Lesson nr 6 of 7

1° Fall arrest system
2° Anchor points
3° Confined Space
4° Rope Access
5° Rescue
6° Lifeline
7° Inspection
Index

- Lifeline introduction
- LV201 SPEEDLINE
- SPIDERLINE III
- SPIDERLINE II
If we connect 2 or more anchor points we obtain a **LIFELINE** which is usefull to work on a huge space without disconnecting the Fall Arrest System.
You can follow this "LIFELINE Lesson" on our TECHNOGUIDE at page 7 or on our CATALOGUE at pages 386 and 387:
The European Standard EN795 considers 2 types of lifelines:

**TYPE C** = with flexible cable
**TYPE D** = with rail

Our 2015 LIFELINES range is:

<table>
<thead>
<tr>
<th>TYPE</th>
<th>ITEM NAME</th>
<th>LENGTH</th>
<th>CHARACT.</th>
<th>MATERIAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>LV201 SPEEDline</td>
<td>20m</td>
<td>TEMPORARY</td>
<td>WEBBING</td>
</tr>
<tr>
<td>C</td>
<td>SPIDERLINE II</td>
<td>UNLIMITED</td>
<td>FIXED</td>
<td>INOX CABLE</td>
</tr>
</tbody>
</table>

Our 2016 LIFELINES range will add:

<table>
<thead>
<tr>
<th>TYPE</th>
<th>ITEM NAME</th>
<th>LENGTH</th>
<th>CHARACT.</th>
<th>MATERIAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>SPIDERLINE III</td>
<td>30m</td>
<td>FIXED</td>
<td>INOX CABLE</td>
</tr>
<tr>
<td>C</td>
<td>LV301 CABLEline</td>
<td>12m</td>
<td>TEMPORARY</td>
<td>INOX CABLE</td>
</tr>
<tr>
<td>C</td>
<td>GPSline</td>
<td>UNLIMITED</td>
<td>FIXED</td>
<td>INOX CABLE</td>
</tr>
<tr>
<td>D</td>
<td>T-REXline</td>
<td>UNLIMITED</td>
<td>FIXED</td>
<td>ALU RAIL</td>
</tr>
<tr>
<td>C</td>
<td>SPIDERLINE IV *</td>
<td>UNLIMITED</td>
<td>FIXED</td>
<td>INOX CABLE</td>
</tr>
</tbody>
</table>

* SPIDERLINE IV will replace SPIDERLINE II
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- SPIDERLINE II
It is composed of 4 elements:

- **A** and **D** are 2 anchor points. Using 2 carabiners AM002 they can be connected to a post.
- **B** is a 35mm webbing, length 18m.
- **C** is a tensioner and length regulator. The lifeline is 2.5m min and 20m max, including anchorages A and D.

adapted for 2 people
In case of fall of a person attached to a lifeline, it is necessary to consider a DOUBLE clearance:

1. Clearance of your fall arrest device (for example using an energy absorber in F0 = 2m)

2. Clearance of the lifeline that is flexible. Ex.: 3m. All the data will be available in our U.I. (User Instruction).

1.+2. Total clearance. In our example is: 2 + 3 = 5 meters
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- Lifeline introduction
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It is our simplest fixed cable lifeline system:

- **A**: LV504 (or LV506) - Starting point
- **B**: LV511 - Absorber
- **C**: LV040 - Cable
- **D**: LV516 - Tensioner
- **E**: LV504 (or LV506) - Ending point
### A / E Starting and Ending Point

<table>
<thead>
<tr>
<th>LV504</th>
<th>LV506</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Image" /></td>
<td><img src="image2.png" alt="Image" /></td>
</tr>
<tr>
<td>• Stainless steel anchor point</td>
<td>• Stainless steel anchor point</td>
</tr>
<tr>
<td>• 3 holes</td>
<td>• 1 fixing hole</td>
</tr>
<tr>
<td>• Weight: 1kg</td>
<td>• Weight: 430 gr</td>
</tr>
</tbody>
</table>
A / E Starting and Ending Point on a post

