TP-SERIES

TANDEM PHOENIX MILITARY MAIN PARACHUTE

BY PERFORMANCE DESIGNS, INC.

1300 E. International Speedway Blvd. DeLand, FL 32724
TEL: 386.738.2224 www.performancedesigns.com FAX: 386.734.8297

TMAN-007- AUG 2005 – REV 0

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WARNING AND DISCLAIMER

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It is beyond the scope of this manual to teach you how to deploy, fly, land, or maintain this parachute. This manual is only a general guide about this parachute. It is not a replacement for proper training and instruction.

Parachute systems sometimes fail to open properly, even when properly assembled, packed, and operated. There is a risk of equipment damage, serious injury, or death each time this system is used.

Each time you use this parachute you risk bodily injury and death.

You can substantially reduce this risk by: **(1)** assuring every component of the parachute system has been assembled and packed in strict accordance with the manufacturer's instructions. **(2)** by obtaining proper instruction on the use of this parachute and the rest of the equipment, and **(3)** by operating each component of the system in strict compliance with the owner's manual and safe parachuting practices.

REVISION LIST

Performance Designs, Inc (PD) may revise this manual at any time. The only way to be sure this manual is current for your parachute is to check periodically with PD. PD welcomes suggestions of ways to improve this publication. If you feel parts are incomplete or hard to understand, please let us know by writing or emailing PD.

DISCLAIMER NO WARRANTY

Because of the unavoidable danger associated with the use of this parachute, the manufacturer makes no warranty, either expressed or implied. It is sold with all faults and without any warranty of fitness for any purpose. The manufacturer also disclaims any liability in tort for damages, direct or consequential, including personal injuries resulting from a defect in design, material, workmanship or manufacturing whether caused by negligence on the part of the manufacturer or otherwise.

By using this parachute assembly, or allowing it to be used by others, the user waives any liability of the manufacturer for personal injuries or other damages arising from such use.

SECTION 2:

PARACHUTE MAINTENANCE AND REPAIR

PARACHUTE INSPECTION

OVERVIEW

The Performance Designs parachute should be inspected thoroughly before its first use and periodically with use. This inspection should be done in a clean, well-lit area with enough room to spread out the parachute.

The following is the Performance Designs recommendation for main parachute inspection. Consult the harness and container owner's manual for instructions regarding inspection of non-parachute components.

VISUAL INSPECTION

TOP SURFACE

Spread the parachute out on its bottom surface and inspect the top surface starting at the front of the left end cell. Check half of the cell from nose to tail. Then check the other half from tail to nose. Repeat this pattern until each cell's top surface has been inspected. Look for rips, stains, snags, burns, abrasions or failed seams.

BOTTOM SURFACE

Turn the parachute over and spread it out to inspect the bottom surface. Again use the procedure of inspecting half-cells as on the top surface. Check for rips, stains and failed seams. Look very closely at the line attachments. Even slight damage is cause for rejection in these areas. Line attachments must be completely free of any damage or defects. Check under the ends of the line tabs.

RIBS

Inspect each rib from leading edge to the trailing edge by looking inside each cell. Pay extra attention to the line attachment points. Check for items such as burns, tears, seam integrity and pulled threads. Also check the cross ports.

STABILIZERS AND LINE CONNECTIONS

Lay the parachute neatly on one side, stacking each loaded rib on top of the others. Ensure the trim differential between each line is correct for this parachute. Check the condition of the stabilizers and slider stops on the stabilizer.

SUSPENSION LINES

Check the full length of each line for damage and wear. Look for fraying at all cascades and where each line attaches to the connector link. Check that all lines are sewn and that the stitching is good. Check the continuity and routing of each line.

SLIDER

Ensure the fabric is not torn, the grommets are undamaged with no sharp edges, and that they are securely attached to the slider. Be sure every suspension line and both steering lines pass through the proper grommet on the slider.

RISER AREA

Visually check the link and its condition. If the link is not bent, cracked or damaged, the link is okay for continued service.

PROTECTIVE LINK COVERS

Make sure the protective link covers located on the connector links are the correct ones, are positioned properly, are in good condition and are properly secured with tacking cord.

TOGGLES

The toggles must be installed correctly and must match the guide ring and the hook and loop fastener on the risers. Performance Designs canopies come with brake settings and toggle tie on marks set according to PIA standard riser/brake dimensions. This standard calls for 4 inches (10.2 cm) from the top of the riser to the top of the brake-setting ring. If the risers are more than 1 inch (2.5 cm) different from this standard the parachute must be modified. This modification may only be done by Performance Designs, Inc. In addition, any changes must be marked on the parachute's data panel.

FABRIC TESTING

STRENGTH

If doubt exists about the strength of the parachute fabric due to being exposed to a degrading element, the fabric strength should be tested according to the following procedure:

Use commercially available 1-inch (2.5 cm) wide fabric testing clamps with rubber-faced jaws and appropriate scale. The scale should be calibrated at least once per year and be accurate within 1.0 lb (0.45 kg). The clamps should be free of any burrs or rough edges that could snag the fabric.

Three fabric strength tests should be performed on each of the following locations on the parachute:

• left cell, top surface

• end cell, top surface

• right end center top surface near trailing edge

The test should never be done where any part of the fabric involved in the test is within 3 inches (7.6 cm) of any seam or the data panel. The test should be done chord-wise. An additional test must be performed on any stained or discolored areas.

Attach the locking fabric clamps to the ripstop fabric. The distance between the clamps should be 3 inches (7.6 cm) and the clamps should be aligned so that the ripstop pattern is parallel to the edge of the jaw.

Lock the clamps securely to avoid slippage. Pass a short length of cord through the eye of one clamp and secure to the packing table or other object that will allow a 30 lbs (13.6 kg) load without movement.

Pass the hook from the spring scale through the other eye and apply a 30 lbs (13.6 kg) load for 3 seconds.

PERMEABILITY

The permeability of the fabric is very important. As the permeability increases, the parachute will open more slowly and flight performance will deteriorate. The rate of descent will increase and the forward speed will decrease. The ability of the parachute to flare to a soft landing will decrease.

To ensure the parachute is safe to use, Performance Designs has established an average permeability limit of 2.0 cfm for the TP series parachute throughout its service life.

Fabric permeability should be tested if any of the following events occur:

- Flight performance appears to be substandard.
- There are other reasons to believe the fabric permeability may exceed specifications.

The Performance Designs factory is equipped to perform permeability testing. It is recommended that any parachute needing such testing be returned to the factory.

MAINTENANCE AND REPAIRS

Repairs should only be performed by appropriately rated riggers with training and experience specific to PD parachutes.

ATTACHING THE PARACHUTE TO THE RISERS

ATTACHING THE PARACHUTE TO THE RISERS

OVERVIEW

When assembling a Performance Designs parachute onto risers it is important that the directions are followed precisely. The first time you perform an installation, it should be under supervision. If these directions are followed correctly, and only parts supplied by Performance Designs are used, these links will provide excellent service.

CONNECTOR LINKS

Remove all grease and dirt from links, using a solvent that will leave no residue. Trichloroethylene or electrical contact cleaner is recommended.

Inspect the links carefully. Check for nicks, burrs and any sign of bending or stress. Check to be sure the barrel will screw down at least 2-3/4 turns from first engagement with no resistance.

If the protective link covers are not already installed, slide them over the links and onto the lines. You can use a pull up cord to assist you in doing this.

Attach the connector links onto the risers and tighten the links - finger tight.

Perform a thorough line continuity check at this point, making sure that the parachute is rigged correctly.

Tighten the link finger tight and torque to 20-30 in lbs-force (2.26 – 3.39 Nm). To accurately gauge this, place a 5 lb. (2.27 kg) weight on a wrench, 5 inches (12.7 cm) from the link. When the wrench is horizontal and the barrel no longer turns, the link is fully tightened. Do not tighten more than 30 in lbs-force (3.39 Nm).

ATTACHING STEERING LINES TO TOGGLES

ATTACHING STEERING LINES TO TOGGLES

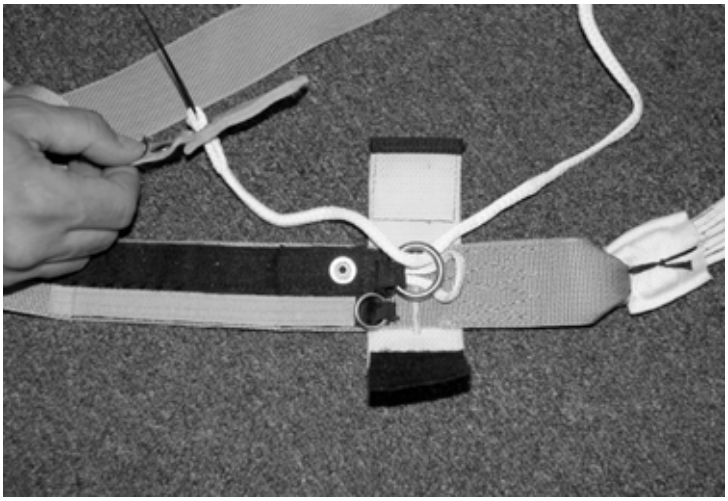
OVERVIEW

Attach the steering toggles according to the rig manufacturer's instructions if they are compatible with the type of steering line used.

If the rig manufacturer gives no conflicting instructions, then Performance Designs recommends the following method.

PROCEDURE

NOTE: Prior to hooking up the steering toggles, make sure the steering line passes through the grommet on the slider.

