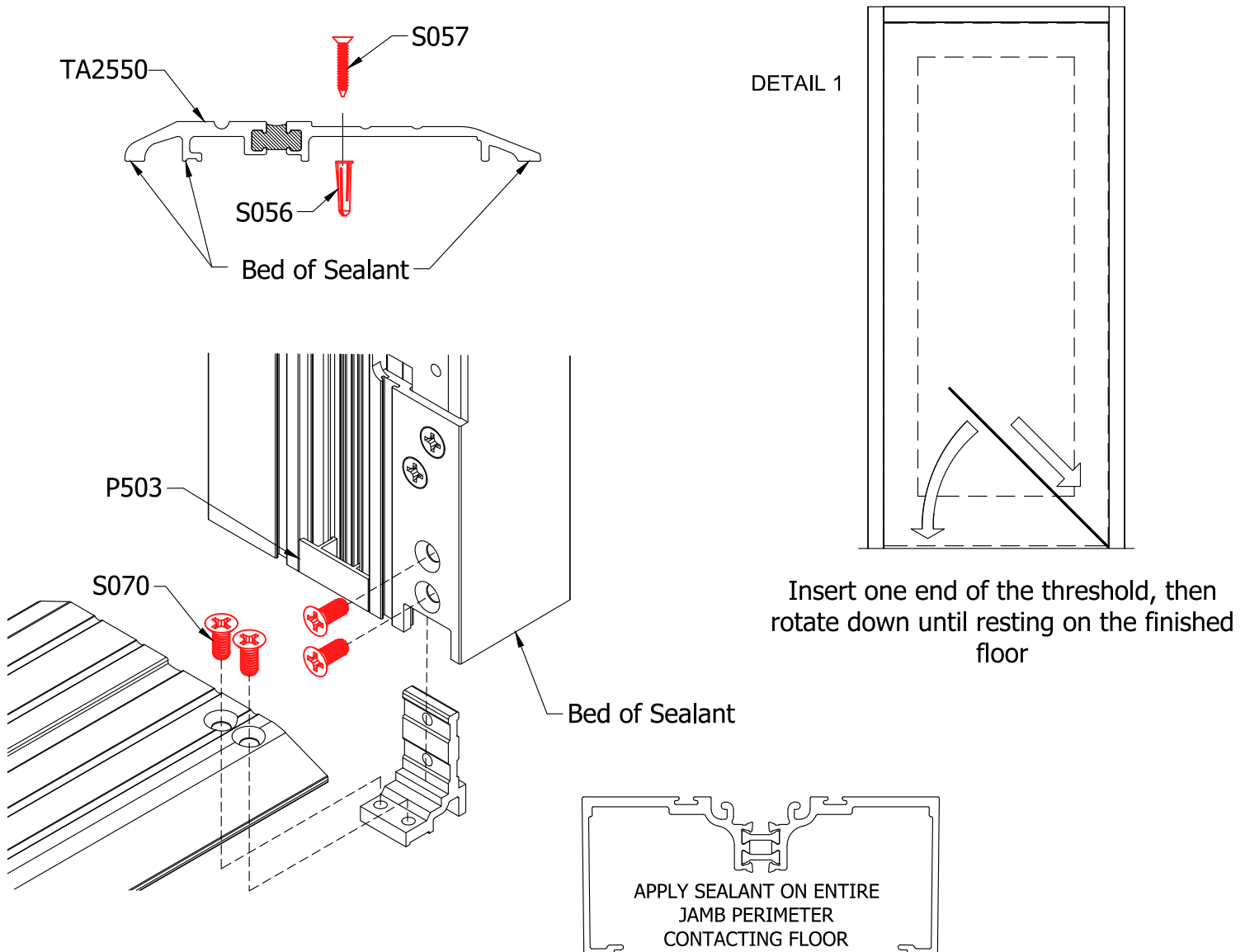
See Perimeter Sheet for more available Components .

FRAME INSTALLATION OVERVIEW

1. Attach threshold clips to jambs with provided screws (S070 - #12-24 x 1/2").
2. Attach header to jambs with provided screws (S204 - #12-24 x 1").
3. Install the frame into the opening.
4. Shim and anchor frame so that it is plumb, square, level and true.
5. Attach the threshold (see threshold installation page).
6. Install vertical door stops and header door stops (see door stop installation page).
7. Use backer rods and caulk the perimeter of frame.



THRESHOLD INSTALLATION



1. Set threshold into place, see Detail 1.
2. Drill pilot holes in floor through pre-drilled holes in threshold.
3. Threshold should be leveled with shims as needed.
4. Be sure all surfaces are cleaned. Apply liberal amount of sealant around the perimeter of the jamb.
5. Caulk ends of threshold and under full length of legs.
6. Set threshold on a bed of sealant.
7. Attach anchor screws (S057 with S056), threshold clip screws (S070) and $\frac{1}{2}$ " jamb filler (P503).
8. Cap and seal anchor screws.
9. Reseal around jambs and threshold if needed.

DOOR STOP INSTALLATION

1. Install P503 or P503A filler in door frame header at each corner. Correct filler is determined by the height of the vertical door stop in that corner. Use P503 for 1/2" vertical stop, P503A for 3/4" vertical stop. See **FIG. 1** & **FIG. 2**
2. Install all P5923 base door stops in header and jambs. See **FIG. 2**
3. Install vertical top door stops in jambs.
4. Install horizontal top door stop in header between vertical stops.
5. Construction Phase door stops are available. See **FIG. 5**

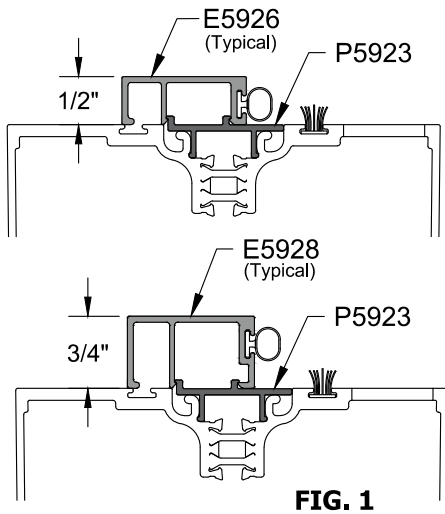


FIG. 1

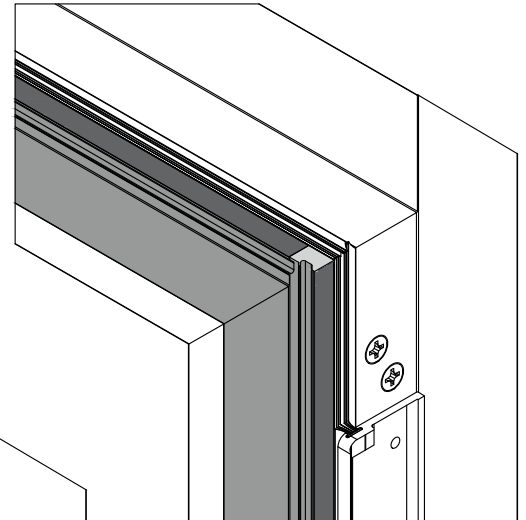
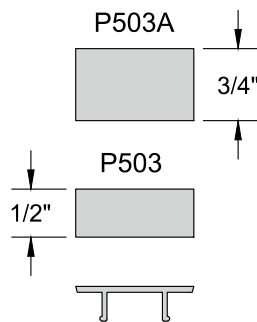


FIG. 4

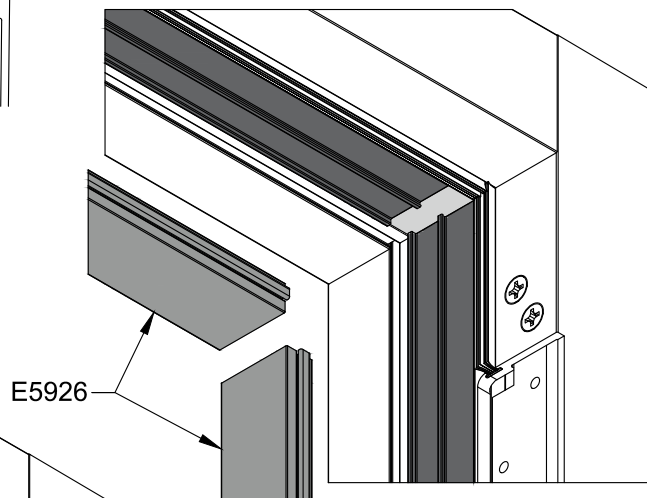


FIG. 3

For use during construction, replaced with standard thermal stops after completion. Only available as lineals. Not compatible with subframes. These stops do not have the same thermal performance as standard thermal stops.

