

# Elements<sup>®</sup>

## Inset Glass Panel Stair System

### FITTING INSTRUCTIONS

The following instructions are for installing Richard Burbidge Elements Glass Panel system. If you have any queries please contact our Technical Helpline on 01691 678212.

Richard Burbidge Elements glass panel system has been designed to suit staircase pitches between 40° & 43°. Components have been independently tested to guarantee conformity to UK building regulations.

Note -

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

Elements glass panel system 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. (FIRA Structural testing reports and Richard Burbidge balustrades are safety approved by TRADA (BM TRADA Approved Timber Balustrading Scheme certificate number 022/001).

Before commencing your installation of the Elements glass panel system, please read these instructions carefully.



### STAIRCASE BALUSTRADE

This system is designed to suit 40° & 43° pitches only.

#### INSTALLING THE BASERAIL

Lay the baserail on top of the stair nosings and offer up to the side of the newel posts. Mark and cut to angle and length (Fig 1).

Drill clearance holes for the screws through the bottom of the groove in baserail and countersink.

Position the baserail between the newel posts, ensuring the rail is central to post. Drill pilot holes through the baserail into the string (Fig 2).

Apply PVA wood glue to top of string and ends of cut baserail. Reposition the baserail and fix to the string, making sure all the screw heads are below the surface and do not project into the groove.

#### INSTALLING THE HANDRAILS

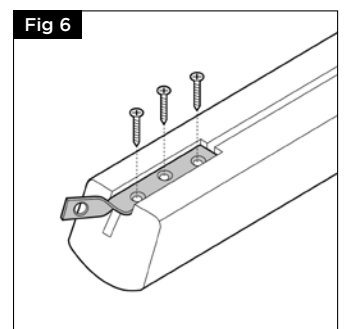
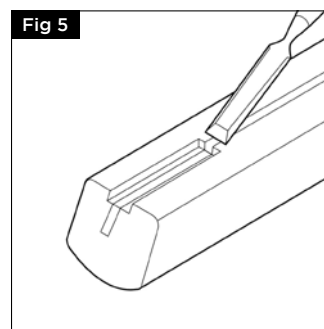
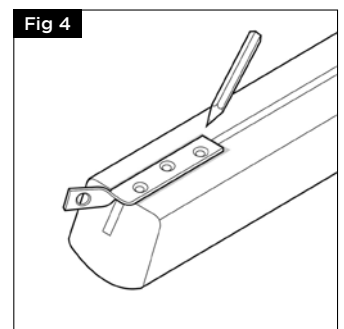
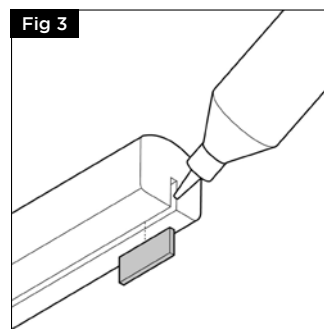
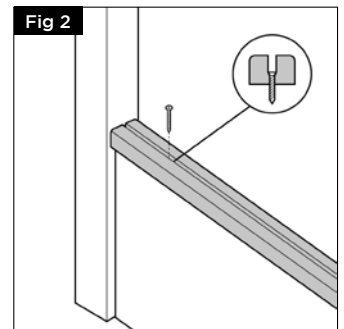
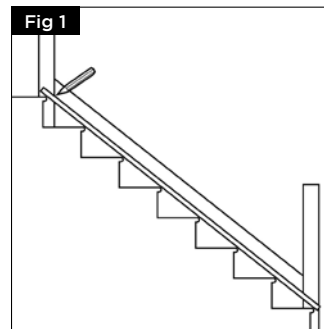
Place a length of handrail on the stair nosings up against the newel posts and mark the handrail from the inside face of the bottom newel post and the inside face of the top newel post. Mark and cut the handrail to the correct angle.

At this stage a length of fillet needs to be inserted into the handrail at both ends to fill the groove to allow for the Twist Bracket and fixing screws. Cut a length of the timber fillet to 80mm and at correct angle both ends. Apply PVA wood glue to all faces of groove and insert fillets firmly into groove. Hold in place with masking tape and allow to dry (Fig 3).

