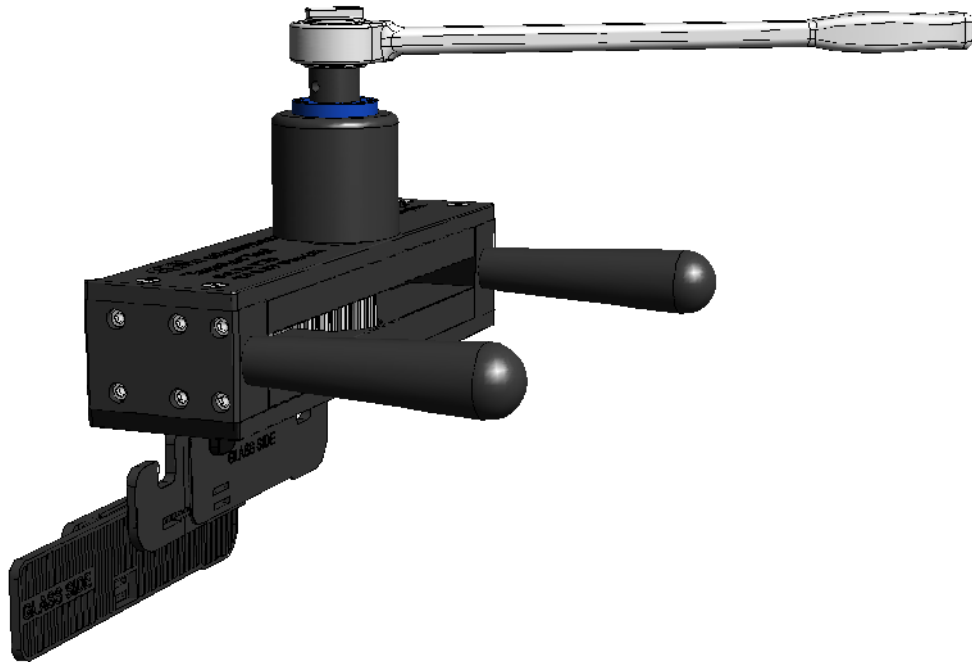


# TAPER-LOC<sup>®</sup> XA

ADJUSTABLE ANGLE  
DRY GLAZE RAILING SYSTEM



2503 E. Vernon Avenue, Los Angeles, CA 90058-1897  
(800) 421-6144 Fax (800) 587-7501  
crlaurence.com | crl-arch.com

<b>CONTENTS</b>	<b>PAGE</b>
<b>GENERAL INSTALLATION NOTES</b>	<b>3</b>
<b>TOOL DESCRIPTION</b>	<b>4</b>
<b>TAPER-LOC® XA SYSTEM COMPONENTS</b>	<b>4</b>
<b>BASE SHOE AND HAND RAILING OPTIONS</b>	<b>5</b>
<b>BASE SHOE INSTALLATION</b>	<b>6</b>
<b>SUBSTRATE PREPARATION</b>	
<b>SUGGESTED MOUNTING METHODS</b>	
<b>GLASS INSTALLATION</b>	<b>8</b>
<b>INSERTING THE BASE SHOE HARDWARE</b>	
<b>TAPER PLACEMENT</b>	
<b>GLASS INSERTION</b>	
<b>LOCKING THE GLASS DOWN</b>	
<b>CLADDING AND FINISHING THE BASE SHOE</b>	<b>13</b>
<b>REMOVING AND ADJUSTING THE GLASS</b>	<b>14</b>
<b>JOB SITE ESSENTIALS</b>	<b>15</b>

*This instruction manual contains 3D images and links to additional product information for your convenience.*

Pages with the  symbol indicate Embedded Interactive Features. Hover mouse to find.

*To experience our 3D Enhancements, mouse over image and:*

*Drag mouse over image while holding left button - **ROTATES IMAGE***

*Drag mouse while holding both buttons - **PANS IMAGE***

*Use the scroll wheel - **ZOOMS***

*Right click on image for a complete menu.*



This document works best with the latest version of Adobe Reader. Click here download.

Rapidly changing technology within the architectural railing industry demands that C.R. Laurence Co. reserves the right to revise, discontinue or change any product line, specification or electronic media without prior written notice.

# 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, 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. **FIELD WELDING.** All field welding, if required, must be adequately shielded to avoid any splatter on glass or glass railing components. Unprotected areas may become unsightly and/or structurally unsound. Advise general contractor and other trades accordingly.
5. **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.
6. **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.
7. **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.
8. **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 CRL.
9. **BUILDING CODES.** Due to the diversity in local, state/provincial, and federal 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 regulations. CRL exercises no control over the use or application of its products, glazing materials, and operating hardware, and assumes no responsibility thereof.
10. **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. Gap between expansion members should be based on temperature at time of installation.
11. **COORDINATION WITH OTHER TRADES.** Coordinate with the general contractor any sequence with other trades which offsets glass rail installations (i.e. fire proofing, back-up walls, partitions, ceilings, mechanical ducts, converters, etc.).
12. **CARE AND MAINTENANCE.** Final cleaning of exposed aluminum surfaces should be done in accordance with CRL's care and cleaning instructions.

