

Benchmark

Fitting Instructions

Important Information

The following instructions are for installing the Cheshire Mouldings **Benchmark Range**.

Cheshire Mouldings **Benchmark Range** has been designed to suit stair pitches between **38° and 45°**.

Cheshire Mouldings Benchmark Range has been independently tested by FIRA and when installed in accordance with these instructions, conforms with Building Regulations for balustrades at 900mm high and 0.36KN/m domestic loadings.

For balustrade runs greater than 2400mm long, an intermediate newel is required

As only official Cheshire Mouldings parts have been tested, the use of non Cheshire Mouldings products used in conjunction with this system cannot be guaranteed to conform.

All components should be inspected BEFORE installation commences for any damage and to check all your items are correct before installation. While care is taken to match our engineered timber products, timber is a natural product where the colour, grain structure, can vary.

While we do everything possible to ensure the information contained within these fitting instructions are correct, they are only a general guide, every situation is different. Please read through the fitting instruction fully before commencing any fitting, Cheshire Mouldings will not be held responsible for any mistakes made through incorrect fitting. You will need to take extra care when installing pre-finished components and some touching up will undoubtedly be necessary around the cut areas.

If you have any queries please contact our technical helpline on **0800 085 3475**.

Please note:

All components should be inspected BEFORE installation commences for any damage, as Cheshire Mouldings cannot be held responsible for any damage caused during installation

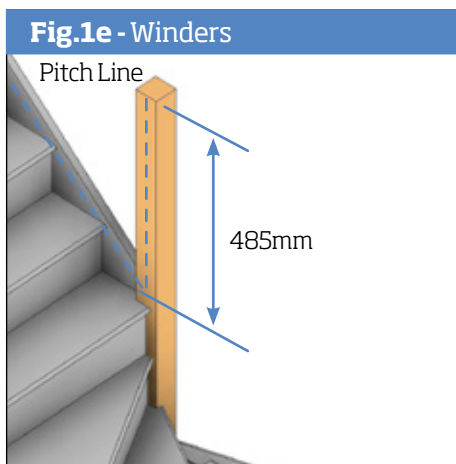
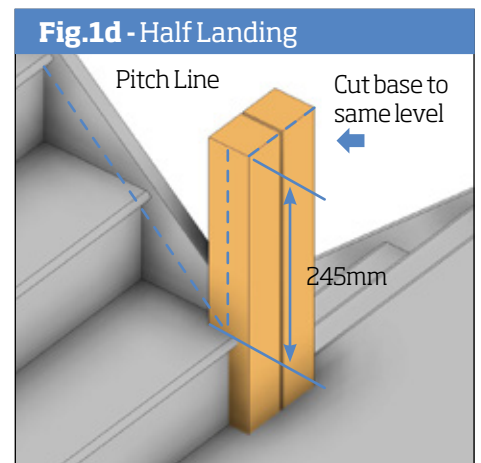
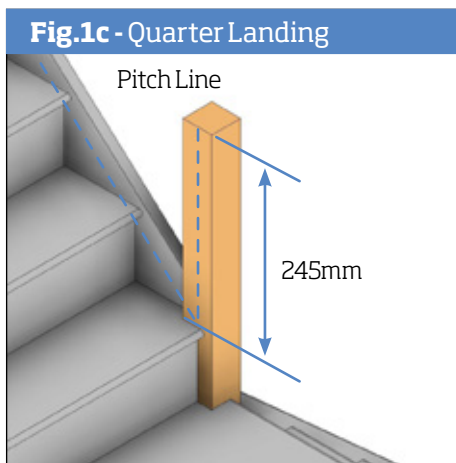
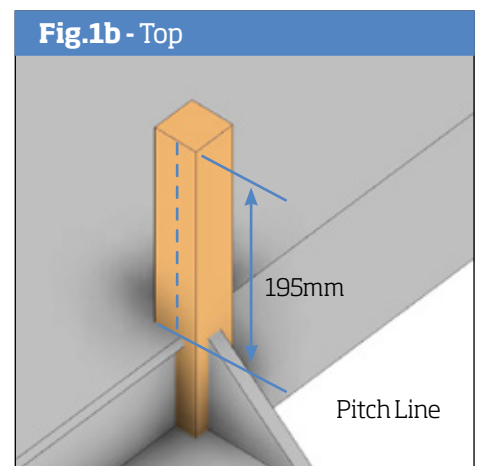
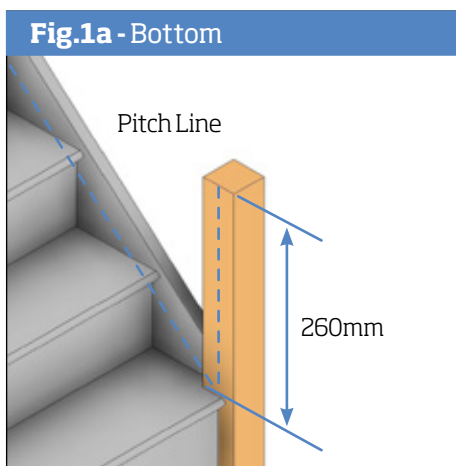
Tools required:

Saw, Battery drill, Drill bits - ø4mm, ø6mm, ø6.5mm, ø7.5mm, ø9mm, ø12mm, ø25mm, ø30mm, ø50.8mm, 7mm spanner, 5mm allen key, adjustable bevel/protractor, square, spirit level, tape measure/1m steel ruler, PVA glue, Multi Purpose Adhesive i.e No Nails, clear silicon sealant.

