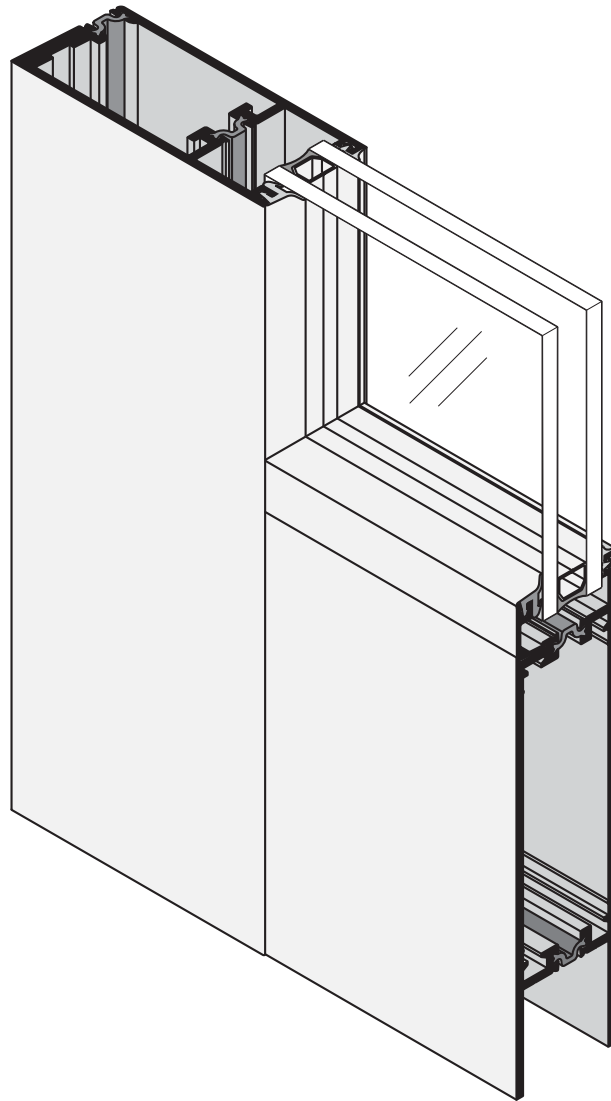


INSTALLATION INSTRUCTIONS

SERIES 250T, 400T, AND 550T THERMAL ENTRANCE DOORS



Phone: (800) 262-5151 • Fax: (866) 262-3299
crlaurence.com • usalum.com • crl-arch.com

HANDLING, STORAGE, AND PROTECTION OF ALUMINUM

The following precautions are recommended to protect the material against damage. Following these precautions will help ensure early acceptance of your products and workmanship.

A. HANDLE CAREFULLY.

All aluminum materials at job site must be stored in a safe place, well removed from possible damage by other trades. Cardboard wrapped or paper interleaved materials must be kept dry.

B. CHECK ARRIVING MATERIALS.

Check for quantity counts and keep records of where various materials are stored.

C. KEEP MATERIALS AWAY FROM WATER, MUD, AND SPRAY.

Prevent cement, plaster, or other materials from damaging the finish.

D. PROTECT THE MATERIALS AFTER ERECTION.

Protect erected frame with polyethylene or canvas splatter screen. Cement, plaster, terrazzo, other alkaline solutions, and acid based materials used to clean masonry are harmful to the finish. ***If any of these materials come in contact with the aluminum, immediately remove with water and mild soap.***

The rapidly changing technology within the architectural aluminum products industry demands that U.S. C.R. Laurence/Aluminum reserve the right to revise, discontinue, or change any product line, specification, or electronic media without prior written notice.

NOTE: Dimensions in parentheses () are millimeters unless otherwise noted.

GENERAL INSTALLATION NOTES

Recommended guidelines for all installations:

1. **REVIEW CONTRACT DOCUMENTS.** Check shop drawings, installation instructions, architectural drawings, and shipping lists to become thoroughly familiar with the project. The shop drawings take precedence and include specific details for the project. Note any **field verified** notes on the shop drawings prior to installing. The installation instructions are of a general nature and cover most conditions.
2. **INSTALLATION.** All materials are to be installed plumb, level, square, and true.
3. **BENCH MARKS.** All work should start from bench marks and/or column lines as established by the architectural drawings and the general contractor with guaranteed accuracy. Working from these datum points and lines determine:
 - a) The plane of the wall in reference to offset lines provided on each floor.
 - b) The finish floor lines in reference to bench marks on the outer building columns.
 - c) Mullion spacing from both ends of masonry opening to prevent dimensional build-up of daylight opening.
4. **STEEL ANCHORS.** Steel anchors that weld to steel structure are normally line set before mullions are hung. Outstanding leg of anchors must be at 90° to offset lines. Mullion space should be held to $\pm 1/32"$ (0.8). Anchor clips vary per job conditions. Follow approved shop drawings for size and location of clips.
5. **FIELD WELDING.** All field welding must be adequately shielded to avoid any splatter on glass or aluminum. Results will be unsightly and/or structurally unsound. Advise general contractor and other trades accordingly. All field welds of steel anchors must receive touch up paint (zinc chromate) to avoid rust.
6. **SURROUNDING CONDITIONS.** Make certain that construction which will receive your materials is in accordance with the contract documents. If not, notify the general contractor in writing and resolve differences before proceeding with work.
7. **ISOLATION OF ALUMINUM.** Aluminum to be placed in direct contact with uncured masonry or incompatible materials should be isolated with a heavy coat of zinc chromate or bituminous paint.
8. **SEALANTS.** Sealants must be compatible with all materials with which they have contact, including other sealant surfaces. Consult with sealant manufacturer for recommendations relative to joint size, shelf life, compatibility, cleaning, priming, tooling, adhesion, etc. It is the responsibility of the **Glazing Contractor** to submit a statement from the sealant manufacturer indicating that glass and glazing materials have been tested for compatibility and adhesion with glazing sealants, and interpreting test results relative to material performance, including recommendations for primers and substrate preparation required to obtain adhesion. The chemical compatibility of all glazing materials and framing sealants with each other and with like materials used in glass fabrication must be established. ***This is required on every project.***
9. **FASTENING.** Within the body of these instructions "fastening" means any method of securing one part to another or to adjacent materials. Only those fasteners used within the system are specified in these instructions. Due to the varying perimeter conditions and performance requirements, perimeter and anchor fasteners are not specified in these instructions. For perimeter and anchor fasteners refer to the shop drawings or consult the fastener supplier.
10. **BUILDING CODES.** Due to the diversity in state/provincial, local, and federal laws and codes that govern the design and application of architectural products, it is the responsibility of the individual architect, owner, and installer to assure that products selected for use on projects comply with all the applicable building codes and laws. U.S. Aluminum exercises no control over the use or application of its products, glazing materials, and operating hardware, and assumes no responsibility thereof.
11. **EXPANSION JOINTS.** Expansion joints and perimeter seals shown in these instructions and in the shop drawings are shown at normal size. Actual dimensions may vary due to perimeter conditions and/or difference in metal temperature between the time of fabrication and the time of installation. Gaps between expansion members should be based on temperature at time of installation.
12. **WATER HOSE TEST.** As soon as a representative amount of the wall has been glazed (500 square feet or 46.5 m²) a water hose test should be conducted in accordance with AAMA 501.2 specifications to check the installation. On all jobs the hose test should be repeated every 500 square feet (46.5 m²) during the glazing operation.
13. **COORDINATION WITH OTHER TRADES.** Coordinate with the general contractor any sequence with other trades which offset curtain wall installation (i.e. fire proofing, back-up walls, partitions, ceilings, mechanical ducts, converters, etc.).
14. **CARE AND MAINTENANCE.** Final cleaning of exposed aluminum surfaces should be done in accordance with AAMA 609.1 for anodized aluminum and 610.1 for painted aluminum.
15. **JOB SITE ESSENTIALS.** See pages 22 and 23.

GETTING STARTED

Introduction

Thank you for selecting the C.R. Laurence/U.S. Aluminum Thermal Entrance Doors. They have been engineered and built to our strict standards of quality and durability giving you the best aluminum framed door available. By following the instructions in this manual, we believe you will experience a trouble free installation of the system.

Should you have any question about this system or any other CRL products, please contact us at (800) 421-6144 or visit our website at www.crlaurence.com.

General Parts List

- Factory Assembled Thermal Door(s)
- Factory prepped Thermal Door Frame
- Hinging hardware - Offset or Pivot style
- Push/Pull hardware with security locks.
- Adjustable Astragal for double doors
- Pressure-type glass stops and glazing vinyl.
- Closer(s) and mounting hardware (optional)
- Panic Exit Device(s) (optional)

Tools and Supplies needed:

- 6 Ft. level
- Plastic Shims
- Silicone Sealant
- Drill Driver

PRODUCT DETAILS

250T NARROW STILE DOOR (TRAFFIC)

STILES	TOP RAIL	BOTTOM RAIL	APPLICATION
3" (76.2 mm)	2-7/8" (73 mm)	4-5/16" (109.5 mm)	LIGHT TO MODERATE
ADA Bottom Rail Option		10" (254 mm)	A.D.A.

400T MEDIUM STILE DOOR (TRAFFIC)

STILES	TOP RAIL	BOTTOM RAIL	APPLICATION
4-1/4" (108 mm)	4-5/16" (109.5 mm)	7-1/4" (184.2 mm)	MODERATE TO HEAVY
ADA Bottom Rail Option		10" (254 mm)	A.D.A.

550T WIDE STILE DOOR (TRAFFIC)

STILES	TOP RAIL	BOTTOM RAIL	APPLICATION
5-1/2" (139.7 mm)	6" (152.4 mm)	7" (177.8 mm)	HEAVY TRAFFIC
ADA Bottom Rail Option		10" (254 mm)	A.D.A.