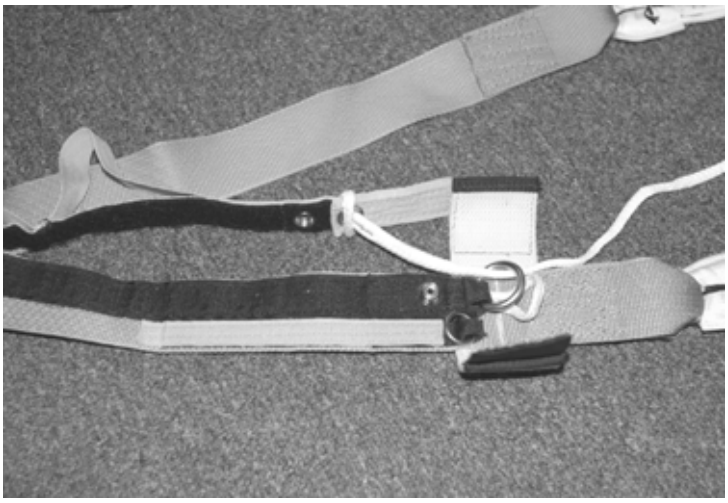


Route the primary steering line through the guide ring located on the riser, then through the grommet in the toggle, starting from the hook and loop fastener side.

Tack cord may be used to assist in threading the finished loop of the control line through the toggle grommet.

Thread the handle end of the toggle through the finished loop creating a lark's head knot. Do not thread the upper end of the toggle through the loop because this is not a secure method and may come off.

Pull the toggle completely through and tighten the knot around the toggle.



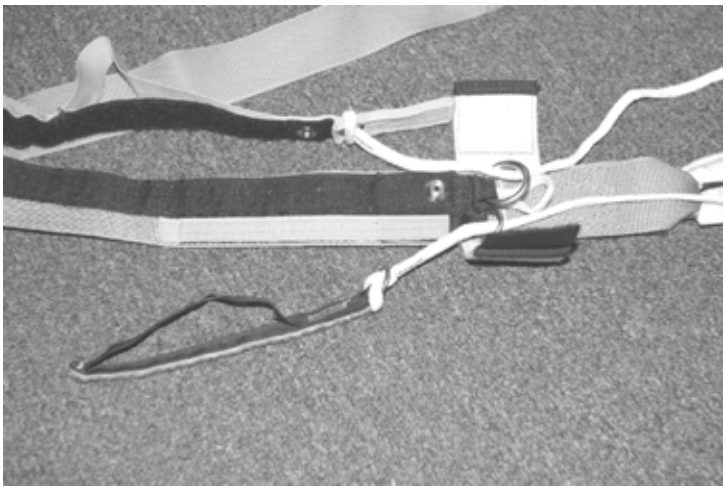
CONNECTING THE SECONDARY CONTROL LINE TO THE TOGGLE

Route the secondary steering line through the guide ring located on the riser, then through the grommet in the toggle, starting from the hook and loop fastener side.

Route the secondary steering line through the ring on the toggle as shown.

Thread the handle end of the toggle through the finished loop creating a lark's head knot. Do not thread the upper end of the toggle through the loop because this is not a secure method and may come off.

Pull the toggle completely through and tighten the knot around the toggle.



CLEANING THE PARACHUTE ASSEMBLY

CLEANING THE PARACHUTE ASSEMBLY

OVERVIEW

Washing a parachute is not recommended unless deemed absolutely necessary. Washing a parachute can weaken and/or increase the permeability of the fabric. Washing can also cause shrinkage in the nylon fabric, tapes and the cotton/Nomex® components (i.e., bridle attachment area). Do not dry clean parachutes. Parachute components may be spot cleaned or cleaned as a unit and care must be taken that the cleaning process does not do more damage than the original soiling.

This chapter also covers identification and removal of some types of contamination. Items such as acid, salt water, and petroleum products are covered.

HANDWASHING (IF ABSOLUTELY NECESSARY)

1. A mild soap or soap solution, and a water softener may be used.
2. Immerse the parachute into clean, fresh water contained in a smooth vessel, such as a bathtub.
3. Do NOT wring the parachute fabric. Damage will result.
4. Gently move items by hand until all air pockets are removed. Agitate as little as possible.
5. Empty the vessel of dirty water and refill with fresh warm, clear water.
6. Rinse the parachute several times in warm, fresh water until rinse water is clear.

DRYING A PARACHUTE

The procedure for drying a parachute is as critical as the procedure for washing it. Asymmetric shrinkage may occur if the parachute is dried unevenly

1. Remove pilot chute assembly and/or drogue/slider control line when at all possible.
2. Hang parachute full-length or the seams may experience uneven shrinkage. This can create a turn in the parachute.
3. Hang parachute assembly by all four connector links.

ACID CONTAMINATION

Nylon that has been contaminated by acid may have irregular shaped spots of gray or dead white color. The acid-contaminated fabric may also become powdery when scraped lightly.

Parachute components suspected of acid contamination may be tested with blue litmus paper. Dampen the suspect area with distilled water. Then lay the litmus paper on the area in question. If the paper turns pink, acid is present. Be careful not to touch the litmus paper. Touching the paper can cause an erroneous response.

If an area tests positive for acid and the effected area is known to be localized, that area should be neutralized with a solution of distilled water and ammonia. Household ammonia will work. Ammonia will not damage nylon or hardware. The damaged area should be removed and the resulting hole should be

patched. If the extent of contamination cannot be determined or if it effects large portions of the parachute, the parachute should be first destroyed then disposed of.

REMOVAL OF SALT WATER CONTAMINATION

Crystals of dry salt and the presence of pale brown, circular stains often evidence salt-water exposure. If the parachute is allowed to dry after salt-water immersion without being rinsed in fresh water, salt crystals will form causing damage to the fabric and suspension lines.

1. Parachutes exposed to salt water should be rinsed out several times in warm, fresh water in a smooth tub. Use of a water softener is recommended. Hang assembly in drying tower in accordance with the section above entitled “Drying a Parachute.”

The maximum complete salt-water immersion limits for the parachute are listed below. The parachute assembly should be cleaned within 8 hours of immersion.

Remove from service any parachute assembly or sub-assembly for any of the following conditions:

1. Immersion in salt water for more than 6 hours if the parachute contains cadmium-plated parts.
2. Immersion in salt water for more than 24 hours if the parachute contains stainless steel parts (i.e., slider stops).
3. Immersion in salt water and cannot be cleaned for 36 hours.

REMOVAL OF PERSPIRATION

Perspiration causes damage to the parachute much like salt water does. Small amounts are not significant and may be ignored. For larger areas heavily contaminated, clean the parachute in accordance with the “Removal of Salt Water Contamination” section above.

REMOVAL OF FRESH WATER

Dry parachute assembly in accordance with the section above entitled “Drying a Parachute.”

REMOVAL OF MILDEW

1. Wash affected area with mild soap and water solution.
2. Rinse affected area thoroughly with fresh, clear water.
3. Hang assembly in drying tower in accordance with the section above entitled “Drying a Parachute.”

REMOVAL OF FIREFIGHTING AGENTS

Parachute fabric and webbing exposed to light water, protein foam, PKP, and any combination of such shall be thoroughly washed within 30 hours after exposure. Hang assembly in drying tower in accordance with the section above entitled “Drying a Parachute.”

Metallic parts or components so exposed shall be disassembled as far as practical, washed, dried, and examined. Metallic components treated in this manner may be returned to service if undamaged.

Remove from service any parachute assembly or sub-assembly for any of the following conditions:

1. Contamination by soda-acid firefighting agent. Hardware items may be returned to service after cleaning.
2. Contamination by firefighting agents such as light water, protein foam, PKP or any combination of such, if not decontaminated within 30 hours. Hardware items may be returned to service after cleaning.

REMOVAL OF PETROLEUM PRODUCTS

Hydrocarbons usually do not harm nylon. Petroleum products such as oil or grease have a greenish or brownish appearance. Wash affected area by repeated applications of mild soap and water solution. Each application shall be followed by a rinse in clean, fresh water.

1. Continue washing and rinsing affected area until clean.
2. Hang assembly in drying tower in accordance with the section above entitled “Drying a Parachute.”

REMOVAL OF BLOODSTAINS

1. Soak the stained area in cold water.
2. Hand wash affected area with mild soap and water solution.
3. Rinse affected area thoroughly with fresh clean water.
4. Hang assembly in drying tower in accordance with the section above entitled “Drying a Parachute.”

REMOVAL OF SOIL

1. Hang the parachute and shake to remove most of the dirt and sand.
2. Brush lightly with a soft-bristled brush.
3. If the assembly is extremely contaminated, perform the following:
    a. Wash only the soiled areas in warm water with a mild soap.
    b. Rinse affected area thoroughly with fresh clean water.
    c. Hang assembly in drying tower in accordance with the section above entitled “Drying a Parachute.”

BASIC PATCH PROCEDURE

BASIC PATCH PROCEDURE

OVERVIEW

The Raghanti Basic Patch is recognized as the preferred patching method throughout the industry. The patching method does not require pins nor does it require a measuring square.

LIMITATIONS

A senior rigger (or country's equivalent) is qualified to repair any damage up to 10 inches (25.4 cm) in length as long as the closest area of the completed repair will be:

- At least 1 inch (2.54 cm) from the nearest seam, and
- At least 5 inches (12.7 cm) from the nearest tape or line attachment.

Small snags and holes smaller than 1/8-inch square (one ripstop box) located further than 10 inches (25.4 cm) from the closest line attachment may remain unrepaired as long as there are no more than one in any 10-inch (25.4 cm) diameter circle. A maximum of three such snags per cell are allowed.

