

TANDEM NEWS

A PUBLICATION BY STRONG ENTERPRISES FOR TANDEM INFORMATION

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AAD UPDATE INFO

Since Strong Enterprises issued the approval and recommendation of installing CYPRES AAD on the Dual Hawk Tandem system the use of the CYPRES has grown tremendously. Many countries have mandated its use for tandem jumping with England, Australia, Norway, Sweden, Finland and Italy among them. Although Strong Enterprises made the decision last October to install a CYPRES with every Dual Hawk sold, there are still hundreds of Dual Hawk systems without the device. After a few years, through attrition, most DHT's will be AAD equipped. That's not fast enough! We would like to see all Dual Hawk Tandem's AAD's. Our suggestion, plan on an AAD being standard equipment on every tandem jump you make in 1994. Check out the full-page information sheet on the CYPRES in this issue.

Other AADs? We are evaluating two other manufacturer's AADs; the FXC Model 12000 for tandem and the SSE Mars FF-3 system. Many years ago we obtained a specially calibrated FXC Model 12000 for tandem testing. We tried to find a safe spot on the rig for the sensor, without giving the jumpers more problems than solutions. After several hairy jumps we discontinued tests on the Model 12000. Just recently we have agreed to reevaluate the Model 12000.

The Mars FF-3 is very interesting, it is a dual functioning system that can release the drogue at one altitude and then, if no deceleration is sensed, activate the reserve. This unit is still being tested by SE for tandem use. As we have more information we'll publish it.

SUCCESS STORY

Over the holidays we received a card from Mike Driver, Tandem Examiner from Denver, Colorado. We'd like to share it on to you, "Dear Strong Enterprises: Thanks for the Dual Hawk System. You have probably been the single largest "sponsor" of my skydiving career. Just recently I made my 1,000th tandem jump. This is more than a number to me. You have produced a system to let me train for and qualify for the U.S. Para-Ski Team. That is the original reason I started doing tandem jumps, then I realized how much I enjoyed them! Your tandem system has opened a lot of doors for me".

Signed: Mike Driver, Para-Ski Team.

FAA, RULE CHANGE

During the 5th and final meeting of the Tandem Proposal Project Team in Alexandria, VA last December, the FAA

**FAA tells us there
just isn't enough time!**

representative dropped a subtle bomb shell! No matter what, there would not be enough time for the FAA to go through the process of a rule change before the present tandem Exemption expired! After a year of the skydiving industry banging out policies, procedures, responsibilities, standards, and rule wording, then FAA tells us there just isn't enough time! Hmmm..... They also suggested that the recommendations for a rule change be submitted to a group called "Aviation Rulemaking Advisory Committee" (ARAC). This ARAC group was formed by the FAA Administrator in February 1991, and is made up of approximately 60 member groups from the aviation community. Frankly, it's hard to figure out what is really going to happen from here! To play it safe Strong Enterprises has filed, through our attorney, for renewal of the Exemption.

EQUIPMENT UPDATES

TYPE VII RISERS

Type VIII risers are out, type VII are in. The problem: Original SE type VIII risers were good for years. Finally after six years we had two break, then another. Of the first two, one pair was 2 or 3 years old, the other was new, within 17 jumps. Since then, we have had all told about 12 break. We have done countless tests, new webbing, old webbing, colors, age of riser, manufacturer of webbing, method of assembly, different operators; it does not seem to have a pattern. Two years ago we replaced all DHT type VIII risers

Inside...

Equipment Update	2
Strong Tandem Statistics	2
Instructor Accomplishments	3
Tandem Passenger Saves Pair	3
Instructor Accomplishments	3

that had bartacks, with ones that had zig-zag stitched around the pocket. Our tests showed the webbing was not stressed as much and stretched more during openings. (Imagine the logistics of exchanging over 700 pairs of risers, worldwide)! Recently we've had several of these risers break. Our only good permanent solution is to change risers again, this time to type VII risers. This is how we will be handling it: all new DHT systems, or separate main canopies will have the type VII risers. Any canopies coming in for repair will have VII risers installed. In order to help defray costs and encourage all DHT owners to upgrade to type VII risers S.E. will offer these risers at \$40.00 per pair. This represents a 50% savings off the retail price of \$80.00.

MAIN DEPLOYMENT-BAG DESIGN

The main deployment bag with the bungee/choker system works just fine if it is used within the design criteria. There exist several possibilities for user adaptations that could cause a problem. We have found situations where the chokers, which are critical to preventing line dump, were taken off and thrown away or some of them were missing, or the choker inside diameter did not match the bungee outside diameter, or some bungees were 2 to 3 times longer than the design length. Any of the above could render this system ineffective. In one case several broken bungees were not replaced and the lines were laying loose in the container. This particular pack job resulted in costly damage to the main, and a reserve activation.

