

Whether building a new staircase or replacing old banisters, the patented Bracket Fix stair balustrading system will enable you to complete the work quickly and easily.

The Richard Burbidge patented Bracket Fix system enables the stair balustrading to be constructed without the need for mortise and tenon joints.

INSTRUCTIONS

These instructions should be used to install Richard Burbidge balustrading only.

SAFETY REGULATIONS

The system has been designed to help you meet safety requirements laid down under current Building Regulations, achieving a minimum 900mm rake and 900mm landing handrail height (**fig. 1**).

HELPLINE

A professional and experienced team of technical advisers can offer assistance and help on all matters relating to Richard Burbidge stair balustrading. Call **01691 678212**.

SPINDLES

To calculate how many you need, count the number of treads between newels. Allow two spindles per tread and one per tread where there is a cut out for a newel post. Building Regulations state that the space between spindles should not allow the passage of a 100mm sphere. To calculate the number of landing spindles required, measure the horizontal distance in millimetres, then divide by 112 for 32mm spindles and 121 for 41mm spindles,

eg, 32mm spindles $896 \div 112 = 8$ spindles
41mm spindles $896 \div 121 = 7$ spindles

RAKING BALUSTRADING: WHERE TO START

Establish whether the existing bases/posts are centrally or side fixed (**fig. 2**). If side fixed it may be necessary to fit newel bases. Before removing existing newel bases check that they are non-supporting or do not form a structural part of the staircase design (if in doubt call our technical advisers).

When using Richard Burbidge newel turnings your existing newel bases should be a minimum 82 x 82mm (the section size of your Richard Burbidge newel turning). If less face/build up existing bases using suitable facing material.

USING EXISTING BASES (fig. 3)

Mark a pitch line on the inside face of the existing bottom newel base by placing a straight edge over the nosings of two or three treads (**fig. 3a**). Mark a vertical centre line also on the inside face of the existing newel base.

Where the two lines intersect measure vertically the given cut off point, saw off horizontally making sure cut is square.

Cut off points: 264mm for bottom newel N160 (**fig. 3a**)

201mm for top newel N160A (**fig. 3b**)

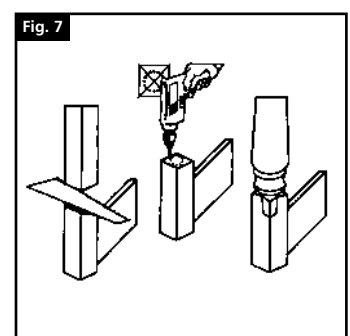
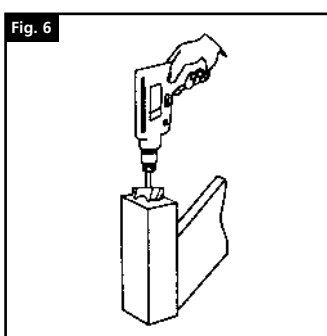
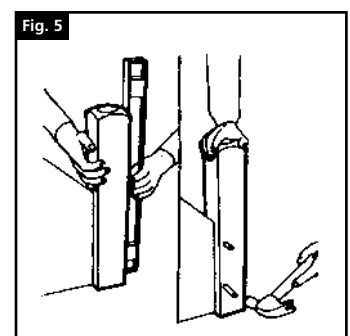
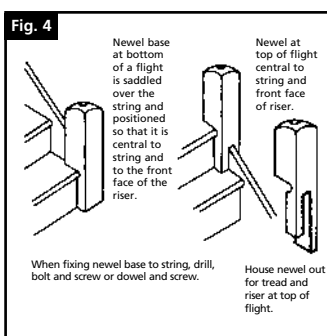
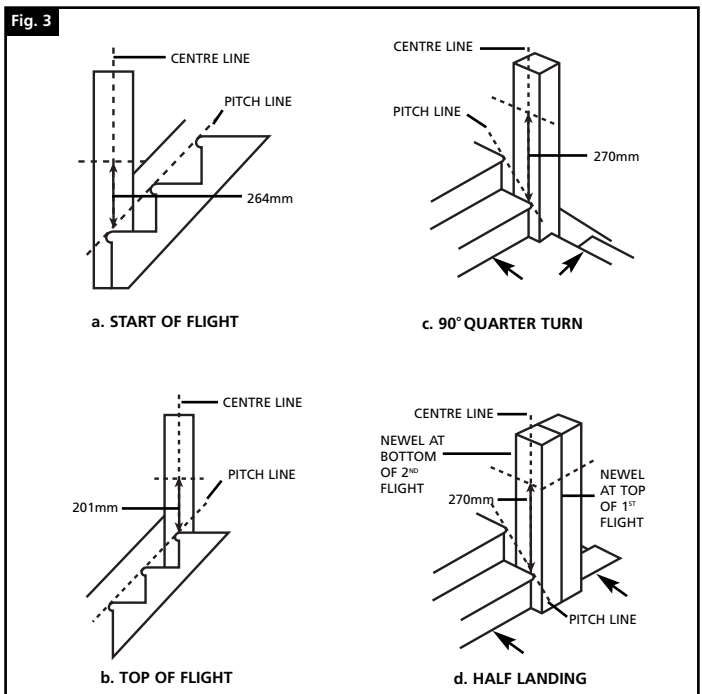
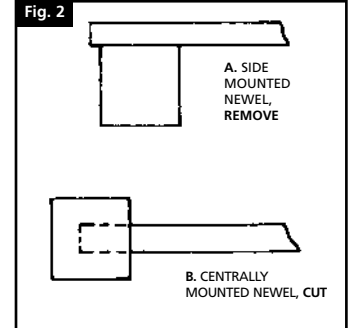
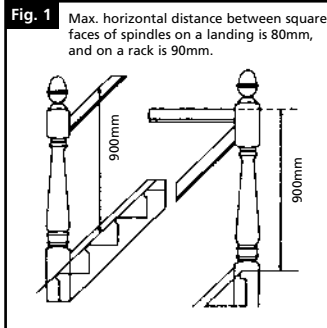
270mm for intermediate newel N415A (**fig. 3c**)

