



**Instruction Manual – Fall arrest kit**

# **PAT210**

ACCESUS PLATAFORMAS SUSPENDIDAS, S.L.  
C/Energia 54  
08980, Cornellà de Llobregat (Barcelona)

Edition: 1/27.05.2019

## TABLE OF CONTENTS

|   |              |
|---|--------------|
| <b>1. Description of device</b> .....                             | <b>p. 3</b>  |
| 1.1. General information.....                                     | p. 3         |
| 1.2. Materials used in manufacturing of fall arrest kit PAT210... | p. 3         |
| 1.3. Components of kit PAT210.....                                | p. 4         |
| 1.3.1.1. Rotary arm PAT210.06.000-B.....                          | p. 4         |
| 1.3.1.2. Housing tube PAT210.05.000-B.....                        | p. 5         |
| 1.3.1.3. Transport sling (2m) WS 005 02.....                      | p. 6         |
| 1.3.1.4. Retractable type fall arrester (6m) CR250 HV 06.....     | p. 7         |
| 1.3.1.5. Guard for retractable type fall arrester OS 010.....     | p. 8         |
| 1.3.1.6. Snap hook AZ011.....                                     | p. 9         |
| 1.3.1.7. Full body harness P30.....                               | p. 10        |
| <b>2. Installation of device</b> .....                            | <b>p. 11</b> |
| 2.1. Preliminary steps.....                                       | p. 11        |
| 2.2. Installation.....  | p. 14        |
| <b>3. Use of kit</b> .....  | <b>p. 19</b> |
| <b>4. Inspection of kit before use</b> .....                      | <b>p. 19</b> |
| <b>5. Periodic inspection of kit</b> .....                        | <b>p. 19</b> |
| <b>6. Risk and hazard assessment during use of kit</b> .....      | <b>p. 21</b> |
| <b>7. General information</b> .....                               | <b>p. 22</b> |
| <b>8. Notes</b> .....   | <b>p. 23</b> |

## 1. Description of device

### 1.1. General information

Pursuant to Regulation of the Minister of Infrastructure of February 6, 2003 on operational health and safety during construction works Personal Protective Equipment must be used. Fall arrest kit PAT210 is designed to meet these requirements and to provide fall protection for workers at construction sites (e.g. during boarding, reinforcement works, etc.).

The device conforms to EN 795:2012 Personal fall protection equipment – Anchor devices – Requirements and testing for Type B anchor devices, as set out in:

- p. 4.4.1.1 for resistance to corrosion
- p. 4.4.2.2 for dynamic load resistance and integrity
- p. 4.4.2.3 for static load resistance

The device is designed to provide protection against fall from a height for one person at a time only.

The kit comprises main elements such as rotary arm and socket, and transport sling and personal protective equipment such as retractable type fall arresters and full body harness).

