



ATD

ArboTeamDevice

Copyright Arboteam® 2016

**WINCH/CYLINDER BRAKE INSTRUCTION, INSTALLATION AND MAINTENANCE
MANUAL USED FOR CONTROLLED TREE FELLING**

ARBOTEAM *Quelli degli alberi
Die Baumfleger*

CONTENTS

1. GENERAL INFORMATION

- 1.1. Purpose of the ATD manual
- 1.2. Applied directives and technical standards
- 1.3. Glossary and terminology

2. WHAT IS THE ATD

- 2.1 Description of the ATD
- 2.2 Technical data
 - 2.2.1. Components
 - 2.2.2. Technical features

3. ATD APPLICATION AREAS

- 3.1. Combining with rigging ropes
- 3.2. Combining ropes and winch
- 3.3. Combining ropes and aluminium cylinder brake

4. INSTALLATION

- 4.1 Hard installation
- 4.2 Soft installation

5. USING THE ATD

- 5.1. Before each use
- 5.2. Using the winch
- 5.3. Using the aluminium cylinder brake
- 5.4. Combined use of winch and aluminium cylinder brake

6. NAMEPLATE DATA

7. SAFETY PRECAUTIONS

- 7.1. General safety rules
- 7.2. Behaviour for the operator's safety

8. INSTRUCTIONS FOR MAINTENANCE, CARE AND TRANSPORTATION

9. EC DECLARATION OF CONFORMITY

1 GENERAL INFORMATION

1.1. Purpose of the manual

This manual provides the technical features, performances and necessary information for the safe use and handling of the ARBOTEAM S.r.l ATD, including its maintenance, repairs and disassembling. This information must be read carefully and the instructions enforced strictly. Failure to observe this information could cause risks to the health and the safety of persons as well as economic damage. This information was provided originally by the manufacturer in its own language (Italian) but can be made available in other languages in order to comply with legislative and/or commercial requirements. This documentation must be stored by a person responsible for the purpose and in an appropriate place, so as to be always accessible and in the best state of preservation for all the personnel in charge of ATD operations or maintenance.

It is understood that it is not permitted, except as a result of a specific written approval of ARBOTEAM S.r.l , transmission to third parties of all or part of this user's manual, as regards the text, the illustrations and the attached diagrams. The manufacturer, however, reserves the right to modify, supplement or improve the manual without notice and without entailing any reason to believe the present publication inadequate. Any modification, addition or deletion of elements, components, or functions etc, not previously agreed with ARBOTEAM S.r.l relieves the manufacturer of any liability.

In case of loss or damage, replacement documentation must be requested directly from the Manufacturer, quoting the code of this manual. This manual reflects the state of the art when the ATD was placed on the market.

This manual is for the ATD users (operators and maintenance) with the aim of supplying them with the main technical data of the system, a technical description of the various functional groups that make it up, as well as the main operating procedures and information needed to carry out preventive and corrective maintenance.

The manual is intended for personnel who have gained a good knowledge of the technique of arboriculture.

This manual is an integral part of the ATD and contains the necessary information to ensure that all entitled staff can operate safely and to guarantee perfect efficiency throughout the lifetime of the ATD.

For proper use of the machine it is assumed that the working environment is adapted to the current regulations in terms of safety and hygiene.

Drawings and photographs are provided by ARBOTEAM S.r.l without limitation, in order to allow an easier understanding of the text.

The ARBOTEAM S.r.l in pursuing a policy of constant development and updating, reserves the right to make any functional or aesthetic changes as to their product, and to make changes in the design of functional components and accessories, without any duty to inform and without incurring any obligation. Any errors and discrepancies between the procedures described in this manual and current security legislation must be promptly reported to our technical department who will make eventual corrections and adjustments. Under no circumstances will the information and operations described in this manual prevail over the current safety standards.

The use of this manual is under the complete responsibility of the user. Once consulted, this manual should be kept in such a way as to have it always at hand.

