

# SUPPLY, INSTALLATION, AND COMMISSIONING OF FALL PROTECTION SYSTEM FOR INDUSTRIAL BUILDINGS.

## General Description:

Fall Protection System for Industrial Buildings shall be designed to fit the specific task of providing adequate safety to the roof workers against the hazards of fall from height. The system should be certified as per EN 795 class C.

## The Fall Protection System

The Fall Protection System designed for safety of workers working on the roof should have the following components—

1. End Anchor post.
2. Intermediate post.
3. Wire rope.
4. Intermediate support Brackets.
5. Corner pass through brackets.
6. Energy absorber.
7. Tensioner.
8. Runner.
9. Full body harness with rope lanyard.
10. Work restraint Rope grab grip.

## Configuration of the system

The configuration of the system is specified by the following parameters (fig. 4-1)

The above parameters form the basis for specifying the force  $F$  in the cable and the deflection  $D$  of the cable that occur when arresting a fall. The values of force  $F$  and deflection  $D$  can be determined based on the diagrams  $F=f(L,S)$  included into Enclosure 1 and  $D=f(L,S)$  included into Enclosure 2.

This documentation covers the following set of configuring parameters:  $4m \leq L \leq 200m$ ;  $4m \leq S \leq 15m$ ;  $N=1,2, 3$  person.

In case of applying other set of the parameters, an additional calculation should be done.

