

# X-RAIL

HORIZONTAL RIGID ANCHOR LINE

# INSTALLATION AND USE

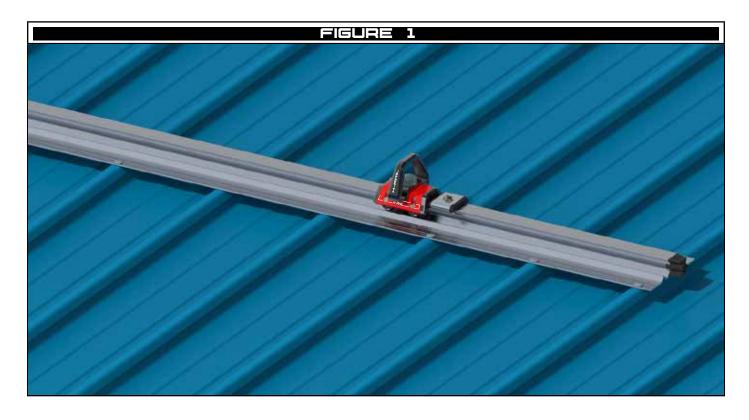












INSTRUCTION: XRAIL-INST-SURFACE-MOUNT

**REVISION: 5.0** 

### 1 Warning

- Improper Use, Installation or Maintenance may result in serious injury or death.
- The building or structure for the anchorages should be assessed by an engineer to ensure that the structure is adequate for X-Rail installation works.
- ▲ SafetyLink's Height Safety Systems must only be installed as per our installation guides, to structures as specified in the installation manual for each product.
- All safety procedures must be complied with in accordance with the current safety code(s) of practice(s) for working at heights in your region. Ensure safety at all times by being attached to suitable anchor points and approved safety equipment or approved scaffolding.
- Installation is to be carried out by, or under the supervision of, a competent person.
- A personal energy absorber or a fall-arrest device with a personal energy absorber must be used in conjunction with all SafetyLink Anchorages and Lifeline systems.
- ⚠ Do not carry out any modifications on this system without written permission by SafetyLink Pty Ltd.

### 2 Specification

### 2.1 Description

The SafetyLink X-Rail is a Rigid Anchor Line suitable for use as part of a personal fall protection system. The X-Rail offers a horizontal Rigid Anchor Line with one or multiple Mobile Anchor Points for attaching to.

#### 2.2 Standard

The X-Rail Rigid Anchor Line System is compliant with AS/NZS 1891.2, EN795:2012 and PD CEN/TS 16415:2013.

### 2.3 User Rating

The X-Rail Rigid Anchor Line is rated for up to 4 users per system and in any span.

### 2.4 Material Specification

COMPONENT	DESCRIPTION
Rail	Aluminium 6000 series
Cross Plates	Aluminium 6000 series
Joins	Aluminium 6000 series
Fasteners	Stainless steel 316
End Cap	Nylon 66
End Stop	Aluminium 6000 series, Rubberised Nylon
Shuttle	Aluminium 6000 series, Stainless steel 316, Nylon 66

# 2.5 Components

	2.5 Components				
	FIGURE 2				
RAIL LENGTH 3M	CROSS PLATE	RAIL JOIN KIT CONCEALED			
XRAIL-TR-102-3M	XRAIL-TR-210	XRAIL-TR-005			
RAIL END CAP	SHUTTLE STOP	SHUTTLE			
XRAIL-TR-213	XRAIL-TR-006	XRAIL-TR-014			
90° CORNER	45° CORNER	RAIL JOIN DOWEL			
XRAIL-TR-104	XRAIL-TR-107	XRAIL-TR-212			
RAIL SCREW	DRILL ON-SITE FIXTURE	RAIL DRILL BIT			
XRAIL-TR-907(OTS)	XRAIL-TR-402	XRAIL-TR-401			
40X40 EPDM SEAL	SHUTTLE GATE				
FOAM-TAPE-SQUARE	XRAIL-TR-GATE-SURFACE				

### 3 Installation

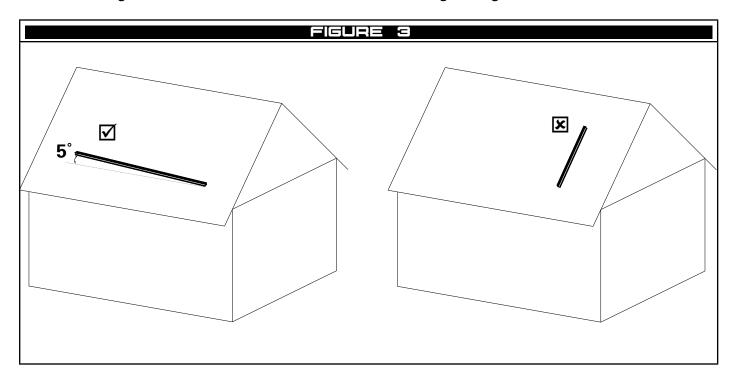
### 3.1 System Design

### 3.1.1 General

Systems shall be designed to limit free fall, swing fall and maximise fall clearance. Where possible, systems should be designed to prevent a free fall from occurring.

It is important to consider the location of corners when designing your system to ensure the rails and corner fastening detail can match the detail in Section 4 of this instruction.

The X-Rail Rigid Anchor Line shall be installed on an angle no greater than 5°.



### 3.1.2 Structure Capacity

The supporting structure shall be capable of supporting 15kN in all direction that the system can be loaded.

# All load cases shall be considered by a trained engineer.

The structures in Figure 4 have been assessed by SafetyLink and are deemed to be acceptable.

