Butler Tactical Parachute Systems, LLC

A division of Butler Parachute Systems Group, Inc.

TT-600

TETHERED TANDEM BUNDLE DELIVERY SYSTEM

ASSEMBLY MANUAL
(Revision A)

INTRODUCTION

This manual contains all the required information for assembling the Butler Tactical Parachute Systems TT-600 Tethered Tandem Bundle Delivery System and is broken down into two sections: TT-600 Components and TT-600 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-600 and MUST be followed as written for the TT-600 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.

SUMMARY OF CHANGES

Effective 1 January, 2006, changes were made to the TT-600 system concerning the canopy vent cap and the way the canopy is attached to the deployment bag. These changes greatly improve the performance of the system and are as follows:

The one-piece vent cap on the HX-600 canopy was changed to a “4-Leaf” vent cap. This change was made to decrease the possibility of damage to the canopy under “High-stress” openings.

The Canopy Bridle was changed to a “Channel Bridle” style to better control the bridle and zipstrip during canopy deployment.

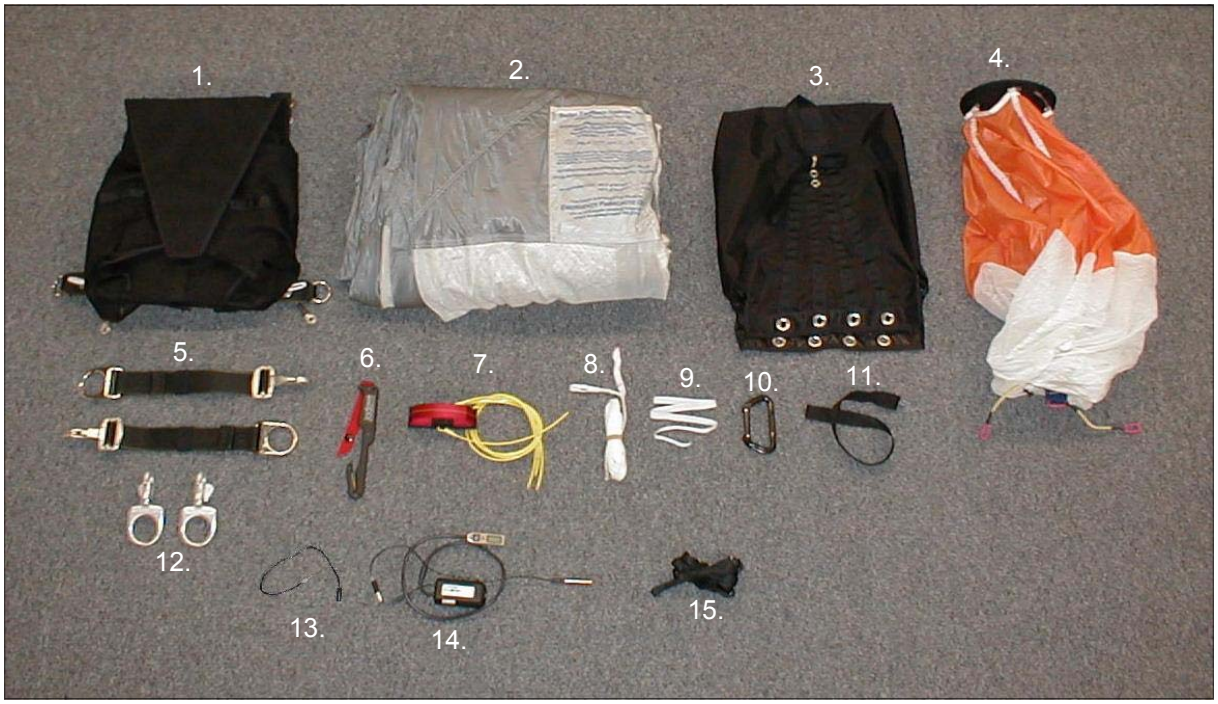
ALL TT-600 SYSTEMS MANUFACTURED AFTER JANUARY 1, 2006 UTILIZE THE CHANGES CONTAINED IN THIS MANUAL

Procedures changed from the original TT-600 Assembly Manual and the original TT-600 Packing Manual are annotated with a red asterisk (*).

TT-600 COMPONENTS

The photograph below illustrates all of the components necessary for the assembly of the TT-600. With the exception of the Cypres unit, all of the components are included in the TT-600 system as it is delivered from the factory.

