CAPTRAD COMPOSITES

GRP KEYCLAMP HANDRAILS

Captrad Composites modular handrail system consists of a 50mm grp pultruded tube in 5m lengths that fit exactly into the comprehensive range of matching grp moulded fittings. The fittings connect to the tube with bolts passing through both parts of the fitting and the tube. The bolt head and the nut recess into the fitting so there are no exposed edges to catch the hand of the user.
The handrail system has been independently tested by the Engineering Dept at Lancaster University. Their tests confirm that the handrail system meets all the requirements of BS4592:0 2006+A1 2012 Industrial flooring, stairs and handrails for the general duty (0.36kN/m). We recommend a maximum span between stanchion centres of 1.25m.

The modular handrail system offers a cost effective alternative to conventional metallic materials (stainless steel or galvanized mild steel).
The system offers benefits in:

- Very easy to install – simple to cut to length, easy to drill with hand tools – no need to seal cut ends
- Special bolt set where both the bolt head and nut recess within the moulding reducing the risk of hands or clothing catching on exposed fixing
- Excellent corrosion and weather resistance – no concerns about damage to any coating leading to corrosion
- Light weight (1/4 of the weight of steel) so much easier to manhandle to limited access sites
- Very low thermal conductivity – seen as warm to the touch compared to steel
- No recycle value so much reduced risk of theft.
- Electrically non-conductive
- Available in colours yellow and grey as standard – other colours could be made to order

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Operating Temperature Range

The maximum continuous operating temperature is 90oC but short term exposure up to 130oC will not affect the handrail mechanical properties. Made from fully cured cross linked thermosetting resins, the handrail system does not soften or distort at the maximum operating temperatures and is not embrittled by low temperatures and can be safely used down to -50oC.

Service Life & Maintenance

The modular handrail system will have a design life of +20 years in normal industrial environments. Some fading of colour shade will take place over time but this does not affect the structural performance of the handrail system. Little or no maintenance is expected to be required over the service life but minor damage can be repaired by sanding off any exposed fibre. and painting with a good quality paint (epoxy or PU paints recommended).

Cutting, Drilling & Machining

Diamond tipped saws blades are recommended for cutting the handrail tubes and toe plate but abrasive disc cutters can also be used. Drilling requires only hand tools with conventional HSS drills. The dust generated is non-toxic but can be a skin irritant. Suitable dust extraction should be used to minimize airborne dust and operators equipped with suitable protective clothing. A safety data sheet is available on request.

Colour

The full range of the modular handrail system is available in safety yellow and a more limited range in a steel grey colour

Technical Description

The tube is used for the stanchions, handrail and knee rail. Both the tube and the Toe plate (Kick board) are made by the pultrusion process giving very high strength to weight ratio with the polyester surface veil backed by continuous strand mat giving excellent resistance to weathering and the scuff, scratches on normal industrial use. The moulded fittings are all made by hot pressed moulding in metal tools giving excellent dimensional consistency and good surface finish.

Raw Materials

All the raw materials used to make the modular handrail system comply with the relevant ISO or EN product specification standards.
The pultruded tube and toe plate are made with a high grade isophthalic polyester resin reinforced with E glass fibre roving, woven fabric and continuous filament mat and includes a polyester surface veil. The moulded fittings are made from a proprietary sheet moulding compound which includes chopped E glass fibre, isophthalic polyester resin and mineral filler.

Chemical Resistance

The modular handrail system exhibits excellent resistance to a wide range of chemicals including acids, alkalis, fresh and salt water, ethylene glycol, petrol and other fuel oils. It is not recommended for extended exposure to concentrated acids or alkalis.

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TU5501Y 50mm/40mm Tube

Colour Yellow
Product Code TU5501Y
Weight -

50 x 40mm GRP pultruded tube (5mm wall) in 5m lengths that fit exactly into a comprehensive range of matching GRP moulded fittings.

3 Way Connection (Tee)

Colour Yellow & Grey
Product Code MH3W
Weight 0.22kg

Used to make a 90deg connection (Tee) of the handrail tube to the stanchion post. Can also be used to join the stanchion post at the end of a run to the knee rail tube. It is not recommended to use this fitting to join lengths of handrail tube – use the tubular spigot joint.

