

ORION II

Installation Instructions

The ORION II System features a powder-coated aluminum framework (offered in black, white or bronze color options) combined with horizontal stainless steel cable infill. The framework is made up of 3"x3"posts, standard bottom rails and a flat continuous top rail. The cable infill consists of HandiSwage™ fittings and 1/8" cable.

The following guide will take you step-by-step through the process of installing your ORION II System.



CONTACT INFORMATION:

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www.atlantisrail.com

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TOOLS NEEDED

Here is a list of tools needed to install your ORION II System. Most of the required tools are common. For the tools that are not common, Atlantis Rail offers a complete selection of specialized tools to successfully complete your installation.

- | | |
|---|------------------------|
| - Power Drill | - Gloves |
| - Vice Grips | - Safety Glasses |
| - Tape Measure | - Allen Wrenches |
| - Rubber Mallet | - Carpenter's Square |
| - Chalk Line | - Hack Saw |
| - Ratchet & Socket Set | - Level |
| - Silicone Caulk | - Drill Bit Set |
| - Miter Saw with a Non-Ferrous Carbide Tipped Blade | - Pencil |
| | - Open Wrench Set |
| | - Phillips Driver Bits |

Specialized tools offered by Atlantis Rail



Hand Swage Tool
#E0113-H600



Cable Cutter
#C0989-00HD



Touch-up Paint
#A0906-P052-XX



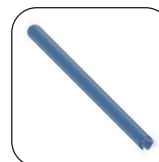
Cable Grip Pad
#E0114-0000



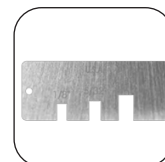
HandiSwage™
Cutting Disk - 2pk
#E0113-CD04-2



3/8" & 7/16"
Combination
Wrench Set
#C0731-TK01-2



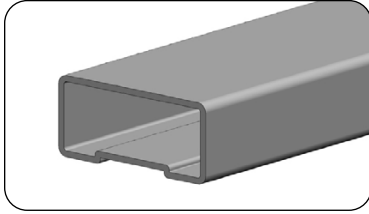
Grommet Install
Tool
#E0916-1000



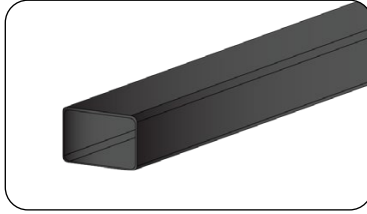
After Swage
Gauge
#E0113-HG00



Curved Lacing
Needle - 2pk
#C0988-400C-2



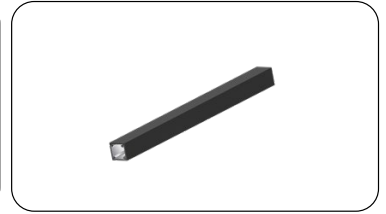
A. Top Stair Rail



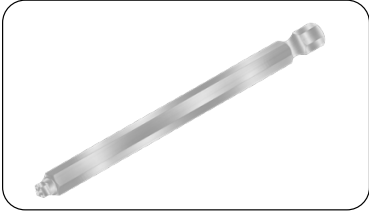
B. Bottom Stair Rail



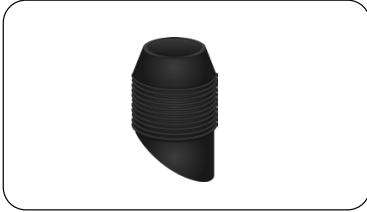
C. Cable Stabilizer, Slotted



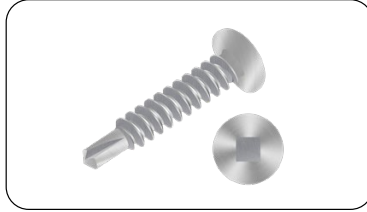
D. Support Block



E. 3-1/2" Square Driver Bit



F. Stabilizer & Support Block Connector



G. #10 Self-Drilling Screw



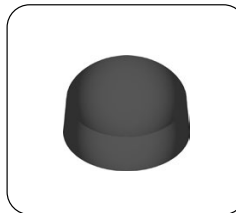
H. Support Block Base Kit



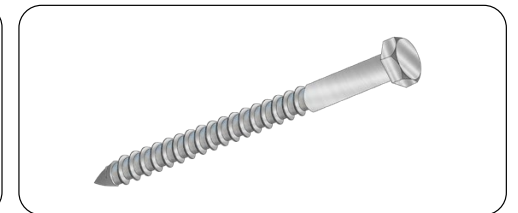
I. Bottom Stair Rail Bracket Base



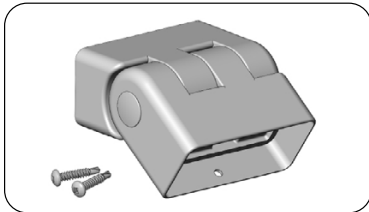
J. Bottom Stair Rail Bracket



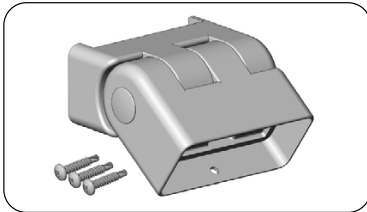
K. Plastic Cover Nut



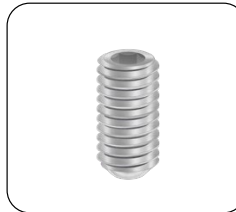
L. Lag Bolt



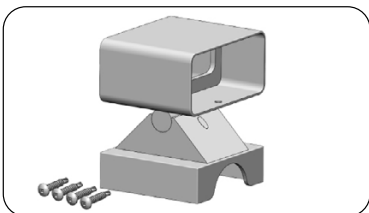
M. Stair Knuckle



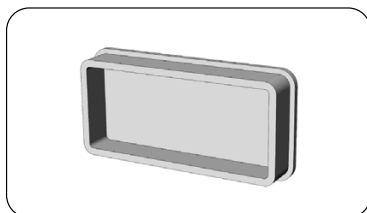
N. Post Mount Stair Knuckle



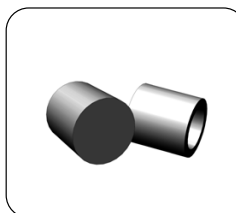
O. Set Screw



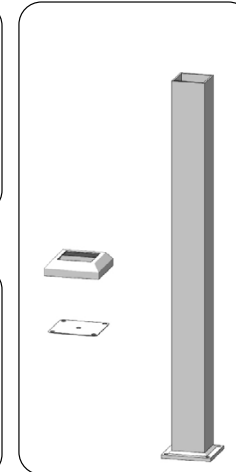
P. Pivoting Post Cap



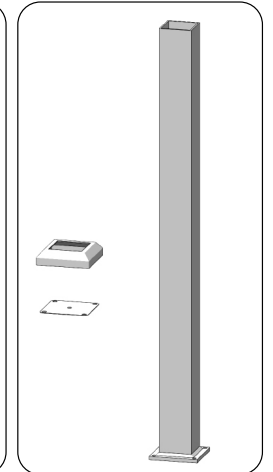
Q. Termination Cap



R. Set Screw Cover



S. 36" Stair Post, Undrilled



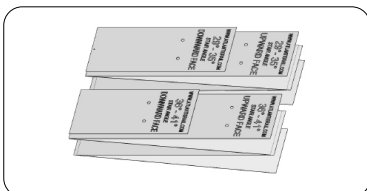
T. 42" Stair Post, Undrilled



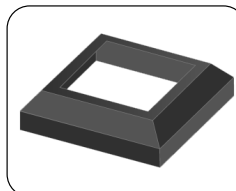
U. Single Mount Tensioner 1/8"



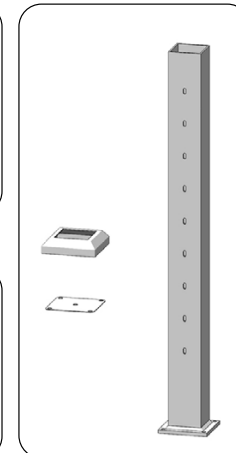
V. Post Pad, Drilled



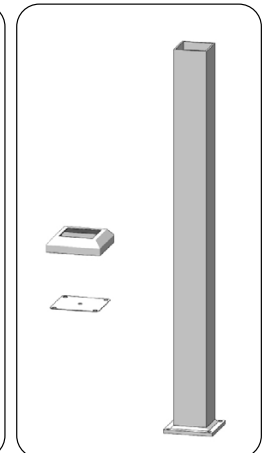
W. Drill Templates



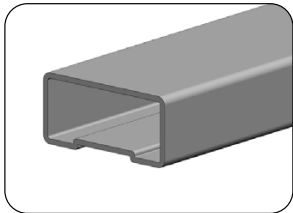
X. Post Skirt



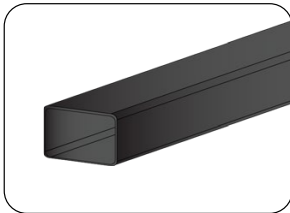
Y. Stair Mid Post, Slotted



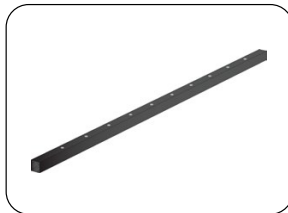
Z. Stair Bottom Post, Undrilled



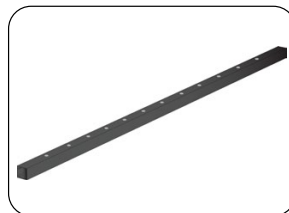
AA. Top Rail



AB. Bottom Rail



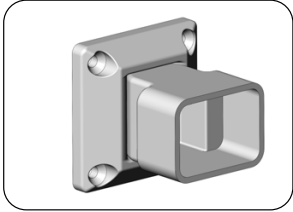
AC. Cable Stabilizer (36" System)



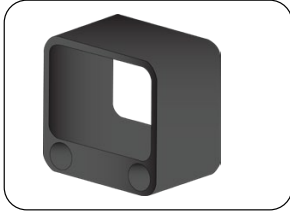
AD. Cable Stabilizer (42" System)



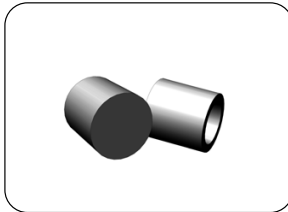
AE. Support Block



AF. Bottom Adjustable Rail Bracket



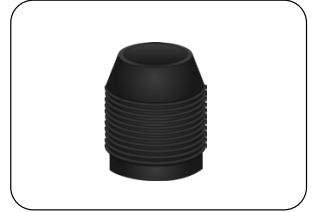
AG. Bottom Rail Bracket



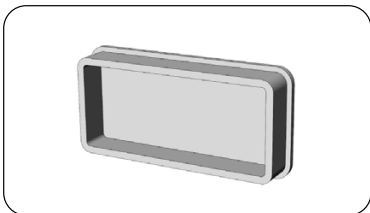
AH. Screw Cover



AI. Support Block Base Kit



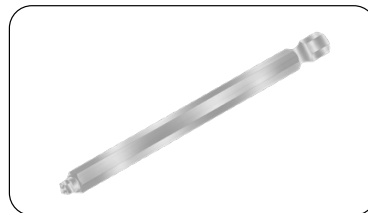
AJ. Stabilizer & Support Block Connector



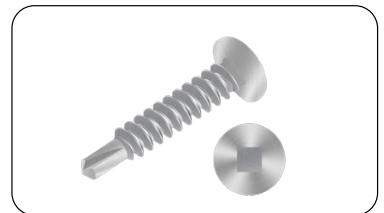
AK. Termination Cap



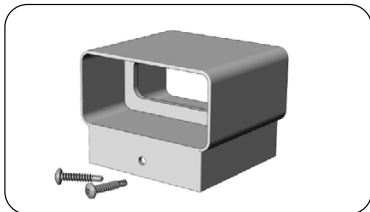
AL. Rail Cap



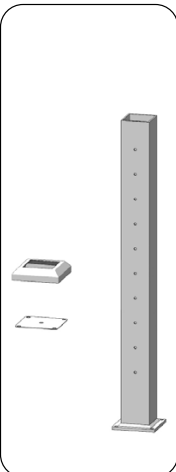
AM. 3-1/2" Square Driver Bit



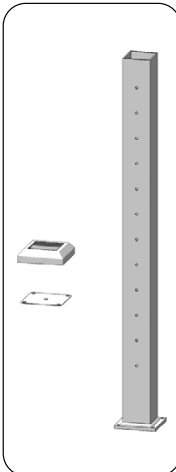
AN. #10 Self-Drilling Screw



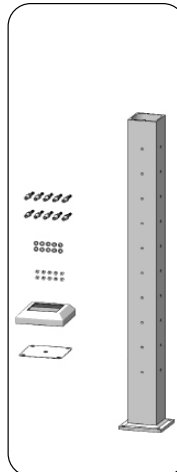
AO. Splice Post Cap



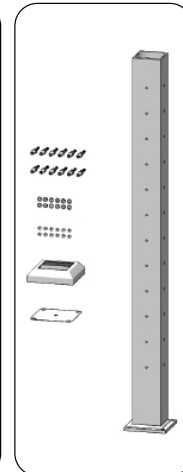
AQ1. 36" Universal Post, Drilled



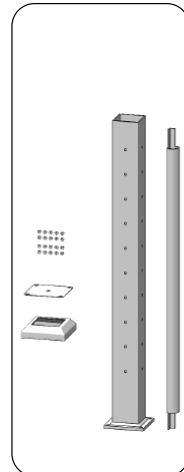
AQ2. 42" Universal Post, Drilled



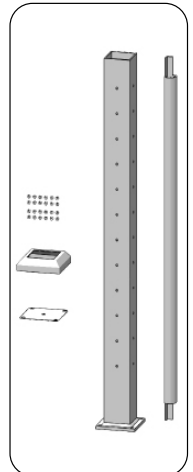
AR1. 36" Corner Post, Drilled



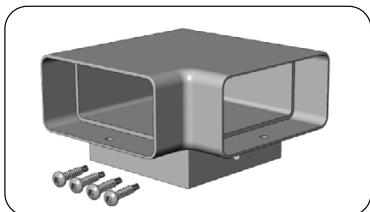
AR2. 42" Corner Post, Drilled



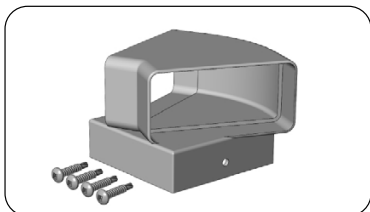
AS1. 36" Corner Post w/ Insert



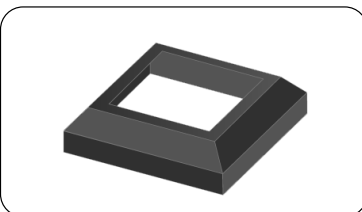
AS2. 42" Corner Post w/ Insert



AP. 90 Degree Elbow Post Cap



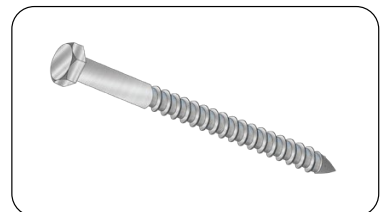
AT. 45 Degree Elbow Post Cap



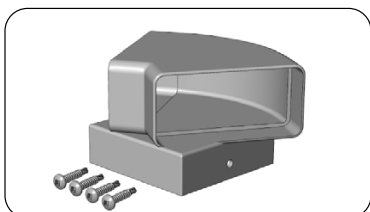
AU. Post Skirt



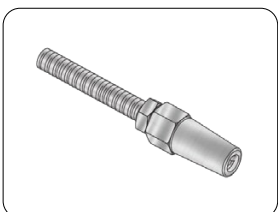
AV. Post Pad, Drilled



AW. Lag Bolt



AX. 60 Degree Elbow Post Cap



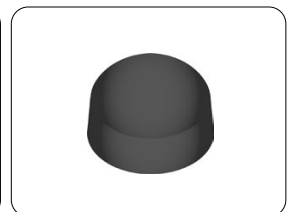
AY. NOVA 1/8" Stud



AZ. Plastic Washer



BA. Cable Grommet



BB. Plastic Cover Nut

WARNINGS

STORE YOUR ORDER INDOORS TO KEEP DRY! Some items in your order have been shrink wrapped with a protective poly film. Avoid exposing these items to harsh weather and moisture to avoid damaging powder coated surfaces. When you're ready to install product, remove the protective shrink wrap before or immediately after installation.

