



Operation & Maintenance Manual

FREESTANDING ROOF EDGE PROTECTION SYSTEM



SYSTEM OVERVIEW

ROOF EDGE GUARDRAIL

Kite's Roof Edge Protection system is an independent safety solution that stands on its own. It's made especially for roofs where ongoing maintenance and works are required.

IDEAL FOR ROOF SAFETY

- Boasts a unique design that delivers robust edge protection.
- Eliminates the need for attachment to the roof or building, thus maintaining structural integrity.
- Employs the cantilever principle to ensure superior strength, stability, and safety.
- Overcomes typical installation challenges such as potential water damage and noise disturbance.
- Ingeniously avoids the difficulties associated with fixing to heavily insulated roofs.
- Prevents the creation of thermal bridges, reducing the risk of condensation and subsequent roof deterioration.



DURABILITY

- Each connection is galvanised according to BS EN ISO 1461 and ASTM A53 standards.
- The zinc coating is 65-85 microns thick.
- Cast clamps have a Dacromet coating on tapped holes.
- Carbon steel grub screws also receive Dacromet protection.
- Minimal upkeep required due to robust protection.
- Galvanised tubes connected by Kite's clamps.
- Base feet with recycled plastic counterweights ensure stability.

This approach ensures strength, stability, and sustainability for the guardrail systems.

SYSTEM OVERVIEW

ADAPTABILITY

- Systems are adaptable for any roof type, including flat, pitched, or circular.
- They manage level changes, roof drops, and complex features like ductwork and cable trays.
- Counterweights and Kite clamps add flexibility for roofs with plants or detailed edges.
- The product line includes standard, raked, and radiused systems to meet diverse needs.
- This system is designed for versatility, ensuring a perfect fit for various roof configurations and complexities.

WITHSTANDING WIND

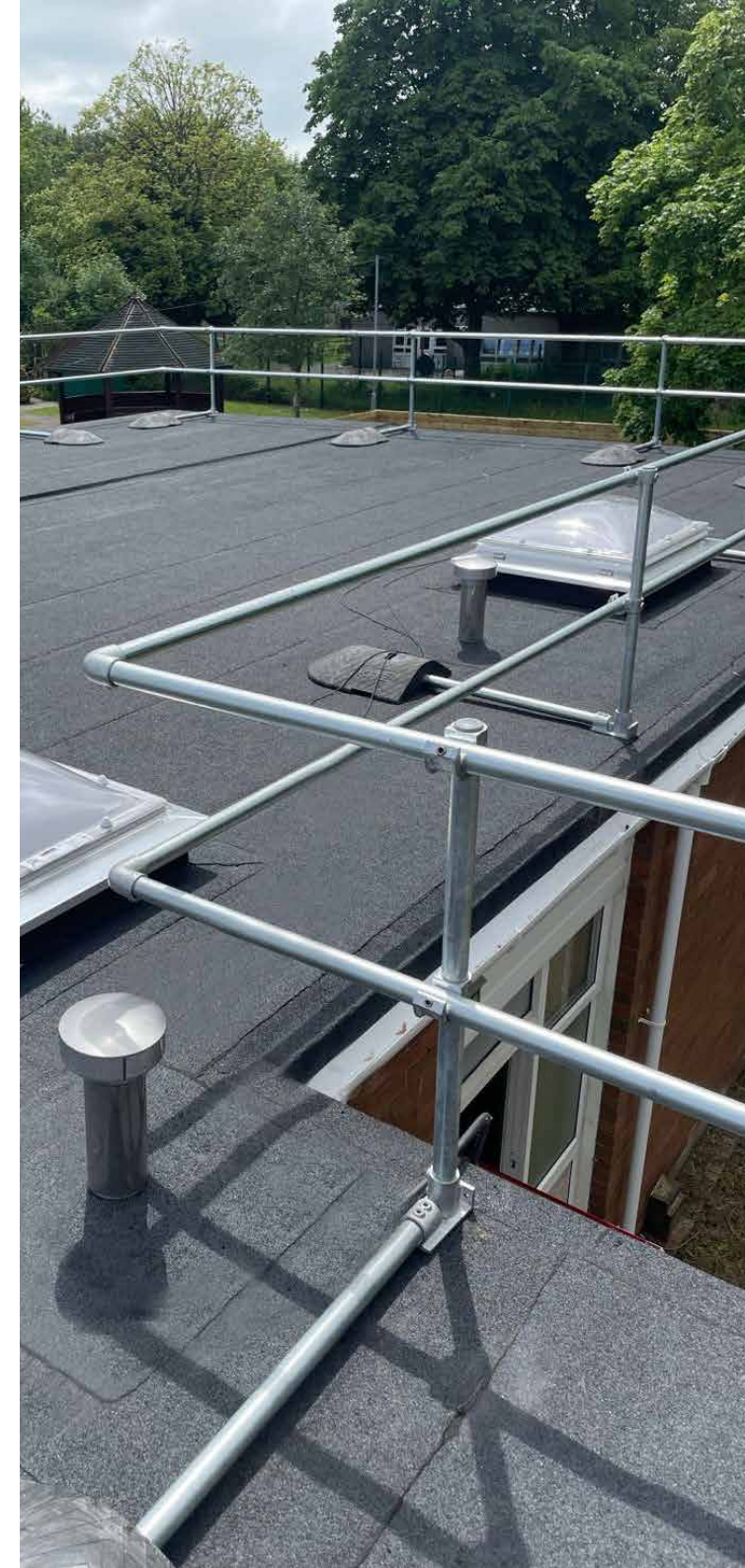
- Wind loading is the most significant force affecting a freestanding roof guardrail's lifespan.
- The Freestanding Roof Edge protection system undergoes rigorous testing via a computerised program.
- This ensures compliance with relevant wind load regulations, considering factors like location, topography, and building height.
- This meticulous testing protocol guarantees that the guardrail systems are robust and reliable, even in the face of strong winds.

