

STAIR REMODELING & INSTALLATION GUIDE

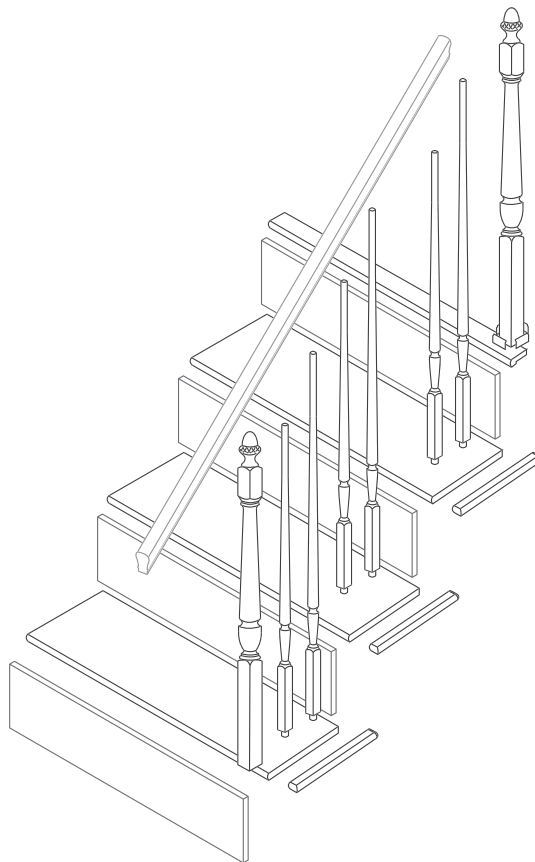
EVERMARK
STAIR PARTS • DOORS & JAMBS • HARDWARE

A Step-by-Step **How to Guide**

Renovating your staircase is more than a remodel, it's a transformation of your home. The new look will add a dramatic change to the look of your home.

Talk about a making a first impression!

Using basic carpentry skills and a few tools, renovating your staircase can be a reality. This instruction booklet will help guide you through the basics of remodeling your staircase, no matter the style and construction.



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TERMINOLOGY & DESIGN

There are two basic types of handrail systems. “Post to Post” and “Over the Post. The type of newel posts you choose will determine your handrail style. However, you may select any baluster type (metal, pin-top wood, square-top wood) and use it with an over-the-post or post-to-post rail system.

POST TO POST

Handrails in post-to-post newel systems attach to block-top or box newels.

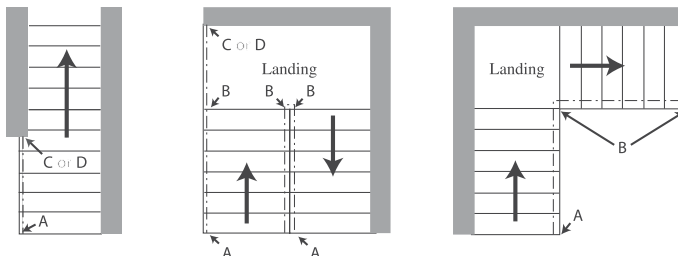
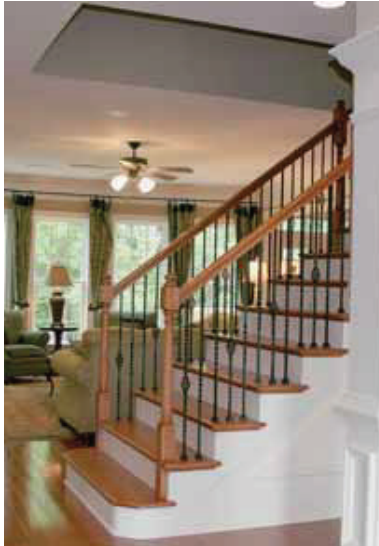
These types of handrail systems require few, if any rail fittings.

Handrails are attached to newels using screws, nails or rail bolts.

Generally, these rail systems are easier to assemble and can be less expensive when used with common newel posts.

To construct a post-to-post handrail system, you will need the following types of newels, depending on the configuration of your staircase. Using the diagram below, the newels you would need are:

- A. Starting Newel
- B. Landing Newel
- C. Rosette
- D. Half Newel



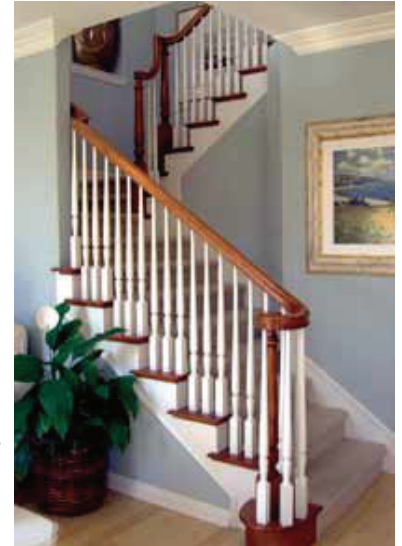
OVER THE POST

Handrails in over-the-post newel systems travel over the newel posts, allowing the hand to run along the handrail continuously.

These systems require handrail fittings that fit on top of newel posts.

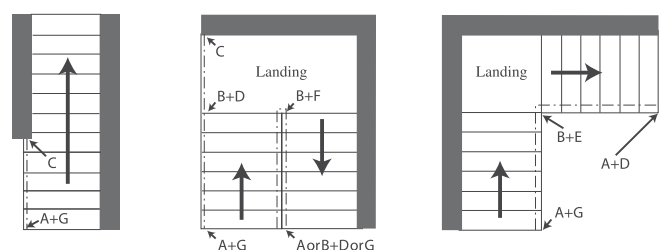
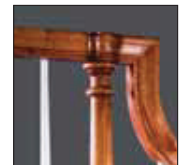
Handrails are attached to fittings using rail bolt kits or Spring Bolts.

Over-the-post systems are generally more expensive and labor intensive.



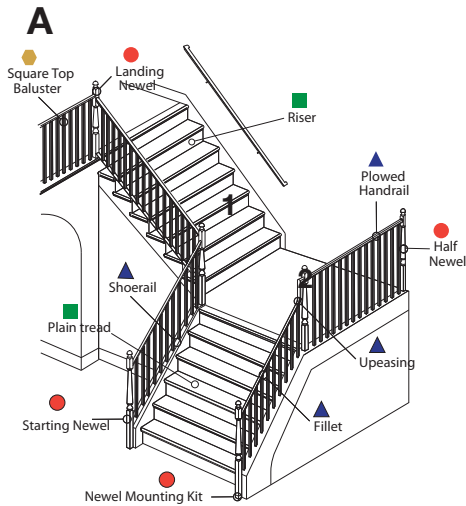
Constructing an over-the-post handrail system requires specific types of rail fittings that are unique to the configuration of your staircase. Using the diagram below, the most commonly used newels and fittings are listed.

- A. Starting Newel
- B. Landing Newel
- C. Rosette
- D. Straight Gooseneck (fitting)
- E. 90° Gooseneck (fitting)
- F. 180° Gooseneck (fitting)
- G. Starting Fitting (volute or starting easing)



TERMINOLOGY & DESIGN

Deciding on the type and style of your staircase is up to you. Updating your staircase with new components will create a dramatic first impression, and doing the job right includes getting the right parts. The drawings below illustrate basic staircase designs and the stair parts used to construct them.

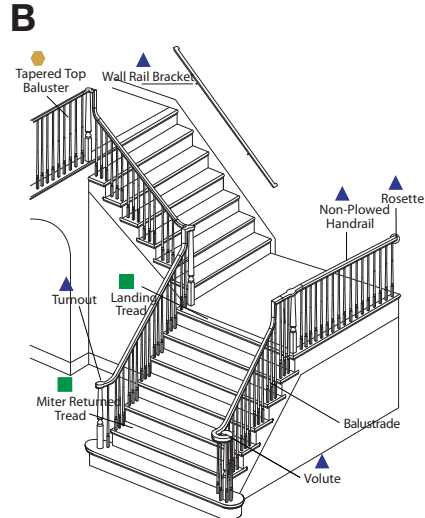


A. POST TO POST RAIL SYSTEM.

A traditional post to post newel system is shown with a few variations.

1. Block top newels where handrail attaches.
2. Block top newels that require a handrail fitting.

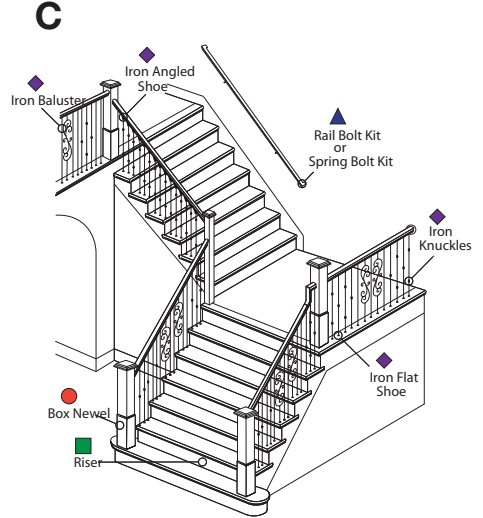
Rails with handrail fittings are generally more expensive and labor intensive



B. OVER THE POST RAIL SYSTEM.

An over the post system comprises handrail fittings that fit on top of pin-top newel posts, allowing the hand to flow interrupted over the railing.

These systems are generally more expensive than post-to-post. Many fittings are available through special order.



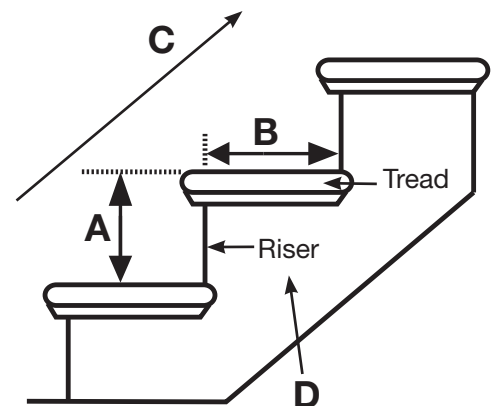
C. BOX NEWEL WITH METAL.

Box newels require few, if any handrail fittings. This stair shows a double bullnose starting step.

While this system is viewed as post-to-post, the use of box newels can make it more expensive than the traditional post-to-post system.

RISE, RUN & RAKE. Two terms that apply to every staircase is the “rise” and the “run.” If you are going to use handrail fittings, knowing the rise and run of your staircase is essential. Using the diagram at right, the terms are defined as follows:

- A. RISE. The measurement between the surface of one tread to the surface of the tread above it.
- B. RUN. The measurement between the face of one riser to the face of riser above it.
- C. RAKE. The angle of ascent up the stairs is called the “rake”. The rake also defines the balusters, newels and rail that are attached to the staircase.
- D. STRINGER. The wood that supports the treads and risers is called the “stringer.”



USING THIS GUIDE

This guide will cover the basic steps necessary to renovate your staircase. It is recommended that you read through this guide before attempting any demolition or removal of your existing staircase.

The tools needed to finish this project are listed in each section. Many tools are available from tool rental stores or home centers.

To help make your project a safe work site, it is recommended that you:

1. Wear eye protection at all times.
2. Wear hearing protection when using power tools.
3. Use utility gloves when removing old lumber and when handling material to be installed.

Tips on making your project more efficient are included throughout this guide.



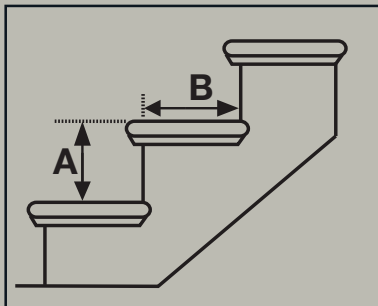
BUILDING CODES:

Before beginning your staircase project, it is important to check with your local authorities about building code requirements for your area. Throughout these instructions, where you see this icon , that step may have code requirements in your jurisdiction.

Building code interpretation and enforcement can vary greatly from city to city. The most commonly accepted code requirements are shown below, but may have changed since this writing. Check with your municipality before beginning your project.

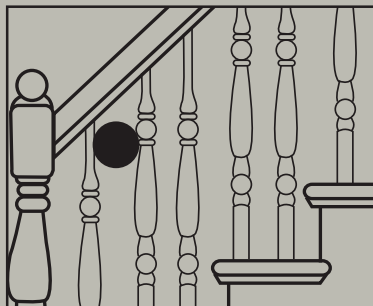


RISE AND RUN DIMENSIONS



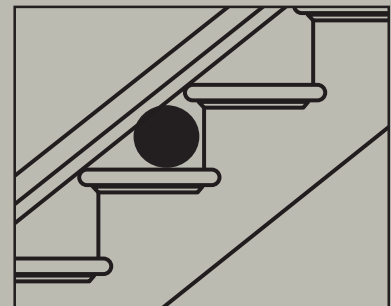
The Rise (A) should not be higher than $7\frac{3}{4}$ ", measured from the surface of 1st tread to the surface of next highest tread. Note. Remodeled stairs may be exempt from this code.

BALUSTER SPACING



Balusters on a staircase should be spaced so that a $4\frac{3}{8}$ " spherical ball cannot pass through the balustrade. Balusters on level railings should be spaced so that a 4" sphere cannot pass through the balustrade.

SHOE RAIL



Shoe rail shall be installed so that a 6" sphere cannot pass between the bottom of the shoe rail and the surface of the tread and riser.