GLASS WIDTH FORMULAS

DOOR STILE		1" (25 mm) GLASS
250T NARROW STILE	SINGLE DOOR	DOOR OPENING MINUS 5-1/4"
	PAIR OF DOORS	DOOR OPENING DIVIDED BY 2, MINUS 5-1/4"
400T MEDIUM STILE	SINGLE DOOR	DOOR OPENING MINUS 7-3/4"
	PAIR OF DOORS	DOOR OPENING DIVIDED BY 2, MINUS 7-3/4"
550T WIDE STILE	SINGLE DOOR	DOOR OPENING MINUS 10-1/4"
	PAIR OF DOORS	DOOR OPENING DIVIDED BY 2, MINUS 10-1/4"

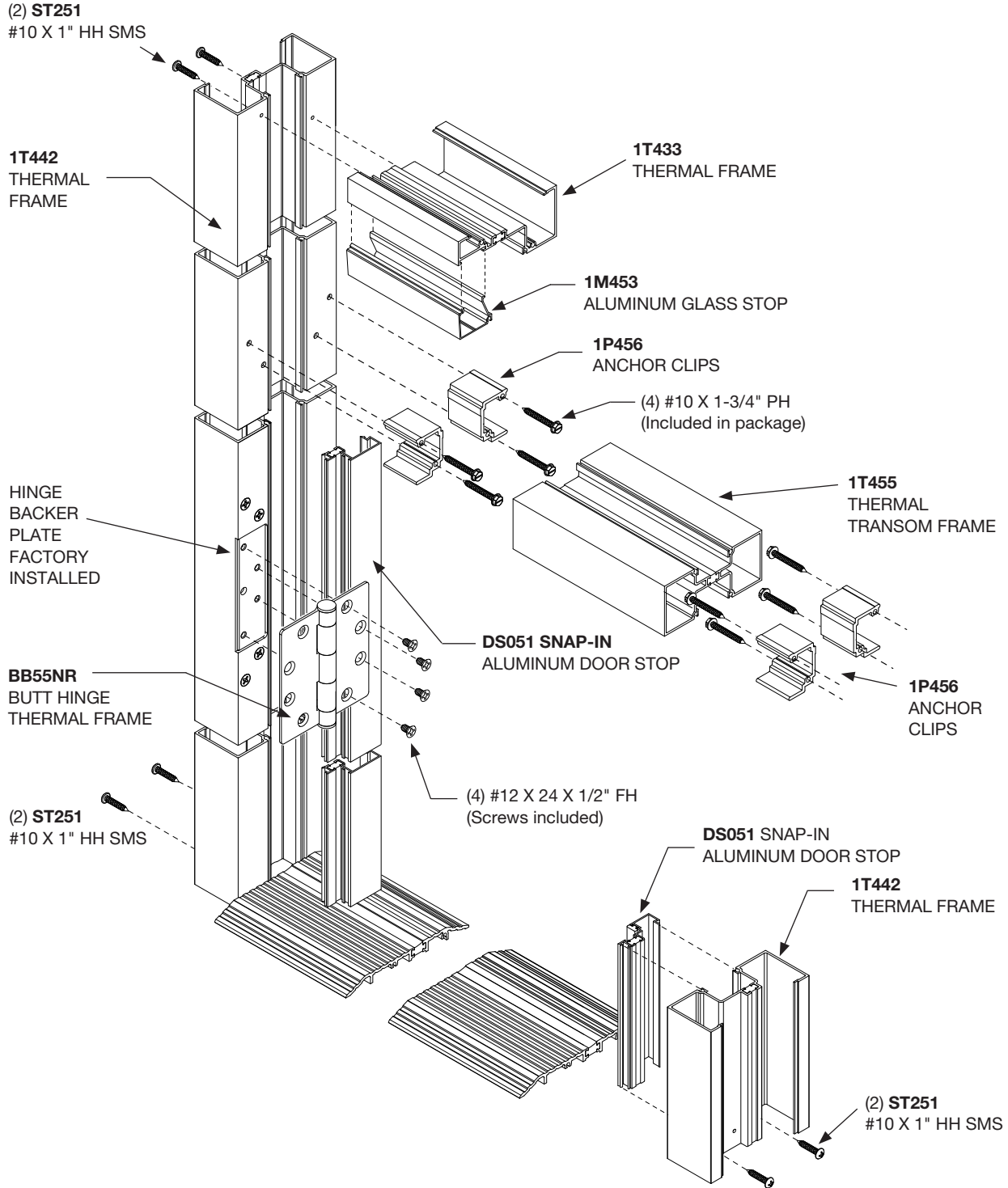
GLASS HEIGHT FORMULAS

DOOR STILE	1" (25 mm) GLASS WITH STANDARD BOTTOM RAIL	1" (25 mm) GLASS WITH 10" A.D.A. BOTTOM RAIL
250T NARROW STILE	DOOR OPENING MINUS 7"	DOOR OPENING MINUS 12-3/4"
400T MEDIUM STILE	DOOR OPENING MINUS 11-3/8"	DOOR OPENING MINUS 14-1/4"
550T WIDE STILE	DOOR OPENING MINUS 12-3/4"	DOOR OPENING MINUS 15-3/4"

"Door Opening" refers to D.L.O. (Day Light Opening) of the door frame and is standard throughout this manual.

FRAME UNIT FOR BUTT HUNG DOOR

1T442 FRAME SHOWN
1T455 AND TT461 SIMILAR

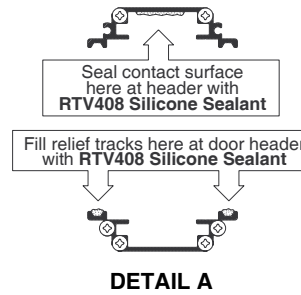


NOT TO SCALE

DOOR FRAME ASSEMBLY

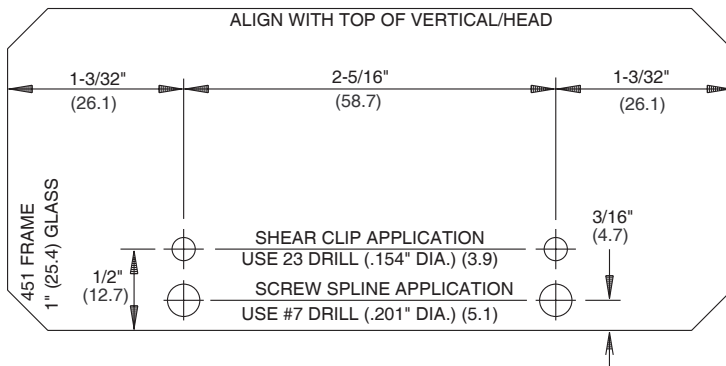
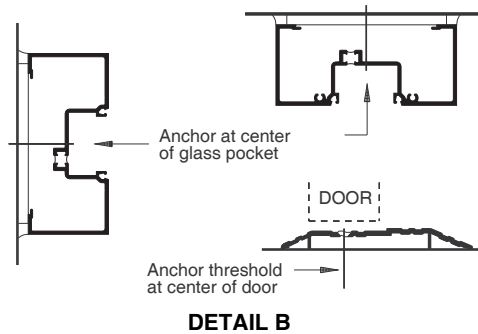
ASSEMBLY INSTRUCTIONS:

1. Verify opening size. Allow for 1/4" (6.4) shim and caulk space at sides, and 1/2" (12.7) space at top of frame. (When using optional AF100 sill flashing, allow 1/4" (6.4) shim space at top of frame).
2. If required, cut off top of vertical jambs to adjust frame to desired height.
3. Cut templates from instructions. Align edge of template with top of vertical and drill holes for head clips.
4. Attach anchor clips for head, door header, and threshold to jambs with provided screws.
5. Butter contact surface of anchor clips with sealant. **(See DETAIL A).**
6. Assemble head and door header to jambs as shown.
7. Install hinges to door jamb(s).



INSTALLATION INSTRUCTIONS:

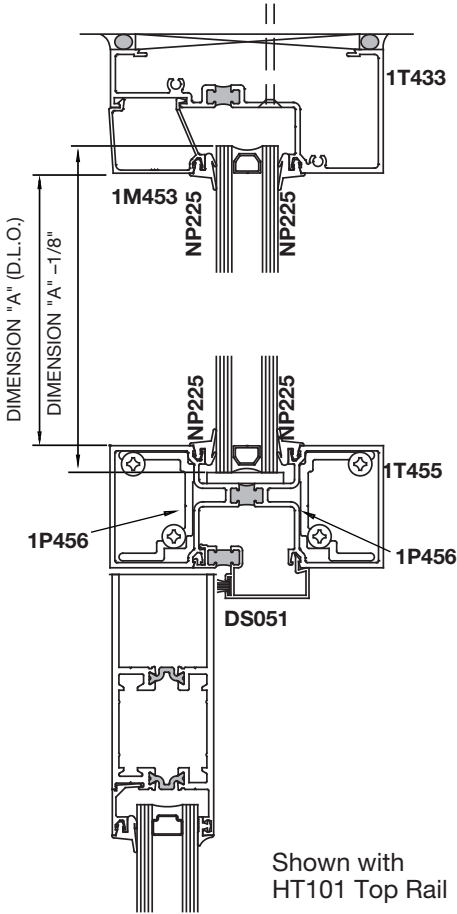
1. Set frame into opening plumb and square.
2. Drill holes for #12 installation screws starting 6" (152.4) from corners and not more than 36" (914.4) O.C.
3. Secure jambs and head to opening and threshold to floor with #12 screws. **(See DETAIL B).**
4. Snap door stop with weatherstrip into jambs and door header. Jamb stops run through.
5. Place setting blocks in door header at quarter or eighth points as required, and glaze transom. Glazing sash is required vertically at Series 451 transom.
6. Install glass stops with glazing gaskets on both sides of glass.
7. Roll-in glazing gaskets for jambs and header.