SETUP

- A rubber mat is affixed to the underside of metal components in contact with the roof.
- In specific cases, extra pads are used between the counterweight/base foot and the roof for extra protection.
- For warm roofs with foot traffic, placing tiles under base feet and counterweights is advised.
- These precautions ensure the integrity of the roof covering while enhancing the safety and durability of the guardrail systems.

APPEARANCE

- Opt for powder coating to improve the standard galvanised finish's appearance.
- Complies with the BS 6497 Specification for Powder Organic Coatings.
- Custom colours can be requested to match specific preferences, in line with EU codes.



SYSTEM OVERVIEW Components and their functions



HEEL CLAMP

KSE-REH

This galvanized mild steel heel clamp is to suit our 48.3od tubes as part of our Freestanding Roof Edge Protection System. This safe edge heel clamp connects to the vertical tube upright when it is fitted with the outrigger tube. Both tubes would be fitted in this clamp through grub screws that are included. This clamp is provided with a rubber pad at the base to protect the system from movement.



CRADLE CLAMP

MFRG-JC

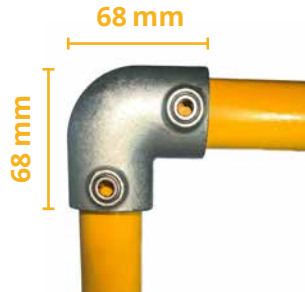
Also known as galvanized cup bracket or roof edge saddle fitting. This saddle clamp suits our 48.3 od galvanised tube. The open cup fitting supports the connection between posts and tubes to build or extend roof edge protection system. It basically provides the method of linking the horizontal galvanised tubes to the support Legs. Grub screws are included.



EXTERNAL TUBE CONNECTOR

149-D

Inline external tube connector is a straight fitting for connecting tubes of the same size.



90-DEGREE ELBOW CLAMP

125-D

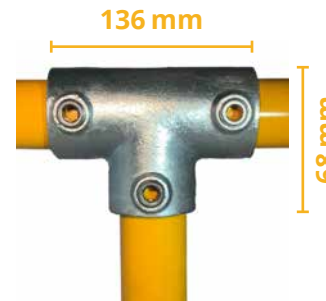
Our 90° two-way elbow fitting is usually used to attach the end vertical to the top rail in straight and level guardrail tubes. It can also be used to create a 90° bend or D-return. This galvanized 90-degree angle joint is to suit our 48.3od galvanised tube.



MULTI SWIVEL ELBOW

166-D

The Multi Swivel Elbow, also called adjustable knuckle is a flexible fitting typically used to create angles other than 90°. Once the preferred angle is acquired, the knuckle is locked with a standard setscrew.



LONG TEE CLAMP

104-D

A 90° tee connection between two rails. It is usually used on straight and level guardrails to connect the vertical to the top rail. This clamp fitting is used to connect weights on double weight set with outrigger.

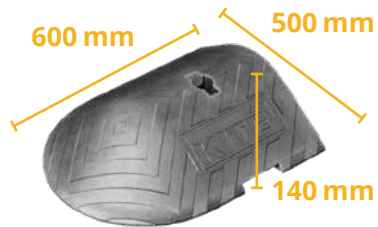
SYSTEM OVERVIEW Components and their functions



LOCKING COLLAR

179-D

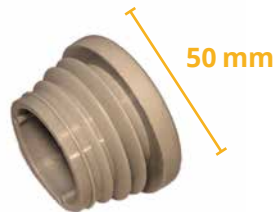
Kite's locking collar is used in our Freestanding Roof Edge Protection system to fix the outrigger to the weight. Since all the systems rely on tube with 48.3 od so all of the clamps needed must be size D.



RECYCLED PLASTIC COUNTERWEIGHT

KSE-22

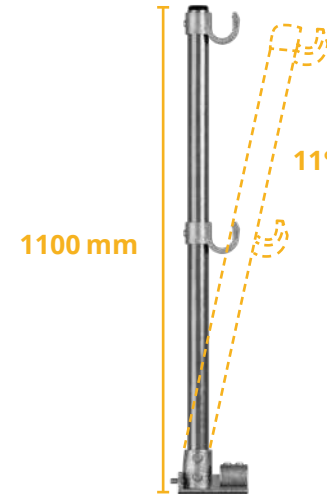
Our Freestanding Roof Edge Counterweight is made of recycled plastic to provide our system with the extra feature of being environmentally friendly. This weight connects to the outrigger tube and is fitted with it through our galvanised locking collar clamp.



PLASTIC CAP

133-D

This round plastic end-cap plug is also called a round tube insert or a plastic stop end. This round end cap is to suit our 48.3od galvanised tube as part of our Freestanding Roof Edge Protection system and TopFix Roof Edge Protection system components.



STANDARD & RAKED POST

The post can be positioned from 0° up to 11° raked angle. This is based on the site requirements.



DOUBLE WEIGHT TUBE CONNECTOR 500 MM

A galvanised tube of 500 mm supplied to connect the two plastic weights.



RAIL TUBE

Either 3.2 or 6 metres lengths of rail tubes are supplied to create the top and middle rails and connect horizontally to the posts through the cradle clamps.

SYSTEM OVERVIEW Compliance

KITE Roof Edge Protection System adheres to building regulations, health and safety regulations, and the requirements of various standards, including:

- BS 13700:2021 | BS EN 13374:2004 | BS 4592-0:2006+A1:2012
- BS EN ISO 14122-3:2001+A1:2010 | UK Health & Safety Executive (HSE) Work at Height (Amendment) Regulations 2007.

