

The Richard Burbidge Outdoor Balustrade Hardwood Range comprises 3 systems, **Hardwood Colonial, Hardwood Square and Hardwood Flat Baluster**. All 3 systems use the LD335 Twist Bracket with hardwood cover cap to fix the handrail to newel posts.

The 3 Hardwood systems are suitable and tested for use on both ground level domestic (low level) and raised level domestic (high level) deck installations.

A low level domestic deck is any deck at ground and up to 600mm above ground and requires handrail heights of 900mm for both steps and horizontal balustrades. A high level domestic deck is any deck higher than 600mm above ground requiring handrail heights of 900mm for balustrades guarding steps and 1100mm handrail heights for horizontal balustrades.

The Hardwood Range and Twist Bracket 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 and 1100mm high balustrades and 0.74kN/m domestic loadings using the LD754 handrail at the maximum supplied length of 1800mm between newels.

Before commencing your installation of the Hardwood range using the twist bracket please read these instructions carefully.

The following instructions are based on the installation of the Hardwood Colonial ground level domestic system using the LD335 twist bracket.

Full instructions and test reports for all Hardwood systems; Colonial, Square and Flat Baluster can be viewed and downloaded from the Outdoor Balustrade Hardwood Range section of our website www.richardburbidge.com

Should you have any enquiries regarding installing the Hardwood systems using the Twist Bracket or deck building in general then please contact our technical support team **01691 678212**.

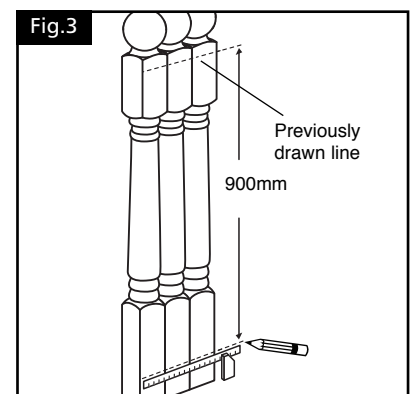
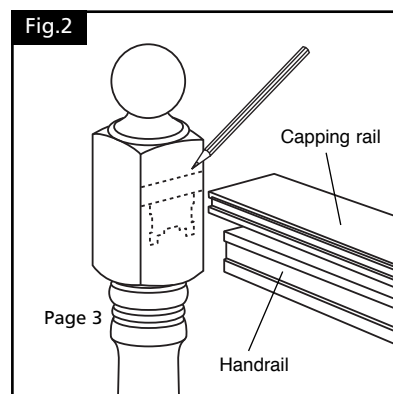
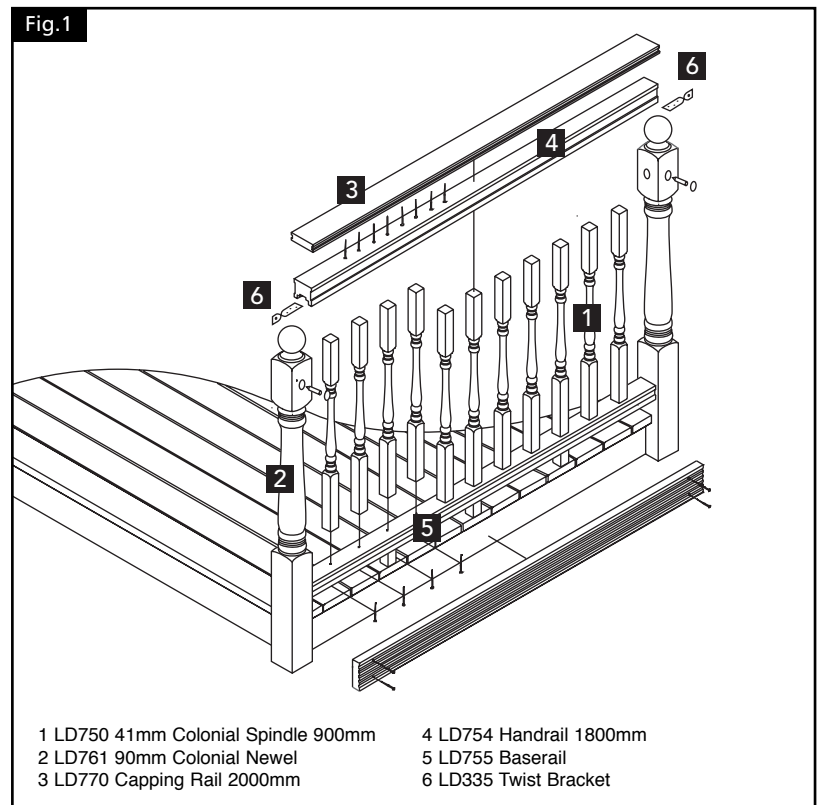
Horizontal Balustrades

Fig.1 illustrates a typical ground level installation of the Hardwood Colonial system.