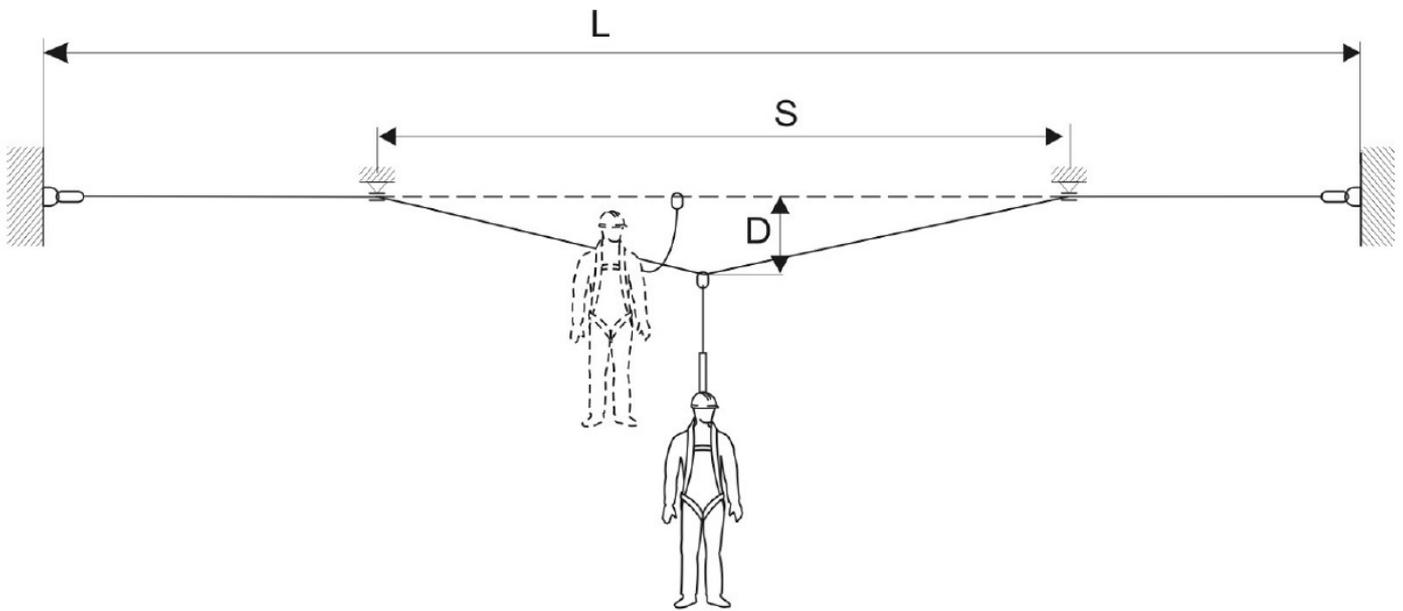


Diagram for determining the force "F" acting on the cable ends

