

TANDEM NEWS



A PUBLICATION BY STRONG ENTERPRISES
FOR TANDEM INFORMATION

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DUAL HAWK MAIN CONTAINER

The double-locking main container is perhaps the most important innovation in tandem systems!!!! Certainly the single innovation most likely to save your life. The big fuss is in reference to the fact that prematurely opened main containers with D-bag extraction is probably eliminated by this design. Containers that have opened before the drogue has been released have been associated with at least 7, maybe 8 fatal accidents, 1 of which was on a Dual Hawk System.

Strong Enterprises did not wait for a second incident to occur before addressing the problem. The safety of the Dual Hawk instructors and passengers has always held our focus on a need for solutions to problems. It took several prototypes, but it's done! It works! It's here!

Let's review!

How do open containers contribute to fatalities?

[1] The main D-bag comes out of the container and wildly swings around while still

attached to the drogue riser. The bag hits the instructor in the head, and the loose risers and suspension lines are positioned right over the reserve container.

[2] Seeing the D-bag outside of the container has often put the instructor into shock. This has been attributed to the instructor not being prepared for this possibility.

[3] This type of shock can prevent us from:

- [a] remembering any emergency procedures,
 - [b] acting out our emergency procedures even though we know what to do, or we may only remember and act out a portion of our emergency procedures.
- Proper sequence of procedures must be followed. Tandem instructors have failed to release the drogue before cutting away and deploying the reserve. The reserve has entangled with the trailing main. (This was addressed in 1993 when Strong Enterprises modified the cutaway handle to release the drogue.)

How or why do containers open prematurely?

- [1] Broken closing loop.
- [2] The closing pin is pushed or pulled out of the closing loop by something in or on

the airplane.

[3] The kevlar drogue bridle is routed in a manner that brings it into conflict with the type IV pin bridle, thereby extracting the closing pin during drogue deployment.

Strong Enterprises has made four distinct improvements to the Dual Hawk aimed at preventing premature opening of the main container, or dealing with that situation if it did occur:

- [1] Closing pin extraction. This has been addressed by changing this pin from a one inch long curved metal pin to a six inch long coated cable. Strong's drogue, being fully inflated throughout the deployment process, easily handles the extraction of the flex pin.
- [2] Conflicts between the drogue bridle and pin bridle. The kevlar bridle is now routed under a protector flap on the outside of the right closing flap, eliminating any close encounters with the pin bridle during drogue deployment (which could pull the closing pin).

[3] Broken closing loops. The loop itself is a wear part that requires periodic replacement. But, if the loop were to break, the main D-bag will still be held inside

the main pack tray. This is accomplished by making the top flap out of Spandura, with flaps that tuck into pockets on the bottom flap. The deploying drogue opens the tuck flaps and allows D-bag extraction. Test jumps with an open main container show the D-bag remaining in place throughout drogueless barrel rolls.

4. Dealing with an open container. Some instructors neglected to release the drogue before cutting away and activating the reserve, which resulted in the reserve pilot chute entangling with the drogue or main suspension lines. In late 1994, we developed a "Breakaway / Drogue Release System" which passed the drogue release ripcord through a ring attached to the cutaway handle. This system has resulted in 3 saves (6 lives).

"I am a true believer in the need for all rigs to be updated to the Spandura flap mod. With 1150 passenger jumps in the training of tandem instructors, I need the safest equipment available on the back of the guy who is on my back. This is it! The Dual Hawk is the safest tandem system available today, and it will be for a long time. I don't believe that anyone would want to jump gear without this, "keep the D-bag in the container" feature on it. No way! Not when this technology is available, no matter who makes it! When you consider the 7

or 8 fatalities that may have been prevented with this system, it doesn't matter that only one fatality involving a prematurely opened main container was on the Strong Dual Hawk".

Bill Morrissey

UP-DATE YOUR DUAL HAWK

All Dual Hawks, made in 1993 with the last three digits of the serial number of 232 or higher can be retrofitted with a "Spandura Flap Kit" by any master rigger or at Strong Enterprises. The "Kit" consists of the four closing flaps, the drogue riser cover flap, and a set of directions. The cost of this kit is \$175., exclusive of the labor which is \$100 at Strong.

If your Dual Hawk can be updated, this is a fine example of a "no-brainer." Don't even think about not doing it!

