## CRACK INSPECTION - WING ATTACH FITTINGS AND OUTBOARD WING SPAR CAPS (MODEL 300)

### 1. Crack Inspection

A. Inspection Procedure

**NOTE:** **This section is applicable to airplane operated in the category of service for which they were originally designed. Airplanes which are operating in a category of service other than originally designed, and have Textron Aviation engineering-approved mission profiles, are listed under SPECIAL PURPOSE AIRPLANES in Chapter 4 of the Super King Air Model 300 and 300LW Series Airworthiness Limitations Manual (101-590097-161) or in the applicable Pilot's Manual Supplement.**

**NOTE:** **This section is only applicable to airplanes that do not have winglets. For airplanes with winglets installed, comply with all inspections in the applicable Instruction for Continued Airworthiness (ICA) documents. Then comply with ANY index numbers in Table 201 that are not called out in the ICA documents.**

***Table 201. Standard Flight Profile***

| Index No. | Figure No. | Inspection Area | Inspection Method | Possible Findings | Initial Inspection | Recurring Inspection Interval | Component Replacement Schedule |
|---|---|---|---|---|---|---|---|
| 1. | 201 | Lower Forward (Main) Spar Lugs | Eddy current | Cracks | 15,000 hrs | 6,000 hrs | None |
| 2. | 202 | Outboard Wing Panel, Lower, Forward Spar Cap **See Note 3** | Eddy current | Cracks | 15,000 hrs | 3,000 hrs | None |
| 3. | 203 | Center Section Lower Forward Spar Cap | Eddy current | Cracks | 18,000 hrs | 3,000 hrs | None |
| 4. | 204 | Center Section Belly Skin | Eddy current | Cracks | 22,500 hrs | 3,000 hrs | None |
| 5. | 205 | Center Section Lower Aft Spar **See Note 1** | Eddy current | Cracks | 27,000 hrs | 1,500 hrs **See Note 2** | None |
| 6. | 206,207 | Center Section and Outboard Wing Panel Aft Spar Lower Fittings **See Note 1** | Eddy current | Cracks | 27,000 hrs | 1,500 hrs **See Note 2** | None |
| 7. | 210 | Lower forward main spar clevis fittings **See Note 4** | Visual | Cracks, corrosion and mechanical damage | 5 yrs | 5 yrs | Refer to Chapter 4 of the 300 Series Airworthiness Limitations Manual (101-590097-161) |
| 8. | 208 | Outboard wing panel upper and lower main spar caps | Visual | Cracks and corrosion | 5 yrs | Annually | Refer to Chapter 4 of the 300 Series Airworthiness Limitations Manual (101-590097-161) |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 9. | 210 | Lower forward wing bolt | N/A | N/A | N/A | N/A | Refer to Chapter 4 of the 300 Series Airworthiness Limitations Manual (101-590097-161) |
| 10. | 211 212, 213, 214 | Upper forward, upper and lower aft wing bolts | Torque check | Incorrect torque | First scheduled inspection after the date on the airplane's Standard Airworthiness Certificate | First scheduled inspection after wing bolt replacement | Refer to Chapter 4 of the 300 Series Airworthiness Limitations Manual (101-590097-161) |
| 11. | 211 212, 213, 214 | Flat surfaces, depressions, counterbores, and bolt bores at the upper forward, upper and lower aft wing joining points | Magnified visual and Eddy current as specified | Cracks, corrosion and mechanical damage | 5 yrs | 5 yrs | None |
| 12. | 211 212, 213, 214 | Wing bolts at the upper forward, upper and lower aft wing joining points | Magnified visual and fluorescent liquid penetrant as specified | Cracks and mechanical damage | 5 yrs | 5 yrs | Refer to Chapter 4 of the 300 Series Airworthiness Limitations Manual (101-590097-161) |
| 13. | 218 | Wing Forward Spar Angle | Eddy current | Cracks | 18,000 hrs | 3,000 hrs | None |

**NOTE 1:**

**The installation of Kit 101-4077 is MANDATORY. The inspection should entail Wing BL 123.309 to BL 28.72.**

**NOTE 2:**

**This recurring inspection interval does not require fastener removal. But requires a Eddy Current inspection to be performed on the vertical, aft and fwd flange of the rear spar as in Figure 205, View A-A.**

**NOTE 3:**

**This inspection is only applicable to airplanes with the 101-110085 Spar Cap Assy. For spares use 101-110084.**

**NOTE 4:**

**When inspecting the wing fitting pay close attention to the "POSSIBLE CRACK AREA" noted in Detail B of Figure 201.**

**2. Main Spar Lower Shear Fitting Lugs**

A. Inspection

(1) Detach the wing as detailed in Chapter 57 of the applicable Super King Air Maintenance Manual.

(2) Clean the lugs with solvent (2 or 3, Chart 208, 91-00-00). Eddy current inspect the forward and aft faces of the lugs. Pay particular attention to areas around the wing attach holes and in the bolts (Ref. Figure 201).

