

MAULE AEROSPACE TECHNOLOGY, INC.  
 MAINTENANCE MANUAL  
 FOR *M-4-210/C*

**INSPECTION GUIDES**

At 25 Hour Total Time, perform 50 Hour Inspection as described below:

At 50 Hour Total Time and every 50 hours thereafter:

**A. POWER PLANT**

|  | MECH | INSP |
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| 1. Perform appropriate inspection as called for in the engine manufacturer's Operator's Manual.  |      |      |
| 2. Perform appropriate inspection as called for in the propeller manufacturer's Installation, Operation and Service Manual.              |      |      |
| 3. Remove the outer muffs from the mufflers and inspect the mufflers and tubes for cracks. Inspect muffs for cracks before reinstalling. |      |      |
| 4. Inspect gascolator, clean if necessary.   |      |      |
| 5. Inspect engine controls for security and proper operation.  |      |      |
| 6. Clean or replace air filter.  |      |      |
| 7. Inspect all engine, engine mount attach bolts.  |      |      |
| 8. Inspect all engine fuel and oil lines for general condition and security.   |      |      |
| 9. Check all engine compartment electrical connections and wires for security and chafing.   |      |      |

**B. AIRCRAFT**

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| 1. Check battery for general condition and electrolyte level, (in wet cell batteries only).  |  |  |
| 2. Check all main electrical connections.  |  |  |
| 3. Check fluid level in brake reservoirs.  |  |  |
| 4. Check engine mount for security and cracks.   |  |  |
| 5. Check the entire fuselage, tail surfaces, and wings for cracks, security of fairings and general condition.   |  |  |
| CAUTION: If airplane is subject to excessive stress, i.e., heavy loads, adverse wind conditions, rough landings, etc., take special care in examining wing skins for any cracks. If any are found, repair before further flight in accordance with AC 43:13 and factory drawings. (Do not replace any countersunk rivets with buttonhead rivets in wing because it is not approved.) |  |  |
| 6. Check the aileron and flap skins for cracks.  |  |  |
| 7. Check the security, operation, and general condition of all control surfaces.   |  |  |



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| 8. Check main landing gear oleo struts for oil leaks.   |      |      |
| 9. Drain sumps of fuel tanks.   |      |      |
| CAUTION: Quick drains are required in all fuel tanks and if not installed, refer to Maule Service Letter No. 32 and Service Bulletin No. 5.   |      |      |
| 10. Check general condition of Maule tailwheel, leaf springs and spring attachment. Leaf springs should have 45° angle with no weight on the wheel. Check all bolts and nuts holding the tail springs to the fuselage. Tighten nuts, if needed, so that there is no play or side movement in the springs or their attachment. |      |      |
| 11. Check tires for inflation and cuts.   |      |      |

**At 100 Hours Total Time and every 100 Hours thereafter, perform the 50 hour inspection plus the following:**

**A. POWER PLANT**

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| 1. Perform appropriate inspection as called for in the engine manufacturer's Operator's Manual.   |  |  |
| 2. Perform appropriate inspection as called for in the propeller manufacturer's Installation, Operation and Service Manual.   |  |  |
| 3. Clean the engine with any good engine cleaner (Gunk, etc.) Be sure to protect magneto from getting wet.  |  |  |
| 4. Examine baffles and baffle extensions for security and cracking.   |  |  |
| 5. Clean gascolator screen.   |  |  |
| 6. Re-torque bolts attaching engine mount-to-fuselage, engine-to-engine mount. Visually inspect mount structure for condition. See "Engine Mount" under "Power Plant System". |  |  |
| 7. Inspect induction system and air box for cracks and security.  |  |  |

**B. AIRCRAFT**

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| 1. Remove right and left kick panels in cockpit, windshield side post covers and panels below seat fronts. Examine rudder cables (located behind kick panels) and attaching clamps, bolts and nuts for security and general condition. |  |  |
| CAUTION: If cable guide tubes are not installed and if backside of kick panel shows evidence of rudder cable rub and tape has not been placed, comply with Maule SB#14 and #17.  |  |  |
| 2. Examine all front cockpit electrical connections and wires, fuel lines and fittings, control cable attachments and pulleys for security, leaks, chafing, etc.   |  |  |