Earlier models can be upgraded by having a new main container installed at Strong Enterprises at a slightly higher cost (\$430.) These systems must first be inspected for suitability for installation of a new container.

FLEX PIN KITS

In the article on the "Spandura Flap" container, we mentioned changing the

curved metal closing pin to a 6 inch long coated cable "Flex Pin". This pin now comes to you in a "handy dandy" easy to use kit. This flex pin is compatible with all existing Dual Hawks. All that is required is shortening the existing Type IV pin bridle and sewing on a short piece of Type I webbing which allows you to larkhead on one of the two flex pins that come with the kit. Installation of this kit will greatly reduce any likelihood of a prematurely opened container, but it does require that you inspect your closing loop for wear. Remember, on the Dual Hawk, you have the full pull force of the open drogue to extract your closing pin! It's PN099412 @ \$15. This does not require a whole lot of thought - DO IT!

PICK UP YOUR GEAR AT PIA

Strong Enterprises will be happy to deliver your new equipment to you at the PIA Symposium in Houston, TX. Feb. 9-14.

In stock:
Complete Dual Hawks with the Spandura Flap modification, and the outstanding SET-400 Z-PO main.

Also available:
SET-400 main canopies,
New Dual Hawk harness / containers for trade-in (Bring your old trade-in with you),
Flex pin kits,
Container modification kits.
Order now! Deposit required.

**READY OR NOT,
GET READY!**

Winter season is the time to get your gear repaired, relined, or updated with the "Spandura Flap" kit and the "Flex Pin" kit. You always promised yourselves to "not put repairs off till we need the gear", so here's the chance to get a jump on things. Approach the coming season knowing that everything's ready.

Tandem examiner Mark Tripari took advantage of the holiday slow down to get his Dual Hawk inspected and repaired. His SET-400 # 011 (the eleventh one built) tested out at zero porosity even after 650 tandem jumps. The only wear on the canopy was a few loose stitches where the Pro-packed tail wraps around the body. He was overdue for a line set. Strong recommends a line change on the Master and T-500 mains every 250 tandem jumps. We are still on the learning curve with the SET-400.

A WARRANTY

Strong suggests that you can expect a useful life of 600 tandem jumps on your mains (See Tandem News # 16). We do so, so you have a number to take to your loan officer, and so you have an idea what to expect for your money. Of course you can reasonably expect a heck of a lot more jumps on that main, much the same as a 30,000 mile

warranty on a car, where you may expect that you will get 100,000 + miles. If your canopy does not give you that 600 jump service life, Strong will pro-rate your main for a replacement. The only problem that we have had so far with the SET-400 was some material that had premature performance deterioration (Something that was not foreseeable.) Strong treated that problem by exchanging new SET-400s for the old mains, and pro-rating the cost at \$5 for each jump that had been made on the old canopy while it was generating income. Example: If an owner used the main 100 times he was charged only \$500 for a new, \$2800, main. That's a heck of a deal, since at \$150 charge per tandem jump, he would have made a gross income of \$15,000 He received a new SET-400, which, barring unforeseen problems, may indeed give him 1,000+ jumps. Let's see..... "If I charge \$250 per tandem jump, I'll gross....."

CLASSIFIED

Due to injuries, Preston Ford needs to sell a '95 Dual Hawk w/ Set 400: 706 235 2701

Larry Hill of Skydive AZ. may have some fairly new Dual Hawks with SET-400s in them for sale.

Jay Speckeen wants to sell a 425 or 520: 319 337 9492

Christian Shoemig of Skydive Key West (800 745 4FUN), has a '92 Dual Hawk

container w/600 jumps, w/ T-520 main (150 jumps on the lines, 300 jumps on the canopy).

Looking for some good used Dual Hawks:
Zoran Rakovic of Phoenix Skydiving (815 286 9230)

Mike Lenzmeier (701 277 8495)

**TANDEM BUSINESS IS
GROWING BIGGER**

Buzz Fink of Air Adventures Skydiving Inc. in San Diego, CA., reports that he doubled his gross tandem revenue from 1995 to 1996. This is in keeping with the numbers of tandem reported by many of the DZ's.