#### FITTING THE HANDRAILS USING THE TWIST BRACKET

Locate the raking twist brackets central to the underside of the handrail and using a pencil mark out the slot on both ends of the rail (Fig.4).

Chisel out the previously marked out slots for the twist bracket to a depth of 8mm (Fig.5), and fix the rake twist bracket using the 3 screws provided (Fig.6).



To set the correct height of the handrail you will need to cut 2 battens at 750mm long and to the relevant staircase pitch (Fig.7). Clamp or masking tape the battens to inside face of both newel posts with the bottoms resting on the top of the baserail. Lower the handrail on top of the battens so the twist bracket hole is on the outside of the newel face.

Using a pencil mark the centre of the twist bracket hole (top and bottom bracket) onto the newel face. (Fig.8). Remove the handrail and mark a hole position off-set +2mm from the previously marked centre line, (this will ensure the handrail is tight to the newel face when the tapered screw is tightened) repeat for all other newels. (Fig.9).

Using a square, mark a line on the inside of the newel face from the centre of the twist bracket holes and across the faces of the newel, follow the centre line with the square and draw a line across the face of the newel where the handrail will be attached (Fig.10). Draw a vertical line through the previously drawn line down the centre of the newel face (Fig.11).

Drill the newels using an 11mm diameter drill bit on the inside faces of the newels (facing inside the stairs) 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.

Place a small amount of PU adhesive on each end of the handrail and offer up to the newel, position the ends of the twist brackets into the 16mm diameter holes in the newel and insert the tapered screws into the 11mm diameter holes in the top and bottom newels using a 6mm hexagonal drive/allen key (Fig12). Tighten until the shoulders on the handrail are flush against the newel faces.

## INSTALLING THE GLASS PANELS ON THE STAIRS

All Richard Burbidge glass panels are etched with the British Standards compliance details on the side of the panels, these must be visible as per the UK Regulations after installation. For staircase installations it is recommended for an aesthetically pleasing finish to align all stamps facing up the flight and underneath the handrail.

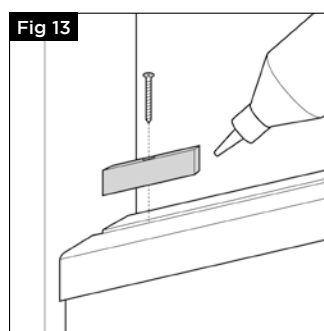
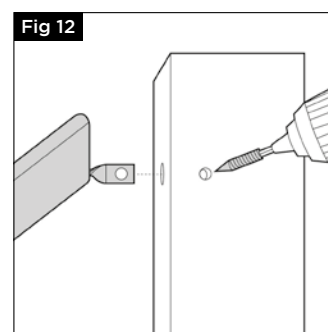
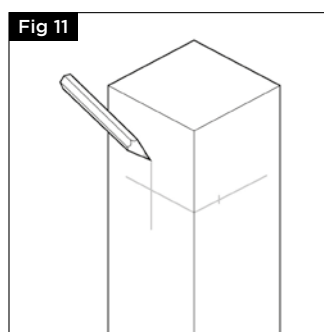
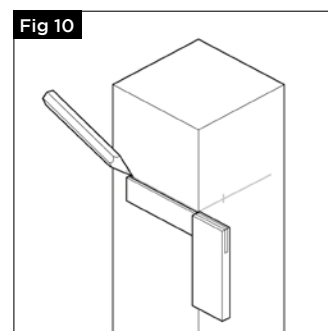
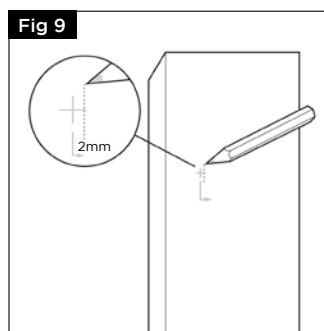
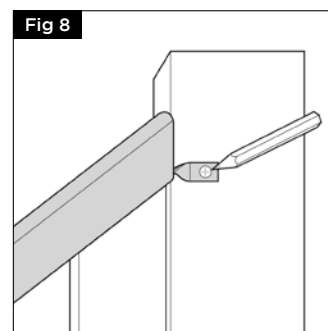
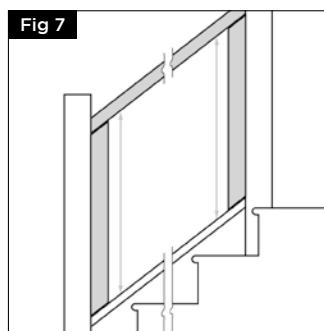
Measure 80mm from the newel post along the top face of the baserail and mark this at both bottom and top of flight. This will locate the position of the side edge of the first and last glass panels in the run. Cut 80mm fillets for the baserail ensuring that fillets are cut to the angle of stairs. Apply PVA wood glue to all faces of baserail groove and insert fillets firmly into groove. Hold in place with masking tape and allow to dry (Fig 13).