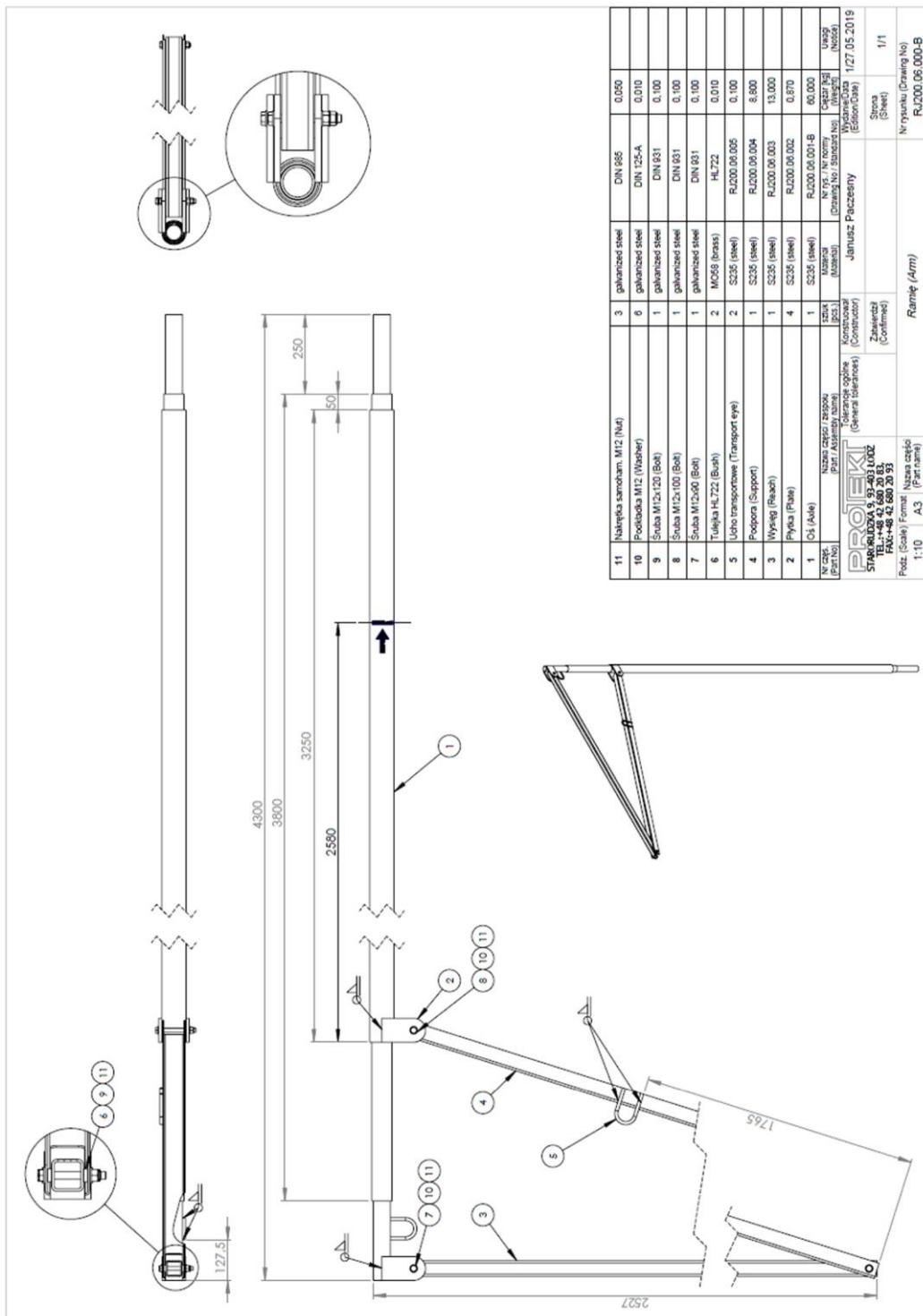
### 1.2. Materials used in manufacturing of fall arrest kit PAT210

Rotary arm is made of steel S235 protected against corrosion by coating. Socket and sling are made of plastic. Other elements (personal protective equipment) are made of steel, or plastic or combination of these materials.