Where the staircase has a half landing, two N415A newels are used side by side. The newel base at the start of the second flight is set at 270mm above the pitch line and the newel base at the top of the first flight is set accordingly so that the tops of the bases are level (**fig. 3d**).

USING NEW NEWEL BASES

Saddle newel base centrally over the string ensuring the front face of riser is central to the inside face of newel base (**fig. 4**). Check that the newel base is vertical and at the correct height. To fix the newel base to the string either bolt, screw or dowel and glue (**fig. 5**).

Note - When setting newel base for corner landing newel N160B see **landing balustrading** section on this page.



FITTING NEWEL TURNINGS TO BASES

When fitting newel turnings to existing cut down newel bases it will be necessary to drill a hole to accept the spigot of the newel turning (this will not be necessary if using newel turning with a new Richard Burbidge newel base as these are pre-drilled to accommodate the spigot).

When using existing newel bases first find the centre, then scribe a circle to the newel spigot diameter (50mm) and bore out a hole to take a spigot.

The best method is to use the Richard Burbidge hole saw (fig. 6) which will drill a hole to the required size to take the newel spigot. You can then sand and chamfer the top face and corners of the existing newel base.

Alternatively the newel turning can be fitted by chain drilling the newel base using a 10-12mm twist drill bit and removing surplus with a flat/spade bit and chisel (fig. 7).

Once bases are secure the newel turnings should be dry fixed. Use the tapered dowel to ensure a good fit.

Tap the tapered dowel part way into the hole in the spigot, test the fit of the spigot in the hole of the newel base (fig. 8) and adjust the dowel as necessary until the spigot is a tight fit in the hole in the newel base. Cut the dowel flush with the edge of the spigot. Check that the newel is vertical but do not glue at this stage.

BASERAIL

You are now ready to fit the baserail which must be cut to the angle of the stairs. To find the angle of the stairs use an adjustable bevel (fig. 9).

Measure and cut both ends of the baserail. Take time to ensure a clean and correct cut (fig. 10).

Drill, countersink, screw and glue baserail to the string. Use at least 32mm (1 1/4") No. 8 screws (fig. 11).

HANDRAIL

The handrail should be cut to the same angle as the baserail (fig. 12). A mitre saw will accurately ensure the correct angle of cut. Alternatively use your baserail as a template to cut your handrail.

You should note that great care must be taken when cutting the handrail as both the handrail and baserail will only be the same length when your existing newel base is the same section as the newel turning (82 x 82mm).

If your newel base is bigger than 82 x 82mm, the handrail will be longer than the baserail, if it is smaller your handrail will be shorter. Adjust as necessary.