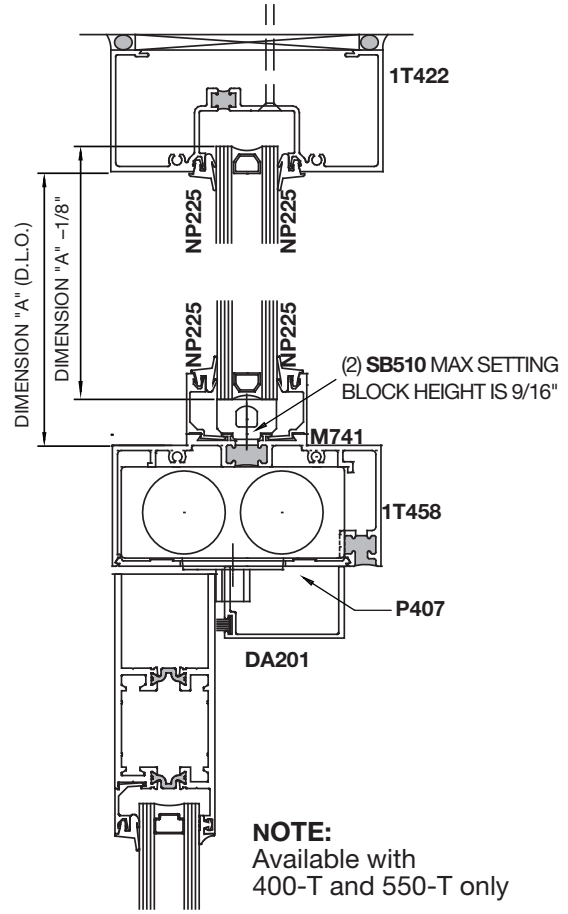
NOTE: Do not cut templates from this manual, templates are supplied inside frame boxes.

DOOR FRAME ASSEMBLY

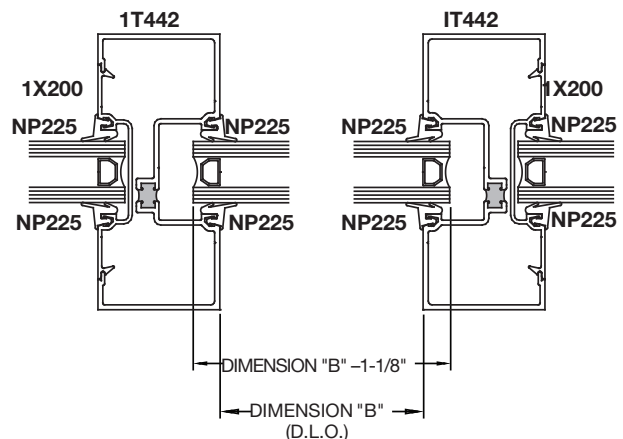
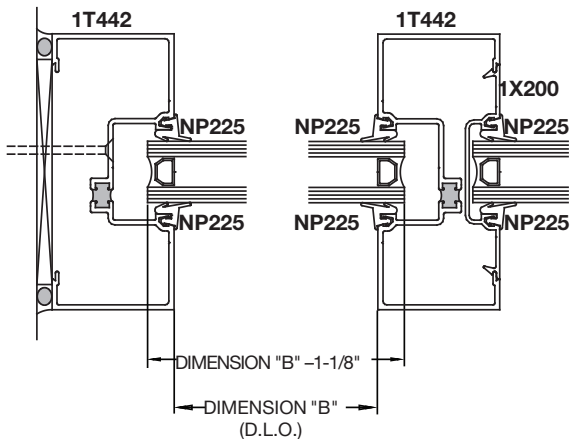
GLASS SIZE FORMULA AT TRANSOM
(OPEN BACK FRAME SHOWN; TUBULAR FRAME SIMILAR)



For Surface Mount Closer



For Concealed Overhead Closer

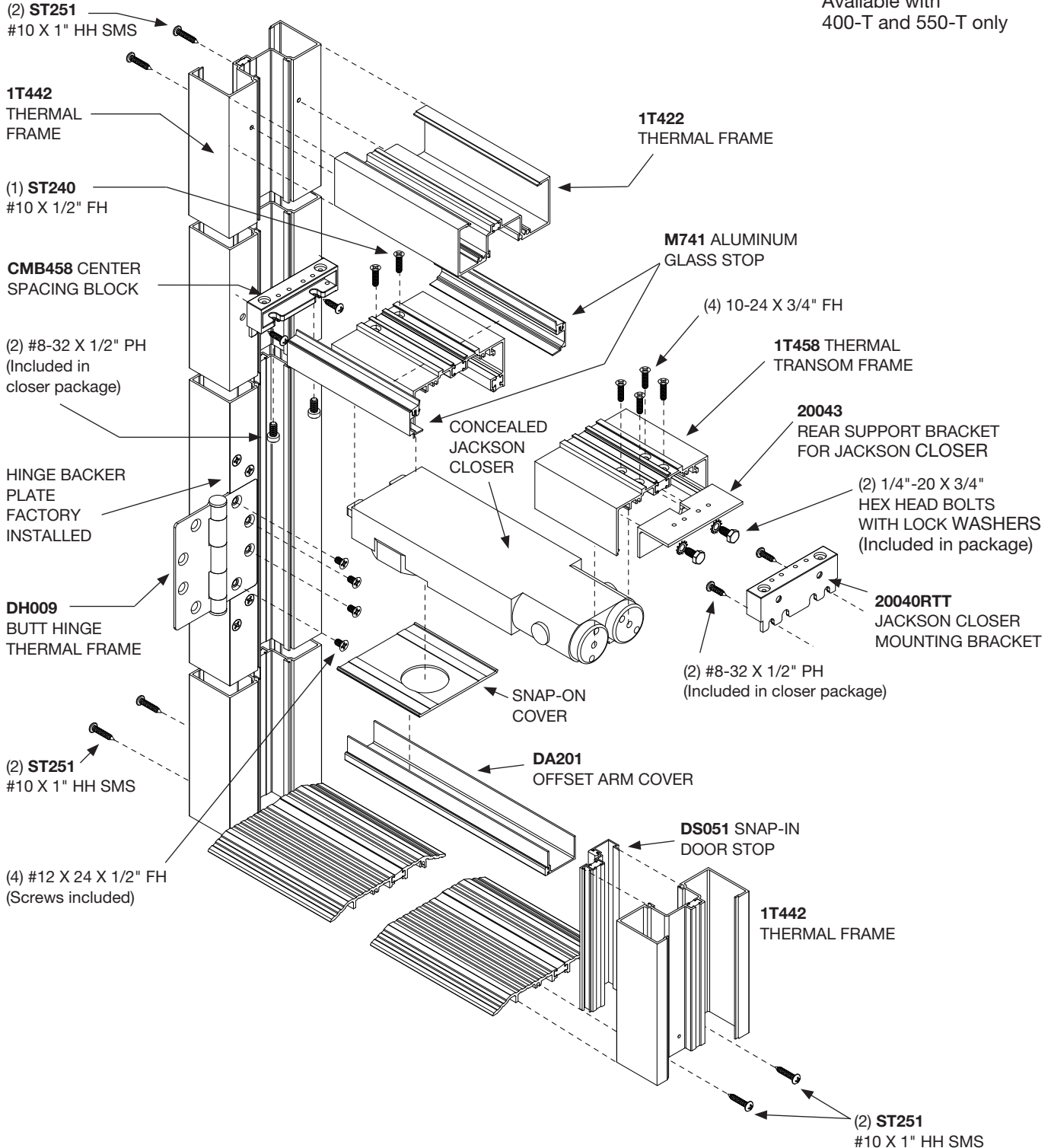


NOT TO SCALE

FRAME UNIT FOR BUTT HUNG DOOR WITH CONCEALED CLOSER AND OFFSET ARM

1T442 FRAME SHOWN
1T455 AND TT461 SIMILAR

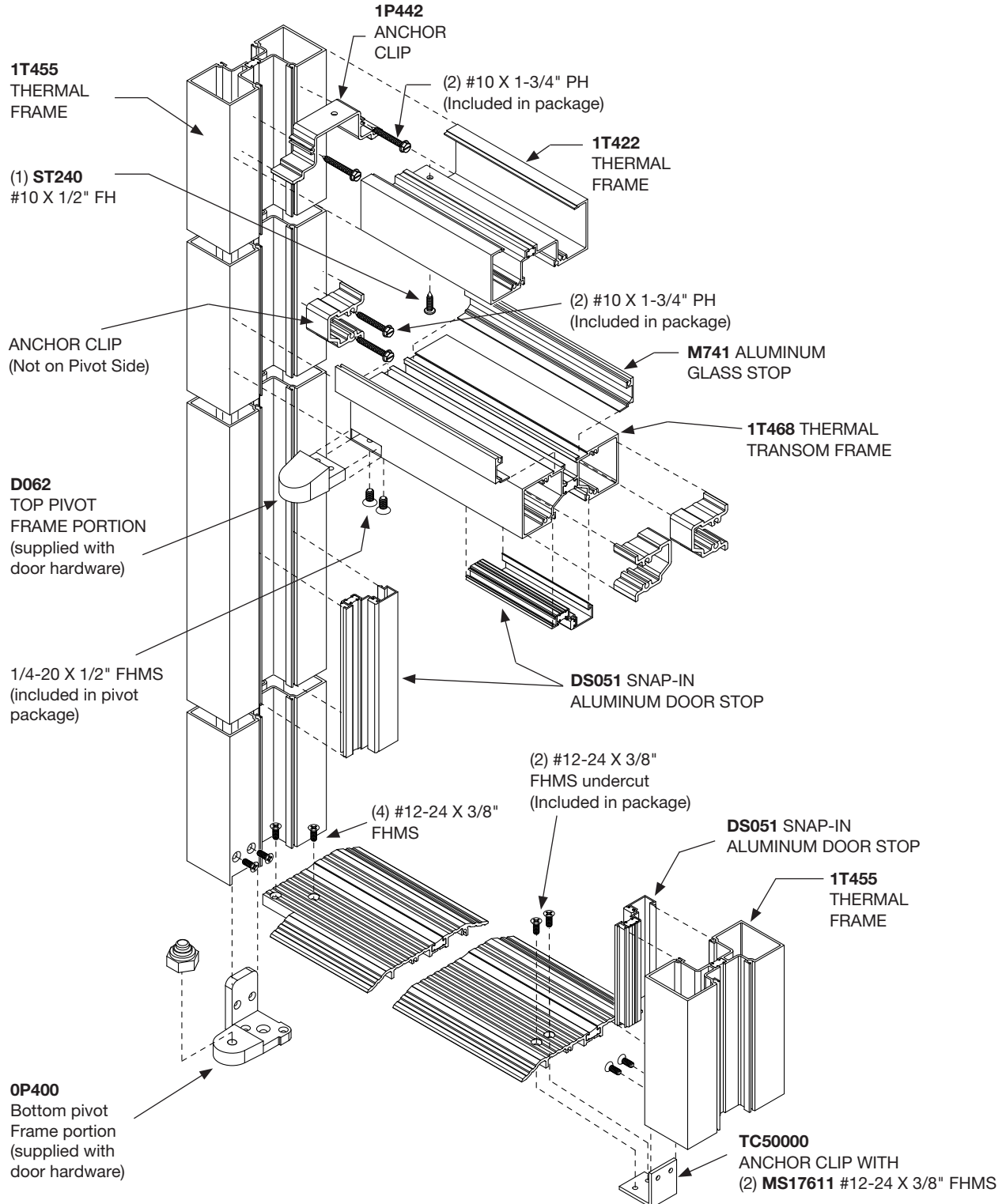
NOTE:
Available with
400-T and 550-T only



