

# *Butler Parachute Systems, Inc.*

## **Tethered Tandem Bundle Delivery System**

### **TT-1000 Gen 2**

# **Assembly Instructions**

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## INTRODUCTION

This manual contains all the required information for assembling the Butler Parachute Systems TT-1000 Tethered Tandem Bundle Delivery System and is broken down into two sections: TT-1000 Components and TT-1000 Assembly.

Most of the information and procedures contained in this manual are routine for the experienced parachute rigger. However, a few of the procedures are unique to the TT-1000 and **MUST** be followed as written for the TT-1000 system to operate correctly. Failure to do so could result in injury or death to the operator.

If at any time you are unsure of a procedure or have a question, stop what you are doing and give us a call...we will be glad to provide you with any assistance you may need.

## TT-1000 COMPONENTS

The following two photographs illustrate all of the components necessary for the assembly of the TT-1000. With the exception of the Cypres unit, all of the components are included in the TT-1000 system as it is delivered from the factory.

Before beginning the assembly process, please ensure that you have all of the required components.



1. TT-1000 Container
2. RW-10/Butterfly Snaps (Left & Right)
3. CYPRES
4. Carabiner
5. Hook Knife
6. 24-inch CYPRES Extension Cable
7. Belly bands
8. Static Line
9. Release Handle

## TT-1000 CANOPY / DEPLOYMENT BAG COMPONENTS

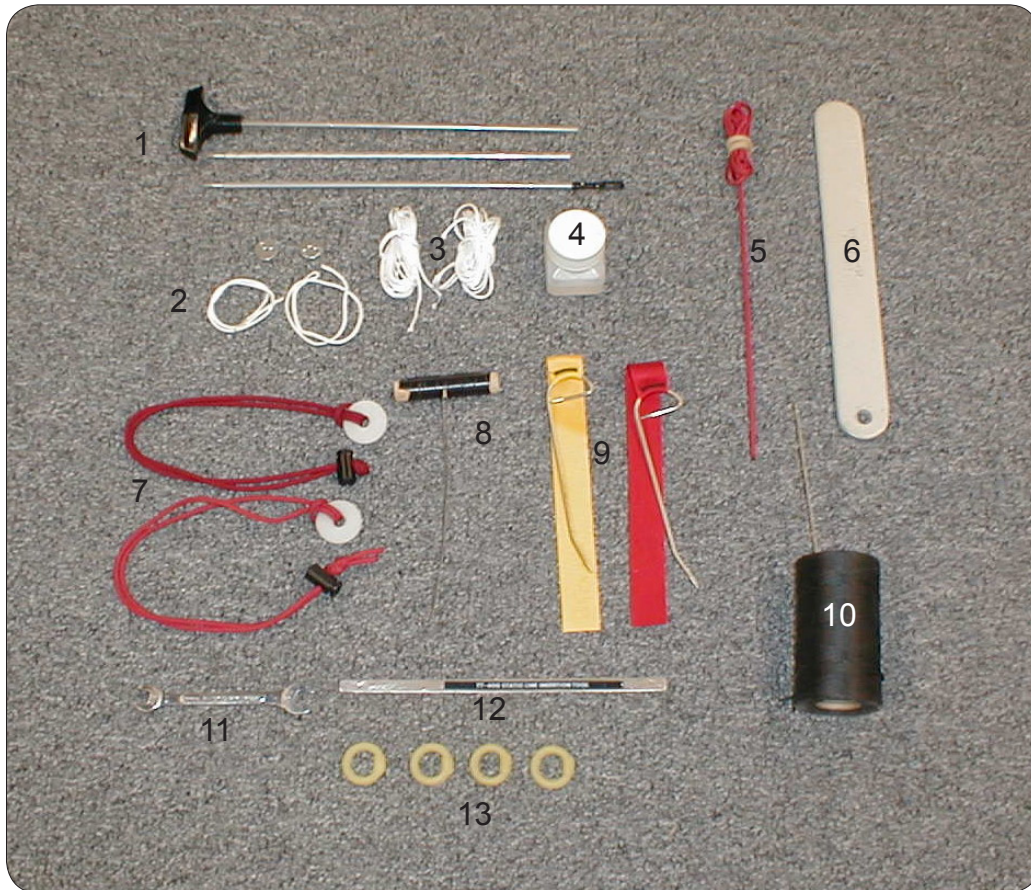


1. HX-1000 Canopy
2. Deployment Bag
3. 50-Inch Controller Drogue
4. Pilot Chute Channel Bridle
5. Deployment Bag Bridle
6. Controller Drogue Bridle
7. Incremental Bridle (Zipstrip)
8. MIL-T-5038, T3, 1/2" Tape
9. 44-inch Pilot Chute

