

**IMPORTANT: Please read instructions thoroughly before beginning installation.**

The following instructions are designed to be used for the installation of our Linear Collection of wood newels and cable railing. The rake newels in this collection are designed for stairways with 7 1/2" rise and 10" run (approx 36.8°), a rake handrail height of 34"-37" and a level handrail height of 36", 39" or 42". We recommend installing a newel at every corner or change in direction making each straight run separate cable with a fixed cable fitting on one end and a tensioner cable fitting on the other end into the newel posts. However, you can use two pass through newels with Post Protector Tubes to turn a corner, but tensioner cable fittings should be used on both ends of the cable to achieve the desired tensioning on both directions of cable. Tensioner cable fittings should also be used on both ends of any cable run that is 25' to 50' long. Before proceeding with the following steps, the balustrade centerline should be marked on the treads and balcony. **Consult your local building code official before purchasing and installing this system.** Cable railing is intended to be used as a guard/fence and is not meant or designed to be stood on or climbed upon or installed in any condition involving motion. Load limits and breaking points may vary depending on installation. An engineer or qualified contractor should be consulted regarding the suitability of this system for particular applications.

| Wood Linear Cable Newel Applications     |   |
|--|---|
| <b>Rake Up Newel (CR-410U)</b>           | Use this newel as the starting newel on the first tread at the bottom of each stairway flight               |
| <b>Rake Pass Through Newel (CR-420)</b>  | Use this newel on the stairway midway between the Rake Start Newel and the Rake Stop Newel at 42" intervals |
| <b>Level Start/Stop Newel (CL-410)</b>   | Use this newel at the beginning or end of each level run  |
| <b>Level Corner Newel (CL-410C)</b>      | Use this newel at the corner of two level runs  |
| <b>Level Down Newel (CL-410D)</b>        | Use this newel on the second floor landing at the top of the stairway flight                                |
| <b>Level Pass Through Newel (CL-420)</b> | Use this newel on level runs midway between the Level Start/Stop Newels at 42" intervals                    |
| <b>Blank Newel (B-400-48)</b>            | This newel is not pre-drilled and can be custom drilled at the jobsite and used at any level location       |

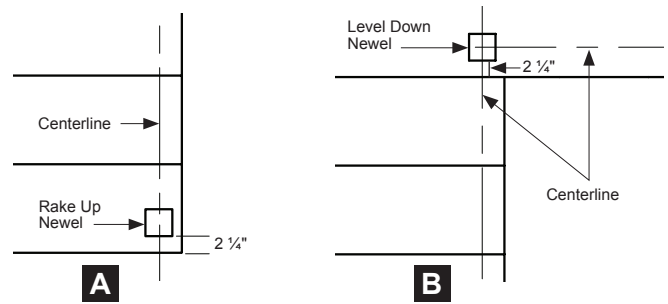
| Tools/Materials list:      |                       |                         |
|----------------------------|-----------------------|-------------------------|
| Power Drill                | Tape Measure          | <b>Optional Items:</b>  |
| 1/8" Cable Cutter          | Construction Adhesive | 3/16" Hex Bit Socket    |
| Two 3/8" open end wrenches | Wax paper             | 6"-8" piece of PVC tube |
| 3/16" Allen Wrench         | 1 1/2" Wood Screws    | Paraffin Wax            |
| 5/16" Twist Bit            | 1/2" Wood Plugs       | LJ-3085 Insert-Runner   |
| 5/8" x 3" Flare Spade Bit  | Cable Release Tool    |                         |
| 9/16" wrench               | Safety Glasses        |                         |

### Place and Mount the Rake Newels:

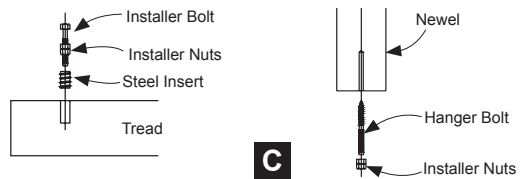
Refer to the above table for placement of newels. We recommend using our LJ-3004-3.5 Newel Mounting Kit to mount each newel post.

