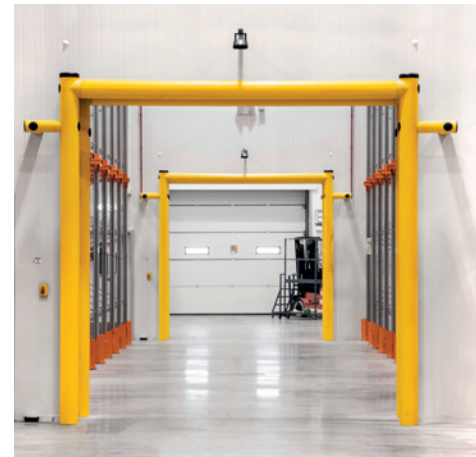


Kingspan SafeDefence Protection Systems

High Performance Polymer Impact Protection Systems



Kingspan SafeDefence Protection Systems

Kingspan SafeDefence Protection Systems consist of a high performance synthetic polymer technology designed to protect people, equipment and assets from impact.



FLEXIBLE &
DURABLE



IMPACT
RESISTANT



BUILT-IN
REINFORCEMENT



CHEMICAL
RESISTANT



UV RESISTANT



SUITABLE FOR
TEMPERATURES
BETWEEN
-40°C TO +80°C



HYGIENIC &
EASY TO CLEAN
WITH SMOOTH
SURFACES



FOODSAFE



UNIQUE SINGLE
'HIDDEN' FIX
SYSTEM



QUICK & EASY
REPAIR



MINIMUM
MAINTENANCE,
ZERO PAINTING



TOTAL
ADAPTABILITY



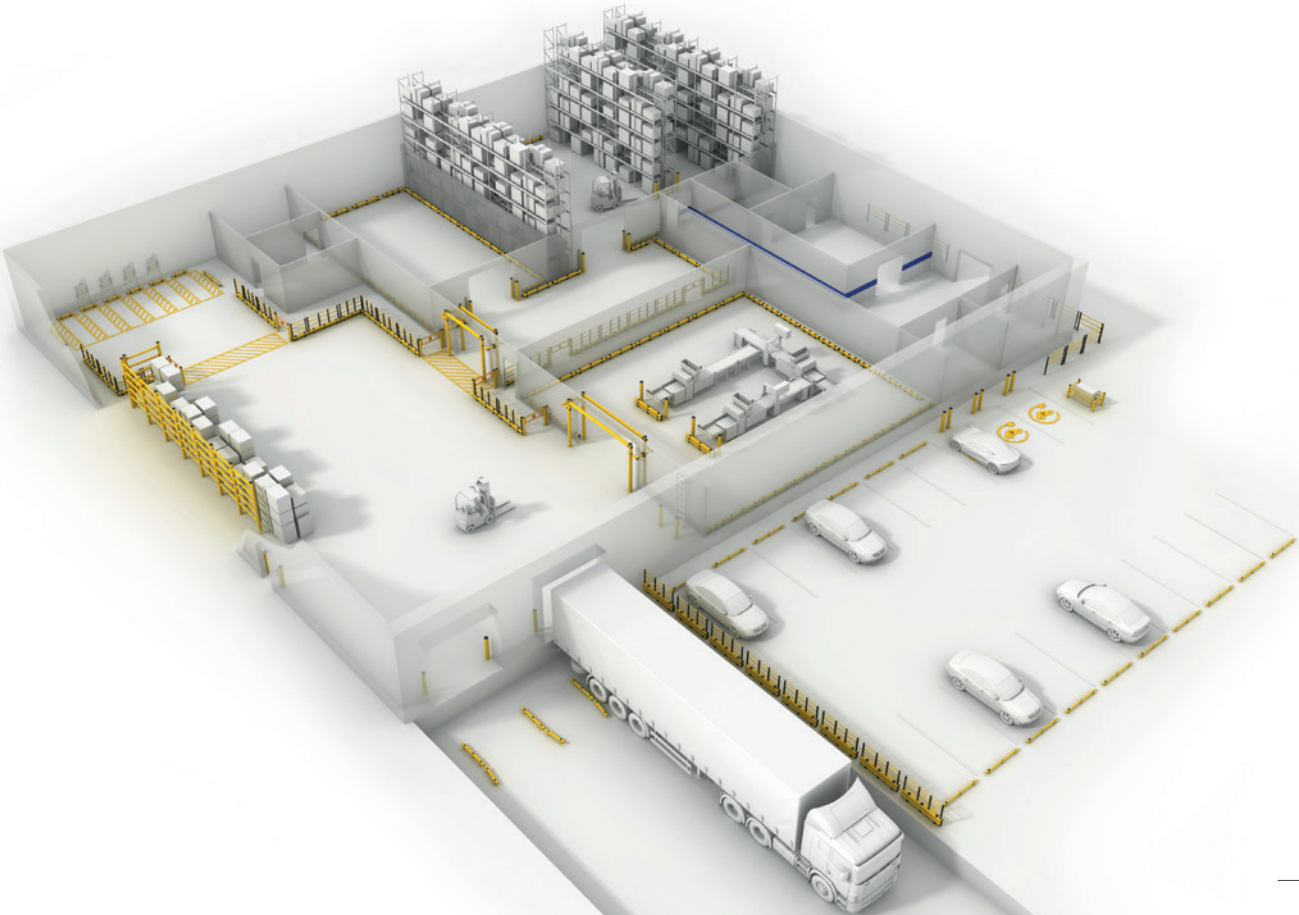
NO EXPOSED
STEEL - ZERO
CORROSION RISK



40% RECYCLED
CONTENT & 100%
RECYCLABLE

Contents

Installation	4	Solid Range	20
Testing	6	KPSPost-S	21
FLEXsafe™ Range	9	KPSBarrier-S	22
KPSPost-H	10	KPSDoubleBarrier-S	23
KPSBarrier-H	11	KPSBarrierRail-S	24
KPSDoubleBarrier-H	12	KPSGate	25
KPSPedestrianRail-H	13	KPSKerb-S	26
KPSBarrierRail-H	14	KPSColumnProtction	27
KPSDoubleBarrierRail-H	15	KPSTrim	28
KPSGoalpost-H	16	KPSWallTrim	29
KPSHeightRestrictor & KPSToppleBarrier	19	Service & Support	31

