

Instructions for use

Mobile anchoring device BORNACK/Lufthansa safety rope

Typ AK - LEOS 01 KM16



[®]
FALLSTOP



EN 795
Klasse C

Technical changes are reserved.

Brief description

Proper use

The anchoring device is exclusively for securing up to two persons, in connection with a safety harness according to DIN EN 361 and a shock absorber connector according to DIN EN 354/355 or a mobile fall arrester with shock absorber according to DIN EN 353-2/355 or a BLOCKSTOP mini 01 fall arrest device, against falling when performing maintenance work on the wings of listed types of aircrafts (refer to page 8-9).

Any other use is improper. The company BORNACK will not be liable for any resulting damage. The user bears the risk.

Features

- Textile 16.0 mm safety rope, special design in sheath core construction; construction type KM16
- Tensioning device type HR54, with attached safety harness
- FS 510 safety hooks (or equivalent) with protective coating for anchoring the rope ends
- VACUUM ANCHOR attachment point as an intermediate attachment (quantity depends on the system length or aircraft type) (specifications in the working instructions apply)
- Mobile attachment points with clamping function AP 051, padded, 2 units in each span section

Optional

- Connection rope with type 024 (or equivalent) karabiner hooks for intermediate attachment points (to optimise the run of the rope); used as an alternative to VACUUM ANCHOR.

Accessories

- Safety harness FS1/FS2 with comfortable padding
- BFD 1.5 m or PYTHON 1.5 m shock absorber connector
- FALLSTOP BK 2.5 m safety rope in adjustable length
- BLOCKSTOP mini 01 fall arrest device, 2.0 m working length

Application

- Secured work on aircraft wings to protect against falling off the edge or sliding along the inclined wings in a longitudinal direction

Approval

- Conformity with EC directive 89/686/EEC
- Product certification according to EN795 „anchoring device class C and B“
- Prototype testing and production control by EXAM, Prüf und Zertifizierungs GmbH, Dinnendahlstr. 9, D-44809 Bochum Germany
CE 0158

Quality inspection

Quality inspection

- Quality assurance system of the manufacturer
- Production monitoring by the notified authority (cat. III)

Compulsory inspection before each use!

If any slight defects are established during the inspection of the device before it is used, this device may no longer be used. A device that is defective in any way may only be tested and/or repaired in an authorised BORNACK workshop.

Visual inspection:

- Check whether the attachment points, safety rope, tensioning device and karabiner hooks are complete and in perfect condition
- Metal parts are not deformed, split, corroded or worn
- Metal parts have a full protective coating to protect against damages to the aircraft membrane
- The rope is not damaged and is correctly tensed
- Sufficient space beneath the falling edge (CAUTION: the falling distance can be up to 4.0 m!)
- The VACUUM ANCHOR immediate anchor must be subjected to a particular test (refer to the manufacturer's separate instructions)

Functional test:

- All moving parts on the tensioning device and karabiner hooks are free
- The self-locking function of karabiner hooks works and lock can be secured
- The mobile attachment point runs freely and stops parallel to the safety rope when pulled

1. Setting up the anchoring device

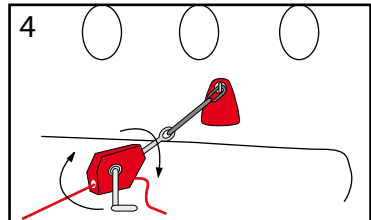
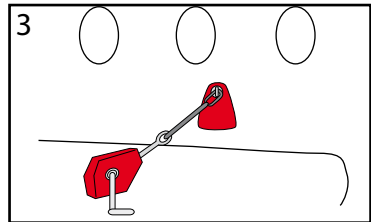
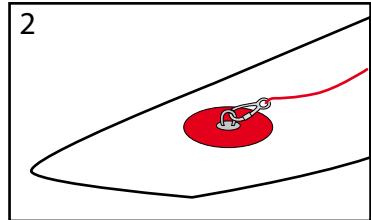
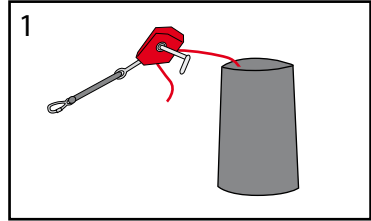
The anchoring device is set up according to the assembly plan for the respective aircraft type.




