



FIPS 2012 – CHATEL

ABS AVALANCHE AIRBAG

STATISTICAL AND TECHNICAL REVIEW

17/04/2012



HISTORY

25 YEARS OF EXPERIENCE



1970 Inverse segregation principle discovered

1985 First official ABS presented at ISPO 1985.

1996 First **double airbags system**. New inflating system : **double venturi valves**. Release of the **pyrotechnical activation** instead of the cable.

Many tests on airbags place, mode of attachment, material used...

2007 **VARIO SYSTEM :**

- Modularity
- Lighter
- More confort
- Evolutive

1985



1989



2007 : THE VARIO



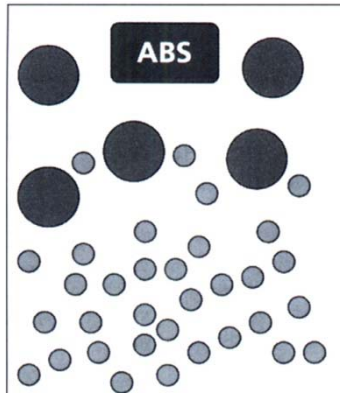


ABS | PRINCIPLE

The inverse segregation



The theory : THE INVERSE SEGREGATION



« in a granular fluid in motion such as an avalanche, the particles will sort according to their volume, so that the larger particles are more likely to be on the surface, while the smallest are rather localized in the lower flow »

The practice : ABS SYSTEM



CONDITIONS TO STAY ON TOP

- Avalanche in mouvement
- 170 L additionnal volume

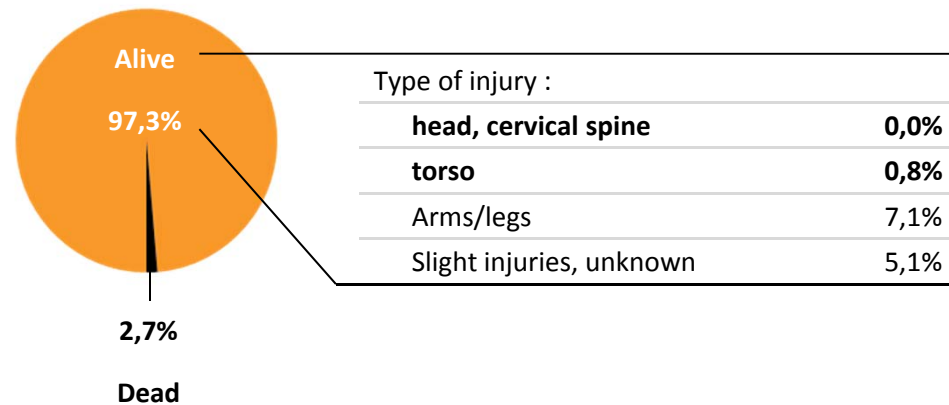


ABS | STATISTICS



KNOW AND REPORTED AVALANCHE ACCIDENTS WITH ABS

Realised by the Institute for Snow and Avalanche Research (SLF, Davos), August 2010 (n=262)



- The ABS is clearly efficient but doesn't replace cautiousness and experience
- The dead cases are identified as follows
 - avalanche size exceeds physical limits of the system
 - Burial caused by the specificities of the field or avalanche (double avalanche, basin, canyon, etc)
 - Cliff jumps



ABS | STATISTICS



ABS AIRBAGS ACTIVATIONS IN AVALANCHE CASES REPORTED IN FRANCE (1996-2012)

ABS ACTIVATIONS IN AVALANCHE	03-04 and before	04-05	05-06	06-07	07-08
Ski Patrollers	1	6	19	5	4
Guides / Ski instructors / Client	6	9	6	11	9
Private + unknown	7	0	6	7	5
Total	14	15	31	23	18

	08-09	09-10	10-11	11-12	Total
Ski Patrollers	6	4	3	2	50
Guides / Ski instructors / Client	15	15	14	7	92
Private + unknown	13	11	18	10	77
Total	34	30	35	19	219

- 50 ski patrollers in France activated the ABS since 2000. All are alive.
- 90% of these cases happened during work time
- A lot of activation happened during PIDA. A case was during a Catex repair.
- There were as many young as experimented ski patrollers
- We can note significant differences among winters.