It also complies with:

- Wind Loadings to BS 6399:Part 2:1995 | Performs in excess of the HSE Specialist Inspector Report No.15 & HSG33 Health and Safety in Roof Work



SYSTEM OVERVIEW Compliance to BS 13700:2021

TEST NO.	TEST DESCRIPTION	TEST TYPE	LOAD TYPE	REQUIREMENTS OF BS EN 13700:2021	CLASSIFICATION
1	Vertically Downwards – Guardrail and Posts (sec. 7.5)	Dry	Serviceability Limit State Ultimate Limit State	55 mm max displacement 300 mm max displacement due to load	Pass
2	Vertically Upwards – System (sec. 7.6)	Dry	Serviceability Limit State	No part of the system shall become attached	Pass
3	Horizontally Parallel – Guardrail and Posts (sec. 7.7)	Dry and Wet	Ultimate Limit State	No identifiable yielding, fracture or separation of any part of the assembly should be observed	Pass
4	Horizontally Outwards – Guardrails and Posts (sec. 7.4)	Dry and Wet	Serviceability Limit State Ultimate Limit State	55 mm max displacement No identifiable yielding, fracture or separation of any part of the assembly should be observed	Pass
5	Working Wind + Horizontal Outward Load – Guardrail and Posts (sec. 7.8)	Dry and Wet	Ultimate Limit State	No identifiable yielding, fracture or separation of any part of the assembly should be observed	Pass



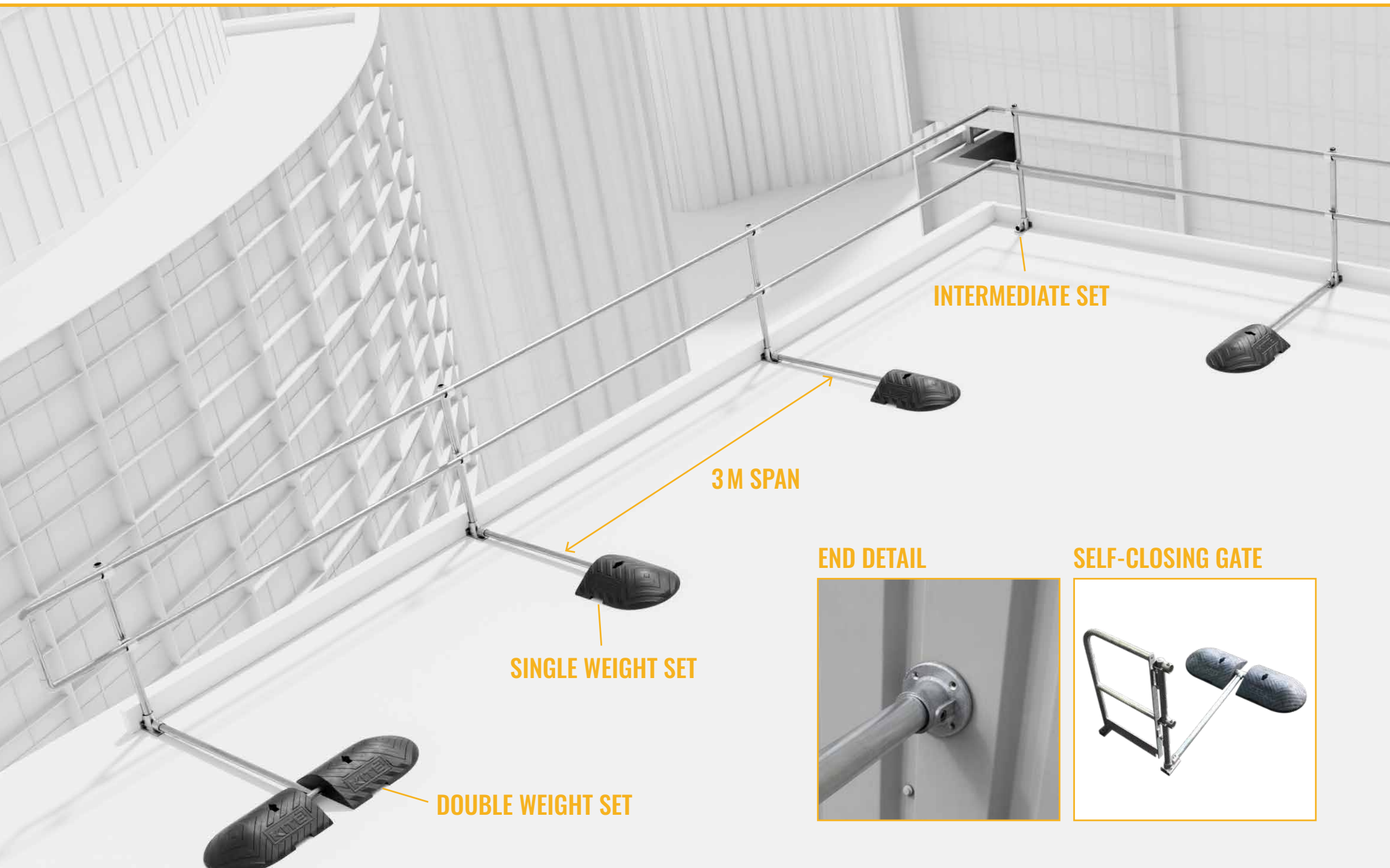
SYSTEM OVERVIEW Compliance to BS 13700:2021