These instructions use the NEWFIXKIT handrail fixing kit as standard.

These instructions are based on the existing location of newel bases/posts being central to string and riser. If the bases/posts are mounted to the side of the string, you may have to remove and install new bases/posts to correct location. **Note** - please check whether the newel bases/posts are non supporting or form a structural part of the stairs before removing them (if in doubt, please contact our Technical Department).

Please use cut off points shown below for all newel bases - bottom base (**Fig.1a**), top base (**Fig.1b**), quarter landing base (**Fig.1c**), half landing bases (**Fig.1d**), winders base (**Fig.1e**).



Installing Stair Glass Panels

Ensure that newel bases are located central to string and central to riser (**Fig.2**).

Newel bases need to be minimum 82mm x 82mm square. If you are using 90mm x 90mm newel posts, the newel base will need building up on all 4 sides using suitable material so it matches the newel post section size (**Fig.3**).

Once all existing bases have been cut to correct height and the top face is flat and at 90 degrees to sides, they need to be drilled in order to accept the newel post spigot. To find centre, mark 2 diagonal lines from corner to corner (**Fig.4**).

Where lines intersect, drill a $\varnothing 50.8$ mm hole to a depth of 85mm (**Fig.5**).

Fig.2

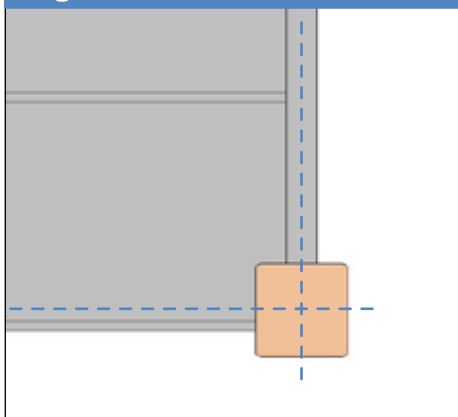


Fig.3

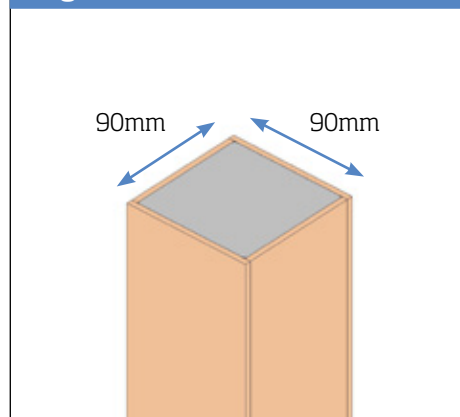


Fig.4

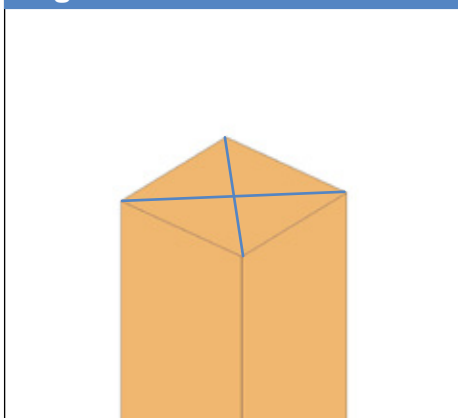
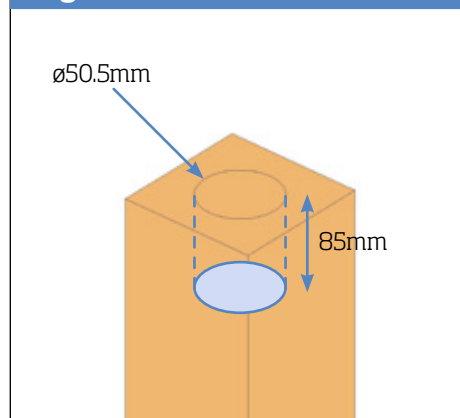