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

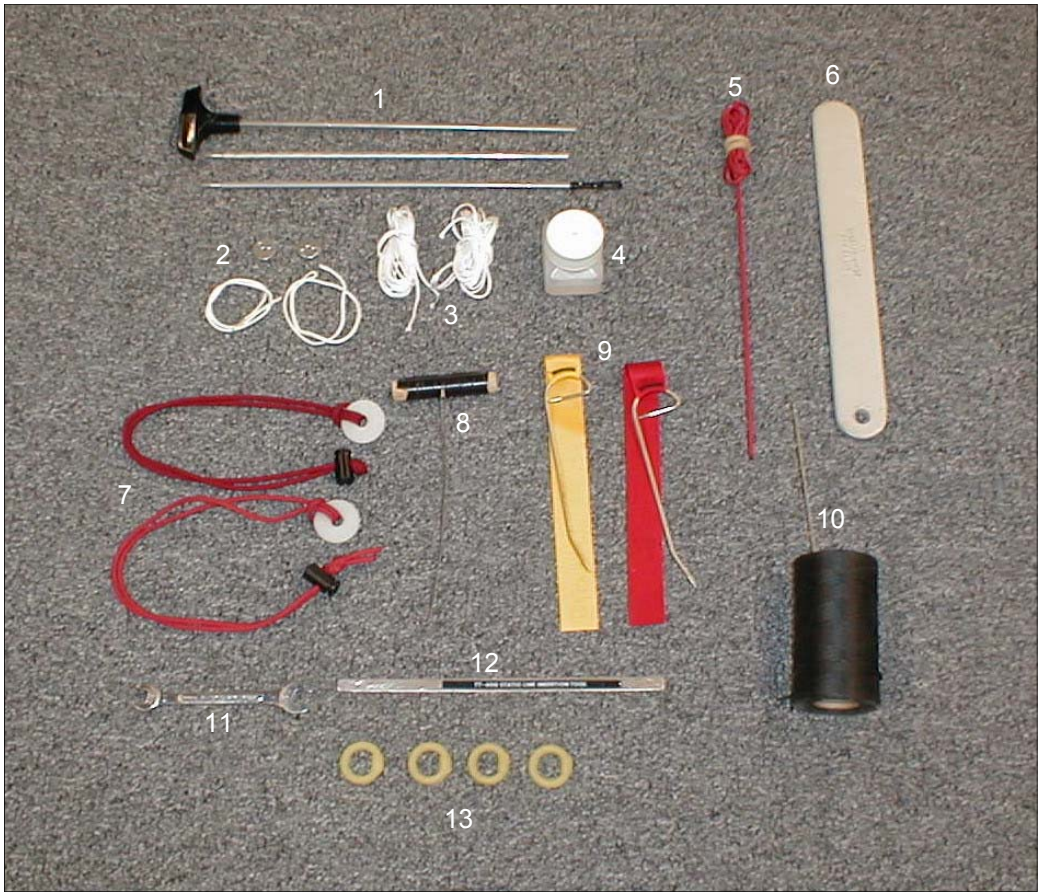


1. TT-600 Container
2. HX-600 Canopy
3. Deployment Bag
4. Pilot Chute
5. Bellybands (2)
6. Hook Knife
7. Release Handle
8. Zip Strip
9. 1/2” Type 3 Break Tie (15-inches long)
10. Carabiner
11. Canopy Channel Bridle
12. RW-10/Butterfly Snaps (left and right)
13. 17-inch Cypres Cable Extension
14. Cypres
15. Static Line

TT-600 ASSEMBLY

REQUIRED TOOLS

Before you begin assembling the TT-600, 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. Gun Cleaning Rod
2. Cypres Closing Loops and Discs (2) *
3. Cypres Pull-up Cords (2) *
4. Cypres Silicone *
5. Linestow Fid
6. Packing Paddle
7. Locking Pull-up cords (2)
8. Fingertrapping Fid
9. CypresTemporary Pins *
10. Supertack (or equivalent) with Tacking Needle
11. 3/8" or Adjustable Wrench
12. TT-600 Static Line Insertion tool
13. Stowbands

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

Before starting the TT-600 assembly, use the following illustrations to familiarize yourself with the various components of the TT-600 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. Hookknife 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-600. Therefore, a 17-inch cable extension is included with the TT-600 system as it comes from the factory.

To prepare the Cypres for installation into the TT-600 Container:

1. Unplug the Cypres release unit from the processing unit.
2. Plug the release unit into the 17-inch cable extension.
3. STOP. Do not plug the extended release unit back into the processor unit at this point.

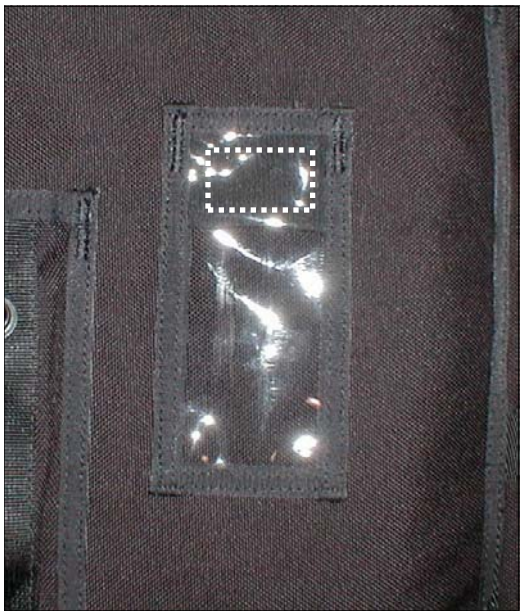
CYPRES INSTALLATION

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

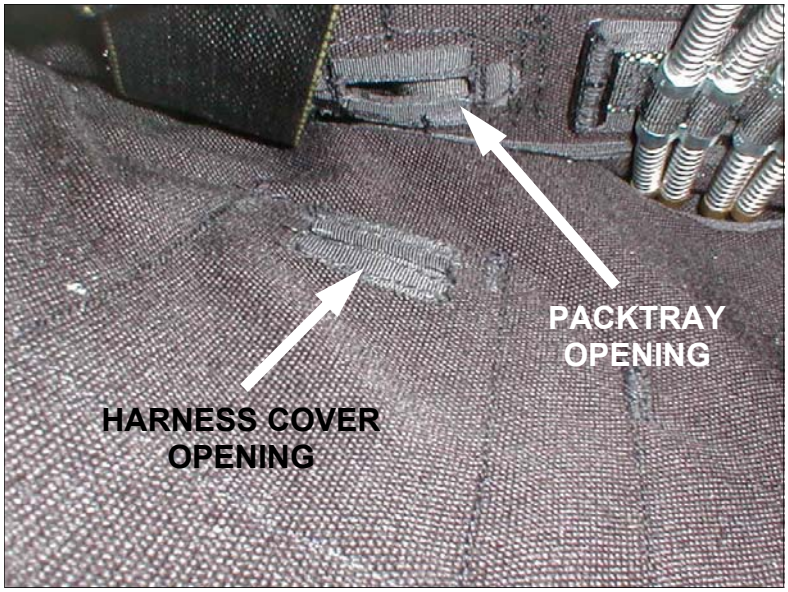
Prior to installing the Cypres into the TT-600 Container, take a moment and familiarize yourself with the openings the Cypres Control Unit needs to pass through to wind up in the control unit pocket located on the harness cover of the container.

