# Installation Instructions

The ORION I 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"x 3"posts, post cap fittings and a flat continuous top rail. The cable infill consists of HandiSwage<sup>™</sup> fittings and 1/8" cable.

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

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## **TOOLS NEEDED**

Here is a list of tools needed to install your ORION I 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
- Vice Grips
- Tape Measure
- Rubber Mallet
- Chalk Line
- Ratchet & Socket Set
- Silicone Caulk
- Miter Saw with a Non-Ferrous Carbide Tipped Blade

- Gloves
- Safety Glasses
- Allen Wrenches
- Carpenter's Square
- Hack Saw
- Level
- Drill Bit Set
- Pencil
- Open Wrench Set
- Phillips Driver Bits

## Specialized tools offered by Atlantis Rail



#E0113-H600

3/8" & 7/16"

Combination

Wrench Set

Hand Swage Tool Cable Cutter #C0989-00HD



Grommet Install Tool #E0916-1000



Gauge

#E0113-HG00



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



## **ORION I SYSTEM COMPONENTS**

## **STAIR SECTIONS**



S. Stair Mid Post, Slotted



AS. 60 Degree Elbow Post Cap

AT. NOVA 1/8" Stud

AU. Plastic Washer

AV. Cable Grommet

AW. 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 I 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 I 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 I SYSTEM IS FOR USE WITH ORION I 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 I System, look for any scratches and/or damage to the powdercoating. These can easily be fixed using our color matching Touch-Up Paint.

## **ORION I INSTALLATION INSTRUCTIONS**

**STAIR SECTIONS** 

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 Tensioners: Based on the angle degree of your stairs, choose the appropriate paper "drill templates" (See Figure C). 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 TENSIONERS - use a <u>7/32" drill bit</u> for the **Single Mount Tensioner** or use a <u>9/64" drill bit</u> for the **HandiSwage**<sup>TM</sup> **Standard Tensioner** (See Figure F).

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. Use the drill template to mark the exact location of the mounting holes (*See Figure G*). Pre-drill holes using a <u>5/32</u>" drill bit.





### 4. Mount the Posts:

It is critical that the mounting hardware penetrate into the structure in accordance with local building codes.

Position <u>all</u> stair posts (top, bottom and mid posts) making sure to follow our recommended placement measurements (*See Figure H*).

Mark the location of mounting holes and the center hole of the Post Pad (Component K). Pre-drill using a  $\frac{1/4"}{4"}$  drill bit (See Figures I, J & K).

Use the Lag Bolts (Component H) to anchor the Posts (See Figure L).

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





## INSTALL THE TENSIONERS

6. The ORION I Stair Railing utilizes either Single Mount Tensioners (Component Q) or HandiSwage<sup>™</sup> 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 N*). **Be careful not to strip the screw head.** The slots on the tensioner base should aim down on the downward post face and aim up on the upward post face (*See Figure O*). Reassemble the tensioners leaving <u>3/4</u>" of thread exposed (*See Figure P*). **For cable runs over 20 feet, extend the threaded stud an additional 1/4" for each additional 10 feet.** 





### B. Installing HandiSwage<sup>™</sup> 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 Q*). **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 R*). Adjust the Threaded Stud on each tensioner until 3/4" of thread is exposed (*See Figure S*). For cable runs over 20 feet, extend the threaded stud an additional 1/4" for each additional 10 feet.





## INSTALL THE STAIR RAIL KIT

 Measure and Cut the Top Rails (See Figure T): 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.

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

**8.** Dry Fit the Top Rails: Slide the Rail Knuckles and Fittings (Components I,J or L) over each end of the rails. For proper orientation, See Figure U. 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).



**9.** Mark the location of the Support Block Base Kit & Cable Stabilizer:

(If your Stair Rail Section is UNDER 4 FEET, you DO NOT need to install a Cable Stabilizer. Skip to STEP 14, if your Rail Section is UNDER 4 FEET)

If the rail section is longer than 4 feet, follow the instructions below for locating the position of cable stabilizer connectors.

Use a Plumb Bob at the center of the top rail to locate the desired position of the cable stabilizer. Mark the location on the underside of the top rail and the stair tread (See Figure V).

# **10.** Pre-Drill the Rail and Install the Angled Stabilizer Connector:

Using an <u>1/8" drill bit</u>, drill straight while gradually working the drill bit to vertical to complete each hole on the underside of the top rails (*See Figure W*).

### REMOVE THE TOP RAILS.

Install the Angled Stabilizer Connector (Component F) using the supplied #8 screws (*See Figure X*).