Fig.5

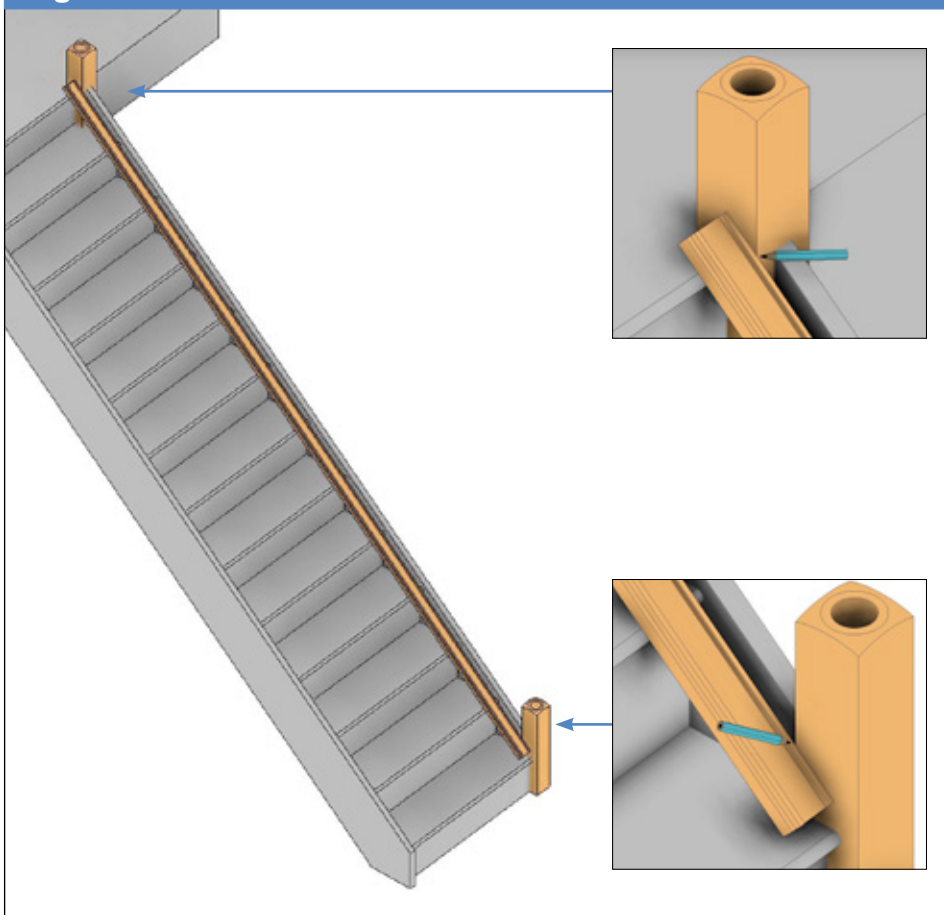


Cutting handrails and baserails

Once newel bases have been checked, place a length of baserail on the stair nosing's and push up to sides of top and bottom newel bases. Mark baserail where it meets the newel bases (**Fig.6**). Mark and cut to length.

Repeat the procedure for the handrail. Mark and cut to length. Check fit between newel bases.

Fig.6



To fix baserail, run a bead of glue along the top of the string and offer baserail on top of string ensuring it is central to the newel base faces at top and bottom of flight. Drill through rail rebate into string, countersink and fix to top of string using suitable screws.

To prepare handrail length for Handrail Fix Kit, find and mark horizontal and vertical centre on cut rail face on both rail ends (**Fig.7**).

Where lines intersect, drill a $\varnothing 12\text{mm}$ hole to a depth of 10mm. Next, drill a $\varnothing 6.5\text{mm}$ hole (for softwood) or a $\varnothing 7.5\text{mm}$ hole (for hardwood) to a depth of 65mm (**Fig.8**).

Once both rail ends have been drilled, insert the wood screw side of the fixing bolt into the previously drilled hole using suitable spanner. Wind screw in clockwise rotation until the knuckle pivot is inserted halfway past the rail face (**Fig.9**).

Once inserted, ensure that the rail fixing bolt is rotated so the engineered bolt is at 90 degrees to rail face (**Fig.10**).

Fig.7

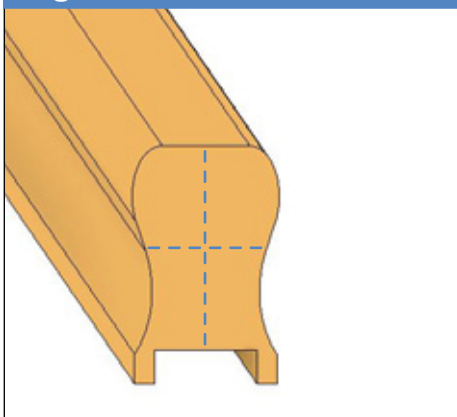


Fig.8

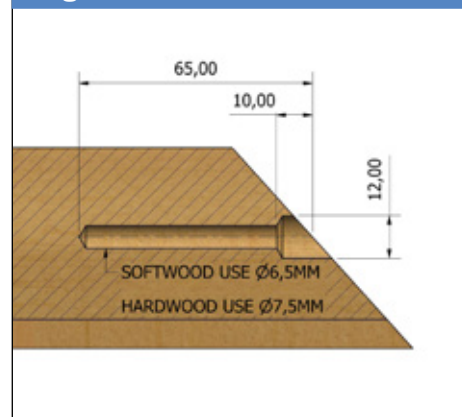


Fig.9

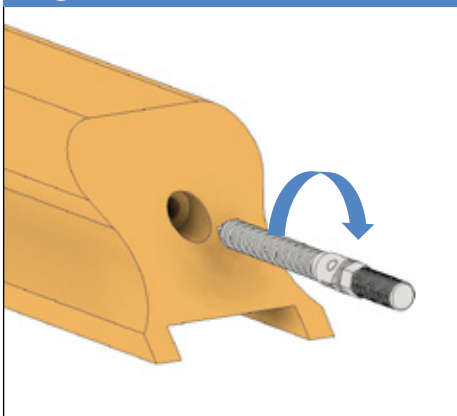
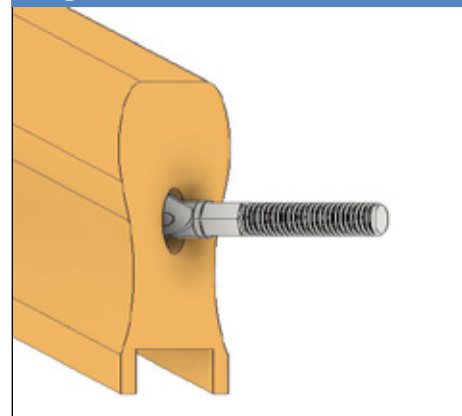


Fig.10



Fixing handrail to newel post

Insert a newel post into top and bottom newel bases (**Fig.11**).