EN 13374 & BS 13700

ROOF TYPE	MAX PITCH	TUBE SIZE	TUBE THICKNESS	END COUNTER BALANCE NO	MAX BAY CENTRES	INTERMEDIATE COUNTER BALANCE NO
Mineral Grade Felt						
Restrained	5°	48.3 mm od	3.2 mm	2	3 m	1
UnRestrained	5°	48.3 mm od	3.2 mm	2	3 m	1
PVC Membrane						
Restrained	5°	48.3 mm od	3.2 mm	2	3 m	1
UnRestrained	5°	48.3 mm od	3.2 mm	2	3 m	1
UnRestrained	5°	48.3 mm od	3.2 mm	2	3 m	1



SYSTEM OVERVIEW System layout and schematics



INTERMEDIATE SET

3M SPAN

SINGLE WEIGHT SET

DOUBLE WEIGHT SET

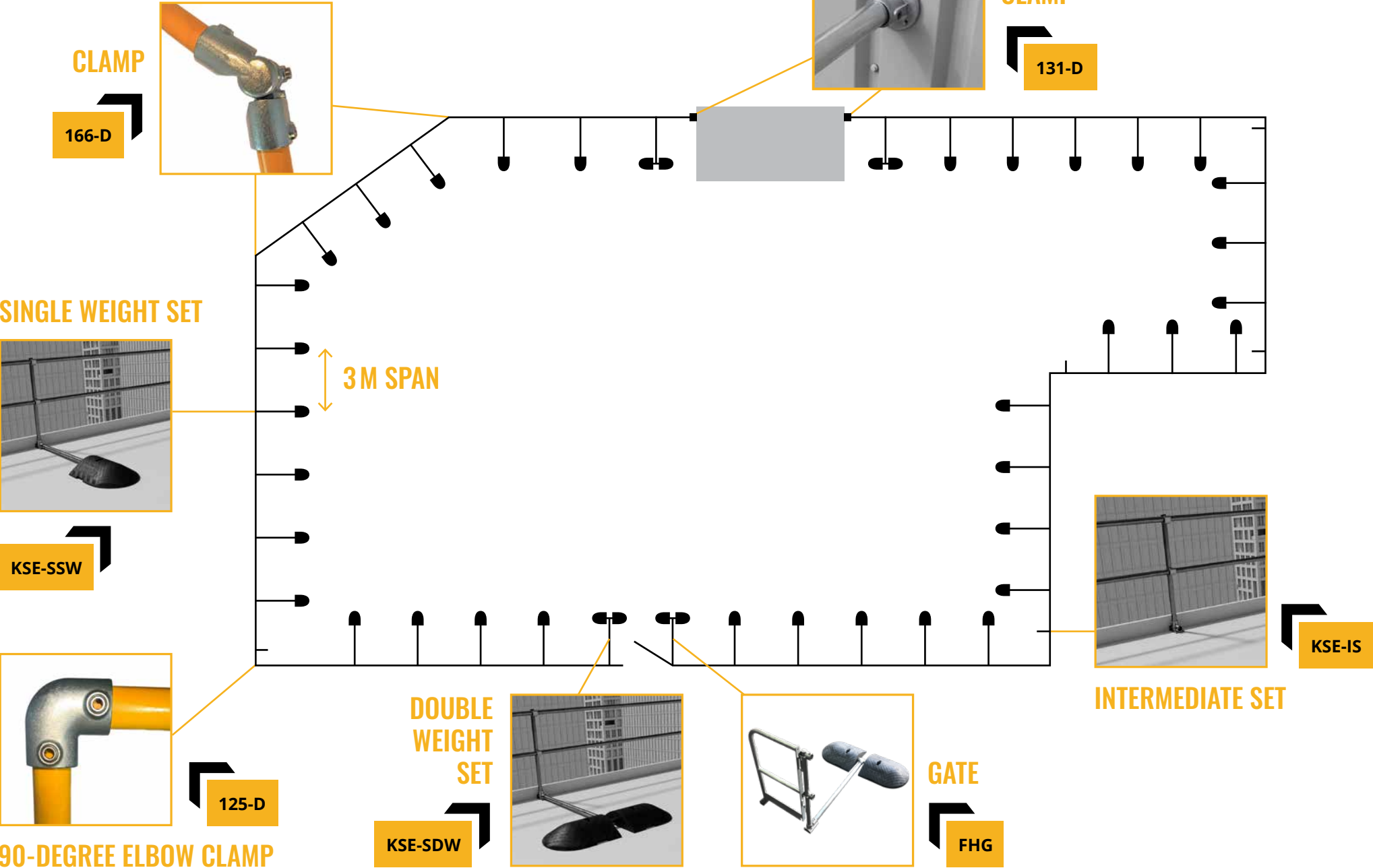
END DETAIL



SELF-CLOSING GATE



SYSTEM OVERVIEW System layout and schematics



SYSTEM SETS

