Roof Edge Fabrications

A KEE SAFETY COMPANY

PROVIDING SOLUTIONS FOR SAFE WORKING AT HEIGHT

Fall Protection Solutions






- COMPREHENSIVE RANGE OF COLLECTIVE AND PERSONAL PROTECTION SYSTEMS
- EACH SYSTEM COMPLIES WITH THE 'WORKING AT HEIGHT' LEGISLATION AND RELEVANT STANDARDS
- DESIGN AND INSTALLATION SERVICE TO ENSURE COMPLIANCE WITH ALL MAJOR STATUTORY REQUIREMENTS

committed to CSCS

SAFEcontractor APPROVED

constructionline

Roof Edge Fabrications

Why You Need Fall Protection?

In the UK, according to the Health and Safety Executive (HSE), falls from height are the biggest cause of death and the second biggest cause of serious injuries in the workplace. Their latest statistics show that in 2013/14, 39 workers died as a result of falls from height and 2895 people were seriously injured. The construction industry leads in the number of major injuries to workers as a result of falling from a height.

Yet every day contractors require regular access to rooftops to carry out essential building, repair and maintenance work. So how can they work in a safer environment?

Under the amended Work at Height Regulations 2007, it is the moral duty and legal responsibility of those in control of rooftop work to do all that is reasonably practical to prevent anyone falling. Employers, employees and contractors must now carry out risk assessments, prepare a method statement and consider whether an alternative form of access would be safer. In fact, the HSE has issued a recent warning to companies whose business involves working at height to ensure they provide suitable safety equipment and have appropriate procedures in place before allowing their staff to work in potentially dangerous situations.

When considering which type of safety equipment to use, the HSE advise a hierarchy of options to be considered.

1. Eliminate the Risk. Can working at height be avoided completely? Can other options such as extendable equipment on the ground be used instead?

2. If working at heights cannot be avoided, the first consideration should be to install collective fall prevention measures eg. guard rail around the perimeter of the roof in order to provide protection for everyone who has to work at heights.

3. Finally, if collective solutions are not viable personal protection systems e.g. work restraints, fall arrest, rope access should be available to all workers to minimise the distance and consequence of a fall should one occur.

Collective and Personal Fall Protection Solutions

As a leading supplier of both Collective and Personal Protection products we have a portfolio which can eliminate many of the unnecessary risks that are still taken every day by people working at heights.

This brochure is intended to provide an overview of our products, if more details are required please contact our sales teams or partners for more detailed information.

The products as detailed on the following pages include both freestanding and fixed collective protection systems, a wide range of fixed, non-penetrative, permanent or temporary personal protection products and a range of fall protection accessories to provide a one stop solution.

Roof Edge Fabrications - Providing solutions for safe working at height.

Collective Protection Solutions

Roof Edge Fabrications
A KEE SAFETY COMPANY

KEEGUARD is the leading free standing non-penetrative solution with many kilometres installed globally. **Kee Safety** is continually refining and developing the range giving us a full range of options to provide you with the most practical solution to your fall protection needs.

Our range of collective protection provides the customer with a modular, adaptable solution enabling quicker and easier installation removing the need to fabricate on site.

Steel systems are fully hot-dipped galvanised to BS EN ISO 1461, aluminium systems incorporate high grade aluminium silicon magnesium fittings and all the systems listed below are available in powder coated finish.

The free standing, non-penetrative systems use 100% recycled PVC counterweights and all systems are fully recyclable.

Kee® Guard

Free standing non-penetrative roof edge protection, galvanised steel (*page 4).*

KeeGuard® Lite

Free standing non-penetrative roof edge protection, lightweight aluminium (*page 8).*

KeeGuard® Foldshield

Free standing non-penetrative roof edge protection, foldable to protect buildings aesthetics and easily re-erected when required.Available in galvanised steel or with aluminium top and mid rails (*page 9).*

KeeGuard® Topfix

Collective protection solution for metal profile and standing seam roofs, utilises a standard base plate with multiple fixing centres. Available in both galvanised steel and aluminium options (*page 11).*

Kee® Modules

A range of structurally mounted edge protection, supplied in pre-assembled kits with multiple fixing options. Available in both galvanised steel and aluminium (*page 12).*

Kee® Dome

Free standing non-penetrative, modular, galvanised barriers specifically designed to provide collective protection for skylights, roof hatches and other roof penetrations.
KEE DOME Mini provides protection for skylights, developed to maximise safety without being obtrusive (*page 13).*

KeeGuard® Free Standing Roof Edge Protection

By using a correctly installed and tested **KEEGUARD** roof edge protection system you can ensure the safety of anyone who has access onto a flat roof. **KEEGUARD** is a modular free standing system that has been fully tested and approved which does not penetrate the roof membrane.

Easy to handle, recycled PVC weights provide stability and galvanised **KEE KLAMP** fittings and tube complete the system. **KEEGUARD** is supplied in prefabricated kit form with a minimum number of assemblies which allows for ease of installation. It is a safe, versatile system which

Safety and Versatility

- System works on a proven counterbalance system
- Suitable for use on concrete, asphalt, PVC membrane and felt roof surfaces
- Compatible with almost all configurations of flat roofs up to 10 degrees slope
- Integral toeboard fixings
- Assemblies are fitted with anti-slip pads
- Design load: 300 N/m applied horizontally along the top rail
- Coloured cover strip available for counterbalance tube to reduce trip hazard.

Durability and Simplicity

- Corrosion resistant - all iron fittings are galvanised to EN ISO 1461
- Fittings use case hardened steel setscrews with **KEE KOAT** protection
- Minimum components for ease of installation
- Modular design allows reconfiguration on site if needed
- Sections can be added to or taken down, for reconstruction elsewhere
- Unique open style fitting allows quick installation of horizontal rails
- Three types of upright available (see page 6)
- No penetration of the roof membrane
- No welding, threading or bolting required on site
- Can be colour coated to any RAL colour
- Installation can be customised to cope with ladder access and any other fixed rooftop obstructions.

Setting the Standards

When correctly designed and installed, **KEEGUARD** will meet or exceed the following safety requirements:

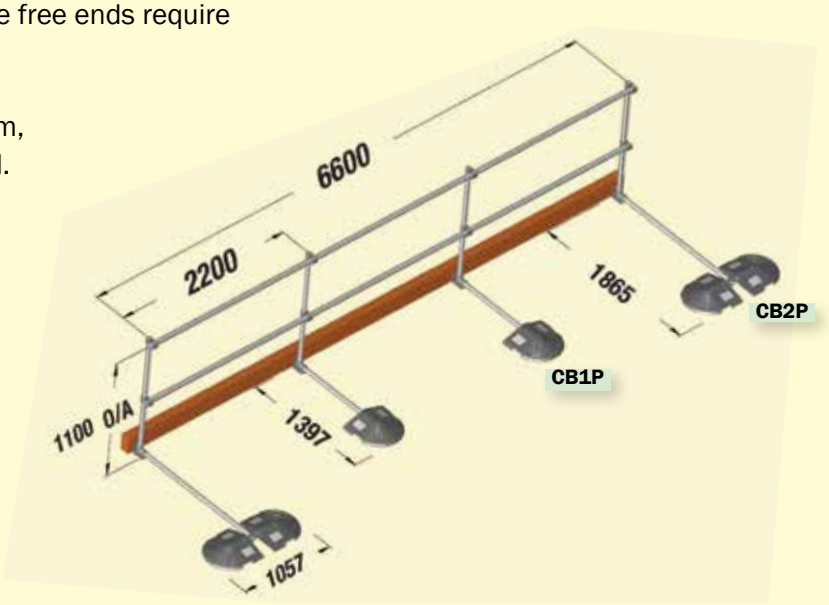
- EN ISO 14122 Part 3
- EN 13374 Class A
- HSG-33 Health & Safety in Roof Work
- HSE INDG 284 *"Working on roofs"*
- BS 6399: Part 2 1995 Wind Code.

A Typical KeeGuard® Configuration when Secondary Restraint is Available

KEEGUARD free standing roof edge protection system meets the requirements of EN 14122 pt. 3 by use of sufficient counter-weight restricting the movement of the guard rail in the event it being called into use. Where a parapet (minimum height 150mm) is in place which can help to absorb some of the force applied against the rail the following configuration can be used.

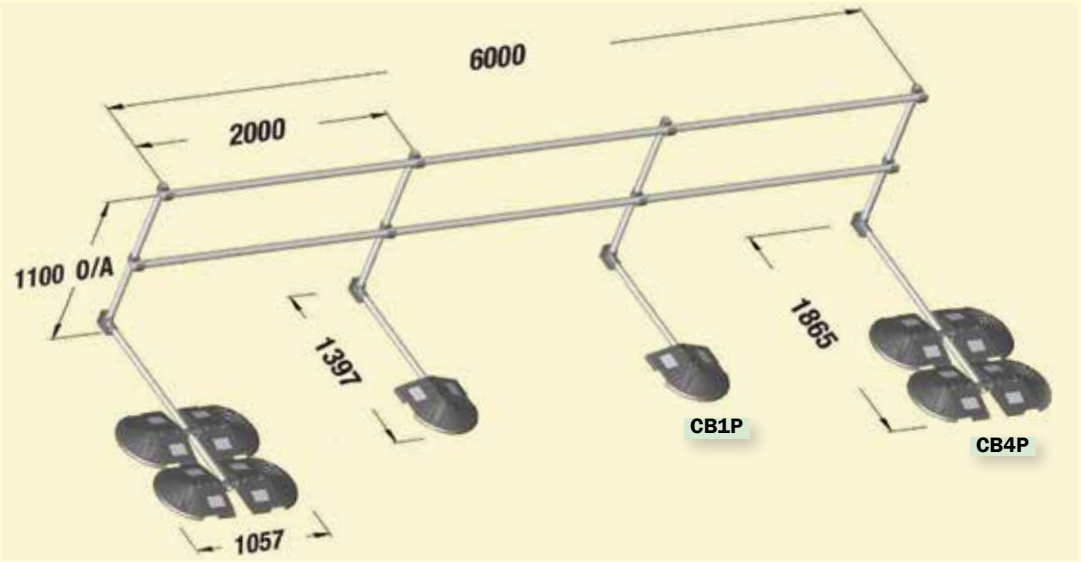
The bay lengths are 2.2 metres and the free ends require two weights per free end.

If the end bay length is reduced to 1.5m, only one weight is needed per free end.



A Typical Unrestrained KeeGuard® Configuration

This is a typical free standing layout, utilising maximum 2.0 metre bays and the required base weight configuration.



Essential Kee Klamp® Fittings Used to Complete a KeeGuard® System

14-8

Type 14-8 Straight Coupling is used to connect lengths of tube.

15-8

Type 15-8 Elbow is used for 'D' Returns and 90° corners.

19-8

Type 19-8 can be used for variable angles and to accommodate slope irregularities.

