

Cascade Nordic Ski Patrol

Directions for

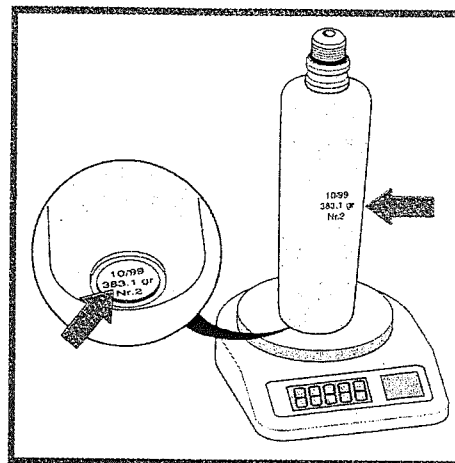
using

ABS Packs

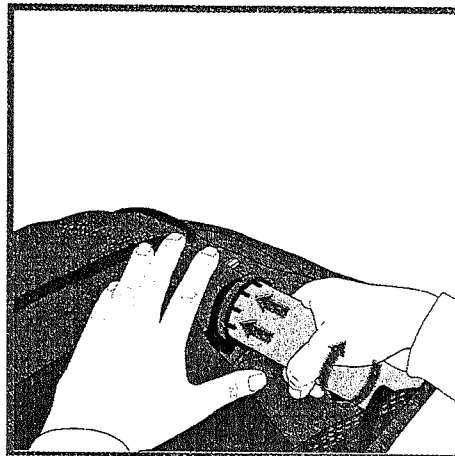
Note: Please read carefully. Do not use packs without reading thoroughly. (Improper use could cause the pack to fail for the next user.)

After using, please make sure pack is completely dry and locked in a secure location.

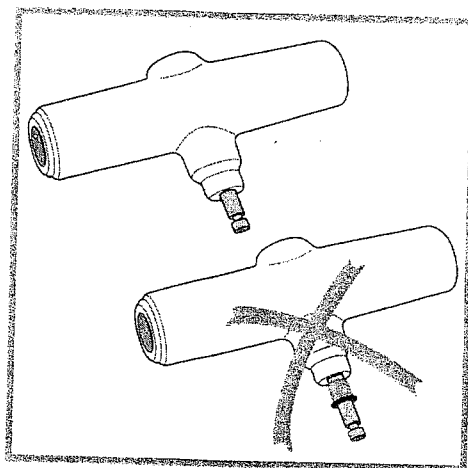
- D** Patronenfüllung ohne Schutzkappe kontrollieren. Die Gewichtsangabe finden Sie am Patronenboden oder seitlich an der Flasche.
- E** Check cartridge weight without protection cap. You find the indication of weight on the bottom or side of the cartridge.
- F** Le contrôle de la cartouche sans capuchon de protection. Le poids est indiqué sur le côté ou sous la cartouche.
- I** Controllare contenuto della cartuccia senza cappuccio di sicurezza. L'istruzioni del peso si trovano sul fondo della cartuccia oppure sul fianco della bottiglia.



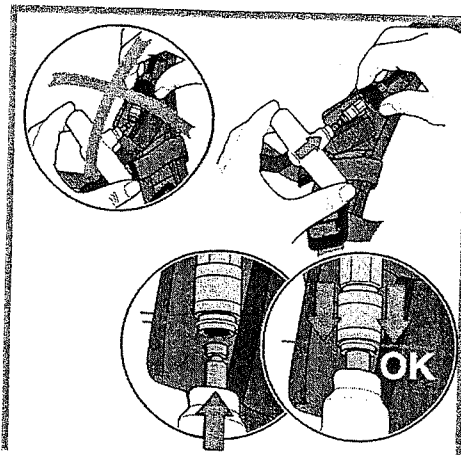
- D** Patrone bis zum Anschlag fest einschrauben.
- E** Make sure to screw the cartridge in all the way.
- F** Visser la cartouche jusqu'à la butée et bien serrer.
- I** Vitare fortemente cartuccia fino all'arresto.



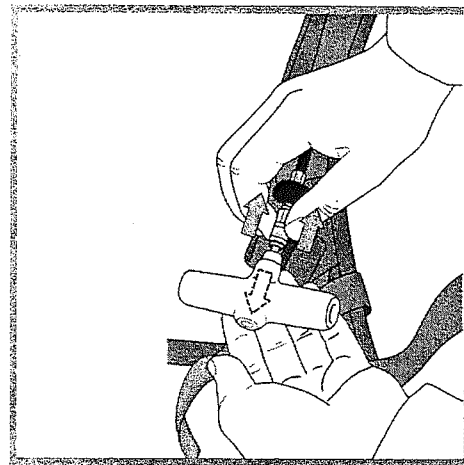
- D** Auslösegriff kontrollieren. Der Stift muss fest sitzen und es darf keine rote Bänderole sichtbar sein. Keine beschädigten Griffe verwenden, sonst beim Auslösen Berstgefahr.
- E** Check release handle. The pin must be unmoveable and the red banderol must not be entirely visible. Do not use any damaged handles – danger of exploding (bursting).
- F** Contrôlez la poignée de déclenchement. La tige métallique ne doit pas avoir de jeu. On ne doit pas voir la bague rouge. N'utilisez jamais une poignée de déclenchement endommagée, lors d'un déclenchement il y aurait un risque d'explosion.
- I** Controllare il manico di scatto. Il perno deve essere bloccato e la fascetta rossa deve rimanere nascosta. Non usare manici danneggiati, pericolo di scoppio.



