TEPA 550 Personal rescue equipment

1 Declaration of Conformity

TEPA 550 Personal rescue equipment is used together with the TEPA 501 and 501.2 mast winch to rescue an ill or injured person from a mast or another height.

Fimtekno has tested the product. It meets the requirements of the standards EN341 **+ A1 1996**.

The descender device category is **EN 341-C**.

- The maximum personnel load is 100 kg.
- The maximum descent is 150 m.

Turku,

Pekka Pavén
Managing director

SERIAL NUMBER:

Manufacturer:

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The invention has been granted the protection of the registered utility model FI 5134.

2 Operator's manual for TEPA 501, TEPA 501.2 winch and TEPA 550 personal rescue equipment

The design and manufacture of the product has been based on the standard EN 341 + A1 1996 'Personal protective equipment against falls from a height and descender devices'.

TEPA 501 and 501.2 have been type inspected in accordance with the machine directive 98/37 EC as a personnel hoist device, in training use as the rescue device, when a safety rope is being used.

TEPA 550 rescue equipment set is used together with TEPA 501 or 501.2 mast winch to rescue an ill or injured person from a mast or another height. Only persons, who have received instruction how to use the devices, and practical training, are allowed to use them. One person will be in charge of the rescue operation.

TEPA 550 rescue equipment consists of the parts indicated in attachment 3. The standard length of the rope is 75 m, nevertheless, other lengths are possible.

Descender device category EN 341-C

- Max personnel load 100 kg.
- Max descent 150 m.
- All the anchorage points must stand a 12 KN tension.

Training situation:

The weather conditions should be observed during the training:

- The training should not be carried out with poor visibility, i.e. when the operator of the winch is not able to see either the person to be rescued or the assisting person.
- Mast work is forbidden in a thunderstorm.
- Work should be avoided during continuous rain.
- Mast work is forbidden when the wind speed exceeds 15 m/s.
- The wind speed being 15 m/s, the temperature should not fall below -2°C.
- The wind speed being 0 m/s, the temperature should not fall below -20°.
- The training is to be carried out from a height of 25-30 m.

Before starting each individual training situation, all the components of the rescue system must be inspected, to secure their faultless functioning, and be installed according to the instructions. A person who has received rescue training should inspect the devices and their installation, and this person is to draw up the inspection record. The contents of the record has been described in Chapter 8, page 18.

Training situation:

The training is carried out by a group of five persons: the person to be rescued, an aid in the mast, the operator of the TEPA winch, the operator of the safety rope and the operator of the holding rope.

To install the winch (drawing 4.1, page 8):

– The winch beam is to be fixed to the towbar of the vehicle, using a ball connector.
– The winch is mounted on the pins located on the pull beam, and locked with a spring catch.
– The front foot is mounted to the winch, and the height is adjusted in a way that allows the rope to go vertically to the lower sheave of the mast. The vertical foot is to be locked to the correct height using a spring catch.

In a training situation use a working rope (PrEN 1891) with a double figure-of-eight loop knot at the end (drawing 4.3, page 11). There is a closing ring (EN 362) in the thimble of the loop knot, to be attached to the safety harness (EN 361) loop of the person to be rescued. The rope goes through a sheave (part 2), attached with a band loop (part 3) to the mast structures, above the person to be rescued, down to the foot of the mast, where through parts 2 and 3 to TEPA winch. The working rope is led from the lower sheave of the mast (part 2) through the winch arrester (Rescucender B 50) to the drum, three rounds from below. When the arrester is released, the descent speed is adjusted by changing the rope tension.

The band loops are attached to the mast batten or to a bracket. The point of attachment should not be open on either end, not to allow the loop to slip off. The band loop should not either be attached to a construction with sharp edges that may cut the band (drawing 4.2, page 10).

The safety rope (part 6) and the parts 2,4,5 included in the TEPA 550 package are taken to the mast. The safety catch (part 5) is attached to the mast structure, at least 1 m above the person to be rescued. The connecting hook (part 4) is attached to one of the lifting eyes in the safety harness of the person to be rescued. The sheave (part 2) is to be attached to the holding rope, and another end (part 4) to the person to be rescued. This way you avoid the person to be rescued from being hurt against the mast structures (drawing 4.2, page 10).

The safety rope is attached to the lower part of the mast as well as the working rope. The rope goes from there to the Pro Allp Tech rope arrester (part 1). The arrester is anchored to a fixed point, e.g. to a bracing eye with a band loop and a closing ring. The anchorage point must stand a 12 KN (EN 341 + A1) tension. Pass the rope through the arrester according to the instructions (Chapter 5, page 14). After all the preparations have been completed, the descent is commenced using both ropes at the same time, operated by different persons. The TEPA winch arrester is released and the rope is allowed to slide through the drum at the desired velocity. The Pro Allp Tech rope arrester is released with a hand lever, and the desired descent speed is obtained by adjusting the brake screw.

NOTE! The working rope is a rescue rope, which means that it is the operator of the TEPA winch who determines the descent speed. The operator of the Pro Allp Tech rope arrester yields to the descent speed. In case the working rope breaks or slides off, and the person to be rescued rests on the safety rope, the training must be interrupted, and the person to be rescued must descend using mast ladders. This way the descent is a controlled and safe one. (See the drawing 4. 2, page 10).

