

Installation Pack

Includes all the items necessary to securely install your LED Light Stick into our split tube handrail.



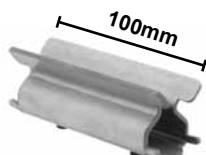
Code	Type	Ø mm	Contents
1809003	304	42.4	2 Mounting Brackets, 1 Cable Housing Strip, 4 LED Mounting Pads, 4 Wiring Connectors and a Cable Protection Strip
1809002	304	48.3	

Double Mounting Bracket

Mounting brackets are designed to secure our Lumenrail LED Light Sticks into our slotted handrail. The M8 threaded spigot allows for Lumenrail to be used in conjunction with any Pro-Railing handrail brackets and can be fitted into any standard balustrade or handrail system using slotted handrail.

Double Mounting Bracket

NEW



Code	Type	Ø mm
1809005	304	42.4
1809004	304	48.3

LED Driver

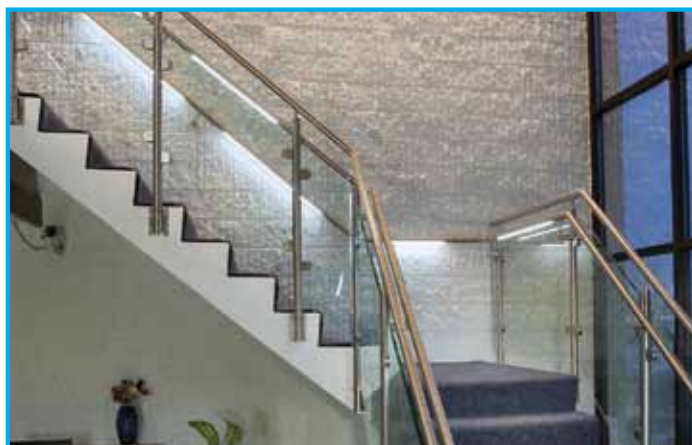
Lumenrail low voltage LED's require a power supply to transform and regulate the voltage. This compact electronic driver is protected against open circuit, short circuit, overload and overheating.



LED Driver Specifications

Size:	240 (L) x 45 (W) x 30mm (H)
Classification:	IP30
Temperature Performance:	-40° C to +60° C
Regulated Output:	1% line, 5% load
Voltages:	240V
Power Factor:	90% min
Total Harmonic Distortion:	20% max
Current Crest Factor:	1.5 max

Code	Type	Contents
1809006	24V/100W	Suitable for 10 LED Light Sticks



Handrail Adaptor & Stem

Cranked Elbow & Wall Plate



Code	Type	Ø mm
1809007C	304	42.4
1809007D	304	48.3

Code	Type
1809008F	304

For a technical installation guide please email prorailing@brundle.com

It remains the responsibility of the installer to ensure these components are fitted in accordance with the manufacturers instructions and countries electrical safety regulations.

Stainless steel 3mm strand wire rope system is a simple and cost effective alternative to our crossbar system. It can be fixed to most surfaces including wood, metal and brick and is ideal for external applications in residential and commercial environments. Suitable for self assembly and simple to install using self locking, crimped or glued connectors.



Turn Buckle Connector



Code	Type
1806601	316

Swageless Turn Buckle Connector



Code	Type
1806611	316

Plain Buckle Connector



Code	Type
1806602	316

Swageless Turn Buckle



Code	Type
1806612	316

Eyebolt Connector



Code	Type
1806603	316

Eyebolt - Woodscrew Thread



Code	Type
1806606	316

Locking Collar



Code	Type
1806604	316

Articulated Wire Tensioner



Code	Type	Ø mm
1806607C	316	42.4
1806607D	316	48.3

Pad Eye



Code	Type
1806608	316

Nickle Plated Ferrule



Code	Type
1806609	316

Thimble



Code	Type
1806610	316

Wire Rope



Code	Type	Length m
180660510	316	10
180660550	316	50
1806605100	316	100

3mm thick

Crimping Tool



Code
189900102

Cutting Tool



Code
080569

Post Fitting Adaptor Ring

NEW



Code	Type	Ø mm
1804335C	304	42.4
1804335D	304	48.3
1806335C	316	42.4
1806335D	316	48.3

M6 Thread



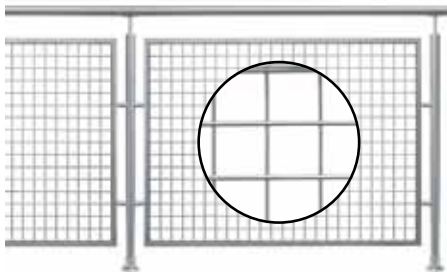
Example of Post Fitting Adaptor Ring

Infill solutions can include the use of Architectural Net, Welded Wire Mesh, Perforated and Expanded Metal. Amongst the materials offered is stainless steel, aluminium and mild steel, with a choice of thicknesses, aperture styles and edging section profiles. Zinc plating and powder coating for mild steel products is an option.

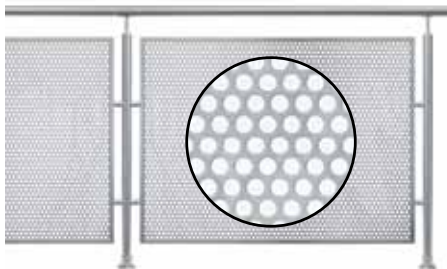


REQUEST A MESH CATALOGUE TODAY!

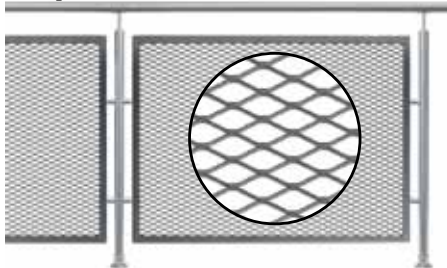
Welded Wire Mesh



Perforated Metal



Expanded Metal



Panel Infill Adaptor

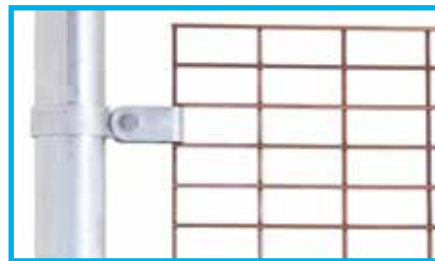


Code	Type	Ø mm
1804503C	304	42.4
1804503D	304	48.3
1806503C	316	42.4
1806503D	316	48.3

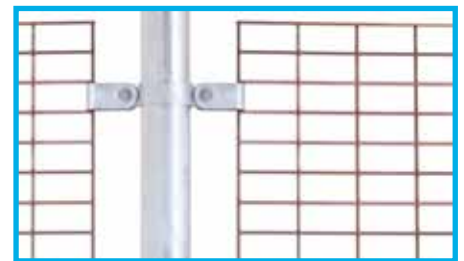
Requires M8 fixing bolt
Code - 189900621

Mesh Clips

Mesh Panel Clip Single



Mesh Panel Clip Double



Code	Type	Ø mm
16170C	ZINC	42.4
16170D	ZINC	48.3
1806170C	316	42.4
1806170D	316	48.3

Code	Type	Ø mm
16171C	ZINC	42.4
16171D	ZINC	48.3
1806171C	316	42.4
1806171D	316	48.3

Fixing Bracket - Single



Fixing Bracket - Double



Fixing brackets can be used for fixing many different sheet material types to Pro-Railing

Code	Type	Ø mm
1804511C	304	42.4
1804511D	304	48.3
1806511C	316	42.4
1806511D	316	48.3

Code	Type	Ø mm
1804512C	304	42.4
1804512D	304	48.3
1806512C	316	42.4
1806512D	316	48.3

