



**SAFETY AT THE HIGHEST LEVEL**

# **KeeGuard®**

## Roof Edge Protection System To EN 14122 Part 3 Assembly and Operating Instructions



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# Contents

Section	Subject	Page
<b>0</b>	<b>Introduction</b>	<b>0-1</b>
0.1	Overview	0-1
0.2	General	0-2
0.3	Intended use and misuse	0-5
0.4	Owner's duty of care	0-6
0.5	Personnel requirements	0-7
<b>1</b>	<b>For your safety</b>	<b>1-1</b>
1.1	Overview	1-1
1.2	Symbols	1-2
1.3	Basic safety information	1-3
<b>2</b>	<b>Assembling The KeeGuard System</b>	<b>2-1</b>
2.1	Overview	2-1
2.2	Transporting and storing the KeeGuard <sup>®</sup> system	2-2
2.3	Checking the components	2-3
2.4	Selecting a location for installation	2-13
2.5	Constructing the KeeGuard <sup>®</sup> system	2-14
2.6	Maintenance, testing and disposal	2-21

# Contents

Section	Subject	Page
	<b>Amendments</b>	
	<b>Appendix</b>	
	Sample page from inspection book	

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# Section 0

## Introduction

### 0.1 Overview

#### Overview

This section is broken down into the following subjects:

<b>Subject</b>	<b>Page</b>
General	0-2
Intended use and misuse	0-5
Owner's duty of care	0-6
Personnel requirements	0-7

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## 0.2 General

### Contents

General information on the KeeGuard® system

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### Validity

These operating instructions apply to the following product:

Type: KeeGuard® fall prevention system for flat roof structures  
Model year: 2013

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### Authorised Distributor

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## 0.2 General

### Intended service life

Metal & PVC parts: Indefinite, but may degrade with time according to service conditions

Rubber mats: 20 years at - 10 °C - + 40 °C. Higher or lower temperatures can reduce the service life.

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### Issue date

Issue 16 – 21<sup>st</sup> May 2013

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### Components and Retention

- These assembly and operating instructions are a component part of any KeeGuard® system. They must be handed to the assembly personnel!
  - At no time may pages be removed from these instructions. If part or all of the instructions should be lost, then you must replace the instructions or the missing parts immediately.
- 

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### Amendment service

The documentation is not covered by the amendment service of the manufacturer or its branches. Amendments to this documentation can be made without further notification.

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### Modifications to the KeeGuard® system

If you should carry out modifications to the KeeGuard® system, then you will automatically make the test reports null and void.

If this is the case, you must carry out the procedure for assessing conformity again for all components in accordance with the applicable EC product guidelines.

## 0.3 Intended use and misuse

### Contents

Intended use and misuse are described in this section.

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#### Definition of “Authorised person”

A person is regarded as an authorised person if he/she is commissioned to carry out certain types of work on or using the KeeGuard® system in accordance with instructions.

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#### Intended use

The KeeGuard® system is a collective fall prevention system for roofs which are not accessible to the public but to which access is required for the purpose of carrying out repairs and maintenance.

The KeeGuard® system is designed as a permanent system. However, dismantling and reconstruction at a different location is permissible under certain circumstances which are explained in the section entitled “Assembling the KeeGuard® system “.

The KeeGuard® system is only regarded as being used for its intended use if **all** the following conditions are met:

- The KeeGuard® system is governed by various workplace Regulations and Guidelines. Assembly personnel must be familiar with the statutory requirements arising from these. They must also be familiar with and adhere to the following specifications and technical regulations:
  - HSG-33, Health & Safety in Roofwork,
  - HSE INDG 284- Working on Flat Roofs
  - EN ISO 14122-Part 3.
- The total weight of the KeeGuard® system depends on the length and configuration of the whole system. The load-bearing capacity of the roof must at least correspond to the total weight of the system plus potential personnel. If in doubt, you must arrange for the roof structure to be examined by a structural engineer before assembly.
- The maximum permissible horizontal load, applied perpendicular to the top rail, is 300 N / m.
- The KeeGuard® system must be linked to the building’s lightning protection system if possible.
- The KeeGuard® system is only designed for use on Asphalt, Concrete Mineral Felt or PVC sheet-covered roofs. The maximum permissible pitch of the flat roof is 3° for EN 14122 Part 3 .
- The roof surface must be kept free from snow and ice and free from any lubricants or slippery substances while the assembly work or repairs are being carried out. The possibility of the roof surface freezing over or becoming covered in snow during use must also be ruled out.

## 0.3 Intended use and misuse

### Intended use

- When handling or installing the KeeGuard® system care is necessary when the wind speed is in the region of 17 m.p.h. (gusting to 26 m.p.h. or over). All installation and handling of the KeeGuard® system should cease when the average(mean) wind speed reaches 23 m.p.h. (gusting to 35 m.p.h. or over).
- The roof must be free from algae, stones, oil, grease, water accumulation and loose debris.
- Assembly personnel must be provided with Personal Protection Equipment (PPE) to prevent them from falling during assembly. The minimum protective equipment consists of a full safety body harness with lanyard, possibly used in conjunction with a Kee Anchor® system.

### Misuse

The following points are classed as misuse although the type of use appears possible at first glance:

- Use of the KeeGuard® system if one of the conditions specified under “intended use“ is not met.
- Failure to observe the weights and conditions relating to the roof surface specified under “intended use“. If the conditions specified are not adhered to, then the KeeGuard® system may possibly fail.
- Use of a damaged KeeGuard® system or one which has been assembled incorrectly or is incomplete.
- Use as a holding device for horizontal rope systems.
- Use as a fixing point for rope feed or for lowering on a rope.
- Use by employees without previous instructions from their employer.
- Dropping or throwing the PVC Weights from a height of approximately 1m so that they land topside down. This could lead to the weights breaking and no longer being usable.

Use under conditions specified is always prohibited! Should the KeeGuard® system be used in spite of these instructions, then the possibility of a fall occurring and resulting in severe or fatal injuries cannot be ruled out.

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## 0.4 Owner's duty of care

### Contents

In this section, you will be able to familiarise yourself with the tasks and obligations of the owner or employer with regard to working with the KeeGuard® system .

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### Safety of the KeeGuard® system

In particular, the owner or employer must ensure that the KeeGuard® system

- is only used as intended,
  - is only provided in a fault-free, reliable state,
  - is checked regularly,
  - is only used by qualified, trained and authorised personnel.
- 

### Protection for personnel

In particular, the owner or employer must ensure that any personal protection equipment required:

- is available for use,
  - is checked regularly.
- 

### Instruction and training

In particular, the owner or employer must ensure that:

- assembly personnel are instructed in all relevant aspects of health and safety at work and environmental protection before starting work for the first time and also at least once a year after that,
  - a full set of legible operating instructions is always kept at the location where the KeeGuard® system is used,
  - all relevant personnel have familiarised themselves with the contents of these operating instructions before assembly.
-

## 0.5 Personnel requirements

### Contents

The manufacturer's requirements regarding assembly, and repair personnel for installing the KeeGuard® system are as follows.

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### Definition of a “Competent Person”

Competent people are those who have sufficient knowledge of the system to be able to assemble or check it on account of their specialist training and experience and are familiar with the relevant regulations, guidelines and generally recognised rules of practice – e.g. Health & Safety Guidelines, accident prevention regulations and suchlike – to such an extent that they can carry out assembly and assess whether or not the system under test is safe to be used.

The owner / employer is responsible for selecting a competent person.

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### Duties of the assembly and repair personnel

The assembly and repair personnel must carry out the following duties:

- Assemble the system and check to make sure that it is working safely and has no faults.
  - Identify any damage and – if possible and permissible – rectify it or send the system to the manufacturer for repair.
- 

### Requirements relating to assembly and repair personnel

Assembly and repair personnel must meet the following requirements in order to be able to carry out their duties:

- They must have received instruction from the owner or employer.
  - They must have sufficient knowledge of English in order to be able to understand these operating instructions.
  - They must be free from any disability that may effect their ability to assemble or repair this system or understand these instructions.
-

# Section 1

## For your safety

### 1.1 Overview

#### Important information

The safety information below is to be regarded as an addition to the national accident prevention & Health & Safety regulations and laws, which already apply.

Existing Health & Safety and accident prevention regulations and laws must always be complied with.

European standard BS EN 62305 Parts 1 to 4 covers the protection of Buildings and Occupants against lightning strikes. It states that any conductive elements above roof level shall be either Puncture Proof or the provision of an overhead centenary system be provided. When steel which is less than 4mm thick is used, it should be bonded to a suitable Lightning Protection System.

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#### Overview

This section is broken down into the following subjects:

Subject	Page
Symbols	1-2
Basic safety information	1-3

## 1.2 Symbols

### Contents

Here are the explanatory notes on the symbols used.

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**Caution**

#### **Danger!**

This symbol indicates the danger of injury or death .

Danger to life is referred to separately by the words “**Danger to life**”.

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**ATTENTION**

#### **Caution!**

This symbol indicates the threat of damage to property or harm to the environment.

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**ADVICE**

#### **Note!**

This symbol indicates information that helps to explain how to use the KeeGuard® system more clearly.