Rescue situation:

A work group consisting of three persons in the mast work. The person working in the mast becomes injured or has a fit.

In this case use the working rope (PrEN 1891) for the rescue. Another installer working in the mast informs the persons under the mast about the situation either by mobile phone, shouting or giving signs with hands. He also attaches the injured person from the safety harness loop to the working rope equipped with a double figure-of-eight knot and a closing ring. The TEPA working rope is equipped with a double figure-of-eight loop knot sealed with a shrink sleeve (drawing, Chapter 4.3, page 11). Below the mast, the winch operator takes the Pro Allp Tech rope arrester (part 1), Beal band loop (part 3) and a closing ring (part 7) from the TEPA 550 rescue set. The closing ring is fixed to the anchorage point of the beam bracket; the band loop is passed in between the closing ring and the arrester (drawing 4.1, page 8).

The working rope is lead from the lower sheave of the mast through the winch arrester (Rescucender B50).

One round around the drum, and to the Pro Allp Tech rope arrester according to the instruction (Chapter 5). After the rope has been locked using the adjustment screw of the arrester, unlock the Rescucender arrester. Then unscrew the Pro Allp Tech adjustment screw, until the hand lever moves. The rope speed is adjusted then by pressing the lever. If the grip loosens from either one of the arresters, the rope will stop.

When the descent is commenced, the other installer who was in the mast comes down with the person to be rescued, using the mast ladder, and ties the person to be rescued to himself using the safety rope; this way the person to be rescued will not hurt himself to the mast structures, and the helper may provide emotional support during the descent. The descent speed is to be adjusted in a way that the rescuer will not have to carry the weight of the person to be rescued.

Note! If you have any doubts about the condition of the working rope, you'll have to use the safety rope (See the drawing 4.2, page 10).

Maintenance and storage:

- After the use, each component is to be inspected visually. If you notice mechanical wear or damages, you should replace the part with a new one (chapter 8, page 18).
- Clean dirty components.
- Make sure also that you still have all the components left (chapter 8, page 18).
- Maintenance of the Pro Allp Tech rope arrester according to the user's manual (chapter 5, pp. 12-13).
- TEPA 501 and 501.2 winches are to be serviced according to the user's manual.
- Check the rope meter by meter. The inspection method and the lifetime are indicated i n the instructions for the rope (chapter 7, pp. 16-17).
- If the rope is wet, you must allow it to dry opened before packing it into the bag.
- Store TEPA 550 equipment in the bag, within the service van, in a place reserved for it.
- Write all the events related with the use into the device specific product card (chapter 8, page 18).

Be careful with the inspections – you may be the next person to be rescued!

3 TEPA 550 personal rescue equipment

FIMTEKNOⒻ certificate / registered utility model No. 5134

The rescue equipment set is used together with the TEPA 501 tension winch or TEPA 501.2 mast winch to rescue an ill or injured person from a mast or another height.

Th product has been designed and manufactured in accordance with the European standard EN 341 + A1 'Personal protective equipment against falls from a height and descender devices'. The device has been inspected and tested for the descender device category EN 341-C.

In a work situation, two installers in a group of three persons are able to bring the injured person to the ground quickly and safely.

