



**Securope®**

# Table of contents.

<b>1. Homologation.</b>	Page 3	<b>9. Marking.</b>	Page 15
<b>2. Preliminary instructions.</b>	Page 4	9.1 Warning plate	
2.1 Instructions for resale		9.2 End anchor	
2.2 Skills of the installer		9.3 Intermediate anchor NEO	
2.2.1 Installation of Securope		9.4 Glider	
2.2.2 Minimum Clearance		9.5 Captive glider	
<b>3. Structure on which the Securope is installed.</b>	Page 5	9.6 Energy absorber	
<b>4. Horizontal lifeline on ground.</b>	Page 6	9.7 Fall arrest ZIP for inclined lifeline	
4.1 Securope NEO 2012 lifeline		9.7.1 Securope Trolley	
<b>5. Securope NEO life line between two walls or on ceiling.</b>	Page 7	<b>10. Installation of the cable.</b>	Page 17
<b>6. Securope NEO life line fixed on a wall.</b>	Page 8	10.1 Placement of the cable	
<b>7. Securope NEO on inclined section.</b>	Page 9	10.2 Tensioning the cable	
<b>8. Components the life lines / Securope NEO.</b>	Page 10	10.3 Tensioning tool	
8.1 Intermediate anchor NEO LDV043		10.4 Crimping tool	
8.1.1 Ground configuration		10.5 Tools	
8.1.2 Wall configuration		<b>11. Fixing system.</b>	Page 19
8.1.3 Ceilling configuration		11.1 Fixing assembly on cold deck	
8.1.4 Configuration of curved sections		11.2 Fixing assembly on concrete slab	
8.2 End anchor LDV002		11.3 Fixing assembly on hot deck	
8.3 End anchor LDV052/053		11.4 Fixing assembly on standing seam roof	
8.4 Crimping rings		<b>12. Recommendations relating to the documentation required after installation.</b>	Page 32
8.4.1 Crimping ring on end anchor		<b>13. Recommendations relating of periodic review procedure.</b>	Page 34
8.4.2 Crimping ring with threaded tip M10.		12.1 Identification label	
8.4.3 Crimping ring – turnbuckle ligne			
8.4.4 Crimping ring junction			
8.4.5 Crimping rings for curved section			
8.5 Switch			
8.5.1 Description			

# 1. Homologation.

The life line Securope has been tested in accordance with standards EN795 :2012 type C et CEN/TS16415 :2013 for use by 1 – 4 persons attached simultaneously on the line. Fallprotec certifies that the anchoring device Securope 2012:

- Has received the CE mark in accordance with the PPE Directive, category III.
- Has been approved by the notify body:

APAVE Sudeurope  
8 rue Jean Jacques Vernazza  
F- 13322 Marseille Cedex 16

The production control is carried out by the notified body APAVE Sudeurope bearing the CE number CE0082.

Securope 2012 with the following characteristics:

- Number of users from 1 to 4.
- Distance between two anchors 12 m.
- Tested in curve 90°.
- Energy absorbing devices installed in intermediate and end anchors.
- No permanent deformation of pieces after a fall.
- Possible installation of Securope lifeline, on cold deck, hot deck, standing seam roof, composite panels and fragile structures.

Several configurations have been homologated:

- Horizontal lifeline with a maximal inclination of 15°, build on ground, on wall and on ceiling.
- Inclined lifeline from 30° to 90°.
- For vertical life line refer to the specific instructions of vertical Securope.

## 2. Preliminary instructions.

### Instructions for resale. 2.1

If the equipment is resold out of the first destination country, the reseller will provide instructions for maintenance, for periodic reviews and instructions on repairs, in the language of the country of use.

### Skills of the installer. 2.2

The anchor device must be installed by competent persons or organizations that will have a certificate of “approved installer” issued by Fallprotec.

The installation must be properly verified by calculation or testing.

### Installation of Securope. 2.2.1

The anchor device Securope 2012 is a horizontal lifeline system with a maximal inclination of 15° or a inclined life line with a inclination between 30° to 90°.

The user must be able to access and exit safely.

The installer must install the Securope lifeline so that the maximum angle at which the Securope cable is allowed to penetrate or exit of the intermediate anchor does not exceed 15°.

The installer must install the Securope lifeline so that, when stopping a fall, the deflection of the cable does not hit sharp edges or anything that could damage it.

### Minimum Clearance. 2.2.2

The height of fall must be less than the available clearance so that the person falling does not hit an obstacle during the fall.

The height of fall is the sum of the terms given below:

- The length of the lanyard “Li”.
- The braking distance of the energy absorber “Le”.
- The deflection of the cable “d”.
- The distance between the harness anchor point and the end of the lower limbs i.e. 1,5 meters.
- The safety equation expressed in meters and calculated from cable axe is thus:

$$Li + Le + d + 1,5 \text{ m} < \text{clearance}$$

$$Li < 2 \text{ m}$$

$$Le < 0,8 \text{ m}$$

d: according to Fallprotec software

If the height of fall is too large, Fallprotec advise mounting 20 mm crimping rings on both sides of each intermediate anchor. The free length of cable can be reduced to 5 times the distance between two successive anchors, see Fallprotec calculation software.

#### Maximal deflection of cable (m).

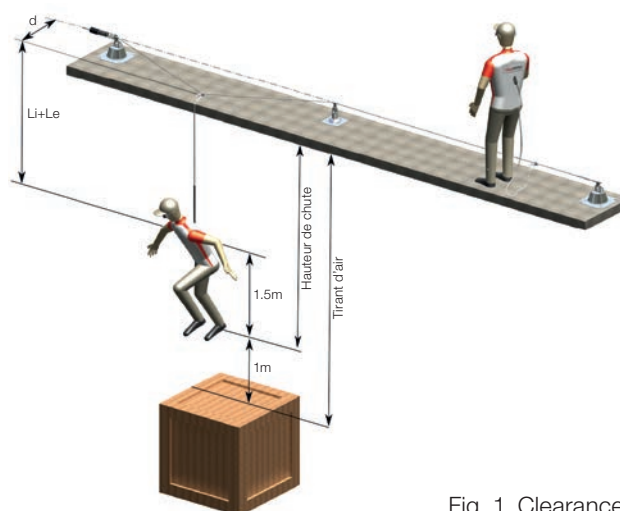


Fig. 1. Clearance

### 3. Structure on which the Securope is installed.

A competent person will check the strength of the structure in relationship with forces transmitted by the end and intermediate anchors when a fall is stopped. Fallprotec makes software available, approved by the notify body, which works out the forces in accordance with the site configuration and the number of users.

The components of the Securope line withstand without permanent deformation the forces indicated to table below and present a safety coefficient of two. The forces calculated by the software must be lower than the allowable forces. If you note a force beyond the allowable force, it will be necessary to change one or more parameters of calculation, either to decrease the number of users or to decrease the distance between two anchors.

Component description	Allowable force kN	Breaking strength kN
End anchor	18.5	50
Intermediate anchor LDV 043	9	24
Cable 7x7	18.5	37
Crimping	18.5	37
Glider	6	30

Table 1

Fallprotec has designed different fixing systems for the Securope lifeline for different types of roofs:

- Cold deck, (corrugated metal sheet roof)
- Hot deck ( corrugated metal sheet + isolation + membrane)
- Standing seam roof.
- Zinc roof.
- Composite panels.

## 4. Horizontal lifeline on ground.

### Securope NEO 2012 lifeline.

4.1

LDV001	Glider
LDV002	End anchor
LDV006	Securope cable
LDV023	Xxx
LDV025	Xxx
LDV027	Xxx
LDV032	Energy absorber
LDV043	Intermediate anchor

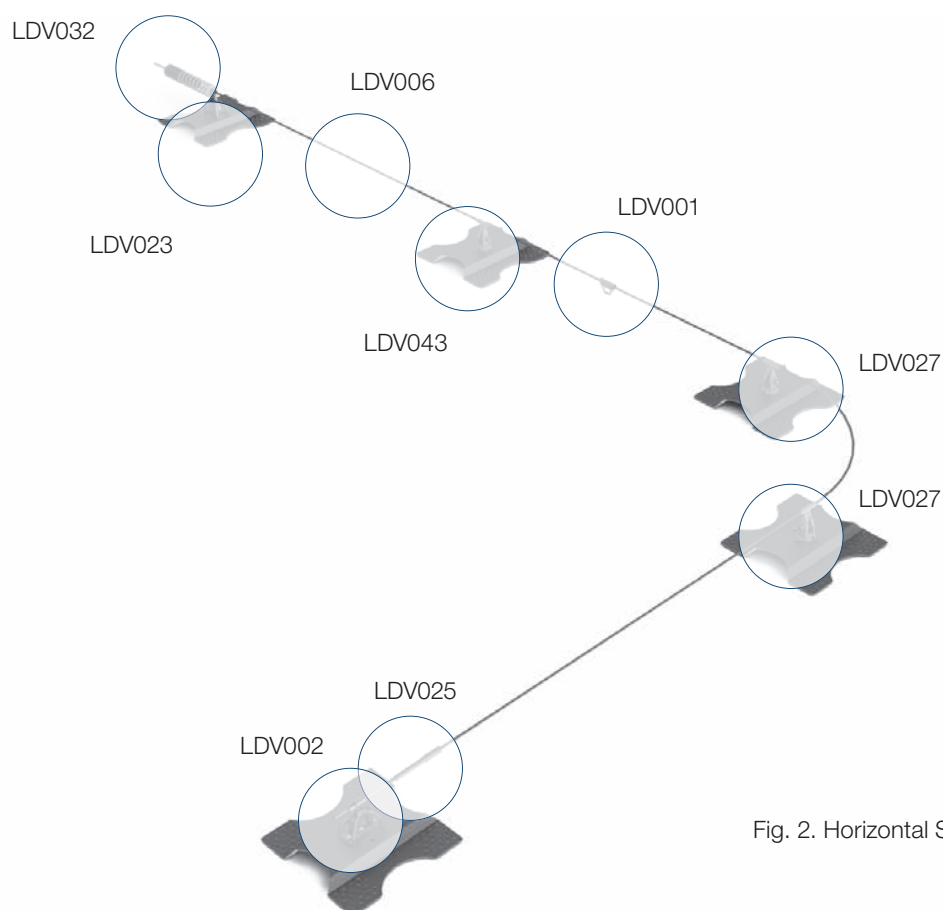


Fig. 2. Horizontal Securope NEO

The Securope NEO lifeline consists of the components shown in Fig. 2, it is set to the horizontal up to an angle of 15°.

The lifeline consists in:

- An end anchor with a energy absorber.
- At regular intervals, the intermediate anchors.
- The curved sections.
- The second end anchor with turnbuckle.

## 5. Securope NEO life line between two walls or on ceiling.

The Securope NEO lifeline could be installed between two walls. The end anchors LDV053 and LDV054 are specified for this configuration, the other components are identical to the Securope NEO.