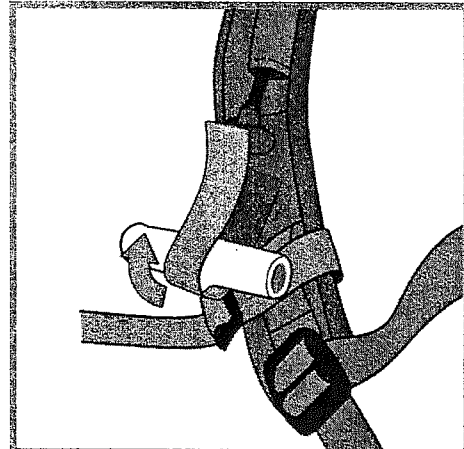
- D** Auslösegriff andocken. Stift gerade ansetzen und Griff hochschieben. Die Schiebehülse schnappt automatisch zurück. Nur dann ist der Griff einsatzbereit fixiert.
- E** Attach release handle. Push handle straight up until it clicks in. Only then is the handle attached properly.
- F** Branchez la poignée de déclenchement. Présentez la exactement en face de la prise rapide et introduisez-la. La bague de verrouillage doit se mettre en place par elle-même – la poignée de déclenchement est prête à l'emploi.
- I** Agganciare il manico di scatto. Appoggiare il perno in modo diritto e spingere verso l'alto il manico. La boccola di spinta si chiude di scatto automaticamente. Solo a questo punto il manico è fisso e pronto all'uso.



- D** Zum Abnehmen des Griffs nur die Schiebehülse hochdrücken. Der Griff fällt ab, ohne dass daran gezogen werden muss.
- E** To detach the handle push the bayonet catch up. Handle will fall out automatically.
- F** Pour débrancher la poignée, remontez la bague de verrouillage. La poignée doit tomber d'elle-même, sans que l'on ait besoin de tirer dessus.
- I** Per togliere il manico basta spingere verso l'alto la boccola di spinta. Il manico si stacca senza che debba essere tirato.



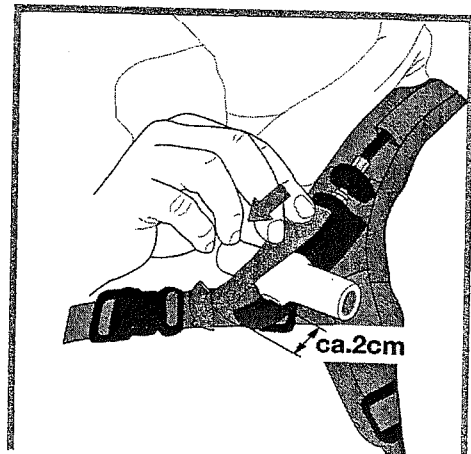
- D** Klettband fest schließen.
- E** Close velcro.
- F** Fermez soigneusement le velcro.
- I** Chiudere bene i nastri di velcro.



- D** Hüft- und Brustgurt fest schließen. Schrittgurt anlegen wenn Hüftgurt locker getragen wird.
- E** Close hip and chest straps tightly. Wear safety belt (footfall straps) when loosening hip straps.
- F** Fermer la ceinture ventrale et la sangle pectorale, fermer les sangles sous-cutales si la ceinture ventrale n'est pas fermée à fond.
- I** Cinturini per le anche e pettorali allacciare con forza. Mettere la cintura inguinale, se non si vuole stringere il cinturino per le anche.



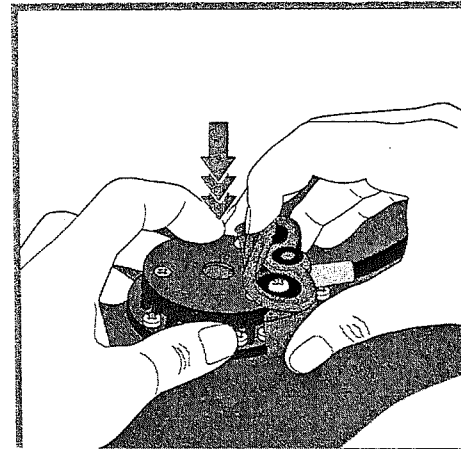
- D** Vor dem Ski fahren das Klettband ca. 2cm lockern, damit leichte Auslösung möglich ist.
- E** Before skiing loosen the Velcro about 2 cm for an unproblematic release.
- F** Avant d'aller sur le terrain, déserrez le velcro de 2 cm environ pour permettre le déclenchement.
- I** Prima di sciare sciogliere il nastro di velcro per 2 cm ca. per facilitare un eventuale scatto.