# If there is any doubt of the structures suitability, consult a trained engineer.

FIGURE 4			
Туре	Size	Spacing	
Steel Purlin		Maximum purlin spacing 600mm or rail system to span a minimum of 5 purlins.	
Timber Rafter and Batten	Rafter F7 or MGP 10 140mm x 45mm, Batten F7 or MGP 10 70mm x 35mm	Maximum rafter spacing 600mm	

### 3.1.3 Intermediate Fixing Spacing

Exact intermediate fixing spacings are determined by the roof sheeting. The below are the maximum allowable distances.

- On a straight section of rail designed for fall arrest, intermediate fixing shall be installed at a distance not greater than 1m.
- If On a straight section of rail designed for abseil, intermediate fixings shall be installed at a distance not greater than 0.6m.

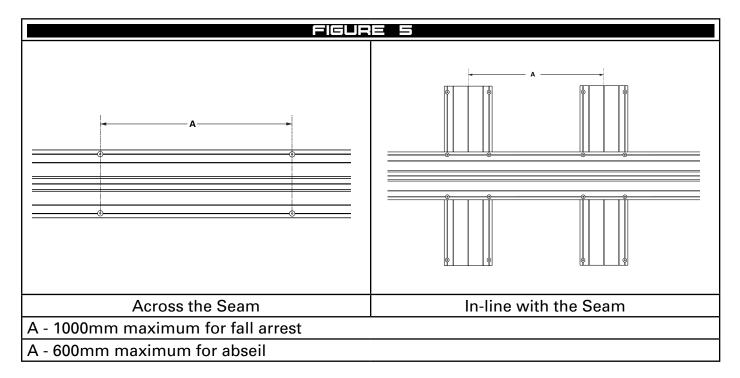


FIGURE 6			
SPAN LENGTH	MAXIMUM DEFLECTION (4 PERSONS)		
600mm	50mm		
1000mm	200mm		

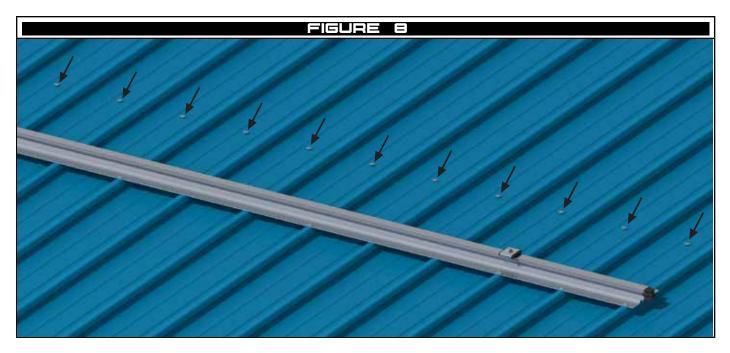
### 3.1.4 Structure Fixings

To prevent the below listed roof profiles from slipping or moving under load, 8mm Tri fold aluminium rivet shall be installed into the purlins along the entire length of the rail. One rivet shall be installed in each pan of the sheeting, either above or below the rail. Rivets shall only be installed for rails running across the seams of the roof sheet. See Figure 8.

- I Klip-Lok 700
- II Klip-Lok 700 Hi-Strength
- III Klip-Lok 406

### 3.1.5 Roof Sheeting

FIGURE 7				
Material	Minimum Base Metal Thickness (mm)	Number of Users		
Steel	0.42	4		
Aluminium	0.7	4		
Zinc	0.7	4		

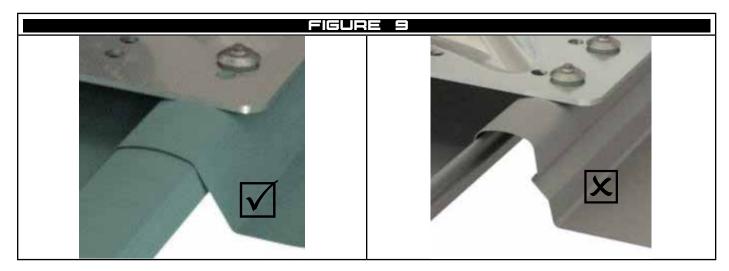


### 3.2 Fixings

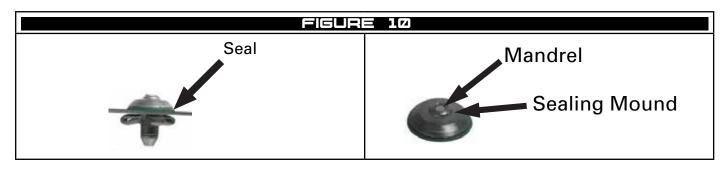
#### **3.2.1 Rivets**

All rivets used to connect the rail profile to the roof sheeting, rail profile to the Cross plate or Cross plate to the roof sheeting shall be; 8mm Tri fold aluminium rivets measuring 27.7mm long with a grip range of 1.0-9.5mm. Drill size 7.8-8.2mm.

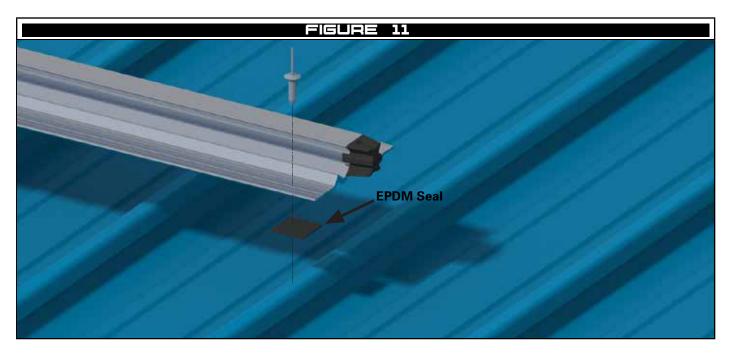
A Rivets installed in to the lap join of the roof sheet shall penetrate both joining roof sheets.



After installation, the mandrel of the rivet shall be visible below the sealing mound. The mandrel is required to be in contact with the sealing mound to create a waterproof seal. In addition, the seal of the rivet shall be compressed between the rail surface and the top of the rivet.