As I traveled around the world I asked questions such as how much is charged for a tandem jump, how much the instructor gets paid, and what does the packer get paid? Worldwide, the prices vary greatly, the highest being 495 Australian dollars (\$393 USD), with \$100 AD (\$80 USD) to the tandem instructor. The lowest is in the USA at \$99, and \$20 to the tandem instructor. Packers are generally paid \$7 to \$10. One element that really jumped out at me is that there are more people wanting to make a tandem jump than there are instructors, parachutes, and airplanes to take them up. I state that because of all the people that have told me of the customers that they had to turn away. They said that all the available slots were booked up, there weren't enough instructors

available, the plane was down, or the gear was down. To say the least, a sizable amount of income was not realized in '96 that could have been.

I have given this subject considerable thought, because of discussions such as "...I can't keep instructors". "Well how much do you pay them", "\$20." "If you paid them \$50 per tandem jump would you have a problem getting instructors?" "No," "Well, compensation for the work being performed may be a factor." "How much do you charge for a tandem jump?", "\$140, and I can't raise it because my competition will undercut my price." "Seems like a lose, lose proposition: [a] you're not making enough money to pay your tandem instructors enough money to keep them, and [b] you don't have enough money to repair or replace your tandem equipment." Some DZs method of doing business is to squeeze the last bit of income out of their gear, long after it should have been replaced. A common occurrence in any business, but who wants to be part of it?

Why are tandem instructors quitting?

Here is what I have been told:

1. They don't think that the compensation is worth the exposure.
2. AFF is easier on them physically and emotionally, while the compensation is the same.
3. Worn out canopies or canopies that need new line sets, are causing too many malfunctions.

What ever the reason, the

fact that the tandem instructors are quitting is hurting the tandem industry. A by-product of instructors dropping out is that being a tandem instructor loses its attraction as a career choice. We are not certifying enough instructors to replace the drop-outs, never mind being able to meet the increased demand as business grows.

THE GOOD LIFE

Tandem can provide it! There is no reason why tandem should be treated like so many demo jumps in the past "...I'll do it cheaper, or for free." We all know how that affects the 'business' aspect of skydiving. Considering that as many as 300 persons per week are making tandem jumps at some DZs, business is booming, with one DZ reporting 100% increase in tandem income from '95 to '96

"If you want a professional staff, you have to pay them. Indentured servants just don't deliver the goods," says Tandem businessman, Mike Schultz. "That's why I have been paying my tandem instructor staff \$50 per jump, and why I am raising it to \$57 per jump in '97." [includes packing]. "I have trained a highly professional staff and I want to keep them. They are working under hard and pressing circumstances and they deserve to be compensated appropriately." Wow! That's a mouthful.

Congratulations on setting a new standard Mike! The tandem instructor deserves financial rewards that will allow him society's niceties such as a mortgage, a car loan, a family. If he doesn't get them, he will become an endangered species.

PLACING A VALUE ON A TANDEM JUMP

Considering the slow upward movement of the cost of a tandem jump, with a continuing climb in the number of people wanting to make tandem jumps, we may be in a position to afford to be a professional skydiver and live like the rest of the world.

Looking at tandem jumping through the eyes of the buyer, compare what the student gets and what his responsibilities are on a tandem jump, to what he gets and what his responsibilities are on a static line jump. He should be paying a lot more for a tandem jump.

STRONG TANDEM EXEMPTION # 6474

This Exemption was issued by the FAA effective 1 July '96. Regardless of the fact that Strong Enterprises takes exception to several parts of this exemption, it is available from the FAA and has been in place for you to use since 1 July '96 You are obliged to follow the wording of Exemption 6474 to the letter.

Strong Enterprises has filed for an amendment to Exemption 6474 that should make it easier to use. You will be notified of the outcome of our request for amendment. Meanwhile, some areas of confusion have come up regarding this exemption.

Facts: (1) You no longer have to report all tandem jumps that you make or that are made on your Dual Hawks. (2) Strong Enterprises must report to the FAA, **within 48 hours**, all reserve activations, injuries, and fatalities that occur on a tandem jump. Your report must be filed with Strong Enterprises at Fax 407 850 6978 in order to accommodate this time constraint.

THE SET 400

Is it enough to say that everyone that tried the SET-400, wants one.

Benefits to the tandem instructor:

- [1] Slow, soft openings which equate to saving your neck and wear and tear on your passenger,
- [2] The lighter toggle pressure
- [3] The 30 MPH speed will hold or get you back to the DZ to make more jumps per day.
- [4] Great flare to land, and you don't have to have the passenger help.