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| 3. Remove rear seat, rear floorboard and panel behind baggage compartment.  |      |      |
| 4. Remove front seats and front and center floorboards.   |      |      |
| 5. Inspect all control cables, pulleys, fairings and electrical connections and wires for security and chafing.   |      |      |
| 6. Open zippers in headliner and inspect all control cables, pulleys, fairleads and electrical connections and wires for security and chafing.  |      |      |
| 7. Remove wing root fairings and inspect control cables, fairleads, fuel lines and connections, and electrical wires and connections for security, chafing, and leaks.  |      |      |
| <p>CAUTION: If a wing has been removed and reinstalled, or a new wing installed, visually inspect the routing of aileron cables through the inspection hole cover located on underside of wing, aft of rear spar and outboard of wing strut attach brackets. Ascertain that cables are not over the strut attach bracket and that they are properly routed through the fairleads and around the pulleys.</p>  |      |      |
| 8. Remove wing strut fairings, top and bottom, and inspect attaching fittings and bolts for security, corrosion, and cracks. Carefully inspect both sides of lift struts for abrasion, corrosion, pinholes, and punctures. Any paint loss or minor corrosion should be sanded down to bare metal with fine sandpaper and metal primer should be applied. After the primer is dried, a finish coat of the desired color may be added. Powder coating is recommended if complete strut is being refinished.   |      |      |
| <p>If powder coating <u>exterior</u> of sealed strut assembly, remove plug from lower end <u>before</u> painting. Oil-coat <u>internal</u> walls of strut as follows (to be done after painting only): Inject into strut approximately one quart of Valoil or Lionoil Multi-purpose L-1, Linseed Oil, Paralketone, LPS-3, Randolph Tube Oil No. 315, Tubeseal (Lineoil) or any other preservative oil conforming to Federal Spec. TT-S-176D, Mil-C-82309E, Type II or Mil-C-6708, Type I. Reinstall plug and slosh oil until interior of strut is thoroughly coated. Remove plug and drain oil from strut. Reinstall plug. Optional: pressure test to 4 psi +/-1 for leaks using soap solution.</p> |      |      |
| <p>WARNING: Any unrepairable dents or punctures in strut are cause for replacement of the strut.</p>  |      |      |
| <p>CAUTION: If aircraft has original <u>unsealed</u> struts, comply with Maule Service Bulletin No. 11 (AD# 98-15-18) as required. (New sealed struts are identified by two weld spots located at upper end. Removal of the upper cuff is needed to locate the weld spots).</p>   |      |      |
| <p>CAUTION: Item (a)(4) of AD# 98-15-18 is very misleading as Maule <u>never</u> drills holes in struts to attach cuffs, door clips or any hardware and it is illegal to do so since there are no approved holes in the wing struts under the TC data. If aircraft has a modification added requiring a drilled hole in strut under a #337, refer to AD for inspection requirements at the 24-month intervals. Also, inspect the area around the holes(s) frequently for corrosion or cracking (ref. SL#58).</p>  |      |      |
| 9. Remove wheels and inspect wheels, tires, brake disc, bearings, brake lines and brake pad for wear, cuts, chafing, leaks and general condition. Repack wheel bearings.  |      |      |



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| 10. Remove landing gear top fairings and inspect attaching fittings and bolts for security, corrosion, and cracks and inspect brake hose for security, chafing and leaks. Check oleo attach bolts for bending or shearing.   |      |      |
| 11. The oleo springs occasionally become overstressed and weak due to hard usage, and if so should be replaced. This can usually be detected if the airplane sits wing low on a level surface or if the wheel camber is negative.  |      |      |
| CAUTION: Check fluid level in the landing gear oleo struts. Fill to overflowing (no air).  |      |      |
| CAUTION: Use Steps 10 and 11, above as a guide for inspection after an unusually hard landing or any time there is concern about the condition of the main landing gears or their attachments.   |      |      |
| 12. Remove all inspection covers/plates and inspect all visible control cables, pulleys, bellcranks, electrical wires and connections, fuel lines and fittings, nuts, bolts, etc. for security, chafing, leaks, etc.   |      |      |
| NOTE: Check top side of rear elevator horn and cable and bottom side of forward elevator horn and cable if yellow color-coding paint is visible. If missing, paint per Maule Service Bulletin No. 30.  |      |      |
| 13. CAUTION: At inspection hole in tail, visually check the pivoting action at the control cable attachment points over the <u>full</u> range of rudder and elevator travel. This action should be such that there are no bending loads imparted to the turnbuckles (which are designed for straight tension load only).   |      |      |
| NOTE: Any binding which causes bending of the turnbuckles should be removed. Any cable attachment parts, which display appreciable corrosion, must be replaced before further flight.  |      |      |
| NOTE: Pivot points must be cleaned and lubricated with any lightweight lubricating oil. Following lubrication, the cable attachments, including the turnbuckles, must be heavily coated with a good preservative such as: Black Bear Paralketone Preventative/Black Bear Co./Long Island City, NY. (preferred) or LPS 3, Heavy Duty Rust Inhibitor/LPS Laboratories, Inc./Tucker, GA |      |      |
| NOTE: Larger stainless steel turnbuckles and corrosion resistant steel fasteners for the elevator cables are approved and recommended for airplanes operating in a potentially corrosive environment.  |      |      |
| CAUTION - Before flight whenever elevator cables are reconnected or new cables installed: Always check operation of elevators after a cable reconnect by <u>pulling back</u> on the control wheel and ascertain that the elevators are in the <u>UP</u> position.  |      |      |
| 14. Lubricate all chains and points of rotation on sprockets, pulleys and bellcranks.  |      |      |
| 15. Inspect and lubricate all control surface hinges and control horn connections.   |      |      |
| 16. Lubricate door hinges and latches and seat tracks.   |      |      |
| CAUTION: Carefully inspect all door hinge bolts and nuts for condition and security. If door hinges are secured with elastic nuts, they must be replaced with castle nuts and cotter pins. Refer to Maule Service Letter No. 61.   |      |      |
| 17. Lubricate rudder pedals and rudder bar points of rotation.   |      |      |
| 18. Check control rigging and cable tensions.  |      |      |
| 19. Check and clean vacuum system regulator valve filter and intake filter.  |      |      |



