Re-Grab Handrail System

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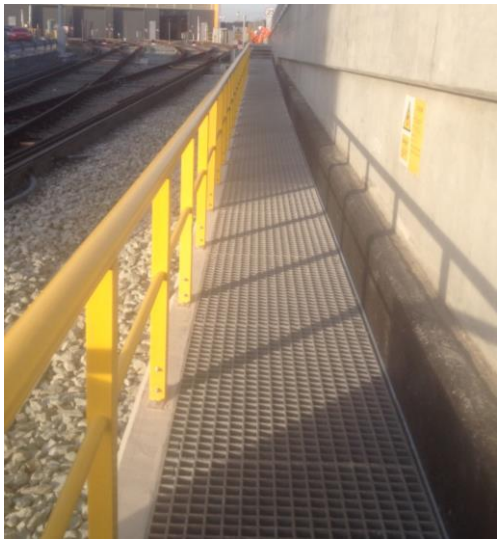
Re-Grab Handrail



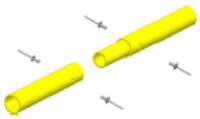
RE-GRAB Handrail is warm to touch – an important factor to consider for modular handrails, handrail design walkways and ladders that are being used in outdoor contexts.

The **RE-GRAB** GRP Handrail is a cost effective modular handrail system consisting of standard **RE-STRUCT** profiles. This modular system shares many of the convenient features of existing proprietary galvanised steel systems (mainly keeclamp) but offers all the advantages of GRP and is very easy to install.

All our handrail systems are manufactured to BS EN ISO14122-3:2001 and BS5395-1-2010.

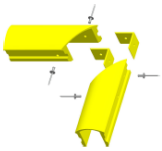
Connections

Mid Rail Splice Kit

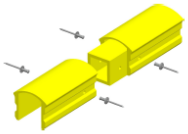


Adjustable Handrail Splice

Corner Handrail Splice Kit



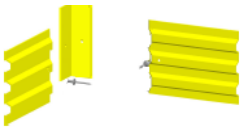
Straight Handrail Kit



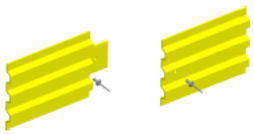
Handrail Stanchion

Kick- Plate

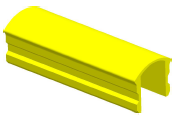
Corner Kick-Plate Splice



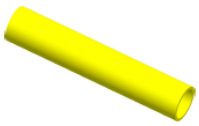
Straight Kick-Plate Splice



Handrail



Midrail



Stainless Steel Foot

GRP Systems Ltd T/A Relinea - 14 Crosshill Road, Crumlin, Co Antrim, BT29 4BQ
Tel : +44 (0) 28 944 70010 Fax: +44 (0) 28 944 70020 Email: info@relinea.com
Registered number: NI053745. VAT number: GB 854 0334 42.

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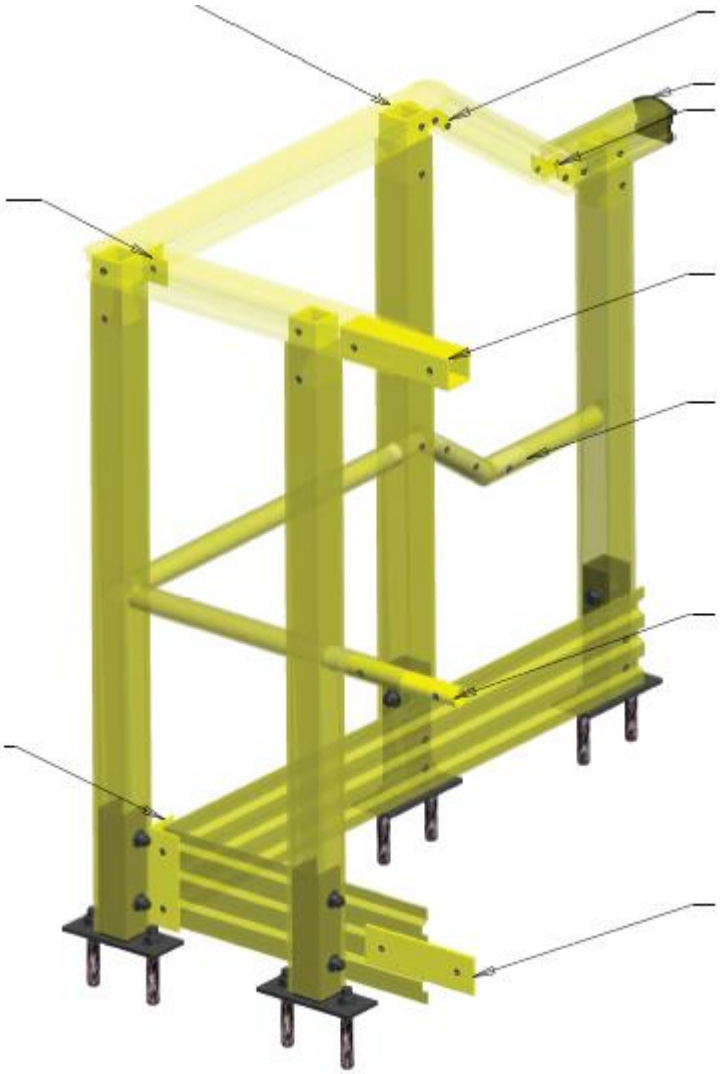
Re-Grab Handrail Installation