### 1.3. Components of kit PAT210

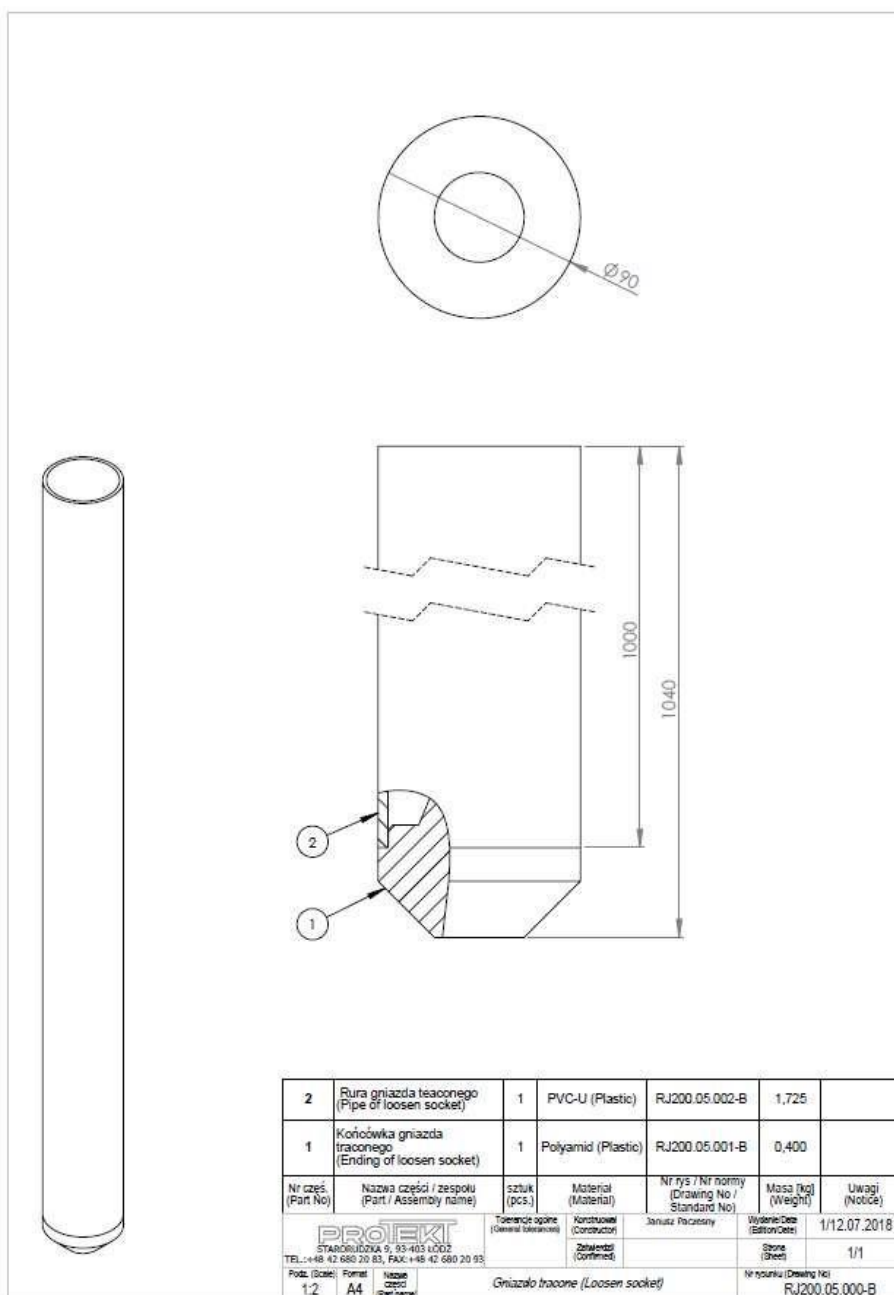
#### 1.3.1.1. Rotary arm PAT210.06.000-B

Rotary arm is made of steel S235 protected against corrosion by coating. To facilitate transport the arm can be folded.



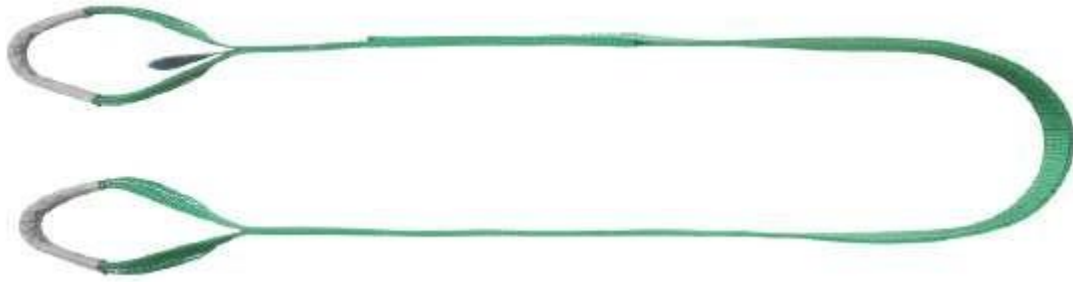
### 1.3.1.2. Housing tube PAT210.05.000-B

Housing tube PAT210.05.000-B is designed for embedding arm PAT210.06.000-B in concrete structure. The tube is embedded during concreting / casting of concrete structural element and remains within until completion of works. After works are completed the tube can be filled with concrete and left in the element. Minimum depth for embedding the socket is 900mm. When embedding the tube its upper (open) part should be plugged temporarily to enable the inside of the tube to be filled with fresh concrete.



### 1.3.1.3. Transport sling (2m) WS 005 02

Transport sling is used to assist embedding of rotary arm in the socket and its removal using a crane. It is an extension enabling detachment of crane hook from a level where the user remains.