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.

Fig. 1

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

Fig. 2

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

Fig. 3

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.

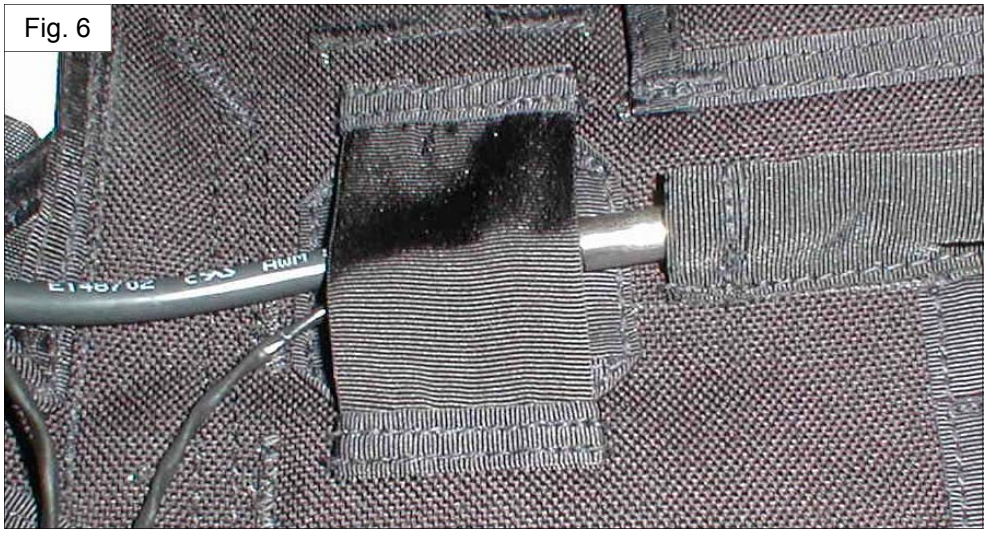
Fig. 4

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

Fig. 5

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

Fig. 6



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

Fig. 7

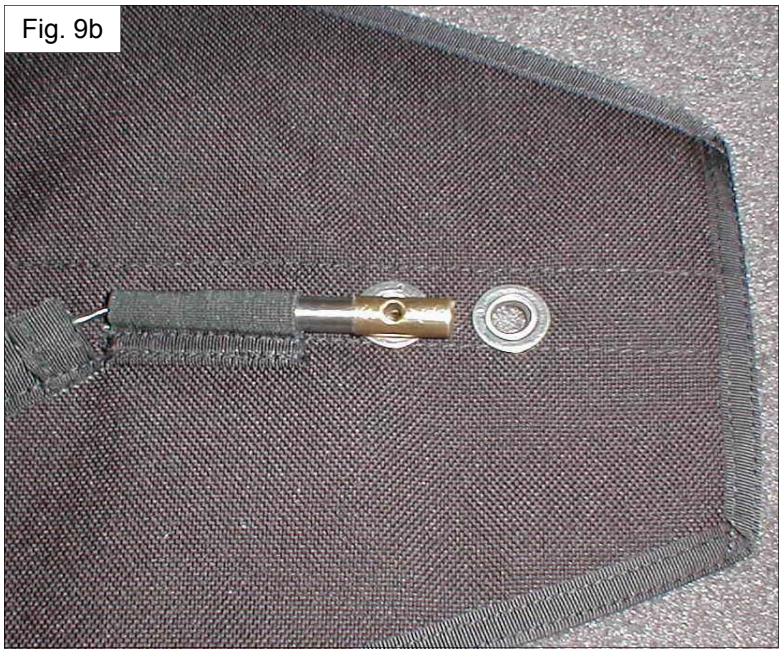
8. Insert the release unit into the second bottom flap channel and feed it through.

Fig. 8

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

Fig. 9a

Fig. 9b



10. Plug the end of the 17-inch extension cable into the processor unit.

Fig. 10

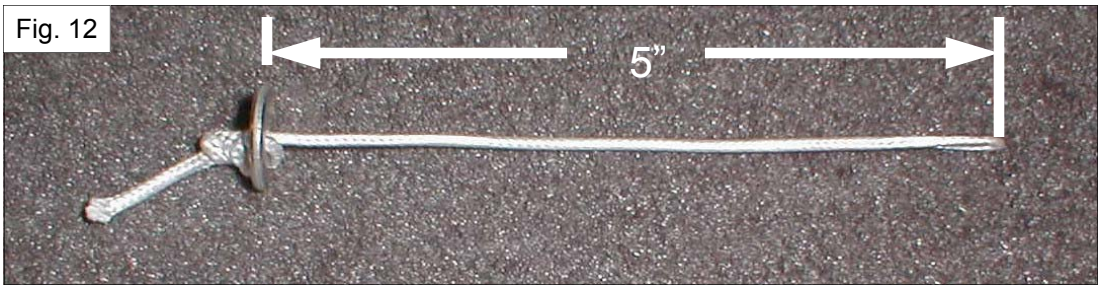
11. Neatly coil both the control unit cable and the release unit cable, then close the cable cover as shown. Remember, the release unit cable MUST be placed UNDER the control unit cable.