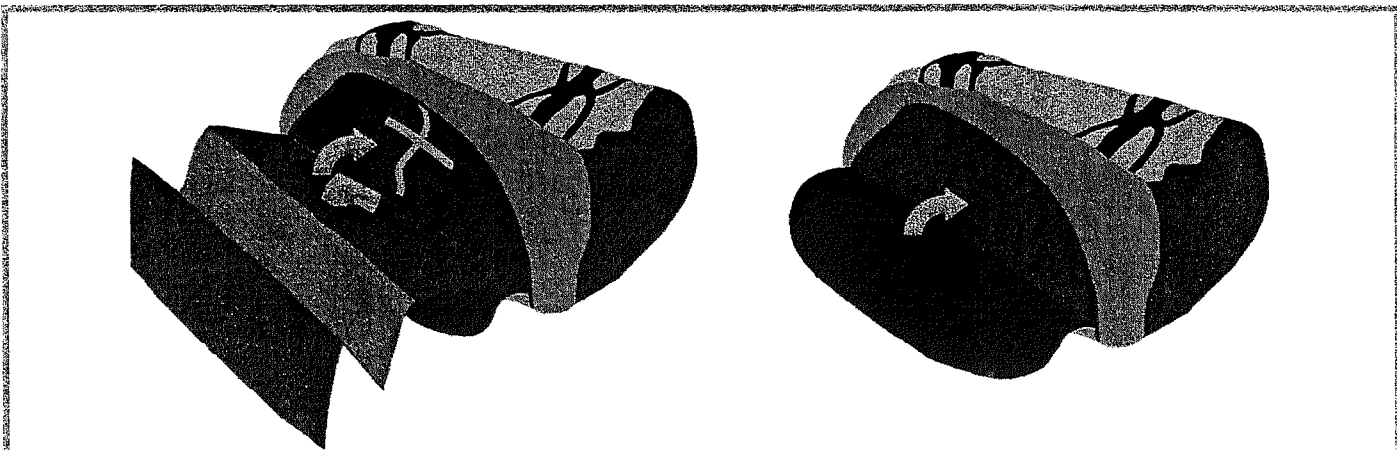
- ☐ Auslösen durch kräftigen, ruckartigen Zug. Darauf achten, dass der Auslösegriff ohne Behinderung erreicht werden kann.
- ☐ Release with a strong, rapid pull. Make sure you can reach the handle at all times.
- ☐ Veuillez à ce que la poignée de déclenchement soit facilement accessible. En cas de besoin, tirez vigoureusement sur la poignée.
- ☐ Far scattare con un tiro forte e brusco. Accertarsi che il manico di scatto sia ben raggiungibile.



- ☐ **Nach Gebrauch:** Airbags durch Drücken des Ablassventils (rote Abdeckkappe hochklappen, roter Druckknopf im Zentrum der schwarzen Kunststoffplatte) bei gleichzeitigem Gegendruck auf den Airbag vollständig entleeren.
- ☐ **After use:** Deflate the airbags via a red button underneath the plastic cover on the suction valve. Press the button and compress the airbags simultaneously to deflate completely.
- ☐ **Après usage:** Videz complètement l'airbag en relevant le capuchon rouge de la valve «Ventury» et en appuyant simultanément sur la purge (poussoir rouge) et l'airbag.
- ☐ **Dopo l'uso:** Sgonfiare gli airbag premendo la valvola di scarico (alzare il cappuccio di copertura rosso, bottone rosso al centro della



- ☐ Der gesamte Airbag muss zieharmonikaförmig gefalten werden. Das Ablassventil (schwarze Kunststoffplatte) soll frei am Netz zum liegen kommen. Klettverschluss schließen. Patrone und Auslösegriff austauschen.
- ☐ The whole airbag must be folded in a concertina matter behind the plastic plate. The release valve has to lie freely on top of the netting. Close Velcro. Exchange cartridge and release handle.
- ☐ Les airbags doivent être pliés soigneusement en accordéon. Les valves venturis (plaquettes en plastique noir avec capuchon rouge) doivent poser librement contre le filet du sac. Changez cartouche et poignée.
- ☐ L'airbag deve essere completamente piegato a fisarmonica. La valvola di scarico (lastra nera di plastica) deve arrivare ad appoggiarsi libera sulla rete. Chiudere il velcro. Sostituire la cartuccia ed il manico di scatto.