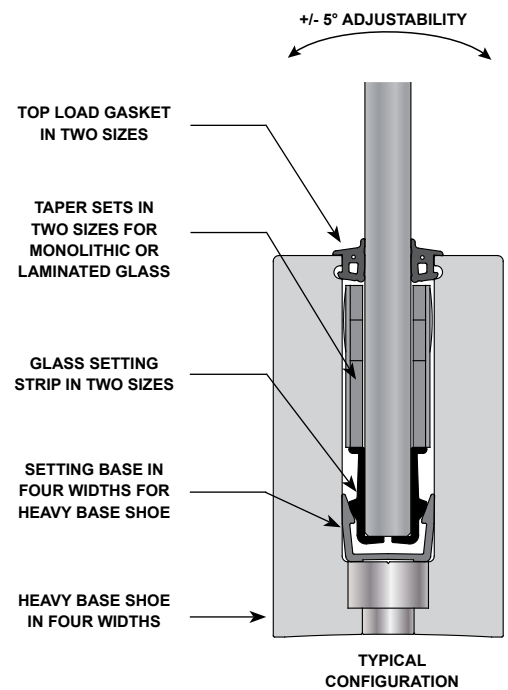
## DESCRIPTION

The new **TAPER-LOC<sup>®</sup> XA Dry Glazing Accessories** provide the installer a way to adjust the vertical angle of glass panels used in glass railing and/or windscreen applications. The unique design allows up to  $\pm 5^\circ$  glass adjustment independent of the base shoe angle. When the desired position is achieved, lock it into place. If you make a mistake, no problem! Simply unlock the tapers with the **Cat. No. TLK12 TAPER-LOC<sup>®</sup> Installation/Removal Tool**, adjust, and lock it down again.

## FOR USE WITH

MONOLITHIC TEMPERED GLASS	LAMINATED GLASS
12 mm (1/2") OVERALL THICKNESS	17.52 mm (11/16") OVERALL THICKNESS
15 mm (5/8") OVERALL THICKNESS	21.52 mm (27/32") OVERALL THICKNESS

### TLK12 TAPER-LOC<sup>®</sup> TOOL KIT

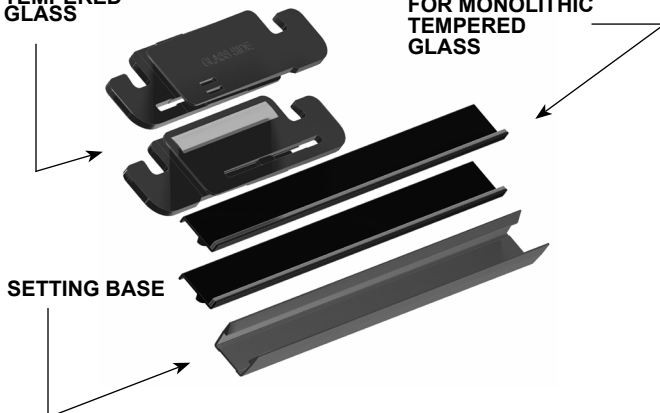


### TAPER-LOC<sup>®</sup> XA ACCESSORIES SOLD SEPARATELY

#### MONOLITHIC TEMPERED GLASS

TLXATSM TAPER SETS FOR MONOLITHIC TEMPERED GLASS

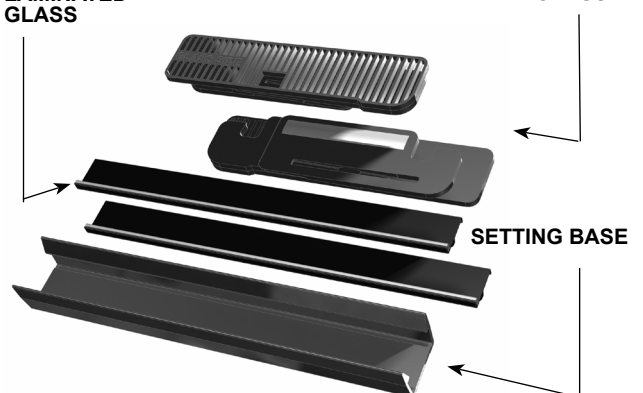
GLASS SETTING STRIPS FOR MONOLITHIC TEMPERED GLASS



#### LAMINATED GLASS

GLASS SETTING STRIPS FOR LAMINATED GLASS

TLXATSL TAPER SETS FOR LAMINATED GLASS





Click on Images for more information.

## BASE SHOE, CAP RAIL, AND HAND RAIL

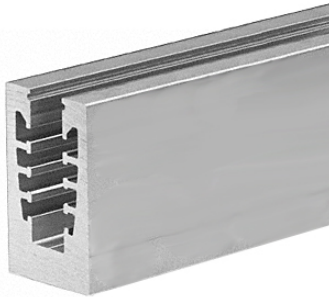
### Traditional Heavy Aluminum Base Shoe:



High strength extruded Aluminum Base Shoe is pre-drilled for anchoring to facilitate installation into various substrates. Standard lengths are 3.05 m and 6.10 m (10' and 20'). Custom lengths can also be made available on special order. Accessories include Cladding and End Caps, Shims, and Roll-in Glazing Gasket.

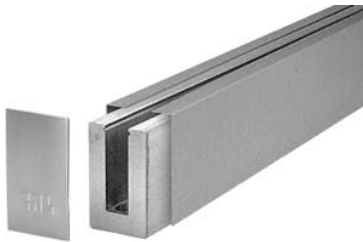
Contact our Technical Sales Department for help in selecting the proper Base Shoe for your installation.

### Reduced Weight Base Shoe:



Available in the same profiles as the Traditional Heavy Base Shoe (above), our Green Series Base Shoe is 20% lighter. This results in a significant cost savings in both raw materials and shipping, and is also easier to handle. The B5G Base Shoe still meets and exceeds Code Standards. Sold in 3.05 m and 6.10 m (10' and 20') lengths that are pre-drilled for anchoring.

### Base Shoe Cladding and End Caps:



Our large selection of accessories includes everything you need for the installation of finished railing systems: Base Shoe Cladding, End Caps, Fasteners, Shims, Vinyl Hand Railing Tubing, Brackets, and Joiners in your choice of many beautiful architectural finishes.

