شركة حديد التقنية العليا الصناعية
HITECH STEEL INDUSTRIES

SKY LIGHT RAILING GUARD SYSTEMS

1. Free-standing, counterweighted design
2. Suitable for permanent or temporary installation
3. Optional self-closing safety gate

OVERVIEW:

This modular fall-protection system is designed specifically to prevent personnel from falling through fragile rooflights, dome lights and roof hatches while accessing the surrounding area for inspection or maintenance on a flat roof. The system forms a rigid, free-standing guard frame around the perimeter of the rooflight.

The free-standing, counterweighted design requires no fixings to either the fragile rooflight or the roofing membrane, allowing it to serve as either a permanent or a temporary installation. The system is supplied in component form for easy transport to site and up to roof level, and is assembled on site using standard tube-and-clamp fittings.

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KEY FEATURES

- Free-standing, counterweighted design — no penetration of the roof membrane or rooflight required.
- Suitable for permanent or temporary installation.
- Modular tube-and-fitting construction assembled on site from standard-length tubes.
- Recycled PVC weighted bases are the only components in contact with the roof membrane, insulating the membrane from heat transfer through the steel components.
- Optional self-closing safety gate (left- or right-hand) for protected access to roof hatches. Hot-dip galvanised steelwork for long-term corrosion resistance.

DESIGN VARIANTS

The system is available in two principal design configurations to suit the rooflight type and the protection strategy required. Both variants share the same free-standing, counterweighted operating principle.

VARIANT A- Perimeter Guardrail System:
The system is available in two principal design configurations to suit the rooflight type and the protection strategy required. Both variants share the same free-standing, counter-weighted operating principle.

Configuration	Plan Size (metric)	Plan Size (imperial)	Gate
Standard kit	3.0 m x 1.5 m	10' x 5'	No
Gate kit	2.0 m x 1.5 m	6'6" x 5'	Yes (self-closing)
Standard kit	2.0 m x 2.0 m	6'6" x 6'6"	No
Standard kit	4.0 m x 2.0 m	13' x 6'6"	No

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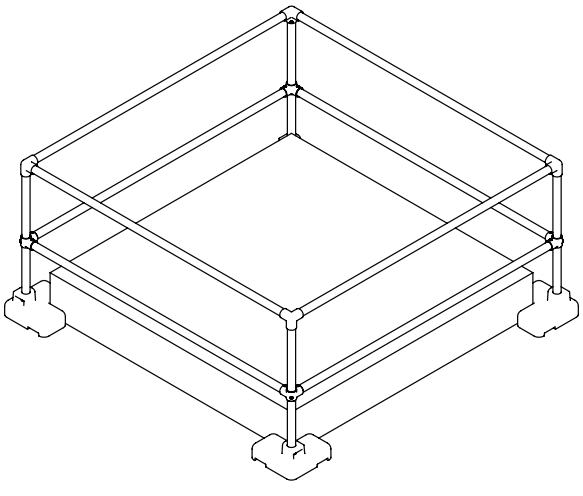
VARIANT B- Mesh-Infill (Compact) System:
A more compact configuration in which a galvanised steel wire-mesh panel is supported over the rooflight on a frame of primary and secondary tubing carried on weighted bases. The mesh panel laps onto the supporting frame and is secured along two opposite sides with mesh fixing clips. This variant provides a physical mesh barrier directly over the fragile rooflight rather than a tall perimeter guardrail, and is supplied in compact plan sizes for smaller rooflights and dome lights.

Configuration	Plan Size (metric)	Plan Size (imperial)	Mesh
Mesh kit(KDK12)	1.2 m x 1.2 m	4' x 4'	Included
Mesh kit(KDK18	1.8 m x 1.8 m	6' x 6'	Included



Standard(2m x 2m))