Split Tube



90° Infill Frame Corner



Mesh Infill Support Clamp



Code	Type	Ø mm	Length m
1804504	304	18	3.0

1.7mm gap

Code	Type
1804506	304

Code	Type
1804505C	304



Tube and Bar for Handrails and Posts



950mm Lengths

Code	Type	Ø mm
1804708CB	304	42.4
1804708DB	304	48.3
1806708CB	316	42.4
1806708DB	316	48.3

1200mm Lengths

Code	Type	Ø mm
1804708CL	304	42.4
1804708DL	304	48.3
1806708CL	316	42.4
1806708DL	316	48.3

3 Metre Lengths

Code	Type	Ø mm
1804704C	304	42.4
1804704D	304	48.3
1806704C	316	42.4
1806704D	316	48.3

6 Metre Lengths

Code	Type	Ø mm
1804700C	304	42.4
1804700D	304	48.3
1806700C	316	42.4
1806700D	316	48.3

Hollow Tube



Solid Bar



Split Tube



Code	Type	Ø mm	Length m
1804510	304	12	3.0
1806510	316	12	3.0

1mm wall thickness

Code	Type	Ø mm	Length m
1804500	304	12	3.0
1806500	316	12	3.0

Code	Type	Ø mm	Length m
1804705C	304	42.4	6.0
1804705D	304	48.3	6.0
1806705C	316	42.4	6.0
1806705D	316	48.3	6.0

1.5mm wall thickness

ZINC PLATED TUBE AND BAR

Tube and Bar for Handrails and Posts

Handrail Tube



Round Bar



Code	Type	Ø mm	Length m
13i001	ZINC	42.4	3.0
13i0016000	ZINC	42.4	6.0

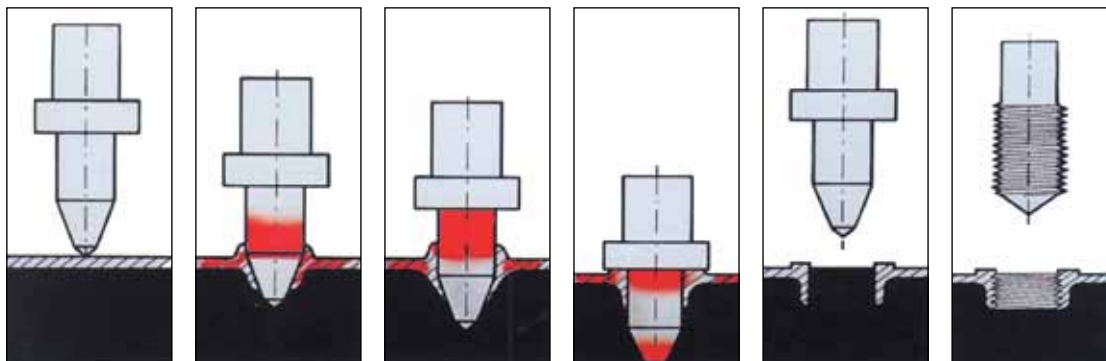
Code	Type	Ø mm	Length m
13i005	ZINC	12	3.0
13i0056000	ZINC	12	6.0



The Mark You Can Trust

FLOW DRILL THREADED HOLE TECHNIQUE

M8 threaded holes are produced by a flow forming process, which forces excess material into the hole. This then increases the thread length in thin walled tubes.



PLEASE NOTE:
We can cut your tube to any length and drill holes using our Flow Drill technique or Mandrel Threaded Insert technique. Please contact our sales team for further details.

All stainless fittings are supplied in a satin polish finish grit 320. They can also be supplied in a variety of finishes.

If you would prefer the benefits of a wooden handrail system, the fusion of wood with stainless steel is possible with our integration range of components. Handrails are available in hard or softwood and can be stained to the colour of your choice.



To Suit 45mm Diameter Wooden Handrails

Flat End Cap



Code	Type
1807214C	304

Rounded End Cap



Code	Type
1807215C	304

"T" Fitting



Code	Type
1807205C	304

Handrail Connector



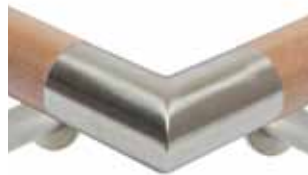
Code	Type
1807206C	304

Elbow - Round Corner



Code	Type
1807201C	304

Elbow - Square Corner



Code	Type
1807202C	304

Adjustable Elbow



Code	Type
1807203C	304

Elbow - Pivotal



Code	Type
1807223C	304

Spare Plastic Support



Code
189900701

Drilling Guide For Fitting Endstops



Code
189900702

Straight Handrail Support



Code	Type
1807303FC	304

Cranked Handrail Support



Code	Type
1807305FC	304

We can stain wood to the colour of your choice with a few examples shown below.

Please enquire for more details.

Untreated



Code	Ø mm	Length m
18077032	45	2.0
18077033	45	3.0

Varnished



Code	Ø mm	Length m
18077012	45	2.0
18077013	45	3.0

Beech Effect



Code	Ø mm	Length m
18077002	45	2.0
18077003	45	3.0

Wengé Effect



Code	Ø mm	Length m
18077022	45	2.0
18077023	45	3.0

WOODEN HANDRAIL AND FITTINGS - 48.3MM



We are able to offer a wide range of solid hardwood handrails which are available unfinished for a final stain or lacquer to be applied after installation. High grade raw materials ensure consistent top quality handrails and our unique adaptor allows the use of our stainless steel components to simplify the installation.

Steamed Beech



Sapele



American White Oak



European Brown Oak



Code	Ø mm	Length m
18077042	48.3	2.0
18077043	48.3	3.0

Code	Ø mm	Length m
18077052	48.3	2.0
18077053	48.3	3.0

Code	Ø mm	Length m
18077062	48.3	2.0
18077063	48.3	3.0

Code	Ø mm	Length m
18077072	48.3	2.0
18077073	48.3	3.0

48.3mm solid wood is available in varying lengths and types. Please ask for details.

These three fittings have been developed to allow a smooth transition between 48.3mm solid wooden handrail and all of the standard 48.3mm Pro-Rail tube and fittings. They allow for wood-to-wood and wood-to-stainless balustrades to be created.



End Cap

Code	Type	Ø mm
1807230D	304	48.3



Connector

Code	Type	Ø mm
1807231D	304	48.3

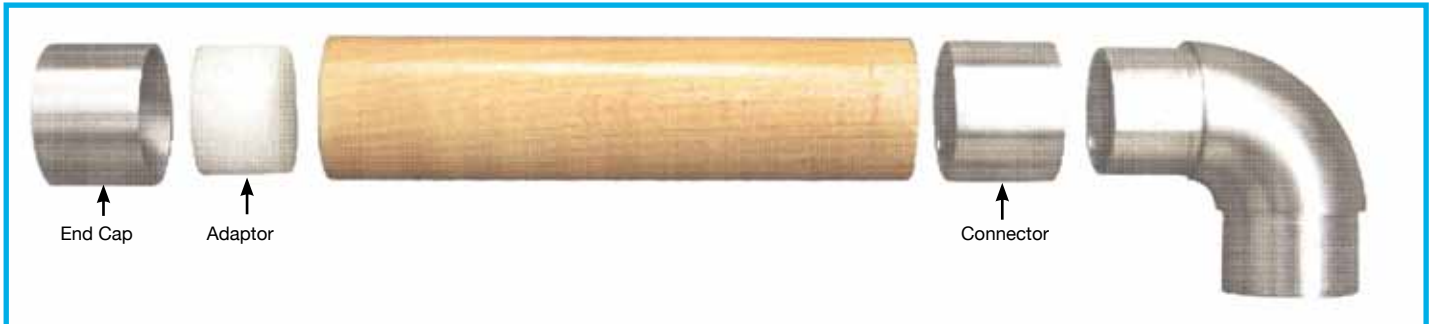


Adaptor

Code	Ø mm
1807232D	48.3

Screw size is 8mm. See page 42 for fixings, Code - 13i0381 or 13i0382

How to use these fittings



PRE-ASSEMBLED HANDRAILS

Pre-Assembled Handrail with End Caps



Code	Type	Ø mm	Length m
1804801C	304	42.4	1.0
1804801D	304	48.3	1.0
1806801C	316	42.4	1.0
1806801D	316	48.3	1.0