Where the pitch line intersects the centre of the newel base, measure up 905mm and mark on newel post head. Establish and mark centre of newel post head and mark so it intersects 905mm mark (**Fig.12**).

Using an adjustable bevel, place up against baserail and side of newel base (**Fig.13**). Take adjustable bevel and transfer to newel post head so the blade passes through intersection point. Draw a line through newel head. This represents where top of handrail will be located (**Fig.14**).

Fig.11

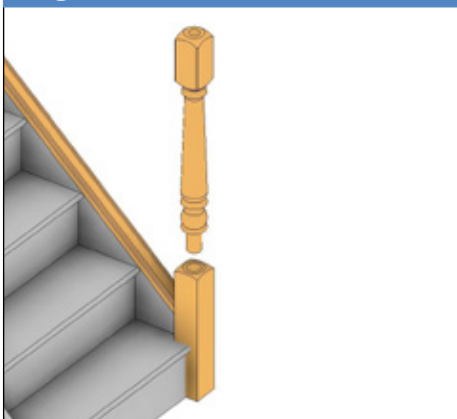


Fig.12

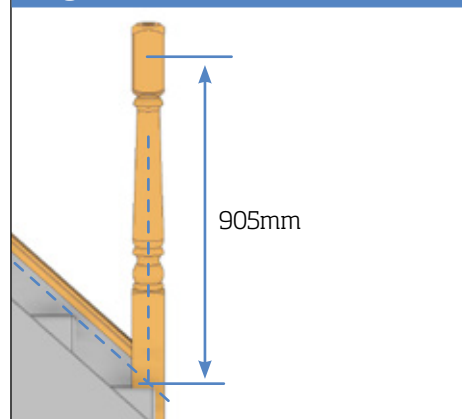


Fig.13

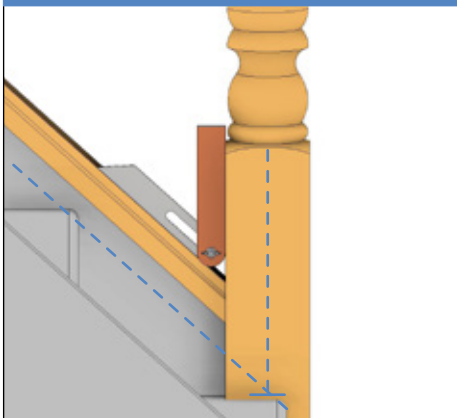
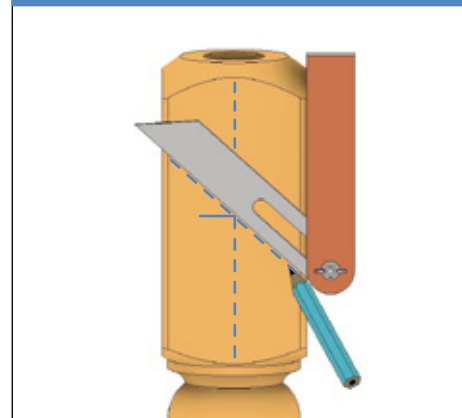


Fig.14



Next, take assembled handrail and offer between newel posts so the top of the handrail is aligned with adjustable bevel lines on the newel head and the rail fix bolts are to the side of the post. Mark location of rail bolts on top and bottom newel post heads (**Fig.15**).

Using a square, strike a line through the bolt mark (**Fig.16**).

Measure in 25mm from face along the line and mark (**Fig.17**).

Drill a $\varnothing 25\text{mm}$ hole, where lines intersect, to a depth of 60mm (**Fig.18**).

Repeat for top newel post.

Using a square, transfer the centre line across the face of the newel post that faces up the stairs and mark vertical centre line of newel head (**Fig.19**).

Drill a $\varnothing 12\text{mm}$ hole until it breaks through into the previously drilled 25mm hole (**Fig.20**). Repeat at top post.

Remove newel posts from newel bases and fix to handrail.

Apply pva glue to rail faces then Insert threaded bolt into 12mm hole and insert locking nut into 25mm hole and tighten using 5mm allen key (**Fig.21**).

Apply proprietary gap filling adhesive to inside of newel base holes (**Fig.22**).