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| 20. Check the pitot static system for leaks.  |      |      |
| 21. Inspect the following components of the ME406/406HM ELT:  |      |      |
| a. (ELT unit and mount) for proper installation and insecure mounting.  |      |      |
| b. Wiring and conduits – for improper routing, insecure mounting, and obvious defects.  |      |      |
| c. Bonding and shielding – for improper installation and poor condition.  |      |      |
| d. Antenna, including trailing antenna – for poor condition, insecure mounting, and improper operation.                                     |      |      |
| e. Verify the battery expiration date. See below for more information concerning ELT Battery.   |      |      |
| 23. Ensure that all applicable Airworthiness Directives and Maule Service Letters and Bulletins that are mandatory have been complied with. |      |      |

**Periodic Maintenance for ME406/406HM ELT for the US**

In the United States, minimum maintenance requirements for ELTs are stated in FAR 91.207 paragraph (d):

(d) Each emergency locator transmitter required by paragraph (a) of this section must be inspected within 12 calendar months after the last inspection for

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|--|--|--|
| 1) Proper installation   |  |  |
| 2) Battery corrosion   |  |  |
| 3) Operation of the controls and crash sensor                    |  |  |
| 4) The presence of a sufficient signal radiated from its antenna |  |  |

NOTE: All references to maintenance requirements for the United States shall also apply to all ELT users outside of the United States unless otherwise required by the installer/aircraft maintenance procedures or the relevant national regulations.

ELT manufacturer suggests testing of the ELT every 1 to 2 months. This provides an indication of the integrity of the ELT and antenna system. If performed at this rate, the accumulated operating time will not reduce the 5-year life rating of the battery pack.

**ELT Battery removal:**

CAUTION: The battery pack contains electrostatic sensitive parts. Take ESD precautions before handling. Damage may happen to the exposed electric parts and prevent correct operation of the ELT. Refer to ELT Description, Operation, Installation and Maintenance Manual p/n 570-1600, Rev. E or later, Para. 5.1 for methods of preventing an EletrStatic Discharge

- 1) Remove the 8 securing screws from the battery-side cover. Battery pack is identified by the embossed text: "BATTERY ACCESS ON THIS SIDE".



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- 2) Carefully lift the battery cover (battery pack) away from the ELT and unplug the flex-cable connected to the pack. Do not pull on the flexible portion of the cable - use the rigid section of the flex circuit at the connector as a handle.
- 3) Inspect the battery pack and ELT chassis. The battery cells, components and connectors should be free of corrosion. Inspect flex-circuit for broken connections or damage. Ensure the battery housing is free of cracks or other visible damage.
- 4) Verify the battery expiration date. If the battery pack has not expired it may be reinstalled. The battery pack must be replaced with a new one:
  - After use in an emergency.
  - When the transmitter has been in use for more than 1 cumulative hour; (7 flash error)
  - After an inadvertent activation of unknown duration.
  - On or before the battery replacement (expiration) date.
  - There is any evidence of corrosion or leakage of any cell or on the small interface board and connector.

ELT Battery replacement:

- 1) If replacing the battery pack, order replacement kit 455-0012 which contains the battery pack (452-6499), replacement gasket, hardware and labels. A spare label showing the expiration date is included in the replacement kit. This label should be mounted in the same location as the former expiration date label.
- 2) Lay the battery pack on the work surface with the batteries facing up. Install a replacement seal in the slot along the perimeter of the housing. Leaving the battery as it is, position the ELT over the battery pack with one hand and plug the flex-cable connector into the battery assembly using the other. The cable should not be twisted and the connector should 'click' into place.

Note: The battery connector is keyed to prevent incorrect installation.