## Assembly of the TT-1000

### REQUIRED TOOLS

Before you begin assembling the TT-1000, make sure you have all of the tools required to complete the assembly. The following illustration shows all of the tools you will need:



1. Incremental Bridle (Zip-Strip) Tool
2. Cypres Closing Loops and Discs (2) \*
3. Cypres Pull-up Cords (2) \*
4. Cypres Silicone \*
5. Line stow Fid
6. Packing Paddle
7. Locking Pull-up cords (2)
8. Fingertrapping Tool
9. Cypres Temporary Pins \*
10. Supertack (or equivalent) with Tacking Needle
11. 3/8" or Adjustable Wrench
12. TT Static Line Insertion tool
13. Stow bands

NOTE: Items with an \* are contained in the Cypres Packer's Kit

Before starting the TT-1000 assembly, use the following illustrations to familiarize yourself with the various components of the TT-1000 container:



1. Closing Loop Base
2. Grommet for SAFETY Closing Loop
3. Grommet for CYPRES Closing Loop
4. Risers
5. Cypres Pocket
6. Cypres Cable Channels
7. Cypres Elastic Release Unit Sleeve

1. Release Handle Protector
2. Carabiner Pouch
3. Hook knife Pocket
4. Cypres Control Unit Cover



HARNESS COVER

1. Static Line Guide
2. Static Line Stow Flutes
3. Safety Cable Channels
4. Safety Cable Closing Loop Grommet
5. Cypres Closing Loop Grommet



INNER TOP FLAP

## CYPRES PREPARATION

The cable on standard Cypres release units is too short to use on the TT-1000. Therefore, a 24-inch cable extension is included with the TT-1000 system as it comes from the factory.

To prepare the Cypres for installation into the TT-1000 Container:

1. Unplug the Cypres release unit from the processing unit.
2. Plug the release unit into the 24-inch cable extension.
3. **STOP**. Do not plug the extended release unit back into the processor unit at this point.

## CYPRES INSTALLATION

NOTE: All CYPRES installations must be done by licensed riggers using the CYPRES Rigger's Guide and any written instructions issued by the rig manufacturer. If you do not have a CYPRES Riggers Guide, you can download a copy from: <http://www.cypres.cc>

Prior to installing the Cypres into the TT-1000 Container, take a moment and familiarize yourself with the openings the Cypres Control Unit needs to pass through to wind up in the control unit pocket located on the harness cover of the container.

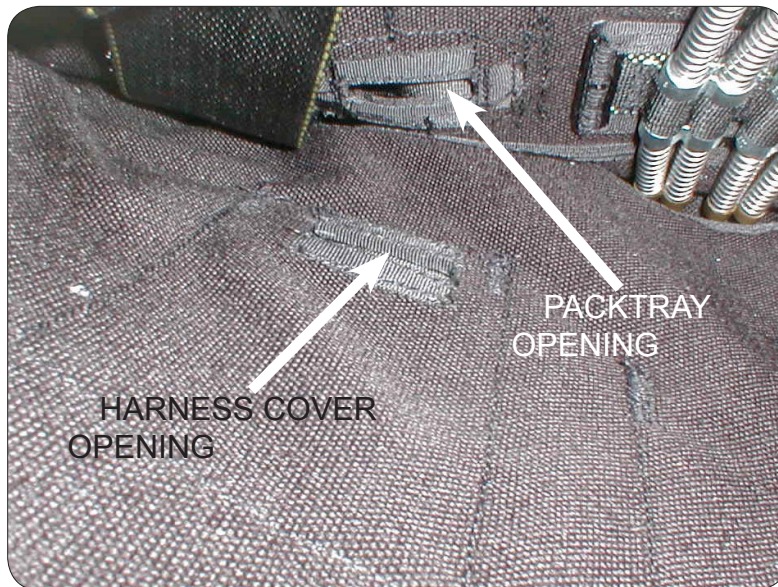
On the inside of the container, just below the Cypres pocket, an opening through the packtray is covered with a piece of 1-1/2" Type 3 webbing. The Control Unit must first pass UNDER the Type 3 and through the opening.







The Cypres Control Unit pocket on the harness cover of the container also has an opening that is covered with Type 3 webbing. This is the second opening that the control unit must pass through.