DIRECTION FOR USE

As with many other rescue devices the personal ability of the user regarding the handling of the apparatus is vital. The handling of the system is very easy but has to be done exactly according to the steps outlined below:

1. Inspect cartridge and weigh it. The weight given by the manufacturer is given on the sticker on the bottom of the cartridge, as well as the date of filling. **The weight given does not include the protection cap!**
2. Screw the cartridge in completely so that it is up to the back stop. **Make sure that the cartridge is screwed in tightly before every use of the airbag. Attention!** Always screw the cartridge in first then connect the handle. If you release the handle without an inserted cartridge you risk damage of the puncture unit. **The whole system has to be sent in to replace the puncture unit.**
3. Check the release handle. If a red ring is visible and you can move the pin then the handle has been used already and will render the entire system dysfunctional. An unused handle has an **unmoveable** pin and only the top of the red banderol is visible. Release outside the system bears the risk of injury. Required force for release approximately 8 kg.
4. Connect handle to pressure hose coupling on the carrying strap of your backpack. Make sure that the coupling is clicked in and the handle secured. The Velcro has to be closed tightly outside the ski area to avoid any unwanted releases, otherwise loosen it, so you do not have to tear it open when you need to release the airbags. To disconnect press the golden shaft around the coupling upwards, the handle will disconnect automatically. The handle must be easily accessible and fixed to chest level. The coupling can be easily readjusted and the whole coupling together with the pressure hose can also be attached to other carrying straps, i.e. serve left handed users without any inconveniences.
5. Adjust all carrying elements to the size of your body and ensure that the weight of the backpack lies on your hips rather than your shoulders. Fasten ALL safety belts and straps tightly to guarantee that the backpack stays attached to your body! The attachment of the release handle to the carrying strap is height adjustable. The ideal height is between chest and shoulder blade. The ABS backpack is a rescue device which

only can help you in an emergency if it stays on your body and you can easily reach the release handle. If you wear mittens test if you can easily release the handle, if not, wear gloves. Close hip strap tightly.

6. Close footfall straps.

7. The airbags are deflated via a red button underneath the plastic cover on the suction valves. Compress the airbags to deflate and fold the airbags underneath the black plastic bases with the valves. The red cover of the bottom has to be on the very top and the airbag has to lie with the plastic bases on the nets in the side pockets. In the Freeride model the plastic covers with the suction valves face the user when closing the airbag. The entire Airbag has to be folded in a concertina way behind the plastic bases.

IN ACTUAL OPERATION

The Release

Pull the handle forcibly. The airbags inflate independent of whether you are skiing, have fallen over or are already caught in the snow masses. It takes approximately two seconds for the airbags to be fully inflated. As soon as you are caught by the avalanche, or before you are caught, pull the handle without hesitation. The inflated airbags to not hinder your escape, which you must do in any case.

Your conduct in an Avalanche

When you have released the handle concentrate on your path down the mountain. The inflated airbags generally prevent you from falling backwards or head over heels and you should try and use your arms, making swimming movements, push away obstacles, try to stabilize and protect your head. The airbags do not obstruct you at all. In this scenario your skies are more of a danger to you and the airbags and they disturb the buoyancy. Try twisting your boots out of the bindings. Never use ski retention straps and no stick loops! Try to keep your mouth closed. Try to create a breath cave by holding both hands in front of your face and taking in an embryo position.

After- Use -Repacking

Compress the airbags to deflate and fold the airbags underneath the

11

black plastic bases with the valves. The red cover of the bottom has to be on the very top and the airbag has to lie with the plastic bases on the nets in the side pockets. In the Freeride model the plastic covers with the suction valves face the user when closing the airbag. The entire Airbag has to be folded in a concertina way behind the plastic bases. If you have been caught by an avalanche you should send us your complete backpack for inspection!

Statistical Analysis

Please inform your supplier if you have had to release your system. The Federal Institute for Snow and Avalanche Research administers a central statistic. The experiences from actual releases are very important to us in the further development of the system. You can request the questionnaire for your specifications directly from us (tel. 0049 89 898789-0 or per mail info@abs-airbag.com) – you can also find it as Online Form under www.abs-airbag.com/ABS-Info/Downloads.

If you return this questionnaire you will receive the refill of the cartridge free of charge.