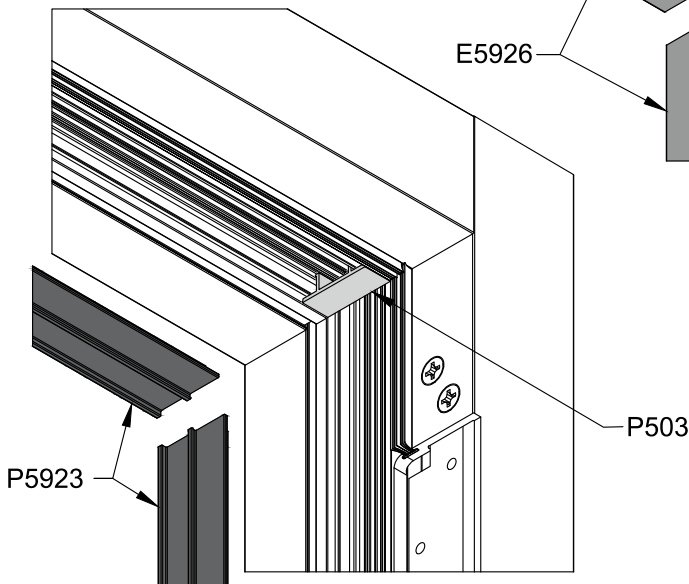


FIG. 2

CONSTRUCTION PHASE STOPS

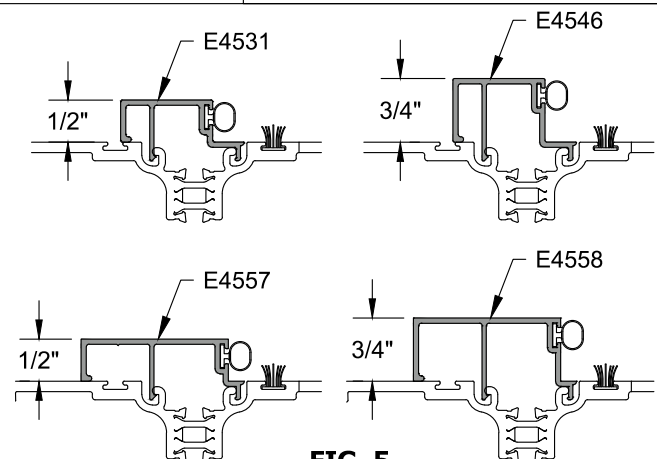
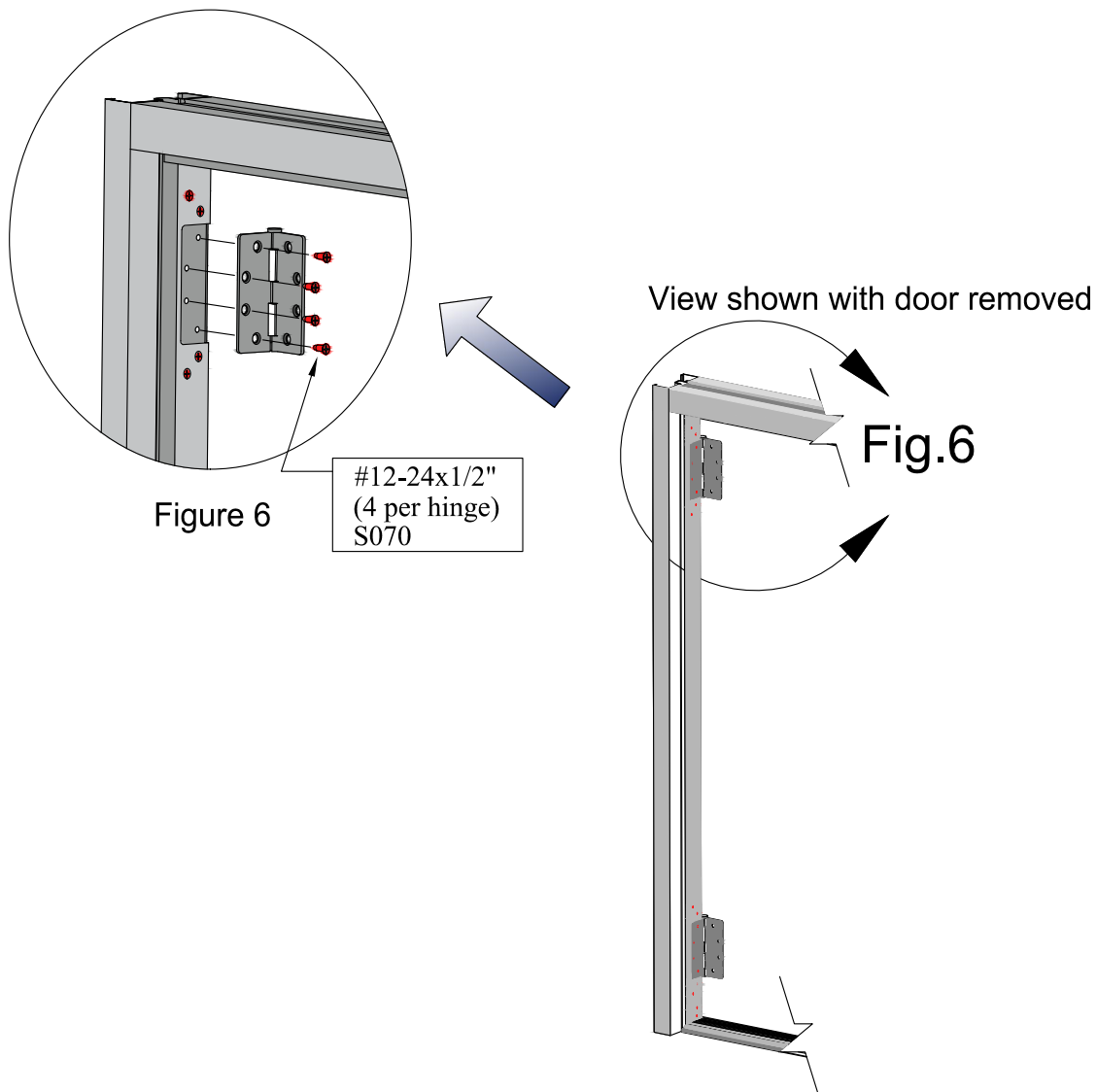


FIG. 5

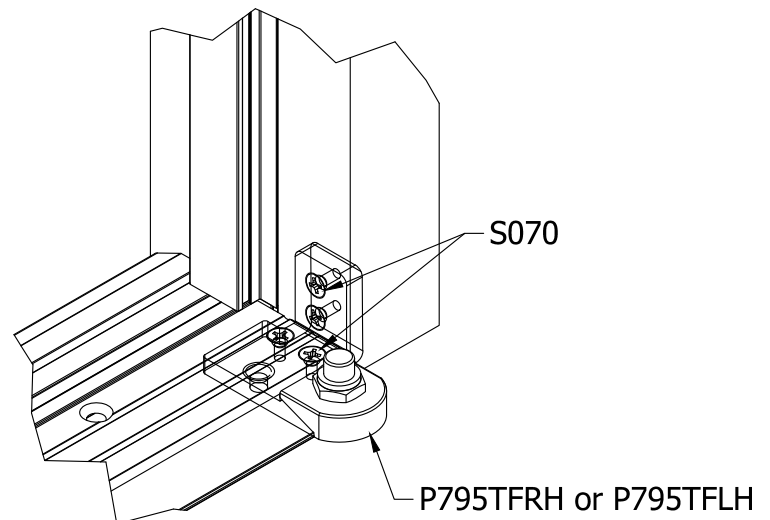
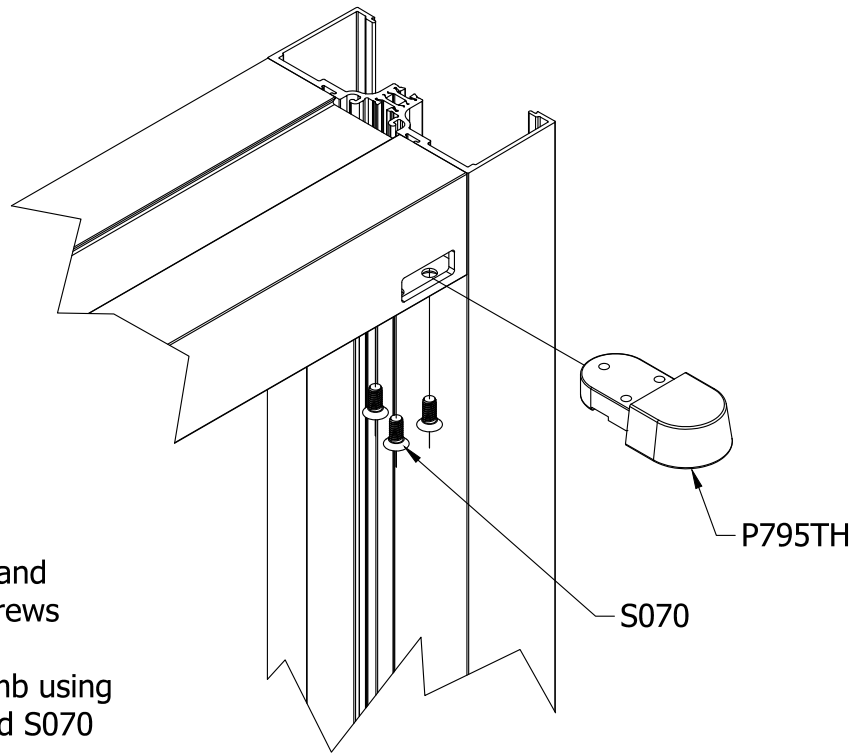
BUTT HINGE DOOR INSTALLATION

- Support door and line up butt hinge mounting holes and screw into place. See Figure 6.
- Check the alignment of the door to frame. Alignment can be adjusted by adjusting cross-blocking of glazed door. See glazing section for more details.



PIVOT INSTALLATION

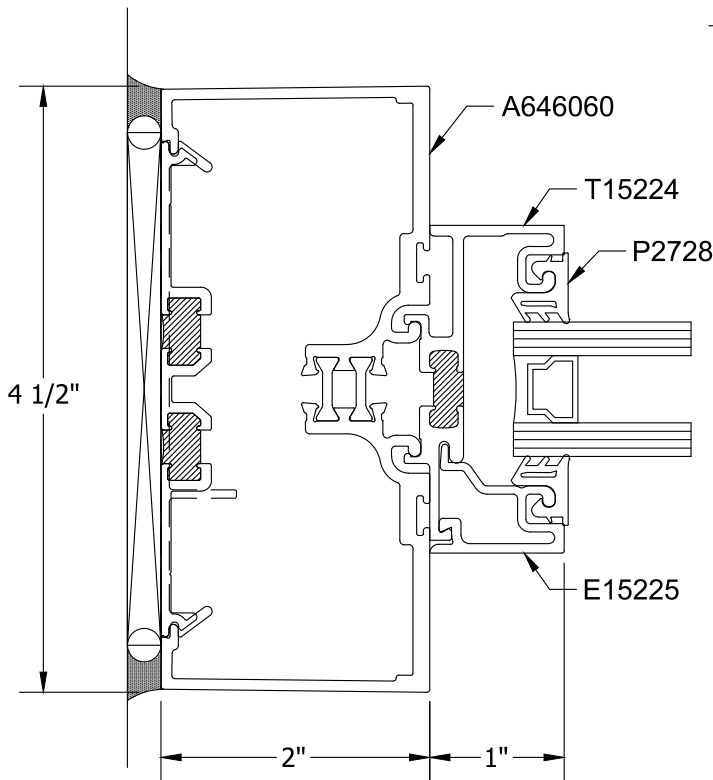
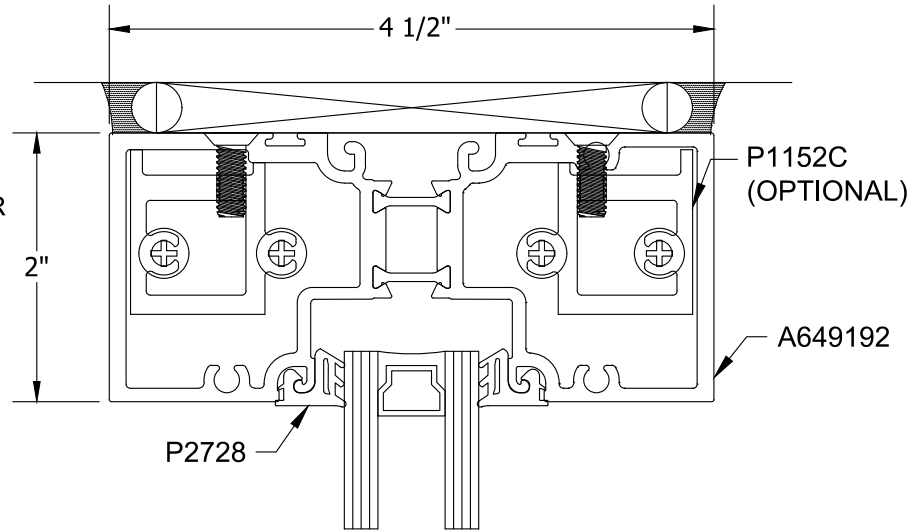
1. Insert P795TH into header cut out and secure with three supplied S070 screws from the underside
2. Attach the P795TFLH/RH to the jamb using the threshold prep and two supplied S070 screws
3. Install the threshold over the top of bottom pivot and secure it with two supplied S070 screws