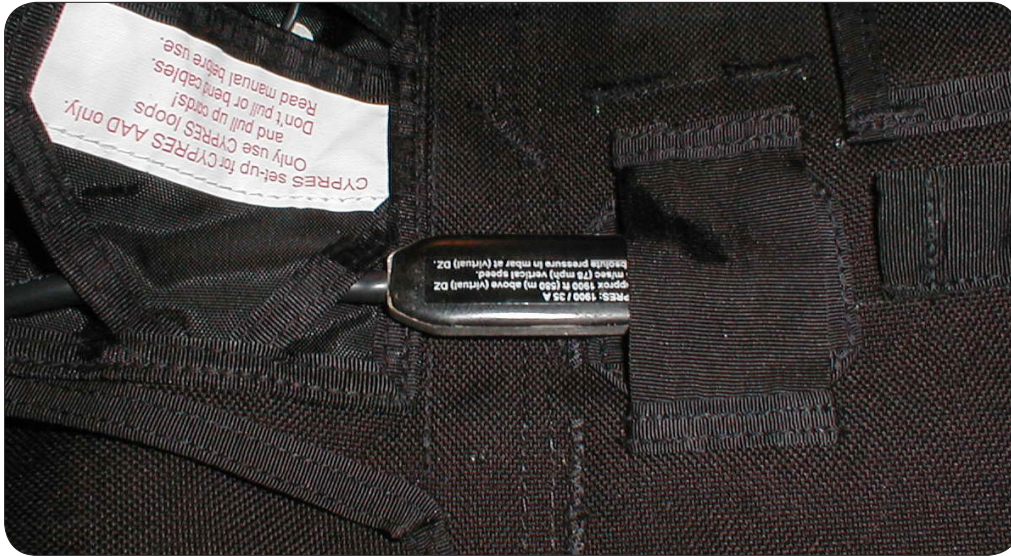
Looking between the harness cover and the underside of the packtray, you can see both openings that the Cypres Control unit must pass through.



1. Place the Cypres Processing Unit into the Cypres pouch as shown. Remember that, in accordance with the Cypres Manual, the cables MUST be on the bottom.



2. Pass the control unit through the corner opening of the cable protector flap.



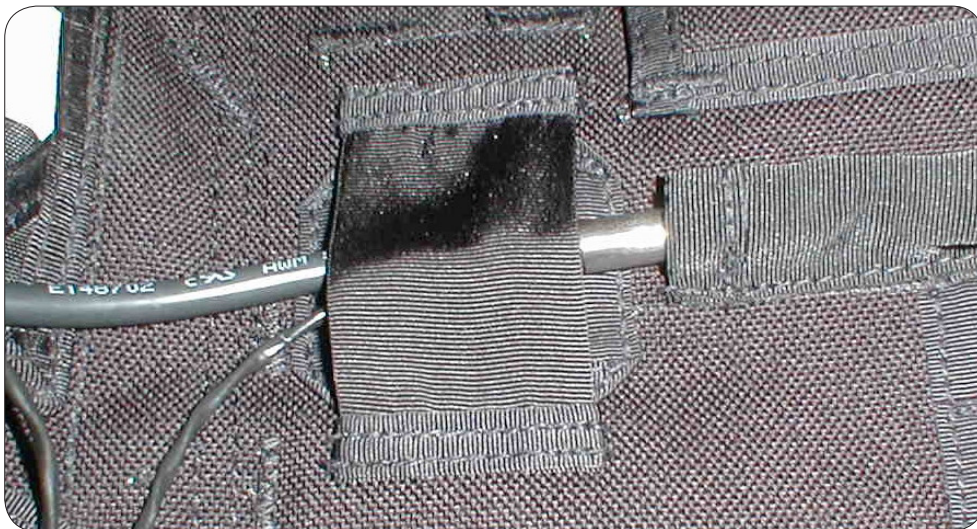
3. Feed the Control Unit under the Type 3 webbing on the packtray and through the packtray opening.



4. Reaching up with one hand between the packtray and the harness cover, pass the control unit through the harness cover opening and into the harness cover pocket.