PRODUCT INFORMATION

With the purchase of an ABS apparatus you have acquired a piece of equipment whose functions and mechanisms are based on many years of experience in the study of avalanches and rescue statistics. Of central importance is the fact that 90% of all victims (alpine skiers & snowboarders) who are caught and buried by avalanches are alive once the avalanche has stopped moving. Because most of them are buried they cannot free themselves and they are frequently not visible to potential rescuers. Now the race against time begins, and anyone buried alive is ultimately bound to lose that race within a few minutes. The main obstacle to a successful recovery is that the victims are on average buried one meter or deeper. Often the recovery takes more time than the victim has to survive in those depths. The most important task of the ABS system is therefore to prevent the burial by the avalanche. The ABS provides, in a matter of seconds, the physical requirements necessary to fulfil this task. If the volume of any body or object is suffi-

ciently high then it will be swept to the surface by the rolling masses of snow. If the volumetric weight of these bodies or objects is less than that of the surrounding snow then they will stay on the surface. They cannot sink back down into the snow masses. If the volumetric weight of these bodies or objects is higher then they immediately sink back. The volumetric weight of light, dry "powder" snow is very low even when compressed as an avalanche. In unfavourable circumstances the volumetric weight is only about 400 grams per litre. The volume of the airbag system equilibrates the volume of the human body to that of the surrounding snow. To remain on the surface of the avalanche, and to be immediately visible, guarantees by far the best chances of survival. With the purchase of the ABS Avalanche Airbag System you are creating that possibility.

WHEN USING THE ABS SYSTEM THE FOLLOWING THINGS HAVE TO BE KEPT IN MIND:

- The ABS System does not prevent avalanches
- Every avalanche implies absolute danger to one's life, whether you are equipped with the ABS System or not
- Under no circumstances should the ABS System increase your readiness to take risks
- The effectiveness of the ABS System is limited to the prevention of burial by the avalanche. There may be circumstances under which this might not be possible or possible only to a limited extent
- The ABS System has to be released by the user himself. The mandatory system test is, as the name suggests, vital in guaranteeing that the user reacts sensibly in an emergency.

For your own security we suggest that you perform a test release 1x per season.

- The ABS System demands careful handling and accurate check of functionality before every use.
- The ABS System together with the authorized backpack (identifiable by the ABS logo) is tested according to the PSA Guidelines 89/686 EWG by TÜV Product Service, Ridlerstr. 21, D-80339 München - examining authority number 0123, and therefore meet the criteria for the CE label.

COMPONENTS

Airbags

Each of the two airbags has a volume of 85 litres (3 cubic ft) in filled condition. They are filled simultaneously, however, have separate closure and suction valves. If one of the airbags is damaged, then the other will remain filled for a sufficient amount of time. The airbags are two-layered and have a tear-resistant outside cover. The inner pressure amounts to around 0,1 bar.

Suction and release valve

This combination part is directly fitted to both airbags. In the black plastic base with the suction openings on the side is also the push button of the release valve. It is protected by a red plastic cover from undesired pressure. To initiate the release, lift up red cover and press the red button. Remove air by compressing the inflated airbags.

Puncture system

The puncture system for the cartridge is accessible via the flap in the back part of the backpack. Here the cartridge will be screwed in. There is additional space for a replacement cartridge with release handle. Please ensure it stays clean and no other objects in the backpack can damage it.

Release System

The release system is made up of the pressure hoses with the golden shaft and the white release handle. The release handle is equipped with a release cartridge by the manufacturer. The release cartridge explodes when the handle is pulled and the resulting air pressure triggers the puncture of the nitrogen cartridge. The nitrogen together with the surrounding air that is being sucked into the airbags by the Venturi nozzles (i.e. the suction valves) fills the airbags. Both airbags are inflated within 2-3 seconds.

The release handle can only be used once and has to be refilled just like the nitrogen cartridge. Never connect the release handle when the cartridge is not screwed in. If the system is released without a cartridge the system has to be sent in for inspection. The release handle must only be attached to the release system and released there.

Do not release the system by hand, nippers etc. You would be risking severe injuries. The required release force amounts to approximately 8 kg. Should dirt have entered the release handle please do not try to clean it yourself but send it in for inspection. The handle must not be subject to any unusual strain, like mould pressure, strokes or cracks. **If the handle is damaged it could burst upon release of the system.**

The attachment of the release handle on the carrying strap is height adjustable – release belt of the upper plastic buckle, adjust height and push belt back through loops. The optimum position is between chest and shoulder.

Cartridge

Only original ABS cartridges **must** be used. Look for the ABS logo to ensure this. The cartridges are also equipped with a protection cap. Before use remove the cap and screw in the cartridge until it reaches the backstop. Empty cartridges must be returned including the protection cap.

A completely filled cartridge is absolutely necessary for the ABS System to function. Therefore it is extremely important to weigh every cartridge before use and compare the weight to that given on the sticker on the bottom or side of the cartridge. The cartridge must not show any sign of fracture or be damaged in any other way. The sticker identifies weight without protection cap and date of filling.

Under no circumstances should any manipulations on the thread be undertaken. You should be able to screw the cartridge up to the backstop easily. Should obvious resistance be met while screwing in the cartridge, or if it is difficult to screw the cartridge in completely, then the cartridge must not be used. There could be a defect in the threads which would render the entire System dysfunctional. The cartridges have been manufactured to withstand temperatures from 40°C to -50°C degrees (104°F to -58°F). Exchange of cartridges and refilling may only be done by the ABS-Supplier.