- Read the instruction manual
 - Prepare the device bag and pull the rope end with the safety hook out - illustration 1
 - Attach the karabiner hook to the end anchor on the wing (end of wing) - illustration 2
 - Attach the rope end to the body of the aircraft: suspend the rope tensioning device HR 54 in the end anchor. The karabiner hooks must be secured - illustration 3
 - Pull the safety rope taut by hand and tense with the tensioning device (ratchet) - refer to illustration 4.
- Always remove the ratchet after use!!!

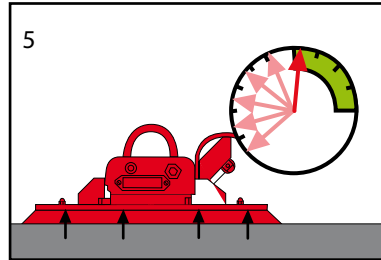
CAUTION: If the safety rope is too loose, the falling distance is greater in the event of a fall! Overload due to excessive preloading cannot occur because the traction wheel has a defined initial tension force and the safety rope has a shock absorbing effect! Do not use any additional or other aids to tense the rope!

- Place the VACUUM ANCHOR intermediate points on the wing according to the assembly plan. The rope sections should be equal sizes. Only the original, or a VACUUM ANCHOR approved by BORNACK should be used. Other devices have not been tested!



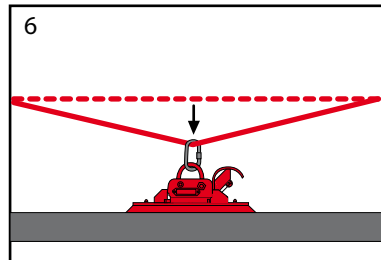
1. Setting up the anchoring device

- Prepare the VACUUM ANCHOR and install properly (observe the manufacturer's instructions of use): 
- The wing surfaces must be free of heavy dust, oil etc
- The sealing lips and attachment surfaces of the VACUUM ANCHOR must be clean and in perfect condition!
- No cracks etc on the wing surface that could prevent the vacuum
- The compressed air bottle must be full
- Switch the vacuum pump on with the control lever: the vacuum must start to form. The vacuum display must be within the green section (refer to illustration 5)!!!



If a vacuum does not start to form: check...

- Whether the VACUUM ANCHOR is correctly positioned (leaks?)
- Whether unevenness or cracks on the surface of the wing could be causing a leak
- Whether the vacuum pump is running

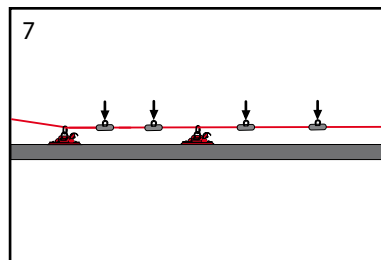


In case of any defects:

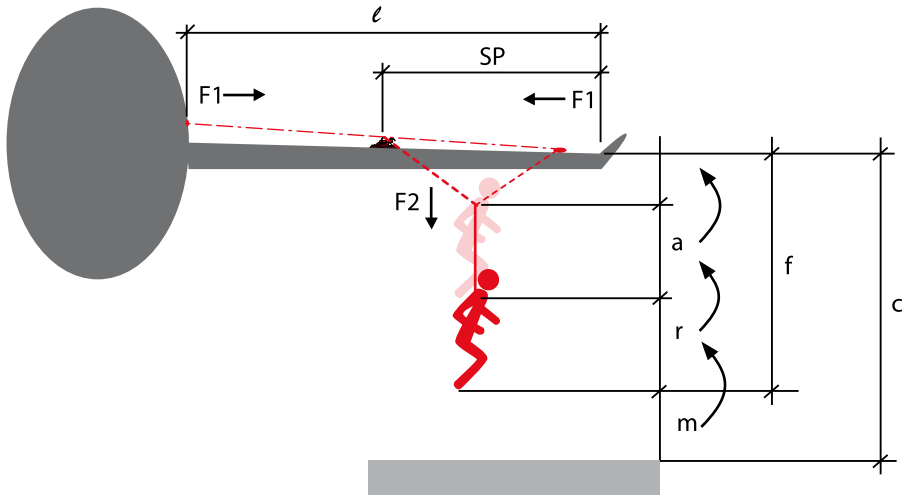
- Allow the device to be checked by an expert or by BORNACK
- Suspend the safety rope using a karabiner hook in the attachment loop on the VACUUM ANCHOR (illustration 6)

There must be 2 „mobile“ attachment points for each span section (illustration 7)

- Retighten the safety rope with the ratchet (illustration 4)
- End check: „Has assembly been fully and correctly carried out?!“ => Approved for use
- Pack the tensioning device into the leather case. The strap must be covered!