To help work out how many panels are required please to refer to table below -

Pitch of stairs	Panel dimension
40 degs	261mm
41 degs	265mm
42 degs	269mm
43 degs	274mm

To work out how many panels are required and the size of remaining fillets, measure the distance between the previous marks on the baserail and divide this measurement by 350. Round the figure down to the next whole number (that will give you the number of panels required).

Multiply this number by the panel dimension according to the pitch of stairs. Subtract this figure from the original measurement. Divide by number of panels (less 1) to get fillet size



### Example -

Measurement between marks on baserail = 3286mm  
3286mm divided by 350 = 9.3, rounded down to 9  
Pitch of stairs is 42 degrees so panel dimension from table is 269mm x 9 = 2421mm  
Original measurement 3286mm minus 2421mm = 865mm  
865mm divided by 8 (number of panels 9 less 1)  
**= 108mm (length of fillet)**

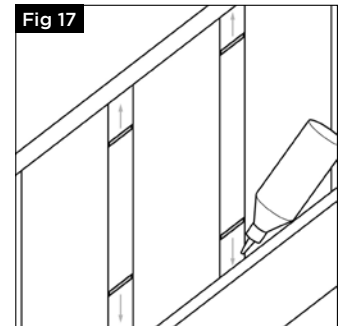
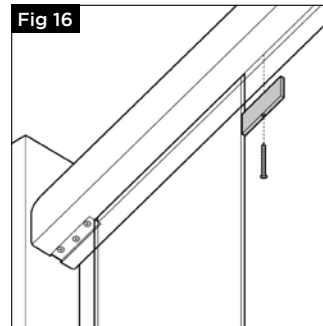
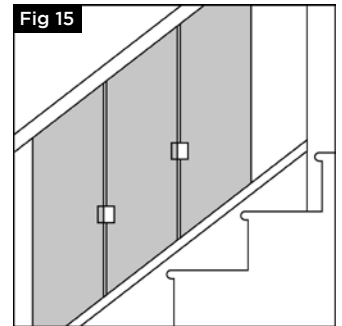
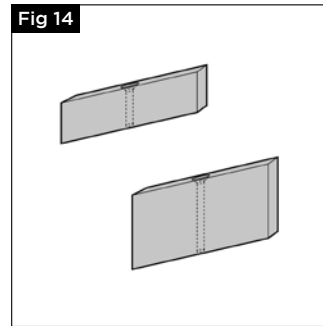
**Please note - maximum length of fillet must not exceed 129mm. If maximum length is exceeded add another panel by rounding up (after dividing by 350) and re-calculate.**

Cut all fillets to calculated length and correct angle (Fig 14). Apply bead of clear silicone to both handrail and baserail grooves ensuring you also put a bead on side wall of handrail groove. The silicone will act as an adhesive but also stop the potential movement of the glass panels over time.

Depending on how many panels are used and the gaps between them we would recommend you insert the last 2-3 panels into the grooves first before installing fillets. If this is the case wrap some cardboard around the side edge of the panels and insert, carefully allowing them to butt up to each other (Fig 15).

Once all panels are in, separate the panels by inserting fillets between them and securing them in place as previous (Fig 16).

Cut the 5mm cover fillets to match the length of the previously installed infill fillets (Fig 17). Depending on personal preference the cover fillets all can be installed with a bevelled edge or a square edge facing up. Apply a bead of PVA wood glue and place into the groove to hide the screw head.



