## MARTIN

**47–47–5 Martin** (Was Service Note 1 of AD–795–1.) Applies to Model 202 Aircraft.

The Stewart-Warner 921–B heaters in the cabin heating and wing thermal deicing systems shall be inspected in accordance with the following: Any heaters indicating impending failure as a result of these inspections shall be replaced immediately:

1. Inspect combustion chamber and heat exchanger end plates on each end of the cabin heaters for signs of cracks at each 30 hours of airplane operation. For wing heaters this inspection should be conducted at each 60 hours of airplane operation.

2. Remove cabin heater for complete inspection and pressure test every 300 hours of airplane operation. In the case of wing heaters this inspection should be conducted at not less than every 600 hours of airplane operation.

3. Item 2. is to be repeated every 100 hours of airplane operation after the first 300-hour inspection for cabin heaters and every 200 hours of operation after the first 600-hour inspection in the case of wing heaters.

NOTE: The above inspection periods may be varied within reasonable limits to suit the normal inspection periods of scheduled air carrier operators at the discretion of the assigned CAA Maintenance Inspector. If heater operating time is logged separately from airplane operating time, the inspections specified in 2. and 3. may be conducted on the basis of heater operating time except that, if this is done, both wing and cabin heaters should be inspected after the first 300 hours and each 100 hours thereafter.

**47–47–6 Martin** (Was Service Note 2 of AD–795–1.) Applies to All Model 202 Airplanes With HSP 23260 Propellers With YB2H17F3–48R Blades and Westinghouse D–30 Generators.

Compliance required at first major (long period) inspection and thereafter as specified below.

Carefully inspect the engine accessory section rear cover for signs of fatigue cracks particularly near the generator mounting pad at the first long period inspection and at every short period inspection thereafter until engine overhaul. After engine overhaul, the same inspection sequence shall be observed.

**48–15–1 Martin** Applies to Model 202 Aircraft Serial Numbers 9125 and 9159 Through 9167.

Compliance required by July 1, 1948.

As a fire protection measure, remove the existing corlac-type cable from the automatic pilot system and install shielded copper type cable.

(Martin Service Bulletin No. 9 dated December 30, 1947, covers this same subject.)

**48–15–2 Martin** Applies to Model 202 Aircraft.

Compliance required by July 1, 1948.

As a fire protection measure, replace the oil tank vent line (Martin P/N 2021A83751) running forward from the firewall, with fire resistant hose (Martin P/N 2021A84127 or equivalent).

(Martin Maintenance Note No. 28 dated January 22, 1948, covers this same subject.)

**48–17–2 Martin** Applies to Model 202 Aircraft Serial Numbers 9125 Through 9127; 9129 Through 9131; and 9158 Through 9167.

Compliance required by June 1, 1948.

To eliminate the fire hazard due to the insulation becoming saturated with hydraulic fluid, remove the fiberglas and rubberized hair and vinyl linings from both the forward and aft belly cargo compartments.

(Martin Service Bulletin No. 26 dated February 24, 1946, covers this subject.)

**48–22–1** *See* Pratt & Whitney Engines.

**48–24–1 Martin** Applies to Model 202 Aircraft Serial Numbers 9125 Through 9133, and 9158 Through 9167.

Compliance required by September 1, 1948.

Reinforce the Nos. 1 and 2 (top and middle) rudder hinge brackets and fairing in accordance with Martin Service Bulletin No. 31, dated March 22, 1948. Other reinforcements

shown to be equivalent to those covered in the Service Bulletin will also be acceptable.

**48–43–1 Martin** Applies to All Model 202 Aircraft.

To be accomplished as soon as practicable, but not later than January 1, 1949.

In order to eliminate excessive hydraulic fluid leakage, the following shall be accomplished:

1. Replace the system emergency and flap synchronizer bypass valves, P N 2021AS2089, (HydroAire No. 4010) with new valves P N 2021A82089–01 (HydroAire No. 4030). (This same subject is covered by GLM Maintenance Note No. 89.)

2. Replace the nose gear steer-valve P N 2021A80590, by new valve P N's 2021A23493, 2021A23508 or 2021A82131. (This same subject is covered by GLM Service Bulletin No. 46.)

3. Replace the two hydraulic test outlet dustcaps, P/N's 155–32–10 and 155–32–20, by new sealing caps, P N's 2021AS2133 and 2021A82134. (This same subject is covered by GLM Maintenance Note No. 88.)

4. Install safety wiring on main and landing gear pressure relief valves, Airex Nos. D–1068–3500 and 1265–900. (This same subject is covered by GLM Service Bulletin No. 67.)

5. Replace all 24ST aluminum alloy tubing used in 3,000 p.s.i. hydraulic pressure lines with new 61ST tubing. (This same subject is covered by GLM Service Bulletin No. 66.)

6. Install proper size AN 6246 leather backup rings at the accumulator and pressure ports of the system unloading valve, Vickers Model AA–34582, at the ports of the emergency brake Valve Bendix No. 146251 and at all other ports where a universal type fitting connection is used.

(GLM Standard Practice Sheet No. 35028 describes the correct method of assembling these connections.)

**48–50–3 Martin** Applies to Model 202 Aircraft.

Compliance required prior to reinstalling autopilot servo control systems.

Provide guards at joints of the stabilizer and wing flap torque tube systems in accordance with, or equivalent to, Martin Service Bulletin No. 72, dated October 22, 1948.

**49–15–2 Martin** Applies to All Model 202 Aircraft.

I. To be accomplished prior to return to service.

The wing splice attachment fitting, Station 187, must be inspected and reworked in accordance with the procedures outlined in Martin Service Bulletin No. 73, revised May 10, 1949, including the following amendments; Amendment 1, revised October 14, 1948; Amendment 2, revised May 10, 1949; Amendment 3, dated October 5, 1948; Amendment 4, dated October 15, 1948; Amendment 5, dated December 27, 1948; Amendment 6, dated May 10, 1949.

II. Compliance required as indicated.

The inspections outlined in the above Service Bulletin No. 73 must be conducted on all aircraft as follows:

1. Conduct the inspections outlined above in Service Bulletin 73 at maximum intervals of 900 hours and beginning with the last inspection conducted at approximately 1,500 hours total flight time, the succeeding intervals shall not exceed 600 hours.

2. Conduct the inspections of amendments 2 and 6 of Service Bulletin 73 between 1,500 and 1,700 total flight hours and at maximum intervals of 200 hours thereafter.

As an added precautionary measure do not operate the aircraft in excess of 90 percent of the Placard $V_{ne}$ and $V_{no}$ speeds as shown on Aircraft Specification A–795. In the event any turbulence is encountered in flight, immediately reduce the speed to a maximum of 170 m.p.h. and further reduce the speed to a maximum of 150 m.p.h. dependent upon the severity of the turbulence. (Suitable revisions to the operating manual will be provided.)

III. Compliance required as indicated.

1. Compliance with the Glenn L. Martin Schedule No. 202–87–1, calling for the return of 202 aircraft to the Glenn L. Martin Co. factory during 1949 for incorporation of modifications described in Martin Service Bulletin No. 87 is hereby directed.

2. After this has been accomplished on each airplane, items I and II are no longer applicable to that airplane.

This supersedes AD 49–9–1.

**50-41-2 Martin** Applies to All Model 202 Aircraft.

Compliance required not later than December 1, 1950.

To maintain a sufficient hydraulic reservoir capacity for the operation of the hydraulic units in the event of failure in the emergency brake system, install a hydraulic fuse (Simmonds P/N G45-6E-402-80) or equivalent, adjacent to the main line tee in the emergency brake system between the main line and the emergency brake accumulator.

(Martin 202 Service Bulletin No. 105 covers this same subject.)

When the manually operated charging valve is installed in accordance with AD 51-11-1, this hydraulic fuse is no longer required.

**50-48-1 Martin** Applies to All Models 202 and 202A Aircraft Except Serial Numbers 14081 and 14082.

Compliance required not later than February 1, 1951.

To reduce the possibility of nose gear centering cam failures which result in the inability to extend the nose landing gear, cut off the locking ears of the upper centering cam (P/N 202SD81541) and fair in this cut area to the cam contour.

(Martin 202/202A Service Bulletin No. 115 covers this same subject.)

**50-52-1** *See* Hamilton Standard Propellers.

**51-3-2 Martin** Applies to All Models 202 and 202A Aircraft.

Compliance required by April 1, 1951, on all aircraft having main landing gears with 4,000 hours service or more, and thereafter every 4,360 cycles of landing gear operation.

Due to reported occurrences of cracks, the main landing gear crankshafts (P/N 202-SD82019 and 202SD82021) should be replaced with new crankshafts bearing the same part numbers and having a ground radius around the periphery of the hole for the retract pin.

(Martin Service Bulletin No. 128, dated October 4, 1950, covers this same subject.)

**51-4-1 Martin** Applies to All Model 202 Aircraft.

Compliance required not later than April 1, 1951.

In order to eliminate a fire hazard due to the possibility of flow from the tank to the engine compartment in case of the failure of the carburetor vapor vent return line, install a swing type check valve at each fuel tank where the vapor vent line attaches to the tank so that flow can take place only toward the fuel tank.

(Martin Service Bulletin No. 138, dated November 30, 1950, covers this same subject.)

**51-11-1 Martin** Applies to All Models 202 and 202A Airplanes Except as Noted.

Compliance required as specified herein. Compliance with this note cancels the requirements of AD 50-41-2.

In order to comply with the recommendations of the Martin 202 Modification Board, the following items must be accomplished. In all cases, modifications which are demonstrated to provide a level of safety equivalent to that provided by the modifications listed herein will be acceptable in lieu of the listed modifications.

Compliance required by August 16, 1951.

1. Decrease breaker rating for propeller anti-icing circuit to 5 amperes to accommodate No. 20 wire. (Applies to Model 202 airplanes only.)

