



fitting instructions



The string is the side of the staircase on which the balustrade is assembled. A cut string has the upper edge cut away to the shape of each individual step, so that the profile can be seen from the side. A closed string has the face housed to accommodate the steps, so that their profile cannot be seen. For full fitting instructions for both closed and cut string, please see the installation instruction leaflet packed with the newel base connector MMBCS/G.

Richard Burbidge Fusion™ stair balustrading comprises a patented system of round newel posts and handrails connected together using a series of metal brackets. Balusters fix into place using patented brackets designed to adjust to suit staircase pitches between 38° & 45°.

Note – When installing Richard Burbidge Fusion™, remember at all times that when you are assembling a pre-finished product extra care should be taken to avoid damaging the finish. All finishes are carefully checked prior to leaving the factory and are designed to withstand most types of normal use, however it is possible to damage these with sharp tools.

Please check all components carefully PRIOR to installation for any damage to the surface. Please note Richard Burbidge cannot be held responsible for any damage once installation has commenced.

Fusion™ carries design registration and has patent pending. Genuine Richard Burbidge Fusion™ components carry the Richard Burbidge dovetail logo. Only genuine components have been independently tested to guarantee conformity to UK building regulations.

Fusion™ is designed for use in domestic situations and will fit closed string staircases with pitches between 38° – 45° and handrail heights of 900mm stairs and 900mm landings. Fusion™ is tested to UK strength requirements of 0.36kN/m.

Tools required: Fusion™ Tool Kit (3mm diameter drill bit, crosshead No. 2 screwdriver, 19mm box/socket spanner 100mm long, 13mm spade bit, 20mm spade bit, 25mm spade bit, 5mm allen key, drill depth gauge), electric or battery drill, spirit level/s, tape measure, a good handsaw, adjustable bevel, 45mm No. 8 crosshead countersunk screws for fixing the baserail.

Assembling Staircase Balustrading

Fusion™ will fit most staircase configurations. For further details please refer to the staircase configuration drawings in the brochure.

Fusion™ can be fitted to either existing or new newel bases. To use existing newel bases, these must be fixed centrally to the staircase string and the front face of the riser concerned (Figs 1 & 2).

Before removing existing newel bases, check that they are non-supporting or do not form a structural part of the staircase design.

When using Fusion™ your existing newel bases must be a minimum of 82mm x 82mm. If less, face/build up existing bases using suitable facing material.

These instructions are for a straight flight with return landing.

Existing Bases

Fusion™ stairparts use pre-cut balusters, and all cut-off points are referenced from the top of the baserail upwards. The system is designed to automatically compensate for any slight inaccuracies in cutting off the existing newel post. Before newel bases can be set to the correct height the baserail must be installed. To do this, lay the baserail on the stair nosings and resting against the inside faces of the newel bases, mark and cut accordingly taking time to ensure a clean and accurate cut. Place the baserail on top of the staircase string, but at this stage, a temporary fix is all that is required ie tacks on unfinished or masking tape on finished rails (Fig. 3).

Bottom Newel Base

From the line representing the top edge of the baserail mark a line upwards through the center point of the newel base and where the two lines intersect measure up 175mm (Fig. 1).

Top Newel Base

The top newel base should be marked out in the same way as the bottom, but the height should be set at 125mm (Fig. 2).

It is important that existing newel bases are cut off squarely so that the newel posts are perfectly vertical. Once the bases are cut, trial fit the newel posts and check with a spirit level. The top of the bases can be sanded level if required. This will reduce the height of the bases slightly but the newel assemblies can compensate for this within the connectors. Once the bases have been levelled they can be chamfered to provide a more pleasing finish.

Newel Base Connectors

Newel base connectors (MMNCS/G) can now be fixed to the newel bases using the stud and barrel nut supplied. From the top of the newel base on the centre line previously marked, measure down 125mm. Using a 20mm spade bit, drill a hole to a depth of 20mm beyond the centre point of the newel base (Fig. 4). On the top of the newel base find the centre by drawing two diagonal lines from corner to corner. Using a 13mm spade bit drill to a depth of 125mm. Note all drill operations should be straight and accurate. Assemble the newel base connector (MMNCS/G) to newel base (Fig. 5) by locating the barrel nut and fully inserting the fixing stud. Place the newel base connector over the fixing stud and tighten nuts using 19mm socket/box spanner making sure that the connectors are positioned as illustrated (Fig. 6).

Note - in most cases when tightening the base connector to the existing bases, the retaining ring on the underside of the connector should pull into the newel base. However depending on the timber type it may be necessary to disassemble the connector and chisel a clearance ring of approximately 3mm wide by 5mm deep allowing the newel base connector to sit flush.

Cut the bottom newel post to a length of 525mm and drill a 25mm diameter clearance hole at a depth of 25mm to the underside of the post to allow it to fit over the stud assembly. Fix post to the connector using screws provided making sure the post is fully inserted. Fix the top post in the

same manner but do not cut the post to length at this stage.

Note – to mark the position of the clearance hole in the newel post, place newel into base connector, knock gently and then remove post.

New Newel Bases

Fit new newel bases central to the front faces of the staircase risers checking that they are vertical and at the correct height (Figs 1 & 2).

Note – remember to add the thickness of the baserail when marking the intersection points as illustrated in (Fig. 3).

Fixing Connectors & Handrails

Fixing the handrails and connectors is best done by two people. To establish the correct angles of connectors and lengths of handrail, you will need to assemble two balusters. Fit the baluster brackets to the ends of the staircase balusters by inserting the screws supplied for a tight fit (Fig. 7).

Note – ensure the baluster brackets are in line with each other by tightening the screws with the baluster held on two blocks of timber (Fig. 8). The balusters are pre-cut to length and should not require any modifications.

