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Due to our policy of continual improvement we reserve the right to change specifications at all times without prior notice.

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**LIONWELD
KENNEDY**
GRATINGS

HANDRAILING

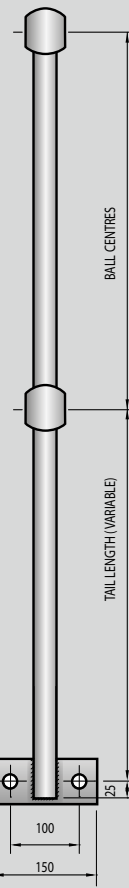
HANDRAIL & STANCHIONS

Saferail is a steel industrial handrailing system that has been extensively used throughout the UK on a wide variety of sites such as power stations, petrochemical sites, factories and industrial fire escape stairs.



Ball centres available:

- 450mm (Typically for stairs)
- 500mm
- 533mm
- 550mm

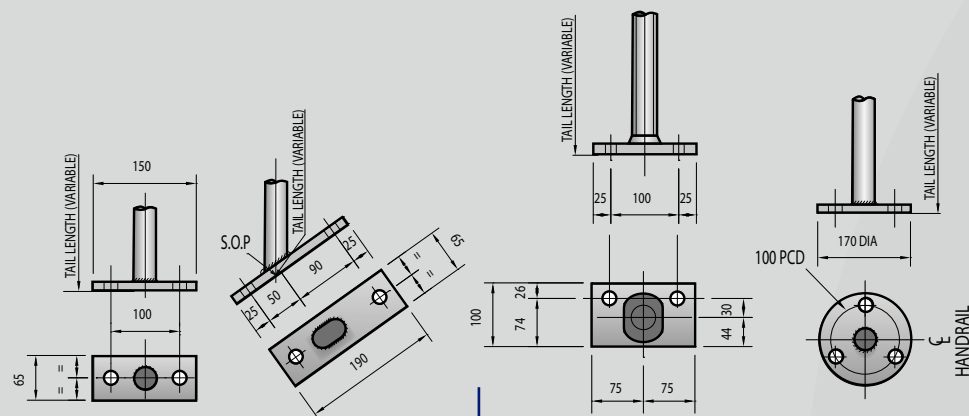


Saferail can be provided as a fully fabricated system or in standard modular shapes to allow simple handrails systems to be pieced together with the support of tubular or solid bar handrail stanchions.

The range consists of handrail stanchions, handrail, gates, kick flat and a range of fixings and connectors, all designed in accordance with **BS4592-0:2006+A1:2012** and **BS EN ISO 14122**.

Solid and tubular base plate options

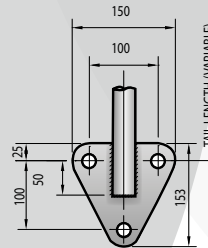
- Notes:**
- For medium duty loadings (0.36kN/m) base plates are 12mm thick as standards.
 - For heavy duty loadings (0.74kN/m) base plates are 15mm thick as standards.
 - All drilled holes are 18mm diameter as standard.



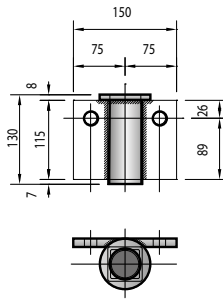
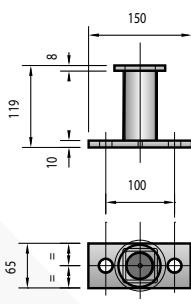
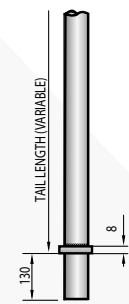
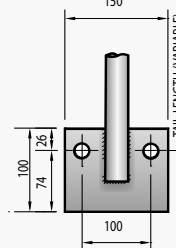
MEDIUM DUTY

HEAVY DUTY

KCB1
(See page 7)



HEAVY DUTY



REMOVEABLE

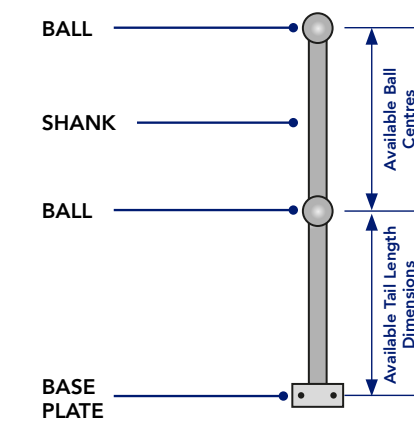
DESIGN CONSIDERATIONS

PLATFORM RAIL

- Design height should be 1100mm from either the pitch line or the top of the floor
- Distance between rails to create an opening no greater than 500mm

STAIR RAIL

- Distance from the pitch line to the centreline of the stair handrail should be between 900mm – 1000mm



Available Ball Centres
500mm (Standard offering)
450mm (Typical for Stair Type)

Available Tail Length Dimensions
Variable to suit application

For quick delivery it may be possible to utilise our stock range of stanchions

Taking into consideration the design criteria, Lionweld Kennedy offer Handrail Stanchions with 500mm ball centres as standard on platform stanchions and 450mm on stair stanchions with a variable tail length to suit your flooring height.