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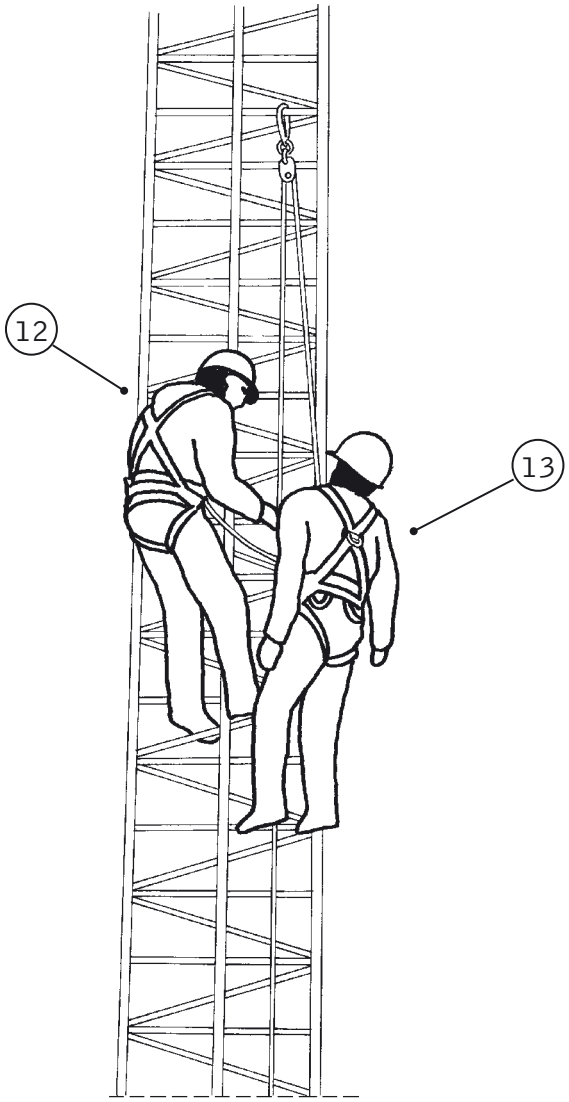
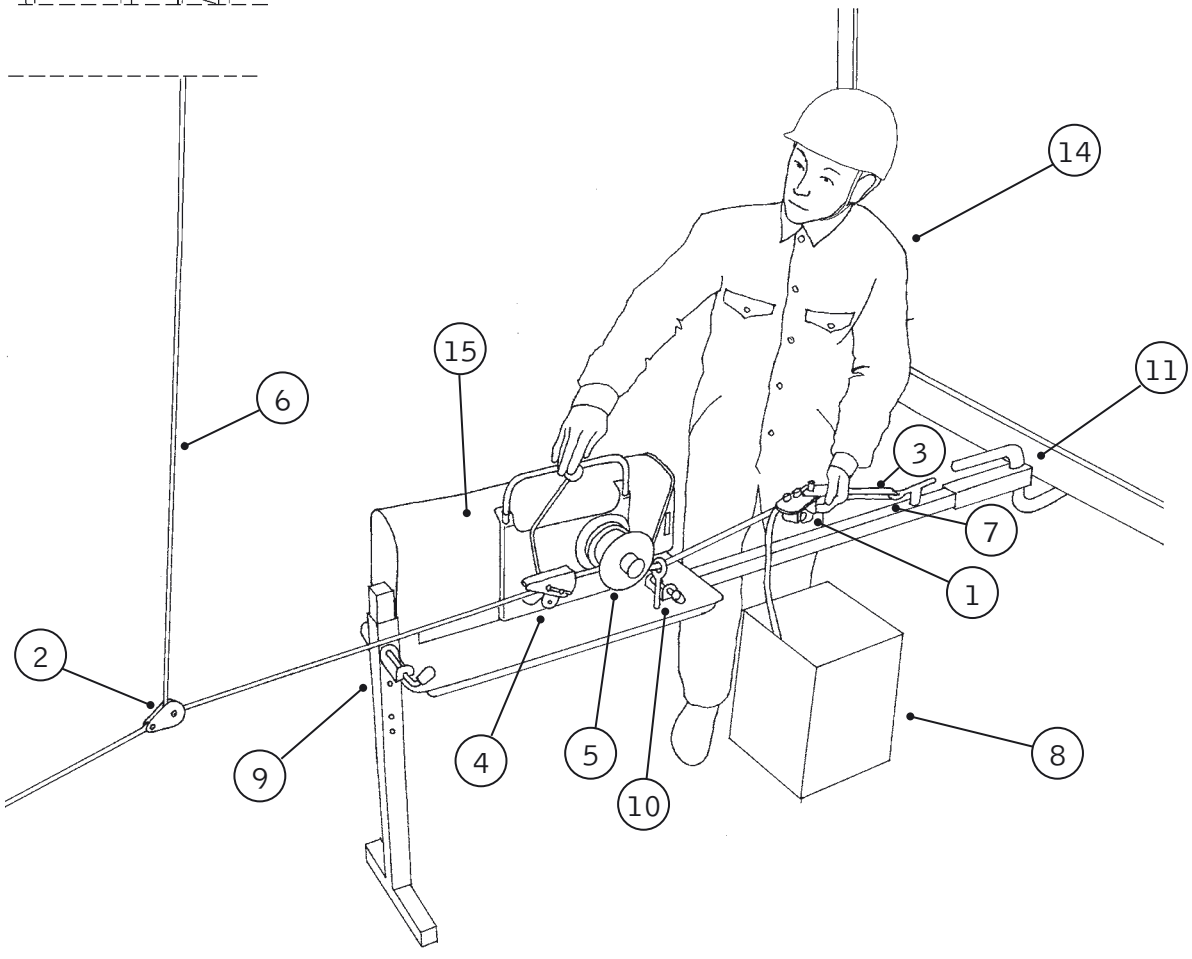


4.1. Rescue situation

1. Pro Allp Tech
2. Sheave P50
3. Band loop
4. Rescucender B50
5. Rope pulley
6. Working rope
7. Closing ring
8. Rope bag
9. Locking of the height
10. Locking of the winch to the beam
11. Ball connector
12. Rescuer
13. Person to be rescued
14. Winch operator
15. 501.2 winch



4.2. Training situation

1. Rope arrester Pro Allp Tech
2. Sheave P50
3. Band loop
4. Connecting hook
5. Safety catch
6. Safety rope
7. Closing ring
8. Working rope
9. Holding rope