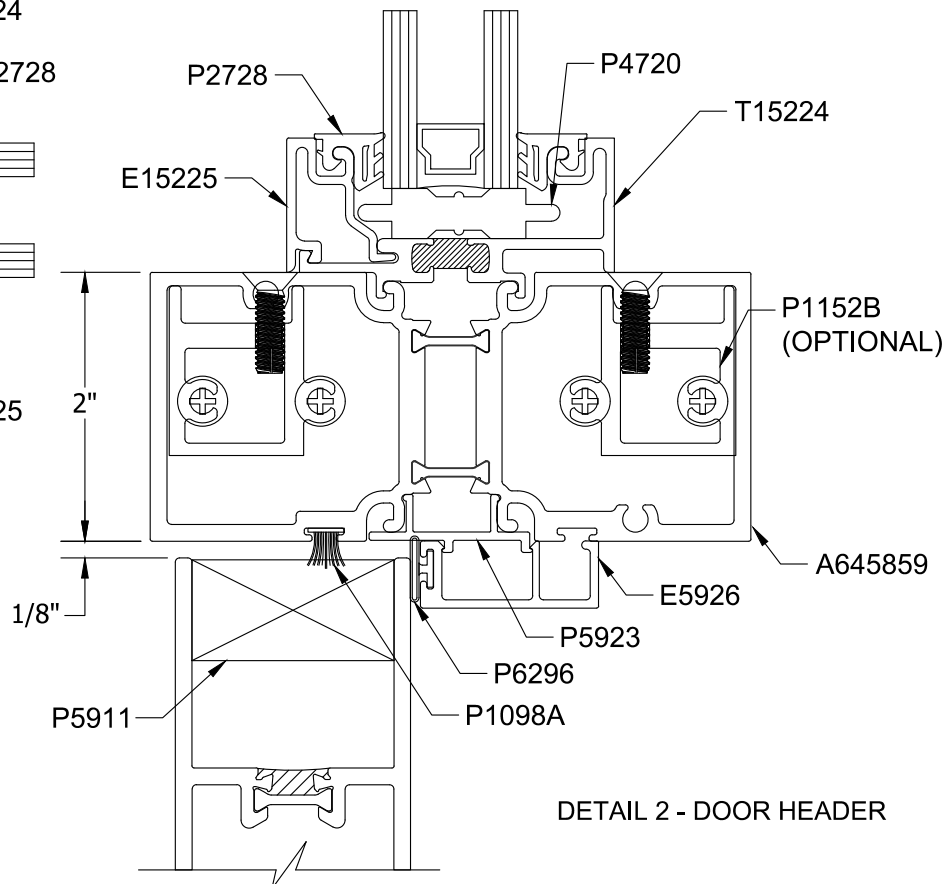
TRANSOM GLASS INFORMATION

1. Removable stop at transom header (see detail 1)
2. Recessed pocket at door header (see detail 2)
3. Snap in stops at jambs (see detail 3)
4. Glass size = D.L.O + 3/4" max.

DETAIL 1 - TRANSOM HEADER



DETAIL 3 - JAMB

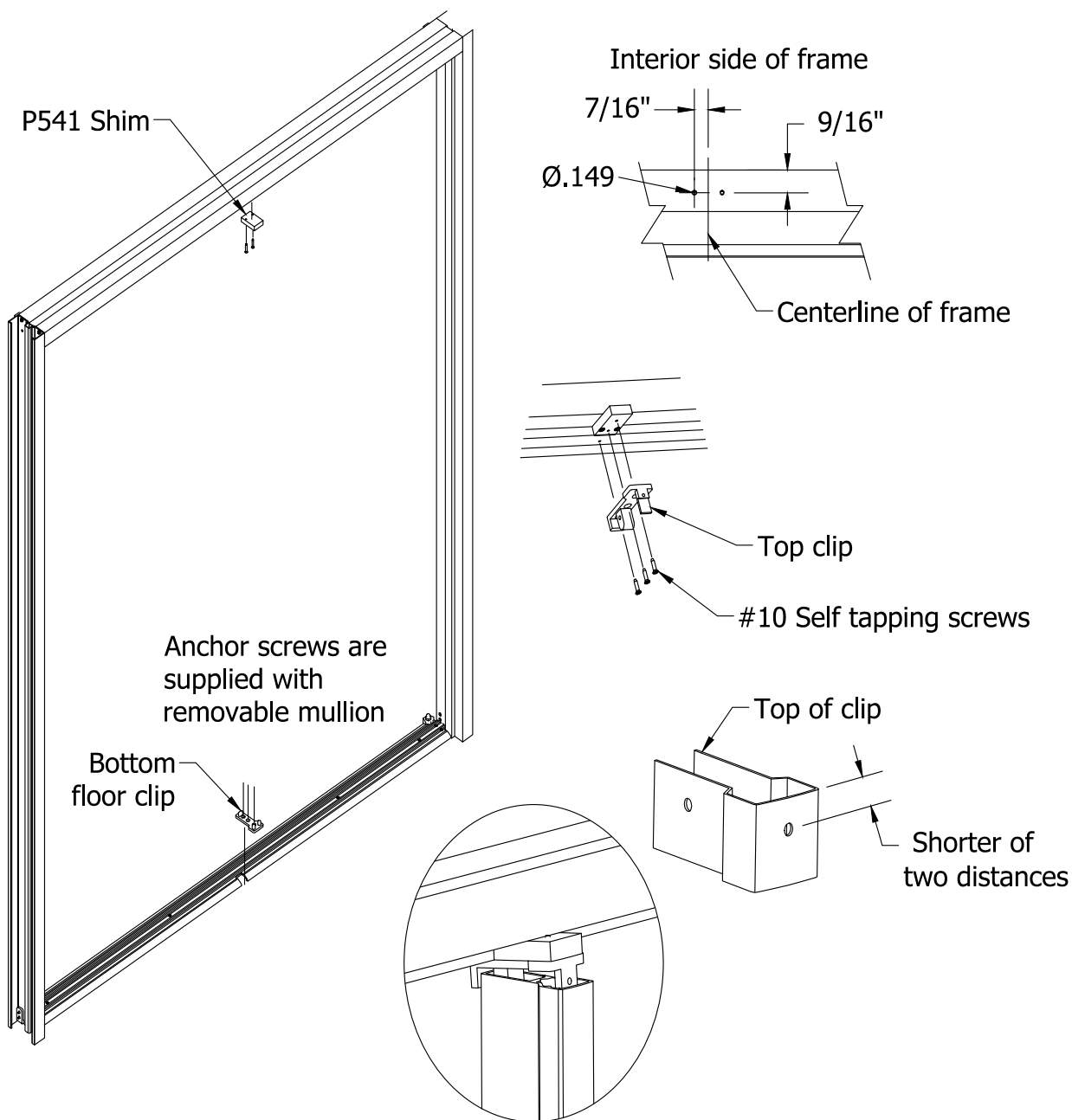


DETAIL 2 - DOOR HEADER

REMOVABLE MULLION INSTALLATION

For removable mullion RIM panics (P3770, P3771, P3772)