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## 1.3 Basic safety information

### Contents

Basic safety information on the safe use of the KeeGuard® system.



#### **Danger!**

You must follow the safety instructions below in order to avoid the danger of injury or death:

Potential danger	Prevention measures
<p><b>Danger to life!</b> There is a risk of the construction personnel falling during assembly or when carrying out repairs.</p> <p><b>Explanatory notes:</b> Inadequate or insufficient safety measures or errors during the assembly of the KeeGuard® system can lead to falls resulting in severe/fatal injuries.</p>	<ul style="list-style-type: none"> <li>● The KeeGuard® system is only to be assembled as specified in the assembly instructions.</li> <li>● Personal Protection Equipment (PPE) consisting of a Full Body Harness with lanyard, possibly in conjunction with a Kee Anchor® system, is to be used during assembly or when carrying out repairs to the KeeGuard® system.</li> <li>● After assembly or after carrying out repairs, check all structural parts and connecting components to make sure that they are located correctly.</li> <li>● Do not use any parts that are damaged.</li> </ul>
<p><b>Danger to life!</b> There is a risk of the KeeGuard® system failing if the installation site is unsatisfactory.</p> <p><b>Explanatory notes:</b> A non-approved roof surface can result in The KeeGuard® system sliding and failing.</p>	<ul style="list-style-type: none"> <li>● Follow the detailed information on the installation sites for the KeeGuard® system in section 2 of these assembly instructions.</li> <li>● The roof surface must always be of the prescribed quality and load-bearing capacity.</li> <li>● The prescribed measures must always be complied with.</li> </ul>
<p><b>Danger to life!</b> There is a risk of people falling due to failure to carry out maintenance work on the KeeGuard® system</p> <p><b>Explanatory notes:</b> Defects or damage can impair the function of the KeeGuard® system therefore the system may possibly not be guaranteed in the event of an emergency.</p>	<ul style="list-style-type: none"> <li>● If you have to carry out repairs on the roof or any plant always carry out a visual check on the KeeGuard® system and the roof area beforehand for damage.</li> <li>● Any parts that are found to be damaged, must always be replaced before any work is started. Only then is it permitted to start the actual work on the roof.</li> </ul>

<p><b>Danger to life!</b> There is a risk of people falling due to attaching Personal Protection Equipment to a KeeGuard® system</p> <p><b>Explanatory notes:</b></p> <p>The KeeGuard® system must never be used to attach P.P.E to as an anchor for abseiling or similar work.</p>	<ul style="list-style-type: none"> <li>● The KeeGuard® system is a stand alone, collective roof edge protection system and should always be treated as such. Under no circumstances should the system be used as a “man anchor” or as a connection for P.P.E.</li> </ul>
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### Basic safety information



**Danger!**

Potential danger	Prevention measures
<p>The imposed lateral load of the whole system may be reduced as a result of the process of reconstruction.</p>	<ul style="list-style-type: none"> <li>● Always use new grubscrews when re-installing <b>any</b> joint or weight.</li> </ul>

## Section 2

# Assembling the KeeGuard® system

### 2.1 Overview

#### Overview

This section is broken down into the following subjects:

<b>Subject</b>	<b>Page</b>
Transporting and storing the KeeGuard® system	2-2
Checking the components	2-3
Selecting a location for installation	2-13
Installing The KeeGuard® system	2-14
Maintenance, testing and disposal	2-21

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## 2.2 Transporting and storing The KeeGuard® system

### Contents

Information on how to transport the fall prevention system safely.

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### Transportation

There are no restrictions regarding the means of transportation. All parts must be secured so that they cannot move.

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### Storage

All individual parts must be stored so that no damage or deterioration can occur. Long term storage must be under cover for protection against the weather. All component parts must be stored on a flat surface to minimise any potential risk of damage.

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### Manual Handling

Please refer to individual weights of components together with Bag Quantity weights before attempting to lift by manual means. Always refer to the manual handling regulation guidelines if in doubt about the correct method of lifting.



## 2.3 Checking the KeeGuard® system's components

### Contents

An overview of all the parts which you need in order to assemble the system properly.




#### Danger!

If some of the parts listed in the parts list or on the delivery note are missing or damaged, then you must replace them with original parts. Contact the manufacturer to obtain these.

### Designation and function of the components for standard systems





The KeeGuard® system consists of the following individual components. The exact number of individual components depends on the length and construction of the KeeGuard® system .

**Note:** A complete list of all parts and details on the total weight of the fall prevention system are provided with the delivery. The load-bearing capacity of the roof must be equal to or exceed the capacity specified earlier (p.0-4).

	Designation	Function	Quantity	For total length
1	"KGU" or "KGU45" vertical posts  	<ul style="list-style-type: none"> <li>Vertical posts for the system</li> <li>Diameter = 48.3 mm</li> <li>Height = 1100 mm</li> <li>Weight = 5.4 or 8.5 kg each</li> <li>Locator for the counter weights</li> <li>Fitted with 2 off L135-87 or 135-8 fittings for the top and mid-rails.</li> <li>Note: Photo shows 135-8 fittings</li> </ul>	3 off	2 m
			3 off	3 m
			4 off	4 m
			4 off	5 m
			4 off	6 m
			4 off + 1 off for every 2 m of additional length	> 6 m


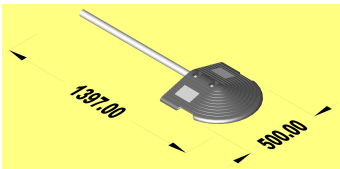
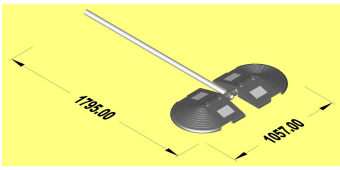
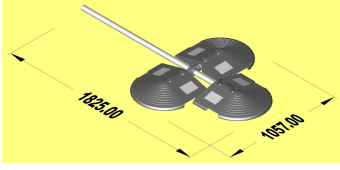
## 2.3 Checking the components

### Designation and function of the components for standard systems

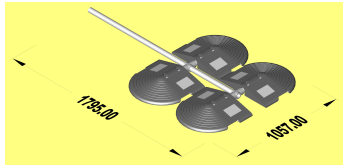

	Designation	Function	Quantity	For length of Guardrail
2	Top and mid-rails 	<ul style="list-style-type: none"> <li>Top rail and mid rail form the fall guard</li> </ul> Diameter = 48.3 mm Length = variable Weight = 3.5 - 4.5 kg / m  Diameter = 42.16 mm Length = variable Weight = 1.17 kg / m	1 of each @ 2m	2 m
			1 of each @3m	3 m
			1of each @4m	4 m
			1of each @5m	5 m
			1of each @6m	6 m
			As stated	> 6 m
3	77-8 / 77-7plastic stopper 	<ul style="list-style-type: none"> <li>Seals off the open ends of the tube</li> </ul>	1 off for each tube end	./.
4	15-8 / L15-7 90° elbow joint 	<ul style="list-style-type: none"> <li>Connects the top and mid rails at an angle of 90°</li> <li>Photo shows 15-8</li> </ul>	1 off for each 90° angle	./.
5	BC53-88 / LB54-77 hinge joint 	<ul style="list-style-type: none"> <li>Connects the top and mid rails at variable angles of up to 202°.</li> </ul> Note: assemble with grub screws pointing downwards  Photo shows BC53-88	1 off for each angle	./.

## 2.3 Checking the components

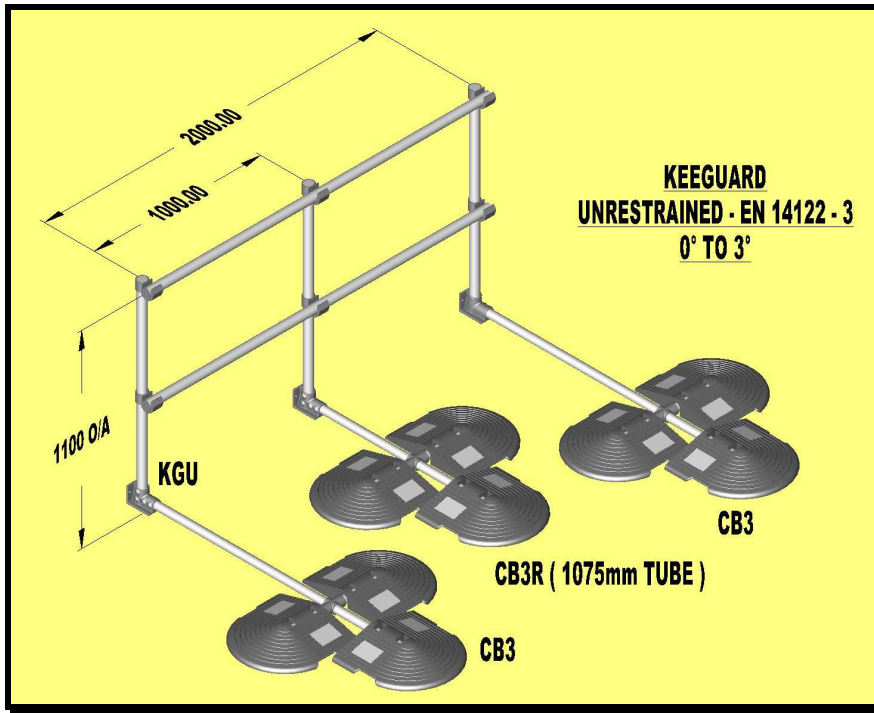
### Designation and function of the components for standard systems