Assembly



****Note: Barring the Wall and Floor Fixings, we supply all the fixings needed for the GRP Grab Handrail Systems****

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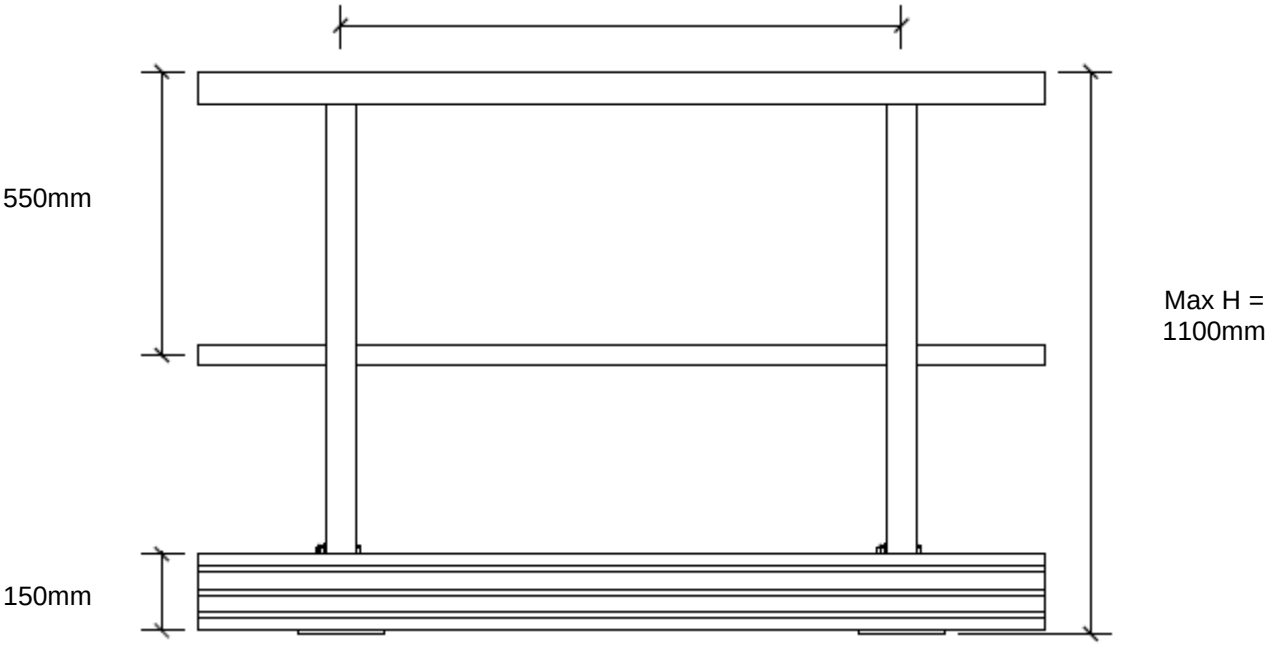
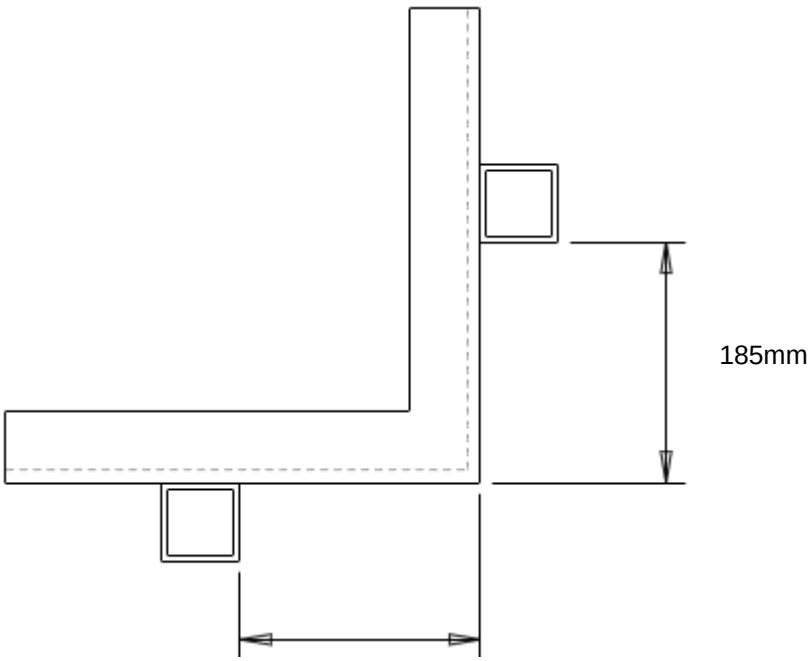
Re-Grab Handrail Installation

