GRP HANDRAIL INSTALLATION GUIDE

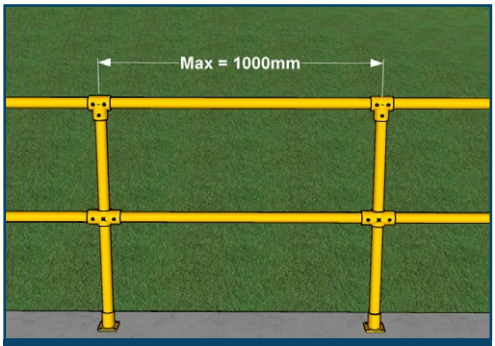
Use this **installation guide** to learn how to assemble GRP handrails in a varoius situations.

Glass reinforced plastic (GRP) handrails offer unltimate protection in dangerous zones, and can be configured in many ways to meet your requirements.

Our GRP Handrails are 50mm in diameter and are supplied as tube & fittinsg similar to standard key clamp.

Use this guide to learn the basic principles that are involved in assembling a GRP handrail system.

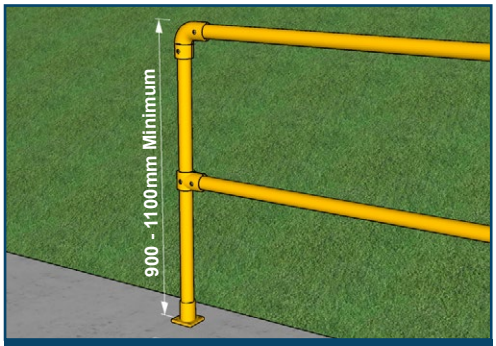
STANDARD PRINCIPLES



POST SPACING

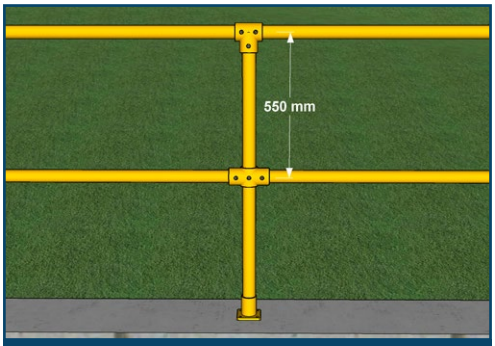
To comply with 0.74KN loading requirements, **GRP handrail posts should be spaced at 1000mm centres maximum.**

1250mm post spacing can be done, but will not meet this loading requirement.



HANDRAIL HEIGHT

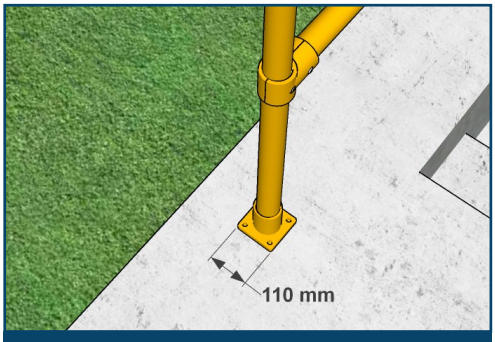
GRP handrails are recomemmended to be **minimum -**
1100mm high high on level surface.
900mm high on a ramp / steps.
1250mm high when used for edge protection.



MID-RAIL HEIGHT

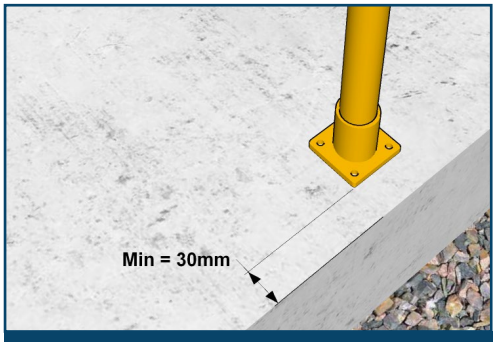
On standard double rail GRP handrails, **the middle rail shouldn't be more than 550mm down from top rail, centre to centre.**

Space between rails = **500mm**



HANDRAIL WIDTH

GRP tubes are 50mm diameter, If you are fixing with baseplates, ensure the surface you are fixing to is at least 170mm wide to ensure sturdy handrail.



