



PSB#071897
Proper Deactivation of the RSL on a Vector Tandem
July 18, 1997

Tandem Rig Owners and Instructors Worldwide

RE: Product Service Bulletin 071897
Proper Deactivation of the RSL on a Tandem Vector

Dear Tandem Rig Owner/Instructor:

Enclosed is a Product Service Bulletin dated July 18, 1997 entitled Proper Deactivation of the RSL on a Tandem Vector. Recent incidents of broken tandem risers have led the Relative Workshop to give Tandem Rig Owners and Instructors the option of disconnecting their RSL. The procedures for properly disconnecting the RSL are detailed in the enclosed product service bulletin. Also included, on the back of the product service bulletin, are some of the most frequently asked questions regarding the product service bulletin. It should be noted that disconnecting the RSL has not been made mandatory. The product service bulletin and frequently asked questions should provide enough information for the Tandem Rig Owner or Instructor to make an educated decision as to whether or not he, she wishes to disconnect the RSL.

Let us remind you that a tandem jump is not just another skydive! Likewise, the equipment used to make a tandem jump should not be considered ordinary equipment. It must endure a great deal of abuse, and for this reason, the Relative Workshop has established a recommendation of the "lifetime" of tandem components:

- Replace suspension lines every 200-300 jumps
- Replace canopy after 600 jumps
- Replace main risers every 600 jumps
- Replace drogue centerline every 300 jumps
- Replace drogue assembly every 600 jumps
- Harness / container inspection every 200 jumps
- Reserve canopy limited to 20 uses

• Note: If you are using an older RSL with a brass shackle and welded reserve pin, the Relative Workshop recommends that you replace that RSL with a newer style RSL with a stainless steel shackle and stamped reserve pin.

These recommendations are based on many years of observing tandem malfunctions and equipment failures. Also, while these guidelines set the maximum number of jumps particular components can see, all components should be inspected regularly and replaced if necessary regardless of the number of jumps. Think of the airplane industry and the rigorous inspection and service cycles that must be upheld. Tandem should be no different given the fact that paying passengers are involved. Keeping this in mind, keep your year in proper working order, and replace components when their "lifetime" is over or when excessive wear and tear necessitates replacement.

Sincerely,

TK Donle
Tandem Program Director

Status: Vector Tandem Instructors now have the option of deactivating their Reserve Static Line Lanyards (RSL). Qualified Personnel: The RSL deactivation should only be performed by a Rated Vector Tandem Instructor or certificated FAA Rigger or foreign equivalent.

Background: Recently, an RSL on a Strong Tandem System was activated during main deployment due to a broken left main riser. The reserve deployed and immediately entangled with the remaining half of the main canopy. The tandem instructor had no time to respond to the resulting malfunction. As a result of this inadvertent reserve activation, the tandem instructor incurred fatal injuries. Within several weeks, Relative Workshop received reports that one of our new Type 7 risers also failed during a hard opening. The RSL did not deploy the reserve, but it very well could have with fatal consequences.

The condition of the risers, as well as the entire system, must be checked every 25 jumps as specified in FAA Exemption 4943. As main risers become older through use, you will find compression abrasion in the area where the riser attaches to the main harness ring. A combination of a severely worn riser and a hard opening could result in a broken riser. If this happens to the right riser on a Vector System with the RSL attached, the reserve will most likely be activated, possibly entangling with your main canopy before you have a reasonable amount of time to react. If your risers appear overly worn, replace them. Relative Workshop recommends replacing main risers every 600 jumps or as needed.

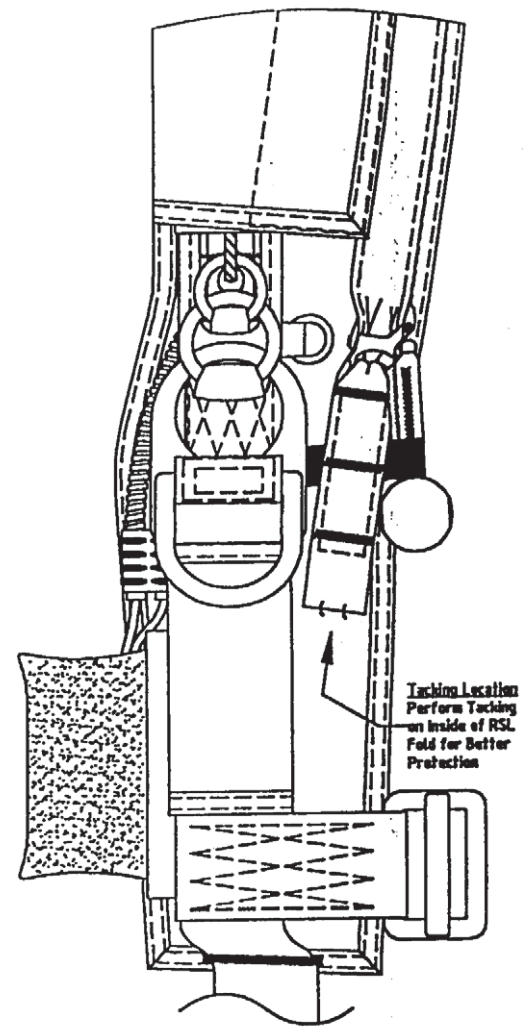
Relative Workshop has developed a modification for the Vector Tandem System that is designed to prevent a two canopy entanglement if the right main riser were to fail. We are testing and evaluating this modification as this bulletin is being written. Until such time that we can publicly release this modification, tandem instructors may decide to deactivate the RSL connection to the main riser.