The bottom connector (MMBSC/G) and top connector (MMTCS/G) are a two-part assembly. Attach the newel post part of the connectors to the newel posts. Note – the top newel post connector slides over the top newel post and should not be permanently fixed at this stage. The handrail part of the bottom connector should now be attached to the overlong handrail. Offer the handrail assembly to the newel post connectors and to check that the handrail is parallel to the baserail and at the correct height, position assembled stair balusters to the underside of the handrail next to the bottom and top newel (Fig. 9).

Adjust the height of the top connector by sliding up and down the top post and check the balusters are vertical using a spirit level. Mark the position of the top connector to the newel post using a pencil and with the overlong handrail to the side of the top connector mark and cut the handrail to the required length (Fig. 10).

Fit the top post connector in place by setting to the previously marked pencil line and secure the newel post part of the connector using the screws supplied. It is important that this connector is fixed so that it is in line with the bottom newel. Fix the handrail connectors to the ends of the handrail and then fix this assembly to all newel post connectors checking that everything is vertical and parallel before securing all connector bolts, nuts and screws. You are now ready to fix the first and last balusters. The last baluster must be fixed so that it is tight against the handrail connector so as to conform to building regulations. Position the baluster between the handrail and baserail, check for vertical and mark the position of the baluster bracket to the baserail with a pencil. Remove the baluster and fix the baserail to the staircase string using 45mm No. 8 countersink screw.

The screw fixing the baserail to the staircase string should be positioned so that it does not interfere with the baluster bracket fixing screws. Reposition the baluster and fix to the handrail and baserail using the screws supplied. Fix the bottom baluster and space so that the gap between baluster and newel post is no greater than 99mm (Fig. 11).

To space the remaining balusters evenly up the stairs measure the distance between the spacing marks (notches on the side of the brackets) of the bottom and top balusters already installed (Fig. 11) and divide by 148.5mm. Round the answer up to the next whole number and divide this whole number back into your original measurement to give an exact spacing.

Example – 2159mm between bottom and top spacing marks divided by 148.5mm = 14.45, rounded up to 15.

2159mm ÷ 15 = 143.9mm spacing measurement.

Fix all remaining baluster brackets to balusters using the screws supplied (Fig. 7) ensuring the brackets are in line using the blocks of wood described previously (Fig. 8). Mark the spacing between balusters to the baserail either using a pencil and tape measure or by marking and cutting a piece of timber to the required length. Fix the assembled brackets and balusters to the baserail first making sure that on every 4th baluster you secret fix the baserail to the staircase string using 45mm No. 8 countersink screws. The top baluster brackets can now be fixed to the underside of the handrail using a spirit level to check for vertical.

Note – if you have a particularly short flight of stairs you may need to re-space the balusters to provide a more pleasing effect, remembering at all times to space them no more than 99mm apart.

Assembling Horizontal/Landing Balustrades

Using standard Fusion™ components you will require a minimum 120mm measured from the centre of the staircase baserail to the centre of the landing baserail for stairs with landings at 180° to the stairs (Fig. 12).

Cut and mitre the landing baserail to size and place into position on the landing. Do not fix to the landing floor at this stage (Fig. 12). Fix the landing baluster brackets to the landing balusters.

Place an off-cut of handrail loosely into the landing connector (MMLCS/G). Position one assembled landing baluster onto the baserail and place the handrail and connector on top of this baluster and to the side of the top newel to establish the required height of the post. Mark and cut to suit.

Where the landing balustrade ends against the wall, mark the position of the wall connector (MMWCS/G) on the wall by placing an assembled landing baluster and baluster connectors to off-cuts of baserail and handrail. Mark the position of the wall connector (MMWCS/G) to the wall and drill and plug to suit.

Note – before drilling and plugging this fixed point check that the landing handrail will be parallel using a spirit level, if the landing floor is slightly out, reposition the wall connector (MMWCS/G) and pack the underside of the landing baserail accordingly.

Place an off-cut of handrail to the landing connector (MMLCS/G) and position on the top newel. Push the landing handrail into the wall connector (MMWCS/G) and offer the horizontal turn (MMHTRS/G or MMHTLS/G) to where the two handrails meet to establish lengths of cut. Mark and cut the handrails to the required length. Reposition the landing handrail to the wall connector (MMWCS/G) and fix horizontal turn (MMHTRS/G or MMHTLS/G) to the other end of this rail. Fix the short return length of handrail onto the other leg of the horizontal turn (MMHTRS/G or MMHTLS/G) and the landing connector (MMLCS/G) to the other end of this short return length of handrail and position over the top newel post (Fig. 13).

Note – before screwing all connectors to rails and top post, we recommend a final check for parallel. Use a spirit level for the handrail and an assembled baluster/baluster brackets between the rails.

To calculate the exact number of landing balusters either divide the total landing length by 117mm, which will give a gap of approximately 98mm, or alternatively you may find it aesthetically more pleasing to space the landing balusters so that they are in line with the staircase balusters. Mark the position of the baluster brackets to the baserail and secret fix the baserail to the landing floorboards using 45mm No. 8 countersink screws every 4th baluster.

Assemble all baluster brackets to the ends of the landing balusters by inserting the relevant fixing screw (63mm No. 8) into the underside of the brackets and tighten (Fig. 7). Ensure that the brackets are in line with each other as previously described for staircase balusters using two square blocks of timber (Fig. 8).

Fix all bottom baluster brackets to the baserail using 30mm No. 6 screws and finally secure the top baluster brackets to the underside of the landing handrail using 30mm No. 6 screws checking for vertical with a spirit level.

