



RIGGING ADVISORY CIRCULAR

Issue Date: 01 July 1988

RAC No. 315 Rev. B

SUBJECT: PHANTOM RESERVE KEVLAR REINFORCING BANDS

STATUS: MANDATORY

IDENTIFICATION: Phantom Model 22, 24, 26 and 28 reserve canopies manufactured prior to 1 January 1988*

*Some Phantom canopies manufactured during the last quarter of 1987 have laminated kevlar construction

BACKGROUND: National Parachute Industries has manufactured approximately 7000 Phantom round reserve canopies as sport reserves and pilot emergency parachutes.

National advise that once or twice each year they hear of a Phantom reserve canopy sustaining structural damage during an apparently normal parachute deployment sequence.

National have decided that extra Kevlar reinforcement of the canopy will reduce the possibility of structural failure in the event of an out-of sequence or irregular deployment.

Laminated Kevlar Bands may be installed by any Master Parachute Rigger (APF Rigger B) or Certificated Loft who has the required personnel, machinery, materials or return you canopy to National for installation. The cost will be US \$35.00 plus shipping. Parachute Riggers and Certificated Lofts may charge more or less.

MANUFACTURERS SERVICE BULLETIN: At the next scheduled repack or prior to 1 August 1988 Phantom Round Reserve canopies built prior to 1 January 1988* must have reinforcing bands fitted in accordance with the following instructions:-

Areas: Upper lateral band and crown band. See figure 1.

Material: Kevlar tape, 1/2", 550 lb. Tensile, Mil-T-87130, Type I, Class II, Condition R. Usage: P-22 = 11 yds; P-24 = 13 yds; p-28 = 14 yds

Nylon E thread, 8.5 lb minimum tensile, V-T-295, Type II, Class I, colour: white.

Machine: Double needle lockstitch with 1/4" needle spacing (Singer 112w140 or equivalent) or single needle lockstitch (Singer 111w155 or equivalent) stitch count 7-8 per inch.



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Goal: Double laminated Kevlar band at crown.
Triple laminated Kevlar band at apex. See figure 2.

Precautions : Handle parachute carefully, sewing machines can stain, snag or tear fabric.

Measure sufficient length of Kevlar required before hand - no splices are allowed.

During all sewing take care not to catch lines or fabric folds.

Sewing Steps - Crown Band Lamination

Find original band overlap, locate opposite side of canopy to start. Position canopy in machine with apex to left (figure 3). Place second layer of kevlar tape over existing kevlar crown band (nylon in earlier canopies).

Begin sewing 1" before radial seam tape (figure 4). Keep kevlar tape under moderate tension (2-3 pounds) (figure 5). Continue sewing around entire crown band duplicating original stitching. To finish, overlap the kevlar one full panel plus 2" and cut tape (figure 6). Fold end under 1" to butt against radial seam tape. Continue stitching 2" past folded end of tape.

If using a single needle machine do second pass over other edge of kevlar tape.

Sewing Steps - Apex Band Lamination

Find first kevlar tape overlap (see stitching), located opposite side of apex to start (figure 2). Position upper lateral band in machine with lines up (figure 7).

Start second kevlar tape midway between apex lines.

Sew second kevlar tape for 6", add third kevlar tape on top of second (figure 8). Keep tapes even at edges, sew matching the original stitching.

NOTE: Keep kevlar under moderate tension (2 to 3 pounds).

Sew around entire lateral band.

When second layer kevlar overlaps itself 6", cut it off (figure 9).

When third kevlar tape overlaps itself 7", cut it off. Fold it under 1" (figure 10). Continue sewing 2" past folded end of tape. If using a single needle machine complete second pass over other edge of kevlar tape.

Sewing Inspection

Check all sewing for proper tension and skipped stitches. Double check for "caught" fabric on inside of parachute. Finished installation of laminated kevlar bands must be done in a neat and professional manner.



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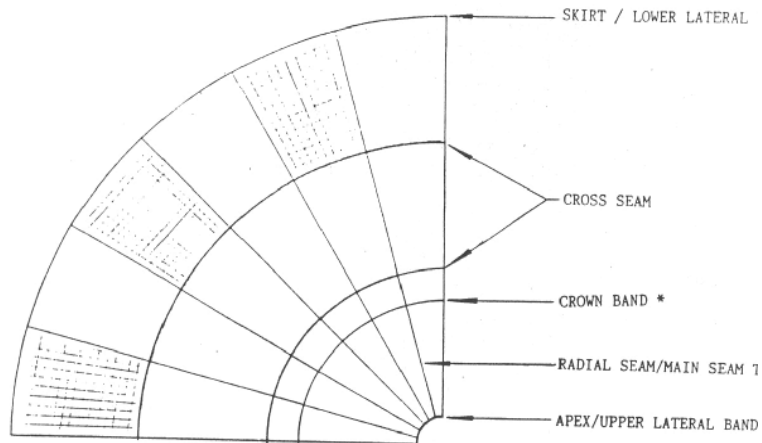


