Sicurpal

INSTRUCTION MANUAL
FOR ASSEMBLY, USE AND MAINTENANCE

SICURLAM

sicurpal.it

EDITION 2 - REVISION 0
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Translation of original instructions.

1. REFERENCE STANDARDS

This manual has been drawn up in compliance with the following legal requirements and standards:

1. Legislative Decree No. 81 dated 9 April 2008 and subsequent modifications and additions

2. Certification standards:

- **UNI EN 795:2012*** valid for max. 1 (one) operator
- **CEN/TS 16415:2013*** valid for max. 4 (four) operators
- **UNI 11578:2015*** valid within Italy only, for max. 4 (four) operators

*See Chapter 7.

3. Reference standards:

- **UNI EN 365:1993**
- **UNI EN 363:2008**
- **UNI 11560:2014**
- **UNI 11158:2015**
- **Regulation UE 425/2016**

	Always read the manual carefully before using the system.
	This manual must always be available for consultation.

2. INTRODUCTION

This “Instruction manual for assembly, use and maintenance” refers to **SICURLAM devices** made of stainless steel.

These devices comply with the requirements of standards **UNI EN 795: 2012**, **CEN/TS 16415:2013**, **UNI 11578:2015 Tipo C**. The **Type C SICURLAM** anchorage systems are designed and approved to be used simultaneously by a maximum of 4 (four) operators and are capable of withstanding a maximum strain of 15 kN.

2.1. WARRANTY

The warranty period for the **SICURLAM** anchor devices is maximum 10 years from the date of installation, if known (the declaration of proper installation shall be deemed valid); if it is not known, the 10 year warranty period starts from the production batch date, which is indicated on the product label. The WARRANTY relates to the **SICURLAM** devices as a whole and their individual components, and covers in particular:

- Faults in manufacture
- Faults in materials
- Faults in welding

EXCEPTIONS

The warranty does not cover damage resulting from use in a manner not foreseen by this manual.

LIMITATIONS

In all cases the warranty is restricted to replacement of the elements or equipment acknowledged to be faulty after assessment by the **SICURPAL** technical department.

All faulty components must be returned to **SICURPAL**, who will assess their characteristics and, if the faults are confirmed, will replace them with conform material.

The warranty only applies to the returned elements, and does not cover the expense incurred for removal and reinstallation of the equipment in the system in which it is fitted.
The warranty also lapses if the material has been fitted and used in a manner not in compliance with the assembly and technical instructions issued by **SICURPAL**.
Any tampering with, or unauthorised replacement of, anchorage device components, use of unsuitable accessories, elements or components and/or improper use of the system will cause the warranty to lapse.
Failure to carry out periodic inspections will render the product guarantee void.

IMPROPER USE refers to use of the device:

- As a support to fix the television aerial;
- As a hook to move objects and/or materials;
- As a lightning conductor (although the device can be used for that purpose subject to the prior authorisation of a qualified technician who must plan and certify connection to the Faraday cage);
- Any other use that is not typical of an anchorage for a fall arrest system.

2.2. PACKING AND TRANSPORT

During storage in the warehouse the fall arrest systems must be suitably protected.
SICURPAL ensures that they are carefully packed prior to transport and assured against:

- Unforeseen stress
- Excessive heat or damp
- Contact with sharp edges
- Contact with corrosive substances or other substances that might damage the devices.

For better protection of the environment, **SICURPAL** has decided to reduce packaging to a minimum. For this reason several products may be sent within the same packaging.

2.3. NOTES ON DELIVERY

On receipt of the material, check that:

- The packages received are undamaged and properly wrapped;
- The goods supplied correspond with the order specifications;
- The delivery note is present;
- The product Declaration of Conformity is present;
- The product manual is present;
- If there is any damage, enter a reservation when signing the shipping document, and notify both the courier and the **SICURPAL** Logistics department within 48 hours of delivery. Detailed photographs are required to support the notification, In the absence of these, **SICURPAL** will not be responsible for any damage;
- In the case of faulty **SICURPAL** devices, contact the **SICURPAL** Logistics Department (Telephone number **SICURPAL** 059-81.81.79, e-mail: qualità@sicurpal.it).

	This manual must be **handed over** to the **installer**, **user** or **maintenance technician** of the anchorage system who, before carrying out installation, using or performing maintenance on the system, must read all the relevant instructions carefully and procure the materials and Personal Protection Equipment (P.P.E.) required to work in safety (see the Technical Roofing Plan). This document must form part of the Technical Construction File, together with design of the fall prevention system (**Encl. XVI Leg. Dec. 81/08**).

3. DESCRIPTION AND FIXING OF ANCHORAGE DEVICES

The products in the **SICURLAM** can be used to create lifelines of variable length between 5 metres and 80 metres, with minimum spans of 5 metres and maximum spans of 14 metres. They can be used to created by-passable or glider lifelines.

3.1. DESCRIPTION OF THE ANCHORAGE DEVICES

The **SICURLAM** devices are suitable to be fixed to the corrugated sheet structure using aluminium rivets. Please refer to Chapter 3.2 for the choice of fixing device.

SICURLAM – Cod. 002590

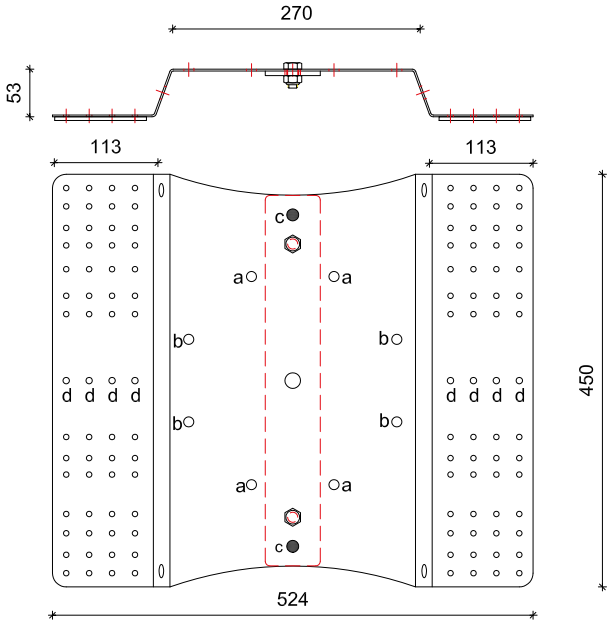


Figure 3.1 - Anchorage device SICURLAM

- Pickled AISI 304 Stainless steel product
- Designed for ends and non-straight intermediate elements
- Base size 524X450X53 mm, thickness 2 mm
- Plate with 4 folds + 2 sheets of neoprene + reinforcement plate, thickness 5 mm
- Plate with option for fixing to corrugated sheets with a spacing of min. 134 mm and max. 494 mm
- The sheet has 8 central holes Φ 7 mm for fixing to the strip with 6 mm screws (d)
- 8 fori Φ 11 mm on the top part of the device for fixing to the Xlam plate: 4 for fixing along the axis of the device (a) and 4 for fixing in the direction perpendicular to the axis of the device (b)
- 2 holes Φ 13 mm for fixing of the lifeline (C)
- The device is supplied complete with the fixing kit (Kit B16)
- Fixing of the SICURLAM devices to the sheet may take place in direct contact with the roofing sheet or using the reinforcement sheets.

PLAM – Cod. 001439

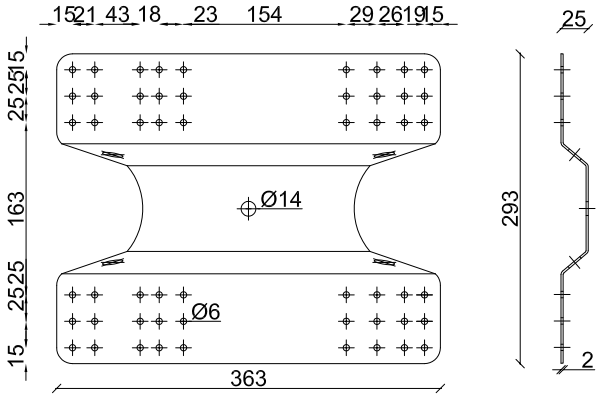


Figure 3.2 - Anchorage device PLAM

- AISI 304 Stainless steel product for roofing sheets
- Ideal when used as an intermediate straight line point in a lifeline using SICURLAM devices (that is not at a curve point or end)
- Base size 363x293x25 mm, thickness 2 mm comprising 54 holes Φ 6 mm for fixing of the device to the support structure and 1 hole Φ 17 mm for fixing of the accessories to the device (see Figure 3.2)
- Height of the device 25 mm
- Integrated waterproofing layer
- The device is supplied complete with the fixing kit (Kit B10)
- Fixing of the PLAM devices to the sheet may take place in direct contact with the roofing sheet or using the reinforcement sheets.

PAIR OF STAINLESS STEEL REINFORCEMENT SHEETS (Cod. 002648)

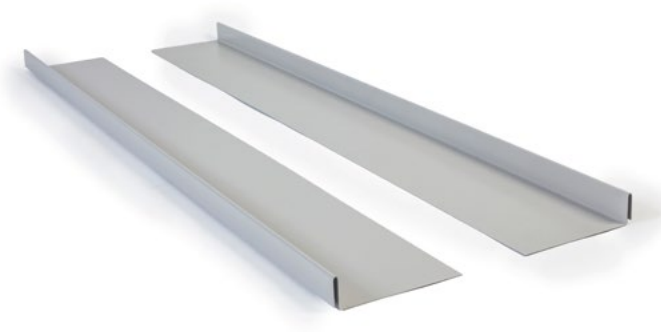


Figure 3.3 - Reinforcement sheets

- Pair of stainless steel reinforcement sheets, size 1050x130x30 mm
- Thickness 8/10 mm
- To be used to fix on aluminium or stainless steel roofing
- The device is supplied complete with the fixing kit (Kit B11)

PAIR OF PRE-PAINTED STEEL REINFORCEMENT SHEETS (Cod. 002647)

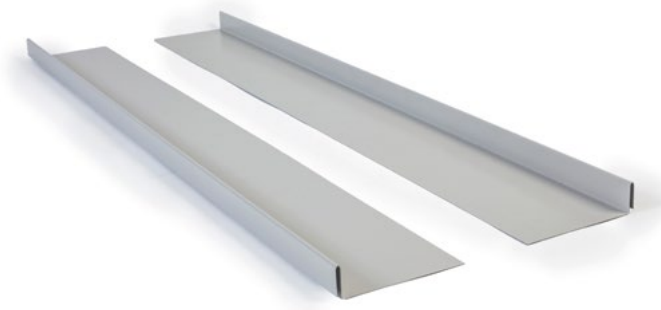


Figure 3.4 - Reinforcement sheets

- Pair of pre-painted steel reinforcement sheets, size 1050x130x30 mm
- Thickness 8/10 mm
- To be used to fix on steel roofing
- The device is supplied complete with the fixing kit (Kit B11)

3.2. FIXING THE ANCHORAGE DEVICES

Installation of the **SICURLAM** anchorage devices must be carried out by trained staff, capable of assembling and dismantling the anchorage system (UNI 11560:2014) according to the indications provided in the Calculation Report drawn up by an authorised technician and containing all the detailed characteristics for the selected fastening (for example the fastening type, bar/screw dimensions, anchoring depth, distance from edges, etc.).
The following are some of the possible application methods, which are subject to verification by an authorised technician.

FIXING METHOD			
DEVICES	**FIXING MATERIAL**	**ROOFING SHEET THICKNESS**	**FIXING TYPE**
PLAM	Steel sheet	= 0.4 mm	**Feasibility to be assessed by technician****
		≥ 0.5 mm	Kit B10 (n°12 rivets to fix the device)
	Aluminium sheet	≥ 0.7 mm	Pair of reinforcement sheets* (Cod. 002648) + Kit B11 (n°18 rivets to fix the reinforcement sheets) + Kit B10 (n°12 rivets to fix the device)
SICURLAM	Steel sheet	= 0.4 mm	**Feasibility to be assessed by technician****
		0.5 – 0.7 mm	Pair of reinforcement sheets* (Cod. 002647) + Kit B11 (n°18 rivets to fix the pair of sheets) + Kit B16 (n°24 rivets to fix the device) for end devices and curves
			Kit B16 (n°24 rivets to fix the device) on intermediate straight line devices
		0.8 mm	Kit B16 (n°24 rivets to fix the device) on all devices
	Aluminium sheet	≥ 0.7 mm	Pair of reinforcement sheets* (Cod. 002648) + Kit B11 (n°18 rivets to fix the pairs of sheets) + Kit B160 (n°24 rivets to fix the device) for all devices

*The reinforcement sheet must be fixed as indicated in Sect. 4.1.3.
**Sicurpal does not certify or guarantee types of fixing on these thicknesses. The installation technician will be responsible for verifying and calculating the feasibility of the anchorage device or anchorage systems to be used.

On the customer's request, the manufacturer can provide the assistance of a technician for the installation methods to be used for **SICURPAL** devices.
This manual is to be considered as an essential indication of how to install the anchorage system properly.
In spite of this, **SICURPAL** offers courses for designers, fitters and testers in order to improve their understanding of these instructions and pass on their know-how to ensure proper installation and reduce to a minimum possible on-site errors.

WARNING

Given the complexity encountered when verifying the "anchorage - rivet - roofing sheet" system, SICURPAL has performed numerous tests in order to determine all the possible types of installation. These types of operation have been certified by SICURPAL, so that no structural verification of the fastening (anchorage - rivet - roofing sheet) by the structural engineer is necessary.
However, structural verification is essential:

- **if the installation is carried out in a different manner from the one indicated in this installation, use and maintenance manual, as, in this case, SICURPAL will only certify the device and not the "anchorage - rivet - roofing sheet" system.**
- **if the sheet to which it is fastened is steel and with a thickness less than or equal to 0.4 mm.**

Sicurpal will not be liable in any way for fixing operations other than the ones suggested in this manual.

4. TYPES OF FIXING OPERATION CERTIFIED BY SICURPAL

4.1. FIXING SICURLAM AND PLAM ANCHORAGE DEVICES TO THE ROOFING SHEET USING PAIRS OF REINFORCED SHEETS

- Fixing of the **SICURLAM** device:
    - to aluminium roofing with a thickness ≥ 0.7 mm
    - to steel sheets with a thickness of less than 0.5 mm
    - to steel sheets with a thickness of between 0.5 and 0.7 mm in which the device forms the end or a curve in the lifeline

  result only possible using reinforcement sheets;
- Fixing of the **PLAM** device:
    - to aluminium roofing with a thickness ≥ 0.7 mm

  is only possible using stainless steel reinforcement sheets;

The following is an explanatory example for two limit scenarios: small corrugation spacing and medium corrugation spacing.

4.1.1. FIXING THE STRIPS TO THE LOAD-BEARING STRUCTURE

MINIMUM CHARACTERISTICS OF THE MATERIALS USED

SHEET SUPPORT STRIPS	5x5 cm in wood
LOAD-BEARING STRUCTURE	Wood/Steel
FIXING THE STRIP TO THE LOAD-BEARING STRUCTURE	Shear failure value 12 kN Traction failure value 19 kN Extraction value when fixed to wood 3 kN Extraction value when fixed to iron 6.5 kN

Having identified the section of roof to which the devices are to be fixed, fasten the strips on the support structure beams using 9 screws, one at each crossing.