Transport sling WS 005 02



Example of handling of rotary arm with crane

#### 1.3.1.4. Retractable type fall arrester (6m) ANR250 HV 06

Retractable type fall arrester ANR250 HV is a certified (in accordance with EN 360 VG11.060 VG11.062) retractable type fall arrester for use in both the vertical and the horizontal, in plastic cover with expandable steel cable and the swivel integrated with the cover. The device has an additional system for absorbing of fall energy fitted at snap hook. It is intended for works requiring significant mobility in respect to attachment point. There is no need to use neither an energy absorber nor line AZ 800 for work in the horizontal.



Retractable type fall arrester, model ANR250 HV 06

#### 1.3.1.5. Guard for retractable type fall arrester OS 010

Guard OS 010 is used to protect retractable type fall arrester against weather and rain or snow in particular.

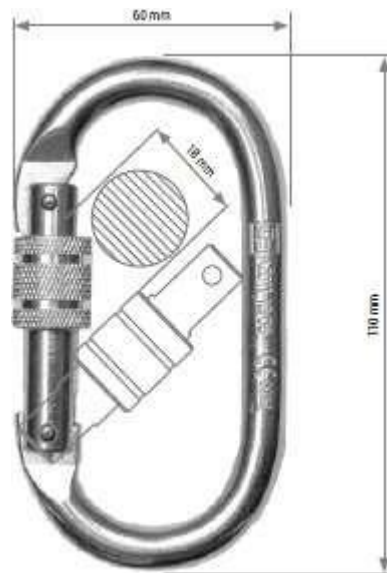


Guard for retractable type fall arrester, model OS 010



### 1.3.1.6. Snap hook AZ011

Snap hook AZ011 is a certified (in accordance with EN 362) connector to connect retractable type fall arrester, through the guard OS 010, to rotary arm PAT210.06.000-B. When using the snap hook please refer to its instruction manual.



Snap hook AZ011



Connection of retractable type fall arrester to rotary arm

### 1.3.1.7. Full body harness A30

Full body harness is a certified (according to EN 361) personal protective equipment which should be at hand to use the kit. The user must wear full body harness in accordance with its instruction manual. Full body harness should be equipped with a non-removable “extension” allowing for independent connection of the user to a retractable type fall arrester. Make sure to protect full body harness against weather.



Full body harness, model A30

## 2. Installation of device

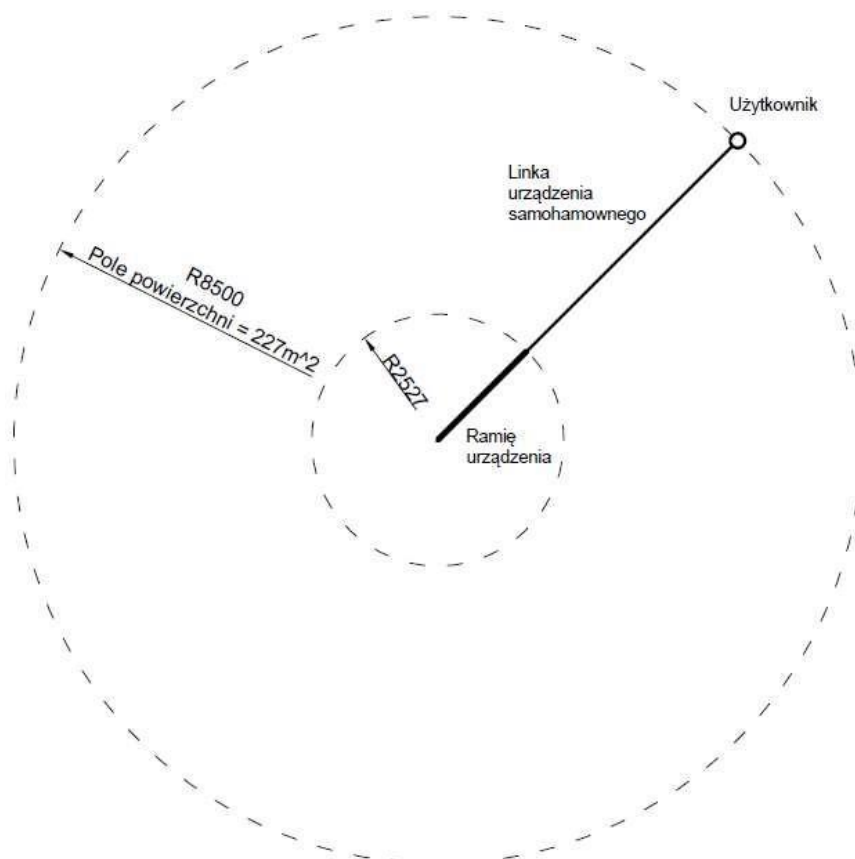
### 2.1. Preliminary steps

Before installation of the kit define type and method of works to be carried out. Pay attention to:

- required number of sockets and rotary arms and personal protective equipment
- number of workers carrying out works at a time
- minimum free space under user (this is of particular importance especially at construction sites where conditions may vary)
- conduct risk assessment for works to be carried out
- consider potential rescue action for affected person

For better analysis CAD software can be used. Please remember that correct arrangement of sockets is important as far as work safety is concerned.

Work area using a single kit is  $227\text{m}^2$  with a radius of 8.5m.



Area and radius of work when using kit PAT210

Sockets should be arranged so maximum spacing is no greater than 10m.

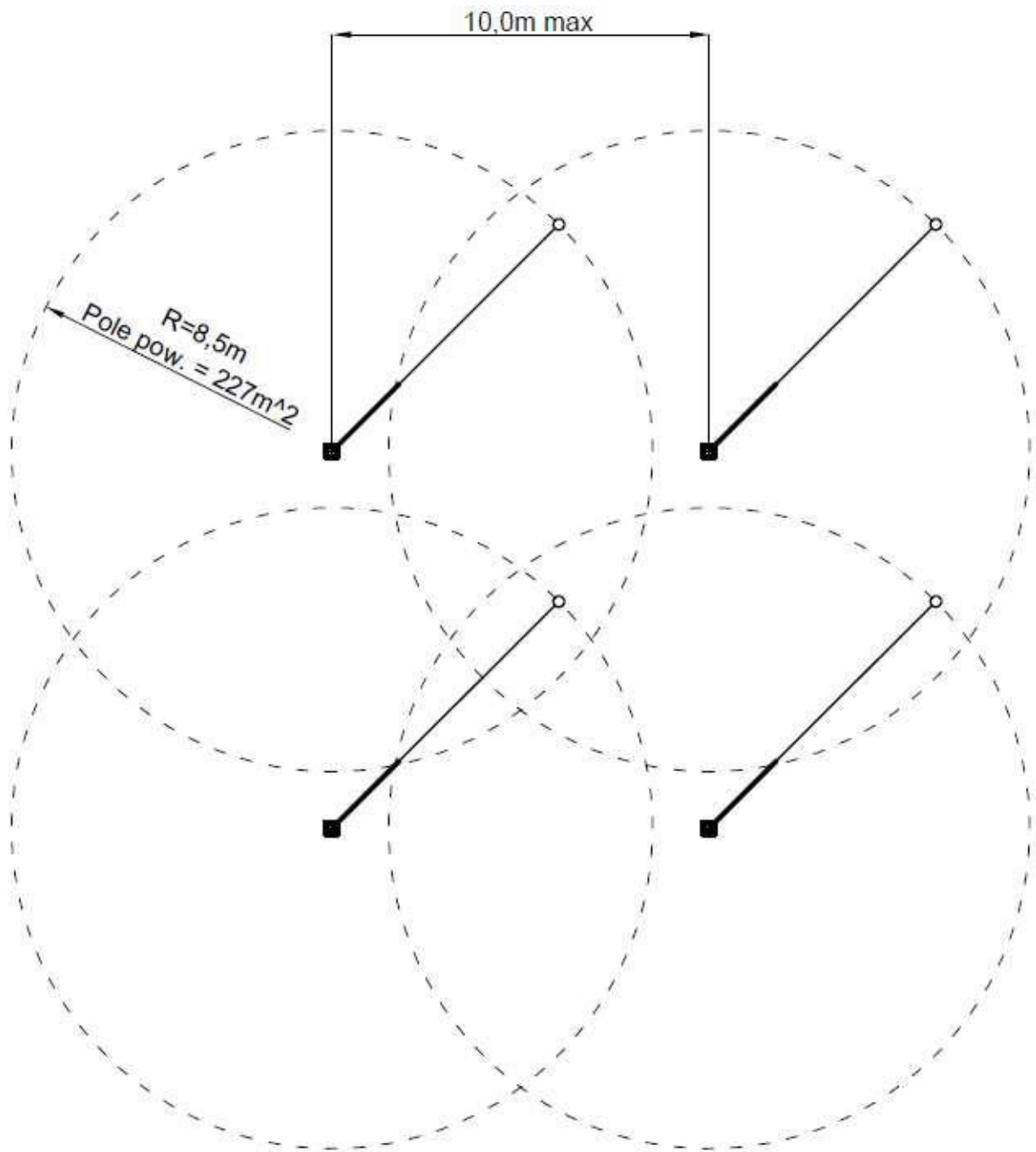
Użytkownik - User

Linka urządzenia samohamownego - Line of retractable type fall arrester

Pole powierzchni =  $227\text{m}^2$  - Area =  $227\text{m}^2$

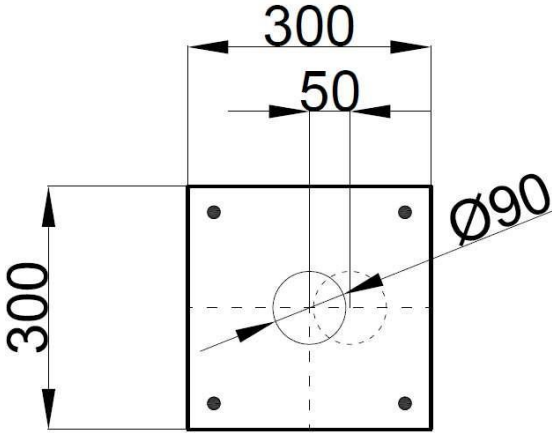
Ramię urządzenia - Arm of device

Pole pow. =  $227\text{m}^2$  - Area =  $227\text{m}^2$

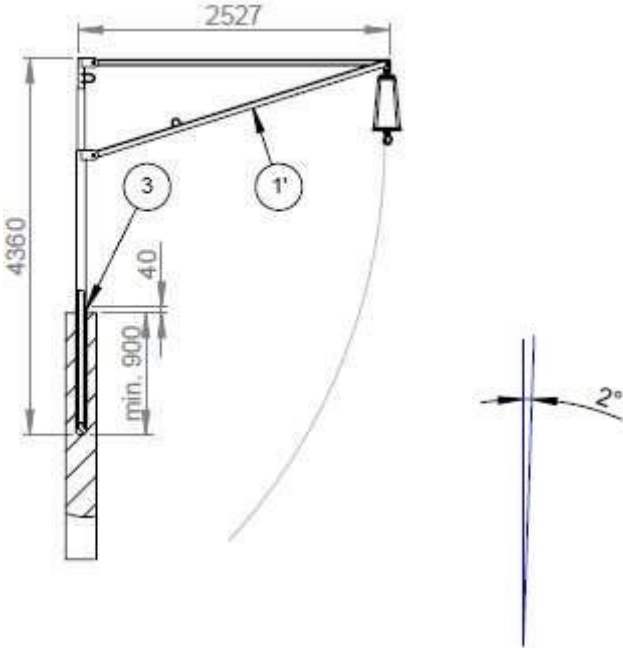


Maximum distance between sockets

Socket can be embedded in tubes of min. 30x30cm. Maximum tolerance for socket offset from its axis is 5cm (in accordance with figure below).



Tolerance for location of socket in tube



Tolerance for deviation of arm from the vertical

Structural element in which socket is embedded must be of adequate strength. Concrete min. C20 / B25 is recommended. Socket is ready for embedding of arm after concrete achieves a required strength:  
 - min. compressive strength 3.27 MPa

Time after which the system can be used depends on time after which concrete achieves a required strength which thus depends on ambient temperature in which concrete dries out:

- 5°C → 28h
- 10°C → 23h
- 15°C → 19h
- >20°C → 15h

## 2.2. Installation

First install housing tube PAT210.05.000-B. Place socket in an axis of freshly poured column so socket protrudes 5cm above concrete surface. During works related to embedding of socket in concrete its upper part should be plugged so no contamination or concrete gets inside.

Once concrete achieves adequate strength a socket is used to fix rotary arm PAT210.06.000-B.



Rotary arm after embedding in socket

Next step is to prepare rotary arm PAT210.06.000-B for operation. Thus unfold, assemble it and install a retractable type fall arrester.

First move beam "A" of the arm away and then fix beam strut using screw "B" M12. This will require the following tools:

- flat wrench 19mm x 2pcs.
- Allen wrench 10mm x 1pcs.