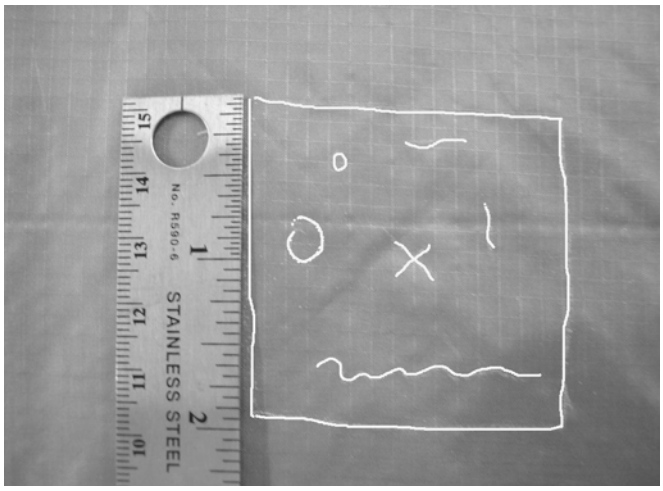
Ripstop tape is not authorized for use on Performance Designs parachutes. If the damage is enough to warrant a repair, a sewn repair must be performed.

EQUIPMENT AND SUPPLIES NEEDED

- Marking pencil
- Single needle sewing machine with "E" thread
- Ruler
- 7-inch (17.8cm) square piece of fabric for the patch
- 13-inch (33 cm) fabric piece (on which to sew the practice patch)
- Hemostat
- Scissors
- Nippers

PROCEDURE

Locate the damage on the fabric (ex. circles and lines in the photograph). Once the damage has been identified, draw a box around it to define the damage area. The boundary for this particular area of damage is approximately a 2-inch square.

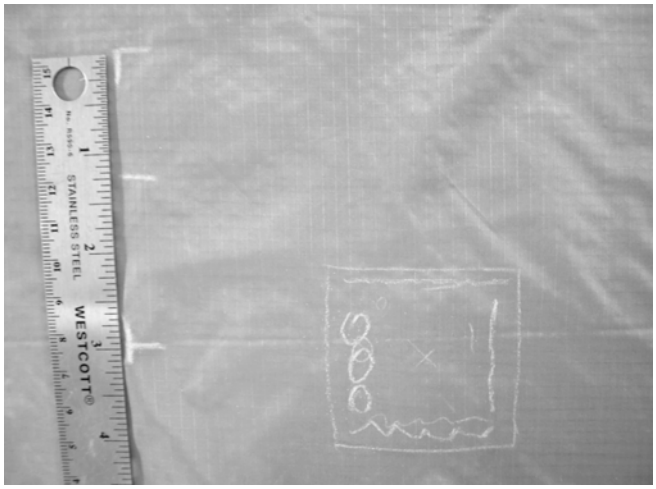


Find the center of the damage and mark it with an “X”.

Allow approximately 2 inches from each boundary side for repair work. This includes a 1-inch seam allowance.

Measure half the patch size (in this case, 3 inches) to the left of the damage center. Follow one rip stop line in the fabric as a guide.

At 3 inches out make a center and left border mark (resembling a “T” turned 90° counterclockwise). The center mark will be on the ripstop line (which was followed out 3 inches) and the left border mark will be perpendicular to the center mark, Go 3 inches up from the left center mark and place a top left corner mark.

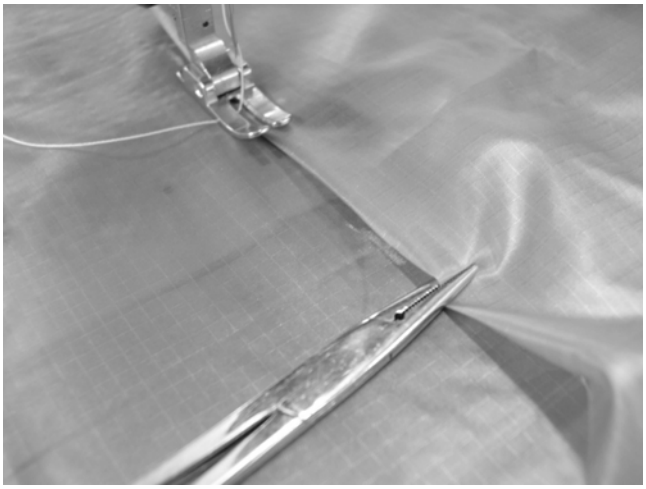


Count down 10 ripstop boxes from the top border and make a mark. This is the starting point.

Count 14 rip stop boxes down on the 7-inch fabric (patch) piece and make a mark. This is the starting point.

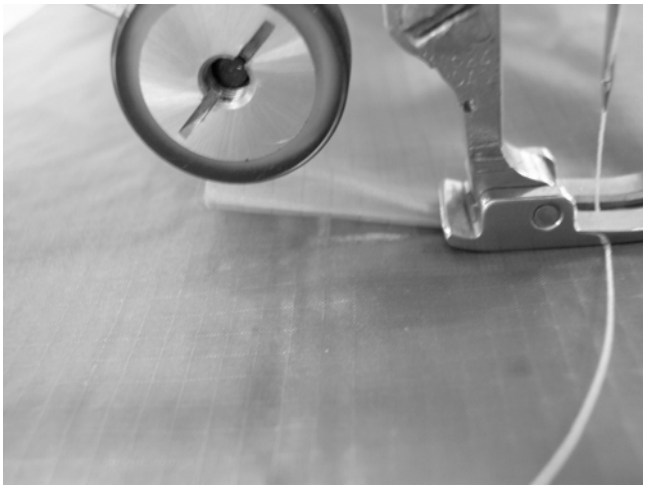
Align the starting marks on both pieces of fabric.

Fold the patch material under 4 ripstop boxes. Hold this 4-block seam allowance with the hemostats.



Disengage the puller if one exists on the sewing machine. This gives the person sewing more control over the fabric to prevent slippage and bunching.

Lower the foot and needle into the fabric. While using one hand to hold the two pieces of fabric taut in front, use your other hand to help feed the fabric through the machine.



Sew to approximately 2 inches from the corner. Fold the 4-block seam allowance under for the second side creating a corner. Hold with the hemostats.

Make sure to set the hook in the stitch loop before lifting the foot to turn a corner. Sew to 1 block from the edge and turn the corner.

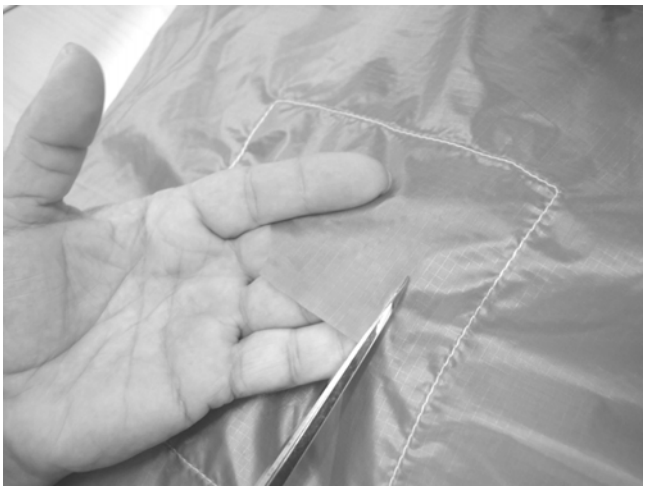
Sew the second side to 2 inches from the corner. Fold the 4-block seam allowance under for the third side creating a corner. Hold with the hemostats.

At this point make sure that the third and fourth sides will align properly before sewing.

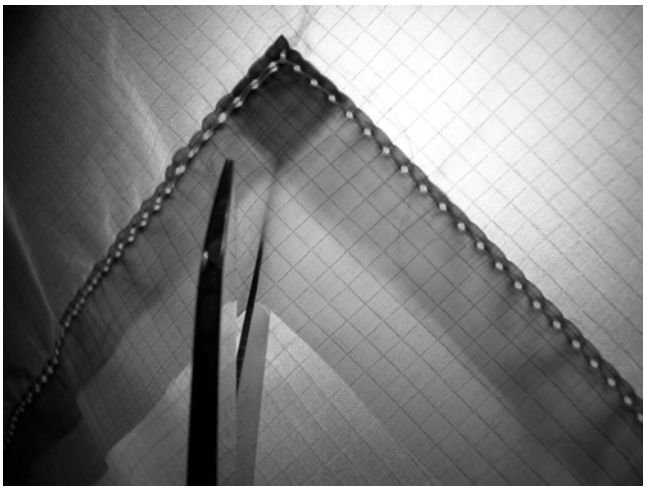
Sew the third side, then the forth side as shown.

Perform a 4-6 inch oversew.

Using scissors cut the damage out along the ripstop lines 7 boxes in from the stitching holding the patch on. Placing the hand between the patch and parachute while trimming (like wearing a mitten) will prevent damaging the patch with the scissors.

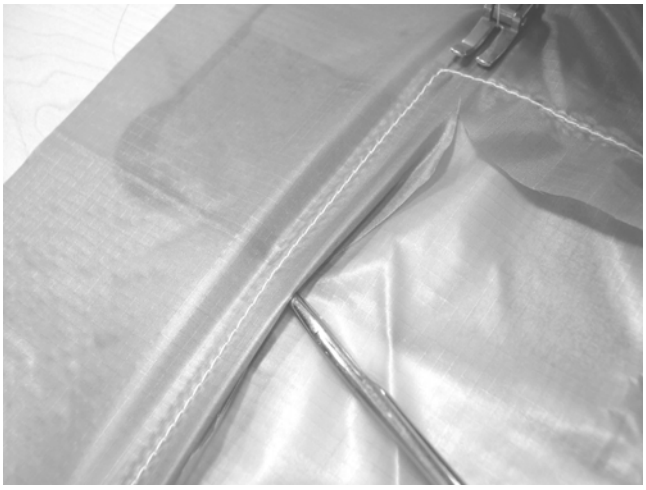


Make a diagonal cut in each corner to 3 ripstop boxes from the corner.