**LV506**
Anchor point

**LV504**

**LV506**
End post

**LV521**
Counter plate for end post

**LV522**

NO

OK
<table>
<thead>
<tr>
<th></th>
<th>B Absorber</th>
<th>C Cable</th>
<th>D Tensioner</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td><strong>ENERGY ABSORBER</strong></td>
<td>Stainless steel wire rope</td>
<td>Stainless steel tensioner to swage</td>
</tr>
<tr>
<td></td>
<td>LV511</td>
<td>LV040</td>
<td>LV516</td>
</tr>
<tr>
<td></td>
<td><em>Stainless steel with ABS carter</em></td>
<td>Composed of 7 strands of 19 wires</td>
<td><em>Stainless steel tensioner to swage</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ø 8 mm</td>
<td>Length: from 25 to 35 cm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Weight: 250 g/ml</td>
<td>Weight: 1 kg</td>
</tr>
</tbody>
</table>

- **SPIDERLINE III**
- **LV511**
- **LV040**
- **LV516**
The 3 components have to be crimped together:

SPIDERLINE III

LV514 Crimping

LV514 Crimping
These 2 swaged points are made using a specific tool, a **swaging machine** available for sale or for rent. Spare parts of this machine are also available.

<table>
<thead>
<tr>
<th>LV528</th>
<th>LV529</th>
<th>LV530</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swaging machine</td>
<td>Crimping die matrix</td>
<td>Spare battery</td>
</tr>
</tbody>
</table>
The maximum load of our lifeline is 37 kN: very resistant for it. The only limit depends on the material the structure is made of: concrete, metal, wood or other.
The minimum structural resistance permitted is shown in a diagram on our U.I. with the following parameters:

- Number of people: from 1 to 6
- Length of the lifeline: from 3 m to 30 m

This performance is normally assured in case of CONCRETE or METAL structure. In other cases and in case of doubts, you need an official advice from an engineer.
A / E  Starting and Ending Point on metallic roof

It can be fixed to a metal roof. In this case you need a specific plate and a customised offer to control the real resistance of the roof.

LV543
Plate for metal roof
It is necessary to have a **RIVET MACHINE** to fix the plate LV543 to a metal roof. But, because of different types of roofs, you need a technical support of an expert.

<table>
<thead>
<tr>
<th>LV537</th>
<th>LV535</th>
<th>LV534</th>
<th>LV536</th>
<th>LV539</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rivet machine</td>
<td>Spare rivets</td>
<td>Fixing kit (for metal roof)</td>
<td>Fixing joint</td>
<td>Fixing kit (for standing seam roof)</td>
</tr>
</tbody>
</table>

**A / E Starting and Ending Point on metallic roof**

LV543
All carabiners certified **EN362 Class A** and **B** are adapted for this lifeline:

<table>
<thead>
<tr>
<th></th>
<th>anchor carabiners</th>
<th></th>
<th>basic carabiners</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong></td>
<td><img src="image" alt="LV401" /></td>
<td><strong>AM022</strong></td>
<td><img src="image" alt="AM009" /></td>
</tr>
<tr>
<td><strong>B</strong></td>
<td><img src="image" alt="AM002" /></td>
<td><img src="image" alt="AM025" /></td>
<td><img src="image" alt="AM018" /></td>
</tr>
</tbody>
</table>
In case of fall of a person attached to a lifeline, it is necessary to consider a DOUBLE clearance:

1. **Clearance of your fall arrest device** (for example using an energy absorber in F0 = 2m

2. **Clearance of the lifeline** that is flexible. Ex.:

   3m span, 4 users = **4m clearance**

All the data are available in our U.I.(User Instruction).

1.+2. **Total clearance**. In our example is: 2 + 4 = 6 meters
SPIDERLINE III

Final Instructions!

When the SPIDERLINE III is installed, the Delta Plus Official Installer has to control and regulate the tensioner, assure the starting points, control that each starting point has a LV057 as warning panel, seal the lifeline with the lead LV527.

So the SPIDERLINE III becomes available for all workers who have experience on work at height.

