

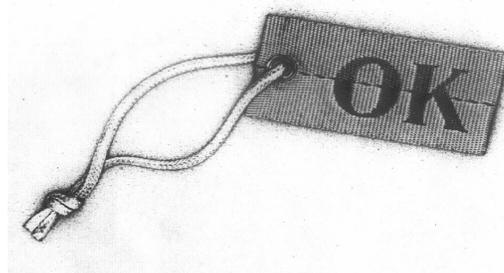
**BLM SMOKEJUMPERS
BOISE, IDAHO
FAIRBANKS, ALASKA**

**RIGGING INSTRUCTIONS FOR THE BLM
RAM-AIR MAIN PARACHUTE**

**COMPILED IN FAIRBANKS, ALASKA
FEBRUARY, 1998**

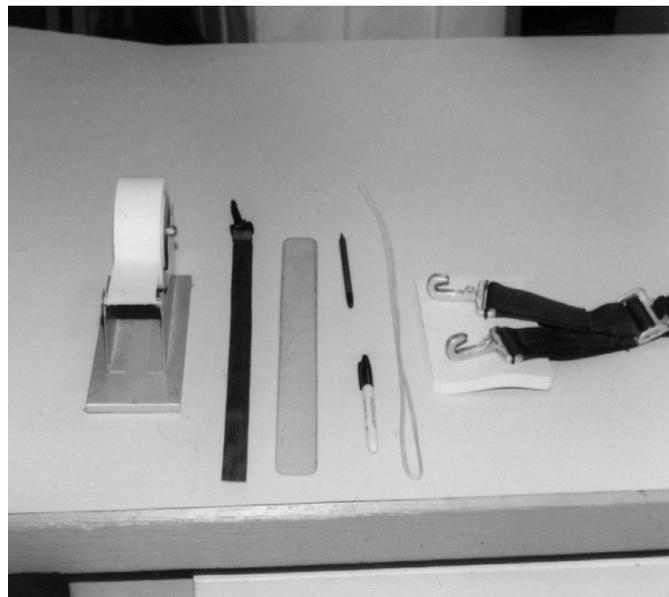
**EDITED
FEBRUARY, 2003**

- 1.) Insure that the canopy has been inspected. The importance of a thorough inspection whether in the field or at a base cannot be stressed enough.

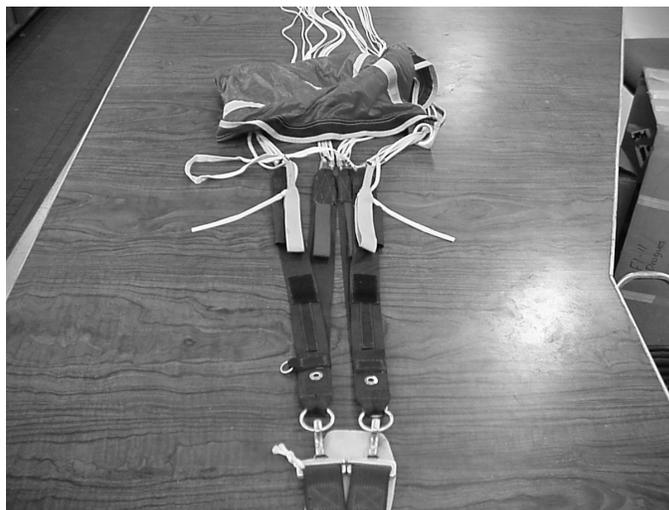


- 2.) Tools required:
 - pull-up cord approximately 36"
 - tension device
 - pen
 - tape, masking
 - 2 3/8" x 1/16" Keener crepe rubber bands.

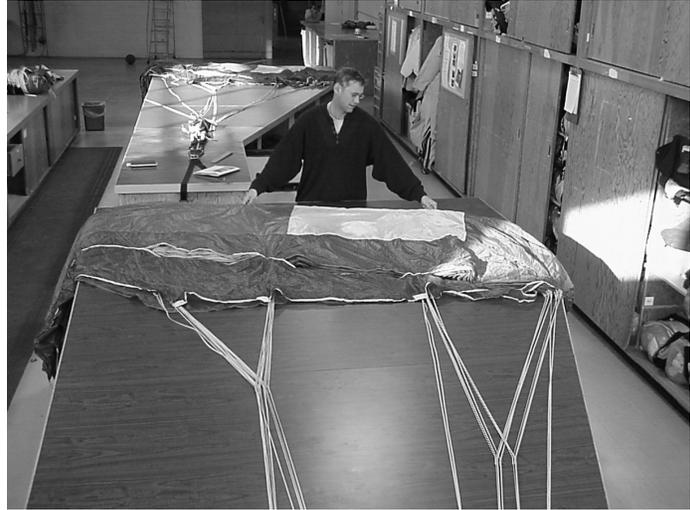
- Optional tools:
- ring locator ribbon
 - marker
 - packing paddle



- 3.) Attach the risers to the tension device with the toggles up and the Reserve Static Line (RSL) system ring on the left.



4) Lay the canopy on its left side and shake it out using the packing tabs. DC-7s have seven packing tabs per group.



5) Pull out the bridle ring and attach the ring locator ribbon or pull-up cord. This step is done to help prevent a rogue drogue.



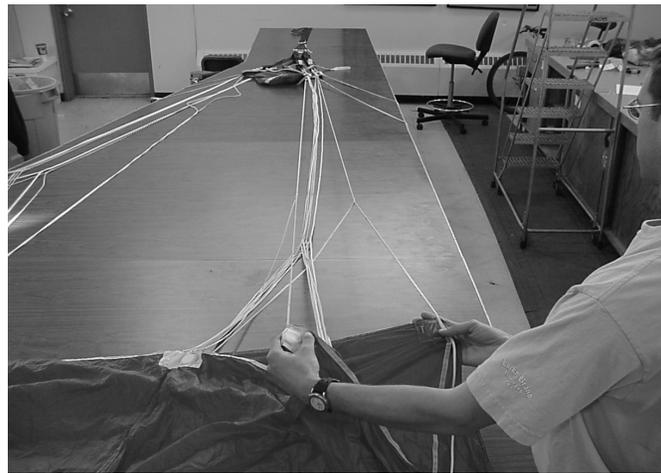
6) Clear and untwist the steering lines by grasping the lines at the outside canopy attachment points working down the lines through the slider grommets and reefing ring to the toggle. Steering lines should now be above and free of any other lines. If not, untangle lines then reattach risers and recheck lines.



- 7.) Straighten the cross tie. It should be clear of all lines and have no twists. It is attached to the inside of the connector links of the rear riser. The connector links need to be checked to ensure they are tight



- 8.) Do a 4-line check. Start with the outside D-lines. The outside lines are attached to slider stops on the stabilizers



- 9.) Follow each line down through the slider grommet to the connector link, making sure the lines are clear and are attached to the outside of the connector links. Be sure there are no twists in the risers.



- 10.) Continue the 4-line check. Hold the outside A-lines and work to the risers.

11.) Again follow each line through the slider grommets to the connector links. Make sure they are clear and attached to the outside of the links. The plastic sleeves covering the connector links are slider bumpers. They protect the slider grommets from damage when striking the links during deployment.



12.) Flake the canopy. Packing tabs are sewn to all seven of the non-load bearing seams. Grasp and pull out the packing tabs and fold the load bearing seams between them.



13.) Flake the tail. Then fold it over onto the canopy.



14.) Flake the nose of the canopy.



15.) Fold the nose under and even with the A-lines. Do not twist the A-lines.



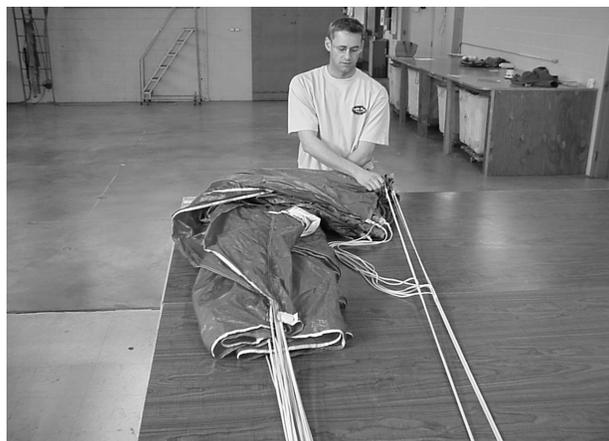
16.) S-fold the B-lines over the A-lines. Stack the line groups on top of each other. S-folding distributes equal amounts of canopy fabric to each side the of stacked line groups.



17.) S-fold the C-lines and the D-lines onto the stack.



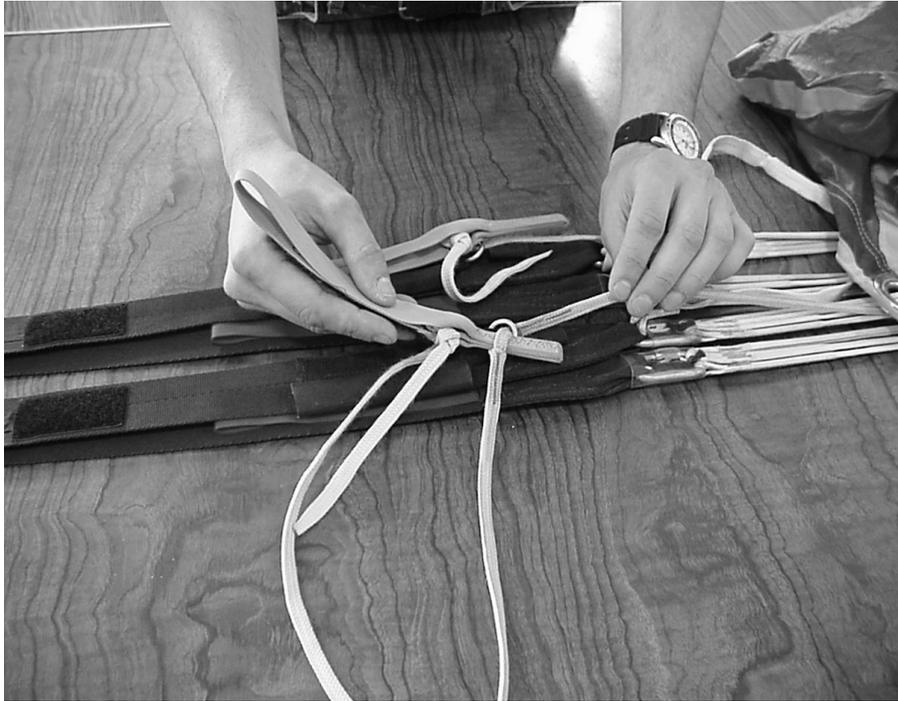
18.) Lay the tail to the right of the canopy and slide the canopy to the left edge of the table. When rigging on the ground you can leave the canopy in place.



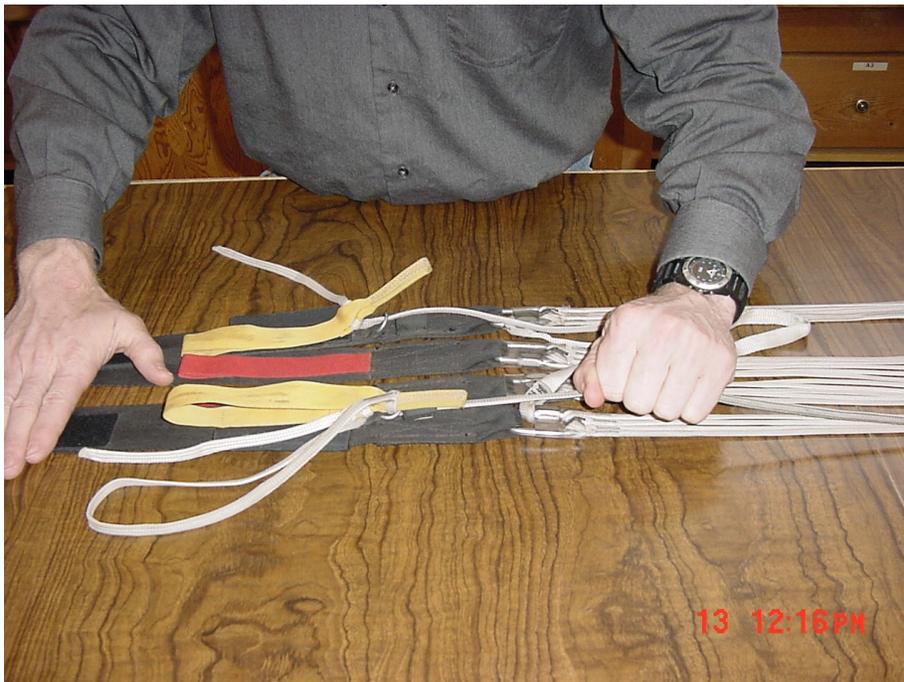
19.) Set the brakes. Pull the steering line down until the brake stow loop is just below the reefing ring.



20.) Place the toggle beak through the brake stow loop as far as it will easily go, with the slack line towards the Velcro flap.



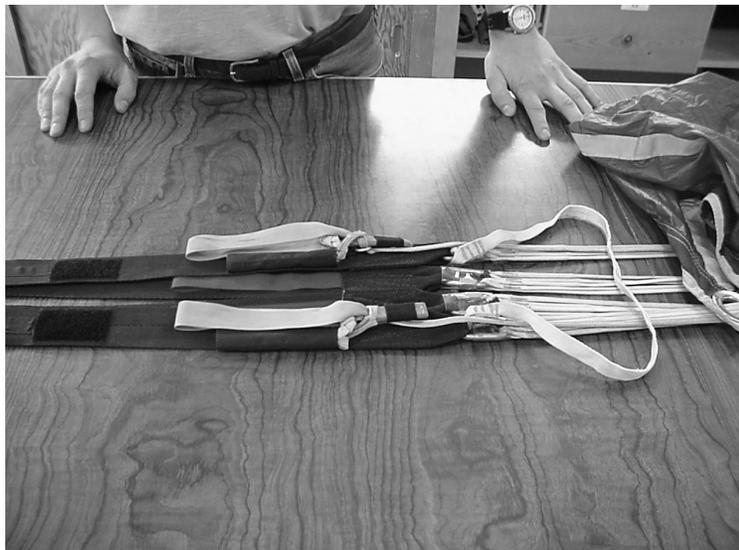
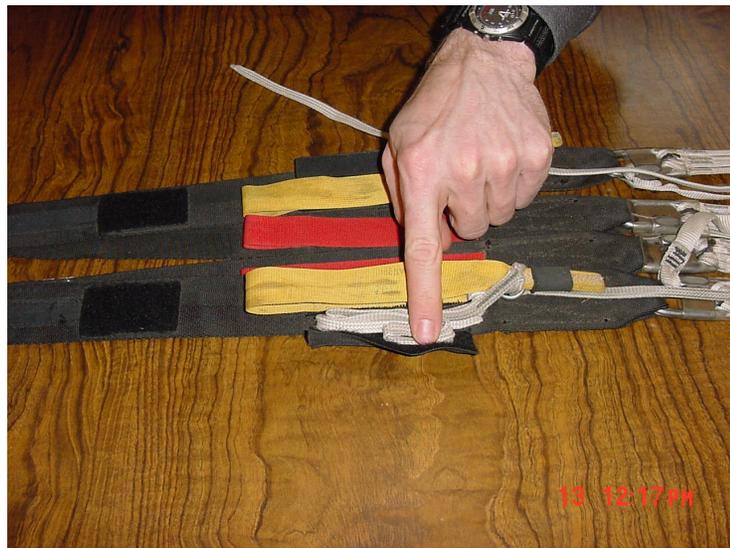
21.) Mate the toggle to the riser Velcro. **At this point, tug on the steering line to make sure that the brakes are set properly.**



22.) Place the toggle beak into the elastic keeper with the line routed up the center of the riser (improperly set brakes have caused a large percentage of our malfunctions).



23.) S-fold the slack in the steering line into the pocket created by the Velcro flap



24.) Clear the stabilizers from the line groups.



25.) With the stabilizers properly dressed, all the lines should be visible up to their canopy attachment points. Re-establish equal line tension.



26.) Re-flake the tail. One at a time, place the seams in the center and fold the fabric between them towards you. When the flaking is complete all of the tail will be folded neatly to the left side of the canopy.



- 27.) Split the tail evenly by folding the top half of the tail over the right side of the canopy. There is a loop sewn on the trailing edge on the center of the canopy that can be used as a reference point.



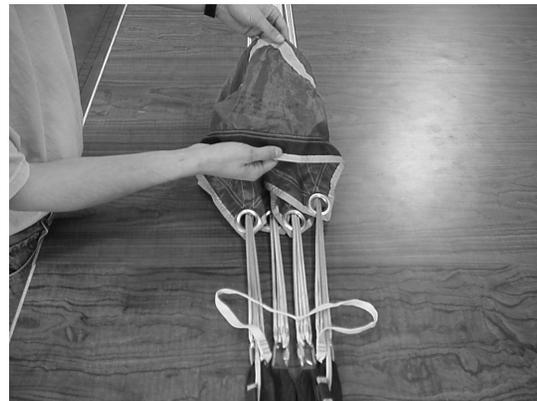
- 28.) Pull out the seam on both sides of the tail's center (be careful not to pull apart the rest of the tail). The top flaps will now be twice as wide as the rest of the tail.



29.) Wrap the center section of the tail around and under the canopy. **Keep your lines centered** and do not pull apart the canopy underneath. Make the width of the wrapped canopy slightly wider than the D-bag. You have now formed the squid.



30.) Check the slider for proper positioning. Spread the risers apart. The reinforcement tape should be facing up and there should be no twists or lines crossing in the slider or the line groups.



31.) Bring the slider up the lines to the slider stops and lay the slider on top of the stabilizers. No line groups should cross.



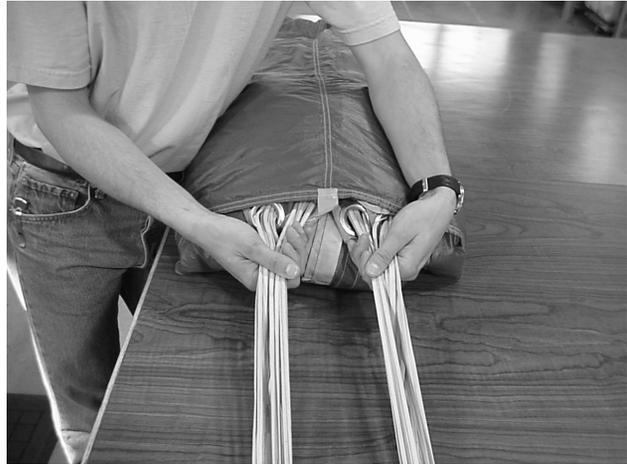
32.) Fold the stabilizers over the slider. Do not alternate.



33.) S-fold the stabilizers and the slider. Make this fold a little shorter than the length of the D-bag. Tuck this fold under the tail.



34.) Split the lines into the left and right line groups. Separate the line groups 8-10 inches



35.) Fold the top of the canopy over the stabilizers and slider. Grasp the top of the canopy from underneath capturing the outer layers of fabric and using them to control the canopy as you make the fold. Make the fold equal to the length of the D-bag.



36.) When rigging in Alaska, expose the nose. While still gripping the outer layers of fabric together, pull out and expose the nose. Spread the exposed nose evenly across the width of the canopy. Count the exposed cells to make sure you have exposed all of the nose. There are 7 cells split evenly with 3 cells on each side with the center cell spread evenly over the middle of the canopy. When rigging in the lower 48, do not expose the nose. (Omit step #35.)



37.) Fold the upper part of the canopy over the first fold maintaining the dressed width of the canopy. **If packing tab rubber bands have not been removed, remove them at this time.**



38.) Tuck the packing tabs and the excess top material under the last fold.



39.) Locate the french link attached to the kill line in the D-bag. Attach the french link to bridle ring. Close the barrel finger tight. Call out “**Hooking up the drogue**”. Pay close attention during this step. Visual inspection is necessary to guarantee the threads of the French link have fully engaged. A rogue drogue is embarrassing and expensive. Remove the ring locator ribbon (or pull-up cord) from the bridle ring.



40.) Pull the d-bag over the end of the canopy. Push the canopy most of the way into the D-bag, pull the french link against the grommet, then push the canopy into the D-bag as far as possible.



41.) Make sure that the french link is against the grommet. If necessary, slip your hand inside the D-bag over the top of the canopy to clear any material that is caught between the link and the grommet.



42.) At this point, the left and right line groups should be separated. If they are pushed out of sight between the folds, they can damage the canopy material.



43.) Make the first locking stow on the left side of the D-bag. Route the left line group out between the left locking stow and the center locking stow. Place the rubber band through the grommet and using only the left line group make the locking stow. A bight of 2 ½ inches should be used to make the locking stows. Double wrap the first stow.



44.) Make your second locking stow on the right side of the D-bag. Using only the right line group, route the lines out between the right locking stow and the center locking stow. Double wrap the second stow.



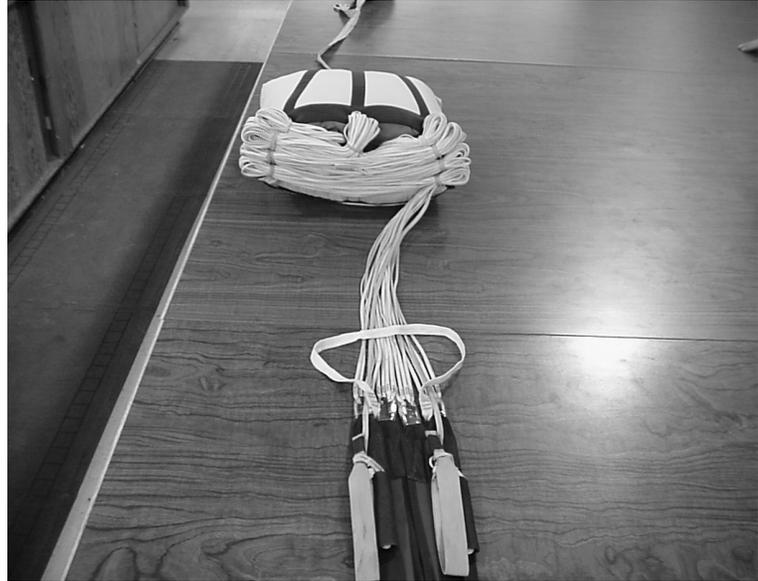
45.) The third locking stow is formed by bringing the left and right line groups together at the center locking stow. Use all of the lines to make the locking stow. Single wrap the last center stow.



46.) Form the line stows. Make the first stow to the left side. S-fold the lines across the top of the D-bag using the rubber bands, with a double wrap, to hold the S-folds (stows) in place. The length of the S-folds should be as short as possible and still allow for a bight of about 2 inches + or - ½ inch.



- 47.) Stow the lines, leaving enough line remaining between the risers and the last completed line stow to make a stow with the cross tie.



- 48.) Straighten the cross tie and lay it on the lines.

- 49.) Make a 1 ½ inch bight with the cross tie and the lines, double wrap it with the rubber band that is at the center of the closing flap. The distance between this bight and the connector links needs to be long enough to allow the risers to be routed into the corners of the D-bag (approx 8").



50.) If there is slack in the lines between the cross tie bight and the last line stow, make one more stow to either side to take up this slack.



51.) With the risers still connected to the tension device, place the main container on them with the risers running over the corners of the top flap. Align the Velcro on the risers with the Velcro on the container.



52.) S-fold the risers onto the container and mate the Velcro.



53.) Place the D-bag on the container. The three tape reinforcement bands should be facing up. Disconnect the risers.



54.) Route the risers along the edges of the container and into the corners. The connector links will be against the bottom flap with the barrels facing down.



- 55.) Position the closing pin next to the top flap grommet. Mate the Velcro together to hold pin in position.

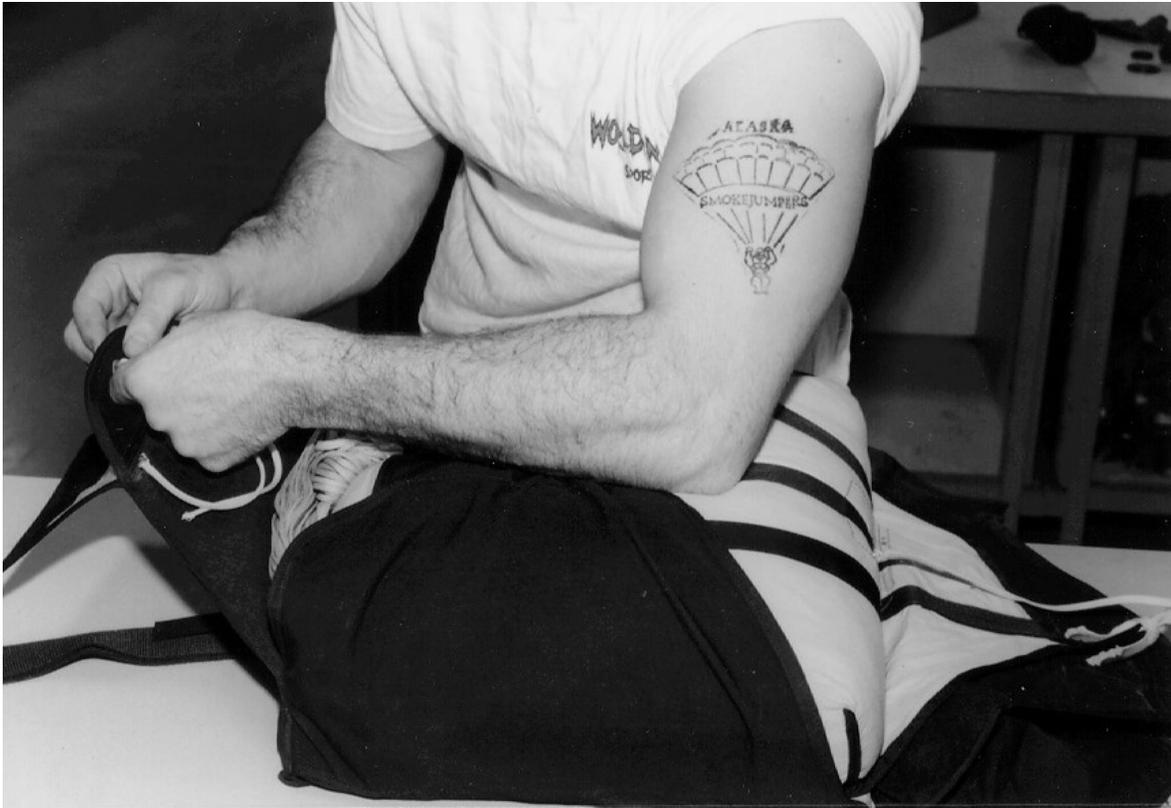


- 56.) Thread the pull-up cord through the closing loop to its midpoint, bring the ends together and use the pull-up cord as one unit. Replace the closing loop if it is worn.



- 57.) Thread the pull-up cord through the flap opposite the closing loop. Now close the side flaps by pulling on the pull-up cord until the closing loop is through the side flap grommet.

58.) Thread the pull up-cord through the grommet on the bottom flap. Use either the heel of your hand or your elbow to hold the side flaps closed.



59.) Close the bottom flap. Again keep the flaps closed and thread the pull-up cord through the top flap grommet.



60.) Straighten the bridle/kill line. Tuck the slack under the top flap.



61.) Close the top flap. Insert the pin into the closing loop. Seat the pin on its side so it lies flat against the container.



62.) Remove the Pull-up cord. Route the pull-up cord under the closing pin and pull it out slowly to prevent friction causing damage to the nylon closing loop.

63.) Reach under the top closing flap and pull out enough bridle to create a bight that will reach the stitch line of the pin protector flap



64.) Route the bridle straight up from the pin and make a 90 degree turn to the first stow on the parachute's right side.



65.) Stow the bridle using all 8 rubber bands. The stows should be uniform in size and double wrapped. Make sure there are no twists in the bridle.



66.) Place the drogue D-bag in the container with the Tupper loop down. The bridle under the drogue should have no twists and the ring lanyard should be routed out between the two rear drogue flaps. The drogue static line runs across the drogue from right to left with the Velcro facing up. Center the rear drogue flaps on the static line Velcro and mate them together.



67.) Grasp the Drogue D-bag and the rear Drogue flaps in both hands and roll forward while pushing down to seat the drogue snugly into the container. Align the front drogue flaps so they are centered and flush with the rear drogue flaps. Mate the Velcro together.



68.) Dress out the container make sure all Velcro is mated and that flaps are neat and in place.



69.) Fill out packing data card.

70.) Stow the risers and belly band straps in place with a waterproof bag under the risers. Tuck the bridal ring under the waterproof bag.



71.) Place masking tape on the pin cover flap. Write your name, the date, the canopy number and the drogue number on the tape. Also write "Ak" or "Boi" on the tape to indicate if the nose has been exposed (Ak) or not (Boi). Fill out your log book and the master log.

72.) Count your tools to make sure they are all accounted for and that none of them are **rigged** into the parachute.



DC-7 BREAKDOWN INSTRUCTOR'S NOTES

TOOLS COUNTED

- CONSEQUENCES OF RIGGING A TOOL IN A PARACHUTE COULD INTERFERE WITH NORMAL DEPLOYMENT

PAPERWORK

- 4 PLACES: TAPE ON CONTAINER, PACKING CARD, PERSONAL LOG BOOK, MASTER LOG BOOK
- REQUIRED BY THE FAA

CONTAINER

- DRESSED NEATLY, NOT LUMPY, NO EXPOSED LINES

VELCRO MATED

- EVENLY MATED AT DROGUE FLAPS, CORNERFLAPS, AND PIN COVER FLAP

RISERS STOWED

- STOWED ON LOWER HARNESS ATTACHMENT BAND

WATERPROOF BAG

- STOWED NEATLY UNDER RISERS

BELLY BANDS STOWED NEATLY

STATIC LINE

- ROUTED TO JUMPER'S LEFT
- UNTWISTED AND TUCKED INTO RIGHT SIDE CLOSING FLAP

DROGUE RING LANYARD

- ROUTED SO THAT THE JUNCTION OF THE BRIDLE AND THE RING LANYARD MEET AT THE OPENING IN THE FLAP

DROGUE D-BAG

- TUPPER LOOP SHOULD BE DOWN
- SOME STATIC LINE ATTACHMENT TAPES MAY HAVE A HALF TWIST DEPENDING ON WHICH SIDE THE HOOK VELCRO IS SEWN

BRIDLE STOWS

- EVENLY SIZED STOWS
- $\frac{3}{4}$ - 1 INCH BIGHTS
- STOWS SHOULD ALLOW ENOUGH SLACK SO THAT THE JUNCTION OF THE BRIDLE AND THE RING LANYARD MEET AT THE OPENING IN THE FLAP
- SHOULD USE ALL THE RUBBER BANDS WITH DOUBLE WRAPS

CURVED PIN

- SEATED AT LEAST $\frac{3}{4}$ OF THE WAY IN

SLACK BELOW PIN

- SLACK IN THE DROGUE BRIDLE BELOW THE PIN SHOULD REACH THE STITCH LINE OF THE PIN COVER FLAP

CLOSED PROPERLY

- SEQUENCE CORRECT, DROGUE BRIDLE SLACK NEATLY STOWED UNDER THE BOTTOM FLAP OF THE MAIN D-BAG

RISERS

- MATED TO VELCRO, STARTS FLAT, TURNS ON ITS SIDE WHEN IT ROUTES TO THE CORNERS.
- SHOULD BE EVEN

LINES / CROSSTIE BIGHT

- 1 $\frac{1}{2}$ INCH BIGHT, DOUBLE WRAPPED
- ENOUGH SLACK FOR THE RISERS TO BE ROUTED TO THE CONTAINER'S CORNERS

LINE STOWS

- 1 $\frac{1}{2}$ - 2 $\frac{1}{2}$ INCH BIGHTS, DOUBLE WRAPPED
- EVEN LINE TENSION – NO "SPAGHETTI"
- NEATNESS

LOCKING STOWS

- 2 ½ INCH BIGHTS, MIDDLE IS SINGLE WRAPPED, OUTSIDES DOUBLE WRAPPED
- EQUAL LINE TENSION IN BOTH GROUPS

FRENCH LINK

- CLEAR OF MATERIAL BETWEEN LINK AND GROMMET
- ATTACHED WITH BARREL ADVANCED UNTIL FINGER TIGHT

CANOPY STACK

- FOLDS EVEN SIZE AND SHAPE
- EQUALLY DISTRIBUTED THROUGHOUT BAG

NOSE

- IF EXPOSED, THE SEVEN CELLS SHOULD BE CENTERED AND EXPOSED TO THE WIDTH OF THE STACK

SLIDER

- SHOULD BE TIGHT AGAINST SLIDER STOPS
- NOT INVERTED – TAPE UP
- WHEN SLID TO RISERS THE FORWARD GROMMETS SHOULD LIFT REAR RISERS

LINES CENTERED

- CENTERED OVER CANOPY S-FOLDS AND PRECEDING LINE GROUPS
- LINES SHOULD BE VISIBLE TO THEIR ATTACHMENT POINTS

STABILIZERS

- STABILIZER MATERIAL CLEAR OF LINES
- NOT FOLDED ALTERNATELY SIDE TO SIDE
- NEAT

TAIL FLAKED NEATLY

- CENTERED
- NOT SPREADING APART
- SPLIT EVENLY

BRAKE STOWS

- TOGGLE BEAK THROUGH SUNDT BELOW GUIDE RING
- BEAK THROUGH ELASTIC KEEPER
- NO ADDED TWISTS
- LINE ROUTED TO CENTER OF RISER
- ALL EXCESS LINE NEATLY STOWED IN POCKET

CANOPY S-FOLDS

- LINE GROUPS AND S-FOLDS SHOULD BE CENTERED OVER EACH

4-LINE

- CLEAR AND ATTACHED TO OUTSIDE OF FRENCH LINKS

STEERING LINES CLEAR

- UNTANGLED / UNTWISTED
- ABOVE AND FREE OF OTHER LINES

GENERAL NEATNESS

- GENERAL IMPRESSION OF OVERALL PACK JOB