

**TITLE**

LANDING GEAR - INSPECTION / REPLACEMENT OF THE MAIN LANDING GEAR "A" FRAME ASSEMBLIES FOR FATIGUE CRACKS

**EFFECTIVITY**

**NOTE:** This Service Bulletin supersedes Mandatory Service Bulletin 2361, Revision III.

**MODEL**

Beech Model 76 Duchess

**SERIAL NUMBERS**

ME-1 thru ME-437

**REASON**

This Service Bulletin is being issued to inspect for fatigue cracks adjacent to the gussets for the torque arm of each main landing gear (MLG) "A" Frame. If cracks exist on any main landing gear "A" Frame and are not detected and/or corrective action is not taken, the main landing gear may collapse.

**DESCRIPTION**

This service document provides instructions that:

- Replaces the repetitive dye penetrant inspection, that was in Mandatory Service Bulletin 2361, Revision III. with a repetitive magnetic particle inspection for the "A" Frame as follows:
  - 105-810023-3, 105-810023-67, and 105-810023-75 (Left) "A" Frames.
  - 105-810023-4, 105-810023-68, and 105-810023-76 (Right) "A" Frames.
- Introduces two new "A" Frames 105-810023-0083 (Left) and 105-810023-0084 (Right). These redesigned "A" Frames are not subject to the repetitive magnetic particle inspections.

**NOTE:** The 105-810023-0083 (Left) and 105-810023-0084 (Right) "A" Frames will still have the normal inspection requirements found in the maintenance manual during the 100-hour or 12-Month (annual type) inspection intervals.

**MANDATORY****SB 32-4156****COMPLIANCE**

MANDATORY. This service bulletin must be accomplished as follows:

"A" Frame part numbers for Left or Right MLG	Initial Inspection	Recurring Inspection Interval
105-810023-3, 105-810023-4, 105-810023-67, 105-810023-68, 105-810023-75, 105-810023-76	Within the next 100 flight-hours, not to exceed the next 100-hour or 12-month (annual type) inspection, whichever occurs first.	100-hour or 12-month (annual type) inspection, whichever occurs first.
105-810023-0083 or 105-810023-0084	Resume regular scheduled landing gear inspection per Duchess 76 Maintenance Manual, Chapter 5 - Time Limits/Maintenance Checks	Regular scheduled landing gear inspection per Duchess 76 Maintenance Manual, Chapter 5 - Time Limits/Maintenance Checks
<p><b>NOTE:</b> A left or right MLG that has a 105-810023-3, 105-810023-4, 105-810023-67, 105-810023-68, 105-810023-75, or 105-810023-76 "A" Frame installed shall be subject to a repetitive Magnetic Particle Inspection per this Service Bulletin.</p> <p>A left or right MLG that has a 105-810023-0083 or 105-810023-0084 "A" Frame installed shall not be subject to a repetitive Magnetic Particle Inspection per this Service Bulletin.</p>		

A service bulletin published by Textron Aviation may be recorded as "completed" in an aircraft log only when the following requirements are satisfied:

- 1) The mechanic must complete all of the instructions in the service bulletin, including the intent therein.
- 2) The mechanic must correctly use and install all applicable parts referenced in the service bulletin. Only with written authorization from Textron Aviation can substitute parts or rebuilt parts be used to replace new parts.
- 3) The mechanic or airplane owner must use the technical data in the service bulletin only as approved and published.
- 4) The mechanic or airplane owner must apply the information in the service bulletin only to aircraft serial numbers identified in the *Effectivity* section of the bulletin.
- 5) The mechanic or airplane owner must use maintenance practices that are identified as acceptable standard practices in the aviation industry and governmental regulations.

No individual or corporate organization other than Textron Aviation is authorized to make or apply any changes to a Textron Aviation-issued service bulletin, service letter, or flight manual supplement without prior written consent from Textron Aviation.

Textron Aviation is not responsible for the quality of maintenance performed to comply with this document, unless the maintenance is accomplished at a Textron Aviation-Owned and Textron Aviation-Authorized Service Center.

**APPROVAL**

Textron Aviation received FAA approval for the technical data in this publication that changes the airplane type design.

Prior to accomplishment, owners/operators of airplanes registered in countries other than the United States shall consult with their local Aviation Regulatory Authority.

**MANDATORY****SB 32-4156****CONSUMABLE MATERIAL**

You must use the consumable materials that follow, or their equivalent, to complete this service document.