5. Install the Cypres release unit by first passing it under the Type 3 webbing that covers the opening in the packtray.



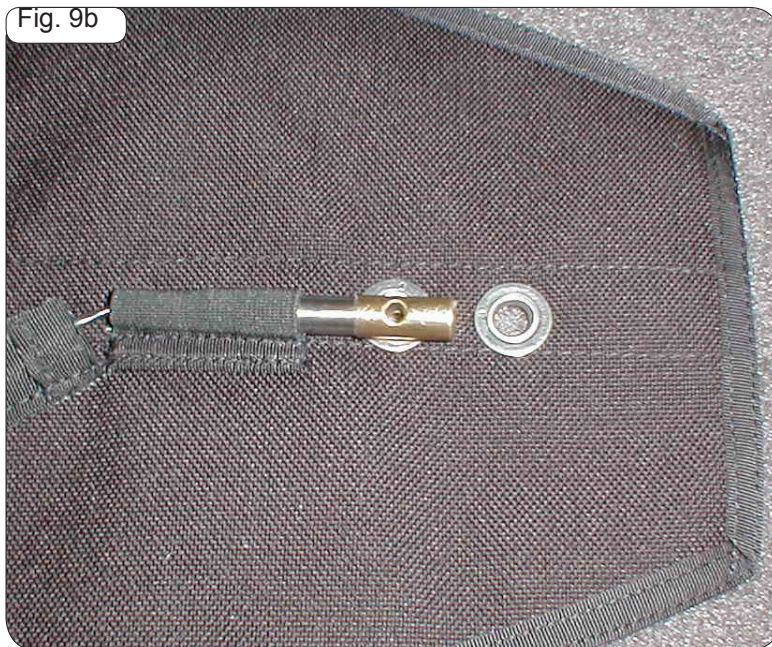
6. Next, insert it into the opening of the packtray channel as shown and carefully feed it through the channel.



7. The bottom flap has two channels. After passing the release unit through the pack-tray channel, insert it into the first bottom flap channel and carefully feed it through.



8. Insert the release unit into the second bottom flap channel and feed it through.



9. As the release unit emerges from the second bottom flap channel (fig. 9a), insert it into the elastic keeper as shown (fig. 9b).



10. Plug the end of the 24-inch extension cable into the processor unit.

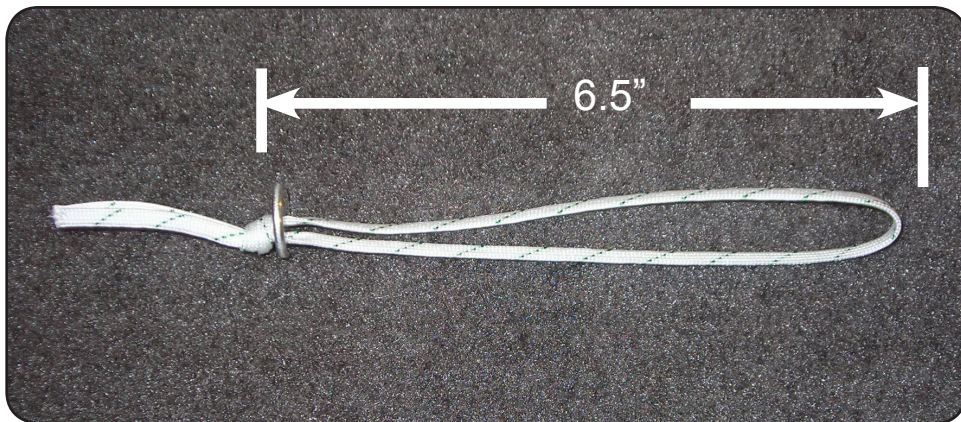


11. Neatly coil both the control unit cable and the release unit cable, then close the cable cover as shown. Remember, the release unit cable MUST be placed UNDER the control unit cable.


## CLOSING LOOP INSTALLATION



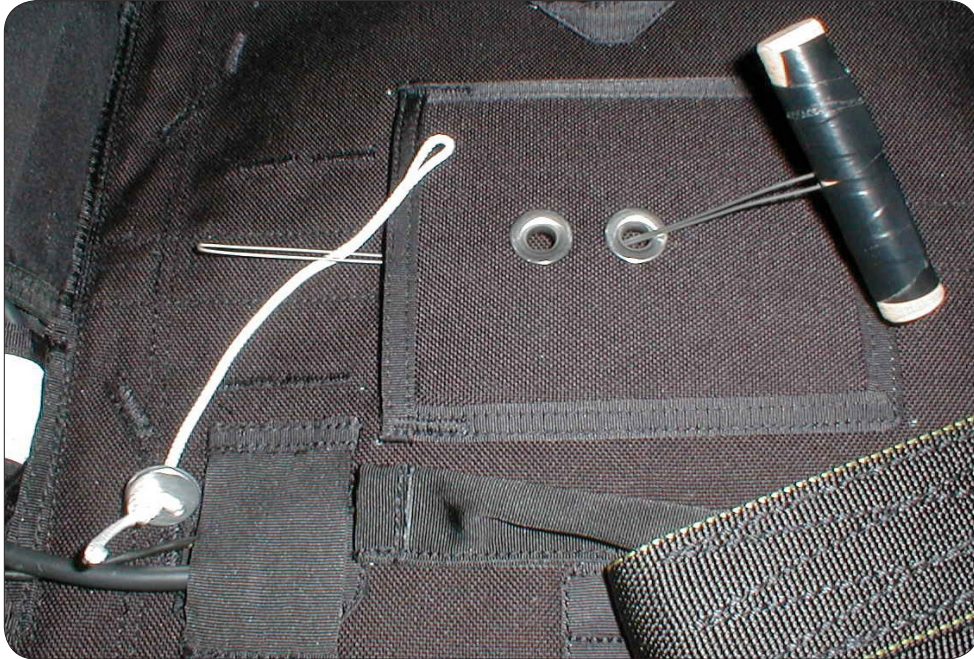
12. Following the steps in the Cypres Rigger's Manual, create closing loops 6" (+-1/4") (15.5 cm) long. NOTE: The closing loop length may need to be adjusted later.