System parameters



a = Elongation of safety rope

r = Length of connector

m = Body length ≤ 1.7 m

f = Falling distance (fall arrest distance) = $(a+r+m)-t$

c = Necessary space under the falling point = c larger than f

l = System length

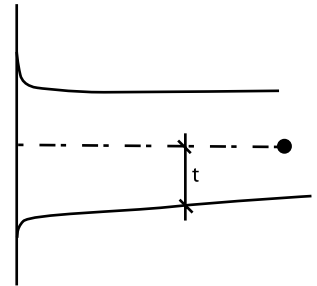
SP = Span width section

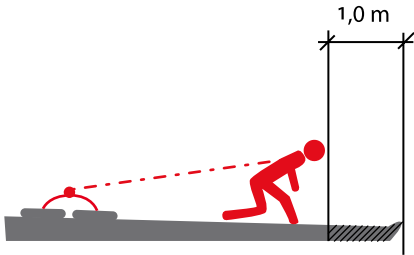
FO = Rope initial tension approx. 50-60 kp

F_1 = Force in the end anchor in the event of a fall ≥ 6.0 kN

F_2 = Fall arrest force ≤ 5.0 kN

t = Distance of safety rope to the falling edge (wing)

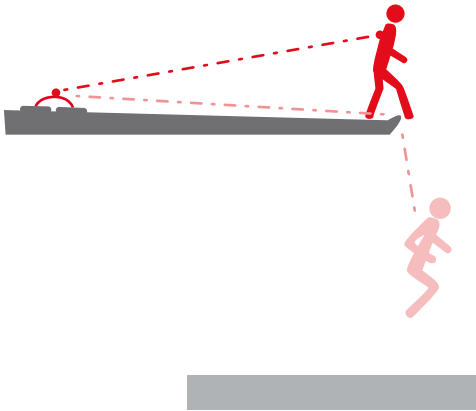




Restraint system

Safety zone!

Don't move into this zone to prevent a fall!

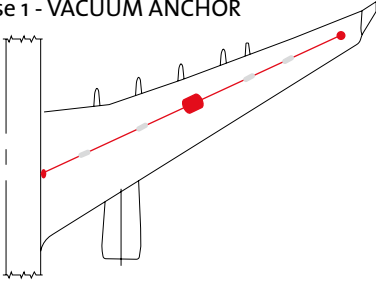


Fall arrest system

Set-up instructions

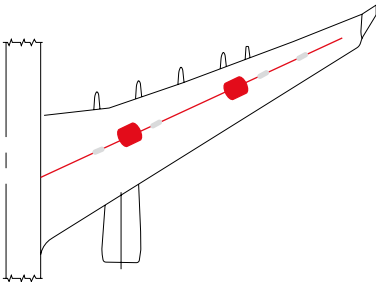
Typ A 320

a) Use 1 - VACUUM ANCHOR



Required space (c) under the wing -
min 4.0 m

b) Use 2 - VACUUM ANCHOR

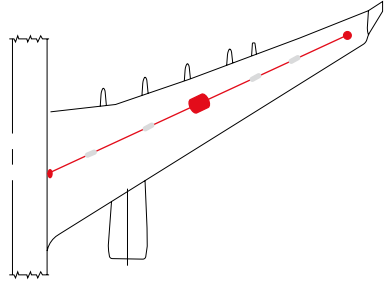


Required space (c) under the wing -
min 3.0 m

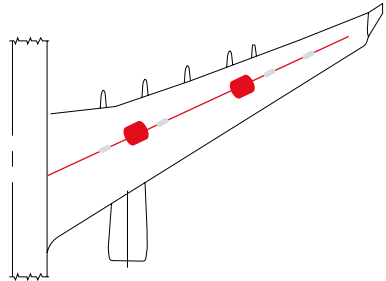
System length 16.5 m

End anchor on body:	101 5196	1 unit
End anchor on wing:	101 9144	1 unit
AK Leos safety rope:	18.0 m	1 unit

Typ A 330 - 200



erforderl. Freiraum [c] unter der Tragfläche
min 5,0m



erforderl. Freiraum [c] unter der Tragfläche
min 4,0m

System length 31.5 m

End anchor on body:	101 5196	1 unit
End anchor on wing:	101 5197	1 unit
AK Leos safety rope:	35.0 m	1 unit