Source: 2018 Int'l Residential Code

GETTING STARTED

1 TREAD & RISER REPLACEMENT

UPGRADE THE LOOK OF YOUR STAIRCASE WITH HARDWOOD TREADS



1. Remove existing wood balusters by cutting them 12-inches below where they are attached to the handrail. Twist to remove them, ensuring holes are clear of wood glue, nails or other debris.
2. Remove any carpet from surface of staircase to expose wood treads and risers.
3. Remove treads and risers using hammer or prybar. Remove any nails and debris.
4. Once old treads and risers are removed, install new risers first. Apply bead of adhesive to face of stringer. Nail or screw risers in place.
5. Install treads (**FIG 1-1**) by applying bead of adhesive to stringer run. Place treads on stringer. Nail or screw in place (**FIG 1-2**).
6. Install landing tread at landings and any balconies (**FIG 1-3**). Apply bead of adhesive on subfloor and nail in place.
7. Landing tread (**FIG 1-3**) can be used with 3/4" oak flooring along a landing when solid oak treads are used. Use landing tread on balconies and at the top of your staircase.
8. Add a finished look by applying oak returns (**FIG 1-4**) to the ends of exposed treads on open stairs. Apply with wood glue and nails.

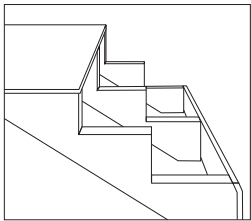
TOOLS YOU NEED:

- ✓ Wear Safety glasses
- ✓ Prybar
- ✓ Hammer
- ✓ Saw
- ✓ Adjustable square
- ✓ Measuring tape
- ✓ Drill
- ✓ Construction adhesive
- ✓ Caulk gun
- ✓ Screws

MATERIALS:

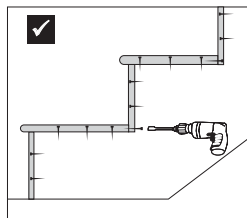
- ✓ Oak Treads
- ✓ Risers
- ✓ Loose oak returns (optional)
- ✓ Landing Tread

FIG 1-1



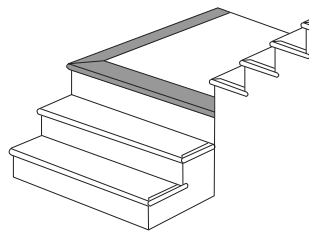
Measure and cut each step separately to ensure a tight fit.

FIG 1-2



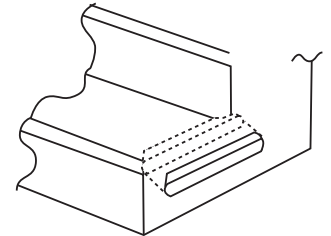
For best appearance, install risers first, then install treads.

FIG 1-3

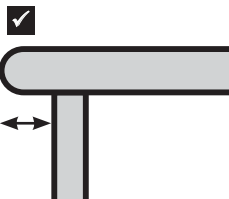


Use landing tread to border balconies and landings. Landing tread can be used with 3/4" oak flooring or carpet and padding.

FIG 1-4



Attach loose oak returns to the sides of treads for a finished and elegant look.



Most codes require treads to overhang risers between 3/4" and 1-1/4". Check your local codes for requirements in your area.



TIP 1: Drill pilot holes before nailing treads to minimize the risk of splitting and cracking

TIP 2: Applying construction adhesive to stringers before installing treads now will help prevent squeaky treads in the future.

INSTALLATION

2 NEWEL POST INSTALLATION FOR POST-TO-POST SYSTEMS

FOR BLOCK-TOP NEWELS AND BOX NEWELS WHERE RAIL IS ATTACHED TO THE SIDE OF THE NEWEL

1. Layout your staircase directly on your treads and landings (**FIG 2-1**). Mark newel and baluster position and centerlines. See diagram at right.
2. With newel in position where it is to be mounted (**FIG 2-2**), slide short end of framing square along the slope of the stairway.
 - Slide edge of square onto post as shown (**A**). Make mark.
 - Measure down 1" from top of newel block (**B**). Make mark.
 - Note measurement (**C**) between the two marks "A" and "B". This is the measurement to use when cutting the bottom of the newel.
3. Trim and fasten starting newels (**FIG 2-3**) in place using Newel Attachment Kits (**E**) or lag bolts and wood plugs (**F**).
4. For 2nd floor and balcony newels (**FIG 2-4**), rail should be set 1" below the top of square part of newel. **Check local building codes for proper rail height.**

FIG 2-1. MARK YOUR STAIR FOR INSTALLATION

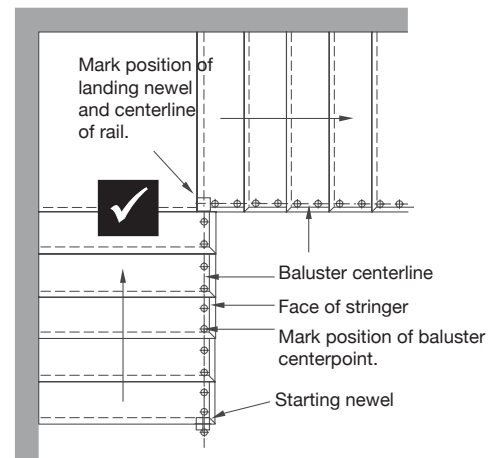
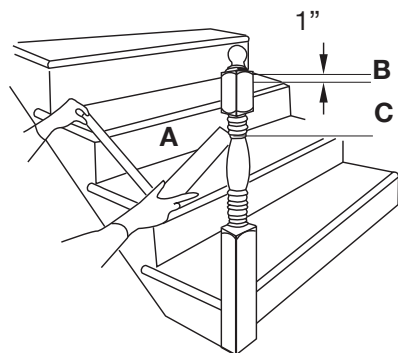


FIG 2-2. STARTING NEWEL INSTALLATION



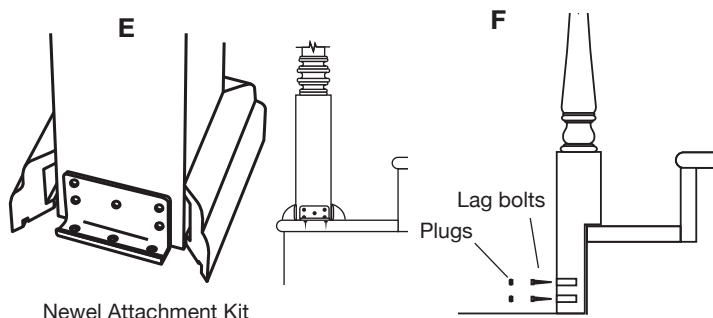
TOOLS YOU NEED:

- ☒ Wear Safety glasses
- ☒ Drill
- ☒ Measuring tape
- ☒ Saw
- ☒ Framing Square
- ☒ Pencil

MATERIALS:

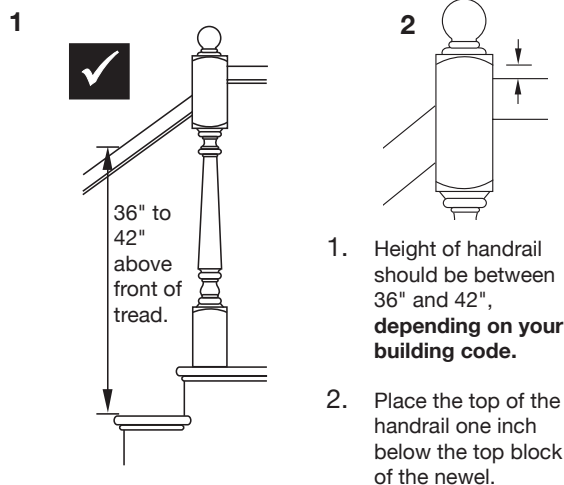
- ☒ Block top / box newels
- ☒ Newel attachment kits
- ☒ Lag bolts
- ☒ Oak plugs

FIG 2-3. NEWEL POST ATTACHMENT



Newel Attachment Kit

FIG 2-4. SECOND FLOOR AND LANDING NEWEL HEIGHT



CHECK LOCAL BUILDING CODES FOR REQUIREMENTS IN YOUR AREA.

INSTALLATION

3

NEWEL POST AND RAIL ASSEMBLY FOR OVER-THE-POST SYSTEMS

FOR PIN-TOP NEWELS WHERE RAIL RUNS ON TOP OF THE NEWELS

FIG 3-1. MARK YOUR STAIR FOR INSTALLATION

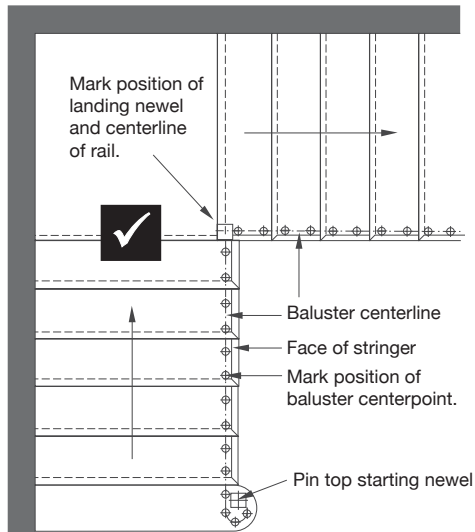


FIG 3-1a. Layout for Turnout fitting

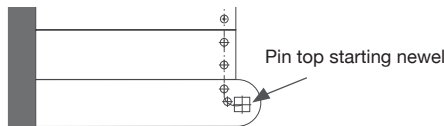
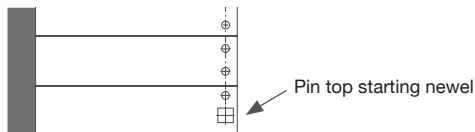


FIG 3-1b. Layout for Opening Cap fitting



1. Layout your staircase (**FIG 3-1**) directly on your treads and landings. Mark newel and baluster position and centerlines. Use layouts for Turnouts (**FIG 3-1a**) and Opening Cap (**FIG 3-1b**) if applicable.
2. For a volute fitting, the centerline of the balustrade (assembled set of balusters, rail and newels) should be laid out. On a kneewall stair, the balustrade should be centered on the kneewall. On an open tread stair, the centerline should be 1/2 of the baluster square in from the face of the stringer (ex. 5/8" for a 1-1/4" baluster).
3. Assemble the handrail and fittings with rail on the staircase. Use either rail bolts or Spring Bolts™ to assemble fittings to handrail. See diagram **3-2a** and **3-2b** for rail bolt & **3-2c** for Spring Bolts details.
4. Apply wood glue to ends of rail and fittings. Assemble and install nut. Tighten nut with wrench, then glue wood plug into hole.
5. Clamp or secure assembled handrail on top of stair. Note centerpoints of newels and mark on treads. In some cases, a notch will have to be cut in nosing of a tread on a landing.

(Continued on Next Page)

TOOLS YOU NEED:

- ✓ Wear Safety glasses
- ✓ Drill
- ✓ Drill bit set
- ✓ Wrench set
- ✓ Measuring tape
- ✓ Saw
- ✓ Framing Square
- ✓ Pencil

MATERIALS:

- ✓ Block top / box newels
- ✓ Newel attachment kits
- ✓ Lag bolts
- ✓ Oak plugs
- ✓ Wood glue

FIG 3-2a. RAIL BOLT - HANDRAIL AND FITTING ASSEMBLY

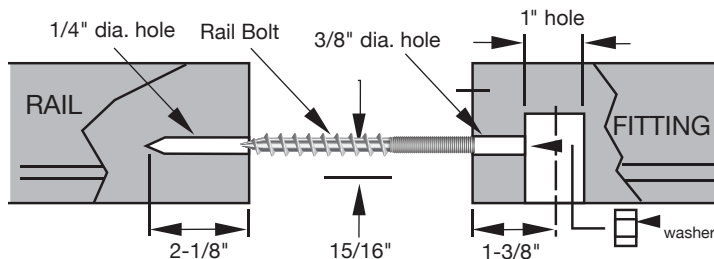


FIG 3-2b. HANDRAIL & FITTING ASSEMBLY

Tighten nut with rail bolt wrench and then glue the wood plug into hole.

