

Steps

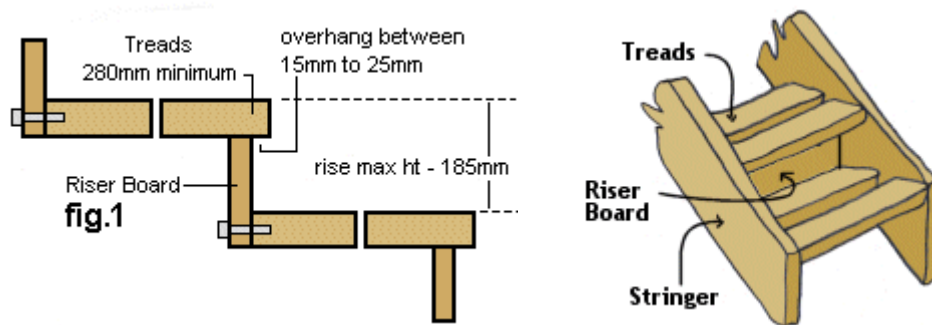
How to Make Standard Exterior Timber Steps

In this tutorial we show you how to make standard exterior steps 900mm wide, coming off a deck 900mm high. **note:** All steps higher than one metre off the ground require a building consent and a council approved handrail.

As the steps we are going to build do not exceed 900mm from the ground, a building consent is not (necessarily) required. However we are going to go by the rules anyway:

Step Rules:

- 1 Treads must be at least 280mm deep.
- 2 Rises must be a maximum of 185mm high.
- 3 Front of tread must overlap the back of tread below by between 15mm to 25mm.
- 4 There can be no gap more than 100mm between the vertical distance of treads, therefore riser boards will be needed to close any gaps. **see Fig1 below**



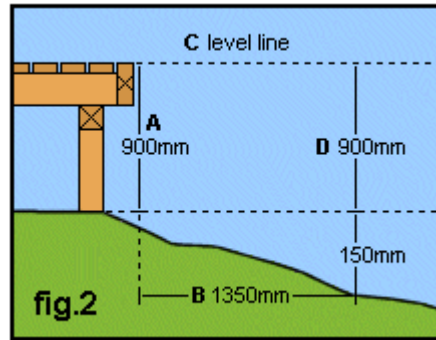
Getting Started:

To start off find the overall height from the top to the bottom of the steps.

We know the height of the deck is 900mm above ground, but the ground coming away from the deck might not necessarily be level and the slope of the ground will affect the overall height of the steps.

To find the true overall height of the steps first measure the height of the deck from the ground where the steps are to fit. (we know that measurement is 900mm). Then measure out from the deck (in the direction the steps are to go) in a level line, one and a half times the deck height measurement. (Approxamately). In this case, 1350mm.

See Fig 2



(A) Height of deck off ground. (900mm)

(B) Distance out from deck where steps will finish. This measurement is 1.5x measurement A. (900x1.5 = 1350mm)

(C) Level line from top of deck.

(D) This height is the overall height of steps. (900mm + 150mm ground slope = 1050mm)
 Now we know the overall height of our steps which is 1050mm. Next work out the height of each rise. This is the vertical distance from the top of one tread, to the top of the tread above it. We know the maximum height of each rise can be 185mm max. Knowing this we need to divide into 1050mm (overall step height) to get an even measurement of 185mm or less. In this case, the even measurement is 175mm, as 175 divides into 1050mm 6 times. This means that there will be six rises, each 175mm, which gives us a total height of 1050mm.

We have now established the dimensions of our steps.

Six Rises at 175mm and five treads across at 280mm. (Always make the treads 280mm regardless of the rise measurements).

The Timber to Use:

Stringers - Dressed H3 Treated Pine, 250x50 (finishes 240x46)

Treads - Dressed H3 Treated Pine 150x50, two per tread (finishes 145x46).

Riser boards - 150x19 H3 rough sawn, which is just standard fence pales.

All the above timber is ready available from any timber merchant.