NAME	NUMBER	MANUFACTURER	USE
Adhesive, Two-Part	Uralane 5776A/B PT	Commercially available	Bonding rub strip to MLG "A" Frame.
Cable Ties	MS3367-1-9	Commercially available	Installation of rub strips.
Isopropyl Alcohol		Commercially Available	To clean metal surfaces.
Paint, Epoxy (Top Coat)	Matterhorn White No. 54-19232	Commercially available	Top coat for MLG "A" Frame.
Pretreatment, Corrosion Preventive (Wash Primer)	MIL-C-10578, Type III or equivalent	Commercially available	Pretreatment (wash primer) of bare metal to remove oxidation and as metal conditioner on MLG "A" Frame.
Primer, Epoxy Polyamide (Primer)	K000479 (1 Gal Kit)	Textron Aviation Parts Distribution 7121 Southwest Boulevard Wichita, KS 67215	Primer coat for MLG "A" Frame.

**TOOLING**

NAME	NUMBER	MANUFACTURER	USE
Pitot Static Tester		Commercially available	To provide airspeed indication for landing gear functional test.

**WEIGHT AND BALANCE INFORMATION**

<b>MODEL</b>	Model 76 with 105-810023-0083 and 105-810023-0084 Installed
<b>WEIGHT CHANGE</b>	+ 3.2 pounds
<b>RESULTANT MOMENT</b>	+ 400 inch-pounds

**REFERENCES**

- FAA Airworthiness Directive 97-06-10
- Mandatory Service Bulletin 2361, Rev. III
- Beechcraft Duchess 76 Maintenance Manual, P/N 105-590000-7 or later revision
- ASTM E1444 Standard Practice for Magnetic Partical Testing
- MIL-STD-1504C Abrasive Blasting
- MIL-P-85891 Plastic Media, For Removal Of Organic Coatings
- Aerospace Industries Association NAS410 Nondestructive Test Personnel Certification
- ISO 9712 Non-Destructive Testing-Qualification and Certification of NDT Personnel

**PUBLICATIONS AFFECTED**

None

## ACCOMPLISHMENT INSTRUCTIONS

1. Prepare the airplane for maintenance.
  - A. Make sure that the airplane is electrically grounded.
  - B. Make sure that all switches are in the OFF/NORM position.
  - C. Disconnect electrical power from the airplane.
    - (1) Disconnect the airplane battery.
    - (2) Disconnect external electrical power.
  - D. Attach maintenance warning tags to the battery and external power receptacle that have "**DO NOT CONNECT ELECTRICAL POWER - MAINTENANCE IN PROGRESS**" written on them.

**NOTE:** Follow all supplemental warnings, cautions, and notes in addition to referenced procedures in the Model 76 Maintenance Manual while completing the steps that follow.

2. Lift the airplane with jacks as follows: (Refer to the Model 76 Maintenance Manual, Chapter 7-00-00, Jacking.)

**WARNING:** To prevent injury to personnel, do not let personnel, other than as necessary to operate the jacks, below the airplane when you lift the airplane.

**CAUTION:** Jacking of an airplane for the purpose of landing gear operation, inspection, servicing or maintenance should be accomplished within an enclosed building or hanger. In the interest of safety, should it become necessary to jack the airplane in the open, wind velocity in any direction and terrain variations must be compensated for prior to jacking the airplane.

**CAUTION:** When placed on jacks, the airplane is nose heavy. Tail stands must weigh enough to keep the tail down under all conditions. Additionally, the tail stand must be strong enough to support any weight which might be transferred to the tailcone area during maintenance, creating a tail heavy condition.

**NOTE:** Make sure the jack cylinders are vertical at the start of the jacking operation to prevent side loads.

**NOTE:** Raise tires no more than necessary for the maintenance being performed.

**NOTE:** The tail stand or anchor should be at least 450 pounds.

- A. Place jacks under the jack pads.
  - B. Simultaneously raise the jacks and keep airplane level until the main tires are clear of the ground.
  - C. Install a weighted tail stand.
  - D. Simultaneously continue to raise the jacks and keep airplane level until all tires are clear of the ground.
3. Remove the left and right MLG side brace assemblies. (Refer to the Model 76 Maintenance Manual, Chapter 32-10-00, Main Landing Gear Side Brace Assembly Removal.)