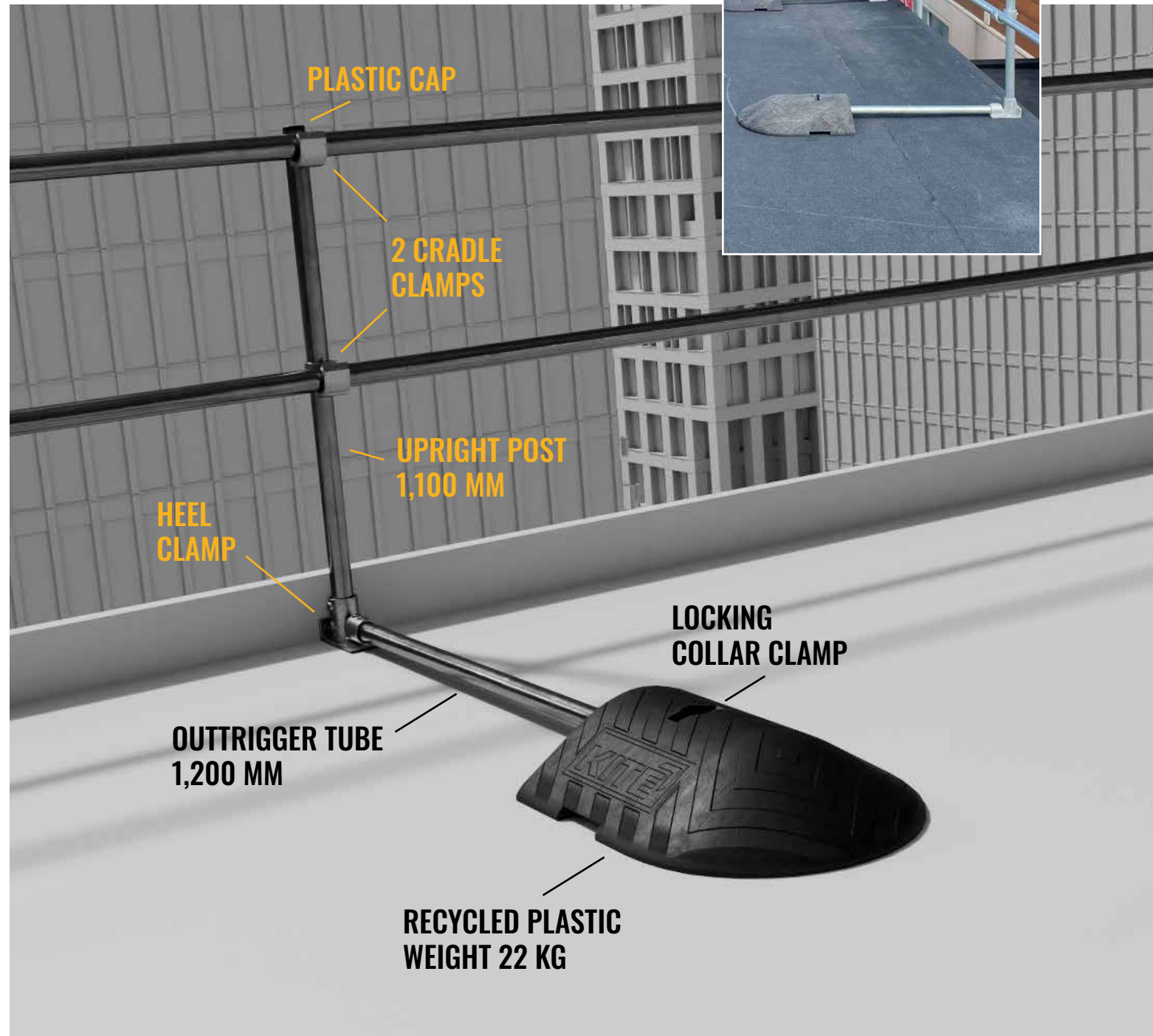
SINGLE WEIGHT SET

The single weight set is used in the middle of a run to form the body structure of the Freestanding Roof Edge Protection system. The span between each post of this set and the next is 3 metres.

It is highly recommended to have a kick plate with the system if there is no existing upstand on the roof.

Kite's single weight roof edge set price includes all components required:

- ┐ 1 x Recycled Plastic Roof Edge Weight
- ┐ 1 x Locking Collar Clamp to fix the weight to the outrigger
- ┐ 1 x Outrigger 1,200 mm
- ┐ 1 x Galvanised Heel Clamp
- ┐ 2 x Cradle Clamps
- ┐ 1 x Upright Post 1,100 mm
- ┐ 1 x Plastic Cap



