

# TANDEM

## Newsletter

ISSUE 36, OCTOBER 2010

This newsletter is written for:

Packers, Riggers, DZ Operators, Strong Tandem Instructors & Strong Tandem Examiners.

Your comments are welcome.



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## 2010 SKYDIVING SEASON

THIS ISSUE IS  
**PACKED** WITH GOOD  
INFORMATION!

Great weather is all we ask for: blue skies and perfect winds! We hope everyone has had fantastic and safe 2010 skydiving season.

We thank all the Strong Tandem Instructors (T/I) that have complied with manufacturer procedures. It makes a difference when Tandem can be carried out by Instructors who take their student/passenger's life seriously and promote fun safe Tandem jumping.

For the lucky T/Is who can continue jumping all year and for those not able to jump over the winter months, don't overlook the condition of your equipment. The slow winter season is the best time to send in your Dual Hawk Tandem system for re-certification. See page 8 for a world-wide listing of our DHT Re-certification Centers and to utilize a re-certification chart guide. If you stop making Tandem jumps for 30 days/ 90 days/ 6 months/ 12 months you need to follow re-currency guidelines listed below to keep current and continue making jumps as a T/I.:

Tandem Instructors are divided into two groups:

1. Those who have under 500 tandem jumps. / 2. Those who have over 500 tandem jumps.

To be current:

1. Tandem Instructors with less than 500 tandem jumps need to have made 1 tandem jump within the last 30 days on the Strong Tandem System. In order to become current they would need to make 1 tandem jump with an experienced skydiver\* as the passenger. This jump is to be made under the supervision of a current Strong Certified Tandem Instructor after they review both normal and emergency procedures.

2. Tandem Instructors with more than 500 tandem jumps on the Strong Tandem System need to have made 1 tandem jump within the last 90 days on the Strong Tandem System. In order to become current they would need to make 1 tandem jump with an experienced skydiver\* as the passenger after they review both normal and emergency procedures.

3. Any Tandem Instructor who has not made a tandem jump within the last 6 months will have to make 1 tandem jump with a current Tandem Instructor as the passenger, after they review both normal and emergency procedures.

4. Any Tandem Instructor who has not made a tandem jump within the last 12 months would have to attend a re-currency course with a Tandem Examiner.

Remember during each Tandem jump we introduce another student/passenger to our fascinating world in the sky. How many students of yours have made a second, third or more tandem jumps? How many of your students have gone onto free-fall? Don't take it for granted, keep it memorable, keep it safe. Ask them questions: Where is the airport? How high are we? (they need altimeters). Give them the toggles and let them steer. You'll be their Hero for introducing them to skydiving for real!

For Tandem questions you may contact us at [tandem@strongparachutes.com](mailto:tandem@strongparachutes.com).

Blue Skies!

Tandem Department

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### Do you know?

What is the maximum weight and speed of the a Master Reserve canopy?

Answer on page 7.



# Pre-Jump Inspection

*What to look for when you put on the Tandem Dual Hawk System*

You can never be too safety conscious, that is why you shouldn't depend on someone else to tell you that the system you're about to jump is in good condition. **Always check the overall condition of the rig: make sure there are no holes, patches, or torn components.** If something doesn't seem right, ask!...don't assume everything's OK.

Follow these quick check points to make sure your Tandem Dual Hawk system is in tip-top shape. Repetition is key, the more you do these quick inspections the faster you get and you'll have a better sense of confidence in the gear you depend on landing you and your student/passenger safely.

## 1

### RESERVE CONTAINER

- Check AAD is armed.
- Pins are seated.
- RSL routed correctly.
- Reserve in date (check Data Card).
- Seal in place.
- Closing loops not frayed or worn.
- 8 Year Re-Certification



## 2

### DROGUE BRIDLE/RISER

- Proper assembly of 3-Rings.
- Proper routing of Drogue release cable (each cable through one end).
- Flex pin properly routed through housing & both closing loops.
- No nicks or broken strands on cable.
- Bridle folded & properly routed along channels.
- Check drogue properly fit in pouch. You want a good firm pack job on drogue.
- Drogue Velcro in good condition.
- End of flex pin not frayed, vinyl not missing. (check closely at swage).
- Main closing loops in good condition not frayed or worn.