Pre-Assembled Handrail with Scroll Ends



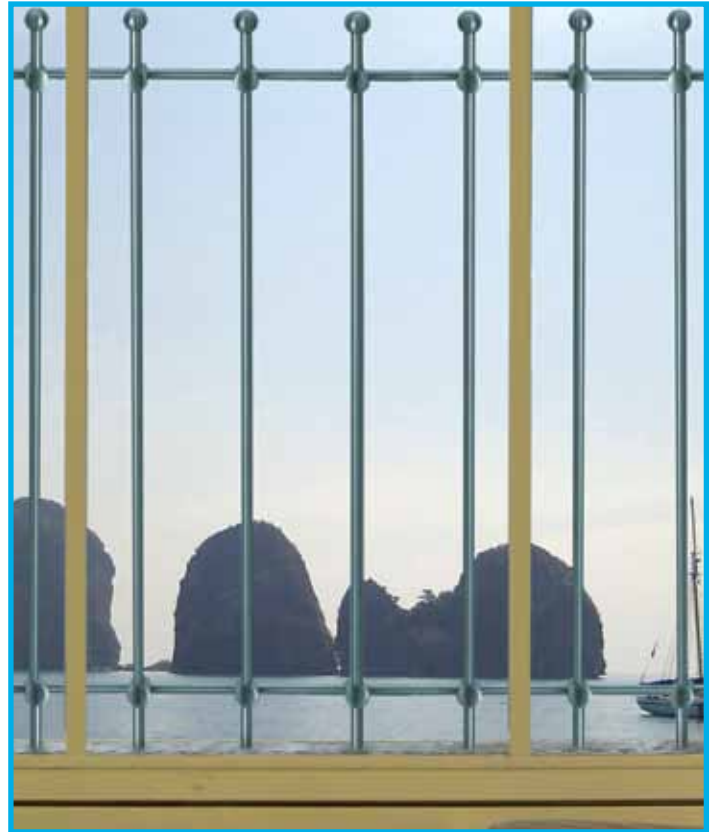
Code	Type	Ø mm	Length m
1804802C	304	42.4	1.0
1804802D	304	48.3	1.0
1806802C	316	42.4	1.0
1806802D	316	48.3	1.0

We offer pre-assembled handrails at lengths specific to your exact requirements.

ZINC PLATED MILD STEEL HANDRAIL



For an economical alternative to our stainless steel system, we have zinc plated mild steel handrails. Offering the same flexibility as the rest of the range, the modular component system will add a stylish finish to any handrail installation.



ZINC PLATED FLANGES AND BASE PLATES

Base Fitting to suit Tube
13i001 and 13i0016000



Code	Type
13iBF	ZINC

Base Fitting for Newel Post
13i00464 and 13i00465



Code	Type
13iBFNP	ZINC

Post Top to suit Tube
13i001 and 13i0016000



Code	Type
13iPT	ZINC

Cover Plate to suit 13i0040, 13i0042,
13i0041 and 13i0043 Newel Posts



Code	Type	Height mm
13i020	ZINC	15

Wall Flange



Code	Type	Ø mm
13i111	ZINC	42.4

Base Flange



Code	Type	Ø mm
13i0213	ZINC	42.4

Coating required to finish zinc plated items.

ZINC PLATED POSTS



Newel Post with Base Flange



13i0040
13i0042

Newel Post with Base Flange and Handrail Bracket



pivotable

13i0041
13i0043

Side Palm Post with Handrail Bracket



pivotable

13i111

13i0045

Side Palm Post



13i00450

12mm Round Bar System



pivotable

13i00464
13i00465

Code	Type	Ø mm	Length m	Description
13i0042	ZINC	42.4	1.0	Newel Post with Base Flange. Order a 13i020 if Cover Plate required
13i0043	ZINC	42.4	1.0	Newel Post with Base Flange & Handrail Bracket. Order a 13i020 if Cover Plate required

Code	Type	Ø mm	Length m	Description
13i00464	ZINC	42.4	1.1	4 hole for use with 12mm Bar System. Order a 13iBFNP if Base Fitting required
13i00465	ZINC	42.4	1.1	9 hole for use with 12mm Bar System. Order a 13iBFNP if Base Fitting required

Code	Type	Ø mm	Length m	Description
13i0040	ZINC	42.4	1.2	Newel Post with Base Flange. Order a 13i020 if Cover Plate required
13i0041	ZINC	42.4	1.2	Newel Post with Base Flange & Handrail Bracket. Order a 13i020 if Cover Plate required
13i0045	ZINC	42.4	1.2	Side Palm Post complete with Handrail Bracket
13i00450	ZINC	42.4	1.2	Side Palm Post. Order a Fixed/Adjustable Handrail Saddle. See below

ZINC PLATED HANDRAIL SADDLES

Fixed Saddle



Code	Type	Ø mm	Height mm
13i031S1	ZINC	42.4	75

Adjustable Saddle



Code	Type	Ø mm	Height mm
13i030S	ZINC	42.4	75



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Coating required to finish zinc plated items.

ZINC PLATED HANDRAIL BRACKETS



Electro Galvanised



Code	Type
171161	ZINC

Zinc Plated



Code	Type
171163	ZINC

Zinc Plated



Code	Type
171164	ZINC

Galvanised



Code	Type	Ø mm
13i0223	ZINC	42.4

ZINC PLATED CROSSBAR SYSTEM

Crossbar Holder



Code	Type	For Tube mm
13i0069	ZINC	Ø 42.4

Crossbar Holder - Tube Fix



Code	Type	Hole mm
13i006	ZINC	Ø 12.2

Two Part Round Bar Holder



Code	Type	Hole mm
13i006966	ZINC	Ø 12.2

Handrail Tube



Code	Type	Ø mm	Length m
13i001	ZINC	42.4	3.0
13i0016000	ZINC	42.4	6.0

Round Bar



Code	Type	Ø mm	Length m
13i005	ZINC	12	3.0
13i0056000	ZINC	12	6.0

2mm wall thickness

SEE PAGE 13 FOR OUR FULL RANGE OF ZINC DIE CAST GLASS CLAMPS

Holed Sphere



Code	Type	Ø mm	Hole (Thread) mm
13i0127	ZINC	25	Ø 12.2 Half Drilled
13i0129	ZINC	25	Ø 12.2 Through Hole
13i0130	ZINC	30	Ø 12.2 Through Hole
13i012	ZINC	60	M10 Thread Half Drilled

Domed End Cap



Code	Type	Ø mm
13i01112	ZINC	42.4

End Cap



Code	Type	Ø mm
13i0119	ZINC	42.4

Coating required to finish zinc plated items.