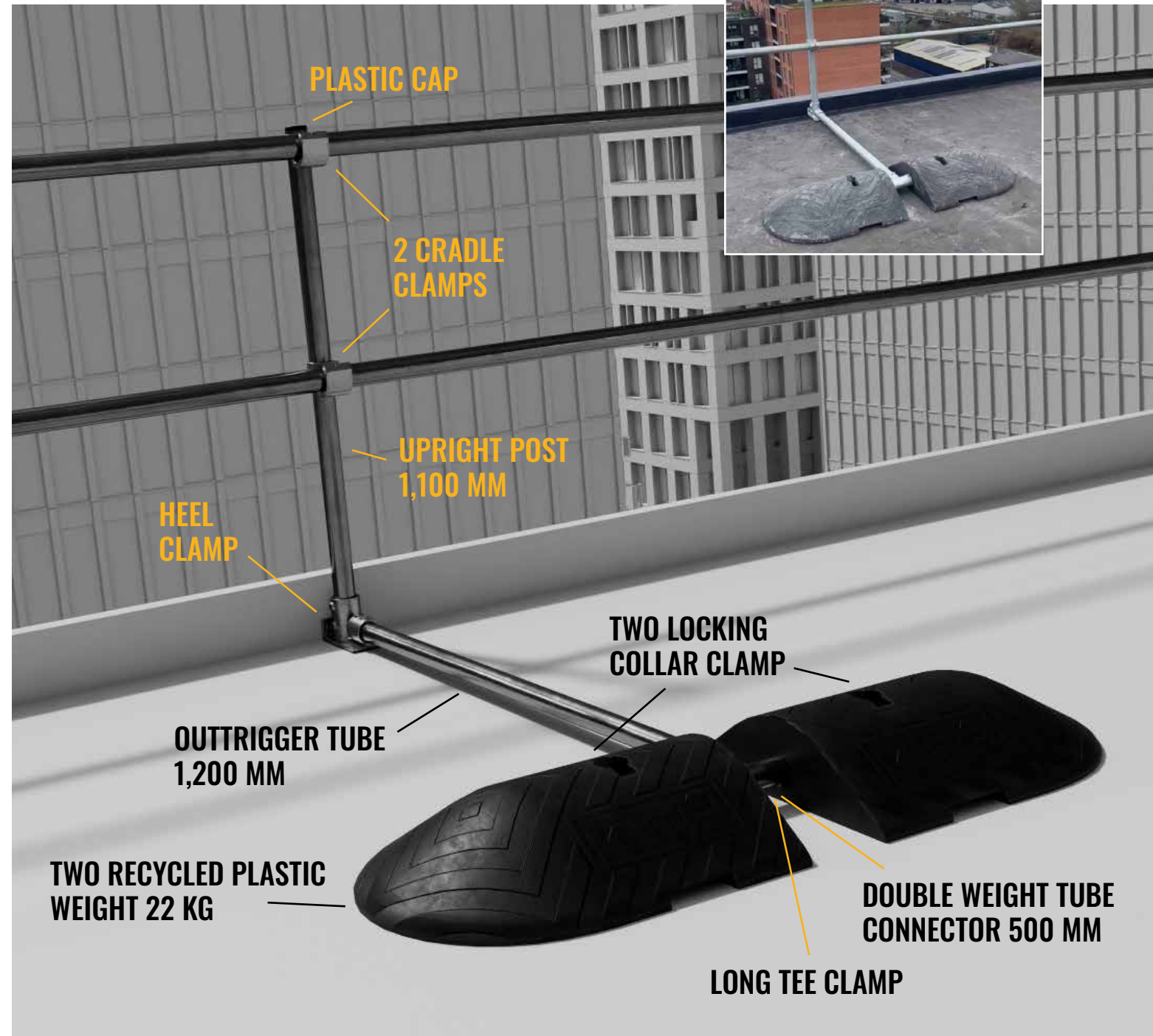
SYSTEM SETS

DOUBLE WEIGHT SET

The double weight set is used at the end of any run and opposite the double weight gate set to provide more stability to the Freestanding Roof Edge Protection system.

Kite's run end double weight set price includes all the components required:

- ↗ 2 x Recycled Plastic Roof Edge Weight
- ↗ 2 x Locking Collar Clamp to fix the weight to the outrigger
- ↗ 1 x Outrigger (1,200 mm tube)
- ↗ 1 x Long Tee Clamp
- ↗ 1 x Double Weight Tube Connector (500 mm tube)
- ↗ 1 x Galvanised Heel Clamp
- ↗ 2 x Cradle Clamps
- ↗ 1 x Upright Post (1,100 mm tube)
- ↗ 1 x Plastic Cap



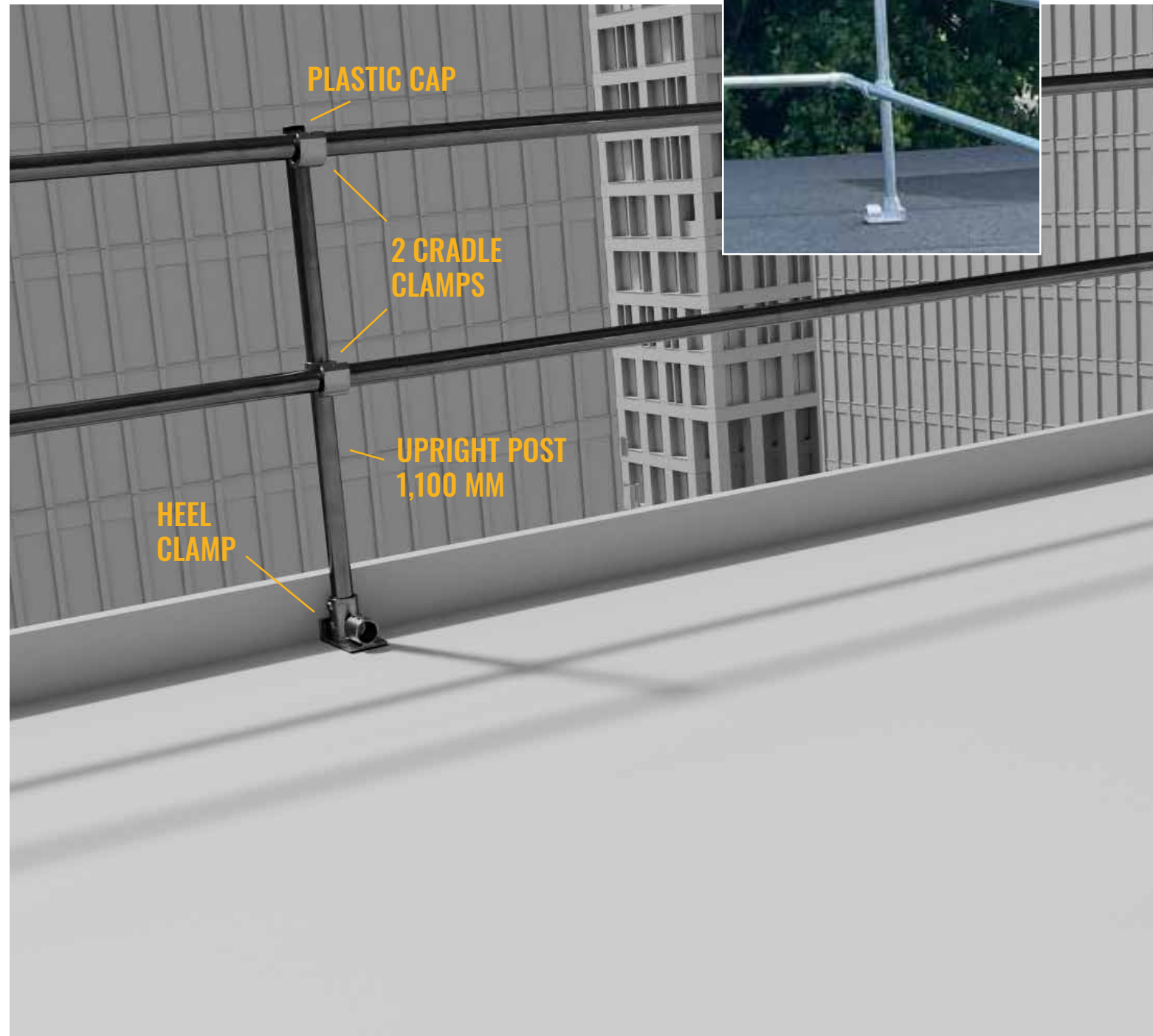
SYSTEM SETS

ROOF EDGE INTERMEDIATE SET

The intermediate set is usually located where corners exist on the roof. Usually, a single set will be attached at either side to form the needed protection at corners.

