

FUSION™

DOMESTIC BALUSTRADE CUT STRING FITTING INSTRUCTIONS

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 staircases with pitches between 38° – 45° and handrail heights of 900mm stairs and 1000mm 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 to landing.

Fusion™ is manufactured to exacting tolerances, however as timber is a natural material some expansion and or shrinkage of the timber components can occur. If the newels and rails are slightly too big for the connectors, gently sand/shave the components to allow for a tight fit, being careful to only rework the area of the timber component that will be concealed by the metal connector. Alternatively if the timber component is loose in the connector, a rigid fix can be achieved using a proprietary gap filling adhesive.

Assembling Staircase Balustrading

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

Fusion™ can be fitted to either existing or new newel bases. To use existing newel bases, these must be fixed central to the riser and inside the nosing to the side of the stairs (Fig. 1).

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 cut-string straight flight staircase of 12/13 treads with a return length of 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. To establish the height of the newel bases place the baserail onto the nosings and to the side face of the bases. Mark the top edge of the baserail to the face of the newel base (Fig. 2).

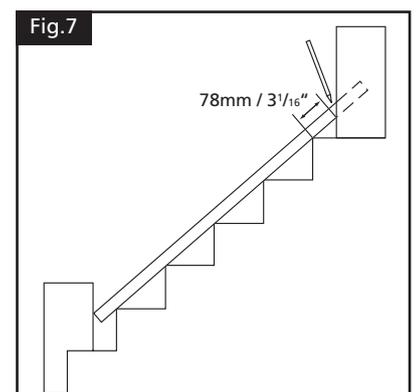
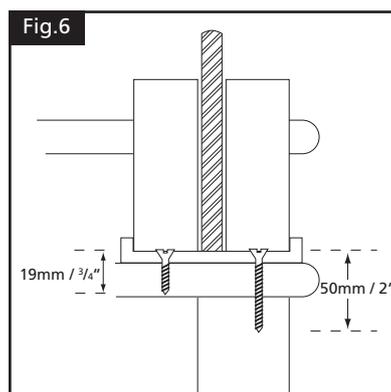
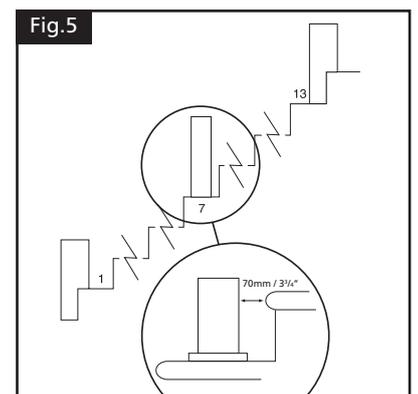
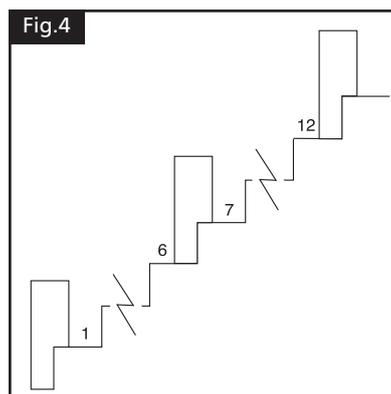
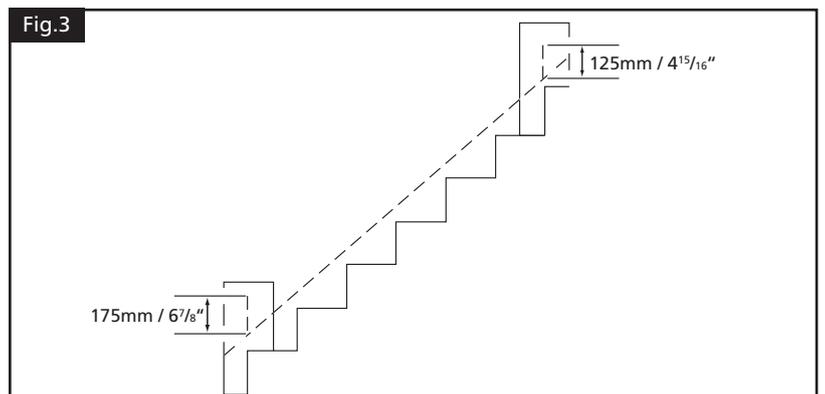
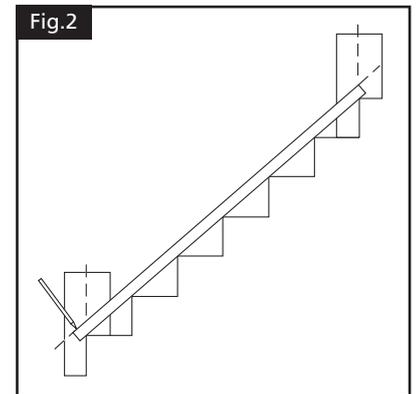
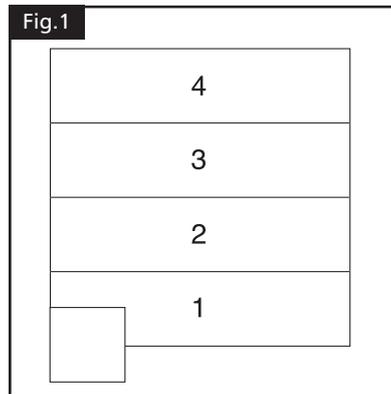
Bottom Newel Base

