**ISSUE 2** 



SAFETY AT THE HIGHEST LEVEL

# **KeeGuard®** Contractor

Temporary Roof Edge Protection System Assembly and Operating Instructions



Kee Safety Ltd Unit A2 Cradley Business Park Overend Road Cradley Heath, West Midlands B64 7DW

 Tel.: +44 (0) 1384 632188

 Fax: +44 (0) 1384 632192

 E-mail: sales@keesafety.com Website:

 www.keesafetygroup.com

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# Section 0 Introduction

## 0.1 Overview

## **Overview**

This section is broken down into the following subjects:

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## 0.2 General

## Contents

General information on the KeeGuard® Contractor system

## Validity

These operating instructions apply to the following product:

Type:KeeGuard® Contractor temporary fall prevention system for flat roof structuresModel year:2012

## Manufacturer

Kee Safety Ltd Unit A2 Cradley Business Park Overend Road Cradley Heath, West Midlands B64 7DW Tel.: +44 (0) 1384 632188

Fax: +44 (0) 1384 632192 E-mail: sales@keesafety.com Website: www.keesafetygroup.com Copyright © 2021 Kee Safety Ltd. All rights reserved



## 0.2 General

## Intended service life

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

#### **Issue date**

Issue 1 – 31<sup>st</sup> July 2012

#### **Components and Retention**

- These assembly and operating instructions are a component part of any KeeGuard<sup>®</sup> Contractor 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.

#### Modifications to the KeeGuard® Contractor system

If you should carry out modifications to the KeeGuard<sup>®</sup> Contractor system, then you will automatically make any 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.

## 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<sup>®</sup> Contractor system in accordance with instructions.

## Intended use

The KeeGuard<sup>®</sup> Contractor system is a temporary 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<sup>®</sup> system is designed as a temporary system. Therefore, dismantling and reconstruction at a different location is permissible under certain circumstances which are explained in the section entitled "Assembling the KeeGuard<sup>®</sup> Contractor system ".

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

- The KeeGuard<sup>®</sup> Contractor 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:
  - o HSG-33, Health & Safety in Roofwork,
  - o HSE INDG 284- Working on Flat Roofs
  - EN ISO 13374 Class A Part there of (correct configuration required) and BS13700
- The total weight of the KeeGuard<sup>®</sup> Contractor 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 594 N.
- The KeeGuard<sup>®</sup> Contractor system must be linked to the building's lightning protection system, if possible, when the system is left on the roof for any length of time.
- The KeeGuard<sup>®</sup> Contractor 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 10°.
- 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<sup>®</sup> Contractor 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<sup>®</sup> Contractor 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<sup>®</sup> system.

#### Misuse

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

- Use of the KeeGuard<sup>®</sup> Contractor 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<sup>®</sup> Contractor system may possibly fail.
- Use of a damaged KeeGuard<sup>®</sup> Contractor 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 or more. This could lead to the weights breaking and no longer being usable.

Use under conditions specified is always prohibited! Should the KeeGuard<sup>®</sup> Contractor 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.





## 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® Contractor system .

## Safety of the KeeGuard® Contractor system

In particular, the owner or employer must ensure that the KeeGuard® Contractor 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® Contractor 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® Contractor system are as follows.

## 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.

## 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 lighting 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.

## **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.



## Danger!

This symbol indicates the danger of injury or death . Danger to life is referred to separately by the words **"Danger to life"**.



## **Caution!**

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



## Note!

This symbol indicates information that helps to explain how to use the KeeGuard  $\ensuremath{^{\circledast}}$  system more clearly.



## **1.3 Basic safety information**

## Contents

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



## Danger!

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

Potential danger	Prevention measures			
<b>Danger to life!</b> There is a risk of the construction personnel falling	<ul> <li>The KeeGuard<sup>®</sup> Contractor system is only to be as- sembled as specified in the assembly instructions.</li> </ul>			
during assembly or when carrying out repairs. <b>Explanatory notes:</b> Inadequate or insufficient safety measures or er- rors during the assembly of the KeeGuard® Contractor system can lead to falls resulting in	<ul> <li>Personal Protection Equipment (PPE) consisting of a Full Body Harness with lanyard, possibly in con- junction with a Kee Anchor<sup>®</sup> system, is to be used during assembly or when carrying out repairs to the KeeGuard<sup>®</sup> Contractor system.</li> </ul>			
severe / fatal injuries.	<ul> <li>After assembly or after carrying out repairs, check all structural parts and connecting components to make sure that they are located correctly.</li> </ul>			
	<ul> <li>Do not use any parts that are damaged.</li> </ul>			
<b>Danger to life!</b> There is a risk of the KeeGuard® Contractor system failing if the installation site is unsatisfactory.	<ul> <li>Follow the detailed information on the installation sites for the KeeGuard<sup>®</sup> Contractor system in section 2 of these assembly instructions.</li> </ul>			
Explanatory notes:	<ul> <li>The roof surface must always be of the prescribed quality and load-bearing capacity.</li> </ul>			
A non-approved roof surface can result in The KeeGuard® Contractor system sliding and failing.	• The prescribed measures must always be complied with.			
Danger to life! There is a risk of people falling due to failure to carry out maintenance work on the KeeGuard® Contractor system	<ul> <li>If you have to carry out repairs on the roof or any plant always carry out a visual check on the KeeGuard<sup>®</sup> Contractor system and the roof area beforehand for damage.</li> </ul>			
<b>Explanatory notes:</b> Defects or damage can impair the function of the KeeGuard <sup>®</sup> Contractor system therefore the system may possibly not be guaranteed in the event of an emergency.	<ul> <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>			

