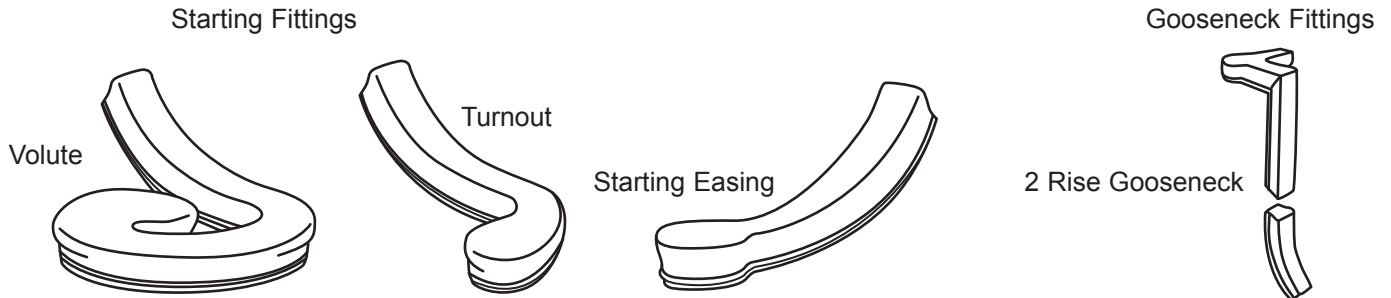


Hand Rail and Fitting Installation Guidelines

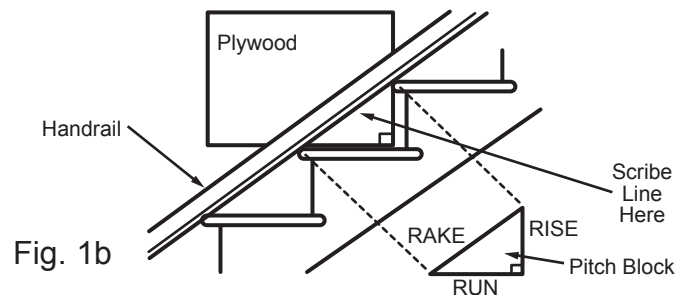
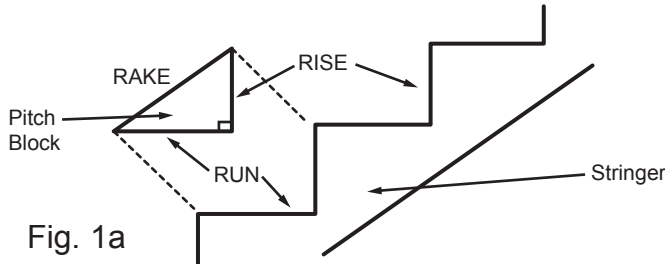
These instructions show the suggested method for cutting and attaching starting fittings and gooseneck fittings like those shown below.



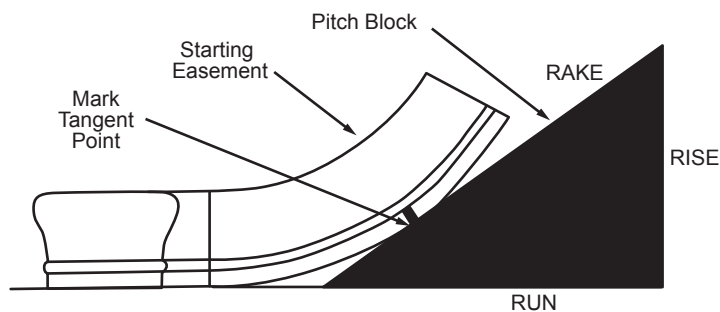
It is recommended the following tools be on hand: Hand drill with bits (1/4", 3/8", 1") 1/2" Box-end wrench, Miter box saw, Table saw or Handsaw.

Important: Please read these instructions completely before beginning installation!

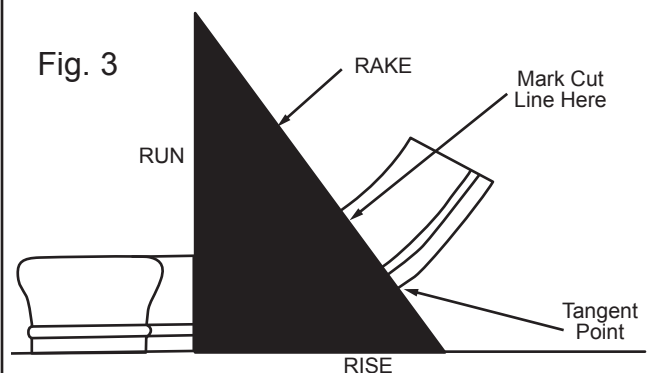
1 A **Pitch Block** can be used to mark cuts on the upeasing of the fitting. The **Pitch Block** can be taken from the stringer of the stair as shown in Fig. 1a, if one is available. If not, the **Pitch Block** can be made by laying the hand rail on the nose of the treads and setting a scrap of plywood next to the rail on the tread as shown in Fig. 1b. Make sure the corner of the board is square and is setting against the nose of the next tread. Draw a line along the bottom of the hand rail on the board. Cut along this line keeping it as straight as possible. Mark the sides of the **Pitch Block** as shown below. If the stair has more than one flight, make a **Pitch Block** for each flight.