WARRANTY REQUIREMENTS:

Refer to the Rail Care Guide(s) for required cleaning and maintenance guidelines. Failure to follow the required cleaning and maintenance guidelines will void the warranty.

ALWAYS REFER TO YOUR LOCAL BUILDING CODE OFFICIALS PRIOR TO INSTALLING ANY ATLANTIS RAIL SYSTEM to ensure all code and safety requirements are met. Atlantis Rail Systems is not responsible for improper or non-recommended installations.

ATLANTIS RAIL SYSTEMS PROVIDES A VARIETY OF MOUNTING OPTIONS FOR POSTS AND RAILS USED IN OUR SYSTEMS. PRODUCTS OF THIS NATURE REQUIRE THAT MOUNTING SURFACES ARE CONSTRUCTED TO BE CONSIDERED STRUCTURAL PER BUILDING CODE DEFINITION FOR THE SURFACE MATERIAL USED. Structural integrity and building code compliance of mounting surfaces are the responsibility of the end user and/or installer. The use of any of our mounting methods are at the option and decision of the end user and/or installer and should be selected to match the structural material used to create the mounting surface.

ORION II STAIR SYSTEMS ACCOMMODATE STAIR ANGLES BETWEEN 29 AND 41 DEGREES ONLY.

ALWAYS WEAR PERSONAL PROTECTION EQUIPMENT during the installation process. Safety Glasses and work gloves are highly recommended.

INSTALL TIPS

Follow the tips below to ensure a successful installation of your ORION II System

- **READ THE INSTRUCTIONS** completely before beginning the installation.
- **PLAN YOUR RAILING PROJECT.** Sketch your project with the actual measurements of your deck or balcony complete with post locations.
- **FIND A HELPER.** Installation is best accomplished with two (2) people.
- **CHECK CARTON(S)** to determine part count is complete.
- **ALWAYS WEAR PERSONAL PROTECTION EQUIPMENT;** safety glasses, work gloves, etc.
- **DO NOT OVER-TORQUE THE SCREWS.** Pre-drilling is required. To avoid stripping the screws, we recommend using a cordless drill. NOT an impact driver.
- **PROVIDED HARDWARE TO INSTALL THE ORION II SYSTEM IS FOR USE WITH ORION II ALUMINUM POSTS.** If installing to other surfaces, you must acquire the appropriate hardware as needed for proper installation.
- **TOUCH-UP ANY SCRATCHES.** After completing the installation of your ORION II System, look for any scratches and/or damage to the powdercoating. These can easily be fixed using our color matching Touch-Up Paint.

Confirm the Contents of Packaging: Make sure to verify that the system components for your order are present.

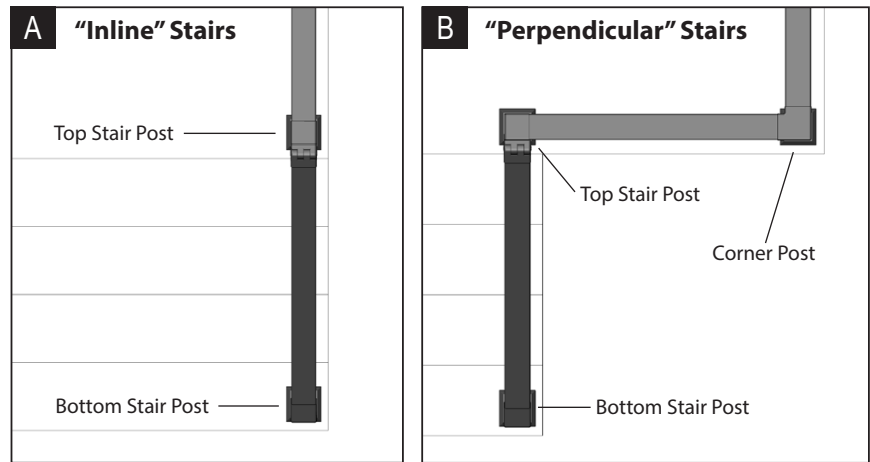
INSTALL THE STAIR POSTS

1. **Gather the Posts and Position them in their General Locations per your Plan Layout.**

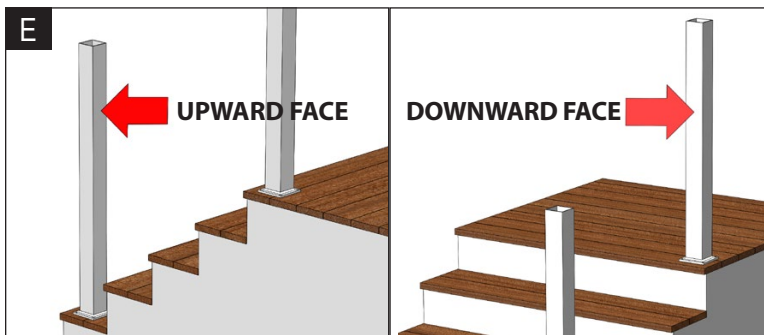
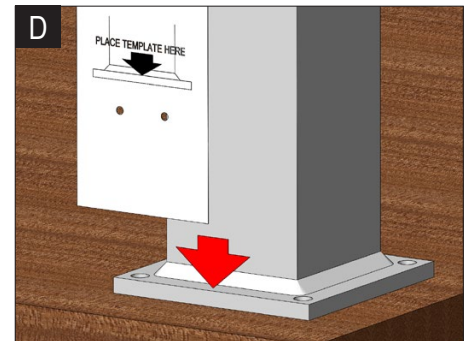
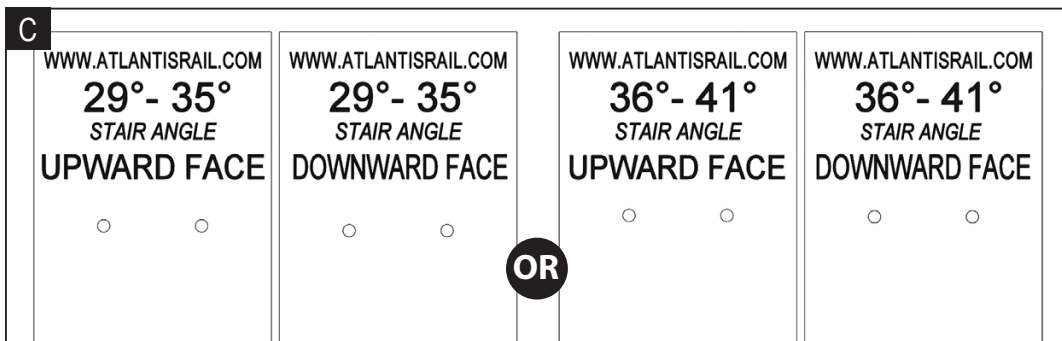
2. **Considerations for Top Stair Post(s):**

Whether the stair rail section is "inline" (See Figure A) or "perpendicular" (See Figure B) with the level section railing, position the top stair post so that it will line up with the adjacent level and stair section posts.

Note: Undrilled Posts are used at the top of the stairs to make the transition from level rail to stairs. This requires drilling the post to attach cable and hardware.



3. **Mark & Pre-Drill Posts for Rail Brackets and Tensioners:** Based on the angle degree of your stairs, choose the appropriate paper "drilling template" (See Figure C). You can find the paper "drilling templates" within the Stair Rail Brackets Kit packaging. When using the templates, be sure to place the bottom of the template on top of the post flange (See Figure D). Mark the locations of the mounting holes onto the Upward face of the bottom stair post and the Downward face of the top stair post (See Figure E).

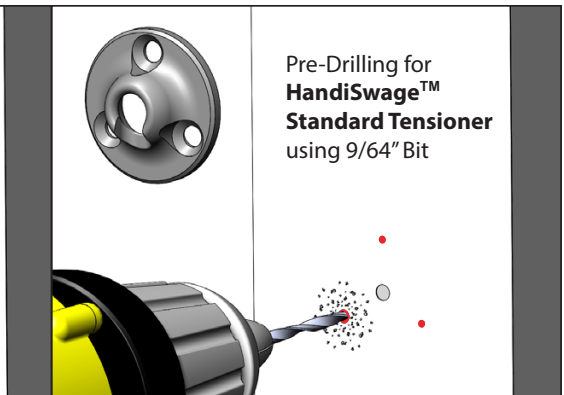
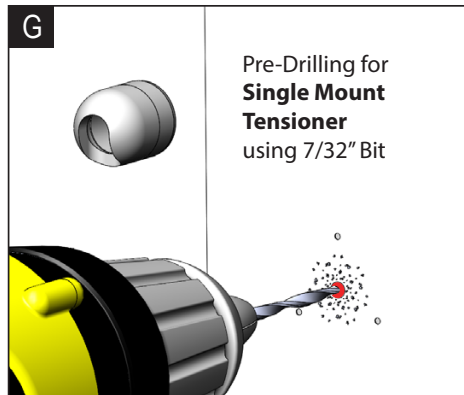
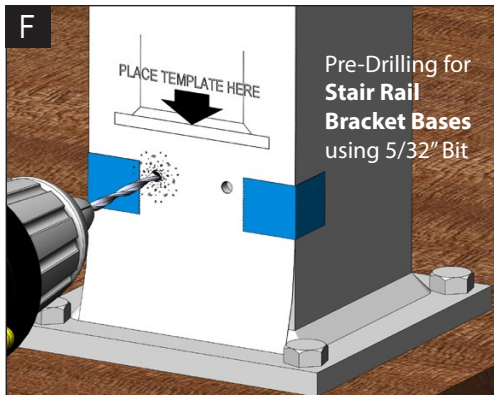


Pre-Drill the Posts using the Drill Templates

For **BOTTOM STAIR RAIL BRACKETS** - use a 5/32" drill bit (See Figure F).

STAIR MID POSTS (Component Y) come "slotted" for cable, but require the use of the paper "drilling template" for drilling the Bottom Stair Rail Bracket Base mounting holes.

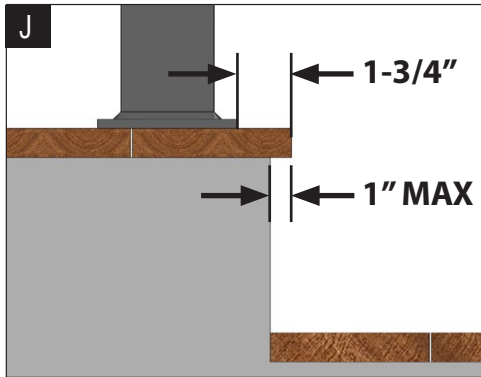
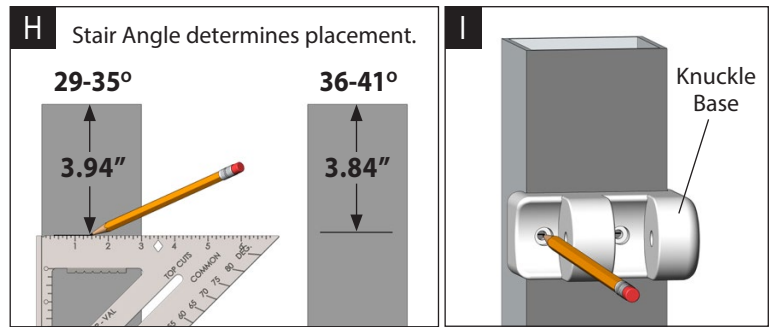
For **TENSIONERS** - use a 7/32" drill bit for the **Single Mount Tensioner** or use a 9/64" drill bit for the **HandiSwage™ Standard Tensioner** (See Figure G).



If transitioning from 42" height level sections to stair railing, use a Post Mount Stair Knuckle (A0907-AR76). The knuckle is mounted to the post using (2) #10 Panhead Screws.

Measure down and mark a center line onto the post for the stair knuckle (See Figure H). With the knuckle disassembled, align the knuckle base with the centerline and mark the exact location of the mounting holes (See Figure I). Pre-drill holes using a $\frac{5}{32}$ " drill bit.

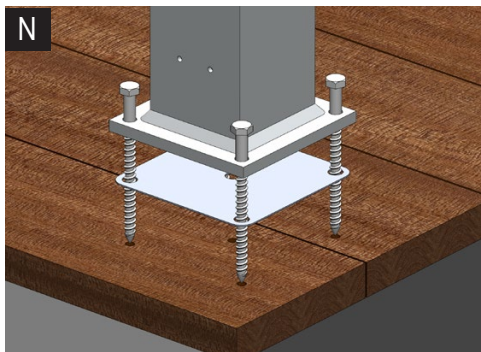
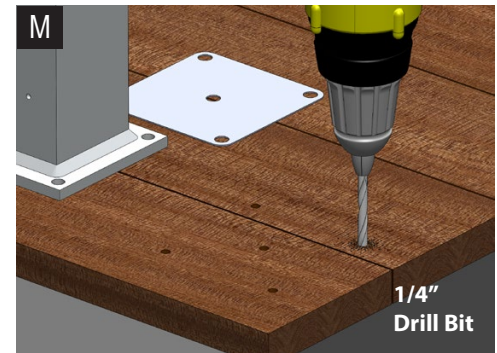
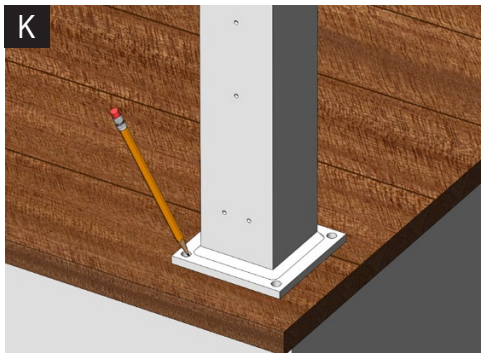
ONLY for attaching stair rail to 42" Undrilled Posts!



4. Mount the Posts: It is critical that the mounting hardware penetrate into the structure in accordance with local building codes. Position all stair posts (top, bottom and mid posts) making sure to follow our recommended placement measurements (See Figure J).