To ensure performance of our system, a stabilizing member such as our 3/4" hollow stainless steel tube or S4S wood is required between all newel posts at the top predrilled position.

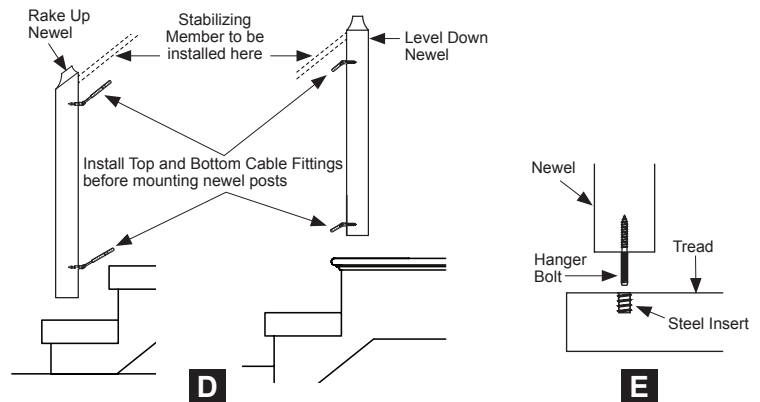
1. Mark the placement of the Newels on the rake centerline. The face of the Rake Up Newel must be exactly 2 1/4" from the front edge of the bottom tread (A). The face of Level Down Newel on the landing at the top of the each flight must be exactly 2 1/4" from the front edge of the landing tread (B).



2. Follow the LJ-3004-3.5 Newel Mounting Kit instructions to drive the steel insert into the treads and install the hanger bolt into each newel (C).

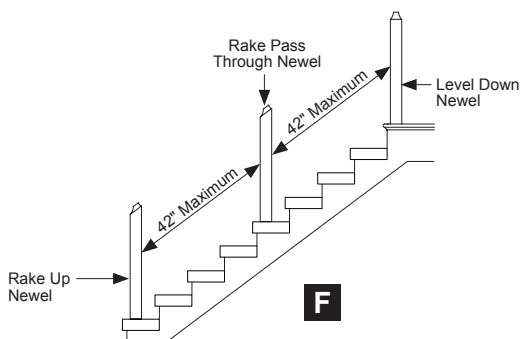


3. We recommend installing at least the top and bottom rake cable fittings into the Rake Up Newel & Level Down Newel to avoid obstructions (stabilizing member between newels/second tread) while using the articulating portion of the fitting as a lever to rotate the lag into the newel face (D). See Installing Rake Cable Rail Fittings section of these instructions.



4. Mount each newel by threading the newel hanger bolt into the steel insert on the tread (E). Placing wax paper under the newel may help prevent marring the tread as the newel is tightened down. Trim away the excess wax paper once the position of the newel is permanently set.

5. The distance between the Rake Up Newel and Level Down Newel should not exceed 42". If the distance is greater than 42", a Rake Pass Through Newel must be installed at 42" maximum intervals between the mounted newels (F). Mount each Rake Pass Through Newel on the centerline making sure the face of the newel is exactly 2 1/4" from the front edge of the tread.

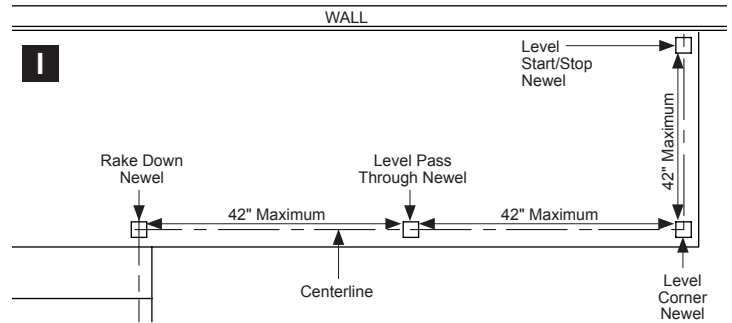
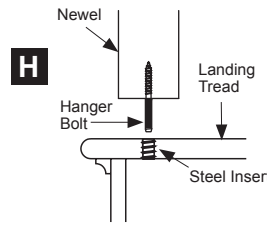
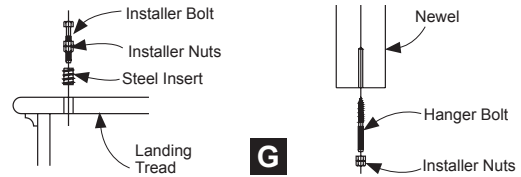