(a) Perform CALIBRATION (STANDARDIZATION) procedure (Ref. Chapter 20-00-00).

(b) Scan the forward and aft faces of the exposed lugs and the bolt bore. Pay particular attention to the area around the wing attach holes. Scan at 0°, 45°, and 90°. A scanning index should be selected to ensure complete coverage of the

area to be inspected, 1/2 coil maximum. Re-nulling may be required on the component being inspected due to minor variations between the component and the material composition of the standard (Ref. Figures 201).

(c) Any vertical deflection that is distinguishable (separated) from the background noise and not caused by lift-off or part geometry shall warrant further examination and scanning of the area of interest.

(d) Mark any repeatable crack-like indications equal or greater than 20% vertical deflections above the baseline/null point. Any repeatable crack-like indication equal or greater than 20% vertical deflections above the baseline/null point shall be considered a crack and reported via the reporting instructions.

(3) If any cracks or mechanical damage is found during the inspection, contact Textron Aviation Technical Support for consultation.

(4) If the fittings are satisfactory after inspection, install the wing.

**NOTE: The bolts, washers, and nuts at the lower forward attach points must be replaced with new components anytime the installed bolt is removed, regardless of time in service.**

**3. Outboard Lower Forward Spar Cap**

A. Inspection

(1) Clean the spar cap with solvent (2 or 3, Chart 208, 91-00-00).

**NOTE: The following settings are for the Nortec 19e II eddy current unit (7, Chart 203, 20-00-00). Other instruments should be set up to obtain a minimum 10% screen deflection when scanning the referenced standard.**

(2) Set the eddy current unit as follows: Frequency (Freq) = 1.5 kHz, Horizontal Decibels (HdB) = 59.0, Vertical Decibels (VdB) = 82.5, Phase Rotation (Rot) = 101, Probe Drive (P Drive) = High, Low Pass Filter (LPF) = 25.

(3) Check the set up against the eddy current standard (17, Chart 203, 20-00-00) to verify a minimum 10% screen deflection. If not, adjust the unit as required to obtain a 10% screen deflection.

(4) Slide the eddy current surface probe (18, Chart 203, 20-00-00) along the forward and aft edges of the outboard wing panel lower spar cap for its entire length from WS 135.0 to WS 291.74. The probe should be on the flat portion of the spar close to the forward skin when scanning the forward edge and close to the aft skin when scanning the aft edge. The edge of the probe should be even with the edge of the spar flat and must not overlap onto the hinge area. The suspect cracks will run forward to aft or aft to forward (Ref. Figure 202).

(5) Report any crack indications to Textron Aviation Technical Support.

**4. Center Section Lower Forward (Main) Spar Cap**

**NOTE: Kit No. 101-1200-1 must be installed on airplane serials FA-2 thru FA-230 prior to conducting this inspection.**

A. Inspection

(1) Remove the ten screws and the left and right inboard nacelle access panels from the airplane to inspect the lower main spar (Ref. Figure 203).

(2) Clean all dirt and grease from the inspection area with solvent (2 or 3, Chart 208, 91-00-00).

(3) Eddy current inspect as directed in the following Steps. Use a non-conductive straight edge as a probe guide as necessary.

(a) Perform CALIBRATION (STANDARDIZATION) procedure (Ref. Chapter 20-00-00).

**CAUTION: Special care must be taken by the operator to ensure that the probe's position is perpendicular to the inspection surface to avoid possible lift-off effects during surface scanning. The ability to hold the probe in a steady position depends upon the competence and experience of the operator.**

(4) Inspect the lower spar cap by slowly sliding the eddy current probe (20, Chart 203, 20-00-00) along the forward and aft edge of the lower spar cap for its entire length from left wing station (LWS) 109.0 to right wing station (RWS) 109.0. The probe should be close to the forward skin when scanning the forward edge of the spar cap and close to the aft skin when scanning the aft edge (Ref. Figure 203, View B).

(5) Inspect the area in the left and right inboard and outboard keel area from WS 88.69 to WS 117.31. Using the 90° probe (20, Chart 203, 20-00-00) inspect the forward and aft edges of the lower spar cap. Inspect the spar cap flanges and the lower spar strap flanges. Inspect around the fasteners in the vertical flange (Ref. Figure 203, View C).

**NOTE: The spar is a three-piece construction with two spar caps bonded back-to-back and the lower spar**

**strap bonded to the lower surface of the spar caps.**

(6) For the 1/2-inch area which is covered by the skin attach angle, the inspection can be performed by sliding a 90° probe (9, Chart 203, 20-00-00) along the forward and aft edges of the spar lower flange edge from both the inboard and outboard sides. Suspect cracks in the lower flange will propagate in a forward and aft direction. Suspect cracks in the vertical flange will run in an up and down direction.

(7) Any vertical deflection that is distinguishable (separated) from the background noise and not caused by lift-off or part geometry shall warrant further examination and scanning of the area of interest.