### Top Cap Rails:



Premium Top Cap Rails are available in diameters from 38 to 102 mm (1-1/2" to 4"). New Square Profile Cap Rails come in sizes from 38 to 63 mm (1-1/2" to 2-1/2"). Precision tooling and finishing techniques assure you a Cap Rail of unsurpassed quality. Accessories include Splicing Sleeves, Elbow Joints, End Caps, Installation Vinyl, and Metal Contact Cement for almost seamless joints.

### Hand Rail Tubing and Brackets:



Round Hand Rail Tubing is sold in diameters from 38.1 mm (1-1/2") to 50.8 mm (2"). Square Hand Rail Tubing is also available in a 38.1 mm (1-1/2") profile. Hand Rail Brackets and accessories are also available in five architectural finishes. Hand Rail Tubing is sold in 6.10 m (20') lengths.

Contact our Architectural Railing Department for help in selecting the proper Base Shoe and other accessories for your installation at:

**(800) 421-6144 Ext. 7730.**

## BASE SHOE INSTALLATION

### 1. GENERAL SUBSTRATE PREPARATION

**Layout and Leveling Procedure:**

Trace the Guardrail or Windscreen perimeter on the mounting surface with a chalk line. Position the first section of Base Shoe, starting at the beginning of a run or at a corner, and align with the chalk line mark. If the installation requires that the Base Shoe be level, the first section to be installed should be located at the highest elevation. Start by installing all mounting fasteners hand tight, and then loosen the fasteners for insertion of leveling shims.

**Level Base Shoe Installations:**

When the Base Shoe is to be level from end-to-end, as opposed to following the slope of the surface, it is easier to level the shoe along its length before correcting the vertical plumb orientation.

**Sloped Base Shoe Installations:**

When the Base Shoe is following a sloping grade, a laser level can be useful for preventing any abrupt elevation changes, and it is easier to level the shoe along its length before correcting the vertical plumb orientation.



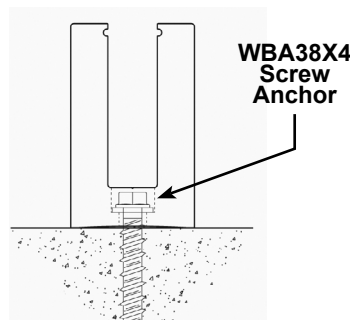
**SHIMS FOR LEVELING THE BASE SHOE:**

CRL CAT. NO. AHS66	1.59 mm (1/16") x 76.2 mm (3") Aluminum Horseshoe Shims
CRL CAT. NO. AHS68	3.18 mm (1/8") x 76.2 mm (3") Aluminum Horseshoe Shims
CRL CAT. NO. AHS64	6.35 mm (1/4") x 76.2 mm (3") Aluminum Horseshoe Shims
CRL CAT. NO. BSS164	.397 mm (1/64") x 610 mm (24") Aluminum Shim Strips
CRL CAT. NO. BSS132	.794 mm (1/32") x 610 mm (24") Aluminum Shim Strips
CRL CAT. NO. BSS116	1.59 mm (1/16") x 610 mm (24") Aluminum Shim Strips

### 2. SUGGESTED MOUNTING METHODS

**Standard Base Shoe Attachment to Concrete**

A common installation is to attach the Base Shoe directly to the concrete. We searched for a fastener that would meet the model code regulations. We selected **Cat. No. WBA38X4 Anchors** with **Cat. No. WBAW38 Washers** (see Essentials Page 15). When the concrete is drilled with ANSI Specification Drill Bits, and the anchor is secured in minimum 4000 psi concrete, sufficient strength is achieved to pass testing.

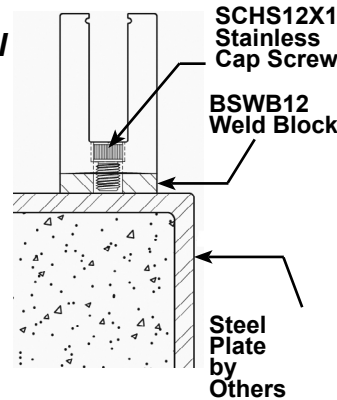


**Works With B5S, B5T, B5L, B5G, and B7S Series Base Shoe**



**Base Shoe Attachment using Weld Blocks to Steel**

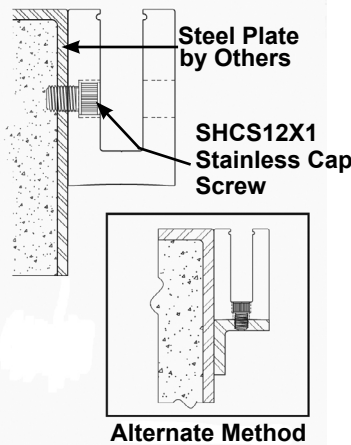
In many instances, installing Base Shoe with Weld Blocks attached and ready for welding is easier than trying to match Base Shoe holes to substrate holes. If the Base Shoe is being attached to a structurally secure steel substrate, all that is required is welding the two together, with no drilling or tapping of holes. Another advantage is that the Base Shoe can be positioned and aligned to job site conditions, and then welded.



Works With B5S, B5T, B5L, B5G and B7S Series Base Shoe

**Base Shoe Attachment to Steel Fascia**

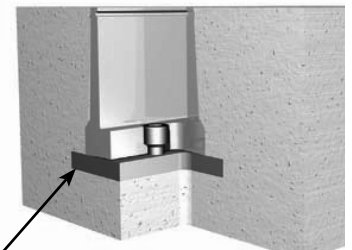
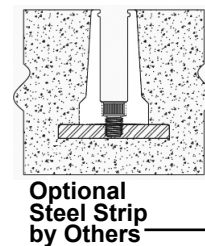
If you are attaching a Base Shoe to a channel or angle from the side, this is called a Fascia Mount. Base Shoe should be attached to steel substrate prior to concrete being poured. Otherwise, drilling and tapping of steel may be difficult, if not impossible. Use of Weld Blocks may be a possible solution. CRL can fabricate the Base Shoe with side mount attachment holes per your engineer's instructions. An alternative is to fasten an angle to the fascia and mount the Base Shoe using the regular bottom mount method. Steel should be drilled to match hole locations in Base Shoe. Allowable fabrication tolerances may affect 305 mm (12") centers.



