DRAG CHUTE - MAINTENANCE PRACTICES

1. Removal/Installation

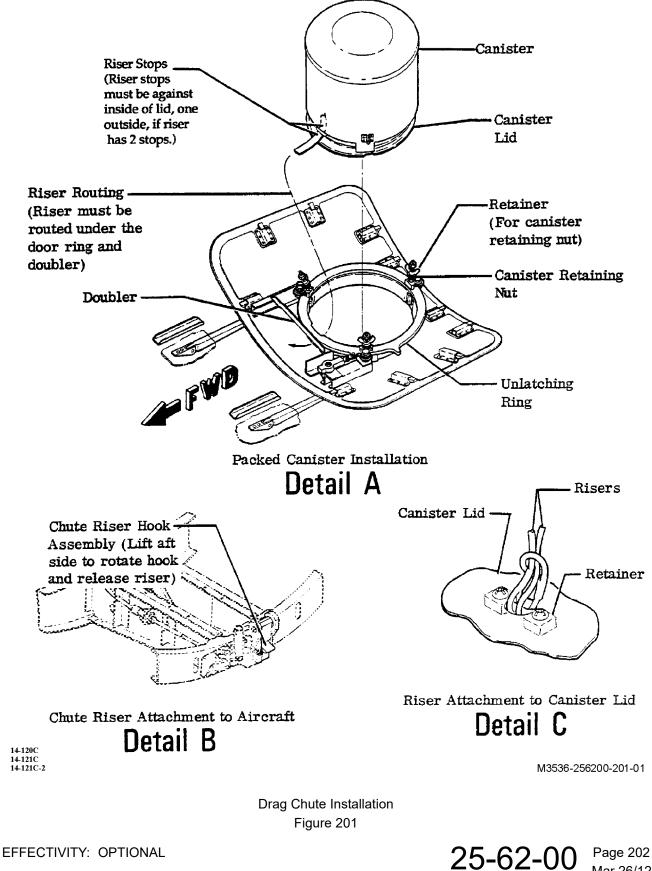
- A. Remove Drag Chute Canister (See Figure 201.)
 - (1) Lower tailcone access door.
 - NOTE: If drag chute is still packed in canister, lower tailcone access door only far enough to gain access to the drag chute attachment hook. This avoids inadvertently pulling chute riser out of canister.
 - (2) Raise hook on control mechanism and remove riser from hook. (See Detail B.)
 - (3) Loosen canister retaining nuts and remove canister and lid assembly from the tailcone access door.
 - (4) Rotate lid assembly, taking care to control spring load on lid, and remove lid from canister.
 - (5) Remove drag chute from canister.
- B. Install Drag Chute Canister (See Figure 201.)
 - NOTE: Refer to Servicing, this section, for drag chute packing procedure.
 - (1) Install canister and lid assembly in tailcone access door and secure with canister retaining nuts. Ensure that riser protruding from canister is forward.
 - (2) Route riser through riser keeper, raise hook of control mechanism (see Detail B) and position loop on hook and allow hook to return to rest position.
 - CAUTION: ENSURE THAT RISER IS ROUTED UNDER DOOR RING AND DOUBLER, AND THROUGH RISER KEEPER. (REFER TO PLACARD ON TAIL-CONE ACCESS DOOR FOR CORRECT ROUTING THROUGH KEEPER.)

ENSURE THAT RED MARKED STOP ON RISER IS INSIDE CANISTER. IF RISER HAS TWO STOPS, THE UNMARKED STOP MUST BE OUTSIDE CANISTER. (PRESENCE OF TWO STOPS OUTSIDE CANISTER COULD CAUSE DAMAGE TO THE DOOR DURING DRAG CHUTE DEPLOYMENT BY SNAGGING DOOR DOU-BLER.)

ENSURE THAT RISER DOES NOT BIND RING.

ON AIRCRAFT MODIFIED PER <u>AAK 74-6A. "DRAG CHUTE INSTALLATION",</u> ENSURE THAT PT2 MOISTURE VALVE DRAIN LINE IS TRIMMED FLUSH WITH AIRCRAFT SKIN. IF LINE IS NOT TRIMMED, POSSIBLE DAMAGE TO DRAG CHUTE CANOPY, RISERS AND AIRCRAFT SKIN COULD RESULT DURING DRAG CHUTE DEPLOYMENT.

(3) Raise and secure tailcone access door.