Latch and Catch



Code	Type	Ø mm
1804513C	304	42.4
1804513D	304	48.3
1806513C	316	42.4
1806513D	316	48.3

Gate Hinge Pin and Bolt



Code	Type	Ø mm
1804514C	304	42.4
1804514D	304	48.3
1806514C	316	42.4
1806514D	316	48.3

Self Closing Glass Gate Hinge

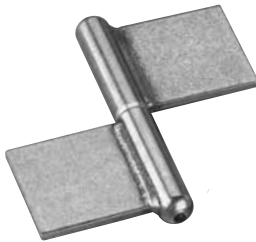


Code	Type	Ø mm	Description
05GC09	VINYL	48.3	For fixing 8 and 10mm glass weighing up to 25kgs on to round posts

Supplied with brushed stainless hinge covers

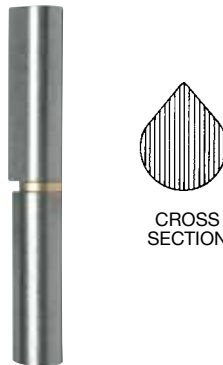
WELDABLE HARDWARE

Off Set Flag Hinge



Code	Type	Size mm
0515FLAG80S	304	80
0515FLAG100S	304	100

Universal Hinge



Code	Type	Size mm
05GAH100S	304	100
05GAH120	304	120

Self Closing Safety Gate Hinge



Code	Type	Description
18SGH	304	Stainless for Tube

Stainless Weldable Elbow



Code	Type	To Suit O.D Tube mm
1804E42	304	42.4
1804E48	304	48.3
1806E42	316	42.4
1806E48	316	48.3



Aluminium glass balustrade combined with split tube handrail provides a stunning finish inside or out everytime



05GC09 installation image

Balusters



Code	Type	Code	Type	Code	Type	Code	Type	Code	Type	Code	Type
0500014171X	304	0500014191X	304	0500014192X	304	0500014201X	304	0500014203X	304	0500014223*	304
Ø 12mm Height 1.0m		□ 12 x 12mm Height 1.0m		□ 12 x 12mm Height 1.0m		□ 12 x 12mm Height 1.0m		□ 12 x 12mm Height 1.0m		Ø 12mm Height 1.0m	

Newel Posts

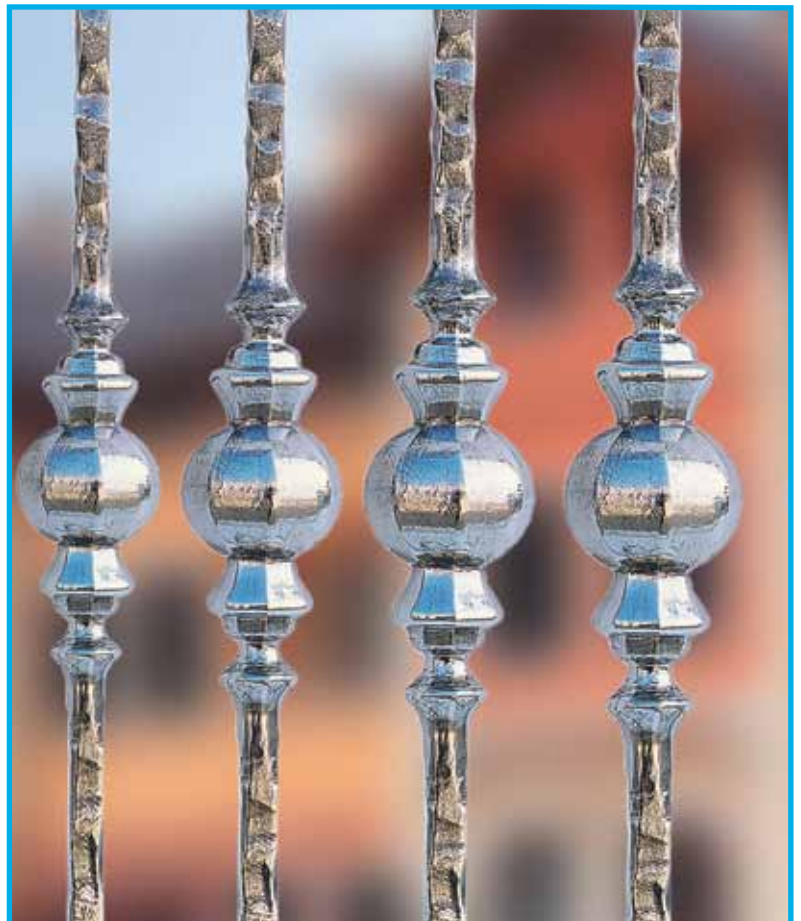


Code	Type
0500014161X	304
□ 25 x 25mm Height 1.2m	

Code	Type
0500014165X	304
Ø 25mm Height 1.2m	

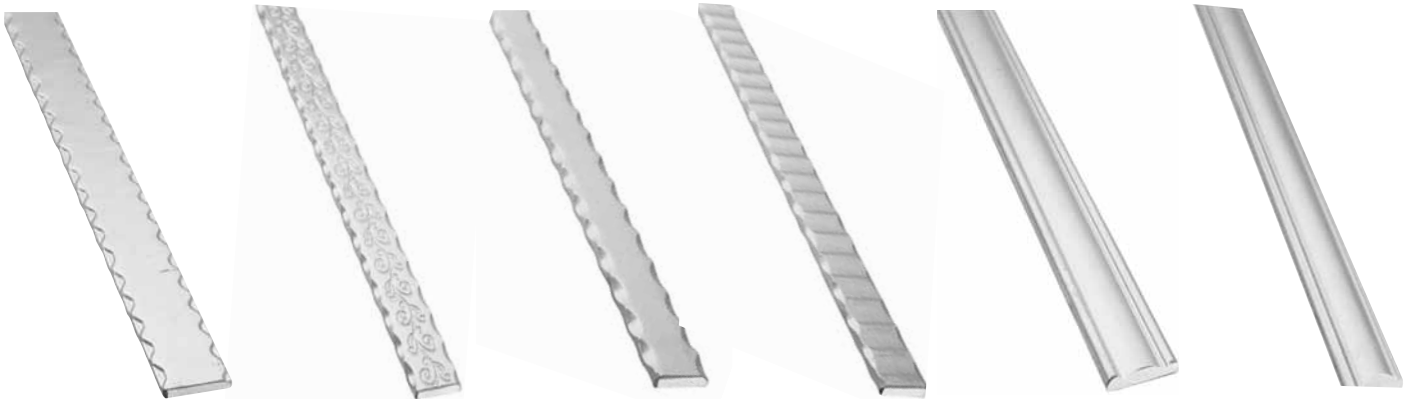
Code	Type
0500014162X	304
□ 30 x 30mm Height 1.2m	

Code	Type
0500014166X	304
Ø 30mm Height 1.2m	



Code	Type
0500014224**	304
Ø 12mm Height 1.0m	

Handrails



Code	Type
0500014231	304
□ 40 x 8mm Length 3.0m	

Code	Type
0500014238	304
□ 40 x 8mm Length 3.0m	

Code	Type
0500014239	304
□ 30 x 8mm Length 3.0m	

Code	Type
05000142310	304
□ 30 x 8mm Length 3.0m	

Code	Type
05000142311	304
□ 53 x 9mm Length 3.0m	

Code	Type
05000142312	304
□ 47 x 14mm Length 3.0m	

Handrail Ends



Code	Type
0500014241	304
For use with 0500014231	

Code	Type
0500014248	304
For use with 0500014238	

Post Tops



Code	Type
0500014251	304
Ø 70mm Height 120mm	



Code	Type
0500014252	304
Ø 33mm Height 140mm	

Forged Spheres



Code	Type
0500014256	304
Ø 30mm	

Code	Type
0500014257	304
Ø 35mm	

Code	Type
0500014258	304
Ø 40mm	

Code	Type
0500014259	304
Ø 50mm	

Plate



Code	Type
0500014266	304
□ 8mm 80 x 80mm	

Flower



Code	Type
0500014267	304
□ 4mm Ø 90mm Ø 12mm hole	

Plate



Code	Type
0500014268	304
□ 4mm 75 x 75mm □ 12 x 12mm hole	

Plate



Code	Type
0500014269	304
□ 8mm 100 x 100mm	



High Strength Retainer (50ml)
For use with tube fittings



Code	Description
1899007638	High Strength Retainer

Adhesive Activator (200ml)
Reduces curing time when used with Loctite 638



Code	Description
18990087649	Adhesive Activator

Instant Adhesive (50ml)
Supplied with plunger and needle for accurate application.
For use with wire fittings