FIGURE 1 - PHANTOM CANOPY SECTION

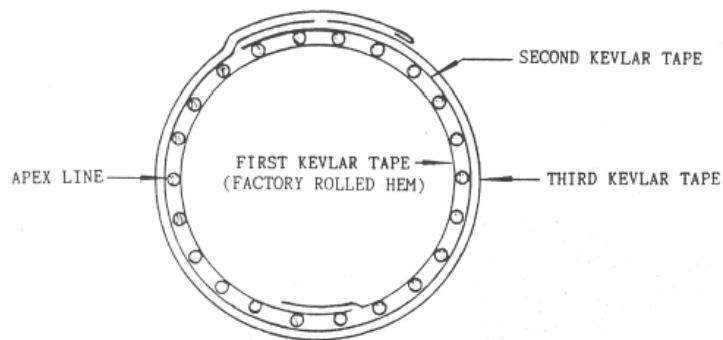


FIGURE 2 - APEX TOP VIEW
"TRIPLE LAMINATED KEVLAR"

* Distance from cross seam varies with size of parachute



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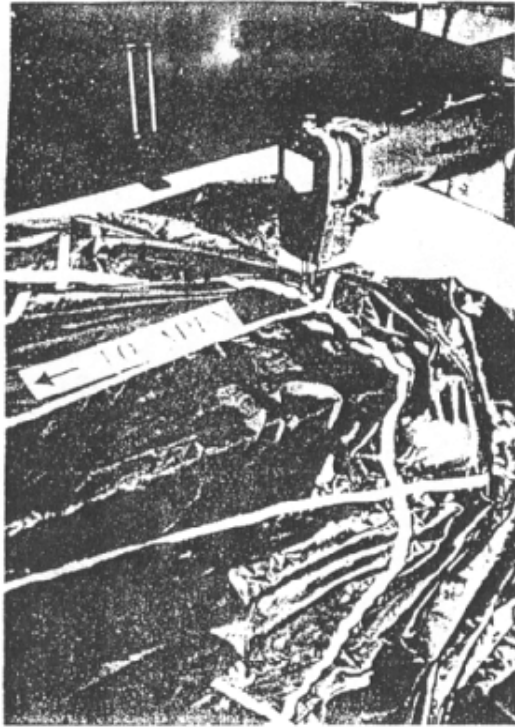


Figure 3



Figure 4



Figure 5

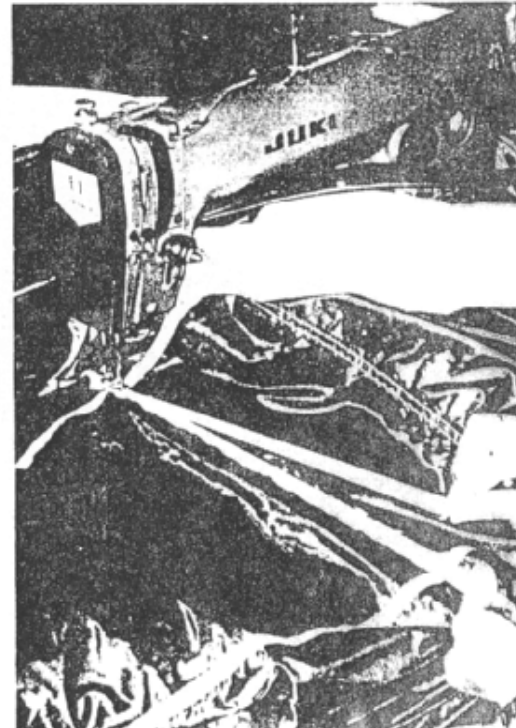


Figure 6



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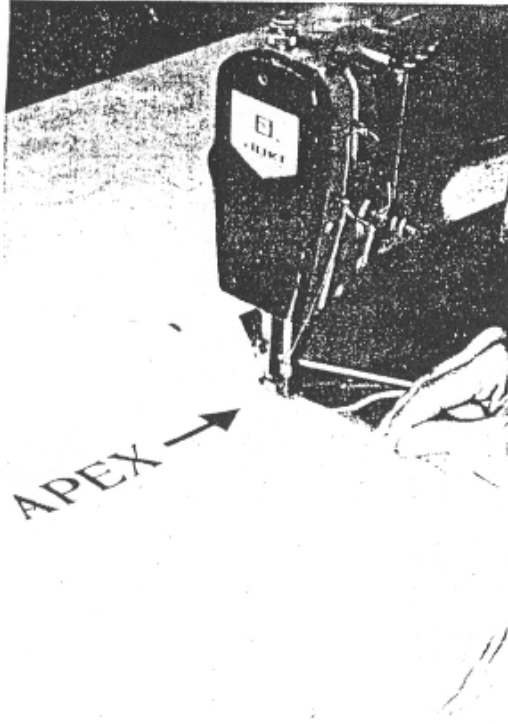