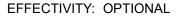


Mar 26/12

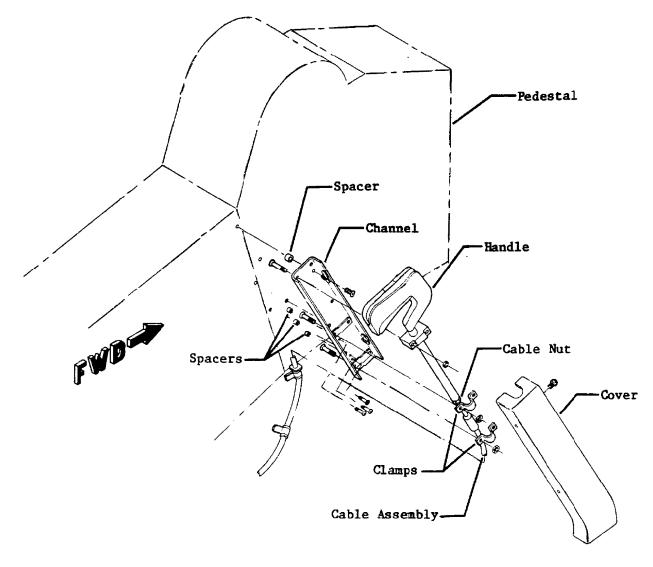
- C. Remove Drag Chute Control Handle (See Figure 202.)
 - (1) Remove cable cover from RH side of pedestal.
 - (2) Remove channel supporting control handle and cable.

NOTE: If spacers are installed between channel and pedestal, note the location of spacers and attaching screws as they are of varying lengths.

- (3) Remove clamps securing cable assembly and handle to channel.
- (4) Break safety wire and unscrew cable nut from handle.
- (5) Pull cable housing and handle apart.
- (6) Using a wrench, hold cable stationary and unscrew handle.
- D. Install Drag Chute Control Handle (See Figure 202.)
 - (1) Using a wrench, hold cable stationary and screw handle onto cable.
 - NOTE: Cable shall fully bottom out in handle. There is no provision for adjustment at this end of the cable.
 - (2) Push cable housing and handle together and screw cable nut into handle. Do not tighten nut at this time.
 - (3) Install cable assembly and handle on channel leaving clamps loose.
 - (4) Position the cable assembly, handle, and channel as they will be installed on the aircraft. While in this position, tighten cable nut being careful not to twist cable assembly.
 - (5) Tighten clamps securing cable assembly and handle to channel.
 - (6) Safety wire cable nut to the nearest clamp.
 - (7) Install channel on RH side of pedestal. If spacers are used, install in the locations noted during removal.
 - (8) Check that cable is not twisted or kinked.
 - (9) Rig drag chute control system. (Refer to Adjustment/Test, this section.)
 - (10) Install cable cover on RH side of pedestal.



25-62-00 Page 203 Mar 26/12



14-111C

M3536-256200-202-01

Drag Chute Control Handle Installation Figure 202

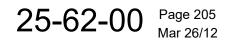


2. Servicing

- A. Pack Drag Chute (See Figure 203.)
 - NOTE: Reliable deployment and inflation is critically dependent on closely following this specific folding and packing procedure. The packing panel incorporated in the canister will ease packing and help achieve proper performance.
 - (1) Lay the drag chute on a smooth, clean, dry surface. Ideally, the surface shall be long enough to completely extend the chute and riser (approximately 55 feet [16.8 meters]). If this is not possible, the riser can be doubled back.
 - (2) Inspect the drag chute assembly for damage. (Refer to Inspection/Check, this section.)
 - NOTE: Each time the drag chute is repacked, a damage inspection shall be made of the suspension lines, canopy panels, and risers. A special inspection (refer to Inspection/ Check) also is required if deployment was made above 150 KIAS, or if jettison or failure occurred above 100 KIAS.
 - (3) Separate and straighten the suspension lines of the individual panels to eliminate crossed or twisted lines.

NOTE: For clarity and ease of reference, each of the chute panels must be identified.

- (4) Identify one of the panels as number one. The remaining panels shall then be numbered in clockwise sequence as shown in Detail A.
- (5) Separate the suspension lines by panels.
- (6) Examine the canopy to ensure the correct surface is to the outside. This can be determined by observing the location of the load bearing tapes on the canopy cloth. The canopy shall be oriented so that the tapes passing across the canopy are located on the outside.
- (7) Ensure that the riser is positioned so that all twists are removed.
- (8) Ensure that riser legs are positioned so that suspension lines from one panel do not cross the suspension lines from any other panel.
- (9) Position the number 1 panel with the full panel width laying on the flat folding surface with canopy inside surface up.
- (10) Position panel 2 to the left side of panel 1 and panels 3 and 4 to the right side of panel 1.
- (11) Fold panel number 1 as shown in Detail B. Ensure that all folds extend the full length of the panel and on through the apex of the chute.
- (12) Fold panel number 2 on top of left half of panel 1 as shown in Detail C. The bottom fold of panel 2 and the top fold of panel 1 must be adjacent and panel edges must be aligned.
- (13) Fold panel number 3 on top of panel number 2 in the same manner as panel 2 was folded onto panel 1. The numbers 1, 2 and 3 folded panels shall appear as shown in Detail D.
- (14) Fold panel number 4 onto the top right half of panel number 1 as shown in Detail E.
- (15) Rotate the top two folds of panel 3 180° clockwise onto top of panel 4 as shown in Detail F.
- (16) The crown area of the canopy is difficult to fold smoothly and correctly until all panels have been folded as outlined in steps (11) through (15). All folds shall now be checked to ensure that they extend through the crown area to the apex of the chute.