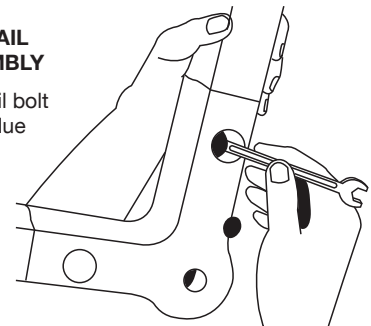
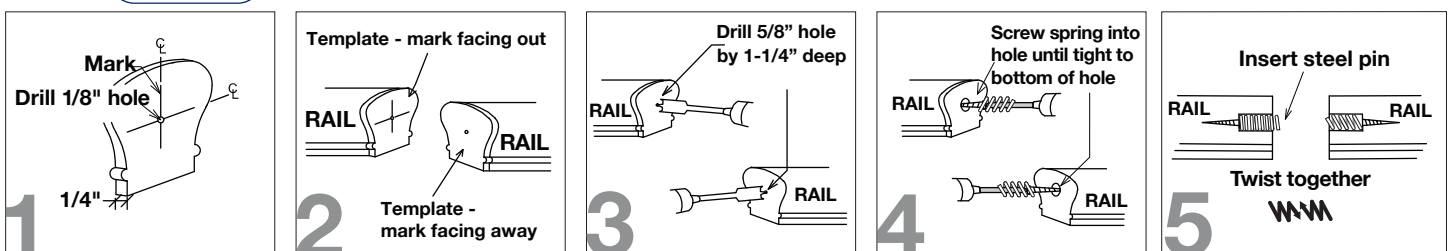


FIG 3-2c. SPRINGBOLT - HANDRAIL AND FITTING ASSEMBLY



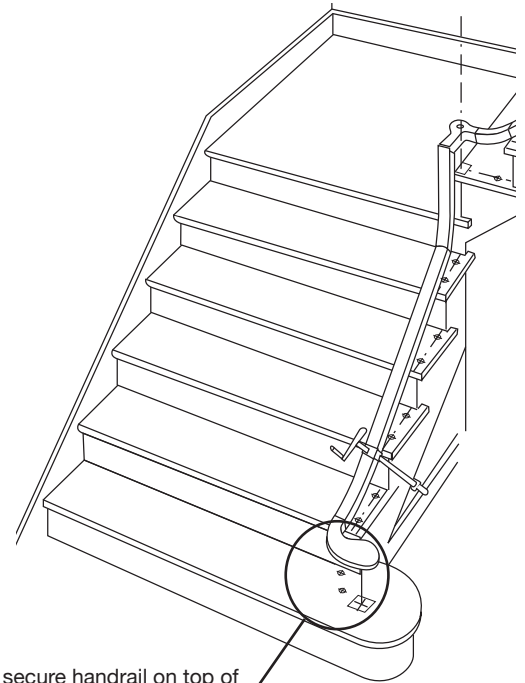
INSTALLATION

NEWEL POST AND RAIL ASSEMBLY FOR OVER-THE-POST SYSTEMS

Continued from page 7

6. See **FIG 3-3**. Measure and trim newel posts using guide at left.
 - Rake rail height (H1) should be between 36" and 42" depending on your local building code.
 - Center the assembled handrail over the newel locations. Measure distance between the tread and the bottom of the handrail fitting (A1 and A2).
 - Measure the thickness of the handrail (T1).
 - Use the following formula to calculate the starting newel height:

$$H1 + A1 - T1 = \text{Starting Newel Height}$$
7. If newel starts from the floor or a lower tread, add that distance.
8. See **FIG 3-4**. Trim and fasten newels using Newel Attachment Kits or Lag Bolts and plugs, or use the Sure-Tite™ Newel Attachment Kit.

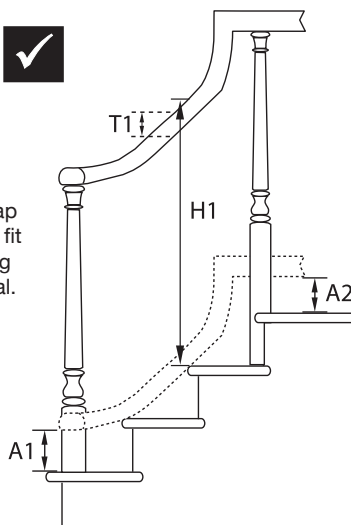


Clamp or secure handrail on top of staircase before setting newels.

FIG 3-3. SETTING CORRECT RAIL HEIGHT



TIP. Cut scrap wood to test fit before cutting finish material.



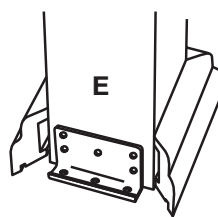
CHECK LOCAL BUILDING CODES FOR REQUIREMENTS IN YOUR AREA



Newel attachment kits are available for 3", 3-1/2", and 5" square newel posts.

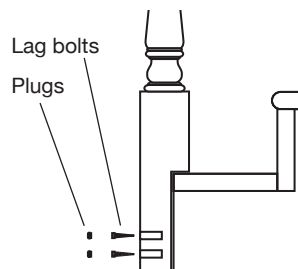
Each kit includes base trim to cover hardware.

FIG 3-4. NEWEL POST ATTACHMENT



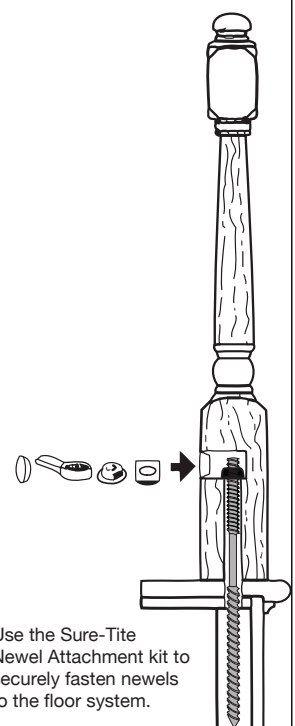
Newel Attachment Kit

F



Above. Lag bolts and plugs

Sure-Tite™ Newel Attachment Kit



Use the Sure-Tite Newel Attachment kit to securely fasten newels to the floor system.

INSTALLATION

4 PIN-TOP BALUSTER AND HANDRAIL INSTALLATION FOR POST-TO-POST AND OVER-THE-POST RAIL SYSTEMS.

1. See **FIG 4-1**. Mark baluster placement on treads allowing for equal spacing and no greater than 4" on center.

- Drill treads the same size and depth as pin on the bottom of baluster.
- Lay handrail along stairs allowing extra length for proper fit to newel posts.
- Being sure that rail does not move, use framing square to transfer wood tread markings from each tread to side of handrail.
- Transfer markings to bottom center of handrail. Locate markings on bottom of handrail. Mark center line of handrail.

TOOLS YOU NEED:

- ✓ Wear Safety glasses
- ✓ Drill
- ✓ Drill bit set
- ✓ Drill guide
- ✓ Measuring tape
- ✓ Level
- ✓ Saw
- ✓ Framing Square
- ✓ Pencil

2. POST-TO-POST. (**FIG 4-2**) Rotate handrail 180° on stairs so balcony side of handrail is at base of stairs.
3. Using newels as guides, mark handrail (**a**) and cut to proper length. Follow instructions for attaching newels.

(Continued on page 10)

FIG 4-1. MARK STAIR FOR INSTALLATION

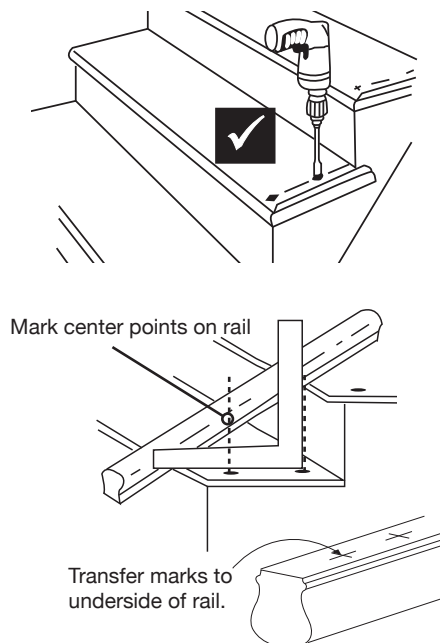
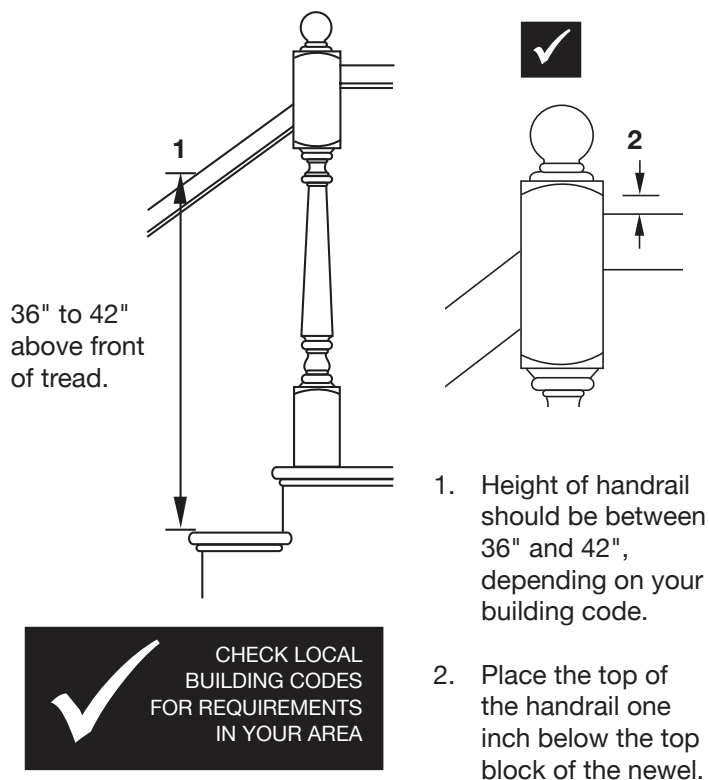
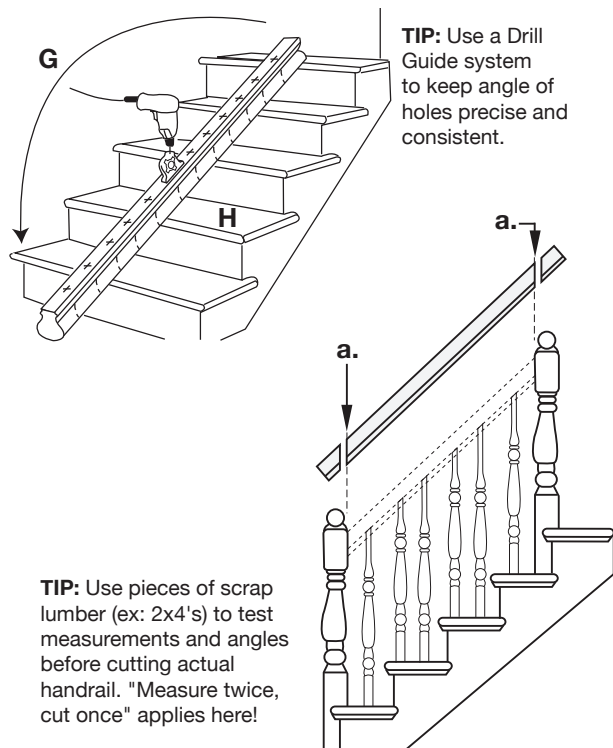


FIG 4-2. PREPARING POST TO POST HANDRAIL



INSTALLATION

PIN-TOP BALUSTER AND HANDRAIL INSTALLATION

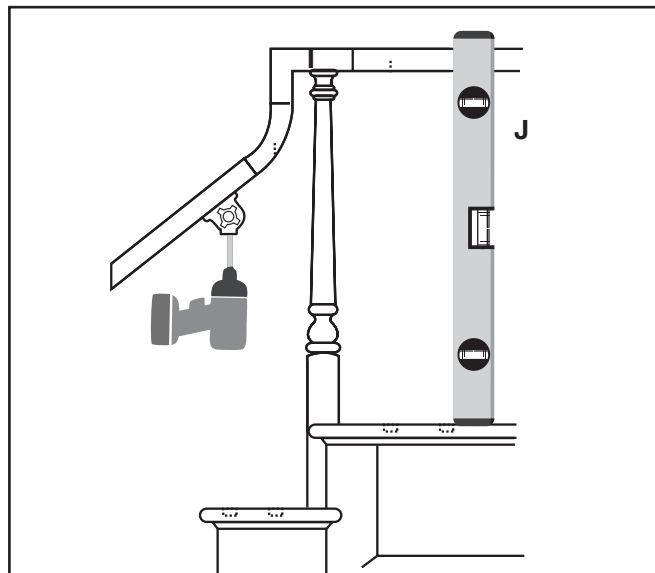
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4. **OVER-THE-POST.** (**FIG 4-3**) Place handrail on top of pin top newels (**I**), but do not glue or nail in place. Use level to mark centers of balusters (**J**) on rail, balcony and treads of stair. Drill holes with drill guide using 5/8" drill bit.
5. For balconies, follow same procedures, keeping rail on flat surface when drilling.

TIP 1: Install pin top balusters first. Then lower handrail down onto the balusters after holes are drilled into handrail.

TIP 2: Practice rail cuts with scrap lumber before cutting final piece.

FIG 4-3. PREPARING OVER THE POST HANDRAIL



5 SQUARE TOP BALUSTER AND HANDRAIL INSTALLATION

FOR POST -TO-POST AND OVER-THE-POST RAIL SYSTEMS.

1. **FOR OPEN STAIRS ONLY.** To install square top balusters, drill holes (**FIG 5-1**) in treads according to your layout from Step 3. Use same size drill bit as the size of the pin on the bottom of baluster (ex: 3/4" pin = 3/4" bit. Make sure baluster holes are spaced evenly. **Check local building codes for proper baluster spacing requirements.**

TOOLS YOU NEED:

- ✓ Wear Safety glasses
- ✓ Drill
- ✓ Drill bit set
- ✓ Drill guide
- ✓ Measuring tape
- ✓ Level
- ✓ Adjustable Square
- ✓ Miter Saw
- ✓ Framing Square
- ✓ Pencil

Square top balusters are installed after the bottom shoerail and plowed handrail are installed.

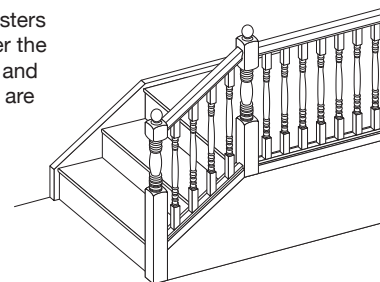
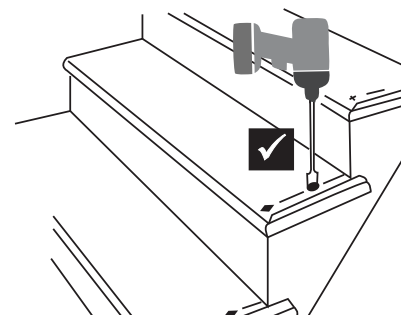


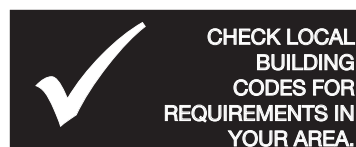
FIG 5-1: MARK STAIR FOR INSTALLATION O. BALUSTERS ON OPEN STAIRCASE.