For horizontal balustrades establish where you would like the Hardwood Handrail LD754 and LD770 Capping Rail to be in relation to the LD761 Colonial Newel. This can be done using small off-cuts of handrail and capping rail. Draw around the profiles of both rails with a pencil onto the face of the newel (**Fig.2**).

Measure down the face of the newel 900mm from the pencil line representing the top edge of the capping rail and draw a pencil line on all 4 faces of the newel. This line represents the finished deckboard level.

Establish how many newels will be used for the installation ensuring that the maximum span between the faces of the newels does not exceed 1800mm (the maximum supplied length of the LD754 Hardwood Handrail). Lay all the newels together on a flat surface making sure that they are level and using the previously marked newel transfer the lines representing the top of the capping rail and deckboard level onto all the newels (**Fig.3**).



If the newels are to be fixed to the outside face of the joists then they should now be half lapped or rebated for those newels used on corners (**Fig.4a & 4b**).

Apart from the first newel, which can be permanently fixed, all other newels should be temporary fixed in their finished positions to the joists making sure they are plumb using Richard Burbidge landscape screws.

Place a 50mm timber block/off-cut onto the top of the deckboards and then place an off cut of the LD755 baserail on top of this block. Mark a pencil line onto the face of the newel representing the top edge of the baserail. Now measure from the pencil line representing the bottom edge of the groove in the handrail to the pencil line representing the top edge of the baserail to establish the length of the LD750 Colonial spindle required (**Fig.5**).

Balustrades are installed in a series of units when using the LD335 Twist Bracket. Measure the distance between the first and second newels to establish the lengths of handrail and baserail required (**Fig.6**). Cut the rails to the required length.

Place the Twist Brackets centrally into the groove on the underside of the handrail and to the underside of the baserail making sure the square shoulders of the brackets line up with the cut ends of the rails. Fix the brackets to the rails using the No.8 x 19mm stainless steel screws supplied (**Fig.7a & 7b**).

Colonial Spindles

Colonial spindles should be spaced at 120mm maximum centres so that the space between the spindles once installed conforms to Building Regulations requirements, which states that the gap should not allow the passage of a 100mm sphere.

To calculate how many spindles are required measure the length of either the handrail or capping rail.

Example:

Rail length between newels = $1750 \div 120 = 14.58$
rounded up to 15

15 spindles x 41mm (section size of spindle) = 615mm

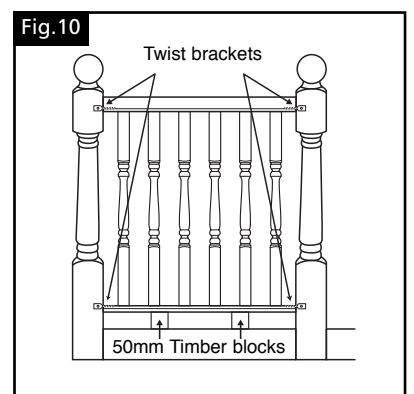
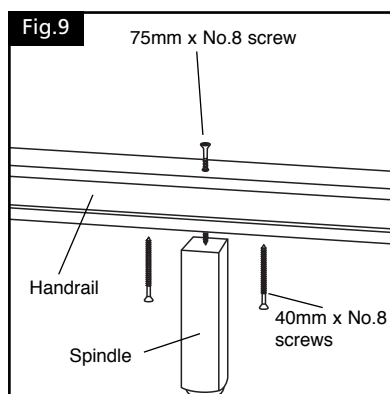
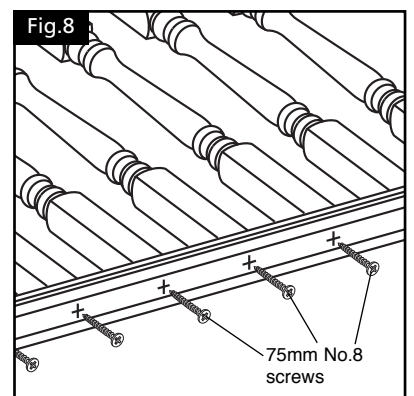
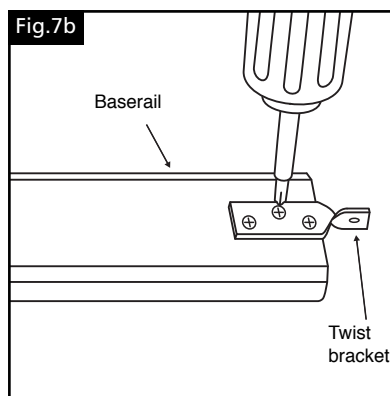
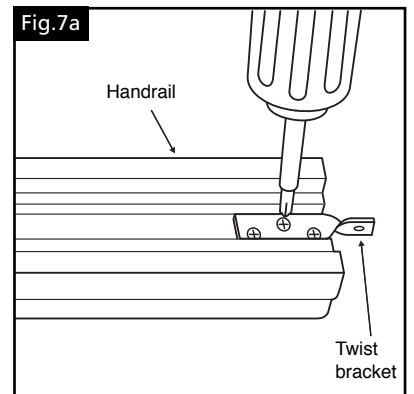
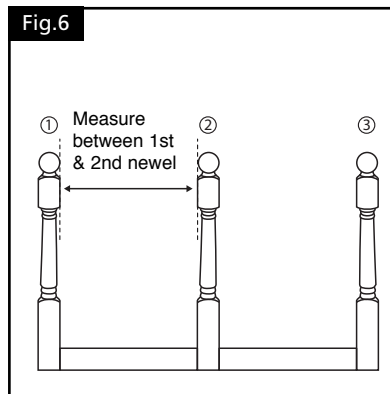
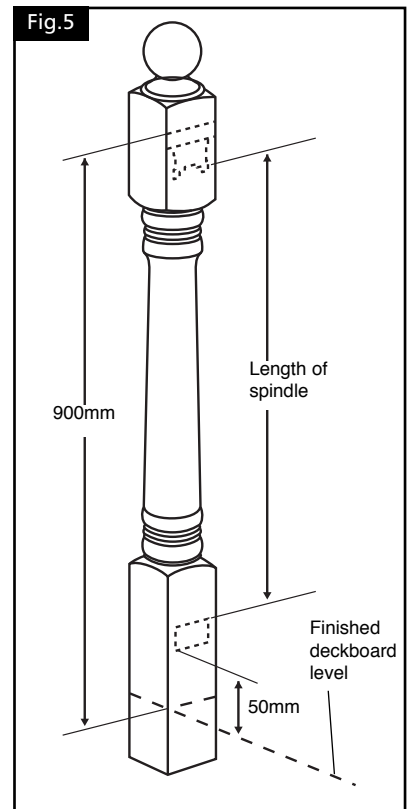
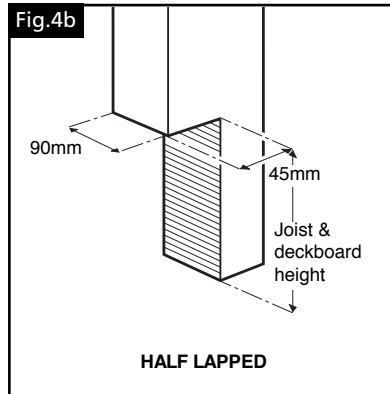
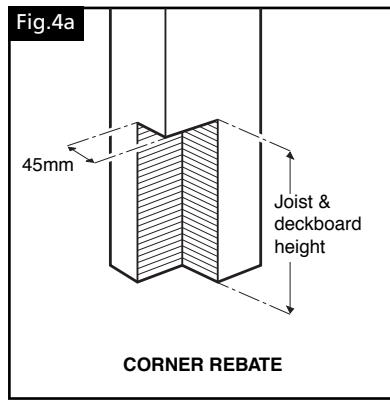
Total Rail Length of $1750 - 615 = 1135$

Divide 1135 by 16 (one more than the total number of spindles required) = 71mm spacing between each spindle.