Where a rivet is installed through either the rail profile or the cross plate profile in to the roof sheeting, an EPDM rubber seal shall be placed between the aluminium and the roof sheeting to prevent leaks in the roof.



### 3.2.2 Clamps

For certain roof sheet profiles the X-Rail may be installed with the below clamps.

FIGURE 12				
CLAMPS	ROOF SHEET	INSTALL TORQUE (MAIN)	INSTALL TORQUE (SIDE) IF APP	
S5-Z	KingZip400	40Nm	20Nm	
S5-S	Standing seam Snap line	40Nm	20Nm	

### 3.3 Fasteners

All X-Rail Fasteners are M10 socket head cap screws. All fasteners shall be tightened to 40Nm with a 6mm hex wrench.

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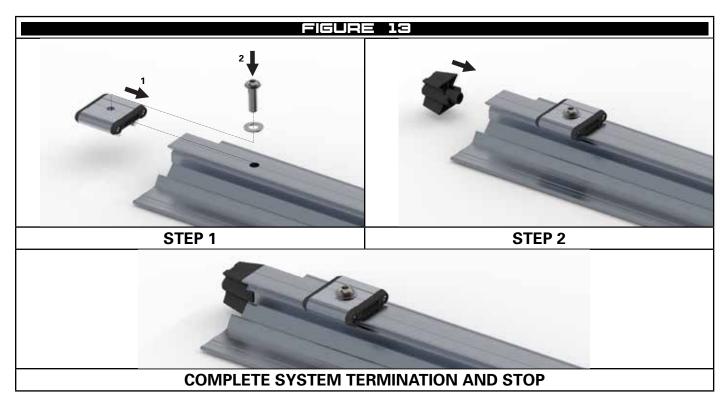
All bolt threads must be applied with Loctite 243 thread-locker or equivalent prior to assembly. (IMPORTANT NOTE: Before applying Loctite 243 use Loctite 7471 primer or equivalent to activate the surface according to manufacturer's instructions).

### 4 System Assembly

### 4.1 Components

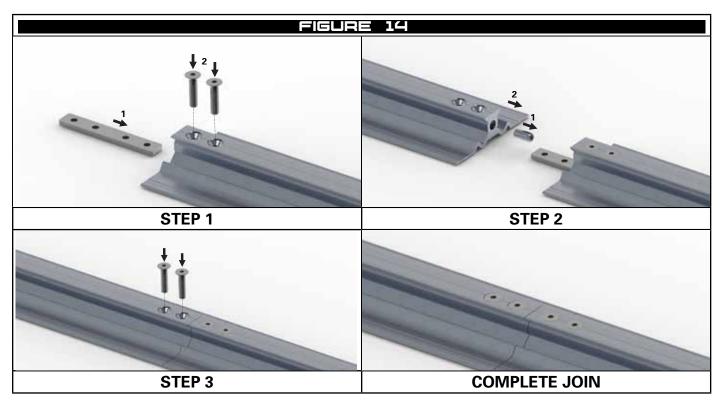
### 4.1.1 System Termination / Shuttle Stop

At the end of a system or at a point where it is necessary to prevent the passage of a shuttle, a shuttle stop shall be installed. Drill an 11mm diameter hole in the centre of the rail, through the top surface only. Where the rail terminates an end cap should be fitted.



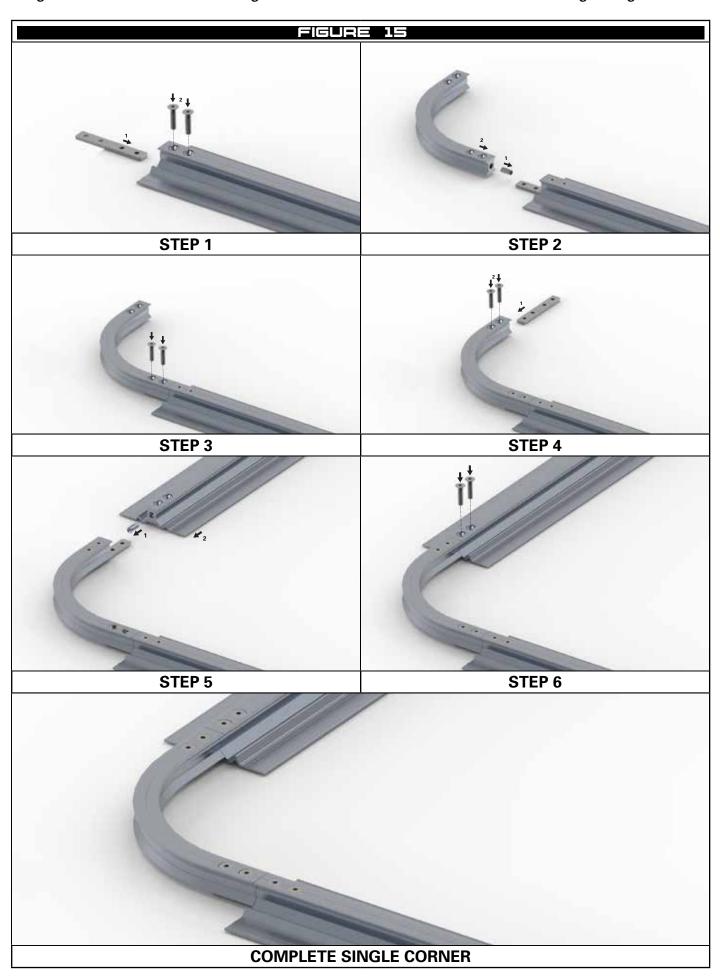
#### 4.1.2 Rail Joins

Each join in the rail shall be fastened with the Rail Joiner as shown in Figure 14. Holes for rail join fasteners to be made with drill bit XRAIL-TR-401 and drill fixture XRAIL-TR-402.