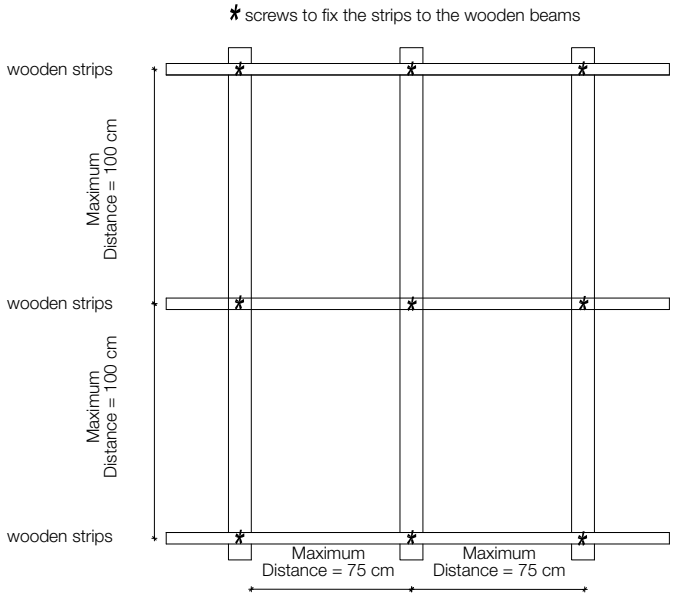
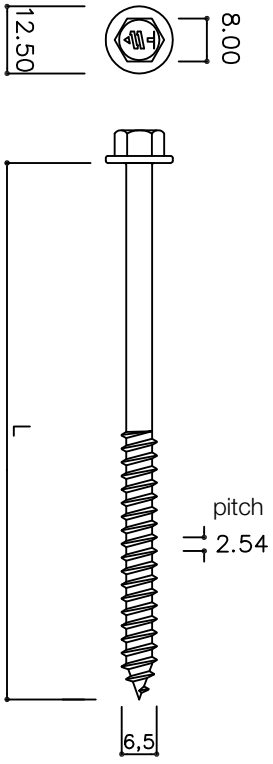


Figure 4.1

4.1.2. FIXING THE ROOFING SHEETS TO THE STRIPS

MINIMUM CHARACTERISTICS OF THE MATERIALS USED

ROOFING SHEET THICKNESS	Between 0.5 and 0.7 mm, in steel SCENARIO 1. Sheet with small corrugation spacing (e.g. 112 mm) SCENARIO 2. Sheet with medium corrugation spacing (e.g. 225 mm)
SCREWS FIXING THE SHEET TO THE STRIP	Wood screws from 6.3x60 mm to 6.3x200 mm Further technical characteristics are indicated below:



Technical Table for Self-tapping wood and metal screws

Traction 19,000 N / Shear 12,000 N	Thick-ness [mm]	Pre-bore [mm]	Extraction iron	Extraction wood	
				Depth [mm]	
N=Newton 1N=Kg 0.1019716	0.6 1 2 3	4 4 4.5 5	1,100 N 1,400 N 4,200 N 6,500 N	10 20 30	1,000 N 2,000 N 3,000 N

We recommend the use of power screwdrivers with depth and working speed limiters of 100/1500 rpm

Figure 4.2

Screw fixing: correct position

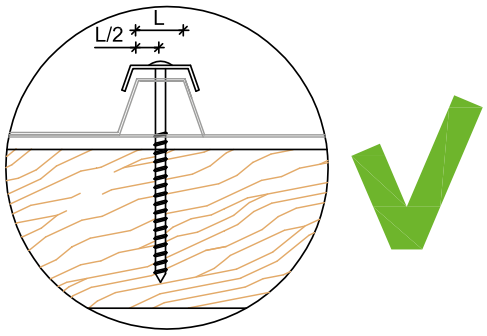


Figure 4.3

Screw fixing: incorrect position

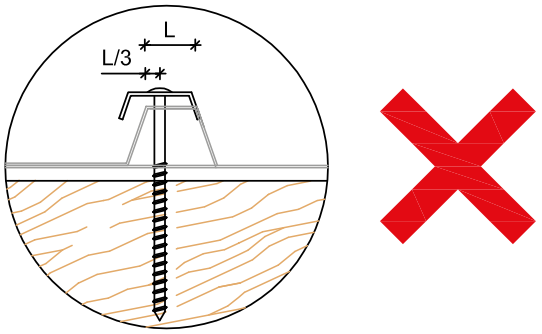


Figure 4.4

After the procedure described in point 4.1.1., proceed to fix the roofing sheet to the strips of wood.
First of all it is necessary to reinforce the roofing sheet (over an area of approximately 3.0 m^2 (1.5 mx2m)) using screws. These screws act as the connection between the roofing sheet and the underlying structure.
The screws must be positioned in correspondence with the point at which the overlapping corrugations meet the supporting beam in the underlying structure.

It is recommended that additional screws be inserted in correspondence with the point where the corrugations and the underlying structure meet (for small corrugations it is recommended that they be inserted every two corrugations, for medium corrugations it is advisable to insert the screws in every corrugation).

The following is an example of how the operation should be carried out in the case of sheets with small or medium corrugations:

SCENARIO 1. SHEET WITH SMALL CORRUGATION SPACING

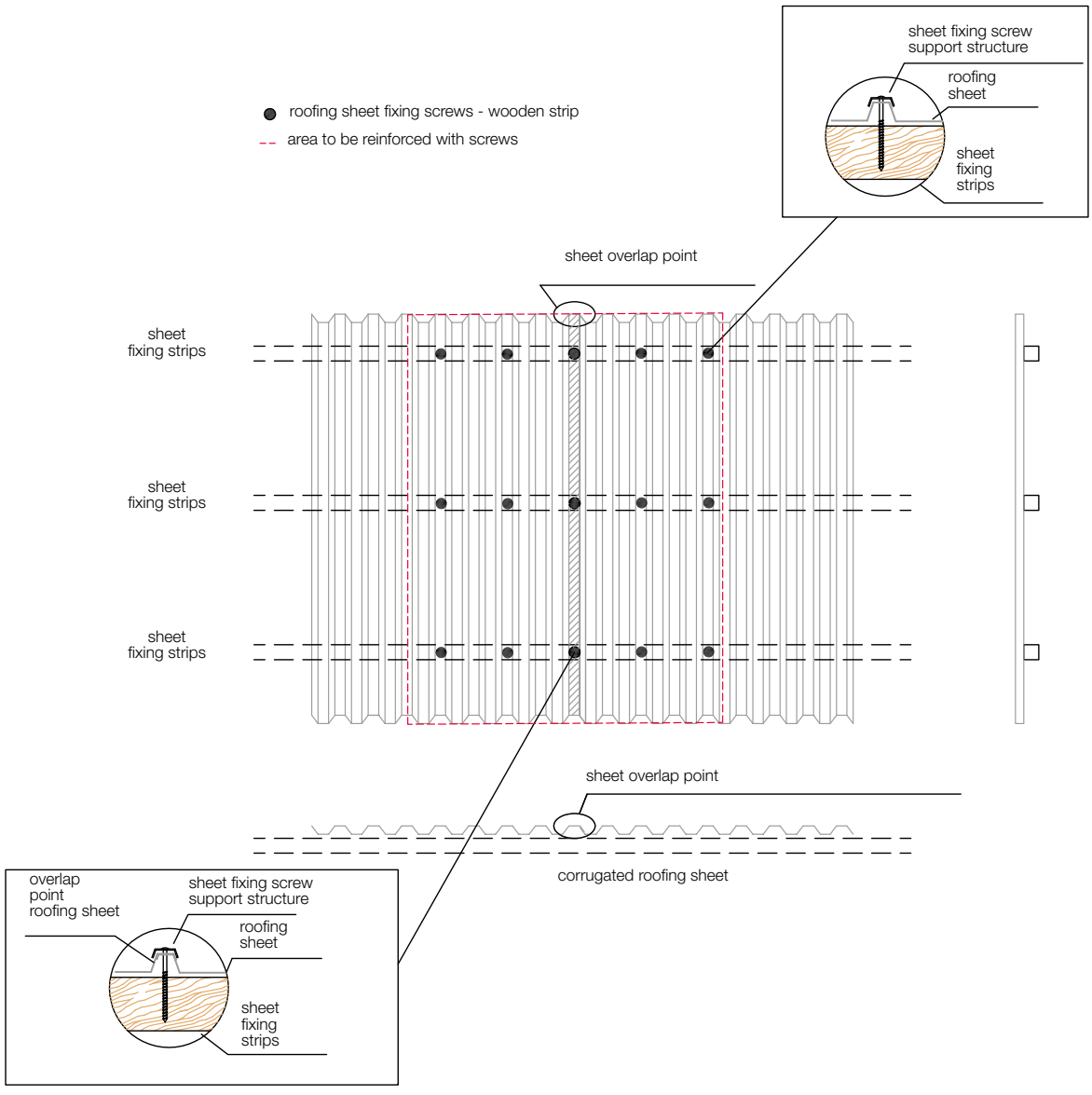


Figure 4.5

In this case, fixing takes place using screws positioned in alternate corrugations.

SCENARIO 2. SHEET WITH MEDIUM CORRUGATION SPACING

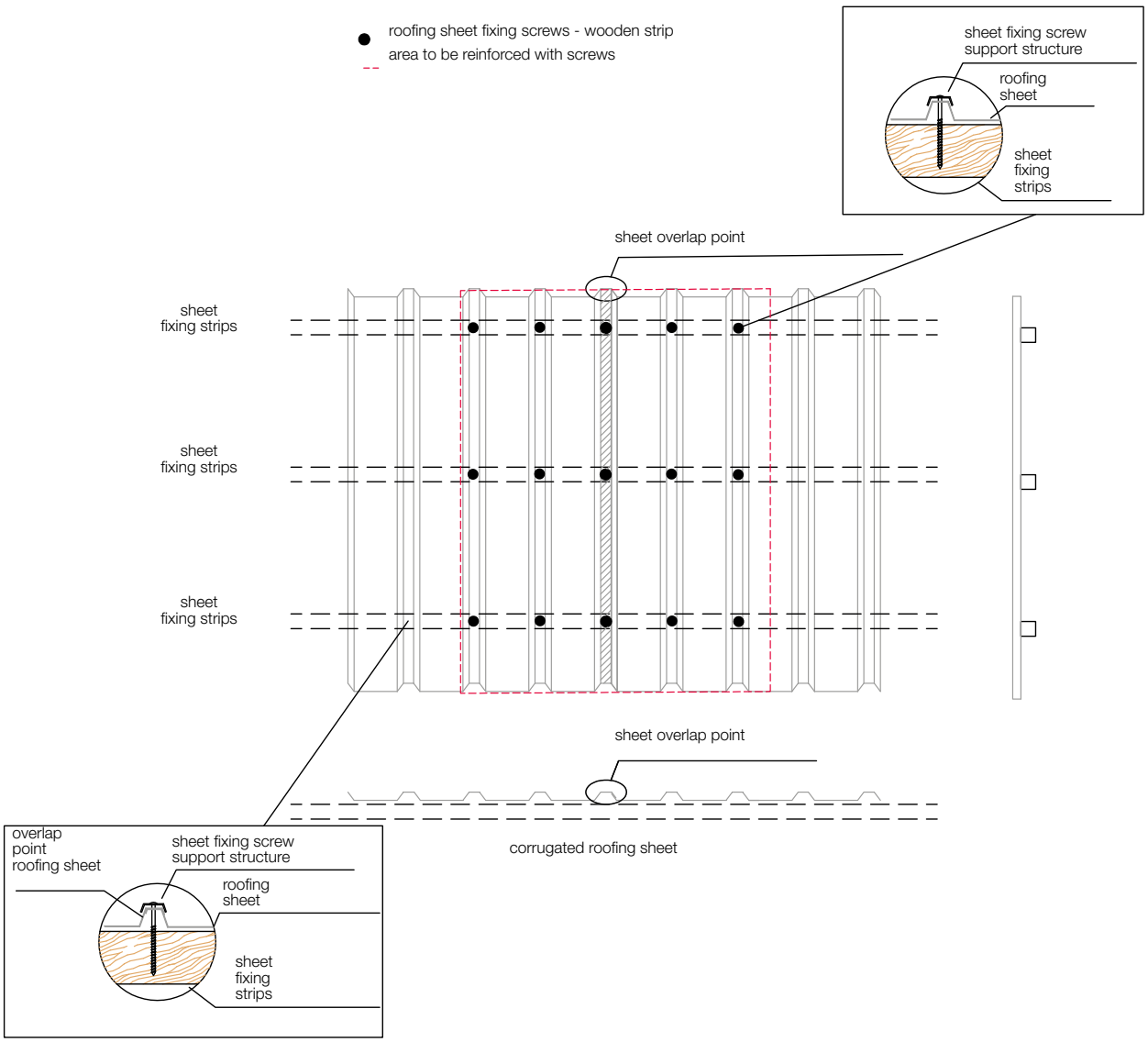
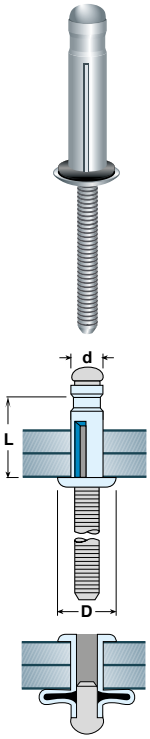
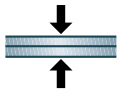
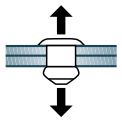
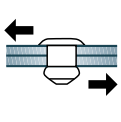
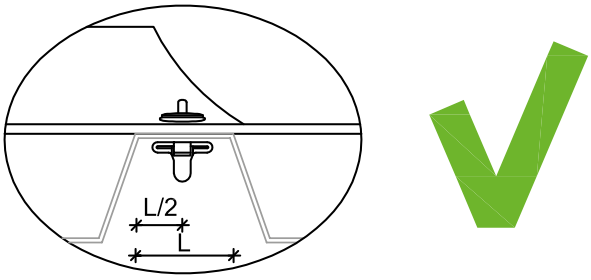
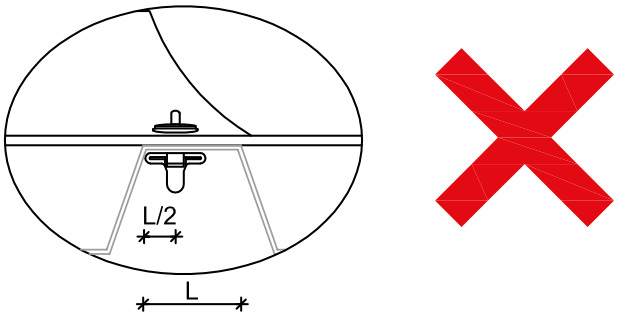


Figure 4.6

In this case, fixing takes place using screws positioned in each corrugation.

4.1.3. FIXING THE PAIR OF REINFORCEMENT SHEETS TO THE ROOFING SHEET

MINIMUM CHARACTERISTICS OF THE MATERIALS PRESENT (SANDWICH PANEL OR CORRUGATED SHEET)

<table>
<tr><td>ROOFING SHEET THICKNESS</td><td>≥ 0.7 mm in aluminium
≥ 0.5 mm and < 0.8 mm in steel (at ends and in curves)</td></tr>
<tr><td>REINFORCEMENT SHEETS</td><td>- Size 1050x130x30 mm and thickness 0.8 mm in pre-painted steel for stainless steel roofing sheet (Cod. 002647)
- Size 1050x130x30 mm and thickness 0.8 mm in stainless steel for Aluminium roofing sheet (Cod. 002648)</td></tr>
<tr><td>RIVETS FIXING THE REINFORCEMENT SHEETS TO THE ROOFING SHEET
  </td><td><u>18 Rivets</u> in aluminium 5.2x20 (kit B11)
<table>
<tr><th>d
mm</th><th>L
mm</th><th>D
mm</th><th> 
mm</th><th> 
mm</th><th> 
N</th><th> 
N</th></tr>
<tr><td>5,2</td><td>20,00</td><td>11,50</td><td>5,3-5,6</td><td>0,5-5,0</td><td>2950</td><td>1820</td></tr>
</table>
<u>Screw fixing: correct position</u>
 
Figure 4.7
<u>Rivet fixing: incorrect position</u>
 
Figure 4.8</td></tr>
</table>

1. Position the reinforcement sheets on the corrugated sheet overlap line, perpendicular to the corrugations, with the outer edges of the two profiles equal to the width of the device to be fitted on them (See Figure 4.9 and Figure 4.10).
2. Fix each reinforcement sheet with 9 rivets: 3 on each short side and 3 intermediate, parallel to the short side, positioning them as shown below.