## 3

### HARDWARE

- B-12 snaps not corroded, safety gate snaps shut freely.



## 4

### PASSENGER HARNESS

- Webbing not nicked or frayed.
- B-12 snaps not corroded, safety gate snaps shut freely.
- Quick ejector snaps close automatically. Springs not weak or broken.



***Pre-jump inspections should take about 5 minutes.***



# TANDEM INCIDENTS

## DZO's and Instructors...

You must submit a Dual Hawk Tandem Incident Report to Strong Enterprises for each Tandem parachute jump resulting in a reserve parachute activation, or resulting in injury or death to the certified Instructor or student jumper.

**You have 48 hours to notify Strong Enterprises** - Tandem Department either by e-mail or phone, followed by your incident report. In the case there is an injury to the student passenger please submit a copy of his/her waiver along with the incident report.

Strong Enterprises needs all the information it can get from incident reports in order to make the equipment safer or to change procedures for its use. An example of equipment improvement as a result of incident reports is the little ring at the bottom of the cutaway pillow. Tandem Instructors were forgetting to activate the drogue release, but they did cutaway. Hence, the little ring through which the drogue release ripcord is threaded. We have five reported avoidances of possible fatal incidents because of this ring. Your full cooperation is needed and appreciated.

*The Dual Hawk Tandem Incident report is available online at [www.strongparachutes.com](http://www.strongparachutes.com).*

### PREVENTION!

Make sure that your packer understands the packing procedures for the Dual Hawk System. Occasionally take a few moments to open the container and check that your lines have been properly stowed. Many reserve rides are caused by tension knots due to improper lines stows during the pack job.

Taking a few minutes to open the DHT system's main container and reveal a wealth of perhaps life saving information. On one occasion the suspension lines were found stowed outside of the Anti-line-Slum flap which is what prevents the line dump during deployment. Several parts could have failed during deployment.

With very little movement of the parts, you can check the number of lines, their length and the condition of the exposed lines. You can check that the drogue has been cocked, the brakes set and the connector links are secure. Close the container and pull out the drogue to establish that it is packed to reach full extension of the kevlar bridle before body inflation. This is designed to prevent your drogue from being stuck on your back in your burble.

**Go ahead and repack the drogue!**



## NO BELLY BAND? NO, NO, NO!

**If the applicant is too large to fit into the passenger harness, he/she doesn't get to jump, Period!**

We don't extend the webbing, tie them in with rope, or as one T/I did, just leave the belly band off. This T/I cited the fact that the Vector Tandem never had a belly band as the reason he conducted that leaving the belly band off the Dual Hawk System would be ok.

It is that kind of mentality, "We can deviate from the manufacturer's instructions", that has led to numerous preventable incidents and fatalities. The passenger harness was made to securely attach the passenger thinking of every eventful circumstance. Don't gamble your student's life at the chance of making a few extra dollars.



# PACKING HISTORY

## Master Reserve

Recently we have been asked why the Master Reserve is packed the way it is and why we use the materials we do. We would like to take this opportunity to explain this and some additional facts about the Master Reserve. To do this we will start at the beginning with some history about the Master Reserve and the Dual Hawk Tandem (DHT) System in general.