Fig. 11

CLOSING LOOP INSTALLATION

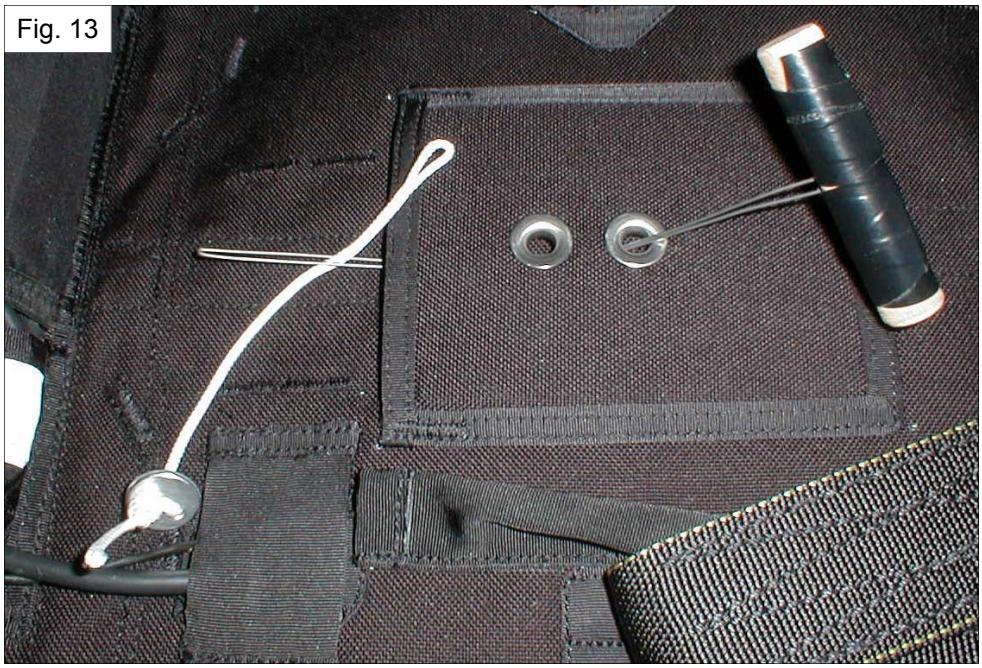
12. Following the steps in the Cypres Rigger's Manual, create two closing loops 5" (13 cm) long. NOTE: The closing loop length may need to be adjusted later.

Fig. 12



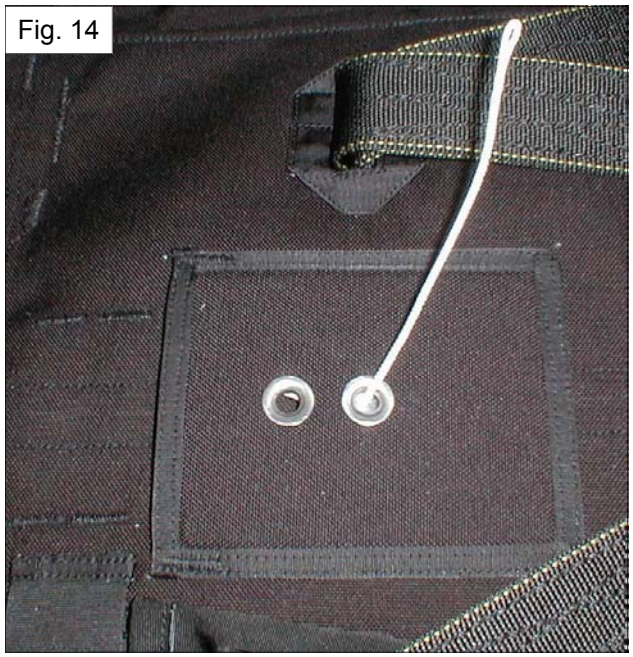
13. Insert your fingertrapping fid through the center grommet of the closing loop base, then place the first closing loop through the fid as shown.

Fig. 13



14. Pull the first closing loop through the base plate grommet until the Cypres disc is in position at the base of the grommet. NOTE: From this point on, this closing loop will be referred to as the CYPRES closing loop.

Fig. 14



15. Insert the second closing loop into the remaining grommet in the same manner as the first. NOTE: From this point on, this loop will be referred to as the SAFETY closing loop.

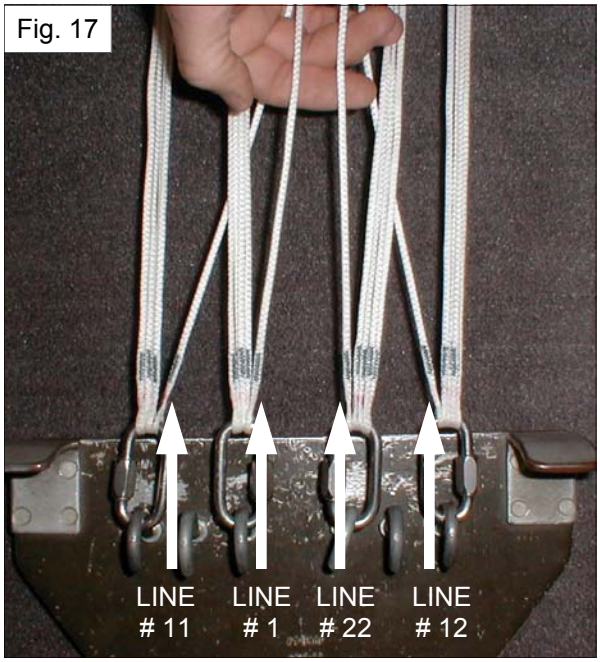
Fig. 15

16. Stretch out the canopy and ensure that the back center gore (with mesh) 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.