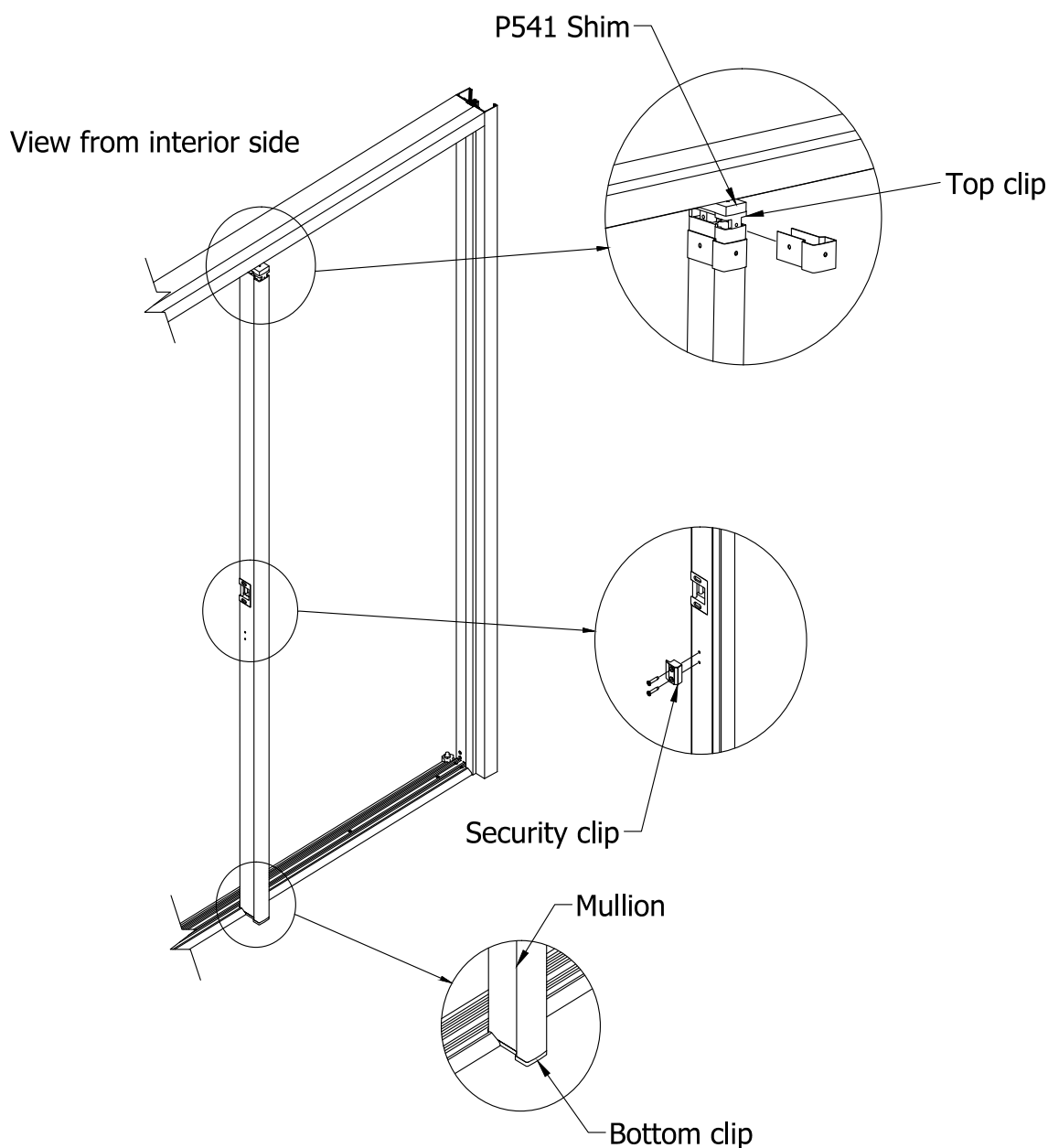
1. Attach P541 shim if required (N.B.T), see below.
2. Attach top clip. Drilling is required for #10 self tapping screw.
3. Cut removable mullion to length if needed.
4. Slip band clip over mullion before installing over top and bottom clips.
5. Tip the top of the removable mullion into the pockets of the top clip to allow clearance for the bottom of the mullion to slip over the pegs of the bottom clip. (see diagram on next page)



REMOVABLE MULLION INSTALLATION

For removable mullion RIM panics (P3770, P3771, P3772) continued

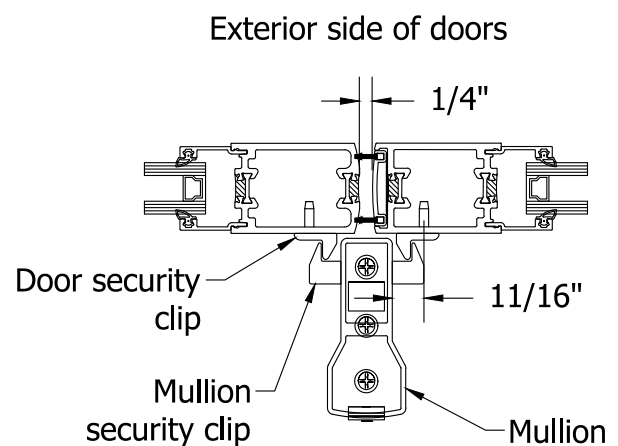
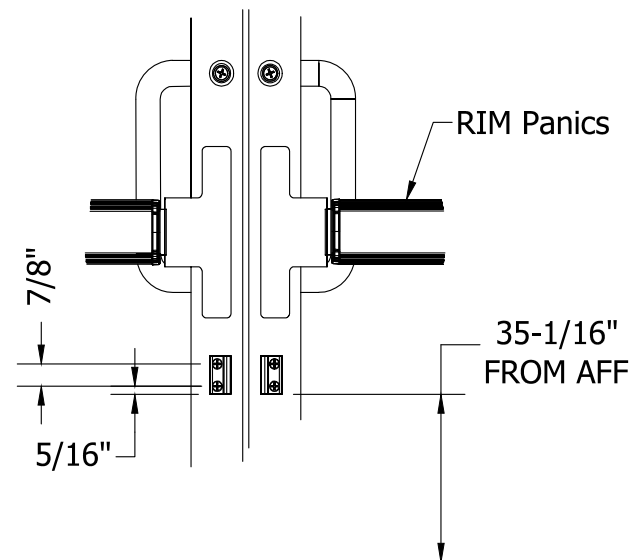
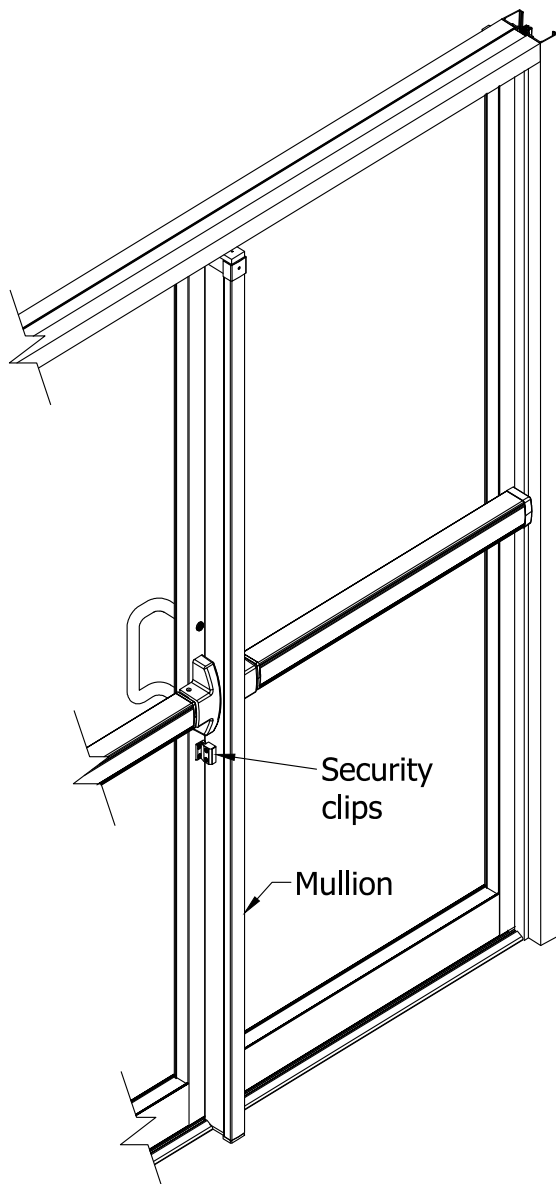
6. Move top of the mullion into place by catching the lip of the top clip with the mullion.
7. Attach the security clips to the removable mullion into the pre-drilled holes with #10 screws provided. (see diagram on next page)



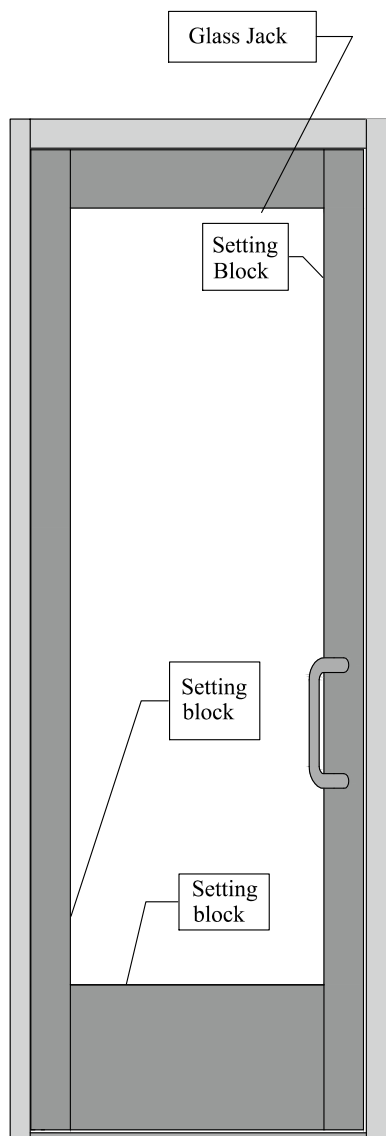
REMOVABLE MULLION INSTALLATION

For removable mullion RIM panics (P3770, P3771, P3772) continued

8. Attach the security clips on doors and removable mullion.
9. Install per diagram below.

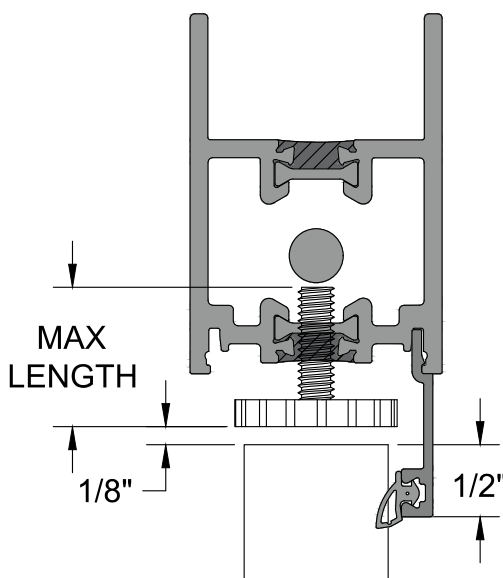


DOOR GLAZING INSTALLATION

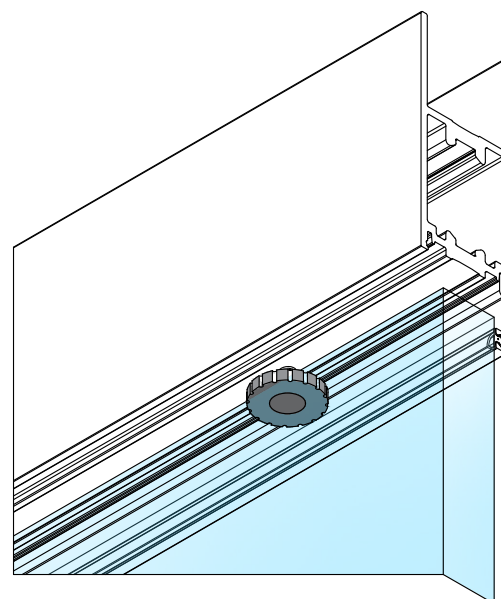


1. Door can be glazed after installed into the frame or laying down on a table or saw horses before being hung.
2. Install P5920 glass jack in top horizontal approximately 4" from lock vertical. Glass jack will need to be screwed tight to top horizontal initially to give clearance for glass install. Glass jack may need to be cut down to avoid tie rod, see chart and detail at bottom of page.
3. Install all interior or all exterior glass stops, one at each horizontal and one at each vertical. Trim glazing gasket leaving 1/8" excess at each end.
 - If glazing a door laying down, install stops on side of the door facing down.
 - If glazing a door already hung, tape may be needed to hold the glass stops in place until glass is installed.
4. Place P1929E setting blocks in 3 locations and adhere with tape provided. See page 19 for multi-lite configurations.
 - 1 at bottom horizontal 3-4" from hinge vertical.
 - 1 at hinge vertical 3-4" up from bottom horizontal.
 - 1 at lock vertical 3-4" down from top horizontal.
5. Install glass in door.

