SAFETY PLAST Srl

SAFETY PLAST

Temporary edge protection systems

RIGID

LIGHT

VERSATILE

EASY TO BE ASSEMBLED

ASSEMBLY HANDBOOK

REV.2 del 02/05/09

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1. IMPORTANCE OF THIS HANDBOOK

WARNING

This handbook has been drawn up with reference to the provisions of the rule UNI EN 13374-2004, **Temporary Edge Protection Systems** (**SPPB**) aiming at providing the user with a suitable knowledge of the equipments and information about:

- a correct sensibilization of operators as regards safety issues;
- the provided use of the equipments;
- the handling, installation and maintenance of them under safety conditions;
- their demolition and disposal according to the rules in force regarding the health of workers and the protection of the environment.

Therefore we recommend to carefully read it before using the equipment, taking care of the underlined messages.
If you observe the rules and recommendations reported in this handbook, you can safely use the equipment and autonomoulsly adopt the necessary interventions.
In case the equipment is made over to others, it is important to inform the builder about the address of the new owner.
This handbook, besides being available at the website www.safetyplast.eu is sent to the customer together with all Transportation Documents issued and referring to the delivery of the Edge Protection Systems.

It is absolutely prohibited to start installing the system without the previous reading and comprehension of this handbook.
This handbook is an integral part of the equipment and is then necessary to keep it intact in a safe place all over the life of the equipment, also taking care of informing operators about the place where it is kept.

2. GENERAL INFORMATION

WARNING

The manufacturer guarantees the System against manufacture faults or defects of faulty materials all over the period guaranteed by law.
The manufacturer is not liable for any direct or indirect damages to people or things, consequential to improper uses of the equipmemnt or to an incorrect installation or however to any actions not provided by this handbook.
The warranty is void in case the system or one of its components:

- has been forced or modified
- has been incorrectly used
- has been used not according to the limits provided by this handbook and/or it has undergone too many mechanic stresses
- has not been adequately maintained or its maintenance has been only partly and/or not adequately carried out
- has undergone damages because of transportation not adequately carried out

or in case not original spare parts have been inserted
On the reception of the equipment, the receiver has to check for any faults, damages due transportation and/or if the equipment is incomplete

3. DESCRIPTION OF THE SYSTEM

A: Metal junction tube

Made from high quality steel, adequately protected against corrosion, by placing and inserting it in the clamps, it represents the resistant structure of the system. The ogive plug at one end allows an easy locking of the holding element.

B: Railing

2 metres long, 1.1 metre high, it is made from high density UV stabilized polyethylene, it is shock-resistant and specifically shaped for undergoing the big stresses of working environments

C: The simple post

Made from high density UV stabilized polyethylene too, it is shock-resistant and provided with a special railing holding system.

Posts are internally reinforced by a high quality steel tube.

In standard installations the number of them used is 2 for each railing.

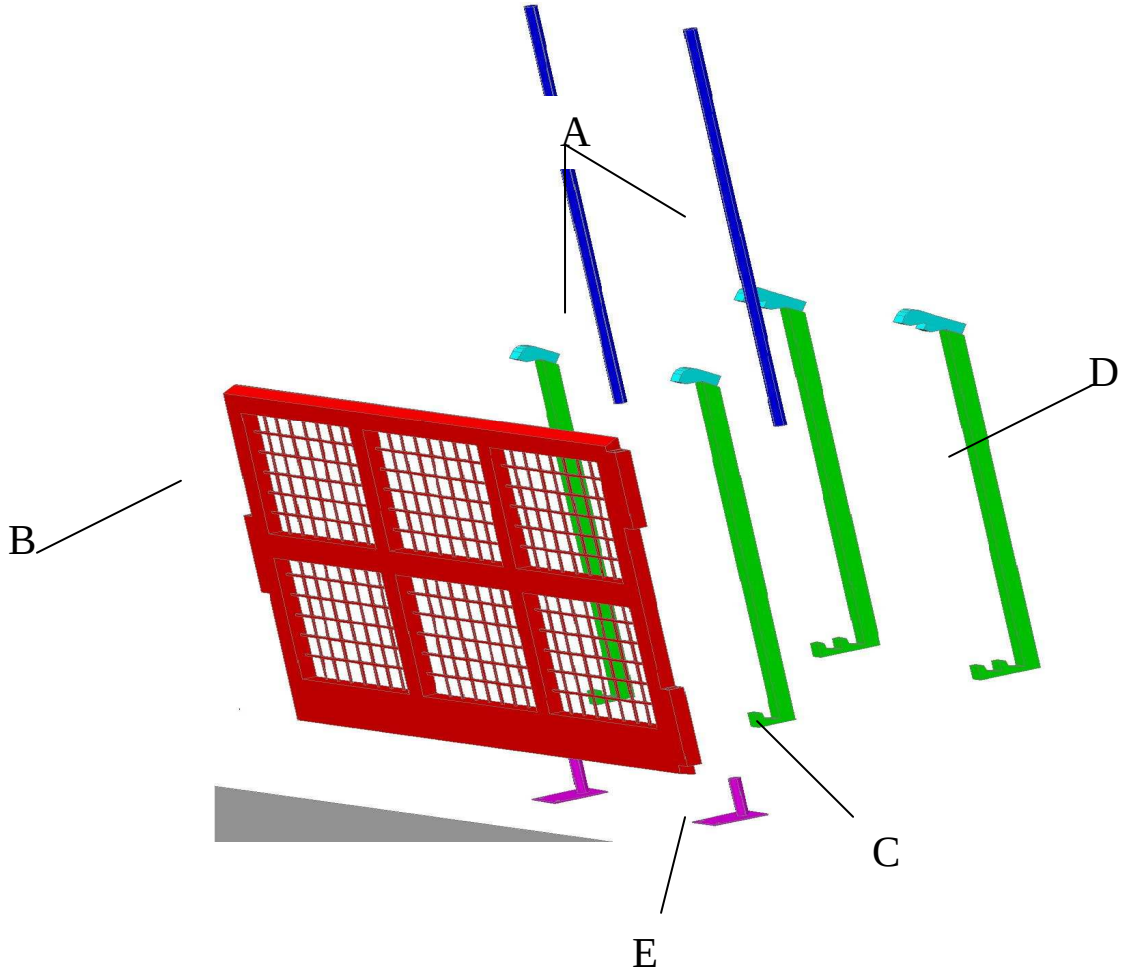
D: The double post

It has got the same characteristics of the simple post.