Mark the location of mounting holes and the center hole of the Post Pad (Component V). Pre-drill using a $\frac{1}{4}$ " drill bit (See Figures K, L & M). Use the Lag Bolts (Component L) to anchor the Posts (See Figure N).

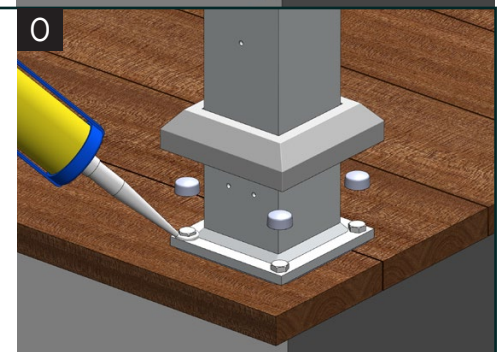
Make sure the Posts are installed plumb. Use Post Shims, if necessary.



5. Install the Plastic Cover Nuts and Post Skirts:

Use silicone caulk on the Lag Bolt heads before installing the Plastic Cover Nuts (Component K) (See Figure O).

DON'T FORGET to install the Post Skirts (Component X).

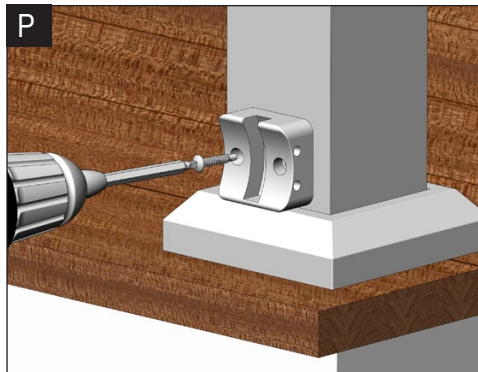


INSTALL THE BOTTOM RAIL BRACKET BASES

6. Install the Bottom Stair Rail Bracket Bases:

Using the #10 Self-Drilling Screws (Component G), install the Bottom Stair Rail Bracket Bases (Component I) onto the post. Make sure the slots on the Bracket Bases face up (See Figure P).

TIP: When installing the Bottom Stair Rail Bracket Base on the upward face of the post(s), use a ratchet with a square driver bit to fasten. There is not enough room for a power drill.

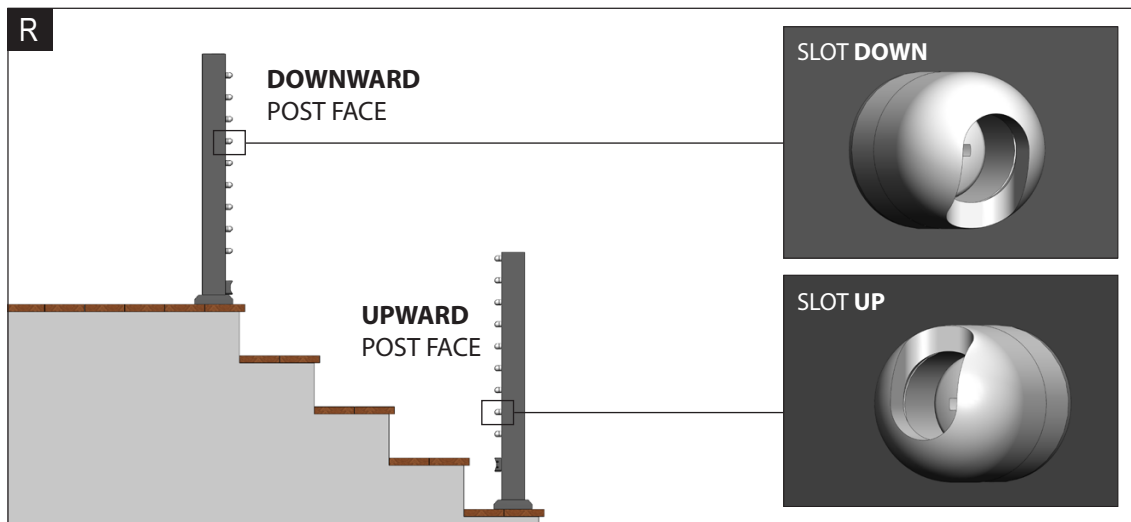
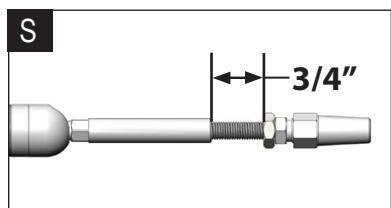
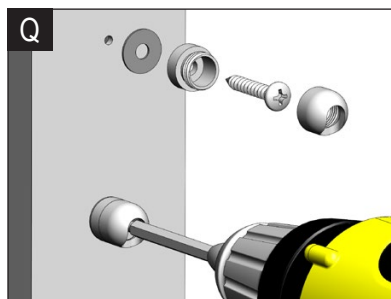
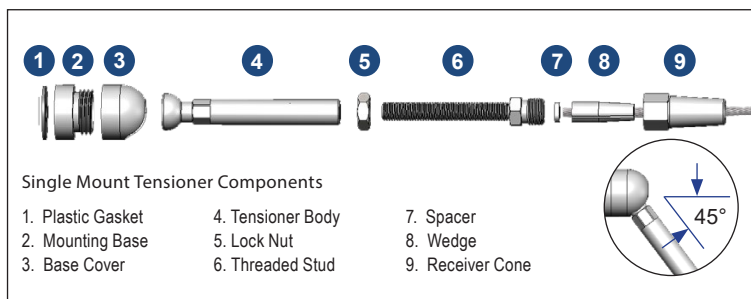


INSTALL THE TENSIONERS

7. The ORION II Stair Railing utilizes either Single Mount Tensioners (Component U) or HandiSwage™ Tensioners. Refer to the steps below to install the tensioners you have chosen for your system.

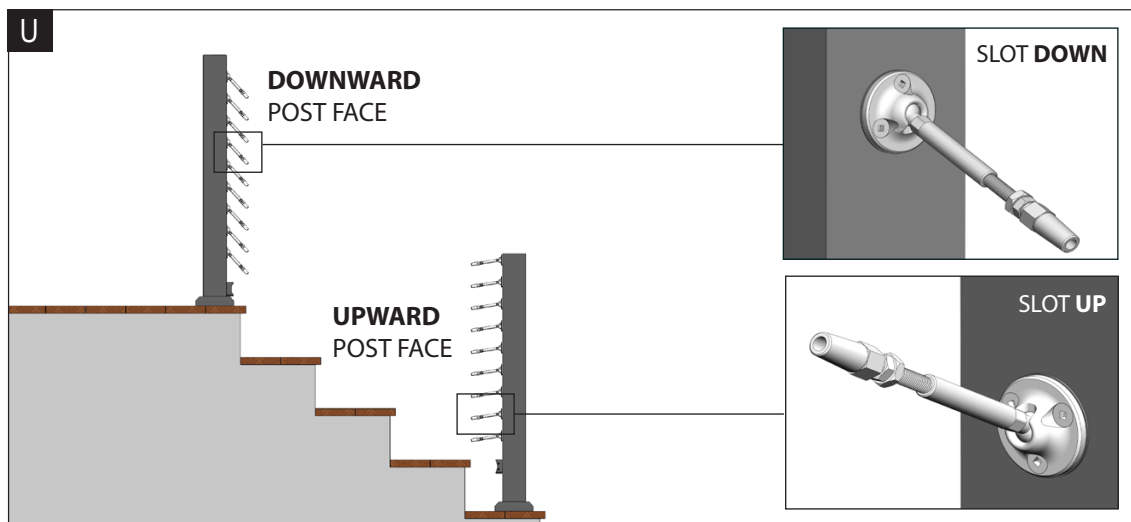
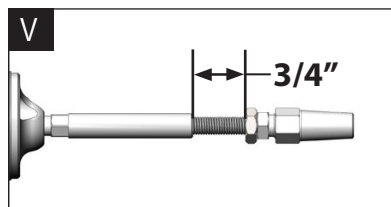
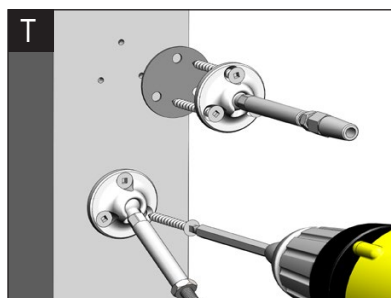
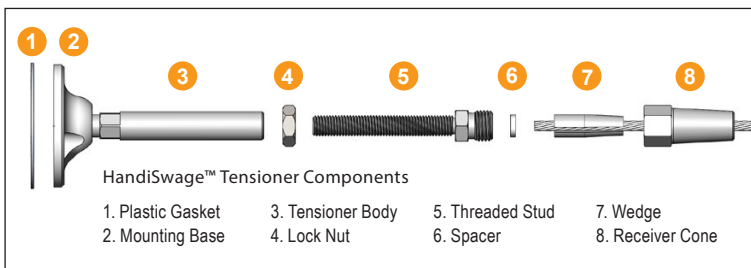
A. Installing Single Mount Tensioners:

Dissassemble the tensioners by removing the Threaded Stud and unscrewing the Base Cover. Reassemble the tensioner bases making sure to insert #14 screw before threading on the Base Cover. Install the tensioner bases to the posts using the Plastic Gasket in between the post and mounting base (See Figure Q). **Be careful not to strip the screw head.** The slots on the tensioner base should aim down on the downward post face (See Figure R). Reassemble the tensioners leaving $\frac{3}{4}$ " of thread exposed (See Figure S). **For cable runs over 20 feet, extend the threaded stud an additional $\frac{1}{4}$ " for each additional 10 feet.**



B. Installing HandiSwage™ Tensioners:

Install each tensioner to the posts using (3) #8 x 1-1/2" Screws, making sure to place the Plastic Gasket in between the post and tensioner Mounting Base (See Figure T). **Be careful not to strip the screw heads.** The tensioner assemblies will aim down on the downward post face and aim up on the upward post face (See Figure U). Adjust the Threaded Stud on each tensioner until $\frac{3}{4}$ " of thread is exposed (See Figure V). **For cable runs over 20 feet, extend the threaded stud an additional $\frac{1}{4}$ " for each additional 10 feet.**



INSTALL THE STAIR RAIL KIT

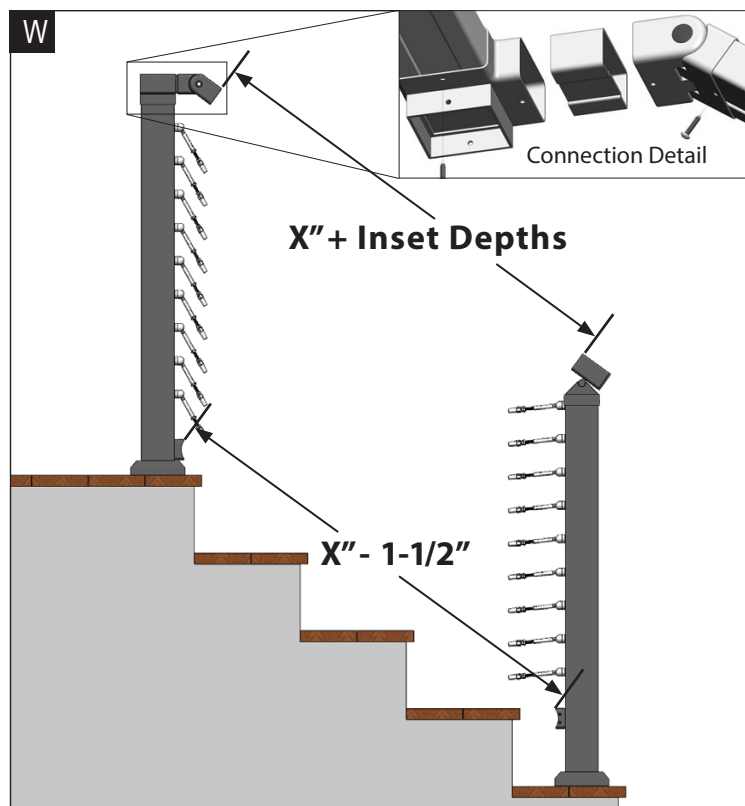
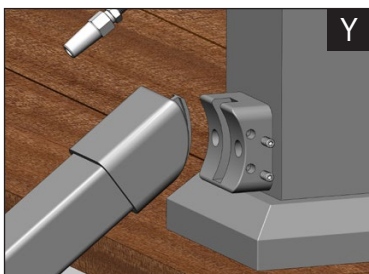
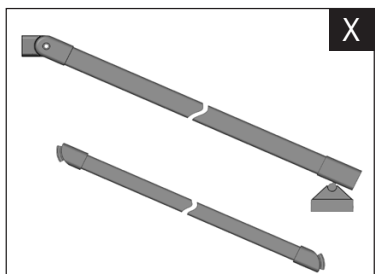
8. Measure and Cut the Rails (See Figure W):

For the Top Rail (Component A), measure between fittings and add the inset measurements to find the total length. The "inset depth" is how far the top rail goes into the fitting.

For the Bottom Rail (Component B), measure from the top edge to top edge of the Bottom Rail Bracket Bases and subtract 1-1/2".

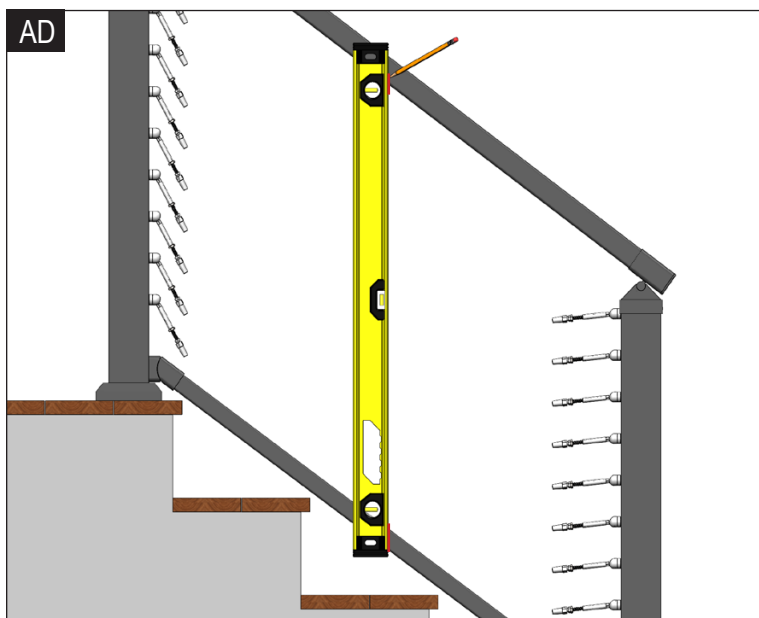
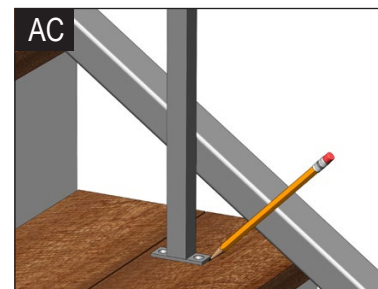
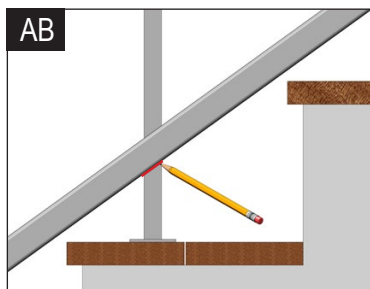
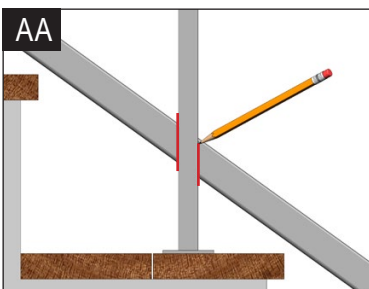
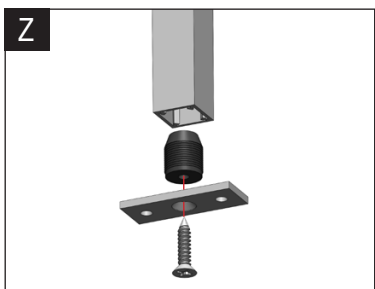
Mark the rails and cut using a miter saw with a non-ferrous carbide tipped blade.

