



SAFETY

A BULLETIN PUBLISHED BY THE INTERNATIONAL PARACHUTING COMMITTEE

SAFETY is an International Bulletin published and distributed World-wide by the International Parachuting Committee (C.I.P.) of the F.A.I. It was inaugurated at the recent C.I.P. meeting in Arnhem with the aim of promoting sport parachuting safety through the exchange of information and incident reports. Any such venture can only succeed if it is supported comprehensively. Given below are the names and address of the two editors — please send any safety information or photographs to either:

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WE CAN ALL BENEFIT FROM THIS BULLETIN — PLEASE SUPPORT IT

The aircraft load of jumpers took off in spite of the approaching storm clouds (cu-nimb). The jumpers decided they had sufficient time to land back on the DZ before the storm reached them. They hadn't. A girl on the load was sucked up into the core of the cu-nimb clouds and, after a horrifying canopy ride during which time she got frost bitten, landed 47 kilometres away from the DZ.

Democratic Republic of Germany.

Conclusion: Cumulo-Nimbus clouds are potentially lethal. Having learnt to recognise them, stay away from them.

The student encountered a partial malfunction of his main parachute. He was unable to operate his right hand pull reserve through lack of strength. It was subsequently discovered he was left handed.

Yugoslavia.

Conclusion: How about centre pull reserves for students? They can be operated by either hand and can be more easily protected in the aircraft.

Great Britain, USA, Holland, Canada and Denmark are actively discouraging the use of the Blast Handle Ripcord Handle — join the international campaign to outlaw this dangerous piece of equipment.

SOME CANADIAN STATISTICS

CHART 1

Breakdown of reported accidents, incidents and malfunctions by experience level (number of jumps).

1 WHO	Accidents	Incidents	Malfunctions	Totals
Jump				
5 or less	32	6	4	42
5-25	6	7	16	29
25-99	3	3	21	27
100-500	8	5	58	71
500+	5	3	35	43
Total	54	24	134	212

CHART 2

Malfunctions Breakdown include all the types reported and the frequency of their occurrence in comparison with the type of canopy (round or square), the container

system (conventional or tandem) and the reserve procedures (manual or cutaway) and the individual, (male or female). In the event of several of the types of malfunction (i.e. pack closure, pilot chute in tow, unable to pull, etc) there is no choice of reserve procedure, simply pull whatever you have, so that no figures are shown.

2 TYPE

	Round	Square	Con-vent	Tandem	Manual	Cut-away	Male	Female	Total
Low Pull		3		3			3		3
Partial	36	52	56	32	11	77	75	13	88
Partial — No Reserve	1		1					1	1
Streamer	2	5	5	2	1	6	6	1	7
Pilot Chute in Tow		2		2			2		2
Premature Activ		1		1			1		1
Brain Mal							2	1	3
Pack Closure	5	10	4	11			14	1	15
Canopy Release Mal		3	1	2		3	3	3	3
Unable to Pull	7		7				5	2	7

CHART 3

Accidents Breakdown includes all those where medical attention was required. The location of the injury is shown in comparison with the type of parachute used (round or square), the sex (male or female) and the individual's experience (number of jumps). Leg and ankle injuries are concentrated in the novice experience categories whereas spine and wrist injuries are suffered by more experienced jumpers.

3	Round	Square	Male	Female	Total	-5	5-25	26-99	100-500	500+
Location of Injury										
Head	2		1	1	2	2				
Neck	1		1	1	1			1		
Spine	3	3	4	2	6	2	1		3	
Arm/Wrist	1	2	3		3			1	1	1
Cuts and Bruises		1	1		1					1
Leg	10		8	2	10					1
Leg and Ankle	2	1	3		3	2				1
Ankle	19	6	15	10	25	17	1	1	4	2
Foot	3		2	1	3	1	2			
					54	32	6	3	8	5

AUSTRALIAN RESEARCH INTO PARACHUTE SAFETY (FOOD FOR THOUGHT)

Australian research into parachute ripcord release suggests that some changes in design specifications for front pack reserve parachutes may be needed.