EQUIPPED ORGANISATIONS



<u>SDP SAVOIE</u>	<u>SDP HAUTE-SAVOIE</u>	<u>SDP ISERE</u>
ARECHES BEAUFORT	CHAMONIX	LES 7 LAUX
VALLOIRE	MEGEVE	LES 2 ALPES
TIGNES	FLAINE	ALPE D'HUEZ
VAL D'ISERE	LES GETS	VILLARD DE LANS
VALFREJUS	LA CLUSAZ	<u>SDP PYRENEES</u>
LES ARCS	ST NICOLAS DE VEROCE	LA MONGIE
SAINT FRANCOIS LONGCHAMP	LES CARROZ	SUPERBAGNERES
SAINTE FOY TARENTOISE	CHATEL	LUZ ARDIDEN
LA PLAGNE	GRAND BORNAND	PIAU ENGALY
AUSSOIS	PRAZ SUR ARLY	GAVARNIE
LA NORMA	LES CONTAMINES	SAINT LARY (en cours)
ORELLE	AVORIAZ	
TERMIGNON	<u>SDP ALPES DU SUD</u>	<u>SDP MASSIF CENTRAL</u>
VAL CENIS	LA GRAVE	MONT DORE
BONNEVAL-SUR-ARC	ORCIERES 1850	
LA ROSIERE	ISOLA 2000	
LE CORBIER	LES ORRES	
SAINT COLLOMBAN DES VILLARDS	SERRE CHEVALIER	
SAINT SORLIN D'ARVES	LA FOUX D'ALLOS	
VALMEINIER	LES ECRINS 1360	<u>SECOURS ET PARCS NATIONAUX</u>
LES KARELLIS	PRALOUP	CRS
LES MENUIRES	SUPER DEVOLUY	PGHM
VAL THORENS	RISOUL	SDIS
COURCHEVEL	VARS	SMUR
MOTTARET		GMHM
VALMOREL		Guarda di finanza
LA TOUSSUIRE		BIM
ALBIEZ MONTROND		Parc National de la Vanoise
PRALOGNAN LA VANOISE		Réserve naturelle de Haute Savoie
MERIBEL		Parc des Ecrins
		Parc National du Mercantour
		Parc du Grand Paradis

- Since 2000, a significant number of ski patrollers services and public organisations have equipped in airbags systems
- We have seen a large increase with the backpack development (VARIO)
- Different policies exists, depending the field. The ABS can be
 - obligatory for everyone and always
 - Or only for PIDA
 - Individual or collective
- Tends to be more and more an individual equipment



PROFESSIONAL ZIP-ONS FOR VARIO BASE UNIT





VARIO 30L LIGHT



PRODUCT DESCRIPTION :

- Fabric : Nylon 330 D Rain Dobby
- Available volume : 30L
- Weight: 400 g without removable straps
- YKK reverse zippers
- Compact but nice volume available
- Main compartment with complete zip front opening. Suitable also for photographers
- 2 large side zip pockets
- Front pocket with vertical zipper
- Zip wallet pocket
- Zipped mesh inner pocket in the front panel
- Attachments for shovel and probe
- Skis, snowboard and snowshoes mounts
- The skis can be attached vertically or diagonally (left or right)
- Ice-axe holder
- Removable compression straps with a-hooks
- Delivered with 2 straps with a-hooks (photo included)
- Many options for mounting items



VARIO 22L PISTEUR



PRODUCT DESCRIPTION :