2. See **FIG 5-2** (NEXT PAGE). Lay handrail and shoe rail (if used) along stairs, marking where they intersect with newels. Cut rail along marks using miter saw. Use scrap lumber to test cuts before cutting finish material.
3. Attach handrail (**FIG 5-3**) (NEXT PAGE) using option #1 (3" wood screws) or option #2 (4-1/2" lag bolts through front of rail). Both options require pre-drilling a pilot hole.
4. **SHOE RAIL OPTION.** Measure and cut shoe rail using same angles as handrail cuts. See **FIG 5-4** (NEXT PAGE). Attach shoe rail using **OPTION 1** (3" wood screws), **OPTION 2** (toe-nailed finish nails), or **OPTION 3** (screwed to kneewall).



Note. Some balusters do not have pins on the bottom. If your balusters do not have pins, skip this step.

(continued on page 11)



INSTALLATION

SQUARE TOP BALUSTER AND HANDRAIL INSTALLATION (Continued from page 10)

5. BALUSTER INSTALLATION ON SHOERAIL (FIG 5-5):

- Use an adjustable square (C) and level to determine the angle to cut balusters. Allow for 1/4" plow depth on handrail and shoerail.
- Cut balusters to correct length. Once spacing is determined, glue and toe nail balusters in place. **Check your local building code for baluster spacing requirements.**
- Cut fillet pieces, being sure to match angles. Glue and nail in place using 1/2" finishing nails.

6. OPEN TREAD OPTION. Using marks on tread made from Step 2, drill holes using the same size bit as the pin on the bottom of baluster (ex: 3/4"). If your balusters do not have pins on the bottom, do not drill holes in your treads.

- Cut balusters to correct length.
- Insert baluster into handrail and adjust with level.
- Apply wood glue and nail baluster in place, making sure balusters are evenly spaced. **Check your local building code for baluster spacing requirements.**
- Cut handrail fillet, being sure to match angles. Glue and nail in place using 1/2" finishing nails.

FIG 5-4. HANDRAIL ATTACHMENT OPTIONS

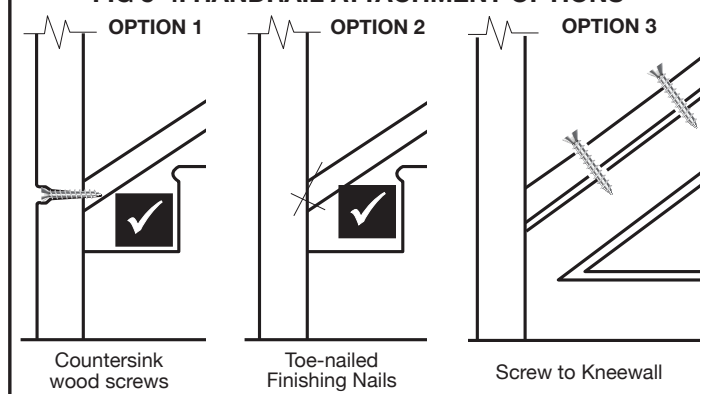
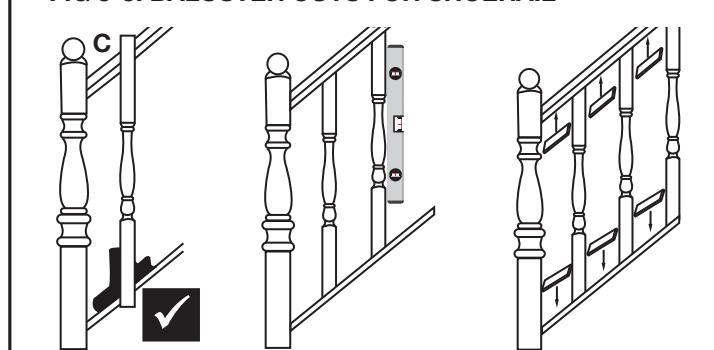
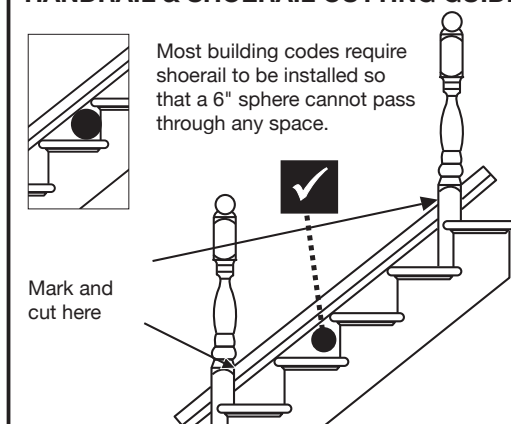


FIG 5-5. BALUSTER CUTS FOR SHOERAIL



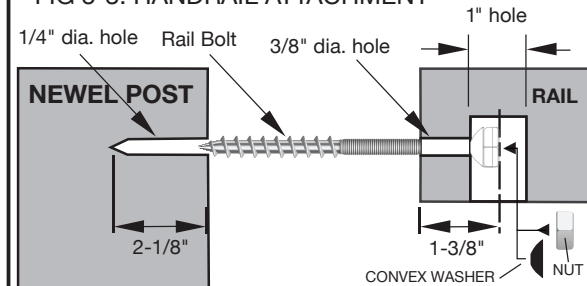
CHECK LOCAL BUILDING CODE FOR REQUIREMENTS IN YOUR AREA

FIG 5-2. HANDRAIL & SHOERAIL CUTTING GUIDE



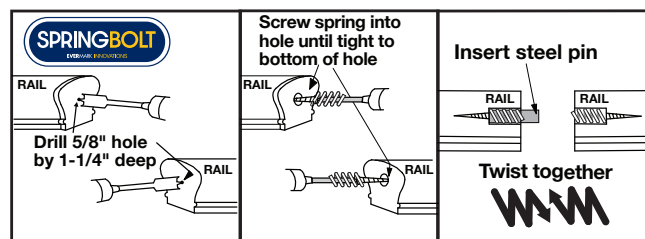
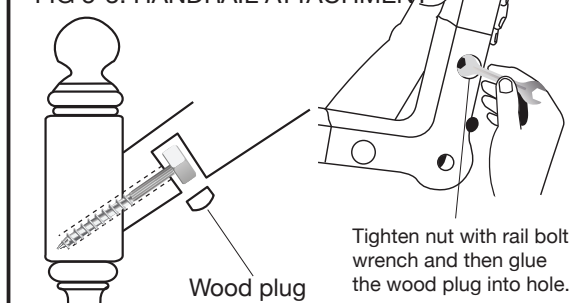
RAIL BOLT KIT

FIG 5-3. HANDRAIL ATTACHMENT



RAIL BOLT KIT

FIG 5-3. HANDRAIL ATTACHMENT



INSTALLATION

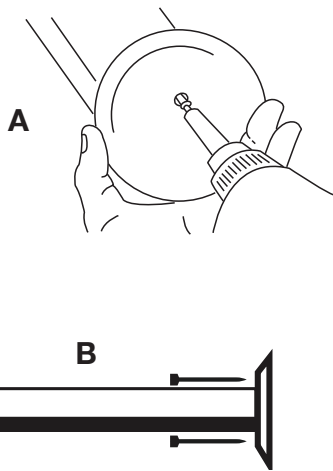
6 ATTACHING HANDRAIL SYSTEMS TO WALL

FOR POST-TO-POST AND OVER-THE-POST RAIL SYSTEMS.

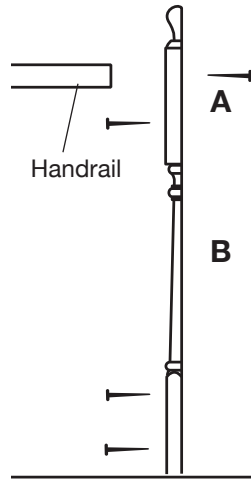


1. Attach rosette or half newel directly to handrail through the back of rosette (A).
2. Secure handrail and rosette or half newel to wall with finish nails or screws (B). Use wood plugs to plug screw holes.
3. Leave no less than 1-1/2" of space between wall and wall rail. ✓
4. Secure wall rail to walls with handrail brackets. Be sure handrail brackets are anchored into studs through dry wall.
5. If attaching fittings to ends of wall rail is preferred, use the same method for attaching fittings from **Step 3-2** on page 7.

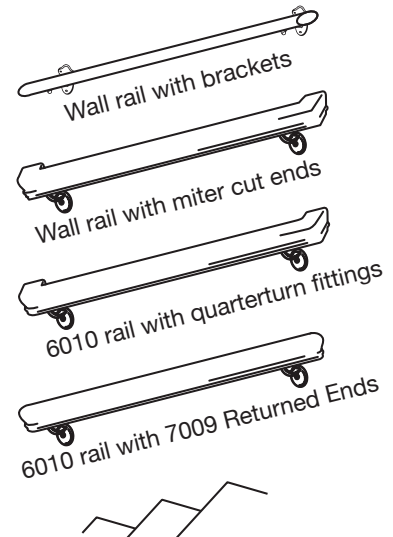
ATTACHING RAIL WITH A ROSETTE



ATTACHING RAIL WITH A HALF NEWEL



ATTACHING WALL RAIL



Miter Cutting Handrails

Handrail can be miter cut at the ends and returned to the wall. In all instances of attaching handrails to walls, handrail brackets should be used to add strength and structural support.



RETURNING HANDRAIL TO THE WALL IS REQUIRED BY BUILDING CODES IN MANY JURISDICTIONS. CHECK YOUR LOCAL AUTHORITIES FOR APPLICABLE BUILDING CODES.

GETTING THE RIGHT PARTS

Listed below are the basic parts you will need to complete your staircase project. Of course, every staircase is different, so you may need to special order certain parts.

ITEM:	Part	QTY	ITEM:	Part	QTY
TREADS: Select one tread for each step.	_____	_____	BALUSTERS FOR STARTING FITTINGS: Balusters needed for starting fittings: Volutes: Five 1-1/4" x 41" balusters Four 1-3/4" x 41" balusters Turnouts: Two 1-1/4" x 41" balusters One 1-3/4" x 41" balusters Starting Easings require one baluster each.	_____	_____
RISERS: Select one riser for each step, then add one more riser per each staircase.	_____	_____	RAKE BALUSTERS*: (For open stairs) For stairs using two balusters per tread, select 34" balusters for the front baluster and 41" balusters for the rear baluster. If there are three balusters per tread, select one 34" baluster for the front, a 36" baluster for the middle, and a 41" baluster for the rear.	_____	_____
LANDING TREAD: Select enough lineal footage for entire balcony and width of stairs at landings.	_____	_____	RAKE BALUSTERS FOR KNEEWALL*: Select 34" balusters at rate of two balusters per tread that are no wider than 4" on center.	_____	_____
RETURN NOSING: (For open stairs) Select one return nosing for each tread. Select two returns if tread is open on each end.	_____	_____	LEVEL BALCONY BALUSTERS*: For 36" rail height, use 34" balusters. For 42" rail height, use 41" balusters.	_____	_____
STARTING FITTING: For over-the-post rail systems, usually a volute, turnout, or starting easing. See "Balusters for Starting Fittings" if selecting an over-the-post system.	_____	_____	HANDRAIL: Select 13" of handrail for each step, and enough for total lineal footage of level rail.	_____	_____
STARTING NEWEL: Use at the bottom of the staircase.	_____	_____	SHOERAIL FOR RAKE: (optional) For kneewall and shoerail applications. Select 13" of shoerail for each step.	_____	_____
LANDING NEWELS: Use at the corner of L-shaped stairs and second floor landings.	_____	_____	SHOERAIL FOR BALCONY: (optional) Select enough to cover all level runs.	_____	_____
BALCONY NEWELS: If balcony is longer than 10 feet, use one newel for every 5 or 6 feet. Use a newel at every corner. Match top blocks of newels to maintain consistency.	_____	_____	PLUGS: Select two wood plugs for every newel mounting using lag bolts. Select one plug for every handrail or shoerail mounting using lag bolt or wood screw.	_____	_____
ROSETTE or HALF NEWELS: Use where handrail connects to a wall.	_____	_____			
NEWEL MOUNTING HARDWARE: Select one newel mounting kit for each newel post mounted to the top of a tread.	_____	_____			

* Building codes vary greatly. Check with your local jurisdiction before installing balusters.