9. Dry Fit the Top and Bottom Rails: Slide the Rail Fittings and Brackets (Components J,M & P) over each end of the rails. For proper orientation, See Figure X. Insert the rib on the bottom brackets into the slot on the rail bracket bases. Install the Set Screws (Component O) into the side of the rail bracket bases (See Figure Y). Place the top rail to ensure proper fit. For attaching the Rail Knuckle, a small section of top rail must be used (See Connection Detail).



10. Mark the location of the Support Block and Stabilizer (If your Stair Rail Section is UNDER 4 FEET, you DO NOT need to install the Support Block and Stabilizer. Skip to STEP 15, if your Rail Section is UNDER 4 FEET)

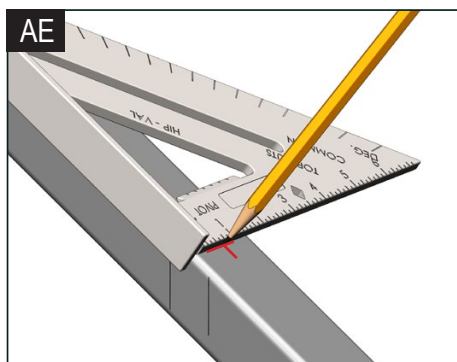
Assemble the Support Block Base Kit (Component H) (See Figure Z). Position the Support Block Base with the Support Block (Component D) in place and mark the bottom rail, the back side of the support block, as well as the stair tread (See Figure AA, AB & AC).

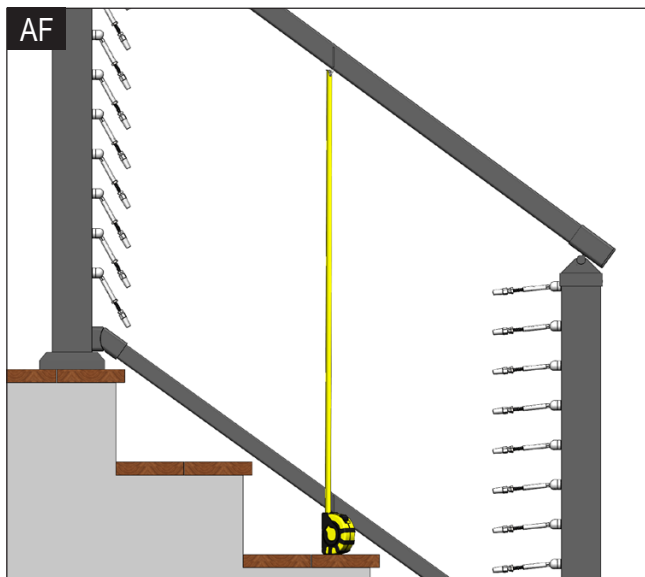


Mark a center line in between the marks on the bottom rail and transfer this center line onto the top rail using a level (See Figure AD).

Use a square to transfer a center mark onto the underside of the top rail and the top and underside of the bottom rail (See Figure AE).

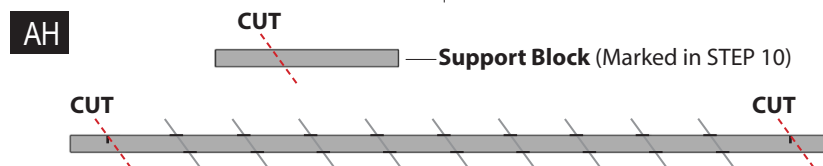
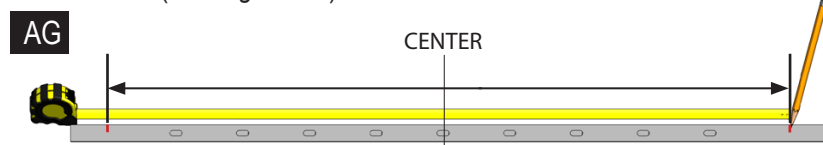
These marks indicate the location of screw holes for the connectors.





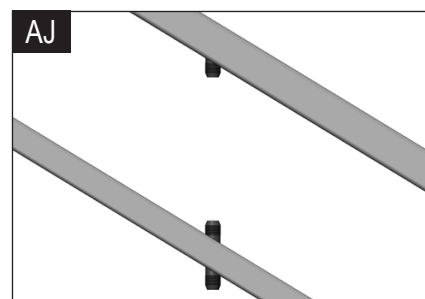
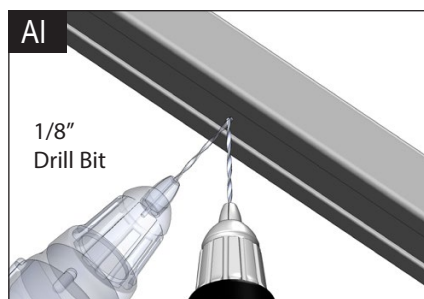
11. Measure & Cut the Stabilizer and Support Block:

Measure between the Top and Bottom rails on the center line (See Figure AF). Transfer this measurement onto the Stabilizer making sure to center your tape measure on the Stabilizer (Component C) (See Figure AG). With the Stabilizer and the Support Block marked, set the saw to match the angle degree of your stairs and cut them to length. **Make sure the offset cable slots in the Stabilizer match the direction of your angled end cuts** (See Figure AH).

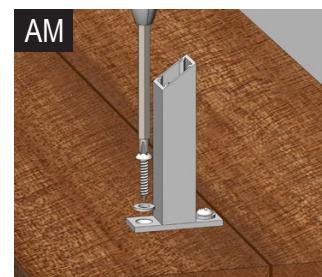
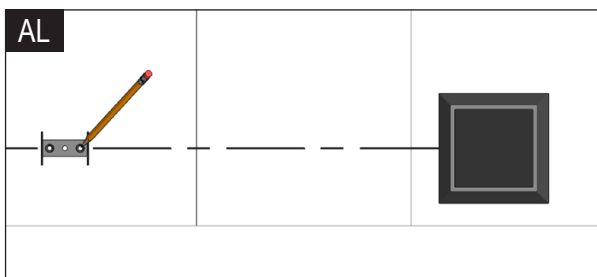
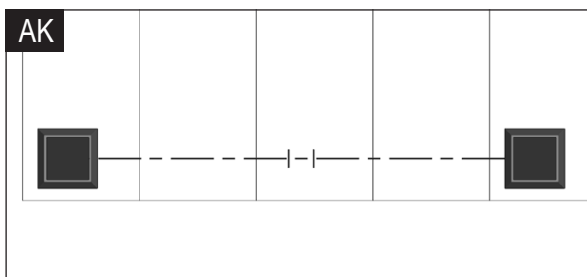


12. Pre-Drill and Install the Connectors onto the Rails:

Using an $\frac{1}{8}$ " drill bit, drill straight while gradually working the drill bit to vertical to complete each hole on the underside of the top rail and top of the bottom rail (See Figure AI). **REMOVE THE RAILS.** Drill the underside of the bottom rails in the same manner. Install the Connectors (Component F) using the supplied #8 screws (See Figure AJ).

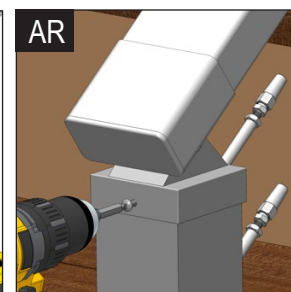
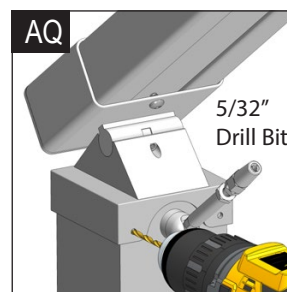
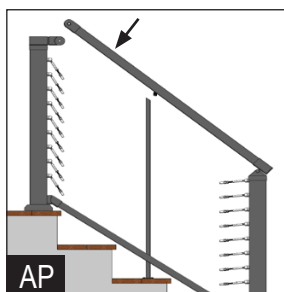
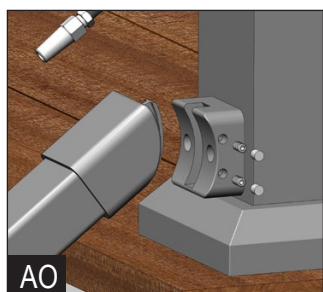
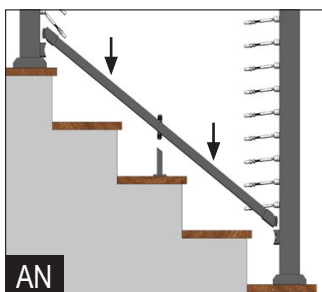


13. Install the Support Block: Measure and mark a center line on the stair tread for the support block. This line should be in line with the center of the stair posts (See Figure AK). Position the Support Block Base and mark the hole placement onto the center line (See Figure AL). Pre-drill the holes with an $\frac{1}{8}$ " drill bit and install the Support Block Base making sure the Plastic Gasket and Washers are used (See Figure AM).



14. Install the Rails and Stabilizer: Repeat **STEP 9** to install the Bottom Rail making sure to insert the connector on the underside of the bottom rail into the top of the support block (See Figure AN). Tighten the Set Screws on the side of the rail bracket bases and install the Set Screw Covers (Component R) (See Figure AO). Install the Stabilizer onto the connector on the top of the bottom rail. Repeat **STEP 9** to install the Top Rail making sure to insert the connector on the underside of the top rail into the top of the stabilizer (See Figure AP).

Post Cap Fittings are secured to the posts with #10 Panhead Screws. Pre-drill mounting holes using a $\frac{5}{32}$ " drill bit. The Pivoting Post Caps require 1 hole on the downside and 2 holes on the upside (See Figures AQ & AR). Install the #10 Screws to secure the top rail and post cap fittings to the posts (See Figure AR).



RUN THE CABLE

15. Determine the Cable Lengths for Each Section:

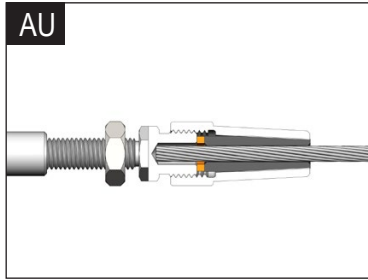
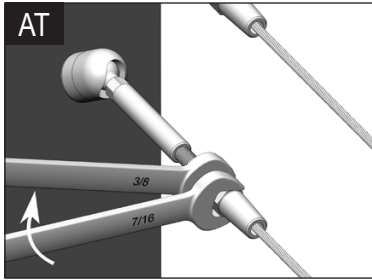
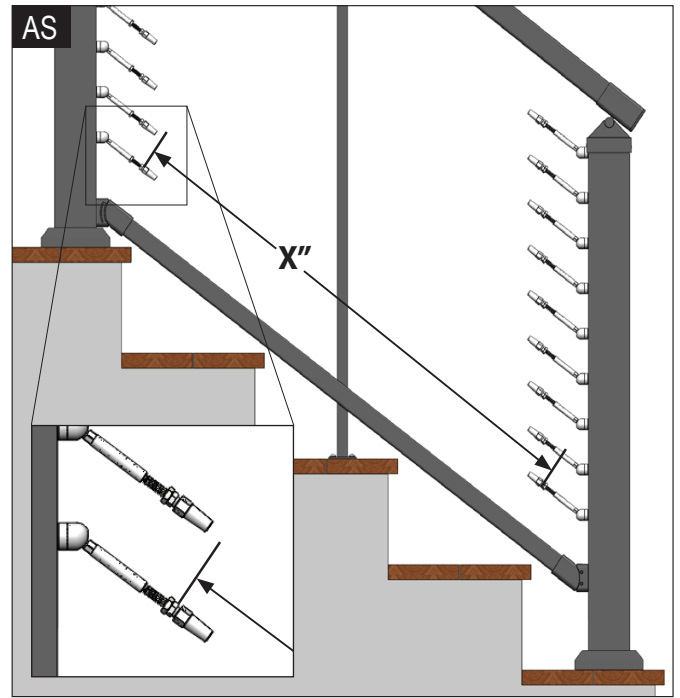
With the Threaded Stud on each tensioner extended $\frac{3}{4}$ " (For cable runs over 20 feet, extend the threaded stud an additional $\frac{1}{4}$ " for each additional 10 feet), measure the distance from "Receiver Cone to Receiver Cone" on opposing tensioners for each section (See Figure AS). This measurement is the "cut to" length for the cable in each section.

16. Cut and Install the Bottom Cable Run for Each Section:

WE RECOMMEND INSTALLING THE BOTTOM CABLE RUN FOR EACH SECTION BEFORE CUTTING ALL OF THE CABLES FOR YOUR ENTIRE PROJECT. Using the measurements from **STEP 15** for each cable run section, cut the cable for the "bottom run" in each cable run section.

Attach the cable end to the Tensioner at the bottom of the Top Stair Post. Insert the cable into the receiver cone while twisting the cable opposite the lay of the wire strands. Fully tighten the receiver cone using $\frac{7}{16}$ " and $\frac{3}{8}$ " open wrenches. The wedge inside will crimp down on the cable (See Figures AT & AU).

Run the cable through each Stabilizer and Mid Post toward the Bottom Stair Post of the cable run section. **REPEAT** the step above to attach the cable end to the Tensioner at the bottom of the Bottom Stair Post.



17. Cut and Install the Remaining Cable Runs for Each Section:

If you find that the cable length was **too short or too long** on the bottom cable run, determine the necessary adjustment needed to be made to the cable length. Cut a new length to the proper size and repeat the steps above to install it.

Now that the bottom cable runs are installed successfully, cut the additional cable lengths for each section and repeat the process in **STEP 16** above for installing the remaining cable runs.