1.2. Applied directives and technical standards

The ATD has been designed, manufactured and tested in accordance with the 'Essential Health and Safety Requirements - EHSR " described in the Annex I of the European Directive 2006/42/EC .

1.3. Glossary and terminology

Some words used frequently in this manual are described here to be sure that their meaning is defined and understood clearly .

Explanation of the technical terms used in this manual

ALUMINIUM CYLINDER BRAKE: used to lower the cut pieces;

WINCH: manually operated component used to lift the cut pieces;

SELF TAILER: component positioned at the end of the winch that allows to maintain the tension on the rope wound around the drum;

ROPE GUIDE (SX, DX): steel rope guide to direct the ropes with the right angle on the aluminium cylinder brake;

ROPE GUIDE HOOK (SX,DX, CENTRAL):it allows to deviate the ropes so that the ground operator can choose the most secure position during the lowering operations;

RIGGING: lifting or lowering operations of the cut pieces of timber with the aid of cylinder brakes, ropes and pulleys;

BLOCKS: pulleys specifically designed for rigging operations during controlled felling;

TREECLIMBER or **elevating work platform operator (EWP)** both must have adequate training and qualification;

SLING : rope-length with a loop at one end and which normally holds a Block or a connector or a ring;

LOWERING: the controlled descent of a cut piece of tree;

STOPPER: component for the temporary locking of a rope; the stopper can be opened and closed with the rope pulled tight (but not moving) ;

GROUND OPERATOR: the person on the ground who controls the ropes during the controlled felling - rigging;

The ground operator must have adequate training.

2. What is the ATD

2.1. Description

ATD is a specific tool to be used only for tree care operations, for lifting or lowering tree sections during controlled felling (rigging) or pruning (eg. removal of large dead or damaged branches).

ATD consists of a metal frame which acts as a support to a winch, wrapped by a aluminium cylinder brake, a mechanical safety blocking system (stopper) and two straps (for anchoring and positioning) .

Since the ATD is not the only equipment used during the rigging, it is necessary that all the other components (ropes, blocks, pulleys, slings, straps, connectors, etc) are in good condition of use, properly sized for the work to be performed and compatible with each other.

All operating instructions must be observed, those indicated in this manual as well as those provided with each device combined to the ATD .



Caution:

The activities involving the use of the ATD are inherently dangerous.

Who uses the ATD is responsible for his/her own actions, decisions and safety.

It is mandatory to follow the current safety standards.

Before using the ATD you must:

- read and understand all operating instructions described in this manual;
- be properly trained for controlled felling with the use of aluminium cylinder brakes and winches
- Understand and accept the risks involved



Caution:

Failure to understand any part of this manual can result in serious or fatal accidents.

The reading and understanding of the ATD user's manual does not replace in any way the learning and training for controlled tree felling with the use of winches and aluminium cylinder brakes.

While using ATD it is compulsory to always wear the following PPE :

1. protective helmet with visor or glasses;
2. heavy-duty gloves (leather recommended)
3. antislip safety shoes with toecaps

When using the ATD, it is also necessary that operators :

- be in good physical and mental condition,
- wear tight clothing and no accessories which they could get entangled with.

2.2. Technical data

2.2.1.Components

- 1) Steel frame
- 2) Winch 46.2 STGNP HARKEN® brand (MWL 1300 Kg) with self tailer
- 3) Aluminium cylinder brake
- 4) Screw pin for the use of two different ropes
- 5) Left rope guide
- 5A) Right rope guide
- 6) Left rope guide hook
- 6a) Right rope guide hook
- 6b) Central rope guide hook
- 7) 75 mm strap tension ratchet (Fig. 1.3.)