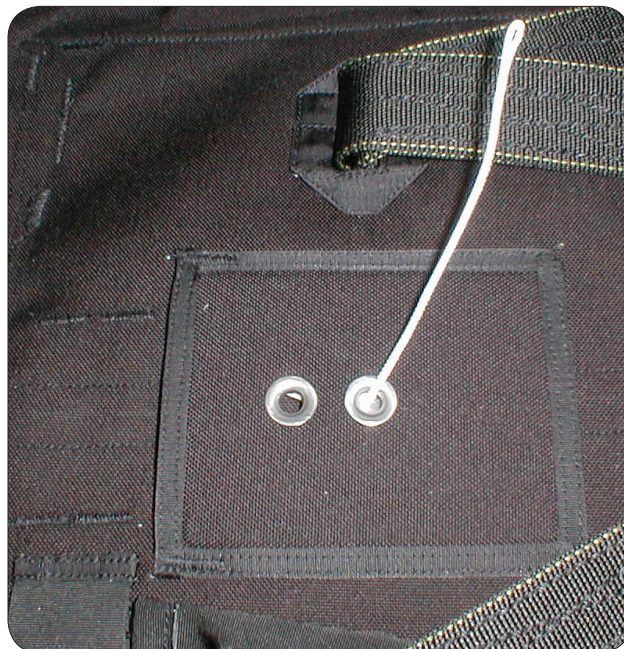
13. Using Nylon, Type 2a cord and a CYPRES disc, create a closing loop 6.5" long (16.5 cm). This will be used as the Safety Closing Loop.

 **WARNING** The SAFETY LOOP must be 1/2" longer than the Cypres closing loop to prevent a hard pull on the cutaway handle.





14. Insert your fingertrapping tool through the center grommet of the closing loop base, then place the CYPRES Closing Loop through the fid as shown.



15. Pull the CYPRES Closing Loop through the base plate grommet until the Cypres disc is in position at the base of the grommet.



16. Insert your fingertrapping fid into the remaining base plate grommet (Fig. 16a) and pull the Nylon, Type 2a Safety Closing Loop into place as shown (Fig. 16b).



17. Stretch out the canopy and ensure that the back center gore (gore 28) is on top. Once you are certain of proper orientation, apply a slight amount tension between the apex and connector links. Next, grab the skirt of the slider and pull it 3 to 4 feet towards the connector links.



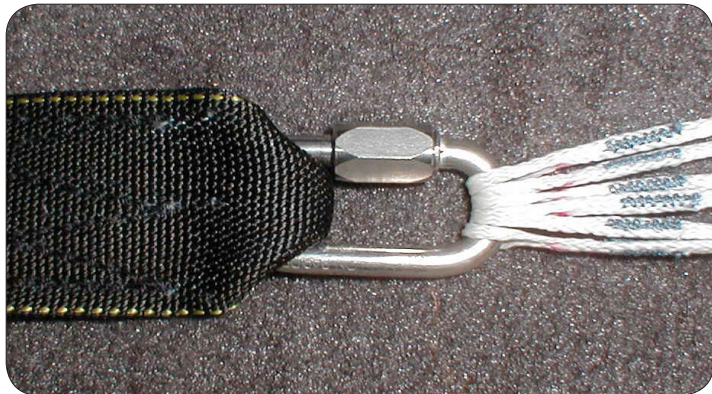
18. Perform a “4-Line Check” to ensure that there are no twists in the suspension lines and that the connector links are oriented correctly.



