

# **ABS AVALANCHE AIRBAG SYSTEM**

## **Product Information and Instructions for Use**

### **DUAL ABS ONLY**

With the purchase of an ABS apparatus you have acquired a piece of equipment the function and mechanism of which is based on many years of experience in the study of avalanches, rescue data and statistics. Of central importance is the fact that 90% of all victims (alpine skiers) who are caught and buried in avalanches are alive when 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 with death starts, and anyone buried alive whose respiratory system is blocked, is ultimately bound to lose that race within 15 minutes at the most.

The most common cause of death among avalanche victims is suffocation due to a blocked respiratory system, which is even more tragic in the light of the fact that the 15 minutes for possible rescue were wasted. Therefore the most important task of the ABS apparatus is to prevent burial in an avalanche. The ABS provides, in a matter of seconds, the physical requirements necessary to fulfil this task. If the volume of any object or body is sufficiently high then it will be swept to the surface by the rolling mass of snow. If the volumetric weight of these objects/bodies is less than the surrounding snow they will remain on the surface. They cannot sink back into the mass of snow. If the volumetric weight of these objects/bodies is higher they immediately sink back. The volumetric weight of light, dry 'powder snow' is very low even when it is compressed as in an avalanche. In unfavourable circumstances the volumetric weight is just approximately 400 grams per liter. The volume of the airbag system is adjusted to that. The heavier (wetter) the snow of the avalanche, the less additional volume is required.

To remain on the surface of an avalanche, and to be immediately visible, guarantees by far the highest chances of survival. With the ABS-Avalanche Airbag System you can take advantage of this possibility.

## **Product Information:**

When using the ABS the following has to be observed:

- the ABS cannot prevent avalanches
- every avalanche means absolute danger to your life, whether you are equipped with ABS or not
- under no circumstances should using the ABS increase your readiness to take risks
- the function and effectiveness of the ABS is exclusively limited to avoiding the total burial of the person caught in an avalanche. There may arise situations where this will not be possible or only possible to a limited extent
- the ABS has to be released by the user himself. Practising this is vital in order to react properly in the case of an emergency
- the ABS requires careful handling and a careful examination of its readiness to function before every use
- The ABS together with the respective backpack is tested according to the PSA-Guidelines 89/686 EWG by TÜV-Produktservice, Ridlerstr. 21, 80339 München - examining authority number 0123.

## **Components of Apparatus:**

### **Airbags**

Each of the two airbags has a volume of 75 litres (2.5 cubic ft) in filled condition. They are filled simultaneously, however, have separate closure 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.

### **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 in the middle and keep red push button pressed. Remove air by compressing the inflated bags.

### **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.

### **Release system**

The release system is made up of the pressure hoses and the yellow release handle. The release handle is equipped by the manufacturer with a release cap. The release cap is activated by connecting it to the pressure hose on the carrying strap of the rucksack and by pulling the release handle. The explosion pressure moves through the pressure hose to the puncture system. There, the gas cartridge is activated, the content of which flows via pressure hoses to both airbags and there in combination with the Venturi nozzles fills the airbags. Filling time approximately 2-3 seconds.

The release handle can only be activated once and then has to be sent in together with the empty cartridge for refilling.

**Important: Never connect the release handle to the pressure hose if the cartridge is not screwed in.**

## **Cartridge**

Only original ABS cartridges may be used. Look for the ABS logo to ensure this. The threads on the cartridge are equipped with a protection cap. Before use remove the protection cap and carefully store it. Empty cartridges must be returned with the protection cap.

### **A completely filled cartridge is absolutely necessary for the ABS to function.**

Therefore, it is extremely important to carefully inspect the cartridges before use. The bronze seal in the thread of the cartridge must not show any sign of damage, fractures, cracks or other irregularities. Every gas cartridge is supplied with a sticker on which is written the total weight of the cartridge (filled, without protection cap) as well as the date of filling. A reliable control of the readiness for use of the cartridge is possible only by weighing the cartridge again and comparing this weight to the weight written on the sticker. This must be done before every use. If there is a difference of more than 5 grams the cartridge must not be used. The danger of a loss in pressure and thus a restricted functioning is given. Possibly check weight again on electric scales. It is also important to inspect the o-ring on the cartridge for cracks and damage. Damaged o-rings must be replaced

Under no circumstances should any manipulations of the thread be undertaken. You should be able to screw the cartridge up to the backstop easily. If obvious resistance is met while screwing in the cartridge or if it is difficult to screw the cartridge in against the back stop then this cartridge must not be used. There could be a defect in the threads thereby making a puncture and airbag deployment impossible. Such a cartridge is not ready for use. The cartridges have been manufactured for use in temperature extremes from 40°C to -50°C (104° f to -58° f) and can be transported, with the protection cap screwed on, in any commercial airplane/helicopter without making any special arrangements. Empty cartridges may be refilled. The exchange of cartridges is possible only with the ABS-supplier directly. The cartridges contain only non dangerous nitrogen as found in the immediate atmosphere. But because of the high pressure of 300 bar (4500 psi), the cartridges may only be punctured while in the ABS housing.

Important! Under no circumstances should full cartridges be placed on a hot surface (stoves, rear window of car, etc.). Neither should they be thrown around or be covered by heavy objects. The cartridges could explode ! - Do not forget - tampering with the cartridges in any way can endanger life.