Works With B5S, B5L, B5G and B7S Series Base Shoe

**Base Shoe Attachment when Embedded in Concrete**

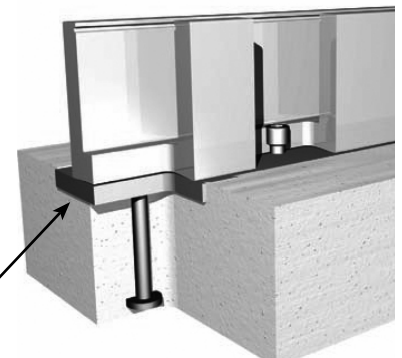
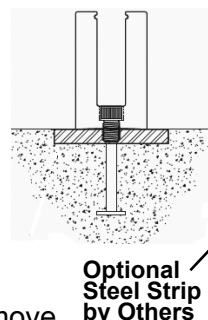
If planning and time permit, a poured in place Base Shoe is often preferred when an 'all-glass' look is desired. This eliminates any Base Shoe showing, and gives the impression that the glass comes directly out of the floor. A Tapered Base Shoe was developed for this application. When poured in place it is locked in by concrete. Mechanically fastening the shoe to the substrate is still recommended during installation. There are many different ways to set the Base Shoe prior to pouring concrete. For more information or questions regarding the different mounting options, contact CRL Technical Sales.



Works With B5T Series Base Shoe

**Base Shoe Attachment to Embedded Steel Strip**

This attachment is often used in multi-story buildings with concrete floors. A 101.6 mm (4") wide x 12.7 mm (1/2") thick steel strip, drilled and tapped for 1/2"-13 S.S. Socket Head Cap Screws on 12" (305 mm) centers (plugged or taped to prevent concrete penetration), is installed flush with the top of the concrete floor. To meet code requirements, 9.5 mm (3/8") x 63.5 mm (2-1/2") Nelson Studs are welded to the underside of the steel strip on 457 mm (18") centers. For installation, remove the tape or plug from tapped holes and secure the Base Shoe with approved fasteners. Steel should be drilled to match hole locations in Base Shoe. Allowable fabrication tolerances may affect 305 mm (12") centers.



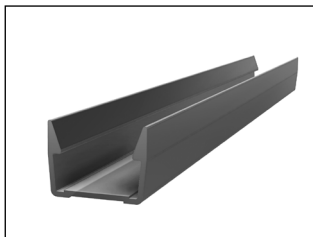
Works With B5S, B5T, B5L, B5G and B7S Series Base Shoe

## GLASS INSTALLATION

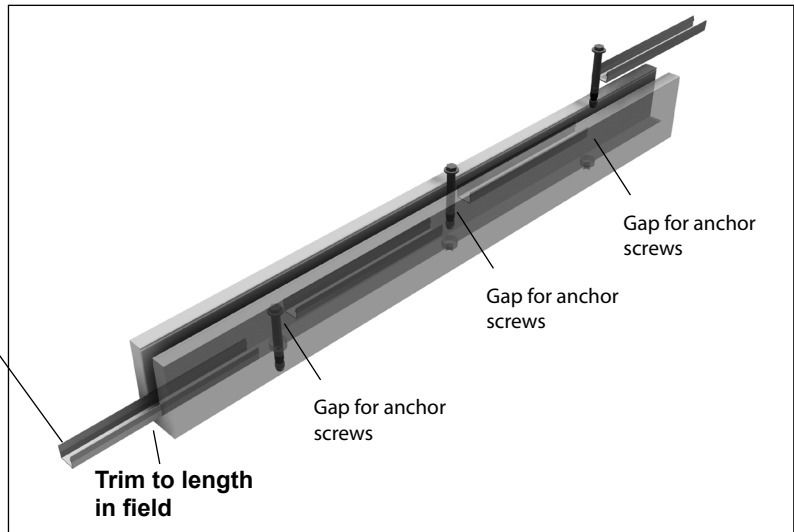
For proper hole positioning into concrete, use the factory drilled holes in the Base Shoe as an alignment fixture. Drill mounting holes using a Rotary Hammer and the recommended masonry drill bit. Remove the excess powder using a **Cat. No. EBADP1 Hole Blow-Out Pump** and install **Cat. No. EBA334 Expansion Bolt Anchors**. Gently snug up each bolt in small increments, paying close attention to level readings front-to-back and side-to-side.

### 1. INSERT THE ALUMINUM SETTING BASE

Insert the **TLXA Extruded Aluminum Setting Base** segments. They are precut into 305 mm (10") lengths. Place a setting base between each anchor bolt head. Do not place them directly over the bolt heads. Insert each setting base down into the shoe channel until it rests against the bottom surface.



**TLXA Extruded Aluminum Setting Base**



NOTE: All open spaces between anchor bolts must have a **TLXA Extruded Aluminum Setting Base**.