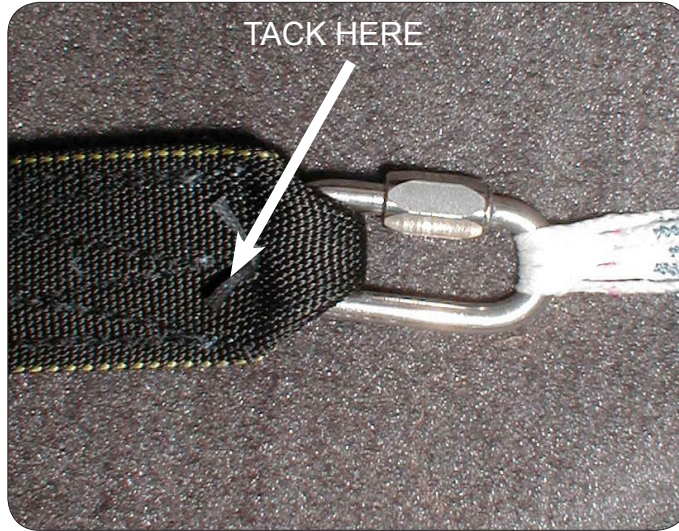
19. Fold the bottom flap of the container under and position the container adjacent to the connector links as shown, flip the risers down so that they are facing the connector links. Position the top two risers toward the center of the packtray. These are the “Rear” risers and will be attached to the two center connector links.



20. Taking care not to place a twist in the suspension lines, carefully attach the connector links to the corresponding risers.



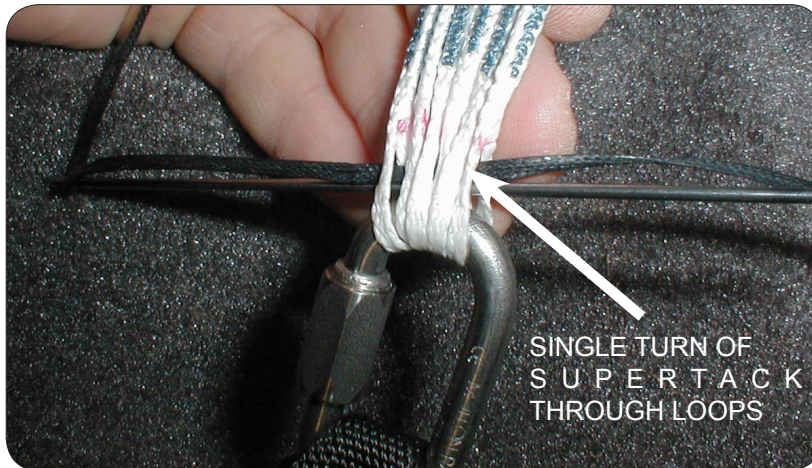
21. After attaching the connector links to the risers, rotate each link through the riser as shown so that the long end of the link is in the butterfly portion of the riser.



22. To help stabilize the connector links on the riser and prevent the possibility of side-loading the links, tack the risers at the base of the connector links with one turn single of Supertack. Tie with a Surgeon's and Locking knot, and trim the ends to 1/2".



**CAUTION** To prevent to loop ends of the suspension lines from slipping over the barrel of the connector links, a figure 8 of Supertack tie is placed around each group of suspension lines. The following steps illustrate how to make the suspension line ties.



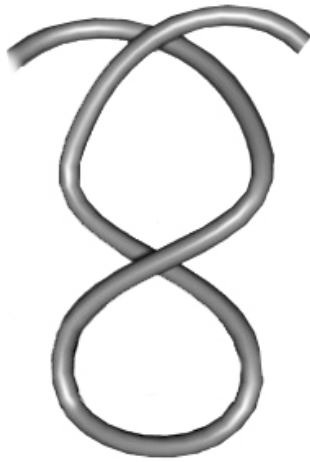
23. Using a tacking needle or finger-trapping fid, first pass a single turn of Supertack through the loops of the suspension line as shown.



24. Next, pass the Supertack UNDER the suspension lines.



25. Pass the Supertack through the loops again. You should now have a loop of Supertack UNDER the suspension lines with the free ends of the Supertack through the suspension line loops.



26. Bring the free ends of the Supertack ABOVE the suspension lines and, while tying together with a Surgeon's and Locking knot, pull the loops snug so as to minimize the suspension line loops...do not restrict the suspension line movement on the link.