FITTING HANDRAIL AND NEWEL TURNINGS TO BASES

To assemble handrails and newels, fix universal brackets to either end of the handrail (fig. 13). Assemble the handrail to the heads of the newel turnings passing the threaded portion of the universal bracket through the newel and finger tighten nut and washer (fig. 14, 15 and 16).

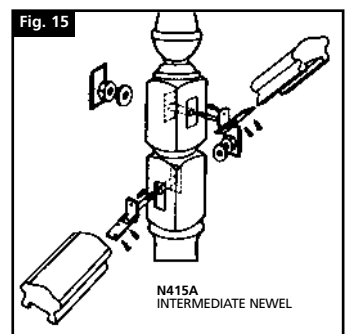
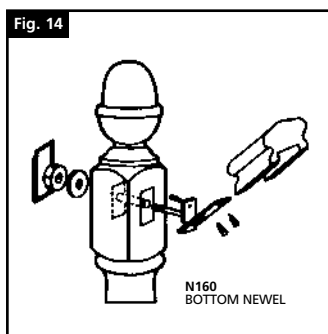
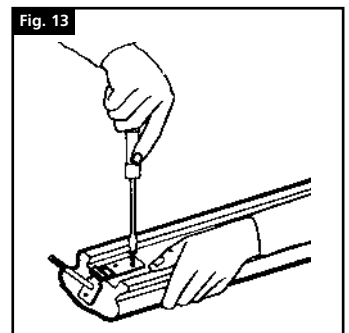
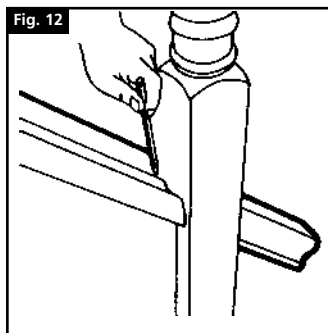
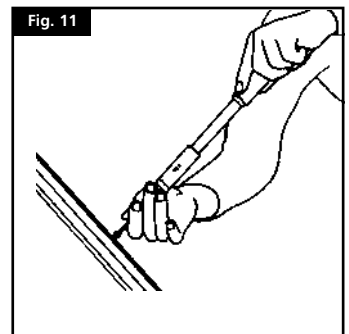
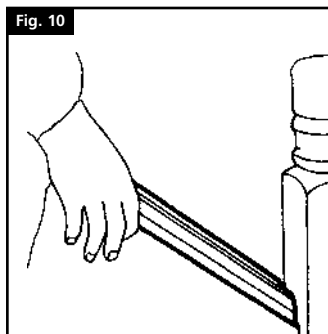
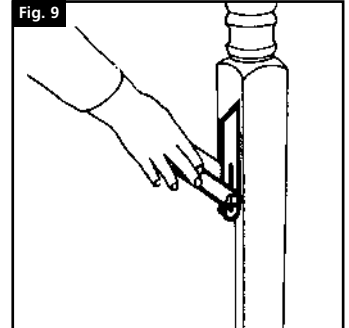
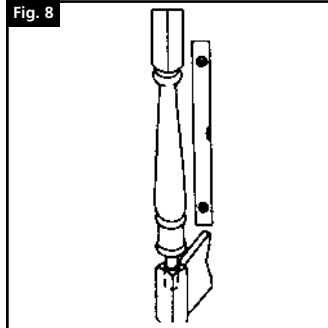
The handrail and newel turnings are inserted into the bases as a single unit. Mount the whole assembly into the newel bases (fig. 17). Make one final check for fitting before gluing, making sure newels are vertical. Glue newel spigots using a PVA with resin W woodworker's adhesive.

When the complete assembly is in position tighten handrail brackets with a socket or box spanner. Finish off by gluing the cover plates supplied to the face of the newel to hide the fixing bracket. Glue caps to the top of the newel turning.

We recommend that the assembly is left for 24 hours for the glue to set. Guard as necessary if staircase is to be in use.

SPINDLES AND FILLETS

The spindles should now be fitted. To give the required length and angle of cut, the first spindle should be measured by standing it against the stair rails (fig. 18) and accurately marking (remember to allow for the groove in the handrail and baserail). The first spindle can be used as a template (fig. 19) to mark and cut further spindles, checking that it is accurate all the way up the stairs.



The spindles are spaced using fillets (**fig. 20**). The fillets are pre-cut to the correct length for use on the rake.

Spindles can be equally spaced (**fig. 21**) up the rake with the exception of the first and last fillet, which must be shortened by at least 15mm due to the pattern of the newel turning.