Spindles are fixed to the handrails and baserails before assembling to the newel posts.

Cut the required number of Colonial spindles to length. Fix the spindles to the baserail using 75mm ceramic galvanised screws (**Fig.8**).

Fix the spindles to the handrail using 75mm ceramic galvanised screws (**Fig.9**).



Place 2 x 50mm timber blocks/off cuts on top of the deckboards and position the completed assembly of handrail, baserail and spindles on top of the blocks so that the Twist Brackets rest against the outside face of the newel posts (**Fig.10**).

The newels should now be marked and drilled to accommodate the twist brackets and tapered screws. Mark the position of the centre of the 4 holes in the Twist Brackets to the faces of the top and bottom of newels 1 & 2 and off set these positions by +2mm (**Fig.11**).

Using a square, mark a line from the centre of the marked Twist Bracket holes onto the inside faces of the newels (**Fig.12**). Mark the centre of this line onto the newels (**Fig.13**).

Newels 1 & 2 can now be drilled. Use a 10.5mm diameter drill bit on the outside faces of the newels to a depth of 60mm to accommodate the tapered screw and a 16mm diameter drill bit to a depth of 40mm on the inside faces of newels to accommodate the ends of the Twist Bracket (**Fig.14**).

Remove the landscape screws in newel 2 and move to one side.

Offer up the assembled unit of handrail, baserail and spindles and position the ends of the Twist Bracket on the handrail and baserail into the 16mm diameter holes on the inside faces of newel 1 (this is easier done by 2 people). If a 1-person installation then temporarily support the freestanding end of the unit using the 50mm timber blocks/off cuts (**Fig.15**).

Insert the tapered screw into the 10.5 diameter holes in newel 1 and tighten using a 6mm hexagonal drive/allen key until the shoulders of both the handrail and baserail are flush against the newel faces (**Fig.16**).

Reposition newel 2 so that the Twist Brackets on the end of the rail assembly are inserted into the 16mm diameter holes and insert and tighten the tapered screws into the 10.5mm diameter holes so that the ends of the handrail and baserail are flush against the newel.