2. Install negative pressure scoop on battery vent line.

Compliance required by November 16, 1951.

1. Add manually operated charging valve in the emergency brake hydraulic system in accordance with Glenn L. Martin Co. Service Bulletin No. 185.

Compliance required by December 1, 1951.

1. Provide circuit protection for voltmeter.

2. Provide circuit protection at main bus for generator trip light circuit.

3. Provide circuit protection for ammeter wires.

Compliance required by February 1, 1952.

1. Install circuit breaker in circuit breaker panel with wire routed back to auxiliary bus control relay.

**51-13-1 Martin** Applies to All Models 202 and 202A Series Aircraft as Noted.

Compliance required as indicated.

1. Applies to all Serial Numbers except 9125 through 9127 and 9129 through 9131.

A. Compliance required every other No. 3 inspection period, approximately 620 hours flight time, or 6 months, whichever occurs first.

(1) Inspect the wing top cover splice angles with a 2- to 6-power glass (may be conducted with paint on). On Model 202 Series aircraft, except Serial Numbers 9149 and 9150, these angles are P/N U23435 through U23442 (wedge assemblies Nos. 2021A12633 and 2021A12624). On Model 202 aircraft, Serial Numbers 9149 and 9150, and on all Model 202A Series aircraft, these angles are P/N A12025, A12026, U29403, U29404, U29407, and U29408 (wedge assemblies Nos. 2021A12023 and 2021A12024).

(2) If cracks are found, the top cover wedge assembly must be replaced as outlined in item B.

(3) Continue the inspections outlined in item A. until the replacement action outlined in item B. is accomplished.

B. Compliance required not later than January 1, 1953.

(1) Replace all wing top cover wedge angles with new angles as follows: On Model 202 Series aircraft, except Serial Numbers 9149 and 9150, the new angles are P/N 202A3000068–1 and –2 through 202A3000071–1 and –2 (wedge assemblies Nos. 2021C12336–9 and –10). On Model 202A aircraft, Serial Numbers 9149 and 9150, and on all Model 202A Series aircraft, the new angles are P/N 202A3000072–1 and –2 through 202A3000074–1 and –2 (wedge assemblies Nos. 2021C12090–9 and –10).

(2) At the time of wedge assembly replacement, the outer wings must be reinstalled with the engines removed, and the mating faces shimmed to a maximum permissible gap of 0.020 inch. The rear spar fitting must also be shimmed to a zero gap for approximately the upper half of its area.

(3) Each airplane must have a torque check on the attach angle bolts immediately after the first flight after any outer wing installation. If the torque is within 15 percent of the installation torque, it is satisfactory.

(4) After the new wedge angles are incorporated, the inspection outlined in item A. is no longer applicable to that airplane.

2. Applies to Serial Numbers 9125 through 9127 and 9129 through 9131.

A. Compliance required every 170 hours flight time. Conduct the inspection outlined in above item 1.A. on angles P/N U23435 through U23442 (wedge assemblies Nos. 2021A12623 and 2021A12624) until cracks are found and/or the replacement action outlined in item B. below is accomplished.

B. Compliance required not later than May 15, 1952. Replace all wing top cover angles with new angles P/N 202A3000068–1 and –2 through 202A3000071–1 and –2, wedge assemblies Nos. 2121C12336–9 and –10, and when accomplished, the inspections outlined in above item A. are no longer applicable to that airplane.

3. Applies to all Model 202 and 202A Series.

A. Compliance required every 12,000 flight hours. Replace all wing top cover attach angle bolts and spar web splice bolt.

(Martin 202/202A Service Bulletins Nos. 180, 184, and 187 cover this same subject.)

**51–19–4 Martin** Applies to All Models 202 and 202A Airplanes Except As Noted.

Compliance required as specified.

In order to comply with the recommendations of the Martin 202 Modification Board, the following items must be accomplished. In all cases, modifications which are demonstrated to provide a level of safety equivalent to that provided by the modifications listed herein will be acceptable in lieu of the listed modifications.

A. Canceled December 22, 1952.

B. Compliance required by October 15, 1952.

1. Provide system independent of wing heat for windshield anti-icing, deicing defogging and birdproofing. Glenn L. Martin Service Bulletins Numbers 176 and 183 together with GLM Drawings Numbers 202A5051026, 202A5051027, 202A5051036, and 202A5051037 cover this same subject. (Applies to Model 202 airplanes only.)

C. Compliance required by January 1, 1952.

1. Redesign heater fuel control box to make leak tight and provide adequate draining.

2. Relocate emergency high seat switches to eliminate lag. (Applies to Model 202 airplanes only.)

3. Redesign fire-detection circuit to eliminate stepping relay. (Applies to Model 202 airplanes only.)

D. Compliance required by April 1, 1952.

1. Improve the landing gear position indicating system so as to reduce the possibility of obtaining a "safe" indication when gears is in an unsafe condition.

(Martin Service Bulletins Numbers 163A (for Model 202A) and 168 (for Model 202) cover this same subject.)

E. Compliance required prior to reactivation of the autopilot.

1. Accomplishment of the reduced gear ratio and installation of field rheostat in rudder servo motor circuit to reduce stall torque. Prototype installation to be approved by a Regional Office of FAA (Aircraft Engineering).

(Martin Service Bulletins Numbers 104A and 114 cover this same subject.) (Applies to Model 202 airplanes only.)

F. Compliance required before accumulation of 8,000 hours total operating time.

1. Accomplish reinforcement of the nacelle structure.

(Martin Service Bulletins Numbers 144 (for Model 202) and 145 (for Model 202A) cover this same subject.)

This supersedes AD 51–12–2.

**51–20–2 Martin** Applies to All Models 202 and 202A Airplanes, Except as Noted.

Compliance required as specified.

In order to comply with the recommendations of the Martin 202 Modification Board, the following items must be accomplished. In all cases, modifications which are demonstrated to provide a level of safety equivalent to that provided by the modifications listed herein will be acceptable in lieu of the listed modifications.

1. Compliance required not later than January 1, 1952.

(*a*) Cover heater ignition interlock relay box tightly. (Applies to Model 202 airplanes only.)

(*b*) Cover autopilot servo control relay box tightly. (Applies to Model 202 airplanes only.)

(*c*) Cover AC distribution panel tightly or replace with enclosed relays.

(*d*) Enclose all uncovered relays in the DC distribution panel in a box or replace with enclosed relays.

(*e*) Cover heating and ventilating control box tightly.

2. Compliance required not later than November 15, 1951.

Either replace present dural crossfeed line with a continuous piece of fire-resistant hose where it passes through the fuselage and relocate the fittings to a location outboard of the fuselage, or provide adequately drained liquid and vapor-proof shroud for the fuel crossfeed line where it passes through the main electrical compartment in the fuselage.

(Glenn L. Martin Service Bulletin No. 173 covers one method of compliance with this item.) (Applies to Model 202 airplanes only.)

3. Compliance required not later than March 1, 1952.

Make electrical hydraulic pump explosion proof.

(Glenn L. Martin Service Bulletin N. 188, issued for the Model 202A, covers this same subject and may be used for both 202 and 202A airplanes.)

4. Compliance required not later than March 1, 1952.

Install separate circuit breakers for the pitot tube heater circuits.

(Glenn L. Martin Service Bulletin No. 118, issued for the Model 202A, covers this same subject and may be used for both 202 and 202A airplanes.)

5. Compliance required not later than March 1, 1952.

Replace all 75ST aileron hinge fittings with steel parts.

(Glenn L. Martin Maintenance Note No. 164 covers this same subject.) (Applies to Model 202 airplanes only.)

**51–24–2 Martin** Applies to All Model 202 Aircraft.

Compliance required at the 3,000-hour period following the modification of the fin attachments per Martin 202 Service Bulletin No. 99 and every 3,000 hours thereafter.

To insure that the fin-to-fuselage attachments contain no structural defects, and to reduce the possibility of fretting corrosion, accomplish the following inspections and shim installations:

(1) Determine that the three fin pins (P/N 2021A11549, 2021A14243 and 2021A14244) are not worn to less than 0.292 inch in width, and are securely attached to the fin.

(2) Inspect the three fuselage receptacles (P/N 2021U27375 and 2021U27415 left and right) for the three fin pin attachments. Replace any receptacle whose slot is greater than 0.357 inch in width.

(3) Using a 4- to 6-power glass, inspect the fin forward attach plate (P/N 2021D26541), the fuselage chords (P/N 2021D25001 and 25002), and the four reinforcing straps (P/N 2021U43293, 43294 and 43295 left and right) for evidence of cracks or fretting corrosion.

(4) Cracks or fretting corrosion found in item (3) should be removed with complete crack removal verified by satisfactory etch inspection. Reworked surfaces should be refinished to a polished finish. All bolt holes should be chamfered and polished to an 0.020-inch radius. If a crack is found in a hole in any reinforcing strap, the strap must be replaced.

(5) Etch inspect the fin rear chords (P/N 2021D14234), using a 10- to 15-power glass, to detect cracks in the chords. Cracks and any surface roughness must be removed. If cracks are found in a splice hole or any splice holes have been distorted, such that the hole bushings are no longer a press fit, the holes are to be reamed oversize and oversize bushings installed. (If the hole had a crack, re-etch inspect the area to insure crack removal.) If the diameter of a hole exceeds 0.843 inch, that fin chord must be replaced.