2 Place the **Starting Fitting** on a flat surface. Slide the **Pitch Block** under the fitting with the Run side down until the Rake side contacts the bottom of the easement as shown in Fig. 2. Place a mark on the easement at the tangent point where the **Pitch Block** contacts the easement.



3 Place the **Pitch Block** next to the fitting with the Rise side down and the **Rake** side aligned with the mark made on the easement in Step 2. Scribe a line on the side of the easement along the **Rake** side of the **Pitch Block** as shown below in Fig. 3. This is the line to cut the correct angle on the easement.



4 **Fig. 4**

It is recommended that the cut be made on the easement using a power miter box. Place the **Pitch Block** on the miter box table with the **Run** side down and the **Rake** side towards the saw as shown in Fig. 4. Position the **Starting Fitting** in the saw and slide the **Pitch Block** under the fitting to help hold it at the proper angle. Always double check your marks before cutting.

5

Make a template to mark the location of the Rail Bolt by cutting a 3/16" piece off the end of a piece of hand rail. Center and drill a small hole 15/16" up from the bottom of the rail as shown in Fig. 5. Align the template on the end of the hand rail and the fitting easement. Mark the location to drill the hole for the **Rail Bolt** on each.

Note: Always assemble the balustrade completely without glue to make sure everything fits and then disassemble the balustrade and reassemble with glue.

6

Drill a 1/4" Dia. hole 2 1/8" deep into the **Fitting Easement**. Install the woodscrew end of the **Rail Bolt** into the easement until 1 7/16" of it remains exposed as shown in Fig. 6a.

Drill a 1" Dia. hole 1 1/2" deep in the bottom of the hand rail as shown in Fig. 6b.

Drill a 3/8" Dia. hole in the end of the hand rail into the 1" Dia. hole as shown in Fig. 6b and 6c.

Attach the fitting onto the end of the hand rail using the Rail Bolt as shown in Fig. 6a. Align the profiles and tighten the nut with a 1/2" box-end wrench. Before final assembly with glue, drive two small finish nails in the end of the hand rail as shown in Fig. 6b and 6c. Cut off the heads of the nails leaving about 1/8" of the nail exposed. The nails will help keep the profiles aligned until the glue sets.

Fig. 6a

Fig. 6b

Fig. 6c

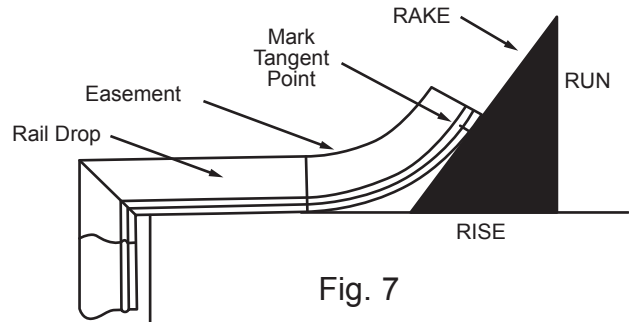
TIP!
ZipBolt makes rail installation a breeze!

Hand Rails and Fittings

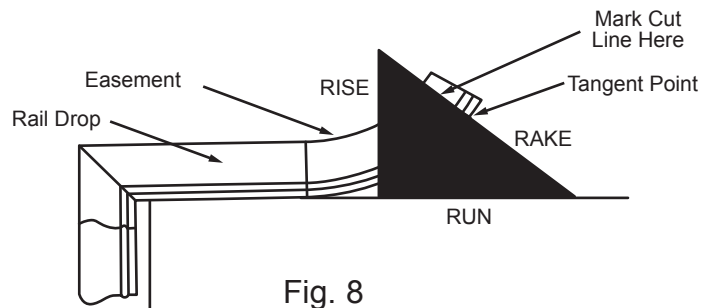
Gooseneck Fitting Installation Instructions

When installing a 2-Rise gooseneck, cut the rail drop to length and attach the easement to the rail drop before continuing on to the next step.

- 1 Place the **Gooseneck Fitting** on a flat surface. Slide the **Pitch Block** under the fitting with the Rise side down until the Rake side contacts the bottom of the easement as shown in Fig. 7. Place a mark on the easement at the tangent point where the **Pitch Block** contacts the easement.



- 2 Place the **Pitch Block** next to the fitting with the **Run** side down and the **Rake** side aligned with the mark made on the easement in Step 1. Scribe a line on the side of the easement along the **Rake** side of the **Pitch Block** as shown below in Fig. 8. This is the line to cut the correct angle on the easement.



- 3 It is recommended that the cut be made on the easement using a power miter box. Place the **Pitch Block** on the miter box table with the Rise side down and the Rake side towards the saw as shown in Fig. 9. Position the **Gooseneck Fitting** in the saw and slide the **Pitch Block** under the fitting to help hold it at the proper cutting angle. Always double check your marks before cutting.