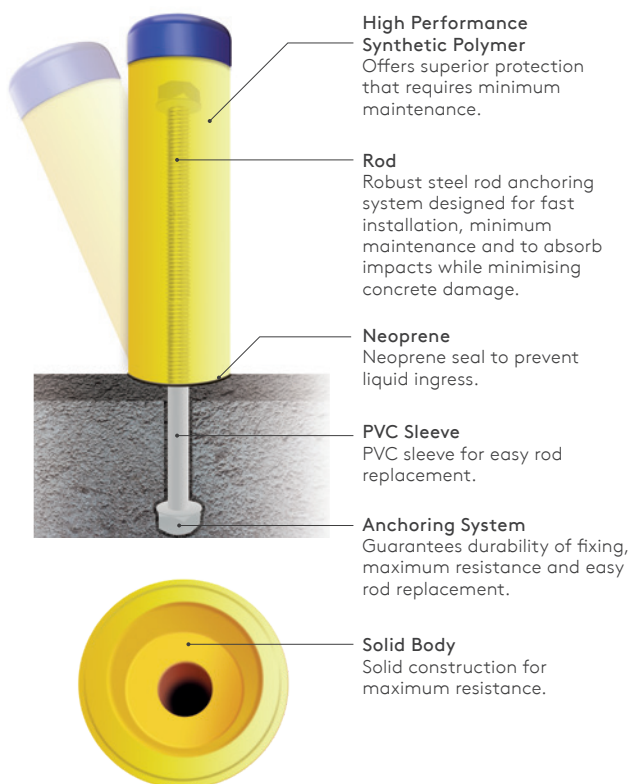


Installation

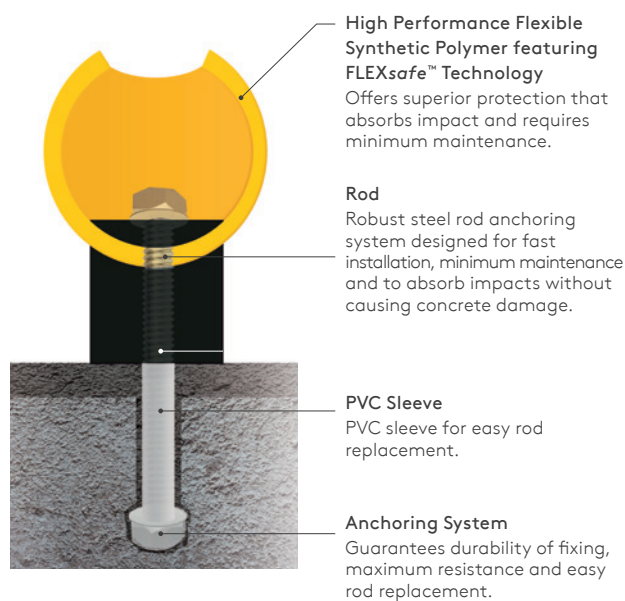
The unique single threaded-rod anchoring system provides exceptional impact resistance and strength while also allowing for fast installation, easy maintenance and minimum concrete damage upon impact.

Kingspan's SafeDefence Protection can be installed up to twice as fast as comparable protection systems. The illustrations below show the installation procedure for KPSPost-S and KPSBarrier-H. However, please contact the Kingspan Tech-eXchange team for installation guidance on other products.

KPSPost-S Components



KPSBarrier-H Components



Installation Method



Drill concrete to specified size.



Vacuum debris and dust appropriately.



Mix and pour grout/resin into hole.



Insert protection system, leave to set and tighten.



Fix cap.



Assembly complete.

Testing

Kingspan SafeDefence Protection Systems are designed to safely resist impacts.

Testing

Kingspan endeavours to underpin performance with third party independent testing. The university of Engineering and Architecture of Zaragoza, Spain have recently carried out onerous static load testing on various Kingspan SafeDefence Protection Systems to understand the force they can withstand, deflection measurements and their impact resistance behaviour. They have also carried out a study using finite element analysis to further understand mechanical performance. Analysis and test results as shown in the test report indicate that the performance of Kingspan SafeDefence Protection Systems is superior due to their unique design.

As well as static load testing, dynamic impact testing has also been carried out on our entire product range. This has been completed by an independently verified testing facility, TUV Nord, showing market leading impact resistance.

Materials

Kingspan SafeDefence Protection systems are manufactured from a high performance synthetic polymer. Protection systems that feature FLEXsafe™ Technology benefit from increased elasticity that increases the protection systems ability to safely absorb forces upon impact. All FLEXsafe™ sections are hollow whereas the standard range of protection products are solid. Besides impact and mechanical performance testing and analysis, the high performance synthetic polymer that is used in Kingspan SafeDefence Protection systems is robustly tested for:

- Food Contact – tested to BS EN 1186-2:2002 and BS EN 1186-3:2002 for materials and articles in contact with foodstuff;
- UV Resistance – tested to BS EN ISO 4892-2:2014;
- Chemical Resistance – high resistance to acids, alkali and solvents;
- Recyclability – typically 40% recycled polymer material and 100% recyclable.

The technical specification are also outlined in the table opposite.



Escuela de
Ingeniería y Arquitectura
Universidad Zaragoza



Technical Specification

Test	Result
Density (g/cm ³) - ISO 1183	0.95
Yield Stress (N/mm ²) - DIN EN ISO 527	28
Elongation Resistance (%) - DIN EN ISO 527	+8
Elongation at Break (%)	300
Tensile E Modulus (MPa) - DIN EN ISO 527	850
Impact Strength (kJ/m ²) - DIN EN ISO 179	Without break
Notched Impact Strength (kJ/m ²) - DIN EN ISO 179	50
Ball Indentation Hardness (N/mm ²) - DIN EN ISO 2039-1	45
Shore Hardness (N/mm ²) - D ISO 868	66
Average Thermal Coefficient of Elongation (K ⁻¹) - DIN 53752	1'8 . 10 ⁻⁴
Thermal Conductivity (W/m.K) - DIN 52612	0.38
Dielectric Strength (kV/mm) - VDE 0303-21	44
Surface Resistance (Ohm) - DIN IEC 167	10 ¹⁴
Temperature Range (°C)	-100 to +80
Chemical Resistance (Acids, Alkalis and Solvents)	High
Physiologically Acceptable	Yes
Welding	Yes
Hot Forming	Possible



KPSPost-H

Featuring FLEXsafe™ Technology – a superior high performance flexible synthetic polymer technology designed to safely absorb impacts – KPSPost-H is available in two diameters and various heights.

KPSPost-H provides a superior durable protection solution that can be used in a range of different applications from door protection to signposting on pedestrian walkways.