Fig. 16

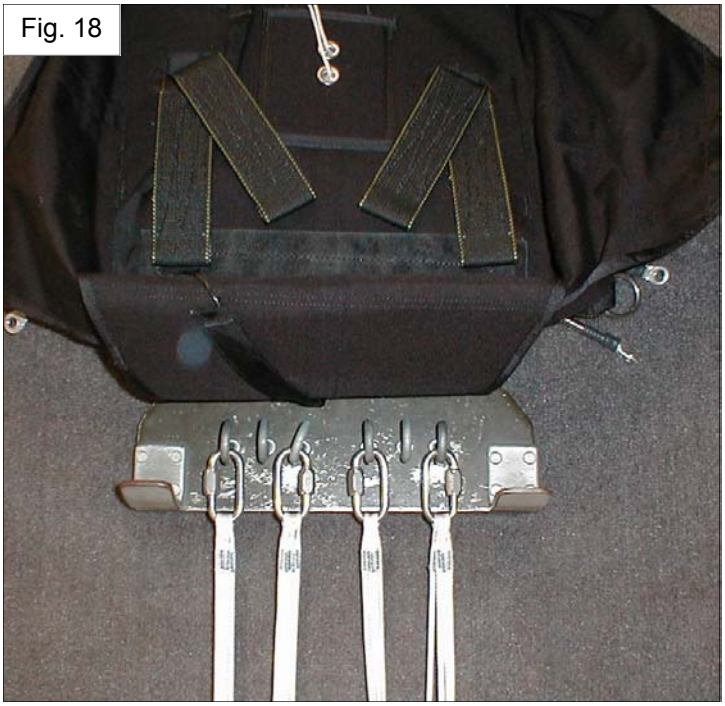
17. Perform a “4-Line Check” to ensure that there are no twists in the suspension lines and that the connector links are oriented correctly.

Fig. 17



18. Fold the bottom flap of the container under and position the container adjacent to the connector links as shown and 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.

Fig. 18



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

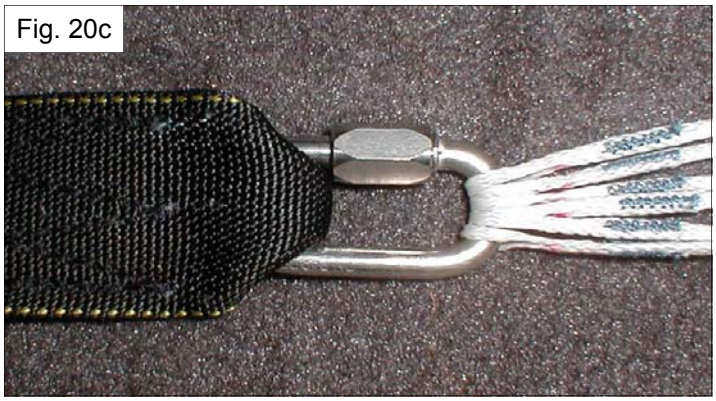
Fig. 19

20. 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.

Fig. 20a

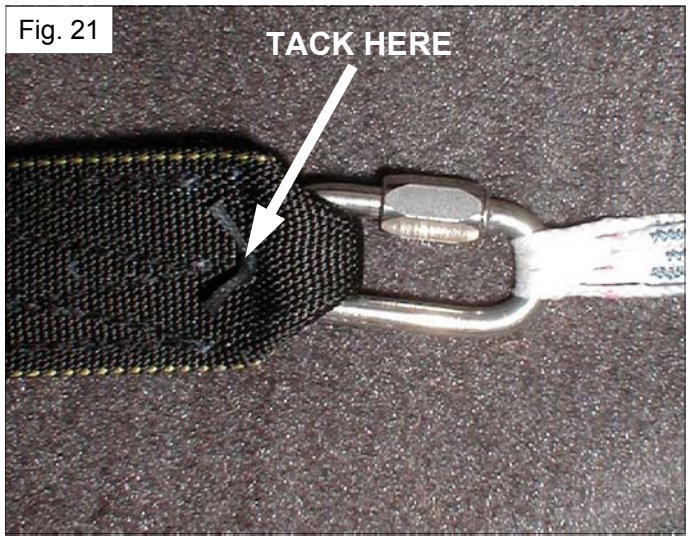
Fig. 20b

Fig. 20c



21. 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".

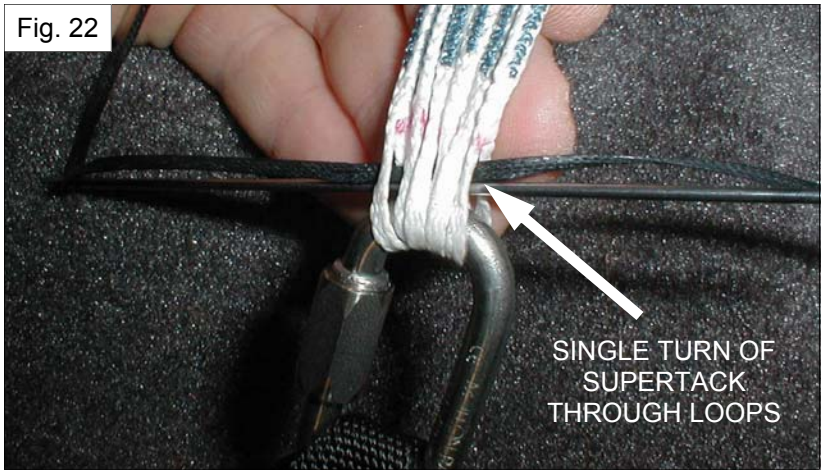
Fig. 21



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

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

Fig. 22



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

Fig. 23

24. 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.

Fig. 24

25. 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...not restrict the suspension line movement on the link.