In 1983 development of a system that would join two people under a single canopy was started. During the next two and a half years the system went through multiple combination configurations and tests trying to find a configuration of container, harness, and reserve canopy packing method that would survive opening speeds of 200 mph with suspended weight of 525 lbs. The DHT system was built using top of the line technology and materials available at the time. In 1984 most reserves whether military or civilian, were flat packed, this was the accepted packing method and continued to be until 1995. The reserve canopy used for the DHT, a 300 square foot (sq. ft.), 9-cell, rectangular canopy called the Mighty Mak was packed using all packing styles currently used, (including pro-pack) but none were able to withstand the opening shock consistently, finally by adjusting the flat pack method and folding the nose we found a packing method that allowed the canopy to repeatedly survive opening shocks with little or no damage. In 1984 the DHT system was TSO'd and ready to be put to use. In June of 1984 the first DHT systems were placed in to service for tandem jumps under an FAA exemption that would be renewed annually (then biannually) for the next 16 years until an official change to wording of FAR 105 would legalize commercial tandem jumping.

During the next 9 months in 1984, 503 tandem jumps were made on 16 systems with only 4 malfunctions that required the use of the reserve canopy, there were no injuries. The development and testing continued and in March 1986 with the canopy sized to 425 sq. ft. (to make landings softer), the lines changed from cascaded to continuous (due to the failure rate of cascaded lines), and numerous other minor changes the Master Reserve was ready for TSO testing. Multiple tests for worst-case scenarios were conducted, including reserve activation with drogue in tow (reserve opening into drogue) and high speed overloaded tests. When it came to choosing a packing method for this new canopy, experience both in the field and from previous tests gave no reason for change to the method currently being used for the Master reserve.

The goal of packing a ram-air canopy is to stage the opening of the canopy and prevent a person from stopping too fast. A violently opening canopy can be as dangerous as a non-opening canopy. One example of this is, Dick Morgan, one of, if not the first person to open a ram-air canopy at terminal speeds woke up in the hospital. The opening shock of the canopy (which didn't have a slider or any reefing system) knocked him out, caused multiple injuries.

Another example is that of a tandem instructor who couldn't find/release the drogue handle so the reserve was activated at terminal speeds. The Master Reserve canopy suffered 50% failure, what was left of the canopy however flew relatively straight and although it had a high rate of descent both student and instructor, though injured, were alive. Upon inspecting this canopy it was noticed that all bartacks, and stitching were where they should be, it was the fabric and Kevlar that had shredded. Imagine the forces necessary to shred forty, 500 lb. Kevlar tapes. This caused us to examine all previous terminal deployments (28 in all), and what was discovered was that there were only 2 canopies that suffered any damage. One had a two-inch tear in a crossport of an internal rib, the other had a two-inch tear in the stabilizer. So what happened to this canopy? Although never admitted or proven it is believed by the 10-15 instructors and riggers that examined the canopy and evidence that the canopy was not packed according to the manual, but instead was pro-packed with nose exposed.

In a situation where the reserve is activated/needed it is imperative that everything works in sequence. First to leave needs to be the pilot chute, which extracts the bridle to full length, next the bridle pulls the freebag from the pack tray and starts unstowing lines. Once lines are completely unstowed, the freebag is pulled from the canopy. This whole process happens quite quickly but if it happens out of sequence there are multiple possibilities for malfunctions and entanglements. We use a freebag that is not attached to the canopy to keep any unnecessary components away while opening and flying. This is also why on the Master Reserve freebag there are elastic stow loops with chokers. During testing we found that in the case of a terminal tandem reserve activation lines could be stripped from rubber bands. The elastic stow loops with chokers when properly used prevented this, keeping the activation sequence in order, and preventing line dump.



There are many misconceptions that have been voiced about the flat pack method used for packing the Master Reserve. First is that the tail fold used increases the likelihood of a line over. In fact one is far more likely to have a line over situation while pro-packing than when flat packing. This is due to the fact that when flat packing lines are constantly under tension and visible, when pro-packing after the tail is brought around the lines and back to the nose it is difficult to control the lines and easier to accidentally pull a line over the nose of the canopy.