Corner 3 Way

Colour Yellow & Grey
Product Code MHCORNER3W
Weight 0.55kg

Used to make a 3 way 90deg joint between handrail and stanchion post. Three bolts are required for this fitting. The fitting is in two parts. The upper part is also used for the right angle bend (code MHRABY) and the lower part is also used in the 4 way corner joint (code MHCORNER4W)

Corner 4 Way

Colour Yellow & Grey
Product Code MHCORNER4W
Weight 0.22kg

Used to make a 4 way 90deg joint between handrail and stanchion post. The stanchion post must be a continuous length from base to handrail. Knee rail tubes cut to length to fit between adjacent stanchion posts. The fitting is in two parts either of which is also used for the lower part of the 3 way corner (code MHCORNER3W)

Round Hole Base Foot

Colour Yellow & Grey
Product Code MHBF
Weight 0.51kg

Used as the structural base foot for stanchion posts. Maximum recommended stanchion post spacing is 1.25m. The stanchion post fits into the base foot and should be secured using an M10 bolt with penny washer and 2 penny washers & nut. There are no pre-moulded indents to show where the holes are to be drilled so they can be drilled at any convenient position using a 10mm HSS drill bit. The holes to connect the base foot to the floor are 13mm diameter to take M12 bolts. The type of bolt to be used depends on the substrate to which it is to be fixed. Please note if fixing on an uneven ground a rubber pad or rubber washer will need to be used to prevent the foot from deformation and cracking.

Triangle Foot Base

Colour Yellow
Product Code MHABF
Weight 0.45kg

Used as a wall fixing plate either to terminate a run of handrail to a wall or to provide (together with a 3 way Tee connection) a run of handrail along a wall. It can also be used as the base foot for stairs - it allows the foot to be fitted closer to the edge of the stair tread than is possible with the standard base foot.

Universal 3 Way

Colour Yellow & Grey
Product Code MH3WUY
Weight 0.56kg

A very versatile fitting that is used as a variable angle connection between handrail and stanchion post for ramps and stairs at the full range of slopes. It is an alternative to the 3 way Tee when an angle other than 90deg is needed. It can also provide a variable angle for the handrail and knee rail to a termination post to a run of handrail. The fitting is made up of 3 parts. A universal sleeve connector and matching universal connector plus the universal connector that fits over the tube - this is half of a universal joint. Two bolts are required to join the sleeve and universal joint connector. The universal connector can either be adhesive bonded to the tube or bolted.

Universal 4 Way

Colour Yellow & Grey
Product Code MH4WUY
Weight 0.98kg

A very versatile fitting that is used as a variable angle connection between knee rail and stanchion post for ramps and stairs at the full range of slopes. It can also be used with the handrail where a change in angle is required e.g. stair to landing. The fitting is made up of 4 parts. A pair of universal connectors plus the universal joint pair. A bolt is required to join universal joint connector to the tube. The universal connector can either be adhesive bonded to the tubes or bolted.

60 Degree 3 Way Connector

Colour Yellow
Product Code MHA3E
Weight 0.24kg

Used to make a connection (Tee) of the handrail tube to the stanchion post at 30 deg – standard angle (slope) for stairs. Can also be used to join the stanchion post at the end of stairs to the knee rail tube. The stanction post must be cut to 60 Deg angle to enable the tube to fully insert and be fixed into position. It is not recommended to use this fitting to join lengths of handrail tube – use the tubular spigot joint.

60 Degree 3 Way Connector

Colour Yellow
Product Code MHA4E
Weight 0.32kg

Used to make a Cross connection of the knee rail tube to the stanchion post at 30 deg - standard angle (slope) for stairs. The stanchion post must be a continuous length from base to handrail. Knee rail tubes cut to length to fit between successive stanchion posts and cut to a 60 Deg angle to enable tube to fully insert into the fitting.

Modular Bolt Set

Colour -
Product Code MHBOLT
Weight 2kg/100

The bolt set utilises an M6 x60 stainless steel bolt with a button head together with a recessed nut. The bolt set fits all the moulded fittings. The side of the fitting taking the bolt is drilled to take the M6 bolts and the bolt head fits within the pre-moulded recess in the fitting. The side of the fitting taking the nut requires a 9mm diameter hole passing though both the fitting and the tube so that the recessed nut fits within the pre-moulded recess in the fitting. In this way both the bolt head and the nut recess into the fitting so there are no exposed edges to catch the hand of the user and nothing to snag on clothing.

