

## ROPE BLOCKS

Catalogue No. TU400-TU407  
 EN 12278:2007

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### 1. Definitions

**WLL ( Working Load Limit )**  
**MBS ( Minimum Breaking Strength )**  
**SF ( Safety Factor )**

### 2. Basic equipment specifications

	TU400+TU401	TU402+TU403
Can be used with wire rope	NO	NO
Maximum rope diameter	Ø18 mm	Ø18 mm
Weight	1.38 kg	1.41 kg
WLL	20 kN	20 kN
MBS	100 kN	100 kN
Axle bore diameter	Ø18 mm	-
Distance between the sheaves axles	100 mm	100 mm
Shell material	EN-AW 6060 ( T6)	EN-AW 6060 ( T6)
Sheave material	EN-AW 5754	EN-AW 5754

	TU404+TU405	TU406+TU407
Can be used with wire rope	NO	NO
Maximum rope diameter	<Ø30 mm	<Ø30 mm
Weight	2.5 kg	2.5 kg
WLL	TU404=25 kN TU405=20 kN	TU406=25 kN TU407=20 kN
MBS	TU404=125 kN TU405=100 kN	TU406=125 kN TU407=100 kN
Axle bore diameter	Ø30 mm	-
Distance between the sheaves axles	140 mm	140 mm
Shell material	EN-AW 6060 ( T6)	EN-AW 6060 ( T6)
Sheave material	EN-AW 5754	EN-AW 5754

Figure 1. Table of parameters

### 3. Use of equipment

The equipment can be used mainly for work at height, arboriculture and load transport.

The equipment is designed for the lifting and lowering of goods.

The device complies with the standards shown in the table above. Follow the manufacturer's recommended loads and, if in any doubt, contact the manufacturer or distributor.

The product is designed for use under normal atmospheric conditions (-40 °C - +50 °C).

Operation in damp environments and during icy conditions can reduce the strength and load bearing capacity of the equipment. For work in aggressive environments, contact the manufacturer or distributor. Contact of the equipment with corrosive substances and chemical reagents should be avoided.

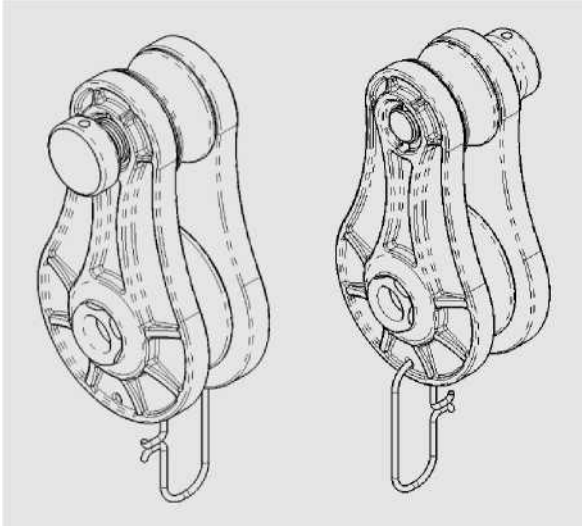
The equipment is adapted for its additional movement stabilisation with a hollow shaft.

Stabilisation is to be carried out with ropes of a maximum diameter 2 mm smaller than the passage diameter of the main axis. .