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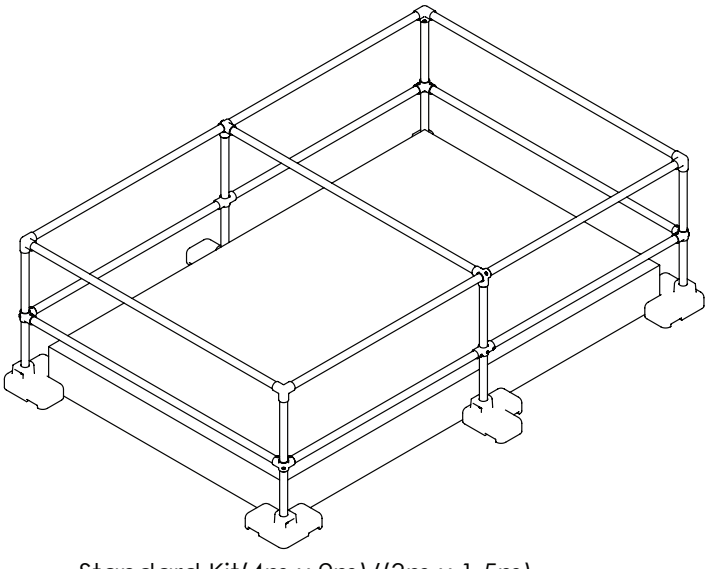
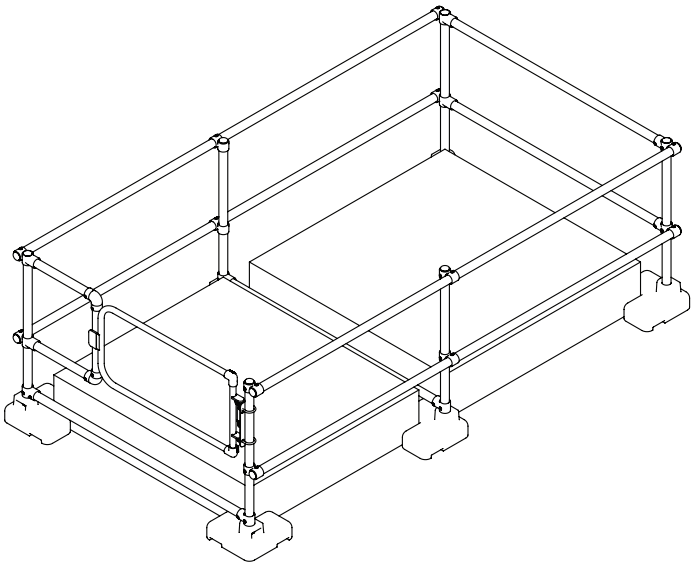
COMPARISON OF VARIANTS

Characteristic	Variant A — Perimeter Guardrail	Variant B — Mesh-Infill (Compact)
Protection principle	Perimeter edge guardrail around opening	Wire-mesh barrier over the opening
Profile / height	Full guardrail height	Low profile
Mesh panel	Not used	Galvanised steel mesh, cut to size on site
Gate option	Available (left- or right-hand)	Not applicable
Plan sizes	3.0x1.5, 2.0x1.5, 2.0x2.0, 4.0x2.0 m	1.2x1.2, 1.8x1.8 m
Typical rooflight size	Larger rooflights & hatches	Smaller rooflights & domes
Base type	Recycled PVC weighted base	Recycled PVC weighted base (compact)



Standard Kit(4m x 2m)/(3m x 1.5m)



Gate Kit(4m x 2m)/(3m x 1.5m)

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FITTINGS AND COMPONENTS

The framework is assembled from cast-iron tube fittings and supporting components. Fittings are sized to suit 42 mm OD tube.

Component	Function	Material / Coating
Weighted base	Free-standing support; locks standards in position and is the only part in contact with the roof membrane	Recycled PVC
Collar	Locates the vertical standard into the weighted base and is secured by a grub screw	Malleable cast iron to BS 1562, galvanised to BS EN ISO 1461
90° side outlet elbow	Connects the top guardrail to the vertical standard at corners	Malleable cast iron to BS 1562, galvanised to BS EN ISO 1461
90° side outlet tee	Connects the intermediate guardrail to the vertical standard at corners	Malleable cast iron to BS 1562, galvanised to BS EN ISO 1461
90° elbow	Handles corners and changes in level	Malleable cast iron to BS 1562, galvanised to BS EN ISO 1461
Cross-over fitting	Links horizontal primary and secondary tubing (Variant B)	Malleable cast iron to BS 1562, galvanised to BS EN ISO 1461
Mesh fixing clip	Secures the wire mesh panel to the primary tube; used on two opposite sides	Galvanised steel to BS EN ISO 1461
Mesh panel	Wire mesh barrier laid over the supporting frame (Variant B); cut to size on site	Galvanised steel to BS EN ISO 1461
Tube end plug	Closes the top of the vertical standard tube	PVC