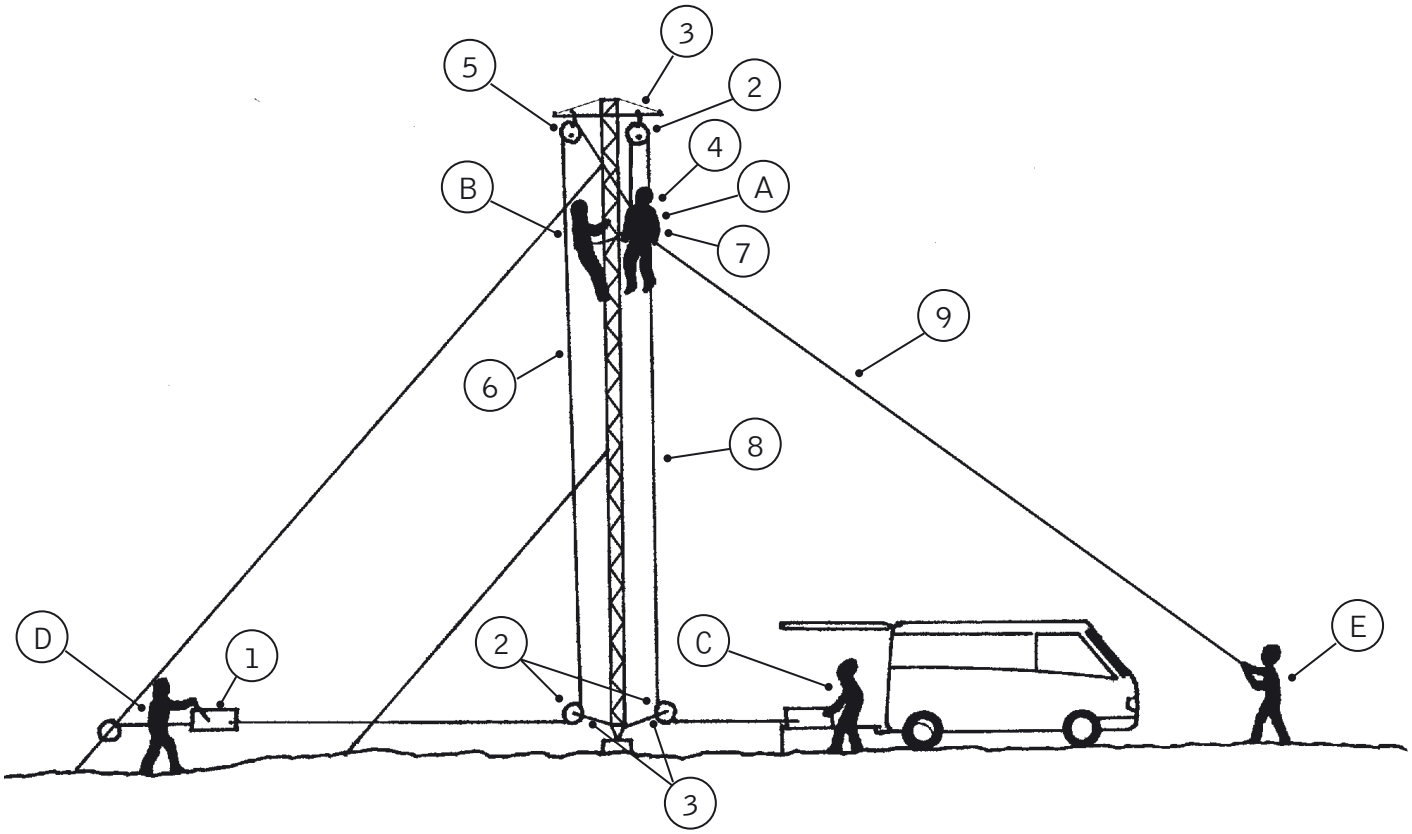
A. Person to be rescued

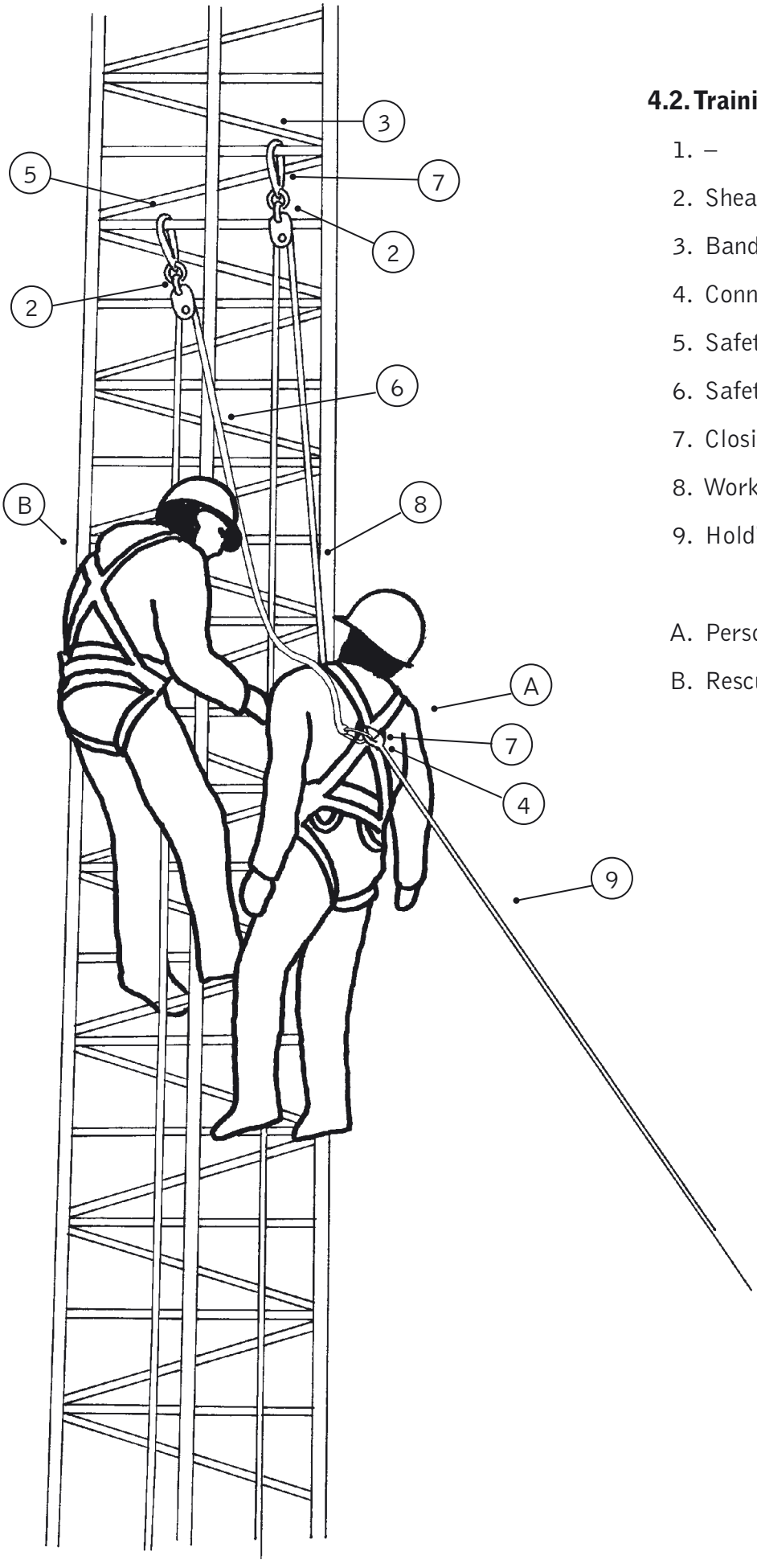
B. Rescuer

C. Operator of the Tepa winch

D. Operator of the safety rope

E. Operator of the holding rope





4.2. Training situation

1. –
2. Sheave P50
3. Band loop
4. Connecting hook
5. Safety catch
6. Safety rope
7. Closing ring
8. Working rope
9. Holding rope