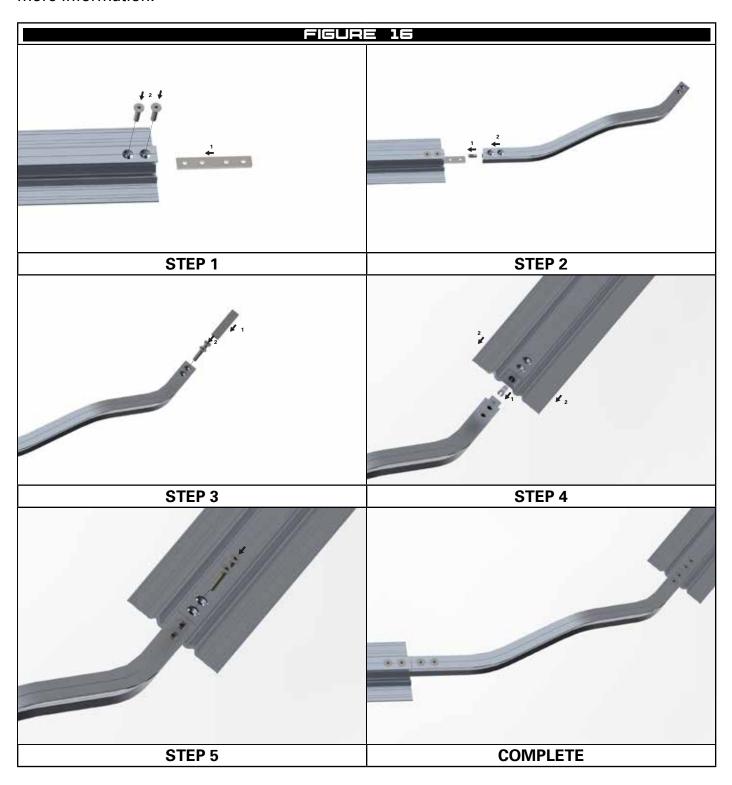
# 4.1.3 Corner Single Bend or Jogs

Single corners are used to change the direction of the rail without traversing a ridge.



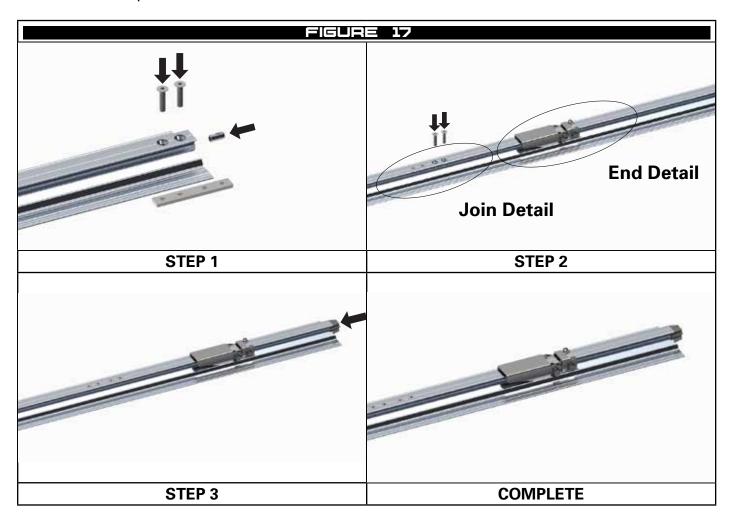
### 4.1.4 Corner Compound Bend

Compound corners are used to traverse a ridge. These corners are unique to specific structures and may require further support not shown below. Please contact SafetyLink for more information.



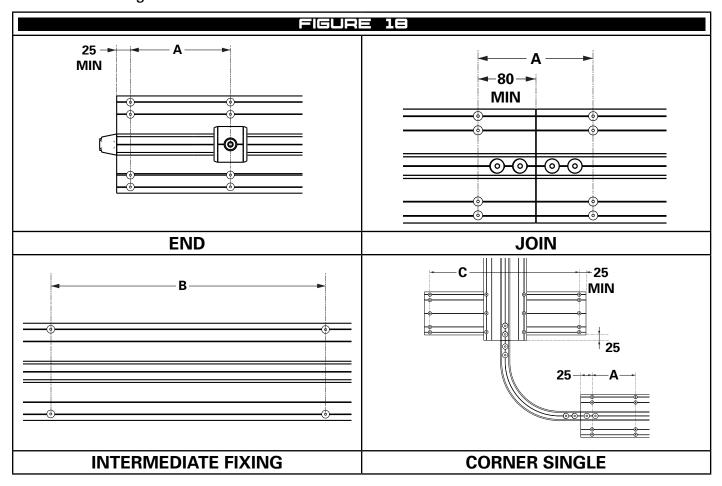
### 4.1.5 Gate

- 1 Each Gate installed in the system shall be fastened with a Rail Joiner as shown in Figure 17. Holes for rail join fasteners to be made with drill bit XRAIL-TR-401 and drill fixture XRAIL-TR-402.
- 2 The Rail Joiner and Gate shall be fixed to the roof sheeting with the appropriate Join and End details respectively for the roof sheet. See Section 4.2.
- 3 Beyond the final roof sheeting fastener of the End Detail, the excess rail may be cut of. Install the end cap.