Technical Specification



Dimensions (mm)			Drilling (mm)	
Diameter	Height	Rod Ø	Hole Ø	Depth
110	1000	30	68	150
110	1500	30	68	150
110	2000	30	68	150
170	800	30	68	150
170	1000	30	68	150
170	1200	30	68	150
170	1500	30	68	150
170	2000	30	68	150

Impact rated up to 26,900 Joules - For more information please refer to datasheet.

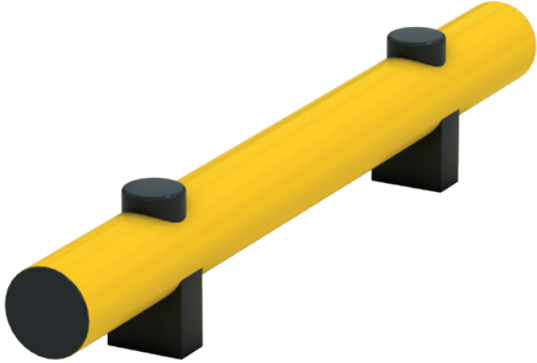


FLEXsafe™

KPSBarrier-H

KPSBarrier-H uses FLEXsafe™ Technology to provide excellent impact resistance combined with high flexibility.

KPSBarrier-H is available in diameters of 110mm and 170mm with a range of lengths as per the table below. KPSBarrier-H is also available with a 40mm diameter reinforcement bar at the bottom. It can also feature two 40mm diameter reinforcement bars to increase the system height to 300mm.



Technical Specification

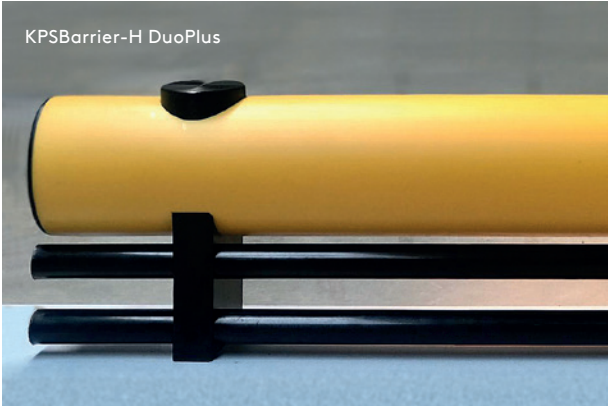
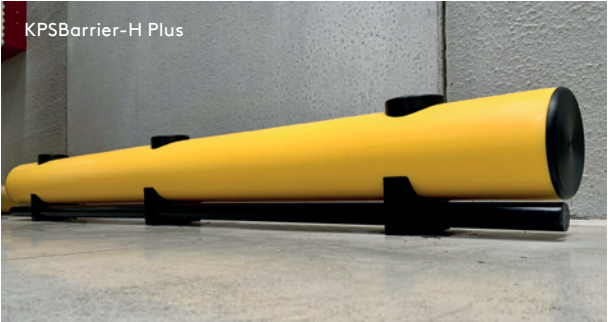


KPSBarrier-H - Dimensions (mm)					Drilling (mm)	
Diameter	Length	No. of Bases	Height	Rod Ø	Hole Ø	Depth
110	500	2	175	14	36	150
110	1000	2	175	14	36	150
110	1500	3	175	14	36	150
110	2000	3	175	14	36	150
170	500	2	220	16	38	150
170	1000	2	220	16	38	150
170	1500	3	220	16	38	150
170	2000	3	220	16	38	150

KPSBarrier-H Plus - Dimensions (mm)					Drilling (mm)	
Diameter	Length	No. of Bases	Height	Rod Ø	Hole Ø	Depth
170 / 40	500	2	220	16	38	150
170 / 40	1000	2	220	16	38	150
170 / 40	1500	3	220	16	38	150
170 / 40	2000	3	220	16	38	150

KPSBarrier-H DuoPlus - Dimensions (mm)					Drilling (mm)	
Diameter	Length	No. of Bases	Height	Rod Ø	Hole Ø	Depth
170 / 40	500	2	300	16	38	150
170 / 40	1000	2	300	16	38	150
170 / 40	1500	3	300	16	38	150
170 / 40	2000	3	300	16	38	150

Impact rated up to 16,100 Joules - For more information please refer to datasheet.

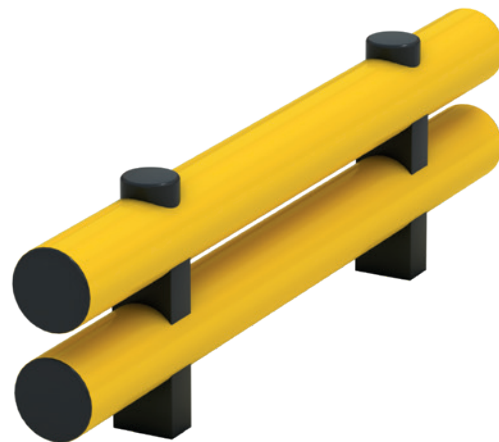


KPSDoubleBarrier-H

KPSDoubleBarrier-H is designed to offer protection to potential impacts that are up to 450mm high.

The combination of FLEXsafe™ technology and the unique threaded rod anchoring system provides the basis for safe protection.

KPSDoubleBarrier-H is also available with the option of a 40mm reinforcement bar (KPSDoubleBarrier-H Plus) to provide additional protection.



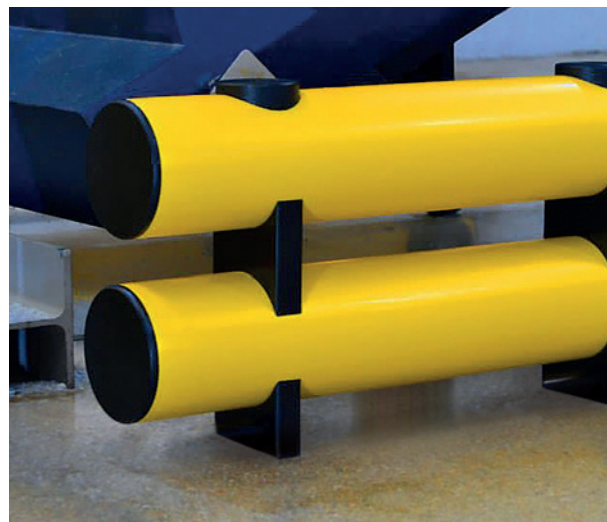
Technical Specification



KPSDoubleBarrier-H - Dimensions (mm)					Drilling (mm)	
Diameter	Length	No. of Bases	Height	Rod Ø	Hole Ø	Depth
110	500	2	330	16	38	150
110	1000	2	330	16	38	150
110	1500	3	330	16	38	150
110	2000	3	330	16	38	150
170	500	2	450	16	38	150
170	1000	2	450	16	38	150
170	1500	3	450	16	38	150
170	2000	3	450	16	38	150

KPSDoubleBarrier-H Plus - Dimensions (mm)					Drilling (mm)	
Diameter	Length	No. of Bases	Height	Rod Ø	Hole Ø	Depth
170 / 40	500	2	450	16	38	150
170 / 40	1000	2	450	16	38	150
170 / 40	1500	3	450	16	38	150
170 / 40	2000	3	450	16	38	150

Impact rated up to 21,300 Joules - For more information please refer to datasheet.