The second common misconception is that twisting the lines introduced when folding the nose causes tension knots. In actuality this twist is transferred from lines to the canopy when the slider is put in place, and this is no different than rolling the nose of the canopy during the pro-pack method. In both methods the nose is being closed off to prevent rapid quick openings that would result in violent opening shock.

A third misconception is that the pro-pack method is better than the flat pack method. Fifteen years ago this would have been said the other way, when in fact neither method has been proven better or more reliable than the other. It is a matter of practice and preference as to which each person chooses to believe is better.

In the 1980's when the Master Reserve was being developed there were three materials that were used for lines: Nylon, Dacron, and Kevlar. Of these the Kevlar was by far the best, strongest and least abrasive of the available materials. In 2005 we investigated the use of Spectra lines on the Master Reserve, but were disappointed with the results. The friction caused by the lines rubbing together produced heat in levels that could cause the lines to fail. We found that Spectra literally melts at 250 degrees Fahrenheit and starts to fail at much lower temperatures, while Kevlar doesn't break down until around 800 degrees Fahrenheit. Spectra also tends to be slipperier than Kevlar, which would allow greater possibilities for line dump. HMA lines seem promising, they are more resistant to abrasions, they are smoother than Kevlar, and they have a much higher melting point than Spectra. The only problem is that HMA is still too new of a material to properly evaluate. We don't want to change the Master Reserve just to say it has changed, we want it to be an improvement not just a sideways step since 99% of all malfunctions can be attributed to problems with the lines, it seems a big risk to take over something that is not proven.

There have been many concerns brought to our attention about the possibility of tension knots. In general tension knots are caused by poor stows, uneven stows, large stows, sloppy stows and poor maintenance. Most tension knots happen when the excess slack in the line wraps around itself and when pulled tight forms a knot. Think of a garden hose, grabbing one end

and pulling generally causes the remaining hose to snarl up, most of the time by shaking the hose a couple times (releasing the tension) you are able to get the hose back in working order and eliminate the snarl. The concept is the same with lines only there is no way to release the tension on the lines without releasing the canopy. To avoid this, keep constant tension on all lines while packing, and avoid large sloppy stows. Another thing to avoid is "milking" the lines, this pushes all the slack to one place, right at the canopy just below the slider, the last place that you want to tie up a canopy. Line slack is like troublemakers in a crowd, spread out here and there they are a nuisance, but put them all together and suddenly you have a huge problem. Ideally the slack from lines needs to be distributed evenly among all stows. Keeping all stows relatively small and even will eliminate almost all chances of creating a tension knot.

I hope this has helped to explain why we chose the materials and packing method that we did for the Master Reserve. Twenty-four years of use in extremely harsh conditions has lead us to believe it is simply right materials and the right method for this canopy. Should you have any questions, comments, or desire a demonstration/class in packing the Master Reserve to become more comfortable with the procedures feel free to contact us by phone or e-mail. We welcome any questions and feedback.

Chuck McHugh & Jessie Hanson



Photographer: Steeve Boothey • T1/E: Tom Noonan • Passenger: Ted Strong

# Proper Drogue Toss



### Drogue Deployment Technique:

- 1) Break Velcro holding pud to container.
- 2) Throw drogue to the right with one quick motion.
- 3) Do not hold the drogue by the pud allowing the Kevlar bridle and drogue body to horseshoe behind you. If the drogue is allowed to horseshoe, upon release the drogue body and mesh will rub against the abrasive Kevlar bridle incurring severe wear. Additionally, the Kevlar bridle or the drogue itself will tie a half hitch knot in the drogue body. More then likely, you will not have enough drag to extract the main containZer closing pin and you would then need to deploy your reserve into a thrashing, drogue in tow.
- 4) If extracting the drogue from the pouch is difficult, place your elbow on the side of the container and use it as a fulcrum for leverage.