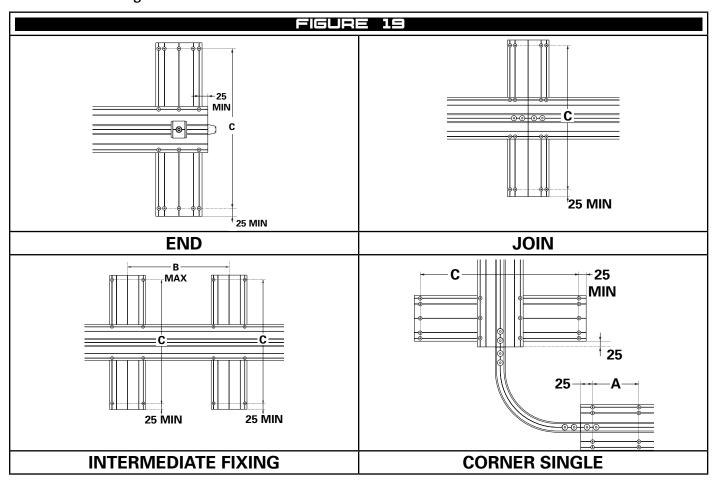


### 4.2 Roof Sheet Fixing

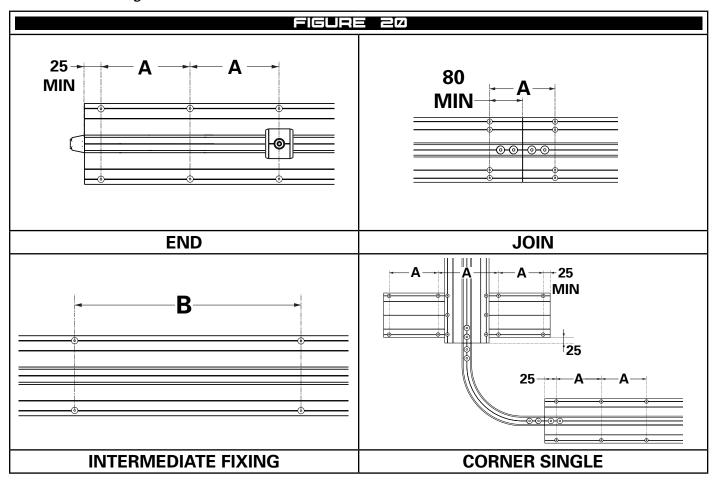
4.2.1 Rivet fixing across the seam install method 1



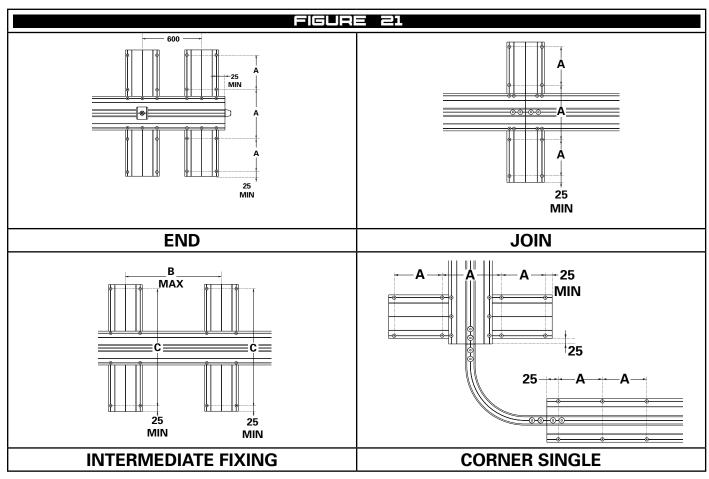
4.2.2 Rivet fixing inline with the seam install method 1



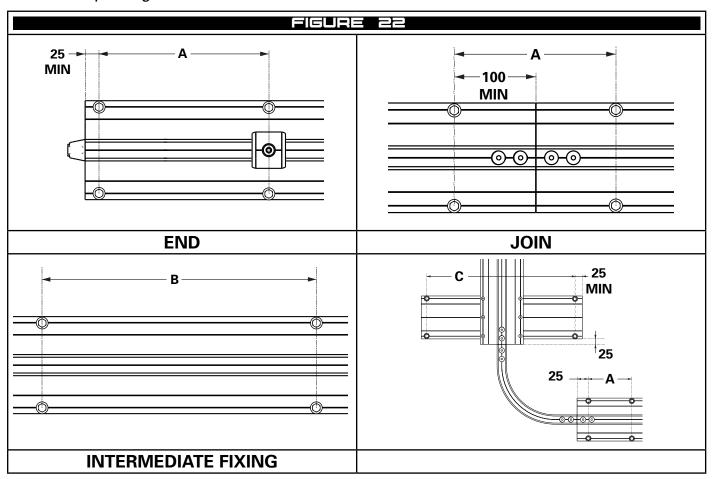
### 4.2.3 Rivet fixing across the seam install method 2



### 4.2.4 Rivet fixing inline with the seam install method 2



### 4.2.5 Clamp fixing across the seam



### 4.2.6 Clamp inline with the seam

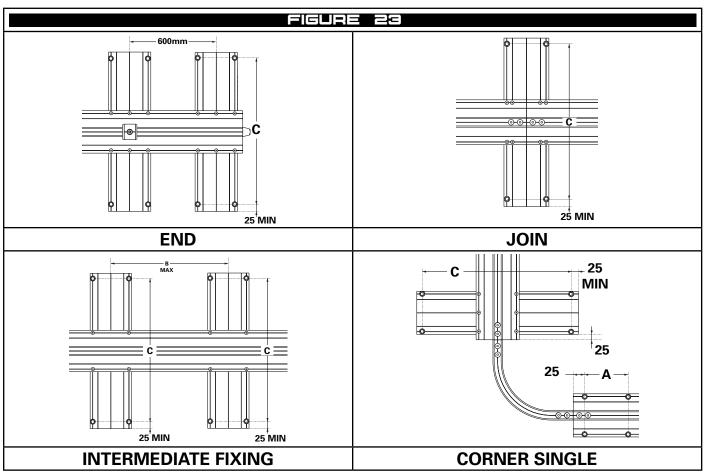
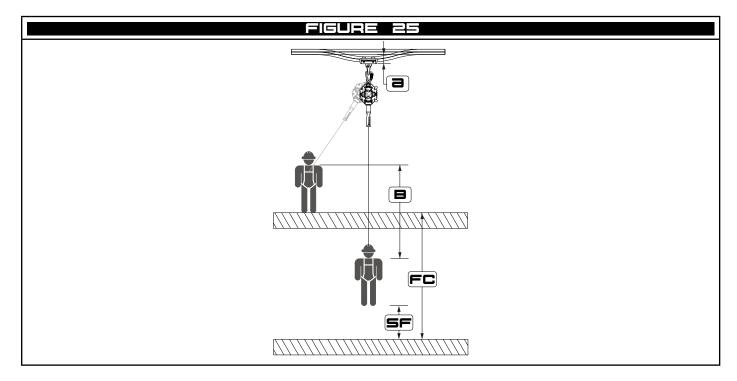