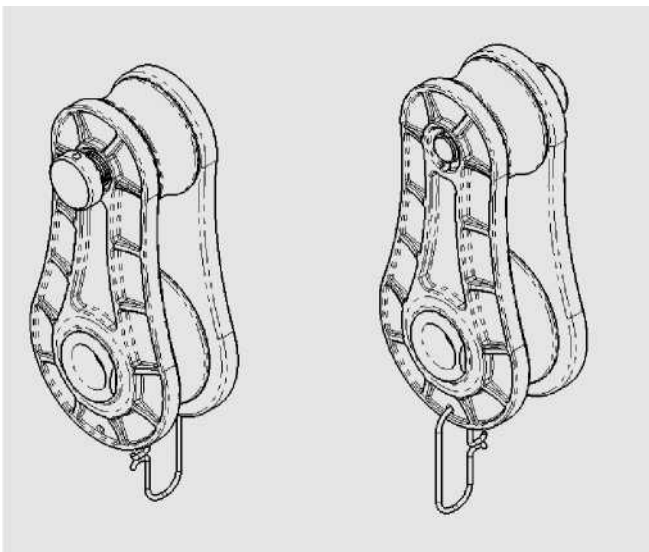
#### 4. Types of equipment

The equipment is available in two dimensions

- Small equipment **Figure 2**
- Large equipment **Figure 3**

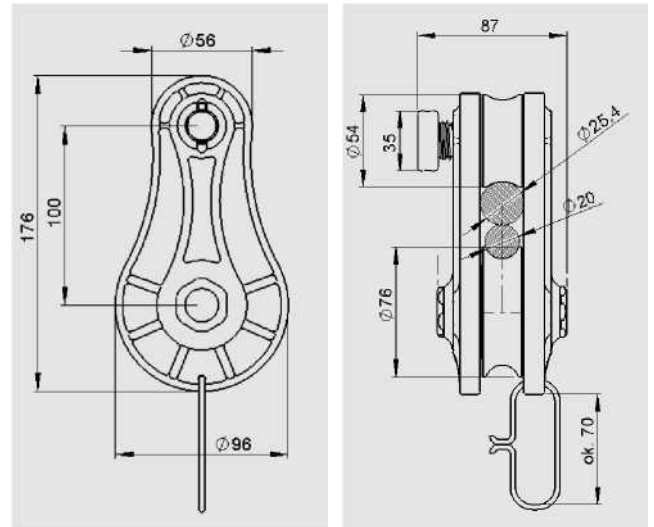


**Figure 2. Rope blocks TU400-TU403**

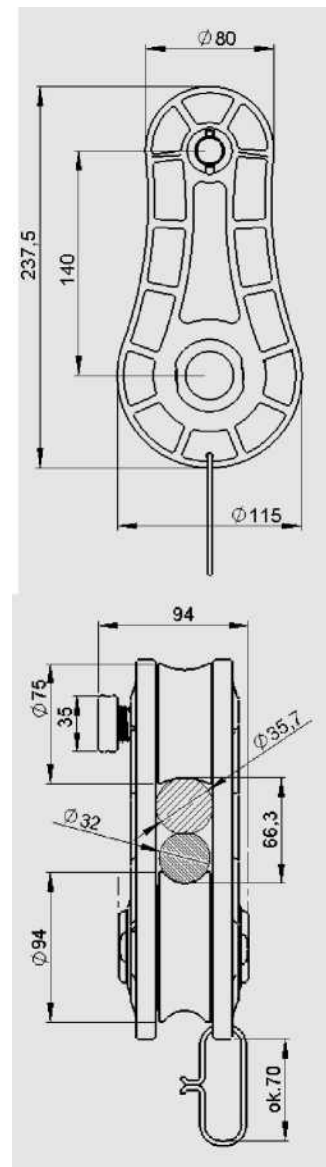


**Figure 3. Rope blocks TU404-TU407**

#### 5. Dimensions of equipment



**Figure 4. Dimensions of TU400-TU403**



**Figure 5. Dimensions of TU404-TU407**

## 6. Design of equipment

The blocks are made in the form of two sheaves of different diameters, 100 mm or 140 mm apart, and sandwiched between two forged aluminium plates additionally ribbed to increase their tensile strength. The large sheave is mounted on a hollow shaft using a special high-strength needle sheaves bearing, which ensures free rotation of the sheaves even under full work load limit (WLL) and above.

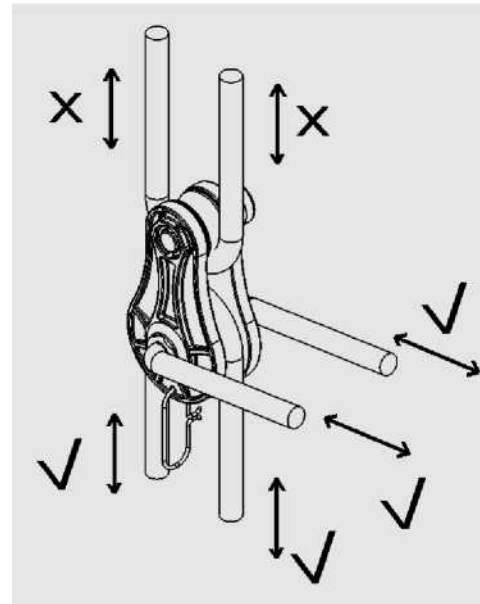
One side of the block, after unlocking by a locking device located in the small sheave axle, has the ability to pivot to facilitate the installation of the working rope on the main block axle.