BOLT DOWN FIXING

When fixing with baseplates, ensure there is at least 30mm clearance from the edge of the baseplate to the edge of the surface you are fixing onto.

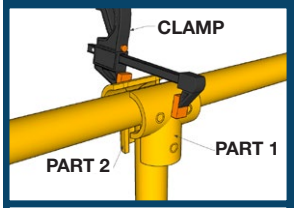
FITTING FIXINGS

All 2 part fittings are fastened together with A2 grade stainless steel bolt & rivnut creating a durable handrail system.

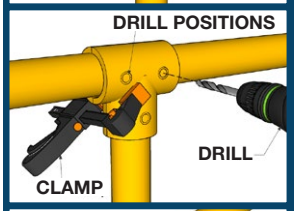
THE **BASICS**

TWO PIECE FITTING ASSEMBLY

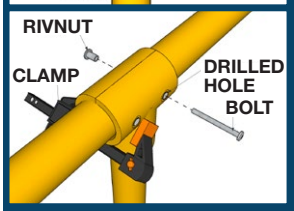
Method for all fittings with 2 parts, e.g. GRP-101, GRP-128 fittings. See Page 4 for guidance on Swivel fitting assembly.



1. Firstly clamp fitting parts around the post / tube in the position to be fitted.



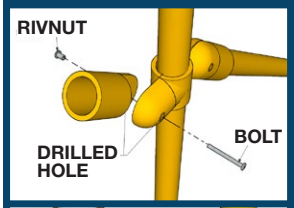
2. Each two piece fitting has a marked position for the bolt & rivnut to be fixed. Simply drill a 9mm hole through the fitting parts & tube while it is clamped.



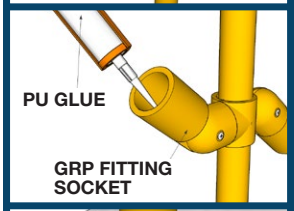
3. Push the stainless steel rivnut into one side of the handrail fitting, and the bolt into opposite side through the tube and tighten with a screwdriver or drill on low chuck speed.

ONE PIECE FITTING ASSEMBLY

Method for Baseplate fittings, side mount fittings & Swivel fittings, e.g. GRP-166, GRP-173.

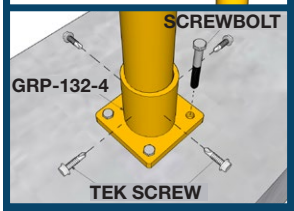


1. Firstly fix the fitting to the fixing surface with bolts in correct position, or if of a swivel fitting, attach to this with bolt & rivnut.