### Drogue Burble:

As air is pushed out of the way during freefall, it rushes around and downward behind the Tandem pair, creating a large burble. Care must be taken to vigorously launch the drogue. This will avoid having the drogue get caught in the burble and being sucked down on top of the jumpers, possibly entangling with equipment or the jumpers.

If the drogue gets caught in the burble immediate action should be taken. Pull both the passenger's and the instructor's arms in on one side to initiate a 1/4-barrel roll. This should clear the drogue.

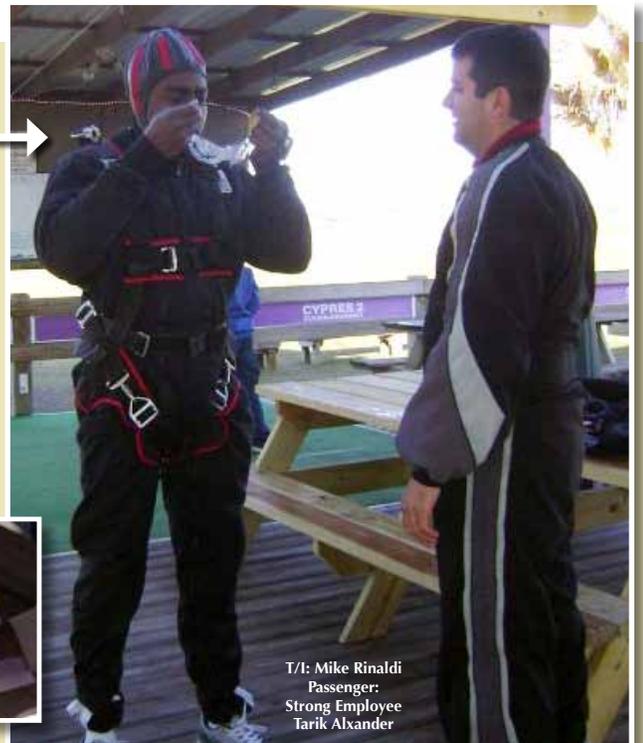
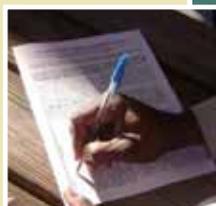
If clearing the drogue cannot be accomplished, remember, recommended minimum altitude for reserve activation is 3,000 feet.

## "A Tandem Jump Is Not Just Another Skydive."

### STUDENT/PASSENGER WAIVER & GEAR

The Safety of our student/passengers is our number one priority. Skydiving is a high risk sport that can be enjoyed safely when the proper precautions and guidelines are followed. All student/passengers jumping on the Dual Hawk Tandem System must be 18 years of age or the age of majority in the state in which the Tandem jump is being done, whichever is greater. A Strong Enterprises Volunteer Parachute jumper Waiver and Assumption of risk Agreement must be signed by the student/passenger prior to their Tandem jump. The following student/passenger equipment is required according to manufacturer's guidelines:

- *Low Drag Jumpsuit or tight fitting clothes*
- *Soft Helmet (French Type)*
- *Goggles*
- *Wrist Altimeter*
- *Student Ripcord*
- *Closed Shoes*



T/I: Mike Rinaldi  
Passenger:  
Strong Employee  
Tarik Alexander



# DZ Owners Beware!!

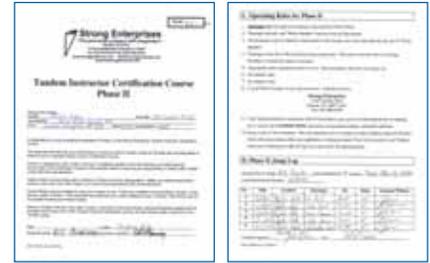
## NO T/I RATING!

This guy made 14 tandem jumps as an Instructor without a Tandem Instructor rating. It was easy, he told two DZO's, where he was making TJs with a rating that he did possess, that he also was rated on the Dual Hawk Tandem System. He wasn't! He took advantage of his relationship with the DZO's, and demonstrated his utter disregard for those relationships, the well-being of the DZO's business, the gear mfg, the pilots and USPA. Each entity was exposed multiple times to litigation that could have resulted from any injury, death, or property damage.