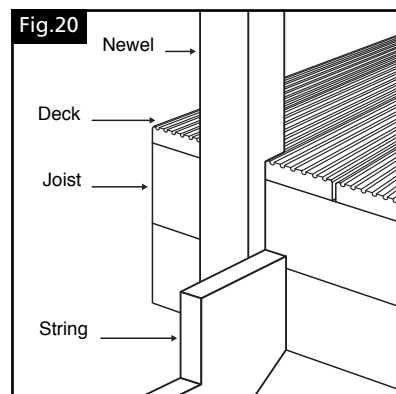
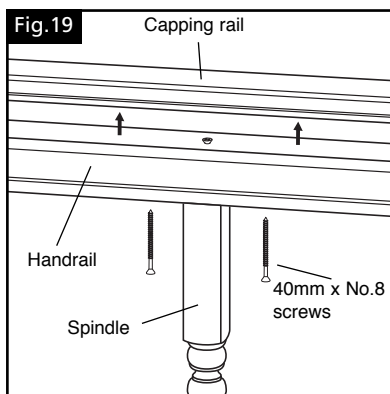
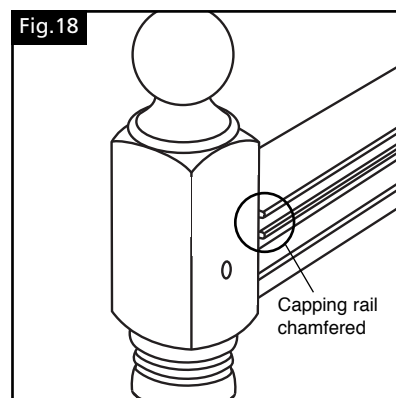
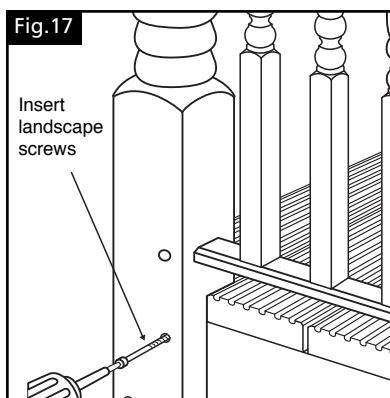
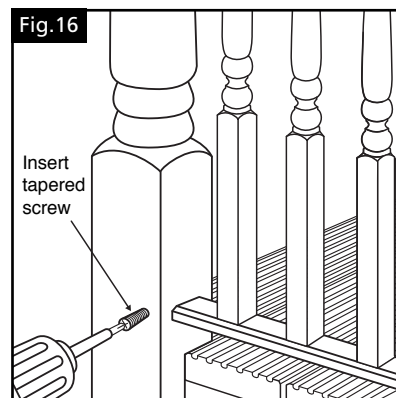
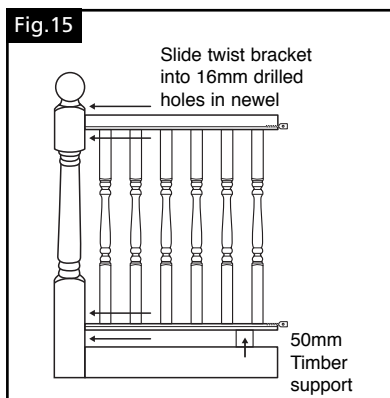
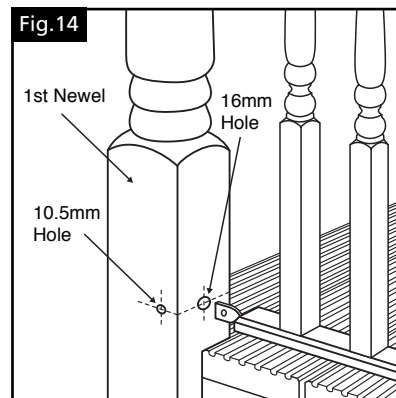
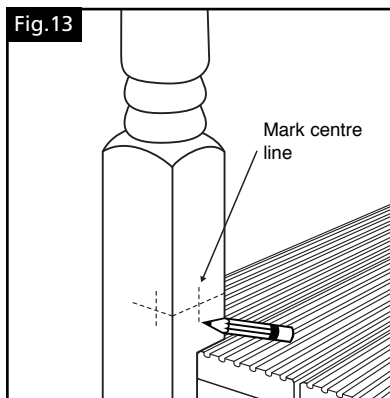
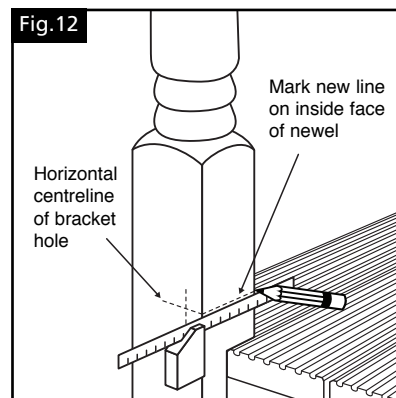
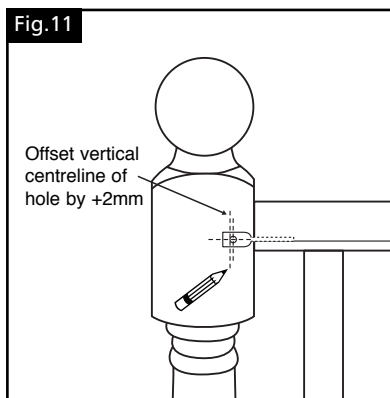
Permanently fix newel 2 to the joists using landscape screws (**Fig.17**).

The LD770 Capping Rail can now be fixed on top of the LD754 Handrail to hide the heads of the screws used to fix the Colonial Spindles. The capping rail is slightly wider than the newels and can be chamfered if desired (**Fig.18**).

Fix the handrail to the capping rail using 40mm ceramic galvanised screws through the groove in the handrail (**Fig.19**).

Repeat the installation procedure for all other units in the installation i.e. newel 2 now becomes the permanently fixed newel and newel 3 is removed (**Fig.6**).

To finish, fix the decorative cover caps supplied over the 10.5mm tapered screw holes using a small bead of PVA exterior wood glue.



Balustrades For Steps

For those decks up to 600mm above ground level it may be necessary to install a short length of stair/rake balustrade as guarding for steps. All horizontal balustrades should be installed prior to the installation of stair/rake balustrade.

Newels that accommodate both horizontal and rake balustrades should be positioned so that the strings are flush against the inside face of the newels at the top of the stair i.e. the first newels accommodating the horizontal balustrade (Fig.20).