TENSION THE CABLE

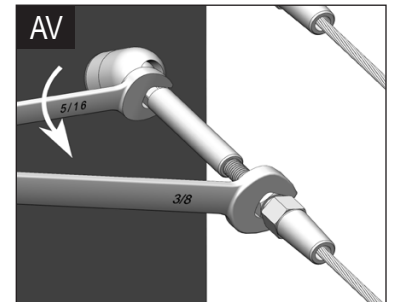
DO NOT TENSION CABLES UNLESS THE FRAMEWORK OF THE ORION II SYSTEM IS COMPLETED. THE POSTS MUST BE INSTALLED SECURELY TO THE MOUNTING STRUCTURE AND THE TOP & BOTTOM RAILS MUST BE SECURELY ATTACHED TO THE POSTS.

18. The Tensioning Method:

Hand tighten the tensioners **equally** on both sides of the cable run. Holding the tensioner stud in a fixed position with a $\frac{3}{8}$ " wrench, rotate the tensioner body with a $\frac{5}{16}$ " wrench to apply tension (See Figure AV).

19. Tension the Center Cable:

Beginning with the center run of cable, use the "tensioning method" until the cable is snug. **DO NOT over-tension!**



20. Tension the Remaining Cables:

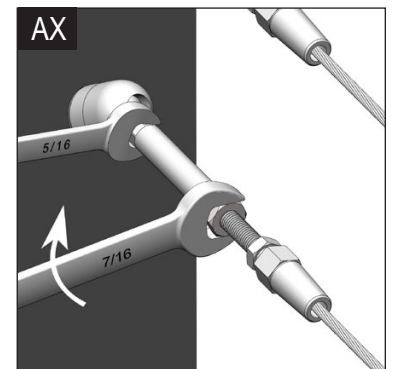
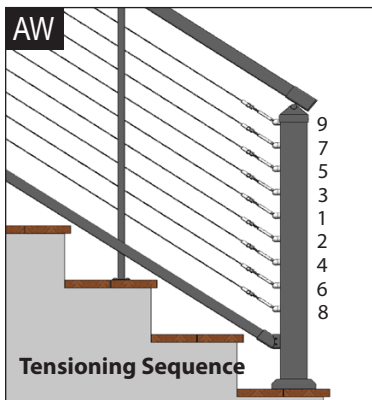
Repeat STEP 18 to tension the rest of the cables. **WORK AWAY FROM THE CENTER CABLE RUN** (See Figure AW).

21. Make Final Adjustments to the Cable Tension:

Make sure all cables are tight and relatively equal in tension.

22. Tighten the Lock Nuts on the Tensioners:

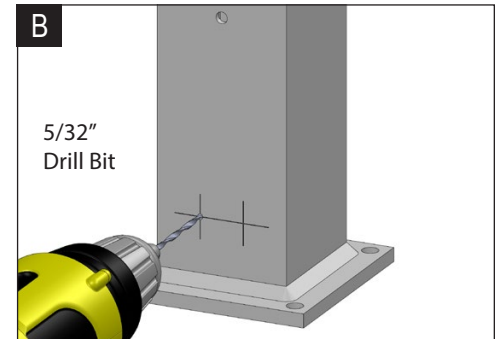
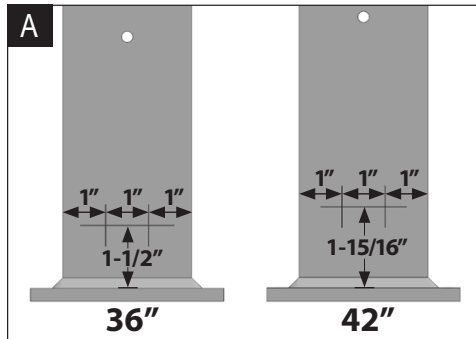
With all of the cables tensioned properly, tighten the tensioner lock nuts. Use a $\frac{5}{16}$ " wrench to hold the tensioner body in a fixed position while tightening the lock nut using a $\frac{7}{16}$ " wrench (See Figure AX).



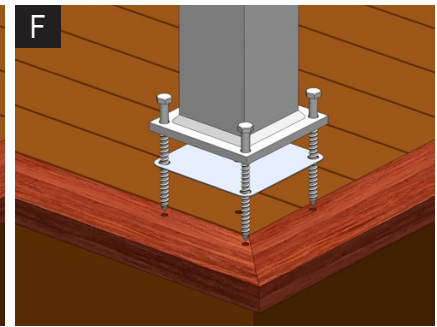
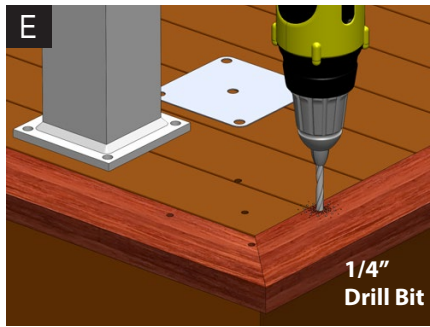
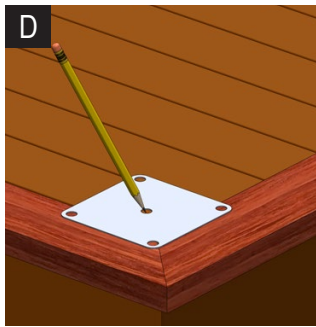
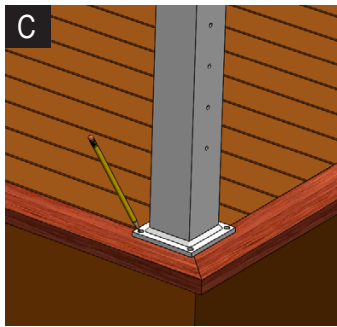
Confirm the Contents of Packaging: Make sure to verify that the system components for your order are present.

INSTALL THE POSTS

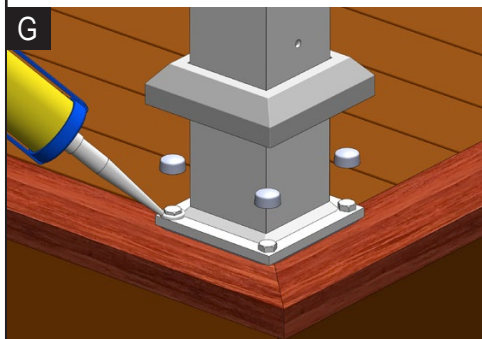
- 1. Gather the Posts and Position them in their General Locations per your Plan Layout.**
- 2. Mark and Pre-Drill the Posts for Bottom Rail Brackets:** Mark Posts with a pencil and drill pilot holes with a $\frac{5}{32}$ " drill bit (See Figures A & B).



- 3. Mount the Posts:** Keep in mind it is critical that the mounting hardware penetrate into the structure in accordance with local building codes. Position all Posts making sure the holes for cable and fittings are oriented correctly. Mark the location of mounting holes and the center hole of the Post Pad (Component AV). Pre-drill using a $\frac{1}{4}$ " drill bit (See Figures C, D & E). Use the Lag Bolts (Component AW) to anchor the Posts (See Figure F). **Make sure the Posts are installed plumb. Use Post Shims, if necessary.**

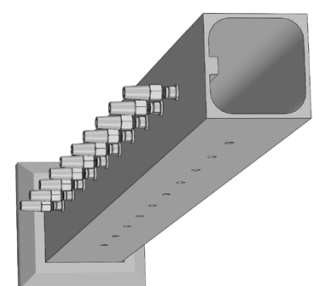
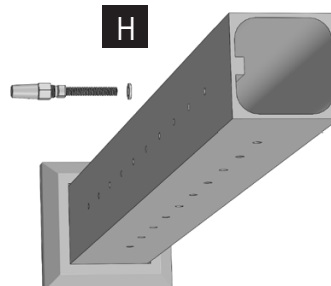


- 4. Install the Plastic Cover Nuts and Post Skirts:** Use silicone caulk on the Lag Bolt heads before installing the Plastic Cover Nuts (Component BB) (See Figure G). **DON'T FORGET** to install the Post Skirts (Component AU).



- 5. Install the NOVA Studs on the Corner Posts:** Locate the side of the Corner Post (Component AR1 or AR2) with the threaded post holes. Making sure to use the Plastic Washer (Component AZ) in between the NOVA Stud and the Post, thread the NOVA Studs (Component AY) into the threaded holes in the Corner Post (See Figure H).

NOTE: If using A0907-CW Corner Posts (where cable passes through the post), NO cable hardware is required.



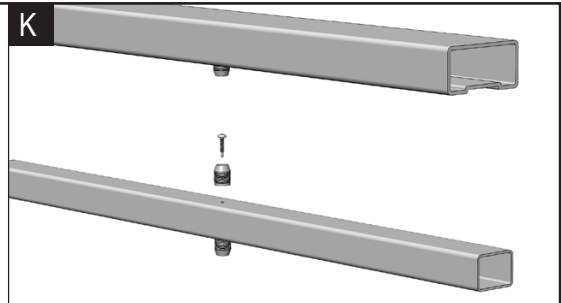
INSTALL THE RAILS

- 6. Measure and Cut the Rails (if necessary):** To ensure the centering of the Cable Stabilizer (Component AC or AD), trim must always be taken from both ends of the Rails (See Figure I). When determining the length of the Top Rail (Component AA) for each section, the "inset depth" of each post cap fitting must be accounted for (See Figure J). Mark the Rails and cut using a miter saw with a non-ferrous carbide tipped blade.



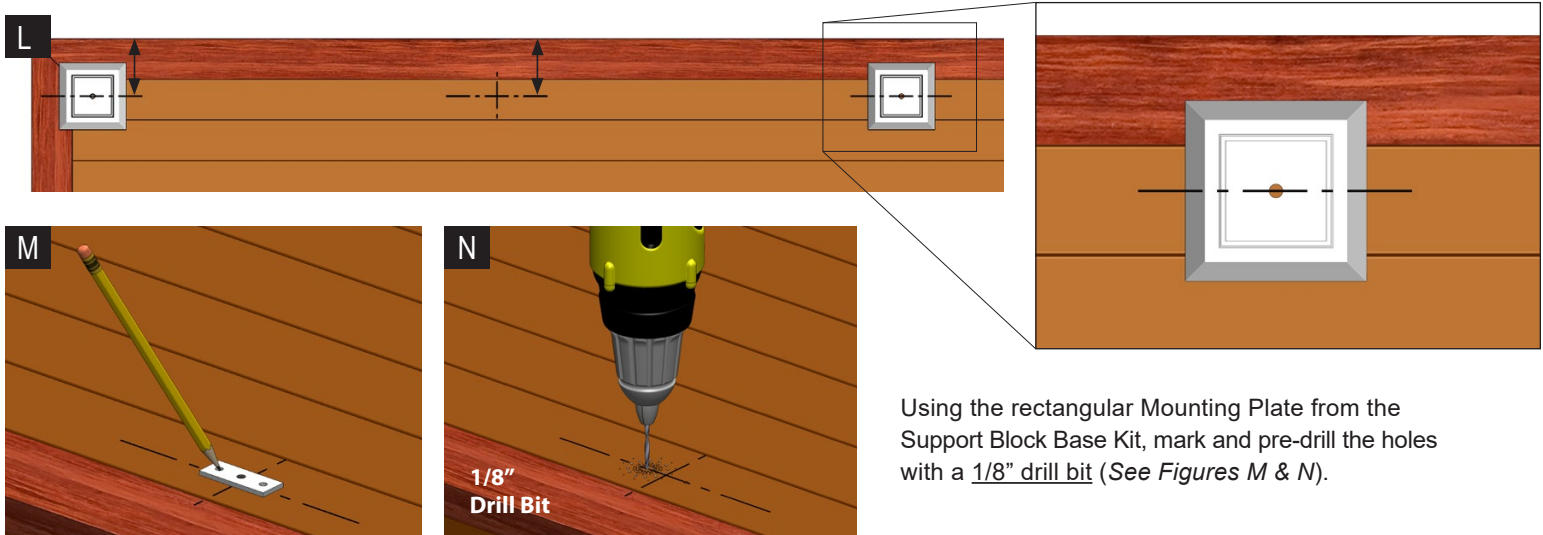
- 7. Install the Stabilizer and Support Block Connectors**
(If your Rail Section is UNDER 4 FEET, you DO NOT need to install the Support Block and Stabilizer. Skip to STEP 12)

Locate the pre-drilled holes in the middle of the underside of the Top Rail and on the top and underside of the Bottom Rail (Component AB). Using the #8 self-drilling screws, the Square Driver Bit (Component AM) and a power drill, install the Stabilizer and Support Block Connectors (Component AJ) on the Top and Bottom Rails (See Figure K).



- 8. Mark and Pre-Drill for the Support Block Base Kit:**

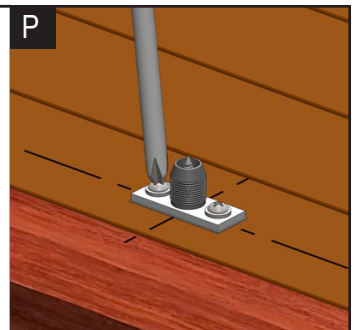
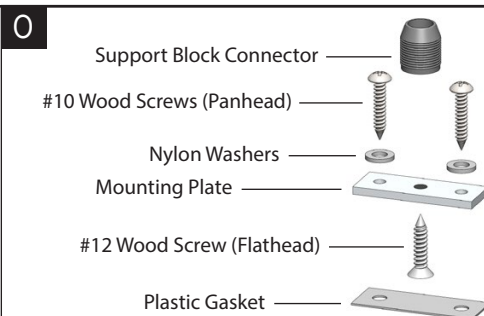
Measure and mark a center line on the deck to indicate the center between Posts. Measure from the edge of the deck to the center of the Posts and transfer this measurement onto the deck by marking a line that intersects the center line between Posts. This is where the location of the Support Block Base Kit (Component AI) is to be installed (See Figure L).



Using the rectangular Mounting Plate from the Support Block Base Kit, mark and pre-drill the holes with a 1/8" drill bit (See Figures M & N).

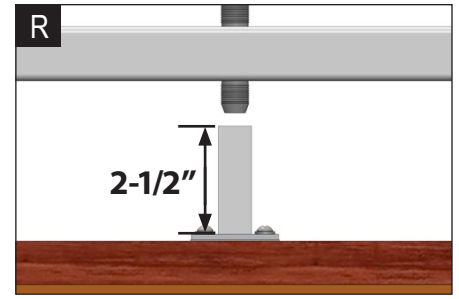
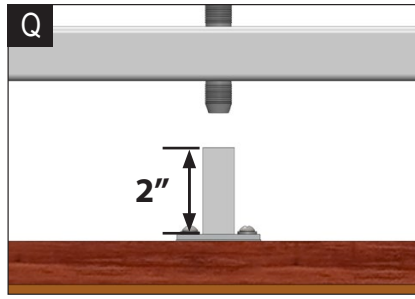
- 9. Assemble and Install the Support Block Base Kit:**

Assemble the Support Block Base Kit as shown (See Figure O). Making sure the Plastic Gasket is between the Mounting Plate and the mounting surface, install the Support Block Base Kit using (2) #10 Wood Screws and Nylon Washers (See Figure P).