Quantities:

Stringers - 250x50, two at 2.1m

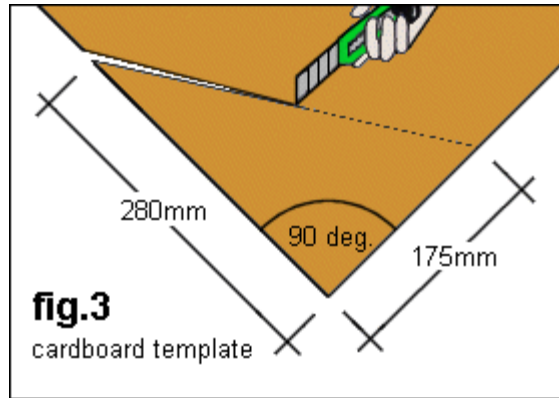
Treads - 150x50, ten at 0.9m

Riser Boards - 150x19, three at 1.8m (standard length)

Building the Steps:

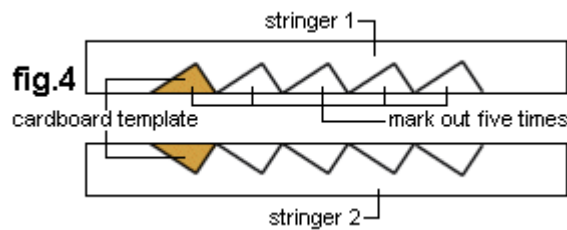
Step 1: Make a simple template in order to mark out on the stringers, The tread positions.

This is a relatively simple task, take a piece of cardboard 300mm square or larger (alternatively you can use hardboard, thin plywood or anything similar). From the cardboard cut out a triangular piece as shown in the following diagram. **fig. 3**



Step 2: Lay out the two stringers (250x50 x 2400) flat on a couple of saw stools, on even ground or on the floor.

Hold the cardboard template, with its longest edge flush to one edge of the stringer, approx 300mm in from one end, and pencil mark around the template. Repeat this action five times on each stringer, as shown in the diagram below. **fig. 4**



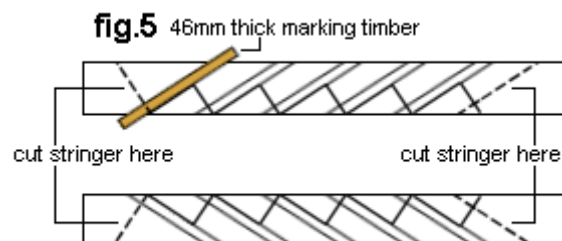
Stringer 1 must be marked mirroring stringer 2.

step 3: To continue marking out for the treads, use a piece of timber about 600mm long, and the same thickness as the treads (46mm) This piece of timber is to be used only for marking and can then be discarded.

Hold this piece of timber flush on one of the tread pencil lines marked on the stringer.

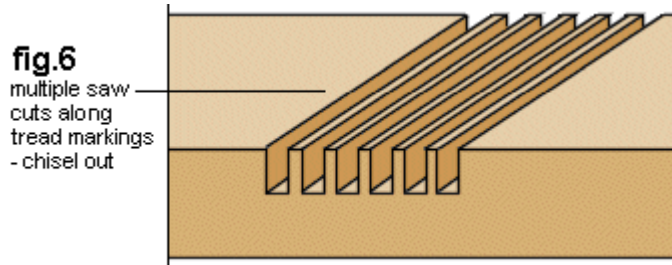
Mark each side of the 46mm thick timber across full width of the stringers, as on fig.5 below.

Repeat this action to all tread lines, on both stringers to get an effect as in the diagram below. **fig.5**



Building the Steps Cont...