FLEXsafe™

KPSPedestrianRail-H

KPSPedestrianRail-H has been designed to stop personnel from reaching restricted areas.

The system can be used to create walkways for foot traffic and restrict people from entering spaces they are not permitted. Supplied with 'connectors' that link the vertical posts together.

Technical Specification

Dimensions (mm)					Drilling (mm)	
Diameter	Length	No. of Bases	Height	Rod Ø	Hole Ø	Depth
70 / 40	1000	2	1100	14	36	150
70 / 40	1500	2	1100	14	36	150



KPSBarrierRail-H

Featuring FLEXsafe™ Technology, KPSBarrierRail-H is a unique protection solution to separate people from traffic.

It is designed to offer optimum protection to people from moving traffic by safely deflecting upon impact and bring forces gradually to a stop.

An additional 40mm reinforcement bar (KPSBarrierRail-H Plus) and 'connectors' that link the vertical posts together are available as optional extras.



Technical Specification



KPSBarrierRail-H - Dimensions (mm)					Drilling (mm)		
Diameter	Length	No. of Bases	Height	Rod Ø	Hole Ø	Depth	
170 / 70 / 40	1000	2	1100	16	38	150	
170 / 70 / 40	1500	3	1100	16	38	150	
170 / 70 / 40	2000	3	1100	16	38	150	

KPSBarrierRail-H Plus - Dimensions (mm)					Drilling (mm)		
Diameter	Length	No. of Bases	Height	Rod Ø	Hole Ø	Depth	
170 / 70 / 40	1000	2	1100	16	38	150	
170 / 70 / 40	1500	3	1100	16	38	150	
170 / 70 / 40	2000	3	1100	16	38	150	

Impact rated up to 16,100 Joules - For more information please refer to datasheet.



FLEXsafe™

KPSDoubleBarrierRail-H

KPSDoubleBarrierRail-H is robustly designed using FLEXsafe™ Technology to provide optimum protection to people from moving traffic.

Upon impact the system deflects gradually bringing forces safely to a stop. Its design, performance and appearance is exceptional.

An additional 40mm reinforcement bar (KPSDoubleBarrierRail-H Plus) and 'connectors' that link the vertical posts together are available as optional extras.



Technical Specification



KPSDoubleBarrierRail-H - Dimensions (mm)					Drilling (mm)		
Diameter	Length	No. of Bases	Height	Rod Ø	Hole Ø	Depth	
170 / 70 / 40	1000	2	1100	16	38	150	
170 / 70 / 40	1500	3	1100	16	38	150	
170 / 70 / 40	2000	3	1100	16	38	150	

KPSDoubleBarrierRail-H Plus - Dimensions (mm)					Drilling (mm)		
Diameter	Length	No. of Bases	Height	Rod Ø	Hole Ø	Depth	
170 / 70 / 40	1000	2	1100	16	38	150	
170 / 70 / 40	1500	3	1100	16	38	150	
170 / 70 / 40	2000	3	1100	16	38	150	

Impact rated up to 21,300 Joules - For more information please refer to datasheet.



KPSGoalpost-H

KPSGoalpost-H is a proven door perimeter protection system that features FLEXsafe™ technology.

Its unique design, provides maximum protection for internal or external door systems. It is designed to safely deflect upon impact and ensure optimum resistance and can be manufactured to suit specific door sizes.

KPSGoalpost-H can be mechanically fixed to a range of substrates including insulated panel systems and concrete walls. Fixing methods, training and installation support is available from Kingspan free of charge.



FLEXsafe™

Goalpost Replacement



1 Measure and drill locations for anchor fixings.



2 Ensure area is clean and free from debris.



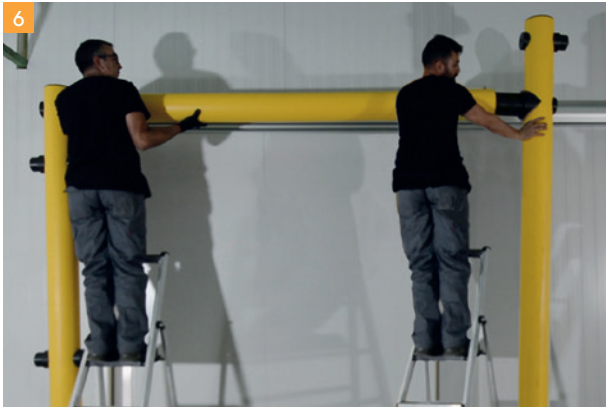
3 Cement anchor fixing in position and allow to cure.



4 Locate anchor base and fix securely.



5 Position vertical posts.



6 Position and fix horizontal beam to posts. Appropriate lifting devices should be used – step ladders or scissors lifts may be suitable subject to site requirements.