61-8

Type 61-8 Flange is used for wall attachments.

77-8

Type 77-8 Plastic Plug is used to cap open tube ends.

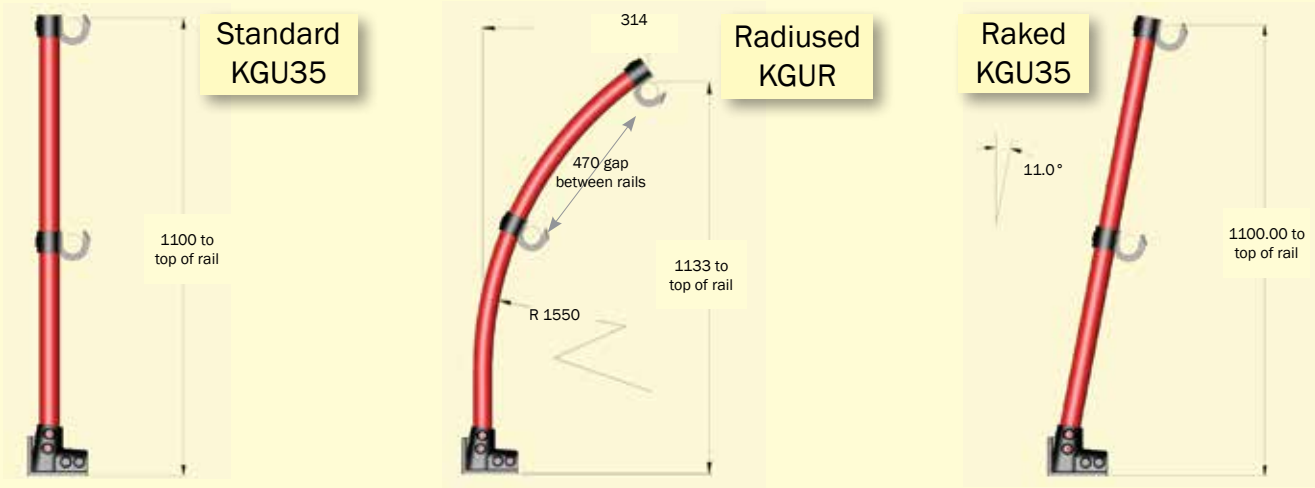
Recycled, easy to handle PVC Base Weights

The recycled PVC weights used with **KEEGUARD** bring a number of advantages to the system, and particularly make installation quicker and easier, saving both time and money.

- 13.5 kg per weight
- Size: 460 x 500 x 85mm
- Carrying handles moulded into the design
- Available in black as standard. Other colours available by request at extra cost
- Moulded surface to improve grip
- Optional covers for counterweight tube available to minimize trip hazards
- Environmentally friendly
- Made from 100% recycled material in the EU

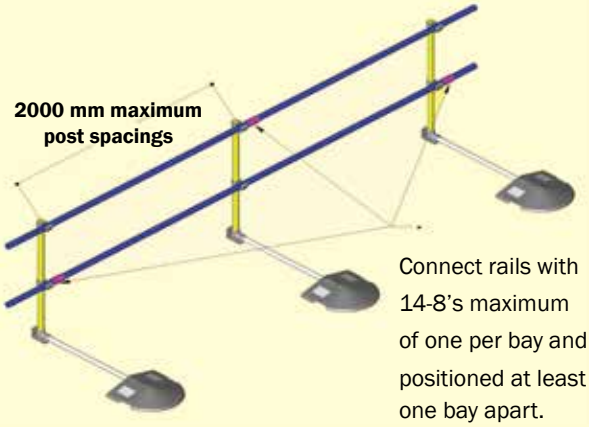
N.B. To protect asphalt roofs from damage it is recommended that Elastomer tiles, available from **Kee Safety**, are placed under all uprights and counterweights.

KeeGuard® Upright Options



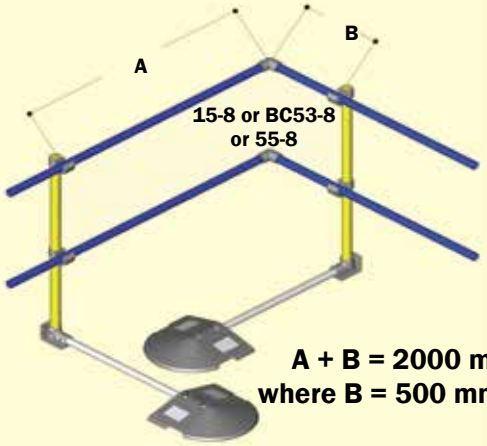
KeeGuard® Installation

Typical Layout



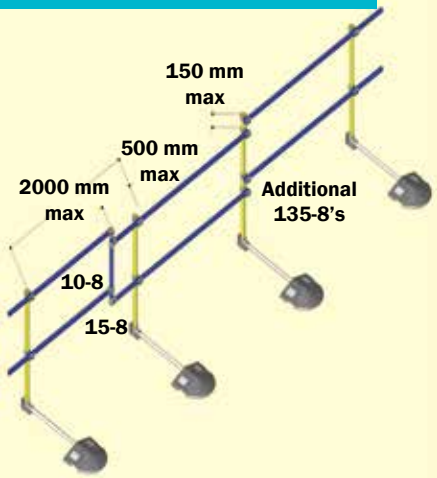
Connect rails with 14-8's maximum of one per bay and positioned at least one bay apart.

Corner Detail

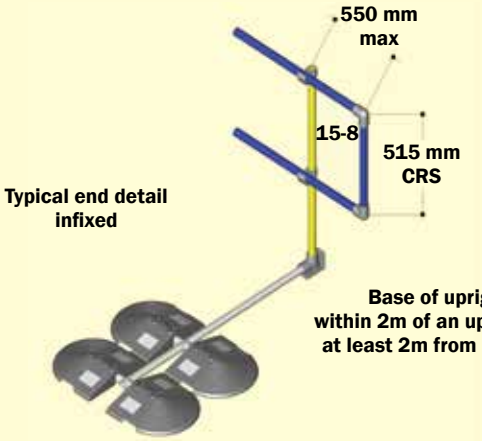


A + B = 2000 mm where B = 500 mm max

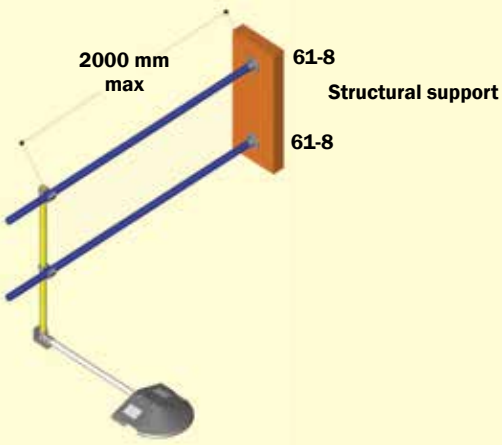
Change in Level Detail

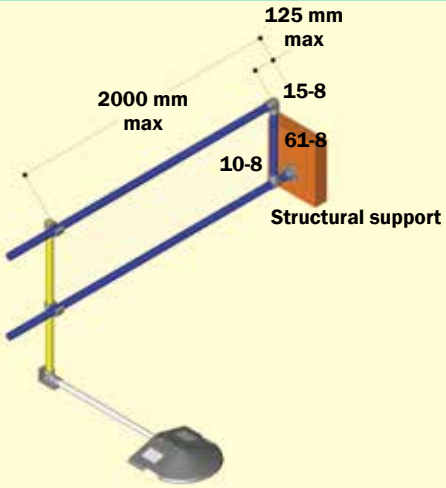


Unrestrained 'D' Return Detail



Wall Fix Detail





Aluminium Free Standing Roof Edge Protection

KEEGUARD Lite is the Aluminium safety solution for free standing roof edge protection, a lightweight alternative to the standard **KEEGUARD** system.

KEEGUARD Lite is supplied in prefabricated kit form, with the uprights, rails and fittings manufactured in Aluminium, grub screws supplied in Stainless Steel and recycled PVC base weights. The lightweight system can be installed with minimal effort, thus saving time and money during on-site installation.

Features

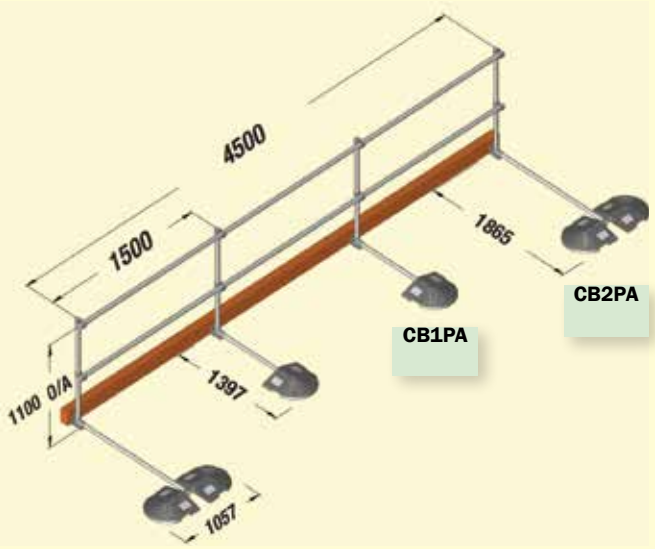
- Aluminium rails and uprights
- Modular system supplied in prefabricated kit form
- Recycled, easy to handle PVC base weights
- Complies with EN 14122 pt.3
- Uses Size 7 (horizontal) and 8 (vertical) tube with bay size a maximum 1.5 metres
- Independently tested at APAVE
- Available for standard, radiused and raked uprights.

Benefits

- Safe, reliable and versatile collective fall protection solution
- Savings in installation time and cost
- Does not penetrate the roof fabric
- Lightweight and corrosion resistant
- Aesthetically attractive
- Minimal long term maintenance keeps on going costs down
- Can be colour coated if required.

KeeGuard® Lite for Use when Secondary Restraint is Available

KEEGUARD Lite can be used where secondary restraint, such as a parapet wall (minimum height 150mm) is available.



Essential Kee Lite® Fittings Used to Complete a KeeGuard® Lite System

Type L14-7 Straight Coupling is used to connect lengths of tube.

Type L15-7 Elbow is used for 'D' Returns and 90° corners.

Type L19-7 can be used for variable angles and to accommodate slope irregularities.

Type L61-7 Flange is used for wall attachments.

Type 77-8 Plastic Plug is used to cap open tube ends.

Free Standing Folding Roof Edge Protection

When collective protection is the preferred method of providing a safe working environment but it is not desirable to have railings permanently visible on the roofline of a building, **KEEGUARD** Foldshield provides an ideal solution.

Designed for use on slopes up to 10 degrees, this folding system is suitable for use on asphalt, concrete, mineral felt or PVC sheet covered roofs and complies with the requirements of EN 13374.