It is used when it is necessary to make use of the spaces which could remain between railings when the edge length to be protected is not a multiple of the railing or when we want to make use of a gap where stock material can be closed in.

E: Anchor clamps

Special clamps fastened to the cement structure by screw anchors and in which the vertical supporting tubes of the structure are inserted – different types of them are available which can satisfy all installation needs.



4. NORMATIVE REFERENCES

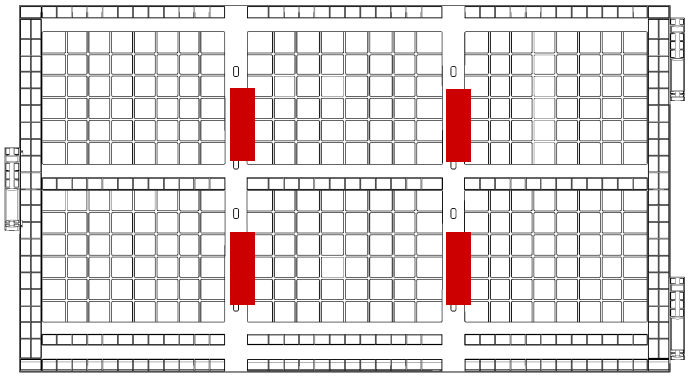
The European rule **UNI EN 13374-2004 Temporary Edge Protection Systems** fixes the requisites and testing methods for temporary guards meant for being used during the construction or maintenance of buildings or other structures.

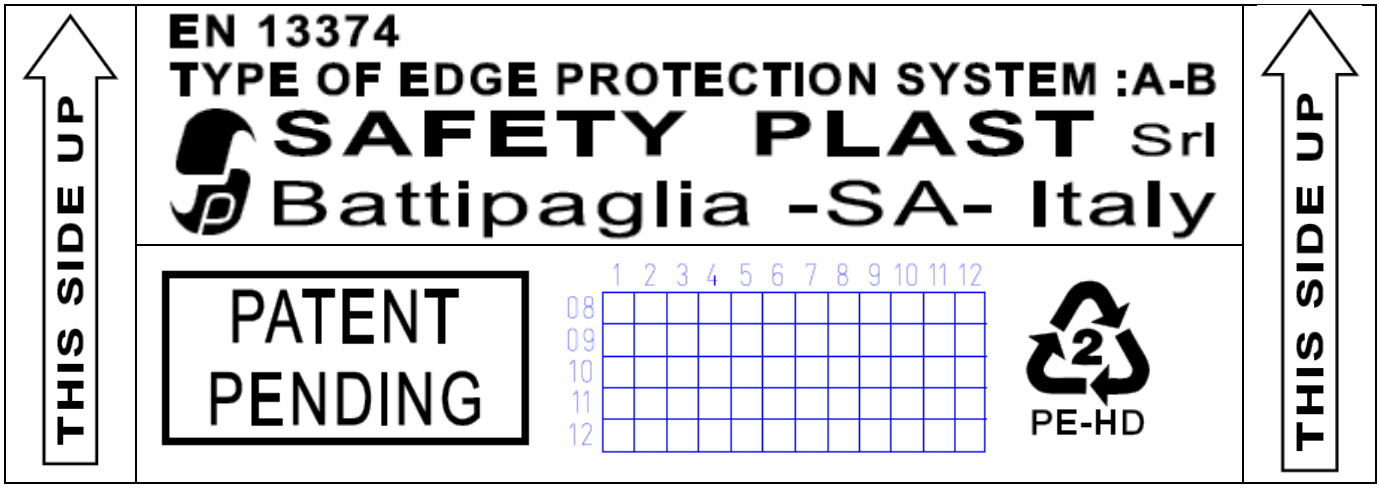
DPR (Decree of the Pres. of the Rep.) 547/55
DPR (Decree of the Pres. of the Rep.) 164/56
DLgs (Legisl.Decree) 81/2008

5. IDENTIFICATION OF THE SYSTEM

On the vertical, central and side posts the identification markings of the system are stamped as it is listed below:

- reference rule
- product class
- year and month of its production
- manufacturer's identification
- instructions for its right positioning *(this side up)*





WARNING

Such stamping guarantees the user about the safety of the system.

6. STORAGE and TRANSPORTATION

 WARNING

All the members of the personnel who come in contact with the system have to strictly follow the instructions reported below.

- *The packing, handling, transportation and unpacking operations must be carried out only by qualified personnel, perfectly knowing the equipment and always referring to the rules in force as regards the prevention of industrial accidents.*
- *The handling, lifting and transportation means, must be intact and suitable for safely carrying out the required operations, taking into account the size, weight, protruding parts, fragile parts and the barycentre of the equipment.*
- *Avoid improper uses and operations and above all any operations not falling within your range of competence and responsibility.*
- *Always use work gloves and special shoes for preventing industrial accidents.*
- *Never put your hands or other parts of your body under uplifted components of the system.*
- *Do not wear rings, watches, bracelets or too large and dangling clothes during the equipment assembling and disassembling operations.*

STORAGE

In order to preserve the full and efficient functioning of the system Safety Plast, the storage of the SPPB components will be carried out following the instructuions reported below:

Plastic components

All plastic components (also see the SPECIFIC NOTE FOR PLASTIC COMPONENTS) in the periods in which they are not used, must be stored in a place not directly lighted by sunlight and being far from possible triggers or free flames.

Further instructions

Railing:

The component can be stacked and thanks to its special shape stable stacks can be obtained up to a number of 40 each stack. Such component must be always stored on flat surfaces in order to limit deformations which could compromise its assembling and what is more important, its installation. It is better to store it in 2 palletts 1000x1200 placed next to each other.

Posts

Also posts, during the period in which they are not used, must be stored on flat surfaces (pallets). That is normally carried out by distributing them into homogeneous rows (oriented posts/placed on the same side) being arranged in alternate layers; a transversal layer superimposed on a longitudinal layer.

Metal components

All metal components are made from high quality cool galvanized steel. Therefore we suggest to store such parts in places repaired from bad weather and in ventilated containers. Moist places must be absolutely avoided as well as the storage of such material in such a way that they are in contact with the ground.

Support tube

On pallets (horizontally placed) or in suitable containers (see above) either horizontally or vertically placed (in this case the plug must be upwards convex)

Anchor clamps
On pallets or in suitable containers.