The investigation was carried out by the University of Queensland at the request of the Australian Department of Transport (Air Transport Group) because of concern at the number of deaths among Australian skydivers, especially women.

Current standards for testing a parachute specify that it should open with no more than 10 kg (22 pound) pull. However, the research showed that only 72 per cent of women could exert 10 kg pull to release the ripcord over the right shoulder (the most common position) — and only five per cent of women could exert this force to release the ripcord of the main parachute over the left shoulder.

Most sporting parachutes used in Australia are made in the United States where they have to meet the Federal Aviation Agency Technical Standard Order C23b.

This specification demands that the pack-opening device shall be tested by use of an accurate spring balance to indicate it is positive and quick-functioning with no more than 10 kg pull. At present there is no Australian standard relating to ripcord release.

Forty parachutists were killed in Australia between 1960 and 1974, and although there were 10 times as many men as women in the sport (600 to 60), one third of those killed were women.

Dr. Margaret I. Bullock, head of the University of Queensland's Department of Physiotherapy, who carried out the study, said half of the total deaths were associated with failure to deploy the main or reserve parachute, suggesting the possibility of a 'hard pull'.

Dr. Bullock's research was based on a sample of 37 women representative in age, build, weight and height of the 60 registered women parachutists in Australia.

Conditions of free fall, in which there is no external counter-balancing support, were simulated in the laboratory with the use of an aluminium frame designed in the university's Department of Mechanical Engineering.

An electric resistance strain gauge on the ripcord handles attached to the frame measured the forces applied by the parachutists for each of six commonly used handle positions — right shoulder (two positions), left shoulder (two), front and front right (in reserve packs).

The output of the strain gauge was transmitted through electronic equipment and the pattern of forces over time was recorded graphically.

The forces for ripcord release using different types of ripcord handles and a variety of postures and grasps also were measured.

Comprehensive tables of figures for the pull-force capabilities of the parachute population were compiled.

Dr. Bullock said it appeared from the figures that it might be appropriate for some modification of the Air Navigation Order relating to the testing of front pack reserve parachutes to be made and that this, in turn, could require some minor change in design to reduce the likelihood of hard pull.

"Under normal circumstances it takes very little force to release a ripcord and of course many parachutists have jumped hundreds of times without the slightest difficulty," she said.

"On the other hand, quite a number admit to having experienced a hard pull on their main chutes and of having to use their reserves. The importance of minimising the possibility of a hard pull on a reserve chute is obvious."

Dr. Bullock said the 10 kg maximum pull requirement for testing parachutes on manufacture appeared to be appropriate for reserve handles in front of the left shoulder and probably the left hip.

"But even taking into account the gain from a two-handed pull, there still would be a certain proportion of women who would face difficulty when using a front pack reserve, especially with a handle on the right, if the reason for the hard pull meant they had to apply 10 kg to release the reserve chute.

"In practice, the forces required to extract the handle from its pocket and to release the ripcord pins can be influenced by many factors including the size, design and tightness of the handle pocket, the type of canopy, the method of packing (which in turn could be dependent on the interval between repacks) the tension on pack opening bands, and the size of the container.

"Where one or more of these factors acts to increase the force required to release the pins, the parachutist is likely to experience a hard pull if he or she cannot apply sufficient force to overcome the resistance offered.

"Most strength tests carried out in the past have used male subjects, and application of such data to design of equipment to be used by a mixed population overlooks the recognised sex differences in strength."

GLYN MAY



Bent pins are not a new disease. They can be cured by nylon loops.