(6) Minimum thicknesses of refinished structural members are:

| *Part* | *Number* | *Minimum Thickness (inch)* |
|---|---|---|
| Fin attach plate | 2021U43641 | 0.177 |
| Fin rear chord | 2021D14233 & 4 | 0.312 |
| Fuselage attach plate | 2021D26541 | 0.050 |
| Fuselage chord | 2021D25001 & 2 | 0.250 |
| Reinforcing strap | 2021U43293, 4 & 5 | 0.187 |

(7) When reinstalling fin, insert shims of 1310 clear 01 vinyl sheet (or equivalent), press polished both sides, to fit between the faying service of the fin, fuselage and reinforcing straps at the fin rear spar attachment. Insert similar shims between the faying surfaces of the fuselage and fin attach plates at the fin front spar attachment.

Upon request of the operator, an FAA maintenance inspector, subject to approval of the Chief, Engineering and Manufacturing Branch, FAA Eastern Region, may adjust the repetitive inspection intervals specified in this AD to permit compliance at an established inspection period of the operator if the request contains substantiating data to justify the increase for such operator. (Effective August 19, 1961.)

(Martin 202 Service Bulletin No. 182 covers this same subject.)

**51–25–2 Martin** Applies to All Models 202 and 202A Airplanes.

Compliance required by January 1, 1952.

Install cover over D7231–125 inverter remote reset circuit breaker terminals to prevent inadvertent shorting between "MAIN" and "CONTROL" terminals. Compliance may be made in same manner or equivalent to Martin Service Instruction Letter No. 8 dated September 10, 1951.

This supersedes the first item in AD 51–11–1 requiring the redesign of the d.c. input circuit breaker mounting.

**52–2–3 Martin** Applies to All Models 202 and 202A Aircraft.

Compliance required not later than May 1, 1952.

Relocate such oxygen bottles as necessary from lower center section to location in upper right forward baggage compartment in order to eliminate the high pressure line now in the bottom of the fuselage.

**52–4–1 Martin** Applies to All Models 202 Aircraft.

Compliance required not later than May 1, 1952.

Provide adequate drain for throttling valve vent in the cabin heater fuel supply line.

**52–4–2 Martin** Applies to All Models 202 and 202A Aircraft.

Compliance required not later than August 1, 1952.

Provide separate protection for each inverter control and warning light circuit. Also provide separate protection for T and B warning lights in forward area.

(Trans World Airlines Engineering Order No. 5717 covers this same subject.)

**52-4-3 Martin** Applies to All Models 202 and 202A Aircraft.

Compliance required not later than May 1, 1952.

Eliminate pressure gage or place in heater fuel control box.

(Trans World Airlines Engineering Order No. 5794 covers the elimination of the pressure gage.)

**52-4-4 Martin** Applies to All Models 202 and 202A Aircraft.

Compliance required not later than July 1, 1952.

Provide two separate and individually protected circuits for instrument panel lighting—each circuit to provide adequate panel illumination for necessary flight instruments.

(G. L. Martin Co. Service Bulletin 118 and Trans World Airlines Engineering Order 5643 cover this same subject for the 202A.)

**52-4-5 Martin** Applies to All Models 202 and 202A Aircraft.

Compliance required not later than November 1, 1952.

Install an engine oil quantity indicating system.

(Trans World Airlines Engineering Order No. 5789 covers this same subject.)

**52-4-6 Martin** Applies to All Models 202 and 202A Aircraft.

Compliance required not later than May 1, 1952.

Relocate the cabin heater (1) fuel failure light, (2) low heat warning light and (3) MANUAL-OFF-AUTO switch to the cockpit.

(G. L. Martin Service Bulletin 110 issued for the 202A together with Trans World Airlines Engineering Orders Nos. 5422 and 5820 cover this same subject and can be used for both 202 and 202A.)

**52-4-7 Martin** Applies to All Models 202 and 202A Aircraft Except as Noted.

Compliance required not later than July 1, 1952.

The following controls and their wiring are common to two wing anti-icing heaters. The controls listed are identical in each nacelle. Modify the [illegible] controls:

2. Firewall shutoff switch.
3. Fuel pump circuit breaker (supplies power to ignition controls and master fuel controls).
4. Fuel shutoff relay.
5. Wiring to the master and auxiliary solenoid valves.
6. Fuel booster pump relay (has dual power input but single ground on the control circuit).
7. Ignition relay (202 only).
8. Ignition transformer (202 only).
9. Ignition circuit breaker (202 only).
10. AC safety relay (202 only).

(Trans World Airlines Engineering Order 5838 covers this same subject for the 202A).

**52-4-8 Martin** Applies to All Models 202 and 202A Aircraft.

Compliance required not later than May 1, 1952.

Relocate the anti-icing heater controls to the main bus.

(Trans World Airlines Engineering Order 5759 covers this same subject.)

**52-5-2 Martin** Applies to All Models 202 and 202A Aircraft.

Compliance required as indicated.

Due to a reported occurrence of cracks in the center wing rear spar lower chord fitting at the Station 187 rib, the following shall be accomplished:

A. Inspect within the next 100 hours. Inspect the fittings (P/N 2021U44473 and 2021U44474) with a 10-power magnifying glass after removal of the paint with a solvent. Pay particular attention to the intersection of the spar leg with the other legs of the fitting.

B. If cracks are discovered in the base or extending into the base of a fitting, the part must be replaced.

C. If cracks are found in the vertical legs only, the part can either be replaced or remain installed in the airplane. If remaining installed, the fitting must be inspected every 85 hours in accordance with items A and B. Other inspection intervals may be approved based on the evaluation of the actual crack location by the manufacturer.

loosen the two spar web splice bolts through the fitting, the spar web stiffeners and rib 187 web. If any gap appears between the fitting and its mating surfaces, install shims so as to reduce this gap to less than 0.010 inch.

E. New parts installed shall be shimmed in accordance with item D.

(Glenn L. Martin Service Instruction Letter No. 17 covers this same subject.)

52–15–2 **Martin** Applies to All Model 202 Airplanes With Hamilton Standard Reversing Propeller Installations.

I. Prior to reactivation of the reversing feature of the propellers:

A. Modify the following terminal strips and pin connector assemblies as specified in items 1 and 2 of Attachment A (see AD 52–13–2 Lockheed):

(1) Terminal strip at nacelle firewall junction box.

(2) Terminal strip at center wing panel.

(3) Terminal strip at fuselage Section 225.

(4) Terminal strip at nose junction box.

(5) 19 pin connector assembly at the propeller control relay box.

B. Modify Hamilton Standard propeller reversing relay box at the front of the control pedestal to shield the reversing solenoid circuit relay contacts, etc., from all other circuits which are energized at any time except when reversing is desired. Reversing relay boxes which have separate pin connectors for the reversing solenoid wire and the remaining circuits, shall be so installed that it is not possible inadvertently to interchange any connectors on the two relay boxes.

C. Rewire the feathering button circuit so that the wire from the feathering button to the fixed terminal for the auxiliary pump on the "A" relay is not energized when feathering is being accomplished and so that the hold in coil on the feathering button is inoperative during unfeathering. Isolate reversing circuit relay contacts in the propeller control relay box in a manner equivalent to the change specified in item I.B. Protect the exposed relay terminals as specified in items 3. of Attachment A.

D. Modify the reversing solenoid circuit wiring in accordance with item 4. of Attachment A.

E. Revise the reversing circuits to comply with Hamilton Standard Service Bulletin No. 236.

F. In order to prevent reversing of a normally operating propeller when unfeathering the other propeller: If the reversing solenoid circuits for the two propellers are adajcent to each other in any connectors, at terminal strips, in wire bundles, or any other points where contact may occur between the two circuits due to a fault, isolate the two circuits from each other as specified in Attachment A and observe the maintenance practices in item II.A.

G. The "reverse operable" warning device shall be clearly visible when the lock is open just a sufficient amount to permit moving the throttles into the reverse regime. It shall not be possible for the flag to catch on its track or on the control pedestal and remain held in the up position.

H. Incorporate throttle pedestal cover plate No. 2021A19719 which has a steel track to prevent lifting the throttles before they reach the idle position.

I. If an alternate manually controllable ground circuit is installed to permit unfeathering in case of an open blade switch circuit, the alternate circuit shall be removed.

J. Increase the height of the throttle quadrant stop at the positive idle position so that a lift of at least ¼-inch is required to lift the pin over the stop.

II. Maintenance practices (to be instituted when reversing is reactivated):

A. At each nearest scheduled service to 350 hours:

(1) Inspect all points specified in I.A.(1) through I.A.(4) unless the modifications made to the system conform to item 1(*a*) or 1(*b*) of Attachment A.

Perform an electrical check of the reverse safety switches in the pedestal assembly to assure that the switch is open when the throttles are moved forward out of the reverse position, unless it is shown that failure of any of the reverse safety switches to open will be clearly apparent to the flight crew by reason of improper operation of the propeller control system. Because of the many technical considerations involved, analyses showing that the ob-

jective of this revision has been accomplished should be referred to the FAA for engineering evaluation and approval.

B. At any time that an electrical fault occurs in a circuit which is carried in the same bundles or the same conduits as the reversing solenoid circuit, representative terminal points in the faulty circuit are to be inspected to determine whether any damage may have occurred within the bundles or conduit. If there is evidence of possible damage, all the wiring involved is to be removed and inspected. Damaged wiring is to be replaced as necessary.

III. Operating instructions: (Comply with item 5 of Attachment A.)

IV. (Note: Propeller governor design changes which are under development and whose purpose is to provide a high pressure hydraulic circuit bypass to safeguard against inadvertent reversing and to provide ability to feather even when the reversing solenoid is energized are still under consideration and may be the subject of a future directive.)

**52-16-1 Martin** Applies to All Model 202A Airplanes.

Item I is to be accomplished by means of a progressive modification program to be submitted to and approved by the FAA. The program shall begin no later than August 10, 1952, and shall be completed no later than May 1, 1953.