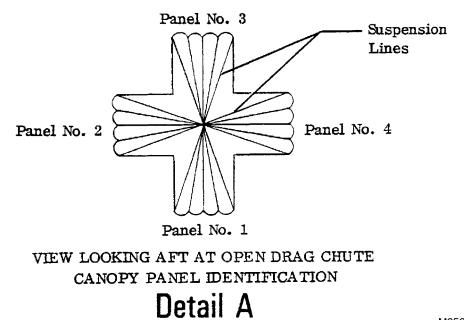


- (17) The final step in the canopy folding process is accomplished by folding the canopy on the center line. This is accomplished by rotating those folds on one side of the center line 180°, and placing these folds on top of the other half of the folded canopy. This may be done in either direction, clockwise or counterclockwise. When this folding step is complete, the canopy will be positioned with all suspension line/canopy attachment points on one side of the folded canopy as shown in Detail G.
- (18) The riser must be oriented with respect to the folded canopy so that no twists exist in the riser. This will necessitate placing the riser legs in the same relative position as the canopy; that is, the leg on the side of the canopy that was folded over shall now be on top of the other leg, with no twists in either leg.
- (19) The next step is to install the riser in the packing panel stowage trays as shown in Detail I. The approximate position from the end of the riser to the first loop is determined by placing the riser over the rim of the packing canister and extending the riser down into the canister. The stop that positions the riser in the canister must be placed to the inside edge of the canister. The point at which the riser makes contact with the center of the canister is the approximate location of the first loop in the stowage panel. This is shown in Detail H.
- (20) The first loop is put in the tray such that riser orientation is maintained. From this point on, by keeping the twists out of the riser, proper orientation will be maintained. The riser loop is forced through the stowage loop on the tray until the riser loop is positioned approximately 1/4 inch (6 mm) past the outside edge of the panel.
- (21) The second riser loop is placed in the first stowage loop on the opposite side of the stowage tray. Each riser loop must be positioned as in step 20. Care must be made not to pull preceding riser loops out of the stowage loops when placing the riser in subsequent stowage loops. The process of stowing the riser in the loops of the stowage tray is continued by inserting the risers in each next unfilled stowage loop on alternating sides of the first stowage tray until the space between the first and second stowage trays is reached.
- (22) After the eleven pairs of riser loops in the first riser stowage tray are utilized, a space in the stowage loop assembly is reached. This space is to permit folding the stowage tray. The first riser loop in the second stowage tray is placed in the same side as the last riser loop from the preceding series. The length of riser between the stowage trays shall be sufficient to facilitate ease of folding. This requires a length of riser sufficient to reach 3/4 of the way across the width of the tray and back to the original side. See Detail I.
- (23) The remaining length of riser is placed in the second stowage tray in the same manner. Allowance has been provided for packing variations and riser elongation. Therefore, it may not be necessary to use all the stowage loops provided.
- (24) Following filling of the second stowage tray, the riser legs must be placed in such a way as to facilitate packing in the canister. This is done by placing the riser legs and the riser/suspension line connecting links as shown in Detail J. The links shall be approximately centered.
- (25) The next step is to fold the suspension lines into the loops of suspension line stowage tray. These loops are loose and serve only to simplify stowage and assure packing and deployment reliability. The first suspension line loop shall be selected so that sufficient slack (approximately 2 inches [50.8 mm]) will be left in the lines to allow proper folding of the tray when packing.
- (26) Insert the suspension lines into stowage loops. Just as in the risers' stowage, the suspension lines are stowed by inserting the suspension lines in each next unfilled stowage loop on alternating sides of the stowage tray. The stowed suspension lines shall extend beyond the edge of the tray



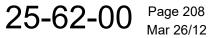
no more than 3/4 inch (19 mm). This process is continued until all stowage loops have been filled. When this has been completed, approximately 12 inches (304.8 mm) of suspension lines will remain unstowed.

- (27) The second riser stowage tray is folded over the first riser stowage tray as shown in Detail K. The suspension line stowage tray becomes the top of the stacked tray. The riser end shall be restored to the original orientation as determined at the beginning of the riser stowage procedure in preparation for final packing steps.
- (28) The canopy skirt of the folded parachute shall be placed on top of the unstowed suspension line.
- (29) The stacked trays in the canister, when properly positioned, will appear as shown in Detail L. Smooth the flap around the circumference of the canister and fold back over the edge toward the canopy.
- (30) The first step in canopy folding is to fold the excess suspension line on top of the stowed lines. The canopy skirt is the placed in the canister at the side where the riser exits and is folded as shown in Detail M.
- (31) When the canopy is completely folded, the flap is placed over the can opening and pressed down on all sides forming a protective closure. The canister lid riser and the pilot chute riser must be kept outside the flap.
- (32) Following the positioning of the closure flap, the pilot chute riser is placed neatly on top of the flap such that the pilot chute spring can be centered on the pack for closure.
- (33) Center the lid on the pilot chute spring and while compressing the spring, distribute the pilot chute canopy evenly around the canister. Engage canister lid on canister, ensuring that the drag chute riser exits through the notch provided in the lid. Care shall be exercised to ensure that pilot chute canopy is not jammed into any part of the canister to lid attachment mechanism.