Fig.15

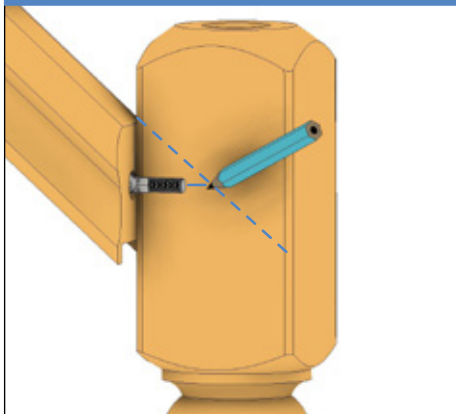


Fig.16

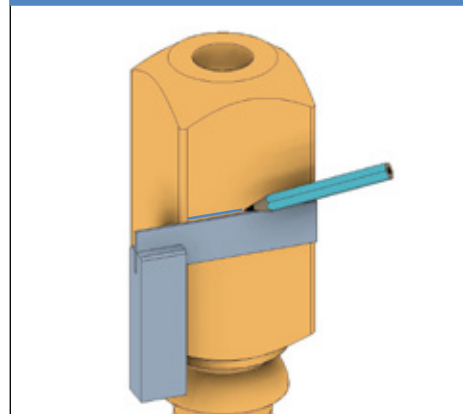


Fig.17

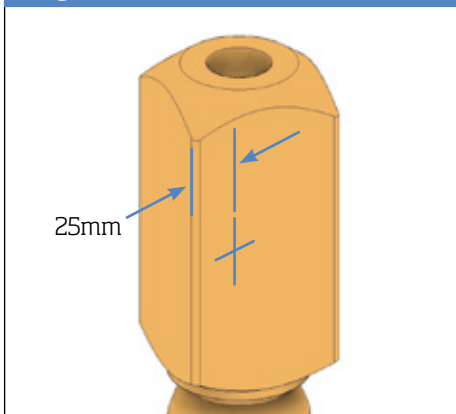


Fig.18

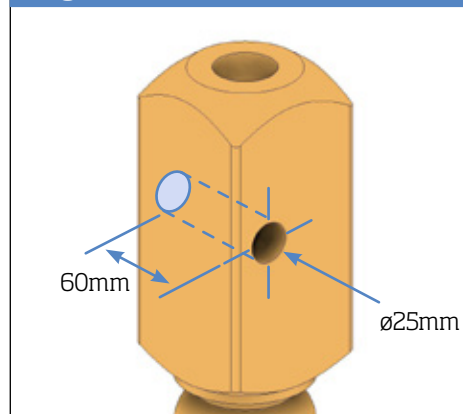


Fig.19

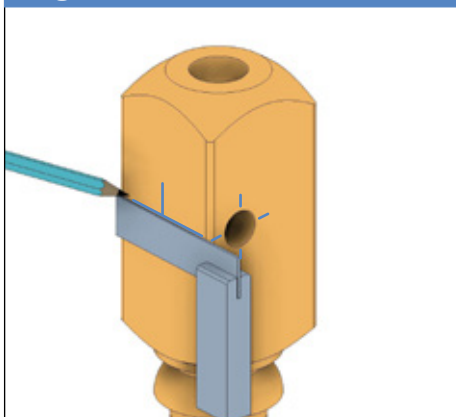


Fig.20

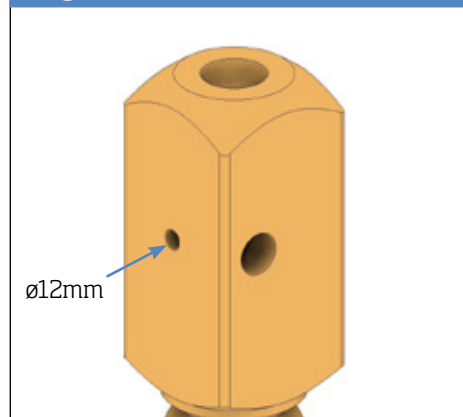


Fig.21

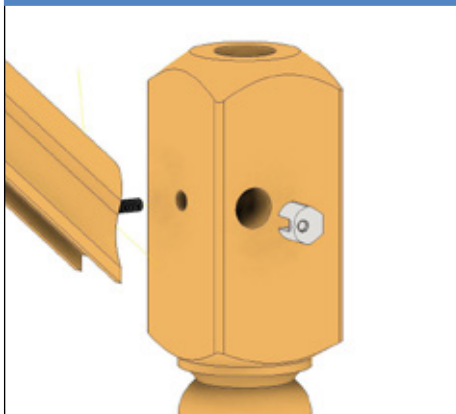


Fig.22



Installing Spindles

Place a spindle to the side of the rails and check it is perpendicular using a spirit level. Mark spindle top and bottom and cut to the angle of the stairs (**Fig.25**).

Place in handrail and baserail rebates and check size and that it is perpendicular. Next, run the spindle up the length of the stairs in rail rebates, checking that the size and fit is consistent.

To establish how many spindles are required and fillet lengths,

- 1 - Measure length of baserail.
- 2 - Select the pitch of your stairs.
- 3 - Divide the distance by the divider and round the figure down to next whole number to get number of spindles required.
- 4 - Multiply this number by the corresponding diagonal distance.
- 5 - Subtract this number from original baserail measurement.
- 6 - To get fillet length, divide the original baserail length by number of spindles plus 1.

Example (using 32mm spindles on 40 degree stair pitch)

1. Baserail = 3450mm
2. Pitch of stairs = 40 degrees
3. $3450\text{mm}/139$ (see table) = 24.8 rounded down to 24 (spindles)
4. 24×41.8 (see table) = 1003.2
5. $3450\text{mm} - 1003.2 = 2446.8\text{mm}$
6. $2446.8/25$ (24 spindles +1) = 97.9mm fillet length.

Cut all spindles using initial cut spindle as a template. Cut all fillets (**Fig.26**). Dry fit 2 spindles and fillet to check gap. If it is greater than 99mm, add another spindle and recalculate.

Glue and pin first fillets into rail grooves then work up the stairs gluing and pinning the remaining spindles and fillets (**Figs 27 & 28**).