- 7a) Crank bushing for the tension ratchet (Fig.1.3.)
- 7b) Protection for the 75mm strap (Fig.1.3.)
- 8) Fixing pin for the 75 mm strap
- 8a) Safety lynch pins
- 9) 75 mm strap
- 9a) 25 mm strap
- 10) Mechanical safety blocking system stopper V Grip maxi Plus Antal
- 11) Stopper anchor plate
- 12) Fixing pin for the stopper
- 13) Fastening hinges for the DX stopper anchor plate
- 13a) Fastening hinges for the SX stopper anchor plate
- 14) Stopper's rope guide
- 14a) Stopper's rope guide
- 15) Anchorage for the 25 mm strap
- 16) Fixing point for winch handle
- 17) Winch handle
- 18) Slot for the 75 mm strap (Figure 2)
- 19) Removable rubber bark-saver protections(Figure 4)

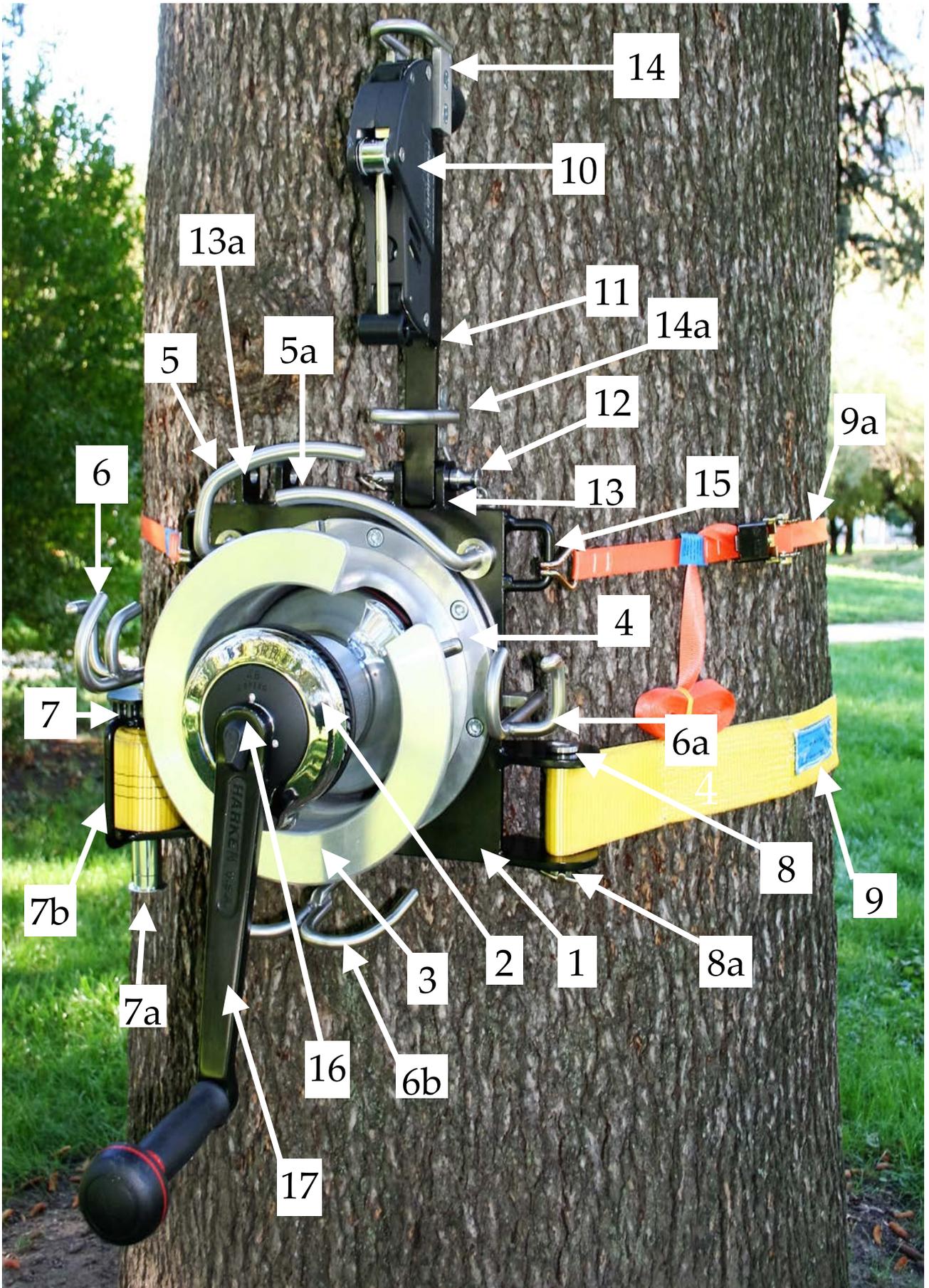


Figure 1

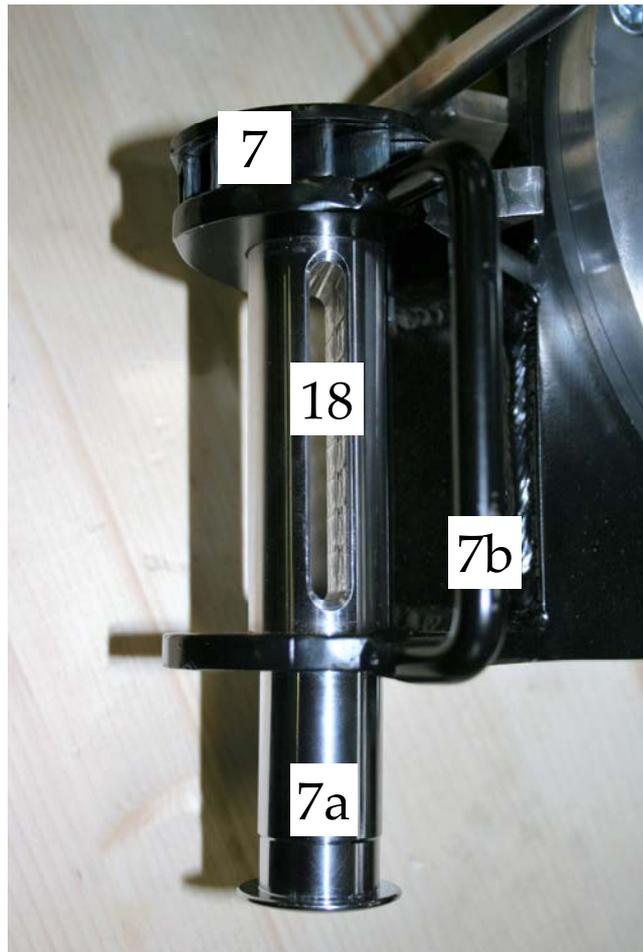


Figure 2

2.2.2- Technical features

All the equipment, including the aluminium cylinder brake, the stopper, the winch, the strap with relative tensions, etc .. , has been verified to the stresses to which it is normally exposed during use. The calculations are part of the technical file of the "machine ".

Total weight : 30,3 Kg

Weight of the stopper: 4,70 Kg

Maximum working load of the aluminium cylinder brake : 2000Kg

Maximum working load of the winch : 1300 Kg

Maximum working load of the stopper : 1300 Kg (with 16 mm plate)

Breaking load of the yellow 75 mm strap : 15000 Kg

Breaking load of the orange 25 mm strap : 400 Kg

3 - ATD application areas

ATD is an exclusive and specific tool to be used only for tree care operations, for lifting or lowering branches and tree sections during controlled felling (rigging) or pruning (eg. removal of branches)



Caution:

It is absolutely forbidden to use ATD for lifting and lowering persons.

The ATD must not be stressed beyond the limits specified in the manual in section 2.2.2

3.1- Combining with rigging ropes

ATD may be used only with the specific arborist ropes for controlled felling. The characteristics of the ropes to be used with ATD are given in the technical dossier.



Caution :

It is forbidden to use any other cables including metal wire ropes.