7 Reinforcement arm components.



8 Fix reinforcement arm to vertical post.



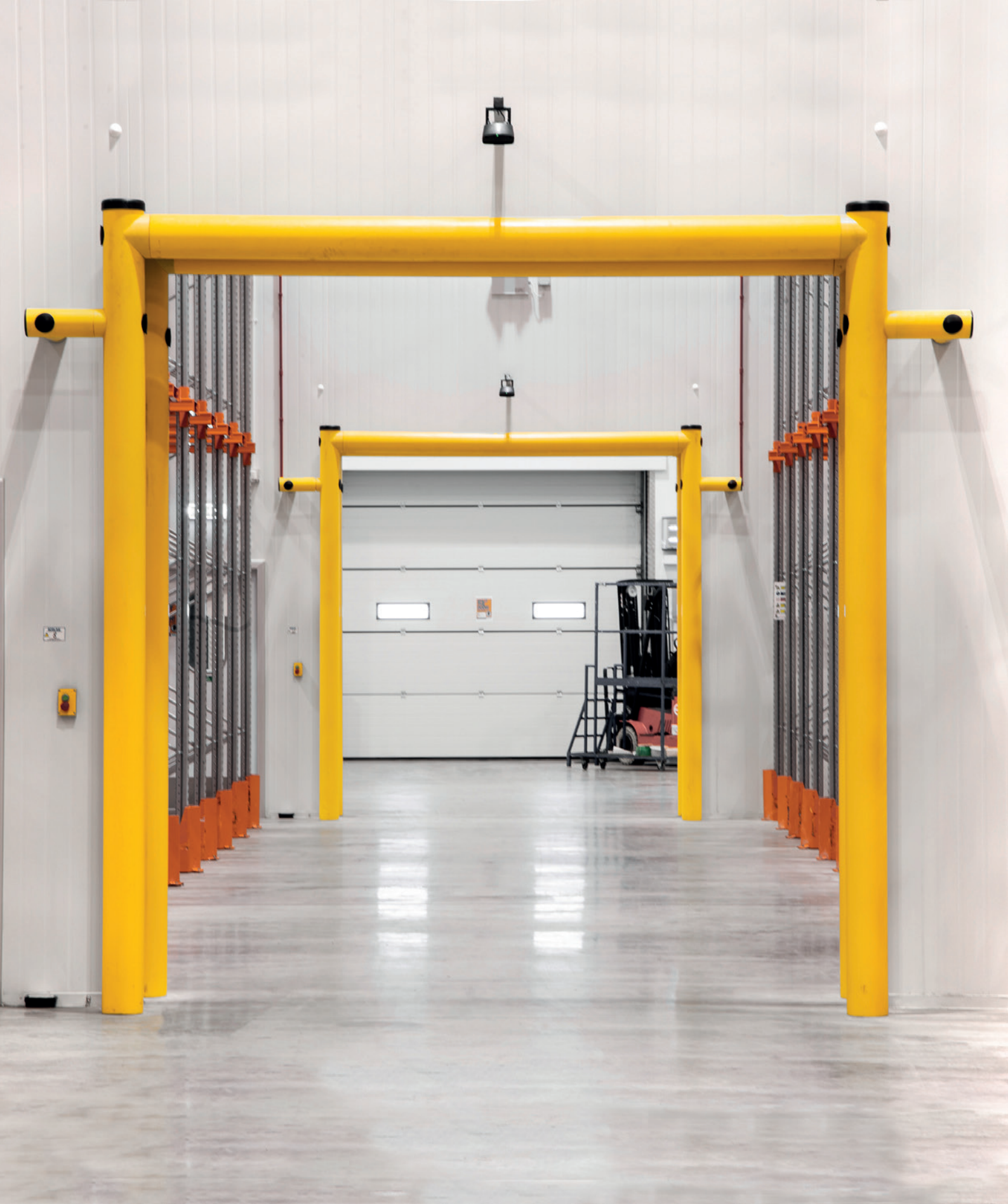
9 Assemble wall reinforcement arm components.



10 Assemble all reinforcement arm components and position on wall.



11 Securely fix reinforcement arm backing plate on other side of the wall.



KPSHeightRestrictor-H

KPSHeightRestrictor uses our FLEXsafe range to alert vehicle traffic from an overhead impact.

The system can be supplied in different diameters and a range of lengths to suit the intended site. Supplied with chains ready to be hung.

Technical Specification

Dimensions (mm)			
Diameter	Length	No. of Chains	Chain Length
110	2000	2	1500



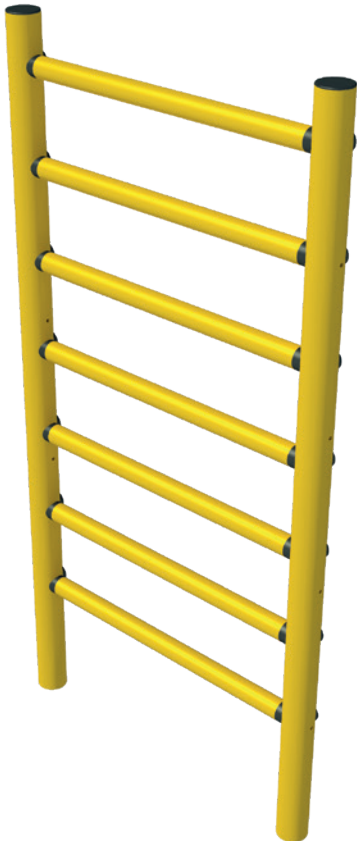
KPSToppleBarrier-H

KPSToppleBarrier is a system designed to keep pedestrians safe from falling goods.

The system can be manufactured to bespoke heights up to 6m tall and linked together to create one continuous run.

Technical Specification

Dimensions (mm)					Drilling (mm)	
Diameter	Length	No. of Bases	Height	Rod Ø	Hole Ø	Depth
170	2000	2	By Design	30	68	150



Solid Range

KPSPost-S

Our KPSPost-S provides a high-performance solution for the protection of building corners, inner and outer door areas and walls, as well as smaller surface areas.

KPSPost-S is manufactured from a high performance synthetic polymer to provide maximum impact resistance and, as it is self-coloured as opposed to painted, offers superior resistance to UV rays.

Technical Specification



Dimensions (mm)			Drilling (mm)	
Diameter	Height	Rod Ø	Hole Ø	Depth
70	266	20	48	150
100	430	30	68	150
100	530	30	68	150
120	430	30	68	150
120	530	30	68	150
120	800	30	68	150
180	430	30	68	150

Impact rated up to 26,900 Joules - For more information please refer to datasheet.



KPSBarrier-S

The unique anchoring system of KPSBarrier-S offers ultimate protection for columns and walls while allowing fast installation and no concrete damage upon impact.

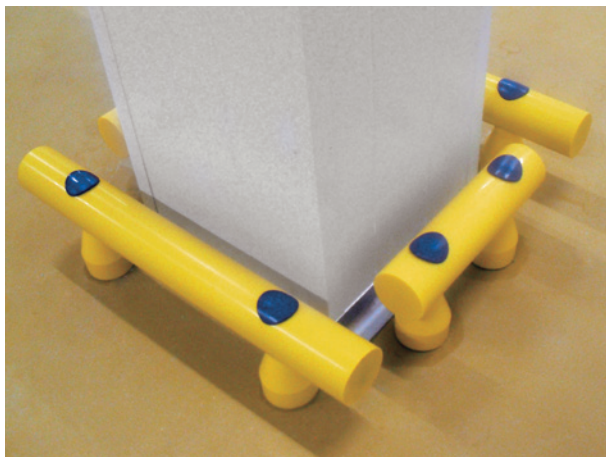
KPSBarrier-S can also be used as a wheel guide to help guide drivers reversing articulated trailers to dock leveller doors for loading / offloading purposes. Manufactured from high performance synthetic polymer technology, its durable design provides excellent impact resistance and ensures optimum protection.