32mm Spindles

PITCH	32MM DIAGONAL	DIVIDER
38°	40.6mm	135
39°	41.2mm	137
40°	41.8mm	139
41°	42.4mm	141
42°	43.1mm	143
43°	43.7mm	145
44°	44.5mm	147
45°	45.2mm	149

41mm Spindles

PITCH	41MM DIAGONAL	DIVIDER
38°	52.0mm	148
39°	52.8mm	150
40°	53.5mm	152
41°	54.3mm	154
42°	55.2mm	156
43°	56.1mm	158
44°	57.0mm	160
45°	58.0mm	162

Fig.23

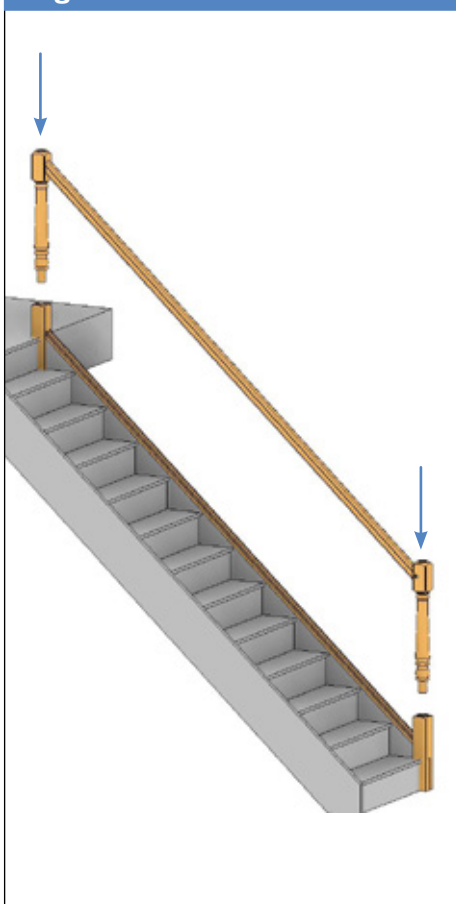


Fig.24

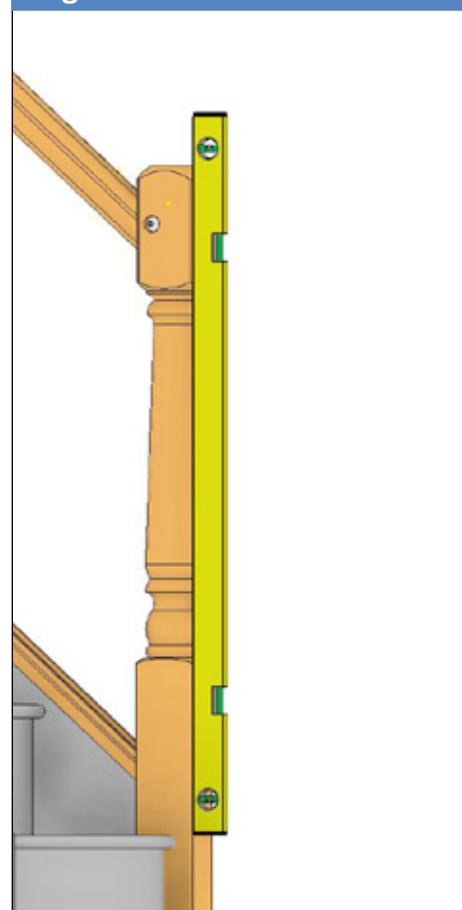


Fig.25

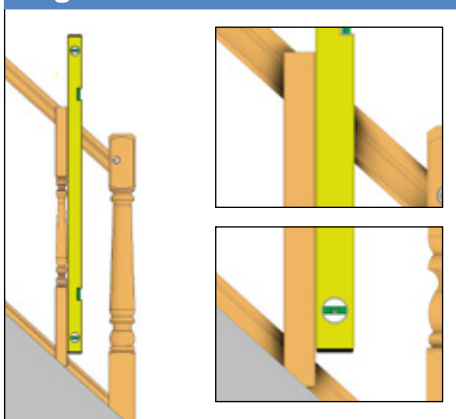


Fig.26

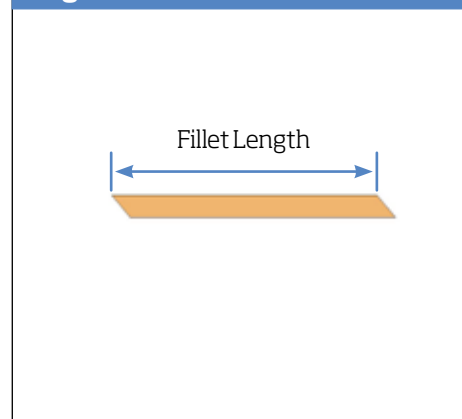
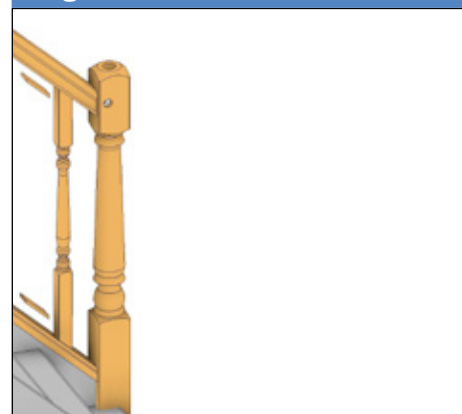


Fig.27



Fig.28



Installing on Landing

Set the half newel post to the wall at the same height as the newel post at the top of the stairs and secure.

Measure up 905mm from the floor and mark height across newel post heads.

Run tram marks to establish length and location of baserail (**Fig.29**).

Cut and mitre baserail to length. Drill and countersink through baserail groove and fix to floor (**Fig.30**).

For return landings, cut a LQT level quarter turn fitting to size and place on top of baserail and up against newel at top of stairs. Measure distance from end face of fitting to half newel post. Using this measurement, cut handrail to length.