A. Person to be rescued

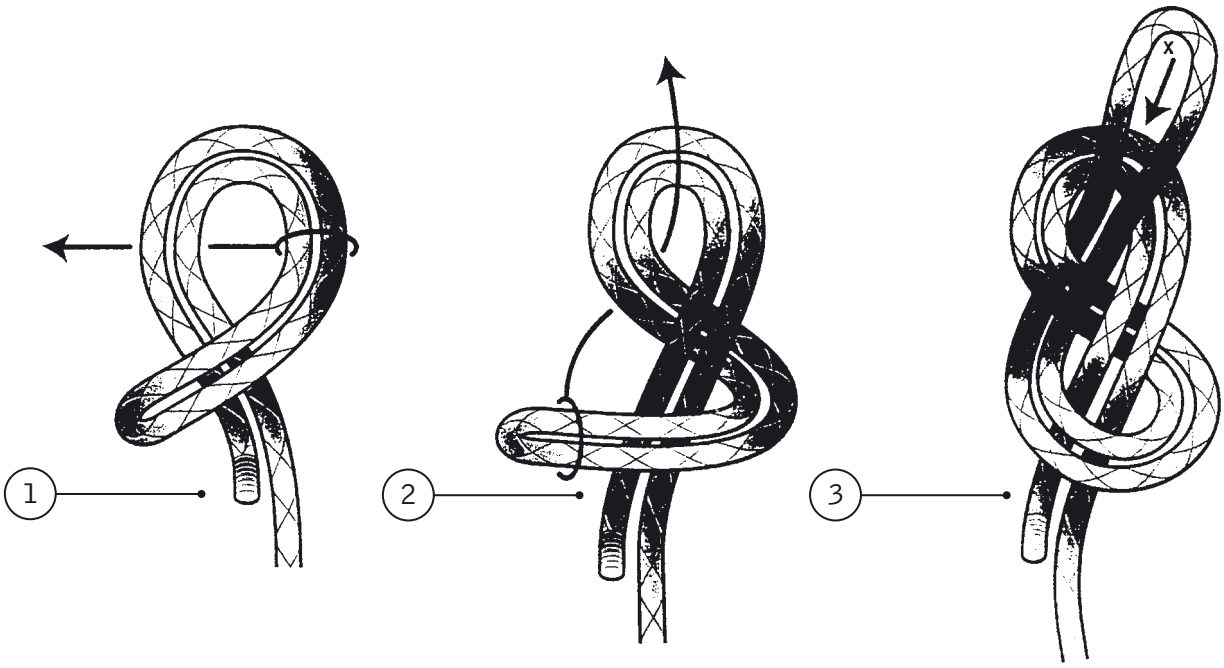
B. Rescuer

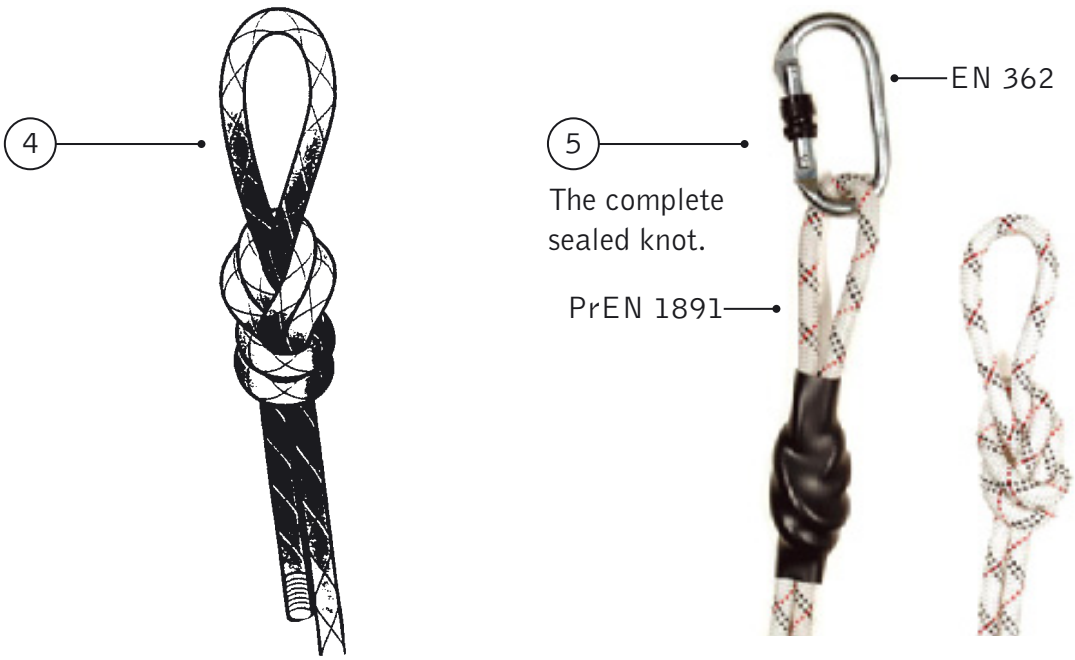
4.3. Double figure-of-eight loop knot for the TEPA 550 working and safety rope

FIGURE OF EIGHT LOOPS

USE: Tied to a rope, when anchoring a safety device, or for any other purpose where a single, double or triple loop knot is required, a figure of eight loop is a versatile alternative for a bowline knot, double or triple one.

INSTRUCTION: Tie a single loop knot with a rope folded double (figures 1 – 4). Remove all the threads in a way that the even parts of the knot are parallel. To maximise the strength, climbers recommend the bend in the fixed part (marked with x in figure 3) to be placed outermost, and the bend in the loose end to the inside. Secure the loose end by attaching it with an end knot to the running part, or slip it once more through the knot. This knot will take 1.2 meters 9-mm rope or 1.5 meters 11-mm rope.





5 Operator's manual for the Pro Allp Tech descender device (rope arrester)

The manufacturer recommends thorough training before starting to use the device in actual work situations. This booklet only provides some guidelines; it isn't user's manual for training. If this device is used improperly, or if the instructions are neglected, it may result in injury or death.

Safe working:

Safe fixing points must always be located above the climber, and slack parts should be avoided in the anchorage line. A safety rope is recommended to be used to guarantee the optimal safety.

Testing and use:

Pro Allp Tech has been tested in accordance with PrEN 12841, using the new Troll 11x32 Platt rescue and intervention rope as well as Cousin 10.5, 11x16 Platt and 12.5 mm x 20 Platt Low Strech ropes. The operator must take into consideration the fact that all the following factors affect the durability of the rope in different ways: moisture, snow, ice, dirt, different rope diameters etc.

Check before use:

Check that there aren't any damages in the descender device, or any other faults preventing normal use. Do this both before and after the use. If you have any doubt there is any fault or damage in the descender device, it must be removed from service and be inspected by a person recommended by the manufacturer, or otherwise the device will have to be returned to the manufacturer. Depending on the amount of use, the device will always have to be inspected at regular intervals. It is recommended that the device is to be inspected at least once a year by a qualified person.

It is difficult to define the life span of the device, nevertheless, as a guideline we can give you this advice: please don't use the device, if 10 years have elapsed from the date of manufacture of the device, or after 5 years of use, whichever comes first. In working use, the durability may vary under special circumstances from a single occasion of use to five years, depending on how the device is being used. The working life will be reduced by general wear and wrenches, damages in structural elements, the use of unsuitable equipment or due to powerful jerks of the load. Continuous exposure to corrosion or chemicals or the neglecting of the recommended storage and maintenance will also shorten the lifetime.

NOTE! All the descenders generate heat that may damage the rope, if particularly hot object/ element is allowed to stay in a single position. The side plates that evaporate heat from the reel and the cam wheel reduce this friction.