To establish the position of the stair handrail to the head of the newel post at the top of the stairs you will need to scribe a pitch line (this is the same line as the bottom edge of the baserail in it's final fixed position resting on the edge of all stair treads) through the inside face of the newel. Using an overlong straight edge i.e. deckboard, resting on the edge of the steps and the inside face of newel scribe a pencil line to the underside of the straight edge and onto the face of the newel (Fig.21).

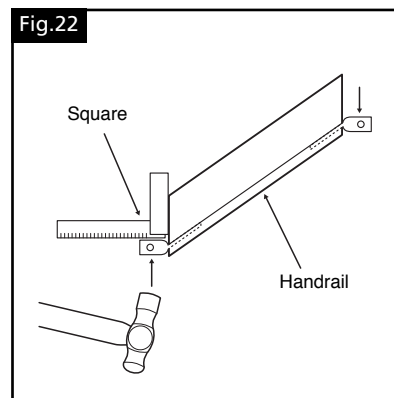
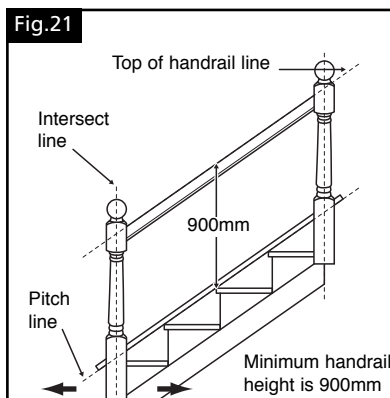
Bisect the Colonial newel at 2 points towards the top and bottom of the newel and drop a vertical line to intersect the previously drawn pitch line. Where these 2 lines intersect measure up a minimum of 900mm for the handrail height (Fig.21).

Using an adjustable bevel scribe a pencil line onto the face of the newel, this line represents the top of the handrail. The pitch lines and handrail height lines should now be squared off onto the front face of the newel at the top of the stairs.

Transfer all pencil lines on the top newel to the bottom newel and offer the bottom newel to the side face of the stairs adjusting the newel by moving forwards/backwards or by cutting its length down so that the drawn pitch line on the newel lines up with the pitch line of the stairs (Fig.21).

Lay the overlong baserail on the edges of the steps and resting against the inside faces of the newels. Mark and cut the baserail to length. Repeat for the handrail.

Place the Twist Brackets centrally into the groove to the underside of the handrail and to the underside of the baserail making sure the square shoulders of the brackets line up with the end cut of the rails. Fix the brackets to the rails using the No.8 x 19mm stainless steel screws supplied (Fig.7a & 7b).



Adjust the twist bracket ends so they are 90° to the cut face of the rails by gently tapping the brackets with a hammer (Fig.22).

Offer the baserail with the Twist Brackets attached to the side face of the bottom and top newels and drill the posts as previously described in the horizontal balustrade section. Repeat for the handrail.

The spindles for rake/stair installations should be spaced so that a 100mm sphere cannot pass through. Once you have calculated how many spindles you will use they need to be cut to the correct length and angle.

Position the baserail and handrail into the bottom newel and to the side of the stair string and locate the twist brackets into the top newel. Offer a spindle to the sides of the rails to establish the length and angle of cut remembering to allow for the groove in the handrail. Cut the spindle accordingly and check for fit between the handrail and baserail before using as a template to mark and cut remaining spindles.

Remove the temporary assembly of baserail, handrail and bottom newel and fix the spindles as described in the horizontal balustrade section.

Fix the assembly of spindles, baserail and, handrail to the bottom newel using the Twist Bracket and tapered screw as described in the horizontal balustrade section.

Offer up the assembled unit and position the ends of the Twist Bracket on the handrail and baserail into the 16mm diameter holes on the front faces of the top newel.

Insert the tapered screws into the 10.5 diameter holes and tighten using a 6mm hex/allen key until the shoulders of both handrail and baserail are flush against the newel faces (Fig.14).

To finish, fix the bottom newel to the stair string using landscape screws and fix the decorative cover caps supplied over the 10.5mm tapered screw holes using a small bead of PVA exterior wood glue.

Guidance and recommendations on how best to maintain and finish your balustrade can be found via our resources library on our website www.richardburbidge.com



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