With the exception of the aluminium body and sheaves, all components are made of stainless steel, which gives them a high corrosion resistance even during frequent use and the impacts and abrasions of equipment.

The use of aluminium alloys for key components reduces the weight of equipment.

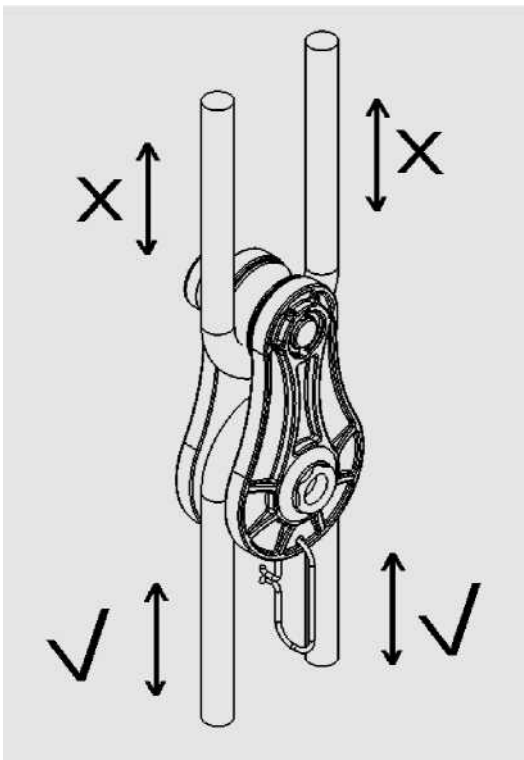
The blocks are available in different colours to increase their visibility when working in dark and densely wooded areas.

The smaller sheave of the block is not a swivel sheave but has some freedom of movement and the work should be planned so that it is not used for torque transmission **Figure 6**

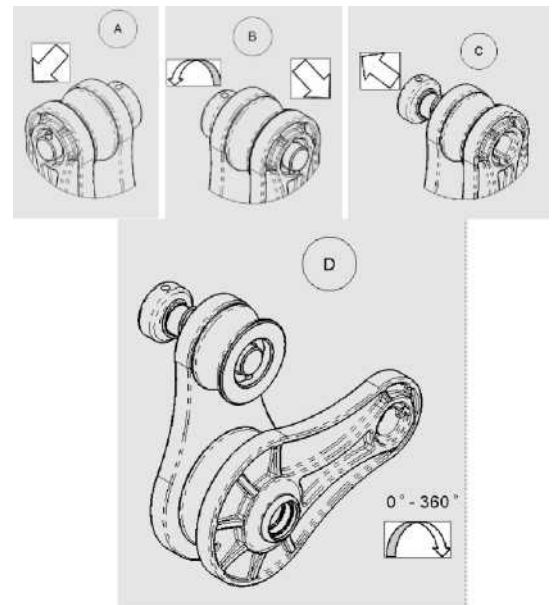


**Figure 6. Example of possible rope movement directions in the blocks**

Large sheave with a special bearing arrangement is used to lower the weights. Small sheave can provide a point of attachment for one worker to the harness using the attachment straps when the device is used as an anchor point.