We have taken some of the work out and put some fun back into tandem jumping!

How about this SET-400

Pick up a SET-400 at the PIA Symposium in Houston, TX, Feb. 9-14.

testimonial from Christian Shoemig of Skydive Key West: "After 2000 tandem jumps you have ruined me, I'll never jump another tandem canopy." He is overjoyed with his two new SET-400 mains.

TANDEM INSTRUCTOR REVOCATION

Charles Musto. Last known address: 3524 NE David St., Albany, OR., 97321.

TIP FROM THE PROS

It has been around since the '91 Bali Boogie, and is generally accepted as the easiest, most predictable tandem exit from a tailgate aircraft. A lot of people still do not know about the rearward facing, step-off with spines vertical and arms in a tracking position into a 3/4 backloop exit. As you pass into the relative wind beneath the aircraft, your feet and legs will be swept to your front and you will perform a 3/4 backloop. Being in the tracking position will keep you from going into a second backloop. After your backloop, you will be looking back at the airport and those who exited before you, a real nice view!

THOUSANDS OF TANDEM JUMPS

On 13 Oct. '96, Tandem Examiner Bob Feisthamel made his 1,000th jump as a tandem instructor. Feisty has been making tandem jumps since 1988. He is a world class CReW competitor and US team member. Considering that Bob's time is divided between running his DZ in Aurora, MO., and competing in CReW events worldwide, makes the 1000 tandem jumps accomplishment that much sweeter. Congratulations Bob!!!

Congratulations to Christian Shoemig on reaching the 2000 tandem jump plateau. Christian is a good example of a tightly controlled maintenance and packing program. As he reflected on the 5 malfunctions he experienced within his first 357 jumps using other people's gear, and packers, he developed his own standards. Christian needs another 157 tandem jumps to reach 2000 tandem jumps without a malfunction. Obviously, it can be done. If your experience is otherwise, maybe you should take a closer look at your program!

Pick up a FLEX PIN KIT at the PIA Symposium in Houston, TX, Feb. 9-14.

**TANDEM INSTRUCTOR
CERTIFICATION
COURSES**

Jan. 6-8
Skydive City, Z-Hills, FL.

Jan. 18-20
Lake Wales, FL.

Feb. 1-3
FreeFlight SD, Coleman, FL.

Feb. 15-17
Lake Wales, FL.

Mar. 21-23
Skydive City, FL.

Apr. 1-3
Umatilla, FL.

**Contact: Strong
Enterprises. for above.**
.....

Apr. 11-13
Laurel, DE.

**Contact: Mike Schultz
301 261 6136**

USPA's BIC

The long awaited Basic Instructor Course is in place. Strong Enterprises stated years ago when the failed modular program, 3-3, was being proposed, that a generic instructional program designed to teach the candidates "How people learn" and "How to teach", would lend itself well in the certification of tandem instructors. If the BIC prepares the candidates to instruct the students, the Tandem Instructor

Certification Course will prepare them to safely conduct the tandem jump.

THE DROGUE

A very special and important piece of equipment that allows tandems to take extended freefalls.

When using the drogue we must be vigilant in order to avoid creating problems:
[1] Weak toss. This can result in the drogue being trapped in the burble and being stuck on your container like SARAN WRAP.
[2] Improperly folding and stowing. The drogue may then be too hard to deploy or the piecemeal deployment may result in #1 above.

[3] Holding the pud while the bridle and body horseshoe behind you. Releasing the drogue at this point has resulted in a half-hitch forming in the drogue bridle or around the drogue body, as the drogue body makes its way up to its normal position over your head. If the half hitch forms around the drogue body, you will not develop the drag necessary to slow you down or to open your container. Most importantly, you will now have a mess over your head that:

- [a] You can not release
- [b] Provides an opportunity for the reserve pilot chute to entangle with the drogue.

In Ron Green's accident, the drogue bridle was half-hitched one meter behind

his container, with the drogue deployment pud caught in the knot. The deploying reserve pilot chute and bridle wrapped 4 times around this knot in the bridle.

[4] Unstable deployments can result in the drogue bridle being wrapped around:

- [a] your arm, neck, foot, etc.
- [b] your passenger's arm, neck, foot, etc.
- [c] your equipment.

INFLATED DROGUE

Why, some people ask, does the drogue stay inflated until the main is out of the bag. In a nutshell, the drogue stays inflated during main deployment to insure that the main does get out of the bag.