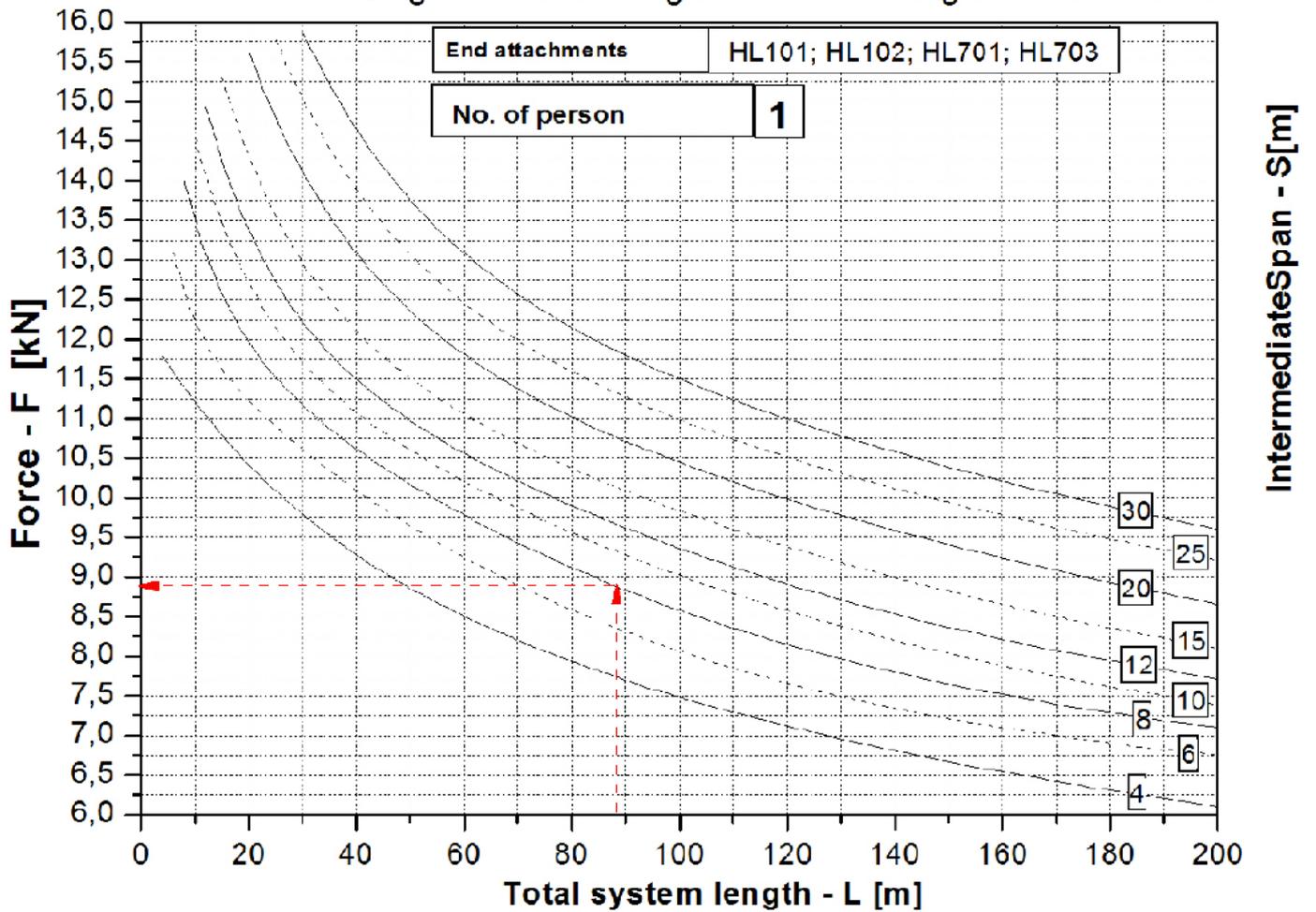


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