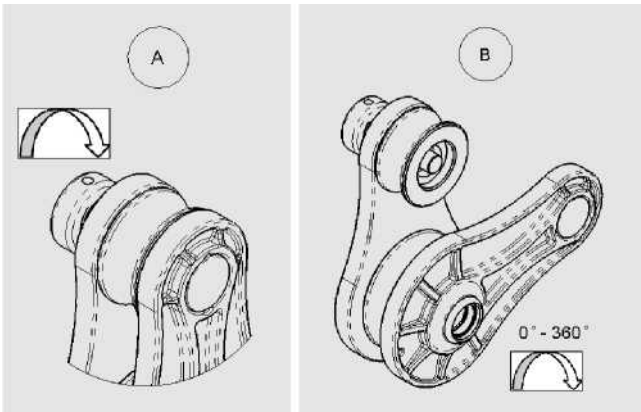


## 7. Opening of equipment



- A- Press the axle
- B- Turn 90° while holding down
- C- Let go
- D- Open

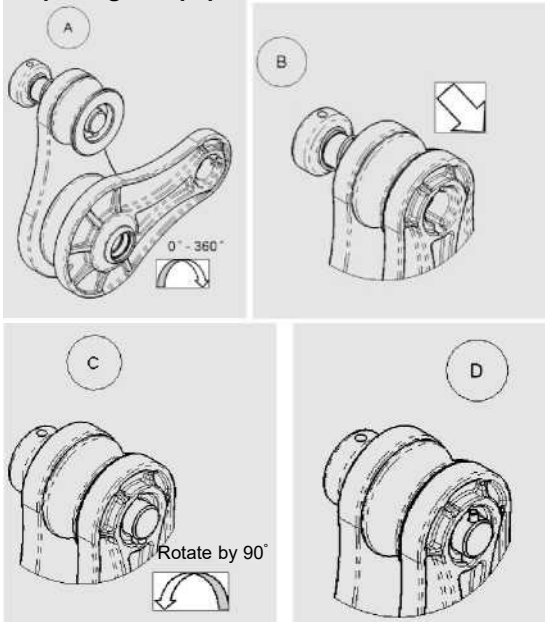
**Figure 7. Opening the TU400;TU402;TU404;TU406 blocks**



A- Untighten  
 D- Open

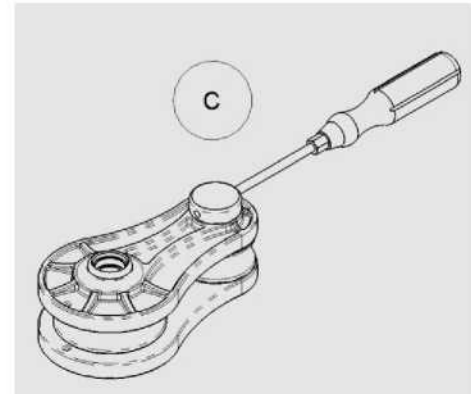
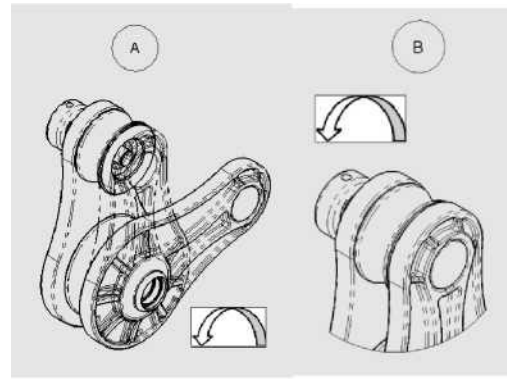
**Figure 8. Opening the  
 TU401;TU403;TU405;TU407 blocks**

**8. Opening of equipment**



A- Close the body  
 A- Press the axle  
 C- Rotate by 90°  
 C- Let go

**Figure 9. Closing the  
 TU400;TU402;TU404;TU406 blocks**



A- Close  
 B- Tighten by hand  
 C- Tighten with a tool

**Figure 10. Closing the blocks  
 TU401;TU403;TU405;TU407**

### 9. Permissible loads

#	For TU400; TU401; TU402; TU403; TU405; TU407 Q=WLL=20kN		For TU404; TU406 Q=WLL=25kN	
	Force F [kN]	Angle between the ropes $\phi$ [°]	Force F [kN]	Angle between the ropes $\phi$ [°]
1	10	0	12.5	0
2	9.6	30	12	30
3	9.2	45	11.5	45
4	8.6	60	10.8	60
5	7	90	8.8	90
6	5	120	6.25	120
7	3.8	135	4.8	135
8	1.7	160	2.17	160
9	0	180	0	180