Technical Specification



Dimensions (mm)					Drilling (mm)	
Diameter	Length	No. of Bases	Height	Rod Ø	Hole Ø	Depth
70	500	2	120	16	38	150
70	1000	2	120	16	38	150
70	1500	3	120	16	38	150
70	2000	3	120	16	38	150
100	500	2	150	20	48	150
100	1000	2	150	20	48	150
100	1500	3	150	20	48	150
100	2000	3	150	20	48	150
120	500	2	170	20	48	150
120	1000	2	170	20	48	150
120	1500	3	170	20	48	150
120	2000	3	170	20	48	150

Impact rated up to 36,425 Joules - For more information please refer to datasheet.



KPSDoubleBarrier-S

With its extremely secure anchoring, KPSDoubleBarrier-S provides high impact resistance, offering a superior solution for the protection of walls and equipment.

KPSDoubleBarrier-S is manufactured from high performance synthetic polymer protection technology to provide maximum protection and impact resistance.

Technical Specification



Dimensions (mm)					Drilling (mm)	
Diameter	Length	No. of Bases	Height	Rod Ø	Hole Ø	Depth
70	500	2	230	20	48	150
70	1000	2	230	20	48	150
70	1500	3	230	20	48	150
70	2000	3	230	20	48	150
100	500	2	300	20	48	150
100	1000	2	300	20	48	150
100	1500	3	300	20	48	150
100	2000	3	300	20	48	150
120	500	2	340	20	48	150
120	1000	2	340	20	48	150
120	1500	3	340	20	48	150
120	2000	3	340	20	48	150

Impact rated up to 36,425 Joules - For more information please refer to datasheet



KPSBarrierRail-S

KPSBarrierRail-S is designed to provide superior protection in pedestrian and high traffic areas.

KPSBarrierRail-S is manufactured from high performance synthetic polymer protection technology.

Its robust design protects people and high value equipment / assets from impacts that may cause injury or damage.

Technical Specification



Dimensions (mm)				Drilling (mm)		
Diameter	Length	No. of Bases	Height	Rod Ø	Hole Ø	Depth
70 / 70	1500	3	1000	16	38	150
70 / 70	2000	3	1000	16	38	150
100 / 70	500	2	1000	20	48	150
100 / 70	1000	2	1000	20	48	150
100 / 70	1500	2	1000	20	48	150
100 / 70	2000	3	1000	20	48	150
120 / 70	500	2	500	20	48	150
120 / 70	1000	2	500	20	48	150
120 / 70	1500	3	500	20	48	150
120 / 70	2000	3	500	20	48	150
120 / 70	500	2	800	20	48	150
120 / 70	1000	2	800	20	48	150
120 / 70	1500	3	800	20	48	150
120 / 70	2000	3	800	20	48	150
120 / 70	500	2	1000	20	48	150
120 / 70	1000	2	1000	20	48	150
120 / 70	1500	3	1000	20	48	150
120 / 70	2000	3	1000	20	48	150

Impact rated up to 36,425 Joules - For more information please refer to datasheet.



KPSGate

Designed to provide a safe entry / exit point for protected pedestrian walkways, KPSGate can be supplied mechanically fixed to KPSPost-S as a system to provide a fully enclosed walkway.

KPSGate is designed and manufactured with pedestrian safety in mind while using the same high performance synthetic polymer technology as other protection systems.

KPSGate compliments KPSPedestrianRail-H, KPSBarrierRail-H, KPSPDoubleBarrierRail-H and KPSBarrierRail-S.



Technical Specification

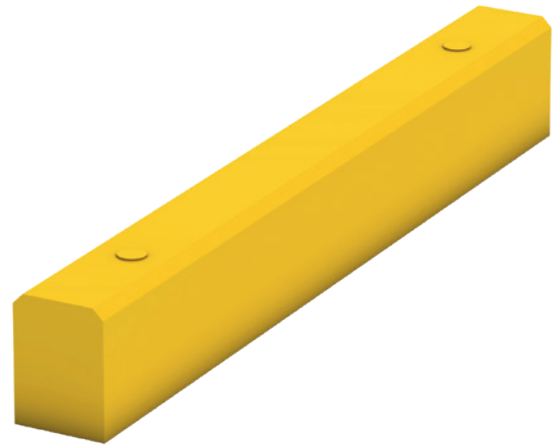
Product Code	Product Dimensions
GATE	1100 mm x 400 mm



KPSKerb-S

The KPSKerb-S protection system is a solid synthetic polymer kerb system that is 150mm high and available in different lengths.

KPSKerb-S is designed to provide maximum protection while also stopping the forks of forklifts from penetrating the protection system. It has a range of uses for both internal and external applications.



Technical Specification



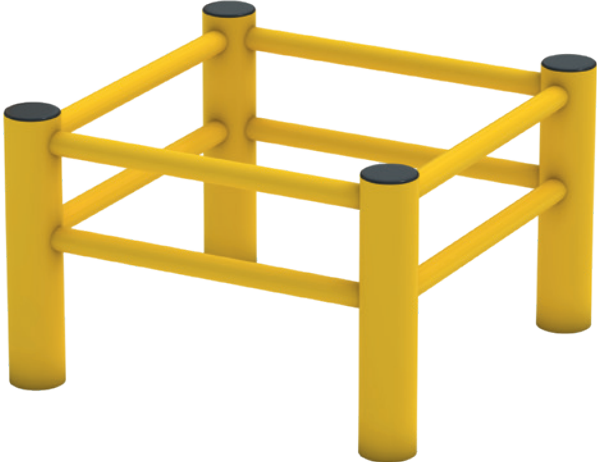
Dimensions (mm)					Drilling (mm)	
Width	Length	Height	No. of Bases	Rod Ø	Hole Ø	Depth
80	500	150	2	16	38	150
80	1000	150	2	16	38	150
80	1500	150	3	16	38	150
80	2000	150	3	16	38	150



KPSColumnProtection

KPSColumnProtection is designed to provide full perimeter protection around columns.