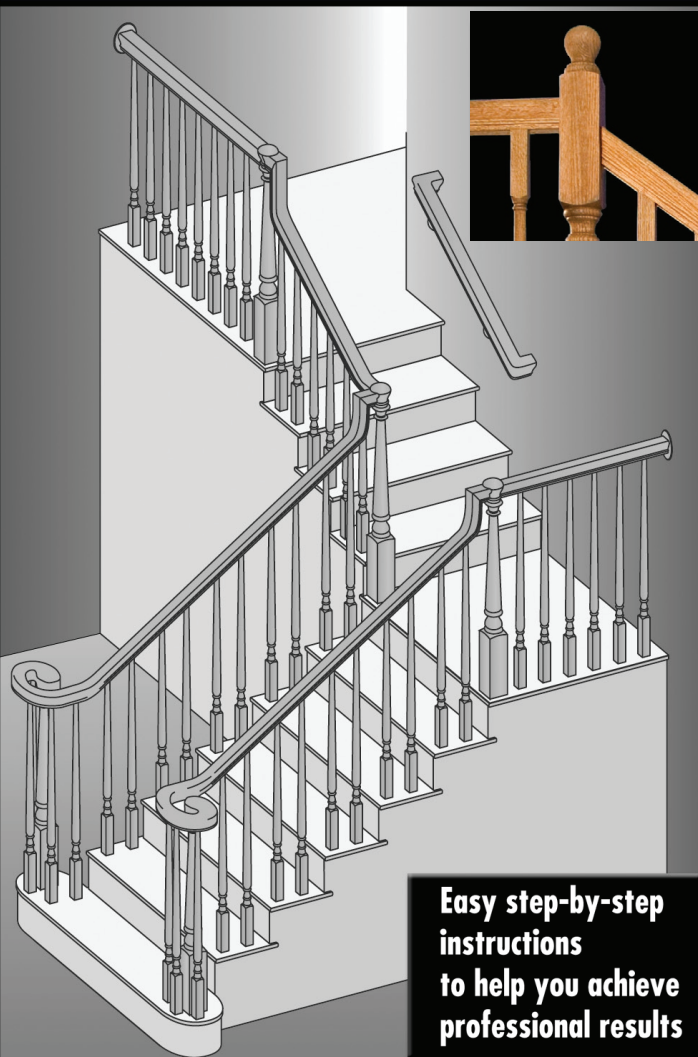
* These are guidelines only. Each job site is different and may require different products

How to build a staircase like a pro.

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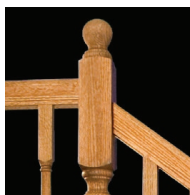
STAIR PARTS • DOORS & JAMBS • HARDWARE

Over-The-Post System

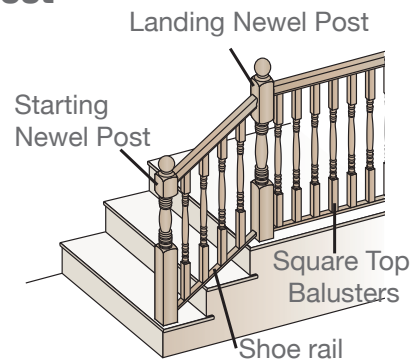


Easy step-by-step instructions to help you achieve professional results

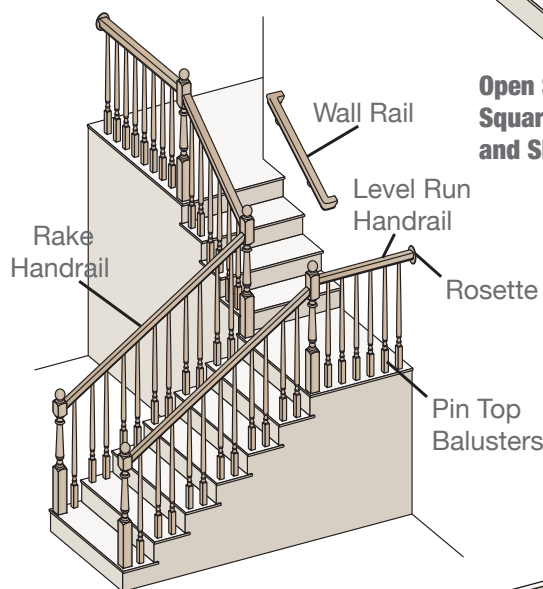
1 Identify Your Type of Post-to-Post Staircase:



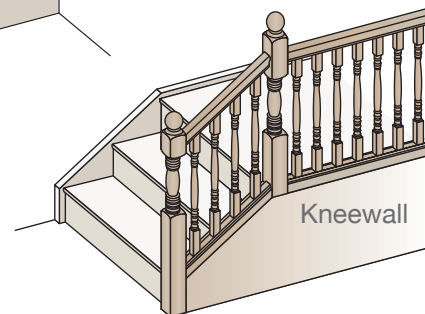
Post-To-Post Staircase System



Open Staircase with Square Top Balusters and Shoe rail

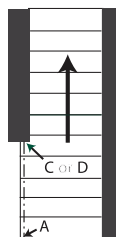


Open Staircase with Pin Top Balusters



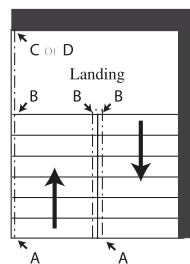
Closed Staircase with Square Top Balusters and Kneewall

Straight



Determine the parts needed.

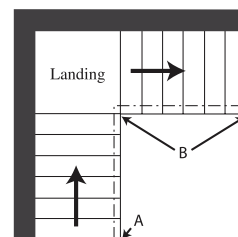
"U" - Shaped



Legend

A - Starting Newel
B - Landing Newel

"L" - Shaped



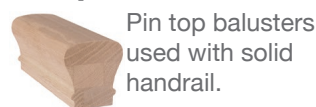
C - Rosette
D - Half Newel

2 Selecting Your Parts:

There are several styles and options for your treads, risers, balusters and newel posts. Below are the most common. Other items are available by special order. Check with your store representative.

Balusters, Newel Posts, Handrails, and Shoe rails:

Pin Top Baluster:

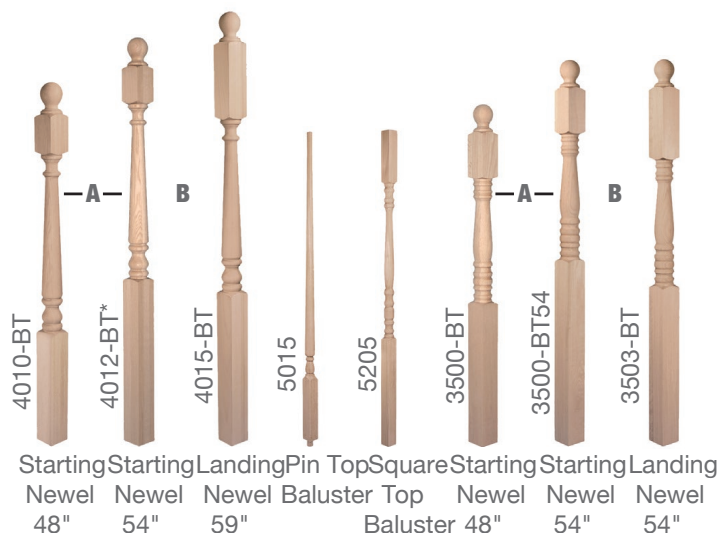


6010
Solid handrail

Square Top Baluster:



6010 Plowed handrail
6045 Shoe rail 1-1/4"



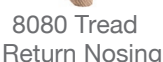
Starting Newel 48" Starting Newel 54" Landing Newel 59" Pin Top Baluster Square Top Baluster Starting Newel 48" Starting Newel 54" Landing Newel 54"

Treads and Risers:



Tread

Riser



8080 Tread
Return Nosing



8090
Landing Tread

Mounting Hardware:



Newel Attach Kits
(Oak, Poplar, Hemlock)



Rail
Bolt



Wood
Plugs

Wall Rails and Handrail Ends:

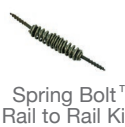


6042 Wall Rail 7009 Returned End 7011 Quarter-Turn

Wall Rail Brackets:



Rail Joinery
Made Simple!



Spring Bolt™
Rail to Rail Kit

C Rosettes:



Round Rosette Oval
Rosette

D Half Newel:

For Wall Finishing
Half newels available to match newel style.

3 Post-to-Post Staircase Parts Checklist:

Check local building codes to ensure compliance. Part # Quantity

All stair parts shown in this brochure are for interior use only.

Treads - Select one tread for each step. _____

Risers - Select one riser for each step. Select one more riser than treads per each staircase. _____

Landing Tread - Select sufficient lineal footage for the entire balcony and width of stairs at each landing. _____

Return Nosing - If stair is open on one side, select one tread return nosing per step. If two-sided, select two per step. _____

Starting Newel * - Use at the bottom of the staircase. _____

Landing Newel * - Use at the landing corner of an L-shaped stair and at the second floor landing. _____

Level Run Newel * - If the balcony is 10 feet or longer, use a newel every 5 or 6 feet. Place a newel at every corner. The Landing Newel may be used, but be sure to match the top block with the newel used at the top of the stairway for consistency. _____

Rosette or Half Newel - Select either a rosette or half newel for each handrail connecting to a wall. _____

Newel Mounting Hardware - Select one newel mounting kit for each newel post mounted on top of a tread. _____

Rake Balusters * - Select the 34" baluster for the front baluster on each tread and the 36" baluster for the back baluster on each tread. If using 3 balusters per tread, use the 36" baluster for the middle baluster on each tread. _____

Rake Balusters for Kneewall Staircase * - Select the 34" baluster at a rate of 2 per tread. Standard placement is 4" on center. Check local building code for your area. _____

Level Run Balusters * - Use the 36" baluster for all 36" height balconies and the 41" baluster for all 41" height balconies. Standard placement is 4" on center. Check local building code for your area. _____

Handrail - Buy 13" of handrail for each tread or step. Buy enough for all level runs. _____

Shoe rail for Rake - Buy 13" of corresponding shoe rail for each tread or step (shoe rail or kneewall stairs only). _____

Shoe rail for Balcony (optional) - Buy enough to cover all Level Runs. _____

Plugs - Select two wood plugs for every newel mounting using lag bolts. Select one plug for each handrail rail bolt used. Select one plug for every handrail or shoe rail mounting using a lag bolt or wood screw. _____

*Note: These guidelines are for a rake handrail height of 36"- 41". Longer newels and balusters may be required for a different handrail height.

4

Tools Required:

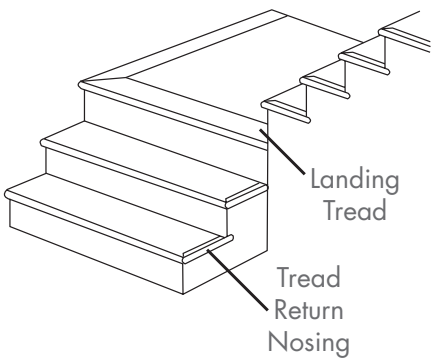
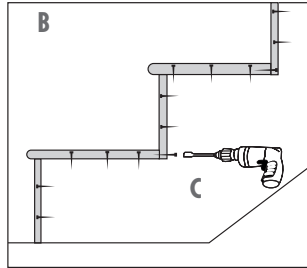
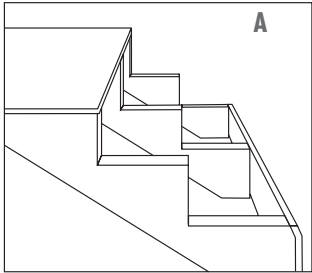
Operation:

Measuring and Leveling	Metal measuring tape, hand levels, (torpedo and 4' level), framing square
Cutting	Miter box and saw (fine-tooth) hand or power circular saw or standard hand saw
Nailing	Hammer, nail set, 1/2" and 1" finishing nails
Gluing	Carpenter's glue and construction adhesive
Screw Driving	Screwdriver (manual or power), 3" wood screws
Drilling	Hand drill, drill guide and 1/8", 1/4", 3/8", 5/8", 3/4", 1" wood bits
Finishing	Sandpaper, steel wool, wood file, wood chisel, finishing stain, rags, tack cloth, etc.

5

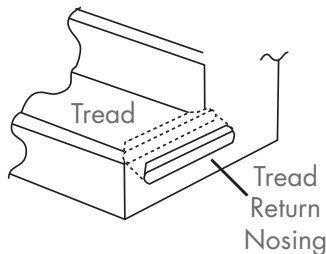
Getting Started - Tread and Riser Installation:

To properly install solid oak treads and risers, you must first remove the existing steps to expose the rough framing. Leave the beginning riser at base of steps (A). Measure and cut each step separately to ensure tight fit. (B). Pre-drill, apply construction adhesive and nail into place. For added strength, screw treads to risers from behind (C). Complete each step before continuing on to next step.



Landing Tread

Landing tread can be used with 3/4" oak flooring along a landing when solid oak treads and risers are used. Landing tread can be used along a balcony with oak flooring. Properly cut miters and attach directly to sub floor.



Tread Return Nosing Installation

Cut and miter tread return nosing to fit. Adds a finished look to the tread edge.

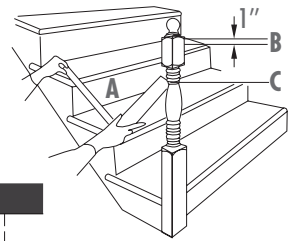
6

Basic Layout and Newel Post Installation:

Marking Your Staircase for Installation

Layout your staircase directly on your treads and landings. Carefully mark Newel and Baluster positions and centerlines.

Starting Newel Height

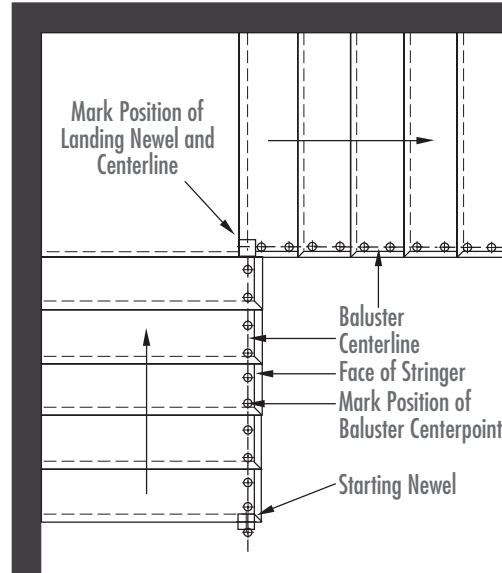


With newel in position where it is to be mounted, slide short end of framing square along slope of stairway.