Fig. 25

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

Fig. 26

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

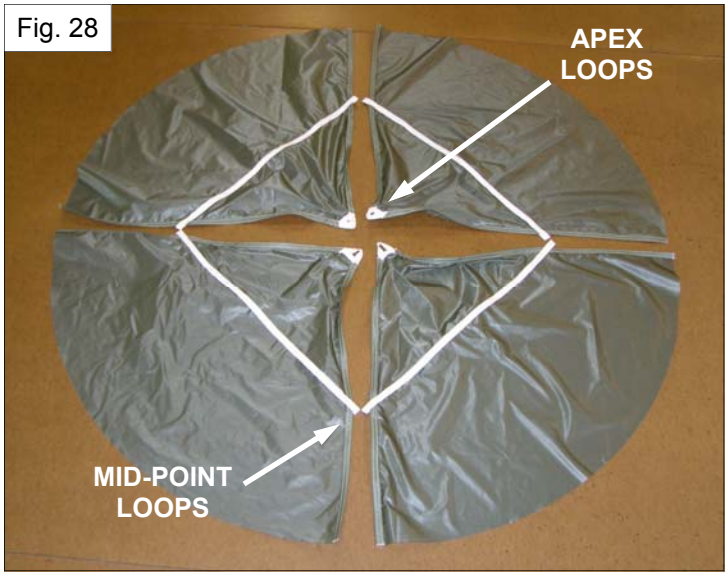
Fig. 27

* 28. Moving to the top of the canopy, familiarize yourself with the configuration of the “4-Leaf” style vent cap. Rather than use a solid vent cap, the HX-600 canopy in the TT-600 system utilizes a vent cap constructed out of 4 individual pieces. Prior to use, the 4 pieces are tied together at the mid-point with 6-cord Cotton, and tied at the apex with one turn single 80# cotton break tape.

If, during deployment, the vent cap experiences a “High-Stress” situation, some or all of the ties will break, thereby reducing the chances of damage to the canopy.

Figure 28 illustrates the “4-Leaf” vent cap prior to being sewn on the canopy.

Fig. 28

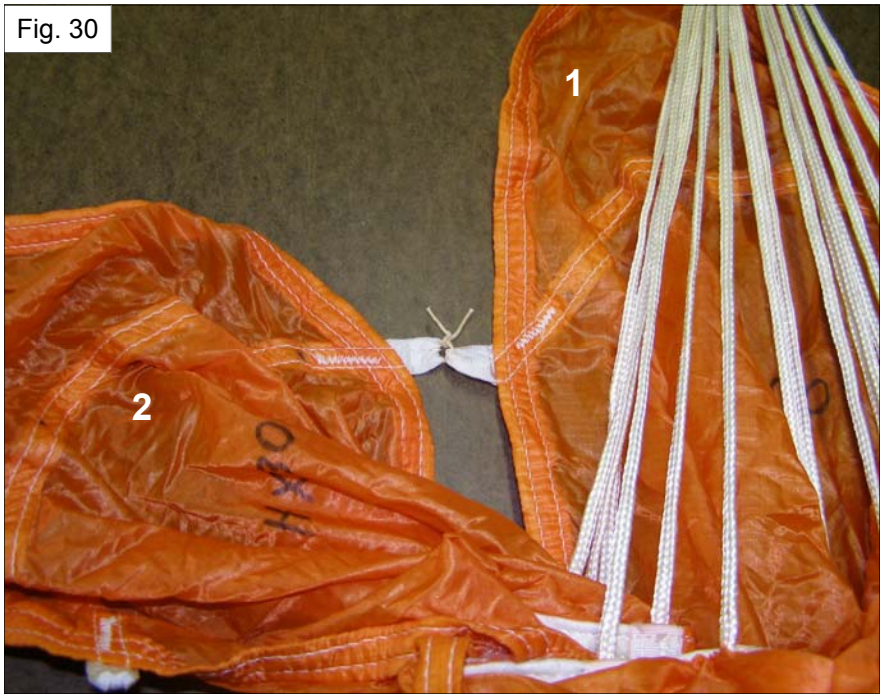


*29. Begin rigging the vent cap by first making sure that the vents lines are clear, with no part of the vent cap panels running through them. Position the canopy so one vent cap panel is flat on the table with the vent lines passing directly overhead. For clarification in the following steps, the panels will be referred to as 1, 2, 3, and 4, with panel 1 being the panel flat on the table.

Fig. 29

*30. Pass a length of 6-cord cotton through the mid-point loops of panel 1 and 2 and tie them together using a Surgeon's and Locking Knot. Trim ends to 1/2" (1 cm).

Fig. 30



*31. Tie panels 2 and 3 together in the same manner.

Fig. 31

*32. Continue by tying panels 3 and 4.

Fig. 32

*33. Finish the mid-point ties by tying panels 1 and 4 together.

Fig. 33

*34. Mid-point ties completed, ready for apex tie.

Fig. 34

*35. Pass one end of a twelve-inch length of 80# Cotton break tape through the apex loop of panel #1.