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. 3).

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. 3).

It is important that existing newel bases are cut off squarely so that the newel posts are perfectly vertical.



Mid Newel Base

For strength purposes a mid newel is required for straight runs over 1800mm.

There are two options for fixing a mid newel on your staircase based on the number of treads. For staircases with an even number of treads the mid newel should be fixed traditionally, central to the riser (Fig. 4).

For stairs with an odd number of treads the newel base must be fixed on top of the tread and 70mm from the nosing using the Richard Burbidge mid newel tread connector (Fig. 5).

How you fix the tread connector will depend on your staircase construction.

For traditionally constructed timber stairs use 2 x 50mm and 2 x 25mm crosshead No. 8's (Fig. 6). For concrete stairs use 4 x 50mm crosshead No. 8's and appropriate anchor fixing/plug. Insert and fix the threaded bar and slide the mid newel base over the bar and onto the tread connector. The mid newel should be set exactly as the bottom newel, at 175mm (Fig. 3). Trim any excess off the bottom of the newel base.

Suspended Baserail

You are now ready to measure and fit the baserail. Position the baserail to the bottom newel base as illustrated (Fig. 7) and where it intersects the next newel base, mark the bottom edge. From this mark, measure back 78mm, mark and cut to length.

Fix the two-part baserail connector assembly together (MMSBCS/G) and then fix to the baserail using the screws supplied. Place between newel bases with the bottom edge of the baserail resting on the staircase nosings and mark the position of the baserail connectors to the face of the newel bases using a pencil. Disassemble the two-piece baserail connector and fit the flat plate part of the connector to the newel bases using the screws supplied. Finally, with the baserail in position, reconnect the two-part connector.

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. 8). 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. 9) 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. 10).

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 and mid newel posts 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 (Fig. 1).

Note - remember to add the thickness of the baserail when marking the intersection points as illustrated in (Fig. 2).

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. 11). 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. 12). The balusters are pre-cut to length and should not require any modifications.

The bottom connector (MMBCS/G), mid newel connector (MMINCS/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 and mid newel connectors should now be attached to the overlong handrail, being careful to slide the mid newel handrail connector gently along the handrail to avoid damage. 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 mid-newel (Fig. 13).