NOT TO SCALE

FRAME UNIT FOR OFFSET PIVOTED DOOR WITH SURFACE CLOSER

1T455 FRAME SHOWN
1T442 AND TT461 SIMILAR

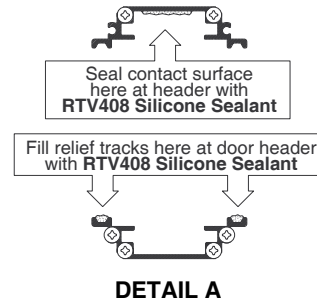


NOT TO SCALE

DOOR FRAME ASSEMBLY

ASSEMBLY INSTRUCTIONS:

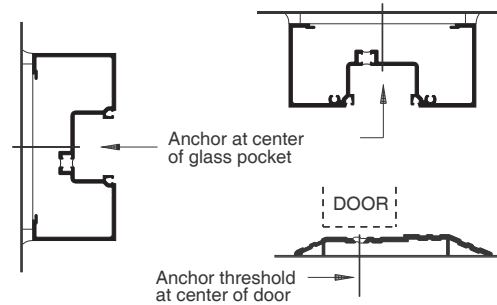
1. Verify opening size. Allow for 1/4" (6.4) shim and caulk space at sides, and 1/2" (12.7) space at top of frame. (When using optional **AF100** sill flashing, allow 1/4" (6.4) shim space at top of frame).
2. If required, cut off top of vertical jambs to adjust frame to desired height.
3. Cut templates from instructions. Align edge of template with top of vertical and drill holes for head clips.
4. Attach anchor clips for head, door header, and threshold to jambs with provided screws.
5. Butter contact surface of anchor clips with sealant. **(See DETAIL A).**
6. Assemble head and door header to jambs as shown.
7. Install hinges to door jamb(s).



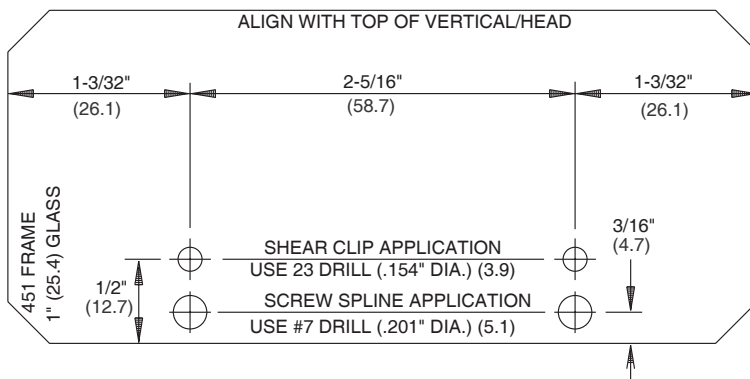
DETAIL A

INSTALLATION INSTRUCTIONS:

1. Set frame into opening plumb and square.
2. Drill holes for #12 installation screws starting 6" (152.4) from corners and not more than 36" (914.4) O.C.
3. Secure jambs and head to opening and threshold to floor with #12 screws. **(See DETAIL B).**
4. Snap door stop with weatherstrip into jambs and door header. Jamb stops run through.
5. Place setting blocks in door header at quarter or eighth points as required, and glaze transom. Glazing sash is required vertically at Series 451 transom.
6. Install glass stops with glazing gaskets on both sides of glass.
7. Roll-in glazing gaskets for jambs and header.



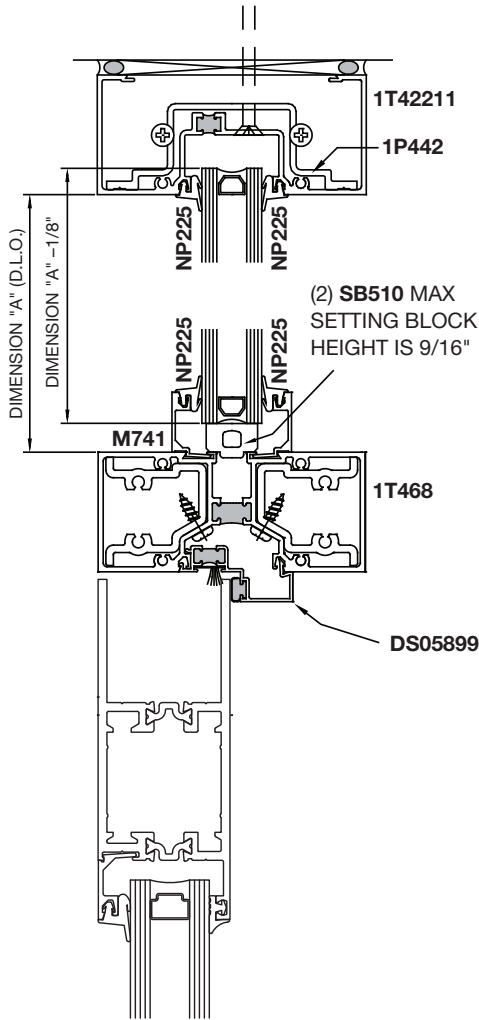
DETAIL B



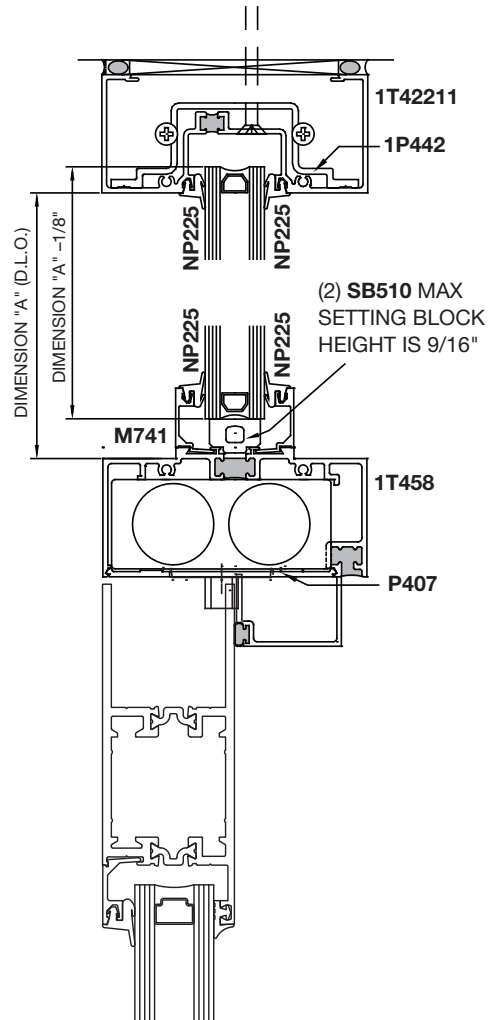
NOTE: Do not cut templates from this manual, templates are supplied inside frame boxes.

DOOR FRAME ASSEMBLY

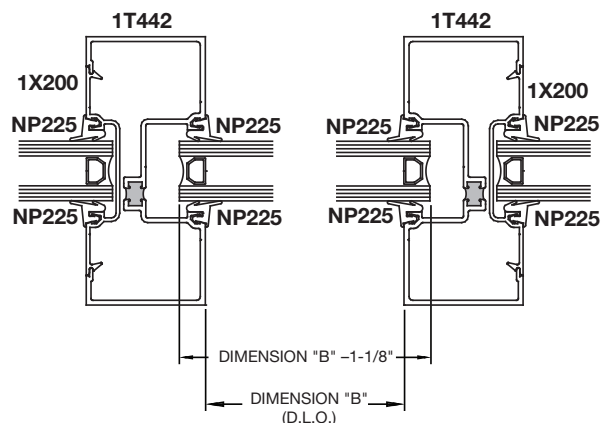
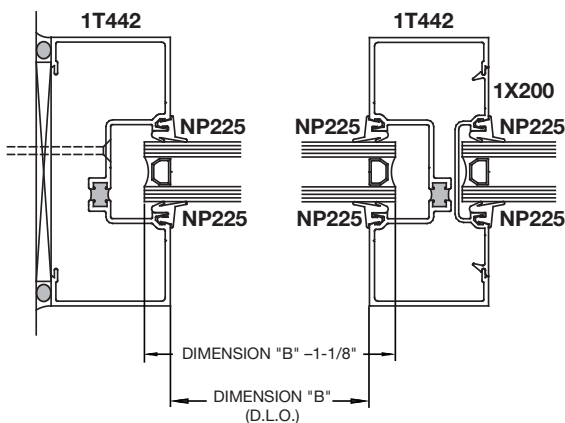
GLASS SIZE FORMULA AT TRANSOM
(OPEN BACK FRAME SHOWN; TUBULAR FRAME SIMILAR)