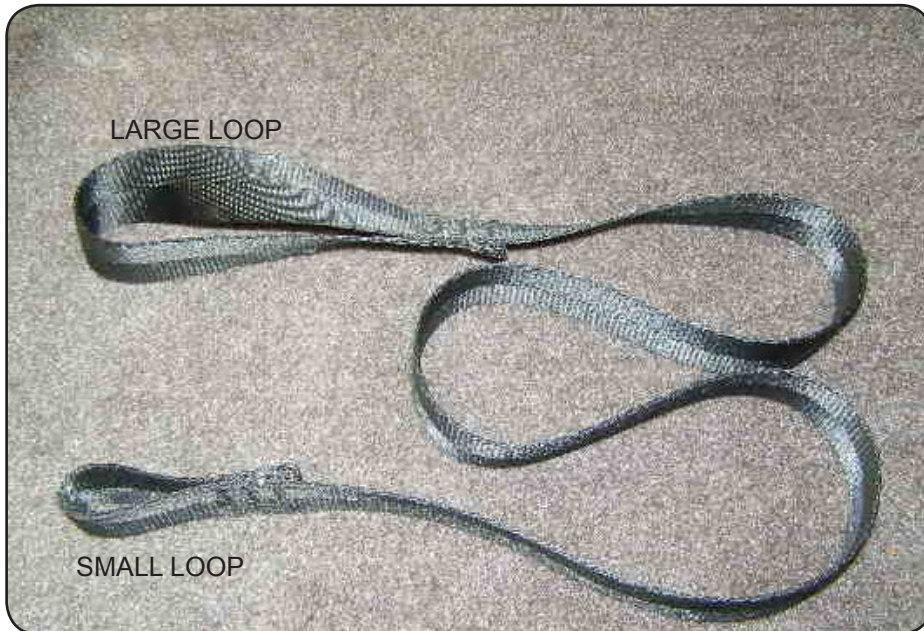


27. The following photo is a side view illustrating the completed suspension line loop tie.

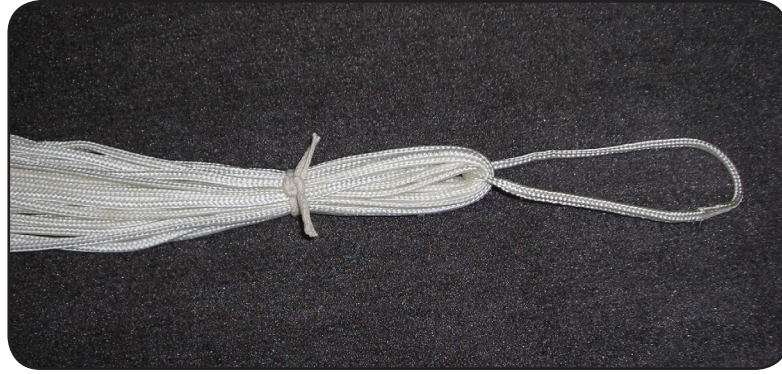




28. After completing the tackings and ties on all of the connector links, re-attach the connector links to your tension device.



29. Prior to attaching the deployment bag bridle to the canopy, look at the bridle and notice that one end has a large loop, and the other end has a small loop. The end with the large loop is the end that will be attached to the canopy vent lines.



30. If not already tied, ensure upper lateral band is even and then make the vent line centering tie 4 inches from the end using one turn single 80# cotton as shown. Tie with a Surgeon's and Locking Knot, and trim the ends to 1 inch.



31. Pass the large loop through the canopy vent lines and Lark's Head the bridle onto the vent lines as shown.



32. Place one #5 Rapide link onto the small loop end of the bridle. Using one turn double cotton 6-cord (or equivalent), butterfly the end of the bridle and tack as shown. Trim the ends of the cord to 1/4".



33. Partially turn the deployment bag inside-out, locate the opening at the top of the bag, and note the 4 layers of Type 4 webbing that cross the opening.



34. Place the crossed Type 4 webbing layers into the Rapide link.



35. Attach one end of the Controller Drogue Bridle onto the Rapide link, close and tighten the link, then tack with one turn double cotton 6-cord (or equivalent) as shown. Trim ends to 1/4".



36. Place one #5 Rapide link onto the other end of the Controller Drogue Bridle, butterfly the webbing, and tack as shown.



37. Look at the base of the Controller Drogue and you will see that all of the radial tapes cross through the bottom loop of the Type 17 centerline webbing.



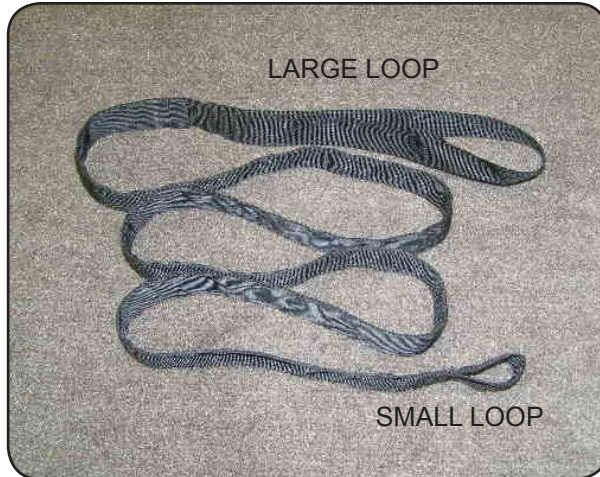
38. Pull the crossed radials clear of the Type 17 loop and insert them into the Rapide link on the end of the Controller Drogue bridle.