**CAUTION:** Use caution not to damage the "A" Frame.
4. Remove the lower brace from each "A" Frame. (For an illustrative view, refer to the Model 76 Maintenance Manual, Chapter 32-10-00, Figure 2, Main Landing Gear Assembly.)
  - A. Remove the nuts, washers, bushings and bolts. Discard the nuts and keep the washers, bushings and bolts.
  - B. Remove the lower brace and spring assembly from each upper "A" Frame and keep.
5. Remove the rub strips from each "A" Frame as follows:
  - A. Identify and record the location of the rub strip on each "A" Frame.

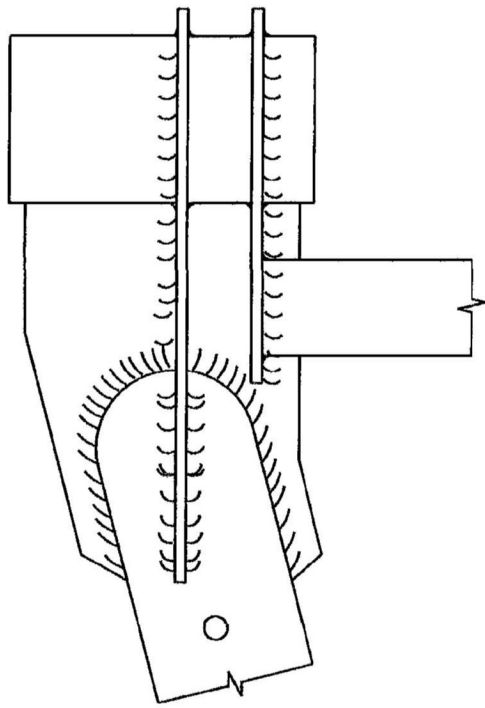
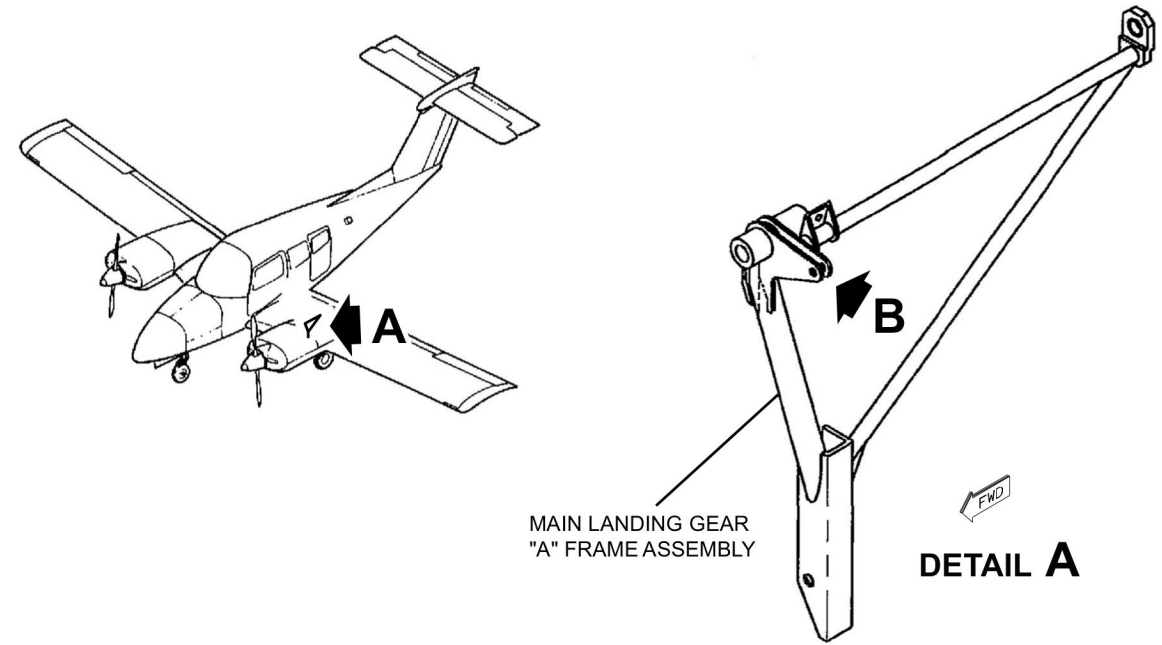
- B. Remove the cable ties.
- C. Remove the rub strips and discard.
- NOTE:** If removal of the rub strip adhesive before abrasive blast is preferred, it can be mechanically removed by sanding.
6. Remove the paint from each MLG "A" Frame as follows:
- A. Use a clean cloths wet with isopropyl alcohol to remove all oil and grease from the "A" Frame before media blast.
- CAUTION:** Do not use chemical paint removal methods on the MLG "A" Frame. Chemical paint removers can smear the paint and hide cracks.
- B. Remove the paint coating with plastic bead media in accordance with plastic media blasting specifications in MIL-STD-1504C. (Refer to MIL-STD-1504C, Abrasive Blasting.)
- NOTE:** Plastic Beads must meet specifications of MIL-P-85891, Size 13 or 10 and air pressure set to a range of 40 to 60 PSI. The air pressure should be adjusted starting with 40 PSI and complete a small test. Adjust the air pressure in increments of 5 PSI until the test results in complete paint removal. This will result in the lowest possible air pressure being used while providing complete paint removal without abrasive wear on the base material.
7. (Refer to Figure 1, Detail B.) Do a magnetic particle inspection of the welds common to the weld cluster or machined fitting shown in Figure 1, Detail B using the fluorescent, wet continuous method.
- NDI personnel must be certified to a minimum of Level 2 in the magnetic particle method in accordance with a written practice that meets the requirements of AIA NAS410, ISO 9712 or similar.
  - The inspection must comply with the requirements of ASTM E1444.
  - The inspection may be carried out using either a wet horizontal bench or a magnetic yoke.
  - If cracks were to exist, it is anticipated that they will follow the weld beads and be located in, or near the toe of the welds.
- NOTE:** The 105-810023-3, 105-810023-67, or 105-810023-75 (Left), 105-810023-4, 105-810023-68, or 105-810023-76 (Right) "A" Frame are acceptable for continued use if cracks are not discovered with a magnetic particle inspection.
- NOTE:** To remove the requirements for the recurring magnetic particle inspection, the existing "A" Frame can be replaced with new 105-810023-0083 (Left) and 105-810023-0084 (Right) "A" Frame.
- A. (If a crack is found.) Replace the "A" Frame.
- (1) Identify the cracked "A" Frame with an Unserviceable Tag and destroy the cracked "A" Frame by cutting in half.
  - (2) Go to Step 8.
- B. (If a crack is not found.) Reinstall the "A" Frame, go to Step 8.
8. Paint the "A" Frame as follows:
- NOTE:** If installing a new "A" Frame that is already painted, the painting procedures can be skipped and continue with assembly and installation starting with Step 9.
- A. Prepare the surface with a media blast with aluminum oxide media that meets media blasting specifications in MIL-STD-1504C. (Refer to MIL-STD-1504C, Abrasive Blasting.)
- B. Blow off all media blast dust with clean dry compressed air.
- C. Wipe the surface with clean wiping cloths wet with isopropyl alcohol.
- (1) Let the parts dry.
- D. Apply pretreatment (wash) primer for urethane paint following the manufacture directions for application and dry time.