Kite's Roof Edge Intermediate Set price includes all the components required:

- ┐ 1 x Galvanised Heel Clamp
- ┐ 2 x Cradle Clamps
- ┐ 1 x Upright Post 1,100 mm
- ┐ 1 x Plastic Cap



INSTALLATION PROCEDURE Pre-installation checks

1

SITE SURVEY

Conduct a thorough site survey to assess the roof area where the system will be installed. Identify any potential hazards, obstructions, or irregularities that might affect the installation.

2

ROOF ASSESSMENT

Check the roof structure for stability and load-bearing capacity. Ensure that the roof surface is flat and suitable for the freestanding system.

3

COMPLIANCE WITH SAFETY REGULATIONS

Verify that the installation complies with local safety regulations and standards. Consider any specific requirements related to the type of building or industry.

4

CLEARANCE AND ACCESS

Ensure there is sufficient clearance around the installation area. Confirm safe access for workers during installation and maintenance.

5

WEATHER CONDITIONS

Check the weather forecast. Avoid installation during adverse weather conditions (e.g., strong winds, rain, snow). Extreme weather can impact safety and installation quality.

6

MATERIALS AND TOOLS

Gather all necessary tools and materials required for installation. Verify that the components of the KITE Group Ltd system are complete and in good condition.

7

ASSEMBLY INSTRUCTIONS

Familiarize yourself with the assembly instructions provided by KITE Group Ltd. Follow the manufacturer's guidelines carefully during installation.

8

WEIGHT DISTRIBUTION

Understand the weight distribution of the system. Ensure that the base plates or weights are evenly distributed to maintain stability.

9

ANCHOR POINTS

Identify suitable anchor points for attaching the system. Ensure that the anchor points are secure and compatible with the system.

10

TESTING AND INSPECTION

Conduct a test assembly to verify the fit and alignment of components. Inspect all parts for defects or damage before installation.

REMEMBER that safety is paramount when working at height. If you have any doubts or need professional assistance, consider consulting a qualified installer for a thorough assessment and guidance.

INSTALLATION PROCEDURE Step-by-step installation instructions

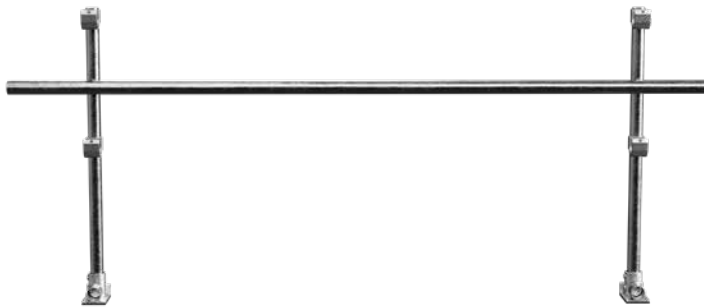
1



STAGE 1 Setting Up Support Legs

Begin by positioning yourself at least 2 metres away from the roof edge at the corner. Then, stand up the two support legs.

2

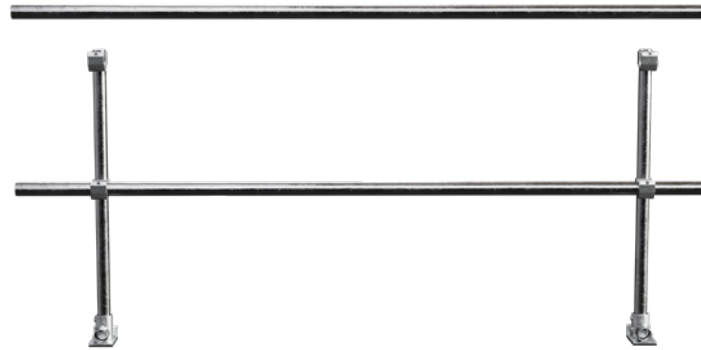


STAGE 2 Attaching Main Rail Tubes

Insert a main rail tube (T300-4) into the bottom Cradle Clamp (MFRG-JC) of each standing leg.

Position the tube so that at least 60 mm (2-1/2 inches) protrudes from the front of the cradle Clamp (MFRG-JC).

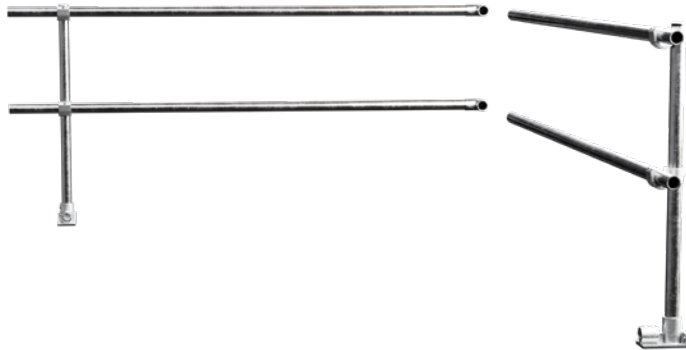
Tighten the grub screw on the Cradle Clamp to secure the tube.