A quick way of calculating/spacing spindles is to place spindle off-cuts into baserail and next to bottom newel base (use off-cuts from top of spindles) and proceed up the baserail spacing off-cuts using pre-cut fillets. Measure the distance from the last spindle off-cut to the top newel base and divide by two. This will give the measurement the first and last fillets need to be cut to.

Having adjusted the first and last fillets as required, fit spindles into position, cross pin and glue (**fig. 22**). Also pin fillets top and bottom.

It may be necessary to trim all fillets to achieve equal spacing of spindles due to the fact that all strings vary in length. Keep any excess fillets from rake for use on landing.

When determining relationship between bottom and top squares of spindles on the rake these are normally equal (this will mean turn of spindle is central).

Note (pine only) - Using the pre-cut fillets in their full length will give a maximum horizontal distance of 90mm (based on 42° pitch) between inside faces of spindles on rake.

LANDING BALUSTRADING

When a landing returns on itself (ie. 180°) at the top of stairs, it is necessary to use the horizontal turn. This can be shortened or lengthened depending on the relationship between the newel and the edge of the landing.

To shorten simply trim/cut leg of horizontal turn. To lengthen attach an appropriate length of handrail to the leg of the horizontal turn using the rail bolt supplied.

Where the landing is at right angles to the stairs (ie. 90°) it is not necessary to use a horizontal turn.

Assemble horizontal turn using template provided (**fig. 23**). Mark centre point. Drill a hole to the depth indicated on the template slip (**fig. 24**).

Fix the rail bolt into the horizontal turn (**fig. 25**). Repeat the operation using the template on the landing handrail. Drill an access hole as indicated on template slip, see page 32 for detailed tie-rail bolt instructions.

You can use a Forstner bit (**fig. 26**) or similar available from DIY/hardware stores. Alternatively, mortise or use a spade bit, grinding down the point so as not to drill through top side of handrail.

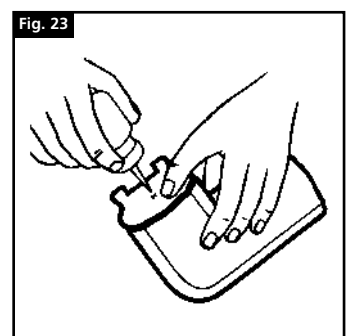
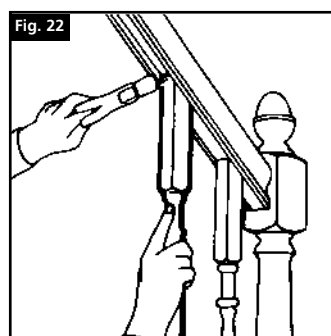
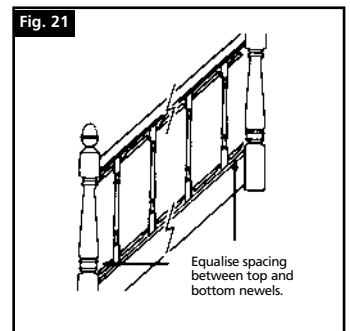
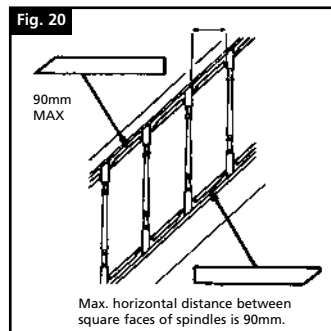
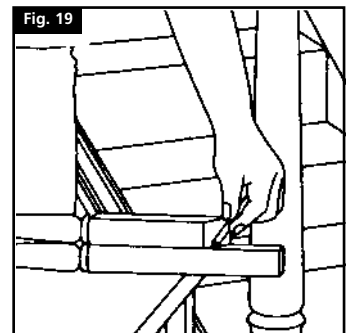
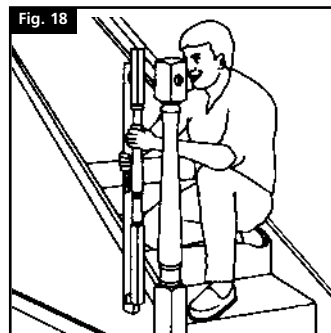
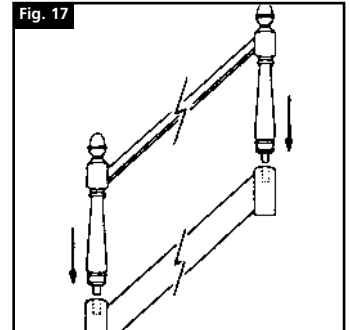
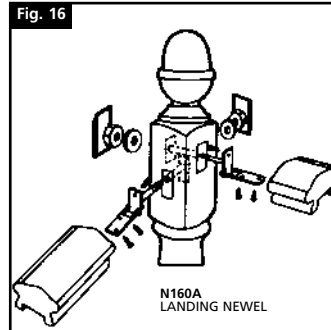
Fix the landing handrail to the horizontal turn by tightening visible nut on the end of the rail bolt (**fig. 27**). Cut the half base to length then drill, plug and screw to the wall. Attach the universal bracket to the half newel turning and position into the half newel base (**fig. 28**).