SCENARIO 1. SHEET WITH SMALL CORRUGATION SPACING

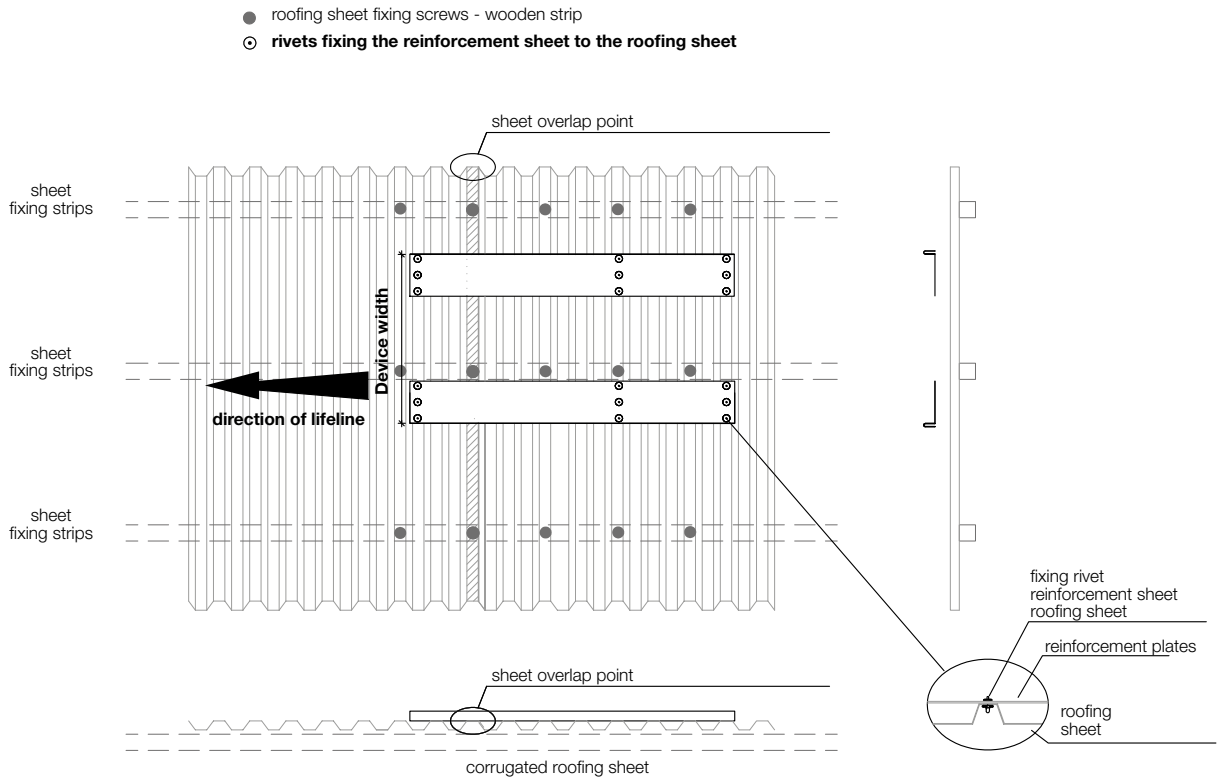


Figure 4.9

SCENARIO 2. SHEET WITH MEDIUM CORRUGATION SPACING

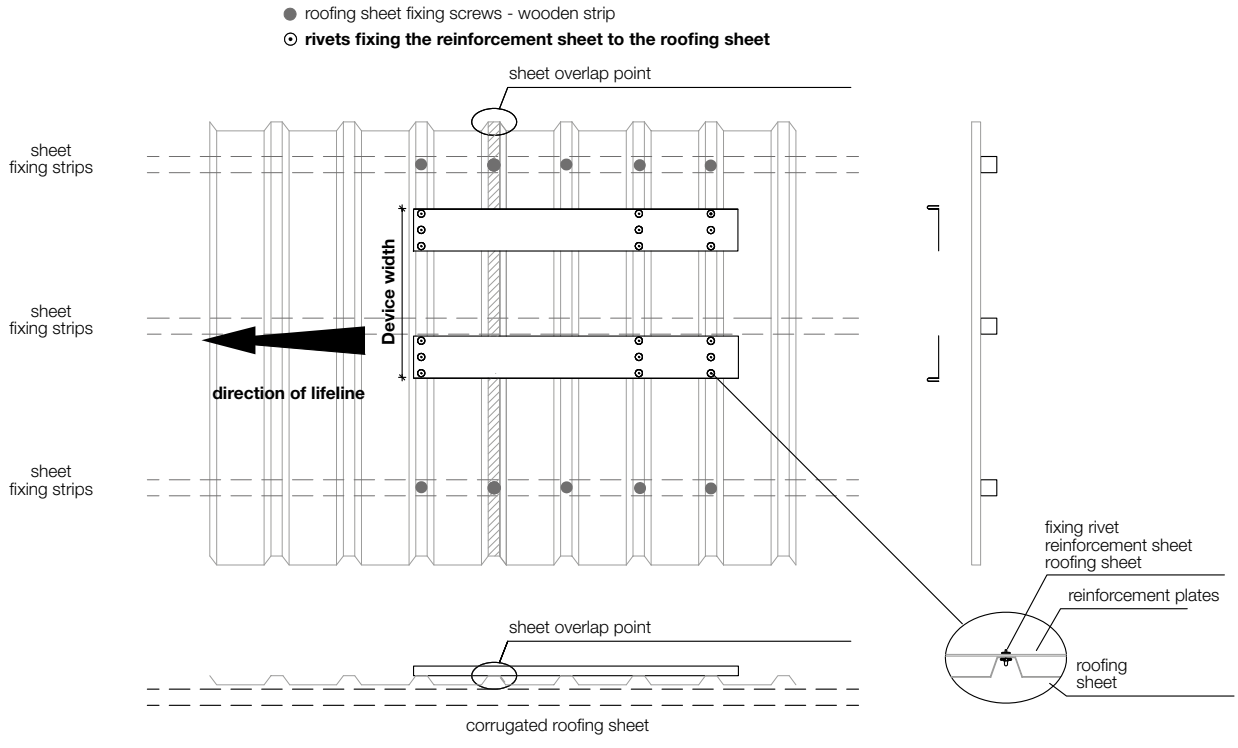
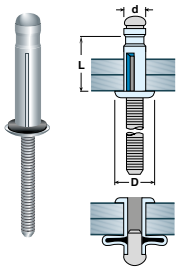


Figure 4.10

4.1.4. FIXING THE ANCHORAGE DEVICE TO THE ROOFING WITH THE REINFORCEMENT SHEET

MINIMUM CHARACTERISTICS OF THE MATERIALS USED

DEVICE FIXING RIVETS



24 Rivets in aluminium **5.2x26** (kit B16)

d mm	L mm	D mm	mm	mm	N	N
5,2	26,00	11,50	5,3-5,6	4,5-11	2950	1820

- **SICURLAM**

Position the **SICURLAM** device over the pair of reinforcement sheets installed previously, moved towards the start of the lifeline (if possible over the point at which the corrugations overlap) and fix it with 24 rivets. The **SICURLAM** device must be fixed in such a way as to take in at least two corrugations, one of which corresponds to the point at which the sheets overlap.

The third row of rivets is arranged so as to connect the reinforcement sheets only, in the absence of available corrugation. See Figure 4.11 or 4.12:

SCENARIO 1. SHEET WITH SMALL CORRUGATION SPACING

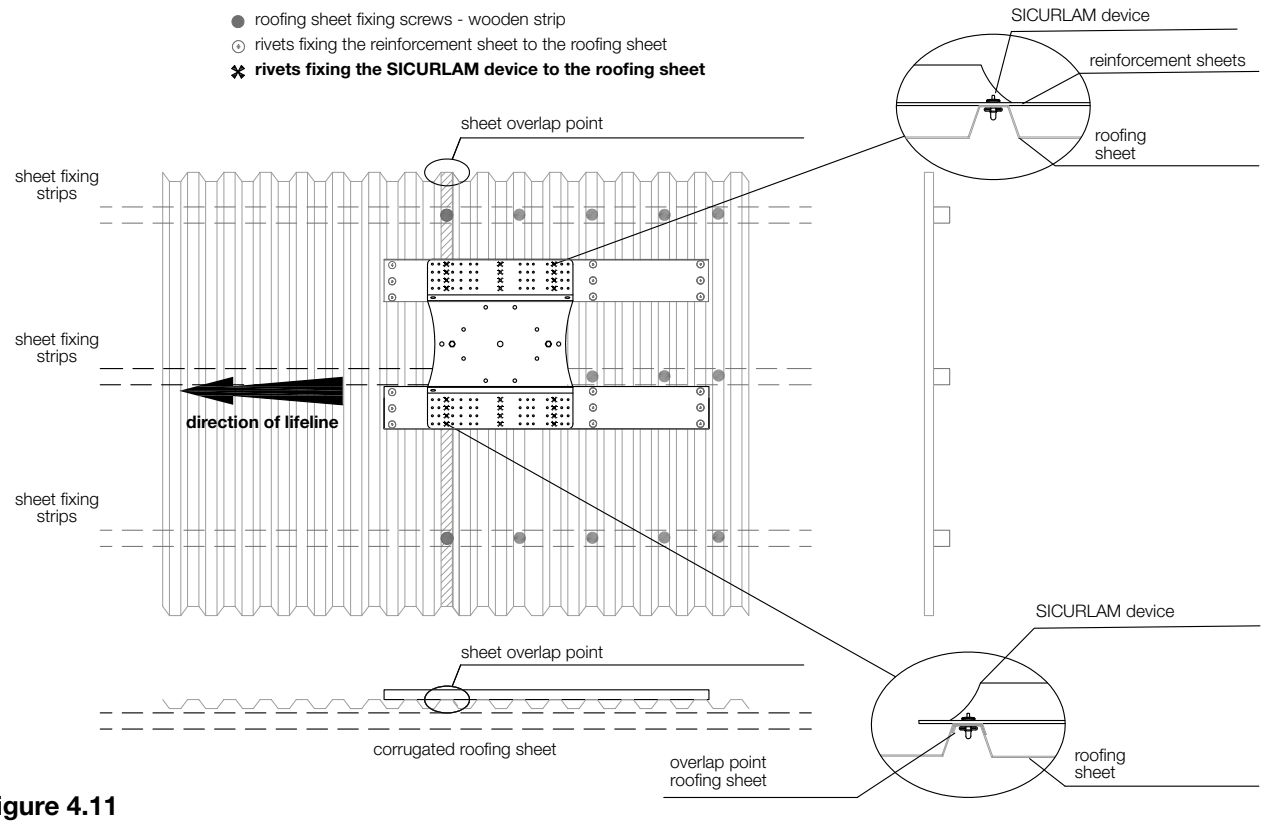


Figure 4.11

SCENARIO 2. SHEET WITH MEDIUM CORRUGATION SPACING

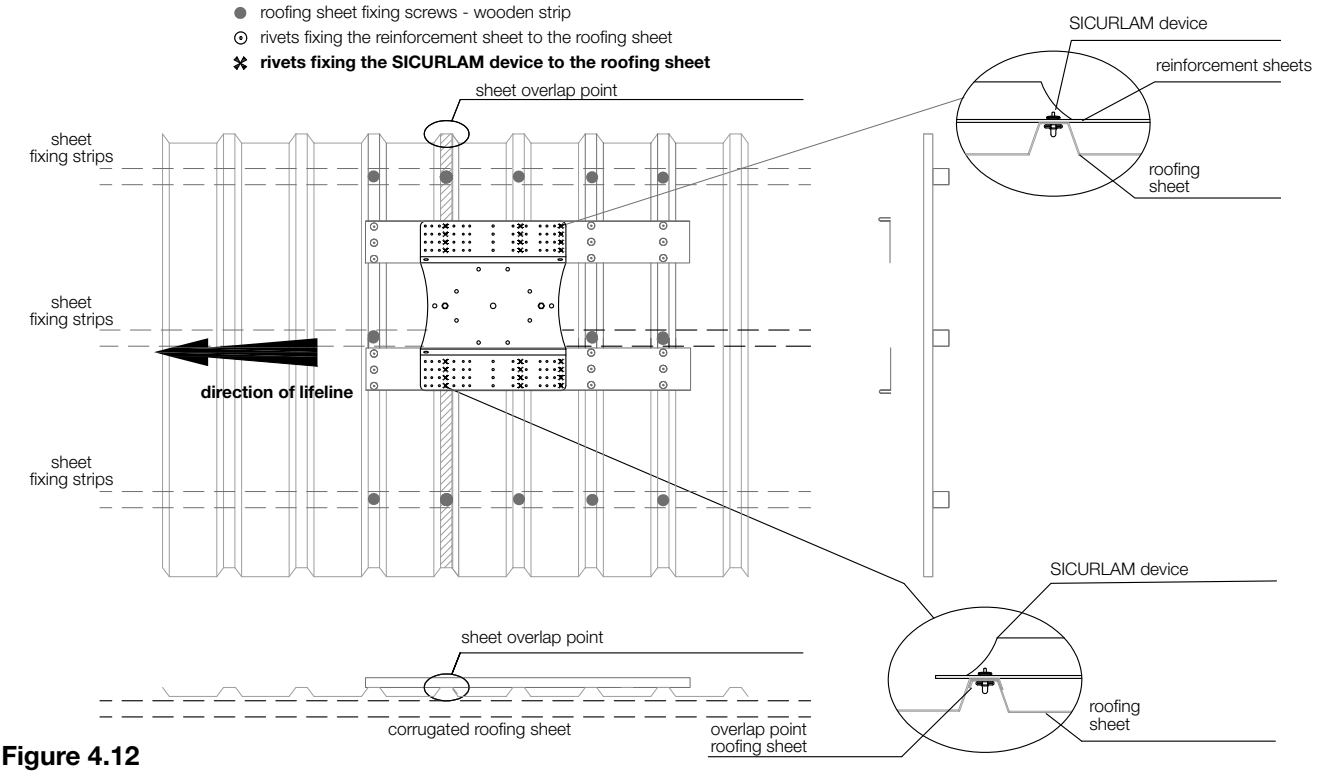


Figure 4.12

- **PLAM**

The **PLAM** device must be fixed in such a way as to connect at least two corrugations, one of which corresponds to the point at which the sheets overlap (See Figure 4.13 or 4.14).

SCENARIO 1. SHEET WITH SMALL CORRUGATION SPACING

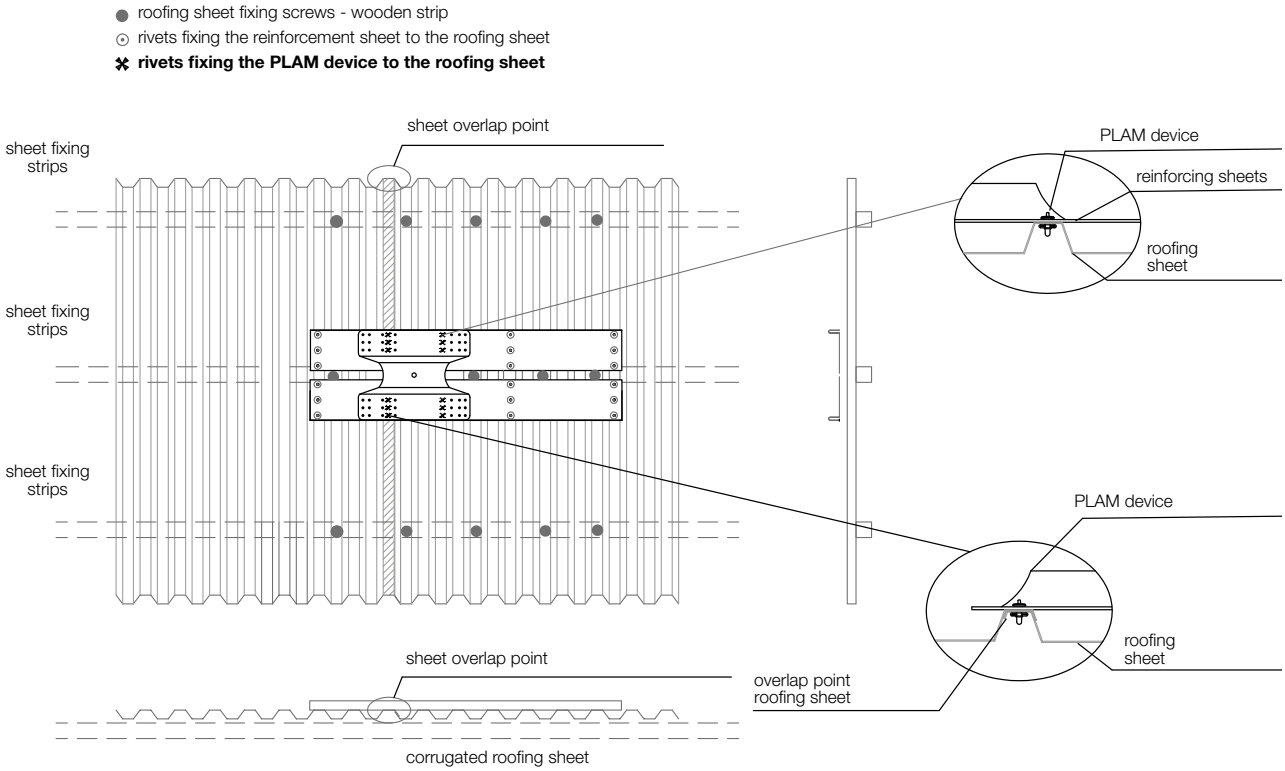


Figure 4.13

SCENARIO 2. SHEET WITH MEDIUM CORRUGATION SPACING

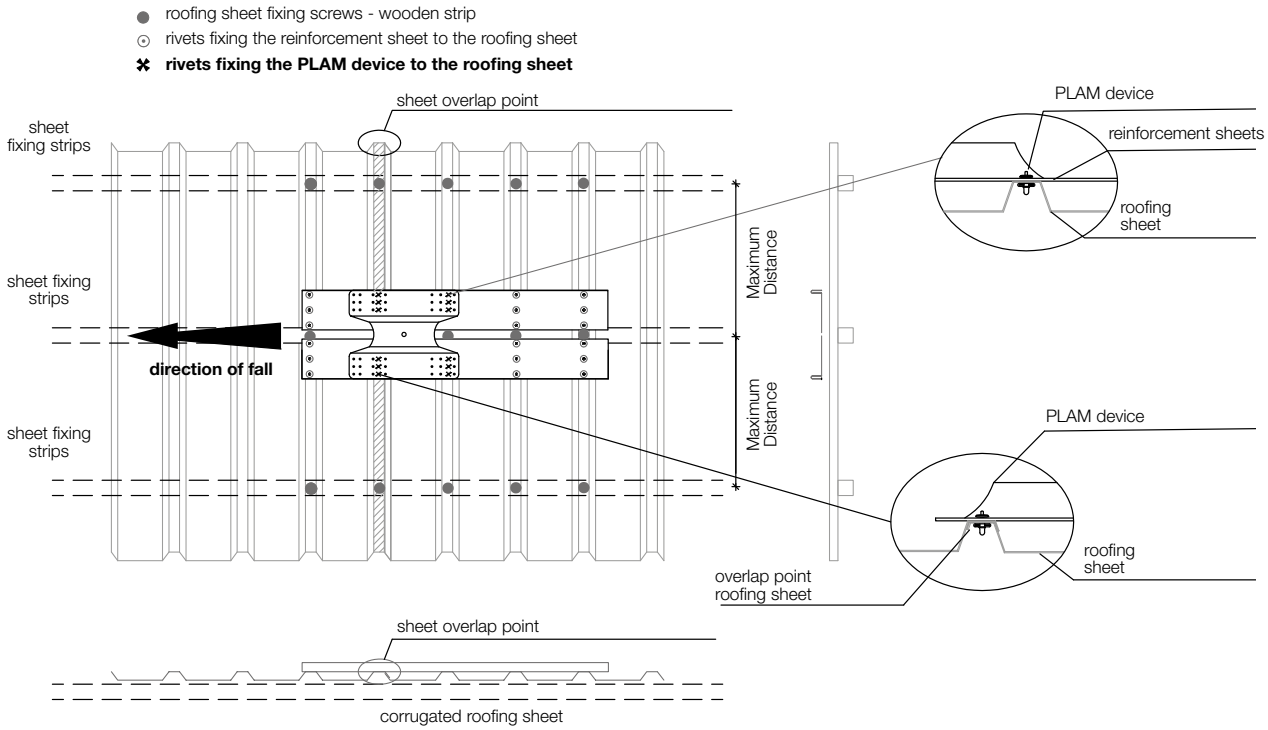


Figure 4.14

4.2. FIXING ANCHORAGE DEVICES IN DIRECT CONTACT WITH THE ROOFING SHEET

Before proceeding to fix the device, reinforce the roofing as described in points 4.1.1. and 4.1.2.