Utilising a hinged version of the standard **KEEGUARD** base fitting, shown below, the guardrail can easily be lifted into place when work is in progress and then quickly folded back down when finished.

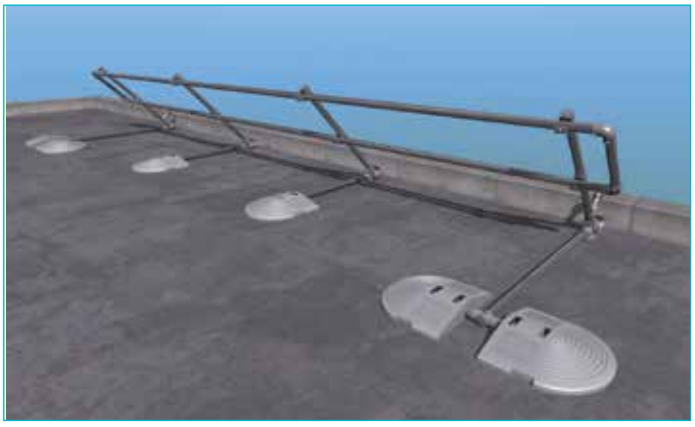
KEEGUARD Foldshield offers all the flexibility of standard **KEEGUARD** allowing continuous runs, fixed ends, corners, changes in direction etc, or can be installed in 6m sections with 'D' returns (as illustrated) to enable it to be folded quickly and simply.

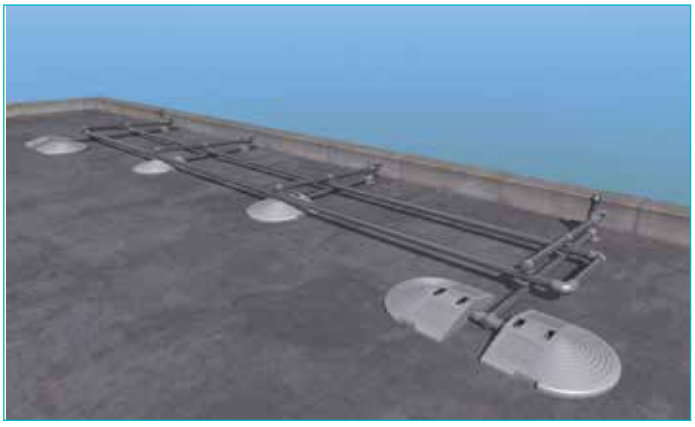
A simple locking pin is all that needs to be removed from the fitting to allow it to pivot.

Two people can easily raise or fold down a standard section (max length 6.4m) of guardrail. To minimise the weight of a section **KEEGUARD** Foldshield is also available in a configuration to allow aluminium mid and top rails.

With a maximum bay size of 2 metres it can be used in both restrained and unrestrained applications.

In order to use the folding fitting in a restrained situation, an additional support prop (shown on the next page) is added to the uprights at six metre intervals to allow sufficient room for the fitting to pivot. A minimum roof up-stand of 250mm is required.





Features

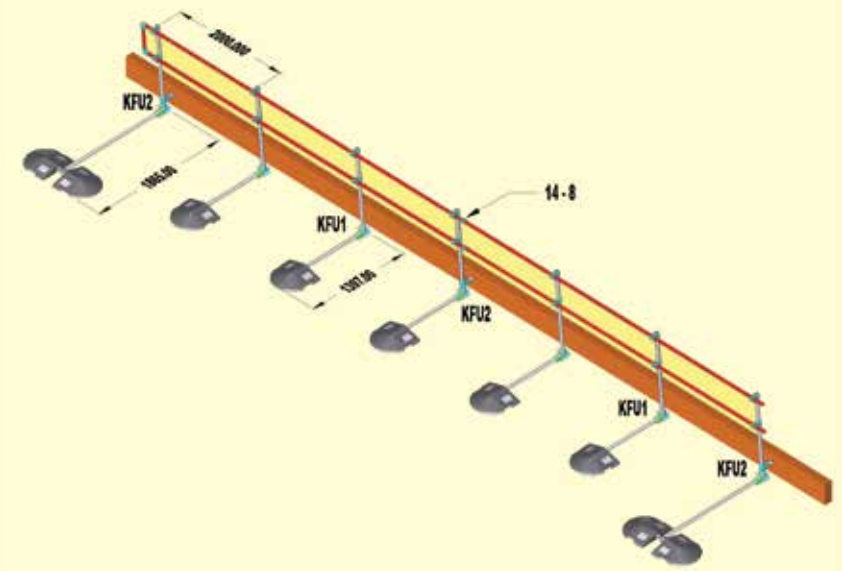
- Folds down when not in use
- Main fitting can only pivot in one direction
- System can be raised and lowered in sections
- Complies to EN 13374.

Benefits

- Does not spoil building aesthetics
- No possibility of the guardrail folding the wrong way
- Saves time and increases flexibility .

KeeGuard® Foldshield

A Typical KeeGuard® Foldshield Restrained Configuration



An Additional Support Prop

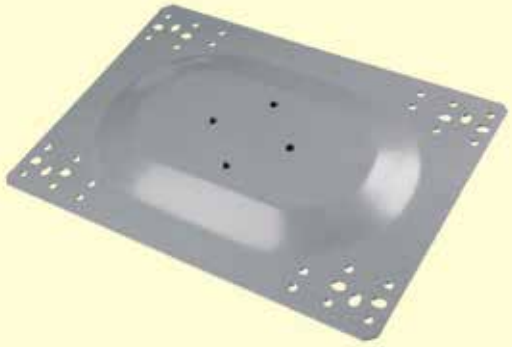
KFU2

KeeGuard® Topfix

Roof Edge Protection for Standing Seam and Metal Profile Roofs

KEEGUARD Topfix provides a simple solution when collective protection is the preferred safety option for metal profile and standing seam roofs up to 45 degree pitch.

The specially designed powder coated base plate, which incorporates multiple fixing centres, allows installation to a wide range of popular roofs. Being an 'off the shelf' product, specification is simpler and it also removes the need to fabricate a different solution for each site, minimising site visits and down time.



Base plates for standing seam roofs are fixed using non-penetrative 2-part clamps and metal profile roofs are fixed with minimal penetrations using rivets and butyl sealing strip to maintain the roof's integrity.

Fixing centres for standing seam roofs: 305, 400 & 500mm.

Fixing centres for trapezoidal profile roof panels: 310, 333, 400 & 500mm.

Roof Edge Protection for Standing Seam and Metal Profile Roofs

KeeGuard® Topfix

Being part of the **KEEGUARD** range **KEEGUARD** Topfix allows for fast installation using pre-assembled uprights and open cup fittings and easily accommodates ridges, valleys, corners, changes in level and self closing gates etc. using standard **KEE KLAMP** fittings.

The standard upright base fitting allows for 0-11 degree vertical adjustment and four fixing holes in the base plate allow it to be used in the most beneficial plane to suit the roof profile.

Available in both galvanised steel and aluminium finish.

Complies with the test requirements of BS EN 14122 part 3 and BS EN 13374 Class A, bay sizes for galvanised EN 14122 are 2.5m (1.75m end bays).

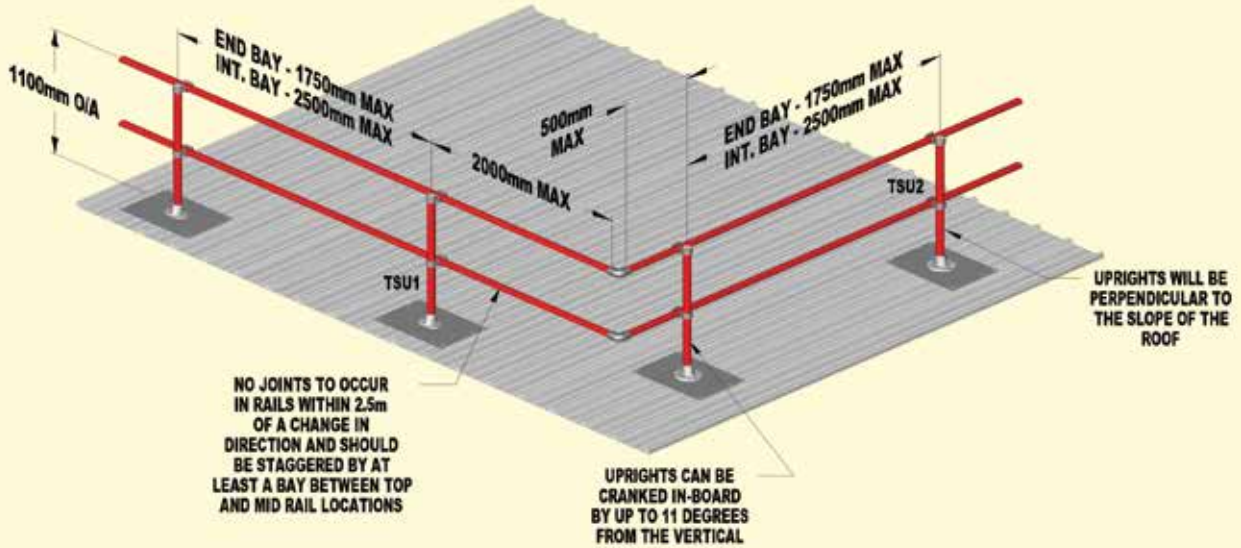
Features

- Suits a wide range of metal profile and standing seam roofs
- Modular prefabricated 'off the shelf' system
- Galvanised or Aluminium options
- Complies with the test requirements of BS EN 14122 part 3 and EN 13374 Class A.

Benefits

- A collective protection solution for metal roofs
- Easier specification means less site visits
- Fast installation, saving time and money
- Non-penetrative solution for standing seam roofs
- Watertight fixings for metal profile roofs.

A Typical KeeGuard® Topfix Layout



This is a typical **KEEGUARD** Topfix layout diagram 6m Plus Trapezoidal Metal Profile Roofs - EN 14122 Pt 3.

Structually Mounted Roof Edge Protection Modules

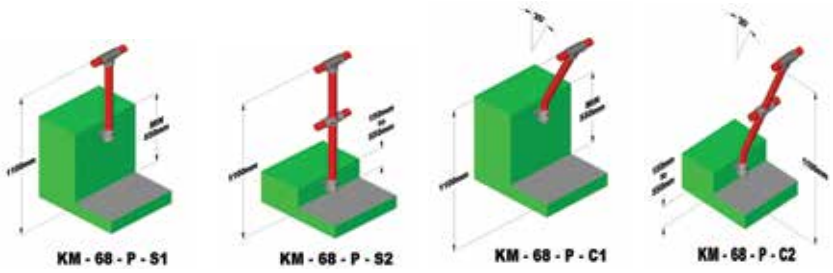
KEE MODULES is a range of pre-designed upright assemblies to enable the quick specification and installation of EN14122 part 3 compliant structurally mounted roof edge protection.