For Surface Mount Closer



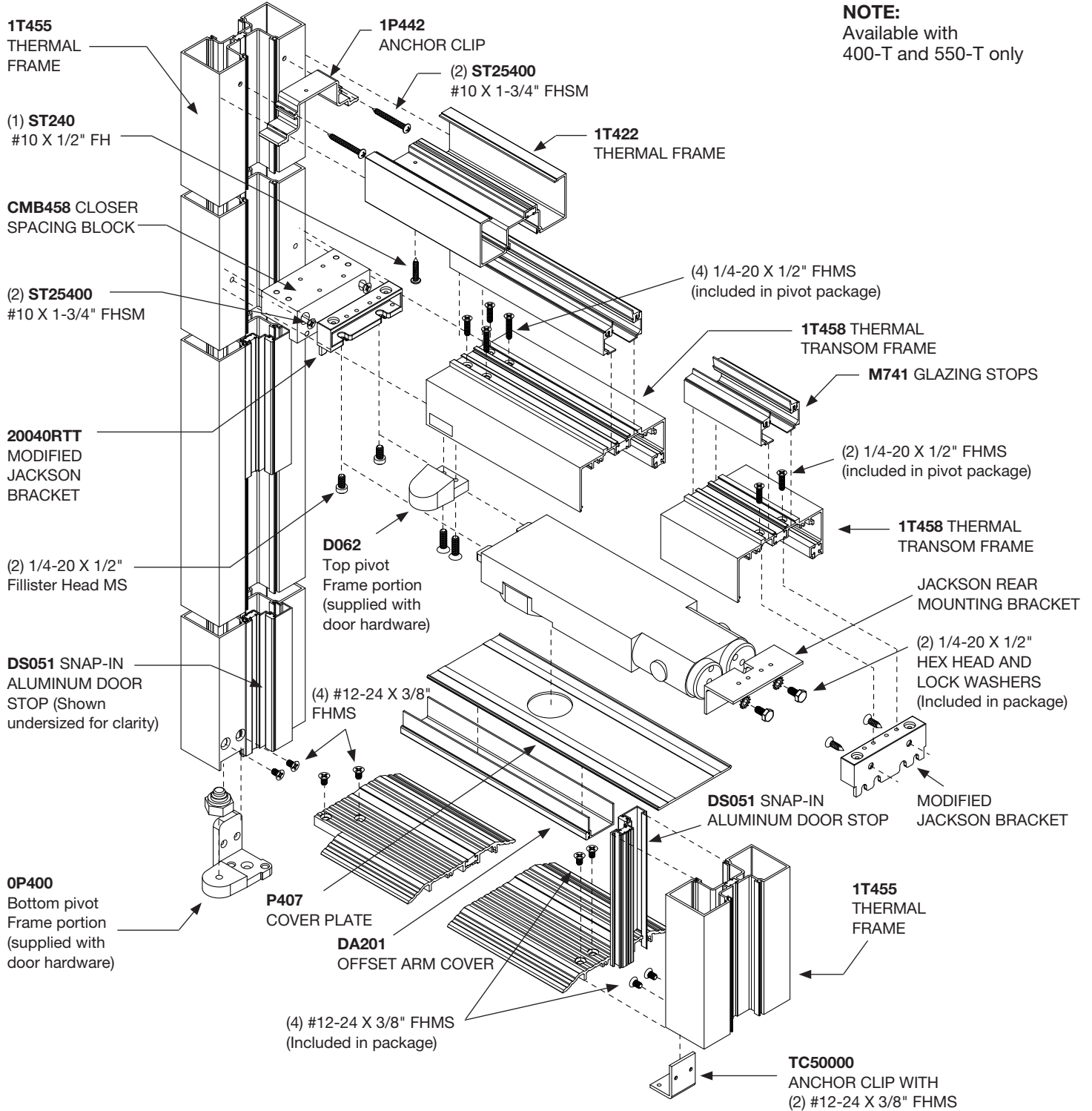
For Concealed Overhead Closer



NOT TO SCALE

FRAME UNIT FOR OFFSET PIVOTED DOOR WITH CONCEALED CLOSER AND OFFSET ARM

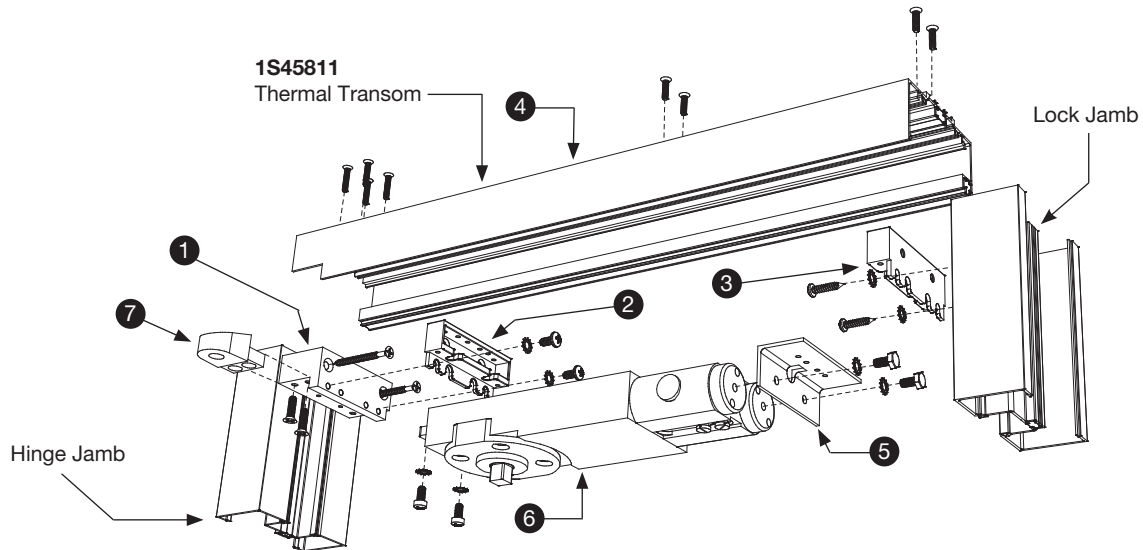
1T455 FRAME SHOWN
1T422 AND TT461 SIMILAR



NOT TO SCALE

DOOR FRAME ASSEMBLY

JACKSON OVERHEAD CONCEALED CLOSER FOR OFFSET PIVOTED DOOR



NOTE:
Available with
400-T and 550-T only

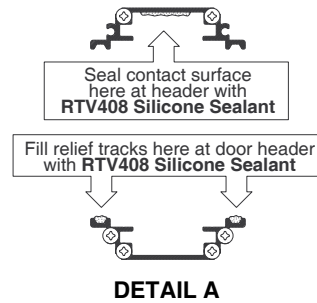
- ① Attach the Closer Spacing Block, Part Number **CMB458**, to the Hinge Jamb using (2) #10 X 2-1/2" Flat Head Sheet Metal Screws.
- ② Attach the Jackson Mounting Bracket, Part Number **20040RTT**, to the Spacing Block using (2) 1/4"- 20 X 1/2" Pan Head Machine Screws and Lock Washers.
- ③ Attach a second Jackson Mounting Bracket, to the opposite Jamb. It should be level and in alignment with the bracket in Step 2.
- ④ Place the Part Number **1T458** Thermal Transom extrusion, over the two brackets, align the holes and secure with (6) 1/4"- 20 X 1/2" Flat Head Machine Screws and Lock Washers.
- ⑤ Attach the Jackson Rear Mounting Bracket, Part Number **20043**, to the Jackson Closer using (2) 1/4"- 20 X 1/2" Hex Head Bolts and Lock Washers.
- ⑥ Insert the Jackson Closer into the Transom Channel and set the front two tabs onto the bracket ledge installed in Step 2. Raise the Rear Mounting Bracket of the closer up and attach it to the Transom using (2) 1/4"- 20 X 1/2" Flat Head Machine Screws. Finish by securing the Closer to the front Bracket with (2) 1/4"- 20 X 1/2" Filister Head Machine Screws and Lock Washers.
- ⑦ Attach the Top Pivot Frame Portion, **D062**, to the bottom of the Spacer Block installed in Step 1 using (2) 1/4"-20 X 1/2" Flat Head Machine Screws.

NOT TO SCALE

DOOR FRAME ASSEMBLY

ASSEMBLY INSTRUCTIONS:

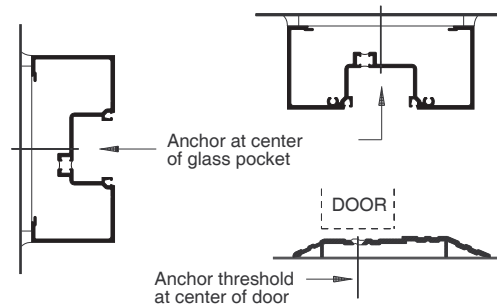
1. Verify opening size. Allow for 1/4" (6.4) shim and caulk space at sides, and 1/2" (12.7) space at top of frame. (When using optional **AF100** sill flashing, allow 1/4" (6.4) shim space at top of frame).
2. If required, cut off top of vertical jambs to adjust frame to desired height.
3. Cut templates from instructions. Align edge of template with top of vertical and drill holes for head clips.
4. Attach anchor clips for head, door header, and threshold to jambs with provided screws.
5. Butter contact surface of anchor clips with sealant. **(See DETAIL A).**
6. Assemble head and door header to jambs as shown.
7. Install hinges to door jamb(s).



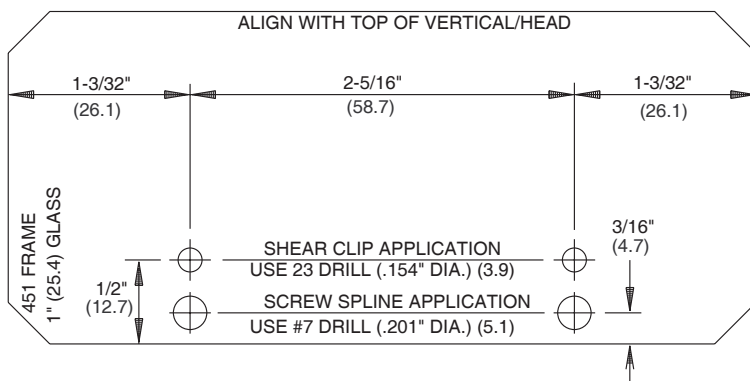
DETAIL A

INSTALLATION INSTRUCTIONS:

1. Set frame into opening plumb and square.
2. Drill holes for #12 installation screws starting 6" (152.4) from corners and not more than 36" (914.4) O.C.
3. Secure jambs and head to opening and threshold to floor with #12 screws. **(See DETAIL B).**
4. Snap door stop with weatherstrip into jambs and door header. Jamb stops run through.
5. Place setting blocks in door header at quarter or eighth points as required, and glaze transom. Glazing sash is required vertically at Series 451 transom.
6. Install glass stops with glazing gaskets on both sides of glass.
7. Roll-in glazing gaskets for jambs and header.