**11.** Mark & Drills Holes for Base Kit: The marked location on the stair tread should be in line with the center of the stair posts (See Figure Y). Using the base kit Mounting Plate, mark the mounting hole locations (See Figure Z). Pre-drill the holes with an <u>1/8" drill bit</u> (See Figure AA).





String & Tape

R

To assist in measuring the length of the cable stabilizer, tape a string in place to represent the top row of cable. Measure between the marked Top Rail and the top of the base kit Mounting Plate (*See Figure AD*). Record measurement "A" and "B". Transfer these measurements onto the Stabilizer (Component B) (*See Figure AE*). With the Stabilizer marked, set the saw to match the angle degree of your stairs to make the top cut. **Make sure the offset cable slots** in the Stabilizer match the direction of your angled end cut (*See Figure AF*).



14. Install the Stabilizer and Top Rail: Install the Stabilizer onto the Support Block Base Kit making sure the slots in the Cable Stabilizer are aligned with the tensioners on the posts. Repeat STEP 8 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 AG). Install the bolt with nut to assemble the Rail Knuckle (Component I or J). Tighten the Set Screw on each Pivoting Rail Cap Fitting (Component L).

Post Cap Fittings are secured to the posts with #10 Panhead Screws. Predrill mounting holes using a <u>5/32</u>" drill bit. The Pivoting Post Caps require 1 hole on the downside and 2 holes on the upside (See Figures AH & AI). Install the #10 Screws to secure the top rail and post cap fittings to the posts (See Figure AI).

Install the Termination Caps: Apply a bead of silicone on the Termination Cap (Component M) and set firmly into place (See Figure AJ).



## **RUN THE CABLE**

## **15.** Determine the Cable Lengths for Each Section:

With the Threaded Stud on each tensioner extended 3/4" (For cable runs over 20 feet, extend the threaded stud an additional 1/4" for each additional 10 feet), measure the distance from "Receiver Cone to Receiver Cone" on opposing tensioners for each section (*See Figure AK*). 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 7/16" and 3/8" open wrenches. The wedge inside will crimp down on the cable (See Figures AL & AM).

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 I 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 3/8" wrench, rotate the tensioner body with a 5/16" wrench to apply tension (See Figure AN).

### **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 AO*).

### **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 5/16" wrench to hold the tensioner body in a fixed position while tightening the lock nut using a 7/16" wrench (See Figure AP).





## **ORION I INSTALLATION INSTRUCTIONS**

## LEVEL SECTIONS

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.
- 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 AQ). Pre-drill using a <u>1/4" drill bit</u> (See Figures A, B & C). Use the Lag Bolts (Component AR) to anchor the Posts (See Figure D). Make sure the Posts are installed plumb. Use Post Shims, if necessary.











 Install the Plastic Cover Nuts and Post Skirts: Use silicone caulk on the Lag Bolt heads before installing the Plastic Cover Nuts (Component AW) (See Figure E).
DON'T FORGET to install the Post Skirts (Component AP).

### 4. Install the NOVA Studs on the Corner Posts:

Locate the side of the Corner Post (Component AM1 or AM2) with the threaded post holes. Making sure to use the Plastic Washer (Component AU) in between the NOVA Stud and the Post, thread the NOVA Studs (Component AT) into the threaded holes in the Corner Post (See Figure F).

NOTE: If using A0909-CW Corner Posts (where cable passes through the post), <u>NO</u> cable hardware is required.

## **INSTALL THE RAILS**

**5. Measure and Cut the Rails (if necessary):** To ensure the centering of the Cable Stabilizer (Component AB or AC), trim must always be taken from both ends of the Rails (*See Figure G*). 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 H*). Mark the Rails and cut using a miter saw with a non-ferrous carbide tipped blade.



## 6. Install the Stabilizer Connectors (If your Rail Section is UNDER 4 FEET, you DO NOT need to install the Stabilizer. Skip to STEP 9)

Locate the pre-drilled holes in the middle of the underside of the Top Rail (Component AA). Using the #8 self-drilling screws, the Square Driver Bit (Component AH) and a power drill, install the Stabilizer Connectors (Component AE) on the Top Rail (See Figure I).



## **7.** 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 AD) is to be installed (*See Figure J*).



- 8. Assemble and Install the Support Block Base Kit: Assemble the Support Block Base Kit as shown (See Figure M). 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 Plastic Washers (See Figure N).
- **9.** Install the Cable Stabilizer and Top Rail: Insert the Cable Stabilizer over the Connector mounted to the deck surface making sure the holes in the Cable Stabilizer are aligned with the holes on the posts (*See Figure O*).