Mark, drill, plug and screw half newel turning to wall (**fig. 29**). Half newel base and turning can also be fixed using wall board adhesive applied to the back face. You must drill, plug, screw and fill also.

When filling over heads of screws use a proprietary wood filler or alternatively a plug cutter to cut flush pellets from off-cuts of fillets/spindles.

Attach the universal bracket to the top raking newel (newel at top of stairs).

Offer up the handrail and screw the universal brackets, from the top raking newel turning and the half newel turning, to the underside of the handrail (**fig. 30**).



The wall rosette is available as a decorative finish where the landing balustrading ends against the wall replacing the use of a half newel. The wall rosette is supplied with a universal bracket and screws for fixing and attaching to handrail and wall.

To fix the wall rosette attach the universal bracket to the rosette and then measure from landing floorboard to the universal bracket on the newel turning N160A at the start of the landing. The universal bracket fixed to the wall rosette should be set at exactly the same height. The wall rosette is fixed to the wall by drilling, plugging and screwing. The handrail is then attached to the bracket.

Note - Wall rosette is not suitable for use with HDR handrail.

Cut the baserail to the required length, drill, countersink, glue and screw to floor (**fig. 31**). Use at least 32mm (1 1/4") No. 8 countersunk screws.

When using the horizontal turn you will need to mitre joint the baserail.

Once landing handrail and baserail are in position the landing spindles can be cut to the correct length.

When determining relationship between bottom and top squares of spindles it is preferable to have more bottom than top square or to have equal bottom and top squares. Mark off one spindle and cut to the required length. Check its accuracy along the landing then cut remaining spindles to length.

As with rake, spacing of landing spindles is achieved with fillets. It is necessary, however, to trim fillets to a maximum 80mm in length for the landing balustrading to comply with safety regulations (**fig. 32**).

Note - The N160 bottom newel should not be used for landing only refurbishments. N160D half newel is designed for horizontal installations only.