No, not all skydivers care only about themselves, but they are out there. Protect yourself! DZO's should have copies of each TI's mfgs.rating card, USPA TI rating, required physical, along with a photo of that TI. Some of these files require annual updating, but the cost of not doing this small task may be your undoing. Protecting your DZ business also protects the mfg. who makes your tandem system. When the gear mfgs. get sued out of existence, you won't have gear to continue in business.

## Strong T/I Certification Illustrations

### Temporary 90 Day T/I Certification: Phase II



Front

Back

Permanent T/I Certification: Unless suspended or revoked by manufacturer. **Always check for current status of your T/Is.**



Front

Back

## 90 Day Suspension...

This Tandem System owner provided a rig to be used by a contracted TI to make a tandem jump with a paying customer, that did not have a Reserve packing data card, nor a riggers seal installed. This tandem system owner displayed utter disregard for the safety of both the TI and the student passenger. Additionally, with premeditation, he exposed the mfg., the DZO, the pilot and USPA to litigation that could have resulted from any injury, death, or property damage.

## Riggers Beware!

Do not pack a tandem system that is not in compliance with the mfgs. maintenance requirements. Strong Enterprises' Bulletin 22, which can be found on Strong's web site, details the maintenance requirements for Strong's Tandem System. We have found some Dual Hawk Tandem Systems that are being used while out of compliance, an FAA.FAR.Sec65.129 Performance Standards violation.

## Answer... (Question on pg.1)

Maximum weight of the Master Reserve is: 500 lbs.  
Maximum speed of the Master Reserve is: 175 kts.-IAS

T/I: Mike Rinaldi  
Passenger:  
Strong Employee  
Tarik Alexander



## Don't Ride the Passenger

Be proactive! When making a Tandem jump know that more than exiting the aircraft your **STARTING** your skydive and stability should be your first thought. Present yourself into the relative wind with a good positive arch. This will greatly reduce your workload. Always make sure you have control from the very beginning. It is easier to handle unexpected circumstance when you're in control of the skydive rather than try to gain control after you've noticed something is wrong. **Always stay one step ahead of the game.** After you set the drogue resist the urge to lay on your student/passenger: **always maintain a positive arch.**

*"Don't let your body arrive anywhere your head hasn't been in at least 4 seconds"*

# ARGUS Service Bulletin

Revised: Issue date - September 5th, 2010

Aviacom has issued a revised service bulletin for a mandatory replacement of all Argus cutters. Systems that have a cutter of the manufacturing date August 2007 or earlier must have the cutter replaced with a later model at next repack but no later than December 31st, 2010. Cutters manufactured as of September 2007 use a different, hardened steel blade delivering a clean cut by loops with lesser tension.

Cutter's manufacturing date can be identified by the cable tag. Any Senior or Master Rigger can unscrew the cutter and replace the old cutter with an approved one. Connector must be locked hand tight in order to ensure water resistance.

You can download the complete service bulletin at: [www.argus-aad.com](http://www.argus-aad.com) and click on Service Bulletin tab.

**Strong Recommendation:  
Argus cutter should  
be replaced before  
the next jump!**

## High Speed Turns to Tandem Final???

In the December 2008 issue of the Tandem News, Tom Noonan wrote a nicely worded article on how to use a 90° turn to final or the Sink Surge Approach to achieve enough speed for a nice flare. The objective being is to reduce the number of injuries to tandem passengers and Instructors. Tom pointed out that Hook-turns are just not necessary, and considering the deaths of tandem students in 2008, unacceptable.