	Designation	Function	Quantity	For total length
6	14-8 / L14-7 straight tube connector 	<ul style="list-style-type: none"> <li>Connects the top and mid rails for a straight connection</li> <li>Connection in a top rail should not be in the same bay as the connection in the mid rail</li> </ul> <p>Note: assemble with grub screws pointing downwards</p>	1 off for each straight tube connection	./.
7	Counter-weights and Cantilever Tube: CB1P = 1 Weight ( Cantilever 1075mm ) SEE IMAGE BELOW 	<ul style="list-style-type: none"> <li>Produce the Total weight required.</li> <li>Each Counter-weight molding = 13.5 kg to 16.5 kg</li> <li>Profiled molded base to aid slip resistance and water dispersal.</li> </ul>	3 × CB3P	Unrestrained 3 m
	CB2P = 2 Weight ( Cantilever 1575mm ) SEE IMAGE BELOW 		2 × CB2P 2 × CB3P	Unrestrained 4 m
	CB3P = 3 Weight ( Cantilever 1575mm ) SEE IMAGE BELOW 		2 × CB2P 2 × CB3P	Unrestrained 5 m
			2 × CB1P 2 × CB4P	Unrestrained 6 m
			2 × CB1P 2 × CB4P + 1 × CB1P for every 2 m of additional length	Unrestrained > 6 m

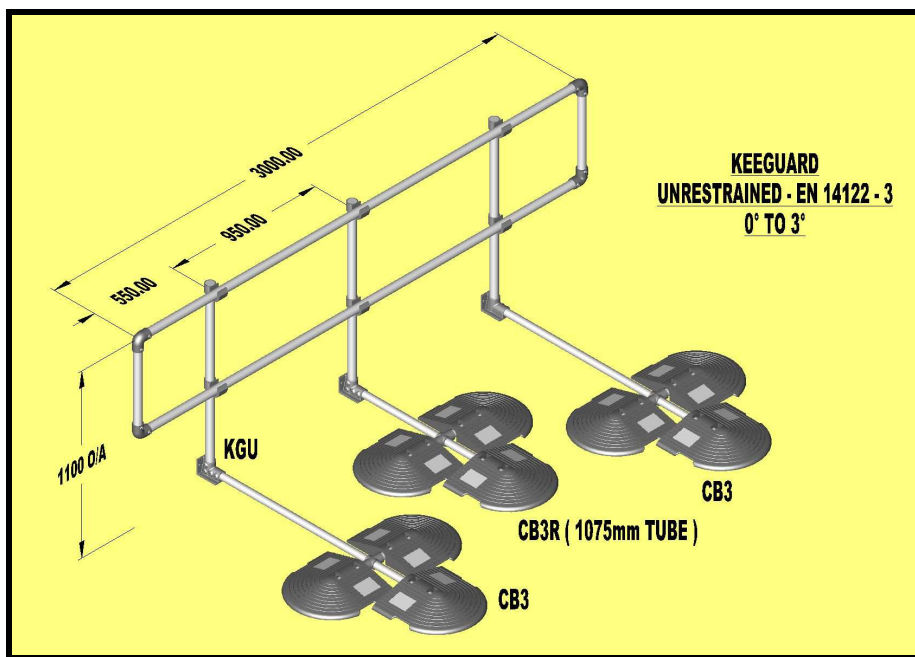
## 2.2 Checking the components

	Designation	Function	Quantity	For total length
7	CB4P = 4 Weight ( Cantilever 1575mm )  SEE IMAGE BELOW 			
8	61-8 / L61-7 Wall Flange 	<ul style="list-style-type: none"> <li>• Fixing Flange for Wall connection where a suitable structural wall is available</li> <li>• Photo shows 61-8</li> </ul>	1 Off for each Tube end.	

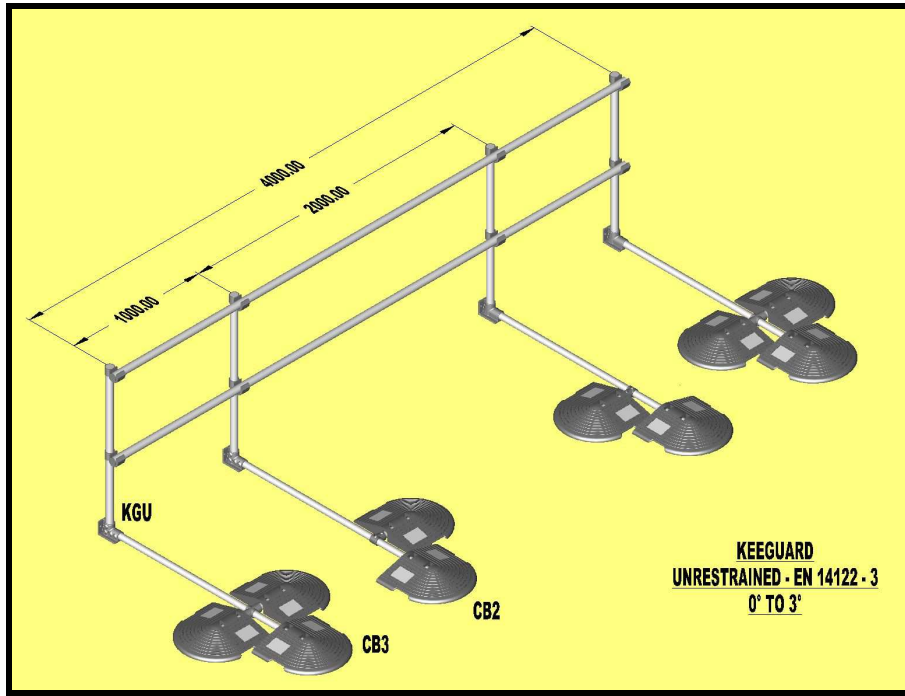
Installation diagram 2 m - Unrestrained - Parapet wall within 2 metres



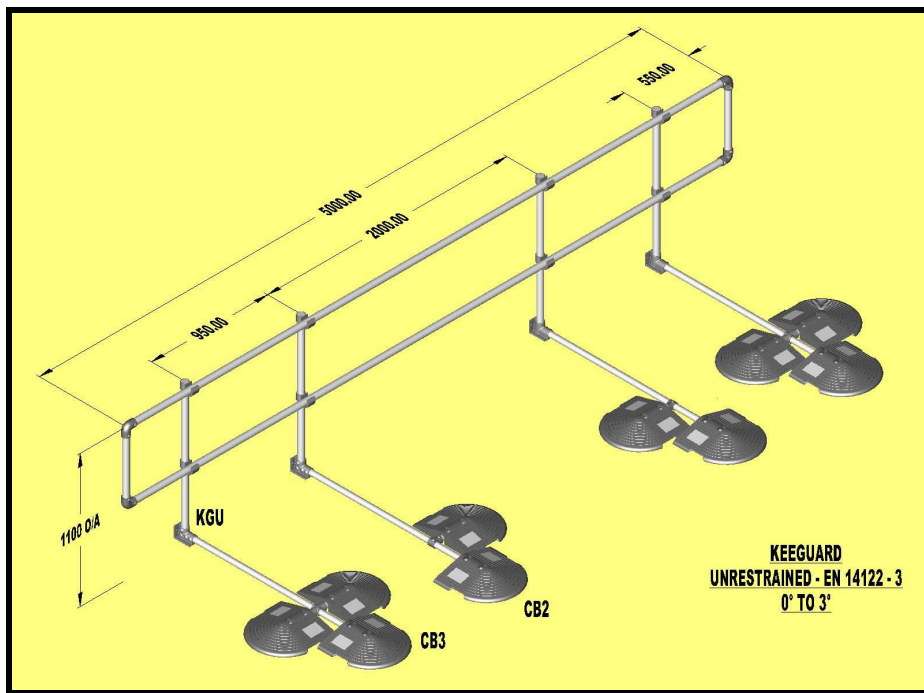
Installation diagram 3 m- Unrestrained - Parapet wall within 2 metres