Under no circumstances must the cartridge be placed on hot surfaces (stoves, rear window of car, etc.), be thrown around, or placed underneath heavy objects. The cartridge could explode. **Tampering with the cartridge endangers life!**

To transport the cartridge outside the backpack please use a Styrofoam box for both cartridge and release handle.

The transport on commercial airplanes is allowed according to IATA-DGR Table 2.3.A under following conditions: A maximum of two release units per backpack. The release handle must not be attached. The airline must be informed in advance and only genuine ABS release units must be carried – it is best to get it noted on your ticket when booking.

Carrying Straps and Belts

The authorized carrying system is identified by the ABS logo. The various straps and belts, materials used and method of construction, are geared to resist the forces of an avalanche and have been safety tested by the safety standards authority (TÜV). The tight closure of the metal waist belt buckle, the chest straps as well as the safety belt is imperative in order to guarantee that the bag is not torn away from the victim. Should one or more of the safety belts not be closed properly it can not be excluded that the backpack stays attached to the victim. All safety belts and straps must be worn tightly.

Maintenance, Storage, Transportation, Cleaning

The ABS system is maintenance free if you check the condition as follows: Both Airbags should be unfolded at least once a year. **We also recommend an annual test release, best at the start of the season.** You can train a realistic release in a harmless area. You should also check the condition of the backpack, the buckles and belts, Velcro straps and, if appropriate, the nets in the side pockets. We recommend connecting the release handle only if you wear the backpack, so as to

avoid undesired releases. While storing or during transportation avoid exposure to any kind of pressure. Make sure that the replacement cartridge has the protection cap screwed on. Under no circumstances use aggressive agents for cleaning the material of bag or backpack. We recommend to use soap only. Avoid the freezing of the suction valves of both airbags as this might reduce their functionality. The golden shaft on the pressure hose should be kept smooth by regularly putting on a couple of drops of some acid free oil – sample tube of silicon oil is attached and can also be ordered by ABS. The handle should always be easily attached to the hose, if you press the golden shaft upwards the handle has to fall out by itself.

Make sure that the cartridge is screwed in tightly before every use.

LIFETIME, SERVICE INTERVALS

The lifetime obviously depends on how many times the System is used but, if the annual check is carried out, we recommend the first service after two years. However, this service is obligatory after three years. The first service will be free of charge (P&P will have to be paid) provided that the airbag is sent in no later than three years after the date of purchase. The owner will have to produce a receipt, otherwise the date of manufacture will be relevant. If the material is subject to wear and tare the entire system can be transferred to a new backpack. This service must only be carried out by the manufacturer.

1. What is it exactly that the ABS is able to do?

The ABS keeps you on the surface in case of a running avalanche. It prevents you from getting buried under the snow mass. It prevents complete burial. Most of the avalanches in which alpine skiers can get caught are running avalanches and they are mostly released by the skiers themselves. Most avalanche victims do survive the actual fall in the avalanche. However, approximately half of these victims are completely submerged. Three out of four (75%) of the completely buried victims have a blocked airway or are unable to breathe properly due to the enormous pressure on their chest. In a situation like this the victim will survive for only a few minutes. After a maximum of fifteen minutes the chances of survival drop drastically. The Avalanche Airbag prevents the burial. The avalanche will drag you with it but you will stay on the surface and therefore have the best chance to survive.

2. How does the ABS work?

The avalanche is a moving mass of snow. It consists of many tiny snow crystals, which start a powerful rotation once the avalanche is moving downwards. In this rotation all bodies which are larger than the snow crystals will automatically be pushed to the surface. However, on the surface area the rotation slows down as does the buoyancy and it is then important that the volume of the skier at least equals the volume of the avalanche snow at the same mass and weight. The snow of a powder avalanche in mid winter has approximately 2.5 times the volume per kilogram weight, as does the volume of a person. The numbers are as follows: one kilogram of powder snow has a volume of approx. 2.5 litres. One kilogram of a person has a volume of 1.03 litres, a little more than a litre. A person at 100 kg therefore has a volume of 103 litres. However, 100 kilograms of mid winter avalanche snow have a volume of 250 litres. In order to swim on top of this avalanche snow the person needs 100 kilograms of weight and a volume of 250 litre.

The Avalanche Airbag can handle such extreme situations. It has a volume of 150 litres and is therefore able to make up for the missing volume of a person weighing 100 kilograms. The skier is no longer able to sink into the avalanche. Without the Airbag he/she would sink down immediately after the buoyancy effect has pushed him/her to the surface.

To put it simply: the buoyancy dynamic due to the rotation of the snow crystals pushes the victim to the surface. The airbag makes up for the missing volume and therefore prevents the burial.