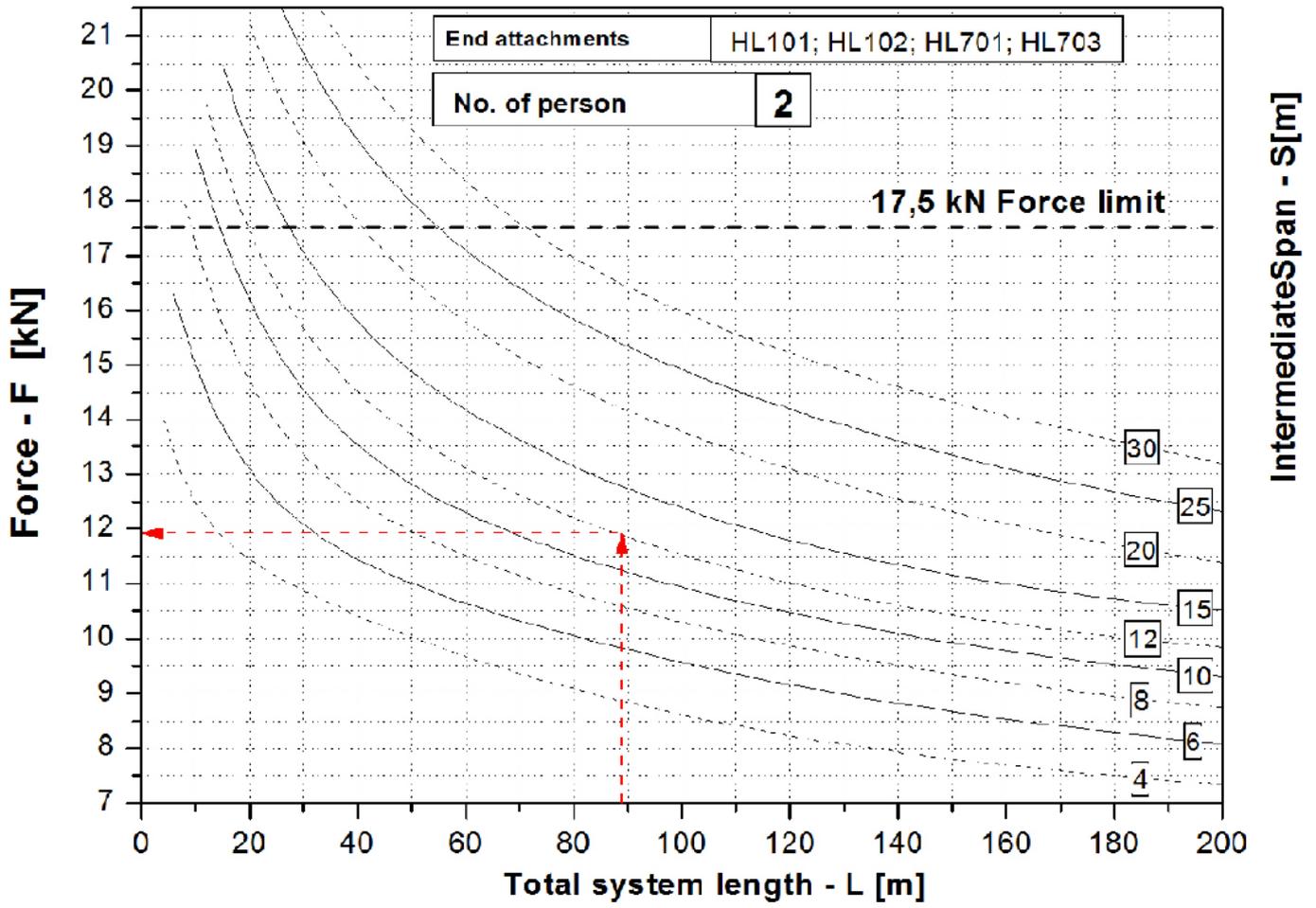
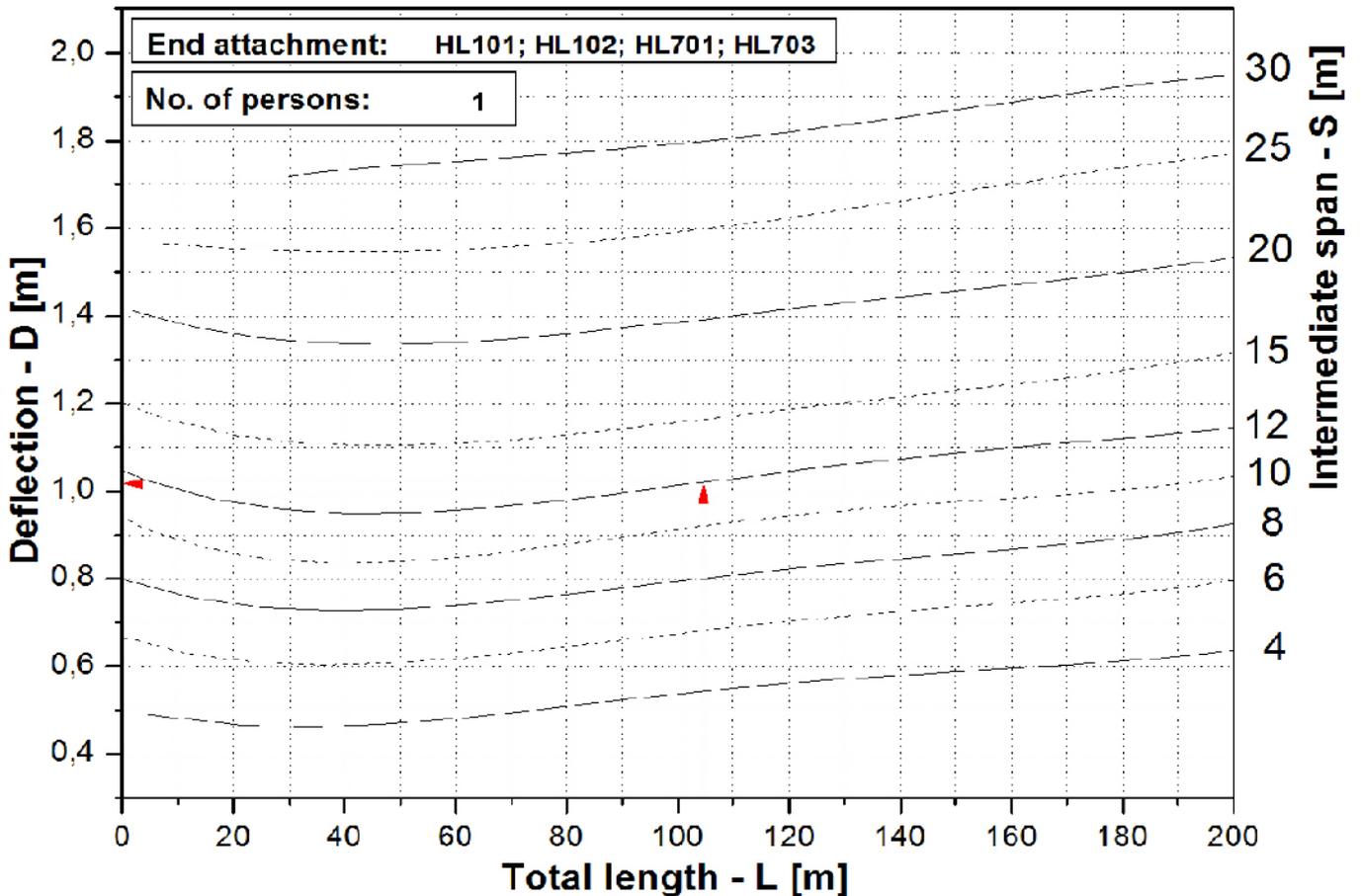
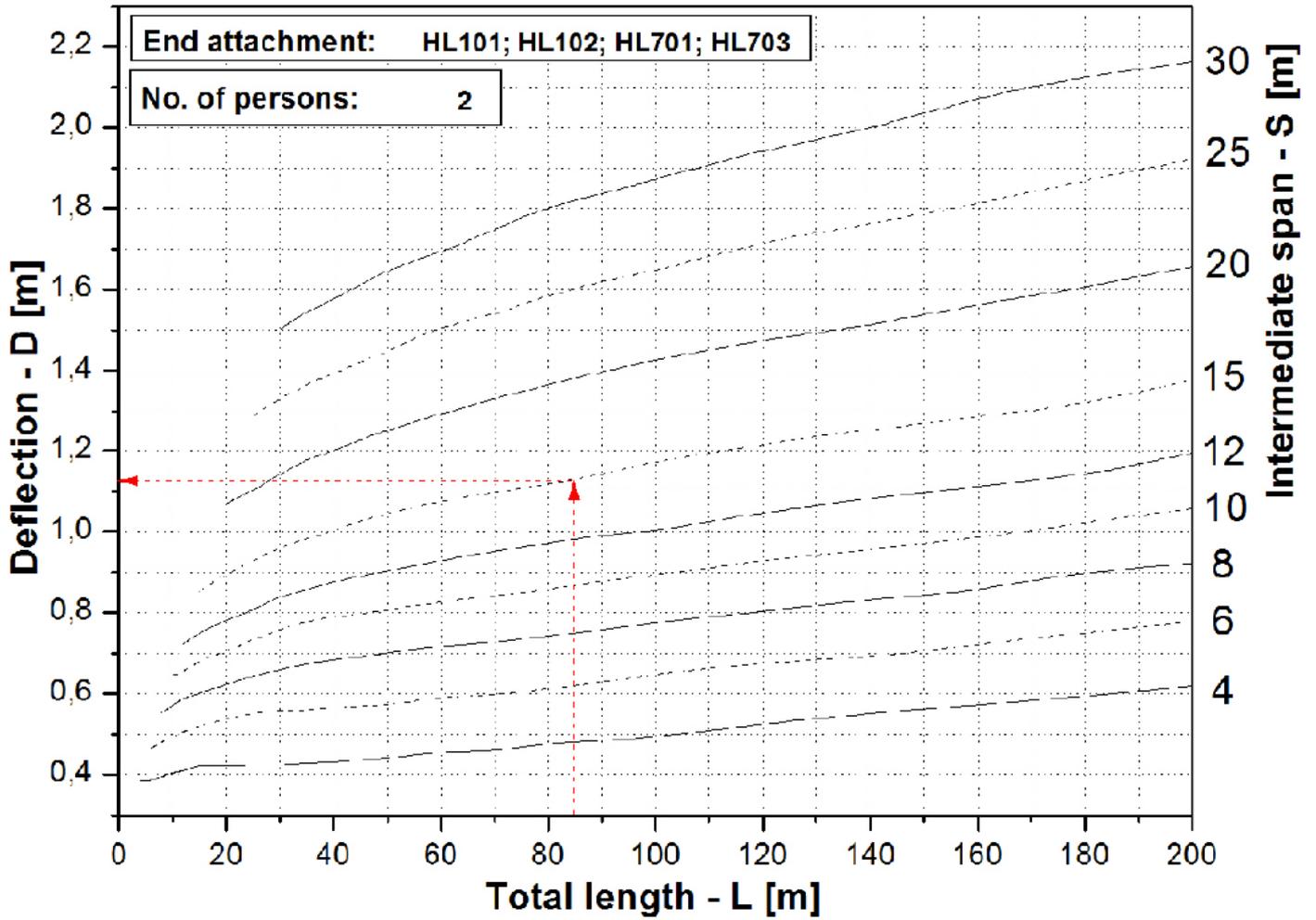