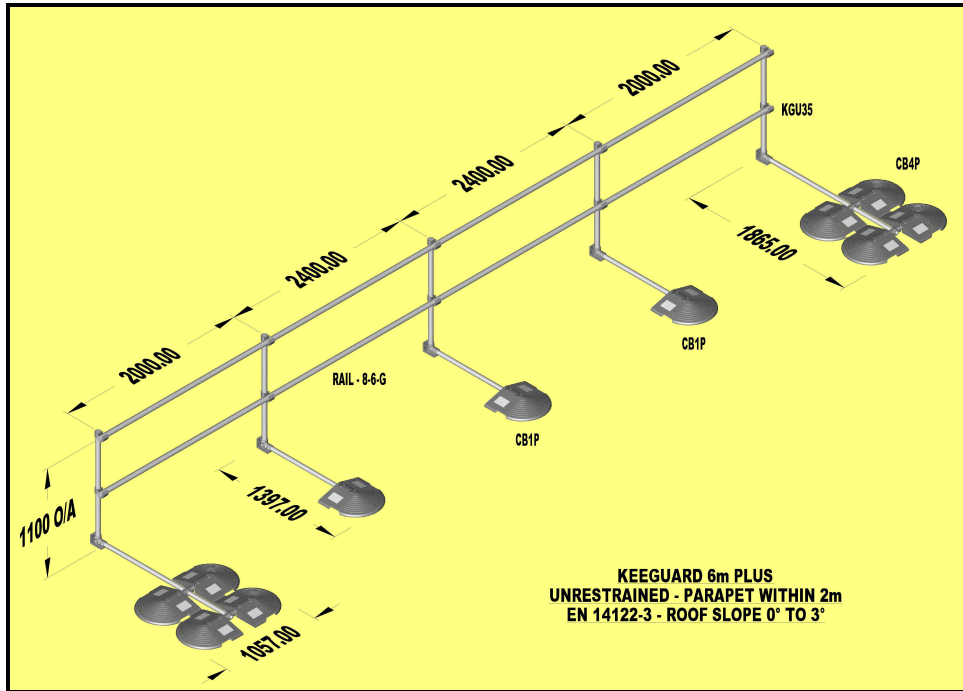
Installation diagram 4 m- Unrestrained - Parapet wall within 2 metres



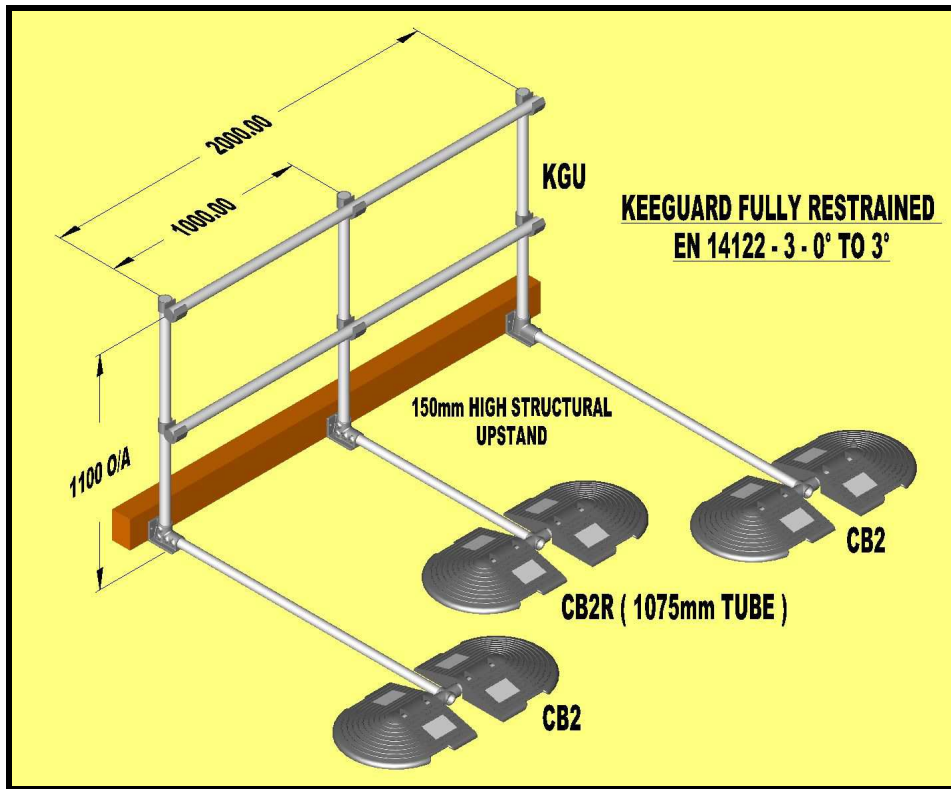
Installation diagram 5 m- Unrestrained - Parapet wall within 2 metres



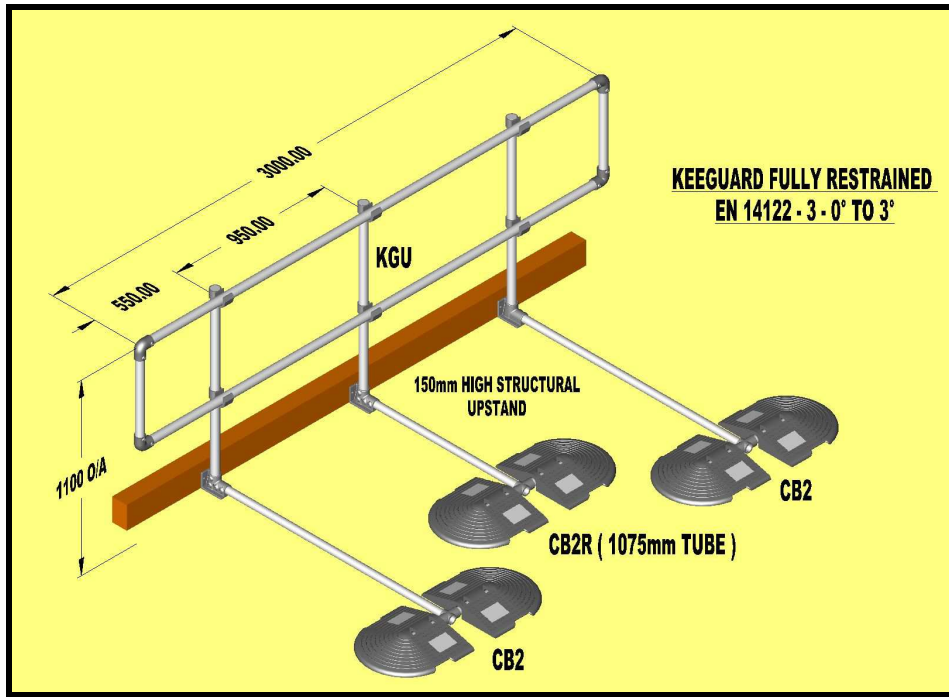
Installation diagram 6m Plus - Unrestrained - Parapet wall within 2 metres



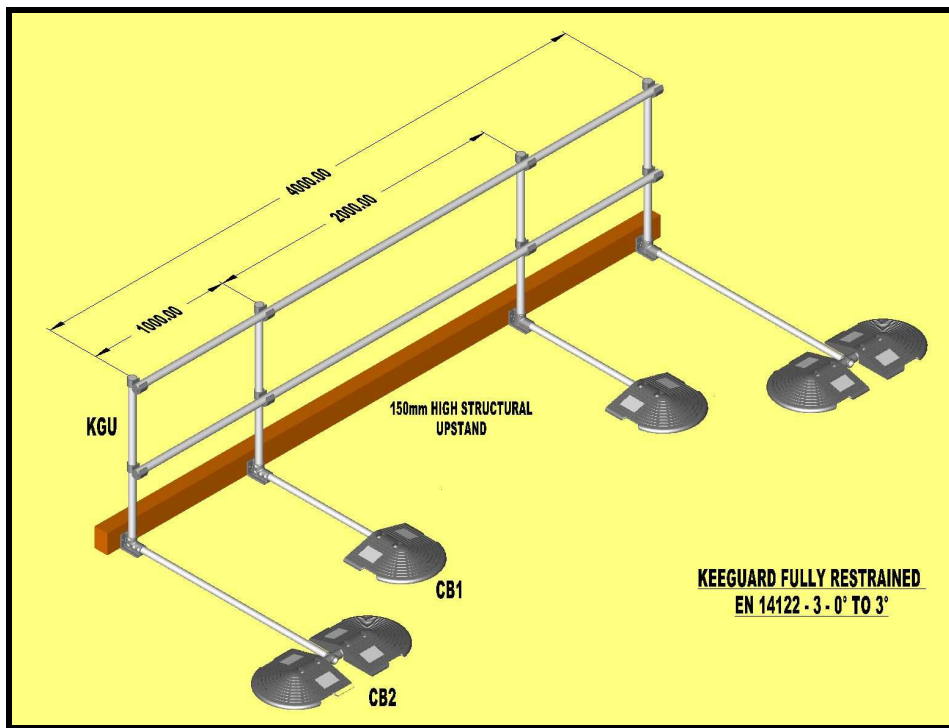
Installation diagram 2m- Restrained – Minimum 150mm High Parapet wall