Installation

Max Spacing Between HR Posts Centres = 1100mm; Applies To Top & Side-Fix Handrail





Max Spacing of HR Posts from Corner; Applies To Side-Fix Handrail Only

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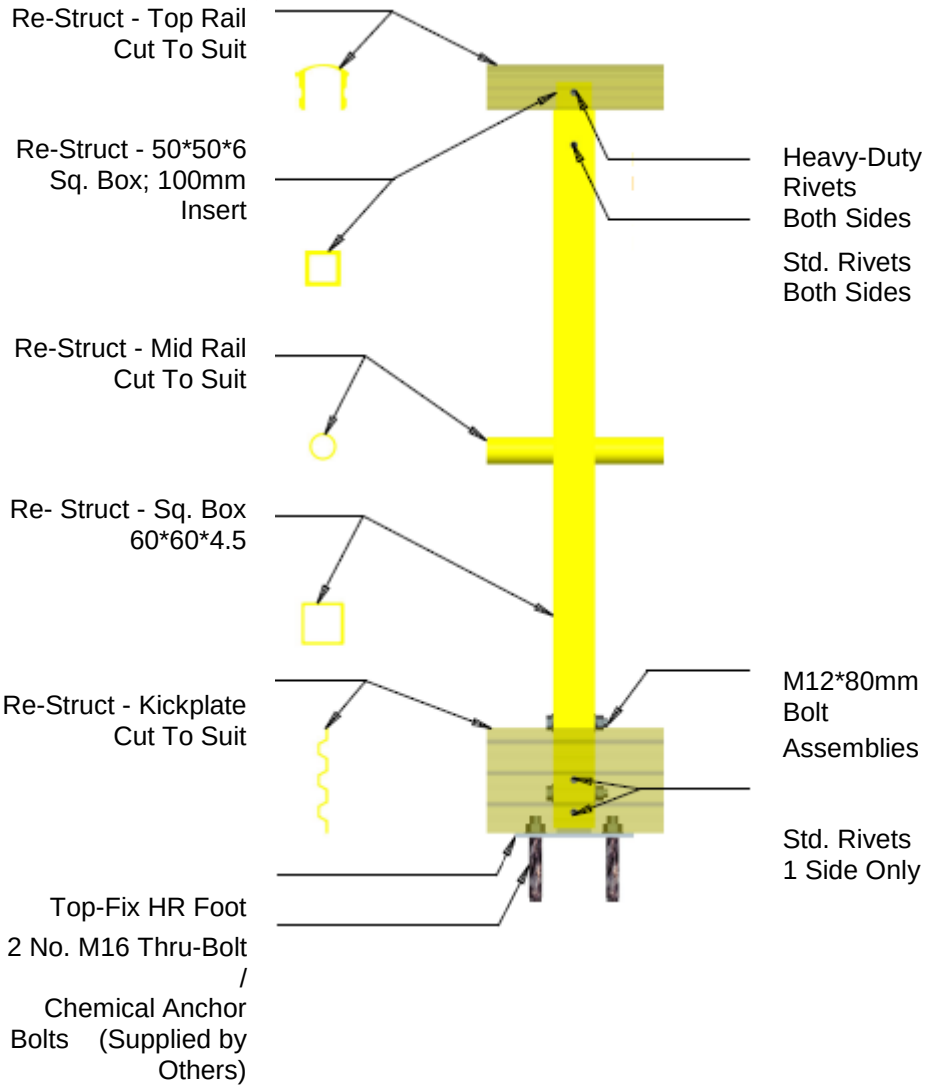
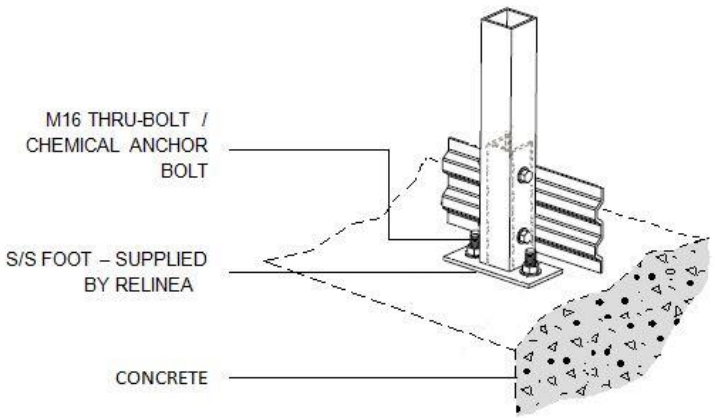
Re-Grab Handrail Installation