Figure 11. Load tables

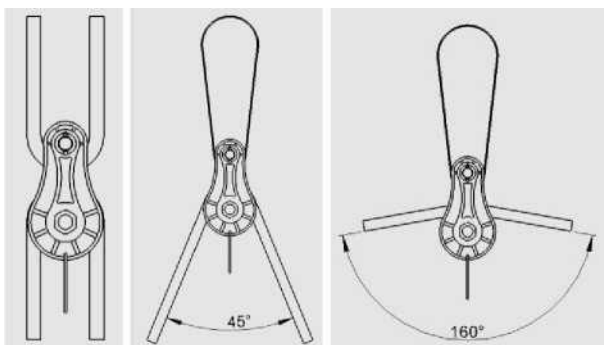
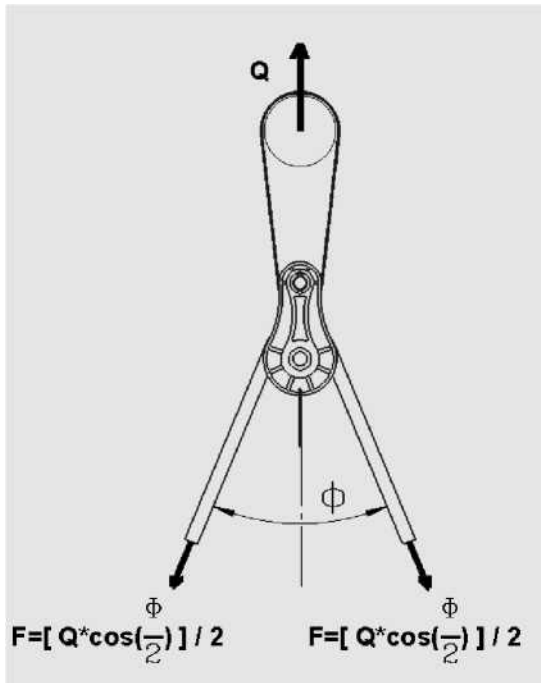


Figure 12. Example of force distribution on the block at maximum working load depending on the rope wrap angle

### 10. Carryover with auxiliary rope

It is imperative that the area is fenced off before the work begins to ensure the safety of bystanders.

If there is limited space to lower the load, the equipment can be used to transport materials not only vertically but also at different angles **Figure 13** using an additional guy-wire led through the centre of the main axis of the block. This method ensures that the load is lowered safely without colliding with the vertical element to which the top loop of the device is anchored.

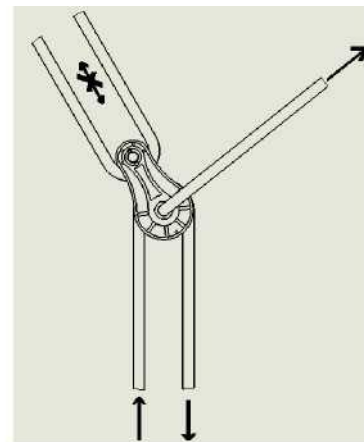


Figure 13. Example of transport with the block

## 11. Block installation on trees

Two ways block mounting for arboriculture works.