A) Slide into post as shown. Make mark.

B) Measure down 1" from top of newel square. Make mark.

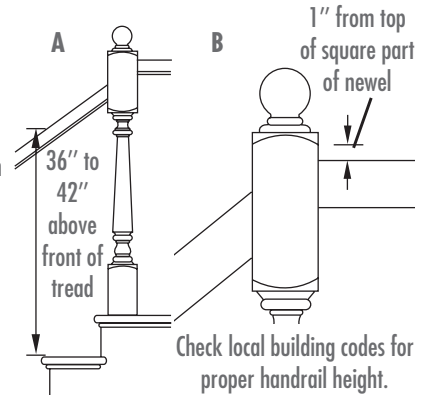
C) The difference between the two marks "A" and "B" is what will be cut off bottom of newel. Proceed with newel installation.



Landing Newel Height

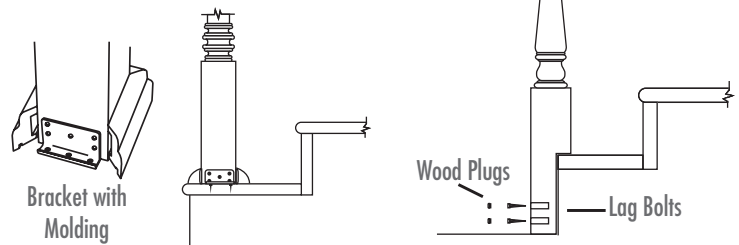
A) Height of the handrail should be between 36" and 42". Check local building codes.

B) Place the top of the handrail one inch below the top block of the newel.

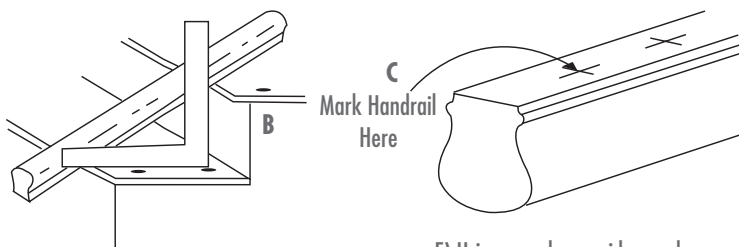
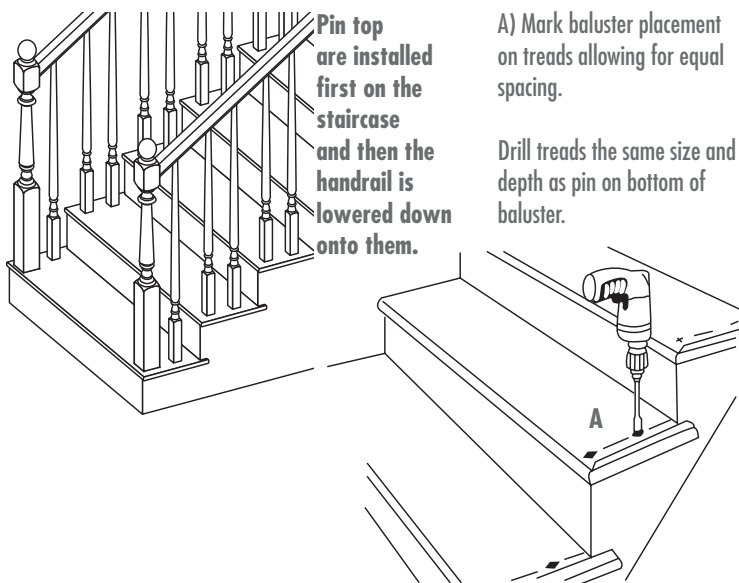


Newel Post Attachment

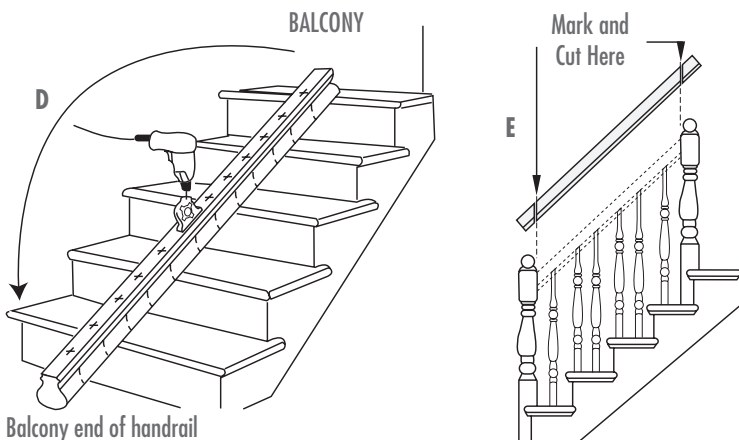
Trim and Fasten the Newel Posts



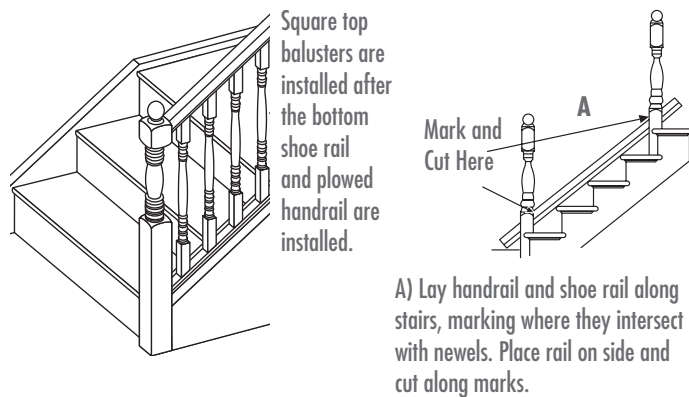
7a Attaching Handrail for Pin Top Balusters:



For balconies, follow same procedures, keeping handrail on flat surface when drilling.

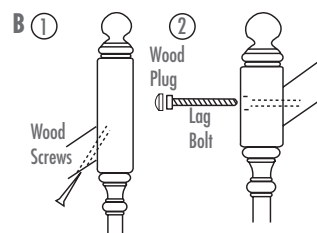


7b Attaching Handrail for Square Top Balusters:



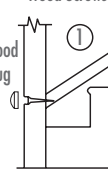
Handrail

B ①

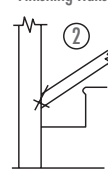


Shoe rail

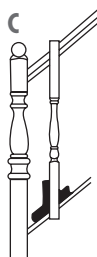
Countersunk Wood Screws



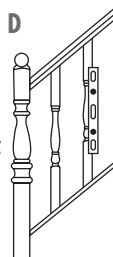
Toe-nailed Finishing Nails



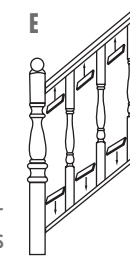
Screwed to Kneewall



C) Use an adjustable square to determine the angle of the cut; allow for 1/4" plow depth on each handrail and shoe rail.



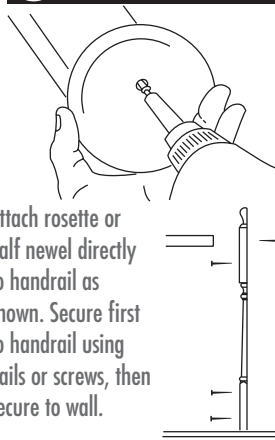
D) Cut balusters to the correct length. Once spacing is determined, glue and toe-nail balusters into place.



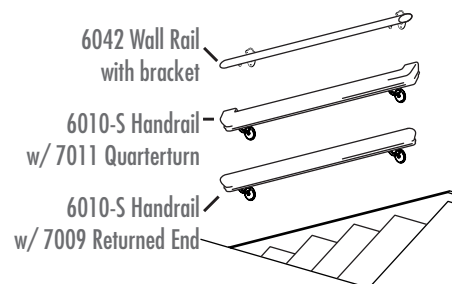
E) Cut fillet pieces being sure to match angles. Glue and nail into place using 1/2" finishing nails.

*Most codes require 4" on center spacing. Check your local municipality for all applicable building codes.

8 Finish to Wall and Wall Rail Installation:



Wall Rail Styles:



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STAIR PARTS • DOORS & JAMBS • HARDWARE

Over-The-Post System

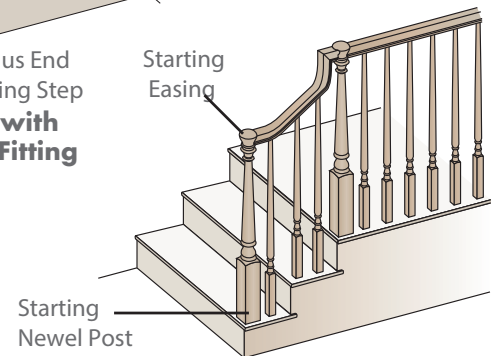
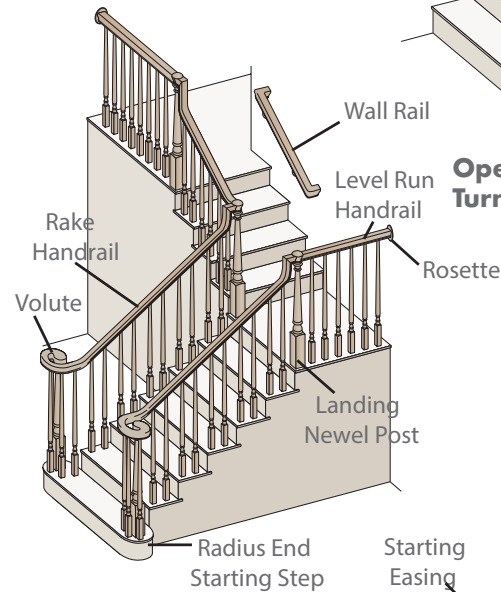
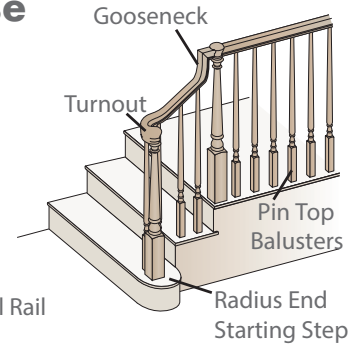


Easy step-by-step instructions to help you achieve professional results

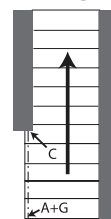
1 Identify Your Type of Over-The-Post Staircase:



Over-The-Post Staircase System

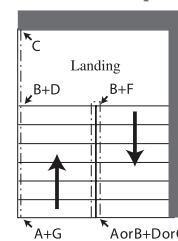


Straight



Determine the parts needed.

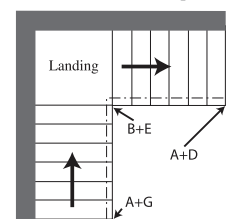
"U" - Shaped



Legend

A - Starting Newel
B - Landing Newel
C - Rosette

"L" - Shaped



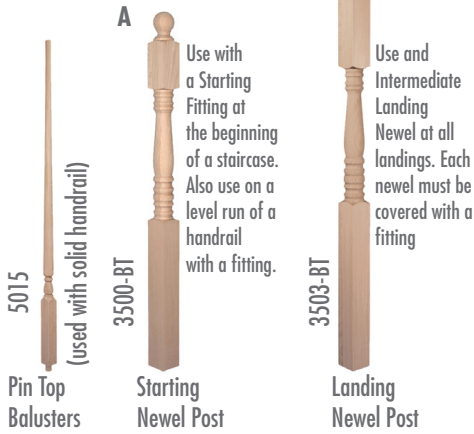
D - Straight Gooseneck
E - 90° Gooseneck
F - 180° Gooseneck
G - Starting Fitting

2

Selecting Your Parts:

There are several styles and options for your treads, risers, balusters and newel posts. Below are the most common. Other items are available by special order. Check with your store representative.

Balusters, Newel Posts:

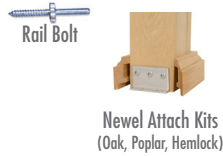


Rosettes:



For Wall Finishing used to connect Handrail to Wall

Mounting Hardware:



Treads and Risers:



Handrail, Ends and Wall Rails:



Wall Rails Brackets:



Choose Fitting Style:

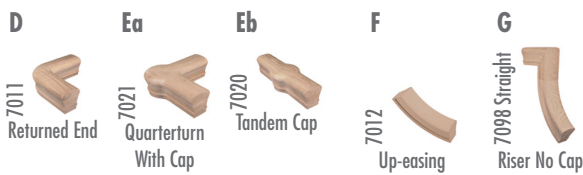
With Cap



No Cap



Make Gooseneck transition using these parts:



Rail Joinery Made Simple!



Each pin top newel post must be covered with a fitting. The floor plans to the left illustrate the fitting components needed for each landing situation.

Choose Starting Fitting:



Build a Starting Easing



Use at the bottom of the stairway over the Starting Newel. Volutes and Turnouts are available left hand or right hand.

3

Post-to-Post Staircase Parts Checklist:

Check local building codes to ensure compliance.

All stair parts shown in this brochure are for interior use only.

Treads - Select one tread for each step.

Part number	Quantity
Selected	Needed

Risers - Select one riser for each step (except the starting step). Select one more riser than treads per each staircase.