## **Suspension or Carrying System**

The authorized suspension system is certified by the ABS logo. These suspension systems, their materials used, their method of construction and their operational function, are geared to the particular requirements of the ABS equipment and have been safety-tested by the safety standards authority (TUV). The tight closure of the metal waist belt buckle, the chest straps as well as wearing the safety belt is imperative in order to guarantee that the ABS apparatus and the suspension stays connected to the wearer in an avalanche. Otherwise it cannot be excluded that the ABS is torn away from the body in an avalanche.

## **Maintenance, storage, transportation, cleaning**

The ABS apparatus and the backpack are maintenance-free if you observe checking the condition as follows: Both airbags should be unfolded at least once a year. You should also regularly check the condition of the backpack carrier, the buckles, the net of the bags of the airbag, and the Velcro straps. We recommend connecting the release handle only if you wear the ABS backpack and only if the main cartridge is installed. Thus, you may avoid undesired releases. While storing or during transportation avoid exposure to any form of pressure (don't put the pack on bottom of the gear pile). Make sure that cartridges separated from the apparatus are secured with the protection cap on top. Under no circumstances use any aggressive agents for cleaning the material of the airbag or rucksack, only use soap water if possible. Avoid freezing of the input valves on the airbag (black plastic base). This may reduce proper functioning.

## **Lifetime - Service Intervals**

The lifetime of the airbag depends mainly on how often the airbag is used. Provided that an annual check of the condition is carried out, we recommend to send in to us the complete ABS-backpack after two seasons for service. However, at the latest after 3 seasons the service is obligatory. The first service will be free of charge. Only costs for freight and packaging have to be paid for. The service will only be free of charge if the airbag has been sent in after 3 seasons from the date of purchase at the latest. Please enclose the receipt of purchase for the airbag as otherwise the date of manufacture will be relevant.

## **Instructions for Use**

As with many technical rescue devices also in the case of the ABS the functioning without any compromise and the personal ability of the user to handle the apparatus is of vital importance. The handling is easy, however, has to be exactly followed step by step as described below:

1. Inspect cartridge and o-ring before screwing in, unscrew protection cap, weigh cartridge, compare weight with that written on the label of the cartridge. . If there is a difference of more than 5 grams the cartridge must not be used. There may be the danger of a loss in pressure and danger of improper inflation.
2. Screw the cartridge in and up to the back stop. **Attention!** Always screw the cartridge in first, before you attach the release handle. If you release the release handle without having screwed in a cartridge, you risk damage of the puncture unit. This would also mean that you puncture the next cartridge when screwing in. If this still has happened to you, then you must send in the apparatus for readjustment.
3. Check release handle. If a red ring becomes visible on the pin and the pin can be moved, then the filling of the cartridge is completed and the release handle cannot be used anymore.
4. Connect release handle to pressure hose coupling. Make sure that the coupling clicks into place and that the release handle is in a fixed position. It is very important that the Velcro straps and the coupling close tightly so that you cannot open the coupling by mistake or unintentionally. To remove the release handle you have to open the Velcro straps and to move the sliding case of the pressure hose coupling upwards. Check position of the release handle. It has to be easily accessible and fixed on chest level. By opening the wide Velcro strap you can easily change the position and then readjust by means of the pull cord. The pull cord always has to be very tight to guarantee an immediate release.
5. The airbags have to be folded in the bags in such a way that the black base of plastic together with the red cover cap lies freely on the net in the bag. Consequently, the entire airbag has to be folded behind it, on the plastic base. First close the inside and then the outside by means of the Velcro closure.
6. Adjust the carrying elements of the backpack to the size of your body. Make use of the various adjusting possibilities. The ABS-backpack primarily serves as a rescue device and the system can only be of use for you, if, in case of an emergency, the backpack stays on your body. Fasten safety belt, if possible by forming a loop of the belt.

## **In Actual Operation**

### **The Release**

Pull the release handle forcibly. The airbags self inflate, independent of whether you are skiing, have fallen over, are lying on the airbag or have been caught in the snow masses. It takes approximately 2 seconds for the airbag to become fully inflated. As soon as you are caught or will be caught in an avalanche, release the airbag immediately without any hesitation. The inflated airbags do not hamper you while trying to escape which you must try to do in every case.

### **Your Conduct in an Avalanche**

When you have released the handle, concentrate on your path down the slope. The inflated airbags, in general, prevent you from falling backwards and from being humbled head over heels. Thus, you can use your arms, make swimming movements and push yourself away from obstructions, to stabilize yourself and to slow yourself down. The airbag does not hinder you in any way whatsoever. The skis are more of a danger to the person and the airbag, than they are as an impairment to the buoyancy. In this case try twisting out of your bindings and, of course, never use ski retention straps. If possible keep your mouth closed.

### **After-Use-Repacking**

Completely remove the air from the airbag by pressing on the air release valve (lift up red cover cap, red push button in the center of the black plastic base) while at the same time compressing the airbag. When folding, take care that the black plastic base lies freely on the net cover and that the complete airbag is folded behind it. After use check all components of the ABS apparatus as well as of the suspension system, against possible damage. In any case you should undertake an airbag test release. If you have been caught in an avalanche you should send in to us the complete ABS for inspection.