If the user is less than 3 m from the life line, 2 m absorbing lanyard, connects the user to the captive glider LDV060, see Fig. 4.

The trolley LDV093 has been designed to be used in conjunction with a retractable block weighing 10 kg or less, see Fig. 5.

### WARNING!

The cable guide of the NEO anchor should be free in rotation, to do so; the installer must take out the shearing pin.

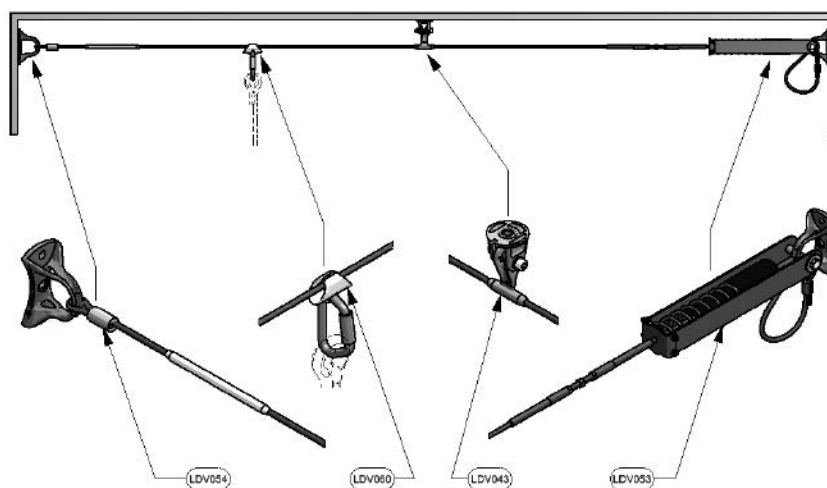


Fig. 3. Securope NEO between two walls with captive glider

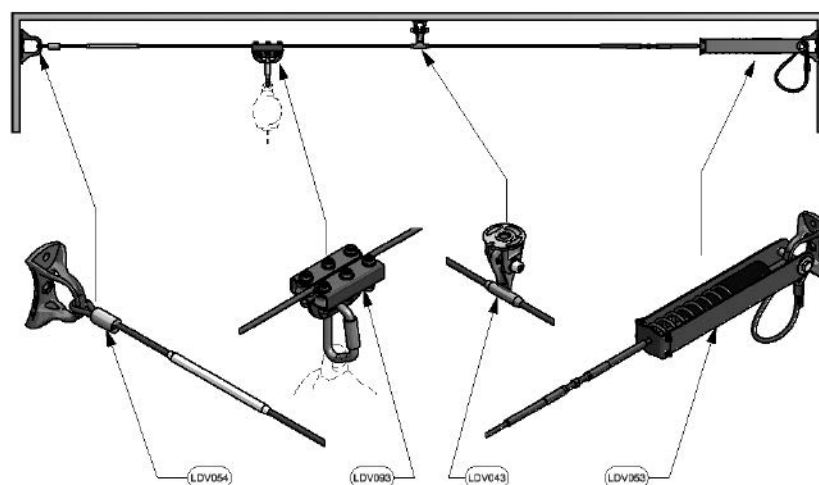


Fig. 4. Securope NEO between two walls with Securope trolley

## 6. Securope NEO life line fixed on a wall.

It is also possible to use the same components as described in chapter 5 for wall configuration where terminal and intermediate anchors are fixed to the wall.

**WARNING!**

The cable guide of the NEO anchor should be free in rotation, to do so; the installer must take out the shearing pin.

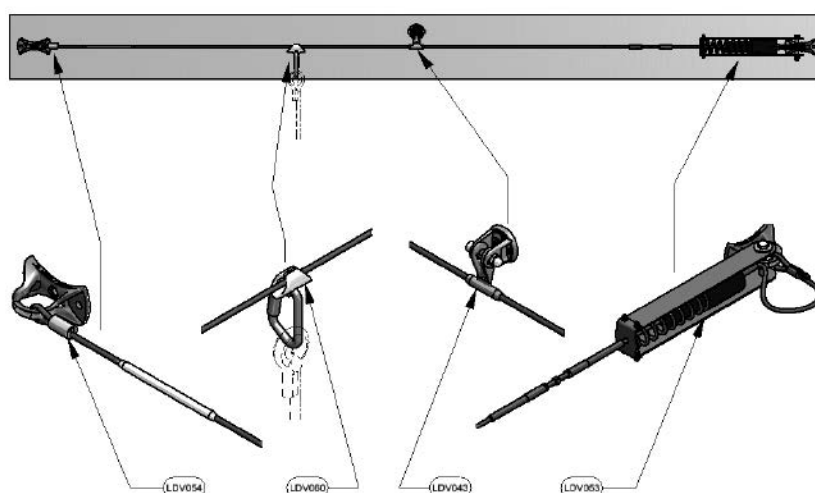


Fig. 5. Securope NEO on wall with captive glider

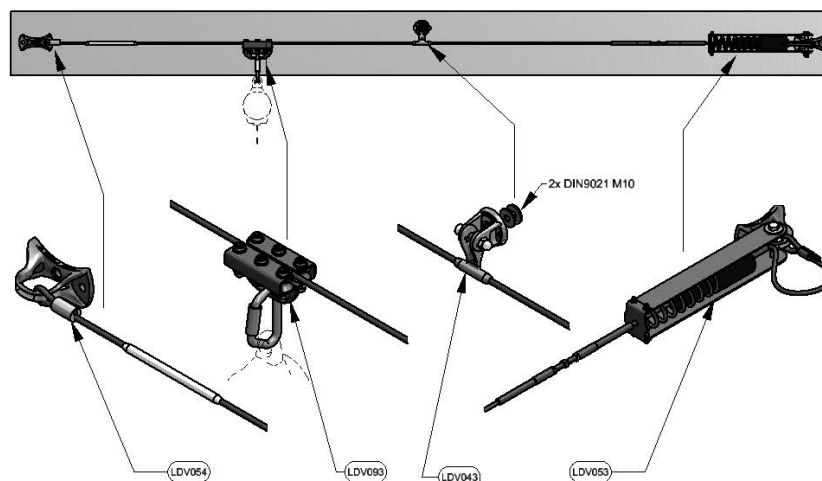


Fig. 6. Securope NEO on wall with Securope Trolley



## 7. Securope NEO on inclined section.

The Securope NEO lifeline is also installed on an inclined section. The components are identical to the ground configuration but arranged differently. The line starts at the bottom by a NEO anchor LDV043 with a ring LDV008; the intermediate anchors are installed at regular intervals.

At the top two configurations are possible:

- The line continue horizontally and 2 x NEO anchors LDV043 equipped with 2 x LDV008 are installed
- The line ends LDV002 equipped with LDV032 is installed The glider is a LDV075 model.

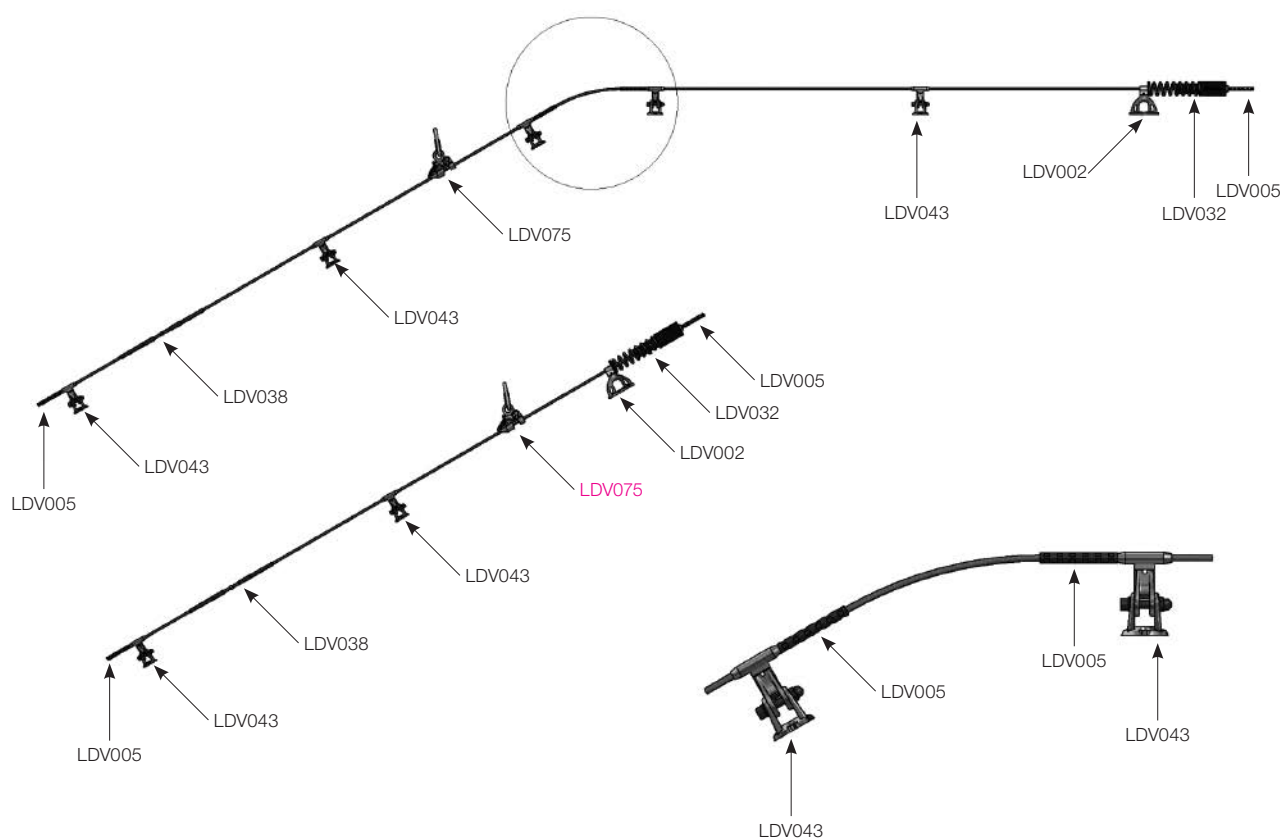


Fig. 7. Securope NEO on inclined section

# 8. Components the life lines Securope NEO

## Intermediate anchor NEO LDV043.

8.1

The anchors NEO are installed with an interval of 12 meters or less.

If an interval greater than 12 m should be considered, it is recommended to seek the Fallprotec advice.

The anchors are attached directly to the host structure or to one of the fixing assemblies described in the specific installation instructions of each type of roof.

If a force of 4 kN is applied to the cable guide, it rotated to the base of the anchor to reduce the moment applied to the host structure.

A notch is formed in the base to prevent rotation of the anchor when mounted on either side of a curved section.

