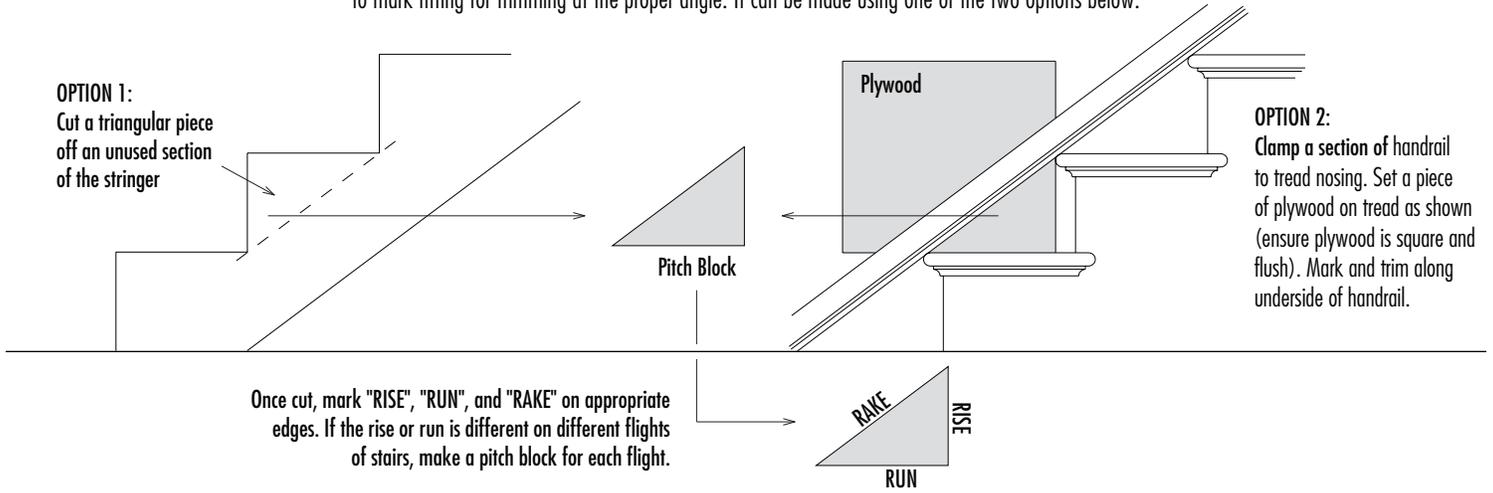


# JOINING STAIR FITTINGS TO HANDRAIL INSTRUCTIONS

## Follow these steps to determine proper cuts to stair fittings to handrail

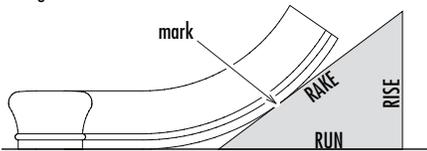
**Tools needed:** saw, drill, wood drill bits, forstner bit, screwdriver, measuring tape, clamps. Optional: drill jig

**PITCH BLOCK:** Before making any cuts to stair parts, it is important to create a pitch block to ensure proper placement and angle of all cuts. A pitch block is a triangular piece of wood used to mark fitting for trimming at the proper angle. It can be made using one of the two options below:

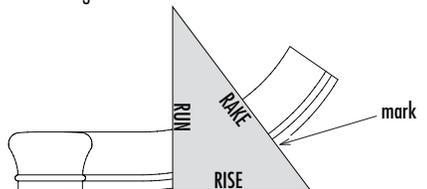


## STARTING EASING, TURNOUTS, VOLUTES (SEE REVERSE SIDE FOR 1 OR 2 RISE GOOSENECKS)

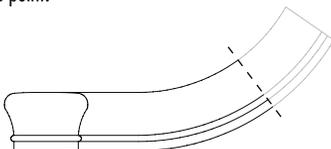
1. Set fitting (starting easing, turnout or volute) on a flat surface. Position pitch block under fitting as shown below with RUN edge on flat surface. Mark fitting at location of contact with fitting block.



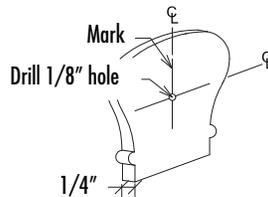
2. To determine proper cut angle, reposition the pitch block as shown below (with RISE side of pitch block on the flat surface). Align RAKE side of pitch block with mark made in step 1 and draw a line on fitting using the RAKE side of pitch block as a guide.