Fig.8

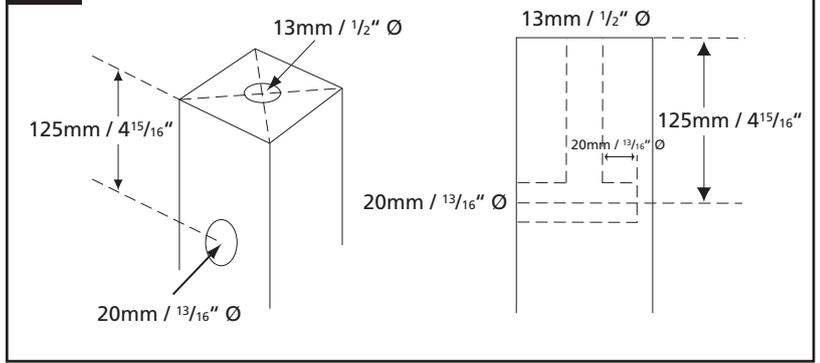


Fig.9

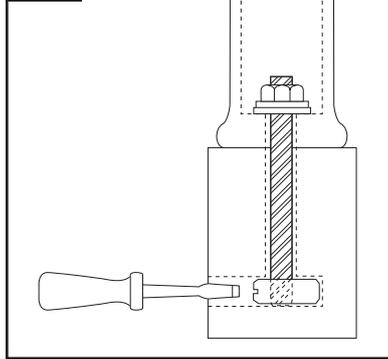


Fig.10

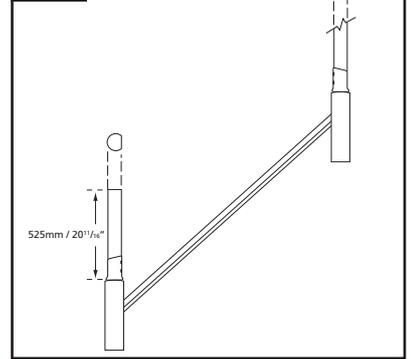


Fig.11

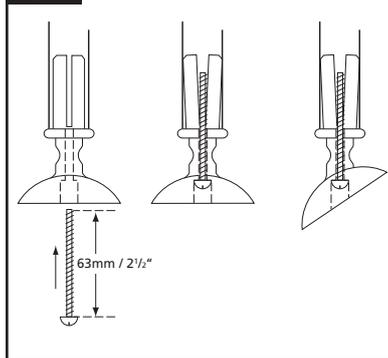


Fig.12

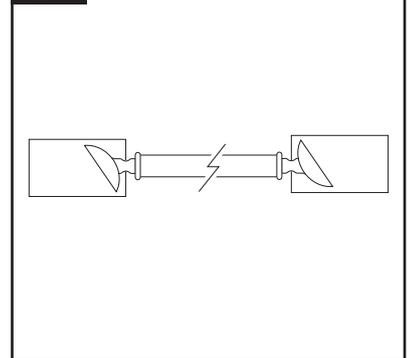
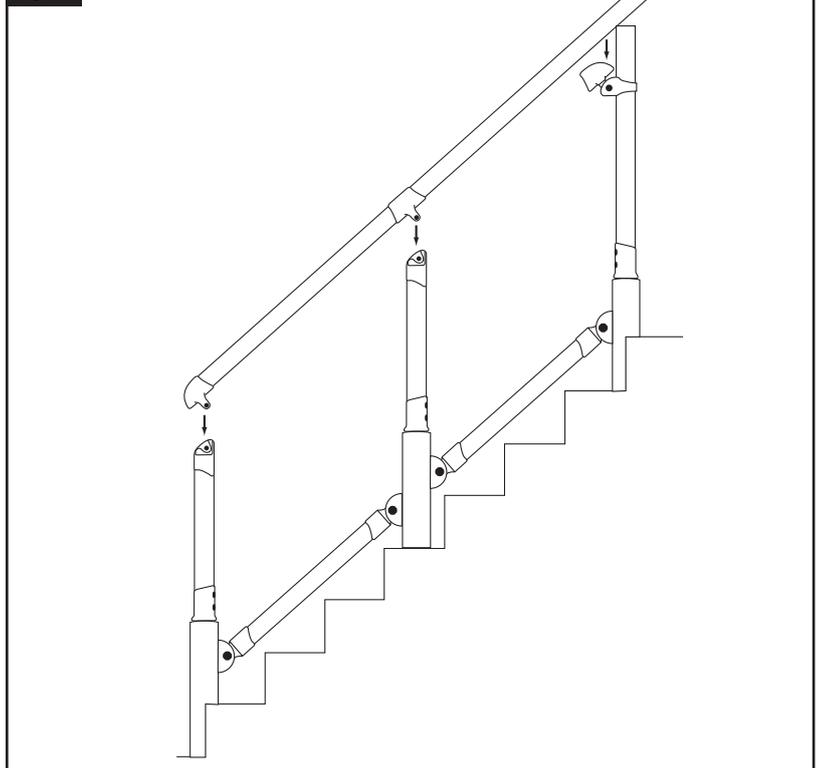


Fig.13



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. 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 and mid newel. Fix the top handrail connector to the end of the handrail and then fix the handrail to all newel post connectors checking that everything is vertical and parallel before securing all connector bolts, nuts and screws (Fig. 14).

The first and last balusters between newel posts can now be fixed. To conform to building regulations regarding spacing the last baluster must be fixed so that it is tight against the handrail connector. Fix the baluster between the handrail and baserail using the screws supplied, checking that it is vertical with a spirit level. Fix the bottom baluster and space so that the gap between the bottom newel and baluster is no greater than 99mm.

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. 15) 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. 11) ensuring the brackets are in line using the blocks of wood described previously (Fig. 12). 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 and then using a spirit level to the underside of the handrail.

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.

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. 16). 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 (Fig. 17).

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 (Fig. 17).

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. 17).

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 end of the landing balusters by inserting the relevant fixing screw 63mm No. 8 into the underside of the brackets and tighten (Fig. 11). Ensure that the brackets are in line with each other as previously described for staircase balusters using two square blocks of timber (Fig. 12).

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.