- E. Apply a urethane primer (primer coat) following the manufacture directions for application and dry time.
  - F. Apply top coat following the manufacture directions for application and dry time.
9. Install the lower brace, that was removed in Step 4.B., on each "A" Frame. (Refer to the Model 76 Maintenance Manual, Chapter 32, Landing Gear - Figure 2 Main Landing Gear Assembly.)
- A. Align the spring assembly and lower brace with the upper "A" Frame with the kept bushings and washers.
  - B. Install the kept bolts, washers, bushings and new MS21245-L7 Nuts and torque 270 to 300 inch-pounds.
10. Complete the side brace inspection for each side brace assembly. (Refer to the Model 76 Maintenance Manual, Chapter 32, Landing Gear - Main Landing Gear Side Brace Inspection.)
11. Install a new 105-810023-39 Rub Strips (nylon sheet) to match the location of the removed rub strips as follows:
- NOTE:** The purpose of the nylon sheet, which is wrapped around the A-Frame, is to be a rub strip for the landing gear downspring when the landing gear is in the UP position.
- A. Identify the location for the rub strips on each "A" Frame with the recorded location from Step 5.A.
  - B. (If the surface is dirty.) Clean the surface of the "A" Frame with mild soap and water and dry with a lint free cloth.
  - C. Wipe the surface of the "A" Frame with a clean lint free cloth dampened with isopropyl alcohol.
    - (1) Dry the surface of the "A" Frame with a clean lint free cloth.
  - D. Mix and apply Uralane 5776-A/B Adhesive to the mating surfaces in accordance with adhesive manufacturer's instructions.
  - E. Position the nylon sheet at the identified location on the "A" Frame.
  - F. Attach three MS3367-1-9 Cable Ties and position so the locking portion of the cable tie is to the inside of the "A" Frame so not to interfere with the down spring.
    - (1) Let the Uralane 5776-A/B Adhesive fully cure according to the manufactures instructions.
12. Install the MLG "A" Frame. (Refer to the Model 76 Maintenance Manual, Chapter 32, Landing Gear - Main Landing Gear Side Brace Assembly Installation, Steps A thru O.)
- CAUTION:** Use caution not to damage the "A" Frame.
- A. Remove maintenance warning tags and connect airplane battery and external electrical power as necessary to complete the main landing gear operational checks and rigging.
- NOTE:** The tail stand will be removed and the airplane will be removed from jacks after the operational checks are complete.
13. Do a landing gear extension and retraction check as follows:
- A. Install a test airspeed indicator at the pitot tube.