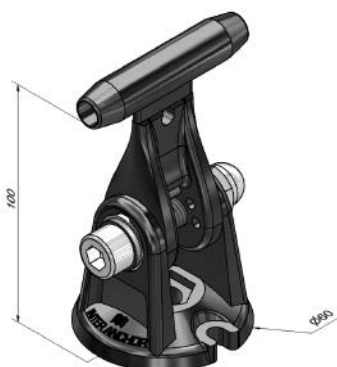


Fig. 8. Intermediate anchor LDV043

## Ground configuration.

8.1.1

The user runs on either the one or the other side of the line, this case is the case for example of a line installed on terrace.



Fig. 9. Ground configuration

## Wall configuration.

8.1.2

The cable guide is located on a plan forming an angle of 45° when using glider LDV001. When using captive glider LDV060, the cable guide is located on a horizontal plan.

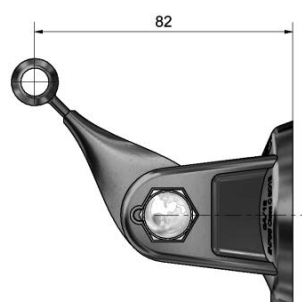


Fig. 10. Wall configuration

## Ceiling configuration.

8.1.3

The cable guide is located on the vertical plan when using the captive glider LDV060 or trolley LDV093.

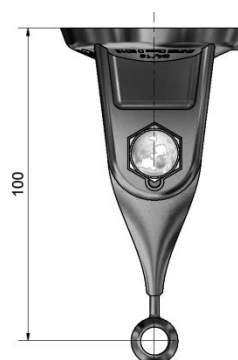


Fig. 11. Ceiling configuration

## Configuration of curved sections.

8.1.4

Two intermediate anchors are installed at the ends of the curved section; the cable does a radius between 0.2 and 0.4 m, the curve is held in place by a crimping ring LDV027 or by crimping the NEO anchor LDV043.

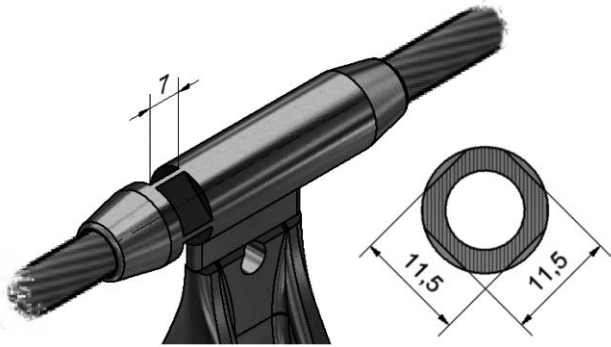


Fig. 12. Crimping on NEO anchor LDV043

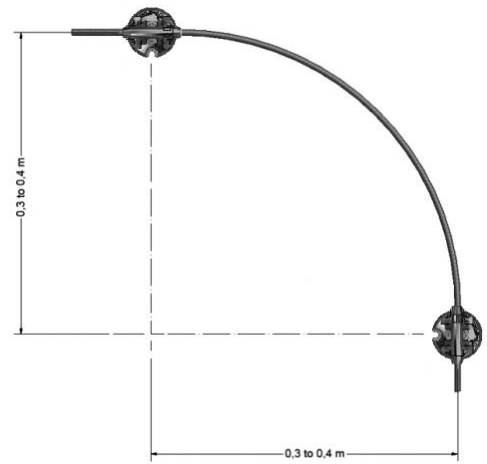
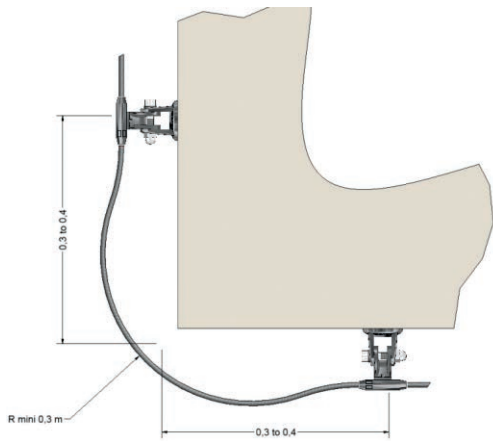


Fig. 13. Curve on wall and on ground

If the lifeline is mounted on post with plate LDV096 or Multipost with plate LDV071, crimping could be replaced by the cable guide LDV076, which allows tensioning the cable in a single operation, for a relatively short line.

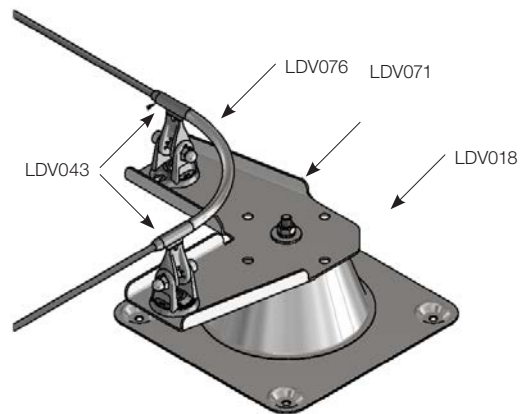
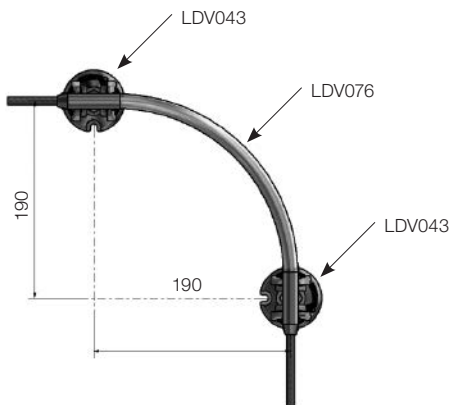


Fig. 14. Curved section

### End anchor LDV002.

8.2

One end anchor is installed at each end of the line. The end anchor is attached to the post by one M12 bolt or by 2 x M12 bolts in concrete and on fixing assembly on cold deck LDV023.

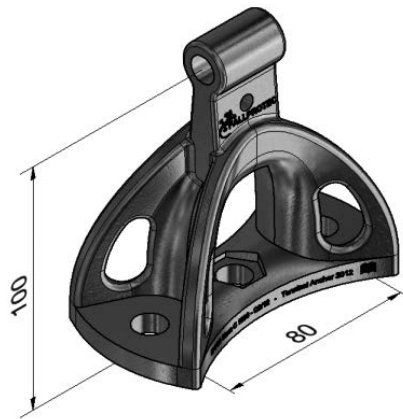
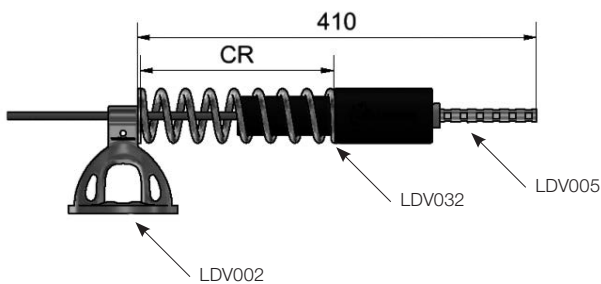


Fig. 15. End anchor LDV002

The end anchor is equipped with an energy absorber which reduces the force transmitted to the host structure in case a fall. An absorber must always be expected when the line length is less than 20 m or when the line is fixed on a fragile structure (cold deck, hot deck, composite panels). The spring prevents overloading the anchors in case of large temperature variation. The spring must be compressed to 40 mm on mounting.



CR		
Charge	Longueur du ressort	Compression
0 kg	200 mm	0 mm
50 kg	183 mm	17 mm
100 kg	159 mm	41 mm
150 kg	141 mm	59 mm
200 kg	118 mm	82 mm
250 kg	100 mm	100 mm en butée sur l'absorbeur

Fig. 16. Energy absorber on anchor LDV002

### End anchor LDV052/053.

8.3

When the lifeline is installed between two vertical walls, models LDV053 and LDV054 are better suited. The end anchors are attached to the host structure by two M12 bolts when fixing on a concrete wall or one central M12 bolt when fixing on a steel structure. The end anchor consists of an anchor type "Twinfix" provided with a sleeved cable and terminated by a junction ring.



Fig. 17. LDV054 Simple anchor

The end anchor with absorber has, in addition to the anchor "twinfix" and to the sleeved cable, an absorber with a spring and a turnbuckle which allowing adjustment of tension in the line.



Fig. 18. LDV053 Anchor with absorber and turnbuckle.

### Crimping rings.

8.4

Six different type of rings are used to crimp the cable.

### Crimping ring on end anchor.

8.4.1

On the end anchor two types of ring are used:

- Crimping ring LDV005 (Fig. 19)
- Crimping ring LDV025 (Fig. 20)

Must make 6 crimps, on the ring, spread over a length of 100 mm.

It is imperative to use a crimping tool supplied by Fallprotec to ensure a proper crimp, capable of withstanding a force of 37kN.

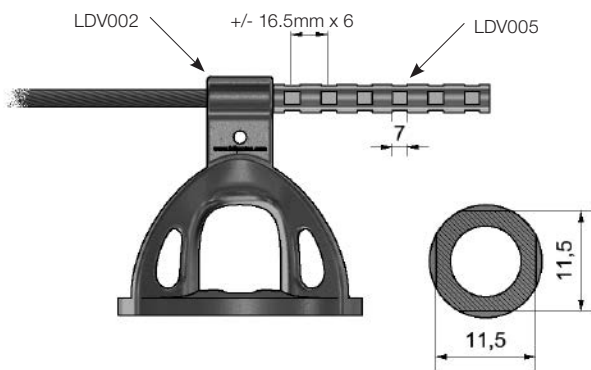


Fig. 19. Crimping ring LDV005

### Crimping ring with threaded tip M10.

8.4.2

To tighten the line (after a fall, or during installation), or if an obstacle does not allow mounting the crimping ring LDV005, we use the crimping ring with threaded tip.

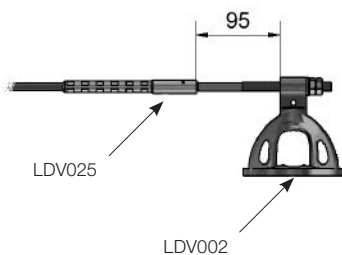


Fig. 20. Crimping ring LDV025

### Crimping ring – turnbuckle ligne.

8.4.3

If the lifeline forms a closed loop, a turnbuckle LDV038 with two inverted threaded ends will be used, to tighten both ends of the line.



Fig. 21. LDV038 turnbuckle

#### WARNING!

A hole is drilled in the two female parts in order to ensure that the threaded rod is sufficiently engaged in the female rings. Put loctite on the threads of the rod.

During tensioning, hold in hand the 2 female rings, to prevent them from turning.

### Crimping ring junction.

8.4.4

For long life line it is advisable to supply the wire rope by length of 100 m and to connect two ends of the cable by using crimping ring junction. Twelve crimps are required on the junction ring.