Installation diagram 3m- Restrained – Minimum 150mm High Parapet wall

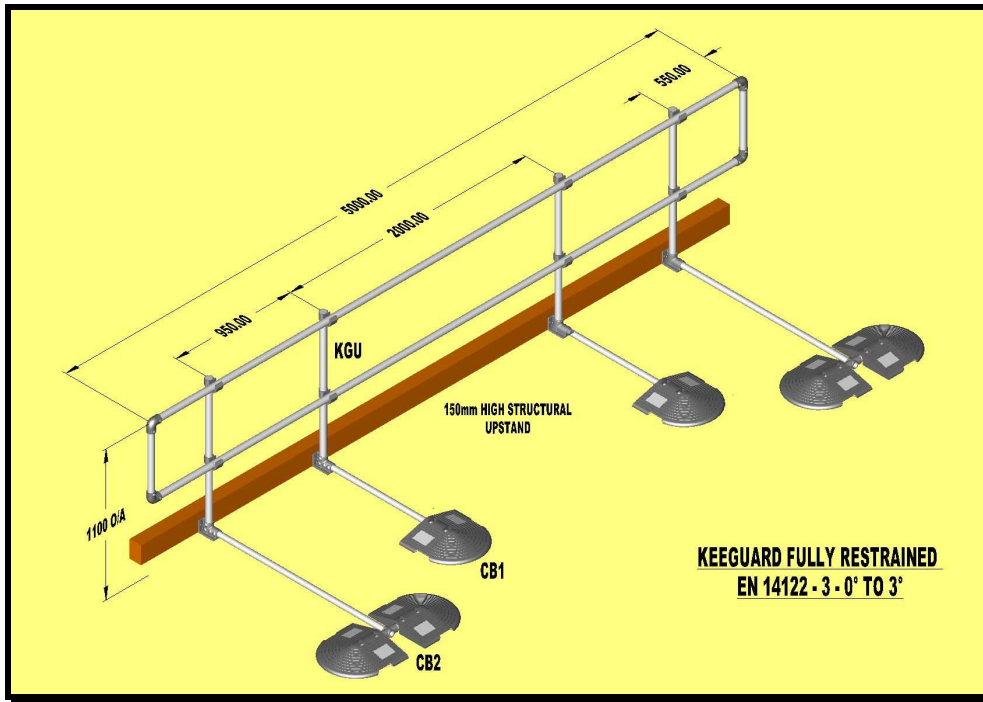


Installation diagram 4m- Restrained – Minimum 150mm High Parapet wall

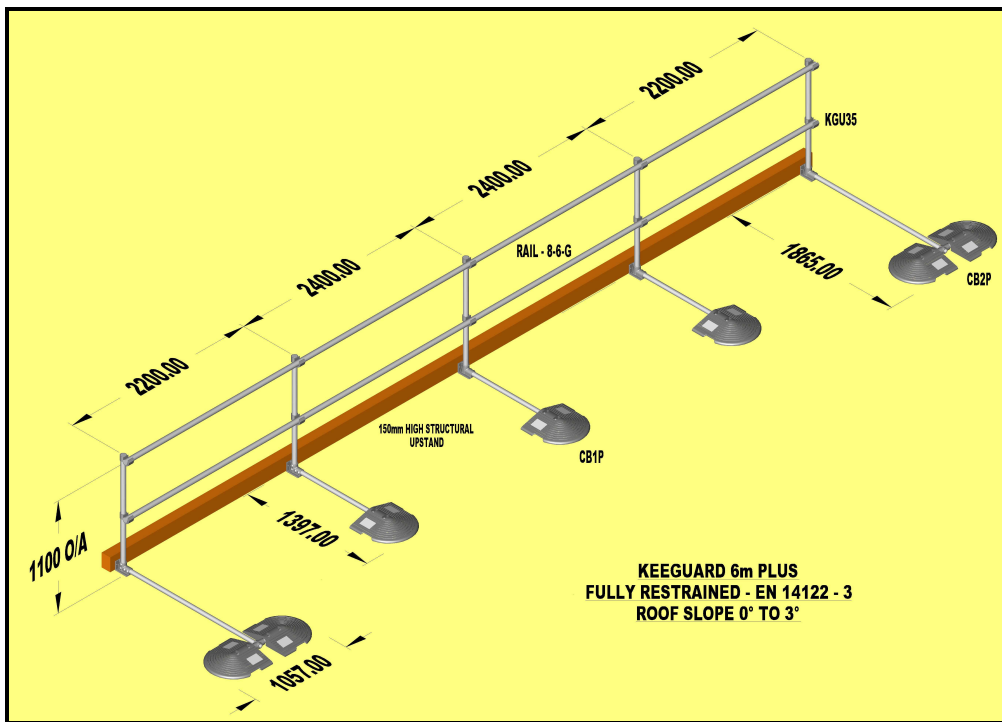




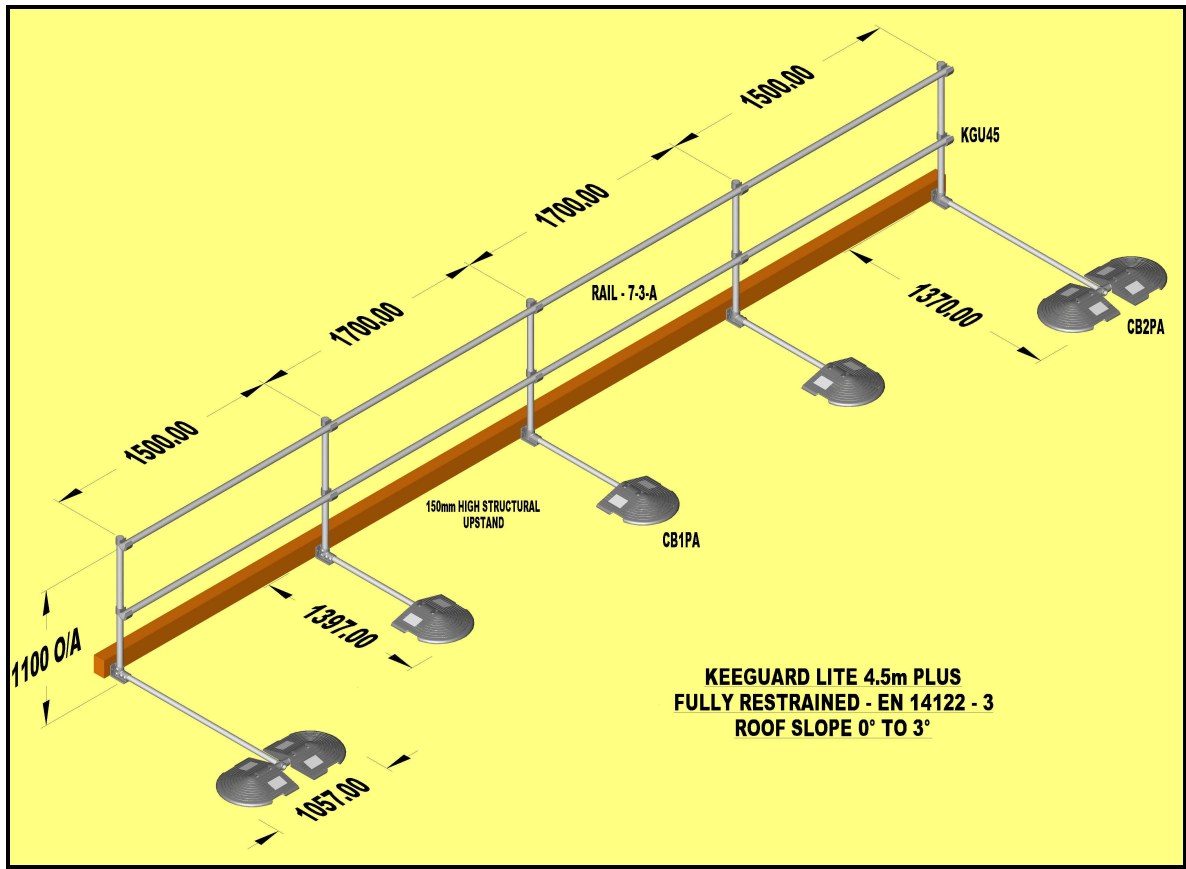
**Installation diagram 5m- Restrained – Minimum 150mm High Parapet wall**



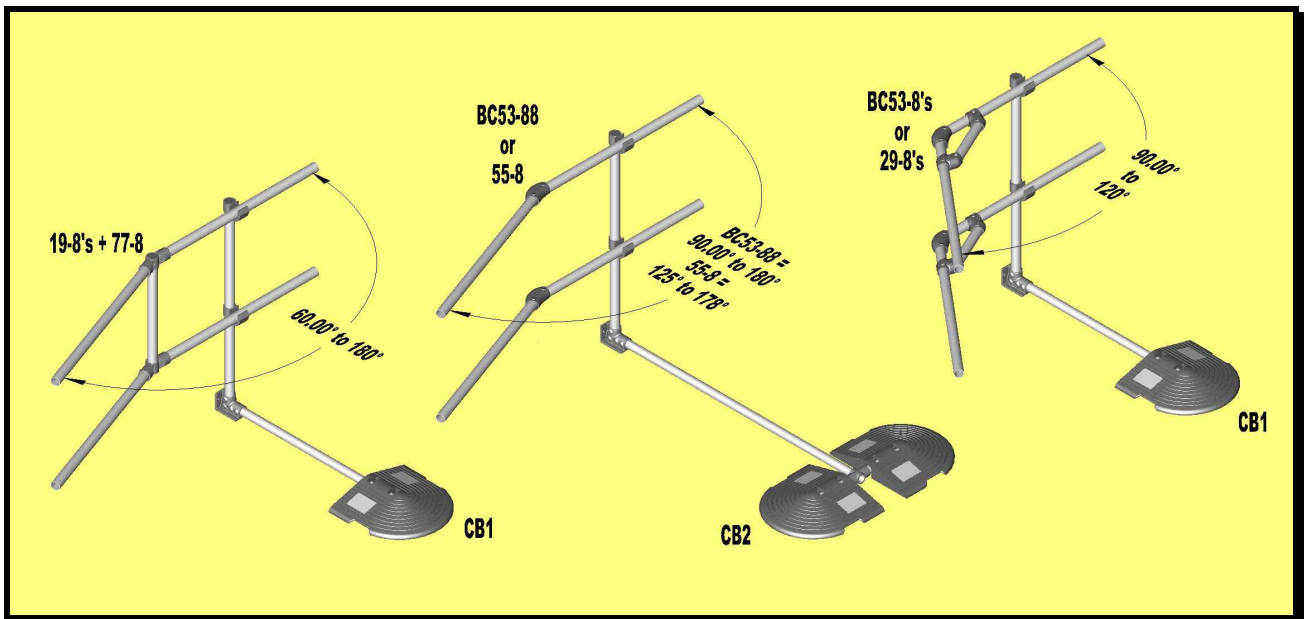
**Installation diagram 6m Plus - Restrained – Minimum 150mm High Parapet wall**