Place the work under the sewing machine. Using the hemostats clamp 1 ripstop box in from the cut edge.

Place the parachute fabric behind the fold back of the patch forming a French fell seam. Do this in two places and seat the 1 box fold back against the patch stitch row with the tip of the hemostat. Sew around the parachute patch repeating this process on each side.



Take care that each corner is fully seated and square.

Use the side of the presser foot as a guide for stitching.

Inspect the work thoroughly.

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LINE REPLACEMENT

LINE REPLACEMENT

OVERVIEW

Damaged suspension lines shall not be repaired. A Master Rigger or his equivalent should replace the lines. Also, lines shall be replaced in pairs to minimize any asymmetrical line trim issues that may result from a single line replacement. Any line, tape, or webbing damage is classified as a major repair and therefore can only be performed by a Master Rigger or his equivalent.

REQUIRED EQUIPMENT AND MATERIALS

- Replacement lines from manufacturer
- V-T-295 size E nylon thread of the same color as used on the rest of the lines
- Bar tack or zig-zag machine
- Scissors
- Seam ripper
- Finger trapping needle

COMPLETE STEERING LINE REPLACEMENT

PROCEDURE

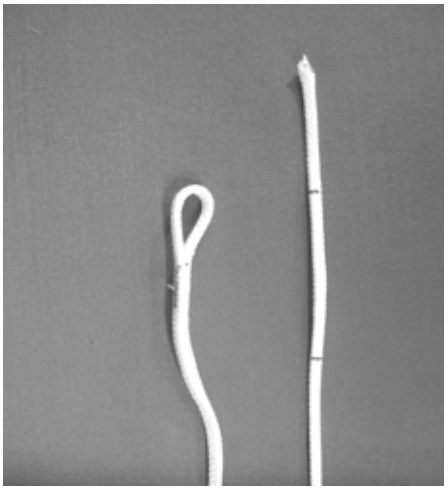
1. Remove the damaged steering line.
2. Starting with the outboard side, attach the new line to the parachute using the same knot as used on the other lines.
3. Bartack the fingertrap. Ensure the bartack originates at the fingertrap entry and extends toward the live side of the fingertrap.
4. Repeat steps 1 through 3 to attach all upper steering lines to the parachute.
5. Thread the lower steering line through the slider and steering line guide ring on the riser and tie to the steering toggle or loop.
6. Apply even tension and adjust all knots. Recheck all measurements.
7. Inspect the work thoroughly. Double check line lengths.
8. Perform a line continuity check.

LOWER STEERING LINE (LST) REPLACEMENT

PROCEDURE

1. Remove the damaged lower steering line.
2. Place the new lower steering line through the lower loops of the upper steering lines.
3. Fingertrap the line back into itself, ensuring the marks on the line match up.
4. Bartack the fingertrap ensuring it originates at the fingertrap entry and extends toward the live side of the fingertrap.
5. Attach bottom end of the lower steering line to the connector link in the same location as the damaged lower line.
6. Perform a continuity check.

SUSPENSION LINE REPLACEMENT



The line being replaced will either be an A/B line or a C/D line. These lines come from the factory as follows:

- The “A” portion of the A/B line and the “C” portion of the C/D line will have a prefabricated loop for parachute attachment. (see picture)
- The “B” portion of the A/B line and the “D” portion of the C/D line come straight line (without a loop) and cut at an angle for finger trapping.

PROCEDURE

1. Remove the damaged line.
2. Attach either the A or the C line (depending on which line is being replaced) to the parachute using a lark’s head knot.
3. Attach either the B or the D line (depending on which line is being replaced) to the parachute by wrapping the line around the parachute attachment loop to resemble a lark’s head knot.
4. Verify the finger-trap match marks are aligned. This ensures the line is at its proper length.
5. Fingertrap the line back into itself, ensuring the marks on the line match up.
6. Bartack the fingertrap. Ensuring it originates at the fingertrap entry and extends toward the live side of the fingertrap.
7. Perform a line continuity check.
8. Repeat steps 1 through 7 for the line opposite the damaged line to ensure symmetry and trim.

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SECTION 4:

PACKING INFORMATION

PACKING INSTRUCTIONS FOR TP-SERIES MAIN PARACHUTE

OVERVIEW

If the rig manufacturer specifies a packing method other than the ones shown, and the rig manufacturer authorizes its use for this specific parachute, you may decide which instructions to follow. Otherwise you must follow the Performance Designs instructions. It is recommended that you follow the instructions for the packing method with which you are most familiar.

Inspect the parachute thoroughly before starting to pack it, following the inspection instructions described in Maintenance and Repair section of this manual. Check the line continuity, and ensure the parachute has been assembled on the rig correctly.

Make sure the parachute is ready to pack by performing a complete suspension and control line continuity check. If the parachute was recently jumped successfully, you can perform a simple control line check. Grasp both control lines at the risers and run the lines up through the rear slider grommets, then directly to the tail of the parachute. If no entanglements were found, the parachute is ready for packing.

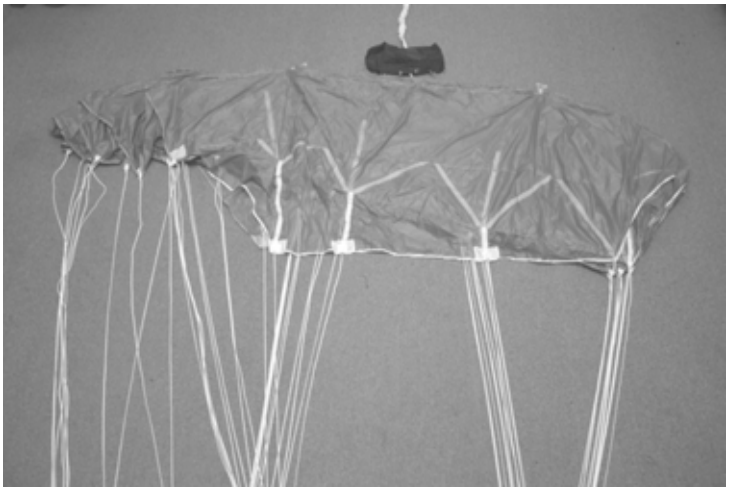
Both the flat pack (or sometimes referred to as the “side pack”) method and the PRO pack method are shown. PD recommends the PRO pack, but either method works. Once you have reached the point in the pack job where the parachute is cocooned, the instructions for folding the parachute for bag insertion are the same.

NOTE: Perform EITHER part 1A (side pack method) OR 1B (PRO pack method). THEN complete the pack job by performing part 2 (BAG INSERTION).

PART 1A:

SIDE PACK (OR FLAT PACK) INSTRUCTIONS – FOLDING

Flake out the parachute by grasping the packing tabs located at the T-seams on the top surface of the parachute. Shake the parachute out so the nose is to the packer’s left, and the tail to the right. Lay the parachute on the packing surface.

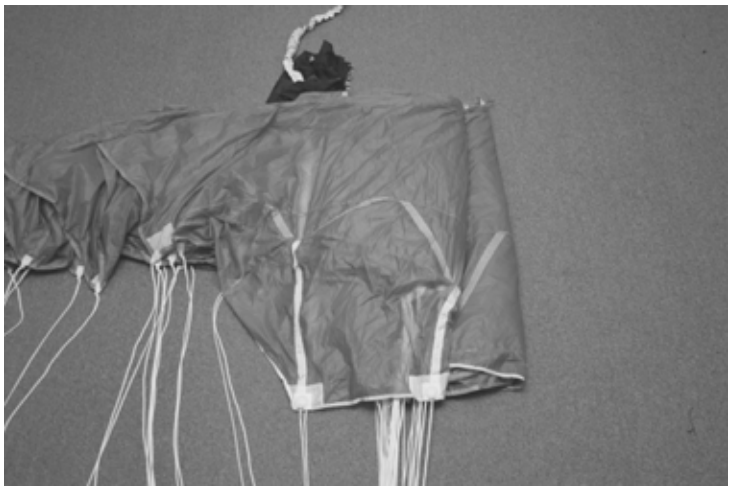


While holding tension on the line groups, fold the A-lines over the B-lines.

Split the nose leaving the center cell open in the middle. While bringing the high points (or T-seams) together, roll each set of 4 cells towards the center cell. Photo shows one side rolled.

Photo shows both sides of the nose rolled in towards the center. Ensure the A lines stay together while you roll the nose cells.

Fold the C-line group to the left and place it directly on top of the A & B-line groups. This move helps evenly distribute the bulk of the fabric.



Fold the D-lines directly on top of the other line groups. Clear the stabilizers.

Set the deployment brakes according to container manufacturer's instructions.