I. In order to prevent inadvertent actuation of the propeller reversing solenoid valves, protect the reversing solenoid circuits from all other electrical circuits and protect the reversing solenoid circuits from each other. This is to be accomplished in accordance with attachment A (see AD 52-13-2 Lockheed) and the following instructions which pertain to specific features to be considered in isolation of the circuits. Other features which are not specifically referred to in this list shall be treated in an equivalent manner.

A. Comply with TWA Engineering Orders 5686, 5776, and 5887.

B. Modify the 19 pin connector at the propeller control relay box as specified in item 2 of attachment A.

C. Modify the Hamilton Standard relay box on the front of the control pedestal to shield the reversing solenoid relay contacts, etc., from all other circuits which are energized at any time except when reversing is desired. Reversing relay boxes which have separate pin connectors for the reversing solenoid wire and the remaining circuits, shall be so installed that it will not be possible inadvertently to interchange any connectors between the relay boxes.

D. Modify the configuration of the propeller control relay box in a manner equivalent specified in item I.C.

E. Modify reversing solenoid circuit wiring in accordance with item 4 of attachment A.

II. The following maintenance practices are to be instituted not later than August 10, 1952.

A. At each nearest scheduled service to 350 hours:

(1) Inspect all points covered by TWA Engineering Orders 5686 and 5776.

(2) Perform an electrical check of the reverse safety switches in the pedestal assembly to assure that the switch is open when the throttles are moved forward out of the reverse position, unless it is shown that failure of any of the reverse safety switches to open will be clearly apparent to the flight crew by reason of improper operation of the propeller control system. Because of the many technical considerations involved, analyses showing that the objective of this revision has been accomplished should be referred to the FAA for engineering evaluation and approval.

B. At any time that an electrical fault occurs in a circuit which is carried in the same bundles or the same conduits as the reversing solenoid circuit, representative terminal points in the faulty circuit are to be inspected to determine whether any damage may have occurred within the bundles or conduit. If there is evidence of possible damage, all the wiring involved is to be removed and inspected. Damaged wiring is to be replaced as necessary.

III. Operating instructions: Comply with item 5 of attachment A.

IV. (Note: Propeller governor design changes which are under development and whose purpose is to provide a high pressure hydraulic circuit bypass to safeguard against inadvertent reversing and to provide ability to feather even when the reversing solenoid is energized, are still under consideration and may be the subject of a future directive.)

**52–16–2 Martin** Applies to All Model 404 Airplanes.

Item I is to be accomplished by means of a progressive modification program to be submitted to and approved by the FAA. This program shall begin no later than August 10, 1952, and shall be completed no later than December 15, 1952.

I. In order to prevent inadvertent actuation of the propeller reversing solenoid valves, protect the reversing solenoid circuits from each other. This is to be accomplished in accordance with Attachment A (see AD 52–13–2 Lockheed) and the following instructions which pertain to specific features to be considered in isolation of the circuits. Other features which are not specifically referred to in this list shall be treated in an equivalent manner.

A. Modify the terminal strip in the engine nose junction box (if used) to comply with item 1. of Attachment A.

B. Modify the pin connector and internal configuration of Hamilton Standard control box to shield the reversing solenoid circuit relay contacts, etc., from all other circuits which are energized at any time except when reversing is desired. Reversing relay boxes which have separate pin connectors for the reversing solenoid wire and the remaining circuits shall be so installed that it will not be possible inadvertently to interchange any connectors on the two relay boxes.

C. Modify the fuselage terminal strip to conform to Item I. of Attachment A.

D. Reversing solenoid circuit wiring: Comply with item 4 of Attachment A.

II. Maintenance practices to be initiated not later than August 10, 1952.

A. At each nearest scheduled service to 350 hours:

(1) Inspect all points covered by items I and III unless the modifications made to the system conform to item 1 (*a*) or 1 (*b*) of Attachment A.

(2) Perform an electrical check of the reverse safety switches in the pedestal assembly to assure that the switch is open when the throttles are moved forward out of the reverse position, unless it is shown that failure of any of the reverse safety switches to open will be clearly apparent to the flight crew by reason of improper operation of the propeller control system. Because of the many technical considerations involved, analyses showing that the objective of this revision has been accomplished should be referred to the FAA for engineering evaluation and approval.

B. At any time that an electrical fault occurs in a circuit which is carried in the same bundles or conduit as the reversing solenoid circuits, representative terminal points in the faulty circuit are to be inspected to determine whether any damage may have occurred within the bundles or conduit. If there is evidence of possible damage, all the wiring involved is to be removed and inspected. Damaged wiring is to be replaced as necessary.

III. Operating instructions: Comply with item 5 of Attachment A.

IV. (Note: Propeller governor design changes which are under development and whose purpose is to provide a high pressure hydraulic circuit bypass to safeguard against inadvertent reversing and to provide ability to feather even when the reversing solenoid is energized, are still under consideration and may be the subject of a future directive. )

**53–20–1 Martin** Applies to All Models 202 and 202A Airplanes With Hamilton Standard Reversing Propeller Installations In Which the Reverse Feature is Not Used, and In Which the Normal Reverse Pitch Stop Ring Has Been Relocated to Act Essentially as a Low Pitch Stop.

Compliance required as indicated.

With the reverse pitch stop ring relocated to act as a low pitch stop, and with inadvertent energization of the reverse solenoid valve, the stop ring will fail under the extreme loads resulting from high oil pressure surge plus the high blade twisting moments attendant to rapid pitch change toward low pitch. This failure will result in the jamming of the pitch changing mechanism, or an inadvertent propeller reversal. To preclude any hazardous incidents, modification of the internal mechanism of the propeller dome, or modification of the propeller control system is necessary. Accomplish items I, II, and III.

I. Comply with AD 52–15–2.

A. Item I of AD 52–15–2 is to be accomplished by means of a progressive modification program to be submitted to and approved by

the FAA. The program shall begin no later than November 1, 1953, and shall be completed no later than August 1, 1954.

B. Item III shall be instituted when reversing is reactivated.

II. Modify the internal mechanism of the propeller dome. The modifications include removal of the normal low pitch stops, and incorporation of a dump valve which opens just above the normal low pitch position to maintain oil pressure of 50 to 100 p.s.i. on the decrease pitch side of the piston.

A. Replace the present oil transfer housing 70451 or 77828 with engine shaft extension assembly 70300.

B. Remove the present low pitch stop lever assembly 71042, 71676 or 76149 from the propeller entirely.

C. Replace the present piston sleeve 68425 with a new piston sleeve 72259 and snap ring 67698. Since the piston sleeve is pressed into the piston, the internal diameter of the sleeve must be machined after assembly.

D. Purchase Orders for the above parts must be submitted to Hamilton Standard by November 1, 1953.

E. Hamilton Standard Service Bulletin No. 264 covers this same subject.

F. Compliance required prior to November 1, 1954.

III. Modify the propeller control system.

A. At the A or unfeathering relays in the propeller relay control box, disconnect the wires that run through the nose junction box and into the reversing control boxes (Hamilton Standard P/N 72400) to connect the A relays with the throttle microswitches.

(1) Either physically remove the full run of these wires from the A relay terminal to the nose junction box terminal strip, or

(2) Physically remove the portion from the A relays to the pin connector in the propeller control relay box, and disconnect these wires from the mating pin in the external portion of the pin connector. Insulate the exposed ends of these wires, and secure them from movement in such manner as to preclude their becoming grounded or contacting any terminals.

B. Modify the reverse solenoid circuit wiring from the reverse solenoids to the terminal on the A relays by providing continuous wires physically isolated from all other circuits.

C. Comply with item I.C. of AD 52–15–2.

D. Revise the reversing solenoid circuits to comply with Hamilton Standard Service Bulletin No. 236, Ref. 955.

E. Provide positive mechanical stops for both throttle levers so they cannot be moved into the reverse range.

(1) Item 2, of NWA Mechanical Order No. 479, dated November 21, 1950, is considered acceptable to accomplish this.

(2) Comply with items 3 and 4 of NWA Mechanical Order No. 479, dated November 21, 1950.

F. Items III.A, B, C, D, and E of AD 53–20–1 are to be accomplished by April 1, 1954.

G. No later than November 1, 1953, all operating instructions regarding unfeathering procedures shall specify that the following practices are to be observed, and shall indicate that the reason is to guard against jamming the pitch changing mechanism or possible inadvertent reversal during the unfeathering operation:

(1) If unfeathering is being accomplished at night the wing illumination lights or landing lights are to be used to permit observation of propeller operation.

(2) The propeller is to be watched during unfeathering and the button is to be released when rotation starts. (This should normally be in 1 or 2 seconds.)

(3) The tachometer is not to be used as a guide for determining when unfeathering is to be terminated.

**54–1–2** *See* Hamilton Standard Propellers.

**54–6–2 Martin** Applies to All Model 202 Aircraft.

Compliance required at next overhaul but not to exceed the next 1,000 operating hours.

Several instances have been found of unsatisfactory wing scarf splice bushing installations which result in applying undesirable bending loads on the bolts because of incomplete lining of the holes. To eliminate this condition, inspect the wing lower chord scarf splices at wing Stations 187 L. H. and R. H. If a bushing is found that does not meet the length requirements specified in Martin 202 Service Instruction Letter No. 29, that bushing

must be removed and a correct one installed in accordance with Service Instruction Letter No. 29, before the airplane is returned to service.

(Martin S. I. L. No. 29 covers this same subject.)

**54–8–1 Martin** Applies to All Models 202, 202A and 404 Aircraft.

Compliance required as indicated.

Several cases of finding cracks in the nose landing gear piston and fork assembly (P/N 202SD84483) have been reported. These cracks were located in the change of cross section fillets which blend the barrel section of the terminal into the legs of the lower fork. To preclude further difficulties of this nature, all aircraft must be inspected and reworked as follows:

I. Compliance required not later than July 1, 1954.

Inspect the piston and fork assembly in the fillets which blend the barrel section of the terminal into the legs of the fork. This inspection must be accomplished with the aid of a 20-power enlarging lens, dye penetrant or magnaflux. Any assembly found to incorporate fillets of less than $1\frac{1}{32}$-inch radius must be further inspected or reworked as follows:

If a crack is found, rework the part in accordance with item II.