## LANDING BALUSTRADE

The maximum distance between newel centres on a landing is 2400mm, after this distance an intermediate newel should be installed.

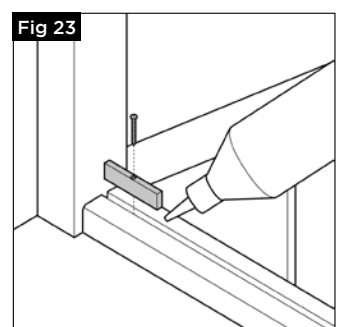
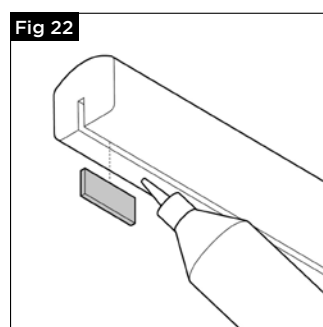
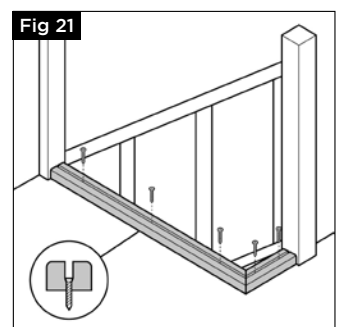
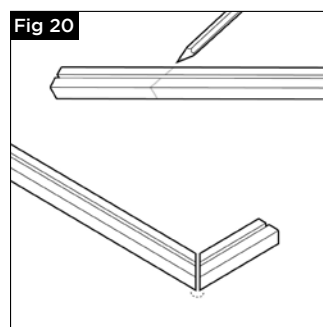
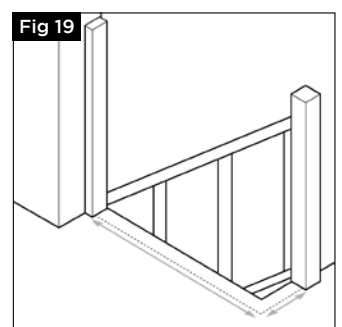
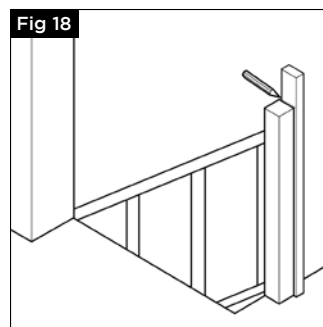
### INSTALLING THE BASERAIL ON THE LANDING

To install the half post cut to match the height of the top of flight post and fix the post to the wall (Fig 18).

For return landings, mark out where the baserail is going to be located (Fig 19). Where the lines intersect on the corner, drawing a diagonal line to represent where the baserail will be mitred (Fig 20). Apply glue to the mitred faces and position the cut baserail on top of the location marks. Fix by drilling countersunk clearance holes through the bottom of the baserail groove. Pilot drill and fix using suitable screws ensuring the head of the screw is below the surface (Fig 21).

### HANDRAIL PREPARATION

Mark and cut the handrails to exact dimensions as baserail. Mitre the corners and glue, check fit. At this stage a length of fillet needs to be inserted into the handrail at both ends to fill the groove to allow the twist bracket and fixing screws. Cut two lengths of timber fillet to 80mm. apply PVA wood glue to all faces of the groove and insert fillets firmly into the groove (Fig 22) (do not screw this fillet as it may interfere with the twist bracket installation). Hold in place with masking tape and allow to dry. At this point cut two 80mm fillets for the start/end of the baserail run to match the handrail and glue/mask these in place to dry, these fillets can be screwed in place as per (Fig 23).



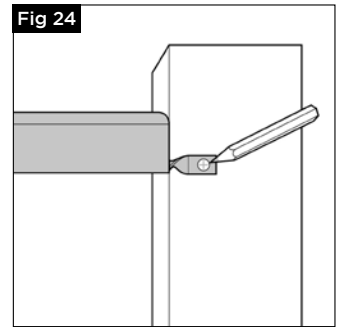
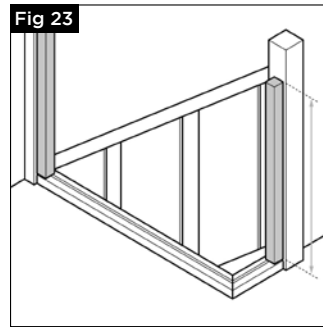
## INSTALLING TWIST BRACKET

Once handrail fillets are fixed locate the twist brackets central to the underside of the handrail and rebate/screw following the steps for the rake handrail previously detailed in Figs 4, 5, 6.