M3536-256200-203-01

Drag Chute Packing Figure 203 (Sheet 1 of 5)



Mar 26/12

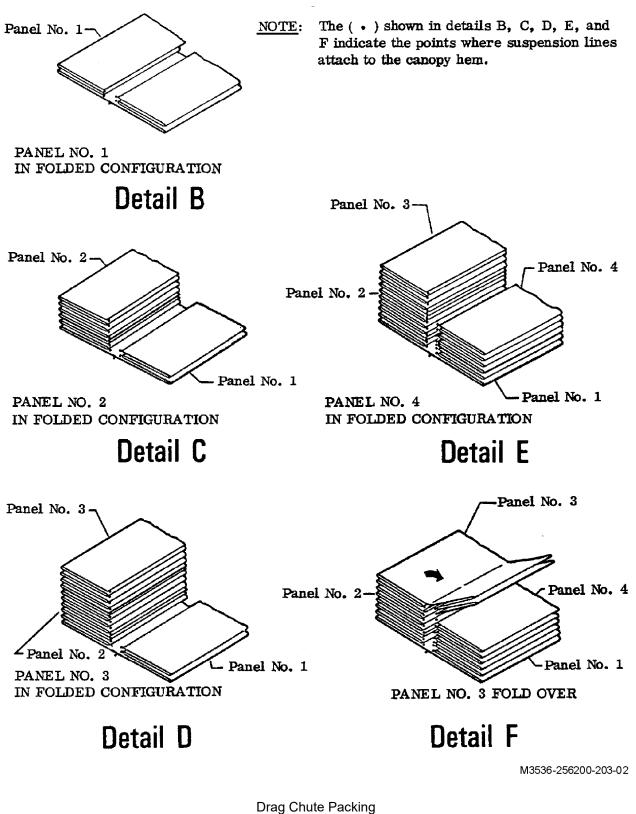


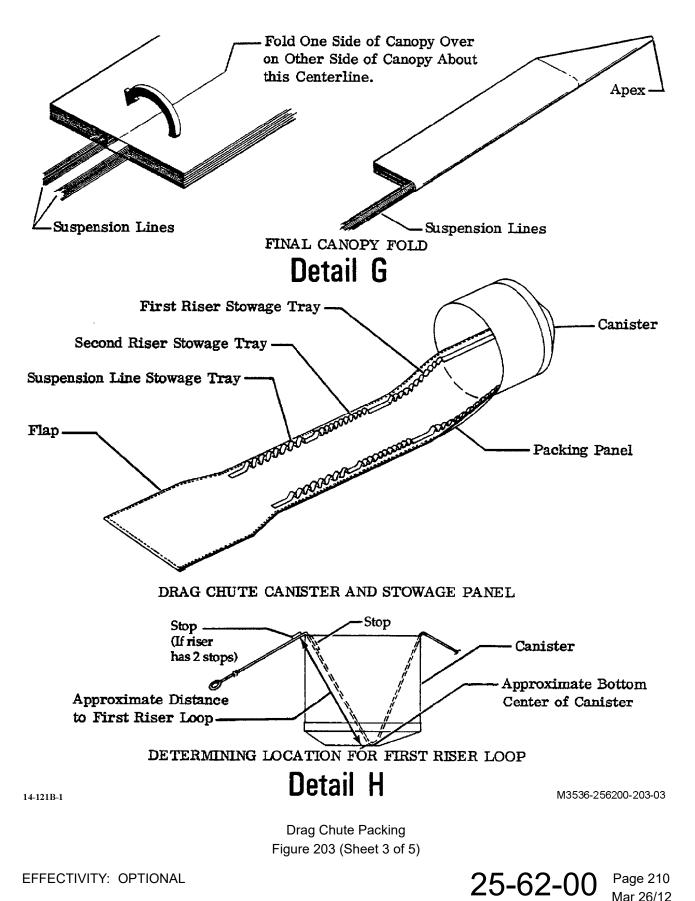
Figure 203 (Sheet 2 of 5)