Assembly & Installation of Top Fix Handrail



Top Fix Handrail Post Installation Methods



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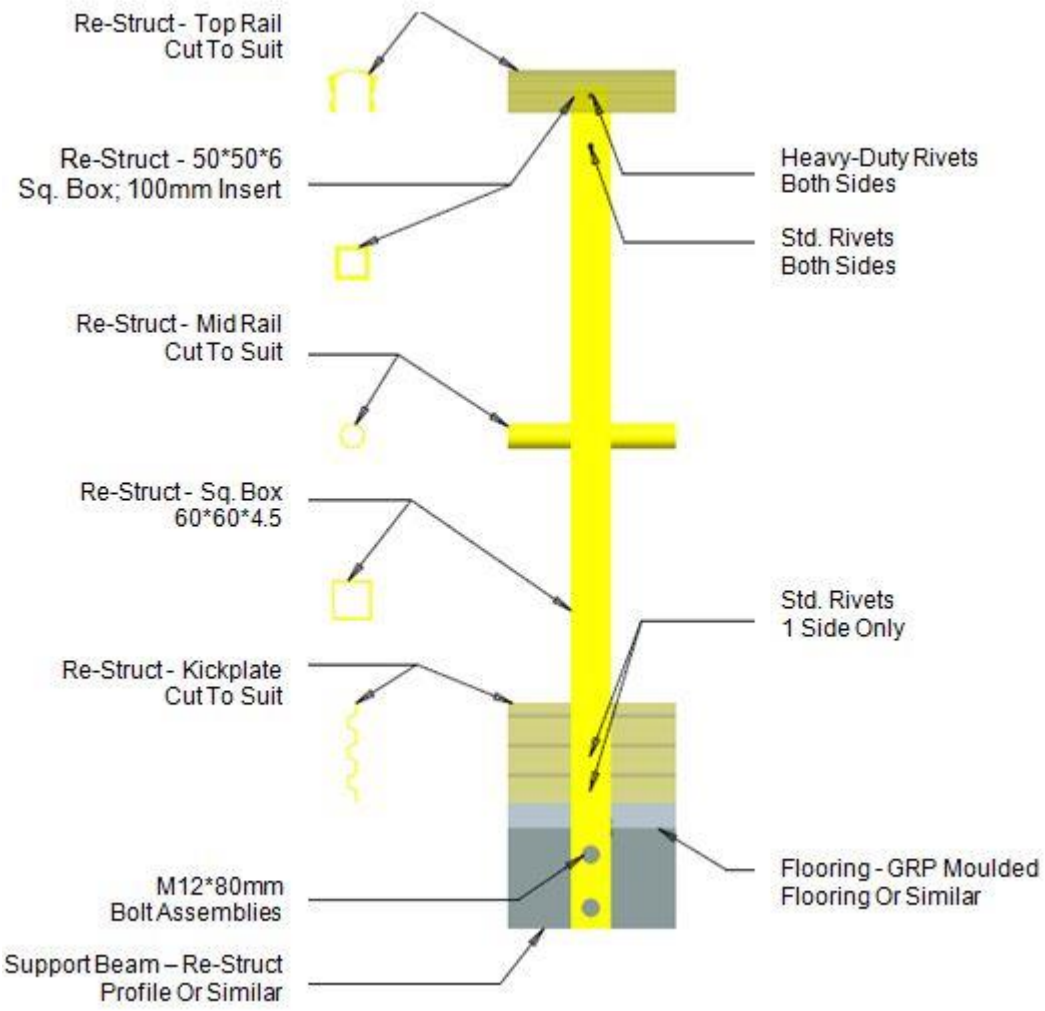
Re-Grab Handrail Installation