Lionweld Kennedy Standard Sizes

To ensure your handrail meets the key design criteria, Lionweld Kennedy offer a standard design to compliment our steel grating products up to 50mm deep. The table below shows the tail length and the toe plate size required to ensure the lower opening remains within the 500mm limit and the handrail provides the minimum 1100mm overall height from the walking surface.

FLAT BASE STANDARD SIZES					
Grating Depth	Ball Centres	Tail Length	Toe Plate required (if welded to flooring)	Upstand Provided	Toe Plate required (if fixed to handrail)
25mm	500mm	650mm	150mm	125mm	130mm
30mm	500mm	650mm	150mm	120mm	130mm
40mm	500mm	650mm	150mm	110mm	100mm
50mm	500mm	650mm	150mm	100mm	100mm

SIDE PALM STANDARD SIZES					
Grating Depth	Ball Centres	Tail Length	Toe Plate required (if welded to flooring)	Upstand Provided	Toe Plate required (if fixed to handrail)
25mm	500mm	725mm	150mm	125mm	130mm
30mm	500mm	725mm	150mm	120mm	130mm
40mm	500mm	725mm	150mm	110mm	100mm
50mm	500mm	725mm	150mm	100mm	100mm

STANCHION

Tubular Stanchion Sizes

All stanchions are manufactured using S235JR grade material with a 3.0mm wall thickness.

Other sizes are available upon request.

Stanchion Size	Ball Size (Nominal diameter)	Rail Size
25nb (33.7mm o/d)	60mm	25nb (33.7mm o/d)
32nb (42.4mm o/d)	60mm	25nb (33.7mm o/d)
32nb (42.4mm o/d)	75mm	32nb (42.4mm o/d)
40nb (48.3mm o/d)	75mm	32nb (42.4mm o/d)
40nb (48.3mm o/d)	75mm	40nb (48.3mm o/d)

Solid Stanchion Sizes

Solid Stanchions are manufactured using S275JR grade material as standard.

Shank	Ball Size (Nominal diameter)	Rail Size
32mm	63mm	33.7mm o/d (25nb)
38mm	70mm	33.7mm o/d (25nb)
38mm	70mm	42.4mm o/d (32nb)
45mm	80mm	42.4mm o/d (32nb)
45mm	80mm	48.3mm o/d (40nb)

Bespoke Stanchions

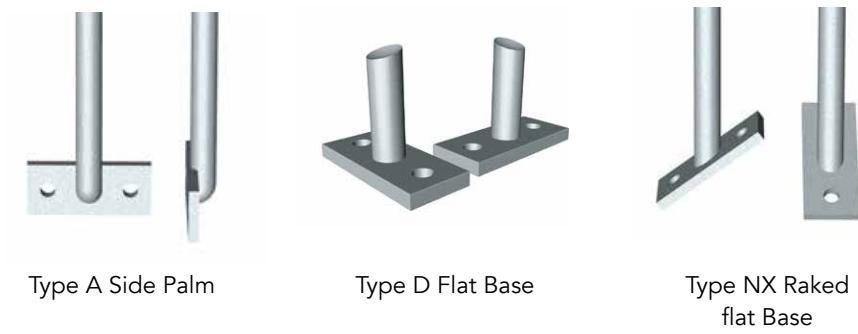
Handrail Stanchions can be manufactured with many variations including single ball stanchions, 3 ball stanchions and can be manufactured with special base plates. Where necessary gate hinges and toe plate brackets can be welded to the stanchions.

Lionweld Kennedy offer a fully bespoke fabrication service for industrial handrailing to suit simple or high complexity designs. We are able to manufacture handrailing for walkways, staircases and storage tanks whilst also allowing for non-standard connections such as welded joints. All fabricated handrail is drawn using our CAD or Tekla software then fabricated and piece marked for easy on site erection.

Saferail is supplied as pre-galvanised tube as standard but is also available with a hot dipped galvanized or self colour finish.

BASE PLATES

Standard Base Plates



Heavy Duty Base Plates



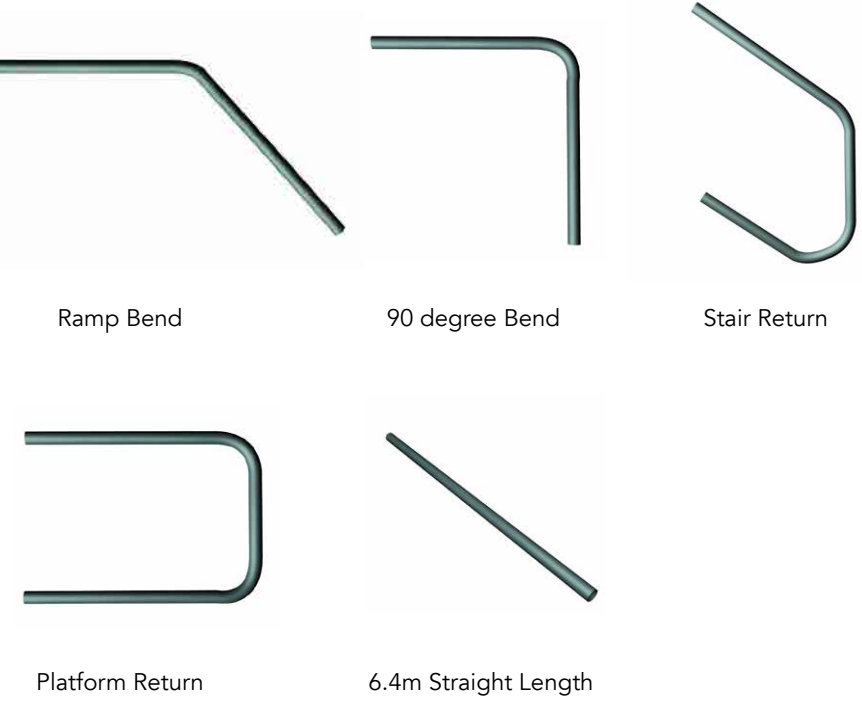
REMOVABLE BASE PLATES

For areas where it may be required to remove the handrail system from time to time, we can offer a removable stanchion. The Type E stanchion has a plain end with a collar welded to it. This stanchion is secured in place using either the Type J or Type H socket, dependant on the required fixing method.



MODULAR HANDRAIL BENDS

Pre-fabricated handrail sections are held in stock to facilitate speedy deliveries, allowing simple handrail systems to be formed without the need for bending on site.



HANDRAIL CONNECTORS

EXPANDING CONNECTORS

Expanding handrail connectors are used for joining:

- 25mm nominal bore (33.7mm OD),
- 32mm nominal bore (42.4mm OD),
- 40mm nominal bore (48.4mm OD) tubular handrailing.

The Handrail Connectors are simply pushed into the tube and secured by tightening the grub screw with an allen key. This type of connection is generally used for 3.2mm thick handrail.

DOWEL CONNECTORS

Each section of handrail tube is drilled and tapped to enable an M8 grub screw to be located between the groove of the connector and be secured into position. This type of connection is generally used for 4mm thick handrail.

CONNECTORS & FIXINGS

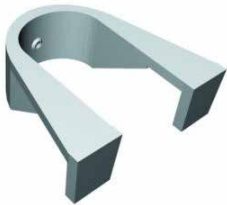
K25 / K40 CONNECTOR

K25 Used with:

- 25nb Tubular Stanchions
- 32mm dia Solid Stanchions

K40 Used with:

- 32nb Tubular Stanchions
- 40nb Tubular Stanchions
- 38mm Dia Solid Stanchions



SIDE PALM FIXING SYSTEM

Alternate the KickKlamps (K25 / K40), fixing them to the top and bottom of the toe plate.

On shorter runs, for extra security, use two KickKlamps per stanchion, one of the top and one on the bottom of the toe plate.



TOE PLATE CONNECTORS

FLAT BASE FIXING SYSTEM

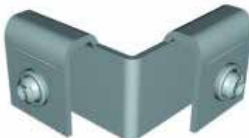
Fix KickKlamps to every stanchion on top of the toe plate and clamp down against the base plate of the stanchion.

TOE PLATE CONNECTORS

To accompany the KickKlamps, corner brackets (KCB1 / KCB2) and straight connectors (KCB3) can be used to join the lengths of toe plate as required.



KCB1
Internal Connector



KCB2
External Connector



KCB3
Straight Connector

TOE PLATE / KICKKLAMP

Toeplate is used to form a barrier to prevent objects falling off the edge of the walkway. 5mm flat bar is supplied in various heights (depending on the depth of flooring) to provide a 100mm high edge protection around the open grid flooring.