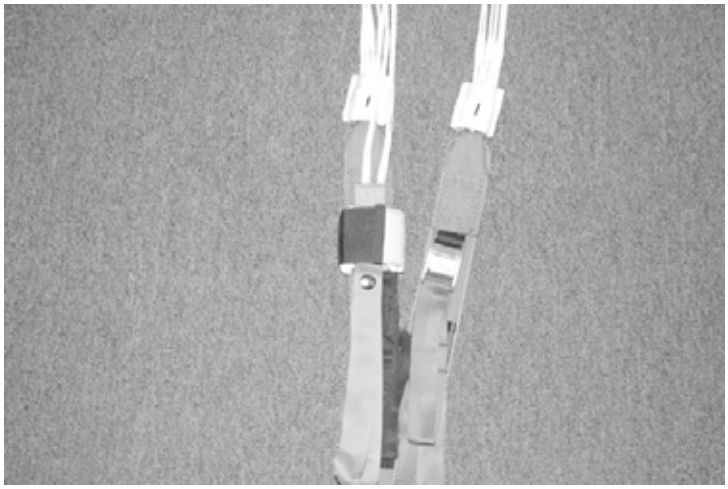


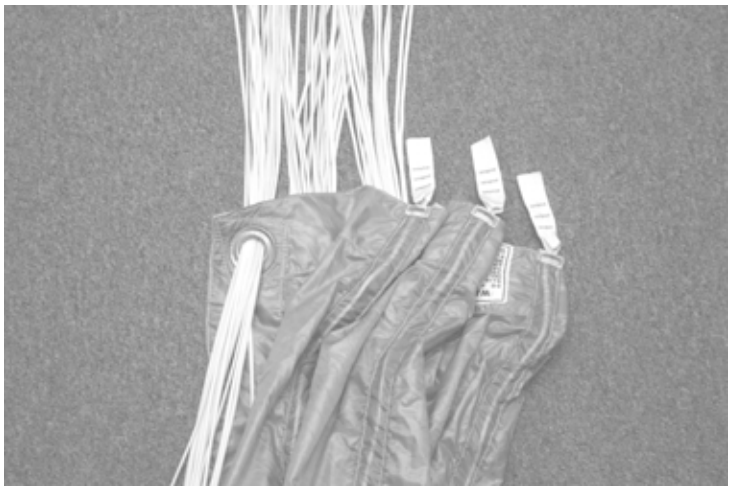
Photo shows parachute with deployment brakes set.

Flake the tail by placing the center cell (with data label) directly in the middle of the folded parachute, with the control lines stacked on top of the D line path.

Ensure all suspension and control lines are in the center.

Clear the stabilizers in preparation for bringing up the slider.

Ensure the tabs on the slider are set (flush against the channels) as shown. This indicates that the slider is in the full, non-collapsed orientation.



Bring the slider up and quarter it. This is accomplished by pulling the material between the front and rear slider grommets toward the outside of the pack job, into the fold formed by the stabilizers

Continue by pulling the slider material between the two rear slider grommets toward the outside of the pack job. Do the same for the material between the front slider grommets.

Photo shows how the slider fabric should be pulled toward the outside of the pack job.

Ensure the grommets are seated against the slider stops and all excess slider material is pulled into the parachute.

Pull the center of the tail down just past the slider grommets. Carefully wrap the tail around the parachute without disturbing the suspension or control lines. Make the width of the parachute the approximate width of the main deployment bag.

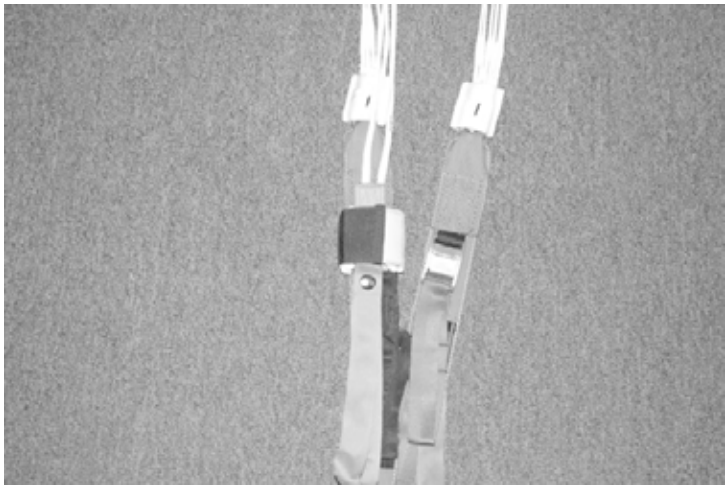
Part 1A is complete. Skip part 1B and proceed to part 2 “Bag Insertion Instructions” to complete the pack job.

PART 1B:

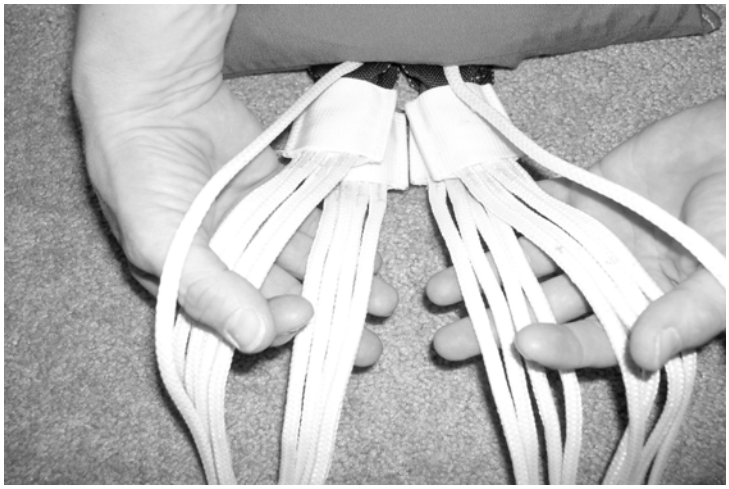
PRO PACK INSTRUCTIONS- FOLDING

Set the brakes according to container manufacturer’s instructions.

Also, (not shown) ensure the tabs on the slider are set (flush against the channels). This indicates that the slider is in the fully non-collapsed orientation. Please refer to the previous page for a photograph of the correct tab position.



While standing between the risers, slip the fingers of your left hand between each left-hand riser and between the left-hand steering line and the risers. Do the same with your right hand. The idea is to have each line group and each steering line occupying a slot between two fingers.



Walk the lines up to the parachute keeping the slider in front of you.

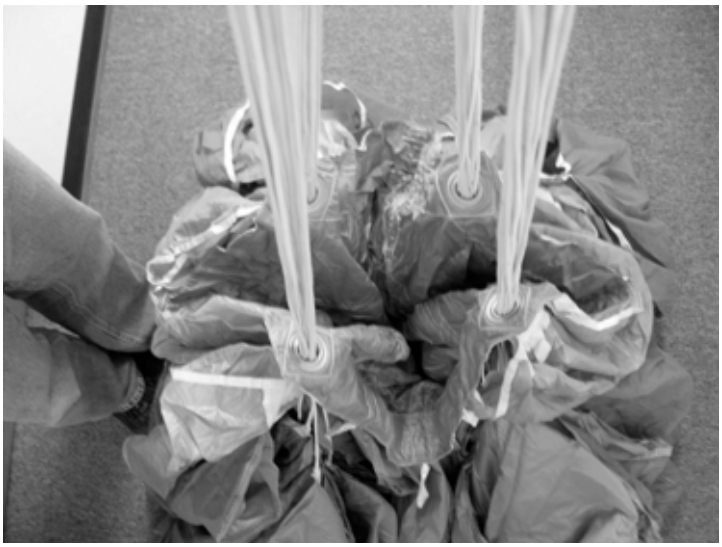
The nose openings should be facing the rig.

Place both line groups over one shoulder.

Starting with the cell closest to your body, count the nose cells, clearing each one as it is counted.

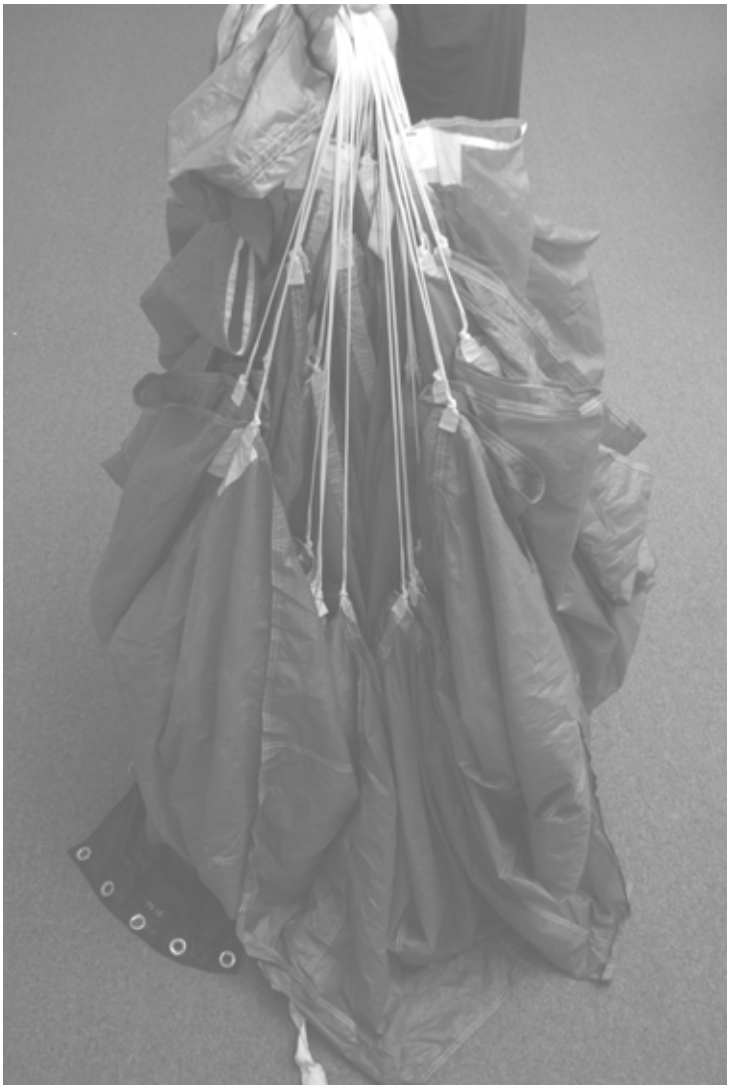
Holding the entire nose of the parachute together, tuck the nose between your knees. This will help hold it in place while flaking out the parachute.