25-62-00 Page 209

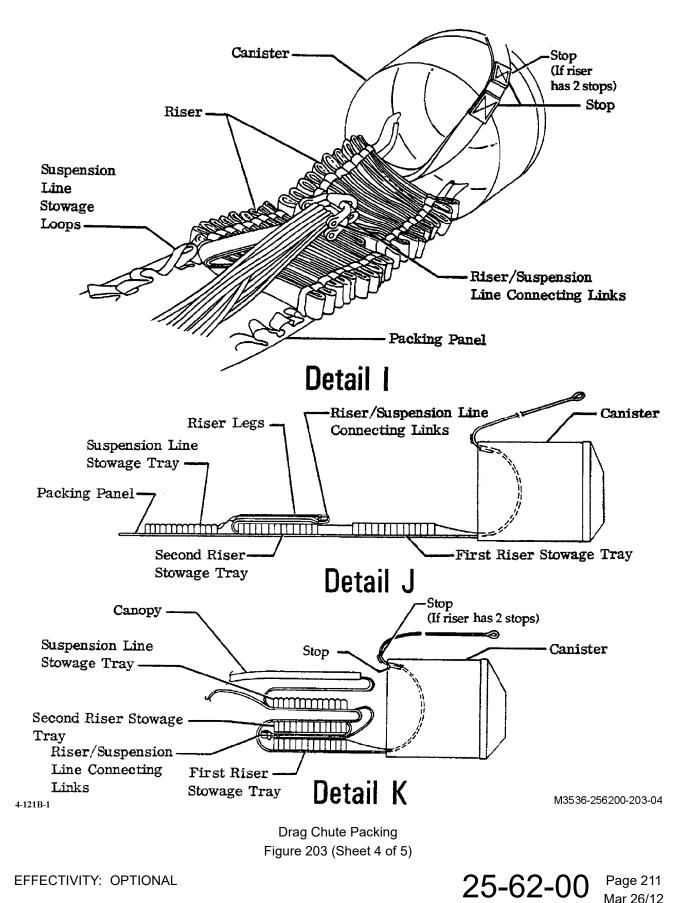
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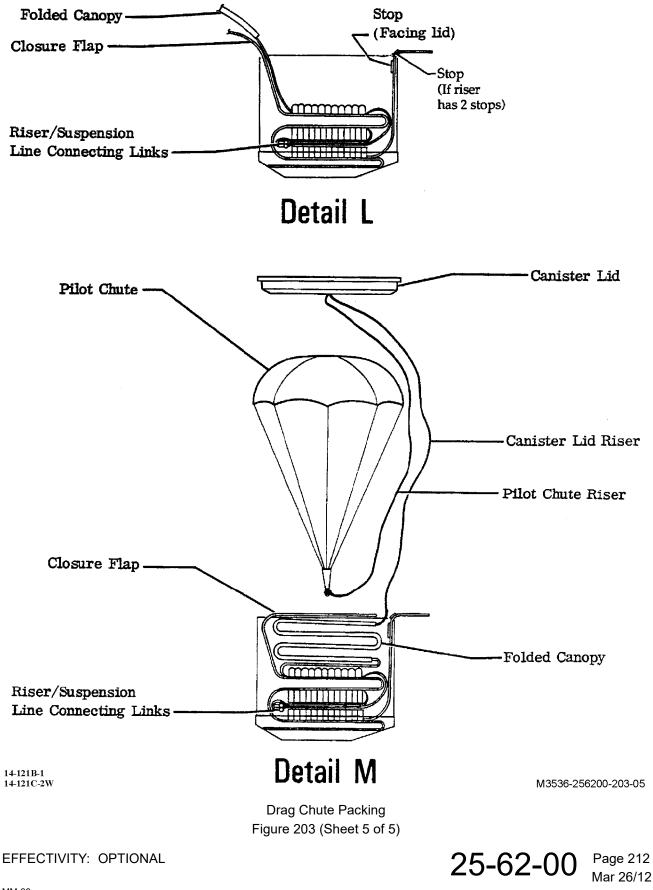
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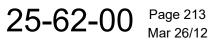


3. Inspection/Check

- A. Inspect Drag Chute
 - (1) Check suspension lines and joints, individually, for cut or frayed cords.
 - (2) Check canopy panels for deterioration or cuts.
 - (3) Check main chute riser joints and riser for weak members.
 - (4) Replace any weak or damaged or fluid soaked chute component.
- B. Inspect Structure
 - NOTE: This inspection is required if the drag chute was deployed above 150 KIAS, if jettison occurred above 100 KIAS, or if failure occurred.
 - (1) Inspect frame structure adjacent to where drag chute control mechanism is mounted.
 - (2) Inspect keel beam forward of the frame on which control mechanism is mounted.
 - (3) Inspect structure used to attach keel beam to the frame on which control mechanism is mounted.