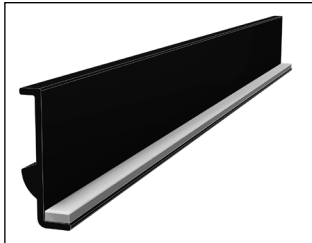
SETTING BASE NUMBER	GLASS TYPE
TLXA12SB	12 mm (1/2") MONOLITHIC TEMPERED
TLXA15SB	15 mm (5/8") MONOLITHIC TEMPERED
TLXA17SB	17.52 mm (11/16") LAMINATED
TLXA21SB	21.52 mm (27/32") LAMINATED



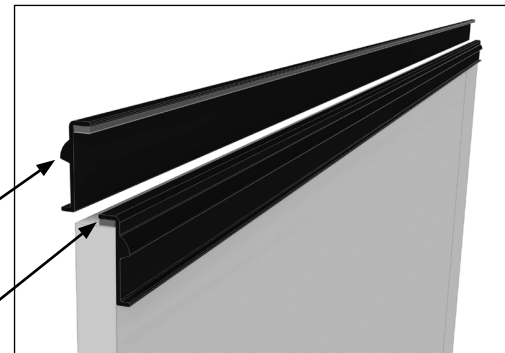
## GLASS INSTALLATION

### 2. ATTACH THE GLASS SETTING STRIPS

Next, cut two pieces of the Glass Setting Strip to the same width as the glass panel. If you need to use up your scrap, you may use multiple shorter pieces. Adhere them to each side of the bottom edge with the provided pressure sensitive tape.



**TLXA Extruded  
Plastic Setting Strips**



Cut to the width of the glass

Bottom edge of glass

SETTING STRIP	GLASS TYPE
TLXAMONO	12 or 15 mm MONOLITHIC
TLXALAM	17.52 or 21.52 mm LAMINATED

### 3. INSERT EXTERIOR DROP-SIDE TAPER SETS

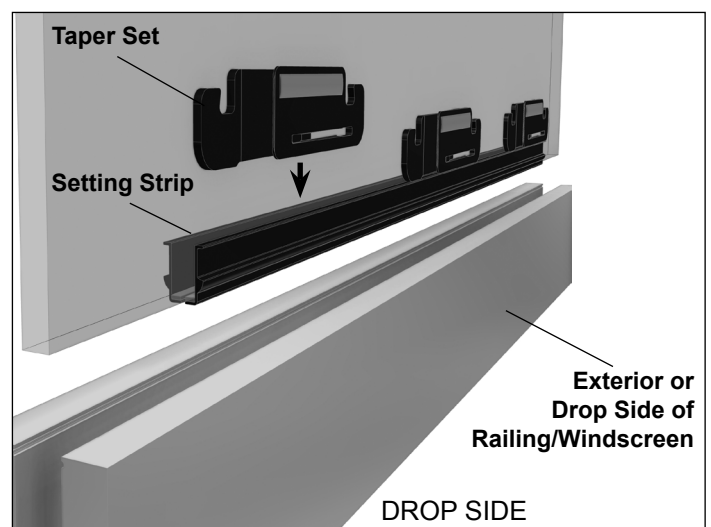
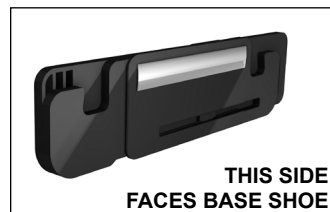
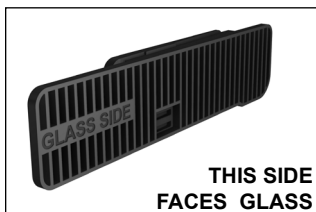
*For instructional purposes, the following steps illustrate the use of our Monolithic Taper Sets for tempered glass. Your particular installation may require our Laminated Taper Sets. The installation procedures are the same for both.*

Starting in the center of the exterior or “DROP SIDE” of the base shoe, spread the first Taper Set to its widest setting. Remove the double sided tape liner and press it onto the top shoulder of the Setting Strip. Make sure that the correct side of the Taper Set is facing the glass. The aluminum strip should be facing the Base Shoe.

#### MONOLITHIC TAPER SETS



#### LAMINATED TAPER SETS

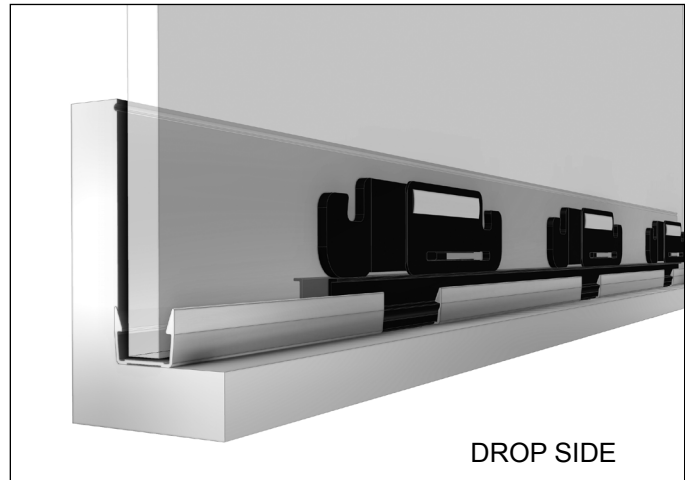
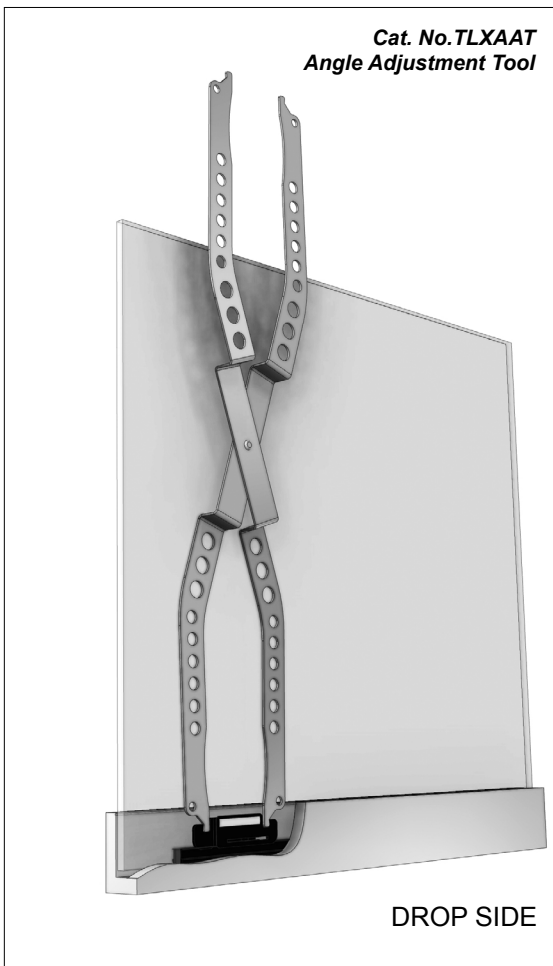