(8) Mark any repeatable crack-like indications equal or greater than 20% vertical deflections above the baseline/null point. Any repeatable crack-like indication equal or greater than 20% vertical deflections above the baseline/null point shall be considered a crack and reported via the reporting instructions.

(9) No cracks allowed. If any evidence of cracks or other discrepancies are found, such as small cracks starting from rivet holes; hairline cracks in spar caps, sheared or deformed rivets, contact Textron Aviation Technical Support for consultation.

(10) Install the left and right inboard nacelle access panels and secure with ten screws.

**5. Center Section Belly Skin (For Airplanes without Kit No. 101-4077 Installed)**

**NOTE: To inspect airplanes that have Kit No. 101-4077 installed, go to CENTER SECTION BELLY SKIN INSPECTION (FOR AIRPLANES WITH KIT No. 101-4077 INSTALLED).**

**NOTE: The following settings are for a Nortec 19e II eddy current unit (Chart 203, 20-00-00). Other instruments must be calibrated to obtain similar results for second layer crack detection. Minor adjustments of the following parameters may be necessary to optimize this test.**

A. Inspection

(1) Set the eddy current Unit (7, Chart 203, 20-00-00) as follows: Frequency (Freq) = 2.0 kHz; Horizontal Decibels (HdB) =52.0; Vertical Decibels (Vdb) = 60.9; Phase Rotation (Rot) = 220°; Probe Drive (P Drive) = High; Low Pass Frequency (LPF) = 30; High Pass Frequency = 0.

(2) Check the setup against the Nortec eddy current calibration standard (14, Chart 203, 20-00-00) as follows:

- Position the standard with the identification number at the upper RH corner. Positioned in this manner, rivets No. 1 and No. 7 will not have EDM notches.
- Position the probe (8, Chart 203, 20-00-00) between the No. 1 and No. 2 fasteners on the test standard and null the instrument. The green arrow on the probe should be near fastener No. 2 and the red arrow should be near fastener No. 1.
- Scan the standard in the direction of the green arrow from left of the No. 1 fastener.

(3) The second layer EDM notches should register on the eddy current unit as shown in Figure 204 (Sheet 2 of 3). Adjust the instrument as required to obtain optimum indications.

(4) Utilizing solvent (2 or 3, Chart 208, 91-00-00), clean the area to be inspected.

(5) Position the probe between two fasteners on the airplane skin, and if necessary, to obtain a screen indication, adjust the eddy current instrument horizontal and vertical positioning. Do not renull the instrument. Scan the lower wing skin in the same manner as the standard. Ensure that the probe is positioned directly over the skin fasteners when scanning. Utilization of a nonmetallic (plastic, phenolic, etc.) straight edge for guidance is recommended.

(6) Scan the entire row of fasteners. Any cracks which may exist, will run fwd to aft.

(7) If any crack indications are detected during the inspection, notify Textron Aviation Technical Support.

**6. Aft Spar Lower Cap**

A. Inspection

(1) Make sure that the Kit Part No. 101-4077-1 or 101-4077-3 has been INSTALLED (contact Textron Aviation Technical Support for availability).

**NOTE: Kit Part No. 101-4077-1 is applicable to Serials FA-2 thru FA-87, FF-1 thru FF-19.**

**NOTE: Kit Part No. 101-4077-3 is applicable to Serials FA-88 thru FA-230, FF-1 thru FF-19.**

**NOTE: Inspect from the Side of Body to the Outboard fitting on both wings BL(WS) 114.00 to BL(WS) 28.72.**

(2) Remove all the center section access panels on the lower skin adjacent to the rear spar (Ref. Figure 205).

(3) Using the applicable Model Airplane Maintenance Manual perform the FLAP ASSEMBLY REMOVAL procedure.

(4) Remove the flap cove panels.

(5) Clean any dirt and grease from the rear spar lower cap with solvent (2 or 3, Chart 208, 91-00-00).

(6) Gain access to the forward side of the aft spar lower caps through the Wheel Well Moister Seal Boot (Curtain).

(7) Where there is access use an eddy current probe (9 or 10, Chart 203, 20-00-00) to scan the edge of the flanges. The suspect cracks will propagate outward from the fastener hole to the edge of the part (Ref. Figure 205).

**CAUTION: Special care must be taken by the operator to ensure that the probe's position is perpendicular to the inspection surface to avoid possible lift-off effects during surface scanning. The ability to hold the probe in a steady position depends upon the competence and experience of the operator.**

(a) Scan the surfaces including the edges of the forward, vertical, and aft flanges. A scanning index must be selected to ensure complete coverage of the area to be inspected, 1/2 coil diameter maximum (Ref. Chapter 20-00-00, GENERAL SURFACE INSPECTIONS). Re-nulling may be required on the component being inspected, due to minor variations between the component and the material composition of the standard. Cracks will typically start at a fastener hole and move to the nearest edge.

