

FRP Grating - Fabrication and Installation Guide

How to cut, seal, support and fasten FRP grating so that it lasts as long on site as it does in the specification.

9 sections - 5 tables - 25 data points | GT-FAB-GUIDE | Rev 1.0

Important - read first

This document is provided for selection guidance only. Values are nominal and subject to manufacturing tolerance. Chemical resistance and load data depend on the exact medium, concentration, temperature and support conditions of your application. Confirm the final specification with us before ordering.

FRP grating is easy to work with, which is exactly why small mistakes are common. Almost every premature failure we see comes from one of two things: a cut edge that was never sealed, or a fixing that was tightened until the panel cracked. This guide covers both, along with the layout and support decisions that have to be made before anything is cut.

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1 . Plan the layout before you cut anything

Nearly all of the waste on an FRP grating job is decided at this stage, not at the saw.

- Check the load bar direction. Pultruded grating carries load along one axis only, so the bars must run across the supports, not along them. Molded grating is bidirectional, but the panel still has a stronger direction and it should span the short gap.
- Land the panel joints on supports. A joint in mid-air becomes a crack within a season.
- Cut as few panels as possible and keep the offcuts, because they are useful for infill and for the next opening.
- Leave an expansion allowance. FRP moves roughly twice as much as steel for the same temperature change. Panels butted hard against a wall or against each other will bow.
- Work out where the fixings will go before cutting, so no fixing lands in a cut-away area.

What has to be decided, and why

Decision	Set it right	If you get it wrong
Load bar direction	Across the supports	Pultruded panels sag or fail under the design load
Panel joints	On a support, never mid-span	Joint opens and cracks
Expansion clearance	About 3 mm per metre of panel at 40°C swing	Panels bow, lift or crack at the fixings
Support spacing	From the load and deflection table for your span	Excess deflection underfoot, or a wasted support structure

2 . Measure and mark

- Measure the opening in several places. Openings are rarely square, and a panel cut to the drawing rather than to the opening will not fit.
- Use the smallest measurement you find, then trim if needed.
- Check the panel itself for square by measuring the diagonals. Panels come out of a mould with a small tolerance, and a panel that is 5 mm out of square will show at the joint.
- Mark the finished face, and cut from that side where the blade allows. Tear-out happens on the side the blade exits.
- Allow for the kerf: a typical abrasive blade removes 3 to 4 mm.

3 . Cutting

FRP cuts quickly with the right blade and badly with the wrong one. The wrong blade burns the resin, which is the very thing that protects the glass.

Tools and what to expect from them

Tool	Use it for	Notes
Circular saw, diamond or carbide-grit blade	Straight cuts, production work	Fastest and cleanest. A wood blade dulls within a metre and then burns the resin.
Jigsaw with a grit or carbide blade	Curves, small openings, awkward access	Slower, and the blade wanders in thick panels. Use a down-cut blade to protect the face.
Reciprocating saw	Demolition, trimming an installed panel	Rough. Only where the finish does not matter.
Angle grinder with a cutting disc	Small adjustments only	Generates a lot of dust and heat. Not for structural cuts.
Never: a torch, or any tool that melts	Nothing	Cutting by heat destroys the resin and the panel with it.

Cutting FRP releases glass fibre dust, which irritates skin, eyes and lungs. Wear a dust mask, sealed goggles, gloves and long sleeves, and cut outdoors or with extraction. Wash skin with cold water, not warm, because warm water opens the pores.

4 . Seal every cut edge

This is the single most important instruction in this guide. A panel that is cut and left unsealed will fail from the cut inwards, and it will fail long before the surface shows any sign of attack.

- What a cut does. The molded or pultruded surface is a resin-rich skin. Cutting exposes bare glass fibres at the cut face.
- Why that matters. The resin matrix is what resists the chemical. Glass fibre on its own has very little chemical resistance, and it wicks liquid along its length by capillary action.

- What happens next. The medium travels into the panel along the fibres, away from the cut. The bond between fibre and resin breaks down from the inside, and the panel delaminates.
- How to seal it. Coat the cut face with a resin matched to the panel's own system - orthophthalic, isophthalic, vinyl ester or phenolic - and let it cure before the panel goes into service. A compatible sealant is acceptable for mild duty, but a resin coat is the proper answer for chemical service.
- How much it costs. A few minutes per panel. Compare that with replacing the panel, and the downtime around it.