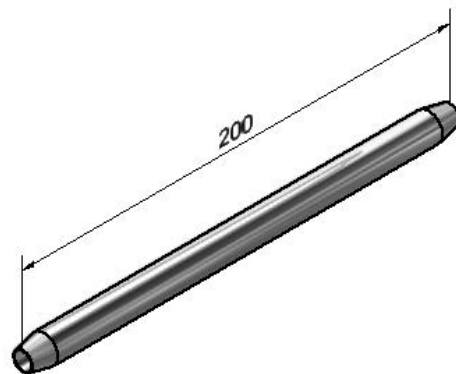


Fig. 22. LDV026 Junction ring

#### WARNING!

Make sure the two ends of the cable do well 2 x 100 mm, use a tape to identify two lengths of 100 mm.

## Crimping rings for curved section.

8.4.5

LDV027 Crimping ring length 30 mm SS 304

If crimping rings LDV027 were forgotten during installation.



Fig. 23. Crimping rings LDV027

## Switch.

8.5

### Description.

8.5.1

Fallprotec designed a switching system specifically for its lifeline. There can be four branches (crossing two lifelines) Fig. 32 or 3 branches (intersection of three lines). The switch, in stainless steel, is made with a base plate on which are installed four fixed anchors.

A rotating anchor is fixed to the center. It allows 360° rotation of the glider. A safety disc, mounted on springs, prevents the glider to escape unintentionally from the line during rotation.

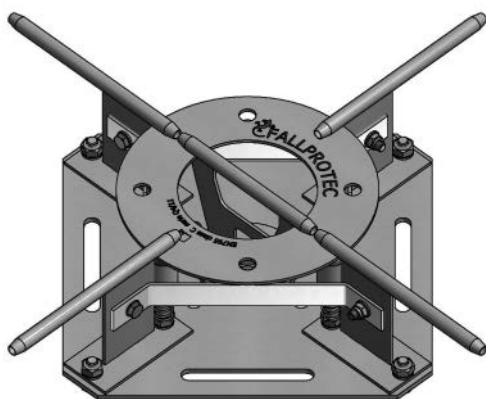


Fig. 24. LDV048 Switch 4 branches

# 9. Marking

## Warning plate.

9.1

A manufacturer's label is installed in the immediate vicinity of the line, in the area where users attach themselves to the line, dimension of the plate.

CARTELLINO IDENTIFICATIVO OBBLIGATORIO				
<input type="checkbox"/>	Punto d'ancoraggio EN 795:2012 -TS16415 Tipo A			
<input type="checkbox"/>	Linea vita orizzontale EN 795:2012 -TS16415 Tipo C			
<input type="checkbox"/>	Binario orizzontale EN 795:2012 EN 795 -TS16415 Tipo D			
<input type="checkbox"/>	Parapetto EN 14122-3:2007			
<input type="checkbox"/>	Passerella EN 14122-2:2010			
<input type="checkbox"/>	Binario verticale EN 353-1:2003			
<input type="checkbox"/>	Scala EN 353-1:2003			
<input type="checkbox"/>	Linea vita verticale EN 353-1:2003			
Tipo _____				
N. massimo di lavoratori connessi _____				
Tirante d'aria _____				
Piombo n. _____				
Data entrata in servizio _____				
Produttori	Installatore			
<input type="checkbox"/>				
<input type="checkbox"/>				
<input type="checkbox"/>				
Manutenzioni				
___/20___	___/20___	___/20___	___/20___	___/20___
___/20___	___/20___	___/20___	___/20___	___/20___

## Intermediate anchor NEO.

9.3

Engraving shows:

- The name of the manufacturer: Fallprotec
- The name of the component: Terminal Anchor
- The standard N° EN795 Type C: 2012
- The logo directing to read the user manual
- The batch number QQ/AA (quarter/year)
- Internet address : [www.fallprotec.com](http://www.fallprotec.com)



Fig. 26. LDV043 Inter. anchor NEO marking

## End anchor.

9.2

Engraving shows:

- The name of the manufacturer: Fallprotec
- The name of the component: Terminal Anchor
- The standard N° EN795 Type C : 2012
- The logo directing to read the user manual
- The batch number QQ/AA (quarter/year)
- Internet adress : [www.fallprotec.com](http://www.fallprotec.com)



Fig. 25. LDV002 End anchor marking

## Glider.

9.4

Engraving shows:

- The name of the manufacturer: Fallprotec
- The batch number (month/year)
- The standard N° EN795 Type C: 2012
- The CE mark
- The logo directing to read the user manual



Fig. 27. LDV001 Glider marking

### Captive glider.

Engraving shows:

- The name of the manufacturer: Fallprotec
- The batch number (month/year)
- The standard N° EN795 Type C: 2012
- The CE mark
- The logo directing to read the user manual



Fig. 28. LDV060 Captive glider marking

9.5

### Fall arrest ZIP for inclined lifeline.

9.7

Engraving shows:

- The name of the manufacturer: Fallprotec
- The logo directing to read the user manual.
- The angle of the line which the glider is set.
- Batch number MM/YY (Month/year)
- The website [www.fallprotec.com](http://www.fallprotec.com)



Fig. 30. NSV010 Fall arrest ZIP

### Energy absorber.

Engraving shows:

- The name of the manufacturer: Fallprotec
- The batch number (month/year)

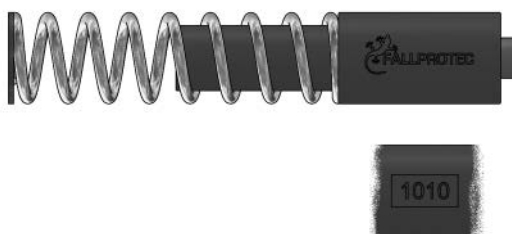


Fig. 29. LDV032 Energy absorber marking

9.6

### Securope Trolley.

9.7.1

Securope Trolley is used when a fall arrest block is suspended to the trolley. The trolley is fitted with 4 wheels mounted on bushings.

Marking consist of:

- The name of the manufacturer : Fallprotec
- The standard number EN795:2012 type C
- One user only or 100 kg
- The logo directing to read the user manual.
- Batch number QQ/YY (Quarter/Year)



Fig. 31. LDV093 Securope Trolley



# 10. Installation of the cable.

Two cable constructions are available:

- Multi strands 7x7 dia. 8 mm, this is standard cable for life line application.

## Placement of the cable. 10.1

The cable is supplied from the factory, pre-cut to the required length plus 1 meter.

One end is to be fitted with the energy absorber and a 100 mm crimping ring. see Fig. 16.

Introduce the cable through the intermediate anchors until the second end anchor.

It is recommended to use the crimping ring with threaded tip LDV025 for fixing the cable to the second end anchor, in order to retension the cable.

## Tensioning the cable. 10.2

We treat an example 0

- Forming the curve "B" and crimping directly onto anchor LDV043 if LDV076 is not used.
- Tensioning section "A". Place the tensioning tool onto end anchor, tension the cable and crimp the 100 mm ring.
- Tensioning section "C". The tensioning tool is fitted on the intermediate anchor « C - D », to tighten and crimp the cable on the anchor LDV043
- Forming curve « D ». Crimp the second anchor LDV043.
- If the straight section after the curve makes more than 12 m, it is necessary to crimp both sides of the anchor LDV043 following the curve between « E » and « F » ; in order to avoid putting too much tension on the anchors placed on the curve.
- Tensioning section « F ». The tensioning tool is fitted on the end anchor, to put the cable in tension with a maximal force of 1,0 kN and to crimp the 100 mm ring.
- If the section « E-F » makes more than 50 m it is necessary to crimp both sides of LDV043 every 50 m.

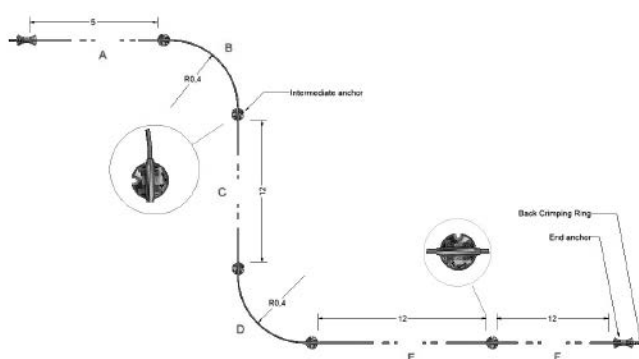


Fig. 32. SECUROPE lifeline on ground.

### Caution

When tensioning a straight section, shake the cable with the hand so making it slide through the intermediate anchors. Oil on the cable improve also the cable sliding.

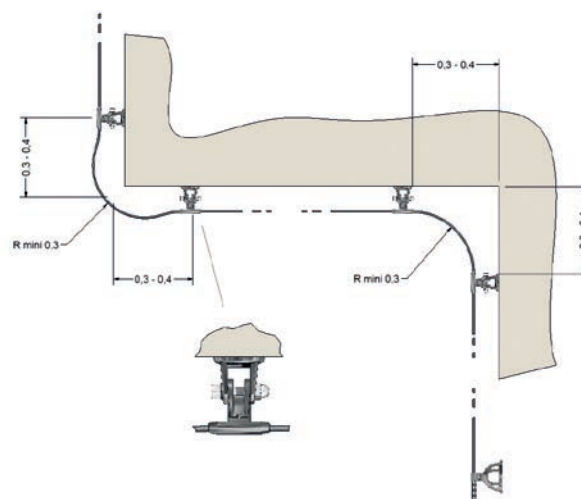


Fig. 33. Securope lifeline on wall.

## Tensioning tool.

### 10.3

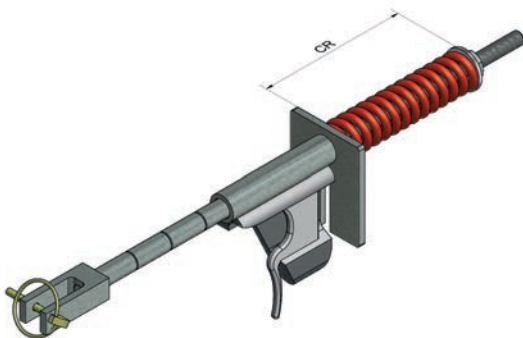
A tensioning tool, supplied by Fallprotec, is used to tension the cable. See 0.

A cable grab is fitted on the cable in contact with the tool plate. The cable pass through the hole of the plate.

The cable is then tensioned with a ratchet handle. The tension is sufficient to keep the cable stretched over the entire length of the line.

A spring controls the tension on the cable. A table shows this tension as function of the compression of the spring, the tension is between 0.5 and 1.0 kN.