To fix fitting to handrail, find and mark vertical and horizontal centres on LQT face. Where line intersect, drill a 6mm dia hole to a depth of 35mm. Take the rail bolt with the nut wound down to the middle and insert into 6mm dia hole using a spanner (**Fig.31**).

To prepare the handrail to accept the fitting, in the rebate measure in 30mm from the face of the handrail and mark. Find centre of rebate and mark. Drill a 30mm dia hole approx. 10mm past the centreline. To ensure you do not drill too deep, offer the drill bit up to the rail face and place some tape around the drill bit as a depth gauge.

Next measure and mark vertical and horizontal centres on handrail face. Where the lines intersect, drill a 9mm dia hole until it breaks through into the previously drilled 30mm dia hole (**Fig.32**).

Apply glue to mating faces. Insert nut and washer into 30mm access hole in handrail and offer parts together. Ensuring the parts are perfectly aligned and flush, tighten nut until joint is solid (**Fig.33**).

Next, install rail fixing bolts to both ends of the handrail assembly following same procedure on stairs (**Ref Figs 7-10**).

Offer handrail and fitting assembly up to newel posts so top of handrail is aligned with 905mm height line and mark location of rail bolts onto side of newel heads (**Fig.34**).

To fix, follow same procedure used on stairs (**Ref Figs 15-21**).

Fig.29

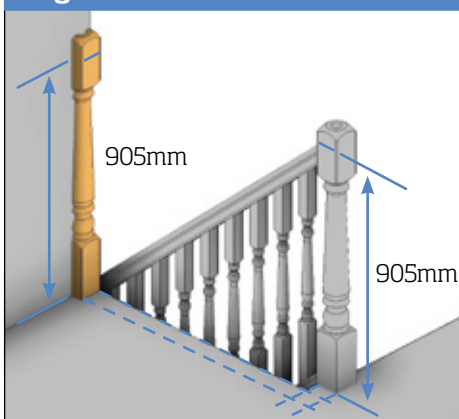


Fig.30

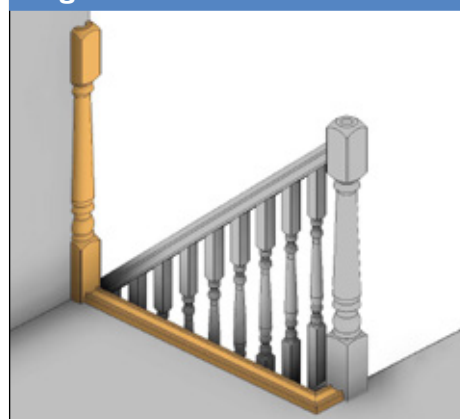


Fig.31 - Fitting

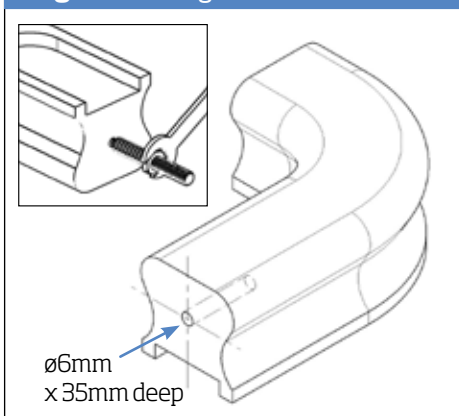


Fig.32 - Handrail

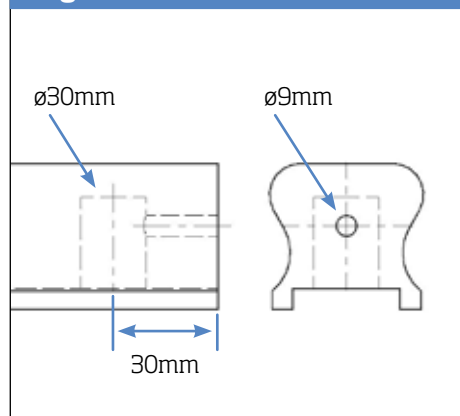


Fig.33

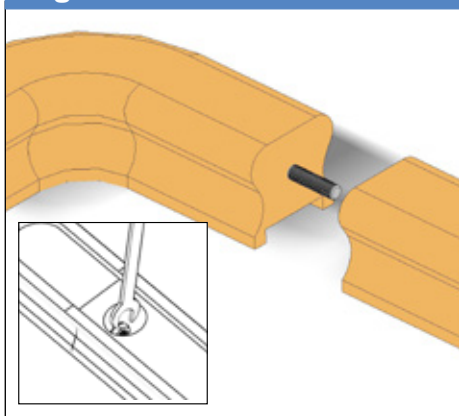
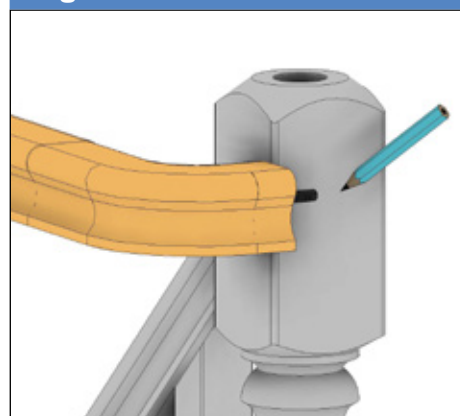


Fig.34



Installing spindles

Follow same procedure as used on stairs to cut spindle to length and follow same checks.