How far edge sealing has to go

Service	Cut edges	Note
Water, sea water, neutral salts	Seal recommended	Neglect shows up as surface fibre bloom rather than a structural failure.
Dilute acids and alkalis	Seal required	This is where capillary wicking starts to matter.
Strong acids, alkalis, oxidisers	Seal required, resin matched to the system	Coat with the same resin family as the panel. A generic sealant is not enough.
Food and potable water areas	Seal with a food grade system	The edge coat has to satisfy the same approval as the panel.

The same applies to drilled holes, notches and any other place where the surface has been broken. If you can see glass, seal it.

5 . Supporting and fastening

Grating that is simply laid in place will move underfoot, lift in wind and creep out of position. It has to be fixed, but not clamped.

- Support spacing comes from the load and deflection table, at your actual span - not from the panel size you happened to order.
- Fix at every support and along every free edge. An unfixed edge is a trip hazard and a sail.
- Use the right fixing for the grating type: molded clips for molded grating, pultruded clips or J-bolts for pultruded grating.
- Do not over-tighten. FRP has a much lower bearing strength than steel. Tighten until the panel is held, then stop. A cracked panel around a fixing is always an over-tightened fixing.
- Watch the metals. Stainless fixings on a stainless structure, galvanised fixings on a galvanised structure. Mixing the two in a wet environment gives you galvanic corrosion, and the fixing is the part that disappears.

Fixing methods

Method	Where it is used	Watch out for
Molded clip, top-mounted	Molded grating to a support	The commonest method. Do not drive the screw through the load bar.
Pultruded clip	Pultruded grating, where the top must stay clear	Needs the correct bar spacing.
J-bolt	Pultruded grating to a steel support	Over-tightening bows the panel between bars.
Hold-down plate or saddle	Panel edges, ramps, high-traffic openings	Must not trap water against the panel.

6 . Stair treads, walkways and openings

- Use the top and bottom step in a contrasting colour. People miss the last step more often than any other, and it is the one that hurts.
- Stair treads need a nosing. On FRP, that is normally a tread cover or an anti-slip strip rather than a metal angle, which would corrode against the panel.
- Gritted surface where it is walked on wet or oily; smooth surface where trolley wheels or cleanliness matter. See the specification sheet for the surface options.
- Every penetration and opening needs edge restraint. An unrestrained cut-out is a crack starter, and a foot trap.
- Keep the walkway clear of the panel joint. Where a walkway crosses a joint, put a support under it.

7 . Handrails and guardrails

- Height, post spacing and rail spacing are set by the standard that governs your site. Confirm which one applies before ordering.
- FRP handrail has a lower modulus than steel, so it needs closer post spacing to feel solid. Copying a steel layout gives a rail that flexes.
- Decide early whether the rail fixes to the grating or to the structure. Fixing to the grating is faster; fixing to the structure is stiffer and does not load the panel.
- Where the rail fixes to the grating, use a load-bearing bar underneath, not just the clip.

8 . Common mistakes

Every item below is something we have seen on a real site, and every one of them is avoidable at no cost.

What goes wrong, and what it costs

Mistake	What happens	Avoid it by
Cut, then installed without sealing	Delamination from the cut inwards	Seal the edge before the panel goes down
Pultruded bars running the wrong way	Panel sags under the design load	Mark the bar direction on the panel before cutting
No expansion allowance	Panels bow and lift at the fixings	About 3 mm per metre at a 40°C swing
Fixings over-tightened	Cracks radiating from the fixing	Tighten until held, then stop
Stainless fixings on galvanised steel	The fixing corrodes away first	Match the fixing metal to the structure
Wood blade in the saw	Burned resin and a splintered edge	Diamond or carbide-grit blade only
Panel unsupported during the cut	Tear-out along the cut line	Support both sides within 100 mm of the cut
Joint left mid-span	Joint opens and cracks	Move the joint onto a support

9 . Ordering panels cut to size

Everything in this guide can be done on site. It is simply quicker, cheaper and more reliable to have it done before the panels ship.

- Send a dimensioned sketch. A photograph of the opening with the measurements written on it is usually enough, and it is often clearer than a drawing.
- We cut to a tighter tolerance than is practical on site, seal every edge with a resin matched to the panel system, and mark each panel to match the sketch so it goes straight to the right opening.

- You receive panels that are ready to lay. No site cutting, no unsealed edges, no dust, and no offcuts to dispose of.
- Panels can be packed to match the installation sequence, and combined with other products in the same container.
- Tell us the medium and the temperature at the same time, so the edge sealing matches the service and not just the panel.