(b) Any vertical deflection that is distinguishable (separated) from the background noise and not caused by lift-off or part geometry shall warrant further examination and scanning of the area of interest.

(8) Where there is access in areas around fastener on the surface of the spar, an eddy current probe (9 or 10, Chart 203, 20-00-00) can be used.

**CAUTION: When Teflon tape is applied to the probe tip to protect from wear and reduce probe drag, it shall be applied in a manner as not to affect the lateral spacing required to maintain sensitivity to cracks propagating from the fastener hole.**

(a) Scan around the entire diameter of the fastener twice, positioning the probe's coil adjacent to, yet in contact with the side of the fastener. Using the fastener as a guide, maintain a positive pressure against the fastener head to ensure constant spacing for sensitivity to be maintained for detection of cracks protruding from the fastener head (Ref. Figure 217). Re-nulling may be required on the component being inspected, due to minor variations between the component and the material composition of the standard.

(b) Any vertical deflection that is distinguishable (separated) from the background noise and not caused by lift-off or part geometry shall warrant further examination and scanning of the area of interest.

(9) No cracks allowed. If any evidence of cracks or other discrepancies are found, such as small cracks starting from rivet holes; hairline cracks in spar caps, sheared or deformed rivets, contact Textron Aviation Technical Support for consultation.

(10) Secure the Wheel Well Moister Seal Boot (Curtain).

(11) Install the flap cove panels.

(12) Using the applicable Model Airplane Maintenance Manual perform the FLAP ASSEMBLY INSTALLATION procedure.

(13) Install the access panels that were previously removed.

**7. Center Section Aft Spar Lower Fitting**

**NOTE: Kit Part No. 101-4077-1 is applicable to Serials FA-1 to FA-87, FF-1 to FF-19.**

**NOTE: Kit Part No. 101-4077-3 is applicable to Serials FA-88 to FA-230, FF-1 to FF-19.**

A. Inspection

(1) Make sure that the Kit Part No. 101-4077-1 or 101-4077-3 has been INSTALLED (contact Textron Aviation Technical Support for availability).

(2) Remove the wing bolt access cover over the lower aft fittings (Ref. Figure 206).

(3) Clean the fitting with solvent (2 or 3, Chart 208, 91-00-00).

(4) For surface inspections calibrate, inspect and evaluate as follows:

(a) Perform CALIBRATION (STANDARDIZATION) procedure (Ref. Chapter 20-00-00).

**NOTE: Special care must be taken by the operator to ensure that the probe's position is perpendicular to the inspection surface to avoid possible lift-off effects during surface scanning. The ability to hold the probe in a steady position depends upon the competence and experience of the operator.**

**CAUTION: When using the High Pass and Low Pass filtering during inspections on ferromagnetic material, scanning speed is critical to avoid suppression of crack signals. Verify and maintain scanning speeds established on the calibration standard.**

(b) Scan the surface to be inspected. When the direction of cracking is known, scan perpendicular to the direction of the cracking. Re-nulling may be required on the component being inspected due to minor variations between the component and the material composition of the standard.

**CAUTION: When Teflon tape is applied to the probe tip to protect from wear and reduce probe drag, it shall be applied in a manner as not to affect the lateral spacing required to maintain sensitivity to cracks propagating from the fastener hole.**

(c) FLUSH FASTENERS - Scan around the entire diameter of the fastener twice. Position the probe's coil immediately outside the edge of the fastener head. Maintaining a constant, yet minimal distance is required to maintain sensitivity to cracks propagating from the fastener hole. A circle template made of non-conductive material may be utilized for this to be achieved (Ref. Figure 216). Re-nulling may be required on the component being inspected, due to minor variations between the component and the material composition of the standard.

(d) PROTRUDING FASTENERS - Scan around the entire diameter of the fastener twice, positioning the probe's coil adjacent to, yet in contact with the side of the fastener. Using the fastener as a guide, maintain a positive pressure against the fastener head to ensure constant spacing for sensitivity to be maintained for detection of cracks protruding from the fastener head (Ref. Figure 217). Re-nulling may be required on the component being inspected, due to minor variations between the component and the material composition of the standard.

(e) Any vertical deflection that is distinguishable (separated) from the background noise and not caused by lift-off or part geometry shall warrant further examination and scanning of the area of interest.

(f) No cracks allowed. If any evidence of cracks or other discrepancies are found, such as small cracks starting from rivet holes; hairline cracks in spar caps, sheared or deformed rivets, contact Textron Aviation Technical Support for consultation.

(5) After completing the inspections replace the wing bolt cover.

(6) If any crack indications are noted during the inspections, contact Textron Aviation Technical Support for consultation.

**8. Outboard Wing Panel Aft Spar Lower Fitting**

**NOTE: Kit Part No. 101-4077-1 is applicable to Serials FA-1 to FA-87, FF-1 to FF-19.**

**NOTE: Kit Part No. 101-4077-3 is applicable to Serials FA-88 to FA-230, FF-1 to FF-19.**

A. Inspection

(1) Make sure that the Kit Part No. 101-4077-1 or 101-4077-3 has been INSTALLED (contact Textron Aviation Technical Support for availability).