4.2.1. POSITIONING AND FIXING THE SICURLAM ANCHORAGE DEVICE

The **SICURLAM** devices can be fixed to the roofing sheet directly (without the aid of reinforcement plates), if the roofing sheet is made of steel and has a thickness of 0.7 mm (provided the devices are not end devices and/or on a curve) or more than 0.7 mm (all devices, including ends and/or curves).

MINIMUM CHARACTERISTICS OF THE MATERIALS USED (see Table in point 4.1.3.)

After reinforcing the roofing sheet, as described in points 4.1.1. and 4.1.2., proceed to fix the **SICURLAM** device along the corrugation overlap line. Use 24 rivets to fasten, of which 8 along the corrugation overlap line of two panels or sheets, and 16 in correspondence with the other corrugations (the corrugation on which the rivet is fixed depends on the corrugation spacing and the distance between the holes in the **SICURLAM** device).

If the corrugation spacing does not allow fixing with three rows of rivets and the device is intermediate, it is possible to fix it using 16 rivets.

The following are two limit scenarios: with small corrugation spacing and with medium corrugation spacing:

SCENARIO 1. SHEET WITH SMALL CORRUGATION SPACING

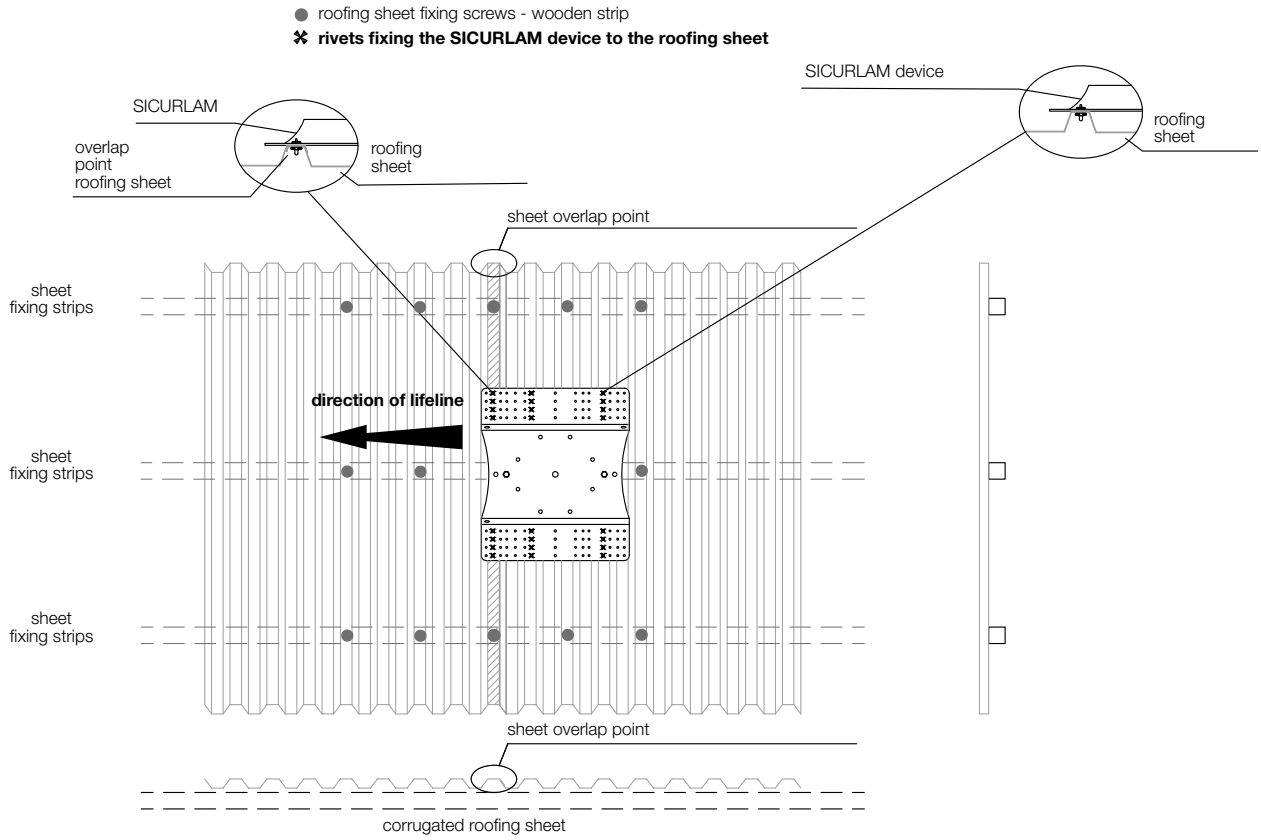


Figure 4.15

SCENARIO 2. SHEET WITH MEDIUM CORRUGATION SPACING

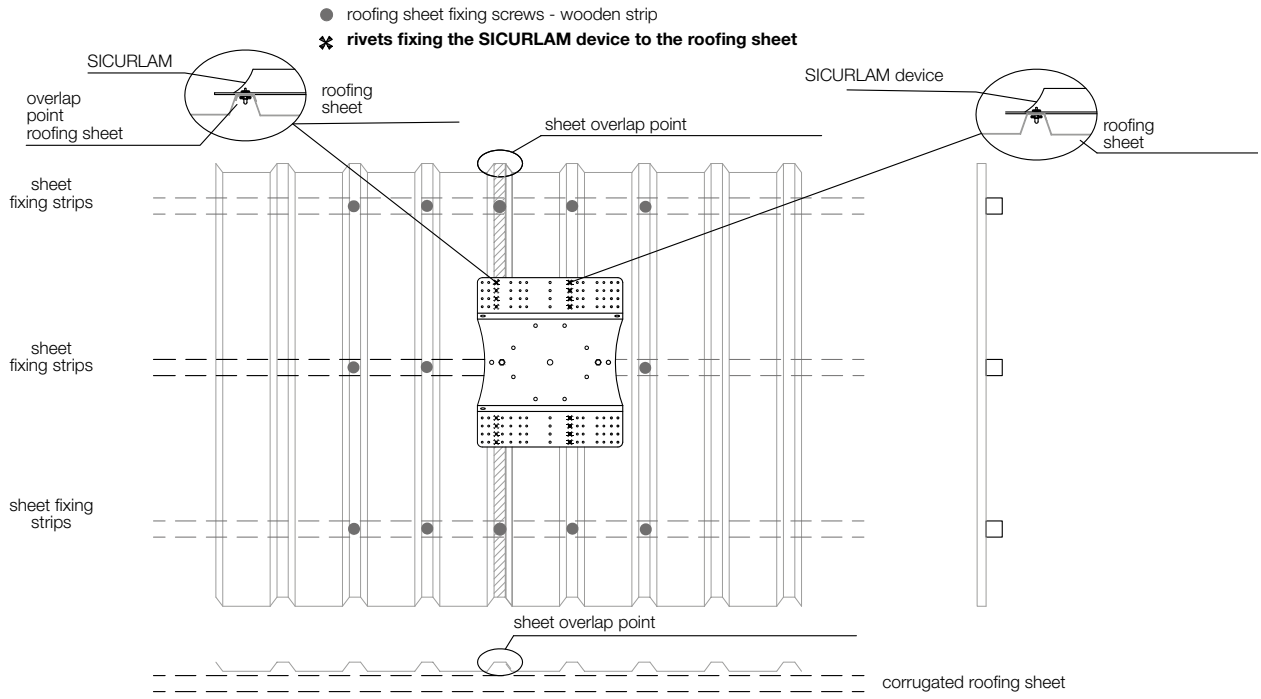


Figure 4.16

4.2.2. POSITIONING AND FIXING THE PLAM ANCHORAGE DEVICE

After reinforcing the roofing sheet, as described in points 4.1.1. and 4.1.2., proceed to fix the **PLAM** device along the corrugation overlap line. Use 12 rivets to fasten, of which 6 along the corrugation overlap line of two panels or sheets, and 6 in correspondence with the adjacent corrugation (the corrugation on which the rivet is fixed depends on the corrugation spacing and the distance between the holes in the **PLAM** device).

SCENARIO 1. SHEET WITH SMALL CORRUGATION SPACING

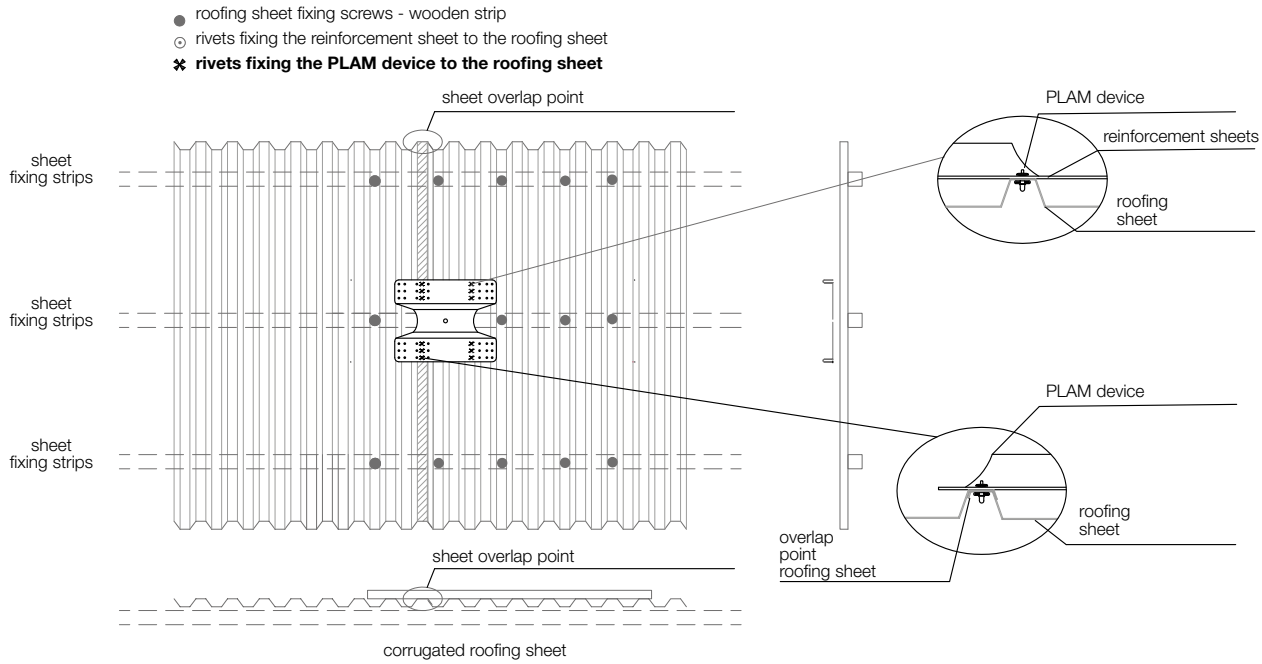


Figure 4.17

SCENARIO 2. SHEET WITH MEDIUM CORRUGATION SPACING

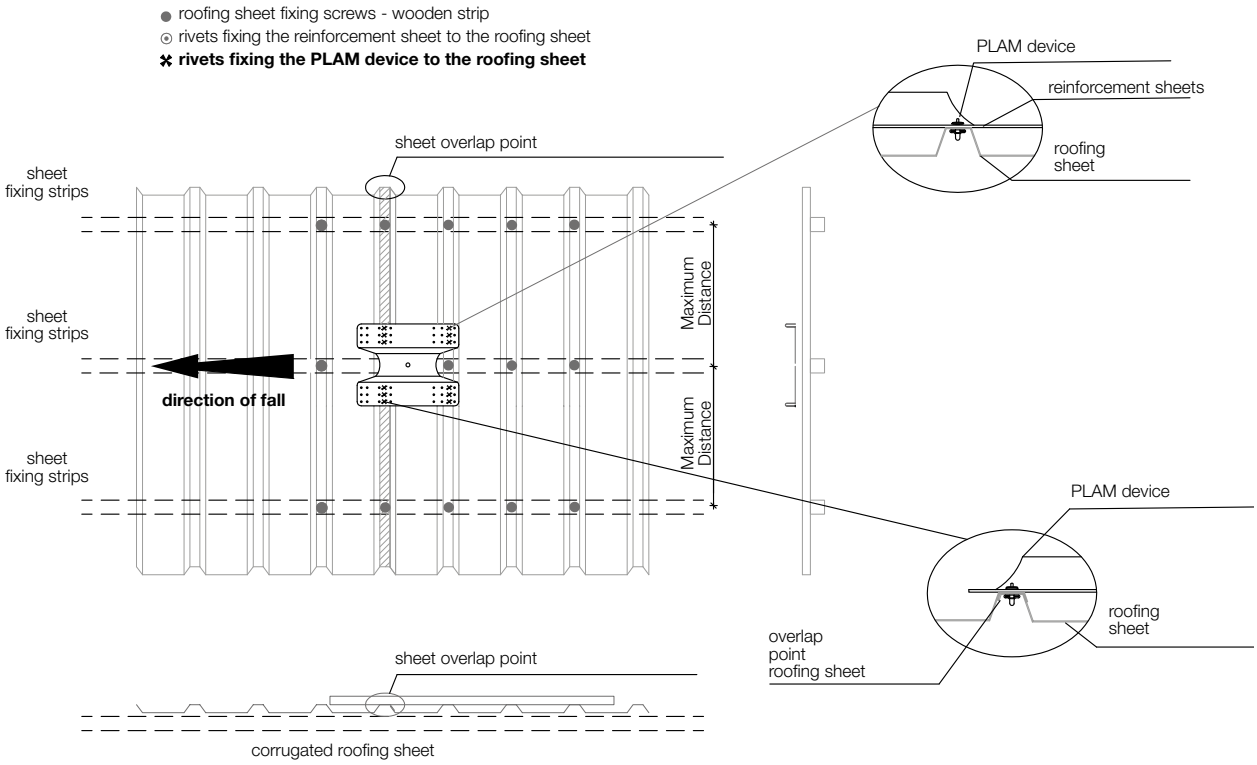


Figure 4.18

The scenarios indicated above can be used as useful examples by the engineer when carrying out verifications on cases other than those certified by **SICURPAL**.

5. DESCRIPTION AND ASSEMBLY OF THE ACCESSORIES

The accessories are to be installed on the upper part of the device to complete the **SICURLAM** lifeline system.