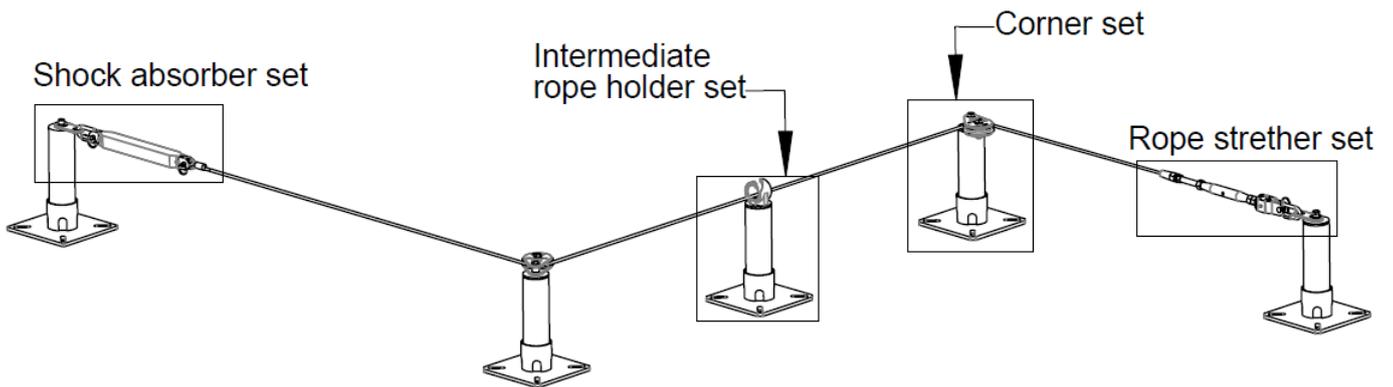
Diagram for determining of the system deflection - D