## Place and Mount the Level Newels:

Refer to the table on page 1 for placement of newels. We recommend using our LJ-3004-3.5 Newel Mounting Kit to mount each newel post.

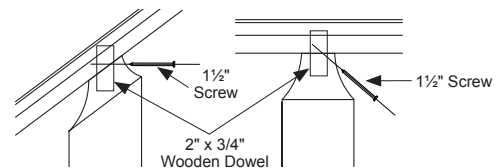
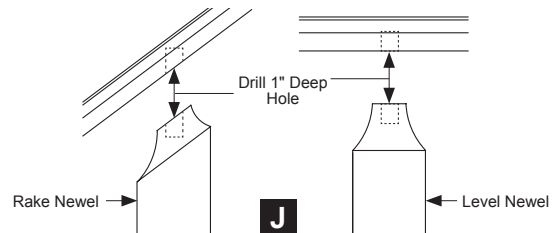
To ensure performance of our system, a stabilizing member such as our 3/4" hollow stainless steel tube or S4S wood is required between all newel posts at the top predrilled position.

1. Follow the LJ-3004-3.5 Newel Mounting Kit instructions to drive the steel insert into the treads and install the hanger bolt into each newel (G).
2. Mount the Level Stop Newel on the level run centerline at the end of the level run by threading the newel hanger bolt into the steel insert on the tread (H). Placing wax paper under the newel may help prevent marring the tread as the newel is tightened down. Trim away the excess wax paper once the position of the newel is permanently set.
3. Mount a Level Corner Newel at each level run corner in the same manner as 2. above (H).
4. The distance between the newels should not exceed 42". If the distance is greater than 42", a Level Pass Through Newel must be installed at 42" maximum intervals between the installed Level Newels. Mount each Level Pass Through Newel on the centerline (I).



## Install the Handrail onto the Newels:

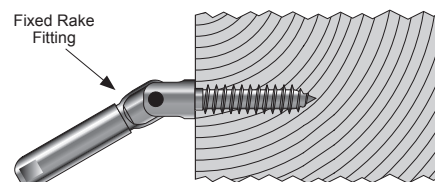
1. Drill a hole 25/32" x 1" deep centered on the top of each newel to accept the provided 2" x 3/4" wooden dowel (J).
2. Using construction adhesive, install the wooden dowel into the hole on the top of each newel.
3. Trim the 684 handrail to length for each run. Utilize handrail fittings for making turns or changes in elevation (if desired).
4. Drill the bottom of the handrail to accept the wooden dowel previously installed in each newel (J).
5. Using construction adhesive, place the handrail onto the newel dowels. Secure the handrail in place by installing 1/2" screws through the newels into the handrail bottom. Plug the holes (K).



## Install the Rake Cable Rail Fittings:

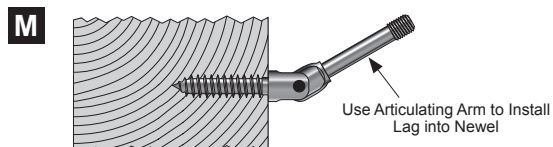
If cable rail fittings will be installed directly into a wall, be sure there are double 2x4s behind the finished drywall.