Note: Glass Jack will need to be cut down for rails listed to the right. Max Length allows for 1/8" clearance from glass before final tightening. Glass jack will need to be cut shorter if additional clearance is needed or top glass bite exceeds 1/2".



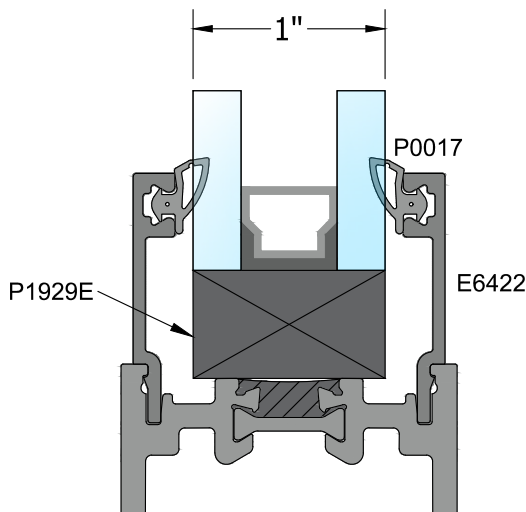
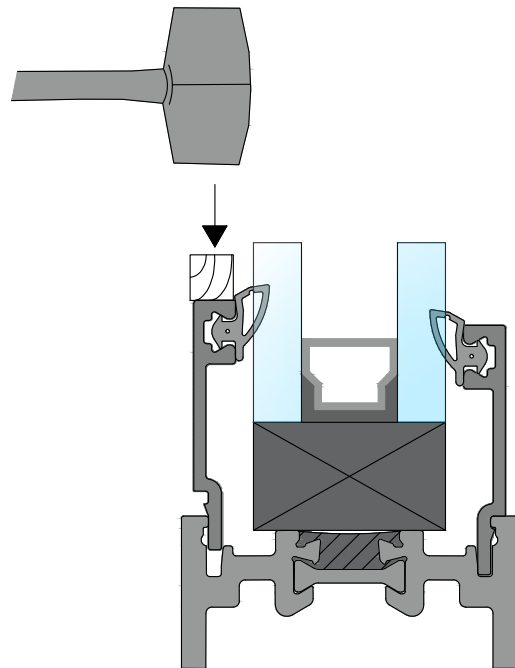
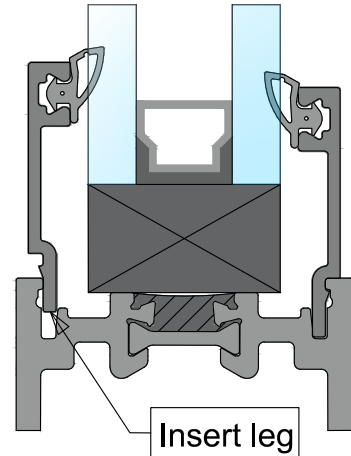
Top Rail	Max Length
A642525 (2 1/2")	31/32"



Clockwise to raise corner.
Counter clockwise to lower.

DOOR GLAZING INSTALLATION

6. Install one vertical glass stop on opposite side of door by sliding leg of E6422 into door stile.
7. Start at one end of glass stop. Use a wood block and mallet to tap down on glass stop until engagement. Work your way down to opposite end.
8. Install final vertical glass stop using same method.
9. Install final bottom horizontal glass stop using same method.
10. If glazing a door laying down, install door into frame.
11. Square door as desired by adjusting glass jack in top horizontal. Lifting the door slightly on the lock side can take pressure off the glass jack and make it easier to turn, a bar or some form of leverage may be needed for assistance.
12. Install final top horizontal glass stop.



MULTI-LITE SETTING BLOCK LOCATIONS

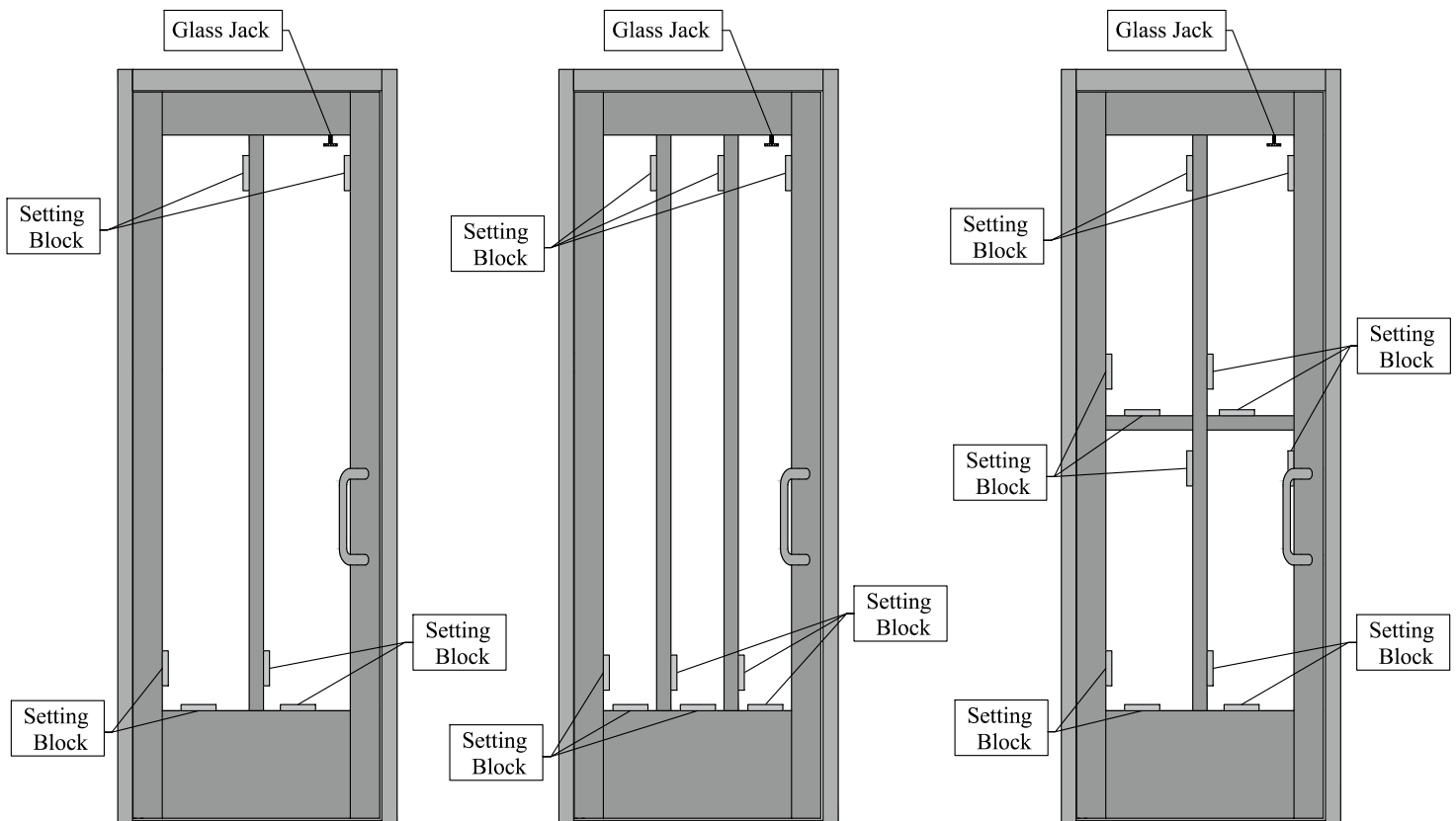
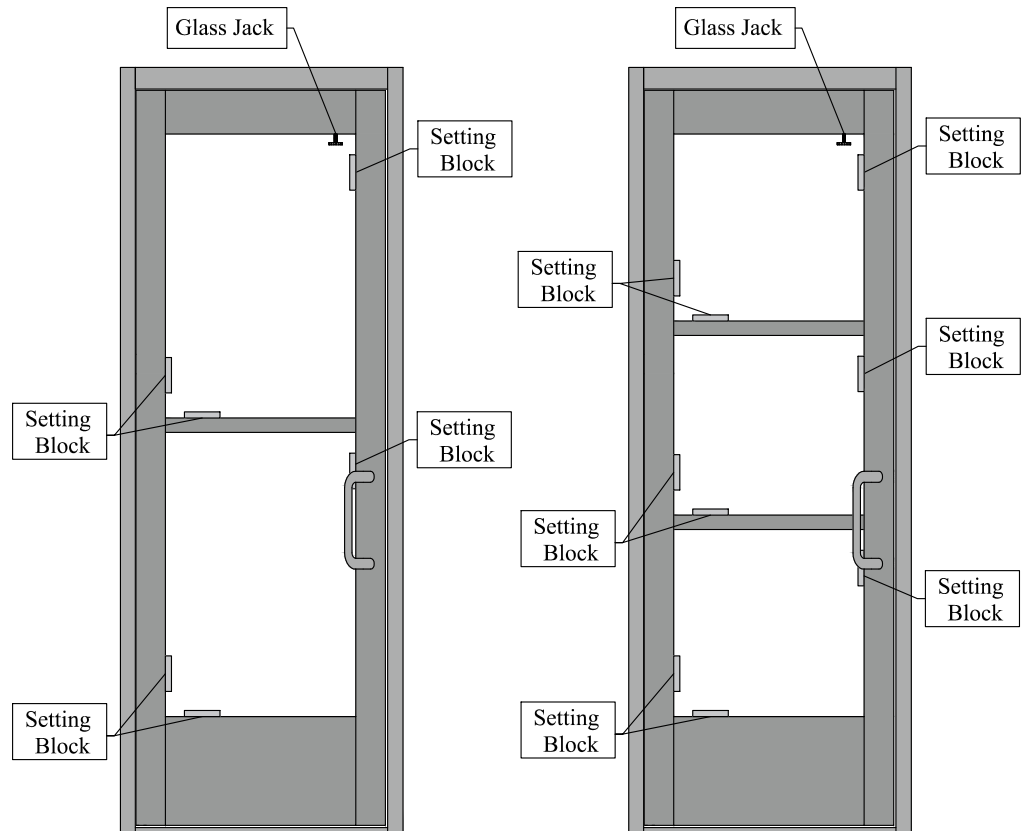
Multi-lite doors use one glass jack in the top horizontal towards the lock vertical. Only the lite touching that corner is adjustable by the glass jack.