Available in size 7 (42.4 mm) size and 8 (48.3 mm) Galvanised Steel or Aluminium.

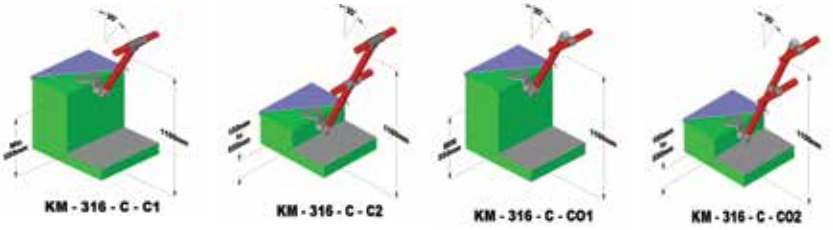
The standard configurations offer side fixing, top fixing or a fitting to enable mounting underneath aluminium copings.

Handrails can be in line or offset, with single or double rails and the Uprights can be supplied straight, inclined or radiused.

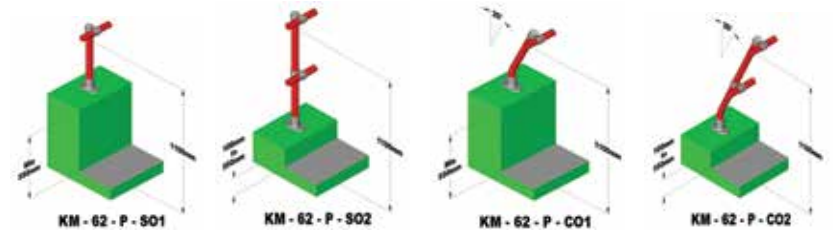
Kee Modules® side fix mounted, handrail tube in-line



Kee Modules® for mounting under aluminium coping, handrail off-set or in-line



Kee Modules® top fix mounted, handrail tube off-set



Features

- Galvanised steel or aluminium
- Adaptable to many roof configurations
- Multiple variations
- Conformance to EN ISO 14122 pt3
- No threading, welding or riveting required.

Benefits

- Pre-assembled uprights for quicker installation
- No welding, no hot work permits required
- Can be adjusted on site to suit local conditions
- Fittings don't damage any protective coatings applied to the tube
- Assured design loads
- Consistent appearance
- Easily installed by lower skilled and therefore less expensive labour.

The Safety Solution for Skylight Fall Protection

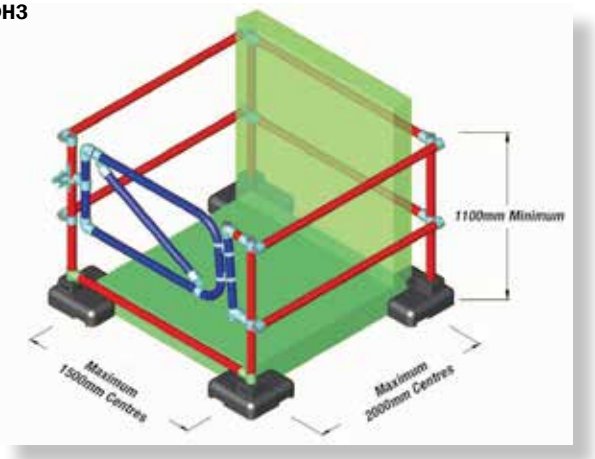
KEE DOME is a modular system designed specifically to prevent falls through skylights, roof hatches and other roof penetrations. Sturdy recycled PVC bases lock the posts into position around the corners of a skylight and **KEE KLAMP** fittings and tube are used to construct a rigid frame. Various sizes are available designed around standard tube lengths of 1.5, 2.0 or 3.2 metres. Additionally a gate can be incorporated for access to roof hatches.

The **KEE DOME** structure is safety compliant, remains completely free-standing and eliminates the risk of damage to the roof membrane.

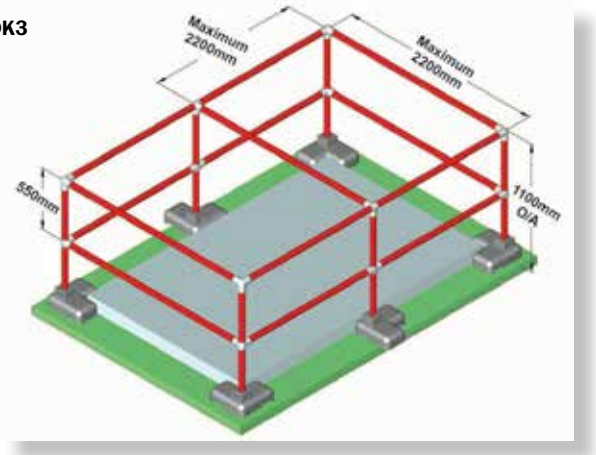
The main features of **KEE DOME** are:

- Modular system using standard components
- Made from 48.3 O/D tube (Size 8)
- Recycled PVC feet
- Complies with EN 14122 pt3
- Suitable for use on all roof surfaces with a maximum pitch of 3°
- Available in any RAL colour if required.

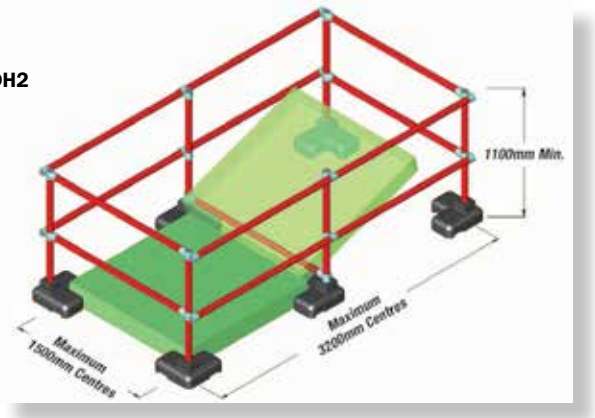
KDH3



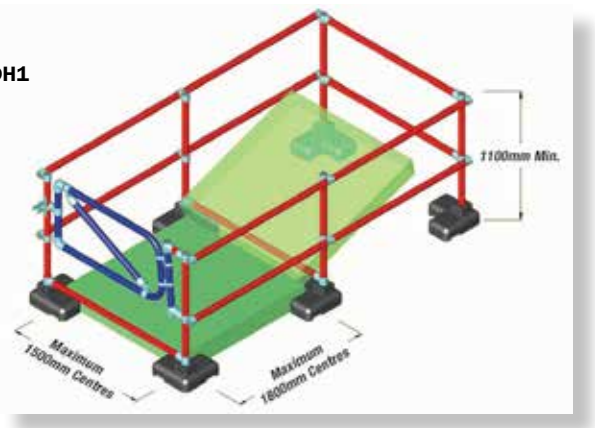
KDK3



KDH2



KDH1



Kee Dome® Mini

The **KEE DOME** Mini is the latest design in our range of skylight fall protection products. Made from size 6 fittings and tube and incorporating new smaller recycled PVC bases, the product has been developed to maximize safety without being obtrusive when a building rooftop is visible.

The top cover of this new **KEE DOME** is very easy to assemble using **KEE KLAMP** fittings, making this a quick and effective collective protection solution.

KEE DOME Mini is designed to fit 1.2m x 1.2m skylights, other sizes up to a maximum of 1.8m x 1.8m available as special orders.

Features

- Modular system
- Complies with EN 14122 pt3
- Suitable for use on all roof surfaces with a maximum pitch of 3°
- Designed using size 6 tube and fittings, galvanised to BS EN ISO 1461
- Recycled PVC bases
- Designed for 1.2m x 1.2m skylights.

Benefits

- Cover top minimizes the risk of anyone falling through the skylight
- Unobtrusive solution on visible roof tops
- Rapid assembly
- Designed as a permanent solution, but can be dismantled, moved and re-erected elsewhere.

Collective Protection Accessories

Toeboard

Unique design does not require any drilling, a slot on the back of the toeboard accepts a bolt head which prevents the bolt from spinning during assembly. Upright fixings and splice kits for corners and straight sections are also available.

Toeboard can be installed directly to the KGU upright assembly or by using a TB3 saddle bracket direct to the upright.

Required when there is no upstand beneath or in front of a guard rail to protect users or equipment below from falling objects.

Self Closing Gate

To allow compliance with the EN14122-3 requirement for a self closing gate Kee Safety offers a Standard Lockable Gate kit.

It incorporates uprights and an adjustable spring mechanism to control the speed of the gate closure, available in left or right hand options.

RH product code: TCG-1, LH product code: TCG2.

In addition the following KEE KLAMP fittings 4 x 135-8 and 2 x 130-875 are required for each gate ordered plus the appropriate free end counterweight assemblies.

Personal Protection Solutions

Roof Edge Fabrications provides a range of personal protection solutions designed to offer enhanced personal safety when working at heights, each of these products is tested and approved by the relevant bodies to comply with the required standards.

Because we offer a wide range of solutions, our products can be selected to suit numerous applications with permanent, temporary, fixed or non-penetrative options.

Roof Edge Fabrications also offers a range of Fall Protection Accessories, to provide a single source supplier for your fall protection requirements.

As with most **Roof Edge Fabrications** products, selection and specification is kept simple and our aim is to offer standard off the shelf products. Where necessary our systems can be obtained and installed nationally by one of our many approved partners.

Kee® Anchor

WEIGHTANKA EN795 Class E deadweight anchor for up to 2 users.
ACCESSANKA provides an EN795 Class B anchor point for rope access.
WIREANKA EN795 Class E supports for an EN795 Class C flexible wire system for multiple users.
Designed for use where the installation of collective protection or permanent personal anchor devices is not viable or desirable (page 16).

Kee® Line

EN795 Class C horizontal flexible life line for roofs, for structures or for through fixing with **POSTANKA** *(page 19)*.

Kee® Walk

A modular system of walkways and steps which provides a safe, anti-slip, level walking surface for anyone who needs to access a roof. Multiple fixing options for flat, barrel and sloping roofs. Complies with the test requirements of EN 516:2006 *(page 27)*.

Roof Edge Fabrications
A KEE SAFETY COMPANY

Slope Mounted and **Ridge Mounted** EN795 anchor points for traditional roof constructions (page 29).

Kee i-bolt®

The **KEE I-BOLT** range offers a comprehensive selection of EN 795 Class A1 safety anchors and fixing options for concrete, brick and steelwork.
RINGANKA is a range of eyebolts for permanent fixing.
KEYANKA is a removable eyebolt which is unobtrusive where visual presentation is important *(page 31)*.

Kee® Safety

Fall Protection Accessories
Harnesses, lanyards, connectors and temporary anchor options to compliment our range of personal protection products *(page 33)*.