Repeat the process with a second main rail tube, inserting it into the top Cradle Clamp in the same manner.

INSTALLATION PROCEDURE Step-by-step installation instructions

3



STAGE 3 Forming a Corner

Connect two 90° Elbows (125-D to one end of each of the Main Rail Tubes (T300-4. Position an additional Support Leg (up to 3 metres as per EN 13374 & BS 13700).



Slide a Main Rail Tube (T300-4) into the bottom Cradle Clamp and 90° Elbow. Similarly, slide another Main Rail Tube into the top Cradle Clamp and 90° Elbow. Tighten the grub screws on all clamps.

4



STAGE 4 Assembling the Bay

Work in pairs to carefully lift the assembled bay. Walk towards the leading edge and place the bay in the desired position.

Slide the corresponding Counterweight tube into the Base Foot. Always ensure the bay is held securely while performing this step. Note that at corner Support Legs, there is no need to connect a PVC Counterweight.

INSTALLATION PROCEDURE Step-by-step installation instructions

5



STAGE 5

To create a Single Weight Set connect Intermediate Support Legs and Plastic Counterweights

Slide one Cantilever Tube into the Heel Clamp without tightening it yet. Place one Locking Collar (179-D) in the front slot of the plastic Counterweight.

Slide one plastic Counterweight onto the free end of the Cantilever Tube. Ensure the guardrail is aligned and level, then tighten all grub screws.



6



STAGE 6 Connecting Main Rail Tubes and Support Legs

Move away from the corner and slide an External Tube Connector (149-D) onto the top and intermediate Main Rail Tubes. Make sure the External Tube Connectors are offset as shown.

Whenever possible, use only one External Tube Connector per bay. Stand up the next Support Leg at the desired position (up to 3 meters as per EN 13374 & BS 13700). Continue fitting the Main Rail Tube (T300-4) and Support Legs together for this section of guardrail.

Remember to connect the intermediate Cantilever Tubes and plastic Counterweights (KSE-22) to the Support Legs as you proceed.

INSTALLATION PROCEDURE Step-by-step installation instructions

7



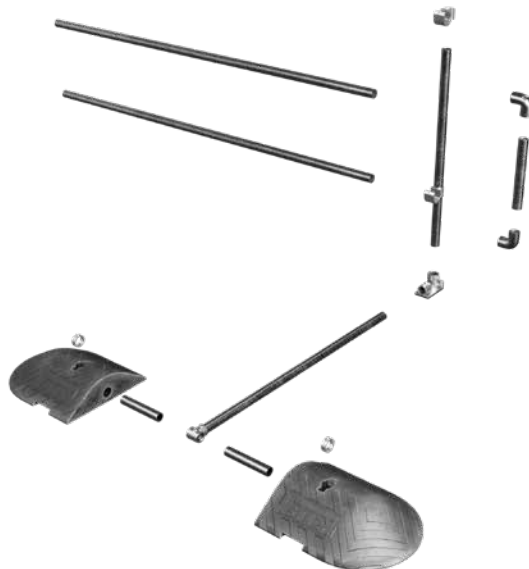
STAGE 7 Free-Standing End Details

Refer to the tables within the specification page for specific details.

Slide one Long Tee Clamp (104-D) onto the free end of the Cantilever Tube without tightening it. Insert one Double Weight Tube Connector into the free ends of the Long Tee Clamp and tighten the grub screws to secure it.

Place one Locking Collar (179-D) in the front slot of each Plastic Counterweight. slide one Plastic Counterweight onto each of the free ends of the Small Cantilever Tube.

8



STAGE 8 D-Return Bend

Using 2 x 125-D clamps to create a D-return form the system end detail.

WARNING:

For fall arrest purposes, never anchor any person to the system. Additionally, do not fix components like timber infill, advertising boards, or polyethylene sheets to the system.

INSTALLATION PROCEDURE

POST-INSTALLATION CHECKS

Periodic inspections conducted by qualified personnel are strongly recommended by manufacturers. In the United Kingdom, these inspections are mandated under Regulation 5 of the Workplace (Health, Safety & Welfare) Regulations, the Work at Height Regulations, and BS EN 365.

The inspection frequency will vary based on the environment, location, and usage but should occur at least once every 12 months.

During these inspections, follow these steps:

VISUAL ASSESSMENT

Walk through and visually inspect the entire installed system, considering the client's specific needs. Determine if any modifications or additional products are necessary due to refurbishment requirements or newly installed plant and equipment that require access.

CONFIGURATION CHECK

Verify that the installation configuration aligns with the original installation drawing or plan.

UNAUTHORISED MODIFICATIONS

Ensure that the system has not been altered or tampered with by unauthorised individuals.



GRUB SCREWS

Check that all grub screws are in place, properly greased, and torqued to the appropriate level.

HEIGHT AND LEVEL

Assess the general height and level of the system, including the positioning of its legs. This becomes critical if any tampering occurs between inspections.

CORROSION INSPECTION

Examine galvanised components for signs of corrosion. If significant rust is present, document it with digital photographs and include these in the inspection report.

TOE-BOARD BRACKETS

For systems with toe-boards, verify that the supporting brackets are in place, well-greased, and adequately torqued.

WALL/STRUCTURE FIXINGS

Where applicable, check fixings to walls or structures, including cat ladder clamps. Ensure they are secure and sufficiently torqued.

SYSTEM PLATE POSITION

Mark the system plate to indicate the date of the next required inspection. Assess whether additional plates are needed due to refurbishment work.

REMEMBER that these inspections play a crucial role in maintaining safety standards and preventing potential hazards. Regular assessments contribute to a safer working environment for everyone involved.



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