3. Cut fitting at guide line. Straight handrail will attach to fitting at this point.



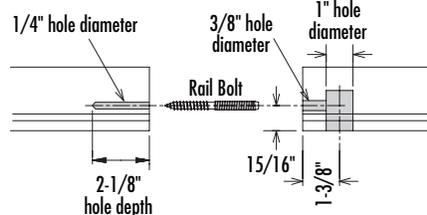
4. To ensure proper alignment of pieces to be joined, cut a 1/4" thick slice of railing to make a template. Mark the center of one face of the template with an "X" and drill a 1/8" hole through template.



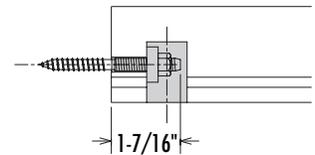
5. Use the template (marked face showing) to mark the end of one of the pieces to be joined. Use the other side of the template (marked face not showing) to mark the other piece to be joined.



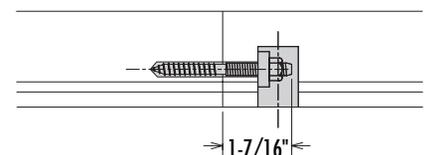
6. Using your marks, drill all holes to the depth and diameter show below. For 1" hole, use a forstner bit.



7. Access the 1-7/16" side of the rail bolt thru the 1" hole in the bottom of the rail and slide convex plastic washer on screw – ensuring plastic convex washer is flush with the hole. Then tighten nut on ensuring it seats down on the flush side of the plastic washer.



8. Temporarily assemble the parts by twisting the two pieces together using the washer and nut. DO NOT OVERTWIST! Use glue only on the final assembly.



**TO MAKE A PERMANENT BOND** use high quality wood glue or epoxy. You must move quickly to align profiles of the pieces you are joining! If glue begins to lock up before you can align profiles, untwist the joint, apply another layer of glue and twist back together.

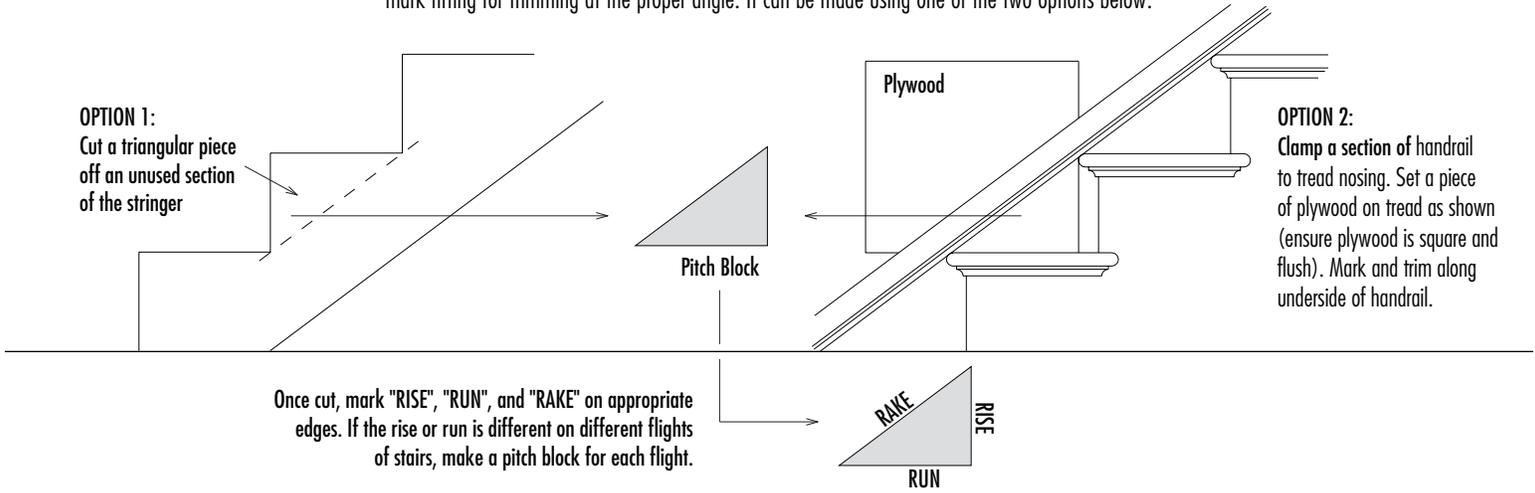
**TO MAKE A TEMPORARY BOND** apply a few drops of glue into the joint after you twist the two pieces together. Then rock the two pieces you are joining to open them up enough to allow a few drops of glue into the joint. Once delivered to the job site a strong tap on the joint will break the bond and allow you to unscrew enough to make the joint permanent.