Now we have a Tandem Instructor advocating 270° turns to final on tandem jumps by putting them on You Tube and distributing DVDs of the same. We know that Swoopers use a 270° turn to build up enough speed that will kill or maim them if they misjudge the altitude or the turn. And this guy is telling you, or perhaps a lesser skilled person, that 270° turns are ok? What are these people thinking?

The Tandem manufacturers are doing everything they can think of to keep tandem jumping as safe and professional as possible. Unfortunately some tandem instructors haven't grasped the idea that they need the manufacturers to remain in business. They can't keep inventing new ways to entertain themselves while throwing the manufacturers under the litigation bus.

## Reminders!!

- T/E Renewal Applications need to be submitted by December 31st.
- **All Tandem Instructors:** Please submit your yearly Tandem Instructor Questionnaire before the year ends. You can download the form at [www.strongparachutes.com](http://www.strongparachutes.com) and click on Information Central tab/forms.

## Re-Certify your Dual Hawk Tandem System



If your DHT system is due for re-certification, the end of the skydive season is the best time to send it in. This will ensure your Dual Hawk Tandem system is in compliance with FAA.FAR Sec.65.129. If in doubt as to whether your gear needs to be re-certified plug in your date of manufacturer to the chart on your right and follow the year increments.

DHT harness, container and main canopy have a life expectancy of 18 years, while reserve canopy goes can go up to 23 years. If you have any question feel free to contact us by phone (407-859-9317) or email ([tandem@strongparachutes.com](mailto:tandem@strongparachutes.com)).

<b>Date of Manufacturer</b>	<i>Insert your DOM here</i> _____
<b>8 Year Re-Certification Due</b>	<i>(8 years from DOM)</i> _____
<b>5 Year Re-Certification Due</b>	<i>(13 years from DOM)</i> _____
<b>5 Year Re-Certification Due</b>	<i>(18 years from DOM)</i> _____

### DHT SYSTEM RE-CERTIFICATION CENTERS WORLDWIDE

<u>Name</u>	<u>Location</u>	<u>Contact Information</u>
Strong Enterprises	USA	<a href="mailto:sales@strongparachutes.com">sales@strongparachutes.com</a>
Flying High MFGR Inc.	Canada	<a href="mailto:inquiry@flyinghigh.net">inquiry@flyinghigh.net</a>
Rigging Argentina	Argentina	<a href="mailto:riggingargentina@yahoo.com">riggingargentina@yahoo.com</a>
Para Centro Locarno	Switzerland	<a href="mailto:felix@paracentro.ch">felix@paracentro.ch</a>
Fallschirmdepot Ostermuncher GMBH	Germany	<a href="mailto:info@fallschirmdepot.de">info@fallschirmdepot.de</a>
Isola' Quip	Netherlands	<a href="mailto:isolaquip@mac.com">isolaquip@mac.com</a>
Jump and Fly	Italy	<a href="mailto:info@jumpandfly.it">info@jumpandfly.it</a>
Fontanesi Pier Luigi	Italy	<a href="mailto:pffontanesi46@tin.it">pffontanesi46@tin.it</a>
New Sky Center	Italy	<a href="mailto:roberto@newskycenter.it">roberto@newskycenter.it</a>
Elis's Fallschirmshop	Austria	<a href="mailto:shop@fallschirm.at">shop@fallschirm.at</a>
Air Safety Solutions PTY	Australia	<a href="mailto:Dave@airsafetysolutions.com.au">Dave@airsafetysolutions.com.au</a>
Ripcord Skydivers	Australia	<a href="http://ripcord@ripcordskydivers.com.au">ripcord@ripcordskydivers.com.au</a>
Precision Rigging (Sky Gear)	Australia	<a href="mailto:roryh@pobox.com">roryh@pobox.com</a>
Wallace	Australia	<a href="mailto:spitfire1927@hotmail.com">spitfire1927@hotmail.com</a>
Whenuapai Parachute Maintenance Center and Repairs	New Zealand	20 Puriri Rd., Auckland 1001