**NOTE:** It is acceptable to use the airplanes airspeed indicator if a calibrated test airspeed indicator is not available.
  - B. Install a pitot static tester to the pitot tube.
  - C. Apply pressure to the pitot tube until the airspeed indicator reads 70-80 Knots then close the vent valve to keep reading.
  - D. Turn on the battery switch.

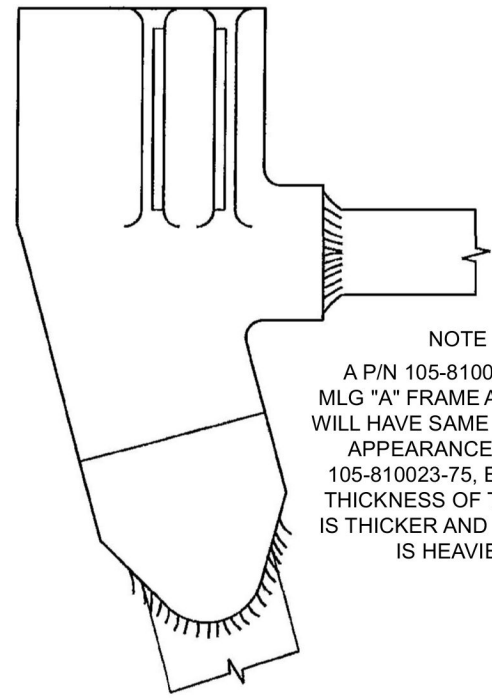
- E. Cycle the landing gear through extension and retraction as necessary to make sure all adjustments have been made.
    - (1) Check for unusual noises and evidence of binding during gear operation and correct as necessary.
  - F. Put the landing gear in the retracted position.
  - G. Disengage the circuit breaker for the landing gear motor.
  - H. Put the landing gear handle to the DOWN position.
  - I. Put the landing gear emergency extension valve to the open position.
  - J. Make sure the landing gear extends to the down and locked position.
  - K. Make sure the three green landing gear down and locked lights are on.
  - L. Close the landing gear emergency extension valve.
  - M. Reset the circuit breaker for the landing gear motor.
14. Make sure the landing gear is in the down and locked position.
15. Turn off airplane electrical power and remove external electrical power.
16. Lower the airplane as follows: (Refer to the Model 76 Maintenance Manual, Chapter 7, Lifting and Shoring - Jacking.)
- WARNING:** To prevent injury to personnel, do not let personnel, other than as necessary to operate the jacks, below the airplane when the airplane is lowered.
- A. Remove all equipment from below the airplane.
  - B. Simultaneously lower the jacks and keep airplane level until the nose tire touches the ground and the weighted tail stand is no longer loaded.
  - C. Remove the weighted tail stand.
  - D. Simultaneously lower the jacks and keep airplane level until the weight of the airplane is fully on all the landing gear.
  - E. Remove the jacks.
17. Make an entry in the airplane logbook that states compliance and method of compliance with this service document.