Quarter the slider. This is accomplished by pulling the material between the front and rear slider grommets toward the outside of the pack job, into the fold formed by the stabilizers



Continue by pulling the slider material between the two rear slider grommets toward the outside of the pack job. Do the same for the material between the front slider grommets.

Ensure the grommets are seated against the slider stops.



NOTE: The slider has been moved out of the way for illustration purposes only. The slider grommets must be against the slider stops before the pack job is complete.

Clear the stabilizers. Since all the lines are bunched up in the middle, pull each stabilizer panel out one by one until they form an irregular shape resembling the petals of a flower when viewed from the top. Be sure none of the lines are wrapped around a slider stop on a stabilizer.

Find the group of A lines on one side of the parachute. With the parachute held in front of you as you have it now, the A lines are the front part of the line group that go through the front slider grommets, the ones that should be closest to you.

Since there is a lot of fabric between the A and B line attachment points, it is easy to separate the two line groups: Look down inside the first small S fold of the stabilizer and find the fabric between the A and B lines.

Now make the rest of the parachute into S folds like the stabilizers: Put your hand in

between the A and B lines on one side (near where they pass their own grommet) and pull them out to the side. This will give the cells on one side the correct type of flaking. Now repeat the process with the other A and B group, pulling the fold out to the other side.

Do the same thing between B and C lines. Pull the fold of fabric between the two groups out to each side. When you look down in between the stabilizer folds after you've done your flaking, the folds should look neat.

Find the D line group - the group of lines nearest the tail. Do not take the steering lines, which are attached at the trailing edge.) Pull the left-hand steering lines off to the left (to get them out of the way).

Follow the stabilizer down to the D lines and pick up all the D lines on the left side. If you have a 9-cell parachute, you should have five lines; if you have a 7-cell, then you should have four lines. All lines in your hand should go through the same grommet. If they don't, you've picked up a wrong line.

Now that you are holding only the correct D lines, you may let go of the steering lines. Take the whole D-line group on one side and pull it out gently.

Fold the D-line group in with one motion to put a real fold in the fabric between the C and D lines. Do the same thing on the other side.

Be sure the stabilizers and their slider stops are correctly lying outside the suspension lines. Parachute damage is likely if a stabilizer (or its slider stop) lies under a line.

Grasp the steering lines where they attach to the tail, pull the entire tail out and drop it straight down.

Pull the tail fabric up and hold it with the lines in one hand.

Split the nose in half and roll each side towards the center. Photo depicts half of the nose rolled and being placed towards the center cell.

Photo depicts both sides of the nose rolled in towards the center. The center cell is located just behind the two rolls. Note the position of the slider. It remains quartered with the grommets against the slider stops.

NOTE: When nose roll is complete, do NOT shove the nose into the center cells or into the center of the parachute. This will disturb the line grouping.

Grasp the edges of the tail and wrap them around the parachute, pulling the tail together so that it meets in the center directly in front of the nose.

TIP: Do not pull excess material. Only pull enough of the tail material around to meet at the back of the pack job (as shown).

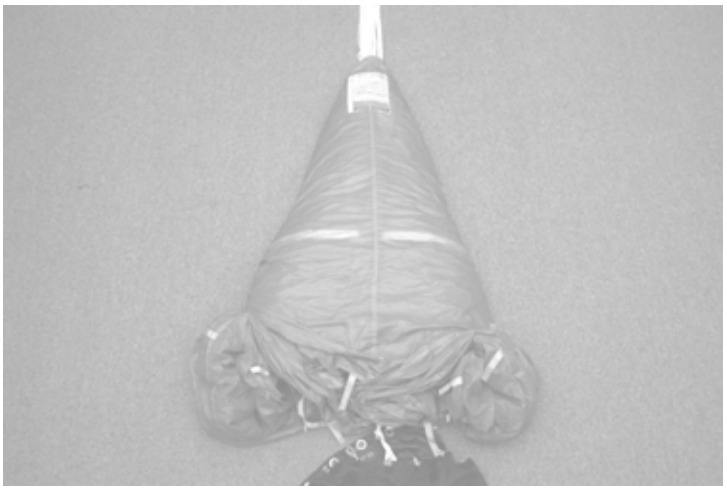
The steering lines must stay positioned at the back of the parachute. If the steering lines are moved towards the nose of the parachute, a line-over malfunction may result.

Begin rolling the tail starting at the lower end.

TIP: While holding the lower portion of the partially rolled tail between your knees, roll the remainder of the tail. Ensure the roll is very tight.

While carefully supporting the parachute (and without releasing the rolled tail), lay the parachute on the floor while maintaining tension on the lines. If the tail is released, the parachute will spread across the floor.

The parachute should resemble the one shown in the photograph.



PART 2:

BAG INSERTION INSTRUCTIONS

Narrow the cocooned parachute taking care not to disturb the lines. This may be accomplished by using your body to compress the parachute.

TIP: Make sure to hold tail together from the back so the parachute doesn't spread out while being compressed.

Grasp the base of the parachute (including the lines) and make the first S-fold. Continue to maintain slight tension on the lines.

Complete the S-fold keeping the tail nice and tight. Maintain control of the fabric by using your knees as shown.

Create a second S-fold on top of your knees, keeping both sides together and close.

Dress both sides of the parachute in preparation for bag insertion.

Remove your knees from the S fold while maintaining control of the fabric as shown.

The parachute is ready for insertion into the bag.

Dress the main deployment bag and slide the tongue of the bag underneath the parachute. This will assist in obtaining a clean insertion of the parachute into the bag.

Pull the bag onto the parachute, filling one corner of the bag at a time. Maintain control of the fabric that is not being inserted into the bag.

Insert the rest of the parachute into the deployment bag, ensuring even distribution in the corners.

This is the view of the parachute in the deployment bag.

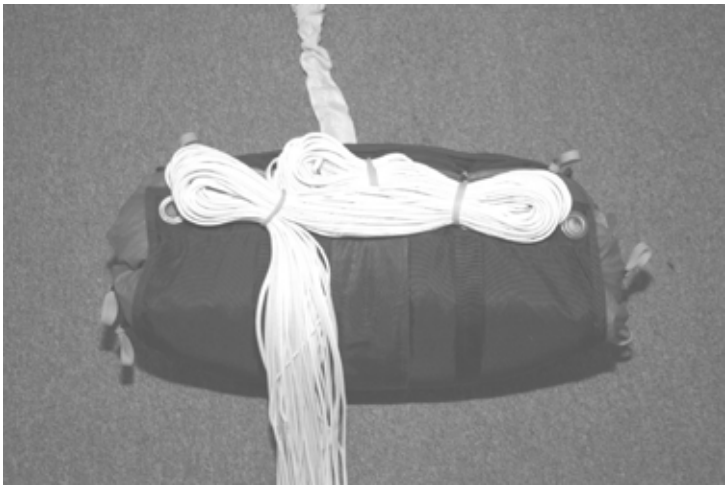
TIP: If too much material is protruding from the top of the bag, it may be gently rolled into the bag as shown in this photograph. Roll the fabric towards the center taking care not to disturb the lines.

Secure the bag by inserting a stow band through the center grommet…

..and secure the band around the first bight of suspension line. The bight should be approximately 3 inches.

Continue securing the five locking stows according to the container manufacturer's instructions (only 3 of the 5 locking stows are shown in this photograph).

Complete packing the container according to rig manufacturer's instructions.



SECTION 5:

DRAWINGS

TP-400-M1 WARNING LABEL

Model Size: TP-400-TYPE

⚠ WARNING

THIS IS A HIGH PERFORMANCE PARACHUTE. EVEN NORMAL USE MAY RESULT IN SERIOUS INJURY OR DEATH. TRAINING, PROFICIENCY AND SKILL ARE REQUIRED TO LOWER THE RISK. READ AND COMPLY WITH ALL MANUFACTURER'S MANUALS, RECOMMENDATIONS, PROCEDURES, PLACARDS AND LIMITATIONS.

PARACHUTE SYSTEMS SOMETIMES FAIL TO OPERATE CORRECTLY, EVEN WHEN PROPERLY MANUFACTURED, ASSEMBLED, PACKED AND OPERATED. YOU RISK SERIOUS INJURY AND DEATH EACH TIME YOU USE THIS SYSTEM.

TRAINING AND PROFICIENCY REQUIREMENTS:

DO NOT USE THIS PARACHUTE SYSTEM UNLESS YOU HAVE:

A. RECEIVED INSTRUCTION IN THE USE OF THIS SPECIFIC PARACHUTE SYSTEM AND OPERATE IT WITHIN THE STUDENT OR NOVICE LIMITATIONS LISTED BELOW:

-OR-

B. PERFORMED AT LEAST 50 RAM AIR PARACHUTE JUMPS AND AT LEAST 10 SOFT STAND UP LANDINGS, WITHIN THE TARGET AREA, USING A CANOPY NO MORE THAN 15% LARGER THAN THIS SIZE.

-OR-

C. EXPERIENCE WITH THIS EQUIPMENT AND ARE HIGHLY FAMILIAR AND PROFICIENT WITH THE OPERATION, FLIGHT AND LANDING CHARACTERISTICS OF THIS MODEL/SIZE PARACHUTE AND SYSTEM.

SKILL AND OPERATING LIMITS (STD. DAY TEMP. AT SEA LEVEL):

WEIGHTS LISTED ARE (jumper + clothing + equipment) LBS (KG).

MIN. WT.	STUDENT*	NOVICE*	INT.*	ADV.*	EXPERT*	MAX. WT.
200 (91)	350 (159)	350 (159)	450 (204)	500 (227)	550 (250)	650 (295)

MAXIMUM DEPLOYMENT SPEED 150 KTS KTS EAS @ SEA LEVEL

S/N TP400-000000

* MAXIMUM WEIGHT, TO REDUCE RISKS STAY WELL BELOW THIS WEIGHT.

-WEIGHT ADJUSTMENTS FOR LANDING CONDITIONS:

REDUCE ALL WEIGHTS BY 2 % PER 1000 FT (300M) LANDING ELEVATION.

REDUCE ALL WEIGHTS BY AN ADDITIONAL 1% FOR EVERY 3° C (5° F) ABOVE STD. DAY TEMP., WHICH IS 15°C (59°F) AT SEA LEVEL.

STD DAY TEMP. DECREASES 2°C (3.5°F) PER 1000 FT (300M). FOR EACH 1000 FT ABOVE SEA LEVEL.

-OPENING FORCES INCREASE WITH ALTITUDE, REDUCE MAXIMUM WEIGHT AND/OR MAXIMUM AIRSPEED (EAS) FOR DEPLOYMENT ALTITUDE.

**VARIES WITH WEATHER/LANDING CONDITIONS

-NOT APPROVED FOR TANDEM USE

-MAX WT. = MAXIMUM DEPLOYMENT WEIGHT

-MAXIMUM LANDING WEIGHT = 425 LBS (193 KG)

.

M1 = FREEFALL

M2 = STATIC LINE/FREEFALL

DATE OF MANUFACTURE CUT DATE	
PN: TP-400P??	INSP:

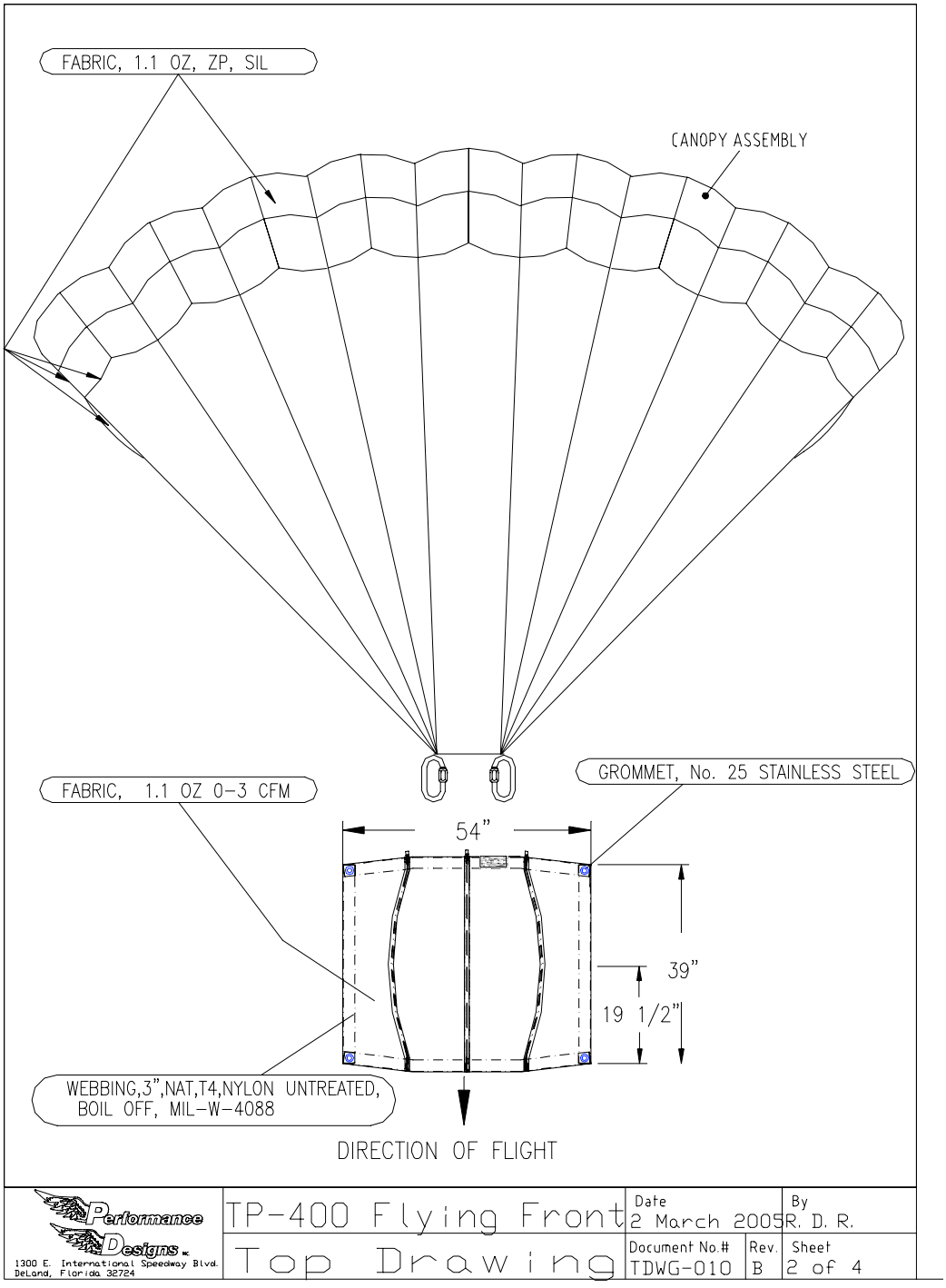
REMOVAL OF THIS LABEL VOIDS ALL WARRANTIES

TP-400-+TYPE	MODEL #
TP0400+CUT REVISION FROM PRODUCTION ORDER	PART #
TP400-NUMBER FROM PRODUCTION ORDER	SERIAL #

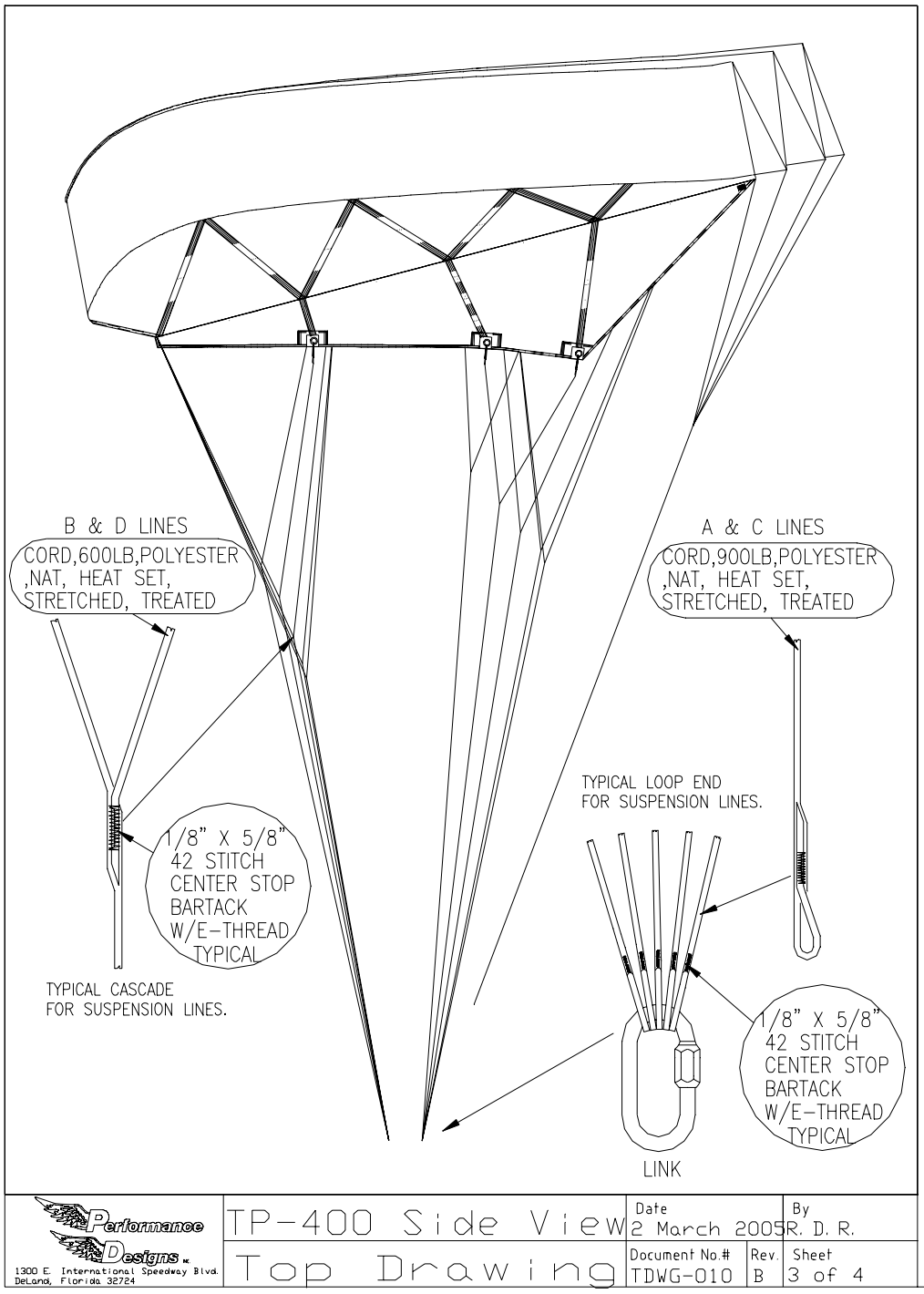
Performance Designs
1300 E. International Speedway Blvd.
DeLand, Florida 32724