(For your personal information: This buoyancy phenomena, caused by the snow particles, is also the reason why only half of the victims are buried, they are the lucky ones who, as soon as they reach the surface are pushed out of the avalanche either by terrain formations or other circumstances and therefore escape burial).

top

3. The Airbag may work in powder conditions but nobody has a chance in heavy snow!

In heavy snow the opposite is the case. The heavier the snow the more dense it is and the smaller the volume. Typically wet spring snow weighs 500 or 600 grams per litre. This means its volume is now just under 2 times greater than that of a person. Therefore the Airbag could have less volume or be smaller. From this point of view the wet spring snow is much less difficult than the dry, cold powder snow.

It is a fact, however, that the chance of injury increases with wet spring snow. It has to be taken into consideration that most of the avalanches are triggered by the skiers themselves and the power of the snow is therefore relatively weak. The dangerous mechanical pressure of a wet avalanche can be as much as several tons pressing on the body does not exist on the surface. The wet avalanche is therefore less dangerous for the ABS-user.

4. What happens if I get caught in an avalanche in the valley or at the bottom of a run?

If the skier is already down in the valley and the avalanche comes thundering down his chances of survival are zero even with the Airbag. The masses of snow literally strike the victim down and bury it. With 30 or 40 meters above the valley bottom and an avalanche release 200 to 300 meters up, the survival chance is still minimal. Zero without the Airbag and slightly greater with the Airbag if the avalanche has a good runout. In this case it is possible to stay on top with the ABS and only receive injuries due to the impact of the snow masses.

All in all it must be said that this situation represents less than 5% of all avalanches involving skiers.

5. Have skiers already been saved with the ABS?

Yes, there are already approx. 70 documented cases where without a doubt the ABS saved lives. One can assume that this figure would be much higher if the unreported cases were included.

6. I have to trigger the ABS by myself. Do you think everyone is capable of doing so in an avalanche situation?

Absolutely. Most of the activating is executed once the skier has fallen. Quite often the skiers are not aware that they released a slab and only activate the ABS once they fall. The Airbag reaches half of its volume within one second and is filled after another 1.0 or 1.5 seconds or so. This is enough time to stay on top even in the case of short slabs. The Airbag inflates itself once the victim has already been caught in the avalanche.

The only thing which needs practise is the pulling of the trigger. In order to do so it is important that it has been installed properly. The trigger must be located between the chest and the clavicle at all times. The Velcro straps should hold it in place so that it is always easily accessible.

The activation strength is approx. 8 kg.

top

7. What happens if the trigger gets caught somewhere?

The Airbag will inflate automatically.

8. How can I prevent unwanted activation?

The trigger should only be put in place when the person is ready to go skiing. We strictly recommend that the trigger is always stored in the waist pocket when not in use. An additional safety measure is the red Velcro strap at the trigger. The compact system (mechanical activation) requires the red trigger ring to be fastened with the red Velcro strap which needs to be loosened when in use. Otherwise more strength is needed for activation.

With the compact system it is also recommended to remove the cartridge after skiing and store it separately with the protective cap.

9. Is the additional safety belt absolutely necessary?

It is the regulation as per the manual. If the hip belt is not fastened properly the backpack could be pulled over the head when caught in an avalanche.

The additional safety belts which of course also have to be tightened will prevent this from happening.

A really tight hip belt, however, is sufficient in most cases.

10. Does the cartridge always remain attached?

It may stay attached. It should be weighed once in a while to ensure that it is still full. It is recommended to do this before each season.

top

11. How will I know whether the cartridge or trigger handle is filled?

How will I know whether the cartridge or trigger handle is filled? The cartridge can be checked by unscrewing the safety cap and checking the little sealing disc. If the cartridge has been pierced it will be easily visible. However, the possibility that the cartridge may not have a proper seal cannot be disregarded. The cartridge is under immense pressure. A hairline fracture, a defect seal or thread could cause a leak or loss in pressure and therefore the apparatus would malfunction.

It is therefore a must to check the weight. Each cartridge shows the weight on a sticker.

Should the weight differ by more than 5g, the cartridge should not be used.

With the trigger handle of the dual system the pin, which attaches to the pressurised hose must be affixed tightly. This can be checked by pulling slightly with your fingers. Most importantly a red band on the pin should not be visible as it is an indicator that the handle has already been activated. Attention! Do not under any circumstances pull

out the pin with pliers or your teeth. This could have serious consequences.

12. Is it advisable to carry an extra cartridge with a trigger handle?

Absolutely. In case of emergency you should not wait until you've been caught in the avalanche before activating the ABS. The trigger handle should be pulled as soon as there is a chance you could have released a slab. If this does not result in an avalanche all the better. You have reacted properly and activated the cartridge. In order to make the ABS functional again you need the extra cartridge with trigger handle. Cartridge and trigger handle are one unit, without the trigger handle the cartridge cannot be activated and an activated trigger handle without a full cartridge cannot fill up the airbags. Only with the compact system is the cartridge enough.