All lites require three setting blocks:

One at the bottom 3-4" from corner towards hinge vertical.

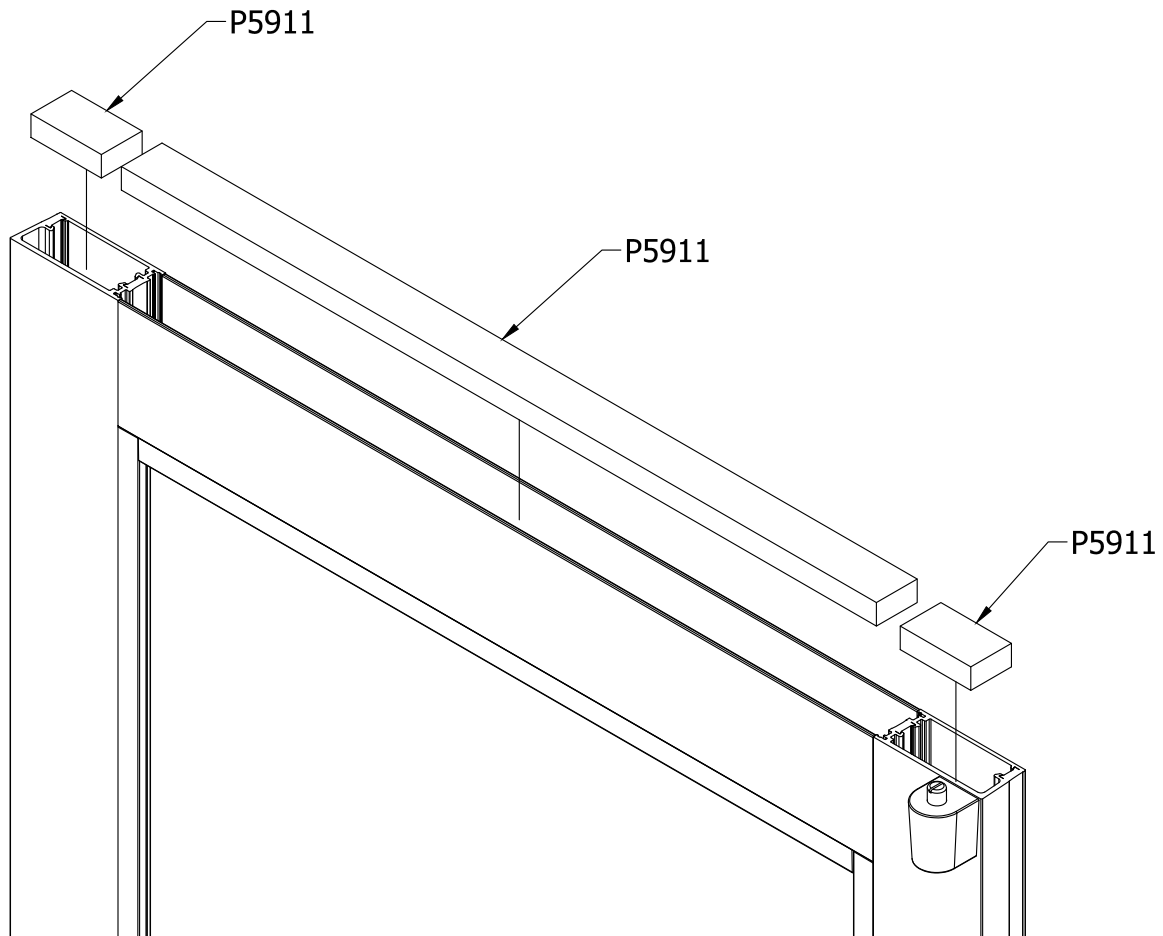
One on the side towards the hinge vertical 3-4" up from the bottom.

One on the side towards the lock vertical 3-4" down from the top.



WEATHER INHIBITOR INSTALLATION

1. Measure the inside cavities of the top of the door.
2. Cut piece of P5911 weather inhibitor slightly larger than the measured cavities to achieve a tight friction fit within the cavity.
3. Position weather inhibitor above cavity and compress with hands to allow inhibitor to drop down into cavity.
4. Position the inhibitors flush with the top of the door.
5. Repeat steps 1 - 4 for bottom of the door.



DOOR SWEEP INSTALLATION

- Sweeps are designed to be attached to the interior face of the bottom rail.
- Transfer the pre drill hole locations in the door sweep to the interior surface of the bottom rail. See Figure 1.
 - Center sweep to rail.
 - Align the bottom edge of door sweep to threshold. The door sweep blade must make full contact with the threshold to obtain the full benefit of the door sweep.
 - Mark the center of hole locations to the bottom rail.
- Attach door sweep to bottom rail.
- Slide gasket back into the door sweep. See Figure 2.

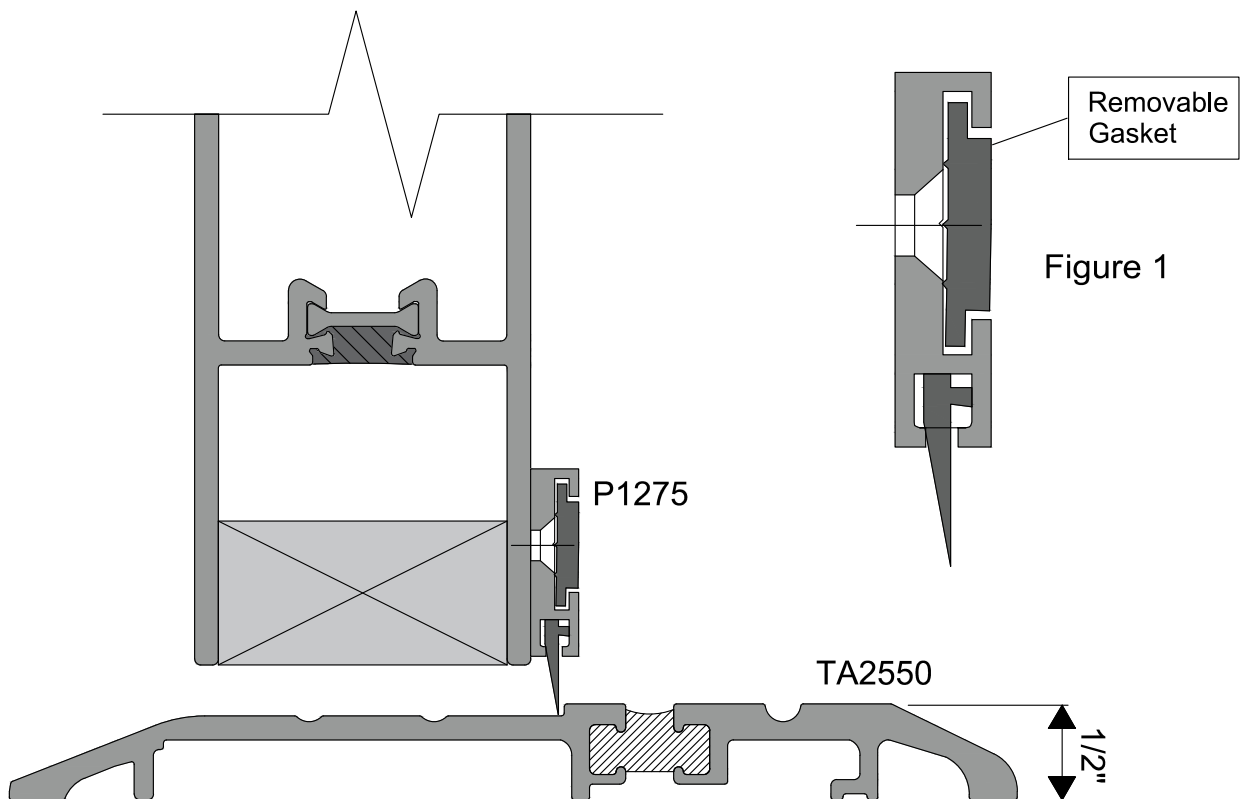
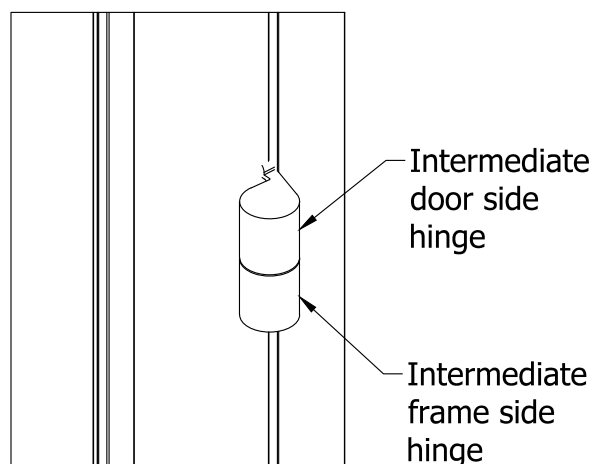
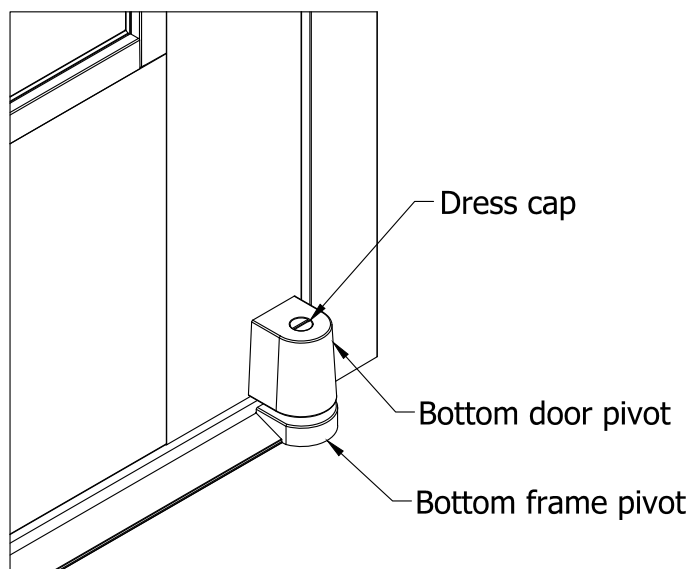
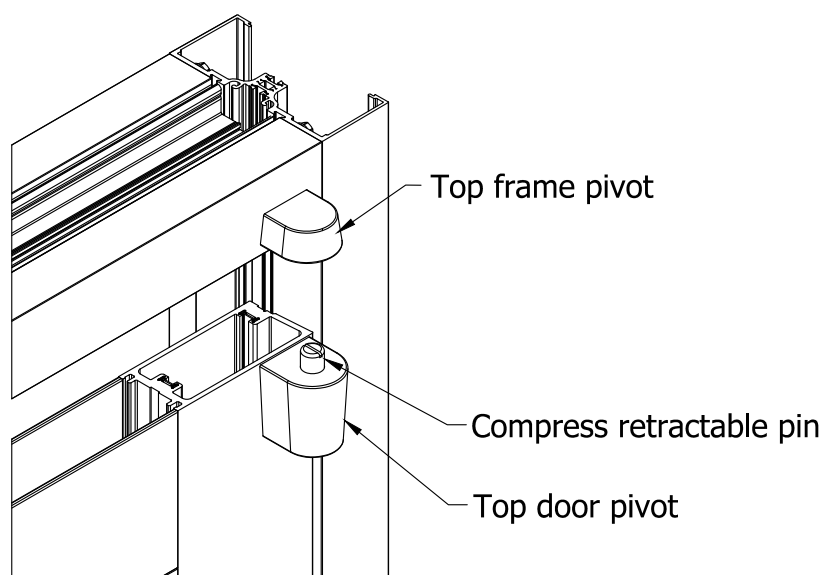