We designed a new main D-bag in order to answer these problems of the bungee bag. The new bag eliminates line slump while allowing us to go back to rubber bands to stow the lines. One extra flap has been

added to cradle the stowed lines during bag snatch. With the sides velcroed, the new Anti-Line-Slump (ALS) bag can be laid out flat on the ground when packing, which is a technique widely used in California. Video and 35mm photos show this system working extremely well, and reports from the users indicate initial reservations gave way to requests from their staff to upgrade all their D-bags to the ALS bag. While it could be said that the ALS bag adds complexity to the system, perhaps it's time for everyone to adjust to the fact that tandem is complex. If heavier, bulkier, more complex means safer tandem jumping and longer service life for the equipment, so be it.

CANOPIES STRENGTHENED

To increase the service life of canopies we have significantly reinforced both the Master 425 and the T-520 canopies. Each of these models has 1 inch reinforcing tapes running across the upper and lower surfaces at the line attachment points. These tapes are joined by 1 inch tapes running vertically up the ribs. In addition to greater structural integrity, this design helps maintain the shape of the airfoil, improving flight characteristics and longevity.

MAIN CONTAINER REDESIGN

Because we have reinforced our canopies in order to provide longer service life, we have had to make changes to the size of the main containers. This resulted in the development of two different sizes of containers, one for the Master 425 and one for the T-520.

FLAG SLIDER

For years skydivers around the world have been using material attached to the leading edge of their sliders to help soften the opening of their para-

STATISTICS THROUGH 1993 FOR STRONG ENTERPRISES TANDEM PROGRAM

Have you wondered how big the tandem industry is? Interested in knowing just what has happened over the last ten years? How many other DHT Tandem Instructors are there? Here's is the basic statistics on what has been happening with the DUAL HAWK TANDEM and Strong Enterprises portion of the tandem industry.

	Total	US	International
Dual Hawk Tandem systems:	800	520	280
Tandem Instructors:	1617	1051	566
Tandem Examiners:	47	25	22
Number of Tandem Jumps:	314,200	204,230	109,970

Note: (Based on an average of 100 jumps per rig per year).

Fatalities:	3 sets	2	1
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Malfunction rate:	1 in every 705 tandem jumps		
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Student injuries (hospital care):	1 in every 7,000 jumps.		
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(In the ten years of tandem jumping on the Dual Hawk there have been 3 fatal accidents involving certified tandem Instructors).

Passenger fatality:	There has been one fatal accident on a Dual Hawk involving an uncertified individual.		
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chutes. This material has taken several forms ranging from plain flaps of varying lengths to today's popular "pocket" sliders.

Strong Enterprises has borrowed from this established technology in order to make the openings of our tandem mains softer. SE's mod is in the form of a rectangular, reinforced flag, sewn along the leading edge of the slider, with 10" deep pockets facing forward at the top of the flag.

The 40" high flag is wrapped around the stacked nose when packing, then blocks the introduction of air into the center cell during the initial stage of deployment, while at the same time the "pockets" at the top of the "flag" retard the descent of the slider.

Test jumps show that the "flag" produced the desired soft openings without any problems being caused by the additional material. SE has sent out some of these flags to selected tandem operators for their evaluation. When we get the necessary feedback we will make these flags, along with packing procedures, available to be sewn onto the sliders of Dual Hawks in the field

The Russians, from whom we got this technology, tell us that this procedure works so well that they do not use the brakes on their traditionally hard opening accuracy canopies. This could certainly open the door to the use of Z-PO material in tandem canopies. Our prototype Z-PO main produces better flares, but we are striving for the consistently soft openings that the "flag" slider hopefully will provide. Softer openings will also allow the use of Spectra lines on our 425 Master mains. Spectra not only has less weight and less drag, but it has a record of producing fewer incidents of pressure knots in the suspension lines, a known cause of malfunctions. Eliminating some twists in the lines by changing the packing procedure from the "flopped" technique that we traditionally used to a "stack" technique should also help reduce line problems and cutaways.

BREAKAWAY/RELEASE HANDLE

Over the last four months Strong Enterprises has been developing a new release handle. One that would answer the need of releasing the drogue before releasing the main canopy. We have come up with an excellent method. The new break/away handle has a channel between the velcro that allows a looped release cable to slide up and down giving a staging effect when cutting-away. A small ringed web strap, below the pillow provide the method for releasing the drogue before the canopy is cutaway. The cable itself has been changed to a larger non-coated cable for greater strength and far

easier pull. The below drawing shows pull forces with the housing in different angles and various forces on the rings.

INSTRUCTOR ACCOMPLISHMENTS

Cliffer Dobson, 1,000 tandem jumps, no malfunctions, jumps as chief instructor at Clewiston, FL Paul Heynes, South Africa, owns two DHT, they have over 1,500 jumps on them. In use since 1986, they have had only three reserve rides:

- a. missrouted drogue bridle, activated reserve into it.
- b. couldn't find the main r/c handle, activated reserve.
- c. line entanglements, cut-away, activated reserve.

TANDEM PASSENGER SAVES HIS LIFE (AND HIS INSTRUCTOR)!

While in droguefall, According to the Instructor, he saw his main deployment bag out of the container, banging against his shoulder, he then forgot that he was on a Tandem Jump and followed his normal solo jump emergency procedures, i.e. cut-away and deploy his reserve. (On a solo jump his pilot chute would still been in the pouch, resulting in a horse-shoe.)