39. Place the centerline loop into the link, then close and tighten the link.



40. Tack the centerline loop with one turn double cotton 6-cord (or equivalent) as shown. Trim ends to 1/4".



41. Locate the Pilot Chute Channel Bridle and note that one end has a large loop and the other has a small loop. The large loop is the end that will be attached to the pilot chute.



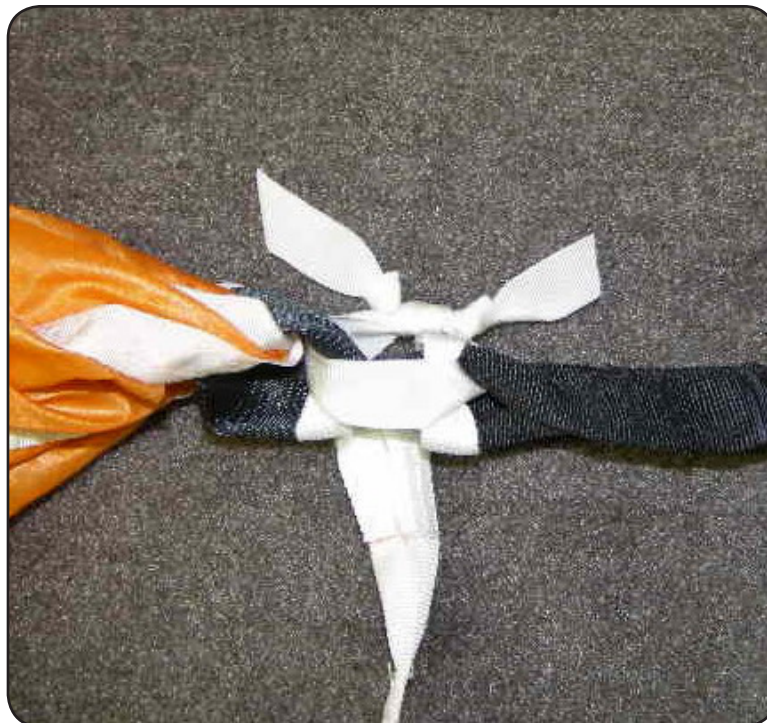
42. Lark's Head one loop of the Incremental Bridle (Zip-Strip) onto the top of the Controller Drogue.



43. Lark's Head the remaining loop onto the small loop end of the Pilot Chute Channel Bridle.



44. Cut one 15-inch piece of 1/2" MIL-T-5038, T3 tape. Pass one end through the Type 17 loop at the top of the Controller Drogue, and the other end through the small loop on the pilot chute channel bridle.



45. Forming a loop approximately 1.5 inches in diameter, tie the ends of the Type 3 tape together with a Square Knot. Tie an overhand safety knot on each free end, then trim the ends to 1 inch.





46. Pass the large loop end of the Pilot Chute Channel Bridle through the two loops at the base of the pilot chute.



47. Pull the bridle towards the crown of the pilot chute. Pass the crown through the large loop, carefully work the pilot chute through the loop, then pull the bridle snug at the base loops.



48. Tack the large loop in two places as shown using one turn double 6-cord cotton (or equivalent). Trim ends to 1/4".



49. Insert Incremental Bridle Tool into the pilot chute end of the pilot chute channel bridle.



50. Push the Incremental Bridle Tool through the canopy channel bridle until the end is exposed near the zipstrip break tie.



51. Using a tacking needle and a length of Supertack, place a loop through the end of the zipstrip as shown.



52. Attach the Supertack loop to the Incremental Bridle Tool, then carefully pull through the bridle.



53. Taking care not to place any twists in the zipstrip, pull the zipstrip fully into the channel.



54. Tack the zipstrip to the channel bridled as shown using one turn single, red seal thread.



55. Snip one side of the Supertack loop, then pull the remainder of the Supertack out of the end of the zipstrip.



56. Completed upper assembly.

With the upper assembly now attached to the canopy, the system is now ready to pack. Refer to the TT-1000 TETHERED TANDEM BUNDLE DELIVERY SYSTEM PACKING MANUAL for packing instructions.

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