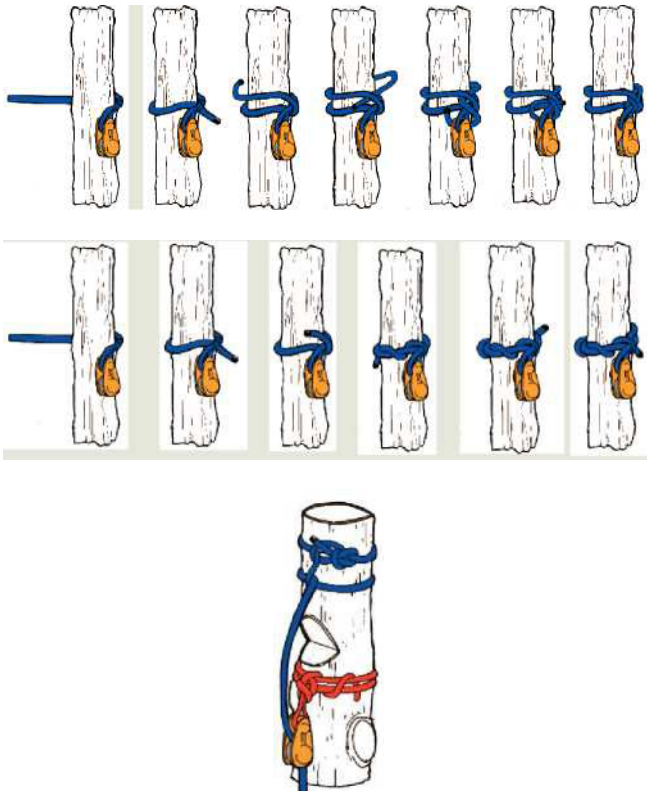


Figure 14. Example of block installation

## 12. Main principles of personal protective equipment (PPE) against falls from a height

- The use of attachment point must be in accordance with the individual equipment use instructions and standards:
  - EN 361 – full body harness
  - EN 352-3; EN 355; EN 360 – protection equipment
  - EN362 – connectors
  - EN 795 - anchor points
- PPE shall only be used by personnel trained in its operation.
- PPE shall not be used by individuals with any health condition that may affect their safety during regular use or in an emergency.
- Prepare an emergency response plan that can be implemented when needed.
- Never attempt to modify the fall arrester without prior written consent from the manufacturer.
- Any repair of the fall arrester shall only be carried out by its manufacturer or its authorised representative.
- PPE shall not be used in any way other than its intended use.
- PPE is a type of personal equipment and shall be operated by a single dedicated user only.
- Before using the fall arrester, verify that all components of the gear which forms the fall arrest system interact correctly. Periodically inspect the joints and fitting of PPE to avoid accidental release or detachment.
- Do not use PPE kits in which the performance of any component is inhibited by performance of any other component.
- Before each use of PPE, it should be thoroughly inspected to check its condition and correct functioning.
- During the visual inspection, verify all components of PPE with particular attention to all evidence of damage, excessive wear, corrosion, abrasion, cuts, or malfunctions. Inspect these components with extreme care:
  - ✓ in the full body harness and belt for positioning buckles, adjusting devices, attachment points (buckles), webbing, seams, loops;
  - ✓ fall arrest energy absorbers: tether loops, lanyards, stitching, casing, and connectors;
  - ✓ textile fibre life lines and anchor lines: lines, loops, thimbles, fasteners, adjustment parts and knots;
  - ✓ steel cable life lines and anchor lines: cables, cable wires, end clamps, thimbles, connectors, and adjustment parts;