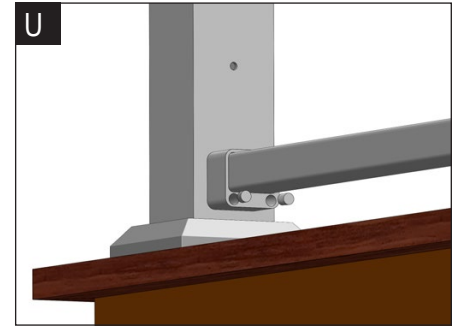
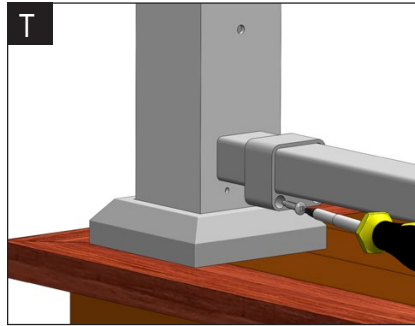
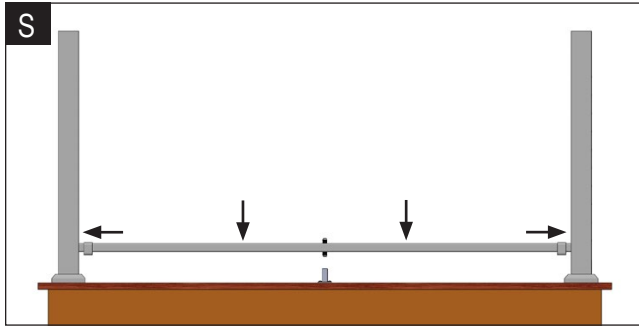
10. Cut and Install the Support Block:

For a 36" post (actual post size is 34.22"), the Support Block (Component AE) should be cut to 2" (See Figure Q).
For a 42" post (actual post size is 40.22"), the Support Block should be cut to 2-1/2" (See Figure R). Measure and mark the Support Block, then cut using a miter saw with a non-ferrous carbide tipped blade. Insert the Support Block onto the Support Block Connector.



11. Install the Bottom Rail:

Slide the Bottom Rail Brackets (Component AG) over each end of the Bottom Rail (See Figure S). The counter bore holes must be toward the center of the rail section. Install the Bottom Rail, using #10 Self-Drilling Screws (Component AN) (See Figure T). Install the Screw Covers (Component AH) (See Figure U).

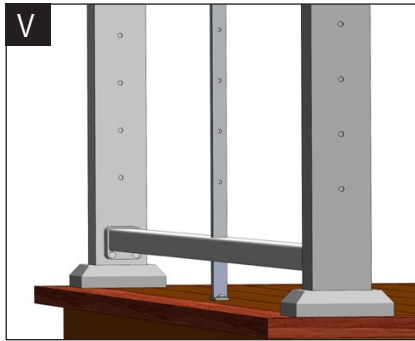


12. Install the Cable Stabilizer and Top Rail:

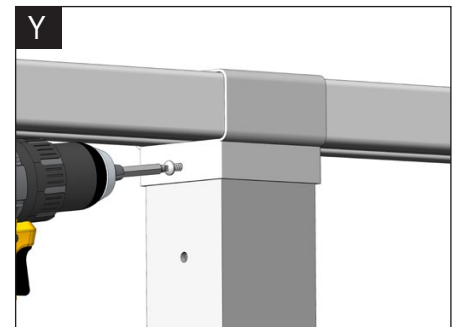
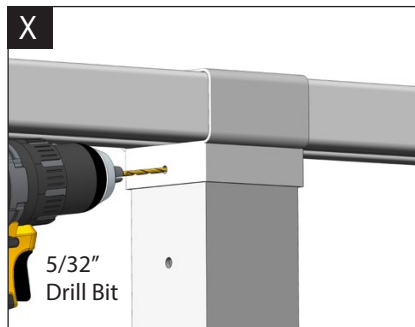
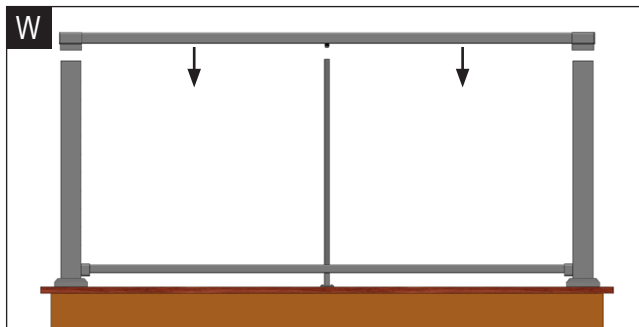
Insert the Cable Stabilizer over the Connector on the top of the Bottom Rail making sure the holes in the Cable Stabilizer are aligned with the holes on the posts (See Figure V).

For 36" railing systems, use the Cable Stabilizer included in the rail section kit.

For 42" railing systems, use the Cable Stabilizer (Component AD) that was supplied separately.

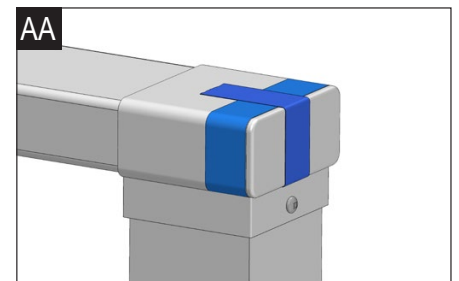
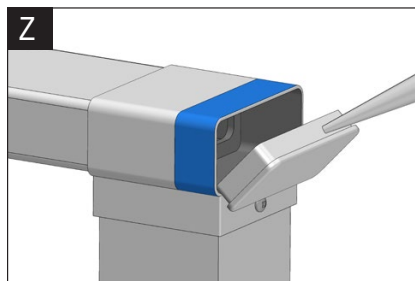


Place the Top Rail with Post Cap Fittings on each end on top of the posts as you insert the Connector on the bottom of the Top Rail into the Cable Stabilizer (See Figure W). Make sure Post Cap Fittings are fully seated on top of posts. Using a 5/32" drill bit, drill holes through the post using the mounting holes in the Post Cap Fitting as a guide (See Figure X). Install the #10 Panhead Screw (See Figure Y).



13. Install the Termination Caps:

Post Cap Fittings at the end of level and stair sections are capped off using the Termination Cap (Component AK). These caps are secured into place using a clear silicone sealant. With the Post Cap Fitting masked off with tape, apply a bead of sealant to the flange on the Termination Cap (See Figure Z). Clean of any excess sealant and tape the cap into place until the sealant is dry (See Figure AA).



“NON-90 DEGREE” ANGLED SECTIONS (45 Degree & 60 Degree)

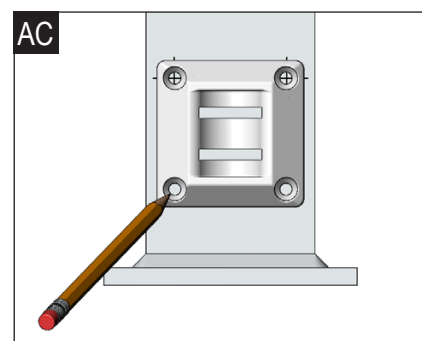
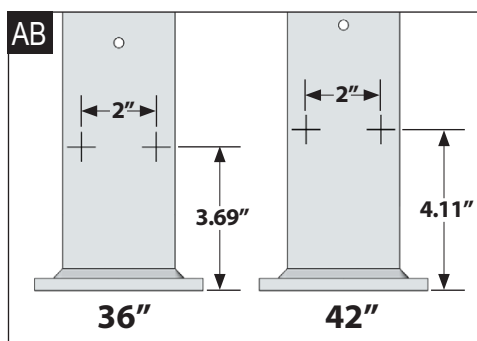
The Orion II System will accommodate 45 & 60 degree angle sections of level railing.

A fixed-angle post cap fitting is used on top of a universal post that is centered on the angle.

INSTALL THE ANGLED SECTION POSTS

14. Mark and Pre-Drill the Posts for Lower Adjustable Rail Brackets:

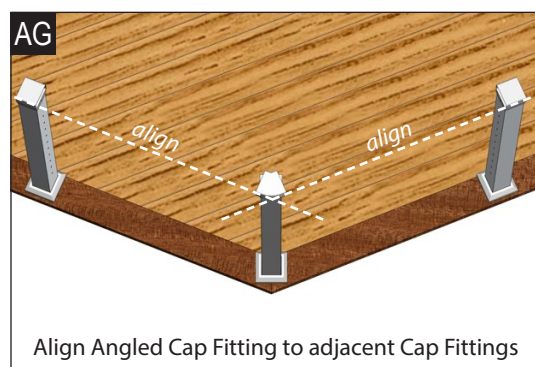
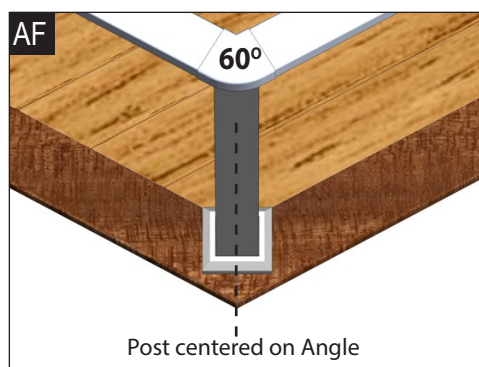
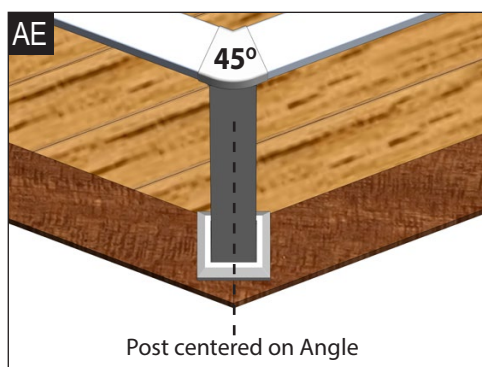
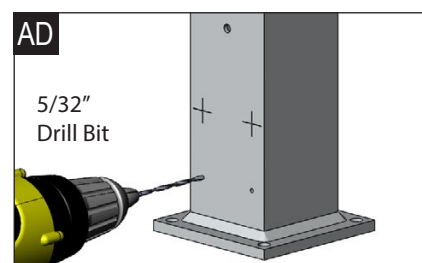
Measure and mark each side of the Posts per the specified dimensions for 36" or 42" height system (See Figure AB). Using the Adj. Rail Bracket Bases, mark the bottom mounting hole locations (See Figure AC). Drill pilot holes with a $\frac{5}{32}$ " drill bit (See Figure AD).



15. Position the Posts :

For all angled sections of railing that use the 45 degree (Component AT) or 60 degree (Component AX) post cap fittings, you must place the post according to the illustrations (See Figures AE & AF).

The angled post cap fittings are designed to be centered on the angle. Place the angled post cap fitting on top of the post and position the post so that it is centered on the angle while aligning it to adjacent posts (See Figure AG).



16. Mount the Posts following “LEVEL SECTIONS: Steps 3 & 4” on page 11. **DON'T FORGET** to install the Post Skirts before attaching rails!

INSTALL THE ANGLED SECTION RAILS

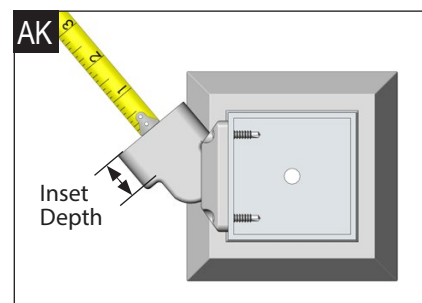
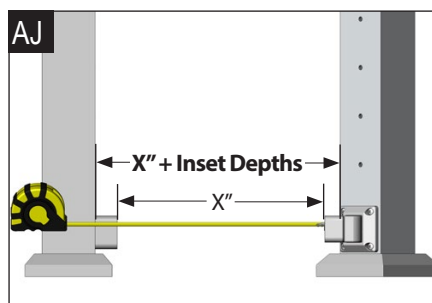
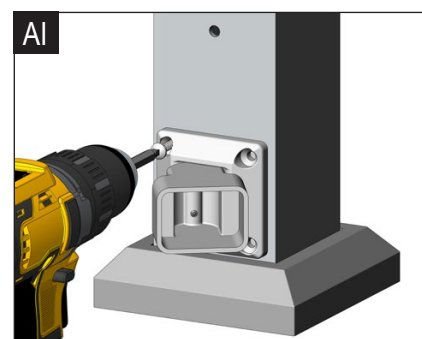
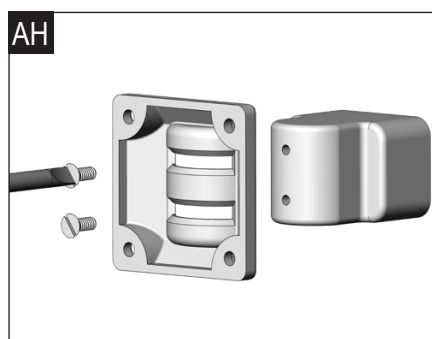
17. Determining the Rail Lengths:

BOTTOM RAIL: Match the angle of your adjustable rail brackets (Component AF) to the angle of your rail sections and lock the rail bracket in place by tightening the machine screws on the back of the base (See Figure AH).

Use #10 Self-Drilling Screws to “temporarily” mount the adjustable rail brackets to the posts (See Figure AI).

Measure the distance between bottom rail brackets for each section. Make sure to account for the “inset depths” of each bracket when determining the overall length of the bottom rail (See Figures AJ & AK).

TOP RAIL: With Post Cap Fittings temporarily in place, measure the distance between fittings making sure the “inset depth” on each fitting is accounted for and added to the total top rail length.

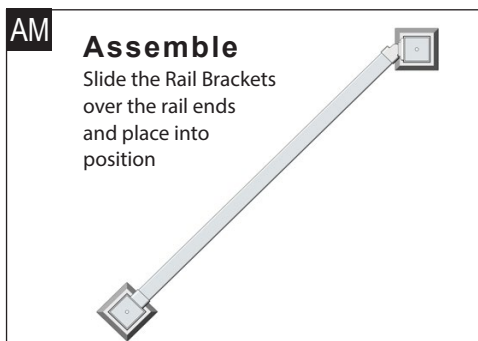
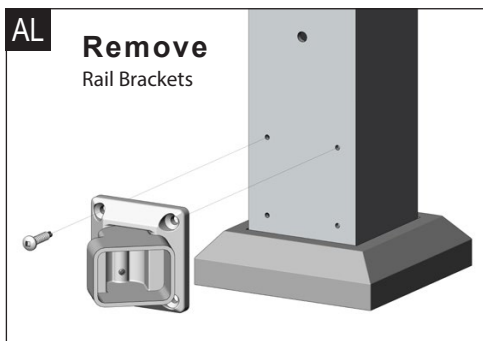


18. Cut the Rails to Length: To ensure the centering of the Cable Stabilizer (Component AC or AD) and the pre-drilled holes in the bottom rails, trim must always be taken equally from both ends of each rail. Using the measurements from Step 17 (*on page 14*), mark the rails and cut using a miter saw with a non-ferrous carbide tipped blade.

19. Install the Stabilizer Connectors and Support Block Connector following “LEVEL SECTIONS: Steps 8 - 10” on pages 12-13.
If your Rail Section is UNDER 4 FEET, you DO NOT need to install the Support Block and Stabilizer.