1. Install the Fixed Rake Fittings into the Level Down Newel by driving the lag thread into each pre-drilled hole. Use the articulating portion of the fitting as a lever to rotate the lag end of the fitting into the newel (L). *Tip: Coating each lag with paraffin wax and using a 6"-8" piece of 3/4" PVC tube over the articulating portion may make this task easier.*



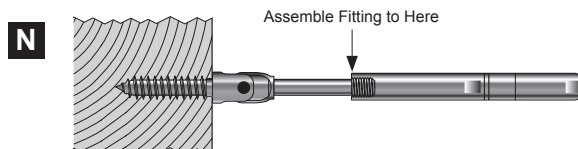
Stop turning when the fitting shoulder makes contact with the newel face. Continue to rotate the fitting up to 1/4 turn to properly orient the fitting or it may be backed off 1/4 turn to achieve the proper orientation.

- To install the Tensioner Rake Fittings, drive the lag thread of the hinged portion of the fitting into the pre-drilled hole on the Rake Up Newel. Using the articulating portion of the fitting as a lever to rotate the lag end of the fitting into the newel (**M**). *Tip: Coating each lag with paraffin wax and using a 6"-8" piece of 3/4" PVC tube over the articulating portion may make this task easier.*



Stop turning when the fitting shoulder makes contact with the newel face. You may continue to rotate the fitting up to 1/4 turn to properly orient the fitting or it may be backed off 1/4 turn to achieve the proper orientation.

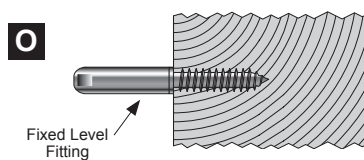
- Assemble the female threaded rotating portion of the fitting onto the male thread only so far as to cover the male thread and no more. (**N**)



### **Install the Level Cable Rail Fittings:**

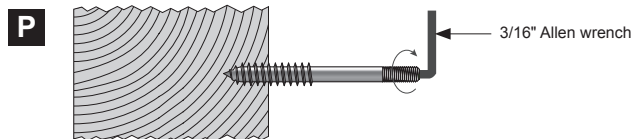
*If cable rail fittings will be installed directly into a wall, be sure there are double 2x4s behind the finished drywall. Linear Blank Newels (B-400-48) will require pre-drilling a 9/32" x 1-1/2" deep hole to accept each cable rail fitting.*

- Install the Fixed Level Fittings into the Level Newel at one end of the level run by driving the lag thread into each pre-drilled hole using a 3/8" open-end wrench on the wrench flats milled into the body of the fitting (**O**). *Tip: Coating each lag with paraffin wax may make this task easier.*



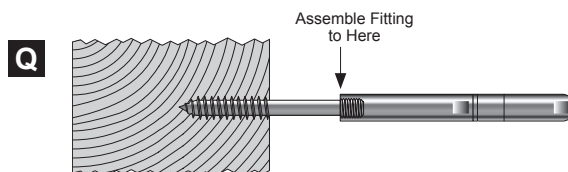
Stop turning when the fitting shoulder between the lag thread and body makes contact with the newel face.

- To install the Tensioner Level Fittings, drive the lag thread of the male portion of the fitting into each pre-drilled hole on the Level Newel at the opposite end of the level run by using a 3/16" hex (Allen) wrench (**P**). *Tip: Coating each lag with paraffin wax may make this task easier.*



Stop turning when the lag threads on the fitting are fully within the wood post.

- Assemble the female threaded rotating portion of the fitting onto the male thread only so far as to cover the male thread and no more. (**Q**)