- ✓ cable/lanyard-operated retractable type fall arresters: proper performance of the winding and locking gears, the casing, the energy absorber, and the connector;
- ✓ guided type fall arresters: casing, proper running on the anchor line, locking gear performance, sheaves, bolts, rivets, connectors, and the energy absorber;
- ✓ in the connectors (latches) on the load-bearing body, riveting, main pawl, operation of the locking mechanism.
- At least once a year, every 12 months of operation, PPE requires removal from service for a thorough periodic inspection. The periodic inspection can be carried out by a person who is responsible at the workplace for periodic inspections of protective equipment and who has been trained to do so. Periodic inspections may also be carried out by the equipment manufacturer or a person or company authorised by the manufacturer. Carefully inspect all parts of the equipment paying particular attention to any damage, excessive wear, corrosion, abrasions, cuts and malfunctions (see previous section). In certain cases, if PPE has a complex design, like fall arresters, periodic inspections shall only be done out by the manufacturer or its authorised representative. Following the periodic inspection, the next periodic inspection date shall be identified.
- Regular periodic inspections are critical to the condition of PPE and the safety of its user, which depends on uncompromised performance and durability of PPE.
- During the periodic inspection, check the legibility of all PPE markings and labels (which apply to the PPE unit in question).
- All information relating to the PPE (name, serial number, date of purchase and entry into service, user name, repair and maintenance information and decommissioning information) must be included in the equipment usage record. The facility where the equipment in question is used is responsible for the entries in the maintenance record. The record is filled in by the person responsible at the workplace for protective equipment. Do not use the PPE that does not have a completed usage record.
- If PPE is sold outside its country of origin, the PPE supplier shall provide it with the instructions for use and maintenance and the procedures of periodic inspection and repair in the official language of the country in which the PPE will be used.
- PPE must be taken out of service immediately if there is any doubt as to the condition of the equipment or its proper functioning. The equipment may be put back into service after a detailed inspection by the equipment manufacturer and his written consent to reuse the equipment.
- PPE must be taken out of service and disposed of (permanently destroyed) if it has arrested a fall.
- Full body harnesses are the only acceptable device for holding the body in personal protective equipment against falls from a height.
- The fall protection system can be attached to the full body harness attachment points (buckles, loops) marked with a capital "A".
- The PPE anchor point or anchor device shall be of a stable construction and in a location which minimises the risk of fall and the length of free fall. The PPE anchor point shall be above the PPE user's workstation.
- The anchor point shape and design shall ensure that PPE is permanently connected and cannot accidentally detach. Operation of certified and marked PPE anchor points that comply with EN 795 is recommended.
- It is mandatory to verify the clearance underneath the workstation where personal protective equipment against falls from a height will be used to avoid hitting obstacles or a surface below while a fall is being arrested. The size of the required clearance under the workstation shall be verified with reference to the instructions for use of the PPE to be used.
- Carry/transport PPE in a packaging which protects it from damage and moisture, e.g. waterproof bags or in steel or plastic cases.
- PPE shall be cleaned and disinfected with tools and methods which do not compromise the materials of the equipment. For textile fibre materials (lanyards, belts, straps, and ropes), use gentle detergents intended for textiles. Cleaning can be done by hand or by machine washing. It should be rinsed thoroughly.
- Plastic parts shall be cleaned with water only. The PPE soaked or wet from cleaning or use shall be thoroughly dried in open air and away from sources of heat. Metal parts and gear (springs, hinges, latches, etc.) can be lubricated periodically with a light film of the lubricant to improve their performance.
- Store PPE loosely packed, in well-ventilated, dry areas, and away from sunlight, UV radiation, dust, sharp objects, extreme temperatures and corrosive chemicals.

### 13. Warranty

The manufacturer grants 12 months of warranty from the date of purchase of the equipment. In the event of a defect in any part, the warranty period for that part shall be extended by the time of repair and effective rectification of the defect disclosed.

The warranty covers:

- Material defects,
- Design defects,
- Defects in the corrosion protection coating.

Pursuant to EN 365, the anchor point is subject to periodic inspection at least every 12 months. The periodic inspection should be carried out by the manufacturer's authorised service:

**PROTEKT GRZEGORZ ŁASZKIEWICZ Sp. z o.o.**  
**Ul. Starorudzka 9 93-403 Łódź**

or by a person trained to inspect such equipment.

The trained person is an individual who, on the basis of his or her specialist training and declaration, has sufficient knowledge of the safety and rescue measures installed and is sufficiently familiar with the applicable health and safety regulations, guidelines and generally recognised technical principles to be able to assess the safe operation and correct application of the safety devices.

Before each use of the system, check that the date of the next technical inspection has not passed. After this date, the system cannot be used. Before and after each use, a visual check should be performed to ensure that the system is complete and in good working order and that the wire rope is in good tension.

If any defects or incompleteness are found, the point may not be used.

Contact the manufacturer to resolve doubts and do not attempt repairs yourself!

A system that has been involved in a fall arrest must be taken out of service immediately!

Re-entry into service of a system that has been involved in fall arrest is allowed after a thorough inspection by the manufacturer or a service authorised by the manufacturer.

When using the system, special attention must be paid to dangerous phenomena affecting the operation of the PPE or safety of the user, in particular: looping and sliding of ropes on sharp edges, swinging falls, electricity, exposure to extreme temperatures, damage to the equipment, adverse effects of climatic factors, exposure to chemicals, pollution.

Original system components must not be modified, repaired or replaced with others.



**14. Operation sheet**

ANCHOR LOOP OPERATION SHEET ( compliant with EN365 )					
Part no.	.....	Serial number:	.....		
Date of commissioning ( installation )	.....	Production date:	.....		
Installation location	.....				
User name:	.....				
Maintenance and repair log					
Item	Inspection date:	Type of inspection/repair	Comments	Date of next inspection	Name and signature of service person
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					