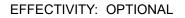
4. Approved Repairs

- A. Repair Drag Chute. (See Figure 204.)
 - NOTE: Repairs to the drag chute are permissible provided proper procedures are followed. Repairs to the drag chute are to be performed only by an FAA approved repair station or by an FAA certified master rigger.
 - (1) Holes or damaged canopy areas may be repaired if the hole or damaged area can be patched using a piece of canopy fabric with a maximum area of 100 square inches (64,516 mm). The patch shall be cut to the proper size so that it extends beyond the hole or damaged area in all directions by a minimum of one and one-half inches (38 mm). The patch shall be sewn on the inside of the canopy using Federal Standard No. 751A stitch, Type 301, with 8 to 11 stitches per inch (25.4 mm). The thread used shall be V-T-295, Type I or II, Class 1 or 2, Size E. The edges of the cloth around the damaged area and the edges of the patch shall be turned toward each other to prevent material fraying. The patch shall be secured to the canopy by sewing two rows of stitches around the damaged area and on the patch.
 - (2) All fabric used to make canopy repairs shall be of the same type and quality as that of the canopy material at the point where the repair is being made. In the event that damage occurs at an area of transition from one type of fabric to another (i.e., at the location where a side panel joins the center panel), the material used for the patch shall be the same as that of the center panel. The four side panels are fabricated using MIL-C-7020, Type II, canopy cloth and the center panel is fabricated from nylon fabric, Pattern Number A25895.
 - (3) When damage to the canopy occurs at a location where a load tape is located within the damaged area, the repair process is somewhat more difficult. For this type of repair, the stitching shall be removed from the load tape sufficiently far back from the damaged area to permit the canopy cloth to be turned under. With the stitching removed, the repair patch is sewn as previously described. When the patch has been secured with two rows of stitches sewn around the damaged area, the repair job is completed by sewing the load tapes to the patch. The tapes shall be sewn using a Type 301 stitch with 8 to 11 stitches per inch (25.4 mm). The thread used shall be V-T-295, Type I



or II, Class 1 or 2, Size E. Two rows of stitching shall be used to coincide with the original two rows of stitching on the load tape. The stitching used to secure the load tape to the repaired canopy shall be of sufficient length to extend a minimum of two inches (50.8 mm) beyond the point where the stitching was removed to permit installing the patch. Therefore, at the locations where the original stitching on the load tapes joins the repaired area, double stitching must be provided.

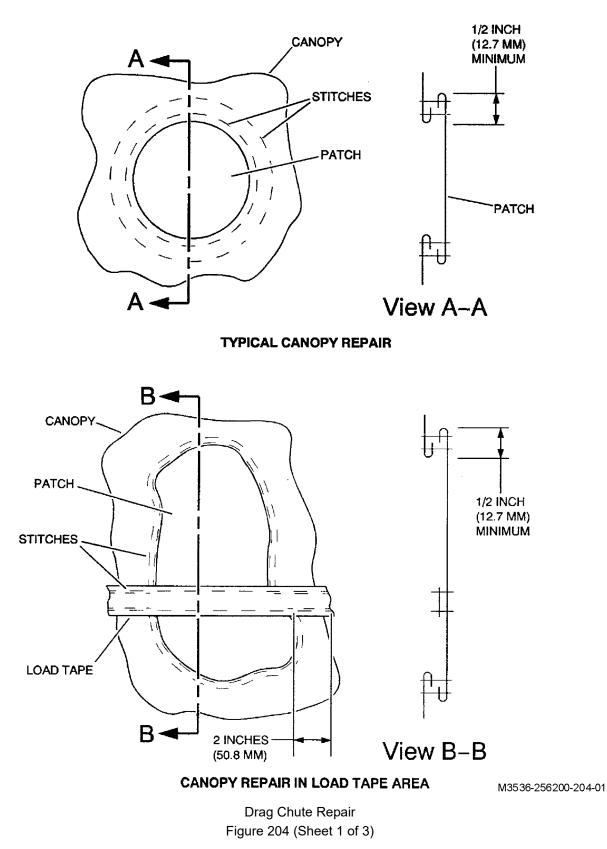
- (4) If the damage inflicted to the parachute caused holes in the canopy or damaged areas that cannot be patched as described above with a patch containing an area of 100 square inches (64,516 square mm), the damaged canopy shall be replaced rather than repaired.
- (5) In the event that a load tape is damaged, the load tape shall be reinforced with a length of tape, MIL-T-5038, Type IV, 5/8 inch (16 mm) wide. The tape shall be of sufficient length to extend 6 inches (152 mm) in both directions beyond the damaged location. The reinforcement tape shall be sewn on as shown using Type 301 stitch with 8 to 11 stitches per inch (25.4 mm). Nylon thread, V-T-295, Type I or II, Class 1 or 2, Size E shall be used to sew the tape. A two-point W-W stitch pattern shall be used to attach the reinforcement tape.
- (6) In the event of load tape damage at a location where two load tapes cross and damage has been incurred to both load tapes, the canopy shall be replaced rather than repaired.
- (7) Frayed or damaged suspension lines or damaged suspension line canopy joints shall be repaired by replacing the suspension lines. The damaged suspension lines shall be carefully taken off the canopy by cutting the stitches that secure the suspension line to the canopy. Prior to attaching the new suspension line, a reinforcement tape, MIL-T-5038, Type IV, 5/8 inch (16 mm) wide, 12 inches (305 mm) long shall be sewn on the canopy immediately above the canopy bottom panel edge. The tape shall be sewn on with 2 point W-W stitch pattern using a Type 301 stitch with 8 to 11 stitches per inch (25.4 mm). Nylon thread, Type I or II, Class 1 or 2, Size E, shall be used.
- (8) After the reinforcement tape has been attached, the new suspension line cord can be sewn on. The cord used shall be MIL-C-7515, Type III. The cord shall be prepared by cutting a length 206 inches (5.23 meters) long, threading one end of the cord around the connector link and back into itself. The cord shall then be secured by sewing with a double throw zig-zag stitch with a minimum stitch length of 5/32 inch (4 mm). The double-throw zig-zag sewing machine shall be set to provide 6 to 9 edge stitches per inch (25.4 mm). Nylon thread, V-T-295, Type I or 1I, Class 1, Size F, shall be used to sew the suspension line cord. Care must be taken to ensure that the new cord occupies the same position on the connector link as was occupied by the replaced cord.
- (9) With one end of the suspension line prepared as shown, the other end of the suspension cord shall be inserted through the bottom of the butterfly reinforcing tab and placed on the top of the 12inch (305 mm) reinforcing tape that was previously sewn to the canopy. The distance from the top of the cord to the bottom of the canopy panel shall be 7-1/2 inches (191 mm). When the cord is positioned, the cord must be sewn to the canopy with the same type stitch and thread as was used to prepare the loop in the other end.
- (10) If the canopy skirt hem (the edge of the canopy where the suspension lines are attached) is damaged, the canopy shall be replaced rather than repaired.
- (11) When the risers connecting the main canopy, canister lid, and pilot chute are damaged, the damaged riser shall be replaced with a new riser.
- (12) Pilot chute riser or canister lid riser attachment is as follows:
 - (a) Attach the pilot chute riser to the pilot chute by passing one end of the riser through the attachment loop of the pilot chute and then through the loop on the opposite end of the pilot chute