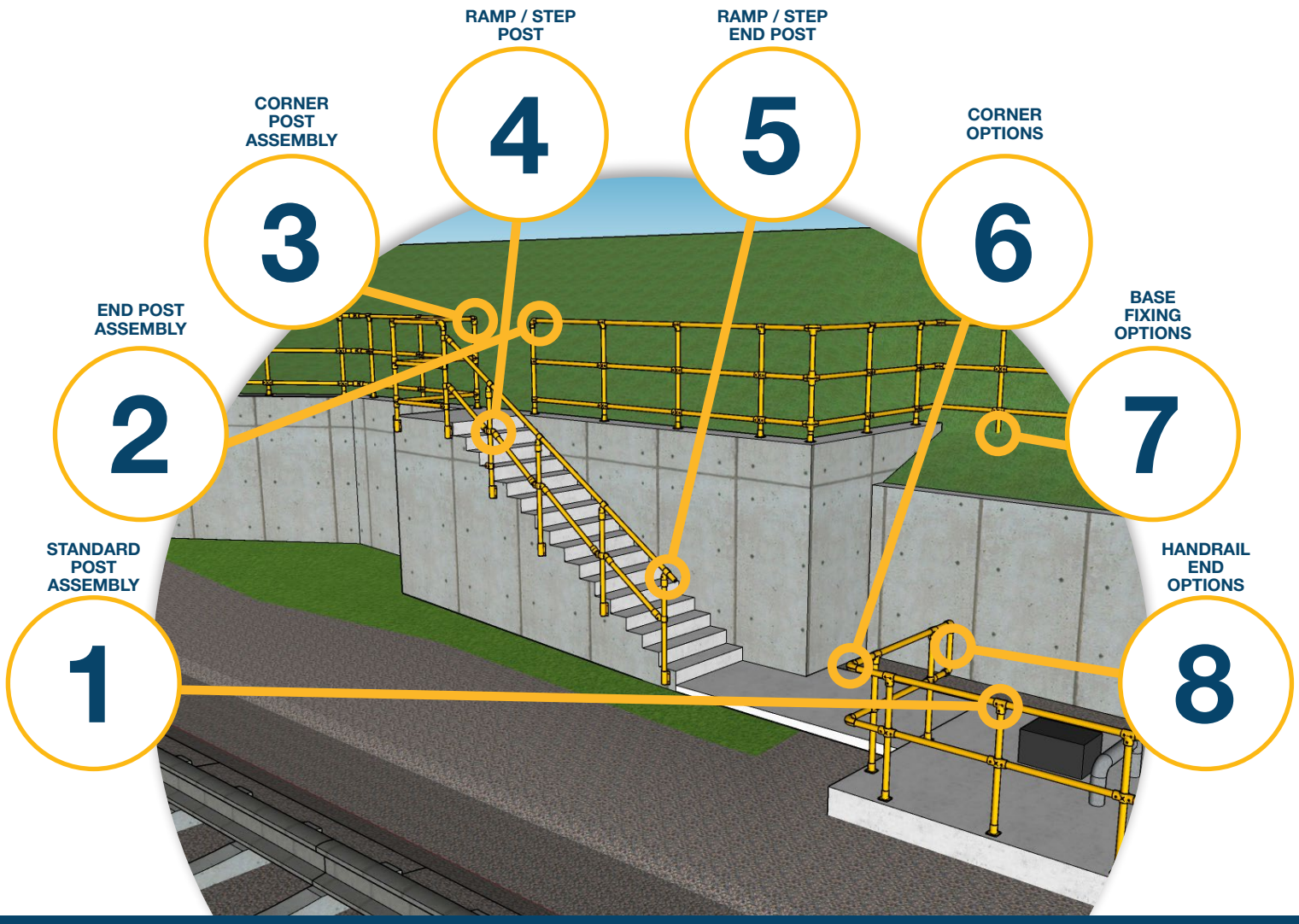


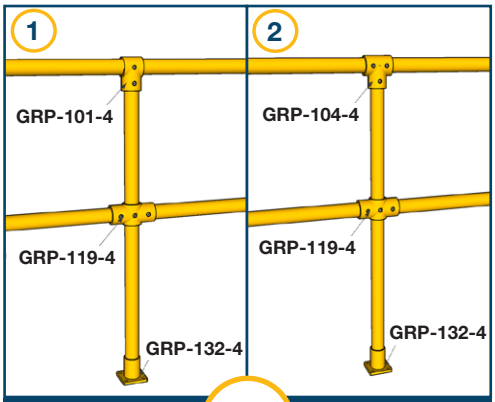
2. Now fit the tube into fitting. there are a couple of methods for this -

   A. **PU Glue** - apply the glue into the fitting. Insert tube into fitting. (Optional - add a tek screw underneath fitting to hold tube in place while glue sets.)
   B. **Tek Screws** - drill 2 - 4 x TEK screws, 1 each side of fitting to hold tube in place.



DDA HANDRAIL DIAGRAM





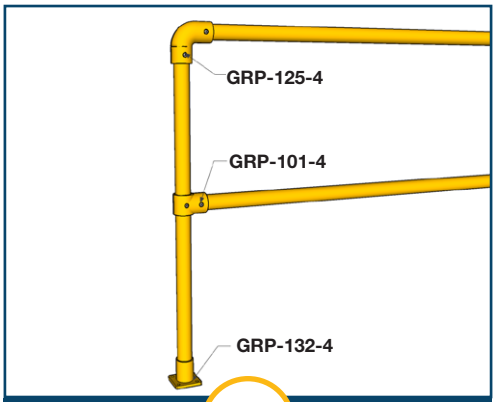
1

STANDARD POST

All GRP post variants on level surfaces can be bolted down, side mounted or root fixed in position - see point 7 for options.