3.2 Combining ropes with winch and stopper

Allowed Rope diameters must be between 14 mm and 16 mm (double braid)

3.3 Combining ropes and aluminium cylinder brake

Allowed Rope diameters : 12 mm – 14 mm – 16 mm or 19 mm



Caution :

Before every lifting or lowering operation it is necessary to :

- choose the rope correctly sized for the task you want to perform
- check the ropes' condition
- Define the danger zone and make sure that nobody stays within it

4. Installation

There are two possible options for installation:

Hard installation, recommended for tree felling

Soft installation, to be used mainly when pruning (without damaging the bark of the tree that houses the ATD) by installing rubber protectors as shown in figure 3

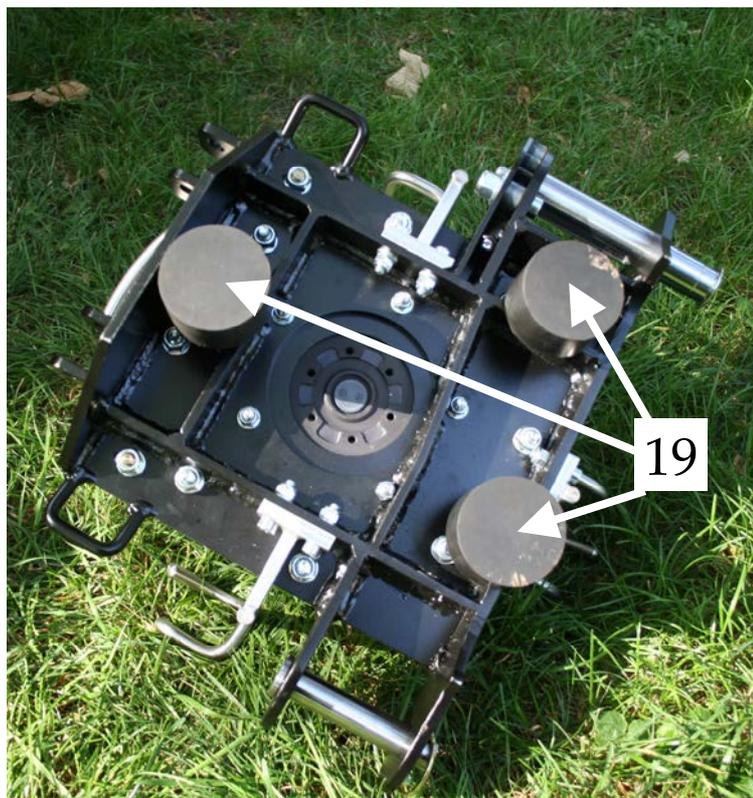


Figure 3



Caution :

Even before installing the ATD, it is necessary to perform a thorough inspection of the tree in order to identify any structural defects that could compromise the safety of the tree felling or pruning (internal cavities, wood degraded by fungal attacks, cracks, damage to root system, etc).

The surface of the tree where the straps and the steel frame are meant to be put up must be free of any object that could affect the proper functioning of the ATD (i.e. climbing plants, branches, objects, nails, etc)

If in doubt, do not proceed with the installation until you have studied in depth the problem

.

Plan the tree climber's tasks so as to install the ATD creating a safety zone on the ground.

For safety zone understand the space which is not affected by the lowering of the pieces, where the ground operator can operate the ropes without having suspended loads above himself, and having a full view of the climber's work and of the landing space.

Steep angles with the ground where the ground operator will work can deviate the rigging rope in the hooks with the risk of it coming out.

4.1 - Hard installation

Working load for winch 1300 kg – 2000 kg for aluminium cylinder brake

A- proceed making a horizontal cut approximately 3 cm long and 10mm deep (this usually corresponds to the cut generated by a medium powered chainsaw).

Avoid excessively deep cuts which besides being useless could compromise the mechanical strength of the tree.

B- place the ATD inserting the steel stabilisation plate inside the generated slot (figure 4).



Figure 4

C- The strap must pass in the slot present on the cylinder of the jack. (Figure 2, n. 18)
Tighten the yellow strap using the winch handle after the strap has been passed around the tree trunk. The strap must be tightened so as to prevent it from sliding on the cylinder of the jack as shown in figure 5.