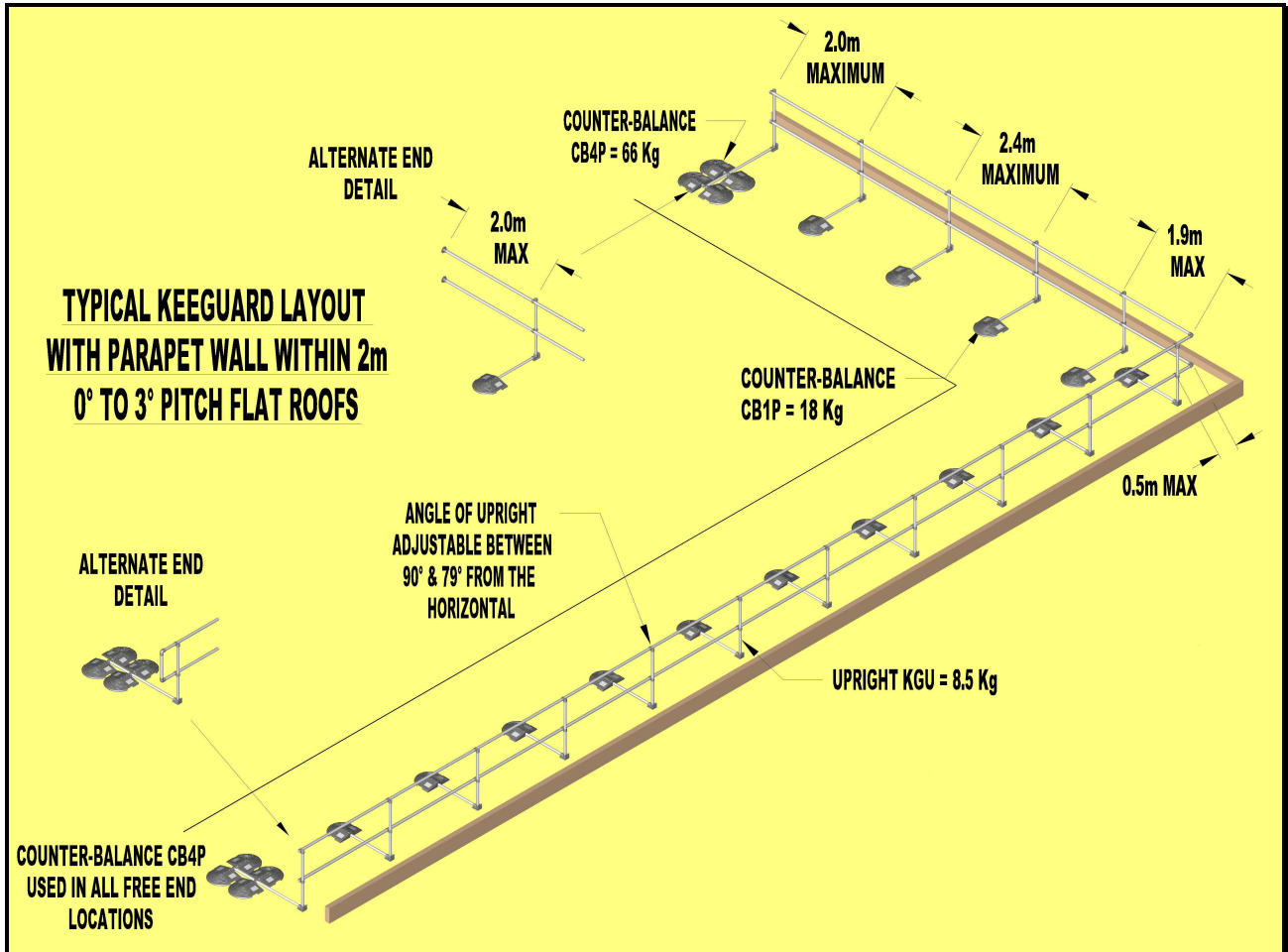
Installation diagram KeeGuard Lite 4.5m Plus - Restrained – Min. 150mm High Parapet wall



Installation diagram - Support options for variable angle corners



## Example of a possible Unrestrained construction – Parapet Wall within 2m



## 2.4 Selecting a location for installation

### Contents

Necessary requirements for the installation site.



### Danger!

The condition of the installation site has a decisive influence on the safe functioning of the KeeGuard® system. If the prerequisites are not met at the site of installation, then do not install the system until you have consulted the manufacturer.

If you cannot be certain of the load-bearing capacity of the roof, then contact a structural engineer before starting construction.

## Requirements relating to the installation site

The installation site must meet the following requirements:



Criterion	Requirement
Roof construction	<ul style="list-style-type: none"> <li>Only flat roofs are permissible for this installation.</li> </ul>
Permissible roof pitch	<ul style="list-style-type: none"> <li>Max. 3°</li> </ul>
Roof surface	<ul style="list-style-type: none"> <li>Only, concrete, mineral felt, asphalt (in this case protection will be required to prevent damage to roof surface) or PVC sheeted roofs are permissible for this installation.</li> <li>The surface of the roof must be free from loose deposits, oil, grease, algae, gravel &amp; accumulated water.</li> </ul>
Weather conditions	<ul style="list-style-type: none"> <li>The roof must be free from snow and ice.</li> <li>If there is the risk of water freezing over during assembly or it starts to snow, then the system must not be installed.</li> <li>KeeGuard® must not be installed if it is very windy.</li> </ul>

## 2.5 Installing the KeeGuard® system

### Contents

Description of the standard construction

### Danger!

- If you have been sent a detailed installation diagram with the delivery, you must not deviate from this installation diagram as otherwise the safe functioning of the KeeGuard® system cannot be guaranteed.
- The KeeGuard® system must not be installed on roofs which are covered with snow or ice. The roof surface must not become covered with snow or ice during assembly.
- Do not use any non approved or damaged parts for assembly.

- Always use all the parts supplied, especially all the weights! If there is insufficient space or there is insufficient load-bearing capacity at the site of installation, then you must not use the KeeGuard® system!
  - Competent assembly personnel who must use Personal Protection Equipment to prevent them from falling, may only carry out installation.
  - KeeGuard is suitable for fitting on Sarnafil PVC membranes without any further requirements. In the case of FPO membranes it will be necessary to incorporate a section of fleece product to act as a barrier between the underside of the KeeGuard and the membrane (for further technical assistance, contact the membrane manufacturer).
- 

### **Before you start**

Before you can start on the installation, you must have carried out the following tasks:

- Check the individual parts are there and not damaged
  - Select a suitable location for installation.
  - Remove any oil, grease and loose debris from the roof. Standard chipping coverage depth is 15mm. Should the chipping coverage depth exceed this, or the full 11° rake of the upright be utilised, longer upright tubes are required (maximum 1400mm), to maintain the 1100 mm top rail height.
- 

### **Tools required**

You will need the following in order to install the fall prevention system:

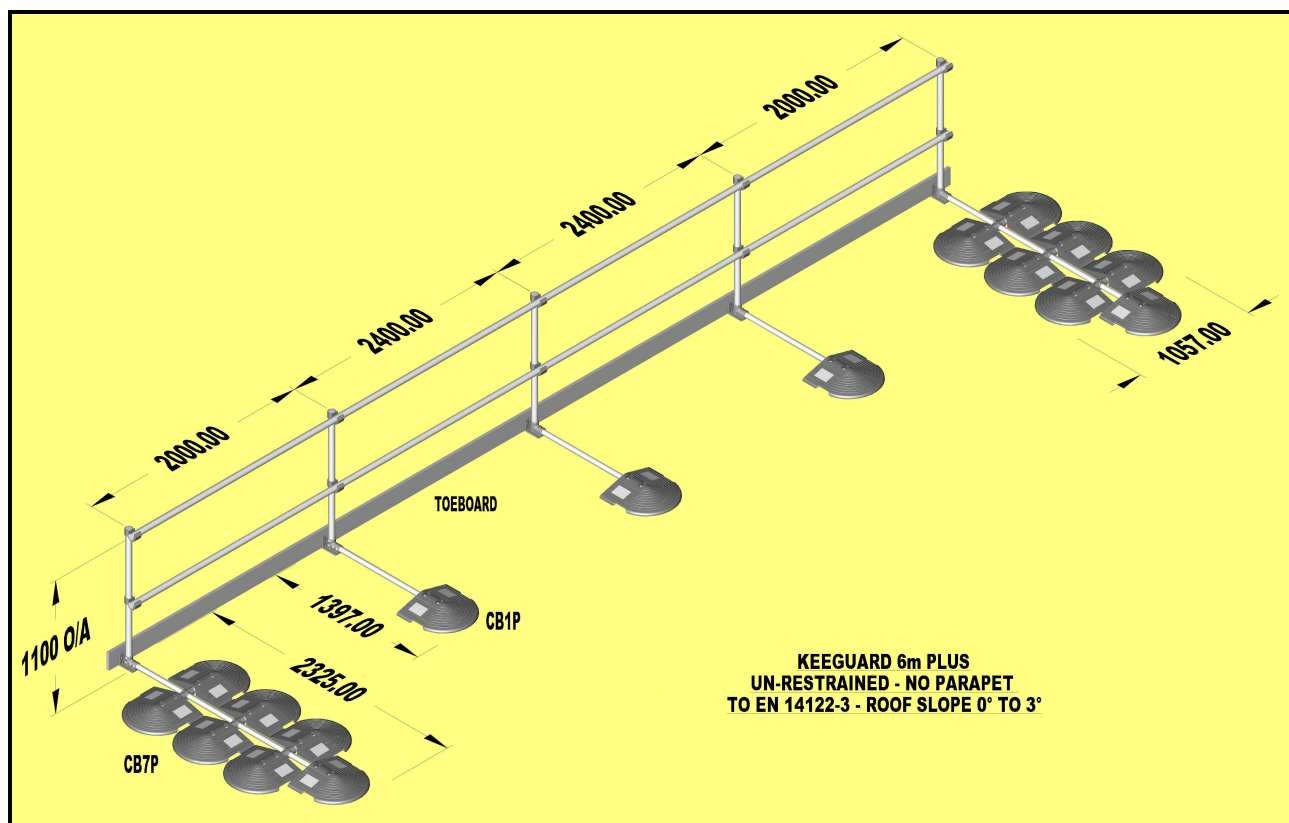
- Hex key socket screw size 5/16" AF
- Torque wrench 10- 60 Nm approx.
- Drill with suitable drill bit (only for wall connection)
- Tape measure
- 50 mm tube cutter

## 2.5 Installing The KeeGuard® system



**Caution**

Special conditions: If a freestanding end of the KeeGuard® fall prevention system is set up less than 2m from the point where a fall could occur (edge of the roof or void) and in this case there is no parapet around the edge or similar facility as an additional means of stopping slippage and there is no opportunity to fix the freestanding end to the building, then in order to improve the level of safety the freestanding ends must be installed as shown in the following diagram to prevent slipping in wet conditions. It is the responsibility of the owner or employer to check the local conditions. If you are unclear about anything, contact the manufacturer before installation.



### Preliminary remarks relating to the installation of the KeeGuard® system for runs less than 6 m long

You must note the following points if you are intending to install a run in the above situation :

- You must contact our technical service department on

*tel. 01384 632188*

if you intend to install a system with a total length of less than 6 m if different from those shown in sections 2.3 & 2.5.

## 2.5 Installing The KeeGuard® system

### Preliminary remarks on the use of tube connectors (Fittings)

Only use the tube connectors as follows:

- You must use the 14-8 or L14-7 straight tube connectors for straight connections.
- You must use the 15-8 / L15-7 - 90° tube connectors for 90° elbow connections.
- You must use the BC53-88 / LB54-77 hinge joint for angle connections adjustable through 202°.
- Variable angle corner joints of greater than 90° need supporting by either a brace across the angle (using non-swivel type fittings), or by a supporting upright utilising a CB2P counter balance. The brace option is limited to use between the angles of >90° & 120° (based on using a 29 type fitting). Installation diagram is shown on page 2-12 for clarification.

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**Installing the 6m PLUS KeeGuard® system - Unrestrained – parapet within 2m or edge at least 2m away.**

#### Step 1: Positioning the Uprights and Counter-Balances

Install the assembled vertical posts. Start with the vertical post at the beginning of the section of railing.

You must note the following points during assembly:

- At the beginning and end of the section of railing, there must always be a vertical post connected to a CB4P counterweight if it is not possible to have a wall connection. The arrangement of all the other counterweights CB1P is shown in the installation diagrams.
- The maximum permissible distance between the vertical posts is 2 m for end bays and 2.4 m for intermediate bays (see the installation diagram if supplied).
- The maximum permissible distance between a vertical post – before or after angle connections is 500 mm in one direction and 1.9m in the other direction. (see installation diagram supplied).
- All the counterweights must be evenly spaced.
- To protect asphalt roofs from damage it is recommended that Spartan OR Elastomer tiles be placed under all uprights and counterbalances in order to distribute the weight of the system over a greater area.

## **ALTERNATIVELY**

**Installing the 6m PLUS KeeGuard® system - Unrestrained – no parapet within 2m or edge under 2m away.**

### **Step 1: Positioning the Uprights and Counter-Balances**

Install the assembled vertical posts. Start with the vertical post at the beginning of the section of railing.

You must note the following points during assembly:

- At the beginning and end of the section of railing, there must always be a vertical post connected to a CB7P counterweight if it is not possible to have a wall connection. The arrangement of all the other counterweights CB1P is shown in the installation diagrams.
- The distance between the vertical posts and the edge of the roof must be at least 300 mm. If you are unable to achieve this distance, and if there is no parapet at the perimeter, then you must also fit a kick board. The kick board must be at least 150 mm high.
- The maximum permissible distance between the vertical posts is 2 m for end bays and 2.4 m for intermediate bays (see the installation diagram if supplied).
- The maximum permissible distance between a vertical post – before or after angle connections is 500 mm in one direction and 1.9m in the other direction. (see installation diagram if supplied).
- All the counterweights must be evenly spaced.
- To protect asphalt roofs from damage it is recommended that Spartan OR Elastomer tiles be placed under all uprights and counterbalances in order to distribute the weight of the system over a greater area.

## **ALTERNATIVELY**

**Installing the 6m PLUS KeeGuard® system - Restrained – 150mm High Vertical Parapet Available.**

### **Step 1: Positioning the Uprights and Counter-Balances**

Install the assembled vertical posts ensuring that the base is placed up against the base of the parapet. Start with the vertical post at the beginning of the section of railing.

You must note the following points during assembly:

- At the beginning and end of the section of railing, there must always be a vertical post connected to a CB2P counterweight if it is not possible to have a wall connection. The arrangement of all the other counterweights CB1P is shown in the installation diagrams.
- The maximum permissible distance between the vertical posts is 2.2 m for end bays and 2.4m for intermediate bays (see the installation diagram if supplied) or 1.5m in for end bays and 1.7m for intermediate bays in the case of KeeGuard Lite.
- The maximum permissible distance between a vertical post – before or after angle connections is 500 mm in one direction and 1.9m in the other direction for standard KeeGuard or 1.2m in the case of KeeGuard Lite. (see installation diagram if supplied).
- All the counterweights must be evenly spaced.



*Continued from previous section*

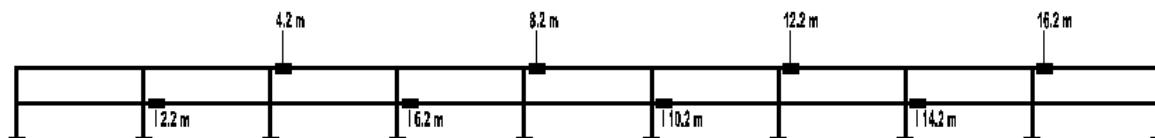
- To protect asphalt roofs from damage it is recommended that Spartan OR Elastomer tiles be placed under all uprights and counterbalances.

**Step 2: Fitting the top and mid rails – All versions**

Fit the top and mid rails between the vertical posts as shown in the diagram. To do this, you must push the rails through the tube connectors (if 45-87) or drop the rail into the fitting (if 135-8) on each vertical post.

You must note the following points during assembly:

- For runs greater than 4 metres each section of the top and mid rails must be at least 4.6 m long ( based on maximum 2m & 2.4m bay sizes ). Shorter sections are only permissible at the start or at the end of a run or if using smaller bays than 2m.
- The top and mid rails may only be connected together using 14-8, 15-8, 19-8, BC53-88, 55-8, L14-7, L15-7, L19-7 & LB54-77 fittings.
- Ensure the tube connector fittings for the top rail are laterally offset in relation to the fittings for the mid rail (see diagram below). The offset should be at least 2.4 m. This will give better stability as the fittings are not located within the same vertical plane. If this is not possible, bay sizes must be reduced to avoid joining in the same bay.



**Step 4: Tightening the adjusting screws**

Finally, tighten all the adjusting screws by applying a tightening torque of 39 Nm.