Risk analysis

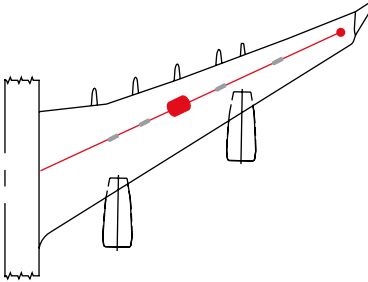
Grade A - use as a restraint system:

-> Falling edge cannot be exceeded! = No space required beneath the wind

Grade B - use as a fall arrest system:

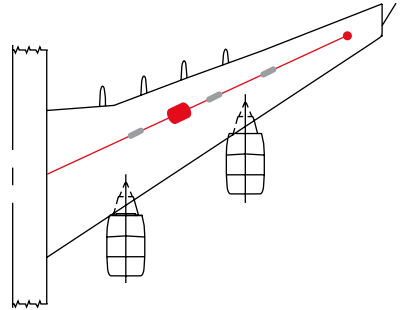
-> Free fall over the wing edge = Space required (see above)!!!

Typ A 340 - 300

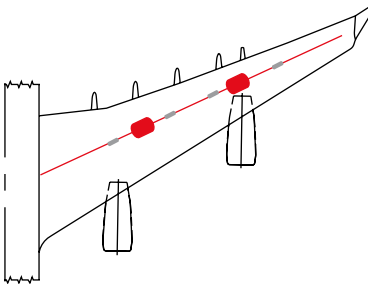


Required space (c) under the wing - min 5,0 m

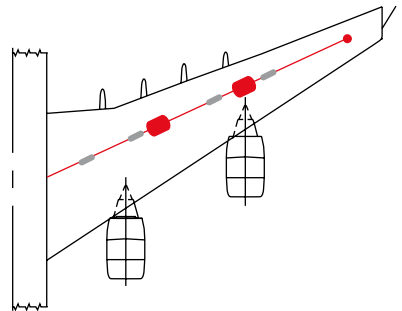
Typ A 340 - 600



Required space (c) under the wing - min 5,0 m



Required space (c) under the wing - min 4,0 m



Required space (c) under the wing - min 4,0 m

System length 31.5 m

End anchor on body: 101 5196 1 unit
 End anchor on wing: 101 5197 1 unit
 AK Leos safety rope: 35.0 m 1 unit

System length 31.5 m

End anchor on body: 101 5196 1 unit
 End anchor on wing: 101 5197 1 unit
 AK Leos safety rope: 35.0 m 1 unit

Check: c larger than f?

Example: A340

1 VAKUUMANKER
 Space c = 4,7 m
 Falling distance f = 4,7 m
 c = f
 4.7m = 4.7 m factor = 1.0

2 VAKUUMANKER
 c = 4,7 m
 f = 3,9 m
 c > f
 0 4,7 m > 3,9 m factor = 1,2

Assembly information/2. Removing the anchoring device

Make sure that the assembly personnel cannot fall during assembly!
Only deploy trained and suitable members of personnel! If necessary, mount the end anchors or rope ends with a platform or ladder and then pull the safety rope into the wing! Use the VACUUM ANCHOR as a temporary attachment point if necessary.

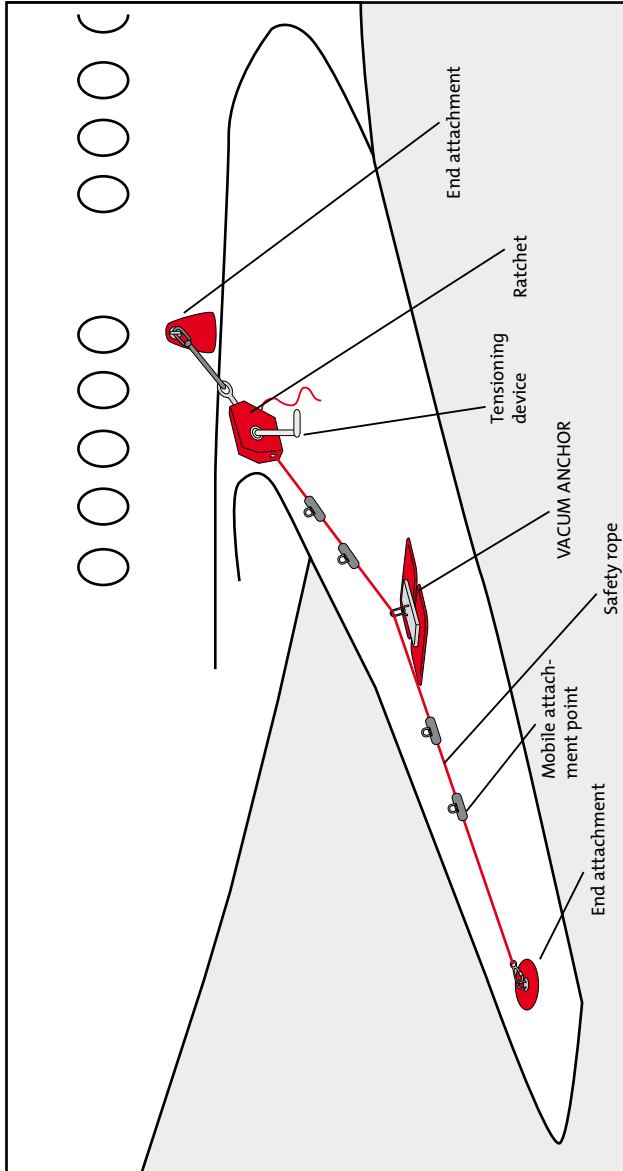
The larger the span width between the attachments, the larger the traction force in the end points and the rope sag in the event of a fall!