FIGURE 24					
Sheeting	Fixing	A (mm)	B (mm)	C (mm)	
TrimDek	Rivets method 1	190.5	Max 1000	381 or 572	
SpanDek	Rivets method 1	175	Max 1000	350-525	
Custom Orb	Rivets method 1	229	Max 1000	381-534	
Klip-Lok 700 Hi-Strength	Rivets method 2	233	Max 1000	467	
Klip-Lok Classic 700	Rivets method 2	233	Max 1000	467	
Klip-Lok 406	Rivets method 2	203	Max 1000	609	
KingZip 400	Clamps	400	Max 1000	800	
Standing Seam Snap line	Clamps	345	Max 1000	690	
Snap-Line 45	Clamps	345	Max 1000	690	

### 5 Limitations of Use

### 5.1 Fall Clearance

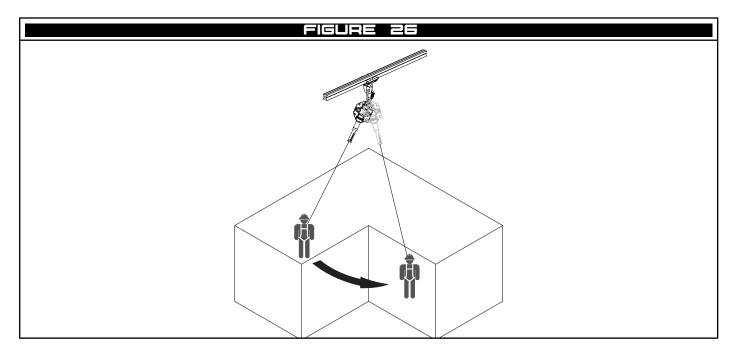
When planning your fall protection system, it is important to accurately assess all components of your system in order to avoid injury. Figure 25 provides guidance on how to calculate fall clearance, (A) represents the deflection Rigid Anchor Line see Figure 6, (B) represents free fall, energy absorber deployment as well as the estimated D-ring side of the harness (Refer the manufacturer's information), (SF) represents the recommended safety factor of 1m, (FC) represents the total allowable fall clearance. For safe use (FC) shall always be greater than A+B + SF.



### 5.2 Swing Fall

Working off centre of a horizontal line or rail may cause a swing fall. See Figure 26. Fall protection systems shall be setup in such a way to limit swing fall.

1 The force of striking an object during a swing fall may result in serious injury or death.



#### 5.3 Hazards

Use of this equipment in the presence of hazards may cause damage to the equipment and/ or result in the function of the equipment being impeded. These hazards include but are not limited to; extreme temperature, sharp edges, chemical reagents, electrical conductivity, abrasion, cutting, climatic exposure and rotating or moving machinery.

### 5.4 Training

It is essential that all users are trained in the proper inspection, setup and use of this equipment. It's the responsibility of the user to ensure they are trained in the correct use of this equipment and understand the limitations of its use.

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Incorrect use of this equipment may result in serious injury or death.

#### 5.5 Rescue

It is the responsibility of the user of this equipment and their employer to have a suitable rescue plan and the ability to implement it at any time during setup and use of this equipment.

### 6 Connections

### 6.1 Making Connection

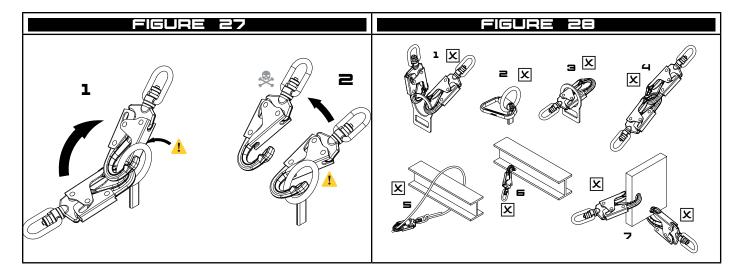
Only make compatible connections. Always ensure connectors close and lock correctly before use. Below and Figure 28 are examples of unsuitable connections;

- 1 To an anchor or D-ring which has another connector attached.
- 2 In a position that will apply load to the gate mechanism.
- 3 By passing the connection through the attachment.
- 4 Connecting a connector to another connector.
- 5 Around a structure and back to the lifeline.
- 6 To an attachment that will limit the function of the gate.
- 7 To a location that will not load the connector as designed.

### 6.2 Compatibility of Connections

Connection made to and with this equipment shall be compatible. Connector shall be compatible shape, size and equivalent rating in order to ensure a compatible connection is made. Incompatible connections may cause loading of the gate mechanism leading to unintentional disengagement. See Figure 27. Connectors shall be compliant with EN362 and auto closing and locking.

Making incompatible or unsuitable connection may result in unintentional disengagement of the connector resulting in serious injury or death.