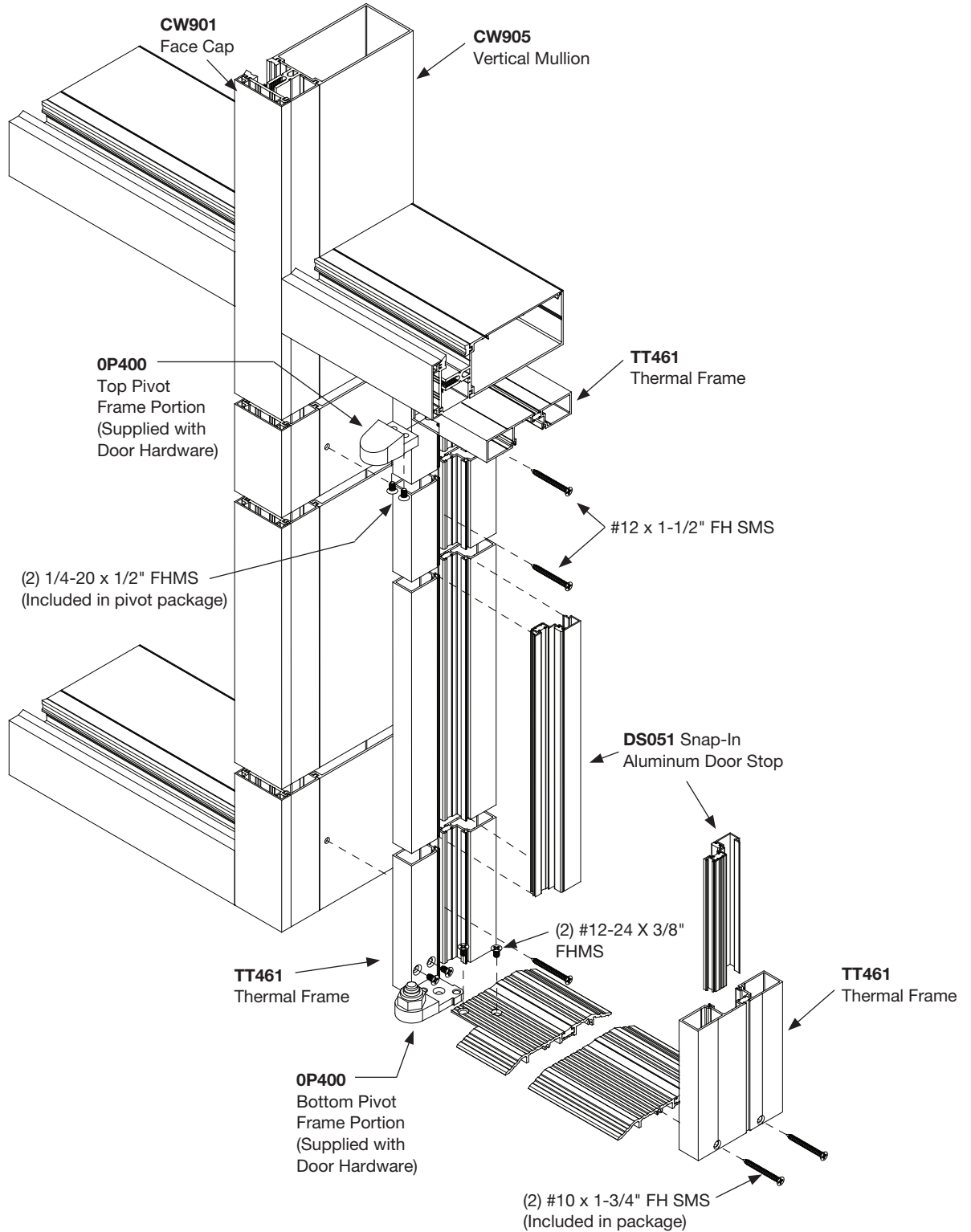
DETAIL B



NOTE: Do not cut templates from this manual, templates are supplied inside frame boxes.

SUB - FRAME UNIT FOR BUTT HUNG DOOR WITH CONCEALED CLOSER AND OFFSET ARM

TT461 THERMAL FRAME

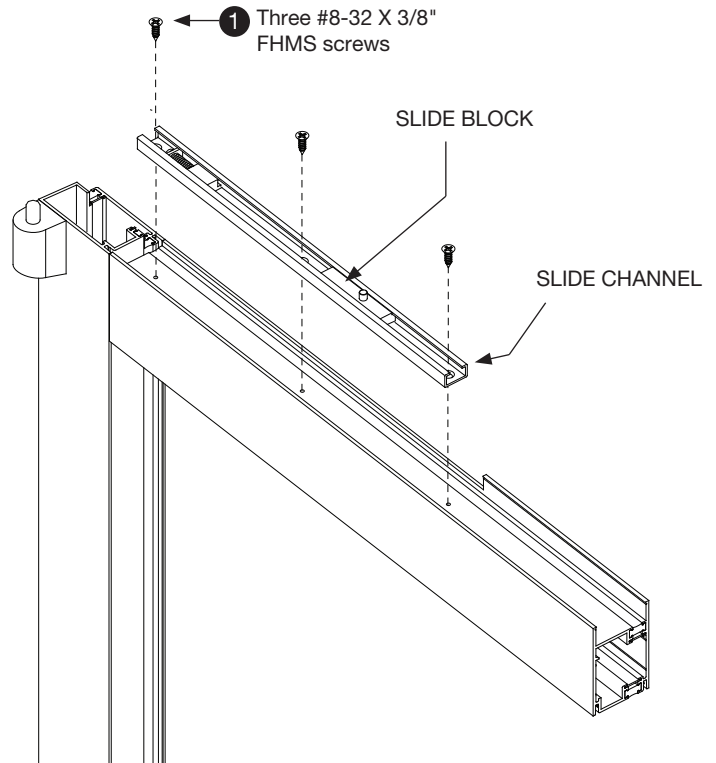


NOT TO SCALE

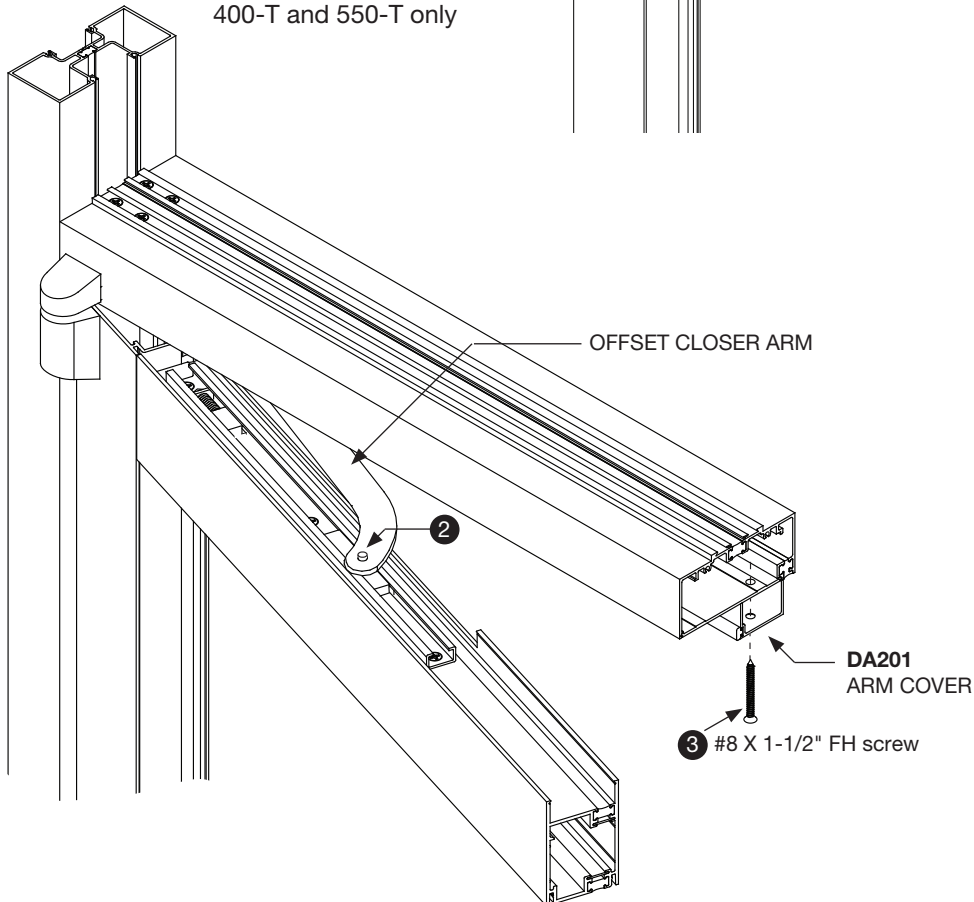
MOUNTING THE JACKSON HARDWARE TO AN OFFSET PIVOTED DOOR

(SAME PROCEDURE FOR BUTT HINGE DOORS)

1. **1** Mount slide channel with three #8-32 X 3/8" FHMS. Reverse slide block if necessary for proper installation. See closer template.
2. Set door onto bottom pivot at an angle. Tilt to vertical holding top pivot pin down until it aligns with header pivot portion. Release pin.
3. **2** Before positioning the offset closer arm in the top rail remove the arm pin retainer with "C" clip pliers, swing door in the open position and slip arm over slide pin and secure with pin retainer.
4. Adjust closer to desired door speed.
5. **3** Install Arm Cover **DA201**, with #8 X 1-1/2" FH screws (provided)
6. Glaze door.