- Fabric : Cordura 600/1000
- Pack designed for ski patrollers
- Available volume : 22L
- Weight: 420 g without removable straps
- YKK reverse zippers
- Compact but nice volume available
- Main compartment with wide zip top opening
- Large front pocket with vertical zip
- Skis, snowboard and snowshoes mounts
- The skis can be attached vertically or diagonally (left or right)
- 4 front mounting webbing grommets
- Many options for attaching items
- 2 side pockets
- Zip wallet pocket
- Interior attaches for shovel and probe
- Drinking system compatible
- Ice axe holder



VARIO 35L GUIDE



PRODUCT DESCRIPTION :

- Fabric : Nylon 330 D Rain Dobby, YKK zippers
- Available volume : 35L
- Lightweight but resistant fabric
- Weight : 350g without removable straps
- Main compartment with top access
- Drawstring and top flap
- Zip wallet pocket in the flap
- Easy carrying handle
- Compression strap
- Skis, snowboard and snowshoes mounts
- Other options for attaching items



VARIO 35L MINING - DYNAMITE



Shape of winter 12/13



Sample of last year full



VARIO 35L MINING - DYNAMITE



PRODUCT DESCRIPTION :

- Fabric : nylon 210D
- Allows to carry more than 20 kg of explosive charges (8 fires)
- Easy carrying handle
- Compression strap
- Attachments for skis, snowboard and snowshoes
- Lightweight: 350g without removable straps
- Resistant material
- Pocket for shovel and probe
- Volume: 35L
- Drawstring + top flap
- Zip wallet pocket in the flap



VARIO OXYGENOTHERAPY



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VARIO OXYGENOTHERAPY



PRODUCT DESCRIPTION :

- Oxygenotherapy pack, ABS Vario Compatible
- Allows to carry a 5L oxygen bottle, dock and strapped.
- Fully foam bag
- Dimensions: (L) x 68 (l) x 29 (D) 24 cm.
- Original shoulder straps allow to carry the pack without the ABS Base Unit
- Large front pocket
- Side handle for easy carrying by hand
- Weight : 2,7kg



VARIO MEDICAL / CAMERA



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VARIO MEDICAL / CAMERA



PRODUCT DESCRIPTION :

- Medical pack, ABS Vario Compatible
- Portable hand-held, slung over the shoulder, or backpack
- Made of waterproof polyester-type Cordura lined with reinforced bottom
- PVC pocket on the front for identification
- Front large compartment(40 x 30 x 6 cm) in front with PVC crystal A4 for listing
- 4 mesh internal pockets, a nylon bag sets in the top of the bag
- 6 internal pockets of different colors attached with Velcro (ventilation, intubation, aspiration, perfusion, wound-dressing, ampoules) all identifiable. YKK zipped closures.
- Lateral strap for helicopter airlift, compression straps and detachable shoulder strap webbing.
- Skis can be attached laterally.
- Dimensions: 60 x 37 x 30 cm.
- Weight: 2,0 kg



VARIO AVALANCHE PACK



PRODUCT DESCRIPTION :

- Avalanche pack
- ABS Vario Compatible
- 6 detachable quiver for flag markups
- 6 fixed quiver for reserve flags
- Megaphone compartment
- Lightweight and resistant material
- Compression straps
- A4 pocket for listing
- 2 interior mesh pockets
- Large interior compartment in front panel
- Weight : 1,3 kg



VARIO RESCUE MATTRESS BAG



PRODUCT DESCRIPTION :

- Rescue mattress bag
- ABS Vario compatible
- Drawstring
- Compression straps
- Weight : 720g



OTHER OPTIONS



PRODUCT DESCRIPTION :

- On the ABS Vario Base Unit, it possible to attach an unlimited number of bags.
- Depending on the quantities, we can study the feasibility of designing a new bag
- It is also possible to transform an existing bag, in order to make it ABS Vario compatible
- For example, a universal carrying frame zipped on a Vario Base Unit, see picture.



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