Figure 2

OFFSET PIVOT DOOR INSTALLATION

1. If pivot is not supported by the finished floor, grout or block under it as required.
2. Set bottom door pivot over the pin on bottom frame pivot.
3. Compress the retractable pivot pin in the top door pivot and set door up into position so the pivot pin engages the top frame pivot.
4. Unscrew dress cap and adjust the screw inside the bottom pivot with an allen wrench until the proper bottom gap is achieved.
5. Check operation of door and re-install dress cap
6. Install any intermediate pivots



PUSH / PULL INSTALLATION

1. Loosely attach P1564 pull handle to exterior of door with S232 screw and P1553 washer inserted through door from interior to top pull handle post.
2. Insert S230 conehead screw through door from interior to bottom pull handle post and tighten.
3. Tighten S232 screw used for top pull handle post.
4. Loosely attach push bar to hinge stile with S231 screw. See Figure 15
5. Set push bar onto S230 conehead fastener used for bottom pull handle post. See Figure 13
6. Insert S133 set screw into push bar post and tighten. See Figure 14
7. Tighten S231 screw at hinge stile.
8. Completed assembly. See Figure 16.

S230 Conehead Screw
1/4"-20 x 2 1/4"

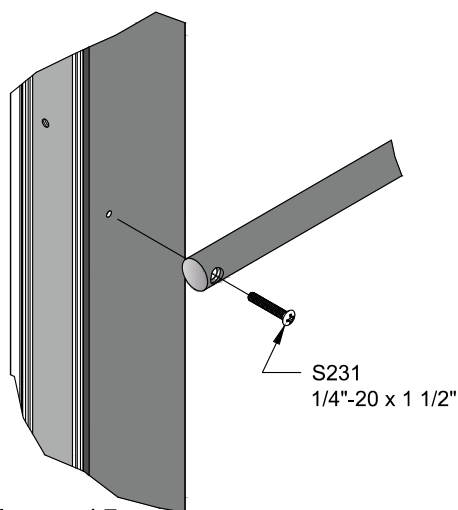


Figure 15

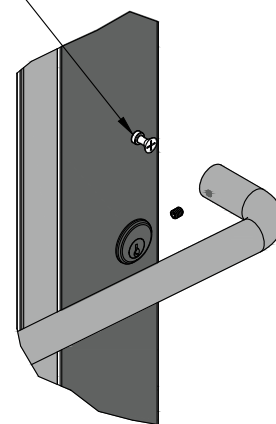


Figure 13

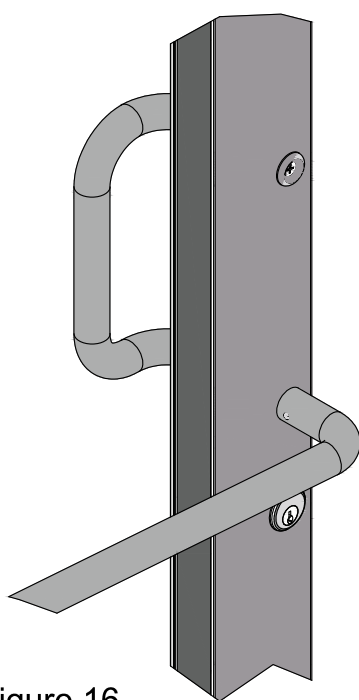


Figure 16

S133
Set Screw

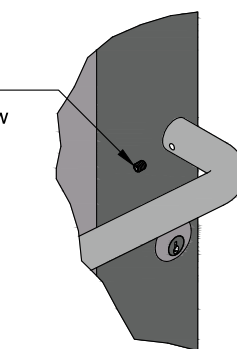


Figure 14

BACK TO BACK PULL INSTALLATION

1. Install P1564 pull handle on exterior of door with two S230 conehead screws. Insert S230 screws through door from the interior, tread into pull handle and tighten. See figure 14.
2. Set P1567 pull handle onto S230 fastener heads on interior of door.
3. Secure P1567 pull handle by using two S133 set screws, one in each pull handle post. See figure 15.

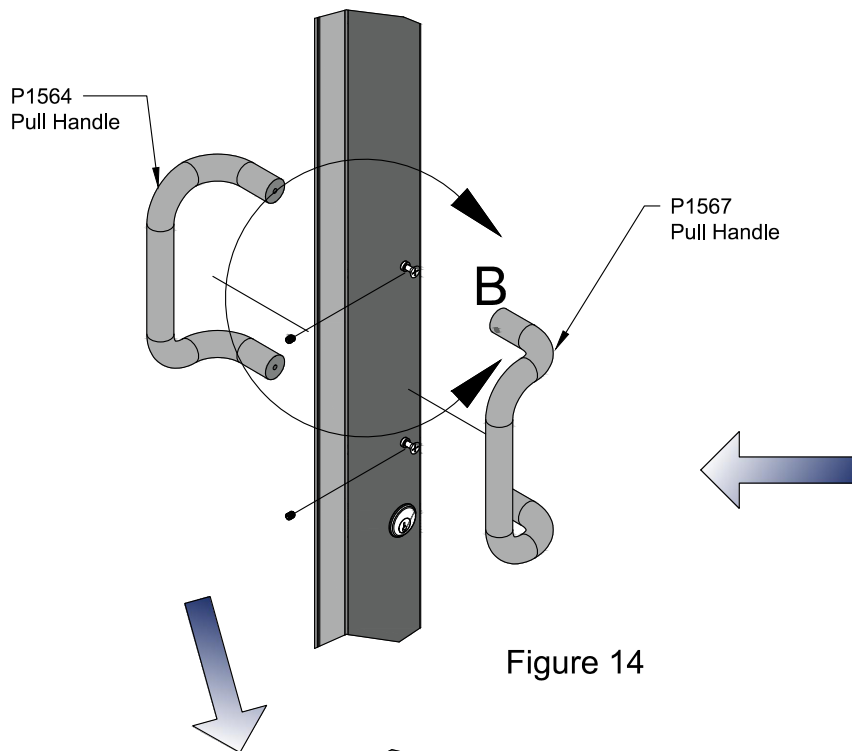


Figure 14

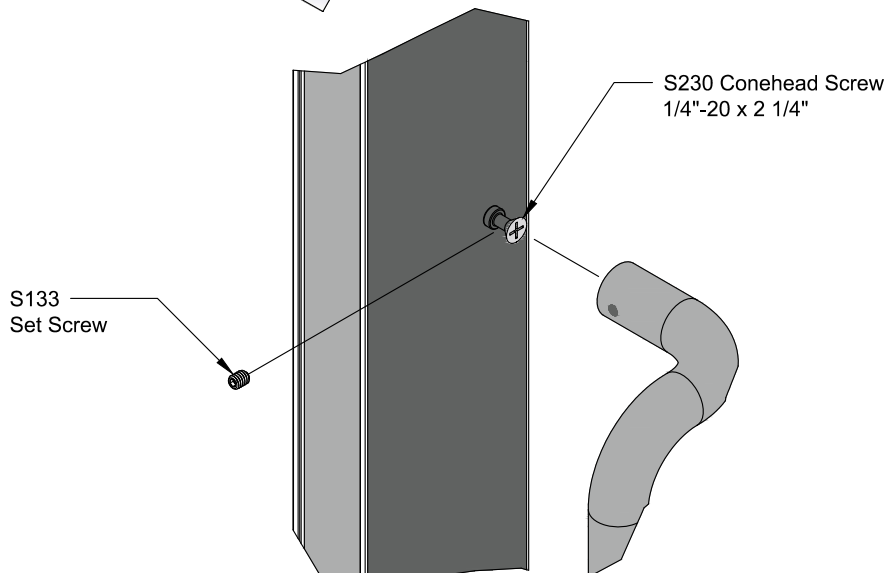
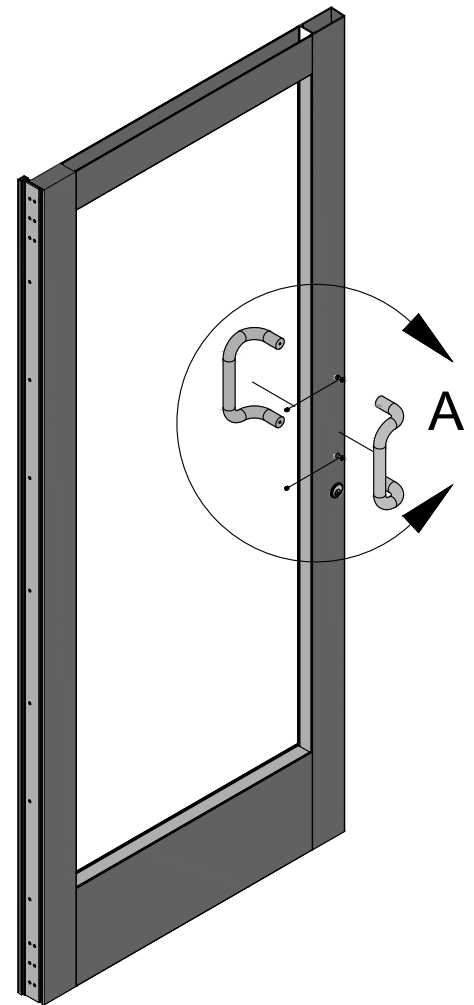


Figure 15



BACK TO BACK PUSH INSTALLATION

1. Install one S234 conehead fastener on interior side of the lock stile, see figure 13.
2. Loosely attach the push bar to the hinge stile with S231 screw, see figure 15.
3. Set the pushbar onto the S234 fastener head on lock stile.
4. Insert the S133 set screw and tighten, see figure 14.
5. Tighten the S231 screw at the hinge stile.
6. Repeat steps 1 - 5 for exterior side of the door.