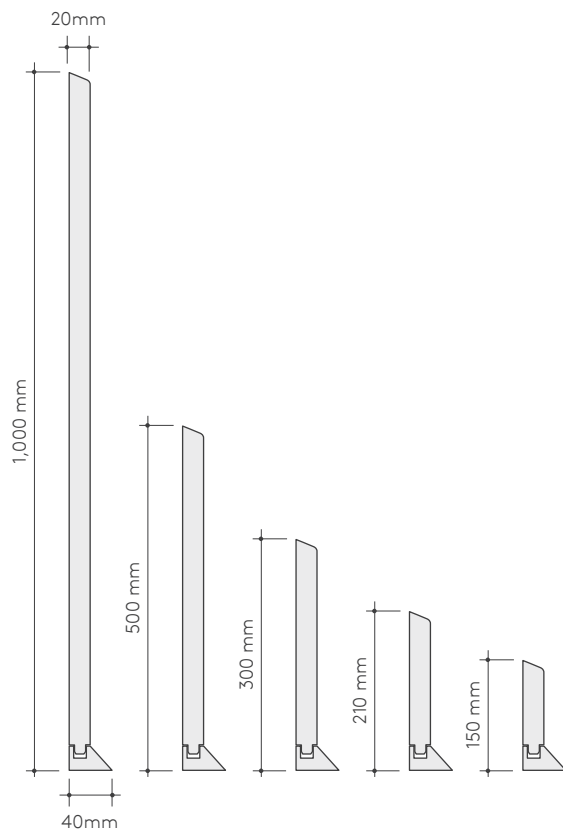
The protection is a bespoke system that can be manufactured from our solid or FLEXsafe range to suit any application required.



KPSTrim

Manufactured from robust polymer technology, KPSTrim is a two-piece protective plinth for protection at the base of building corners, columns and walls.

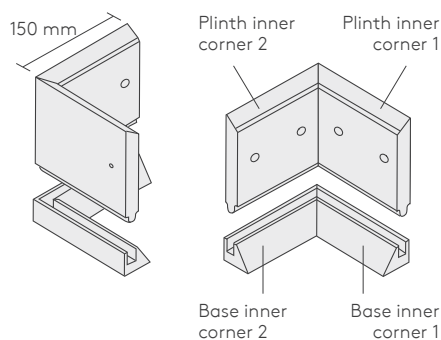
Supplied in 2 metre lengths and available in various heights, KPSTrim is easy to install, fixing to both floor and wall with hidden fasteners. Its superior impact resistance makes it ideal for highly trafficked areas.



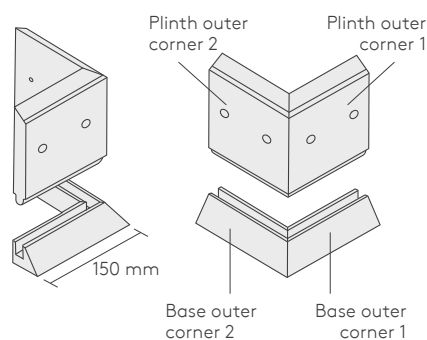
Technical Specification

KPSTrim	
Standard length	2 m
Height	1,000 mm, 500 mm, 300 mm, 210 mm and 150 mm
Base thickness (± 1 mm)	40 mm
Plinth thickness (± 1 mm)	20 mm
Density	0.91 g/cm ³
Conduction coefficient	0.17 W/m °C
Breaking elongation	70 %
Working temperature range (max. / min.)	60 °C / -20 °C
Impact resistance	7
Shore hardness	72
Chemical resistance - acids / alkalis	Excellent

Inner Corner



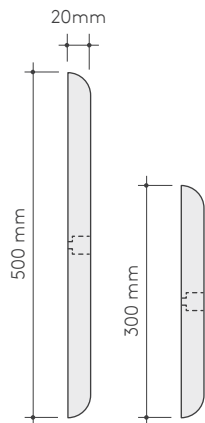
Outer Corner



KPSWallTrim

KPSWallTrim is a single-piece protection strip for walls, manufactured from robust polymer technology.

Supplied in 2 metre lengths and available in two heights, KPSWallTrim is easy to install, fixing directly to the wall at the desired height, using hidden fasteners. Its superior impact resistance makes it ideal for highly trafficked areas such as corridors.



Technical Specification

KPSWallTrim	
Standard length	2 m
Height	500 mm and 300 mm
Thickness	20 mm
Standard Colour*	White (RAL 9016)
Density	0.91 g/cm ³
Conduction coefficient	0.17 W/m °C
Breaking elongation	70 %
Working temperature range (max. / min.)	60 °C / -20 °C
Impact resistance	7
Shore hardness	72
Chemical resistance - acids / alkalis	Excellent

*Other colours are available. Please contact Kingspan Technical Services for more information.





Service & Support

Service & Support

From project conception to completion, our dedicated in-house teams are available to support all of your project needs.

Technical Services

Our Tech-eXchange team provides the industry with bespoke project advice and assistance. This includes project design support, product recommendations, technical advice and assistance and layout / take-off support for all Kingspan SafeDefence protection systems.

The team also provides project support by generating and issuing specifications, product information, construction details, installation guides, BIM objects etc. These are all complimentary services.

Our Tech-eXchange team in the UK and Ireland are specialists with vast experience in giving bespoke technical assistance and advice to architects, installers, contractors, insurers, building owners and the general construction industry.

UK Technical Team:

T: +44 (0) 1352 716 101

E: technical@kingspanpanels.com

Ireland Technical Team:

T: +353 (0) 42 9698500

E: technical.ireland@kingspan.com

Samples

We offer a range of standard samples which include each of our core SafeDefence Protection products.