riser. Draw the riser tight against the pilot chute attachment loop, and attach the free end to the canister lid. Refer to Detail A.

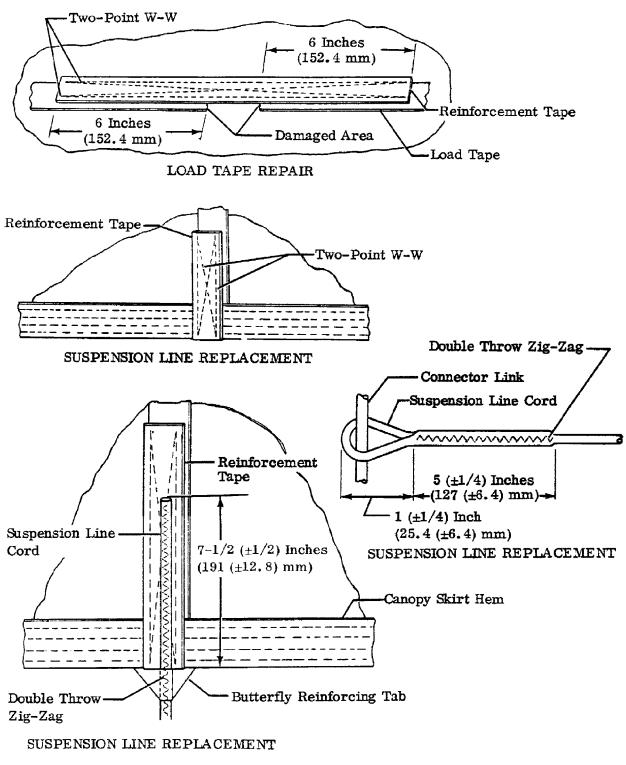
- (b) To attach canister lid riser to main canopy, remove bolt from shackle at apex of main canopy, position loop of riser in shackle, and install bolt, passing it through the riser loop.
- (c) Attach either or both risers to canister lid by removing retainer attachment screws, and extracting retainer from inside lid. Pulling on risers while removing screws will aid in controlling retainer during screw removal. Install risers to retainer as shown in Detail B, and insert retainer/riser assembly into canister lid. Align attachment holes in retainer and lid, and install attachment screws. Pulling risers while installing screws will aid in controlling retainer.
- (13) In the event the main chute riser becomes worn or damaged, the riser shall be replaced rather than repaired.
- (14) If the pilot parachute is damaged, it shall be removed and replaced with a new pilot parachute. The pilot parachute must be attached to the top of the main parachute with the canister lid as described previously.
- (15) A damaged stowage tray shall be removed and replaced with a new one. The stowage tray can be replaced by removing the two bolts on the inside of the packing container. The new stowage tray shall be put into position and secured by inserting the bolts and tightening the nuts.