The **GRP-101-4** fitting is used to connect top rail to the post (1), when joining top rails, use **GRP-104-4** fitting instead (2). The **GRP-119-4** fitting connects the middle rails, post is bolted down with **GRP-132-4**.

(Fitting assembly tips on page 2)
(See Diagram A for triple rail handrail tips)



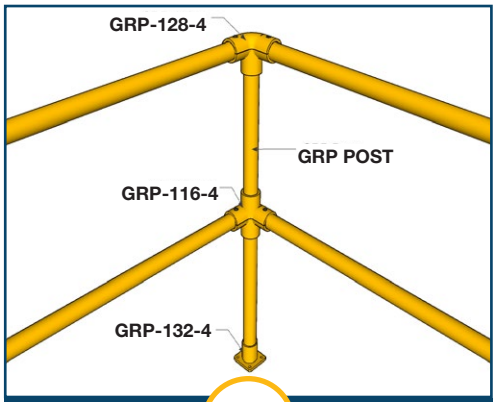
2

END POST

End posts are used at the end of the handrail run, see point 8 for other handrail end options.

The **GRP-125-4** fitting is used to return the top rail to the post, and **GRP-101-4** fitting connects middle rail, post is bolted down with **GRP-132-4**.

(Fitting assembly tips on page 2)
(See Diagram A for triple rail handrail tips)



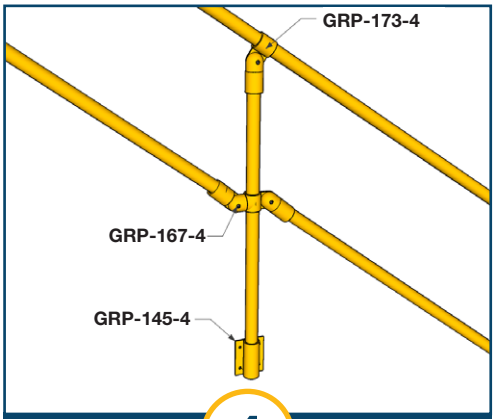
3

CORNER POST

Corner posts are used to create a 90° bend in the handrail run, see point 6 for other corner options.

The **GRP-128-4** top-rail fitting and **GRP-116-4** mid-rail fittings are used to form a 90° bend in handrail, post is bolted down with **GRP-132-4**.

(Fitting assembly tips on page 2)
(See Diagram A for triple rail handrail tips)



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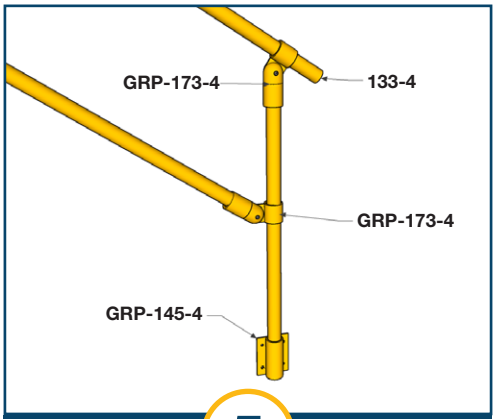
RAMP/STEP STANDARD POST

All ramp/step GRP post variants can be side mounted or root fixed in position - see point 7 for options.

Use **GRP-173-4** swivel fitting to connect top rail to the post, Mid-rail is connected using **GRP-167-4** swivel fitting, post is side fixed with **GRP-145-4**.

(Swivel Fitting assembly tips on page 4)
(See Diagram A for triple rail handrail tips)



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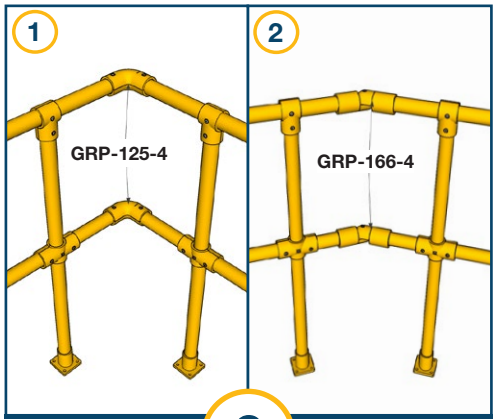
RAMP/STEP END POST

End posts are used at the end of the handrail run, see point 8 for other handrail end options.