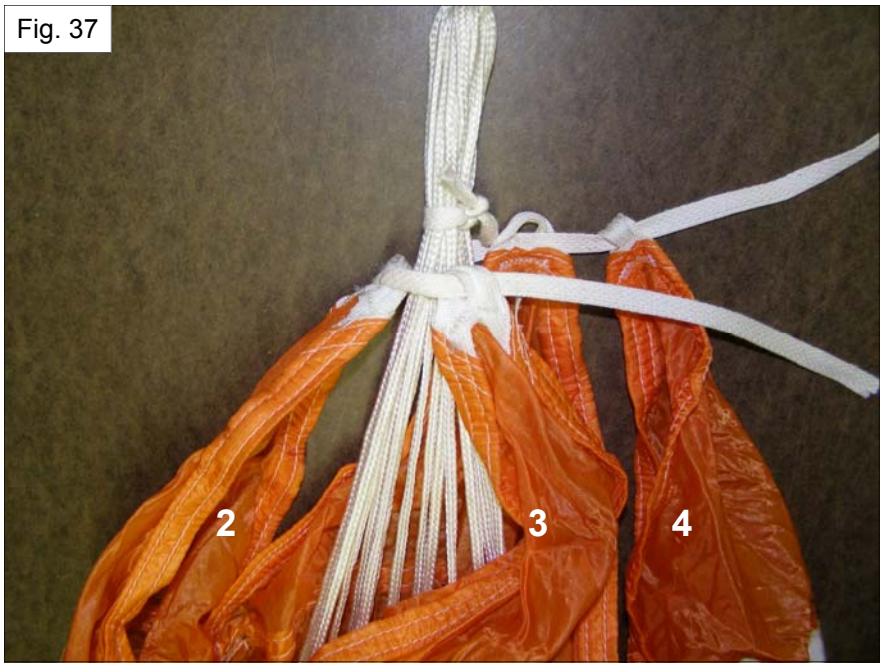
Fig. 35

*36. Pass the ends of the 80# through the apex loops of panels 2 and 4.

Fig. 36

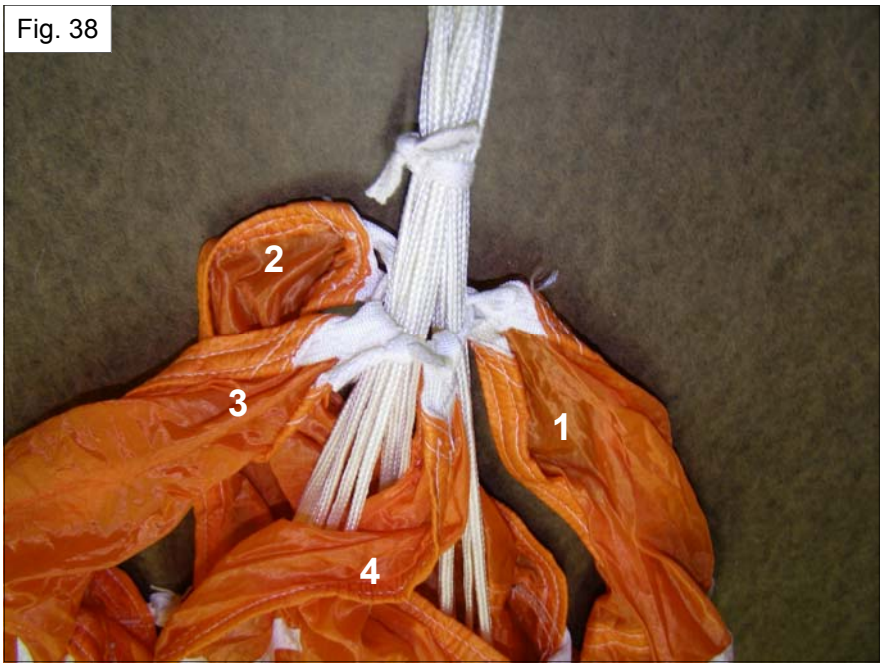
*37. Pass the left end of the 80# through the apex loop of panel #3.

Fig. 37



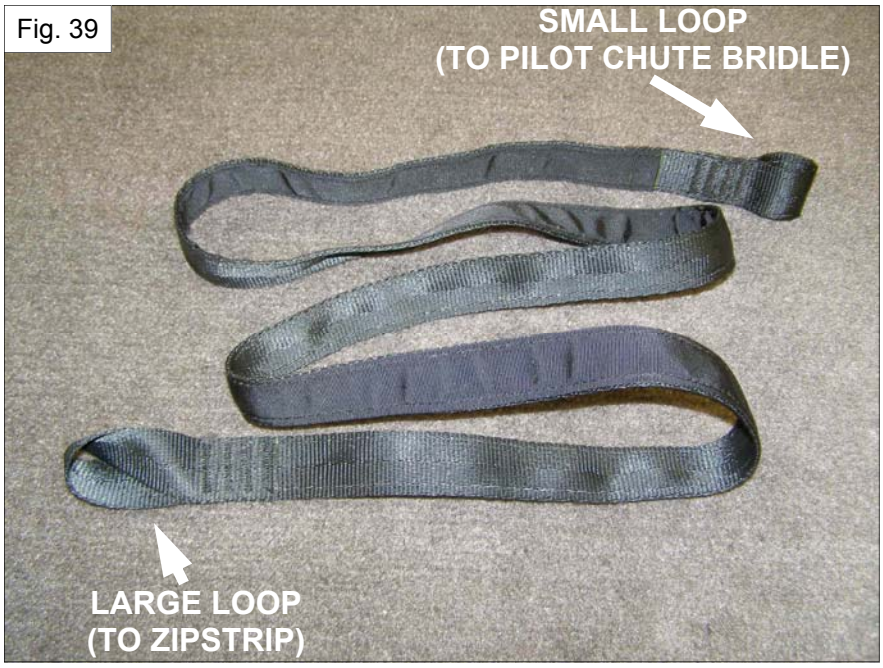
*38. Pulling the 80# snug, tie with a Surgeon's and Locking Knot. Trim ends to 1/2" (1 cm).

Fig. 38



*39. Take a look at the canopy channel bridle and notice that one end has a large loop, while the other end has a small loop. The end with the large loop is the end that attaches to the zipstrip, and the end with the small loop attaches to the pilot chute bridle.

Fig. 39



*40. Lark's Head the canopy channel bridle to the zipstrip as shown.

Fig. 40

*41. Using the 15-inch length of 1/2” Type 3 webbing, create the zipstrip breaktie by passing one end through the canopy ventlines, and the other through the loop on the end of the canopy channel bridle.