To set the correct height of handrail you will need to cut 2 battens at 825mm long. Clamp or masking tape the battens to inside face of both newel posts with the bottom resting on the top of the baserail. Lower the handrail on top of the battens so the twist bracket hole is on the outside of the newel face (Fig.24).

To drill the newel posts following the steps for the rake handrail previously detailed in Figs 8, 9, 10.

At this stage do not install the handrail as the glass panels should be fitted first.

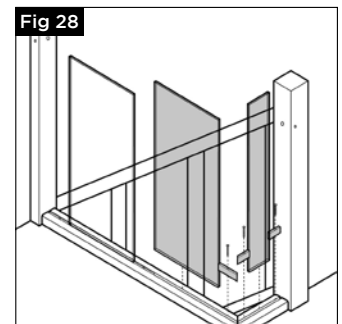
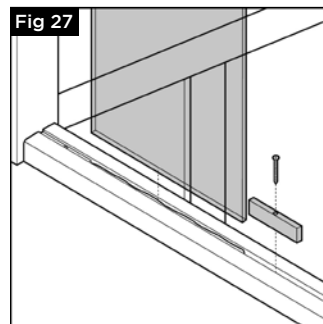
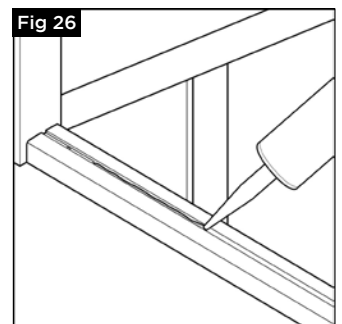
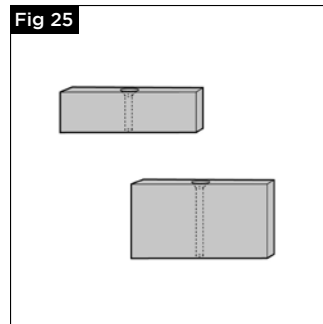


## INSTALLING LANDING GLASS PANELS

All Richard Burbidge glass panels are etched with the British Standards compliance details on the side of the panels, these must be visible as per the UK Regulations after installation. For landing installations it is recommended for an aesthetically pleasing finish to align all stamps facing the same direction and underneath the handrail.

To establish if you require a small landing panel for the short length of baserail which turns from the top newel post, the maximum distance from post to centre of baserail should not exceed 102mm, if it does a small landing panel should be installed. The maximum distance using 1 small landing panel is 270mm.

To calculate the number of panels required for the landing, measure from the first fillet to last fillet for a straight run or from the intersection of the groove in the mitred baserail, for a return landing, to the face of the last fillet. Divide the distance by 280 and round to the nearest whole number, this gives the number of panels required. Multiply the number of panels by 200. Subtract this from the original measurement, divide by the number of panels less 1 (to give gap sizes).



### Example

Measurement is 2150mm  
Divide 2150 by 280 = 7.7, rounded to the nearest whole number = 8 (panels)  
Multiply 8 x 200 = 1600  
2150mm - 1600 = 550mm divided by 7 (8 panels less 1)  
**= 78mm gap/fillet size**

Please note maximum fillet size is 99mm, if fillet size is exceeded add panel by rounding up to the next whole number (after dividing by 280) and recalculate.

Cut the handrail and baserail fillets to calculated length and drill a 4mm hole through the middle of each fillet and countersink so the head of the screw will be below the top of the fillet (Fig 25).

Starting from the 80mm fillet previously installed at the half post apply a bead of clear silicone into the baserail and insert the glass into the groove on top of the silicone, ensuring the edge of the panel is fully up against the timber fillet (Fig 26).