Use the **GRP-173-4** swivel fitting to return the top & middle rails into the end post as above, post is usually side fixed with **GRP-145-4**.

(Swivel Fitting assembly tips on page 4)
(See Diagram A for triple rail handrail tips)



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CORNER OPTIONS

Assembly options for offset corners on level & sloping handrails.

1. 90° Offset corner - formed using 2 x **GRP-125-4** fittings.
2. Variable corner - If corner is less / greater than 90°, use 2 x **GRP-166-4** fittings.

(For triple rail handrail - add another of the mid-rail fittings to connect third rail)

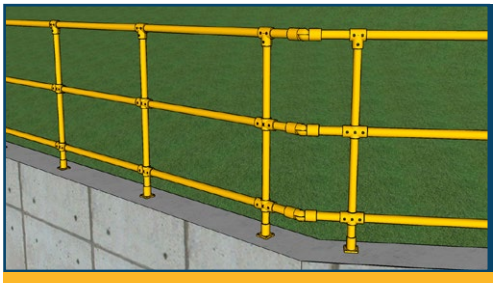
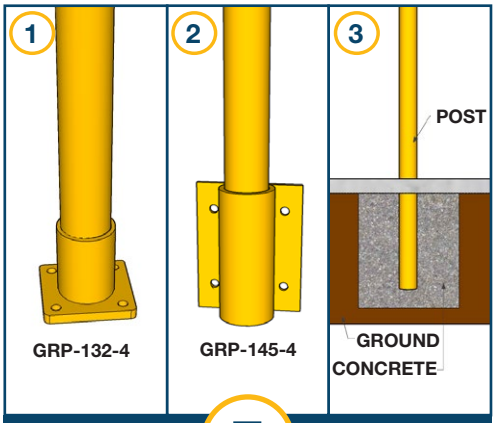


DIAGRAM A - TRIPLE RAIL SET UP...

If a third rail is required on your handrail set up, insert another rail and use same fittings as instructed for middle rail.

Third rail can be added at height of your choice but usually fitted just above the baseplate fitting or around 100mm above ground/fixing surface.



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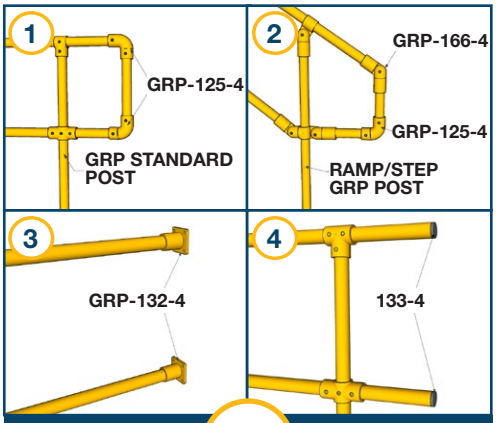
BASE FIXING OPTIONS

1. Bolt down fixing method - **GRP-132-4** fitting is used on level surfaces.
2. Side fixing method - **GRP-145-4** side fixing enables the handrail to bolted to the side of a ramp or step.
3. Dig-in fixing method - **Concrete the post into the ground** for a secure fix.



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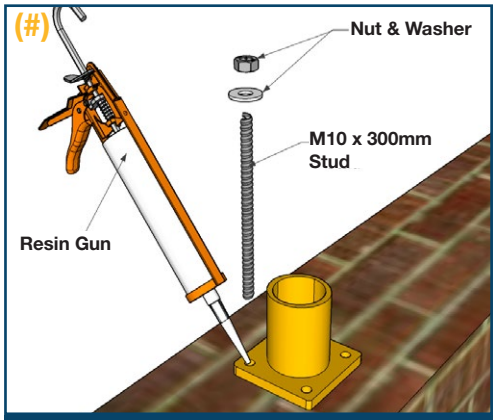
HANDRAIL END OPTIONS

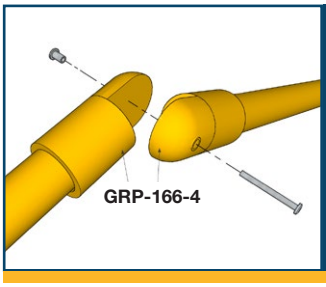
1. Level looped end - 2 x **GRP-125-4** fittings can form a looped end on .
2. Raking looped end - 1 x **GRP-166-4** swivel & 1 x **GRP-125-4** elbow fittings can form a looped end on a set of steps or on steep ramp handrail.
3. Wall mount - End handrails at wall with 2 x GRP-132-4 baseplates.
4. End cap - Use 133-4 plastic end caps on ends of tubes.



RESIN ANCHOR FIXING

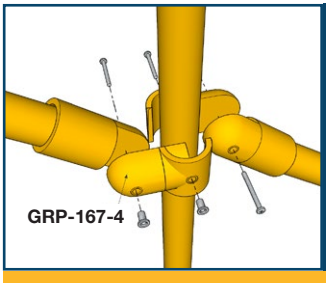
The 300mm long resin anchors are commonly used to fix the handrail to a brickwall or tarmac surface. Below are a few tips to help with fixing -

- The studs should be **drilled through a motar joint** on the top soldier course to reduce risk of breaking bricks.
- The holes for the handrail should **be at least 250mm deep**.
- **Always clean the hole to remove all dust** before inserting the resin to ensure a strong fix.



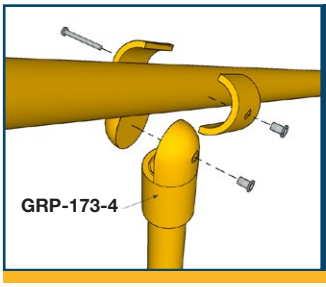
GRP-166-4 SWIVEL FITTING ASSEMBLY

1. Drill the fitting parts - clamp 2 part pieces together, drill 9mm hole through fitting peices at marked point, insert and tighten bolt & rivnut.
2. Insert tube - now insert tube into 1 piece sockets each side of fitting and fix as shown on page 2.



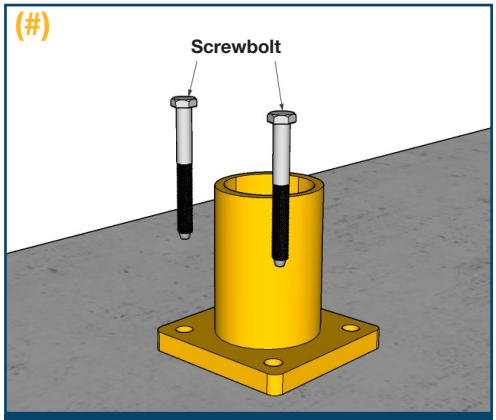
GRP-167-4 SWIVEL FITTING ASSEMBLY

1. Set height of rail - measure and mark postion of rail
2. Drill the fitting parts - clamp 2 part pieces around post, drill 9mm hole through tube & fitting peices, insert and tighten bolt & rivnut.
3. Attach swivel parts - now fix 1 piece sockets each side of fitting with bolt & rivnut and fix rails as on page 2.



GRP-173-4 SWIVEL FITTING ASSEMBLY

1. Set height of rail - measure and mark postion of rail
2. Drill the fitting parts - clamp 2 part pieces around post, drill 9mm hole through tube & fitting peices, insert and tighten bolt & rivnut.
3. Attach swivel part - now fix 1 piece socket to rest of fitting with bolt & rivnut and fix rails as on page 2.



SCREWBOLT FIXING

Screwbolt fixings are commonly used to fasten the handrail into concrete & timber surfaces. Below are a few tips to help with fixing -

- For a strong, secure fix, **remove the dust from the hole** before inserting the fixing.
- Use an **impact driver to tighten the screwbolts** to ensure the base fittings are securely fixed.

TOOLS

- 9mm HSS drill bit or 9mm Glass bit
- Diamond tipped saw to cut GRP tubes recommended.
- SDS drill if bolting handrails into concrete/brick work.
- Impact driver / Combi drill for tightening Bolts & Screws.

OTHER INFORMATION

- View diagrams marked with **(#)** for fixing guidance.
- GRP-132-4 Baseplates use M10 fixings.
- GRP-145-4 side mount fitting use M8 fixings.
- Use No. 12 Tek Screws or PU glue for fixing 1 piece fittings to tube.