E69763



ORIGINAL/EARLIER REPLACEMENT  
WELD CLUSTER FITTING

P/N 105-810023-3 SHOWN,  
P/N 105-810023-4 OPPOSITE



DETAIL B

MACHINED FITTING

NOTE  
 A P/N 105-810023-0083  
 MLG "A" FRAME ASSEMBLY  
 WILL HAVE SAME OUTWARD  
 APPEARANCE AS P/N  
 105-810023-75, BUT WALL  
 THICKNESS OF THE TUBE  
 IS THICKER AND THE PART  
 IS HEAVIER.

P/N 105-810023-75 SHOWN, -76 OPPOSITE  
P/N 105-810023-0083 SIMILAR, -0084 OPPOSITE

Figure 1. Main Landing Gear "A" Frame (Sheet 1)



**MATERIAL INFORMATION**

Order the parts below to install this modification.

<b>NEW P/N</b>	<b>QUANTITY</b>	<b>KEY WORD</b>	<b>OLD P/N</b>	<b>INSTRUCTIONS/ DISPOSITION</b>
105-810023-0083	1	Left "A" Frame	105-810023-3 or 105-810023-67 or 105-810023-75	If Replacing Discard Old, Install New
105-810023-0084	1	Right "A" Frame	105-810023-4 or 105-810023-68 or 105-810023-76	If Replacing Discard Old, Install New
105-810023-39	2	Rub Strip (Nylon Sheet)	Same	Discard Old, Install New
MS21245-L7	2	Nut, Lock	Same	Discard Old, Install New



**TITLE**

LANDING GEAR - INSPECTION / REPLACEMENT OF THE MAIN LANDING GEAR "A" FRAME ASSEMBLIES FOR FATIGUE CRACKS

**TO:**

Beechcraft Model 76 Duchess Owner

**REASON**

This Service Bulletin is being issued to inspect for fatigue cracks adjacent to the gussets for the torque arm of each main landing gear (MLG) "A" Frame. If cracks exist on any main landing gear "A" Frame and are not detected and/or corrective action is not taken, the main landing gear may collapse.

**COMPLIANCE**

MANDATORY. This service bulletin must be accomplished as follows:

"A" Frame part numbers for Left or Right MLG	Initial Inspection	Recurring Inspection Interval
105-810023-3, 105-810023-4, 105-810023-67, 105-810023-68, 105-810023-75, 105-810023-76	Within the next 100 flight-hours, not to exceed the next 100-hour or 12-month (annual type) inspection, whichever occurs first.	100-hour or 12-month (annual type) inspection, whichever occurs first.
105-810023-0083 or 105-810023-0084	Resume regular scheduled landing gear inspection per Duchess 76 Maintenance Manual, Chapter 5 - Time Limits/Maintenance Checks	Regular scheduled landing gear inspection per Duchess 76 Maintenance Manual, Chapter 5 - Time Limits/Maintenance Checks
<p><b>NOTE:</b> A left or right MLG that has a 105-810023-3, 105-810023-4, 105-810023-67, 105-810023-68, 105-810023-75, or 105-810023-76 "A" Frame installed shall be subject to a repetitive Magnetic Particle Inspection per this Service Bulletin.</p> <p>A left or right MLG that has a 105-810023-0083 or 105-810023-0084 "A" Frame installed shall not be subject to a repetitive Magnetic Particle Inspection per this Service Bulletin.</p>		

**LABOR HOURS**

For planning purposes only:

WORK PHASE	LABOR-HOURS
Initial Inspection	1.0
Test and Inspection	0.50
"A" Frame Assembly Replacement	4.0

May 3, 2019

SB 32-4156  
Page 1 of 2

Textron Aviation Customer Service, P.O. Box 7706, Wichita, KS 67277, U.S.A. 1-316-517-5800

This document contains technical data and is subject to U.S. export regulations. This information has been exported from the United States in accordance with export administration regulations. Diversion contrary to U.S. law is prohibited. ECCN: 9E991

**MATERIAL AVAILABILITY**

PART NUMBER	AVAILABILITY	COST
105-810023-0083	*	*
105-810023-0084	*	*
105-810023-39	*	*
MS21245-L7	*	*

\* Please contact a Textron Aviation Authorized Service Facility for current cost and availability of parts listed in this service document.

Based on availability and lead times, parts may require advanced scheduling.

**WARRANTY**

None

**NOTE:** As a convenience, service documents are now available online to all our customers through a simple, free-of-charge registration process. If you would like to sign up, please visit the "Customer Access" link at [www.txtavsupport.com](http://www.txtavsupport.com) to register.