Landing Tread - Select sufficient lineal footage for the entire balcony and width of stairs at each landing.

Return Nosing - If stair is open on one side, select one tread return nosing per step. If two-sided, select two per step.

Starting Fitting - Select either a Volute, Turnout, or Starting Easing.

Starting or Landing Newel* - Use at the bottom of the stairway and at the second floor landing. If the balcony is 10 feet or longer, use the starting newel every 5 or 6 ft. Place a newel at every corner under a quarterturn.

Intermediate Landing Newel* - Use at the intermediate landing corner of a U-or L-shaped stair.

Rosette - Select a rosette for each handrail connection into a wall.

Newel Mounting Hardware: - Select one newel mounting kit for each newel post mounted on top of a tread.

Balusters for Starting Fittings* - Each volute requires (6)1-1/4" x 41" balusters, or (4)1-1/4 or 1-3/4" x 41" balusters. Each turnout requires (2)1-1/4" x 41" balusters or (1)1-3/4" x 41" baluster. Each starting easing requires (1) 41" baluster.

Rake Balusters* - Select the 34" baluster for the front baluster on each tread and the 36" baluster for the back baluster on each tread. If using 3 balusters per tread, use the 36" baluster for the middle baluster on each tread.

Level Run Balusters* - Use the 36" baluster for all 36" height balconies and the 41" baluster for all 41" height balconies. Standard placement is 4" on center. Check local building code for your area.

Handrail - Buy 13" of handrail for each tread or step. Buy enough for all level runs.

Plugs - Select two wood plugs for every newel mounting using lag bolts. Select one plug for each handrail rail bolt used.

Handrail Mounting Hardware - Select one Rail Bolt Kit or Spring Bolt for each handrail-to-handrail connection required.

Gooseneck Fittings - Select the appropriate gooseneck fitting for each straight, U or L-shaped staircase newel.

*Note: These guidelines are for a rake handrail height of 36" - 41". Longer newels and balusters may be required for a different handrail height.

4

Tools Required:

Operation:

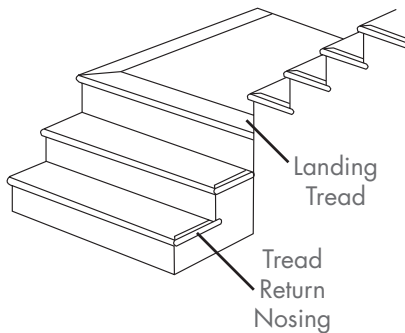
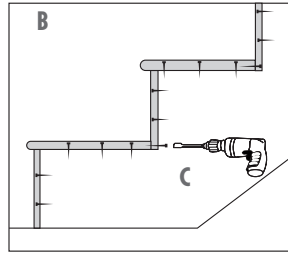
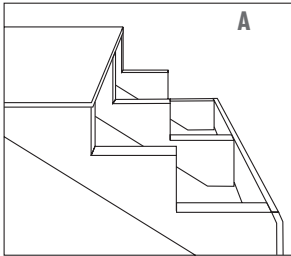
Tools Needed:

Measuring and Leveling	Metal measuring tape, hand levels, (torpedo and 4' level), framing square
Cutting	Miter box and saw (fine-tooth) hand or power circular saw or standard hand saw
Nailing	Hammer, nail set, 1" finishing nails
Gluing	Carpenter's glue and construction adhesive
Screw Driving	Screwdriver (manual or power), 3" wood screws
Drilling	Hand drill, drill guide and 1/8", 1/4", 3/8", 5/8", 3/4", 1" wood bits
Finishing	Sandpaper, steel wool, wood file, wood chisel, finishing stain, rags, tack cloth, etc.

5

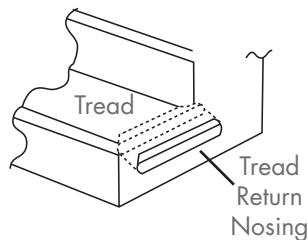
Getting Started - Tread and Riser Installation:

To properly install solid oak treads and risers, you must first remove the existing steps to expose the rough framing. Leave the beginning riser at base of steps (A). Measure and cut each step separately to ensure tight fit. (B). Pre-drill, apply construction adhesive and nail into place. For added strength, screw treads to risers from behind (C). Complete each step before continuing on to next step.



Landing Tread

Landing tread can be used with 3/4" oak flooring along a landing when solid oak treads and risers are used. Landing tread can be used along a balcony with oak flooring. Properly cut miters and attach directly to sub floor.



Tread Return Nosing Installation

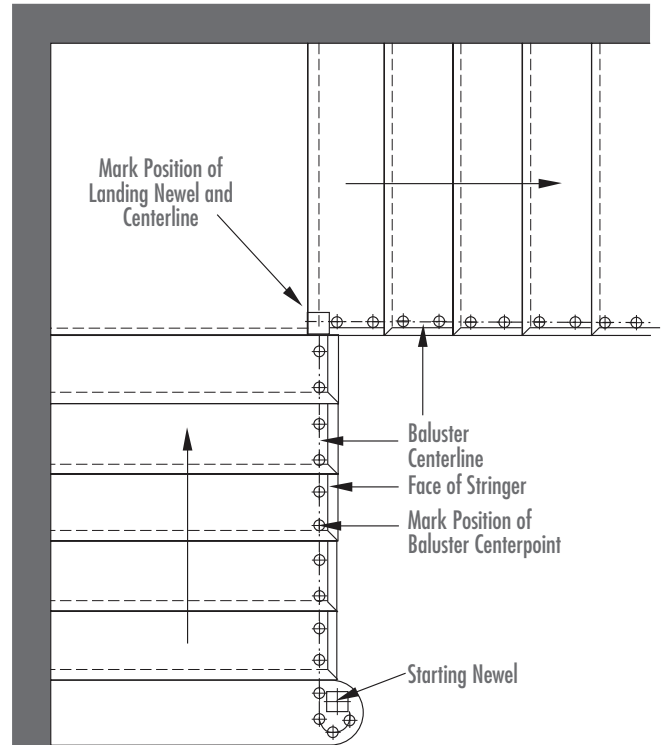
Cut and miter tread return nosing to fit. Adds a finished look to the tread edge.

6

Basic Installation:

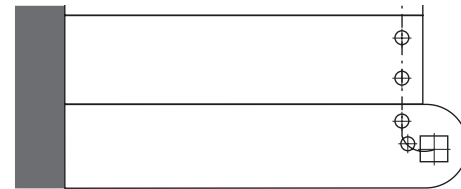
Marking Your Staircase for Installation

Layout your staircase directly on your treads and landings. Carefully mark Newel and Baluster positions and centerlines.

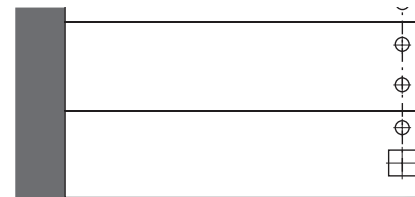


Volute Starting Fitting Layout

The balustrade centerline and newel centerpoints should be laid out. On a kneewall stair, the balustrade should be centered on the kneewall. On an open-tread stair, the centerline should be 1/2 of the baluster square in from the face of the stringer; i.e. 5/8" for a 1-1/4" baluster.



Turnout Starting Fitting Layout



Starting Easing Fitting Layout

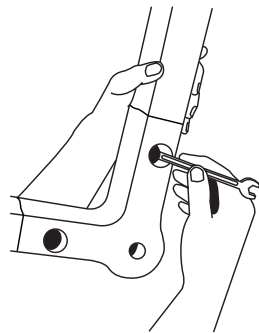
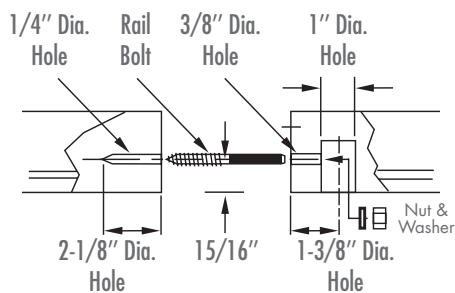
7

Assemble the Handrail:

Assemble the handrail on top of the stair treads prior to installing the newel posts. Use rail bolts and glue at each fitting connection. Complete instructions are included with fittings.

Rail Bolt Installation

Apply glue to ends. Assemble and install nut. Tighten nut with wrench. Fill access hole with wood plug.



8

Newel Post Installation:

Measure and Trim Newel Posts

The rake rail height should be between 36" – 42" (H1) (check local building codes). Center the assembled handrail over the newel locations. Measure the distance between the tread and the bottom of the handrail fitting (A1 and A2). Also measure the rake rail thickness (T1). Use the following formula to calculate the starting newel height.

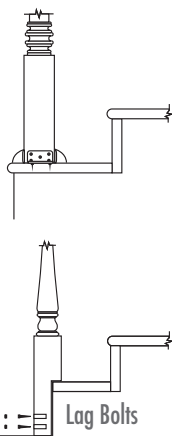
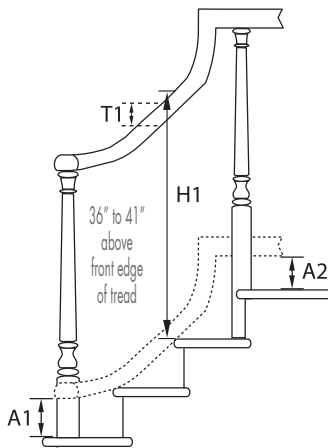
$$H1 + A1 - T1 = \text{Starting Newel Height}$$

If the newel starts from the floor or a lower tread, add that distance as well.

Newel Post Installation

Bracket with molding

Wood Plugs
Lag Bolts



9

Installing the Balusters and Handrail:

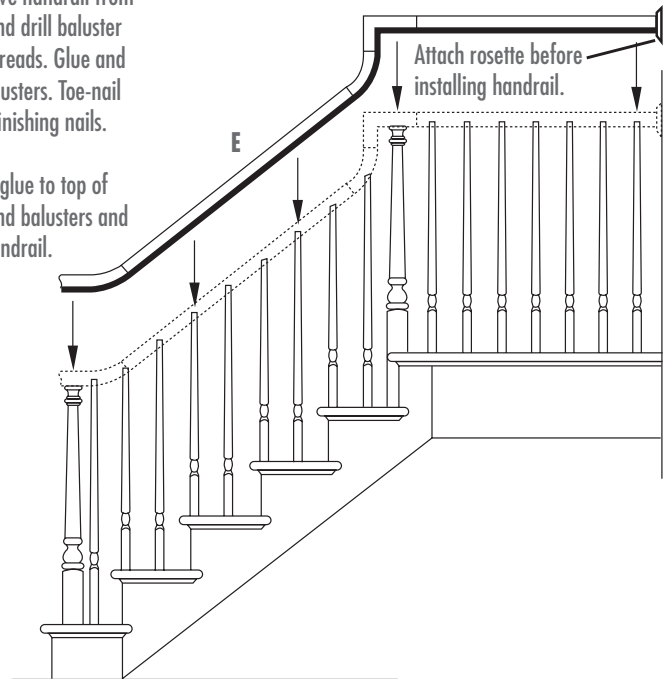
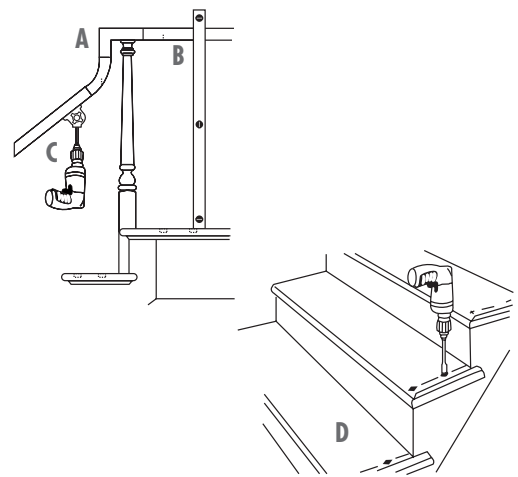
A) Temporarily position assembled handrail onto newels.

B) Use level to mark the handrail with baluster centers.

C) While handrail is on newels, drill baluster holes with drill guide. Drill holes using 5/8" drill bit a minimum of 3/4" deep into handrail.

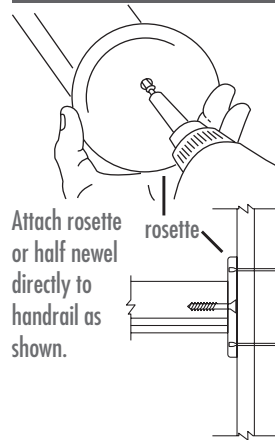
D) Remove handrail from newels and drill baluster holes in treads. Glue and insert balusters. Toe-nail with 1" finishing nails.

E) Apply glue to top of newels and balusters and attach handrail.



10

Finish to Wall and Wall Rail Installation:

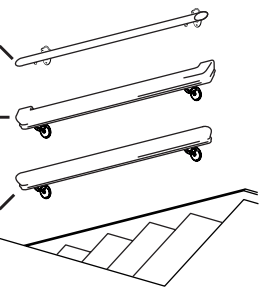


Wall Rail Styles:

6042 Wall Rail with bracket

6010-S Handrail w/ 7011 Quarterturn

6010-S Handrail w/ 7009 Returned End



IRON BALUSTER INSTALLATION GUIDE



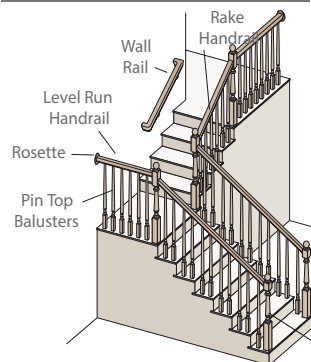
A "How-To" Guide for the
Installation of Iron Balusters.