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

For 42" railing systems, use the Cable Stabilizer (Component AC) 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 P). Make sure Post Cap Fittings are fully seated on top of posts. Using a  $\frac{5/32"}{32"}$  drill bit, drill holes through the post using the mounting holes in the Post Cap Fitting as a guide (See Figure Q). Install the #10 Panhead Screw (See Figure R).



### **10.** Install the Termination Caps:

Post Cap Fittings at the end of level and stair sections are capped off using the Termination Cap (Component AF). 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 S*). Clean off any excess sealant and tape the cap into place until the sealant is dry (*See Figure T*).





## "NON-90 DEGREE" ANGLED SECTIONS (45 Degree & 60 Degree)

The Orion I 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**

### **11.** Position the Posts :

For all angled sections of railing that use the 45 degree (Component AO) or 60 degree (Component AS) post cap fittings, you must place the post according to the illustrations (See Figures U & V).

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 W).



**12.** Mount the Posts following "LEVEL SECTIONS: Steps 2 & 3" on page 11. DON'T FORGET to install the Post Skirts before attaching rails!

## INSTALL THE ANGLED SECTION RAIL

### **13.** Determining the Rail Length:

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 (See Figures X & Y).

X" + Inset Depths = Rail Length



**14.** Cut the Rail to Length: To ensure the centering of the Cable Stabilizer (Component AB or AC) and the pre-drilled holes on the underside of the Top Rails, trim must always be taken equally from both ends of each rail. Using the measurements from Step 13 (*above*), mark the rails and cut using a miter saw with a non-ferrous carbide tipped blade.

**15.** Install the Stabilizer Connector following "LEVEL SECTIONS: Steps 6 - 8" on pages 12. If your Rail Section is UNDER 4 FEET, you DO NOT need to install the Stabilizer.

### 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. Z).

**16. 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 ¼"-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 AA & AB). 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 AC). For cable runs over 20 feet, extend the threaded stud an additional 1/4" for each additional 10 feet.



### **17.** Install the Top Rail (and Cable Stabilizer, if necessary):

Insert the Cable Stabilizer over the Connector mounted to the deck surface 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 AC) 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 AD*). Make sure Post Cap Fittings are fully seated on top of posts. Using a <u>5/32</u>" drill bit, drill holes through the post using the mounting holes in the Post Cap Fitting as a guide (*See Figure AE*). Install the #10 Panhead Screw (*See Figure AF*).



## RUN THE CABLE

**18.** Determine the Cable Lengths for Each Section: Measure from "outside to outside" of the outer posts for each cable run section (*See Figure AG*). Follow the steps below to find the "cut to" length for each cable run section.

### HandiSwage<sup>™</sup> Stud to HandiSwage<sup>™</sup> Stud

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

### NOVA Stud to HandiSwage<sup>™</sup> Stud

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





19. 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 18 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 AI). Install the Plastic Washer and hand tighten the Tensioning Nut onto the stud, leaving a <u>1/2</u>" of thread exposed (See Figure AJ).

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 AJ*). This should leave about a <u>1/2</u>" of thread exposed.

**For sections using "A0909-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 <u>7/16</u>" and <u>3/8" open wrenches</u> (*See Figure AK*). The wedge inside will crimp down on the cable (*See Figure AL*).

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 AI*). Install the Plastic Washer and hand tighten the Tensioning Nut onto the stud (*See Figure AJ*). This should leave about a 1/2" of thread exposed.



**20.** 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.

**21.** For sections using "A0909-CW36 & -CW42" Corner Posts (cables pass through), the total length of a cable run passing through the Corner Post <u>MUST NOT EXCEED 50 FEET</u> and the cable run <u>MUST HAVE A TENSIONING STUD ON EACH END OF THE CABLE</u>. (See Figure AM)

AM

We recommend measuring and cutting <u>ONE</u> 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).





- **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 AO*). Install the Plastic Washer and hand tighten the Tensioning Nut onto the stud, leaving a <u>1/2</u>" of thread exposed (*See Figure AP*).

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



A Length + B Length + 8" = Approximate Cable Length

**50 FT. MAXIMUM** 

- 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 AQ). Place the Insert into the post on the inside corner with the curved side of the insert facing the cable (See Figure AR). Pull the cable into place making sure that it follows the curve of the Insert (See Figure AS). Pull the cable taught to the opposite End Post. The cable should extend beyond the End Post (See Figure AT).
- F. Mark and Cut the cable to the "exact" length using the measurement shown below (See Figure AT). 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 AO). Install the Plastic Washers and hand tighten the Tensioning Nuts onto the studs (See Figure AP). This should leave about a <u>1/2</u>" of thread exposed. Re-install the top rail assembly before moving on to "Tension the Cable" steps.