TP-400 Warning Label		Date 2 March 2005	By R. D. R.	
Top Drawing		Document No.# TDWG-010	Rev. C	Sheet 4 of 5

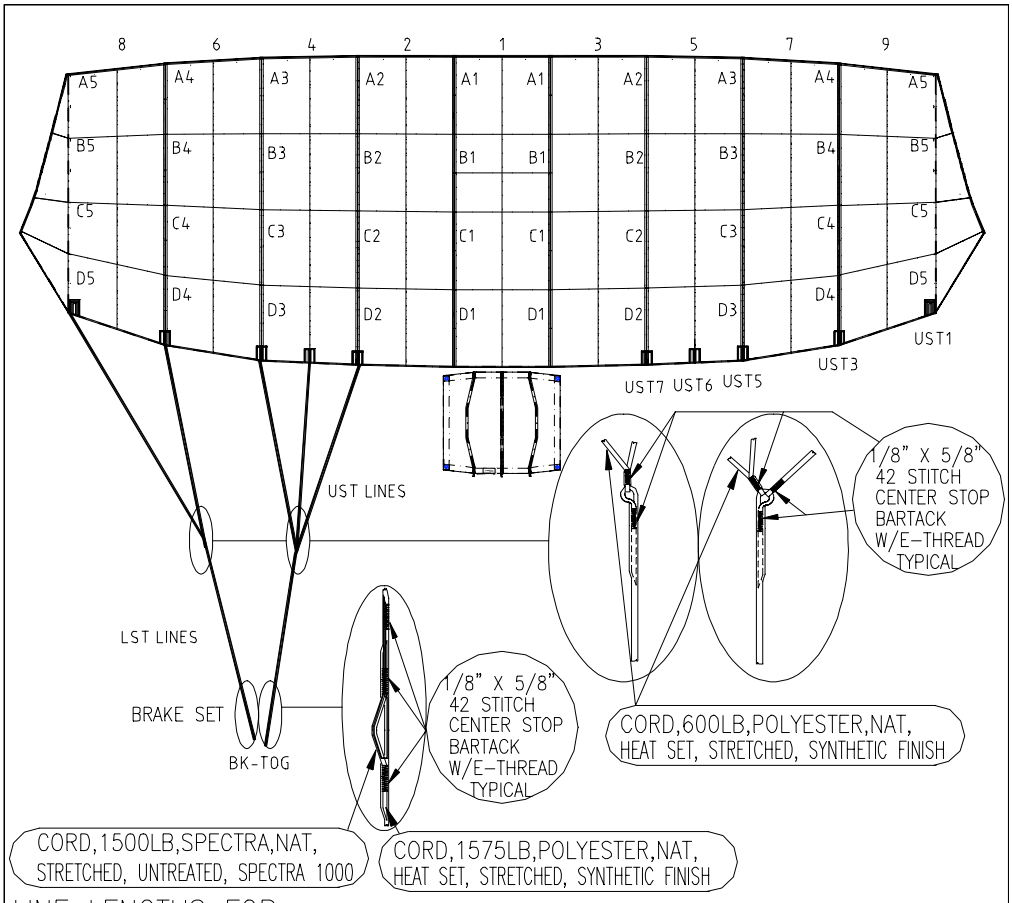
TP-400-M1 FLYING FRONT VIEW



TP-400-M1 FLYING SIDE VIEW



TP-400-M1 PLANFORM



LINE LENGTHS FOR EQUIPMENT INSPECTION

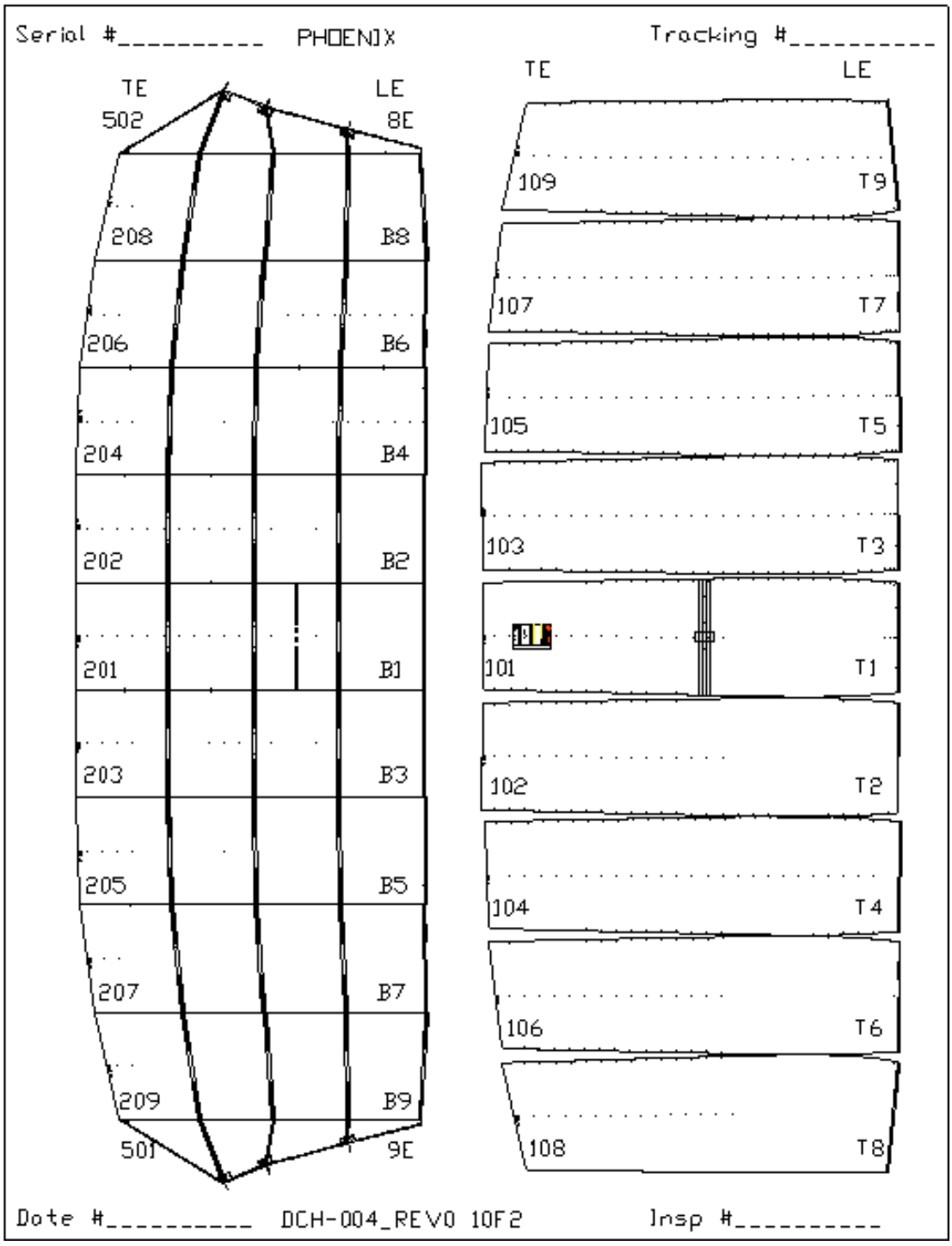
A5 LINE	217 7/8"	± 1"	A5 TO B5	3"	± 1/2"	A1 TO B1	3 3/8"	± 1/2"
A4 LINE	217 1/2"	± 1"	A5 TO C5	9 7/8"	± 1/2"	A1 TO C1	12 3/8"	± 1/2"
A3 LINE	217 1/4"	± 1"	A5 TO D5	17 7/8"	± 1/2"	A1 TO D1	25 5/8"	± 1/2"
A2 LINE	216 7/8"	± 1"	A4 TO B4	3"	± 1/2"			
A1 LINE	216 7/8"	± 1"	A4 TO C4	11"	± 1/2"	A5 TO UST1	8 7/8"	± 1"
P-BRAKE TO TOGGLE	18 1/8"	± 1/2"	A4 TO D4	22 3/8"	± 1/2"	A5 TO UST3	8 7/8"	± 1"
S-BRAKE TO TOGGLE	19 1/4"	± 1/2"	A3 TO B3	3 1/8"	± 1/2"	A5 TO UST5	14 1/4"	± 1"
SEAM TO SEAM TOP SKIN #1	41 3/8" TO 41 3/8"		A3 TO C3	11 7/8"	± 1/2"	A5 TO UST6	15 5/8"	± 1"
B1 TO C1	33 7/8" TO 35 1/2"		A3 TO D3	24 1/2"	± 1/2"	A5 TO UST7	16 7/8"	± 1"
			A2 TO B2	3 1/4"	± 1/2"			
			A2 TO C2	12 1/4"	± 1/2"			
			A2 TO D2	25 1/4"	± 1/2"			

Performance Designs
1300 E. International Speedway Blvd.
DeLand, Florida 32724

TP-400 Planform Top Drawing

Date: 2 March 2005 | By: R. D. R.
Document No.#: TDWG-010 | Rev.: B | Sheet: 1 of 4

TP-400-M1 DAMAGE CHART



TP-400-M1 DAMAGE CHART