20. Install the Bottom Rail (DON'T FORGET to install the Post Skirts before installing the rails):

With the adjustable bottom rail brackets set to the angle degree of the rail section, remove the brackets from the posts and slide them over each end of the Bottom Rail (*See Figures AL & AM*). Install the Bottom Rail, using #10 Self-Drilling Screws (Component AN) to secure the rail brackets to the posts (*See Figure AN*).

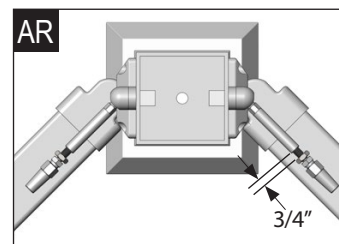
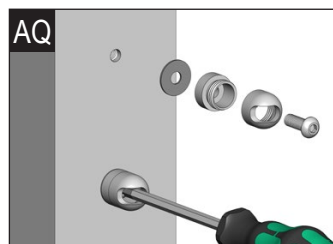
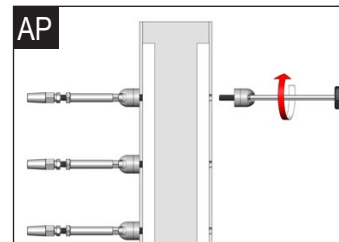
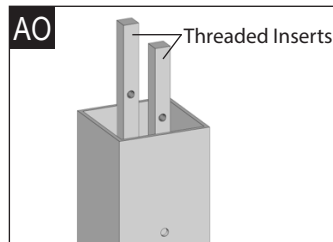


INSTALL THE CABLE FITTINGS FOR ANGLED SECTIONS

NOTE: Each post requires (2) threaded inserts on the inside of the post to serve as a backing plate for attaching the Single Mount Tensioners (Fig. AO).

21. Installing the Single Mount Tensioners on angled posts:

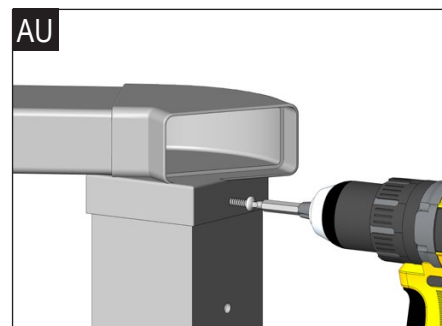
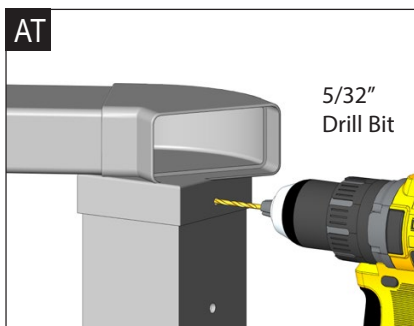
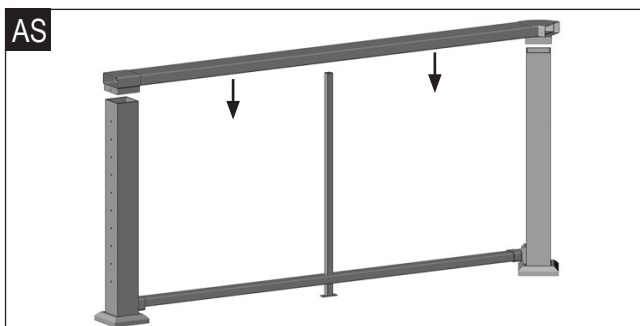
Disassemble the tensioners by removing the Threaded Stud and unscrewing the Base Cover. Reassemble the tensioner bases making sure to insert the 1/4"-28 UNF machine screw (P0906-0030) before threading on the Base Cover. Install the tensioner bases to the posts using the Plastic Gasket in between the post and mounting base (*See Figures AP & AQ*). The slot on the tensioner base should aim in the direction that the tensioner body will be angled. Reassemble the tensioners leaving 3/4" of thread exposed (*See Figure AR*). For cable runs over 20 feet, extend the threaded stud an additional 1/4" for each additional 10 feet.



22. Install the Top Rail (and Cable Stabilizer, if necessary):

Insert the Cable Stabilizer over the Connector on the top of the Bottom Rail making sure the holes in the Cable Stabilizer are aligned with the holes on the posts. For 36" railing systems, use the Cable Stabilizer included in the rail section kit. For 42" railing systems, use the Cable Stabilizer (Component AD) that was supplied separately.

Place the Top Rail with Post Cap Fittings on each end on top of the posts as you insert the Connector on the bottom of the Top Rail into the Cable Stabilizer (*See Figure AS*). Make sure Post Cap Fittings are fully seated on top of posts. Using a 5/32" drill bit, drill holes through the post using the mounting holes in the Post Cap Fitting as a guide (*See Figure AT*). Install the #10 Panhead Screw (*See Figure AU*).



RUN THE CABLE

- 23. Determine the Cable Lengths for Each Section:** Measure from “outside to outside” of the outer posts for each cable run section (See Figure AV). Follow the steps below to find the “cut to” length for each cable run section.

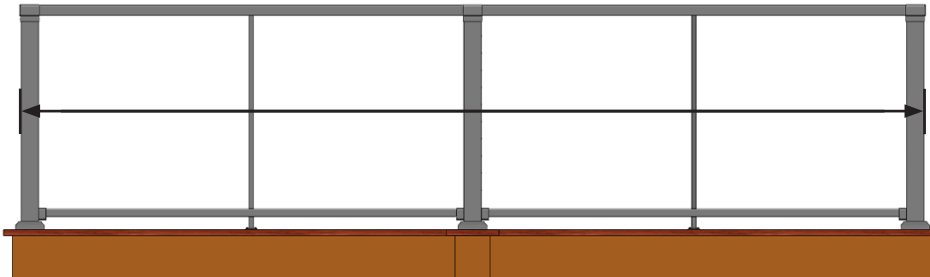
HandiSwage™ Stud to HandiSwage™ Stud

For cable run sections where HandiSwage Studs will be used on both ends of cable runs, **subtract 3”** (See Figure AW).

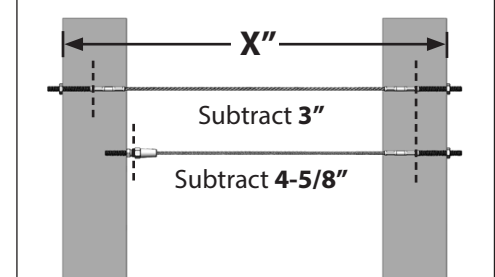
NOVA Stud to HandiSwage™ Stud

For cable run sections where a Corner Post using NOVA Studs is present, **subtract 4-5/8”** (See Figure AW).

AV



AW



- 24. Cut and Install the Bottom Cable Run for Each Section:** WE RECOMMEND INSTALLING THE BOTTOM CABLE RUN FOR EACH SECTION BEFORE CUTTING ALL OF THE CABLES FOR YOUR ENTIRE PROJECT. Using the measurements from **STEP 23** for each cable run section, cut the cable for the “bottom run” in each cable run section.

For Straight cable run sections where HandiSwage™ Studs will be used on both ends of cable runs, crimp a HandiSwage Stud onto one end of the cable following the hand swage tool instructions. Insert the stud through the bottom post hole. Locate the HandiSwage Cover Nut Set and identify each component (See Figure AX). Install the Plastic Washer and hand tighten the Tensioning Nut onto the stud, leaving a 1/2” of thread exposed (See Figure AY).

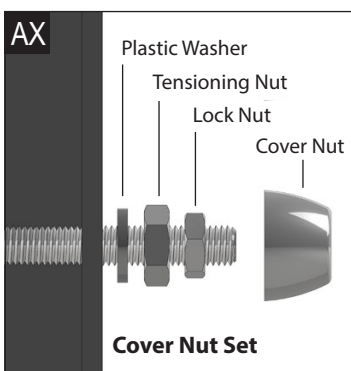
Run the cable through each Cable Stabilizer and Mid Post toward the opposite post of the cable run section.

Crimp a HandiSwage Stud to the cable end. Insert the stud (threaded end first) through the post, install the Plastic Washer and hand tighten the Tensioning Nut onto the stud (See Figure AY). This should leave about a 1/2” of thread exposed.

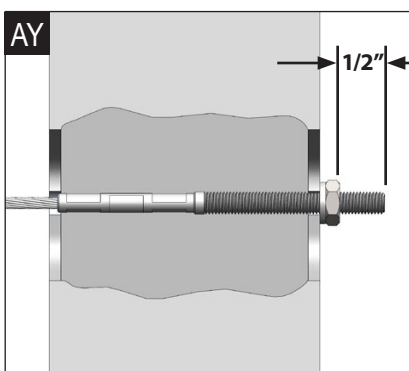
For sections using “A0907-C036 & -C042” Corner Posts (utilizes fixed / tensioning hardware), attach the cable end to the NOVA Stud at the bottom of the Corner Post. Insert the cable into the receiver cone while twisting the cable opposite the lay of the wire strands. Fully tighten the receiver cone using 7/16” and 3/8” open wrenches (See Figure AZ). The wedge inside will crimp down on the cable (See Figure BA).

Run the cable through each Cable Stabilizer and Mid Post toward the opposite post of the cable run section. Following the hand swage tool instructions, crimp a HandiSwage Stud to the cable end and insert it through the post. Locate the HandiSwage Cover Nut Set and identify each component (See Figure AX). Install the Plastic Washer and hand tighten the Tensioning Nut onto the stud (See Figure AY). This should leave about a 1/2” of thread exposed.

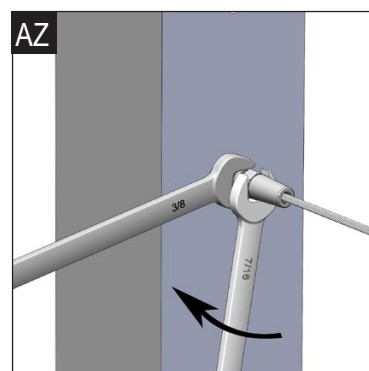
AX



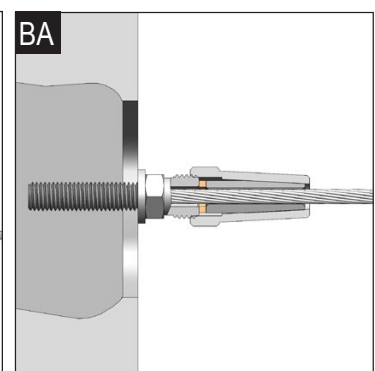
AY



AZ



BA



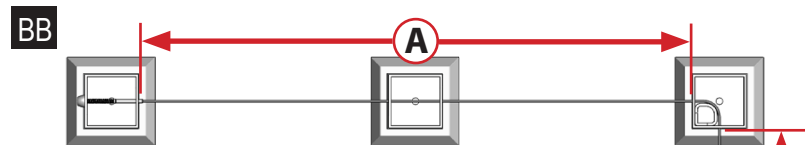
- 25. Cut and Install the Remaining Cable Runs for Each Section:** If you find that the cable length was **too short or too long** on the bottom cable run, determine the necessary adjustment needed to be made to the cable length. Cut a new length to the proper size and repeat the steps above to install it.

Now that the bottom cable runs are installed successfully, cut the additional cable lengths for each section and repeat the process in the steps above for installing the remaining cable runs.

- 26. For sections using “A0907-CW36 & -CW42” Corner Posts** (cables pass through), the total length of a cable run passing through the Corner Post MUST NOT EXCEED 50 FEET and the cable run MUST HAVE A TENSIONING STUD ON EACH END OF THE CABLE. (See Figure BB)

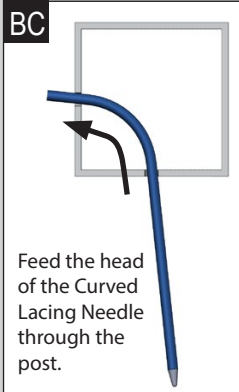
We recommend measuring and cutting ONE of the cable rows to an “approximate” length per the instructions. Follow **Steps A through E** to insure that the cable length is long enough. Once this is confirmed, you can cut all of the cable runs to this length.

- A. Determine the “approximate” length of the cable** by measuring from the Corner Post to the face of each End Post. ADD the two lengths together PLUS an extra 8” to find the approximate length for your cable. Refer to the formula and illustration (on right).

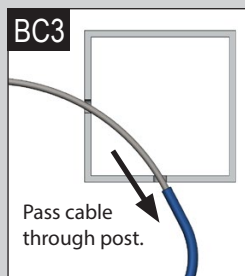
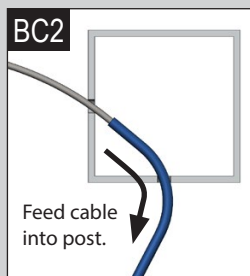
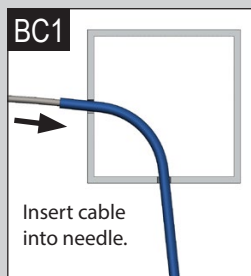


$$A \text{ Length} + B \text{ Length} + 8'' = \text{Approximate Cable Length}$$

- B. Start at one of the End Posts and pass the cable through the Mid Posts and Cable Stabilizers until you reach the Corner Post. Remove Insert from the Corner Post (if present).**



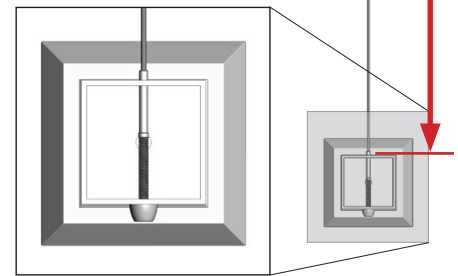
Using the Curved Lacing Needle (C0988-400C-2), pass the cable through the Corner Post by lacing the cable through one hole and out the other (See Figures BC, BC1, BC2 & BC3).



50 FT. MAXIMUM

For total length (End Post to End Post) of cable run that passes through a Corner Post.

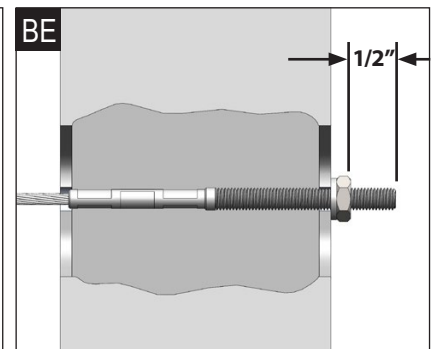
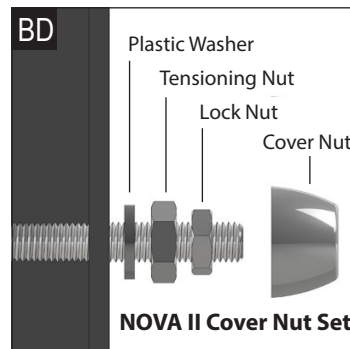
MUST HAVE tensioning device on each end of the cable run.