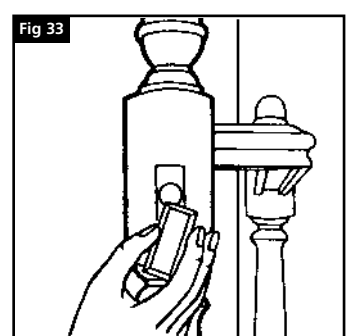
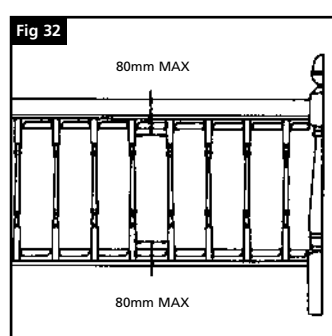
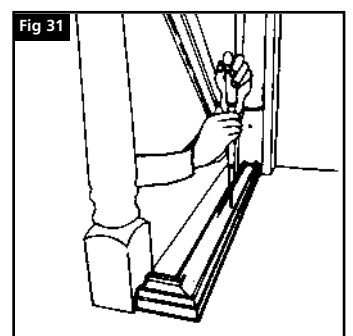
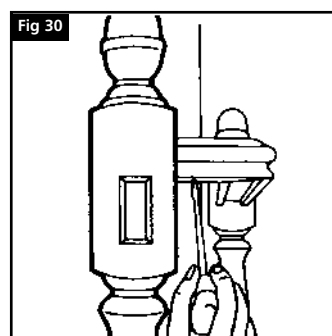
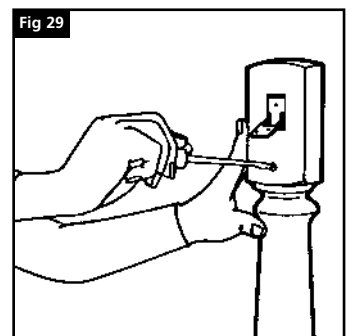
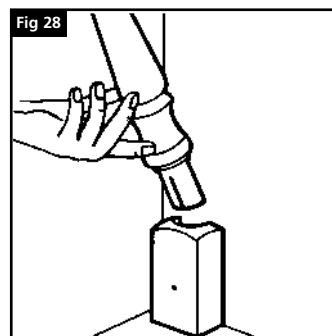
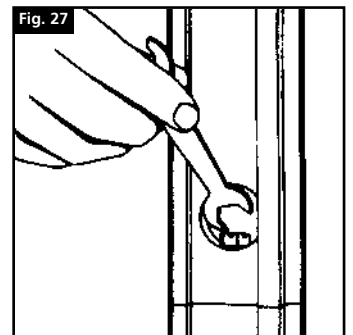
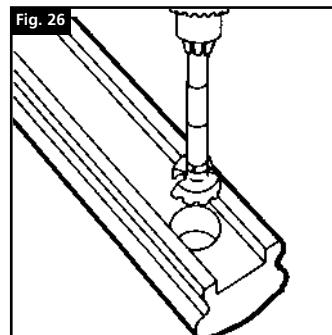
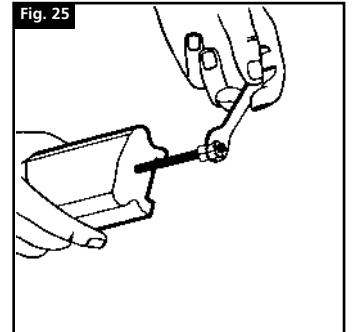
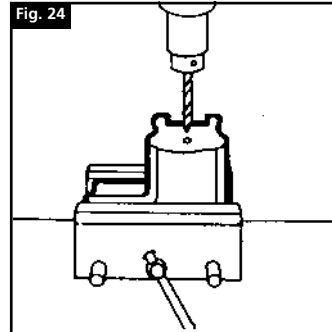
Note - The maximum distance we recommend between landing newels is 2400mm. For landings exceeding this recommendation please call our technical advisers for the choice and fitting of mid-landing newels.

Follow the same procedure as on rake to achieve equal spacing. Equalise spacing between first and last landing spindle.

Once achieved, glue and pin spindles and fillets into position. Glue newel caps and cover plates (**fig 33**) into position as necessary.

CORNER LANDING SITUATION

If fitting a newel base to accommodate the corner landing newel (N160B) you will need to fix the base through the landing floorboards and secure to a joist/trimmer by bolting/screwing. This newel base should be set at the same height as the top newel base accommodating N160A, measured from landing floor level. The N160B is designed to allow two horizontal landing handrails to be fixed to the newel at exactly the same height.



If your staircase has extra rises such as winders halfway up the staircase, it may be necessary to use a combination of UE upward easing and VT vertical turn to ramp the staircase handrail up and into the newel turning.

These handrail fittings are supplied overlong to suit the majority of staircase pitches and configurations and will need to be cut down to suit individual requirements.

UPWARD EASINGS

To mark and cut angles of ramps use a pitch board/block which is a triangular piece of cardboard/plywood with the sides the same rise, going and pitch as the stairs (**fig. 35**). Place the handrail fitting and pitch board onto a flat surface and offer the pitch board to the underside of the handrail fitting/ramp. At the centre point where the hypotenuse of the pitch board touches the ramp mark with a pencil 'x' (**fig. 36**). Reverse the pitch board as detailed in **fig. 36** and align the marked point 'x' on the handrail fitting with the B-C axis. Scribe a pencil line onto the handrail fitting to give the angle of cut.

VT VERTICAL TURN

The overall length of the vertical arm of the VT is 475mm. This is usually longer than required when used with the Continuous Handrail System and will need to be cut down to suit. Using the full size side elevation previously discussed, establish the length of VT and angle of cut UE required. Mark the UE for joining the pitching handrail using pitch board (**fig. 37**). You should note it is not necessary to cut both faces of the UE when used at the bottom and top of the stairs. The face to be cut is the one adjoining the handrail length.

Whilst these illustrations cover standard straight and split flights with quarter and half landings, you may have other configurations on which you would like to install Richard Burbidge Bracket Fix stair balustrading.

For further advice and instruction call **01691 678212**.