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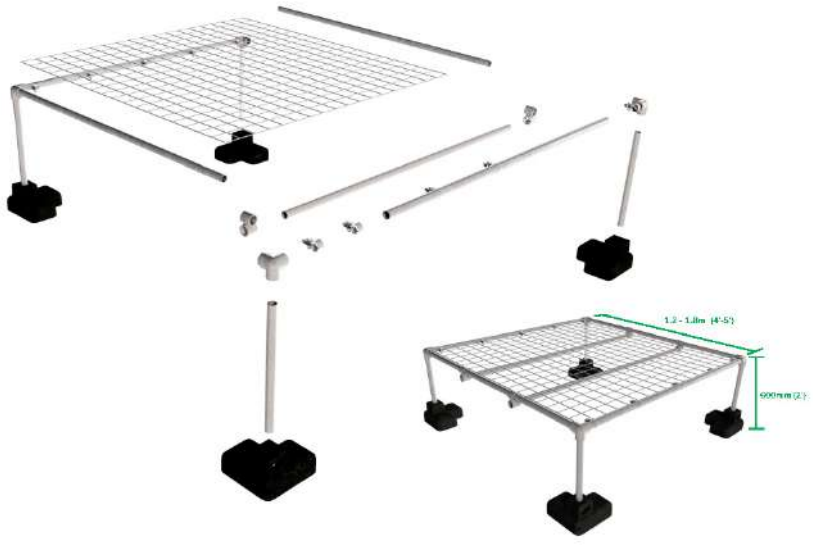

MATERIAL

Element	Material	Finish / Standard
Steel tube	Steel	Hot-dip galvanised to BS EN ISO 1461 (approx. 40 micron average coating)
Cast fittings	Malleable cast iron to BS 1562	Galvanised after manufacture to BS EN ISO 1461
Mesh fixing clips	Galvanised steel	Galvanised to BS EN ISO 1461
Wire mesh panel (Variant B)	Galvanised steel mesh	Galvanised to BS EN ISO 1461; cut to size on site
Weighted bases	Recycled PVC	Insulating barrier between steelwork and roof membrane
Tube end plug	PVC	—

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STANDARDS & COMPLIANCE

The system has been designed and tested with reference to the following standards and guidance. Compliance should be confirmed against the specification applicable to the project and region.

Reference	Scope
BS EN ISO 1461	Hot-dip galvanised coatings on iron and steel articles — specification and test methods
BS 1562	Malleable cast iron fittings
EN 13374	Temporary edge protection systems
EN 14122-3	Safety of machinery — permanent means of access — stairs, stepladders and guardrails
BS EN 365	Periodic examination of equipment
ACR Red Book (non-fragility test)	Test for non-fragility of roof assemblies (referenced for the mesh-infill variant)

Non-fragility test (mesh-infill variant): the mesh configuration has been tested against the criteria and loadings of the ACR test for non-fragility of roof assemblies. A 45 kg (100 lb) weight free-falling a distance of 1.2 m (4 ft) was arrested by deformation of the wire-mesh panel with no penetration of the mesh.

Regulatory Guidance (UK / Europe)

- Work at Height Regulations.
- HSG33 — Health & Safety in Roof Work.
- Workplace (Health, Safety and Welfare) Regulations.

Important — Polycarbonate rooflights: Although polycarbonate is strong and durable, it can fail prematurely if treated incorrectly. Contact with plasticiser-bearing materials (e.g. plastisol-coated steel or PVC tape), permanent stresses, certain chemicals and trapped water can all accelerate degradation. Non-fragility of any rooflight should not be assumed in the long term. The protection system should not be relied upon as a substitute for correct rooflight specification and maintenance.

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TUBE & PIPE SPECIFICATION

All structural tube used in the framework is standardised to 42 mm outside diameter (nominal). Tubes are supplied in standard lengths and cut to suit the rooflight on site where required.

Component	Outside Diameter	Standard Lengths	Material / Coating
Guardrail tube (Variant A)	42 mm	1.5 m, 2.0 m, 3.2 m	Galvanised steel to BS EN ISO 1461
Vertical standard (Variant A)	42 mm	1.1 m	Galvanised steel to BS EN ISO 1461
Primary tube (Variant B)	42 mm	1.2 m, 1.8 m	Galvanised steel to BS EN ISO 1461
Secondary tube (Variant B)	42 mm	1.26 m, 1.86 m	Galvanised steel to BS EN ISO 1461
Vertical standard (Variant B)	42 mm	0.6 m	Galvanised steel to BS EN ISO 1461

Note: 42 mm OD is the standardised tube size for all framework members across both variants. Wall thickness is selected by the manufacturer to suit the loading and the relevant standard.