Step 5: Now that we have the tread lines marked out on the stringers, we need to check (rebate) them out. This can be achieved by setting the blade depth on our circular saw to between 15mm and 20mm, and making repeated cuts along and between the tread markings on the stringers. See diagram below. **fig.6**

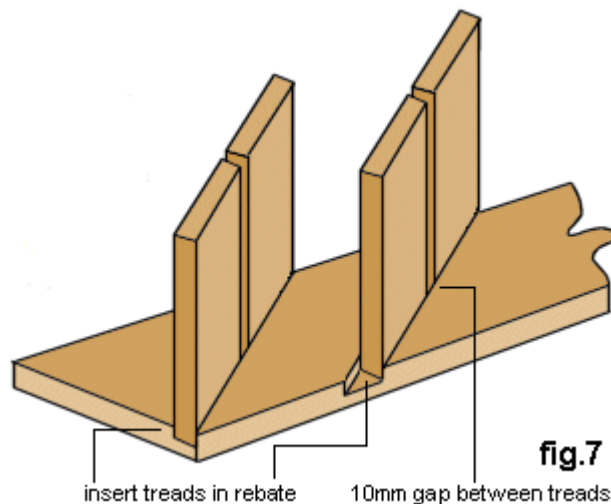


Repeat this action to all tread markings on both stringers.

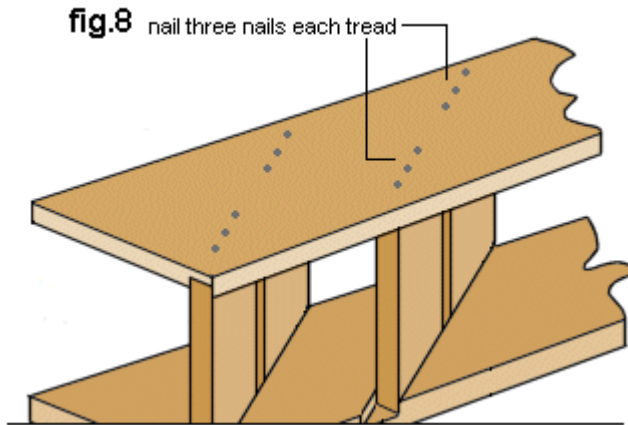
Finish by chiselling out the grooves with a sharp chissel. The more saw cuts, the easier the chisselling.

Step 6: Cut all tread timber, 150x50, to the required length, in this case 840mm. (10 in all, 2 per tread)

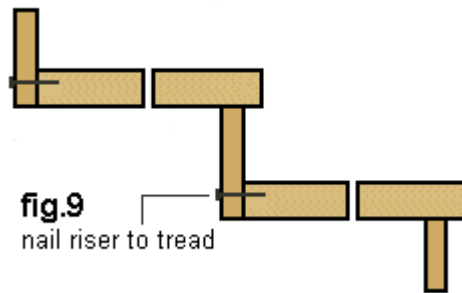
Step 7: Lay one of the stringers on even ground or the floor and insert the treads into the rebated grooves. **fig.7**



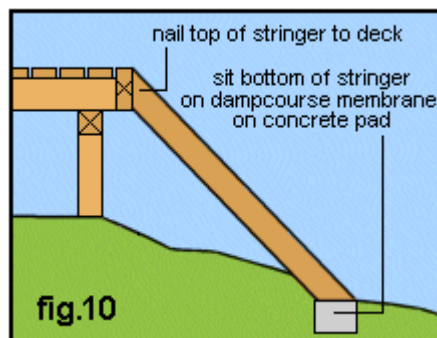
Step 8: Place the other stringer on top of the treads mirroring the bottom stringer. Nail through the stringer into the treads using 100mm or 90mm galvanised jolthead nails. 3 nails per side per piece of tread timber. **see fig.8**



Step 9: Cut riser boards and nail against back of treads. **see fig.9**



Step 10: Fix the steps in place. Nail the top of the stringers to the deck structure. Temporarily pack with blocks of wood under the bottom tread until treads are level. Dig a hole 250x250x250 under each stringer and fill with concrete. Place a galvanised wire or bracket into the wet concrete against the the two stringers. When the concrete has cured (2 days) place a piece of dampcourse membrane, melthoid or similar under the stringer and on top of the concrete pad. This prevents moisture from the concrete pad going to the timber. **See fig.10**



Remove temporary packers from under bottom tread and nail or staple the galvanised wire or bracket to the stringers.