Base Foot Bolt

Colour -
Product Code MHBOLTBF
Weight 0.07kg

The bolt set utilises a M10 x 80 stainless steel hex head bolt with two stainless steel washers and a nut. This bolt set is specifically used for our standard base foot and our triangular base foot to attach the base foot to the stanchion post. The base foot must be drilled with a 10mm HSS drill bit straight through the base foot and the tube. The bolt is put through with a washer on either side of the foot.

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4 Way Connection

Colour	Yellow & Grey
Product Code	MH4W
Weight	0.29kg

Used to make a 90deg connection (Cross) of the knee rail tube to the stanchion post. The stanchion post must be a continuous length from base to handrail. Knee rail tubes cut to length to fit between successive stanchion posts.

90 Degree Elbow

Colour	Yellow & Grey
Product Code	MH90E
Weight	0.36kg

Used to make a 90deg end to a handrail run joining the handrail to the stanchion post. Also used to make a 90deg turn to a run of handrail.

Long 3 Way Connector

Colour	Yellow
Product Code	MHL3WY
Weight	0.30kg

Used to make a 90deg connection (tee) of the handrail tube to the stanchion post. Can also be used to join the stanchion post at the end of a run to the knee rail tube. This fitting can be used to join lengths of handrail tube instead of using a tubular spigot joint.

Right Angled Bend

Colour	Yellow & Grey
Product Code	MHRABY
Weight	0.41kg

Used to make a sharp 90deg end to a handrail run joining the handrail to the stanchion post. Also used to make a sharp 90deg turn to a run of handrail. This fitting is also used as the top half of the 3 way corner fitting

Side Fit

Colour	Yellow & Grey
Product Code	MHSF
Weight	0.465kg

Used as a structural base for the stanchion post when fitted to side of stairs, ramp or walkway. The base of the fitting is closed so the tube does not pass through. The side fit base is a pinch fit to the tube so that when clamped tight to the side it holds the tube in place. Care is needed not to over tighten the bolts which could cause the fitting to crack. Spacer washers should be used to prevent the deformation of the fitting. The holes in the side fit base are 10mm diameter. The type of bolt to be used depends on the substrate to which is to be fixed.

Modular Toe Plate

Length	5m
Colour	Yellow
Product Code	MHTP
Weight	1.3kg/m

The bottom edge of the toe plate rests on the edge of the stanchion base foot. This gives the required gap for water drainage and complies with the requirements of BSEN14122-3 where the gap between the edge or the toe plate and the floor should be no more than 10mm. The toe plate is bolted to the stanchion post base foot and to the stanchion post.

Universal Joint

Colour	Yellow & Grey
Product Code	MHUJ
Weight	0.49kg

Used to allow a change in angle of handrail and knee rail in any plain and any angle. The universal joint fits over the tube. The tube can be adhesive bonded in place or bolted. A bolt is required for the swivel connection.

P Joint

Colour	Yellow & Grey
Product Code	MHPJ
Weight	0.62kg

Used primarily when installing modular handrail around a circle as the angle can be adjusted. Can also be used as part of a handrail gate as a swivel hinge.

120 Degree Elbow

Colour	Yellow
Product Code	MHA120E
Weight	0.32kg

Used to make an end to a stairs handrail joining the handrail to the stanchion post at 30 deg - standard angle (slope) for stairs.

Spigot

Colour	Yellow & GREY
Product Code	MHSPIGOTY
Weight	0.19kg

A 300mm length of tube 38mm od to form a joint between lengths of handrail tube. The joint between the tubes is secured with 2 No bolts. Note that the bolts required for this fitting are 45mm long (standard bolt set is 60mm long) Bolts are included.

Base Foot Pad 5mm

Colour	Black
Product Code	MHFP5MM
Weight	0.10kg

This 5mm rubber pad is to be used with our base foot (MHBF). When installing the base foot on uneven ground the pad can be placed under the base foot before fixing the base foot to the ground. The rubber pad helps to even out uneven ground to give a solid base.

Tube End Cap

Colour	Black
Product Code	TU624CAP
Weight	2kg/100

Plastic tube insert designed to knock into the end of the tube. The tops of the inserts are designed to sit flush with the outside of the tube.

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