TRANSPORTATION
When starting the transportation or moving the equipment be sure that the material is placed in a stable position and that possible wind strokes or abrupt movements of the means of transport do not compromise the stability of the load itself and then the road safety.

7. INFORMATION ABOUT THE DISPOSAL OF THE MATERIAL

The SPPB **Safety Plast** product, when it has come to the end of its life cycle, can be 100% recycled, since it is made from:
about 90% High Density Polyethylene
about 5% metal parts
Therefore it is possible to reuse such material, as raw matter for the production of other similar products or however for the production of any other products made from recycled material the use of which is allowed.

The materials obtained from a separation/disassembling of the different components of the container produce the following kinds of waste:

Waste kind	**Code CER**
Plastic parts (railing and post)	02.01.04
Iron and steel (tubes and clamps)	17.04.05

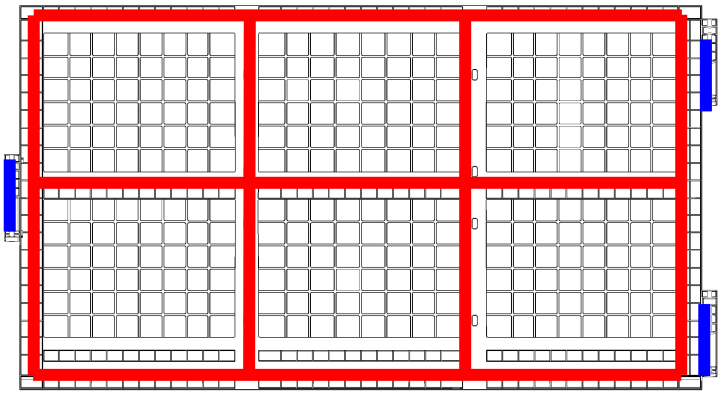
The disposal of such products must be carried out only by authorized waste recycling companies and the owner of such products is the only responsible for ascertaining that the recycling companies to which waste are given are duly authorized by law to carry out such activity.
As regards all the above said activities we refer to the rules in force in this field.(**Legisl. Decree dated February 5th 1997 nr.22 "Implementation of EEC directions 91/156/EE on waste, 91/689/EEC on dangerous waste and 94/62/EEC on packing and waste deriving from packing"**.)

8. MAINTENANCE

The wear and/or damage conditions for which the recall of one or more parts of the SPPB is necessary, are described below.

GUARDRAIL
The damage/break of one of the supporting (red highlighted) elements of the railing is such to compromise the safe holding of the railing or to cause the damage of the anchor (blue highlighted) elements to the adjoining guardrail . The total and partial break of the fencing structure existing between the supporting elements must be evaluated in each case, since it is normally not a reason for recalling the component.

WARNING
The railing is made in such a way to support fall arrest without damages. Breaks and/or damages are to be surelly sattributed to strongly anomalous stresses. If that happens we recommend you not to try to repair it in any case.



POST

Head

Damage and/or break of the head of the post being such to compromise the safe holding of the railing. Only if the post foot is intact it is possible to repair this component by replacing the post head with another suitable one (for example a single post head with a single post foot).

Foot

Damage and/or break of the foot or of the body of the post being such as to compromise the safe holding of the railing. By separating it from the head it is possible to recover it by matching it with a new post foot of the suitable kind (for example a single post head with a single post foot).

WARNING

The post assembly is made in such a way to support the fall arrest without damages. Breaks and/or damages are to be surely attributed to really anomalous stresses. If that happens we strongly recommend not to try to repair it in any case.

Clamp

Serious deformations of the fastening plate which hinder its level fastening/the flattening of the cylinder shaped stub such as that it does not allow the clutch of the supporting tube/disjucntion of weldings.

Tube

Deformations such as to avoid its clutch with the clamp and/or with the post.
Break of the plastic convex plug being set on one end. If this happens it is possible to repair the component by replacing the plug.

WARNING

All the metal parts is sized in order to support the fall arrest without damages .Breaks and/or damages are to be surely attributed to anomalous stresses or to an incorrect storage of the material when it is not used. If this happens we recommend not to try to repair it in any case.

SPECIFIC NOTE FOR PLASTIC PARTS

Even if the SPPB plastic parts are made from High Density first melting UV stabilized Polyethylene, these components undergo a slow degradation caused just by their exposure to atmospheric agents.

Safety Plast gurantees a full performance of the SPPB over a period of real exposure lasting 5 years. By real exposure we mean the sum of the periods over which the SPPB remains in use. As regards the remaining periods we recommend to follow the instructions for storage.

PERIODICAL CONTROLS

Temporary prefabricated guards (SPPB) used in building yards, are temporary works and a collective protection; if they are not properly inspected and maintained they do not properly function as collective edge protection system.

Temporary guards, even if they are not subject to any European Community directions on products (not only machines), must be considered as "material agents" for the workers' safety and then their use is ruled by title III, Legisl.Decree nr.628/1994.

INSPECTION BEFORE ASSEMBLING AND AFTER DISASSEMBLING The inspection before assembling and after disassembling must be carried out by the assembler and always according to the instructions contained in this handbook.

USE INSPECTION It is daily carried out by the worker according to this handbook, by eye control of each component. The worker must immediately inform the appointed personnel about any fault or inconvenience found.

PERIODICAL INSPECTION It is normally carried out every three months. It must be carried out by the assembler and according to the procedure showed by this handbook. The control must be of an eye kind.

ENTRY OR ACTIVATION INSPECTION The entry or activation must be carried out besides the use and periodical inspection

- on the reception of a new SPPB
- before the new use of the SPPB
- before the new use of the SPPB, in case it has been stored for a long period or however in conditions that according to this handbook, must have compromised its preservation state

INSPECTION OF A GUARDRAIL AFTER A FALL OR AN ARREST Each SPPB which has undergone a fall arrest or which shows a fault must be immediately recalled from service and stored in a place the access of which is prohibited; on it a card informing about its condition of being out of service must be attached. The SPPB must be controlled by the assembler or by another qualified operator who will decide if it is the case of putting it into service again or of destroying it according to what is described in this handbook.

REGISTRATIONS The employer will provide for the following registrations for each functioning lot:

SPPB lot nr./ manufacturing year/ purchase date/ date on which it was first put into service / periods of service/ date and inspection and/or maintenance details.

WARNING

SAFETY PLAST recommends that in assembling operations as well as in removal operations of the SPPB, the workers, if no other collective antifall protection exists, use individual Protection Devices such as ropes, spring catches and any other necessary tool ensuring their safety.