Safety Solutions for a Portable Deadweight Anchor

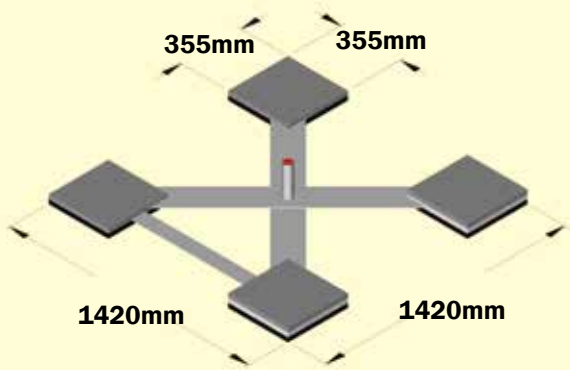
The **KEE ANCHOR** range of products comprises:

- **WEIGHTANKA** – portable deadweight anchor
- **ACCESSANKA** – portable deadweight anchor system for rope access
- **WIREANKA** – deadweight anchor system with flexible horizontal life line.

Weightanka®

A KEE SAFETY PRODUCT

Deadweight Anchor



WEIGHTANKA is a mobile, deadweight anchor device for use on roofs of up to 5 degrees pitch, where the absence of guardrails or permanent anchor devices would otherwise preclude safe means of access. **WEIGHTANKA** is the first Class 'E' anchor device to be approved for use on all roof surfaces when wet and also for use downhill on metal clad roofs (subject to the addition of two extra weights). **WEIGHTANKA** utilises a central pedestal (attachment point) which raises the height at which the arrest force is applied, thus reducing the distance the anchor device moves during a fall arrest event.

A basic system weighs only 250Kg and uses individual, smaller components, with no single item weighing more than 25Kg. The modular construction makes it a very practical and convenient option, easy to lift and carry to and from the point of use.

Features

- Does not penetrate the roof surface
- Base layer weights fully encased in rubber moulding
- Raised central pedestal reduces the distance of travel during a fall arrest event
- Galvanised to BS EN ISO 1461
- Conforms to CLASS E EN 795, BS 7883 & ISO 14567
- CE Approved to PPE Directive
- Independently tested at N.E.L. (National Engineering Laboratory, East Kilbride, N.B. 0320).

Benefits

- System for up to two users for restraint
- Rubber moulded base layer weights prevent rubber pads 'peeling' at the edges
- With the correct model it can be used on any of the following roof surfaces in WET or DRY conditions:

Single Ply Membrane	Asphalt
Steel Cladding	Concrete
Stone Chippings (Brushed)	Mineral Felt

- Can be used on roofs up to 5° pitch
- Easy to assemble, minimal amount of components and no need for extra tools.

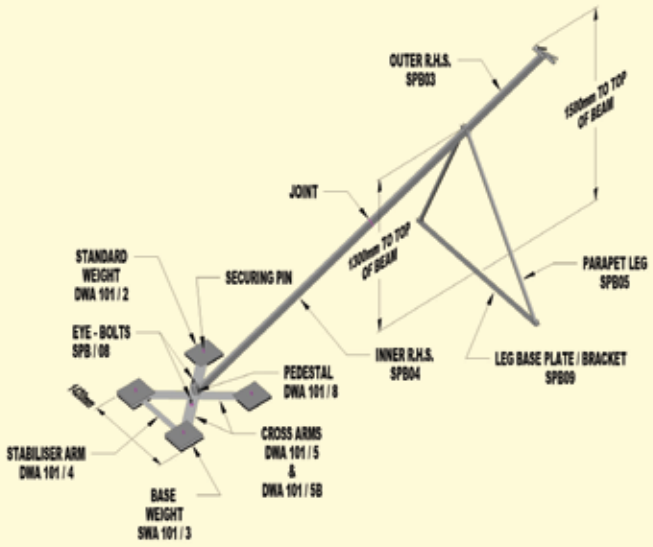
Portable Deadweight Anchor System for Rope Access

Accessanka®

A KEE SAFETY PRODUCT

ACCESSANKA is designed as an accessory to **WEIGHTANKA** to provide a portable anchor device for rope access workers, allowing them to work safely in accordance with BS 7985, the 'Code of Practice for the Use of Rope Access Methods for Industrial Purposes'. When correctly installed, the system is extremely stable and will not migrate across the roof surface either in normal use or when arresting the fall of both a worker and a rescuer up to a 200Kg limit.

ACCESSANKA has been designed for easy transportation and installation with no part over 25Kg or 2 metres.



Features

- Does not penetrate the roof surface
- Self contained portable anchor device
- Separate anchor points for the working line and back up line
- Modular construction
- Internally force balanced system allows the assembly to remain static, even when arresting the fall of both worker and rescuer
- Conforms to CLASS B EN 795, BS 7883 & ISO 14567
- CE Approved to PPE Directive
- Independently tested at N.E.L.. (National Engineering Laboratory, East Kilbride N.B. 0320).

Benefits

- Requires no attachment to structural members
- Easily moved across roof surface, removing need for multiple attachment points
- Rope lines held away from edge of building reducing risk of abrasion
- Provides full fall arrest protection before approaching edge
- Aluminium, galvanised and rubber coated parts requiring minimum maintenance.

Wireanka®

A KEE SAFETY PRODUCT

Deadweight Anchor System with Flexible Horizontal Life Line

WIREANKA is a system of deadweight anchor devices and Class 'C' horizontal, flexible safety lines to EN 795. It is intended for use on flat roofs, in temporary situations, or where it is preferable that penetration of the roof surface be avoided.

For up to two users in fall arrest and multiple users in restraint (dependant on configuration).

To be classified as restraint, the position of the **WIREANKA** and the length of the lanyard must ensure it is not possible to approach within 500mm of a roof edge or other opening.

Features

- Does not penetrate the roof surface
- First deadweight support to be approved for Class 'C' horizontal flexible safety lines
- Base layer weights fully encased in rubber moulding
- Conforms to Class C EN 795 & ISO 14567
- CE Approved to PPE Directive
- Galvanised to BS EN ISO 1461
- Independently tested at N.E.L. (National Engineering Laboratory, East Kilbride N.B. 0320).

Benefits

- Suitable for use on any premises where disruption of day-to-day business operations by opening the roof is to be avoided
- With the correct model it can be used on any of the following roof surfaces in WET or DRY conditions:

Single Ply Membrane	Asphalt
Steel Cladding	Concrete
Stone Chippings (Brushed)	Mineral Felt

- Rubber moulded base layer weights prevent rubber pads 'peeling' at the edges.

Minimum Edge Distances and Minimum Free Fall Distances Relative to the Span

Fall Arrest Systems

Maximum span (m) between anchors	5	6	8	10	12	15
Minimum fall distance (m)	5.2	5.4	5.8	6.2	6.6	7.2
Minimum distance from edge of fall hazard (m)	2.5	2.5	3.0	3.0	4.0	4.0

Restraint Only Systems

Maximum span (m) between anchors	5	6	8	10	12	15
Minimum distance from edge of fall hazard (m)	2.5	2.5	2.5	2.5	Consult our Technical Department	

The Safety Solution for Horizontal Life Lines

KEELINE is a 8mm Gr.316 stainless steel wire system with electro-polished brackets, detachable travellers and zinc treated, powder coated anchors that provide flexible, continuous protection for multiple users working at height.

The system incorporates an Inline Shock Absorber that minimises the loads to an acceptable level for both the user and structure in the event of a fall.

The Inline Shock Absorber also allows the system to be installed to lightweight modern roof constructions. Unlike other systems, there is no need for expensive 'fall-over' posts at every support. Systems are quick and easy to install using top fix posts with minimal or no roof penetration required.

KEELINE is a development of Kee Safety's **LINEANKA** wire system and **TOPANKA** top fix roof anchors which have been successfully sold and installed in Europe since 2003 for a wide range of applications.

KEELINE for Roofs comprises the wire system and brackets, top fix roof anchors for modern roof types or can be specified with **POSTANKA** anchors where through fixing to the main building structure is preferred.

KEELINE for Structures is available for mounting directly to concrete, steel, brick or stonework either in the horizontal or overhead application.

To ensure simple specification **KEELINE** installations can be designed using the bespoke calculation software.

Where it is preferred not to penetrate the roof at all, for permanent or temporary applications the WIREANKA system is available. **KEELINE** conforms to EN795 Class C, OSHA 1915.159, 1926.502M, ANSI Z359.1 2007 and AS/NZS 1891.2 and is CE Marked.

Why you should purchase KeeLine®

Benefits

- Provides users with total fall protection through continuous attachment whilst travelling the system
- Adaptable to different usage situations
- Durable and weather resistant
- Easy to design and install
- The design and specification process is simplified by the bespoke calculation software.

Features

- Conforms to EN795 Class C, ANSI Z359, AS/NZS 1891
- CE Approved to the PPE Directive
- Development of existing LINEANKA & TOPANKA system's which have been successfully sold and installed in Europe for over 6 years
- Tested on 'as built' roofs in advance of EN795
- Efficient in-line absorber negates the need for expensive 'fall over' style posts at every bracket position
- Maximum span in between supports 15m
- Accommodates corners and varying building shapes
- Open style, low profile top fix posts to suit modern roof constructions including metal profile, standing seam and membrane roofs
- Comprehensive range of fixing options
- Horizontal or Overhead applications
- Traveller enables users to detach or re-attach at any point of the system
- Multiple users
- Modular design for easier specification
- Gr.316 Stainless Steel 8mm dia. wire and bracket
- Available with non-penetrative WIREANKA option.

KeeLine® for Roofs

Wire

8mm dia 7x7 IWRC Gr. 316 Stainless Steel.

Available cut to length or 1000m reels.

Upright Post

Extremity upright post: 200mm x 100mm x 85mm

Intermediate/Corner Upright Post: 150mm x 100mm x85mm

Absorber

Used at both ends of the system, minimises loads on structure to below 10 kN.

Tension Indicator

Used at start of system (or both ends for systems over 150m).

Indicates when system is correctly tensioned.

Available Swaged or Swageless.

Swage Assembly

Used to terminate system.

Available Swaged or Swageless

Intermediate Bracket

One piece bracket for intermediate supports.

Corner Bracket

Available in 90° or 135°.

Accommodates internal or external bends.

Extended Intermediate Bracket

One piece bracket. Each extended arm adjustable up to 15° to accommodate site variations such as ridges and gutters.

KeeLine® Traveller

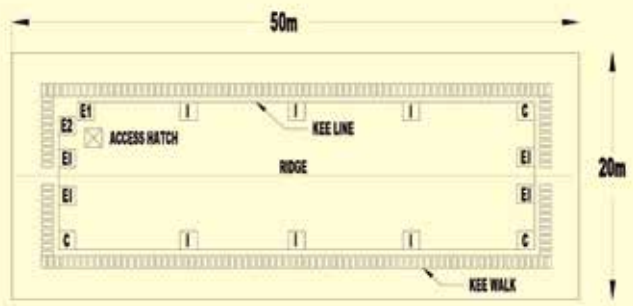
Allows user to attach at any point on system.