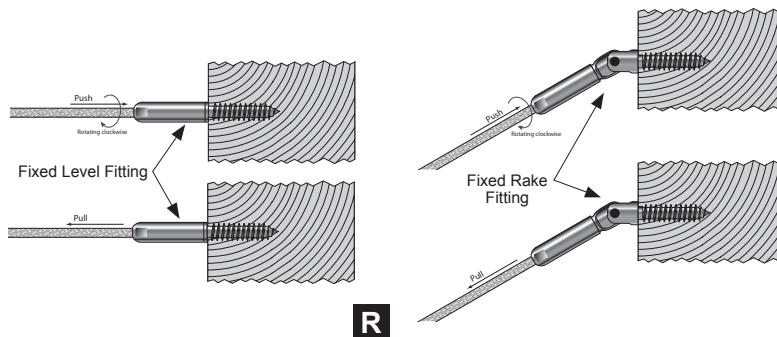


### **Install the Cable:**

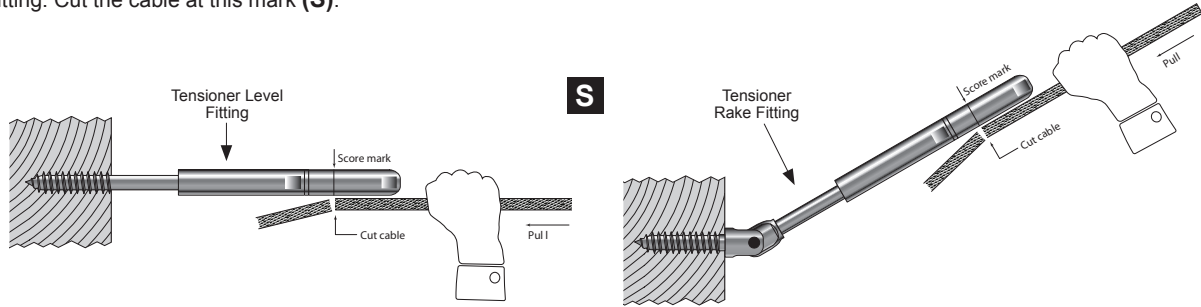
**IMPORTANT:** All cable cut ends must be "clean" and burr free. We recommend using a cable cutter that encircles the cable as it cuts it. When inserting a cut end of the cable into our cable fittings it is important to rotate the cable and/or fitting in a direction that is "with the lay" of the cable strand. For Left Hand lay strand, rotate the cable and the fitting clockwise. This will help to prevent the cable from fraying or "unlaying" while it is inserted into the fitting. Insert cut cable end into the cable fitting approximately 1.062" until you feel it rest against a hard stop and then pull against the fitting to secure the wedges in the fitting. If the cable lay is not smooth upon full insertion into the fitting, the Cable Release Tool (C-RELEASE) can be used to release the cable from the fitting so a second attempt can be made to insert the cable end into the fitting.

**Steps 1-3 should be performed one cable at a time before proceeding to step 4.**

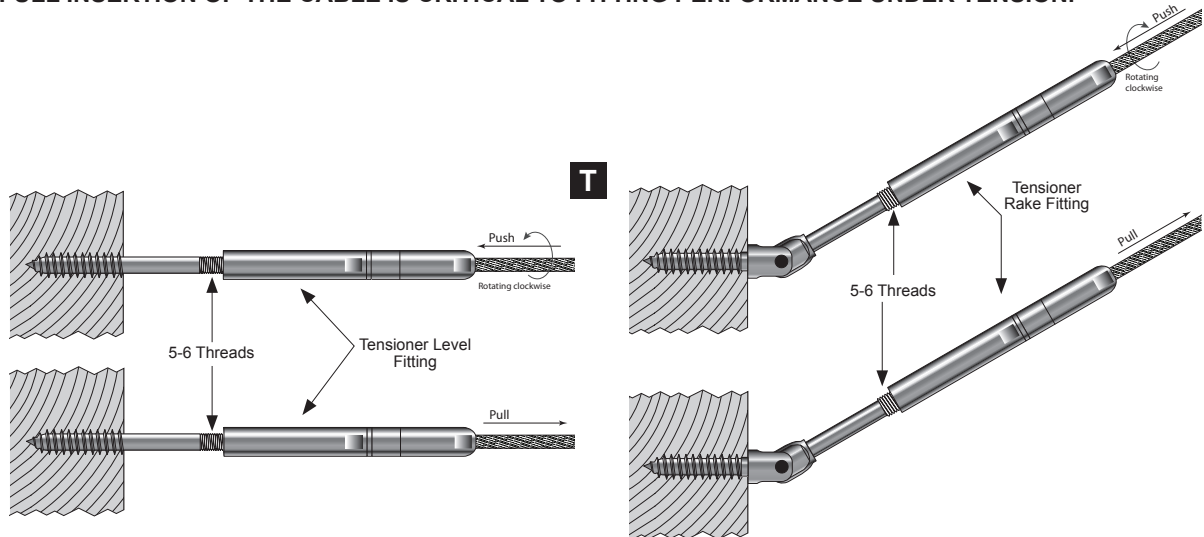
- Begin by inserting the cut end of the cable into the Fixed (non-tensioning) Fitting as described to the right (**R**). **FULL INSERTION OF THE CABLE IS CRITICAL TO FITTING PERFORMANCE UNDER TENSION.**