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9. USE OF THE SYSTEM

The SPPB Safety Plast has been designed and *certified* to be used as temporary **collective protection system** against falling during repair and assembling works in building yards and allows to work on balconies, terraces, ladders and roofs of civil and industrial buildings,n under full safety conditions.

Plastic disposable female bell Ø int. 34 mm mod. SF 01-A-B	**"Z" shaped clamp for fastening on stringcourse mod. SF 02-A-B**	**Clamp for vertical fastening mod. SF 03-A-B**

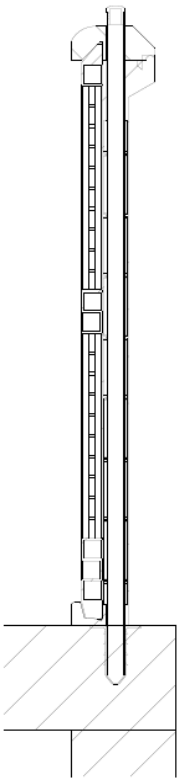
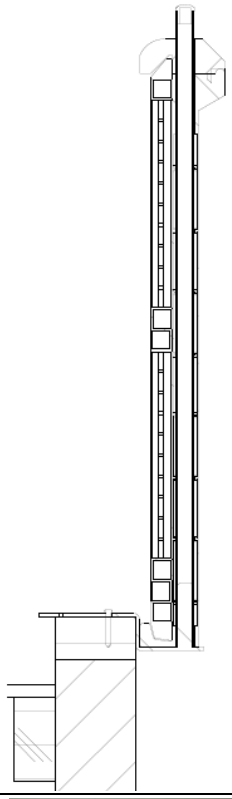
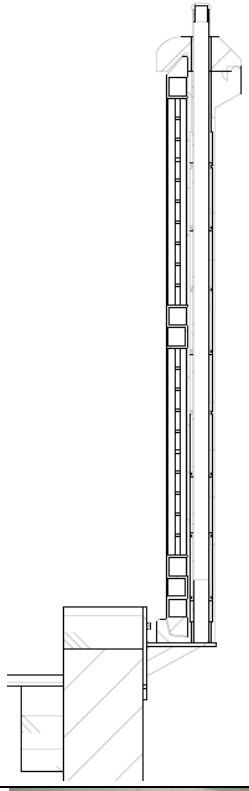
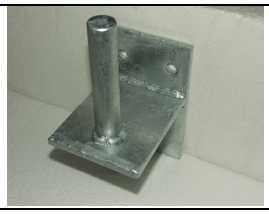
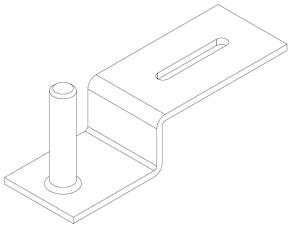
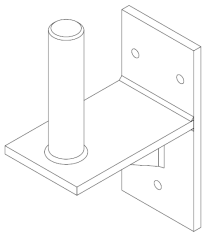
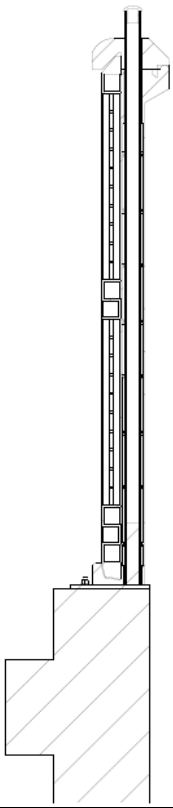
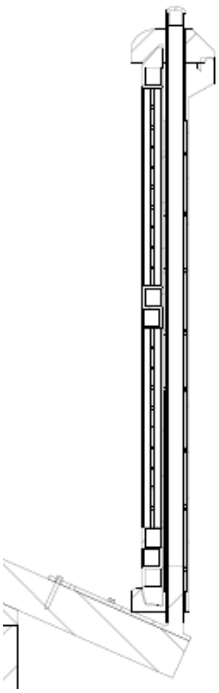
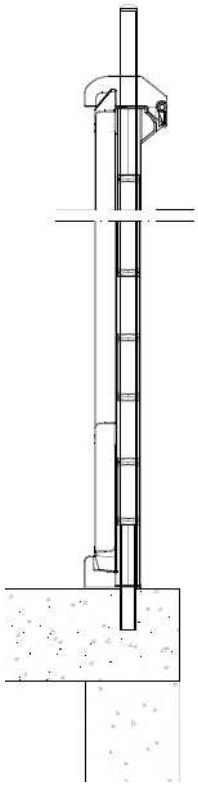
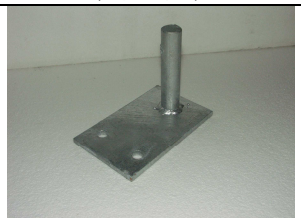
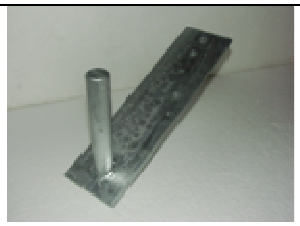
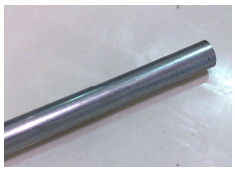
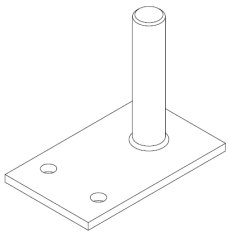
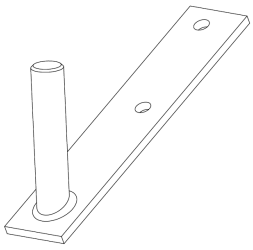
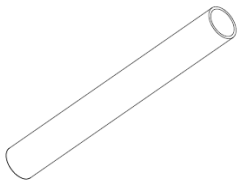

		