If no cracks exist, the part must be reinspected, as above, every No. 1 inspection but not to exceed 115 hours of service until reworked in accordance with item III. Should cracks be found in reinspection, the part must be reworked in accordance with item II.

II. Compliance required prior to return to service.

If a crack is found, the piston and fork assembly may be repaired by grinding out the crack within the following limits:

(The crack lengths, specified below, are based upon the total length of a crack or cracks in a single fork leg fillet. The depths of material removable pertain to the fork leg cross section and should be measured from the plane of the fork leg surface.)

(A) A crack measuring up to 2 inches may be ground out to a maximum depth of 0.065 inch.

(B) A crack measuring from 2 to 4 inches in length may be ground out to a maximum depth of 0.055 inch.

(C) A crack measuring over 4 inches in length may be ground out to a maximum depth of 0.040 inch.

The reworked area is to be blended smoothly into the fork leg surface. The surface finish after grinding must be equivalent to RMS–32 with no tool marks present.

NOTE: Piston and fork assemblies not repairable within the above-stated limitations must be replaced.

III. Compliance required not later than March 1, 1955.

If no cracks exist, rework the fillets which blend the barrel section of the terminal into the legs of the fork to a radius of $\frac{3}{8} \pm \frac{1}{32}$ inch. This new fillet should be ground tangent to the lowest point of material removed (Ref. item II) or the fork leg surface, as the case may be. Further, it is important that the fillet be blended into the surface of the terminal so that a smooth transition of cross sectional area is obtained, especially in the crotch of the fork. The surface finish after this rework must be equivalent to RMS–32 with no tool marks present.

(Martin Service Instruction Letters Nos. 30A and 404–64A, for the Models 202 and 404 aircraft respectively, cover this same subject.)

**54–12–1 Martin** Applies to All Model 404 Aircraft.

Compliance required as indicated.

An analysis of the design and the service experience of Model 404 main landing gear oleo drag struts, P/N E100008, has resulted in the establishment of a 6,500-hour service life figure for these assemblies.

It will be permissible to continue these assemblies in service not to exceed 8,500 hours total service time, provided the drag strut piston rods and forked end fittings are subjected to the following inspections when they attain 6,500 hours of service and every 250 service hours thereafter until replacement is made with new drag strut assemblies, P/N E100050, in accordance with item 5. (See item 6 for increasing inspection interval to 500 hours.)

NOTE: A 10X to 30X enlarging lens must be used when accomplishing the visual examination portions of these inspections.

1. Perform dye penetrant inspection for cracks on the entire threaded portion of the piston rod, P/N SE 997512. (The location at which a crack would be most likely to occur is through the root of a thread which lies in or adjacent to the faying plane between the piston terminal, P/N SE997514, and the locknut, P/N SE997515, when these parts are in their installed position on the drag strut piston rod.)

2. Perform a dye penetrant or a Zyglo inspection for cracks on the end bosses of the forked end fitting, P/N SE997590. In order to inspect these areas satisfactorily, it is necessary to remove the bronze bushings, P/N SE997517, from the end bosses. Laboratory analysis of drag strut forked end fittings which failed during landing gear repeat load tests determined the origin of the crack, in each instance, to be located at the inner surface of the 5/16-inch bolt hole adjacent to the bronze bushing. It is essential, therefore, that these and all other surfaces lying in the plane of the least cross-sectional area be scrutinized most critically.)

3. If the above inspections reveal minute indications of a crack not clearly definable, the area in question should be subjected to a macro etch inspection.

(*a*) The steel piston rod may be etched with a saturated aqueous solution of ammonium persulphate.

(*b*) The forged aluminum forked end fittings may be etched with a 30-percent aqueous solution of sodium hydroxide.

4. A piston rod or forked end fitting found to contain a crack must be scrapped.

5. Reinspection of parts found to be satisfactory shall be made every 250 service hours (or 500 hours per item 6), until replacement struts of the new configuration, P/N E100050, become available. Original struts, P/N E100008, must be replaced at 8,500 hours service life, at which time the inspection program can be discontinued. (When the new design drag struts become available, no attempts should be made to interchange assembly components, but a complete replacement of old design struts with new design struts should be effected.)

6. The 250-hour inspection interval may be increased to 500 hours provided the following is accomplished:

(*a*) Chamfer all edges of the cross bolt hole in the P/N SE99759C oleo drag strut fork fitting.

(*b*) Maintain a minimum torque of 900 inch-pounds on the piston rod jam nut.

(*c*) Instruct the pilots to use the brakes in such a manner as to minimize the strut bottomings.

(Martin Service Instruction Letter No. 404–65 covers this same subject.)

**54–24–4 Martin** Applies to All Models 202 and 202A Aircraft.

Compliance required as indicated.

Several cases of cracks in the main landing gear trunnion fittings (P/N 2021A23307, 2021-A23308, 2021A23309, 2021A23310) have been reported. These cracks have been in the area of the boss and the web. To preclude failure of these parts all aircraft must be inspected and reworked as follows:

I. Compliance required as soon as practical but not later than December 10, 1954, unless already accomplished.

Thoroughly clean fittings and inspect using a dye penetrant inspection method. If a crack is found, rework the part in accordance with item II. If no cracks exist the part must be reinspected using an 8-power magnifying glass, dye penetrant method or equivalent every 250 hours plus or minus 75 hours.

II. Compliance required prior to return to service if a crack is found.

The fitting may be repaired by grinding provided the crack does not exceed either 2 inches in length or exceed 0.060 inch in depth. Parts having cracks exceeding either of the above limitations must be replaced. Repaired parts must be etch inspected. Repaired parts must be reinspected using an 8-power magnifying glass, dye penetrant method or equivalent every 250 hours plus or minus 75 hours.

III. New parts of the same design (P/N 2021A23307 through 23310) must be inspected at the first regular inspection period of approximately 1,000 hours after installation, and thereafter at every 250 hours plus or minus 75

hours using an 8-power magnifying glass, dye penetrant method or equivalent.

IV. Replacement parts of the improved design (P/N 2021A23307–1 through 23310–1) must be inspected visually at the first regular inspection period of 1,000 hours after installation, and thereafter at intervals not exceeding 500 hours. At 7,500 hours after installation, and thereafter at every 250 hours plus or minus 75 hours, inspect the fittings using a dye penetrant method or equivalent.

(NOTE: All specified inspection intervals are based on an average landing frequency of one per hour. Where average landing frequency exceeds this, there should be a corresponding decrease in the inspection intervals.)

(Martin telegram of November 3, 1954, to all 202 and 202A operators covers this subject.)

**55–16–2 Martin** Applies to Models 202, 202A, and 404 Aircraft Equipped With Hamilton Standard Propellers.

Compliance required by first scheduled engine change after November 1, 1955, but not later than November 1, 1956.

To increase the fire-resistance integrity of the propeller feathering system against damage by a powerplant fire, all flexible hose components of propeller feathering lines forward of the firewall must be replaced with lines and fittings which will meet current fire-resistant requirements. The following hose assemblies are considered acceptable for this application:

(*a*) Aeroquip 680–12S hose assemblies with Aeroquip 304 protective sleeves over end fittings (Aeroquip assembly P/N 304000–12S).

(*b*) Resistoflex SSFR–3800–10 hose assemblies utilizing –12 connections.

(*c*) Aeroquip 309009–12S hose assemblies.

**55–20–3 Martin** Applies to All Models 202, 202A, and 404 Aircraft.

Compliance required as indicated.

Several cases of nose gear steering shaft failures have occurred at the machined splines, due to torsional fatigue. Accordingly, the following inspections using dye penetrant, magnetic particle or vapor blast, are required to check for the presence of cracks.

1. New type shafts, Menasco P/N 526681, installed on all 202 and 202A aircraft, and on all 404 aircraft incorporating shimmy dampeners, must be inspected every 2,500 hours. On 404 aircraft not incorporating shimmy dampeners, the inspection must be conducted every 1,000 hours. Cracked shafts should be removed from service pending instructions from Martin.

2. Original type shafts, Menasco P/N 511681, which have never cracked, may be continued in service subject to the same conditions and inspections as the new type in item 1 providing the 1.628±0.005-inch relief cut is added. This is accomplished by grinding the serration run out circumferentially to a relief diameter of 1.628 inches starting 5/8 inch from upper shoulder, with 1/16-inch corner radii. Cracked shafts may be ground down to a minimum diameter of 1.530 inches to remove cracks. If cracks are removed, the shaft may be returned to service, but must be reinspected as required in the following paragraph 3.

3. All original type shafts which have been ground to remove cracks must be inspected at 325-hour intervals. Shafts may be ground down to a 1.530-inch minimum diameter to remove cracks. If cracks are removed, the shafts may be returned to service, continuing this inspection. If cracks are not removed at the 1.530 diameter, the shaft must be replaced.

**56–9–2 Martin** Applies to All Models 202, 202A, and 404 Aircraft.

Compliance required by September 1, 1956.

In order to eliminate shearing of rivets securing the rudder torque tube flange, P/N 2021U42196, to the rudder torque tube, P/N 2021D19331, caused by gust buffeting with gust locks not engaged and resulting in loss of adequate and/or positive rudder control, it is necessary to replace the 3/16-inch rivets with 1/4-inch 24ST heat treated rivets.

(Martin Service Instruction Letters No. 202/202A–36 and No. 404–69 cover this same subject.)

**56–24–2 Convair and Martin** Applies to the Following Aircraft Equipped With PR–58E5–17 and –27 Carburetors in P&W Double Wasp CB Engines: Convair CV–240 and CV–340 (Except CV–340's With CV–440 Nacelles) and Martin 202A and 404. Also Applies to Convair 340 Aircraft With CV–440 Nacelles and Equipped With PR–58E5–17 and –27 Carburetors in P&W Double Wasp CB Engines: Martin 202A and 404.

Compliance required by first engine overhaul after January 1, 1957, but not later than September 1, 1957.

Normal fuel metering in carburetors incorporating the PR–58E5–17 and –27 "Transport Setting" may result in powers lower than those employed for aircraft certification. This occurs in the high power range with the control in the Auto-Rich position in cases where the carburetor meters on the rich side of the allowable limits. The amount of power loss will vary with different carburetors.

Performance information in the FAA-approved Airplane Flight Manual is based upon the maximum certificated power ratings of the engine. To obtain full rated power at manifold pressure limits for maximum continuous power, it is necessary to adjust the fuel mixture by the mixture control (takeoff power is not adversely affected by use of the full rich mixture position). P&WA Engine Operation Information Letter No. 28, and P&WA Service Bulletins Nos. 1602 and 1604 cover this subject in further detail.

In order to insure obtaining the power used in aircraft certification, accomplish the following:

1. For MC power during one-engine-out operation use Auto-Lean mixture setting. Revise the pertinent airplane flight manuals accordingly to insure that the operation check procedure includes this item for engine-out operation.

2. Incorporate the leaner carburetor derichment jet per Bendix Service Bulletins Numbers 804 and 806. This applies to PR–58E5–17 and –27 carburetor settings only. The primary purpose of this change is to provide correct fuel flow for takeoff power. It does not materially affect fuel flow for maximum continuous power.

3. The Auto-Lean mixture control position should be plainly marked and identified.

NOTE. Selective manual leaning of the mixture by reference to the fuel flowmeter is not satisfactory because of the time and attention required for such a procedure in an emergency. It is necessary that the mixture adjustment be completed in one direct movement by placing the control in the Auto-Lean marked position.

Compliance with items 1 and 3 is not directly related to item 2, and should be accomplished as soon as possible regardless of the time of compliance with item 2.

**57–3–4 Martin** Applies to All Models 202, 202A, and 404 Aircraft.

Compliance recommended at the next engine change or airplane overhaul but required not later than April 1, 1958, except that compliance with item 7 shall be required not later than July 1, 1958.

Results of investigation of an accident involving an uncontrolled zone III fire and of several incidents involving combustion heater system malfunctioning indicate the necessity of improving the fire-resistant qualities of certain parts in the nacelle area and increasing the margin of safety of the combustion heater control systems. The following modifications are required to accomplish these ends:

1. Replace anti-icing heater ram air ducts in the nacelles (at least up to the air damper) with fireproof ducting material or lag or coat the aluminum ducting to materially retard the time of burn through.

2. Lag, with fireproof material, the exposed portion in zone III (in front of forward spar) of the fuel line from the selector valve to the tank.

3. Fire detector coverage shall be provided in the detector system in at least the following areas of each nacelle if not previously installed:

(*a*) On aft side of firewall in the vicinity of the pressure transmitters.

(*b*) On outboard side of nacelle between the two electrical junction boxes.

(*c*) On inboard side of nacelle in area of the main fuel supply strainer.

(*d*) On forward side of front spar at the fuel selector valve.

(*e*) On the inboard and outboard sides of the nacelle at Station 434.2 and approximately 20 inches circumferentially from the nacelle top center line.

4. Make following changes in anti-icing heater fuel supply and control system. (Applicable to 202 and 202A aircraft only.)

Aluminum tubing in zone III replaced with steel. Install new fuel supply tap points with

restrictors. Provide and additional solenoid fuel shutoff valve in series hydraulically in parallel electrically with existing cycling control valve in fuel control box (each heater). Circuitry of present low heat warning light revised to indicate overheat warning. Overheat lockout circuit added. Material of cover attaching clips in each fuel control box changed to steel.

5. Install firebell similar to that in Model 404. (Applicable to 202 and 202A aircraft only.)

6. Make following changes in cabin heater fuel supply and control systems. (Applicable to 202 and 202A aircraft only.)

Aluminum tubing within boundaries of nacelles replaced with steel. Material of cover attaching clips in each fuel control box changed to steel. Overheat lockout circuit added.

7. Make following changes in anti-icing and cabin heater fuel supply and control systems. (Applicable to 404 aircraft only.)

Add an additional solenoid control valve (in series hydraulically and in parallel electrically) in anti-icing and cabin heater fuel control boxes. Change material of cover attaching clips in each fuel control box to steel.

8. The fire emergency procedure and flight manual shall be changed to provide for actuation of the fuel selector to shut off the fuel and crossfeed early in the emergency sequence, immediately prior to or after closing the firewall shutoff valve.

The following Martin Service Instruction Letters cover acceptable methods of compliance with these modifications: Nos. 202/202A-40 and 404-72 cover item 1; Nos. 202/202A-42 and -42A cover item 4; No. 202/202A-43 covers item 5; Nos. 202/202A-45 and -45A cover item 6; Nos. 404-74 and -74A cover item 7.

**57-6-2 Martin** Applies to All Models 202, 202A and 404 Aircraft.

Compliance required as indicated.

As a result of a number of failures in service, the engine mount attaching studs should be replaced as indicated below:

1. Replace the engine mount studs with approved studs whenever the Quick Engine Change unit is removed for major overhaul, but at intervals not exceeding 1,600 hours flight time. Both the stud and engine mount installation should be made with care since misalinement and/or improper torque could cause failure of the stud in service.

(Installation techniques are included in Martin Service Instruction Letter 404-50.)

2. If the engine mount studs are replaced with approved through-bolt installations, the replacement program of item 1 is not applicable, and this Airworthiness Directive no longer applies.

(Martin Service Instruction Letter 202/202A of October 1, 1956, covers this same subject.)

This supersedes AD 51-29-4.

**58-17-3 Martin and Curtiss-Wright** Applies to Models 202, 202A, 404 and C-46 Series (Including C-46/CW20-T) Aircraft Having Propeller Hydraulic Feathering Lines Routed Over or Attached to Engine Cylinder Assemblies.

Compliance recommended at the next engine overhaul but required by June 1, 1959.

Several cases of engine cylinder failures have occurred in which it was subsequently impossible to feather the propeller. In these cases, the feathering line which was routed over a front row cylinder was severed by a dislodged cylinder, thus preventing feathering and causing an additional fire hazard from oil being pumped over the engine. The record of cylinder failures from studs loosening or breaking indicates that the front row cylinders are mainly involved.

To prevent loss of feathering control from such failures, either of the following is required:

1. The propeller feathering line must be routed between cylinders. It must be supported in a manner avoiding attachment to a cylinder, and the line located at least three to four inches from the cylinder flanges.

2. The propeller feathering line must be routed between cylinders on the front row of cylinders in the manner described above. However, it will be acceptable for the line to be routed over a rear row cylinder provided it can be determined that sufficient flexibility is provided to prevent feathering line damage in the event of cylinder failure.

59-17-3 *See* Hamilton Standard Propellers.

59-20-3 **Martin** Applies to Models 202, 202A and 404 Aircraft.

Unless the following inspections have been completed within the last 500 hours of operation compliance required as indicated.

(1) On aircraft having flight times of 15,000 hours or greater the following inspection required at the next stop where adequate maintenance facilities and personnel are available to conduct inspection by any one of the specified inspection methods.

(2) Aircraft having less than 15,000 hours to be inspected prior to October 25, 1959.

Repeated inspection required every 500 hours of operation on all aircraft until permanent fix is incorporated.

Inspect wing lower rear spar cap flanges inboard side of nacelle at Stations 133 to 135. Cracks develop at bolt holes in fretted area generated by nacelle doubler. Inspect these areas on left and right wings with 10-power glass and dye penetrant or by X-ray. Cracked members must be repaired in accordance with instructions from the Martin Company prior to next flight.

The rework detailed in Eastern Airlines Drawing No. 404-5098 is acceptable for repairing or reinforcing Model 404 aircraft.

59-26-5 **Martin** Applies to All Models 202, 202A, and 404 Aircraft.

Compliance required as indicated.

Fatigue failure occurred in a Model 404 wing outer panel lower front spar cap (Station 188.5, 1½ inches outboard of the outer panel closing rib). Cracks also were found in the vertical angle which attaches the outer panel closing rib to the inboard spar web. As a result, the following must be accomplished:

Within 400 hours' time in service from last inspection of these areas and every 400 hours' time in service thereafter, the following areas in both wing outer panel front spars located at 25 percent of the wing chord must be radiographically inspected:

(a) Lower front spare cap in a region three inches long from the closing rib outboard.

(b) Spar web inboard of the outer panel closing rib (between the rib and the splice bolts).

(c) Vertical angle that attaches this web to the closing rib.

The fuel should be drained before radiographic inspection because of the effect of lead in the gasoline.

As an alternate inspection, remove the lower skin from both wings in this area and inspect (a), (b), and (c) with dye penetrant and a 10-power glass.

If cracks are found, replace the cracked members or the wing outer panel before the next flight.

This supersedes AD 59-20-5.

60-7-6 **Martin** Amdt. 118 Part 507 Federal Register March 25, 1960. Applies to All Model 404 Aircraft.

Compliance required as indicated.

Investigation of a recent Model 404 wheels up landing disclosed that the landing gear lock linkage and lock plunger malfunctioned. Inspection of the jury strut revealed that when the lock plunger was pulled back to normal travel limits in operating the "free fall" actuating mechanism to "full travel", the plunger would periodically jam in the retracted position and consequently flare out in the form of a knife edge. Also, cutting action was evident in the forward bushings (in the plunger cylinder) in an area coincident with the two flared edges. To prevent further lock plunger malfunctioning, the following must be accomplished:

(a) Replace lock plunger P/N 404-4088121-3 with new lock plunger P/N 404-4900121-5 on each main landing gear by July 31, 1960.