Iron Baluster Installation

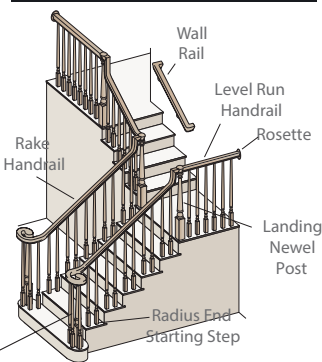
Before proceeding with the following steps, the handrail height should already be determined. Read all the steps below before beginning installation.

See "How-To Build a Staircase Like a Pro" for instructions on how to set proper handrail height.

Post-to-Post

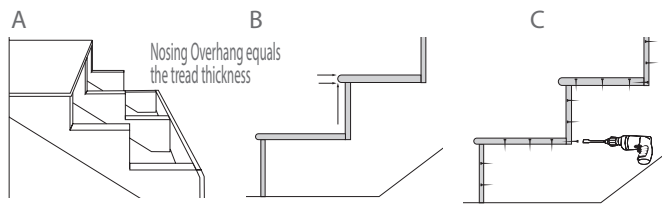


Over-the-Post



1 Tread and Riser Installation:

To properly install solid oak treads and risers, you must first remove the existing steps to expose the rough framing. Leave the beginning riser at base of steps (A). Measure and cut each step separately to ensure tight fit. (B). Pre-drill, apply construction adhesive and nail into place. For added strength, screw treads to risers from behind (C). Complete each step before continuing on to next step.

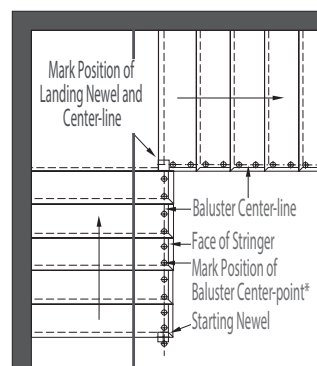


2 Basic Layout:

Marking Your Staircase for Installation

Layout your staircase directly on your treads and landings. Carefully mark Newel and Baluster positions and center-lines.

Post-to-Post



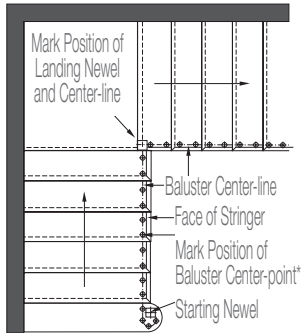
*Metal balusters should be installed no wider than 4" on center, so that a 4" sphere cannot pass through anywhere along the handrail. Check your local building codes to ensure compliance.

(Continued on next page)

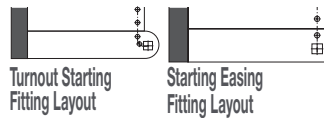
2 Basic Layout (continued from last pg):

Marking Your Staircase for Installation Layout your staircase directly on your treads and landings. Carefully mark Newel and Baluster positions and center-lines.

Over-the-Post



The balustrade center-line and newel center-points should be laid out. On a knee-wall stair, the balustrade should be centered on the knee-wall. On an open-tread stair, the center-line should be 1/2 of the baluster square in from the face of the stringer (i.e. 5/8" for a 1-1/4" baluster).

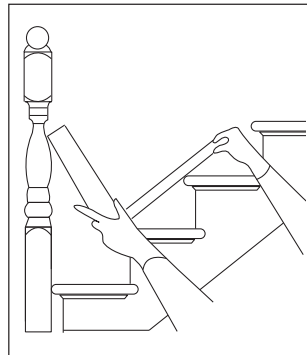
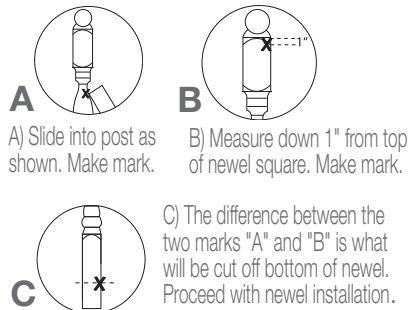


3 Newel Post Installation:

Post-to-Post

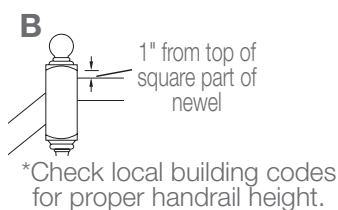
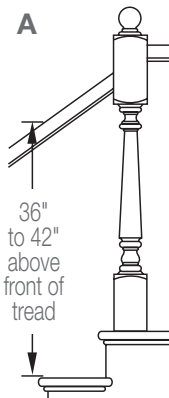
Starting Newel Height

With newel in position where it is to be mounted, slide short end of framing square along slope of stairway.



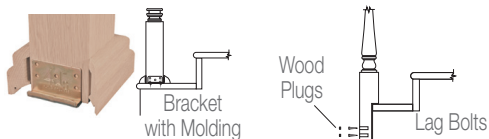
Landing Newel Height

A) Height of the handrail should be between 36" and 42". Check local building codes. B) Place the top of the handrail one inch below the top block of the newel.



Newel Post Attachment

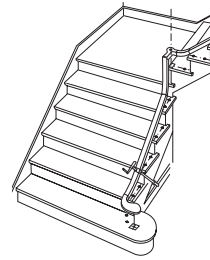
Trim and Fasten the Newel Posts using one of these methods



3 Newel Post Installation:

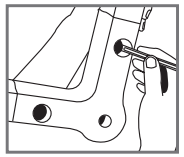
Over-the-Post

Assemble the Handrail:

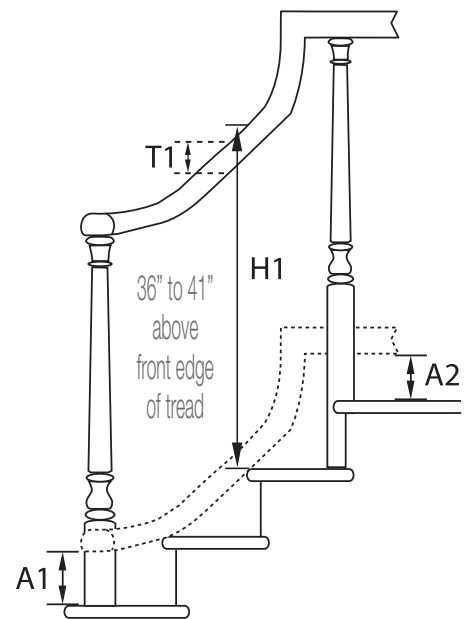
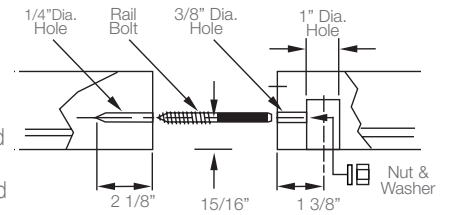


Rail Bolt Installation

Apply glue to ends. Assemble and install nut. Tighten nut with wrench. Fill access hole with wood plug.



Assemble the handrail on top of the stair treads prior to installing the newel posts. Use rail bolts and glue at each fitting connection. Complete instructions are included with fittings.



Measure and Trim Newel Posts

The rake rail height should be between 36"- 42" (H1) (check local building codes). Center the assembled handrail over the newel locations. Measure the distance between the tread and the bottom of the handrail fitting (A1 and A2). Also measure the rake rail thickness (T1). Use the following formula to calculate the starting newel height.

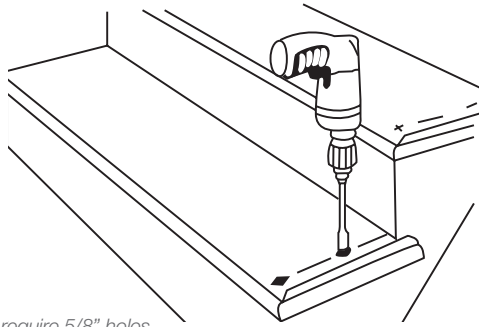
$$H1 + A1 - T1 = \text{Starting Newel Height}$$

If the newel starts from the floor or a lower tread, add that distance as well.



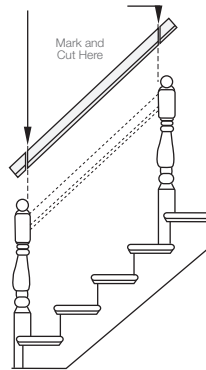
4 Measure and Trim Balusters

Mark baluster placement on treads allowing for equal spacing while following your original design. Drill holes* using 5/8" drill bit a minimum of 3/4" deep into stair treads. Make sure to keep the depths consistent.

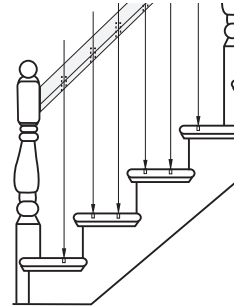


*Note: a. 1/2" balusters require 5/8" holes.
b. 5/8" balusters require 7/8" holes.

Using newels as guides, mark handrail and cut to proper length. Follow instructions for attaching newels and temporarily install handrail.



Using a plum bob, line up with the holes in the treads and mark the handrail for the top of the baluster. Drill holes using 5/8" drill bit a minimum of 3/4" deep into handrail.



5 Trim and Install Balusters

Follow the instruction on the other side of this brochure to trim and install your Iron balusters.

Replacing Wood Balusters with Iron Balusters

Choose your look ...



2 Balusters per step*



Single
Basket
Baluster



Double
Basket
Baluster



3 Balusters per step*



Rake Shoe



Flat Shoe



Single
Twist
Baluster



Double
Twist
Baluster

*Note: Building codes vary by municipality. Check with your local authorities to ensure your project meets code in your area.

Two Methods for Removing Old Balusters:

1st Method:

1. A firm twist of the baluster may be all that is necessary to remove baluster from tread and handrail. Remove any nails remaining or fasteners.
2. Once loosened, lift the baluster up into the handrail, enough to clear the stair tread at the bottom, and then tilt it to the side and pull out from the handrail.
3. If glue and/or wood still remains in the holes, a drill with a 1/2" bit can be used to remove any excess.*



2nd Method

1. Cut baluster in half with a hand or power saw.
2. Twist each half to loosen.
3. Remove each half of the baluster from the stair tread and handrail, and any nails remaining or fasteners.
4. If glue and/or wood still remains in the holes, a drill with a 1/2" bit can be used to remove any excess.*



*Note: a. 1/2" balusters require 5/8" holes.
b. 5/8" balusters require 7/8" holes.

Installing New Balusters:

Trim Iron Balusters to fit.

1. Using a metal tape measure, measure the distance from the front hole in the stair tread to the corresponding hole in the bottom of the handrail. It may be necessary to drill the hole deeper into the handrail to accommodate the baluster. Be careful to NOT drill through top of handrail.



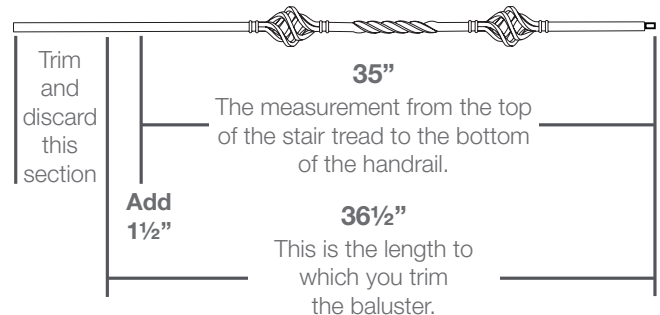
2. Do this same procedure for the all holes in the stair tread.



3. To each of these measurements add 1 1/2".

Example: 35" + 1 1/2" = 36 1/2"

This is your baluster length.



4. Using the above measurement, cut the baluster to the length needed. Be sure to cut from the bottom of your baluster. The top is the end with the rounded tip.



Baluster Top

5. A Chop Saw with a metal-cutting blade is the preferred way to cut the iron balusters. Take care when marking and cutting the balusters. Use safety glasses and follow proper safety precautions while cutting balusters. **Note:** Iron can be extremely hot after cutting.



Install and Secure Balusters

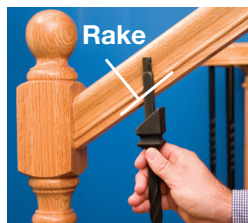
6. Before placing the balusters in the staircase, top and bottom “shoes” must be inserted on both ends. Loosen set screws to insert baluster ends. Face set screws in same direction.



7. A RAKE shoe should be placed at the top (Pin end) of each baluster. A FLAT shoe will go at the cut end of each baluster. Tighten in place a few inches from each end. This keeps them secure during placement of the baluster.



8. Make sure the “rake” of the shoe coincides with the angle of the handrail. The angle of the rake shoes may have to be adjusted with a grinder or belt sander for the best fit.



TIP: Test-fit all balusters before securing with epoxy.

9. Following manufacturers instructions, place epoxy in the stair tread hole and some on the Pin Top of the baluster.



10. Place the Pin Top into the handrail hole first and then into the stair tread hole. Straighten baluster once inserted. The Pin Top should press firmly against the front of the handrail hole, making sure that the flat shoe at the bottom squares up with the front of the step.



11. Once the epoxy has set, the rake and flat shoes can be put into position and secured with an allen wrench.