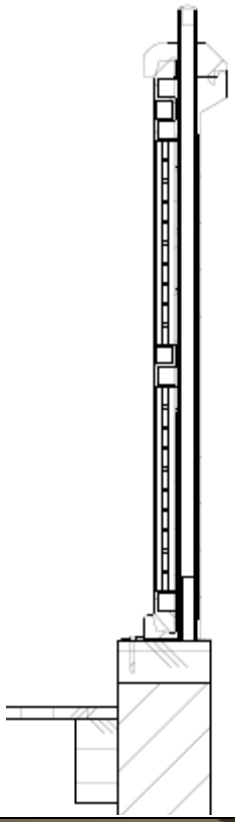
FOTO NON DISPONIBILE		
		
<u>Mimimum requirements of the single fastening elements</u> EDGE CEMENT THE FLOOR AVOIDING RESIDUALS TO PENETRATE WITHIN	<u>Minimum requirements of the single fastening elements</u> Nr. 2 ELEMENTS SLIDING RESISTANCE* > 6.7 KN	<u>Minimum requirements of the single fastening elements</u> Nr. 2 ELEMENTS SLIDING RESISTANCE* > 6.7 KN

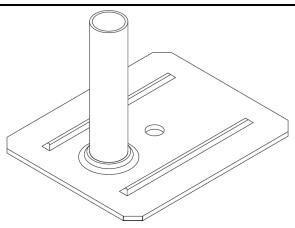
*as an example we refer here to anchoring systems Hilti HUS-S 12,5x85

Clamp for fastening on level floor mod. SF 04-A-B	Clamp for inclined floor fastening mod. SF 05-A-B	Tube l=200 for hole fastening on level floor mod. SF 06-A-B
		
		
		
Minimum requirements of the single fastening elements Nr. 2 ELEMENTS SLIDING RESISTANCE* > 6,7 KN	Minimum requirements of the single fastening elements Nr. 2 ELEMENTS SLIDING RESISTANCE* > 6,7 KN	Minimum requirements of the fastening elements: HOLE DIAMETRE 29mm EMBEDDED FOR AT LEAST 80mm

*as an example we refer to anchoring systems Hilti HUS-S 12,5x85

Clamp for level floor fastening (light version)
Mod. SF 104-A





Minimum requirements of the fastening elements
Nr. 1 ELEMENT
SLIDING RESISTANCE > 6.7 KN

*as an example we refer to the anchoring systems Hilti HUS-S 12,5x85

WARNING

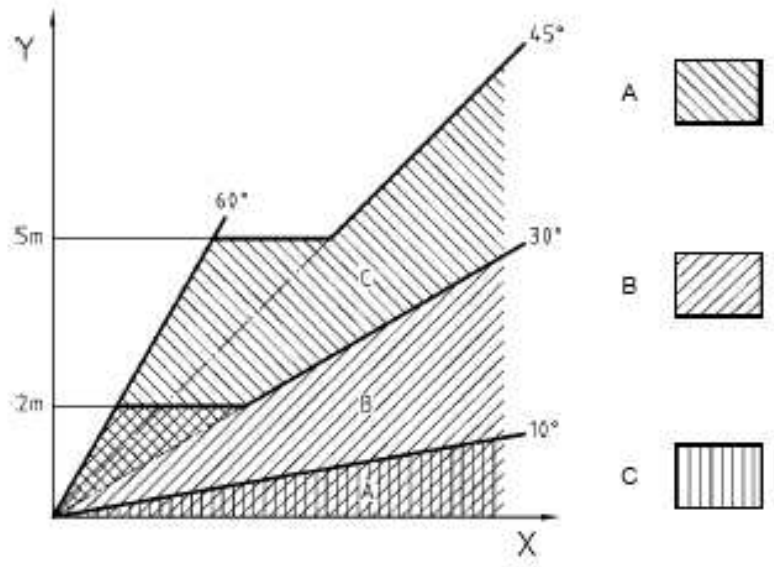
*The use of the guardrail in its different configurations, (class "anchoring systems) A and/or B) is recommended in the case of surfaces to be protected having a **maximum** inclination as it referred to by ANNEX B of the EN13374-2004 that is:*

-class A to be used when the working surface has got a maximum inclination of 10°

-class B to be used if the angle is smaller than:

- *30° without the limitations given by the falling height*
- *60° if the falling height is less than 2mt.*

The diagram reported below refers to the FigB1 of the Annex B "definition of the class according to inclination and falling height"



Key

x inclination of working area
y falling height

DESCRIPTION	REF.
Disposal plastic female bell Ø int. 34 mm	SF 01 A-B
"Z" shaped clamp for fastening on stringcourse	SF 02 A-B
Clamp for vertical fastening	SF 03 A-B
Clamp for fastening on level floor	SF 04 A-B
Clamp for fastening on inclined floor	SF 05 A-B
Tube l=200 for hole fastening on level floor	SF 06 A-B
Clamp for fastening on level floor (light version)	SF 104 A

10. LOADS MOVED FROM THE POST TO THE ANCHOR STRUCTURE

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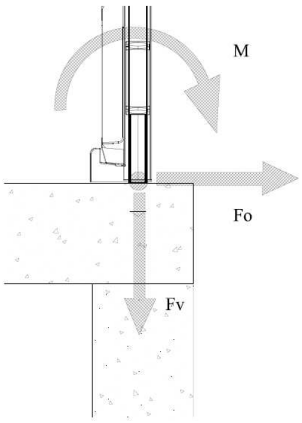
<tr><td rowspan="4"> 
</td><td>Load conditions provided by the UNI EN 13374</td><td>Fo
(daN)</td><td>Fv
(daN)</td><td>M
(daN M)</td></tr>
<tr><td>Ultimate Limit State</td><td>± 105</td><td>+ 13</td><td>± 90</td></tr>
<tr><td>Accidental Limit State</td><td></td><td>+140</td><td></td></tr>
<tr><td colspan="4">Distance between the centers of the guards max 1050 mm</td></tr>
</table>

11. USE ENVIRONMENTAL CONDITIONS

WARNING

*Even if the SPPB is tested wih a wind characteristic speed equal to **30 m/sec** we recommend to stop the working activities according to the limits obligatorily reported in the **P.O.S.** (**O**perative **P**lan for the yard **S**afety)..*

WARNING

*Moreover, the assembling and disassembling operations wll be interrupted if the wind speed is equal or over **60km/h***

WARNING

Being a system of temporary protection, the period of installation, during which periodical controls of the conditions of the components of the guard and of the state of the system itself, must not last more than six months.