	Kee <sup>®</sup> Guard
<b>Danger to life!</b> There is a risk of people falling due to attaching Personal Protection Equipment to a KeeGuard® Contractor system	• The KeeGuard <sup>®</sup> Contractor 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
Explanatory notes:	"man anchor" or as a connection for P.P.E.
The KeeGuard <sup>®</sup> system must never be used to at- tach P.P.E to as an anchor for abseiling or similar work.	

## **Basic safety information**



Danger!

Potential danger	Prevention measures
The imposed lateral load of the whole system may be reduced as a result of the process of recon- struction.	• Always use new grubscrews when re-installing <b>any</b> joint or weight. These can be purchased from the manufacturer or an appointed distributor.



# Section 2 Assembling the KeeGuard<sup>®</sup> Contractor system

## 2.1 Overview

## **Overview**

This section is broken down into the following subjects:

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Maintenance, testing and disposal	



## 2.2 Transporting and storing The KeeGuard® Contractor system

## Contents

Information on how to transport the fall prevention system safely.

## **Transportation**

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

## 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.

## **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® Contractor 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<sup>®</sup> Contractor system consists of the following individual components. The exact number of individual components depends on the length and construction of the KeeGuard<sup>®</sup> Contractor 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	Fu	nction	Quantity	For total length
1	220 – 8 ' Base Weight '	•	Base weight for the system	4 off	2 m
			Length = 550 mm Width = 550 mm	5 off	4 m
			Height = $170 \text{ mm}$	6 off	6 m
		w	Weight = 40 kg each approx	7 off	8 m
			Locator for the Upright	8 off	10 m
			Modules Fitted with 2 off 75-8 Collars to secure Upright modules when in position	8 off + 1 off for every 2 m of addi- tional length	> 10 m



## 2.3 **Checking the components**

## Designation and function of the components for standard systems

	Designation	Fu	nction	Quantity	For length of Guardrail
2	Upright Module	•	Support for Top rail and mid rail to form the fall guard	1 off	2 m
	<b>V</b>		Diameter = 48.3 mm Height = 1.100 m Weight = kg approx	2 off	4 m
				3 off	6 m
				4 off	8 m
				5 off	10 m
				5 off + 1 off for every 2 m of addi- tional length	> 10 m
3	Horizontal Rails	•	Top rail and mid rail form the fall guard Diameter = 48.3 mm Length = Up to 6.4 m Weight = 3.61 kg / m approx	1 off	./.
4	10 - 8 Tee	•	Connects End return rails to main run rails . Diameter = 48.3 mm Length = 0.100 m Weight = 0.62 kg approx	1 off for each 90° angle	./.



	Designation	Function	Quantity	For length of Guardrail
5	77-8 plastic stopper	<ul> <li>Seals off the open ends of the Horizontal Rails</li> </ul>	1 off for each tube end	·/·
6	14 - 8 Rail Joiner	<ul> <li>Connects horizontal rails together .</li> <li>Diameter = 48.3 mm Length = 0.100 m Weight = 0.64 kg approx</li> </ul>	1 off for each tube joint	./.

Installation diagram of a typical system





## 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<sup>®</sup> Contractor 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	Only flat roofs are permissible for this installation.
Permissible roof pitch	• Max. 10°
Roof surface	• Only, concrete, mineral felt, asphalt (in this case pro- tection may be required to prevent damage to roof surface) or PVC sheeted roofs are permissible for this installation.
	• The surface of the roof must be free from loose deposits, oil, grease, algae, gravel & accumulated water.
Weather conditions	The roof must be free from snow and ice.
	• If there is the risk of water freezing over during as- sembly or it starts to snow, then the system must not be installed.
	<ul> <li>KeeGuard<sup>®</sup> Contractor must not be installed if it is very windy.</li> </ul>



## 2.5 Installing the KeeGuard® Contractor 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<sup>®</sup> Contractor system cannot be guaranteed.
- The KeeGuard<sup>®</sup> Contractor 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<sup>®</sup> Contractor system!
- Competent assembly personnel who must use Personal Protection Equipment to prevent them from falling, may only carry out installation.
- KeeGuard<sup>®</sup> Contractor system 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 Contractor system 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 1200mm), to maintain the 1100 mm top rail height.