**Terminating the run**

The following terminations can be used at the ends according to the structural conditions in each case:

**Free end with 77-8 / 77-7 plastic stopper**

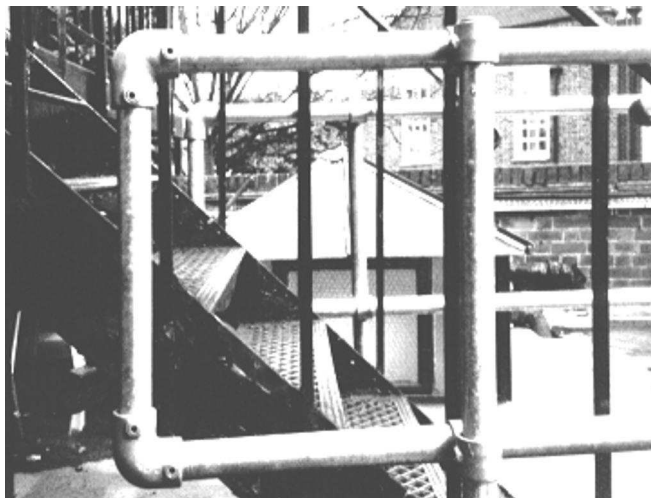
Seal off the open ends of the top and mid rails using a 77-8 / 77-7 plastic stopper on each end.

## 2.5 Installing The KeeGuard® system

### Terminating the ends

#### Free end with D-shaped bend

Connect the open ends (max. projection 500 mm) of the top and mid rails using two 15-8 / L15-7, 90° fittings and a short vertical tube to form a D-shaped bend. There must be no joint in the rails forming the D for at least 1 bay after the first upright



#### Wall connection

Fit a 61-8 / L61-7 wall flange to the end of each rail and fix each wall flange to the existing brickwork with appropriate fixings. Make sure that the distance between the wall and the next vertical post does not exceed a maximum of 2 m for standard KeeGuard or 1.5m for KeeGuard Lite !

It will depend on the brickwork as to which fixings you need to use. Consult a specialist if you need help selecting the fixings.



## 2.6 Maintenance, testing and disposal

### Contents

Information on the maintenance and regular inspection of the KeeGuard® system

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### Cleaning

It is perfectly adequate to use clean water for cleaning. You can also use a hose or high-pressure cleaner for this purpose.

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### Maintenance

The KeeGuard® system is virtually maintenance-free. However, any damaged parts or damaged grub screws must be replaced with original spare parts. Due to the nature of the corrosion protection, in time, the finish will become duller.

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### Regular compulsory checks

A KeeGuard® system must be checked at least once a year by a competent person. In the process, it is essential to check that all the grub screw connections are seated firmly as these connections can work loose under the influence of wind or other dynamic loads.

Checks and the results must be documented in writing in the inspection records.

A sample page, which you can copy, can be found in the appendix to these operating instructions.

Kee Safety Ltd offer this as part of the KEE CHECK Inspection and Assessment Service.

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### Disposal

Apart from the rubber mats and re-cycled PVC Weights, the KeeGuard® system is made predominantly of ferrous and non-ferrous metals. The KeeGuard® system can therefore be disposed of in a scrap metal facility.

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ISSUE No.	AMENDMENTS MADE	DATE MODIFIED
1	First Issue	December 2004
2	Changes made to front cover, Amendments Section 2, Amendment Page added	30 <sup>th</sup> Nov 2005
3	Contents I – Section 0.3 page changed from 0-4 to 0-5, Section 0.4 page changed from 0-6 to 0-7, Section 0.5 page changed from 0-7 to 0-8, Section 2.4 page changed from 2-9 to 2-10, Section 2.5 page changed from 2-10 to 2-11, Section 2.6 page changed from 2-15 to 2-17. Section 0 Introduction – Page changed from 0-4 to 0-5, Page changed from 0-6 to 0-7, Page changed from 0-7 to 0-8. Contents II – word “Amendments” added	9 <sup>th</sup> March 2007
4	Introduction 0-3 Issue dated altered to March 2007	9 <sup>th</sup> March 2007
	Introduction 0-6 3 <sup>rd</sup> bullet point Kee Anchor Registered Mark added	9 <sup>th</sup> March 2007
	For your safety 1-3 Kee Anchor Registered Mark added and PPE in capitals	9 <sup>th</sup> March 2007
	Assembly 2-3 “POS” deleted from table. Words pipe and connectors changed to fittings	9 <sup>th</sup> March 2007
	Assembly 2-4 “POS” deleted from table	9 <sup>th</sup> March 2007
	Assembly 2-5 “POS” deleted from table. Word pipe changed to tube	9 <sup>th</sup> March 2007
	Assembly 2-8 New drawing added “Support options for variable angle corners”	9 <sup>th</sup> March 2007
	Assembly 2-9 drawing moved from 2-8 - All pages now roll on	9 <sup>th</sup> March 2007
	Assembly 2-14 New 4 <sup>th</sup> bullet point added. Installing the KeeGuard system installation diagram changed from 2-12 to 2-13	9 <sup>th</sup> March 2007

	Assembly 2-15 8 <sup>th</sup> bullet point word “pipe” changed to tube	9 <sup>th</sup> March 2007
	Index amended	9 <sup>th</sup> March 2007
5	Page 1-1 Amendments for Important information	7 <sup>th</sup> June 2007
6	Section 0 Introduction 0-2 TUV Certificate number changed	9 <sup>th</sup> July 2007
	Section 0 Introduction 0-5 Bullet point added (EN ISO 13374)	9 <sup>th</sup> July 2007
7	Section 0 – 0.2 General – Issue date changed	26 <sup>th</sup> July 2007
	Amendments added to Amendments sheet	26 <sup>th</sup> July 2007
8	Company name change/certification details	25 <sup>th</sup> June 2008
	Due date for next inspection	
9	Re-Cycled PVC Counter-Balance weight system replacing previous cast iron weights.	1 <sup>st</sup> Sep 2008
10	Page 0 – 2 – Test & Certificate Numbers added	24 <sup>th</sup> Oct 2008
11	Page 2 – 13 – Drawing updated.	6 <sup>th</sup> April 2009
	Page 2 – 15 –7 Fleece requirement bullet point added.	
	Pages 2 – 17 & 2 – 18 – Removal of CB3 refs from installation method.	
12	Page 2 – 17 – 6 <sup>th</sup> Bullet point removed.	16 <sup>th</sup> April 2009
	Page 2 – 18 – No parapet less than 2m from edge instructions added.	
13	Page 0 – 5 – Additional Bullet point added to misuse section.	20 <sup>th</sup> May 2009
14	<p>Page 0 – 2 – Model Year.</p> <p>Page 0 – 3 – Issue date.</p> <p>Page 1 – 2 – Symbols.</p> <p>Page 1 – 3 – Symbol.</p> <p>Page 1 – 4 – Symbol.</p> <p>Page 2 – 2 – Manual Handling section added.</p> <p>Page 2 – 3 – Symbol.</p> <p>Page 2 – 5 – ‘ P ’ suffix added to Counter-balance references.</p> <p>Page 2 – 6 – ‘ P ’ suffix added to Counter-balance references.</p> <p>Page 2 – 13 – Symbol.</p> <p>Page 2 – 14 – Symbol.</p> <p>Page 2 – 16 – Symbol.</p> <p>Page 2 – 17, 18 &amp; – ‘ P ’ suffix added to Counter-balance references and Elastomer plate option added.</p>	5 <sup>th</sup> October 2009

15	<p>Cover – Rev Number &amp; Copyright date          Contents – Section 0 &amp; 2 Page numbers changed          Page 0 – 1 – Page numbers changed          Page 0 – 2 – Model year &amp; Test Body details changed          Page 0 – 3 – Issue date details changed          Page 0 – 4 – Sixth main bullet point changed          Page 2 – 1 – Page Numbers changed          Page 2 – 3 – Upright details changed          Page 2 – 4 – KeeGuard Lite options added          Page 2 – 5 - KeeGuard Lite options added          Page 2 – 6 - KeeGuard Lite options added          Page 2 – 9 – 6m Plus image changed          Page 2 – 11 – 6m Plus image changed          Page 2 – 12 – KeeGuard Lite image changed          Page 2 – 13 – Image changed          Page 2 – 14 – Roof pitch details changed          Page 2 – 15 – Third bullet point amended          Page 2 – 16 – Image changed          Page 2 – 17 – Bullet points 1, 2, 3, 6, &amp; 7 amended          Page 2 – 18 – Bullet points 3, 4, 6, 8 &amp; 9 amended          Page 2 – 19 – Bullet points 2 &amp; 4 amended and plastic stopper details changed          Index removed</p>	1 <sup>st</sup> July 2011
16	<p>Cover – Rev Number, Standard, Address &amp; Copyright date          Page 0 – 2 – Model year, Authorised Distributor Details &amp; Test Body removed.          Page 0 – 3 – Issue Date.          Page 0 – 4 – Fifth &amp; Sixth Bullet Points removed &amp; tenth Bullet Point amended.</p>	21 <sup>st</sup> May 2013
17	<p>Cover – Issue Number          Page 2 – 16 – Contact Telephone Number</p>	3 <sup>rd</sup> September 2013

## INSPECTION AND RESULT OF THE REGULAR COMPULSORY INSPECTION FOR KEEGUARD®

Date	Inspector Name/Qualification	Inspection result	If defects found, reinspection to be carried out on (date)	Result of the reinspection	Signature of the Inspector	Due date for next inspection