CR		
Load	Length of spring	Compression
0 kg	115 mm	0 mm
50 kg	106 mm	9 mm
75 kg	104 mm	11 mm
90 kg	102 mm	13 mm
100 kg	101 mm	14 mm
110 kg	100 mm	15 mm
120 kg	098 mm	17 mm
130 kg	097 mm	18 mm
140 kg	095 mm	20 mm
150 kg	094 mm	21 mm
160 kg	093 mm	22 mm
170 kg	091 mm	24 mm
180 kg	090 mm	25 mm
190 kg	089 mm	26 mm
200 kg	087 mm	28 mm
210 kg	085 mm	30 mm
220 kg	082 mm	33 mm



# 11. Fixing system.

## Fixing assembly on cold deck. 11.1

A competent person will check the strenght of the structure in relationship with forces transmitted by the end intermediate anchors when a fall is stopped. Fallprotec makes software available, approved by Apave, which works out the forces in accordance with the site configuration and the number of users.

The components of the Securope line withstand without permanent deformation the forces indicated to table below and present a safety coefficient of two. The forces calculated by the software must be lower than the allowable forces. If you note a force beyond the allowable force it will be necessary to change one or more parameters of calculation, either to decrease the number of users or to decrease the distance between two anchors.

Component description	Allowable force on cold deck KN	Breaking strength KN
End anchor fixing assembly	11	22
Inter. Anchor fixing assembly	6	12
Wire rope	20	40
Crimping ring 100 mm	20	40
Glider (mobile anchor point)	6	15

Table 1.

Fallprotec has designed fasteners to allow fixing of Securope life line on fragile structure like cold deck (corrugated metal sheet roof).

The force applying on end anchors should be below 11 Kn in the event that the Securope is installed on a cold deck. To fulfil this requirement it is necessary to limit the number of users attached on the line, to reduce the span between two anchors and to install an energy absorber on one end anchor.

Lenght of the line meter	Span between anchors meter	Type of absorber	Number of users Max.
5	5	LDV032	2
10	5	LDV032	2
15	5	LDV032	2
20	6.7	LDV032	2
25	8.4	LDV032	2
30	10	LDV032	2
40	10	LDV032	2
50	10	LDV032	2
60	12	LDV032 ou LDV002	3
70	12	LDV032 ou LDV002	3
100	12	LDV032 ou LDV002	4

Table 2.

Falprotec developed a whole of fixing of the intermediate and end anchors on cold deck roof. Cold deck consists of corrugated metal sheets fixed on purlins. If the mechanical fixing, of the corrugated metal sheet is reliable, than it possible to fix directly the Securope life line on the corrugated metal sheet.

A great amount of tests were carry out on various corrugated metal sheet, the minimum pull out force measured on a 0,63 mm thickness metal sheet was above 22 KN for the end anchor and 12 KN for the intermediate anchor, refer to

test report of NORESKO para. 4.4.5. The safety coefficient against wrenching force is greate than 2.

- The fixing assembly consist of:
- The end or intermediate anchor;
- The bended plate in stainless steel, one model for the end anchor and one model for the intermediate anchor;
- 16 or 8 fasteners, according to the plate's model;
- Waterproofing tape.

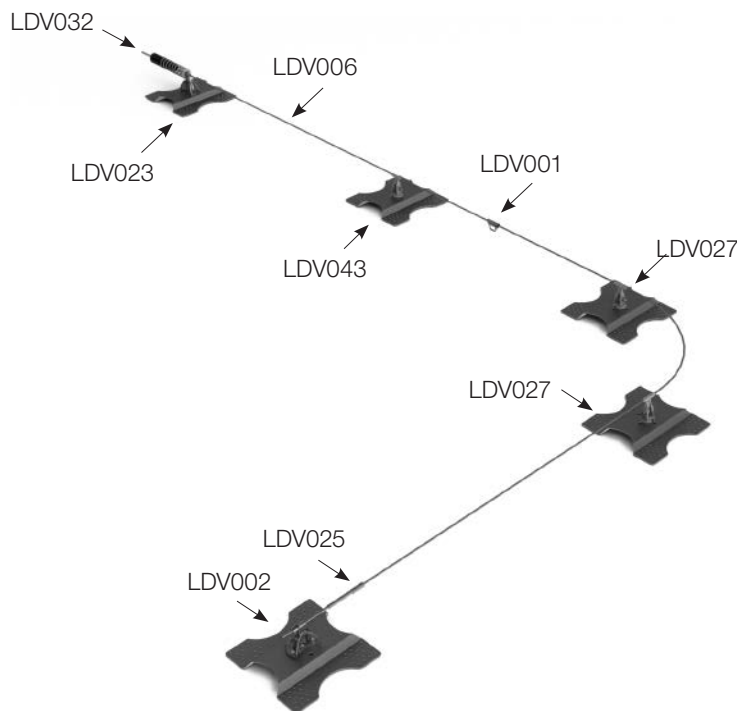


Fig. 1. Typical configuration: secuope on cold deck

## The plates.

The bended plate ensures a homogeneous distribution of the forces on the roof.

The plate is in stainless steel AISI304 having a thickness of 3 mm, and a engraving marking including the standard number EN795 class C, a batch number and the company logo. The end anchor on a bended plate having overall dimensions of 360x360 mm; and for the intermediate anchor the dimensions are 360x200mm. The bended plate should match the corrugation of the metal sheet, in standard the pitch lenght varies from 210 to 333mm. For special project Fallprotec can supply bended plates with other pitch lenghts. The plate for end anchor is also used for the two intermediate anchors forming a curve, see Fig. 3.

## Rigging of the anchors.

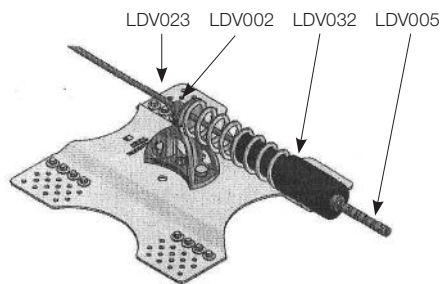


Fig. 2. Rigging end anchor fitted with energy absorber on cold deck.

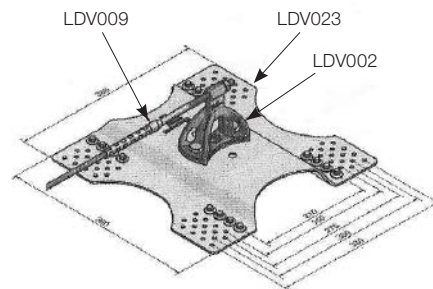


Fig. 4. Rigging end anchor fitted with crimping ring and threaded bar on cold deck

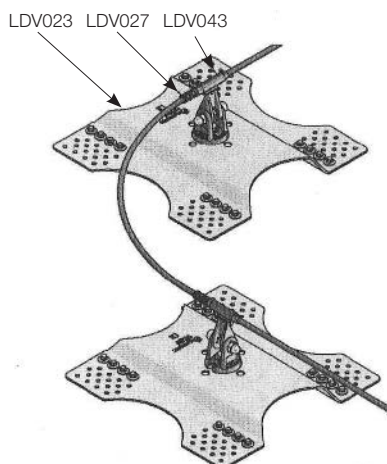


Fig. 3. Rigging of a curved section on cold deck.

## The fasteners.

Fixing of the bended plate on roof is by self drilling fasteners; it is forbidden to use other fasteners than those supplied by Fallprotec.

The fasteners TDC have been designed by SFS Intec according to Fallprotec requirements. The fasteners may be used in steel or aluminium deck. The number of fasteners depends of the bended plate's model. A table shows the pull out force according to different parameters.

Metal sheet material	Sheet thickness mm	Pre drill dia. mm	Pull out force N
Aluminium alloy 220 N/mm <sup>2</sup>	1	Not required	1363
	2	Not required	3621
	3	Not required	6309
Steel 420N/mm <sup>2</sup>	0,50	Not required	781
Steel 390N/mm <sup>2</sup>	0,63	Not required	1430
	0,75	Not required	2061
	1,00	Not required	2354
Tensile breaking load fastener			23250 N
Shear breaking load of fastener			17835 N

Table 3 Fastener characteristics

The minimum thickness of the deck is specified in the table above

- The dimension of fastener is  $\varnothing 6.3 \times 25$  mm
- Head/drive Hex. 8 mm A/F
- Material of fastener: stainless steel AISI 304
- Material of washer: Stainless steel AISI 304
- With vulcanized EPDM sealant



Fig. 7. Drillnox Fasteners

### Waterproofing tape.

A waterproofing tape is delivered with the fixing assembly which is positioned below the 2 lines of fasteners. Tape dimensions 22 x 5 mm length 12 m.

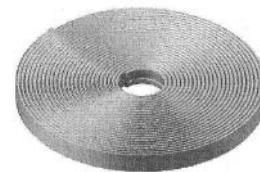
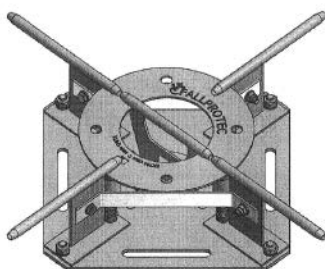


Fig. 8. V-ETA-U18x4 waterproofing tape

### Switch.

Fallprotec has designed a switch for Securope lifeline. There can be four branches (the intersection of two lines) or 3 branches (intersection of three lines). The switch manufactured in stainless steel, has a base on which are placed 4 fixed anchors. A anchor, located in the center allows 360° rotation for the glider to change direction. A safety disc mounted on springs, prevents the glider to escape from the line when changing direction.



The rigging on cold deck requires a specific plate as show Fig. 56

Fig. 9. LDV048 Switch with 4 branches

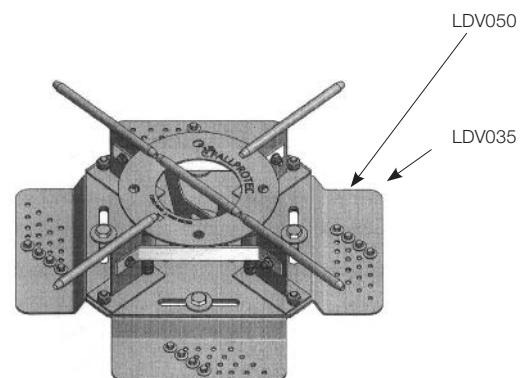


Fig. 10. Switch on cold deck

## Fixing assembly on concrete slab.

11.2

A competent person will check the strength of the structure in relationship with forces transmitted by the end and intermediate anchors when a fall is stopped. Fallprotec makes software available, approved by Apave, which works out the forces in accordance with the site configuration and the number of users.

The components of the Securope line withstand without permanent deformation the forces indicated to table below and present a safety coefficient of two. The forces calculated by the software must be lower than the allowable forces. If you note a force beyond the allowable force it will be necessary to change one or more parameters of calculation, either to decrease the number of users or to decrease the distance between two anchors.