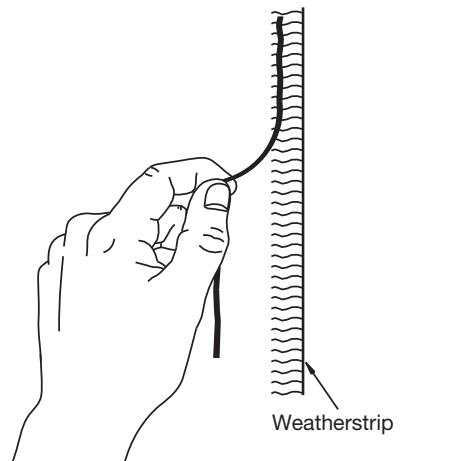
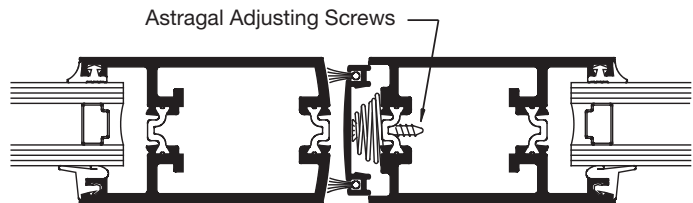
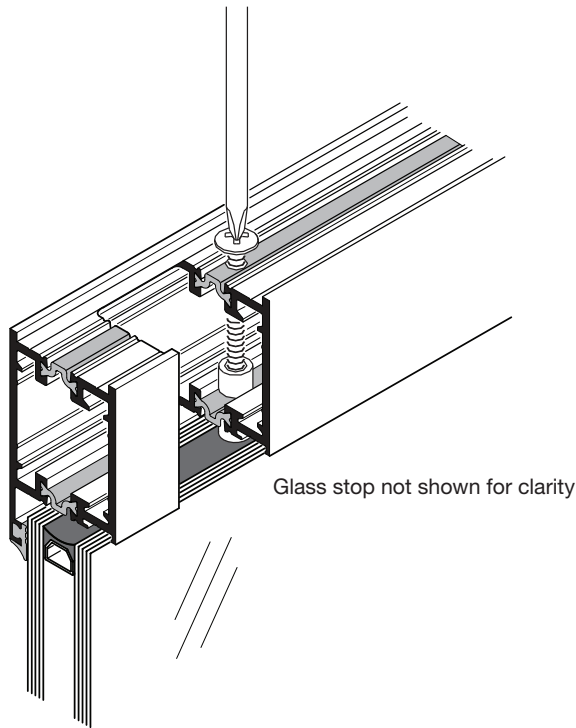
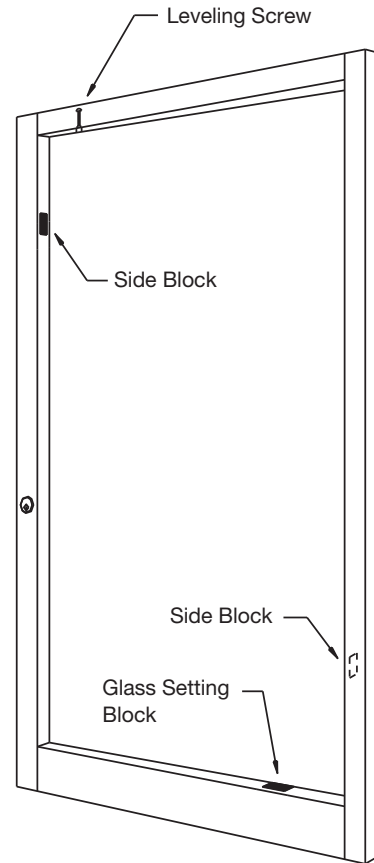
NOTE:
Available with
400-T and 550-T only



NOT TO SCALE

DOOR GLAZING INSTRUCTIONS

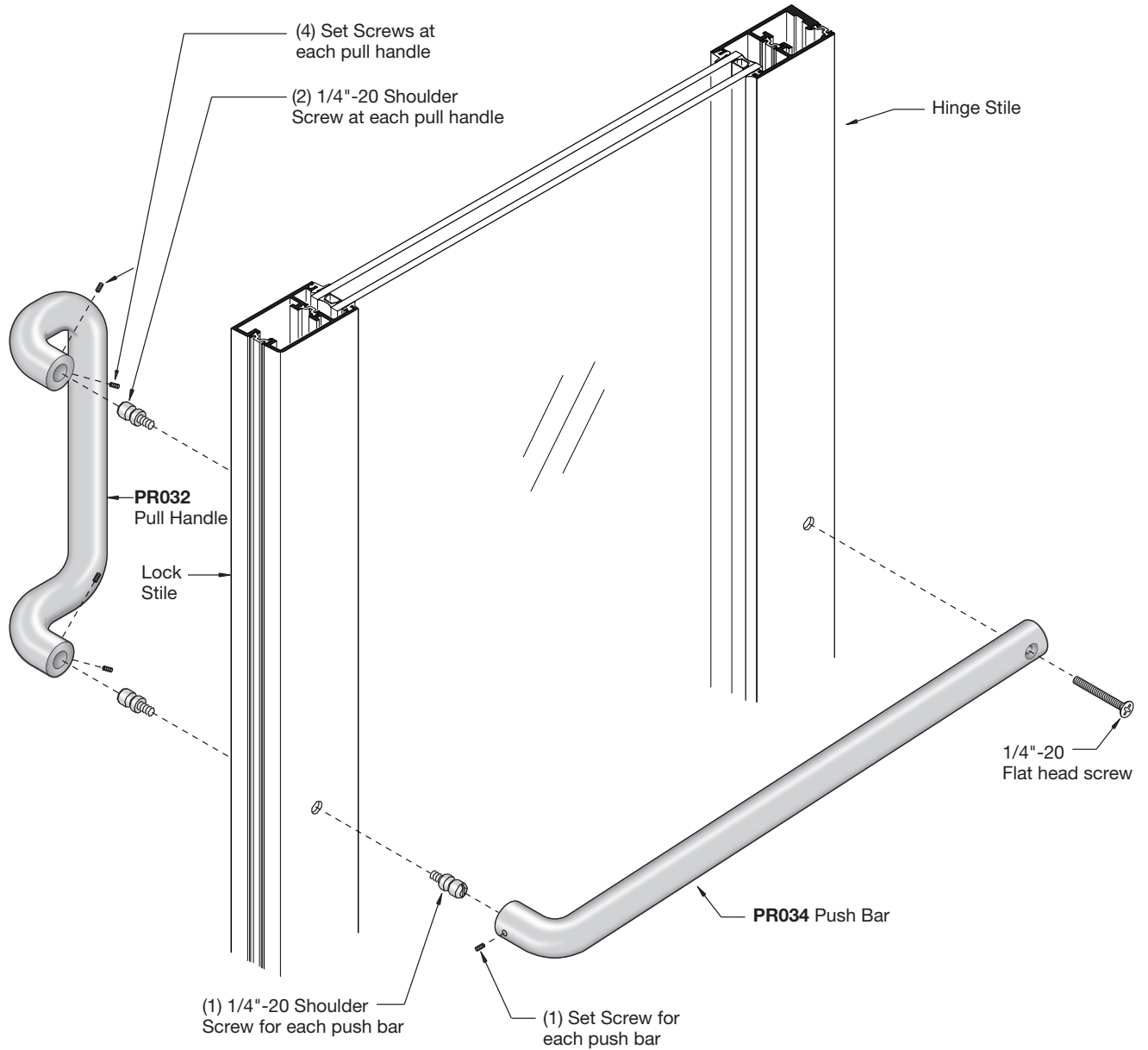
1. Door may be glazed either installed or laid horizontal.
NOTE: Doors are more easily glazed in horizontal position. If glazing horizontally, leveling screw adjustments occur after hanging door.
2. Raise adjustable leveling screw to maximum retracted position.
3. Install glass stops, with glazing gaskets on one side of door only. If using square stops, install vertical stops first. If using beveled stops, install horizontal stops first.
4. Center glass in opening resting on setting blocks.
5. Snap-in remaining glass stops.
6. Turn leveling screw as required to maintain a uniform clearance between door top rail and header.
7. On pair of doors with Astragal adjust screws to keep proper meeting stiles clearance.
8. On all weather stripped door stiles, pull the string to release weatherstrip pile after doors are installed.



NOT TO SCALE

Astral II

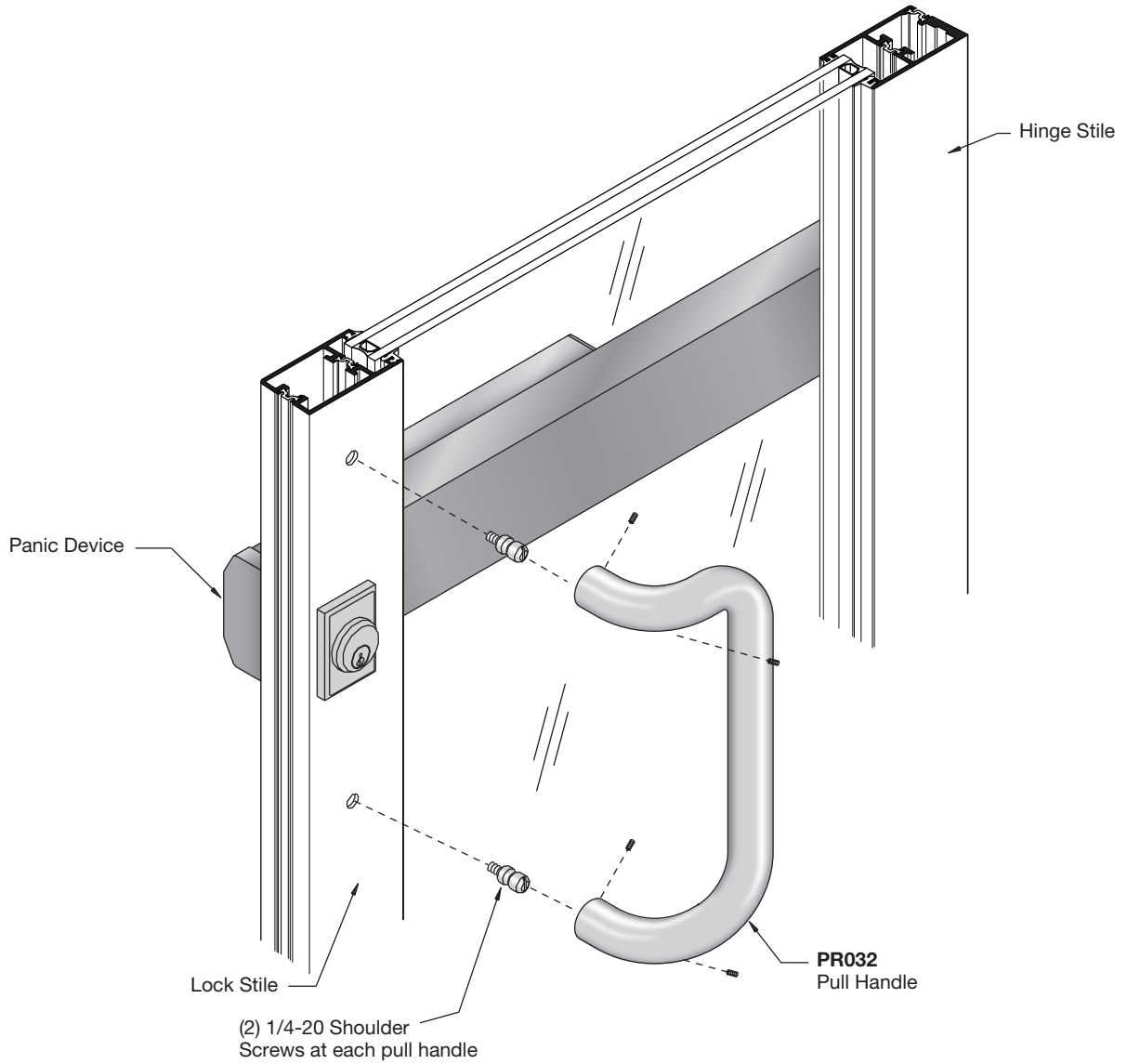
PUSH BAR HARDWARE - OFFSET HUNG DOOR TYPE "B" STANDARD PUSH/PULL FOR OFFSET DOORS