NEXT ISSUE

We would like your views on:

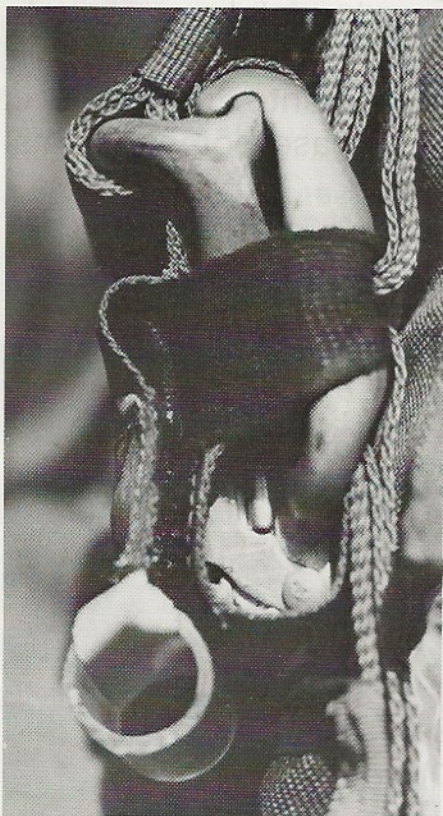
- 1. Hard versus soft helmets.**
- 2. Student static line equipment.**
- 3. Ripcords and their alternatives.**

Please support this bulletin with reports and photos in the promotion of safety.

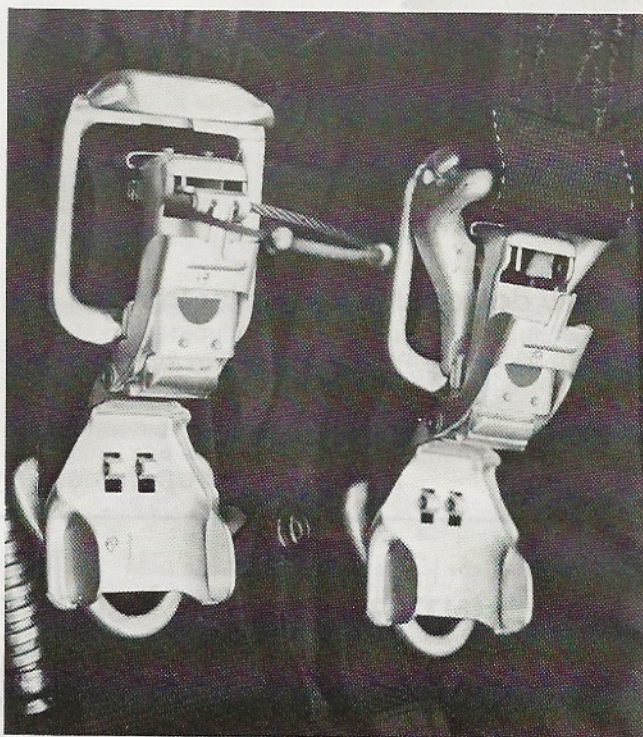
SAFETY PHOTOS

R2 and R3 Canopy Release Assembly

Unlike the conventional Capewell Release, the R2 and R3 Releases can be assembled incorrectly with the slider *under* the bottom lug instead of over it. At a quick glance these two photos don't appear to be very different. The one on the right, however, has potential lethal consequences. Don't forget your systematic pre-jump checks.



Another potentially lethal situation discovered during a reserve repack. The metal of the pack stiffener has worn through the pack material and snagged a number of the suspension lines. It would have been interesting discovering this in the air!



This Capewell malfunction occurred in the air with near fatal consequences. It prompts us to consider alternatives.

“A man who has made a mistake and does not know how to correct it, has made two mistakes already.”

Let us all benefit from each others experiences and mistakes through the medium of this International Safety Bulletin. Below is a suggested Incident Report Form — if you are involved in an incident, report the knowledge from which you think others might learn. Please complete this form and return it to either of the Editors of this Bulletin.

INTERNATIONAL INCIDENT REPORT FORM

1. Date of Incident:
2. Time of Day:
3. Place:
4. Height above sea level:
5. Weather Conditions:
6. Details of Parachutists involved and experience level:
7. Equipment worn (was it in any way a contributory factor?):
8. Description of Incident:
9. How do you think a similar incident can be prevented in the future?

Please send supplementary diagrams and photographs.

**• INTERNATIONAL SPORT PARACHUTE EQUIPMENT •
DEALERS—PLEASE NOTE**

We will accept one advertisement in each issue to help with printing and distribution costs. If you are interested please contact either of the Editors.