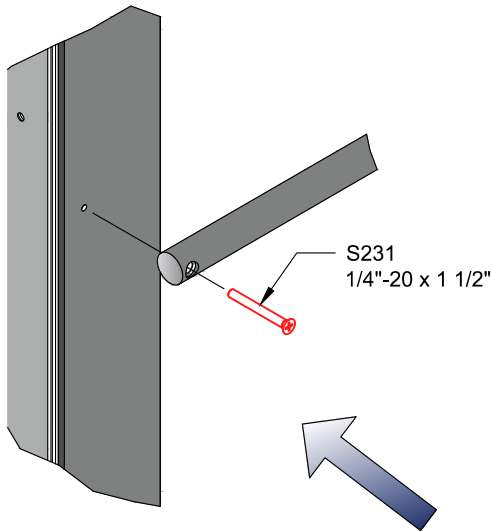


Figure 15

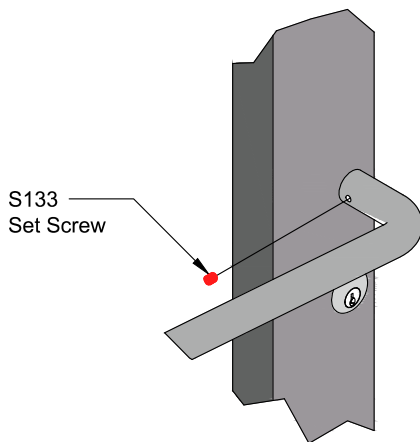


Figure 14

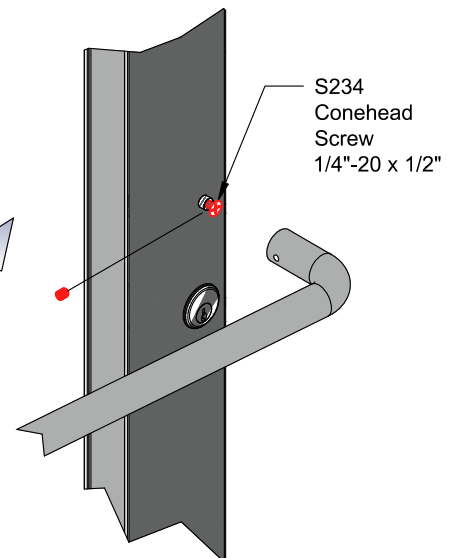
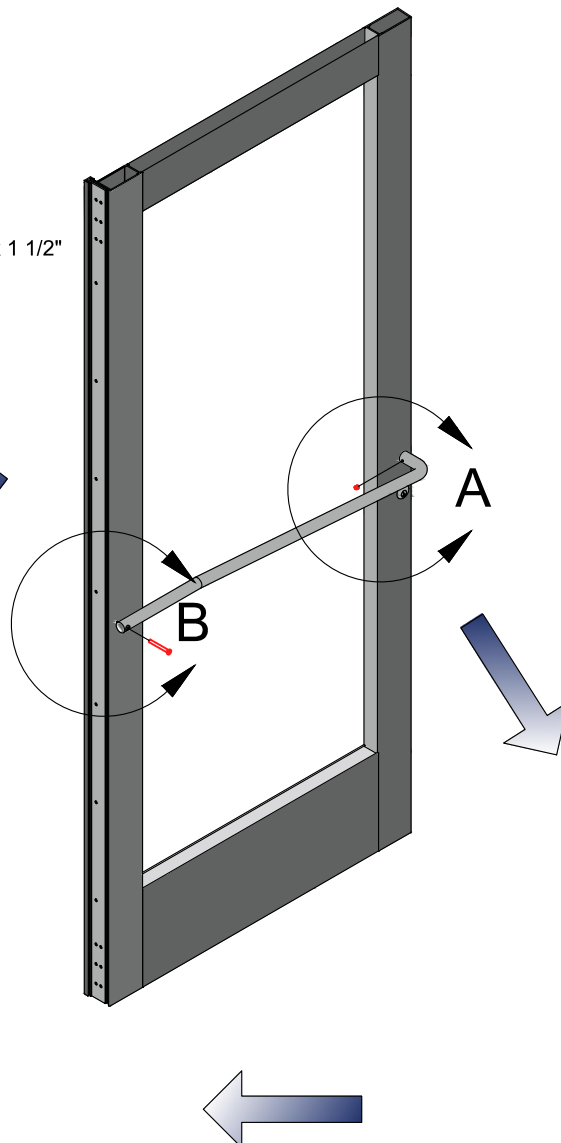
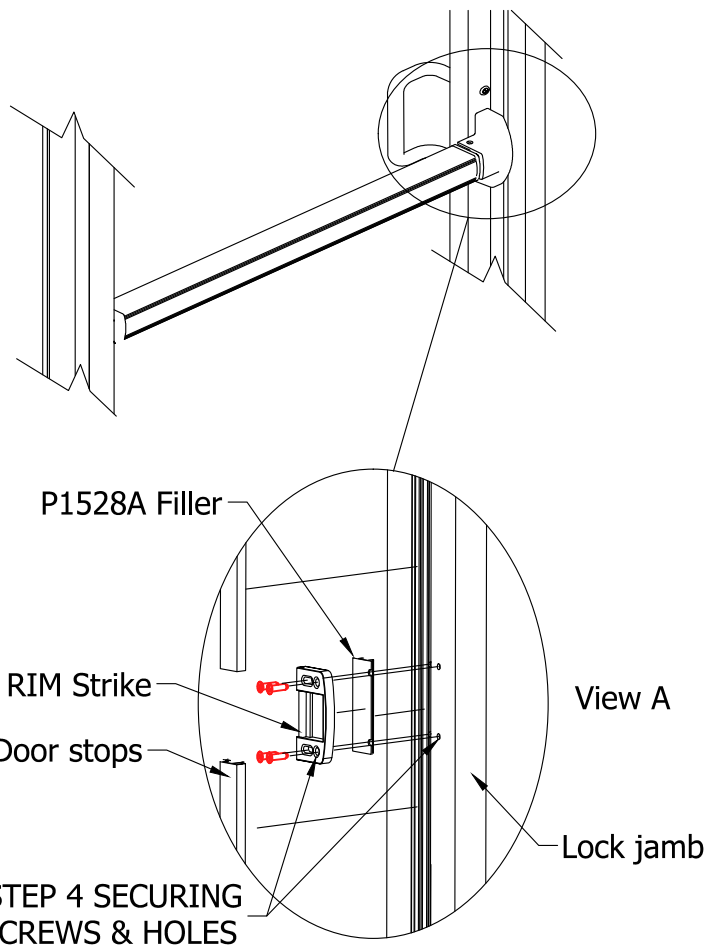
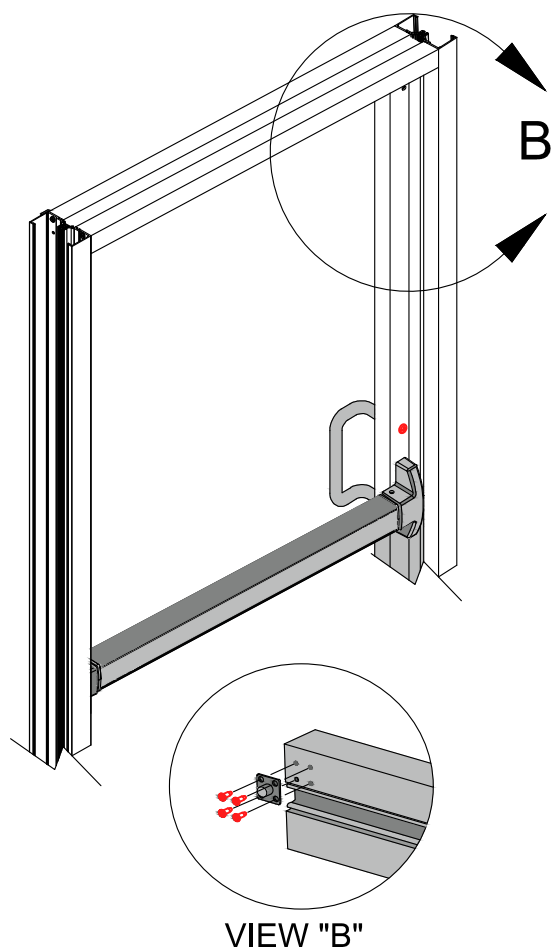


Figure 13

PANIC STRIKE INSTALLATION

RIM PANIC STRIKE

1. Snap in door stop base and P1528A filler.
2. Screw on the strike plate (see view A)
3. Close door and ensure that panic latches onto the strike. If not, adjust strike by loosening screws and re-adjusting strike, then re-tighten screws.
4. Once adjustment is made, interior side holes will have to be drilled to secure strike.
5. Once strike is secured with screws, test door again for proper function



CVR TOP STRIKE:

1. Install top strike plate into pre-punched holes (see view B)
2. Open and close the door to ensure proper engagement of the concealed vertical panic to strike. If panic does not engage properly, refer to panic manufacturer's installation instructions.

ADJUSTABLE ASTRAGAL

1. Adjust the weather astragal by turning the adjustment screws located along the meeting stile of the active leaf.
2. Turn the screws clockwise to increase the distance between leaves.
3. Turn the screws counter-clockwise to reduce the clearance between leaves