(2) Remove the wing bolt cover from over the fittings (Ref. Figure 207).

(3) Clean fitting with solvent (2 or 3, Chart 208, 91-00-00).

(4) For surface inspections calibrate, inspect and evaluate as follows:

(a) Perform CALIBRATION (STANDARDIZATION) procedure (Ref. Chapter 20-00-00).

**NOTE: Special care must be taken by the operator to ensure that the probe's position is perpendicular to the inspection surface to avoid possible lift-off effects during surface scanning. The ability to hold the probe in a steady position depends upon the competence and experience of the operator.**

**CAUTION: When using the High Pass and Low Pass filtering during inspections on ferromagnetic material, scanning speed is critical to avoid suppression of crack signals. Verify and maintain scanning speeds established on the calibration standard.**

(b) Scan the surface to be inspected. When the direction of cracking is known, scan perpendicular to the direction of the cracking. Re-nulling may be required on the component being inspected due to minor variations between the component and the material composition of the standard.

**CAUTION: When Teflon tape is applied to the probe tip to protect from wear and reduce probe drag, it shall be applied in a manner as not to affect the lateral spacing required to maintain sensitivity to cracks propagating from the fastener hole.**

(c) FLUSH FASTENERS - Scan around the entire diameter of the fastener twice. Position the probe's coil immediately

outside the edge of the fastener head. Maintaining a constant, yet minimal distance is required to maintain sensitivity to cracks propagating from the fastener hole. A circle template made of non-conductive material may be utilized for this to be achieved (Ref. Figure 216). Re-nulling may be required on the component being inspected, due to minor variations between the component and the material composition of the standard.

(d) PROTRUDING FASTENERS - Scan around the entire diameter of the fastener twice, positioning the probe's coil adjacent to, yet in contact with the side of the fastener. Using the fastener as a guide, maintain a positive pressure against the fastener head to ensure constant spacing for sensitivity to be maintained for detection of cracks protruding from the fastener head (Ref. Figure 217). Re-nulling may be required on the component being inspected, due to minor variations between the component and the material composition of the standard.

(e) Any vertical deflection that is distinguishable (separated) from the background noise and not caused by lift-off or part geometry shall warrant further examination and scanning of the area of interest.

(f) No cracks allowed. If any evidence of cracks or other discrepancies are found, such as small cracks starting from rivet holes; hairline cracks in spar caps, sheared or deformed rivets, contact Textron Aviation Technical Support for consultation.

(5) After completing the inspections replace the wing bolt cover.

(6) If any crack indications are noted during the inspection, contact Textron Aviation Technical Support for consultation.

**9. Outboard Wing - Main Spar Crack and Corrosion**

**WARNING: The entire upper and lower spar cap from the wing attach fitting to the wing tip must be inspected.**

**NOTE: Special emphasis should be placed on airplanes that have been operated and/or stored for extended periods in areas where geographical location and atmospheric conditions are conducive to corrosion.**

A. Inspection

Inspection of the upper and lower spar caps must be performed as described in the following Steps:

(1) Visually inspect the exterior surfaces of the upper and lower spar caps for any buildup of the whitish, salt-like nonmetallic substance indicative or corrosion. If any buildup of this substance is detected, the area should receive extra attention. Wax or paint that may be trapped between the edge of the skin and the exposed portion of the spar cap should not be interpreted as corrosion.

(2) Wash all exterior surfaces of the upper and lower spar caps by normal cleaning procedures.

(3) Visually inspect all exposed surfaces of the spar caps for paint blisters, raised areas and/or surface distortions and cracks in metal. The exposed surface of the spar cap is extruded flat. Any of the previously noted irregularities could indicate corrosion and must be considered suspect (Ref. Figure 208).

**NOTE: Areas of unevenness and/or raised areas on the spar caps may be detected by sliding the fingers over the surface, by moving a straightedge over the surface, or by sighting down the length of the spar cap.**

(4) If unusual conditions are noted which cannot be resolved locally, contact Textron Aviation Technical Support for consultation.

**10. Wing Bolt, Nut and Spar Fitting Inspection**

**WARNING: All eight wing bolts must be removed and each of the wing bolt fittings must be inspected. The wing bolts must be inspected or replaced as directed in Table 201.**

**WARNING: Render unserviceable all components removed in compliance with the time limitations.**

**WARNING: New wing attach components must be obtained only from Textron Aviation or a Textron Aviation-approved source.**

A. Prepare the Airplane for the Inspection Procedure.

**CAUTION: Do not scratch or scribe the fittings.**

(1) Before removing any of the wing attach bolts, ensure that the wing is properly supported in a manner which prevents wing shifting. Draw a line across each pair of fittings with a grease pencil to aid wing alignment, if required.