Figure 5

Do not exceed the pre-tensioning of the strap

It's enough the force applied by one single person.

D- tighten the orange strap so as to maintain the ATD in the correct position (firmly against the tree trunk and without any possibility of movement in any direction)



Caution :

The orange strap does not replace in any way the use of the yellow strap.

The ATD can only be used with both straps installed and tightened correctly .

4.2 - Soft installation

Working load for Winch 800Kg - descending brake 800 kg

The soft installation is chosen when the tree on which the ATD is installed must be preserved : do not proceed therefore with the horizontal cut.

Before installation proceed to mount the rubber protections screwing them completely in the appropriate spots (figure 3).

Proceed by following the steps described in the B - C - D points of the hard installation.



Caution :

The orange strap does not replace in any way the use of the yellow strap.

The ATD can only be used with both straps installed and tightened correctly .

5- Using the ATD

5.1- Before each use



Caution

A general check should be performed on:

- **Frame:**, verify the integrity of the steel frame (welding, operating of the ratchet, integrity of the hooks, integrity of the fastening hinges for the stopper anchor plate and the fixing pins) and any burrs in the areas in contact with the ropes and straps to avoid these getting damaged
- **aluminium cylinder brake:**check the correct tightening of the screws fixing it to the frame, and the absence of cracks or any burrs
- **winch:** besides referring to the information in the user's manual of the winch, check the correct tightening of the screws fixing it to the frame, and that there are no damaged components that could damage the ropes
- **stopper:** check the tightening of the screws on the stopper's anchor plate and the good condition of the junction pins, the absence of foreign bodies inside the cam, the mobility of the clamping lever, and the locking effectiveness for the chosen rope
- **straps :** the straps must be intact, with no cuts or abrasions , and with a readable identification label .

- **nameplate** : the nameplate which allows to identify the ATD must be intact and readable

During use, check the tension of the straps.

Never leave the ATD unattended after installing it.

The rigging rope can be installed on the ATD as follows :

1) with the stopper installed

(mandatory when using the winch),

the rope must pass inside the stopper, within the rope guide of the stopper's anchor plate and within the two rope guides below it as shown in figure 6



Figure 6

2) without the stopper installed

(rope lowered on the aluminium cylinder brake)

The two rope guide hooks (left and right) are not to be used for redirecting the rope!

The rope must pass inside the two rope guides on entering the aluminium cylinder brake and according to the needs, to the right or to the left (figure7)



Figure 7



Caution

In both cases described above the rigging rope must be lowered from above and reach the ATD below the most vertically possible. The stopper must be installed with a maximum total range of 10 degrees as shown in figure 8 (5 degrees at right, 5 degrees at left and 5 frontwards).

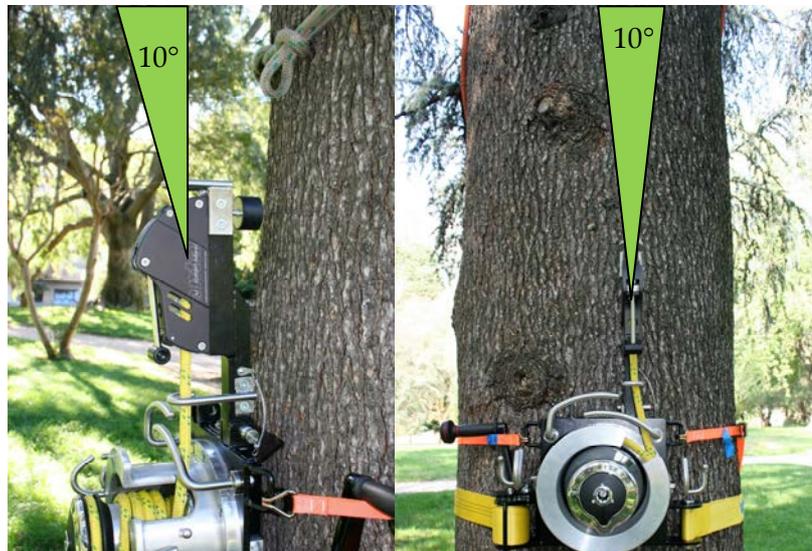


Figure 8

If the rope does not fall vertically, it is imperative to redirect it the by making it pass through a sling combined with a pulley or connector or a ring.(figure 9)



Figure 9

5.2- Use of the winch



Caution

The winch must always be used combined with a stopper.