WARNING

*The assembling and use of the equipment in the presence of **ice** or **snow** can be dangerous for the personnel (for example they can cause slipping or can diminish visibility), in each specific case weather conditions must be carefully evaluated and then the necessary precautions and/or decisions must be taken..*

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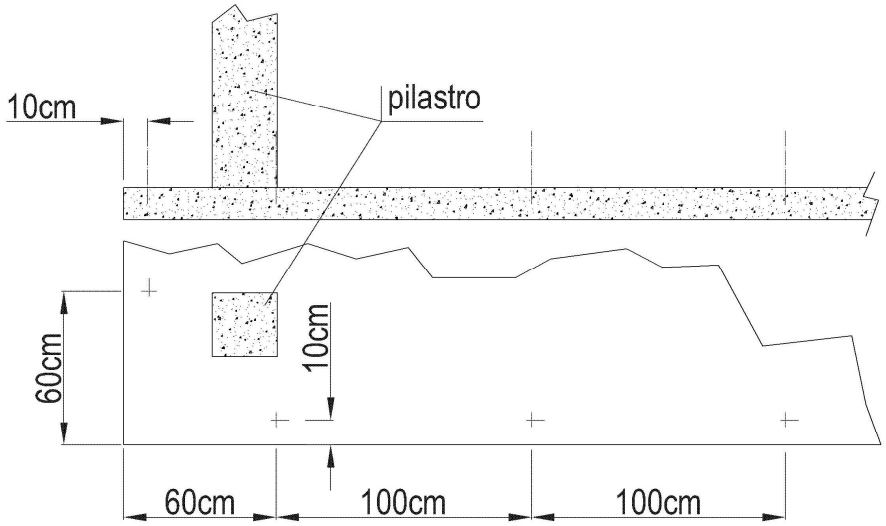
12. ASSEMBLING AND DISASSEMBLING OF THE SYSTEM

Diagram for the positioning of the post WITHOUT pilasters in the angle or along the perimetre

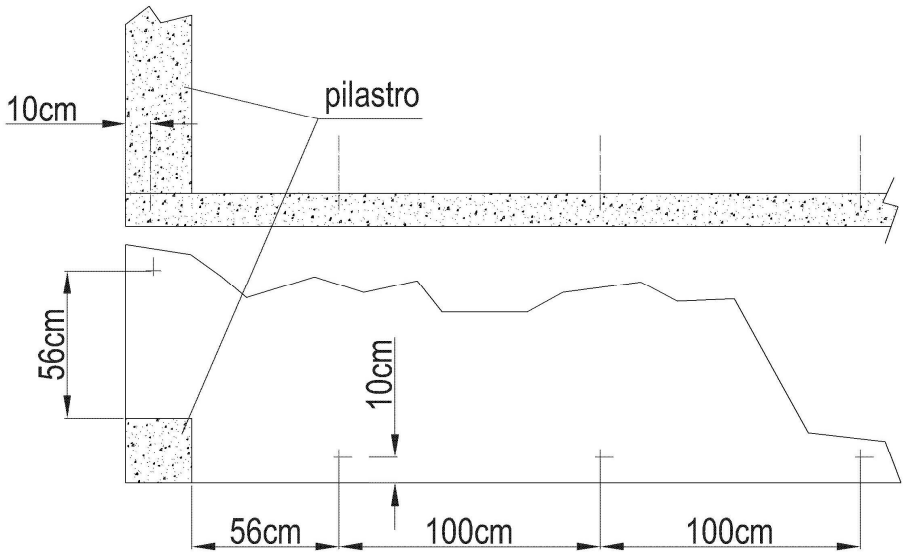


Pilastro= Pilaster

Calculation of materials

Subtract the length from the edge (Lt) to be protected 0.122mt:
Lt-122=Lr
For calculating the number of necessary guardrails (nB) divide the remaining length (Lr) by the guardrail length (=2mt):
Lr/2=nB.
In case the result is a decimal number, to the total of guardrails you have to add nr.1 guardrail with double posts.

Diagram showing the positioning of posts with pilasters in the angle along the perimetre



Calculation of materials

Subtract the length from the edge (Lt) to be protected 0.2mt:
Lt-122=Lr
For calculating the number of necessary guardrails (nB) divide the remaining length (Lr) by the guardrail length (=2mt):
Lr/2=nB.
In case the result is a decimal number, to the total of guardrails you have to add nr.1 guardrail with double posts.

Assembling

The installation of the anchor clamps (you will choose the most suitable one to the surface) must take place taking into account a distance between centres of about 1,00 mt; the latter can slightly vary since the supports of the guardrail are sliding (fig. 1 and 1 bis)

Positioning of the metal tubes on the anchor clamps and of the posts on the tubes (fig.2 and 2 bis).

The positioning of railings on the posts takes place thanks to the shape of special grooves. Start positioning the railing from its lower part, holding the railing vertically and leaning it against the posts and the anchor components. Once it is positioned, the railing cannot be disassembled from its supports (fig.3 and 3 bis)

Railings will be connected with each other by a junction metal tube (fig. 4).

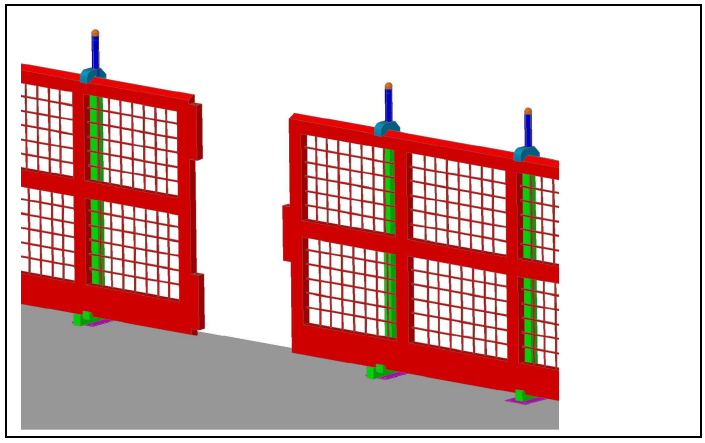
In the same way, you can connect, in the case of an angle of a building, the two railings thanks to a junction tube which becomes the joint of the whole structure (fig. 5 and 5 bis).

Use of the double post

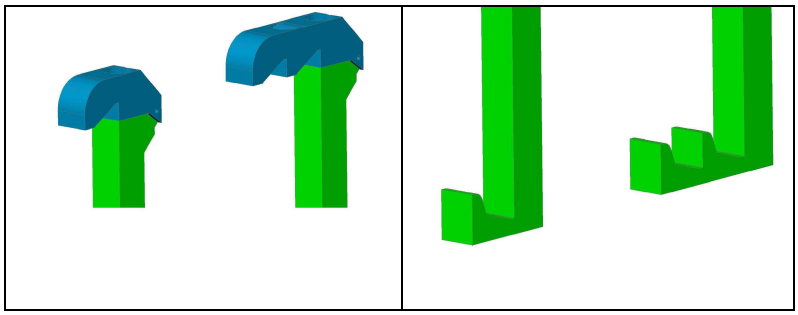
WARNING

The positioning must be always carried out starting from the angle of the surface to be protected.
The right method for closing the residual space (GAP)changes according to the width of this space.
WE RECOMMEND YOU TO ALWAYS FOLLOW THE INSTRUCTIONS OF THIS HANDBOOK.