## GLASS INSTALLATION

### 4. INSERT THE GLASS INTO THE BASE SHOE

Place the glass assembly into the base shoe's receiving pocket and slide it into position. Holding the glass panel plumb, close the center Taper Set until it becomes snug. Do not compress the Taper Set to the point that the angle of the glass move out of plumb. If the DROP SIDE is accessible, you can snug each Taper Set by hand. If it is an elevated balcony or inaccessible terrace, use the **Cat. No. TLXAAT** Angle Adjustment Tool.

Do not try to remove tightened Taper Sets with the Angle Adjustment Tool. Excessive pressure will bend the blades. Relieve the pressure on the MAN SIDE Taper Sets first with the **Cat. No. TLK12 TAPER-LOC<sup>®</sup> Installation/ Removal Tool** then adjust the DROP SIDE sets.



The **Cat. No. TLXAAT Angle Adjustment Tool** allows light tensioning of the Tapers on non-accessible or DROP SIDE installations.

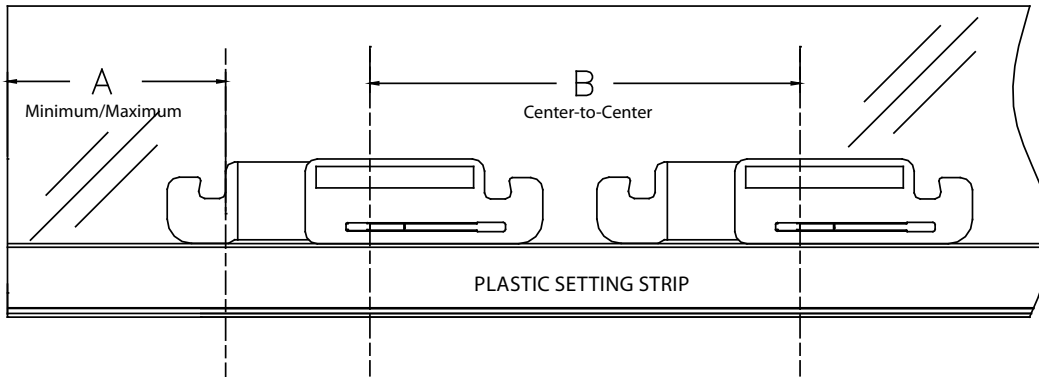
Apply just enough pressure to the Taper Set on the DROP SIDE to contact the gap surfaces. The interior or "MAN SIDE" Tapers will be installed in the next step with much greater pressure using the **Cat. No. TLK12 TAPER-LOC<sup>®</sup> Installation/ Removal Tool**.

#### IMPORTANT NOTE:

EACH TAPER SET MUST HAVE A MATCHING SET ON THE OPPOSITE SIDE OF THE GLASS IN ORDER TO AVOID GLASS BREAKAGE WHEN TENSIONED.

## GLASS INSTALLATION

**Additional Taper Sets are required as follows:**



**TYPICAL BASE SHOE ELEVATION DETAIL WITH TAPER-LOC® TAPER SET LOCATIONS**

**IMPORTANT NOTE:**

EACH TAPER SET MUST HAVE A MATCHING SET ON THE OPPOSITE SIDE OF THE GLASS IN ORDER TO AVOID GLASS BREAKAGE WHEN TENSIONED.

**MONOLITHIC TEMPERED GLASS**

**LAMINATED GLASS**

“A” The edge distance spacing of each Taper Set shall not be less than 51 mm (2”) **minimum** or more than 219 mm (8-5/8”) **maximum** from the edge of glass. (See Illustration Above)

“A” The edge distance spacing of each Taper Set shall not be less than 51 mm (2”) **minimum** or more than 219 mm (8-5/8”) **maximum** from the edge of glass. (See Illustration Above)

“B” The center-to-center spacing of each Taper Set shall not be less than 178 mm (7”) **minimum** or more than 356 mm (14”) **maximum**.

“B” The center-to-center spacing of each Taper Set shall not be less than 203 mm (8”) **minimum** or more than 230 mm (9”) **maximum**.

PANEL WIDTH	MINIMUM TAPERS PER SIDE
152 to 356 mm (6" - 14")	1 Set
356 to 711 mm (14" - 28")	2 Sets
711 to 1067 mm (28" - 42")	3 Sets
1067 to 1422 mm (42" - 56")	4 Sets
1422 to 1778 mm (56" - 70")	5 Sets

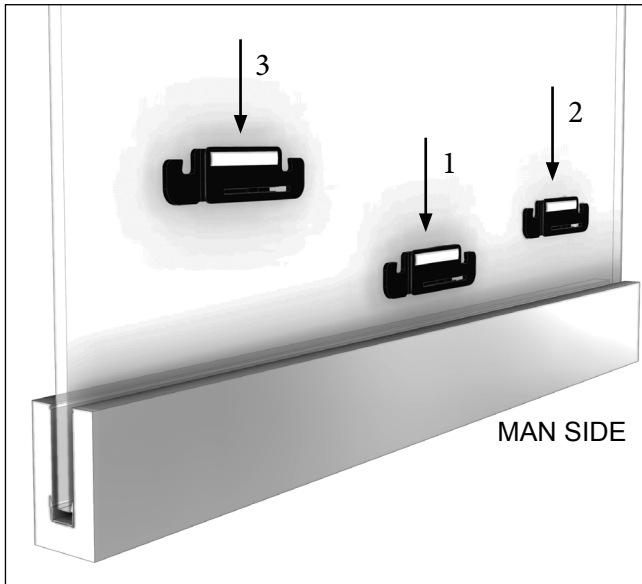
PANEL WIDTH	MINIMUM TAPERS PER SIDE
230 to 458 mm (9" - 18")	1 Set
458 to 686 mm (18" - 27")	2 Sets
686 to 915 mm (27" - 36")	3 Sets
915 to 1143 mm (36" - 45")	4 Sets
1143 to 1372 mm (45" - 54")	5 Sets