LV057
Information panel

LV527
Lead to seal the lifeline
Our Installer Network in Europe, at the beginning of 2016, is composed of more than 53 Installers.
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- LV201 SPEEDline
- SPIDERLINE III
- SPIDERLINE II
Introduction

SPIDERLINE II is a multi span lifeline. It is still available, but during 2016 it will be replaced by SPIDERLINE IV which will have better performances.
SPIDERLINE II has the similar functions as SPIDERLINE III but:

- It can have intermediate points and curves, so the length is unlimited.
- Each span, including the first one, has a MAXIMUM length of only 12m.
- It is tested ONLY to the old standard EN 795:1996 A1:2000 Class C.
- You can use ONLY the slider LV500.
- You have to use ONLY the absorber LV510 (and not the LV511).
## Additional items

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>LV510</td>
<td>Energy absorber</td>
<td>Stainless steel and aluminium</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Weight: 2.2 kg</td>
</tr>
<tr>
<td>LV515</td>
<td>Connector between the cable and the absorber</td>
<td>Stainless steel</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Weight: 400 gr</td>
</tr>
<tr>
<td>LV502</td>
<td>Intermediate bracket</td>
<td>Stainless steel</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Weight: 250 gr</td>
</tr>
<tr>
<td>LV503</td>
<td>Curve</td>
<td>2 pieces</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Weight: 500 gr</td>
</tr>
<tr>
<td>LV531</td>
<td>Wire rope reel</td>
<td>Stainless steel, $8 \text{ mm}$, $7 \times 19$ wires</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Weight: 250 gr</td>
</tr>
<tr>
<td>LV532</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LV500</td>
<td>Removable slider</td>
<td>Stainless steel</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Weight: 275 gr – Size: $9 \times 5 \times 2 \text{ cm}$</td>
</tr>
</tbody>
</table>
The bracket can be fixed on intermediate post or end post.

<table>
<thead>
<tr>
<th>LV502</th>
<th>LV503</th>
<th>LV506</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intermediate bracket</td>
<td>Curve</td>
<td>Starting/Ending anchor point</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LV523</th>
<th>LV522</th>
<th>LV521</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intermediate post</td>
<td>End post</td>
<td>Counter plate for end post</td>
</tr>
</tbody>
</table>
A vertical or horizontal flexion less than 15° is accepted. With a horizontal curve from 16° to 90° you have to use our curve system:

<table>
<thead>
<tr>
<th>Curve connectors. They can be fixed on 2 end posts (LV522)</th>
<th>If necessary a curve rail (not yet included in the catalogue)</th>
<th>If necessary a curve support with a simple fixing point. It is adapted also on a post (LV522)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LV503</td>
<td>LV517</td>
<td>LV518</td>
</tr>
</tbody>
</table>
SPIDERLINE II can be installed:

- On the ground
- On the wall
- Low on the wall
- On overhead
For the installations

- Low on the wall
- On overhead

all the INTERMEDIATE points and curves need a support to change direction 90 degrees

**SPIDERLINE II**

- Bracket for intermediate head and ceiling adapter
- Stainless steel
- Weight: 530 gr – Size: 7 x 8 x 10 cm
With a complex lifeline you need a spreadsheet to define the lifeline CLEARANCE and the STRENGTH on the anchorage points.

Only our **EXPERTS INSTALLERS** can calculate the real clearance using our spreadsheet.
Depending on:

a) **the distance** of the 3 or more anchorage points (min 2m max 12m)

b) **the resistance** of the support (declared by an engineer)

our **OFFICIAL INSTALLERS**, using our spreadsheet, define:

- **the clearance** due to lifeline
- the maximum number of **admitted workers**, from 1 to 6

To obtain a shorter clearance and/or a largest number of workers, the official installers will suggest a technical drawing with the most appropriate configuration.
In case of fall of a person attached to a lifeline, it is necessary to consider a DOUBLE clearance:

1. **Clearance of your fall arrest device** (for example using an energy absorber in $F_0 = 2m$

2. **Clearance of the lifeline** that is flexible.

All the data are available using our spreadsheet.

1+2 **Total clearance** is the sum of point 1. and point 2.
During the first part of 2016 we will introduce the following new items: