Butler Tactical Parachute Systems, LLC

A division of Butler Parachute Systems Group, Inc.

TT-600

TETHERED TANDEM BUNDLE DELIVERY SYSTEM

PACKING MANUAL
(REVISION "A")

INTRODUCTION

This manual contains all the required information for packing the Butler Tactical Parachute Systems TT-600 Tethered Tandem Bundle Delivery System.

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

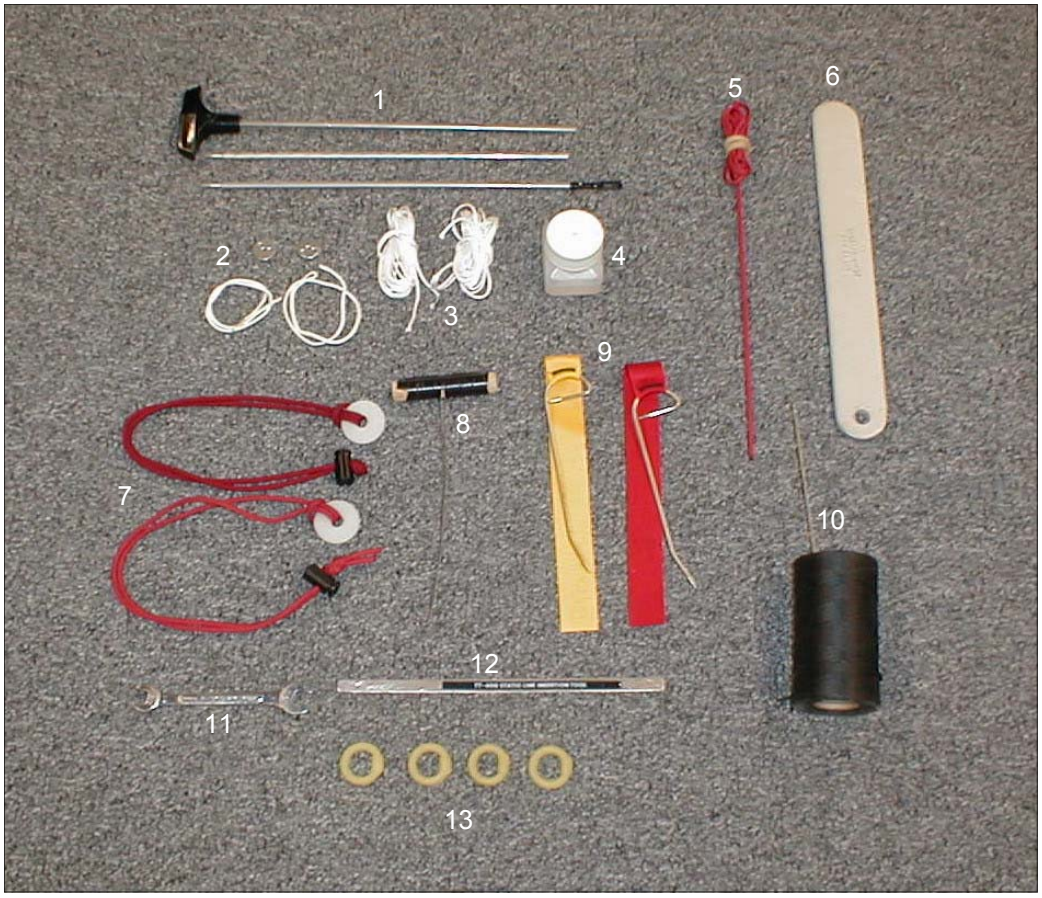
Procedures changed from the original TT-600 Assembly Manual and the original TT-600 Packing Manual are annotated with a red asterisk (*).

GENERAL PACKING PROCEDURES

1. COUNT YOUR TOOLS!
2. Airing and drying – as required.
3. Check layout and line rotation; straighten canopy from the top down.
4. INSPECTION – Record Serial number and other data from all components.
    a. Pilot chute – snags, bent spring, solid ferrule, proper type.
    b. Bridle – tackings and knots, proper routing of incremental bridle, T3 break tape.
    c. Apex – vent and cap, lateral band, straighten vent hem.
    d. Canopy – radial seams and gore seams, general condition, fabric pull test.
    e. Lower lateral band – skirt hem, line attachments.
    f. Suspension lines – snags, kinks, sheathing.
    g. Connector links – plating, approved type (no speed links).
    h. Risers – Stitching, condition of webbing.
    I. Harness/Container – canopy releases, webbing, hardware, release handle and cables, housings, and Cypres installation.
6. Repair and re-inspect as necessary.
7. Pleat, fold, stow, stack, close, dress pack...Neatness Counts!
8. Seal, sign, record data.
9. Count your tools!

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

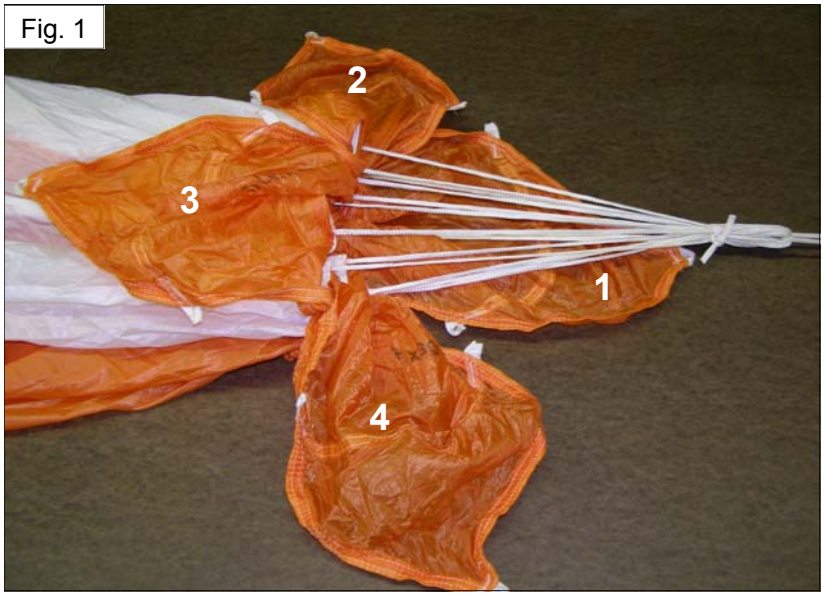
NOTE: Items with an * are contained in the Cypres Packer’s Kit

TT-600 PACKING

NOTE: If this is a re-pack after system use, start with step 1 and re-rig the vent cap and zipstrip as needed. If this is an initial-use pack job, the vent cap and zipstrip are already rigged and you can begin on step 23.

*1. 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. 1



*2. 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. 2

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

Fig. 3

*4. Continue by tying panels 3 and 4.

Fig. 4

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

Fig. 5

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

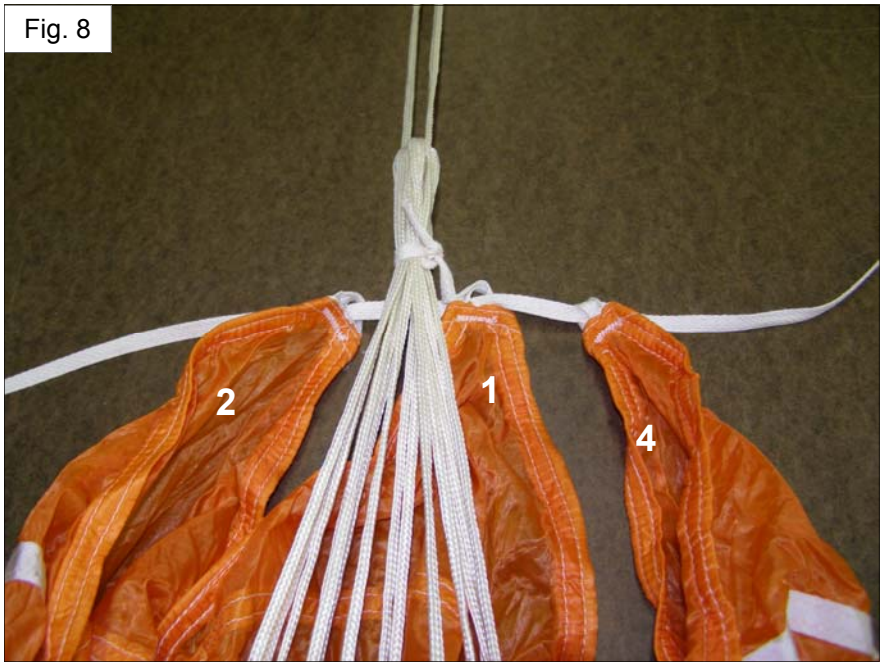
Fig. 6

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

Fig. 7

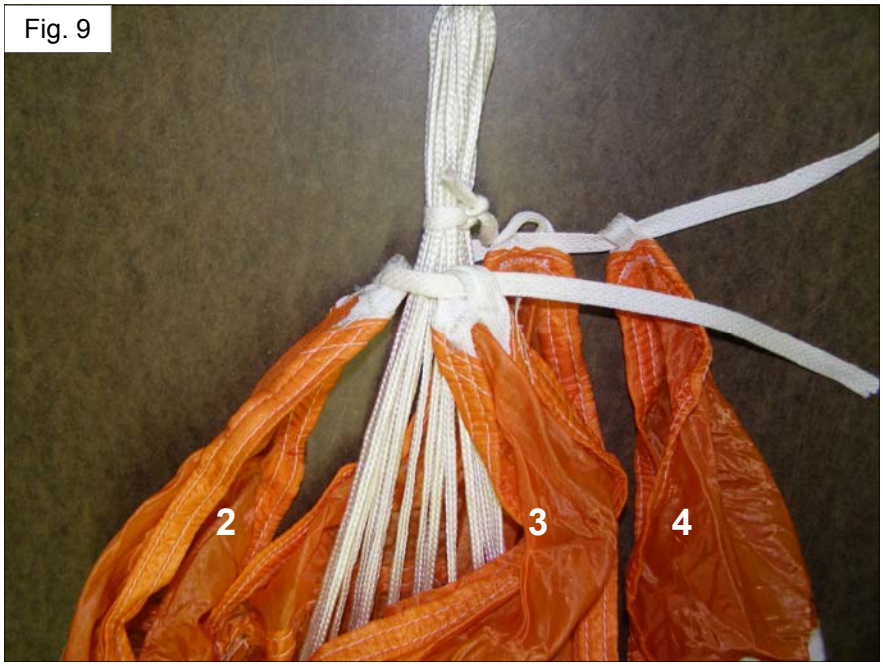
*8. Pass the ends of the 80# through the apex loops of panels 2 and 4.

Fig. 8



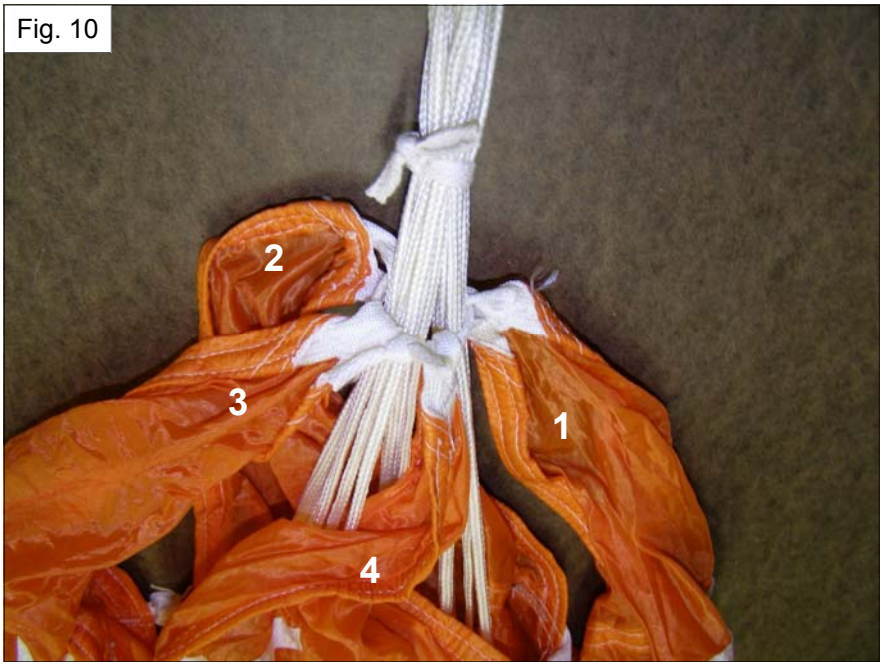
*9. Pass the left end of the 80# through the apex loop of panel #3.

Fig. 9



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

Fig. 10



*11. Lark's Head one loop of the replacement zipstrip onto the vent lines as shown.

Fig. 11

*12. Lark's Head the canopy channel bridle to the remaining zipstrip loop as shown.

Fig. 12

*13. Using a15-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. 13

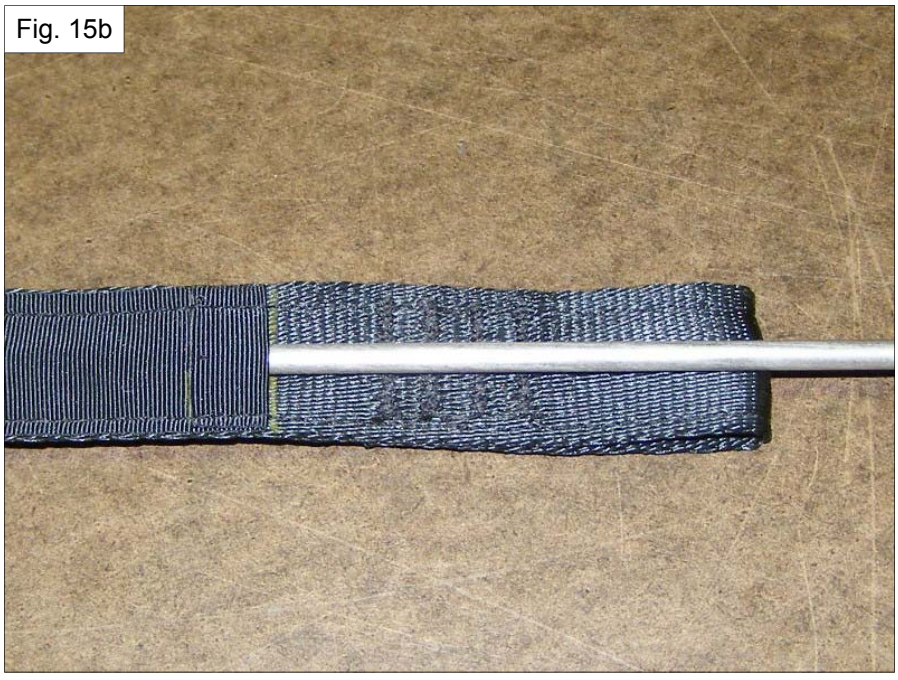
*14. Bring the ends of the Type 3 together and form a loop approximately 1 inch (2.5 cm) in diameter. Tie the ends together with a Square Knot. Next, tie an overhand safety knot on each end and trim to 1/2 inch (1 cm).

Fig. 14

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

Fig. 15a

Fig. 15b

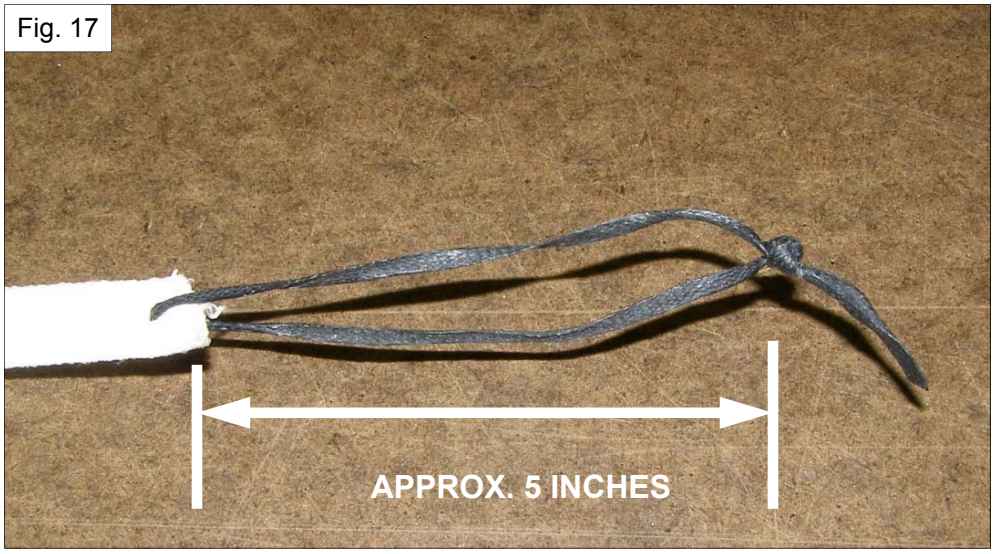


*16. Push the rod through the canopy channel bridle until the end is exposed near the zipstrip break tie.

Fig. 16

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

Fig. 17



*18. Attach the Supertack loop to the rod.

Fig. 18

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

Fig. 19

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

Fig. 20

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

Fig. 21

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

Fig. 22a

Fig. 22b

23. Apply tension to the canopy, flake the canopy in the usual manner, then lay the canopy on the table with an equal amount of gores on each side. Gore number 22 (with the data label) should be facing up on the left side.

Fig. 23

24. To ensure that the slider is not wrapped around any suspension lines, lift line number 22 and follow it to the skirt of the slider. Straighten the slider as needed.

Fig. 24

25. Still lifting line 22, grab the apex of the slider and pull it up towards the canopy skirt. Holding the apex in one hand and the suspension line in the other, pull the slider all the way up into the wind channel of the canopy until the grommets on the slider are against the slider stop rings on the suspension lines.

Fig. 25

26. Slider fully inserted into the wind channel of the canopy.

Fig. 26

27. Hold the suspension lines together at the skirt of the slider with either a line separator of a soft shot bag.

Fig. 27

28. Starting on one side, grab and flake the slider skirt into the corresponding gores of the canopy.

Fig. 28

29. After flaking the slider skirt, ensure the canopy skirt is even on both sides.

Fig. 29

30. Once the skirt is even, fold the gores as a group 90 degrees so that the skirt is parallel to the radial seam.

Fig. 30

31. Long fold the canopy into fifths by first bringing the right-hand gores over to the center of the canopy.

Fig. 31

32. Next, bring the left-hand gores to the center.

Fig. 32

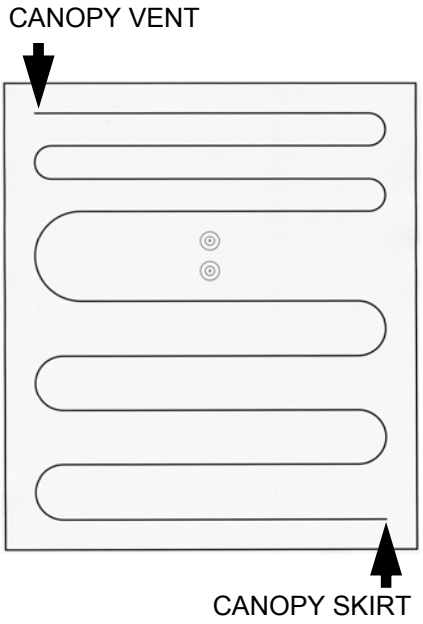
33. Fold the right-hand side over slightly past the center.

Fig. 33

34. Finally, fold the left-hand side over the right as shown.

Fig. 34

Before placing the canopy into the deployment bag, refer to the following illustration showing the correct canopy orientation and suggested number of folds above and below the closing loop grommets.
NOTE: To allow room for the Cypres processing unit, it is important to keep the top of the deployment bag soft. For this reason, the number of folds above and below the grommets is at the rigger's discretion.



35. Neatly place the folded zip strip and canopy bridle into the top of the bag, then insert the vent into the upper left-hand corner.

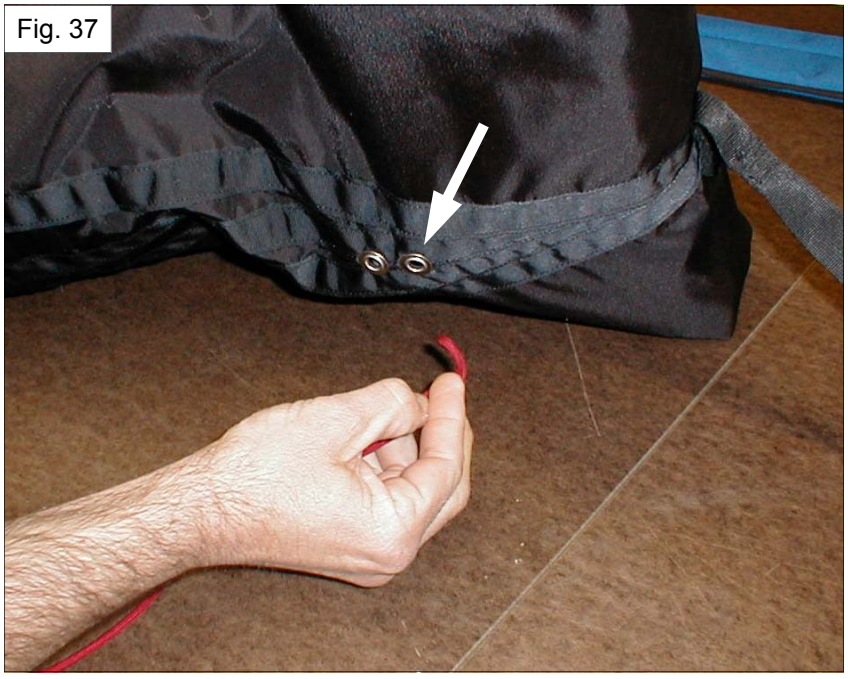
Fig. 35

36. Making your folds slightly wider than the bag, “S” fold the canopy back and forth into the bag. After placing four layers into the bag, STOP.

Fig. 36

37. Carefully raise the deployment bag and insert one locking pull-up cord into the grommet closest to the top of the bag.

Fig. 37



38. Route the locking pull-up cord through the corresponding grommet on the opposite side of the deployment bag as shown. Secure the cord by attaching a large washer or by tying a knot that will not slip through the grommet.

Fig. 38

39. Pull the locking pull-up cord tight and secure with either a cord lock or slip knot.

Fig. 39

40. Insert the other locking pull-up cord in the same manner as the first.

Fig. 40

41. Continue “S”-folding the canopy into the deployment bag. The last fold should end with the canopy skirt and slider at the lower right corner of the bag.

Fig. 41

42. Holding the folded canopy in place, bring the suspension lines to the center of the bag.

Fig. 42

43. Carefully standing the deployment bag on its end, bring the right-hand side flap over, pass the tubestow through the bottom flap (flap without label), then through the top flap.

Fig. 43

44. Place the first bight of suspension lines into the stowband to form the first deployment bag locking stow.

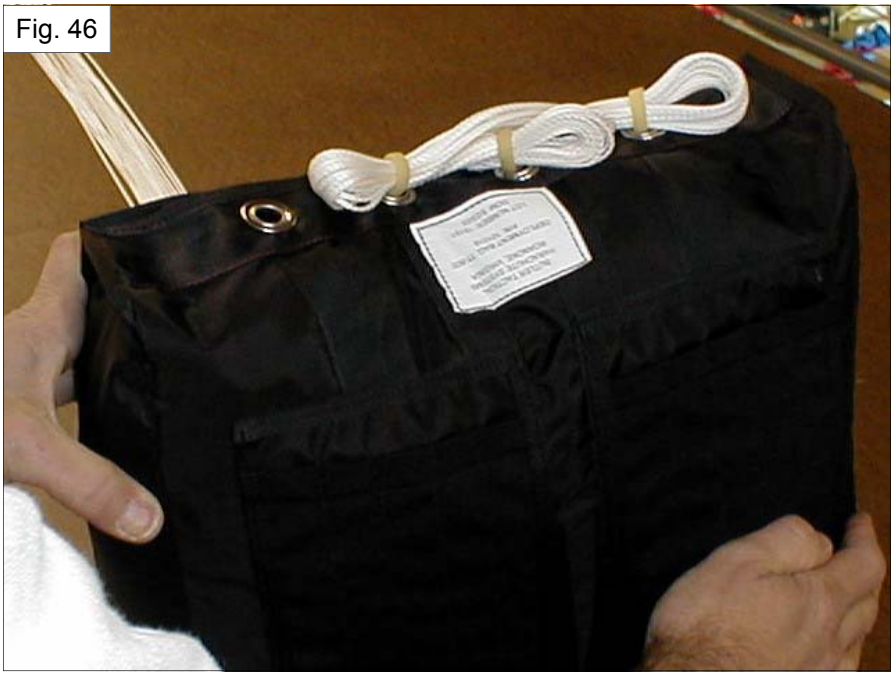
Fig. 44

45. Bring the left-hand side flap up and create the second locking stow in the same manner as the first.

Fig. 45

46. Continue closing the bag by creating the third locking stow as shown.

Fig. 46



47. Finish closing the deployment bag with the fourth locking stow.

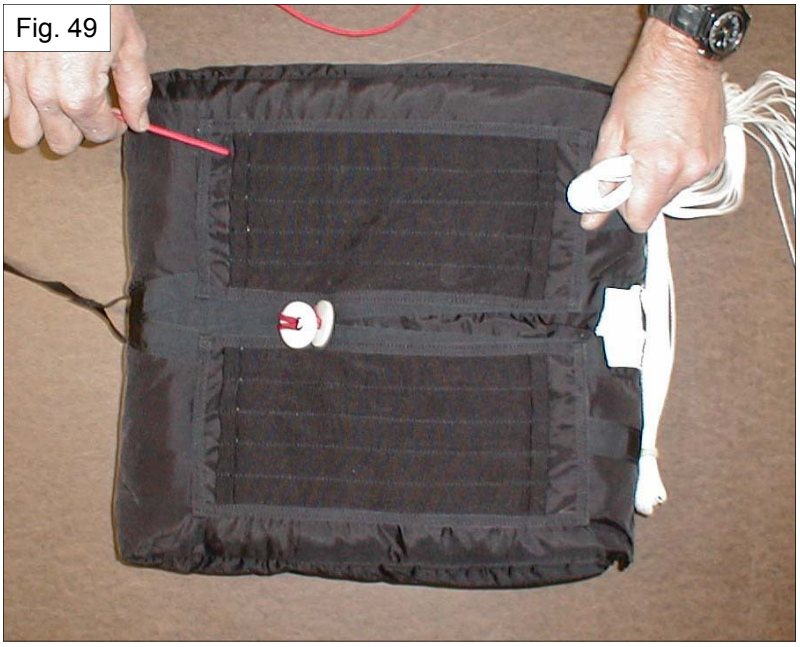
Fig. 47

48. Begin stowing the suspension lines by placing the lines on top of the first stowage flute to measure the correct amount to be stowed. Allow enough for the bight to extend from the top of the flute approximately 1/2”.

Fig. 48

49. Holding the first suspension line bight in one hand, insert the linestow fid through the first stow flute, through the suspension line bight, and back through the flute.

Fig. 49



50. Taking care not to twist the suspension lines, pull the first bight through the flute as shown.

Fig. 50

51. Measure the second bight the same way you did the first.

Fig. 51

52. Again, being careful not to twist the lines, pull the lines through the second flute. Continue stowing the lines across the width of the bag.

Fig. 52

53. The finger-trapped portion (the last 10 inches) of the suspension lines do not get inserted into the linestow flutes. Therefore, the length of the last bight will vary and may not reach the end of the stow flutes.

Fig. 53

CLOSING THE CONTAINER

GROMMET ORIENTATION

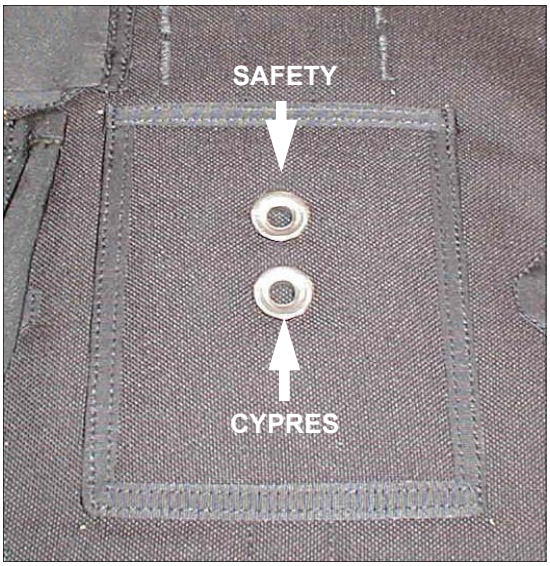
With the container laying flat on the table and all flaps folded back, the top grommet on the top flap is the grommet the CYPRES closing loop will pass through, yet the top grommet on the bottom flap is the grommet the SAFETY closing loop goes through. Confusing? It can be if you're not careful.

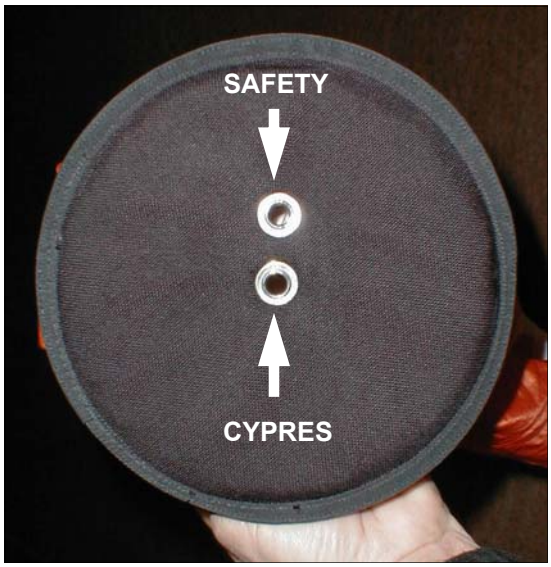
So, prior to inserting the deployment bag into the container and beginning the closing process, take a moment and fold the flaps in place to see how the grommets are aligned.

Take a look at the two grommets on the closing loop base and you will see that one is in the center of the base and one is closer to the top flap. The grommet in the center is for the CYPRES closing loop, and the one near the top flap is for the SAFETY closing loop. As you fold the container flaps in place, you will see that the top grommet on the top flap actually becomes the CYPRES loop grommet, and the top grommet on the bottom flap becomes the SAFETY loop grommet.

Now take a look at the pilot chute crown and see that one grommet is centered while the other is closer to the edge of the crown. The center grommet is for the CYPRES loop, and the other is for the SAFETY loop.

Once you start closing the container and have the pilot chute compressed, ALWAYS REMOVE THE CYPRES TEMPORARY PIN FIRST WHEN CLOSING SUBSEQUENT FLAPS! Since the Cypres loop is in the center of the pilot chute, doing this will keep the pilot chute flat.





54. At times, it may be difficult to see which temporary pin is holding which closing loop in place. To alleviate any confusion, mark one of the pin flags “SAFETY” and the other “CYPRES”.

Fig. 54

55. Insert your pull-up cords through the closing loops and remember to lubricate them with the Cypres Silicone as per the instructions in the Cypres manual.

Fig. 55

56. Holding the line groups with one hand, carefully flip the deployment bag into the container as shown.

Fig. 56a

Fig. 56b

57. Lifting the deployment bag away from the packtray, pass the CYPRES loop pull-up cord through the first locking pull-up cord, the gently pull the CYPRES pull-up cord through the deployment bag.

Pull the SAFETY closing loop pull-up cord through the deployment bag in the same manner.

Fig. 57a

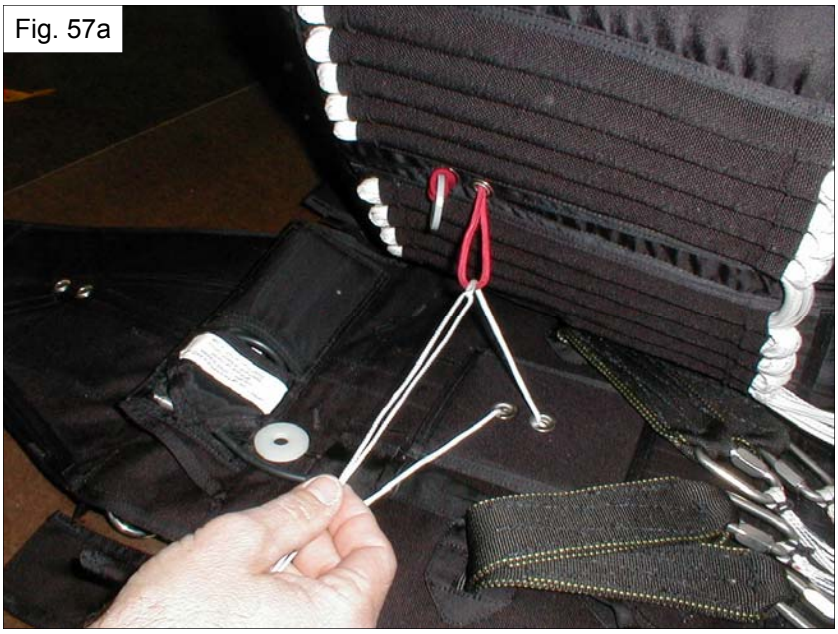


Fig. 57b

58. Ensure that the deployment bag is fully seated into the bottom corners of the container.

Fig. 58

59. Bring the bottom flap up, pass the CYPRES loop pull-up cord through the Cypres release unit, then through the bottom flap grommet.

Fig. 59

60. Pull the bottom flap all the way into position and pin it in place with the temporary pin you marked “CYPRES”.

NOTE: AT THIS POINT, IF THE CLOSING LOOPS ARE TOO SHORT OR TOO LONG, STOP AND ADJUST THEM AS NECESSARY.

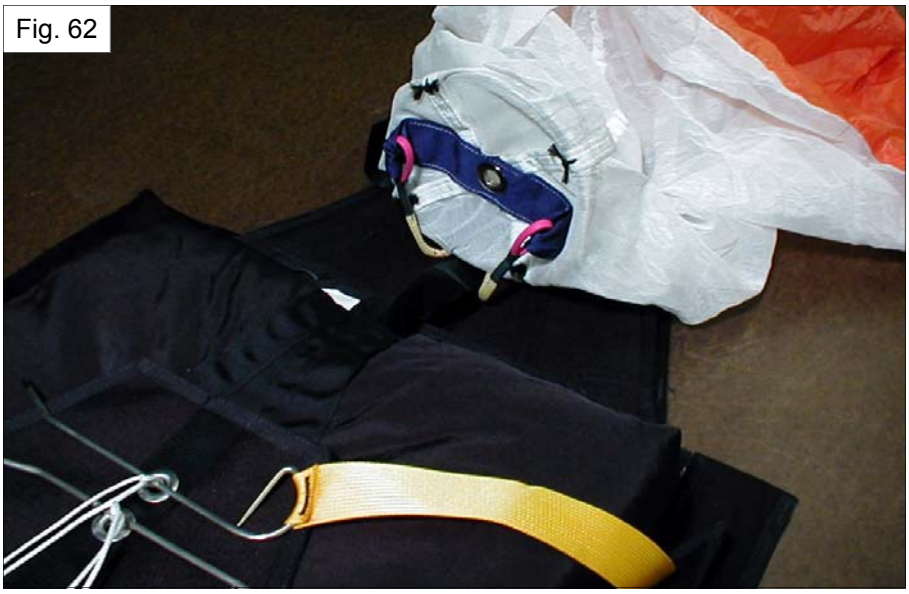
Fig. 60

61. Thread the SAFETY loop pull-up cord through the other grommet and pin the SAFETY closing loop in place with the “SAFETY” temporary pin.

Fig. 61

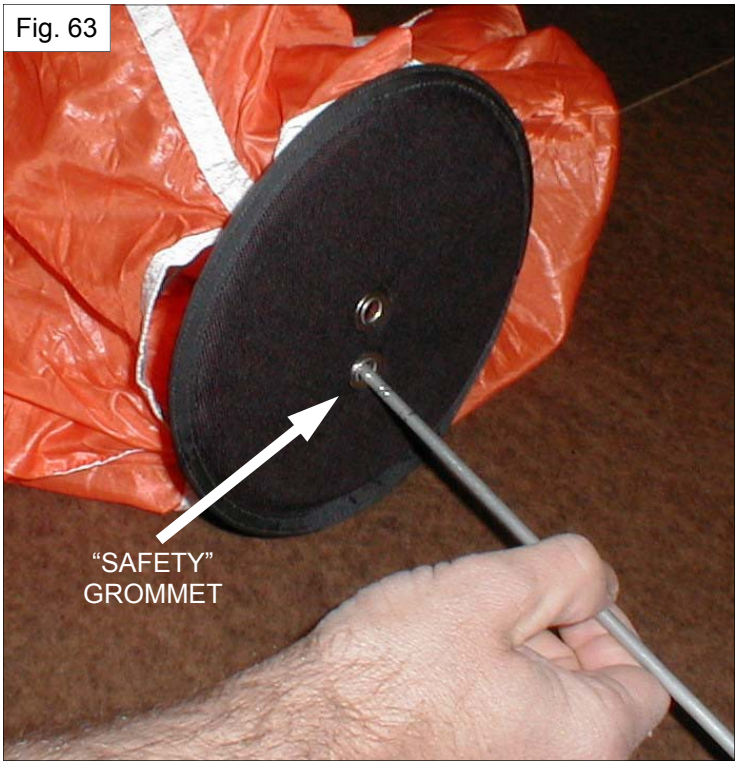
62. Remove any twists in the pilot chute bridle, then place the base of the pilot chute near the top of the deployment bag. Make sure to have the kevlar loops facing down towards the top flap to keep them clear of the pull-up cords.

Fig. 62



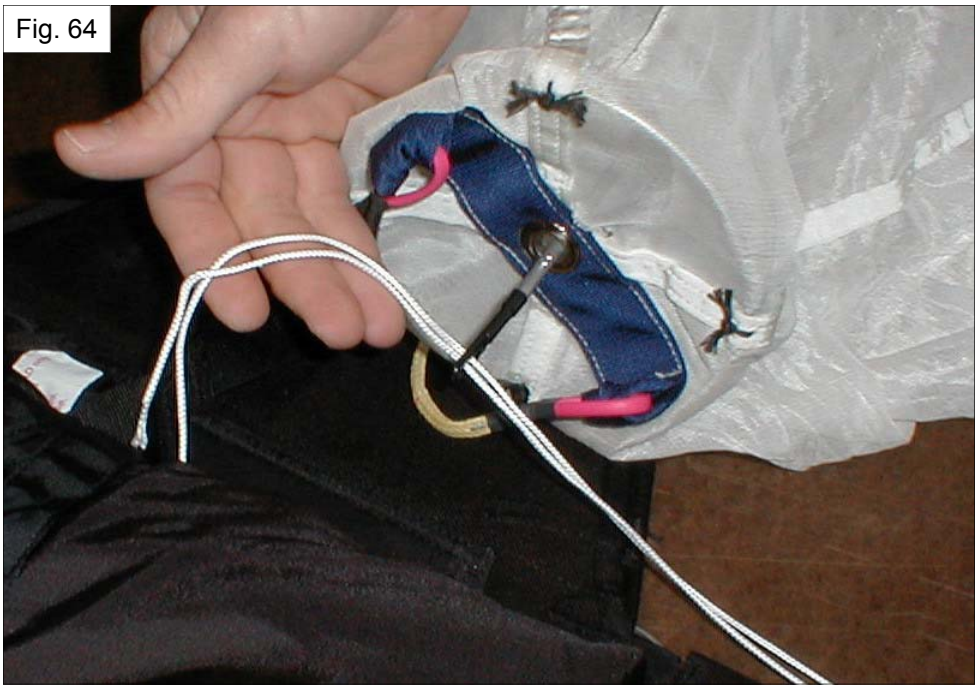
63. Insert your gun rod into the SAFETY grommet on the pilot chute crown and route it to the bottom of the pilot chute. MAKE SURE THE ROD GOES STRAIGHT DOWN THE CENTER OF THE PILOT CHUTE AND NOT AROUND THE SPRING!

Fig. 63



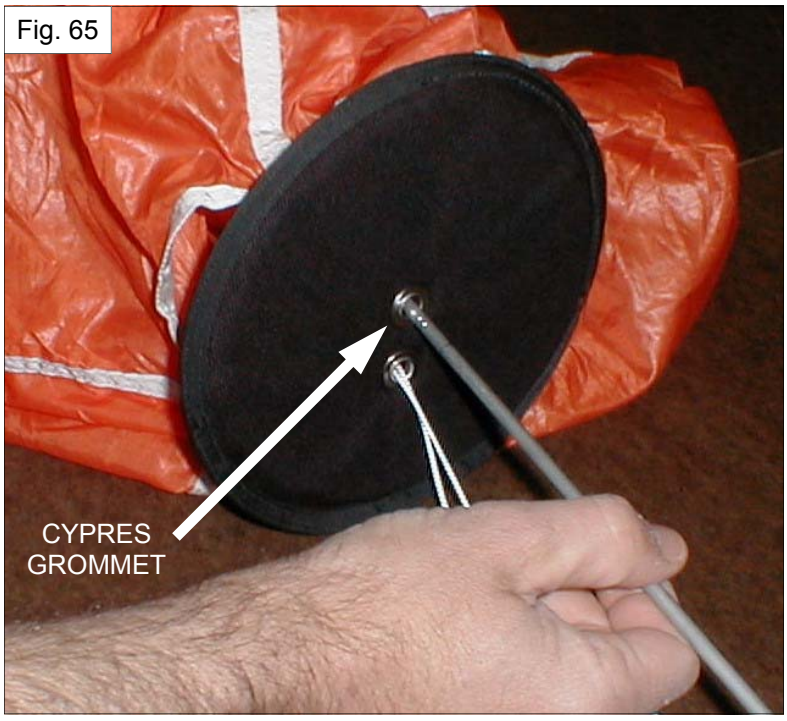
64. Pass the rod through the grommet on the pilot chute base, then insert your SAFETY pull-up cord as shown. Bring the pull-up cord through the pilot chute by slowly withdrawing the gun rod.

Fig. 64



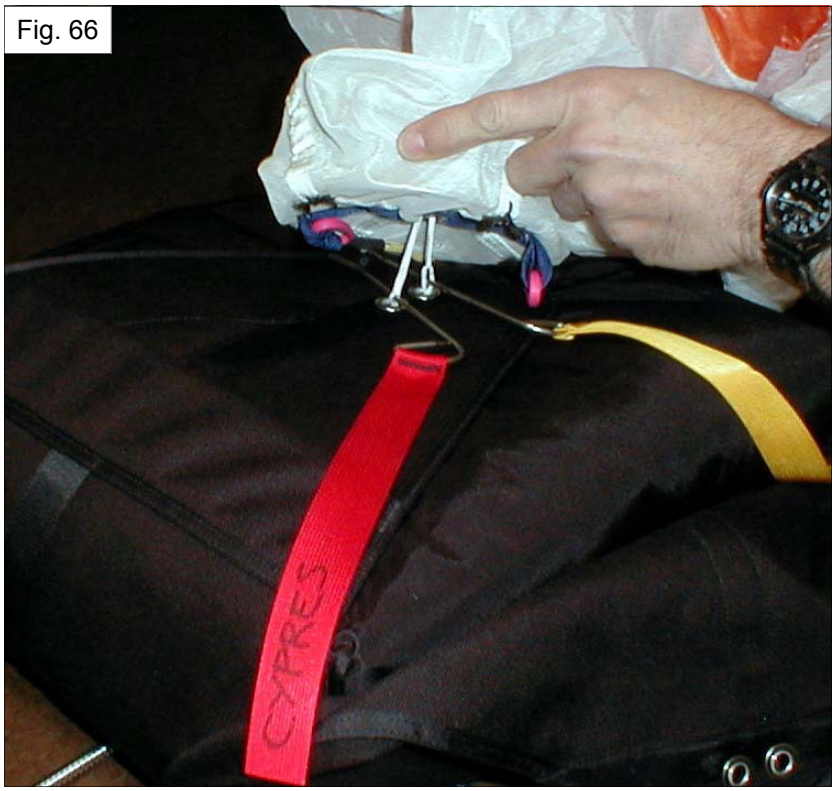
65. After bringing the SAFETY pull-up cord through the top of the pilot chute, remove the cord from the rod. Insert the rod into the CYPRES grommet and, taking care not to wrap around the SAFETY pull-up cord, pass the rod back through the pilot chute and bring the CYPRES pull-up cord through in the same manner as the SAFETY pull-up cord.

Fig. 65



66. Remove slack in the pull-up cords and place the base of the pilot chute on the temporary pins.

Fig. 66



67. Making sure the grommets on the pilot chute crown are correctly oriented, carefully compress the pilot chute while pulling the pull-up cords through the crown as you compress. WARNING: DO NOT TWIST THE PILOT CHUTE AS IT COMPRESSES! DOING SO WILL CAUSE THE CLOSING LOOPS TO TWIST AROUND EACH OTHER!

Fig. 67

68. With the pilot chute fully compressed, insert your CYPRES temporary pin into the CYPRES closing loop.

Fig. 68

69. Insert the SAFETY temporary pin into the SAFETY closing loop.

Fig. 69

70. Pull all of the pilot chute material clear of the pilot chute spring.

Fig. 70

71. Starting at the bottom of the container, carefully fold the pilot chute material and place it against the compressed pilot chute.

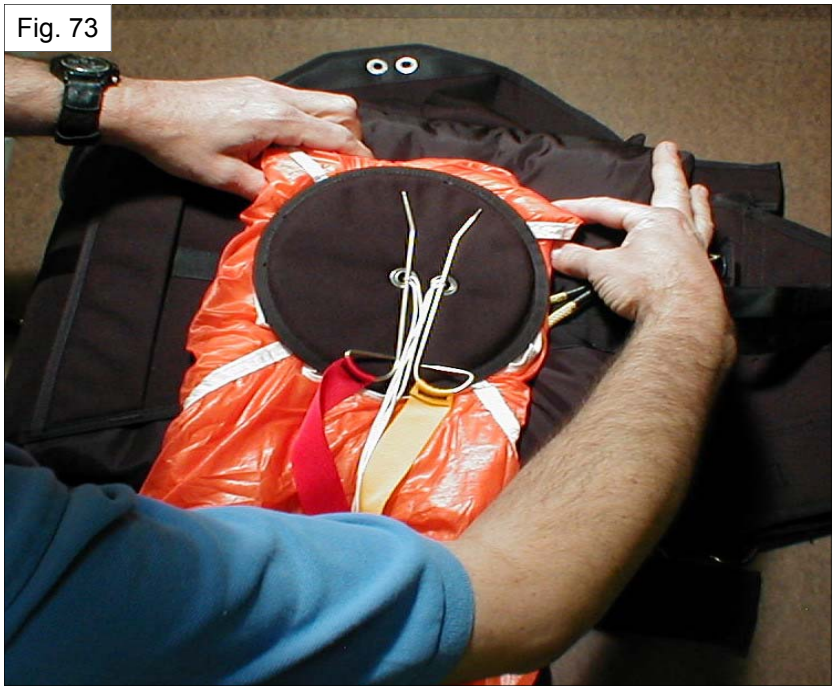
Fig. 71

72. Rotate the container as needed and fold the pilot chute at the top of the container.

Fig. 72

73. Rotate the container again. Fold and tuck the pilot chute on the left side.

Fig. 73



74. Finally, rotate the container again, then fold and tuck the pilot chute on the right side of the container.

Fig. 74

75. Close and pin the left side flap in place.

Fig. 75

76. Close and pin the right side flap in place.

Fig. 76

77. Using a packing paddle, carefully tuck the side flap tuck tabs in place between the packtray and the deployment bag.

Fig. 77

78. Soften the top of the deployment bag to make room for the Cypres by pounding on the top of the bag. Re-tuck the side flap tuck tabs again if they should become loose.

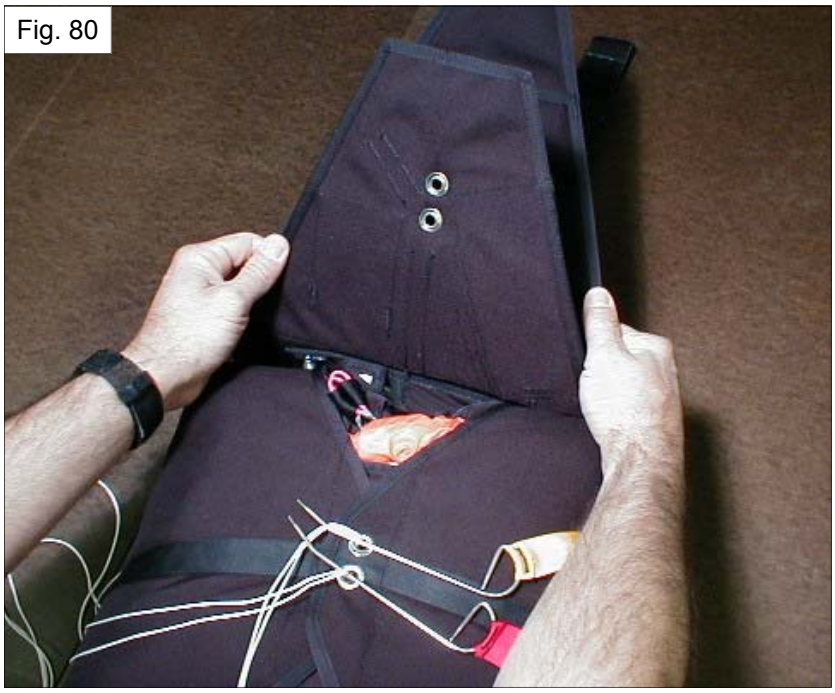
Fig. 78

79. “S” fold the pilot chute bridle and place it on the top of the deployment bag as shown.

Fig. 79

80. Bring the top flap up into position.

Fig. 80



81. Route your pull-up cords through the inner top flap grommets and pin the flap in place.

Fig. 81

82. Remove the CYPRES temporary pin from the CYPRES closing loop in insert the static line pin as shown.

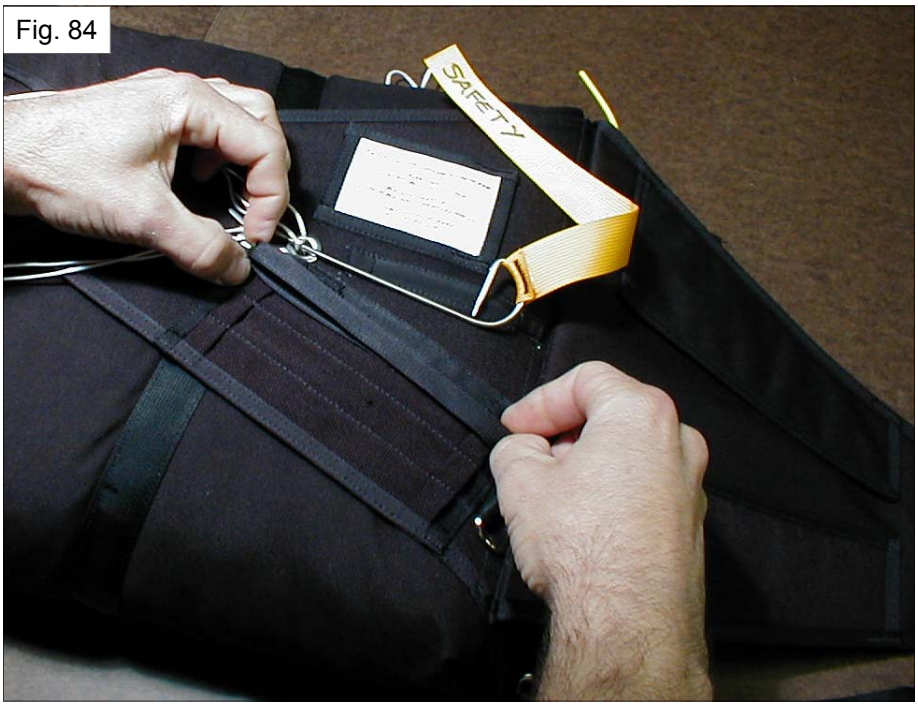
Fig. 82

83. Mate the velcro on the static line to the velcro on the inner top flap

Fig. 83

84. Measure the first stow of the static line the same way you measured the suspension line stows.

Fig. 84



85. Using the static line insertion tool, place the first bight of the static line into the first of the static line stow flutes.

Fig. 85

86. Place a second bight of static line ON TOP OF the bight in the first stow flute, then continue stowing the static line by placing two bights in the second stow flute.

Fig. 86

87. Place one static line bight into the last stow flute.

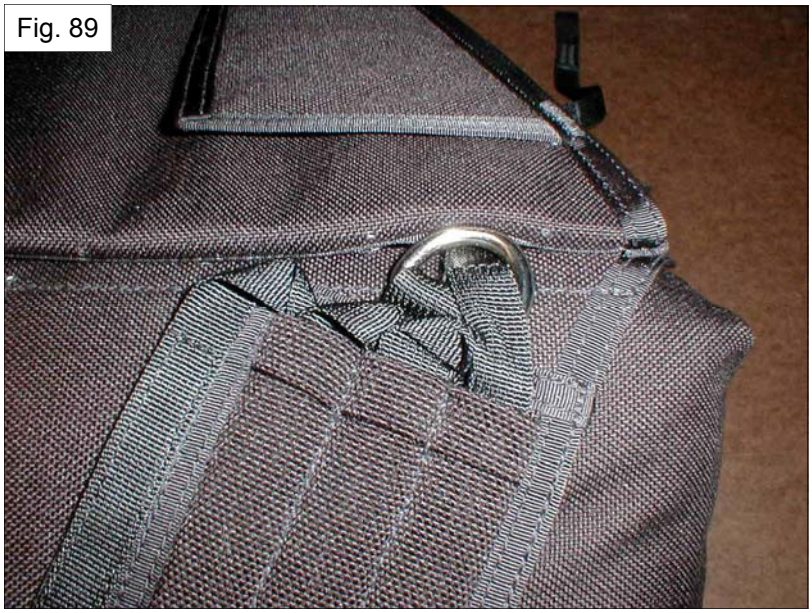
Fig. 87

88. Place a second bight of static line into the last stow flute until the static line velcro is approximately 1 inch from the top of the flute.

Fig. 88

89. Pass the static line through the static line guide and through the opening between the inner and outer top flap. WARNING! FAILURE TO PASS THE STATIC LINE THROUGH THE STATIC LINE COULD RESULT IN DAMAGE TO THE CONTAINER AND POSSIBLE FAILURE DURING DEPLOYMENT.

Fig. 89



90. Pull the static line through the static line opening until the end of the static line velcro is even with the velcro on the top flap.

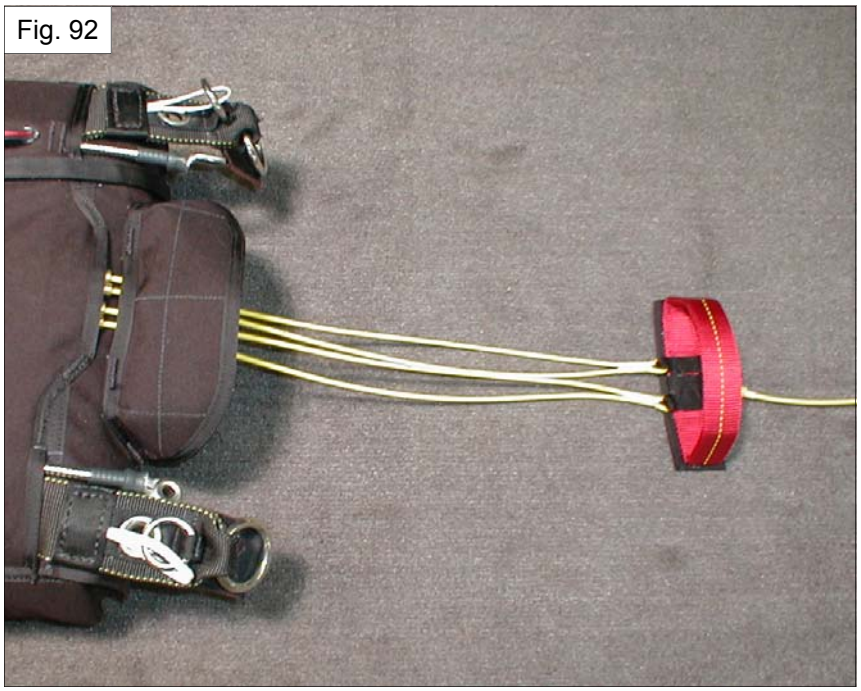
Fig. 90

91. Mate the static line velcro to the top flap and harness cover velcro as shown.

Fig. 91

92. Straighten the four three-ring release cables on the release handle. Pass the cables through the opening at the base of the handle protector and into the four cable housings as shown.

Fig. 92



93. Feed the release cables into the housings and seat the release handle onto the top flap velcro.

Fig. 93

94. Insert the safety cable into the opening between the inner and outer top flaps.

Fig. 94

95. Place the end of the safety cable into the upper cable guide.

Fig. 95

96. Route the safety cable through the upper cable guide, through the SAFETY closing loop, and into the lower cable guide.

Fig. 96

97. Carefully remove your pull-up cords.

Fig. 97

98. Fold the outer top flap into position. Insert the tuck flaps UNDER the inner top flap and the bottom of the flap into the bottom flap tuck pocket as shown.

Fig. 98

99. Attach the carabiner to the static line.

Fig. 99

100. Place the bottom of the carabiner into the carabiner pocket, then clip it to the keeper.

Fig. 100

101. Snap the carabiner pocket closed.

Fig. 101

102. Insert the hook knife into the hook knife pocket and snap the handle flag to the pocket.

Fig. 102

103. Attach the bellybands to the container

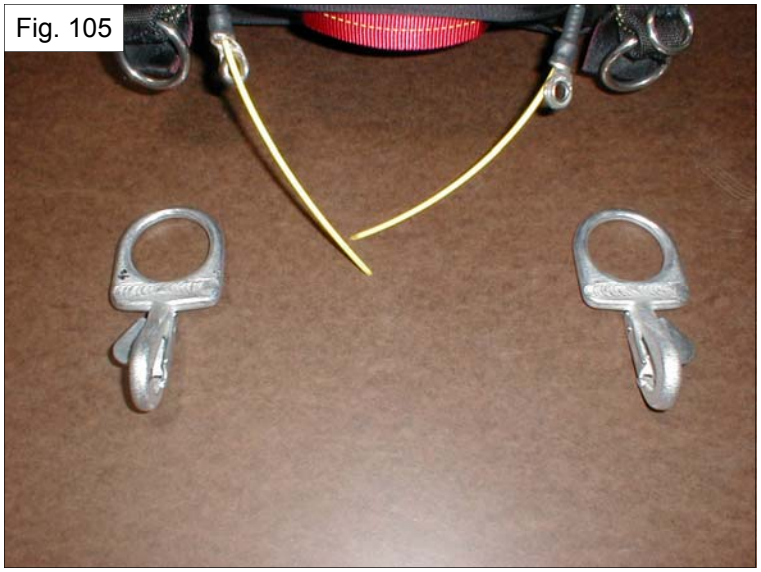
Fig. 103

104. Stow the end of the release cable in the opening provided on the bottom flap of the container.

Fig. 104

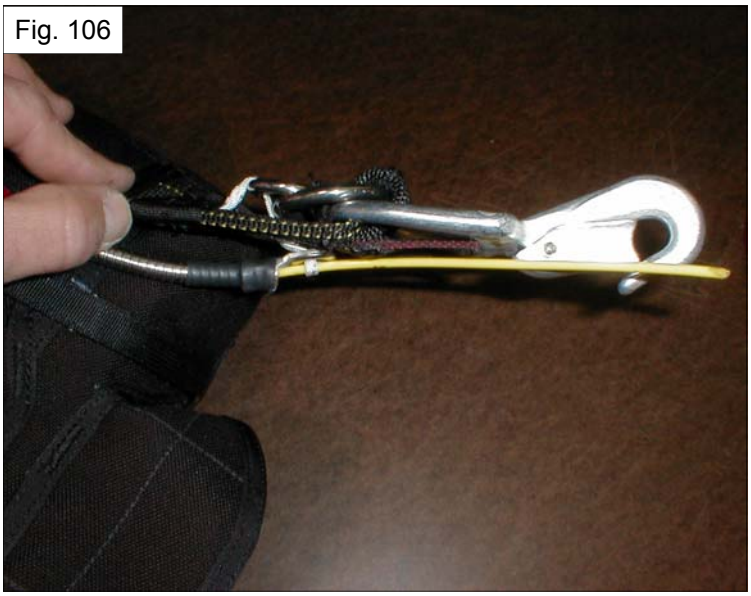
105. Note that the RW-10 / Butterfly snaps have one of the butterfly tabs removed. The remaining tab MUST face OUTBOARD when attached to the harness. Prior to installing the hardware to the harness, make sure you have the correct piece.

Fig. 105



106. With the snap opening facing AWAY from the harness cover, install the RW-10 / Butterfly rings to the harness as shown.

Fig. 106



107. Stow the excess release cable in the pockets located on the harness.

Fig. 107

108. Sign the Packing Data Card and insert it into the pocket on the Inner Top Flap.

Fig. 108

Packing the TT-600 is now complete. Place the system in its carry bag until needed.

COUNT YOUR TOOLS!