The winch must be operated by a single operator

LIFTING

Once the operator has tied up the section to be removed,

The ground operator must:

A- Open the stopper by turning the lever up (figure 10)

B- Insert the rope coming from above inside the stopper

-or insert the rope into the stopper before forwarding it up to the tree climber

C- Recover any rope slack between the knot point above in the tree and the stopper

D- Wrap the rope for at least four turns around the winch drum clockwise making a last turn within the self tailer discs

E- Close the stopper by rotating the lever down (figure 11)

F- Insert the winch handle into its specific fixing point (figure 1 n.16) and proceed to lift by actionning manually the lever.



Figure 10



Figure 11

Clockwise rotation : lifting capacity 46:1

Anticlockwise rotation : lifting capacity 22:1

LOWERING

G- Once the lifting is finished, **unroll carefully the rope from the drum of the winch** keeping the rope perpendicular to the axis of the winch then to start lowering wrap the rope clockwise around the aluminium cylinder brake with a number of turns proportionate to the weight of the lifted section. Pass the rope inside one of the rope guide hooks.

Firmly holding the rope, carefully open the stopper by moving the lever up and proceed to lower the piece slowly and in a controlled manner.

LOWERING(different option)

Once the lifting operation finished, you can use the winch to lower the piece by proceeding as shown in figure 12



Figure 12



Caution:

It is forbidden to use the stopper as a brake

During the lowering the stopper must be open

No one, including the ground operator, may remain in the lowering and rope manoeuvres zone !

Advice for use

If the piece needs to be lifted again (stuck piece, wrong descent corridor between the branches, etc) proceed blocking the stopper (lever down) and repeat the procedure from step D.

If an overlap occurs on the rope on the aluminium cylinder brake :

- lock the stopper, untangle the rope, rearrange the rope turns around the aluminium cylinder brake and only then, holding the rope firmly, proceed again with the lowering by opening again the stopper .

5.3. Using the aluminium cylinder brake

The aluminium cylinder brake can be used with or without the aid of the stopper.

The rope can be wound in a clockwise way with the stopper installed on the right or in an anticlockwise way with the stopper installed on the left.

The rope must absolutely pass within the rope guides.

The number of turns around the aluminium cylinder brake must be proportional to the weight to lower.

the stopper have to be open before the descent always.

Once the tree climber has tied up the section to be removed, the ground operator must:

a. open the stopper

b. make a first turn around the aluminium cylinder brake

c. recover any rope slack between the knot point above in the tree and the aluminium cylinder brake

d. make extra turns if necessary, according to the size of the piece to be lowered.

e. Choose the rope guide hook best suited to the descent of the piece and insert the rope inside of it avoiding excessive friction

f. place the remaining rope neatly behind the ground operator

g. Move to a safe area which offers maximum visibility on the operator and on the piece to be lowered

h. wait for the cut to be made and the starting signal from the tree climber located above.

i. proceed to lower the piece controlling the sliding of the rope on the aluminium cylinder brake gradually decelerating the descent in a controlled way. In such a way that the piece gains less speed possible.



Caution:

The central rope guide hook can only be used by positioning frontally to the ATD with a maximum range of 45 degrees to the right and to the left of the hook (figure 13).

the stopper have to be open before the descent always.

Do not block suddenly the piece being lowered

You can produce high loads even with small sized pieces.



In the case of a sudden stop, the forces generated could damage the lowering system endangering the tree climber and the ground operator.

Do not overload the system (ATD, rope, block, sling , the tree)

Always use compatible elements and properly dimensioned for the developed loads.