Component description	Allowable force on concrete slab KN	Breaking strength KN
End anchor + post	12	24
Intermediate anchor + post	6	12
Wire rope	18.5	37
Crimping ring 100 mm	18.5	37
Glider (mobile anchor point)	6	15

Table 1.

## Fixing on concrete slab or wall.

The end anchors LDV002 and intermediate anchors can be fixed directly on a concrete slab or wall (LDV004 and LDV043 only for wall configuration) having a strength of 25 MPa or more and a thickness of 100 mm or more. The type of fixing selected will be compatible with the calculated forces.

## Supporti Linea 7003

11.2.1

I supporti servono a sopportare i carichi che si sviluppano in caso di caduta dell'operatore sugli elementi costituenti la linea. Devono essere quindi dimensionati in relazione a tali carichi e alla struttura su cui vengono montati (conglomerato cementizio armato, legno, acciaio). Esistono una serie di supporti cosiddetti standard che si adattano alla maggior parte delle tipologie di struttura, con la possibilità di progettare e realizzare qualsiasi altro tipo di supporto partendo da un base in acciaio inox nella quale si innesta la torre della lega 7003.



### **Materiale:**

base e torre in estrusione d'alluminio 7003-T6 gli standard base in acciaio inox e torre in estrusione d'alluminio 7003-T6 gli speciali

### **Geometria:**

variabile a seconda della tipologia - Altezze: 30/50/75/100 cm

### **Peso:**

variabile

### **Fissaggio:**

direttamente su struttura con fissaggi M16 e resina bi-componente o con apposite contropiastre (il numero e la geometria varia a seconda della tipologia)

### **Tipologia:**

supporti standard SAP/SAS/SAU per elementi d' estremità e rinvii d'angolo orientabili

supporti standard intermedi SIAP/SIAS/SAU per elementi intermedi supporti speciali ST10/ST20/ST30/ST40/ST90

**N.B.:** per un maggiore dettaglio dei supporti serie 7003 fare riferimento al relativo manuale di montaggio.

## Adattatore Securope® art. PAS

11.2.2

L'adattatore serve per fissare gli elementi della linea **Securope®** sui supporti della Linea 7003.



### **Materiale:**

lega d'alluminio

### **Geometria:**

150x100x20 mm

### **Peso netto:**

0.750 Kg

### **Fissaggio:**

a viti autofilettanti 6.3x45 mm a testa esagonale dotate di rondelle piane con guaina di tenuta Ø 16

### **Dotazione:**

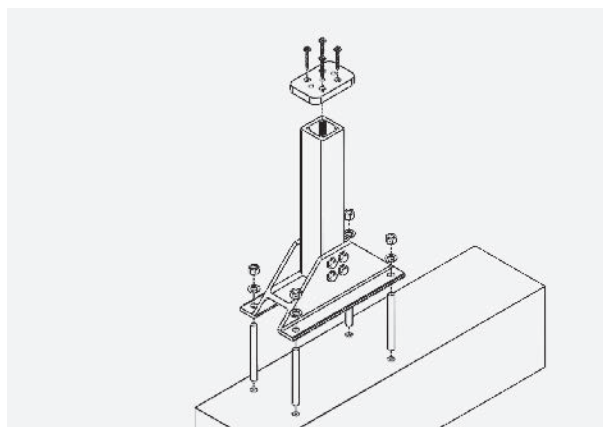
4 fori Ø 6.5 con cava cilindrica Ø 16.5 per il fissaggio sui supporti

3 fori filettati M12 L = 18 mm per il fissaggio degli elementi



### Fissaggio diretto su legno o conglomerato cementizio (C.C.A.) (per ogni barra filettata): 11.2.3

- praticare sulla copertura un foro  $\varnothing 18$  di lunghezza 10 cm con trapano a rotoperussione;
- pulire lo stesso con apposito scovolino, facendolo roteare, e successivamente con pompetta manuale in modo da eliminare i residui di polvere dalle pareti del foro (ripetere l'operazione più di una volta);
- inserire la resina epossidica bi-componente lentamente, per evitare la formazione di bolle d'aria;
- inserire la barra filettata M16 praticando la rotazione della stessa;
- posizionare il supporto e lasciare indurire la resina secondo i tempi indicati sulla confezione;
- inserire la rondella grover e il dado sulla barra filettata;
- serrare il dado applicando una coppia di 170 Nm.



### Fissaggio diretto su tavelloni + cappa con rete elettrosaldata (per ogni barra filettata): 11.2.4

- praticare sulla copertura un foro  $\varnothing 20$  con trapano a rotoperussione, lasciando integro il fondello inferiore del tavellone;
- pulire lo stesso con apposito scovolino, facendolo roteare, e successivamente con pompetta manuale in modo da eliminare i residui di polvere dalle pareti del foro (ripetere l'operazione più di una volta);
- inserire una calzetta di rete presagomata per il contenimento della resina;
- inserire la resina epossidica bi-componente lentamente, per evitare la formazione di bolle d'aria e la troppa fuoriuscita dalla maglia della calzetta;
- inserire la barra filettata praticando la rotazione della stessa;
- posizionare il supporto e lasciare indurire la resina secondo i tempi indicati sulla confezione;
- inserire la rondella grover e il dado sulla barra filettata M16;
- serrare il dado applicando una coppia di 170 Nm.

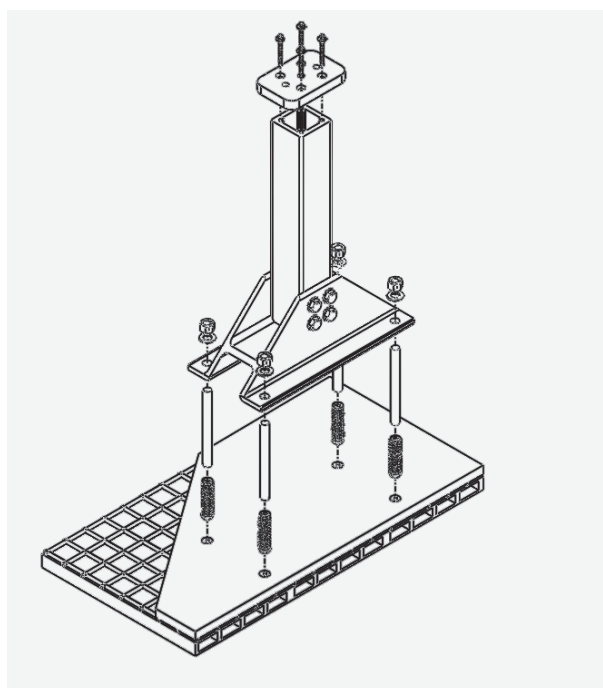


Table 1.

**Fixing on hot deck. 11.3**

**Introduction. 11.3.1**

A component person will check strength of the structure in relationship with forces transmitted by the end and intermediate anchors when a fall is stopped. Fallprotec makes software available, approved by Apave, which works out the forces in accordance with the site configuration and the number of users.

The components of the Securope line withstand without permanent deformation the forces indicated to table below and present a safety factor of two. The forces calculated by the software must be lower than the allowable forces. If you note a force beyond the allowable force it will be necessary to change one or more parameters of calculation, either to decrease the number of users or to decrease the distance between two anchors.

Component description	Allowable force on hot deck KN	Breaking strength KN
End anchor fixing assembly	15	50
Inter. anchor fixing assembly	9	18
Wire rope	17.5	35
Crimping ring 100 mm	17.5	35
Glider (mobile anchor point)	6	15

A Hot Deck consist of a corrugated sheet covered by an insulating material and a membrane. The Multipost / Spontanchor attaches the life line to this surface securely. The dimension of the corrugated sheet can vary according to national construction legislations but are generally as follows.

- Thickness of metal sheet: 0.75 to 1.25 mm.
- Height of the corrugated sheet covering from 30 to 165mm;
- The span of the corrugations may lie between 200 to 333mm.

The insulations is generally rockwool with a thickness 80 and 160 mm.

The waterproof membrane is either a bituminous membrane, PVC or EPDM.

The Multipost with 4 toggle bolts is used to fix the end anchors and the anchors in the curves. The Spontanchor with 1 toggle bolt is used to fix intermediate anchors in straight section, see Fig. 01.

**Component. 11.3.2**

**1. Multipost Base.**

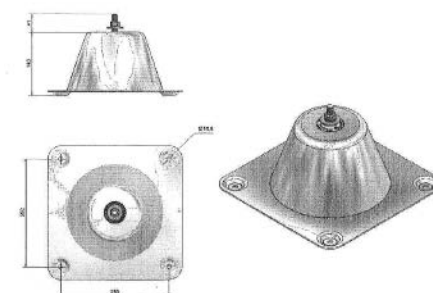


Fig. 2. LDV019 Multipost Base

## 2. The toggle bolts.

The toggle bolts are made of zinc coated steel size M10 x 300 mm, and can withstand a traction force of 20 KN. The installer should drill a hole of 32 mm in the steel deck to allow passage of the toggle bolt. The threaded bars are cut to size on site and the nuts are tightened.

## 3. The sealing collar.

The sealing collar is glued to the base plate at the factory. For the Multipost, the collar should be lifted to place the toggle bolts during the on-site installation. The collar should be glued after on the base plate and on the roof membrane. For the Spotanchor, the collar should be glued on the roof membrane. The Standpipe is crewed onto the M22 threaded bar and loctite. A capsule with loctite is provided. The collar can be provided by Fallprotec or supplied and sealed by the Installer.

## 4. Bituminous / PVC / EPDM / Collar.

Bitumen collar, 70cm diameter, 3.0 mm thick, pre-glued onto the base plate.

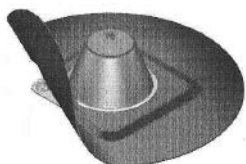


Fig. 5. Bituminous collar

## 5. The cover

A 1-mm thick stainless steel cover protects the area where the collar is glued onto the base. Fallprotec supplies a complete set assembled with the collar. If the collar is assembled by the installer, a sealing paste must be added between the cover and the collar (For Multipost only).

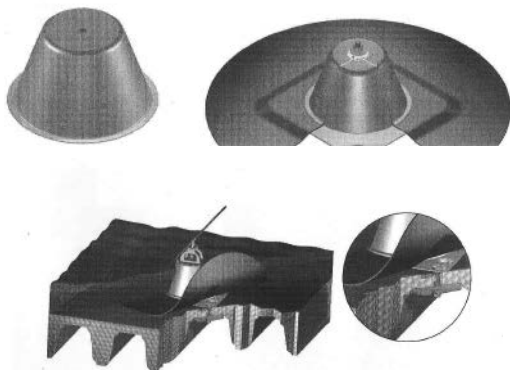


Fig. 13. Multipost on roofs covered with plant material

## Montaggio

11.3.3

Il supporto da fissare è scelto tra la gamma disponibile, od eventualmente calcolato, in base alla tipologia della copertura su cui va montato con i fissaggi M16 indicati in precedenza.