No moving parts.

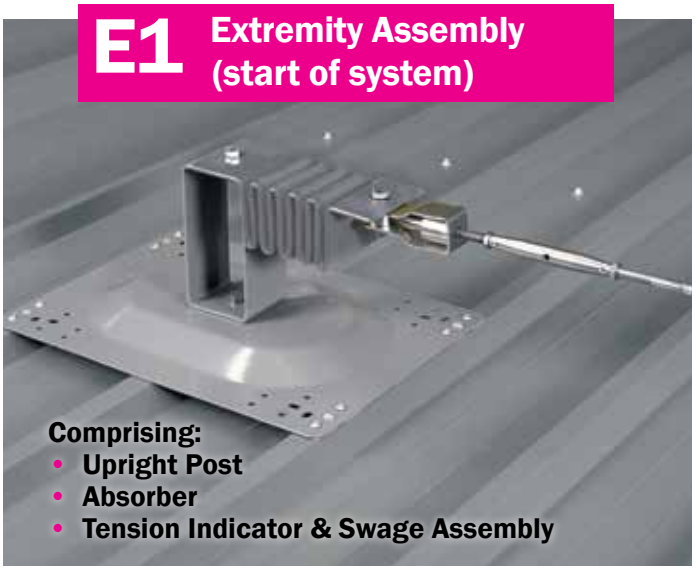
Passes corners and intermediates without needing to detach from the system.

KeeLine® for Roofs

Outline Roof Plan

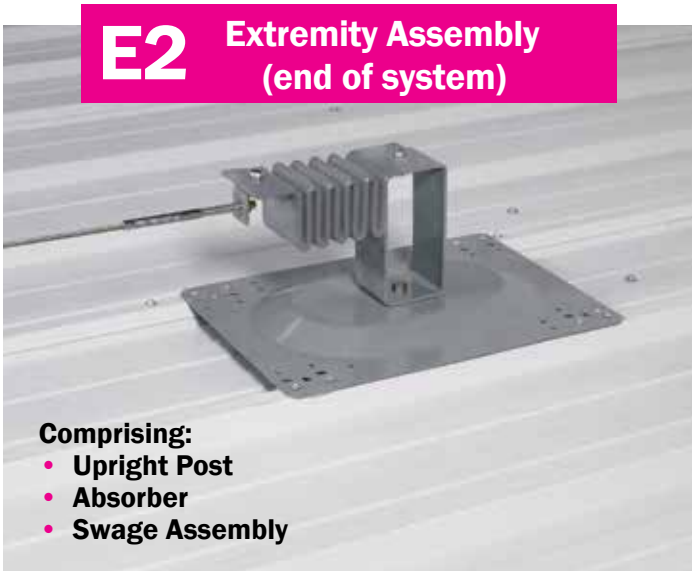


E1 Extremity Assembly (start of system)



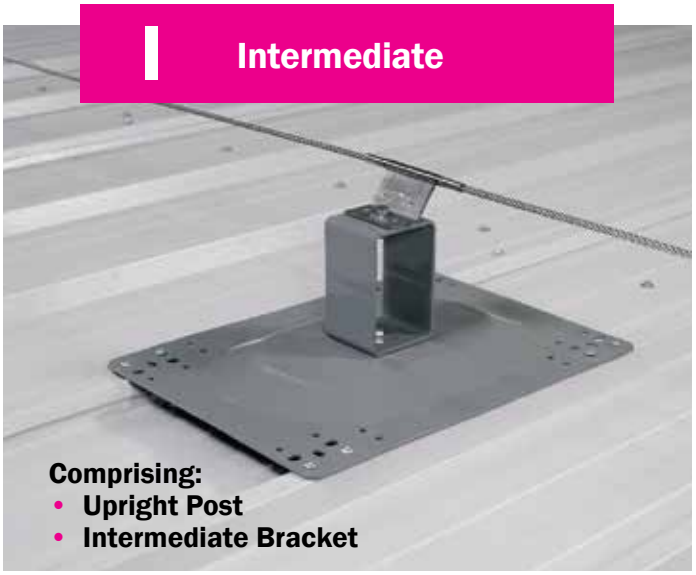
Comprising:
- Upright Post
- Absorber
- Tension Indicator & Swage Assembly

E2 Extremity Assembly (end of system)



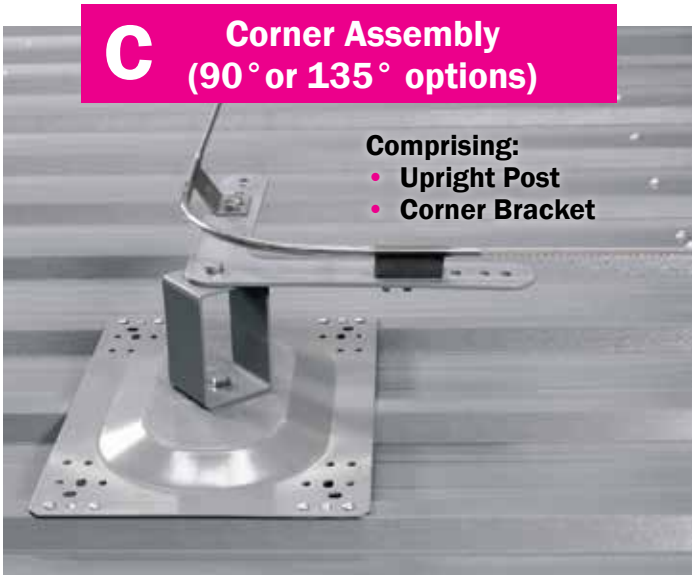
Comprising:
- Upright Post
- Absorber
- Swage Assembly

I Intermediate



Comprising:
- Upright Post
- Intermediate Bracket

C Corner Assembly (90° or 135° options)



Comprising:
- Upright Post
- Corner Bracket

EI Extended Intermediate

Comprising:
- Upright Post
- Extended Intermediate Bracket

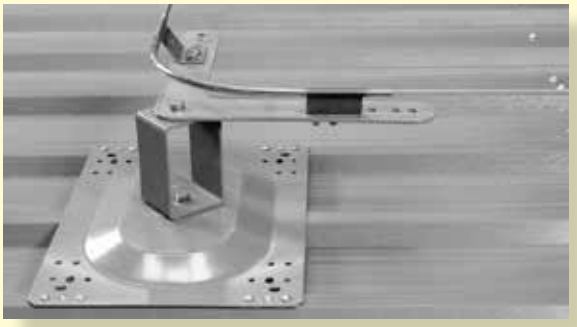
KeeLine® for Roofs

Base Plate Options

To enable easier specification and minimise stock holding the **KEELINE** for Roofs range of base plates have been designed to suit end, corner and intermediate brackets.

MR Base plates for Metal profiled and Standing Seam roofs.

FR Base plates for Membrane roofs incorporate recessed holes for fixings to allow waterproofing membrane to sit flat on top of the baseplate.



MR Base plates for profile metal roof panels

- Fixed with rivets - minimal penetration required
- Includes butyl sealing strip to maintain roof integrity
- Fixing centres: 400, 500, 333, 310 to suit wide range of roof profiles.

MR Base plates for standing seam roofs

- Fixed with non penetrative S5 clamps
- Fixing centres: 305, 400, 500.

FR Base plates for membrane roofs with metal deck

- Top fixed with 4 toggle bolt assemblies
- Fixing centres: 400, 333, 470 to suit wide range of standard deck profiles.

FR Base plates for membrane roofs with concrete deck

- Top fixed with resin fix anchor centres: 400, 333, 470.

KeeLine® for Roofs using Postanka®

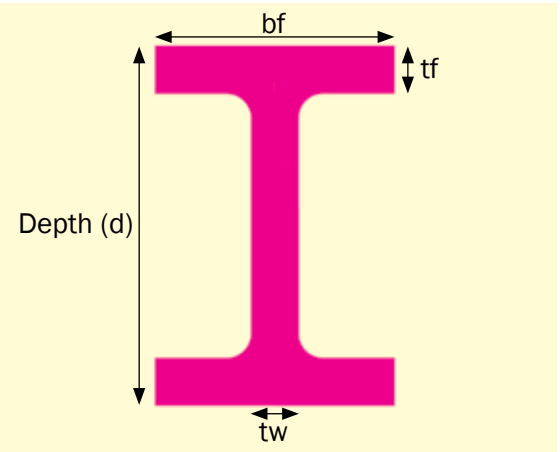
The Kee Safety **POSTANKA** range offers an alternative fixing method when the roof structure is unsuitable for **KEELINE** Top Fix anchors. **POSTANKA'S** are designed to be installed directly to the building supporting structure for example on traditional tiled sloping roofs, historical buildings or directly to concrete roof decks for **KEELINE** systems on green roofs or for abseil anchor points. The POSTANKA range is designed for use with horizontal flexible safety lines and conforms to EN 795 and BS 7883 Class C.

Type 6 Standard

A standard version of the type 6 welded pedestal anchor has a flat baseplate with slotted holes to enable it to be specified for a wide range of steelwork flange widths or alternatively for fixing directly to the top of concrete roof decks with suitable fasteners. The design does not require any strengthening gussets so it makes it easy to weatherproof by an approved roofing contractor.

Suits flange sizes 90 to 190mm wide.
Available 250, 350 or 450mm high.

Rated to 10kN.
Galvanised finish to BS ISO EN 1461.



Postanka® Bespoke Options

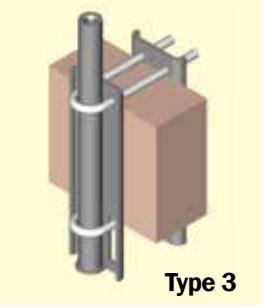
Kee Safety provides a range of **POSTANKA** types quickly designed and manufactured to suit the clients specific application.

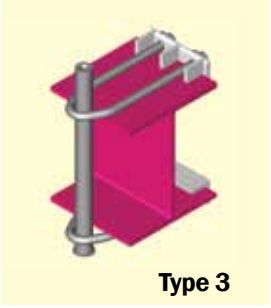
Galvanised finish to BS ISO EN 1461.