2. Removing the anchoring device

- Remove the VACUUM ANCHOR
 - Turn the valve lever to „off“ = vacuum is released
 - Carry the device away
 - Pack the anchoring device in the device bag
 - Unscrew the end anchor (body). Seal the hole with the stopper
 - Return with the device bag and tensioning device and store the safety rope in the device bag
- Note: do not wind up the rope - push into the device bag „over hand“
- Unscrew the end anchor (wing point) and seal the hole with a stopper



System - components



3. The anchoring device in use

A. Attach the safety harness and connectors (refer to the separate instructions of use e.g. FS 1 safety harness)

- a) Lift the safety harness and place the shoulder straps over the shoulders.
- b) Close the leg straps
- c) Adjust the length of the leg straps
- d) Close the chest strap
- e) Suspend the connector or fall arrest device into the back loop on the safety harness:
 - Safety hooks on the shock absorber or
 - Safety hooks on the blue connector strap on the FALLSTOP BK fall arrester

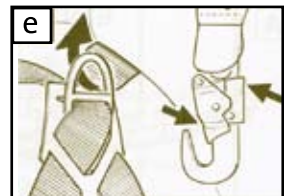
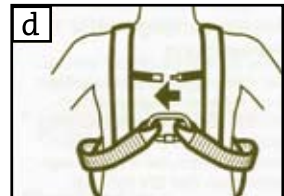
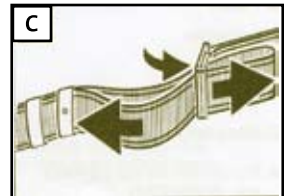
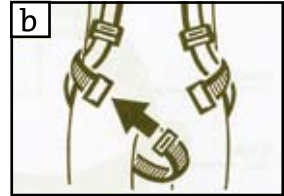
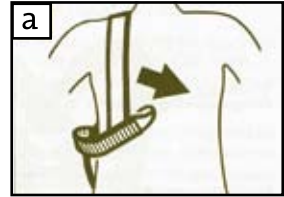
CAUTION:

Never use any connectors without a shock absorber!



Safety check:

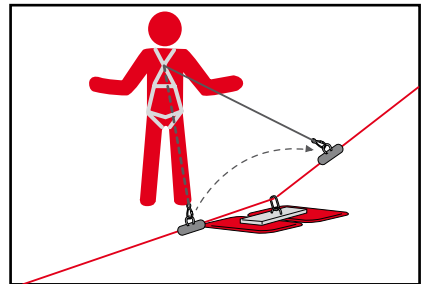
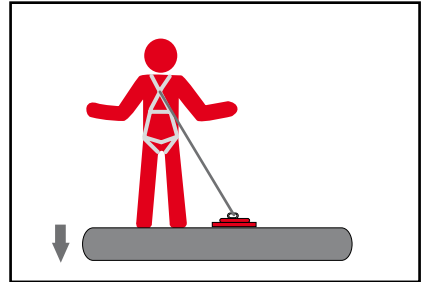
Have all components been attached correctly?