### Montaggio supporto multipost:

- sollevare il collare bituminoso/Pvc del supporto Multipost in modo da vedere la piastra di base;
- effettuare i fori passanti  $\varnothing 26$  con trapano a rotopercussione nella posizione voluta;
- ammorzare, con un tensionatore meccanico, il cavo e dall'altro il supporto d'estremità;
- posizionare la piastra e inserire le barre filettate M10 con le ancorine verso il basso;
- inserire sulle barre le rondelle piane, le rondelle in gomma e il dado e serrare gli stessi con coppia di serraggio di 40 Nm accertandosi che le ancorine siano
- posizionate in orizzontale;
- tagliare le barre filettate per la parte in disavanzo;
- scaldare il collare bituminoso/Pvc e farlo aderire alla copertura in guaina presente in modo da ripristinare l'impermeabilizzazione.

**N.B. Esiste la possibilità di installare le barre M10 con resina chimica bicomponente, eliminando gli elementi basculanti e rispettando le procedure per il fissaggio diretto su struttura per la parte relativa alla focatura (10 cm  $\varnothing$  120 mm) con coppia di serraggio 40 Nm.**



## Fixing assembly on standing seam roof.

11.4

### Introduction.

A component person will check strength of the structure in relationship with forces transmitted by the end and intermediate anchors when a fall is stopped. Fallprotec makes software available, approved by Apave, which works out the forces in accordance with the site configuration and the number of users.

The components of the Securope line withstand without permanent deformation the forces indicated to table below and present a safety factor of two. The forces calculated by the software must be lower than the allowable forces. If you note a force beyond the allowable force it will be necessary to change one or more parameters of calculation, either to decrease the number of users or to decrease the distance between two anchors.

Component description	Allowable force on hot deck KN	Breaking strength KN
End anchor fixing assembly	12	24
Inter. anchor fixing assembly	9	18
Wire rope	20	44
Crimping ring 100 mm	20	40
Glider (mobile anchor point)	6	15

Table 1.

Fallprotec has designed fasteners to allow the fixing of Securope life line on fragile structure like standing seam roof.

The force applying on end anchors should be below 12 Kn in the event that the Securope is installed on standing seam roof. To fulfil this requirement it is necessary to limit the number of users attached on the line, to reduce the span between two anchors and to install an energy absorber on one end anchor.

Lenght of the line meter	Span between anchors Max. meter	Type of absorber	Number of users Max.
5	2,5	LDV032	2
10	3,3	LDV032	2
15	5	LDV032	2
20	5	LDV032	2
25	6,25	LDV032	2
30	9	LDV032	2
40	9	LDV032	2
50	9	LDV032	2
60	9	LDV032	3
70	9	LDV032	3
100	9	LDV032	4

Table 2.

Standing seam roofs represent the state of the art in roofing today, offering service life and dependability measured in decades. Attachment of rooftop ancillary items, however, has been difficult and often the source of leaks and maintenance problems. Securope fixing assembly to attach life line on standing seam roof, without piercing the panel, does not jeopardise the integrity of the roof. Standing seam roof consists of a corrugated metal sheet, fixed on purlins. The corrugated metal sheet varies according to manufacturers, in dimensions and material.

The fixing assembly consists of:

- The end or intermediate anchor or anchor point;
- The cross members;
- The clamps.

## Elements.

### Fixing assembly with clamps V-S5-Z on Kalzip panels.

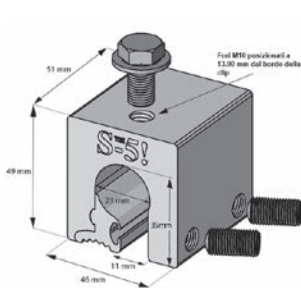


Fig. 6. LDV023K-Z

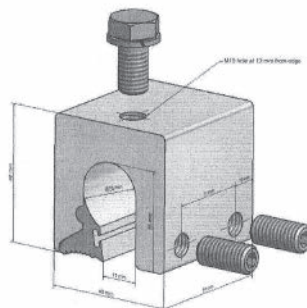
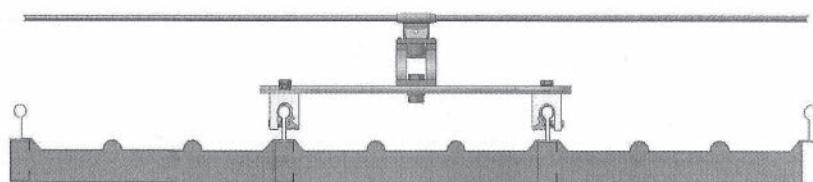


Fig. 7. V-S5-Z clamps



The Z Clamp will fit profiles that have a “bulb” shaped seam configuration. The two piece clamp is designed to be easily installed anywhere along the length of the panel seam. The Z clamp is a structural aluminium clamp, compatible

## The cross members.

The cross members are in stainless steel, thickness 5 mm. The cross members insure a proper fixing on the standing seams, which have a pitch from 300 to 600 mm. For pitch over 600 mm the standard cross members should be modified accordingly, the client will inform Fallprotec of the actual pitch distance.

## The clamps S-5.

The clamps offer a solution to the many varied attachments on standing seam roofs. Aluminium clamps are metallurgically compatible with galvanized steel, as well as aluminium alloyed, stainless steel and zinc sheet. Clamps are furnished with stainless steel bolts and washers.

with aluminium, zinc plated and stainless steel panel. It has been tested for load failure results on Corus and Bemo panels. The failure mode of this clamp is migration of 8 mm.

Manufacturer & type	Material panel	Thickness mm	Screw torque	Ultimate strength	Allowable strength
Bemo	Alu.	0.8 mm	13 Nm	11.8 KN	5.8 KN
Bemo	Alu.	1.0 mm	13 Nm	11 KN	5.5 KN
Bemo	Steel. St37	0.6 mm	13 Nm	7.86 KN	3.93 KN
Corus - Kalzip	Alu.	0.8 mm	13 Nm	11.8 KN	5.8 KN
Corus - Kalzip	Alu.	1.0 mm	13 Nm	10.9 KN	5.5 KN
Corus - Kalzip	Steel. St37	0.6 mm	13 Nm	7.86	3.93 KN

## Fixing assembly with clamps V-S5-E on double folded standing seam.

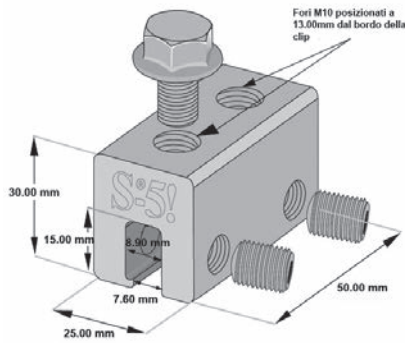


Fig. 8. LDV023K-E

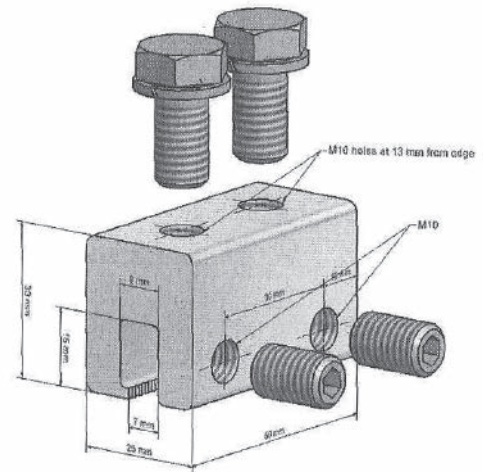
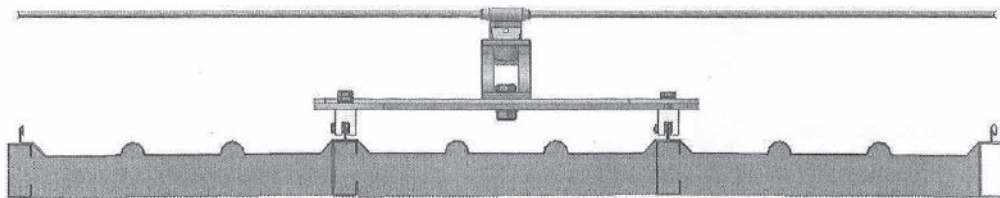


Fig. 9. V-S5-E clamps



The E clamp is designed especially for the traditional double folded standing seam profile that is popular all over Western Europe. The clamp is furnished, complete with M 10 Stainless steel bolts, washer, set screws and with

screw gun bit tips included in every box. Mounting holes are laterally located over the center of the seam and 13 mm from each end of the clamp.

Manufacturer & type	Material panel	Thickness mm	Screw torque	Ultimate strength	Allowable strength
Alcan - Falzonal	Alu	0.7 mm	13 Nm	5.34 KN	2.67 KN
Corus - Falzinc	Alu	0.7 mm	13 Nm	5.14 KN	2.87 KN
Corus - Titansilber	Alu	0.7 mm	13 Nm	4.22 KN	2.11 KN
Novelis - Falzonal	Alu	0.7 mm	13 Nm	5.34 KN	2.67 KN
Prefa - Prefalz	Alu	0.7 mm	13 Nm	3.82 KN	1.91 KN
Rheinzink	Titanzink	0.7 mm	13 Nm	5.54 KN	2.77 KN
Rheinzink	Titanzink	0.8 mm	13 Nm	7.44 KN	3.72 KN
Umicore - VM ZINC	Titanzink	0.7 mm	13 Nm	6.58 KN	3.29 KN
Umicore - VM ZINC	Titanzink	0.8 mm	13 Nm	7.25 KN	3.63 KN

### Other types of clamps available for double folded standing seam.

The S-5-S clamp is used on double folded standing seam having a height around 20 mm.

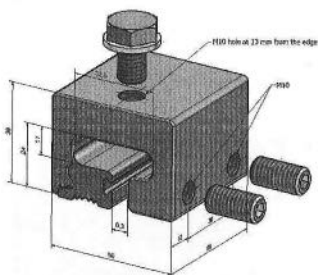


Fig. 10. V-S5-U clamp

### Other types of clamps available for double folded standing seam.

The S-5-T clamp is used on double folded standing seam, the top of the seam being bended with an angle of 90° (-)

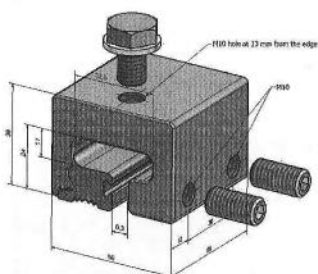


Fig. 11. V-S5-T clamp

The S-5-B clamp is used on double folded standing seam, plate being in brass.