In this case it was certainly the wrong decision! The unreleased drogue held the bag close to his shoulder, and the deploying reserve pilot chute entangled with the main suspension lines.

That was it. The scene was set. They were on their way to their deaths. Passenger to the rescue! The StrongDualHawk TandemSystem, as standard equipment, includes a passenger activated drogue release ripcord. Hooray for the drop zone program director, he used the equipment as it was designed. The student not only had a ripcord but also an altimeter and was instructed on the use of both. The student was supposed to activate the drogue release at 5,000 ft. Finally realizing that he was at 1,500 ft., the student pulled his ripcord releasing the drogue, which pulled away the horseshoed main (which had been cutaway earlier by the Instructor), and lastly, this pulled away the reserve pilot chute which was entangled with the main, and the reserve was deployed high enough for a 5-13 second canopy ride! (depending how excited the eye witness was).

It's fair to say that the passenger deserves a parade, and the Tandem Instructor deserves suspension of his Tandem Certification. It is hoped that a most significant issue will not be overlooked: the passenger

proved capable of using the equipment and instruction he was given. Please let's hear a round of applause for the concept of giving the passenger tools to save his life, and the drop zone management who gives the students their money's worth.

Seven tandem fatalities in '93 bring the total to twenty.

FATALITIES

1993 was bad year for fatalities on the Dual Hawk Tandem System.

On 24 August, the second tandem fatality occurred. A current tandem instructor, 3,380 freefalls, 64 tandem jumps. About 3 seconds after drogue deployment, the main bag was dislodged from the prematurely opened main container (closing loop was OK). Neither drogue release was activated. Breakaway and reserve ripcord were activated. The reserve pilot chute and bridle were entangled with the main.

Failure to activate the drogue release could be attributed to "traumatic shock". A breakaway/drogue release system would have released this drogue.

On 2 October, a newly certified tandem instructor's first tandem jump with a student. Asymmetrical arm position of both jumpers contributed to their going right side down immediately after exit. The instructor was wearing large freestyle webbed gloves. Student's reverse arch and leg position then started them spinning on their sides. Other than assuming a hard arch, the tandem instructor made no attempt at recovery or to activate either parachute.

*An AAD could possibly have been able to prevent this fatality.

been only threesets of fatalities involving our certified instructors and our equipment. (One accident involving our equipment but the (Tandem Vector rated) instructor was not trained and certified on the DHT System. He received "training" from the owner/operator of the Dual Hawk that he was using. That "owner" no longer may own or operate tandem jumping equipment in the USA.)

After 300,000+ tandem jumps there have been only three sets of fatalities involving our certified instructors and our equipment.

Let me take this opportunity to remind everyone that the Standard Operational Procedure to deploy the Dual Hawk main and reserve is to:

1. Deploy the drogue (NO DROGUE - NO MAIN!).
2. Pull the primary drogue release ripcord. If that doesn't work:

3. Pull the secondary drogue release ripcord. If that doesn't work:

4. Cutaway (The main could release after reserve activation).

5. Pull the reserve ripcord.

In that sequence!

CYPRES available here.

The Dual Hawk Tandem has gone through a major facelift and upgrade. Dozens of small and large improvements have been made. Most significantly is the addition of a CYPRES AAD in every Dual Hawk Tandem System sold as of October 15th, 1993.

For present registered owners of Dual Hawks (Serial number 202016 and up [February, 1992]). Strong Enterprises wants to make it as easy as possible for you to equip your system with a CYPRES AAD. We have reduced the price from \$1,522.25 to \$1,370.00 to ease the pain of purchasing the CYPRES.

We have 2-pin Tandem CYPRES AAD's now available for instant installation in your Dual Hawk.

Do you own a Dual Hawks manufactured before February, 1993? Strong Enterprises has a update program for you:

1. If your Dual Hawk is in good to excellent condition we will inspect your harness/container and reserve, install the pocket and channeling for the CYPRES, repack your reserve for only \$150.00 plus the cost of the CYPRES \$1,370.00. (Does not include other necessary repairs or update of other components and return shipping).

2. Our replacement program for worn or obsolete Dual Hawk systems (before Feb, 1992). We have a special offer for registered owners of these systems, check this out:

*NEW Dual Hawk harness/container including passenger harness, breakaway/release handle and ripcords. (Your choice of colors)!

* CYPRES AAD factory installed.

* Reserve inspected, updated if needed and repacked.

ALL FOR ONLY \$2,320.00

Now is the time to give us a call and schedule your Dual Hawk to be upgraded. Give us your custom colors and a \$1,000.00 will get your new system ready. We'll then notify you and have the change over done in a few days, with a minimum amount of down time for you.

**QUASAR SALE
TO TANDEM INSTRUCTORS ONLY**

Last November we send a special offer to all Dual Hawk tandem instructors. The response has been terrific! We're impressed! This new, state of the art, QUASAR harness/container system with matching STELLAR reserve and Z-PO main is catching on fast- Look for our full page ads in Parachutist and Skydiver. If you'd like more information drop us a line.