Caution:

The lowering of a piece depends on many factors such as the weight, the characteristics of the rope and its status (worn, soiled with resin or earth, etc.), environmental conditions (wet rope), the lowering system being used (blocks, rings, etc)



Caution

The ground operator must have received proper training for controlled felling with the use of aluminium cylinder brakes and winches.



Caution

No one, including the ground operator, may remain in the lowering and rope manoeuvres zone .

The ground operator must never wrap the rope around himself or around other tools other than the aluminium cylinder brake or the ATD winch.

The rigging rope must be operated by a single operator.

The rope must be free of knots and neatly arranged on the ground in an completely clear area (free of all objects such as branches, tools, protruding roots or anything that might prevent the rope from sliding smoothly, etc.)

It is good practice not to exceed with the size of the pieces to lower

5.4 Combined use of winch and aluminium cylinder brake

In certain situations you can use two ropes at the same time :

one mounted on the winch to lift – hold - lower, the other one mounted on aluminium cylinder brake for the lowering.



Caution

The combined load of both ropes must not exceed 2000 kg

Take advantage of every possible technique that prevents the ropes rubbing (deviations with pulleys or connectors).

Put away one of the two ropes inside a bag or container so as to facilitate operations .

In the combined use, the rope on the aluminium cylinder brake must enter the the rope guide to the left.

It is recommended to have a ground operator for each rope.

6. Nameplate data

The ATD is provided with a nameplate. In it are the references and all necessary directions. Manufacturer, model, serial number, year of production and certificate from a Notified Body

7 Safety precautions

The final user must comply with the instructions provided by the manufacturer in terms of :

- Requirements for proper installation;
- Proper use and regular maintenance of all components .

7.1 General safety rules

For any damage caused by a failure to apply the rules of the manual, insurance terms will no longer be considered applicable, and ARBOTEAM S.r.l will not take on any responsibility. Also, there will be no taking responsibility for damages arising from negligence of a customer

8. INSTRUCTIONS FOR MAINTENANCE, CARE AND TRANSPORTATION

The ATD is an extremely sturdy tool created to withstand heavy work in unfavorable environment, however it requires some precautions to ensure that the tool life will be the longest possible .

During transport, take care to avoid shocks that could damage it and avoid contact with sharp tools (chainsaw bars, axes, etc.).

Avoid contact with aggressive substances such as acids, alkalis, oils and fuels which could damage the ATD components.

Particular attention should be paid to the state of the straps that need to be replaced every time abrasions or cuts appear.

Keep the ATD clean by using non-aggressive products and warm water

For the winch refer to its own operating and maintenance manual .

Warning

Dirty ropes (mud, resin,oil,etc.) will wear out more some parts of the ATD, in particular: the rope guide, the aluminium cylinder brake, the drum of the winch, and the stopper

It is recommended to use clean ropes.

9. EC Declaration of Conformity

EC Declaration of Conformity

Hereby, the manufacturer

Arboteam srl via Giotto 19

39100 Bolzano Italia

declares

that the specified product

ARBOTEAMDEVICE – ATD

Model, serial number and year

See the product label

complies with the provisions of Directive 2006/42 / EC, according to the certificate EC NO .: IS-M / BZ-95 / 0418A / 16, issued by the Notified Body CE 0937 on April 18, 2016.

The following guidelines have been adopted:

Directive 2006/42 / EC (machines);

Other adopted regulations:

DIN EN ISO 12100-1 and 2;

DIN EN ISO 14121-1 (Safety of industrial machines)

This declaration loses its validity in case of changes of the model Arboteamdevice-ATD” not agreed with the manufacturer and the certification body

Bolzano 18 Aprile 2016

ARBOTEAM S.r.l. - GmbH
Via Giotto 19 - Giottostr. 19
39100 BOLZANO - BOZEN
P.IVA - MwSt.Nr. 02247720218
Tel. 0471 910215 - Fax 0471 513124
cell. 335 7629478