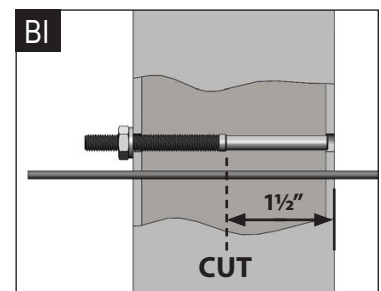
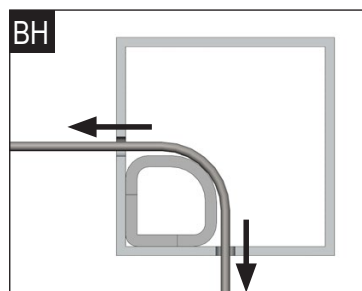
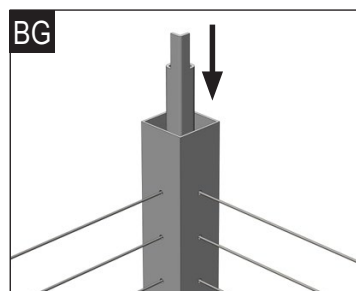
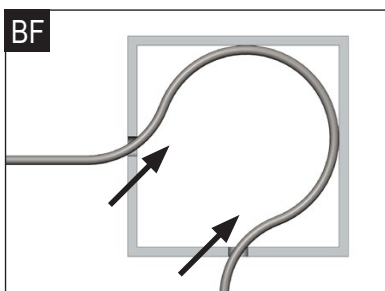
- C. Continue to pass the cable through the Mid Posts and Cable Stabilizers (if present) until you reach the opposite End Post.**

- D. Following the hand swage tool instructions, crimp the HandiSwage Studs onto the end of the cable. Insert the stud through the End Post. Locate the HandiSwage Cover Nut Set and identify each component (See Figure BD). Install the Plastic Washer and hand tighten the Tensioning Nut onto the stud, leaving a $\frac{1}{2}$ " of thread exposed (See Figure BE).**

Remove top rail assembly over -CW corner post. This allows access to the inside of the post when installing the insert.



- E. Install the Insert into the Corner Post by following these steps. First, force the cable to bend into place inside the corner post so that it is out of the way (See Figure BF). Place the Insert into the post on the inside corner with the curved side of the insert facing the cable (See Figure BG). Pull the cable into place making sure that it follows the curve of the Insert (See Figure BH). Pull the cable taught to the opposite End Post. The cable should extend beyond the End Post (See Figure BI).**
- F. Mark and Cut the cable to the “exact” length using the measurement shown below (See Figure BI). Crimp the HandiSwage Studs onto the cable ends following the hand swage tool instructions and insert them through the post. Locate the HandiSwage Cover Nut Sets and identify each component (See Figure BD). Install the Plastic Washers and hand tighten the Tensioning Nuts onto the studs (See Figure BE). This should leave about a $\frac{1}{2}$ " of thread exposed. **Re-install the top rail assembly before moving on to “Tensioning the Cable” steps.****



TENSION THE CABLE

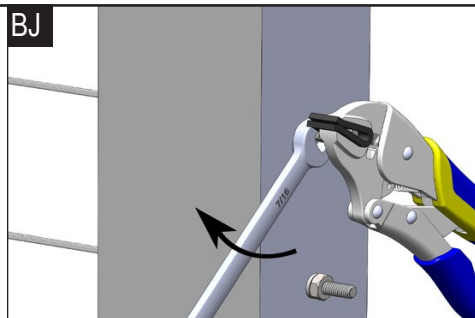
DO NOT TENSION CABLES UNLESS THE FRAMEWORK OF THE ORION II SYSTEM IS COMPLETED. THE POSTS MUST BE INSTALLED SECURELY TO THE MOUNTING STRUCTURE AND THE TOP/BOTTOM RAILS AND POST CAPS MUST BE SECURELY ATTACHED TO THE POSTS.

27. The Tensioning Method:

Using a Cable Grip Pad with vice grips, hold the stud or cable in a fixed position and turn the Tensioning Nut with a 7/16" wrench to apply tension (See Figure BJ).

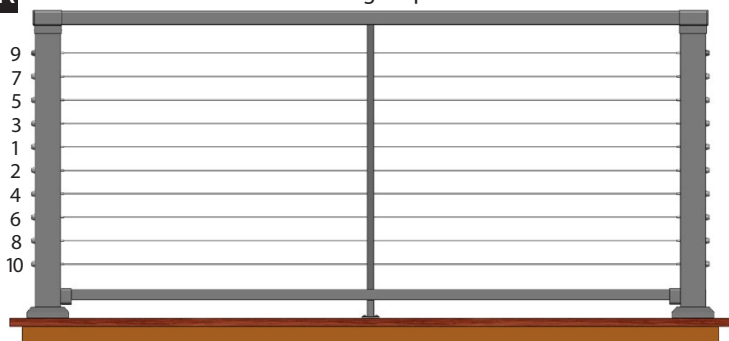
28. Tension the Center Cable:

Beginning with the center run of cable, use the "tensioning method" and tighten the nut until the cable is snug. **DO NOT over-tension!**



BK

Tensioning Sequence



29. Tension the Remaining Cables:

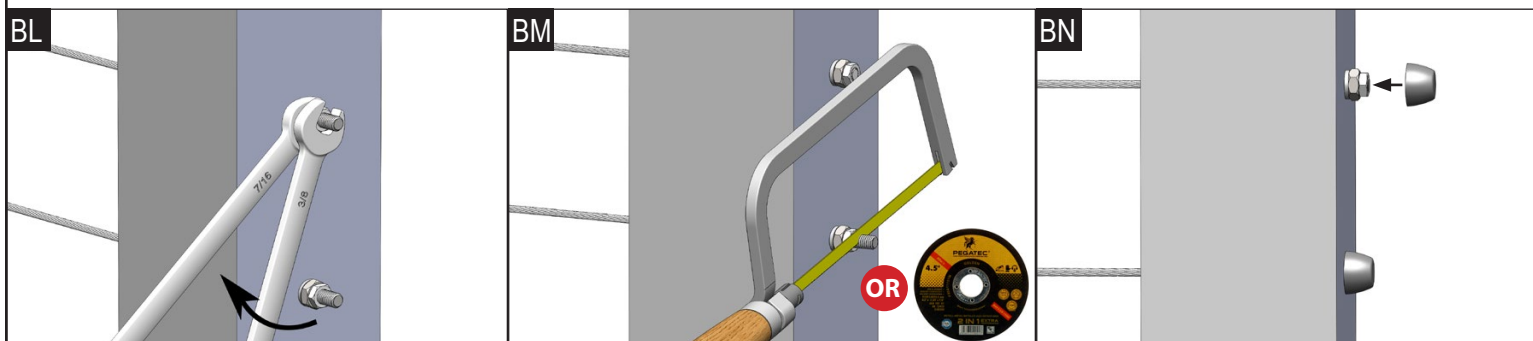
Tension the rest of the cables by tightening the nuts until the cable is snug. WORK AWAY FROM THE CENTER CABLE RUN (See Figure BK).

30. Make Final Adjustments to the Cable Tension:

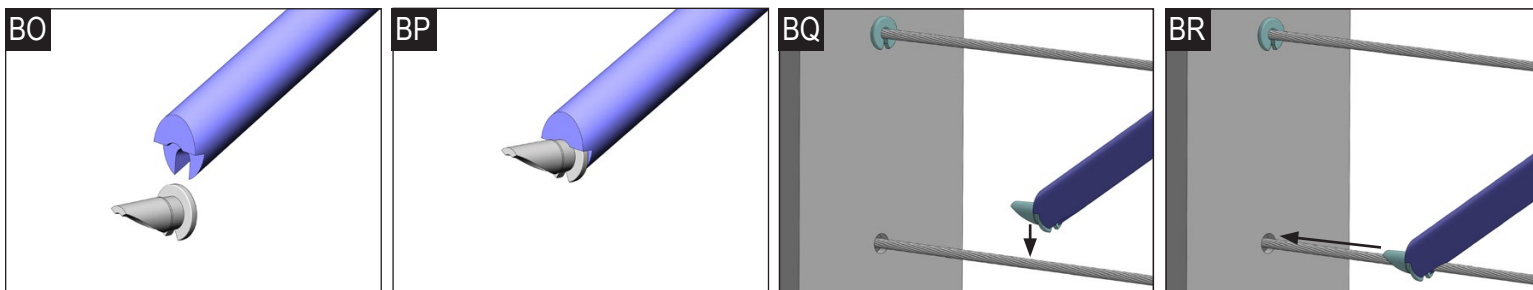
Make sure all cables are tight and relatively equal in tension.

31. Install the Lock Nuts and Cover Nuts: With all of the cables tensioned properly, hand tighten the Lock Nuts onto the stud ends. With a 7/16" wrench holding the Tensioning Nut in place, tighten the Lock Nut using a 3/8" wrench (See Figure BL).

Using a hacksaw OR our Cutting Disk (E0113-CD04-2), cut the stud ends flush with the outer side of the Lock Nuts (See Figure BM). **BE CAREFUL NOT TO SCRATCH OR DAMAGE THE POST WHILE CUTTING THE STUDS.** Place the Cover Nut over the assembly until it is flush with the Post (See Figure BN).



32. Install the Cable Grommets: Using the Grommet Install Tool (Part # E0916-1000), install the Cable Grommets (Component BA) wherever cable passes through the Posts and Cable Stabilizers (See Figure BO, BP, BQ & BR). There are 3 different size grommets. Use the standard grommets (Part # C0916-0003-25) on Mid Posts, the stud grommets (Part # C0916-B003-25) on End or Angled Posts, and the short grommets (Part # C0916-A003-25) on Cable Stabilizers.



ORION II Post Kits, Cable Spacing & Heights

Part Number	Post Description	Cable Spacing	Actual Post Height	Rendered Rail Height	Height From Surface
A0907-0036-XX*	ORION II Universal Post 36"	2.75"	34.22"	36"	34.22"
A0907-0042-XX*	ORION II Universal Post 42"	2.75"	40.22"	42"	40.22"
A0907-C036-XX*	ORION II Corner Post 36"	2.75"	34.22"	36"	34.22"
A0907-C042-XX*	ORION II Corner Post 42"	2.75"	40.22"	42"	40.22"
A0907-CW36-XX*	ORION II Corner Post 36" - Pass Thru	2.75"	34.22"	36"	34.22"
A0907-CW42-XX*	ORION II Corner Post 42" - Pass Thru	2.75"	40.22"	42"	40.22"
A0907-U036-XX*	ORION II Stair Post, Undrilled 36"	N/A	34.22"	36"	34.22"
A0907-U042-XX*	ORION II Stair Post, Undrilled 42"	N/A	40.22"	36"/42"	40.22"
A0907-SM42-XX*	ORION II Stair Mid Post, Slotted	3.00"	35.12"	36"	35.12"
A0907-SU42-XX*	ORION II Stair Bottom Post, Undrilled	N/A	35.12"	36"	35.12"

ORION II System Product Specifications

Part Number	Description	Use
Post Kits		
A0907-0036-XX*	ORION II Universal Post, 36"	36" surface mount straight post
A0907-0042-XX*	ORION II Universal Post, 42"	42" surface mount straight post
A0907-C036-XX*	ORION II Corner Post, 36"	36" surface mount corner post
A0907-C042-XX*	ORION II Corner Post, 42"	42" surface mount corner post
A0907-CW36-XX*	ORION II "CW" Corner Post, 36" - Pass Thru	36" surface mount corner post where cable passes through
A0907-CW42-XX*	ORION II "CW" Corner Post, 42" - Pass Thru	42" surface mount corner post where cable passes through
A0907-U036-XX*	ORION II Stair Post, Undrilled 36"	36" surface mount stair post (typically used as top post)
A0907-U042-XX*	ORION II Stair Post, Undrilled 42"	42" surface mount stair post (typically used as top post)
A0907-SM42-XX*	ORION II Stair Mid Post, Slotted	Surface mount mid stair post
A0907-SU42-XX*	ORION II Stair Bottom Post, Undrilled	Surface mount dedicated stair bottom post
Rail & Bracket Kits		
A0907-0201-XX*	ORION II 6' Straight Rail Section (Top & Bottom Rails)	6' straight top & bottom rails
A0907-S021-XX*	ORION II 6' Stair Rail Section (Top & Bottom Rails)	6' stair top & bottom rails
A0907-HD03-XX*	ORION II Straight Rail Section Hardware Kit (Bottom Rail Brackets)	Mounts straight bottom rails to posts
A0907-HD23-XX*	ORION II Stair Rail Section Hardware Kit (Adj. Bottom Rail Brackets)	Mounts stair bottom rails to posts
A0907-0075-XX*	ORION II Angled Rail Section Hardware Kit (Bottom - 2 sides)	Mounts angled bottom rails to posts on level sections
Cable Mounting Hardware		
C0731-H0703-2	HandiSwage™ Stud (2 pack)	Attaches to cable on level posts. Tensioning device
C0731-H0703-10	HandiSwage™ Stud (10 pack)	Attaches to cable on level posts. Tensioning device
C0748-SM03-2	Single Mount Tensioner (2 pack)	Attaches to cable on stair posts. Adj angle tensioning device
A0908-0003	Stud, Mechanical Swage (Individual)	Attaches to cable on level posts. Fixed end (NO tensioning)
Post Mounting Hardware		
A0908-HD10	Post Mounting Hardware Kit, 5/16" x 4-1/2" Lags w/ Caps (4 pack)	Surface mount posts to wooden structure
Accessories		
C0916-B003	End/Corner Grommet, Clear Plastic (25 pack)	Used over 1/8" HandiSwage™ Studs on End/Corner Posts
C0916-0003	Mid Grommet, Clear Plastic (25 pack)	Used over 1/8" Cable and inserted into Mid Posts
C0916-A003	Universal Stabilizer Mid Grommet, Clear Plastic (25 pack)	Used over 1/8" Cable and inserted into Stabilizer
C0309-XX02-10*	HandiSwage™ Cover Nut Set (10 pack)	Used on the end of HandiSwage™ Studs to tension cable
A0907-AR42-XX*	ORION II Stabilizer, Drilled 42"	Cable stabilizer for 42" height Orion II level sections
A0906-C036-INSERT	Threaded Insert, 36" Aluminum	Mean of attachment for cable fittings on 36" height Orion II
A0906-C042-INSERT	Threaded Insert, 42" Aluminum	Mean of attachment for cable fittings on 42" height Orion II
Tools		
A0906-P051-XX*	Touch-Up Paint	Touch-up any scratches on powdercoat finish
C0731-TK01-2	HandiSwage™ Combination Wrench Set - 3/8" & 7/16" (2 pack)	Used to install the HandiSwage™ Cover Nut Sets
C0988-400C-2	Curved Lacing Needle (2 pack)	For lacing cable through A0906-CW Corner Posts
C0989-00HD	Cable Cutter	Cleanly cuts up to 5/32" diameter cable
E0113-CD04-2	HandiSwage™ Cutting Disks - 4-1/2" (2 pack)	Cuts the HandiSwage™ Studs flush with the lock nuts
E0113-H600	Hand Swage Tool	Crimps HandiSwage™ fittings onto cable
E0114-0000	Cable Grip Pad (3 pack)	Use with vice grips during the cable tensioning process
E0916-1000	Grommet Install Tool	Makes installing cable grommets easy

* "XX" in the part number is the color designation. Replace with "BK" for black, "WH" for white or "BZ" for bronze.