## **Tools required**

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

- Ratchet & Hex socket bit size 5/16" AF
- 12" Extension Bar to suit above
- Torque wrench 10- 60 Nm approx.
- Drill with suitable drill bit (only for toeboard connection)
- Tape measure



## 2.5 Installing The KeeGuard® Contractor system



Special conditions: If a freestanding end of the KeeGuard® Contractor 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. We do not recommend the use of the KeeGuard® Contractor in this scenario. 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® Contractor system for runs less than 2m 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. 0118 931 1022

if you intend to install a system with a total length of less than 2m if different from those shown in sections 2.3 & 2.5.

## 2.5 Installing The KeeGuard® Contractor system

Installing the 2m PLUS KeeGuard<sup>®</sup> Contractor system - Unrestrained – parapet within 2m or edge at least 2m away.

## Step 1: Positioning the Base weights and Modules

Starting with the 220-8 Base at the beginning of the section of railing. Install the lower half of the 220-8 Bases and then insert two 75-8 collars into the centre cut-outs that correspond with the required upright locations. Fit the top half of the 220-8 base on to the bottom half ensuring both parts fit fully together with no gaps between the two moldings. Continue along with the remaining bases.

You must note the following points during assembly:

- At the beginning and end of the section of railing, there must always be a 1.5m return. The arrangement of all the other Bases is shown in the installation diagrams if supplied. These two Bases need to have both halves of the moldings Zip tied together using the carrying handles for this purpose to ensure in the event of the system needing to restrain a person falling against the railing the two halves of the moldings do not separate.
- The maximum permissible distance between the intermediate bases is 3 m (see the installation diagram if supplied).
- All the bases must be evenly spaced.
- To protect asphalt and mineral felt roofs from damage it is recommended that Spartan OR Elastomer tiles be placed under all bases in order to distribute the weight of the system over a greater area.



## Step 2: Fitting the Upright Modules – All versions

Fit all the Upright Modules into the bases as shown in the diagram if supplied. To do this, you must push the Ends of the uprights into the upright hole in the centre of the base with the retained metal collar ensuring it is fully located into the bottom of the hole. Rotate the Uprights so that the Open Cup is located to the outside of the System. At this point leave the collar in the base not tightened.

#### Step 3: Fitting the Top & Mid Rails - All versions

Starting at the 1.5m Return Drop the cut length of tube into the open cup fitting attached to the Upright Module. Ensure that the end of the tube is flush with the end of Open cup fitting. See Image below.



At the opposite end fit the 10-8 fitting onto the end of the tube so that the branch of the tee is pointing in the direction of the main run of Guardrail. See Image below.



Next drop in the 3.2m Cut length of tube into first section of the main run and then slide fully back into the 10-8 that is attached to the 1.5m end return so that you end up with the above situation. At the Opposite end loosely fit the 14-8 Tube Joiner onto the end of the Rail. Take another 3.2m Cut tube and drop into the next section of Uprights and then slide back against the previously fitted rail with the 14-8 attached. Centralise the 14-8 Tube Joiner over the Rail Joint and tighten the securing screws to a torque of 39 Nm. See image below. Repeat this for all further sections both in the top and mid rail locations.





## Step 4: Tightening the securing screws

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

## Step 5 - Optional: Longer Rail Option

If the potential of using full length 6.4m Rails is possible it is feasible to reduce the quantity of Uprights needed in the Intermediate sections from doubles to singles as per the image below. Where Joints between rails occur it is still necessary to use double Upright Modules as detailed above.





## 2.6 Maintenance, Checking and Disposal

#### Contents

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

## Cleaning

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

## Maintenance

The KeeGuard<sup>®</sup> Contractor 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.

#### **Regular compulsory checks**

A KeeGuard<sup>®</sup> Contractor system must be checked everytime it is going to be used 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.

## Disposal

Apart from the re-cycled PVC Weights, the KeeGuard<sup>®</sup> Contractor system is made predominantly of ferrous metals. The KeeGuard<sup>®</sup> Contractor system can therefore be disposed of in a scrap metal facility.



ISSUE No.	AMENDMENTS MADE	DATE MODIFIED
1	First Issue	July 2012
2	Adding BS 13700 codes	Jan 2021



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

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