In case the size of the edge to be protected is not a multiple of the guardrail being positioned the condition represented in the figure on the right could take place, that is a space (GAP) between the guardrails.
Such GAP will be closed by positioning an overlapped guardrail.



In this case it is necessary to use the double post.
In the first picture first the head of the single post and then that of the double post are represented.
In the second picture the feet of the two kinds of posts, the single one and the double one, are represented



Assembling

Position and fasten the anchor clamp which will be engaged by the double post.
Position the double posts without inserting the metal pole and opening its head. At this point insert the closing (overlapped) railing of the GAP. Close the head of the double post taking care that this engages both guardrails (fig.6).
Insert the metal pole into the posts up to engage the anchor clamp (or the hole) which has been fastened before.
At this point evenly distribute the length of the guardrail between the two posts (Fig.6bis).
If the guardrail must be removed follow the above reported procedure in the reverse order.


Fig.6

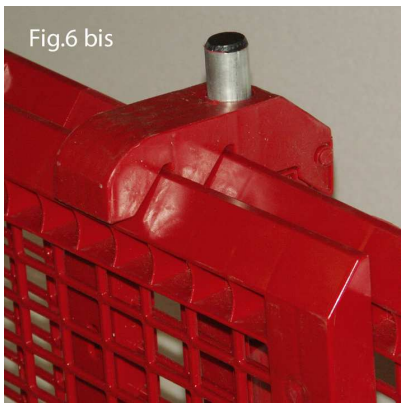
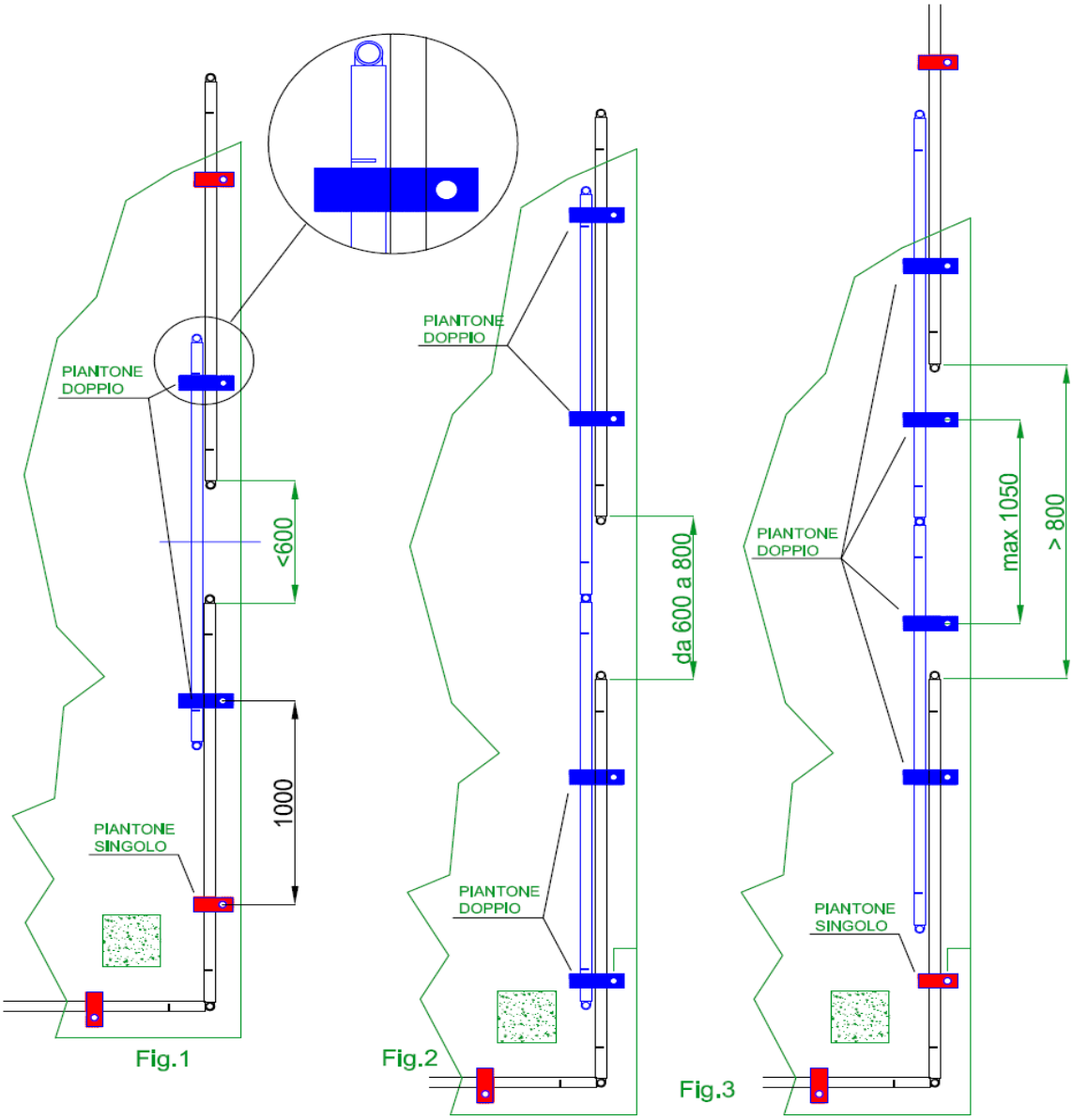


Fig.6 bis

WARNING

- *For residual GAPs up to 600 mm wide, use the diagram reported in figure 1, taking care that at the level of the next double post, the situation described above in detail occurs.*
- *For residual GAPs from 600 to 800 mm wide, use the diagram reported in figure 2*
- *For GAPs exceeding the width of 800 mm use the diagram reported in figure 3 by positioning further nr.2 double posts in the middle of the residual space (MAXIMUM DISTANCE BETWEEN THE CENTRES 1050))*