**NOTE:**

The above tables represent the MINIMUM number of Taper Sets per panel size. Situations may occur that allow one or two more Taper Sets to be inserted without collision. If possible, we recommend that you do so.

## GLASS INSTALLATION

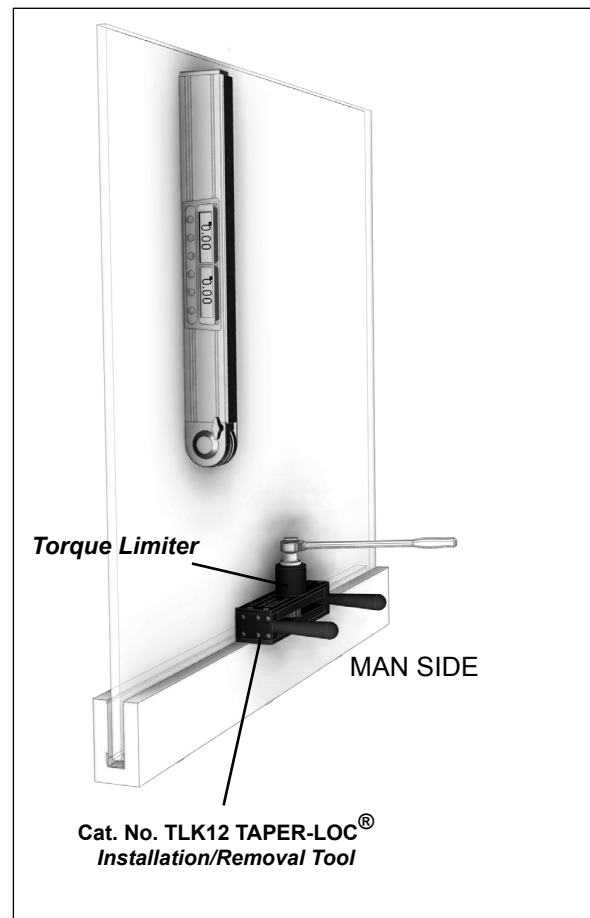
### 5. LOCK THE GLASS IN PLACE



At this point the glass panel should be plumb and level. While holding the glass in place, insert the center Taper Set on the MAN SIDE. It is not necessary to remove the pressure sensitive tape liner. Press the Taper Set down into the space between the glass and the base shoe. Line it up with the Taper Set on the other side of the glass. It is important that they apply pressure directly against each other in order to avoid glass breakage. Torque the MAN SIDE center Taper Set first.

Insert the **Cat. No. TLK12 TAPER-LOC<sup>®</sup> Installation/Removal Tool** with the Yellow-Coded Blades into the Taper Set Slots. (Longer blades may be required for deeper base shoe.) Close (tighten) the Taper Set until the Torque Limiter on the **Cat. No. TLK12 TAPER-LOC<sup>®</sup> Installation/Removal Tool** makes a click sound. Be sure to check for plumb as you go.

Verify the glass alignment is correct before proceeding. Using the **Cat. No. TLXAAAT Angle Adjustment Tool**, apply light force to the remaining Taper sets at the DROP SIDE. Then install the MAN SIDE Taper Sets. Lock into place using the **Cat. No. TLK12 TAPER-LOC<sup>®</sup> Installation/ Removal Tool**. If the Glass Panel requires more angle towards the MAN SIDE, unlock the Tapers on that side first then unlock the Tapers on the DROP SIDE using the **Cat. No. TLXAAAT Angle Adjustment Tool**.



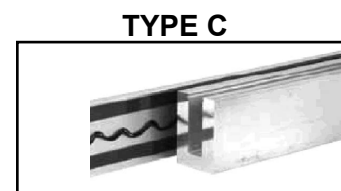
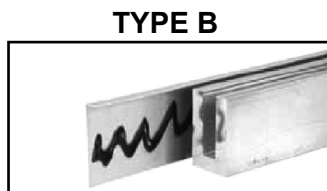
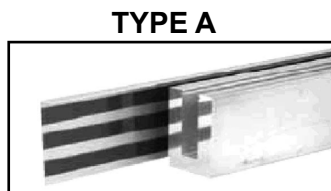
## CLADDING AND FINISHING THE BASE SHOE

There are three methods of attaching the Cladding to the Base Shoe. All three methods, shown below, will provide sufficient results, but a combination of Cladding Tape and Neutral Cure Silicone (TYPE C) offers the best solution. The instant adhesion of the tape combined with the durability of silicone yields a flexible and durable bond.

**TYPE A:** Apply three rows of Tape to the vertical edge of the Cladding. Carefully align the Cladding to the Base Shoe and press in place.