EFFECTIVITY: OPTIONAL

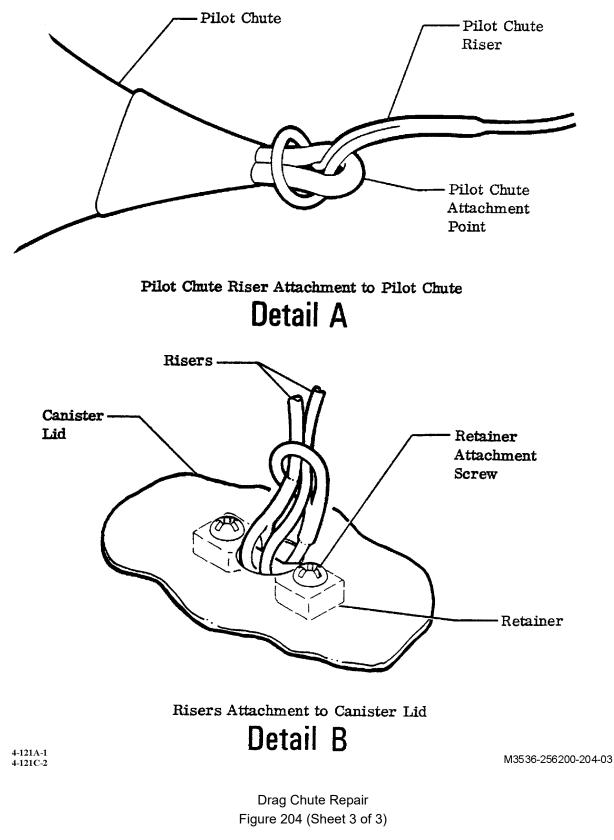
25-62-00 Page 216 Mar 26/12



M3536-256200-204-02

Drag Chute Repair Figure 204 (Sheet 2 of 3)

> 25-62-00 Page 217 Mar 26/12



EFFECTIVITY: OPTIONAL

25-62-00 Page 218 Mar 26/12

5. Adjustment/Test

- A. Rig Drag Chute Control System. (See Figure 205.)
 - (1) Lower the tailcone access door.
 - (2) Position the control handle to the rest/jettison position (control handle fully down).

NOTE: The drag chute control handle is locked unless the two grip safeties are squeezed simultaneously.

- (3) Check that the control mechanism crank is full against the stop (rest/jettison position). Loosen telescopic nut and adjust clevis as required.
- (4) With the control handle and the control mechanism crank in the rest/jettison position there shall be some play in the control handle within its detent.
- (5) Squeeze the grip safeties and pull the control handle to the deploy position (control handle fully up).
- (6) Check that control mechanism crank is full down against the stop (deploy position). Adjust clevis as required.
- (7) With the control handle and the control mechanism crank in the deploy position, there shall be some play in the control handle within its detent.
- (8) Tighten telescopic nut and install cotter pin.
- (9) Squeeze grip safeties and return the control handle to the rest/jettison position.
- (10) Raise and secure the tailcone access door.

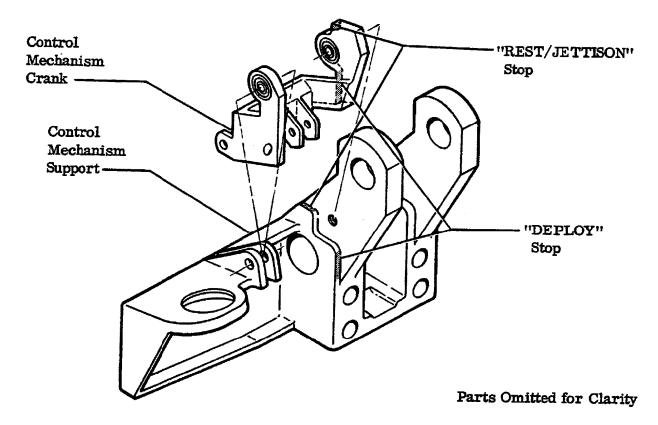
CAUTION: ENSURE THAT RISER DOES NOT BIND RING.

- B. Functional Test Drag Chute.
 - NOTE: Perform Functional Test of Drag Chute in accordance with the current inspection intervals specified in Chapter 5.

Drag chute may be deployed on landing in lieu of the following static test procedure, provided the drag chute lubrication requirements in Chapter 12 are accomplished.

- (1) Station a person under the tailcone access door to hold and prevent the canister lid from being ejected when drag chute control handle is actuated. The lid assembly must be allowed to pop down only enough to assure disengagement of latching mechanism.
- (2) Squeeze grip safeties of control handle and pull up to the deploy position.
- (3) Note disengagement of canister lid assembly from canister.
- (4) Push lid assembly back up into position.
- (5) Squeeze the grip safeties and return the control handle to the rest/jettison position, thus reengaging the lid latches.
- (6) Lubricate drag chute control system. (Refer to Chapter 12.)

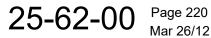




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Control Mechanism Stop Location Figure 205



Mar 26/12