5.1. LIFELINE ACCESSORIES

CABLE Ø8

Cod. 000055
In AISI 316 stainless steel Ø 8 mm
49 strands with identification bar for product traceability

Figure 5.1

TURNBUCKLE/PIPE SUPPORT

Cod. 000194
For installation of the pipe turnbuckle (Cod. 000775) or guide pipe (Cod. 000307/000308/ 000309)
In AISI 304 Stainless steel
Hardware included: bolt 16x35 mm and ø16 mm washer in stainless steel

Figure 5.2

MINI TURNBUCKLE/PIPE SUPPORT

Cod. 000765
For installation of the pipe turnbuckle (Cod. 000775) or guide pipe (Cod. 000307/000308/ 000309)
In AISI 304 Stainless steel
Hardware included: bolt 16x35 mm and ø16 mm washer in stainless steel

Figure 5.3

END OF TRAVEL PLATE

Cod. 000636
End of travel device for 8 mm cable, including two fixing clamps
The device prevents the operator from continuing beyond the point defined by the end of travel plate

Figure 5.4

LIFELINE CONNECTOR

Cod. 001459
Plate and lifeline connection accessory
The connector is fixed to the plate
by means of an M16x30 A2-70 stainless steel bolt

Figure 5.5

ABSORBER

Cod. 000033
Energy absorber for lifeline
In AISI 304 Stainless steel

Figure 5.6

QUICK LINK

Cod. 001518
Universal quick link

Figure 5.7

Cod. 001758
Economy
quick link

Figure 5.8

PIPE TURNBUCKLE

Figure 5.9

Cod. 000775
Turnbuckle with 250 mm thread in AISI 316 Stainless steel **to be pressed** for lifeline
Hardware included: 2 nuts and 1 washer ø14 in stainless steel

Figure 5.10

Cod. 002477
Turnbuckle with 250 mm thread in AISI 316 Stainless steel **to be crimped** for lifeline
Hardware included: 2 nuts and 1 washer ø14 in stainless steel
The turnbuckle allows tensioning of the lifeline

JAW/PIPE TURNBUCKLE

Figure 5.11

Cod. 000294
AISI 316 Stainless steel turnbuckle with 250 mm closed pipe and one jointed jaw with Ø 12X40 mm fastening bolt

Figure 5.12

Cod. 002494
AISI 304 Stainless steel turnbuckle with 150 mm closed pipe and one jointed jaw with Ø 12X40 mm fastening bolt

DOUBLE JAW TURNBUCKLE

Figure 5.13

Cod. 000032
AISI 316 Stainless steel turnbuckle with 250 mm closed pipe and two jointed jaws with Ø 12X40 mm fastening bolts

Figure 5.14

Cod. 002493
AISI 304 Stainless steel turnbuckle with 150 mm closed pipe and two jointed jaws with Ø 12X40 mm fastening bolts

JAW TERMINAL

FIXED

Figure 5.15

Cod. 000292
AISI 316 Stainless steel terminal and fixed jaw with Ø 12X40 mm fastening bolt

JOINTED

Figure 5.16

Cod. 000293
AISI 316 Stainless steel terminal and jointed jaw with fastening bolt Ø 12X40 mm

X-LAM PLATE

Cod. 000787
Line by-pass type intermediate accessory fixing plate
The X-Lam accessory allows the lifeline cable to be positioned at a height of 0.146 m, thus preventing the cable from touching the roofing sheet as a result of changes in temperature
The X-Lam accessory is positioned over the line Sicurlam devices, that do not form ends or curves

Figure 5.17

FIXING KIT, Ø8 CABLE

Cod. 001513
FIXING KIT, Ø 8 CABLE
In AISI 304 Stainless steel for cable
Ø 8 mm
Required for fixing with rope clips

Figure 5.18

SEAL

Cod. 000290
Turnbuckle locking seal (see Chapter 6 for the installation procedure)

Figure 5.19

LIFELINE ID

Cod. 000291
Lifeline identification code

Figure 5.20

ACCESS SIGN

Cod. 000296
Aluminium access sign to be positioned in the vicinity of every access point to the secured area

Figure 5.21

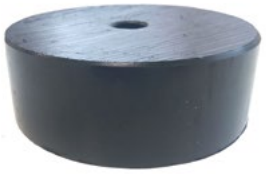
5.2. BYPASS LINE ACCESSORIES

INTERMEDIATE CABLE SUPPORT

Cod. 001094
Aluminium by-pass cable support

Figure 5.22

ALUMINIUM CABLE SUPPORT HOLDER



Cod. 002751
Polyethylene support with external diameter 120 mm, internal diameter 16.5 mm and height 45 mm
Used to prevent the cable from touching the roof
It is fixed to the intermediate SICURLAM/PLAM device using a 14x80 mm countersunk head bolt

Figure 5.23

CORNER GUIDE PIPES

Figure 5.24
STRAIGHT PIPE
Cod. 000309

Figure 5.25
135° PIPE
Cod. 000307

Figure 5.26
90° PIPE
Cod. 000308

Pipe Ø 14 mm with thickness 2 mm
In AISI 304 Stainless steel
Capable of covering 90°/135°/180° corers
To be used in combination with the supports (Cod. 000194)

PULLEY CORNER CABLE SUPPORT

Cod. 000306
Corner cable support with AISI 304 stainless steel elements and aluminium pulley
Hardware included: bolt 16x50 + self-locking nut and ø16 mm stainless steel washer

Figure 5.27

5.3. GLIDER ACCESSORIES

To avoid the risk of the cable touching the roof, due to a reduction in the height of the cable with respect to the covering, the use of glider accessories is preferable.

L.L. GLIDER

Cod. 001512
Safety glider for bypassable lifeline, allowing the operator to work without having to unhook, pause or slow down his movements
See Chapter 5, point 5.5, for information on the installation procedure, use and maintenance

Figure 5.28

GLIDER VERTICAL CABLE SUPPORT

Cod. 000192
Fixed vertical cable for fixed glider
In some cases it is possible to install it directly on the support

Figure 5.29

ADJUSTABLE INCLINED CABLE SUPPORT

Cod. 001345
Inclined vertical cable support for glider, adjustable 0°/45°

Figure 5.30

VERTICAL 90 CABLE SUPPORT

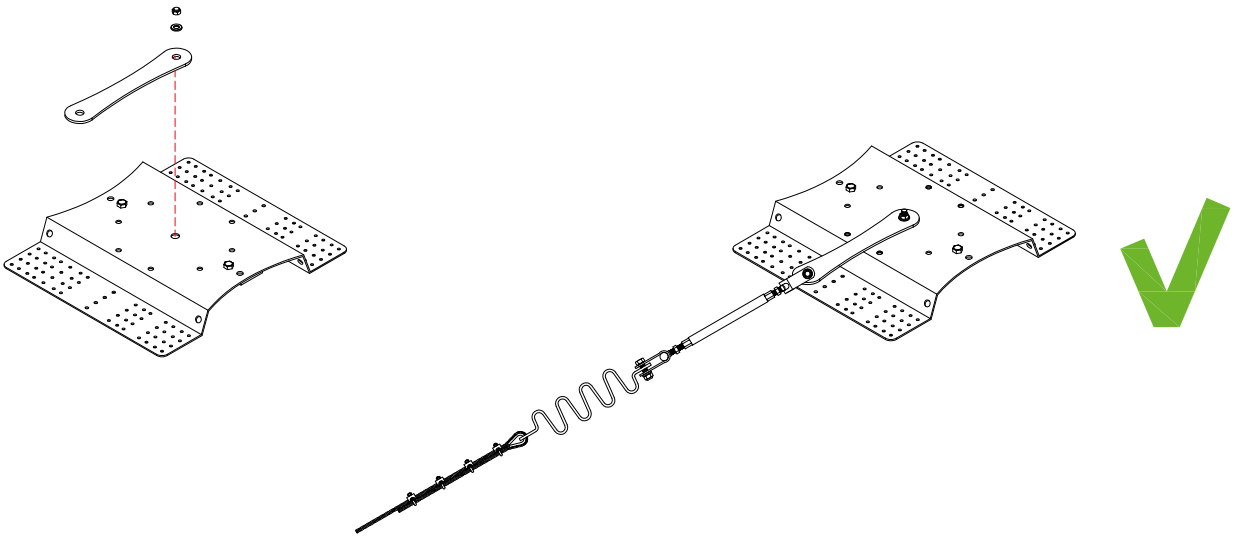
Cod. 001327
Fixed vertical 90° cable support for glider

Figure 5.31

5.4. ASSEMBLING THE ACCESSORIES

The **SICURLAM** lifeline anchorage system consists of various interconnected components, starting from the **SICURLAM** device supporting the accessories. The following are examples of possible applications.
Use of the lifeline connector device is only foreseen if it is fitted perpendicular to the axis of the anchorage device.

Correct positioning of the lifeline connector



Incorrect positioning of the lifeline connector

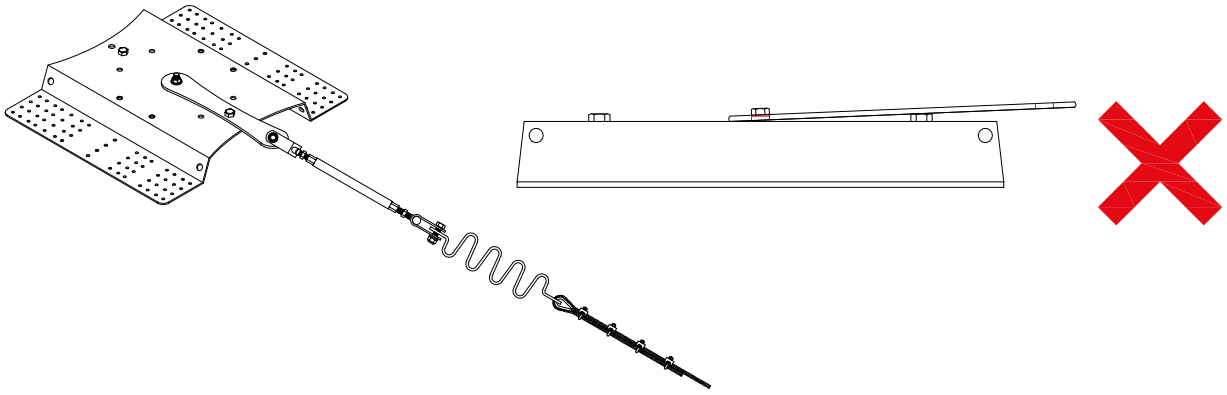


Figure 5.32 - SICURLAM device with lifeline connector (Cod. 001459)

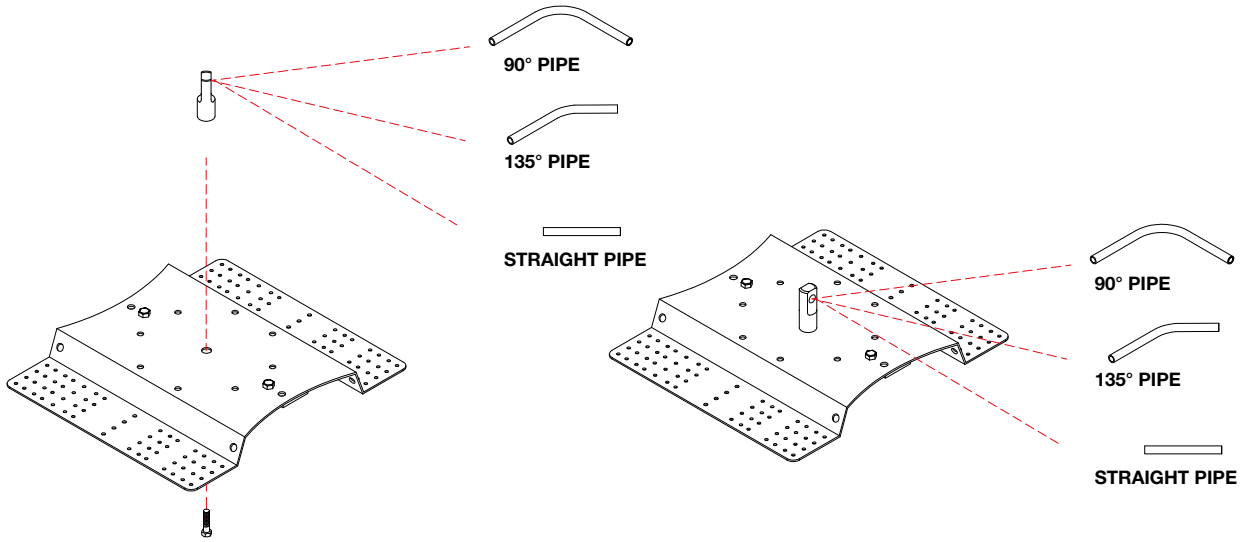


Figure 5.33 - SICURLAM device with turnbuckle/pipe support (Cod. 000194) + pipe (Cod. 000307/000308/000309)

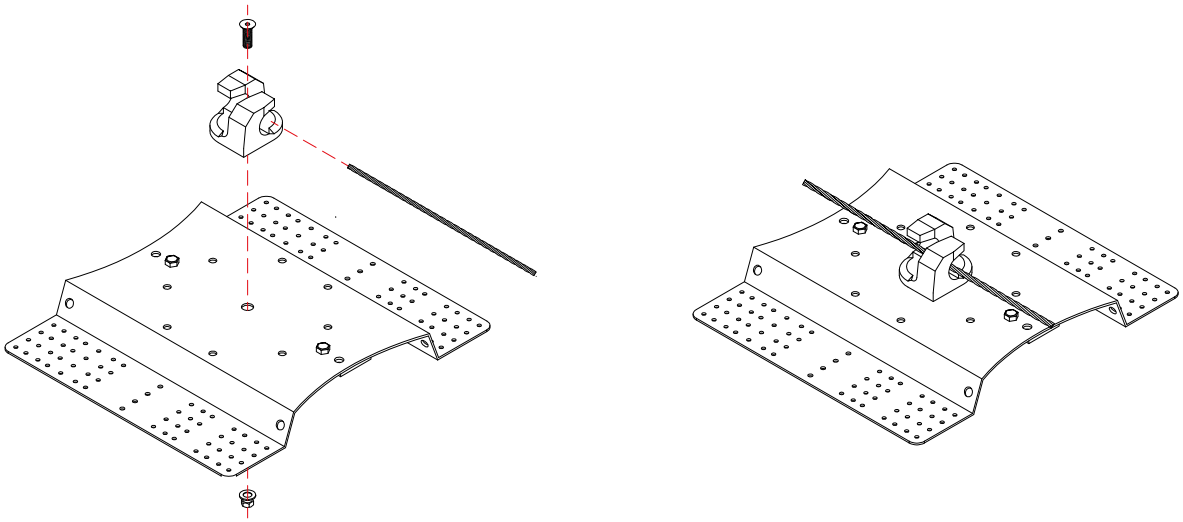


Figure 5.34 - SICURLAM device with aluminium cable support (Cod. 001094)

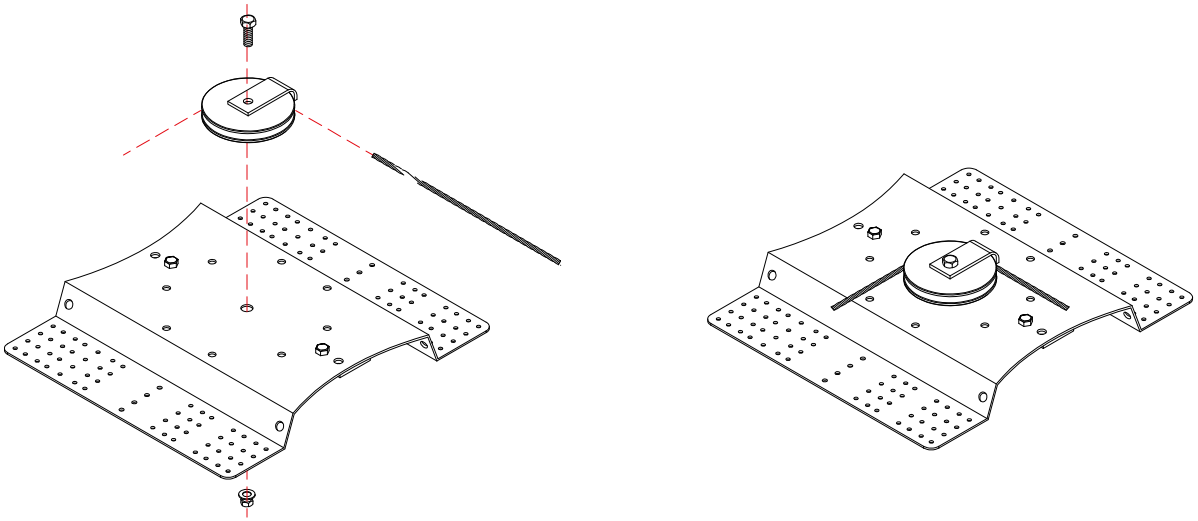


Figure 5.35 - SICURLAM device with pulley (Cod. 000306)