13. Does the ABS need maintenance and if so at what time intervals?

Does the ABS need maintenance and if so at what time intervals? The ABS is an article of rescue equipment which in the case of an emergency decides over life and death. The manufacturer recommends sending the ABS in every two years for a general check up. It is also recommended to do a trial activation with a full cartridge before each season.

The activation process should then be monitored closely, the proper sealing of the airbag and the general state of the complete ABS system must also be checked. The two year maintenance program includes a test to check the general functioning, changing of the seals and a thorough check of the whole system.

top

14. The cartridges and trigger handles are refillable. Can the cartridges be purchased at camping gas dealers?

The cartridges and trigger handles can only be filled by the manufacturer. Replacement cartridges and trigger handles are only available where the ABS is sold. This also applies in foreign countries.

15. Are there ice-up problems with the trigger handle of the dual system, with attaching the pin to the pressurised hose or with the activation itself ?

No - unless you create an ice-up yourself.

Care should be taken though to protect the Velcro closures at the adapter of the pressurised hose, no matter whether the trigger handle is attached or not. It is also important to handle the trigger handle with care and to avoid any soiling of the pin or its opening. Should it get dirty do not attempt to clean it yourself as you could provoke an unwanted activation and possibly cause an accident, replace the handle instead. You will only be charged for a refill.

Please also note that the trigger handle must not be attached unless a filled cartridge has been screwed in. Should the system be activated without a cartridge the prick system will be damaged and the whole system may therefore malfunction. If it happened anyway, send the ABS backpack in for a complete check up.

16. The cartridges for the dual system are different from the ones for the compact system, why is that and would it be possible to interchange them?

The cartridges for the dual system are different from the ones for the compact system, would it be possible to interchange them?

It is clearly marked on the cartridges in which system they have to be used. The cartridges for the dual system are shorter, fatter, uniform in shape and are bronze in colour. The cartridges for the compact system are black, longer and of a non-uniform shape. Both cartridges have a different thread and only fit with the appropriate system.

17. Can the ABS be taken into the airplane? What about heliskiing?

The backpack itself does not pose a problem. Problems arise with the gas cartridges. Every pressurised container is regarded as dangerous goods by the IATA and has to be declared as such. This means the airline company has to be informed a few days before departure in order to be checked in as carry on luggage or checked in luggage.

Generally there are no problems with heliskiing in Europe and in the Caucasus (there the company supplies the airbag). With the Dual System the trigger handle should be removed in order to avoid accidental or wilful activation in the cabin. No ABS backpacks should be kept near the pilot. An accidental activation in the back part of the cabin resulted in no harm to the unbuckled ABS-user nor the helicopter.

To this date **Klondike Heliskiing** in Atlin/BC is the only heliski company which uses the ABS and offers it to their clients free of charge. All other heliski operators do not equip their guests with the ABS system. It may take some time until these highly successful operators start to equip their guests with this very effective safety device and upgrade to European standards.

18. Once I have purchased an ABS do I still need a transceiver?

This is not a question about whether or not to have a transceiver, this is a question of priorities from the point of view of the avalanche victim. So far the thinking has been from the perspective of the rescuer. All activity comes from the outside and the avalanche victim stays passive. In this case the time factor is the biggest challenge. In locating the victims the transceivers are the best. However, no advances have been made to reduce the time it takes to dig the victim out. The only aid is the shovel. This reduces the chances of a successful rescue immensely and the fact remains that 2/3 of all totally submerged victims are dead at the time of rescue.

Every form of outside help is therefore considered a Band-Aid solution, the last of all possibilities. Even the most modern transceiver cannot change this.

A new way of thinking is required, away from the passive role of the avalanche victim, accepting burial and the exclusiveness of rescue, and towards an active rescue with one's own action. It is the not submerged and visible avalanche victims who survive in most cases. To prevent the burial by oneself is an active act and in most situations a successful rescue out of an avalanche.

Transceivers and shovels are aids to rescue others but in no way are they a prevention of one's own burial. It is a fact that, due to special circumstances i.e. extreme terrain formations, malfunctioning, technical defects etc., a burial in an avalanche cannot be counted out even with the airbag. There is no question that submerged victims with transceivers have a greater chance to be rescued than those without one.

The priorities when caught in an avalanche must include:

Active prevention of burial - which means the use of the ABS Avalanche Airbag
Additional use of a transceiver in order to facilitate a fast rescue by other skiers in case of a total burial.
Reliance on the assistance from fellow skiers depends on the use of the Avalanche Airbag. Because only the victim who is not buried will be able to help a fellow skier.