Place the next previously drilled timber fillet up against the edge of the glass panel and insert in place using PVA wood glue. Carry on until the baserail is complete. At this stage check all panels are equally spaced and then secure all baserail timber fillets in place using 38mm No 6 screws (Fig 27, 28).

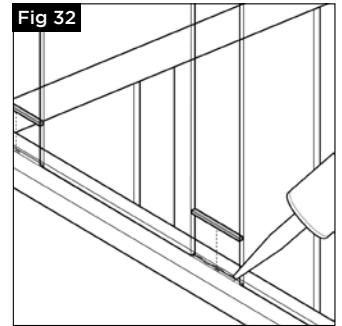
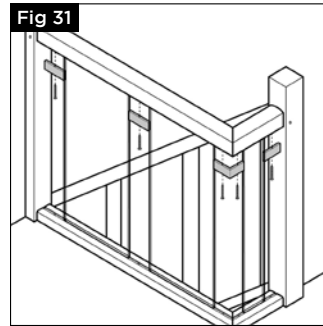
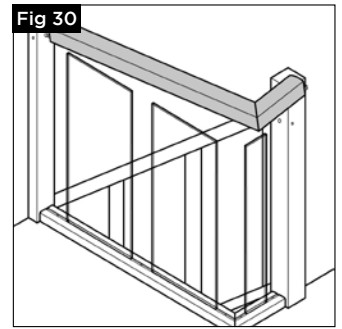
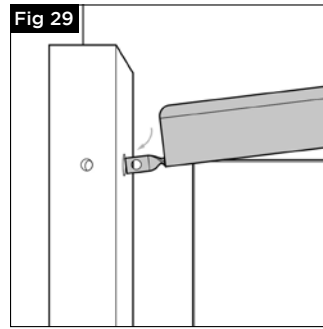
## INSTALLING HANDRAIL ON LANDINGS

Run a small bead of silicone along groove walls of the landing handrail and place a small amount of PU adhesive on each end of the handrail. Offer the twist bracket on the end of the handrail into half newel post (Fig 29) and carefully align the landing glass panels into the handrail groove (Fig 30) and insert the other end into the top newel. Once twist brackets are correctly in place insert the tapered screws into the 11mm diameter holes in both posts using a 6mm hexagonal drive/allen key (Fig.11) tighten until the shoulders on the handrail are flush against the newel faces.

Install the pre-cut fillets between the glass panels in the groove of the handrail, PVA glue and screw these in place using 38mm No 6 screws ensuring the countersink is deep enough to allow screw head to sit beneath the fillet face (Fig 31).

Cut the 5mm cover fillets to match the length of the previously installed infill fillets. Depending on personal preference the cover fillets all can be installed with a bevelled edge or a square edge facing up. Apply a bead of PVA wood glue and place into the groove to hide the screw head (Fig 32).

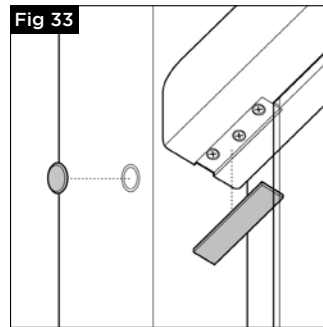
Once installation has been completed, using a clear silicone, apply all caps to cover twist bracket holes in newels and underneath handrails (Fig 33).



## FINISHING ADVICE

Varnish is available in clear matt, satin and gloss finishes and also tinted/coloured, varnish gives a tough, durable and hardwearing finish which requires minimal maintenance and is heat and water resistant. Coloured varnishes have the advantage of being suitable for application on previously varnished surfaces. When applying coloured varnishes you should note that as they do not penetrate like a true wood stain/dye it is a good idea to finish with a couple of coats of clear varnish which will prevent colour loss due to wear and tear.

As well as polyurethane varnishes there are a number of acrylic/ water-based varnishes which are solvent free, have a low odour and are extremely quick drying. They also have the advantage of easy brush maintenance and require only a quick rinse with water after use.



## PAINTING ADVICE

Use a 'knotting' solution on live knots and resinous areas. This prevents resin bleeding/seeping through onto the finished surface. New bare timber should have a coat of primer, followed by one or two coats of undercoat. Finish with a topcoat. Follow manufacturers guidelines for preparation/application.