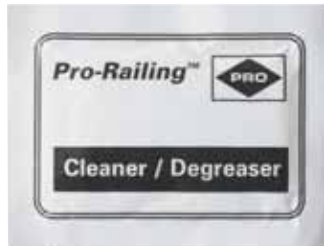
Code	Description
1899007454	Instant Adhesive

Stainless Steel Cleaner (400ml)
Degreases & cleans surfaces ready for gluing



Code	Description
18990097063	Stainless Steel Cleaner

Stainless Cleaning Wipe
Removes finger and hand marks left over after installation



Code	Description
189900901	Stainless Cleaning Wipe

After Care Tea Staining 3-Part Cleaner Kit
Keeps stainless handrail and fittings in top condition long after installation



Code	Description
189900902	3 Part Cleaner Kit

Stainless Cleaning Gel
Pickling gel helps remove rust, dirt and grime from stainless steel



Code	Description
18990094023	Stainless Cleaning Gel

Polishing Cloths
For removal of light scratches on stainless tube and fittings



Code	Description
189901101	Fine (Grey)
189901102	Medium (Red)

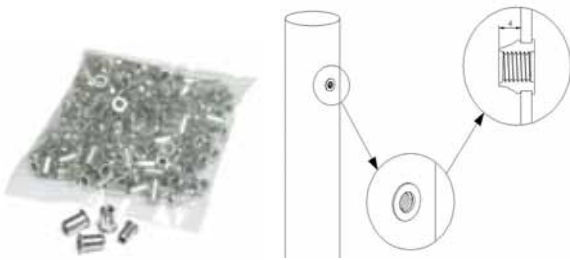
Silicone Sealant (310ml)
Gives an all-round waterproof seal



Code	Description
18990125366	Clear Sealant
18990125368	Black Sealant

Threaded Inserts & Mandrels

Threaded inserts with cylindrical flat head



Code	Type	Thread
13i40591	Galvanised Steel	M5
13i40592	Galvanised Steel	M6
13i40593	Galvanised Steel	M8
189900611	316	M5
189900609	316	M6
189900610	316	M8

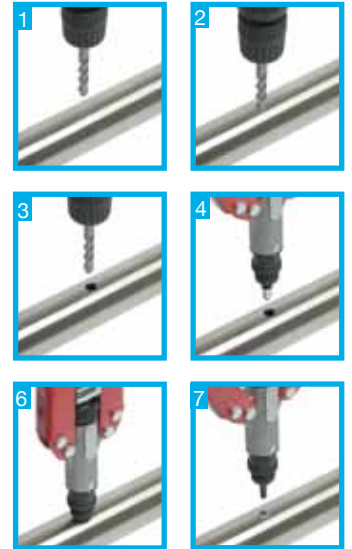
Threaded Insert/Mandrel Tool

For fixing M5, M6 and M8 bolt to posts when used with the correct mandrel



Code	Description
1899E40590	Threaded Insert Mandrel Tool

Code	Description
13E40590	Threaded Insert Mandrel Tool Boxed



Rockite Concrete Compound

Re-sealable Tub - 2.2kg



Code	Description
189900665	Rockite Concrete Compound

Polyester Resin

Polyester Styrene Free
300ml Tube



Code	Description
189900663	Polyester Resin

Wire Mesh Sleeve

Cut to required length.
Use with Polyester Resin



Code	Description
189900664	1m Wire Mesh Sleeve - For M10/M12 Studs

RKEM+ Chemical Fixing

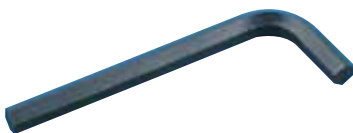
Cartridge & Nozzle - 300ml



Code	Description
05RKEM	Chemical Fixing

Allen Keys

For use with all glass clamps



Code	Description
189900605	For M6
189900606	For M8
189900607	Grub screws on handrail brackets
189900608	For glass clamps
189900627	For PanelGrip (size 3/16")

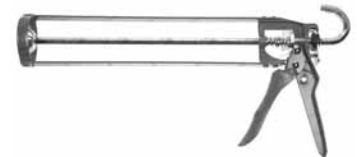
Threaded Lengths

*For use with RKEM+ Chemical Fixing Compound



Code	Size mm	Type
189900615	M8 x 20	316
*189900640	M10 x 150	316
*189900641	M12 x 150	316
189900625	M6 x 25	316

Sealant Gun



Code	Description
189900666	Sealant Gun

Wood Screw

For fixing wooden handrails to stainless handrail brackets



Code	Size mm	Type
13i0382	5 x 20	ZINC
13i0381	6 x 20	ZINC

Countersunk Screw

For fixing handrail saddles



Code	Size mm	Type
13i0383	5.5 x 22	ZINC
13i0384	6.3 x 22	ZINC
189900619	5 x 20	316

Pan Head Screw

For fixing handrail saddles to tube



Code	Size mm	Type
189900620	M5 x 20	316

Threaded Dowel

For use with handrail brackets



Code	Size mm	Type
189900622	8 x 50	ZINC

Countersunk Screw

For general fixing



Code	Size mm	Type
13i0385	M5 x 25	ZINC
13i0322	M6 x 10	ZINC
13i03851	M6 x 25	ZINC
13i032	M10 x 25	ZINC
189900603	M6 x 20	316
189900604	M8 x 20	316

Button Head Bolt

For fixing handrail brackets and rod holders 705/707



Code	Size mm	Type
189900618	M5 x 20	316
189900621	M6 x 20	316

Socket Head Cap Screw

For fixing glass clamps into posts



Code	Size mm	Type
13i0323	M8 x 20	ZINC
189900601	M8 x 20	316
189900602	M8 x 20	316

Variable Fixing Bolt

To give +/- 5° adjustment

NEW



Code	Size mm	Type
189900602A	M8 x 12	316

Thread Insert & Set Screw

For fixing wood handrail to stainless fittings



Code	Description	Type
189900626	To suit M6 Stud	ZINC

Code	Description	Type
189900625	Threaded Stud M6 x 25mm	316

Plain Washer



Code	Size	Type
189900631	M8	316
189900632	M10	316
189900633	M12	316

Spring Washer



Code	Size	Type
189900634	M8	316
189900635	M10	316
189900636	M12	316

Hexagonal Full Nuts



Code	Size	Type
189900637	M8	316
189900638	M10	316
189900639	M12	316

Hexagonal Nyloc Nuts



Code	Size	Type
189900628	M8	316
189900629	M10	316
189900630	M12	316

Hexagonal Domed Head Nuts



Code	Size	Type
189900617	M8	316
189900650	M10	316
189900616	M12	316

All fixings are sold individually.