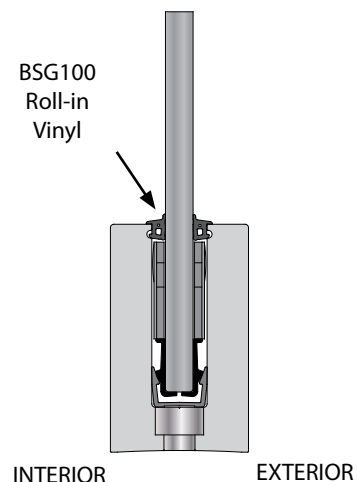
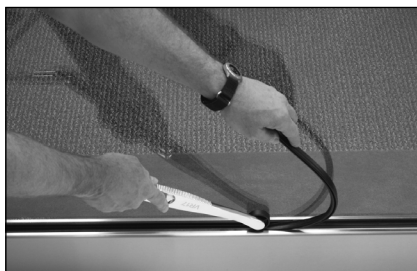
**TYPE B:** Apply Silicone to the vertical edge of the Cladding. Carefully align the Cladding to the Base Shoe and press in place. Use clamps to hold the Cladding in place until the Silicone cures.

**TYPE C:** Apply two rows of Tape to the vertical edge of the Cladding, one toward the top and one toward the bottom. Apply the Silicone between the rows of Tape. Carefully align the Cladding to the Base Shoe and press in place.



Once the Cladding is applied, the last and final step to finish off the Base Shoe is installing the Roll-in Gasket for interior applications, or to apply **Cat. No. CRL95CBL Neutral Cure Silicone** for exterior applications. We invite you to contact our Railing Technical Sales Department at [railings@crlaurence.com](mailto:railings@crlaurence.com) to discuss your individual application.

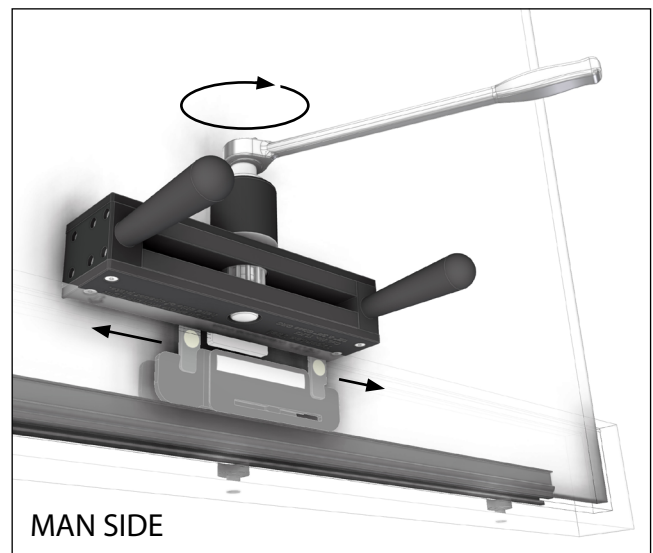
**For Interior Applications:** Use **Cat. No. BSG100** or **Cat. No. BSG500 Roll-in Glazing Gasket** to finish off the top of the Base Shoe pocket. The gasket easily rolls in with any one of CRL's vinyl roller tools.



## REMOVING AND ADJUSTING THE GLASS

With the new XA Series Tapers, it is usually necessary to loosen or remove the Tapers on just the **MAN SIDE** of the glass. If removal or further adjustment is required on the **DROP SIDE** use the **Cat. No. TLXAAT Angle Adjustment Tool**.

To adjust or remove a glass panel that is already installed, use the standard **Cat. No. TLB3 Yellow Coded Installation/Removal Tool Kit**. Remember to protect the cladding with **Cat. NO. BL992 2" Blue Masking Tape** when removing the TAPER-LOC® Taper Sets. For glass railing applications insert **Cat. No. TLK12 TAPER-LOC® Installation/ Removal Tool** over the Taper Sets that you wish to remove or loosen. Once the Removal Tool is in place, reverse the torque direction and apply force to open the Taper Sets for adjustment or removal as required. Continue this step as needed for the number of Taper Sets that need to be adjusted or removed. See Step 5 for adjustment details.

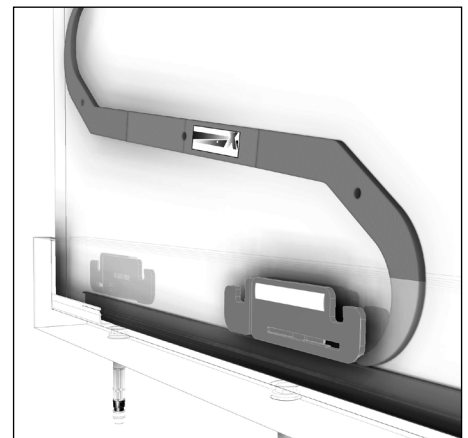


## REMOVING DAMAGED TAPER SETS

To remove frozen and broken Taper Sets, we suggest the **Cat.No.TLEX1 Extractor Tool**.



**TAPER-LOC XA**  
**EXTRACTOR**





# JOB SITE ESSENTIALS

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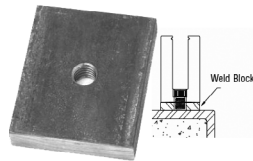
**BHP454**  
Makita® 18 Volt Cordless Lithium Ion Combo Hammer Drill for Mounting to Concrete



**EBADP1**  
Hole Blow Out Pump for Cleaning Freshly Drilled Holes in Masonry or Concrete



**EBA334**  
M8 95.2 mm (3-3/4") Long Expansion Anchor



**BSWB12**  
12.7 mm (1/2") x 64 mm (2-1/2") x 67 mm (2-1/4") Weld Block



**SHCS12X1**  
25.4 mm (1/2"-13 x 1") Socket Head Cap Screw S.S. for Base Shoe



**WBA38X4**  
9.5 mm x 102 mm (3/8" x 4") Screw Anchors



**VR17**  
Vinyl Roller Tool for Roll-in Gaskets



**BSG100 and BSG-500**  
Black Top Rubber Gasket for Monolithic Tempered Glass



**AT234**  
.045" x 3/4" Acrylic Foam Cladding Tape



**WG41004XT**  
18:1 Ratio Perimeter Caulking Gun



**95CBL**  
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