NOT TO SCALE

Astral II

PUSH/PULL HARDWARE - PANIC DOOR



NOT TO SCALE



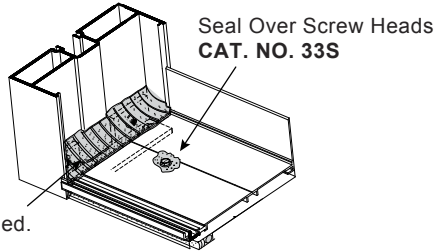
GUIDE TO SEALANTS

NOTE: All sealants must be tooled to ensure proper adhesion.

WATERPROOFING

- **33S ACETIC CURE SILICONE**

Sill to Subsill, End Dams, Screw Heads, and Threshold to Door Frame Sealing.



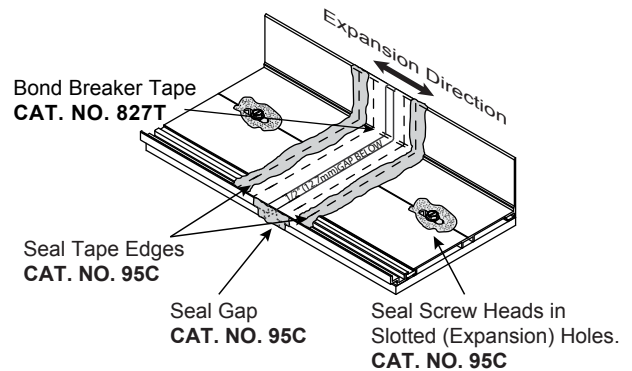
Fill with Sealant to Create a Water Shed.
CAT. NO. 33S

NOTE: Not for use near insulating glass units with butyl sealant.

EXPANSION

- **95C SILICONE BUILDING SEALANT**

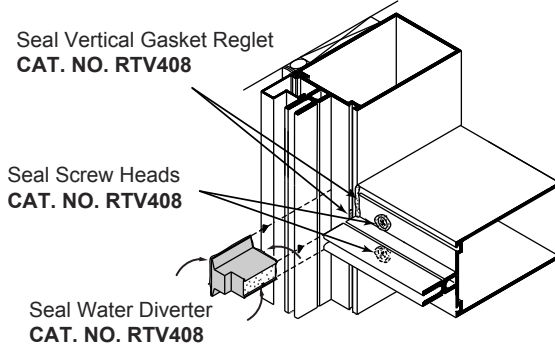
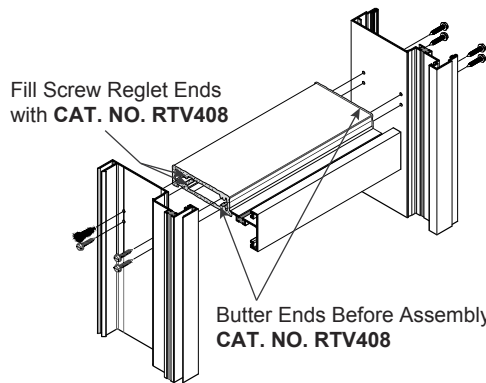
Expansion Joints.



JOINT ADHESIVE

- **RTV408 NEUTRAL CURE SILICONE**

Small Joints, End Joints and Buttered Surfaces, Water Diverters, End Dams, and Reglet Fills.

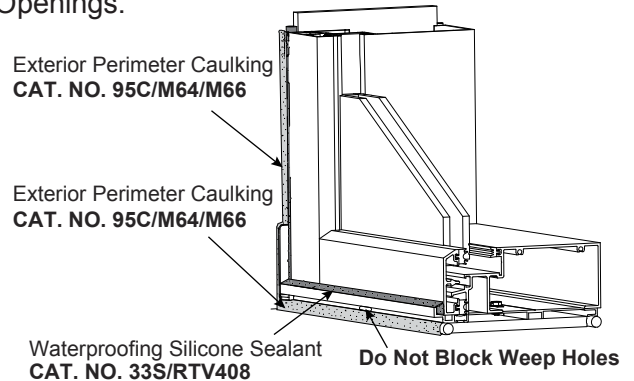


NOTE: I.G. butyl contact OK.

PERIMETER

- **95C SILICONE BUILDING SEALANT (Preferred)**
- **M64 (SMOOTH) MODIFIED POLYURETHANE**
- **M66 (TEXTURED) MODIFIED POLYURETHANE**

Perimeter Seals, Expansion Joints, Sill and Threshold Beds, Concrete, Wood, and Steel Openings.



STRUCTURAL

- **ALL STRUCTURAL SEALANTS REQUIRE TESTING AND APPROVAL.**

Glass-to-Glass or Glass-to-Metal



JOB SITE ESSENTIALS

Helpful Tools and Supplies for Installing CRL U.S. Aluminum Entrances, Storefronts, Windows, and Curtain Wall Systems



CRL 95C Silicone Building Sealant



CRL RTV408 Neutral Cure Silicone



CRL 33S Acetic Cure Silicone Sealant



CRL M64 Smooth Texture Modified Polyurethane Construction Sealant



CRL M66 Grainy Texture Modified Polyurethane Construction Sealant



**CRL12:1 Ratio Strap Frame Caulking Gun
CAT. NO. GA1203**



CRL BOCBR Series Open Cell Backer Rod



**CRL Backer Rod Roller Tool
CAT. NO. SBRR**



**CRL Vacuum Cup
CAT. NO. S7950**



CRL Saint-Gobain/Norton V2100 Thermalbond® Structural Glazing Spacer Tape



CRL PHS Series Plastic Horseshoe Shims



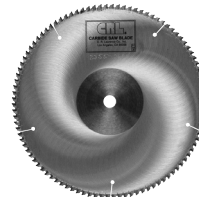
**CRL Digital Laser Level Tool
CAT. NO. 406065**



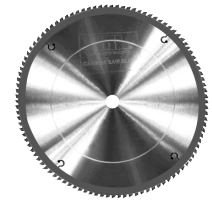
**CRL Cordless Screwdriver
CAT. NO. LD823**



CRL Portable Miter Saw 10" CAT. NO. LS1040



**CRL Nordic Carbide Saw Blade
CAT. NO. CSB10X100AX**



**CRL Cougar Carbide Saw Blade
CAT. NO. CT10X100**



**CRL Door Jack
CAT. NO. DJ1**



**CRL Complete Set of Seven All Stainless Steel Spatulas
CAT. NO. AB958G**



**CRL Portable Ladder
CAT. NO. 6206**



**CRL Hard Hat
CAT. NO. ES3452**



**CRL Soft-Face Power Hitter
CAT. NO. ST57532**

SERIES 250-T/400-T/550-T



**CRL Bond Breaker Tape
CAT. NO. 827T2**



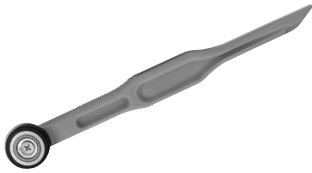
**CRL Glass Cutters
CAT. NO. TC17B**



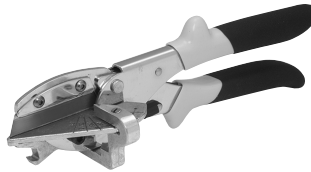
**CRL Running Pliers
CAT. NO. PPG1**



**CRL Utility Knife
CAT. NO. K82**



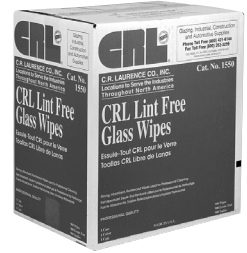
**CRL Gasket Roller
CAT. NO. VR10**



**CRL Gasket Cutter
CAT. NO. MC80N**



**CRL Glass Cleaner
CAT. NO. 1973**



**CRL Glass Wipes
CAT. NO. 1550**



**CRL 96" Phenolic Straight Edge
CAT. NO. SEP96**



**CRL Glazier's Rule Holder
CAT. NO. RH670**



**CRL Phenolic L Square
CAT. NO. L48**



**CRL Spring Clamp
CAT. NO. JC3202HT**



**CRL Tape Measure
CAT. NO. 54125**



**CRL Glass Marking Pencil
CAT. NO. GM44**



**CRL Belt Sander
CAT. NO. LD321**



**CRL Glass Grinding Belts
CAT. NO. CRL3X21120X**



**CRL Gloves
CAT. NO. KF1TL**



**CRL Utility Knife Blades
CAT. NO. 1992C**



**CRL Cordless Driver/Drill
CAT. NO. LD147**



**CRL All Terrain Dolly
CAT. NO. ATD1**