(2) If (while using hand pressure only) wing attach bolt binding occurs upon disengagement or reinstallation, support the outboard wing panel, loosen the remaining three bolts and reposition the wing to release binding of the bolt. Even though the lower forward wing bolts must be driven from the fittings with a pin, excessive force should not be required to remove these bolts.

(3) If the wing attach fittings are separated or repositioned during this procedure, the aluminum washers between each upper

wing and center section fittings must be replaced with new aluminum washers. New aluminum washers should not be required if the wing-attach bolts are removed one at a time.

**NOTE: Ensure that the radiused washers used at the wing-attach points have full radii with no sharp edges that could mark the attach fittings. Replace any washers which exhibit an incomplete radius or sharp edge.**

(4) Replace all placards which were removed after the WING FITTING INSPECTION and WING BOLT, NUT AND SPAR FITTING INSPECTION is completed.

B. Lower Forward Wing Fitting Inspection and Bolt Replacement Procedure. (Ref. Table 201, Index No. 7)

**NOTE: The bolt, washers and nut must be replaced with new components in accordance with the Component Replacement Schedule in Table 201 or anytime the bolt is removed from the fitting for any reason regardless of time in service.**

(1) Cut and remove the safety wire from the bolt head and nut.

(2) Remove the attaching bolts and clips from over the bolt head and nut.

(3) Hold the bolt head immobile and remove the nut.

**CAUTION: Exercise extreme care when driving the bolt and aligning pin out of the fittings. Use only the Textron Aviation approved aligning pin for bolt removal.**
**As the bolt is being driven from the fittings, periodically check the bolt head side of the fittings to ensure that the bushings in the bolt bore are not being driven out with the bolt.**

(4) Utilizing the Textron Aviation approved aligning pin (P/N 10996, available from Textron Aviation Authorized Outlets) and a rawhide mallet, carefully drive the bolt out of the fittings. When the bolt has been removed, drive the aligning pin out of the fittings with a flat end pin of a smaller diameter.

(5) Clean the fittings with solvent (2 or 3, Chart 208, 91-00-00).

(6) Utilizing a 10-power or stronger magnifying glass, visually inspect the visible surfaces of the fittings and bushings in the bolt bore for cracks, corrosion and mechanical damage.

**NOTE: If any of the conditions above are found, contact Textron Aviation Technical Support for consultation.**

(7) If the fitting surface and bolt bore is satisfactory, coat the exposed surface of the fittings with alodine (2, 3, 4, 5 or 6, Chart 203, 91-00-00). Allow the coating to dwell for approximately five minutes. After the dwell time has elapsed, wash the coated areas with water and blow dry. Do not wipe dry.

**NOTE: The bolt, washers and nut must be replaced with new components in accordance with the Component Replacement Schedule in Table 201 or anytime the bolt is removed from the fitting for any reason regardless of time in service.**

**NOTE: The requirement to treat the fittings with alodine is not applicable to Serial FA-231 and after and not applicable to any unlisted airplane which has had the 101-110084 spar installed.**

(8) Liberally lubricate the lower forward wing bolt and wing fitting with Ardrox AV 8 Corrosion Inhibiting Compound.(17, Chart 203, 91-00-00).

(9) With a rawhide mallet install a special aligning pin (P/N 10996 PIN or P/N 101-120125-1/D943) coated with corrosion preventive compound (7, Chart 203, 91-00-00) into the lower forward wing attach bolt hole from the forward side of the wing. Care should be exercised when driving the pin so the bolt bore is not damaged.

(10) Insert the lower forward wing attach bolt, with one AN960PD1416L washer and one NAS1515H14 nylon washer under the bolt head, into the forward side of the bolt hole and carefully drive it into the hole with a rawhide mallet, simultaneously driving out the aligning pin. The washers and bolt head must seat firmly against the surface of the fitting (Ref. Figure 210).

(11) Install one NAS1515H14 nylon washer under the nut and install the nut. Should the slot in the nut not align with the lockwire hole in the bolt, install one AN960PD-1416L washer between the nylon washer and the nut and torque the nut at 30 inch-pounds to 50 inch-pounds (Ref. Figure 210). The slot in the nut must align with the lockwire hole in the bolt after torquing. Safety the bolt and nut to the retainer clip with MS20995C41 safety wire.

C. Upper Forward, Upper and Lower Aft Wing Bolt, Nut and Fitting Inspection

**CAUTION: These inspections should be done one attach-point at a time with the bolt installed and correctly torqued before moving to the next location. When removing an upper forward or upper aft wing bolt, make sure the wing is supported in a manner which will prevent the possibility of any movement of the upper wing-attach fittings.**

(1) Remove the wing bolt covers and any decals which may be affixed to the fittings. Clean the accessible flat areas of the fittings with solvent (2 or 3, Chart 208, 91-00-00).