Whether it be a container lock or a main D-bag lock, we are trying to eliminate it as a possibility.

Some considerations are: A collapsed drogue during main deployment reduces the potential energy available for main deployment and allows the tandem to accelerate towards the ground while awaiting main inflation. If the container or the D-bag are locked closed, then the instructor's working time for emergency procedures is drastically reduced.

Think about it: If you pull your main ripcord at 5000 ft. and your collapsed drogue causes you to start accelerating to 'no-drogue' terminal speed, at what altitude will you be when you realize you have a

problem? At your new rate of closure with the ground, how much working time do you have left?

We don't want you going slow at the top end of the skydive, then going faster on the bottom end as you close with the ground.

How much pull force is needed to extract the main?

[1] Well, what kind of pin is it? A 1" long metal curved pin, or a 6' long flex pin.

[2] Did we stuff a 520 main into a 425 container? Is the closing loop exerting too much pressure on the pin?

[3] What kind of stow bands are we using? Are they double wrapped, or are we using two rubber bands per stow?

These things make a difference when we are considering whether or not we have enough pull force to deploy the main.

An additional feature of the fully inflated drogue is that in a low altitude bailout situation, where you do want to use your main, this system allows you to pull your drogue release ripcord in the plane, turning the drogue into a hand deploy pilot chute.

Misconception of some users

"The inflated drogue applies too much pressure on the top of the canopy". Well, the fact is that as the canopy leaves the bag, the bag is in the process of sliding 7' towards the drogue in order to invert the drogue, which effectively 'kills' the it. Strong mains are similar to all ram air mains in that they are reinforced at the bridle attachment point in order to accommodate deployment forces. The

influencing 'fact' is that application of the potential energy of the inflated drogue will overcome the drag of the flex pin, bungee stows, double rubber bands, etc., without the unnecessary risk of increasing your rate of closure with the ground, at the wrong end of the skydive!

After fourteen years of utilizing the drogue in this manner we have no reason that suggests that we should change.

UNUSUAL INCIDENTS

The curved pin separated from the pin bridle. This resulted in a container closure. A rough spot inside the eyelet of the pin cut through the pin bridle. In his report, the tandem instructor suggests that 'better equipment checks' would help prevent these occurrences. By now, we should all know the penalties suffered by jumpers using equipment they have not thoroughly inspected. Misrouted bridles, drogues not hooked up, 3-rings improperly oriented, loose or bent reserve pins, the list goes on and on.

The FAA requires that tandem systems be inspected every 25 jumps. The instructor has the right to know if this is being done, and to view those records. The instructor also has the obligation to check his gear! That's the bottom line. Since we are talking about

the FAA requirements, be reminded that **you (the certified tandem instructors) are required** to report all tandem reserve deployments, injuries or deaths to Strong Enterprises so we may notify the FAA within the allotted 48 hrs. from the time of the incident.

Another incident recently reported by the Australian Parachute Association refers to the instructor not being able to locate his secondary drogue release handle (after the primary ripcord failed to release the drogue. They don't mention the cutaway handle, so I'll guess that finding it was not the problem. It seems that this instructor elected to deploy the reserve without cutting away the main first. Needless to say that during reserve deployment the main opened and caused some serious problems. Because a drogue riser that is 'hung-up' will release 80% of the time during reserve deployment, Strong's Tandem Instructor Certification Course has included adherence to following the 'basic four' steps to deploy the main, and, if necessary, deploy the reserve.

The four steps, and the order in which they must be done are:

- [1] **Deploy the drogue,**
- [2] **Release the drogue,**
- [3] **Cutaway,**
- [4] **Activate the reserve.**

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PICK UP YOUR GEAR AT PIA

Dual Hawk Tandems for Sale

Strong Enterprises will be happy to deliver your new equipment to you at the PIA Symposium in Houston, TX. Feb. 9-14.

In stock, complete Dual Hawks with the Spandura Flap modification, and the outstanding SET-400 Z-PO main.

Also available:..

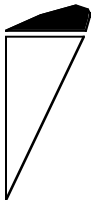
SET-400 main canopies,

New Dual Hawk harness / containers for trade-in
(Bring your old trade-in with you).

Flex pin kits.

Container modification kits.

Order now! Deposit required.



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TANDEM NEWS

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