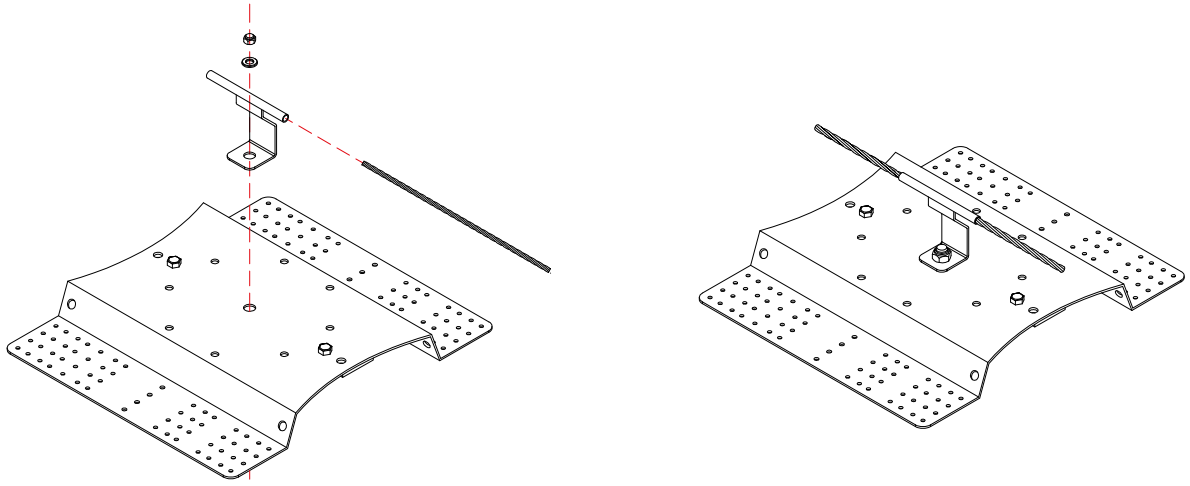


Figure 5.36 - SICURLAM device + Glider Vertical Cable Support (Cod. 000192)

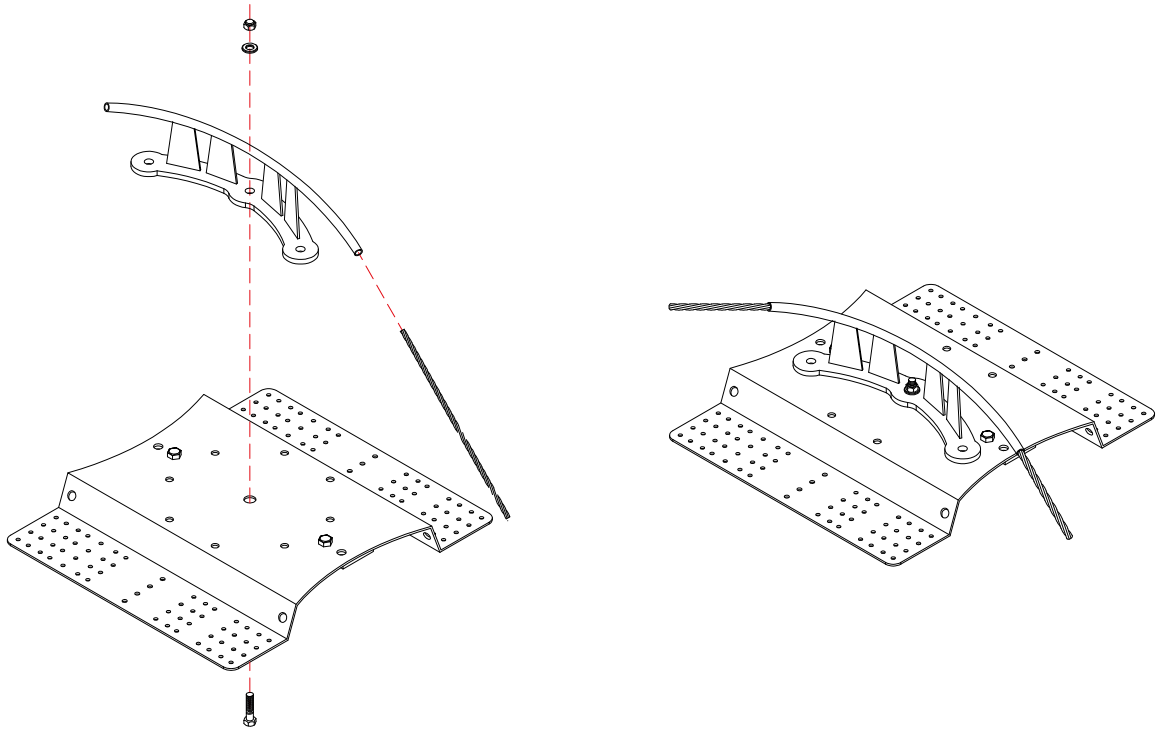


Figure 5.37 - SICURLAM device + 90° Cable Support for glider (Cod. 001327)

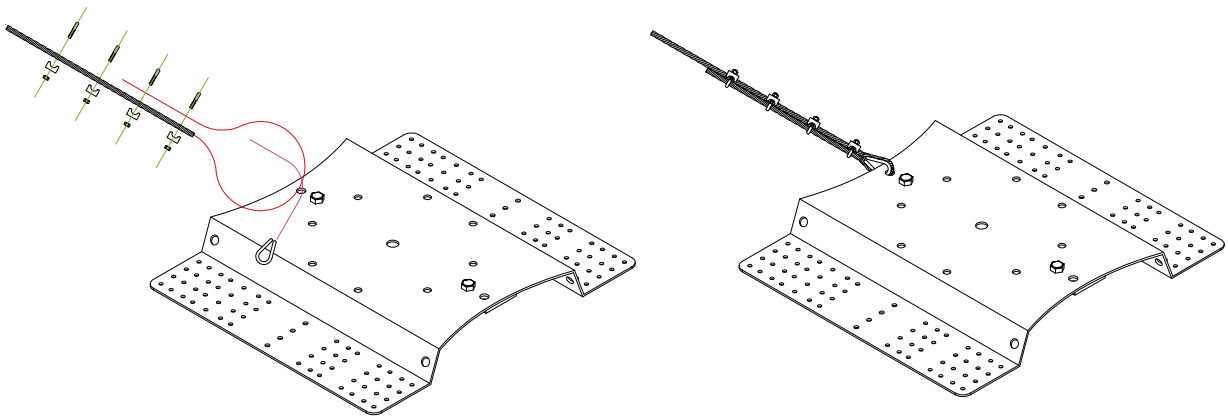
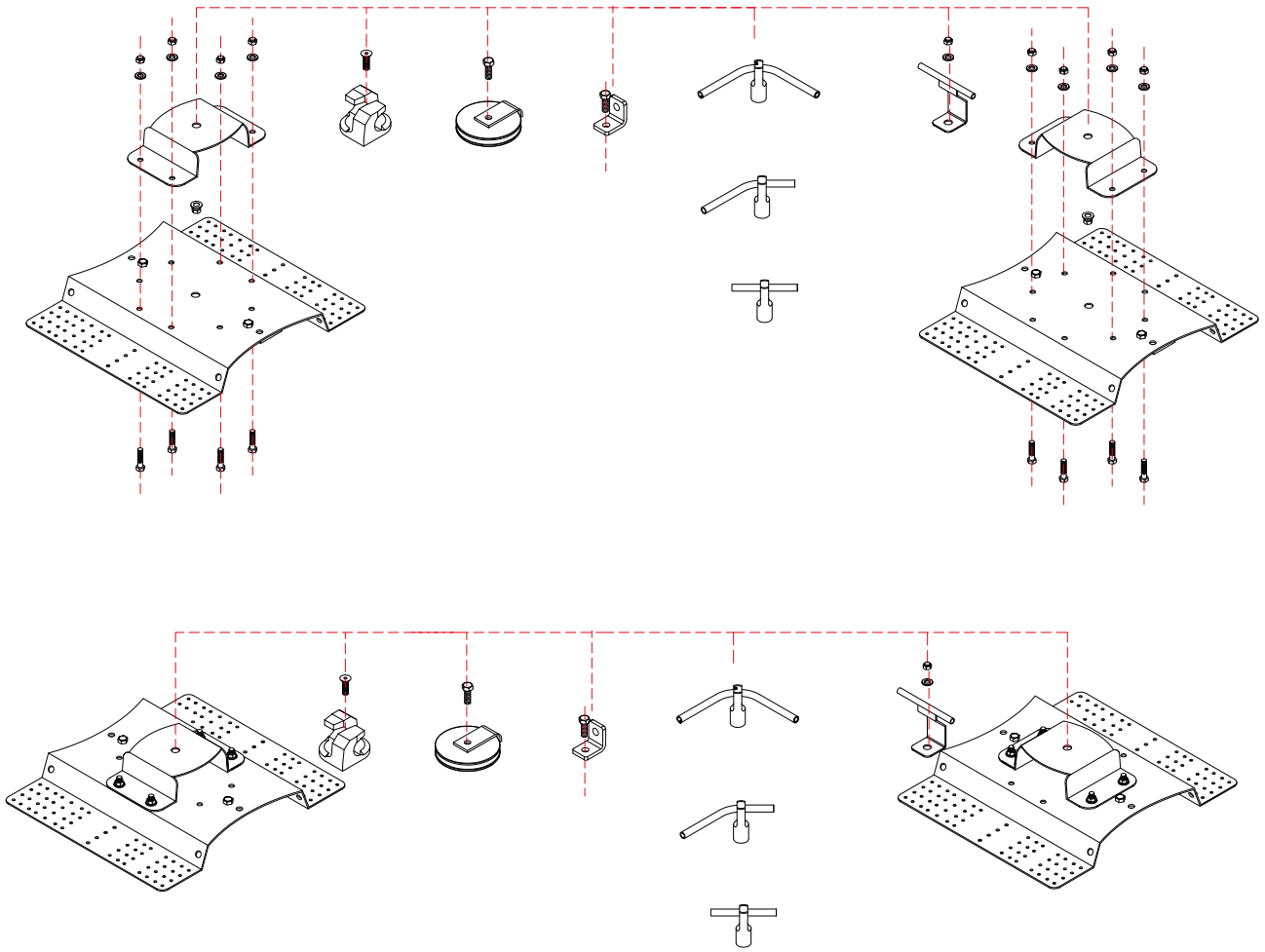


Figure 5.38 - SICURLAM device + clips and thimble (Cod. 001513)



- Fix the X-Lam plate to the Sicurlam device using 4 M10 bolts;
- Fix the Aluminium Cable Support/Pullley/Glider vert. Cable Support to the **SICURLAM** plate using an M16 bolt.

Figure 5.39 - SICURLAM device + X-Lam Plate (Cod. 000787) + Aluminium cable support (Cod. 001094)/ pulley (Cod. 000306)/ turnbuckle mini support (Cod. 000765)/ turnbuckle support (Cod. 000194)+ pipe (Cod. 000307/Cod. 000308/Cod. 000309)+ Glider Vert. Cable Support (Cod. 000192)

⚠	**For lifelines without curves it is possible to use the PLAM device, instead of the SICURLAM, as an intermediate device.**

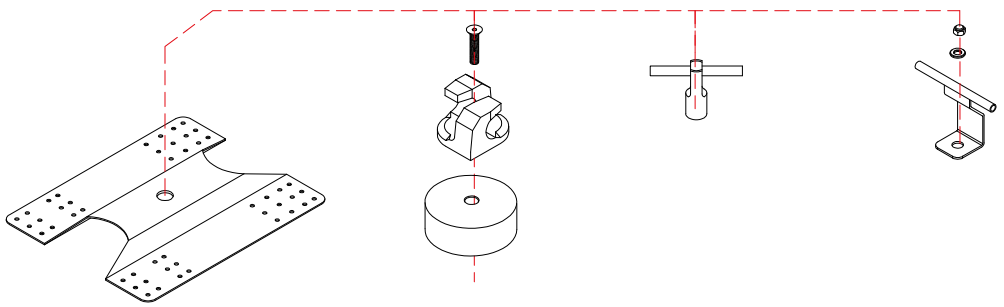


Figure 5.40 - PLAM device + Aluminium cable support (Cod. 001094)+ cable support holder (Cod. 002751)/ turnbuckle support (Cod. 000194)+ pipe (Cod. 000307/Cod. 000308/Cod. 000309)+ Glider Vert. Cable Support (Cod. 000192)

5.5. INSTALLATION, USE AND MAINTENANCE OF THE GLIDER

The glider is used for bypassable lifelines of significant lengths, to allow the operator to work without having to unhook, pause or slow down his movements. This is possible if the lifeline is also equipped with the following accessories:

- Vertical cable support for glider (Cod. 000192)
- Vertical cable support 90 (Cod. 001327)
- Adjustable vertical cable support (Cod. 001345)

The glider consists of two assembled, sliding parts. This allows the glider to be hooked up and unhooked from the lifeline by means of two intentional actions. The front part contains two stops:

Figure 5.41
Stop 1 - Serves to lock the two parts of the glider finally and intentionally.
Stop 2 - This is a safety stop that serves to open the glider and subsequently allow it to be hooked up to the lifeline.

Figure 5.42 - The rear part of the glider contains two teeth, which have the sole purpose of allowing the mobile part to be gripped and made to slide (after applying a slight downward force).
(See Figure 5.43)

The following illustrates how to install the glider on the lifeline:

Figure 5.43

Figure 5.44 - Glider open

1. Unscrew stop 1;
2. Pull stop 2 outwards and at the same time grip the mobile part of the glider and press downwards slightly (see Figure 4.34);
3. Fasten the glider to the lifeline cable and release the grip, so that the glider closes again (returns to its original position);
4. Turn stop 1 until it is completely tight;
5. Hook the snap shackle (OXAN TL) included with the device into the bore at the bottom.

The same procedure is used to remove the glider.
For proper maintenance of the glider, it is recommended that a jet of compressed air and a cleaning product for brakes and metals be used in case of blockage.

⚠	**The device must only be opened for maintenance by Sicurpal technicians.**

6. INDICATIONS FOR FITTING THE LIFELINE

The following are the operations to be carried out to complete installation of the **PTV lifeline**:

a. Assemble the accessories (see Chapter 5.4.);

b. Fix the turnbuckle at one end and the energy absorber at the other end, or in series;

c. Fix the intermediate accessories in the case of a line with multiple spans*

*In the case of lifelines with multiple spans of different lengths, it is recommended that the energy absorber be installed in the shortest span;

d. Fix the cable.

To fix the cable, two main methods can be used:

Method 1: FITTING WITH CRIMPING

The terminals in the **SICURLAM** lifeline can be:

- crimped
- fixed jaw (Cod. 000292)
- jointed jaw (Cod. 000293)
- turnbuckle (Cod. 000294/002494) and (Cod. 000775/002477)

Each pipe to be crimped has an open bore that allows the correct positioning of the cable to be checked both before and after crimping.

The procedure used for crimping is as follows:

1. Insert the cable all the way into the pipe and check that it is present using the bore;
2. Use a crimping tool to make the first crimping, checking that the cable is still visible inside the pipe;
3. Perform the other crimping operations at a distance of approximately 8 mm from the previous one, turning the crimping tool by about 20° each time (see **Figure 6.1**). This operation is compulsory for aesthetic reasons, to avoid a pipe that is not straight and not in axis.

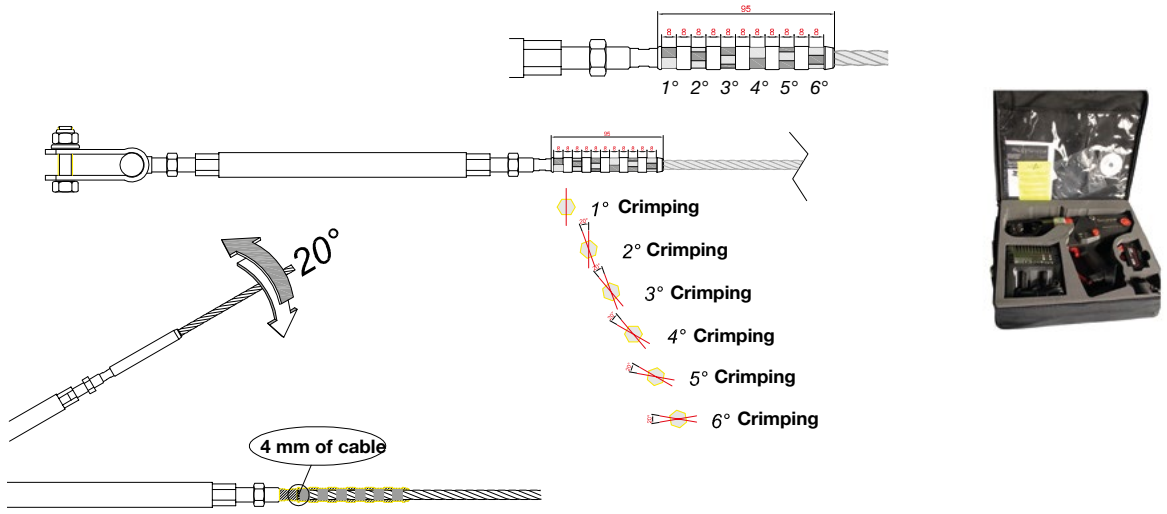


Figure 6.1 - Crimping

⚠	**In the presence of roofing with a slope of more than 5°, install snow stopper hooks to prevent possible damage to the fall prevention system.**

STANDARD EXAMPLES OF INSTALLATION:

All **SICURLAM** products comply with standards UNI EN 795:2012, CEN/TS 16415:2013 and with UNI 11578:2015.