### 7 Use

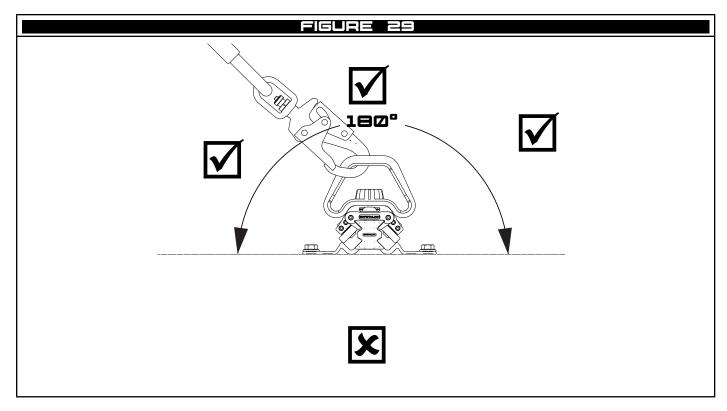
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### 7.1 Planning

Before starting work, plan your working at heights and rescue systems by accounting for all hazards present in the work place and allowing for the available fall clearance. Ensure all users are fit, healthy and capable of safely operating this equipment as well as implementing the rescue plan.

### 7.2 Working Range

The X-Rail Rigid Anchor Line should be used in a 180° arc around the attachment point of the shuttle along the length of the rail. Operating outside this range may cause connecting devices to interfere with intermediate or end bracket fixings or result in the gate of the connector being loaded.



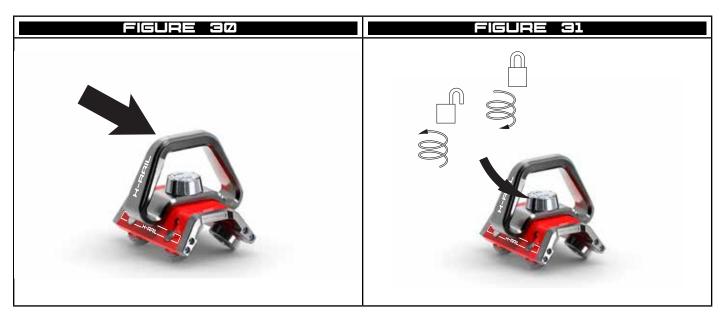
During use always allow for the required fall clearance, swing fall and hazards present in the work place.

#### 7.3 Connection to the X-Rail Shuttle

The X-Rail has one attachment for connecting the users system to the shuttle, see Figure 30. Connection shall be made with an auto-locking compatible connector.

#### 7.4 Shuttle Lock

To lock the position of the shuttle along the rail for work positioning or abseil purposes turn the locking bolt clockwise till the shuttle locks on the rail. To release the shuttle turn the locking bolt counter clockwise till the shuttle is free to move.



- Each shuttle is for a single user. Do not attach multiple users to a single shuttle.
- Do not attach to any other point on the X-Rail Shuttle or Rigid Anchor Line.
- ⚠ Use of incompatible connectors may lead to forced roll out and unintentional disconnection.
- Always consult the connecting system manufacturer's instruction to ensure it is suitable for use with this equipment.
- Only ever operate this equipment within the allowable operation range specified in this instruction, see Figure 29.

### 8 Storage, Transport and Maintenance

#### 8.1 Storage and transport

This equipment shall be stored and transported in a cool, dry environment, away from any hazards and out of direct sunlight.

#### 8.2 Maintenance

- 8.2.1 The X-Rail system is serviceable only by trained and authorised installers. Contact SafetyLink to find your nearest available installer. The service interval will be determined by the condition in which it is used. Harsher conditions will require more frequent servicing. The equipment may remain in service until it fails an inspection or is involved in a fall.
- 8.2.2 The X-Rail Shuttle is non serviceable. The equipment may remain in service until it fails an inspection or is involved in a fall.
- ⚠ Do not attempt to modify or disassemble this product.

#### 8.3 Cleaning

The X-Rail Rigid Anchor Line may be cleaned by the end user periodically to increase service life. After cleaning, the product shall undergo the pre-use inspection.

Rails and System - Clean rail, joiners, brackets fixing and fasteners with a rag and warm water to remove dirt and grit. A mild detergent may be used to remove grease or oils from the product.

Shuttle - Clean Shuttle with a rag and warm water to remove dirt and grit. A mild detergent may be used to remove grease or oils from the product.

Do not store this product when wet. Allow the product to dry and conduct a pre-use inspection prior to return the item to service.

#### 9 Inspection

#### 9.1 **Before and After Use**

The X-Rail Rigid Anchor Line shall be inspected before and after each use by the user.

#### 9.2 **Competent Person**

A competent person shall inspect the product at least every 12 months.

#### 9.3 **Procedure**

- 9.3.1 Rail inspect the rail for deformation, damage, dents or debris that may affect the strength of the rail or impede the Shuttle.
- 9.3.2 Joiners, System stop inspect all fasteners are present and tight. Inspect the aluminium for chips, cracks, discolouration, damage to the protective coating, bending or warping.
- 9.3.3 Corners and Jogs inspect for deformation, damage, dents or debris that may affect the strength of the rail or impede the Shuttle. Inspect all the fasteners are present and tight.
- 9.3.4 Fixings inspect all fixings are present and tight. Inspect Fixings are free of damage, debris, cracks, and corrosion.
- 9.3.5 Shuttle inspect the housing is free of cracks, damage or deformation. Inspect the attachment point is free of cracks, damage or deformation. Ensure all screws are present and not loose. Inspect all the wheels contact the rail and the shuttle moves smoothly over the rail. Inspect the markings are present and legible.
- 9.3.6 Fasteners inspect the fasteners for corrosion, deformation, damage or leaks. Inspect the rivets (where applicable) are installed in the correct number and location. Inspect the clamps (where applicable) are torqued correct and installed in the correct number and location
- 9.3.7 Roof inspect the roof sheet and structure for corrosion, deformation, damage or leaks that may affect the strength of the roof.
- 9.3.8 Label inspect the system label is present and legible as per Figure 32.