Site information required:

- Detail of support beam
- Height of **POSTANKA** above beam
- Fastener/fixing detail
- Loading

E.g. **KEELINE** Extremity/Corner post: 10kN
Single point anchor/**KEELINE** intermediate post: 6kN
Abseil anchor: 15kN





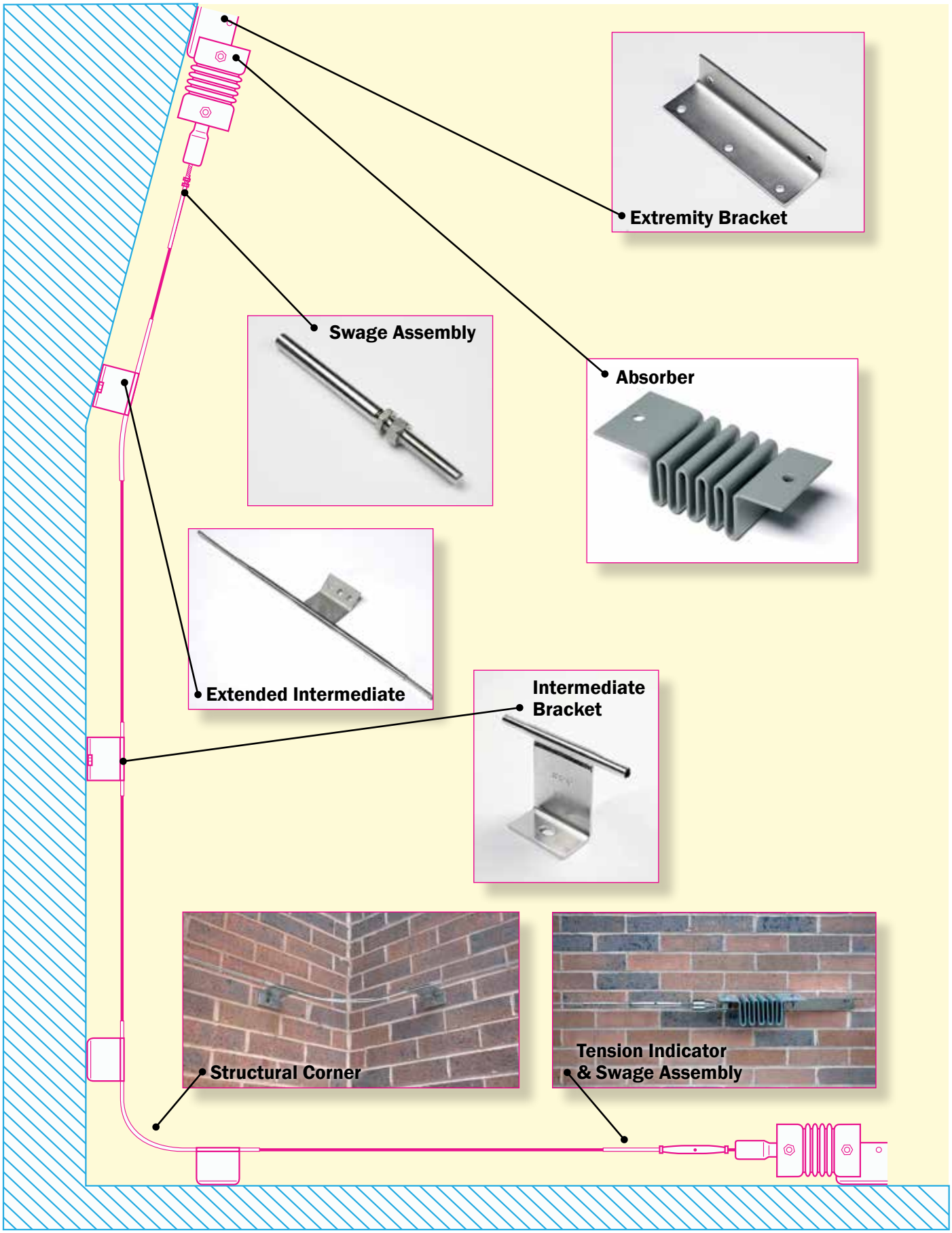
Options

Type 3 for Steelwork
Type 3 for Timber
The **Type 3** post features an adjustable pedestal, ideal for irregular support structures or roof constructions.

Type 6
Welded pedestal anchor, multiple fixing options.
Suitable for Steelwork or concrete fixing.

KeeLine® for Structures

Brackets for fixing directly to Steel, Concrete, Brick or Stone works, suitable for horizontal or overhead applications.



The Safety Solution for Roof Top Walkways

KEE WALK provides a safe, anti-slip, level walking surface for anyone who needs to access a roof in the course of their work. It provides a clear demarcation route which protects the roof from unnecessary damage and uniformly distributes the pedestrian load across its surface.

The product caters for flat, barrel and sloping roofs, with steps and a traverse option allowing access to be created for virtually any roof configuration from 0 to 35 degrees.

KEE WALK is a modular system complying with the test requirements of EN 516:2006 (Prefabricated Accessories for Roofing – Installations for roof access – Walkways, treads and steps).

Easy assembly utilising standard components removes the need to have parts specifically manufactured off-site, making installation and specification quick and simple.

KEE WALK is designed for modern roof types including trapezoidal profile composite or built up and standing seam roofs.

Features

- Provide a safe, level walkway across a roof surface
- Compliant with the test requirements of EN 516 Class 1-C (Prefabricated Accessories for Roofing – Installations for roof access – Walkways, treads and steps) and assists compliance with the Work at Heights regulations
- 1.5m & 3m pre-assembled lengths supplied as standard from stock
- Designed for use on composite, trapezoidal metal profile and standing seam roofs
- Flexible, modular system adaptable to changing roof angles from 0 to 35 degrees; fully adjustable on-site
- Contrasts with roof surface to provide a clear demarcation route
- Nylon treads with enhanced slip resistance for adverse weather conditions
- Lightweight aluminium bearer bars for all roof types
- Minimal selection of brackets required to install a complete system
- Fixings do not damage the integrity of the roof surface
- No bespoke parts required
- Fire Rated to Class HB of UL94 (harmonised with ISO 9772)
- Open tread ensures water drains away easily.

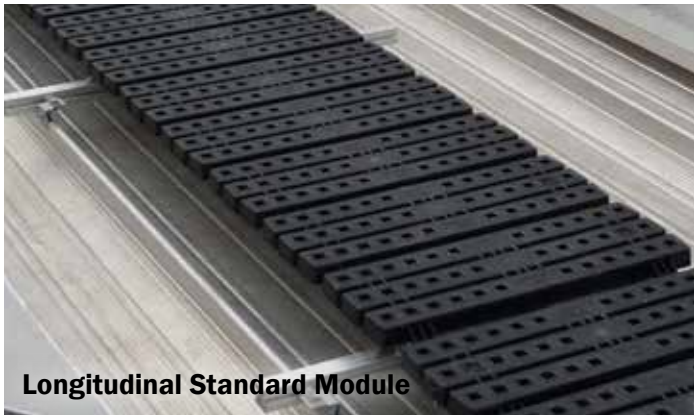
Benefits

- Standard parts available from stock
- Ease of installation
- Slip resistance compliant to British Standard BS 4592
- Flexible, modular system adaptable to changing roof levels
- Rigid, solid construction ensures **KEE WALK** is secure under foot
- Treads and bearer bars are recyclable
- Clear on-roof demarcation to prevent roof surface being damaged.

The Kee Walk® System

KEE WALK provides a flexible, easy to assemble walkway system designed for use on most modern roof types. To demonstrate the flexibility of the system, a brief explanation of the key constituent parts; the longitudinal configuration, the configuration to traverse a roof, the step configuration and the treads is given below.

The anti-slip characteristics of the walkway are essential for user safety. The British Standard (BS 4592) requires a minimum co-efficient of 0.4 as a measure of the friction and **KEE WALK** achieves almost double this in both wet and dry conditions. Specific fixing packs are supplied for the different roof types.



Longitudinal Standard Module

Longitudinal 3m Configuration

Supplied pre-assembled by Kee Safety to facilitate rapid on-site installation and thus minimise installation costs, these standard lengths have 12 treads per 3m. Weighing only 24kg, the standard lengths are easily positioned and aligned. They are joined together by a simple 100mm long straight connector which attaches to the bearer bars.

KEE WALK Traverse Walkway

Traverse Configuration

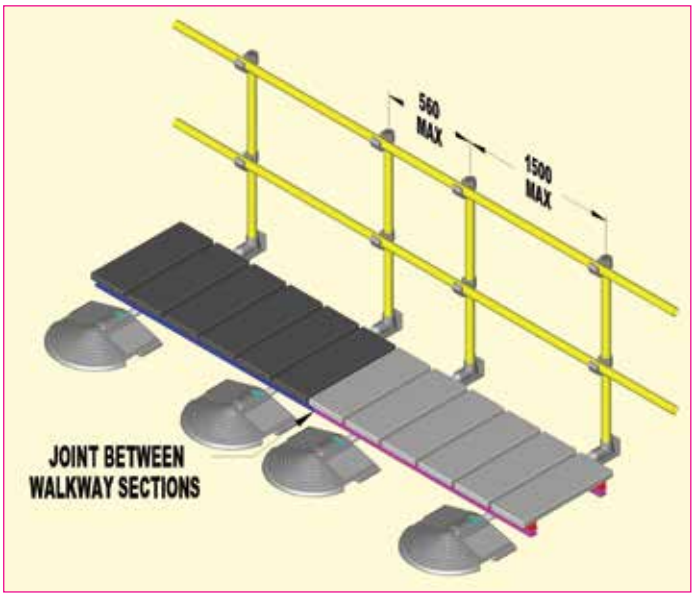
KEE WALK is designed to make the task of building a walkway across a sloping roof a straight forward installation, again using a standard set of components. A traverse section of walkway uses a standard **KEE WALK** section for the level walking surface which is mounted onto a sub-frame fixed to the roof. The two sections are joined with hinged brackets at the rear of the assembly and use the rotating arms at the front to level the walking surface, as depicted on the adjacent photograph.

Choices

The **KEE WALK** system is idealy suited to compliment horizontal life lines such as the **KEELINE** system.

Where collective protection is the preferred option on metal roofs it can also be used in conjunction with **KEEGUARD** Topfix, alternatively for flat roofs it can be used with the standard free standing **KEEGUARD** system.

For advice how to use **KEE WALK** for applications other than the standard configurations please contact **Kee Safety**.



The Kee Walk® System

Steps

Rotating Arms

Kee Safety provides pre-assembled step configurations in 3m or 1.5m lengths which require only minor adjustment on-site. The rotating arms (shown above) allow the installer to set the angle of the steps simply by removing the locating bolt, setting the horizontal angle and then replacing the bolt. The steps configurations will change depending on the pitch of the roof. Standard components are available for 5° - 10°, 10° - 15, 15° - 25°, 25° - 35°, all which comply with the requirements of EN 516. Kee Safety can provide specific information on all the different step configurations as required.

KEE WALK steps

The Treads

A KEE WALK tread

Manufactured in high grade nylon incorporating raised roughened sections, the treads are developed to comply with EN 516 (Prefabricated Accessories for Roofing – Installations for roof access – Walkways, treads and steps), exceeding the deflection criteria and slip resistance requirements of the standard.