(b) At each 320 hours' time in service commencing not later than May 15, 1960, visually inspect main and nose gear lock plungers for a spalling or flaring condition. Check the lock plunger for free operation. The plunger should be free from dirt, dust, moisture, ice, etc. If spalling or flaring exists, the lock plunger must be chamfered (rounded out) at the corners of the plunger for the full length of the flat area.

(Martin Service Bulletin No. 404-260 dated October 30, 1952, partially covers this subject.)

60-10-7 **Martin** Amdt. 141 Part 507 Federal Register May 4, 1960. Applies to All Models 202, 202A and 404 Airplanes.

Compliance required as indicated.

Fatigue failures have occurred on the upper nose gear torque arm, P/N 511653. These failures were approximately 3 inches aft of the safety pin, P/N AN 416–1, which connects the lower torque arm, P/N 511650, to the upper torque arm. As a result of investigation of these failures, the following shall be accomplished prior to June 1, 1960:

(a) Unless already accomplished, rework torque arms, P/N's 511650 and 511653, by increasing the 0.125-inch radius, where the arm tapers to the narrow section at the aft end, to 0.25 inch.

(b) Visually inspect for cracks, using a 10-power magnifying glass or equivalent, the areas on the nose landing gear upper and lower torque arms at all radii near the apex of each torque arm. If crack indications are found, reinspect the above area using dye penetrant or equivalent. Torque arms with cracks must be replaced prior to further flight.

(c) Visually inspect for and remove any nicks or dents in the radius described in (a).

(d) Inspect the scissor disconnect bolt safety pin, P/N AN 416–1, for proper overhang to prevent opening. Safety pins with less than ¼-inch overhang shall be replaced prior to further flight.

(e) Repeat inspections (b) and (c) at intervals not to exceed 320 hours' time in service and inspection (d) at each safety pin installation.

**61–1–2 Martin** Amdt. 239 Part 507 Federal Register January 5, 1961. Applies to All Models 202, 202A and 404 Aircraft With Main Landing Gear Torque Arms Having More Than 12,000 Hours' Time In Service.

Compliance required as indicated.

Failures of Model 404 main landing gear torque arms have occurred in the lower attachment point where the torque scissors attach to the strut. Also, a failure was found in the apex (upper to lower torque arm attach point). As a result, the following must be accomplished within the next 225 hours' time in service, unless already accomplished within the last 225 hours' time in service, and every 450 hours' time in service thereafter.

Inspect all surfaces of the torque arm lugs which attach the torque scissors to the strut for cracks or corrosion, using dye penetrant, ultrasonic or radiographic method, or FAA approved equivalent. Beginning with the first repetitive inspection, also inspect all surfaces of the torque arm apex using dye penetrant, ultrasonic or radiographic method, or FAA approved equivalent. Removal of bolts and bushings is required only if dye penetrant is used. If cracks or corrosion are found, the torque arm must be replaced before the next flight.

This directive effective January 6, 1961.

## McCLISH (FUNK)

47–40–2 *See* Continental Engines.

## MEYERS

46–6–3 *See* Gladden Engines.

## MONOCOUPE

**50–47–1** *See* Sensenich Propellers.

## MOONEY

**50–1–1 Mooney** Applies to All Model M–18L Aircraft.

Compliance required as soon as possible but not later than next 25 hours operating time and at each 25-hour period thereafter until reinforcement of engine mount lugs is accomplished.

Inspect the four engine mount lugs for cracks. If cracks are evident, reweld the lugs to mate with the mount holes on the engine and weld an X–4130 0.058-inch strap ½ x 3-inches to the lug and the side tube member. Further inspections are not necessary after the above reinforcement of the lugs is made.

(Mooney Service Bulletin No. 4 covers this same subject.)

**51–3–1 Mooney** Applies to Model M–18 Series Aircraft, Serial Numbers 1 Through 82 and 201 Through 236.

Compliance required not later than March 15, 1951.

There have been reported failures of the fuel line due to vibration and relative motion between the fuel tank and the fuel shutoff valve. To preclude the possibility of recurrence of this type failure, cut the fuel line at a point approximately 4 inches from the fuel tank outlet and install a 4-inch length of ⅜-inch ID approved aromatic resistant flexible hose and hose clamps at this point.

(Mooney Service Bulletin No. 6 covers this same subject.)

**53–17–1 Mooney** Applies to All Model M–18 Series Aircraft.

Compliance required by October 15, 1953.

To prevent possible fouling of controls and the control stick by foreign objects install canvas boot P/N 22–7 around control stick and secure to floor boards. These boots are available from Mooney Aircraft, Inc., Box 72, Kerrville, Texas.

(Mooney Service Bulletin No. 11 covers this same subject.)

**53–24–3 Mooney** Applies to All Model M–18L Aircraft Which Have Not Had the Landing Gear Bellcrank Cover Installed.

Compliance required by February 28, 1954.

In order to prevent baggage from jamming or fouling the landing gear retraction bellcrank P/N 35–1, install bellcrank covers, P/N 1028–1 with installing angles P/N 1028–2.

(Mooney Service Bulletin No. 12 covers this same subject.)

**57–10–1 Mooney** Applies to Model M–20 Aircraft Serial Numbers 1002 Through 1126 Incorporating Main Landing Gear Retracting Bellcrank Bracket P/N 5035.

To be accomplished as soon as practicable but not later than July 1, 1957.

Cracks have been reported in the main landing gear retracting bellcrank bracket P/N 5035. In one case complete failure of the bracket resulted in jamming the elevator control system. Therefore, it is required that bracket P/N 5035 be replaced by new redesigned brackets P/N 5101 which have a 0.095 inch wall tubing.

The revised retracting bellcrank bracket P/N 5101 incorporated a reinforcing angle at the lower front corner and a cross member between the gear bungee fittings.

(Mooney Service Letter 20–22 covers this same subject.)

**58–19–3 Mooney** Applies to Mark 20A, Items 1 and 3 to Serial Numbers 1201 Through 1275, Items 2 and 4 to Serial Numbers 1201 Through 1257, Item 5 to Serial Numbers 1201 Through 1259.

Compliance required by December 1, 1958.

Several cases have occurred in which the carburetor air box cross vanes P/N 6235 have cracked and broken off. This type failure could cause loss of power if the vanes are drawn into the carburetor opening.

Cracking of carburetor air boxes around the neck has also been reported. The following rework is therefore necessary:

1. Remove the carburetor air box and inspect for cracks. Repair as required by welding.

2. Add an aluminum brace to each side of the air box neck.

3. Remove cross vanes located in air box neck.

4. Shorten fuel overflow drain tube on bottom of air box.

5. Enlarge fuel overflow drain tube hole in bottom of cowl and replace existing grommet.

(Mooney Service Letter 20-37 covers this same subject.)

**58-23-3 Mooney** Applies to Model M-20 Aircraft Serial Numbers 1002 Through 1051.

Compliance required as soon as practicable but not later than December 15, 1958.

Several failures of the aileron counterbalance buttweld at the aileron spar have occurred. The affected airplanes do not have a ⅜ inch O.D. x 0.028 inch x 3 inch steel reinforcing brace installed.

It must be determined whether this brace has been incorporated. If not, the following inspection and repair must be accomplished:

1. Remove the paint from the subject welded joint and inspect for cracks.

2. Reweld the joint if cracks are present.

3. Install the ⅜ inch O.D. x 0.028 inch x 3 inch 4130 steel tubular brace (trimmed to fit).

(Mooney Aircraft, Inc. Service Letter 20-7 Revision B covers this same subject.)

**59-6-3 Mooney** Applies to Models M-20 and M-20A Serial Numbers 1002 Through 1364.

Compliance required as indicated.

A failure of a rudder hinge bearing bracket (P/N 4003) has occurred on a Mooney M-20A. To preclude the possibility of similar failures occurring on these brackets or on the aileron and elevator hinge bearing brackets, the following inspection and rework is required as indicated:

Within the next five flight hours, inspect the welds which attach the hinge bearing housing (⅞ inch O.D. x .058 inch 4130 steel tube) to the fixed surface hinge bearing channel (P/N 4002). Bearing bracket assemblies (P/N 4003) are installed as aileron, elevator, and rudder hinges. The inspection shall be conducted as follows:

Remove paint from welds and, using a 10-power glass, inspect for cracks or inadequate weld (i.e. weld which does not completely fill fillet cross section area.)

If cracks are found, the bearing brackets on that surface must be removed and a set of modified hinge bearing brackets (P/N 4003) installed prior to further flight.

If inadequate welds are found (i.e. such as but not limited to, not completely, filling in between the face of the outer race and the top of the channel leg and/or inadequate fillet radius between the edge of the outer race and the top of the channel leg) the defective bearing brackets must be removed and a *set* of modified hinge bearing brackets (P/N 4003) installed on that surface not later than April 15, 1959.

A *set* of hinge bearing brackets is defined as follows: Aileron—*all three* (3) hinge bearing brackets; elevator—*outer two* (2) hinge bearing brackets; rudder—*upper two* (2) hinge bearing brackets. The installation shall be accomplished as follows:

(1) Install AN 960-3 washers (2) with each new hinge bearing bracket, one at each attach bolt between bracket and structure except at the tip elevator hinge where P/N 8389 shim should be used in place of the inboard washer.

(2) Rudder

(a) Remove fabric covering small "D" shaped cutout in plywood at trailing edge on right-hand side at each of the upper hinges. Do not remove gap tape or lower hinge bolt.

(b) Replace hinge bearing bracket (2) and recover access openings with fabric patch (use Butyrate dope.)