Fig.14

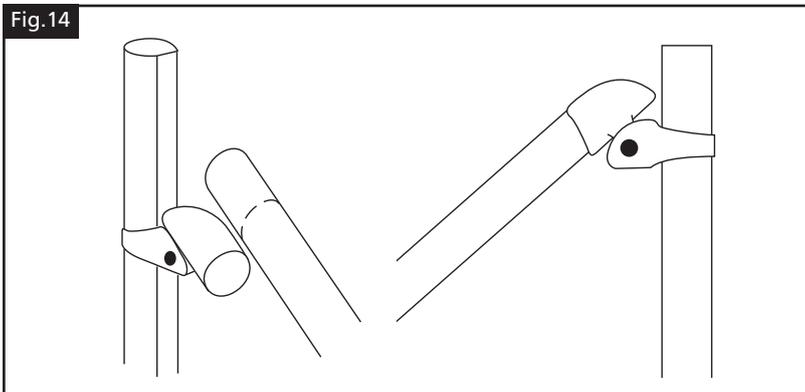


Fig.15

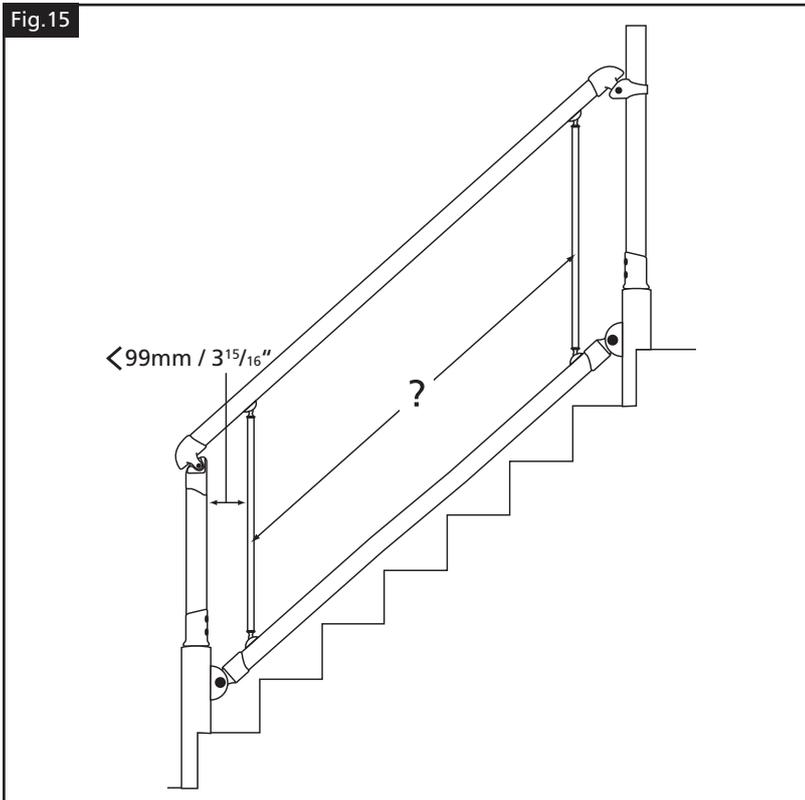


Fig.16

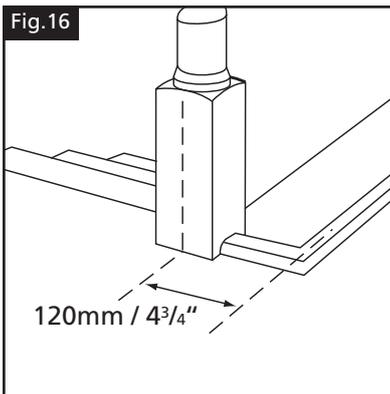
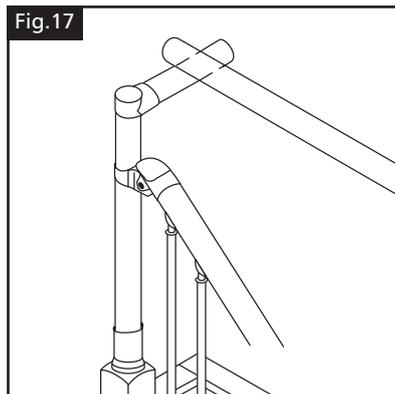


Fig.17



**Richard
Burbidge**
DECORATIVE TIMBER

Whittington Road, Oswestry, Shropshire SY11 1HZ
Telephone: 01691 655131, Fax: 01691 657694

5 Fitzwilliam Place, Dublin 2 Eire
Telephone: 01 6622788, Fax: 01 6760438

E-mail: info@richardburbidge.co.uk
Website: www.richardburbidge.co.uk

TECHNICAL HELPLINE: 01691 678212

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