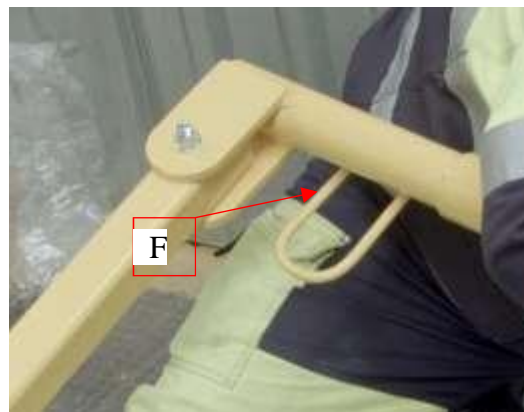
Sequence of assembly of rotary arm PAT210.06.000-B

Mount retractable type fall arrester ANR250 HV 06 "C" to axle "D" using snap hook AZ011 "E". Make sure to disable possibility of self-acting opening of snap hook by tightening its locking gear (in accordance with snap hook instruction manual).



Installation of retractable type fall arrester on rotary arm

Then attach 2m long transport sling WS 005 02 to holder “F” on the crane.



Attachment point for transport sling

Arm prepared this way is ready for embedding in a previously prepared socket. For installation is socket please pay attention that arm remains embedded at a full depth (rests on bottom of socket) so socket is free of any contamination. Arm should rotate freely in socket. When installing arm in socket please use a crane and provide assistance of other worker who will help locate arm axis in socket.





Assistance of worker when embedding arm in socket

After whole kit PAT210 is assembled it can be used for fall protection by user. User should use full body harness, helmet for works at a height and other personal protective equipment required for a particular work station (e.g. safety shoes, safety goggles, safety gloves, reflective vest, etc.). Snap hook of retractable type fall arrester should be connected to dorsal attachment point on full body harness through an “extension” enabling connection of the user.



Completely assembled kit together with connected user

Make sure that when working at a height a worker is continuously attached to the kit and remains within its work range. When it is necessary to interchange between arm work ranges first re-connect to retractable type fall arrester installed on the next arm.

When re-connecting please follow the rule below:

**I AM CONNECTED → CONNECT NEXT DEVICE → DISCONNECT  
PREVIOUS DEVICE**

To each arm and retractable type fall arrester only one user can be connected at a time. Total weight of user with tools in use cannot exceed 100kg.

### **3. Use of kit**

Kit PAT210 must be used in accordance with relevant occupational health and safety regulations and manufacturer's guidelines.

- The kit can be used only by users who have read and understood this instruction manual.
- The kit can be used only by users whose health condition and psychophysical characteristics allow for working at a height.
- All workers who work at a height must be equipped with adequate PPE for a particular type of works and protected against fall.
- Check if the kit is assembled correctly and completely.
- Exercise particular caution when working.
- Use original and operational spare parts only.
- Never attempt to repair and modify the kit yourself.
- It is forbidden to use elements of the system which appear to be damaged or malfunction. It is required to withdraw such elements from use and consult supplier or manufacturer immediately.
- It is forbidden to use the kit to suspend or handle loads.

### **4. Inspection of kit before use**

Before installation of the device always check whether all components are complete and in operating condition. Please check if the elements are not damaged or corroded.

Never use damaged or corroded elements, as this may affect user's safety.

### **5. Periodic inspection of kit**

Pursuant to PN-EN 365 it is recommended to carry out periodic inspections of device PAT210. Periodic inspection should be carried out by service point authorized by the manufacturer. Periodic inspection (min. once a year) should be carried out by a competent person. In case of any doubts please contact supplier or manufacturer of the kit.

Inspection activities:

- Inspection of weld seams, deformations, cracks
- Inspection of retractable type fall arrester
- Inspection of full body harness
- Inspection of bolts, pins, cotters
- Quality assessment of surfaces, corrosion centres

Results of inspections should be recorded in identity cards for individual elements.

**ATTENTION!!!**

When the device PAT210 has been used to arrest a fall, it must be withdrawn from use immediately and inspected by a competent person (supplier or manufacturer of the kit).

## 6. Risk and hazard assessment during use of kit

Shown below is an example “Risk Assessment Sheet” for works related to installation and use of kit PAT210 and works at a height.