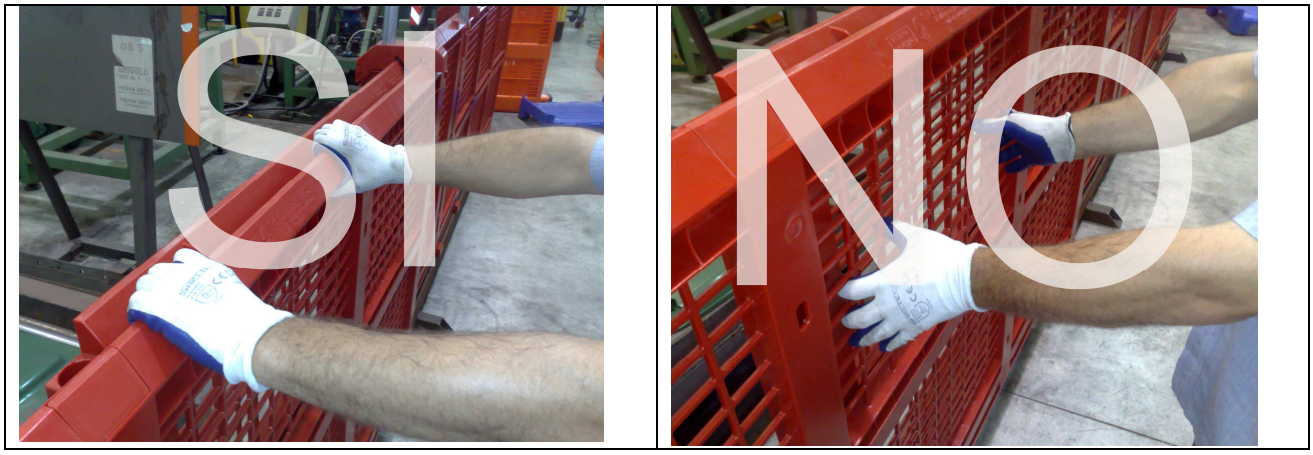
WE RECOMMEND YOU TO ALWAYS FOLLOW THE INSTRUCTIONS OF THIS HANDBOOK



WARNING

Remove the guardrail using the upper smooth part of it. This will help you to avoid the possible crushing of your fingers or hand.

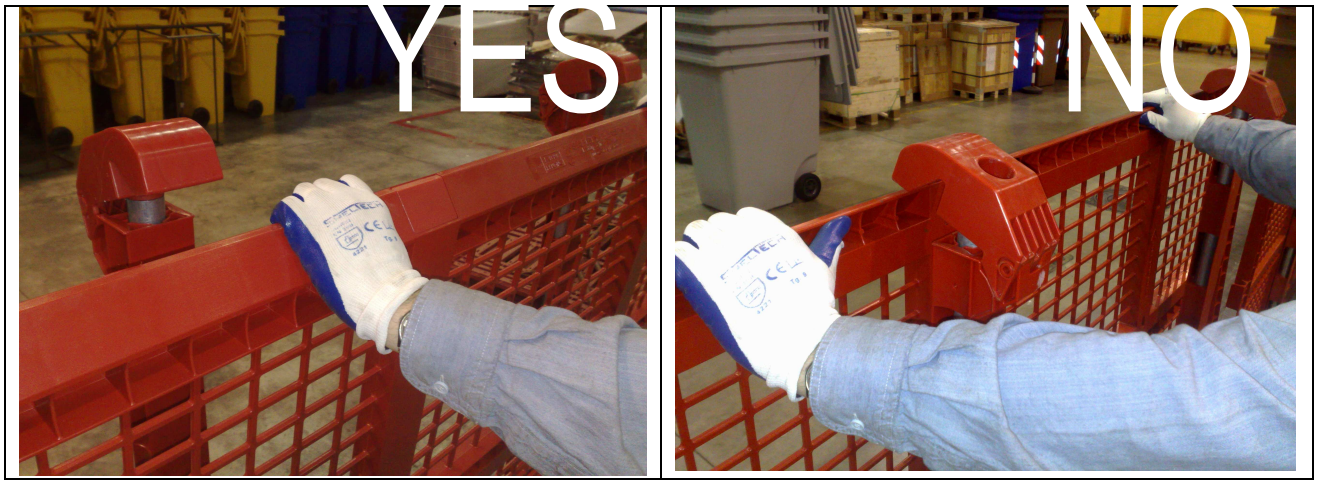
DO NOT REMOVE THE GUARDRAIL BY GRASPING THE FENCING STRUCTURE OF THE RAILING BODY



WARNING

Carry out the positioning of the railing always keeping the post outwards and the jaw towards you

NEVER ASSEMBLE THE SYSTEM BY KEEPING THE POST INWARDS



DISASSEMBLING

Disassembling operations must be carried out following exactly the order reported below:

1) remove the interconnection stakes
2) move the railing on its side up to disengage the adjoining ones
3) slip the stakes off from the inside of the posts
4) remove the railing together with the two posts
5) remove the anchor clamps if they have been set
6) provide for the proper storage of these materials as it is described in the paragraph about storage and transportation

WARNING

SAFETY PLAST recommends that during the assembling operations as well as those of removal of the SPPB the workers always wear special gloves for protecting themselves against mechanic risks and suitable for the activity they have to carry out.

WARNING

Even if the devices of collective protection are preferred, in some situations they cannot be installed.. The operations of assembling and disassembling of the system SAFETY PLAST are among these situations.Therefore in this case the protection of workers must be guaranteed by a suitable system of fall arrest which is intended to allow a free fall not overcoming 1.5 m or, in the presence of an energy dissipator, 4 metres..

13. MATERIALS -DIMENSIONS – WEIGHTS

WARNING

The sizesand weights reported below, are given for suitably informing and training workers about the possible risks occurring in al lby Hand Handlings of Loads. n tutte le MMC (Movimentazione Manuale dei Carichi).
THE EMPLOYER IS OBLIGED TO PROVIDE THE SUITABLE INFORMATION-TRAINING FOR A RIGHT BY HAND HANDLING OF LOADS.

Guardrail: PEHD - 2040 x 1100 x 40 mm – 10,5KG

SINGLE POST: PEHD – 1180 x 150 x 70 – 1,00KG

SINGLE POST: PEHD – 1180 x 150 x 70 – 1,15KG

Toeboard: zinc plated - Ø 33 x 1300mm – 1,5 KG

Weight of the anchor clamps from 0.75 to 2.75 KG

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