INSPECTION RECORD				
Product Code	Date of Manufacture			
Serial or Batch No.	Date of Install			
Inspector	Date of Inspection			
PROCEDURE	INSPECTION	USER	COMPETENT PERSON	
9.3.1	Rail - inspect the rail for deformation, damage, dents or debris that may affect the strength of the rail or impede the Shuttle.			
	Comments:			
9.3.2	Joiners, System stop - inspect all fasteners are present and tight. Inspect the aluminium for chips, cracks, discolouration, damage to the protective coating, bending or warping.			
	Comments:			
9.3.3	Corners and Jogs - inspect for deformation, damage, dents or debris that may affect the strength of the rail or impede the Shuttle. Inspect all the fasteners are present and tight.			
	Comments:			
9.3.4	9.3.4 Fixings - inspect all fixings are present and tight. Inspect Fixings are free of damage, debris, cracks, and corrosion.			
	Comments:			
9.3.5	Shuttle - inspect the housing is free of cracks, damage or deformation. Inspect the attachment point is free of cracks, damage or deformation. Ensure all screws are present and not loose. Inspect all the wheels contact the rail and the shuttle moves smoothly over the rail. Inspect the markings are present and legible.			
	Comments:			
9.3.6	Fasteners - inspect the fasteners for corrosion, deformation, damage or leaks. Inspect the rivets (where applicable) are installed in the correct number and location. Inspect the clamps (where applicable) are torqued correct and installed in the correct number and location			
	Comments:			
9.3.7	Roof - inspect the roof sheet and structure for corrosion, deformation, damage or leaks that may affect the strength of the roof.			
	Comments:			
9.3.8	Label - inspect the system label is present and legible as per Figure 32.			
	Comments:			

#### FIGURE 32 **NUMBER OF USERS** 1x 👤 □ 2x 👤 □ 3x 👤 □ 4x **± SYSTEM USE** □ Fall Arrest ☐ Abseil \_/\_/ (DD/MM/YYYY) INSTALLED BY **INSTALLED DATE STANDARDS** EN795:2012/D CEN/TS 16415:2013 AS/NZS 1891.2:2009 **ONLY EVER CONNECT 1 USER TO EACH SHUTTLE** INSPECTION RECORD (DD/MM/YYYY) (DD/MM/YYYY) 2 7 (DD/MM/YYYY) (DD/MM/YYYY) 3 8 (DD/MM/YYYY) (DD/MM/YYYY) 4 9 (DD/MM/YYYY) (DD/MM/YYYY) (DD/MM/YYYY) 10 (DD/MM/YYYY) Safety Link® Safety Link Pty Ltd | ABN 83 081 777 371 Innovative Phone: 1300 789 545 or +61 2 4964 1068 Fall Protection info@safetylink.com | www.safetylink.com

**SYSTEM LABEL - XRAIL-TR-WARN** 

### WARRANTIES

#### **EXTRACT: SAFETYLINK PTY LTD STANDARD TERMS AND CONDITIONS**

- 1.1 To the extent permitted by law all implied conditions, warranties and undertakings are expressly excluded.
- 1.2 Except as provided in this clause the Company shall not be liable for any loss or damage, whether direct or indirect (including consequential losses or damage) arising out of any breach of contract by the Company or any negligence of the Company, its employees or agents.
- 1.3 Should the Company be liable for a breach of a guarantee, condition or warranty implied by the Australian Consumer Law (not being a guarantee, condition or warranty implied by sections 51, 52 and 53 of that Law) then its liability for a breach of any such condition or warranty express or implied shall be limited, at its option, to any one or more of the following.
- A in case of Goods
  - I the replacement of the Goods or the supply of equivalent Goods.
  - If the repair of the goods,
  - III the payment of the cost of replacing the Goods or acquiring equivalent Goods.
  - IV the payment of the cost of having the Goods repaired. Provided that any such Goods are returned to the Company by the Purchaser at the Purchaser's expense.
- B in the case of services
  - I the supply of the services again,
  - If the payment of the cost of having the services supplies again.
- 1.4 The Company is not liable for the costs of recovery of the Goods from the field, loss of use of the Goods, loss of time, inconvenience, incidental or consequential loss or damage, nor for any other loss or damage other than as stated above, whether ordinary or exemplary, caused either directly or indirectly by use of the Goods.
- 1.5 The Company warrants that at the time of shipment, Products manufactured by it will be free from defects in material and workmanship. In the absence of a modified written warranty, the Company agrees to making good any such defects by repairing the same or at the Company's option by replacement, for a period of (1) one year from the date of shipment. This limited warranty applies provided that:
- a defects have arising solely from faulty materials or workmanship;
- b the Products have not received maltreatment, inattention or interference;
- the Products have been installed in accordance with the Company's Installation Handbooks using only products supplied by the Company;
- d accessories used with the Products are manufactured by or approved by the Company
- e the Products are maintained in accordance with Australian Standard 1891.4 (section 9).
- f you notify any claim under this warranty to SafetyLink in writing to the address below no later than 14 days after the event or occurrence concerning the produce giving rise to the claim and you pay all costs related to your claim.

This warranty does not apply to any defects or other malfunctions caused to the Goods by accident, neglect, vandalism, misuse, alteration, modification or unusual physical, environment or electrical stress.

Please note that the benefits to the purchaser (as a consumer) given by this warranty are in addition to your other rights and remedies under the Australian Consumer Law. Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

- 1.6 If any goods are not manufactured by the Company, the guarantee of the manufacturer thereof shall be accepted by the Purchaser as the only express warranty given in respect of the goods.
- 1.7 Except as provided in this clause 11, all express and implied warranties, guarantees and conditions under statute or general law as the merchantability, description, quality, suitability or fitness of the Products for any purpose or as to design, assembly, installation, materials or workmanship or otherwise are hereby expressly excluded (to the extent to which they may be excluded by law).

PLEASE SEE SAFETYLINK PTY LTD FULL STANDARD TERMS OF CONDITIONS OF SALE FOR FURTHER REFERENCE.





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