(2) Remove the wing bolt washers and nut and clean bolt bores and fitting recesses. Ensure that the radius on the outer circumference of the washer under the nut is adjacent to the fitting face and that the countersink in the washer under the bolt head is facing the bolt head. If a radius or countersink is not oriented as shown in the applicable illustration, contact Textron Aviation Technical Support. Refer to Figure 211,, Figure 212, and Figure 213 for proper washer orientation. If the washers are properly oriented, proceed with the inspection.

**NOTE: The barrel nut must be disassembled before inspection. This may be done by moving one of the roll pins flush with the inside of the cradle and removing the nut (Ref. Figure 209).**

(3) Eddy current inspect the exposed spar fittings, focusing extra attention at the washer-seat and bolt-bore area. If scoring, corrosion pitting, crack indications, or washer impressions are found in these areas, contact Textron Aviation Technical Support for consultation.

(a) Perform CALIBRATION (STANDARDIZATION) procedure (Ref. Chapter 20-00-00).

(b) Perform SURFACE INSPECTION WING SPAR FITTINGS procedure (Ref. Chapter 20-00-00).

(c) Perform INDICATION EVALUATION FOR SURFACE INSPECTION procedure (Ref. Chapter 20-00-00).

**NOTE: It is possible that certain small cracks may be removed from the feathered edge of the counterbore and from the back side of the depression (bathtub) area. However, Textron Aviation Technical Support should be consulted prior to initiation of any crack removal procedure.**

(4) If the bolts and nuts do not exceed their life limit as designated in Table 201, thoroughly clean the bolt, nut and washers with solvent (2 or 3, Chart 208, 91-00-00) and inspect for cracks and mechanical damage with a 10X or stronger magnifying glass. If mechanical damage or cracks are found, replace the affected component. Scratches and markings in the cadmium plating, and or localized deterioration of the cadmium plating is not reason to reject a bolt. The cadmium plating may be discolored and may have areas exhibiting a rubbed or polished appearance, usually resulting from the installation procedure. If mechanical damage or cracks are found, replace the affected component.

**NOTE: Make sure that washer P/N 95-110025-7 is used instead of P/N 95-110025-3 on airplanes affected by MTB-57-01.**

(5) Fluorescent liquid penetrant inspect each wing bolt and nut (as outlined in Chapter 20-00-00). If the bolts and nuts prove to be free of cracks and mechanical damage, they may be reused after cleaning.

## 11. Wing Lower Forward Spar Angle

A. Inspection

(1) Remove Lower Forward Wing Bolt Access Panels.

(2) Clean any dirt and grease from the Lower Forward Spar Angle with solvent (2 or 3, Chart 208, 91-00-00).

(3) For surface inspections calibrate, inspect and evaluate as follows (Ref. Figure 218):

(a) Perform CALIBRATION (STANDARDIZATION) procedure (Ref. Chapter 20-00-00).

(b) Perform GENERAL SURFACE INSPECTIONS procedure (Ref. Chapter 20-00-00).

(c) Perform INDICATION EVALUATION FOR SURFACE INSPECTION procedure (Ref. Chapter 20-00-00).

(4) If any cracks are indicated during the inspections, contact Textron Aviation Technical Support for consultation.

(5) Install the access panels that were removed in Step a.

## 12. Wing Bolt Maintenance

A. Check the Wing Bolt Torque.

(1) At the first scheduled normal airplane inspection (as designated by the applicable Super King Air Maintenance Manual) after the bolts have been loosened and retorqued or after initial installation, check the bolts for proper torque (Ref. Table 201).

**NOTE: It will not be necessary to recheck the torque of the shear bolt used at the lower forward attach point (clevis fitting).**

B. Apply Corrosion Preventive Compound to the Wing Bolts.

(1) Concurrent with the bolt torque check, and annually thereafter, inject corrosion preventive compound (12, Chart 203, 91-00-00) into the barrel nut lubrication fittings with a 314150 grease nozzle (P/N of Alemite Tool, a division of Stewart Warner)

and a good quality grease gun. Inject the compound until one of the following conditions are met:

- Corrosion preventive compound emerges from between the two portions of the barrel nut assembly.
- Corrosion preventive compound emerges from the locking portion of the barrel nut.
- The fitting will not accept any additional corrosion preventive compound after several actuations of the grease gun.

(2) Liberally lubricate the lower forward wing bolt and wing fitting with Ardrox AV 8 Corrosion Inhibiting Compound.(17, Chart 203, 91-00-00).

(3) Prior to installing the wing bolt covers, ensure that the drain holes in the upper fittings are unobstructed and can drain freely.