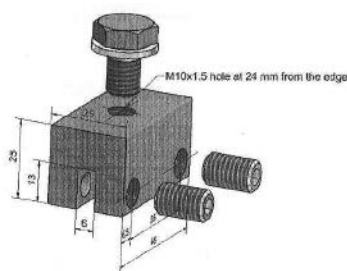


Fig. 12. V-S5-B clamp

### Note.

All load incurred by the clamp will be transferred to the panel seam. Panel attachment and structural characteristic must be adequate to withstand such loads. Clamps have been laboratory tested on various seam types, profiles and materials for ultimate tensile failure loads parallel to panel seam, see tables above.

For end anchors the maximum load shall not exceed 12 KN and for intermediate anchor, it will not exceed 6 KN, a safety factor of 2 should be used.

The secuope life line parameters (length of cable, span between anchors and number of users) will be chosen to limit the force imposed on the end anchors to 12 KN max. The force imposed on the intermediate anchor is 6 KN. In general, 4 clamps per fixing assembly are enough, a safety coefficient of 2 should be considered for the calculation of the quality of clamps on the fixing assembly. If any doubt, send the parameters of your project to Fallprotec S.

### Montaggio piastra per pannello sandwich:

- posizionare 2 strisce della gomma bi-adesiva lungo tutta la lunghezza del pannello nella posizione voluta e posizionarci sopra la piastra;
- inserire le 6+6 viti speciali auto-foranti lunghe negli appositi fori con la rondella in acciaio+gomma e serrare fino a fine corsa.

**Si ricorda che le viti da utilizzare sono viti speciali e studiate appositamente per questo tipo di applicazione e non sono normali viti auto-foranti e non è possibile quindi utilizzarne altre. La particolarità delle certificazioni ottenute per queste viti è che possono lavorare nel vuoto o nello strato di isolante per 200 mm.**



## 12. Recommendations relating to the documentation required after installation.

New requirements of EN795:2012

For the user, the documentation on the installation provides evidence that the installation was performed correctly. In addition, it serves as an essential foundation for further examination of the anchor, because, in many cases, fixing anchors are not visible or accessible.

After installation, the installer sends the user copies of the documentation for the installation. This documentation must be kept in the building for subsequent reviews of the anchor.

Documentation on the installation must contain at least the following information:

- The address and location of the installation;
- The name and address of the company that carried out the installation;
- The name of the person responsible for the installation;
- The product identification (manufacturer of the anchor, type, model / item);
- The fixing device (manufacturer, product, and transverse tensile forces eligible);
- The schematic plan of the installation, for example the roof, and information relevant to the user, such as the position of the anchor points (for example relevant in case of snow).

Should be marked on the schematic plan of the building so that it is visible or available to all (for example, at the point of access to the roof).

The statements made by the responsible installer must be signed by him and attest that at least the anchor:

- Has been installed in accordance with manufacturer's installation instructions;
- Is consistent with the plan;
- Was attached to the specified support;
- Has been set as specified (e.g. number of bolts, correct materials, position / location correct);
- Was put into service according to information supplied by the manufacturer;
- Came with photographic information / documentation, especially when the fasteners (eg bolts) and the underlying support are no longer visible once installation is complete.

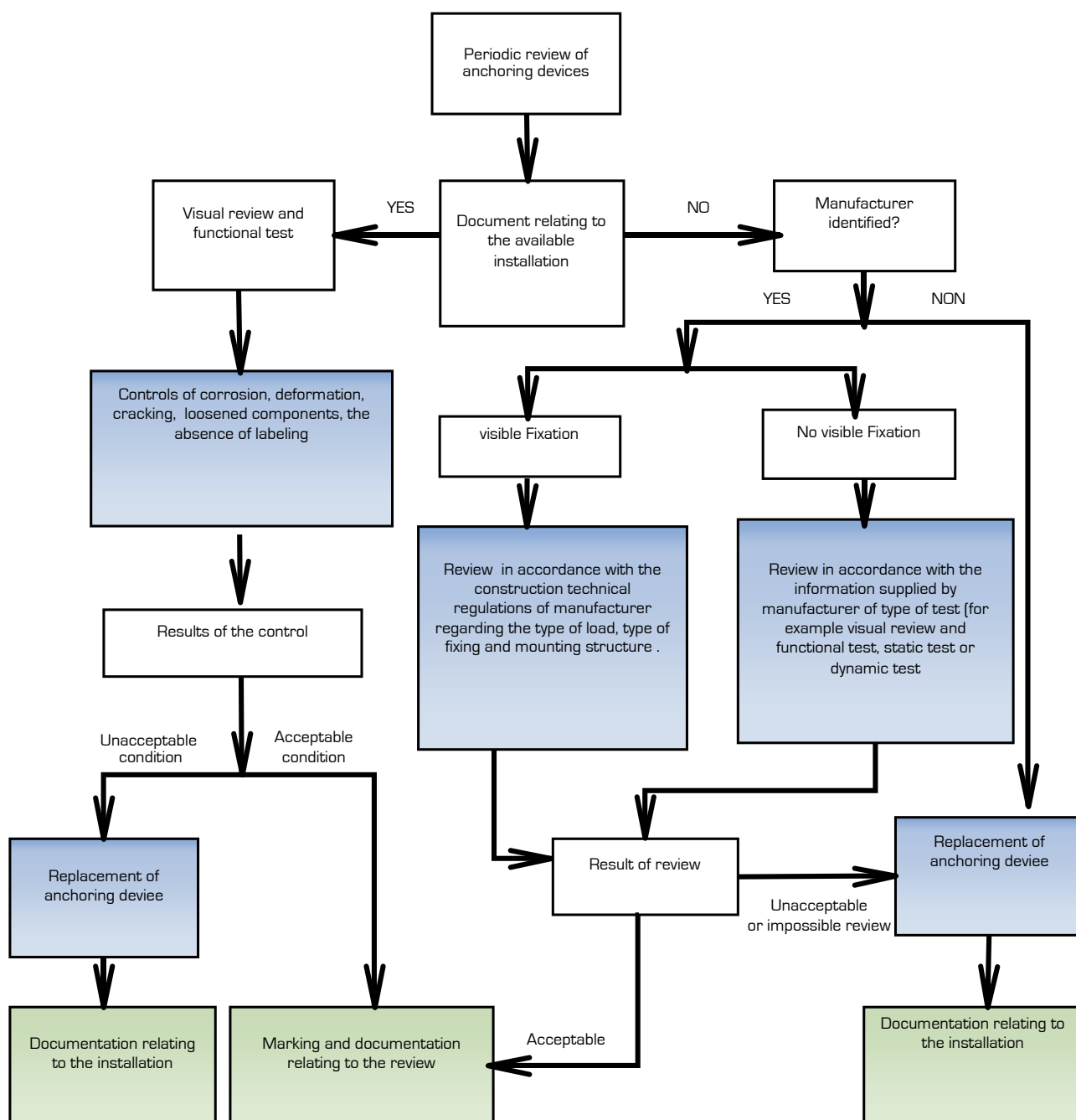
When several anchor points must be photographed for identification purposes, it is recommended to mark the anchoring devices with numbers and incorporate this numbering in the inspection records of the anchoring device and the ground plan in the installation area.

Fallprotec provides the installer with a model for the "Installer schematic plan"



Schematic plan of installation			
<b>Building / Structure</b>			
Address :	Order N°:		
Notes :	Type of order :		
	Shape of the roof :		
	Anchoring device: Class C- Lifeline		
<b>Client</b>			
Name :	Contact :		
Address :	Telephone N°:		
<b>Installer</b>			
Name :	Installer chief:		
Address :	Telephone N°:		
<b>Anchoring device</b>			
Manufacturer : FALLPROTEC			
Model identification /type : Securope 2012			
<b>Building components</b>			
<b>Attachments / Studs</b>			
<input type="checkbox"/> Data of fixations	Ø drilled hole            mm Depth                            mm Torque                            N.m Distance from the edge Cx: Axial spacing                    Sx:		Type : Material : Minimum distance from the edge (c): Minimal axial distance (s): Minimum thickness of the component: Permissible tensile strength : Breaking force :
Notes:	<input type="checkbox"/> Hammer	<input type="checkbox"/> Cleaning of the drilled hole	System <input type="checkbox"/> yes <input type="checkbox"/> No
Drilling method:	<input type="checkbox"/> Rotative		impact <input type="checkbox"/> Humid <input type="checkbox"/> dry
Test device:	<input type="checkbox"/> Wrench	<input type="checkbox"/> Testing devise of fixations	<input type="checkbox"/> yes <input type="checkbox"/> No
Control list	Ground plan of the roof:		
<input type="checkbox"/> Substrate except exceptions (no doubt on the capacity)			
<input type="checkbox"/> Installation in accordance with manufacturer's instructions			
<input type="checkbox"/> Recommended attachments used			
<input type="checkbox"/> All attachements photographed with identification			
<input type="checkbox"/> Visibles attachments			
<input type="checkbox"/> Installation plan attached on site			
<input type="checkbox"/> Screw immobilisation by traversing fixing technique			
<input type="checkbox"/> Additional information			
<b>Breakout force (kN), required torque (Nm)</b>			
Anchoring point 1	Anchoring point 5	Anchoring point 9	Anchoring point 13
Anchoring point 2	Anchoring point 6	Anchoring point 10	Anchoring point 14
Anchoring point 3	Anchoring point 7	Anchoring point 11	Anchoring point 15
Anchoring point 4	Anchoring point 8	Anchoring point 12	Anchoring point 16
Additional fixations:			
Note of installation chief:			
Date :	Signature		

# 12. Recommendations relating to periodic review procedure.



## Identification label. 12.1

An identification card must accompany the product during its use.

### Identification card of Securope Lifeline.

Type the equipment: Securope2012 lifeline

Manufacturer :

FALLPROTEC SA.  
43-45, ZA Op Zaemer  
L- 4959 Bascharage  
Luxembourg

Tel : +352 26 55 09 30  
Fax : +352 26 55 09 30 55  
Email : [ft@fallprotec.com](mailto:ft@fallprotec.com)  
[www.fallprotec.com](http://www.fallprotec.com)

Equipment Identification:

Date of manufacturing:

Purchase date:

First use date:

Periodicity of inspection: Once a year

Estimated life time: 20 ans.

Date of 1 <sup>st</sup> review	Type of review & repairs	Name and signature of competent person	Date of the next review
After 1 year of use	Visual Cleaning of the Securope lifeline Check of energy absorbers Tightening of LDV038 and locking with loctite Check tightening of bolts Check proper position of cable guide on intermediate anchor LDV043		Periodicity once a year
Dates	Defects noticed– relevant information	Name and signature	Prevision dates

**NOTE: It is the responsibility for the user to provide the identification card and to fill**



**Genesi Italia**

Via Donizetti, 109/111  
24030 Brembate di Sopra  
Bergamo - Italy

T. +39 035 0332049  
F. +39 035 6220438  
info@genesibesafe.com



[genesibesafe.com](http://genesibesafe.com)

**Genesi Italia, Be Safe**