(3) Elevator

(a) Remove fabric covering small "D" shaped cutout in plywood at trailing edge on underside at each of the outboard hinges. Do not remove gap tape or inboard hinge bolt.

(b) Replace hinge bearing bracket (2) (see item (1) for use of ship at tip hinge bracket) and recover access opening with fabric patch (use Butyrate dope).

(4) Aileron

(a) Remove counterbalance weight fairing and two access plates at trailing edge of wing.

(b) Disconnect control tube and remove aileron.

(c) Check clearance between aileron gap strip and existing hinge bearing bracket. If this clearance is not approximately 1/16-inch,

the gap strip may have to be dimpled at the hinge to allow clearance for heavier replacement bracket.

(d) Replace hinge bearing bracket (3).

(Mooney Aircraft Inc. Service Letters 20–44 and 20–45 cover this same subject.)

**59–9–1 Mooney** Applies to All Models M–20 and M–20A Airplanes.

As a result of the investigation of an in-flight failure item (a) shall be accomplished prior to the next flight and items (b) through (g) shall be accomplished within the next 5 flight-hours to detect cracks and prevent failure of empennage fuselage attachment brackets.

(a) Remove the empennage gap strip and inspect the empennage-to-fuselage upper attachment brackets P/N 3009 for cracks in the radii area of the brackets near the attaching bolts using a 10-power magnifying glass. If cracked, items (b) through (g) must be accomplished.

(b) Remove the empennage to fuselage upper attachment brackets P/N 3009.

(c) Remove paint and inspect for cracks in the bend radii and in the bearing area of the bolts using a dye penetrant and a 10-power magnifying glass.

(d) Replace all cracked brackets and all brackets damaged by bolt head bearing in radii area with new brackets using 1/8-inch longer AN 4–16A bolts.

(e) Install 1/8-inch by 1/2-inch by 3-inch 1010 cold rolled steel bearing plates P/N 3449 in the channel under the bolts heads, of bracket P/N 3009. Bearing plates P/N 3449 may be made using P/N 3009 as a template, drill and deburr 9/32-inch holes for attach bolts and by filing 1/16-inch by 45 degree chamfer along edges to provide clearance at radius of brackets.

(f) All brackets found satisfactory may be reinstalled provided they are installed with AN 4–16A bolts and bearing plates P/N 3449.

(g) Washers used on airplanes with Serial Numbers 1359 and above under the attaching bolt heads shall be replaced with bearing plates P/N 3449.

**59–11–3 Mooney** Applies to Mark 20A Aircraft Through Serial Number 1534.

Compliance required as indicated.

To guard against the possibility of carbon monoxide entering the cabin, the following inspection and/or repair is required:

(1) Before next flight, visually inspect the exhaust pipes for cracking around the heater jacket bulkheads. Repair or replace as required. No welding is permitted inside the muff or at heater jacket bulkheads.

(2) Within next 25 hours of flight and periodically every 50 hours thereafter, remove the heater muff jacket and inspect the complete exhaust system for cracking. Repair or replace defective parts as required. The 50-hour inspection is not required if exhaust heater muff assembly P/N 6363 is installed.

(Mooney Service Letter 20–38 concerns this subject.)

**59–14–2 Mooney** Applies to M–20 Airplanes Serial Numbers 1175 Through 1200 and M–20A Airplanes Serial Numbers 1201 Through 1375.

Compliance required prior to August 1, 1959.

To guard against fuel selector valve failure and inability to change selector valve position the following inspection and replacement is required prior to August 1, 1959. Replacement valves obtained from the factory after April 27, 1959, and installed need not comply with this AD.

(a) Remove fuel tank selector valve.

(b) Remove lower part of valve housing and remove plastic core.

(c) Determine if the shaft and plastic core are pinned together. If not, replace complete valve assembly with replacement valve P/N 311–221–1/4D obtained from Mooney.

(Mooney Service Letter 20–48 concerns this subject.)

**59–22–3 Mooney** Applies to All M–18 Series Aircraft.

Compliance required within the next 10 flight-hours but not later than December 15, 1959.

The following inspections, repairs, and replacements shall be accomplished:

(a) Empennage

(1) Remove and disassemble empennage. Remove control surfaces and hinge brackets from fin and horizontal stabilizer. Remove bolts through stabilizer main spar attach

blocks. Disassemble stabilizer and fin from empennage truss and each other.

(2) Inspect all bolted joints for the following items:

(i) Wear on bolt

(ii) Wear on bolt holes in fittings and lugs

(iii) Wear on bushing

(iv) Wear of bushing on fittings, lugs and wood. (Replace parts as necessary.)

(3) Remove all fabric from stabilizer and fin. Inspect all wood and glue joints including attachment of leading edge skin to main spar for deterioration.

(4) At center section of stabilizer spar inspect glue joint between attach blocks and spar for deterioration and inspect spar and blocks for cracks. Inspect fin spar for cracks at attach bolts.

(5) Any defective wood parts shall be replaced or repaired in accordance with CAM 18 and/or manufacturer's recommendations. When the fin and stabilizer are satisfactory, reinforcement of the stabilizer main spar center section and the fin and stabilizer center hinge rib-rear spar attachment shall be accomplished in accordance with Mooney M-18 Service Letter No. 16. (Kits of reinforcement parts are available from Mooney Aircraft, Inc.)

(6) Clean all empennage drain holes, and see that they are located as specified in Mooney M-18 Service Letter 16.

(7) Inspect welds at rudder and elevator hinges and control horns and at all joints on the tail truss for inadequate welds (i.e. weld which does not fill fillet cross section area) and for cracks using either method (i) or (ii) below.

(i) Magnetic particle or X-ray inspection.

(ii) Remove paint and primer and visually inspect welds with a 10-power glass. Parts with defective welds are to be replaced or repaired. A joint may be rewelded providing the old weld is removed and the surfaces thoroughly cleaned.

(8) Remove upper tail truss attach fittings from aft fuselage bulkhead and inspect as described in item (2). Inspect bulkhead front and back for cracks in area of these fittings. Inspect glue joint between bulkhead and aft fuselage skin and longerons for deterioration or separation. Repair in accordance with Mooney M-18 Service Letter No. 17. Examine trim linkage attached to lower part of aft bulkhead for worn bolts. Replace bolts as necessary.

(9) Reassemble and install empennage making sure all bolts are tight. Block airplane solidly at tail skid and inspect for empennage play as follows:

(i) Stabilizer—Move up and down at one tip and measure at opposite tip. Total allowable play ½-inch up and down.

(ii) Stabilizer—Move fore and aft at one tip and measure at opposite tip. Total allowable play ¾-inch fore and aft.

(iii) Fin—Move fore and aft at top leading edge and measure at bottom of rudder trailing edge. Total allowable play ½-inch up and down.

(b) Aft Fuselage

(1) Inspect wood around forward fuselage tubular structure attach fittings for deterioration. Clean all drain holes. Inspect all glue joints for deterioration. See that drain holes are located as specified in Mooney M-18 Service Letter 16.

(c) Wing

(1) Remove seat, auxiliary fuel tank and belly access panel. Inspect ribs, skin and both spars at lower center section and around fuselage fittings for wood and glue joint deterioration.

(2) Inspect all wood and glue joints in wheel well area for deterioration. Inspect both spars for cracks in area of the gear attachments.

(3) Inspect interior of wing in areas having access openings.

(4) Remove aileron and inspect hinges and control horn in accordance with part (a), item (7).

(5) Remove wing fabric locally in area of aileron hinges and at inboard corner of aileron cutout and check condition of wood and glue joints. If evidence of deterioration is found remove fabric further as necessary for complete examination of forward area of wing trailing edge. Check security of attachment of wing trailing edge in aileron area.

(6) Clean all drain holes in wing, and see that they are located as specified in Mooney M-18 Service Letter 16.

(d) Control Systems

(1) Inspect all control systems (aileron, trim, rudder, and elevator).

(i) Visually inspect all welds for cracks and inadequate welds (i.e. weld which does not completely fill fillet cross section area).

(ii) Check security of all bolted hinge and fitting attach points.

(Mooney M-18 Service Letters Nos. 16 and 17 pertains to this same subject.)

**59-25-6 Mooney** Applies to M-20A Aircraft Serial Numbers 1201 Through 1500.

Compliance required not later than December 30, 1959.

In order to minimize the possibility of icing of the induction system alternate air source, relocate the carburetor alternate air source to a more sheltered location and omit the screen covering this opening.

(a) Remove the engine side cowls and the landing light.

(b) Disconnect air hose P/N 6064-19 from present alternate air inlet. Remove screen and air inlet and patch hole.

(c) Cut hole in landing light housing in the upper inboard quadrant to match hose connecting assembly P/N 6354.

(d) Position P/N 6354 inlet on outer side of light housing to match hole cut per item (c). Self-locking nuts and bolts should be used to attach P/N 6354 to landing light housing, in lieu of Tinnerman fasteners furnished with kit.

(e) Attach hose P/N 6064-19 to P/N 6354 with existing clamp and reinstall light and cowling.

(Mooney Service Letter 20-50 covers this same alteration.)

**61-22-7 Mooney** Amdt. 359 Part 507 Federal Register November 2, 1961. Applies to the M-20, M-20A, and M-20B Aircraft, Serial Numbers 1001 Through 1875.

Compliance required within 25 hours' time in service after the effective date of this AD unless already accomplished.

To prevent failures of the fuel and oil pressure gage lines in the accessory compartment, the following replacement is required:

Replace the copper fuel and oil pressure gage lines from the firewall to the engine pickup location with flexible hose in accordance with Mooney Service Letter 20-82A or replace with other FAA approved equivalent lines or fittings.

(Mooney Service Letter 20-82A covers this same subject.)

This directive effective November 2, 1961.