Fig. 41

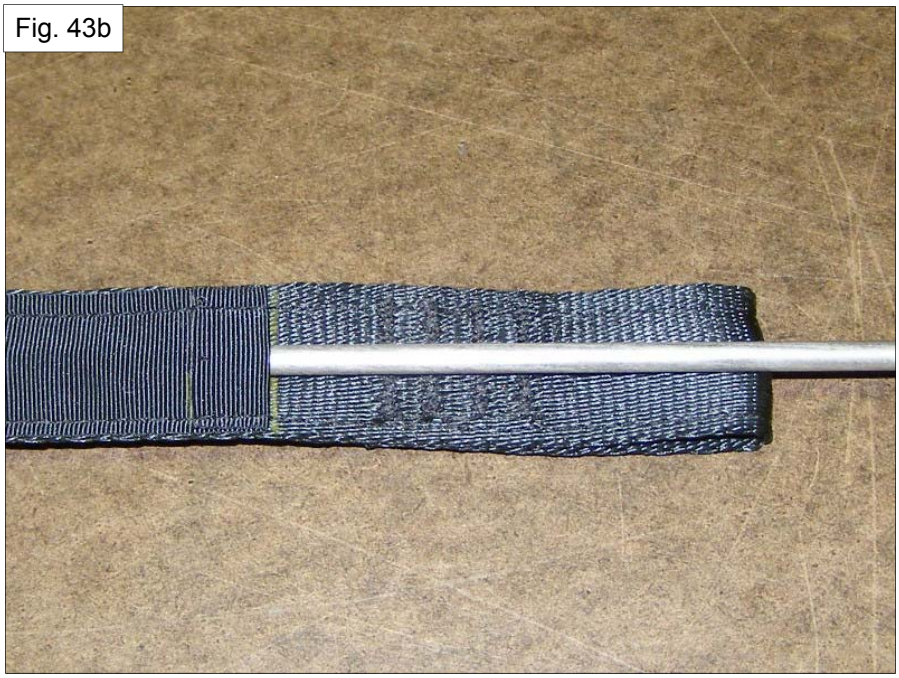
*42. Bring the ends of the Type 3 together and form a loop approximately 1 inch (2.5 cm) in diameter. Tie the ends together with a Square Knot. Next, tie an overhand safety knot on each end and trim to 1/2 inch (1 cm).

Fig. 42

*43. Insert a notched rod or gun-cleaning rod into the pilot chute end of the canopy channel bridle.

Fig. 43a

Fig. 43b

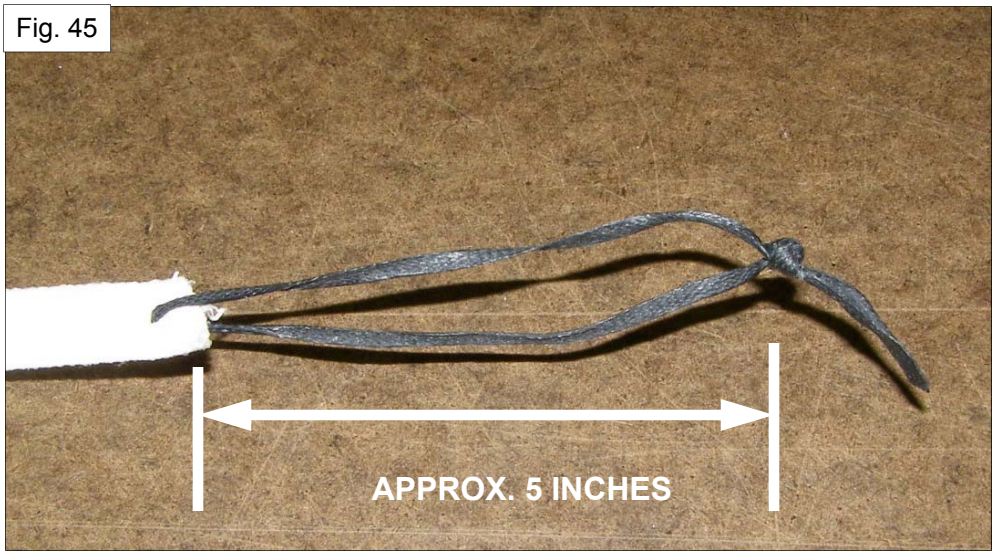


*44. Push the rod through the canopy channel bridle until the end is exposed near the zipstrip break tie.

Fig. 44

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

Fig. 45



*46. Attach the Supertack loop to the rod.

Fig. 46

*47. Pulling the rod back through the canopy channel bridle, carefully insert the end of the zipstrip into the channel.

Fig. 47

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

Fig. 48

*49. Tack the zipstrip to the channel bridle as shown using red seal thread.

Fig. 49

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

Fig. 50a

Fig. 50b

*51. With the deployment bag inside out, attach the canopy channel bridle to the pilot chute bridle with a #5 Rapide link.

Fig. 51

*52. “S” fold the canopy channel bridle and secure the folds using 3-cord cotton as shown. NOTE: As an alternate, the folded channel bridle may also be held in place using rubber bands.

Fig. 52

53. Attach the pilot chute to the deployment bag by first passing the deployment bag pilot chute bridle through both of the kevlar loops located at the base of the pilot chute as shown.

Fig. 53

54. Pass the crown of the pilot chute through the looped end of the pilot chute bridle.

Fig. 54

55. Carefully work the pilot chute through the bridle loop as shown.

Fig. 55

56. After passing the pilot chute through the bridle loop, pull the bridle snug against the kevlar pilot chute loops.

Fig. 56

57. With the deployment bag and pilot chute now attached to the canopy, the system is now ready to pack.

Refer to the TT-600 TETHERED TANDEM BUNDLE DELIVERY SYSTEM PACKING MANUAL for packing instructions.

Fig. 57