Through Bolts

Code	Type	Thread Dia mm	Anchor Length mm	Hole Dia mm	Max Fixture Thickness mm	Fixture Clearance Hole mm	Embedment Depth mm	Hole Depth mm	Min Structure Thickness mm	Tightning Torque Nm
16248	ZINC	8	90	8	45	9	35	40	100	10
162410	ZINC	10	95	10	33	12	45	50	100	28
162412	ZINC	12	100	12	25	14	60	65	100	34
162416	ZINC	16	105	16	10	18	75	85	110	85
162420	ZINC	20	120	20	20	22	85	100	130	160
189900613 Thread Length - 35mm	316	8	100	8	35	9	55	65	100	15
189900614 Thread Length - 35mm	316	12	100	12	50	14	80	90	130	50



Loose Bolts with Shield Anchor

Code	Type	Thread Dia mm	Anchor Length mm	Hole Dia mm	Max Fixture Thickness mm	Fixture Clearance Hole mm	Embedment Depth mm	Hole Depth mm	Min Structure Thickness mm	Tightning Torque Nm
189900645	316	8	60	14	10	10	50	55	100	14
189900646	316	10	85	16	25	12	60	65	120	27
189900647	316	12	100	20	25	14	75	85	160	46



Sleeve Anchor - BZP

Code	Type	Thread Dia mm	Anchor Length mm	Hole Dia mm	Max Fixture Thickness mm	Fixture Clearance Hole mm	Embedment Depth mm	Hole Depth mm	Min Structure Thickness mm	Tightning Torque Nm
189900642	ZINC	8	75	10	35	11	45	50	70	40
189900643	ZINC	10	80	12	22	13	50	65	90	65
189900644	ZINC	12	110	16	50	17	60	70	100	90



Anchor Bolts - BZP

Code	Type	Thread Dia mm	Anchor Length mm	Hole Dia mm	Max Fixture Thickness mm	Fixture Clearance Hole mm	Embedment Depth mm	Hole Depth mm	Min Structure Thickness mm	Tightning Torque Nm
189900648	ZINC	10	100	8	60	12	40	55	90	40
189900649	ZINC	12	100	10	50	14	50	70	110	60

Cobalt Drill Bits



Masonry Drill Bits Straight Shank



SDS Masonry Drill



Code	Description
189901001	7.2mm drill for M5 insert/mandrel
189901002	9.6mm drill for M6 insert/mandrel
189901003	10.5mm drill for M8 insert/mandrel
189901004	4.2mm drill for M5 self tapping screw

Code	Size mm
189900651	8 x 80
189900652	10 x 80
189900653	12 x 90
189900654	14 x 90
189900655	16 x 90
189900656	20 x 100

Code	Size mm
189900657	8 x 100
189900658	10 x 100
189900659	12 x 100
189900660	14 x 100
189900661	16 x 150
189900662	20 x 150



Grade	Carbon	Silicon	Manganese	Phosphorous	Sulphur	Nickel	Chromium	Molybdenum
304 DIN 1.4301	<=0.08	<=1.00	<=2.00	<=0.035	<=0.035	8.00 - 10.50	18.00 - 20.00	-
316 DIN 1.4401	<=0.09	<=1.00	<=2.00	<=0.035	<=0.035	10.00 - 14.00	16.00 - 18.00	2.00 - 3.00

There are many grades of stainless steel, but the majority of stainless steel items in this catalogue are 304 and 316.

Grade 304 is the most common stainless steel, and satisfies a broad demand for adequate performance at an affordable price. It has good corrosion resistance in a wide variety of environments. It is the best choice for indoor use (except swimming pools).

Grade 316 has a higher level of corrosion resistance and is often referred to as marine grade. Typical applications are architectural components where they are exposed to extreme weather conditions and climatic conditions, such as near the coast, near heavy industrial sites or in/around swimming pools.

Stainless steel is not maintenance free but maintenance friendly and when using stainless steel material outdoors, you need to

clean periodically, especially in aggressive environments like coastal areas or swimming pools. The chlorine rich atmosphere driven in from the sea can affect in-land stainless as far as 20 miles from the coast.

Choosing the correct grade can dramatically improve the corrosion resistance against chlorine, but other things should be taken into consideration.

Surface finish is a critical element in the battle against corrosion. The British Stainless Steel Association (BSSA) recommend that a surface finish of no less than 0.5µm Ra (320 Grit) is used on all applications subjected to a chlorine rich environment. A surface any rougher than this will retain corrosive particles and rust will inevitably follow.

STANDARDS RELEVANT TO SURFACE FINISH - BS 1449

Part 1 - 1991 (Sections 1.1 to 1.15 replaced by EN 1088) - This standard specifies the properties of various stainless steels, and includes a general reference of six mechanically polished surfaces of different nominal grit sizes.

Part 2 - 1983 (Amended in 1985 & 1991 and 683/13 Euronorm 88)

Nominal Grit Size	BS 1449 Pt 2	EN 1088	Description
80 -100	3A	1G/2G	Ground Ra nom 2.5 µm
180	3B	2J	Ground Ra nom 1.25 µm
240	4	1J/2J	Dull Polish Ra nom 0.6 µm
320	5	1K/2K	Satin Polish Ra > 0.5 µm
590 - 630	7	2P	Bright Polish Ra nom 0.05 µm
800	8	1P/2P	Mirror Finish Ra nom 0.05 µm



Degreasing

Dirt left on the surface after a fabrication process can have a serious affect on the corrosion resistance of stainless steel. Not only will it prevent the steel from oxidizing, it can contain corrosive particles, which will start rusting at a later date.

Pickling

Pickling requires the use of strong chemicals (hydrofluoric acid and nitric acid) to dissolve the surface of the steel. This process completely removes any surface contaminants and will help to restore the chromium level to the weld affected areas.

The heat from the welding process drives chromium away from the weld area. The area adjacent to the weld is often low in chromium and high in iron. These areas are always the most susceptible to corrosion once the component is in use.

Iron dissolves more readily than chromium, therefore, the pickling process leaves the surface chromium-rich and in a condition where it can form a dense oxide layer.

Passivation

Stainless steel will passivate in the open atmosphere - assuming that it is spotlessly clean to begin with and so is the air it is sat in. It is a slow process and, depending on the grade of stainless, can take between 24-48 hours to occur.

The chromium-oxide layer that protects stainless from corrosion is relatively fragile. It can be broken or damaged during fabrication, if scratched and/or surface contamination is allowed to settle on the surface.

The most effective way to form the passive layer is to force it by subjecting the steel to an oxidizing chemical. These are typically acid solutions containing nitric acid or citric acid. This process speeds up the reaction time and typically takes around 2-3 hours contact time to fully form a dense and effective layer.

Simply cleaning a corroded piece of stainless steel with a stainless steel cleaner and a scouring pad (usually phosphoric acid or citric acid based) does not passivate it. These acids will help to dissolve the corrosion (iron oxides) and leave the surface in a condition in which it can self-passivate.

Rain washing regularly will reduce the risk of tea staining (brown discolouration). This is a visual impairment only, and does not affect the structural integrity or longevity of the material. The best way to prevent it is to follow the cleaning chart below, but as a general rule of thumb the recommendation is that the stainless needs cleaning as often as the glass.

Remember bad design can result in poor performance e.g. partially sheltered systems will greatly reduce the benefit of natural washing by rain. Maintenance of stainless steel should be considered in the design process.

Building	Roof or wall washed by rain		Eaves, soffits or sheltered areas not washed by rain	
	No deposits	Deposits accumulated	No deposits	Deposits accumulated
Cleaning in rural, suburban and residential areas	1 Year	1 Year	1-2 Year	2-12 Year
Cleaning for seaside, industrial and severe areas	1 Year	1 Year	3-4 Year	4-12 Year

Notes:
 Cleaning frequency is dependant on surface finish, design details, environment, cleaning procedure and expectations of performance.
 Cleaning involves using Pro-Railing Enviro-Shield (189900902) - which comprises stainless steel cleaner, demineralised water and protection spray.

Stainless steel is not self-cleaning!



Problem	Cleaning Method	Comments
Standard cleaning	Soap and water	Sponge, rinse with clean water and wipe dry
Fingerprints	Soap and warm water or stainless steel cleaner (18990097063)	Rinse with clean water and wipe dry
Oil/grease marks, other stains and light discolouration	Pro-Railing Enviro-Shield (189900902)	Follow instructions on the box
Heavy discolouration	Stainless cleaning gel (18990094023)	Rinse well with clean water then use Pro-Railing Enviro-Shield (189900902)
Scratches on satin finish (Mirror finish will need repolishing properly)	<u>Slight scratches</u> Use fine polishing cloth (189901101) coated with stainless steel cleaner (18990097063) <u>Deeper scratches</u> Use coarse cloth (189901102) first then fine cloth with cleaner (as above)	Do not use steel based cleaning products (wire wool) as this will embed in the surface and will cause further surface damage and discolouration
Paint/Graffiti	Use a generic paint stripper dependant on type of paint	Use soft bristle brush and treat afterwards with Pro-Railing Enviro-Shield (189900902)

Polishing Cloths

For removal of light scratches on stainless tube and fittings



Code	Description
189901101	Fine (Grey)
189901102	Medium (Red)

Stainless Steel Cleaner (400ml)

Degreases & cleans surfaces ready for gluing



Code	Description
18990097063	Stainless Steel Cleaner

Stainless Cleaning Gel

Pickling gel helps remove rust, dirt and grime from stainless steel



Code	Description
18990094023	Stainless Cleaning Gel

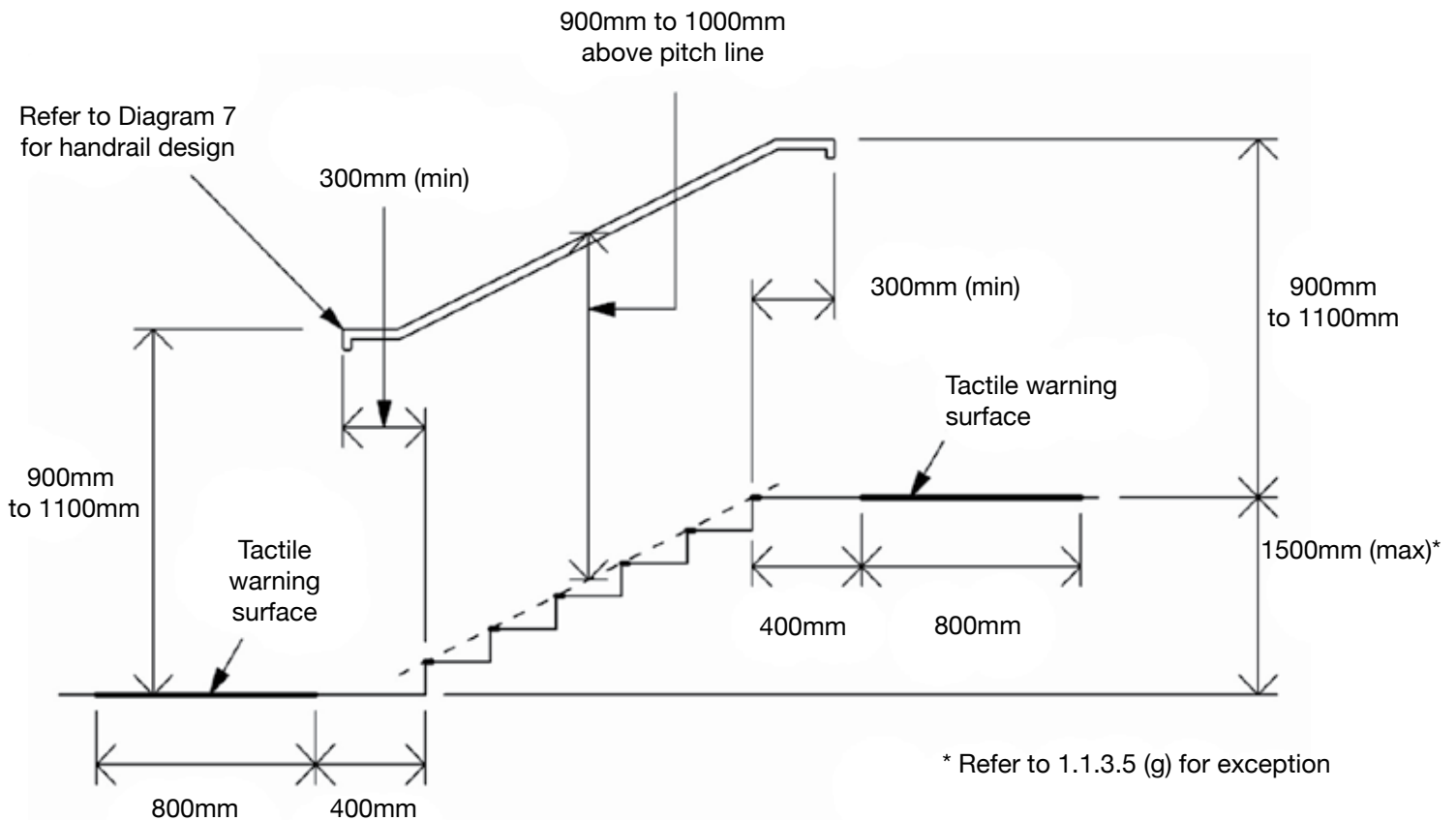
After Care Tea Staining 3-Part Cleaner Kit

Keeps stainless handrail and fittings in top condition long after installation



Code	Description
189900902	3 Part Cleaner Kit

Diagram 6 External steps and stairs - Key dimensions



Extract from Building Regulations Part K and Part M;

1.1.3.6 Handrails

General guidance on handrails and guarding is given in TGD K, but the guidance that follows applies to handrails on accessible access routes.

Where handrails are provided on a ramped or stepped access route:

- (a) The vertical height to the top of the upper handrail from the pitch line of the surface of a flight should be between 900mm and 1000mm and from the surface of a landing should be between 900mm and 1100mm (refer to Diagram 6). Where a second handrail on stairs is provided for children or those of short stature the vertical height to the top of a second lower handrail from the pitch line of the surface of a flight should be between 600mm and 700mm;

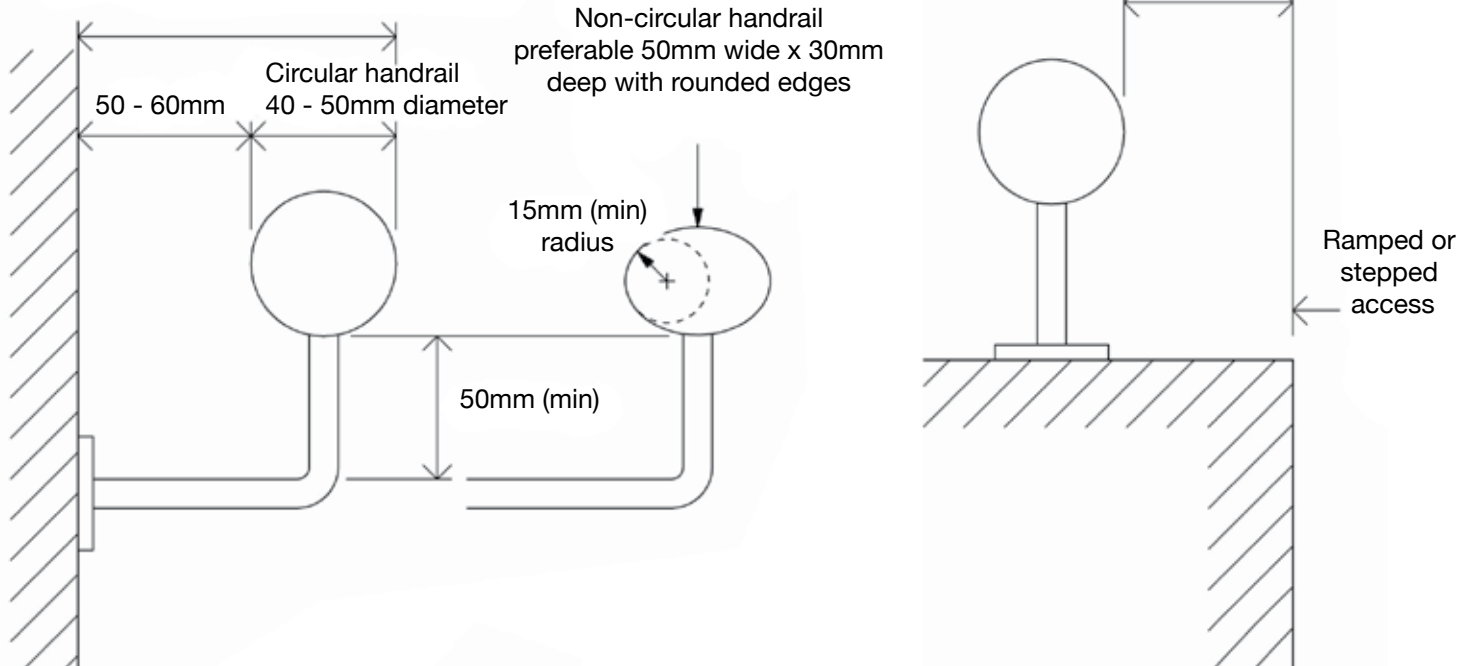
- (b) Where there are two or more flights separated by a landing or landings, the handrails should be continuous across flights and landings, except where broken by side access routes on landings;

- (c) Where the handrail is not continuous the handrail should extend at least 300mm beyond the top and bottom of a ramped approach and the top and bottom risers of a stepped approach, and terminate in a closed end which does not project into a route of travel. Handrails should be terminated in such a way that reduces the risk of clothing being caught;
- (d) The background against which the handrails are seen should contrast visually without being highly reflective (refer to 1.6.4);
- (e) The profile should be either circular with a diameter of between 40mm to 50mm or oval with a width of 50mm (refer to Diagram 7);

Diagram 7

Handrail design

(Note TGD B Method of Measurement)



Extract from Building Regulations Part K and Part M;

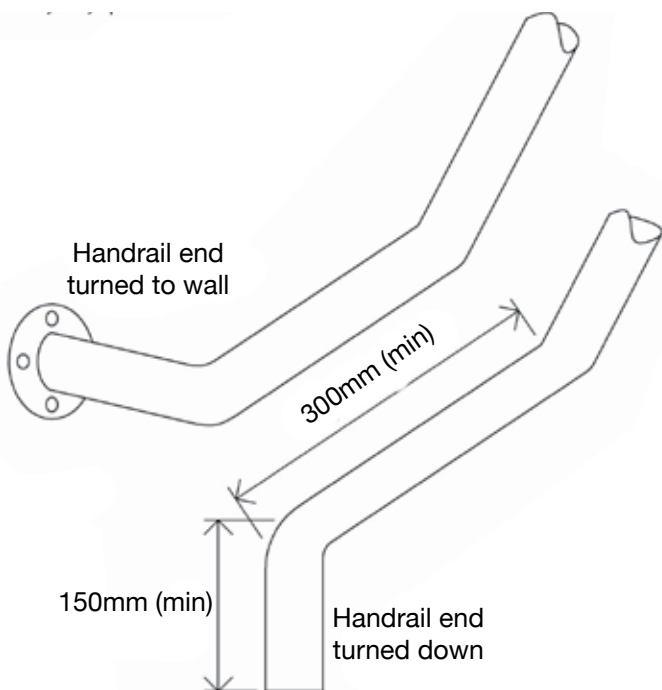
(f)
Handrails should not protrude more than 100mm into the surface width of the access route where this would impinge on the stair width requirement of TGD B – Methods of Measurement;

(g)
There should be a clearance of at least 50mm to 60mm between the handrail and any adjacent wall surface (refer to Diagram 7);

(h)
There should be a clearance of at least 50mm between a cranked support and the underside of the handrail (refer to Diagram 7). The handrail support should meet the handrail centrally on its underside. Rationale: This will minimise the risk of the handrail supports interrupting the smooth running of a person’s hand along the rail;

(i)
The handrails inner face should be located no more than 50mm beyond the surface width of the access route (refer to Diagram 7);

(j)
Handrail fixings should be designed to meet the loading recommendations of I.S. EN 1991-1-1:2002.



Extract from BS 6180 1999:-

Deflection;

6.4.1 Barriers for protection of people should be of adequate strength and stiffness to sustain the applied loads given in BS 6399, without permanent deflection or distortion.

In addition, a barrier that is structurally safe should not possess sufficient flexibility to alarm building users when subject to normal service conditions. Therefore, for serviceability considerations, the limiting condition for deflection appropriate for a horizontal displacement of the barrier at any point from its original position should not exceed the deflection limits determined from the relevant structural design code for the material used or 25mm, whichever is the smaller.

Where a glass component of a barrier is subjected to imposed loads given in BS 6399-1, or of appropriate BS 6399-2, the displacement of any point of the glass component, relative of its fixings, should not exceed $L/65$ or 25mm, whichever is the smaller where L is given in 8.3, 8.4 or 8.5.

This is used in conjunction with BS 6399, Table 4 as below.

Table 4 - Minimum horizontal imposed loads for parapets, barriers and balustrades, etc.

Type of activity/occupancy for part of the building or structure	Examples of specific use	Horizontal uniformly distributed line load (kN/m ²)	A uniformly distributed load applied to the infill (kN/m ²)	A point load applied to part of the infill (kN)
A Domestic and residential activities	(i) All areas within or serving exclusively one dwelling including stairs, landings etc. but excluding external balconies and edges of roofs (see C3 ix)	0.36	0.5	0.25
	(ii) Other residential, (but also C)	0.74	1.0	0.5
B and E Offices and work areas not included elsewhere including storage areas	(iii) Light access stairs and gangways not more than 600mm wide	0.22	N/A	N/A
	(iv) Light pedestrian traffic routes in industrial and storage buildings except designated escape routes	0.36	0.5	0.25
	(v) Areas not susceptible to overcrowding in office and institutional buildings also industrial and storage buildings except as given above	0.74	1.0	0.5
C Areas where people may congregate	(vi) Areas having fixed seating within 530mm of the barrier, balustrade or parapet	1.5	1.5	1.5
C1/C2 Areas with tables or fixed seating	(vii) Restaurants and bars	1.5	1.5	1.5
C3 Areas without obstacles for moving people & not susceptible to overcrowding	(viii) Stairs, landings, corridors, ramps	0.74	1.0	0.5
	(ix) External balconies and edges of roofs. Footways and pavements within building curtilage adjacent to basement/sunken areas	0.74	1.0	0.5
C5 Areas susceptible to overcrowding	(x) Footways or pavements less than 3m wide adjacent to sunken areas	1.5	1.5	1.5
	(xi) Theatres, cinemas, discotheques, bars, auditoria, shopping malls, assembly areas, studio. Footways or pavements greater than 3m wide adjacent to sunken areas	3.0	1.5	1.5
D Retail areas	(xiii) All retail areas including public areas of banks/building societies or betting shops. For areas where overcrowding may occur, see C5	1.5	1.5	1.5
F/G Vehicular	(xiv) Pedestrian areas in car parks including stairs, landings, ramps, edges or internal floors, footways, edges of roofs	1.5	1.5	1.5
	(xv) Horizontal loads imposed by vehicles	See clause 11		

F.H.Brundle cannot be held liable for the compliance of our products to Building Regulations and it remains the responsibility of the customer to ensure all current regulations are met.



Tube clamps - Handrail, guardrail or safety rail. Easily installed and galvanised tube available to suit.



Warmagrip - A "Warm to the Touch" DDA compliant handrail component system.



Handrail Standards - Self colour or galvanised to fit 33.7mm, 42.4mm & 48.3mm tube.



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