Crimped or pressed connections comply with all three of the above mentioned standards.

The following are a series of ways in which the lifeline can be assembled:

TURNBUCKLE

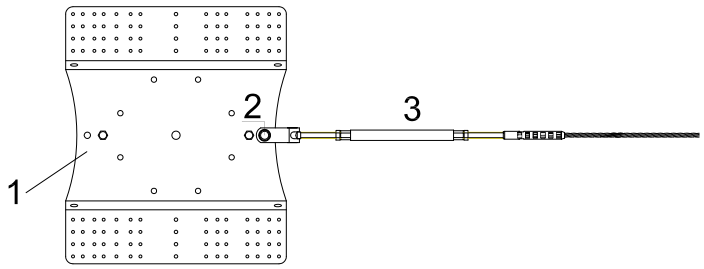


Figure 6.2

- **UNI EN 795:2012**
- **CEN/TS 16415:2013**
- **UNI 11578:2015**

1. Fix the SICURLAM device (1) (Cod. 002590) following the indications provided in Chapter 4.;
2. Fix the J/P turnbuckle (3) (Cod. 000294/002494) on the side hole of the device using the M12x40 bolt + washer + self-locking nut (2) provided;
3. Insert the cable into the other end of the turnbuckle and crimp the cable (See Chapter 6.).

TERMINAL

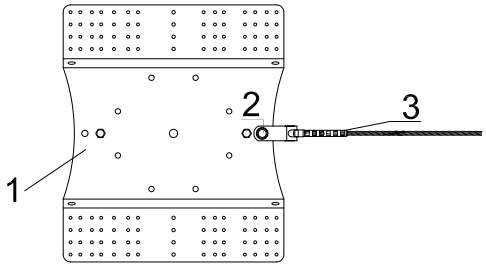


Figure 6.3

- **UNI EN 795:2012**
- **CEN/TS 16415:2013**
- **UNI 11578:2015**

1. Fix the SICURLAM device (Cod. 002590) following the indications provided in Chapter 4.;
2. Fix the jointed jaw terminal (Cod. 000293) on the side hole of the plate using the M12x40 bolt + washer + self-locking nut (2) provided;
3. Insert the cable into the other end of the terminal and crimp the cable (See Chapter 6.).

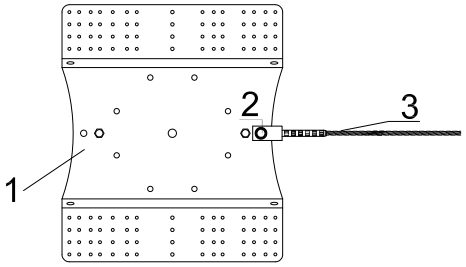
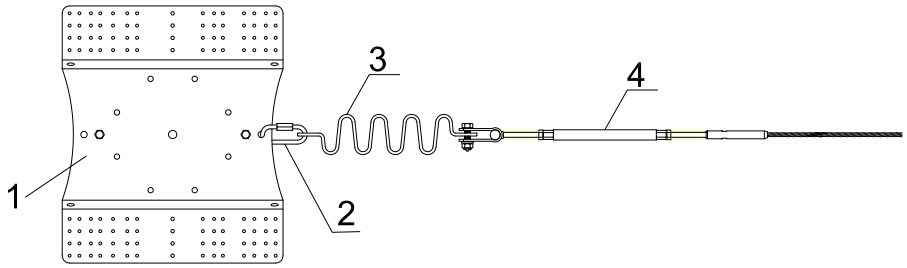


Figure 6.4

- **UNI EN 795:2012**
- **CEN/TS 16415:2013**
- **UNI 11578:2015**

1. Fix the SICURLAM device (Cod. 002590) following the instructions provided in Chapter 4.;
2. Fix the fixed jointed jaw terminal (Cod. 000292) on the side hole of the plate using the M12x40 bolt + washer + self-locking nut (2) provided;
3. Insert the cable into the other end of the terminal and crimp the cable (See Chapter 6.).

TERMINAL



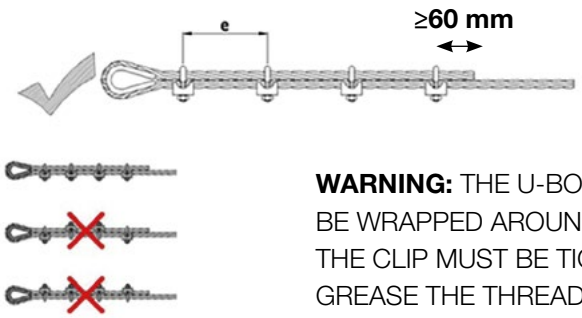
- **UNI EN 795:2012**
- **CEN/TS 16415:2013**
- **UNI 11578:2015**

Figure 6.5

1. Fix the SICURLAM device (Cod. 002590) following the indications provided in Chapter 4.;
2. Fix a quick link (2) (Cod. 0001518/001758) to the side hole of the device;
3. Pass the energy absorber through the inside of the quick link (3) (Cod. 000033);
4. Fix the jaw-pipe turnbuckle (Cod. 0002945/002494) into the other end of the energy absorber;
5. Insert the cable into the other end of the turnbuckle and press it (See Chapter 6.).

Method 2: FITTING WITH WIRE ROPE CLIPS

1. Insert the cable into the smaller heat-shrinkable sheathing and then into the larger one, before bending the cable;
2. Position the 4 rope clips on the 8 mm diameter cable, taking care to ensure that the first rope clip is as close as possible to the thimble, so that the value of the distance between clips "e" is between 30 mm and 60 mm and in any case not less than 30 mm or greater than 60 mm (see **Figure 6.6**).
   The length of the dead cable must be in relation to the distance "e" between clips, while the length of the cable at the end of the clips must always be more than 60 mm;



WARNING: THE U-BOLT PART OF THE ROPE CLIP MUST BE WRAPPED AROUND THE DEAD PART OF THE CABLE.
THE CLIP MUST BE TIGHTENED TO 3.3 Nm.
GREASE THE THREADS BEFORE TIGHTENING.

Figure 6.6 - Positioning cable with rope clips

3. Tighten the 8 nuts in the clips using a torque wrench set to 3.3 Nm (EN 14399);
4. Initial tightening of the clips must be with the cable slack and without using a torque wrench, while final tightening must be using a torque wrench and with the cable taut;
5. Tension the cable;
6. Position the wider heat shrinkable sheathing over the four rope clips and heat it until it has shrunk completely into place (see **Figure 6.7**).

Figure 6.7 - Heating the sheathing

	During heating of the sheathing the following risks are present: **· Risk of fire** **· Risk of heat** **· Risk of explosion** **· Risk of intoxication**

EXAMPLES OF INSTALLATION WITH CLIPS:

Unlike crimped and pressed connections, connections made using wire rope clips are only compliant with standard UNI 11578:2015.

FITTING WITHOUT QUICK LINK

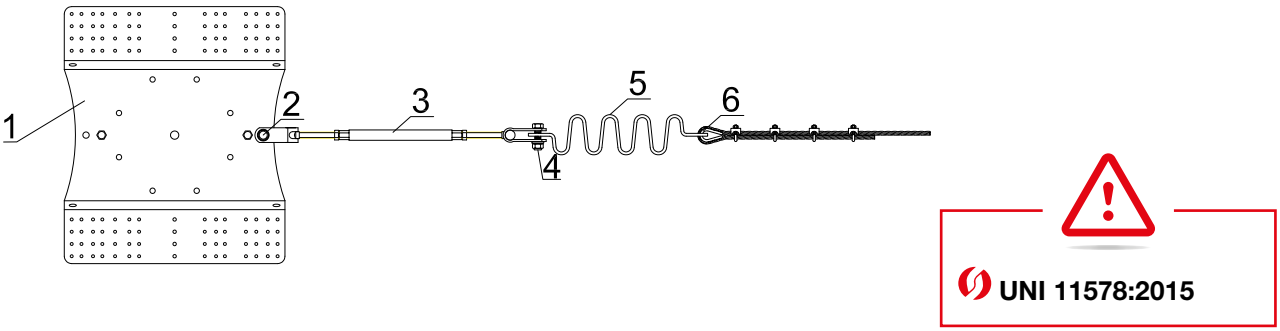
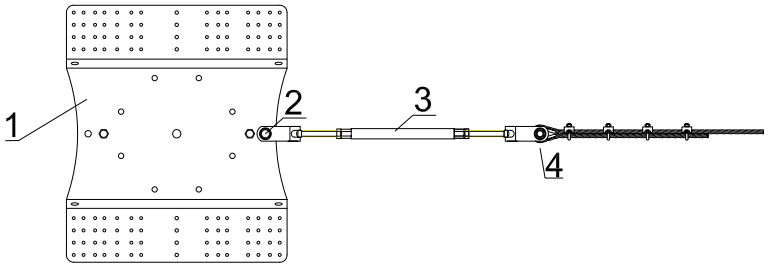


Figure 6.8

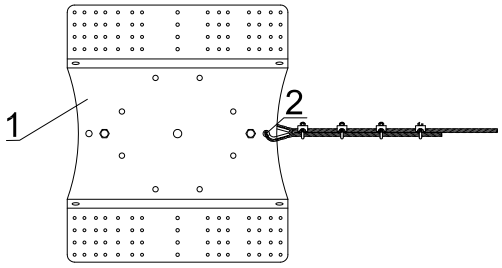
1. Fix the SICURLAM device (Cod. 002590) following the indications provided in Chapter 4.;
2. Fix the J/J turnbuckle (3) (Cod. 000032/002493) to the plate using an M12x120 bolt + washer (2);
3. Connect the opposite end of the turnbuckle (2) to the energy absorber (5) (Cod. 000033) using a bolt M12x120 (4);
4. Insert a thimble into the bore at the other end of the energy absorber, and pass the cable through the thimble;
5. Fix the cable with 4 rope clips (See Chapter 6.).



UNI 11578:2015

Figure 6.9

1. Fix the SICURLAM device (Cod. 002590) following the instructions provided in Chapter 4.;
2. Fix the J/J turnbuckle (Cod. 000032/002493) (3) to the Sicurlam device using an M12x120 bolt + washer (2);
3. Connect the opposite end of the turnbuckle (3) to a thimble (4) and pass the cable through it;
4. Fix the cable with 4 rope clips (See Chapter 6.).

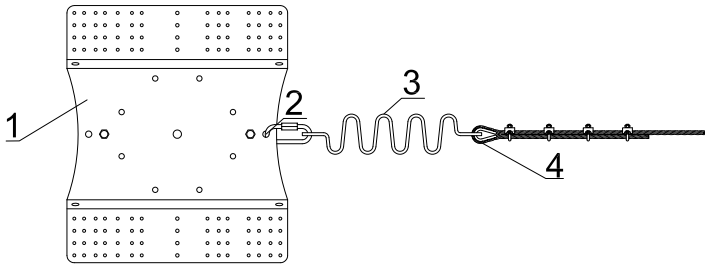


UNI 11578:2015

Figure 6.10

1. Fix the SICURLAM device (Cod. 002590) following the indications provided in Chapter 4.;
2. Insert a thimble into the hole in the SICURPAL device and pass the cable through it;
3. Fix the cable with 4 rope clips (See Chapter 6.).

FITTING WITH QUICK LINK



UNI 11578:2015

Figure 6.11

1. Fix the SICURLAM device (Cod. 002590) following the indications provided in Chapter 4.;
2. Insert the quick link into the hole in the SICURLAM device;
3. Insert one end of the energy absorber (3) (Cod. 000033) into the quick link (Cod. 0001518/001758) and close it;
4. Insert the thimble (4) onto the opposite end of the energy absorber;
5. Pass the cable through the thimble and fix it with 4 rope clips (See Chapter 6.).

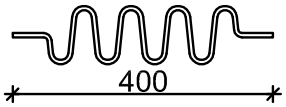
e. Complete installation of the lifeline by turning the turnbuckle (Cod. 000775 or 000032/002493 or 000294/002494) until the line is taut.

For proper tensioning of the lifeline:

- Check the length of the energy absorber and tighten the cable until the absorber lengthens by 5-10 mm (equivalent to a traction force of approximately 100/150 daN) (Cod. 000033) (see **Figure 6.12**);
- If you have the test KIT, the cable tension can be measured using cell C - Cable Tensioning.

CHECKING THE ENERGY ABSORBER

Starting length 40 cm (400 mm) ±0.5 cm (5 mm)



Length after pre-tensioning 40.5-41 cm (405-1410 mm) ±0.5 cm (5 mm)

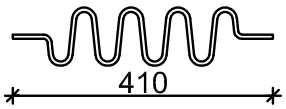


Figure 6.12

If the absorber exceeds 45 cm (450 mm) in length, it must be replaced.

f. Position the turnbuckle seal as shown in the example given below:

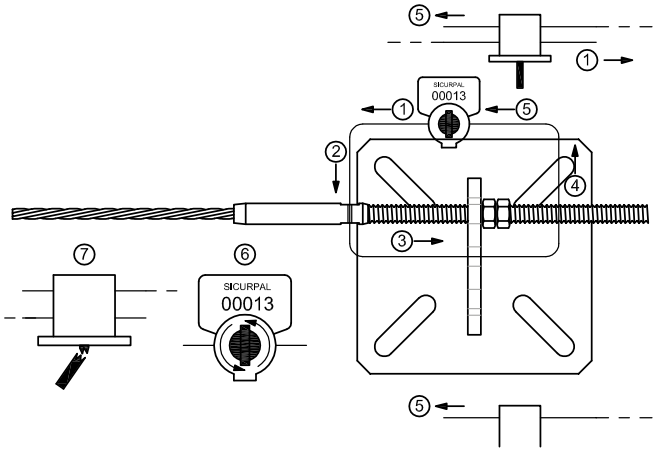


Figure 6.13

1.Pass one end of the wire cable through one of the two bores in the safety seal;
2.Continue by inserting the metal wire into the bore in the turnbuckle:
Cod. 000775/002477
Cod. 000032/002493
Cod. 000294/002494 or into one of the two jaws;
3.Continue by inserting the wire into the turnbuckle support or into the remaining jaw;
4.Continue by bringing the wire up to the seal;
5.Insert the wire into the remaining bore in the safety seal, pulling it tight;
6.After tightening the metal wire, turn the locking device in the seal and eliminate the excess wire;
7.Seal the whole by breaking the locking device grip.

For the sake of clarity, it is recommended to watch the explanatory video on the SICURPAL website:
https://www.youtube.com/watch?v=AfKvLSx-AFU

g. Install the lifeline identification code (Cod. 000291), which identifies the system and is used to find all the necessary information in terms of system components and the location of devices in the event of subsequent inspections.

	Crimped connections are compliant with: **UNI EN 795:2012** **CEN/TS 16415:2013** **UNI 11578:2015**
	Connections with wire rope clips are compliant with: **UNI 11578:2015**

7. USE OF FALL PREVENTION SYSTEMS

The **SICURPAL SICURLAM** devices suitable for use by operators, comply with the minimum requirements of standards **UNI EN 363:2008**, **UNI 11560:2014** and **UNI 11158:2015** and with the provisions of Leg. Dec. 81/08 and subsequent modifications and additions, art. 115.
They are suitable for use in the following types of personal protection system:

- ✓Retention systems;
- ✓On-site positioning systems;
- ✓Fall arrest systems.

A personal fall protection system consists of an assembly of components designed to protect the worker from falling from a height, including a body harness and a
connection system, which can be fastened to the anchorage system.
It should be remembered that Leg. Dec. 81/08 and subsequent modifications and additions, art. 77 paragraph 5, letter a, indicates the essential nature of training in the use of personal fall protection systems and the relevant Category III P.P.E. (Personal Protection Equipment) (Regulation UE 425/2016).

7.1. RETENTION SYSTEMS

A retention system is a personal fall protection system that prevents the worker from reaching areas in which there is a risk of falling from a height.

Table of deflections in the case of retention and/or positioning of a 70kg operator.

MAX SPAN Length (m)	1 SPAN		2 SPANS		5 SPANS		Tot L		
	WEIGHT [Kg]	DEFLEC-TION [m]	WEIGHT [Kg]	DEFLEC-TION [m]	WEIGHT [Kg]	DEFLEC-TION [m]	WEIGHT [Kg]	DEFLEC-TION [m]	
5	5.00		10.00		25.00		80.00		Total length of line (m)
	70.00	0.24	70.00	0.35	70.00	0.67	70.00	0.78	
10	10.00		20.00		50.00		80.00		Total length of line (m)
	70.00	0.42	70.00	0.53	70.00	0.87	70.00	0.93	
14	14.00		28.00		70.00		80.00		Total length of line (m)
	70.00	0.56	70.00	0.67	70.00	1.01	70.00	1.15	

The values indicated in the table "Table of deflections in the case of retention and/or positioning of an operator" must be taken into account by the operator who is using the retention and/or positioning P.P.E.