2. Feed the cable through any Pass Through Newels toward the Tensioner Fitting at the opposite end of the run. Mark the cable at the score mark on the body of the fitting. Cut the cable at this mark (S).

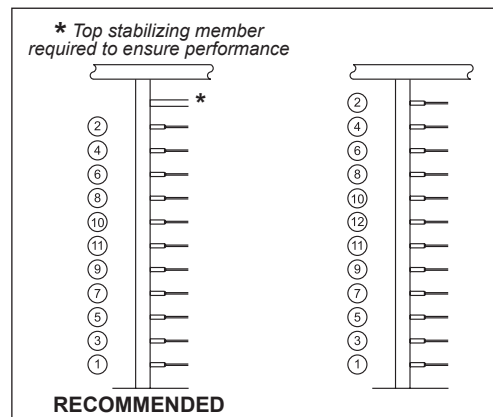


3. Loosen the Tensioner Fitting so that approximately 5 or 6 threads are showing and insert the cable end into the fitting as described in the preface of this section (T). **FULL INSERTION OF THE CABLE IS CRITICAL TO FITTING PERFORMANCE UNDER TENSION.**

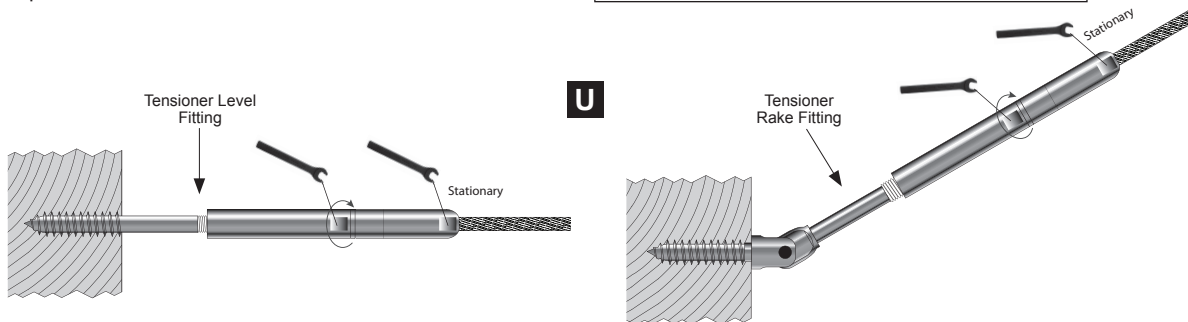


4. Following the Tensioning Sequence to the right, tension each cable by holding the tensioner fitting body with a 3/8" open end wrench on the wrench flat nearest the cable (**Do not let this section rotate while cable is inserted**). Using a second 3/8" open end wrench, rotate the female threaded section of the fitting onto the male threads (U). Consult local building codes for the desired tension on cables. Start tensioning at the top and bottom cables of the run and work in an alternating pattern toward the center of the run as shown in the illustration to the right. It may be necessary to make two passes at this process because the frame may flex as the cables are initially tensioned, thus allowing the previously tensioned cables to slightly lose tension.

### TENSIONING SEQUENCE



Due to the nature of wood, the tension on the cables will need periodic adjustment by using two 3/8" open end wrenches as described in step 4 above.



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