The anchoring device in use

B. Using the anchoring device

- When moving onto the wing, immediately attach the connector to the „mobile attachment point“ or directly onto the safety rope. More than 2 persons may never use the system at the same time!
- Always adjust the connector tightly -> no sagging rope!
- Check: Is the safety rope preloaded? Is the VACUUM ANCHOR display on „green“? CAUTION: If not, do not use the equipment! Inform the person responsible for assembly to check/fix the equipment!
- Pull the guide line lightly upwards to slide the „mobile attachment point“
- When pulled parallel to the safety rope, the mobile attachment point clamps onto the rope
- In order to pass by an intermediate anchor point, release the karabiner hook on the connector and immediately snap it onto the safety rope directly behind the intermediate anchor point!!
- If the vacuum is lost in the VACUUM ANCHOR due to a fault (leak, damage), an acoustic signal sounds = alarm. The safety system and danger area must be immediately vacated. The system must be given to an expert for careful checks/repairs.



CAUTION - DANGER OF DEATH:

- Do not use a connector without shock absorber!
- Always hold the connector taut = restraint function = no falling forces!
- Immediately stop any work if the „alarm“ sounds!

CAUTION:

Do not change the tensioning device (pulling the hand strap releases the safety rope!!)



Safety provisions

- There is a risk of fatal injuries if the safety provisions are not observed.
- PSA may no longer be used even in the event of slight damage.
- Damaged PSA or PSA and/or safety equipment that have been subject to a fall or are of dubious condition should be taken out of service **immediately**. The equipment should only be inspected by an expert or a workshop that has been authorised in writing by BORNACK. This needs to be documented in the inspection card.
- Autonomous modifications or repairs are prohibited.
- The safety harness is part of the personal protection equipment to prevent falling and should be allocated to a specific person.
- The PSA may only be used by trained persons that are familiar with the material and know how to use the equipment safely, and have been trained in the risks associated with its use.
- Accessories from other manufactures may only be used if approved by BORNACK; they may not impair the function or safety of the protective equipment.
- Clothing and shoes should be suitable for the application and respective weather conditions.
- The harness should be set to the personal body size (including appropriate clothing).
- Only use when completely healthy.
- Protect the safety ropes, harnesses, fall arrest device and guide rope against the effects of heat (e.g. welding flames or sparks) and chemicals (acids, lyes, oils, etc.) and sharp edges etc.
- The local safety regulations (e.g. in D of the Guidelines BGR 198, 199 of the professional associations) and the relevant industry-specific accident prevention regulations need to be observed.
- The instructions of use for the VACUUM ANCHOR must also be observed. This particularly applies to checking and maintaining the device.
- When using this PSA as a fall arrest system (free fall is possible) it is compulsory that a safety harness that meets the standards of EN 361 is used.
- Before work is commenced, an emergency plan (rescue plan) needs to be drawn up for the respective work situation by the responsible person stating how a person who has fallen can be safely and quickly rescued from the hanging situation and first aid administered. Rescue actions like this need to be performed within 10 to 30 minutes. BORNACK assists you here by drawing up tailored rescue plans and incorporating your rescue plan into the training courses. BORNACK-hotmail

Miscellaneous

Storage

- Dry the wet PSA before putting it into storage.
- Store in a dry, dark place.
- Do not store the textile components such as the harness and safety rope close to radiators or heat sources.
- Do not allow the safety equipment to come into contact with aggressive substances (oils, greases, acids, chemicals, etc.)
- Store safely and transport in a device case or bag.

Maintenance and care

- Rub wet equipment dry with a soft cloth.
- Dry the wet harness and safety rope in the air and not on artificial heat sources.
- Carefully brush soiled textile components or clean with lukewarm water and a little mild detergent. Then rinse thoroughly. Other detergents are prohibited and can destroy the material!
- Protective equipment that is looked after will retain its function for longer!

Repair

- For liability reasons, repairs may only be performed by BORNACK.
- Only original parts from BORNACK may be used.

Inspection

- Perform a visual and functional test before each use.
- The anchoring device and harness with connectors may only be used for a maximum period of 6 years from the production date (refer to label for year of manufacture)
- Regularly allow the anchoring device, harness and connecting elements (at least once per year) to be tested by an expert and allow the test result to be entered in the inspection card.

Information

Sollte die Ware in anderssprachige Länder

If the goods are sold in other foreign-language countries, the dealer must ensure that the instructions of use are supplied in the respective national language. The respective translation needs to be authorised by BORNACK.

If you have any further questions relating to the safe use of this rope protection equipment or further services by BORNACK, such as

- Hazard analyses
- Emergency plans
- Training courses
- Inspections by experts

please contact the following e-mail hotline with your enquiry:

hotline@bornack.de

We will be happy to help you!

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