***Table 202. Wing Bolt Tools***

| Position | Bolt Part Number | Wrench Part Number | Nut Part Number | Nut Torque Adapter |
|---|---|---|---|---|
| Upper Forward | 81784-12-32 or VCC0025 | TS1176-6 | 80691CF-1216 (Barrel Nut) | None |
| Lower Forward | 130909B175 | 1 1/4-inch Box End Wrench | 130909N46 | 11001 |
| Upper and Lower Rear | 81786-10-20 or VCN0018 | TS1222-5 or 50-590012 | 81783-1018 | TS1176-11 |

***Table 203. Wing Bolt Torque Values***

| Wing Bolt Position | Torque Value |
|---|---|
| Upper Forward | 2380 to 2500 inch-pounds |
| Upper Aft | 1180 to 1300 inch-pounds |
| Lower Aft | 1180 to 1300 inch-pounds |

**13. Center Section Belly Skin Inspection (For Airplanes with Kit No. 101-4077 Installed)**

**NOTE: To inspect airplanes without Kit No. 101-4077 installed, go to CENTER SECTION BELLY SKIN INSPECTION (FOR AIRPLANES WITHOUT KIT No. 101-4077 INSTALLED).**

A. General Information and Limitations.

(1) Electrical Discharge Machining (EDM) is a non-conventional metal removal machining method that employs the use of an electrode to machine the desired shape into a workpiece under carefully controlled conditions. The EDM notch is a cut made by the electric discharge machining method to simulate a very small crack.

(2) This procedure uses an Olympus Nortec 600S. A 0.060 or 0.125 shielded high frequency pencil probe for scanning around fasteners is appropriate for the following procedure.

(3) The instrument settings in this procedure are meant as a guide for surface probe inspection. Minor adjustments may be necessary to optimize the set up; however, the sensitivity level shall be achieved.

(4) The operator must be adequately trained and be familiar with the equipment used before doing inspections on aircraft. For instructions on how to operate the eddy current instrument used, refer to the equipment manufactures operating manual.

(5) For parts inspected in the painted condition, calibration shall be done with the equivalent thickness of non-conductive shim.

(6) If non-conductive shims are required for lift-off compensation the shims shall be placed on the reference standard during phase adjustment, nulling and establishing sensitivity.

(7) Calibration should be verified at least every 30 minutes. If the original sensitivity requirements are not met following any calibration verification, all inspections done since the last validated calibration must be re-inspected.

B. Calibration

(1) Connect the cable and probe to the instrument, and select the instrument on. Apply Teflon tape to the probe, as required, to prevent wear and to reduce probe drag during scanning.

(2) Set the instrument to default by performing the following Steps:

(a) Select SETUP MENU.

(b) Select DEFAULT and push ENTER.

(c) Select LD DEFAULT and push ENTER.

(d) Turn the smartknob to highlight CONFIRM and push ENTER.

(3) Adjust the frequency to the frequency called out in the specific procedure. If no frequency is specified, adjust the frequency to 200 KHz.

(4) Adjust the instrument settings to those given in Table 202.

(5) Place the probe on the reference standard at least 0.25 inch away from the EDM notches and push the CONT softkey to set Null.

(6) Repeatedly place the probe on and off of the reference standard at least 0.25 inch away from the EDM notches and edges, to produce a lift-off curve. Using the ANGLE softkey, adjust the Phase Angle to produce a horizontal lift-off curve to the left of the dot null position.

(7) Place the probe on the reference standard at least 0.25 inch from the EDM notch and push the CONT softkey to set Null. Scan over 0.020 inch EDM notch. Adjust the V-GAIN and H-GAIN to achieve at a minimum, an 80% Full Screen Height (FSH) signal in the vertical direction, and 40% signal in the horizontal direction from the 0.020 inch EDM notch. Scan over the 0.010 inch and 0.005 inch depth EDM notches to verify that a minimum of 5% FSH response is achieved from the 0.005 inch depth notch and a 20% to 30% response from the 0.010 inch depth notch (Ref. Figure 214).

(8) **COATING LIFT-OFF COMPENSATION** - For inspections performed over painted surfaces, effects from lift-off caused by the paint thickness affect sensitivity and require compensation of the increased lift-off factor. To compensate, place the appropriate thickness of non-conductive material (plastic shims) between the probe and reference standard during the calibration process. To determine the appropriate thickness of non- conductive shim to be used during calibration, compare the horizontal position of the dot when placed on the reference standard to the position of the dot when placed on the surface to be inspected. The vertical position of the dot is not a concern, as the reference standard and the part under test may have different conductivity values. If the horizontal positions are within 30% Full Screen Width (FSW) then no compensation is required. If the two horizontal positions are further than 30% FSW apart, place shims of varying thickness between the probe and the reference standard until the two positions are within 30% FSW (Ref. Figure 215).

(9) If required, do the calibration again with the appropriate shims in place.

***Table 204. Initial Instrument Settings For The Olympus Nortec 600S***

| Soft Key | Description | Setting |
|---|---|---|
| FREQ | Frequency | 200 KHz |
| H-GAIN | Horizontal Gain | 65 |
| V-GAIN | Vertical Gain | 70 |
| ANGLE | Angle (Phase) | 70° |
| LPF | Low Pass Filter | 100 |
| HPF | High Pass Filter | OFF |
| CONT | Cont Null | OFF |
| SWEEP | Sweep | OFF |
| | Probe Drive | Mid |
| V-POS | Vertical Position | 10 |
| H-POS | Horizontal Position | 80 |