7.2. ON-SITE POSITIONING SYSTEMS

An on-site positioning system is a personal fall protection system that allows the operator to work while restrained/ held up, so as to prevent falling from a height (UNI 11560:2014).

7.3. FALL ARREST SYSTEMS

A fall arrest system is a personal fall protection system that stops a free fall and restricts the impact on the worker's body during stoppage of the fall.

Table of dynamic deflections in the case of fall arrest for 4 (four) operators, to calculate the clearance.

MAX SPAN Length (m)	1 SPAN		2 SPANS		4 SPANS		5 SPANS		Tot L		
	LOAD [kN]	DEFLEC-TION [m]	LOAD [kN]	DEFLEC-TION [m]	LOAD [kN]	DEFLEC-TION [m]	LOAD [kN]	DEFLEC-TION [m]	LOAD [kN]	DEFLEC-TION [m]	
5	5.00		10.00		20.00		25.00		80.00		Total length of line (m)
	12.12	0.88	11.60	0.90	10.68	0.94	10.44	0.96	8.7	1.13	
10	10.00		20.00		40.00		50.00		80.00		Total length of line (m)
	12.62	1.21	11.67	1.27	10.32	1.37	9.96	1.41	8.97	1.53	
14	14.00		24.00		56.00		70.00		80.00		Total length of line (m)
	12.69	1.44	11.35	1.53	9.94	1.68	9.46	1.75	9.14	1.79	

8. TECHNICAL DATA

		DEVICES
		SICURLAM
Net weight	**[Kg]**	4.0
Product height	**[mm]**	53
Anchor plate dimensions	**[mm]**	524x450x53
Number of structural anchor bores	**n°**	120 bores
Material used		PICKLED AISI 304 STAINLESS STEEL
Number of users per device as UNI EN 795:2012 Type C	**max**	1
Number of users per lifeline as CEN/TS 16415:2013 and UNI 11578:2015 Type C	**max**	4
Maximum weight of each user	**[Kg]**	125
Minimum distance between lifeline anchorage devices	**[m]**	5
Maximum distance between lifeline anchorage devices	**[m]**	14
Maximum length of lifeline	**[m]**	80

9. EXAMPLES OF MARKING

Each removable component in the system is clearly marked, as shown below:

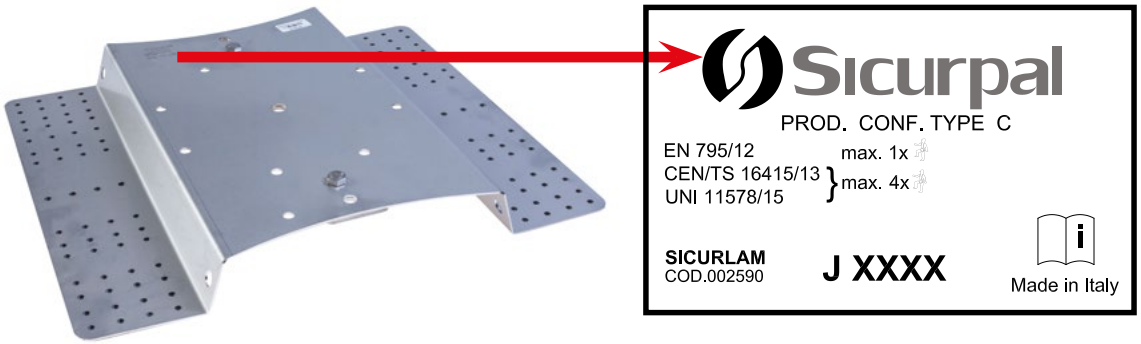


Figure 9.1

Sicurpal	Manufacturer's name and identification mark
EN 795/2012 **CEN/TS 16415/2013** **UNI 11578/2015**	Certification standards
SICURLAM	Name of anchorage device
J XXXX	Production batch number
TYPE C	Device type
1X	Max. No. operators allowed
Cod. 000036	Product identification code
Made in Italy	Country of manufacture
	Read the instructions in the manual

	In the absence of a mark the device is to be considered non compliant and must be replaced.

10. INSPECTION AND MAINTENANCE SCHEDULE

Standard UNI 11560:2014 envisages four types of inspection. The manufacturer has implemented this standard and applies it as follows:

10.1. INSPECTION ON FITTING

Inspection of the components prior to assembly and inspection of the system after assembly, must be carried out by the fitter in accordance with the instructions provided by **SICURPAL** as the device manufacturer, the anchorage system designer and the structural engineer (UNI 11560:2014).

SICURPAL, as the manufacturer, prescribes the need for a traction test to be carried out after installation (the **SICURLAM** devices must only be pulled as shown in Figure 10.1):

- Insert a quick link into each of the side holes in the device;
- Insert a tape into the quick links and apply a traction force of 5 kN for 15 seconds (see the direction of the arrows), as shown in Figure 10.1. This test serves to verify that the anchorage device and the support structure are properly connected.
  After this test, the device **must not** have suffered any deformation.

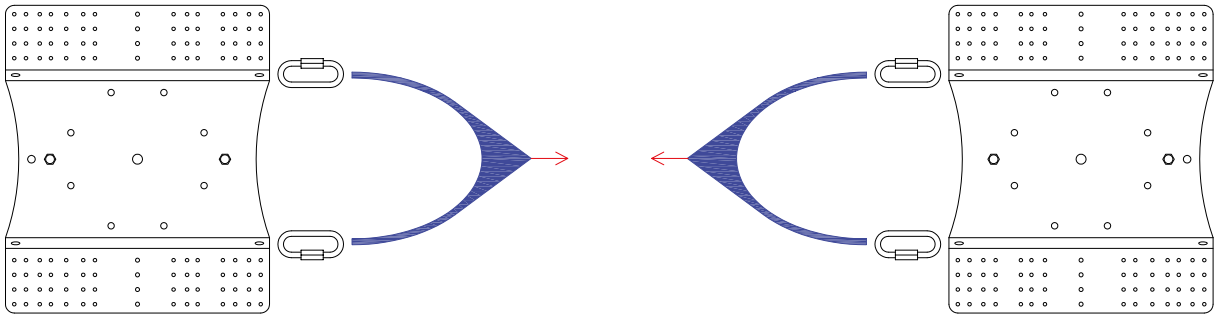


Figure 10.1

10.2. INSPECTION PRIOR TO USE

Before using the **SICURPAL** anchorage devices, the following preliminary visual inspections must be carried out:

- Waterproofing;
- Wear;
- Rusting/corrosion;
- Deformation of components (see Chapter 6, point f)
- Abnormal deformation of the cable;
- Tensioning of the cable;
- Locking of the nuts and bolts on visible devices;
- State of any moving parts.

	**If any anomalies are found in the system after performing these checks, it must not be used. It is also necessary to prevent access by other users and to inform the client, who must withdraw the system from service and, if necessary, arrange for it to be restored to normal use, by requesting the intervention of competent persons.**

Before accessing the roof area, the user must check the fall clearance in all parts of the roof where there is a risk of falling, so as to eliminate any risk of colliding with the ground or with other obstacles along the path in the event of a fall.
Before going onto the roof, make sure that the weather and environmental conditions are not likely to cause a health risk for the fall prevention system user. The user must check the Technical Plan for any dangers of swing fall and for any special requirements.

10.3. PERIODIC INSPECTION

Periodic inspection of every anchorage system must be carried out by a competent person*. Inspection should be carried out annually for the devices and at the intervals recommended by the structural engineer as regards the structural anchorage system.
In any case, the interval between two periodic inspections must not be more than 2 years for controls on the anchorage system and 4 years for controls on the support structure and anchoring devices (UNI 11560:2014 see System Instruction Manual).

	**For further information please contact your local authorised dealer or SICURPAL.**

10.4. SPECIAL INSPECTION

After notification of a fault or after a fall, the anchorage system must immediately be put out of use. After this, a special inspection must be carried out by **SICURPAL** or a company authorised by **SICURPAL**, to identify any action that needs to be taken to restore the anchorage system, the anchors and the support structure to their proper performance levels (UNI 11560:2014).

10.5. MAINTENANCE

Maintenance must be carried out, if necessary, following the special inspection. If the maintenance involves replacing components and/or operations on the support structure, if necessary involving an authorised technician, (UNI 11560:2014) the maintenance technician must issue a declaration indicating that the required maintenance has been properly carried out, confirming that the system is suitable for use.

** A competent person is a person who knows current requirements for inspections prior to use, periodic and special inspections, the recommendations and instructions issued by the manufacturer and applicable to the component, sub-system or system in question (UNI EN 365 § 3 "terms and definitions").*

11. WARNINGS AND RECOMMENDATIONS

11.1. INSTALLATION

11.2. USE

The devices in the **SICURLAM** range must only be installed after a qualified technician has assessed the risks of falling from a height, and verified the suitability of the structures on which the devices are to be installed.	The **SICURPAL** anchorage devices must only be used by persons authorised by the employer (or customer) who have fully read and understood the instructions provided in this manual. They must also be trained, instructed and experienced in the use of Category III P.P.E.
During installation of the **SICURPAL** anchorage devices it is strictly forbidden to use components other than the ones supplied, without the manufacturer's authorisation.	The **SICURPAL** anchorage devices must only be used by persons equipped with P.P.E. that comply with specific technical standards, are subjected to regular maintenance and have not exceeded the manufacturer's expiry date.
The installer must make sure that the materials and supports to which the anchorage devices are to be fixed are compliant with and suited to the requirements of the Calculation Report.	The manufacturer is likewise to be considered free from any responsibility for accidents due to improper use of the system and failure to observe the warnings and recommendations contained in this manual. In this case the responsibility will lie with the client and/or employer.
It is absolutely forbidden to create new bores, enlarge existing ones or modify the shape of the device without the prior written authorisation of the manufacturer **SICURPAL**. Doing so will render the warranty and product conformity null and void.	The choice of P.P.E. to be employed when using the anchorage devices must be made and indicated by the employer (or client) in the working safety plan.
SICURPAL shall not be considered liable for any abrasions or damage to paintwork due to rubbing of the cable on the roofing. If it occurs, ensure suitable accessories are being used and adequate maintenance performed.	
Prior to installation, check the state of the support structure (e.g. the state of insulation in insulated panels, ageing of wooden structures, etc.) and make sure it is suitable to support the fall prevention system.	

11.3. INSPECTIONS AND MAINTENANCE

If the user connected to the **SICURPAL** devices suffers a fall, the anchorage system must be put out of use and all its components must be checked by **SICURPAL**.	If the anchorage devices become bent or damaged, they must be replaced immediately. Replacement of any products must be carried out by **SICURPAL** or by authorised and qualified technicians.
The **SICURLAM** system must only be returned to service after they have been finally certified by **SICURPAL** or a company authorised by **SICURPAL**.	

	The manufacturer will not be held liable for any accidents deriving from failure to comply with the standards and indications given in this manual.
	As well as verifying the anchorage system, the user must also make sure all the control procedures are carried out for all the system anchoring elements (energy absorbers, lanyards, harnesses, etc.).

In the case of faulty **SICURPAL** devices, contact the **SICURPAL** Logistics Department (Telephone number **SICURPAL** 059-81.81.79, e-mail: qualità@sicurpal.it).

11.4. EARTHING

In areas at risk of lightning, according to standard CEI 81-10, connect the underside of the device fixing plat to an equipotential / earthing circuit using a cable with eyelet terminal of a suitable cross-section to allow for protection from lightning.
This operation must be carried out by a qualified technician pursuant to Ministerial Decree N° 37 dated 22-1-2008.
This operation is not mandatory, and is the responsibility of the client/owner of the building.

	Check that the anchorage device is fixed and properly installed according to these instructions.
	SICURPAL will not be held liable in any way for earthing of the system.

12. MANUFACTURER'S NOTE

The following is the information requested in point 7 of standard UNI EN 795:2012:

A) The **SICURLAM Type C** anchorage system can be used by max. **1 (one) operator** following certification tests according to UNI EN 795:2012.
The **SICURLAM Type C** anchorage device can be used by max. **4 (four) operators** following certification tests according to Technical Standards CEN/TS 16415:2013 and UNI 11578:2015.

B) The anchorage device can be used with fall arrest systems, provided the Personal Protection Equipment contains an energy absorber.

C) The maximum load transmittable by the **Type C** anchorage device is ft = 12.38 kN in a horizontal direction parallel to the roof and in the direction of the cable and of fall (valid for **1 (one) operator** hooked to the line – **UNI EN 795:2012**).
The maximum load transmittable by the **Type C** anchorage device is ft = 13.40 kN in a horizontal direction parallel to the roof and in the direction of the cable and of fall (valid for **4 (four) operators** hooked to the lin e– **CEN/TS 16415:2013** and **UNI 11578:2015**).

D) The maximum deflection value of the **SICURLAM** anchorage devices and the maximum movement value of the anchorage point is 0°.
The maximum deflection of the Type C **SICURLAM** line is 115 cm.

E) See Chapter 7.

F) The anchorage devices are made exclusively of metal, so that it is not necessary to provide additional information on the materials from which they are made.

G) It is necessary to mark the System Register or the card located near the roof access points, after every inspection.

H) Not relevant - Type B anchorage devices.

I) i) At the present time, intermediate anchorages with an angle of 90°/135°/180° are not foreseen.
ii) The Type C **SICURLAM** anchorage devices may be used with retracting type fall arrest devices, provided they have been tested by the manufacturer.
iii) The potential dangers that might arise when using the fall prevention system with **SICURLAM** product, are:
- falling from a height with operator hanging,
- swing effect,
- collision with obstacles beyond the edge of the roof, due to insufficient clearance,
- vertical fall due to breakage of the roof,
- falling through open or breakable skylights and dormer windows.
There might be other residual dangers, which must be assessed on a case by case basis according to the type of roof in question.

J) i) The anchorage devices can be installed on roof and/or flat surfaces with slopes of up to 16° that need to be made safe.
ii) The manufacturer allows direct connection to the anchorage line, subject to installation of a mobile

anchor point using a connector (UNI EN 362) fixed directly to the anchor line, or using a glider as mobile anchor point.
iii) When using connectors (UNI EN 362), it is possible to use the fall prevention system without removing the mobile anchor from the lifeline. Also when using the mobile glider and vertical cable support for glider (Cod. 000192) it is possible to use the fall prevention system without removing the mobile anchor from the lifeline. However, in the case of curves that involve a break in the lifeline, it is necessary to use a lanyard (UNI EN 354) with connector (UNI EN 362) to hook up to the next lifeline before disconnecting from the one being used. When using a connector (UNI EN 362) as mobile anchor point in the presence of vertical cable supports for glider, it is likewise necessary to use a lanyard (UNI EN 354) to hook up to the next span before disconnecting from the span of the lifeline being used.

K) Not relevant - Type E anchorage devices.

L) On completing installation, the installer must provide the client with the Declaration of Proper Installation - Appendix A1 UNI EN 795:2012 signed by himself, as proof and warranty of proper and appropriate installation. This will be considered the basic documentation for subsequent periodic examinations. The client is responsible for keeping said documentation so that it can be consulted by maintenance technicians/installers/users. More detailed documentation will be kept by **SICURPAL** and can be consulted, subject to appointment, by calling +39 059.818179.
According to Appendix A2 - Guide to the documentation to be supplied after installation, the documentation required by the client who decides to carry out installation independently must comprise:
- address and location of the installation;
- name and address of the installing company;
- name of the person responsible for installation;
- product identification (name of the anchorage device manufacturer, type, model/article);
- fixing device (manufacturer, product, allowed traction and transversal forces);
- outline installation plan and information pertinent to the user/client, such as the position of anchorage points.

The outline installation plan should be affixed at the entrance points to the building, so that it is visible or available to all.
The Declaration of Proper Installation provided by the installer in charge must contain the following information relating to the anchorage device:
- It has been installed in compliance with the installation instructions provided by the manufacturer;
- The installation plan, described above, has been followed;
- It has been fixed to the substrate indicated;
- It has been fixed as indicated (number of bolts, proper materials, proper position, proper location);
- It has been commissioned in compliance with the manufacturer's instructions;
- Photographic/documentary information has been provided.

It must be remembered that, when more than one anchorage point has to be photographed for identification, the anchorage devices must be marked with numbers and these numbers must be incorporated in the inspection reports for the anchorage device and in the outline drawing of the installation area.

M) The anchorage device must only be used for fall prevention P.P.E.s and not for lifting equipment. For more detailed information on this question, please see chapter 2.1. "Warranty".

N) The **SICURLAM** devices are not fitted with a fall indicator, so no information on how to inspect the fall indicator is provided in this Manual.

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