Mounting:

Connect the Pro Allp Tech TEPA 550 to the winch or to the anchorage point according to the instructions.

– release the lock hook and open simultaneously the side plates, to feed the rope (figure 5 and 6)
– feed the rope (figure 7)
– close the side plates and the fastening pin/bolt, the bolt will move automatically to its place

Check that the device is in completely locked position before any descent is to be carried out. Complete locking is 'on' when the automatic locking handle is in its maximum position and the adjustment screw has been turned to the red direction, until the end. The locking will open gradually when the screw is turned towards the green marking.

Releases, general publications, EC certificates:

- SGS Yarsley International Certification Services
- SGS House 217-221 London Road, Camberley, Surrey, GU 15 3 EC
- Identification number 0120

Product markings explained:

- CE mark complies with the EC directive 89/686/EEC. The device has a four-digit identification number.
- PrEN 12841 C complies with PrEN 12841.1999, type C.
- Device to protect a person from falling from a height. Rope feed system. Rope control devices.
- ID-No.; the first two digits indicate the year of manufacture, and the subsequent digits the serial number of the product.
- 10.5 – 12.7 indicate the minimum and maximum diameter of the rope to be used with the device.
- Pro Allp Tech is the name of the device, Troll is the brand.
- PAT.No 2256673 is the patent number.

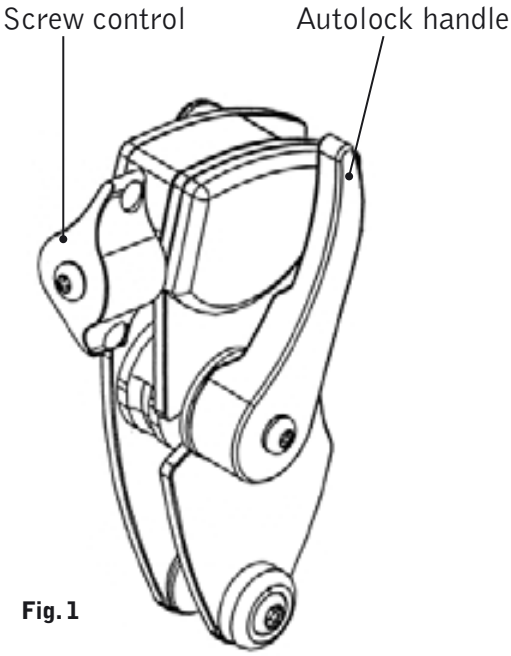


Fig. 1

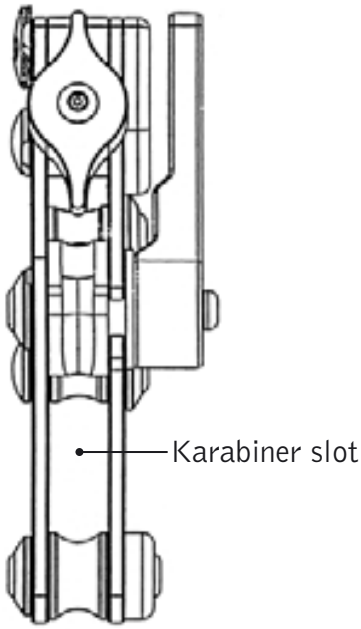


Fig. 2

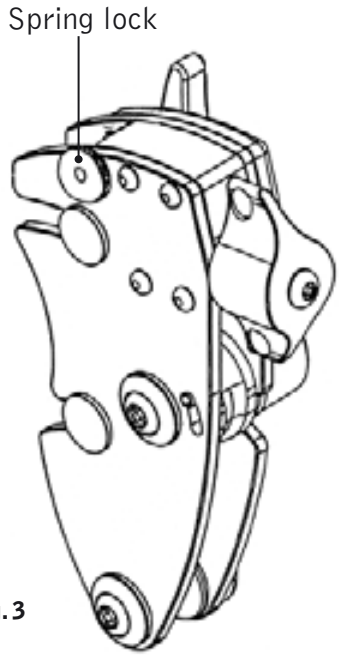


Fig. 3

Fig. 4

- Pro Allp Tech from the front

Fig. 5

- Open plates

Fig. 6

- Open lock

Fig. 7

- Rope feed/ removal

Fig. 8

- Pro Allp Tech from behind
- Inspection

6 TEPA 550 Personal rescue equipment

- Descent using the safety rope and the holding rope

- Installation of the rope arrester brake

- Safety rope in use

- Working rope in use

7 Beal descent and working ropes

Use:

A rope that has been intended for use when working in caves, for rescue use as well as for work use. In work use the rope may be used together with other equipment to transfer persons, equipment or objects to the work place or from there.

– Always check that there aren't any sharp edges in the descender devices or other equipment that might damage the rope.

– Neither store nor use the rope in temperatures exceeding 80°C.

– Provide for rescue measures before and during the use of the rope, in case of possible problems.

– We recommend a well-tightened double figure-of-eight knot to attach the rope.

– You may tie the 8-knot to any part of the rope provided that there is the minimum of 10 cm of rope on both sides of the knot.