To establish how many spindles are required and fillet lengths,

- 1 - Measure length of baserail and divide by 112 for 32mm spindles and divide by 121 for 41mm spindles.
- 2 - Round figure up to next whole number.
- 3 - Multiply this number by spindle thickness.
- 4 - Subtract number from original base ail length.
- 5 - Divide measurement by number of spindles plus 1.

Example (using 32mm spindles)

1. Baserail = 1000mm
2. $1000\text{mm}/112 = 8.9$
(round up to next number = 9)
3. $9 \times 32\text{mm} = 288\text{mm}$
4. $1000 - 288 = 712\text{mm}$
5. $712/10$ (9 spindles plus 1)
= 71.2mm fillet length.

Cut all spindles and fillets to length.

Starting at one end glue and pin all spindles and fillets until run is complete (**Fig.35**).

Fig.35



Installing shadow cap

Using a pencil and straight edge, mark the centre of the top of newel post by drawing lines from corner to corner. Repeat on underside of shadow cap (**Fig 36**).

Offset the centre line by measuring and marking 25mm each side. Repeat on shadow cap (**Fig 37**).

Where the 25mm offset lines intersect the centre line on top of newel post, drill 2 x 10mm dia holes to a depth of 30mm. Repeat drilling operation for shadow cap but to a drill depth of 15mm (**Fig 38**).

Dry fix dowels into top of newel and offer shadow cap onto dowels to check fit and alignment (**Fig 39**).

Fig.36

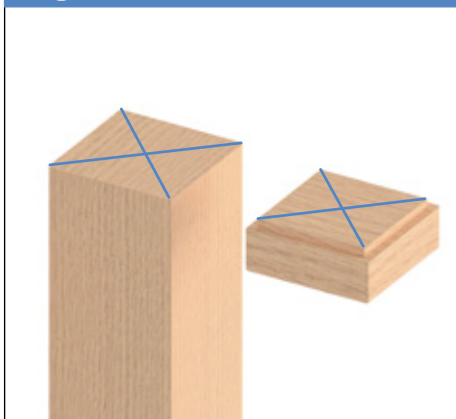


Fig.37

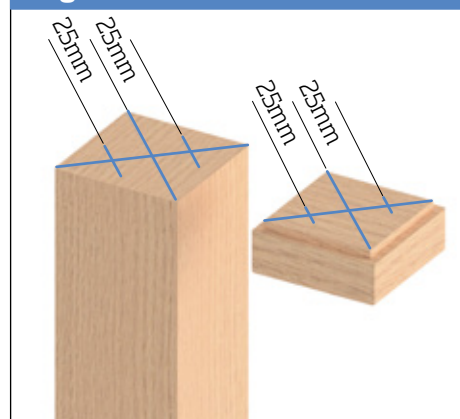


Fig.38

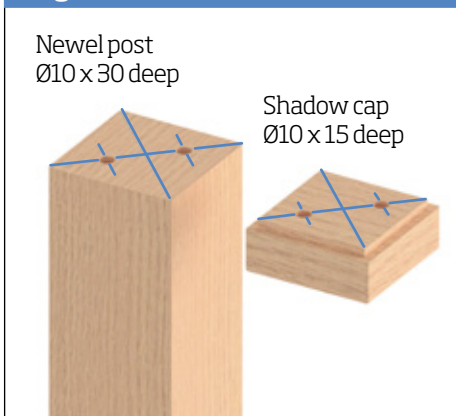


Fig.39



Remove dowels and apply adhesive to newel post and shadow cap holes and apply a run of adhesive to top of newel post, allowing for the rebate on the shadow cap (**Fig 40**). Gently tap dowels back into top of newel post.

Offer shadow cap onto top of newel post until fully down (**Fig 41**).

For half newels, measure and mark centre line of post. Then measure and mark a 20mm line from the back of the newel post. Offset the centre line 25mm each side. Repeat for shadow cap.

Drill 10mm dia holes at intersection points to depth of 30mm on the half newel and to a depth of 15mm on shadow cap (**Fig 42**).

Check fit then apply adhesive as detailed above.

Offer shadow cap to top of newel until fully down (**Fig 43**).

Fig.40

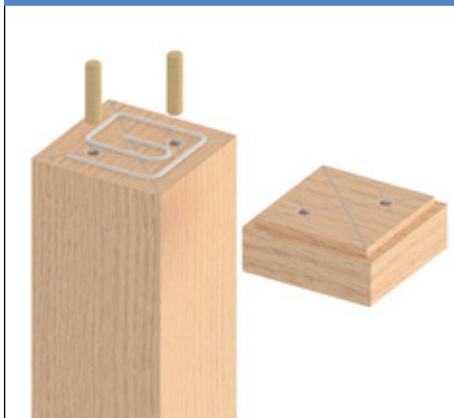


Fig.41



Fig.42

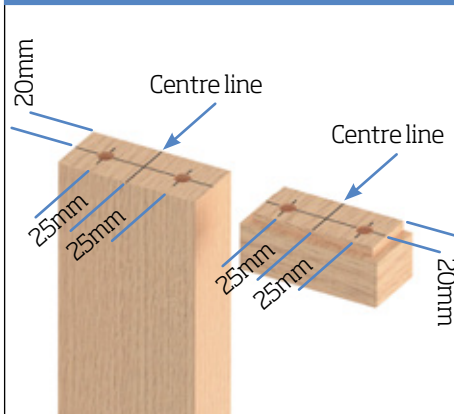


Fig.43



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