## **TENSION THE CABLE**

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

### **22.** 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 <u>7/16</u>" wrench to apply tension (*See Figure AU*).

### **23.** 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!** 



- **24.** 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 AV*).
- **25.** Make Final Adjustments to the Cable Tension: Make sure all cables are tight and relatively equal in tension.

**26.** 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 <u>7/16" wrench</u> holding the Tensioning Nut in place, tighten the Lock Nut using a <u>3/8" wrench</u> (See Figure AW).

Using a hacksaw <u>OR</u> our Cutting Disk (E0113-CD04-2), cut the stud ends flush with the outer side of the Lock Nuts (*See Figure AX*). **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 AY*).



**27. Install the Cable Grommets:** Using the Grommet Install Tool (Part # E0916-1000), install the Cable Grommets (Component AV) wherever cable passes through the Posts and Cable Stabilizers (*See Figure AZ, BA, BB & BC*). 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 I Post Kits, Cable Spacing & Heights

Part Number	Post Description	Cable Spacing	Actual Post Height	Rendered Rail Height	Height From Surface
A0909-0036-XX*	ORION I Universal Post 36"	2.87"	34.22"	36"	34.22"
A0909-0042-XX*	ORION I Universal Post 42"	2.88"	40.22"	42"	40.22"
A0909-C036-XX*	ORION I Corner Post 36"	2.87"	34.22"	36"	34.22"
A0909-C042-XX*	ORION I Corner Post 42"	2.88"	40.22"	42"	40.22"
A0909-CW36-XX*	ORION I Corner Post 36" - Pass Thru	2.87"	34.22"	36"	34.22"
A0909-CW42-XX*	ORION I Corner Post 42" - Pass Thru	2.88"	40.22"	42"	40.22"
A0907-U036-XX*	ORION Stair Post, Undrilled 36"	N/A	34.22"	36"	34.22"
A0907-U042-XX*	ORION Stair Post, Undrilled 42"	N/A	40.22"	36"/42"	40.22"
A0909-SM42-XX*	ORION I Stair Mid Post, Slotted	3.25"	35.12"	36"	35.12"
A0907-SU42-XX*	ORION Stair Bottom Post, Undrilled	N/A	35.12"	36"	35.12"

## **ORION I System Product Specifications**

	Part Number	Description	Use			
	Post Kits					
	A0909-0036-XX*	ORION I Universal Post, 36"	36" surface mount straight post			
	A0909-0042-XX*	ORION I Universal Post, 42"	42" surface mount straight post			
	A0909-C036-XX*	ORION I Corner Post, 36"	36" surface mount corner post			
	A0909-C042-XX*	ORION I Corner Post, 42"	42" surface mount corner post			
	A0909-CW36-XX*	ORION I "CW" Corner Post, 36" - Pass Thru	36" surface mount corner post where cable passes through			
	A0909-CW42-XX*	ORION I "CW" Corner Post, 42" - Pass Thru	42" surface mount corner post where cable passes through			
	A0907-U036-XX*	ORION Stair Post, Undrilled 36"	36" surface mount stair post (typically used as top post)			
	A0907-U042-XX*	ORION Stair Post, Undrilled 42"	42" surface mount stair post (typically used as top post)			
	A0909-SM42-XX*	ORION I Stair Mid Post, Slotted	Surface mount mid stair post			
	A0907-SU42-XX*	ORION Stair Bottom Post, Undrilled	Surface mount dedicated stair bottom post			
	Rail Kits					
	A0909-0201-XX*	ORION I 6' Straight Rail Section (Top Rail & Stabilizer)	6' straight top rail			
	A0909-S021-XX*	ORION I 6' Stair Rail Section (Top Rail & Stabilizer)	6' stair top rail			
	Cable Mounting H	lardware				
	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			
	A0909-AR42-XX*	ORION I Stabilizer, Drilled 42"	Cable stabilizer for 42" height Orion I level sections			
	A0909-C036-INSERT	ORION I Threaded Insert, 36" Aluminum	Mean of attachment for cable fittings on 36" height Orion I			
	A0909-C042-INSERT	ORION I Threaded Insert, 42" Aluminum	Mean of attachment for cable fittings on 42" height Orion I			
	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 A0909-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.