Action: When the Vector Tandem System is being jumped with the RSL disconnected, the RSL must be properly stowed to insure safe operation of the system. In addition, 1) the pillow-style reserve ripcord handle must be replaced with a loop handle reserve, and 2) The instructor must review tandem emergency procedures, preferably in the hanging harness made covering each possible procedure as outlined in our video and manual. The procedures for properly deactivating the RSL are as follows:

Disconnect the shackle of the RSL from the attachment ring connected to the right main riser. Connect the shackle to the RSL lanyard as shown in the drawing. It may be necessary to separate the lanyard Velcro from the comfort pad Velcro in order to properly secure the shackle around the lanyard. Once the shackle has been attached to the lanyard, mate the pile Velcro on the lanyard with the hook Velcro on the comfort pad. Make sure the yellow Velcro is properly attached between the lanyard and comfort padding so that the ball handle can still be used to deploy the reserve.

If the Velcro holding the lanyard's one inch wide Type 4 is insufficient to securely hold it in place, then tack it with a double turn of red rigger's seal thread. Inspect it regularly to be sure the hand tack is air worthy.

Distribution: Tandem Rig Owners and Instructors Worldwide



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Frequently Asked Questions

Q. I have brand new risers, should I be concerned?

A. Only if you keep the RSL active and attached to the main riser, hence the importance of this service bulletin. If you think about the chain of events that might occur during a hard opening which can cause damage to your system, then having a riser break is actually a planned fuse-link along with the canopy and lines. In reality, your main risers are part of the canopy assembly.

Consider this: If you experience an opening shock so bad that structural damage is inevitable, you either want the canopy to blow up, the suspension lines to break, or the riser to fall. We must avoid hurting the jumper or causing structural damage to the primary harness at all costs. Therefore, risers are designed to break at a rough structural threshold of approximately 5000 pounds.

Q. Why not just build a stronger riser?

A. We can build a stronger riser, but the possibility of hurting the jumper or damaging the primary harness during a really hard opening is ever present. Sucking the yellow cutaway cable into the cutaway housing grommet is the next problem we need to be concerned about. In other words, if your cutaway cable is sucked through the grommet, you will not be able to cutaway the canopy. This is a very serious problem.

Q. Can I remove my RSL completely?

A. No, not ever. The Tandem Vector RSL is also your auxiliary right-hand reserve ripcord. You may deactivate the RSL, but never remove it completely from the system.

Q. Why do I need a Loop-Style Reserve Ripcord?

A. A loop-style reserve ripcord is easier to see and pull. Now that tandem instructors have the option of deactivating their RSL's, we want to give every tandem instructor the best possible handle to see and pull. Previously, RSL's were heavily relied upon to activate the reserve.

Q. Is there anything I can do to minimize the risks?

A. Yes there is. We believe the following information is critical. Please pass it on to other instructors. This information applies to all types of canopies.

Point loading a riser is a condition that we believe is controlled by a certain set of circumstances:

1. How you pack the canopy is critical. First, the suspension line groups, both left and right, must be symmetrical. A couple of inches of asymmetry there can create an opening shock spike that can point load risers.
2. Good line tension throughout the complete pack job is critical. Poor line tension is the most common cause of partial malfunctions.
3. Nose treatment of the canopy. You must fold the nose per our instructions on page 26-27 of the Tandem Vector Owner's Manual. (Center cell inflation first expands the slider to full dimension and the relative wind keeps the slider high during the deceleration phase, causing a more staged and orderly deployment. On the other hand, rolling the entire nose in the same direction will generally cause one side of the canopy to open ahead of the other, sending the slider down the lines unevenly which can cause point loading.)
4. Proper stow band usage with proper length line bites (3-4 inches). We now recommend large tube stows on the two center locking stows on the bag. The remaining bands should be our standard, wide tandem rubber bands. "Line dump" is one of the biggest culprits which contributes to point-loading. And finally

5. Body position during main deployment. Tandem instructors must look straight up for the deployment. Never look over a shoulder as we were taught in the old days. Doing so will cause major line group asymmetry and point loading.

Comment:

Before deactivating the RSL, consider the statistical probability of a riser breaking and deploying the reserve via the RSL versus the tandem instructor not pulling the reserve ripcord manually when required. In the past 13 years, approximately 2 million jumps have been made on the Vector Tandem System. There have been 5 reported cases of a riser breaking during deployment. That's a broken riser every 400,000 jumps. However, risers do not break because of statistics, they break because of Insufficient maintenance, Incorrect packing technique, or poor body position. during deployment. Know your gear, check its condition regularly, pack carefully and according to the Instructions, maintain proper body position during deployment, and most of all, BE SAFE!