## Diagram for determining of the system deflection - D



Assembly look of the entire fall protection system—



### 1. End Anchor Post—

Anchor Post is a post which is placed on ends of the system which form as a anchor point for wire rope running across the system. The anchor post should have necessary clamping or fixing provision which can be fixed on the roof either by clamping, drilling or riveting. The End anchor post should be design calculated to take the required strength of no. of people working on the system.

Made of stainless steel SS 316, anchor post are resistant to any corrosion. Post is also coated with high strength durable Powder coating which give additional long life to the device.



### 2. Intermediate Anchor Post—

Intermediate Anchor Post is a post which is placed on equal distance of 10-15 mtrs the system which form as a anchor point for wire rope running across the system. The anchor post should have necessary clamping or fixing provision which can be fixed on the roof either by clamping, drilling or riveting. The intermediate anchor point should have an inbuilt energy absorber to absorb the load coming on the line at the intermediate. The End anchor post should be design calculated to take the required strength of no. of people working on the system.

Made of stainless steel SS 316, anchor post are resistant to any corrosion. Post is also coated with high strength durable Powder coating which give additional long life to the device.

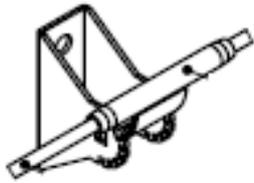
### 3. Wire rope—

Wire rope made of SS 316 of 8mm diameter. The wire rope is made of 7X19 construction with steel core inside. Wire rope forms the connection to the entire system enabling the person to be connected on the system and protecting its fall. Having a breaking strength of 3600 Kgs, this can take the required systems load.



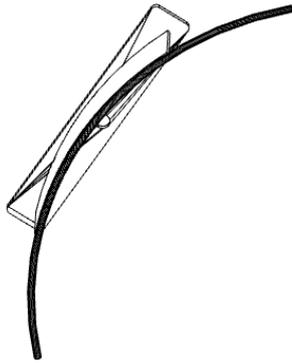
### 4. intermediate supporting brackets—

The horizontal wire rope is supported with intermediate brackets so that the sag in the system is minimum and within the acceptable limit. The centre to centre distance between intermediate supports should be 10-15 mtrs The intermediate brackets is made of SS 316 strength corrosion resistant material. The intermediate brackets allow unobstructed and continuous movement of carriage mechanism through the entire span of the horizontal wire rope.



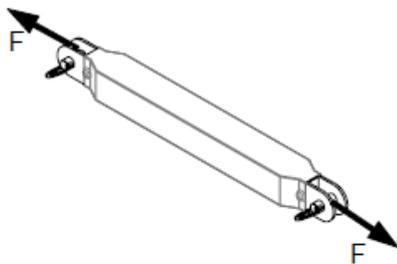
#### 5. Corner pass through bracket—

The Corner pass-through Brackets is used at 90 degree bend. The Corner pass-through Brackets shall be made of SS-316 for strength corrosion resistant. The Corner pass-through Brackets allows unobstructed and continuous movement of carriage mechanism through the entire span of the horizontal wire rope.