Toe plate can be either welded to the flooring or attached to the handrail stanchions using a U bolt or our innovative kickklamp system.

KICKKLAMP SYSTEM

KickKlamp brackets are a revolutionary system for fixing kick flat / toe plate to handrail standards.

The basic principle involves gripping the toe plate with steel ‘forked fingers’ and fixing to the stanchion with a single grub screw.

KICK PLATE CONNECTION

As an alternative method of fixing toe plate to a stanchion, the toeplate can be cut to size and drilled at each end to allow a bespoke bracket to be fixed around a stanchion, securing the toe plate in place.



GATES

Self closing gates are designed to compliment our handrail system and are usually provided with an enclosed spring assembly, hinged to an adjoining handrail stanchion or bolted to a flat member such as an angle using a 65mm x 850mm x 12mm thick fixing plate.

BS4592-0:2006+A1:2012 requires gates to provide equal protection to that required for the surrounding guarding.

It should consist of a Handrail, at least one intermediate or knee rail and a toe plate.

This design criteria makes the traditional half height gate non-compliant unless it is being used at ground level where toe plate is not required.



HANDRAIL LOAD TABLES

Maximum centres of 1100 high standards fixed to Steelwork (Two Hole Flat Base)

Data Sheet in accordance with BS 5395 / 6180							
Item	Size	Matl Gr.	Loading 0.36 kN/m	Loading 0.74 kN/m	Handrail BS 1387	Base Pl' Gr S275	Fixings* into Steel
Standard	33.7 o/d x 3.0 th	S235	780	390	33.7 x 3.2	65 x 12 x 150	M16 Gr 8.8
Standard	33.7 o/d x 3.0 th	S355	1040	520	33.7 x 3.2	65 x 12 x 150	M16 Gr 8.8
Standard	42.4 o/d x 3.0 th	S235	1250	630	33.7 x 3.2	65 x 12 x 150	M16 Gr 8.8
Standard	42.4 o/d x 3.0 th	S355	1560	740	33.7 x 3.2	65 x 12 x 150	M16 Gr 8.8
Standard	48.3 o/d x 3.0 th	S235	1750	850	33.7 x 3.2	65 x 15 x 150	M16 Gr 8.8
Standard	48.3 o/d x 3.0 th	S355	2000	1130	33.7 x 3.2	65 x 15 x 150	M16 Gr 8.8
Standard	48.3 o/d x 5.0 th	S355	2000	1500	33.7 x 3.2	65 x 15 x 150	M16 Gr 8.8
Standard	32 dia solid	S275	1400	700	33.7 x 3.2	65 x 12 x 150	M16 Gr 8.8
Standard	38 dia solid	S275	1950	1150	33.7 x 3.2	65 x 15 x 150	M16 Gr 8.8
Standard	45 dia solid	S275	2000	1800	42.4 x 3.2	65 x 20 x 150	M16 Gr 8.8

Maximum centres of 1200 high standards fixed to Steelwork (Two Hole Horizontal Side Palm)

Data Sheet in accordance with BS 5395 / 6180							
Item	Size	Matl Gr.	Loading 0.36 kN/m	Loading 0.74 kN/m	Handrail BS 1387	Base Pl' Gr S275	Fixings* into Steel
Standard	33.7 o/d x 3.0 th	S235	710	340	33.7 x 3.2	65 x 12 x 150	M16 Gr 8.8
Standard	33.7 o/d x 3.0 th	S355	820	410	33.7 x 3.2	65 x 12 x 150	M16 Gr 8.8
Standard	42.4 o/d x 3.0 th	S235	960	570	33.7 x 3.2	65 x 12 x 150	M16 Gr 8.8
Standard	42.4 o/d x 3.0 th	S355	1360	680	33.7 x 3.2	65 x 12 x 150	M16 Gr 8.8
Standard	48.3 o/d x 3.0 th	S235	1600	800	33.7 x 3.2	65 x 15 x 150	M16 Gr 8.8
Standard	48.3 o/d x 3.0 th	S355	1840	1030	33.7 x 3.2	65 x 15 x 150	M16 Gr 8.8
Standard	48.3 o/d x 5.0 th	S355	2000	1600	42.4 x 3.2	65 x 20 x 150	M16 Gr 8.8
Standard	32 dia solid	S275	1180	600	33.7 x 3.2	65 x 12 x 150	M16 Gr 8.8
Standard	38 dia solid	S275	1800	1050	33.7 x 3.2	65 x 15 x 150	M16 Gr 8.8
Standard	45 dia solid	S275	2000	1800	42.4 x 3.2	65 x 20 x 150	M16 Gr 8.8

NOTES

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