– All the pieces of equipment included in the safety chain (harnesses, closing rings, band loops, anchorage points, safety devices, descender devices, etc.) must comply with the European safety norms, and one must be familiar with their use as well as be aware of the limitations regarding their use.

Life time:

The lifetime of the rope depends on the amount of use and on the way of use. The rope may become unfit for use even after the first occasion of use, in case one has acted incorrectly.

Repeated falls, chafing, UV radiation and moisture weaken the rope little by little.

Average lifetime of the rope:

- Active use: from three months to a year
- Weekly use: from 2 to 3 years
- Occasional use: from 4 to 5 years
- The maximum lifetime of the rope is five years.

The rope should be abandoned from use, if:

- The rope has been in a powerful fall.
- The rope core has been damaged.
- The rope case has been badly damaged.
- Chemicals damaging the rope have attacked the rope.
- The rope should not be used for longer than five years in any case.
- The rope should be stored in the sales package, and the lifetime must not exceed 10 years from the year of manufacture.

Rope maintenance:

Before the first use soak the rope through and allow it to dry gradually. The rope will shrink about 5%, and you should take this into consideration when calculating the rope length. Please note that the rope diameter will expand in use, and the maximum decrease in the rope length will be 5%.

The rope must not be in touch with corrosive substances such as acids, oils and fuels, because they may damage the fibres without any visual indication. Paints and detergents may also be harmful to the rope.

If detergents or paints get into the rope in work use, their impact on the rope must be tested in advance. Avoid the rope getting exposed to UV radiation; store the rope in a sheltered, dry and cool place.

If the rope is dirty, it can be washed in lukewarm water. When necessary, you may use detergents meant for fine wash and and a brush with man-made fibres. If the rope is soaking wet, let it dry in a sheltered place away from heat sources.

After each use, check that there are no visible damages in the rope and that the rope feels undamaged when pulled through hands. There may be very serious damages in the rope that can be seen only in use and when inspecting the rope. Use the rope bag always when transporting the rope, to avoid the rope from getting dirty and twisted. If you have to cut the rope, always mark the new ends of the rope with the type markings of the rope.

8 TEPA 550 Personal rescue equipment Product card

Manufacturer:

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Serial number

First day of use

Operator

The parts to be used must comply with the requirements of the EN 341 - C standards.

1 Rope arrester/brake Pro AIbTech PrEN 12841		2 Sheave P 50 EN 12278		3 Band loop Beal EN 566		4 Connecting hook EN 362		5 Safety catch EN 362		6 Rope 10,0 22 KN PrEN 1891		7 Closing ring EN 362		8 Rope bag Swelock EN 5100		9 TEPA 501–501.2 Winch		**Inspector Date**	
Appr.	Rej.	Appr.	Rej.	Appr.	Rej.	Appr.	Rej.	Appr.	Rej.	Appr.	Rej.	Appr.	Rej.	Appr.	Rej.	Appr.	Rej.	**date**	**insp.**

Inspection of the TEPA 550 rescue set / reasons for rejection:

1. Rope arrester Pro Allp Tech PrEN 12841

Visual inspection of the device is to be carried out. If any traces of blows, distortions are detected or if the moving parts are stuck, the device must not be used. Corrosion damages are also a reason to reject the device from use.

2. Sheave (P 50) EN 12278

Visual inspection. If mechanical deformations or corrosion detected, if the flanges or the rope coil do not move properly, the device must be removed from use.

3. Band loop Beal EN 566

Visual inspection. If cuts or abrasion detected in the band, the loop must be removed from use.

4. Connecting hook EN 362

Visual inspection. If mechanical deformations or corrosion detected, or if the closing mechanism doesn't work flawlessly, the device must be removed from use.

5. Safety catch EN 362

Visual inspection. If mechanical deformations or corrosion detected, or if the closing mechanism doesn't work flawlessly, the device must be removed from use.

The equipment must be inspected at two (2) years intervals by the manufacturer or an authorised dealer.

6. Rope PrEN 1891

The rope will be removed from use, if a powerful fall has struck the rope, the rope core has been damaged, the rope case has been seriously damaged, the rope has been exposed to chemicals damaging it, if the service life of the rope exceeds five years or if ten years have elapsed from the year of manufacture.

7. Steel closing ring EN 362

If the closing mechanism of the ring doesn't work properly, or if there are deformations in the ring, the part will have to be rejected.

8. Rope bag

A broken bag must be replaced with a new one. The rope will have to be stored dry and clean.

9. TEPA 501, 501.2 Mast winch Rescucender P50 rope arrester EN 567

If the jaws of the arrester are so worn that there aren't any indentation left, the rope arrester must be replaced with a new one. The release lever must move freely. If the lever is stuck, the shaft must be cleaned and lubricated with open gear wheel grease, or the shaft must be replaced with a new one. The rope pulley must be inspected visually. If the closure pinhole has stretched, or is otherwise too large, the pin and the rope pulley must be changed. The mechanism and the springs of the fixing bolts (2 pcs) of the frame are inspected. If the mechanism is too rigid or the springs fatigued, the parts must be replaced. The ball connector of the pull beam is checked. If the ball has a too big clearance, or if the mechanism doesn't work properly, the ball connector must be changed.