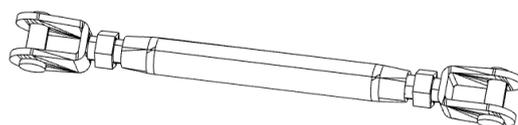
#### 6. Energy absorber—

Energy absorber limits the force applied to the user when a fall occurs. It is designed to absorb the kinetic energy of the worker from falling. The shock absorber prevents both injury to the worker and the amount of force transferred to the lifeline and anchor. Made of Stainless steel 316 grade, the absorber is protected from rust proof. Min capacity of energy absorber should be 10KN.



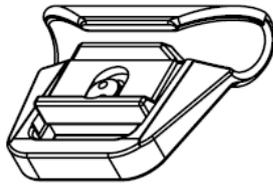
#### 7. Tensioner—

A Tensioner is an approved device located between the two anchorage points of the overhead horizontal life line system (wire rope) and provides required tension to it so that the sag in the system is minimum and within the acceptable limit. The Tensioner device is made of SS-316. The tensioner is equipped with a tension indicator signifying the appropriate tension in the line. The tensioner should have a internal stopper to prevent accidental opening of tensioner from the line.



#### 8. overhead trolley/carriage body—

The overhead trolley / carriage body is made of SS-316 material so that no spark or friction or static electricity is generated while it is moving on the SS wire rope. Also the carriage body passes easily through the intermediates and the corner brackets without any disconnection to the device.



#### 9. Full body harness with rope lanyard—

Full body harness having one dorsal attachment D-Ring, One central D-ring at the front, two lateral D-Rings at waist, Adjustable thigh straps, Adjustable chest strap to support the worker during and after a fall. The safety harness have a Tell-Tale indicator to illustrate if the harness has already had a fall.

Rope lanyard incorporated with Energy Absorber. Rope ends spliced and covered with polyethylene protective sleeve. Abrasion resistant thimbles provided within loops. One side of Energy Absorber equipped with Karabiner while other side of the lanyard equipped with Steel Scaffold Hook. Rope used  $\varnothing 12$ mm three strand polyamide rope of length 2 m. Black strand in the rope to indicate degradation of material .



#### 10. Work restraint Rope grab grip.—

The rope is of  $\varnothing 12-14$ mmmm Polyamide rope. The rope is having a length of 20 meters to give the required operational flexibility to the operator. The grab metal assembly is made of Zinc plated yellow passivation Steel Alloy (5mm Sheet) free of Sharpe edges.



Installation tag line card with periodic inspection checklist—

<b>Fall protection equipment</b>											
<b>HORIZONTAL ANCHOR LINE</b>											
P R I M EN795:2012 / FprCEN/TS18415:2012 - class C											
<b>PROTEKT</b>	Starorudzka 9, 93-403 Łódź										
<p><b>ATTENTION!</b> Before use read the instruction manual.</p> <p>Use only with fall protection system conform to EN363.</p>											
											
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;">Number of co-users:</td> <td style="width: 20%;"></td> </tr> <tr> <td>Serial number:</td> <td></td> </tr> <tr> <td>Installation date:</td> <td></td> </tr> <tr> <td>Installer:</td> <td></td> </tr> </table>	Number of co-users:		Serial number:		Installation date:		Installer:		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 100%;">Next inspection:</td> </tr> <tr> <td style="height: 40px;"></td> </tr> </table>	Next inspection:	
Number of co-users:											
Serial number:											
Installation date:											
Installer:											
Next inspection:											
Don't use after a fall or after next inspection date.											

All the lines should be tested and provided with inspection card mentioning the date of installation and the next due installation date.

Horizontal anchor Line control card—

Horizontal Anchor Line Control Card			
Type:	PRIM	Serial number:	
Length [m]		Installation date:	
Localization:			
User name:			

Periodic examination and repair history					
	Date	Type of examination or repair	Defect noted and repair carried out	Next control date	Name and signature of competent person
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					