Assembly & Installation of the Side-Fix Handrail



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Re-Grab Handrail Engineering Specification

Part 1 - General

1.01 Related documents

a) Contract drawings, including general drawings and addenda drawings
b) General specification sections.

1.02 Summary

a) This section covers moulded grating products which include:
    1. GRP Handrail

1.03 Scope of Work

a) The Contractor shall furnish all labour, materials, equipment and incidentals as required to properly install all of the GRP products specified herein.

1.04 Quality Assurance

a) All GRP Products and Fabrications shall be supplied by an experienced firm who has continually engaged in the manufacture or fabrication of glass reinforced plastic products.
b) The Installing Contractor shall assure that all field dimensions are taken accurately and communicated properly to the GRP Fabricator, that other trades will not affect a proper installation of the GRP, and that all manufacturer's instructions and recommendations are followed.
c) No substitution of materials will be accepted unless they are submitted for review and the Architect/Engineer approves their use.

1.05 Design Requirements

a) All GRP ladder and handrail components shall conform to EN13706 European standard for structural pultruded profiles.

1.06 Submittals

a) Submit complete shop drawings and engineering data for all GRP materials and fabrications as required by the scope of work.
b) Product data;
    1. Manufacturers catalogue with load data for all GRP structural shapes.
c) Drawings showing all GRP materials as required and include all dimensions, fasteners, tolerances, assembly and installation details as required.

Part 2 - Products

2.01 General

a) All GRP items under this section shall be composed of fibreglass reinforcement and resin qualities, quantities, properties, arrangements and dimensions as necessary to meet the design requirements and dimensions as specified in the Contract documents.

b) All GRP materials will be manufactured with either Isophthalic polyester or vinyl ester resins.

c) All GRP structural shapes shall be fire retardant per ASTM E-84 Class 1 flame spread of 25 or less.

d) After fabrication of GRP, all cuts, holes and abrasions shall be sealed to prevent corrosion.

e) All mechanical fixings shall be Type 316SS (stainless steel)

2.02 Handrail

a) All posts and rails are to be GRP structural shapes manufactured by the pultrusion process. The structural shapes shall be composed of fibreglass reinforcement and resin in qualities, quantities, properties, arrangements and dimensions as necessary to meet the design requirements and dimensions specified in the Contract Documents.

b) Fibreglass reinforcement shall be a combination of continuous roving, continuous strand mat, and surfacing veil in sufficient quantities as needed by the application and/or physical properties required.

c) Resins shall be an isophthalic polyester or vinyl ester with chemical formulation necessary to provide the corrosion resistance, strength and other physical properties as required.

d) All finished surfaces of GRP items and fabrications shall be smooth, resin-rich, free of voids and without dry spots, cracks, crazes or unreinforced areas. All glass fibres shall be well covered with resin to protect against their exposure due to wear or weathering.

e) All pultruded structural shapes shall be further protected from ultraviolet (UV) attack with 1) integral UV inhibitors in the resin, 2) a synthetic surfacing veil to help produce a resin rich surface.

f) All GRP products shall have a tested flame spread rating of 15 or less per ASTM E-84 Tunnel Test.

g) Top rails are to be 51 mm internal ergonomic profile, the mid rails are to be 38mm (32mm ID) circular tube, the posts are to be 60x60x4.5 mm square tube and kickplate is to be 150 mm deep x 3 mm thick with reinforcing ribs.

h) The completed handrail installation shall meet the following load requirements with a minimum factor of safety of 2.0:

1. Concentrated Load: 891 N applied in any direction at the top rail.
2. Uniform Load: 730.5 N/m of the top rail in any direction.
3. Loads are assumed not to act concurrently.

i) All rails, posts, and kick plates are to be integrally pigmented.

j) Pultruded structural shapes used in the handrail are to have the minimum longitudinal mechanical properties listed below:

Property	**Test Method**	**Min properties E23 grade**	**Min Properties E17 grade**	**Units**
Full Section test	Annex d, pr EN13706-2	23	17	Gpa
Tension Modulus – axial	EN ISO 527-4	23	17	GPa
Tension Modulus – transverse	EN ISO 527-4	7	5	GPa
Tension Strength – axial	EN ISO 527-4	240	170	MPa
Tension Strength – transverse	EN ISO 527-4	50	30	MPa
Flexural Strength – axial	EN ISO 14125	240	170	MPa
Flexural Strength – transverse	EN ISO 14125	100	70	MPa
Interlaminar shear strength - axial	EN ISO 14130	25	17	MPa
Flame Spread	E-84	25 or less		N/A

k) All fasteners used in the railing system are to be 316 SS. Rivets to be 18-8 SS.

l) Suppliers, Relinea, 14 Crosshill Road, Crumlin, Co Antrim, BT29 4BQ,
Tel +44 (0) 2894 422270

Part 3 Execution

3.01 Fabrication

a) The handrail post/rail connection is to be fabricated such that the rails are unbroken and continuous through the post without the use of packs or splices. The bottom rail is to be installed through the post at a prepared hole made to fit the outside dimensions of the rail. The top rail is to fit into a machined, u-shaped pocket formed into top of the post such that the rail is located at the centre of the post. All exposed post corners are to be radiused to eliminate sharp edges. The rails are to be joined to the post through a combination of bonding and riveting. No sharp, protruding edges are to remain after assembly of the handrail. Spacing of the posts shall not exceed 1.83 m.

b) The bases of the posts are to be attached according to the contract drawings. The bases of the posts are to be reinforced to a height of 254 mm.

c) When required, rails are to be spliced using a 152.4 mm length of 38.1 mm x 3.2 mm GRP square tube bonded and riveted into place using epoxy adhesive and 18-8 stainless steel rivets.

d) To avoid embrittlement at cold temperatures and loss of strength at high temperatures, no PVC or CPVC connectors should not be used as a load carrying component of the handrail system.

e) All shop fabricated cuts are to be coated with a vinyl ester resin to provide maximum corrosion resistance. Field cuts are to be similarly coated by the contractor in accordance with the manufacturer's instructions.

3.02 Inspection

a) Upon receipt of material at job site, the contractor shall inspect all materials for shipping damage

3.03 Handling and Storage

a) Handle all GRP materials with reasonable care to prevent damage. Do not drag GRP material. If GRP materials are not being installed immediately, then store them to prevent twisting, bending or breakage of any kind.

3.04 Installation

a) Installing contractor to coordinate and verify that other construction trades and materials have been installed per the contract drawings and that they are accurate in location, alignment, elevation and are plumb and level.

b) Install GRP materials in accordance with the installation drawings supplied by the GRP supplier.

c) Install materials accurately in location and elevation level and plumb.

d) All field cuts, holes or abrasions must be sealed with sealing resin to prevent corrosion.