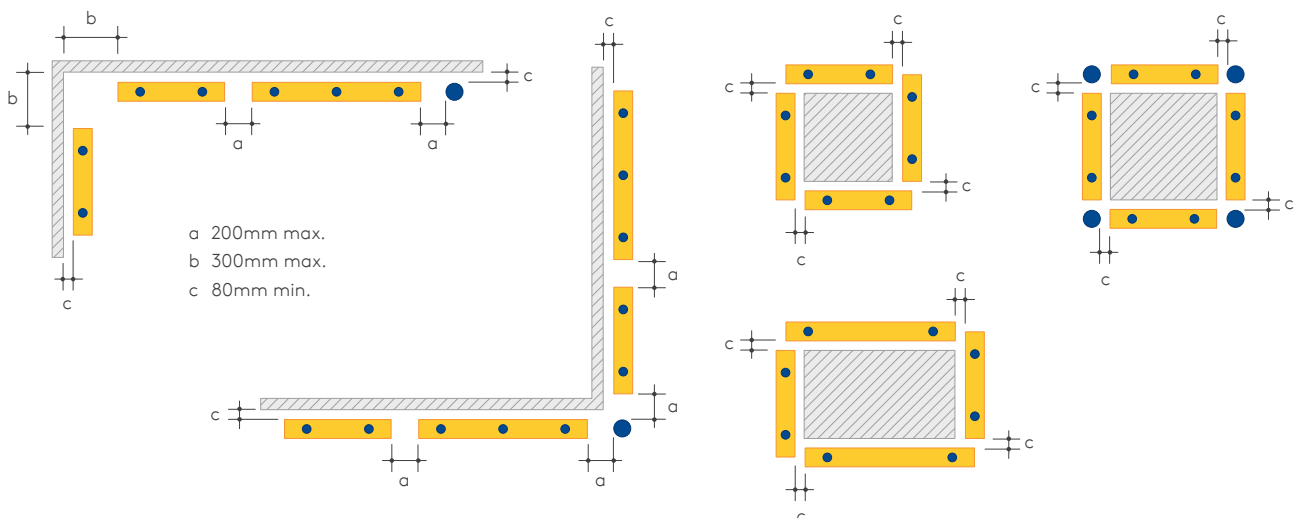
Specialist Installation Training

Our Field Services Team offer specialist installation training and demonstration of the products and systems we offer. This extensive training provides a basic level of competency in installation of our SafeDefence Protection Systems, covering the installation procedure, from safe unloading and handling, to installation and completion.

Customer Services

Our customer services team across the UK and Ireland are dedicated to providing care and attention to our customer needs. Various queries are quickly dealt with that range from order placement to scheduling to delivering to site.

Layout / Design Recommendations



Design & Visualisation

Technical Services

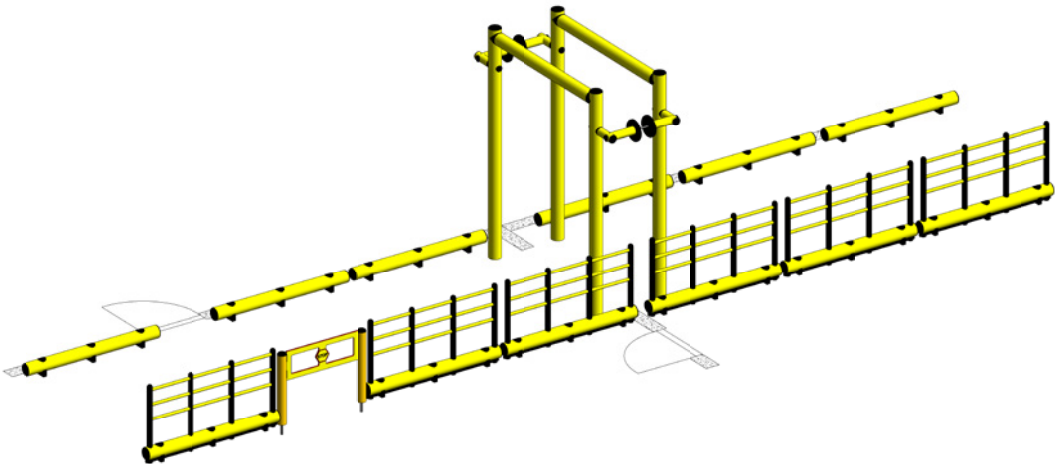
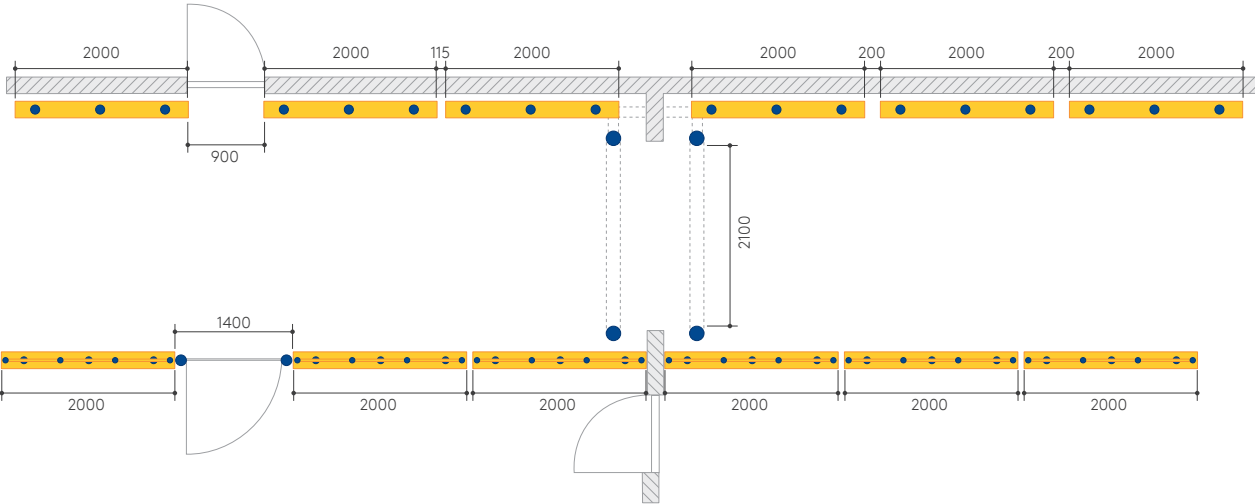
Our in house design engineers can create 3D quantified layout designs showing product integration, on specific project request.

These drawings can be supplied with layout dimensions showing the spacing of each unit making setting out on site a quicker and easier process.

Designs are created in Revit and can be used in BIM intergration. Our Revit families are available to download upon request.



Please scan the QR code to gain access to our Revit parts through BIM360.



Contact Details

UK

Kingspan Limited

Greenfield Business Park No.2
Greenfield | Holywell
Flintshire | CH8 7GJ

T: +44 (0) 1352 716100

F: +44 (0) 1352 710161

E: protectionsystems@kingspan.com

www.kingspanpanels.co.uk

Ireland

Kingspan Limited

Carrickmacross Road
Kingscourt | Co. Cavan

T: +353 (0) 420969 8500

F: +353 (0) 420969 8572

E: protectionsystems@kingspan.com

www.kingspanpanels.ie

For the product offering in other markets please contact your local sales representative or visit www.kingspan.com

Care has been taken to ensure that the contents of this publication are accurate, but Kingspan Limited and its subsidiary companies do not accept responsibility for errors or for information that is found to be misleading. Suggestions for, or description of, the end use or application of products or methods of working are for information only and Kingspan Limited and its subsidiaries accept no liability in respect thereof.