# JOINING STAIR FITTINGS TO HANDRAIL INSTRUCTIONS

## Follow these steps to determine proper cuts to stair fittings to handrail

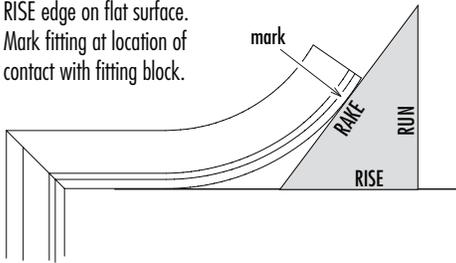
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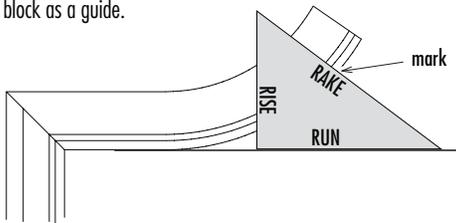


## 1 OR 2 RISE GOOSENECKS (SEE REVERSE SIDE FOR STARTING EASING, TURNOUTS, VOLUTES)

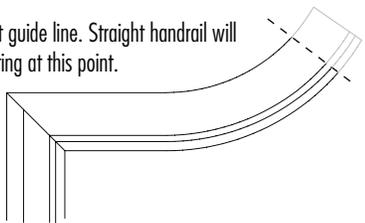
- Set gooseneck on a flat surface with vertical rise portion lying flat. Position pitch block under fitting as shown below with RISE edge on flat surface. Mark fitting at location of contact with fitting block.



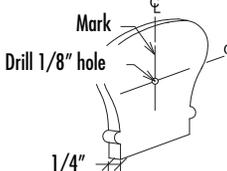
- To determine proper cut angle, reposition the pitch block as shown below (with RUN side of pitch block on the flat surface). Align RAKE side of pitch block with mark made in step 1 and draw a line on fitting using the RAKE side of pitch block as a guide.



- Cut fitting at guide line. Straight handrail will attach to fitting at this point.



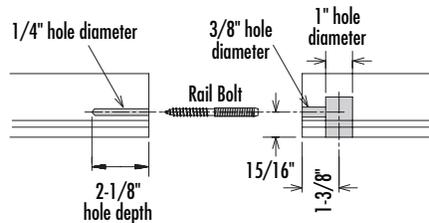
- To ensure proper alignment of pieces to be joined, cut a 1/4" thick slice of railing to make a template. Mark the center of one face of the template with an "X" and drill a 1/8" hole through template.



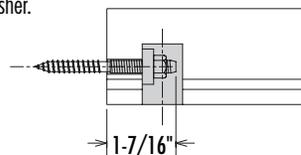
- Use the template (marked face showing) to mark the end of one of the pieces to be joined. Use the other side of the template (marked face not showing) to mark the other piece to be joined.



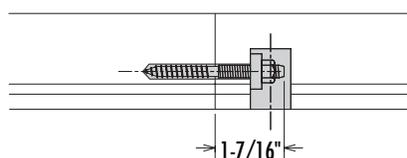
- Using your marks, drill all holes to the depth and diameter show below. For 1" hole, use a forstner bit.



- Access the 1-7/16" side of the rail bolt thru the 1" hole in the bottom of the rail and slide convex plastic washer on screw — ensuring plastic convex washer is flush with the hole. Then tighten nut on ensuring it seats down on the flush side of the plastic washer.



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### HOW TO DETERMINE PROPER "DROP" LENGTH ON 2-RISE GOOSENECK FITTINGS

All 2-rise gooseneck fittings have a 13" drop allowing for use on stairs with 6-1/2" to 8" rise.

Use the following formula:

$$8" - \boxed{\phantom{00}} \text{ FILL IN YOUR STAIRS RISE HEIGHT} = \boxed{\phantom{00}} \times 2 = \boxed{\phantom{00}}$$

SUBTRACT THIS AMOUNT FROM 10-1/2" TO DETERMINE REQUIRED DROP.

**EXAMPLE:** Your stair has a 7-1/2" rise

$$8" - 7-1/2" = 1/2" \times 2 = 1"$$

10-1/2" - 1" = 9-1/2" IS THE PROPER DROP LENGTH