Figure 7

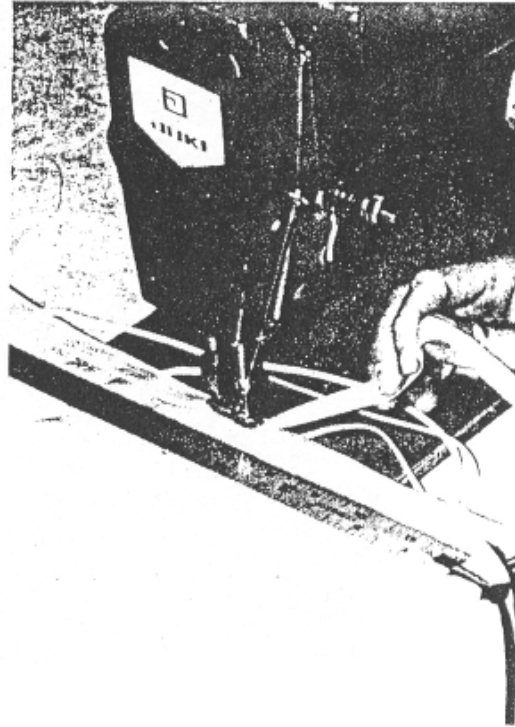


Figure 8

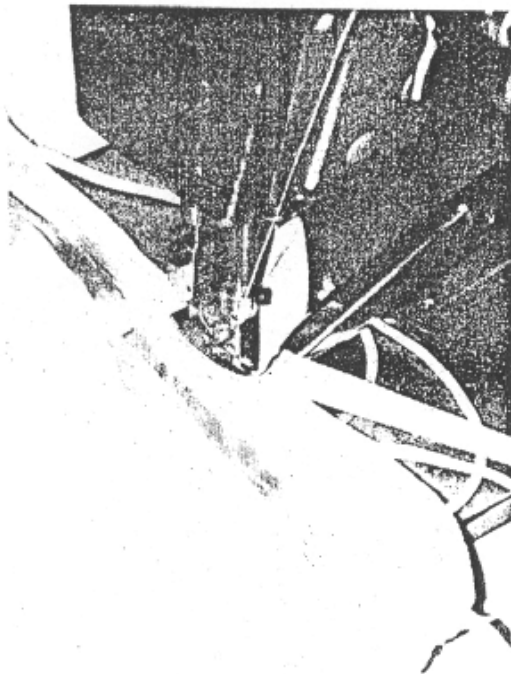


Figure 9

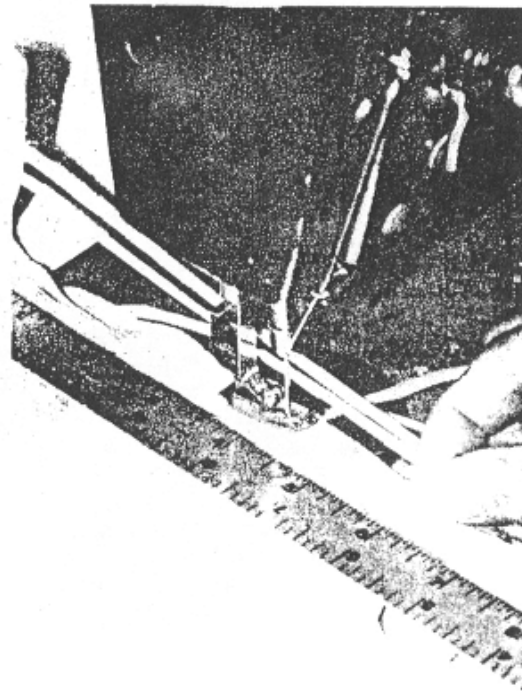


Figure 10



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Documentation - Packing Log and Canopy Data Panel

Use permanent ink pen.

Specify the following:

“Laminated Kevlar Installed”

Name of installer, with Master Rigger number of Parachute

Loft number.

Date and place of installation.

EFFECTIVE DATE: Accomplish prior to 1 August 1988

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