The treads, when supplied separately to build steps or walkway sections less than the standard 1.5 or 3m pre-assembled sections, are quickly secured onto the aluminium bearer bars using two self drilling screws, fixed in the centre holes. Additional fixing holes are provided either side of the centre hole. Their design incorporates spacers to ensure simple, correct spacing and alignment. Treads can be cut down if required to fit between fixed points.

Each tread is 625mm long, 225mm wide and 35mm deep.

Test Requirements - EN 516-2006

- **EN 516 (Prefabricated Accessories for Roofing Installations for roof access – Walkways, treads and steps) Test Requirements**
- **Deflection Criteria on Walkways & Steps** - 1.5 KN concentrated load applied over an area of 100mm x 100mm. The deflection under load must not exceed 15mm or 1/100 of the span, which ever is the lesser.
- **Residual Deformation on Walkways & Steps** - 2.6 KN concentrated load applied over an area of 100mm x 100mm at the front edge of the tread applied for 1 minute. The residual deformation after the load is removed should not exceed 5mm.

These criteria have been surpassed in all testing. The raised surfaces on the tread have a slightly coarse finish to enhance the slip resistance.

Fall Arrest Anchor Solutions

Roof Edge Fabrications

The Roof Edge Fabrications range of permanently **Fixed Roof Anchors** provides an easy to install, cost effective solution for pitched roof safety.

The range features the standard roof mounted anchor and an adjustable ridge anchor for varying beam sizes.

Roof Edge Fabrications' range of slope mounted roof anchors are independently tested to EN 795, EN 517 and CE approved to PPE (Personal Protective Equipment) Directive.

The **Slope Mounted Roof Anchor** is suitable for installation on most types of roof support and allows contractors to attach a safety lanyard to a secure anchor point. The anchor is specially designed to be mounted on the slope of the roof, which enables the anchor to be fixed next to the access point.

The **Slope Mounted Roof Anchor** includes an external lead slate piece which ensures the integrity of the building envelope once the anchor has been installed.

This anchor is designed for single user applications only.

All exposed components are stainless grade 316 and internal components are galvanised to EN ISO 1461

Features

- Provides single point attachment for fall protection use
- Provides ladder hook to position roof ladder
- Provides clamp to support crawling boards
- Incorporates weatherproof seal
- All components above the roof are stainless and internal components are galvanised
- Slope mounted, therefore can be placed next to a roof access point
- Conforms to BS EN 795, BS EN 517, BS 7883 and ISO 14567.
- CE Approved to PPE Directive

Benefits

- Low cost solution to fall protection on pitched and tiled roofs
- Removes the need to erect scaffolding for short term maintenance work
- Always available for immediate use once installed
- Easily installed during roof construction or re-roofing
- Adjustable to limit component variants.

Ridge Mounted Fall Arrest Anchor

The **Ridge Anchor** is a permanently fixed, secure fall arrest anchor specifically designed to be mounted at the ridge of a pitched roof.

This ensures the safest anchorage position above the position of the contractor whilst providing access to both sides of the roof from the one anchor point.

Ridge Anchor is adjustable to fit a wide range of roof trusses and supplied in two different sizes. The anchor is designed for single user applications only. Adjustable to fit a wide range of roof trusses from 35mm x 97mm up to 75mm x 250mm.

All components above the roof are stainless grade 316. and internal components are galvanised to EN ISO 1461.

Re-certification is required annually in accordance to BS EN 365.

Features

- Provides single point attachment for fall protection use
- Installation at ridge provides access to both pitches of the roof
- Installation at ridge ensures anchor point is always above the user
- Adjustable to fit a wide range of roof trusses
- Two sizes available to accommodate roof trusses from 35mm x 97mm up to 75mm x 250mm
- All components below the roof are galvanised to EN ISO 1461
- Conforms to EN 795, EN 517, BS 7883 & ISO 14567
- CE Approved to PPE Directive

Benefits

- Low cost solution to fall protection on tiled roofs
- Removes the need to erect scaffolding for short term maintenance work
- Always available for immediate use once installed.

Safety Eyebolt Solutions

The **KEE I-BOLT** range offers a comprehensive selection of Class A1 safety anchors.

RINGANKA is a range of fixed Class A1 safety eyebolts and fixing components conforming to EN 795 and BS 7883.

KEYANKA is a removable eyebolt and a range of fixing solutions, which is unobtrusive where visual presentation is important.

Each of the products has been independently tested at the National Engineering Laboratory and is CE approved to meet the PPE Directive.

It is important that the correct eyebolt is used to suit the material and that the positioning is determined by a competent person.

Safety Eyebolt

Ringanka®

A KEE SAFETY PRODUCT

RINGANKA is a range of fixed safety eyebolts for installation to an external or internal face of a structural element adjacent to a window or other access point.

RINGANKA is available in three different lengths suitable for use in a range of materials; brick, concrete, masonry and steel.

Available in three finishes, Electro-polished Grade 316 stainless steel, high tensile carbon steel with a galvanised or white plastic-coated finish.

BS 7883 requires that, wherever possible, all safety anchor devices are removable for periodic inspection; this is easily achieved by using our Knurled Inserts in conjunction with suitable resin. PPE Warning Labels are also available, which are required for compliance with EN 795.

A range of standard components allow the **RINGANKA** range to be fitted to a wide range of constructions including cavity walls and also can accommodate cantilevers up to 175mm (100mm in brickwork), for example when installing into buildings with false walls or cladding.

The positioning selection for these products should only be carried out by a competent person.

Features

- Comprehensive range of anchor bolts and accessories to suit most installations
- Available in Galvanised, White plastic coated and Stainless Steel
- Conforms to CLASS A1 EN 795, BS 7883 & ISO 14567
- CE Approved to PPE Directive
- Independently tested at N.E.L. (National Engineering Laboratory, East Kilbride, N.B. 0320).

Benefits

- Provides workers with safe means of access
- White plastic coated finish blends with most interior decor.

Keyanka®

A KEE SAFETY PRODUCT

Removable Safety Eyebolt

The **KEYANKA** safety eyebolt offers a removable unobtrusive solution to traditional eyebolts for use where aesthetics mean a detachable eyebolt is preferred. The permanently installed grade 316 stainless steel anchor socket is concealed by a flush fitting white plastic cover, which blends in with most interior designs.

Equipped with the **KEYANKA** eyebolt at the end of his lanyard, the operator uses a simple 'key' action with sprung locking movement, to provide a fast and safe attachment. The eye-bolt is able to rotate 180° whilst still attached to the socket to provide the best orientation in event of a fall arrest situation, and can only be removed by five simple, separate but deliberate, sequential movements.

Features

- Removable Eyebolt
- Produced from Grade 316 Stainless Steel
- Spring loaded locking action
- Variety of fixing options including concrete, brick, steelwork and cavity walls
- Flush fitting white plastic cover to blend in with most interior designs
- Optional Stainless Steel Cap
- Conforms to CLASS A1 EN 795, BS 7883 & ISO 14567
- CE Approved to PPE Directive
- Independently tested at N.E.L. (National Engineering Laboratory, East Kilbride, N.B. 0320).

Benefits

- An unobtrusive solution to traditional eyebolts in more prestigious buildings
- Fast and safe attachment
- Eyebolt is able to rotate 180° whilst still attached to socket to provide best orientation in event of fall arrest situation
- Removes a potential trip hazard when required to be fitted into the floor
- Removes the potential of unauthorised or inappropriate use.

PPE Accessories

Harnesses

P10
Single Point Full Body Harness with dorsal attachment point. Conforms to EN 361.

P35
Two Point Full Body Harness with front and dorsal attachment points. Conforms to EN 361.

P56
Four Point Body Harness with front and dorsal attachment points, with additional work positioning belt. Conforms to EN 361 & 358.

P10F
Female's Single Point Full Body Harness with dorsal attachment point. Conforms to EN 361.

Lanyards

ABM/LB100A c/w Snap Hook
ABM/LB100B c/w Scaffold Hook
Adjustable energy absorbing lanyard available with either snap hook or scaffold hook. Conforms to EN 355 & 354.

ABM-TA c/w Snap Hook
ABM-TB c/w Scaffold Hook
Energy absorbing 2m lanyard available with either snap hook or scaffold hook. Conforms to EN 355.

ABM-2TA c/w Snap Hook
ABM-2TB c/w Scaffold Hook
Energy absorbing twin legged 2m lanyard available with either snap hook or scaffold hook. Conforms to EN 355.

1m Restraint Lanyard
Conforms to EN 354 & En 358.

AH210
2.25m Retractable energy absorbing lanyard fitted with swivel snaphook Conforms to EN 360.

AC010 **AC100**
Removable fall arrest rope grab. Rope available in 5m, 10m, 20m and 30m lengths. Conforms to 352-2.

PPE Accessories

Webbing Temporary Life Line

A temporary webbing horizontal life line that can span between 2 anchor points for up to 3 users, fitted with a spring gate karabiner at both ends. Available in 10m and 20m lengths and stored in its own protective bag. Conforms to EN 795 Class B.

AE320 10
AE320 20

Temporary Anchor Points

Anchor Clamp

AT250

A temporary lightweight aluminium anchor point for use with steel beams. Tested to EN795 Class B, adjustable for beams between 95mm and 400mm flange.

Anchor Beam

AT060

A temporary anchor point for one user tested to EN795 Class B.

Adjustable to suit 350mm – 1240mm clamping range.

Miscellaneous Accessories

Suspension Trauma Strap

AY201

Retrofit to any full body harness the Suspension Trauma Strap provides the means for a worker who has fallen to stand in their harness, while waiting for rescue. Standing relieves pressure on the legs and prevents the effects of suspension trauma.

AZ011

Screw Gate Snap Hook Zinc Plated.

Dimensions 108 x 60mm.

Conforms to EN 362.

The Inspection and Assessment Service

The Roof Anchor Co.
A KEE SAFETY COMPANY

The Roof Anchor Company is Roof Edge Fabrications' dedicated recertification company which specialises in the inspection and recertification of fall protection equipment Our trained inspection representative can inspect and assess all roof top installation works which have been carried out. The inspection representative will check that all fall protection systems in place comply with current Health and Safety legislation regarding Working at Heights and National and European Design Standards.

The Roof Anchor Company's qualified engineers will also inspect and certify PPE such as lanyards and harnesses used in conjunction with these systems to ensure complete safety.

In addition we offer a full Working at Heights Assessment Service to your roof top areas. We will inspect and issue a full report indicating the potential Health and Safety hazards identified on your roof areas, and provide our recommendations on solutions to overcome future hazards and potential injuries.

- **Inspection of roof top protection systems**
- **Identification of Health and Safety hazards**
- **Recommendation of possible solutions**
- **Compliance with Health and Safety legislation**

Fall Protection Photo Gallery

Roof Edge Fabrications
A KEE SAFETY COMPANY

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