Before attempting any works make sure to prepare such sheet to include hazards occurring at a particular construction site (these hazards may vary significantly compared to the provided below.)

Moreover it is recommended to draw a “Construction Method Statement” including description of works, list of devices used, division of works, method of protection and list of PPE, and rescue action plan.

| SHEET OF ASSESSMENT OF RISK DURING WORKS WITH USE OF KIT PAT210   |  |                 |            |          |   |   |            |            |  |
|---|--|-----------------|------------|----------|---|---|------------|------------|--|
| pt. 1   |  |                 |            |          | pt. 2   |   |            |            |  |
| Action-related hazard   | Source of hazards (action / production process / device / other)       | Risk assessment |            |          | Preventive actions and works organization plan  | Risk assessment after application of preventive actions |            |            |  |
|   |  | Effect          | Likelihood | Risk     |   | Effect  | Likelihood | Risk       |  |
| Tripping, slipping.   | Access to site of installation. Moving within construction site.       | minor           | moderate   | minor    | Exercise particular caution when moving. Move along determined routes.  | minor   | minor      | very minor |  |
| Traffic accident.   | Car traffic.   | major           | moderate   | major    | Exercise particular caution when moving. Move along determined routes. Pay particular attention to railway and car traffic within the site. Use reflective vests.   | major   | minor      | moderate   |  |
| Fall from a height.   | Use of ladders. Moving between ladders and roof slopes and vice versa. | major           | minor      | moderate | Use full body harness and double lines with energy absorber. Apply “re-connection” rule using a line when ascending and descending.   | moderate  | minor      | minor      |  |
| Fall from a higher to lower level, fall from a height.            | Works related to installation of kit PAT210                            | major           | moderate   | major    | Use full body harness, double lines with energy absorber, lines with guide type fall arrester. Connect to structural anchor points. Move while keeping a distance from roof edge. Worker should hold valid medical examinations for works at a height above 3m. Continued supervision of works. | major   | minor      | moderate   |  |
| Fall from a higher to lower level, fall from a height.            | Works related to use of kit PAT210                                     | major           | moderate   | major    | Use full body harness and connect to retractable type fall arrester forming part of the kit. Worker should hold valid medical examinations for works at a height above 3m. Continued supervision of works.  | major   | minor      | moderate   |  |
| Dynamic loads of musculoskeletal system.                          | Manual transport works.  | moderate        | minor      | minor    | Follow valid standards concerning transportation. Exercise particular caution.  | minor   | minor      | very minor |  |
| Hitting, crushing by falling elements.                            | Transportation of materials and tools, falling, sliding down the roof. | major           | minor      | moderate | Avoid danger zones. Use safety helmets, keep the work station clean and tidy.   | moderate  | minor      | minor      |  |
| Slipping, falling on the same plane. Slippery, wet, icy surfaces. | Moving, carrying materials and tools.                                  | minor           | moderate   | minor    | Exercise particular caution when moving. Move along determined routes, use safety shoes, keep work station clean and tidy.  | minor   | minor      | very minor |  |
| Electric current.   | Operation of power tools.  | major           | moderate   | major    | On-going assessment of technical condition of power tools. Use operational electrical equipment only.   | major   | minor      | moderate   |  |
| Contact with sharp or cutting edges.                              | Sheet metal cutting and flashing. Power and manual tools.              | moderate        | moderate   | moderate | Use cut-resistant safety gloves.  | minor   | minor      | very minor |  |
| Injuries caused by metal spatter.                                 | Flashing, drilling holes for tube fixing.                              | moderate        | moderate   | moderate | Use protective masks and safety goggles.  | minor   | minor      | very minor |  |
| Rain, snow, icing, low temperature.                               | Adverse weather conditions.  | moderate        | moderate   | moderate | Use adequate (warm or light) work clothing, shoes with non-slip sole. Exercise particular caution when moving. Take breaks for rest, heat up and meal.  | moderate  | minor      | minor      |  |
| High temperature.   | Roof works in summer.  | moderate        | moderate   | moderate | Take work breaks at around noon, drink cool regeneration drinks. Sunblocks.   | minor   | minor      | very minor |  |

## **7. General information**

Manufacturer reserves the right to introduce changes to this manual.

Kit PAT210 is designed to be used only for purposes described in this instruction manual.

Manufacturer or distributor cannot be held responsible for damages resulting from incorrect usage of the kit by third parties.

