TECHNICAL & SAFETY COMMITTEE

INTERNATIONAL PARACHUTING COMMISSION (FAI)

Technical & Safety Information Notice No.	**07/2010** **W.N. 33**
Date of Issue	**09 December 2010**
Subject Matter and Applicability	**Text of CYPRES Disc Update Circular, Nov 22, 2010** In September 2009 we were contacted by a rigger in Texas who reported that a CYPRES disc tore in the web area between two of the holes, while repacking a Wings container. The report was immediately investigated, and it was discovered that one lot of 12,000 discs were produced with a different hardness aluminium material than all of the previous discs, of which 9,600 had been shipped. The reason that a different grade aluminium material was used is that the original (German) supplier went out of business so an alternate supplier was sourced. The new material met all the specs and required standards, but as it turns out, the original supplier used an alloy that was actually stronger than the specification required. The disc pull force spec is 253 pounds (115 kg). The actual yield strength of the original disc is greater than this and can not be measured using CYPRES loop material, as the loop tears first at approximately 350 pounds (159 kg). The discs with the new material yield at approx. 270-275 pounds (123-125 kg), and made it through QC as they exceed the required minimum specification. It was determined that there is no safety risk, since a disc that "survives" the stress of packing will then have a reduced load on it once the pin is in place. (The loop has to have a lower load on it in order to meet the maximum ripcord pull force requirement of 22 lb / 10 kg). Our measurements indicate that typically a rigger does not exceed 220 lb (100 kg) force on the closing loop during repack. If one of the discs with the lower strength material is over-stressed during re-pack, it yields, the loop slips or tears, and gets replaced before the container is closed. As a preemptive measure, Airtec decided to upgrade the material specification to that of the material that had been previously used, and to replace as many of the affected batch of discs as feasible. Airtec contacted all of the rig manufacturers that had received discs from this lot, and all but approximately 400 of the discs were retrieved and replaced. (The other 11,600+ discs were scrapped.) Riggers that were around 20 years ago when CYPRES was first introduced might remember the original CYPRES "bar" washer. It was then replaced with the "Smiley" 3-hole style disc. The reason Airtec developed an improved washer system is because a closing loop assembly with a standard single-hole washer and overhand knot typically fails at the knot at a force lower than the actual strength of the

	loop material, or slips at the knot. Airtec developed the CYPRES washer and disc to be used with the CYPRES loop material to achieve an overall stronger and more secure closing system that facilitates flap separation when container opening is initiated by the ripcord or CYPRES. Regardless of the reserve closing loop system, care needs to be taken to not over stress the assembly (or bend the pack tray stiffener plate) during closing, especially when the loop is on the short side, or when packing a rock-hard canopy/container combination. Another observation is that the closing loop should not be used to "compress" the pack job. A lot of force can be generated with a mechanical advantage "helper". (9 ft-lbs of torque on the 1" diameter "closing device" that Par Gear sells produces 216 pounds of force, however it only takes 23 inch-pounds of torque to produce the same force with a typical T-bar bodkin.) A high peak load can also be achieved by pulling up sharply on a loop installed in a rig using a long pullup cord wrapped around a packing bar while standing on the rig to "seat the knot" (According to our instrumental tests, a rigger can produce 400+ pounds if he goes at it). While closing the reserve, if one pulls hard enough on the pullup cord using a packing aid (torque-style mechanical advantage closing device) or by standing on the rig and pulling upward will full upper body strength, something in the path is going to yield: the pullup cord, the knot, the loop, the disc, or the plate in the back of the rig. Rig design is also a factor, as a rig with the closing loop threaded through two grommets in the pack tray reduces the force on the disc by about 30%, although the loop sees the same force as with a 1 grommet design. Bottom line, there are in excess of 696,000 CYPRES discs out there, less than 400 of them are not as "strong" as the others, but there is no safety concern since once the rig is closed, the force on the loop is less than that applied during the closing process. Even if a disc tears in the web area between the first two holes during closing, it simply gets replaced, same as if a loop tears during closing.
Compliance	Immediate and Ongoing
Concerned Publication	All Skydivers, Parachute Riggers and Rig Manufacturers.
Authority	Airtec Safety Systems CYPRES Disc Update Dated Nov 22, 2010
Acknowledgement	*Liam McNulty* IPC Technical & Safety Committee 09 December 2010

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09 December 2010